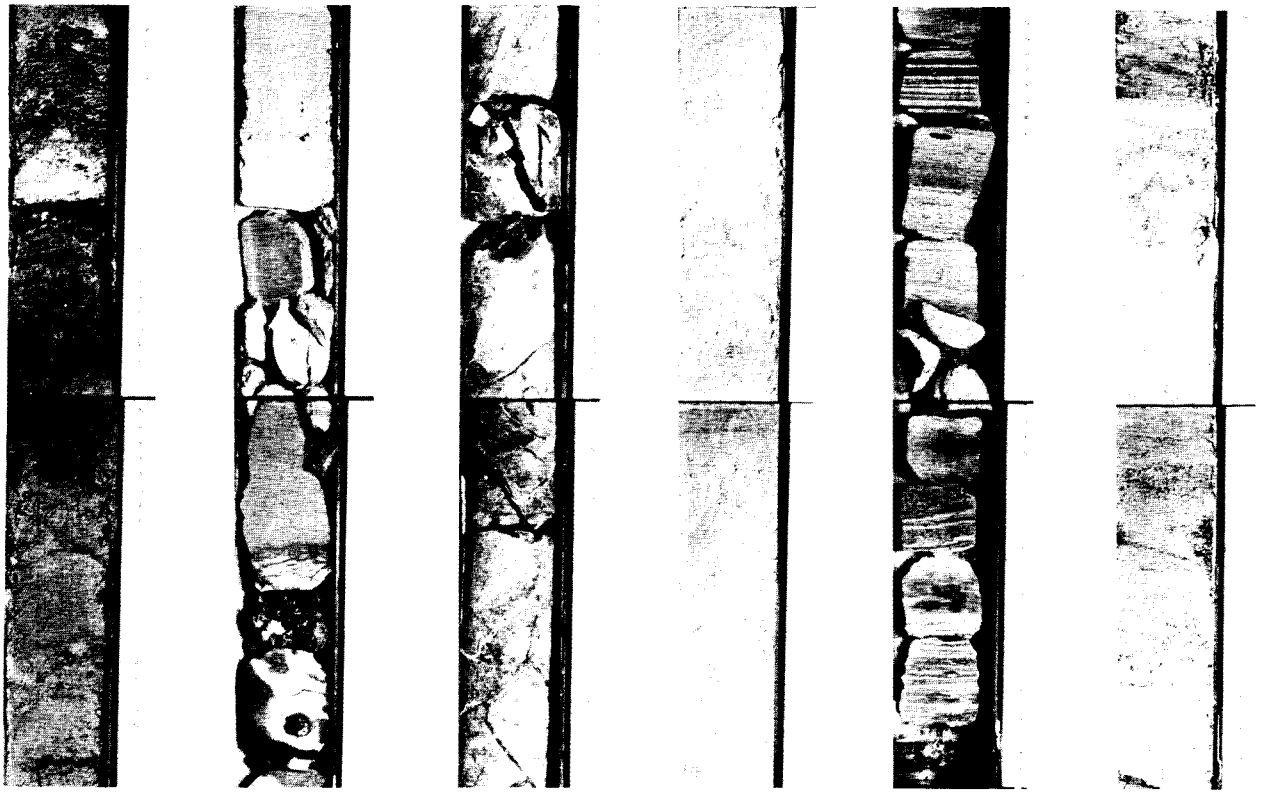
INITIAL CORE DESCRIPTIONS

DEEP SEA DRILLING PROJECT
LEG 38
NORWEGIAN-GREENLAND SEA



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

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Dear Colleague:

This document has been printed and distributed by the Deep Sea Drilling Project for the purpose of sample selection by interested earth scientists, sample requests being honored one year after completion of the cruise on which the samples were collected. It is an interim and informal document consisting of site data and sedimentologic and paleontologic data as known six (6) months post-cruise. These data, while completely adequate for almost all sample selection needs, will be subject to possible slight change by the time of issue of the formal cruise report, 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,

N. Terence Edgar
Chief Scientist
Deep Sea Drilling Project

NTE:eb

INITIAL CORE DESCRIPTIONS
DEEP SEA DRILLING PROJECT

LEG 38
JULY 29, 75 - SEPTEMBER 26, 75

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

MEMBER ORGANIZATIONS

Lamont-Doherty Geological Observatory, Columbia University
Rosenstiel School of Marine and Atmospheric Science, University of Miami
Scripps Institution of Oceanography, University of California
University of Washington
Woods Hole Oceanographic Institution
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INITIAL CORE DESCRIPTIONS - LEG 38

INTRODUCTION

This leg marked the first incursion of the GLOMAR CHALLENGER into the high latitude of the Arctic region. Taking advantage of the period of optimum weather and sea ice conditions, the ship's track ranged as far as 76° north latitude (Figure 1). Sixteen holes at 17 sites were drilled in the Norwegian-Greenland Sea, a region noted for its geological complexity.

Primary concerns of this leg were to unravel the structural and stratigraphic problems present in this relatively young ocean. Such problems are the result of changing sea floor spreading patterns which have developed since the Norwegian Sea first opened approximately 60 m.y. ago. General concerns of this leg were to determine boundaries between oceanic and continental basement, dating magnetic anomalies of old and new spreading centers, tracing changing paths of surface currents, and establishing standard biostratigraphic columns for Tertiary and Mesozoic strata.

There are many key structural elements present in this area. These elements and the Norwegian-Greenland Sea in general were probed for answers to more specific questions such as: (1) the tectonic framework and the evolution of this area with particular emphasis on the continental margins, and on questions concerned with shifts of spreading axis and existence of foundered continental areas, (2) the youngest times of existence of landbridges between Eurasia and North America and the effect of these landbridges on water circulation and paleoclimates, (3) the date of the initiation of glaciation and

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dates of glacial advances and retreats, (4) description of the Tertiary marine microfauna and microflora of the Norwegian-Greenland Sea which are essentially unknown at the present time, and investigation of their similarity with microfauna and microflora from other areas.

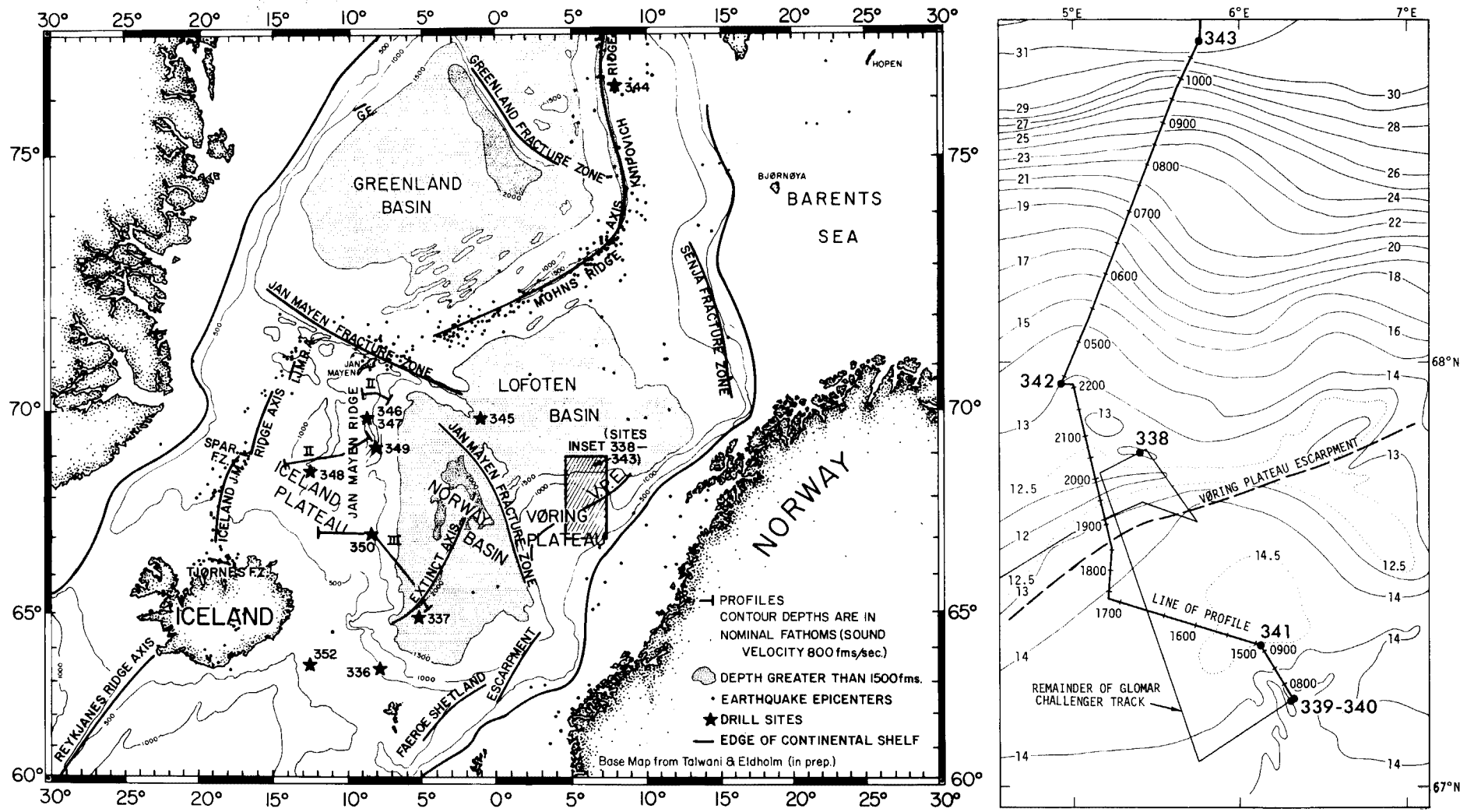


Figure 1 - Location of Leg 38 drilling sites, and bathymetry and structure of the Norwegian - Greenland Sea. (Note: Site 351 was occupied but was not drilled. Its location has not been shown on this map. See Table 1 for details.) The inset map shows the track of GLOMAR CHALLENGER between Holes 338 & 343 on the Vøring Plateau. Portion between Holes 339 & 343 corresponds to line of composite profile illustrated in accompanying diagram. Also shown are position of Vøring Plateau Escarpment, and corrected bathymetry of the area, in hundreds of meters, constructed principally from records taken by RV VEMA of Lamont Doherty Geological Observatory, supplemented by GLOMAR CHALLENGER data.

EXPLANATORY NOTES

Introduction

The following material should aid in understanding the terminology, labeling, and numbering conventions in use at the Deep Sea Drilling Project. Also included are explanations of the core logs and of some of the data that have been assembled up to this time. The sediment classification used on Leg 38 and a sample distribution policy appears near the end of this section.

Numbering of Sites, Holes, Cores, Samples

Drill site numbers run consecutively from the first site drilled by GLOMAR CHALLENGER in 1968, thus the site number is unique. A site refers to the hole or holes drilled from one acoustic positioning beacon. Several holes may be drilled at a single locality by pulling the drill string above the sea floor ("mud line") and offsetting the ship some distance (usually 100 meters or more) from the previous hole.

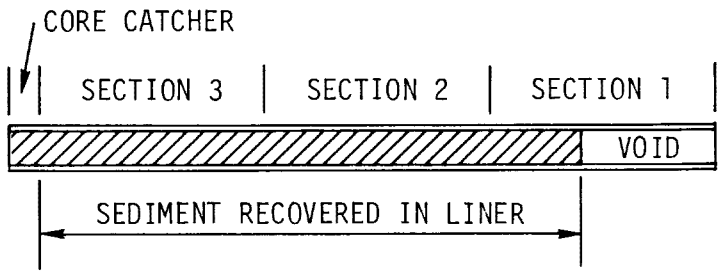
The first (or only) hole drilled at a site takes the site number. Additional holes at the same site are further distinguished by a letter suffix. The first hole has only the site number; the second has the site number with suffix A; the third has the site number with suffix B; and so forth. It is important,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

Cores are numbered sequentially from the top down. In the ideal case, they consist of 9 meters of sediment or rock in a plastic liner of 6.6 cm diameter. In addition, a short sample is obtained from the core catcher (a multi-fingered device at the bottom of the core barrel which prevents cored materials from sliding out during core-barrel recovery). This usually amounts to about 20 cm of sediment and is stored separately. This sample, from each core, represents the lowest stratum recovered in the particular cored interval. The core catcher sample is designated by CC (e.g., 338-4-CC, core catcher sample of the fourth core taken at Site 338).

The cored interval is the interval in meters below the sea floor, measured from the point at which coring for a particular core was started to the point at which it was terminated. This interval is generally 9.5 meters (nominal length of a core barrel), but may be shorter if conditions dictate. Cores and cored intervals need not be contiguous. In soft sediments, the drill string can be "washed ahead" without recovering core by applying sufficiently high pump pressure to wash sediment out of the way of the bit. In a similar manner, a center bit, which fills the opening in the bit face, can replace the core barrel if drilling ahead without coring is necessary.

When a core is brought aboard the GLOMAR CHALLENGER it is labeled and the plastic liner and core cut into 1.5-meter sections. A full, 9-meter core would thus consist of six sections, numbered from the top down, 1 to 6. (The discrepancy between the 9-meter

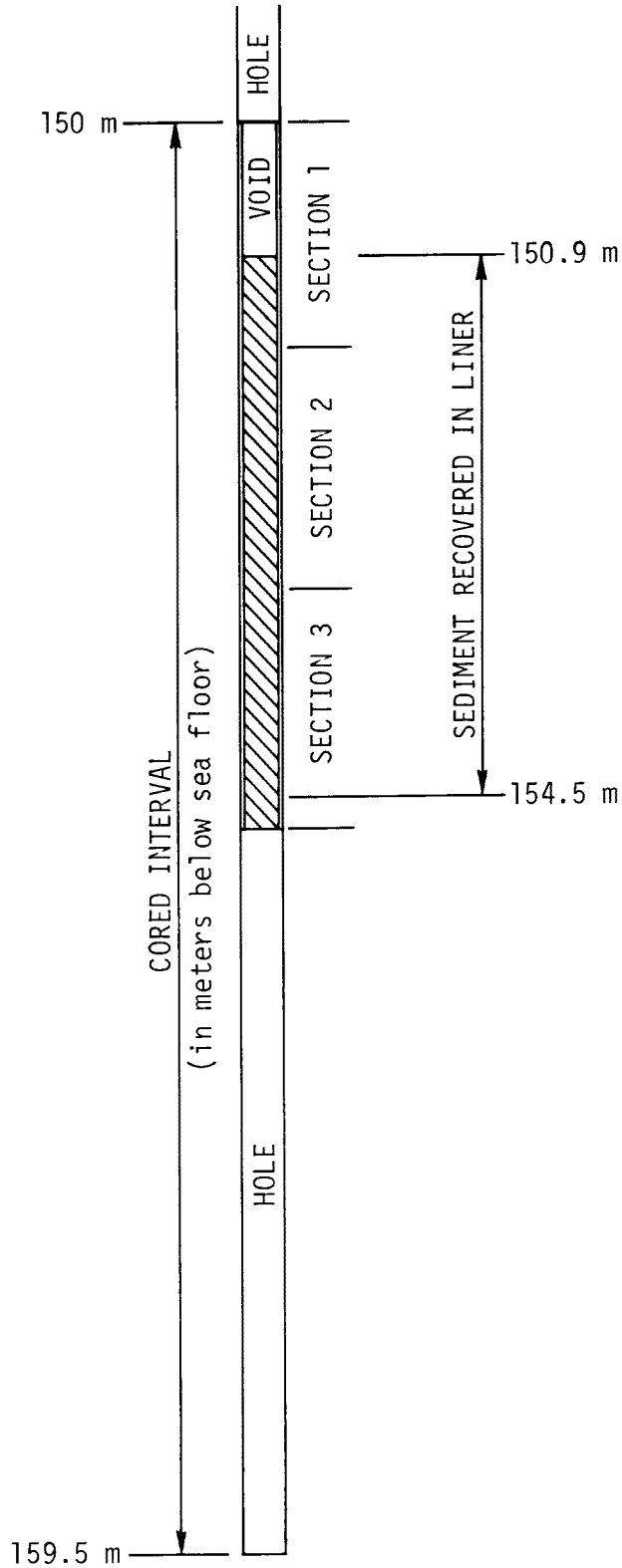
core and 9.5-meter cored interval is discussed below.) Generally something less than 9 meters is recovered. In this case, the sections are still numbered starting with one at the top, but the number of sections is the number of 1.5-meter intervals needed to accommodate the length of core recovered; this is illustrated below:



Thus, as shown, recovery of 3.6 meters of sediment would result in a core with 3 sections, with a void of 0.9 meters at the top of the first section. By convention, and for convenience in routine data handling at the Deep Sea Drilling Project, if a core contains a length of material less than the length of the cored interval, the recovered material is placed in the top of the cored interval, with the top of Section 1, rather than the top of the sediment, equal to the top of the cored interval. This is shown below for the core in the above example.

Thus, the depth below the sea floor of the top of the sediment of this hypothetical core would lie at 150.9 meters (not 150.0 m) and the bottom at 154.5 meters (the core catcher sample is regarded as being dimensionless).

It was noted above that a discrepancy exists between the usual coring interval of 9.5 meters and the 9-meter length of core recovered. The core liners used are actually 9.28 meters in length, and the core catcher accounts for another 0.2 meters. In cases where the core liner is recovered full to the top, the core is still cut into six 1.5-meter sections, measured from the bottom of the liner, and the extra 0.28-meter section at the top is designated Section 0, or the "zero section". The zero section is ignored in calculations of depth below



the sea floor of cores or levels within cores.

In the core laboratory on the GLOMAR CHALLENGER, after routine processing, the 1.5-meter sections of sediment core and liner are split in half lengthwise. One half is designated the "archive" half, which is described by the shipboard geologists, and photographed; and the other is the "working" half, which is sampled by the shipboard sedimentologists and paleontologists for further shipboard and shorebased analysis.

Basalts are not split in this manner. Rather, small mini-cores are taken using a drill press and a small diamond-studded coring device. The mini-cores are subsequently divided for specific sampling needs. For additional details regarding the shipboard handling of basalt, contact the Curator, Deep Sea Drilling Project.

Samples taken from core sections are designated by the interval in centimeters from the top of the core section from which the sample was extracted; the sample size, in cc, is also given. Thus, a full sample designation would consist of the following information:

Leg (Optional)

Site (Hole, if other than first hole)

Core Number

Section Number

Interval in centimeters from top of section

Site 352A -4-3, 122-124 cm (10cc) designates a 10cc sample taken from Section 3 of Core 4 from the second hole drilled at Site 352. The depth below the sea floor for this sample would then

be the depth to the top of the cored interval (150 meters in the example above) plus 3 meters for Sections 1 and 2, plus 122 cm (depth below the top of Section 3), or 154.2 meters. (Note, however, that sample requests should refer to a specific interval within a core section (in centimeters) rather than level (meters) below sea floor.)

Core Disturbance

The rotary drill-coring technique quite often results in a high degree of disturbance of the cored sediments. This is especially true of the softer unconsolidated sediments. A qualitative estimate of the degree of deformation is given on the core logs.

Carbon-Carbonate Data

Sediment samples are analyzed on a Leco 70-Second Analyzer at DSDP following procedures outlined in Volumes 9 and 18 of the Initial Reports of the Deep Sea Drilling Project. Accuracy and precision of the results are as follows:

Total carbon	±0.3% (absolute)
Organic carbon	±0.06% (absolute)
$CaCO_3$	±3% (absolute)

Also included on the core forms for Leg 38 are carbon-carbonate data received from Phillips Petroleum Company. For these samples the weight percent of organic carbon and carbonate carbon are presented. The DSDP data available for the ICD includes only total carbon and carbonate values. All organic carbon values are recorded as 0.0.

X-ray Mineralogy

Semiquantitative determinations of the mineral composition are tabulated on the core logs as reported by laboratories of Phillips and British Petroleum companies.

Analytical procedures and method of data reporting on the core logs is summarized below:

Phillips X-ray Data:

Bulk samples: To determine bulk mineralogy, a representative aliquot of each sample was washed with distilled water to remove sea water, dried at room temperature, crushed to a fine particle size in a mortar and pestle, and prepared as a randomly oriented sample by packing material in a standard aluminum holder prior to X-ray diffraction analysis. The concentration of mineral components of the bulk samples reported were based on the following criteria:

Trace (TR): Diffraction pattern was weak and identification was made on the basis of two major diagnostic peaks.

Present (P): A number of the mineral are visible in the diffraction pattern.

Abundant (A): Diffraction peaks of the mineral are prominent in the total diffraction pattern, but the peaks of other minerals are of an equivalent intensity.

Major (M): The diffraction peaks of the mineral dominate the diffraction pattern.

The concentrations reported are relative and in no way reflect absolute quantities. Also, no concentration data are reported for mixed-layer clay, inasmuch as the mixed-layer clay does not have well-defined, diagnostic peaks in the diffraction patterns.

<2 Micron fraction: The following procedure was used to obtain aliquots of the <2μ fraction of the samples for clay mineral analysis. Each sample was washed with distilled water to remove sea water, and disaggregated by ultrasonic treatment. The sand fraction was removed by wet sieving through a 62μ (230 mesh) sieve and the <2μ fraction segregated by standard sedimentation methods. Each clay sample was mounted with a preferred orientation by vacuum filtering onto porous ceramic plates. Four X-ray diffraction patterns were obtained for each prepared slide: first, untreated at room temperature; second, after exposure to ethylene glycol vapor for 2 hours; third, after heating the glycolated slides at 375°C for 1/2 hour; and fourth, after heating the slides at 550°C for one hour.

Determination of the relative amounts of specific clay minerals in the <2 micron fraction was made according to the technique devised by Biscaye (1965) using the following peaks and weighting factors: 1) the area of the

17Å glycolated peak for montmorillonite and mixed-layer clay; 2) four times (4X) the 10Å peak area (glycolated trace) for mica; 3) twice (2X) the 7Å peak for chlorite and kaolinite. The 7Å peak was divided between kaolinite and chlorite in proportion to the fraction of each mineral in the total area under the 3.5Å kaolinite-chlorite doublet. It is to be emphasized that the "percentages" reported reflect the method used in their determination, i.e., it is not implied that a concentration of 1% chlorite in a clay fraction can be detected and measured.

The percentages of montmorillonite layers in the mixed-layer clay, reported were estimated to the nearest tenth percentile by the method of Reynolds and Hower (1970). Those samples in which the expandable interlayer component exhibited moderate thermal stability are noted with an asterisk.

British Petroleum Co. Data:

Preparation: Three groups of clay minerals (term restricted to phyllosilicates in the <5μ fraction) are relatively easily identified by X-ray diffraction from their basal (00ℓ) spacings. These are montmorillonites, illites and kaolinites/chlorites. Biscaye's (1965) method was used to determine the relative abundance of these groups. A fourth group of clay minerals, the mixed-layer clays, can also be recognized, although there is no satisfactory method for determining its relative abundance.

The diagnostic basal reflections are enhanced by the preparation of slides of oriented clays from aqueous suspensions of clay minerals. Leg 38 samples consisted almost exclusively of muds. These were first dry ground to a very fine powder, and then ground further in a very weak solution of dispersing agent using a "micronising" mill. Each suspension was allowed to settle for 36 minutes after which a volume was extracted from a depth of 5 cms. This sample, representing the <5μ fraction, was spread onto three glass slides and air dried. One slide was then heated at 550°C for 3/4 hour, while a second was placed in ethylene glycol vapor for at least 12 hours. The third slide was retained in an untreated state. Each of the slides was subsequently examined on a diffractometer over the range 3.5° 2θ to 30° 2θ. This preparation method can lead to the preferential concentration of clay minerals, particularly montmorillonite. This enhancement is unavoidable but is probably most significant with samples which have <60% montmorillonite.

Identification: It is important to appreciate that clay minerals are not distinguished solely on d-spacings but also by characteristic changes with different treatments. There are a number of problems associated with this method, particularly dealing with the distinction between kaolinite and chlorite, and the mixed-layer clays.

Calculation: Results have been calculated using Biscaye's (1965) method, which involves the use of a planimeter to calculate peak area measurements. These measurements (integrated intensities) are preferable to methods using only peak heights (model intensities). The intensity of the basal reflections is a function of relative abundance, chemical composition and structural character of the clay minerals. All quantitative methods make assumptions about some of these variables, and therefore the percentages quoted can never be regarded as more than semiquantitative.

Grain Size Analyses

The DSDP grain size analyses presented on the core logs are performed by standard sieve and pipette techniques, described in detail in Appendix III of Volume 4 of the Initial Reports (p. 745), with modified settling times as in Volume 9. The results are preliminary for the publication of the ICD.

Sediment Classification

The sediment classification used here was devised by the JOIDES Panel on Sedimentary Petrology and Physical Properties, and adopted for use by the JOIDES Planning Committee in March 1974.

Accompanying the sediment classification is the employment of a set of lithologic symbols (Figure 2). These symbols have been used on all core and site summary forms.

Smear Slides

Smear slides are the basic means of mineral identification for

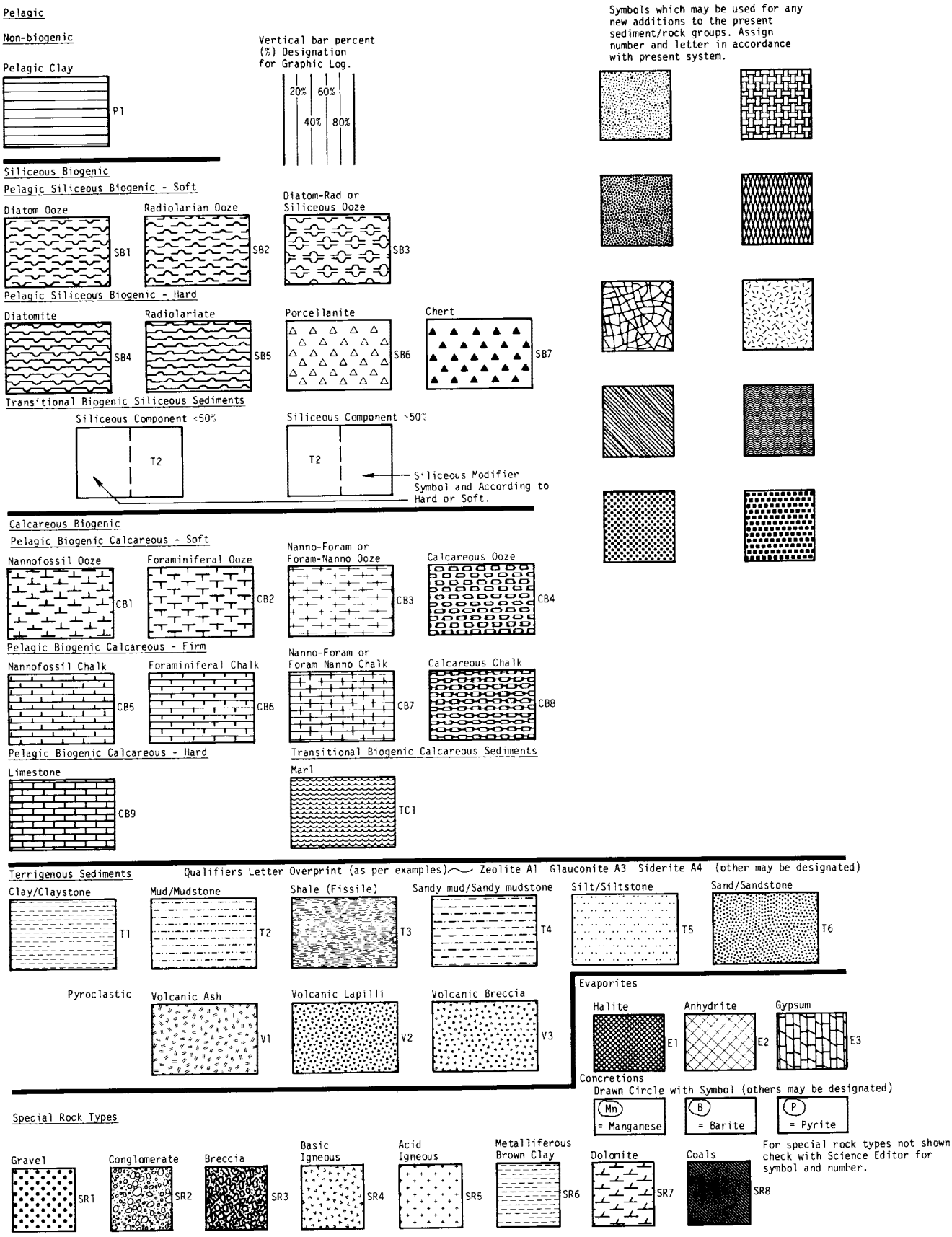


Figure 2. Graphic symbols to accompany the lithologic classification scheme.

sediments on shipboard although thin sections and mineral grain mounts are used in studies of basaltic rocks.

Smear slide estimates of mineral abundances were based on area of the smear slide covered by each component. Past experience has shown that accuracy may approach a percent or so for very distinctive minor constituents but that, for major constituents, accuracy of ±10 to 20% is considered very good. Of more importance to the geologist than absolute accuracy are relative changes in component abundances.

Core Forms (Figure 5)

The basic lithologic data are contained on core summary forms. As far as possible the data are presented in the following order:

Sediment or rock name

Sediment Disturbance and Sedimentary Structures (Figure 3)

Color name and Munsell or GSA number

The reader is advised that colors recorded in core barrel summaries were determined during shipboard examination immediately after splitting core sections. Experience with carbonate sediments shows that many of the colors will fade or disappear with time after opening and storage. Colors particularly susceptible to rapid fading are purple, light and medium tints of blue, light bluish gray, dark greenish black, light tints of green, and pale tints of orange. These colors change to white or yellowish white or pale tan.

Composition via smear slides

Grain size (Figure 4), carbon-carbonate, and X-ray data

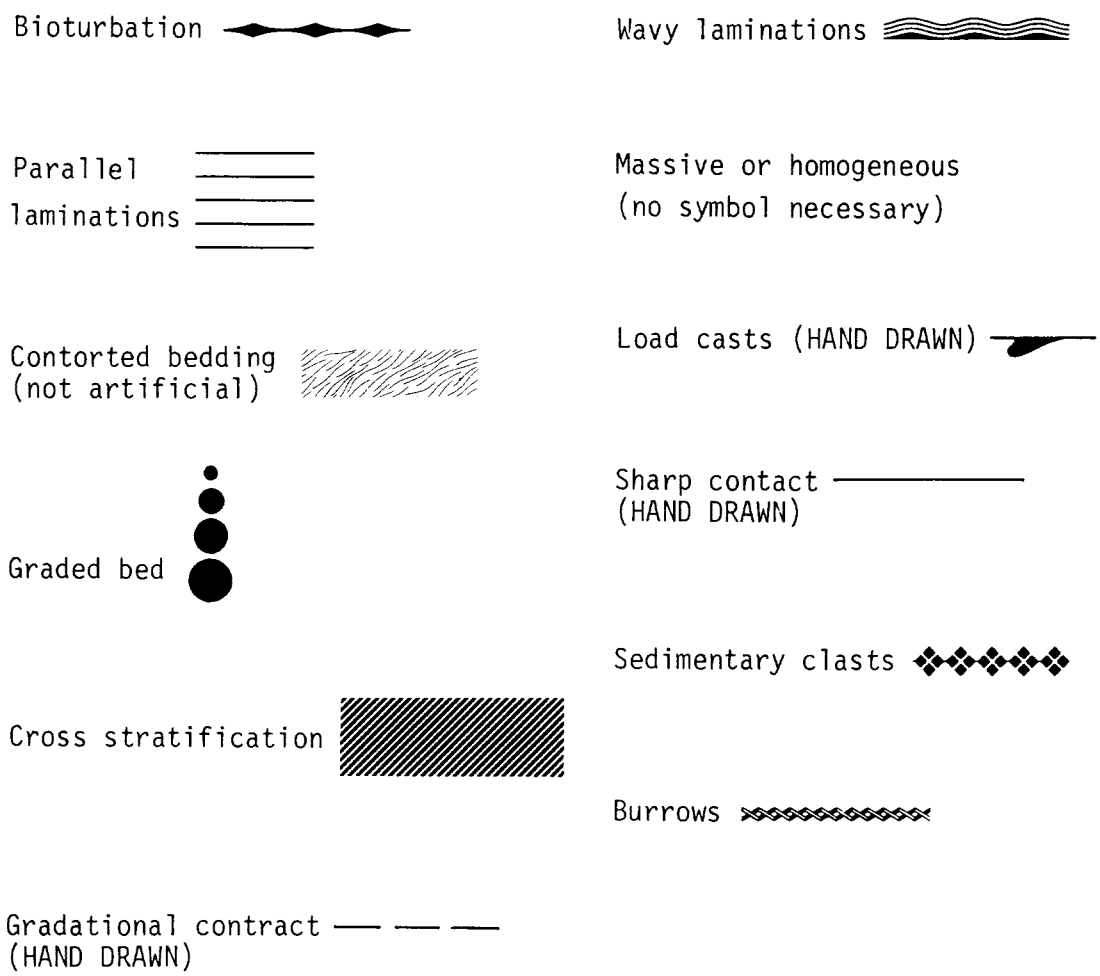


Figure 3. Sedimentary Structure Symbols.

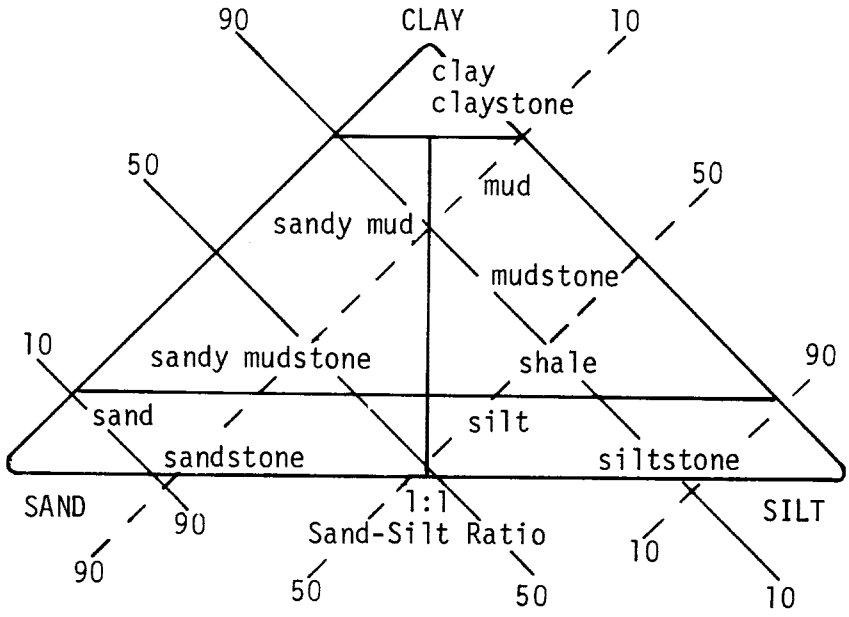


Figure 4. Textural Groups - Terrigenous Sediments

Many cores contain minor important lithologies as well as a basic lithology. The description of the basic lithology is so indicated in most cases, however, descriptive information for minor lithologies is included wherever possible. X-ray data are those collected by the British Petroleum and Phillips Petroleum laboratories. Grain size and carbon-carbonate results are from the DSDP laboratory at Scripps.

A sample core form precedes the site-by-site presentation of the cores (Figure 5). On this sample core form is contained all legend and explanatory notes for an understanding of the core forms.

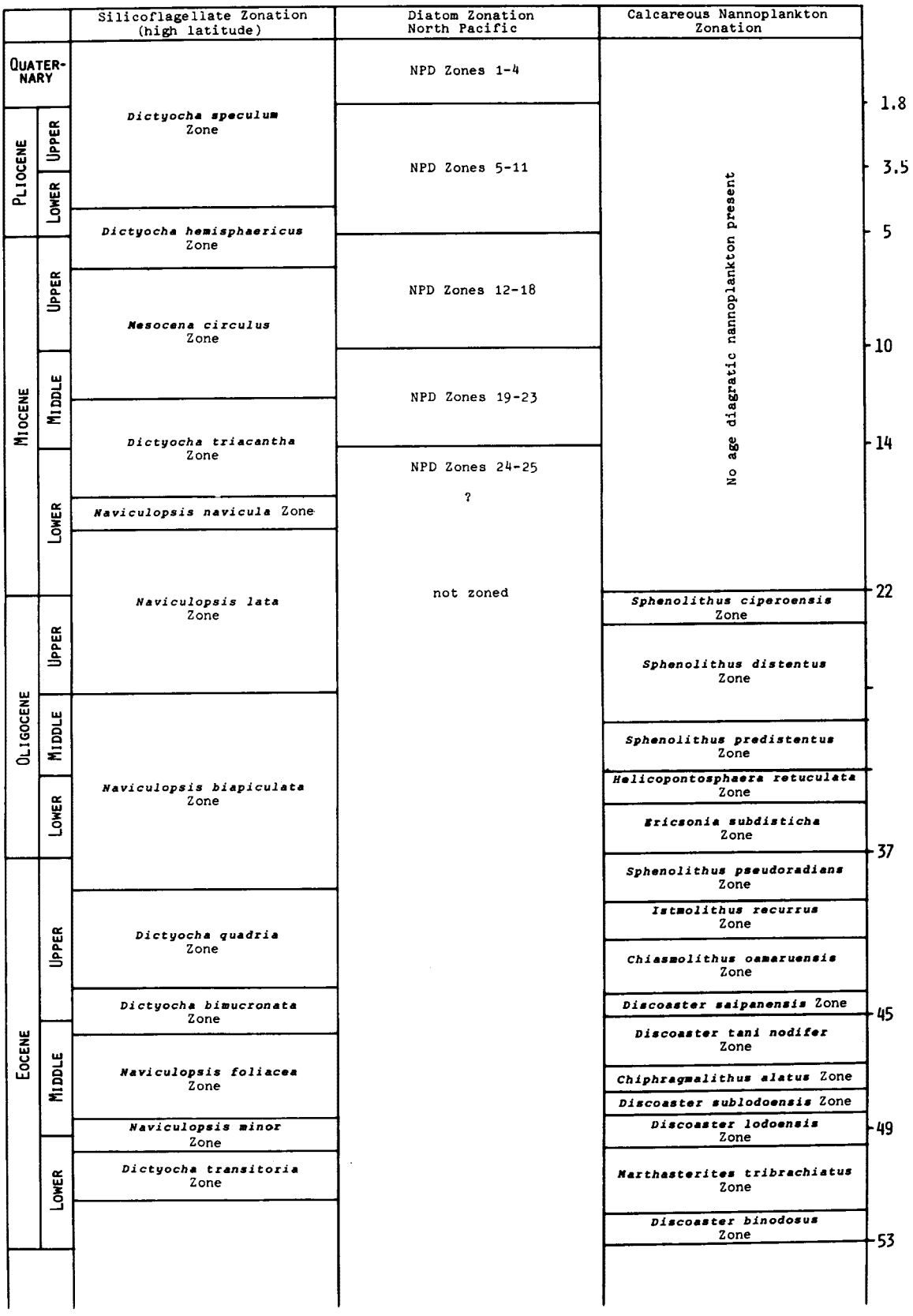
Biostratigraphy

As of this writing biostratigraphic studies of Leg 38 cores are still in progress. Consequently, biostratigraphic boundaries given in this report are necessarily tentative. Although no major changes in age assignments are anticipated, adjustments of some boundaries are likely to be made prior to issuing of the Initial Report Volume for Leg 38. Major biostratigraphic zonations are listed in Table 1.

The silicoflagellate and nannofossil zonations were supplied by Dr. Carla Müller, and Dr. E. Martini Geologisch Palaeonlologisches Institut der Universität, Frankfurt An Main; the diatom zonations by Dr. Hans Schrader, Geologisches Institut der Universität, Kiel; and the dinoflagellate/spore/pollen ratios were supplied by Dr. Svein Manum, Institut for Geology, Universtet i Oslo, Norway.

It is important to note that while only diatoms, silicoflagellates

Table 1. Silicoflagellate, diatom, nannoplankton zonations used for Leg 38 ICD. Absolute ages are from Berggren (1972).



and nannofossil zones were used in assigning ages on the following Leg 38 core descriptions data from all microfossil groups will be integrated for each site in the Initial Report Volume.

sample-distribution policy

Distribution of Deep Sea Drilling samples will be undertaken in order to (1) provide supplementary data for inclusion in the appropriate Initial Report to support *Glomar Challenger* scientists in achieving the scientific objectives of their particular cruise, and (2) provide individual investigators with material to conduct detailed studies beyond the scope of the Initial Reports.

The National Science Foundation has established a Sample Distribution Panel to advise on distribution of core material. 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 core and related materials. Funding for the proposed research is handled separately by the investigator, not through the Deep Sea Drilling Project.

Distribution of samples for contributions to Initial Reports

Any investigator who wishes to contribute a paper to a given volume of the Initial Reports may write to the Curator, Deep Sea Drilling Project, Scripps Institution of Oceanography, University of California at San Diego, La Jolla, 92037, requesting samples from a forthcoming cruise. The request should include the nature of the study, and type, size, number of samples, particular sampling techniques or equipment that might be required, and an estimate of the time required to complete the study. The requests will be reviewed by shipboard scientists, and, if they are deemed suitable and pertinent to the objectives of the leg, and shipboard workload permits, the requested samples will be taken during the cruise (provided, of course, material suitable to the investigation is obtained during the drilling). In the case of multiple requests to perform the same investigation, selection of investigator will be made by the shipboard scientific party.

Proposals should be of a scope appropriate to complete the sampling and study in time for publication in the Initial Reports. Studies deemed acceptable will be referred to the Curator who will, with the consent of the NSF Sample Distribution Panel, authorize distribution of the samples. The Sample Distribution Panel and the Deep Sea Drilling Project will strive to ensure a reasonable degree of continuity in the investigations among the various cruises, that the studies are pertinent to goals of the cruise, and that they are consistent with the publication policy for the Initial Reports. Subject to these same provisions, the shipboard scientific party may elect to have special studies of selected core samples of its recently completed cruise made by other investigators.

Investigations not completed in time for inclusion in the Initial Report may not be published in other journals until publication of the Initial Report for which it was intended.

Distribution of samples for publication other than in Initial Reports

1. Researchers intending to request samples for studies beyond the scope of the Initial Reports should first obtain a sample request form from the Curator. Requests should specify the quantities and intervals of the core required, a statement of the proposed research, the possibility of returning residue to the Curator, the estimated time required to complete and publish the results, and the availability or need of funding and availability of equipment and space foreseen for the research.

In order to ensure that requests for highly desirable but limited samples can all be considered, approval of requests and distribution of samples will not be made prior to 12 months after date of completion of the cruise that collected the cores. Prior to publication of an Initial Report, requests for samples from a cruise can be based on the preliminary shipboard core logs. Copies of these logs will be kept on open file at Scripps and other designated institutions. The only exceptions will be for specific instances involving ephemeral properties.

Requests for samples from researchers in industrial laboratories will be handled in the same manner as those from academic organizations, and there will be the same obligation to publish results promptly. Requests from foreign scientists or organizations will also be considered.

2. The Curator has the responsibility for distributing samples, controlling quality of samples, and preserving core material. He also has the responsibility for maintaining a record of requests for samples that have been processed and filled indicating the investigator and subjects to be studied. This record will be available to investigators.

The distribution of samples will be made directly from the two repositories at Lamont-Doherty Geological Observatory and Scripps by the Curator or his designated representative.

3. (a) Samples up to 10 cc/m of core length can be automatically distributed by the Curator, Deep Sea Drilling Project or his authorized representative to any qualified investigator who requests them. The Curator will refrain from making automatic distribution of any parts of the cores which appear to be in particularly high demand, and any requests for these parts of the cores will be referred to the Sample Distribution Panel for review. Requests for samples from thin layers or important stratigraphic boundaries will generally require Panel review.

(b) All requests for samples in excess of 3(a) above will be referred to the Sample Distribution Panel.

(c) If, in the opinion of scientific investigators, certain properties they wish to study may deteriorate prior to the normal availability of the samples, such investigators may request that the normal waiting period not apply. All such requests must be approved by the Sample Distribution Panel.

4. 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 1). If a sample request is dependent, either wholly or in part, on proposed funding, the Curator will 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.

5. Investigators receiving samples are responsible for:

i) promptly publishing significant results.

ii) acknowledging, in publications, that samples were supplied through the assistance of the National Science Foundation.

iii) submitting 4 copies of all reprints of published results to the Curator.

iv) notifying the Curator of any work done on the samples that is additional to that stated in the original request for samples.

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

6. Cores will be made available at repositories for investigators to examine and specify exact samples in such instances as this may be necessary for the scientific purposes of the sampling, subject to the limitations of 3 (a), (b), (c), and 5, above, and with the specific permission of the Curator or his delegate.

7. Cores of igneous and metamorphic rocks will also remain at the repositories where they will be available for observation and description and where selected samples may be taken for thin-section preparation and other work.

8. The Deep Sea Drilling Project routinely processes by computer most of the quantitative data presented in the Initial Reports. Space limits in the Initial Reports preclude 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.

Magnetics, seismic-reflection and bathymetric data collected under way by the *Glomar Challenger* will also be available for distribution 12 months after completion of the cruise.

Requests for these data may be made to the Coordinating Staff Geologist of the Deep Sea Drilling Project, at Scripps.

A charge will be made to recover the expenses of responding to individual requests. Estimated charges can be furnished before the request is processed, if required.

9. This policy has the approval of the National Science Foundation and is designed to help ensure that the greatest possible scientific benefit is gained from the materials obtained, and that samples will be made widely available to interested geologists.

(Slightly condensed from the official sample distribution policy of the Deep Sea Drilling Project.)

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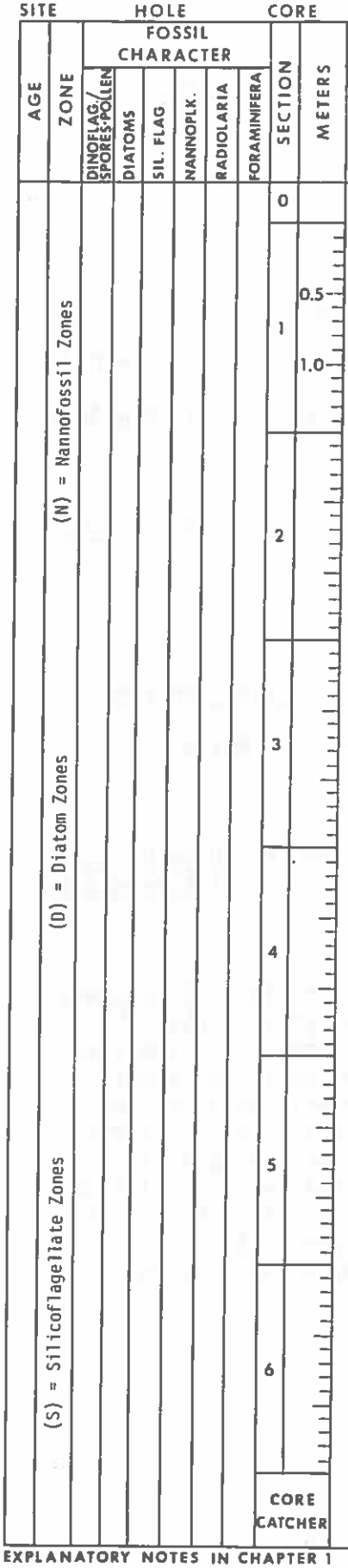
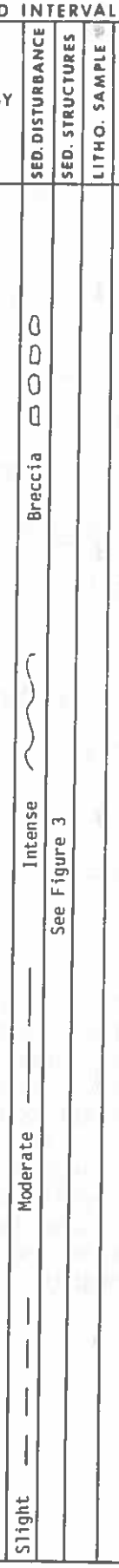
Reynolds, R. C., Jr., and Hower, J., 1970. The Nature of Interlayering in Mixed-layer Illite-montmorillonite, Clays and Clay Minerals, 18, p. 25-36.

SITE HOLE CORE CORED INTERVAL:





LITHOLOGIC DESCRIPTION

colors

Area of general description: general lithology, colors, deformation, and specific characteristics.

Smear Slide Descriptions:
Lithology: major and minor included

"Clay mineral" in composition column may designate unresolvable, fine clay-size material.

Specific characteristics of smear slides may follow the basic listing.

Note: Grain size, carbon-carbonate, bulk X-ray and smear slide intervals are given by section and centimeter. For example; 6-40 is a sample that was taken at 40 centimeters in Section 6.

Carbon-Carbonate (DSDP):
(Total C%, Org. C%, $CaCO_3$%)
Note: For this ICD, only Total C & $CaCO_3$ data are given.

Carbon-Carbonate (PP = Phillips Petroleum):
(Org. C - Wt. %, $CaCO_3$ - Wt. %)

Grain Size (DSDP):
(% Sand, % Silt, % Clay)
Note: Preliminary data only.

For Sites 343, 355 and 345:
X-ray (BP = British Petroleum)
Clay mineral component in <5μm fraction.
Other minerals are reported as A = Abundant, M = Major, P = Present, TR = Trace.

For Sites 346, 347, 348 and 349:
X-ray (PP = Phillips Petroleum)
Bulk
M = Major, A = Abundant, P = Present, TR = Trace
<2μ
Rel. concentration (%) of clay minerals.

Symbols for fossil character:
A = Abundant
C = Common
F = Frequent
R = Rare
B = Barren
T = Trace
G or g = good (very little dissolution/abrasion
M or m = moderate (dissolution/abrasion/recrystallization noticeable)
P or p = poor (substantial or very strong evidence of dissolution/abrasion/recrystallization)

The column Dinoflagellates/spores-pollen represents a relative abundance ratio using symbols designated above.

EXPLANATORY NOTES IN CHAPTER 1

Figure 5. Sample Core Form and Legends.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 336

SITE SUMMARY SHEET

POSITION: Latitude: 63°21.06'N Longitude: 07°47.27'W

Water depth (from sea level): 811.0 corrected meters (Echo sounding)

Bottom felt at: 830.0 meters (drill pipe) Penetration: 515.0 meters

Number of Holes: 1 Number of Cores: 44

Total length of cored section: 396.5 m Total core recovered: 220.9 m

Percentage of core recovery: 55.7%

OLDEST SEDIMENT CORED:

Depth below sea floor: 463.0 meters Nature: Gray black mudstone

Age: Middle Eocene (Core 37) Measured velocity: 2.1 km/sec

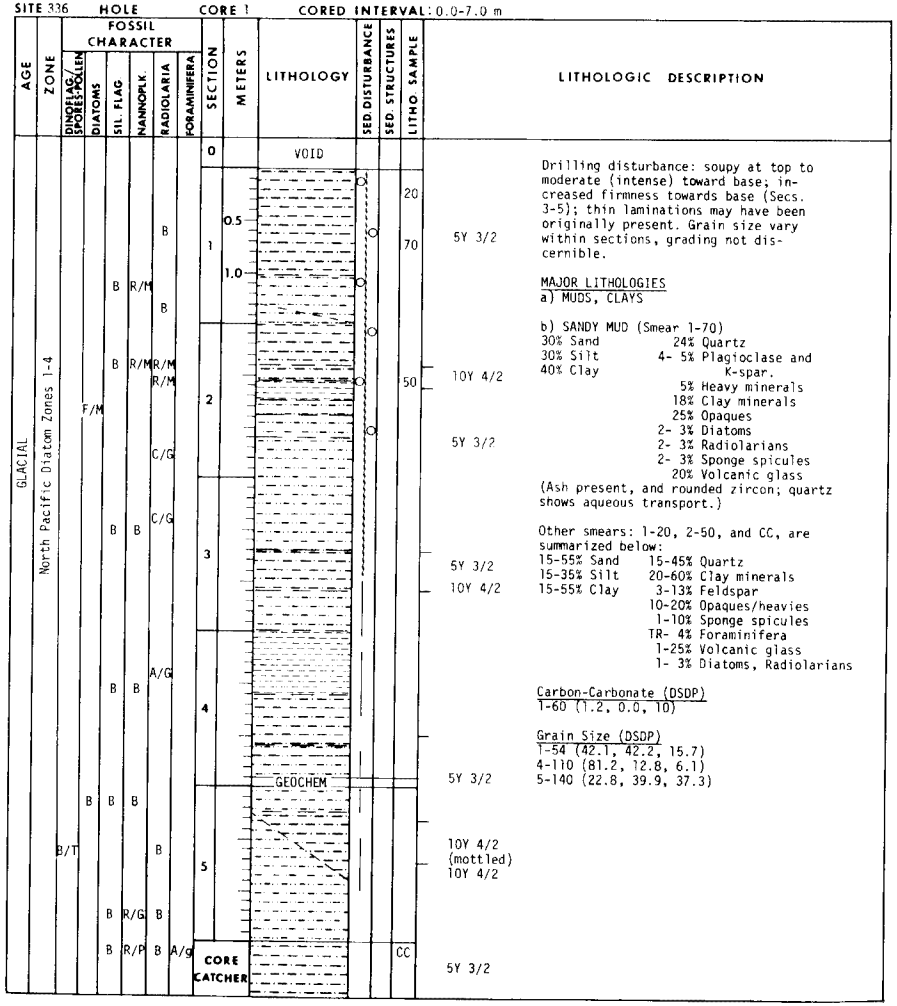
BASEMENT:

Depth below sea floor: 484.5 meters (drilled) Nature: Fine-grained trachybasalt

PRINCIPAL RESULTS:

Site 336 penetrated a total depth of 515 meters, the last 30.5 meters being in basalt. The basalt, which is covered by rubble derived by weathering, was probably extruded subaerially. Subsequently the area has undergone subsidence. A mudstone from 168 meters to 463 meters of upper Oligocene to middle Eocene age contains several well-defined ash layers and overlies the basalt. The topmost unit consists largely of clays and sands containing a large percentage of glacially derived material deposited in the Plio-Pleistocene. The data at this site are not inconsistent with a Proto-Iceland type of origin for the Iceland-Faeroe Ridge, in which the spreading center was emergent, but the ridge gradually subsided and probably became completely submergent during the Miocene.

SITE 336 HOLE CORE 1 CORED INTERVAL: 0.0-7.0 m



LITHOLOGIC DESCRIPTION

Drilling disturbance: soupy at top to moderate (intense) toward base; increased firmness towards base (Secs. 3-5); thin laminations may have been originally present. Grain size vary within sections, grading not discernible.

MAJOR LITHOLOGIES
a) MUDS, CLAYS

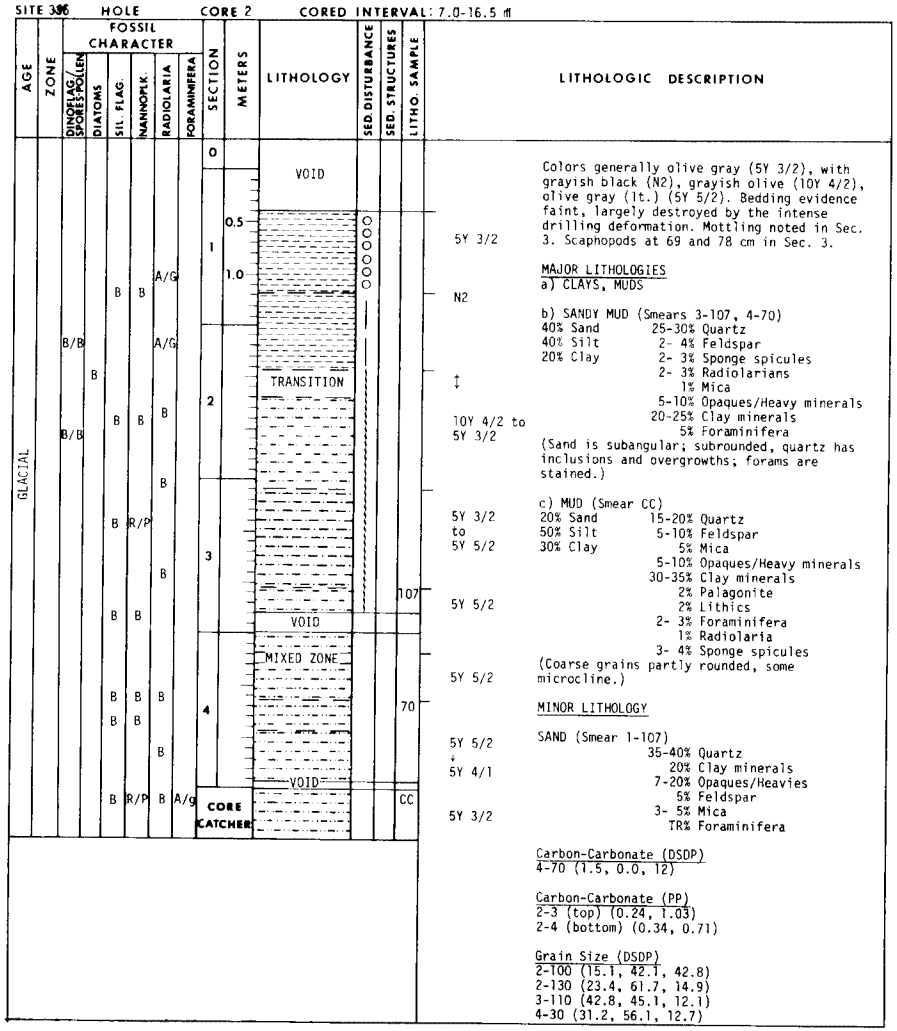
b) SANDY MUD (Smear 1-70)
30% Sand 24% Quartz
30% Silt 4- 5% Plagioclase and K-spar.
40% Clay 5% Heavy minerals
18% Clay minerals
25% Opaques
2- 3% Diatoms
2- 3% Radiolarians
2- 3% Sponge spicules
20% Volcanic glass
(Ash present, and rounded zircon; quartz shows aqueous transport.)

Other smears: 1-20, 2-50, and CC, are summarized below:
15-55% Sand 15-45% Quartz
15-35% Silt 20-60% Clay minerals
15-55% Clay 3-13% Feldspar
10-20% Opaques/heavies
1-10% Sponge spicules
TR- 4% Foraminifera
1-25% Volcanic glass
1- 3% Diatoms, Radiolarians

Carbon-Carbonate (DSDP)
1-60 (1.2, 0.0, 10)

Grain Size (DSDP)
1-54 (42.1, 42.2, 15.7)
4-110 (81.2, 12.8, 6.1)
5-140 (22.8, 39.9, 37.3)

SITE 336 HOLE CORE 2 CORED INTERVAL: 7.0-16.5 m



Colors generally olive gray (5Y 3/2), with grayish black (N2), grayish olive (10Y 4/2), olive gray (lt.) (5Y 5/2). Bedding evidence faint, largely destroyed by the intense drilling deformation. Mottling noted in Sec. 3. Scaphopods at 69 and 78 cm in Sec. 3.

MAJOR LITHOLOGIES
a) CLAYS, MUDS

b) SANDY MUD (Smears 3-107, 4-70)
40% Sand 25-30% Quartz
40% Silt 2- 4% Feldspar
20% Clay 2- 3% Sponge spicules
2- 3% Radiolarians
1% Mica
5-10% Opaques/Heavy minerals
20-25% Clay minerals
5% Foraminifera
(Sand is subangular; subrounded, quartz has inclusions and overgrowths; forams are stained.)

c) MUD (Smear CC)
20% Sand 15-20% Quartz
50% Silt 5-10% Feldspar
30% Clay 5% Mica
5-10% Opaques/Heavy minerals
30-35% Clay minerals
2% Palagonite
2% Lithics
2- 3% Foraminifera
1% Radiolaria
3- 4% Sponge spicules
(Coarse grains partly rounded, some microcline.)

MINOR LITHOLOGY

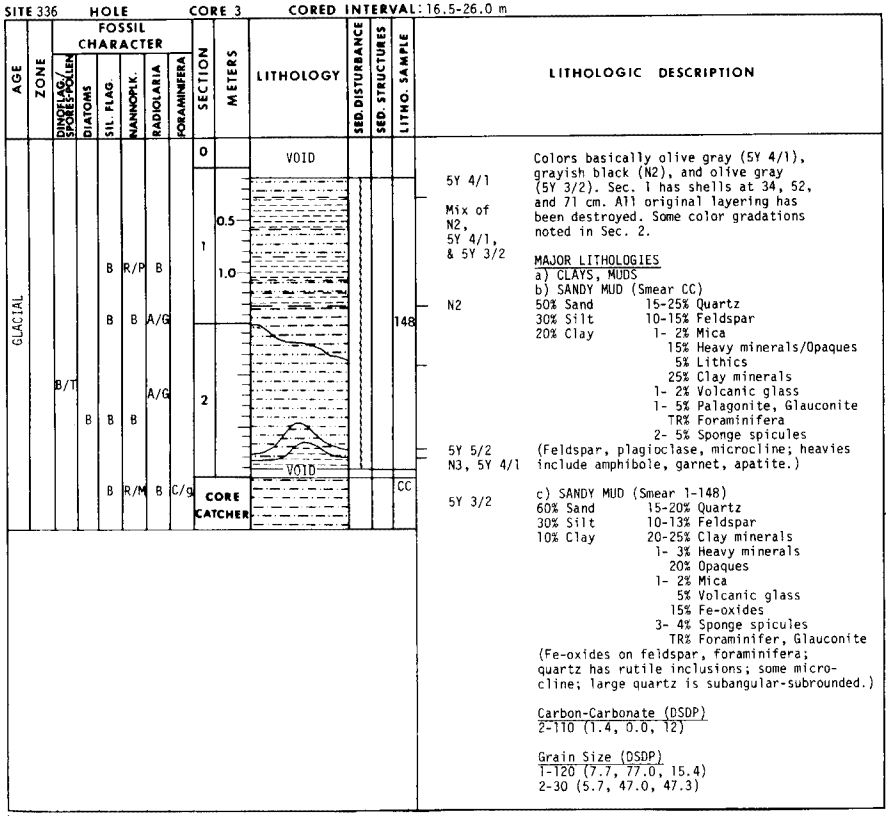
SAND (Smear 1-107)
35-40% Quartz
20% Clay minerals
7-20% Opaques/Heavies
5% Feldspar
3- 5% Mica
TR% Foraminifera

Carbon-Carbonate (DSDP)
4-70 (1.5, 0.0, 12)

Carbon-Carbonate (PP)
2-3 (top) (0.24, 1.03)
2-4 (bottom) (0.34, 0.71)

Grain Size (DSDP)
2-100 (15.1, 42.1, 42.8)
2-130 (23.4, 61.7, 14.9)
3-110 (42.8, 45.1, 12.1)
4-30 (31.2, 56.1, 12.7)

SITE 336 HOLE CORE 3 CORED INTERVAL: 16.5-26.0 m



5Y 4/1

Mix of N2, 5Y 4/1, & 5Y 3/2

N2

5Y 5/2
N3, 5Y 4/1

5Y 3/2

LITHOLOGIC DESCRIPTION

Colors basically olive gray (5Y 4/1), grayish black (N2), and olive gray (5Y 3/2). Sec. 1 has shells at 34, 52, and 71 cm. All original layering has been destroyed. Some color gradations noted in Sec. 2.

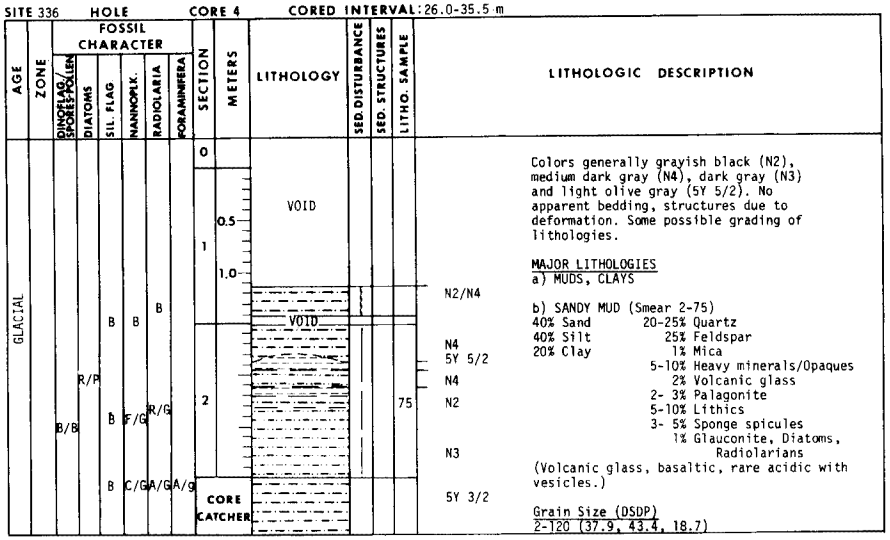
MAJOR LITHOLOGIES
a) CLAYS, MUDS
b) SANDY MUD (Smear CC)
50% Sand 15-25% Quartz
30% Silt 10-15% Feldspar
20% Clay 1- 2% Mica
15% Heavy minerals/Opaques
5% Lithics
25% Clay minerals
1- 2% Volcanic glass
1- 5% Palagonite, Glauconite
TR% Foraminifera
2- 5% Sponge spicules
(Feldspar, plagioclase, microcline; heavies include amphibole, garnet, apatite.)

c) SANDY MUD (Smear 1-148)
60% Sand 15-20% Quartz
30% Silt 10-13% Feldspar
10% Clay 20-25% Clay minerals
1- 3% Heavy minerals
20% Opaques
1- 2% Mica
5% Volcanic glass
15% Fe-oxides
3- 4% Sponge spicules
TR% Foraminifer, Glauconite
(Fe-oxides on feldspar, foraminifera; quartz has rutile inclusions; some microcline; large quartz is subangular-subrounded.)

Carbon-Carbonate (DSDP)
2-110 (1.4, 0.0, 12)

Grain Size (DSDP)
1-120 (7.7, 77.0, 15.4)
2-30 (5.7, 47.0, 47.3)

SITE 336 HOLE CORE 4 CORED INTERVAL: 26.0-35.5 m



N2/N4

N4

5Y 5/2

N4

N2

N3

5Y 3/2

LITHOLOGIC DESCRIPTION

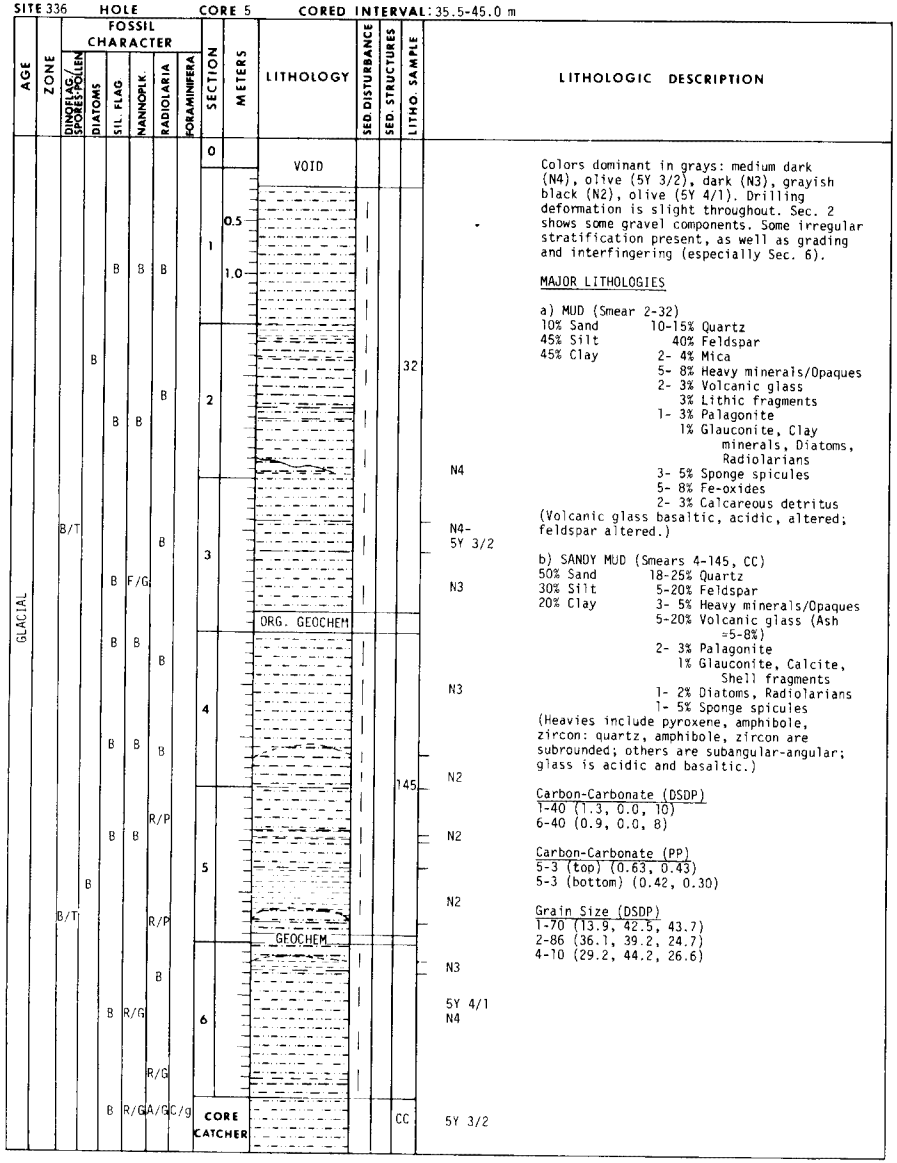
Colors generally grayish black (N2), medium dark gray (N4), dark gray (N3) and light olive gray (5Y 5/2). No apparent bedding, structures due to deformation. Some possible grading of lithologies.

MAJOR LITHOLOGIES
a) MUDS, CLAYS

b) SANDY MUD (Smear 2-75)
40% Sand 20-25% Quartz
40% Silt 25% Feldspar
20% Clay 1% Mica
5-10% Heavy minerals/Opaques
2% Volcanic glass
2- 3% Palagonite
5-10% Lithics
3- 5% Sponge spicules
1% Glauconite, Diatoms, Radiolarians
(Volcanic glass, basaltic, rare acidic with vesicles.)

Grain Size (DSDP)
2-120 (37.9, 43.4, 18.7)

SITE 336 HOLE CORE 5 CORED INTERVAL: 35.5-45.0 m



Colors dominant in grays: medium dark (N4), olive (5Y 3/2), dark (N3), grayish black (N2), olive (5Y 4/1). Drilling deformation is slight throughout. Sec. 2 shows some gravel components. Some irregular stratification present, as well as grading and interfingering (especially Sec. 6).

MAJOR LITHOLOGIES

a) MUD (Smear 2-32)

10% Sand	10-15% Quartz
45% Silt	40% Feldspar
45% Clay	2- 4% Mica
	5- 8% Heavy minerals/Opaques
	2- 3% Volcanic glass
	3% Lithic fragments
	1- 3% Palagonite
	1% Glauconite, Clay minerals, Diatoms, Radiolarians
	3- 5% Sponge spicules
	5- 8% Fe-oxides
	2- 3% Calcareous detritus

(Volcanic glass basaltic, acidic, altered; feldspar altered.)

b) SANDY MUD (Smears 4-145, CC)

50% Sand	18-25% Quartz
30% Silt	5-20% Feldspar
20% Clay	3- 5% Heavy minerals/Opaques
	5-20% Volcanic glass (Ash =5-8%)
	2- 3% Palagonite
	1% Glauconite, Calcite, Shell fragments
	1- 2% Diatoms, Radiolarians
	1- 5% Sponge spicules

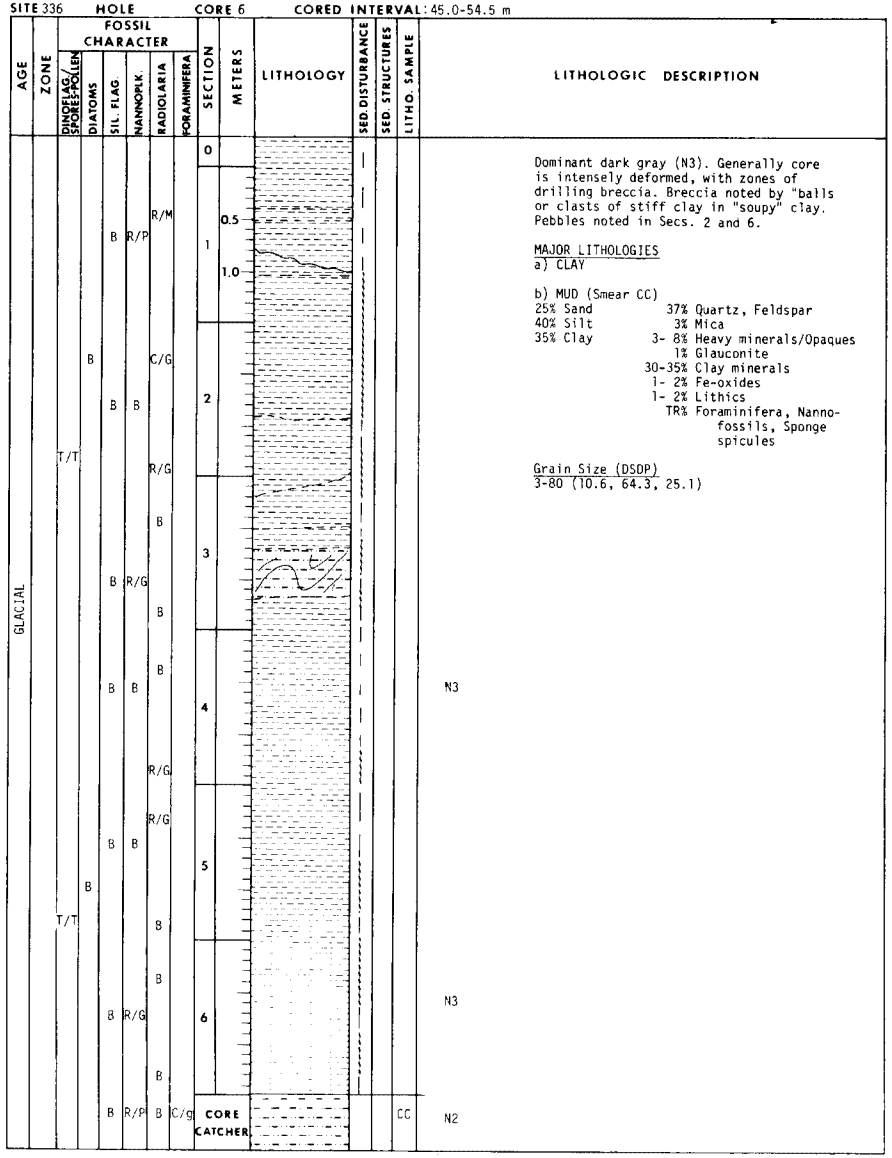
(Heavies include pyroxene, amphibole, zircon: quartz, amphibole, zircon are subrounded; others are subangular-angular; glass is acidic and basaltic.)

Carbon-Carbonate (DSDP)
1-40 (1.3, 0.0, 10)
6-40 (0.9, 0.0, 8)

Carbon-Carbonate (PP)
5-3 (top) (0.63, 0.43)
5-3 (bottom) (0.42, 0.30)

Grain Size (DSDP)
1-70 (13.9, 42.5, 43.7)
2-86 (36.1, 39.2, 24.7)
4-10 (29.2, 44.2, 26.6)

SITE 336 HOLE CORE 6 CORED INTERVAL: 45.0-54.5 m



Dominant dark gray (N3). Generally core is intensely deformed, with zones of drilling breccia. Breccia noted by "balls or clasts of stiff clay in "soupy" clay. Pebbles noted in Secs. 2 and 6.

MAJOR LITHOLOGIES
a) CLAY

b) MUD (Smear CC)

25% Sand	37% Quartz, Feldspar
40% Silt	3% Mica
35% Clay	3- 8% Heavy minerals/Opaques
	1% Glauconite
	30-35% Clay minerals
	1- 2% Fe-oxides
	1- 2% Lithics
	TR% Foraminifera, Nannofossils, Sponge spicules

Grain Size (DSDP)
3-80 (10.6, 64.3, 25.1)

SITE 336 HOLE CORE 7 CORED INTERVAL: 54.5-64.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG/SPORES-POLLEN	DIATOMS	SIL FLAG	NANNOPLK	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
GLACIAL				B	B	B	C/G	CORE CATCHER					CC	

MAJOR LITHOLOGY
(VOLCANIC) MUD (Smear CC)

25% Sand	26% Quartz, Feldspar
50% Silt	3% Mica
25% Clay	3- 7% Heavy minerals/Opaques
	20-25% Volcanic glass
	TR% Palagonite
	6- 7% Lithics
	3- 5% Clay minerals
	1- 2% Diatoms, Sponge spicules

SITE 336 HOLE CORE 8 CORED INTERVAL: 64.0-73.5 m

AGE: PLIOCENE/MIOCENE
ZONE: North Pacific Diatom Zones 5-11

FOSSIL CHARACTER:

DINOFLAG/SPORES-POLLEN	DIATOMS	SIL FLAG	NANNOPLK	RADIOLARIA	FORAMINIFERA
	B/R			R/P	
				R/P	
		B	B		
	F/G	B	B	R/G	
				B	
		B	B		
				B	
		B	B		
				R/M	
		B	B		
				C/G	
		B	B		
	B/R			C/G	
				C/G	
	C/G	R/G	B		
				C/G	
				R/M	
		B	B		
				C/G	C/M

SECTION / METERS / LITHOLOGY / SED DISTURBANCE / SED. STRUCTURES / LITHO. SAMPLE

SECTION	METERS
0	
1	0.5
	1.0
2	
3	
4	
5	
6	
CORE CATCHER	

VOID
GEOCHEM

LITHO. SAMPLE	
98	N3
	N4
91	
	N3
46	N4
	N3
CC	N2

LITHOLOGIC DESCRIPTION

5GY 4/1
N3

Colors range from dark greenish gray (5GY 4/1) (minor) to dark gray (N3). Generally massive, with slight to moderate deformation; drilling breccia in Secs. 4 to 5. Some pebbles noted in Secs. 1, 2, 3, 4 and 6. Iron staining noted in sandy zones. Bioturbation in Secs. 2 and 3; limestone clast (angular) noted in Sec. 3, plus shell debris. Very thin stratification (1-5 cm) present in Sec. 6.

MAJOR LITHOLOGIES

a) CLAY

b) MUD (Smears 2-95, 4-91, CC)

10-25% Sand	10-20% Quartz
30-45% Silt	5-22% Feldspar
30-60% Sand	0- 2% Mica
	2-10% Heavy minerals/Opaques
	15-25% Volcanic glass
	0- 2% Palagonite
	TR- 1% Glauconite
	10-15% Clay minerals
	1- 3% Diatoms, Radiolarians, Sponge spicules
	0- 4% Lithics

c) SAND (Smear 6-46)

80% Sand	19% Quartz
10% Silt	10-15% Feldspar
10% Clay	12-15% Heavy minerals/Opaques
	5- 7% Volcanic glass
	1- 2% Palagonite
	10% Clay minerals
	0- 1% Glauconite
	1- 2% Diatoms, Radiolarians, Sponge spicules

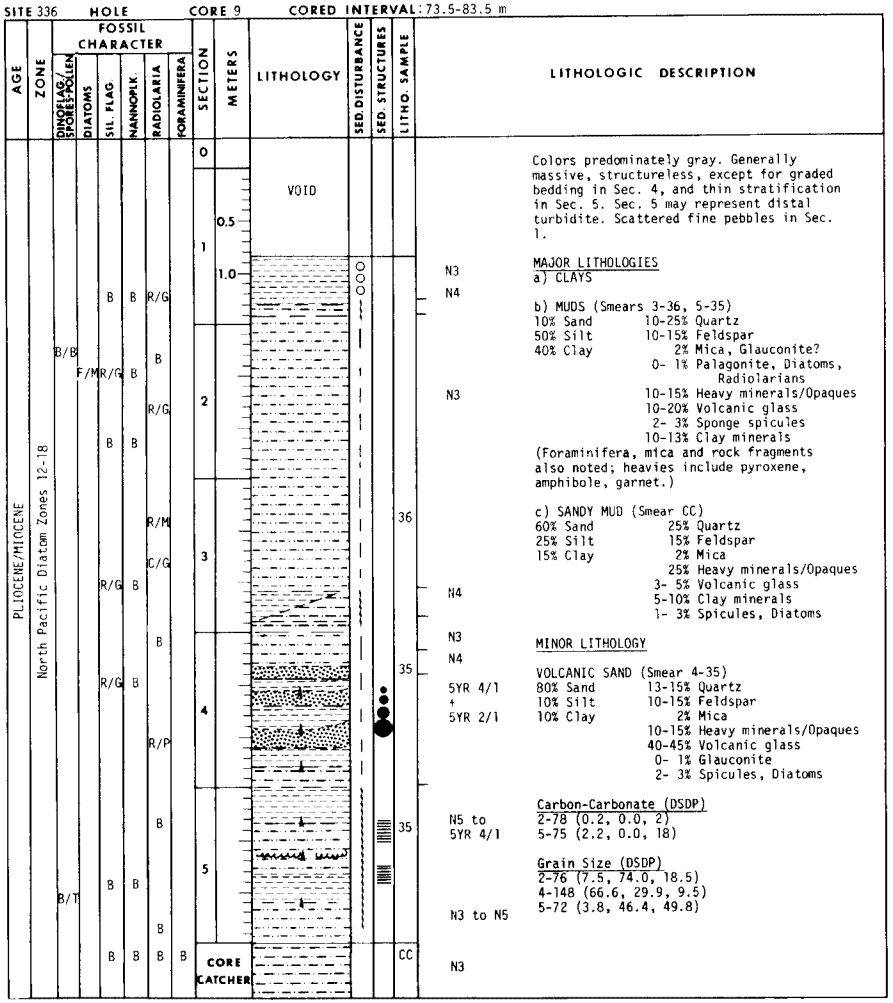
(Heavy minerals include pyroxene, amphiboles, olivine; glass angular-subangular.)

Carbon-Carbonate (DSDP)
1-30 (0.5, 0.0, 5)
5-86 (0.3, 0.0, 3)

Carbon-Carbonate (PP)
8-3 (top) (0.11, 0.05)
8-3 (bottom) (0.09, 0.04)

Grain Size (DSDP)
1-83 (67.0, 24.4, 8.6)
1-88 (55.3, 30.5, 14.2)
5-83 (2.2, 68.9, 29.0)

SITE 336 HOLE CORE 9 CORED INTERVAL: 73.5-83.5 m



LITHOLOGIC DESCRIPTION

Colors predominately gray. Generally massive, structureless, except for graded bedding in Sec. 4, and thin stratification in Sec. 5. Sec. 5 may represent distal turbidite. Scattered fine pebbles in Sec. 1.

MAJOR LITHOLOGIES

a) CLAYS

b) MUDS (Smears 3-36, 5-35)

10% Sand	10-25% Quartz
50% Silt	10-15% Feldspar
40% Clay	2% Mica, Glauconite?
	0- 1% Palagonite, Diatoms, Radiolarians
	10-15% Heavy minerals/Opaques
	10-20% Volcanic glass
	2- 3% Sponge spicules
	10-13% Clay minerals

(Foraminifera, mica and rock fragments also noted; heavies include pyroxene, amphibole, garnet.)

c) SANDY MUD (Smear CC)

60% Sand	25% Quartz
25% Silt	15% Feldspar
15% Clay	2% Mica
	25% Heavy minerals/Opaques
	3- 5% Volcanic glass
	5-10% Clay minerals
	1- 3% Spicules, Diatoms

MINOR LITHOLOGY

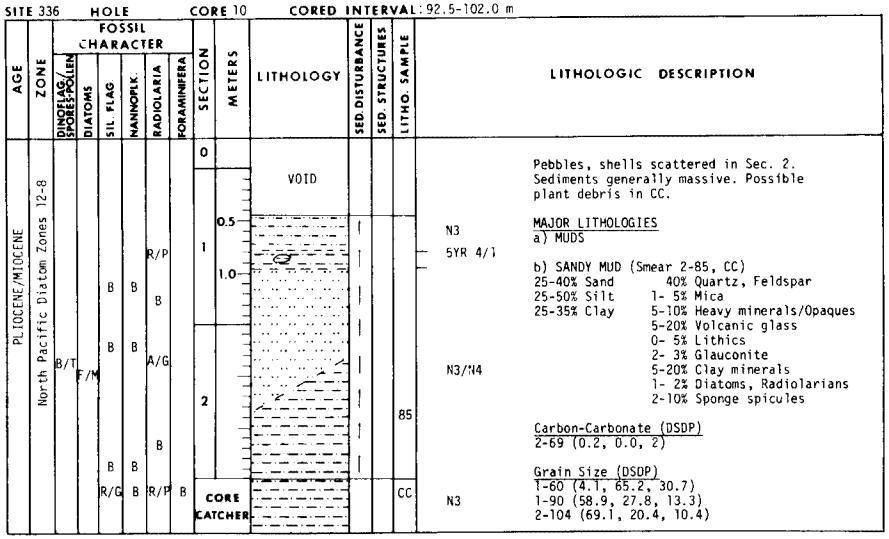
VOLCANIC SAND (Smear 4-35)

80% Sand	13-15% Quartz
10% Silt	10-15% Feldspar
10% Clay	2% Mica
	10-15% Heavy minerals/Opaques
	40-45% Volcanic glass
	0- 1% Glauconite
	2- 3% Spicules, Diatoms

Carbon-Carbonate (DSDP)
2-78 (0.2, 0.0, 2)
5-75 (2.2, 0.0, 18)

Grain Size (DSDP)
2-76 (7.5, 74.0, 18.5)
4-148 (66.6, 29.9, 9.5)
5-72 (3.8, 46.4, 49.8)

SITE 336 HOLE CORE 10 CORED INTERVAL: 92.5-102.0 m



Pebbles, shells scattered in Sec. 2. Sediments generally massive. Possible plant debris in CC.

MAJOR LITHOLOGIES

a) MUDS

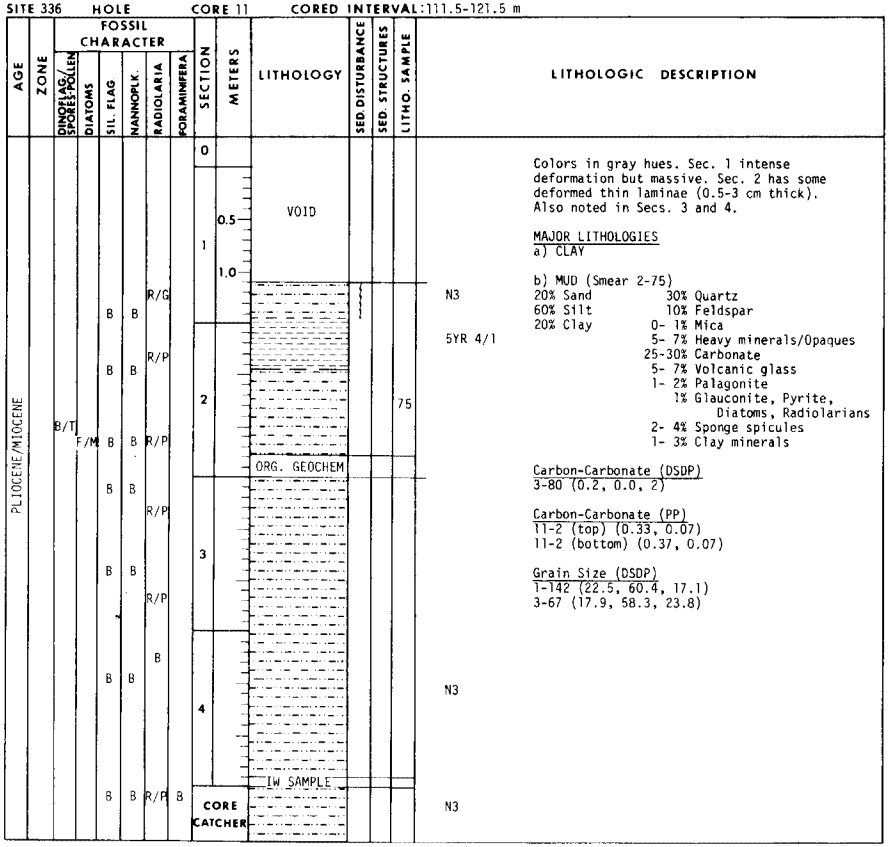
b) SANDY MUD (Smear 2-85, CC)

25-40% Sand	40% Quartz, Feldspar
25-50% Silt	1- 5% Mica
25-35% Clay	5-10% Heavy minerals/Opaques
	5-20% Volcanic glass
	0- 5% Lithics
	2- 3% Glauconite
	5-20% Clay minerals
	1- 2% Diatoms, Radiolarians
	2-10% Sponge spicules

Carbon-Carbonate (DSDP)
2-69 (0.2, 0.0, 2)

Grain Size (DSDP)
1-60 (4.1, 65.2, 30.7)
1-90 (58.9, 27.8, 13.3)
2-104 (69.1, 20.4, 10.4)

SITE 336 HOLE CORE 11 CORED INTERVAL: 111.5-121.5 m



LITHOLOGIC DESCRIPTION

Colors in gray hues. Sec. 1 intense deformation but massive. Sec. 2 has some deformed thin laminae (0.5-3 cm thick). Also noted in Secs. 3 and 4.

MAJOR LITHOLOGIES
a) CLAY

b) MUD (Smear 2-75)

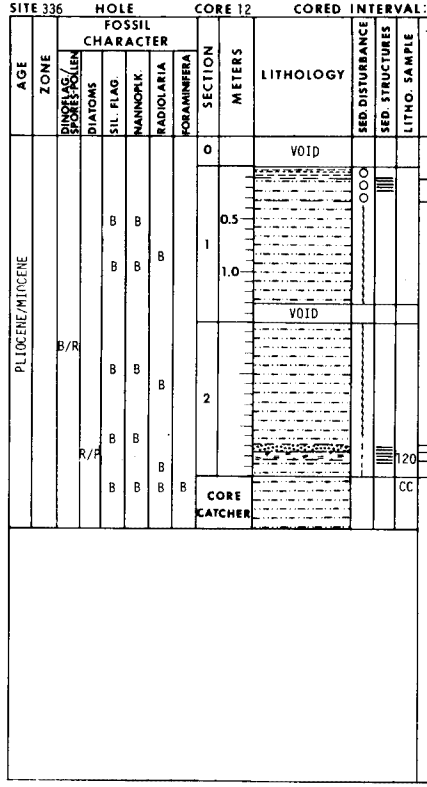
20% Sand	30% Quartz
60% Silt	10% Feldspar
20% Clay	0- 1% Mica
	5- 7% Heavy minerals/Opaques
	25-30% Carbonate
	5- 7% Volcanic glass
	1- 2% Palagonite
	1% Glauconite, Pyrite, Diatoms, Radiolarians
	2- 4% Sponge spicules
	1- 3% Clay minerals

Carbon-Carbonate (DSDP)
3-80 (0.2, 0.0, 2)

Carbon-Carbonate (PP)
11-2 (top) (0.33, 0.07)
11-2 (bottom) (0.37, 0.07)

Grain Size (DSDP)
1-142 (22.5, 60.4, 17.1)
3-67 (17.9, 58.3, 23.8)

SITE 336 HOLE CORE 12 CORED INTERVAL: 130.5-140.0 m



LITHOLOGIC DESCRIPTION

Color in grays. Highly (intense-breccia) disturbed to 120 cm in Sec. 2. Sec 1 contains scattered, very fine pebbles (1 cm); also very thinly stratified with mud, clay and silt. Sec. 2 very similar with pockets of sand.

MAJOR LITHOLOGIES
a) CLAY

b) MUD (Smear CC)

40% Sand	5-10% Quartz
50% Silt	30% Feldspar
10% Clay	1- 2% Heavy minerals
	50-55% Volcanic glass
	10% Clay minerals
	1% Glauconite
	1% Pyrite, Diatoms, Radiolarians, Sponge spicules

(Glass fresh, basaltic; feldspar altered.)

MINOR LITHOLOGY

VOLCANIC ASH (Smear 2-120)

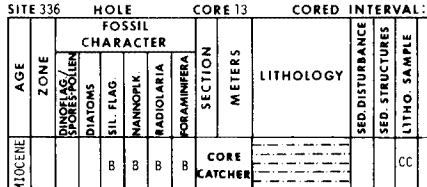
80% Sand	2- 3% Quartz
15% Silt	15-20% Feldspar
5% Clay	2% Heavy minerals
	55-60% Volcanic glass
	10-15% Volcanic ash
	1% Glauconite, Diatoms, Radiolarians, Sponge spicules

Carbon-Carbonate (DSDP)
2-83 (0.3, 0.0, 2)

Carbon-Carbonate (PP)
12-1 (top) (0.26, 0.03)
12-1 (bottom) (0.32, 0.06)

Grain Size (DSDP)
2-80 (18.6, 60.5, 20.9)

SITE 336 HOLE CORE 13 CORED INTERVAL: 149.5-159.0 m



LITHOLOGIC DESCRIPTION

Core catcher recovery only:

MAJOR LITHOLOGY

SANDY MUD (Smear CC)

50% Sand	5-10% Quartz
40% Silt	25-30% Feldspar
10% Clay	0- 1% Mica
	1- 5% Heavy minerals/Opaques
	5- 7% Clay minerals
	1% Glauconite
	1- 2% Pyrite
	1% Diatoms, Radiolarians, Sponge SPicules
	5- 7% Lithics

(Heavy minerals include pyroxene, zircon, amphibole; glass fresh, basaltic, angular; feldspar weathered.)

SITE 336 HOLE CORE 14 CORED INTERVAL: 159.0-168.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG.	NANNOFLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
PLIOCENE/MIOCENE				B	B		R/m	CORE CATCHER					CC	N1 to N2 Core catcher recovery only: SAND (Smear CC) (Glauconitic) 90% Sand 5-10% Quartz 10% Silt 30-40% Feldspar 3- 5% Heavy minerals 20-25% Volcanic glass (fresh) 1- 2% Palagonite 20-30% Glauconite 2- 3% Pyrite 1- 2% Sponge spicules, Diatoms

SITE 336 HOLE CORE 15 CORED INTERVAL: 168.5-178.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG.	NANNOFLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
LATE OLIGOCENE	Sphenolithus ciperoensis (N) / Naviculopsis lata (S)			F/G	C/G		F/M	0		VOID				Colors: olive gray (5Y 3/2), gray olive green (5GY 3/2) and light olive gray (5Y 4/1) zones. Intense deformation. Possible lithologic change in CC(?).
				F/G	C/G			1	0.5				90	5Y 3/2 with 5GY 3/2 and 5Y 4/1 MAJOR LITHOLOGY MUD (Smear 1-90) 30% Sand 20% Quartz 60% Silt 20% Feldspar 10% Clay 10% Clay minerals 20-35% Volcanic glass 5-10% Glauconite 3- 4% Pyrite 2% Lithics 0- 1% $CaCO_3$ (Shells?) 2- 3% Diatoms, Radiolarians 5- 6% Sponge spicules
									1.0				141	
				R/G	A/G	R/M	R/m	CORE CATCHER					CC	5Y 3/2 10Y 5/4 MUD (Smears 1-141, CC) 10% Sand 5% Feldspar 70% Silt 1- 2% Heavy minerals 20% Clay 60-70% Clay minerals 2-10% Volcanic glass 5- 7% Glauconite 1- 3% Pyrite 1- 3% Foraminifera 3- 5% Diatoms 5-10% Radiolarians, Sponge spicules Carbon-Carbonate (DSDP) 1-80 (0.9, 0.0, 7)

SITE 336 HOLE CORE 16 CORED INTERVAL: 178.0-189.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG.	NANNOFLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
MIDDLE OLIGOCENE	Sphenolithus distentus (N) / Naviculopsis lata (S)							0		VOID				Colors: olive gray (5Y 4/1) (light) with olive black (5Y 2/1) (dark). Intensive mottling due to intense-moderate core deformation. Firm-stiff; bioturbation(?). Lithified zone in 16-4 (40-50 cm).
				F/G	F/P				0.5					MAJOR LITHOLOGY
									1.0					MUD (Smears 2-15, 4-40, 4-105, CC) 30% Sand 5-10% Feldspar 30-40% Silt 1- 2% Heavy minerals 30-40% Clay 60-75% Clay minerals 5-10% Volcanic glass 1- 2% Tridymite 3- 5% Glauconite 0- 1% Foraminifera 1- 3% Diatoms 3- 5% Radiolarians 10% Sponge spicules
				C/G	R/P								15	
			T/B	A/G					2					5Y 4/1 with minor 5Y 2/1
				B	B									
				C/G	F/M	R/m			3					Carbon-Carbonate (DSDP) 5-60 (0.8, 0.0, 7)
				F/G	C/G									Carbon-Carbonate (PP) 16-5 (top) (0.67, 0.02) 16-5 (bottom) (0.10, 0.05)
				B	C/P									Grain Size (DSDP) 2-70 (36.7, 40.2, 23.1)
													40	5Y 4/1 with 5Y 2/1
				A/G	F/P				4				105	5Y 2/1
										GEOCHEM				
				B	B									
									5					5Y 4/4 with 5Y 2/1
			T/TA/G	C/G	R/P									
				B	B									
									6					
				F/G	B									
				F/G	B	F/g	B	CORE CATCHER					CC	5Y 3/2 with 10Y 5/4

SITE 336 HOLE CORE 17 CORED INTERVAL: 187.5-197.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
				R/G	B	R/m	B	CORE CATCHER					CC	10Y 5/4 Core Catcher recovery only: MUD

SITE 336 HOLE CORE 18 CORED INTERVAL: 197.0-206.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
								0		VOID				10Y 4/2 with 5Y 2/1
				R/G	B			1	0.5					5Y 2/1
									1.0					10Y 4/2 with 5Y 2/1
		A/B	A/M	F/G	B									10Y 4/2
														N5
								2					75	10Y 4/2 with 5Y 2/1
				R/G	B	R/P								
								3					83	5GY 3/2
													95	
										ORG. GEOCHEM				
				B	B								10	
				B	B			4						N2
													104	10GY 3/2
										TW SAMPLE				5Y 2/1
		C/B		B	B			5						N6
			F/M										98	
													116	N6
														N6
				B	B	R/P	B							5Y 3/2
								CORE CATCHER					CC	5GY 4/1

Colors: dominant olive black (5Y 2/1) with grayish olive (10Y 4/2), medium gray (N5), dark gray (N3). Medium light gray ash beds. Change to dusky yellow green (10GY 3/2) at Sec. 5 (90 cm), and olive gray at Sec. 5 (120 cm); color mottling common. Moderate deformation; core firm-stiff with very stuff = semi-lithified zones in Sec. 3 and down. Mn, ash zones common.

MAJOR LITHOLOGIES

TRANSITIONAL SILICEOUS OOZE
(>50% Si) (Smears 2-75, CC)
20% Sand 5% Quartz
60% Silt 3% Feldspar
20% Clay 5- 7% Heavy minerals
20% Clay minerals
5% Volcanic glass
5% Diatoms
20% Radiolarians
25-30% Sponge spicules

TRANSITIONAL SILICEOUS OOZE
(<50% Si) (Smears 3-83, 3-95)
5% Sand 3- 5% Feldspar
15% Silt 20% Clay minerals
80% Clay 3- 4% Glauconite
1% Diatoms
2% Radiolarians
20% Sponge spicules

MINOR LITHOLOGIES

a) ASH (Smears 5-98, 5-116)
(Clay 10-20%, Volcanic glass 80-90%)

b) MUD (Smear 4-104)

Carbon-Carbonate (DSDP)
2-30 (0.3, 0.0, 3)
3-20 (0.4, 0.0, 3)

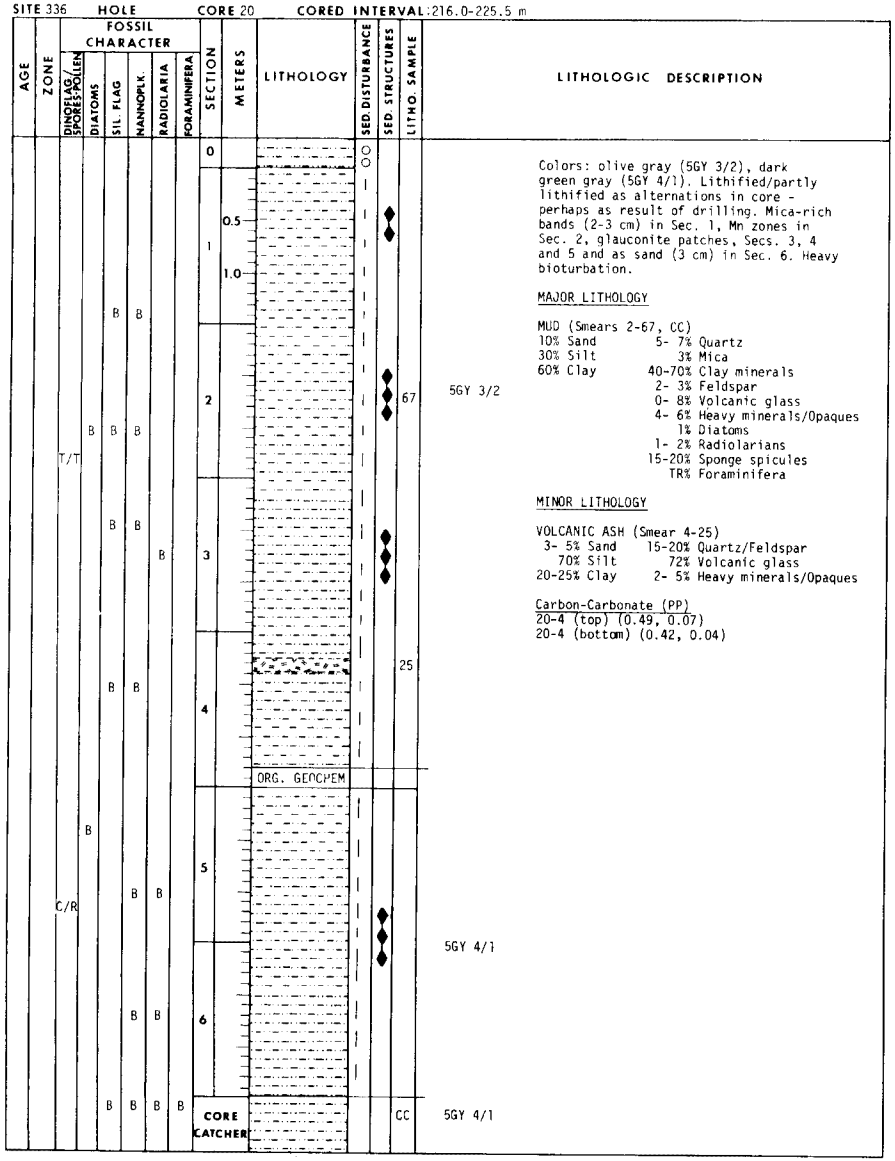
Carbon-Carbonate (PP)
18-3 (top) (0.10, 0.04)
18-3 (bottom) (0.14, 0.10)

Grain Size (DSDP)
1-50 (40.5, 40.2, 19.3)
4-120 (18.2, 45.8, 36.0)
5-70 (3.8, 54.6, 41.6)

SITE 336 HOLE CORE 19 CORED INTERVAL: 206.5-216.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
								0						Colors: dusky yellow green (10GY 3/2), gray olive green (5GY 3/2) plus gray olive 10Y 4/2, and brown-black (5YR 2/1). Drilling breccia to moderate deformation. Glauconite zones.
									0.5	VOID				
								1						MAJOR LITHOLOGIES
									1.0					10GY 3/2 with 5GY 3/2
						R/P								a) MUD (Smear 2-15)
		C/C		B	B								15	5% Sand 5% Quartz
								2						25% Silt 15% Feldspar
		R/P												70% Clay 60% Clay minerals
				B	B									2% Glauconite
				B	B	F/m	B							1% Pyrite
								CORE CATCHER					CC	1% Diatoms, Radiolarians
														15% Sponge spicules
														10Y 3/2 10Y 4/2
														b) TRANSITIONAL SILICEOUS OOZE
														(<50% Si) (Smear CC)
														10Y 3/2 57% Silt 5- 7% Quartz
														43% Clay 10% Feldspar
														10Y 4/2 3- 5% Heavy minerals
														5YR 2/1 40-43% Clay minerals
														2- 3% Radiolarians
														5GY 4/1 36-44% Sponge spicules
														Grain Size (DSDP)
														2-120 (18.5, 42.6, 39.0)

SITE 336 HOLE CORE 20 CORED INTERVAL: 216.0-225.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5GY 3/2), dark green gray (5GY 4/1). Lithified/partly lithified as alternations in core - perhaps as result of drilling. Mica-rich bands (2-3 cm) in Sec. 1, Mn zones in Sec. 2, glauconite patches, Secs. 3, 4 and 5 and as sand (3 cm) in Sec. 6. Heavy bioturbation.

MAJOR LITHOLOGY

MUD (Smears 2-67, CC)

10% Sand	5- 7% Quartz
30% Silt	3% Mica
60% Clay	40-70% Clay minerals
	2- 3% Feldspar
	0- 8% Volcanic glass
	4- 6% Heavy minerals/Opaques
	1% Diatoms
	1- 2% Radiolarians
	15-20% Sponge spicules
	TR% Foraminifera

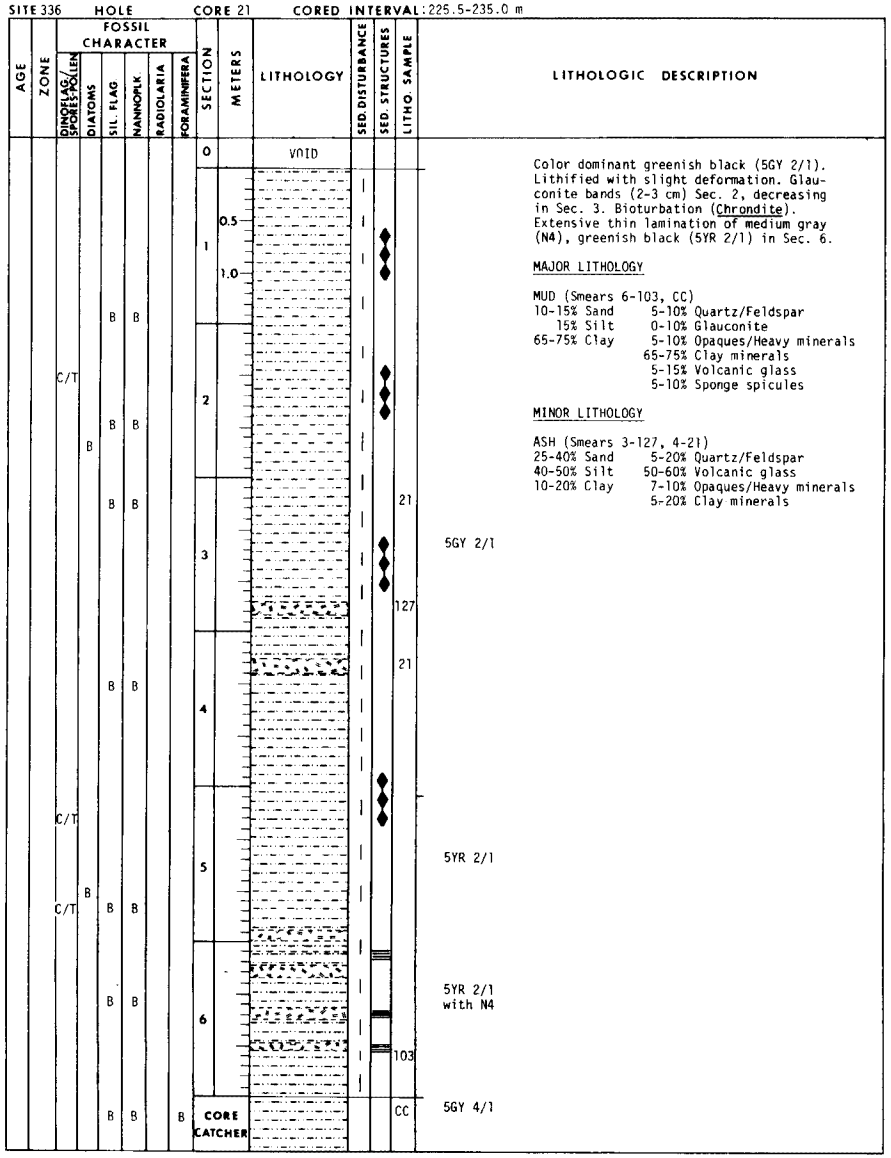
MINOR LITHOLOGY

VOLCANIC ASH (Smear 4-25)

3- 5% Sand	15-20% Quartz/Feldspar
70% Silt	72% Volcanic glass
20-25% Clay	2- 5% Heavy minerals/Opaques

Carbon-Carbonate (PP)
20-4 (top) (0.49, 0.07)
20-4 (bottom) (0.42, 0.04)

SITE 336 HOLE CORE 21 CORED INTERVAL: 225.5-235.0 m



Color dominant greenish black (5GY 2/1). Lithified with slight deformation. Glauconite bands (2-3 cm) Sec. 2, decreasing in Sec. 3. Bioturbation (Chrondite). Extensive thin lamination of medium gray (N4), greenish black (5YR 2/1) in Sec. 6.

MAJOR LITHOLOGY

MUD (Smears 6-103, CC)

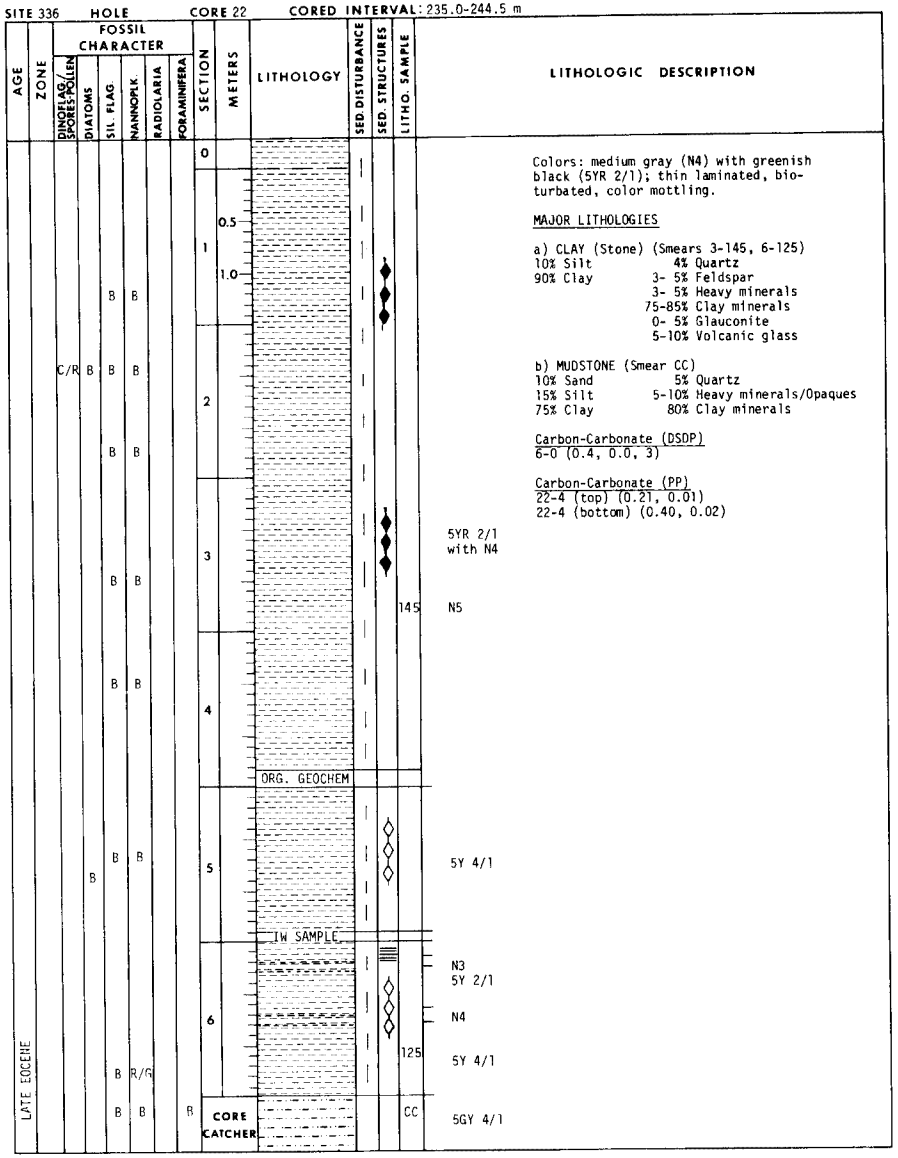
10-15% Sand	5-10% Quartz/Feldspar
15% Silt	0-10% Glauconite
65-75% Clay	5-10% Opaques/Heavy minerals
	65-75% Clay minerals
	5-15% Volcanic glass
	5-10% Sponge spicules

MINOR LITHOLOGY

ASH (Smears 3-127, 4-21)

25-40% Sand	5-20% Quartz/Feldspar
40-50% Silt	50-60% Volcanic glass
10-20% Clay	7-10% Opaques/Heavy minerals
	5-20% Clay minerals

SITE 336 HOLE CORE 22 CORED INTERVAL: 235.0-244.5 m



Colors: medium gray (N4) with greenish black (5YR 2/1); thin laminated, bioturbated, color mottling.

MAJOR LITHOLOGIES

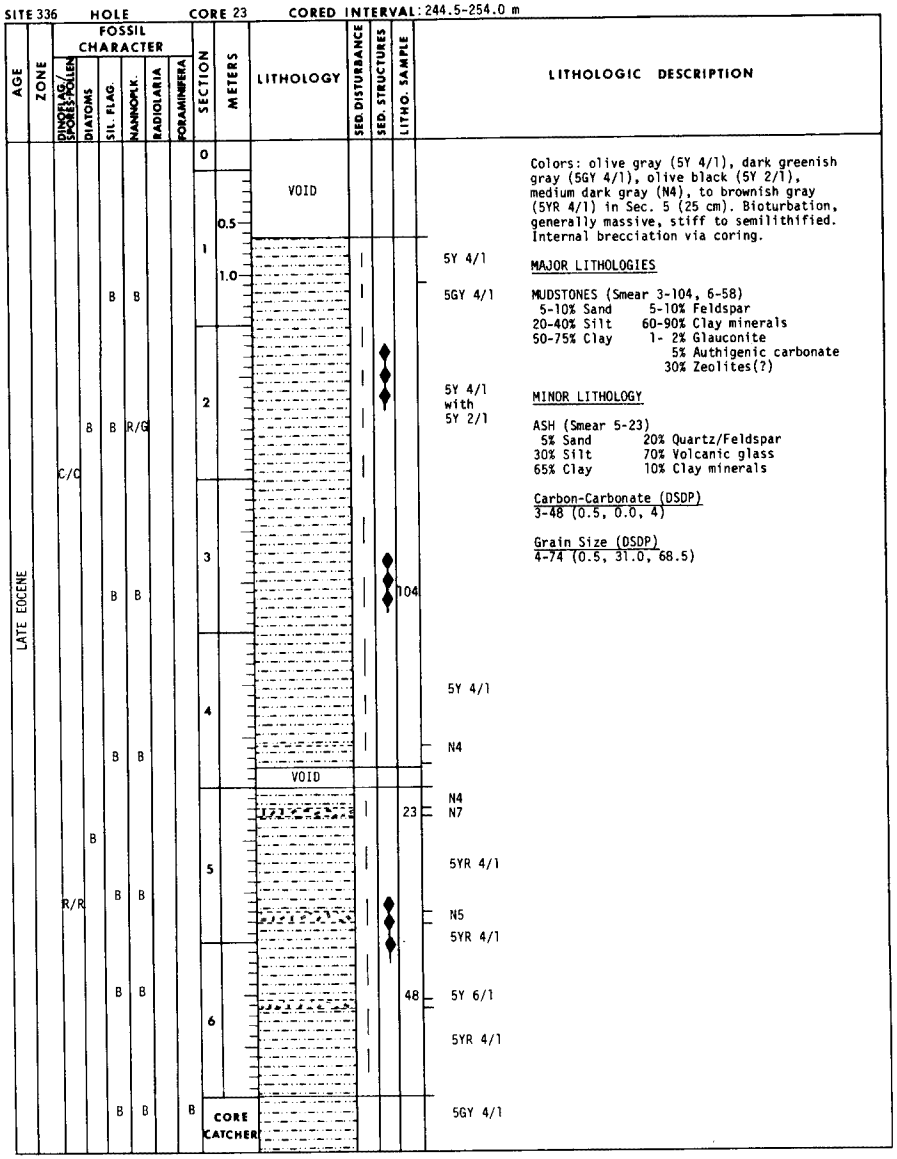
a) CLAY (Stone) (Smears 3-145, 6-125)
10% Silt — 4% Quartz
90% Clay — 3- 5% Feldspar
3- 5% Heavy minerals
75-85% Clay minerals
0- 5% Glauconite
5-10% Volcanic glass

b) MUDSTONE (Smear CC)
10% Sand — 5% Quartz
15% Silt — 5-10% Heavy minerals/Opaques
75% Clay — 80% Clay minerals

Carbon-Carbonate (DSDP)
6-0 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
22-4 (top) (0.21, 0.01)
22-4 (bottom) (0.40, 0.02)

SITE 336 HOLE CORE 23 CORED INTERVAL: 244.5-254.0 m



Colors: olive gray (5Y 4/1), dark greenish gray (5GY 4/1), olive black (5Y 2/1), medium dark gray (N4), to brownish gray (5YR 4/1) in Sec. 5 (25 cm). Bioturbation, generally massive, stiff to semilithified. Internal brecciation via coring.

MAJOR LITHOLOGIES

MUDSTONES (Smear 3-104, 6-58)
5-10% Sand — 5-10% Feldspar
20-40% Silt — 60-90% Clay minerals
50-75% Clay — 1- 2% Glauconite
5% Authigenic carbonate
30% Zeolites(?)

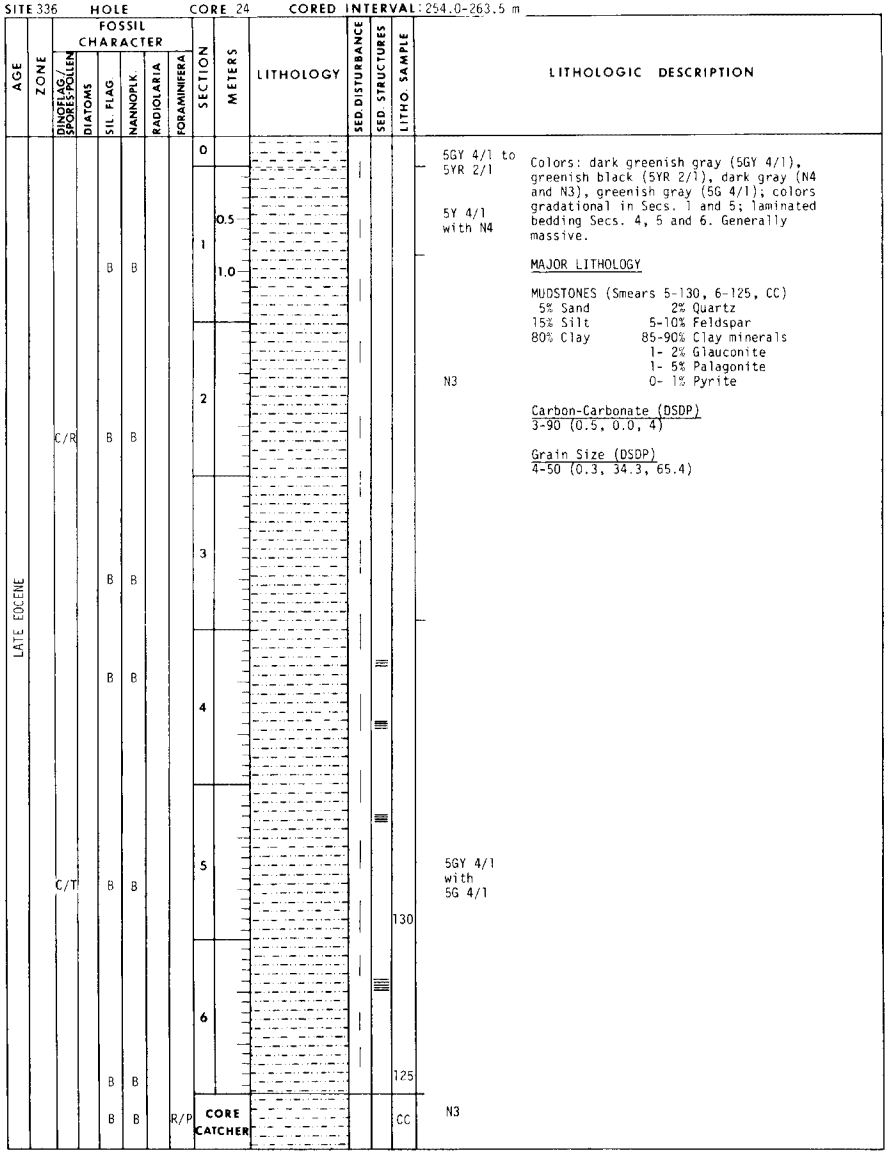
MINOR LITHOLOGY

ASH (Smear 5-23)
5% Sand — 20% Quartz/Feldspar
30% Silt — 70% Volcanic glass
65% Clay — 10% Clay minerals

Carbon-Carbonate (DSDP)
3-48 (0.5, 0.0, 4)

Grain Size (DSDP)
4-74 (0.5, 31.0, 68.5)

SITE 336 HOLE CORE 24 CORED INTERVAL: 254.0-263.5 m



Colors: dark greenish gray (5GY 4/1), greenish black (5YR 2/1), dark gray (N4 and N3), greenish gray (5G 4/1); colors gradational in Secs. 1 and 5; laminated bedding Secs. 4, 5 and 6. Generally massive.

MAJOR LITHOLOGY

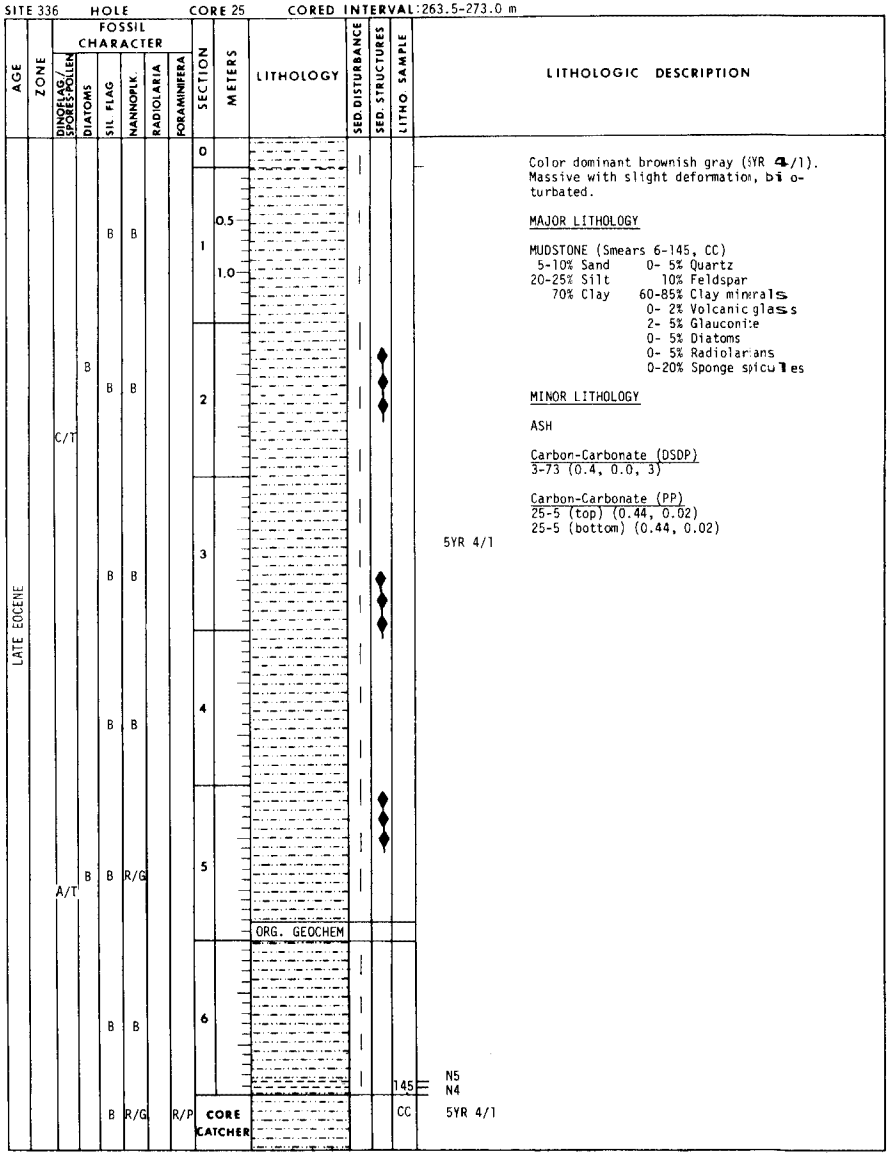
MUDSTONES (Smears 5-130, 6-125, CC)

5% Sand	2% Quartz
15% Silt	5-10% Feldspar
80% Clay	85-90% Clay minerals
	1- 2% Glauconite
	1- 5% Palagonite
	0- 1% Pyrite

Carbon-Carbonate (DSDP)
3-90 (0.5, 0.0, 4)

Grain Size (DSDP)
4-50 (0.3, 34.3, 65.4)

SITE 336 HOLE CORE 25 CORED INTERVAL: 263.5-273.0 m



Color dominant brownish gray (5YR 4/1). Massive with slight deformation, bioturbated.

MAJOR LITHOLOGY

MUDSTONE (Smears 6-145, CC)

5-10% Sand	0- 5% Quartz
20-25% Silt	10% Feldspar
70% Clay	60-85% Clay minerals
	0- 2% Volcanic glass
	2- 5% Glauconite
	0- 5% Diatoms
	0- 5% Radiolarians
	0-20% Sponge spicules

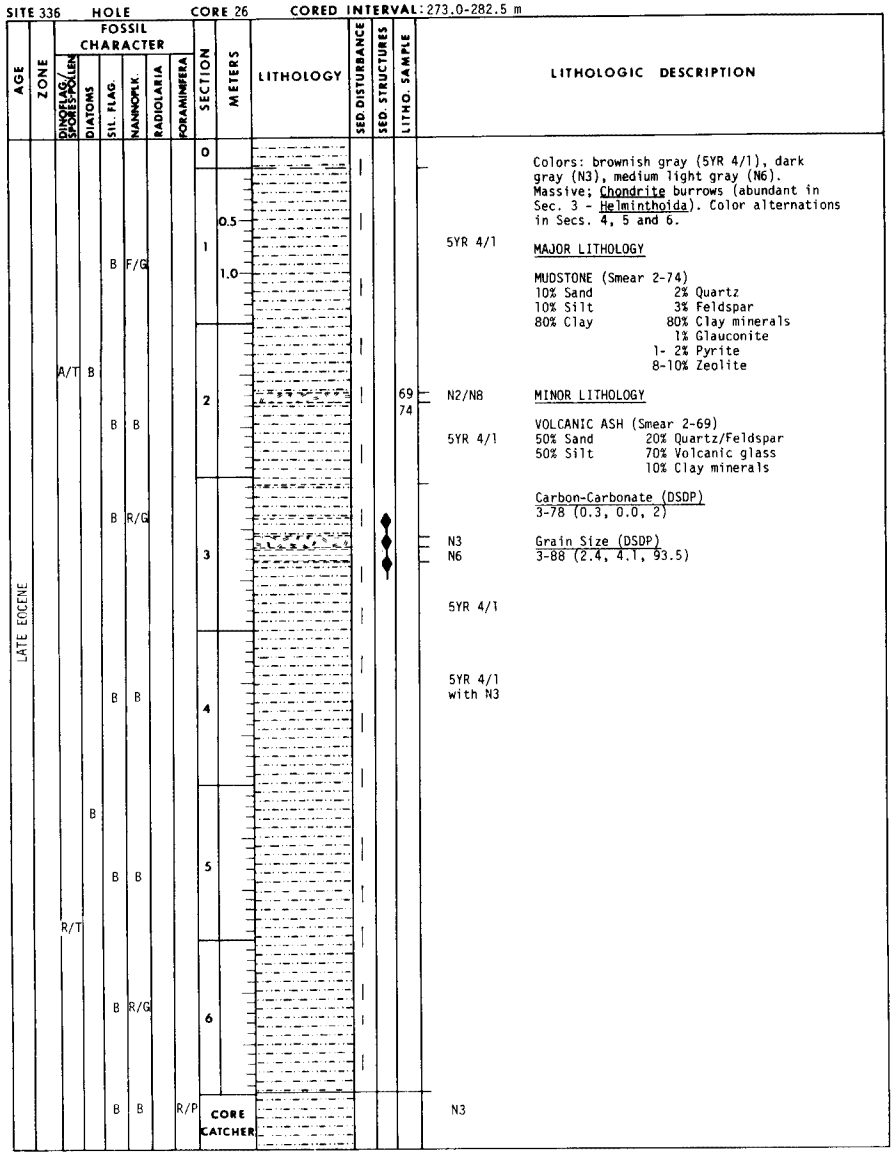
MINOR LITHOLOGY

ASH

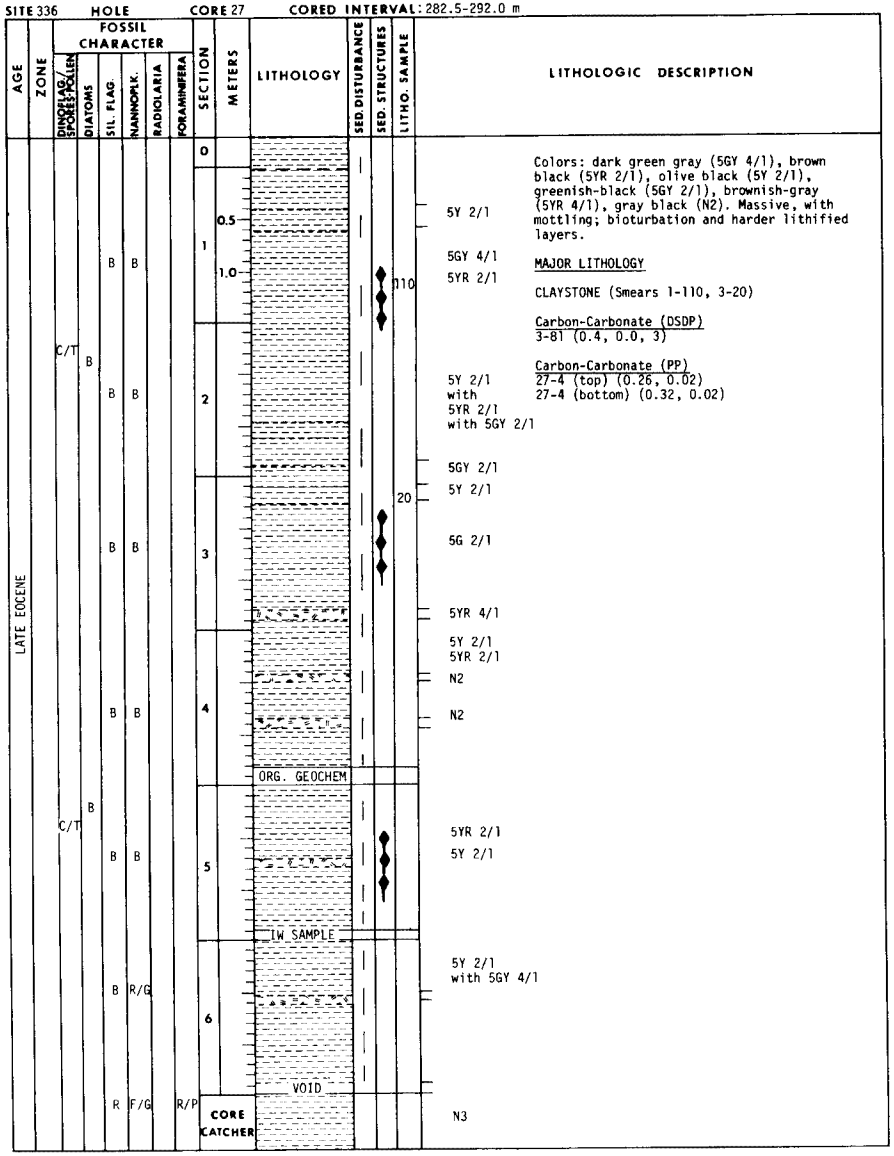
Carbon-Carbonate (DSDP)
3-73 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
25-5 (top) (0.44, 0.02)
25-5 (bottom) (0.44, 0.02)

SITE 336 HOLE CORE 26 CORED INTERVAL: 273.0-282.5 m



SITE 336 HOLE CORE 27 CORED INTERVAL: 282.5-292.0 m



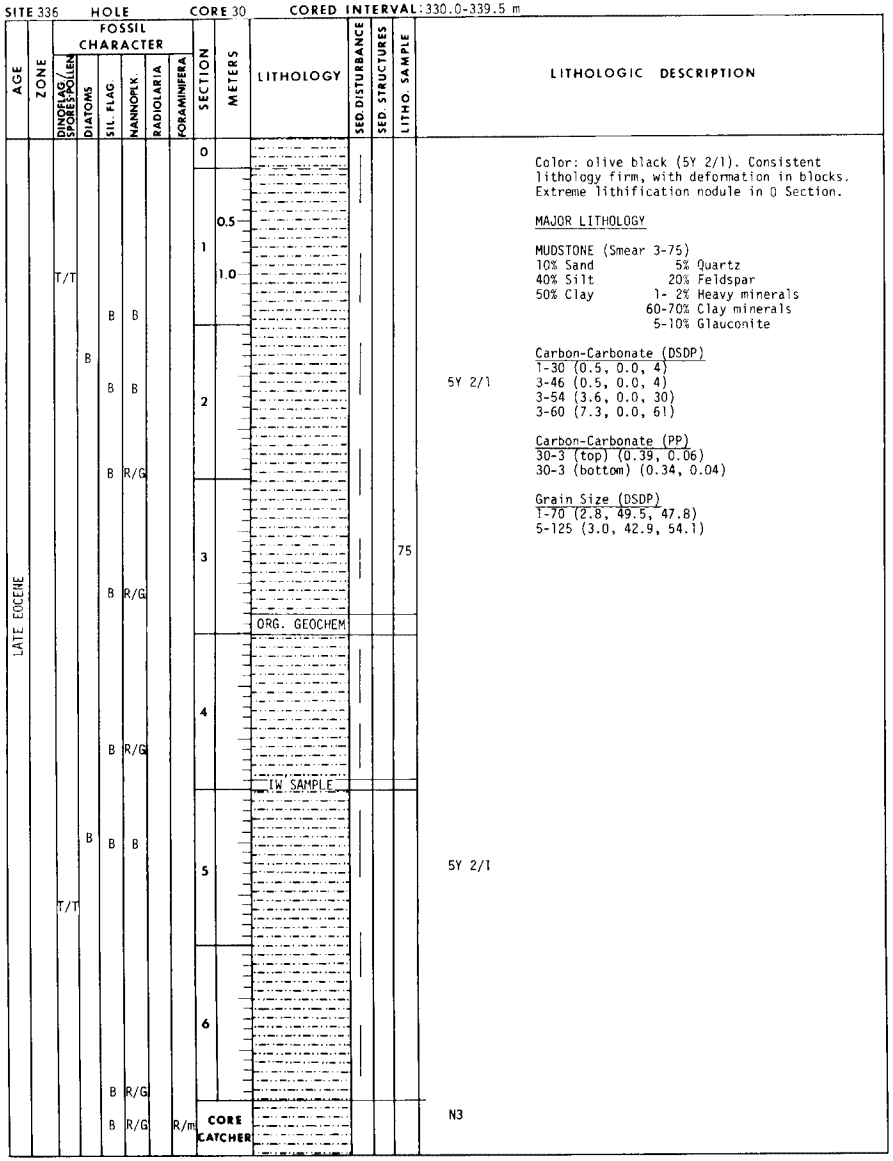
SITE 336 HOLE CORE 28 CORED INTERVAL: 292.0-301.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
LATE EOCENE				B	B			0		VOID				Color: olive gray (5Y 4/1); drilling breccia throughout.
								1	0.5					5Y 4/1 MAJOR LITHOLOGY
									1.0					5Y 4/1 CLAY
								2		VOID				Carbon-Carbonate (DSDP) 3-130 (0.3, 0.0, 3)
								3						Grain Size (DSDP) 1-140 (0.8, 61.5, 39.3)
														5Y 4/1
								4						
				B	R/G			5		VOID				
				B	F/G			6						5Y 4/1
				B	R/G		F/g	CORE CATCHER						5Y 4/1

SITE 336 HOLE CORE 29 CORED INTERVAL: 311.0-320.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
LATE EOCENE								0		VOID				Colors: olive gray (5Y 4/1), olive black (5Y 2/1). Drilling breccia in Section 1 to moderate deformation in Section 2.
								1	0.5					MAJOR LITHOLOGY
				B	B				1.0					CLAY
				B	R/G									5Y 4/1 Carbon-Carbonate (DSDP) 2-70 (0.4, 0.0, 4)
			B					2						5Y 2/1
		R/T												
										VOID				5Y 4/1
				B	B		R/P	CORE CATCHER						N3

SITE 336 HOLE CORE 30 CORED INTERVAL: 330.0-339.5 m



Color: olive black (5Y 2/1). Consistent lithology firm, with deformation in blocks. Extreme lithification nodule in 0 Section.

MAJOR LITHOLOGY

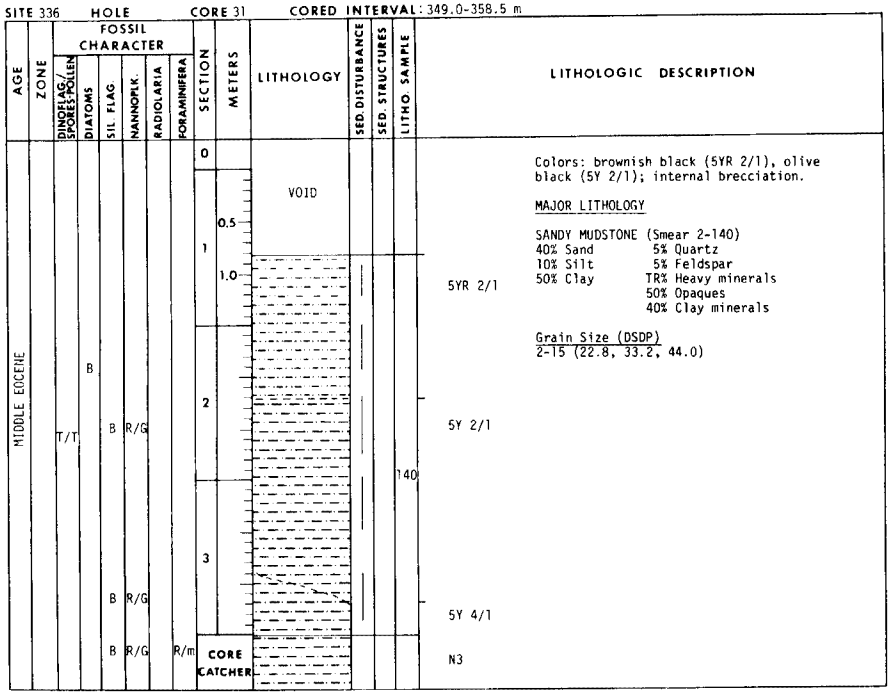
MUDSTONE (Smear 3-75)
10% Sand 5% Quartz
40% Silt 20% Feldspar
50% Clay 1- 2% Heavy minerals
60-70% Clay minerals
5-10% Glauconite

Carbon-Carbonate (DSDP)
1-30 (0.5, 0.0, 4)
3-46 (0.5, 0.0, 4)
3-54 (3.6, 0.0, 30)
3-60 (7.3, 0.0, 61)

Carbon-Carbonate (PP)
30-3 (top) (0.39, 0.06)
30-3 (bottom) (0.34, 0.04)

Grain Size (DSDP)
1-70 (2.8, 49.5, 47.8)
5-125 (3.0, 42.9, 54.1)

SITE 336 HOLE CORE 31 CORED INTERVAL: 349.0-358.5 m



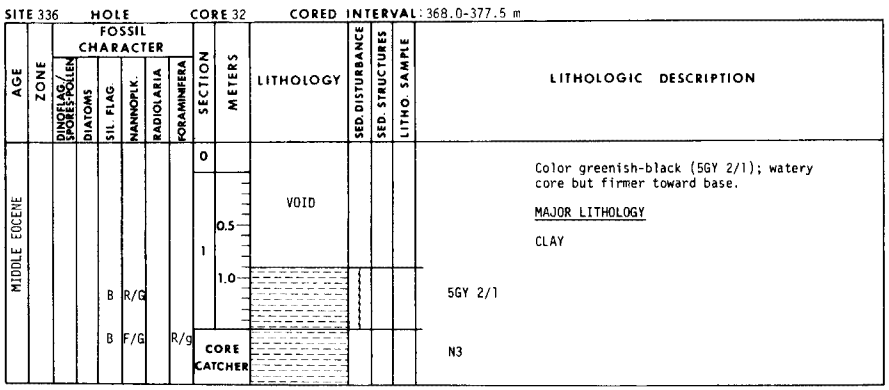
Colors: brownish black (5YR 2/1), olive black (5Y 2/1); internal brecciation.

MAJOR LITHOLOGY

SANDY MUDSTONE (Smear 2-140)
40% Sand 5% Quartz
10% Silt 5% Feldspar
50% Clay TR% Heavy minerals
50% Opaques
40% Clay minerals

Grain Size (DSDP)
2-15 (22.8, 33.2, 44.0)

SITE 336 HOLE CORE 32 CORED INTERVAL: 368.0-377.5 m

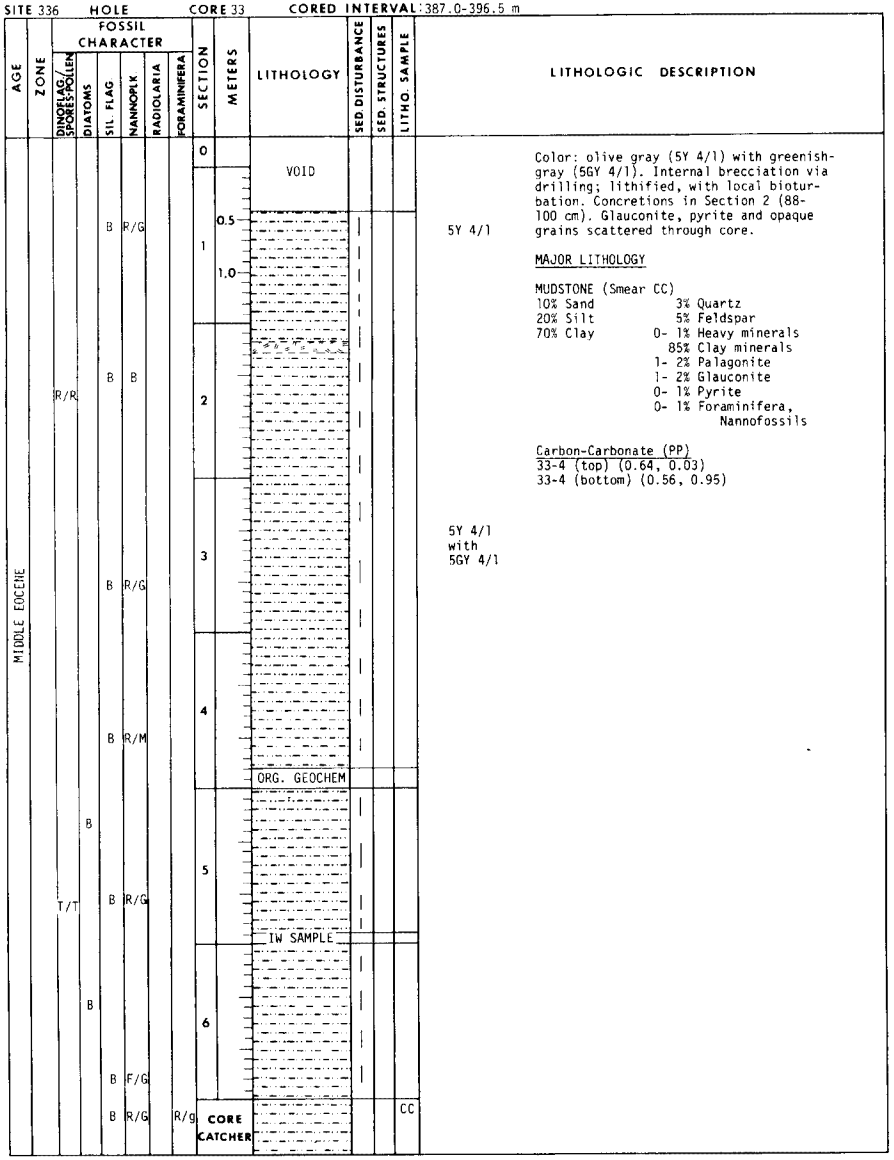


Color greenish-black (5GY 2/1); watery core but firmer toward base.

MAJOR LITHOLOGY

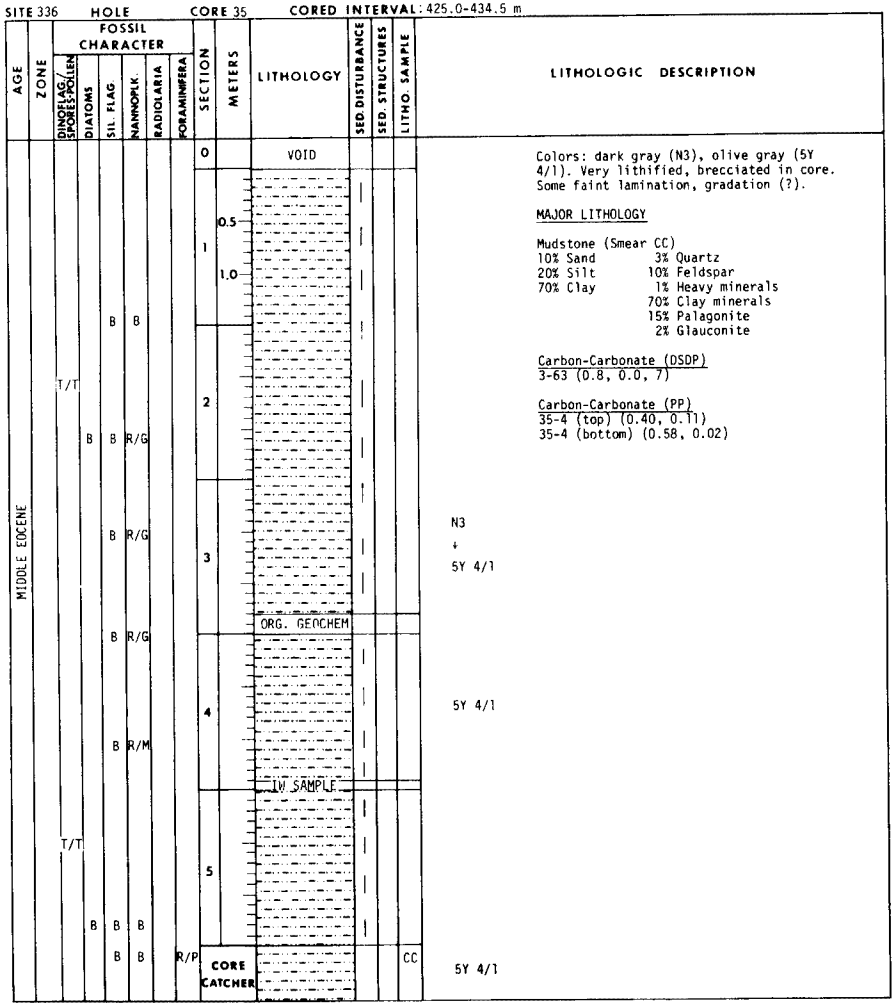
CLAY

SITE 336 HOLE CORE 33 CORED INTERVAL: 387.0-396.5 m

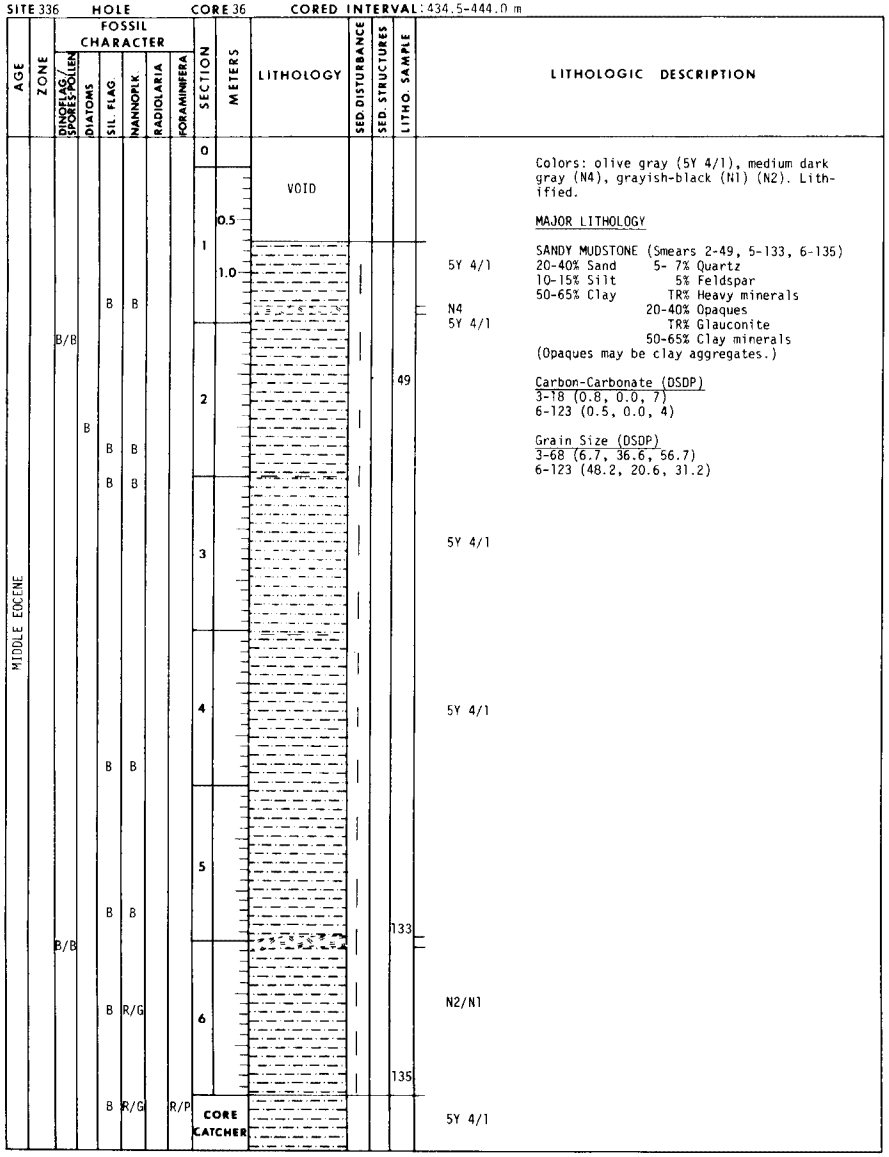


Site 336, Core 34, Cored Interval 406.0-415.5:
NO RECOVERY.

SITE 336 HOLE CORE 35 CORED INTERVAL: 425.0-434.5 m



SITE 336 HOLE CORE 36 CORED INTERVAL: 434.5-444.0 m



Colors: olive gray (5Y 4/1), medium dark gray (N4), grayish-black (N1) (N2). Lithified.

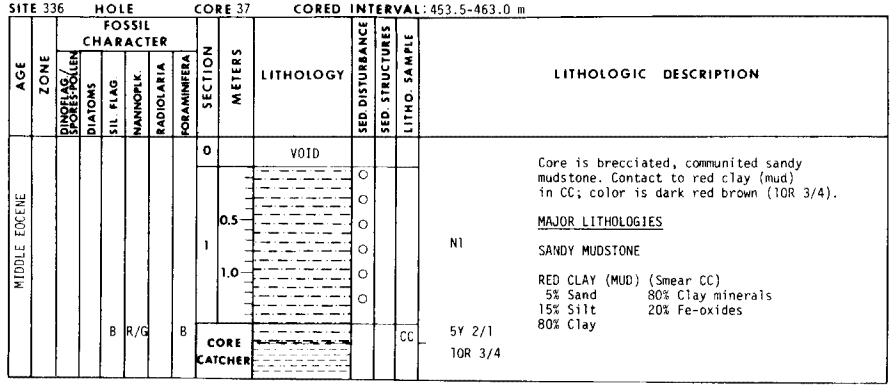
MAJOR LITHOLOGY

SANDY MUDSTONE (Smears 2-49, 5-133, 6-135)
20-40% Sand 5- 7% Quartz
10-15% Silt 5% Feldspar
50-65% Clay TR% Heavy minerals
20-40% Opaques
TR% Glauconite
50-65% Clay minerals
(Opaques may be clay aggregates.)

Carbon-Carbonate (DSDP)
3-18 (0.8, 0.0, 7)
6-123 (0.5, 0.0, 4)

Grain Size (DSDP)
3-68 (6.7, 36.6, 56.7)
6-123 (48.2, 20.6, 31.2)

SITE 336 HOLE CORE 37 CORED INTERVAL: 453.5-463.0 m



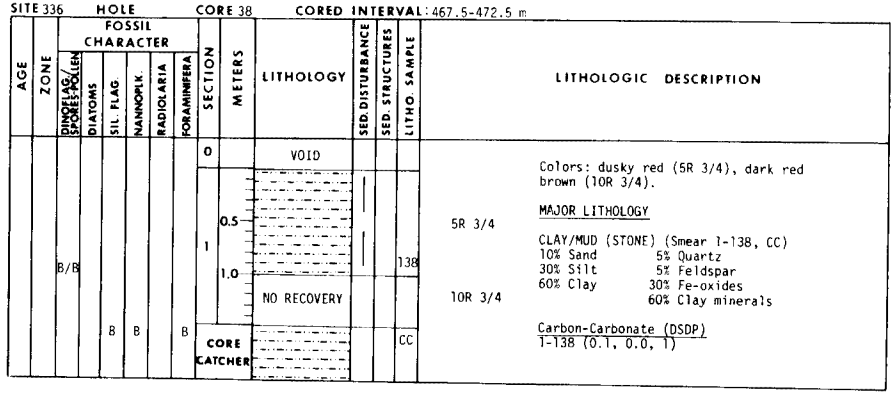
Core is brecciated, communited sandy mudstone. Contact to red clay (mud) in CC; color is dark red brown (10R 3/4).

MAJOR LITHOLOGIES

SANDY MUDSTONE

RED CLAY (MUD) (Smear CC)
5% Sand 80% Clay minerals
15% Silt 20% Fe-oxides
80% Clay

SITE 336 HOLE CORE 38 CORED INTERVAL: 467.5-472.5 m



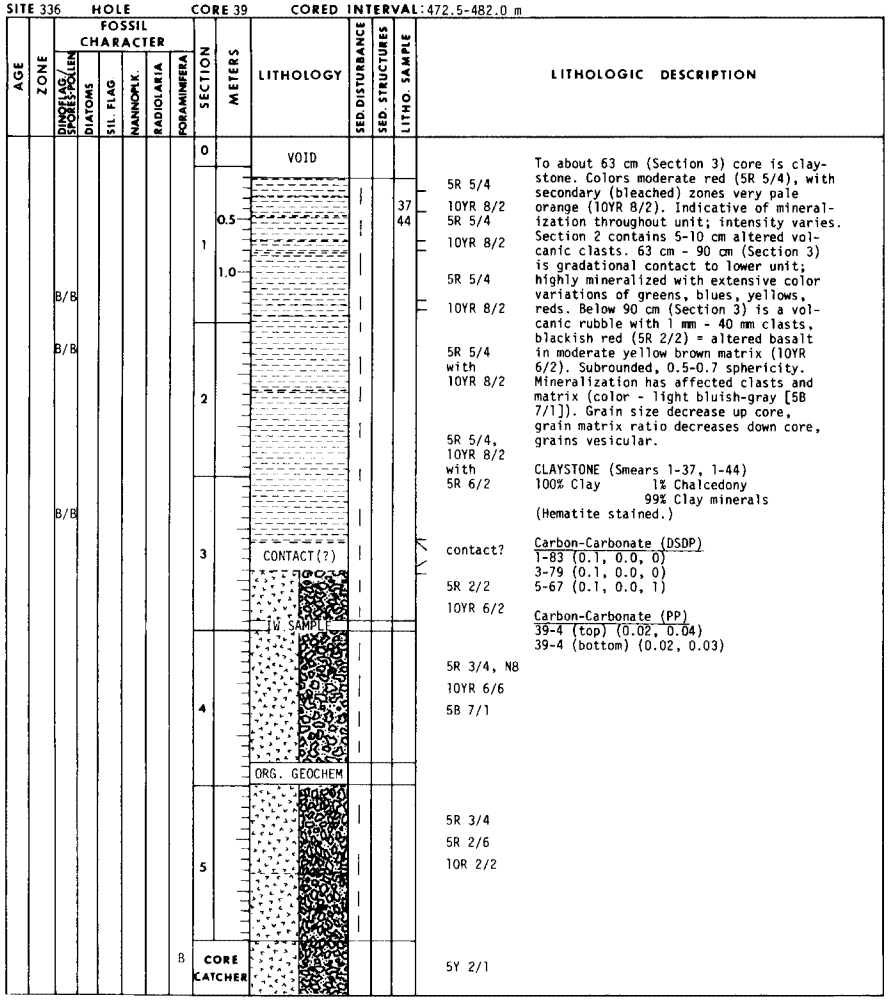
Colors: dusky red (5R 3/4), dark red brown (10R 3/4).

MAJOR LITHOLOGY

CLAY/MUD (STONE) (Smear 1-138, CC)
10% Sand 5% Quartz
30% Silt 5% Feldspar
60% Clay 30% Fe-oxides
60% Clay minerals

Carbon-Carbonate (DSDP)
1-138 (0.1, 0.0, 1)

SITE 336 HOLE CORE 39 CORED INTERVAL: 472.5-482.0 m



LITHOLOGIC DESCRIPTION

5R 5/4
10YR 8/2
5R 5/4
10YR 8/2
5R 5/4
10YR 8/2
5R 5/4 with 10YR 8/2
5R 5/4, 10YR 8/2 with 5R 6/2
contact?
5R 2/2
10YR 6/2
5R 3/4, N8
10YR 6/6
5B 7/1
5R 3/4
5R 2/6
10R 2/2
5Y 2/1

37
44

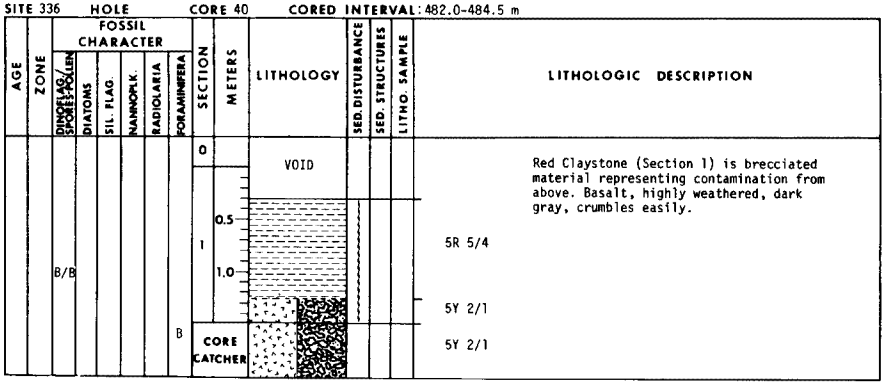
To about 63 cm (Section 3) core is claystone. Colors moderate red (5R 5/4), with secondary (bleached) zones very pale orange (10YR 8/2). Indicative of mineralization throughout unit; intensity varies. Section 2 contains 5-10 cm altered volcanic clasts. 63 cm - 90 cm (Section 3) is gradational contact to lower unit; highly mineralized with extensive color variations of greens, blues, yellows, reds. Below 90 cm (Section 3) is a volcanic rubble with 1 mm - 40 mm clasts, blackish red (5R 2/2) = altered basalt in moderate yellow brown matrix (10YR 6/2). Subrounded, 0.5-0.7 sphericity. Mineralization has affected clasts and matrix (color - light bluish-gray [5B 7/1]). Grain size decrease up core, grain matrix ratio decreases down core, grains vesicular.

CLAYSTONE (Smears 1-37, 1-44)
100% Clay 1% Chalcedony
99% Clay minerals
(Hematite stained.)

Carbon-Carbonate (DSDP)
1-83 (0.1, 0.0, 0)
3-79 (0.1, 0.0, 0)
5-67 (0.1, 0.0, 1)

Carbon-Carbonate (PP)
39-4 (top) (0.02, 0.04)
39-4 (bottom) (0.02, 0.03)

SITE 336 HOLE CORE 40 CORED INTERVAL: 482.0-484.5 m

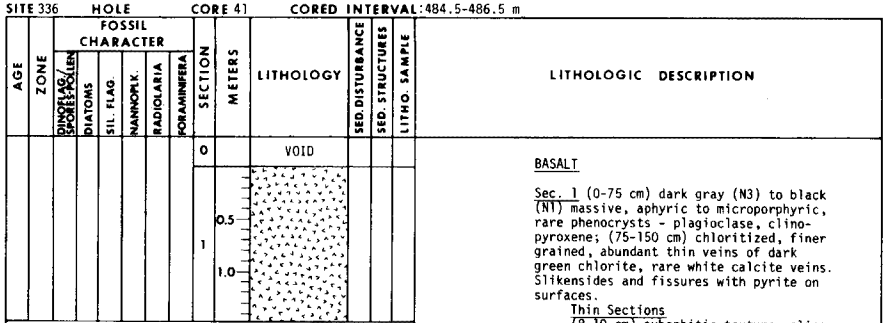


LITHOLOGIC DESCRIPTION

5R 5/4
5Y 2/1
5Y 2/1

Red Claystone (Section 1) is brecciated material representing contamination from above. Basalt, highly weathered, dark gray, crumbles easily.

SITE 336 HOLE CORE 41 CORED INTERVAL: 484.5-486.5 m



LITHOLOGIC DESCRIPTION

BASALT

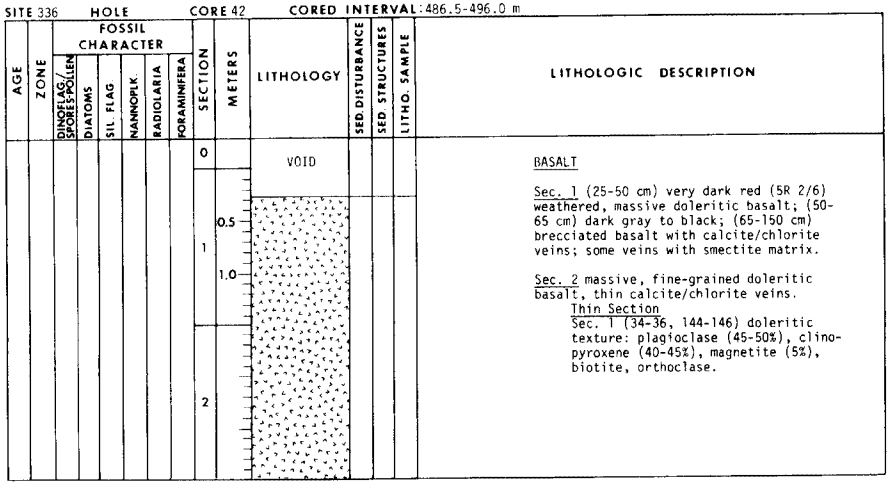
Sec. 1 (0-75 cm) dark gray (N3) to black (N1) massive, aphyric to microporphyric, rare phenocrysts - plagioclase, clinopyroxene; (75-150 cm) chloritized, finer grained, abundant thin veins of dark green chlorite, rare white calcite veins. Slikensides and fissures with pyrite on surfaces.

Thin Sections

(8-10 cm) subophitic texture, clinopyroxene (2-3%), olivine (1-2%). Groundmass: plagioclase (35-40%), clinopyroxene (40-45%).

(95-97, 119-121, 144-146, and 148-150 cm) diabasic; pyroxene (30-35%), interstadial between plagioclase laths (50%), magnetite (3-5%), biotite (2-5%), chlorite phenocrysts (5-10%).

SITE 336 HOLE CORE 42 CORED INTERVAL: 486.5-496.0 m



BASALT

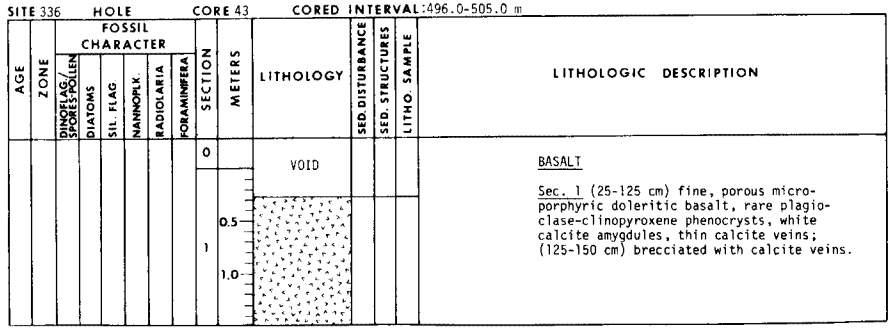
Sec. 1 (25-50 cm) very dark red (5R 2/6) weathered, massive doleritic basalt; (50-65 cm) dark gray to black; (65-150 cm) brecciated basalt with calcite/chlorite veins; some veins with smectite matrix.

Sec. 2 massive, fine-grained doleritic basalt, thin calcite/chlorite veins.

Thin Section

Sec. 1 (34-36, 144-146) doleritic texture: plagioclase (45-50%), clinopyroxene (40-45%), magnetite (5%), biotite, orthoclase.

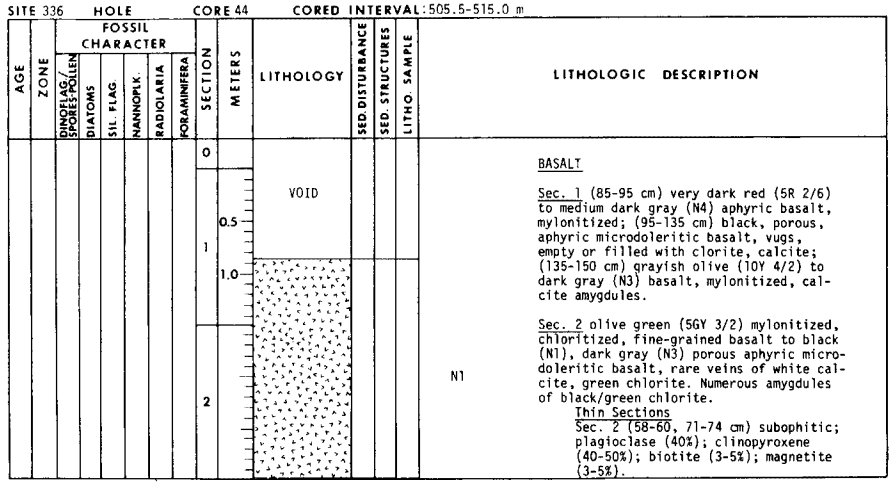
SITE 336 HOLE CORE 43 CORED INTERVAL: 496.0-505.0 m



BASALT

Sec. 1 (25-125 cm) fine, porous microporphyric doleritic basalt, rare plagioclase-clinopyroxene phenocrysts, white calcite amygdules, thin calcite veins; (125-150 cm) brecciated with calcite veins.

SITE 336 HOLE CORE 44 CORED INTERVAL: 505.5-515.0 m



N1

BASALT

Sec. 1 (85-95 cm) very dark red (5R 2/6) to medium dark gray (N4) aphyric basalt, mylonitized; (95-135 cm) black, porous, aphyric microdoleritic basalt, vugs, empty or filled with clorite, calcite; (135-150 cm) grayish olive (10Y 4/2) to dark gray (N3) basalt, mylonitized, calcite amygdules.

Sec. 2 olive green (5GY 3/2) mylonitized, chloritized, fine-grained basalt to black (N1), dark gray (N3) porous aphyric microdoleritic basalt, rare veins of white calcite, green chlorite. Numerous amygdules of black/green chlorite.

Thin Sections

Sec. 2 (58-60, 71-74 cm) subophitic; plagioclase (40%); clinopyroxene (40-50%); biotite (3-5%); magnetite (3-5%).

DEEP SEA DRILLING PROJECT

LEG 38 SITE 337

SITE SUMMARY SHEET

POSITION: Latitude: 64°52.30'N Longitude: 05°20.51'W

Water depth (from sea level): 2631.0 corrected meters (Echo sounding)

Bottom felt at: 2657.0 meters (drill pipe) Penetration: 132.5 meters

Number of Holes: 1 Number of Cores: 15

Total length of cored section: 132.5 m Total core recovered: 99.5 m

Percentage of core recovery: 75.0%

OLDEST SEDIMENT CORED:

Depth below sea floor: 113.0 meters Nature: Dusky yellow clay

Age: Lower/middle Oligocene (Core 12) Measured velocity: 1.53 km/sec

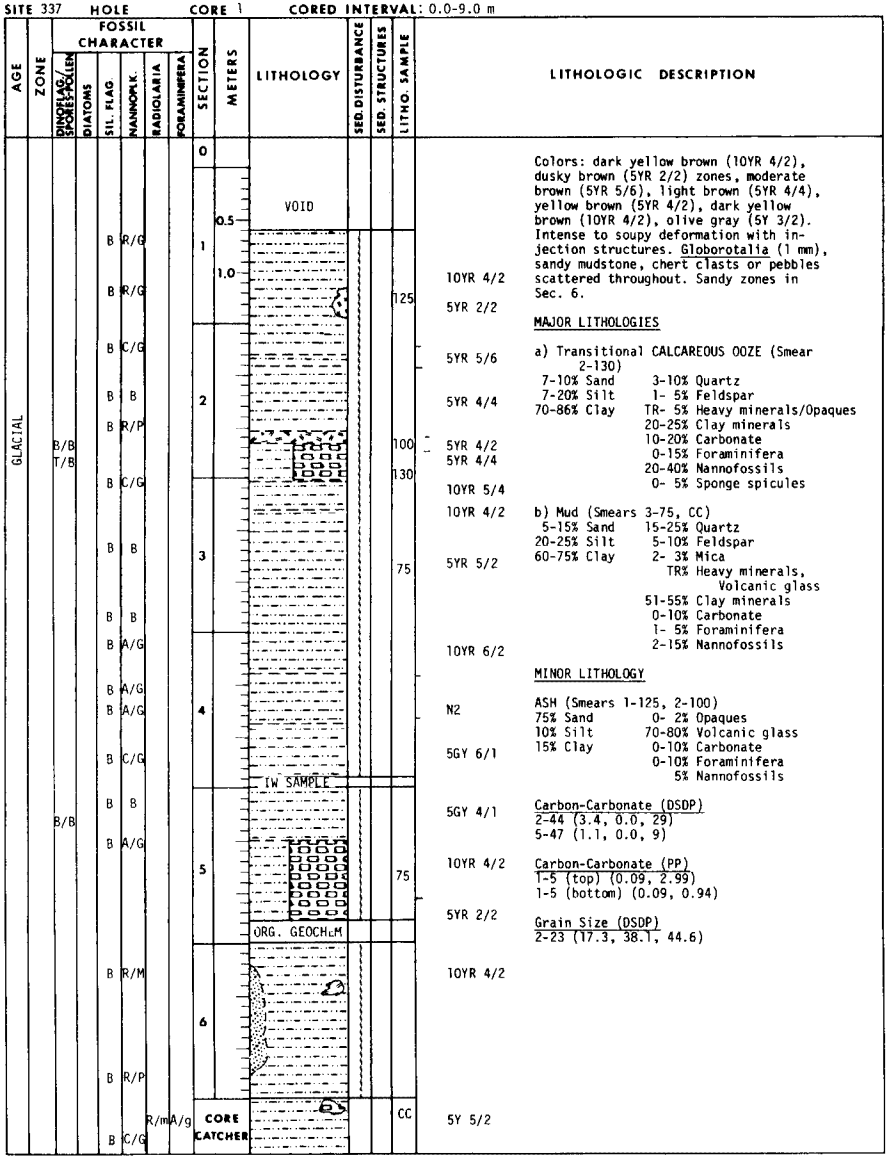
BASEMENT:

Depth below sea floor: 113.0 meters (drilled) Nature: Basalt

PRINCIPAL RESULTS:

Site 337 is located on what are believed to be rift mountains just east of the "extinct" spreading axis in the Norway Basin. Drilling penetrated a total depth of 132.5 meters, of which 113 meters was in sediment, and the remainder basalt. Sediment section includes about 47 meters of Glacial sediments consisting of clays, sandy muds and muds, and glacially derived material such as pebbles. The Tertiary unit ranging to lower/middle Oligocene(?) is an almost completely pelagic accumulation of clay and muds. Basement consists of basalt very similar to tholeiitic basalt typically found in mid-ocean ridge rifts. Brecciated layers suggest the presence of 13-14 flows of pillow lavas. Using the tentative age obtained for the oldest sediments and making a very rough allowance of distance from the axis of "extinct" rift, it is estimated that the shift in ridge axis from Norway Basin took place about 30 m.y. ago.

SITE 337 HOLE CORE 1 CORED INTERVAL: 0.0-9.0 m



Colors: dark yellow brown (10YR 4/2), dusky brown (5YR 2/2) zones, moderate brown (5YR 5/6), light brown (5YR 4/4), yellow brown (5YR 4/2), dark yellow brown (10YR 4/2), olive gray (5Y 3/2). Intense to soupy deformation with injection structures. Globorotalia (1 mm), sandy mudstone, chert clasts or pebbles scattered throughout. Sandy zones in Sec. 6.

MAJOR LITHOLOGIES

a) Transitional CALCAREOUS OOZE (Smear 2-130)

7-10% Sand	3-10% Quartz
7-20% Silt	1- 5% Feldspar
70-86% Clay	TR- 5% Heavy minerals/Opaques
	20-25% Clay minerals
	10-20% Carbonate
	0-15% Foraminifera
	20-40% Nannofossils
	0- 5% Sponge spicules

b) Mud (Smears 3-75, CC)

5-15% Sand	15-25% Quartz
20-25% Silt	5-10% Feldspar
60-75% Clay	2- 3% Mica
	TR% Heavy minerals, Volcanic glass
	51-55% Clay minerals
	0-10% Carbonate
	1- 5% Foraminifera
	2-15% Nannofossils

MINOR LITHOLOGY

ASH (Smears 1-125, 2-100)

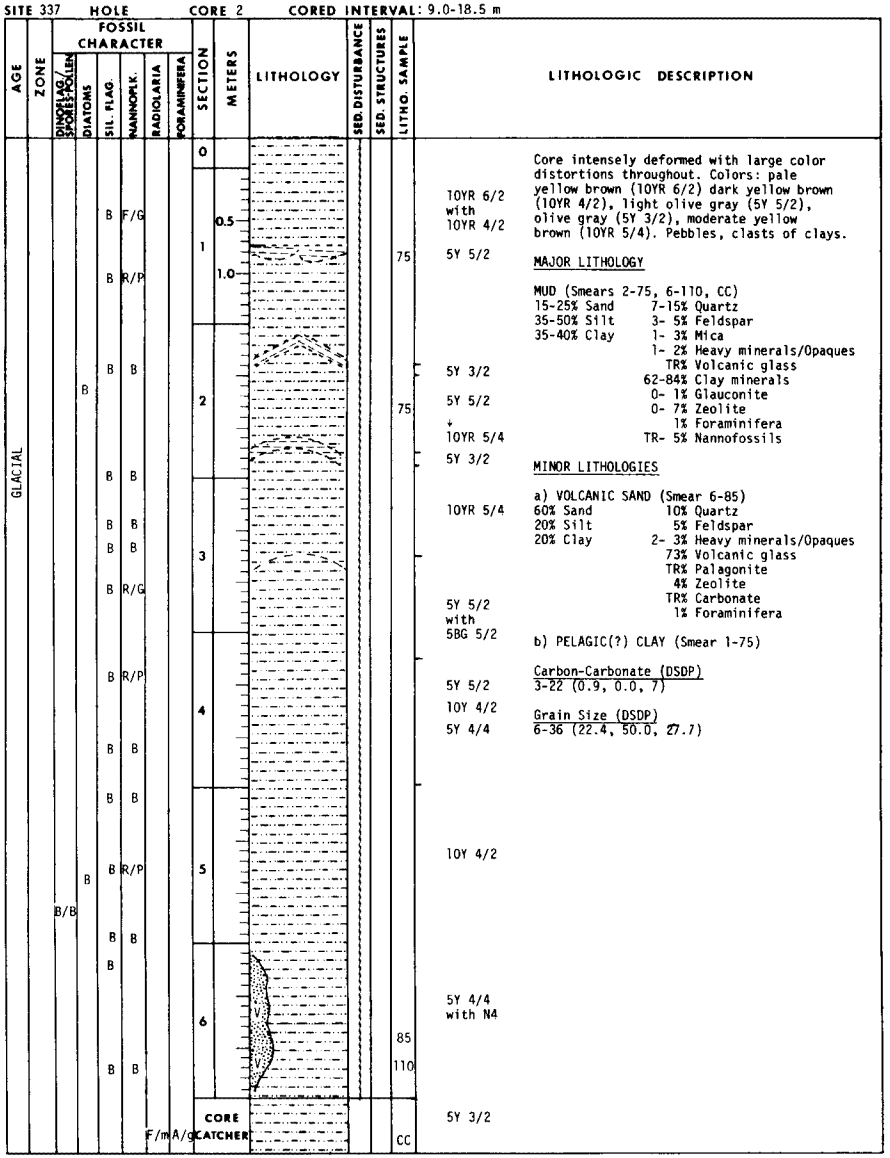
75% Sand	0- 2% Opaques
10% Silt	70-80% Volcanic glass
15% Clay	0-10% Carbonate
	0-10% Foraminifera
	5% Nannofossils

Carbon-Carbonate (DSDP)
2-44 (3.4, 0.0, 29)
5-47 (1.1, 0.0, 9)

Carbon-Carbonate (PP)
1-5 (top) (0.09, 2.99)
1-5 (bottom) (0.09, 0.94)

Grain Size (DSDP)
2-23 (17.3, 38.1, 44.6)

SITE 337 HOLE CORE 2 CORED INTERVAL: 9.0-18.5 m



Core intensely deformed with large color distortions throughout. Colors: pale yellow brown (10YR 6/2) dark yellow brown (10YR 4/2), light olive gray (5Y 5/2), olive gray (5Y 3/2), moderate yellow brown (10YR 5/4). Pebbles, clasts of clays.

MAJOR LITHOLOGY

MUD (Smears 2-75, 6-110, CC)

15-25% Sand	7-15% Quartz
35-50% Silt	3- 5% Feldspar
35-40% Clay	1- 3% Mica
	1- 2% Heavy minerals/Opaques
	TR% Volcanic glass
	62-84% Clay minerals
	0- 1% Glauconite
	0- 7% Zeolite
	1% Foraminifera
	TR- 5% Nannofossils

MINOR LITHOLOGIES

a) VOLCANIC SAND (Smear 6-85)

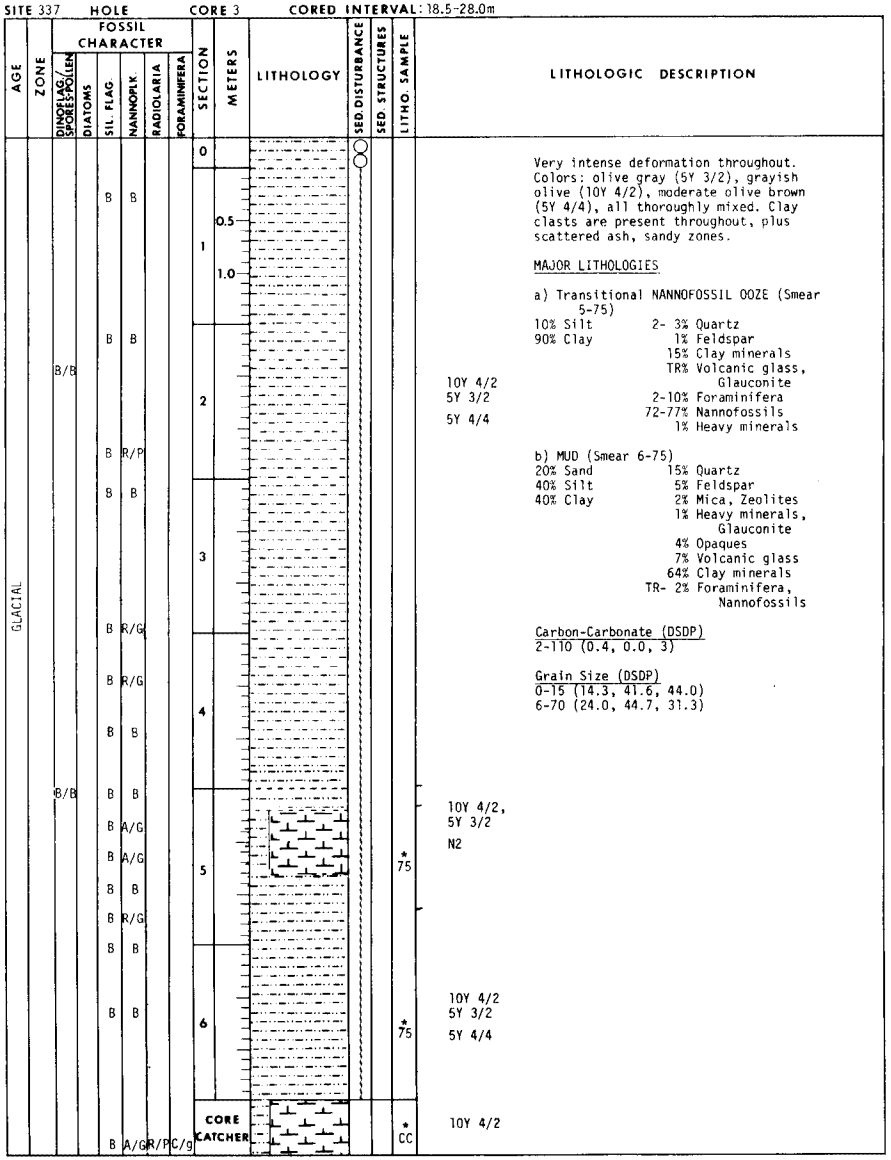
60% Sand	10% Quartz
20% Silt	5% Feldspar
20% Clay	2- 3% Heavy minerals/Opaques
	73% Volcanic glass
	TR% Palagonite
	4% Zeolite
	TR% Carbonate
	1% Foraminifera

b) PELAGIC(?) CLAY (Smear 1-75)

Carbon-Carbonate (DSDP)
3-22 (0.9, 0.0, 7)

Grain Size (DSDP)
6-36 (22.4, 50.0, 27.7)

SITE 337 HOLE CORE 3 CORED INTERVAL: 18.5-28.0m



Very intense deformation throughout. Colors: olive gray (5Y 3/2), grayish olive (10Y 4/2), moderate olive brown (5Y 4/4), all thoroughly mixed. Clay clasts are present throughout, plus scattered ash, sandy zones.

MAJOR LITHOLOGIES

a) Transitional NANNOFOSSIL OOZE (Smear 5-75)

10% Silt	2- 3% Quartz
90% Clay	1% Feldspar
	15% Clay minerals
	TR% Volcanic glass, Glauconite
	2-10% Foraminifera
	72-77% Nannofossils
	1% Heavy minerals

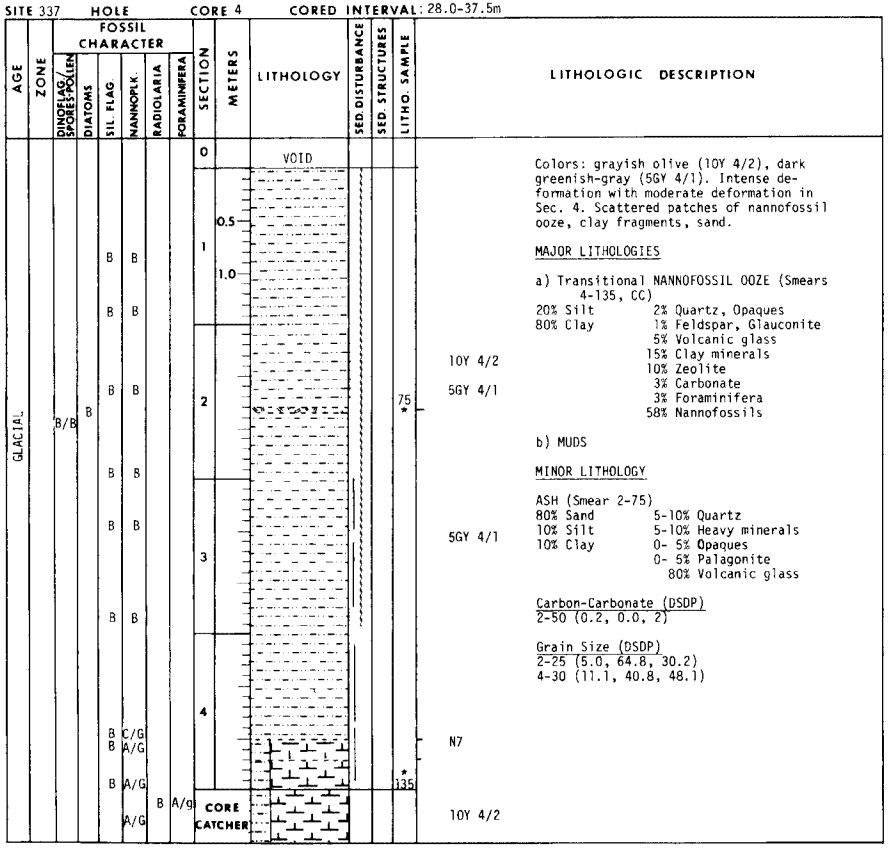
b) MUD (Smear 6-75)

20% Sand	15% Quartz
40% Silt	5% Feldspar
40% Clay	2% Mica, Zeolites
	1% Heavy minerals, Glauconite
	4% Opaques
	7% Volcanic glass
	64% Clay minerals
	TR- 2% Foraminifera, Nannofossils

Carbon-Carbonate (DSDP)
2-110 (0.4, 0.0, 3)

Grain Size (DSDP)
0-15 (14.3, 41.6, 44.0)
6-70 (24.0, 44.7, 31.3)

SITE 337 HOLE CORE 4 CORED INTERVAL: 28.0-37.5m



Colors: grayish olive (10Y 4/2), dark greenish-gray (5GY 4/1). Intense deformation with moderate deformation in Sec. 4. Scattered patches of nannofossil ooze, clay fragments, sand.

MAJOR LITHOLOGIES

a) Transitional NANNOFOSSIL OOZE (Smears 4-135, CC)

20% Silt	2% Quartz, Opaques
80% Clay	1% Feldspar, Glauconite
	5% Volcanic glass
	15% Clay minerals
	10% Zeolite
	3% Carbonate
	3% Foraminifera
	58% Nannofossils

b) MUDS

MINOR LITHOLOGY

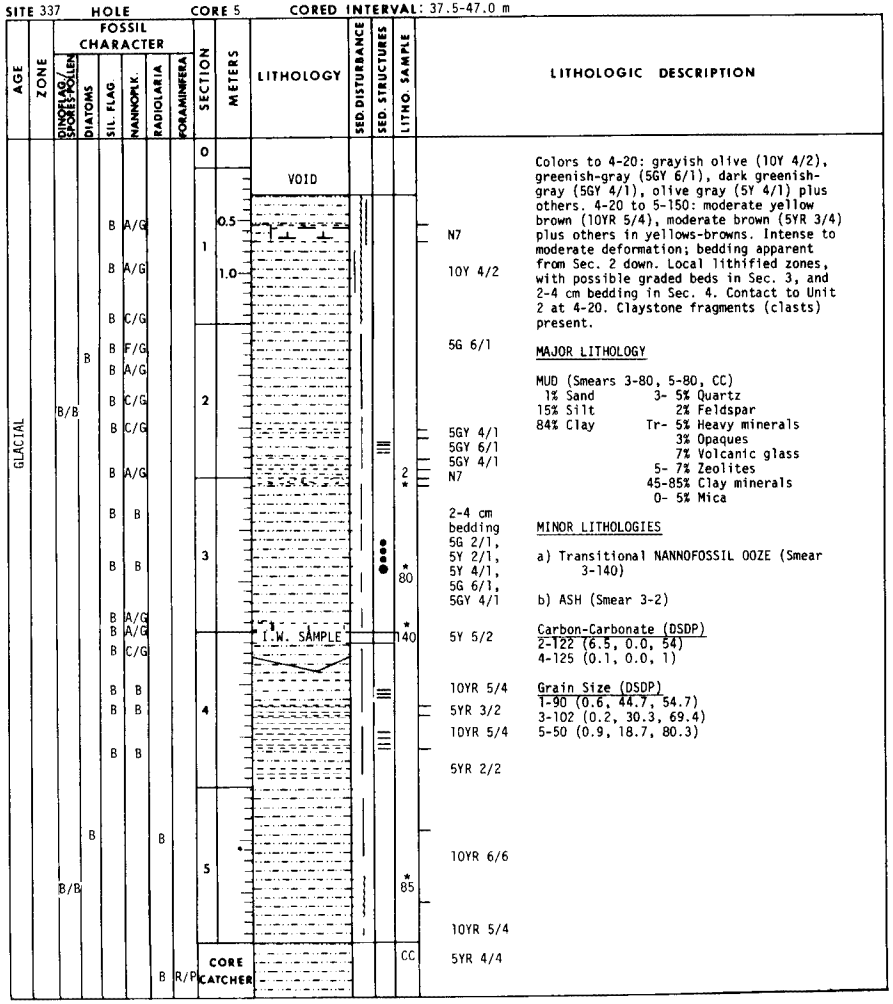
ASH (Smear 2-75)

80% Sand	5-10% Quartz
10% Silt	5-10% Heavy minerals
10% Clay	0- 5% Opaques
	0- 5% Palagonite
	80% Volcanic glass

Carbon-Carbonate (DSDP)
2-50 (0.2, 0.0, 2)

Grain Size (DSDP)
2-25 (5.0, 64.8, 30.2)
4-30 (11.1, 40.8, 48.1)

SITE 337 HOLE CORE 5 CORED INTERVAL: 37.5-47.0 m



Colors to 4-20: grayish olive (10Y 4/2), greenish-gray (5GY 6/1), dark greenish-gray (5GY 4/1), olive gray (5Y 4/1) plus others. 4-20 to 5-150: moderate yellow brown (10YR 5/4), moderate brown (5YR 3/4) plus others in yellows-browns. Intense to moderate deformation; bedding apparent from Sec. 2 down. Local lithified zones, with possible graded beds in Sec. 3, and 2-4 cm bedding in Sec. 4. Contact to Unit 2 at 4-20. Claystone fragments (clasts) present.

MAJOR LITHOLOGY

MUD (Smears 3-80, 5-80, CC)

1% Sand	3- 5% Quartz
15% Silt	2% Feldspar
84% Clay	Tr- 5% Heavy minerals
	3% Opaques
	7% Volcanic glass
	5- 7% Zeolites
	45-85% Clay minerals
	0- 5% Mica

MINOR LITHOLOGIES

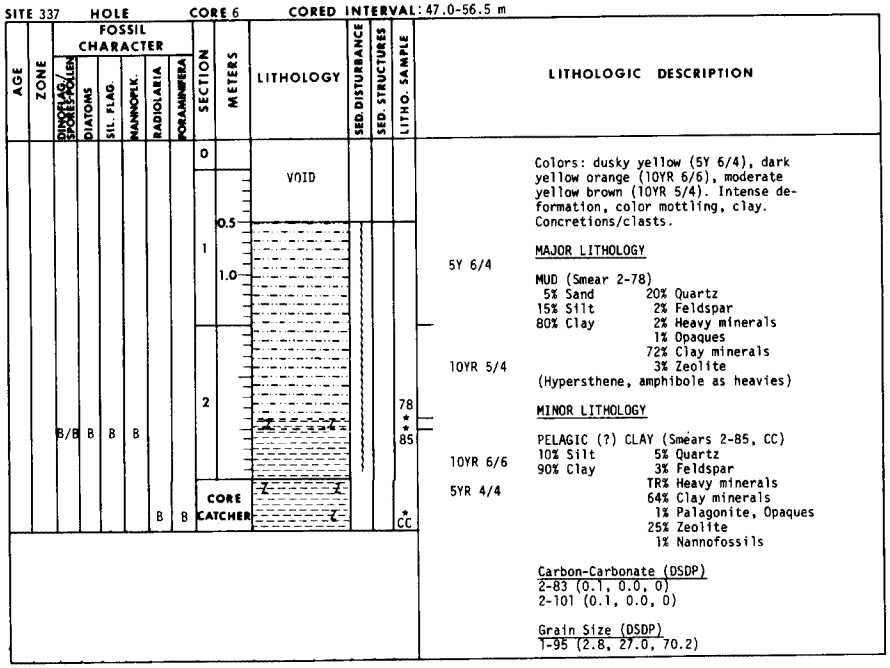
a) Transitional NANNOFOSSIL OOZE (Smear 3-140)

b) ASH (Smear 3-2)

Carbon-Carbonate (DSDP)
2-122 (6.5, 0.0, 54)
4-125 (0.1, 0.0, 1)

Grain Size (DSDP)
1-90 (0.6, 44.7, 54.7)
3-102 (0.2, 30.3, 69.4)
5-50 (0.9, 18.7, 80.3)

SITE 337 HOLE CORE 6 CORED INTERVAL: 47.0-56.5 m



Colors: dusky yellow (5Y 6/4), dark yellow orange (10YR 6/6), moderate yellow brown (10YR 5/4). Intense deformation, color mottling, clay. Concretions/clasts.

MAJOR LITHOLOGY

MUD (Smear 2-78)

5% Sand	20% Quartz
15% Silt	2% Feldspar
80% Clay	2% Heavy minerals
	1% Opaques
	72% Clay minerals
	3% Zeolite

(Hypersthene, amphibole as heavies)

MINOR LITHOLOGY

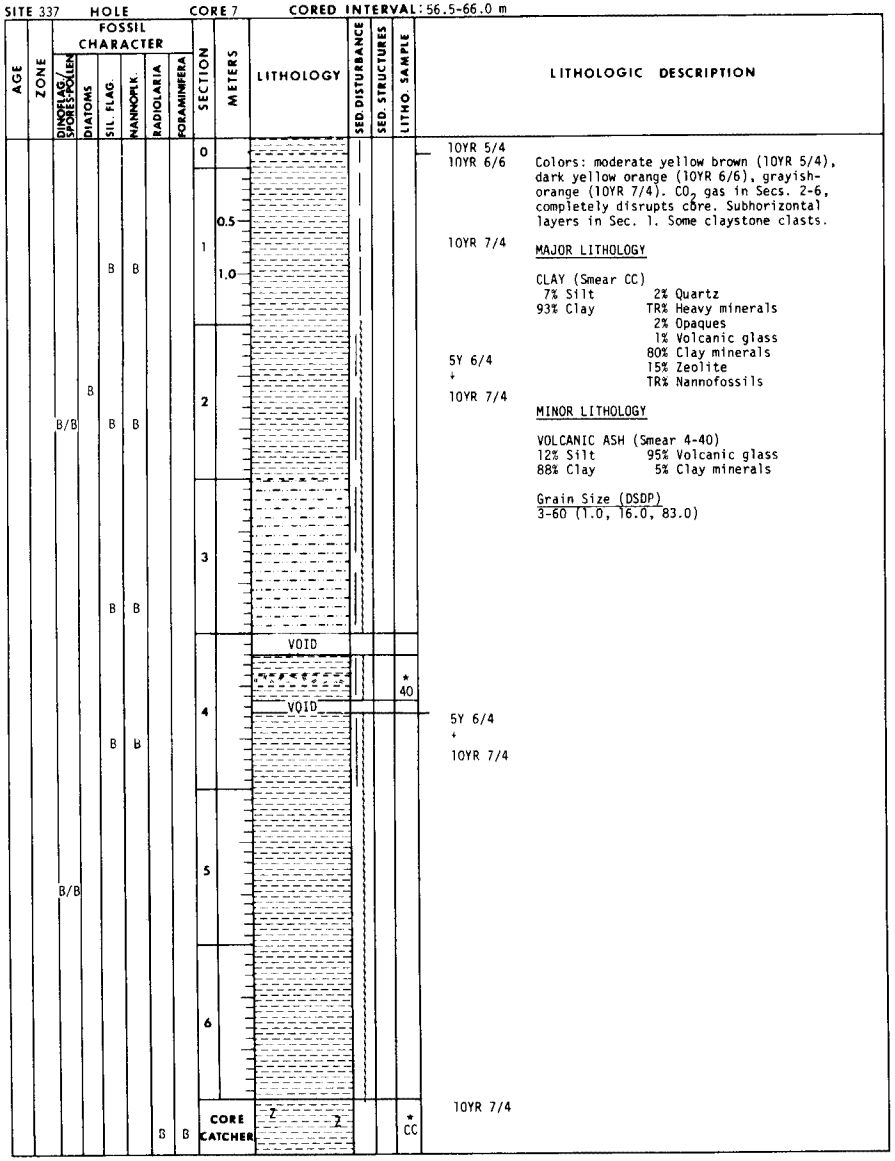
PELAGIC (?) CLAY (Smears 2-85, CC)

10% Silt	5% Quartz
90% Clay	3% Feldspar
	TR% Heavy minerals
	64% Clay minerals
	1% Palagonite, Opaques
	25% Zeolite
	1% Nannofossils

Carbon-Carbonate (DSDP)
2-83 (0.1, 0.0, 0)
2-101 (0.1, 0.0, 0)

Grain Size (DSDP)
1-95 (2.8, 27.0, 70.2)

SITE 337 HOLE CORE 7 CORED INTERVAL: 56.5-66.0 m



10YR 5/4
10YR 6/6
10YR 7/4
5Y 6/4
+
10YR 7/4
5Y 6/4
+
10YR 7/4
10YR 7/4

Colors: moderate yellow brown (10YR 5/4), dark yellow orange (10YR 6/6), grayish-orange (10YR 7/4). CO_2 gas in Secs. 2-6, completely disrupts core. Subhorizontal layers in Sec. 1. Some claystone clasts.

MAJOR LITHOLOGY

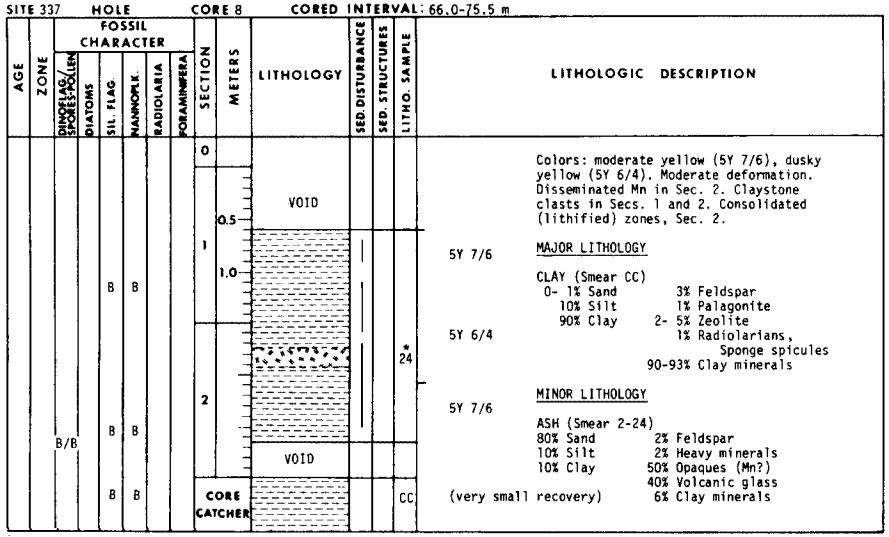
CLAY (Smear CC)
7% Silt
93% Clay
2% Quartz
TR% Heavy minerals
2% Opaques
1% Volcanic glass
80% Clay minerals
15% Zeolite
TR% Nannofossils

MINOR LITHOLOGY

VOLCANIC ASH (Smear 4-40)
12% Silt
88% Clay
95% Volcanic glass
5% Clay minerals

Grain Size (DSDP)
3-60 (1.0, 16.0, 83.0)

SITE 337 HOLE CORE 8 CORED INTERVAL: 66.0-75.5 m



5Y 7/6
5Y 6/4
5Y 7/6
(very small recovery)

Colors: moderate yellow (5Y 7/6), dusky yellow (5Y 6/4). Moderate deformation. Disseminated Mn in Sec. 2. Claystone clasts in Secs. 1 and 2. Consolidated (lithified) zones, Sec. 2.

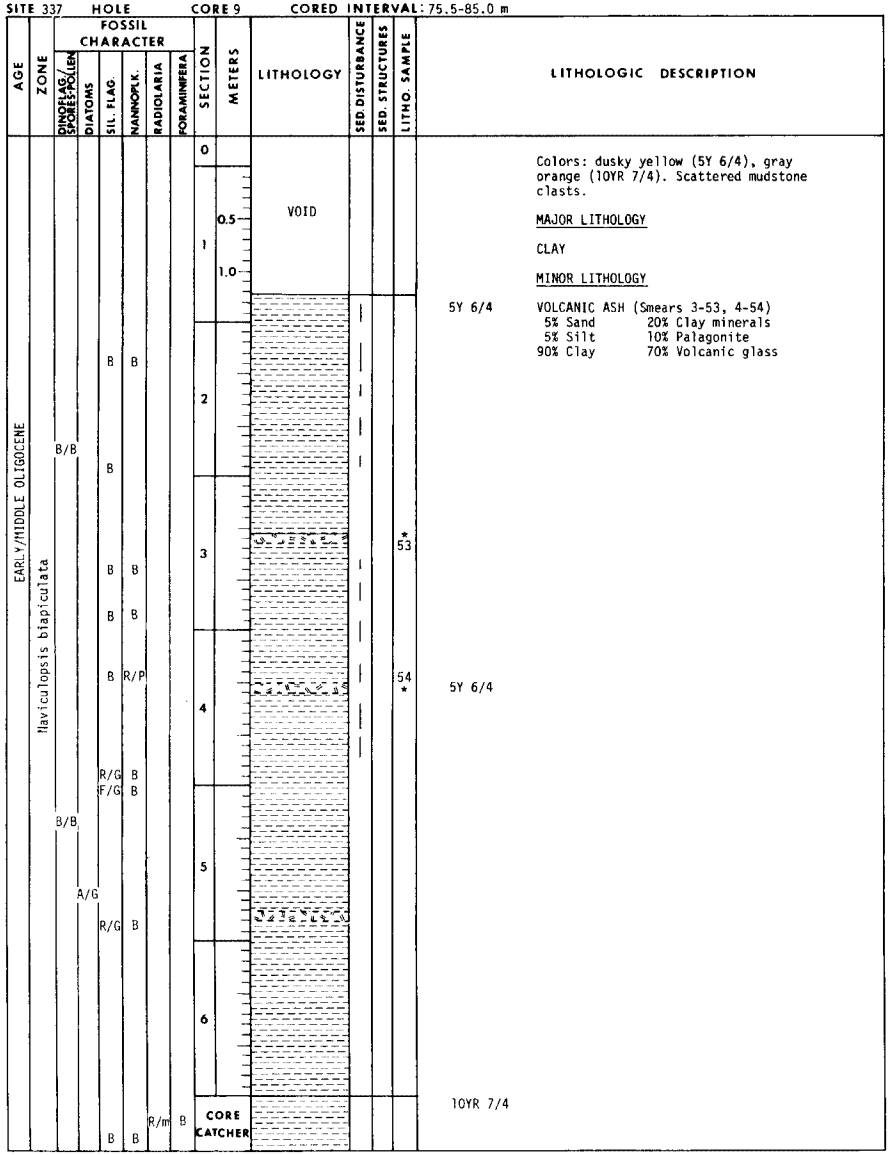
MAJOR LITHOLOGY

CLAY (Smear CC)
0- 1% Sand
10% Silt
90% Clay
3% Feldspar
1% Palagonite
2- 5% Zeolite
1% Radiolarians, Sponge spicules
90-93% Clay minerals

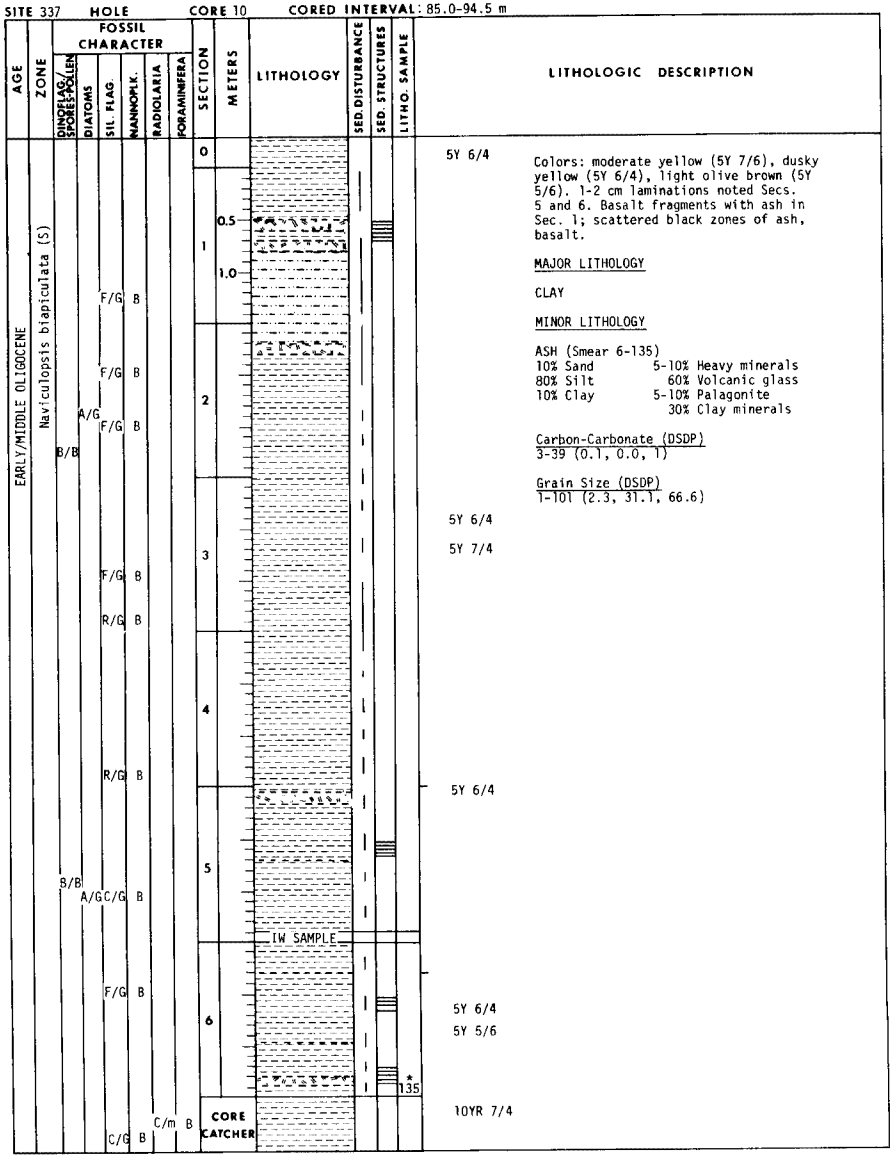
MINOR LITHOLOGY

ASH (Smear 2-24)
80% Sand
10% Silt
10% Clay
2% Feldspar
2% Heavy minerals
50% Opaques (Mn?)
40% Volcanic glass
6% Clay minerals

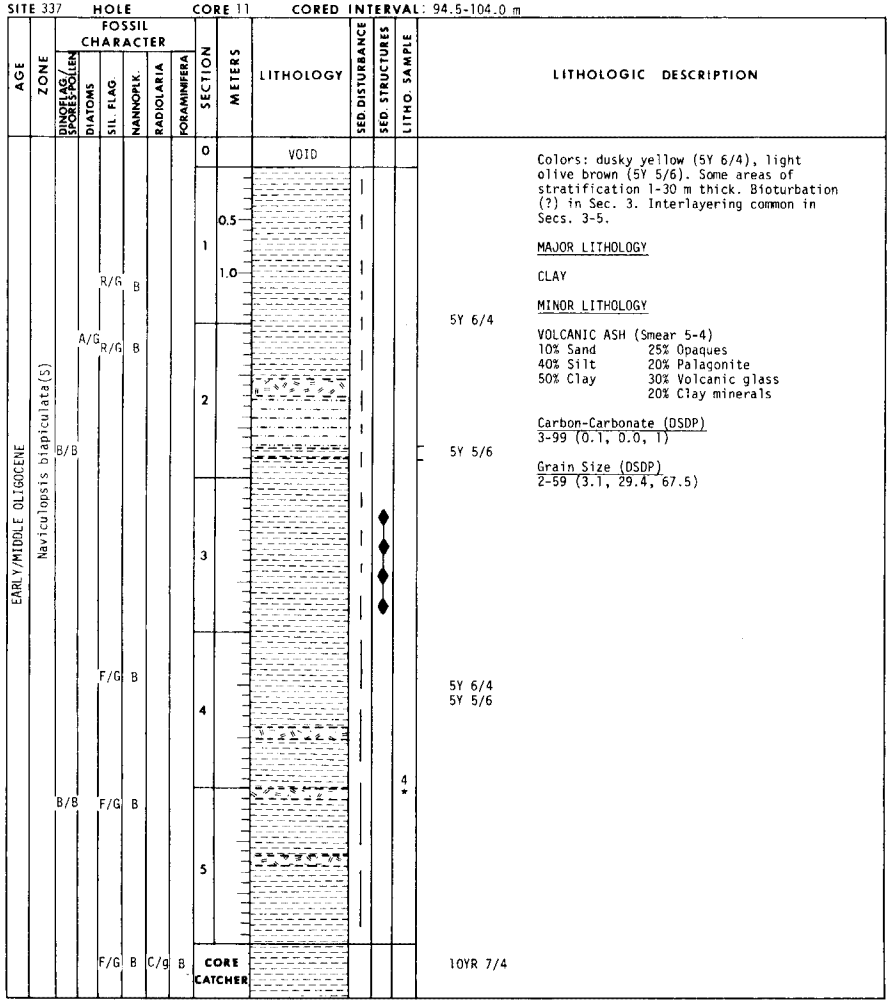
SITE 337 HOLE CORE 9 CORED INTERVAL: 75.5-85.0 m



SITE 337 HOLE CORE 10 CORED INTERVAL: 85.0-94.5 m



SITE 337 HOLE CORE 11 CORED INTERVAL: 94.5-104.0 m



LITHOLOGIC DESCRIPTION

Colors: dusky yellow (5Y 6/4), light olive brown (5Y 5/6). Some areas of stratification 1-30 m thick. Bioturbation (?) in Sec. 3. Interlayering common in Secs. 3-5.

MAJOR LITHOLOGY

CLAY

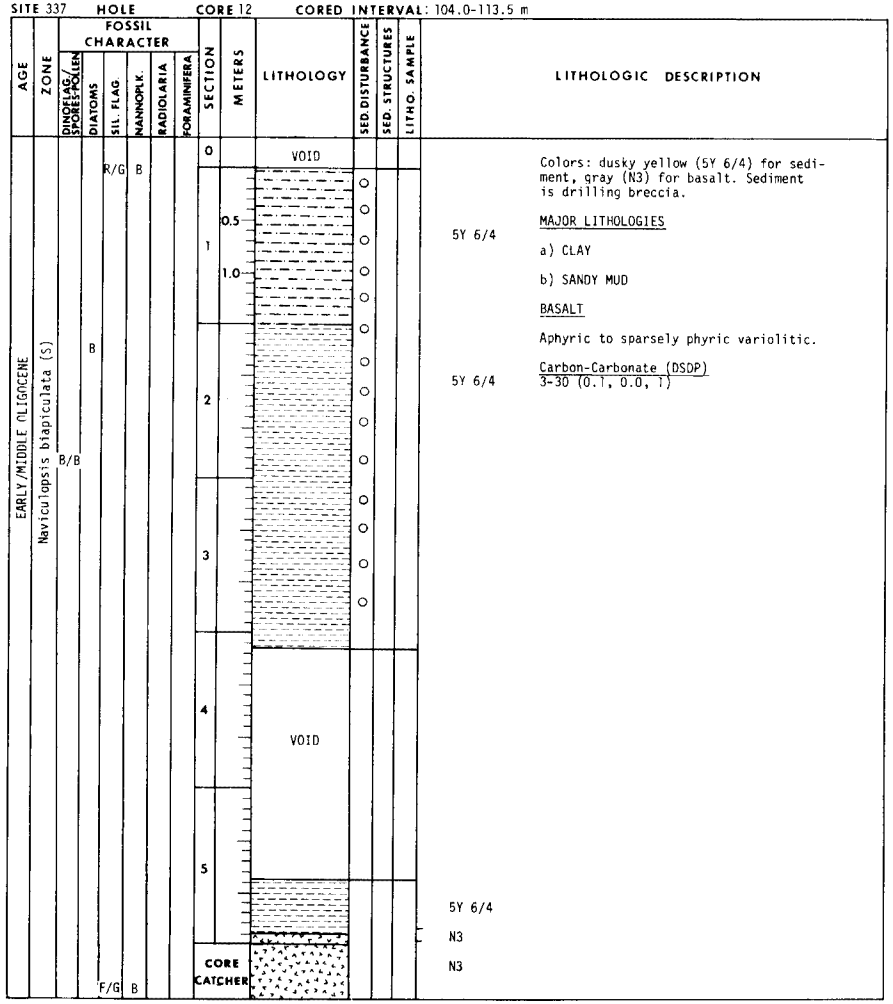
MINOR LITHOLOGY

VOLCANIC ASH (Smear 5-4)
10% Sand 25% Opaques
40% Silt 20% Palagonite
50% Clay 30% Volcanic glass
20% Clay minerals

Carbon-Carbonate (DSDP)
3-99 (0.1, 0.0, 1)

Grain Size (DSDP)
2-59 (3.1, 29.4, 67.5)

SITE 337 HOLE CORE 12 CORED INTERVAL: 104.0-113.5 m



Colors: dusky yellow (5Y 6/4) for sediment, gray (N3) for basalt. Sediment is drilling breccia.

MAJOR LITHOLOGIES

a) CLAY

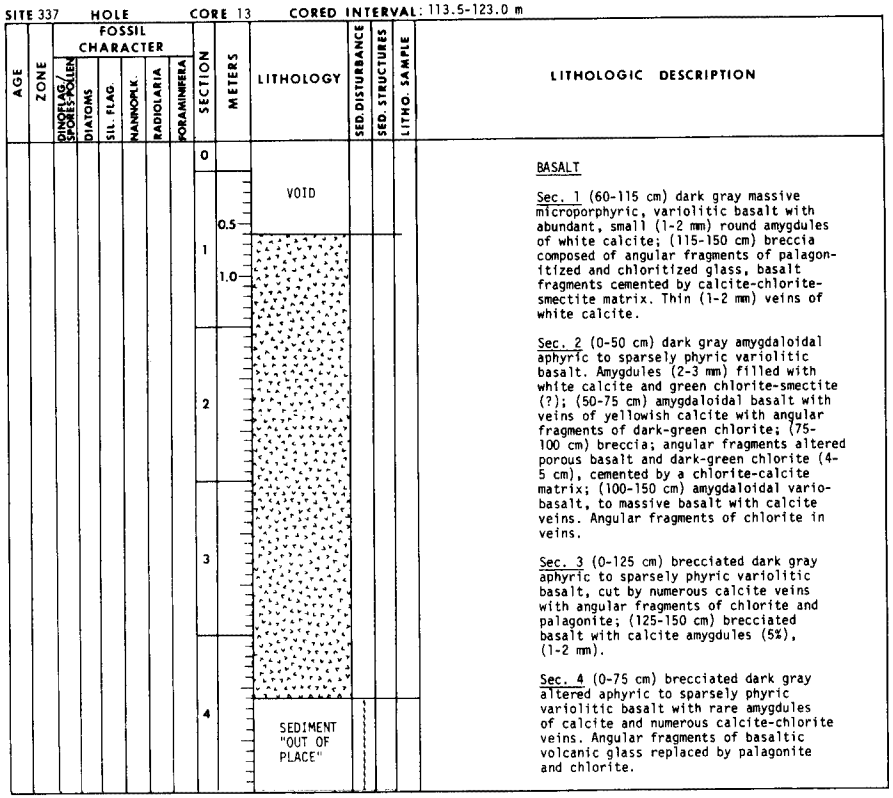
b) SANDY MUD

BASALT

Aphyric to sparsely phyric variolitic.

Carbon-Carbonate (DSDP)
3-30 (0.1, 0.0, 1)

SITE 337 HOLE CORE 13 CORED INTERVAL: 113.5-123.0 m



LITHOLOGIC DESCRIPTION

BASALT

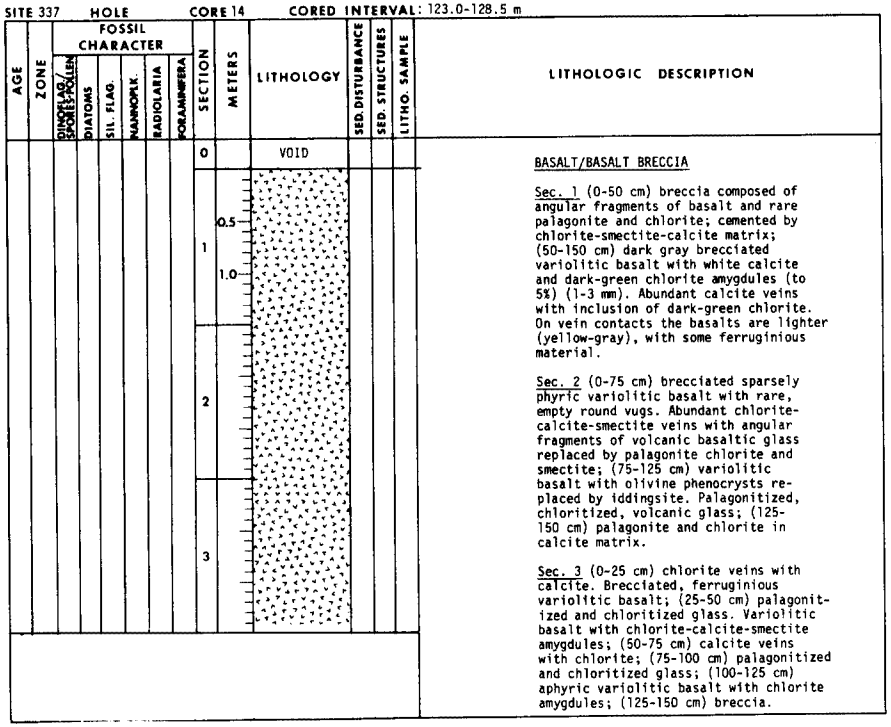
Sec. 1 (60-115 cm) dark gray massive microporphyric, variolitic basalt with abundant, small (1-2 mm) round amygdules of white calcite; (115-150 cm) breccia composed of angular fragments of palagonitized and chloritized glass, basalt fragments cemented by calcite-chlorite-smectite matrix. Thin (1-2 mm) veins of white calcite.

Sec. 2 (0-50 cm) dark gray amygdaloidal aphyric to sparsely phyric variolitic basalt. Amygdules (2-3 mm) filled with white calcite and green chlorite-smectite (?); (50-75 cm) amygdaloidal basalt with veins of yellowish calcite with angular fragments of dark-green chlorite; (75-100 cm) breccia; angular fragments altered porous basalt and dark-green chlorite (4-5 cm), cemented by a chlorite-calcite matrix; (100-150 cm) amygdaloidal variobasalt, to massive basalt with calcite veins. Angular fragments of chlorite in veins.

Sec. 3 (0-125 cm) brecciated dark gray aphyric to sparsely phyric variolitic basalt, cut by numerous calcite veins with angular fragments of chlorite and palagonite; (125-150 cm) brecciated basalt with calcite amygdules (5%), (1-2 mm).

Sec. 4 (0-75 cm) brecciated dark gray altered aphyric to sparsely phyric variolitic basalt with rare amygdules of calcite and numerous calcite-chlorite veins. Angular fragments of basaltic volcanic glass replaced by palagonite and chlorite.

SITE 337 HOLE CORE 14 CORED INTERVAL: 123.0-128.5 m



LITHOLOGIC DESCRIPTION

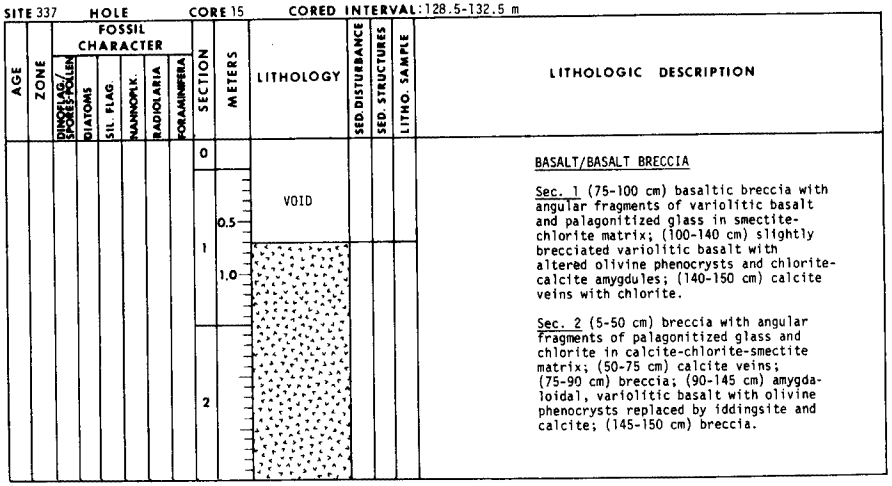
BASALT/BASALT BRECCIA

Sec. 1 (0-50 cm) breccia composed of angular fragments of basalt and rare palagonite and chlorite; cemented by chlorite-smectite-calcite matrix; (50-150 cm) dark gray brecciated variolitic basalt with white calcite and dark-green chlorite amygdules (to 5%) (1-3 mm). Abundant calcite veins with inclusion of dark-green chlorite. On vein contacts the basalts are lighter (yellow-gray), with some ferruginious material.

Sec. 2 (0-75 cm) brecciated sparsely phyric variolitic basalt with rare, empty round vugs. Abundant chlorite-calcite-smectite veins with angular fragments of volcanic basaltic glass replaced by palagonite chlorite and smectite; (75-125 cm) variolitic basalt with olivine phenocrysts replaced by iddingsite. Palagonitized, chloritized, volcanic glass; (125-150 cm) palagonite and chlorite in calcite matrix.

Sec. 3 (0-25 cm) chlorite veins with calcite. Brecciated, ferruginious variolitic basalt; (25-50 cm) palagonitized and chloritized glass. Variolitic basalt with chlorite-calcite-smectite amygdules; (50-75 cm) calcite veins with chlorite; (75-100 cm) palagonitized and chloritized glass; (100-125 cm) aphyric variolitic basalt with chlorite amygdules; (125-150 cm) breccia.

SITE 337 HOLE CORE 15 CORED INTERVAL: 128.5-132.5 m



LITHOLOGIC DESCRIPTION

BASALT/BASALT BRECCIA

Sec. 1 (75-100 cm) basaltic breccia with angular fragments of variolitic basalt and palagonitized glass in smectite-chlorite matrix; (100-140 cm) slightly brecciated variolitic basalt with altered olivine phenocrysts and chlorite-calcite amygdules; (140-150 cm) calcite veins with chlorite.

Sec. 2 (5-50 cm) breccia with angular fragments of palagonitized glass and chlorite in calcite-chlorite-smectite matrix; (50-75 cm) calcite veins; (75-90 cm) breccia; (90-145 cm) amygdaloidal, variolitic basalt with olivine phenocrysts replaced by iddingsite and calcite; (145-150 cm) breccia.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 338

SITE SUMMARY SHEET

POSITION: Latitude: 67°47.11'N Longitude: 05°23.26'E

Water depth (from sea level): 1297.0 corrected meters (Echo sounding)

Bottom felt at: 1315.0 meters (drill pipe) Penetration: 437.0 meters

Number of Holes: 1 Number of Cores: 45

Total length of cored section: 427.5 m Total core recovered: 208.7 m

Percentage of core recovery: 48.8%

OLDEST SEDIMENT CORED:

Depth below sea floor: 400.8 meters Nature: Sandy mud/mudstone

Age: Lower Eocene (or older) (Core 42) Measured velocity: 2.1 km/sec

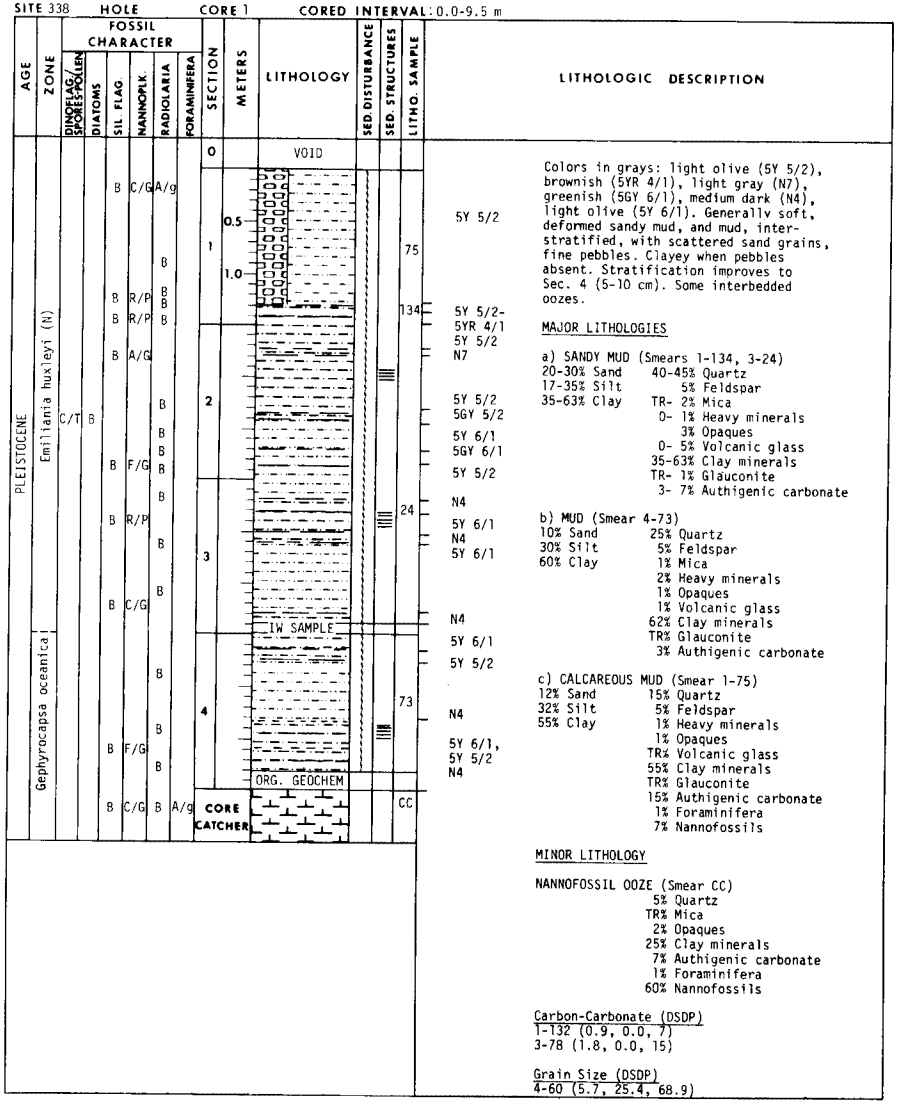
BASEMENT:

Depth below sea floor: 400.8 meters (drilled) Nature: Basalt with doleritic texture

PRINCIPAL RESULTS:

A nearly complete section of Tertiary sediments was recovered. The dominant component in the Miocene, Oligocene, and upper and lower Eocene sediments is diatomaceous oozes. Lower Eocene sediments, included a large component of sandy muds, deposited over a basalt basement. The presence of a basaltic basement, and the correspondence between the age predicted from magnetic anomalies and obtained from faunal evidence, supports a sea-floor spreading type of origin for the Vøring Plateau. The alkalic, rather than tholeiitic nature of the basalt, is, however, puzzling.

SITE 338 HOLE CORE 1 CORED INTERVAL: 0.0-9.5 m



Colors in grays: light olive (5Y 5/2), brownish (5YR 4/1), light gray (N7), greenish (5GY 6/1), medium dark (N4), light olive (5Y 6/1). Generally soft, deformed sandy mud, and mud, interstratified, with scattered sand grains, fine pebbles. Clayey when pebbles absent. Stratification improves to Sec. 4 (5-10 cm). Some interbedded oozes.

MAJOR LITHOLOGIES

a) SANDY MUD (Smears 1-134, 3-24)

20-30% Sand	40-45% Quartz
17-35% Silt	5% Feldspar
35-63% Clay	TR- 2% Mica
	0- 1% Heavy minerals
	3% Opaques
	0- 5% Volcanic glass
	35-63% Clay minerals
	TR- 1% Glauconite
	3- 7% Authigenic carbonate

b) MUD (Smear 4-73)

10% Sand	25% Quartz
30% Silt	5% Feldspar
60% Clay	1% Mica
	2% Heavy minerals
	1% Opaques
	1% Volcanic glass
	62% Clay minerals
	TR% Glauconite
	3% Authigenic carbonate

c) CALCAREOUS MUD (Smear 1-75)

12% Sand	15% Quartz
32% Silt	5% Feldspar
55% Clay	1% Heavy minerals
	1% Opaques
	TR% Volcanic glass
	55% Clay minerals
	TR% Glauconite
	15% Authigenic carbonate
	1% Foraminifera
	7% Nannofossils

MINOR LITHOLOGY

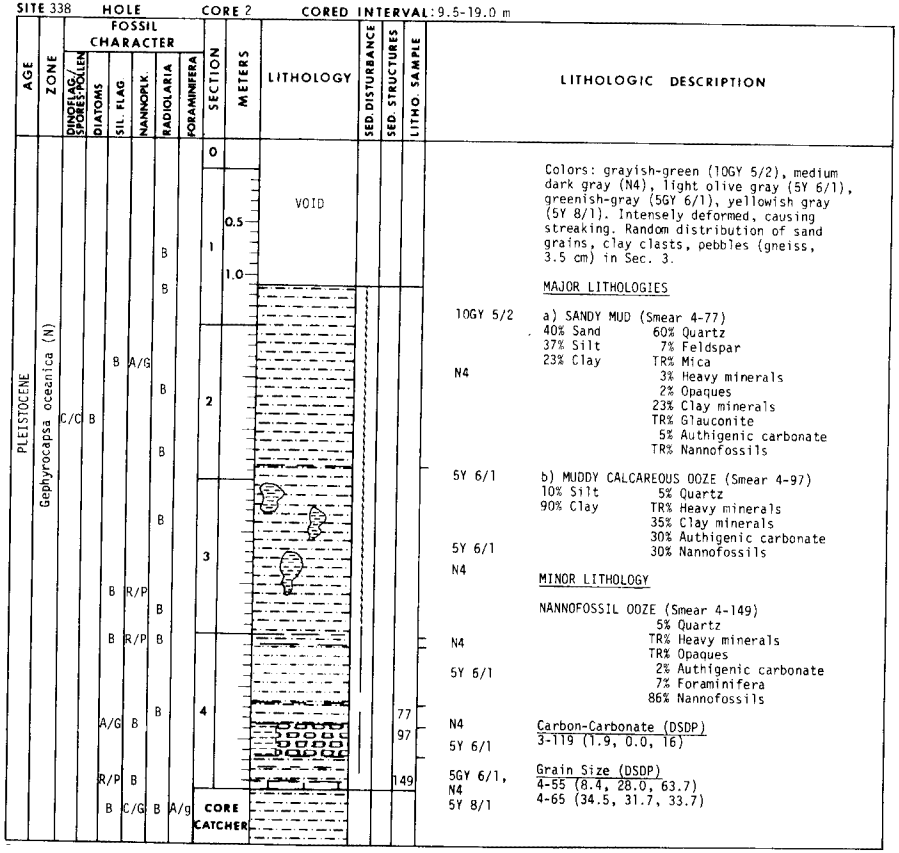
NANNOFOSSIL OOZE (Smear CC)

5% Quartz
TR% Mica
2% Opaques
25% Clay minerals
7% Authigenic carbonate
1% Foraminifera
60% Nannofossils

Carbon-Carbonate (DSDP)
1-132 (0.9, 0.0, 7)
3-78 (1.8, 0.0, 15)

Grain Size (DSDP)
4-60 (5.7, 25.4, 68.9)

SITE 338 HOLE CORE 2 CORED INTERVAL: 9.5-19.0 m



Colors: grayish-green (10GY 5/2), medium dark gray (N4), light olive gray (5Y 6/1), greenish-gray (5GY 6/1), yellowish gray (5Y 8/1). Intensely deformed, causing streaking. Random distribution of sand grains, clay clasts, pebbles (gneiss, 3.5 cm) in Sec. 3.

MAJOR LITHOLOGIES

a) SANDY MUD (Smear 4-77)

40% Sand	60% Quartz
37% Silt	7% Feldspar
23% Clay	TR% Mica
	3% Heavy minerals
	2% Opaques
	23% Clay minerals
	TR% Glauconite
	5% Authigenic carbonate
	TR% Nannofossils

b) MUDDY CALCAREOUS OOZE (Smear 4-97)

10% Silt	5% Quartz
90% Clay	TR% Heavy minerals
	35% Clay minerals
	30% Authigenic carbonate
	30% Nannofossils

MINOR LITHOLOGY

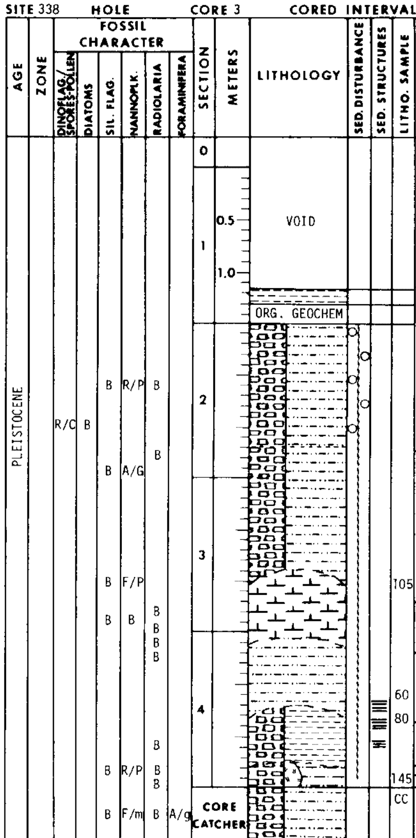
NANNOFOSSIL OOZE (Smear 4-149)

5% Quartz
TR% Heavy minerals
TR% Opaques
2% Authigenic carbonate
7% Foraminifera
86% Nannofossils

Carbon-Carbonate (DSDP)
3-119 (1.9, 0.0, 16)

Grain Size (DSDP)
4-55 (8.4, 28.0, 63.7)
4-65 (34.5, 31.7, 33.7)

SITE 338 HOLE CORE 3 CORED INTERVAL: 19.0-28.5 m



5Y 3/2

N4

Mixed 5GY 6/1, 5Y 4/1 and N4

5Y 4/1

N4

5Y 4/1

N4, 5Y 4/1

5GY 4/1

LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2), dark gray (N4), greenish-gray (5GY 6/1), olive gray (5Y 4/1). Pebble zones throughout. Intense deformation, bedding improves in Sec. 4, especially at base.

MAJOR LITHOLOGIES

a) CALCAREOUS MUD (Smear CC)

7% Sand	10%	Quartz
18% Silt	5%	Feldspar
75% Clay	TR%	Mica
	TR%	Opaques
	55%	Clay minerals
	20%	Authigenic carbonate
	TR%	Foraminifera
	10%	Nannofossils

b) CALCAREOUS CLAY (Smear 4-80)

2%	Quartz
1%	Mica
TR%	Heavy minerals
57%	Clay minerals
30%	Authigenic carbonate
10%	Nannofossils

c) CALCAREOUS ASH (Smear 4-145)

7%	Quartz
TR%	Mica
TR%	Heavy minerals
40%	Opaques - Ash?
18%	Clay minerals
15%	Authigenic carbonate
20%	Nannofossils

d) MUD (Smear 4-60)

10% Sand	20%	Quartz
20% Silt	3%	Feldspar
69% Clay	TR%	Mica
	1%	Heavy minerals
	1%	Opaques
	1%	Volcanic glass
	69%	Clay minerals
	5%	Authigenic carbonate

MINOR LITHOLOGY

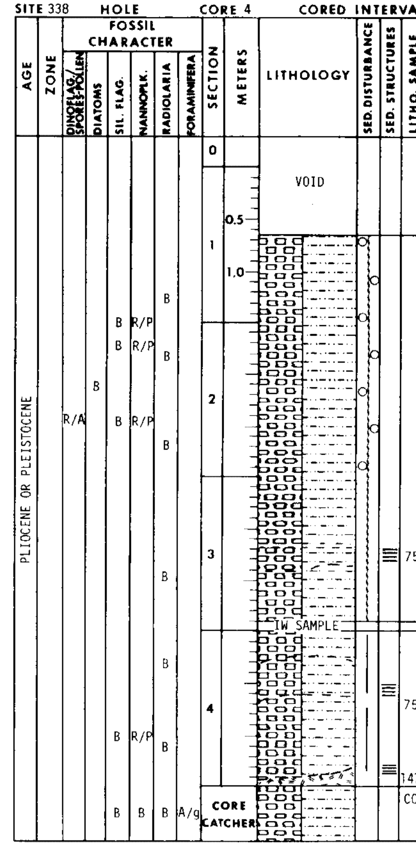
NANNOFOSSIL OOZE (Smear 3-105)

5%	Quartz
10%	Authigenic carbonate
81%	Nannofossils
3%	Sponge spicules
1%	Foraminifera
TR%	Opaques, Volcanic glass

Carbon-Carbonate (DSDP)
2-105 (1.1, 0.0, 9)

Grain Size (DSDP)
2-100 (15.0, 34.3, 50.7)

SITE 338 HOLE CORE 4 CORED INTERVAL: 28.5-38.0 m



5Y 4/1 with N3

5Y 4/1

5Y 4/1 with 5Y 6/1

N3, N4

5Y 4/1 with N3

N3

5Y 4/1 with 5GY 4/1

5GY 4/1

LITHOLOGIC DESCRIPTION

Drilling breccia to intense deformation (Secs. 1-3). Moderate in Sec. 4. Colors: olive gray (5Y 4/1), dark gray (N3), light olive gray (5Y 6/1), medium dark gray (N4), dark green gray. Generally very mixed with 1 cm dark gray (N3) bands in Sec. 4. Pebbles (1-2 mm) noted in Sec. 3.

MAJOR LITHOLOGY

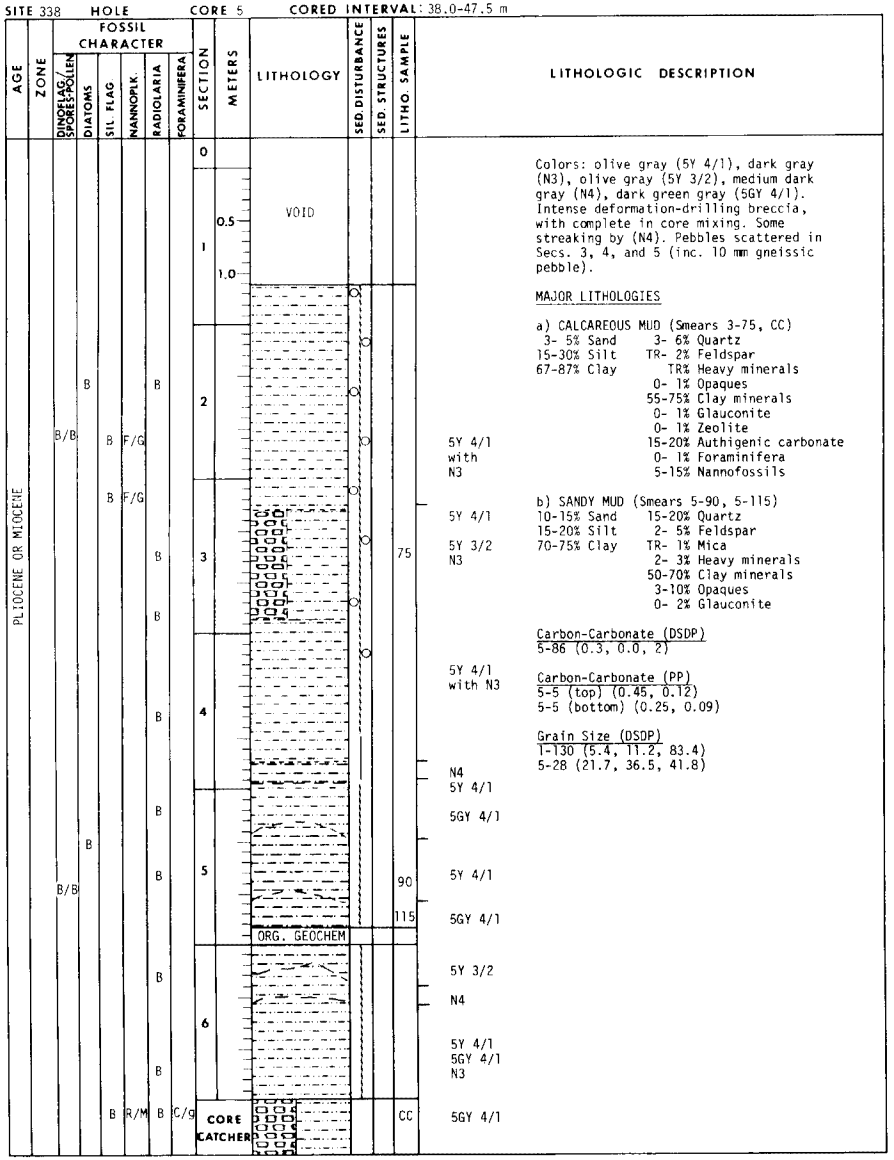
MUDDY CALCAREOUS OOZE (Smears 3-75, 4-75, 4-147, CC)

5% Sand	5- 7%	Quartz
10% Silt	TR%	Heavy minerals
85-90% Clay	TR- 1%	Opaques
	0-15%	Volcanic glass
	32-35%	Clay minerals
	0-TR%	Glauconite
	25-50%	Authigenic carbonate
	20%	Nannofossils

Carbon-Carbonate (DSDP)
4-129 (1.9, 0.0, 16)

Grain Size (DSDP)
4-147 (2.2, 35.7, 62.1)

SITE 338 HOLE CORE 5 CORED INTERVAL: 38.0-47.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), dark gray (N3), olive gray (5Y 3/2), medium dark gray (N4), dark green gray (5GY 4/1). Intense deformation-drilling breccia, with complete in core mixing. Some streaking by (N4). Pebbles scattered in Secs. 3, 4, and 5 (inc. 10 mm gneissic pebble).

MAJOR LITHOLOGIES

a) CALCAREOUS MUD (Smears 3-75, CC)

3- 5% Sand	3- 6% Quartz
15-30% Silt	TR- 2% Feldspar
67-87% Clay	TR% Heavy minerals
	0- 1% Opaques
	55-75% Clay minerals
	0- 1% Glauconite
	0- 1% Zeolite
	15-20% Authigenic carbonate
	0- 1% Foraminifera
	5-15% Nannofossils

b) SANDY MUD (Smears 5-90, 5-115)

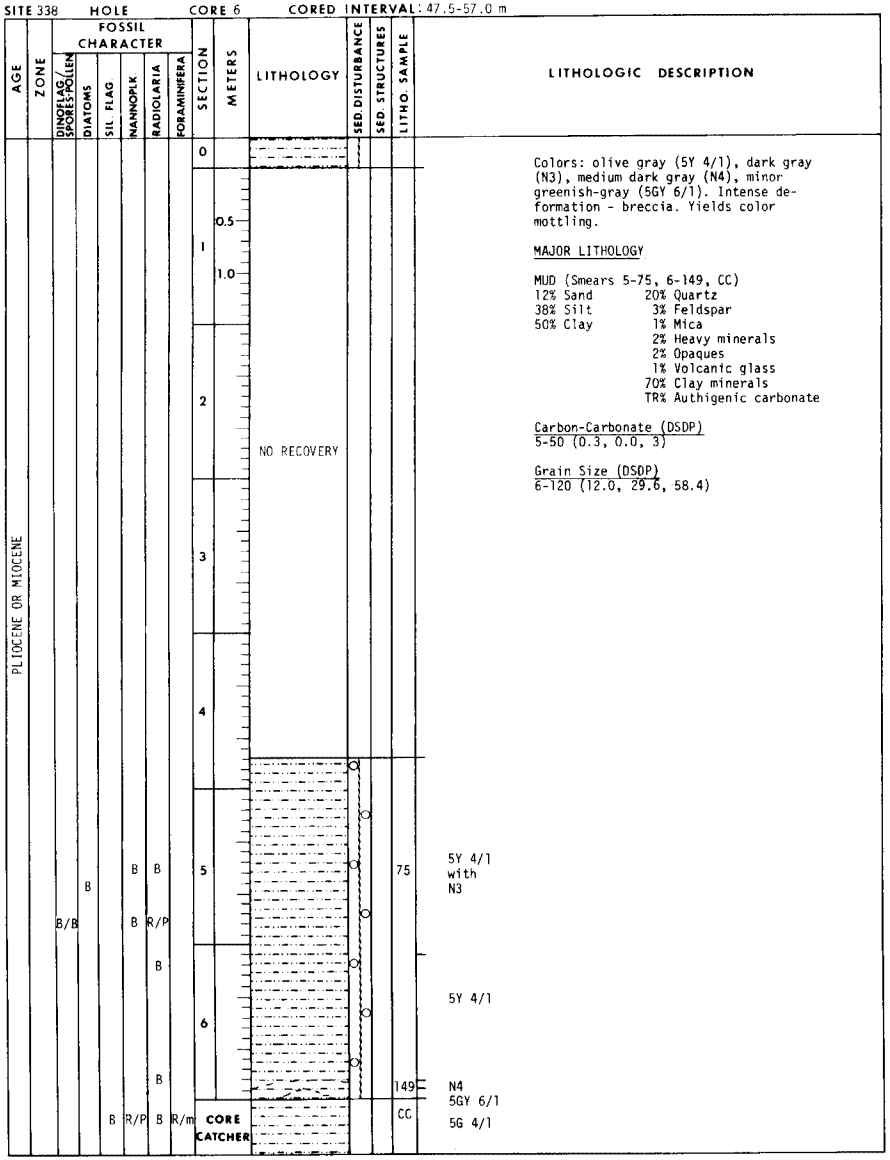
10-15% Sand	15-20% Quartz
15-20% Silt	2- 5% Feldspar
70-75% Clay	TR- 1% Mica
	2- 3% Heavy minerals
	50-70% Clay minerals
	3-10% Opaques
	0- 2% Glauconite

Carbon-Carbonate (DSDP)
5-86 (0.3, 0.0, 2)

Carbon-Carbonate (PP)
5-5 (top) (0.45, 0.12)
5-5 (bottom) (0.25, 0.09)

Grain Size (DSDP)
1-130 (5.4, 11.2, 83.4)
5-28 (21.7, 36.5, 41.8)

SITE 338 HOLE CORE 6 CORED INTERVAL: 47.5-57.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), dark gray (N3), medium dark gray (N4), minor greenish-gray (5GY 6/1). Intense deformation - breccia. Yields color mottling.

MAJOR LITHOLOGY

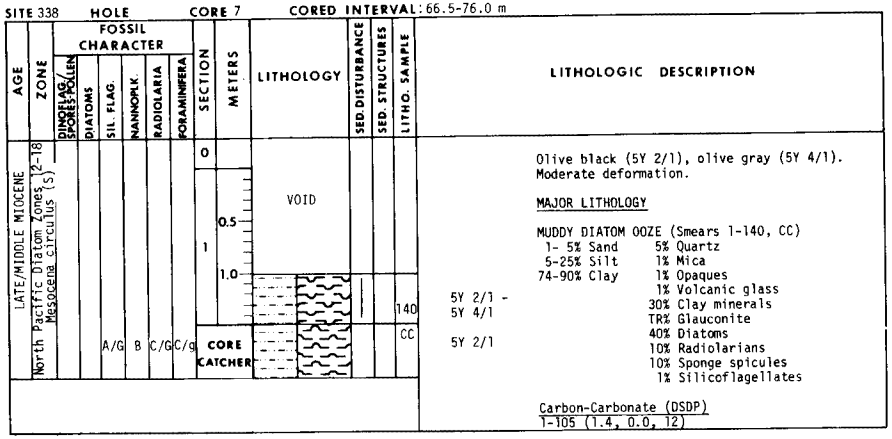
MUD (Smears 5-75, 6-149, CC)

12% Sand	20% Quartz
38% Silt	3% Feldspar
50% Clay	1% Mica
	2% Heavy minerals
	2% Opaques
	1% Volcanic glass
	70% Clay minerals
	TR% Authigenic carbonate

Carbon-Carbonate (DSDP)
5-50 (0.3, 0.0, 3)

Grain Size (DSDP)
6-120 (12.0, 29.6, 58.4)

SITE 338 HOLE CORE 7 CORED INTERVAL: 66.5-76.0 m



LITHOLOGIC DESCRIPTION

Olive black (5Y 2/1), olive gray (5Y 4/1). Moderate deformation.

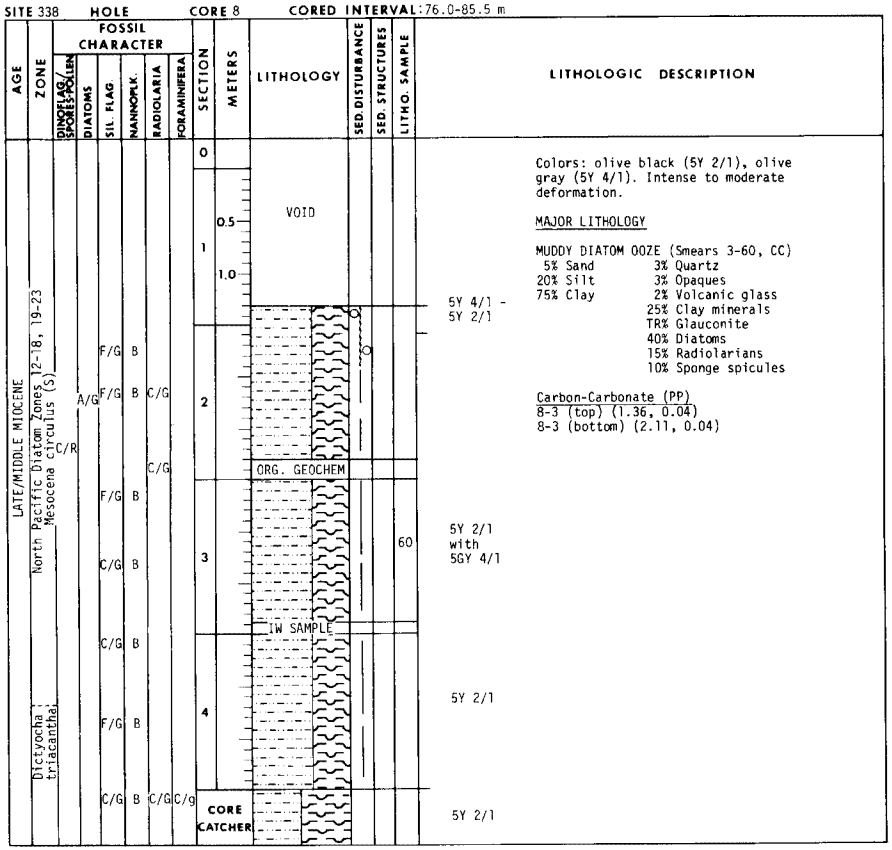
MAJOR LITHOLOGY

MUDDY DIATOM OOZE (Smears 1-140, CC)

1- 5% Sand	5% Quartz
5-25% Silt	1% Mica
74-90% Clay	1% Opaques
	1% Volcanic glass
	30% Clay minerals
	TR% Glauconite
	40% Diatoms
	10% Radiolarians
	10% Sponge spicules
	1% Silicoflagellates

Carbon-Carbonate (DSDP)
1-105 (1.4, 0.0, 12)

SITE 338 HOLE CORE 8 CORED INTERVAL: 76.0-85.5 m



LITHOLOGIC DESCRIPTION

Colors: olive black (5Y 2/1), olive gray (5Y 4/1). Intense to moderate deformation.

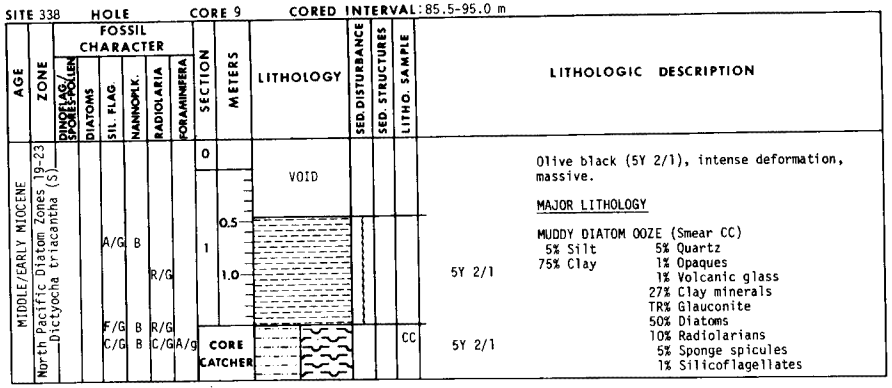
MAJOR LITHOLOGY

MUDDY DIATOM OOZE (Smears 3-60, CC)

5% Sand	3% Quartz
20% Silt	3% Opaques
75% Clay	2% Volcanic glass
	25% Clay minerals
	TR% Glauconite
	40% Diatoms
	15% Radiolarians
	10% Sponge spicules

Carbon-Carbonate (PP)
8-3 (top) (1.36, 0.04)
8-3 (bottom) (2.11, 0.04)

SITE 338 HOLE CORE 9 CORED INTERVAL: 85.5-95.0 m



LITHOLOGIC DESCRIPTION

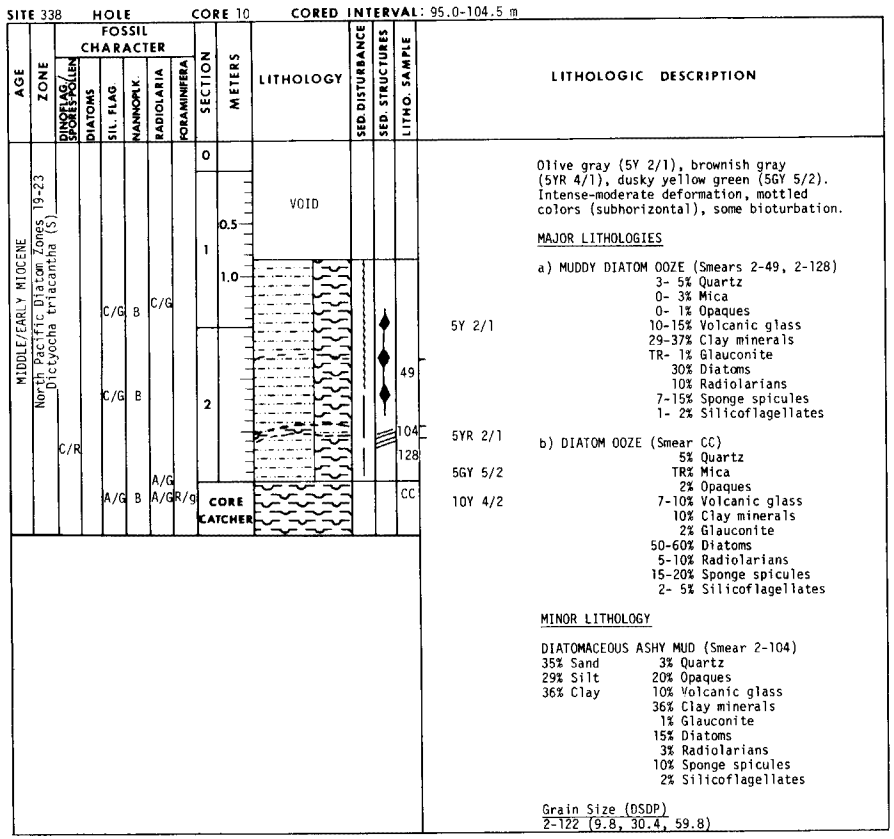
Olive black (5Y 2/1), intense deformation, massive.

MAJOR LITHOLOGY

MUDDY DIATOM OOZE (Smear CC)

5% Silt	5% Quartz
75% Clay	1% Opaques
	1% Volcanic glass
	27% Clay minerals
	TR% Glauconite
	50% Diatoms
	10% Radiolarians
	5% Sponge spicules
	1% Silicoflagellates

SITE 338 HOLE CORE 10 CORED INTERVAL: 95.0-104.5 m



LITHOLOGIC DESCRIPTION

Olive gray (5Y 2/1), brownish gray (5YR 4/1), dusky yellow green (5GY 5/2). Intense-moderate deformation, mottled colors (subhorizontal), some bioturbation.

MAJOR LITHOLOGIES

a) MUDDY DIATOM OOZE (Smears 2-49, 2-128)

	3- 5% Quartz
	0- 3% Mica
	0- 1% Opaques
	10-15% Volcanic glass
	29-37% Clay minerals
	TR- 1% Glauconite
	30% Diatoms
	10% Radiolarians
	7-15% Sponge spicules
	1- 2% Silicoflagellates

b) DIATOM OOZE (Smear CC)

	5% Quartz
	TR% Mica
	2% Opaques
	7-10% Volcanic glass
	10% Clay minerals
	2% Glauconite
	50-60% Diatoms
	5-10% Radiolarians
	15-20% Sponge spicules
	2- 5% Silicoflagellates

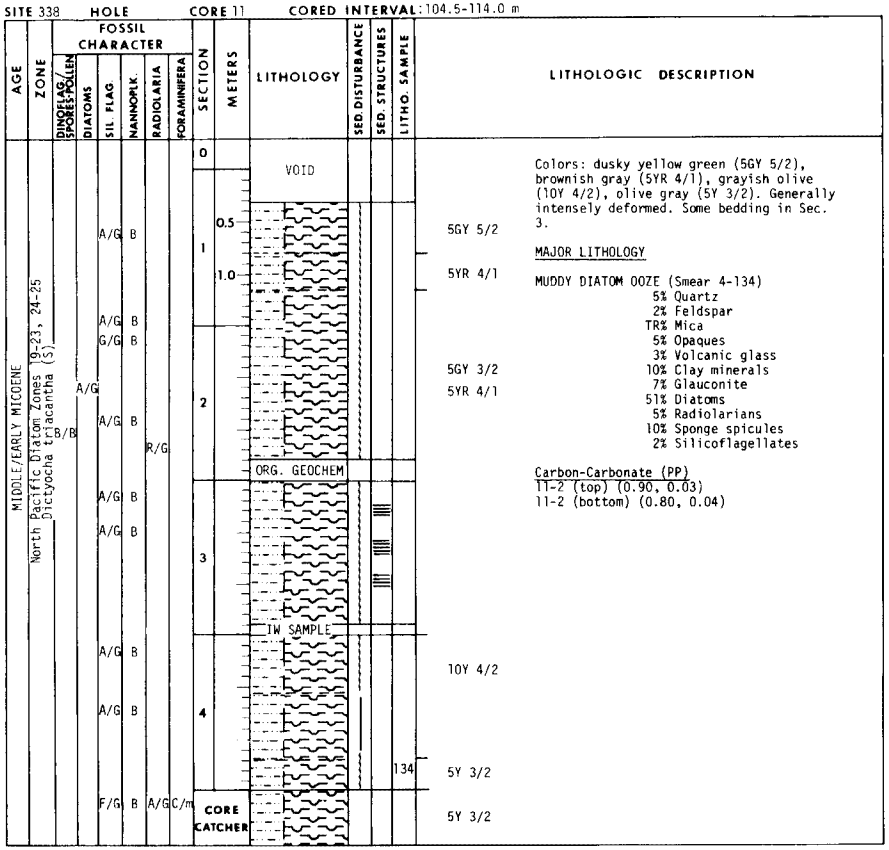
MINOR LITHOLOGY

DIATOMACEOUS ASHY MUD (Smear 2-104)

35% Sand	3% Quartz
29% Silt	20% Opaques
36% Clay	10% Volcanic glass
	36% Clay minerals
	1% Glauconite
	15% Diatoms
	3% Radiolarians
	10% Sponge spicules
	2% Silicoflagellates

Grain Size (DSDP)
2-122 (9.8, 30.4, 59.8)

SITE 338 HOLE CORE 11 CORED INTERVAL: 104.5-114.0 m



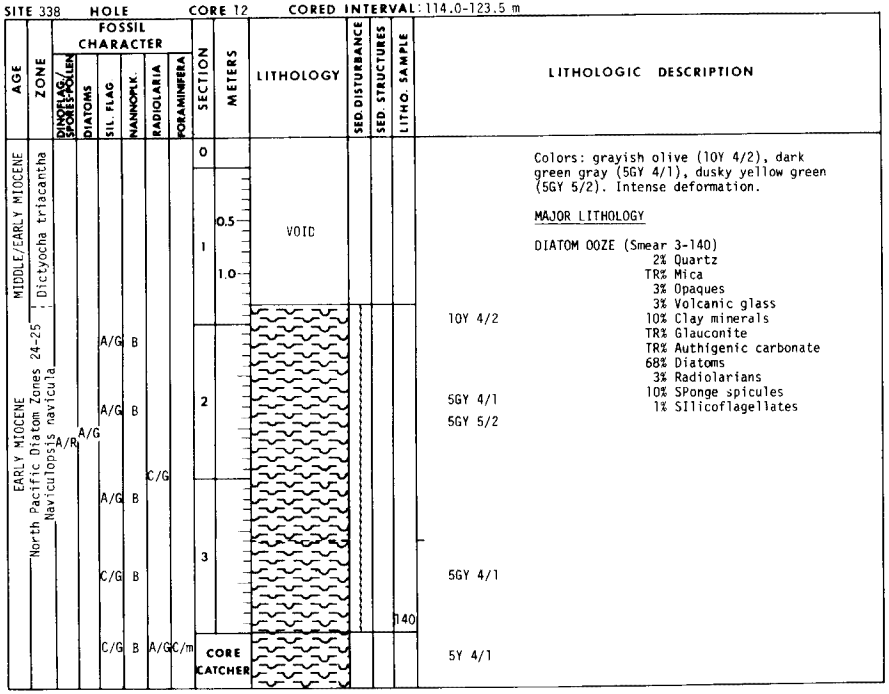
Colors: dusky yellow green (5GY 5/2), brownish gray (5YR 4/1), grayish olive (10Y 4/2), olive gray (5Y 3/2). Generally intensely deformed. Some bedding in Sec. 3.

MAJOR LITHOLOGY

MUDDY DIATOM OOZE (Smear 4-134)
- 5% Quartz
- 2% Feldspar
- TR% Mica
- 5% Opaques
- 3% Volcanic glass
- 10% Clay minerals
- 7% Glauconite
- 51% Diatoms
- 5% Radiolarians
- 10% Sponge spicules
- 2% Silicoflagellates

Carbon-Carbonate (PP)
11-2 (top) (0.90, 0.03)
11-2 (bottom) (0.80, 0.04)

SITE 338 HOLE CORE 12 CORED INTERVAL: 114.0-123.5 m

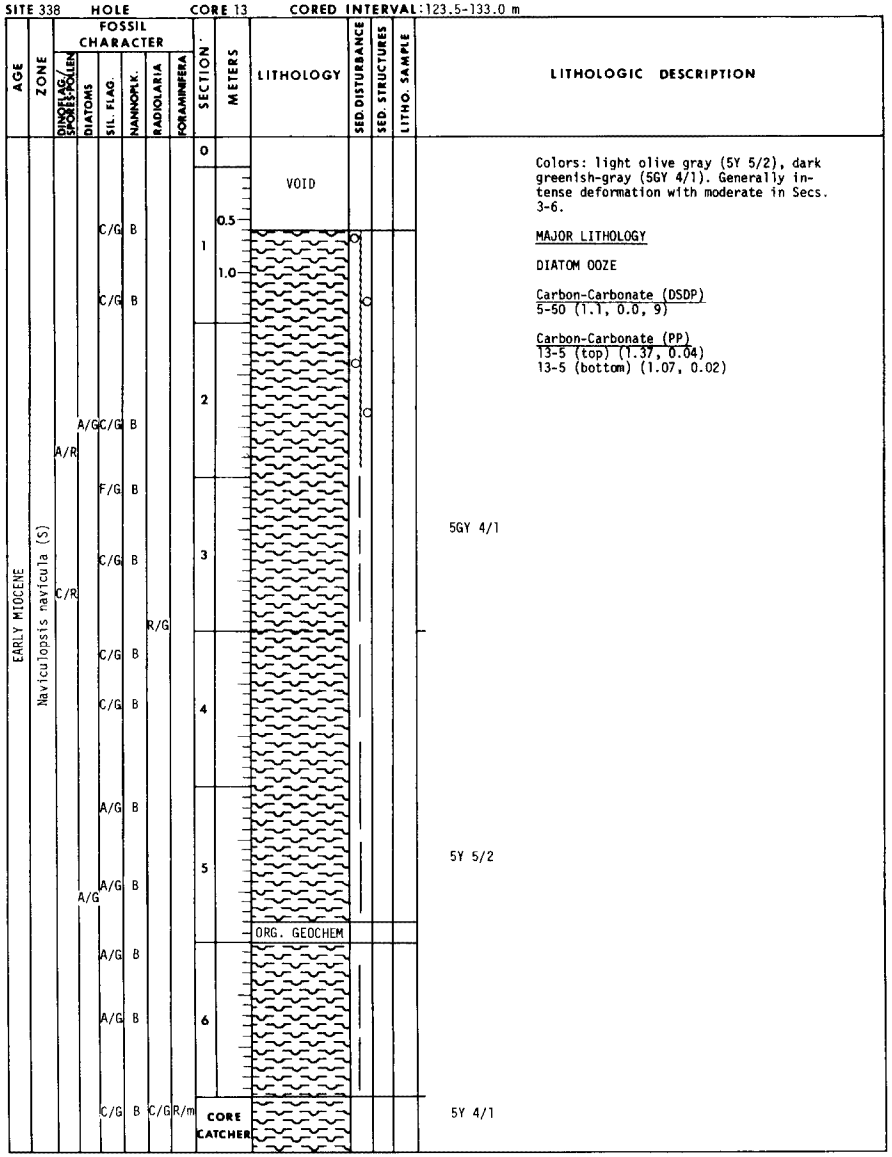


Colors: grayish olive (10Y 4/2), dark green gray (5GY 4/1), dusky yellow green (5GY 5/2). Intense deformation.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 3-140)
- 2% Quartz
- TR% Mica
- 3% Opaques
- 3% Volcanic glass
- 10% Clay minerals
- TR% Glauconite
- TR% Authigenic carbonate
- 68% Diatoms
- 3% Radiolarians
- 10% SPonge spicules
- 1% SIlicoflagellates

SITE 338 HOLE CORE 13 CORED INTERVAL: 123.5-133.0 m



Colors: light olive gray (5Y 5/2), dark greenish-gray (5GY 4/1). Generally intense deformation with moderate in Secs. 3-6.

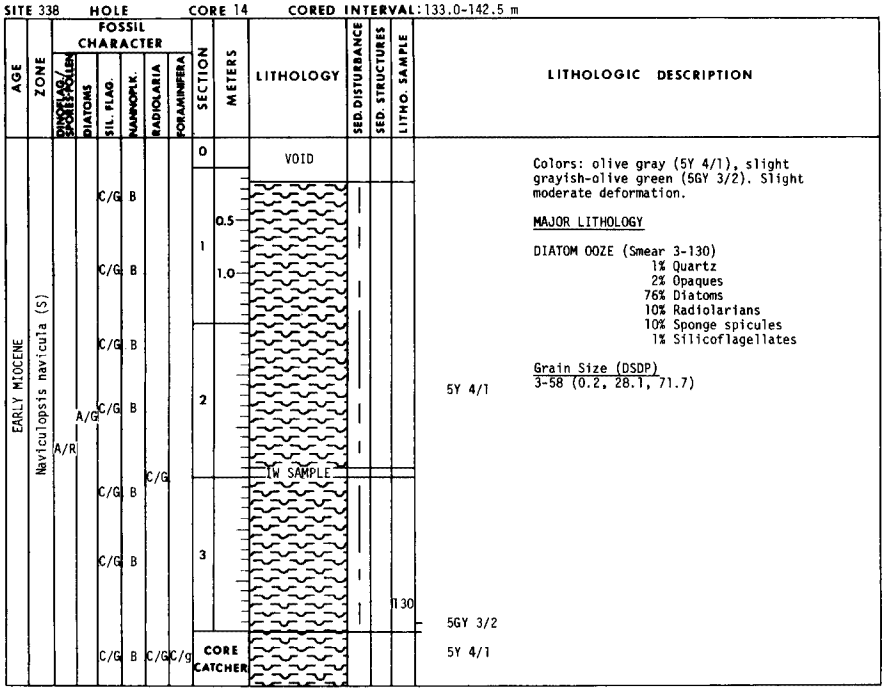
MAJOR LITHOLOGY

DIATOM OOZE

Carbon-Carbonate (DSDP)
5-50 (1.1, 0.0, 9)

Carbon-Carbonate (PP)
13-5 (top) (1.37, 0.04)
13-5 (bottom) (1.07, 0.02)

SITE 338 HOLE CORE 14 CORED INTERVAL: 133.0-142.5 m



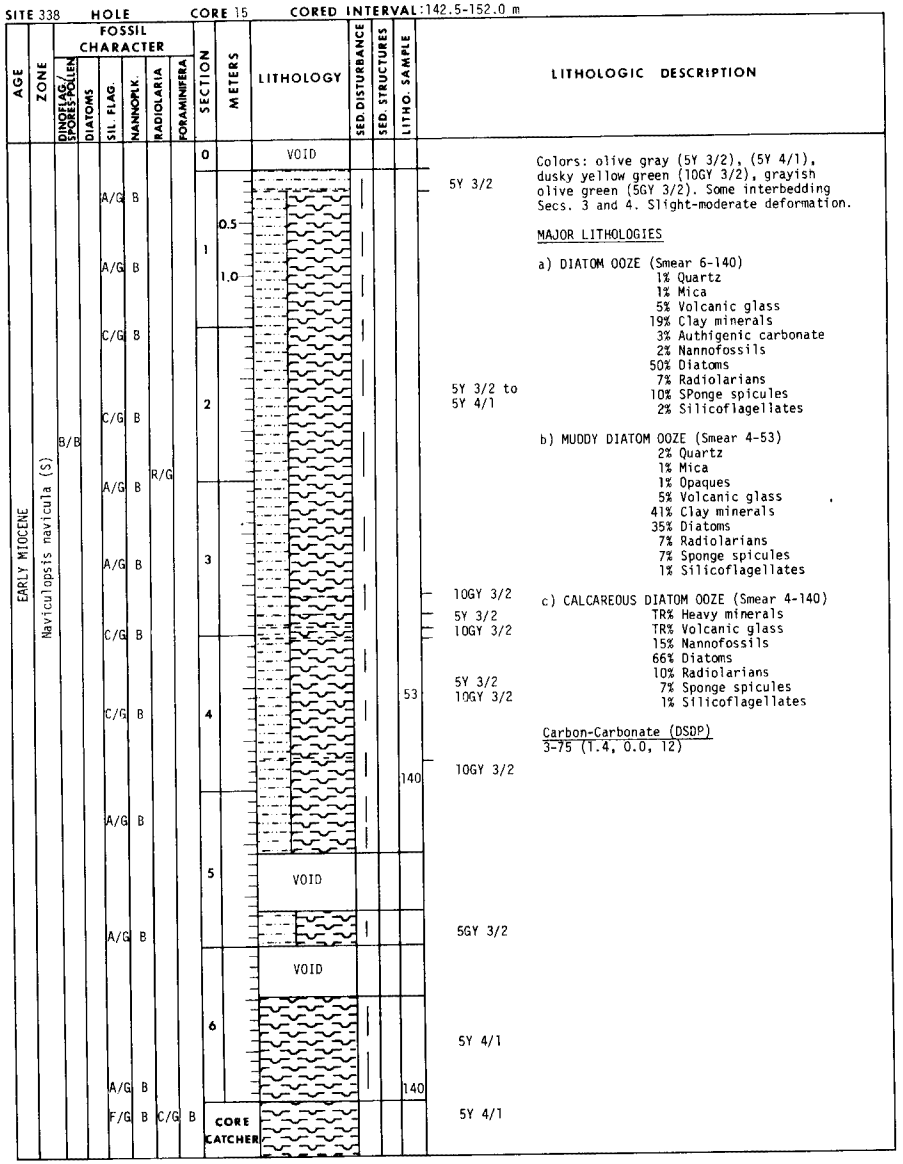
Colors: olive gray (5Y 4/1), slight grayish-olive green (5GY 3/2). Slight moderate deformation.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 3-130)
1% Quartz
2% Opaques
76% Diatoms
10% Radiolarians
10% Sponge spicules
1% Silicoflagellates

Grain Size (DSDP)
3-58 (0.2, 28.1, 71.7)

SITE 338 HOLE CORE 15 CORED INTERVAL: 142.5-152.0 m



Colors: olive gray (5Y 3/2), (5Y 4/1), dusky yellow green (10GY 3/2), grayish olive green (5GY 3/2). Some interbedding Secs. 3 and 4. Slight-moderate deformation.

MAJOR LITHOLOGIES

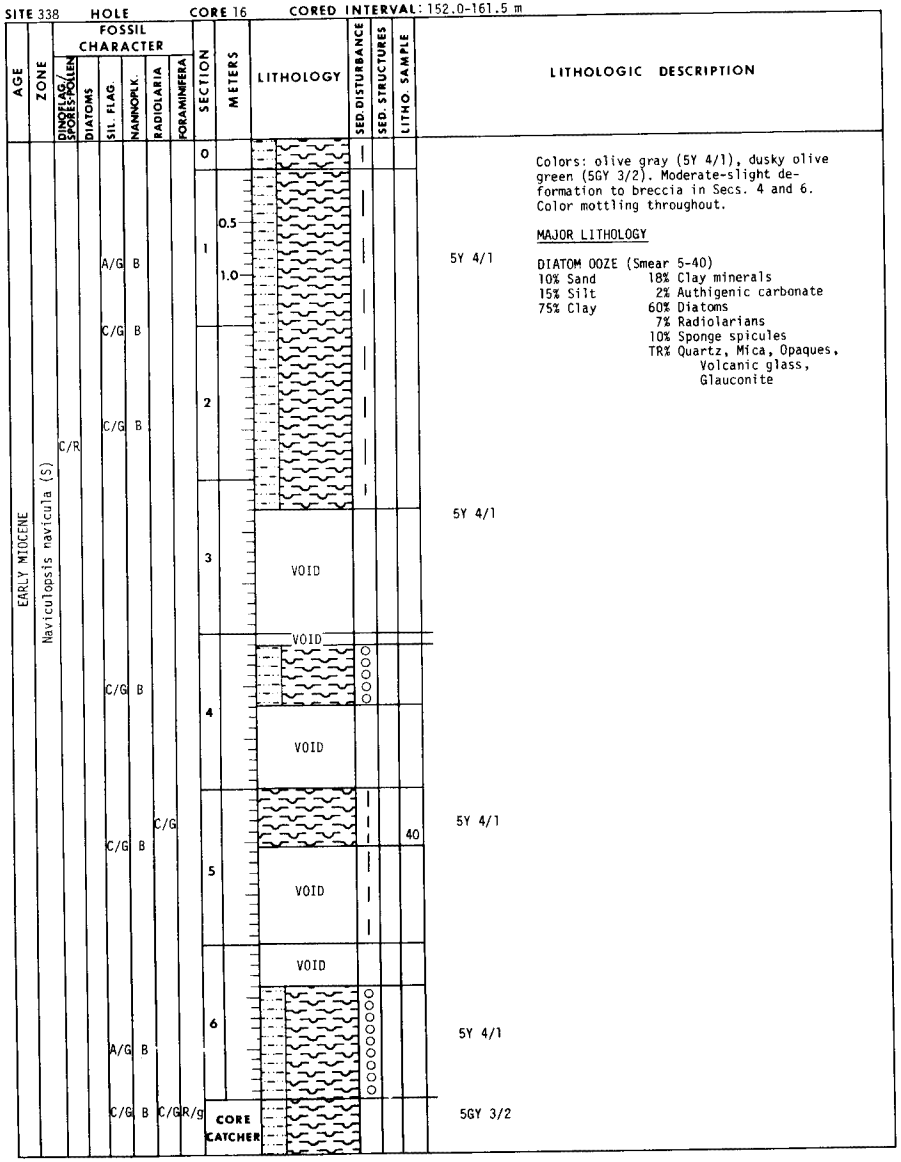
a) DIATOM OOZE (Smear 6-140)
1% Quartz
1% Mica
5% Volcanic glass
19% Clay minerals
3% Authigenic carbonate
2% Nannofossils
50% Diatoms
7% Radiolarians
10% SPonge spicules
2% Silicoflagellates

b) MUDDY DIATOM OOZE (Smear 4-53)
2% Quartz
1% Mica
1% Opaques
5% Volcanic glass
41% Clay minerals
35% Diatoms
7% Radiolarians
7% Sponge spicules
1% Silicoflagellates

c) CALCAREOUS DIATOM OOZE (Smear 4-140)
TR% Heavy minerals
TR% Volcanic glass
15% Nannofossils
66% Diatoms
10% Radiolarians
7% Sponge spicules
1% Silicoflagellates

Carbon-Carbonate (DSDP)
3-75 (1.4, 0.0, 12)

SITE 338 HOLE CORE 16 CORED INTERVAL: 152.0-161.5 m

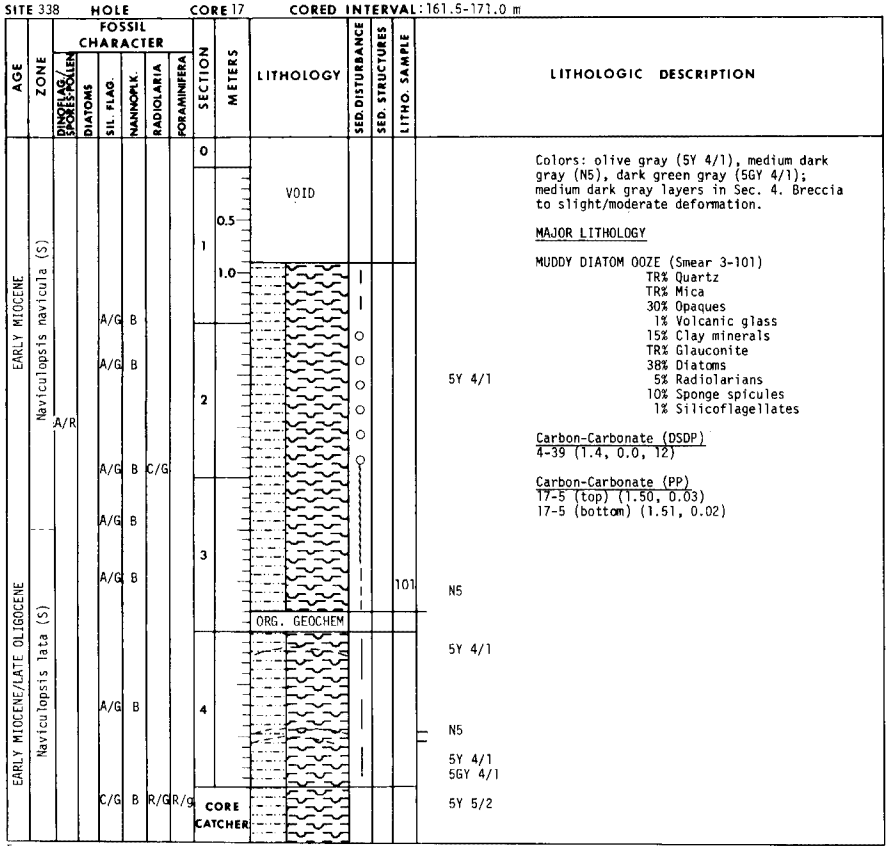


Colors: olive gray (5Y 4/1), dusky olive green (5GY 3/2). Moderate-slight deformation to breccia in Secs. 4 and 6. Color mottling throughout.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 5-40)
10% Sand
15% Silt
75% Clay
18% Clay minerals
2% Authigenic carbonate
60% Diatoms
7% Radiolarians
10% Sponge spicules
TR% Quartz, Mica, Opaques, Volcanic glass, Glauconite

SITE 338 HOLE CORE 17 CORED INTERVAL: 161.5-171.0 m



Colors: olive gray (5Y 4/1), medium dark gray (N5), dark green gray (5GY 4/1); medium dark gray layers in Sec. 4. Breccia to slight/moderate deformation.

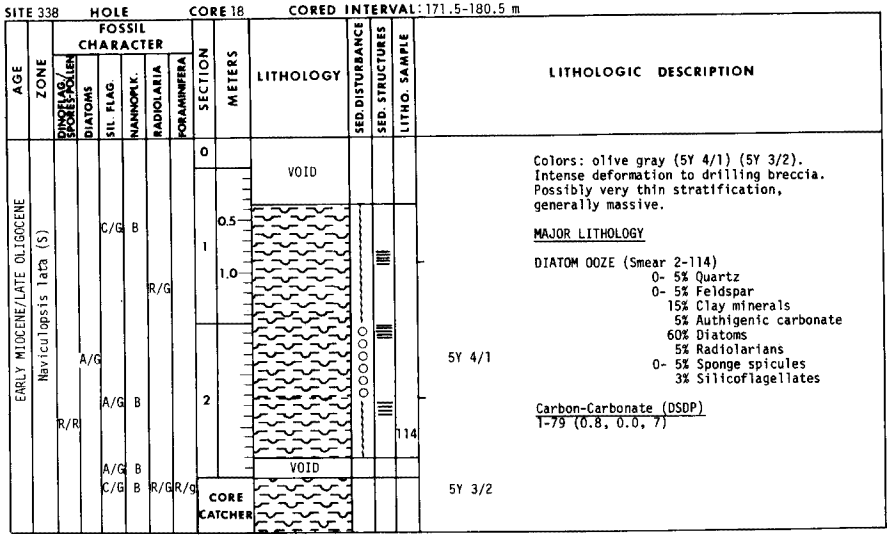
MAJOR LITHOLOGY

MUDDY DIATOM OOZE (Smear 3-101)
- TR% Quartz
- TR% Mica
- 30% Opaques
- 1% Volcanic glass
- 15% Clay minerals
- TR% Glauconite
- 38% Diatoms
- 5% Radiolarians
- 10% Sponge spicules
- 1% Silicoflagellates

Carbon-Carbonate (DSDP)
4-39 (1.4, 0.0, 12)

Carbon-Carbonate (PP)
17-5 (top) (1.50, 0.03)
17-5 (bottom) (1.51, 0.02)

SITE 338 HOLE CORE 18 CORED INTERVAL: 171.5-180.5 m



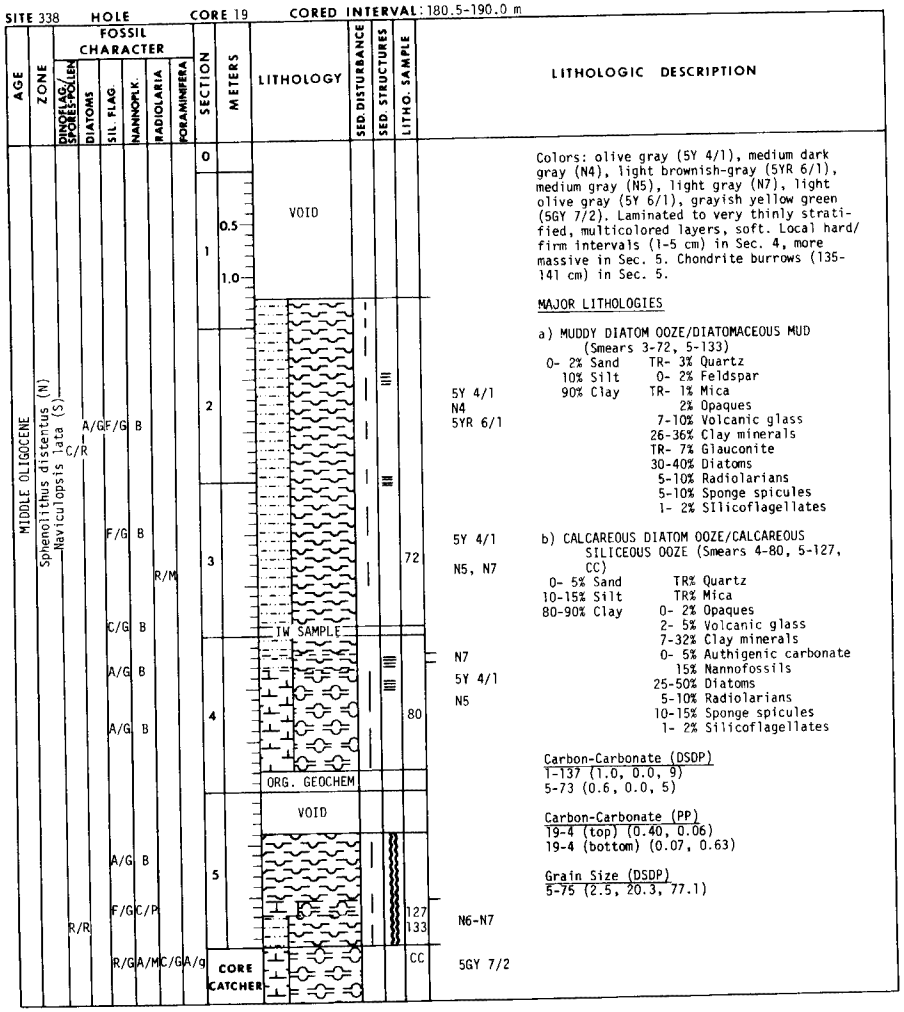
Colors: olive gray (5Y 4/1) (5Y 3/2). Intense deformation to drilling breccia. Possibly very thin stratification, generally massive.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 2-114)
- 0- 5% Quartz
- 0- 5% Feldspar
- 15% Clay minerals
- 5% Authigenic carbonate
- 60% Diatoms
- 5% Radiolarians
- 0- 5% Sponge spicules
- 3% Silicoflagellates

Carbon-Carbonate (DSDP)
1-79 (0.8, 0.0, 7)

SITE 338 HOLE CORE 19 CORED INTERVAL: 180.5-190.0 m



Colors: olive gray (5Y 4/1), medium dark gray (N4), light brownish-gray (5YR 6/1), medium gray (N5), light gray (N7), light olive gray (5Y 6/1), grayish yellow green (5GY 7/2). Laminated to very thinly stratified, multicolored layers, soft. Local hard/firm intervals (1-5 cm) in Sec. 4, more massive in Sec. 5. Chondrite burrows (135-141 cm) in Sec. 5.

MAJOR LITHOLOGIES

a) MUDDY DIATOM OOZE/DIATOMACEOUS MUD (Smears 3-72, 5-133)

0- 2% Sand	TR- 3% Quartz
10% Silt	0- 2% Feldspar
90% Clay	TR- 1% Mica
	2% Opaques
	7-10% Volcanic glass
	26-36% Clay minerals
	TR- 7% Glauconite
	30-40% Diatoms
	5-10% Radiolarians
	5-10% Sponge spicules
	1- 2% Silicoflagellates

b) CALCAREOUS DIATOM OOZE/CALCAREOUS SILICEOUS OOZE (Smears 4-80, 5-127, CC)

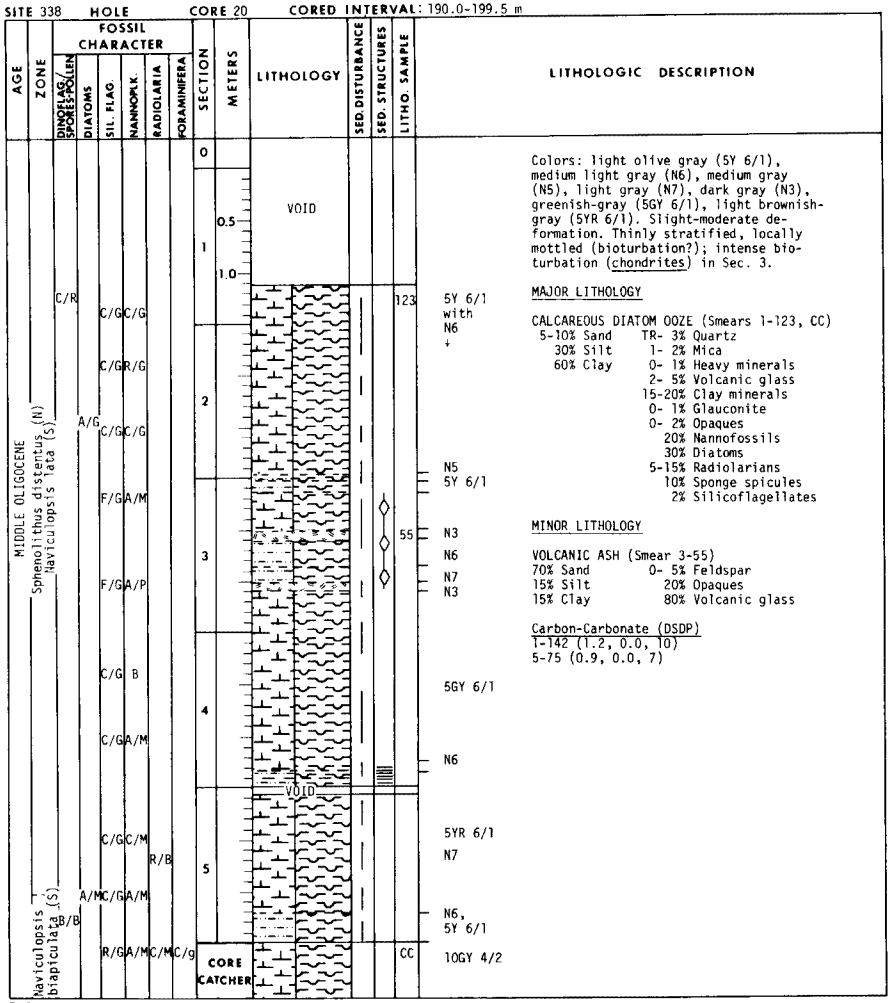
0- 5% Sand	TR% Quartz
10-15% Silt	TR% Mica
80-90% Clay	0- 2% Opaques
	2- 5% Volcanic glass
	7-32% Clay minerals
	0- 5% Authigenic carbonate
	15% Nannofossils
	25-50% Diatoms
	5-10% Radiolarians
	10-15% Sponge spicules
	1- 2% Silicoflagellates

Carbon-Carbonate (DSDP)
1-137 (1.0, 0.0, 9)
5-73 (0.6, 0.0, 5)

Carbon-Carbonate (PP)
19-4 (top) (0.40, 0.06)
19-4 (bottom) (0.07, 0.63)

Grain Size (DSDP)
5-75 (2.5, 20.3, 77.1)

SITE 338 HOLE CORE 20 CORED INTERVAL: 190.0-199.5 m



Colors: light olive gray (5Y 6/1), medium light gray (N6), medium gray (N5), light gray (N7), dark gray (N3), greenish-gray (5GY 6/1), light brownish-gray (5YR 6/1). Slight-moderate deformation. Thinly stratified, locally mottled (bioturbation?); intense bioturbation (chondrites) in Sec. 3.

MAJOR LITHOLOGY

CALCAREOUS DIATOM OOZE (Smears 1-123, CC)

5-10% Sand	TR- 3% Quartz
30% Silt	1- 2% Mica
60% Clay	0- 1% Heavy minerals
	2- 5% Volcanic glass
	15-20% Clay minerals
	0- 1% Glauconite
	0- 2% Opaques
	20% Nannofossils
	30% Diatoms
	5-15% Radiolarians
	10% Sponge spicules
	2% Silicoflagellates

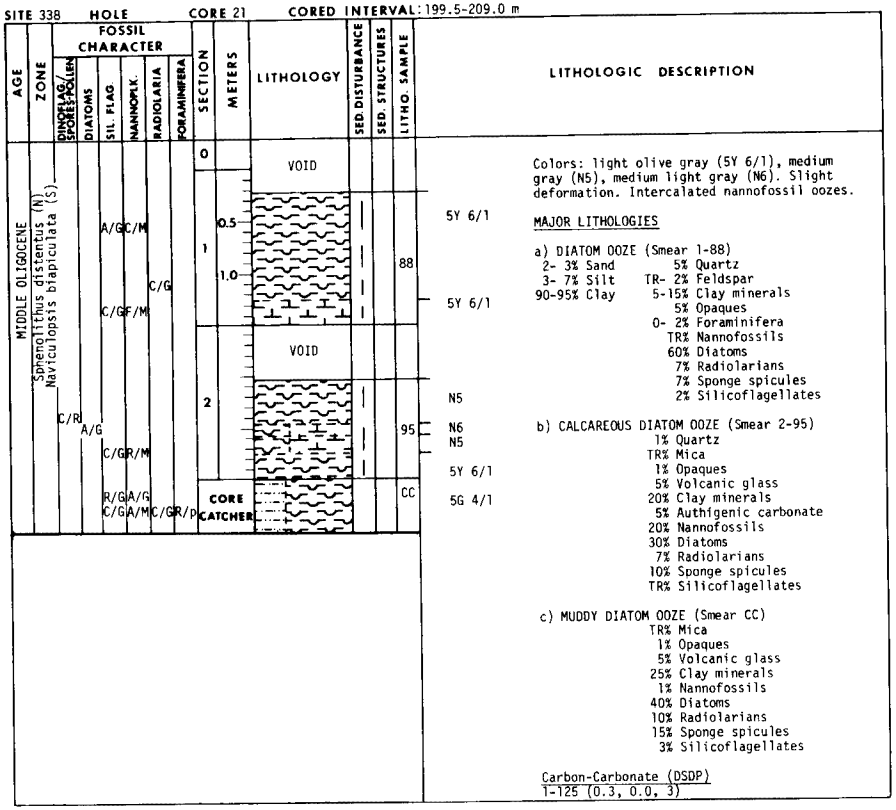
MINOR LITHOLOGY

VOLCANIC ASH (Smear 3-55)

70% Sand	0- 5% Feldspar
15% Silt	20% Opaques
15% Clay	80% Volcanic glass

Carbon-Carbonate (DSDP)
1-142 (1.2, 0.0, 10)
5-75 (0.9, 0.0, 7)

SITE 338 HOLE CORE 21 CORED INTERVAL: 199.5-209.0 m



LITHOLOGIC DESCRIPTION

Colors: light olive gray (5Y 6/1), medium gray (N5), medium light gray (N6). Slight deformation. Intercalated nannofossil oozes.

MAJOR LITHOLOGIES

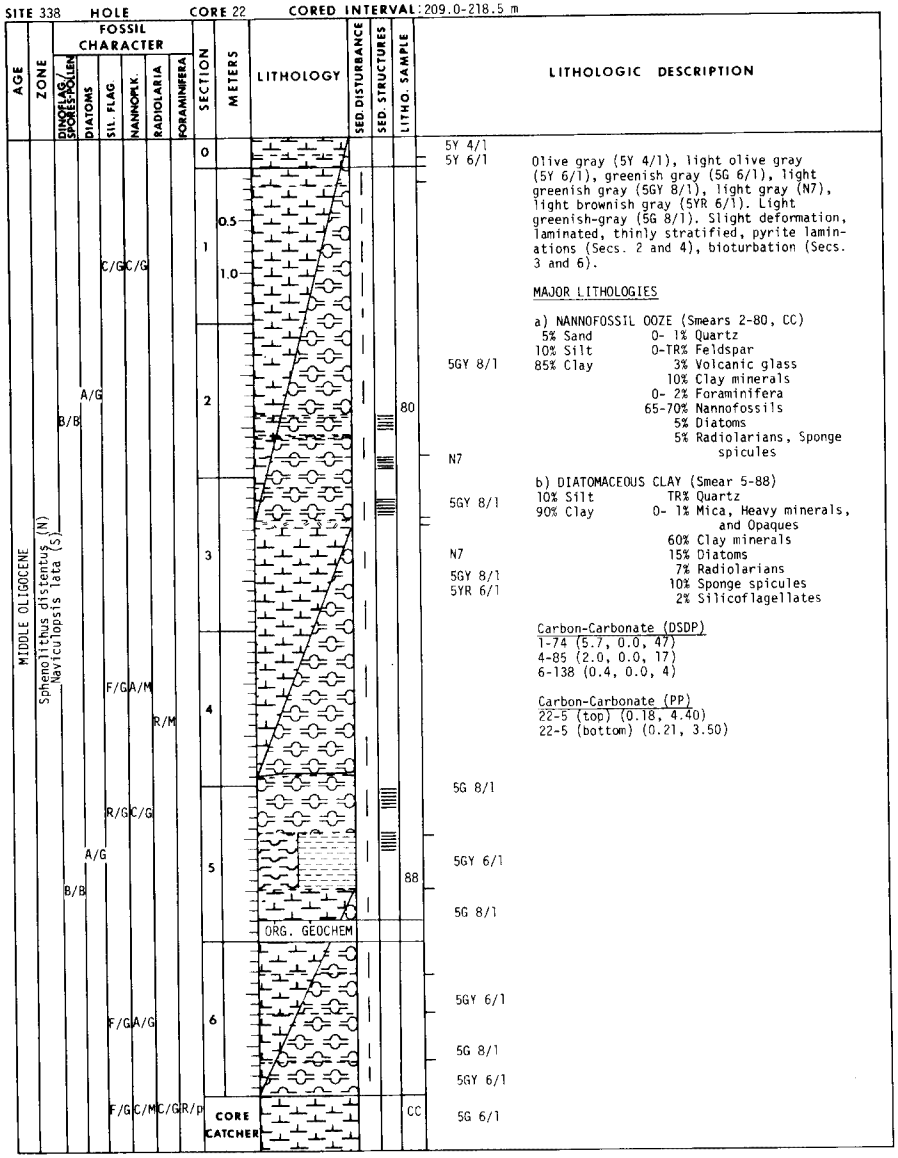
a) DIATOM OOZE (Smear 1-88)
2- 3% Sand
3- 7% Silt
90-95% Clay
5% Quartz
TR- 2% Feldspar
5-15% Clay minerals
5% Opaques
0- 2% Foraminifera
TR% Nannofossils
60% Diatoms
7% Radiolarians
7% Sponge spicules
2% Silicoflagellates

b) CALCAREOUS DIATOM OOZE (Smear 2-95)
1% Quartz
TR% Mica
1% Opaques
5% Volcanic glass
20% Clay minerals
5% Authigenic carbonate
20% Nannofossils
30% Diatoms
7% Radiolarians
10% Sponge spicules
TR% Silicoflagellates

c) MUDDY DIATOM OOZE (Smear CC)
TR% Mica
1% Opaques
5% Volcanic glass
25% Clay minerals
1% Nannofossils
40% Diatoms
10% Radiolarians
15% Sponge spicules
3% Silicoflagellates

Carbon-Carbonate (DSDP)
1-125 (0.3, 0.0, 3)

SITE 338 HOLE CORE 22 CORED INTERVAL: 209.0-218.5 m



LITHOLOGIC DESCRIPTION

Olive gray (5Y 4/1), light olive gray (5Y 6/1), greenish gray (5G 6/1), light greenish gray (5GY 8/1), light gray (N7), light brownish gray (5YR 6/1). Light greenish-gray (5G 8/1). Slight deformation, laminated, thinly stratified, pyrite laminations (Secs. 2 and 4), bioturbation (Secs. 3 and 6).

MAJOR LITHOLOGIES

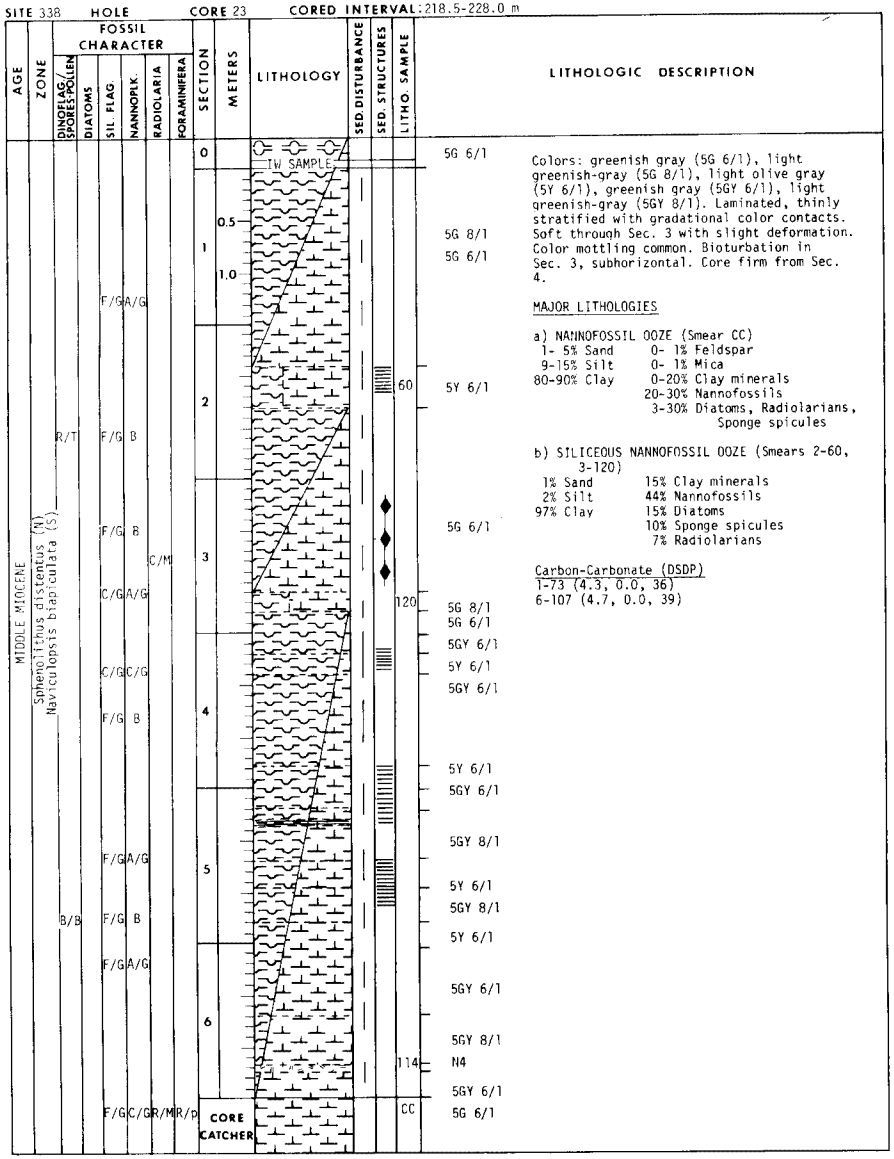
a) NANNOFOSSIL OOZE (Smears 2-80, CC)
5% Sand
10% Silt
85% Clay
0- 1% Quartz
0-TR% Feldspar
3% Volcanic glass
10% Clay minerals
0- 2% Foraminifera
65-70% Nannofossils
5% Diatoms
5% Radiolarians, Sponge spicules

b) DIATOMACEOUS CLAY (Smear 5-88)
10% Silt
90% Clay
TR% Quartz
0- 1% Mica, Heavy minerals, and Opaques
60% Clay minerals
15% Diatoms
7% Radiolarians
10% Sponge spicules
2% Silicoflagellates

Carbon-Carbonate (DSDP)
1-74 (5.7, 0.0, 47)
4-85 (2.0, 0.0, 17)
6-138 (0.4, 0.0, 4)

Carbon-Carbonate (PP)
22-5 (top) (0.18, 4.40)
22-5 (bottom) (0.21, 3.50)

SITE 338 HOLE CORE 23 CORED INTERVAL: 218.5-228.0 m



Colors: greenish gray (5G 6/1), light greenish-gray (5G 8/1), light olive gray (5Y 6/1), greenish gray (5GY 6/1), light greenish-gray (5GY 8/1). Laminated, thinly stratified with gradational color contacts. Soft through Sec. 3 with slight deformation. Color mottling common. Bioturbation in Sec. 3, subhorizontal. Core firm from Sec. 4.

MAJOR LITHOLOGIES

a) NANNOFOSSIL OOZE (Smear CC)

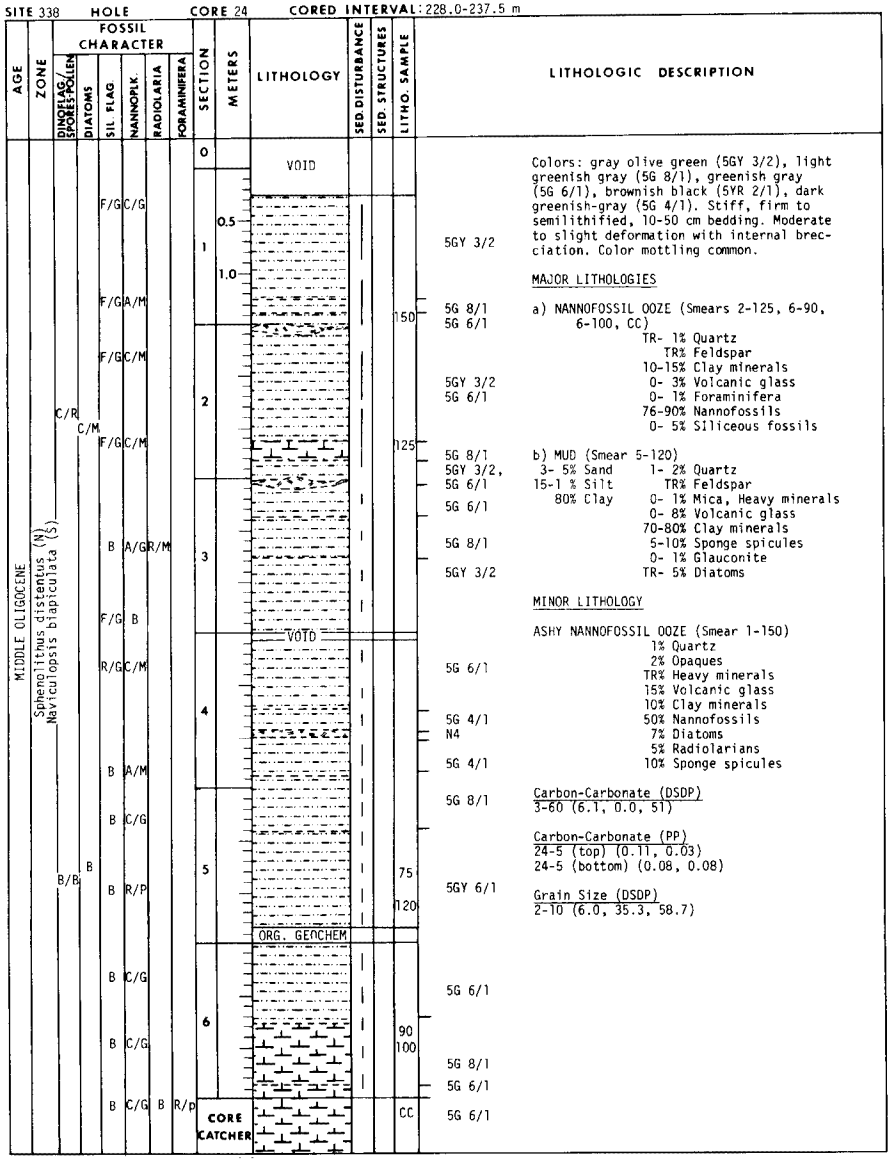
1- 5% Sand	0- 1% Feldspar
9-15% Silt	0- 1% Mica
80-90% Clay	0-20% Clay minerals
	20-30% Nannofossils
	3-30% Diatoms, Radiolarians, Sponge spicules

b) SILICEOUS NANNOFOSSIL OOZE (Smears 2-60, 3-120)

1% Sand	15% Clay minerals
2% Silt	44% Nannofossils
97% Clay	15% Diatoms
	10% Sponge spicules
	7% Radiolarians

Carbon-Carbonate (DSDP)
1-73 (4.3, 0.0, 36)
6-107 (4.7, 0.0, 39)

SITE 338 HOLE CORE 24 CORED INTERVAL: 228.0-237.5 m



Colors: gray olive green (5GY 3/2), light greenish gray (5G 8/1), greenish gray (5G 6/1), brownish black (5YR 2/1), dark greenish-gray (5G 4/1). Stiff, firm to semilithified, 10-50 cm bedding. Moderate to slight deformation with internal brecciation. Color mottling common.

MAJOR LITHOLOGIES

a) NANNOFOSSIL OOZE (Smears 2-125, 6-90, 6-100, CC)

	TR- 1% Quartz
	TR% Feldspar
	10-15% Clay minerals
	0- 3% Volcanic glass
	0- 1% Foraminifera
	76-90% Nannofossils
	0- 5% Siliceous fossils

b) MUD (Smear 5-120)

3- 5% Sand	1- 2% Quartz
15-1 % Silt	TR% Feldspar
80% Clay	0- 1% Mica, Heavy minerals
	0- 8% Volcanic glass
	70-80% Clay minerals
	5-10% Sponge spicules
	0- 1% Glauconite
	TR- 5% Diatoms

MINOR LITHOLOGY

ASHY NANNOFOSSIL OOZE (Smear 1-150)

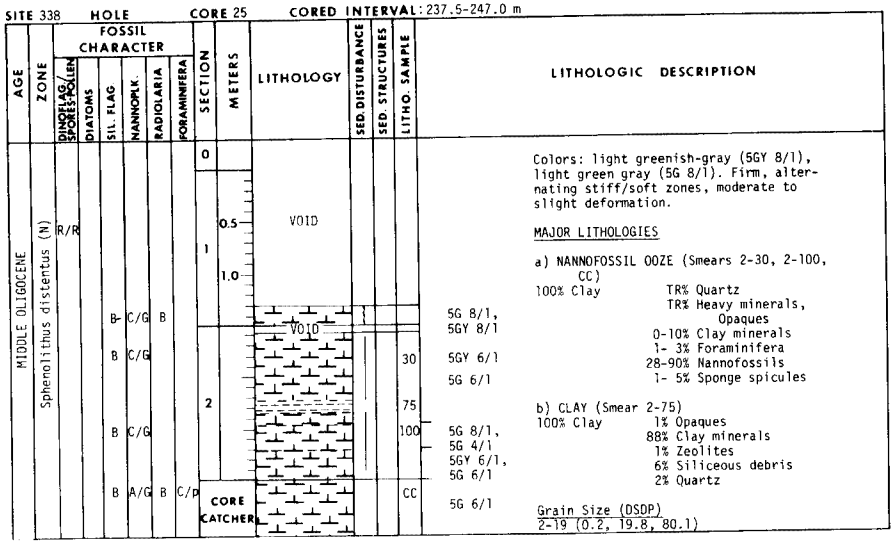
	1% Quartz
	2% Opaques
	TR% Heavy minerals
	15% Volcanic glass
	10% Clay minerals
	50% Nannofossils
	7% Diatoms
	5% Radiolarians
	10% Sponge spicules

Carbon-Carbonate (DSDP)
3-60 (6.1, 0.0, 51)

Carbon-Carbonate (PP)
24-5 (top) (0.11, 0.03)
24-5 (bottom) (0.08, 0.08)

Grain Size (DSDP)
2-10 (6.0, 35.3, 58.7)

SITE 338 HOLE CORE 25 CORED INTERVAL: 237.5-247.0 m



LITHOLOGIC DESCRIPTION

Colors: light greenish-gray (5GY 8/1), light green gray (5G 8/1). Firm, alternating stiff/soft zones, moderate to slight deformation.

MAJOR LITHOLOGIES

a) NANNOFOSSIL OOZE (Smears 2-30, 2-100, CC)

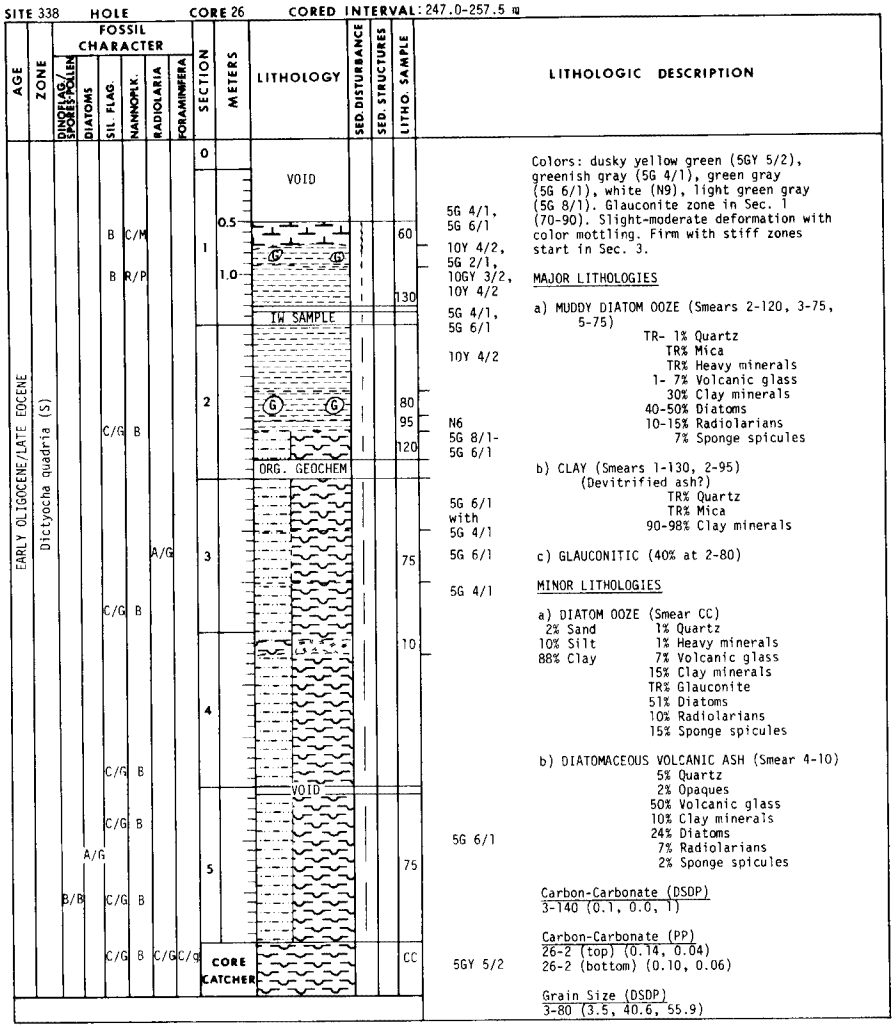
100% Clay	TR% Quartz
	TR% Heavy minerals, Opaques
	0-10% Clay minerals
	1- 3% Foraminifera
	28-90% Nannofossils
	1- 5% Sponge spicules

b) CLAY (Smear 2-75)

100% Clay	1% Opaques
	88% Clay minerals
	1% Zeolites
	6% Siliceous debris
	2% Quartz

Grain Size (DSDP)
2-19 (0.2, 19.8, 80.1)

SITE 338 HOLE CORE 26 CORED INTERVAL: 247.0-257.5 m



LITHOLOGIC DESCRIPTION

Colors: dusky yellow green (5GY 5/2), greenish gray (5G 4/1), green gray (5G 6/1), white (N9), light green gray (5G 8/1). Glauconite zone in Sec. 1 (70-90). Slight-moderate deformation with color mottling. Firm with stiff zones start in Sec. 3.

MAJOR LITHOLOGIES

a) MUDDY DIATOM OOZE (Smears 2-120, 3-75, 5-75)

TR- 1% Quartz
TR% Mica
TR% Heavy minerals
1- 7% Volcanic glass
30% Clay minerals
40-50% Diatoms
10-15% Radiolarians
7% Sponge spicules

b) CLAY (Smears 1-130, 2-95)
(Devitrified ash?)

TR% Quartz
TR% Mica
90-98% Clay minerals

c) GLAUCONITIC (40% at 2-80)

MINOR LITHOLOGIES

a) DIATOM OOZE (Smear CC)

2% Sand	1% Quartz
10% Silt	1% Heavy minerals
88% Clay	7% Volcanic glass
	15% Clay minerals
	TR% Glauconite
	51% Diatoms
	10% Radiolarians
	15% Sponge spicules

b) DIATOMACEOUS VOLCANIC ASH (Smear 4-10)

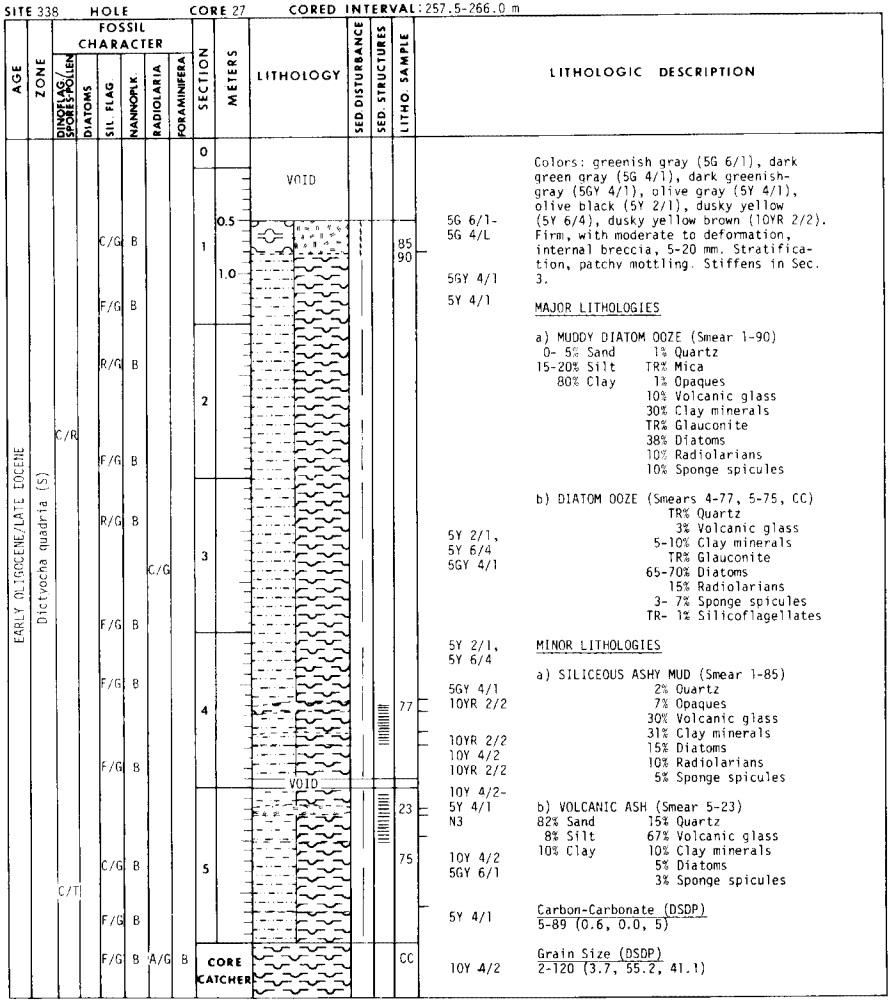
5% Quartz
2% Opaques
50% Volcanic glass
10% Clay minerals
24% Diatoms
7% Radiolarians
2% Sponge spicules

Carbon-Carbonate (DSDP)
3-140 (0.1, 0.0, 1)

Carbon-Carbonate (PP)
26-2 (top) (0.14, 0.04)
26-2 (bottom) (0.10, 0.06)

Grain Size (DSDP)
3-80 (3.5, 40.6, 55.9)

SITE 338 HOLE CORE 27 CORED INTERVAL: 257.5-266.0 m



LITHOLOGIC DESCRIPTION

Colors: greenish gray (5G 6/1), dark green gray (5G 4/1), dark greenish-gray (5GY 4/1), olive gray (5Y 4/1), olive black (5Y 2/1), dusky yellow (5Y 6/4), dusky yellow brown (10YR 2/2). Firm, with moderate to deformation, internal breccia, 5-20 mm. Stratification, patchy mottling. Stiffens in Sec. 3.

MAJOR LITHOLOGIES

a) MUDDY DIATOM OOZE (Smear 1-90)

0- 5% Sand	1% Quartz
15-20% Silt	TR% Mica
80% Clay	1% Opaques
	10% Volcanic glass
	30% Clay minerals
	TR% Glauconite
	38% Diatoms
	10% Radiolarians
	10% Sponge spicules

b) DIATOM OOZE (Smears 4-77, 5-75, CC)

TR% Quartz
3% Volcanic glass
5-10% Clay minerals
TR% Glauconite
65-70% Diatoms
15% Radiolarians
3- 7% Sponge spicules
TR- 1% Silicoflagellates

MINOR LITHOLOGIES

a) SILICEOUS ASHY MUD (Smear 1-85)

2% Quartz
7% Opaques
30% Volcanic glass
31% Clay minerals
15% Diatoms
10% Radiolarians
5% Sponge spicules

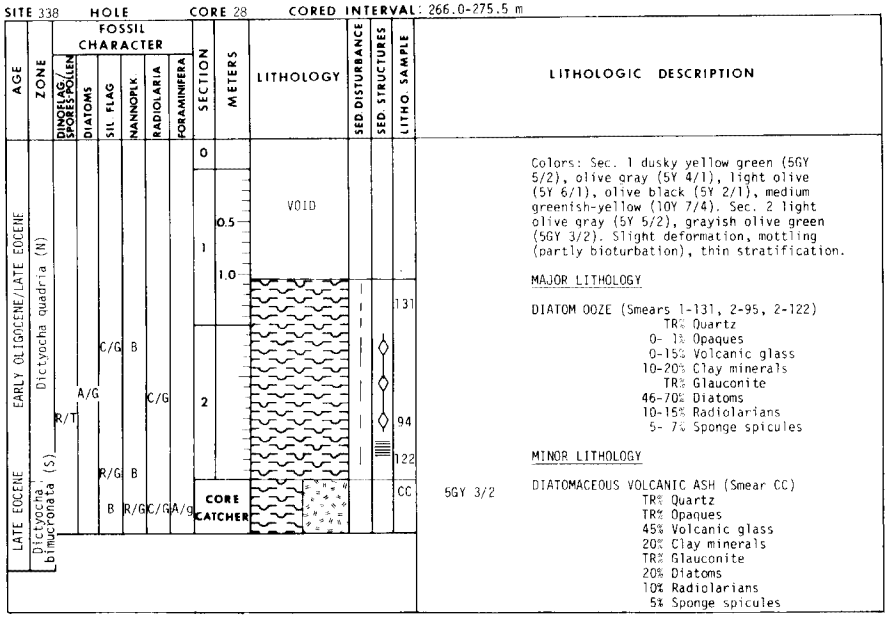
b) VOLCANIC ASH (Smear 5-23)

82% Sand	15% Quartz
8% Silt	67% Volcanic glass
10% Clay	10% Clay minerals
	5% Diatoms
	3% Sponge spicules

Carbon-Carbonate (DSDP)
5-89 (0.6, 0.0, 5)

Grain Size (DSDP)
2-120 (3.7, 55.2, 41.1)

SITE 338 HOLE CORE 28 CORED INTERVAL: 266.0-275.5 m



LITHOLOGIC DESCRIPTION

Colors: Sec. 1 dusky yellow green (5GY 5/2), olive gray (5Y 4/1), light olive (5Y 6/1), olive black (5Y 2/1), medium greenish-yellow (10Y 7/4). Sec. 2 light olive gray (5Y 5/2), grayish olive green (5GY 3/2). Slight deformation, mottling (partly bioturbation), thin stratification.

MAJOR LITHOLOGY

DIATOM OOZE (Smears 1-131, 2-95, 2-122)

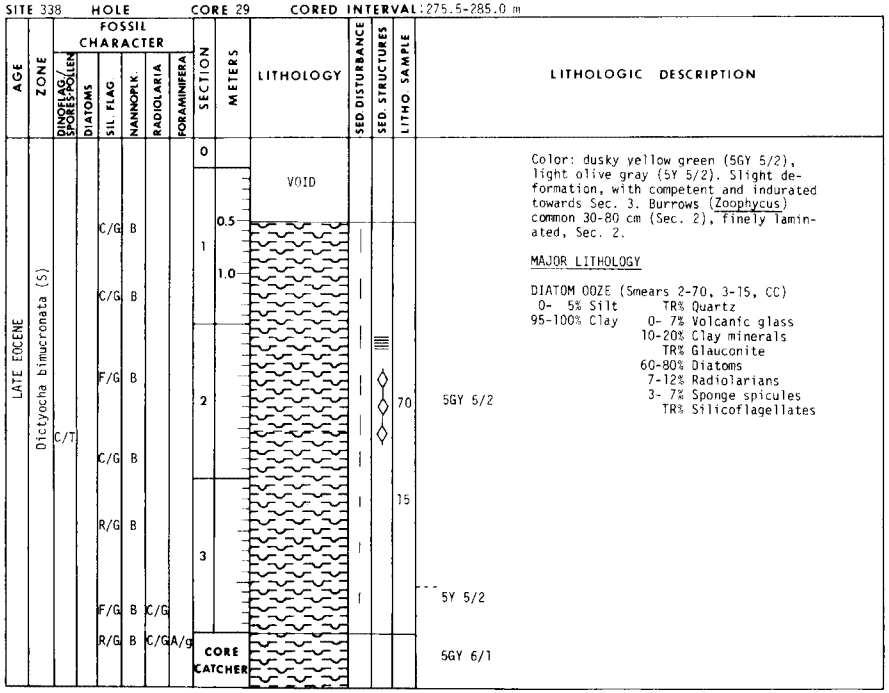
TR% Quartz
0- 1% Opaques
0-15% Volcanic glass
10-20% Clay minerals
TR% Glauconite
46-70% Diatoms
10-15% Radiolarians
5- 7% Sponge spicules

MINOR LITHOLOGY

DIATOMACEOUS VOLCANIC ASH (Smear CC)

TR% Quartz
TR% Opaques
45% Volcanic glass
20% Clay minerals
TR% Glauconite
20% Diatoms
10% Radiolarians
5% Sponge spicules

SITE 338 HOLE CORE 29 CORED INTERVAL: 275.5-285.0 m



LITHOLOGIC DESCRIPTION

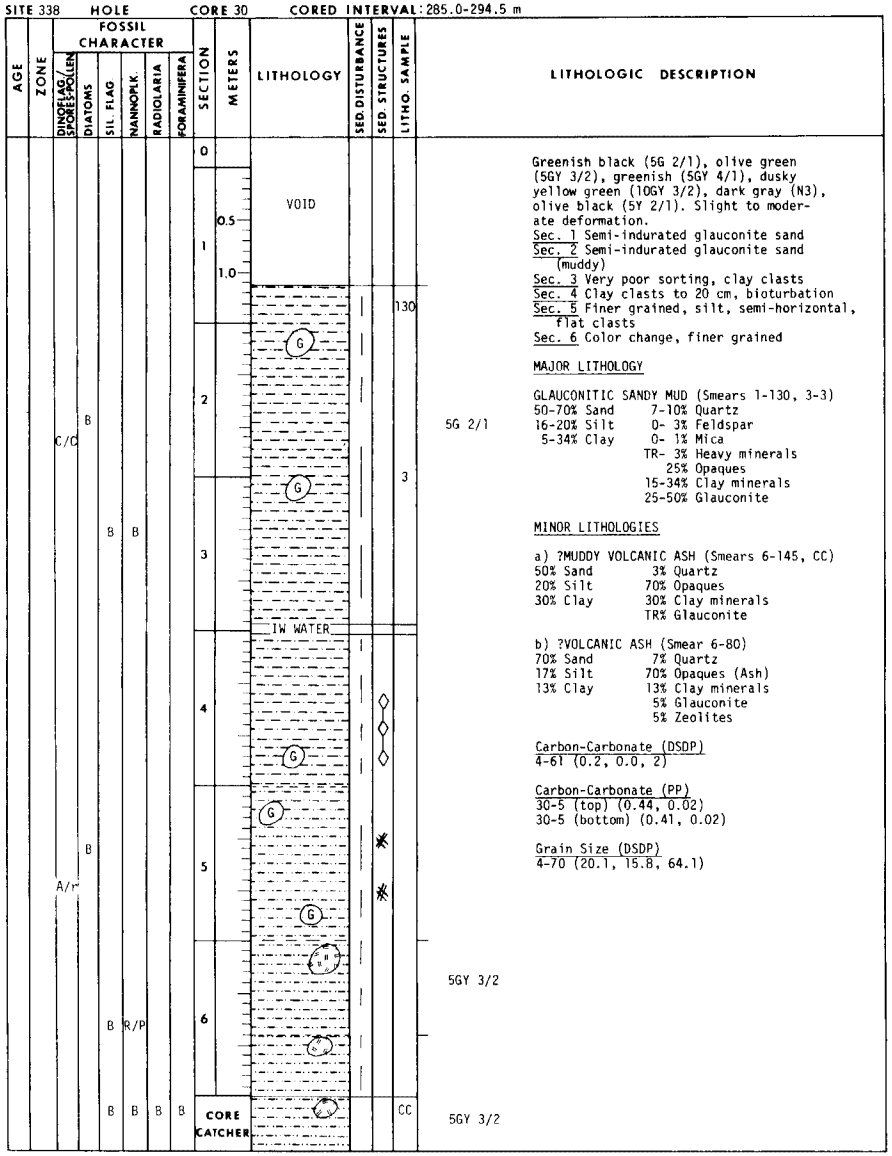
Color: dusky yellow green (5GY 5/2), light olive gray (5Y 5/2). Slight deformation, with competent and indurated towards Sec. 3. Burrows (Zoophycus) common 30-80 cm (Sec. 2), finely laminated, Sec. 2.

MAJOR LITHOLOGY

DIATOM OOZE (Smears 2-70, 3-15, CC)

0- 5% Silt	TR% Quartz
95-100% Clay	0- 7% Volcanic glass
	10-20% Clay minerals
	TR% Glauconite
	60-80% Diatoms
	7-12% Radiolarians
	3- 7% Sponge spicules
	TR% Silicoflagellates

SITE 338 HOLE CORE 30 CORED INTERVAL: 285.0-294.5 m



LITHOLOGIC DESCRIPTION

Greenish black (5G 2/1), olive green (5GY 3/2), greenish (5GY 4/1), dusky yellow green (10GY 3/2), dark gray (N3), olive black (5Y 2/1). Slight to moderate deformation.
Sec. 1 Semi-indurated glauconite sand
Sec. 2 Semi-indurated glauconite sand (muddy)
Sec. 3 Very poor sorting, clay clasts
Sec. 4 Clay clasts to 20 cm, bioturbation
Sec. 5 Finer grained, silt, semi-horizontal, flat clasts
Sec. 6 Color change, finer grained

MAJOR LITHOLOGY

GLAUCONITIC SANDY MUD (Smears 1-130, 3-3)

50-70% Sand	7-10% Quartz
16-20% Silt	0- 3% Feldspar
5-34% Clay	0- 1% Mica
	TR- 3% Heavy minerals
	25% Opaques
	15-34% Clay minerals
	25-50% Glauconite

MINOR LITHOLOGIES

a) ?MUDDY VOLCANIC ASH (Smears 6-145, CC)

50% Sand	3% Quartz
20% Silt	70% Opaques
30% Clay	30% Clay minerals
	TR% Glauconite

b) ?VOLCANIC ASH (Smear 6-80)

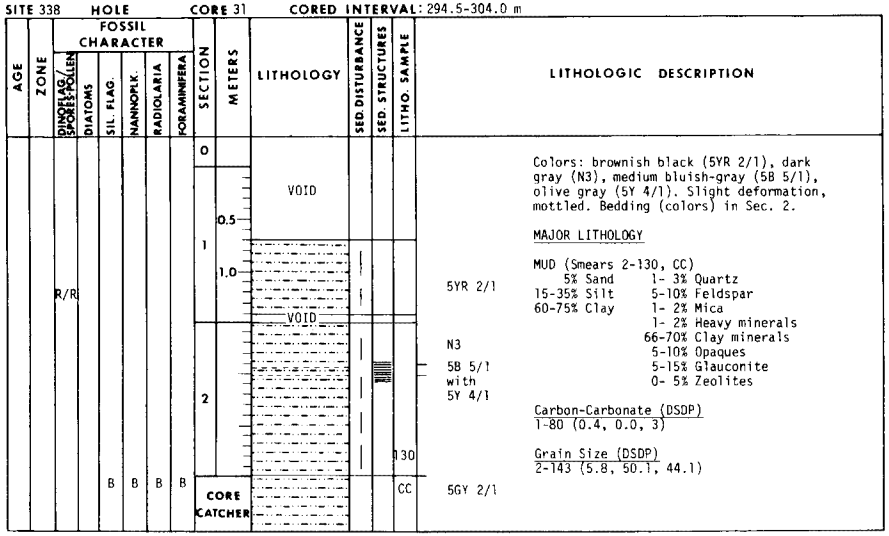
70% Sand	7% Quartz
17% Silt	70% Opaques (Ash)
13% Clay	13% Clay minerals
	5% Glauconite
	5% Zeolites

Carbon-Carbonate (DSDP)
4-61 (0.2, 0.0, 2)

Carbon-Carbonate (PP)
30-5 (top) (0.44, 0.02)
30-5 (bottom) (0.41, 0.02)

Grain Size (DSDP)
4-70 (20.1, 15.8, 64.1)

SITE 338 HOLE CORE 31 CORED INTERVAL: 294.5-304.0 m



LITHOLOGIC DESCRIPTION

Colors: brownish black (5YR 2/1), dark gray (N3), medium bluish-gray (5B 5/1), olive gray (5Y 4/1). Slight deformation, mottled. Bedding (colors) in Sec. 2.

MAJOR LITHOLOGY

MUD (Smears 2-130, CC)

5% Sand	1- 3% Quartz
15-35% Silt	5-10% Feldspar
60-75% Clay	1- 2% Mica
	1- 2% Heavy minerals
	66-70% Clay minerals
	5-10% Opaques
	5-15% Glauconite
	0- 5% Zeolites

Carbon-Carbonate (DSDP)
1-80 (0.4, 0.0, 3)

Grain Size (DSDP)
2-143 (5.8, 50.1, 44.1)

SITE 338 HOLE CORE 32 CORED INTERVAL: 304.0-313.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	
EARLY EOCENE	Marthestenisis tribrachiatus (N)			B	F/M			0			1			
								1	0.5					
									1.0					
			B					2					50	5Y 4/1
				B	R/P									
								3						
										ORG. GEOCHEM				
				B	R/G			4						5G 4/1 with 5Y 4/1
				B	F/G									
			B					5					110	5Y 4/1
		C/R C?												5Y 4/1 with N3
								6						5G 4/1
				B	B	B	A/g	CORE CATCHER					CC	5Y 3/2

Colors: olive gray (5Y 4/1), dark green gray (5G 4/1), dark gray (N3). Slight deformation. Burrows in Sec. 3. Chondrites in Sec. 4 - 3-8 mm; x-section, faint color difference; also thin stratification (8-10 mm); Sec. 5. Thin stratification (8-22 mm), prominent burrows (1 cm rind burrows), parallel bedding; Sec. 6 as above.

MAJOR LITHOLOGIES

a) SANDY MUD (Smears 2-50, CC)

10-20% Sand
20-40% Silt
30-60% Clay

20-25% Quartz
3- 5% Feldspar
TR- 5% Mica
1- 2% Heavy minerals
5-15% Opaques
30-60% Clay minerals
0-1% Glauconite
1- 2% Sponge spicules
3-15% Authigenic carbonate

b) MUD (Smear 5-110)

5% Sand
40% Silt
45% Clay

7% Quartz
1% Feldspar
1% Mica
60% Clay minerals
1% Volcanic glass
TR% Glauconite, Zeolites
30% Authigenic carbonate

Carbon-Carbonate (DSDP)
4-27 (0.7, 0.0, 6)

Carbon-Carbonate (PP)
32-3 (top) (0.43, 0.13)
32-3 (bottom) (0.59, 0.17)

Grain Size (DSDP)
5-134 (4.5, 48.4, 47.2)

SITE 338 HOLE CORE 33 CORED INTERVAL: 313.5-323.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	
EARLY EOCENE	Marthestenites tribrachiatus (N)							0		VOID				
								1	0.5					
									1.0					
				B	R/G			2						5Y 4/1 with N3
		R/R	B											
				B	R/G									5Y 4/1
				B	R/G			3						
				B	R/G									5Y 4/1 N6 5Y 4/1
								4						
			B					5						
				B	R/G									N3 with 5Y 4/1 5Y 4/1
				B	R/G									
		R/C		B	R/G									
								6						
				B	R/G									
				B	F/G	B	A/g	CORE CATCHER						5Y 2/1

Colors: olive gray (5Y 4/1), olive black (5Y 2/1), dark gray (N3), medium light gray (N6). Slight deformation. Sec. 1 - faint layering, 3 x 6 mm burrows; Sec. 2 - thinly stratified, faint mottling; Sec. 3- 3-15 mm laminae, mottling, chondrite burrows in 1.5 to 2 cm dark clays; Sec. 4 - mottling prominent at 29, 40-44, 50-53, 66-68 and 79-83 cm, chondrite burrows; Sec. 5 - thin stratified, Helminthoidea at 48-52 cm; Sec. 6 - thin stratification, burrows.

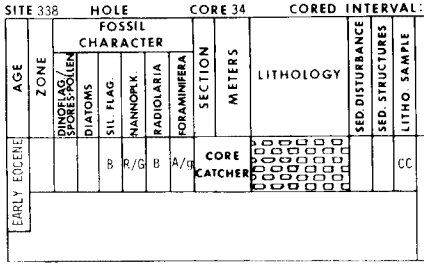
MAJOR LITHOLOGY

MUD

Carbon-Carbonate (DSDP)
4-50 (0.5, 0.0, 4)

Grain Size (DSDP)
4-127 (14.0, 49.3, 36.7)

SITE 338 HOLE CORE 34 CORED INTERVAL: 323.0-332.5 m



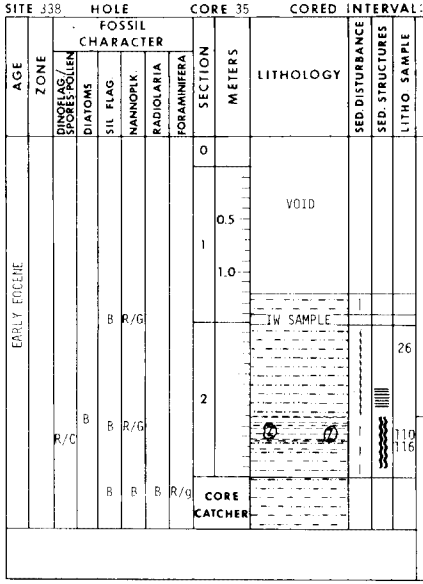
5Y 2/1

LITHOLOGIC DESCRIPTION

Core catcher only: olive black (5Y 2/1).

CALCAREOUS OOZE (SANDY) (Smear CC)
14% Clay minerals
3% Quartz, Feldspar
3% Opaques
80% Authigenic carbonate

SITE 338 HOLE CORE 35 CORED INTERVAL: 332.5-342.0 m



5Y 4/1

5Y 2/1

LITHOLOGIC DESCRIPTION

Olive black (5Y 2/1), intense deformation to 90 cm in Sec. 2, slight to 150 cm. 0-90 cm, Sec. 2 - massive, with drilling breccia, with fragments of lithified mud; 90-150 cm, laminated to thinly stratified, burrowing (chondrite).

MAJOR LITHOLOGY

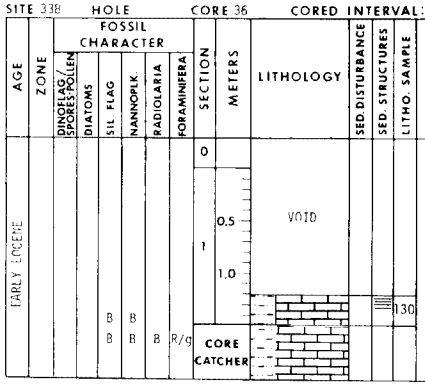
MUD (Smears 2-26, 2-116)
7% Sand 30% Quartz
10-40% Silt 71% Feldspar
50-80% Clay 3% Heavy minerals
2% Opaques
1% Volcanic glass
50-80% Clay minerals
1% Zeolites
3% Mica

MINOR LITHOLOGY

ZEOLITIC CLAY (Smear 2-110)
10% Silt 1% Opaques
90% Clay 20% Clay minerals
(Devitrified ash)
79% Zeolites

Carbon-Carbonate (DSDP)
2-45 (0.6, 0.0, 5)

SITE 338 HOLE CORE 36 CORED INTERVAL: 342.0-351.5 m



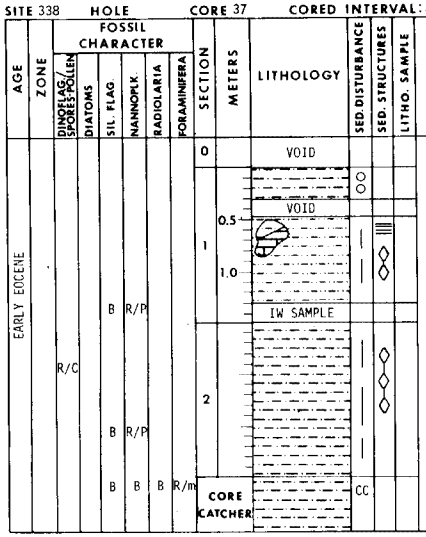
5YR 4/1

LITHOLOGIC DESCRIPTION

Colors: brownish black (5YR 4/1) and brownish gray (5YR 2/1) laminated, thinly stratified. Calcareous mudstone, locally burrowed (Helminthoida), calcite veins.

LIMESTONE (Smear 1-130)
2% Sand 1% Quartz
88% Silt 2% Opaques
10% Clay 20% Clay minerals
77% Carbonate

SITE 338 HOLE CORE 37 CORED INTERVAL: 351.5-361.0 m



5YR 4/1

5Y 2/1

LITHOLOGIC DESCRIPTION

Colors: olive black (5Y 2/1), brownish gray (5YR 4/1). Slight deformation, soft, slightly deformed, micaceous, very thinly stratified, laminated. Partly burrowed (chondrites). Local pyrite nodules up to 1.5 cm locally.

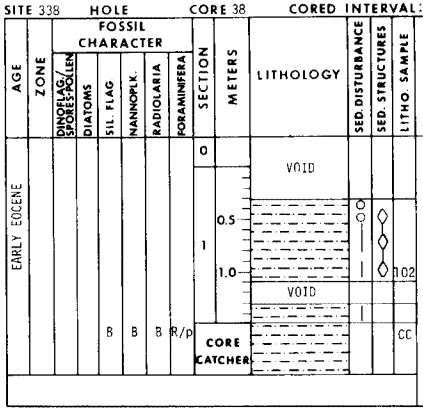
MAJOR LITHOLOGY

SANDY MUD (Smear CC)
30% Sand 50% Quartz
33% Silt 7% Feldspar
37% Clay 3% Heavy minerals
2% Opaques, Mica
37% Clay minerals

Carbon-Carbonate (DSDP)
2-64 (0.7, 0.0, 6)

Grain Size (DSDP)
1-115 (18.5, 57.5, 24.0)

SITE 338 HOLE CORE 38 CORED INTERVAL: 361.0-370.5 m



5YR 4/1

5Y 4/1

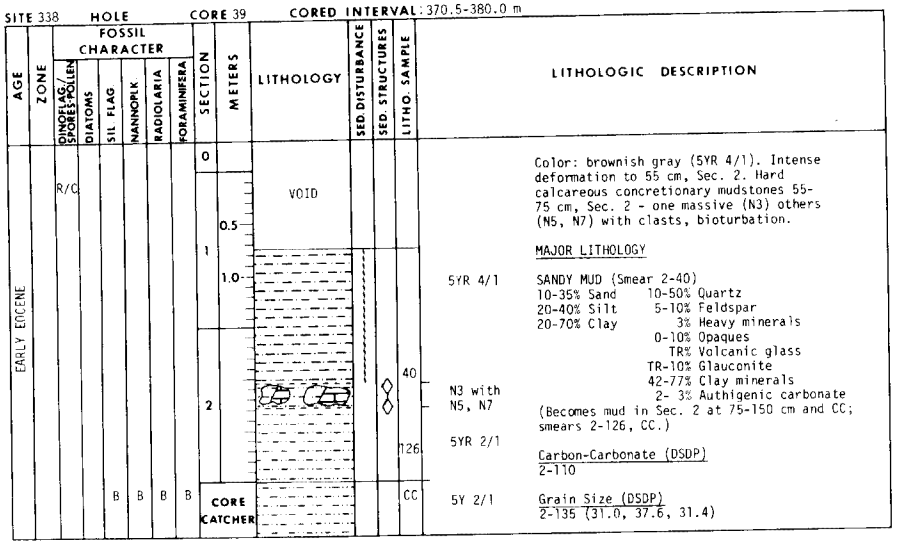
LITHOLOGIC DESCRIPTION

Colors: brownish gray (5YR 4/1), massive, possibly bioturbated, soft with some clay fragments.

MAJOR LITHOLOGY

MUDDY SAND (Smears 1, 102, CC)
40% Sand 40-50% Quartz
30% Silt 7-10% Feldspar
30% Clay 2- 3% Mica
2- 4% Heavy minerals
2- 4% Opaques
1- 2% Volcanic glass
30% Clay minerals
TR% Glauconite
2- 3% Authigenic carbonate
7% Lithics

SITE 338 HOLE CORE 39 CORED INTERVAL: 370.5-380.0 m



Color: brownish gray (5YR 4/1). Intense deformation to 55 cm, Sec. 2. Hard calcareous concretionary mudstones 55-75 cm, Sec. 2 - one massive (N3) others (N5, N7) with clasts, bioturbation.

MAJOR LITHOLOGY

SANDY MUD (Smear 2-40)

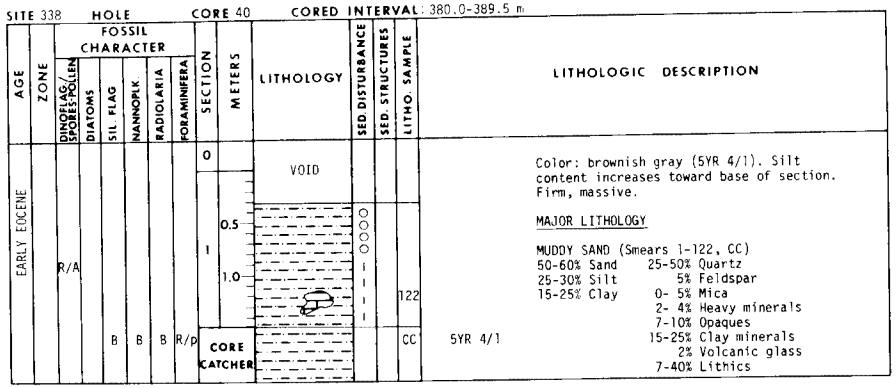
10-35% Sand	10-50% Quartz
20-40% Silt	5-10% Feldspar
20-70% Clay	3% Heavy minerals
	0-10% Opaques
	TR% Volcanic glass
	TR-10% Glauconite
	42-77% Clay minerals
	2- 3% Authigenic carbonate

(Becomes mud in Sec. 2 at 75-150 cm and CC; smears 2-126, CC.)

Carbon-Carbonate (DSDP)
2-110

Grain Size (DSDP)
2-135 (31.0, 37.6, 31.4)

SITE 338 HOLE CORE 40 CORED INTERVAL: 380.0-389.5 m



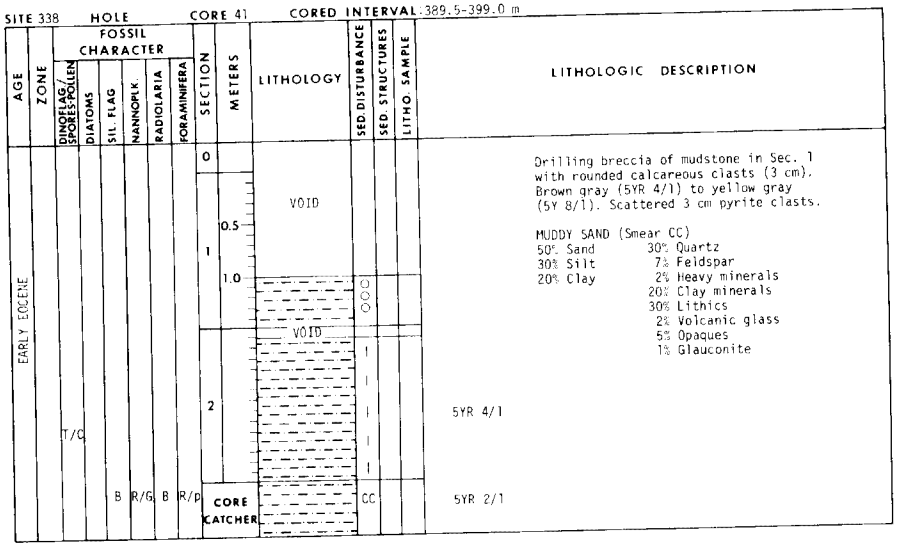
Color: brownish gray (5YR 4/1). Silt content increases toward base of section. Firm, massive.

MAJOR LITHOLOGY

MUDDY SAND (Smears 1-122, CC)

50-60% Sand	25-50% Quartz
25-30% Silt	5% Feldspar
15-25% Clay	0- 5% Mica
	2- 4% Heavy minerals
	7-10% Opaques
	15-25% Clay minerals
	2% Volcanic glass
	7-40% Lithics

SITE 338 HOLE CORE 41 CORED INTERVAL: 389.5-399.0 m

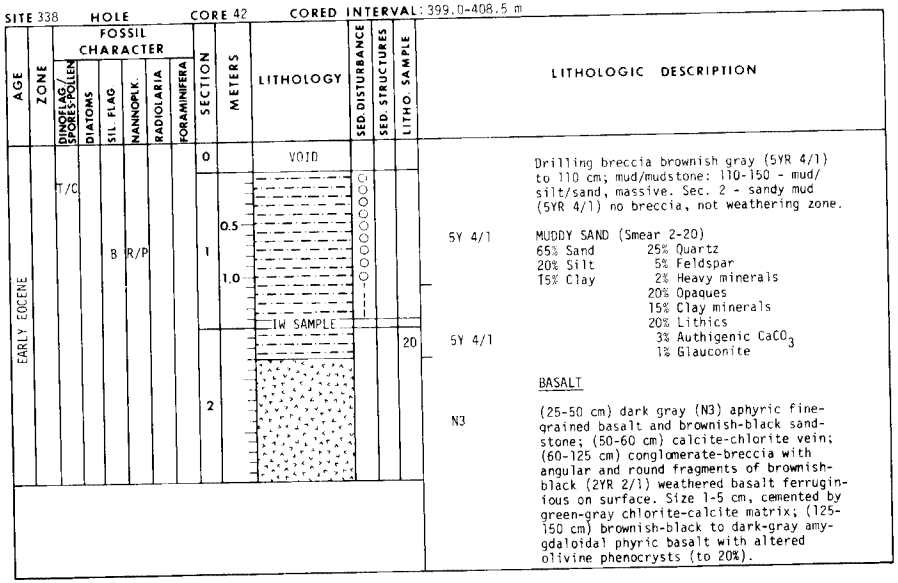


Drilling breccia of mudstone in Sec. 1 with rounded calcareous clasts (3 cm). Brown gray (5YR 4/1) to yellow gray (5Y 8/1). Scattered 3 cm pyrite clasts.

MUDDY SAND (Smear CC)

50% Sand	30% Quartz
30% Silt	7% Feldspar
20% Clay	2% Heavy minerals
	20% Clay minerals
	30% Lithics
	2% Volcanic glass
	5% Opaques
	1% Glauconite

SITE 338 HOLE CORE 42 CORED INTERVAL: 399.0-408.5 m



Drilling breccia brownish gray (5YR 4/1) to 110 cm; mud/mudstone: 110-150 - mud/silt/sand, massive. Sec. 2 - sandy mud (5YR 4/1) no breccia, not weathering zone.

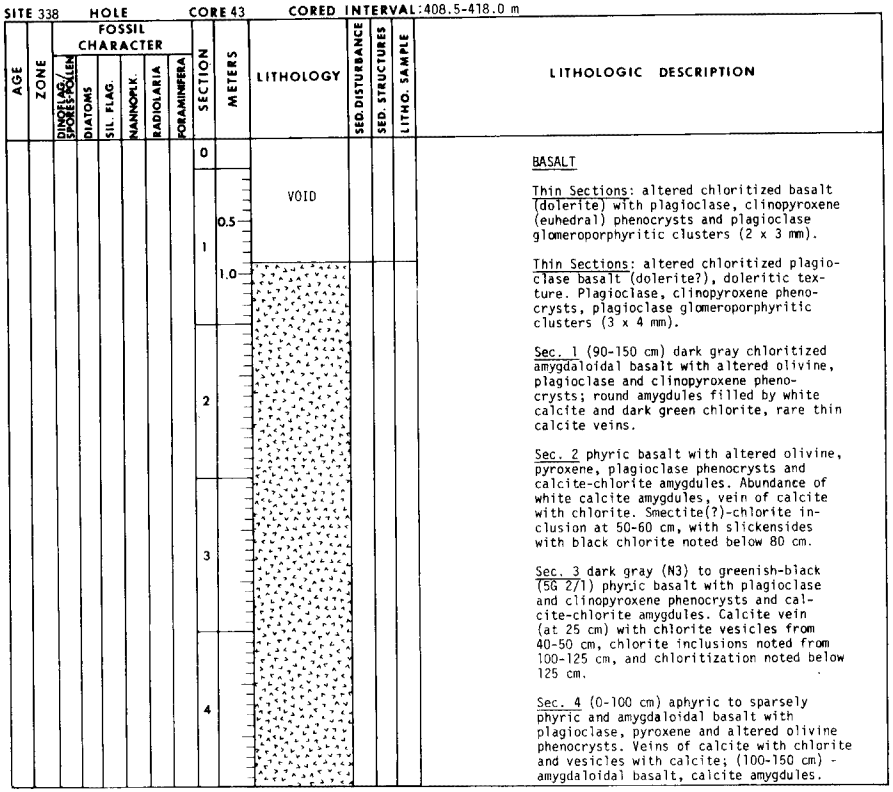
MUDDY SAND (Smear 2-20)

65% Sand	25% Quartz
20% Silt	5% Feldspar
15% Clay	2% Heavy minerals
	20% Opaques
	15% Clay minerals
	20% Lithics
	3% Authigenic $CaCO_3$
	1% Glauconite

BASALT

(25-50 cm) dark gray (N3) aphyric fine-grained basalt and brownish-black sandstone; (50-60 cm) calcite-chlorite vein; (60-125 cm) conglomerate-breccia with angular and round fragments of brownish-black (2YR 2/1) weathered basalt ferruginous on surface. Size 1-5 cm, cemented by green-gray chlorite-calcite matrix; (125-150 cm) brownish-black to dark-gray amygdaloidal phyric basalt with altered olivine phenocrysts (to 20%).

SITE 338 HOLE CORE 43 CORED INTERVAL: 408.5-418.0 m



LITHOLOGIC DESCRIPTION

BASALT

Thin Sections: altered chloritized basalt (dolerite) with plagioclase, clinopyroxene (euhedral) phenocrysts and plagioclase glomeroporphyritic clusters (2 x 3 mm).

Thin Sections: altered chloritized plagioclase basalt (dolerite?), doleritic texture. Plagioclase, clinopyroxene phenocrysts, plagioclase glomeroporphyritic clusters (3 x 4 mm).

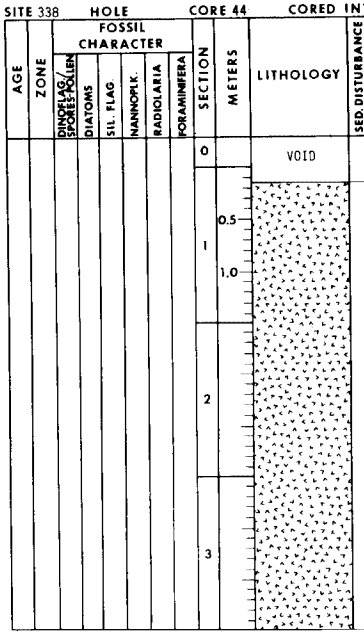
Sec. 1 (90-150 cm) dark gray chloritized amygdaloidal basalt with altered olivine, plagioclase and clinopyroxene phenocrysts; round amygdules filled by white calcite and dark green chlorite, rare thin calcite veins.

Sec. 2 phyric basalt with altered olivine, pyroxene, plagioclase phenocrysts and calcite-chlorite amygdules. Abundance of white calcite amygdules, vein of calcite with chlorite. Smectite(?)-chlorite inclusion at 50-60 cm, with slickensides with black chlorite noted below 80 cm.

Sec. 3 dark gray (N3) to greenish-black (5G 2/1) phyric basalt with plagioclase and clinopyroxene phenocrysts and calcite-chlorite amygdules. Calcite vein (at 25 cm) with chlorite vesicles from 40-50 cm, chlorite inclusions noted from 100-125 cm, and chloritization noted below 125 cm.

Sec. 4 (0-100 cm) aphyric to sparsely phyric and amygdaloidal basalt with plagioclase, pyroxene and altered olivine phenocrysts. Veins of calcite with chlorite and vesicles with calcite; (100-150 cm) - amygdaloidal basalt, calcite amygdules.

SITE 338 HOLE CORE 44 CORED INTERVAL: 418.0-427.5 m



LITHOLOGIC DESCRIPTION

BASALT

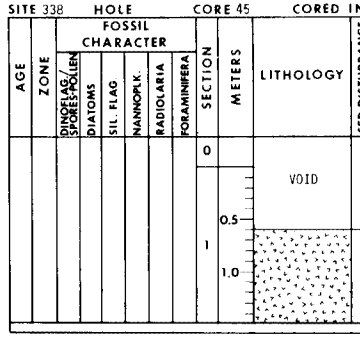
Thin Section: chloritized with chloritized plagioclase phenocrysts, chlorite amygdules and veins, chlorite amygdules.

Sec. 1 (15-75 cm) drill pebbles of very fine-grained chloritized basalt with calcite and chlorite on fissure walls and cavities; (75-150 cm) phyric basalt with rare phenocrysts of altered olivine, plagioclase and clinopyroxene. Small round amygdules of chlorite and calcite, calcite veins with chlorite.

Sec. 2 (10-150 cm) dark gray (N3) to olive black (5Y 2/1) massive basalt, to aphyric to sparsely phyric basalt. Rare round white calcite amygdules (2-10 mm). Chlorite amygdules, calcite veins and slickensides.

Sec. 3 (0-20 cm) drill pebbles of aphyric basalt, calcite veining; (20-150 cm) phyric basalt with phenocrysts of altered olivine, clinopyroxene and plagioclase glomeroporphyritic clusters. Cavities noted with chlorite and calcite.

SITE 338 HOLE CORE 45 CORED INTERVAL: 427.5-437.0 m



LITHOLOGIC DESCRIPTION

BASALT

Sec. 1 (60-150 cm) massive phyric basalt with phenocrysts of altered olivine, plagioclase and clinopyroxene. Calcite-chlorite veins, plus rare small calcite-chlorite amygdules, slickenside surfaces.

Sec. 2 phyric basalt is similar to Sec. 1 with chlorite veins, slickensides, calcite amygdules, and chloritization noted on slickenside surfaces.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 339

SITE SUMMARY SHEET

POSITION: Latitude: 67°12.65'N Longitude: 06°17.05'E

Water depth (from sea level): 1262.0 corrected meters (Echo sounding)

Bottom felt at: 1276.0 meters (drill pipe) Penetration: 108.0 meters

Number of Holes: 1 Number of Cores: 12

Total length of cored section: 108.0 m Total core recovered: 50.5 m

Percentage of core recovery: 46.7%

OLDEST SEDIMENT CORED:

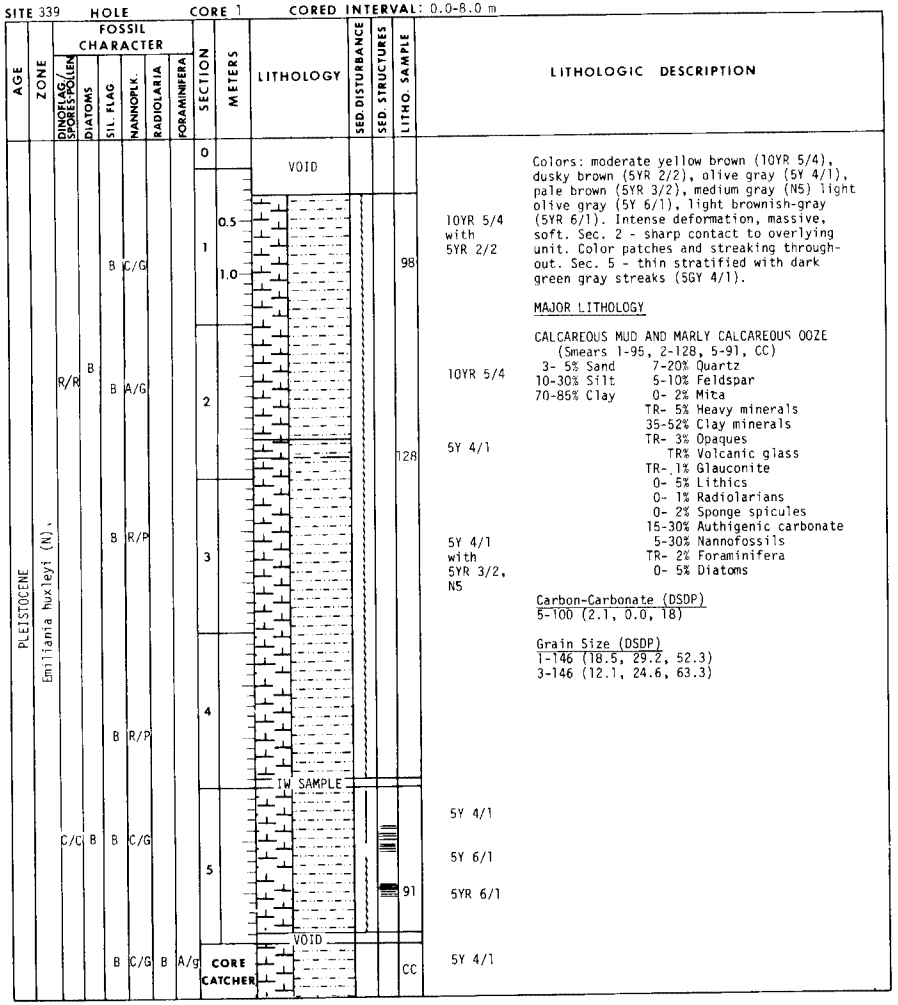
Depth below sea floor: 108.0 meters Nature: Diatomaceous ooze

Age: Lower/middle Oligocene (Core 12) Measured velocity: ≈2.0 km/sec

PRINCIPAL RESULTS:

This site was on a diapir on the Inner Vøring Plateau. About 75 meters of Glacial sediments overlie disturbed lower/middle Oligocene diatomaceous oozes. The latter is believed to constitute the diapiric material. The Oligocene section was cored above the Miocene section.

SITE 339 HOLE CORE 1 CORED INTERVAL: 0.0-8.0 m



Colors: moderate yellow brown (10YR 5/4), dusky brown (5YR 2/2), olive gray (5Y 4/1), pale brown (5YR 3/2), medium gray (N5) light olive gray (5Y 6/1), light brownish-gray (5YR 6/1). Intense deformation, massive, soft. Sec. 2 - sharp contact to overlying unit. Color patches and streaking throughout. Sec. 5 - thin stratified with dark green gray streaks (5GY 4/1).

MAJOR LITHOLOGY

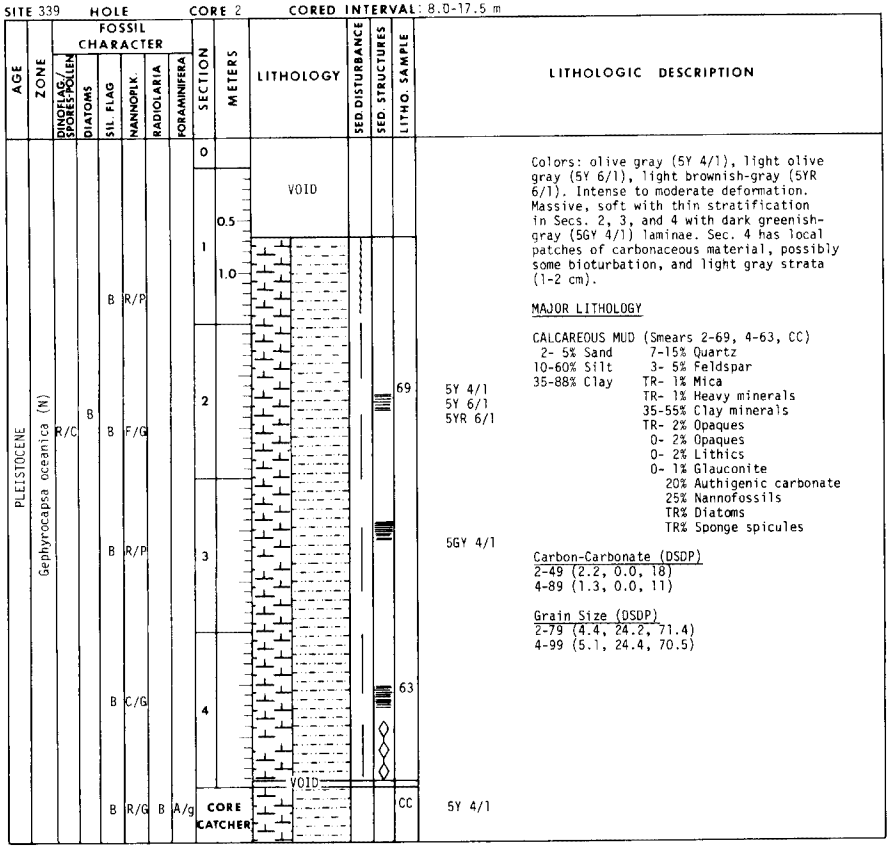
CALCAREOUS MUD AND MARLY CALCAREOUS OOZE
(Smears 1-95, 2-128, 5-91, CC)

3- 5% Sand	7-20% Quartz
10-30% Silt	5-10% Feldspar
70-85% Clay	0- 2% Mica
	TR- 5% Heavy minerals
	35-52% Clay minerals
	TR- 3% Opaques
	TR% Volcanic glass
	TR-.1% Glauconite
	0- 5% Lithics
	0- 1% Radiolarians
	0- 2% Sponge spicules
	15-30% Authigenic carbonate
	5-30% Nannofossils
	TR- 2% Foraminifera
	0- 5% Diatoms

Carbon-Carbonate (DSDP)
5-100 (2.1, 0.0, 18)

Grain Size (DSDP)
1-146 (18.5, 29.2, 52.3)
3-146 (12.1, 24.6, 63.3)

SITE 339 HOLE CORE 2 CORED INTERVAL: 8.0-17.5 m



Colors: olive gray (5Y 4/1), light olive gray (5Y 6/1), light brownish-gray (5YR 6/1). Intense to moderate deformation. Massive, soft with thin stratification in Secs. 2, 3, and 4 with dark greenish-gray (5GY 4/1) laminae. Sec. 4 has local patches of carbonaceous material, possibly some bioturbation, and light gray strata (1-2 cm).

MAJOR LITHOLOGY

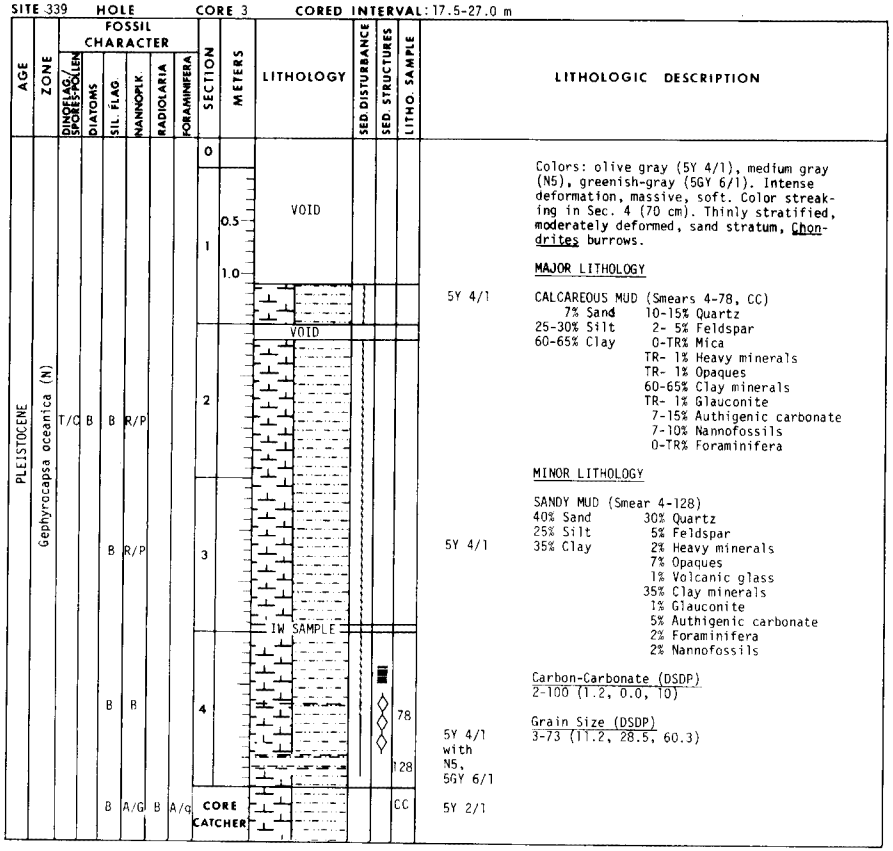
CALCAREOUS MUD (Smears 2-69, 4-63, CC)

2- 5% Sand	7-15% Quartz
10-60% Silt	3- 5% Feldspar
35-88% Clay	TR- 1% Mica
	TR- 1% Heavy minerals
	35-55% Clay minerals
	TR- 2% Opaques
	0- 2% Opaques
	0- 2% Lithics
	0- 1% Glauconite
	20% Authigenic carbonate
	25% Nannofossils
	TR% Diatoms
	TR% Sponge spicules

Carbon-Carbonate (DSDP)
2-49 (2.2, 0.0, 18)
4-89 (1.3, 0.0, 11)

Grain Size (DSDP)
2-79 (4.4, 24.2, 71.4)
4-99 (5.1, 24.4, 70.5)

SITE 339 HOLE CORE 3 CORED INTERVAL: 17.5-27.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), medium gray (N5), greenish-gray (5GY 6/1). Intense deformation, massive, soft. Color streaking in Sec. 4 (70 cm). Thinly stratified, moderately deformed, sand stratum, Chondrites burrows.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smears 4-78, CC)

7% Sand	10-15% Quartz
25-30% Silt	2- 5% Feldspar
60-65% Clay	0-TR% Mica
	TR- 1% Heavy minerals
	TR- 1% Opaques
	60-65% Clay minerals
	TR- 1% Glauconite
	7-15% Authigenic carbonate
	7-10% Nannofossils
	0-TR% Foraminifera

MINOR LITHOLOGY

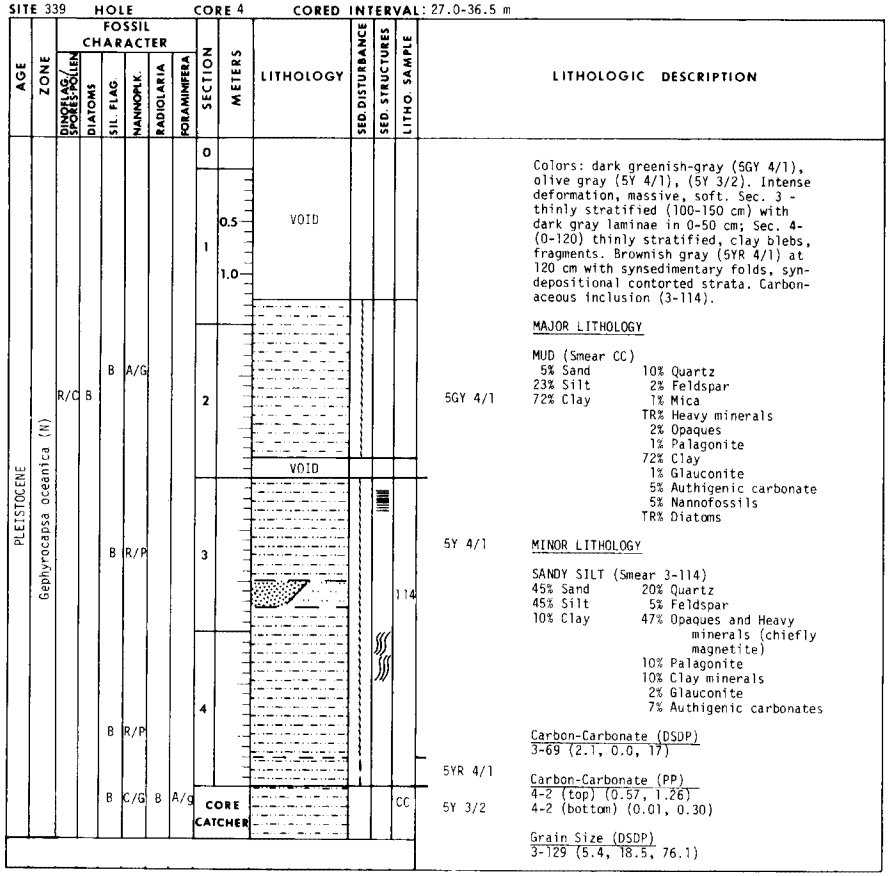
SANDY MUD (Smear 4-128)

40% Sand	30% Quartz
25% Silt	5% Feldspar
35% Clay	2% Heavy minerals
	7% Opaques
	1% Volcanic glass
	35% Clay minerals
	1% Glauconite
	5% Authigenic carbonate
	2% Foraminifera
	2% Nannofossils

Carbon-Carbonate (DSDP)
2-100 (1.2, 0.0, 10)

Grain Size (DSDP)
3-73 (11.2, 28.5, 60.3)

SITE 339 HOLE CORE 4 CORED INTERVAL: 27.0-36.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5GY 4/1), olive gray (5Y 4/1), (5Y 3/2). Intense deformation, massive, soft. Sec. 3 - thinly stratified (100-150 cm) with dark gray laminae in 0-50 cm; Sec. 4- (0-120) thinly stratified, clay blebs, fragments. Brownish gray (5YR 4/1) at 120 cm with synsedimentary folds, syndepositional contorted strata. Carbonaceous inclusion (3-114).

MAJOR LITHOLOGY

MUD (Smear CC)

5% Sand	10% Quartz
23% Silt	2% Feldspar
72% Clay	1% Mica
	TR% Heavy minerals
	2% Opaques
	1% Palagonite
	72% Clay
	1% Glauconite
	5% Authigenic carbonate
	5% Nannofossils
	TR% Diatoms

MINOR LITHOLOGY

SANDY SILT (Smear 3-114)

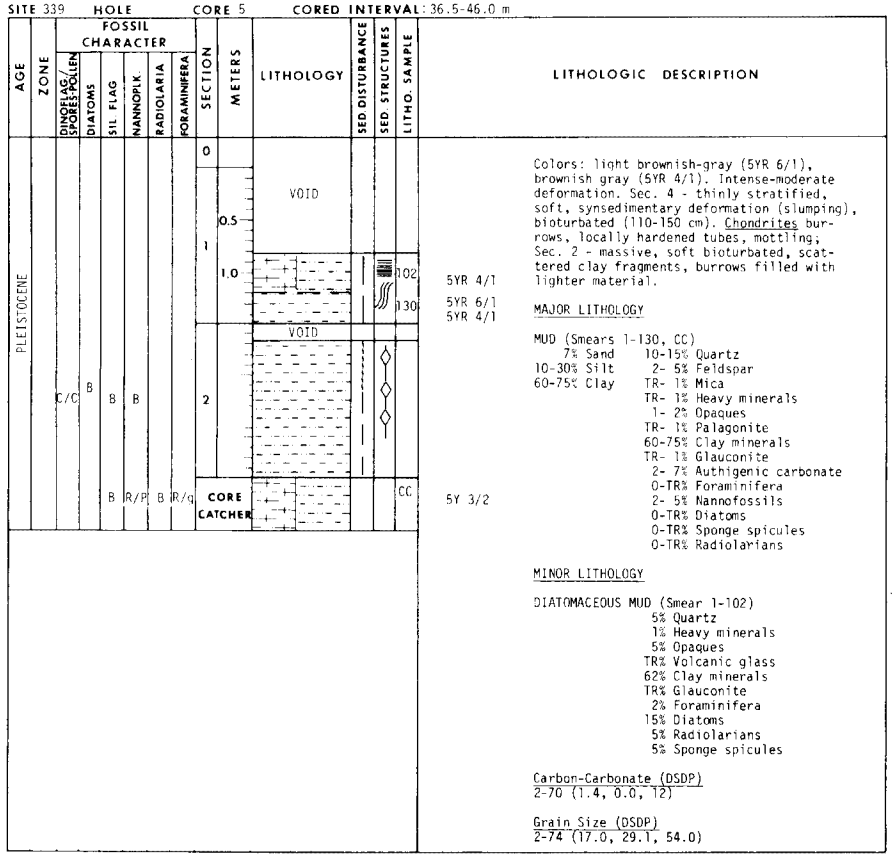
45% Sand	20% Quartz
45% Silt	5% Feldspar
10% Clay	47% Opaques and Heavy minerals (chiefly magnetite)
	10% Palagonite
	10% Clay minerals
	2% Glauconite
	7% Authigenic carbonates

Carbon-Carbonate (DSDP)
3-69 (2.1, 0.0, 17)

Carbon-Carbonate (PP)
4-2 (top) (0.57, 1.26)
4-2 (bottom) (0.01, 0.30)

Grain Size (DSDP)
3-129 (5.4, 18.5, 76.1)

SITE 339 HOLE CORE 5 CORED INTERVAL: 36.5-46.0 m



LITHOLOGIC DESCRIPTION

Colors: light brownish-gray (5YR 6/1), brownish gray (5YR 4/1). Intense-moderate deformation. Sec. 4 - thinly stratified, soft, synsedimentary deformation (slumping), bioturbated (110-150 cm). Chondrites burrows, locally hardened tubes, mottling; Sec. 2 - massive, soft bioturbated, scattered clay fragments, burrows filled with lighter material.

MAJOR LITHOLOGY

MUD (Smears 1-130, CC)

7% Sand	10-15% Quartz
10-30% Silt	2- 5% Feldspar
60-75% Clay	TR- 1% Mica
	TR- 1% Heavy minerals
	1- 2% Opaques
	TR- 1% Palagonite
	60-75% Clay minerals
	TR- 1% Glauconite
	2- 7% Authigenic carbonate
	0-TR% Foraminifera
	2- 5% Nannofossils
	0-TR% Diatoms
	0-TR% Sponge spicules
	0-TR% Radiolarians

MINOR LITHOLOGY

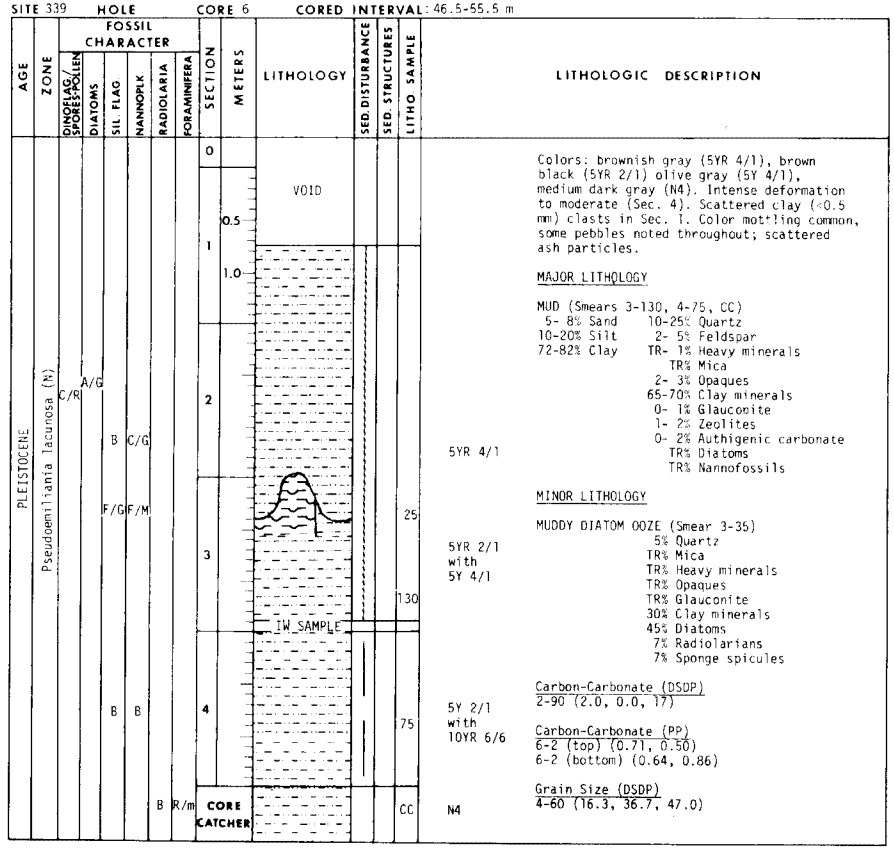
DIATOMACEOUS MUD (Smear 1-102)

5% Quartz
1% Heavy minerals
5% Opaques
TR% Volcanic glass
62% Clay minerals
TR% Glauconite
2% Foraminifera
15% Diatoms
5% Radiolarians
5% Sponge spicules

Carbon-Carbonate (DSDP)
2-70 (1.4, 0.0, 12)

Grain Size (DSDP)
2-74 (17.0, 29.1, 54.0)

SITE 339 HOLE CORE 6 CORED INTERVAL: 46.5-55.5 m



Colors: brownish gray (5YR 4/1), brown black (5YR 2/1) olive gray (5Y 4/1), medium dark gray (N4). Intense deformation to moderate (Sec. 4). Scattered clay (<0.5 mm) clasts in Sec. 1. Color mottling common, some pebbles noted throughout; scattered ash particles.

MAJOR LITHOLOGY

MUD (Smears 3-130, 4-75, CC)

5- 8% Sand	10-25% Quartz
10-20% Silt	2- 5% Feldspar
72-82% Clay	TR- 1% Heavy minerals
	TR% Mica
	2- 3% Opaques
	65-70% Clay minerals
	0- 1% Glauconite
	1- 2% Zeolites
	0- 2% Authigenic carbonate
	TR% Diatoms
	TR% Nannofossils

MINOR LITHOLOGY

MUDDY DIATOM OOZE (Smear 3-35)

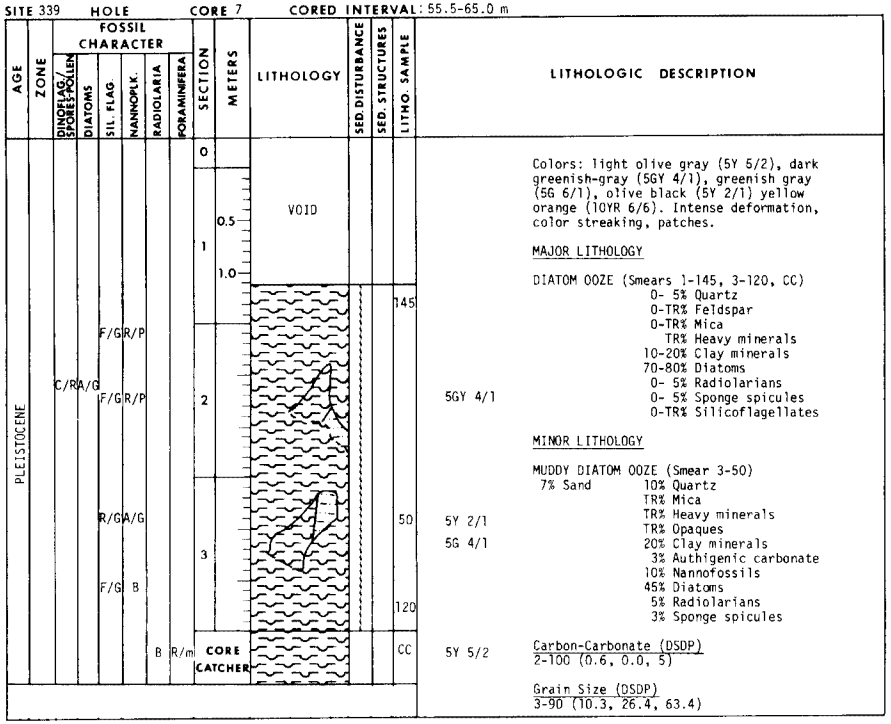
5% Quartz
TR% Mica
TR% Heavy minerals
TR% Opaques
TR% Glauconite
30% Clay minerals
45% Diatoms
7% Radiolarians
7% Sponge spicules

Carbon-Carbonate (DSDP)
2-90 (2.0, 0.0, 17)

Carbon-Carbonate (PP)
6-2 (top) (0.71, 0.50)
6-2 (bottom) (0.64, 0.86)

Grain Size (DSDP)
4-60 (16.3, 36.7, 47.0)

SITE 339 HOLE CORE 7 CORED INTERVAL: 55.5-65.0 m



LITHOLOGIC DESCRIPTION

Colors: light olive gray (5Y 5/2), dark greenish-gray (5GY 4/1), greenish gray (5G 6/1), olive black (5Y 2/1) yellow orange (10YR 6/6). Intense deformation, color streaking, patches.

MAJOR LITHOLOGY

DIATOM OOZE (Smears 1-145, 3-120, CC)
- 0- 5% Quartz
- 0-TR% Feldspar
- 0-TR% Mica
- TR% Heavy minerals
- 10-20% Clay minerals
- 70-80% Diatoms
- 0- 5% Radiolarians
- 0- 5% Sponge spicules
- 0-TR% Silicoflagellates

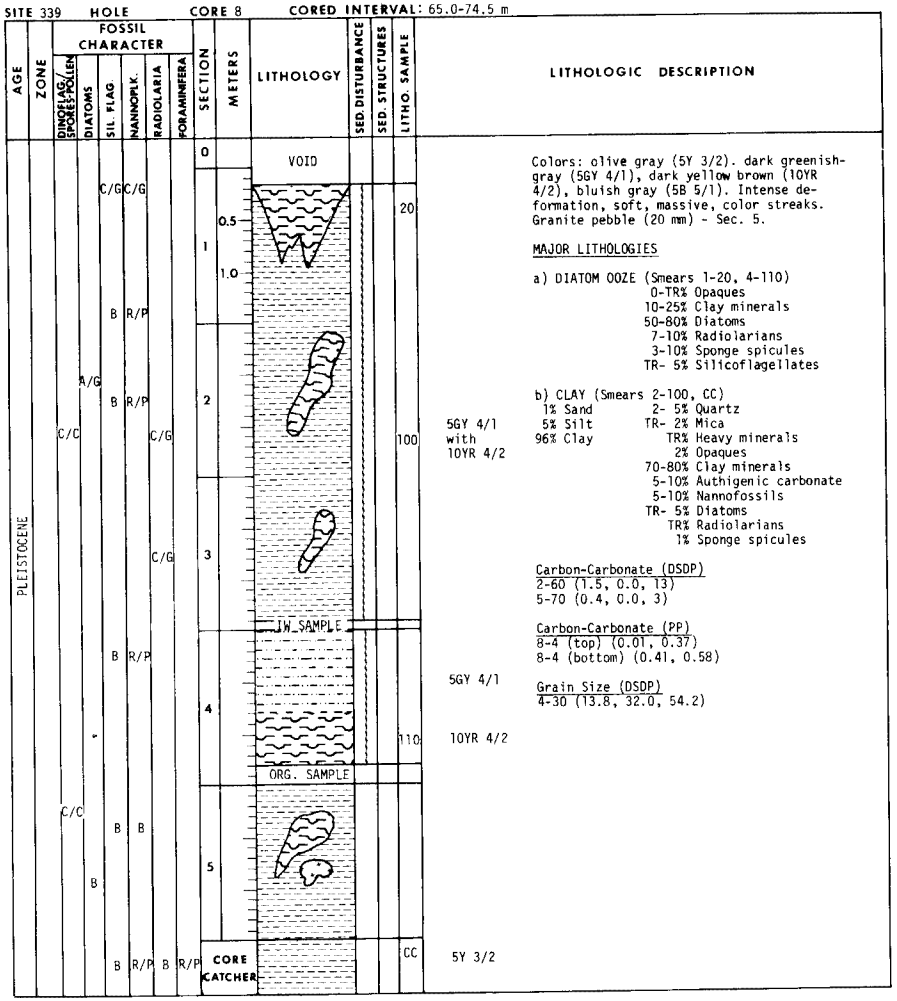
MINOR LITHOLOGY

MUDDY DIATOM OOZE (Smear 3-50)
7% Sand
- 10% Quartz
- TR% Mica
- TR% Heavy minerals
- TR% Opaques
- 20% Clay minerals
- 3% Authigenic carbonate
- 10% Nannofossils
- 45% Diatoms
- 5% Radiolarians
- 3% Sponge spicules

Carbon-Carbonate (DSDP)
2-100 (0.6, 0.0, 5)

Grain Size (DSDP)
3-90 (10.3, 26.4, 63.4)

SITE 339 HOLE CORE 8 CORED INTERVAL: 65.0-74.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2). dark greenish-gray (5GY 4/1), dark yellow brown (10YR 4/2), bluish gray (5B 5/1). Intense deformation, soft, massive, color streaks. Granite pebble (20 mm) - Sec. 5.

MAJOR LITHOLOGIES

a) DIATOM OOZE (Smears 1-20, 4-110)
- 0-TR% Opaques
- 10-25% Clay minerals
- 50-80% Diatoms
- 7-10% Radiolarians
- 3-10% Sponge spicules
- TR- 5% Silicoflagellates

b) CLAY (Smears 2-100, CC)
1% Sand
5% Silt
96% Clay
- 2- 5% Quartz
- TR- 2% Mica
- TR% Heavy minerals
- 2% Opaques
- 70-80% Clay minerals
- 5-10% Authigenic carbonate
- 5-10% Nannofossils
- TR- 5% Diatoms
- TR% Radiolarians
- 1% Sponge spicules

Carbon-Carbonate (DSDP)
2-60 (1.5, 0.0, 13)
5-70 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
8-4 (top) (0.01, 0.37)
8-4 (bottom) (0.41, 0.58)

Grain Size (DSDP)
4-30 (13.8, 32.0, 54.2)

SITE 339 HOLE CORE 9 CORED INTERVAL: 74.5-84.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
MIDDLE/EARLY OLIGOCENE	Naviculopsis biapiculata (S)			F/G	B	A/G	B	CORE CATCHER					CC	5Y 5/2 Core catcher only: light olive gray (5Y 5/2). DIATOM OOZE (Smear CC) TR% Mica TR% Opaques 20% Clay minerals 55% Diatoms 5% Radiolarians 15% Sponge spicules TR% Silicoflagellates

SITE 339 HOLE CORE 10 CORED INTERVAL: 84.0-93.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
MIDDLE/EARLY OLIGOCENE	Naviculopsis biapiculata (S)	C/R	A/G	F/G	B	C/G	B	0		VOID				Colors: light olive gray (5Y 5/2), greenish gray (5GY 6/1) (5G 6/1). Color splotches, intense deformation, soft to firm, H_2S odor.
								1	0.5				90	5GY 6/1 with 5G 6/1
									1.0				130	MAJOR LITHOLOGY
								2					145	DIATOM OOZE (Smears 1-90, 1-145, 3-20, CC) 0-TR% Quartz 0-TR% Mica 0-TR% Heavy minerals 0- 3% Opaques 10-24% Clay minerals 60-80% Diatoms 5-10% Radiolarians 3-10% Sponge spicules TR- 1% Silicoflagellates
				F/G	B	C/G	B	3					20	MINOR LITHOLOGY DIATOMACEOUS MUD (Smear 1-130) TR% Mica 5% Opaques 75% Clay minerals 10% Diatoms 5% Radiolarians 5% Sponge spicules
				A/G	B		B	CORE CATCHER					CC	Carbon-Carbonate (DSDP) 3-95 (0.3, 0.0, 3) Grain Size (DSDP) 2-110 (1.5, 27.0, 71.5) 3-130 (3.3, 32.3, 64.3) 5Y 5/2

SITE 339 HOLE CORE 11 CORED INTERVAL: 93.5-105.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
MIDDLE/EARLY MIOCENE	Naviculopsis biapiculata (S)			C/G	B	C/G	B	0		VOID				Colors: light olive gray (5Y 5/2), dusky yellow green (5GY 5/2), pale green (10G 6/2) - mottles.
								1	0.5				118	5GY 5/2
									1.0				130	10G 6/2 5GY 5/2
								CORE CATCHER					CC	5Y 5/2 MAJOR LITHOLOGY DIATOM OOZE (Smears 1-30, CC) TR% Quartz 0- 2% Opaques 15-20% Clay minerals 70-76% Diatoms 2- 5% Radiolarians 2- 5% Sponge spicules TR% Silicoflagellates MINOR LITHOLOGY DIATOMACEOUS MUD (Smear 1-118) 5% Quartz TR% Mica TR% Heavy minerals 70% Clay minerals 20% Diatoms 2% Radiolarians 2% Sponge spicules

SITE 339 HOLE CORE 12 CORED INTERVAL: 103.0-108.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
MIDDLE/EARLY MIOCENE	Naviculopsis biapiculata	R/T	C/G	B				0		VOID				Colors: light olive gray (5Y 5/2) (5Y 6/1), dusky yellow green (5GY 5/2), pale green (10G 6/2). Intense deformation, soft.
			A/G					1	0.5				140	5Y 6/1
									1.0					MAJOR LITHOLOGY
				F/G	B	C/G		2					130	DIATOM OOZE/DIATOMITE (Smears 1-140, 3-70, 3-140, CC) 0- 2% Opaques 0- 5% Volcanic glass 10-15% Clay minerals 68-80% Diatoms 5-10% Radiolarians 0-10% Sponge spicules 0- 2% Silicoflagellates
										IW SAMPLE				5GY 5/2
				A/G	B			3					70	MINOR LITHOLOGY MUDDY DIATOM OOZE (Smear 2-130) 3% Sand 5% Quartz 1% Opaques 32% Clay minerals 40% Diatoms 10% Radiolarians 10% Sponge spicules 2% Silicoflagellates
													140	Carbon-Carbonate (DSDP) 3-60 (0.5, 0.0, 5)
				C/G	B	C/G	B	CORE CATCHER					CC	Carbon-Carbonate (PP) 12-1 (top) (0.42, 0.05) 12-1 (bottom) (0.44, 0.02) 5Y 5/2 Grain Size (DSDP) 3-10 (0.2, 21.4, 78.4)

DEEP SEA DRILLING PROJECT

LEG 38 SITE 340

SITE SUMMARY SHEET

POSITION: Latitude: 67°12.47'N Longitude: 06°18.38'E

Water depth (from sea level): Est. 1206/1217 corrected meters (Echo sounding)

Bottom felt at: 1244.0 meters (drill pipe) Penetration: 104.5 meters

Number of Holes: 1 Number of Cores: 11

Total length of cored section: 104.5 m Total core recovered: 67.2 m

Percentage of core recovery: 64.3%

OLDEST SEDIMENT CORED:

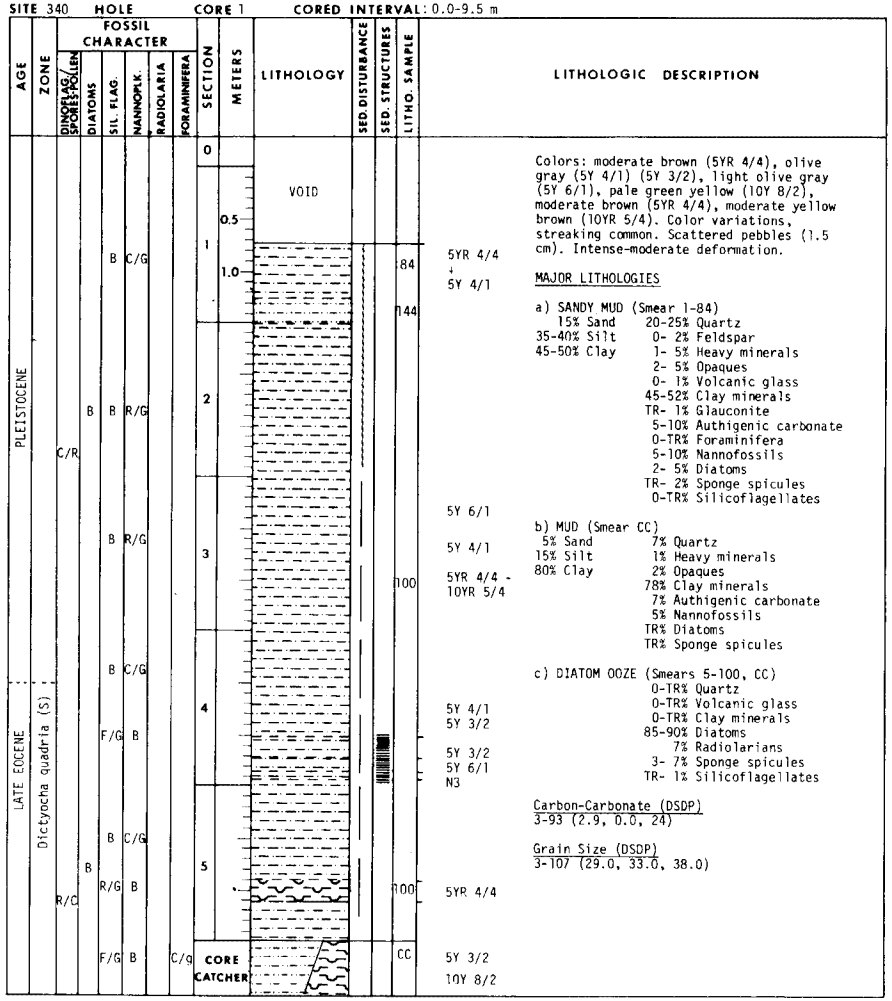
Depth below sea floor: 104.5 meters Nature: Diatomaceous ooze

Age: Upper Eocene (Core 11) Measured velocity: ≈1.57 km/sec

PRINCIPAL RESULTS:

This site, about 2200 feet from Site 339, was located on a topographically steeper part of the diapir. This difference in location reduced the thickness of the overlying Glacial sediments to 5 or 10 meters. The remaining 95 meters was in upper Eocene diapiric material. This material, which consists of diatomaceous oozes, is greatly disturbed, and may include a stratigraphic reversal within the Eocene sediments.

SITE 340 HOLE CORE 1 CORED INTERVAL: 0.0-9.5 m



Colors: moderate brown (5YR 4/4), olive gray (5Y 4/1) (5Y 3/2), light olive gray (5Y 6/1), pale green yellow (10Y 8/2), moderate brown (5YR 4/4), moderate yellow brown (10YR 5/4). Color variations, streaking common. Scattered pebbles (1.5 cm). Intense-moderate deformation.

MAJOR LITHOLOGIES

a) SANDY MUD (Smear 1-84)

15% Sand
35-40% Silt
45-50% Clay

20-25% Quartz
0- 2% Feldspar
1- 5% Heavy minerals
2- 5% Opaques
0- 1% Volcanic glass
45-52% Clay minerals
TR- 1% Glauconite
5-10% Authigenic carbonate
0-TR% Foraminifera
5-10% Nannofossils
2- 5% Diatoms
TR- 2% Sponge spicules
0-TR% Silicoflagellates

b) MUD (Smear CC)

5% Sand
15% Silt
80% Clay

7% Quartz
1% Heavy minerals
2% Opaques
78% Clay minerals
7% Authigenic carbonate
5% Nannofossils
TR% Diatoms
TR% Sponge spicules

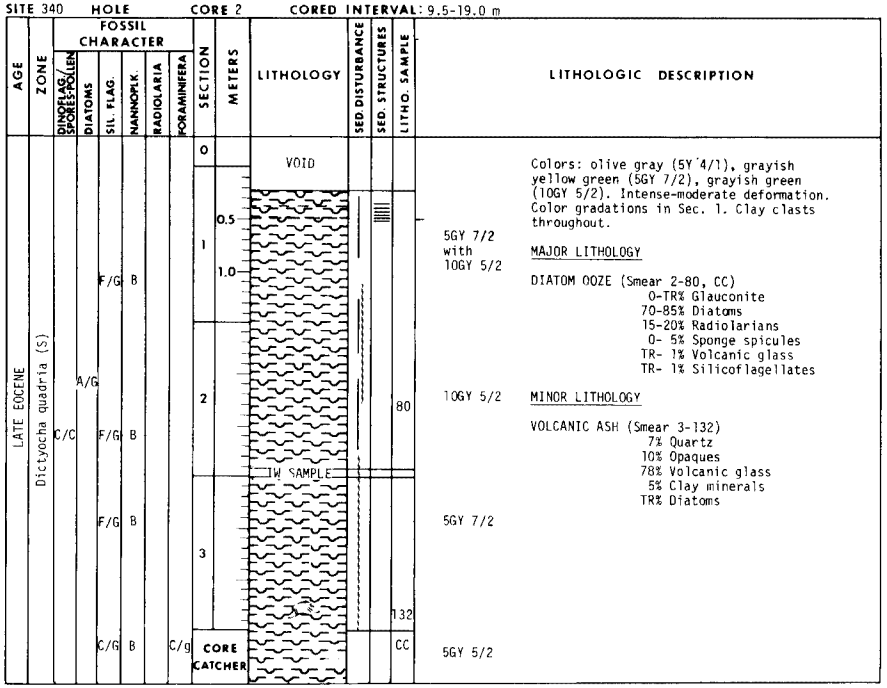
c) DIATOM OOZE (Smears 5-100, CC)

0-TR% Quartz
0-TR% Volcanic glass
0-TR% Clay minerals
85-90% Diatoms
7% Radiolarians
3- 7% Sponge spicules
TR- 1% Silicoflagellates

Carbon-Carbonate (DSDP)
3-93 (2.9, 0.0, 24)

Grain Size (DSDP)
3-107 (29.0, 33.0, 38.0)

SITE 340 HOLE CORE 2 CORED INTERVAL: 9.5-19.0 m



Colors: olive gray (5Y 4/1), grayish yellow green (5GY 7/2), grayish green (10GY 5/2). Intense-moderate deformation. Color gradations in Sec. 1. Clay clasts throughout.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 2-80, CC)

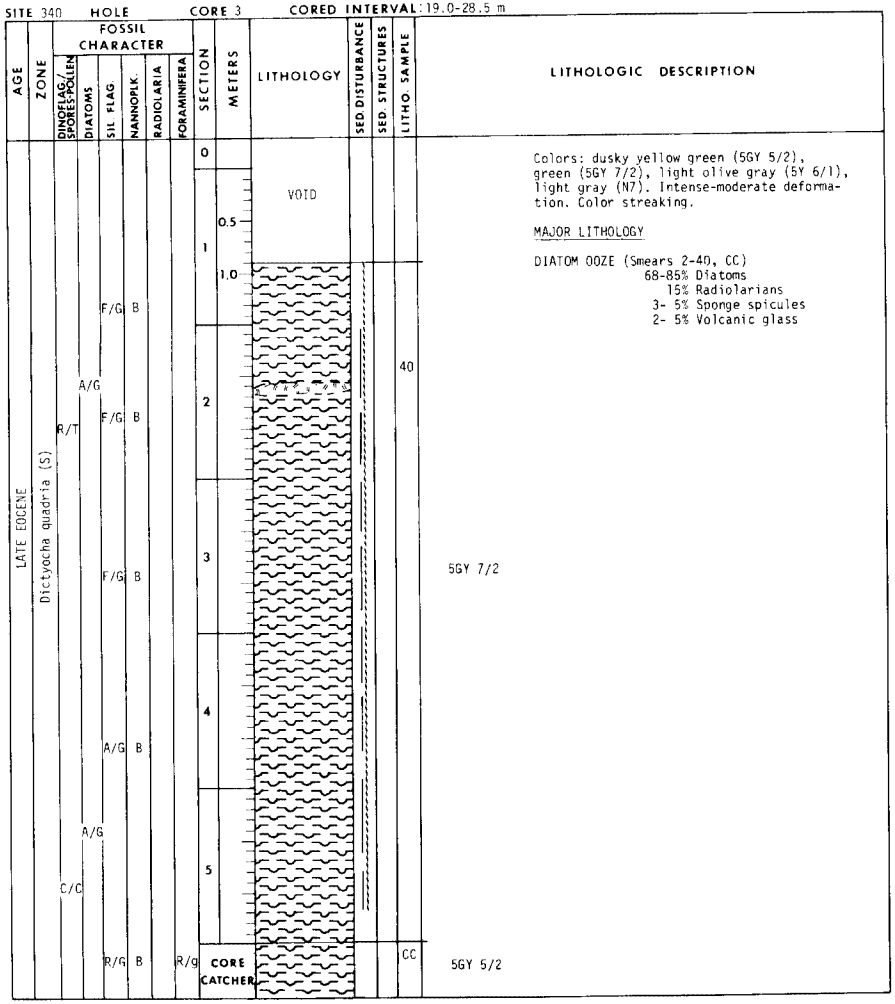
0-TR% Glauconite
70-85% Diatoms
15-20% Radiolarians
0- 5% Sponge spicules
TR- 1% Volcanic glass
TR- 1% Silicoflagellates

MINOR LITHOLOGY

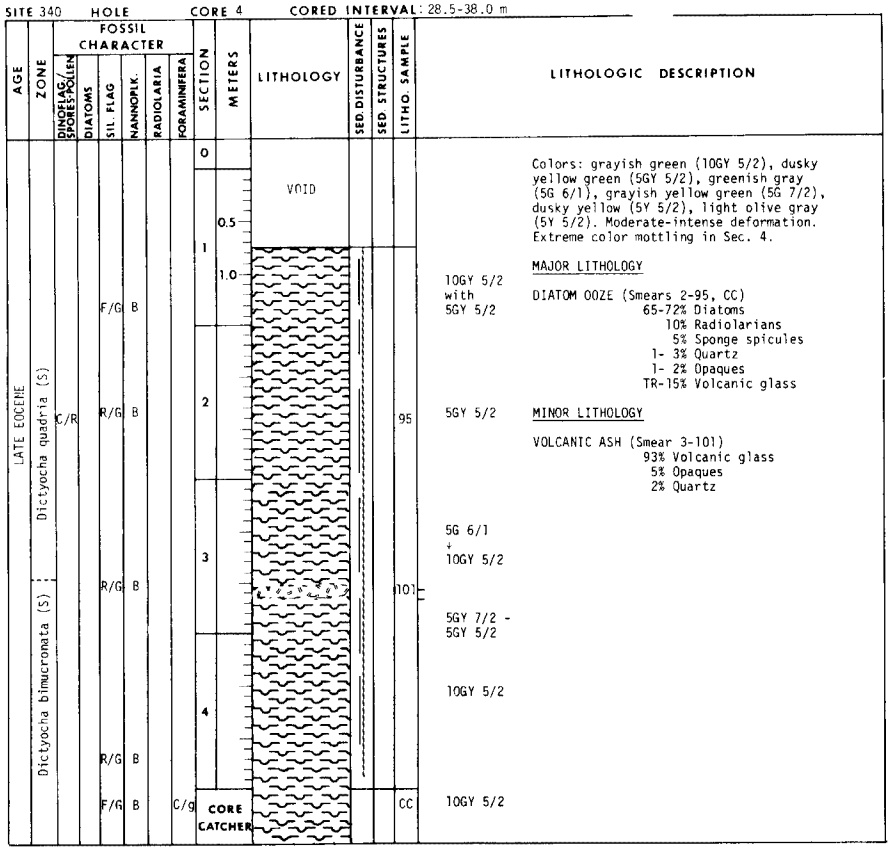
VOLCANIC ASH (Smear 3-132)

7% Quartz
10% Opaques
78% Volcanic glass
5% Clay minerals
TR% Diatoms

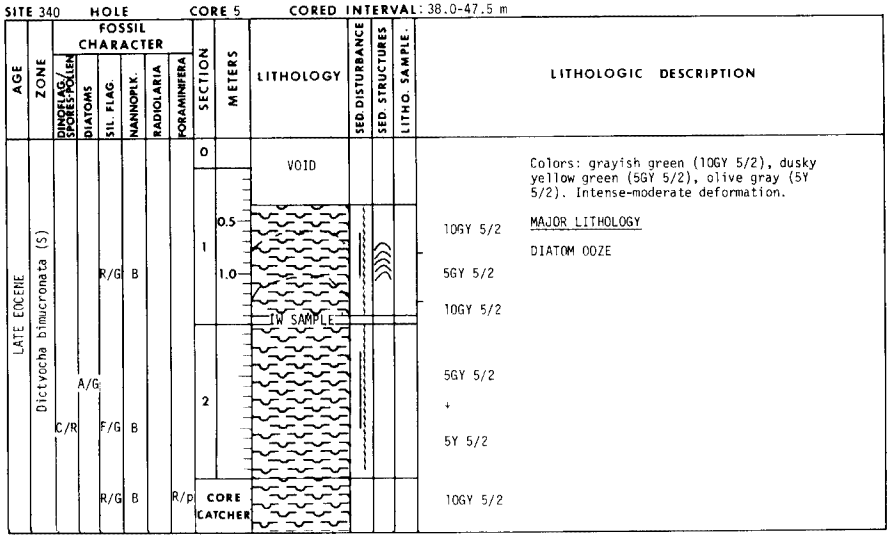
SITE 340 HOLE CORE 3 CORED INTERVAL: 19.0-28.5 m



SITE 340 HOLE CORE 4 CORED INTERVAL: 28.5-38.0 m



SITE 340 HOLE CORE 5 CORED INTERVAL: 38.0-47.5 m



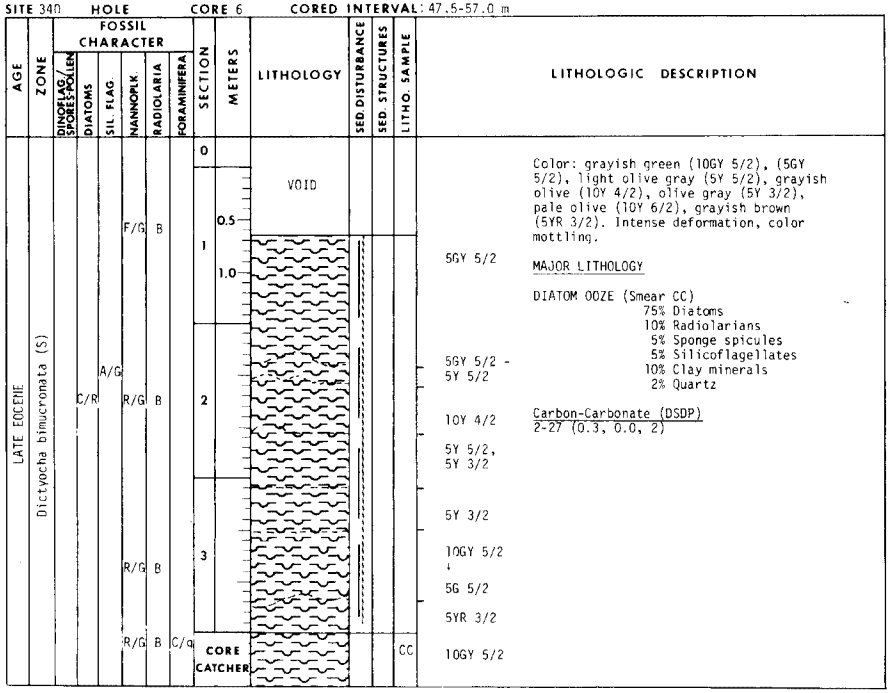
LITHOLOGIC DESCRIPTION

Colors: grayish green (10GY 5/2), dusky yellow green (5GY 5/2), olive gray (5Y 5/2). Intense-moderate deformation.

MAJOR LITHOLOGY

DIATOM OOZE

SITE 340 HOLE CORE 6 CORED INTERVAL: 47.5-57.0 m



LITHOLOGIC DESCRIPTION

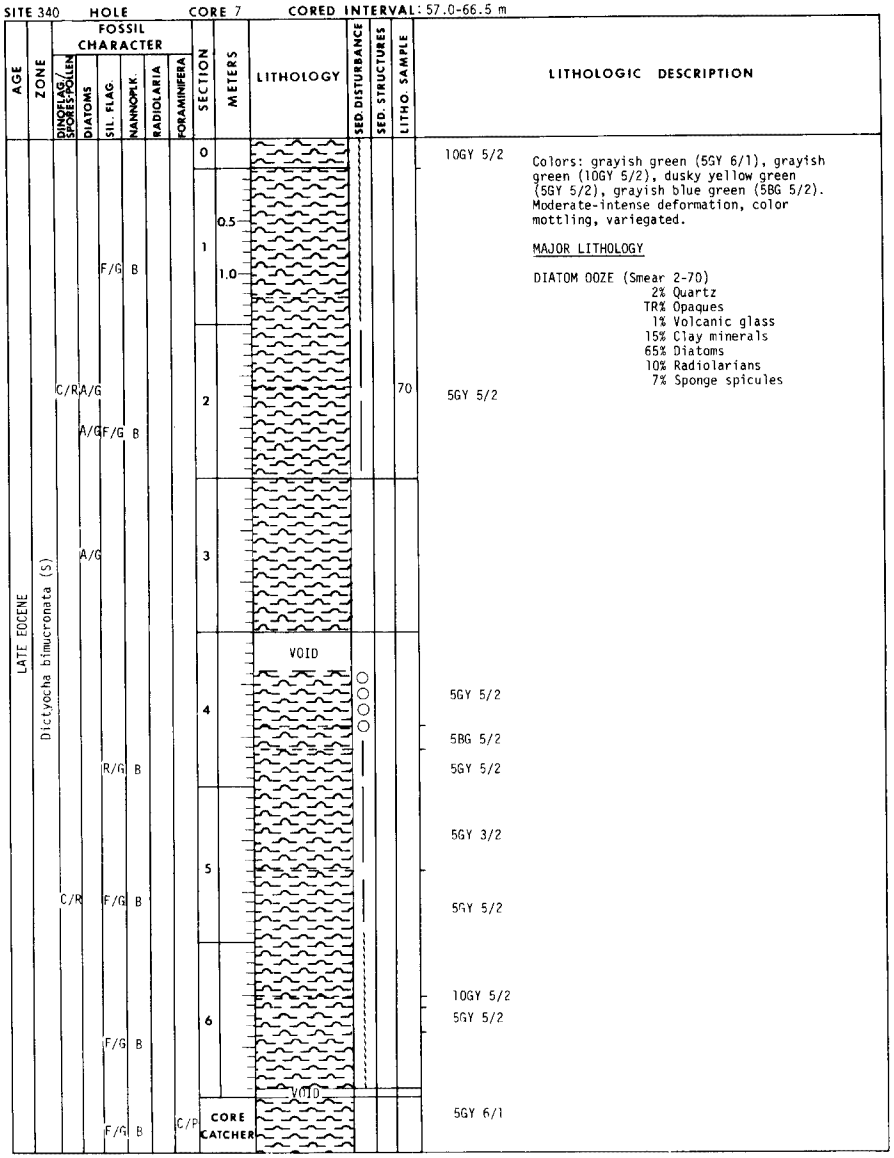
Color: grayish green (10GY 5/2), (5GY 5/2), light olive gray (5Y 5/2), grayish olive (10Y 4/2), olive gray (5Y 3/2), pale olive (10Y 6/2), grayish brown (5YR 3/2). Intense deformation, color mottling.

MAJOR LITHOLOGY

DIATOM OOZE (Smear CC)
75% Diatoms
10% Radiolarians
5% Sponge spicules
5% Silicoflagellates
10% Clay minerals
2% Quartz

Carbon-Carbonate (DSDP)
2-27 (0.3, 0.0, 2)

SITE 340 HOLE CORE 7 CORED INTERVAL: 57.0-66.5 m



LITHOLOGIC DESCRIPTION

Colors: grayish green (5GY 6/1), grayish green (10GY 5/2), dusky yellow green (5GY 5/2), grayish blue green (5BG 5/2). Moderate-intense deformation, color mottling, variegated.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 2-70)
2% Quartz
TR% Opaques
1% Volcanic glass
15% Clay minerals
65% Diatoms
10% Radiolarians
7% Sponge spicules

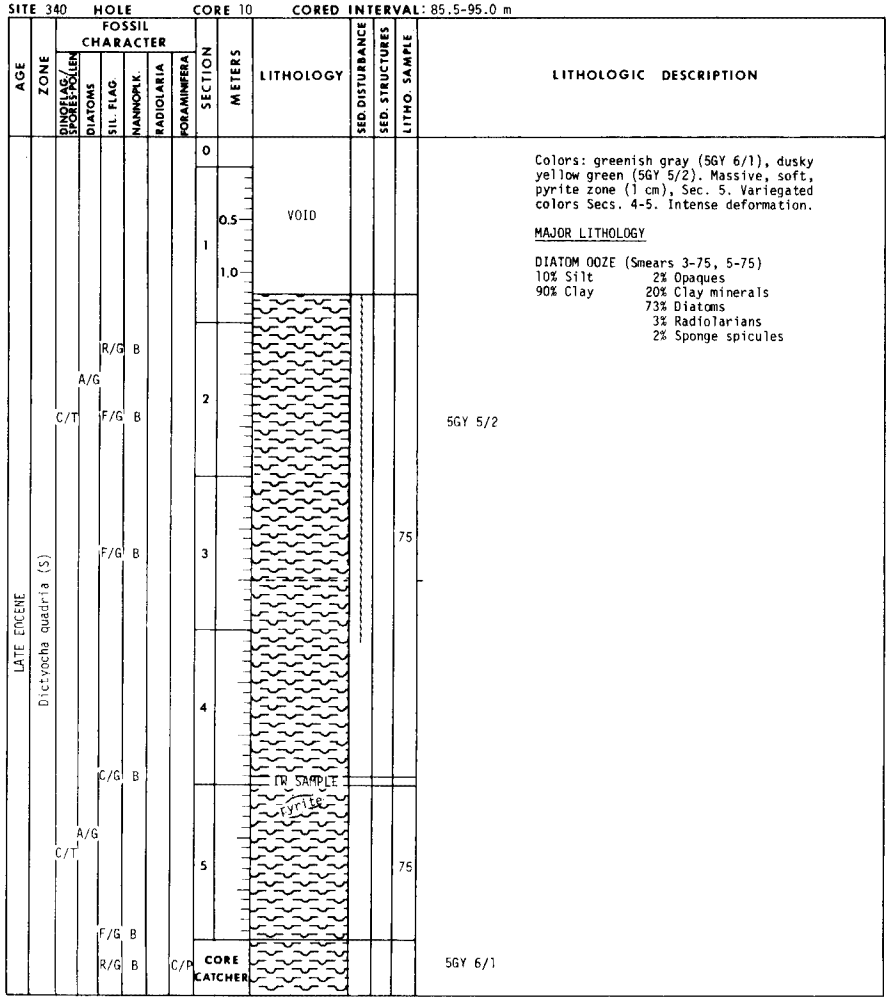
SITE 340 HOLE CORE 8 CORED INTERVAL: 66.5-76.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG/SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
LATE EOCENE	Dictyocha quadria (S)							0		VOID				Colors: grayish green (5GY 6/1), dusky yellow green (5GY 5/2), grayish green (5GY 4/1) (10GY 5/2), pale green (10G 6/2). Intense deformation - color streaking.
								1	0.5					5GY 5/2, 10GY 4/4 — MAJOR LITHOLOGY: DIATOM OOZE (Smears 2-70, 3-70, 4-140, CC) 0-TR% Quartz, TR% Opaques, TR- 3% Volcanic glass, 80-87% Diatoms, 5-10% Radiolarians, 5-10% Sponge spicules
				F/G	B				1.0					
								2					70	5G 5/2 — MINOR LITHOLOGY: VOLCANIC ASH (Smear 5-101) 95% Volcanic glass, 5% Opaques, TR% Diatoms; Carbon-Carbonate (DSDP) 4-50 (0.2, 0.0, 2)
		C/R												
				R/G	B									
								3					70	10GY 5/2
				F/G	B									
								4						
				R/G	B								140	
								5						10G 6/2, 5GY 5/2, 10GY 5/2
		C/T	A/G		B								101	
				F/G				6						
				R/G	B		R/P	CORE CATCHER					CC	5GY 6/1

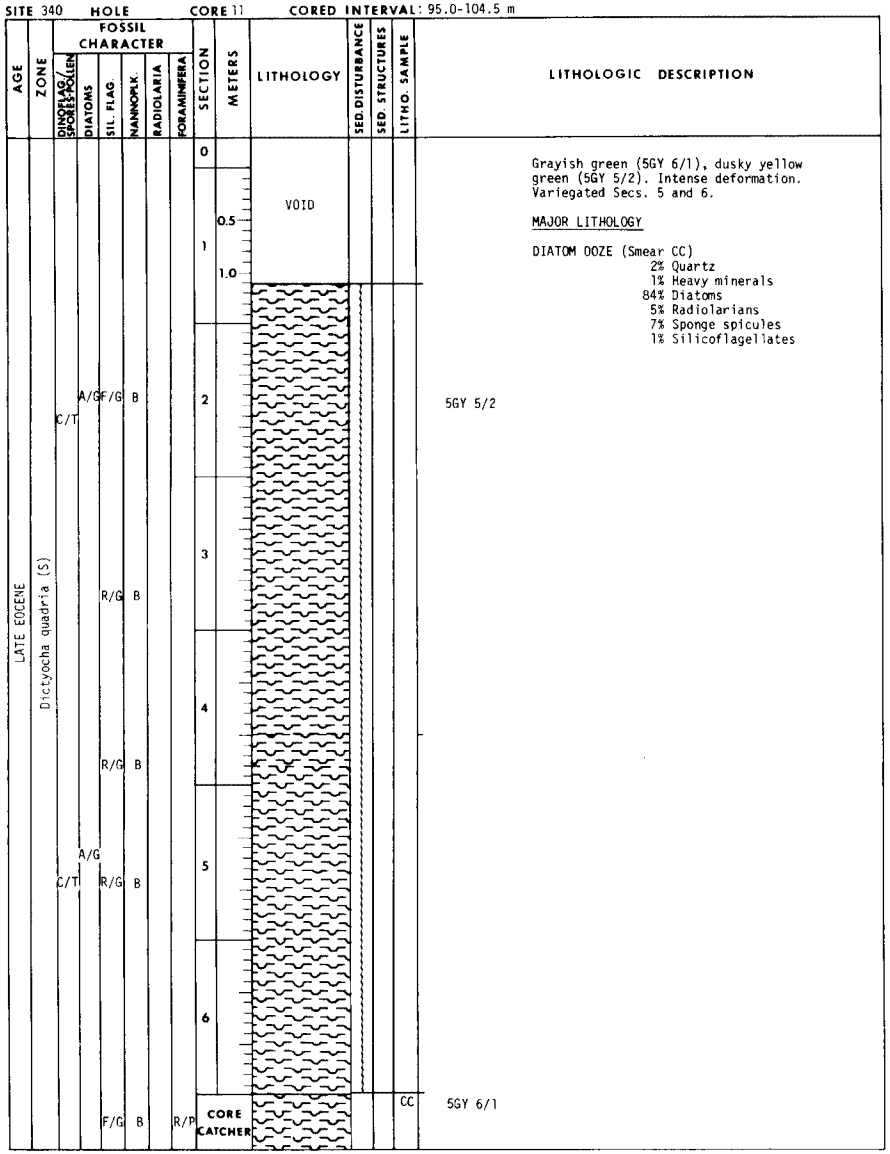
SITE 340 HOLE CORE 9 CORED INTERVAL: 76.0-85.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG/SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO SAMPLE	LITHOLOGIC DESCRIPTION
LATE EOCENE	Dictyocha quadria (S)							0		VOID				Colors: grayish green (5GY 6/1), gray olive green (5GY 3/2), dusky yellow (5GY 5/2), pale green (10G 6/2). Intense deformation, soft, massive, streaked.
								1	0.5					5GY 3/2 with 5GY 5/2, 10G 6/2 — MAJOR LITHOLOGY: DIATOM OOZE (Smears 2-75, 3-75, CC) 0- 1% Opaques, TR- 3% Volcanic glass, 0-TR% Glauconite, 79-90% Diatoms, 5-10% Radiolarians, 3- 7% Sponge spicules, 0-TR% Silicoflagellates
				C/G	B				1.0					
			A/G					2					75	5GY 5/2 — Carbon-Carbonate (DSDP) 3-15 (0.3, 0.0, 3)
		C/T												
				C/G	B									
								3					75	
				C/G	B									
								4						
				F/G	B									
			A/G											
		C/T						5						
				F/G	B		A/P	CORE CATCHER					CC	5GY 6/1

SITE 340 HOLE CORE 10 CORED INTERVAL: 85.5-95.0 m



SITE 340 HOLE CORE 11 CORED INTERVAL: 95.0-104.5 m



DEEP SEA DRILLING PROJECT

LEG 38 SITE 341

SITE SUMMARY SHEET

POSITION: Latitude: 67°20.10'N Longitude: 06°06.64'E

Water depth (from sea level): 1439.0 corrected meters (Echo sounding)

Bottom felt at: 1443.5 meters (drill pipe) Penetration: 456.0 meters

Number of Holes: 1 Number of Cores: 34

Total length of cored section: 313.5 m Total core recovered: 213.0 m

Percentage of core recovery: 67.9%

OLDEST SEDIMENT CORED:

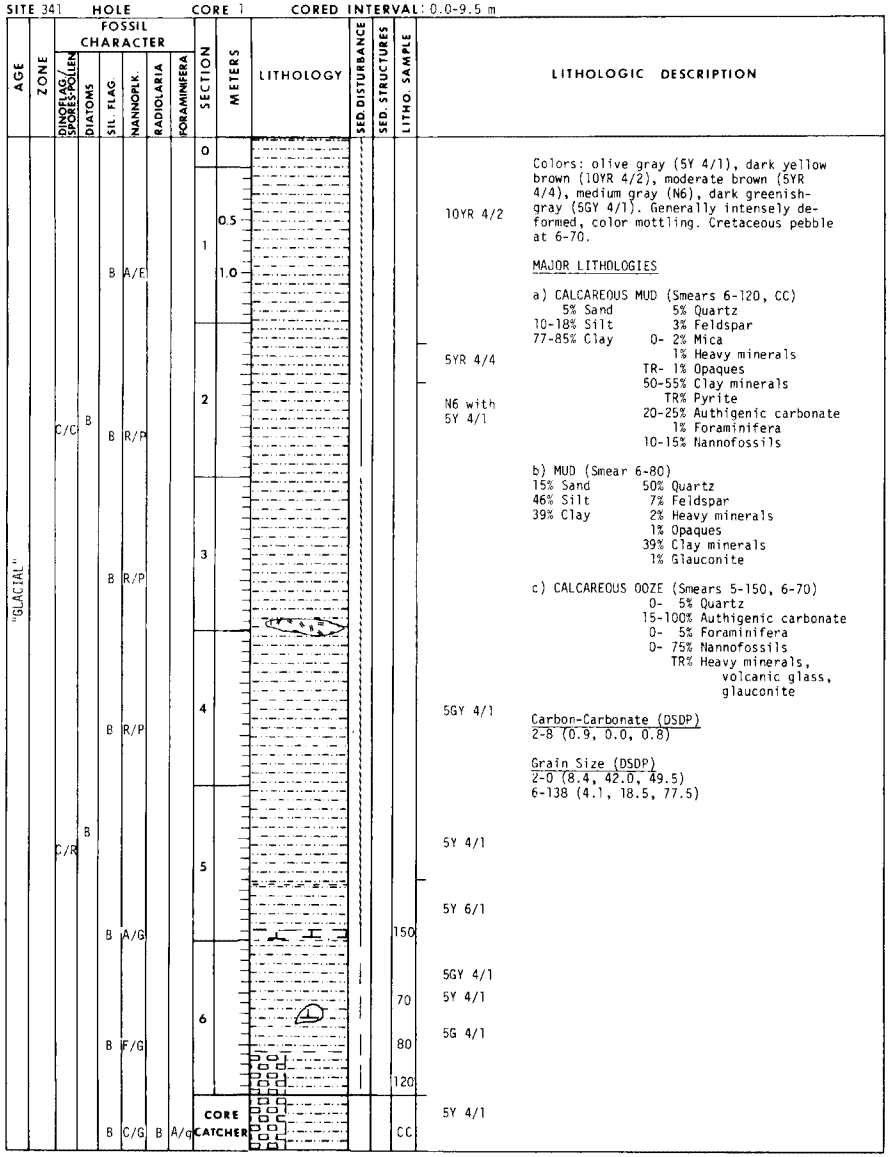
Depth below sea floor: 456.0 meters Nature: Transition biogenic siliceous (diatomite)

Age: Middle/upper Miocene (Core 34)

PRINCIPAL RESULTS:

At this site, a thick sequence (323 m) of Glacial sediments, overlies upper/middle Miocene sediments. The thick glacial sequence included allocthonous material of Miocene, Oligocene, and Eocene sediments, presumably obtained by slumping and erosion from nearby diapiric bodies. Also included were Pleistocene sediments containing shallow water benthic fauna. The Miocene diatomaceous oozes contained methane and traces of ethane. Liquid hydrocarbons, were discovered in the middle Miocene sediments, and further penetration was stopped.

SITE 341 HOLE CORE 1 CORED INTERVAL: 0.0-9.5 m



Colors: olive gray (5Y 4/1), dark yellow brown (10YR 4/2), moderate brown (5YR 4/4), medium gray (N6), dark greenish-gray (5GY 4/1). Generally intensely deformed, color mottling. Cretaceous pebble at 6-70.

MAJOR LITHOLOGIES

a) CALCAREOUS MUD (Smears 6-120, CC)

5% Sand	5% Quartz
10-18% Silt	3% Feldspar
77-85% Clay	0- 2% Mica
	1% Heavy minerals
	TR- 1% Opaques
	50-55% Clay minerals
	TR% Pyrite
	20-25% Authigenic carbonate
	1% Foraminifera
	10-15% Nannofossils

b) MUD (Smear 6-80)

15% Sand	50% Quartz
46% Silt	7% Feldspar
39% Clay	2% Heavy minerals
	1% Opaques
	39% Clay minerals
	1% Glauconite

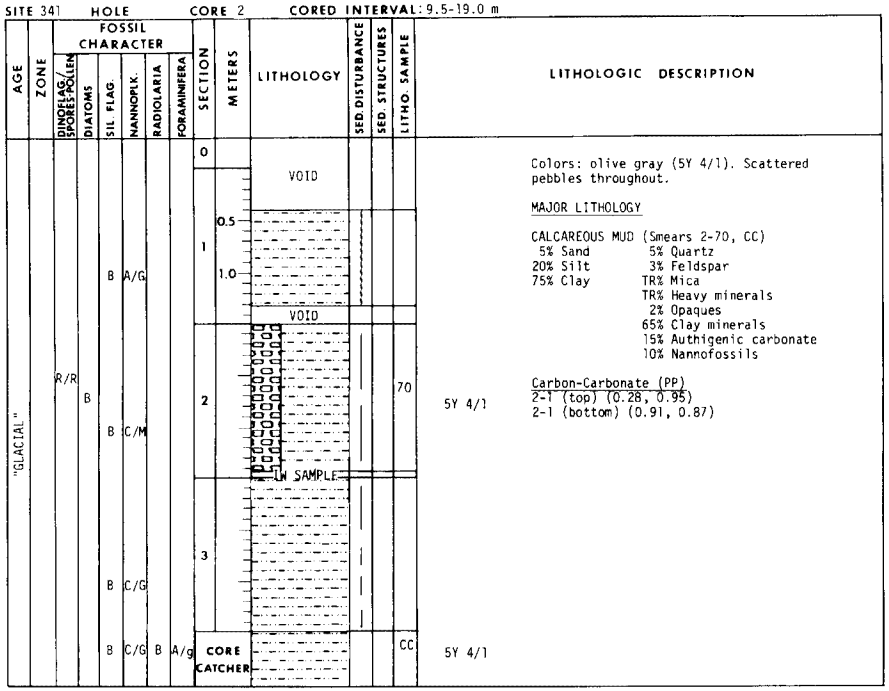
c) CALCAREOUS OOZE (Smears 5-150, 6-70)

	0- 5% Quartz
	15-100% Authigenic carbonate
	0- 5% Foraminifera
	0- 75% Nannofossils
	TR% Heavy minerals, volcanic glass, glauconite

Carbon-Carbonate (DSDP)
2-8 (0.9, 0.0, 0.8)

Grain Size (DSDP)
2-0 (8.4, 42.0, 49.5)
6-138 (4.1, 18.5, 77.5)

SITE 341 HOLE CORE 2 CORED INTERVAL: 9.5-19.0 m



Colors: olive gray (5Y 4/1). Scattered pebbles throughout.

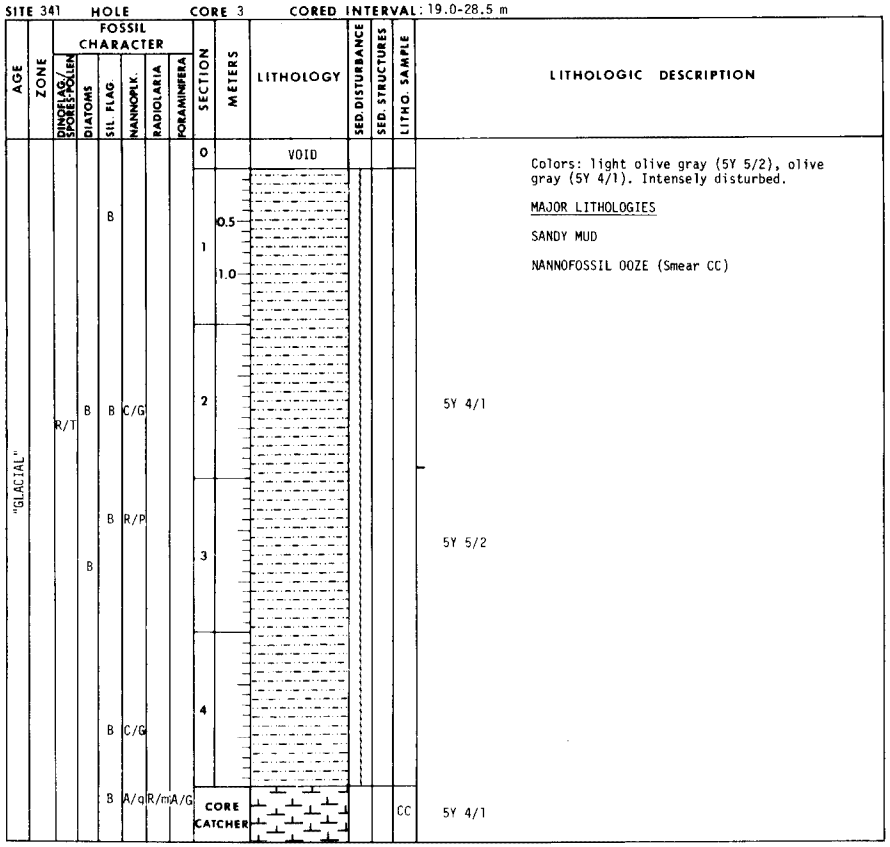
MAJOR LITHOLOGY

CALCAREOUS MUD (Smears 2-70, CC)

5% Sand	5% Quartz
20% Silt	3% Feldspar
75% Clay	TR% Mica
	TR% Heavy minerals
	2% Opaques
	65% Clay minerals
	15% Authigenic carbonate
	10% Nannofossils

Carbon-Carbonate (PP)
2-1 (top) (0.28, 0.95)
2-1 (bottom) (0.91, 0.87)

SITE 341 HOLE CORE 3 CORED INTERVAL: 19.0-28.5 m



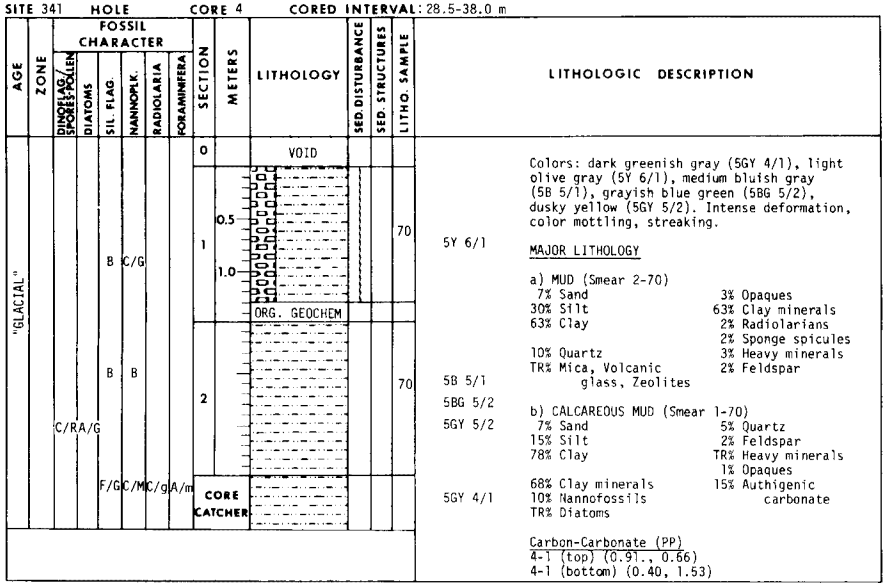
Colors: light olive gray (5Y 5/2), olive gray (5Y 4/1). Intensely disturbed.

MAJOR LITHOLOGIES

SANDY MUD

NANNOFOSSIL OOZE (Smear CC)

SITE 341 HOLE CORE 4 CORED INTERVAL: 28.5-38.0 m



Colors: dark greenish gray (5GY 4/1), light olive gray (5Y 6/1), medium bluish gray (5B 5/1), grayish blue green (5BG 5/2), dusky yellow (5GY 5/2). Intense deformation, color mottling, streaking.

MAJOR LITHOLOGY

a) MUD (Smear 2-70)

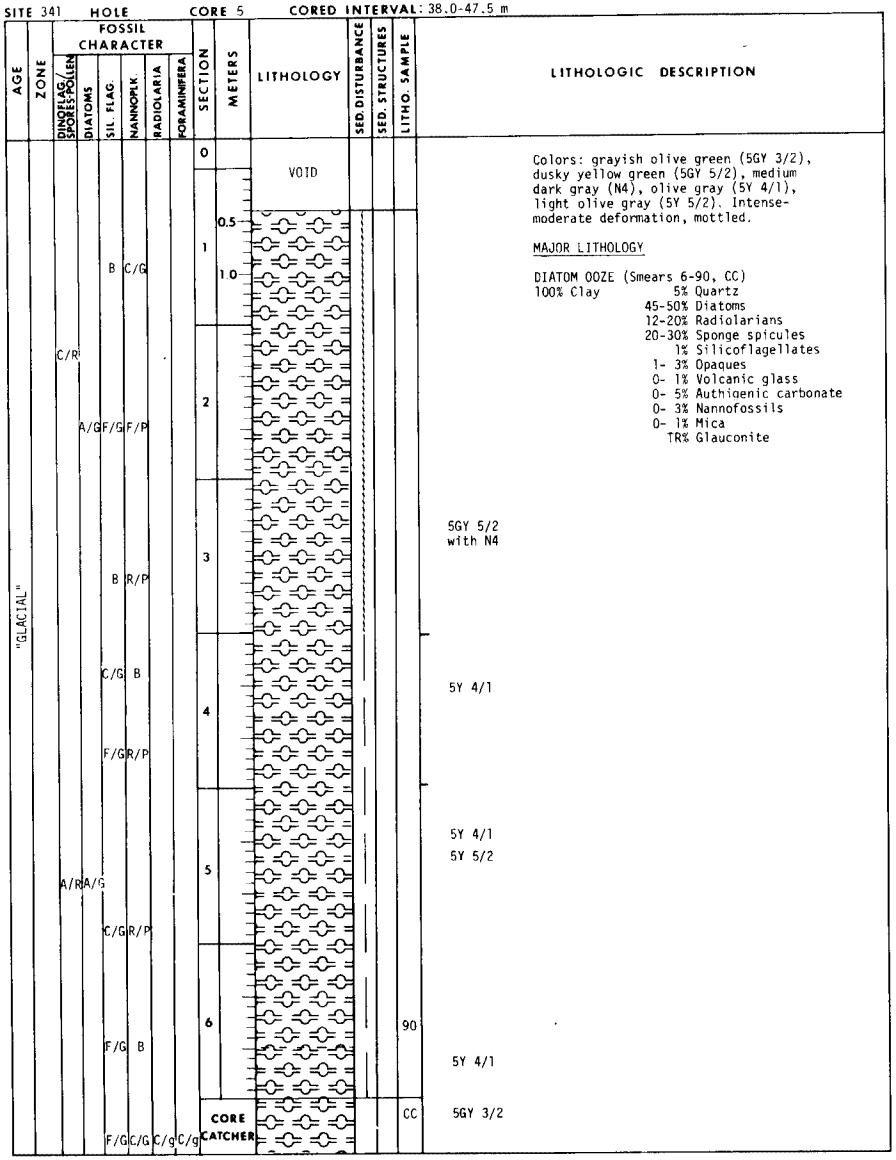
7% Sand	3% Opaques
30% Silt	63% Clay minerals
63% Clay	2% Radiolarians
	2% Sponge spicules
10% Quartz	3% Heavy minerals
TR% Mica, Volcanic glass, Zeolites	2% Feldspar

b) CALCAREOUS MUD (Smear 1-70)

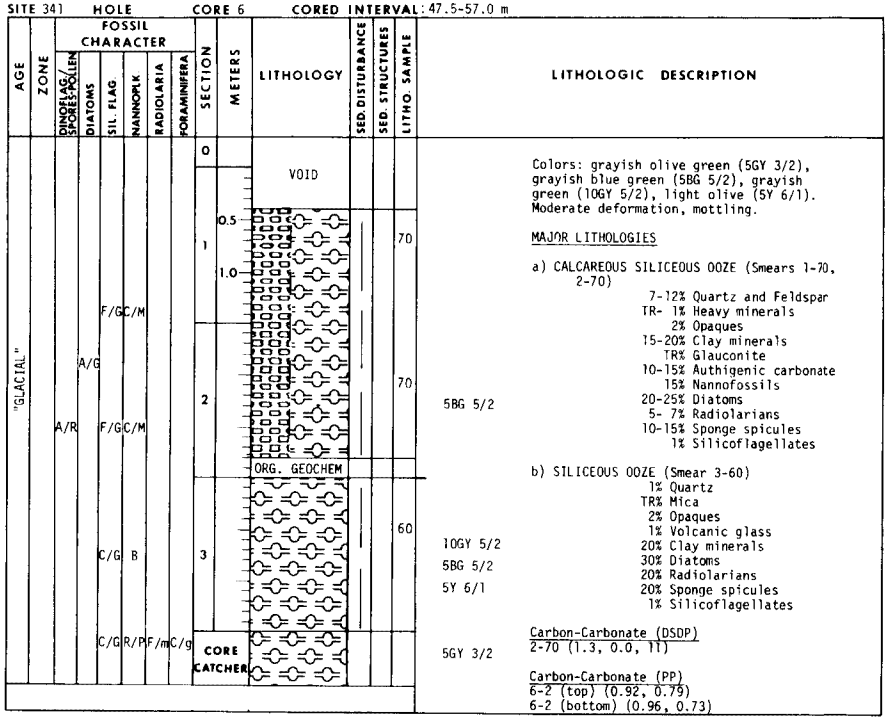
7% Sand	5% Quartz
15% Silt	2% Feldspar
78% Clay	TR% Heavy minerals
	1% Opaques
68% Clay minerals	15% Authigenic carbonate
10% Nannofossils	
TR% Diatoms	

Carbon-Carbonate (PP)
4-1 (top) (0.91., 0.66)
4-1 (bottom) (0.40, 1.53)

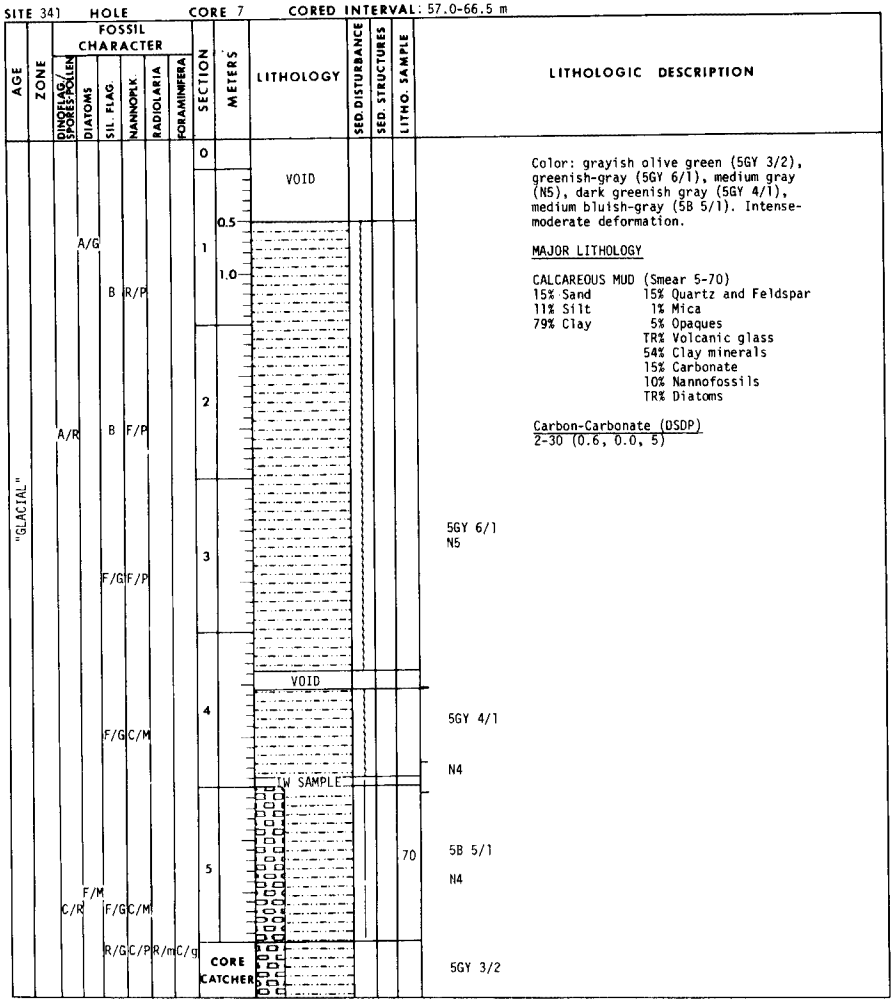
SITE 341 HOLE CORE 5 CORED INTERVAL: 38.0-47.5 m



SITE 341 HOLE CORE 6 CORED INTERVAL: 47.5-57.0 m



SITE 341 HOLE CORE 7 CORED INTERVAL: 57.0-66.5 m



Color: grayish olive green (5GY 3/2), greenish-gray (5GY 6/1), medium gray (N5), dark greenish gray (5GY 4/1), medium bluish-gray (5B 5/1). Intense-moderate deformation.

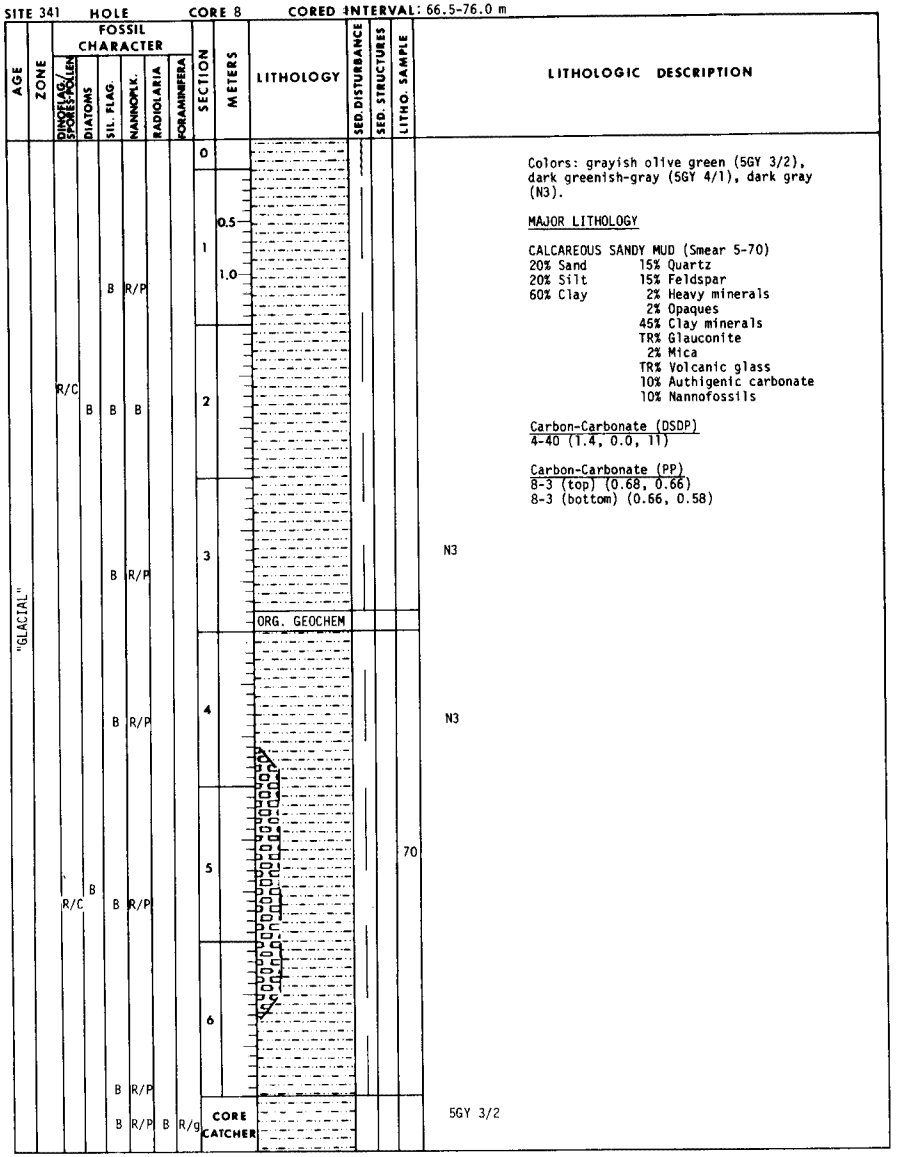
MAJOR LITHOLOGY

CALCAREOUS MUD (Smear 5-70)

15% Sand	15% Quartz and Feldspar
11% Silt	1% Mica
79% Clay	5% Opaques
	TR% Volcanic glass
	54% Clay minerals
	15% Carbonate
	10% Nannofossils
	TR% Diatoms

Carbon-Carbonate (DSDP)
2-30 (0.6, 0.0, 5)

SITE 341 HOLE CORE 8 CORED INTERVAL: 66.5-76.0 m



Colors: grayish olive green (5GY 3/2), dark greenish-gray (5GY 4/1), dark gray (N3).

MAJOR LITHOLOGY

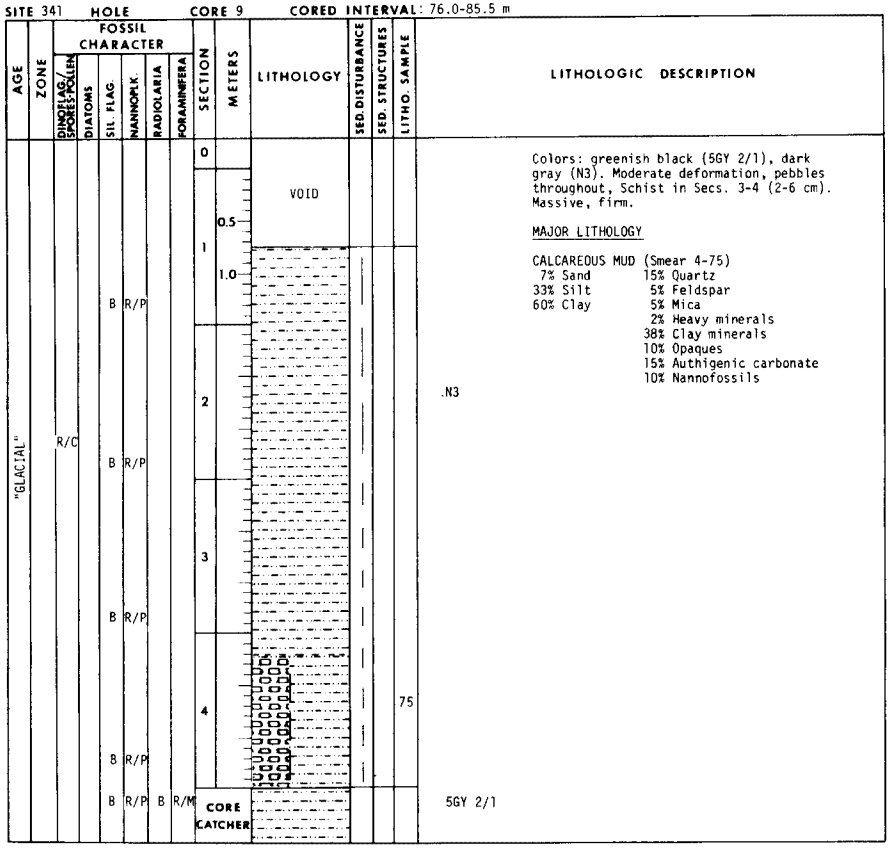
CALCAREOUS SANDY MUD (Smear 5-70)

20% Sand	15% Quartz
20% Silt	15% Feldspar
60% Clay	2% Heavy minerals
	2% Opaques
	45% Clay minerals
	TR% Glauconite
	2% Mica
	TR% Volcanic glass
	10% Authigenic carbonate
	10% Nannofossils

Carbon-Carbonate (DSDP)
4-40 (1.4, 0.0, 11)

Carbon-Carbonate (PP)
8-3 (top) (0.68, 0.66)
8-3 (bottom) (0.66, 0.58)

SITE 341 HOLE CORE 9 CORED INTERVAL: 76.0-85.5 m



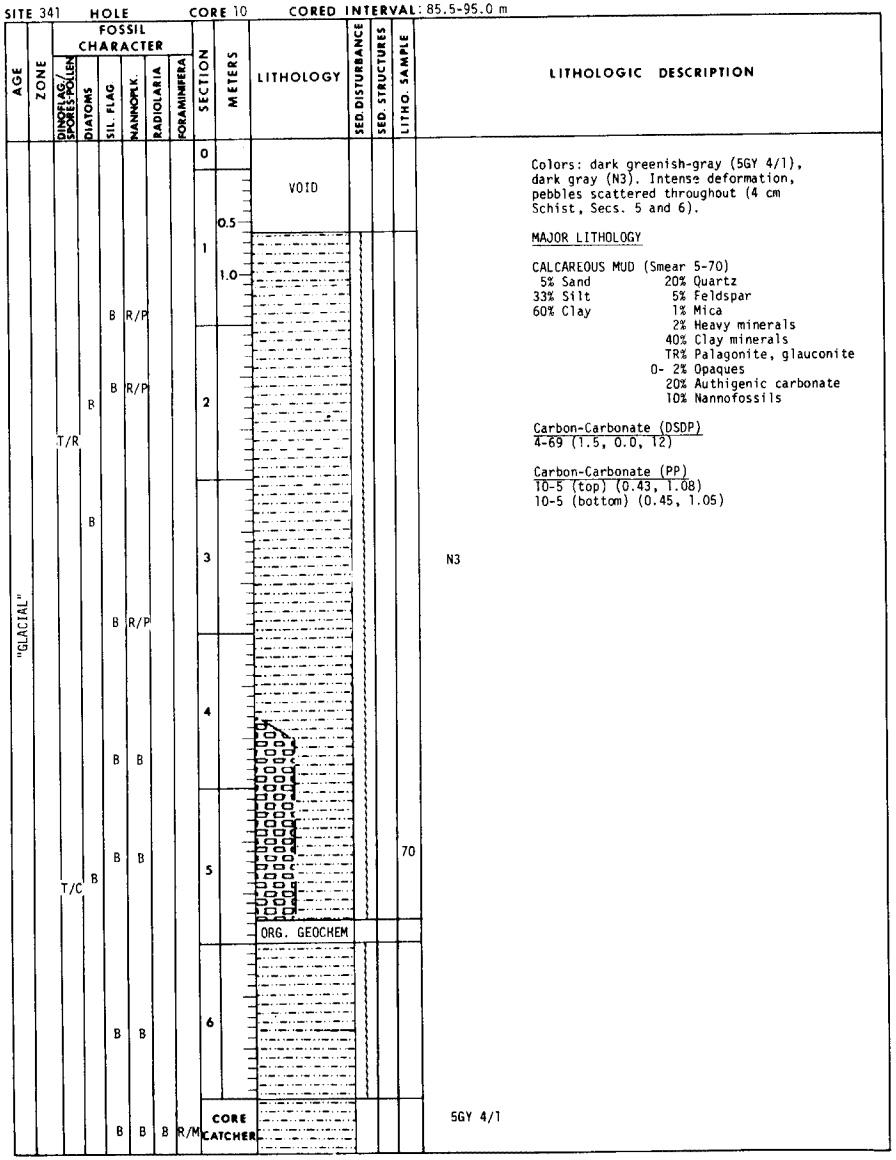
Colors: greenish black (5GY 2/1), dark gray (N3). Moderate deformation, pebbles throughout, Schist in Secs. 3-4 (2-6 cm). Massive, firm.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smear 4-75)

7% Sand	15% Quartz
33% Silt	5% Feldspar
60% Clay	5% Mica
	2% Heavy minerals
	38% Clay minerals
	10% Opaques
	15% Authigenic carbonate
	10% Nannofossils

SITE 341 HOLE CORE 10 CORED INTERVAL: 85.5-95.0 m



Colors: dark greenish-gray (5GY 4/1), dark gray (N3). Intense deformation, pebbles scattered throughout (4 cm Schist, Secs. 5 and 6).

MAJOR LITHOLOGY

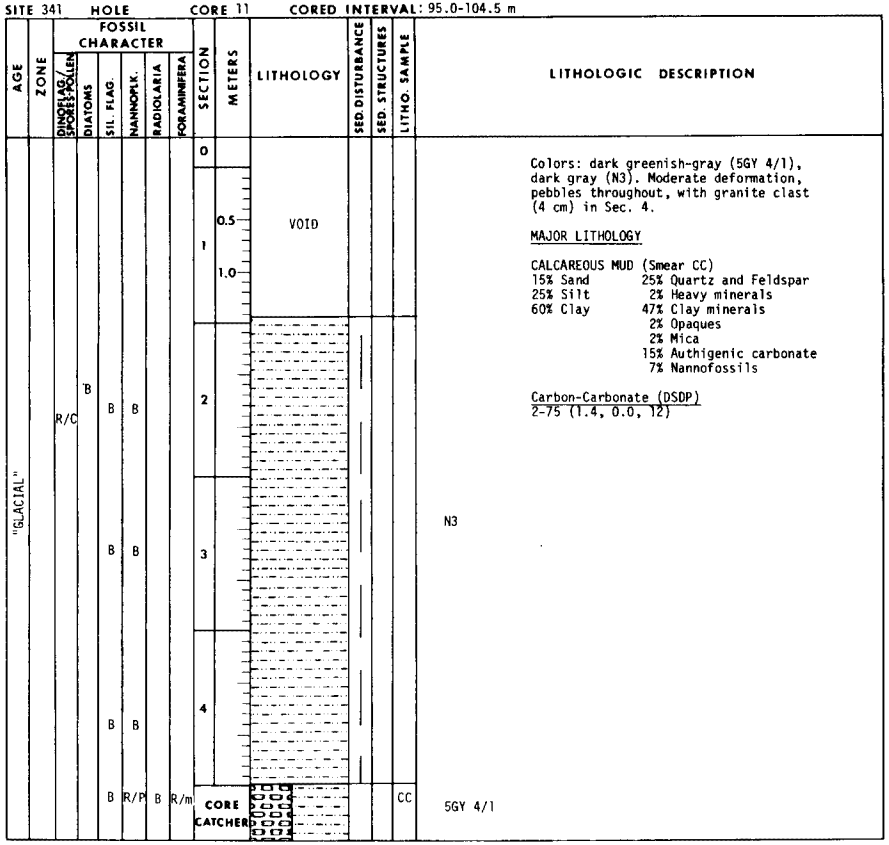
CALCAREOUS MUD (Smear 5-70)

5% Sand	20% Quartz
33% Silt	5% Feldspar
60% Clay	1% Mica
	2% Heavy minerals
	40% Clay minerals
	TR% Palagonite, glauconite
	0- 2% Opaques
	20% Authigenic carbonate
	10% Nannofossils

Carbon-Carbonate (DSDP)
4-69 (1.5, 0.0, 12)

Carbon-Carbonate (PP)
10-5 (top) (0.43, 1.08)
10-5 (bottom) (0.45, 1.05)

SITE 341 HOLE CORE 11 CORED INTERVAL: 95.0-104.5 m



Colors: dark greenish-gray (5GY 4/1), dark gray (N3). Moderate deformation, pebbles throughout, with granite clast (4 cm) in Sec. 4.

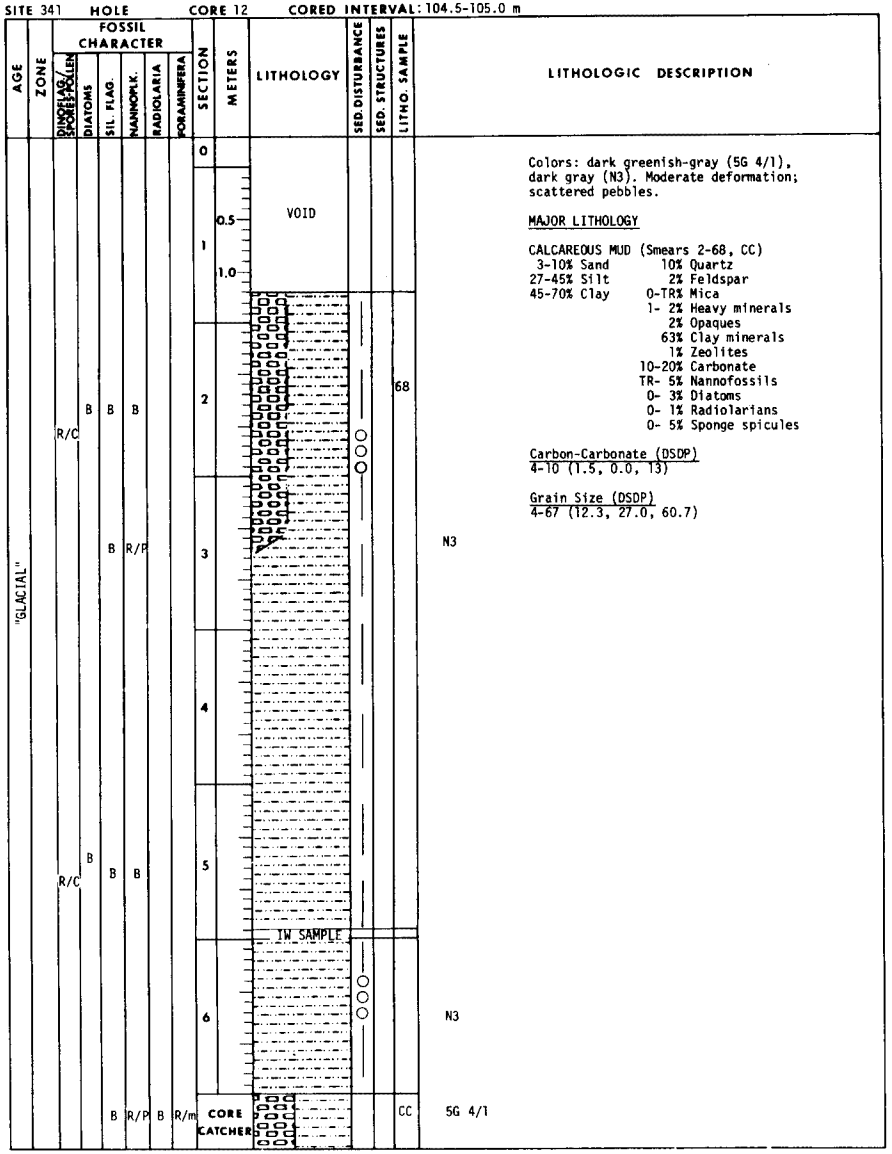
MAJOR LITHOLOGY

CALCAREOUS MUD (Smear CC)

15% Sand	25% Quartz and Feldspar
25% Silt	2% Heavy minerals
60% Clay	47% Clay minerals
	2% Opaques
	2% Mica
	15% Authigenic carbonate
	7% Nannofossils

Carbon-Carbonate (DSDP)
2-75 (1.4, 0.0, 12)

SITE 341 HOLE CORE 12 CORED INTERVAL: 104.5-105.0 m



Colors: dark greenish-gray (5G 4/1), dark gray (N3). Moderate deformation; scattered pebbles.

MAJOR LITHOLOGY

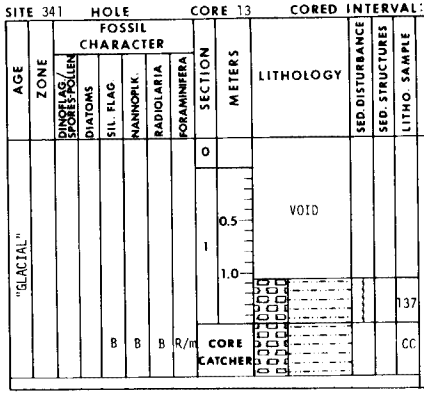
CALCAREOUS MUD (Smears 2-68, CC)

3-10% Sand	10% Quartz
27-45% Silt	2% Feldspar
45-70% Clay	0-TR% Mica
	1- 2% Heavy minerals
	2% Opaques
	63% Clay minerals
	1% Zeolites
	10-20% Carbonate
	TR- 5% Nannofossils
	0- 3% Diatoms
	0- 1% Radiolarians
	0- 5% Sponge spicules

Carbon-Carbonate (DSDP)
4-10 (1.5, 0.0, 13)

Grain Size (DSDP)
4-67 (12.3, 27.0, 60.7)

SITE 341 HOLE CORE 13 CORED INTERVAL: 105.5-114.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1); medium dark gray (N4). Intense deformation, soft structureless.

MAJOR LITHOLOGY

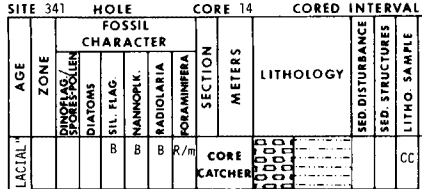
CALCAREOUS MUD (Smear 1-137, CC)

7-15% Sand	12-20% Quartz and Feldspar
23-25% Silt	2% Mica
60-70% Clay	2% Heavy minerals
	2% Opaques
	42-52% Clay minerals
	TR% Volcanic glass, Diatoms, Glauconite, Zeolites
	20% Carbonate
	7-10% Nannofossils

N4

5G 4/1

SITE 341 HOLE CORE 14 CORED INTERVAL: 114.0-123.5 m



LITHOLOGIC DESCRIPTION

5G 4/1

Core catcher only: dark greenish-gray (5G 4/1) with pebbles.

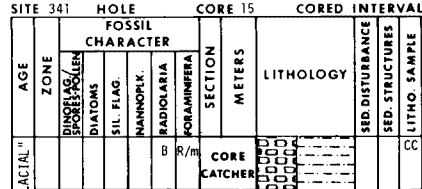
MAJOR LITHOLOGY

CALCAREOUS MUD (Smear CC)

10% Sand	20% Quartz and Feldspar
20% Silt	2% Heavy minerals
70% Clay	55% Clay minerals
	7% Nannofossils
	15% Authigenic carbonate
	1% Opaques

(Carbonate fragments present.)

SITE 341 HOLE CORE 15 CORED INTERVAL: 142.5-152.0 m



LITHOLOGIC DESCRIPTION

5G 4/1

Core catcher only: dark greenish-gray (5G 4/1). Mud with pebbles.

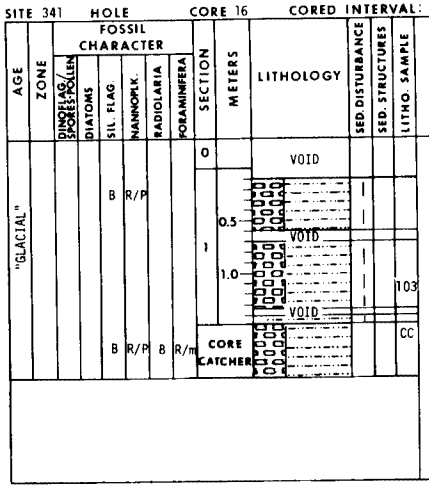
MAJOR LITHOLOGY

CALCAREOUS MUD (Smear CC)

12% Sand	20% Quartz and Feldspar
20% Silt	TR% Mica, Opaques
68% Clay	2% Heavy minerals
	55% Clay minerals
	15% Authigenic carbonate
	7% Nannofossils

EXPLANATORY NOTES IN CHAPTER 1

SITE 341 HOLE CORE 16 CORED INTERVAL: 161.5-171.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1), medium dark gray (N4) massive, structureless, pebbles.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smears 1-103, CC)

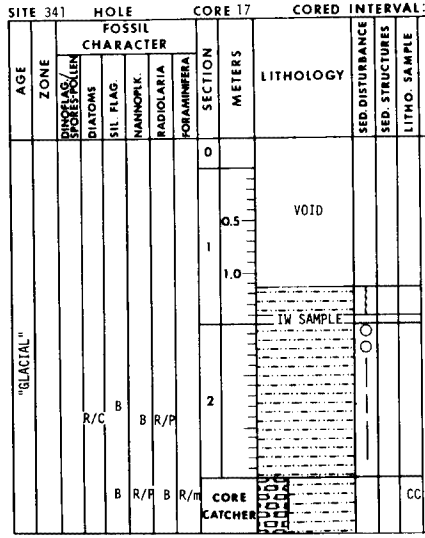
10-20% Sand	25% Quartz
30% Silt	10% Feldspar
50-60% Clay	2% Mica
	3% Heavy minerals
	1% Opaques
	30% Clay minerals
	1% Glauconite
	20% Carbonate
	7% Nannofossils

Carbon-Carbonate (DSDP)
1-99 (1.2, 0.0, 10)

Grain Size (DSDP)
1-49 (26.8, 30.9, 42.3)

5G 4/1

SITE 341 HOLE CORE 17 CORED INTERVAL: 180.5-190.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1), medium dark gray (N4). Massive, pebbles.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smear CC)

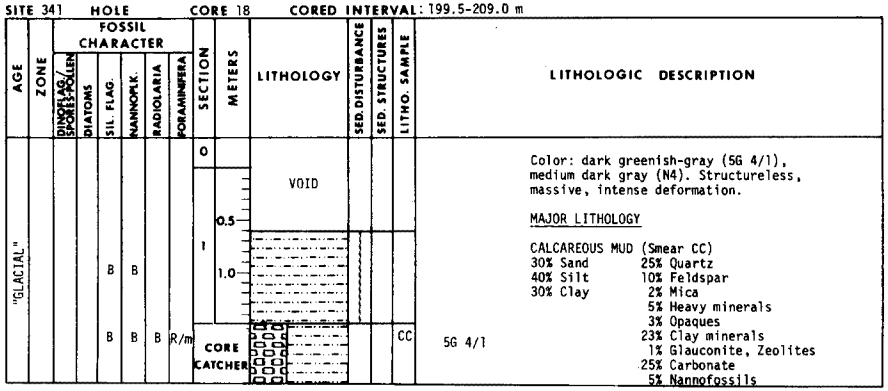
7% Sand	15% Quartz and Feldspar
78% Silt	2% Mica
65% Clay	1% Heavy minerals
	50% Clay minerals
	25% Carbonate
	7% Nannofossils

N4

N4

5G 4/1

SITE 341 HOLE CORE 18 CORED INTERVAL: 199.5-209.0 m



5G 4/1

LITHOLOGIC DESCRIPTION

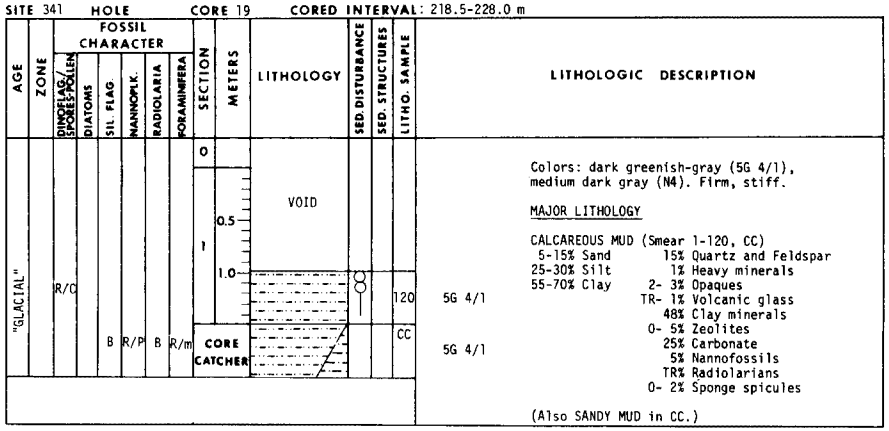
Color: dark greenish-gray (5G 4/1), medium dark gray (N4). Structureless, massive, intense deformation.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smear CC)

30% Sand	25% Quartz
40% Silt	10% Feldspar
30% Clay	2% Mica
	5% Heavy minerals
	3% Opaques
	23% Clay minerals
	1% Glauconite, Zeolites
	25% Carbonate
	5% Nannofossils

SITE 341 HOLE CORE 19 CORED INTERVAL: 218.5-228.0 m



5G 4/1

5G 4/1

LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1), medium dark gray (N4). Firm, stiff.

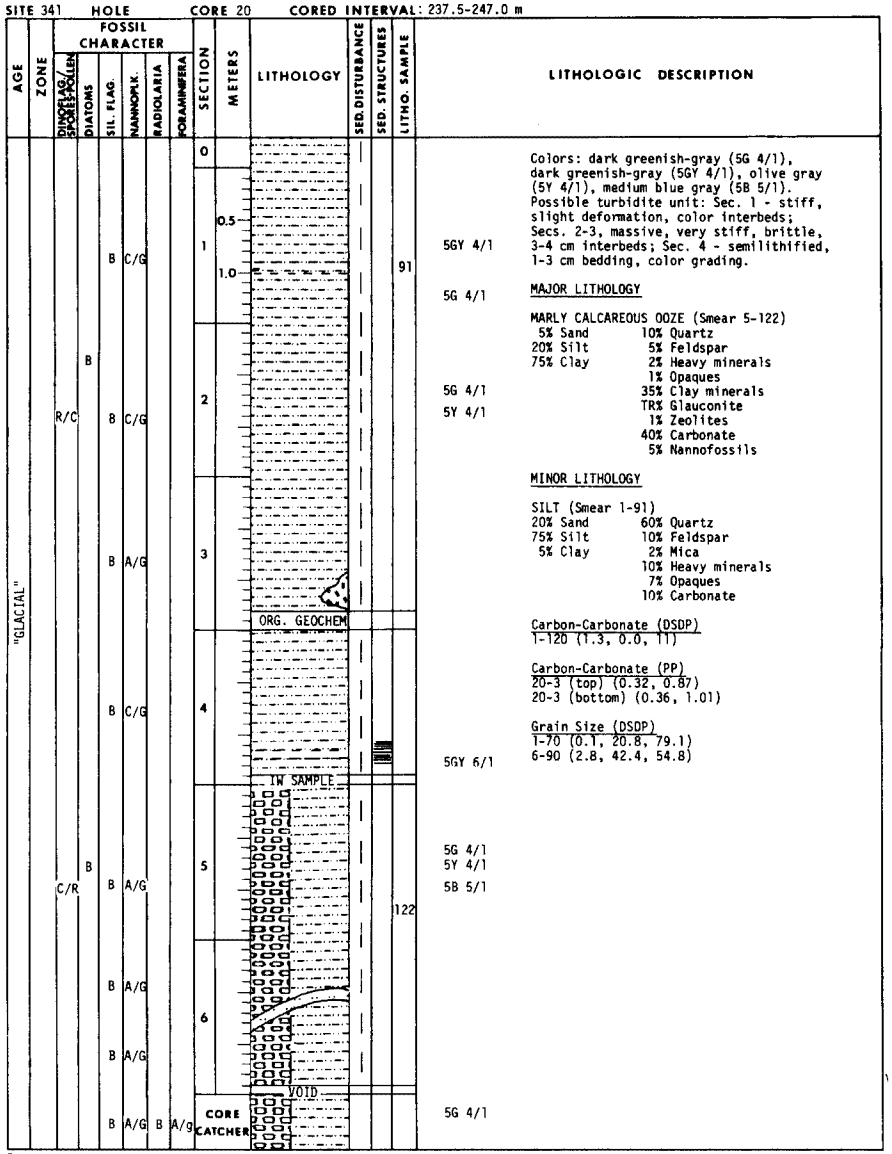
MAJOR LITHOLOGY

CALCAREOUS MUD (Smear 1-120, CC)

5-15% Sand	15% Quartz and Feldspar
25-30% Silt	1% Heavy minerals
55-70% Clay	2- 3% Opaques
	TR- 1% Volcanic glass
	48% Clay minerals
	0- 5% Zeolites
	25% Carbonate
	5% Nannofossils
	TR% Radiolarians
	0- 2% Sponge spicules

(Also SANDY MUD in CC.)

SITE 341 HOLE CORE 20 CORED INTERVAL: 237.5-247.0 m



5GY 4/1

5G 4/1

5G 4/1

5Y 4/1

5GY 6/1

5G 4/1

5Y 4/1

5B 5/1

5G 4/1

Colors: dark greenish-gray (5G 4/1), dark greenish-gray (5GY 4/1), olive gray (5Y 4/1), medium blue gray (5B 5/1). Possible turbidite unit: Sec. 1 - stiff, slight deformation, color interbeds; Secs. 2-3, massive, very stiff, brittle, 3-4 cm interbeds; Sec. 4 - semilithified, 1-3 cm bedding, color grading.

MAJOR LITHOLOGY

MARLY CALCAREOUS OOZE (Smear 5-122)

5% Sand	10% Quartz
20% Silt	5% Feldspar
75% Clay	2% Heavy minerals
	1% Opaques
	35% Clay minerals
	TR% Glauconite
	1% Zeolites
	40% Carbonate
	5% Nannofossils

MINOR LITHOLOGY

SILT (Smear 1-91)

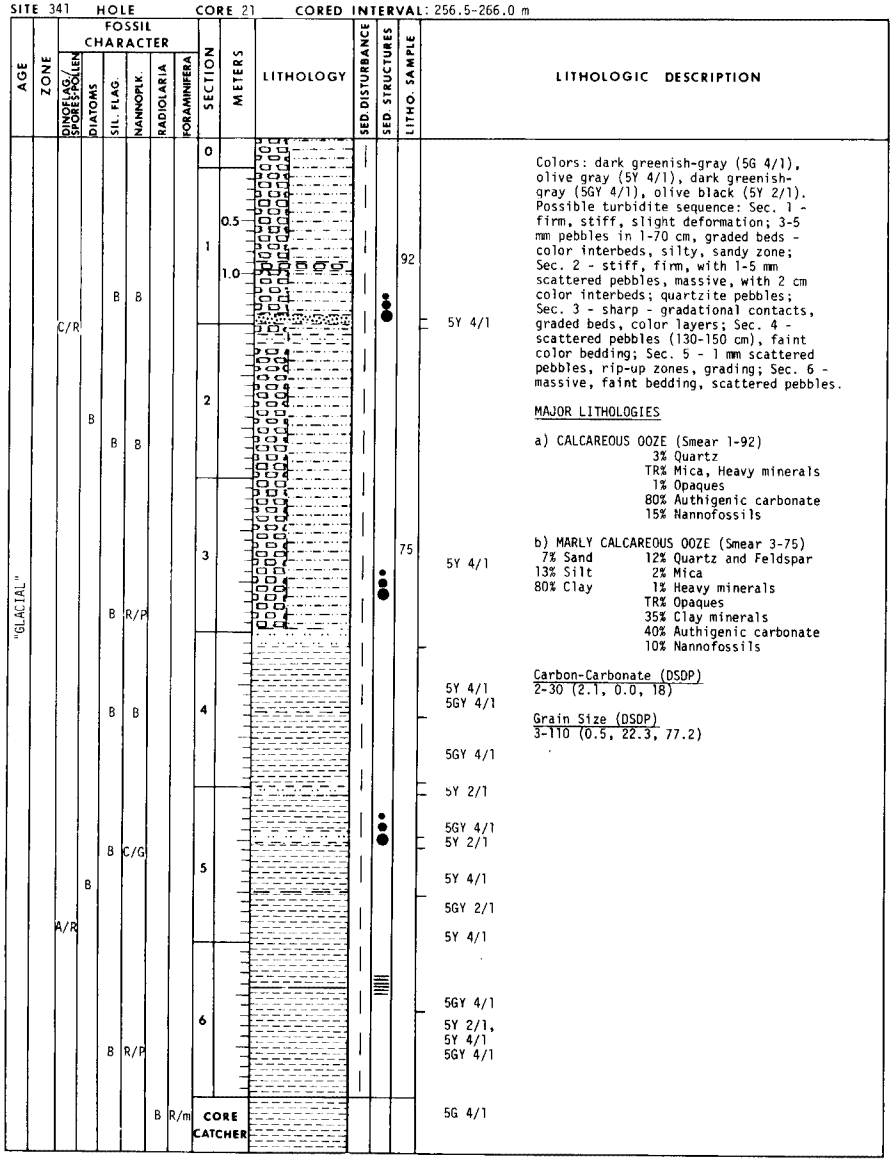
20% Sand	60% Quartz
75% Silt	10% Feldspar
5% Clay	2% Mica
	10% Heavy minerals
	7% Opaques
	10% Carbonate

Carbon-Carbonate (DSDP)
1-120 (1.3, 0.0, 11)

Carbon-Carbonate (PP)
20-3 (top) (0.32, 0.87)
20-3 (bottom) (0.36, 1.01)

Grain Size (DSDP)
1-70 (0.1, 20.8, 79.1)
6-90 (2.8, 42.4, 54.8)

SITE 341 HOLE CORE 21 CORED INTERVAL: 256.5-266.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1), olive gray (5Y 4/1), dark greenish-gray (5GY 4/1), olive black (5Y 2/1). Possible turbidite sequence: Sec. 1 - firm, stiff, slight deformation; 3-5 mm pebbles in 1-70 cm, graded beds - color interbeds, silty, sandy zone; Sec. 2 - stiff, firm, with 1-5 mm scattered pebbles, massive, with 2 cm color interbeds; quartzite pebbles; Sec. 3 - sharp - gradational contacts, graded beds, color layers; Sec. 4 - scattered pebbles (130-150 cm), faint color bedding; Sec. 5 - 1 mm scattered pebbles, rip-up zones, grading; Sec. 6 - massive, faint bedding, scattered pebbles.

MAJOR LITHOLOGIES

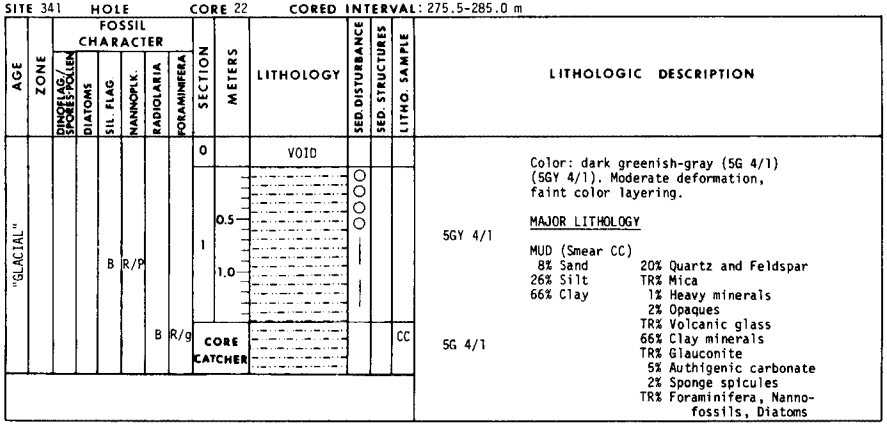
a) CALCAREOUS OOZE (Smear 1-92)
3% Quartz
TR% Mica, Heavy minerals
1% Opaques
80% Authigenic carbonate
15% Nannofossils

b) MARLY CALCAREOUS OOZE (Smear 3-75)
7% Sand
13% Silt
80% Clay
12% Quartz and Feldspar
2% Mica
1% Heavy minerals
TR% Opaques
35% Clay minerals
40% Authigenic carbonate
10% Nannofossils

Carbon-Carbonate (DSDP)
2-30 (2.1, 0.0, 18)

Grain Size (DSDP)
3-110 (0.5, 22.3, 77.2)

SITE 341 HOLE CORE 22 CORED INTERVAL: 275.5-285.0 m



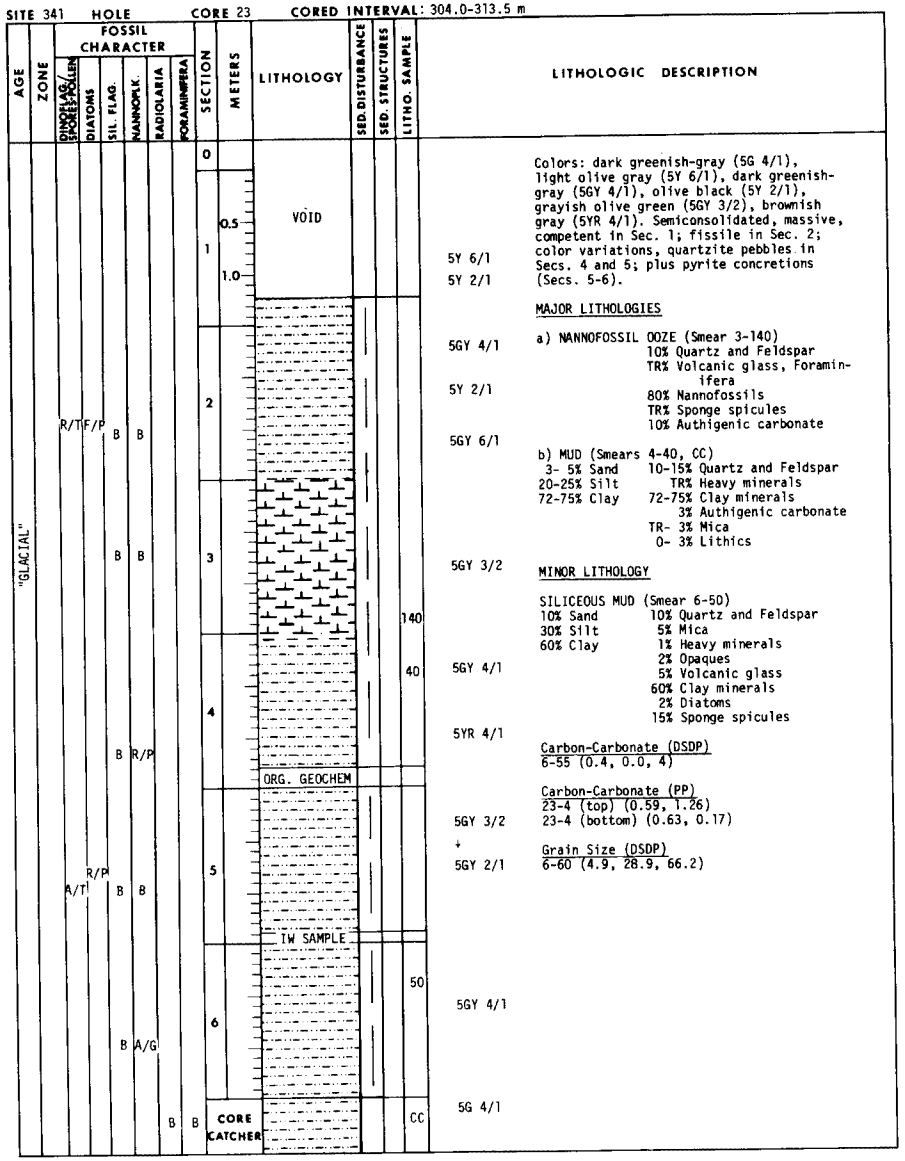
LITHOLOGIC DESCRIPTION

Color: dark greenish-gray (5G 4/1) (5GY 4/1). Moderate deformation, faint color layering.

MAJOR LITHOLOGY

MUD (Smear CC)
8% Sand
26% Silt
66% Clay
20% Quartz and Feldspar
TR% Mica
1% Heavy minerals
2% Opaques
TR% Volcanic glass
66% Clay minerals
TR% Glauconite
5% Authigenic carbonate
2% Sponge spicules
TR% Foraminifera, Nannofossils, Diatoms

SITE 341 HOLE CORE 23 CORED INTERVAL: 304.0-313.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1), light olive gray (5Y 6/1), dark greenish-gray (5GY 4/1), olive black (5Y 2/1), grayish olive green (5GY 3/2), brownish gray (5YR 4/1). Semiconsolidated, massive, competent in Sec. 1; fissile in Sec. 2; color variations, quartzite pebbles in Secs. 4 and 5; plus pyrite concretions (Secs. 5-6).

MAJOR LITHOLOGIES

a) NANNOFOSSIL OOZE (Smear 3-140)
10% Quartz and Feldspar
TR% Volcanic glass, Foraminifera
80% Nannofossils
TR% Sponge spicules
10% Authigenic carbonate

b) MUD (Smears 4-40, CC)
3- 5% Sand 10-15% Quartz and Feldspar
20-25% Silt TR% Heavy minerals
72-75% Clay 72-75% Clay minerals
3% Authigenic carbonate
TR- 3% Mica
0- 3% Lithics

MINOR LITHOLOGY

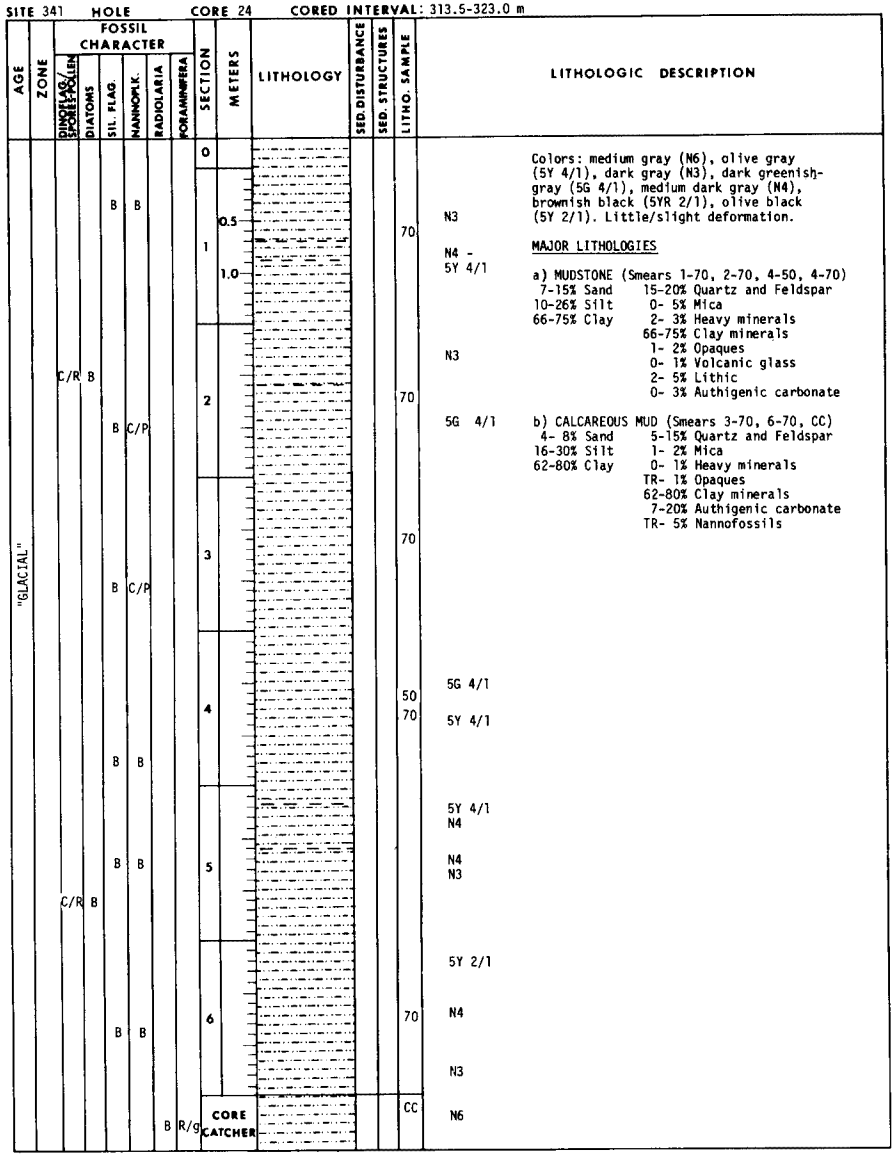
SILICEOUS MUD (Smear 6-50)
10% Sand 10% Quartz and Feldspar
30% Silt 5% Mica
60% Clay 1% Heavy minerals
2% Opaques
5% Volcanic glass
60% Clay minerals
2% Diatoms
15% Sponge spicules

Carbon-Carbonate (DSDP)
6-55 (0.4, 0.0, 4)

Carbon-Carbonate (PP)
23-4 (top) (0.59, 1.26)
23-4 (bottom) (0.63, 0.17)

Grain Size (DSDP)
6-60 (4.9, 28.9, 66.2)

SITE 341 HOLE CORE 24 CORED INTERVAL: 313.5-323.0 m



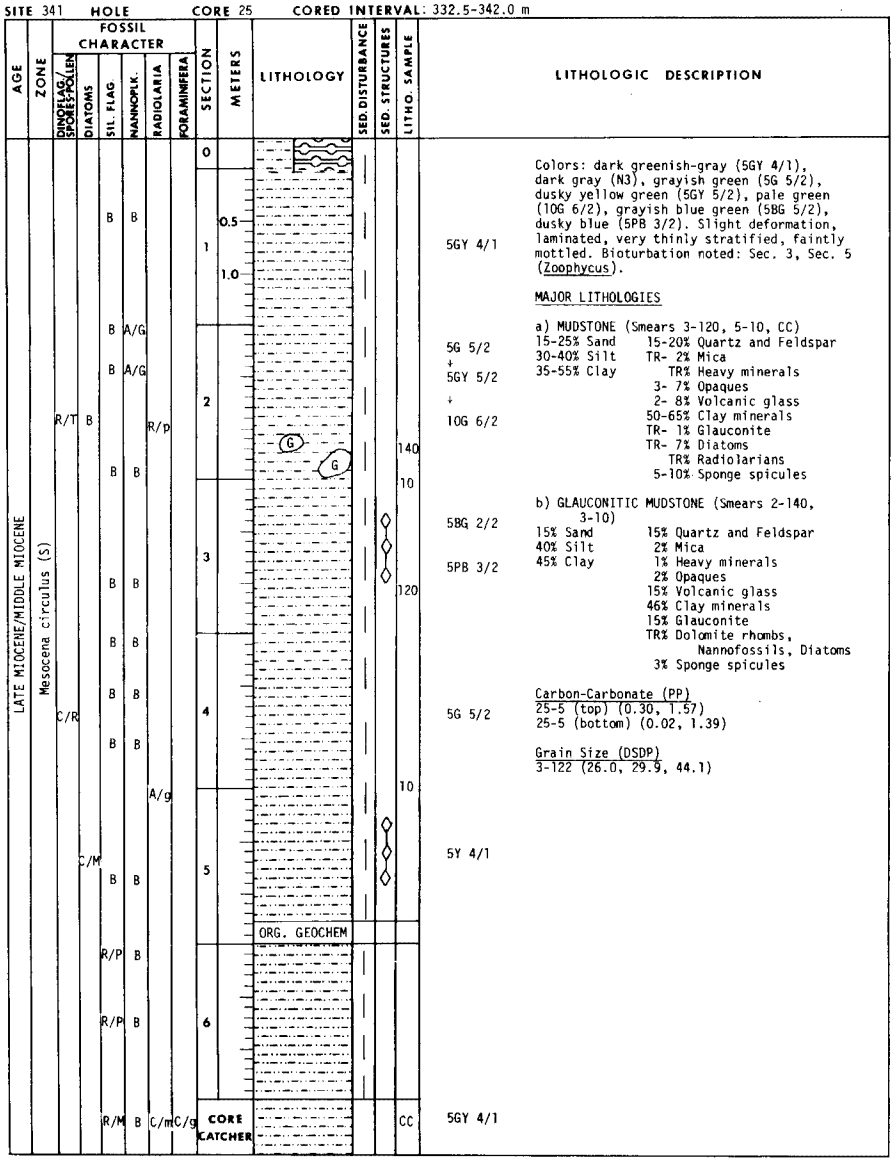
Colors: medium gray (N6), olive gray (5Y 4/1), dark gray (N3), dark greenish-gray (5G 4/1), medium dark gray (N4), brownish black (5YR 2/1), olive black (5Y 2/1). Little/slight deformation.

MAJOR LITHOLOGIES

a) MUDSTONE (Smears 1-70, 2-70, 4-50, 4-70)
7-15% Sand 15-20% Quartz and Feldspar
10-26% Silt 0- 5% Mica
66-75% Clay 2- 3% Heavy minerals
66-75% Clay minerals
1- 2% Opaques
0- 1% Volcanic glass
2- 5% Lithic
0- 3% Authigenic carbonate

b) CALCAREOUS MUD (Smears 3-70, 6-70, CC)
4- 8% Sand 5-15% Quartz and Feldspar
16-30% Silt 1- 2% Mica
62-80% Clay 0- 1% Heavy minerals
TR- 1% Opaques
62-80% Clay minerals
7-20% Authigenic carbonate
TR- 5% Nannofossils

SITE 341 HOLE CORE 25 CORED INTERVAL: 332.5-342.0 m



Colors: dark greenish-gray (5GY 4/1), dark gray (N3), grayish green (5G 5/2), dusky yellow green (5GY 5/2), pale green (10G 6/2), grayish blue green (5BG 5/2), dusky blue (5PB 3/2). Slight deformation, laminated, very thinly stratified, faintly mottled. Bioturbation noted: Sec. 3, Sec. 5 (Zoophycus).

MAJOR LITHOLOGIES

a) MUDSTONE (Smears 3-120, 5-10, CC)

15-25% Sand	15-20% Quartz and Feldspar
30-40% Silt	TR- 2% Mica
35-55% Clay	TR% Heavy minerals
	3- 7% Opaques
	2- 8% Volcanic glass
	50-65% Clay minerals
	TR- 1% Glauconite
	TR- 7% Diatoms
	TR% Radiolarians
	5-10% Sponge spicules

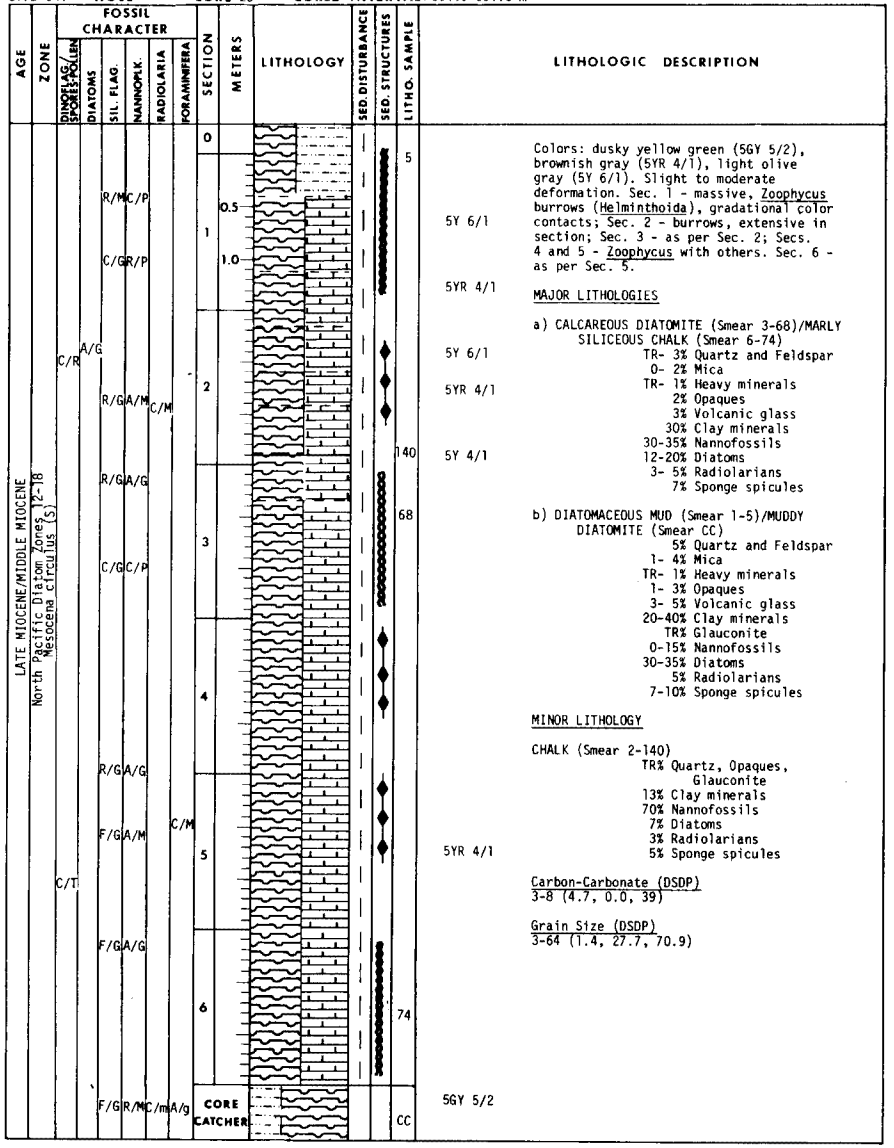
b) GLAUCONITIC MUDSTONE (Smears 2-140, 3-10)

15% Sand	15% Quartz and Feldspar
40% Silt	2% Mica
45% Clay	1% Heavy minerals
	2% Opaques
	15% Volcanic glass
	46% Clay minerals
	15% Glauconite
	TR% Dolomite rhombs, Nannofossils, Diatoms
	3% Sponge spicules

Carbon-Carbonate (PP)
25-5 (top) (0.30, 1.57)
25-5 (bottom) (0.02, 1.39)

Grain Size (DSDP)
3-122 (26.0, 29.9, 44.1)

SITE 341 HOLE CORE 26 CORED INTERVAL: 351.5-361.0 m



Colors: dusky yellow green (5GY 5/2), brownish gray (5YR 4/1), light olive gray (5Y 6/1). Slight to moderate deformation. Sec. 1 - massive, Zoophycus burrows (Helminthoida), gradational color contacts; Sec. 2 - burrows, extensive in section; Sec. 3 - as per Sec. 2; Secs. 4 and 5 - Zoophycus with others. Sec. 6 - as per Sec. 5.

MAJOR LITHOLOGIES

a) CALCAREOUS DIATOMITE (Smear 3-68)/MARLY SILICEOUS CHALK (Smear 6-74)

TR- 3% Quartz and Feldspar
0- 2% Mica
TR- 1% Heavy minerals
2% Opaques
3% Volcanic glass
30% Clay minerals
30-35% Nannofossils
12-20% Diatoms
3- 5% Radiolarians
7% Sponge spicules

b) DIATOMACEOUS MUD (Smear 1-5)/MUDDY DIATOMITE (Smear CC)

5% Quartz and Feldspar
1- 4% Mica
TR- 1% Heavy minerals
1- 3% Opaques
3- 5% Volcanic glass
20-40% Clay minerals
TR% Glauconite
0-15% Nannofossils
30-35% Diatoms
5% Radiolarians
7-10% Sponge spicules

MINOR LITHOLOGY

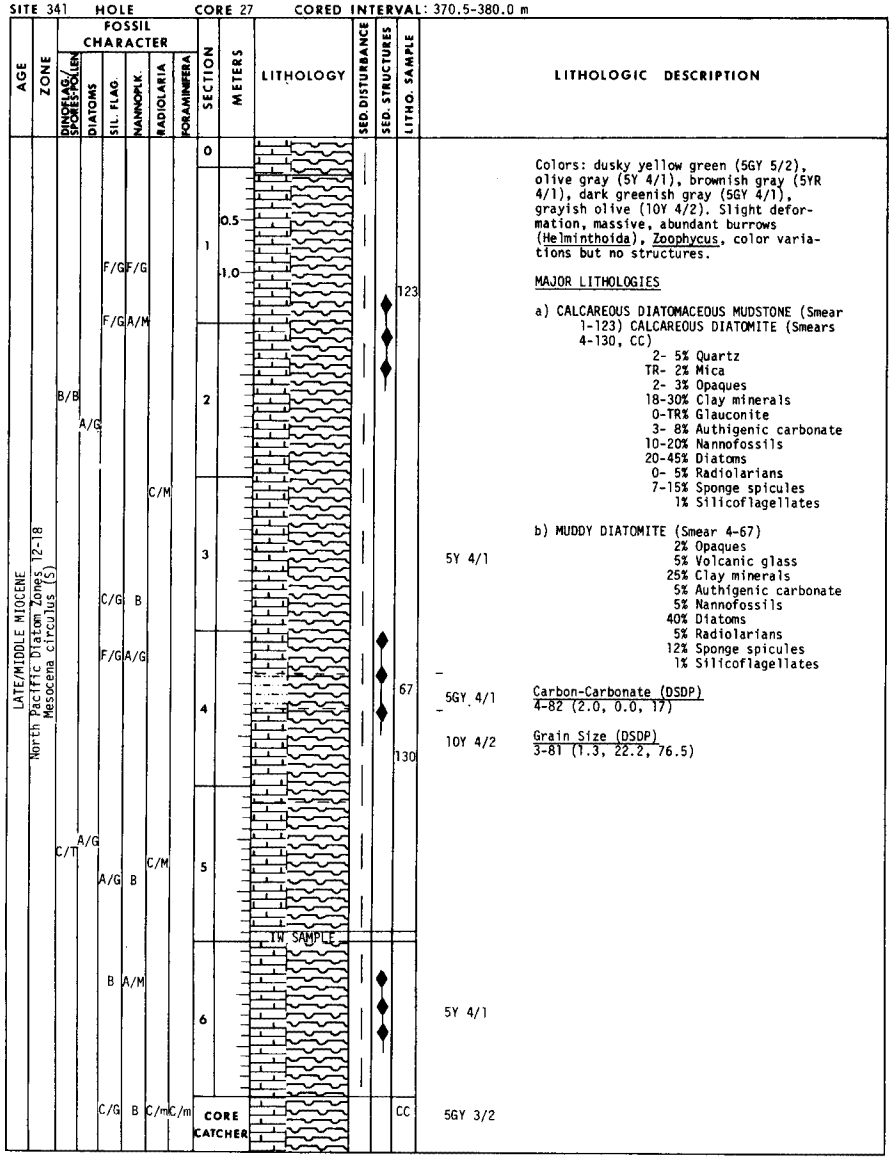
CHALK (Smear 2-140)

TR% Quartz, Opaques, Glauconite
13% Clay minerals
70% Nannofossils
7% Diatoms
3% Radiolarians
5% Sponge spicules

Carbon-Carbonate (DSDP)
3-8 (4.7, 0.0, 39)

Grain Size (DSDP)
3-64 (1.4, 27.7, 70.9)

SITE 341 HOLE CORE 27 CORED INTERVAL: 370.5-380.0 m



Colors: dusky yellow green (5GY 5/2), olive gray (5Y 4/1), brownish gray (5YR 4/1), dark greenish gray (5GY 4/1), grayish olive (10Y 4/2). Slight deformation, massive, abundant burrows (Helminthoida), Zoophycus, color variations but no structures.

MAJOR LITHOLOGIES

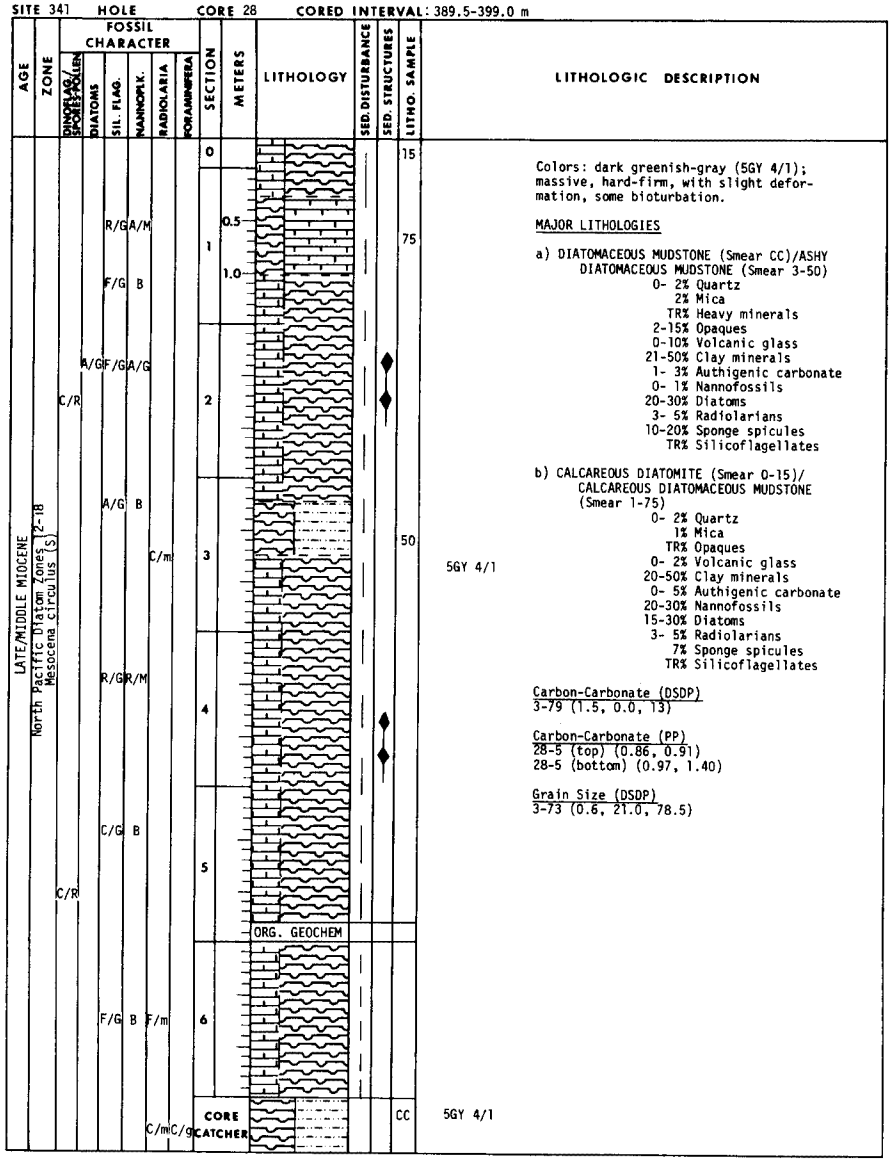
a) CALCAREOUS DIATOMACEOUS MUDSTONE (Smear 1-123) CALCAREOUS DIATOMITE (Smears 4-130, CC)
- 2- 5% Quartz
- TR- 2% Mica
- 2- 3% Opaques
- 18-30% Clay minerals
- 0-TR% Glauconite
- 3- 8% Authigenic carbonate
- 10-20% Nannofossils
- 20-45% Diatoms
- 0- 5% Radiolarians
- 7-15% Sponge spicules
- 1% Silicoflagellates

b) MUDDY DIATOMITE (Smear 4-67)
- 2% Opaques
- 5% Volcanic glass
- 25% Clay minerals
- 5% Authigenic carbonate
- 5% Nannofossils
- 40% Diatoms
- 5% Radiolarians
- 12% Sponge spicules
- 1% Silicoflagellates

Carbon-Carbonate (DSDP)
4-82 (2.0, 0.0, 17)

Grain Size (DSDP)
3-81 (1.3, 22.2, 76.5)

SITE 341 HOLE CORE 28 CORED INTERVAL: 389.5-399.0 m



Colors: dark greenish-gray (5GY 4/1); massive, hard-firm, with slight deformation, some bioturbation.

MAJOR LITHOLOGIES

a) DIATOMACEOUS MUDSTONE (Smear CC)/ASHY DIATOMACEOUS MUDSTONE (Smear 3-50)
- 0- 2% Quartz
- 2% Mica
- TR% Heavy minerals
- 2-15% Opaques
- 0-10% Volcanic glass
- 21-50% Clay minerals
- 1- 3% Authigenic carbonate
- 0- 1% Nannofossils
- 20-30% Diatoms
- 3- 5% Radiolarians
- 10-20% Sponge spicules
- TR% Silicoflagellates

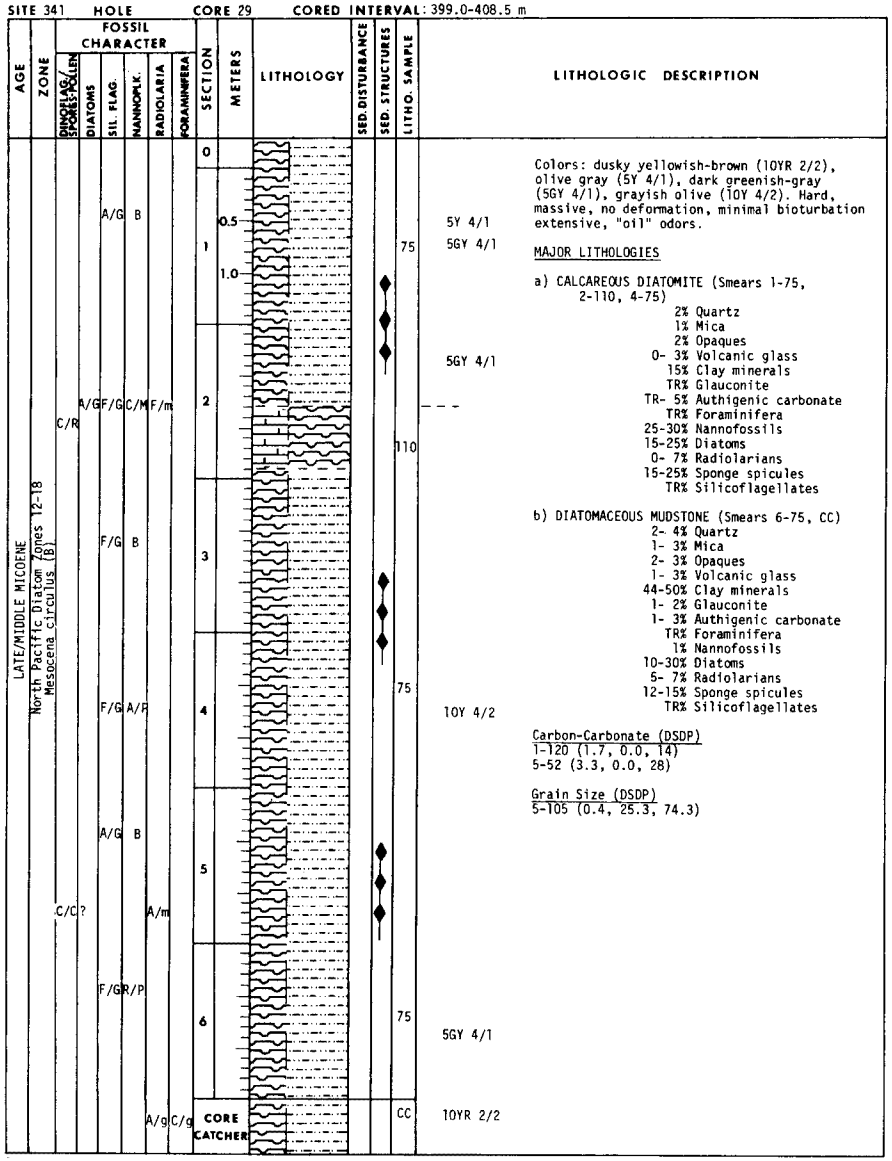
b) CALCAREOUS DIATOMITE (Smear 0-15)/ CALCAREOUS DIATOMACEOUS MUDSTONE (Smear 1-75)
- 0- 2% Quartz
- 1% Mica
- TR% Opaques
- 0- 2% Volcanic glass
- 20-50% Clay minerals
- 0- 5% Authigenic carbonate
- 20-30% Nannofossils
- 15-30% Diatoms
- 3- 5% Radiolarians
- 7% Sponge spicules
- TR% Silicoflagellates

Carbon-Carbonate (DSDP)
3-79 (1.5, 0.0, 13)

Carbon-Carbonate (PP)
28-5 (top) (0.86, 0.91)
28-5 (bottom) (0.97, 1.40)

Grain Size (DSDP)
3-73 (0.6, 21.0, 78.5)

SITE 341 HOLE CORE 29 CORED INTERVAL: 399.0-408.5 m



Colors: dusky yellowish-brown (10YR 2/2), olive gray (5Y 4/1), dark greenish-gray (5GY 4/1), grayish olive (10Y 4/2). Hard, massive, no deformation, minimal bioturbation extensive, "oil" odors.

MAJOR LITHOLOGIES

a) CALCAREOUS DIATOMITE (Smears 1-75, 2-110, 4-75)

2% Quartz
1% Mica
2% Opaques
0- 3% Volcanic glass
15% Clay minerals
TR% Glauconite
TR- 5% Authigenic carbonate
TR% Foraminifera
25-30% Nannofossils
15-25% Diatoms
0- 7% Radiolarians
15-25% Sponge spicules
TR% Silicoflagellates

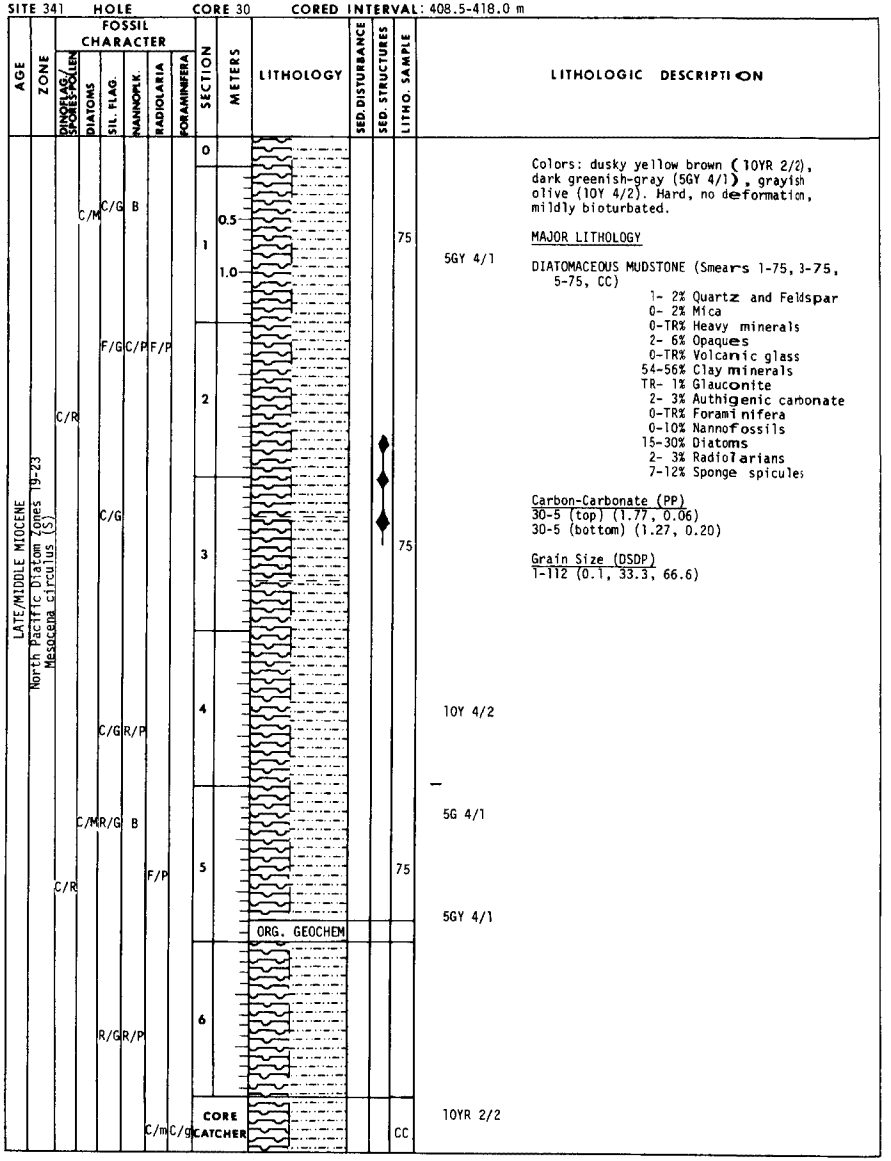
b) DIATOMACEOUS MUDSTONE (Smears 6-75, CC)

2- 4% Quartz
1- 3% Mica
2- 3% Opaques
1- 3% Volcanic glass
44-50% Clay minerals
1- 2% Glauconite
1- 3% Authigenic carbonate
TR% Foraminifera
1% Nannofossils
10-30% Diatoms
5- 7% Radiolarians
12-15% Sponge spicules
TR% Silicoflagellates

Carbon-Carbonate (DSDP)
1-120 (1.7, 0.0, 14)
5-52 (3.3, 0.0, 28)

Grain Size (DSDP)
5-105 (0.4, 25.3, 74.3)

SITE 341 HOLE CORE 30 CORED INTERVAL: 408.5-418.0 m



Colors: dusky yellow brown (10YR 2/2), dark greenish-gray (5GY 4/1), grayish olive (10Y 4/2). Hard, no deformation, mildly bioturbated.

MAJOR LITHOLOGY

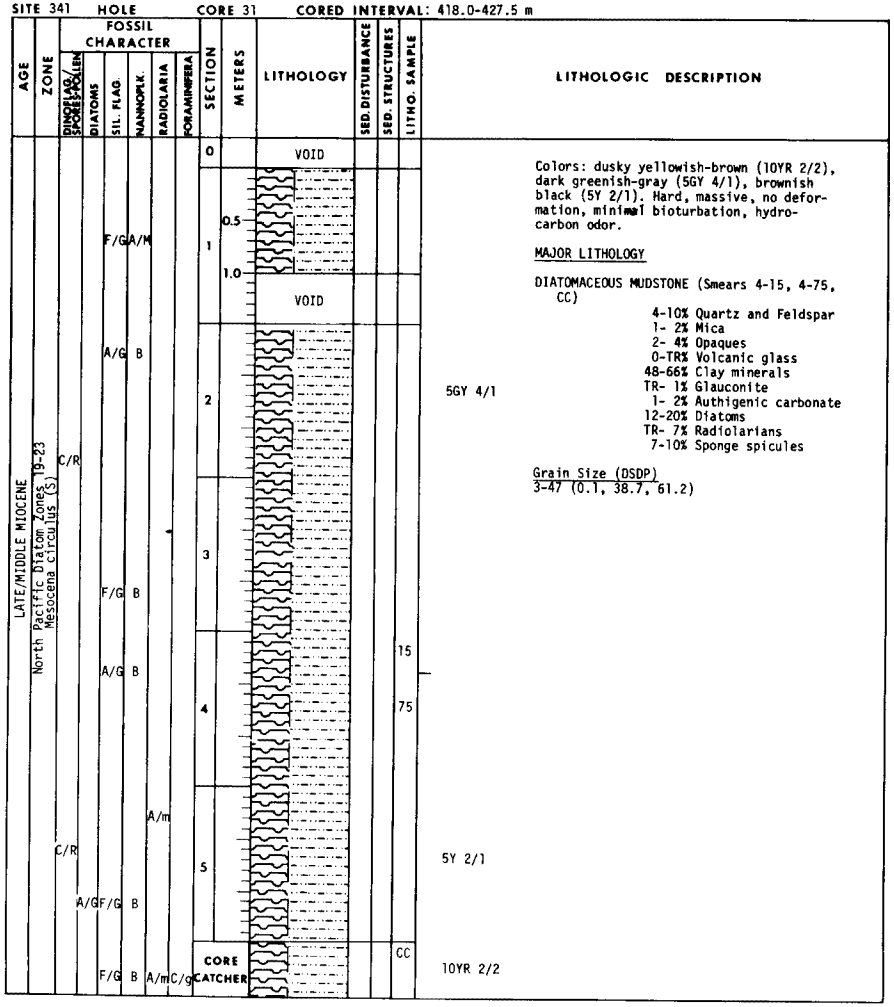
DIATOMACEOUS MUDSTONE (Smears 1-75, 3-75, 5-75, CC)

1- 2% Quartz and Feldspar
0- 2% Mica
0-TR% Heavy minerals
2- 6% Opaques
0-TR% Volcanic glass
54-56% Clay minerals
TR- 1% Glauconite
2- 3% Authigenic carbonate
0-TR% Foraminifera
0-10% Nannofossils
15-30% Diatoms
2- 3% Radiolarians
7-12% Sponge spicules

Carbon-Carbonate (PP)
30-5 (top) (1.77, 0.06)
30-5 (bottom) (1.27, 0.20)

Grain Size (DSDP)
1-112 (0.1, 33.3, 66.6)

SITE 341 HOLE CORE 31 CORED INTERVAL: 418.0-427.5 m



LITHOLOGIC DESCRIPTION

Colors: dusky yellowish-brown (10YR 2/2), dark greenish-gray (5GY 4/1), brownish black (5Y 2/1). Hard, massive, no deformation, minimal bioturbation, hydrocarbon odor.

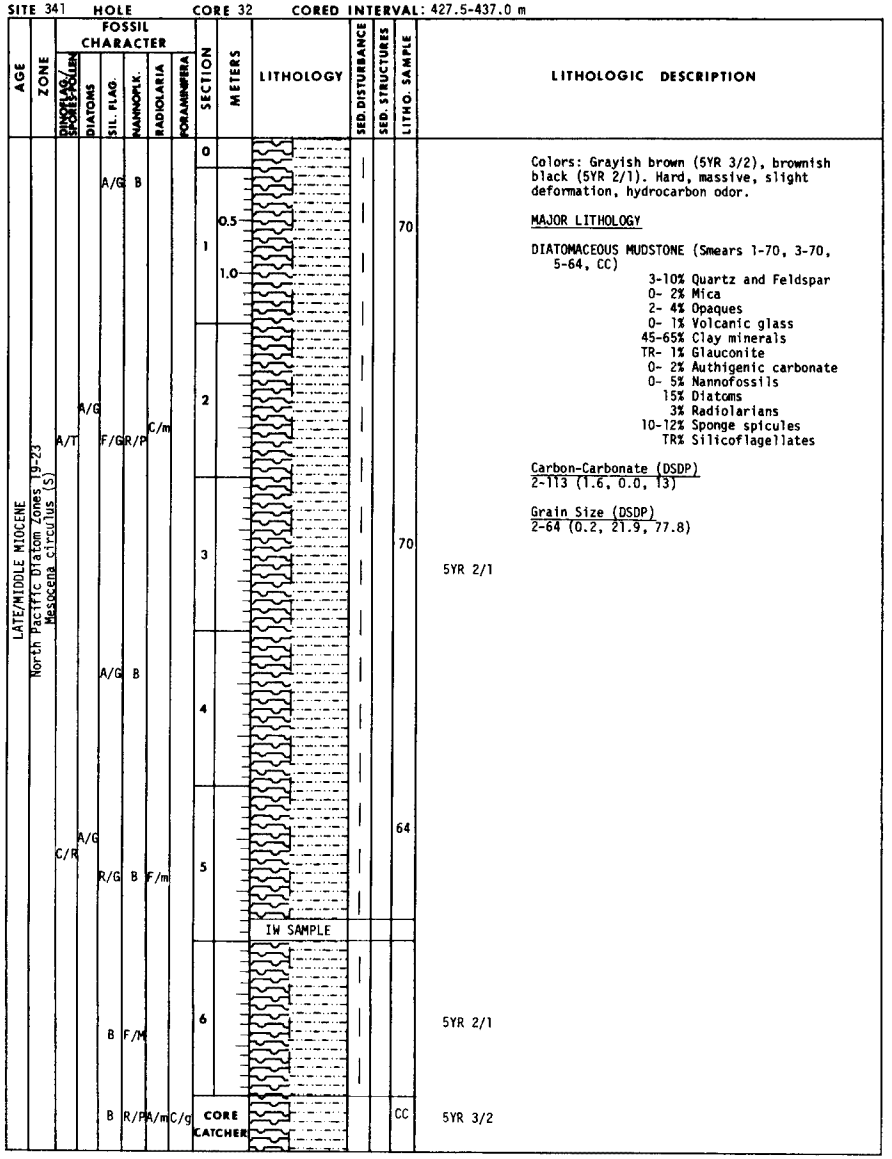
MAJOR LITHOLOGY

DIATOMACEOUS MUDSTONE (Smears 4-15, 4-75, CC)

4-10% Quartz and Feldspar
1- 2% Mica
2- 4% Opaques
0-TR% Volcanic glass
48-66% Clay minerals
TR- 1% Glauconite
1- 2% Authigenic carbonate
12-20% Diatoms
TR- 7% Radiolarians
7-10% Sponge spicules

Grain Size (DSDP)
3-47 (0.1, 38.7, 61.2)

SITE 341 HOLE CORE 32 CORED INTERVAL: 427.5-437.0 m



Colors: Grayish brown (5YR 3/2), brownish black (5YR 2/1). Hard, massive, slight deformation, hydrocarbon odor.

MAJOR LITHOLOGY

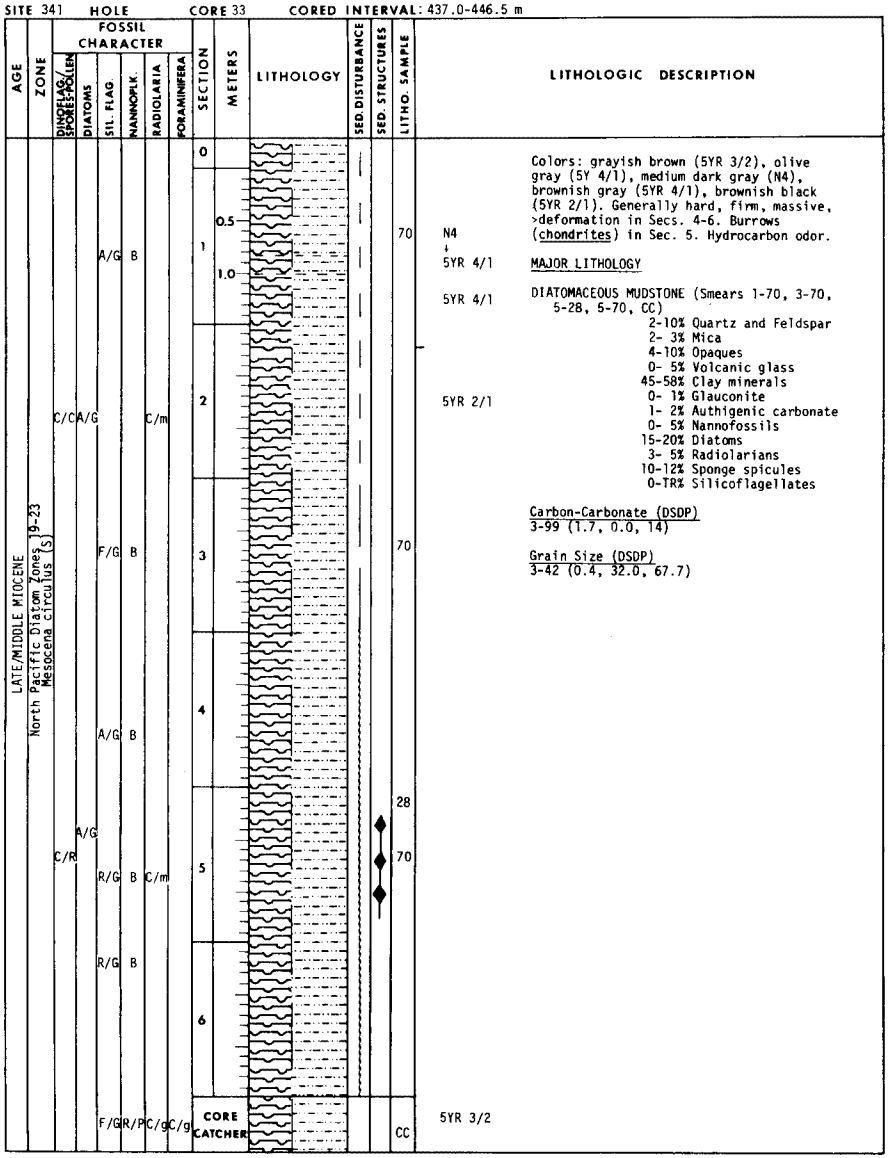
DIATOMACEOUS MUDSTONE (Smears 1-70, 3-70, 5-64, CC)

3-10% Quartz and Feldspar
0- 2% Mica
2- 4% Opaques
0- 1% Volcanic glass
45-65% Clay minerals
TR- 1% Glauconite
0- 2% Authigenic carbonate
0- 5% Nannofossils
15% Diatoms
3% Radiolarians
10-12% Sponge spicules
TR% Silicoflagellates

Carbon-Carbonate (DSDP)
2-113 (1.6, 0.0, 13)

Grain Size (DSDP)
2-64 (0.2, 21.9, 77.8)

SITE 341 HOLE CORE 33 CORED INTERVAL: 437.0-446.5 m



Colors: grayish brown (5YR 3/2), olive gray (5Y 4/1), medium dark gray (N4), brownish gray (5YR 4/1), brownish black (5YR 2/1). Generally hard, firm, massive, >deformation in Secs. 4-6. Burrows (chondrites) in Sec. 5. Hydrocarbon odor.

N4 + 5YR 4/1

MAJOR LITHOLOGY

5YR 4/1 DIATOMACEOUS MUDSTONE (Smears 1-70, 3-70, 5-28, 5-70, CC)

- 2-10% Quartz and Feldspar
- 2- 3% Mica
- 4-10% Opaques
- 0- 5% Volcanic glass
- 45-58% Clay minerals
- 0- 1% Glauconite
- 1- 2% Authigenic carbonate
- 0- 5% Nannofossils
- 15-20% Diatoms
- 3- 5% Radiolarians
- 10-12% Sponge spicules
- 0-TR% Silicoflagellates

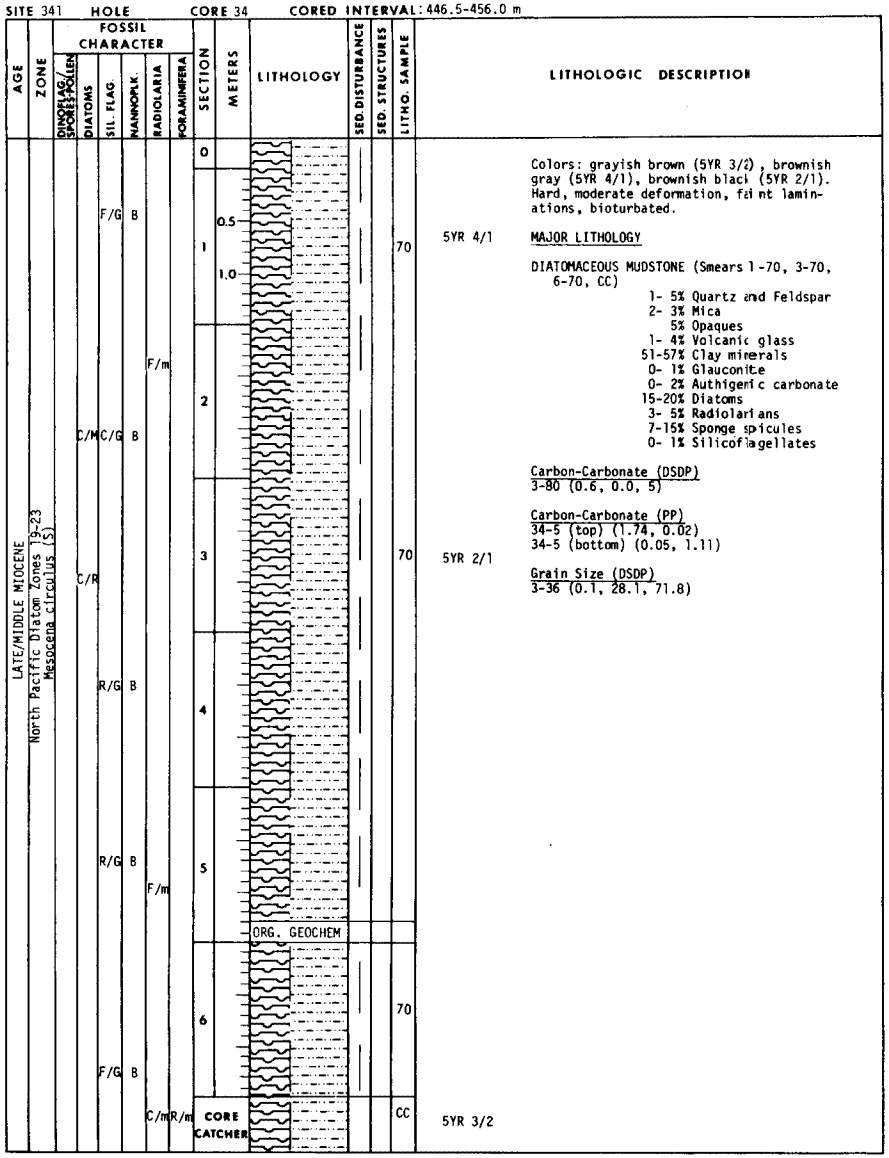
5YR 2/1

Carbon-Carbonate (DSDP)
3-99 (1.7, 0.0, 14)

Grain Size (DSDP)
3-42 (0.4, 32.0, 67.7)

5YR 3/2

SITE 341 HOLE CORE 34 CORED INTERVAL: 446.5-456.0 m



Colors: grayish brown (5YR 3/2), brownish gray (5YR 4/1), brownish black (5YR 2/1). Hard, moderate deformation, faint laminations, bioturbated.

5YR 4/1

MAJOR LITHOLOGY

DIATOMACEOUS MUDSTONE (Smears 1-70, 3-70, 6-70, CC)

- 1- 5% Quartz and Feldspar
- 2- 3% Mica
- 5% Opaques
- 1- 4% Volcanic glass
- 51-57% Clay minerals
- 0- 1% Glauconite
- 0- 2% Authigenic carbonate
- 15-20% Diatoms
- 3- 5% Radiolarians
- 7-15% Sponge spicules
- 0- 1% Silicoflagellates

Carbon-Carbonate (DSDP)
3-80 (0.6, 0.0, 5)

Carbon-Carbonate (PP)
34-5 (top) (1.74, 0.02)
34-5 (bottom) (0.05, 1.11)

5YR 2/1

Grain Size (DSDP)
3-36 (0.1, 28.1, 71.8)

5YR 3/2

DEEP SEA DRILLING PROJECT

LEG 38 SITE 342

SITE SUMMARY SHEET

POSITION: Latitude: 67°57.04'N Longitude: 04°56.02'E

Water depth (from sea level): 1303.0 corrected meters (Echo sounding)

Bottom felt at: 1316.0 meters (drill pipe) Penetration: 170.5 meters

Number of Holes: 1 Number of Cores: 8

Total length of cored section: 75.5 m Total core recovered: 48.0 m

Percentage of core recovery: 63.6%

OLDEST SEDIMENT CORED:

Depth below sea floor: 151.5 meters Nature: Diatomaceous oozes

Age: Lower Oligocene (Core 6) Measured velocity: 1.59 (Core 5) km/sec

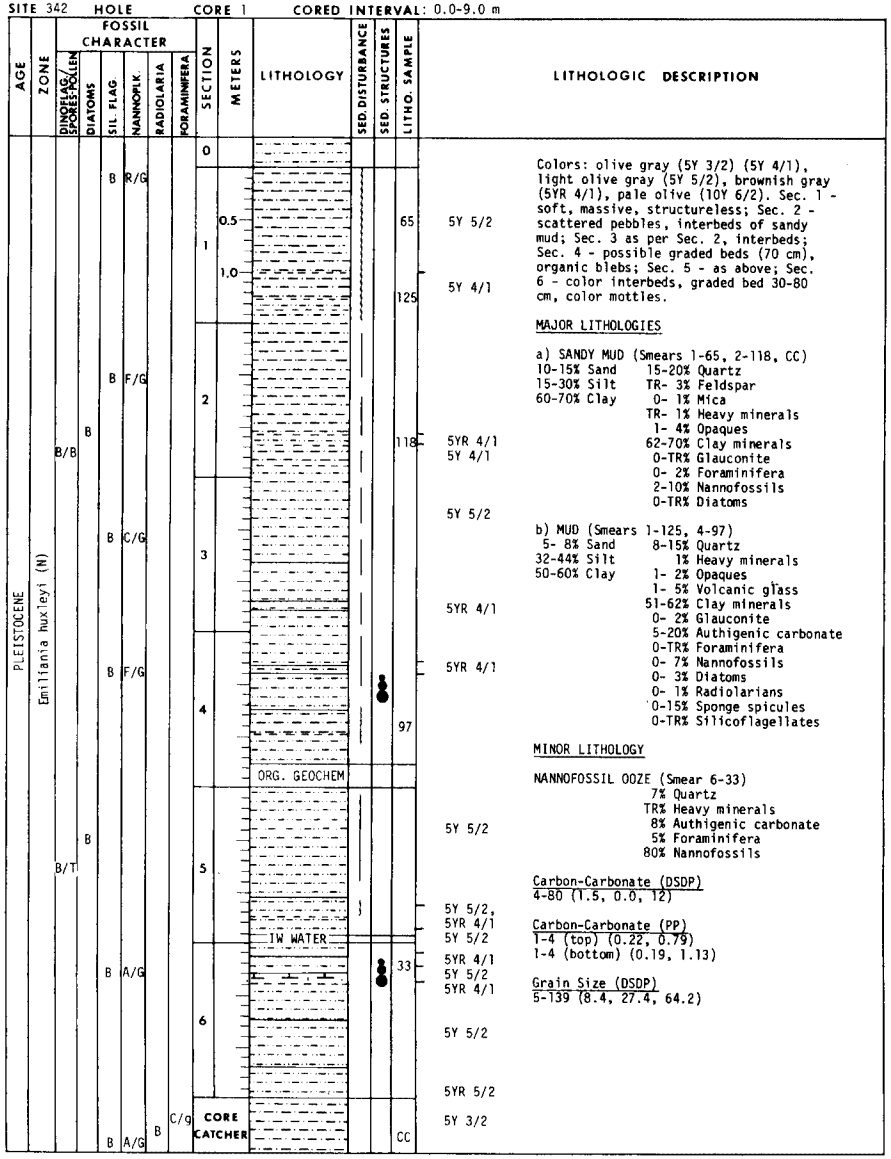
BASEMENT:

Depth below sea floor: 153.2 meters (drilled) Nature: Holocrystalline basalt

PRINCIPAL RESULTS:

This site is located on the Vøring Plateau on the landward side of the Vøring Plateau escarpment. The results are very similar to those from Site 338, except that the Eocene sediments are missing, and lower Oligocene sediments rest directly on alkalic basaltic basement.

SITE 342 HOLE CORE 1 CORED INTERVAL: 0.0-9.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2) (5Y 4/1), light olive gray (5Y 5/2), brownish gray (5YR 4/1), pale olive (10Y 6/2). Sec. 1 - soft, massive, structureless; Sec. 2 - scattered pebbles, interbeds of sandy mud; Sec. 3 as per Sec. 2, interbeds; Sec. 4 - possible graded beds (70 cm), organic blebs; Sec. 5 - as above; Sec. 6 - color interbeds, graded bed 30-80 cm, color mottles.

MAJOR LITHOLOGIES

a) SANDY MUD (Smears 1-65, 2-118, CC)
10-15% Sand — 15-20% Quartz
15-30% Silt — TR- 3% Feldspar
60-70% Clay — 0- 1% Mica
TR- 1% Heavy minerals
1- 4% Opaques
62-70% Clay minerals
0-TR% Glauconite
0- 2% Foraminifera
2-10% Nannofossils
0-TR% Diatoms

b) MUD (Smears 1-125, 4-97)
5- 8% Sand — 8-15% Quartz
32-44% Silt — 1% Heavy minerals
50-60% Clay — 1- 2% Opaques
1- 5% Volcanic glass
51-62% Clay minerals
0- 2% Glauconite
5-20% Authigenic carbonate
0-TR% Foraminifera
0- 7% Nannofossils
0- 3% Diatoms
0- 1% Radiolarians
0-15% Sponge spicules
0-TR% Siliceoflagellates

MINOR LITHOLOGY

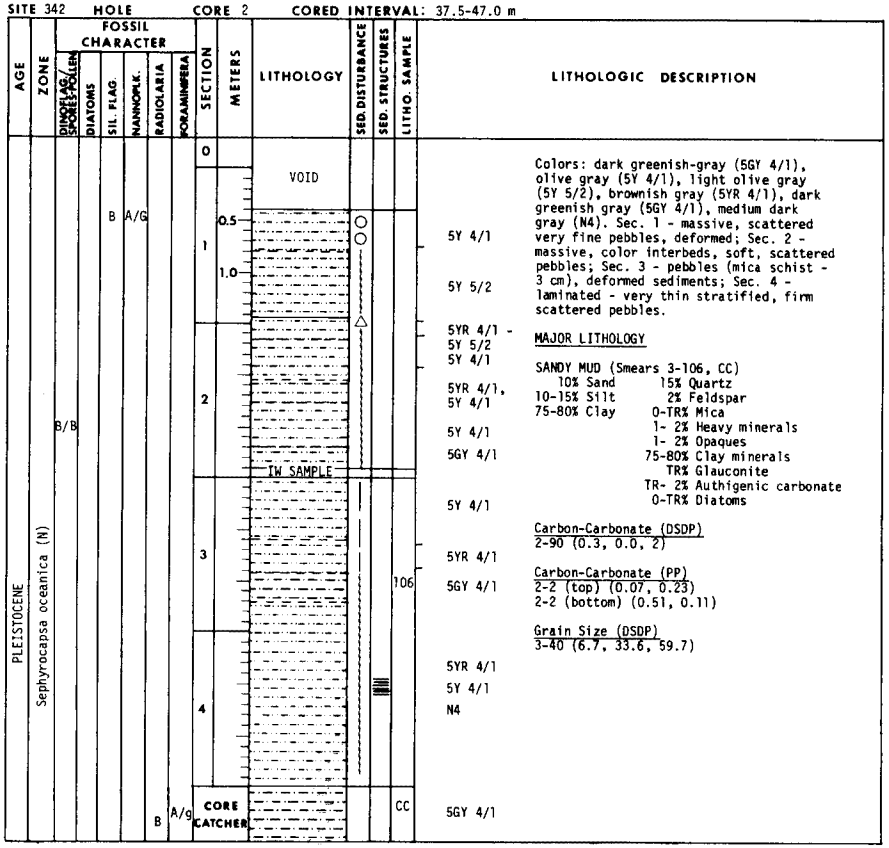
NANNOFOSSIL OOZE (Smear 6-33)
7% Quartz
TR% Heavy minerals
8% Authigenic carbonate
5% Foraminifera
80% Nannofossils

Carbon-Carbonate (DSDP)
4-80 (1.5, 0.0, 12)

Carbon-Carbonate (PP)
1-4 (top) (0.22, 0.79)
1-4 (bottom) (0.19, 1.13)

Grain Size (DSDP)
5-139 (8.4, 27.4, 64.2)

SITE 342 HOLE CORE 2 CORED INTERVAL: 37.5-47.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5GY 4/1), olive gray (5Y 4/1), light olive gray (5Y 5/2), brownish gray (5YR 4/1), dark greenish gray (5GY 4/1), medium dark gray (N4). Sec. 1 - massive, scattered very fine pebbles, deformed; Sec. 2 - massive, color interbeds, soft, scattered pebbles; Sec. 3 - pebbles (mica schist - 3 cm), deformed sediments; Sec. 4 - laminated - very thin stratified, firm scattered pebbles.

MAJOR LITHOLOGY

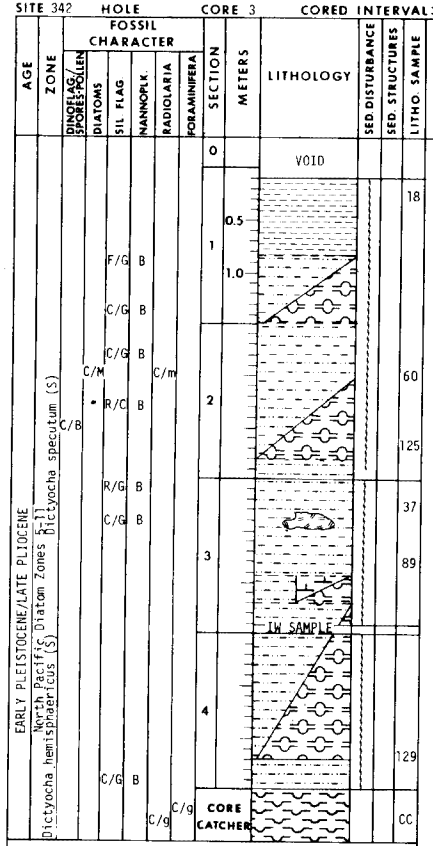
SANDY MUD (Smears 3-106, CC)
10% Sand — 15% Quartz
10-15% Silt — 2% Feldspar
75-80% Clay — 0-TR% Mica
1- 2% Heavy minerals
1- 2% Opaques
75-80% Clay minerals
TR% Glauconite
TR- 2% Authigenic carbonate
0-TR% Diatoms

Carbon-Carbonate (DSDP)
2-90 (0.3, 0.0, 2)

Carbon-Carbonate (PP)
2-2 (top) (0.07, 0.23)
2-2 (bottom) (0.51, 0.11)

Grain Size (DSDP)
3-40 (6.7, 33.6, 59.7)

SITE 342 HOLE CORE 3 CORED INTERVAL: 85.0-94.5 m



Colors: olive gray (5Y 4/1), brownish gray (5YR 4/1), light olive gray (5Y 6/1), greenish gray (5GY 6/1), grayish brown (5YR 3/2). Intense deformation. Sec. 1 - firm, soft, relict thin stratification, pebbles, including siliceous material 80-150 cm; Sec. 2 - originally thinly stratified; Sec. 4 - originally thinly stratified.

5Y 4/1

MAJOR LITHOLOGY

SPONGE SPICULE MUD (Smears 2-60, 2-125)
5-20% Sand
27-32% Silt
48-67% Clay
7-15% Quartz
0- 2% Feldspar
1- 2% Heavy minerals
1- 2% Opaques
7% Volcanic glass
48-67% Clay minerals
0- 1% Glauconite
0-TR% Authigenic carbonate
2- 5% Diatoms
1- 2% Radiolarians
10% Sponge spicules

5Y 4/1

5Y 4/1 and 5GY 6/1

MINOR LITHOLOGIES

a) CLAY (Smear 1-18)
7% Quartz
1% Feldspar
1% Heavy minerals
1% Opaques
90% Clay minerals
TR% Glauconite

b) VOLCANIC ASH (Smear 3-37)
30% Opaques
70% Volcanic glass

c) NANNOFOSSIL OOZE (Smear 3-89)
7% Quartz
TR% Heavy minerals
TR% Opaques
2% Volcanic glass
1% Glauconite
5% Authigenic carbonate
TR% Foraminifera
75% Nannofossils
1% Diatoms
7% Sponge spicules

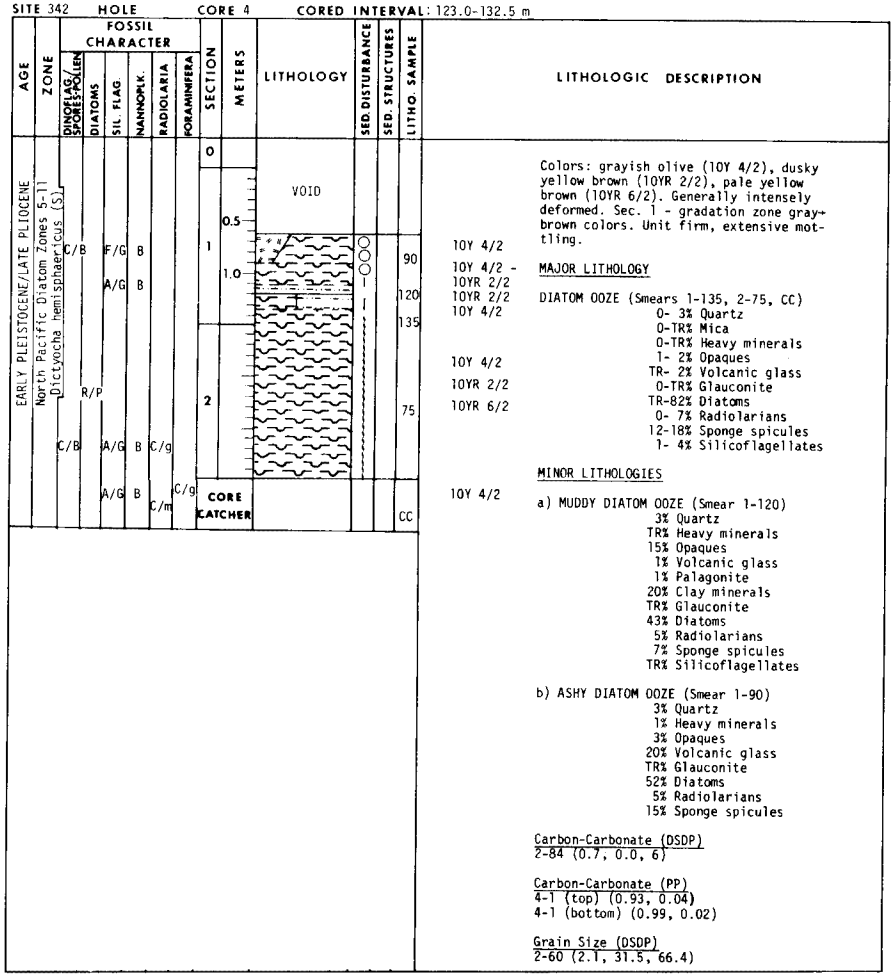
5YR 3/2
5YR 4/1

5Y 4/1

d) DIATOM OOZE (Smear CC)
5% Quartz
3% Opaques
3% Volcanic glass
10% Clay minerals
TR% Glauconite
57% Diatoms
7% Radiolarians
15% Sponge spicules
TR% Silicoflagellates

Carbon-Carbonate (DSDP)
2-110 (0.3, 0.0, 3)
Carbon-Carbonate (PP)
3-2 (top) (0.39, 0.36)
3-2 (bottom) (0.63, 0.01)
Grain Size (DSDP)
3-60 (13.2, 46.0, 40.8)

SITE 342 HOLE CORE 4 CORED INTERVAL: 123.0-132.5 m



Colors: grayish olive (10Y 4/2), dusky yellow brown (10YR 2/2), pale yellow brown (10YR 6/2). Generally intensely deformed. Sec. 1 - gradation zone gray-brown colors. Unit firm, extensive mottling.

10Y 4/2

10Y 4/2 - 10YR 2/2

10YR 2/2
10Y 4/2

10Y 4/2
10YR 2/2
10YR 6/2

10Y 4/2

MAJOR LITHOLOGY

DIATOM OOZE (Smears 1-135, 2-75, CC)
0- 3% Quartz
0-TR% Mica
0-TR% Heavy minerals
1- 2% Opaques
TR- 2% Volcanic glass
0-TR% Glauconite
TR-82% Diatoms
0- 7% Radiolarians
12-18% Sponge spicules
1- 4% Silicoflagellates

MINOR LITHOLOGIES

a) MUDDY DIATOM OOZE (Smear 1-120)
3% Quartz
TR% Heavy minerals
15% Opaques
1% Volcanic glass
1% Palagonite
20% Clay minerals
TR% Glauconite
43% Diatoms
5% Radiolarians
7% Sponge spicules
TR% Silicoflagellates

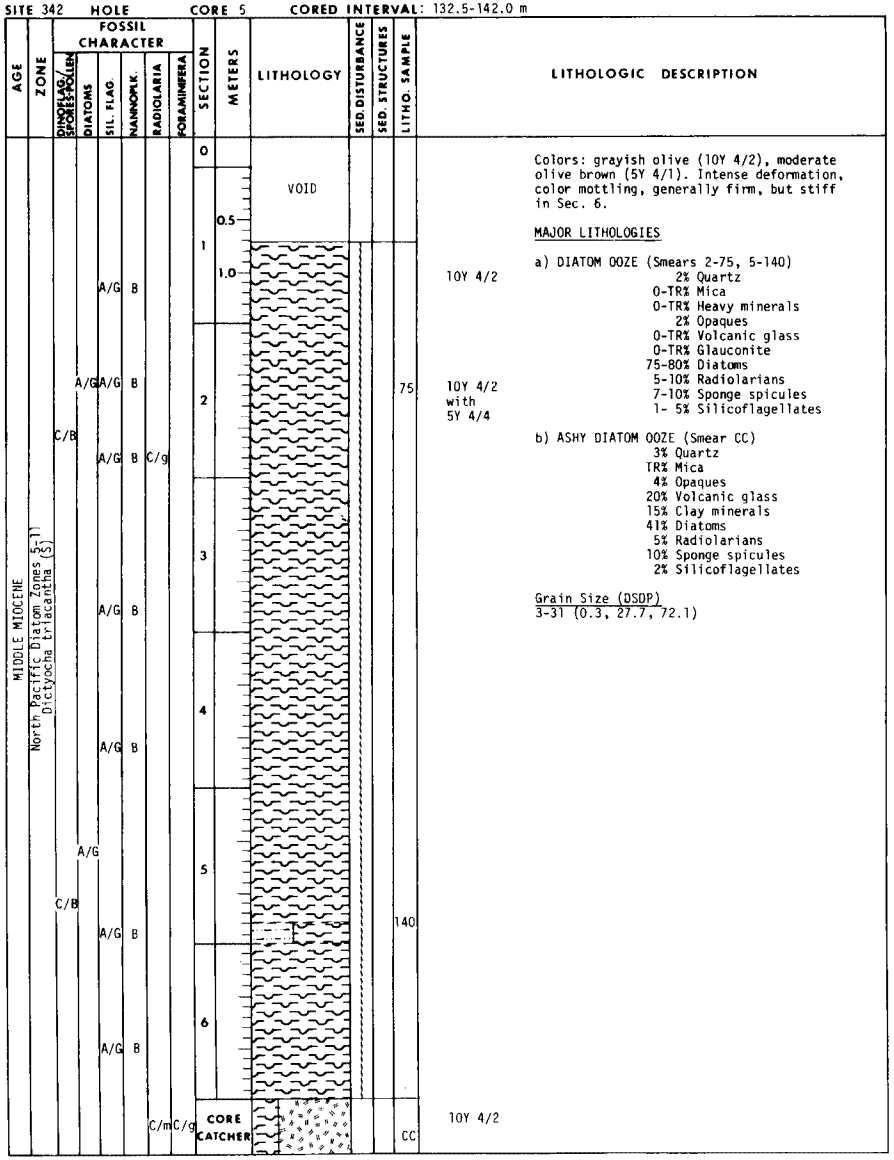
b) ASHY DIATOM OOZE (Smear 1-90)
3% Quartz
1% Heavy minerals
3% Opaques
20% Volcanic glass
TR% Glauconite
52% Diatoms
5% Radiolarians
15% Sponge spicules

Carbon-Carbonate (DSDP)
2-84 (0.7, 0.0, 6)

Carbon-Carbonate (PP)
4-1 (top) (0.93, 0.04)
4-1 (bottom) (0.99, 0.02)

Grain Size (DSDP)
2-60 (2.1, 31.5, 66.4)

SITE 342 HOLE CORE 5 CORED INTERVAL: 132.5-142.0 m



LITHOLOGIC DESCRIPTION

Colors: grayish olive (10Y 4/2), moderate olive brown (5Y 4/1). Intense deformation, color mottling, generally firm, but stiff in Sec. 6.

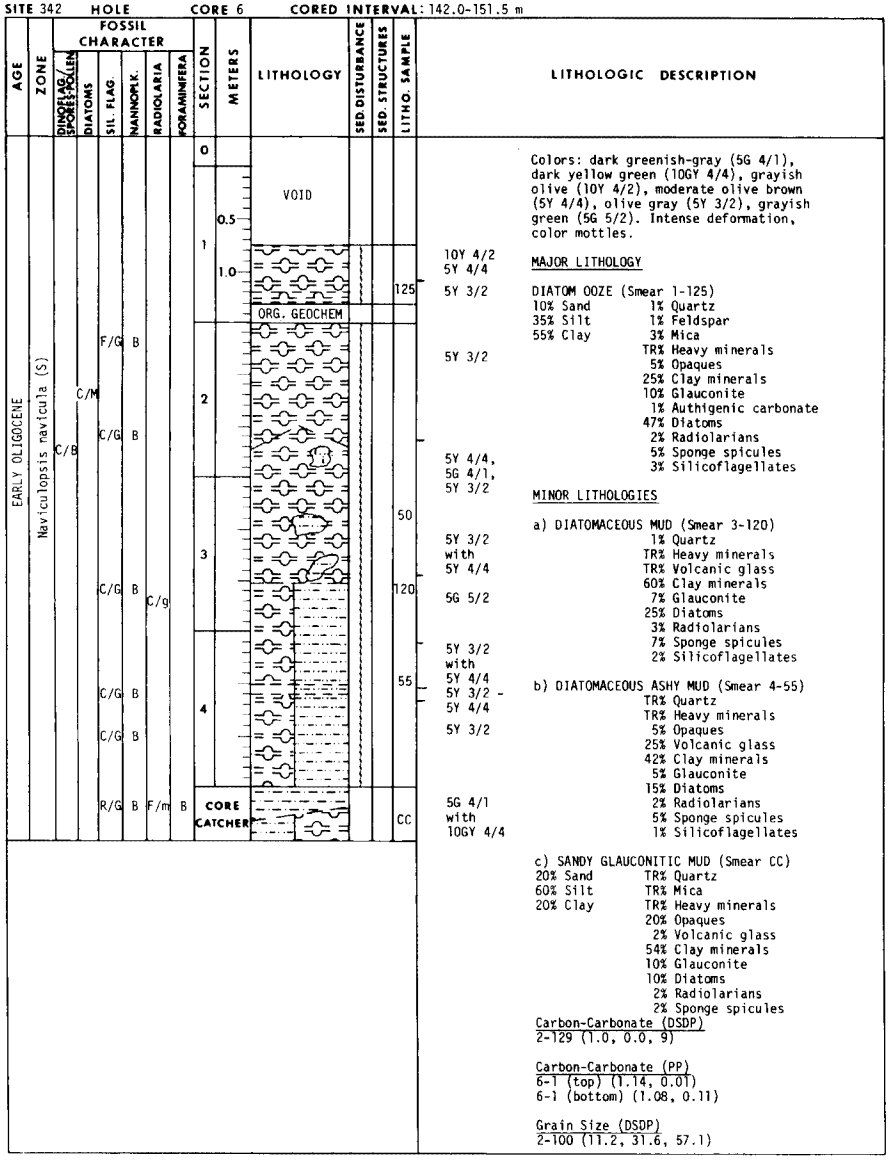
MAJOR LITHOLOGIES

a) DIATOM OOZE (Smears 2-75, 5-140)
- 2% Quartz
- 0-TR% Mica
- 0-TR% Heavy minerals
- 2% Opaques
- 0-TR% Volcanic glass
- 0-TR% Glauconite
- 75-80% Diatoms
- 5-10% Radiolarians
- 7-10% Sponge spicules
- 1- 5% Silicoflagellates

b) ASHY DIATOM OOZE (Smear CC)
- 3% Quartz
- TR% Mica
- 4% Opaques
- 20% Volcanic glass
- 15% Clay minerals
- 41% Diatoms
- 5% Radiolarians
- 10% Sponge spicules
- 2% Silicoflagellates

Grain Size (DSDP)
3-31 (0.3, 27.7, 72.1)

SITE 342 HOLE CORE 6 CORED INTERVAL: 142.0-151.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5G 4/1), dark yellow green (10GY 4/4), grayish olive (10Y 4/2), moderate olive brown (5Y 4/4), olive gray (5Y 3/2), grayish green (5G 5/2). Intense deformation, color mottles.

MAJOR LITHOLOGY

DIATOM OOZE (Smear 1-125)
- 10% Sand
- 35% Silt
- 55% Clay
- 1% Quartz
- 1% Feldspar
- 3% Mica
- TR% Heavy minerals
- 5% Opaques
- 25% Clay minerals
- 10% Glauconite
- 1% Authigenic carbonate
- 47% Diatoms
- 2% Radiolarians
- 5% Sponge spicules
- 3% Silicoflagellates

MINOR LITHOLOGIES

a) DIATOMACEOUS MUD (Smear 3-120)
- 1% Quartz
- TR% Heavy minerals
- TR% Volcanic glass
- 60% Clay minerals
- 7% Glauconite
- 25% Diatoms
- 3% Radiolarians
- 7% Sponge spicules
- 2% Silicoflagellates

b) DIATOMACEOUS ASHY MUD (Smear 4-55)
- TR% Quartz
- TR% Heavy minerals
- 5% Opaques
- 25% Volcanic glass
- 42% Clay minerals
- 5% Glauconite
- 15% Diatoms
- 2% Radiolarians
- 5% Sponge spicules
- 1% Silicoflagellates

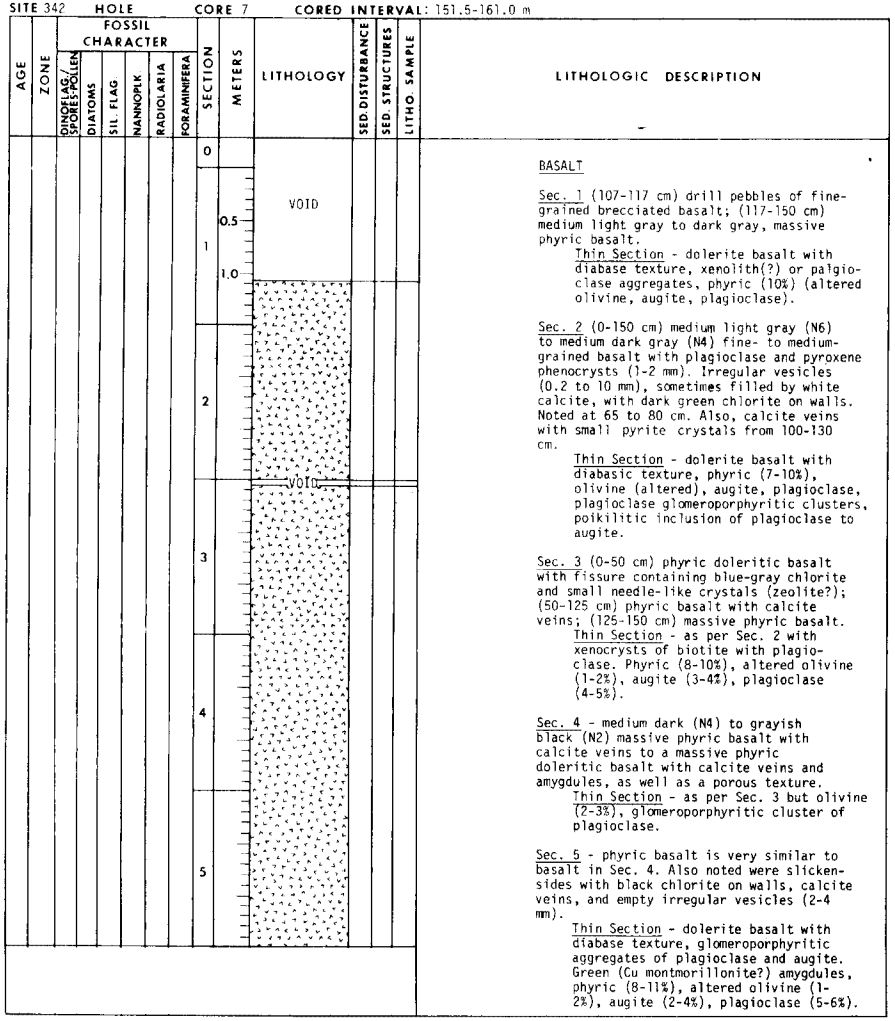
c) SANDY GLAUCONITIC MUD (Smear CC)
- 20% Sand
- 60% Silt
- 20% Clay
- TR% Quartz
- TR% Mica
- TR% Heavy minerals
- 20% Opaques
- 2% Volcanic glass
- 54% Clay minerals
- 10% Glauconite
- 10% Diatoms
- 2% Radiolarians
- 2% Sponge spicules

Carbon-Carbonate (DSDP)
2-129 (1.0, 0.0, 9)

Carbon-Carbonate (PP)
6-1 (top) (1.14, 0.01)
6-1 (bottom) (1.08, 0.11)

Grain Size (DSDP)
2-100 (11.2, 31.6, 57.1)

SITE 342 HOLE CORE 7 CORED INTERVAL: 151.5-161.0 m



LITHOLOGIC DESCRIPTION

BASALT

Sec. 1 (107-117 cm) drill pebbles of fine-grained brecciated basalt; (117-150 cm) medium light gray to dark gray, massive phyric basalt.

Thin Section - dolerite basalt with diabase texture, xenolith(?) or palgioclase aggregates, phyric (10%) (altered olivine, augite, plagioclase).

Sec. 2 (0-150 cm) medium light gray (N6) to medium dark gray (N4) fine- to medium-grained basalt with plagioclase and pyroxene phenocrysts (1-2 mm). Irregular vesicles (0.2 to 10 mm), sometimes filled by white calcite, with dark green chlorite on walls. Noted at 65 to 80 cm. Also, calcite veins with small pyrite crystals from 100-130 cm.

Thin Section - dolerite basalt with diabasic texture, phyric (7-10%), olivine (altered), augite, plagioclase, plagioclase glomeroporphyritic clusters, poikilitic inclusion of plagioclase to augite.

Sec. 3 (0-50 cm) phyric doleritic basalt with fissure containing blue-gray chlorite and small needle-like crystals (zeolite?); (50-125 cm) phyric basalt with calcite veins; (125-150 cm) massive phyric basalt.

Thin Section - as per Sec. 2 with xenocrysts of biotite with plagioclase. Phyric (8-10%), altered olivine (1-2%), augite (3-4%), plagioclase (4-5%).

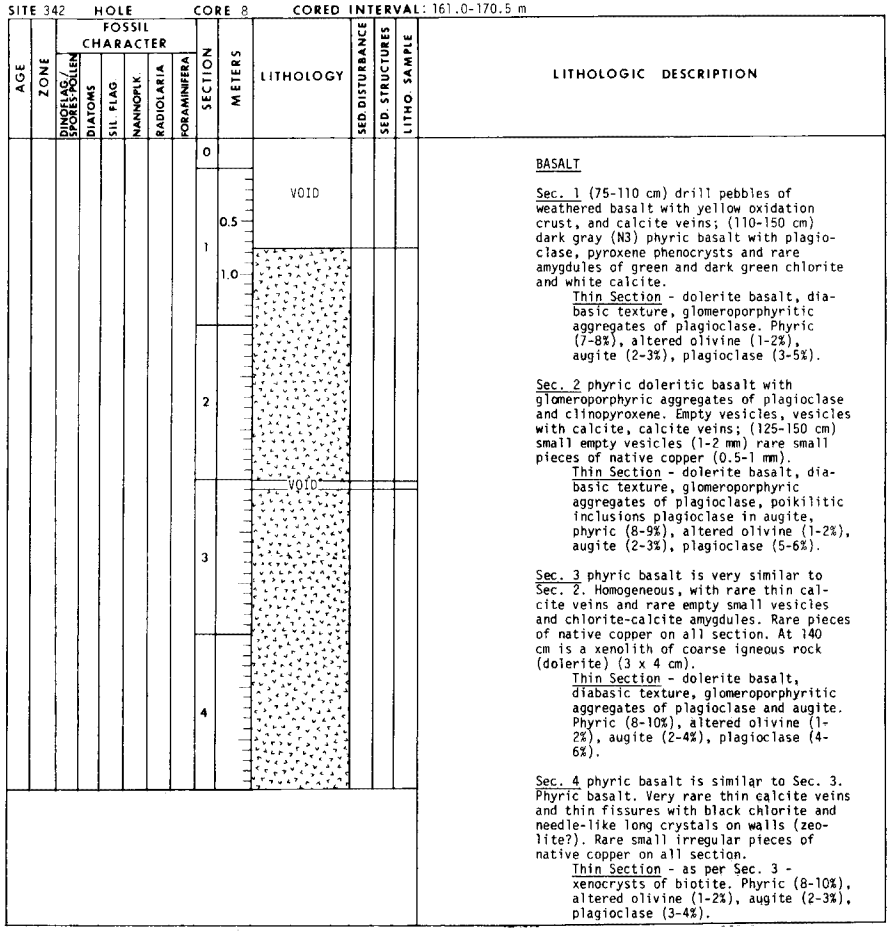
Sec. 4 - medium dark (N4) to grayish black (N2) massive phyric basalt with calcite veins to a massive phyric doleritic basalt with calcite veins and amygdules, as well as a porous texture.

Thin Section - as per Sec. 3 but olivine (2-3%), glomeroporphyritic cluster of plagioclase.

Sec. 5 - phyric basalt is very similar to basalt in Sec. 4. Also noted were slickensides with black chlorite on walls, calcite veins, and empty irregular vesicles (2-4 mm).

Thin Section - dolerite basalt with diabase texture, glomeroporphyritic aggregates of plagioclase and augite. Green (Cu montmorillonite?) amygdules, phyric (8-11%), altered olivine (1-2%), augite (2-4%), plagioclase (5-6%).

SITE 342 HOLE CORE 8 CORED INTERVAL: 161.0-170.5 m



LITHOLOGIC DESCRIPTION

BASALT

Sec. 1 (75-110 cm) drill pebbles of weathered basalt with yellow oxidation crust, and calcite veins; (110-150 cm) dark gray (N3) phyric basalt with plagioclase, pyroxene phenocrysts and rare amygdules of green and dark green chlorite and white calcite.

Thin Section - dolerite basalt, diabasic texture, glomeroporphyritic aggregates of plagioclase. Phyric (7-8%), altered olivine (1-2%), augite (2-3%), plagioclase (3-5%).

Sec. 2 phyric doleritic basalt with glomeroporphyric aggregates of plagioclase and clinopyroxene. Empty vesicles, vesicles with calcite, calcite veins; (125-150 cm) small empty vesicles (1-2 mm) rare small pieces of native copper (0.5-1 mm).

Thin Section - dolerite basalt, diabasic texture, glomeroporphyric aggregates of plagioclase, poikilitic inclusions plagioclase in augite, phyric (8-9%), altered olivine (1-2%), augite (2-3%), plagioclase (5-6%).

Sec. 3 phyric basalt is very similar to Sec. 2. Homogeneous, with rare thin calcite veins and rare empty small vesicles and chlorite-calcite amygdules. Rare pieces of native copper on all section. At 140 cm is a xenolith of coarse igneous rock (dolerite) (3 x 4 cm).

Thin Section - dolerite basalt, diabasic texture, glomeroporphyritic aggregates of plagioclase and augite. Phyric (8-10%), altered olivine (1-2%), augite (2-4%), plagioclase (4-6%).

Sec. 4 phyric basalt is similar to Sec. 3. Phyric basalt. Very rare thin calcite veins and thin fissures with black chlorite and needle-like long crystals on walls (zeolite?). Rare small irregular pieces of native copper on all section.

Thin Section - as per Sec. 3 - xenocrysts of biotite. Phyric (8-10%), altered olivine (1-2%), augite (2-3%), plagioclase (3-4%).

DEEP SEA DRILLING PROJECT

LEG 38 SITE 343

SITE SUMMARY SHEET

POSITION: Latitude: 68°42.91'N Longitude: 05°45.73'E

Water depth (from sea level): 3131.0 corrected meters (Echo sounding)

Bottom felt at: 3165.0 meters (drill pipe) Penetration: 284.0 meters

Number of Holes: 1 Number of Cores: 16

Total length of cored section: 132.0 m Total core recovered: 59.3 m

Percentage of core recovery: 44.9%

OLDEST SEDIMENT CORED:

Depth below sea floor: 282.0 meters Nature: Turbidites, muds, sandy muds

Age: Lower Eocene (Core 16)

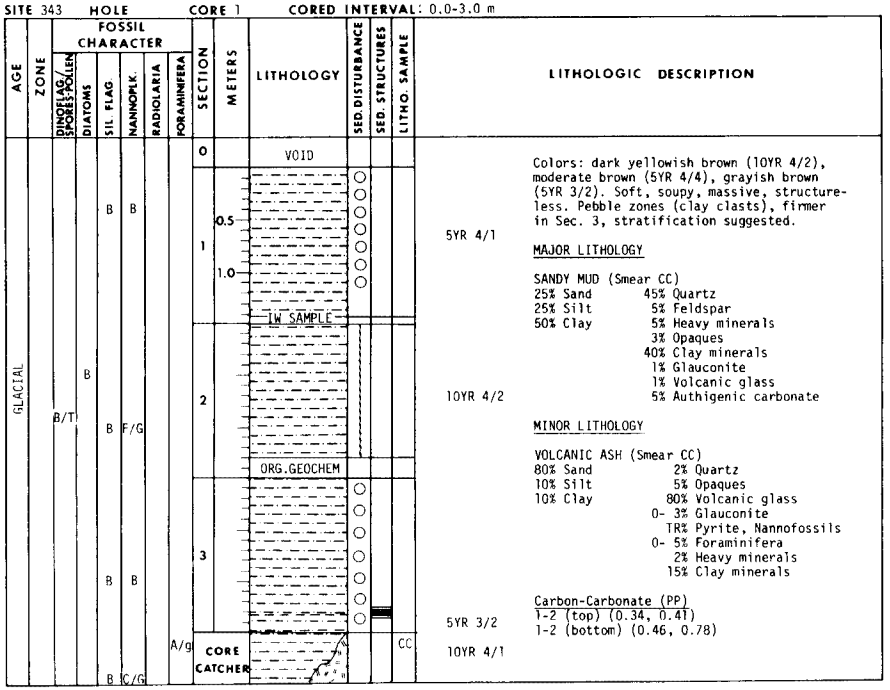
BASEMENT:

Depth below sea floor: 251.3 meters (drilled) Nature: Alkalic, basalt to subalkalic, plateau

PRINCIPAL RESULTS:

This site is located at the eastern margin of the Lofoten Basin, at the foot of the Vøring Plateau. It lies on a well-developed magnetic lineation which has been identified as anomaly 23 on the Heirtzler time scale. The hole penetrated 253 meters of sediment, of which 108 meters were Glacial. The interval from 108 to 146 meters was washed, and lower Eocene sediments lie below this interval. Thus, any post-Eocene Tertiary sediments are either absent, or have a total thickness less than 38 meters. The Glacial sediments consist of varying percentages of terrigenous sediments (muds, sandy muds, and fine sands), and biogenic oozes (principally nannoplankton). The upper part of the lower Eocene is dominated by biogenic oozes, while the lowest 50 meters is almost completely terrigenous, with turbidites being present. The underlying basalt is highly altered, and is judged to have been subalkalic in composition.

SITE 343 HOLE CORE 1 CORED INTERVAL: 0.0-3.0 m



LITHOLOGIC DESCRIPTION

Colors: dark yellowish brown (10YR 4/2), moderate brown (5YR 4/4), grayish brown (5YR 3/2). Soft, soupy, massive, structureless. Pebble zones (clay clasts), firmer in Sec. 3, stratification suggested.

5YR 4/1

MAJOR LITHOLOGY

SANDY MUD (Smear CC)

25% Sand	45% Quartz
25% Silt	5% Feldspar
50% Clay	5% Heavy minerals
	3% Opaques
	40% Clay minerals
	1% Glauconite
	1% Volcanic glass
	5% Authigenic carbonate

10YR 4/2

MINOR LITHOLOGY

VOLCANIC ASH (Smear CC)

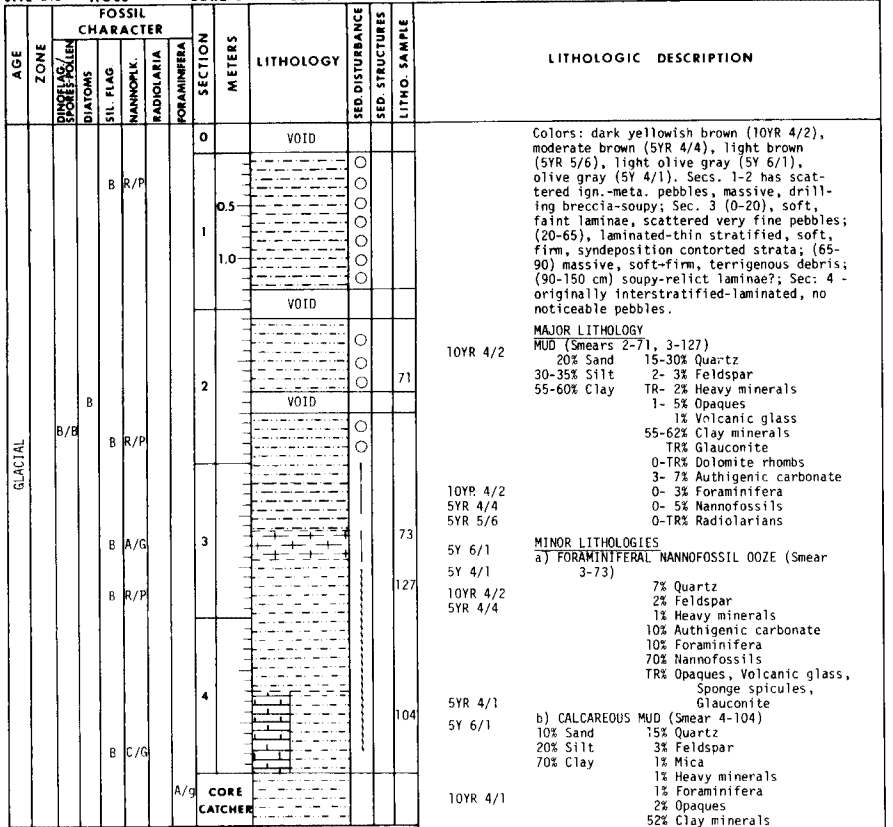
80% Sand	2% Quartz
10% Silt	5% Opaques
10% Clay	80% Volcanic glass
	0- 3% Glauconite
	TR% Pyrite, Nannofossils
	0- 5% Foraminifera
	2% Heavy minerals
	15% Clay minerals

Carbon-Carbonate (PP)
1-2 (top) (0.34, 0.41)
1-2 (bottom) (0.46, 0.78)

5YR 3/2

10YR 4/1

SITE 343 HOLE CORE 2 CORED INTERVAL: 3.0-12.5 m



LITHOLOGIC DESCRIPTION

Colors: dark yellowish brown (10YR 4/2), moderate brown (5YR 4/4), light brown (5YR 5/6), light olive gray (5Y 6/1), olive gray (5Y 4/1). Secs. 1-2 has scattered ign.-meta. pebbles, massive, drilling breccia-soupy; Sec. 3 (0-20), soft, faint laminae, scattered very fine pebbles; (20-65), laminated-thin stratified, soft, firm, syndeposition contorted strata; (65-90) massive, soft-firm, terrigenous debris; (90-150 cm) soupy-relict laminae?; Sec: 4 - originally interstratified-laminated, no noticeable pebbles.

10YR 4/2

MAJOR LITHOLOGY

MUD (Smears 2-71, 3-127)

20% Sand	15-30% Quartz
30-35% Silt	2- 3% Feldspar
55-60% Clay	TR- 2% Heavy minerals
	1- 5% Opaques
	1% Volcanic glass
	55-62% Clay minerals
	TR% Glauconite
	0-TR% Dolomite rhombs
	3- 7% Authigenic carbonate
	0- 3% Foraminifera
	0- 5% Nannofossils
	0-TR% Radiolarians

10YR 4/2
5YR 4/4
5YR 5/6

MINOR LITHOLOGIES

a) FORAMINIFERAL NANNOFOSSIL OOZE (Smear 3-73)

	7% Quartz
	2% Feldspar
	1% Heavy minerals
	10% Authigenic carbonate
	10% Foraminifera
	70% Nannofossils
	TR% Opaques, Volcanic glass, Sponge spicules, Glauconite

5Y 6/1
5Y 4/1
10YR 4/2
5YR 4/4

5YR 4/1
5Y 6/1

b) CALCAREOUS MUD (Smear 4-104)

10% Sand	15% Quartz
20% Silt	3% Feldspar
70% Clay	1% Mica
	1% Heavy minerals
	1% Foraminifera
	2% Opaques
	52% Clay minerals
	15% Authigenic carbonate
	10% Nannofossils
	TR% Volcanic glass, Glauconite

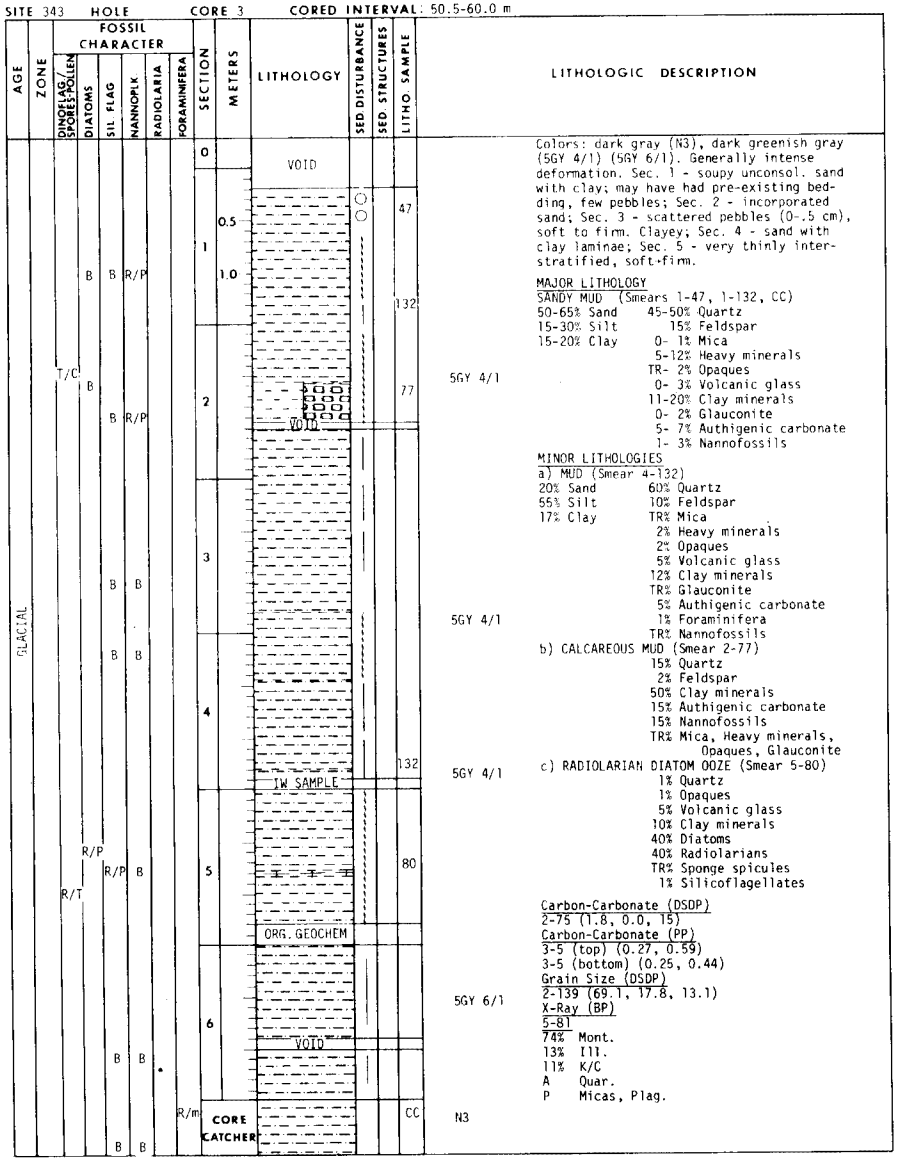
10YR 4/1

Grain Size (DSDP)
3-5 (20.1, 29.3, 50.6)
4-35 (20.9, 31.9, 47.2)

X-Ray (BP)

3-7		4-38	
22%	Mont.	20%	Mont.
40%	Ill.	50%	Ill.
16%	Kaol.	15%	Kaol.
21%	Chlo.	21%	Chlo.
A	Quartz, Plag.	A	Quartz
P	Micas	P	Micas, Plag.
P	Calcite	TR%	Calc.

SITE 343 HOLE CORE 3 CORED INTERVAL: 50.5-60.0 m



Colors: dark gray (N3), dark greenish gray (5GY 4/1) (5GY 6/1). Generally intense deformation. Sec. 1 - soupy unconsol. sand with clay; may have had pre-existing bedding, few pebbles; Sec. 2 - incorporated sand; Sec. 3 - scattered pebbles (0-.5 cm), soft to firm. Clayey; Sec. 4 - sand with clay laminae; Sec. 5 - very thinly interstratified, soft-firm.

MAJOR LITHOLOGY

SANDY MUD (Smears 1-47, 1-132, CC)

50-65% Sand
15-30% Silt
15-20% Clay

45-50% Quartz
15% Feldspar
0- 1% Mica
5-12% Heavy minerals
TR- 2% Opaques
0- 3% Volcanic glass
11-20% Clay minerals
0- 2% Glauconite
5- 7% Authigenic carbonate
1- 3% Nannofossils

MINOR LITHOLOGIES

a) MUD (Smear 4-132)

20% Sand
55% Silt
17% Clay

60% Quartz
10% Feldspar
TR% Mica
2% Heavy minerals
2% Opaques
5% Volcanic glass
12% Clay minerals
TR% Glauconite
5% Authigenic carbonate
1% Foraminifera
TR% Nannofossils

b) CALCAREOUS MUD (Smear 2-77)

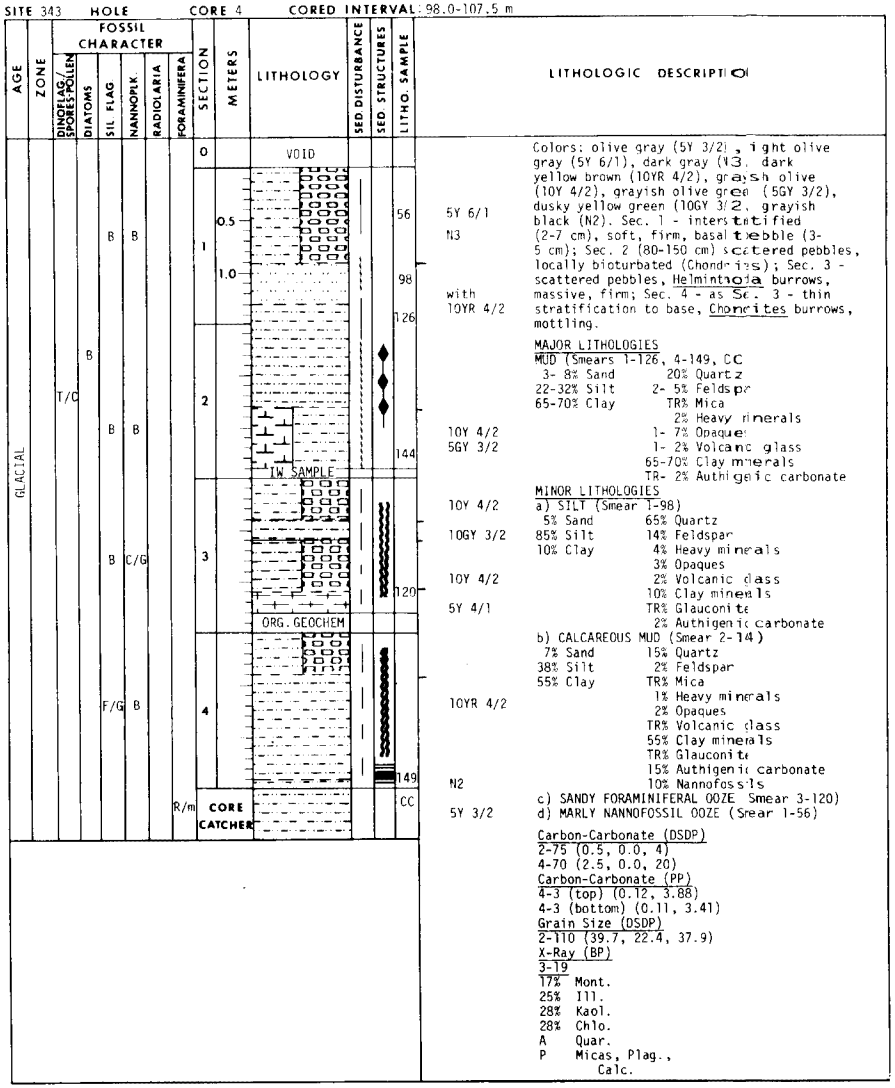
15% Quartz
2% Feldspar
50% Clay minerals
15% Authigenic carbonate
15% Nannofossils
TR% Mica, Heavy minerals, Opaques, Glauconite

c) RADIOLARIAN DIATOM OOZE (Smear 5-80)

1% Quartz
1% Opaques
5% Volcanic glass
10% Clay minerals
40% Diatoms
40% Radiolarians
TR% Sponge spicules
1% Silicoflagellates

Carbon-Carbonate (DSDP)
2-75 (1.8, 0.0, 15)
Carbon-Carbonate (PP)
3-5 (top) (0.27, 0.59)
3-5 (bottom) (0.25, 0.44)
Grain Size (DSDP)
2-139 (69.1, 17.8, 13.1)
X-Ray (BP)
5-81
74% Mont.
13% Ill.
11% K/C
A Quar.
P Micas, Plag.

SITE 343 HOLE CORE 4 CORED INTERVAL: 98.0-107.5 m



Colors: olive gray (5Y 3/2), light olive gray (5Y 6/1), dark gray (N3), dark yellow brown (10YR 4/2), grayish olive (10Y 4/2), grayish olive green (5GY 3/2), dusky yellow green (10GY 3/2), grayish black (N2). Sec. 1 - interstratified (2-7 cm), soft, firm, basal pebble (3-5 cm); Sec. 2 (80-150 cm) scattered pebbles, locally bioturbated (Chondrites); Sec. 3 - scattered pebbles, Helminthoida burrows, massive, firm; Sec. 4 - as Sec. 3 - thin stratification to base, Chondrites burrows, mottling.

MAJOR LITHOLOGIES

MUD (Smears 1-126, 4-149, CC)

3- 8% Sand
22-32% Silt
65-70% Clay

20% Quartz
2- 5% Feldspar
TR% Mica
2% Heavy minerals
1- 7% Opaques
1- 2% Volcanic glass
65-70% Clay minerals
TR- 2% Authigenic carbonate

MINOR LITHOLOGIES

a) SILT (Smear 1-98)

5% Sand
85% Silt
10% Clay

65% Quartz
14% Feldspar
4% Heavy minerals
3% Opaques
2% Volcanic glass
10% Clay minerals
TR% Glauconite
2% Authigenic carbonate

b) CALCAREOUS MUD (Smear 2-14)

7% Sand
38% Silt
55% Clay

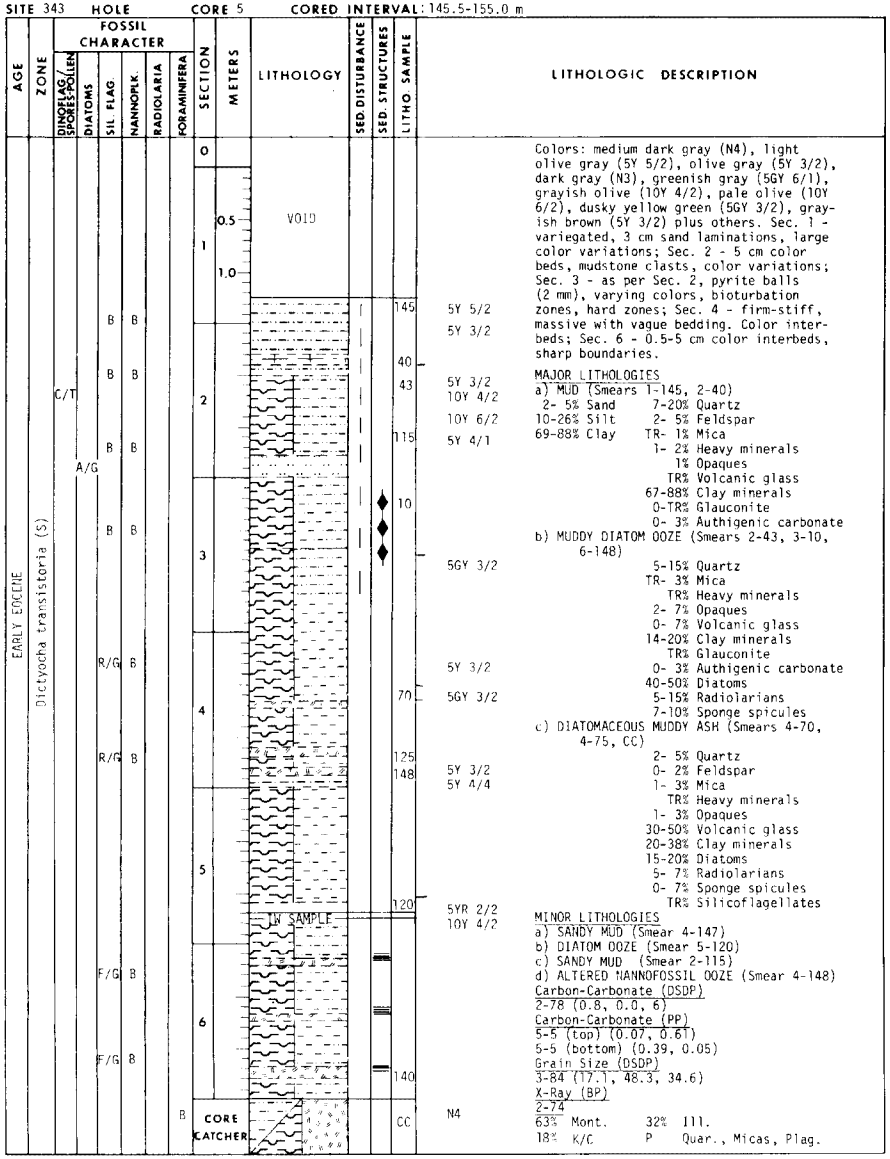
15% Quartz
2% Feldspar
TR% Mica
1% Heavy minerals
2% Opaques
TR% Volcanic glass
55% Clay minerals
TR% Glauconite
15% Authigenic carbonate
10% Nannofossils

c) SANDY FORAMINIFERAL OOZE (Smear 3-120)

d) MARLY NANNOFOSSIL OOZE (Smear 1-56)

Carbon-Carbonate (DSDP)
2-75 (0.5, 0.0, 4)
4-70 (2.5, 0.0, 20)
Carbon-Carbonate (PP)
4-3 (top) (0.12, 3.88)
4-3 (bottom) (0.11, 3.41)
Grain Size (DSDP)
2-110 (39.7, 22.4, 37.9)
X-Ray (BP)
3-19
17% Mont.
25% Ill.
28% Kaol.
28% Chlo.
A Quar.
P Micas, Plag., Calc.

SITE 343 HOLE CORE 5 CORED INTERVAL: 145.5-155.0 m



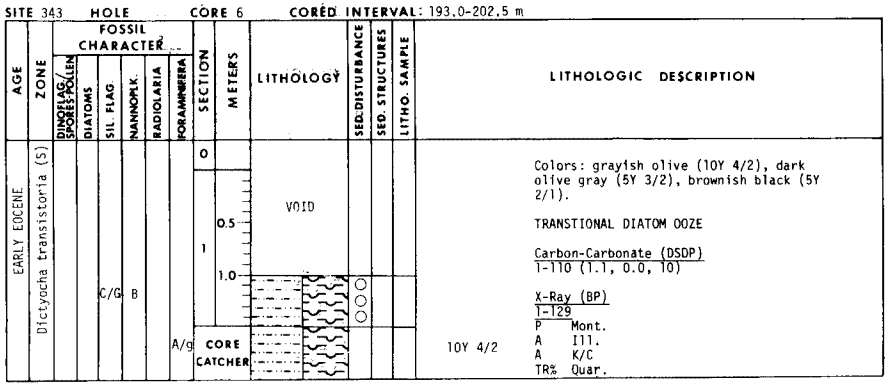
Colors: medium dark gray (N4), light olive gray (5Y 5/2), olive gray (5Y 3/2), dark gray (N3), greenish gray (5GY 6/1), grayish olive (10Y 4/2), pale olive (10Y 6/2), dusky yellow green (5GY 3/2), grayish brown (5Y 3/2) plus others. Sec. 1 - variegated, 3 cm sand laminations, large color variations; Sec. 2 - 5 cm color beds, mudstone clasts, color variations; Sec. 3 - as per Sec. 2, pyrite balls (2 mm), varying colors, bioturbation zones, hard zones; Sec. 4 - firm-stiff, massive with vague bedding. Color interbeds; Sec. 6 - 0.5-5 cm color interbeds, sharp boundaries.

MAJOR LITHOLOGIES
a) MUD (Smears 1-145, 2-40)
2- 5% Sand 7-20% Quartz
10-26% Silt 2- 5% Feldspar
69-88% Clay TR- 1% Mica
1- 2% Heavy minerals
1% Opaques
TR% Volcanic glass
67-88% Clay minerals
0-TR% Glauconite
0- 3% Authigenic carbonate
b) MUDDY DIATOM OOZE (Smears 2-43, 3-10, 6-148)
5-15% Quartz
TR- 3% Mica
TR% Heavy minerals
2- 7% Opaques
0- 7% Volcanic glass
14-20% Clay minerals
TR% Glauconite
0- 3% Authigenic carbonate
40-50% Diatoms
5-15% Radiolarians
7-10% Sponge spicules
c) DIATOMACEOUS MUDDY ASH (Smears 4-70, 4-75, CC)
2- 5% Quartz
0- 2% Feldspar
1- 3% Mica
TR% Heavy minerals
1- 3% Opaques
30-50% Volcanic glass
20-38% Clay minerals
15-20% Diatoms
5- 7% Radiolarians
0- 7% Sponge spicules
TR% Silicoflagellates

MINOR LITHOLOGIES
a) SANDY MUD (Smear 4-147)
b) DIATOM OOZE (Smear 5-120)
c) SANDY MUD (Smear 2-115)
d) ALTERED NANNOFOSSIL OOZE (Smear 4-148)

Carbon-Carbonate (DSDP)
2-78 (0.8, 0.0, 6)
Carbon-Carbonate (PP)
5-5 (top) (0.07, 0.61)
5-5 (bottom) (0.39, 0.05)
Grain Size (DSDP)
3-84 (17.1, 48.3, 34.6)
X-Ray (BP)
2-74
63% Mont. 32% Ill.
18% K/C P Quar., Micas, Plag.

SITE 343 HOLE CORE 6 CORED INTERVAL: 193.0-202.5 m



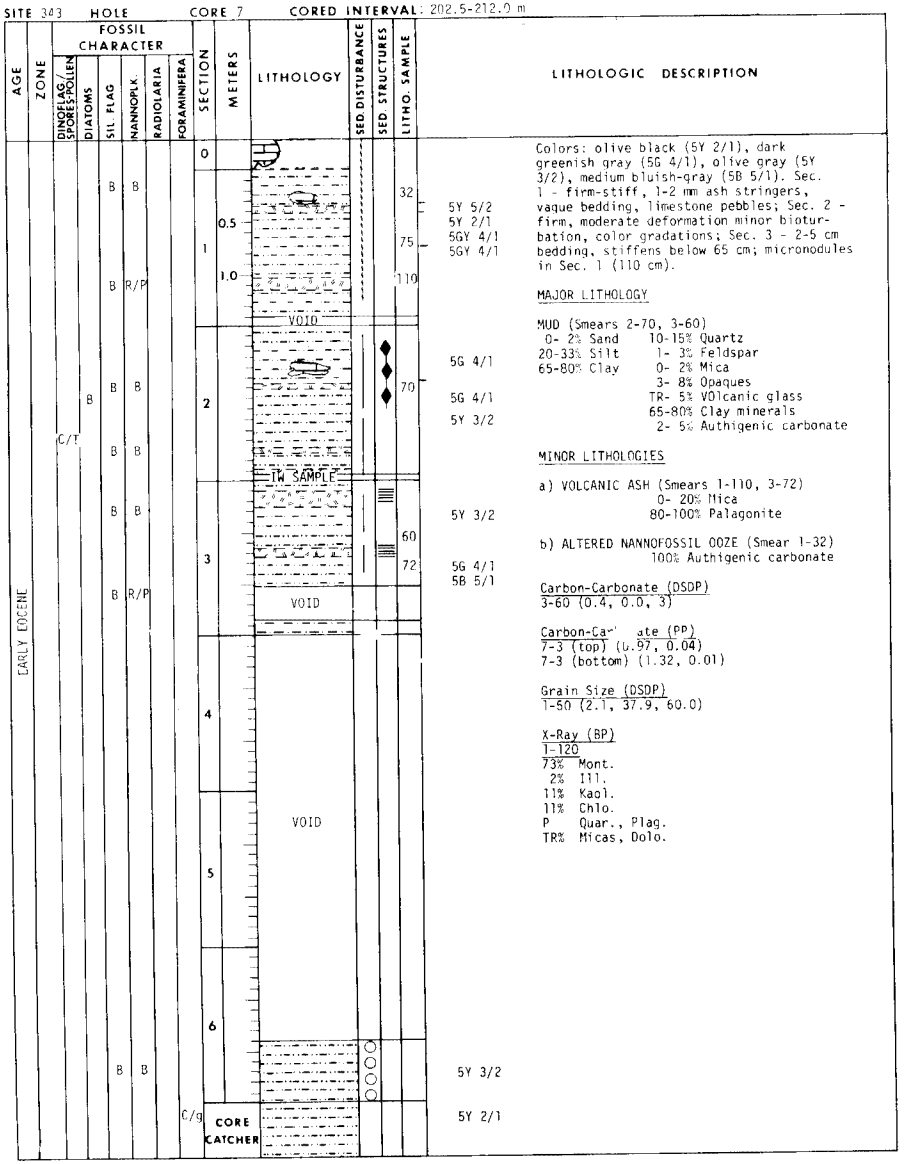
Colors: grayish olive (10Y 4/2), dark olive gray (5Y 3/2), brownish black (5Y 2/1).

TRANSTIONAL DIATOM OOZE

Carbon-Carbonate (DSDP)
1-110 (1.1, 0.0, 10)

X-Ray (BP)
1-129
P Mont.
A Ill.
A K/C
TR% Quar.

SITE 343 HOLE CORE 7 CORED INTERVAL: 202.5-212.0 m



Colors: olive black (5Y 2/1), dark greenish gray (5G 4/1), olive gray (5Y 3/2), medium bluish-gray (5B 5/1). Sec. 1 - firm-stiff, 1-2 mm ash stringers, vaque bedding, limestone pebbles; Sec. 2 - firm, moderate deformation minor bioturbation, color gradations; Sec. 3 - 2-5 cm bedding, stiffens below 65 cm; micronodules in Sec. 1 (110 cm).

MAJOR LITHOLOGY

MUD (Smears 2-70, 3-60)
0- 2% Sand
20-33% Silt
65-80% Clay
10-15% Quartz
1- 3% Feldspar
0- 2% Mica
3- 8% Opaques
TR- 5% Volcanic glass
65-80% Clay minerals
2- 5% Authigenic carbonate

MINOR LITHOLOGIES

a) VOLCANIC ASH (Smears 1-110, 3-72)
0- 20% Mica
80-100% Palagonite

b) ALTERED NANNOFOSSIL OOZE (Smear 1-32)
100% Authigenic carbonate

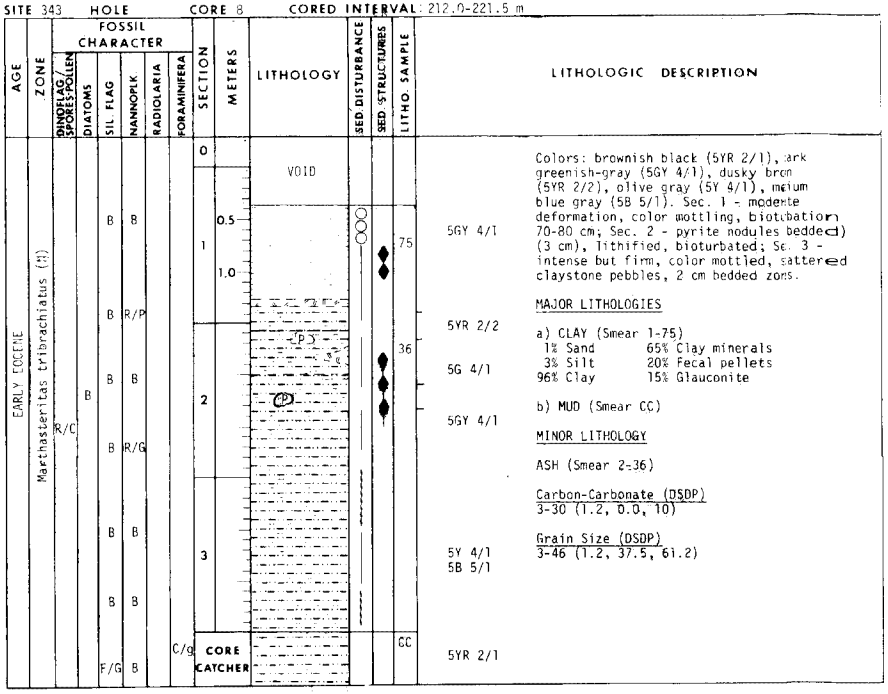
Carbon-Carbonate (DSDP)
3-60 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
7-3 (top) (0.97, 0.04)
7-3 (bottom) (1.32, 0.01)

Grain Size (DSDP)
1-50 (2.1, 37.9, 60.0)

X-Ray (BP)
1-120
73% Mont.
2% Ill.
11% Kaol.
11% Chlo.
P Quar., Plag.
TR% Micas, Dolo.

SITE 343 HOLE CORE 8 CORED INTERVAL: 212.0-221.5 m



Colors: brownish black (5YR 2/1), dark greenish-gray (5GY 4/1), dusky brown (5YR 2/2), olive gray (5Y 4/1), medium blue gray (5B 5/1). Sec. 1 - moderate deformation, color mottling, bioturbation 70-80 cm; Sec. 2 - pyrite nodules bedded (3 cm), lithified, bioturbated; Sec. 3 - intense but firm, color mottled, scattered claystone pebbles, 2 cm bedded zone.

MAJOR LITHOLOGIES

a) CLAY (Smear 1-75)
1% Sand
3% Silt
96% Clay
65% Clay minerals
20% Fecal pellets
15% Glauconite

b) MUD (Smear CC)

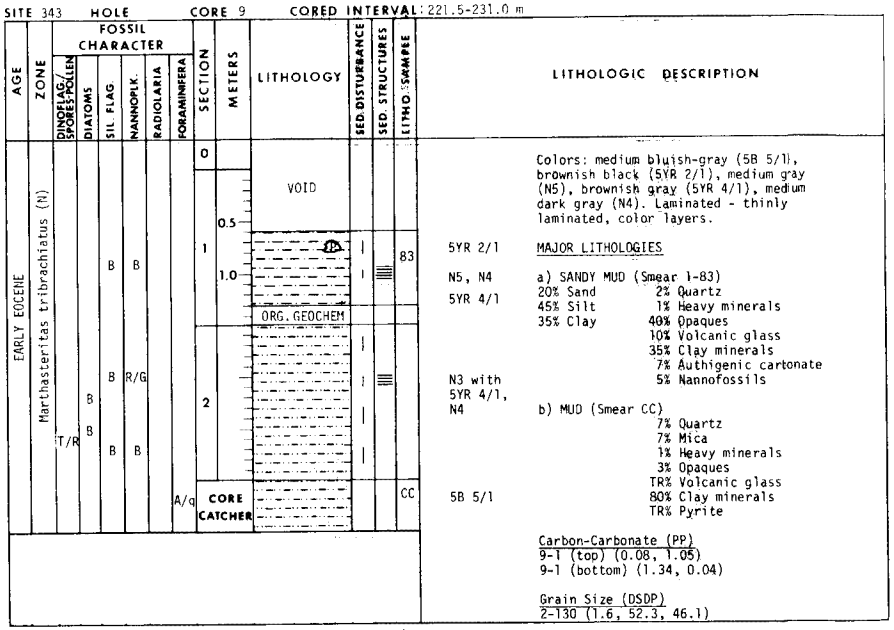
MINOR LITHOLOGY

ASH (Smear 2-36)

Carbon-Carbonate (DSDP)
3-30 (1.2, 0.0, 10)

Grain Size (DSDP)
3-46 (1.2, 37.5, 61.2)

SITE 343 HOLE CORE 9 CORED INTERVAL: 221.5-231.0 m



Colors: medium bluish-gray (5B 5/1), brownish black (5YR 2/1), medium gray (N5), brownish gray (5YR 4/1), medium dark gray (N4). Laminated - thinly laminated, color layers.

MAJOR LITHOLOGIES

a) SANDY MUD (Smear 1-83)
20% Sand
45% Silt
35% Clay
2% Quartz
1% Heavy minerals
40% Opaques
10% Volcanic glass
35% Clay minerals
7% Authigenic carbonate
5% Nannofossils

b) MUD (Smear CC)
7% Quartz
7% Mica
1% Heavy minerals
3% Opaques
TR% Volcanic glass
80% Clay minerals
TR% Pyrite

Carbon-Carbonate (PP)
9-1 (top) (0.08, 1.05)
9-1 (bottom) (1.34, 0.04)

Grain Size (DSDP)
2-130 (1.6, 52.3, 46.1)

SITE 343 HOLE CORE 10 CORED INTERVAL: 231.0-240.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE
EARLY EOCENE	Marthasteritas tribrachiatus (N)	T/R	B	B	B	B	A/g	0		VOID			
								1	0.5				
				B	R/M				1.0				
				B	R/M			2					
				B	B								CC
								CORE CATCHER					

LITHOLOGIC DESCRIPTION

Colors: greenish black (5G 2/1), medium dark gray (N4), brownish gray (5YR 4/1), dusky yellow green (10GY 3/2), olive gray (5Y 4/1). Slight deformation, thinly laminated, color mottled.

5YR 4/1
N4

MAJOR LITHOLOGY

MUDSTONE (Smear CC)
5% Sand — 25% Quartz
52% Silt — 7% Feldspar
43% Clay — 3% Mica
12% Opaques
2% Volcanic glass
N4 — 43% Clay minerals
5% Glauconite
3% Authigenic carbonate

Carbon-Carbonate (DSDP)
2-40 (0.9, 0.0, 7)

Grain Size (DSDP)
2-60 (0.3, 41.3, 58.4)

5G 2/1

SITE 343 HOLE CORE 11 CORED INTERVAL: 240.5-250.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE
EARLY EOCENE	Marthasteritas tribrachiatus (N)							0					
										VOID			
								1	0.5				
				B	R/M				1.0				
										ORG. GEOCHEM			
		R/R	B	B	B			2					100
				B	B								
				B	R/M		R/g	CORE CATCHER					

LITHOLOGIC DESCRIPTION

Colors: dark greenish-gray (5GY 4/1), brownish gray (5Y 4/1), medium dark gray (N4), grayish olive green (5GY 3/2). Mottled, originally stratified.

MAJOR LITHOLOGY

MUD (Smear 2-100)
6% Sand — 4% Mica
N4 — 19% Silt — 8% Heavy minerals
5YR 4/1 — 75% Clay — 75% Clay minerals
TR% Palagonite
8% Opaques
TR% Glauconite
2% Authigenic carbonate

Carbon-Carbonate (DSDP)
2-70 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
11-2 (top) (0.50, 0.04)
11-2 (bottom) (0.55, 0.06)

5GY 4/1

Grain Size (DSDP)
2-80 (5.7, 28.2, 66.1)

X-Ray (BP)
2-40
12% Mont.
32% Ill.
19% Kaol.
36% Chlo.
A Quar.
P Micas, Plag.
TR% Dolo.

SITE 343 HOLE CORE 12 CORED INTERVAL: 250.0-252.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE
								0					
				B	B				0.5	VOID			
								1	1.0				
								2					
								3		VOID			
								4					
				B	R/P		R/p	CORE CATCHER					

LITHOLOGIC DESCRIPTION

Colors: greenish black (5G 2/1), olive gray (5Y 3/2).

Sec. 1 - MUD - intense deformation, claystone clasts (rip-up).

Sec. 2 - (0-3 cm) probable base of turbidite siltstone with mudstone rip-up clasts. Intense deformation (N3) penecontemporate folding; (3-12 cm) - 3 thin-graded beds (CDE). 4-5 cm ≠ stratified siltstone, mudstone (5Y 4/1) (5Y 2/1) minor unconformity; (12-25 cm) - complex Bouma sequence granule-size claystone conglomerate at base; ≠ stratified, siltstone above, x-stratified→very fine siltstone (with current ripple laminae, followed by ≠ laminae siltstone/claystone; (25-33 cm) - thin ≠ laminae gray black siltstone, not graded = Bouma D; unconformable above, with claystone clasts - from E ; (33-38 cm) - thin gray black massive (N2) silty→claystone, base unconformable; (38-62 cm) - thick massive silt→massive claystones. At top dark gray (N3) - gray black (N2) - olive black (5Y 2/1). Silt layers pyritized with pyrite nodules, rip-up claystone clasts, calcite veins, local folding, possible x-stratified - ADE sequence; (62-70 cm) - graded, deformed with claystone, rip-up clasts, pull-apart layers with internal contortions - dark gray (N3) → massive mudstones; (70-76 cm) - dark gray (N3) - olive black (5Y 2/1) graded bed, very fine sand/silt → mudstones; (76-86 cm) - N3-N2 graded sequence, very fine sand/silt-channeled into mudstone, x-bed flute cast filling→≠ laminae-silt mud→mudstone = CDE; (86-107 cm) - N2-5Y 2/1 graded sequence - conglomerate→mudstone conglomerate clasts - mudstone (1.5 cm) subrounded, calcite veins, thin, flat laminae in siltstone→mudstone ABDE, possible x-stratified in C; (107-120 cm) - N2 to N5 conglomerate breccia subrounded - subangular clasts (2.5 cm) in $CaCO_3$ mud-

5Y 3/2

5G 2/1

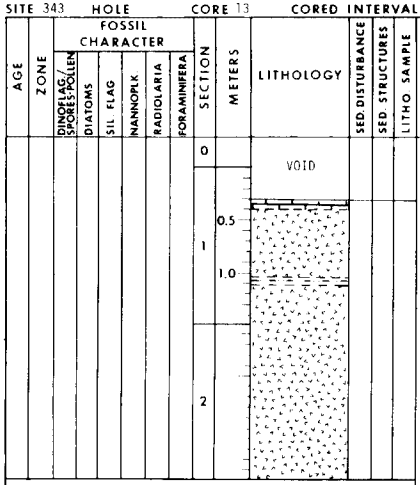
stone, calcite veins, mudstone clasts, upward graded to siltstone - pyrite nodule.

Smears (1-145, 2-82 = mudstone; 2-111 = claystone; 2-15, 2-61 = glauconitic mudstone)

*BASALT
Sec. 2 (118-130 cm) - drill pebbles of basalt; (130-150 cm) - grayish black (N2) basalt with pyrite impregnation.

Sec. 4 (110-150 cm) - drill pebbles of grayish black (N2) to medium dark gray (N4) basalt with plagioclase phenocrysts, and white calcite amygdules. Pyritization noted.

SITE 343 HOLE CORE 13 CORED INTERVAL: 252.0-259.5 m



LITHOLOGIC DESCRIPTION

BASALT

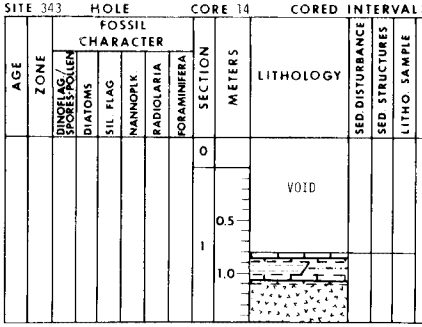
Sec. 1 (30-40 cm) - angular fragment of light olive gray clay limestone; (40-102 cm) - dark gray (N3) to grayish black (N3) basalt. Irregular white calcite amygdules in (0.2-2 mm) and cavities in (1-3 cm), filled by white calcite. Impregnation of pyrite rushes; (102-110 cm) - drill pebbles of mudstone; (110-150 cm) - medium dark gray (N4) basalt with pores and vesicles sometimes filled by white calcite, calcite veins.

Thin Section - altered chloritized basalt (dolerite-basalt), subdiabasic texture, skeletal plagioclase laths, devitrified glass relics, microphyric (8-9%), auqite (2%), olivine (5%), plagioclase (2%).

Sec. 2 (0-37 cm) - dark gray (N3) to grayish black (N2) basalt; (37-55 cm) - drill fragments of basalt; (55-77 cm) - basalt with vesicles and cavites (3x5 cm) sometimes filled by calcite crystals. Slickensides. Pyritization noted; (77-150 - drill fragments of basalt, calcite crystals.

Thin Section - chloritized basalt (dolerite basalt), subdoleritic texture, microphyric (5-8%) (altered olivine, pyrite, plagioclase), chlorite, calcite amygdules.

SITE 343 HOLE CORE 14 CORED INTERVAL: 259.5-269.0 m

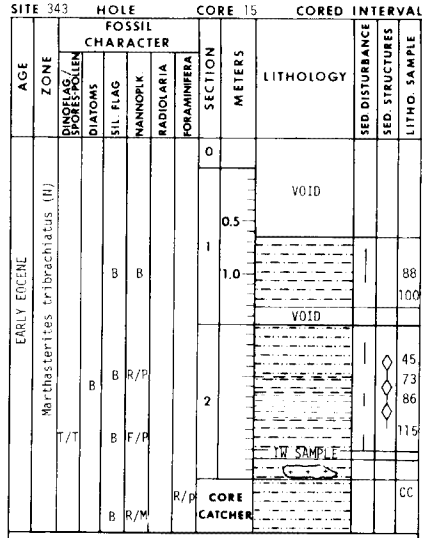


LITHOLOGIC DESCRIPTION

BASALT

Sec. 1 (80-85 cm) - angular fragments of phosphatic limestone; (85-110 cm) - small drill pebbles of claystone, mudstone and limestone. Round concretion of pyrite, angular fragment of limestone; (110-150 cm) - small drill fragments of medium dark gray (N4) basalt with dark green amygdules.

SITE 343 HOLE CORE 15 CORED INTERVAL: 269.0-278.5 m



LITHOLOGIC DESCRIPTION

Color: dark greenish-gray (5GY 4/1), olive gray (5Y 3/2), olive black (5Y 2/1), moderate-slight deformation, vague color bedding, firm-soft, massive with brittle zone 50-89 cm, Sec. 2. Some bioturbation - color streaking. Andesite pebble at Sec. 2.

5Y 3/2
5Y 2/1
5Y 3/2
5GY 4/1

MAJOR LITHOLOGIES

a) MUD (Smears 2-45, CC)

3- 5% Sand	4-15% Quartz
30% Silt	2-25% Feldspar
65-67% Clay	0- 3% Mica
	50-80% Clay minerals
	2- 3% Opaques
	0- 5% Glauconite
	1% Heavy minerals

b) CLAY (Smear 2-86)

5% Sand	5% Quartz
5% Silt	5% Mica/Chlorite
90% Clay	5% Opaques
	82% Clay minerals(devitrified?)
	3% Glauconite

c) SANDY MUD (Smears 1-88, 1-100, 2-73, 2-115)

15-25% Sand	10-40% Quartz
30-50% Silt	5- 8% Feldspar
80% Clay	2- 5% Mica/Chlorite
	TR- 5% Heavy minerals
	7-10% Opaques
	36-82% Clay minerals
	0-15% Glauconite
	0- 2% Zeolites
	2-15% Carbonate

(High % of clay minerals may be chlorite.)

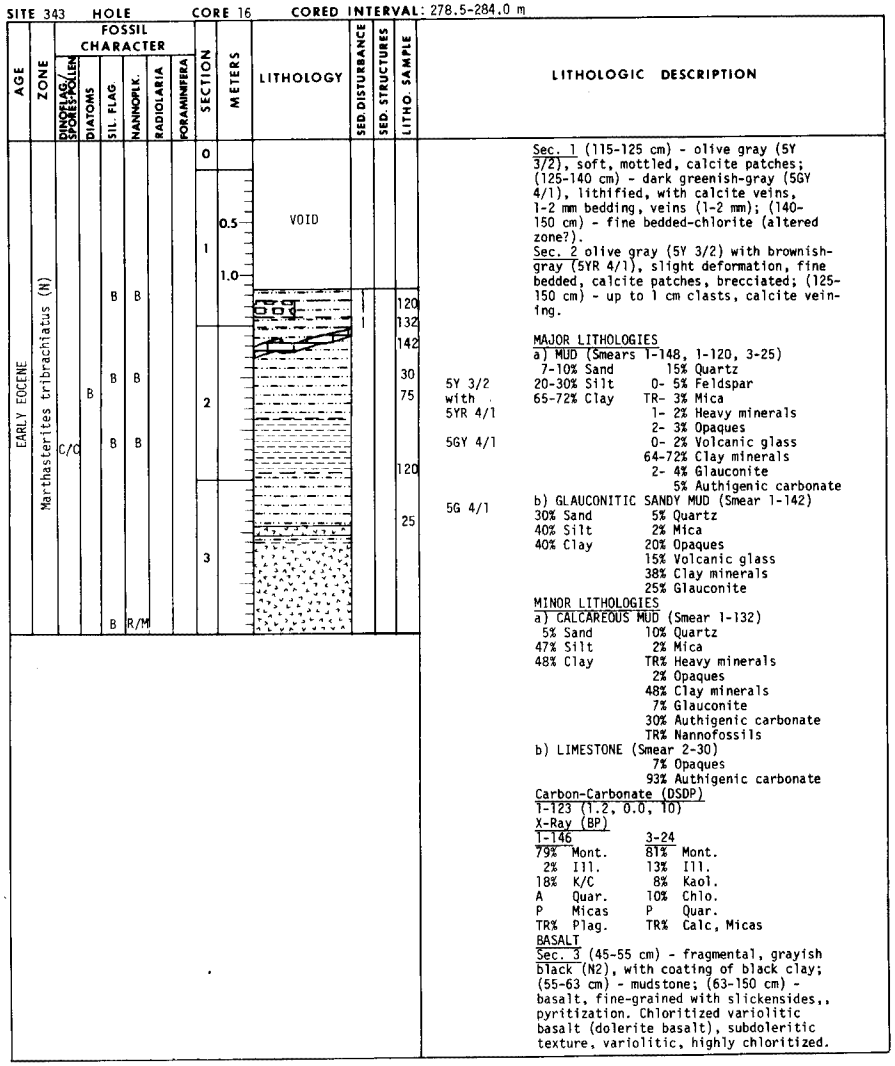
Carbon-Carbonate (DSDP)
2-110 (1.0, 0.0, 9)

Carbon-Carbonate (PP)
15-1 (top) (0.55, 0.04)
15-1 (bottom) (0.62, 0.09)

X-Ray (BP)

2-39		2-86	
A	Mont.	13%	Mont.
77%	Ill.	8%	Ill.
22%	K/C	77%	K/C
A	Quar.	P	Quar.,
P	Micas, Plag.	TR%	Micas Plag.

SITE 343 HOLE CORE 16 CORED INTERVAL: 278.5-284.0 m



LITHOLOGIC DESCRIPTION

Sec. 1 (115-125 cm) - olive gray (5Y 3/2), soft, mottled, calcite patches; (125-140 cm) - dark greenish-gray (5GY 4/1), lithified, with calcite veins, 1-2 mm bedding, veins (1-2 mm); (140-150 cm) - fine bedded-chlorite (altered zone?).
Sec. 2 olive gray (5Y 3/2) with brownish-gray (5YR 4/1), slight deformation, fine bedded, calcite patches, brecciated; (125-150 cm) - up to 1 cm clasts, calcite veining.

MAJOR LITHOLOGIES

a) MUD (Smears 1-148, 1-120, 3-25)

7-10% Sand	15% Quartz
20-30% Silt	0- 5% Feldspar
65-72% Clay	TR- 3% Mica
	1- 2% Heavy minerals
	2- 3% Opaques
	0- 2% Volcanic glass
	64-72% Clay minerals
	2- 4% Glauconite
	5% Authigenic carbonate

b) GLAUCONITIC SANDY MUD (Smear 1-142)

30% Sand	5% Quartz
40% Silt	2% Mica
40% Clay	20% Opaques
	15% Volcanic glass
	38% Clay minerals
	25% Glauconite

MINOR LITHOLOGIES

a) CALCAREOUS MUD (Smear 1-132)

5% Sand	10% Quartz
47% Silt	2% Mica
48% Clay	TR% Heavy minerals
	2% Opaques
	48% Clay minerals
	7% Glauconite
	30% Authigenic carbonate
	TR% Nannofossils

b) LIMESTONE (Smear 2-30)

	7% Opaques
	93% Authigenic carbonate

Carbon-Carbonate (DSDP)
1-123 (1.2, 0.0, 10)

X-Ray (BP)

1-146		3-24	
79%	Mont.	81%	Mont.
2%	Ill.	13%	Ill.
18%	K/C	8%	Kaol.
A	Quar.	10%	Chlo.
P	Micas	P	Quar.
TR%	Plag.	TR%	Calc, Micas

BASALT
Sec. 3 (45-55 cm) - fragmental, grayish black (N2), with coating of black clay; (55-63 cm) - mudstone; (63-150 cm) - basalt, fine-grained with slickensides,, pyritization. Chloritized variolitic basalt (dolerite basalt), subdoleritic texture, variolitic, highly chloritized.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 344

SITE SUMMARY SHEET

POSITION: Latitude: 76°08.89'N Longitude: 07°52.52'E

Water depth (from sea level): 2156.0 corrected meters (Echo sounding)

Bottom felt at: 2201.0 meters (drill pipe) Penetration: 414.0 meters

Number of Holes: 1 Number of Cores: 37

Total length of cored section: 338.0 m Total core recovered: 140.7 m

Percentage of core recovery: 31.0%

OLDEST SEDIMENT CORED:

Depth below sea floor: 377.5 meters Nature: Sandy mudstone

Age: Miocene or Pliocene (Core 33) Measured velocity: 1.86 km/sec

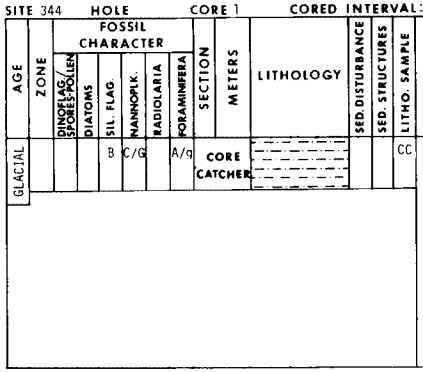
BASEMENT:

Depth below sea floor: 377.5 meters (drilled) Nature: Diabase, gabbro-diabase, gabbro

PRINCIPAL RESULTS:

The entire 377 meter column of sediments appears to be glacial-marine in origin. The age of the basal sediments is not well determined, but probably is Pliocene or upper Miocene, suggesting that glaciation may have started 5 m.y. ago, or even earlier. The underlying igneous rocks have a coarse texture, are highly altered, and possibly originated from a subalkalic basaltic magma.

SITE 344 HOLE CORE 1 CORED INTERVAL: 0.0-1.5 m



10YR 4/2

No recovery except 0.1 m in CC. Dark yellow brown (10YR 4/2), 3-4 cm pebbles.

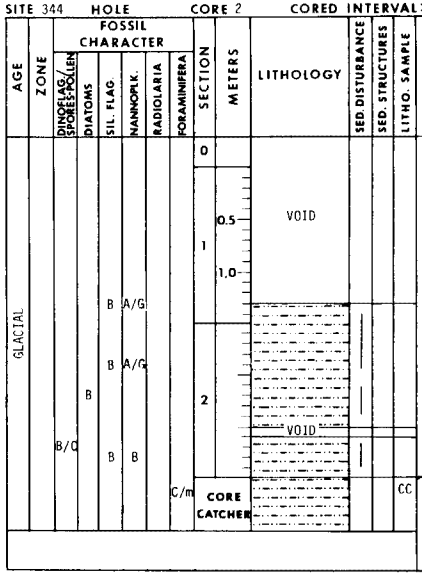
MAJOR LITHOLOGY

SANDY MUD (Smear CC)

35% Sand	18-20% Quartz
35% Silt	10% Feldspar
30% Clay	5% Heavy minerals
	0- 2% Foraminifera
	63% Clay minerals (including Carbonate particles)
	2% Opaques

(Pebbles include Schist, sandstone.)

SITE 344 HOLE CORE 2 CORED INTERVAL: 1.5-11.0 m



Colors: medium dark gray (N4), olive gray (5Y 4/1). Mottled, streaks, moderate deformation.

MAJOR LITHOLOGY

MUD (Smear CC)

7% Sand	27% Quartz
23% Silt	10% Feldspar
70% Clay	2% Heavy minerals
	59% Clay minerals (including Carbonate particles)
	2% Opaques

Carbon-Carbonate (DSDP)
2-20 (1.2, 0.0, 10)

5Y 4/1

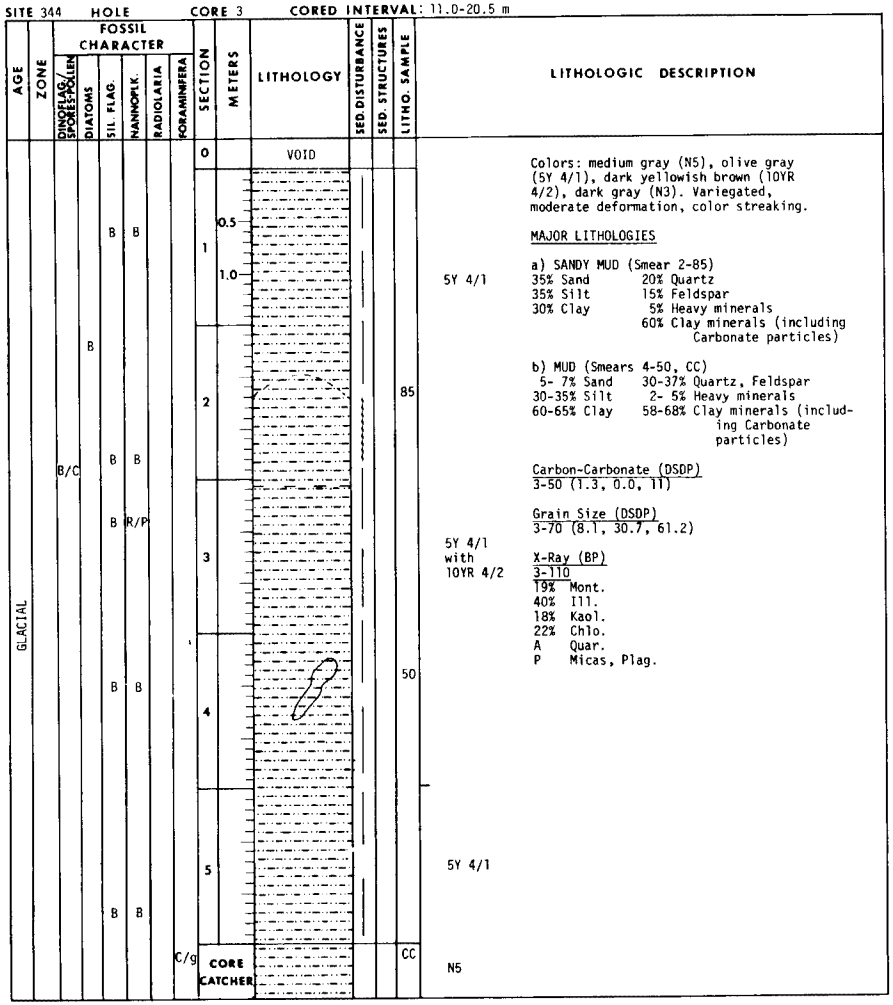
Grain Size (DSDP)
2-50 (14.8, 27.4, 57.8)

X-Ray (BP)
2-70

30%	Mont.
28%	Ill.
16%	Kaol.
24%	Chlo.
A	Quar.
P	Micas, Plag.

N4

SITE 344 HOLE CORE 3 CORED INTERVAL: 11.0-20.5 m



Colors: medium gray (N5), olive gray (5Y 4/1), dark yellowish brown (10YR 4/2), dark gray (N3). Variegated, moderate deformation, color streaking.

MAJOR LITHOLOGIES

a) SANDY MUD (Smear 2-85)

35% Sand	20% Quartz
35% Silt	15% Feldspar
30% Clay	5% Heavy minerals
	60% Clay minerals (including Carbonate particles)

5Y 4/1

b) MUD (Smears 4-50, CC)

5- 7% Sand	30-37% Quartz, Feldspar
30-35% Silt	2- 5% Heavy minerals
60-65% Clay	58-68% Clay minerals (including Carbonate particles)

Carbon-Carbonate (DSDP)
3-50 (1.3, 0.0, 11)

Grain Size (DSDP)
3-70 (8.1, 30.7, 61.2)

5Y 4/1 with 10YR 4/2

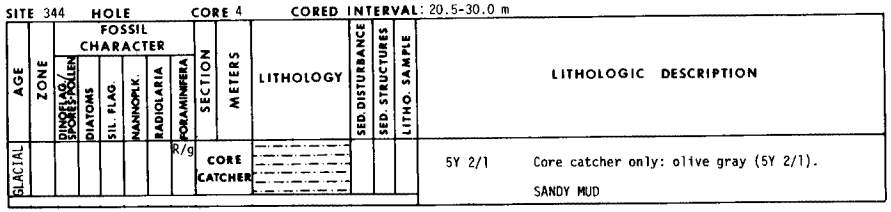
X-Ray (BP)
3-110

19%	Mont.
40%	Ill.
18%	Kaol.
22%	Chlo.
A	Quar.
P	Micas, Plag.

5Y 4/1

N5

SITE 344 HOLE CORE 4 CORED INTERVAL: 20.5-30.0 m

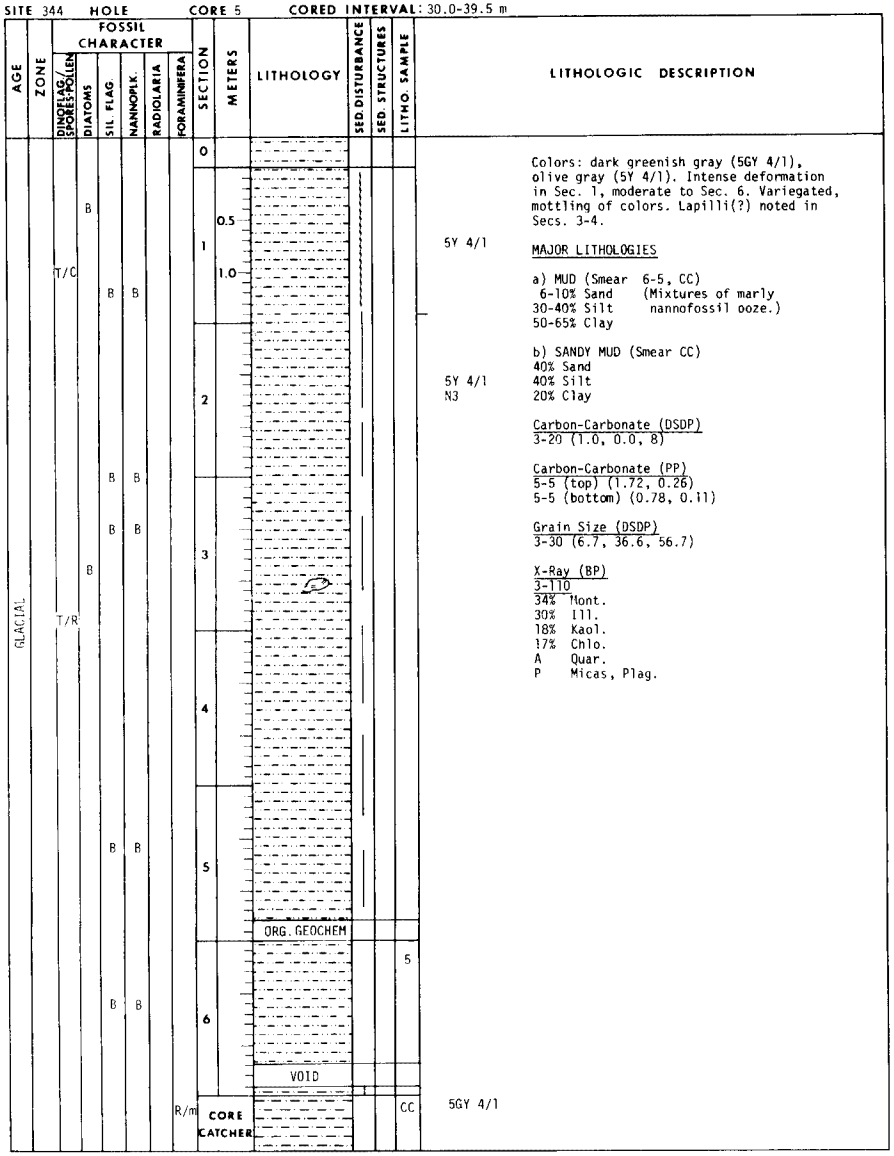


5Y 2/1

Core catcher only: olive gray (5Y 2/1).

SANDY MUD

SITE 344 HOLE CORE 5 CORED INTERVAL: 30.0-39.5 m



Colors: dark greenish gray (5GY 4/1), olive gray (5Y 4/1). Intense deformation in Sec. 1, moderate to Sec. 6. Variegated, mottling of colors. Lapilli(?) noted in Secs. 3-4.

MAJOR LITHOLOGIES

a) MUD (Smear 6-5, CC)
6-10% Sand (Mixtures of marly
30-40% Silt nannofossil ooze.)
50-65% Clay

b) SANDY MUD (Smear CC)
40% Sand
40% Silt
20% Clay

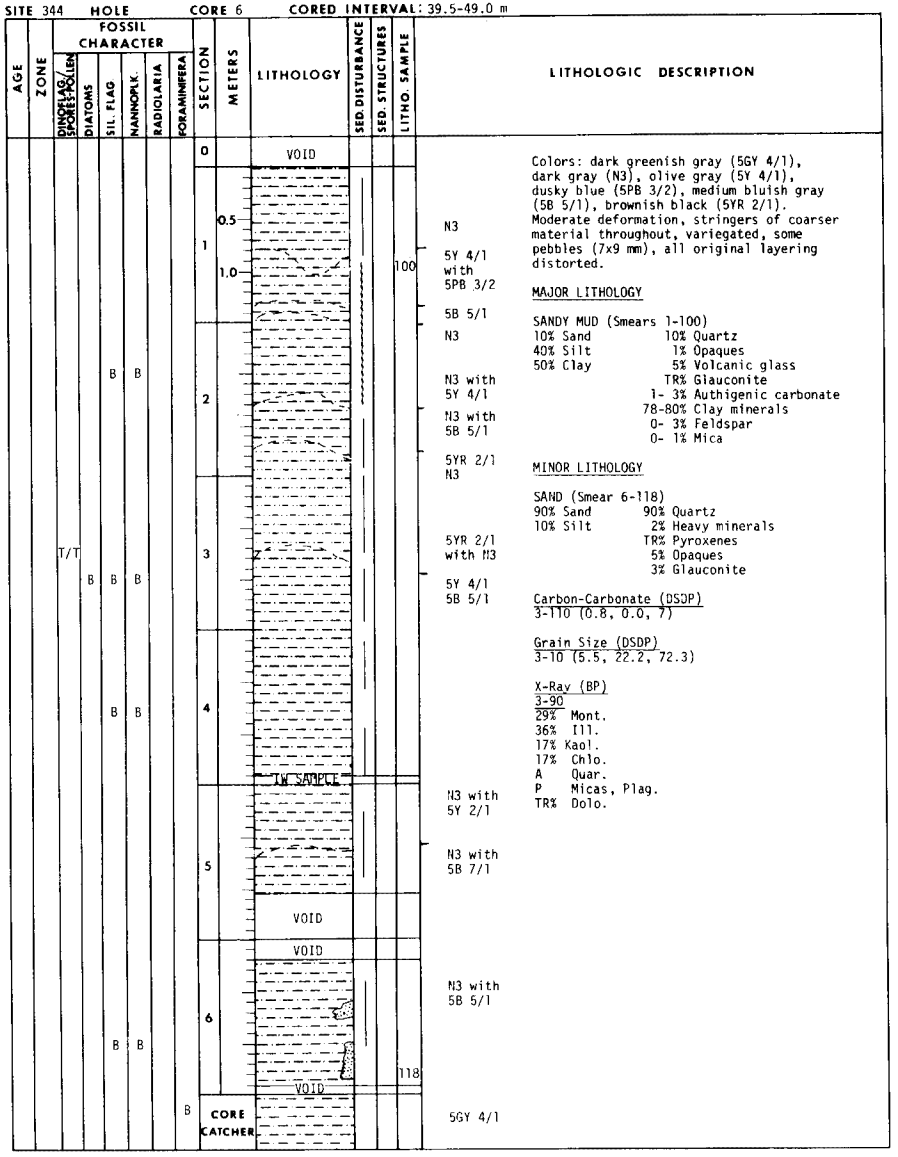
Carbon-Carbonate (DSDP)
3-20 (1.0, 0.0, 8)

Carbon-Carbonate (PP)
5-5 (top) (1.72, 0.26)
5-5 (bottom) (0.78, 0.11)

Grain Size (DSDP)
3-30 (6.7, 36.6, 56.7)

X-Ray (BP)
3-110
34% Mont.
30% Ill.
18% Kaol.
17% Chlo.
A Quar.
P Micas, Plag.

SITE 344 HOLE CORE 6 CORED INTERVAL: 39.5-49.0 m



Colors: dark greenish gray (5GY 4/1), dark gray (N3), olive gray (5Y 4/1), dusky blue (5PB 3/2), medium bluish gray (5B 5/1), brownish black (5YR 2/1). Moderate deformation, stringers of coarser material throughout, variegated, some pebbles (7x9 mm), all original layering distorted.

MAJOR LITHOLOGY

SANDY MUD (Smears 1-100)
10% Sand 10% Quartz
40% Silt 1% Opaques
50% Clay 5% Volcanic glass
TR% Glauconite
1- 3% Authigenic carbonate
78-80% Clay minerals
0- 3% Feldspar
0- 1% Mica

MINOR LITHOLOGY

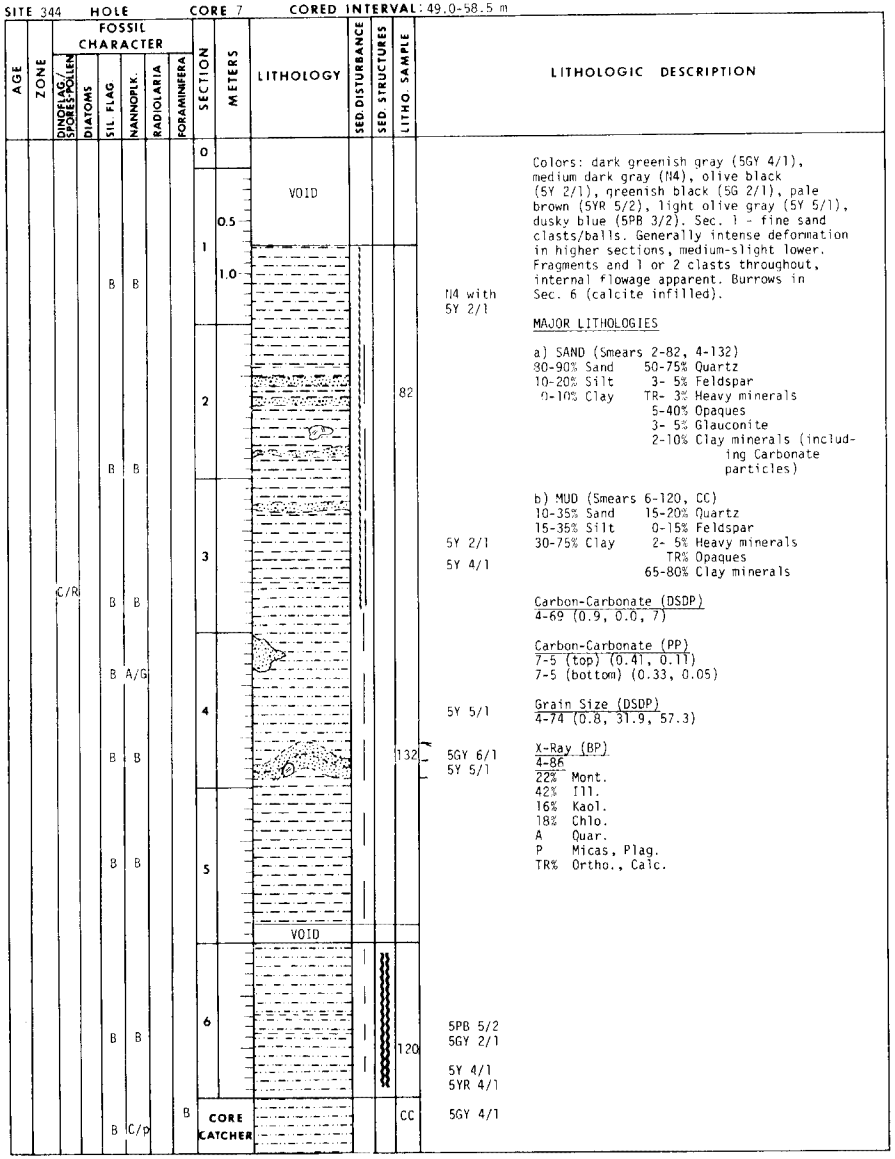
SAND (Smear 6-118)
90% Sand 90% Quartz
10% Silt 2% Heavy minerals
TR% Pyroxenes
5% Opaques
3% Glauconite

Carbon-Carbonate (DSDP)
3-110 (0.8, 0.0, 7)

Grain Size (DSDP)
3-10 (5.5, 22.2, 72.3)

X-Ray (BP)
3-90
29% Mont.
36% Ill.
17% Kaol.
17% Chlo.
A Quar.
P Micas, Plag.
TR% Dolo.

SITE 344 HOLE CORE 7 CORED INTERVAL: 49.0-58.5 m



Colors: dark greenish gray (5GY 4/1), medium dark gray (N4), olive black (5Y 2/1), greenish black (5G 2/1), pale brown (5YR 5/2), light olive gray (5Y 5/1), dusky blue (5PB 3/2). Sec. 1 - fine sand clasts/balls. Generally intense deformation in higher sections, medium-slight lower. Fragments and 1 or 2 clasts throughout, internal flowage apparent. Burrows in Sec. 6 (calcite infilled).

MAJOR LITHOLOGIES

a) SAND (Smears 2-82, 4-132)

80-90% Sand	50-75% Quartz
10-20% Silt	3- 5% Feldspar
0-10% Clay	TR- 3% Heavy minerals
	5-40% Opaques
	3- 5% Glauconite
	2-10% Clay minerals (including Carbonate particles)

b) MUD (Smears 6-120, CC)

10-35% Sand	15-20% Quartz
15-35% Silt	0-15% Feldspar
30-75% Clay	2- 5% Heavy minerals
	TR% Opaques
	65-80% Clay minerals

Carbon-Carbonate (DSDP)
4-69 (0.9, 0.0, 7)

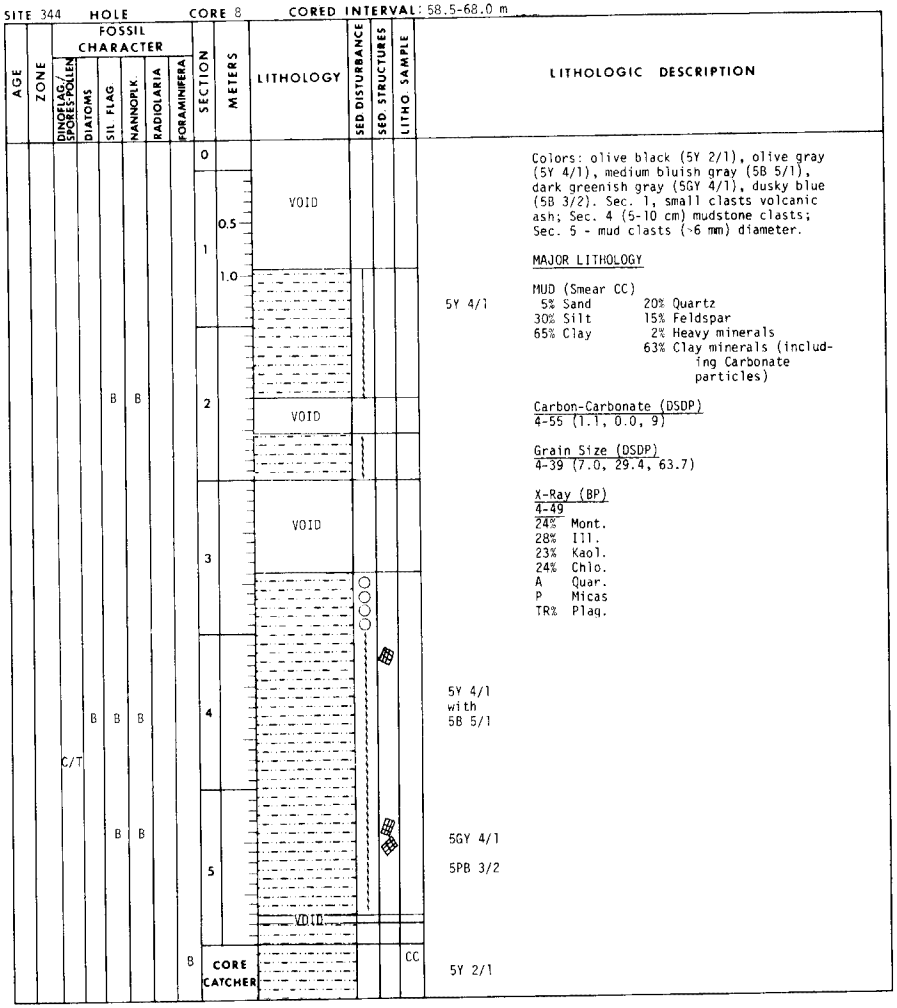
Carbon-Carbonate (PP)
7-5 (top) (0.4), 0.11)
7-5 (bottom) (0.33, 0.05)

Grain Size (DSDP)
4-74 (0.8, 31.9, 57.3)

X-Ray (BP)
4-86

22%	Mont.
42%	Ill.
16%	Kaol.
18%	Chlo.
A	Quar.
P	Micas, Plag.
TR%	Ortho., Calc.

SITE 344 HOLE CORE 8 CORED INTERVAL: 58.5-68.0 m



Colors: olive black (5Y 2/1), olive gray (5Y 4/1), medium bluish gray (5B 5/1), dark greenish gray (5GY 4/1), dusky blue (5B 3/2). Sec. 1, small clasts volcanic ash; Sec. 4 (5-10 cm) mudstone clasts; Sec. 5 - mud clasts (~6 mm) diameter.

MAJOR LITHOLOGY

MUD (Smear CC)

5% Sand	20% Quartz
30% Silt	15% Feldspar
65% Clay	2% Heavy minerals
	63% Clay minerals (including Carbonate particles)

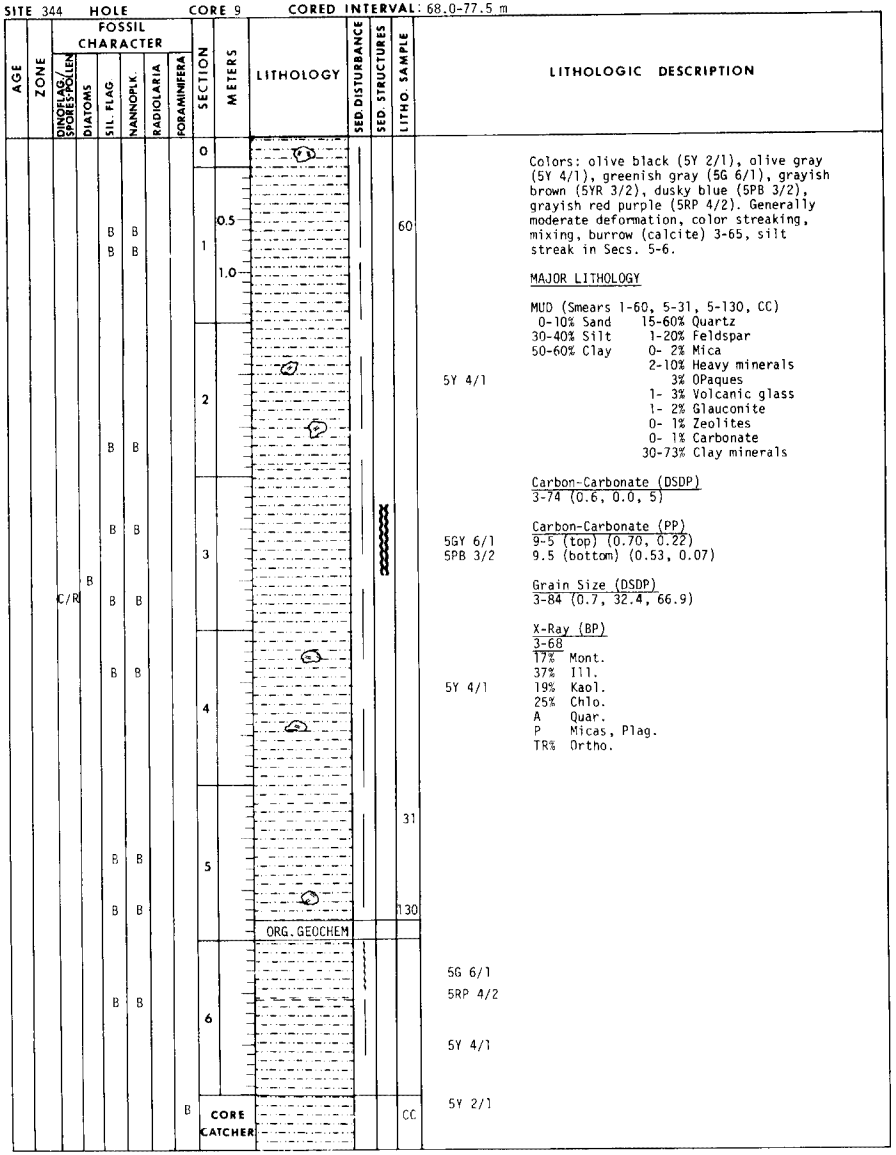
Carbon-Carbonate (DSDP)
4-55 (1.1, 0.0, 9)

Grain Size (DSDP)
4-39 (7.0, 29.4, 63.7)

X-Ray (BP)
4-49

24%	Mont.
28%	Ill.
23%	Kaol.
24%	Chlo.
A	Quar.
P	Micas
TR%	Plag.

SITE 344 HOLE CORE 9 CORED INTERVAL: 68.0-77.5 m



Colors: olive black (5Y 2/1), olive gray (5Y 4/1), greenish gray (5G 6/1), grayish brown (5YR 3/2), dusky blue (5PB 3/2), grayish red purple (5RP 4/2). Generally moderate deformation, color streaking, mixing, burrow (calcite) 3-65, silt streak in Secs. 5-6.

MAJOR LITHOLOGY

MUD (Smears 1-60, 5-31, 5-130, CC)
0-10% Sand
30-40% Silt
50-60% Clay
15-60% Quartz
1-20% Feldspar
0- 2% Mica
2-10% Heavy minerals
3% OPaques
1- 3% Volcanic glass
1- 2% Glauconite
0- 1% Zeolites
0- 1% Carbonate
30-73% Clay minerals

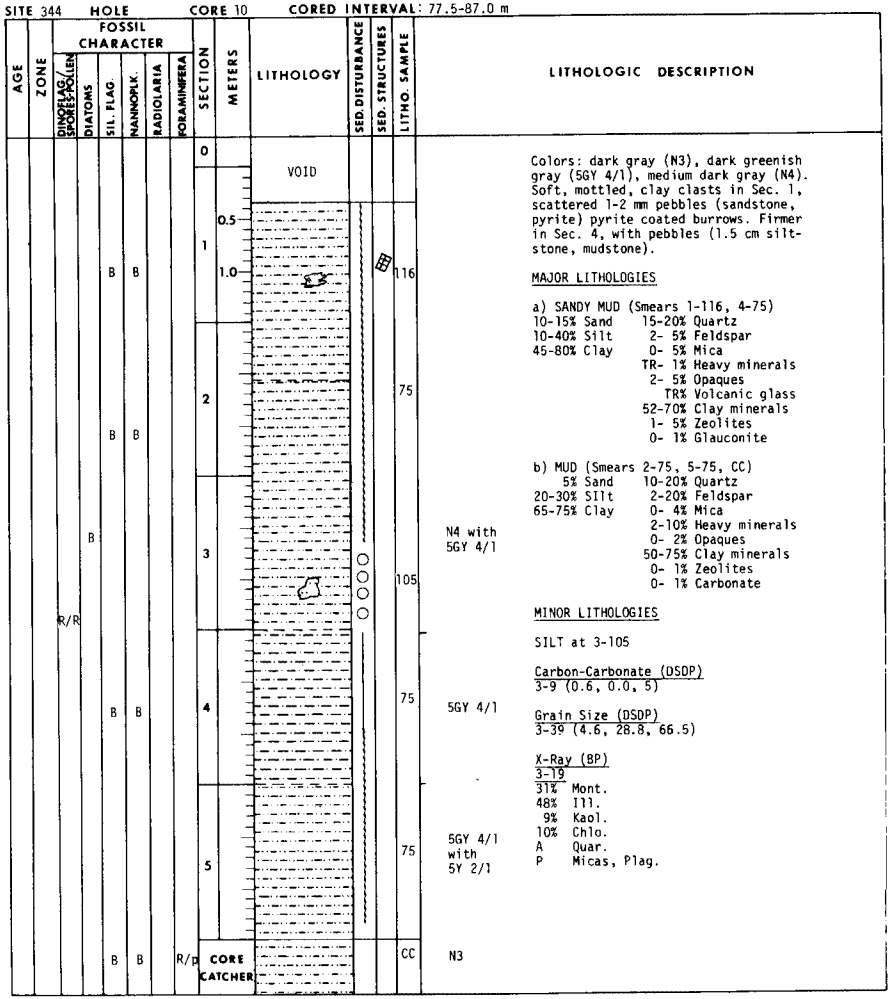
Carbon-Carbonate (DSDP)
3-74 (0.6, 0.0, 5)

Carbon-Carbonate (PP)
9-5 (top) (0.70, 0.22)
9.5 (bottom) (0.53, 0.07)

Grain Size (DSDP)
3-84 (0.7, 32.4, 66.9)

X-Ray (BP)
3-68
17% Mont.
37% Ill.
19% Kaol.
25% Chlo.
A Quar.
P Micas, Plag.
TR% Ortho.

SITE 344 HOLE CORE 10 CORED INTERVAL: 77.5-87.0 m



Colors: dark gray (N3), dark greenish gray (5GY 4/1), medium dark gray (N4). Soft, mottled, clay clasts in Sec. 1, scattered 1-2 mm pebbles (sandstone, pyrite) pyrite coated burrows. Firmer in Sec. 4, with pebbles (1.5 cm siltstone, mudstone).

MAJOR LITHOLOGIES

a) SANDY MUD (Smears 1-116, 4-75)
10-15% Sand
10-40% Silt
45-80% Clay
15-20% Quartz
2- 5% Feldspar
0- 5% Mica
TR- 1% Heavy minerals
2- 5% Opaques
TR% Volcanic glass
52-70% Clay minerals
1- 5% Zeolites
0- 1% Glauconite

b) MUD (Smears 2-75, 5-75, CC)
5% Sand
20-30% SIlt
65-75% Clay
10-20% Quartz
2-20% Feldspar
0- 4% Mica
2-10% Heavy minerals
0- 2% Opaques
50-75% Clay minerals
0- 1% Zeolites
0- 1% Carbonate

MINOR LITHOLOGIES

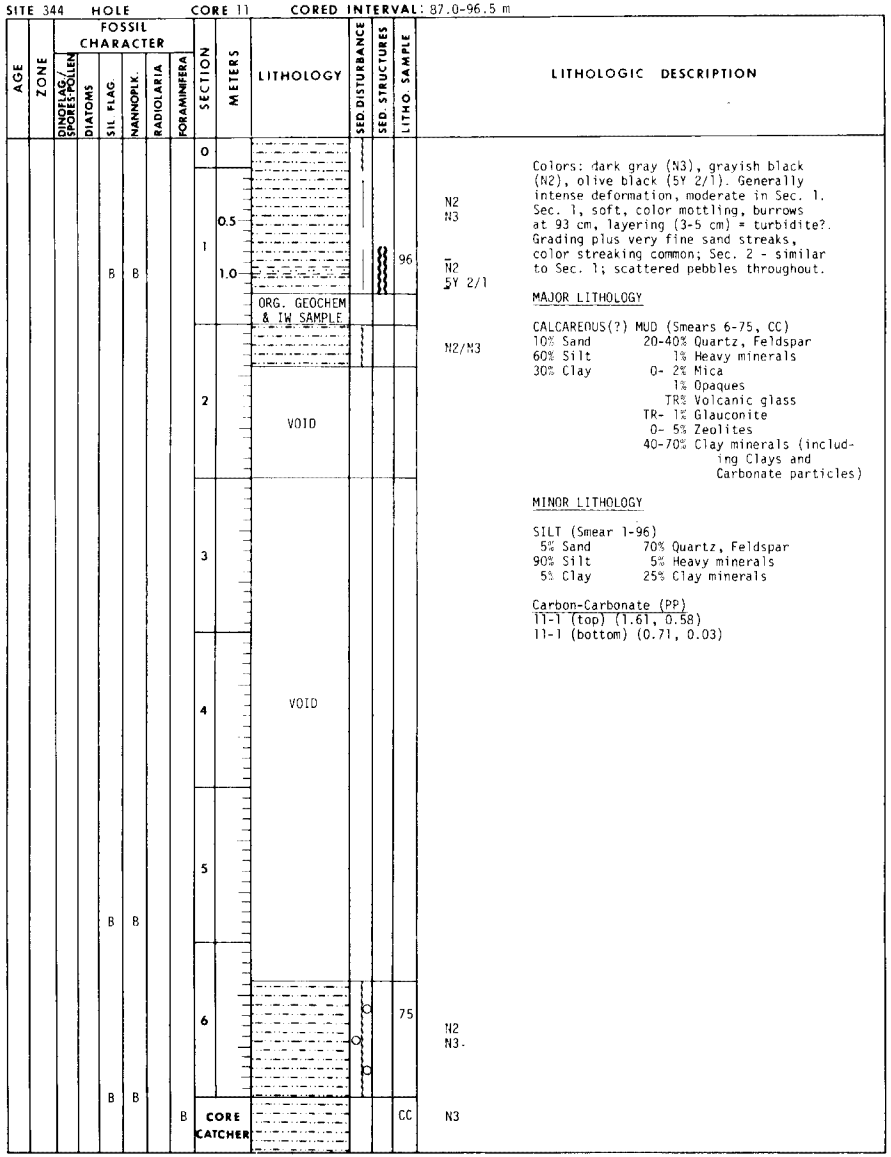
SILT at 3-105

Carbon-Carbonate (DSDP)
3-9 (0.6, 0.0, 5)

Grain Size (DSDP)
3-39 (4.6, 28.8, 66.5)

X-Ray (BP)
3-19
31% Mont.
48% Ill.
9% Kaol.
10% Chlo.
A Quar.
P Micas, Plag.

SITE 344 HOLE CORE 11 CORED INTERVAL: 87.0-96.5 m



Colors: dark gray (N3), grayish black (N2), olive black (5Y 2/1). Generally intense deformation, moderate in Sec. 1. Sec. 1, soft, color mottling, burrows at 93 cm, layering (3-5 cm) = turbidite?. Grading plus very fine sand streaks, color streaking common; Sec. 2 - similar to Sec. 1; scattered pebbles throughout.

MAJOR LITHOLOGY

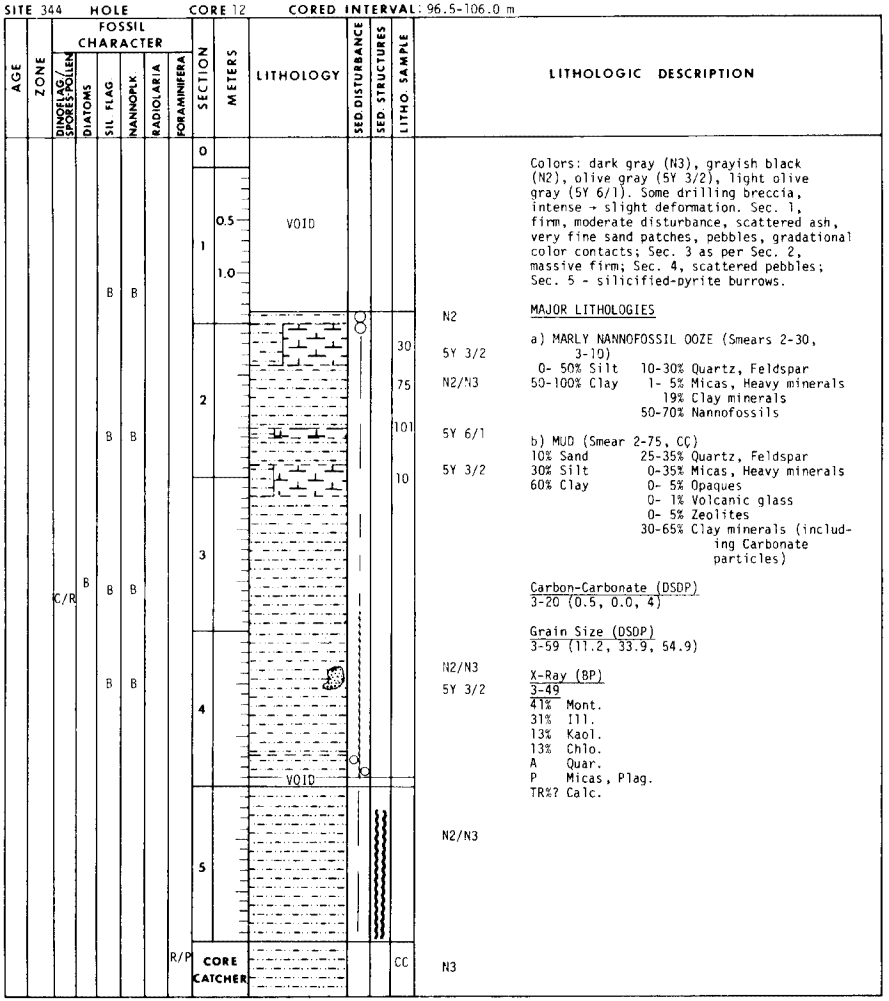
CALCAREOUS(?) MUD (Smears 6-75, CC)
10% Sand — 20-40% Quartz, Feldspar
60% Silt — 1% Heavy minerals
30% Clay — 0- 2% Mica
1% Opaques
TR% Volcanic glass
TR- 1% Glauconite
0- 5% Zeolites
40-70% Clay minerals (including Clays and Carbonate particles)

MINOR LITHOLOGY

SILT (Smear 1-96)
5% Sand — 70% Quartz, Feldspar
90% Silt — 5% Heavy minerals
5% Clay — 25% Clay minerals

Carbon-Carbonate (PP)
11-1 (top) (1.61, 0.58)
11-1 (bottom) (0.71, 0.03)

SITE 344 HOLE CORE 12 CORED INTERVAL: 96.5-106.0 m



Colors: dark gray (N3), grayish black (N2), olive gray (5Y 3/2), light olive gray (5Y 6/1). Some drilling breccia, intense → slight deformation. Sec. 1, firm, moderate disturbance, scattered ash, very fine sand patches, pebbles, gradational color contacts; Sec. 3 as per Sec. 2, massive firm; Sec. 4, scattered pebbles; Sec. 5 - silicified-pyrite burrows.

MAJOR LITHOLOGIES

a) MARLY NANNOFOSSIL OOZE (Smears 2-30, 3-10)
0- 50% Silt — 10-30% Quartz, Feldspar
50-100% Clay — 1- 5% Micas, Heavy minerals
19% Clay minerals
50-70% Nannofossils

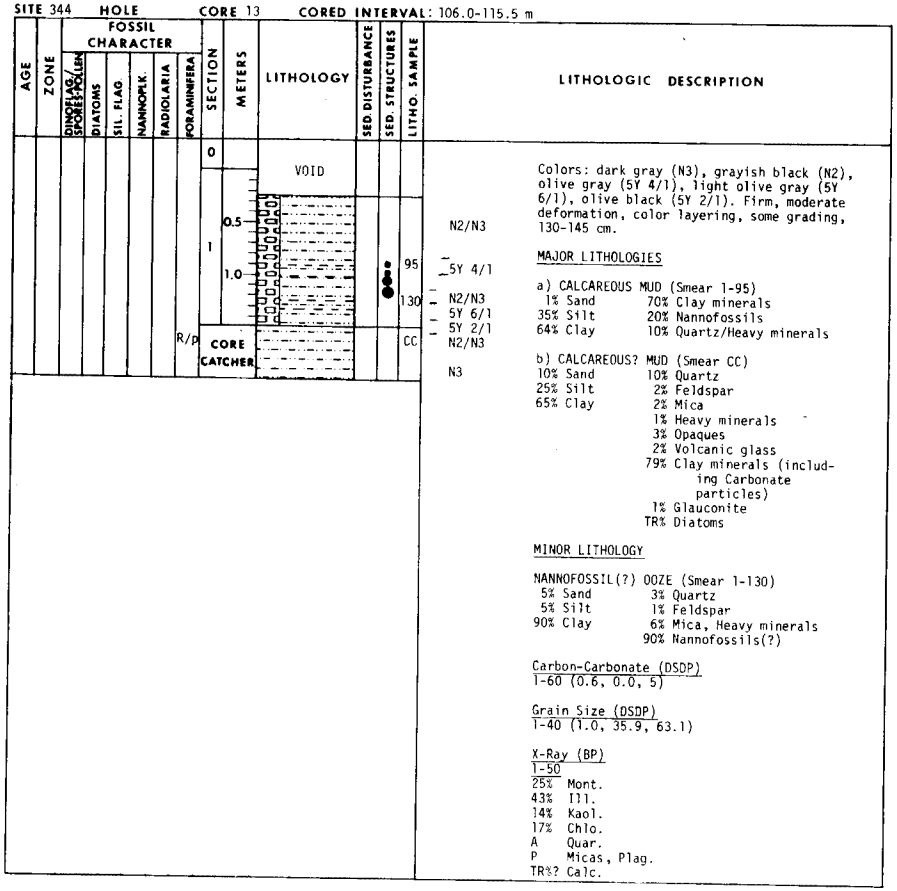
b) MUD (Smear 2-75, CC)
10% Sand — 25-35% Quartz, Feldspar
30% Silt — 0-35% Micas, Heavy minerals
60% Clay — 0- 5% Opaques
0- 1% Volcanic glass
0- 5% Zeolites
30-65% Clay minerals (including Carbonate particles)

Carbon-Carbonate (DSDP)
3-20 (0.5, 0.0, 4)

Grain Size (DSDP)
3-59 (11.2, 33.9, 54.9)

X-Ray (BP)
3-49
41% Mont.
31% Ill.
13% Kaol.
13% Chlo.
A Quar.
P Micas, Plag.
TR%? Calc.

SITE 344 HOLE CORE 13 CORED INTERVAL: 106.0-115.5 m



LITHOLOGIC DESCRIPTION

Colors: dark gray (N3), grayish black (N2), olive gray (5Y 4/1), light olive gray (5Y 6/1), olive black (5Y 2/1). Firm, moderate deformation, color layering, some grading, 130-145 cm.

MAJOR LITHOLOGIES

a) CALCAREOUS MUD (Smear 1-95)

1% Sand	70% Clay minerals
35% Silt	20% Nannofossils
64% Clay	10% Quartz/Heavy minerals

b) CALCAREOUS? MUD (Smear CC)

10% Sand	10% Quartz
25% Silt	2% Feldspar
65% Clay	2% Mica
	1% Heavy minerals
	3% Opaques
	2% Volcanic glass
	79% Clay minerals (including Carbonate particles)
	1% Glauconite
	TR% Diatoms

MINOR LITHOLOGY

NANNOFOSSIL(?) OOZE (Smear 1-130)

5% Sand	3% Quartz
5% Silt	1% Feldspar
90% Clay	6% Mica, Heavy minerals
	90% Nannofossils(?)

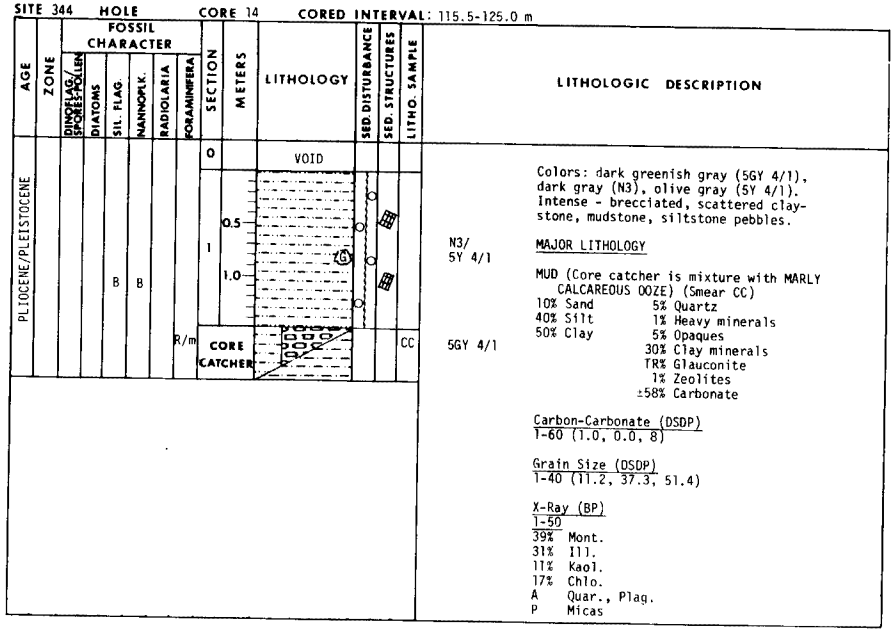
Carbon-Carbonate (DSDP)
1-60 (0.6, 0.0, 5)

Grain Size (DSDP)
1-40 (1.0, 35.9, 63.1)

X-Ray (BP)
1-50

25%	Mont.
43%	Ill.
14%	Kaol.
17%	Chlo.
A	Quar.
P	Micas, Plag.
TR%?	Calc.

SITE 344 HOLE CORE 14 CORED INTERVAL: 115.5-125.0 m



Colors: dark greenish gray (5GY 4/1), dark gray (N3), olive gray (5Y 4/1). Intense - brecciated, scattered clay-stone, mudstone, siltstone pebbles.

MAJOR LITHOLOGY

MUD (Core catcher is mixture with MARLY CALCAREOUS OOZE) (Smear CC)

10% Sand	5% Quartz
40% Silt	1% Heavy minerals
50% Clay	5% Opaques
	30% Clay minerals
	TR% Glauconite
	1% Zeolites
	±58% Carbonate

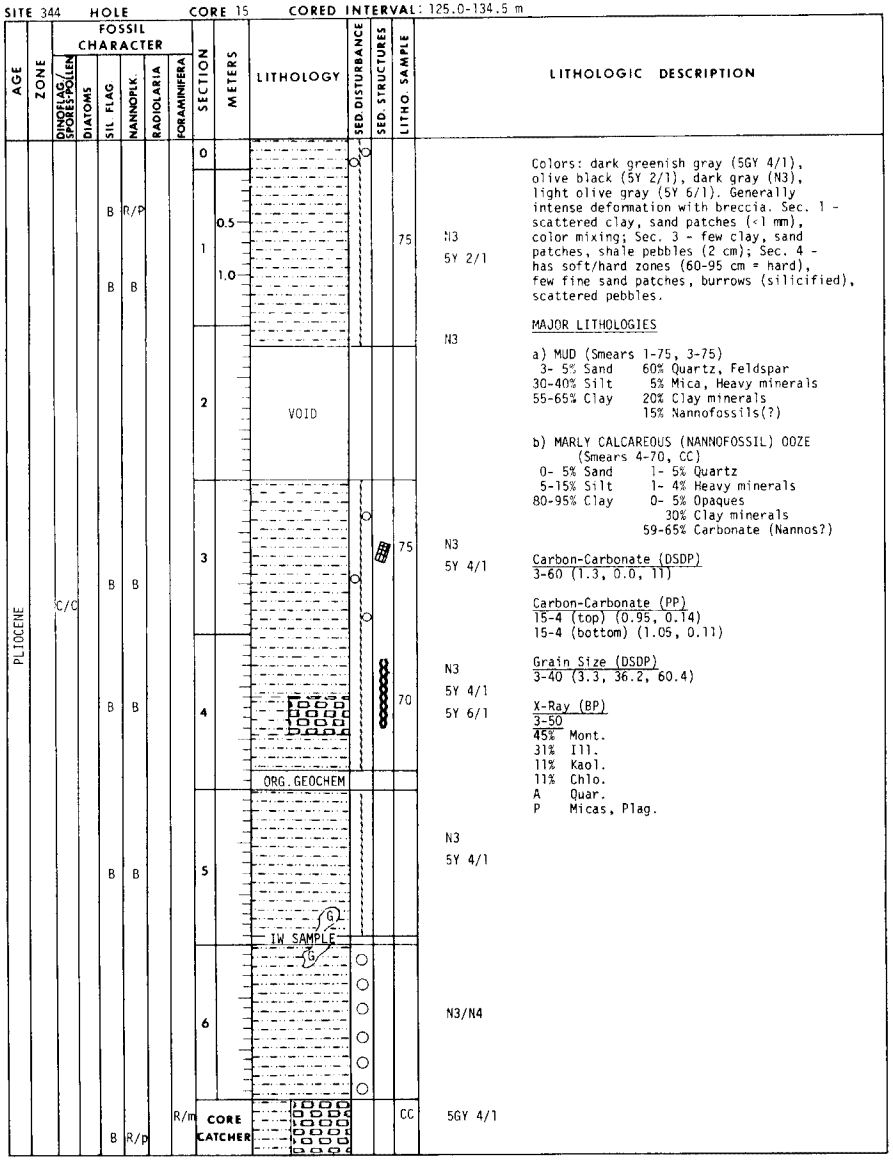
Carbon-Carbonate (DSDP)
1-60 (1.0, 0.0, 8)

Grain Size (DSDP)
1-40 (11.2, 37.3, 51.4)

X-Ray (BP)
1-50

39%	Mont.
31%	Ill.
11%	Kaol.
17%	Chlo.
A	Quar., Plag.
P	Micas

SITE 344 HOLE CORE 15 CORED INTERVAL: 125.0-134.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), olive black (5Y 2/1), dark gray (N3), light olive gray (5Y 6/1). Generally intense deformation with breccia. Sec. 1 - scattered clay, sand patches (<1 mm), color mixing; Sec. 3 - few clay, sand patches, shale pebbles (2 cm); Sec. 4 - has soft/hard zones (60-95 cm = hard), few fine sand patches, burrows (silicified), scattered pebbles.

MAJOR LITHOLOGIES

a) MUD (Smears 1-75, 3-75)
3- 5% Sand — 60% Quartz, Feldspar
30-40% Silt — 5% Mica, Heavy minerals
55-65% Clay — 20% Clay minerals
15% Nannofossils(?)

b) MARLY CALCAREOUS (NANNOFOSSIL) OOZE (Smears 4-70, CC)
0- 5% Sand — 1- 5% Quartz
5-15% Silt — 1- 4% Heavy minerals
80-95% Clay — 0- 5% Opaques
30% Clay minerals
59-65% Carbonate (Nannos?)

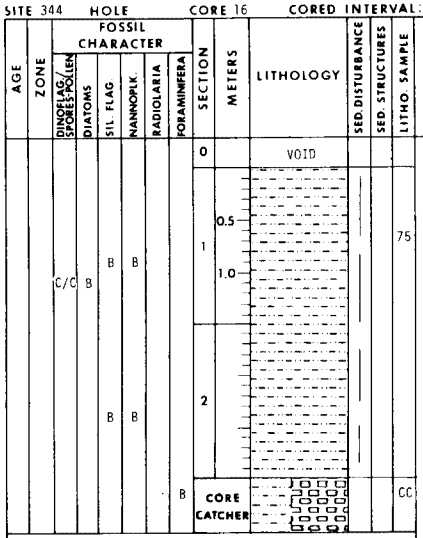
Carbon-Carbonate (DSDP)
3-60 (1.3, 0.0, 11)

Carbon-Carbonate (PP)
15-4 (top) (0.95, 0.14)
15-4 (bottom) (1.05, 0.11)

Grain Size (DSDP)
3-40 (3.3, 36.2, 60.4)

X-Ray (BP)
3-50
45% Mont.
31% Ill.
11% Kaol.
11% Chlo.
A Quar.
P Micas, Plag.

SITE 344 HOLE CORE 16 CORED INTERVAL: 134.5-144.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), dark gray (N3), light brownish gray (5YR 6/1). Moderate deformation.

MAJOR LITHOLOGIES

a) MUD (Smear 1-75)
2% Sand — 30% Quartz
50% Silt — 10% Feldspar
48% Clay — 5% Heavy minerals, Mica
45% Clay minerals (including Carbonate particles)
10% Nannofossils

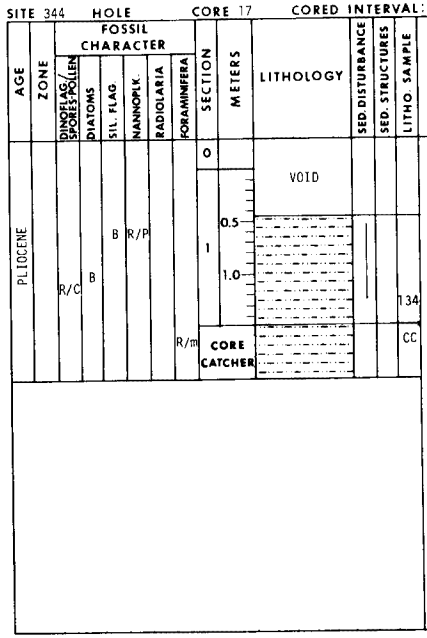
b) MARLY CALCAREOUS OOZE (Smear CC)
3% Sand — 4% Quartz
70% Silt — 1% Feldspar
27% Clay — 8% Heavy minerals
60% Carbonate particles
27% Clay minerals

Carbon-Carbonate (DSDP)
2-60 (0.9, 0.0, 8)

Grain Size (DSDP)
2-40 (1.2, 52.8, 46.0)

X-Ray (BP)
2-50
34% Mont.
35% Ill.
14% Kaol.
15% Chlo.
A Quar.
P Micas, Plag.
TR% Dolo.

SITE 344 HOLE CORE 17 CORED INTERVAL: 144.0-153.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), olive gray (5Y 4/1), dark gray (N3).

MAJOR LITHOLOGY

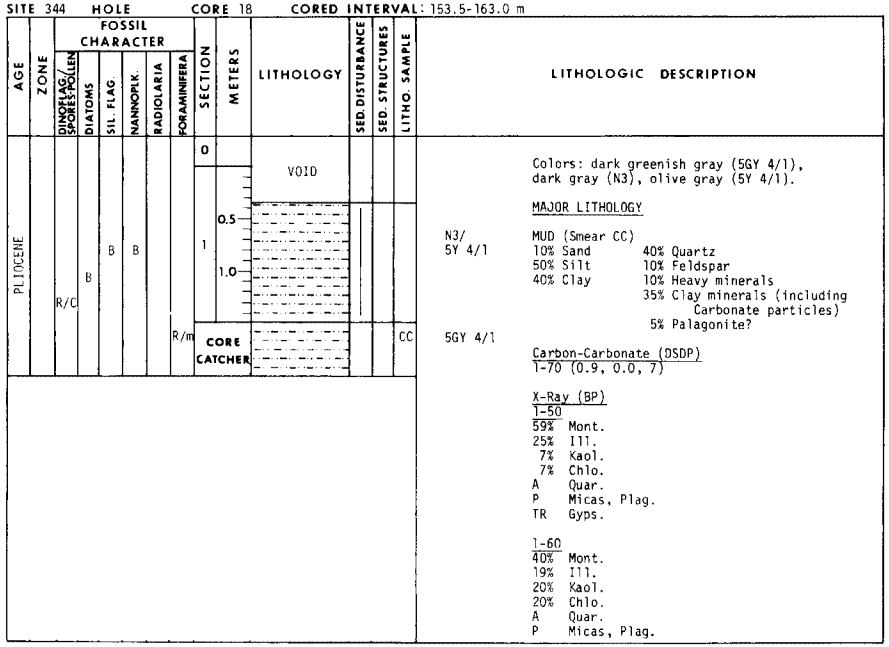
MUD (Smears 1-134, CC)
1% Sand — 20-45% Quartz
50% Silt — 5-10% Feldspar
49% Clay — TR-15% Mica
5% Heavy minerals
0- 2% Opaques
0-TR% Volcanic glass
30-51% Clay minerals (including Carbonate particles)
0- 2% Zeolites

Carbon-Carbonate (DSDP)
1-70 (1.1, 0.0, 9)

Grain Size (DSDP)
1-60 (0.7, 58.5, 40.8)

X-Ray (BP)
1-50
15% Mont.
62% Ill.
5% Kaol.
16% Chlo.
A Quar., Plag.
P Micas
TR Dolo.

SITE 344 HOLE CORE 18 CORED INTERVAL: 153.5-163.0 m



N3/
5Y 4/1

5GY 4/1

Colors: dark greenish gray (5GY 4/1), dark gray (N3), olive gray (5Y 4/1).

MAJOR LITHOLOGY

MUD (Smear CC)

10% Sand	40% Quartz
50% Silt	10% Feldspar
40% Clay	10% Heavy minerals
	35% Clay minerals (including Carbonate particles)
	5% Palagonite?

Carbon-Carbonate (DSDP)
1-70 (0.9, 0.0, 7)

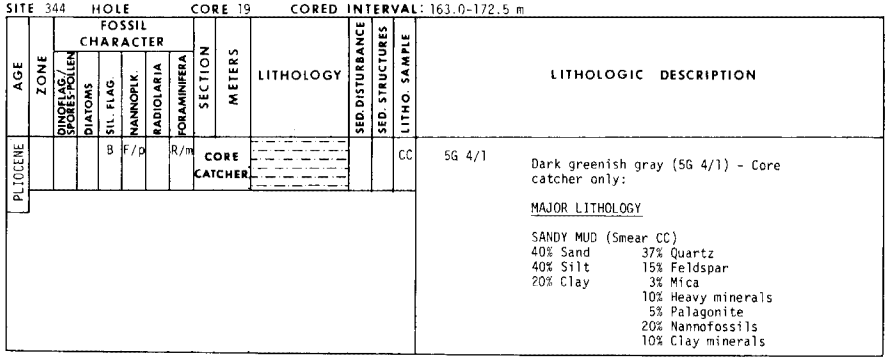
X-Ray (BP)
1-50

59%	Mont.
25%	Ill.
7%	Kaol.
7%	Chlo.
A	Quar.
P	Micas, Plag.
TR	Gyps.

1-60

40%	Mont.
19%	Ill.
20%	Kaol.
20%	Chlo.
A	Quar.
P	Micas, Plag.

SITE 344 HOLE CORE 19 CORED INTERVAL: 163.0-172.5 m



5G 4/1

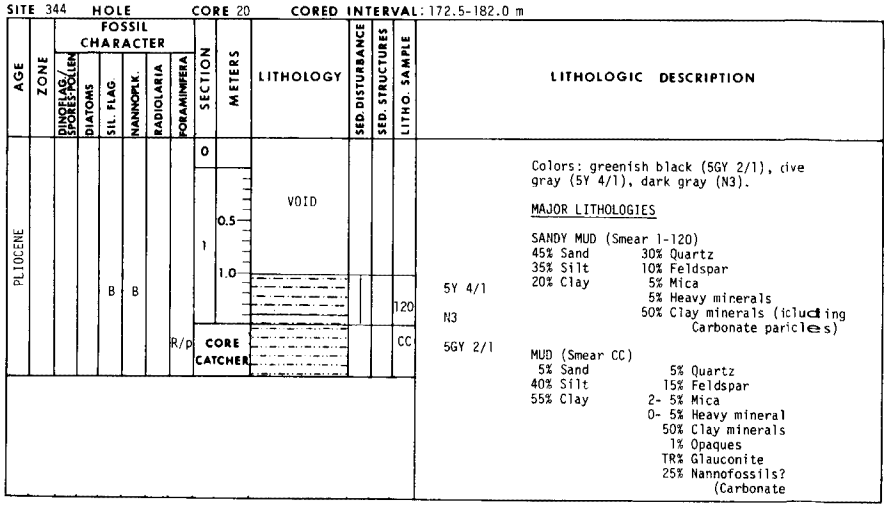
Dark greenish gray (5G 4/1) - Core catcher only:

MAJOR LITHOLOGY

SANDY MUD (Smear CC)

40% Sand	37% Quartz
40% Silt	15% Feldspar
20% Clay	3% Mica
	10% Heavy minerals
	5% Palagonite
	20% Nannofossils
	10% Clay minerals

SITE 344 HOLE CORE 20 CORED INTERVAL: 172.5-182.0 m



5Y 4/1

N3

5GY 2/1

Colors: greenish black (5GY 2/1), dive gray (5Y 4/1), dark gray (N3).

MAJOR LITHOLOGIES

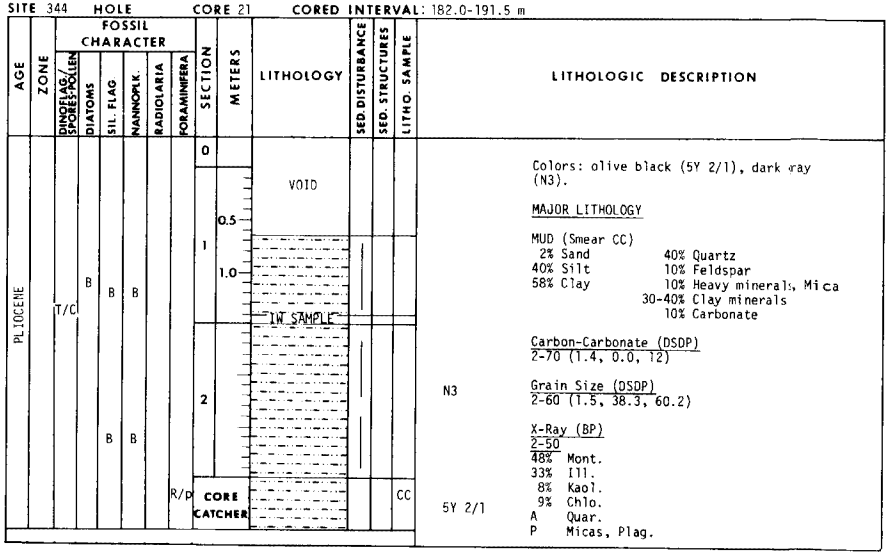
SANDY MUD (Smear 1-120)

45% Sand	30% Quartz
35% Silt	10% Feldspar
20% Clay	5% Mica
	5% Heavy minerals
	50% Clay minerals (including Carbonate particles)

MUD (Smear CC)

5% Sand	5% Quartz
40% Silt	15% Feldspar
55% Clay	2- 5% Mica
	0- 5% Heavy mineral
	50% Clay minerals
	1% Opaques
	TR% Glauconite
	25% Nannofossils? (Carbonate

SITE 344 HOLE CORE 21 CORED INTERVAL: 182.0-191.5 m



N3

5Y 2/1

Colors: olive black (5Y 2/1), dark gray (N3).

MAJOR LITHOLOGY

MUD (Smear CC)

2% Sand	40% Quartz
40% Silt	10% Feldspar
58% Clay	10% Heavy minerals, Mica
	30-40% Clay minerals
	10% Carbonate

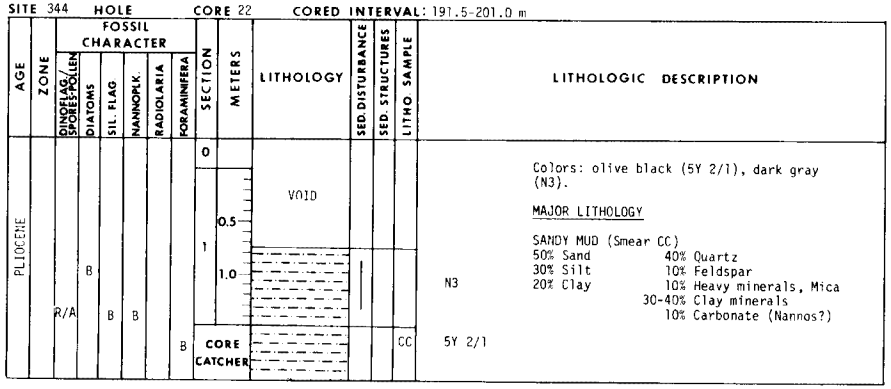
Carbon-Carbonate (DSDP)
2-70 (1.4, 0.0, 12)

Grain Size (OSDP)
2-60 (1.5, 38.3, 60.2)

X-Ray (BP)
2-50

48%	Mont.
33%	Ill.
8%	Kaol.
9%	Chlo.
A	Quar.
P	Micas, Plag.

SITE 344 HOLE CORE 22 CORED INTERVAL: 191.5-201.0 m



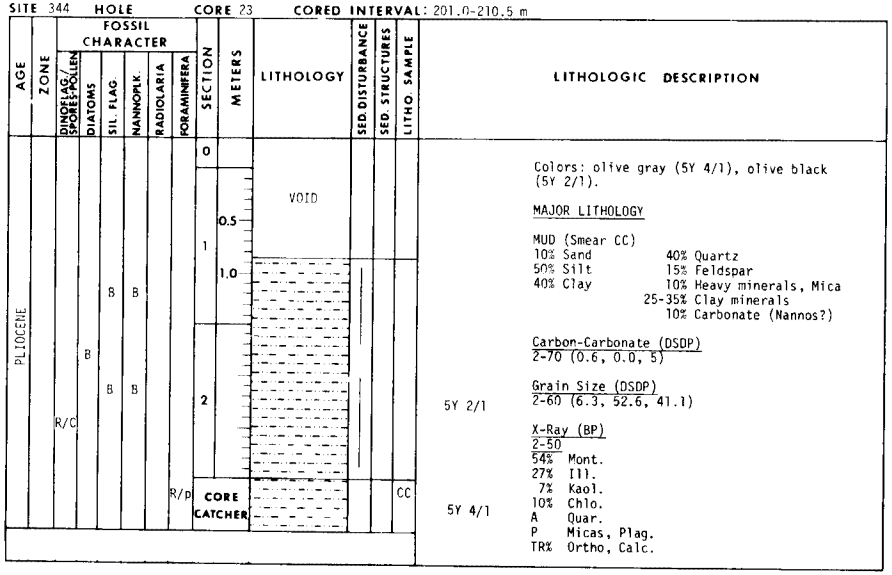
Colors: olive black (5Y 2/1), dark gray (N3).

MAJOR LITHOLOGY

SANDY MUD (Smear CC)

50% Sand	40% Quartz
30% Silt	10% Feldspar
20% Clay	10% Heavy minerals, Mica
	30-40% Clay minerals
	10% Carbonate (Nannos?)

SITE 344 HOLE CORE 23 CORED INTERVAL: 201.0-210.5 m



Colors: olive gray (5Y 4/1), olive black (5Y 2/1).

MAJOR LITHOLOGY

MUD (Smear CC)

10% Sand	40% Quartz
50% Silt	15% Feldspar
40% Clay	10% Heavy minerals, Mica
	25-35% Clay minerals
	10% Carbonate (Nannos?)

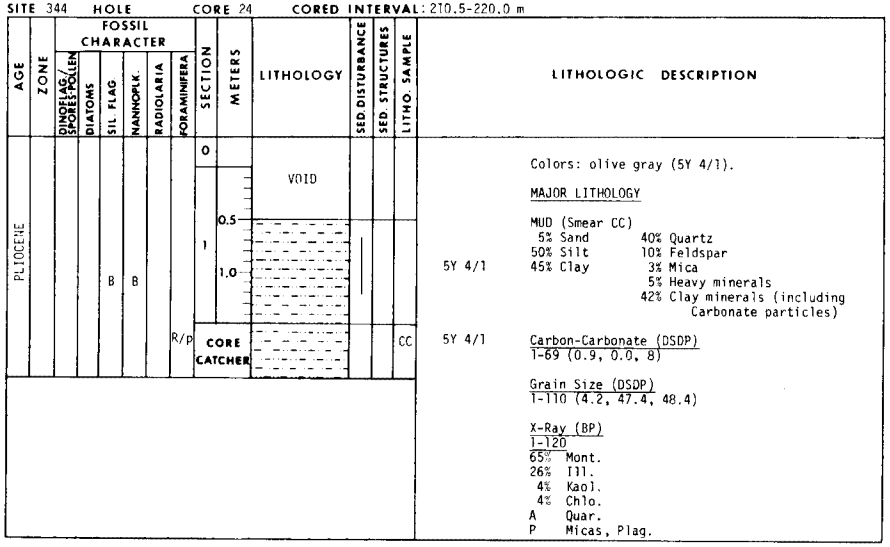
Carbon-Carbonate (DSDP)
2-70 (0.6, 0.0, 5)

Grain Size (DSDP)
2-60 (6.3, 52.6, 41.1)

X-Ray (BP)
2-50

54%	Mont.
27%	Ill.
7%	Kaol.
10%	Chlo.
A	Quar.
P	Micas, Plag.
TR%	Ortho, Calc.

SITE 344 HOLE CORE 24 CORED INTERVAL: 210.5-220.0 m



Colors: olive gray (5Y 4/1).

MAJOR LITHOLOGY

MUD (Smear CC)

5% Sand	40% Quartz
50% Silt	10% Feldspar
45% Clay	3% Mica
	5% Heavy minerals
	42% Clay minerals (including Carbonate particles)

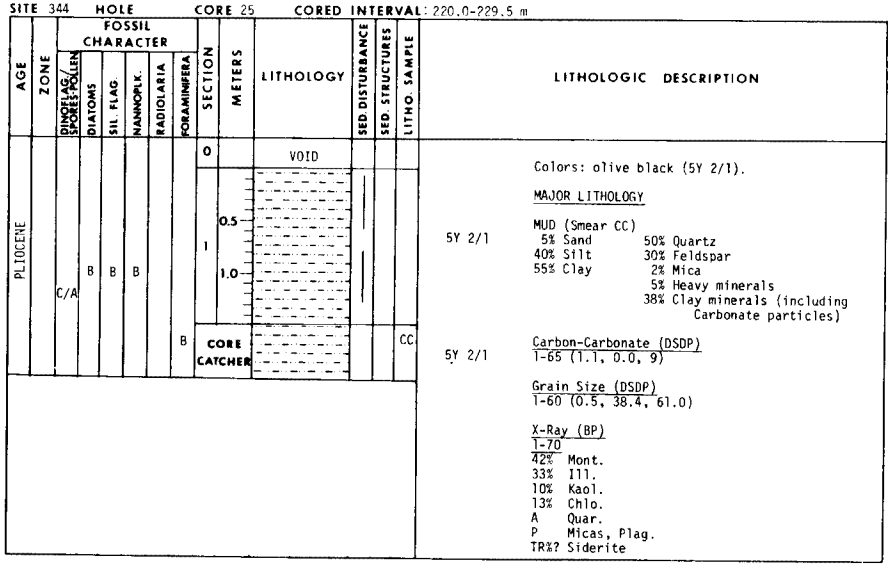
Carbon-Carbonate (DSDP)
1-69 (0.9, 0.0, 8)

Grain Size (DSDP)
1-110 (4.2, 47.4, 48.4)

X-Ray (BP)
1-120

65%	Mont.
26%	Ill.
4%	Kaol.
4%	Chlo.
A	Quar.
P	Micas, Plag.

SITE 344 HOLE CORE 25 CORED INTERVAL: 220.0-229.5 m



Colors: olive black (5Y 2/1).

MAJOR LITHOLOGY

MUD (Smear CC)

5% Sand	50% Quartz
40% Silt	30% Feldspar
55% Clay	2% Mica
	5% Heavy minerals
	38% Clay minerals (including Carbonate particles)

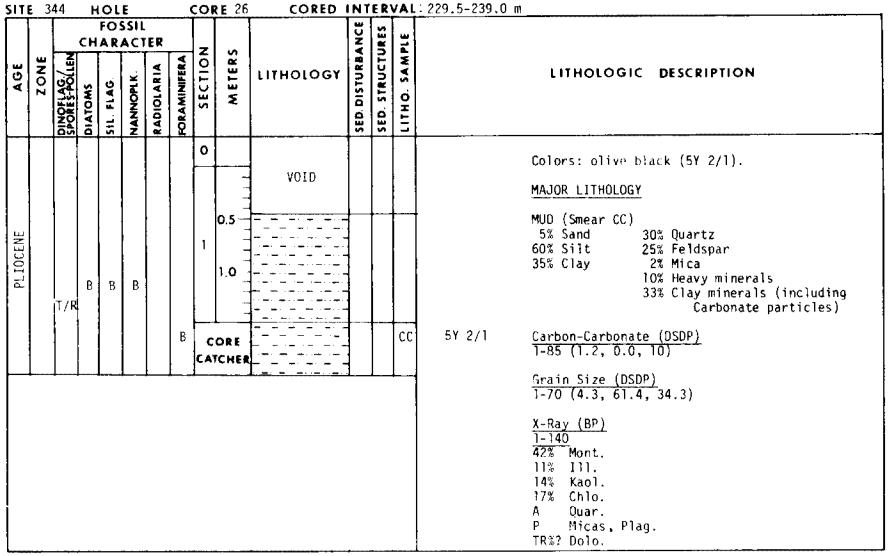
Carbon-Carbonate (DSDP)
1-65 (1.1, 0.0, 9)

Grain Size (DSDP)
1-60 (0.5, 38.4, 61.0)

X-Ray (BP)
1-70

42%	Mont.
33%	Ill.
10%	Kaol.
13%	Chlo.
A	Quar.
P	Micas, Plag.
TR%?	Siderite

SITE 344 HOLE CORE 26 CORED INTERVAL: 229.5-239.0 m



LITHOLOGIC DESCRIPTION

Colors: olive black (5Y 2/1).

MAJOR LITHOLOGY

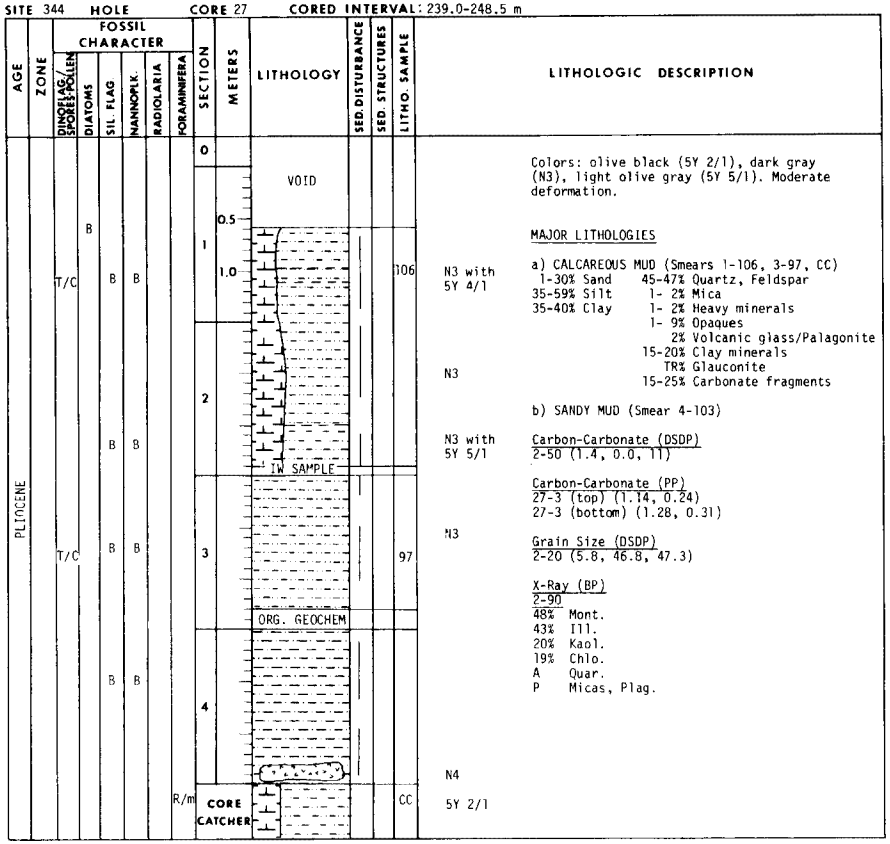
MUD (Smear CC)
5% Sand
60% Silt
35% Clay
30% Quartz
25% Feldspar
2% Mica
10% Heavy minerals
33% Clay minerals (including Carbonate particles)

Carbon-Carbonate (DSDP)
1-85 (1.2, 0.0, 10)

Grain Size (DSDP)
1-70 (4.3, 61.4, 34.3)

X-Ray (BP)
1-140
42% Mont.
11% Ill.
14% Kaol.
17% Chlo.
A Quar.
P Micas, Plag.
TR?? Dolo.

SITE 344 HOLE CORE 27 CORED INTERVAL: 239.0-248.5 m



Colors: olive black (5Y 2/1), dark gray (N3), light olive gray (5Y 5/1). Moderate deformation.

MAJOR LITHOLOGIES

a) CALCAREOUS MUD (Smears 1-106, 3-97, CC)
1-30% Sand
35-59% Silt
35-40% Clay
45-47% Quartz, Feldspar
1- 2% Mica
1- 2% Heavy minerals
1- 9% Opaques
2% Volcanic glass/Palagonite
15-20% Clay minerals
TR% Glauconite
15-25% Carbonate fragments

b) SANDY MUD (Smear 4-103)

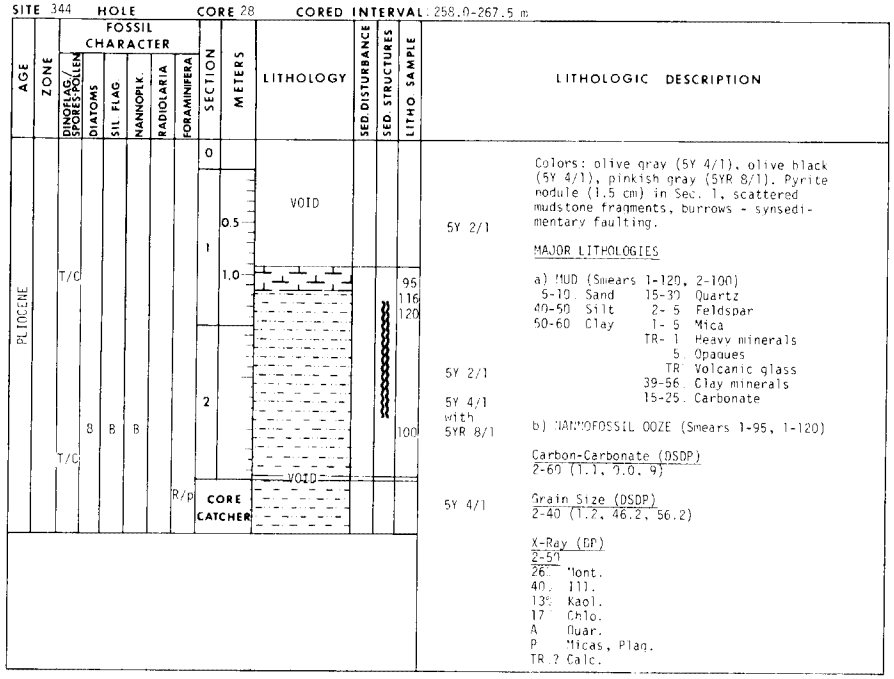
Carbon-Carbonate (DSDP)
2-50 (1.4, 0.0, 11)

Carbon-Carbonate (PP)
27-3 (top) (1.14, 0.24)
27-3 (bottom) (1.28, 0.31)

Grain Size (DSDP)
2-20 (5.8, 46.8, 47.3)

X-Ray (BP)
2-90
48% Mont.
43% Ill.
20% Kaol.
19% Chlo.
A Quar.
P Micas, Plag.

SITE 344 HOLE CORE 28 CORED INTERVAL: 258.0-267.5 m



LITHOLOGIC DESCRIPTION

5Y 2/1

Colors: olive gray (5Y 4/1), olive black (5Y 4/1), pinkish gray (5YR 8/1). Pyrite nodule (1.5 cm) in Sec. 1, scattered mudstone fragments, burrows - synsedimentary faulting.

MAJOR LITHOLOGIES

a) MUD (Smears 1-120, 2-100)

5-10% Sand	15-30% Quartz
40-50% Silt	2- 5% Feldspar
50-60% Clay	1- 5% Mica
	TR- 1% Heavy minerals
	5% Opaques
	TR% Volcanic glass
	39-56% Clay minerals
	15-25% Carbonate

5Y 2/1

5Y 4/1 with 5YR 8/1

b) NANNOFOSSIL OOZE (Smears 1-95, 1-120)

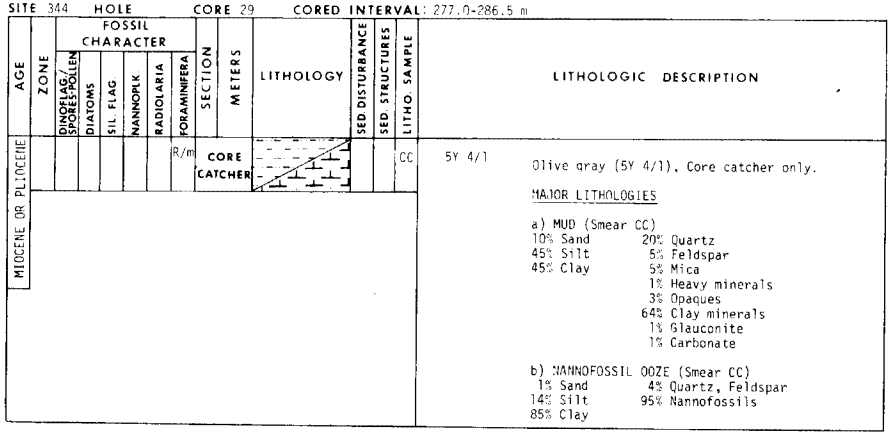
Carbon-Carbonate (DSDP)
2-60 (1.1, 0.0, 9)

5Y 4/1

Grain Size (DSDP)
2-40 (1.2, 46.2, 56.2)

X-Ray (DP)
2-50
26% Mont.
40% Ill.
13% Kaol.
17% Chlo.
A Quar.
P Micas, Plag.
TR? Calc.

SITE 344 HOLE CORE 29 CORED INTERVAL: 277.0-286.5 m



LITHOLOGIC DESCRIPTION

5Y 4/1

Olive gray (5Y 4/1), Core catcher only.

MAJOR LITHOLOGIES

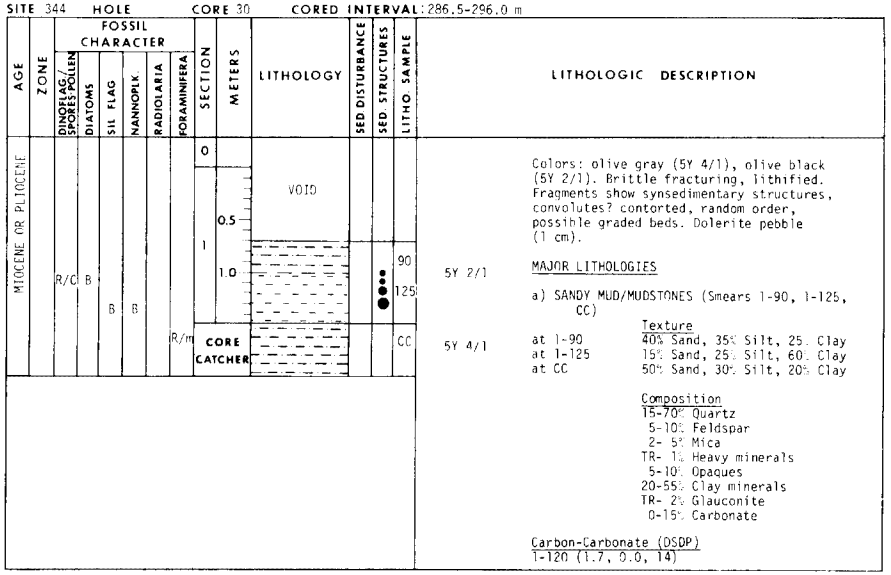
a) MUD (Smear CC)

10% Sand	20% Quartz
45% Silt	5% Feldspar
45% Clay	5% Mica
	1% Heavy minerals
	3% Opaques
	64% Clay minerals
	1% Glauconite
	1% Carbonate

b) NANNOFOSSIL OOZE (Smear CC)

1% Sand	4% Quartz, Feldspar
14% Silt	95% Nannofossils
85% Clay	

SITE 344 HOLE CORE 30 CORED INTERVAL: 286.5-296.0 m



LITHOLOGIC DESCRIPTION

5Y 2/1

Colors: olive gray (5Y 4/1), olive black (5Y 2/1). Brittle fracturing, lithified. Fragments show synsedimentary structures, convolutes? contorted, random order, possible graded beds. Dolerite pebble (1 cm).

MAJOR LITHOLOGIES

a) SANDY MUD/MUDSTONES (Smears 1-90, 1-125, CC)

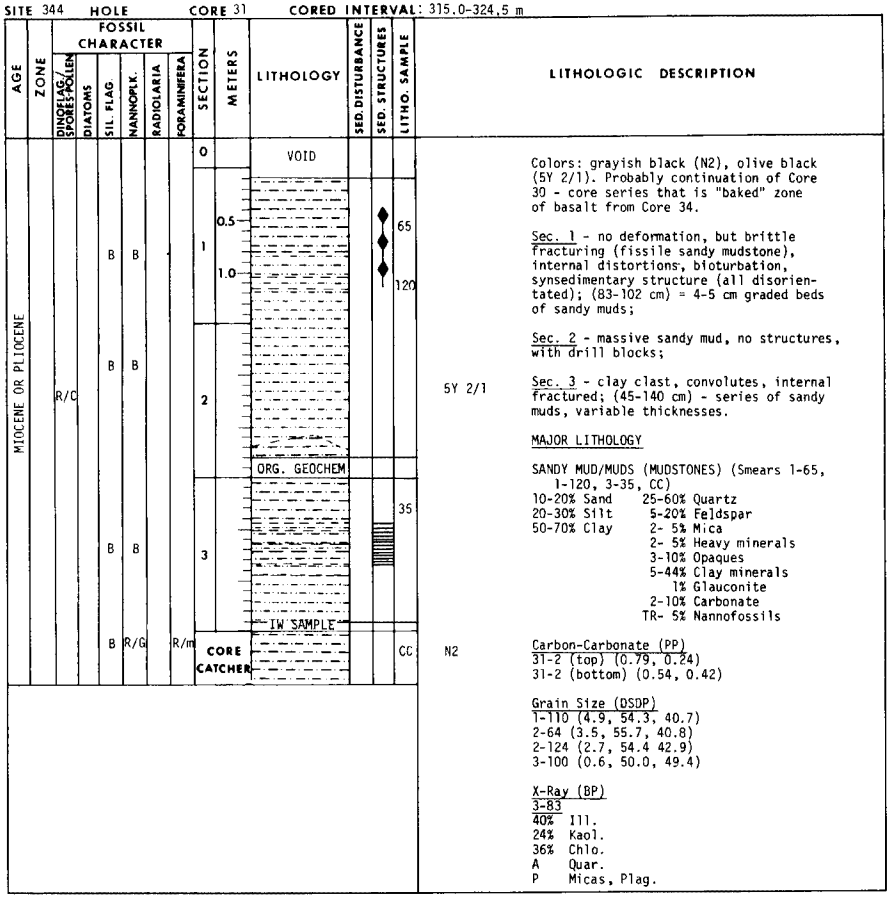
	Texture
at 1-90	40% Sand, 35% Silt, 25% Clay
at 1-125	15% Sand, 25% Silt, 60% Clay
at CC	50% Sand, 30% Silt, 20% Clay

5Y 4/1

Composition
15-70% Quartz
5-10% Feldspar
2- 5% Mica
TR- 1% Heavy minerals
5-10% Opaques
20-55% Clay minerals
TR- 2% Glauconite
0-15% Carbonate

Carbon-Carbonate (DSDP)
1-120 (1.7, 0.0, 14)

SITE 344 HOLE CORE 31 CORED INTERVAL: 315.0-324.5 m



LITHOLOGIC DESCRIPTION

Colors: grayish black (N2), olive black (5Y 2/1). Probably continuation of Core 30 - core series that is "baked" zone of basalt from Core 34.

Sec. 1 - no deformation, but brittle fracturing (fissile sandy mudstone), internal distortions, bioturbation, synsedimentary structure (all disorientated); (83-102 cm) = 4-5 cm graded beds of sandy muds;

Sec. 2 - massive sandy mud, no structures, with drill blocks;

Sec. 3 - clay clast, convolutes, internal fractured; (45-140 cm) - series of sandy muds, variable thicknesses.

MAJOR LITHOLOGY

SANDY MUD/MUDS (MUDSTONES) (Smears 1-65, 1-120, 3-35, CC)

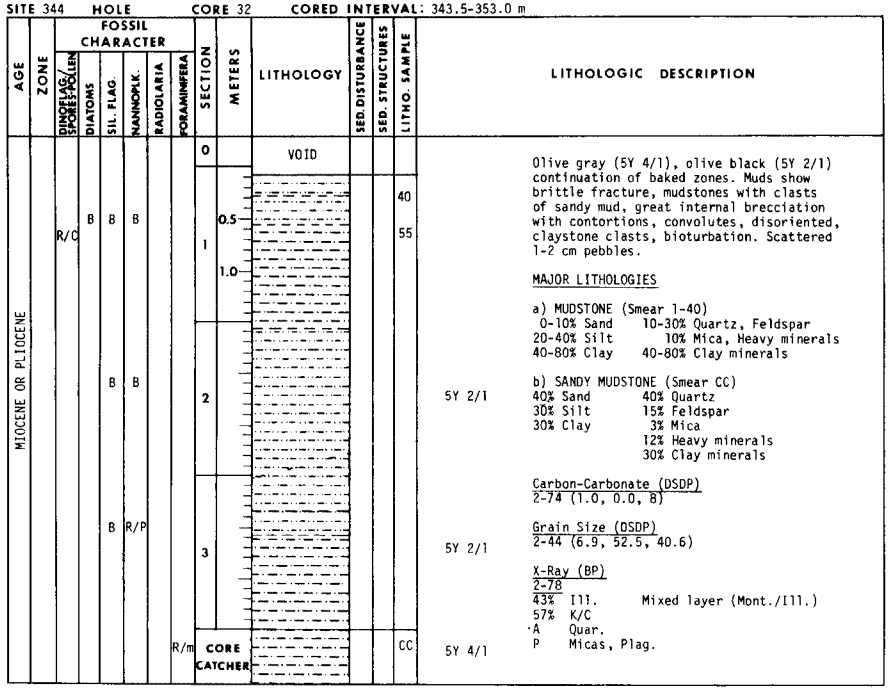
10-20% Sand	25-60% Quartz
20-30% Silt	5-20% Feldspar
50-70% Clay	2- 5% Mica
	2- 5% Heavy minerals
	3-10% Opaques
	5-44% Clay minerals
	1% Glauconite
	2-10% Carbonate
	TR- 5% Nannofossils

Carbon-Carbonate (PP)
31-2 (top) (0.79, 0.24)
31-2 (bottom) (0.54, 0.42)

Grain Size (DSDP)
1-110 (4.9, 54.3, 40.7)
2-64 (3.5, 55.7, 40.8)
2-124 (2.7, 54.4 42.9)
3-100 (0.6, 50.0, 49.4)

X-Ray (BP)
3-83
40% Ill.
24% Kaol.
36% Chlo.
A Quar.
P Micas, Plag.

SITE 344 HOLE CORE 32 CORED INTERVAL: 343.5-353.0 m



Olive gray (5Y 4/1), olive black (5Y 2/1) continuation of baked zones. Muds show brittle fracture, mudstones with clasts of sandy mud, great internal brecciation with contortions, convolutes, disoriented, claystone clasts, bioturbation. Scattered 1-2 cm pebbles.

MAJOR LITHOLOGIES

a) MUDSTONE (Smear 1-40)

0-10% Sand	10-30% Quartz, Feldspar
20-40% Silt	10% Mica, Heavy minerals
40-80% Clay	40-80% Clay minerals

b) SANDY MUDSTONE (Smear CC)

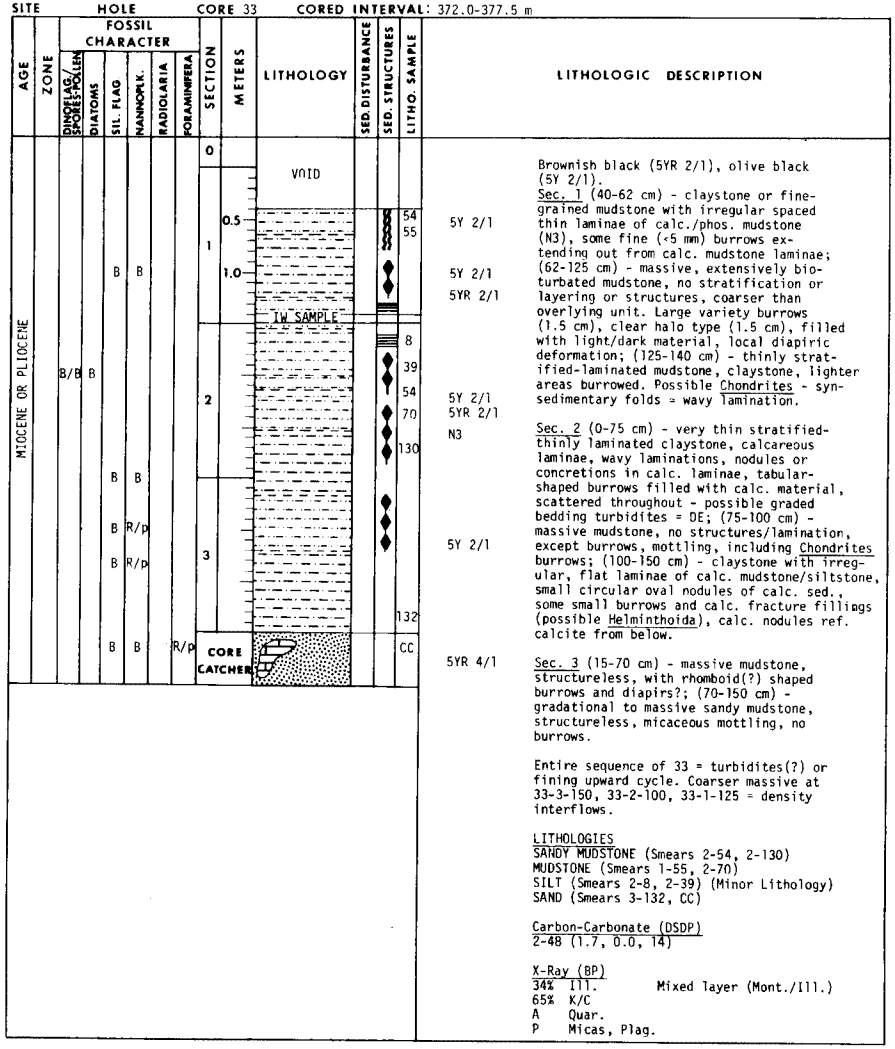
40% Sand	40% Quartz
30% Silt	15% Feldspar
30% Clay	3% Mica
	12% Heavy minerals
	30% Clay minerals

Carbon-Carbonate (DSDP)
2-74 (1.0, 0.0, 8)

Grain Size (DSDP)
2-44 (6.9, 52.5, 40.6)

X-Ray (BP)
2-78
43% Ill. Mixed layer (Mont./Ill.)
57% K/C
A Quar.
P Micas, Plag.

SITE HOLE CORE 33 CORED INTERVAL: 372.0-377.5 m



Brownish black (5YR 2/1), olive black (5Y 2/1).

Sec. 1 (40-62 cm) - claystone or fine-grained mudstone with irregular spaced thin laminae of calc./phos. mudstone (N3), some fine (<5 mm) burrows extending out from calc. mudstone laminae; (62-125 cm) - massive, extensively bioturbated mudstone, no stratification or layering or structures, coarser than overlying unit. Large variety burrows (1.5 cm), clear halo type (1.5 cm), filled with light/dark material, local diapiric deformation; (125-140 cm) - thinly stratified-laminated mudstone, claystone, lighter areas burrowed. Possible Chondrites - syn-sedimentary folds = wavy lamination.

Sec. 2 (0-75 cm) - very thin stratified-thinly laminated claystone, calcareous laminae, wavy laminations, nodules or concretions in calc. laminae, tabular-shaped burrows filled with calc. material, scattered throughout - possible graded bedding turbidites = DE; (75-100 cm) - massive mudstone, no structures/lamination, except burrows, mottling, including Chondrites burrows; (100-150 cm) - claystone with irregular, flat laminae of calc. mudstone/siltstone, small circular oval nodules of calc. sed., some small burrows and calc. fracture fillings (possible Helminthoida), calc. nodules ref. calcite from below.

Sec. 3 (15-70 cm) - massive mudstone, structureless, with rhomboid(?) shaped burrows and diapirs?; (70-150 cm) - gradational to massive sandy mudstone, structureless, micaceous mottling, no burrows.

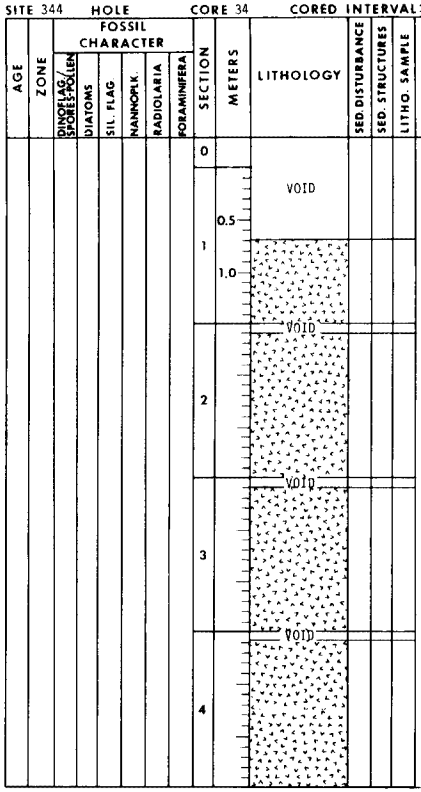
Entire sequence of 33 = turbidites(?) or fining upward cycle. Coarser massive at 33-3-150, 33-2-100, 33-1-125 = density interflows.

LITHOLOGIES
SANDY MUDSTONE (Smears 2-54, 2-130)
MUDSTONE (Smears 1-55, 2-70)
SILT (Smears 2-8, 2-39) (Minor Lithology)
SAND (Smears 3-132, CC)

Carbon-Carbonate (DSDP)
2-48 (1.7, 0.0, 14)

X-Ray (BP)
34% Ill. Mixed layer (Mont./Ill.)
65% K/C
A Quar.
P Micas, Plag.

SITE 344 HOLE CORE 34 CORED INTERVAL: 377.5-387.0 m



BASALT

Sec. 1 (108-150 cm) - medium dark gray (N5) holocrystalline medium-grained diabase (dolerite) with abundant pyrite and rare chlorite amygdules. Calcite veins.

Thin Section (114-117) - diabasic and ophitic (poikilitic) texture, medium-fine grained; plagioclase (35-40%), pyroxene (45-55%), uralite, talc, carbonate.

Sec. 2 (10-150 cm) - medium gray (N5) to dark medium gray (N4) diabase; abundant pyritization. Calcite veins (0.5-15 mm) with small crystals of pyrite. Rare slickensides with calcite and pyrite on walls.

Thin Section - poikilitic (gabbroic), diabase and ophitic textures, fine-medium grained. Plagioclase (40-50%), pyroxene (augite) (30-50%), amphibole, talc, chlorite, calcite.

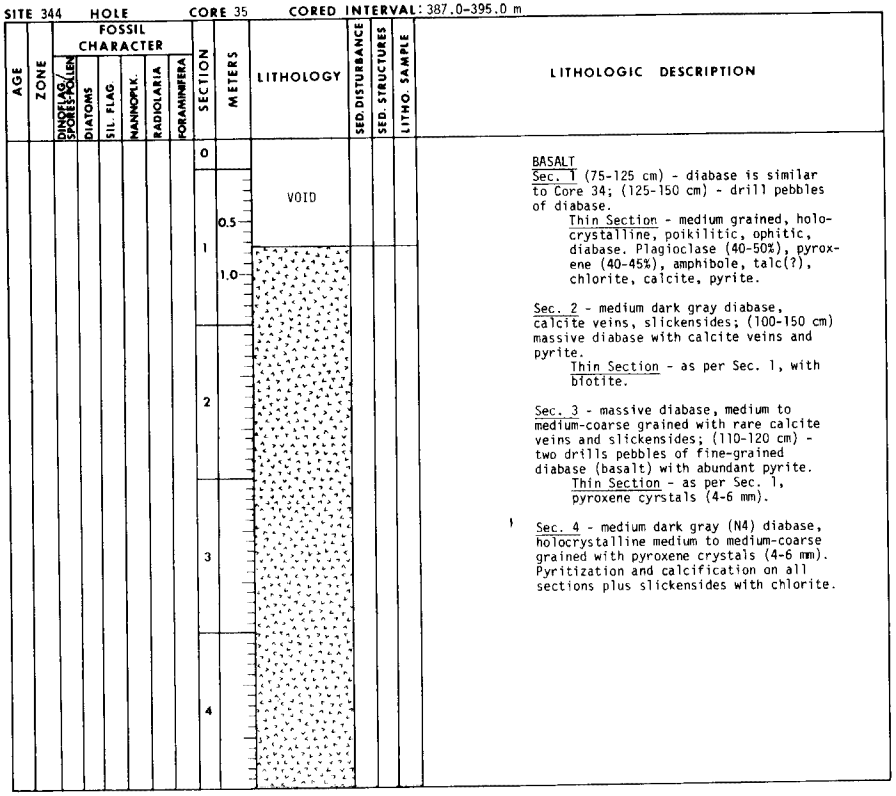
Sec. 3 (10-150 cm) - medium dark gray holocrystalline diabase with calcification and pyritization. Abundant white calcite veins and slickensides with pyrite.

Thin Section - poikilitic, diabasic, ophitic, medium grained. Plagioclase (40-50%), pyroxene (40-55%), amphibole, talc, chlorite, calcite, pyrite.

Sec. 4 - calcite veins (thick = 2-3 cm) with coarse (0.5-1 cm) calcite crystals. Diabase medium grained (on top) and medium- to coarse-grained (on lower part of section). Pyritization and calcification on all sections.

Thin Section - medium grained (1-5 mm), poikilitic, diabasic, ophitic texture. Plagioclase (40-60%), pyroxene (25-50%), amphibole, talc, chlorite, calcite, pyrite.

SITE 344 HOLE CORE 35 CORED INTERVAL: 387.0-395.0 m



BASALT

Sec. 1 (75-125 cm) - diabase is similar to Core 34; (125-150 cm) - drill pebbles of diabase.

Thin Section - medium grained, holocrystalline, poikilitic, ophitic, diabase. Plagioclase (40-50%), pyroxene (40-45%), amphibole, talc(?), chlorite, calcite, pyrite.

Sec. 2 - medium dark gray diabase, calcite veins, slickensides; (100-150 cm) massive diabase with calcite veins and pyrite.

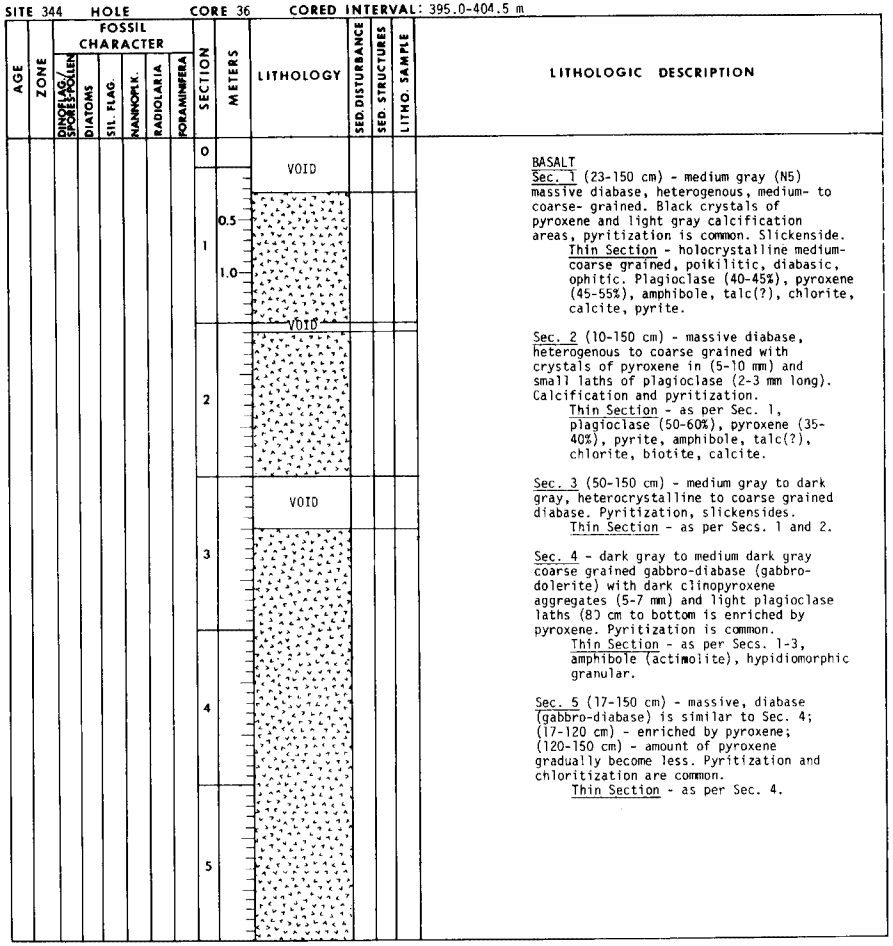
Thin Section - as per Sec. 1, with biotite.

Sec. 3 - massive diabase, medium to medium-coarse grained with rare calcite veins and slickensides; (110-120 cm) - two drills pebbles of fine-grained diabase (basalt) with abundant pyrite.

Thin Section - as per Sec. 1, pyroxene cyrstals (4-6 mm).

Sec. 4 - medium dark gray (N4) diabase, holocrystalline medium to medium-coarse grained with pyroxene crystals (4-6 mm). Pyritization and calcification on all sections plus slickensides with chlorite.

SITE 344 HOLE CORE 36 CORED INTERVAL: 395.0-404.5 m



BASALT

Sec. 1 (23-150 cm) - medium gray (N5) massive diabase, heterogenous, medium- to coarse- grained. Black crystals of pyroxene and light gray calcification areas, pyritization is common. Slickenside.

Thin Section - holocrystalline medium-coarse grained, poikilitic, diabasic, ophitic. Plagioclase (40-45%), pyroxene (45-55%), amphibole, talc(?), chlorite, calcite, pyrite.

Sec. 2 (10-150 cm) - massive diabase, heterogenous to coarse grained with crystals of pyroxene in (5-10 mm) and small laths of plagioclase (2-3 mm long). Calcification and pyritization.

Thin Section - as per Sec. 1, plagioclase (50-60%), pyroxene (35-40%), pyrite, amphibole, talc(?), chlorite, biotite, calcite.

Sec. 3 (50-150 cm) - medium gray to dark gray, heterocrystalline to coarse grained diabase. Pyritization, slickensides.

Thin Section - as per Secs. 1 and 2.

Sec. 4 - dark gray to medium dark gray coarse grained gabbro-diabase (gabbro-dolerite) with dark clinopyroxene aggregates (5-7 mm) and light plagioclase laths (8) cm to bottom is enriched by pyroxene. Pyritization is common.

Thin Section - as per Secs. 1-3, amphibole (actimolite), hypidiomorphic granular.

Sec. 5 (17-150 cm) - massive, diabase (gabbro-diabase) is similar to Sec. 4; (17-120 cm) - enriched by pyroxene; (120-150 cm) - amount of pyroxene gradually become less. Pyritization and chloritization are common.

Thin Section - as per Sec. 4.

SITE 344 HOLE CORE 37 CORED INTERVAL: 404.5-414.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
								0		VOID				BASALT Sec. 1 (20-150 cm) - diabase, coarse grained, heterogenous with pyroxene crystals (3-5 mm) and plagioclase laths. Massive diabase, lower in section. Thin Section - as per Core 36 with magnetite (0-1%). Sec. 2 (60-150 cm) - diabase is the same as above, but with less pyroxene crystals. Pyritized slickensides. Sec. 3 - dark gray, medium-grained, holocrystaline, massive diabase. Pyritization, chloritization, calcification and amphibolization are common. Rare slickensides are observed.
								1	0.5 1.0					
								2						
								3						

DEEP SEA DRILLING PROJECT

LEG 38 SITE 345

SITE SUMMARY SHEET

POSITION: Latitude: 69°50.23'N Longitude: 01°14.26'W

Water depth (from sea level): 3195.0 corrected meters (Echo sounding)

Bottom felt at: 3216.0 meters (drill pipe) Penetration: 802.0 meters

Number of Holes: 1 Number of Cores: 36

Total length of cored section: 336.5 m Total core recovered: 189.5 m

Percentage of core recovery: 56.3%

OLDEST SEDIMENT CORED:

Depth below sea floor: 762.0 meters Nature: Red sandstones

Age: Middle Oligocene/Oligocene (Core 34) Measured velocity: ≈6.0 km/sec

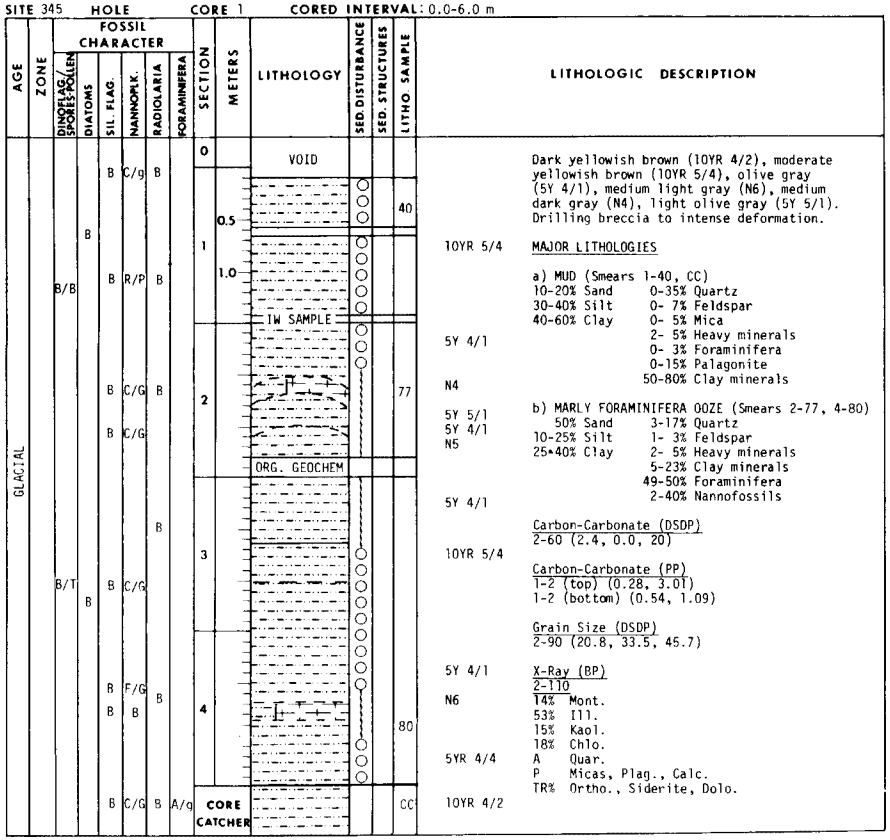
BASEMENT:

Depth below sea floor: 762.0 meters (drilled) Nature: Altered aphyric basalt breccia

PRINCIPAL RESULTS:

This site was located in the Lofoten Basin near the eastern flank of Mohns Ridge. The sediments consist of a thin Glacial and Miocene sequence, overlying a very thick Oligocene sequence. Glacial sediments extend from the top to a depth of 36 meters, and are dominately muds, sandy muds, and sands. Miocene sediments extend from 55 to 141(?) meters, and consist of clays, muds, and siliceous oozes. The fauna is siliceous. The thick Oligocene section extends from ≈137 meters to the top of the basalt at 762 meters. The sediments consist of mudstones and sandstones in the lower part. Often lithified and soft sequences alternate. The Oligocene sediments are barren in calcareous fossils, radiolarians and silico-flagellates. Only arenaceous foraminifera are present, being more abundant in the middle Oligocene near the base of the section. From 762 to 780 meters, the basement consists of tuff breccias, and below 780 meters, a highly altered basalt and amygdaloidal basalt.

SITE 345 HOLE CORE 1 CORED INTERVAL: 0.0-6.0 m



LITHOLOGIC DESCRIPTION

Dark yellowish brown (10YR 4/2), moderate yellowish brown (10YR 5/4), olive gray (5Y 4/1), medium light gray (N6), medium dark gray (N4), light olive gray (5Y 5/1). Drilling breccia to intense deformation.

10YR 5/4

MAJOR LITHOLOGIES

a) MUD (Smears 1-40, CC)

10-20% Sand	0-35% Quartz
30-40% Silt	0- 7% Feldspar
40-60% Clay	0- 5% Mica
	2- 5% Heavy minerals
	0- 3% Foraminifera
	0-15% Palagonite
	50-80% Clay minerals

5Y 4/1

N4

b) MARLY FORAMINIFERA OOZE (Smears 2-77, 4-80)

5Y 5/1
5Y 4/1
N5

50% Sand	3-17% Quartz
10-25% Silt	1- 3% Feldspar
25-40% Clay	2- 5% Heavy minerals
	5-23% Clay minerals
	49-50% Foraminifera
	2-40% Nannofossils

5Y 4/1

Carbon-Carbonate (DSDP)
2-60 (2.4, 0.0, 20)

10YR 5/4

Carbon-Carbonate (PP)
1-2 (top) (0.28, 3.01)
1-2 (bottom) (0.54, 1.09)

Grain Size (DSDP)
2-90 (20.8, 33.5, 45.7)

5Y 4/1

X-Ray (BP)
2-110

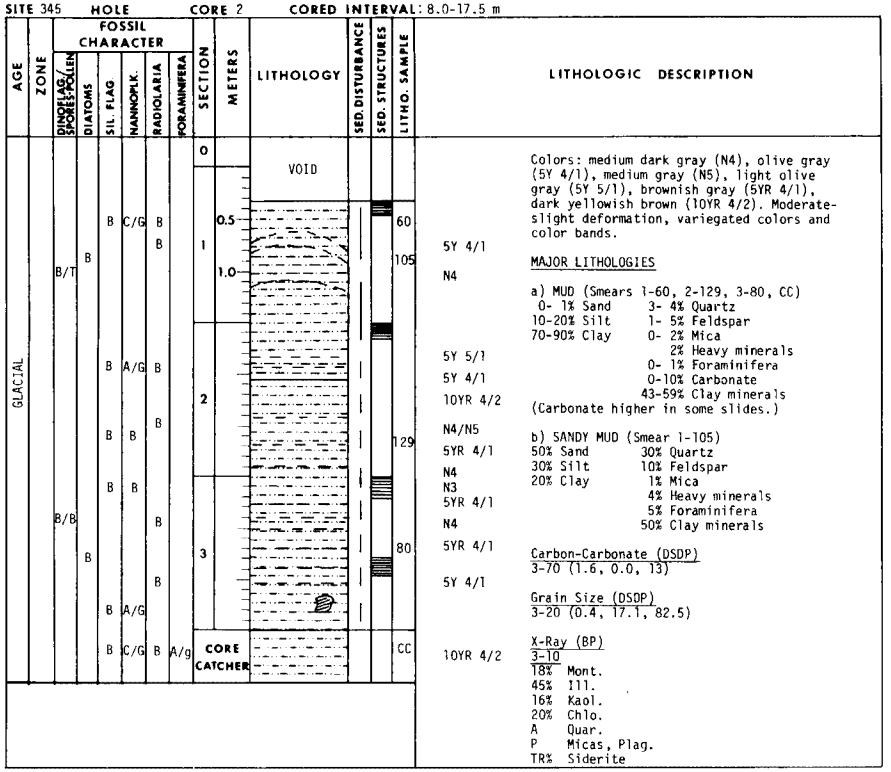
N6

14%	Mont.
53%	Ill.
15%	Kaol.
18%	Chlo.
A	Quar.
P	Micas, Plag., Calc.
TR%	Ortho., Siderite, Dolo.

5YR 4/4

10YR 4/2

SITE 345 HOLE CORE 2 CORED INTERVAL: 8.0-17.5 m



LITHOLOGIC DESCRIPTION

Colors: medium dark gray (N4), olive gray (5Y 4/1), medium gray (N5), light olive gray (5Y 5/1), brownish gray (5YR 4/1), dark yellowish brown (10YR 4/2). Moderate-slight deformation, variegated colors and color bands.

5Y 4/1

N4

MAJOR LITHOLOGIES

a) MUD (Smears 1-60, 2-129, 3-80, CC)

0- 1% Sand	3- 4% Quartz
10-20% Silt	1- 5% Feldspar
70-90% Clay	0- 2% Mica
	2% Heavy minerals
	0- 1% Foraminifera
	0-10% Carbonate
	43-59% Clay minerals

5Y 5/1

5Y 4/1

10YR 4/2

(Carbonate higher in some slides.)

N4/N5

b) SANDY MUD (Smear 1-105)

5YR 4/1

50% Sand	30% Quartz
30% Silt	10% Feldspar
20% Clay	1% Mica
	4% Heavy minerals
	5% Foraminifera
	50% Clay minerals

N4

N3

5YR 4/1

N4

5YR 4/1

Carbon-Carbonate (DSDP)
3-70 (1.6, 0.0, 13)

5Y 4/1

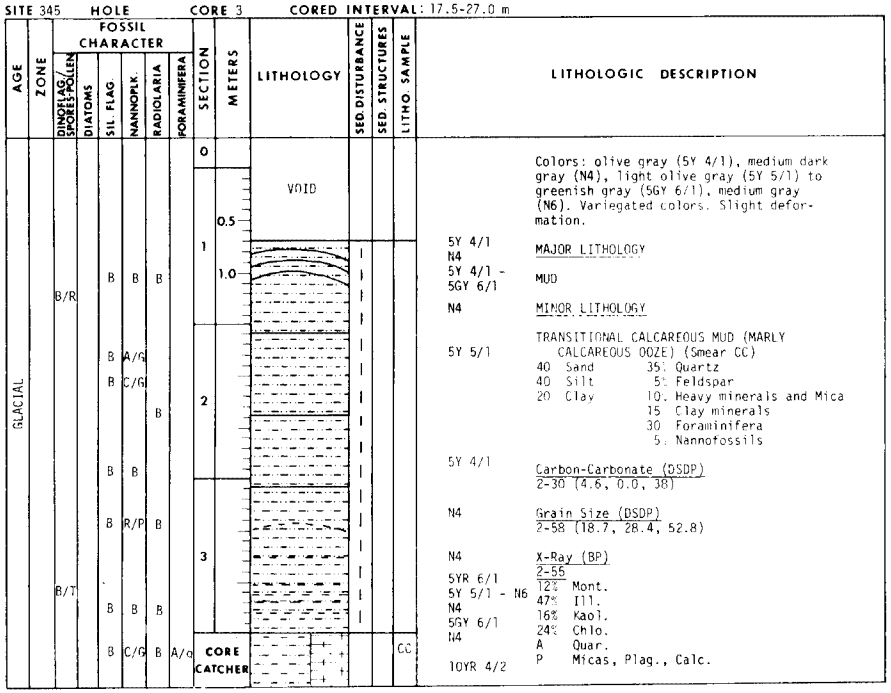
Grain Size (DSDP)
3-20 (0.4, 17.1, 82.5)

X-Ray (BP)
3-10

10YR 4/2

18%	Mont.
45%	Ill.
16%	Kaol.
20%	Chlo.
A	Quar.
P	Micas, Plag.
TR%	Siderite

SITE 345 HOLE CORE 3 CORED INTERVAL: 17.5-27.0 m



Colors: olive gray (5Y 4/1), medium dark gray (N4), light olive gray (5Y 5/1) to greenish gray (5GY 6/1), medium gray (N6). Variegated colors. Slight deformation.

5Y 4/1
N4
5Y 4/1 - 5GY 6/1

MAJOR LITHOLOGY

MUD

N4

MINOR LITHOLOGY

5Y 5/1

TRANSITIONAL CALCAREOUS MUD (MARLY CALCAREOUS OOZE) (Smear CC)

40	Sand	35	Quartz
40	Silt	5	Feldspar
20	Clay	10	Heavy minerals and Mica
		15	Clay minerals
		30	Foraminifera
		5	Nannofossils

5Y 4/1

Carbon-Carbonate (DSDP)
2-30 (4.6, 0.0, 38)

N4

Grain Size (DSDP)
2-58 (18.7, 28.4, 52.8)

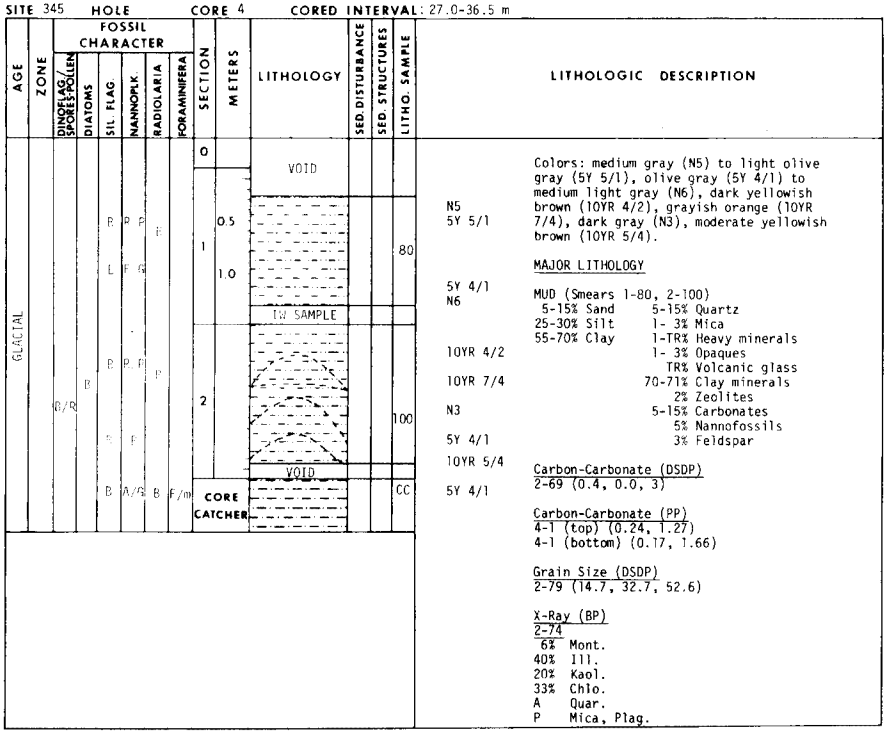
N4
5YR 6/1
5Y 5/1 - N6
N4
5GY 6/1
N4

X-Ray (BP)
2-55

12%	Mont.
47%	Ill.
16%	Kaol.
24%	Chlo.
A	Quar.
P	Micas, Plag., Calc.

10YR 4/2

SITE 345 HOLE CORE 4 CORED INTERVAL: 27.0-36.5 m



Colors: medium gray (N5) to light olive gray (5Y 5/1), olive gray (5Y 4/1) to medium light gray (N6), dark yellowish brown (10YR 4/2), grayish orange (10YR 7/4), dark gray (N3), moderate yellowish brown (10YR 5/4).

N5
5Y 5/1
5Y 4/1
N6
10YR 4/2
10YR 7/4
N3
5Y 4/1
10YR 5/4
5Y 4/1

MAJOR LITHOLOGY

MUD (Smears 1-80, 2-100)

5-15% Sand	5-15% Quartz
25-30% Silt	1- 3% Mica
55-70% Clay	1-TR% Heavy minerals
	1- 3% Opaques
	TR% Volcanic glass
	70-71% Clay minerals
	2% Zeolites
	5-15% Carbonates
	5% Nannofossils
	3% Feldspar

Carbon-Carbonate (DSDP)
2-69 (0.4, 0.0, 3)

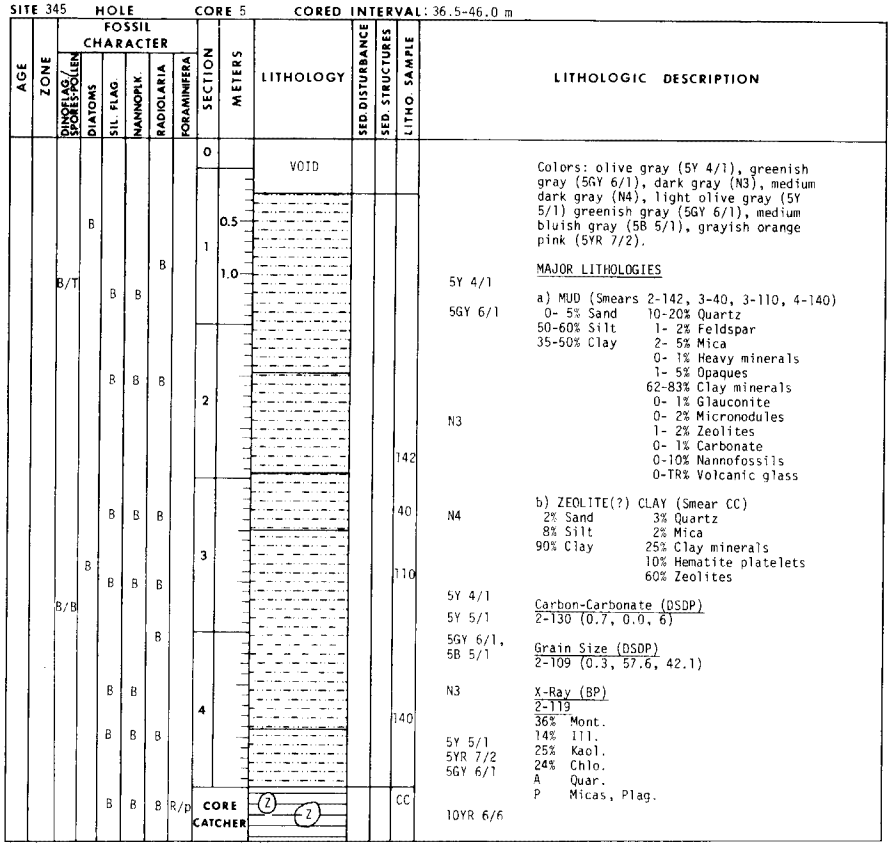
Carbon-Carbonate (PP)
4-1 (top) (0.24, 1.27)
4-1 (bottom) (0.17, 1.66)

Grain Size (DSDP)
2-79 (14.7, 32.7, 52.6)

X-Ray (BP)
2-74

6%	Mont.
40%	Ill.
20%	Kaol.
33%	Chlo.
A	Quar.
P	Mica, Plag.

SITE 345 HOLE CORE 5 CORED INTERVAL: 36.5-46.0 m



Colors: olive gray (5Y 4/1), greenish gray (5GY 6/1), dark gray (N3), medium dark gray (N4), light olive gray (5Y 5/1) greenish gray (5GY 6/1), medium bluish gray (5B 5/1), grayish orange pink (5YR 7/2).

MAJOR LITHOLOGIES

a) MUD (Smears 2-142, 3-40, 3-110, 4-140)

0- 5% Sand	10-20% Quartz
50-60% Silt	1- 2% Feldspar
35-50% Clay	2- 5% Mica
	0- 1% Heavy minerals
	1- 5% Opaques
	62-83% Clay minerals
	0- 1% Glauconite
	0- 2% Micronodules
	1- 2% Zeolites
	0- 1% Carbonate
	0-10% Nannofossils
	0-TR% Volcanic glass

b) ZEOLITE(?) CLAY (Smear CC)

2% Sand	3% Quartz
8% Silt	2% Mica
90% Clay	25% Clay minerals
	10% Hematite platelets
	60% Zeolites

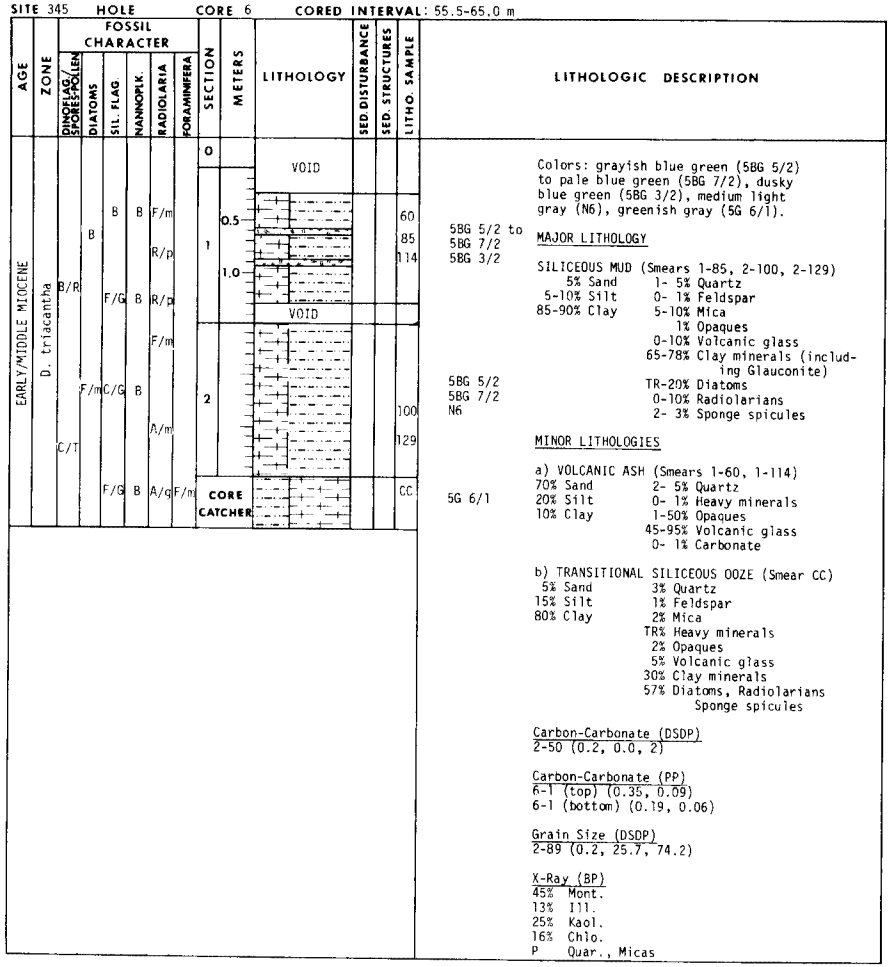
Carbon-Carbonate (DSDP)
2-130 (0.7, 0.0, 6)

Grain Size (DSDP)
2-109 (0.3, 57.6, 42.1)

X-Ray (BP)
2-119

36%	Mont.
14%	Ill.
25%	Kaol.
24%	Chlo.
A	Quar.
P	Micas, Plag.

SITE 345 HOLE CORE 6 CORED INTERVAL: 55.5-65.0 m



Colors: grayish blue green (5BG 5/2) to pale blue green (5BG 7/2), dusky blue green (5BG 3/2), medium light gray (N6), greenish gray (5G 6/1).

MAJOR LITHOLOGY

SILICEOUS MUD (Smears 1-85, 2-100, 2-129)

5% Sand	1- 5% Quartz
5-10% Silt	0- 1% Feldspar
85-90% Clay	5-10% Mica
	1% Opaques
	0-10% Volcanic glass
	65-78% Clay minerals (including Glauconite)
	TR-20% Diatoms
	0-10% Radiolarians
	2- 3% Sponge spicules

MINOR LITHOLOGIES

a) VOLCANIC ASH (Smears 1-60, 1-114)

70% Sand	2- 5% Quartz
20% Silt	0- 1% Heavy minerals
10% Clay	1-50% Opaques
	45-95% Volcanic glass
	0- 1% Carbonate

b) TRANSITIONAL SILICEOUS OOZE (Smear CC)

5% Sand	3% Quartz
15% Silt	1% Feldspar
80% Clay	2% Mica
	TR% Heavy minerals
	2% Opaques
	5% Volcanic glass
	30% Clay minerals
	57% Diatoms, Radiolarians Sponge spicules

Carbon-Carbonate (DSDP)
2-50 (0.2, 0.0, 2)

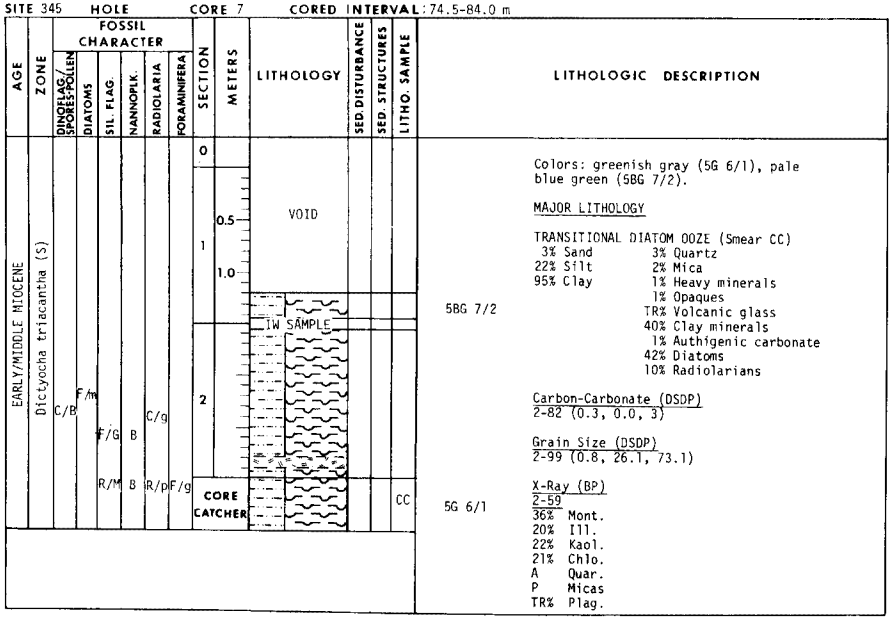
Carbon-Carbonate (PP)
6-1 (top) (0.35, 0.09)
6-1 (bottom) (0.19, 0.06)

Grain Size (DSDP)
2-89 (0.2, 25.7, 74.2)

X-Ray (BP)

45%	Mont.
13%	Ill.
25%	Kaol.
16%	Chlo.
P	Quar., Micas

SITE 345 HOLE CORE 7 CORED INTERVAL: 74.5-84.0 m



LITHOLOGIC DESCRIPTION

Colors: greenish gray (5G 6/1), pale blue green (5BG 7/2).

MAJOR LITHOLOGY

TRANSITIONAL DIATOM OOZE (Smear CC)

3% Sand	3% Quartz
22% Silt	2% Mica
95% Clay	1% Heavy minerals
	1% Opaques
	TR% Volcanic glass
	40% Clay minerals
	1% Authigenic carbonate
	42% Diatoms
	10% Radiolarians

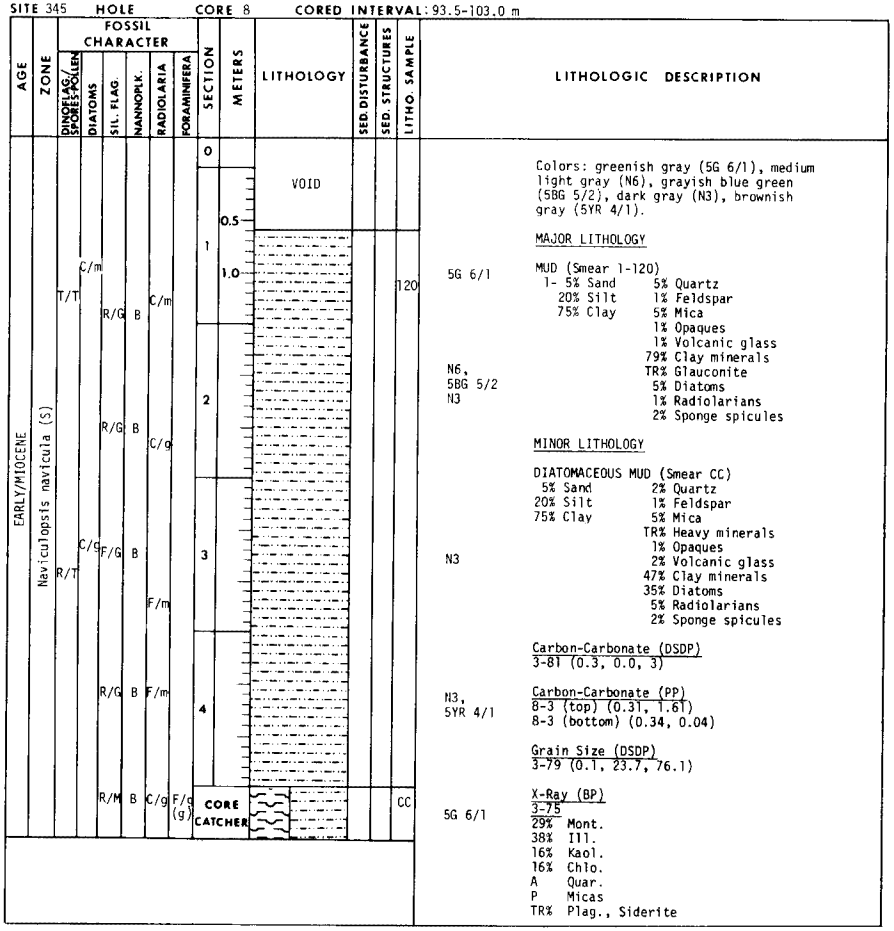
Carbon-Carbonate (DSDP)
2-82 (0.3, 0.0, 3)

Grain Size (DSDP)
2-99 (0.8, 26.1, 73.1)

X-Ray (BP)
2-59

36%	Mont.
20%	Ill.
22%	Kaol.
21%	Chlo.
A	Quar.
P	Micas
TR%	Plag.

SITE 345 HOLE CORE 8 CORED INTERVAL: 93.5-103.0 m



LITHOLOGIC DESCRIPTION

Colors: greenish gray (5G 6/1), medium light gray (N6), grayish blue green (5BG 5/2), dark gray (N3), brownish gray (5YR 4/1).

MAJOR LITHOLOGY

MUD (Smear 1-120)

1- 5% Sand	5% Quartz
20% Silt	1% Feldspar
75% Clay	5% Mica
	1% Opaques
	1% Volcanic glass
	79% Clay minerals
	TR% Glauconite
	5% Diatoms
	1% Radiolarians
	2% Sponge spicules

MINOR LITHOLOGY

DIATOMACEOUS MUD (Smear CC)

5% Sand	2% Quartz
20% Silt	1% Feldspar
75% Clay	5% Mica
	TR% Heavy minerals
	1% Opaques
	2% Volcanic glass
	47% Clay minerals
	35% Diatoms
	5% Radiolarians
	2% Sponge spicules

Carbon-Carbonate (DSDP)
3-81 (0.3, 0.0, 3)

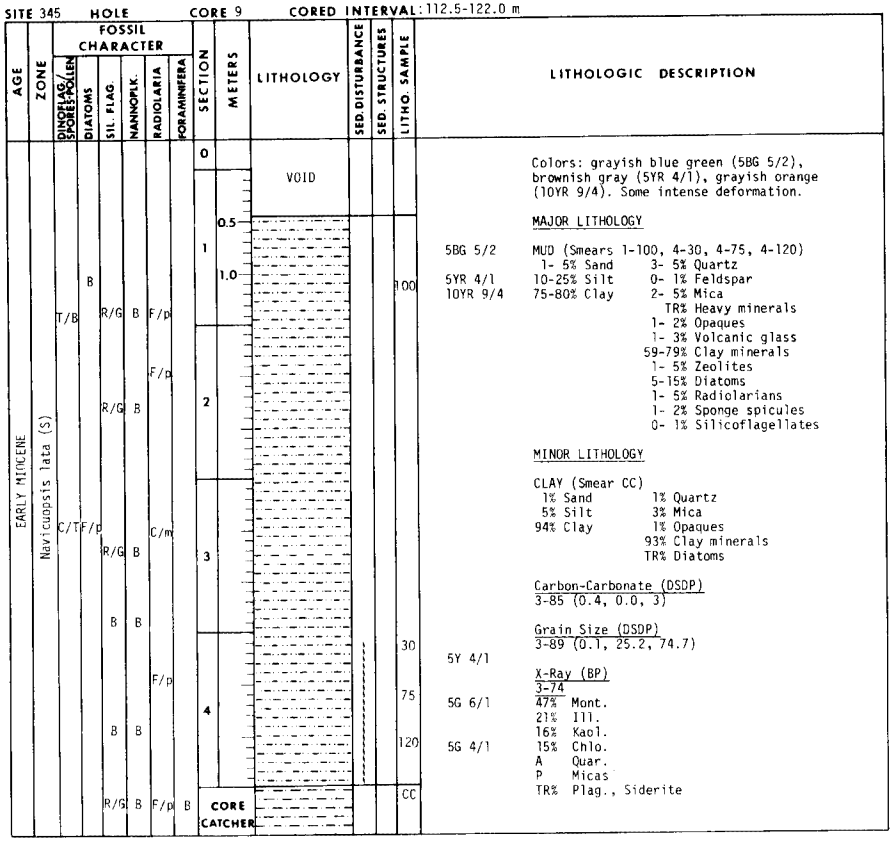
Carbon-Carbonate (PP)
8-3 (top) (0.31, 1.61)
8-3 (bottom) (0.34, 0.04)

Grain Size (DSDP)
3-79 (0.1, 23.7, 76.1)

X-Ray (BP)
3-75

29%	Mont.
38%	Ill.
16%	Kaol.
16%	Chlo.
A	Quar.
P	Micas
TR%	Plag., Siderite

SITE 345 HOLE CORE 9 CORED INTERVAL: 112.5-122.0 m



Colors: grayish blue green (5BG 5/2), brownish gray (5YR 4/1), grayish orange (10YR 9/4). Some intense deformation.

MAJOR LITHOLOGY

MUD (Smears 1-100, 4-30, 4-75, 4-120)

1- 5% Sand	3- 5% Quartz
10-25% Silt	0- 1% Feldspar
75-80% Clay	2- 5% Mica
	TR% Heavy minerals
	1- 2% Opaques
	1- 3% Volcanic glass
	59-79% Clay minerals
	1- 5% Zeolites
	5-15% Diatoms
	1- 5% Radiolarians
	1- 2% Sponge spicules
	0- 1% Silicoflagellates

MINOR LITHOLOGY

CLAY (Smear CC)

1% Sand	1% Quartz
5% Silt	3% Mica
94% Clay	1% Opaques
	93% Clay minerals
	TR% Diatoms

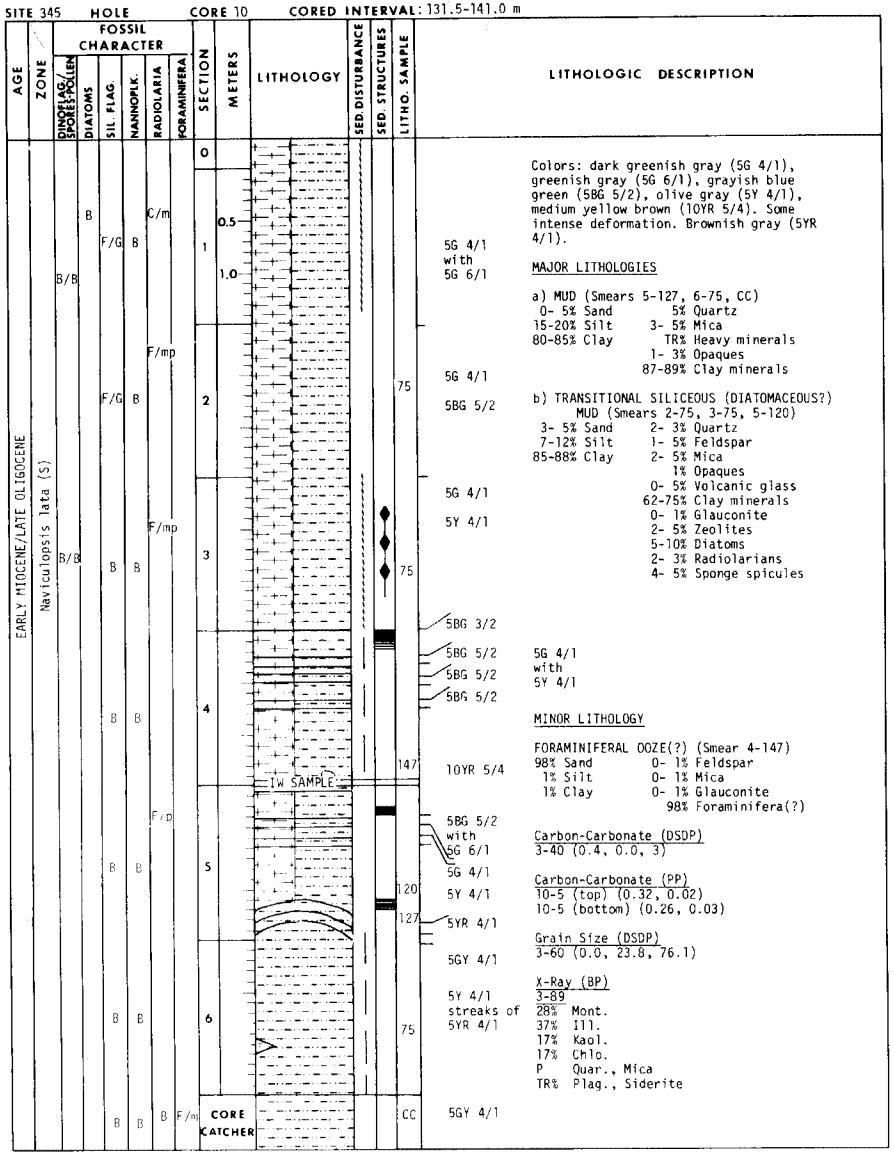
Carbon-Carbonate (DSDP)
3-85 (0.4, 0.0, 3)

Grain Size (DSDP)
3-89 (0.1, 25.2, 74.7)

X-Ray (BP)
3-74

47%	Mont.
21%	Ill.
16%	Kaol.
15%	Chlo.
A	Quar.
P	Micas
TR%	Plag., Siderite

SITE 345 HOLE CORE 10 CORED INTERVAL: 131.5-141.0 m



Colors: dark greenish gray (5G 4/1), greenish gray (5G 6/1), grayish blue green (5BG 5/2), olive gray (5Y 4/1), medium yellow brown (10YR 5/4). Some intense deformation. Brownish gray (5YR 4/1).

MAJOR LITHOLOGIES

a) MUD (Smears 5-127, 6-75, CC)

0- 5% Sand	5% Quartz
15-20% Silt	3- 5% Mica
80-85% Clay	TR% Heavy minerals
	1- 3% Opaques
	87-89% Clay minerals

b) TRANSITIONAL SILICEOUS (DIATOMACEOUS?) MUD (Smears 2-75, 3-75, 5-120)

3- 5% Sand	2- 3% Quartz
7-12% Silt	1- 5% Feldspar
85-88% Clay	2- 5% Mica
	1% Opaques
	0- 5% Volcanic glass
	62-75% Clay minerals
	0- 1% Glauconite
	2- 5% Zeolites
	5-10% Diatoms
	2- 3% Radiolarians
	4- 5% Sponge spicules

MINOR LITHOLOGY

FORAMINIFERAL OOZE(?) (Smear 4-147)

98% Sand	0- 1% Feldspar
1% Silt	0- 1% Mica
1% Clay	0- 1% Glauconite
	98% Foraminifera(?)

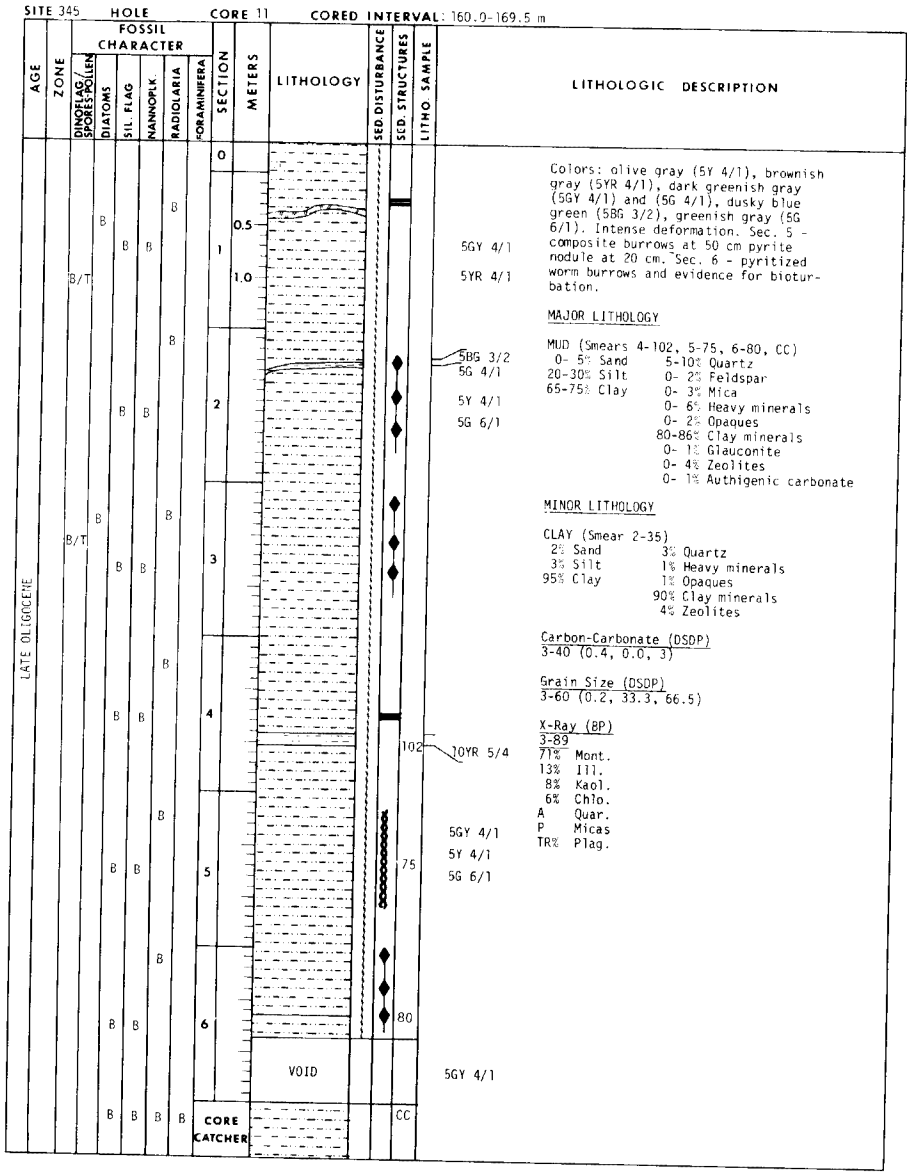
Carbon-Carbonate (DSDP)
3-40 (0.4, 0.0, 3)

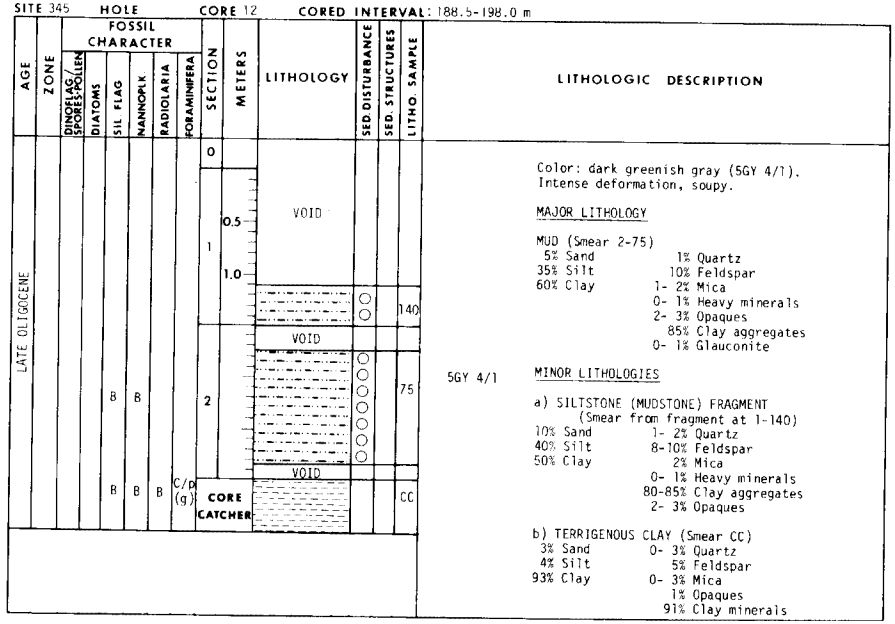
Carbon-Carbonate (PP)
10-5 (top) (0.32, 0.02)
10-5 (bottom) (0.26, 0.03)

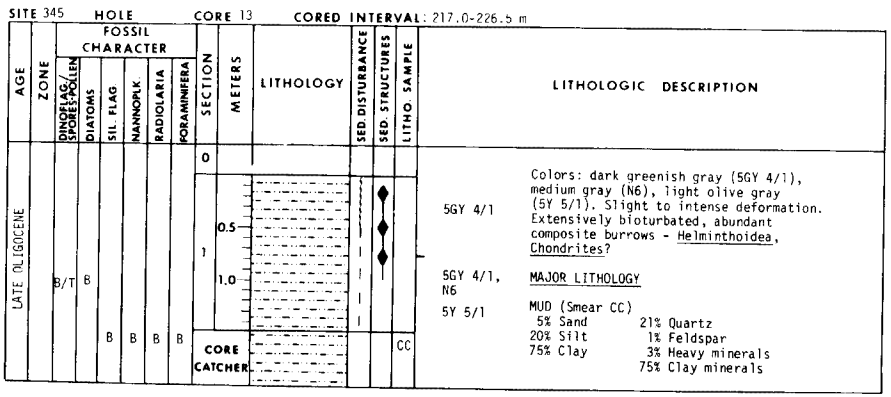
Grain Size (DSDP)
3-60 (0.0, 23.8, 76.1)

X-Ray (BP)
3-89

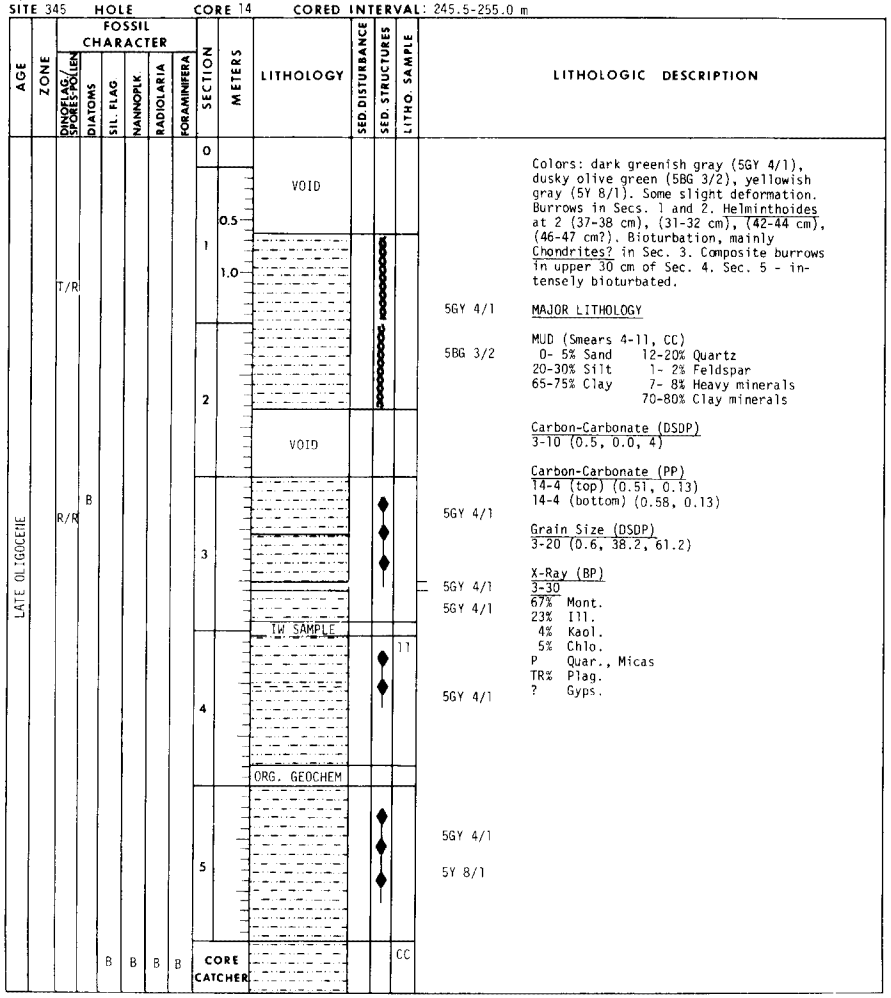
28%	Mont.
37%	Ill.
17%	Kaol.
17%	Chlo.
P	Quar., Mica
TR%	Plag., Siderite


SITE 345 HOLE CORE 11 CORED INTERVAL: 160.0-169.5 m
AGE
ZONE
FOSSIL CHARACTER
DINOFLAG./SPORES-POLLEN
DIATOMS
SIL. FLAG
NANNOPLK.
RADIOLARIA
FORAMINIFERA
SECTION
METERS
LITHOLOGY
SED. DISTURBANCE
SED. STRUCTURES
LITHO. SAMPLE
LITHOLOGIC DESCRIPTION
LATE OLIGOCENE
B/T
B
CORE CATCHER
VOID
5GY 4/1
5YR 4/1
5BG 3/2
5G 4/1
5Y 4/1
5G 6/1
10YR 5/4
102
75
80
CC
Colors: olive gray (5Y 4/1), brownish gray (5YR 4/1), dark greenish gray (5GY 4/1) and (5G 4/1), dusky blue green (5BG 3/2), greenish gray (5G 6/1). Intense deformation. Sec. 5 - composite burrows at 50 cm pyrite nodule at 20 cm. Sec. 6 - pyritized worm burrows and evidence for bioturbation.
MAJOR LITHOLOGY
MUD (Smears 4-102, 5-75, 6-80, CC)
0- 5% Sand
20-30% Silt
65-75% Clay
5-10% Quartz
0- 2% Feldspar
0- 3% Mica
0- 6% Heavy minerals
0- 2% Opaques
80-86% Clay minerals
0- 1% Glauconite
0- 4% Zeolites
0- 1% Authigenic carbonate
MINOR LITHOLOGY
CLAY (Smear 2-35)
2% Sand
3% Silt
95% Clay
3% Quartz
1% Heavy minerals
1% Opaques
90% Clay minerals
4% Zeolites
Carbon-Carbonate (DSDP)
3-40 (0.4, 0.0, 3)
Grain Size (DSDP)
3-60 (0.2, 33.3, 66.5)
X-Ray (BP)
3-89
71% Mont.
13% Ill.
8% Kaol.
6% Chlo.
A Quar.
P Micas
TR% Plag.


SITE 345 HOLE CORE 12 CORED INTERVAL: 188.5-198.0 m
AGE
ZONE
FOSSIL CHARACTER
DINOFLAG./SPORES-POLLEN
DIATOMS
SIL. FLAG
NANNOPLK.
RADIOLARIA
FORAMINIFERA
SECTION
METERS
LITHOLOGY
SED. DISTURBANCE
SED. STRUCTURES
LITHO. SAMPLE
LITHOLOGIC DESCRIPTION
LATE OLIGOCENE
B
C/p (g)
CORE CATCHER
VOID
140
75
CC
5GY 4/1
Color: dark greenish gray (5GY 4/1). Intense deformation, soupy.
MAJOR LITHOLOGY
MUD (Smear 2-75)
5% Sand
35% Silt
60% Clay
1% Quartz
10% Feldspar
1- 2% Mica
0- 1% Heavy minerals
2- 3% Opaques
85% Clay aggregates
0- 1% Glauconite
MINOR LITHOLOGIES
a) SILTSTONE (MUDSTONE) FRAGMENT (Smear from fragment at 1-140)
10% Sand
40% Silt
50% Clay
1- 2% Quartz
8-10% Feldspar
2% Mica
0- 1% Heavy minerals
80-85% Clay aggregates
2- 3% Opaques
b) TERRIGENOUS CLAY (Smear CC)
3% Sand
4% Silt
93% Clay
0- 3% Quartz
5% Feldspar
0- 3% Mica
1% Opaques
91% Clay minerals


SITE 345 HOLE CORE 13 CORED INTERVAL: 217.0-226.5 m
AGE
ZONE
FOSSIL CHARACTER
DINOFLAG./SPORES-POLLEN
DIATOMS
SIL. FLAG
NANNOPLK.
RADIOLARIA
FORAMINIFERA
SECTION
METERS
LITHOLOGY
SED. DISTURBANCE
SED. STRUCTURES
LITHO. SAMPLE
LITHOLOGIC DESCRIPTION
LATE OLIGOCENE
B/T
B
CORE CATCHER
CC
5GY 4/1
5GY 4/1, N6
5Y 5/1
Colors: dark greenish gray (5GY 4/1), medium gray (N6), light olive gray (5Y 5/1). Slight to intense deformation. Extensively bioturbated, abundant composite burrows - Helminthoidea, Chondrites?
MAJOR LITHOLOGY
MUD (Smear CC)
5% Sand
20% Silt
75% Clay
21% Quartz
1% Feldspar
3% Heavy minerals
75% Clay minerals

SITE 345 HOLE CORE 14 CORED INTERVAL: 245.5-255.0 m



Colors: dark greenish gray (5GY 4/1), dusky olive green (5BG 3/2), yellowish gray (5Y 8/1). Some slight deformation. Burrows in Secs. 1 and 2. Helminthoides at 2 (37-38 cm), (31-32 cm), (42-44 cm), (46-47 cm?). Bioturbation, mainly Chondrites? in Sec. 3. Composite burrows in upper 30 cm of Sec. 4. Sec. 5 - intensely bioturbated.

MAJOR LITHOLOGY

MUD (Smears 4-11, CC)

0- 5% Sand	12-20% Quartz
20-30% Silt	1- 2% Feldspar
65-75% Clay	7- 8% Heavy minerals
	70-80% Clay minerals

Carbon-Carbonate (DSDP)
3-10 (0.5, 0.0, 4)

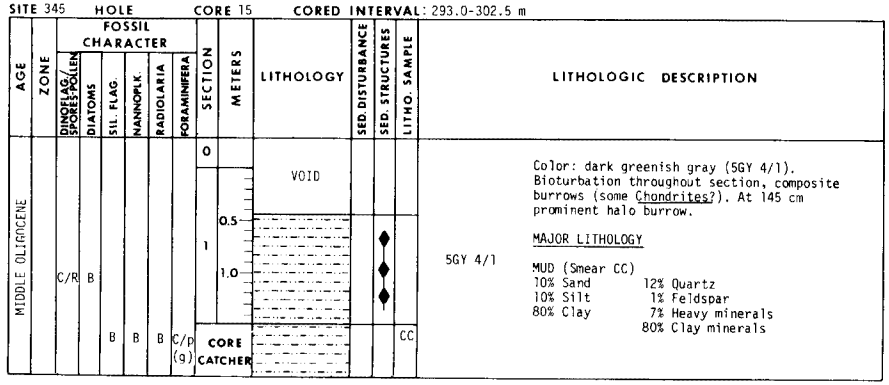
Carbon-Carbonate (PP)
14-4 (top) (0.51, 0.13)
14-4 (bottom) (0.58, 0.13)

Grain Size (DSDP)
3-20 (0.6, 38.2, 61.2)

X-Ray (BP)
3-30

67%	Mont.
23%	Ill.
4%	Kaol.
5%	Chlo.
P	Quar., Micas
TR%	Plag.
?	Gyps.

SITE 345 HOLE CORE 15 CORED INTERVAL: 293.0-302.5 m



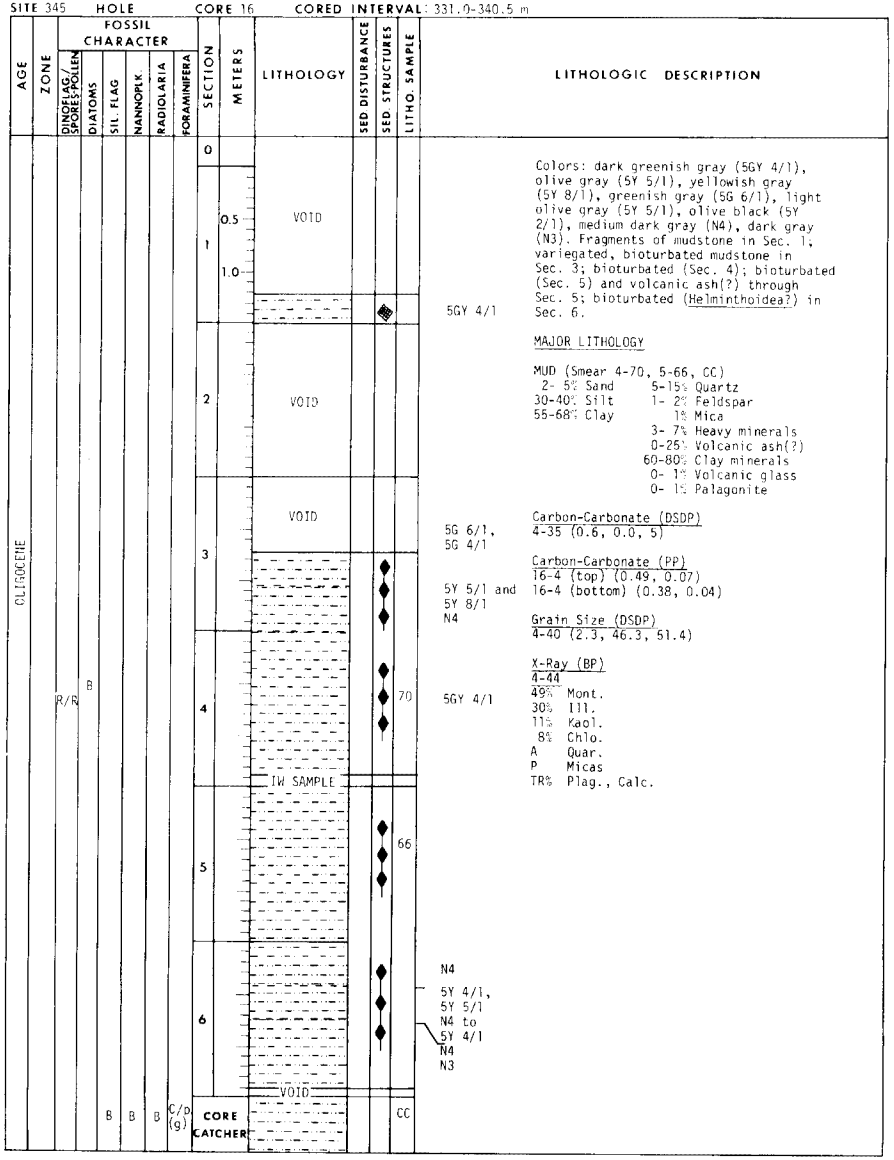
Color: dark greenish gray (5GY 4/1). Bioturbation throughout section, composite burrows (some Chondrites?). At 145 cm prominent halo burrow.

MAJOR LITHOLOGY

MUD (Smear CC)

10% Sand	12% Quartz
10% Silt	1% Feldspar
80% Clay	7% Heavy minerals
	80% Clay minerals

SITE 345 HOLE CORE 16 CORED INTERVAL: 331.0-340.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), olive gray (5Y 5/1), yellowish gray (5Y 8/1), greenish gray (5G 6/1), light olive gray (5Y 5/1), olive black (5Y 2/1), medium dark gray (N4), dark gray (N3). Fragments of mudstone in Sec. 1, variegated, bioturbated mudstone in Sec. 3; bioturbated (Sec. 4); bioturbated (Sec. 5) and volcanic ash(?) through Sec. 5; bioturbated (Helminthoidea?) in Sec. 6.

5GY 4/1

MAJOR LITHOLOGY

MUD (Smear 4-70, 5-66, CC)
2- 5% Sand
30-40% Silt
55-68% Clay
5-15% Quartz
1- 2% Feldspar
1% Mica
3- 7% Heavy minerals
0-25% Volcanic ash(?)
60-80% Clay minerals
0- 1% Volcanic glass
0- 1% Palagonite

5G 6/1, 5G 4/1

Carbon-Carbonate (DSDP)
4-35 (0.6, 0.0, 5)

5Y 5/1 and 5Y 8/1 N4

Carbon-Carbonate (PP)
16-4 (top) (0.49, 0.07)
16-4 (bottom) (0.38, 0.04)

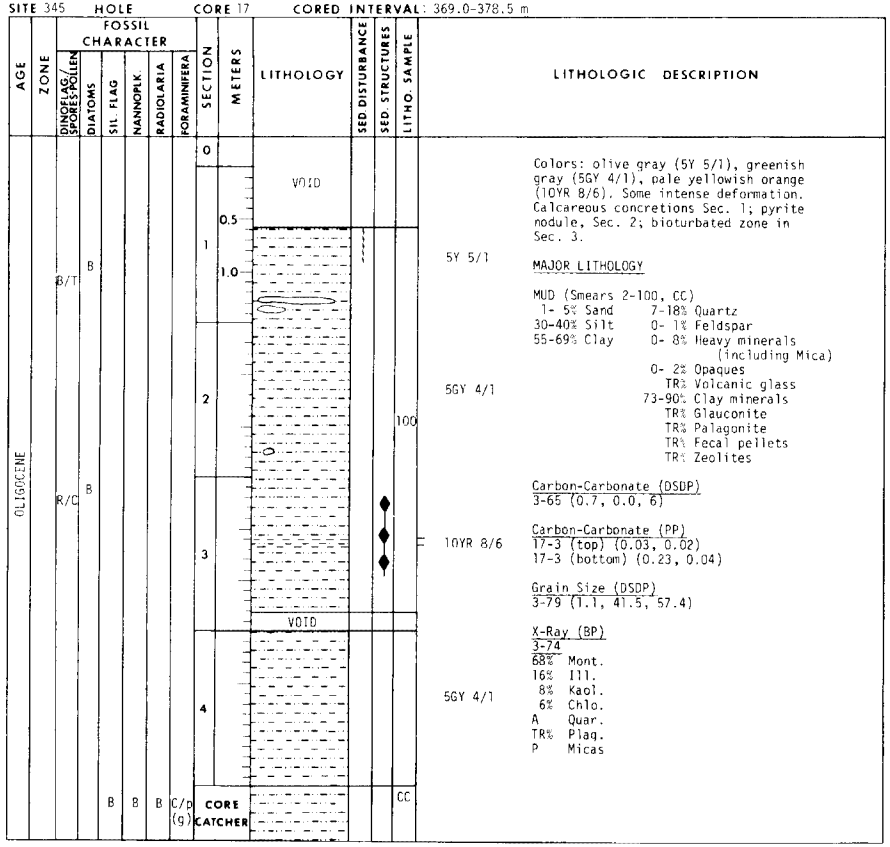
Grain Size (DSDP)
4-40 (2.3, 46.3, 51.4)

5GY 4/1

X-Ray (BP)
4-44
49% Mont.
30% Ill.
11% Kaol.
8% Chlo.
A Quar.
P Micas
TR% Plag., Calc.

N4
5Y 4/1, 5Y 5/1 N4 to 5Y 4/1
N4
N3

SITE 345 HOLE CORE 17 CORED INTERVAL: 369.0-378.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 5/1), greenish gray (5GY 4/1), pale yellowish orange (10YR 8/6). Some intense deformation. Calcareous concretions Sec. 1; pyrite nodule, Sec. 2; bioturbated zone in Sec. 3.

5Y 5/1

MAJOR LITHOLOGY

MUD (Smears 2-100, CC)
1- 5% Sand
30-40% Silt
55-69% Clay
7-18% Quartz
0- 1% Feldspar
0- 8% Heavy minerals (including Mica)
0- 2% Opaques
TR% Volcanic glass
73-90% Clay minerals
TR% Glauconite
TR% Palagonite
TR% Fecal pellets
TR% Zeolites

5GY 4/1

Carbon-Carbonate (DSDP)
3-65 (0.7, 0.0, 6)

10YR 8/6

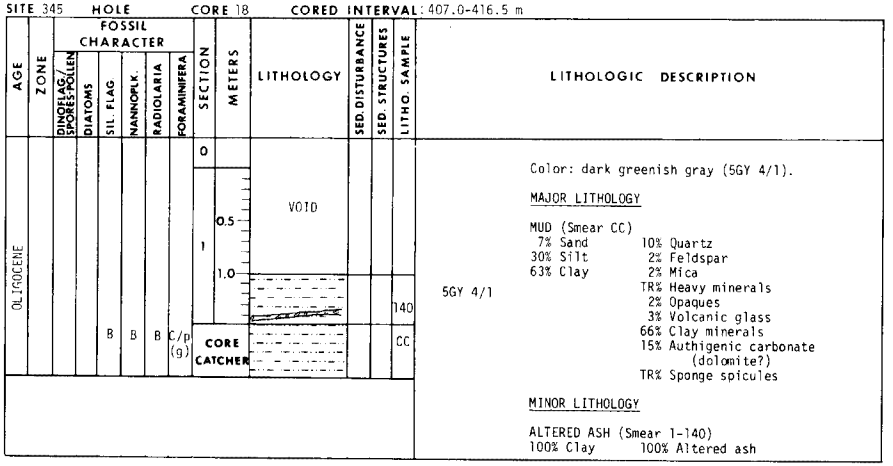
Carbon-Carbonate (PP)
17-3 (top) (0.03, 0.02)
17-3 (bottom) (0.23, 0.04)

Grain Size (DSDP)
3-79 (1.1, 41.5, 57.4)

5GY 4/1

X-Ray (BP)
3-74
68% Mont.
16% Ill.
8% Kaol.
6% Chlo.
A Quar.
TR% Plag.
P Micas

SITE 345 HOLE CORE 18 CORED INTERVAL: 407.0-416.5 m



LITHOLOGIC DESCRIPTION

Color: dark greenish gray (5GY 4/1).

MAJOR LITHOLOGY

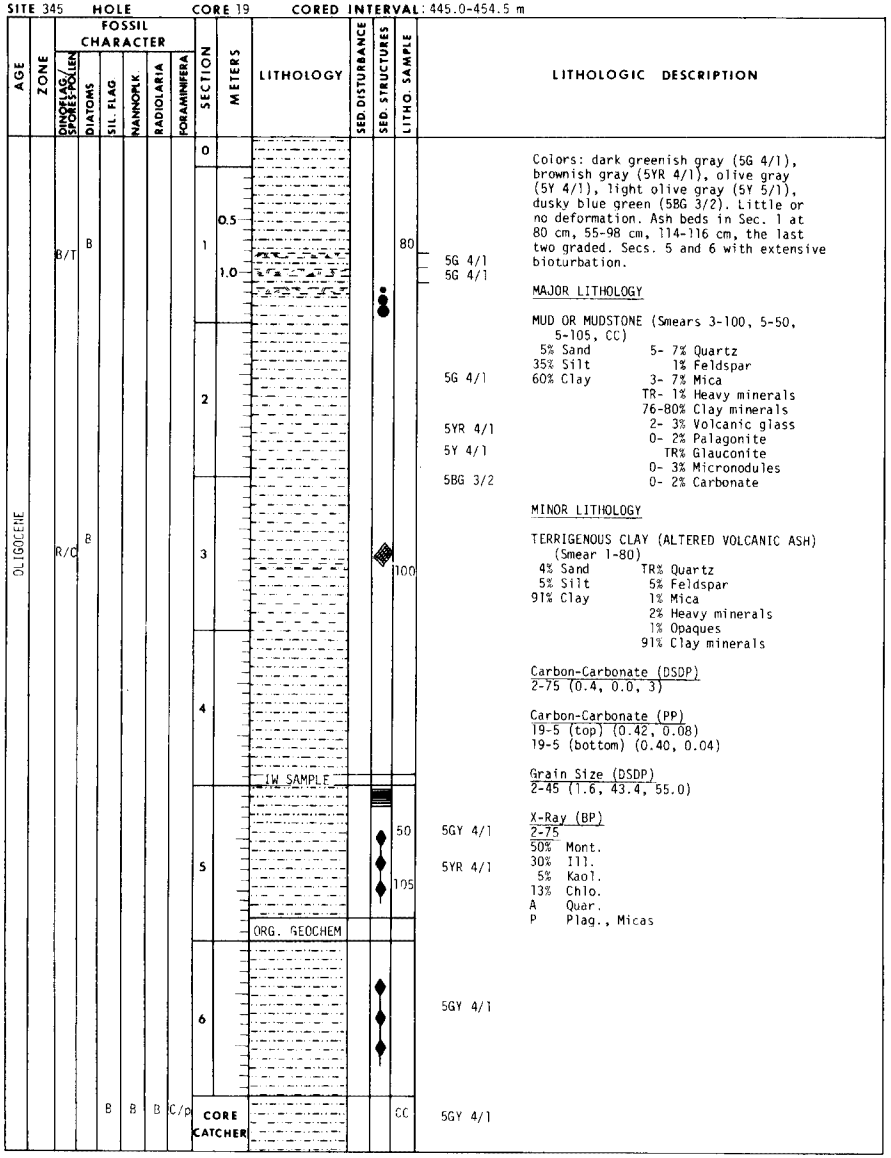
MUD (Smear CC)
7% Sand
30% Silt
63% Clay
10% Quartz
2% Feldspar
2% Mica
TR% Heavy minerals
2% Opaques
3% Volcanic glass
66% Clay minerals
15% Authigenic carbonate (dolomite?)
TR% Sponge spicules

5GY 4/1

MINOR LITHOLOGY

ALTERED ASH (Smear 1-140)
100% Clay
100% Altered ash

SITE 345 HOLE CORE 19 CORED INTERVAL: 445.0-454.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5G 4/1), brownish gray (5YR 4/1), olive gray (5Y 4/1), light olive gray (5Y 5/1), dusky blue green (5BG 3/2). Little or no deformation. Ash beds in Sec. 1 at 80 cm, 55-98 cm, 114-116 cm, the last two graded. Secs. 5 and 6 with extensive bioturbation.

MAJOR LITHOLOGY

MUD OR MUDSTONE (Smears 3-100, 5-50, 5-105, CC)

5% Sand	5- 7% Quartz
35% Silt	1% Feldspar
60% Clay	3- 7% Mica
	TR- 1% Heavy minerals
	76-80% Clay minerals
	2- 3% Volcanic glass
	0- 2% Palagonite
	TR% Glauconite
	0- 3% Micronodules
	0- 2% Carbonate

MINOR LITHOLOGY

TERRIGENOUS CLAY (ALTERED VOLCANIC ASH) (Smear 1-80)

4% Sand	TR% Quartz
5% Silt	5% Feldspar
91% Clay	1% Mica
	2% Heavy minerals
	1% Opaques
	91% Clay minerals

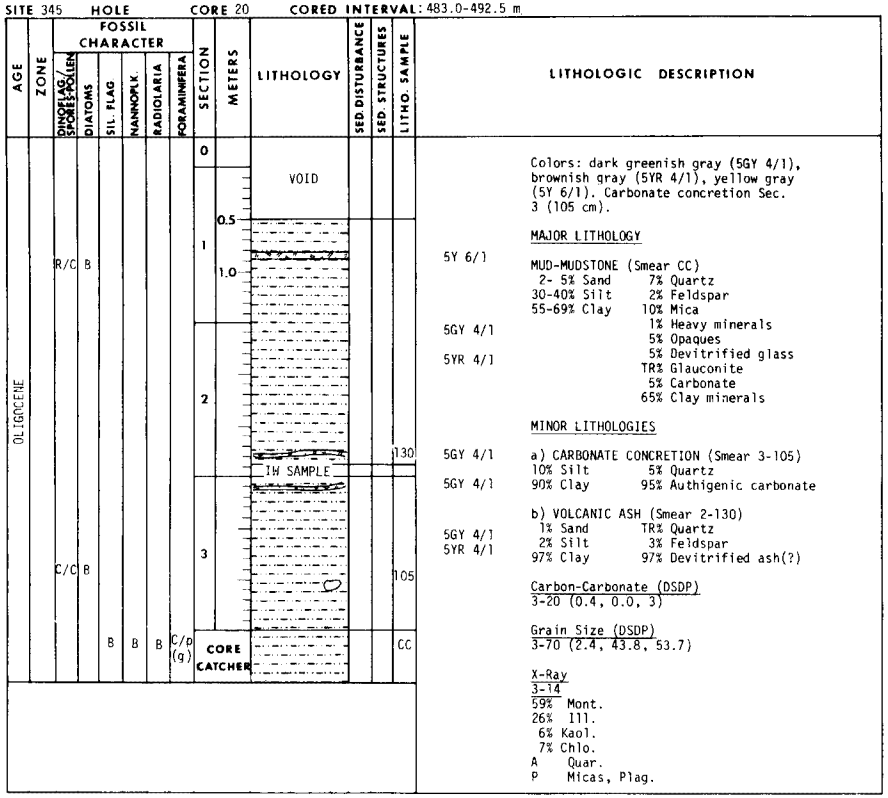
Carbon-Carbonate (DSDP)
2-75 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
19-5 (top) (0.42, 0.08)
19-5 (bottom) (0.40, 0.04)

Grain Size (DSDP)
2-45 (1.6, 43.4, 55.0)

X-Ray (BP)
2-75
50% Mont.
30% Ill.
5% Kaol.
13% Chlo.
A Quar.
P Plag., Micas

SITE 345 HOLE CORE 20 CORED INTERVAL: 483.0-492.5 m



Colors: dark greenish gray (5GY 4/1), brownish gray (5YR 4/1), yellow gray (5Y 6/1). Carbonate concretion Sec. 3 (105 cm).

MAJOR LITHOLOGY

MUD-MUDSTONE (Smear CC)

2- 5% Sand	7% Quartz
30-40% Silt	2% Feldspar
55-69% Clay	10% Mica
	1% Heavy minerals
	5% Opaques
	5% Devitrified glass
	TR% Glauconite
	5% Carbonate
	65% Clay minerals

MINOR LITHOLOGIES

a) CARBONATE CONCRETION (Smear 3-105)

10% Silt	5% Quartz
90% Clay	95% Authigenic carbonate

b) VOLCANIC ASH (Smear 2-130)

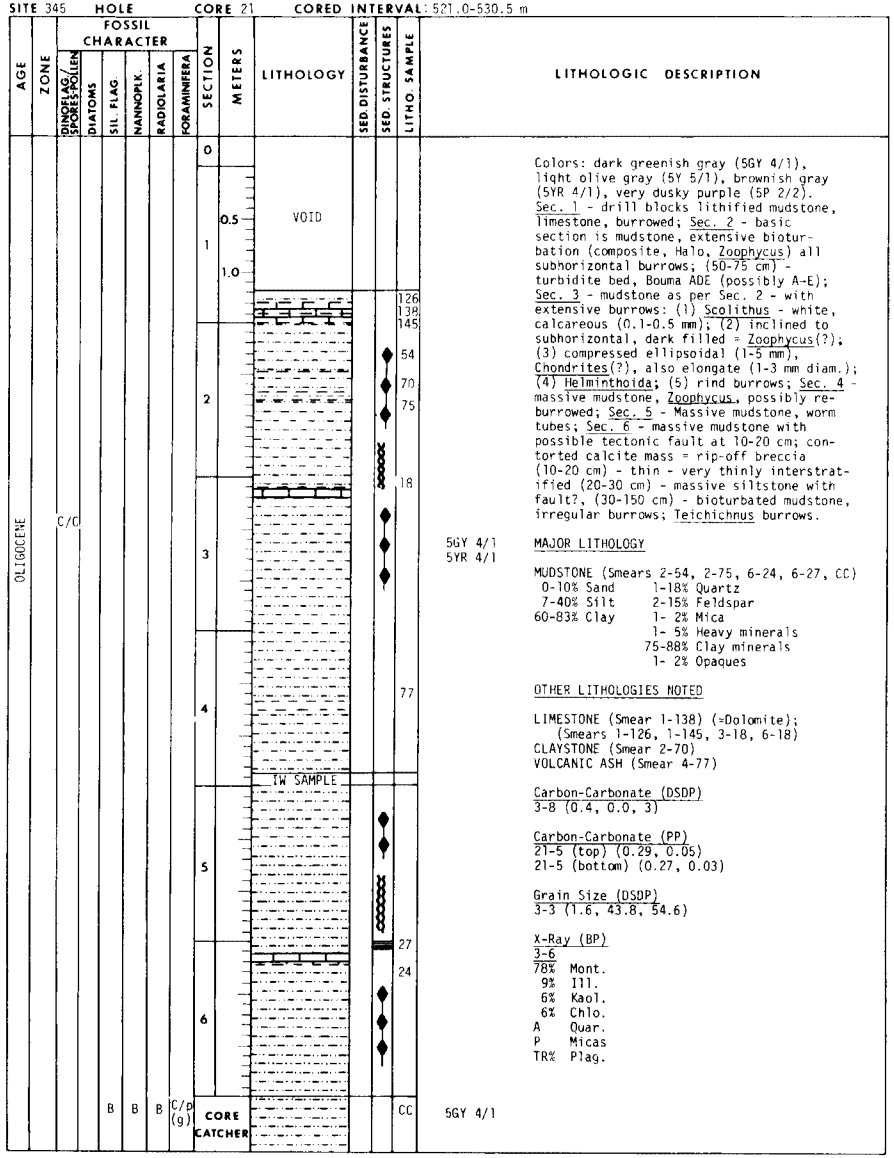
1% Sand	TR% Quartz
2% Silt	3% Feldspar
97% Clay	97% Devitrified ash(?)

Carbon-Carbonate (DSDP)
3-20 (0.4, 0.0, 3)

Grain Size (DSDP)
3-70 (2.4, 43.8, 53.7)

X-Ray
3-14
59% Mont.
26% Ill.
6% Kaol.
7% Chlo.
A Quar.
P Micas, Plag.

SITE 345 HOLE CORE 21 CORED INTERVAL: 521.0-530.5 m



Colors: dark greenish gray (5GY 4/1), light olive gray (5Y 5/1), brownish gray (5YR 4/1), very dusky purple (5P 2/2). Sec. 1 - drill blocks lithified mudstone, limestone, burrowed; Sec. 2 - basic section is mudstone, extensive bioturbation (composite, Halo, Zoophycus) all subhorizontal burrows; (50-75 cm) - turbidite bed, Bouma ADE (possibly A-E); Sec. 3 - mudstone as per Sec. 2 - with extensive burrows: (1) Scolithus - white, calcareous (0.1-0.5 mm); (2) inclined to subhorizontal, dark filled = Zoophycus(?); (3) compressed ellipsoidal (1-5 mm), Chondrites(?), also elongate (1-3 mm diam.); (4) Helminthoida; (5) rind burrows; Sec. 4 - massive mudstone, Zoophycus, possibly re-burrowed; Sec. 5 - Massive mudstone, worm tubes; Sec. 6 - massive mudstone with possible tectonic fault at 10-20 cm; contorted calcite mass = rip-off breccia (10-20 cm) - thin - very thinly interstratified (20-30 cm) - massive siltstone with fault?, (30-150 cm) - bioturbated mudstone, irregular burrows; Teichichnus burrows.

MAJOR LITHOLOGY

MUDSTONE (Smears 2-54, 2-75, 6-24, 6-27, CC)

0-10% Sand	1-18% Quartz
7-40% Silt	2-15% Feldspar
60-83% Clay	1- 2% Mica
	1- 5% Heavy minerals
	75-88% Clay minerals
	1- 2% Opaques

OTHER LITHOLOGIES NOTED

LIMESTONE (Smear 1-138) (=Dolomite); (Smears 1-126, 1-145, 3-18, 6-18)
CLAYSTONE (Smear 2-70)
VOLCANIC ASH (Smear 4-77)

Carbon-Carbonate (DSDP)
3-8 (0.4, 0.0, 3)

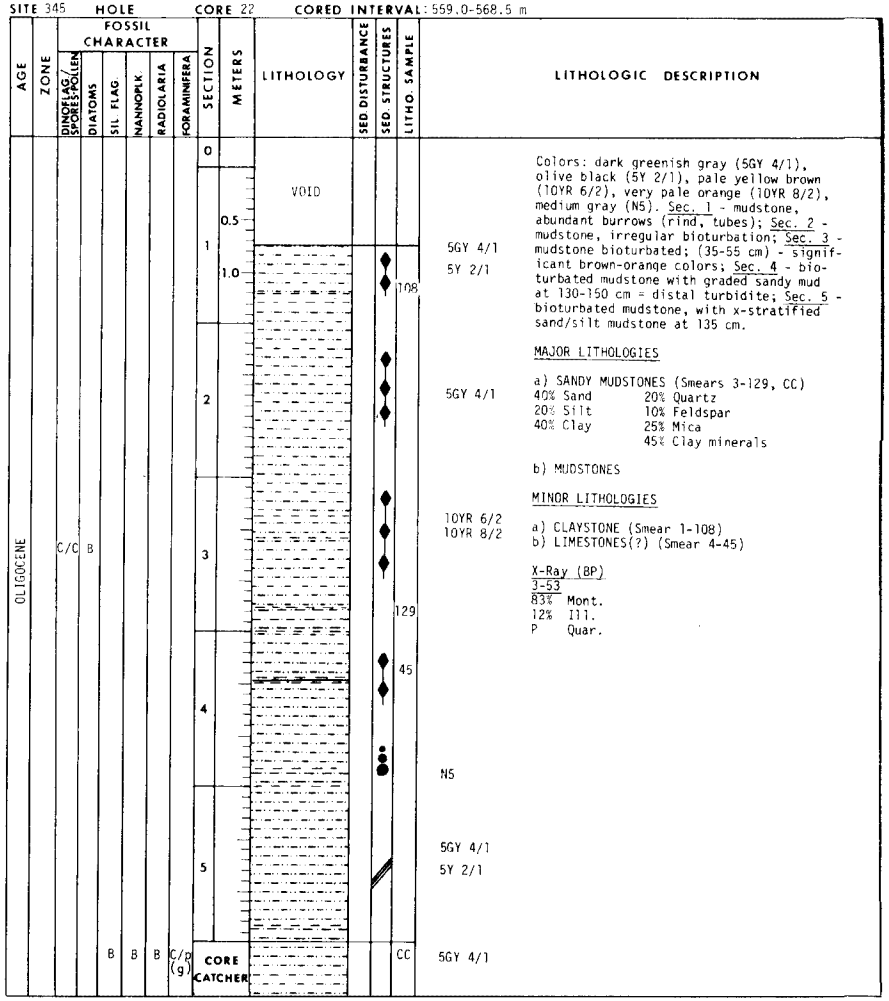
Carbon-Carbonate (PP)
21-5 (top) (0.29, 0.05)
21-5 (bottom) (0.27, 0.03)

Grain Size (DSDP)
3-3 (1.6, 43.8, 54.6)

X-Ray (BP)
3-6

78%	Mont.
9%	Ill.
6%	Kaol.
6%	Chlo.
A	Quar.
P	Micas
TR%	Plag.

SITE 345 HOLE CORE 22 CORED INTERVAL: 559.0-568.5 m



Colors: dark greenish gray (5GY 4/1), olive black (5Y 2/1), pale yellow brown (10YR 6/2), very pale orange (10YR 8/2), medium gray (N5). Sec. 1 - mudstone, abundant burrows (rind, tubes); Sec. 2 - mudstone, irregular bioturbation; Sec. 3 - mudstone bioturbated; (35-55 cm) - significant brown-orange colors; Sec. 4 - bioturbated mudstone with graded sandy mud at 130-150 cm = distal turbidite; Sec. 5 - bioturbated mudstone, with x-stratified sand/silt mudstone at 135 cm.

MAJOR LITHOLOGIES

a) SANDY MUDSTONES (Smears 3-129, CC)

40% Sand	20% Quartz
20% Silt	10% Feldspar
40% Clay	25% Mica
	45% Clay minerals

b) MUDSTONES

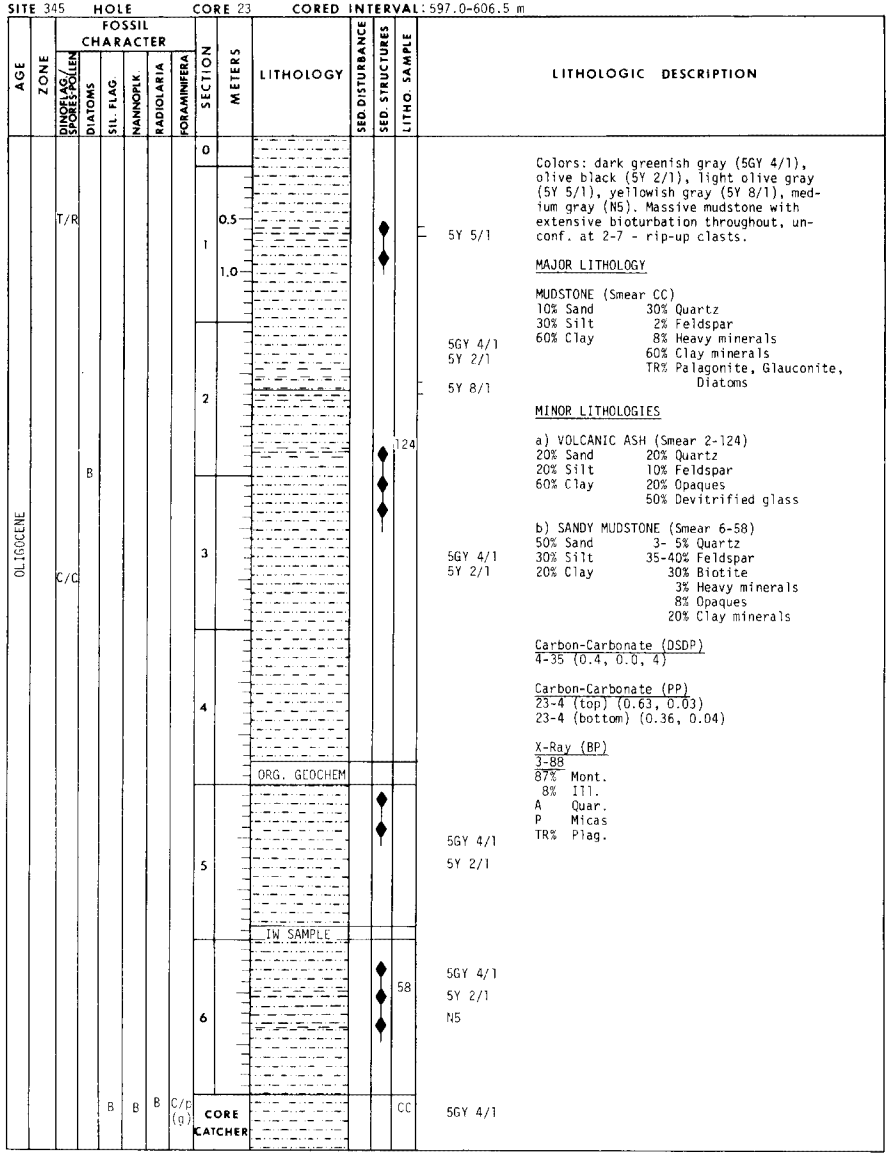
MINOR LITHOLOGIES

a) CLAYSTONE (Smear 1-108)
b) LIMESTONES(?) (Smear 4-45)

X-Ray (BP)
3-53

83%	Mont.
12%	Ill.
P	Quar.

SITE 345 HOLE CORE 23 CORED INTERVAL: 597.0-606.5 m



Colors: dark greenish gray (5GY 4/1), olive black (5Y 2/1), light olive gray (5Y 5/1), yellowish gray (5Y 8/1), medium gray (N5). Massive mudstone with extensive bioturbation throughout, unconf. at 2-7 - rip-up clasts.

MAJOR LITHOLOGY

MUDSTONE (Smear CC)
10% Sand 30% Quartz
30% Silt 2% Feldspar
60% Clay 8% Heavy minerals
60% Clay minerals
TR% Palagonite, Glauconite, Diatoms

MINOR LITHOLOGIES

a) VOLCANIC ASH (Smear 2-124)
20% Sand 20% Quartz
20% Silt 10% Feldspar
60% Clay 20% Opaques
50% Devitrified glass

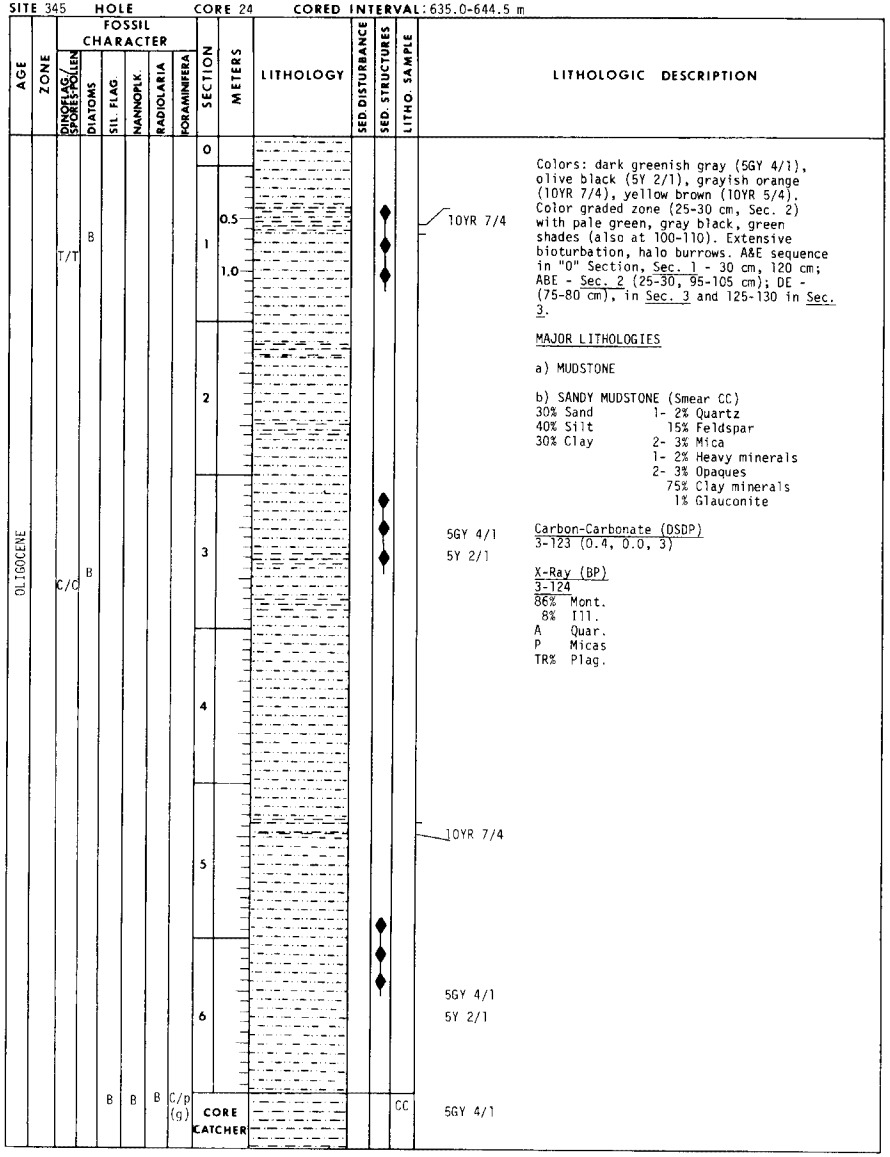
b) SANDY MUDSTONE (Smear 6-58)
50% Sand 3- 5% Quartz
30% Silt 35-40% Feldspar
20% Clay 30% Biotite
3% Heavy minerals
8% Opaques
20% Clay minerals

Carbon-Carbonate (DSDP)
4-35 (0.4, 0.0, 4)

Carbon-Carbonate (PP)
23-4 (top) (0.63, 0.03)
23-4 (bottom) (0.36, 0.04)

X-Ray (BP)
3-88
87% Mont.
8% Ill.
A Quar.
P Micas
TR% Plag.

SITE 345 HOLE CORE 24 CORED INTERVAL: 635.0-644.5 m



Colors: dark greenish gray (5GY 4/1), olive black (5Y 2/1), grayish orange (10YR 7/4), yellow brown (10YR 5/4). Color graded zone (25-30 cm, Sec. 2) with pale green, gray black, green shades (also at 100-110). Extensive bioturbation, halo burrows. A&E sequence in "0" Section, Sec. 1 - 30 cm, 120 cm; ABE - Sec. 2 (25-30, 95-105 cm); DE - (75-80 cm), in Sec. 3 and 125-130 in Sec. 3.

MAJOR LITHOLOGIES

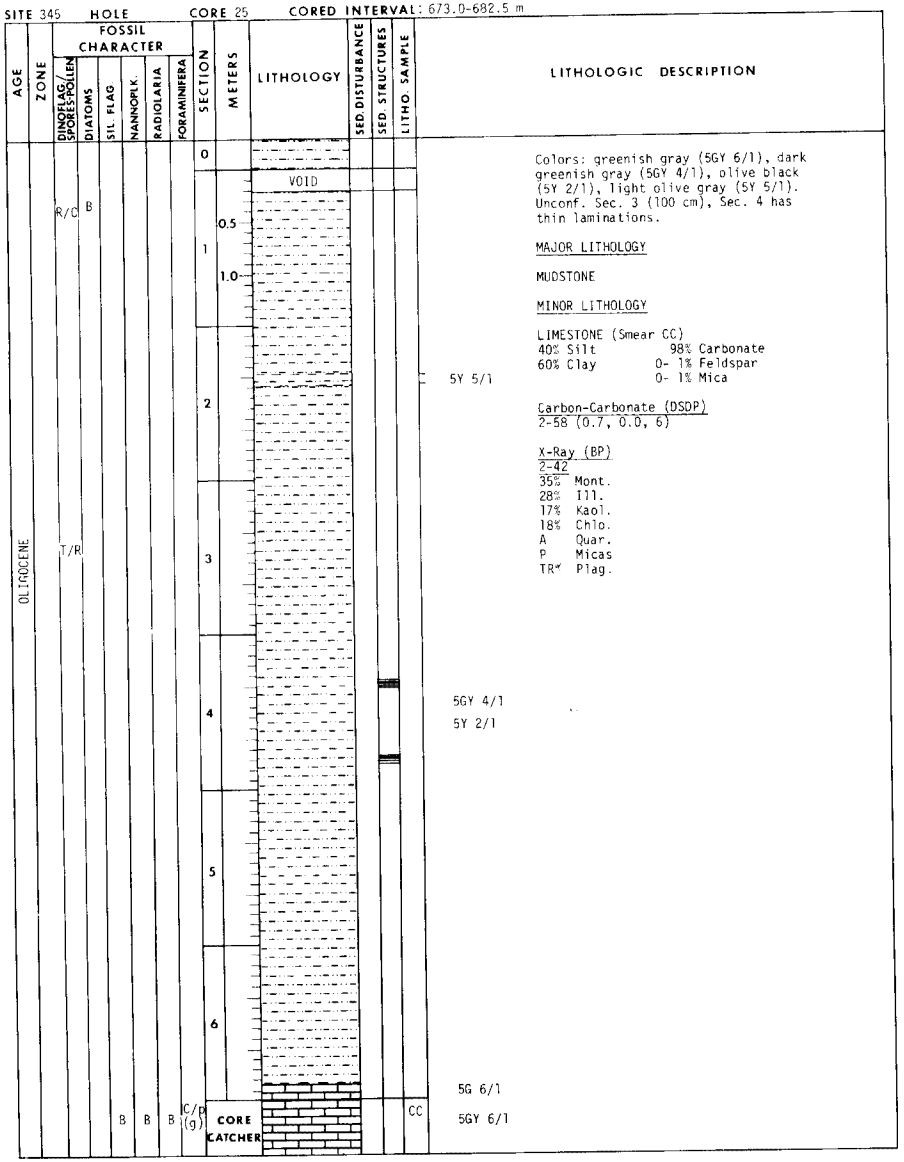
a) MUDSTONE

b) SANDY MUDSTONE (Smear CC)
30% Sand 1- 2% Quartz
40% Silt 15% Feldspar
30% Clay 2- 3% Mica
1- 2% Heavy minerals
2- 3% Opaques
75% Clay minerals
1% Glauconite

Carbon-Carbonate (DSDP)
3-123 (0.4, 0.0, 3)

X-Ray (BP)
3-124
86% Mont.
8% Ill.
A Quar.
P Micas
TR% Plag.

SITE 345 HOLE CORE 25 CORED INTERVAL: 673.0-682.5 m



Colors: greenish gray (5GY 6/1), dark greenish gray (5GY 4/1), olive black (5Y 2/1), light olive gray (5Y 5/1). Unconf. Sec. 3 (100 cm), Sec. 4 has thin laminations.

MAJOR LITHOLOGY

MUDSTONE

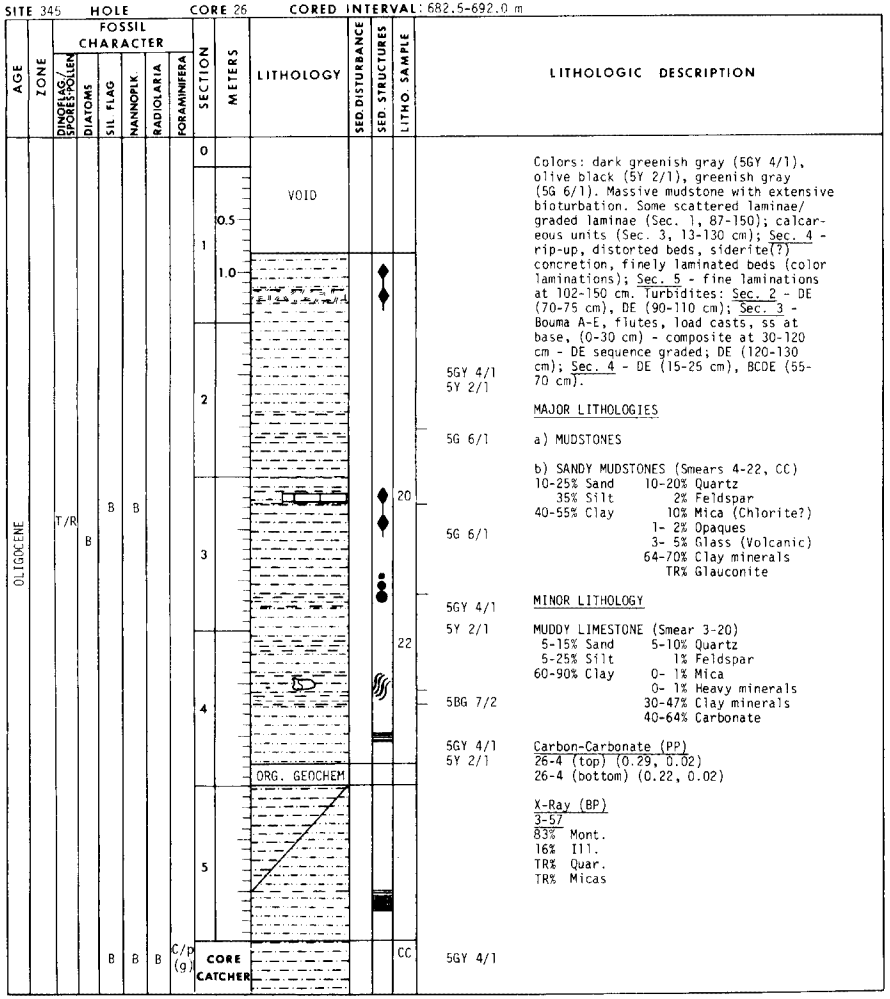
MINOR LITHOLOGY

LIMESTONE (Smear CC)
40% Silt 98% Carbonate
60% Clay 0- 1% Feldspar
0- 1% Mica

Carbon-Carbonate (DSDP)
2-58 (0.7, 0.0, 6)

X-Ray (BP)
2-42
35% Mont.
28% Ill.
17% Kaol.
18% Chlo.
A Quar.
P Micas
TR% Plag.

SITE 345 HOLE CORE 26 CORED INTERVAL: 682.5-692.0 m



Colors: dark greenish gray (5GY 4/1), olive black (5Y 2/1), greenish gray (5G 6/1). Massive mudstone with extensive bioturbation. Some scattered laminae/graded laminae (Sec. 1, 87-150); calcareous units (Sec. 3, 13-130 cm); Sec. 4 - rip-up, distorted beds, siderite(?) concretion, finely laminated beds (color laminations); Sec. 5 - fine laminations at 102-150 cm. Turbidites: Sec. 2 - DE (70-75 cm), DE (90-110 cm); Sec. 3 - Bouma A-E, flutes, load casts, ss at base, (0-30 cm) - composite at 30-120 cm - DE sequence graded; DE (120-130 cm); Sec. 4 - DE (15-25 cm), BCDE (55-70 cm).

MAJOR LITHOLOGIES

a) MUDSTONES

b) SANDY MUDSTONES (Smears 4-22, CC)
10-25% Sand 10-20% Quartz
35% Silt 2% Feldspar
40-55% Clay 10% Mica (Chlorite?)
1- 2% Opaques
3- 5% Glass (Volcanic)
64-70% Clay minerals
TR% Glauconite

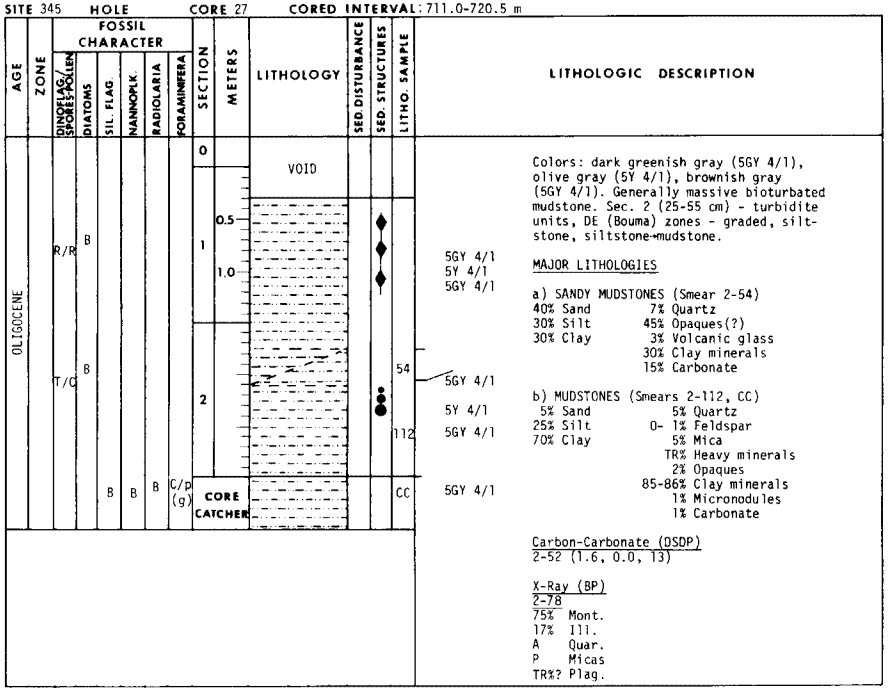
MINOR LITHOLOGY

MUDDY LIMESTONE (Smear 3-20)
5-15% Sand 5-10% Quartz
5-25% Silt 1% Feldspar
60-90% Clay 0- 1% Mica
0- 1% Heavy minerals
30-47% Clay minerals
40-64% Carbonate

Carbon-Carbonate (PP)
26-4 (top) (0.29, 0.02)
26-4 (bottom) (0.22, 0.02)

X-Ray (BP)
3-57
83% Mont.
16% Ill.
TR% Quar.
TR% Micas

SITE 345 HOLE CORE 27 CORED INTERVAL: 711.0-720.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), olive gray (5Y 4/1), brownish gray (5GY 4/1). Generally massive bioturbated mudstone. Sec. 2 (25-55 cm) - turbidite units, DE (Bouma) zones - graded, siltstone, siltstone→mudstone.

MAJOR LITHOLOGIES

a) SANDY MUDSTONES (Smear 2-54)

40% Sand	7% Quartz
30% Silt	45% Opaques(?)
30% Clay	3% Volcanic glass
	30% Clay minerals
	15% Carbonate

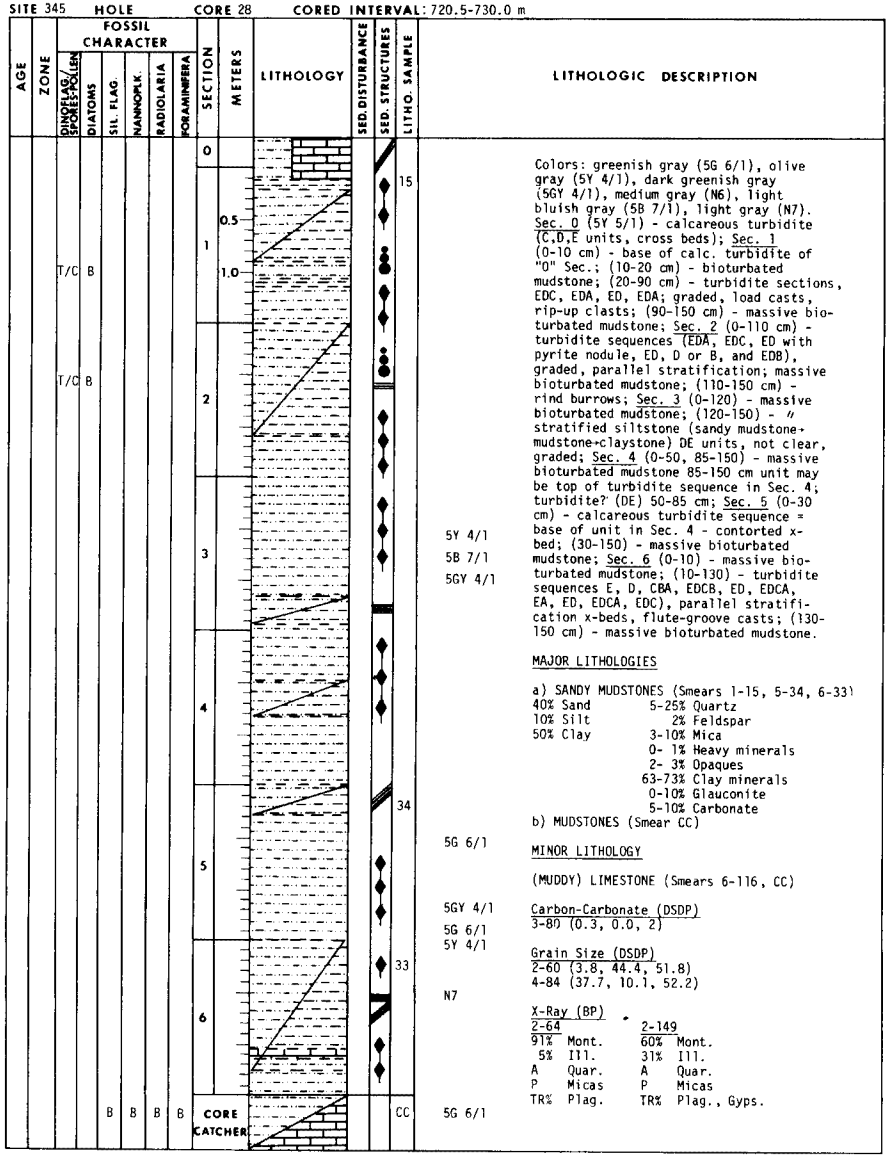
b) MUDSTONES (Smears 2-112, CC)

5% Sand	5% Quartz
25% Silt	0- 1% Feldspar
70% Clay	5% Mica
	TR% Heavy minerals
	2% Opaques
	85-86% Clay minerals
	1% Micronodules
	1% Carbonate

Carbon-Carbonate (DSDP)
2-52 (1.6, 0.0, 13)

X-Ray (BP)
2-78
75% Mont.
17% Ill.
A Quar.
P Micas
TR%? Plag.

SITE 345 HOLE CORE 28 CORED INTERVAL: 720.5-730.0 m



LITHOLOGIC DESCRIPTION

Colors: greenish gray (5G 6/1), olive gray (5Y 4/1), dark greenish gray (5GY 4/1), medium gray (N6), light bluish gray (5B 7/1), light gray (N7). Sec. 0 (5Y 5/1) - calcareous turbidite (C,D,E units, cross beds); Sec. 1 (0-10 cm) - base of calc. turbidite of "0" Sec.; (10-20 cm) - bioturbated mudstone; (20-90 cm) - turbidite sections, EDC, EDA, ED, EDA; graded, load casts, rip-up clasts; (90-150 cm) - massive bioturbated mudstone; Sec. 2 (0-110 cm) - turbidite sequences (EDA, EDC, ED with pyrite nodule, ED, D or B, and EDB), graded, parallel stratification; massive bioturbated mudstone; (110-150 cm) - rind burrows; Sec. 3 (0-120) - massive bioturbated mudstone; (120-150) - ″ stratified siltstone (sandy mudstone→mudstone→claystone) DE units, not clear, graded; Sec. 4 (0-50, 85-150) - massive bioturbated mudstone 85-150 cm unit may be top of turbidite sequence in Sec. 4; turbidite? (DE) 50-85 cm; Sec. 5 (0-30 cm) - calcareous turbidite sequence = base of unit in Sec. 4 - contorted x-bed; (30-150) - massive bioturbated mudstone; Sec. 6 (0-10) - massive bioturbated mudstone; (10-130) - turbidite sequences E, D, CBA, EDCB, ED, EDCA, EA, ED, EDCA, EDC), parallel stratification x-beds, flute-groove casts; (130-150 cm) - massive bioturbated mudstone.

MAJOR LITHOLOGIES

a) SANDY MUDSTONES (Smears 1-15, 5-34, 6-33)

40% Sand	5-25% Quartz
10% Silt	2% Feldspar
50% Clay	3-10% Mica
	0- 1% Heavy minerals
	2- 3% Opaques
	63-73% Clay minerals
	0-10% Glauconite
	5-10% Carbonate

b) MUDSTONES (Smear CC)

MINOR LITHOLOGY

(MUDDY) LIMESTONE (Smears 6-116, CC)

Carbon-Carbonate (DSDP)
3-80 (0.3, 0.0, 2)

Grain Size (DSDP)
2-60 (3.8, 44.4, 51.8)
4-84 (37.7, 10.1, 52.2)

X-Ray (BP)

2-64	2-149
91% Mont.	60% Mont.
5% Ill.	31% Ill.
A Quar.	A Quar.
P Micas	P Micas
TR% Plag.	TR% Plag., Gyps.

SITE 345 HOLE CORE 29 CORED INTERVAL: 730.0-739.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES/POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE
OLIGOCENE		T/R	B	B	B	B	F/P (g)	0		VOID			
								1	0.5				75
									1.0				115
										VOID			135
								2					
								CORE CATCHER					CC

5GY 4/1

Colors: dark greenish gray (5GY 4/1).

Sec. 1 (67-137 cm) - Turbidite sandstone-mudstone bed about 60 cm thick, forms Bouma ACDE sequence; E unit - massive, unbioturbated dark greenish gray (5GY 4/1) mudstone different than typical bioturbated olive gray mudstone below and above of hemipelagic origin; D unit - very thinly interlaminated to very thinly interstratified fine-grained - very fine grained sandstone, siltstone, and mudstone; sandstone 10% of unit, in laminae <4 mm thick, medium gray (N5), mudstone dark greenish gray (5GY 4/1); C unit - thin ripple x-stratified fine-very fine sandstone, amplitude 0.8 cm, length 1.5 cm, incline <30°; medium dark gray (N4); migrating current ripples; A unit - coarse-medium sandstone at base with subangular mudstone rip-up clasts up to 1 cm in diam. from bed below; medium gray (N5); large rip-up clast near base extending completely across core, may be (1) ripped by turbidity current off bottom, (2) underlying sandstone intruded as a sill into mudstone, (3) part of flame structure of mudstone up into sandstone during load casting activity. Cannot tell from core which one, or combination of 3 caused "rip-up"; olive gray (5Y 4/1) bioturbated mudstone; tubes, burrows extremely flattened, appears to be laminated because of compaction.

Sec. 2 - olive black (5Y 2/1), massive, extensive bioturbated mudstone, rind burrows, Zoophycus - silty laminae at 82 cm, 2 cm thick = DE(?) sequence.

MAJOR LITHOLOGIES

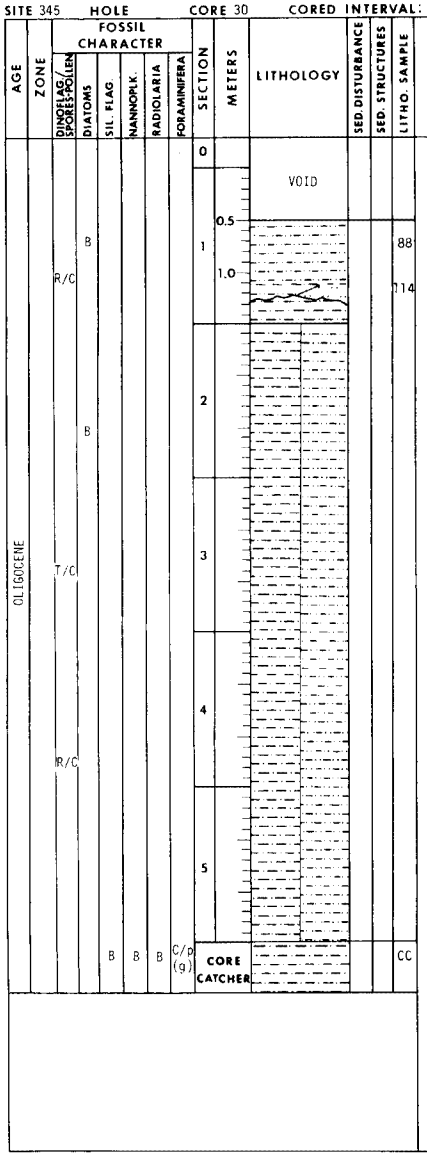
a) MUDSTONE (Smears 1-75, CC)

5% Sand	7-10% Quartz
20-36% Silt	2% Feldspar
60-75% Clay	5% Mica
	2- 5% Opaques
	74-86% Clay minerals
	TR% Volcanic glass
	TR- 2% Micronodules
	0- 2% Carbonate

b) SANDY MUD (MUDDY SAND) (Smears 1-115, 1-135, 2-82)

Carbon-Carbonate (PP)
29-1 (top) (0.35, 0.05)
29-1 (bottom) (0.53, 0.01)

SITE 345 HOLE CORE 30 CORED INTERVAL: 739.5-749.0 m



5GY 4/1
5Y 2/1

5Y 3/2

5YR 4/1

LITHOLOGIC DESCRIPTION

Colors: brownish gray (5YR 4/1), dark greenish gray (5GY 4/1), olive black (5Y 2/1).
Sec. 1 (50-110, 125-150 cm) - massive mudstone, extensive bioturbation. Subhorizontal burrows, some pyrite-filled, no bioturbation (125-150 cm); 110-150 cm) = turbidite sequence, SILT sandstone→mudstone unconformable basal contact, upward grading.
Sec. 2 (0-25 cm) - lower part of graded turbidite; upper part in base of 30-1 (mudstone-claystone); basal massive fine→medium sandstone 2 cm thick, medium gray (N6) overlying // laminated (very thin, <0.1 mm) very fine→fine sandstone, 7 cm thick, medium dark gray (N4); overlying massive, unbioturbated, possibly some small cross beds (amp 0.4 cm) grading up into very fine ss, siltstone, mudstone, olive black (5Y 2/1); (25-33 cm) graded turbidite unit; upper 7 cm massive mudstone-claystone, E unit; (33-73 cm) parallel stratified and irregularly stratified, very fine, fine, medium, and locally coarse-grained sandstone; above 50 cm, abundant thin mudstone-claystone laminae <1.0 cm thick; finer grain sizes in upper part of unit; large burrows or possibly dikes (irregular shape) at 60-62 cm filled with medium-grained sandstone; DBA units; (73-78 cm) basal unit of irregularly len-shaped fine-medium grained sandstone in mudstone; either bioturbated, brecciated, or depositional gradational with burrows or load casts; (78-100 cm) - large, thick, turbidite-grain flow(?) deposit extending downward into 30-3; (1) upper 20 cm thinly to very thinly laminated mudstone-claystone with moderate yellowish brown (10YR 5/4) and pale yellowish brown (siderite? or rhodochrosite?-bearing // laminated unit from 85-92 cm; D unit; (100-150 cm) middle unit, 100 cm→150 cm, mixed up, disrupted unit that may be a composite turbidite, containing abundant claystone and mudstone, rip-up clasts and possibly lenses of mudstone fine to coarse-grained sandstone matrix; rip-up clasts locally deformed, contorted; clastic pebbles of quartz also scattered, A and C unit; lower 15 cm probably x-stratified amplitudes up to 5 cm.
Sec. 3 - continued mixed up, disrupted units, claystone, mudstone clasts, clastic pebbles (round), quartz (1 cm diameter), poss. cross beds, dish. structures. A & C units - poor sorted medium grained sand, mud. Grade to coarse sand at 105-109 cm. (110-150) - very thin stratified mud/stone, claystone, olive black (5Y 2/1), bioturb. Zoophycus burrows. Smear at 3-117 = mudstone.
Sec. 4 (0-15 cm) - olive black (5Y 2/1) mudstone grading down to fine- to coarse-grained sandstone, unconformable or underlying mudstone-claystone; one large rounded quartz pebble at 8 cm, 1.1 cm diameter; (15-30 cm) - thick coarse-grained turbidite unit that includes parallel-stratified and massive conglomeratic, coarse- to very coarse-grained sandstone, thin olive black (5Y 2/1) parallel stratified claystone mudstone with mudstone, strata 0.2 mm to 3 cm thick, D and E unit; (30-103 cm) - diffused parallel laminated medium- to very coarse-grained and granule-sized conglomeratic sandstone; no shale rip-ups, all clastic sand-sized material; laminae defined by textural and color variations; Scolithus at 31 cm, undoubtedly as a clast; scattered pebbles of quartz, feldspar(?), chert(?), volcanic litich mafic fragments(?); rounded and definitely clastic, reworked. Lower 15 cm relatively massive, probably Bouma A unit; erosional base, possibly flute or channel into underlying sandy mudstone; (103-115 cm) - bioturbated pebbly, sandy, mudstone; sand grains within elongate subhorizontal lens-shaped burrows within olive black (5Y 2/1) sandy, probably mudstone; (115-120 cm) cgl, cs sandstone, medium gray (N5) at base, 1 cm thick, pebbles up to 3 mm, micaceous, overlain by sandy, massive mudstone 3-4 cm thick, E,A unit; (120-130 cm) basal medium dark to dark gray (N4-N3) cgl sandstone with 1-2 mm granule grading up into parallel stratified + laminated very fine ss, siltstone, mudstone; sandy, pebbly (<4 mm) massive mudstone, unstratified and unlayered, scattered pebbles and sand grains, no current-formed sed structures, probably intensely bioturbated. Probably poorly sorted, bimodally or polymodally distributed mudstone without pebbles lowest 3 cm.

Sec. 5 (0-20 cm) - fine pebbly mudstone, rounded quartz, lithic, and feldspar(?) clasts <3 mm massive, no stratification, no visible burrows or sed structures; base unconformable and channeled into underlying mudstone; generally fining upward; (20-25 cm) - graded parallel-laminated Bouma DE sequence, olive gray (5Y 4/1) fine grained ss, irregularly ll laminated, grading up into more irregularly parallel stratified massive olive black (5Y 2/1) mudstone-claystone, E,D unit; (25-33 cm) - parallel-laminated very fine-grained sandstone, well-sorted, no pebbles or larger sand grains, medium gray (N5), grades upward into very thinly irregular mudstone and claystone, olive black (5Y 2/1). E, D? unit; (33-63 cm) - massive, ungraded, pebbly and sandy mudstone with abundant Scolithus type tubes, possibly some arenaceous foraminifera; lithic pebbles up to 1.1 cm length, plus elongate white clasts. Brownish gray (5YR 4/1) color generally, medium dark gray (N4) at base, which is very coarse grained, granule-sized, and very fine pebble-sized while arenaceous forams and/or fragments; (63-74 cm) - turbidite or pebbly mudstone unit similar to above, basal medium dark gray (N4) unit containing abundant fragments oriented parallel to one another, obviously clasts with massive ungraded pebbly mudstone with tubes and pebbles up to 1/2 cm in length; (74-130 cm) - massive pebbly mudstone, containing well-rounded clasts of quartz, lithic fragments, and possibly arenaceous forams; large lens-shaped burrows sub-parallel to bedding, ~1 cm x 3-4 cm, flattened, lighter colored (light brownish gray, 5YR 4/1) within brownish gray (5YR 4/1) to medium dark gray (N4) pebbly mudstone; very abundant tubes in situ in pebbly mudstone, one in place conspicuously at 80 cm; pebbles as long as 1.1 cm; no grading or stratification; (130-150 cm) light brown (5YR 5/6) and moderate brown (5YR 4/4) very lithified calcareous sandstone-siltstone; prominent cross-strata near top of unit worked by prominent moderate brown laminae; abundant small vertical Scolithus-sized tubes in upper 3 cm; massive in center, scattered lithic clasts and possible burrows, swirly lamination; basal 5 cm massive fine→medium calc ss.
Core catcher: grayish brown, sandy mudstone, burrows, (poss. detrital), micaceous, clasts→1 mm absent.

MUDSTONE (Smears 1-88, 1-114)
5-10% Sand — 10-12% Quartz, Feldspar
15-20% Silt — 0-10% Mica
70-80% Clay — 8-10% Heavy minerals
70-80% Clay minerals

SANDSTONE (Smear 4-63)
40% Sand — 50% Quartz
10% Mud — 40% Heavy minerals, Opaques
10% Clay minerals

SANDY MUDSTONES (Smears 4-65, 4-113)
(MUDDY SANDS)
25-40% Sand — 35-60% Quartz
10-20% Silt — 0- 5% Feldspar
40-65% Clay — 0- 5% Mica
1-15% Heavy minerals, Opaques
23-50% Clay minerals

MUDSTONES (Smear 5-41)

SANDY MUDSTONE (Smears 5-70, CC)

Carbon-Carbonate (DSDP)
5-130 (52., 0.0, 43)

Grain Size (DSDP)
1-121 (23.8, 11.5, 64.7)

X-Ray (BP)

4-7		5-82	
55%	Mont.	68%	Mont.
20%	Ill.	19%	Ill.
10%	Kaol.	11%	K/C
14%	Chlo.	A	Quar.
A	Quar.	P	Micas, Plag.
P	Micas	TR%?	Calc.
TR%	Plag.		

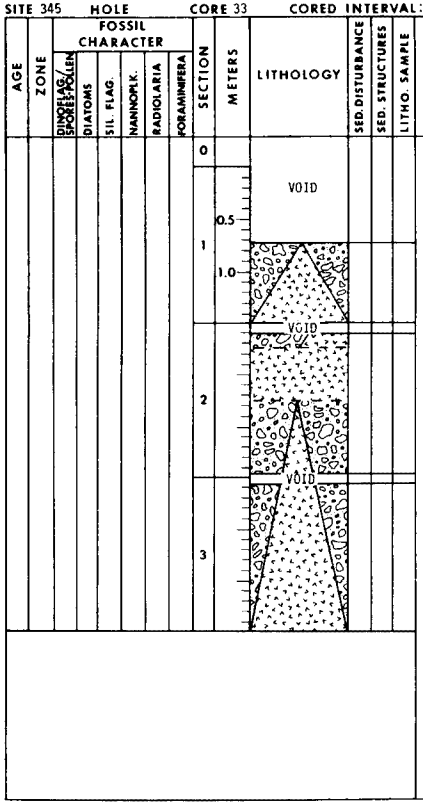
SITE 345 HOLE CORE 31 CORED INTERVAL: 749.0-758.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
OLIGOCENE		B/B						0						Colors: grayish brown (5YR 3/7), brownish gray (5YR 4/1), medium gray (N5), medium brown (5YR 3/4), grayish brown (5YR 3/2), olive black (5Y 2/1).
								1	0.5	VOID				Sec. 1 - sandy mudstone to muddy sandstones, massive, thinly interstratified, 31 cm thick, burrows abundant;
									1.0					Sec. 2 (0-45 cm) - massive, structureless, pebbly sandy mudstone, 1-2 cm N5 bands with gradational contacts. Pebbles ☓ rounded; chert. Heavy mineral conglomerate at base;
														5YR 3/7 (45-75 cm) - pebbly sandy mudstone; (75-100) -
														5YR 4/1 pebbly sandy mudstone, scattered chert, worm tubes-white chitin.-phosphatic? material,
														some claystone rip-up clasts - gradational
													44	at 100 cm to soft sandstone (3 cm) - sub-
														5YR 4/1 rounded. (105-150 cm) - pebbly, sandy mud-
								2						5YR 3/4 stone massive, structureless, coarsens up-
														ward with large round lithics (0.5 cm) -
														5YR 3/2 scattered chert (black) pebbles.
														Sec. 3 - massive, structureless, pebbly, sandy, mudstone to muddy ss - 1-3 cm thick, lighter color strata, less mud, better sorted, micaceous, pebbles maximum 0.7 cm, abundant worm tubes, rare claystone clasts.
								3						Sec. 4 - as per Sec. 3 - sandy strata with biotite, heavy laminae; irregularly mottled - large burrowed areas;
														Sec. 5 - pebbly micaceous sandy mudstone, scattered worm tubes, chert pebbles plus granite pebble (6 cm), well rounded, low orthoclase, sandstone layers;
														Sec. 6 - as per Sec. 5 - sandy mudstone with sandstones = well sorted, quartzose, rounded subrounded chert pebbles (<1 cm)
													30	micaceous - pebbly at base - chert, quartzite granite;
														5YR 3/4 Core catcher - massive, blotchy, pebbly medium
								4						5YR 4/1 grained ss, no strucutres, grayish red (10R
		B/B												N5 4/2), medium red brown (10R 4/6), pale red
														(10R 6/2) blotches.
														LITHOLOGIES
														SANDY MUD (Smears 2-44, 4-30, CC)
														(CC has 50% sand, 20% silt, 30% clay with 54% Fe-oxide/clay.)
														Grain Size (DSDP)
														5YR 3/4 3-31 (16.6, 25.6, 57.8)
								5						5YR 4/4 X-Ray (BP)
														3-44 6-2
														41% Mont. 85% Mont.
														33% Ill. 6% Ill.
														12% Kaol. 7% K/C
														12% Chlo. A Quar.
														A Quar. P Micas
														P Micas TR% Plag.
														P Plag.
														TR%? Calc.
								6						
			B	B			C/p (g)	CORE CATCHER						10R 4/2 10R 4/6

SITE 345 HOLE CORE 32 CORED INTERVAL: 758.5-764.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
OLIGOCENE								0						Colors: moderate reddish brown (10R 4/6), dark reddish brown (10R 3/4).
								1	0.5	VOID				Sec. 1 - pebbly sandstone, scattered sub-rounded pebbles (<1.2 cm), open framework, random orientation, locally blotchy/mottled, lessens >70 cm, no structures, fe-oxide mottled tubular areas, possible worm tubes.
									1.0					Sec. 2 - as per Sec. 1 - scattered chert pebbles.
														10R 4/6 Sec. 3 (0-25 cm) - moderate brown to grayish
														10R 3/4 brown siltstone with round quartz grains.
														Grayish blue green to dusky blue green silt-
														stone. Siltstone with chlorite-calcite frag-
														ments (0.5-1 cm); (25-62 cm) - breccia;
														angular and near round basalt fragments and
														pieces of pale blue green chlorite, white
														calcite (1-6 mm); (62-90 cm) - breccia;
														angular fragments of weathered grayish red
														basalt, cemented by grayish red matrix;
														(90-150 cm) - drill pebbles of breccia,
														angular chloritized and chlorite fragments
														(0.5-10 cm), cemented by a chlorite-smectite-
														calcite matrix.
														MAJOR LITHOLOGY
								2		VOID			87	5Y 3/2 SILTSTONE (Smear 3-87)
														5YR 3/7 10% Sand 70% Quartz
														90% Silt 10% Heavy minerals
														5BG 3/2 5% Opaques
														10% Clay minerals
								3						Grain Size (DSDP)
							F/p (g)							2-110 (7.6, 86.2, 6.2)
														X-Ray (BP)
														2-123
														89% Mont.
														8% Ill.
														1% K/C
														P Quar.
														TR% Micas
														TR% Plag.

SITE 345 HOLE CORE 33 CORED INTERVAL: 764.0-773.5 m



5GY 2/1
5BG 3/2
5R 2/2
5Y 4/1
N3
5YR 3/4
5YR 5/6
5BG 3/2
5BG 5/2

LITHOLOGIC DESCRIPTION

BASALT BRECCIA

Sec. 1 (75-150 cm) - greenish black (5GY 2/2) to dusky blue green (5BG 3/2) breccia; angular and round fragments of blackish red and dark gray aphyric basalts (0.1 to 5 cm) cemented by chlorite-smectite matrix with calcite.

Thin Section - angular, weathered, zeolite, hematite, goethite, altered olivine replaced by chlorite-smectite, calcite matrix.

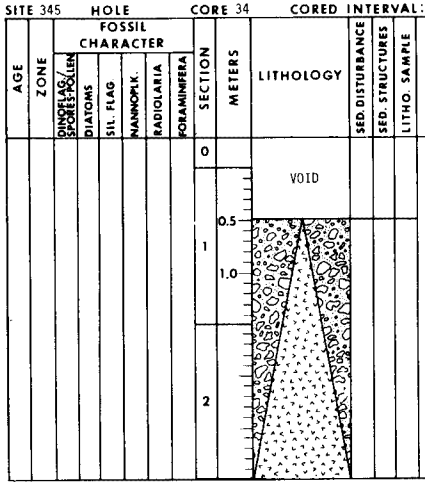
Sec. 2 (10-30 cm) - breccia; angular of blackish red fragments of basalt, cemented by a chlorite-smectite matrix; (30-75 cm) - dark gray (N3) to brownish gray (5YR 4/1) basalt, brecciated (probably fragment of breccia) with white calcite veins and zeolite(?)-calcite amygdules; (75-125 cm) - breccia as above but with goethite vein in 123-126 cm interval; (125-150 cm) - brecciated basalt-chlorite-calcite-smectite veins. Probably basalt is the breccia fragment.

Thin Section - breccia, altered basalt, hyalophitic, variolitic, trachytoid texture, aphanitic, very fine grained (0.01-0.1 mm). Plagioclase laths (20%), also glomeroporphyritic pyroxene (20%), altered olivine phenocrysts (5%) altered (zeolite) glass. Secondary smectite, chlorite, zeolite, calcite, albite.

Sec. 3 (0-50 cm) - sedimentary breccia with sandy cement with quartz grains and radiolarians. Fragments of breccia are angular and round of grayish red basalt and grayish blue green chlorite-smectite; (50-150 cm) - breccia with angular and round fragments. Dark gray and grayish red aphyric basalt, cemented by chlorite-smectite(?) matrix.

Thin Section - as per Sec. 2 - some hematized basalt, zeolite, altered olivine - zeolite, smectite(?) cement.

SITE 345 HOLE CORE 34 CORED INTERVAL: 773.5-783.0 m



LITHOLOGIC DESCRIPTION

BASALT BRECCIA

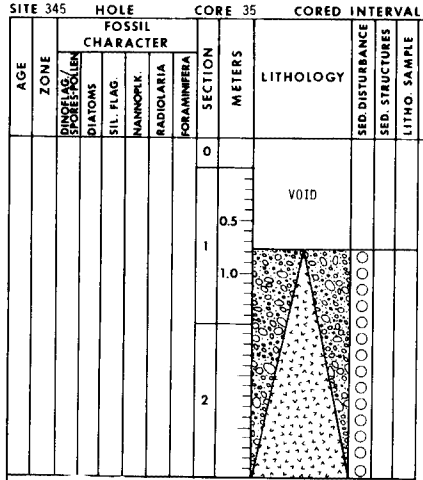
Sec. 1 (45-150 cm) - breccia in Core 33 with angular fragments of altered olivine basalt, cemented by a chlorite-smectite mass.

Thin Section - angular fragments, altered basalt, zeolite, altered olivine-smectite, goethite, calcite. Zeolite-smectite cement.

Sec. 2 (0-100 cm) - breccia is similar to Sec. 1; (100-150 cm) - drill fragments of medium gray (N5) to medium light gray (N6) basalt. There are grayish red and pale blue green spots in basalt.

Thin Section - breccia, angular weathered (altered) basalt, hematite basalt, zeolite, zeolite-smectite cement. Basalt - hyalophitic, interstadial texture, chlorite, zeolite, smectite amygdules (3-5%), olivine (2%) replaced by smectite, calcite-goethite, Plagioclase (20-30%).

SITE 345 HOLE CORE 35 CORED INTERVAL: 783.0-792.5 m



LITHOLOGIC DESCRIPTION

BASALT BRECCIA

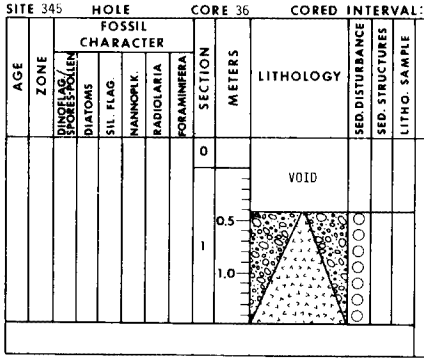
Sec. 1 (75-150 cm) - basalt with vesicles and amygdules, filled by smectite. Slickensides with black clayish material on walls.

Thin Section - altered amygdaloidal basalt subophitic, fine grained; plagioclase (30%) - albite, labradorite (An_{60}), pyroxene (20%), altered glass, chlorite, smectite, calcite, zeolite, goethite. Amygdules (10-15%) filled by smectite, zeolite.

Sec. 2 (0-100 cm) - smectite-calcite vein in drill fragments of amygdaloidal basalt with grayish green and pale yellowish veins and spots of calcite-smectite. Smectite(?) veins; (100-150 cm) - amygdaloidal phyric basalt. Slickensides.

Thin Section - altered amygdaloidal basalt, subophitic, variolitic texture; Plagioclase (20-30%) - An_{68} - magnetite (1-2%), altered glass, smectite, chlorite, zeolite, calcite amygdules (10-15%).

SITE 345 HOLE CORE 36 CORED INTERVAL: 792.5-802.0 m



LITHOLOGIC DESCRIPTION

BASALT BRECCIA

Sec. 1 (40-50 cm) - drill pebbles of basalt and two pieces of moderate yellowish fine-grained dolomite; (50-150 cm) - brecciated basalt with calcite veins and small smectite-calcite amygdules and vesicles. Brecciated altered hyalobasalt.

Thin Section - altered amygdaloidal basalt, with glomeroporphyritic clusters of olivine and plagioclase.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 346

SITE SUMMARY SHEET

POSITION: Latitude: 69°53.35'N Longitude: 08°41.14'W

Water depth (from sea level): 732.0 corrected meters (Echo sounding)

Bottom felt at: 741.0 meters (drill pipe) Penetration: 187.0 meters

Number of Holes: 1 Number of Cores: 20

Total length of cored section: 187.0 m Total core recovered: 120.4 m

Percentage of core recovery: 64.4%

OLDEST SEDIMENT CORED:

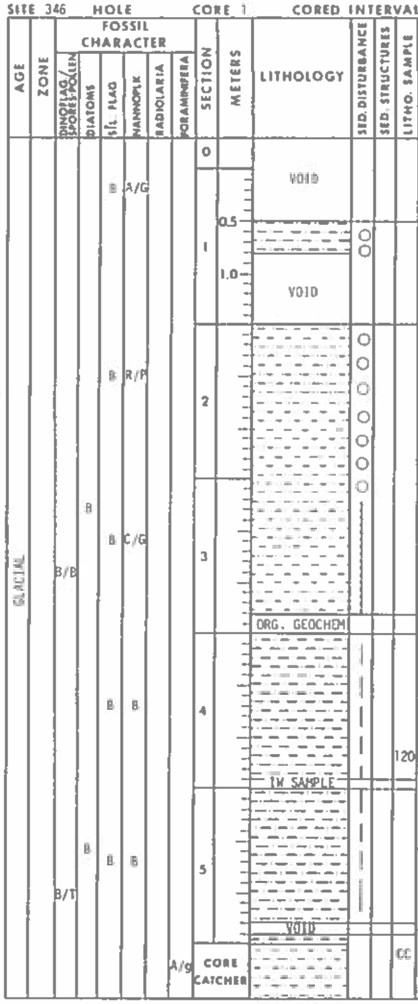
Depth below sea floor: 187.0 meters Nature: Sandy mudstone

Age: Middle Miocene? or older Measured velocity: 1.83 (Core 14) km/sec

PRINCIPAL RESULTS:

Site 346 was located on the Jan Mayen Ridge. The Glacial sediments extend from the top to a depth of 16 meters, and consist of terrigenous sandy mud, as well as mud and clay. The middle Miocene sediments consist of sandy mud and biogenic siliceous oozes characterized by a high percentage of spong spicules. Below the Miocene section is a massive terrigenous sandy mudstone. This unit was quite hard to penetrate, and is almost completely barren of fauna except for arenaceous foraminifera (benthonic), and a few badly preserved calcareous foraminifera.

SITE 346 HOLE CORE 1 CORED INTERVAL: 0.0-6.5 m



LITHOLOGIC DESCRIPTION

10YR 4/2
10YR 5/4
10YR 4/2
10YR 5/4
N5
10YR 5/4
N5
10YR 4/2

Colors: dark yellowish brown (10YR 4/2), moderate yellowish brown (10YR 5/4), medium gray (N5). Soupy, intense and moderate drilling deformation, soft.

MAJOR LITHOLOGY

SANDY MUDS AND MUDS (Smears 4-120, CC)

15%	Sand	15-20%	Quartz
10-40%	Silt	5-10%	Feldspar
45-75%	Clay	10%	Mica
		5-10%	Heavy minerals
		44-47%	Clay minerals
		TR- 1%	Foraminifera
		0- 2%	Sponge spicules
		5- 7%	Opaque minerals
		1- 5%	Authigenic CO_3(?)
		0- 1%	Radiolarians

(Heavy minerals including epidote, rutile, hornblende.)

Carbon-Carbonate (DSDP)
3-65 (1.1, 0.0, 9)

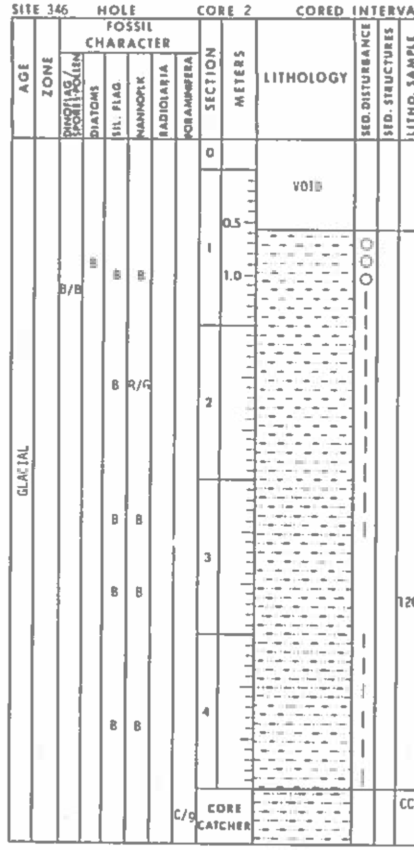
Carbon-Carbonate (PP)
1-3 (top) (0.05, 0.00)
1-3 (bottom) (0.14, 1.14)

Grain Size (DSDP)
3-58 (19.2, 44.1, 36.8)

X-Ray (PP)

3-90 (Bulk)		3-90 (<2μ)	
M	Quartz	44%	Micas
P	Plag.	12%	Kaol.
TR%	Micas	12%	Chlo.
TR%	K/C	32%	MXL (60% Mont.)
P	Calc.		

SITE 346 HOLE CORE 2 CORED INTERVAL: 6.5-16.0 m



LITHOLOGIC DESCRIPTION

10YR 5/4
10YR 4/2
10YR 4/2
10YR 5/4
N4
N3
5GY 4/1

Colors: moderate yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/2), medium dark gray (N4), and dark gray (N3). Drilling deformation soupy to moderate, soft throughout. Locally mottled (2-3).

MAJOR LITHOLOGY

MUD (Smears 3-120, CC)

10-15%	Sand	15-22%	Quartz
30-40%	Silt	8-10%	Feldspar
50-55%	Clay	3-10%	Mica
		2-15%	Heavy minerals
		5- 7%	Opaques
		50-55%	Clay minerals
		0- 1%	Glauconite
		TR%	Nannofossils
		2- 3%	Sponge spicules
		TR- 1%	Diatoms

Carbon-Carbonate (DSDP)
3-91 (0.2, 0.0, 2)

Grain Size (DSDP)
3-40 (10.0, 35.8, 54.2)

X-Ray (PP)

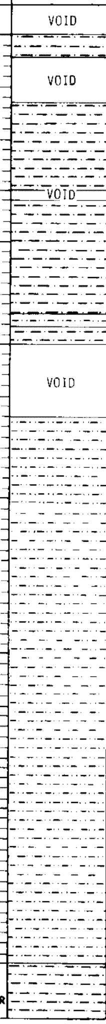
3-59 (Bulk)		3-59 (<2μ)	
M	Quar.	28%	Mica
P	Plag.	20%	Kaol.
TR%	Micas	12%	Chlo.
TR%	K/C	40%	MXL (50% Mont.)
TR%	Calc.		

SITE 346 HOLE CORE 3 CORED INTERVAL: 16.0-25.5 m

AGE | ZONE | FOSSIL CHARACTER (DINOFLAG./SPORES-POLLEN, DIATOMS, SIL. FLAG., NANNOPLK., RADIOLARIA, FORAMINIFERA) | SECTION | METERS | LITHOLOGY | SED. DISTURBANCE | SED. STRUCTURES | LITHO. SAMPLE | LITHOLOGIC DESCRIPTION

Fossil character: Section 1: B/B (Dinoflag./Spores-Pollen), B (Diatoms), B (Sil. Flag.), B (Nannoplk.); Section 2: B (Sil. Flag.), B (Nannoplk.); Section 3: B/R (Dinoflag./Spores-Pollen); Section 4: B, B; Section 5: B, B; Section 6: B, B; Core Catcher: C/q (Foraminifera)

Sections: 0, 1, 2, 3, 4, 5, 6, CORE CATCHER; Meters: 0.5, 1.0



Litho. samples: 120 (Section 2), 120 (Section 6), CC

Colors (downcore): N4 + 5Y 5/2; N4; 5Y 6/1; N5; 5Y 6/1; 5Y 4/1; 5Y 4/1; N3; N3; 5Y 4/1; N3; 5GY 4/1

Colors: light olive gray (5Y 5/2, 5Y 6/1), olive gray (5Y 4/1), medium dark gray (N4), medium gray (N5), dark gray (N3). Drilling deformation soupy to none. Soft throughout. Locally mottled and variegated.

MAJOR LITHOLOGY

SANDY MUDS AND MUD (Smears 2-120, 6-120, CC)

5-18% Sand	10-20%	Quartz
17-30% Silt	5-10%	Feldspar
65-75% Clay	5-10%	Mica
	5-15%	Heavy minerals
	0-TR%	Volcanic glass
	TR- 1%	Glauconite
	45-65%	Clay minerals
	2- 5%	Sponge spicules
	TR- 1%	Radiolarians
	0-TR%	Diatoms

Carbon-Carbonate (DSDP)
5-30 (0.7, 0.0, 6)

Grain Size (DSDP)
5-49 (11.0, 51.5, 37.5)

X-Ray (PP)

5-39 (Bulk)		5-39 (<2μ)	
M	Quar.	32%	Mica
P	Plag.	9%	Kaol.
TR%	Micas	9%	Chlo.
TR%	K/C	50%	MXL (50% Mont.)

SITE 346 HOLE CORE 4 CORED INTERVAL: 25.5-35.0 m

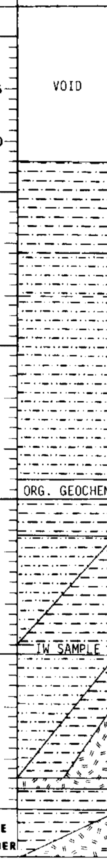
AGE | ZONE | FOSSIL CHARACTER (DINOFLAG./SPORES-POLLEN, DIATOMS, SIL. FLAG., NANNOPLK., RADIOLARIA, FORAMINIFERA) | SECTION | METERS | LITHOLOGY | SED. DISTURBANCE | SED. STRUCTURES | LITHO. SAMPLE | LITHOLOGIC DESCRIPTION

Age: MIDDLE MIOCENE

Zone: Dictyocha triacantha (S)

Fossil character: Section 2: B (Sil. Flag.), R/P (Nannoplk.); B/R (Dinoflag./Spores-Pollen), B (Diatoms); Section 3: B, B; Section 4: B (Diatoms), B/T (Dinoflag./Spores-Pollen); Section 5: B, B; R/P, B; Core Catcher: R/P, B, B (Foraminifera)

Sections: 0, 1, 2, 3, 4, 5, CORE CATCHER; Meters: 0.5, 1.0



Litho. samples: 90 (Section 2), 110, 126 (Section 5), CC

Colors (downcore): 5Y 4/1; N3; 5Y 4/1; 5Y 4/1; N3; 5Y 4/1; N3; N4, 5GY 4/1; N4; N5; 5BG 3/2; 5Y 5/2; 5BG 3/2; 5GY 4/1; 5YR 4/4

Colors: olive gray (5Y 4/1), dark gray (N3), dark greenish gray (5GY 4/1), medium dark gray (N4), medium gray (N5), grayish blue green (5BG 3/2), light olive gray (5Y 5/2), grayish brown (5YR 3/2). Deformation moderate to intense, soft to stiff.

MAJOR LITHOLOGY

MUD (Smear 2-90)

15% Sand	15%	Quartz
30-40% Silt	10%	Feldspar
45-55% Clay	3%	Mica
	7%	Heavy minerals
	7%	Opaques
	1%	Lithics (Chert)
	1%	Glauconite
	TR%	Authigenic carbonate
	55%	Clay minerals
	2%	Foraminifera

(Heavy minerals including epidote.)

MINOR LITHOLOGIES

a) VOLCANIC ASH-RICH SANDY MUD (Smears 5-110, CC)

40% Sand	5-11%	Quartz
20% Silt	2- 6%	Feldspar
40% Clay	0-TR%	Mica
	1- 3%	Heavy minerals
	20-25%	Volcanic glass
	0-10%	Palagonite
	0- 5%	Glauconite
	0- 5%	Opaques
	0-TR%	Foraminifera
	0- 3%	Diatoms
	1- 2%	Radiolarians
	1- 5%	Sponge spicules

b) ALTERED VOLCANIC ASH (Smear 5-126)

80% Sand	5%	Quartz
20% Silt	5%	Feldspar
	2%	Heavy minerals
	84%	Altered ash (Palagonite)
	TR%	Lithics
	1%	Glauconite
	TR%	Nannofossils
	3%	Sponge spicules

Carbon-Carbonate (DSDP)
3-30 (0.5, 0.0, 4)

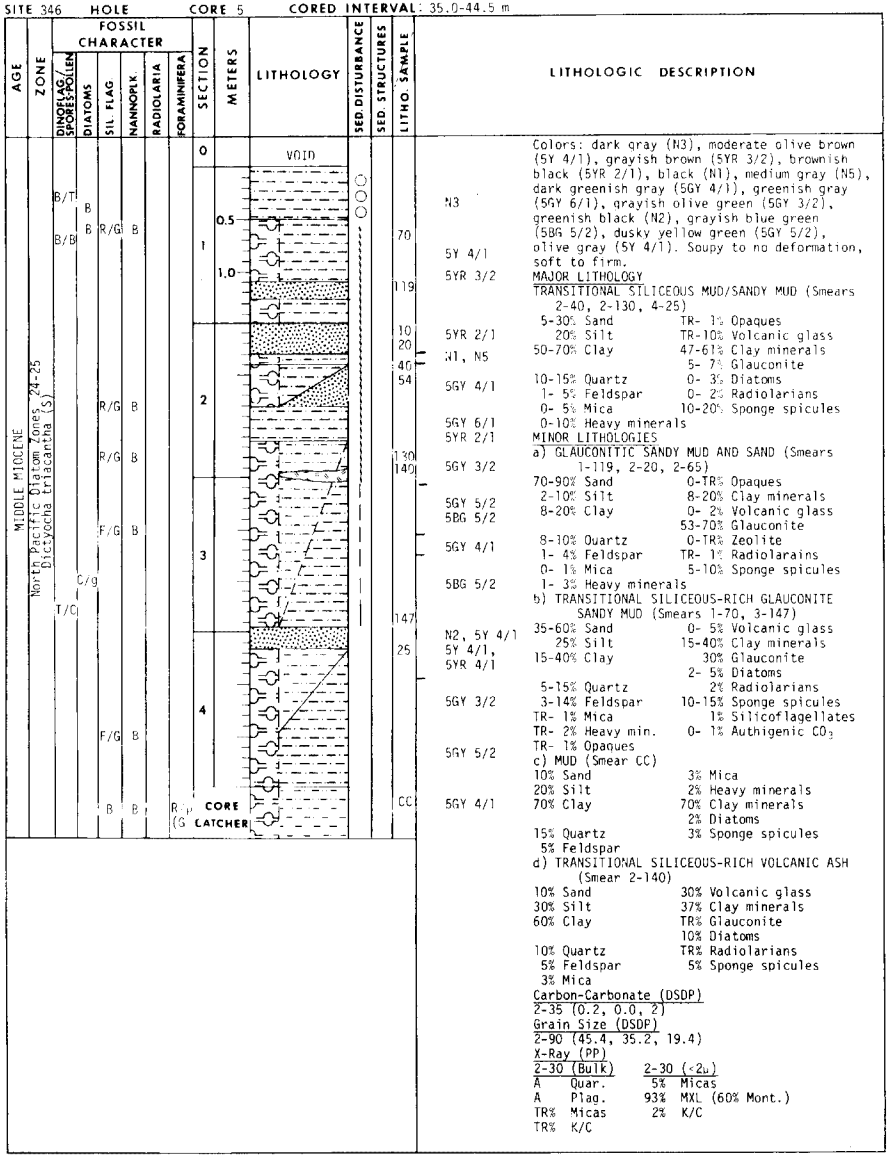
Carbon-Carbonate (PP)
4-3 (top) (0.34, 0.02)
4-3 (bottom) (0.28, 0.06)

Grain Size (DSDP)
3-50 (9.8, 47.5, 42.7)

X-Ray (PP)

3-40 (Bulk)		3-40 (<2μ)	
M	Quar.	34%	Micas
P	Plag.	8%	Kaol.
TR%	Micas	7%	Chlo.
TR%	K/C	51%	MXL (70% Mont.)

SITE 346 HOLE CORE 5 CORED INTERVAL: 35.0-44.5 m



LITHOLOGIC DESCRIPTION

Colors: dark gray (N3), moderate olive brown (5Y 4/1), grayish brown (5YR 3/2), brownish black (5YR 2/1), black (N1), medium gray (N5), dark greenish gray (5GY 4/1), greenish gray (5GY 6/1), grayish olive green (5GY 3/2), greenish black (N2), grayish blue green (5BG 5/2), dusky yellow green (5GY 5/2), olive gray (5Y 4/1). Soupy to no deformation, soft to firm.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD/SANDY MUD (Smears 2-40, 2-130, 4-25)

5-30% Sand	TR- 1% Opaques
20% Silt	TR-10% Volcanic glass
50-70% Clay	47-61% Clay minerals
	5- 7% Glauconite
10-15% Quartz	0- 3% Diatoms
1- 5% Feldspar	0- 2% Radiolarians
0- 5% Mica	10-20% Sponge spicules
0-10% Heavy minerals	

MINOR LITHOLOGIES

a) GLAUCONITIC SANDY MUD AND SAND (Smears 1-119, 2-20, 2-65)

70-90% Sand	0-TR% Opaques
2-10% Silt	8-20% Clay minerals
8-20% Clay	0- 2% Volcanic glass
	53-70% Glauconite
8-10% Quartz	0-TR% Zeolite
1- 4% Feldspar	TR- 1% Radiolarains
0- 1% Mica	5-10% Sponge spicules
1- 3% Heavy minerals	

b) TRANSITIONAL SILICEOUS-RICH GLAUCONITE SANDY MUD (Smears 1-70, 3-147)

35-60% Sand	0- 5% Volcanic glass
25% Silt	15-40% Clay minerals
15-40% Clay	30% Glauconite
	2- 5% Diatoms
5-15% Quartz	2% Radiolarians
3-14% Feldspar	10-15% Sponge spicules
TR- 1% Mica	1% Silicoflagellates
TR- 2% Heavy min.	0- 1% Authigenic CO_3
TR- 1% Opaques	

c) MUD (Smear CC)

10% Sand	3% Mica
20% Silt	2% Heavy minerals
70% Clay	70% Clay minerals
	2% Diatoms
15% Quartz	3% Sponge spicules
5% Feldspar	

d) TRANSITIONAL SILICEOUS-RICH VOLCANIC ASH (Smear 2-140)

10% Sand	30% Volcanic glass
30% Silt	37% Clay minerals
60% Clay	TR% Glauconite
	10% Diatoms
10% Quartz	TR% Radiolarians
5% Feldspar	5% Sponge spicules
3% Mica	

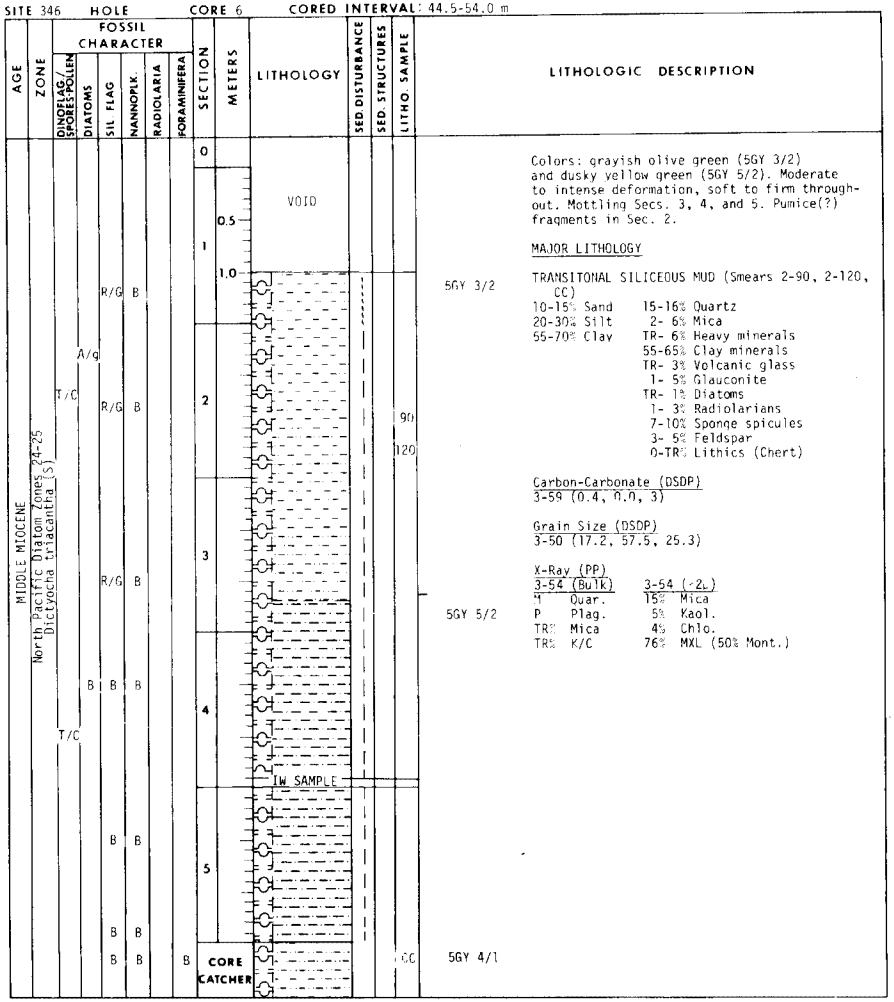
Carbon-Carbonate (DSDP)
2-35 (0.2, 0.0, 2)

Grain Size (DSDP)
2-90 (45.4, 35.2, 19.4)

X-Ray (PP)

2-30 (Bulk)		2-30 (<2μ)
A	Quar.	5% Micas
A	Plag.	93% MXL (60% Mont.)
TR%	Micas	2% K/C
TR%	K/C	

SITE 346 HOLE CORE 6 CORED INTERVAL: 44.5-54.0 m



LITHOLOGIC DESCRIPTION

Colors: grayish olive green (5GY 3/2) and dusky yellow green (5GY 5/2). Moderate to intense deformation, soft to firm throughout. Mottling Secs. 3, 4, and 5. Pumice(?) fragments in Sec. 2.

MAJOR LITHOLOGY

TRANSITONAL SILICEOUS MUD (Smears 2-90, 2-120, CC)

10-15% Sand	15-16% Quartz
20-30% Silt	2- 6% Mica
55-70% Clay	TR- 6% Heavy minerals
	55-65% Clay minerals
	TR- 3% Volcanic glass
	1- 5% Glauconite
	TR- 1% Diatoms
	1- 3% Radiolarians
	7-10% Sponge spicules
	3- 5% Feldspar
	0-TR% Lithics (Chert)

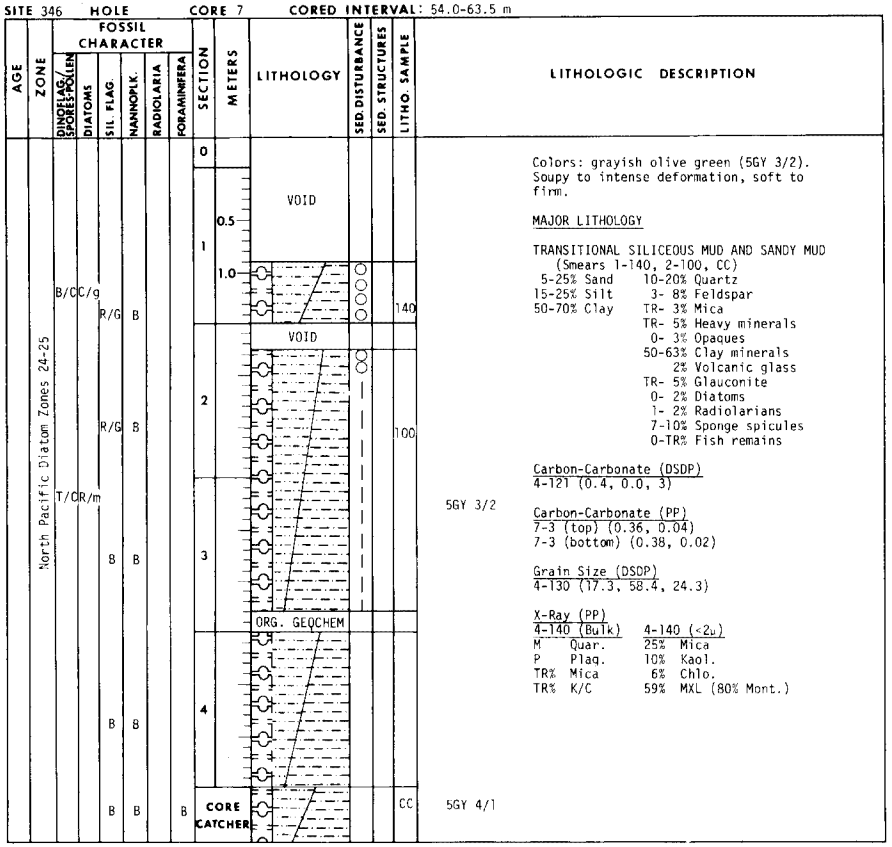
Carbon-Carbonate (DSDP)
3-59 (0.4, 0.0, 3)

Grain Size (DSDP)
3-50 (17.2, 57.5, 25.3)

X-Ray (PP)

3-54 (Bulk)		3-54 (<2μ)
A	Quar.	15% Mica
P	Plag.	5% Kaol.
TR%	Mica	4% Chlo.
TR%	K/C	76% MXL (50% Mont.)

SITE 346 HOLE CORE 7 CORED INTERVAL: 54.0-63.5 m



Colors: grayish olive green (5GY 3/2). Soupy to intense deformation, soft to firm.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD AND SANDY MUD
(Smears 1-140, 2-100, CC)

5-25% Sand	10-20% Quartz
15-25% Silt	3- 8% Feldspar
50-70% Clay	TR- 3% Mica
	TR- 5% Heavy minerals
	0- 3% Opaques
	50-63% Clay minerals
	2% Volcanic glass
	TR- 5% Glauconite
	0- 2% Diatoms
	1- 2% Radiolarians
	7-10% Sponge spicules
	0-TR% Fish remains

Carbon-Carbonate (DSDP)
4-121 (0.4, 0.0, 3)

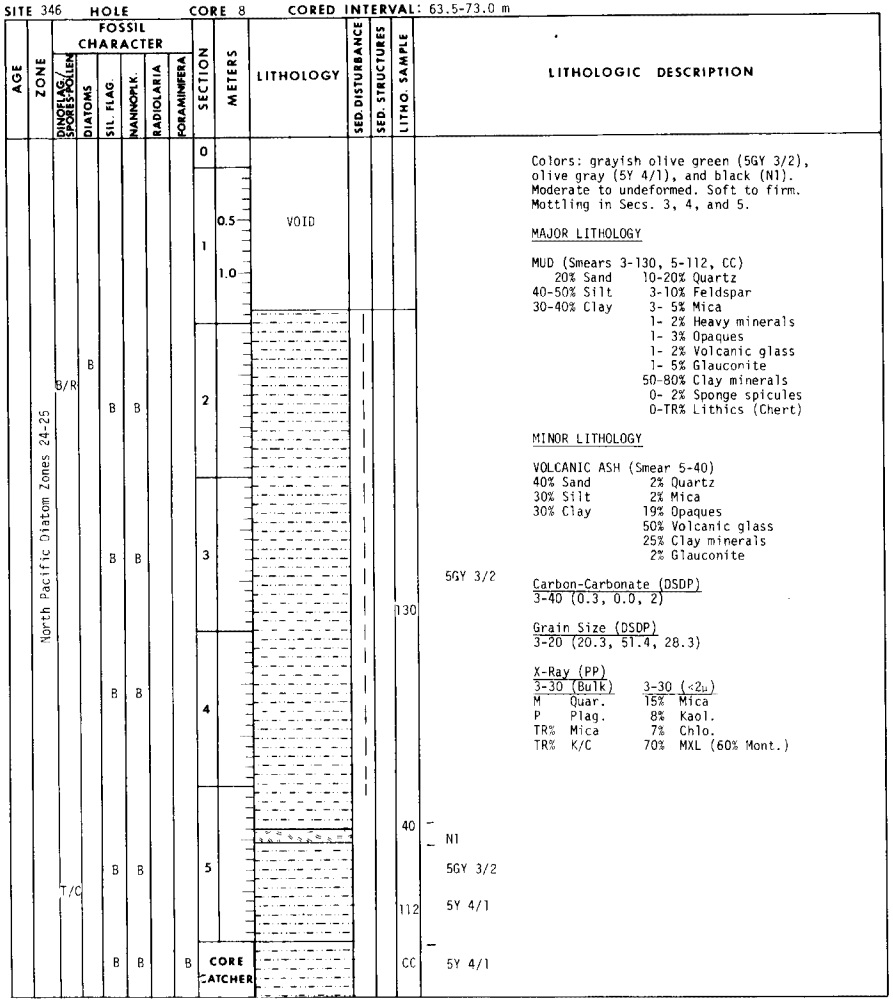
Carbon-Carbonate (PP)
7-3 (top) (0.36, 0.04)
7-3 (bottom) (0.38, 0.02)

Grain Size (DSDP)
4-130 (17.3, 58.4, 24.3)

X-Ray (PP)

4-140 (Bulk)		4-140 (<2μ)	
M	Quar.	25%	Mica
P	Plag.	10%	Kaol.
TR%	Mica	6%	Chlo.
TR%	K/C	59%	MXL (80% Mont.)

SITE 346 HOLE CORE 8 CORED INTERVAL: 63.5-73.0 m



Colors: grayish olive green (5GY 3/2), olive gray (5Y 4/1), and black (N1). Moderate to undeformed. Soft to firm. Mottling in Secs. 3, 4, and 5.

MAJOR LITHOLOGY

MUD (Smears 3-130, 5-112, CC)

20% Sand	10-20% Quartz
40-50% Silt	3-10% Feldspar
30-40% Clay	3- 5% Mica
	1- 2% Heavy minerals
	1- 3% Opaques
	1- 2% Volcanic glass
	1- 5% Glauconite
	50-80% Clay minerals
	0- 2% Sponge spicules
	0-TR% Lithics (Chert)

MINOR LITHOLOGY

VOLCANIC ASH (Smear 5-40)

40% Sand	2% Quartz
30% Silt	2% Mica
30% Clay	19% Opaques
	50% Volcanic glass
	25% Clay minerals
	2% Glauconite

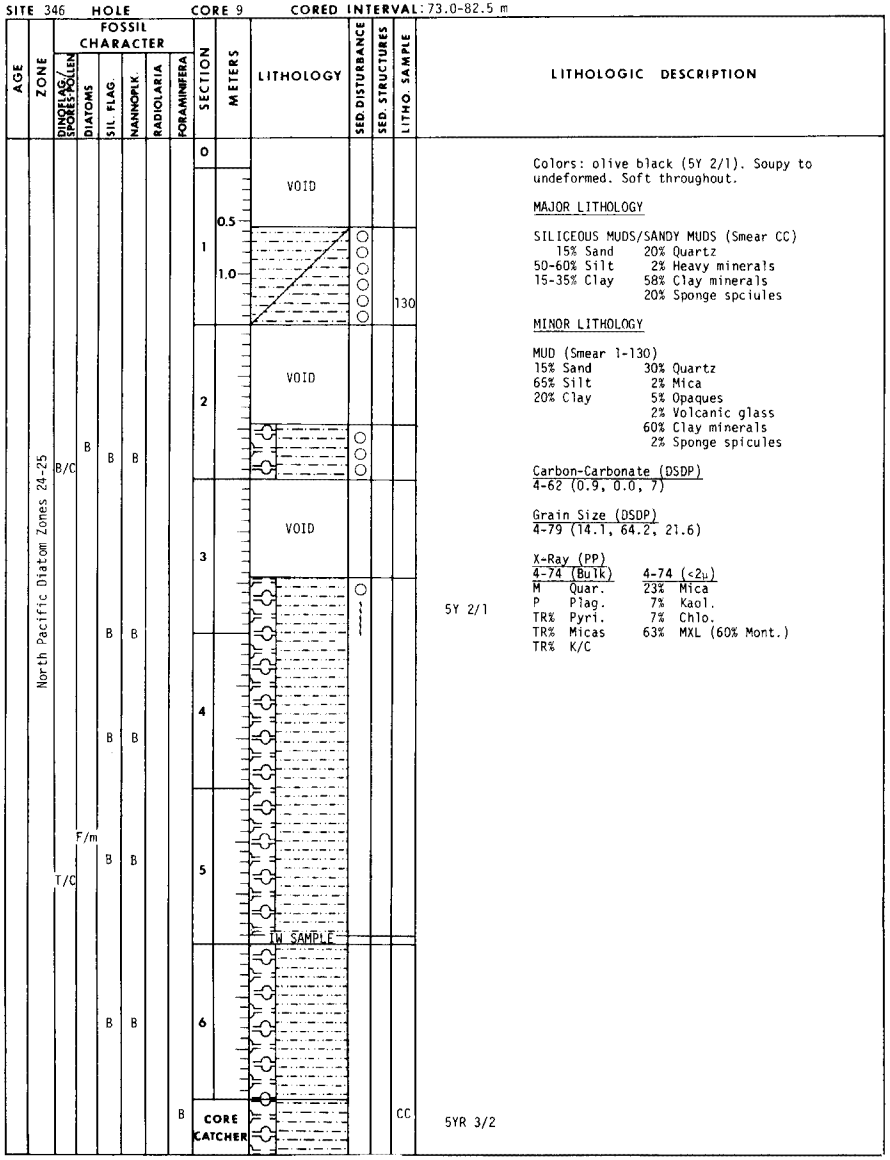
Carbon-Carbonate (DSDP)
3-40 (0.3, 0.0, 2)

Grain Size (DSDP)
3-20 (20.3, 51.4, 28.3)

X-Ray (PP)

3-30 (Bulk)		3-30 (<2μ)	
M	Quar.	15%	Mica
P	Plag.	8%	Kaol.
TR%	Mica	7%	Chlo.
TR%	K/C	70%	MXL (60% Mont.)

SITE 346 HOLE CORE 9 CORED INTERVAL: 73.0-82.5 m



LITHOLOGIC DESCRIPTION

Colors: olive black (5Y 2/1). Soupy to undeformed. Soft throughout.

MAJOR LITHOLOGY

SILICEOUS MUDS/SANDY MUDS (Smear CC)

15% Sand	20% Quartz
50-60% Silt	2% Heavy minerals
15-35% Clay	58% Clay minerals
	20% Sponge spciules

MINOR LITHOLOGY

MUD (Smear 1-130)

15% Sand	30% Quartz
65% Silt	2% Mica
20% Clay	5% Opaques
	2% Volcanic glass
	60% Clay minerals
	2% Sponge spicules

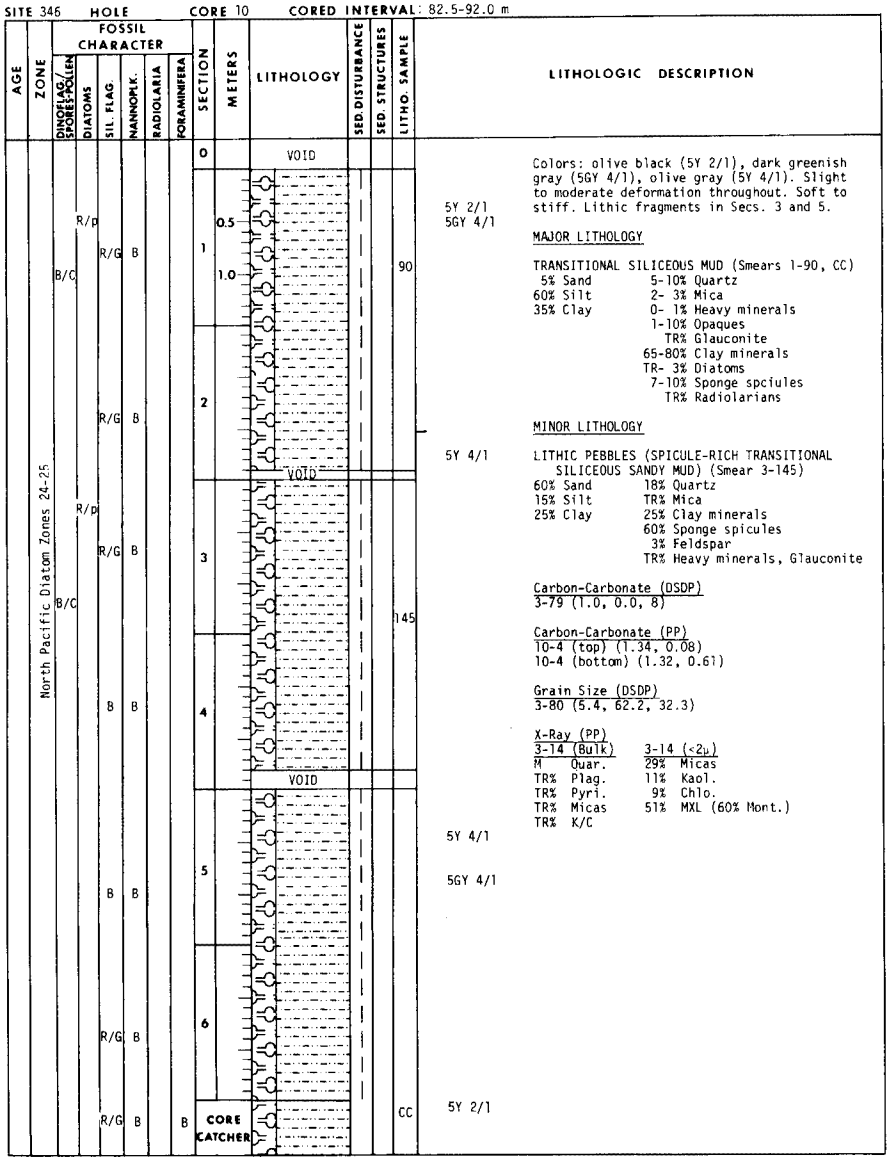
Carbon-Carbonate (DSDP)
4-62 (0.9, 0.0, 7)

Grain Size (DSDP)
4-79 (14.1, 64.2, 21.6)

X-Ray (PP)

4-74 (Bulk)		4-74 (<2μ)	
M	Quar.	23%	Mica
P	Plag.	7%	Kaol.
TR%	Pyri.	7%	Chlo.
TR%	Micas	63%	MXL (60% Mont.)
TR%	K/C		

SITE 346 HOLE CORE 10 CORED INTERVAL: 82.5-92.0 m



LITHOLOGIC DESCRIPTION

Colors: olive black (5Y 2/1), dark greenish gray (5GY 4/1), olive gray (5Y 4/1). Slight to moderate deformation throughout. Soft to stiff. Lithic fragments in Secs. 3 and 5.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smears 1-90, CC)

5% Sand	5-10% Quartz
60% Silt	2- 3% Mica
35% Clay	0- 1% Heavy minerals
	1-10% Opaques
	TR% Glauconite
	65-80% Clay minerals
	TR- 3% Diatoms
	7-10% Sponge spciules
	TR% Radiolarians

MINOR LITHOLOGY

LITHIC PEBBLES (SPICULE-RICH TRANSITIONAL SILICEOUS SANDY MUD) (Smear 3-145)

60% Sand	18% Quartz
15% Silt	TR% Mica
25% Clay	25% Clay minerals
	60% Sponge spicules
	3% Feldspar
	TR% Heavy minerals, Glauconite

Carbon-Carbonate (DSDP)
3-79 (1.0, 0.0, 8)

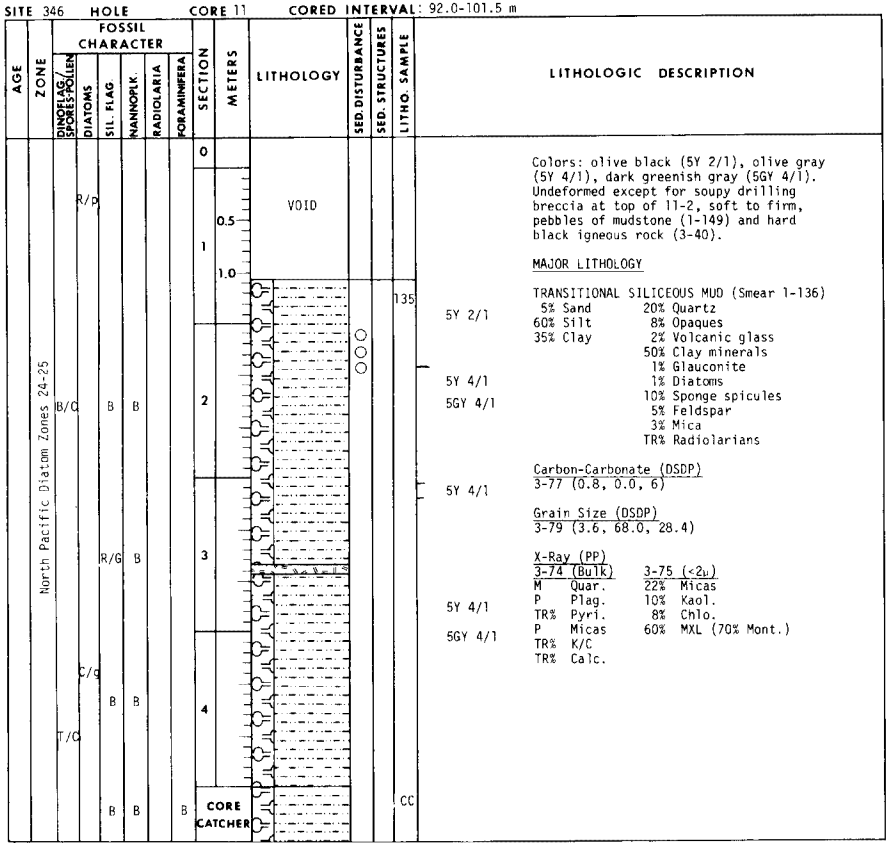
Carbon-Carbonate (PP)
10-4 (top) (1.34, 0.08)
10-4 (bottom) (1.32, 0.61)

Grain Size (DSDP)
3-80 (5.4, 62.2, 32.3)

X-Ray (PP)

3-14 (Bulk)		3-14 (<2μ)	
M	Quar.	29%	Micas
TR%	Plag.	11%	Kaol.
TR%	Pyri.	9%	Chlo.
TR%	Micas	51%	MXL (60% Mont.)
TR%	K/C		

SITE 346 HOLE CORE 11 CORED INTERVAL: 92.0-101.5 m



LITHOLOGIC DESCRIPTION

Colors: olive black (5Y 2/1), olive gray (5Y 4/1), dark greenish gray (5GY 4/1). Undeformed except for soupy drilling breccia at top of 11-2, soft to firm, pebbles of mudstone (1-149) and hard black igneous rock (3-40).

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smear 1-136)

5% Sand	20% Quartz
60% Silt	8% Opaques
35% Clay	2% Volcanic glass
	50% Clay minerals
	1% Glauconite
	1% Diatoms
	10% Sponge spicules
	5% Feldspar
	3% Mica
	TR% Radiolarians

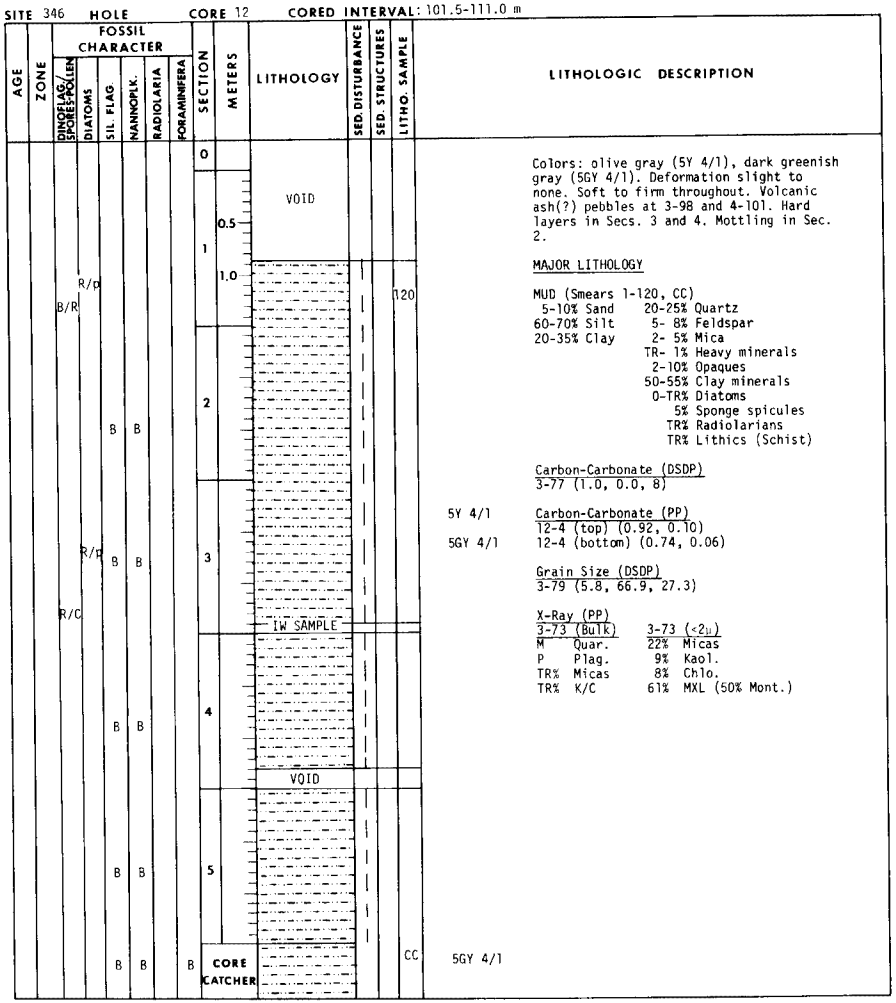
Carbon-Carbonate (DSDP)
3-77 (0.8, 0.0, 6)

Grain Size (DSDP)
3-79 (3.6, 68.0, 28.4)

X-Ray (PP)

3-74 (Bulk)		3-75 (<2μ)
M	Quar.	22% Micas
P	Plag.	10% Kaol.
TR%	Pyri.	8% Chlo.
P	Micas	60% MXL (70% Mont.)
TR%	K/C	
TR%	Calc.	

SITE 346 HOLE CORE 12 CORED INTERVAL: 101.5-111.0 m



Colors: olive gray (5Y 4/1), dark greenish gray (5GY 4/1). Deformation slight to none. Soft to firm throughout. Volcanic ash(?) pebbles at 3-98 and 4-101. Hard layers in Secs. 3 and 4. Mottling in Sec. 2.

MAJOR LITHOLOGY

MUD (Smears 1-120, CC)

5-10% Sand	20-25% Quartz
60-70% Silt	5- 8% Feldspar
20-35% Clay	2- 5% Mica
	TR- 1% Heavy minerals
	2-10% Opaques
	50-55% Clay minerals
	0-TR% Diatoms
	5% Sponge spicules
	TR% Radiolarians
	TR% Lithics (Schist)

Carbon-Carbonate (DSDP)
3-77 (1.0, 0.0, 8)

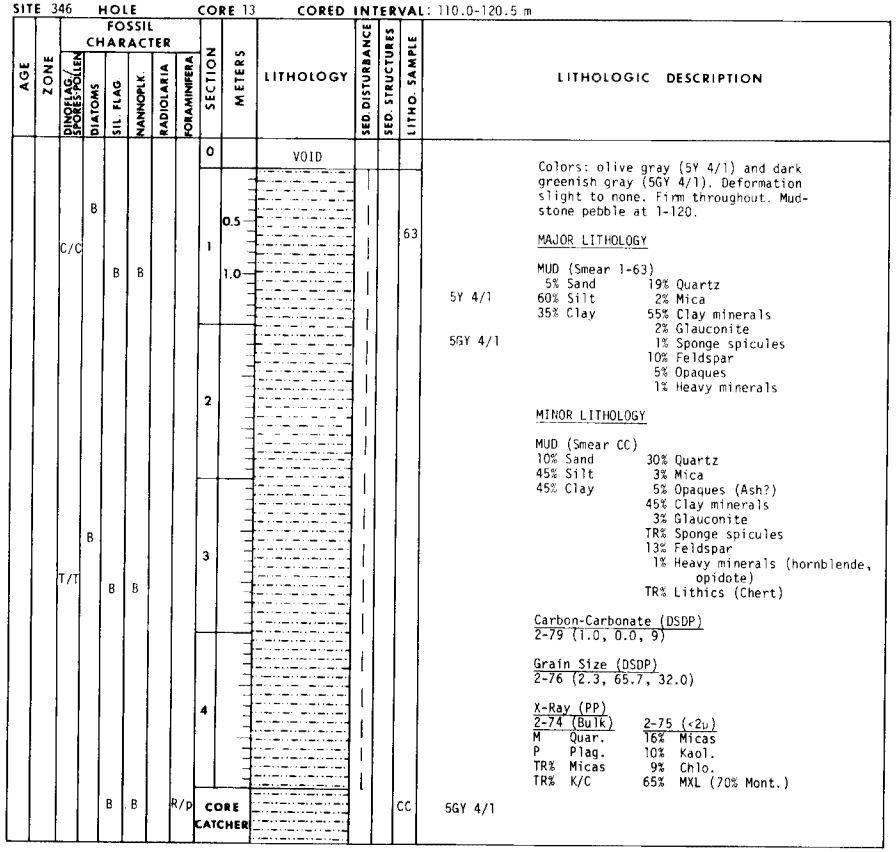
Carbon-Carbonate (PP)
12-4 (top) (0.92, 0.10)
12-4 (bottom) (0.74, 0.06)

Grain Size (DSDP)
3-79 (5.8, 66.9, 27.3)

X-Ray (PP)

3-73 (Bulk)		3-73 (<2μ)
M	Quar.	22% Micas
P	Plag.	9% Kaol.
TR%	Micas	8% Chlo.
TR%	K/C	61% MXL (50% Mont.)

SITE 346 HOLE CORE 13 CORED INTERVAL: 110.0-120.5 m



Colors: olive gray (5Y 4/1) and dark greenish gray (5GY 4/1). Deformation slight to none. Firm throughout. Mudstone pebble at 1-120.

MAJOR LITHOLOGY

MUD (Smear 1-63)

5% Sand	19% Quartz
60% Silt	2% Mica
35% Clay	55% Clay minerals
	2% Glauconite
	1% Sponge spicules
	10% Feldspar
	5% Opaques
	1% Heavy minerals

MINOR LITHOLOGY

MUD (Smear CC)

10% Sand	30% Quartz
45% Silt	3% Mica
45% Clay	5% Opaques (Ash?)
	45% Clay minerals
	3% Glauconite
	TR% Sponge spicules
	13% Feldspar
	1% Heavy minerals (hornblende, opidote)
	TR% Lithics (Chert)

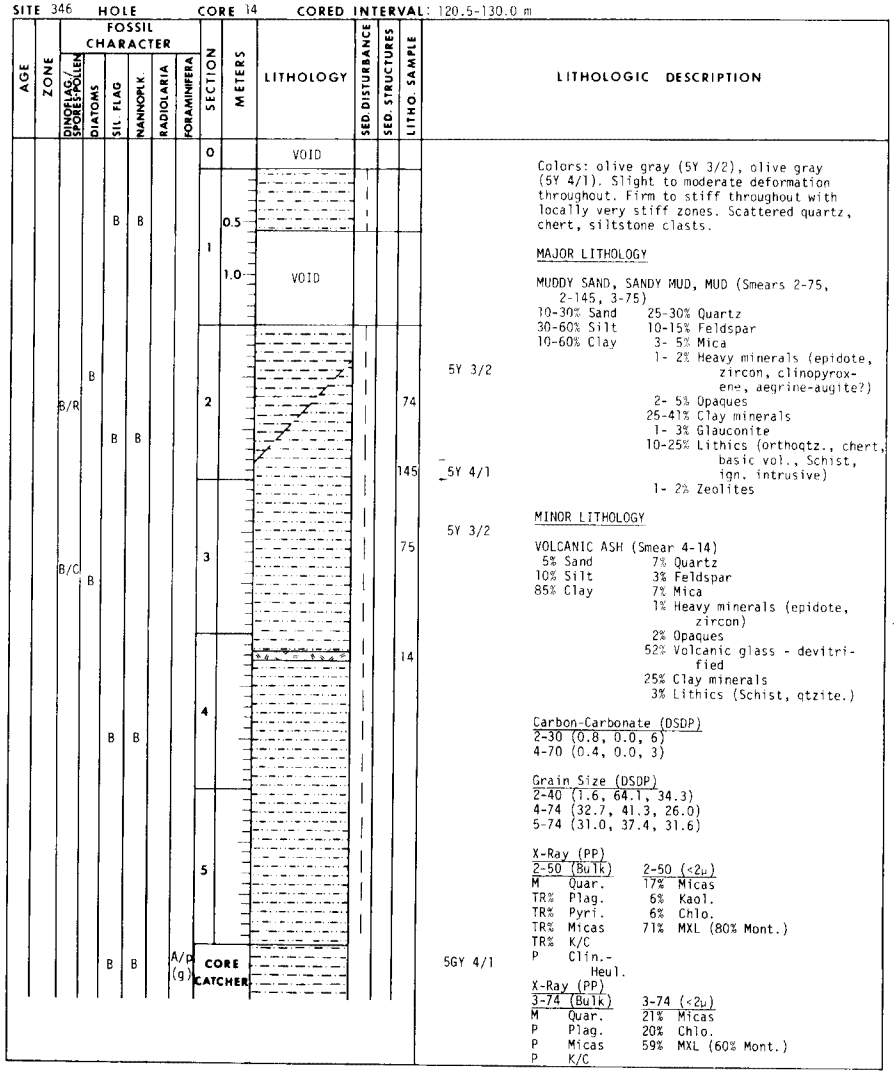
Carbon-Carbonate (DSDP)
2-79 (1.0, 0.0, 9)

Grain Size (DSDP)
2-76 (2.3, 65.7, 32.0)

X-Ray (PP)

2-74 (Bulk)		2-75 (<2μ)
M	Quar.	16% Micas
P	Plag.	10% Kaol.
TR%	Micas	9% Chlo.
TR%	K/C	65% MXL (70% Mont.)

SITE 346 HOLE CORE 14 CORED INTERVAL: 120.5-130.0 m



Colors: olive gray (5Y 3/2), olive gray (5Y 4/1). Slight to moderate deformation throughout. Firm to stiff throughout with locally very stiff zones. Scattered quartz, chert, siltstone clasts.

MAJOR LITHOLOGY

MUDDY SAND, SANDY MUD, MUD (Smears 2-75, 2-145, 3-75)

10-30% Sand	25-30% Quartz
30-60% Silt	10-15% Feldspar
10-60% Clay	3- 5% Mica
	1- 2% Heavy minerals (epidote, zircon, clinopyroxene, aegrine-augite?)
	2- 5% Opaques
	25-41% Clay minerals
	1- 3% Glauconite
	10-25% Lithics (orthoqtz., chert, basic vol., Schist, ign. intrusive)
	1- 2% Zeolites

MINOR LITHOLOGY

VOLCANIC ASH (Smear 4-14)

5% Sand	7% Quartz
10% Silt	3% Feldspar
85% Clay	7% Mica
	1% Heavy minerals (epidote, zircon)
	2% Opaques
	52% Volcanic glass - devitrified
	25% Clay minerals
	3% Lithics (Schist, qtzite.)

Carbon-Carbonate (DSDP)
2-30 (0.8, 0.0, 6)
4-70 (0.4, 0.0, 3)

Grain Size (DSDP)
2-40 (1.6, 64.1, 34.3)
4-74 (32.7, 41.3, 26.0)
5-74 (31.0, 37.4, 31.6)

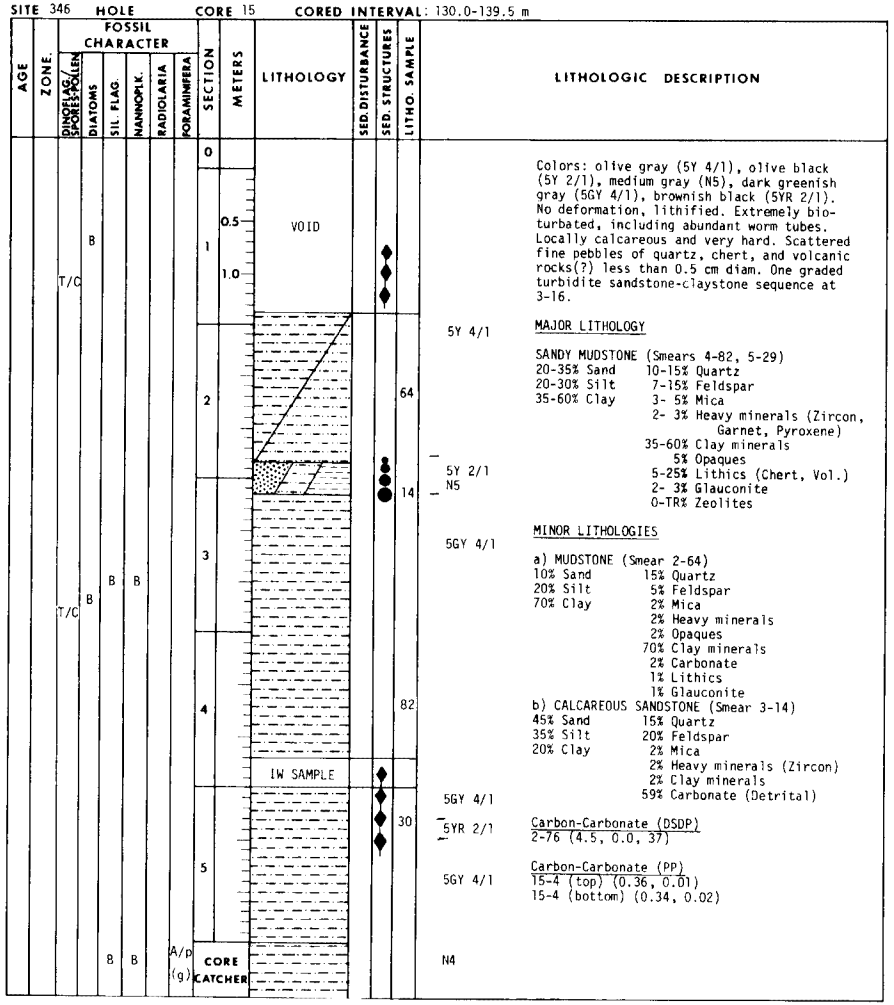
X-Ray (PP)

2-50 (Bulk)		2-50 (<2μ)
M	Quar.	17% Micas
TR%	Plag.	6% Kaol.
TR%	Pyri.	6% Chlo.
TR%	Micas	71% MXL (80% Mont.)
TR%	K/C	
P	Clin.-Heul.	

X-Ray (PP)

3-74 (Bulk)		3-74 (<2μ)
M	Quar.	21% Micas
P	Plag.	20% Chlo.
P	Micas	59% MXL (60% Mont.)
P	K/C	

SITE 346 HOLE CORE 15 CORED INTERVAL: 130.0-139.5 m



Colors: olive gray (5Y 4/1), olive black (5Y 2/1), medium gray (N5), dark greenish gray (5GY 4/1), brownish black (5YR 2/1). No deformation, lithified. Extremely bioturbated, including abundant worm tubes. Locally calcareous and very hard. Scattered fine pebbles of quartz, chert, and volcanic rocks(?) less than 0.5 cm diam. One graded turbidite sandstone-claystone sequence at 3-16.

MAJOR LITHOLOGY

SANDY MUDSTONE (Smears 4-82, 5-29)
20-35% Sand
20-30% Silt
35-60% Clay
10-15% Quartz
7-15% Feldspar
3- 5% Mica
2- 3% Heavy minerals (Zircon, Garnet, Pyroxene)
35-60% Clay minerals
5% Opaques
5-25% Lithics (Chert, Vol.)
2- 3% Glauconite
0-TR% Zeolites

MINOR LITHOLOGIES

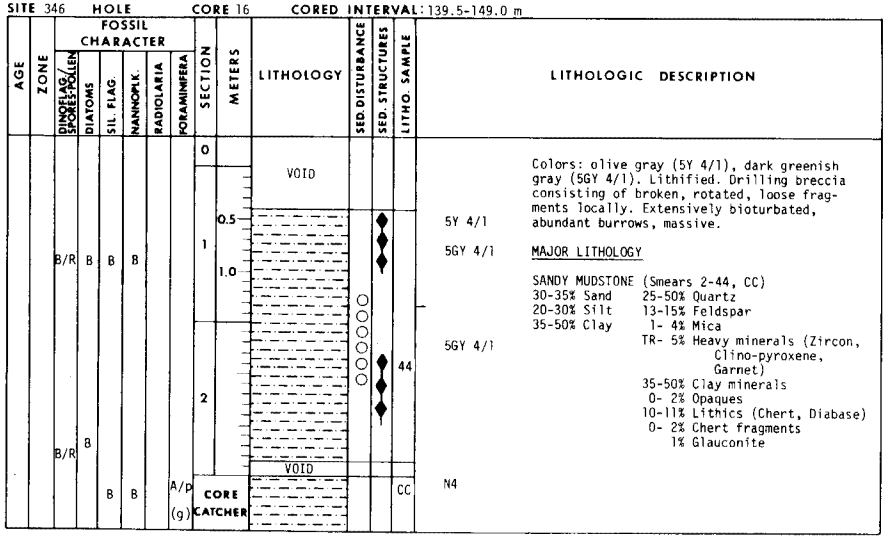
a) MUDSTONE (Smear 2-64)
10% Sand
20% Silt
70% Clay
15% Quartz
5% Feldspar
2% Mica
2% Heavy minerals
2% Opaques
70% Clay minerals
2% Carbonate
1% Lithics
1% Glauconite

b) CALCAREOUS SANDSTONE (Smear 3-14)
45% Sand
35% Silt
20% Clay
15% Quartz
20% Feldspar
2% Mica
2% Heavy minerals (Zircon)
2% Clay minerals
59% Carbonate (Detrital)

Carbon-Carbonate (DSDP)
2-76 (4.5, 0.0, 37)

Carbon-Carbonate (PP)
15-4 (top) (0.36, 0.01)
15-4 (bottom) (0.34, 0.02)

SITE 346 HOLE CORE 16 CORED INTERVAL: 139.5-149.0 m

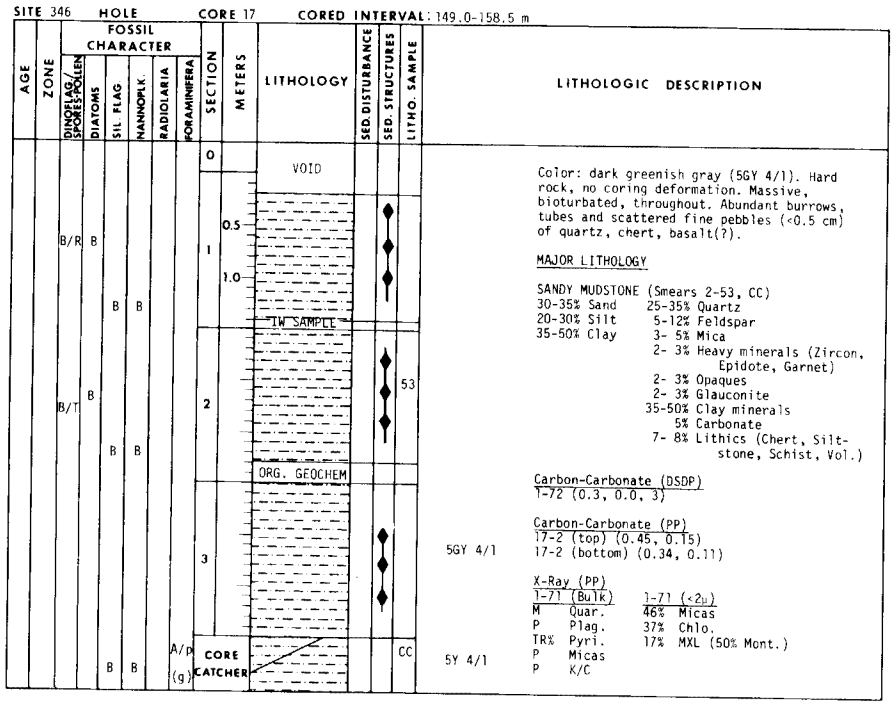


Colors: olive gray (5Y 4/1), dark greenish gray (5GY 4/1). Lithified. Drilling breccia consisting of broken, rotated, loose fragments locally. Extensively bioturbated, abundant burrows, massive.

MAJOR LITHOLOGY

SANDY MUDSTONE (Smears 2-44, CC)
30-35% Sand
20-30% Silt
35-50% Clay
25-50% Quartz
13-15% Feldspar
1- 4% Mica
TR- 5% Heavy minerals (Zircon, Clino-pyroxene, Garnet)
35-50% Clay minerals
0- 2% Opaques
10-11% Lithics (Chert, Diabase)
0- 2% Chert fragments
1% Glauconite

SITE 346 HOLE CORE 17 CORED INTERVAL: 149.0-158.5 m



Color: dark greenish gray (5GY 4/1). Hard rock, no coring deformation. Massive, bioturbated, throughout. Abundant burrows, tubes and scattered fine pebbles (<0.5 cm) of quartz, chert, basalt(?).

MAJOR LITHOLOGY

SANDY MUDSTONE (Smears 2-53, CC)
30-35% Sand
20-30% Silt
35-50% Clay
25-35% Quartz
5-12% Feldspar
3- 5% Mica
2- 3% Heavy minerals (Zircon, Epidote, Garnet)
2- 3% Opaques
2- 3% Glauconite
35-50% Clay minerals
5% Carbonate
7- 8% Lithics (Chert, Siltstone, Schist, Vol.)

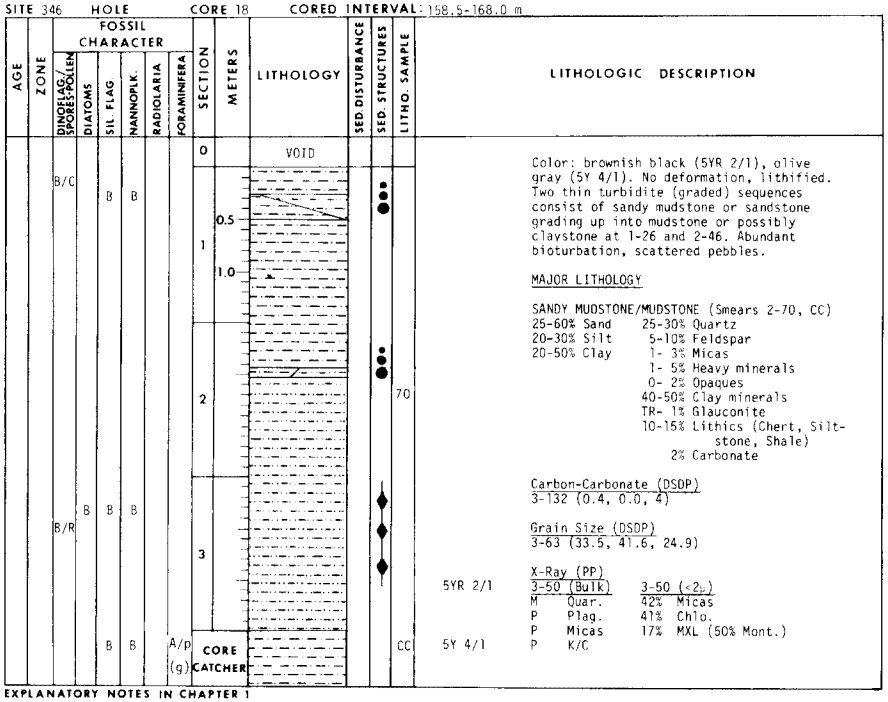
Carbon-Carbonate (DSDP)
1-72 (0.3, 0.0, 3)

Carbon-Carbonate (PP)
17-2 (top) (0.45, 0.15)
17-2 (bottom) (0.34, 0.11)

X-Ray (PP)

1-71 (Bulk)		1-71 (<2μ)
M	Quar.	46% Micas
P	Plag.	37% Chlo.
TR%	Pyri.	17% MXL (50% Mont.)
P	Micas	
P	K/C	

SITE 346 HOLE CORE 18 CORED INTERVAL: 158.5-168.0 m



LITHOLOGIC DESCRIPTION

Color: brownish black (5YR 2/1), olive gray (5Y 4/1). No deformation, lithified. Two thin turbidite (graded) sequences consist of sandy mudstone or sandstone grading up into mudstone or possibly claystone at 1-26 and 2-46. Abundant bioturbation, scattered pebbles.

MAJOR LITHOLOGY

SANDY MUDSTONE/MUDSTONE (Smears 2-70, CC)

25-60% Sand	25-30% Quartz
20-30% Silt	5-10% Feldspar
20-50% Clay	1- 3% Micas
	1- 5% Heavy minerals
	0- 2% Opaques
	40-50% Clay minerals
	TR- 1% Glauconite
	10-15% Lithics (Chert, Siltstone, Shale)
	2% Carbonate

Carbon-Carbonate (DSDP)
3-132 (0.4, 0.0, 4)

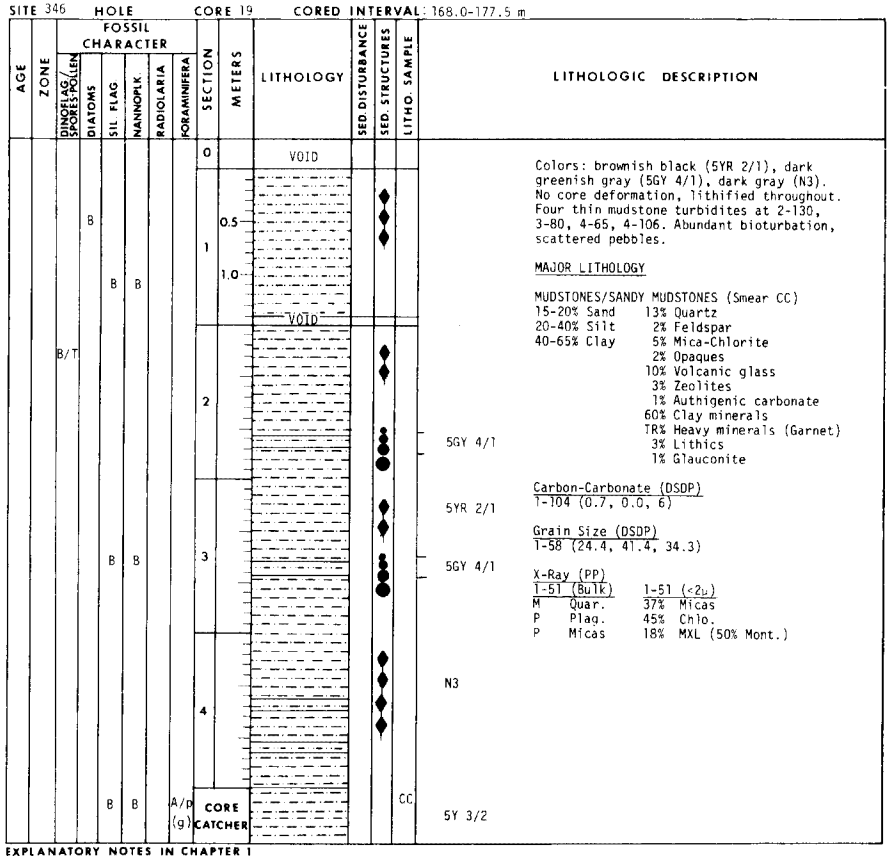
Grain Size (DSDP)
3-63 (33.5, 41.6, 24.9)

X-Ray (PP)

3-50 (Bulk)		3-50 (<2μ)
M	Quar.	42% Micas
P	Plag.	41% Chlo.
P	Micas	17% MXL (50% Mont.)
P	K/C	

EXPLANATORY NOTES IN CHAPTER 1

SITE 346 HOLE CORE 19 CORED INTERVAL: 168.0-177.5 m



LITHOLOGIC DESCRIPTION

Colors: brownish black (5YR 2/1), dark greenish gray (5GY 4/1), dark gray (N3). No core deformation, lithified throughout. Four thin mudstone turbidites at 2-130, 3-80, 4-65, 4-106. Abundant bioturbation, scattered pebbles.

MAJOR LITHOLOGY

MUDSTONES/SANDY MUDSTONES (Smear CC)

15-20% Sand	13% Quartz
20-40% Silt	2% Feldspar
40-65% Clay	5% Mica-Chlorite
	2% Opaques
	10% Volcanic glass
	3% Zeolites
	1% Authigenic carbonate
	60% Clay minerals
	TR% Heavy minerals (Garnet)
	3% Lithics
	1% Glauconite

Carbon-Carbonate (DSDP)
1-104 (0.7, 0.0, 6)

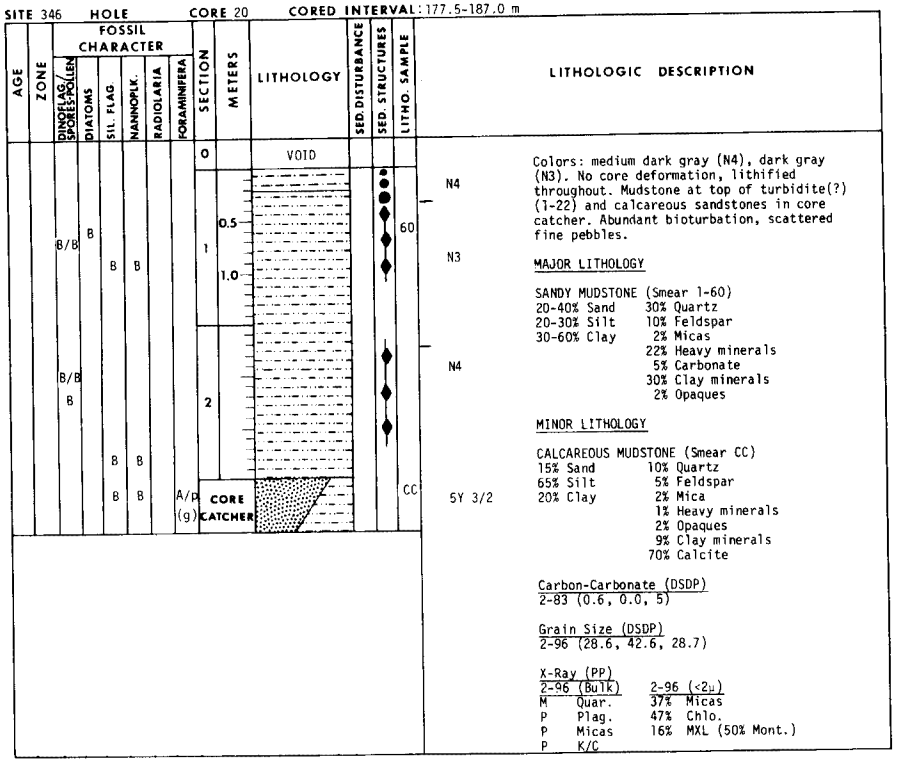
Grain Size (DSDP)
1-58 (24.4, 41.4, 34.3)

X-Ray (PP)

1-51 (Bulk)		1-51 (<2μ)
M	Quar.	37% Micas
P	Plag.	45% Chlo.
P	Micas	18% MXL (50% Mont.)

EXPLANATORY NOTES IN CHAPTER 1

SITE 346 HOLE CORE 20 CORED INTERVAL: 177.5-187.0 m



Colors: medium dark gray (N4), dark gray (N3). No core deformation, lithified throughout. Mudstone at top of turbidite(?) (1-22) and calcareous sandstones in core catcher. Abundant bioturbation, scattered fine pebbles.

MAJOR LITHOLOGY

SANDY MUDSTONE (Smear 1-60)

20-40% Sand	30% Quartz
20-30% Silt	10% Feldspar
30-60% Clay	2% Micas
	22% Heavy minerals
	5% Carbonate
	30% Clay minerals
	2% Opaques

MINOR LITHOLOGY

CALCAREOUS MUDSTONE (Smear CC)

15% Sand	10% Quartz
65% Silt	5% Feldspar
20% Clay	2% Mica
	1% Heavy minerals
	2% Opaques
	9% Clay minerals
	70% Calcite

Carbon-Carbonate (DSDP)
2-83 (0.6, 0.0, 5)

Grain Size (DSDP)
2-96 (28.6, 42.6, 28.7)

X-Ray (PP)

2-96 (Bulk)		2-96 (<2μ)
M	Quar.	37% Micas
P	Plag.	47% Chlo.
P	Micas	16% MXL (50% Mont.)
P	K/C	

DEEP SEA DRILLING PROJECT

LEG 38 SITE 347

SITE SUMMARY SHEET

POSITION: Latitude: 69°52.31'N Longitude: 08°41.80'W

Water depth (from sea level): 745.0 corrected meters (Echo sounding)

Bottom felt at: 762.0 meters (drill pipe) Penetration: 190.0 meters

Number of Holes: 1 Number of Cores: 4

Total length of cored section: 24.0 m Total core recovered: 12.15 m

Percentage of core recovery: 50.6%

OLDEST SEDIMENT CORED:

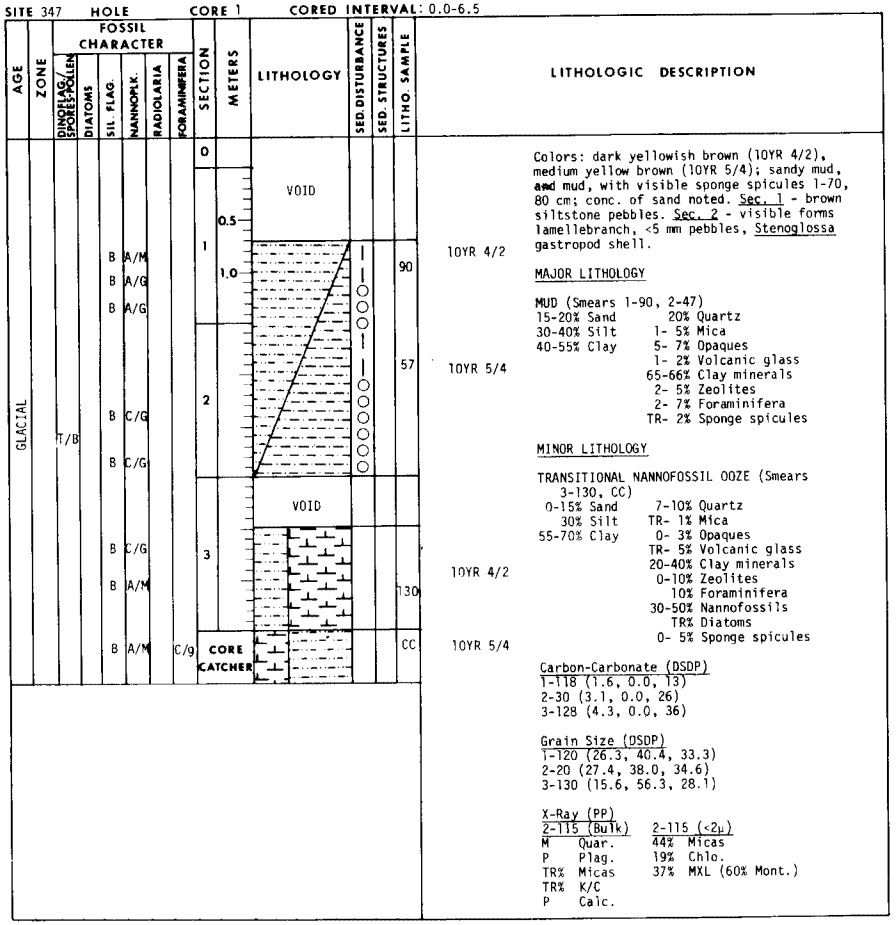
Depth below sea floor: 190.0 meters Nature: Sandy mudstone

Age: "Glacial" or older Measured velocity: 3.082 (Core 3) km/sec

PRINCIPAL RESULTS:

Site 347 was located on the Jan Mayen Ridge about 1 nautical mile southwest of Site 346, at the edge of the ridge platform. It was hoped that basement would be reached at a shallower depth closer to the edge. The seismic reflection record was unclear near the unconformity at 120 meters, and it was suspected that basement might lie below it. However, even after 190 meters were drilled, basement was not reached. Since progress was slow and there was no clear indication of when basement might be reached, the hole was terminated.

SITE 347 HOLE CORE 1 CORED INTERVAL: 0.0-6.5



LITHOLOGIC DESCRIPTION

Colors: dark yellowish brown (10YR 4/2), medium yellow brown (10YR 5/4); sandy mud, and mud, with visible sponge spicules 1-70, 80 cm; conc. of sand noted. Sec. 1 - brown siltstone pebbles. Sec. 2 - visible forms lamellebranch, <5 mm pebbles, Stenoglossa gastropod shell.

MAJOR LITHOLOGY

MUD (Smears 1-90, 2-47)

15-20% Sand	20% Quartz
30-40% Silt	1- 5% Mica
40-55% Clay	5- 7% Opaques
	1- 2% Volcanic glass
	65-66% Clay minerals
	2- 5% Zeolites
	2- 7% Foraminifera
	TR- 2% Sponge spicules

MINOR LITHOLOGY

TRANSITIONAL NANNOFOSSIL OOZE (Smears 3-130, CC)

0-15% Sand	7-10% Quartz
30% Silt	TR- 1% Mica
55-70% Clay	0- 3% Opaques
	TR- 5% Volcanic glass
	20-40% Clay minerals
	0-10% Zeolites
	10% Foraminifera
	30-50% Nannofossils
	TR% Diatoms
	0- 5% Sponge spicules

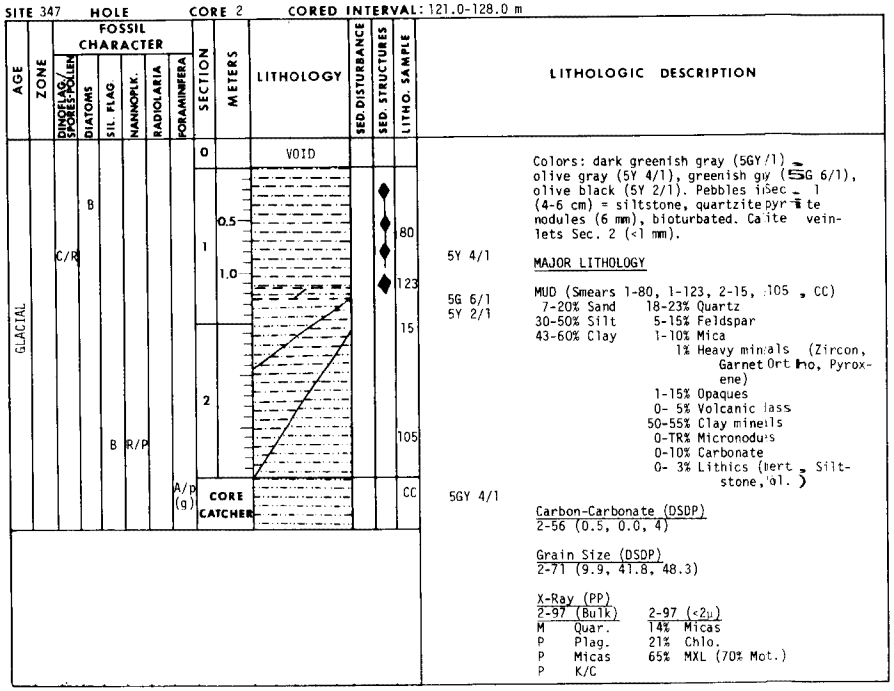
Carbon-Carbonate (DSDP)
1-118 (1.6, 0.0, 13)
2-30 (3.1, 0.0, 26)
3-128 (4.3, 0.0, 36)

Grain Size (DSDP)
1-120 (26.3, 40.4, 33.3)
2-20 (27.4, 38.0, 34.6)
3-130 (15.6, 56.3, 28.1)

X-Ray (PP)

2-115 (Bulk)		2-115 (<2μ)
M	Quar.	44% Micas
P	Plag.	19% Chlo.
TR%	Micas	37% MXL (60% Mont.)
TR%	K/C	
P	Calc.	

SITE 347 HOLE CORE 2 CORED INTERVAL: 121.0-128.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), olive gray (5Y 4/1), greenish gy (5G 6/1), olive black (5Y 2/1). Pebbles in Sec. 1 (4-6 cm) = siltstone, quartzite pyrite nodules (6 mm), bioturbated. Calcite veinlets Sec. 2 (<1 mm).

MAJOR LITHOLOGY

MUD (Smears 1-80, 1-123, 2-15, 105, CC)

7-20% Sand	18-23% Quartz
30-50% Silt	5-15% Feldspar
43-60% Clay	1-10% Mica
	1% Heavy minerals (Zircon, Garnet Ortho, Pyroxene)
	1-15% Opaques
	0- 5% Volcanic glass
	50-55% Clay minerals
	0-TR% Micronodules
	0-10% Carbonate
	0- 3% Lithics (Chert, Siltstone, Vol.)

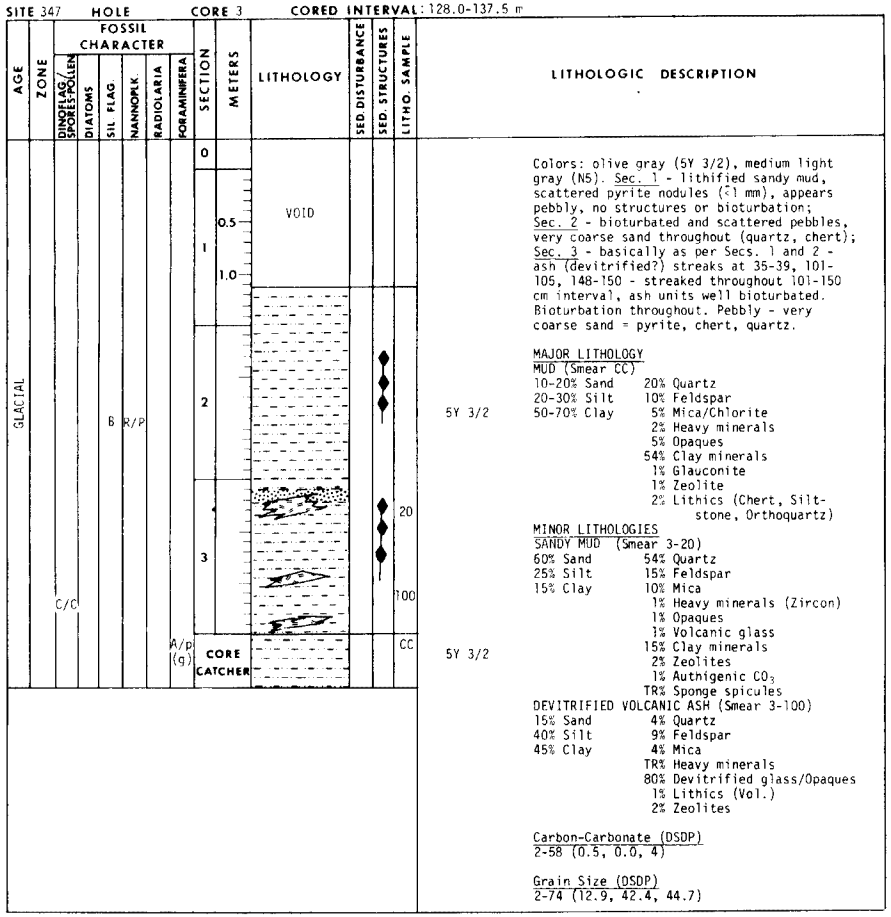
Carbon-Carbonate (DSDP)
2-56 (0.5, 0.0, 4)

Grain Size (DSDP)
2-71 (9.9, 41.8, 48.3)

X-Ray (PP)

2-97 (Bulk)		2-97 (<2μ)
M	Quar.	14% Micas
P	Plag.	21% Chlo.
P	Micas	65% MXL (70% Mot.)
P	K/C	

SITE 347 HOLE CORE 3 CORED INTERVAL: 128.0-137.5 m



Colors: olive gray (5Y 3/2), medium light gray (N5). Sec. 1 - lithified sandy mud, scattered pyrite nodules (<1 mm), appears pebbly, no structures or bioturbation; Sec. 2 - bioturbated and scattered pebbles, very coarse sand throughout (quartz, chert); Sec. 3 - basically as per Secs. 1 and 2 - ash (devitrified?) streaks at 35-39, 101-105, 148-150 - streaked throughout 101-150 cm interval, ash units well bioturbated. Bioturbation throughout. Pebbly - very coarse sand = pyrite, chert, quartz.

MAJOR LITHOLOGY

MUD (Smear CC)

10-20% Sand	20% Quartz
20-30% Silt	10% Feldspar
50-70% Clay	5% Mica/Chlorite
	2% Heavy minerals
	5% Opaques
	54% Clay minerals
	1% Glauconite
	1% Zeolite
	2% Lithics (Chert, Siltstone, Orthoquartz)

MINOR LITHOLOGIES

SANDY MUD (Smear 3-20)

60% Sand	54% Quartz
25% Silt	15% Feldspar
15% Clay	10% Mica
	1% Heavy minerals (Zircon)
	1% Opaques
	1% Volcanic glass
	15% Clay minerals
	2% Zeolites
	1% Authigenic CO_3
	TR% Sponge spicules

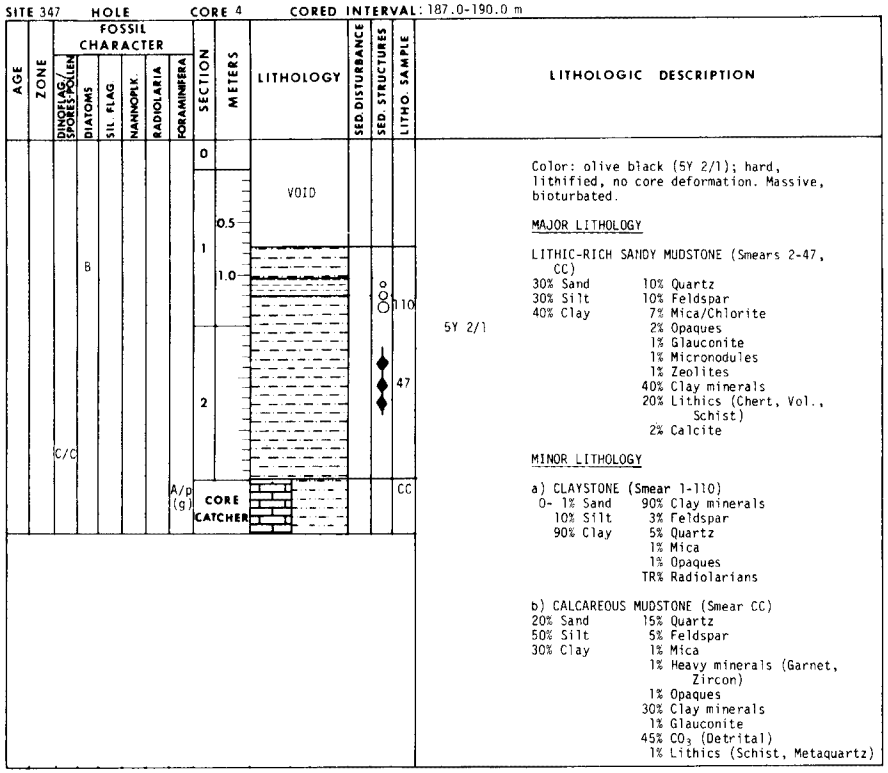
DEVITRIFIED VOLCANIC ASH (Smear 3-100)

15% Sand	4% Quartz
40% Silt	9% Feldspar
45% Clay	4% Mica
	TR% Heavy minerals
	80% Devitrified glass/Opaques
	1% Lithics (Vol.)
	2% Zeolites

Carbon-Carbonate (DSDP)
2-58 (0.5, 0.0, 4)

Grain Size (DSDP)
2-74 (12.9, 42.4, 44.7)

SITE 347 HOLE CORE 4 CORED INTERVAL: 187.0-190.0 m



Color: olive black (5Y 2/1); hard, lithified, no core deformation. Massive, bioturbated.

MAJOR LITHOLOGY

LITHIC-RICH SANDY MUDSTONE (Smears 2-47, CC)

30% Sand	10% Quartz
30% Silt	10% Feldspar
40% Clay	7% Mica/Chlorite
	2% Opaques
	1% Glauconite
	1% Micronodules
	1% Zeolites
	40% Clay minerals
	20% Lithics (Chert, Vol., Schist)
	2% Calcite

MINOR LITHOLOGY

a) CLAYSTONE (Smear 1-110)

0- 1% Sand	90% Clay minerals
10% Silt	3% Feldspar
90% Clay	5% Quartz
	1% Mica
	1% Opaques
	TR% Radiolarians

b) CALCAREOUS MUDSTONE (Smear CC)

20% Sand	15% Quartz
50% Silt	5% Feldspar
30% Clay	1% Mica
	1% Heavy minerals (Garnet, Zircon)
	1% Opaques
	30% Clay minerals
	1% Glauconite
	45% CO_3 (Detrital)
	1% Lithics (Schist, Metaquartz)

DEEP SEA DRILLING PROJECT

LEG 38 SITE 348

SITE SUMMARY SHEET

POSITION: Latitude: 68°30.18'N Longitude: 12°27.72'W

Water depth (from sea level): 1763.0 corrected meters (Echo sounding)

Bottom felt at: 1777.0 meters (drill pipe) Penetration: 544.0 meters

Number of Holes: 1 Number of Cores: 34

Total length of cored section: 316.0 m Total core recovered: 215.1 m

Percentage of core recovery: 68.0%

OLDEST SEDIMENT CORED:

Depth below sea floor: 256.0 meters Nature: Mud/mudstone

Age: Lower/middle Miocene (Core 18) Measured velocity: 2.05 km/sec

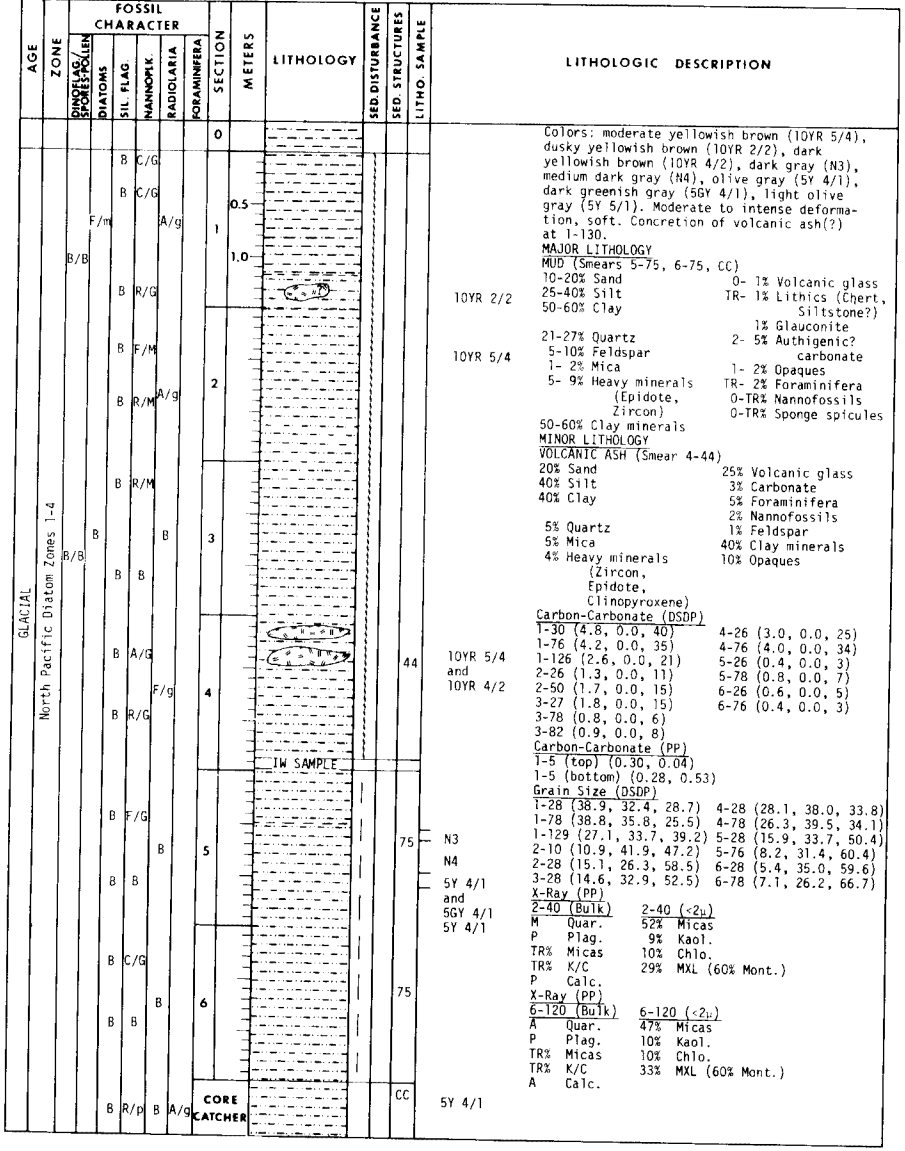
BASEMENT:

Depth below sea floor: 526.8 meters (drilled) Nature: Variolitic basalt

PRINCIPAL RESULTS:

This site is located in an area of well-defined linear magnetic anomalies on the Icelandic Plateau, east of the 10 m.y. isochron of the Iceland-Jan Mayen Ridge. It is west of the magnetically quiet Jan Mayen Ridge. Glacial sediments consisting of a mixture of terrigenous mud, sandy mud and clay, with occasional layers of volcanic ash, extend to 47 meters. Upper Pliocene to lower middle Miocene, extending from 47 to 256 meters, contains biogenic siliceous sediments which also include terrigenous clay and mud. This underlying lower/middle Miocene unit consists almost entirely of terrigenous sediments which lie on basement. Basement is composed of tholeiitic basalt, which varies in texture from fine to medium grained, but contains no pillow lavas. No distinct opaque layer was found. Most likely the "opaque" layer is the basalt itself. Very tentative estimates of sediment age suggest an age of 25 m.y. for the basalt.

SITE 348 HOLE CORE 1 CORED INTERVAL: 0.0-9.0 m



Colors: moderate yellowish brown (10YR 5/4), dusky yellowish brown (10YR 2/2), dark yellowish brown (10YR 4/2), dark gray (N3), medium dark gray (N4), olive gray (5Y 4/1), dark greenish gray (5GY 4/1), light olive gray (5Y 5/1). Moderate to intense deformation, soft. Concretion of volcanic ash(?) at 1-130.

MAJOR LITHOLOGY

MUD (Smears 5-75, 6-75, CC)

10-20% Sand
25-40% Silt
50-60% Clay

21-27% Quartz
5-10% Feldspar
1- 2% Mica
5- 9% Heavy minerals (Epidote, Zircon)
50-60% Clay minerals

0- 1% Volcanic glass
TR- 1% Lithics (Chert, Siltstone?)
1% Glauconite
2- 5% Authigenic? carbonate
1- 2% Opaques
TR- 2% Foraminifera
0-TR% Nannofossils
0-TR% Sponge spicules

MINOR LITHOLOGY

VOLCANIC ASH (Smear 4-44)

20% Sand
40% Silt
40% Clay

5% Quartz
5% Mica
4% Heavy minerals (Zircon, Epidote, Clinopyroxene)

25% Volcanic glass
3% Carbonate
5% Foraminifera
2% Nannofossils
40% Clay minerals
10% Opaques

Carbon-Carbonate (DSDP)

1-30 (4.8, 0.0, 40)
1-76 (4.2, 0.0, 35)
1-126 (2.6, 0.0, 21)
2-26 (1.3, 0.0, 11)
2-50 (1.7, 0.0, 15)
3-27 (1.8, 0.0, 15)
3-78 (0.8, 0.0, 6)
3-82 (0.9, 0.0, 8)

4-26 (3.0, 0.0, 25)
4-76 (4.0, 0.0, 34)
5-26 (0.4, 0.0, 3)
5-78 (0.8, 0.0, 7)
6-26 (0.6, 0.0, 5)
6-76 (0.4, 0.0, 3)

Carbon-Carbonate (PP)

1-5 (top) (0.30, 0.04)
1-5 (bottom) (0.28, 0.53)

Grain Size (DSDP)

1-28 (38.9, 32.4, 28.7)
1-78 (38.8, 35.8, 25.5)
1-129 (27.1, 33.7, 39.2)
2-10 (10.9, 41.9, 47.2)
2-28 (15.1, 26.3, 58.5)
3-28 (14.6, 32.9, 52.5)

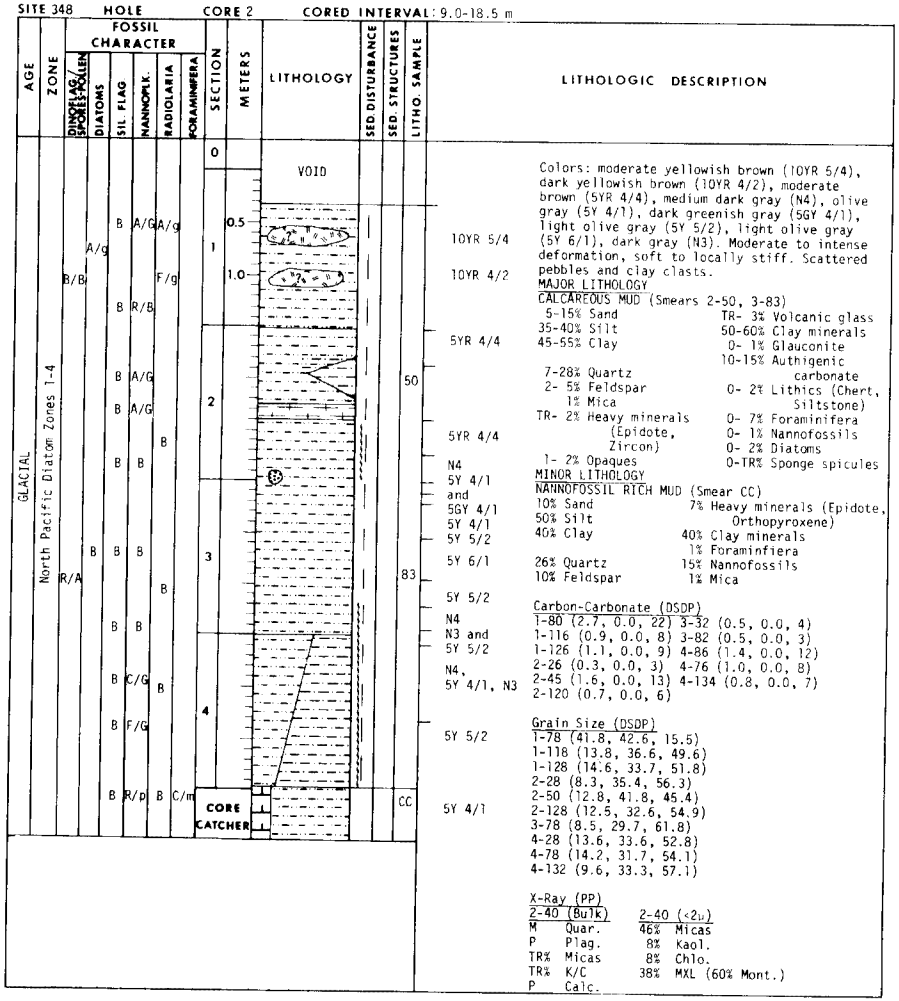
4-28 (28.1, 38.0, 33.8)
4-78 (26.3, 39.5, 34.1)
5-28 (15.9, 33.7, 50.4)
5-76 (8.2, 31.4, 60.4)
6-28 (5.4, 35.0, 59.6)
6-78 (7.1, 26.2, 66.7)

X-Ray (PP)

2-40 (Bulk)		2-40 (<2μ)	
M	Quar.	52%	Micas
P	Plag.	9%	Kaol.
TR%	Micas	10%	Chlo.
TR%	K/C	29%	MXL (60% Mont.)
P	Calc.		

6-120 (Bulk)		6-120 (<2μ)	
A	Quar.	47%	Micas
P	Plag.	10%	Kaol.
TR%	Micas	10%	Chlo.
TR%	K/C	33%	MXL (60% Mont.)
A	Calc.		

SITE 348 HOLE CORE 2 CORED INTERVAL: 9.0-18.5 m



Colors: moderate yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/2), moderate brown (5YR 4/4), medium dark gray (N4), olive gray (5Y 4/1), dark greenish gray (5GY 4/1), light olive gray (5Y 5/2), light olive gray (5Y 6/1), dark gray (N3). Moderate to intense deformation, soft to locally stiff. Scattered pebbles and clay clasts.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smears 2-50, 3-83)

5-15% Sand
35-40% Silt
45-55% Clay

7-28% Quartz
2- 5% Feldspar
1% Mica
TR- 2% Heavy minerals (Epidote, Zircon)
1- 2% Opaques

TR- 3% Volcanic glass
50-60% Clay minerals
0- 1% Glauconite
10-15% Authigenic carbonate
0- 2% Lithics (Chert, Siltstone)
0- 7% Foraminifera
0- 1% Nannofossils
0- 2% Diatoms
0-TR% Sponge spicules

MINOR LITHOLOGY

NANNOFOSSIL RICH MUD (Smear CC)

10% Sand
50% Silt
40% Clay

26% Quartz
10% Feldspar

7% Heavy minerals (Epidote, Orthopyroxene)
40% Clay minerals
1% Foraminfiera
15% Nannofossils
1% Mica

Carbon-Carbonate (DSDP)

1-80 (2.7, 0.0, 22)
1-116 (0.9, 0.0, 8)
1-126 (1.1, 0.0, 9)
2-26 (0.3, 0.0, 3)
2-45 (1.6, 0.0, 13)
2-120 (0.7, 0.0, 6)

3-32 (0.5, 0.0, 4)
3-82 (0.5, 0.0, 3)
4-86 (1.4, 0.0, 12)
4-76 (1.0, 0.0, 8)
4-134 (0.8, 0.0, 7)

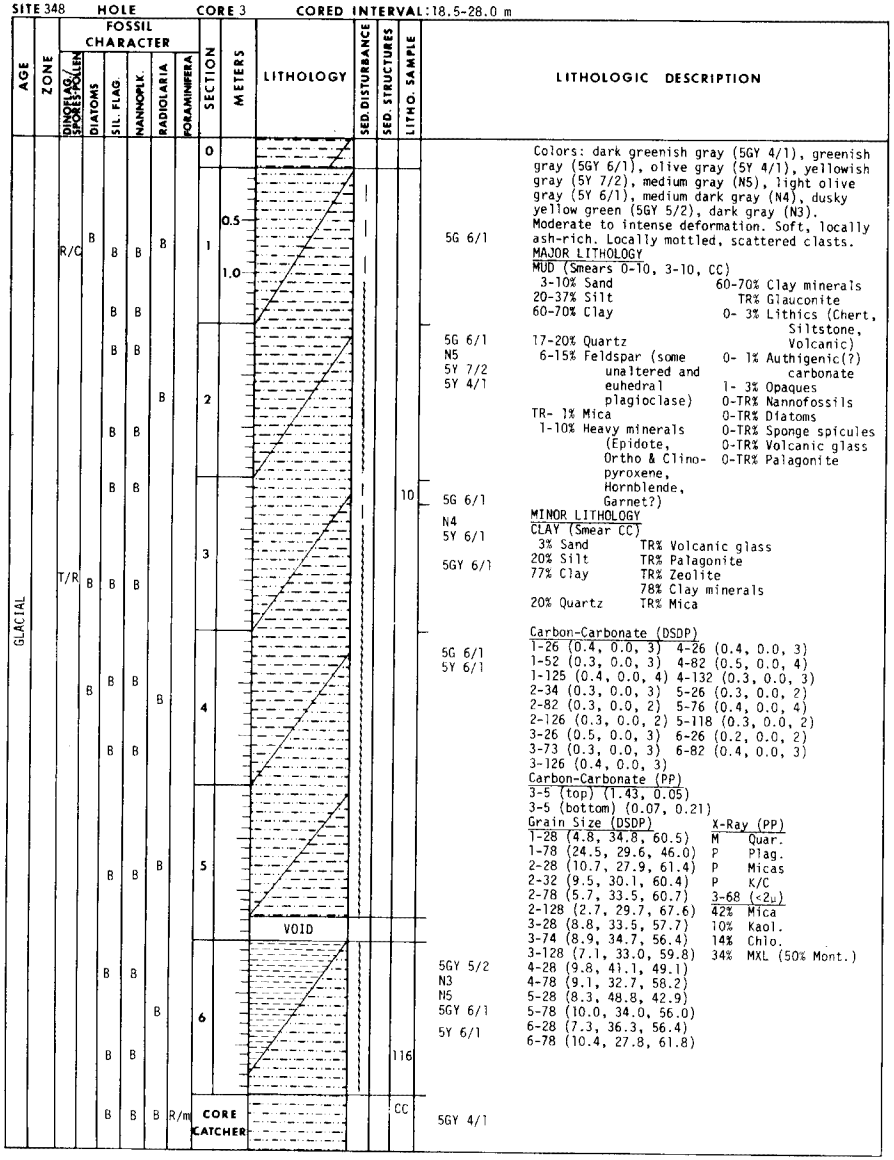
Grain Size (DSDP)

1-78 (41.8, 42.6, 15.5)
1-118 (13.8, 36.6, 49.6)
1-128 (14.6, 33.7, 51.8)
2-28 (8.3, 35.4, 56.3)
2-50 (12.8, 41.8, 45.4)
2-128 (12.5, 32.6, 54.9)
3-78 (8.5, 29.7, 61.8)
4-28 (13.6, 33.6, 52.8)
4-78 (14.2, 31.7, 54.1)
4-132 (9.6, 33.3, 57.1)

X-Ray (PP)

2-40 (Bulk)		2-40 (<2μ)	
M	Quar.	46%	Micas
P	Plag.	8%	Kaol.
TR%	Micas	8%	Chlo.
TR%	K/C	38%	MXL (60% Mont.)
P	Calc.		

SITE 348 HOLE CORE 3 CORED INTERVAL: 18.5-28.0 m



Colors: dark greenish gray (5GY 4/1), greenish gray (5GY 6/1), olive gray (5Y 4/1), yellowish gray (5Y 7/2), medium gray (N5), light olive gray (5Y 6/1), medium dark gray (N4), dusky yellow green (5GY 5/2), dark gray (N3). Moderate to intense deformation. Soft, locally ash-rich. Locally mottled, scattered clasts.

MAJOR LITHOLOGY

MUD (Smears 0-10, 3-10, CC)

3-10% Sand
20-37% Silt
60-70% Clay

60-70% Clay minerals
TR% Glauconite
0- 3% Lithics (Chert, Siltstone, Volcanic)
17-20% Quartz
6-15% Feldspar (some unaltered and euhedral plagioclase)
TR- 1% Mica
1-10% Heavy minerals (Epidote, Ortho & Clino-pyroxene, Hornblende, Garnet?)
0- 1% Authigenic(?) carbonate
1- 3% Opaques
0-TR% Nannofossils
0-TR% Diatoms
0-TR% Sponge spicules
0-TR% Volcanic glass
0-TR% Palagonite

MINOR LITHOLOGY

CLAY (Smear CC)

3% Sand
20% Silt
77% Clay
20% Quartz

TR% Volcanic glass
TR% Palagonite
TR% Zeolite
78% Clay minerals
TR% Mica

Carbon-Carbonate (DSDP)

1-26 (0.4, 0.0, 3)
1-52 (0.3, 0.0, 3)
1-125 (0.4, 0.0, 4)
2-34 (0.3, 0.0, 3)
2-82 (0.3, 0.0, 2)
2-126 (0.3, 0.0, 2)
3-26 (0.5, 0.0, 3)
3-73 (0.3, 0.0, 3)
3-126 (0.4, 0.0, 3)
4-26 (0.4, 0.0, 3)
4-82 (0.5, 0.0, 4)
4-132 (0.3, 0.0, 3)
5-26 (0.3, 0.0, 2)
5-76 (0.4, 0.0, 4)
5-118 (0.3, 0.0, 2)
6-26 (0.2, 0.0, 2)
6-82 (0.4, 0.0, 3)

Carbon-Carbonate (PP)

3-5 (top) (1.43, 0.05)
3-5 (bottom) (0.07, 0.21)

Grain Size (DSDP)

1-28 (4.8, 34.8, 60.5)
1-78 (24.5, 29.6, 46.0)
2-28 (10.7, 27.9, 61.4)
2-32 (9.5, 30.1, 60.4)
2-78 (5.7, 33.5, 60.7)
2-128 (2.7, 29.7, 67.6)
3-28 (8.8, 33.5, 57.7)
3-74 (8.9, 34.7, 56.4)
3-128 (7.1, 33.0, 59.8)
4-28 (9.8, 41.1, 49.1)
4-78 (9.1, 32.7, 58.2)
5-28 (8.3, 48.8, 42.9)
5-78 (10.0, 34.0, 56.0)
6-28 (7.3, 36.3, 56.4)
6-78 (10.4, 27.8, 61.8)

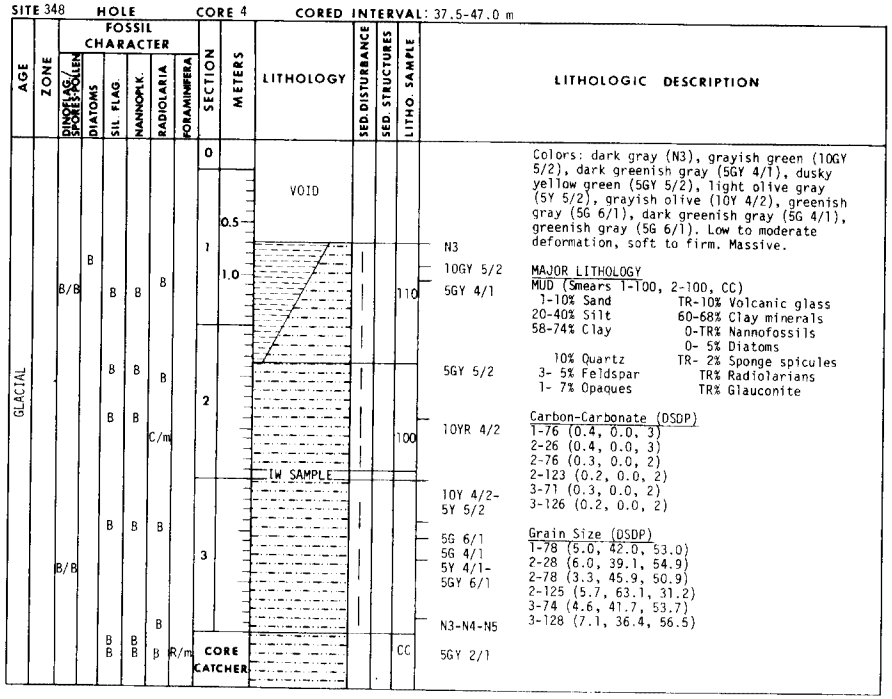
X-Ray (PP)

M	Quar.
P	Plag.
P	Micas
P	K/C

3-68 (<2μ)

42%	Mica
10%	Kaol.
14%	Chlo.
34%	MXL (50% Mont.)

SITE 348 HOLE CORE 4 CORED INTERVAL: 37.5-47.0 m



Colors: dark gray (N3), grayish green (10GY 5/2), dark greenish gray (5GY 4/1), dusky yellow green (5GY 5/2), light olive gray (5Y 5/2), grayish olive (10Y 4/2), greenish gray (5G 6/1), dark greenish gray (5G 4/1), greenish gray (5G 6/1). Low to moderate deformation, soft to firm. Massive.

MAJOR LITHOLOGY

MUD (Smears 1-100, 2-100, CC)

1-10% Sand
20-40% Silt
58-74% Clay

10% Quartz
3- 5% Feldspar
1- 7% Opaques

TR-10% Volcanic glass
60-68% Clay minerals
0-TR% Nannofossils
0- 5% Diatoms
TR- 2% Sponge spicules
TR% Radiolarians
TR% Glauconite

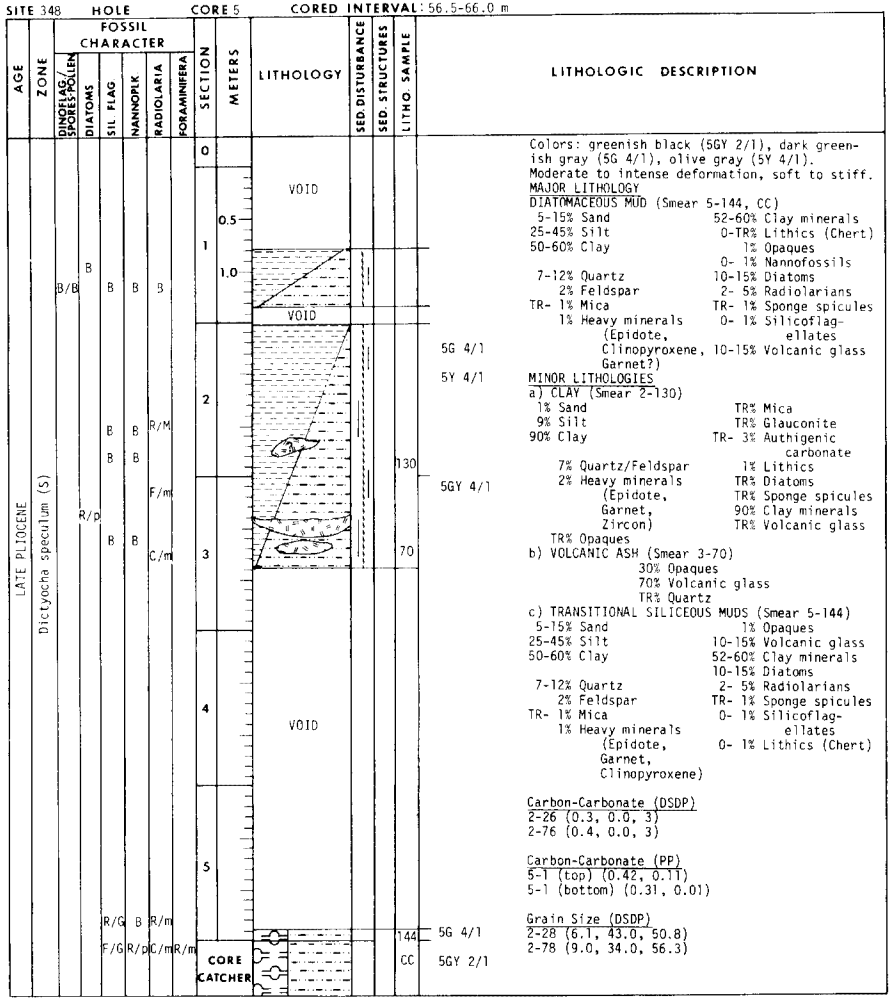
Carbon-Carbonate (DSDP)

1-76 (0.4, 0.0, 3)
2-26 (0.4, 0.0, 3)
2-76 (0.3, 0.0, 2)
2-123 (0.2, 0.0, 2)
3-71 (0.3, 0.0, 2)
3-126 (0.2, 0.0, 2)

Grain Size (DSDP)

1-78 (5.0, 42.0, 53.0)
2-28 (6.0, 39.1, 54.9)
2-78 (3.3, 45.9, 50.9)
2-125 (5.7, 63.1, 31.2)
3-74 (4.6, 41.7, 53.7)
3-128 (7.1, 36.4, 56.5)

SITE 348 HOLE CORE 5 CORED INTERVAL: 56.5-66.0 m



LITHOLOGIC DESCRIPTION

Colors: greenish black (5GY 2/1), dark greenish gray (5G 4/1), olive gray (5Y 4/1). Moderate to intense deformation, soft to stiff.

MAJOR LITHOLOGY

DIATOMACEOUS MUD (Smear 5-144, CC)

5-15% Sand	52-60% Clay minerals
25-45% Silt	0-TR% Lithics (Chert)
50-60% Clay	1% Opaques
	0- 1% Nannofossils
7-12% Quartz	10-15% Diatoms
2% Feldspar	2- 5% Radiolarians
TR- 1% Mica	TR- 1% Sponge spicules
1% Heavy minerals (Epidote, Clinopyroxene, Garnet?)	0- 1% Silicoflagellates
	10-15% Volcanic glass

MINOR LITHOLOGIES

a) CLAY (Smear 2-130)

1% Sand	TR% Mica
9% Silt	TR% Glauconite
90% Clay	TR- 3% Authigenic carbonate
7% Quartz/Feldspar	1% Lithics
2% Heavy minerals (Epidote, Garnet, Zircon)	TR% Diatoms
	TR% Sponge spicules
	90% Clay minerals
	TR% Volcanic glass
TR% Opaques	

b) VOLCANIC ASH (Smear 3-70)

30% Opaques
70% Volcanic glass
TR% Quartz

c) TRANSITIONAL SILICEOUS MUDS (Smear 5-144)

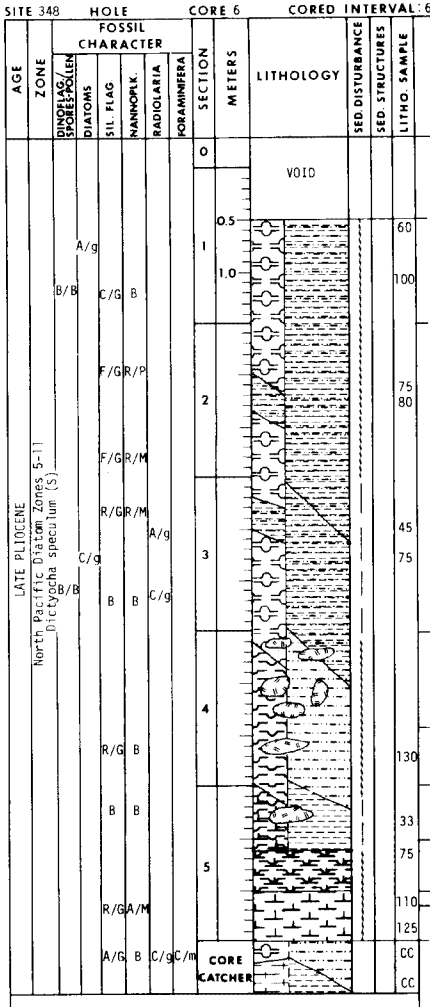
5-15% Sand	1% Opaques
25-45% Silt	10-15% Volcanic glass
50-60% Clay	52-60% Clay minerals
	10-15% Diatoms
7-12% Quartz	2- 5% Radiolarians
2% Feldspar	TR- 1% Sponge spicules
TR- 1% Mica	0- 1% Silicoflagellates
1% Heavy minerals (Epidote, Garnet, Clinopyroxene)	0- 1% Lithics (Chert)

Carbon-Carbonate (DSDP)
2-26 (0.3, 0.0, 3)
2-76 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
5-1 (top) (0.42, 0.11)
5-1 (bottom) (0.31, 0.01)

Grain Size (DSDP)
2-28 (6.1, 43.0, 50.8)
2-78 (9.0, 34.0, 56.3)

SITE 348 HOLE CORE 6 CORED INTERVAL: 66.0-75.5 m



LITHOLOGIC DESCRIPTION

Colors: dark gray (N3), medium gray (N5), dusky yellow green (5GY 5/2), olive gray (5Y 3/2), dusky green (5G 3/2), grayish olive (10Y 4/2), grayish olive green (5GY 3/2), grayish black (N2), grayish olive (10Y 4/2), light gray (N7), very light gray (N8), light olive gray (5Y 6/1), greenish gray (5G 6/1). Moderate to intense deformation, soft.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smears 1-60, 1-100, 2-75, 3-75, 4-130, CC)

1-20% Sand	0- 2% Zeolites
37-50% Silt	0- 3% Carbonate
30-60% Clay	2-10% Diatoms
	0-10% Radiolarians
2-15% Quartz	2-20% Sponge spicules
0-10% Feldspar	0- 2% Silicoflagellates
TR- 3% Mica	
TR- 3% Heavy minerals (Epidote)	0-TR% Lithics
	0- 7% Foraminifera
0-15% Opaques	0-TR% Nannofossils
5-20% Volcanic glass	30-60% Clay minerals

MINOR LITHOLOGIES

a) NANNOFOSSIL OOZE (Smears 5-110, 5-125, CC)

20% Sand	TR% Heavy minerals (Epidote, Orthopyroxene)
40-60% Silt	
20-60% Clay	
	1% Opaques
TR- 5% Diatoms	5-10% Volcanic glass
1% Radiolarians	0- 4% Clay minerals
TR- 1% Quartz	55-70% Nannofossils
0- 1% Feldspar	5-20% Sponge spicules
TR- 1% Mica	

b) SILICEOUS-NANNOFOSSIL OOZE (Smear 5-75)

5% Sand	1% Zeolite
40% Silt	55% Nannofossils
55% Clay	10% Diatoms
	2% Radiolarians
3% Quartz	7% Sponge spicules
1% Feldspar	1% Silicoflagellates
1% Opaques	5% Volcanic glass

c) TERRIGENOUS MUD AND CLAY (Smear 2-80, 3-45)

5-10% Sand	81-90% Clay minerals
40-50% Silt	4- 5% Volcanic glass
40-55% Clay	1- 3% Opaques
	0- 1% Diatoms
0- 3% Quartz	TR- 1% Radiolarians
0- 1% Feldspar	0- 2% Sponge spicules
0- 2% Heavy minerals (Epidote)	0- 1% Mica

d) DEVITRIFIED VOLCANIC ASH (Smear 5-33)

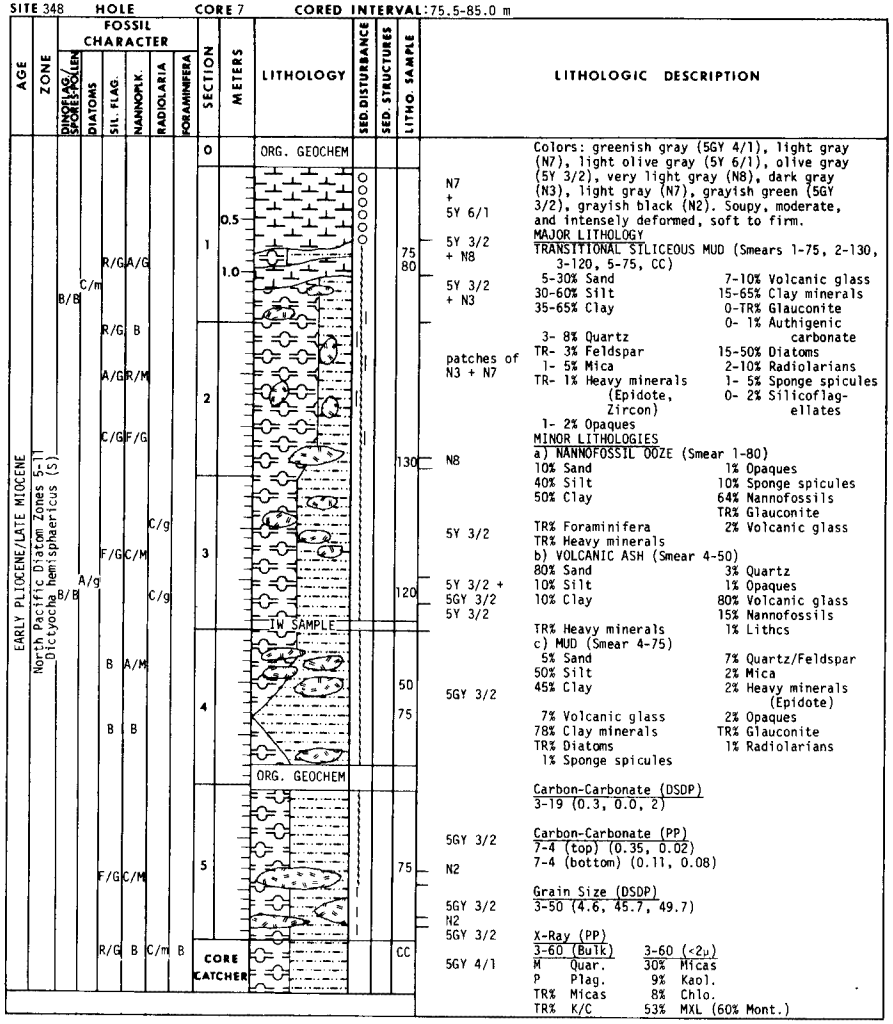
5% Sand	TR% Heavy minerals (Epidote)
10% Silt	
85% Clay	1% Opaques
	1% Volcanic glass
10% Quartz	85% Devitrified ash
2% Feldspar (some unaltered and euhedral)	TR% Glauconite
	TR% Lithics (Chert)
	1% Mica

X-Ray (PP)
2-104 (Bulk)
M Quar.
P Plag.
TR% Pyri.
TR% K/C
2-104 (<2μ)
23% Mica
9% Kaol.
9% Chlo., 59% MXL (50% Mont.)

Carbon-Carbonate (DSDP)
2-66 (0.3, 0.0, 3)
2-70 (0.3, 0.0, 3)
3-55 (0.3, 0.0, 2)
4-72 (0.3, 0.0, 2)
5-72 (1.9, 0.0, 16)

Grain Size (DSDP)
1-78 (5.4, 48.5, 46.1)
2-82 (2.8, 52.6, 44.6)
2-99 (3.8, 52.3, 43.9)
3-82 (4.1, 51.2, 44.6)
4-70 (1.6, 51.8, 46.6)
5-70 (3.1, 45.0, 51.9)

SITE 348 HOLE CORE 7 CORED INTERVAL: 75.5-85.0 m



LITHOLOGIC DESCRIPTION

Colors: greenish gray (5GY 4/1), light gray (N7), light olive gray (5Y 6/1), olive gray (5Y 3/2), very light gray (N8), dark gray (N3), light gray (N7), grayish green (5GY 3/2), grayish black (N2). Soupy, moderate, and intensely deformed, soft to firm.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smears 1-75, 2-130, 3-120, 5-75, CC)

5-30% Sand
30-60% Silt
35-65% Clay

3- 8% Quartz
TR- 3% Feldspar
1- 5% Mica
TR- 1% Heavy minerals (Epidote, Zircon)
1- 2% Opaques

7-10% Volcanic glass
15-65% Clay minerals
0-TR% Glauconite
0- 1% Authigenic carbonate
15-50% Diatoms
2-10% Radiolarians
1- 5% Sponge spicules
0- 2% Silicoflagellates

MINOR LITHOLOGIES

a) NANNOFOSSIL OOZE (Smear 1-80)

10% Sand
40% Silt
50% Clay

TR% Foraminifera
TR% Heavy minerals

1% Opaques
10% Sponge spicules
64% Nannofossils
TR% Glauconite
2% Volcanic glass

b) VOLCANIC ASH (Smear 4-50)

80% Sand
10% Silt
10% Clay

TR% Heavy minerals

3% Quartz
1% Opaques
80% Volcanic glass
15% Nannofossils
1% Lithcs

c) MUD (Smear 4-75)

5% Sand
50% Silt
45% Clay

7% Volcanic glass
78% Clay minerals
TR% Diatoms
1% Sponge spicules

7% Quartz/Feldspar
2% Mica
2% Heavy minerals (Epidote)
2% Opaques
TR% Glauconite
1% Radiolarians

Carbon-Carbonate (DSDP)
3-19 (0.3, 0.0, 2)

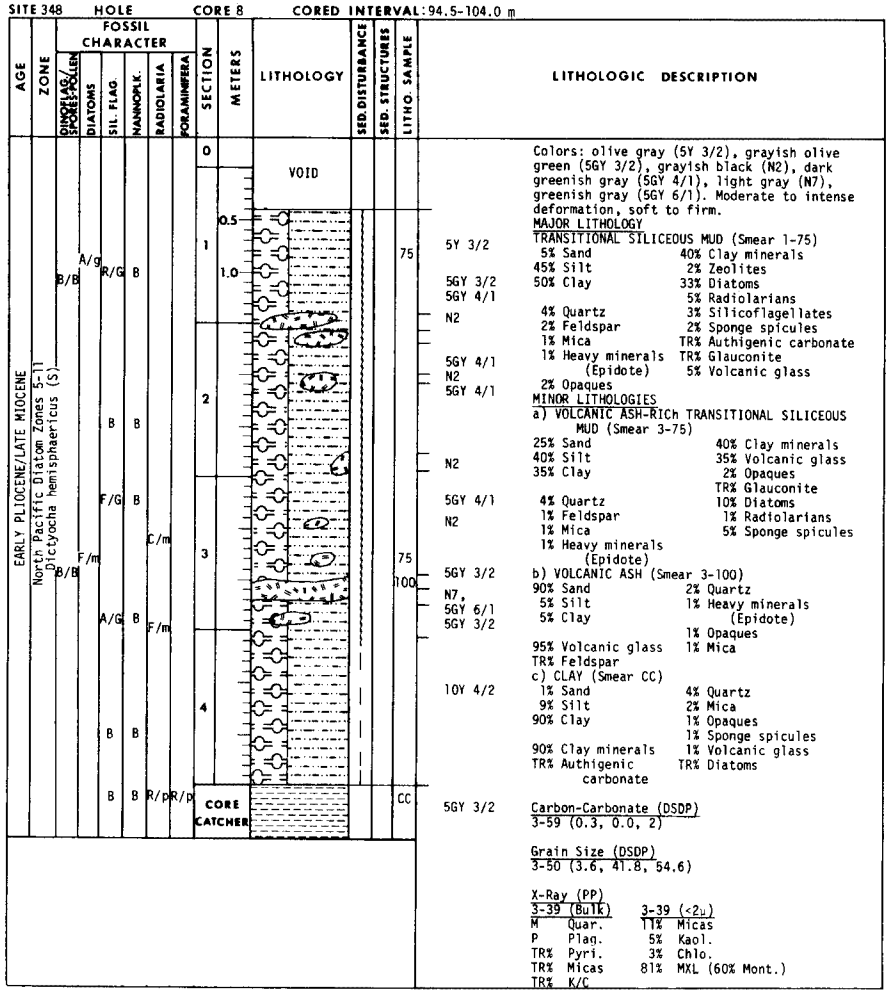
Carbon-Carbonate (PP)
7-4 (top) (0.35, 0.02)
7-4 (bottom) (0.11, 0.08)

Grain Size (DSDP)
3-50 (4.6, 45.7, 49.7)

X-Ray (PP)

3-60 (Bulk)		3-60 (<2μ)	
M	Quar.	30%	Micas
P	Plag.	9%	Kaol.
TR%	Micas	8%	Chlo.
TR%	K/C	53%	MXL (60% Mont.)

SITE 348 HOLE CORE 8 CORED INTERVAL: 94.5-104.0 m



Colors: olive gray (5Y 3/2), grayish olive green (5GY 3/2), grayish black (N2), dark greenish gray (5GY 4/1), light gray (N7), greenish gray (5GY 6/1). Moderate to intense deformation, soft to firm.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smear 1-75)

5% Sand
45% Silt
50% Clay

4% Quartz
2% Feldspar
1% Mica
1% Heavy minerals (Epidote)
2% Opaques

40% Clay minerals
2% Zeolites
33% Diatoms
5% Radiolarians
3% Silicoflagellates
2% Sponge spicules
TR% Authigenic carbonate
TR% Glauconite
5% Volcanic glass

MINOR LITHOLOGIES

a) VOLCANIC ASH-RICh TRANSITIONAL SILICEOUS MUD (Smear 3-75)

25% Sand
40% Silt
35% Clay

4% Quartz
1% Feldspar
1% Mica
1% Heavy minerals (Epidote)

40% Clay minerals
35% Volcanic glass
2% Opaques
TR% Glauconite
10% Diatoms
1% Radiolarians
5% Sponge spicules

b) VOLCANIC ASH (Smear 3-100)

90% Sand
5% Silt
5% Clay

95% Volcanic glass
TR% Feldspar

2% Quartz
1% Heavy minerals (Epidote)
1% Opaques
1% Mica

c) CLAY (Smear CC)

1% Sand
9% Silt
90% Clay

90% Clay minerals
TR% Authigenic carbonate

4% Quartz
2% Mica
1% Opaques
1% Sponge spicules
1% Volcanic glass
TR% Diatoms

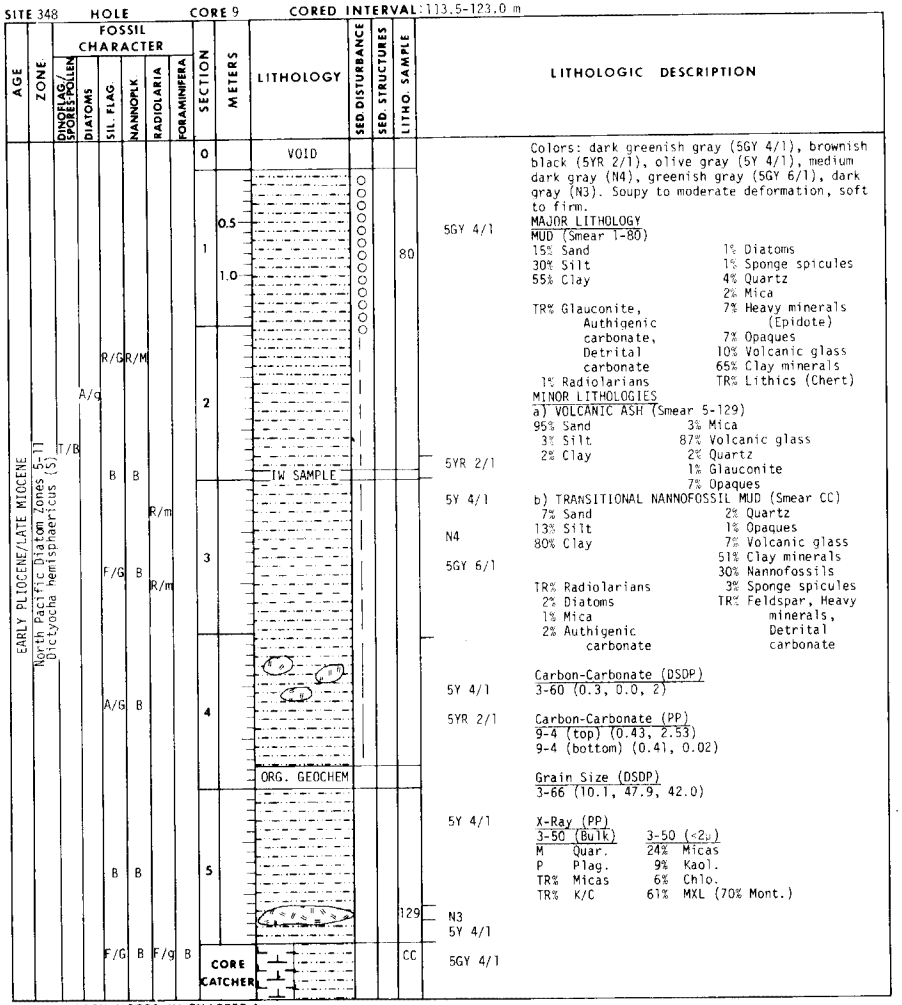
Carbon-Carbonate (DSDP)
3-59 (0.3, 0.0, 2)

Grain Size (DSDP)
3-50 (3.6, 41.8, 54.6)

X-Ray (PP)

3-39 (Bulk)		3-39 (<2μ)	
M	Quar.	11%	Micas
P	Plag.	5%	Kaol.
TR%	Pyri.	3%	Chlo.
TR%	Micas	81%	MXL (60% Mont.)
TR%	K/C		

SITE 348 HOLE CORE 9 CORED INTERVAL: 113.5-123.0 m



Colors: dark greenish gray (5GY 4/1), brownish black (5YR 2/1), olive gray (5Y 4/1), medium dark gray (N4), greenish gray (5GY 6/1), dark gray (N3). Soupy to moderate deformation, soft to firm.

MAJOR LITHOLOGY

MUD (Smear 1-80)

15% Sand	1% Diatoms
30% Silt	1% Sponge spicules
55% Clay	4% Quartz
	2% Mica
TR% Glauconite, Authigenic carbonate, Detrital carbonate	7% Heavy minerals (Epidote)
	7% Opaques
	10% Volcanic glass
	65% Clay minerals
1% Radiolarians	TR% Lithics (Chert)

MINOR LITHOLOGIES

a) VOLCANIC ASH (Smear 5-129)

95% Sand	3% Mica
3% Silt	87% Volcanic glass
2% Clay	2% Quartz
	1% Glauconite
	7% Opaques

b) TRANSITIONAL NANNOFOSSIL MUD (Smear CC)

7% Sand	2% Quartz
13% Silt	1% Opaques
80% Clay	7% Volcanic glass
	51% Clay minerals
	30% Nannofossils
TR% Radiolarians	3% Sponge spicules
2% Diatoms	TR% Feldspar, Heavy minerals, Detrital carbonate
1% Mica	
2% Authigenic carbonate	

Carbon-Carbonate (DSDP)
3-60 (0.3, 0.0, 2)

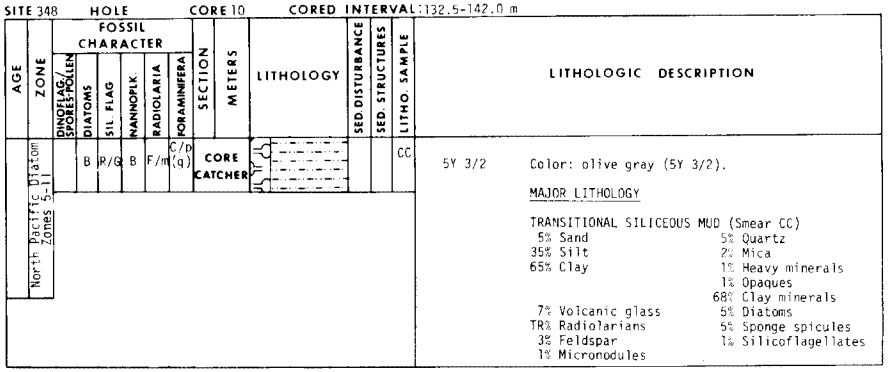
Carbon-Carbonate (PP)
9-4 (top) (0.43, 2.53)
9-4 (bottom) (0.41, 0.02)

Grain Size (DSDP)
3-66 (10.1, 47.9, 42.0)

X-Ray (PP)

3-50 (Bulk)		3-50 (<2μ)
M	Quar.	24% Micas
P	Plag.	9% Kaol.
TR%	Micas	6% Chlo.
TR%	K/C	61% MXL (70% Mont.)

SITE 348 HOLE CORE 10 CORED INTERVAL: 132.5-142.0 m



5Y 3/2 Color: olive gray (5Y 3/2).

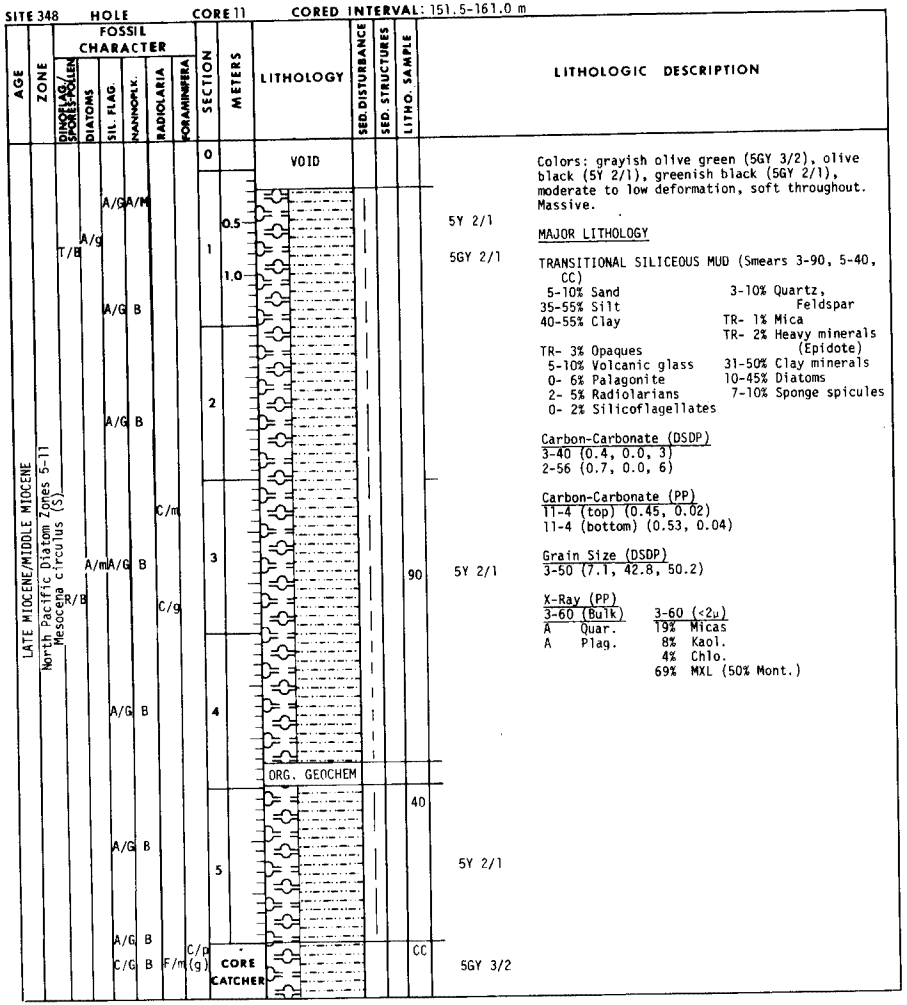
MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smear CC)

5% Sand	5% Quartz
35% Silt	2% Mica
65% Clay	1% Heavy minerals
	1% Opaques
	68% Clay minerals
7% Volcanic glass	5% Diatoms
TR% Radiolarians	5% Sponge spicules
3% Feldspar	1% Silicoflagellates
1% Micronodules	

EXPLANATORY NOTES IN CHAPTER 1

SITE 348 HOLE CORE 11 CORED INTERVAL: 151.5-161.0 m



Colors: grayish olive green (5GY 3/2), olive black (5Y 2/1), greenish black (5GY 2/1), moderate to low deformation, soft throughout. Massive.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smears 3-90, 5-40, CC)

5-10% Sand
35-55% Silt
40-55% Clay

TR- 3% Opaques
5-10% Volcanic glass
0- 6% Palagonite
2- 5% Radiolarians
0- 2% Silicoflagellates

3-10% Quartz, Feldspar
TR- 1% Mica
TR- 2% Heavy minerals (Epidote)
31-50% Clay minerals
10-45% Diatoms
7-10% Sponge spicules

Carbon-Carbonate (DSDP)
3-40 (0.4, 0.0, 3)
2-56 (0.7, 0.0, 6)

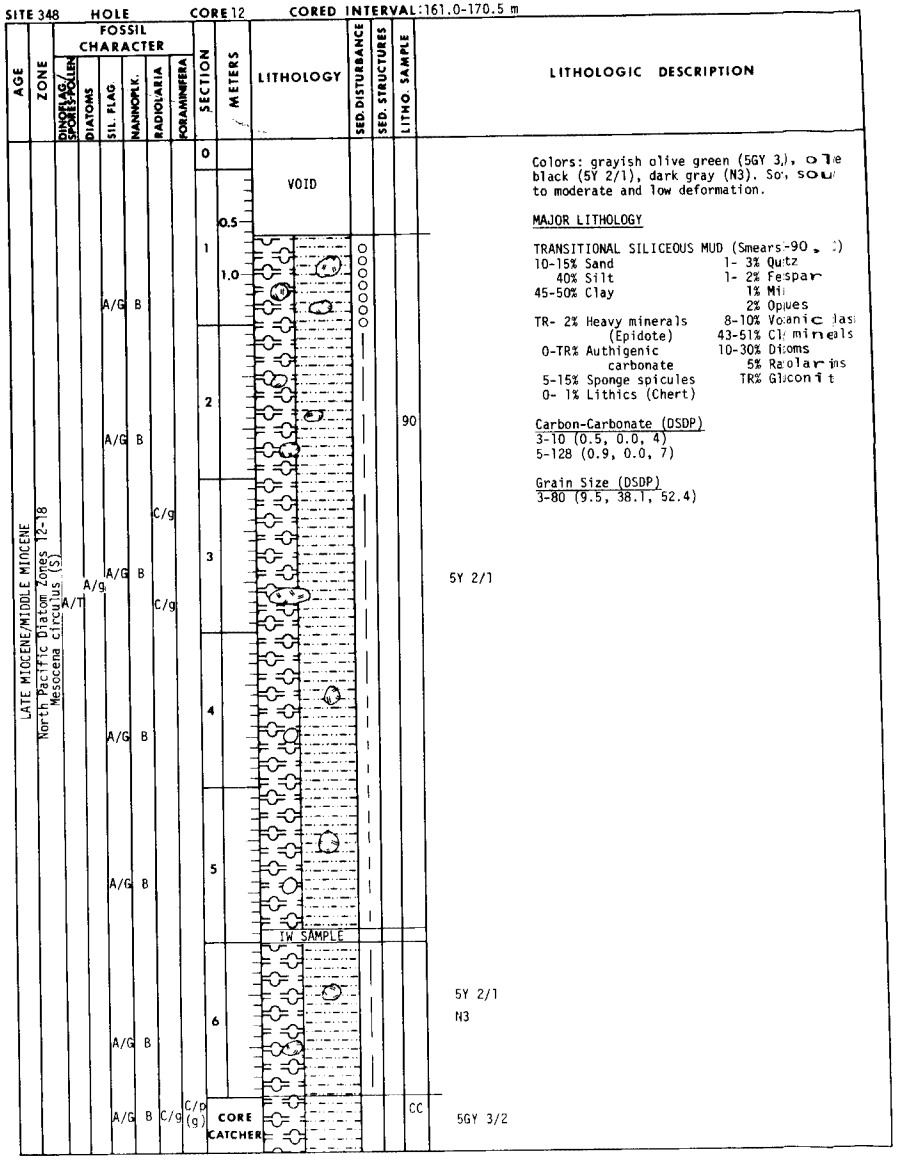
Carbon-Carbonate (PP)
11-4 (top) (0.45, 0.02)
11-4 (bottom) (0.53, 0.04)

Grain Size (DSDP)
3-50 (7.1, 42.8, 50.2)

X-Ray (PP)

3-60 (Bulk)		3-60 (<2μ)
A	Quar.	19% Micas
A	Plag.	8% Kaol.
		4% Chlo.
		69% MXL (50% Mont.)

SITE 348 HOLE CORE 12 CORED INTERVAL: 161.0-170.5 m



Colors: grayish olive green (5GY 3/), olive black (5Y 2/1), dark gray (N3). Soft, soupy to moderate and low deformation.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smears-90,)
10-15% Sand
40% Silt
45-50% Clay

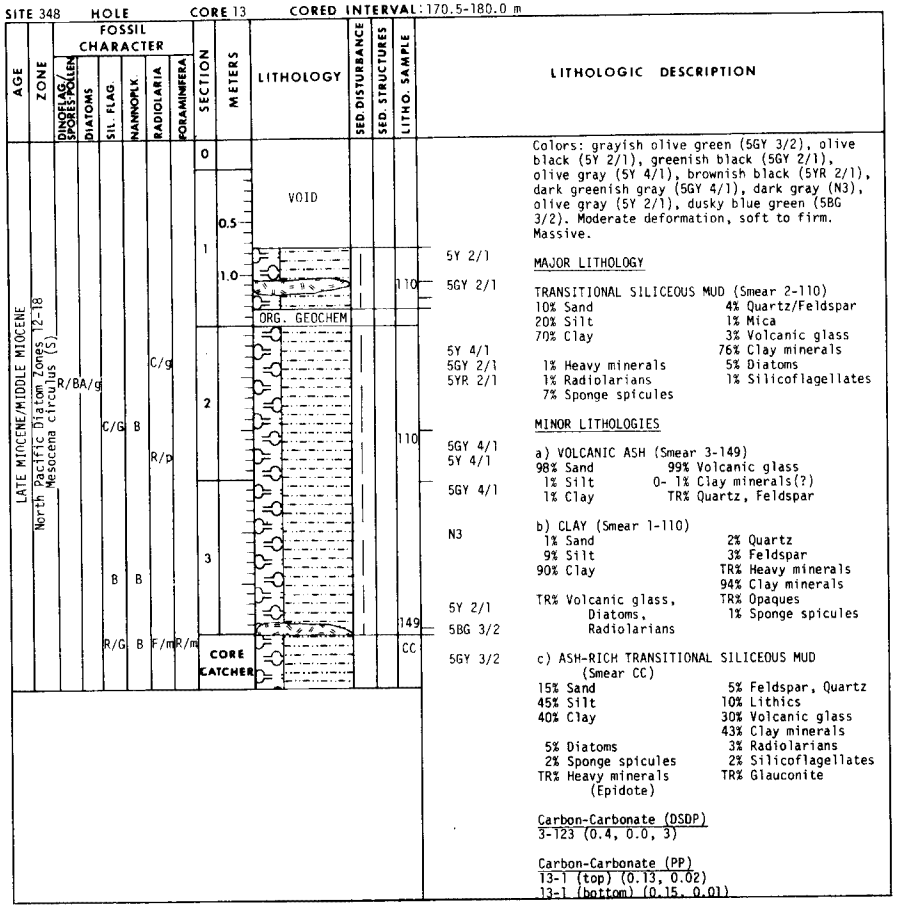
TR- 2% Heavy minerals (Epidote)
0-TR% Authigenic carbonate
5-15% Sponge spicules
0- 1% Lithics (Chert)

1- 3% Qutz
1- 2% Fespar
1% Mi
2% Opues
8-10% Volcanic glas
43-61% Cl minerals
10-30% Diatoms
5% Radiolarians
TR% Glaconit

Carbon-Carbonate (DSDP)
3-10 (0.5, 0.0, 4)
5-128 (0.9, 0.0, 7)

Grain Size (DSDP)
3-80 (9.5, 38.1, 52.4)

SITE 348 HOLE CORE 13 CORED INTERVAL: 170.5-180.0 m



LITHOLOGIC DESCRIPTION

Colors: grayish olive green (5GY 3/2), olive black (5Y 2/1), greenish black (5GY 2/1), olive gray (5Y 4/1), brownish black (5YR 2/1), dark greenish gray (5GY 4/1), dark gray (N3), olive gray (5Y 2/1), dusky blue green (5BG 3/2). Moderate deformation, soft to firm. Massive.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smear 2-110)

10% Sand	4% Quartz/Feldspar
20% Silt	1% Mica
70% Clay	3% Volcanic glass
	76% Clay minerals
1% Heavy minerals	5% Diatoms
1% Radiolarians	1% Silicoflagellates
7% Sponge spicules	

MINOR LITHOLOGIES

a) VOLCANIC ASH (Smear 3-149)

98% Sand	99% Volcanic glass
1% Silt	0- 1% Clay minerals(?)
1% Clay	TR% Quartz, Feldspar

b) CLAY (Smear 1-110)

1% Sand	2% Quartz
9% Silt	3% Feldspar
90% Clay	TR% Heavy minerals
	94% Clay minerals
TR% Volcanic glass, Diatoms, Radiolarians	TR% Opaques
	1% Sponge spicules

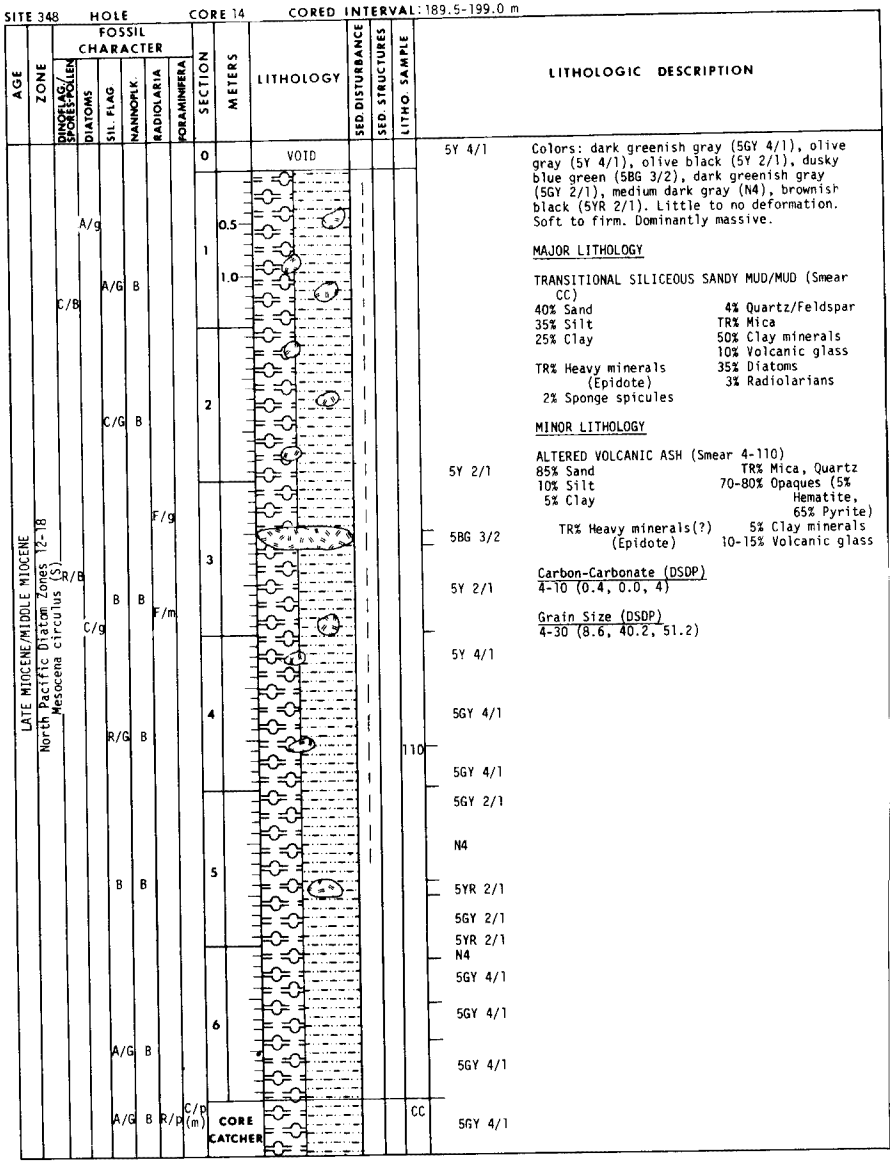
c) ASH-RICH TRANSITIONAL SILICEOUS MUD (Smear CC)

15% Sand	5% Feldspar, Quartz
45% Silt	10% Lithics
40% Clay	30% Volcanic glass
	43% Clay minerals
5% Diatoms	3% Radiolarians
2% Sponge spicules	2% Silicoflagellates
TR% Heavy minerals (Epidote)	TR% Glauconite

Carbon-Carbonate (DSDP)
3-123 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
13-1 (top) (0.13, 0.02)
13-1 (bottom) (0.15, 0.01)

SITE 348 HOLE CORE 14 CORED INTERVAL: 189.5-199.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), olive gray (5Y 4/1), olive black (5Y 2/1), dusky blue green (5BG 3/2), dark greenish gray (5GY 2/1), medium dark gray (N4), brownish black (5YR 2/1). Little to no deformation. Soft to firm. Dominantly massive.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS SANDY MUD/MUD (Smear CC)

40% Sand	4% Quartz/Feldspar
35% Silt	TR% Mica
25% Clay	50% Clay minerals
	10% Volcanic glass
TR% Heavy minerals (Epidote)	35% Diatoms
2% Sponge spicules	3% Radiolarians

MINOR LITHOLOGY

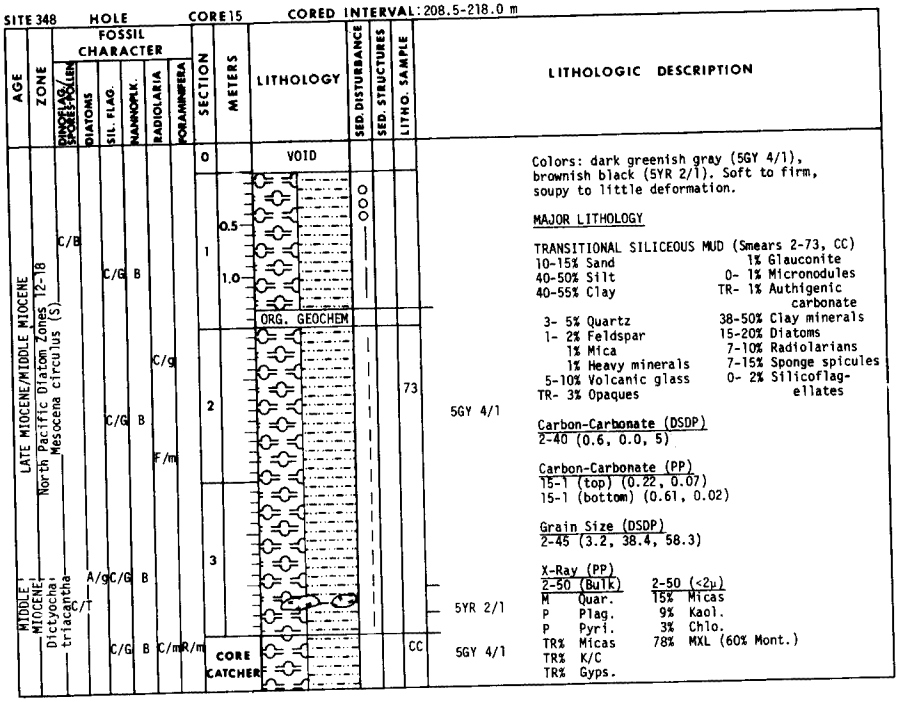
ALTERED VOLCANIC ASH (Smear 4-110)

85% Sand	TR% Mica, Quartz
10% Silt	70-80% Opaques (5% Hematite, 65% Pyrite)
5% Clay	
TR% Heavy minerals(?) (Epidote)	5% Clay minerals
	10-15% Volcanic glass

Carbon-Carbonate (DSDP)
4-10 (0.4, 0.0, 4)

Grain Size (DSDP)
4-30 (8.6, 40.2, 51.2)

SITE 348 HOLE CORE 15 CORED INTERVAL: 208.5-218.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), brownish black (5YR 2/1). Soft to firm, soupy to little deformation.

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smears 2-73, CC)

10-15% Sand	1% Glauconite
40-50% Silt	0- 1% Micronodules
40-55% Clay	TR- 1% Authigenic carbonate
3- 5% Quartz	38-50% Clay minerals
1- 2% Feldspar	15-20% Diatoms
1% Mica	7-10% Radiolarians
1% Heavy minerals	7-15% Sponge spicules
5-10% Volcanic glass	0- 2% Silicoflagellates
TR- 3% Opaques	

Carbon-Carbonate (DSDP)
2-40 (0.6, 0.0, 5)

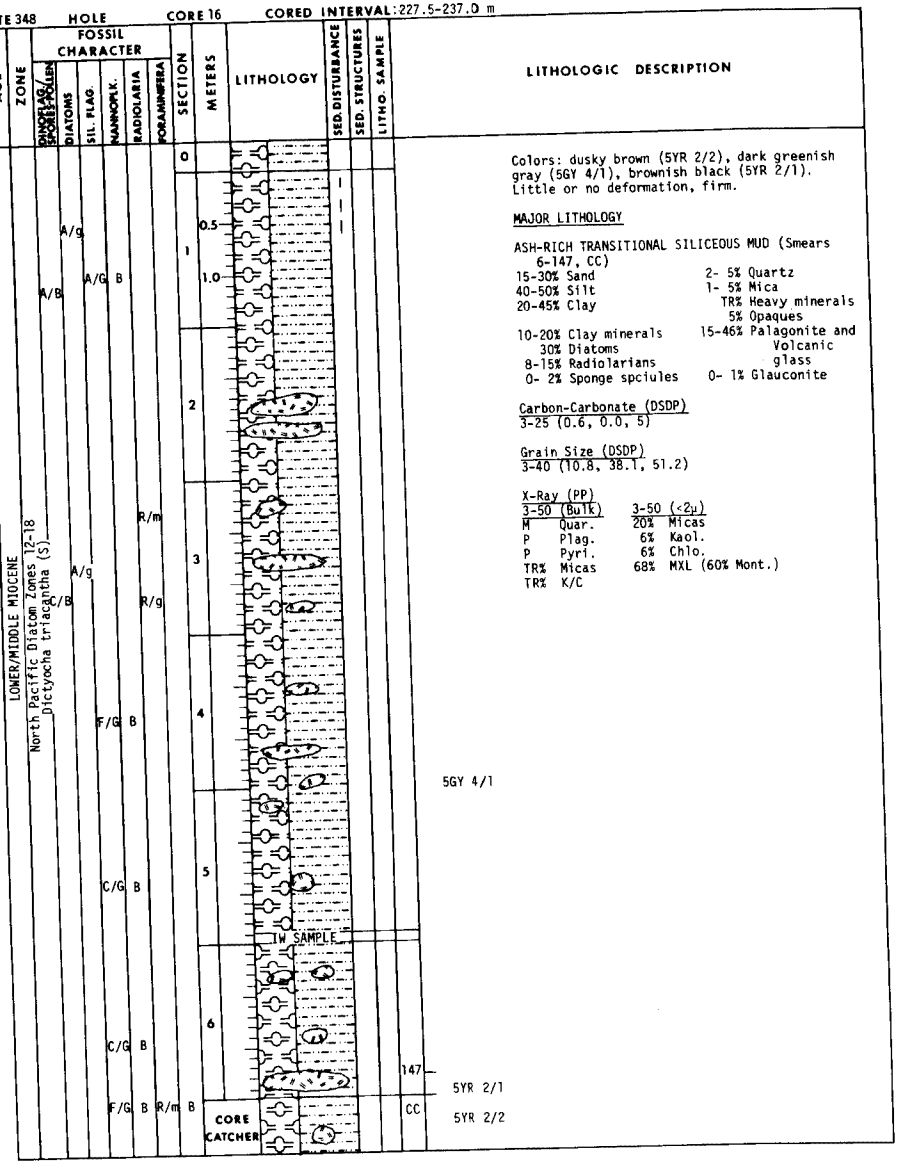
Carbon-Carbonate (PP)
15-1 (top) (0.22, 0.07)
15-1 (bottom) (0.61, 0.02)

Grain Size (DSDP)
2-45 (3.2, 38.4, 58.3)

X-Ray (PP)

2-50 (Bulk)		2-50 (<2μ)
M	Quar.	15% Micas
P	Plag.	9% Kaol.
P	Pyri.	3% Chlo.
TR%	Micas	78% MXL (60% Mont.)
TR%	K/C	
TR%	Gyps.	

SITE 348 HOLE CORE 16 CORED INTERVAL: 227.5-237.0 m



LITHOLOGIC DESCRIPTION

Colors: dusky brown (5YR 2/2), dark greenish gray (5GY 4/1), brownish black (5YR 2/1). Little or no deformation, firm.

MAJOR LITHOLOGY

ASH-RICH TRANSITIONAL SILICEOUS MUD (Smears 6-147, CC)

15-30% Sand	2- 5% Quartz
40-50% Silt	1- 5% Mica
20-45% Clay	TR% Heavy minerals
	5% Opaques
10-20% Clay minerals	15-46% Palagonite and Volcanic glass
30% Diatoms	
8-15% Radiolarians	
0- 2% Sponge spciules	0- 1% Glauconite

Carbon-Carbonate (DSDP)
3-25 (0.6, 0.0, 5)

Grain Size (DSDP)
3-40 (10.8, 38.1, 51.2)

X-Ray (PP)

3-50 (Bulk)		3-50 (<2μ)
M	Quar.	20% Micas
P	Plag.	6% Kaol.
P	Pyri.	6% Chlo.
TR%	Micas	68% MXL (60% Mont.)
TR%	K/C	

SITE 348 HOLE CORE 17 CORED INTERVAL: 237.0-246.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
LOWER/MIDDLE MIOCENE	Dictyocha triacantha		R/G	B	R/m	C/m		CORE CATCHER					CC	10YR 2/2

Colors: dusky yellowish brown (10YR 2/2).

MAJOR LITHOLOGY

TRANSITIONAL DIATOMACEOUS MUD (Smear CC)

5% Sand	7% Quartz
55% Silt	3% Feldspar
40% Clay	2% Opaques
	5% Volcanic glass
30% Clay minerals	TR% Micronodules
40% Diatoms	5% Radiolarians
5% Sponge spicules	2% Silicoflagellates
1% Heavy minerals (Epidote)	

SITE 348 HOLE CORE 18 CORED INTERVAL: 246.5-256.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
LOWER/MIDDLE MIOCENE	Dictyocha triacantha		C/G	B	R/p	C/p		CORE CATCHER					CC	5GY 2/1

Colors: greenish black (5GY 2/1).

MAJOR LITHOLOGY

TRANSITIONAL SILICEOUS MUD (Smear CC)

5% Sand	4% Quartz
30% Silt	3% Mica
65% Clay	1% Heavy minerals (Epidote)
69% Clay minerals	5% Volcanic glass
7% Diatoms	2% Radiolarians
5% Sponge spicules	1% Glauconite
TR% Lithics (Schist)	

SITE 348 HOLE CORE 19 CORED INTERVAL: 265.5-275.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
		R/B	B	B	B	B		0	0	VOID				5GY 4/1
								1	0.5					
									1.0					
				B	B			2					120	
		C/R	B			B		3						
				B	B								139	5YR 2/1
								4						5GY 4/1
				B	B									
								5		ORG. GEOCHEM				
				B	B									
								6						5GY 2/1
				B	B									5GY 4/1
				B	B	B		CORE CATCHER					CC	5GY 2/1

Colors: dark greenish gray (5GY 4/1), brownish black (5YR 2/1), greenish black (5GY 2/1). Soft to indurated. Intense to no deformation. Mudstone and mud intermixed. Locally bioturbated, massive.

MAJOR LITHOLOGY

MUD/MUDSTONE (Smears 2-120, 3-139, CC)

1- 5% Sand	0- 5% Quartz
14-20% Silt	0-TR% Feldspar
79% Clay	1% Mica
	TR% Heavy minerals (Epidote, Zircon, Garnet)
87-88% Clay minerals	
0-TR% Lithics	
0-TR% Glauconite	
2- 3% Opaques	0- 2% Volcanic glass

Carbon-Carbonate (DSDP)
6-15 (0.2, 0.0, 2)

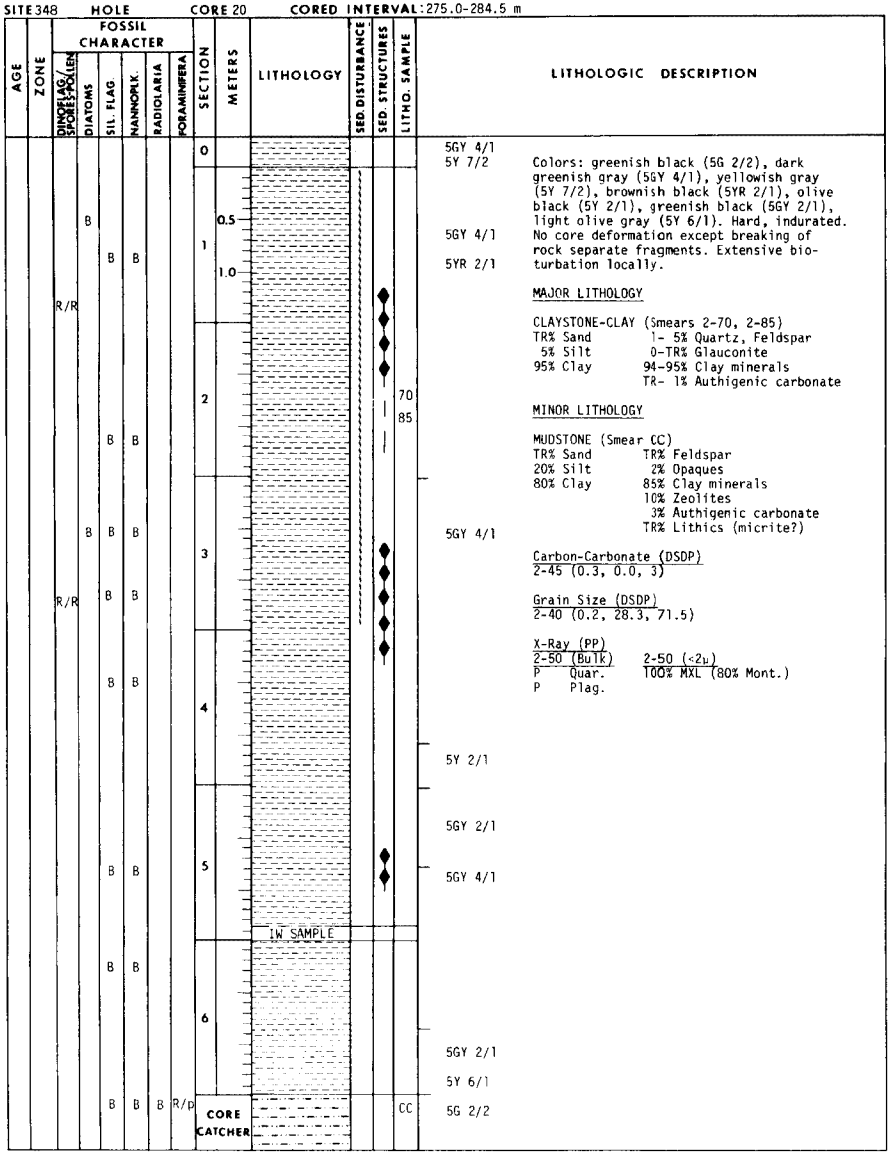
Carbon-Carbonate (PP)
19-5 (top) (0.34, 0.14)
19-5 (bottom) (0.18, 0.01)

Grain Size (DSDP)
5-30 (0.5, 25.2, 74.3

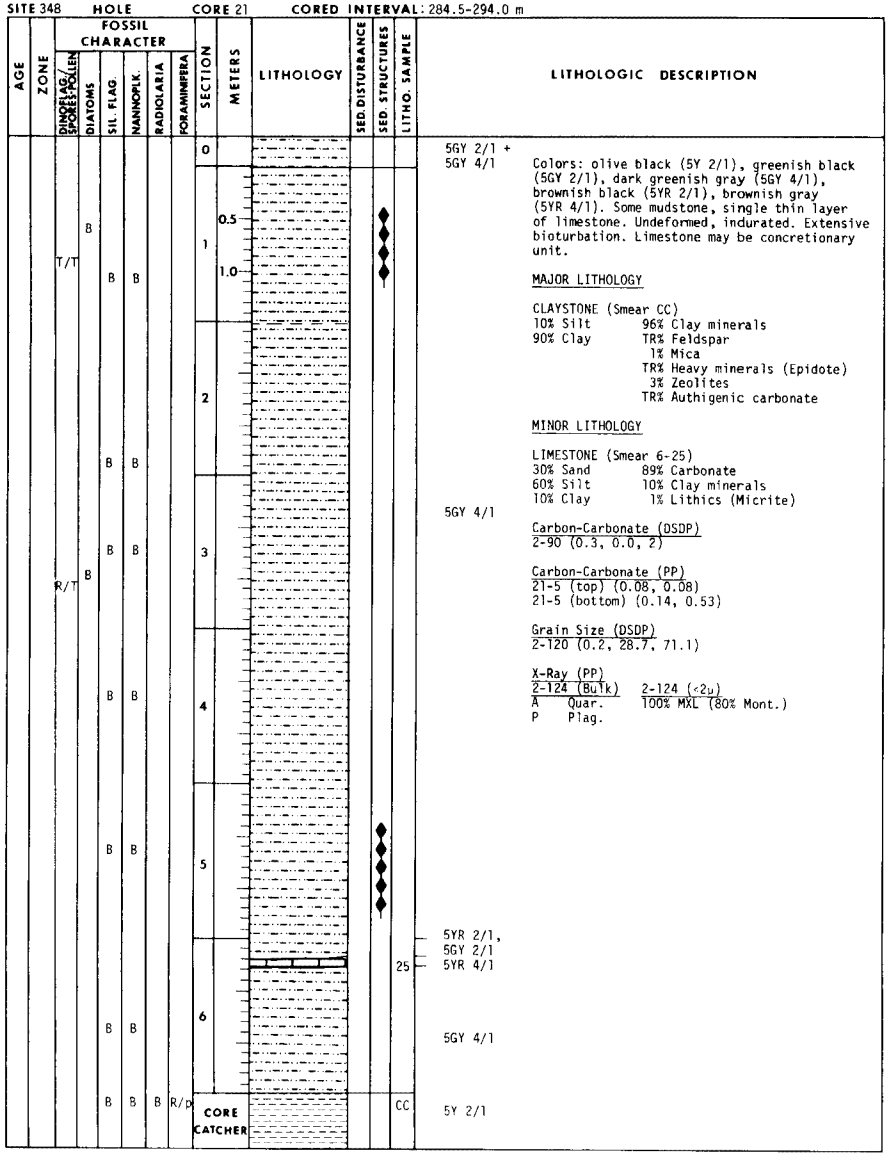
X-Ray (PP)

5-20 (Bulk)	5-20 (<2μ)
P Quar.	100% Mont.
TR% Plag.	
P Clin.-Heul.	

SITE 348 HOLE CORE 20 CORED INTERVAL: 275.0-284.5 m



SITE 348 HOLE CORE 21 CORED INTERVAL: 284.5-294.0 m



SITE 348 HOLE CORE 22 CORED INTERVAL: 303.5-313.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOFLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
				B	B	B	R/p	CORE CATCHER					CC	5GY 2/1

Color: greenish black (5GY 2/1).

MAJOR LITHOLOGY

MUDSTONE (Smear CC)

5% Sand	1% Quartz
70% Silt	4% Feldspar
25% Clay	2% Mica
	1% Heavy minerals (Epidote)
	7% Opaque minerals
	80% Clay minerals
	1% Glauconite
	TR% Lithics
	1% Zeolites
	3% Authigenic carbonate

EXPLANATORY NOTES IN CHAPTER 1

SITE 348 HOLE CORE 23 CORED INTERVAL: 322.5-332.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOFLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
								0		VOID				5Y 3/2
								1	0.5					
									1.0					
			T/T	B	B			2					60	10Y 4/2
				B	B									
			T/C	B	B	B		3						10Y 4/2
														10G 4/2
								4						
				B	B									
				B	B			5						
										VOID				
				B	B			6		PYRITE				N3
				B	B	B	C/p (g)	CORE CATCHER					CC	5GY 4/1

Colors: dark greenish gray (5GY 4/1), olive gray (5Y 3/2), grayish olive (10Y 4/2). Indurated, essentially undeformed except for drilling breccia at top of core and rotation of broken lithified blocks in core barrel. Bioturbated, massive. Pyrite nodule at 6-11.

MAJOR LITHOLOGY

MUDSTONE (Smears 2-60, CC)

10-15% Sand	5- 6% Quartz
20-30% Silt	11-25% Feldspar
50-70% Clay	2% Mica
	2% Heavy minerals (Epidote, Garnet, Zircon, Clinopyroxene, Rutile?)
	1- 5% Opaques
	50-75% Clay minerals
	TR- 1% Glauconite
	TR% Zeolites
	0-TR% Authigenic carbonate
	3-10% Lithics (Chert, Orthoquartzite, Basalt, Schist)
	0-TR% Nannofossils

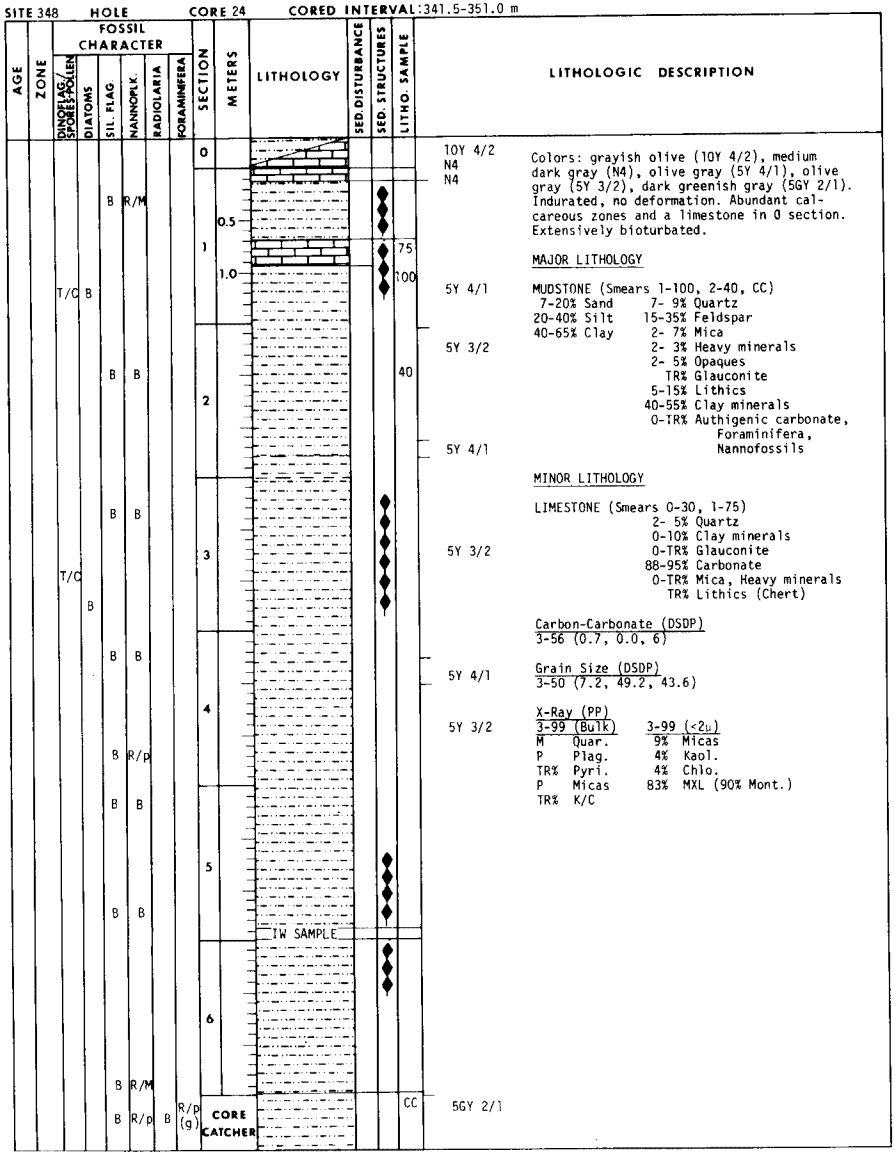
Carbon-Carbonate (DSDP)
3-70 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
23-5 (top) (0.47, 0.03)
23-5 (bottom) (0.58, 0.03)

Grain Size (DSDP)
3-74 (4.1, 36.5, 59.5)

EXPLANATORY NOTES IN CHAPTER 1

SITE 348 HOLE CORE 24 CORED INTERVAL: 341.5-351.0 m



Colors: grayish olive (10Y 4/2), medium dark gray (N4), olive gray (5Y 4/1), olive gray (5Y 3/2), dark greenish gray (5GY 2/1). Indurated, no deformation. Abundant calcareous zones and a limestone in 0 section. Extensively bioturbated.

MAJOR LITHOLOGY

MUDSTONE (Smears 1-100, 2-40, CC)

7-20% Sand	7- 9% Quartz
20-40% Silt	15-35% Feldspar
40-65% Clay	2- 7% Mica
	2- 3% Heavy minerals
	2- 5% Opaques
	TR% Glauconite
	5-15% Lithics
	40-55% Clay minerals
	0-TR% Authigenic carbonate, Foraminifera, Nannofossils

MINOR LITHOLOGY

LIMESTONE (Smears 0-30, 1-75)

	2- 5% Quartz
	0-10% Clay minerals
	0-TR% Glauconite
	88-95% Carbonate
	0-TR% Mica, Heavy minerals
	TR% Lithics (Chert)

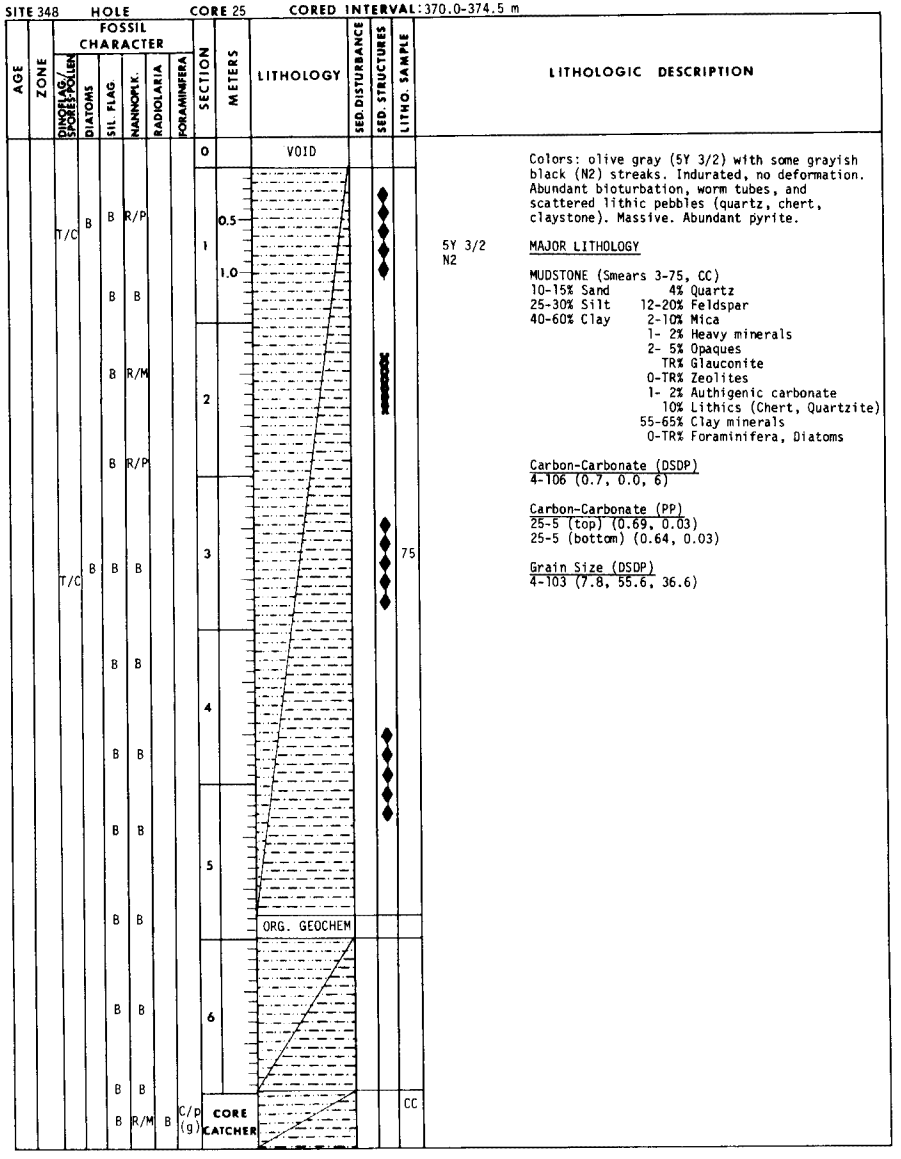
Carbon-Carbonate (DSDP)
3-56 (0.7, 0.0, 6)

Grain Size (DSDP)
3-50 (7.2, 49.2, 43.6)

X-Ray (PP)

3-99 (Bulk)		3-99 (<2μ)
M	Quar.	9% Micas
P	Plag.	4% Kaol.
TR%	Pyri.	4% Chlo.
P	Micas	83% MXL (90% Mont.)
TR%	K/C	

SITE 348 HOLE CORE 25 CORED INTERVAL: 370.0-374.5 m



Colors: olive gray (5Y 3/2) with some grayish black (N2) streaks. Indurated, no deformation. Abundant bioturbation, worm tubes, and scattered lithic pebbles (quartz, chert, claystone). Massive. Abundant pyrite.

MAJOR LITHOLOGY

MUDSTONE (Smears 3-75, CC)

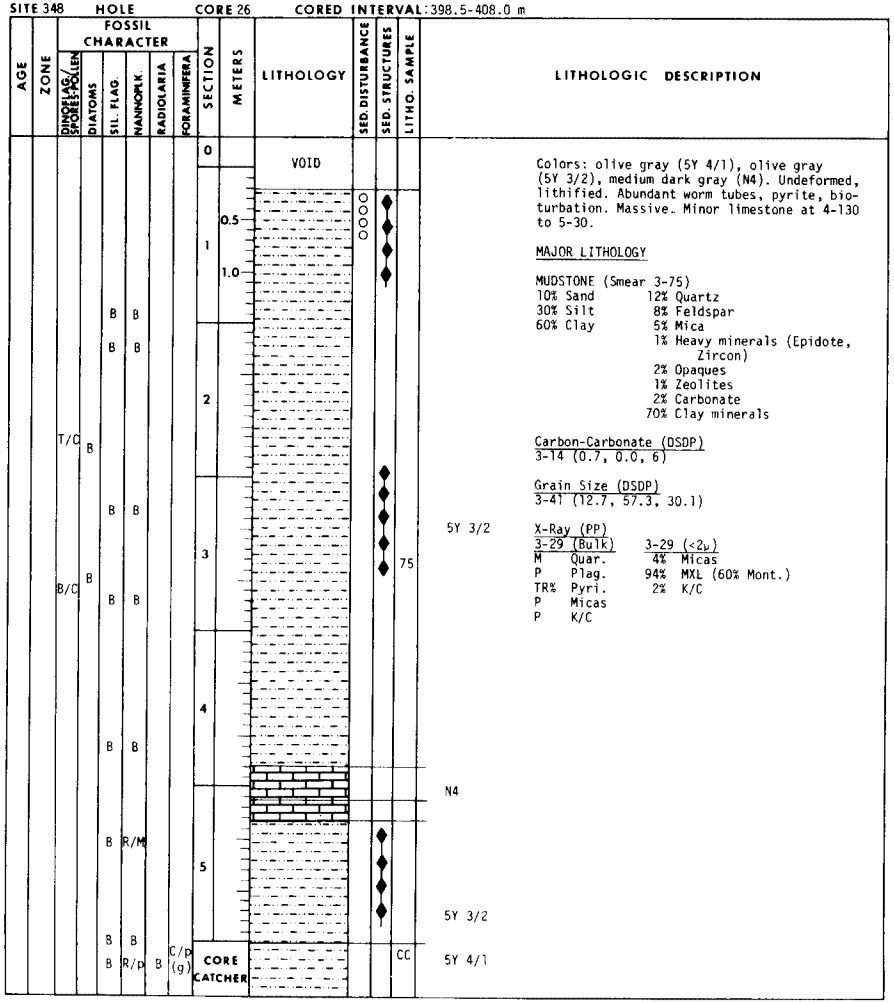
10-15% Sand	4% Quartz
25-30% Silt	12-20% Feldspar
40-60% Clay	2-10% Mica
	1- 2% Heavy minerals
	2- 5% Opaques
	TR% Glauconite
	0-TR% Zeolites
	1- 2% Authigenic carbonate
	10% Lithics (Chert, Quartzite)
	55-65% Clay minerals
	0-TR% Foraminifera, Diatoms

Carbon-Carbonate (DSDP)
4-106 (0.7, 0.0, 6)

Carbon-Carbonate (PP)
25-5 (top) (0.69, 0.03)
25-5 (bottom) (0.64, 0.03)

Grain Size (DSDP)
4-103 (7.8, 55.6, 36.6)

SITE 348 HOLE CORE 26 CORED INTERVAL: 398.5-408.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), olive gray (5Y 3/2), medium dark gray (N4). Undeformed, lithified. Abundant worm tubes, pyrite, bioturbation. Massive. Minor limestone at 4-130 to 5-30.

MAJOR LITHOLOGY

MUDSTONE (Smear 3-75)

10% Sand	12% Quartz
30% Silt	8% Feldspar
60% Clay	5% Mica
	1% Heavy minerals (Epidote, Zircon)
	2% Opaques
	1% Zeolites
	2% Carbonate
	70% Clay minerals

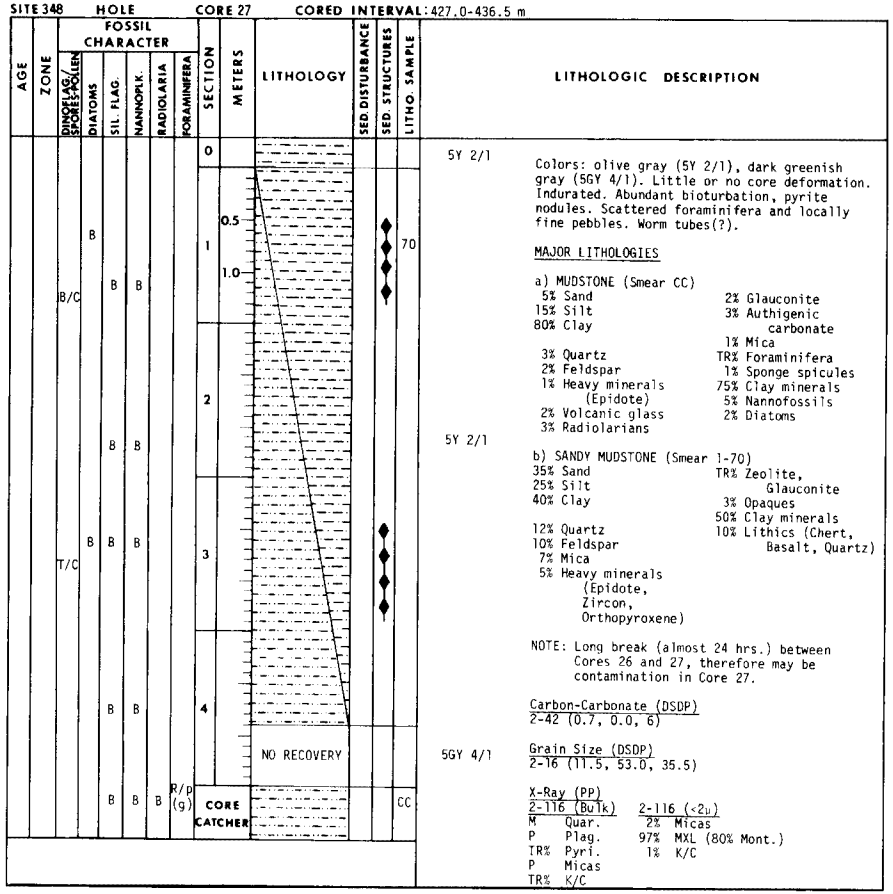
Carbon-Carbonate (DSDP)
3-14 (0.7, 0.0, 6)

Grain Size (DSDP)
3-41 (12.7, 57.3, 30.1)

X-Ray (PP)

3-29 (Bulk)		3-29 (<2μ)	
M	Quar.	4%	Micas
P	Plag.	94%	MXL (60% Mont.)
TR%	Pyri.	2%	K/C
P	Micas		
P	K/C		

SITE 348 HOLE CORE 27 CORED INTERVAL: 427.0-436.5 m



5Y 2/1

Colors: olive gray (5Y 2/1), dark greenish gray (5GY 4/1). Little or no core deformation. Indurated. Abundant bioturbation, pyrite nodules. Scattered foraminifera and locally fine pebbles. Worm tubes(?).

MAJOR LITHOLOGIES

a) MUDSTONE (Smear CC)

5% Sand	2% Glauconite
15% Silt	3% Authigenic carbonate
80% Clay	1% Mica
3% Quartz	TR% Foraminifera
2% Feldspar	1% Sponge spicules
1% Heavy minerals (Epidote)	75% Clay minerals
2% Volcanic glass	5% Nannofossils
3% Radiolarians	2% Diatoms

5Y 2/1

b) SANDY MUDSTONE (Smear 1-70)

35% Sand	TR% Zeolite, Glauconite
25% Silt	3% Opaques
40% Clay	50% Clay minerals
12% Quartz	10% Lithics (Chert, Basalt, Quartz)
10% Feldspar	
7% Mica	
5% Heavy minerals (Epidote, Zircon, Orthopyroxene)	

NOTE: Long break (almost 24 hrs.) between Cores 26 and 27, therefore may be contamination in Core 27.

Carbon-Carbonate (DSDP)
2-42 (0.7, 0.0, 6)

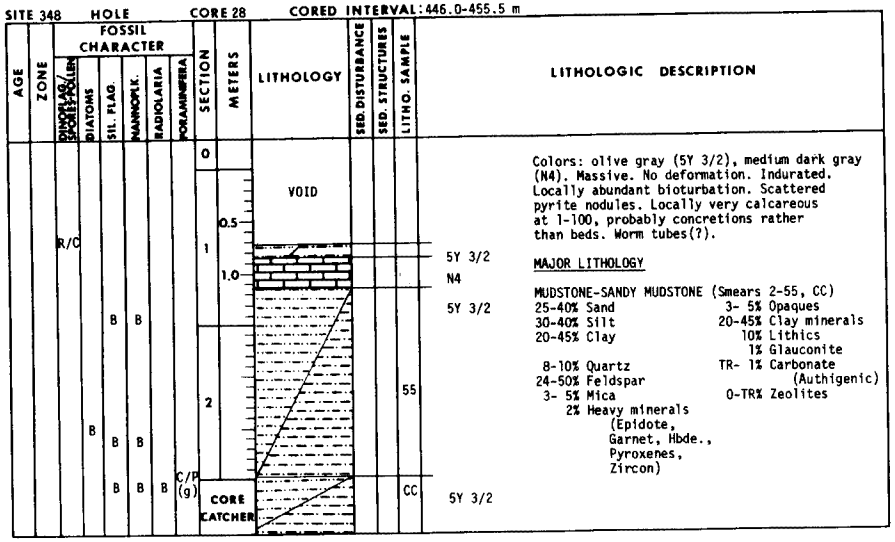
5GY 4/1

Grain Size (DSDP)
2-16 (11.5, 53.0, 35.5)

X-Ray (PP)

2-116 (Bulk)		2-116 (<2μ)	
M	Quar.	2%	Micas
P	Plag.	97%	MXL (80% Mont.)
TR%	Pyri.	1%	K/C
P	Micas		
TR%	K/C		

SITE 348 HOLE CORE 28 CORED INTERVAL: 446.0-455.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2), medium dark gray (N4). Massive. No deformation. Indurated. Locally abundant bioturbation. Scattered pyrite nodules. Locally very calcareous at 1-100, probably concretions rather than beds. Worm tubes(?).

MAJOR LITHOLOGY

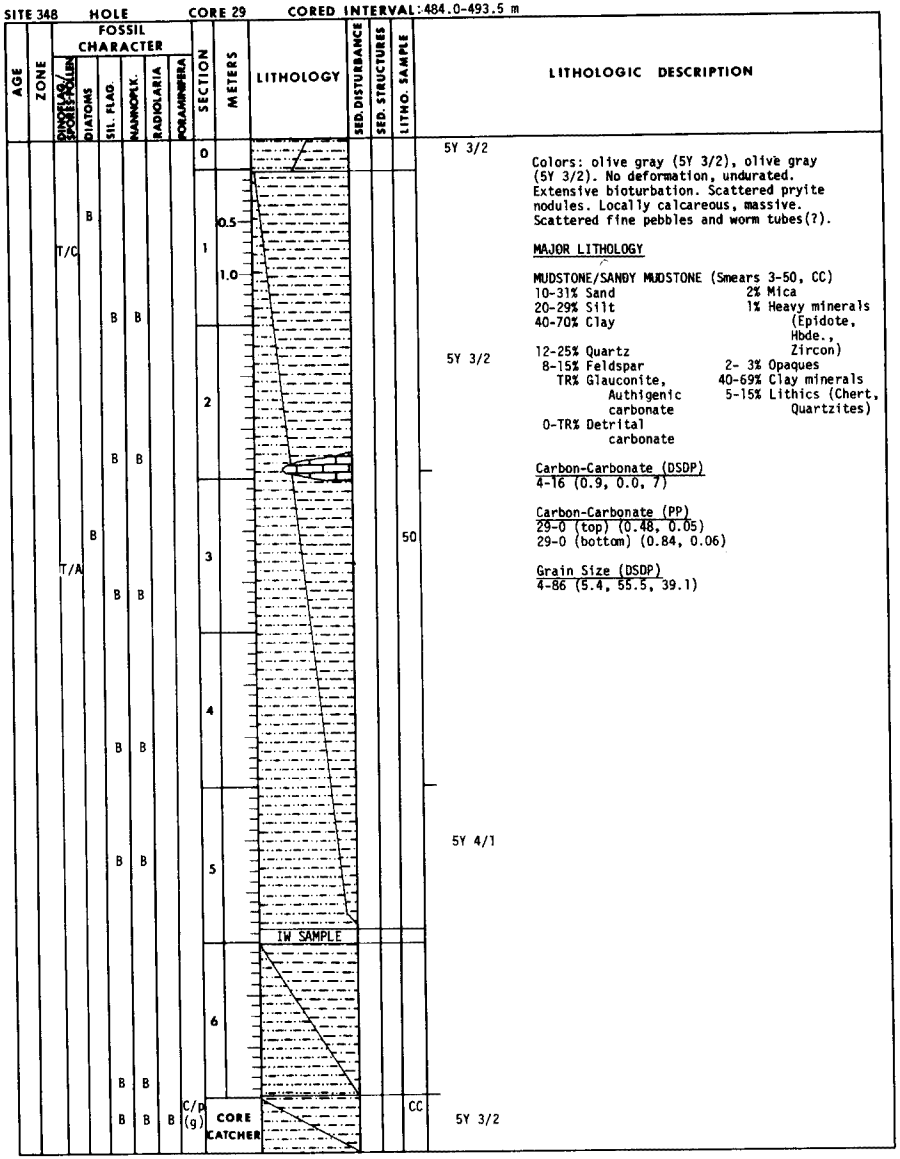
MUDSTONE-SANDY MUDSTONE (Smears 2-55, CC)

25-40% Sand
30-40% Silt
20-45% Clay

8-10% Quartz
24-50% Feldspar
3- 5% Mica
2% Heavy minerals (Epidote, Garnet, Hbde., Pyroxenes, Zircon)

3- 5% Opaques
20-45% Clay minerals
10% Lithics
1% Glauconite
TR- 1% Carbonate (Authigenic)
0-TR% Zeolites

SITE 348 HOLE CORE 29 CORED INTERVAL: 484.0-493.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2), olive gray (5Y 3/2). No deformation, undurated. Extensive bioturbation. Scattered pryite nodules. Locally calcareous, massive. Scattered fine pebbles and worm tubes(?).

MAJOR LITHOLOGY

MUDSTONE/SANDY MUDSTONE (Smears 3-50, CC)

10-31% Sand
20-29% Silt
40-70% Clay

12-25% Quartz
8-15% Feldspar
TR% Glauconite, Authigenic carbonate
0-TR% Detrital carbonate

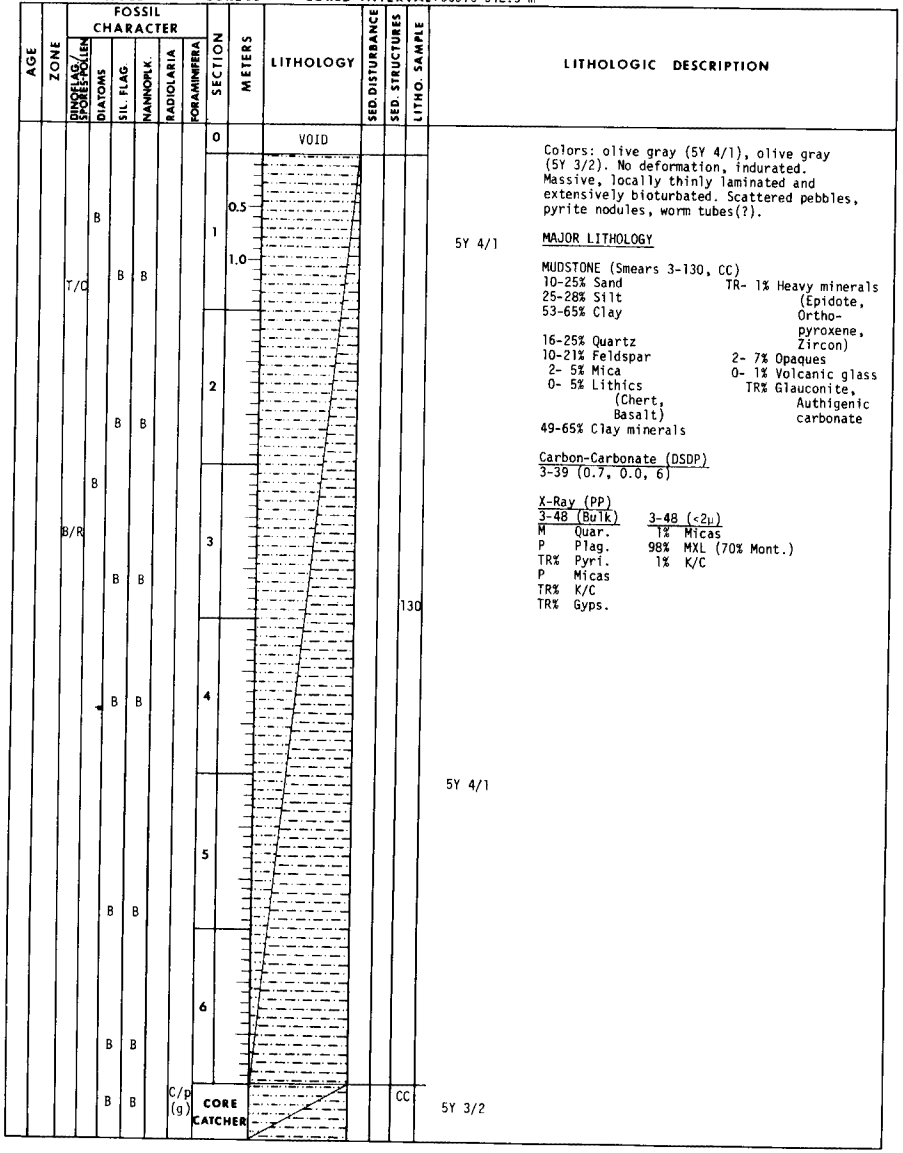
2% Mica
1% Heavy minerals (Epidote, Hbde., Zircon)
2- 3% Opaques
40-69% Clay minerals
5-15% Lithics (Chert, Quartzites)

Carbon-Carbonate (DSDP)
4-16 (0.9, 0.0, 7)

Carbon-Carbonate (PP)
29-0 (top) (0.48, 0.05)
29-0 (bottom) (0.84, 0.06)

Grain Size (DSDP)
4-86 (5.4, 55.5, 39.1)

SITE 348 HOLE CORE 30 CORED INTERVAL: 503.0-512.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), olive gray (5Y 3/2). No deformation, indurated. Massive, locally thinly laminated and extensively bioturbated. Scattered pebbles, pyrite nodules, worm tubes(?).

MAJOR LITHOLOGY

MUDSTONE (Smears 3-130, CC)
10-25% Sand
25-28% Silt
53-65% Clay

16-25% Quartz
10-21% Feldspar
2- 5% Mica
0- 5% Lithics (Chert, Basalt)
49-65% Clay minerals

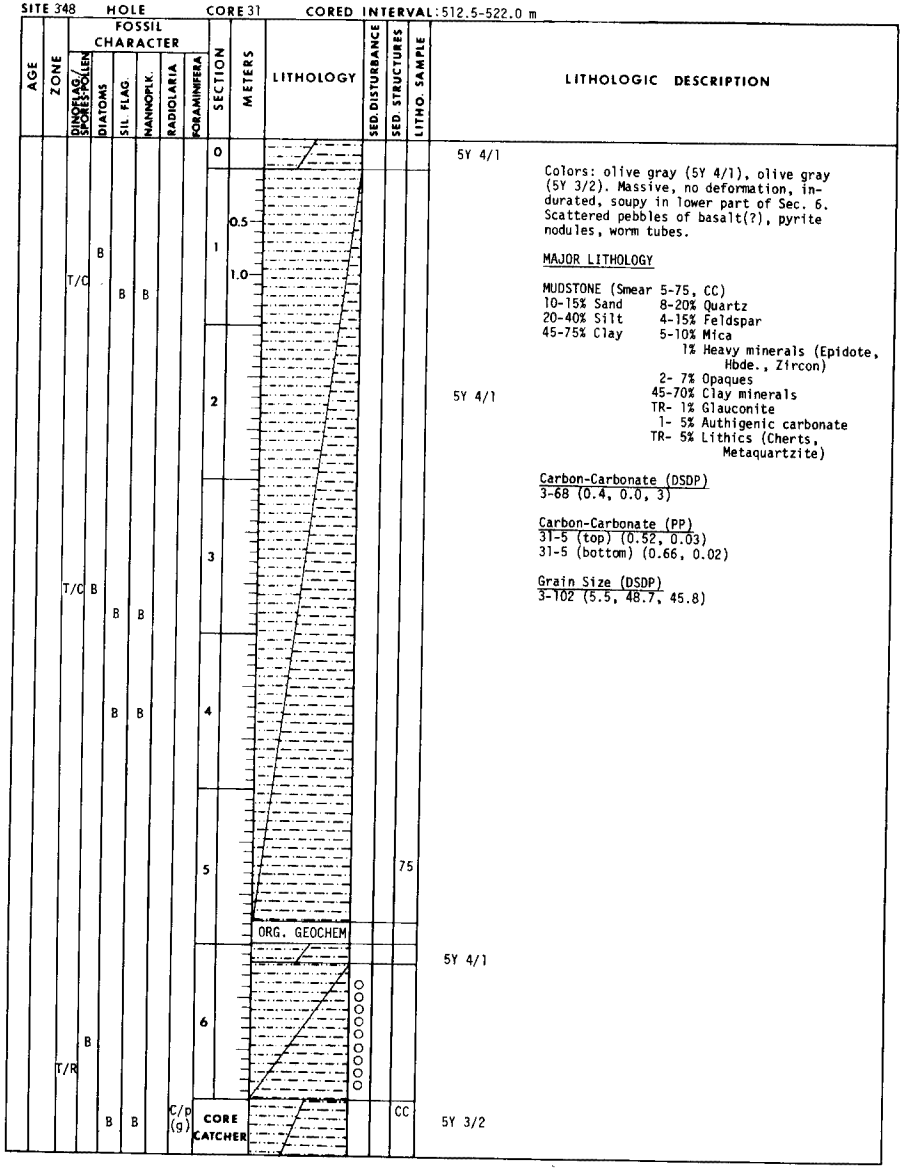
TR- 1% Heavy minerals (Epidote, Ortho-pyroxene, Zircon)
2- 7% Opaques
0- 1% Volcanic glass
TR% Glauconite, Authigenic carbonate

Carbon-Carbonate (DSDP)
3-39 (0.7, 0.0, 6)

X-Ray (PP)

3-48 (Bulk)		3-48 (<2μ)	
M	Quar.	1%	Micas
P	Plag.	98%	MXL (70% Mont.)
TR%	Pyri.	1%	K/C
P	Micas		
TR%	K/C		
TR%	Gyps.		

SITE 348 HOLE CORE 31 CORED INTERVAL: 512.5-522.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), olive gray (5Y 3/2). Massive, no deformation, indurated, soupy in lower part of Sec. 6. Scattered pebbles of basalt(?), pyrite nodules, worm tubes.

MAJOR LITHOLOGY

MUDSTONE (Smear 5-75, CC)
10-15% Sand
20-40% Silt
45-75% Clay

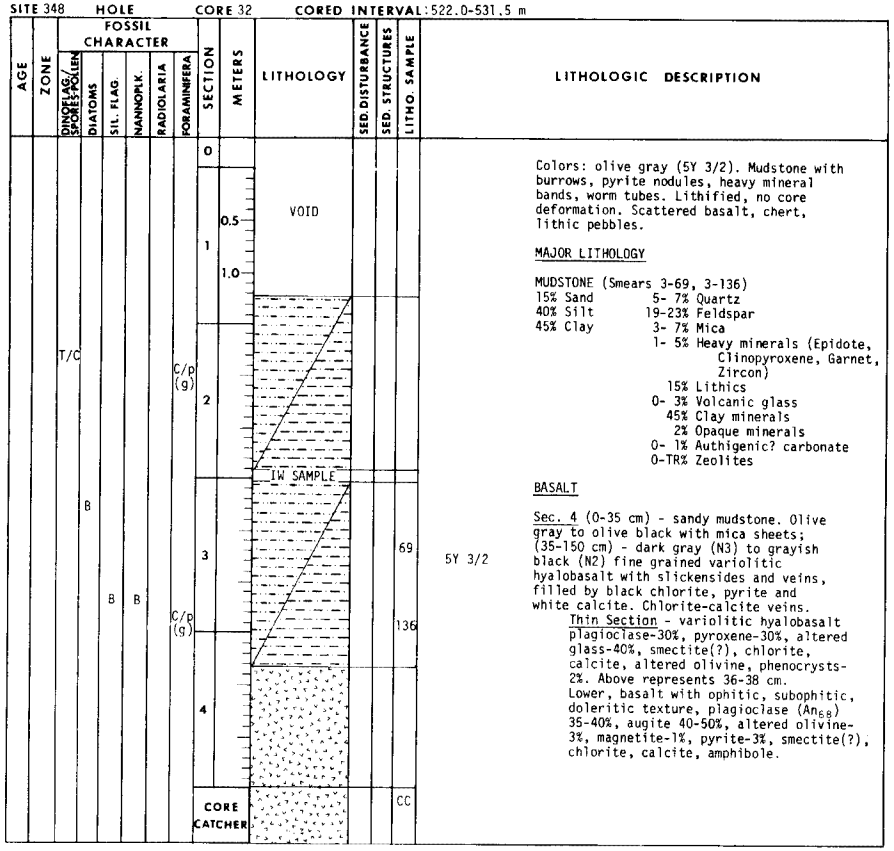
8-20% Quartz
4-15% Feldspar
5-10% Mica
1% Heavy minerals (Epidote, Hbde., Zircon)
2- 7% Opaques
45-70% Clay minerals
TR- 1% Glauconite
1- 5% Authigenic carbonate
TR- 5% Lithics (Cherts, Metaquartzite)

Carbon-Carbonate (DSDP)
3-68 (0.4, 0.0, 3)

Carbon-Carbonate (PP)
31-5 (top) (0.52, 0.03)
31-5 (bottom) (0.66, 0.02)

Grain Size (DSDP)
3-102 (5.5, 48.7, 45.8)

SITE 348 HOLE CORE 32 CORED INTERVAL: 522.0-531.5 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2). Mudstone with burrows, pyrite nodules, heavy mineral bands, worm tubes. Lithified, no core deformation. Scattered basalt, chert, lithic pebbles.

MAJOR LITHOLOGY

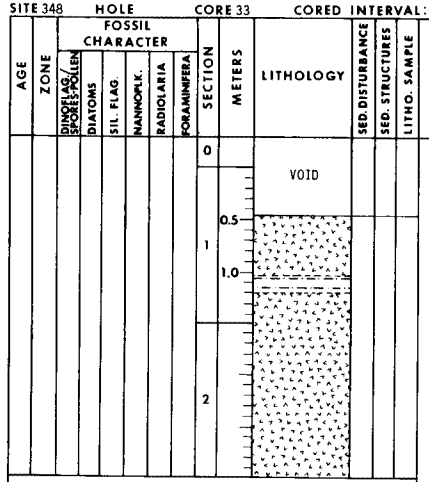
MUDSTONE (Smears 3-69, 3-136)
15% Sand
40% Silt
45% Clay
5- 7% Quartz
19-23% Feldspar
3- 7% Mica
1- 5% Heavy minerals (Epidote, Clinopyroxene, Garnet, Zircon)
15% Lithics
0- 3% Volcanic glass
45% Clay minerals
2% Opaque minerals
0- 1% Authigenic? carbonate
0-TR% Zeolites

BASALT

Sec. 4 (0-35 cm) - sandy mudstone. Olive gray to olive black with mica sheets; (35-150 cm) - dark gray (N3) to grayish black (N2) fine grained variolitic hyalobasalt with slickensides and veins, filled by black chlorite, pyrite and white calcite. Chlorite-calcite veins.

Thin Section - variolitic hyalobasalt plagioclase-30%, pyroxene-30%, altered glass-40%, smectite(?), chlorite, calcite, altered olivine, phenocrysts-2%. Above represents 36-38 cm. Lower, basalt with ophitic, subophitic, doleritic texture, plagioclase (An_{68}) 35-40%, augite 40-50%, altered olivine-3%, magnetite-1%, pyrite-3%, smectite(?), chlorite, calcite, amphibole.

SITE 348 HOLE CORE 33 CORED INTERVAL: 531.5-541.0 m



LITHOLOGIC DESCRIPTION

BASALT

Sec. 1 (45-110 cm) - medium dark gray (N4) to dark gray (N3) fine grained basalt with thin chlorite-calcite veins and slickensides; (110-125 cm) - olive gray (5Y 4/1) sandy mudstone with mica sheets and small pyrite crystals; (125-150 cm) - basalt as above, but near the contact with mudstone is aphanitic with thin green chlorite veins.

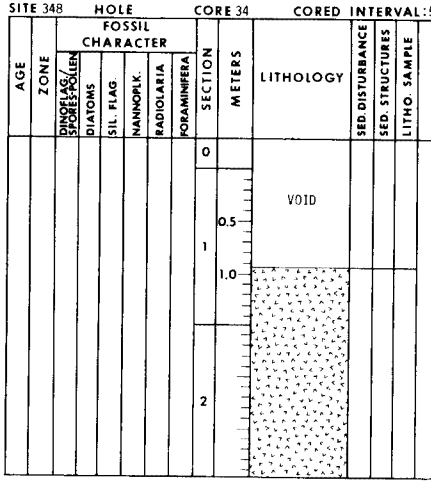
Thin Section (56-59, 102-105, 145-148) - ophitic, doleritic, subophitic textures plagioclase (labradorite) 35-45%, augit 45-60%, altered olivine-3%, smectite, chlorite, amphibole, calcite; (118-119, 126-129 cm) - variolitic with skeletal plagioclase laths-35%, pyroxene variolites 30-35%, altered glass-30%, smectite, chlorite, calcite.

Sec. 2 (0-125 cm) - grayish black (N2) to black (N1) fine grained aphyric homogeneous basalt. Large (1 cm) crystals of calcite. Calcite veins with pyrite and black chlorite (75-125 cm) - medium grained doleritic microdoleretic basalt; (125-150 cm) - calcite-chlorite-pyrite veins. On veins there are large calcite crystals.

Thin Section - dolerite basalt, doleritic, ophitic, subophitic texture, fine-medium grained, holocrystalline. Plagioclase (labradorite (An_{66}) 30-45%, augite 40-55%, altered olivine-3%, smectite, chlorite, calcite, amphibole, pyrite(2), magnetite-1%.

Sec. 3 (85-150 cm) - basalt as above, but coarse. Rare thin branching black chlorite veins (0.1-1 mm) and slickensides with black chlorite.

SITE 348 HOLE CORE 34 CORED INTERVAL: 541.0-544.0 m



LITHOLOGIC DESCRIPTION

BASALT

Sec. 1

Thin Section - basalt with doleritic, ophitic, subophitic textures, medium-fine grained, holocrystalline. Plagioclase (labradorite) 30-45%, augite 40-60%, altered olivine 10-30%, smectite, chlorite, amphibole, pyrite, magnetite.

Sec. 2 (0-15 cm) - dark gray (N3) amygdaloidal basalt. Amygdules (10-15%) of chlorite-smectite. Calcite veins with pyrite. Some mylonitized basalt with rare (3-5%) amygdules; (75-80 cm) - mylonited basalt and calcite veins with pyrite and chlorite; (75-150 cm) - calcite amygdules in amygdaloidal basalt.

Thin Section - subophitic texture plagioclase 30-40%, pyroxene 45-60%, altered olivine-2%, smectite, chlorite, amphibole.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 349

SITE SUMMARY SHEET

POSITION: Latitude: 69°12.41'N Longitude: 08°05.80'W

Water depth (from sea level): 915.0 corrected meters (Echo sounding)

Bottom felt at: 928.0 meters (drill pipe) Penetration: 319.5 meters

Number of Holes: 1 Number of Cores: 13

Total length of cored section: 120.0 m Total core recovered: 81.2 m

Percentage of core recovery: 67.7%

OLDEST SEDIMENT CORED:

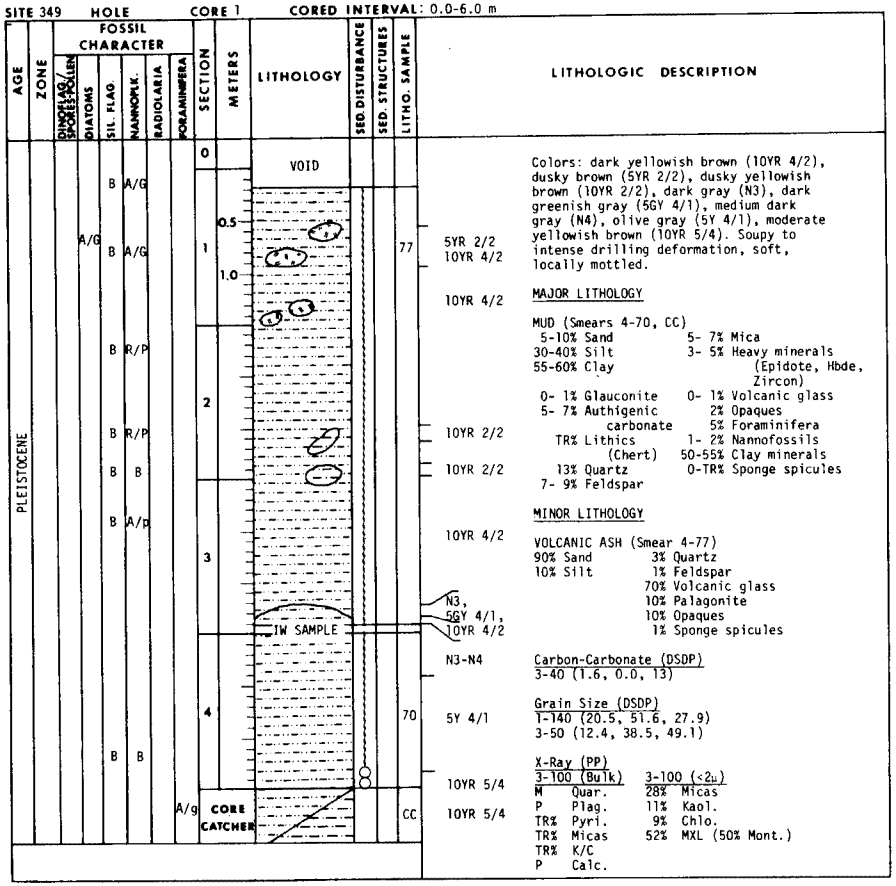
Depth below sea floor: 319.5 meters Nature: Sandy mudstone, mudstone, conglomerate

Age: Upper Eocene (Core 13) Measured velocity: ≈2.16 (Core 13) km/sec

PRINCIPAL RESULTS:

At this site on the Jan Mayen Ridge, sediments ranging in age from Glacial to upper Eocene lie (as at Sites 346 and 347) over an unconformity at 120 meters BSB. However, at this site the unconformity is marked by a basal conglomerate. The glaical sediments consist of muds and sandy muds, with scattered inclusions of volcanic ash. The underlying Oligocene sediments also consist of muds and sandy muds, with volcanic ash in the upper part, and glauconite in the upper and lower parts. Below the unconformity lie mudstones, sandy mudstones, conglomerate, sandstone and breccia with an age range of (tentative) upper Eocene. These beds correspond in the reflection profiler records to the strata with prominent easterly dips. Other than arenaceous foraminifera, these sediments are barren of fossils.

SITE 349 HOLE CORE 1 CORED INTERVAL: 0.0-6.0 m



LITHOLOGIC DESCRIPTION

Colors: dark yellowish brown (10YR 4/2), dusky brown (5YR 2/2), dusky yellowish brown (10YR 2/2), dark gray (N3), dark greenish gray (5GY 4/1), medium dark gray (N4), olive gray (5Y 4/1), moderate yellowish brown (10YR 5/4). Soupy to intense drilling deformation, soft, locally mottled.

MAJOR LITHOLOGY

MUD (Smears 4-70, CC)

5-10% Sand	5- 7% Mica
30-40% Silt	3- 5% Heavy minerals
55-60% Clay	(Epidote, Hbde, Zircon)
0- 1% Glauconite	0- 1% Volcanic glass
5- 7% Authigenic carbonate	2% Opaques
	5% Foraminifera
TR% Lithics (Chert)	1- 2% Nannofossils
	50-55% Clay minerals
13% Quartz	0-TR% Sponge spicules
7- 9% Feldspar	

MINOR LITHOLOGY

VOLCANIC ASH (Smear 4-77)

90% Sand	3% Quartz
10% Silt	1% Feldspar
	70% Volcanic glass
	10% Palagonite
	10% Opaques
	1% Sponge spicules

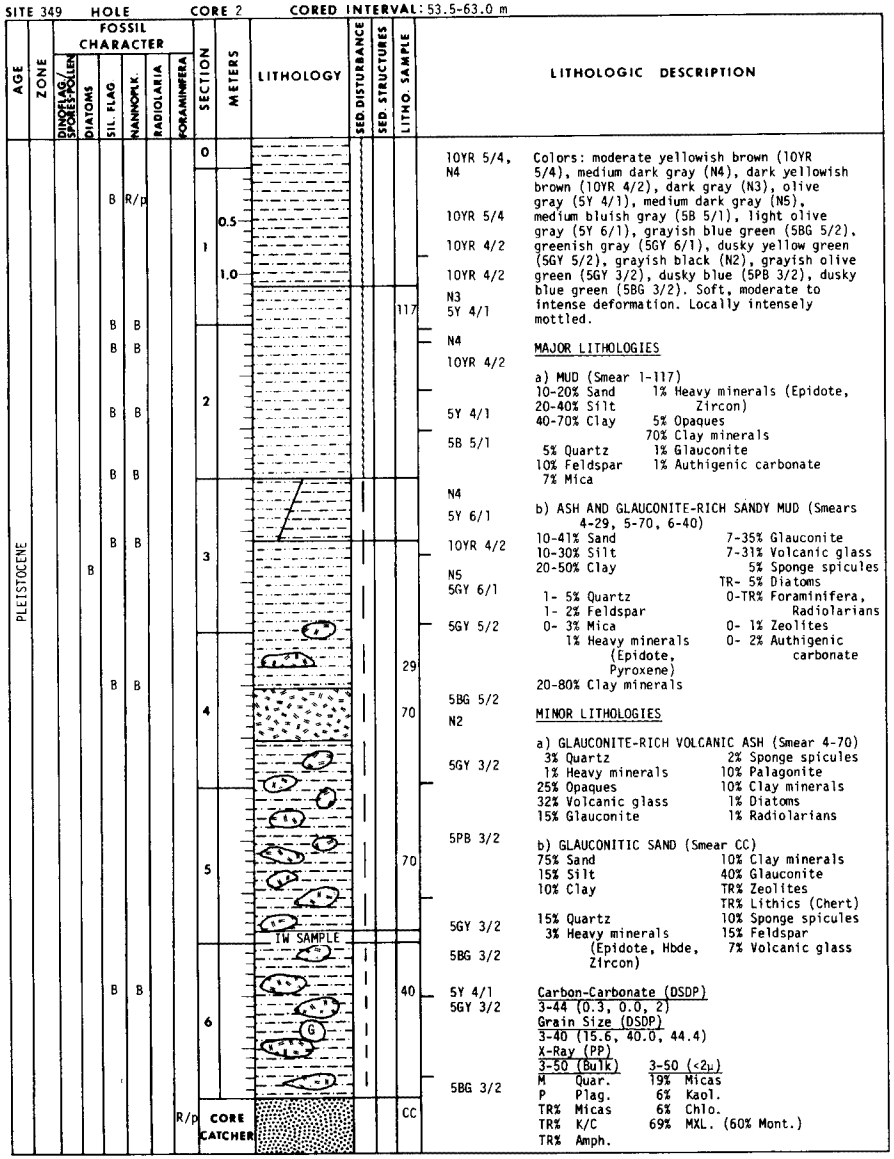
Carbon-Carbonate (DSDP)
3-40 (1.6, 0.0, 13)

Grain Size (DSDP)
1-140 (20.5, 51.6, 27.9)
3-50 (12.4, 38.5, 49.1)

X-Ray (PP)

3-100 (Bulk)		3-100 (<2μ)	
M	Quar.	28%	Micas
P	Plag.	11%	Kaol.
TR%	Pyri.	9%	Chlo.
TR%	Micas	52%	MXL (50% Mont.)
TR%	K/C		
P	Calc.		

SITE 349 HOLE CORE 2 CORED INTERVAL: 53.5-63.0 m



LITHOLOGIC DESCRIPTION

Colors: moderate yellowish brown (10YR 5/4), medium dark gray (N4), dark yellowish brown (10YR 4/2), dark gray (N3), olive gray (5Y 4/1), medium dark gray (N5), medium bluish gray (5B 5/1), light olive gray (5Y 6/1), grayish blue green (5BG 5/2), greenish gray (5GY 6/1), dusky yellow green (5GY 5/2), grayish black (N2), grayish olive green (5GY 3/2), dusky blue (5PB 3/2), dusky blue green (5BG 3/2). Soft, moderate to intense deformation. Locally intensely mottled.

MAJOR LITHOLOGIES

a) MUD (Smear 1-117)

10-20% Sand	1% Heavy minerals (Epidote, Zircon)
20-40% Silt	
40-70% Clay	5% Opaques
	70% Clay minerals
5% Quartz	1% Glauconite
10% Feldspar	1% Authigenic carbonate
7% Mica	

b) ASH AND GLAUCONITE-RICH SANDY MUD (Smears 4-29, 5-70, 6-40)

10-41% Sand	7-35% Glauconite
10-30% Silt	7-31% Volcanic glass
20-50% Clay	5% Sponge spicules
	TR- 5% Diatoms
1- 5% Quartz	0-TR% Foraminifera, Radiolarians
1- 2% Feldspar	
0- 3% Mica	0- 1% Zeolites
1% Heavy minerals (Epidote, Pyroxene)	0- 2% Authigenic carbonate
20-80% Clay minerals	

MINOR LITHOLOGIES

a) GLAUCONITE-RICH VOLCANIC ASH (Smear 4-70)

3% Quartz	2% Sponge spicules
1% Heavy minerals	10% Palagonite
25% Opaques	10% Clay minerals
32% Volcanic glass	1% Diatoms
15% Glauconite	1% Radiolarians

b) GLAUCONITIC SAND (Smear CC)

75% Sand	10% Clay minerals
15% Silt	40% Glauconite
10% Clay	TR% Zeolites
	TR% Lithics (Chert)
15% Quartz	10% Sponge spicules
3% Heavy minerals (Epidote, Hbde, Zircon)	15% Feldspar
	7% Volcanic glass

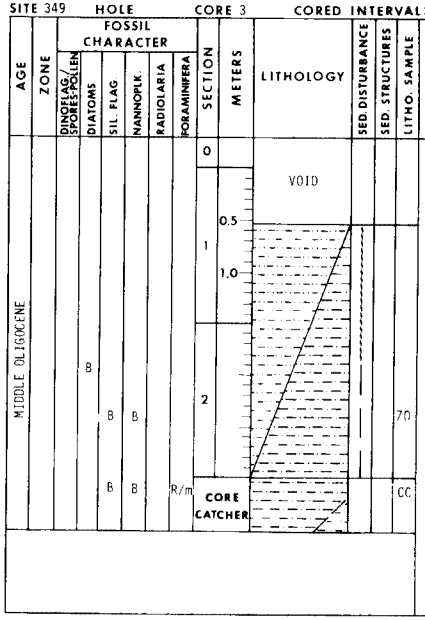
Carbon-Carbonate (DSDP)
3-44 (0.3, 0.0, 2)

Grain Size (DSDP)
3-40 (15.6, 40.0, 44.4)

X-Ray (PP)

3-50 (Bulk)		3-50 (<2μ)	
M	Quar.	19%	Micas
P	Plag.	6%	Kaol.
TR%	Micas	6%	Chlo.
TR%	K/C	69%	MXL. (60% Mont.)
TR%	Amph.		

SITE 349 HOLE CORE 3 CORED INTERVAL: 91.5-101.0 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), grayish olive (10Y 4/2). Intense to moderate deformation, soft, mottled.

MAJOR LITHOLOGY

5GY 4/1

MUD (Smears 2-70, CC)

15% Sand	10-15% Quartz
20-25% Silt	7- 8% Feldspar
60-65% Clay	1- 2% Mica
	10-15% Heavy minerals (Epidote, Pyroxene, Zircon)
	0- 5% Volcanic glass
	2% Opaques
	TR% Glauconite
	60-65% Clay minerals
	TR% Lithics (Chert)
	3% Zeolites

Carbon-Carbonate (DSDP)
2-94 (0.4, 0.0, 3)

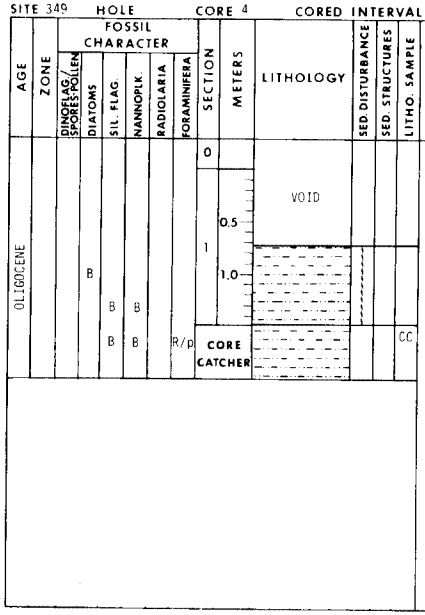
Grain Size (DSDP)
2-100 (11.2, 52.5, 36.4)

10Y 4/2

X-Ray (PP)

2-120 (Bulk)		2-120 (<2μ)
M	Quar.	6% Micas
P	Plag.	91% MXL. (50% Mont.)
P	Micas	3% K/C
P	K/C	

SITE 349 HOLE CORE 4 CORED INTERVAL: 101.0-110.5 m



LITHOLOGIC DESCRIPTION

Colors: grayish olive green (5GY 3/1), olive gray (5Y 4/1), dark greenish gray (5GY 4/1). Soft, intensely deformed.

MAJOR LITHOLOGY

5GY 3/1

MUD (Smear CC)

10-15% Sand	30% Quartz
40-50% Silt	16% Feldspar
35-50% Clay	5% Mica
	10% Heavy minerals (Epidote, Hbde., Zircon)
	30% Clay minerals
	5% Opaques
	1% Glauconite
	2% Zeolites
	1% Lithics (Chert)

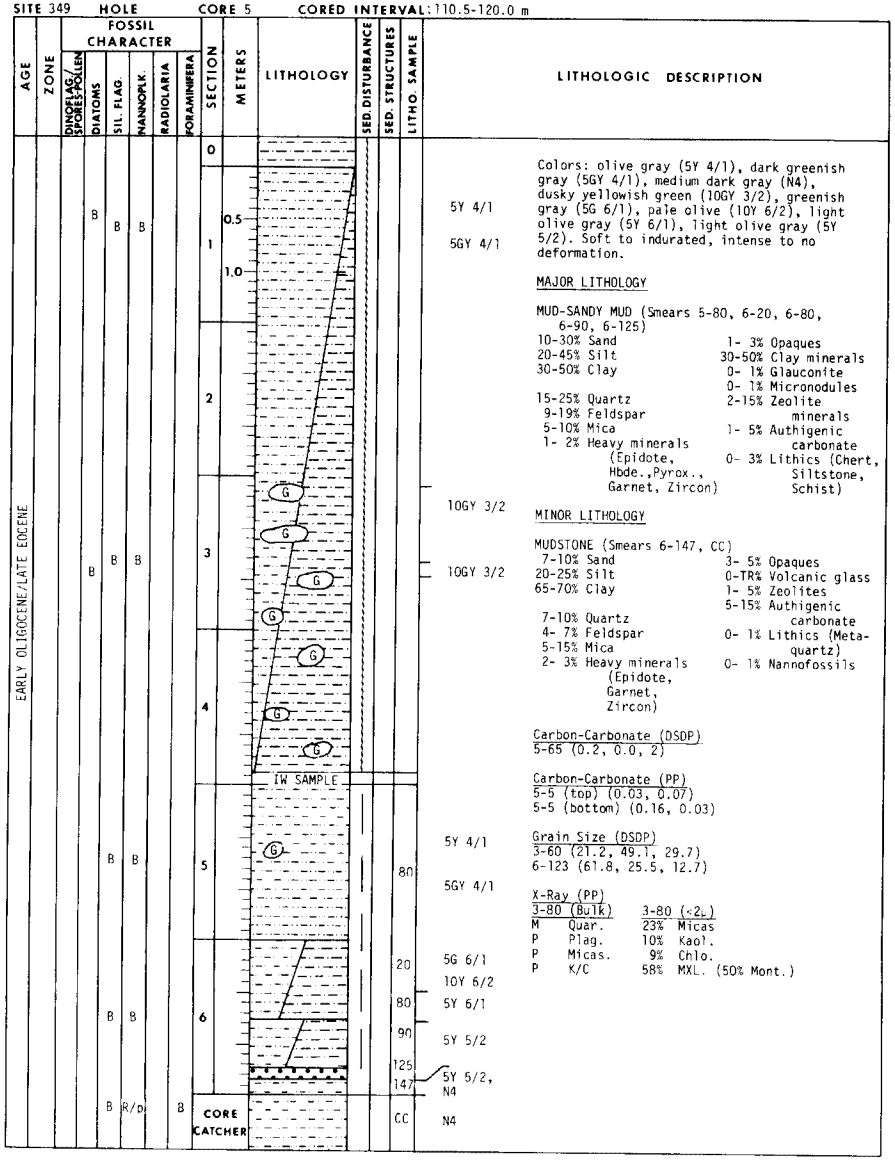
Carbon-Carbonate (DSDP)
1-85 (0.3, 0.0, 3)

Grain Size (DSDP)
1-100 (12.0, 52.4, 35.6)

X-Ray (PP)

1-90 (Bulk)		1-90 (<2μ)
M	Quar.	13% Micas
P	Plag.	8% Kaol.
P	Micas	5% Chlo.
P	K/C	74% MXL. (70% Mont.)

SITE 349 HOLE CORE 5 CORED INTERVAL: 110.5-120.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), dark greenish gray (5GY 4/1), medium dark gray (N4), dusky yellowish green (10GY 3/2), greenish gray (5G 6/1), pale olive (10Y 6/2), light olive gray (5Y 6/1), light olive gray (5Y 5/2). Soft to indurated, intense to no deformation.

MAJOR LITHOLOGY

5Y 4/1
5GY 4/1
10GY 3/2

MUD-SANDY MUD (Smears 5-80, 6-20, 6-80, 6-90, 6-125)

10-30% Sand	1- 3% Opaques
20-45% Silt	30-50% Clay minerals
30-50% Clay	0- 1% Glauconite
	0- 1% Micronodules
15-25% Quartz	2-15% Zeolite minerals
9-19% Feldspar	1- 5% Authigenic carbonate
5-10% Mica	0- 3% Lithics (Chert, Siltstone, Schist)
1- 2% Heavy minerals (Epidote, Hbde., Pyrox., Garnet, Zircon)	

10GY 3/2

MINOR LITHOLOGY

MUDSTONE (Smears 6-147, CC)

7-10% Sand	3- 5% Opaques
20-25% Silt	0-TR% Volcanic glass
65-70% Clay	1- 5% Zeolites
	5-15% Authigenic carbonate
7-10% Quartz	0- 1% Lithics (Meta-quartz)
4- 7% Feldspar	0- 1% Nannofossils
5-15% Mica	
2- 3% Heavy minerals (Epidote, Garnet, Zircon)	

Carbon-Carbonate (DSDP)
5-65 (0.2, 0.0, 2)

Carbon-Carbonate (PP)
5-5 (top) (0.03, 0.07)
5-5 (bottom) (0.16, 0.03)

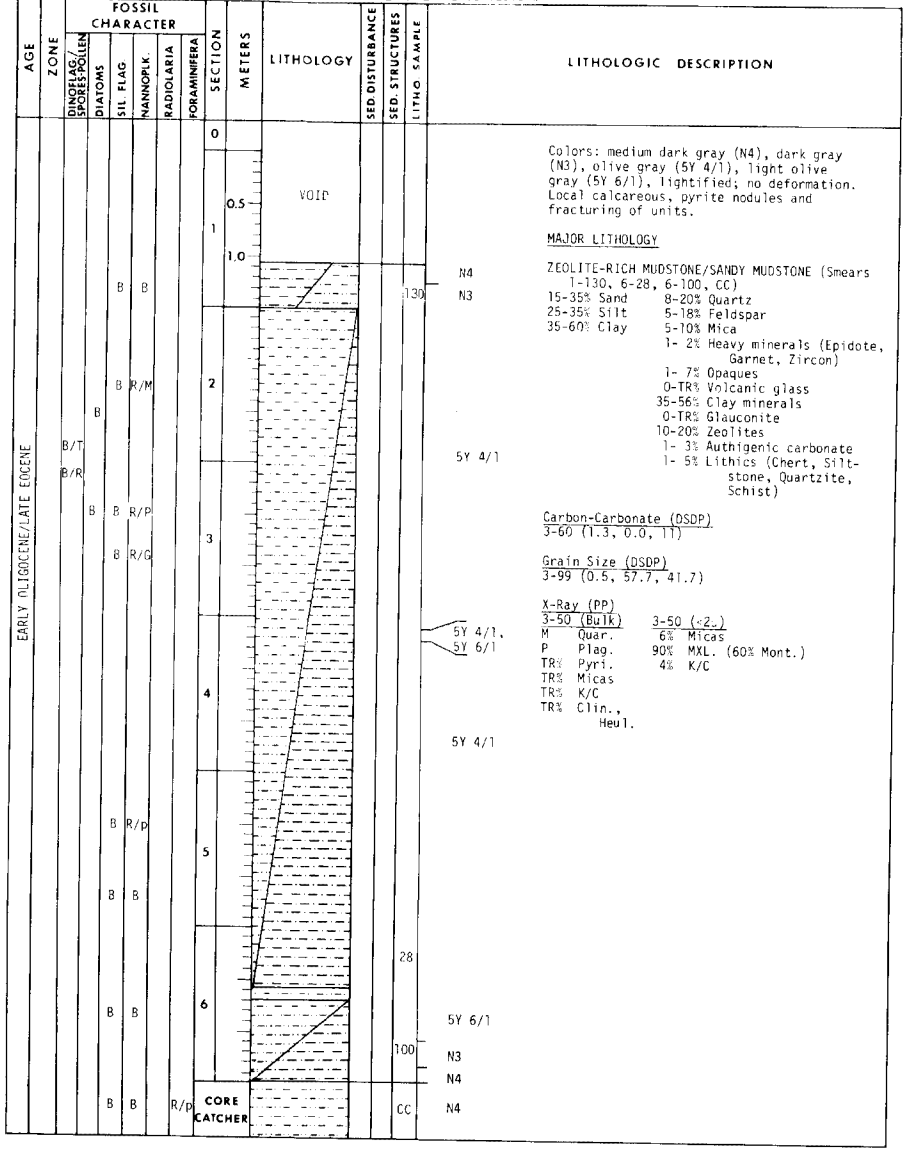
Grain Size (DSDP)
3-60 (21.2, 49.1, 29.7)
6-123 (61.8, 25.5, 12.7)

5Y 4/1
5GY 4/1
5G 6/1
10Y 6/2
5Y 6/1
5Y 5/2
5Y 5/2, N4
N4

X-Ray (PP)

3-80 (Bulk)		3-80 (<2μ)
M	Quar.	23% Micas
P	Plag.	10% Kaol.
P	Micas.	9% Chlo.
P	K/C	58% MXL. (50% Mont.)

SITE 349 HOLE CORE 6 CORED INTERVAL: 120.0-129.5 m



Colors: medium dark gray (N4), dark gray (N3), olive gray (5Y 4/1), light olive gray (5Y 6/1), lightified; no deformation. Local calcareous, pyrite nodules and fracturing of units.

MAJOR LITHOLOGY

ZEOLITE-RICH MUDSTONE/SANDY MUDSTONE (Smears 1-130, 6-28, 6-100, CC)

15-35% Sand	8-20% Quartz
25-35% Silt	5-18% Feldspar
35-60% Clay	5-10% Mica
	1- 2% Heavy minerals (Epidote, Garnet, Zircon)
	1- 7% Opaques
	0-TR% Volcanic glass
	35-56% Clay minerals
	0-TR% Glauconite
	10-20% Zeolites
	1- 3% Authigenic carbonate
	1- 5% Lithics (Chert, Siltstone, Quartzite, Schist)

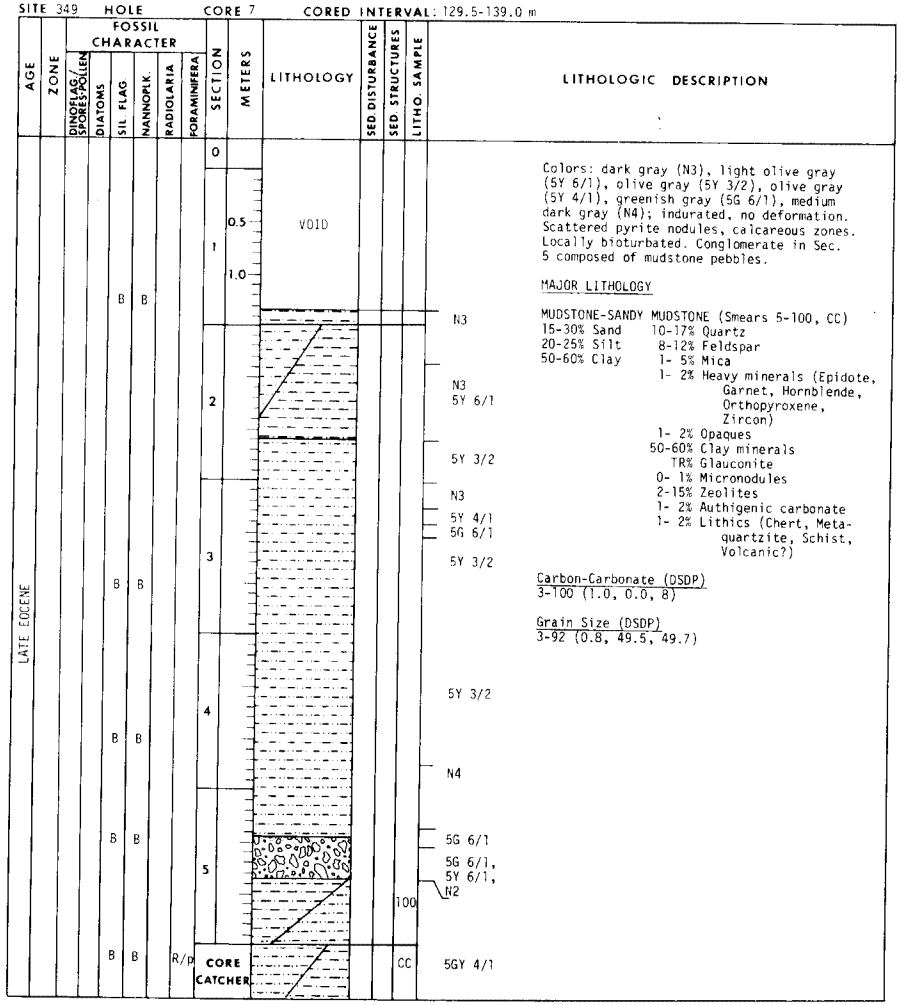
Carbon-Carbonate (DSDP)
3-60 (1.3, 0.0, 11)

Grain Size (DSDP)
3-99 (0.5, 57.7, 41.7)

X-Ray (PP)

3-50 (Bulk)		3-50 (<2.)	
M	Quar.	6%	Micas
P	Plag.	90%	MXL. (60% Mont.)
TR%	Pyri.	4%	K/C
TR%	Micas		
TR%	K/C		
TR%	Clin., Heul.		

SITE 349 HOLE CORE 7 CORED INTERVAL: 129.5-139.0 m



Colors: dark gray (N3), light olive gray (5Y 6/1), olive gray (5Y 3/2), olive gray (5Y 4/1), greenish gray (5G 6/1), medium dark gray (N4); indurated, no deformation. Scattered pyrite nodules, calcareous zones. Locally bioturbated. Conglomerate in Sec. 5 composed of mudstone pebbles.

MAJOR LITHOLOGY

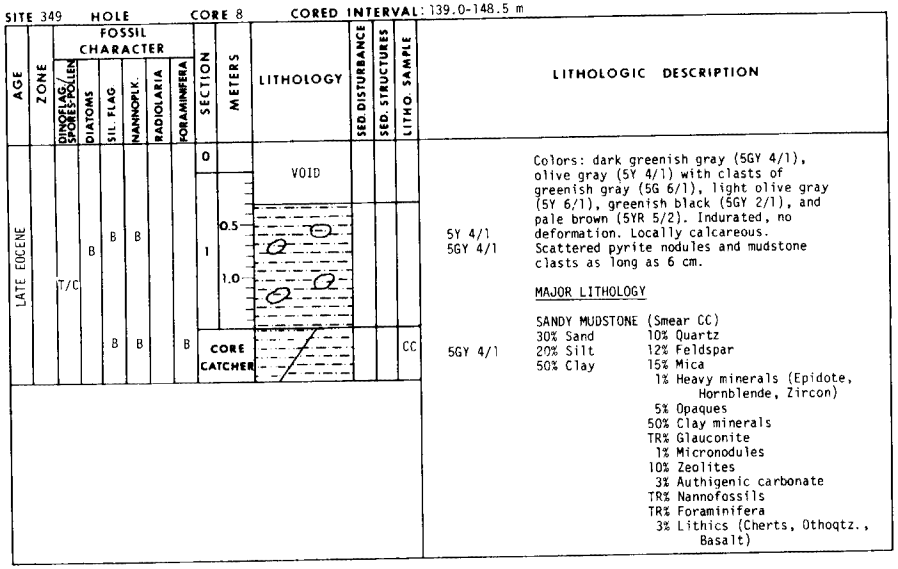
MUDSTONE-SANDY MUDSTONE (Smears 5-100, CC)

15-30% Sand	10-17% Quartz
20-25% Silt	8-12% Feldspar
50-60% Clay	1- 5% Mica
	1- 2% Heavy minerals (Epidote, Garnet, Hornblende, Orthopyroxene, Zircon)
	1- 2% Opaques
	50-60% Clay minerals
	TR% Glauconite
	0- 1% Micronodules
	2-15% Zeolites
	1- 2% Authigenic carbonate
	1- 2% Lithics (Chert, Metaquartzite, Schist, Volcanic?)

Carbon-Carbonate (DSDP)
3-100 (1.0, 0.0, 8)

Grain Size (DSDP)
3-92 (0.8, 49.5, 49.7)

SITE 349 HOLE CORE 8 CORED INTERVAL: 139.0-148.5 m



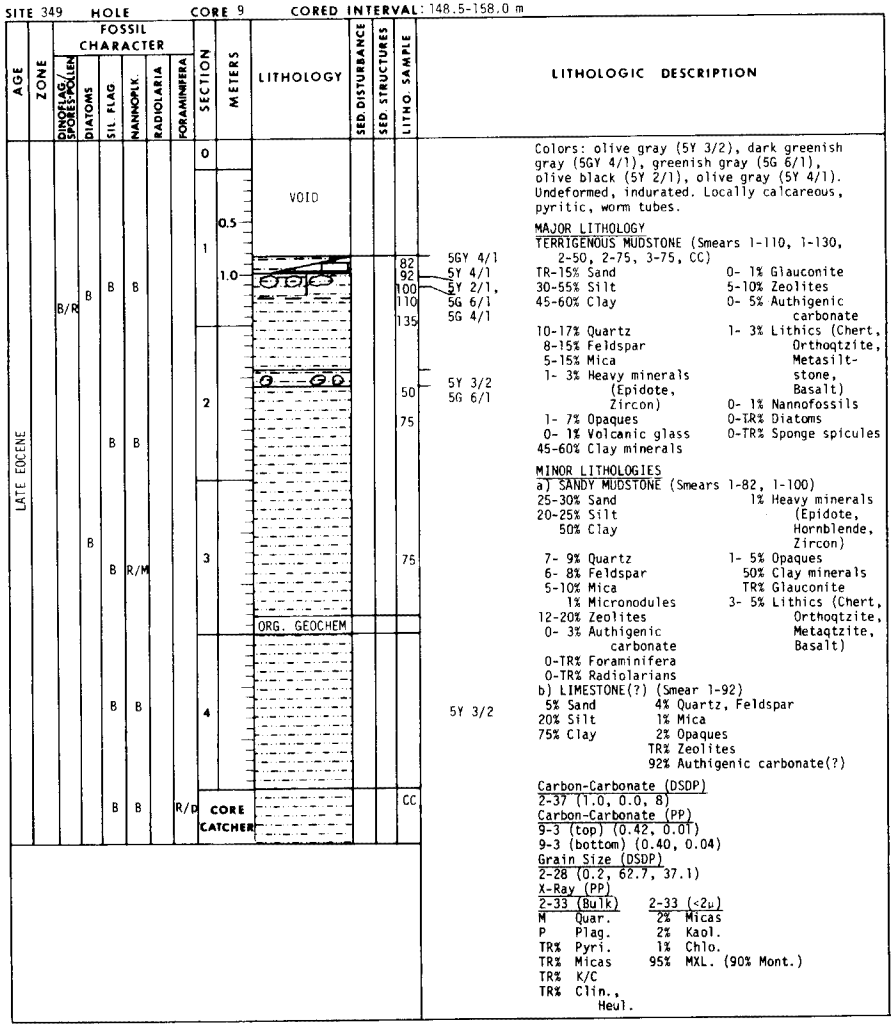
Colors: dark greenish gray (5GY 4/1), olive gray (5Y 4/1) with clasts of greenish gray (5G 6/1), light olive gray (5Y 6/1), greenish black (5GY 2/1), and pale brown (5YR 5/2). Indurated, no deformation. Locally calcareous. Scattered pyrite nodules and mudstone clasts as long as 6 cm.

MAJOR LITHOLOGY

SANDY MUDSTONE (Smear CC)

30% Sand	10% Quartz
20% Silt	12% Feldspar
50% Clay	15% Mica
	1% Heavy minerals (Epidote, Hornblende, Zircon)
	5% Opaques
	50% Clay minerals
	TR% Glauconite
	1% Micronodules
	10% Zeolites
	3% Authigenic carbonate
	TR% Nannofossils
	TR% Foraminifera
	3% Lithics (Cherts, Othoqtz., Basalt)

SITE 349 HOLE CORE 9 CORED INTERVAL: 148.5-158.0 m



Colors: olive gray (5Y 3/2), dark greenish gray (5GY 4/1), greenish gray (5G 6/1), olive black (5Y 2/1), olive gray (5Y 4/1). Undeformed, indurated. Locally calcareous, pyritic, worm tubes.

MAJOR LITHOLOGY

TERRIGENOUS MUDSTONE (Smears 1-110, 1-130, 2-50, 2-75, 3-75, CC)

TR-15% Sand	0- 1% Glauconite
30-55% Silt	5-10% Zeolites
45-60% Clay	0- 5% Authigenic carbonate
10-17% Quartz	1- 3% Lithics (Chert, Orthoqtzite, Metasilt-stone, Basalt)
8-15% Feldspar	
5-15% Mica	
1- 3% Heavy minerals (Epidote, Zircon)	0- 1% Nannofossils
	0-1R% Diatoms
1- 7% Opaques	0-TR% Sponge spicules
0- 1% Volcanic glass	
45-60% Clay minerals	

MINOR LITHOLOGIES

a) SANDY MUDSTONE (Smears 1-82, 1-100)

25-30% Sand	1% Heavy minerals (Epidote, Hornblende, Zircon)
20-25% Silt	
50% Clay	
7- 9% Quartz	1- 5% Opaques
6- 8% Feldspar	50% Clay minerals
5-10% Mica	TR% Glauconite
1% Micronodules	3- 5% Lithics (Chert, Orthoqtzite, Metaqtzite, Basalt)
12-20% Zeolites	
0- 3% Authigenic carbonate	
0-TR% Foraminifera	
0-TR% Radiolarians	

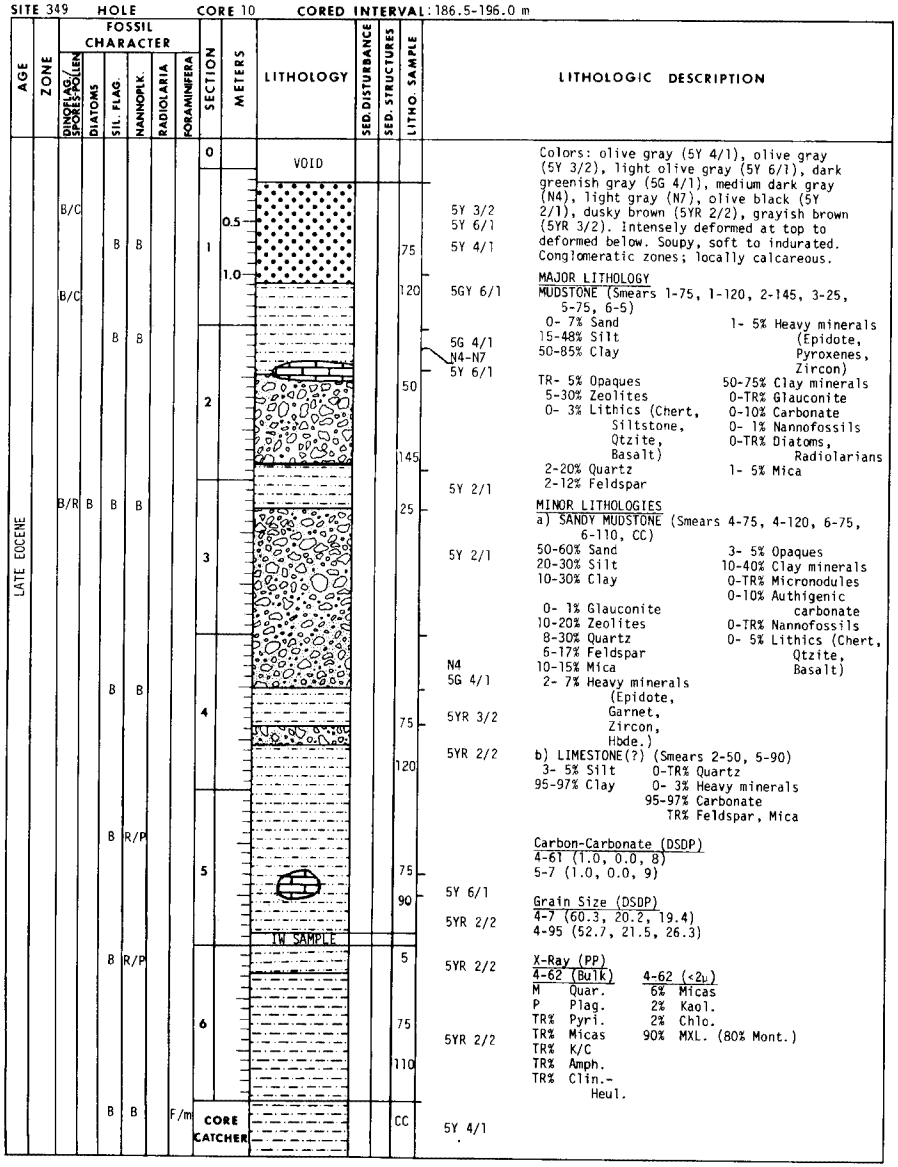
b) LIMESTONE(?) (Smear 1-92)

5% Sand	4% Quartz, Feldspar
20% Silt	1% Mica
75% Clay	2% Opaques
	TR% Zeolites
	92% Authigenic carbonate(?)

Carbon-Carbonate (DSDP)
2-37 (1.0, 0.0, 8)
Carbon-Carbonate (PP)
9-3 (top) (0.42, 0.01)
9-3 (bottom) (0.40, 0.04)
Grain Size (DSDP)
2-28 (0.2, 62.7, 37.1)
X-Ray (PP)

2-33 (Bulk)		2-33 (<2μ)	
M	Quar.	2%	Micas
P	Plag.	2%	Kaol.
TR%	Pyri.	1%	Chlo.
TR%	Micas	95%	MXL. (90% Mont.)
TR%	K/C		
TR%	Clin., Heul.		

SITE 349 HOLE CORE 10 CORED INTERVAL: 186.5-196.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), olive gray (5Y 3/2), light olive gray (5Y 6/1), dark greenish gray (5G 4/1), medium dark gray (N4), light gray (N7), olive black (5Y 2/1), dusky brown (5YR 2/2), grayish brown (5YR 3/2). Intensely deformed at top to deformed below. Soupy, soft to indurated. Conglomeratic zones; locally calcareous.

MAJOR LITHOLOGY

MUDSTONE (Smears 1-75, 1-120, 2-145, 3-25, 5-75, 6-5)

0- 7% Sand	1- 5% Heavy minerals (Epidote, Pyroxenes, Zircon)
15-48% Silt	
50-85% Clay	
TR- 5% Opaques	50-75% Clay minerals
5-30% Zeolites	0-TR% Glauconite
0- 3% Lithics (Chert, Siltstone, Qtzite, Basalt)	0-10% Carbonate
	0- 1% Nannofossils
	0-TR% Diatoms, Radiolarians
2-20% Quartz	1- 5% Mica
2-12% Feldspar	

MINOR LITHOLOGIES

a) SANDY MUDSTONE (Smears 4-75, 4-120, 6-75, 6-110, CC)

50-60% Sand	3- 5% Opaques
20-30% Silt	10-40% Clay minerals
10-30% Clay	0-TR% Micronodules
	0-10% Authigenic carbonate
0- 1% Glauconite	
10-20% Zeolites	0-TR% Nannofossils
8-30% Quartz	0- 5% Lithics (Chert, Qtzite, Basalt)
6-17% Feldspar	
10-15% Mica	
2- 7% Heavy minerals (Epidote, Garnet, Zircon, Hbde.)	

b) LIMESTONE(?) (Smears 2-50, 5-90)

3- 5% Silt	0-TR% Quartz
95-97% Clay	0- 3% Heavy minerals
	95-97% Carbonate
	TR% Feldspar, Mica

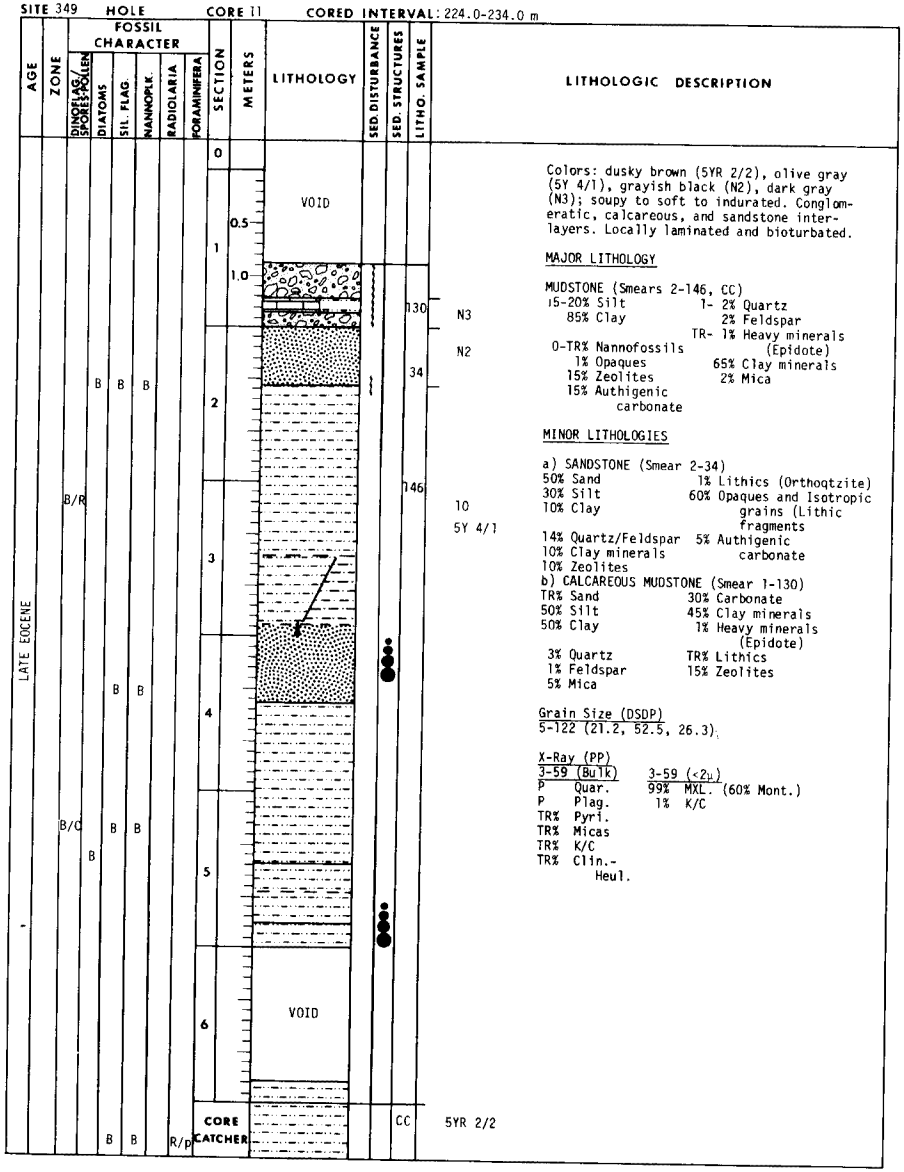
Carbon-Carbonate (DSDP)
4-61 (1.0, 0.0, 8)
5-7 (1.0, 0.0, 9)

Grain Size (DSDP)
4-7 (60.3, 20.2, 19.4)
4-95 (52.7, 21.5, 26.3)

X-Ray (PP)

4-62 (Bulk)	4-62 (<2μ)
M Quar.	6% Micas
P Plag.	2% Kaol.
TR% Pyri.	2% Chlo.
TR% Micas	90% MXL. (80% Mont.)
TR% K/C	
TR% Amph.	
TR% Clin.-Heul.	

SITE 349 HOLE CORE 11 CORED INTERVAL: 224.0-234.0 m



LITHOLOGIC DESCRIPTION

Colors: dusky brown (5YR 2/2), olive gray (5Y 4/1), grayish black (N2), dark gray (N3); soupy to soft to indurated. Conglomeratic, calcareous, and sandstone interlayers. Locally laminated and bioturbated.

MAJOR LITHOLOGY

MUDSTONE (Smears 2-146, CC)

15-20% Silt	1- 2% Quartz
85% Clay	2% Feldspar
	TR- 1% Heavy minerals (Epidote)
0-TR% Nannofossils	
1% Opaques	65% Clay minerals
15% Zeolites	2% Mica
15% Authigenic carbonate	

MINOR LITHOLOGIES

a) SANDSTONE (Smear 2-34)

50% Sand	1% Lithics (Orthoqtzite)
30% Silt	60% Opaques and Isotropic grains (Lithic fragments
10% Clay	
14% Quartz/Feldspar	5% Authigenic carbonate
10% Clay minerals	
10% Zeolites	

b) CALCAREOUS MUDSTONE (Smear 1-130)

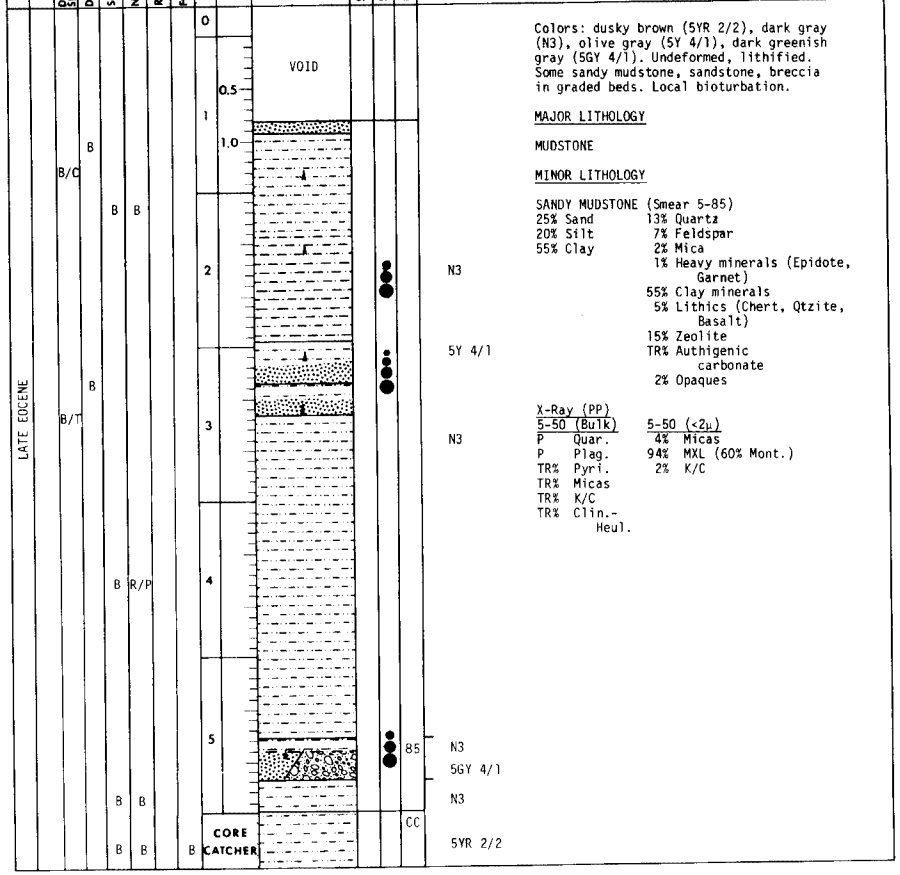
TR% Sand	30% Carbonate
50% Silt	45% Clay minerals
50% Clay	1% Heavy minerals (Epidote)
3% Quartz	TR% Lithics
1% Feldspar	15% Zeolites
5% Mica	

Grain Size (DSDP)
5-122 (21.2, 52.5, 26.3)

X-Ray (PP)

3-59 (Bulk)	3-59 (<2μ)
P Quar.	99% MXL. (60% Mont.)
P Plag.	1% K/C
TR% Pyri.	
TR% Micas	
TR% K/C	
TR% Clin.-Heul.	

SITE 349 HOLE CORE 12 CORED INTERVAL: 262.5-272.0 m



Colors: dusky brown (5YR 2/2), dark gray (N3), olive gray (5Y 4/1), dark greenish gray (5GY 4/1). Undeformed, lithified. Some sandy mudstone, sandstone, breccia in graded beds. Local bioturbation.

MAJOR LITHOLOGY

MUDSTONE

MINOR LITHOLOGY

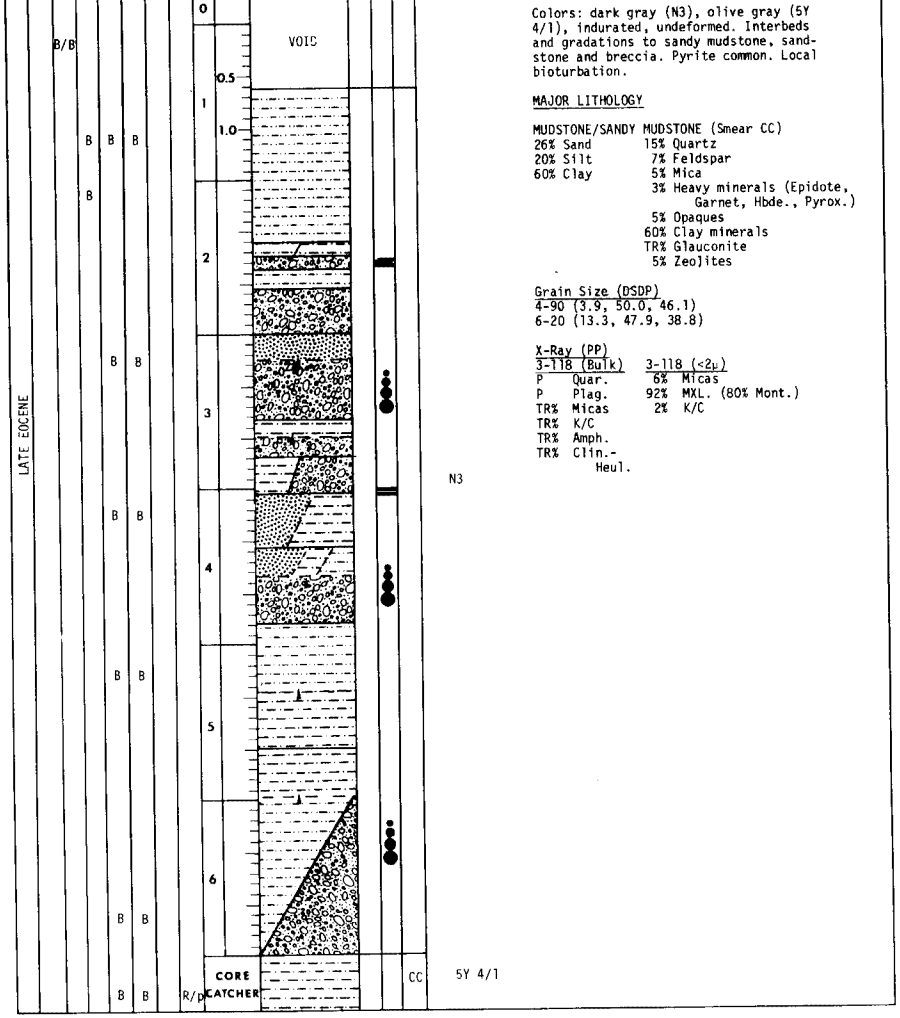
SANDY MUDSTONE (Smear 5-85)

25% Sand	13% Quartz
20% Silt	7% Feldspar
55% Clay	2% Mica
	1% Heavy minerals (Epidote, Garnet)
	55% Clay minerals
	5% Lithics (Chert, Qtzite, Basalt)
	15% Zeolite
	TR% Authigenic carbonate
	2% Opaques

X-Ray (PP)

5-50 (Bulk)		5-50 (<2μ)	
P	Quar.	4%	Micas
P	Plag.	94%	MXL (60% Mont.)
TR%	Pyri.	2%	K/C
TR%	Micas		
TR%	K/C		
TR%	Clin.-Heul.		

SITE 349 HOLE CORE 13 CORED INTERVAL: 310.0-319.5 m



Colors: dark gray (N3), olive gray (5Y 4/1), indurated, undeformed. Interbeds and gradations to sandy mudstone, sandstone and breccia. Pyrite common. Local bioturbation.

MAJOR LITHOLOGY

MUDSTONE/SANDY MUDSTONE (Smear CC)

26% Sand	15% Quartz
20% Silt	7% Feldspar
60% Clay	5% Mica
	3% Heavy minerals (Epidote, Garnet, Hbde., Pyrox.)
	5% Opaques
	60% Clay minerals
	TR% Glauconite
	5% Zeolites

Grain Size (DSDP)
4-90 (3.9, 50.0, 46.1)
6-20 (13.3, 47.9, 38.8)

X-Ray (PP)

3-118 (Bulk)		3-118 (<2μ)	
P	Quar.	6%	Micas
P	Plag.	92%	MXL. (80% Mont.)
TR%	Micas	2%	K/C
TR%	K/C		
TR%	Amph.		
TR%	Clin.-Heul.		

DEEP SEA DRILLING PROJECT

LEG 38 SITE 350

SITE SUMMARY SHEET

POSITION: Latitude: 67°03.34'N Longitude: 08°17.68'W

Water depth (from sea level): 1275.0 corrected meters (Echo sounding)

Bottom felt at: 1289.0 meters (drill pipe) Penetration: 388.0 meters

Number of Holes: 1 Number of Cores: 16

Total length of cored section: 150.5 m Total core recovered: 49.5 m

Percentage of core recovery: 32.9%

OLDEST SEDIMENT CORED:

Depth below sea floor: 362.5 meters Nature: Mudstones

Age: Upper Eocene or older (Core 14) Measured velocity: 2.1 (Core 13) km/sec

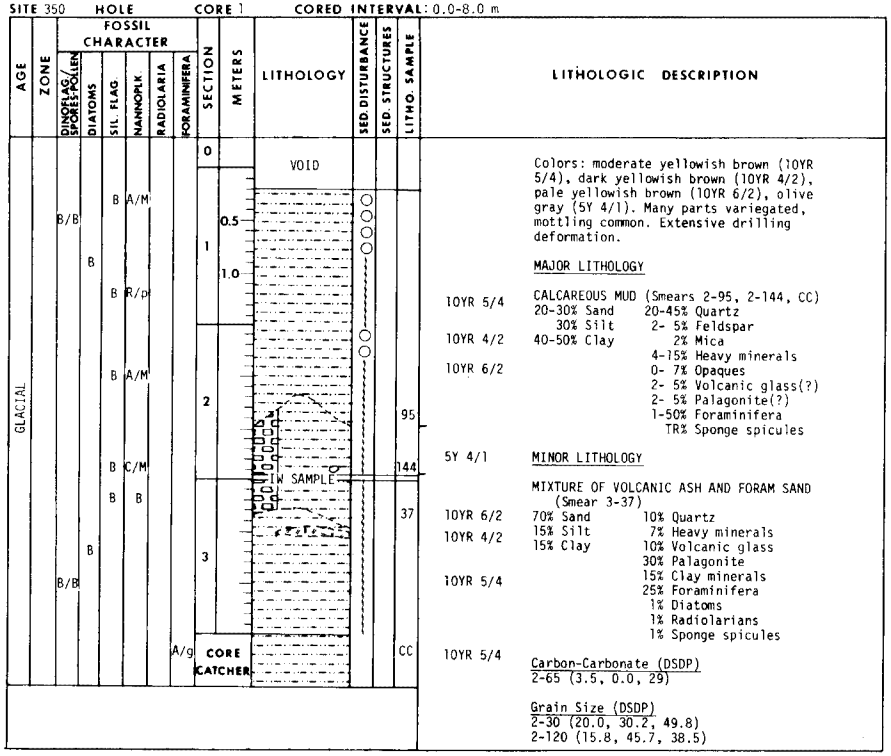
BASEMENT:

Depth below sea floor: 362.5 meters (drilled) Nature: Basalt breccia/ dolerite basalt

PRINCIPAL RESULTS:

A total of 388 meters was penetrated at this site, of which 362 meters was in sediments, and the remainder in basaltic basement. Glacial sediments extend from the top to about 36 meters. They consist principally of sandy muds and muds, with admixtures of various amounts of volcanic ash and some foraminiferal oozes. Below the glacial sediments, a lithologic unit has been defined which extends from about 60 to 220 meters. It is middle Miocene in age at the top, and extends into the Oligocene at the bottom (264 meters). Alternating layers of unconsolidated and indurated to lithified sediments, dominantly terrigenous clays and muds, make up this unit. The underlying lithologic unit extends from 264 meters to the basalt at 362 meters. This unit is dominated by lithified sediments, particularly mudstone, claystone, limestone, breccia and some sandstone. Turbidites are well-developed towards the base of the unit. Near the boundary with the basement, the sediments become highly lithified breccias. Tuff breccias comprise the top portion ofthe igneous basement (from 362 to 379 meters), and overlies basalt which extends to the bottom of the hole at 388 meters. The tuff breccia is altered, but the basalt is very fresh compared to that from other sites of Leg 38. The basalts are normal tholeiites.

SITE 350 HOLE CORE 1 CORED INTERVAL: 0.0-8.0 m



10YR 5/4
10YR 4/2
10YR 6/2
5Y 4/1
10YR 6/2
10YR 4/2
10YR 5/4
10YR 5/4

Colors: moderate yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/2), pale yellowish brown (10YR 6/2), olive gray (5Y 4/1). Many parts variegated, mottling common. Extensive drilling deformation.

MAJOR LITHOLOGY

CALCAREOUS MUD (Smears 2-95, 2-144, CC)

20-30% Sand	20-45% Quartz
30% Silt	2- 5% Feldspar
40-50% Clay	2% Mica
	4-15% Heavy minerals
	0- 7% Opaques
	2- 5% Volcanic glass(?)
	2- 5% Palagonite(?)
	1-50% Foraminifera
	TR% Sponge spicules

MINOR LITHOLOGY

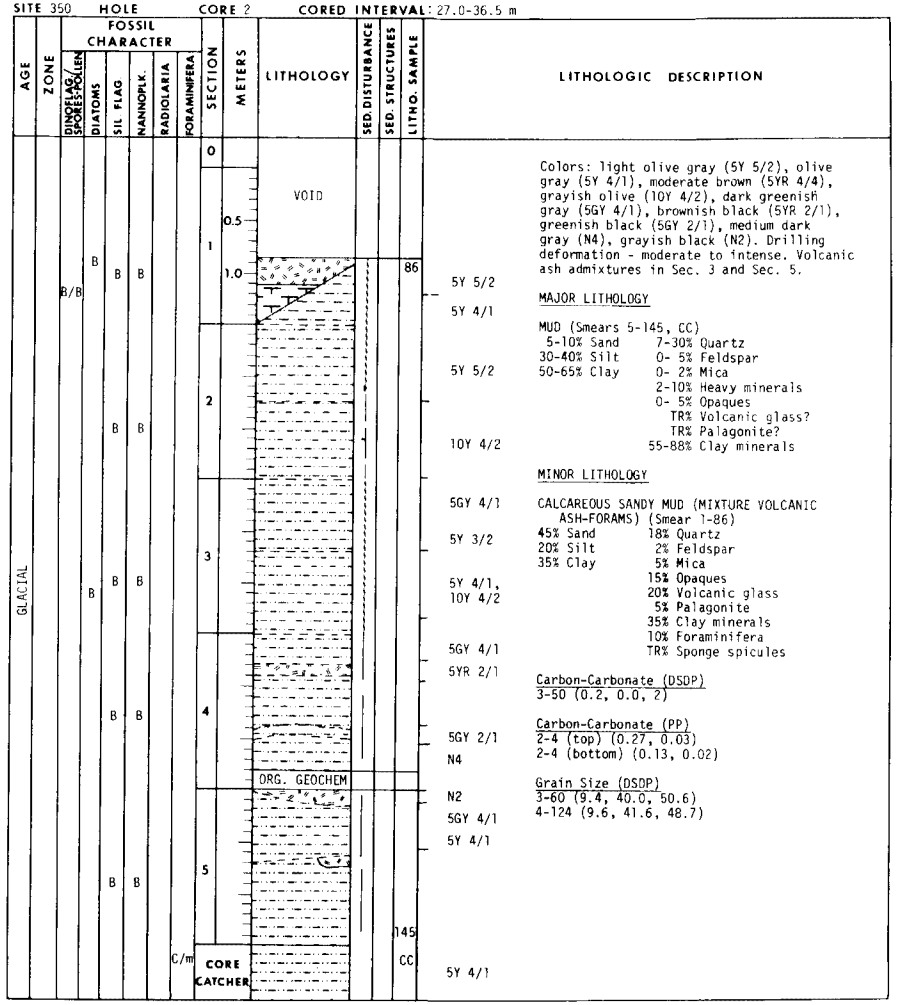
MIXTURE OF VOLCANIC ASH AND FORAM SAND (Smear 3-37)

70% Sand	10% Quartz
15% Silt	7% Heavy minerals
15% Clay	10% Volcanic glass
	30% Palagonite
	15% Clay minerals
	25% Foraminifera
	1% Diatoms
	1% Radiolarians
	1% Sponge spicules

Carbon-Carbonate (DSDP)
2-65 (3.5, 0.0, 29)

Grain Size (DSDP)
2-30 (20.0, 30.2, 49.8)
2-120 (15.8, 45.7, 38.5)

SITE 350 HOLE CORE 2 CORED INTERVAL: 27.0-36.5 m



5Y 5/2
5Y 4/1
5Y 5/2
10Y 4/2
5GY 4/1
5Y 3/2
5Y 4/1, 10Y 4/2
5GY 4/1
5YR 2/1
5GY 2/1
N4
N2
5GY 4/1
5Y 4/1
5Y 4/1

Colors: light olive gray (5Y 5/2), olive gray (5Y 4/1), moderate brown (5YR 4/4), grayish olive (10Y 4/2), dark greenish gray (5GY 4/1), brownish black (5YR 2/1), greenish black (5GY 2/1), medium dark gray (N4), grayish black (N2). Drilling deformation - moderate to intense. Volcanic ash admixtures in Sec. 3 and Sec. 5.

MAJOR LITHOLOGY

MUD (Smears 5-145, CC)

5-10% Sand	7-30% Quartz
30-40% Silt	0- 5% Feldspar
50-65% Clay	0- 2% Mica
	2-10% Heavy minerals
	0- 5% Opaques
	TR% Volcanic glass?
	TR% Palagonite?
	55-88% Clay minerals

MINOR LITHOLOGY

CALCAREOUS SANDY MUD (MIXTURE VOLCANIC ASH-FORAMS) (Smear 1-86)

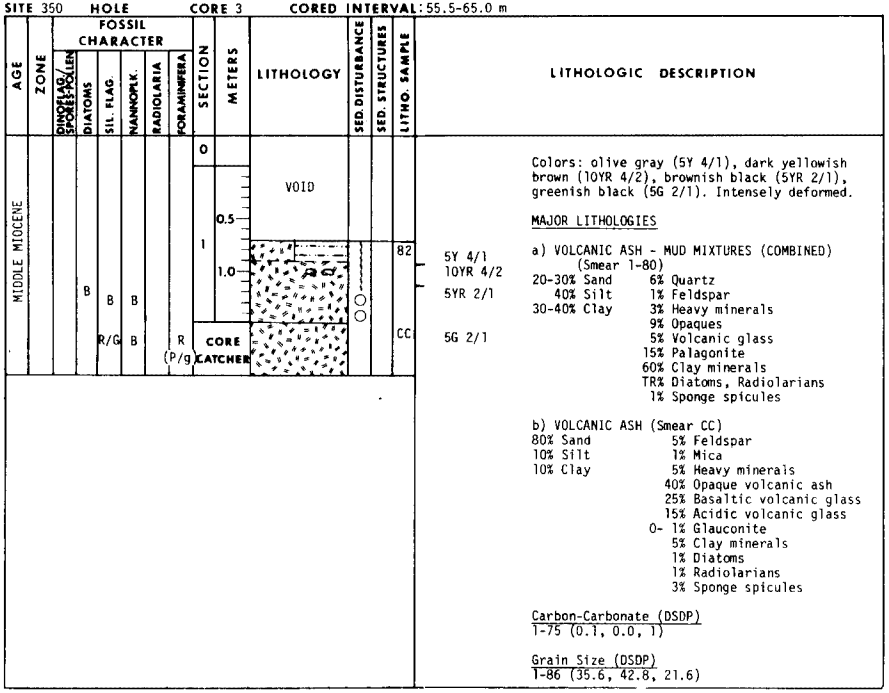
45% Sand	18% Quartz
20% Silt	2% Feldspar
35% Clay	5% Mica
	15% Opaques
	20% Volcanic glass
	5% Palagonite
	35% Clay minerals
	10% Foraminifera
	TR% Sponge spicules

Carbon-Carbonate (DSDP)
3-50 (0.2, 0.0, 2)

Carbon-Carbonate (PP)
2-4 (top) (0.27, 0.03)
2-4 (bottom) (0.13, 0.02)

Grain Size (DSDP)
3-60 (9.4, 40.0, 50.6)
4-124 (9.6, 41.6, 48.7)

SITE 350 HOLE CORE 3 CORED INTERVAL: 55.5-65.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 4/1), dark yellowish brown (10YR 4/2), brownish black (5YR 2/1), greenish black (5G 2/1). Intensely deformed.

5Y 4/1
10YR 4/2
5YR 2/1
5G 2/1

MAJOR LITHOLOGIES

a) VOLCANIC ASH - MUD MIXTURES (COMBINED) (Smear 1-80)

20-30% Sand	6% Quartz
40% Silt	1% Feldspar
30-40% Clay	3% Heavy minerals
	9% Opaques
	5% Volcanic glass
	15% Palagonite
	60% Clay minerals
	TR% Diatoms, Radiolarians
	1% Sponge spicules

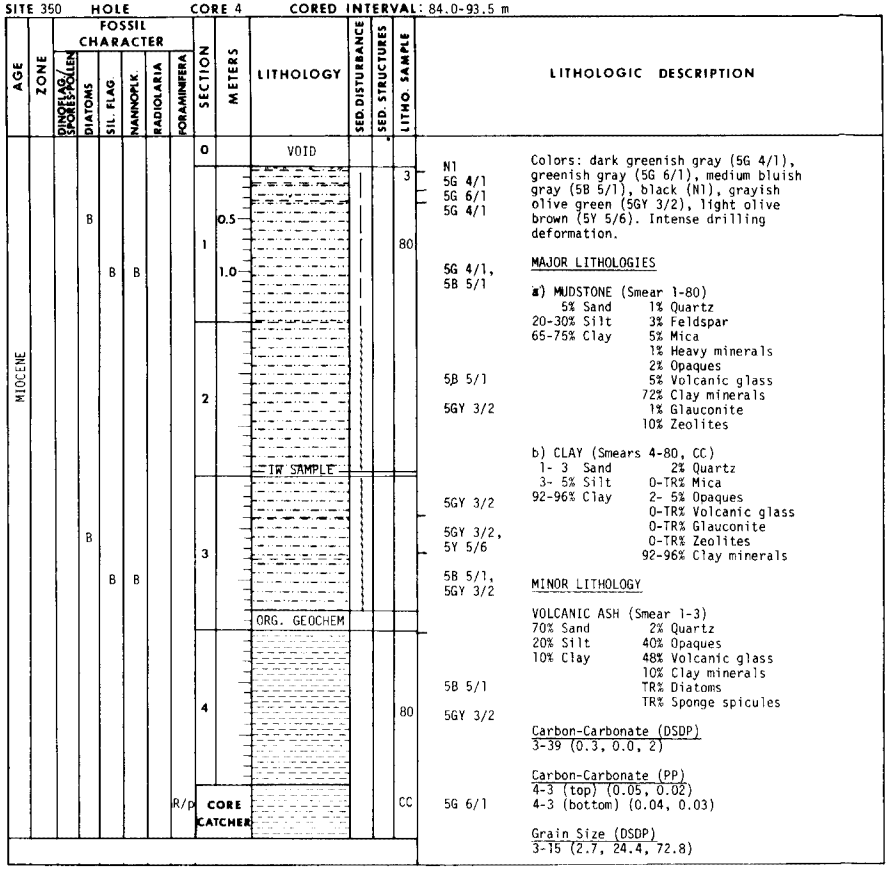
b) VOLCANIC ASH (Smear CC)

80% Sand	5% Feldspar
10% Silt	1% Mica
10% Clay	5% Heavy minerals
	40% Opaque volcanic ash
	25% Basaltic volcanic glass
	15% Acidic volcanic glass
	0- 1% Glauconite
	5% Clay minerals
	1% Diatoms
	1% Radiolarians
	3% Sponge spicules

Carbon-Carbonate (DSDP)
1-75 (0.1, 0.0, 1)

Grain Size (DSDP)
1-86 (35.6, 42.8, 21.6)

SITE 350 HOLE CORE 4 CORED INTERVAL: 84.0-93.5 m



LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5G 4/1), greenish gray (5G 6/1), medium bluish gray (5B 5/1), black (N1), grayish olive green (5GY 3/2), light olive brown (5Y 5/6). Intense drilling deformation.

N1
5G 4/1
5G 6/1
5G 4/1
5G 4/1, 5B 5/1
5B 5/1
5GY 3/2
5GY 3/2
5GY 3/2, 5Y 5/6
5B 5/1, 5GY 3/2
5B 5/1
5GY 3/2
5G 6/1

MAJOR LITHOLOGIES

a) MUDSTONE (Smear 1-80)

5% Sand	1% Quartz
20-30% Silt	3% Feldspar
65-75% Clay	5% Mica
	1% Heavy minerals
	2% Opaques
	5% Volcanic glass
	72% Clay minerals
	1% Glauconite
	10% Zeolites

b) CLAY (Smears 4-80, CC)

1- 3 Sand	2% Quartz
3- 5% Silt	0-TR% Mica
92-96% Clay	2- 5% Opaques
	0-TR% Volcanic glass
	0-TR% Glauconite
	0-TR% Zeolites
	92-96% Clay minerals

MINOR LITHOLOGY

VOLCANIC ASH (Smear 1-3)

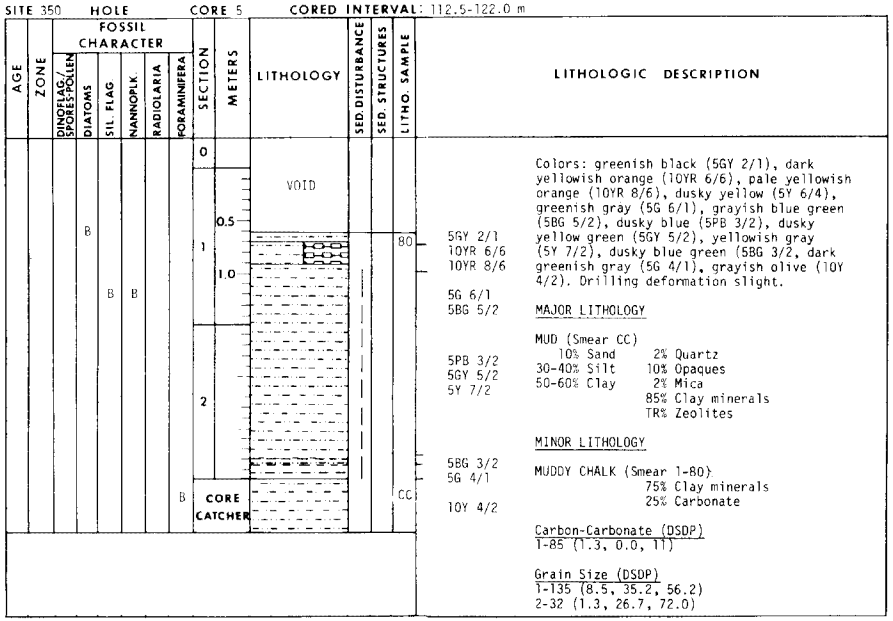
70% Sand	2% Quartz
20% Silt	40% Opaques
10% Clay	48% Volcanic glass
	10% Clay minerals
	TR% Diatoms
	TR% Sponge spicules

Carbon-Carbonate (DSDP)
3-39 (0.3, 0.0, 2)

Carbon-Carbonate (PP)
4-3 (top) (0.05, 0.02)
4-3 (bottom) (0.04, 0.03)

Grain Size (DSDP)
3-15 (2.7, 24.4, 72.8)

SITE 350 HOLE CORE 5 CORED INTERVAL: 112.5-122.0 m



LITHOLOGIC DESCRIPTION

5GY 2/1
10YR 6/6
10YR 8/6
5G 6/1
5BG 5/2
5PB 3/2
5GY 5/2
5Y 7/2
5BG 3/2
5G 4/1
10Y 4/2

Colors: greenish black (5GY 2/1), dark yellowish orange (10YR 6/6), pale yellowish orange (10YR 8/6), dusky yellow (5Y 6/4), greenish gray (5G 6/1), grayish blue green (5BG 5/2), dusky blue (5PB 3/2), dusky yellow green (5GY 5/2), yellowish gray (5Y 7/2), dusky blue green (5BG 3/2, dark greenish gray (5G 4/1), grayish olive (10Y 4/2). Drilling deformation slight.

MAJOR LITHOLOGY

MUD (Smear CC)
10% Sand 2% Quartz
30-40% Silt 10% Opaques
50-60% Clay 2% Mica
85% Clay minerals
TR% Zeolites

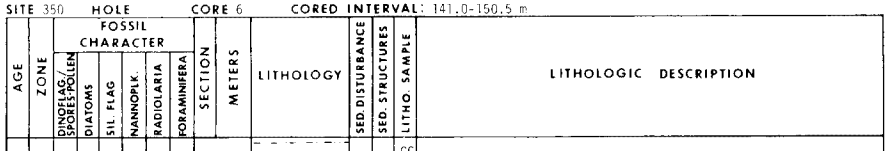
MINOR LITHOLOGY

MUDDY CHALK (Smear 1-80)
75% Clay minerals
25% Carbonate

Carbon-Carbonate (DSDP)
1-85 (1.3, 0.0, 11)

Grain Size (DSDP)
1-135 (8.5, 35.2, 56.2)
2-32 (1.3, 26.7, 72.0)

SITE 350 HOLE CORE 6 CORED INTERVAL: 141.0-150.5 m



LITHOLOGIC DESCRIPTION

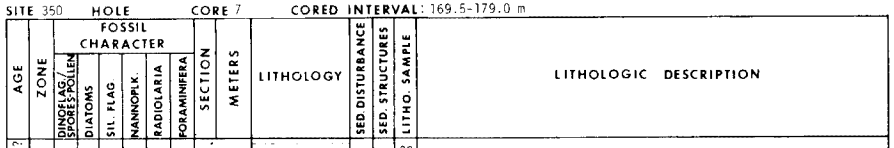
10Y 4/2

Core catcher only. Color: grayish olive (10Y 4/2).

MAJOR LITHOLOGY

MUD (Smear CC)
1% Sand 3% Quartz
10% Silt 1% Mica
89% Clay 5% Opaques
TR% Volcanic glass
89% Clay minerals
2% Zeolites

SITE 350 HOLE CORE 7 CORED INTERVAL: 169.5-179.0 m



LITHOLOGIC DESCRIPTION

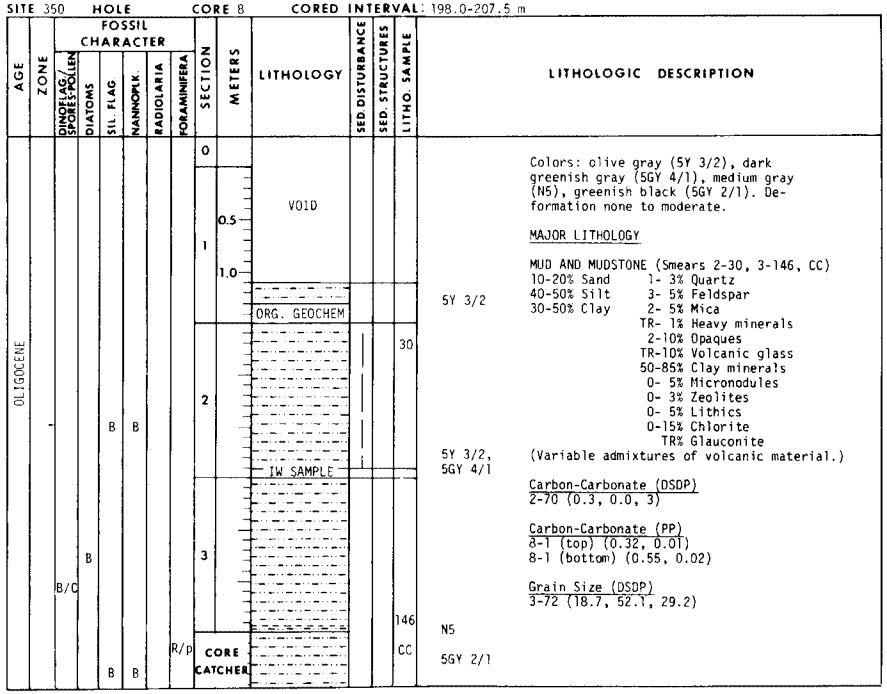
10Y 4/2

Core catcher only. Color: grayish olive (10Y 4/2).

MAJOR LITHOLOGY

CLAY (Smear CC)
2% Sand 5% Quartz
8% Silt TR% Mica
90% Clay 2% Opaques
TR% Volcanic glass
90% Clay minerals
2% Zeolites

SITE 350 HOLE CORE 8 CORED INTERVAL: 198.0-207.5 m



LITHOLOGIC DESCRIPTION

5Y 3/2
5Y 3/2, 5GY 4/1
N5
5GY 2/1

Colors: olive gray (5Y 3/2), dark greenish gray (5GY 4/1), medium gray (N5), greenish black (5GY 2/1). Deformation none to moderate.

MAJOR LITHOLOGY

MUD AND MUDSTONE (Smears 2-30, 3-146, CC)
10-20% Sand 1- 3% Quartz
40-50% Silt 3- 5% Feldspar
30-50% Clay 2- 5% Mica
TR- 1% Heavy minerals
2-10% Opaques
TR-10% Volcanic glass
50-85% Clay minerals
0- 5% Micronodules
0- 3% Zeolites
0- 5% Lithics
0-15% Chlorite
TR% Glauconite

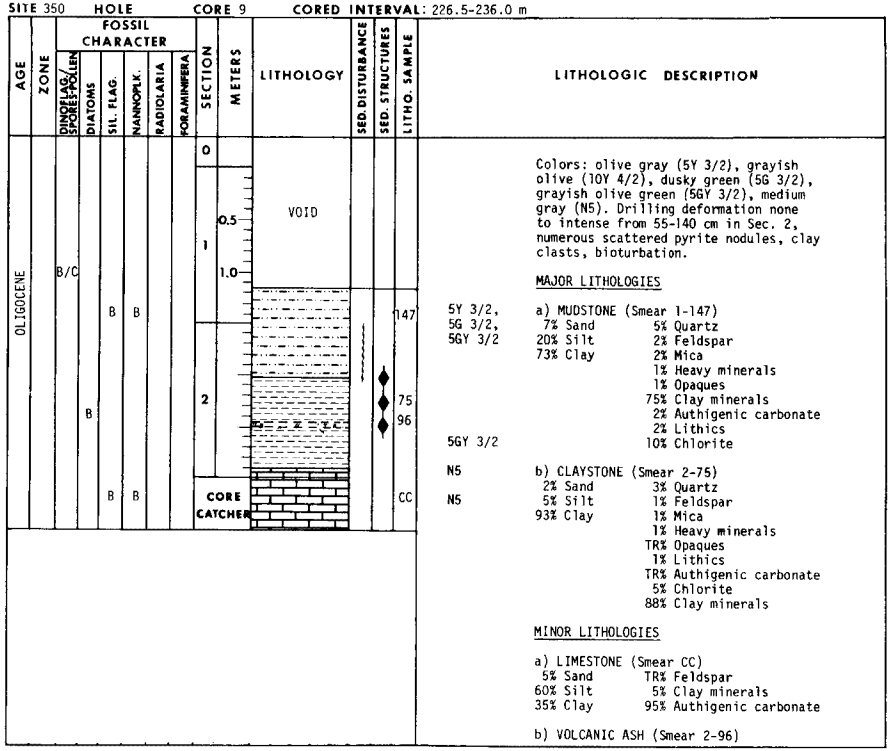
(Variable admixtures of volcanic material.)

Carbon-Carbonate (DSDP)
2-70 (0.3, 0.0, 3)

Carbon-Carbonate (PP)
8-1 (top) (0.32, 0.01)
8-1 (bottom) (0.55, 0.02)

Grain Size (DSDP)
3-72 (18.7, 52.1, 29.2)

SITE 350 HOLE CORE 9 CORED INTERVAL: 226.5-236.0 m



LITHOLOGIC DESCRIPTION

Colors: olive gray (5Y 3/2), grayish olive (10Y 4/2), dusky green (5G 3/2), grayish olive green (5GY 3/2), medium gray (N5). Drilling deformation none to intense from 55-140 cm in Sec. 2, numerous scattered pyrite nodules, clay clasts, bioturbation.

MAJOR LITHOLOGIES

5Y 3/2, 5G 3/2, 5GY 3/2

a) MUDSTONE (Smear 1-147)

7% Sand	5% Quartz
20% Silt	2% Feldspar
73% Clay	2% Mica
	1% Heavy minerals
	1% Opaques
	75% Clay minerals
	2% Authigenic carbonate
	2% Lithics
	10% Chlorite

5GY 3/2

N5

b) CLAYSTONE (Smear 2-75)

2% Sand	3% Quartz
5% Silt	1% Feldspar
93% Clay	1% Mica
	1% Heavy minerals
	TR% Opaques
	1% Lithics
	TR% Authigenic carbonate
	5% Chlorite
	88% Clay minerals

N5

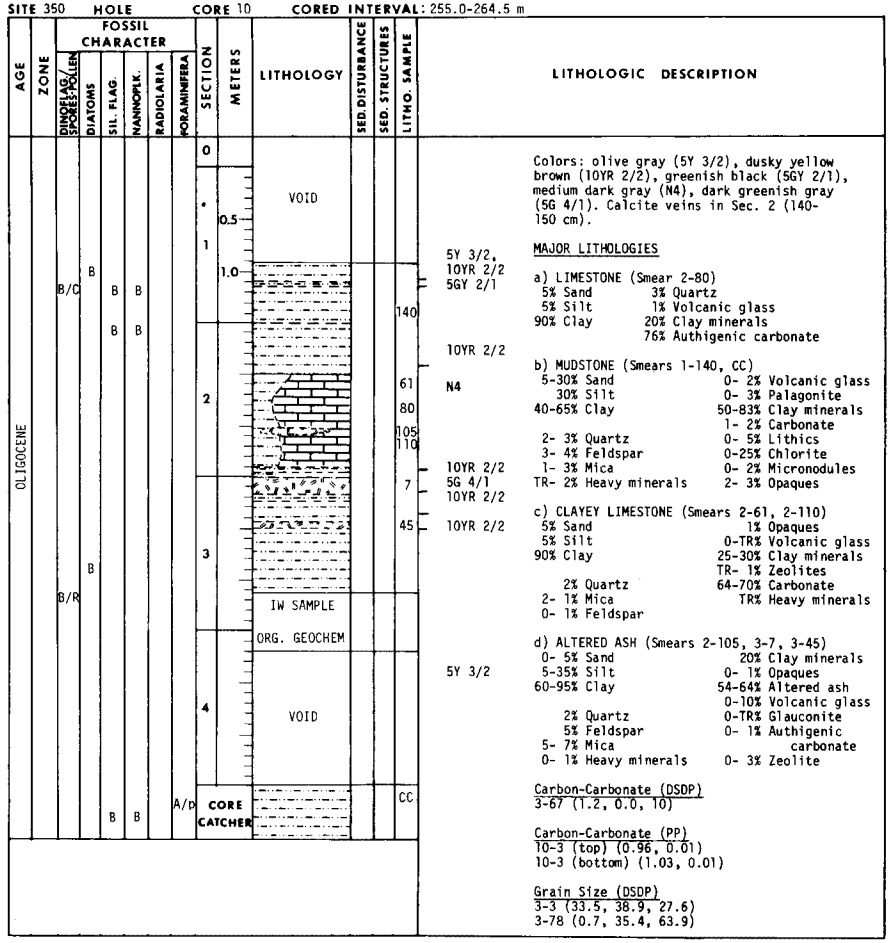
MINOR LITHOLOGIES

a) LIMESTONE (Smear CC)

5% Sand	TR% Feldspar
60% Silt	5% Clay minerals
35% Clay	95% Authigenic carbonate

b) VOLCANIC ASH (Smear 2-96)

SITE 350 HOLE CORE 10 CORED INTERVAL: 255.0-264.5 m



Colors: olive gray (5Y 3/2), dusky yellow brown (10YR 2/2), greenish black (5GY 2/1), medium dark gray (N4), dark greenish gray (5G 4/1). Calcite veins in Sec. 2 (140-150 cm).

MAJOR LITHOLOGIES

5Y 3/2, 10YR 2/2 5GY 2/1

a) LIMESTONE (Smear 2-80)

5% Sand	3% Quartz
5% Silt	1% Volcanic glass
90% Clay	20% Clay minerals
	76% Authigenic carbonate

10YR 2/2

N4

b) MUDSTONE (Smears 1-140, CC)

5-30% Sand	0- 2% Volcanic glass
30% Silt	0- 3% Palagonite
40-65% Clay	50-83% Clay minerals
	1- 2% Carbonate
2- 3% Quartz	0- 5% Lithics
3- 4% Feldspar	0-25% Chlorite
1- 3% Mica	0- 2% Micronodules
TR- 2% Heavy minerals	2- 3% Opaques

10YR 2/2 5G 4/1 10YR 2/2

10YR 2/2

c) CLAYEY LIMESTONE (Smears 2-61, 2-110)

5% Sand	1% Opaques
5% Silt	0-TR% Volcanic glass
90% Clay	25-30% Clay minerals
	TR- 1% Zeolites
2% Quartz	64-70% Carbonate
2- 1% Mica	TR% Heavy minerals
0- 1% Feldspar	

5Y 3/2

d) ALTERED ASH (Smears 2-105, 3-7, 3-45)

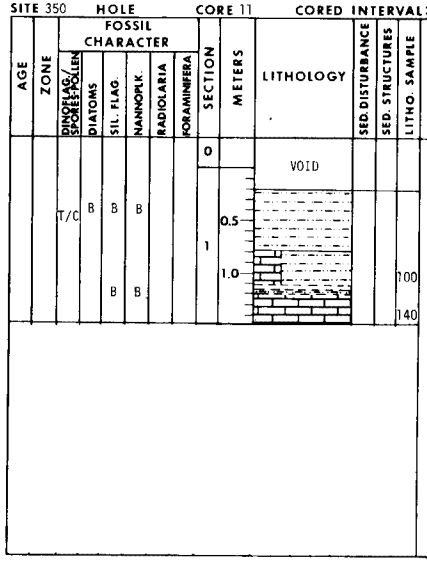
0- 5% Sand	20% Clay minerals
5-35% Silt	0- 1% Opaques
60-95% Clay	54-64% Altered ash
	0-10% Volcanic glass
2% Quartz	0-TR% Glauconite
5% Feldspar	0- 1% Authigenic carbonate
5- 7% Mica	
0- 1% Heavy minerals	0- 3% Zeolite

Carbon-Carbonate (DSDP)
3-67 (1.2, 0.0, 10)

Carbon-Carbonate (PP)
10-3 (top) (0.96, 0.01)
10-3 (bottom) (1.03, 0.01)

Grain Size (DSDP)
3-3 (33.5, 38.9, 27.6)
3-78 (0.7, 35.4, 63.9)

SITE 350 HOLE CORE 11 CORED INTERVAL: 283.5-293.0 m



10YR 2/2
N3/N4
10YR 2/2

Colors: dusky yellowish brown (10YR 2/2) dark gray (N3), medium dark gray (N4). At 97-113 cm calcite veining. Layer at 113-115 assume same composition as layer above. Layer at 115 cm-120 cm non-calc. mudstone, limestone.

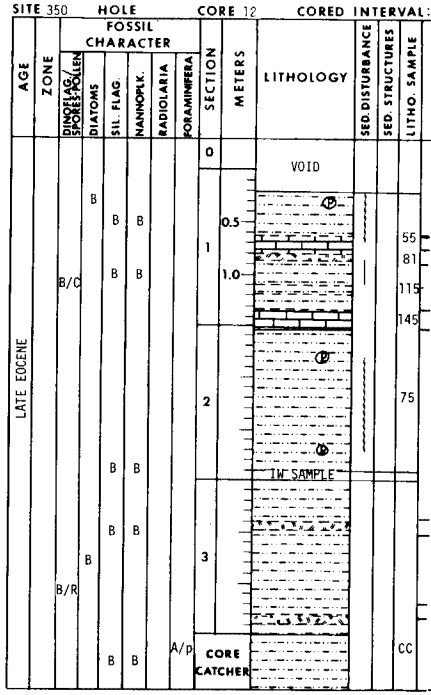
MAJOR LITHOLOGY

LIMESTONE (Smear 1-140)
5% Sand — 5% Quartz
15% Silt — 1% Feldspar
80% Clay — 5% Mica
TR% Opaques
10% Clay minerals
79% Authigenic carbonate

MINOR LITHOLOGY

CALCAREOUS MUDSTONE (Smear 1-100)
10% Silt — 5% Quartz
90% Clay — 1% Feldspar
5% Mica
TR% Heavy minerals
5% Volcanic glass
54% Clay minerals
30% Authigenic carbonate

SITE 350 HOLE CORE 12 CORED INTERVAL: 312.0-321.5 m



5Y 3/2
5G 6/1
10YR 2/2
5G 6/1
5Y 3/2
N4
10YR 2/2
10YR 2/2
5G 6/1
10YR 2/2
5G 6/1
10YR 2/2
5Y 3/2

Colors: olive gray (5Y 3/2), greenish gray (5G 6/1), dusky yellow brown (10YR 2/2), medium dark gray (N4). Some intense drilling deformation.

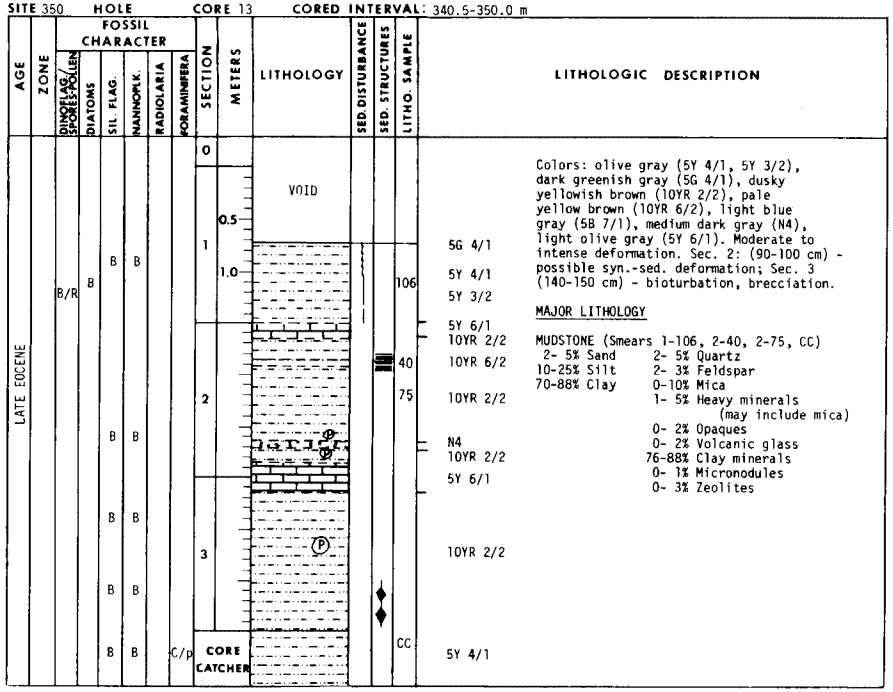
MAJOR LITHOLOGIES

a) MUDSTONE (Smears 1-55, 1-115, 2-75, CC)
0-10% Sand — 1- 5% Quartz
15-35% Silt — 2- 7% Feldspar
55-85% Clay — 10-15% Mica
TR% Heavy minerals
0- 3% Opaques
TR- 5% Volcanic glass
0-10% Altered ash
0-TR% Glauconite
1- 5% Micronodules
0- 2% Zeolites
0- 1% Authigenic carbonate
61-72% Clay minerals

b) LIMESTONE (Smear 1-145)
5% Sand — 2% Quartz
5% Silt — 5% Mica
90% Clay — TR% Opaques
15% Clay minerals
78% Authigenic carbonate

c) ALTERED ASH (Smear 1-81)
5% Silt — 1% Quartz
95% Clay — 2% Feldspar
5% Mica
3% Opaques
1% Volcanic glass
3% Micronodules
1% Zeolites

SITE 350 HOLE CORE 13 CORED INTERVAL: 340.5-350.0 m



5G 4/1
5Y 4/1
5Y 3/2
5Y 6/1
10YR 2/2
10YR 6/2
10YR 2/2
N4
10YR 2/2
5Y 6/1
10YR 2/2
5Y 4/1

Colors: olive gray (5Y 4/1, 5Y 3/2), dark greenish gray (5G 4/1), dusky yellowish brown (10YR 2/2), pale yellow brown (10YR 6/2), light blue gray (5B 7/1), medium dark gray (N4), light olive gray (5Y 6/1). Moderate to intense deformation. Sec. 2: (90-100 cm) - possible syn.-sed. deformation; Sec. 3 (140-150 cm) - bioturbation, brecciation.

MAJOR LITHOLOGY

MUDSTONE (Smears 1-106, 2-40, 2-75, CC)
2- 5% Sand — 2- 5% Quartz
10-25% Silt — 2- 3% Feldspar
70-88% Clay — 0-10% Mica
1- 5% Heavy minerals (may include mica)
0- 2% Opaques
0- 2% Volcanic glass
76-88% Clay minerals
0- 1% Micronodules
0- 3% Zeolites

SITE 350 HOLE CORE 14 CORED INTERVAL: 359.5-369.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG.	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE
LATE EOCENE		B/R	B	B	B	B	R/p	0		VOID			24, 32, 49, 50, CC
								1	0.5, 1.0				
								2					
								3					
								CORE CATCHER					

5GY 4/1
5Y 4/1
N5

5GY 4/1

LITHOLOGIC DESCRIPTION

Colors: dark greenish gray (5GY 4/1), grayish black (N2), dark greenish gray (5Y 4/1), medium gray (N5), medium light gray (N6). Sec. 1 (16-28 cm) - massive, with claystone fragments (basalt [N2]); (35-40 cm) - mudstone (N5), calcareous(?); (58-76 cm) - brecciated (calc.?) mudstone; Secs. 1 and 2 - mudstone unit. Extensively bioturbated (comp. and rhomboid. burrows. In Sec. 2, angular claystone fragments (N2 and N6).

MAJOR LITHOLOGY
MUDSTONE (Smears 1-24, 1-32, 2-50)

5% Sand	0- 2% Volcanic glass
10-15% Silt	
80-85% Clay	0-10% Chlorite
	0-TR% Palagonite
0- 2% Quartz	0- 5% Zeolites
3- 5% Feldspar	3- 8% Authigenic carbonate
3- 4% Mica	
1- 2% Heavy minerals	0- 2% Chert
0-TR% Opaques	0- 1% Barite
0- 3% Lithics	69-79% Clay minerals

MINOR LITHOLOGY
MUDSTONE (pebble in mudstone, perhaps derived from basalt) (Smear 2-49)

3% Sand	10% Feldspar
12% Silt	2% Mica
85% Clay	50% Clay minerals
	20% Volcanic glass (recrystallized)
15% Zeolites	
5% Lithics	TR% Opaques

BASALT BRECCIA
Sec. 2 (50-75 cm) - drilling breccia of sedimentary rock (claystone); (75-150 cm) - breccia: angular and round fragments of claystone and basalt (sizes up to 10 cm). Cemented by olive gray to olive black calcite-chlorite-smectite matrix.

Thin Section (73-75 cm) - highly altered (calcified, chloritized, albitized) basalt. Plag.-30%, pyroxene-20%, olivine-5%, magnetite-2%, altered glass-30%, smectite, chlorite, zeolite, albite, sphene(?); (90-93 cm, 108-110 cm) breccia with coarse angular fragments, calcified basalts, hyalobasalts, zeolite, chlorite, palagonite.

Sec. 3 - branching white calcite veins. Cavities up to 2 cm in a breccia composed from angular and round fragments of fine grained basalt, grayish black to black with thin rims (0.5-1 mm) of calcite and chlorite. Breccia cement is olive black to greenish black fine grained chlorite-smectite matrix.

Thin Section - breccia with coarse, angular fragments of phyric-hyalobasalt. Plagioclase (An_{68-72}) fresh. Small rounded fragments (0.1-2 mm) of palagonite and glass replaced by chlorite, smectite(?), zeolite. Chlorite, smectite, calcite rims on fragments - cement istropic-zeolite, clay(?).

Core catcher - breccia as above.

Core 15 (369.0-378.5 m) - No recovery.

SITE 350 HOLE CORE 16 CORED INTERVAL: 379.5-388.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG./SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE
								0		VOID			
								1	0.5, 1.0	VOID			
								2		VOID			
								3					

LITHOLOGIC DESCRIPTION

BASALT BRECCIA - BASALT
Sec. 1 (70-90 cm) - breccia: angular fragments of medium dark gray basalt cemented by black clay matrix; (90-150 cm) - basalt: grayish black (N2) to black (N1) fine-grained with phenocrysts of plagioclase and pyroxene and white calcite amygdules and cavities. Rare calcite veins with yellowish-green chlorite.

Thin Section (74-77 cm) - calcitized. Tuff with angular small (0.05-0.1 mm) piece of volcanic glass replaced by chlorite, zeolite and cemented by isotropic, very fine, zeolite matrix; (112-117, 114-117 cm) - dolerite basalt, subophitic, trachytachyoid, fine grained with glomeroporphyritic clusters of plagioclase and orthopyroxene. Plagioclase 40-50%, pyroxene 40-50%, altered olivine-3%, magnetite-5%, smectite, carbonate, amphibole, albite, plagioclase = An_{70}.

Sec. 2 (5-50 cm) - massive basalt, with calcite veins with chlorite. Slickenside surfaces; (50-125 cm) - black (N1) to grayish black (N2) fine grained basalt with glomeroporphyritic plagioclase (up to 3 mm long). Rare round calcite amygdules with thin chlorite edgings. Calcite vein with chlorite; (125-150 cm) - massive basalt.

Thin Section - basalt as per Sec. 1, coarser (med. grained), twinned pyroxene with poikilitic plagioclase.

Sec. 3 - black (N1) massive phyric medium-grained basalt. Rare phenocrysts of plagioclase and clinopyroxene and round calcite amygdules. Slickensides with white calcite and yellowish green chlorite on walls.

Thin Section - dolerite basalt (as per Sec. 2) but with abundant smectite (15-20%), plagioclase (An_{66-72}) 40-55%, pyroxene (augite, ortho) 40-50%. Altered olivine-3%, magnetite 3-6%, smectite, chlorite, calcite, amphibole, albite(?).

DEEP SEA DRILLING PROJECT

LEG 38 SITE 351

SITE SUMMARY SHEET

POSITION: Latitude: 67°47.34'N Longitude: 11°18.26'W

Water depth (from sea level): 1844.0 corrected meters (Echo sounding)

PRINCIPAL RESULTS:

Site was occupied during the time specified above. Subsequent weather deterioration prevented hole from being drilled.

DEEP SEA DRILLING PROJECT

LEG 38 SITE 352

SITE SUMMARY SHEET

POSITION: Latitude: 63°38.97'N Longitude: 13°28.26'W

Water depth (from sea level): 990.0 corrected meters (Echo sounding)

Bottom felt at: 1018.0 meters (drill pipe) Penetration: 103.5 meters (352)
122.5 meters (352A)

Number of Holes: 2 Number of Cores: 6 (352); 3 (352A)

Total length of cored section: 46.0 meters (352); 28.5 meters (352A)

Total core recovered: 27.6 meters (352); 5.1 meters (352A)

Percentage of core recovery: 60.0% (352); 28.5% (352A)

OLDEST SEDIMENT CORED:

Depth below sea floor: 38.0 meters (352); 122.5 meters (352A)

Nature: Pebbly-sandy muds (352); nannofossil ooze (352A)

Age: Glacial (352); upper middle Oligocene (352A)

Measured velocity: 1.77 (Core 2) km/sec (352); 1.59 (Core 2) km/sec (352A)

PRINCIPAL RESULTS:

At this site on the southern flank of the Iceland-Faeroe Ridge, at least 54 meters of glacial sediments consisting of muds, sandy muds, with pebbly layers are present. They are rich in planktonic as well as benthonic foraminifera, but poor in nannoplankton and radiolarians. Pliocene and Miocene sediments are probably absent and the glacial sediments lie directly on middle Oligocene nannofossil oozes. These Oligocene sediments contrast greatly with the Oligocene sediments recovered at Site 336 on the northern flank of Iceland-Faeroe Ridge, which are very poor in calcareous fossils. This suggests that the Iceland-Faeroe Ridge acted as a barrier against the mixing of North Atlantic and Norwegian Sea surface waters at least as late as the middle Oligocene.

SITE 352 HOLE CORE 1 CORED INTERVAL: 0.0-8.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG/SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
GLACIAL				B	R/p			1	0.5	VOID				
									1.0				98	5Y 5/2
													115	
				B	B			2		VOID				5YR 4/4
								3						5YR 4/4
				B	B									10YR 4/2
								4		GEOCHEM			105	N5
				B	R/G			5		VOID				
								6					132	
				B	R/p		A/G	CORE CATCHER					CC	5Y 5/2

Colors: light olive gray (5Y 5/2), moderate brown (5YR 4/4), dark yellowish brown (10YR 4/2), medium gray (N5), pale brown (5YR 5/2), medium dark gray (N4); moderate to intense deformation. Sec. 1 - scattered fine pebbles (1.5 cm) probably basalt, with some concentration at 90, 103-106, and 115-120 cm; pebbles angular-subangular; comminuted shell debris; Sec. 2 - as per Sec. 1 with local mottling and some black sand (ash). No stratification; Sec. 3 - pebbles (>6 cm) angular-rounded at 5, 80 and 105 cm; scattered, finer shell fragments; Sec. 4 - scattered pebbles (up to 5 cm), basalt, vol. ss; Sec. 5 - as per above, intermixed colors by deformation; scattered angular-subrounded basalt (<3 cm long) fragments; Sec. 6 - soft to firm, massive, with some intermixed colors; pebbles (<3 cm) basalt; 40-70 cm and 120-150 cm.

MAJOR LITHOLOGIES

a) SANDY MUD (Smears 1-98, 1-115, 4-105)

45-50% Sand	1- 2% Glauconite
20-30% Silt	9-10% Clay minerals
25-30% Clay	1- 2% Opaques
	1- 2% Fecal pellets
20-30% Quartz	7-12% Foraminifera
5-10% Feldspar	1- 2% Diatoms
5- 7% Mica	1- 2% Radiolarians
2- 3% Heavy minerals	1- 2% Sponge spicules
3- 5% Lithic fragments	2- 5% Nannofossils
2- 7% Volcanic glass	2- 5% Palagonite

b) MUD (Smears 5-132, CC)

5-15% Sand	2- 5% Opaques
10-30% Silt	1- 5% Volcanic glass
55-70% Clay	1- 5% Palagonite
	1- 3% Glauconite
10-15% Quartz	1- 5% Carbonate
5-10% Feldspar	20-40% Clay minerals
3- 5% Mica	1- 5% Nannofossils
1- 3% Heavy minerals	1% Sponge spicules

Carbon-Carbonate (DSDP)
1-126 (2.1, 0.0, 17)
2-126 (1.3, 0.0, 11)
3-84 (1.1, 0.0, 9)
4-84 (1.5, 0.0, 12)
5-84 (1.7, 0.0, 14)
6-82 (1.0, 0.0, 8)

Carbon-Carbonate (PP)
3-0 (0.16, 0.01)
3-150 (0.09, 1.30)

Grain Size (DSDP)
1-128 (70.4, 22.0, 7.6)
2-128 (66.5, 26.6, 6.9)
3- 82 (42.6, 48.1, 9.2)
3-118 (49.1, 30.9, 20.0)
4-86 (50.1, 29.5, 20.4)
5-82 (57.0, 35.2, 7.9)
6-31 (3.9, 36.4, 59.7)
6-80 (6.0, 37.6, 56.4)

SITE 352 HOLE CORE 2 CORED INTERVAL: 8.5-18.0 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG/SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
GLACIAL				B	B			1	0.5	VOID				5GY 6/1
									1.0					5Y 4/1
				B	B			2						5Y 4/1
														5Y 4/1
				B	B									5Y 6/1
								3						N4
														5Y 4/1
				B	B									N4
								4		TW SAMPLE				5Y 4/1
														5Y 6/1
														5Y 2/1
														5Y 4/1
														5GY 4/1
				B	R/p			5					42	10YR 5/4
													60	N3
														5Y 4/1
				B	F/p		A/G	CORE CATCHER					CC	5Y 3/2

Colors: light olive gray (5Y 6/1), olive black (5Y 2/1), greenish gray (5GY 6/1), olive gray (5Y 4/1), medium gray (N4), moderate yellowish brown (10YR 5/4), dark gray (N3), olive gray (5Y 3/2). Intense deformation and color mottling. Mud/volcanic ash mixtures; foraminifera sand in Sec. 1 and manno ooze, Sec. 3.

MAJOR LITHOLOGIES

a) MUD (Smear CC)

10-15% Sand	15-20% Quartz
20-25% Silt	8-10% Feldspar
65% Clay	2- 3% Mica
	1- 3% Heavy minerals
	3- 5% Opaques
	1- 3% Volcanic glass
	1- 2% Palagonite
	1- 2% Lithics
	2- 5% Carbonate
	50% Clay minerals
	2- 3% Foraminifera
	TR% Sponge spicules

b) SANDY MUD (Smears 5-42, 5-60)

40-50% Sand	20-25% Quartz
15-20% Silt	10% Feldspar
35-45% Clay	3- 5% Heavy minerals
	3- 5% Opaques
	30-40% Clay minerals
	1- 2% Zeolites
	15-20% Palagonite

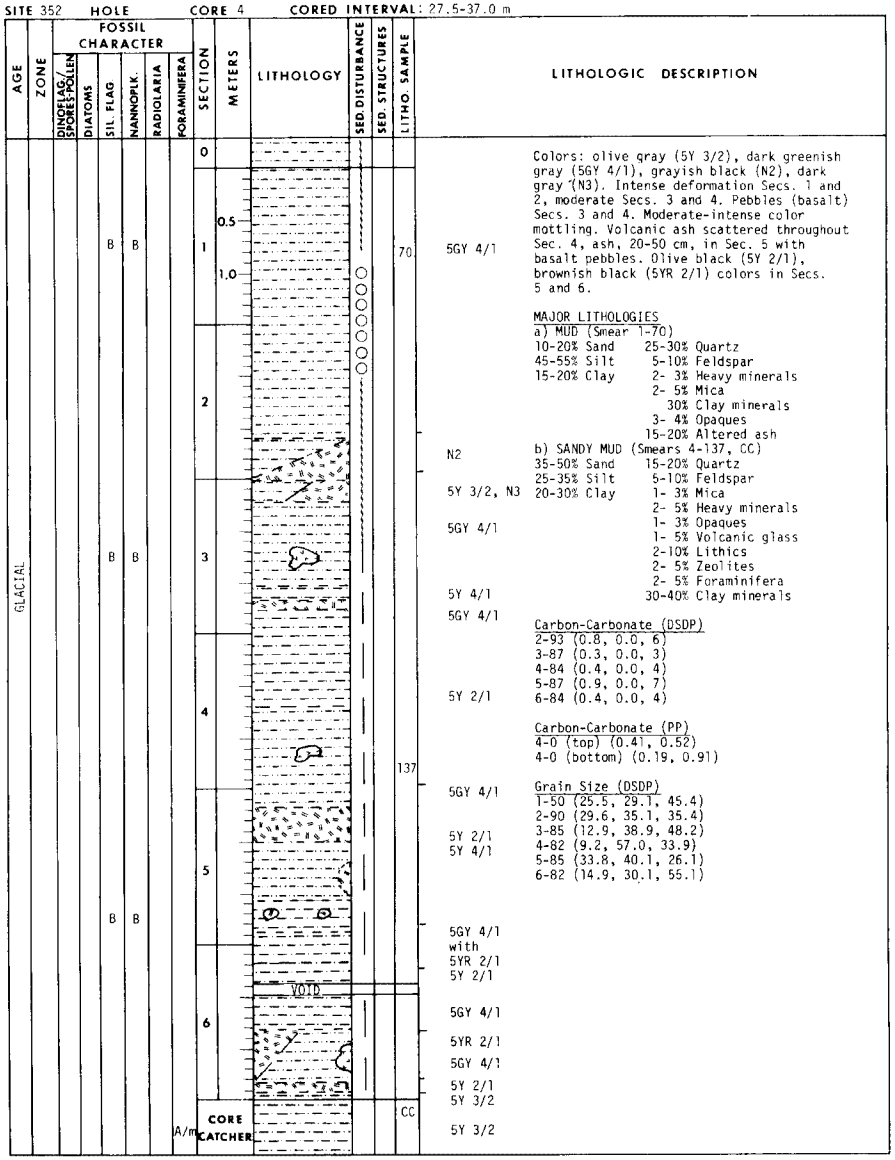
Carbon-Carbonate (DSDP)
1-84 (0.7, 0.0, 6)
3-130 (1.2, 0.0, 10)
4-60 (0.9, 0.0, 8)
5-40 (0.6, 0.0, 5)

Grain Size (DSDP)
1-78 (9.8, 56.0, 34.1)
2-130 (18.9, 53.7, 27.4)
3-60 (25.2, 47.2, 27.6)
4-40 (36.5, 34.2, 29.3)
5-70 (40.5, 32.7, 26.8)

SITE 352 HOLE CORE 3 CORED INTERVAL: 18.0-27.5 m

AGE	ZONE	FOSSIL CHARACTER: DINOFLAG/SPORES-POLLEN	DIATOMS	SIL. FLAG	NANNOPLK.	RADIOLARIA	FORAMINIFERA	SECTION	METERS	LITHOLOGY	SED. DISTURBANCE	SED. STRUCTURES	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
										NO RECOVERY				<10 cc of pebbles, sand and sandy mud recovered. Smear slide indicates a SANDY MUD as per Core 2.

SITE 352 HOLE CORE 4 CORED INTERVAL: 27.5-37.0 m



Colors: olive gray (5Y 3/2), dark greenish gray (5GY 4/1), grayish black (N2), dark gray (N3). Intense deformation Secs. 1 and 2, moderate Secs. 3 and 4. Pebbles (basalt) Secs. 3 and 4. Moderate-intense color mottling. Volcanic ash scattered throughout Sec. 4, ash, 20-50 cm, in Sec. 5 with basalt pebbles. Olive black (5Y 2/1), brownish black (5YR 2/1) colors in Secs. 5 and 6.

MAJOR LITHOLOGIES

a) MUD (Smear 1-70)

10-20% Sand	25-30% Quartz
45-55% Silt	5-10% Feldspar
15-20% Clay	2- 3% Heavy minerals
	2- 5% Mica
	30% Clay minerals
	3- 4% Opaques
	15-20% Altered ash

b) SANDY MUD (Smears 4-137, CC)

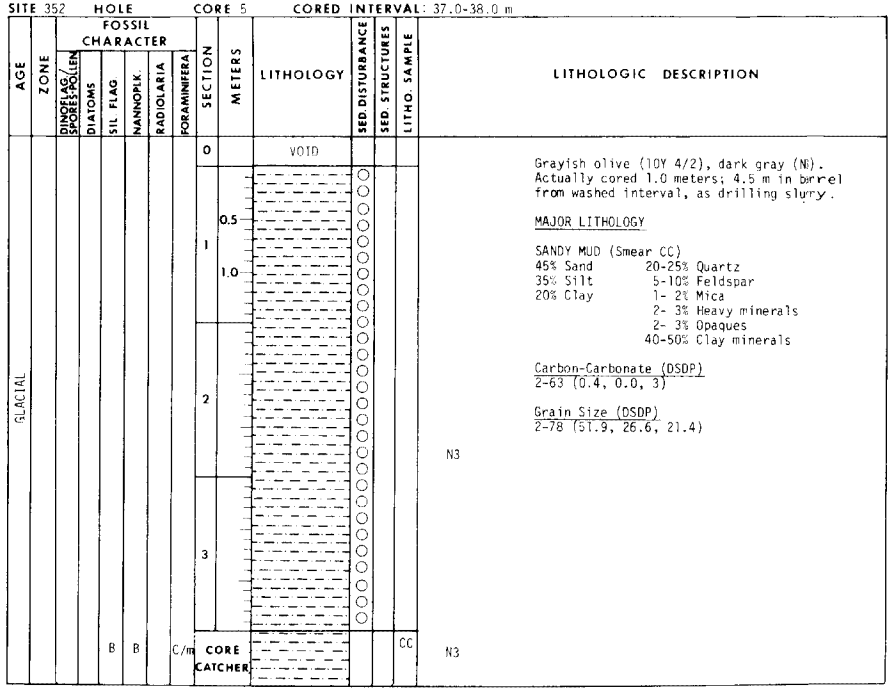
35-50% Sand	15-20% Quartz
25-35% Silt	5-10% Feldspar
20-30% Clay	1- 3% Mica
	2- 5% Heavy minerals
	1- 3% Opaques
	1- 5% Volcanic glass
	2-10% Lithics
	2- 5% Zeolites
	2- 5% Foraminifera
	30-40% Clay minerals

Carbon-Carbonate (DSDP)
2-93 (0.8, 0.0, 6)
3-87 (0.3, 0.0, 3)
4-84 (0.4, 0.0, 4)
5-87 (0.9, 0.0, 7)
6-84 (0.4, 0.0, 4)

Carbon-Carbonate (PP)
4-0 (top) (0.41, 0.52)
4-0 (bottom) (0.19, 0.91)

Grain Size (DSDP)
1-50 (25.5, 29.1, 45.4)
2-90 (29.6, 35.1, 35.4)
3-85 (12.9, 38.9, 48.2)
4-82 (9.2, 57.0, 33.9)
5-85 (33.8, 40.1, 26.1)
6-82 (14.9, 30.1, 55.1)

SITE 352 HOLE CORE 5 CORED INTERVAL: 37.0-38.0 m



Grayish olive (10Y 4/2), dark gray (N4). Actually cored 1.0 meters; 4.5 m in barrel from washed interval, as drilling slurry.

MAJOR LITHOLOGY

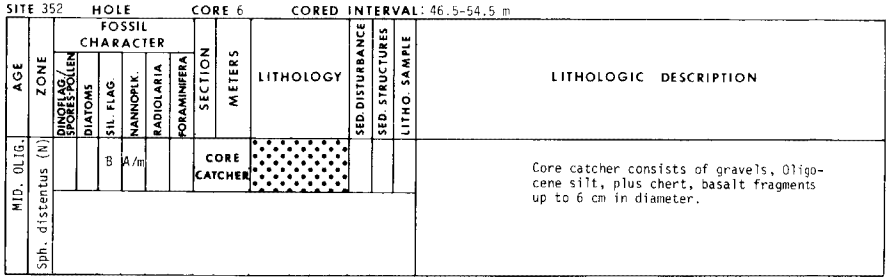
SANDY MUD (Smear CC)

45% Sand	20-25% Quartz
35% Silt	5-10% Feldspar
20% Clay	1- 2% Mica
	2- 3% Heavy minerals
	2- 3% Opaques
	40-50% Clay minerals

Carbon-Carbonate (DSDP)
2-63 (0.4, 0.0, 3)

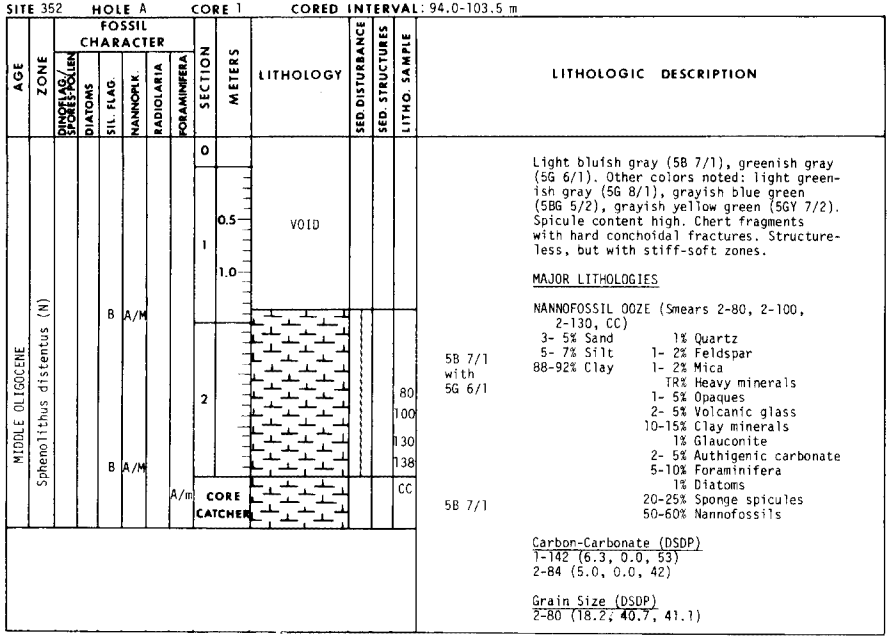
Grain Size (DSDP)
2-78 (51.9, 26.6, 21.4)

SITE 352 HOLE CORE 6 CORED INTERVAL: 46.5-54.5 m



Core catcher consists of gravels, Oligocene silt, plus chert, basalt fragments up to 6 cm in diameter.

SITE 352 HOLE A CORE 1 CORED INTERVAL: 94.0-103.5 m



LITHOLOGIC DESCRIPTION

Light bluish gray (5B 7/1), greenish gray (5G 6/1). Other colors noted: light greenish gray (5G 8/1), grayish blue green (5BG 5/2), grayish yellow green (5GY 7/2). Spicule content high. Chert fragments with hard conchoidal fractures. Structureless, but with stiff-soft zones.

MAJOR LITHOLOGIES

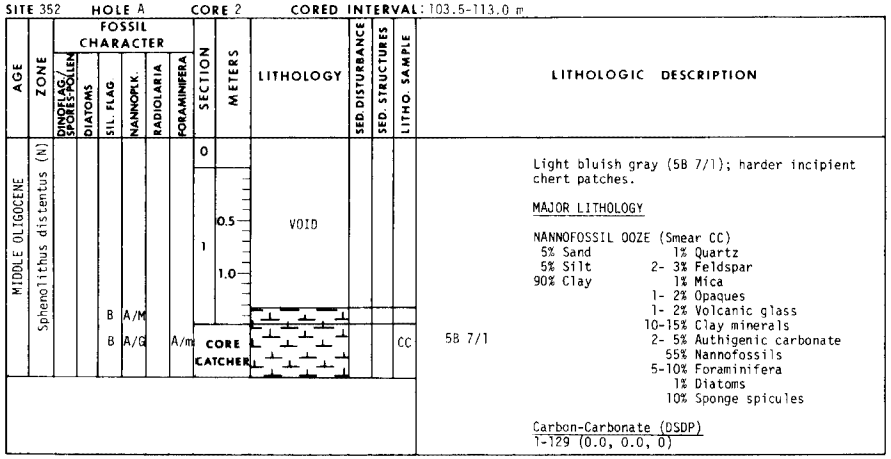
NANNOFOSSIL OOZE (Smears 2-80, 2-100, 2-130, CC)

3- 5% Sand	1% Quartz
5- 7% Silt	1- 2% Feldspar
88-92% Clay	1- 2% Mica
	TR% Heavy minerals
	1- 5% Opaques
	2- 5% Volcanic glass
	10-15% Clay minerals
	1% Glauconite
	2- 5% Authigenic carbonate
	5-10% Foraminifera
	1% Diatoms
	20-25% Sponge spicules
	50-60% Nannofossils

Carbon-Carbonate (DSDP)
1-142 (6.3, 0.0, 53)
2-84 (5.0, 0.0, 42)

Grain Size (DSDP)
2-80 (18.2, 40.7, 41.1)

SITE 352 HOLE A CORE 2 CORED INTERVAL: 103.5-113.0 m



LITHOLOGIC DESCRIPTION

Light bluish gray (5B 7/1); harder incipient chert patches.

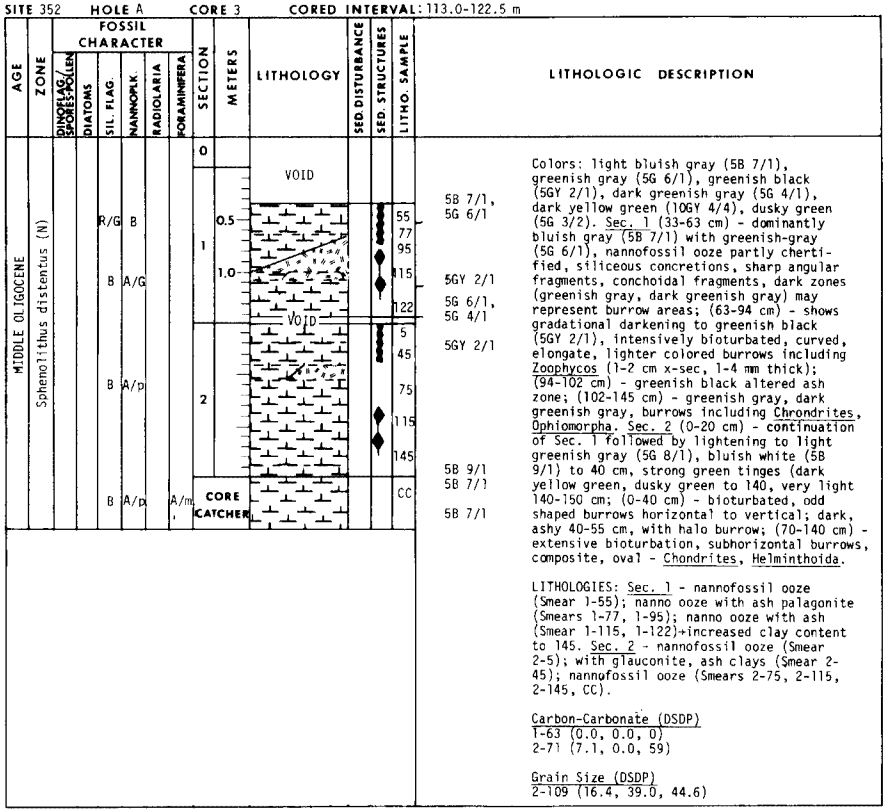
MAJOR LITHOLOGY

NANNOFOSSIL OOZE (Smear CC)

5% Sand	1% Quartz
5% Silt	2- 3% Feldspar
90% Clay	1% Mica
	1- 2% Opaques
	1- 2% Volcanic glass
	10-15% Clay minerals
	2- 5% Authigenic carbonate
	55% Nannofossils
	5-10% Foraminifera
	1% Diatoms
	10% Sponge spicules

Carbon-Carbonate (DSDP)
1-129 (0.0, 0.0, 0)

SITE 352 HOLE A CORE 3 CORED INTERVAL: 113.0-122.5 m



LITHOLOGIC DESCRIPTION

Colors: light bluish gray (5B 7/1), greenish gray (5G 6/1), greenish black (5GY 2/1), dark greenish gray (5G 4/1), dark yellow green (10GY 4/4), dusky green (5G 3/2). Sec. 1 (33-63 cm) - dominantly bluish gray (5B 7/1) with greenish-gray (5G 6/1), nannofossil ooze partly chertified, siliceous concretions, sharp angular fragments, conchoidal fragments, dark zones (greenish gray, dark greenish gray) may represent burrow areas; (63-94 cm) - shows gradational darkening to greenish black (5GY 2/1), intensively bioturbated, curved, elongate, lighter colored burrows including Zoophycos (1-2 cm x-sec, 1-4 mm thick); (94-102 cm) - greenish black altered ash zone; (102-145 cm) - greenish gray, dark greenish gray, burrows including Chrondrites, Ophiomorpha. Sec. 2 (0-20 cm) - continuation of Sec. 1 followed by lightening to light greenish gray (5G 8/1), bluish white (5B 9/1) to 40 cm, strong green tinges (dark yellow green, dusky green to 140, very light 140-150 cm; (0-40 cm) - bioturbated, odd shaped burrows horizontal to vertical; dark, ashy 40-55 cm, with halo burrow; (70-140 cm) - extensive bioturbation, subhorizontal burrows, composite, oval - Chondrites, Helminthoida.

LITHOLOGIES: Sec. 1 - nannofossil ooze (Smear 1-55); nanno ooze with ash palagonite (Smears 1-77, 1-95); nanno ooze with ash (Smear 1-115, 1-122)+increased clay content to 145. Sec. 2 - nannofossil ooze (Smear 2-5); with glauconite, ash clays (Smear 2-45); nannofossil ooze (Smears 2-75, 2-115, 2-145, CC).

Carbon-Carbonate (DSDP)
1-63 (0.0, 0.0, 0)
2-71 (7.1, 0.0, 59)

Grain Size (DSDP)
2-109 (16.4, 39.0, 44.6)