SITE 767 HOLE A CORE 1H CORED INTERVAL 0-4.2 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: N22; R/G; F/G
- NANNOFOSSILS: *E. huxleyi* NN21
- RADIOLARIANS
- DIATOMS: *Pseudoeunotia doliolus*; F/P; C/G

PALEOMAGNETICS: Brunhes

PHYS. PROPERTIES: (TOC=0.59%); WC=149.0-81.4 %; ρ=2.57-1.39 g/cm³

CHEMISTRY: CaCO₃=0.9%; CaCO₃=1.1%; TOC=0.57%

SECTION: 1, 2, 3, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbedded very thin volcanic ash layers

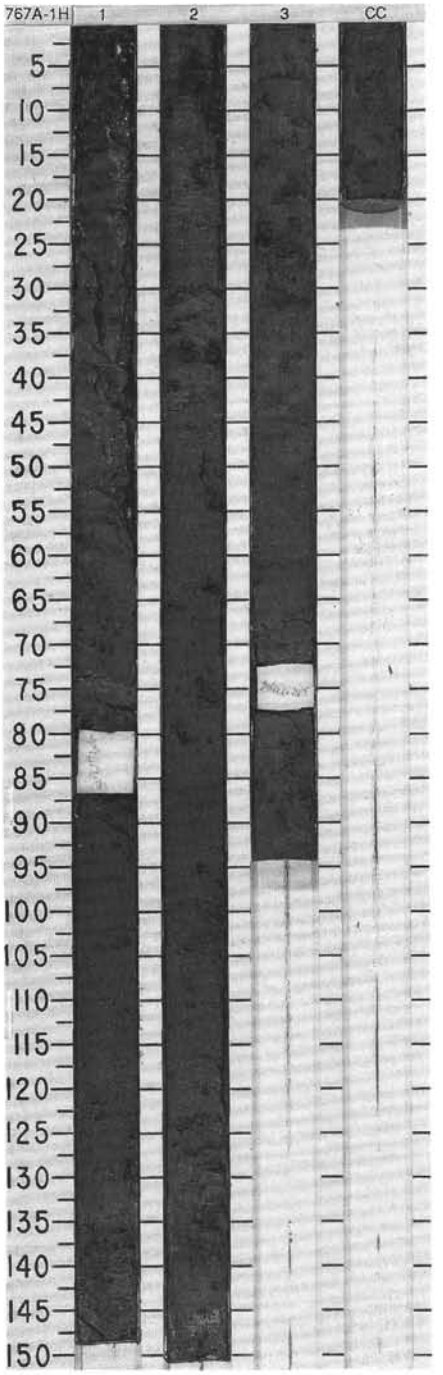
Major lithology: VOLCANIC CLAYEY SILT. Silt-sized vitric and crystal ash is disseminated throughout the volcanic clayey silt, forming a major component of the sediment. The upper 75 cm of the core is yellowish brown (10YR 5/4), with thick planar laminae which are very dark grayish brown (2.5Y 3/2). Bioturbation in this upper interval is moderate to slight. In the remainder of the core the volcanic clayey silt is thick-bedded, structureless, and highly bioturbated; it is dominantly olive brown (2.5Y 4/2).

Minor lithology: Vitric ash occurs in very thin beds in Section 1, 73-75 cm, and Section 3, 68-73 cm. The upper ash bed shows faint planar lamination; the lower one is structureless. Both are gray (5YR 7/1) and predominantly silt-sized.

SMEAR SLIDE SUMMARY (%):

	1, 30 D	1, 74 M	2, 70 D	2, 90 D	3, 68 M
TEXTURE:					
Sand	—	10	—	—	50
Silt	73	90	58	58	40
Clay	27	—	42	42	10
COMPOSITION:					
Accessory minerals	10	1	10	—	2
Apatite	—	—	—	—	Tr
Clay	40	1	—	40	0
Diatoms	Tr	—	—	Tr	—
Feldspar	21	17	40	10	10
Foraminifers	—	—	1	—	—
Glass	5	70	10	15	83
Hornblende	—	10	—	—	—
Mica	5	—	—	—	—
Nannofossils	—	—	—	Tr	—
Pellets	—	—	10	10	—
Pyroxene	—	—	—	—	2
Quartz	—	—	—	5	—
Radiolarians	2	—	1	—	—
Rock fragment	—	1	15	5	2
Silicious sponge spicules	15	—	3	—	—
Silicoflagellates	Tr	—	3	—	—
Spicules	—	—	—	10	—
Zircon	—	—	—	—	Tr

Information on Core Description Forms, for ALL sites, represents field notes taken aboard ship. Some of this information has been refined in accord with post-cruise findings, but production schedules prohibit definitive correlation of these forms with subsequent findings. Thus, the reader should be alerted to the occasional ambiguity or discrepancy.



SITE 767 HOLE B CORE 1H CORED INTERVAL 0-9.0 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: ●R/M ●F/G ●F/P
- NANNOFOSSILS: N22; *E. huxleyi* NN21
- RADIOLARIANS
- DIATOMS: *Pseudoeunotia doliolus* Zone; F/M●C/G●C/G●

PALEOMAGNETICS: Brunhes

PHYS. PROPERTIES: ϕ=83 ρ=1.36 ●WC=165; ϕ=85 ρ=1.35 ●WC=178

CHEMISTRY: ●$CaCO_3$=1.3%; ●$CaCO_3$=0.6%●TOC=0.58%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG, W

LITHOLOGIC DESCRIPTION

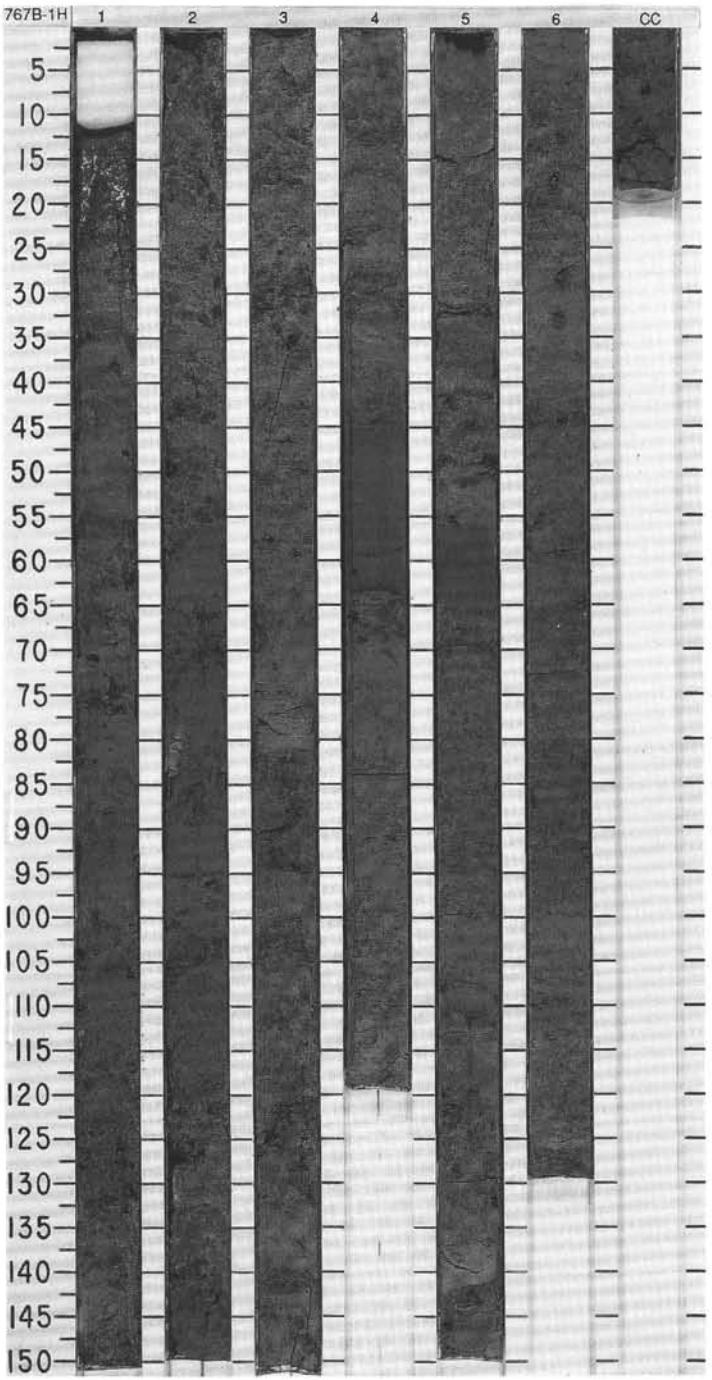
VOLCANIC CLAYEY SILT with interbedded very thin volcanic ash layers

Major lithology: VOLCANIC CLAYEY SILT. Silt-sized vitric and crystal ash is disseminated throughout the volcanic clayey silt, forming a major component of the sediment. The upper 85 cm of the core is yellowish brown (10YR 5/4), with slight to moderate bioturbation and some preserved thick laminae. In the remainder of the core the volcanic clayey silt is massive and moderately to highly bioturbated, with little or no preservation of primary layering; its color varies from dark gray (5Y 4/1) to olive gray (5Y 4/2) to dark greenish gray (10Y 4/2).

Minor lithologies:
a. Volcanic ash forms very thin beds in Section 2, 76-80 cm; Section 5, 136-141 cm; Section 6, 115-116 cm and 125-126 cm. The ash beds are gray (5Y 5/1) and structureless.
b. Volcanic clayey silt with nannofossils occurs in Section 4, 46-63 cm.

SMEAR SLIDE SUMMARY (%):

	1, 77 D	3, 84 D	4, 50 M
TEXTURE:			
Sand	—	1	—
Silt	63	70	61
Clay	37	29	39
COMPOSITION:			
Accessory minerals	—	—	10
Amphibole	10	3	—
Clay	40	20	40
Feldspar	2	—	3
Foraminifers	—	—	Tr
Glass	25	15	—
Nannofossils	—	2	10
Opaques	5	1	—
Pellets	5	50	10
Rock fragment	5	1	20
Spicules	5	5	5



SITE 767 HOLE B CORE 2H CORED INTERVAL 9.0-18.5 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: ●B; ●R/G
- NANNOFOSSILS: *E. huxleyi* NN21
- RADIOLARIANS
- DIATOMS: *Pseudoeunotia doliolus* Zone

PALEOMAGNETICS: Brunhes

PHYS. PROPERTIES: TOC=0.73%; ρ=1.81; ρ=1.35; WC=162; ●P=1.38

CHEMISTRY: $CaCO_3$=2.4%; ●TOC=0.34%; ●$CaCO_3$=0.5%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: IW

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbedded very thin volcanic layers

Major lithology: VOLCANIC CLAYEY SILT. Massive, moderately to highly bioturbated, dark greenish gray (10Y 4/1) and olive gray (5Y 4/2) volcanic clayey silt occurs in diffuse thick beds. Altered vitric ash is a major component disseminated within the sediment, along with minor amounts of feldspar and volcanic lithic fragments.

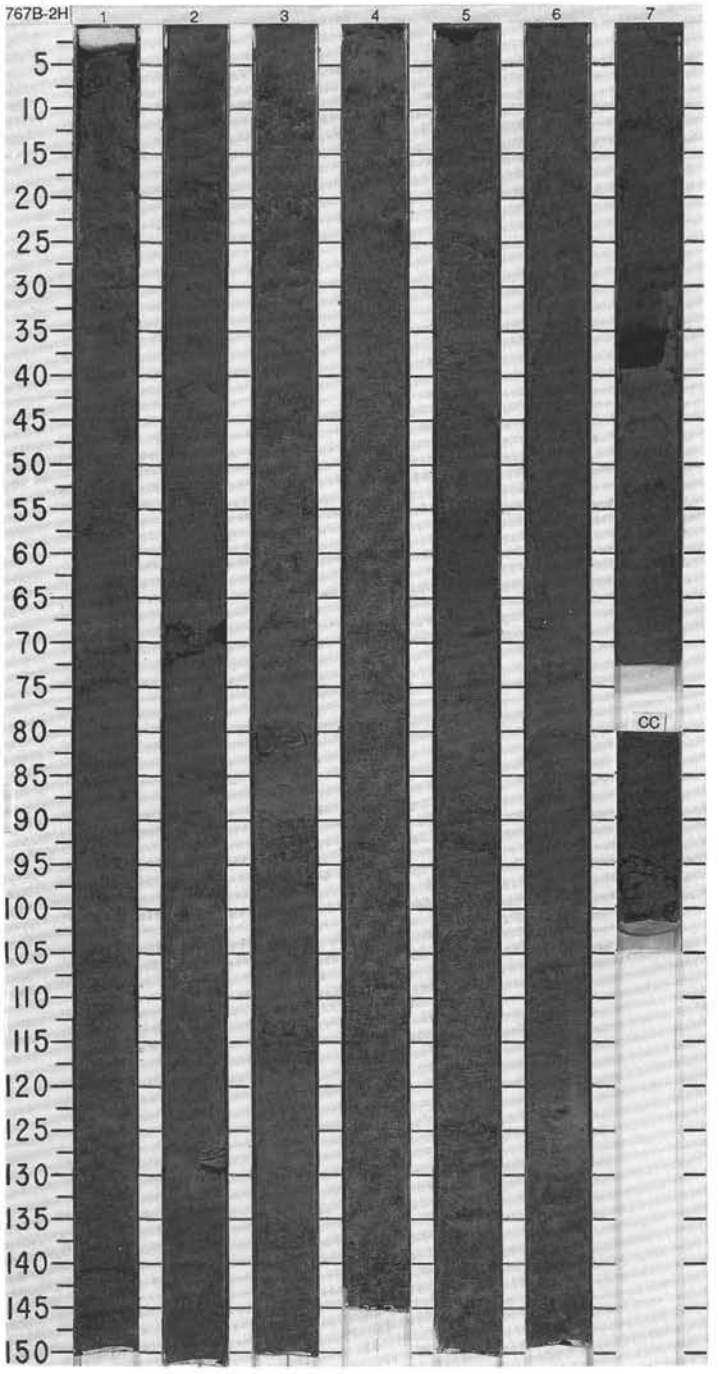
Minor lithology: Vitric ash. A thin bed of olive brown (2.5Y 4/4) vitric ash occurs in Section 2, 55-65 cm, and black (5Y 2.5/1) vitric ash in Section 7, 36-40 cm.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 68 M	1, 79 D	2, 58 M	T 2, 58 M	2, 79 D	2, 128 M	4, 80 M
TEXTURE:							
Sand	—	1	40	40	1	40	15
Silt	65	67	50	30	67	60	70
Clay	35	32	10	30	32	—	15
COMPOSITION:							
Accessory minerals	—	5	1	—	—	—	1
Biotite	—	—	—	Tr	—	—	—
Clay	10	30	10	1	74	—	80
Feldspar	2	6	5	—	2	10	3
Foraminifers	—	—	—	—	—	—	—
Glass	80	30	80	55	15	60	10
Hornblende	1	5	1	1	1	10	2
Magnetite	1	—	—	—	—	—	—
Opaques	—	1	—	2	—	—	—
Pellets	2	10	—	—	5	—	—
Plagioclase	—	—	—	30	—	—	—
Plant	—	—	—	Tr	—	—	—
Pyroxene	—	—	1	2	—	—	—
Rock fragment	—	10	—	5	2	20	1
Spicules	1	1	—	—	1	—	2

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	5, 135 M	6, 76 M	7, 38 M
TEXTURE:			
Sand	50	10	—
Silt	40	60	65
Clay	10	30	35
COMPOSITION:			
Accessory minerals	1	—	—
Bioclast	—	4	—
Clay	5	50	5
Feldspar	1	—	1
Foraminifers	—	1	—
Glass	85	5	85
Hornblende	1	—	—
Magnetite	—	—	1
Nannofossils	—	20	—
Pellets	—	15	—
Pyroxene	—	—	1
Rock fragment	5	—	5
Spicules	—	?	—



SITE 767 HOLE B CORE 3H CORED INTERVAL 18.5-28.0 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: ●R/M
- NANNOFOSSILS: ●C/M — N22 — *G. oceanica* NN20
- RADIOLARIANS
- DIATOMS: ●C/G — *Pseudoeunotia doliolus* Zone

PALEOMAGNETICS: Brunhes

PHYS. PROPERTIES: ρ=1.34 Φ=84 ●WC=179

CHEMISTRY: ●$CaCO_3$=0.5% TOC=0.39%● ●TOC=0.47 ρ=1.36 ●WC=176 Φ=85 ●$CaCO_3$=0.4%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: IW

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbedded very interbedded very thin volcanic ash layers

Major lithology: VOLCANIC CLAYEY SILT. This lithology is massive and moderately to highly bioturbated, which caused color mottling. The dominant color is dark greenish gray (10Y 4/1), with slightly calcareous olive gray (5Y 4/2) beds. Some decimeter-scale beds show slight fining upward due to decrease in silt content.

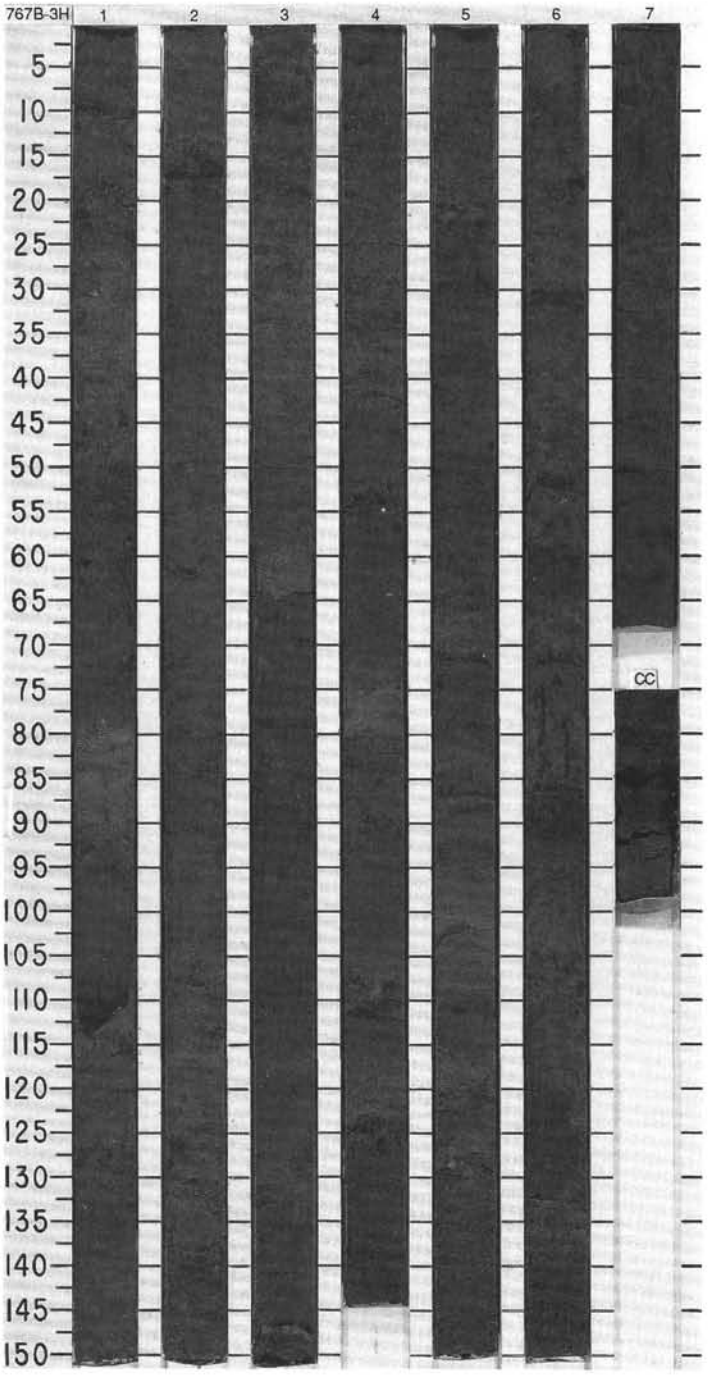
Minor lithology: Vitric ash occurs in thin (5-10 cm) beds, with grain size from silt to sand. Minor components of the ash include lithic fragments, feldspars, clay, and sponge spicules. Color is variable: dark gray (2.5Y 4/1) in Section 1, 80-90 cm, brown (10YR 4/2) in Section 1, 109-114 cm, and gray (10YR 5/1) in Section 3, 60-65 cm.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 30 D	1, 81 M	1, 90 M	T 1, 111 M	1, 112 D	2, 50 D	3, 62 M
TEXTURE:							
Sand	6	—	50	20	50	8	10
Silt	62	100	50	70	50	63	90
Clay	32	—	—	10	—	29	—
COMPOSITION:							
Accessory minerals	—	—	5	—	—	—	—
Clay	50	—	—	—	—	30	—
Feldspar	—	—	—	7	5	—	—
Glass	15	95	85	75	80	40	90
Hornblende	5	1	1	—	—	5	—
Magnetite	—	—	—	—	1	—	1
Opaques	—	—	—	10	—	—	—
Plagioclase	20	1	5	—	—	20	5
Plant	—	—	—	1	—	—	—
Pyroxene	—	1	1	3	2	—	1
Rock fragment	—	—	2	Tr	10	—	1
Silicious sponge spicules	10	—	—	—	—	5	—

SMEAR SLIDE SUMMARY (%):

	4, 30 D	4, 79 M	6, 60 D
TEXTURE:			
Sand	6	4	2
Silt	60	57	69
Clay	33	34	29
COMPOSITION:			
Clay	—	20	—
Diatoms	1	—	—
Feldspar	20	15	35
Glass	50	—	50
Hornblende	5	—	1
Intraclasts	—	50	—
Radiolarians	10	—	1
Spicules	10	10	10



SITE 767 HOLE B CORE 4H CORED INTERVAL 28.0-37.5 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ●R/M; NANNOFOSSILS ●T/G; *P. lacunosa* NN19; RADIOLARIANS; DIATOMS ●T/P

PALEOMAGNETICS: Brunhes

PHYS. PROPERTIES: ρ=1.37 ●Φ=82 W=155; ρ=2.57 ●W=165 ●Φ=83 W=165 ρ=1.36 ρ=2.55

CHEMISTRY: TOC=0.79%● $CaCO_3$=0.7%● ●TOC=0.15% ●$CaCO_3$=0.3%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbedded very thin volcanic ash layers

Major lithology: VOLCANIC CLAYEY SILT. This lithology is massive and moderately to highly bioturbated, which causes color mottling. The dominant color is dark greenish gray (10Y 4/1), with slightly calcareous olive gray (5Y 4/2) beds. Some decimeter-scale beds show slight fining upward due to decrease in silt content.

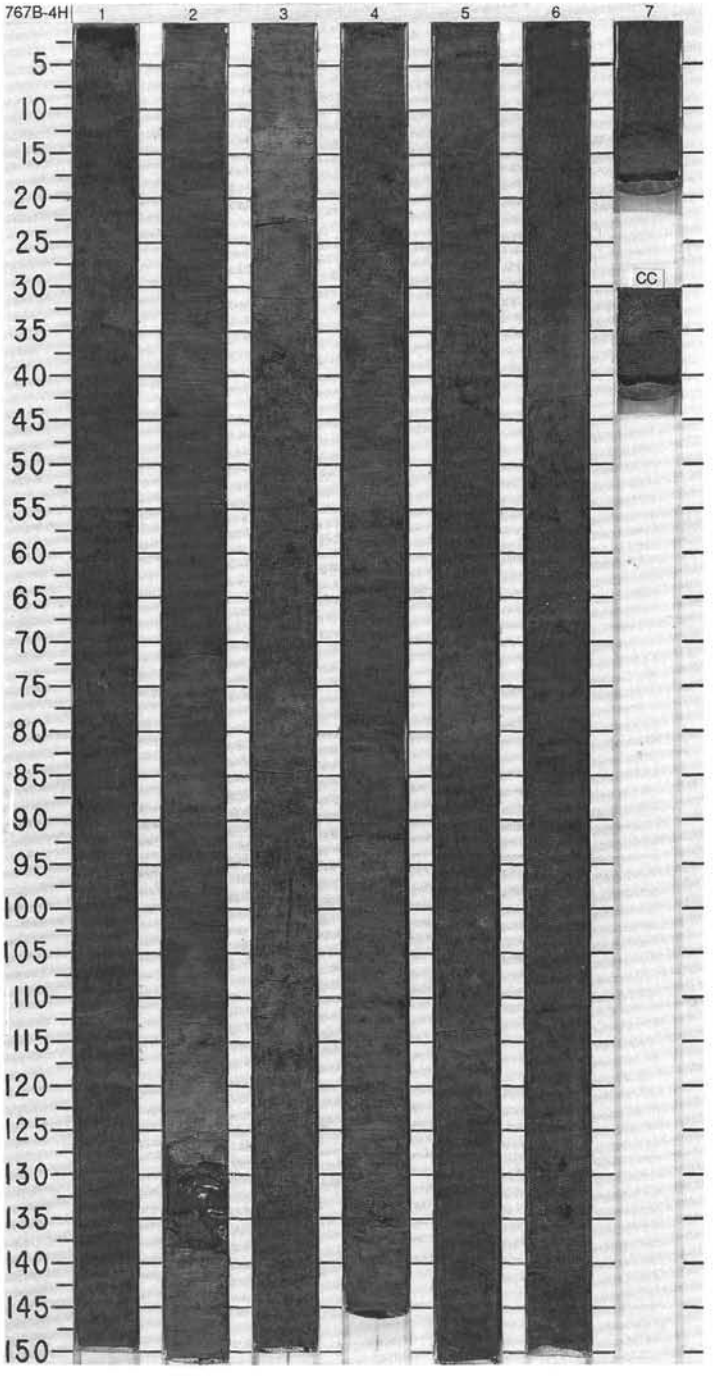
Minor lithology: Vitric ash occurs in thin (5-10 cm), light gray (5YR 6/1) graded beds, with grain size from silt to sand.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 118 M	2, 123 M	3, 20 M	3, 82 M	3, 90 D	4, 134 M	5, 41 D
TEXTURE:							
Sand	—	7	60	3	7	70	3
Silt	70	65	40	73	62	30	71
Clay	30	28	—	24	31	—	26
COMPOSITION:							
Accessory minerals	1	—	—	10	—	—	5
Biotite	—	—	—	—	—	5	—
Carbonate grains	—	30	—	—	—	—	—
Clay	38	20	—	10	20	—	70
Diatoms	5	*Tr*	—	—	—	—	—
Feldspar	—	—	10	—	10	15	—
Fish	—	—	—	5	—	—	—
Foraminifers	—	—	—	30	—	5	—
Glass	—	50	80	10	40	65	—
Glauconite	—	—	—	1	—	—	—
Hornblende	5	—	—	1	5	—	—
Magnetite	—	—	2	—	—	—	—
Other	—	—	—	5	—	—	—
Pellets	10	—	—	—	—	—	10
Plagioclase	5	—	—	2	—	—	—
Pyroxene	1	—	Tr	1	—	5	—
Radiolarians	25	—	—	5	1	—	5
Rock fragment	—	—	5	10	—	5	—
Spicules	10	—	—	10	4	—	10

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	5, 57 D	5, 75 M
TEXTURE:		
Sand	1	2
Silt	70	73
Clay	29	25
COMPOSITION:		
Accessory minerals	—	3
Clay	70	70
Foraminifers	—	5
Glass	—	5
Pellets	20	5
Radiolarians	5	2
Spicules	5	10



SITE 767 HOLE B CORE 5H CORED INTERVAL 37.5-47.0 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ●R/G ●F/M; NANNOFOSSILS *P. lacunosa* NN19; RADIOLARIANS; DIATOMS ●T/P

PALEOMAGNETICS: Brunhes

PHYS. PROPERTIES: ρ=1.34 ● ϕ=85 / ρ=2.62 ● WC=1.83; ρ=1.34 ● ϕ=85 / ρ=2.62 ● WC=1.85

CHEMISTRY: ●CaCO$_3$=24.2% ●TOC=0.34 ●CaCO$_3$=3.7% ●TOC=0.38%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: IW

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbedded very thin volcanic ash layers.

Major lithology: thick beds of massive, slightly to moderately bioturbated VOLCANIC CLAYEY SILT make up most of this core. Silt-sized feldspar, glass, and volcanic rock fragments are disseminated throughout. The color varies from olive (5Y 4/3) to olive gray (5Y 5/2 to 4/2) to dark greenish gray (10Y 4/2/ to 4/1), with common mottling due to bioturbation. Several layers in Sections 5 and 6 contain calcareous bioclasts as a major component.

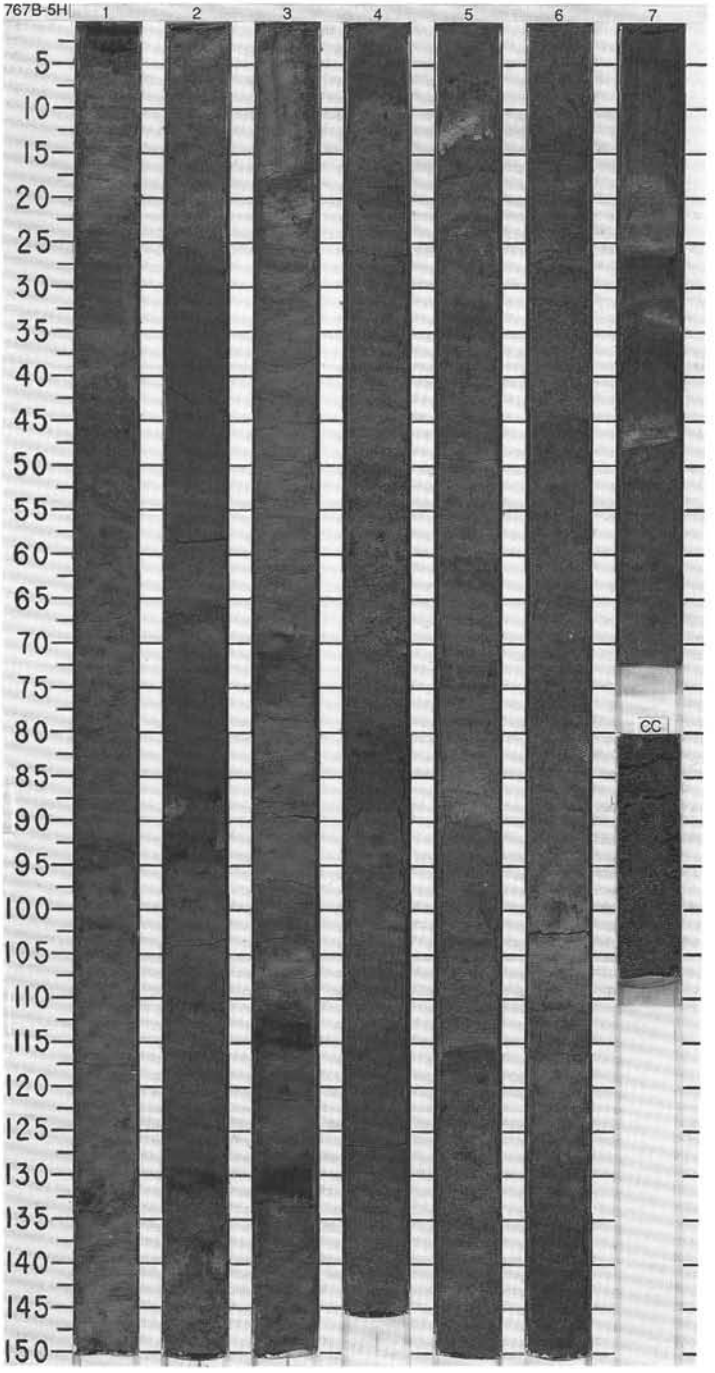
Minor lithology: Volcanic ash layers of varied composition are present. The ash layers are thin to very thin, have sharp bases, and are normally graded; they are composed of predominantly silt-sized grains. Vitric and lithic-vitric ash layers are light gray (10YR 6/1) to grayish brown (10YR 5/2 and 2.5Y 5/2 to 4/2); feldspar grains form a minor component in these ashes. They occur in Section 1, 16-17, 21-22, 30-40 and 40-52 cm; Section 3, 20-21 cm; Section 5, 10-14 cm; and Section 7, 18-25 cm. Lithic ash layers are very dark brown (10YR 2/2), and contain minor amounts of feldspar, hornblende, and pyroxene. They occur in Section 3, 69-71 cm, 111-115 cm, and 127-133 cm.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

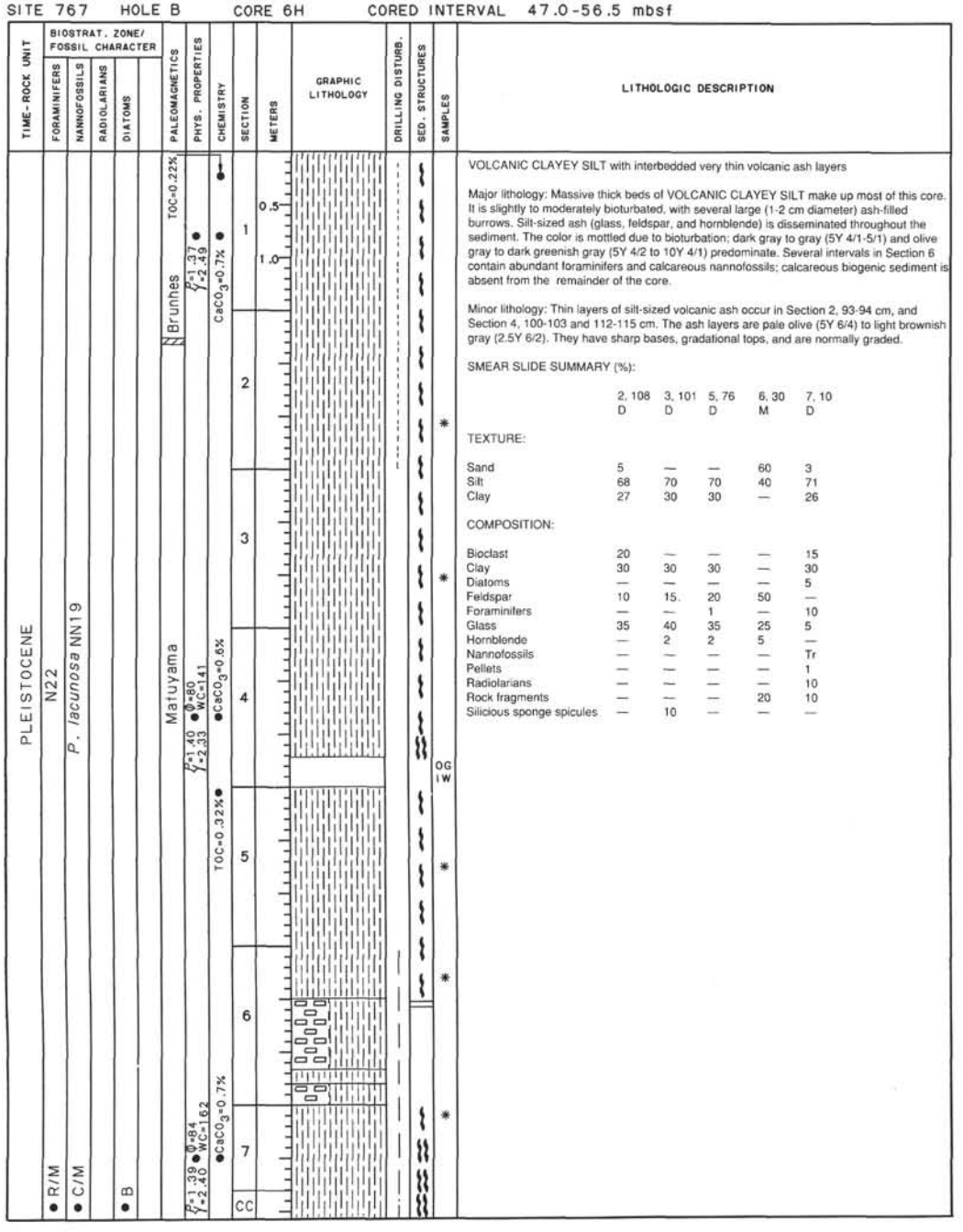
	1, 16 M	1, 21 M	1, 133 M	2, 40 D	3, 132 M	T 5, 10 M	5, 13 M
TEXTURE:							
Sand	30	75	—	2	20	70	25
Silt	70	25	20	67	80	25	75
Clay	—	—	80	31	—	5	—
COMPOSITION:							
Accessory minerals	2	1	1	—	3	—	1
Biotite	—	—	—	—	—	—	2
Clay	—	—	90	30	—	—	—
Feldspar	10	20	5	20	10	2	10
Foraminifers	—	—	—	1	—	—	—
Glass	70	40	—	39	—	90	85
Hornblende	—	3	2	5	5	—	—
Opaques	—	—	—	—	—	1	—
Organic matter	—	—	—	—	—	Tr	—
Pyroxene	5	2	—	—	2	—	—
Radiolarians	—	—	—	—	—	Tr	—
Rock fragment	10	30	—	—	80	2	—
Spicules	—	—	—	5	—	Tr	—

SMEAR SLIDE SUMMARY (%):

	5, 28 D	5, 89 D	5, 115 M	7, 25 M	7, 30 M
TEXTURE:					
Sand	2	90	2	10	1
Silt	69	10	68	90	71
Clay	29	—	30	—	28
COMPOSITION:					
Accessory minerals	—	5	3	1	—
Bioclast	—	80	50	—	—
Clay	45	—	20	—	30
Feldspar	—	6	2	6	—
Glass	5	—	5	90	50
Hornblende	—	6	—	—	—
Nannofossils	—	—	10	—	—
Pellets	10	—	10	—	—
Plant	—	—	—	—	5
Radiolarians	—	—	—	—	5
Rock fragment	10	—	—	—	—
Silt	20	—	—	—	—
Spicules	10	—	—	—	10



SITE 767 HOLE B CORE 6H CORED INTERVAL 47.0-56.5 mbsf



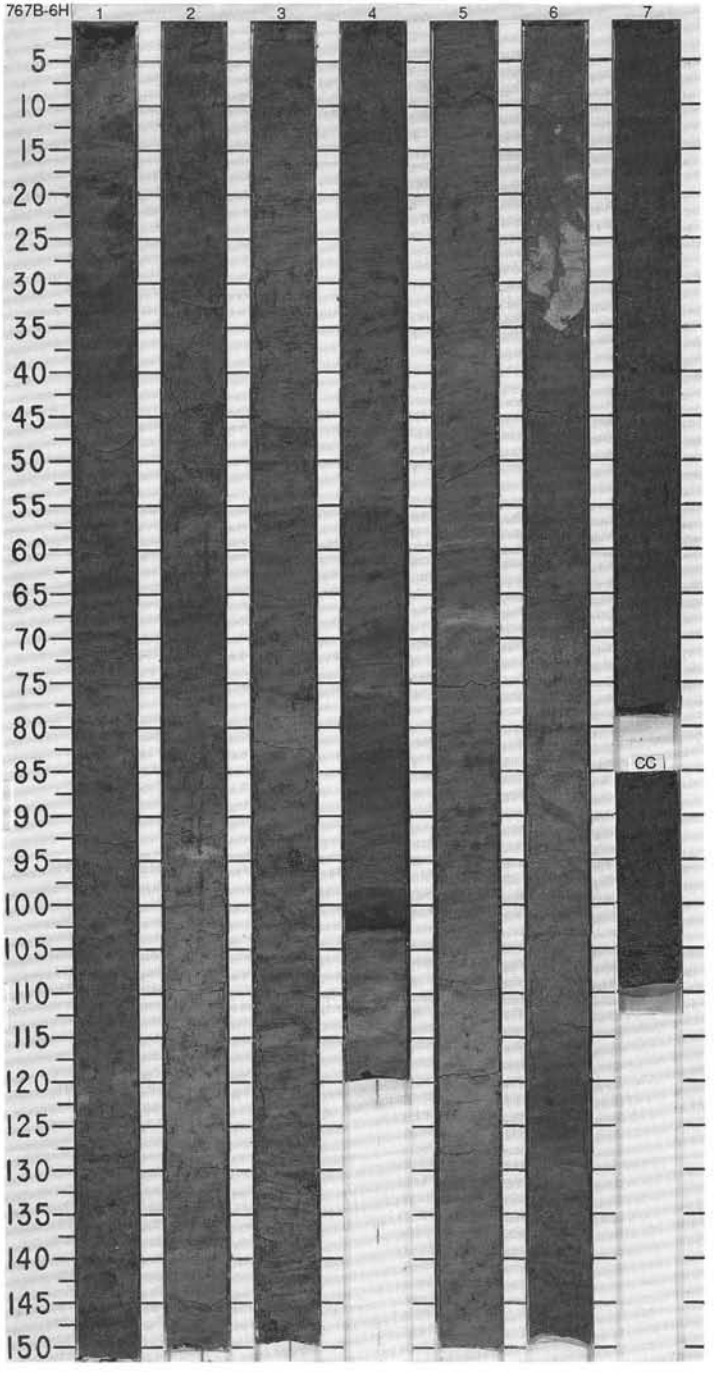
VOLCANIC CLAYEY SILT with interbedded very thin volcanic ash layers

Major lithology: Massive thick beds of VOLCANIC CLAYEY SILT make up most of this core. It is slightly to moderately bioturbated, with several large (1-2 cm diameter) ash-filled burrows. Silt-sized ash (glass, feldspar, and hornblende) is disseminated throughout the sediment. The color is mottled due to bioturbation; dark gray to gray (5Y 4/1-5/1) and olive gray to dark greenish gray (5Y 4/2 to 10Y 4/1) predominate. Several intervals in Section 6 contain abundant foraminifers and calcareous nannofossils; calcareous biogenic sediment is absent from the remainder of the core.

Minor lithology: Thin layers of silt-sized volcanic ash occur in Section 2, 93-94 cm, and Section 4, 100-103 and 112-115 cm. The ash layers are pale olive (5Y 6/4) to light brownish gray (2.5Y 6/2). They have sharp bases, gradational tops, and are normally graded.

SMEAR SLIDE SUMMARY (%):

	2, 108 D	3, 101 D	5, 76 D	6, 30 M	7, 10 D
TEXTURE:					
Sand	5	—	—	60	3
Silt	68	70	70	40	71
Clay	27	30	30	—	26
COMPOSITION:					
Bioclast	20	—	—	—	15
Clay	30	30	30	—	30
Diatoms	—	—	—	—	5
Feldspar	10	15	20	50	—
Foraminifers	—	—	1	—	10
Glass	35	40	35	25	5
Hornblende	—	2	2	5	—
Nannofossils	—	—	—	—	Tr
Pellets	—	—	—	—	1
Radiolarians	—	—	—	—	10
Rock fragments	—	—	—	20	10
Silicious sponge spicules	—	10	—	—	—



SITE 767 HOLE B CORE 7H CORED INTERVAL 56.5-66.0 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ●B ●B ●B; NANNOFOSSILS ● NN19; RADIOLARIANS ●A/S ●R/M ●T/G; DIATOMS

PALEOMAGNETICS: Matuyama; Jaramillo

PHYS. PROPERTIES: ρ=1.36 ● Φ=75 WC=131; ρ=1.38 ● Φ=77 WC=133; ρ=1.41 ● Φ=70 WC=102

CHEMISTRY: ●$CaCO_3$=0.8%; ●$CaCO_3$=1.0%; TOC=0.69● ●$CaCO_3$=0.5%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: * * * * * * * * * * IW *

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbeds of volcanic ash, carbonate silt, and foraminiferal ooze

Major lithology: VOLCANIC CLAYEY SILT. This lithology occurs in thick beds which are primarily massive and moderately to highly bioturbated, but thick laminae with gradational boundaries are present locally. Olive gray to dark olive gray (5Y 4/2 to 5Y 3/1) colors predominate. Disseminated silt-sized grains of glass and feldspar are present.

Minor lithologies:

a. A layer of foraminiferal ooze occurs in Section 3, 50-80 cm. The ooze is pale olive (5Y 6/3), planar laminated, and is probably a turbidite deposit. A similar but thinner layer occurs in Section 4, 110-113 cm.

b. Layers of clayey pelletal carbonate silt occur in Section 1, 34-39 cm; Section 5, 37-46 and 85-89 cm. These layers are graded, with sharp bases and gradational tops, and are interpreted as turbidite deposits.

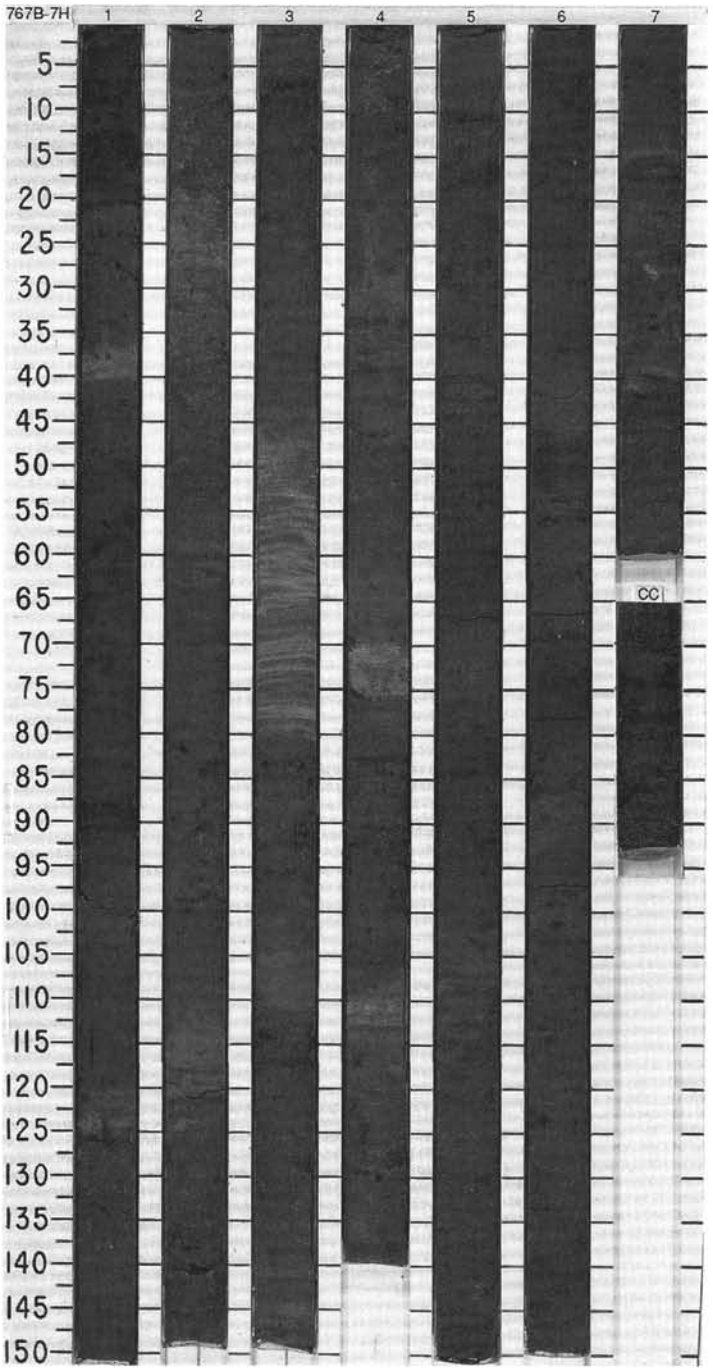
c. Very thin layers of light gray (5Y 5/1) vitric ash occur in Section 1, 119-124 cm, and Section 4, 70-76 cm. The ash layers have sharp bases and bioturbated tops, but are internally structureless.

SMEAR SLIDE SUMMARY (%):

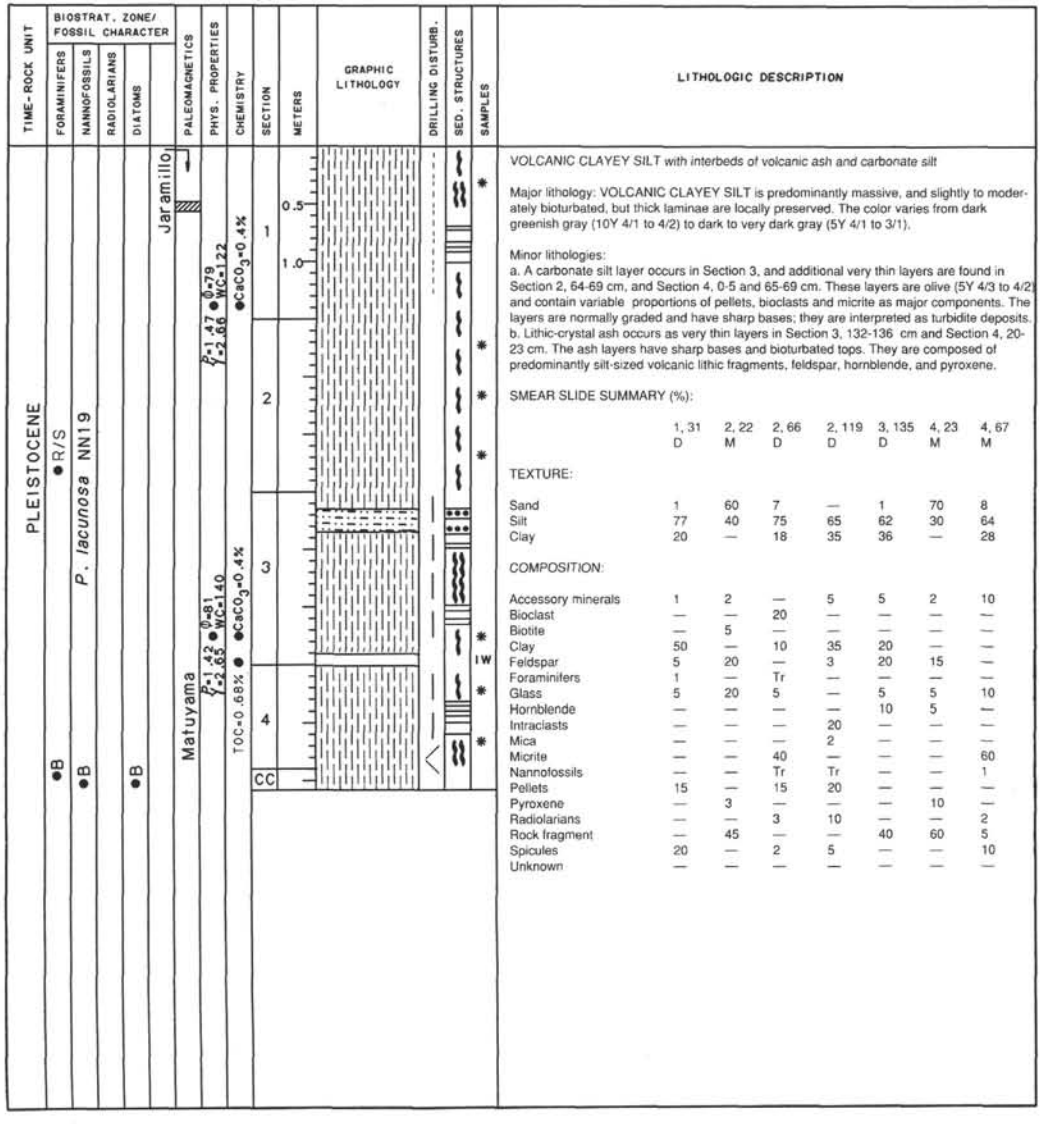
	1, 37 D	1, 71 D	2, 54 D	3, 60 M	4, 9 D	4, 55 D	4, 75 D
TEXTURE:							
Sand	4	3	3	6	3	3	40
Silt	69	68	70	69	67	69	60
Clay	27	29	27	25	29	28	—
COMPOSITION:							
Accessory minerals	—	—	5	—	10	5	—
Bioclast	5	—	—	10	—	—	—
Calcite	—	—	1	—	—	—	—
Clay	30	50	10	8	25	20	—
Diatoms	—	—	—	2	—	—	—
Feldspar	2	25	1	—	3	5	10
Foraminifers	10	—	1	50	—	—	—
Glass	—	5	10	—	5	25	80
Hornblende	—	5	Tr	—	—	—	—
Micrite	5	—	—	—	—	—	—
Nannofossils	—	—	1	2	—	—	—
Ostracod	—	—	—	1	—	—	—
Pellets	30	—	50	10	—	—	—
Pyroxene	—	—	—	—	—	—	3
Quartz	—	—	—	Tr	—	—	—
Radiolarians	—	—	—	10	—	—	—
Rock fragment	—	—	10	—	45	40	5
Silicious sponge spicules	15	10	10	—	—	—	—
Silicoflagellates	—	Tr	—	—	—	—	—
Spicules	—	—	—	5	10	5	—
Unpecified minerals	—	—	—	2	—	—	—

SMEAR SLIDE SUMMARY (%):

	4, 111 M	5, 79 D	7, 17 M
TEXTURE:			
Sand	1	1	50
Silt	82	62	50
Clay	17	36	—
COMPOSITION:			
Accessory minerals	Tr	5	2
Aggregates	—	30	—
Bioclast	—	Tr	—
Biotite	—	—	5
Clay	10	10	—
Feldspar	—	10	5
Foraminifers	30	1	—
Glass	—	5	10
Oxide	—	1	—
Pellets	25	30	—
Radiolarians	20	—	—
Rock fragment	5	—	75
Silicious sponge spicules	—	5	—
Spicules	10	—	—



SITE 767 HOLE B CORE 8H CORED INTERVAL 66.0-71.5 mbsf



LITHOLOGIC DESCRIPTION

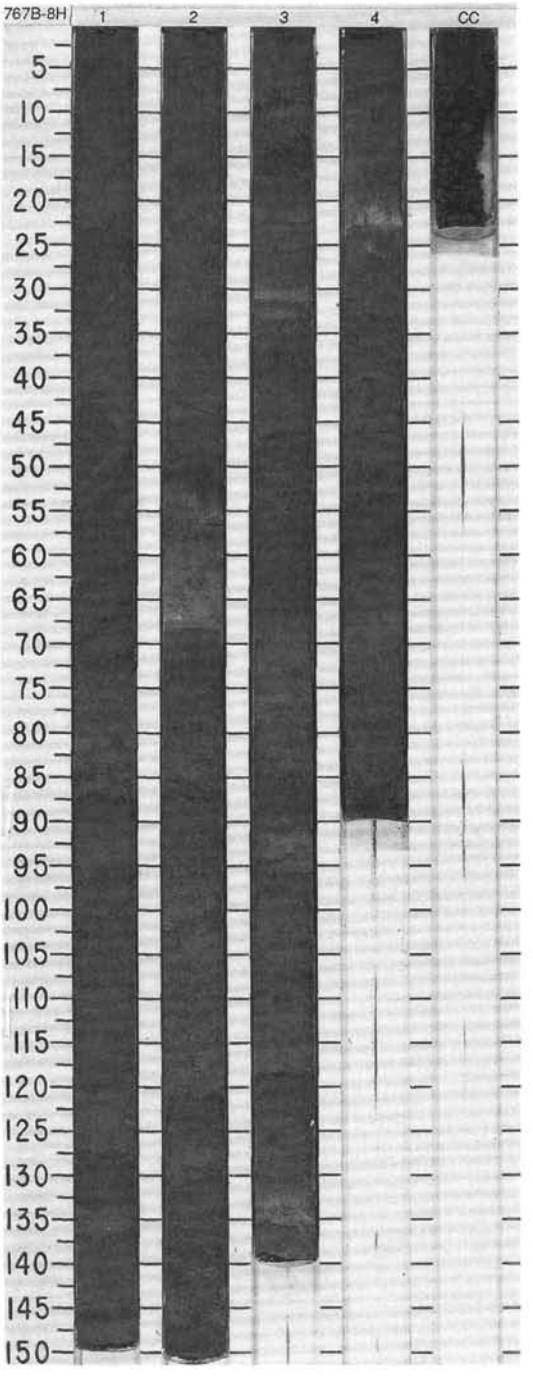
VOLCANIC CLAYEY SILT with interbeds of volcanic ash and carbonate silt

Major lithology: VOLCANIC CLAYEY SILT is predominantly massive, and slightly to moderately bioturbated, but thick laminae are locally preserved. The color varies from dark greenish gray (10Y 4/1 to 4/2) to dark to very dark gray (5Y 4/1 to 3/1).

Minor lithologies:
a. A carbonate silt layer occurs in Section 3, and additional very thin layers are found in Section 2, 64-69 cm, and Section 4, 0-5 and 65-69 cm. These layers are olive (5Y 4/3 to 4/2) and contain variable proportions of pellets, bioclasts and micrite as major components. The layers are normally graded and have sharp bases; they are interpreted as turbidite deposits.
b. Lithic-crystal ash occurs as very thin layers in Section 3, 132-136 cm and Section 4, 20-23 cm. The ash layers have sharp bases and bioturbated tops. They are composed of predominantly silt-sized volcanic lithic fragments, feldspar, hornblende, and pyroxene.

SMEAR SLIDE SUMMARY (%):

	1, 31 D	2, 22 M	2, 66 D	2, 119 D	3, 135 D	4, 23 M	4, 67 M
TEXTURE:							
Sand	1	60	7	—	1	70	8
Silt	77	40	75	65	62	30	64
Clay	20	—	18	35	36	—	28
COMPOSITION:							
Accessory minerals	1	2	—	5	5	2	10
Bioclast	—	—	20	—	—	—	—
Biotite	—	5	—	—	—	—	—
Clay	50	—	10	35	20	—	—
Feldspar	5	20	—	3	20	15	—
Foraminifers	1	—	Tr	—	—	—	—
Glass	5	20	5	—	5	5	10
Hornblende	—	—	—	—	10	5	—
Intraclasts	—	—	—	20	—	—	—
Mica	—	—	—	2	—	—	—
Micrite	—	—	40	—	—	—	60
Nannofossils	—	—	Tr	Tr	—	—	1
Pellets	15	—	15	20	—	—	—
Pyroxene	—	3	—	—	—	10	—
Radiolarians	—	—	3	10	—	—	2
Rock fragment	—	45	—	—	40	60	5
Spicules	20	—	2	5	—	—	10
Unknown	—	—	—	—	—	—	—



SITE 767 HOLE B CORE 9H CORED INTERVAL 71.5-81.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	●B	●B		●B	Matuyama / Cobb Mt. / Matuyama	ρ=1.42 ● ϕ=79 ρ=2.54 ● WC=133	$CaCO_3$=0.8%● ●TOC=0.11%	1	0.5				*
	●C/S	●F/G							1.0				
		P. lacunosa NN19						2					*
								3					*
													*
								4					*
												OG IW	
								5					*
								6					*
								7					*
								CC					*

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbeds of very thin volcanic ash and redeposited clayey ash with foraminifers

Major lithology: thick beds of VOLCANIC CLAYEY SILT make up most of this core. The beds are slightly to moderately bioturbated, and are therefore mainly structureless, but thick laminae are preserved in some intervals. Silt-sized grains of volcanic ash (glass, feldspar, quartz, mica, and lithic fragments) and siliceous sponge spicules are present throughout. The color is mottled due to bioturbation, but is dominantly gray and very dark gray (5Y 5/1 to 3/1) and olive gray (5Y 4/2).

Minor lithologies:

a. Layers of gray (5Y 5/1 to 6/1) volcanic ash are present in Section 1, 43-45 cm; Section 2, 16-18 and 114-120 cm; Section 3, 86-87 cm; and Section 4, 30-31 cm. The ash layers have sharp bases and gradational bioturbated tops, but no internal structures are evident. The ash is primarily silt-sized, and is variable in composition: lithic-vitric, crystal-vitric, and vitric-lithic ash layers are all present. Crystal phases in the ashes include feldspar, hornblende, pyroxene, and biotite.

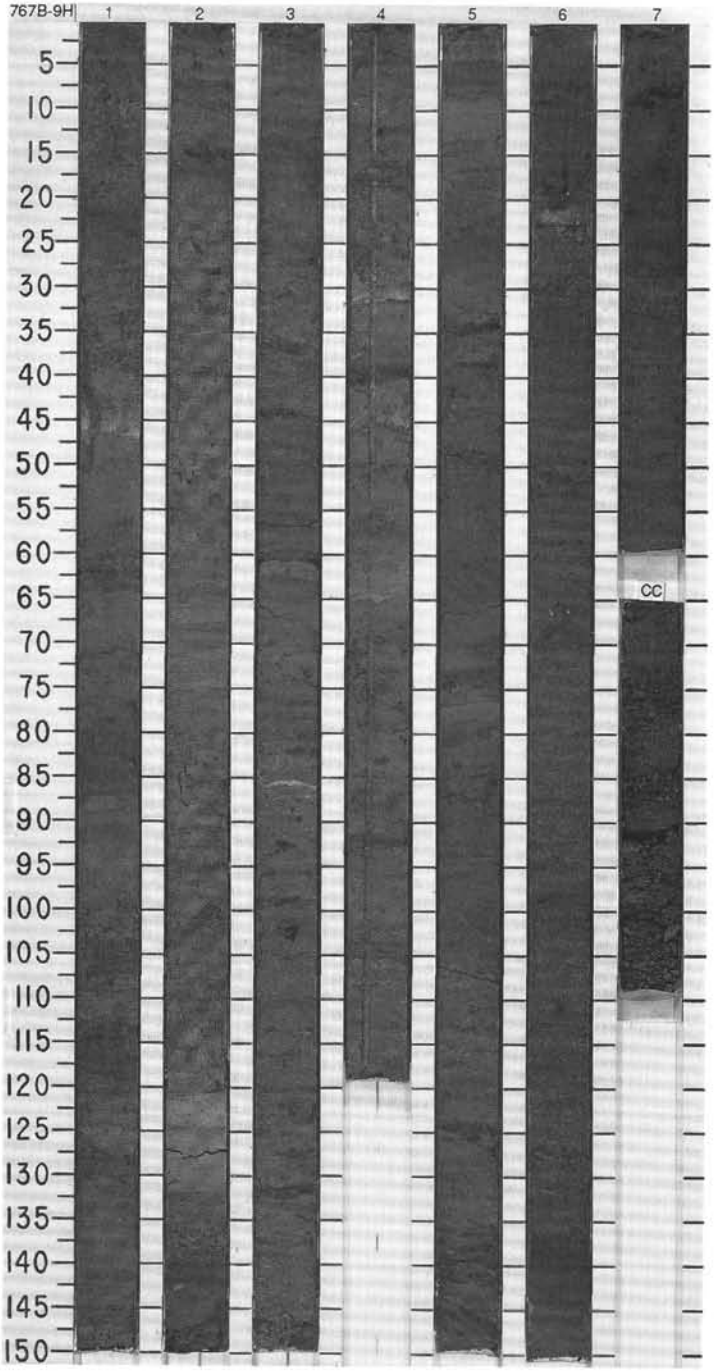
b. Clayey volcanic ash with foraminifers occurs in beds 10-20 cm thick. These beds are dark greenish gray (10Y 5/2) to olive (5Y 5/3); the dominant grain size is silt. The beds have sharp basal contacts, planar lamination, and normal grading; they are interpreted as reworked ash deposited by turbidity currents.

SMEAR SLIDE SUMMARY (%):

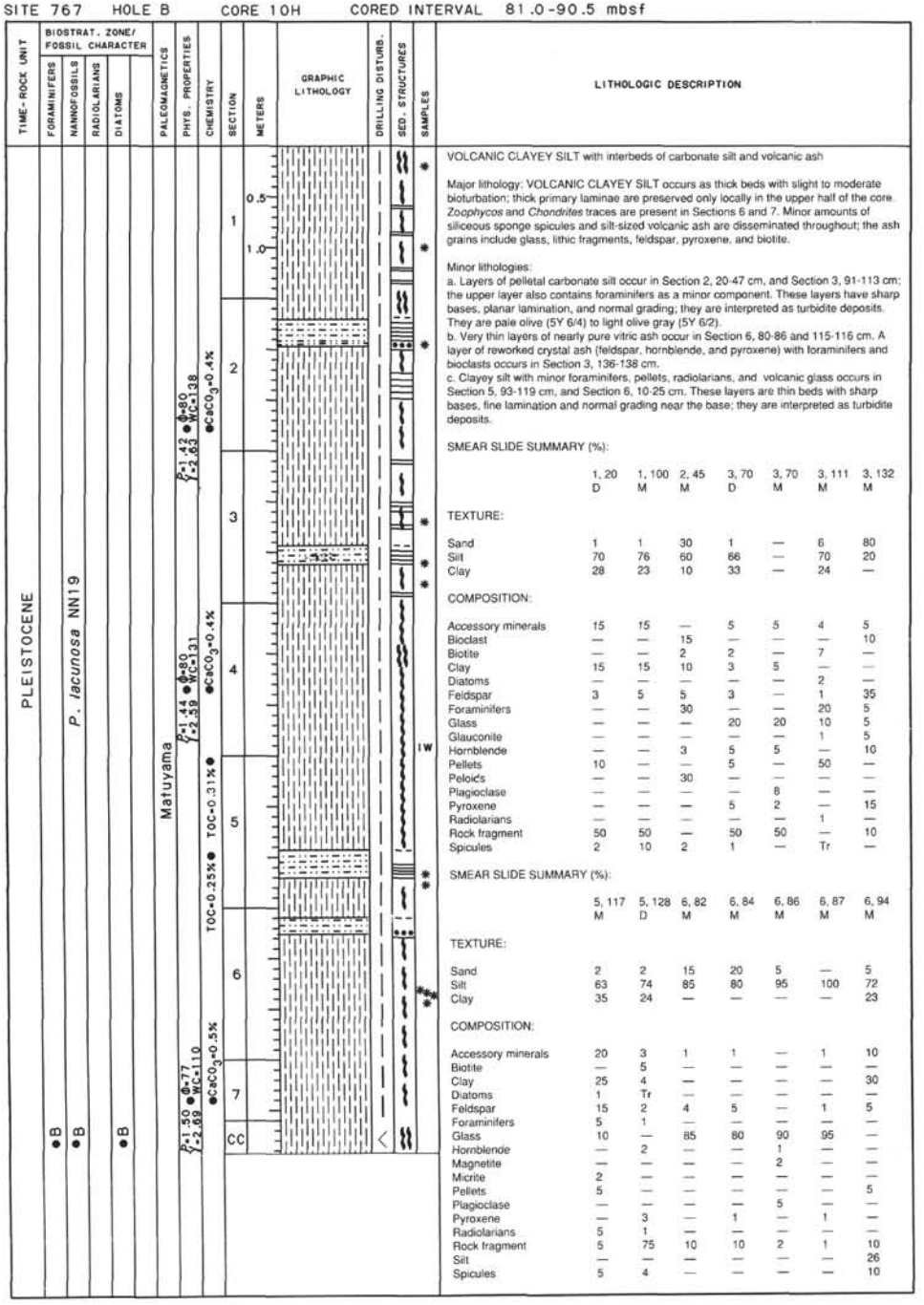
	1, 92 D	2, 74 M	2, 121 M	3, 60 M	3, 86 M	3, 120 D	4, 31 M
TEXTURE:							
Sand	2	2	70	1	40	2	60
Silt	70	78	30	70	60	74	40
Clay	28	20	—	29	—	24	—
COMPOSITION:							
Accessory minerals	1	5	1	5	2	5	1
Biotite	—	2	5	—	—	—	—
Clay	65	20	—	30	—	30	—
Feldspar	1	15	5	15	20	15	15
Foraminifers	2	20	—	—	—	—	—
Glass	5	10	45	5	50	5	25
Glauconite	Tr	—	—	—	—	—	—
Hornblende	Tr	5	—	—	5	—	2
Mica	1	—	—	5	—	5	—
Nannofossils	1	—	—	—	—	—	—
Pellets	20	5	—	5	—	3	—
Pyroxene	—	—	2	—	10	—	3
Radiolarians	1	—	—	2	—	2	—
Rock fragment	—	—	40	5	10	5	50
Silt	—	—	—	25	—	25	—
Spicules	2	5	—	3	—	5	—
Volcanic ash	—	10	—	—	—	—	—

SMEAR SLIDE SUMMARY (%):

	6, 90 D	7, 4 D
TEXTURE:		
Sand	2	2
Silt	70	54
Clay	25	43
COMPOSITION:		
Accessory minerals	5	10
Clay	30	20
Feldspar	15	10
Glass	5	—
Mica	5	—
Pellets	3	—
Radiolarians	2	—
Rock fragment	10	45
Silt	20	—
Spicules	5	10



SITE 767 HOLE B CORE 10H CORED INTERVAL 81.0-90.5 mbsf



LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT with interbeds of carbonate silt and volcanic ash

Major lithology: VOLCANIC CLAYEY SILT occurs as thick beds with slight to moderate bioturbation; thick primary laminae are preserved only locally in the upper half of the core. *Zoophycos* and *Chondrites* traces are present in Sections 6 and 7. Minor amounts of siliceous sponge spicules and silt-sized volcanic ash are disseminated throughout; the ash grains include glass, lithic fragments, feldspar, pyroxene, and biotite.

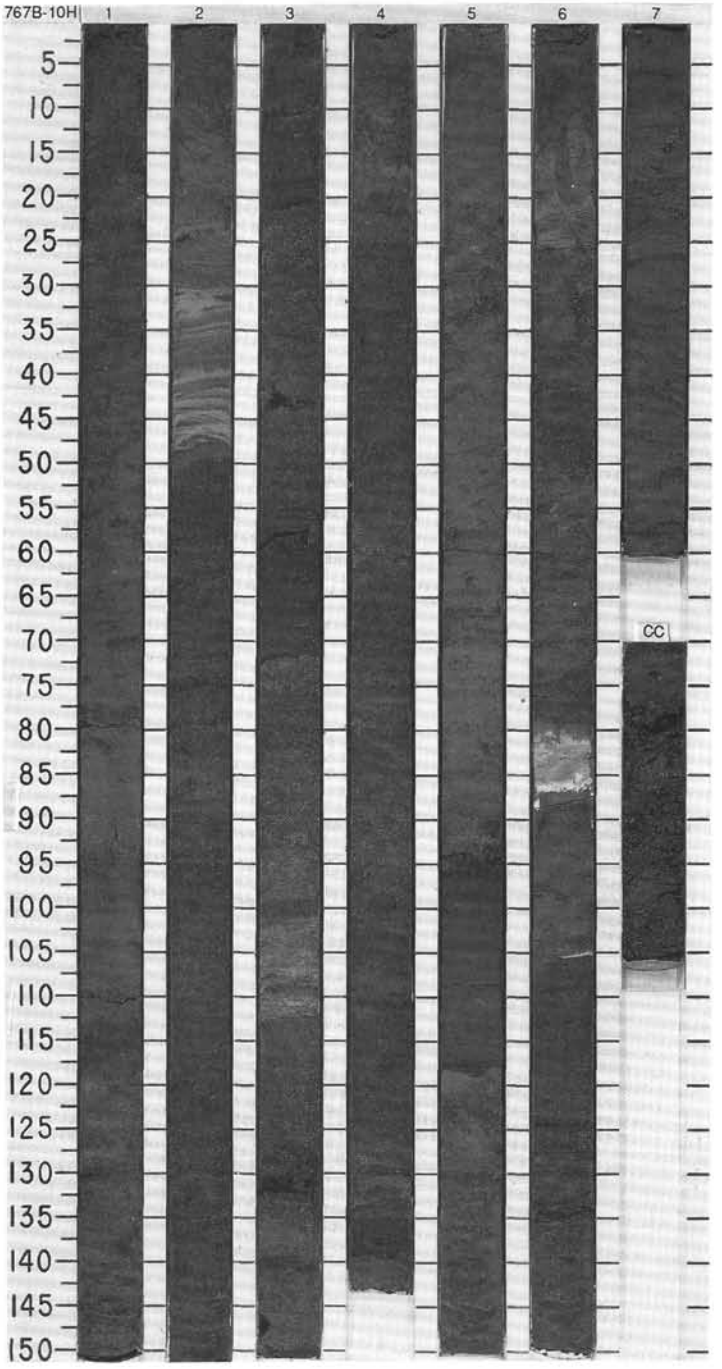
Minor lithologies:
a. Layers of pelletal carbonate silt occur in Section 2, 20-47 cm, and Section 3, 91-113 cm; the upper layer also contains foraminifers as a minor component. These layers have sharp bases, planar lamination, and normal grading; they are interpreted as turbidite deposits. They are pale olive (5Y 6/4) to light olive gray (5Y 6/2).
b. Very thin layers of nearly pure vitric ash occur in Section 6, 80-86 and 115-116 cm. A layer of reworked crystal ash (feldspar, hornblende, and pyroxene) with foraminifers and bioclasts occurs in Section 3, 136-138 cm.
c. Clayey silt with minor foraminifers, pellets, radiolarians, and volcanic glass occurs in Section 5, 93-119 cm, and Section 6, 10-25 cm. These layers are thin beds with sharp bases, fine lamination and normal grading near the base; they are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 20 D	1, 100 M	2, 45 M	3, 70 D	3, 70 M	3, 111 M	3, 132 M
TEXTURE:							
Sand	1	1	30	1	—	6	80
Silt	70	76	60	66	—	70	20
Clay	28	23	10	33	—	24	—
COMPOSITION:							
Accessory minerals	15	15	—	5	5	4	5
Bioclast	—	—	15	—	—	—	10
Biotite	—	—	2	2	—	7	—
Clay	15	15	10	3	5	—	—
Diatoms	—	—	—	—	—	2	—
Feldspar	3	5	5	3	—	1	35
Foraminifers	—	—	30	—	—	20	5
Glass	—	—	—	20	20	10	5
Glauconite	—	—	—	—	—	1	5
Hornblende	—	—	3	5	5	—	10
Pellets	10	—	—	5	—	50	—
Peloids	—	—	30	—	—	—	—
Plagioclase	—	—	—	—	8	—	—
Pyroxene	—	—	—	5	2	—	15
Radiolarians	—	—	—	—	—	1	—
Rock fragment	50	50	—	50	50	—	10
Spicules	2	10	2	1	—	Tr	—

SMEAR SLIDE SUMMARY (%):

	5, 117 M	5, 128 D	6, 82 M	6, 84 M	6, 86 M	6, 87 M	6, 94 M
TEXTURE:							
Sand	2	2	15	20	5	—	5
Silt	63	74	85	80	95	100	72
Clay	35	24	—	—	—	—	23
COMPOSITION:							
Accessory minerals	20	3	1	1	—	1	10
Biotite	—	5	—	—	—	—	—
Clay	25	4	—	—	—	—	30
Diatoms	1	Tr	—	—	—	—	—
Feldspar	15	2	4	5	—	1	5
Foraminifers	5	1	—	—	—	—	—
Glass	10	—	85	80	90	95	—
Hornblende	—	2	—	—	1	—	—
Magnetite	—	—	—	—	2	—	—
Micrite	2	—	—	—	—	—	—
Pellets	5	—	—	—	—	—	5
Plagioclase	—	—	—	—	5	—	—
Pyroxene	—	3	—	1	—	1	—
Radiolarians	5	1	—	—	—	—	—
Rock fragment	5	75	10	10	2	1	10
Silt	—	—	—	—	—	—	26
Spicules	5	4	—	—	—	—	10



SITE 767 HOLE B CORE 11X CORED INTERVAL 90.5-100.0 mbsf

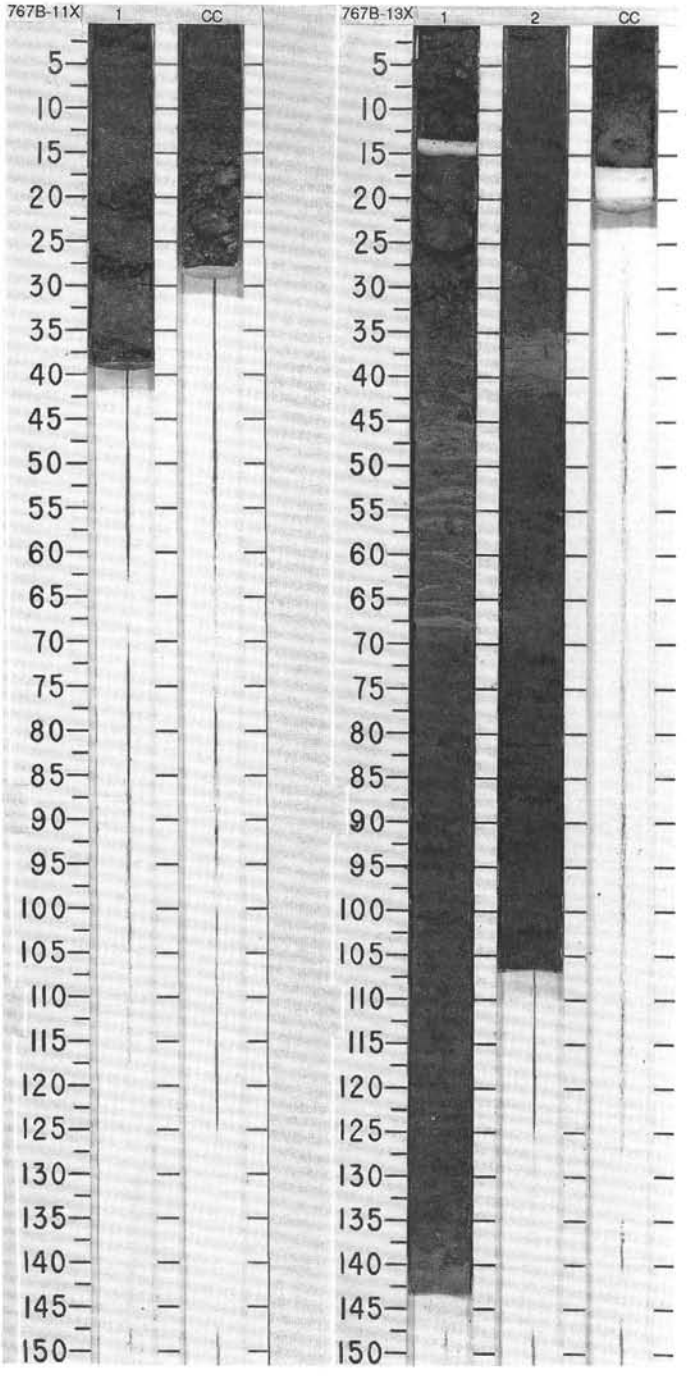
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	BIOSTRAT. ZONE/ FOSSIL CHARACTER: NANNOFOSSILS	BIOSTRAT. ZONE/ FOSSIL CHARACTER: RADIOLARIANS	BIOSTRAT. ZONE/ FOSSIL CHARACTER: DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
PLEISTOCENE	●R/S	●C/M						1						VOLCANIC CLAYEY SILT Major lithology: VOLCANIC CLAYEY SILT. Dark grayish brown (2.5Y 3/2), mottled, very disturbed by drilling.
		P. lacunosa NN19						CC	0.5					

767B-12X NO RECOVERY

SITE 767 HOLE B CORE 13X CORED INTERVAL 109.6-119.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	BIOSTRAT. ZONE/ FOSSIL CHARACTER: NANNOFOSSILS	BIOSTRAT. ZONE/ FOSSIL CHARACTER: RADIOLARIANS	BIOSTRAT. ZONE/ FOSSIL CHARACTER: DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
PLEISTOCENE	●B ●C/S	●B *P. lacunosa* NN19				ρ=1.45 ● Φ=78 ρ=2.50 ● WC=123	TOC=0.08%● ●$CaCO_3$=0.6%	1	0.5 1.0					VOLCANIC SILT and bioclastic sand Major lithology: VOLCANIC SILT. Massive, bioturbated, dark greenish gray (5Y 4/1 - 10Y 4/2). Composed mainly of clay material, altered vitric ash and smaller amounts of altered lithic ash. Minor lithologies: a. Volcanic clayey silt. Massive, bioturbated, dark greenish gray (5Y 4/2- 10Y 4/2) containing more silt grade material. Composed mainly of altered vitric ash and smaller amounts of altered lithic ash. b. Bioclastic sand. Massive, laminated and cross laminated, olive gray (5Y 5/3) and pale olive gray (5Y 6/3); made up of bioclastic material and smaller amounts of foraminifers. The volcanic silt and bioclastic sand are interlaminated (Section 1, 40-70 cm). SMEAR SLIDE SUMMARY (%):
								2				IW		
								CC						

	1, 103 M	2, 37 M	2, 63 D	2, 103 M	CC, 12 M
TEXTURE:					
Sand	10	90	1	40	—
Silt	80	10	75	60	80
Clay	5	—	24	—	20
COMPOSITION:					
Accessory minerals	5	10	1	5	—
Bioclast	—	55	—	5	—
Biotite	2	—	—	—	—
Clay	5	—	20	—	—
Feldspar	—	—	10	15	1
Foraminifers	—	20	—	—	—
Glass	50	—	5	65	70
Glauconite	—	10	1	—	—
Hornblende	3	—	5	—	—
Pellets	—	—	5	—	—
Plagioclase	5	—	—	—	—
Pyroxene	2	—	5	5	—
Rock fragment	25	—	40	5	25
Spicules	—	5	5	—	—



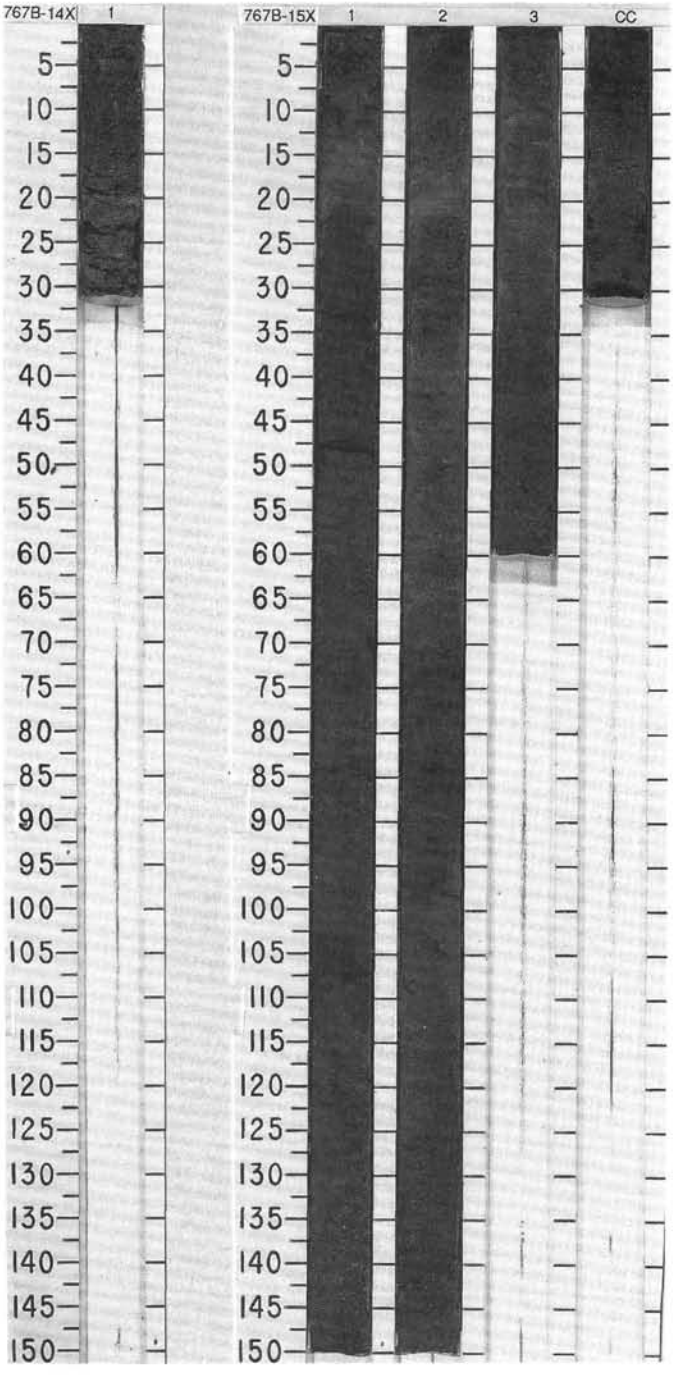
SITE 767 HOLE B CORE 14X CORED INTERVAL 119.3-128.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
PLEISTOCENE	R/S●	*P. lacunosa* NN19 F/G●						1						VOLCANIC CLAYEY SILT Major lithology: VOLCANIC CLAYEY SILT. Massive, bioturbated, dark greenish gray (10Y 4/1) and olive gray (5Y 5/2).

SITE 767 HOLE B CORE 15X CORED INTERVAL 128.9-138.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
PLEISTOCENE	● B ● R/G	● C/S *P. lacunosa* NN19				ρ=1.38 ● ϕ=80 ρ=2.58 WC=145 TOC=0.34% ● $CaCO_3$=0.6%		1 2 3 CC	0.5 1.0				*	VOLCANIC CLAYEY SILT with carbonate sand and bioclastic clayey silt Major lithology: VOLCANIC CLAYEY SILT. Massive. Dark greenish gray (10Y 4/1), mottled by bioturbation dark gray (5Y 4/1), dark grayish brown (5Y 4/2) and grayish green (5G 4/2). Composed mainly of feldspar, altered vitric ash and lithic ash. Minor lithologies: a. Bioclastic carbonate sands: olive gray (5Y 4/2), bioturbated. Contains foraminifers, nannofossils and lithic fragments. b. Bioclastic clayey silt: Bioturbated, olive gray (5Y 4/2). Bioclastic and volcanic clayey silts are interlaminated in places (core catcher). SMEAR SLIDE SUMMARY (%):

	1, 48 M	1, 120 D	2, 10 M
TEXTURE:			
Sand	60	—	70
Silt	40	60	30
Clay	—	40	—
COMPOSITION:			
Accessory minerals	5	—	5
Bioclast	15	—	45
Biotite	2	—	—
Clay	—	30	—
Feldspar	20	30	—
Foraminifers	—	—	10
Glass	10	20	—
Glauconite	3	—	—
Hornblende	1	5	—
Nannofossils	—	—	10
Pyroxene	5	—	—
Rock fragment	35	15	20
Spicules	3	—	10



767B-16X NO RECOVERY

SITE 767 HOLE B CORE 17X CORED INTERVAL 148.3-158.0 mbsf

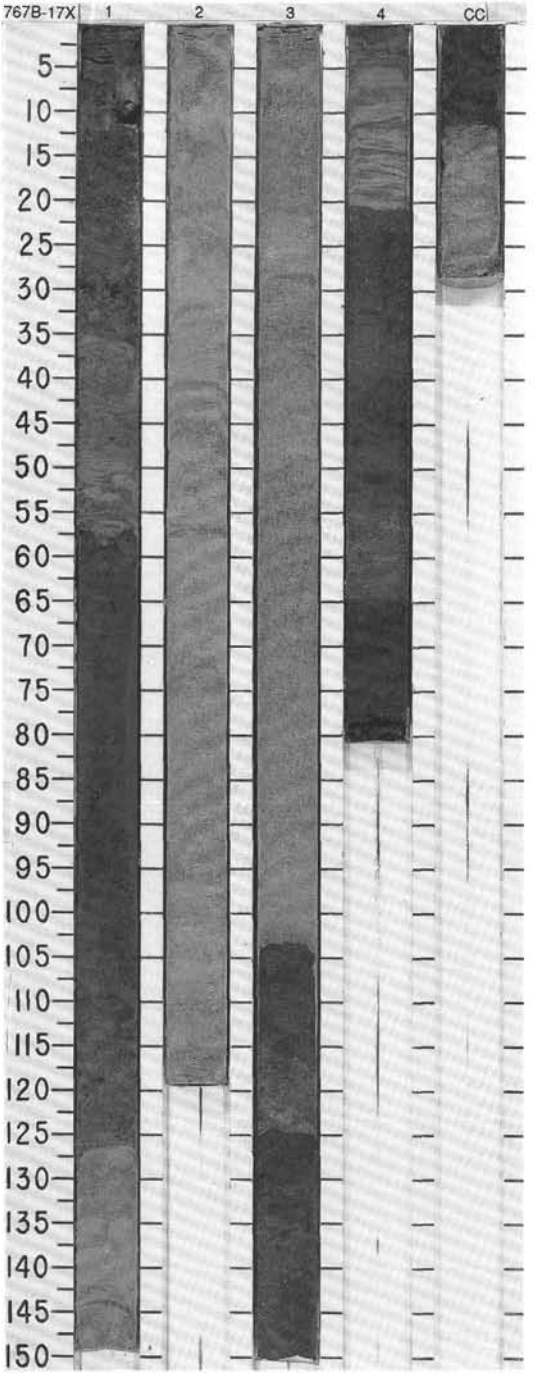
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE / PLEISTOCENE	●R/S	●R/S											
	●R/S	*D. brouweri* NN18	●C/G NN19					1	0.5				
									1.0				
								2					OG IW
								3					
	●R/S	●B						4					
								CC					

LITHOLOGIC DESCRIPTION

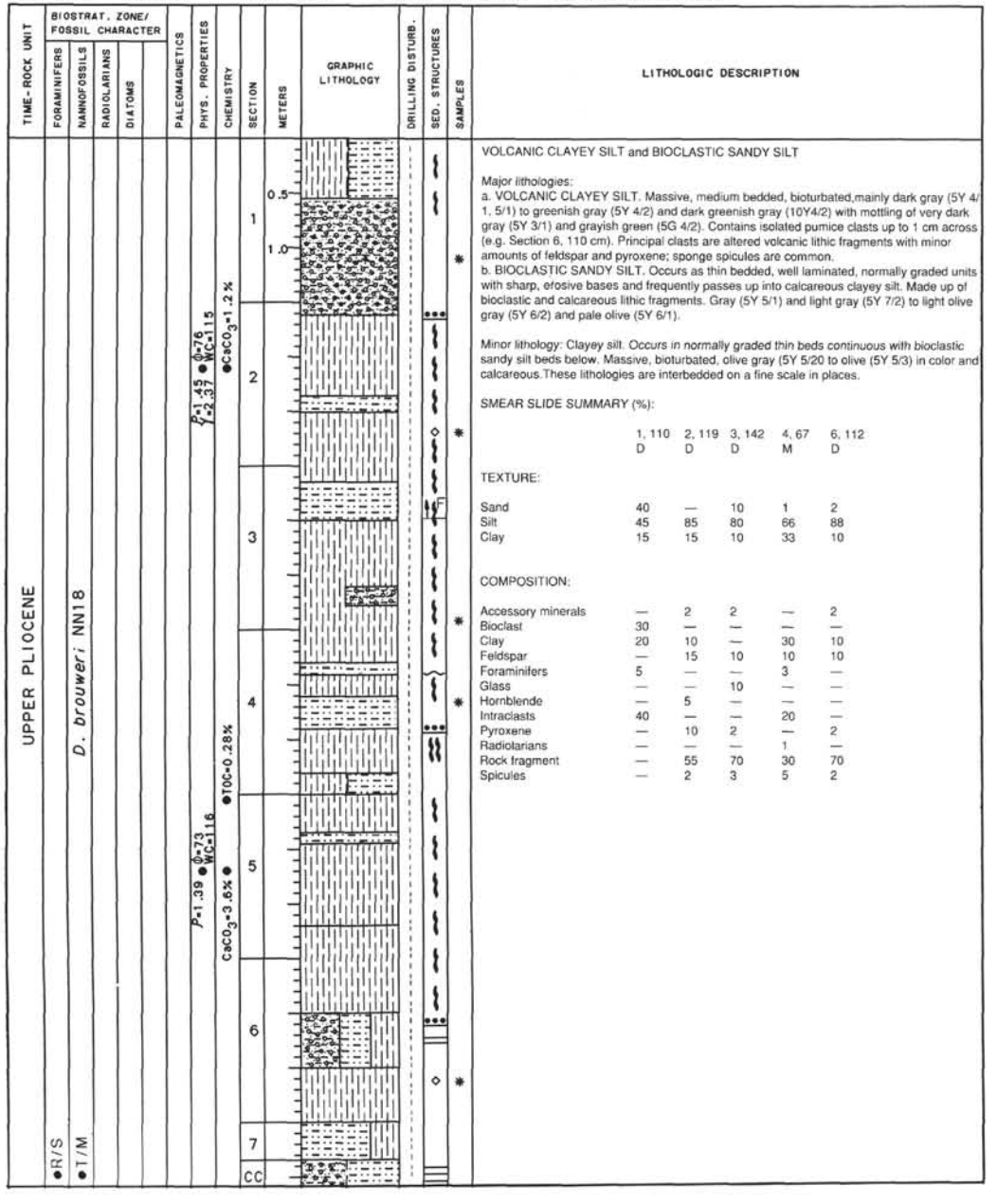
BIOCLASTIC SANDY SILT and VOLCANIC CLAYEY SILT

Major lithologies:
a. BIOCLASTIC SANDY SILT. Sandy silts and silty sands of bioclastic and lithic carbonate detritus, light greenish gray (10Y 7/2) in color. Occurs in erosively based, graded sequences continuous with overlying bioclastic silty clays. The thickest unit is 275 cm thick (Section 1, 120 cm to Section 3, 105 cm) and is reverse graded in the lowest 50 cm, then normally graded to the top, where it is laminated.
b. VOLCANIC CLAYEY SILT: very dark gray (5Y 3/1) to dark grayish brown (10YR 3/2), mottled dark brown (10YR 3/3) by bioturbation. Composed mainly of altered volcanic lithic fragments, volcanic glass and feldspar. Includes very thin beds of lithic ash (core catcher).

Minor lithology: Carbonate clayey silts. Bioclastic with micritic and clayey components, a finer equivalent of the bioclastic sandy silts, which it grades down into. Dark olive gray (5Y 3/2) to light olive gray (5Y 6/2) in color. The volcanic clayey silts and carbonate clayey silts are interlaminated in places. The thick carbonate bed is considered to be a calc-turbidite.



SITE 767 HOLE B CORE 18X CORED INTERVAL 158.0-167.6 mbsf



LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT and BIOCLASTIC SANDY SILT

Major lithologies:

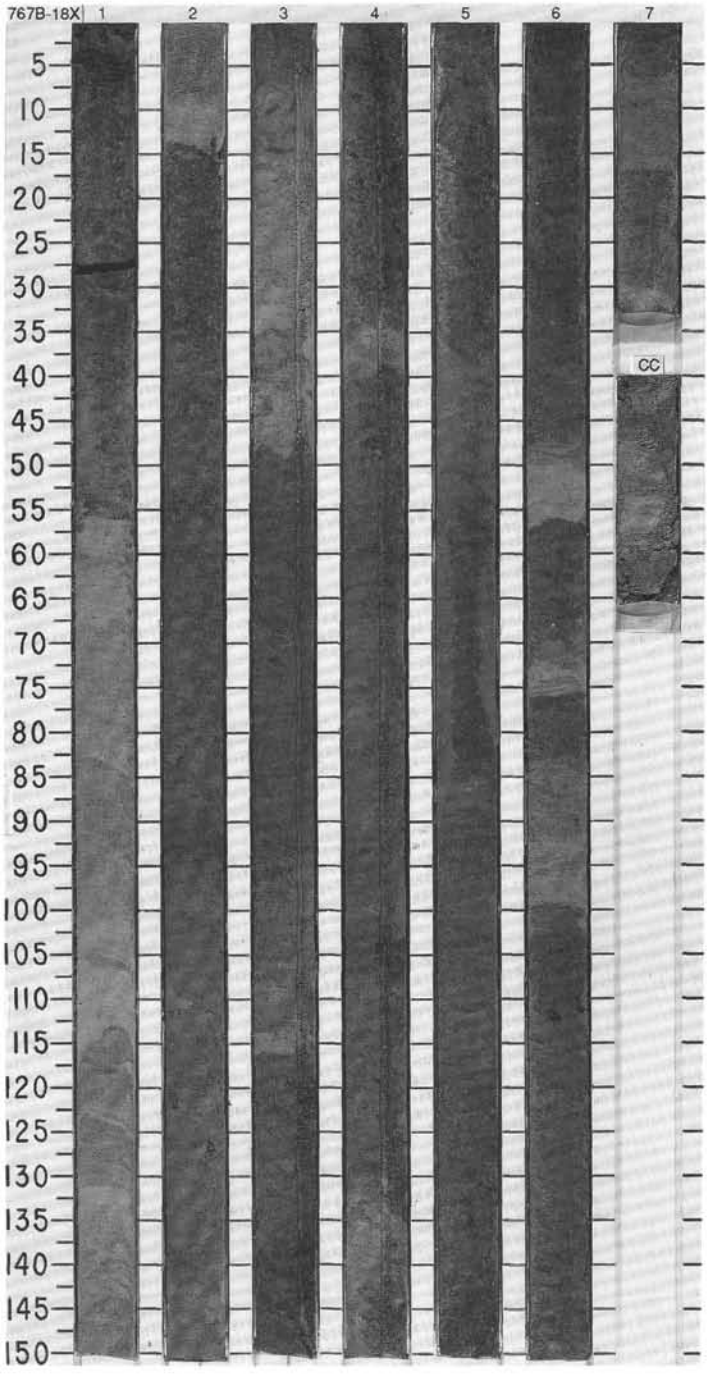
a. VOLCANIC CLAYEY SILT. Massive, medium bedded, bioturbated,mainly dark gray (5Y 4/1, 5/1) to greenish gray (5Y 4/2) and dark greenish gray (10Y4/2) with mottling of very dark gray (5Y 3/1) and grayish green (5G 4/2). Contains isolated pumice clasts up to 1 cm across (e.g. Section 6, 110 cm). Principal clasts are altered volcanic lithic fragments with minor amounts of feldspar and pyroxene; sponge spicules are common.

b. BIOCLASTIC SANDY SILT. Occurs as thin bedded, well laminated, normally graded units with sharp, erosive bases and frequently passes up into calcareous clayey silt. Made up of bioclastic and calcareous lithic fragments. Gray (5Y 5/1) and light gray (5Y 7/2) to light olive gray (5Y 6/2) and pale olive (5Y 6/1).

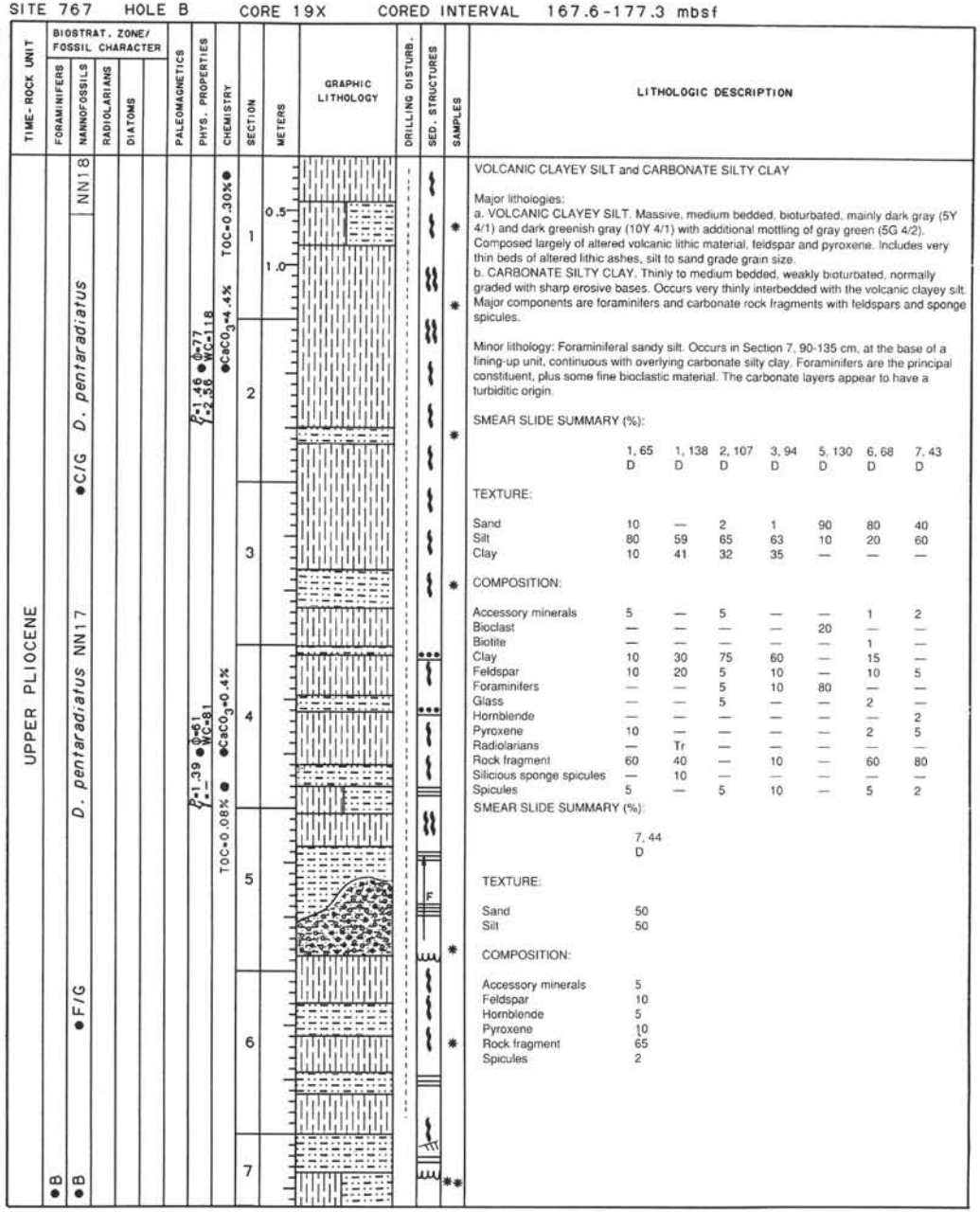
Minor lithology: Clayey silt. *Occurs in normally graded thin beds continuous with bioclastic* sandy silt beds below. Massive, bioturbated, olive gray (5Y 5/20 to olive (5Y 5/3) in color and calcareous.These lithologies are interbedded on a fine scale in places.

SMEAR SLIDE SUMMARY (%):

	1, 110 D	2, 119 D	3, 142 D	4, 67 M	6, 112 D
TEXTURE:					
Sand	40	—	10	1	2
Silt	45	85	80	66	88
Clay	15	15	10	33	10
COMPOSITION:					
Accessory minerals	—	2	2	—	2
Bioclast	30	—	—	—	—
Clay	20	10	—	30	10
Feldspar	—	15	10	10	10
Foraminifers	5	—	—	3	—
Glass	—	—	10	—	—
Hornblende	—	5	—	—	—
Intraclasts	40	—	—	20	—
Pyroxene	—	10	2	—	2
Radiolarians	—	—	—	1	—
Rock fragment	—	55	70	30	70
Spicules	—	2	3	5	2



SITE 767 HOLE B CORE 19X CORED INTERVAL 167.6-177.3 mbsf



LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT and CARBONATE SILTY CLAY

Major lithologies:
a. VOLCANIC CLAYEY SILT. Massive, medium bedded, bioturbated, mainly dark gray (5Y 4/1) and dark greenish gray (10Y 4/1) with additional mottling of gray green (5G 4/2). Composed largely of altered volcanic lithic material, feldspar and pyroxene. Includes very thin beds of altered lithic ashes, silt to sand grade grain size.
b. CARBONATE SILTY CLAY. Thinly to medium bedded, weakly bioturbated, normally graded with sharp erosive bases. Occurs very thinly interbedded with the volcanic clayey silt. Major components are foraminifers and carbonate rock fragments with feldspars and sponge spicules.

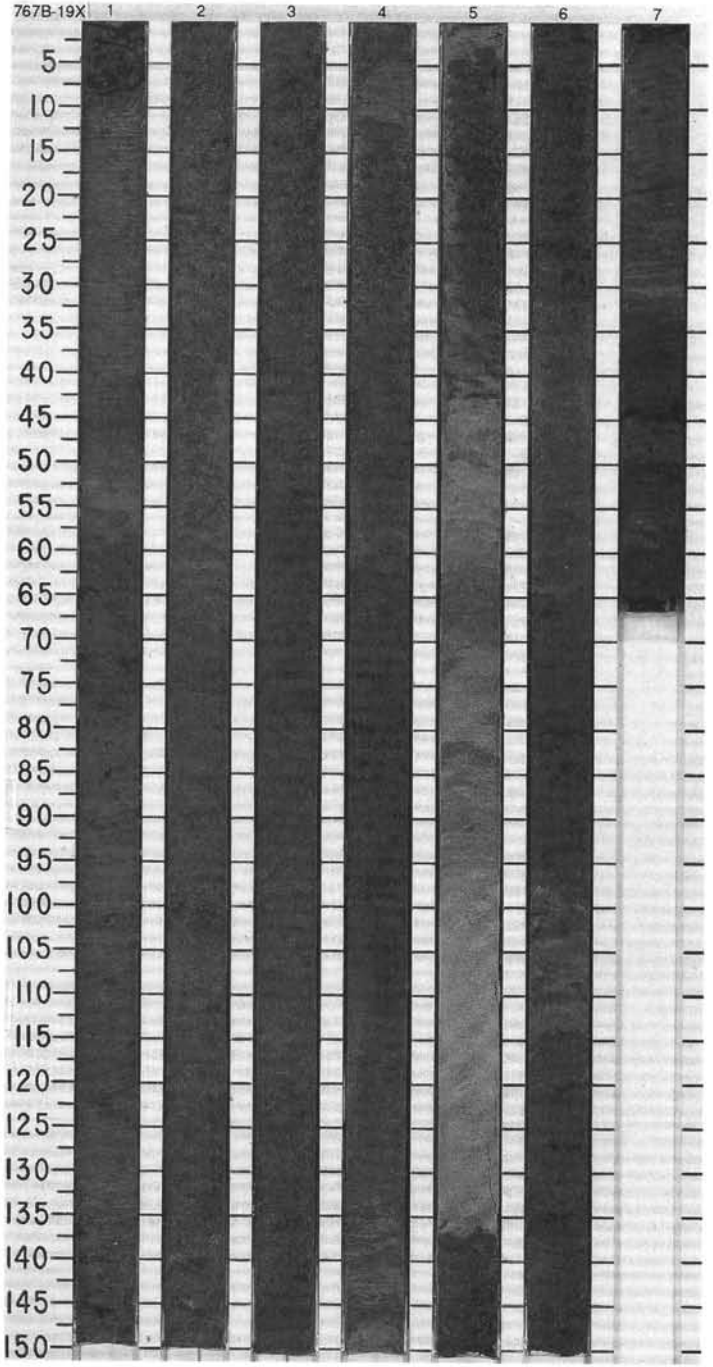
Minor lithology: Foraminiferal sandy silt. Occurs in Section 7, 90-135 cm, at the base of a lining-up unit, continuous with overlying carbonate silty clay. Foraminifers are the principal constituent, plus some fine bioclastic material. The carbonate layers appear to have a turbiditic origin.

SMEAR SLIDE SUMMARY (%):

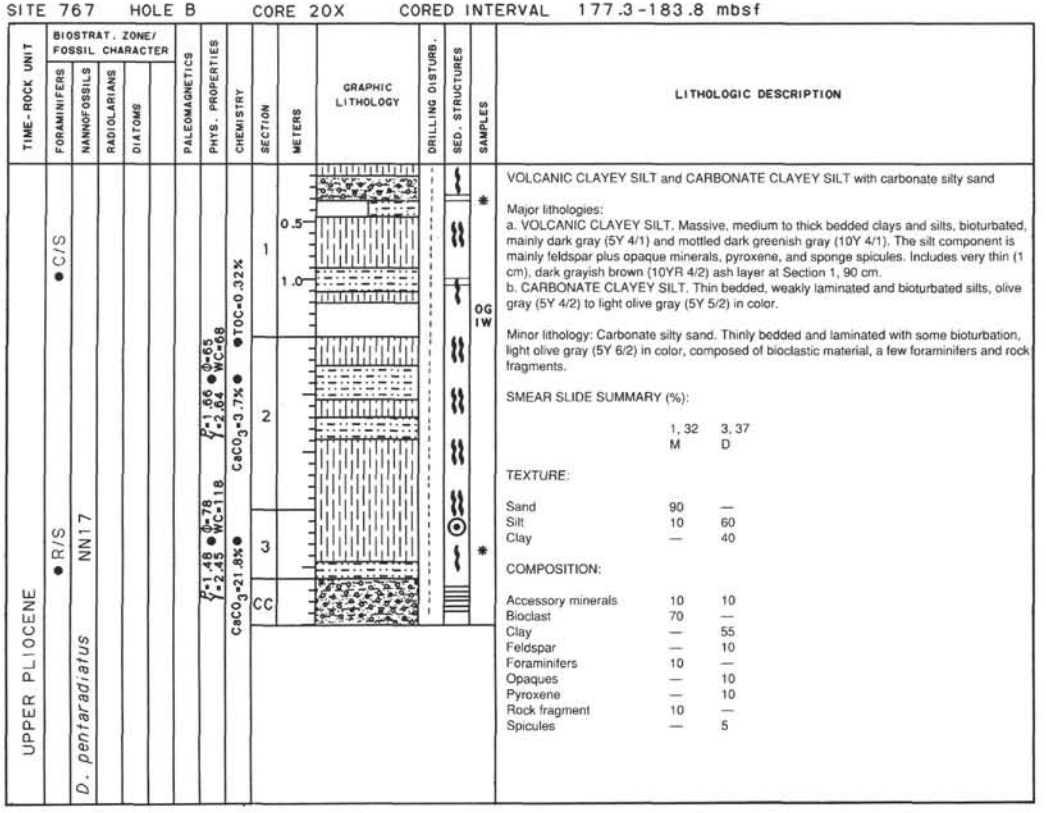
	1, 65 D	1, 138 D	2, 107 D	3, 94 D	5, 130 D	6, 68 D	7, 43 D
TEXTURE:							
Sand	10	—	2	1	90	80	40
Silt	80	59	65	63	10	20	60
Clay	10	41	32	35	—	—	—
COMPOSITION:							
Accessory minerals	5	—	5	—	—	1	2
Bioclast	—	—	—	—	20	—	—
Biotite	—	—	—	—	—	1	—
Clay	10	30	75	60	—	15	—
Feldspar	10	20	5	10	—	10	5
Foraminifers	—	—	5	10	80	—	—
Glass	—	—	5	—	—	2	—
Hornblende	—	—	—	—	—	—	2
Pyroxene	10	—	—	—	—	2	5
Radiolarians	—	Tr	—	—	—	—	—
Rock fragment	60	40	—	10	—	60	80
Silicious sponge spicules	—	10	—	—	—	—	—
Spicules	5	—	5	10	—	5	2

SMEAR SLIDE SUMMARY (%):

	7, 44 D
TEXTURE:	
Sand	50
Silt	50
COMPOSITION:	
Accessory minerals	5
Feldspar	10
Hornblende	5
Pyroxene	10
Rock fragment	65
Spicules	2



SITE 767 HOLE B CORE 20X CORED INTERVAL 177.3-183.8 mbsf



LITHOLOGIC DESCRIPTION

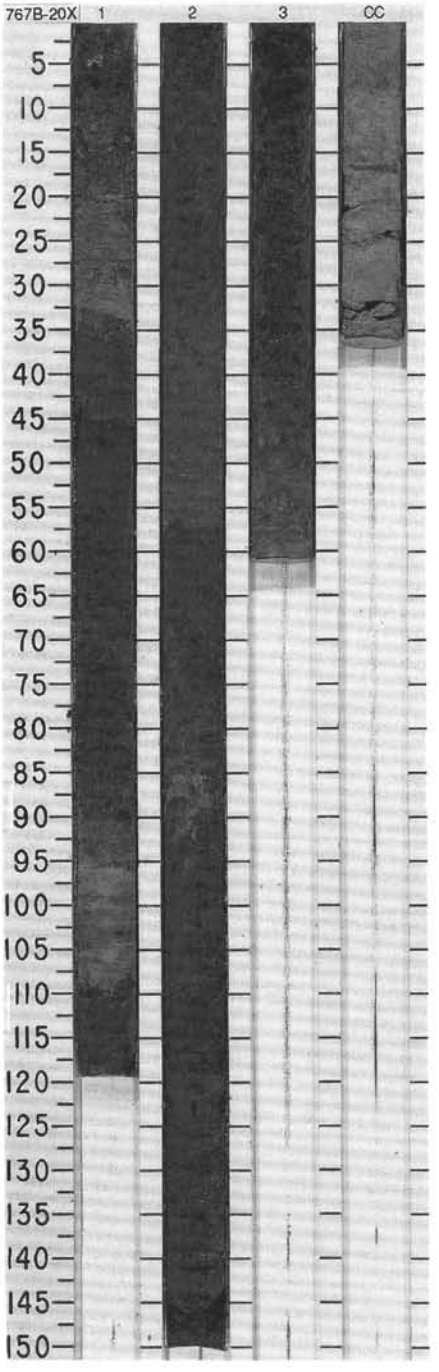
VOLCANIC CLAYEY SILT and CARBONATE CLAYEY SILT with carbonate silty sand

Major lithologies:
a. VOLCANIC CLAYEY SILT. Massive, medium to thick bedded clays and silts, bioturbated, mainly dark gray (5Y 4/1) and mottled dark greenish gray (10Y 4/1). The silt component is mainly feldspar plus opaque minerals, pyroxene, and sponge spicules. Includes very thin (1 cm), dark grayish brown (10YR 4/2) ash layer at Section 1, 90 cm.
b. CARBONATE CLAYEY SILT. Thin bedded, weakly laminated and bioturbated silts, olive gray (5Y 4/2) to light olive gray (5Y 5/2) in color.

Minor lithology: Carbonate silty sand. Thinly bedded and laminated with some bioturbation, light olive gray (5Y 6/2) in color, composed of bioclastic material, a few foraminifers and rock fragments.

SMEAR SLIDE SUMMARY (%):

	1, 32 M	3, 37 D
TEXTURE:		
Sand	90	—
Silt	10	60
Clay	—	40
COMPOSITION:		
Accessory minerals	10	10
Bioclast	70	—
Clay	—	55
Feldspar	—	10
Foraminifers	10	—
Opaques	—	10
Pyroxene	—	10
Rock fragment	10	—
Spicules	—	5



SITE 767 HOLE B CORE 21X CORED INTERVAL 183.8-193.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	●R/S ●F/M	*D. surculus* NN16 NN17				P=1.77 ● Φ=62 P=2.11 ● Hc=37	●$CaCO_3$=68.0%	1	0.5 1.0			F F	*
						P=1.45 ● Φ=78 P=2.31 ● Hc=121	●TOC=0.93% ●$CaCO_3$=7.3%	2 3 4					*
						P=1.44 ● Φ=71 P=2.62 ● Hc=121	●$CaCO_3$=1.7%	5 6 7 CC					*

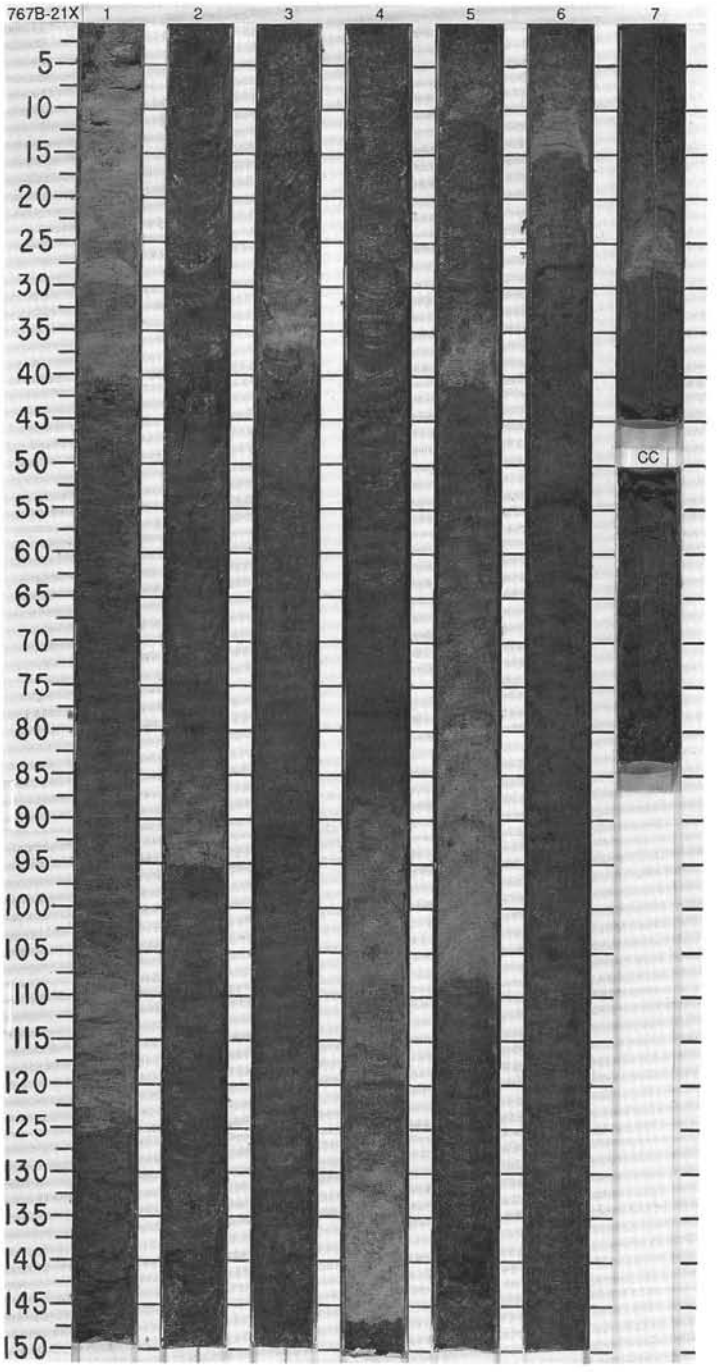
LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT and CARBONATE SILT

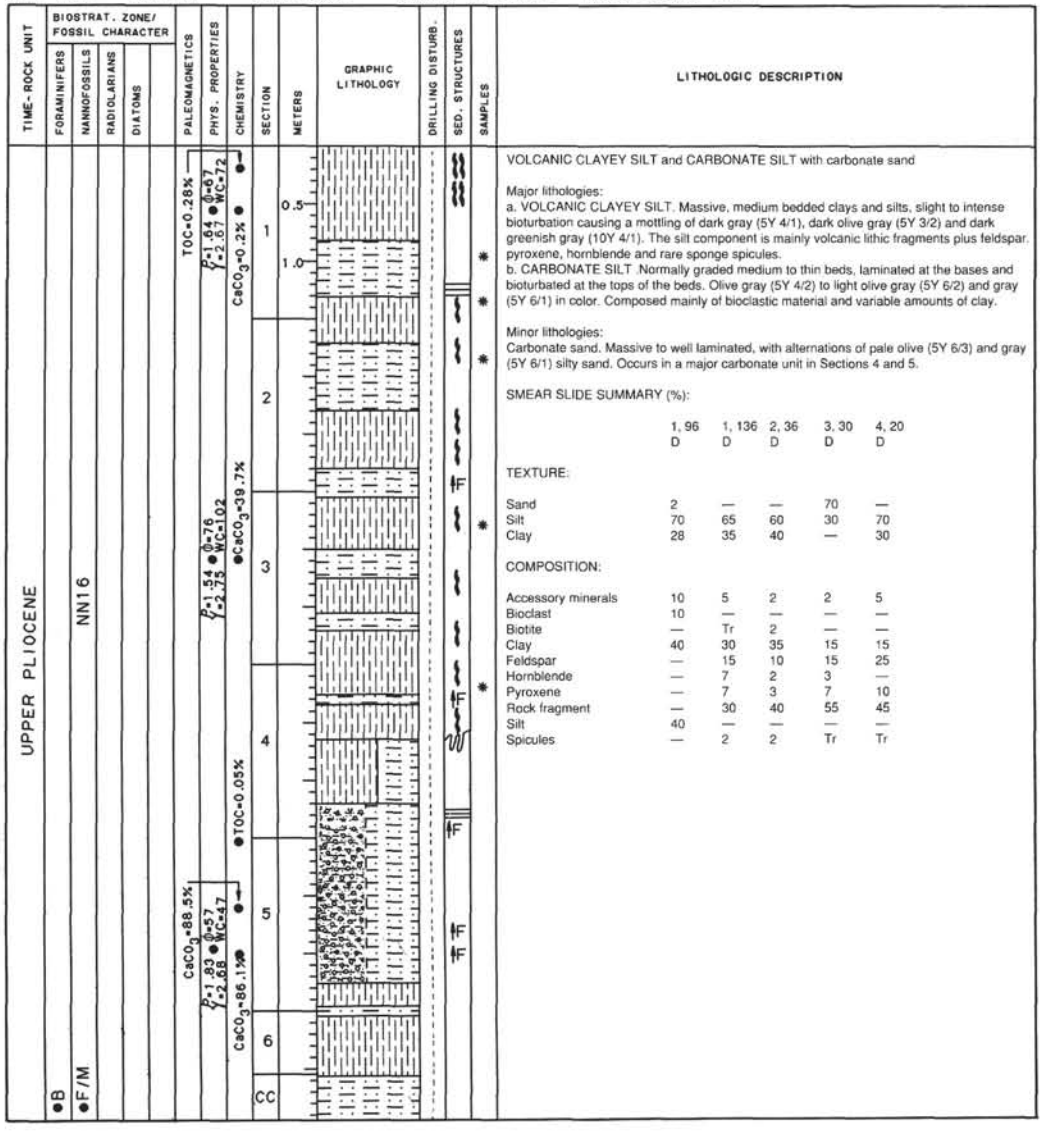
Major lithologies:
a. VOLCANIC CLAYEY SILT. Massive, medium bedded clays and silts, bioturbated, dark gray (5Y 4/1), dark olive gray (5Y 3/2) and dark greenish gray (10Y 4/1). The silt component is mainly volcanic lithic fragments plus feldspar and some sponge spicules.
b. CARBONATE SILT. Laminated or massive carbonate silts which are variably sandy to clayey in normally graded thin beds, olive gray (5Y 4/2) to light olive gray (5Y 6/2) and gray (5Y 6/1) in color. Composed mainly of bioclastic material, with foraminifers, rock fragments and feldspars. There is little or no bioturbation in these carbonate beds, which are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 107 M	2, 140 D	4, 103 M	6, 139 D	7, 19 M
TEXTURE:					
Sand	80	—	4	—	8
Silt	20	70	71	70	75
Clay	—	30	25	30	17
COMPOSITION:					
Accessory minerals	10	5	10	5	10
Bioclast	40	—	10	—	50
Clay	—	20	40	25	—
Feldspar	10	15	5	15	10
Foraminifers	20	—	5	—	20
Glauconite	—	Tr	—	Tr	—
Hornblende	—	2	—	5	—
Pyroxene	—	2	—	5	—
Rock fragment	20	50	—	40	10
Silt	—	—	25	—	—
Spicules	—	5	5	2	—



SITE 767 HOLE B CORE 22X CORED INTERVAL 193.5-203.3 mbsf



LITHOLOGIC DESCRIPTION

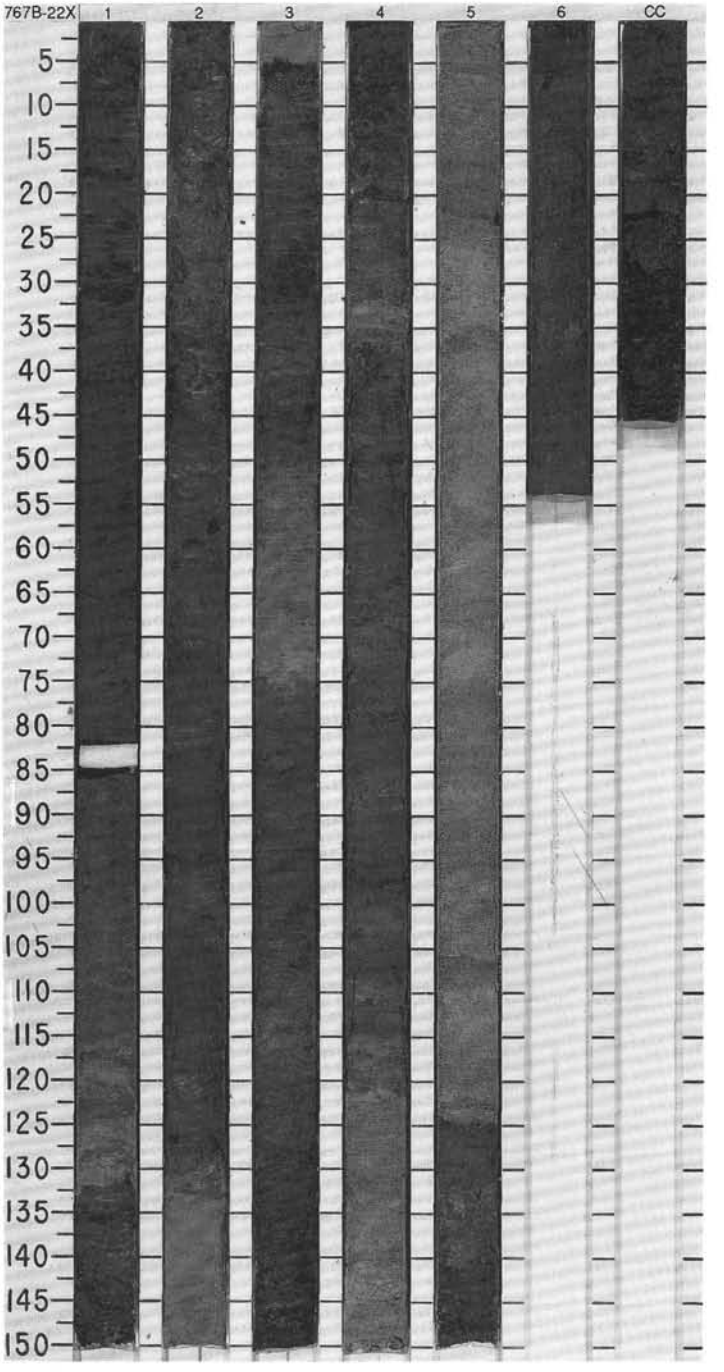
VOLCANIC CLAYEY SILT and CARBONATE SILT with carbonate sand

Major lithologies:
a. VOLCANIC CLAYEY SILT. Massive, medium bedded clays and silts, slight to intense bioturbation causing a mottling of dark gray (5Y 4/1), dark olive gray (5Y 3/2) and dark greenish gray (10Y 4/1). The silt component is mainly volcanic lithic fragments plus feldspar, pyroxene, hornblende and rare sponge spicules.
b. CARBONATE SILT .Normally graded medium to thin beds, laminated at the bases and bioturbated at the tops of the beds. Olive gray (5Y 4/2) to light olive gray (5Y 6/2) and gray (5Y 6/1) in color. Composed mainly of bioclastic material and variable amounts of clay.

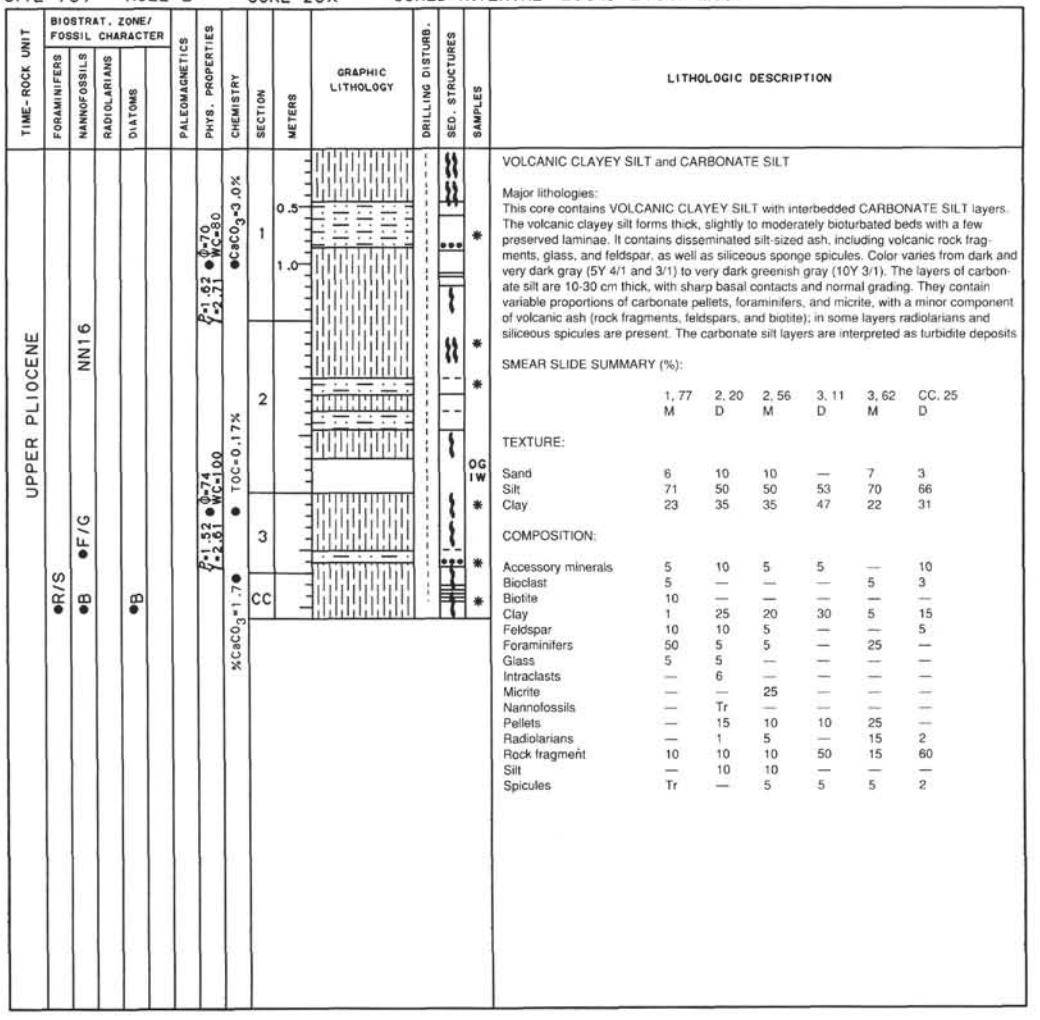
Minor lithologies:
Carbonate sand. Massive to well laminated, with alternations of pale olive (5Y 6/3) and gray (5Y 6/1) silty sand. Occurs in a major carbonate unit in Sections 4 and 5.

SMEAR SLIDE SUMMARY (%):

	1, 96 D	1, 136 D	2, 36 D	3, 30 D	4, 20 D
TEXTURE:					
Sand	2	—	—	70	—
Silt	70	65	60	30	70
Clay	28	35	40	—	30
COMPOSITION:					
Accessory minerals	10	5	2	2	5
Bioclast	10	—	—	—	—
Biotite	—	Tr	2	—	—
Clay	40	30	35	15	15
Feldspar	—	15	10	15	25
Hornblende	—	7	2	3	—
Pyroxene	—	7	3	7	10
Rock fragment	—	30	40	55	45
Silt	40	—	—	—	—
Spicules	—	2	2	Tr	Tr



SITE 767 HOLE B CORE 23X CORED INTERVAL 203.3-213.1 mbsf



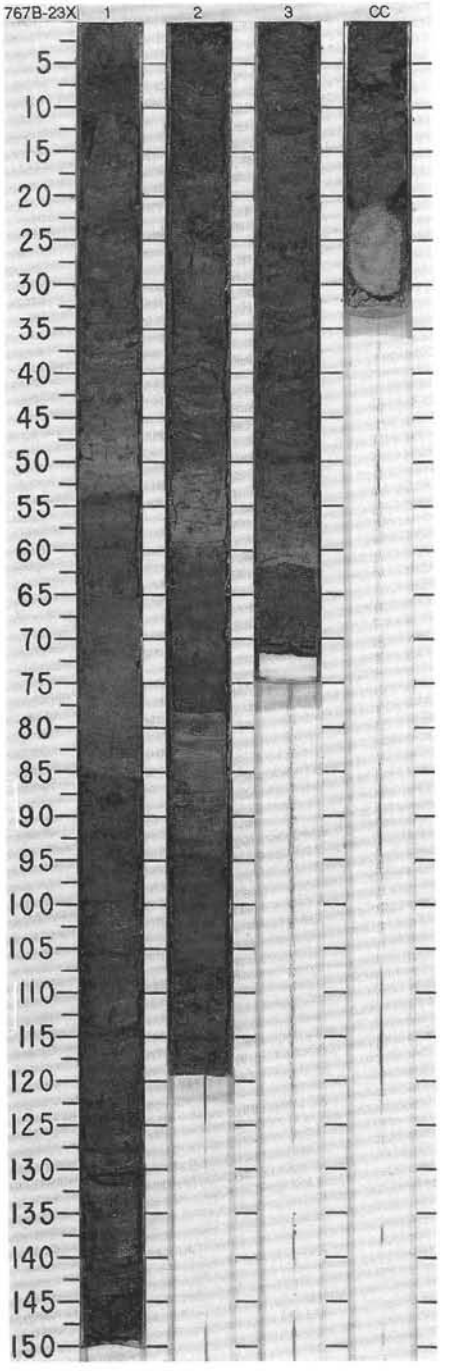
LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILT and CARBONATE SILT

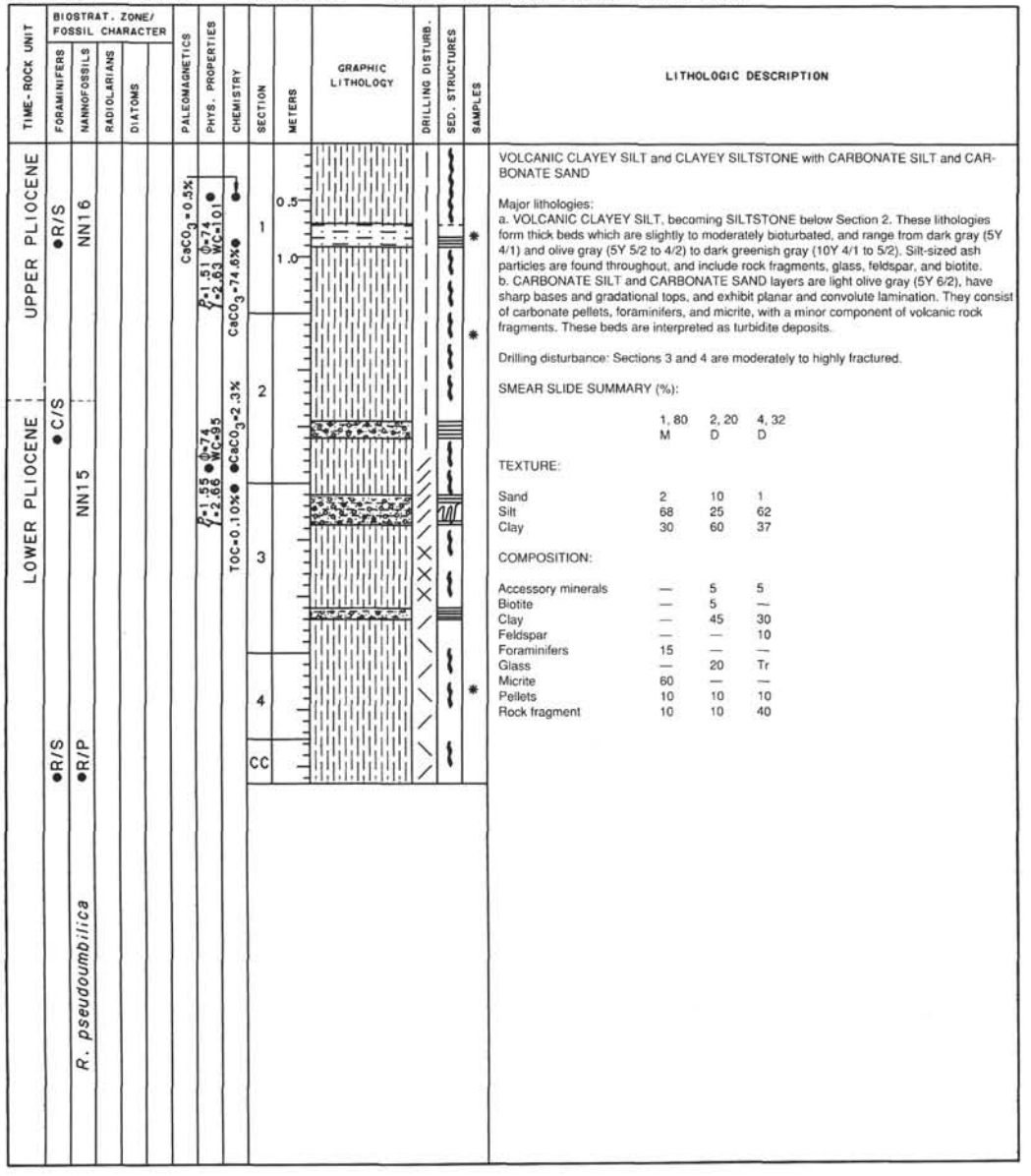
Major lithologies:
This core contains VOLCANIC CLAYEY SILT with interbedded CARBONATE SILT layers. The volcanic clayey silt forms thick, slightly to moderately bioturbated beds with a few preserved laminae. It contains disseminated silt-sized ash, including volcanic rock fragments, glass, and feldspar, as well as siliceous sponge spicules. Color varies from dark and very dark gray (5Y 4/1 and 3/1) to very dark greenish gray (10Y 3/1). The layers of carbonate silt are 10-30 cm thick, with sharp basal contacts and normal grading. They contain variable proportions of carbonate pellets, foraminifers, and micrite, with a minor component of volcanic ash (rock fragments, feldspars, and biotite); in some layers radiolarians and siliceous spicules are present. The carbonate silt layers are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 77 M	2, 20 D	2, 56 M	3, 11 D	3, 62 M	CC, 25 D
TEXTURE:						
Sand	6	10	10	—	7	3
Silt	71	50	50	53	70	66
Clay	23	35	35	47	22	31
COMPOSITION:						
Accessory minerals	5	10	5	5	—	10
Bioclast	5	—	—	—	5	3
Biotite	10	—	—	—	—	—
Clay	1	25	20	30	5	15
Feldspar	10	10	5	—	—	5
Foraminifers	50	5	5	—	25	—
Glass	5	5	—	—	—	—
Intraclasts	—	6	—	—	—	—
Micrite	—	—	25	—	—	—
Nannofossils	—	Tr	—	—	—	—
Pellets	—	15	10	10	25	—
Radiolarians	—	1	5	—	15	2
Rock fragment	10	10	10	50	15	60
Silt	—	10	10	—	—	—
Spicules	Tr	—	5	5	5	2



SITE 767 HOLE B CORE 24X CORED INTERVAL 213.1-222.9 mbsf



LITHOLOGIC DESCRIPTION

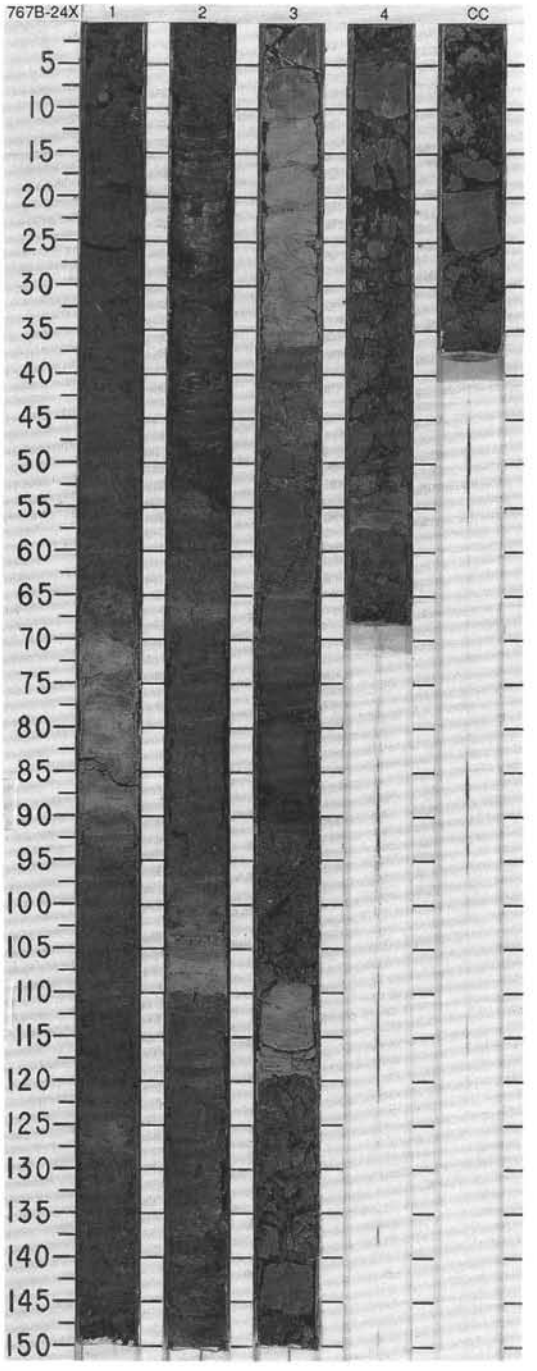
VOLCANIC CLAYEY SILT and CLAYEY SILTSTONE with CARBONATE SILT and CARBONATE SAND

Major lithologies:
a. VOLCANIC CLAYEY SILT, becoming SILTSTONE below Section 2. These lithologies form thick beds which are slightly to moderately bioturbated, and range from dark gray (5Y 4/1) and olive gray (5Y 5/2 to 4/2) to dark greenish gray (10Y 4/1 to 5/2). Silt-sized ash particles are found throughout, and include rock fragments, glass, feldspar, and biotite.
b. CARBONATE SILT and CARBONATE SAND layers are light olive gray (5Y 6/2), have sharp bases and gradational tops, and exhibit planar and convolute lamination. They consist of carbonate pellets, foraminifers, and micrite, with a minor component of volcanic rock fragments. These beds are interpreted as turbidite deposits.

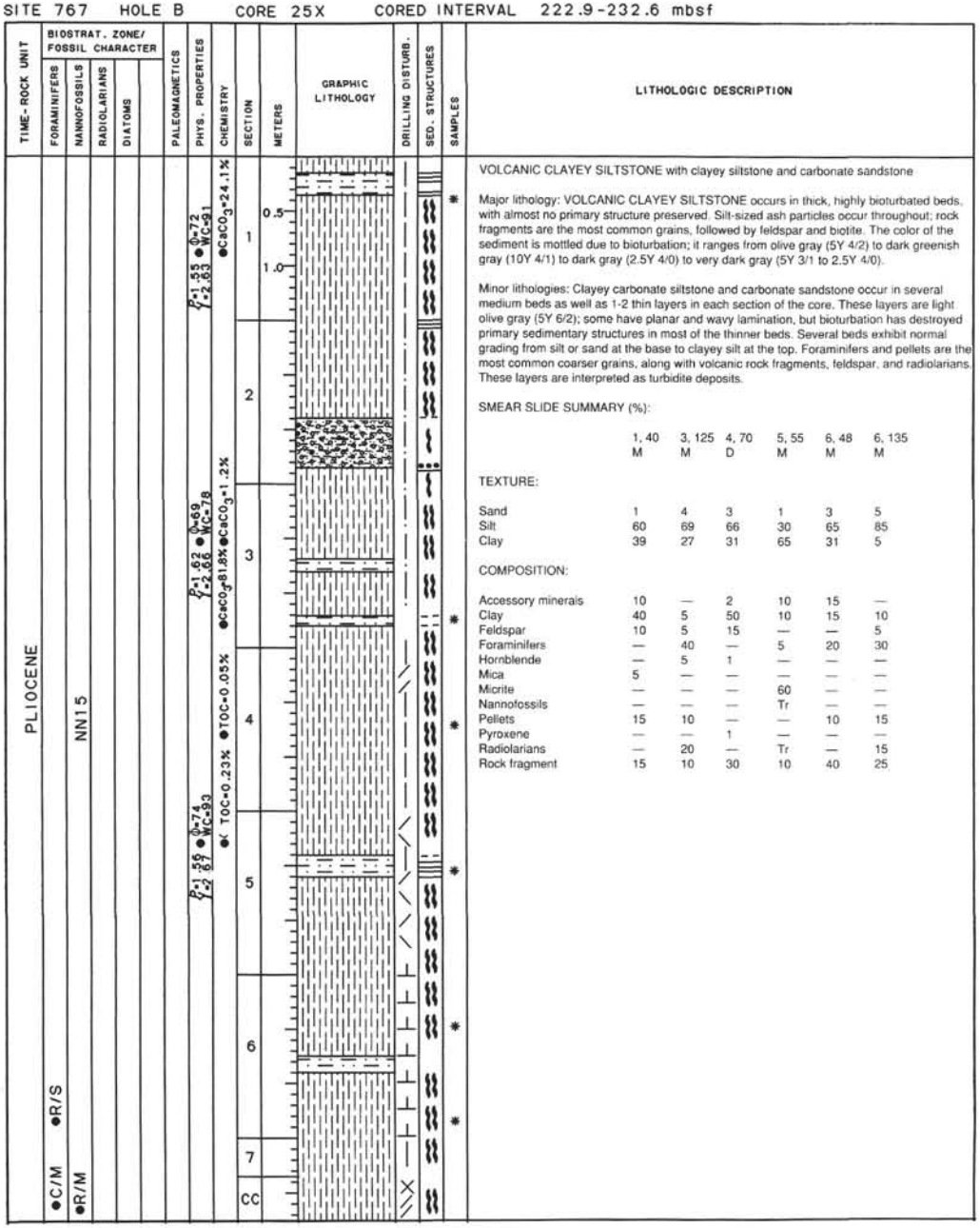
Drilling disturbance: Sections 3 and 4 are moderately to highly fractured.

SMEAR SLIDE SUMMARY (%):

	1, 80 M	2, 20 D	4, 32 D
TEXTURE:			
Sand	2	10	1
Silt	68	25	62
Clay	30	60	37
COMPOSITION:			
Accessory minerals	—	5	5
Biotite	—	5	—
Clay	—	45	30
Feldspar	—	—	10
Foraminifers	15	—	—
Glass	—	20	Tr
Micrite	60	—	—
Pellets	10	10	10
Rock fragment	10	10	40



SITE 767 HOLE B CORE 25X CORED INTERVAL 222.9-232.6 mbsf



LITHOLOGIC DESCRIPTION

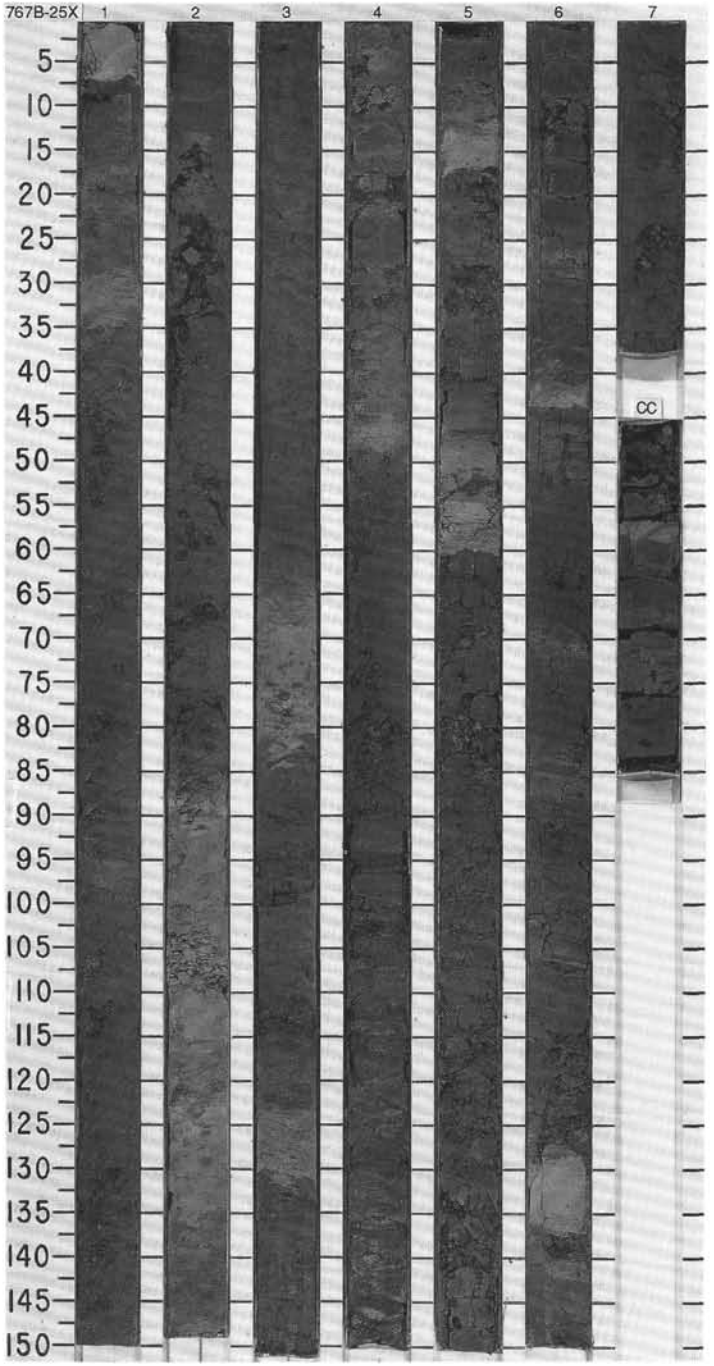
VOLCANIC CLAYEY SILTSTONE with clayey siltstone and carbonate sandstone

Major lithology: VOLCANIC CLAYEY SILTSTONE occurs in thick, highly bioturbated beds, with almost no primary structure preserved. Silt-sized ash particles occur throughout; rock fragments are the most common grains, followed by feldspar and biotite. The color of the sediment is mottled due to bioturbation; it ranges from olive gray (5Y 4/2) to dark greenish gray (10Y 4/1) to dark gray (2.5Y 4/0) to very dark gray (5Y 3/1 to 2.5Y 4/0).

Minor lithologies: Clayey carbonate siltstone and carbonate sandstone occur in several medium beds as well as 1-2 thin layers in each section of the core. These layers are light olive gray (5Y 6/2); some have planar and wavy lamination, but bioturbation has destroyed primary sedimentary structures in most of the thinner beds. Several beds exhibit normal grading from silt or sand at the base to clayey silt at the top. Foraminifers and pellets are the most common coarser grains, along with volcanic rock fragments, feldspar, and radiolarians. These layers are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 40 M	3, 125 M	4, 70 D	5, 55 M	6, 48 M	6, 135 M
TEXTURE:						
Sand	1	4	3	1	3	5
Silt	60	69	66	30	65	85
Clay	39	27	31	65	31	5
COMPOSITION:						
Accessory minerals	10	—	2	10	15	—
Clay	40	5	50	10	15	10
Feldspar	10	5	15	—	—	5
Foraminifers	—	40	—	5	20	30
Hornblende	—	5	1	—	—	—
Mica	5	—	—	—	—	—
Micrite	—	—	—	60	—	—
Nannofossils	—	—	—	Tr	—	—
Pellets	15	10	—	—	10	15
Pyroxene	—	—	1	—	—	—
Radiolarians	—	20	—	Tr	—	15
Rock fragment	15	10	30	10	40	25



SITE 767 HOLE B CORE 26X CORED INTERVAL 232.6-242.2 mbsf

TIME-ROCK UNIT: PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ●B ●C/G N19/20 ●A/G; NANNOFOSSILS ●B NN15; RADIOLARIANS ●C/G; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ρ=1.55 Φ=72 ρ=2.60 WC=31; ρ=1.53 Φ=73 ρ=2.46 WC=36

CHEMISTRY: ●CaCO3=0.7%●; ●CaCO3=1.2%; ●TOC=0.13%

SECTION: 1 2 3 4 5 6 7

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: OG IW

SAMPLES

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILTSTONE and CLAYEY CARBONATE SILTSTONE

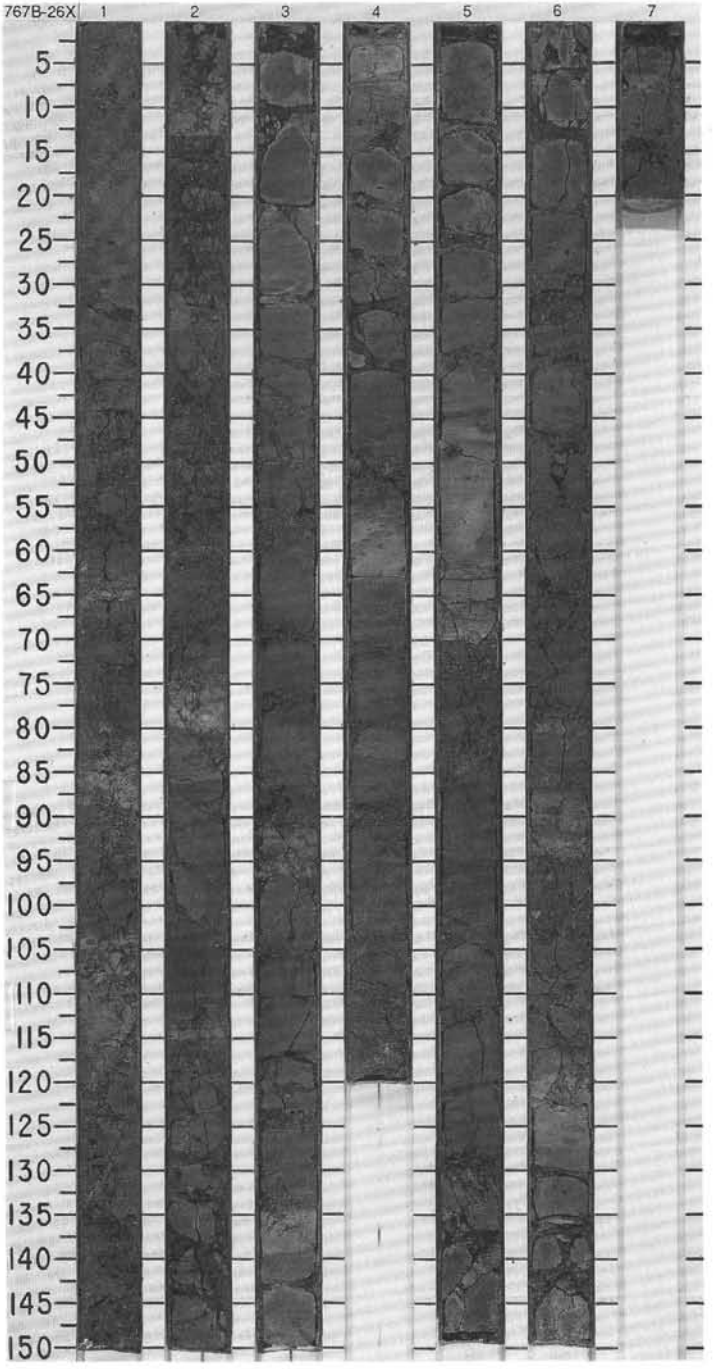
Major lithologies:

a. VOLCANIC CLAYEY SILTSTONE occurs in thick beds (30-60 cm) which are moderately to highly bioturbated, with *Chondrites*, *Planolites*, and *Zoophycos*. These beds range from olive gray and dark olive gray (5Y 4/2 and 3/2) to very dark gray (5Y 3/1) and dark greenish gray (10Y 4/1). Silt grains include common ash particles, chiefly rock fragments with minor feldspar and biotite.

b. CLAYEY CARBONATE SILTSTONE beds are 4-15 cm thick, and are fairly uniformly distributed through the core, with an average of 3 beds per Section. They are pale olive (5Y 6/3) and olive gray to light olive gray (5Y 6/2 to 4/2); normal grading and planar lamination are present in some, but bioturbation has commonly obscured their internal structure. Most beds grade from clayey carbonate silt at the base to calcareous clay in the upper part: they contain foraminifers, pellets, and minor components of radiolarians, siliceous spicules, and volcanic rock fragments. These beds are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 30 D	2, 40 D	2, 79 M	2, 84 M	3, 26 M	4, 60 M	5, 62 M
TEXTURE:							
Sand	3	—	4	—	3	10	25
Silt	68	60	60	55	65	40	40
Clay	29	35	35	40	32	45	30
COMPOSITION:							
Accessory minerals	2	5	—	—	—	10	7
Biotite	5	—	—	—	—	—	10
Clay	40	10	15	30	40	15	5
Feldspar	10	15	5	5	5	—	10
Foraminifers	—	—	40	10	—	5	—
Glass	—	—	—	—	10	—	60
Mica	—	—	—	3	10	—	—
Micrite	—	—	—	—	—	60	—
Nannofossils	—	—	—	—	Tr	Tr	—
Opaques	2	—	—	—	—	—	5
Pellets	—	15	5	10	2	—	—
Radiolarians	—	—	20	10	—	Tr	—
Rock fragment	40	50	10	25	30	5	—
Spicules	—	—	5	2	—	1	—



SITE 767 HOLE B CORE 27X CORED INTERVAL 242.2-251.9 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: ●B ●A/G N19/20 ●A/S
- NANNOFOSSILS: ●R/P ●F/P NN15 ●C/M ●B
- RADIOLARIANS
- DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ρ=1.65 ●Φ=69 WC=76; ρ=1.65 ●Φ=51 WC=47; ρ=1.54 Φ=73 WC=85; ρ=2.82; ρ=2.85

CHEMISTRY: ●CaCO3=0.2%; TOC=0.35%●; ●CaCO3=0.2%; ●%CaCO3=85.9; IC=0.2%●

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: *

LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILTSTONE and CLAYEY CARBONATE SILTSTONE

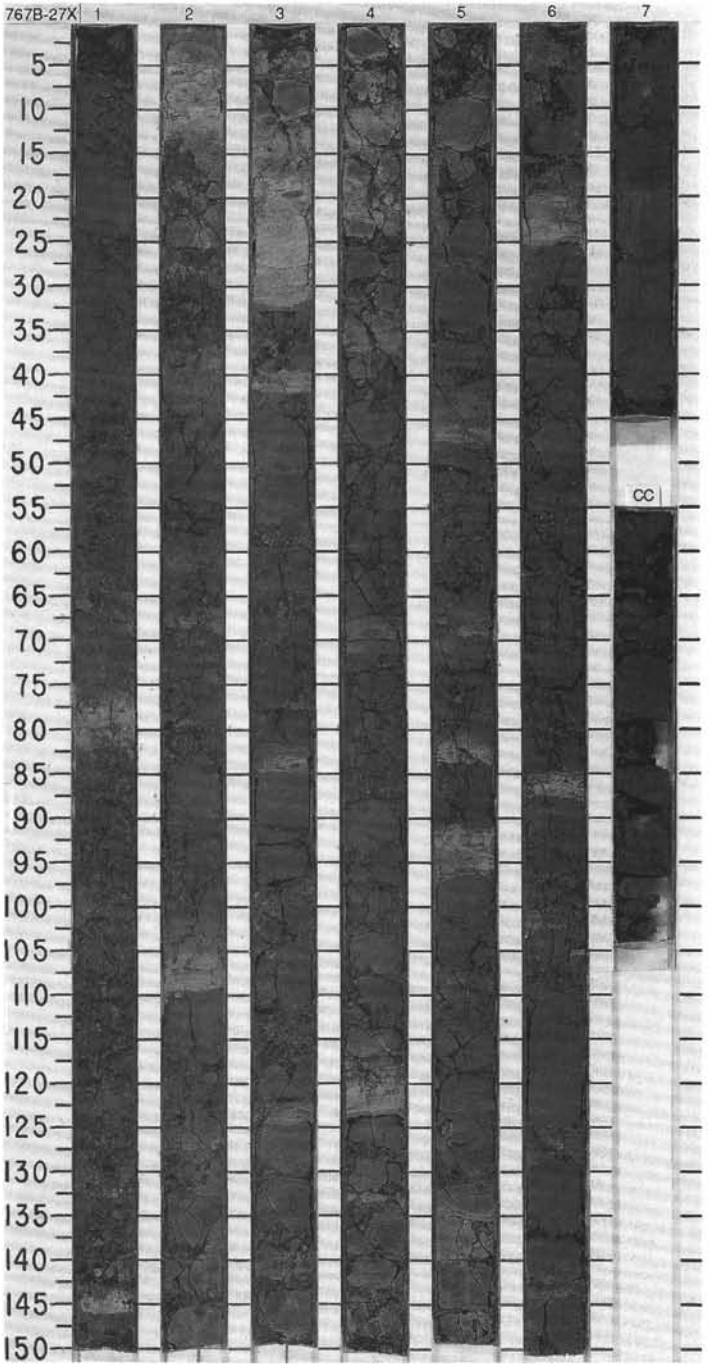
Major lithology:

a. Thick-bedded (30-60 cm) VOLCANIC CLAYEY SILTSTONE is the predominant lithology in this core. It is slightly to moderately bioturbated, with common *Chondrites, Planolites, Skolithos, Zoophycos,* and other trace fossils. Color ranges from olive gray (5Y 4/2) to dark gray (5Y 4/1) to very dark gray (5Y 3/1). Minor amounts of silt-sized ash occur disseminated through the sediment, and include feldspar, rock fragments, mica, and quartz.

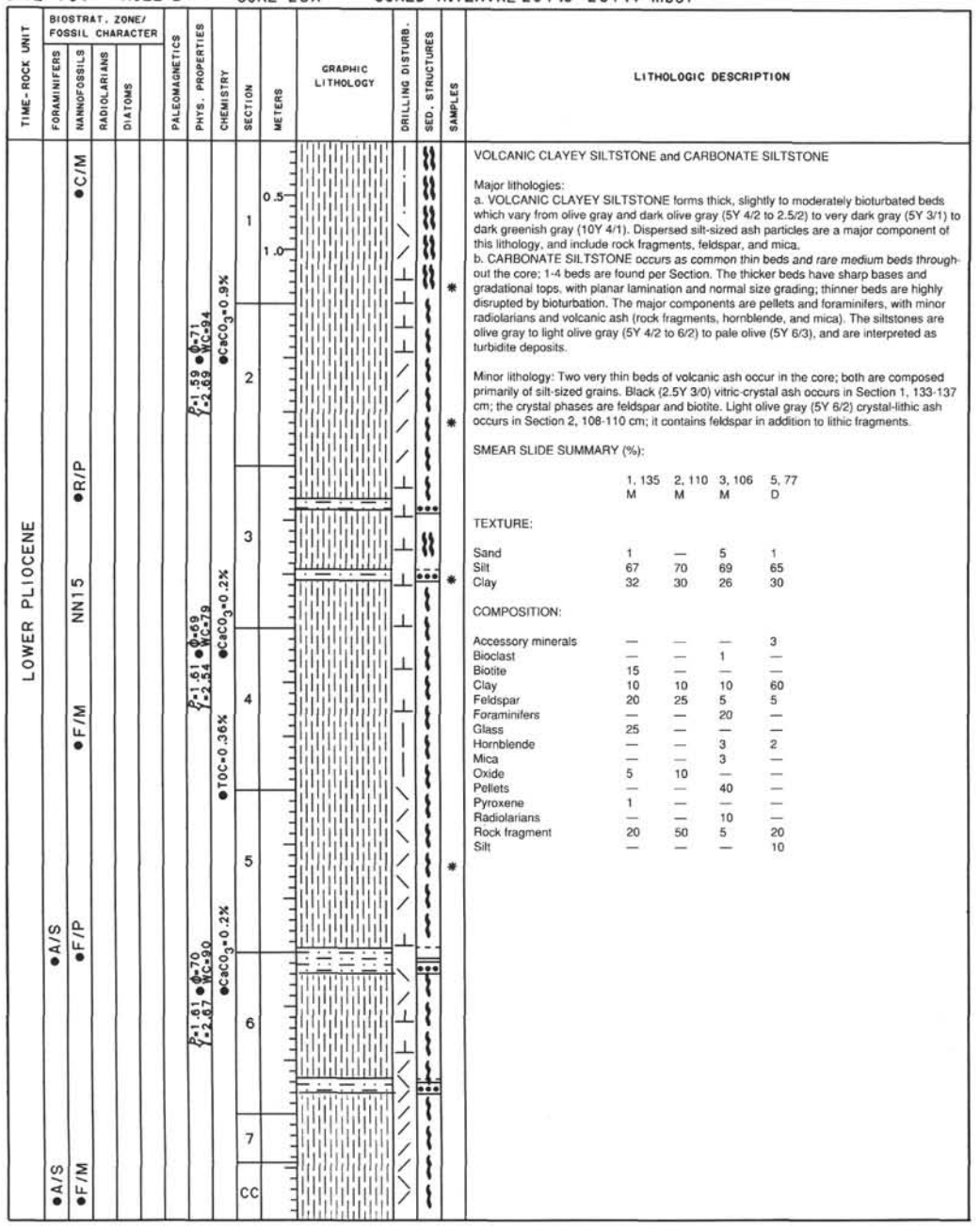
b. Thin beds (3-14 cm) of CLAYEY CARBONATE SILTSTONE occur throughout the core, with a frequency of 3-5 beds per Section. They are olive gray (5Y 5/2 to 4/2) to light olive gray (5Y 6/2), and commonly slightly bioturbated, obscuring primary structures. Planar lamination and sharp basal contacts are preserved in a number of beds. Carbonate silt grains are concentrated near the base of the beds, which are normally graded and decrease in carbonate content upward. These beds are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	5, 65 D
TEXTURE:	
Sand	2
Silt	60
Clay	35
COMPOSITION:	
Accessory minerals	5
Clay	40
Feldspar	5
Hornblende	5
Rock fragment	20
Silt	20



SITE 767 HOLE B CORE 28X CORED INTERVAL 251.9-261.4 mbsf



LITHOLOGIC DESCRIPTION

VOLCANIC CLAYEY SILTSTONE and CARBONATE SILTSTONE

Major lithologies:

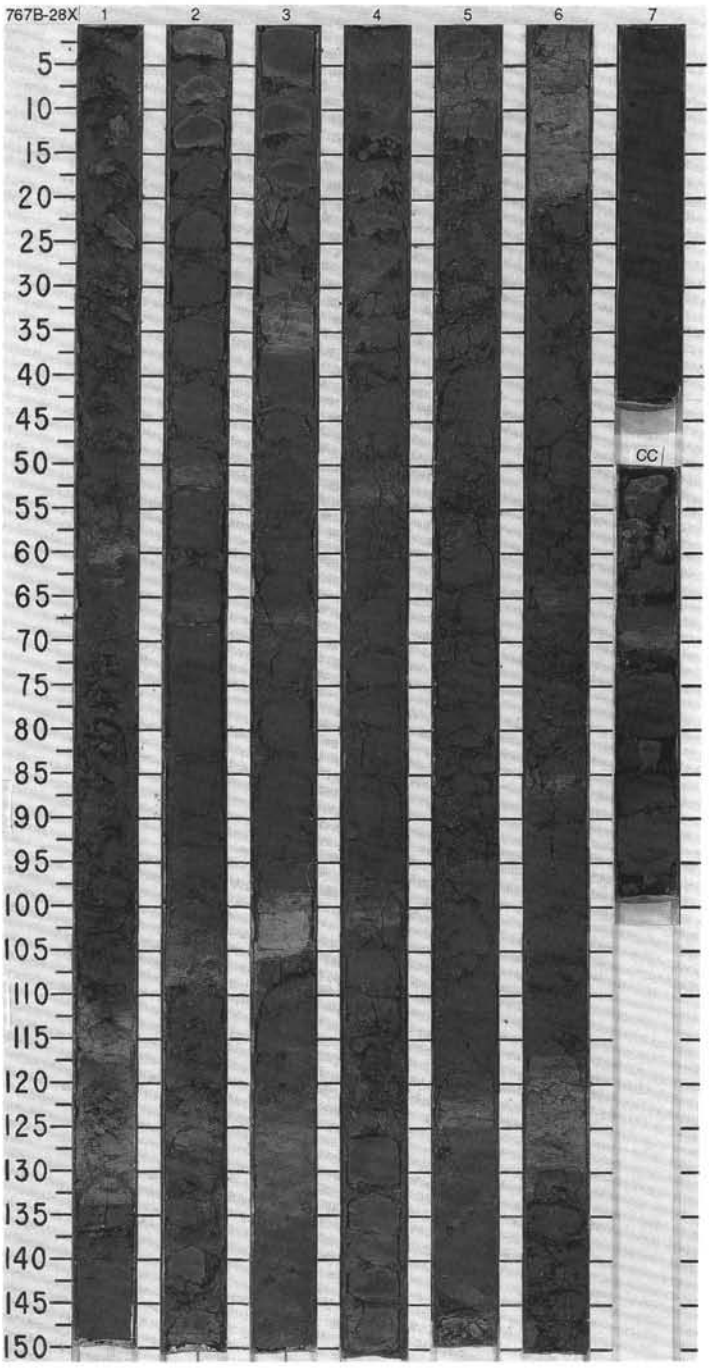
a. VOLCANIC CLAYEY SILTSTONE forms thick, slightly to moderately bioturbated beds which vary from olive gray and dark olive gray (5Y 4/2 to 2.5/2) to very dark gray (5Y 3/1) to dark greenish gray (10Y 4/1). Dispersed silt-sized ash particles are a major component of this lithology, and include rock fragments, feldspar, and mica.

b. CARBONATE SILTSTONE occurs as common thin beds and rare medium beds throughout the core; 1-4 beds are found per Section. The thicker beds have sharp bases and gradational tops, with planar lamination and normal size grading; thinner beds are highly disrupted by bioturbation. The major components are pellets and foraminifers, with minor radiolarians and volcanic ash (rock fragments, hornblende, and mica). The siltstones are olive gray to light olive gray (5Y 4/2 to 6/2) to pale olive (5Y 6/3), and are interpreted as turbidite deposits.

Minor lithology: Two very thin beds of volcanic ash occur in the core; both are composed primarily of silt-sized grains. Black (2.5Y 3/0) vitric-crystal ash occurs in Section 1, 133-137 cm; the crystal phases are feldspar and biotite. Light olive gray (5Y 6/2) crystal-lithic ash occurs in Section 2, 108-110 cm; it contains feldspar in addition to lithic fragments.

SMEAR SLIDE SUMMARY (%):

	1, 135 M	2, 110 M	3, 106 M	5, 77 D
TEXTURE:				
Sand	1	—	5	1
Silt	67	70	69	65
Clay	32	30	26	30
COMPOSITION:				
Accessory minerals	—	—	—	3
Bioclast	—	—	1	—
Biotite	15	—	—	—
Clay	10	10	10	60
Feldspar	20	25	5	5
Foraminifers	—	—	20	—
Glass	25	—	—	—
Hornblende	—	—	3	2
Mica	—	—	3	—
Oxide	5	10	—	—
Pellets	—	—	40	—
Pyroxene	1	—	—	—
Radiolarians	—	—	10	—
Rock fragment	20	50	5	20
Silt	—	—	—	10



SITE 767 HOLE B CORE 29X CORED INTERVAL 261.4-271.0 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ●B ●A/S N18 ●A/S ●R/S; NANNOFOSSILS ●B ●F/M ●R/P NN12-14 C/G●; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ρ=1.60 ● ϕ=67 Wc=74; ρ=1.54 ● ϕ=64 Wc=75; ρ=1.81 ϕ=70 Wc=79; ρ=2.03

CHEMISTRY: ●$CaCO_3$=2.7% ● TOC=0.22%; ●$CaCO_3$=0.2%; ●$CaCO_3$=81.5%; ●$CaCO_3$=11.3%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG, IW

LITHOLOGIC DESCRIPTION

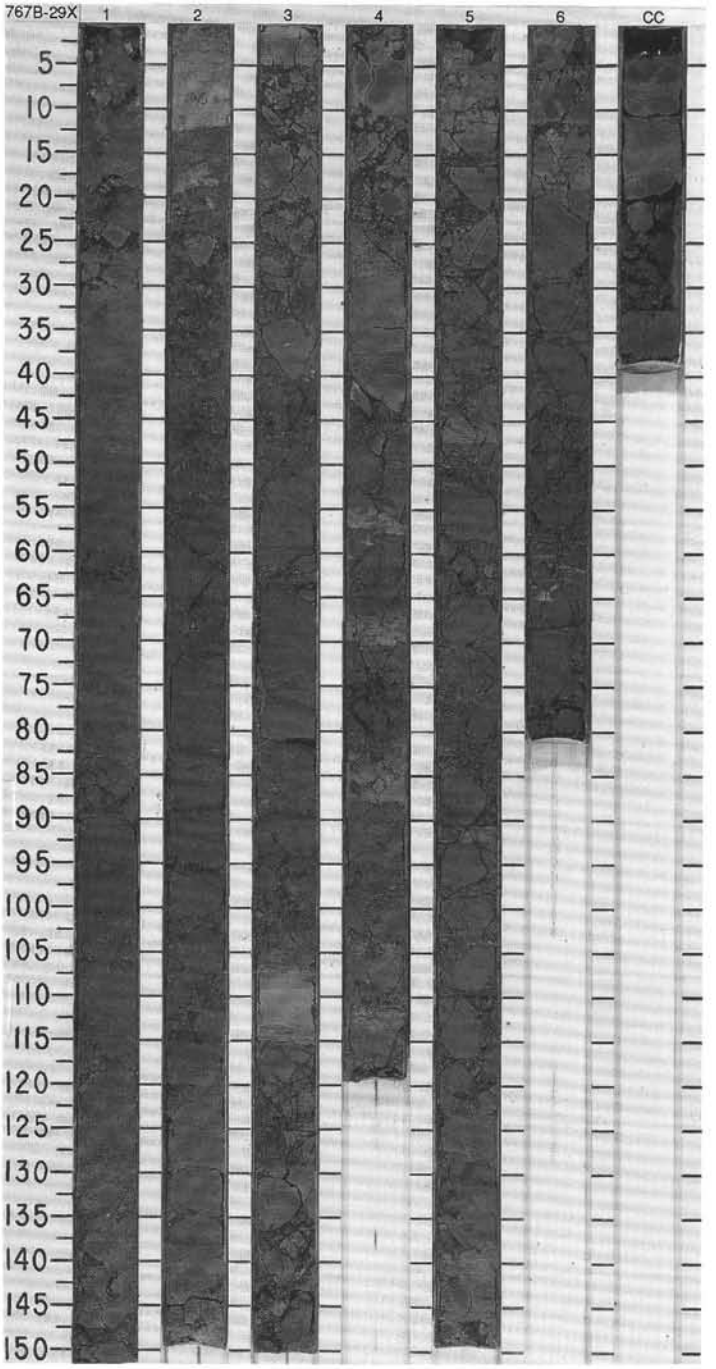
VOLCANIC SILTY CLAYSTONE with very thin beds of carbonate siltstone

Major lithology: VOLCANIC SILTY CLAYSTONE. Massive, *medium to thick* bedded, bioturbated with distinct burrows up to 1 cm in diameter. Mainly dark gray (5Y 4/1) to very dark gray (5Y 3/1) and dark greenish gray (10Y 4/1) with additional mottling of gray green (5G 4/2). Composed largely of clay with some altered volcanic lithic material and feldspar. Includes very thin beds of altered lithic ashes, silt to sand grade grain size (core catcher, 12 cm).

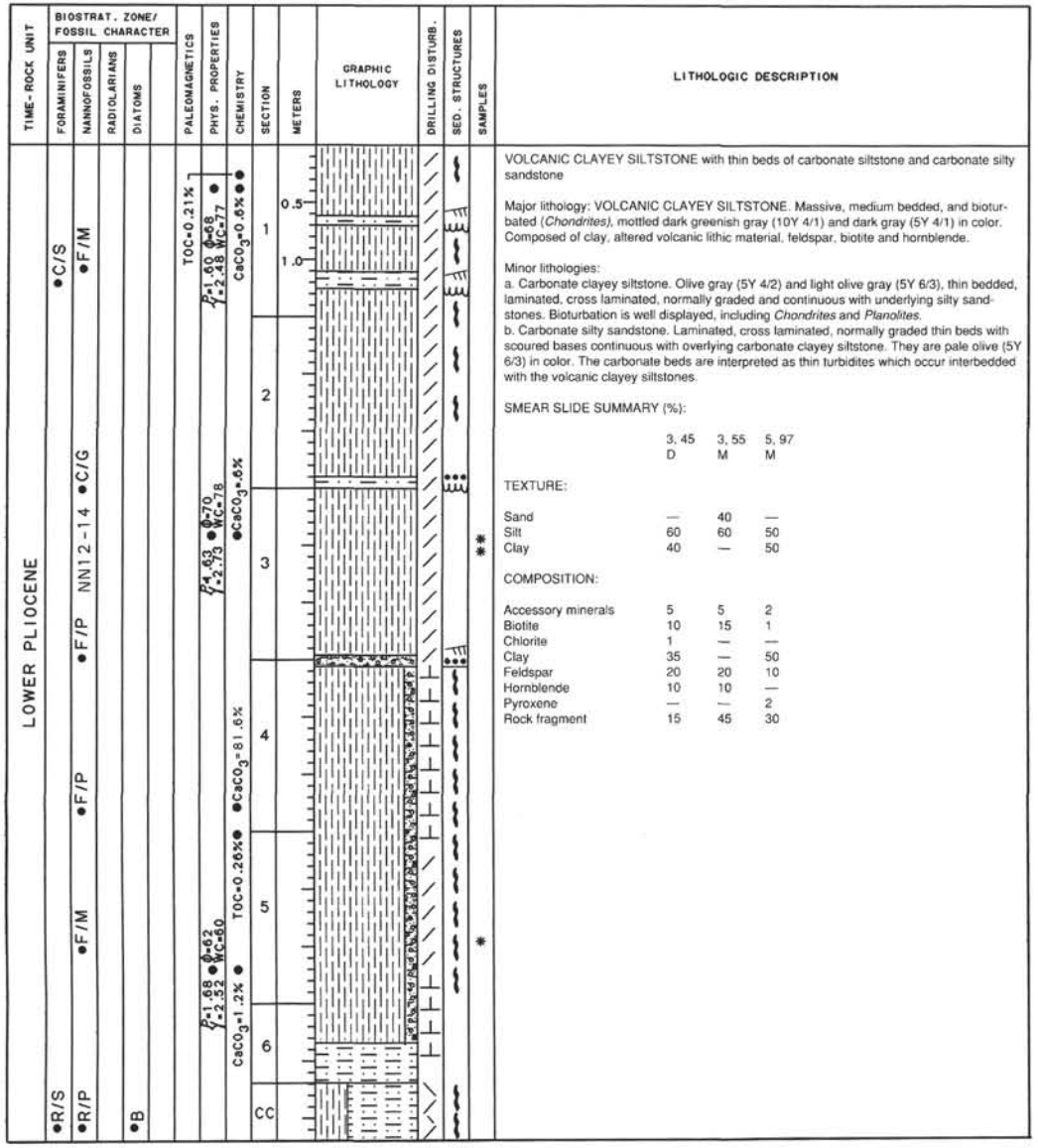
Minor lithology: Carbonate siltstone. Thin bedded (5-10 cm thick), normally graded and well laminated with some mottling due to bioturbation. Olive gray (5Y 4/2) to pale olive (5Y 6/3) in color. Occurs interbedded with the volcanic silty claystone throughout the core.

SMEAR SLIDE SUMMARY (%):

	3, 111 M	5, 53 D
TEXTURE:		
Sand	3	—
Silt	69	30
Clay	26	70
COMPOSITION:		
Accessory minerals	5	2
Biotite	—	1
Clay	30	70
Feldspar	5	10
Glauconite	—	1
Hornblende	—	1
Pellets	10	—
Plant	5	—
Pyroxene	—	1
Rock fragment	—	10
Silt	45	—



SITE 767 HOLE B CORE 30X CORED INTERVAL 271.0-280.7 mbsf



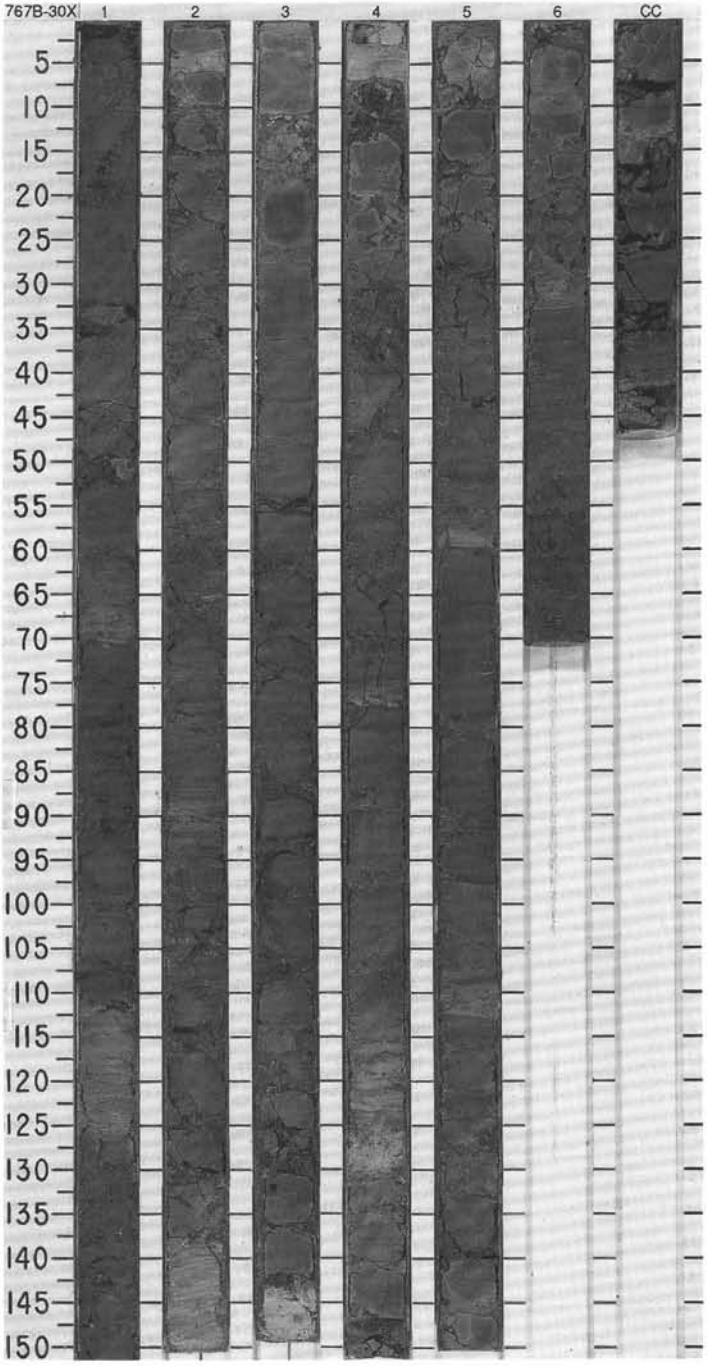
VOLCANIC CLAYEY SILTSTONE with thin beds of carbonate siltstone and carbonate silty sandstone

Major lithology: VOLCANIC CLAYEY SILTSTONE. Massive, medium bedded, and bioturbated (*Chondrites*), mottled dark greenish gray (10Y 4/1) and dark gray (5Y 4/1) in color. Composed of clay, altered volcanic lithic material, feldspar, biotite and hornblende.

Minor lithologies:
a. Carbonate clayey siltstone. Olive gray (5Y 4/2) and light olive gray (5Y 6/3), thin bedded, laminated, cross laminated, normally graded and continuous with underlying silty sandstones. Bioturbation is well displayed, including *Chondrites* and *Planolites*.
b. Carbonate silty sandstone. Laminated, cross laminated, normally graded thin beds with scoured bases continuous with overlying carbonate clayey siltstone. They are pale olive (5Y 6/3) in color. The carbonate beds are interpreted as thin turbidites which occur interbedded with the volcanic clayey siltstones.

SMEAR SLIDE SUMMARY (%):

	3, 45 D	3, 55 M	5, 97 M
TEXTURE:			
Sand	—	40	—
Silt	60	60	50
Clay	40	—	50
COMPOSITION:			
Accessory minerals	5	5	2
Biotite	10	15	1
Chlorite	1	—	—
Clay	35	—	50
Feldspar	20	20	10
Hornblende	10	10	—
Pyroxene	—	—	2
Rock fragment	15	45	30



SITE 767 HOLE B CORE 31X CORED INTERVAL 280.7-290.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	●B (*A. tricorniculatus*) R/S●	●CM R/P● NN12-14 F/P●				ρ=1.53 ● Φ=65 γ=2.49 WC=78	TOC=0.21%● ●$CaCO_3$=6.0%	1	0.5 1.0				*
								2					
								3					*
								CC					

LITHOLOGIC DESCRIPTION

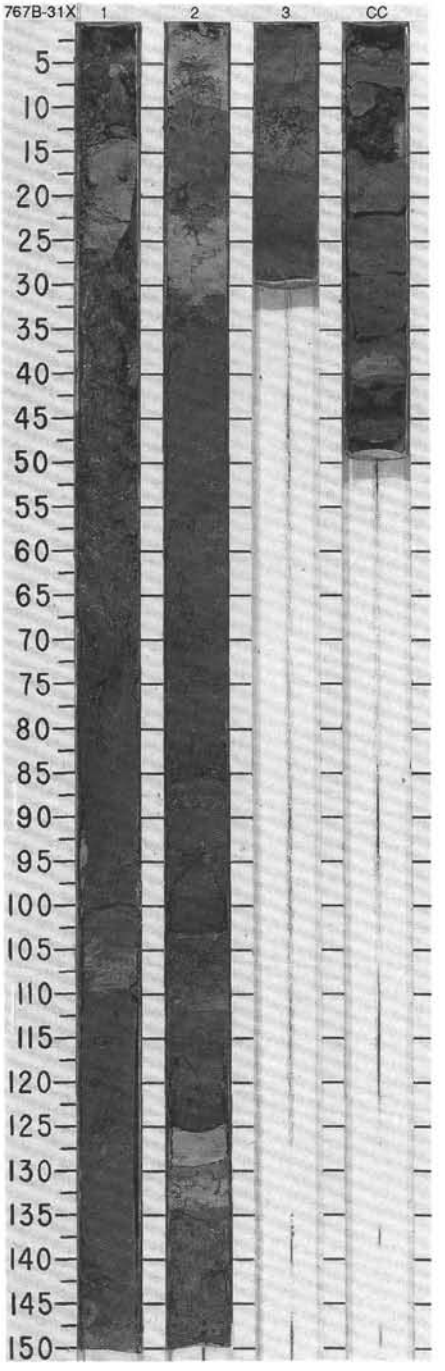
VOLCANIC CLAYEY SILTSTONE with thin beds of CARBONATE CLAYEY SILTSTONE and carbonate silty sandstone.

Major lithologies:
a. VOLCANIC CLAYEY SILTSTONE. Massive, medium bedded, and bioturbated, dark greenish gray (10Y 4/1) and dark olive gray (5Y 4/2) in color. Composed largely of clay with some altered volcanic lithic material and feldspar. Includes very thin beds of altered lithic ashes, very dark gray (5Y 3/1) and black (5Y 2.5/2), between 100 cm and 125 cm in Section 2 and at 43 cm in Section 3.
b. CARBONATE CLAYEY SILTSTONE. Olive gray in color (5Y 5/2 and 5Y 4/2), thin bedded, laminated, normally graded and continuous with underlying silty sandstones. Foraminifers and bioclasts are the principal constituents, with clay and some lithic fragments. Bioturbation is very well displayed, including *Chondrites*, *Zoophycos*, and *Planolites*.

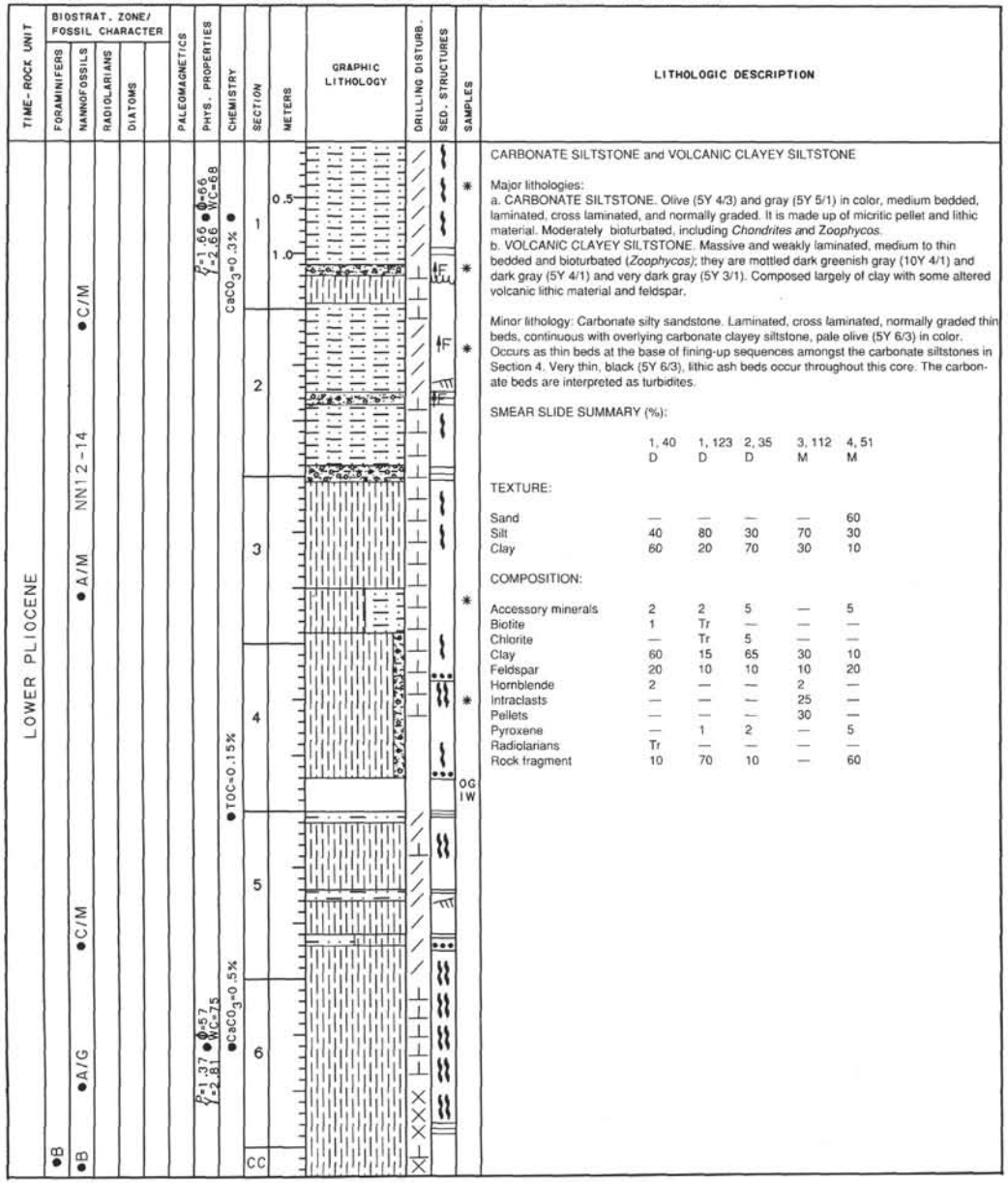
Minor lithology: Carbonate silty sandstone. Laminated, cross laminated, normally graded thin beds with scoured bases continuous with overlying carbonate clayey siltstone. They are pale olive (5Y 6/3 and 5Y 6/2) in color and become darker as they become finer. The carbonate beds are interpreted as thin turbidites which occur interbedded with the volcanic clayey siltstones.

SMEAR SLIDE SUMMARY (%):

	1, 24 M	2, 125 M
TEXTURE:		
Sand	60	20
Silt	30	70
Clay	5	10
COMPOSITION:		
Accessory minerals	2	5
Bioclast	25	—
Biotite	Tr	—
Clay	—	10
Feldspar	5	10
Foraminifers	30	—
Glass	—	20
Hornblende	Tr	—
Micrite	5	—
Nannofossils	Tr	—
Pellets	10	—
Pyroxene	—	2
Rock fragment	20	50



SITE 767 HOLE B CORE 32X CORED INTERVAL 290.4-300.1 mbsf



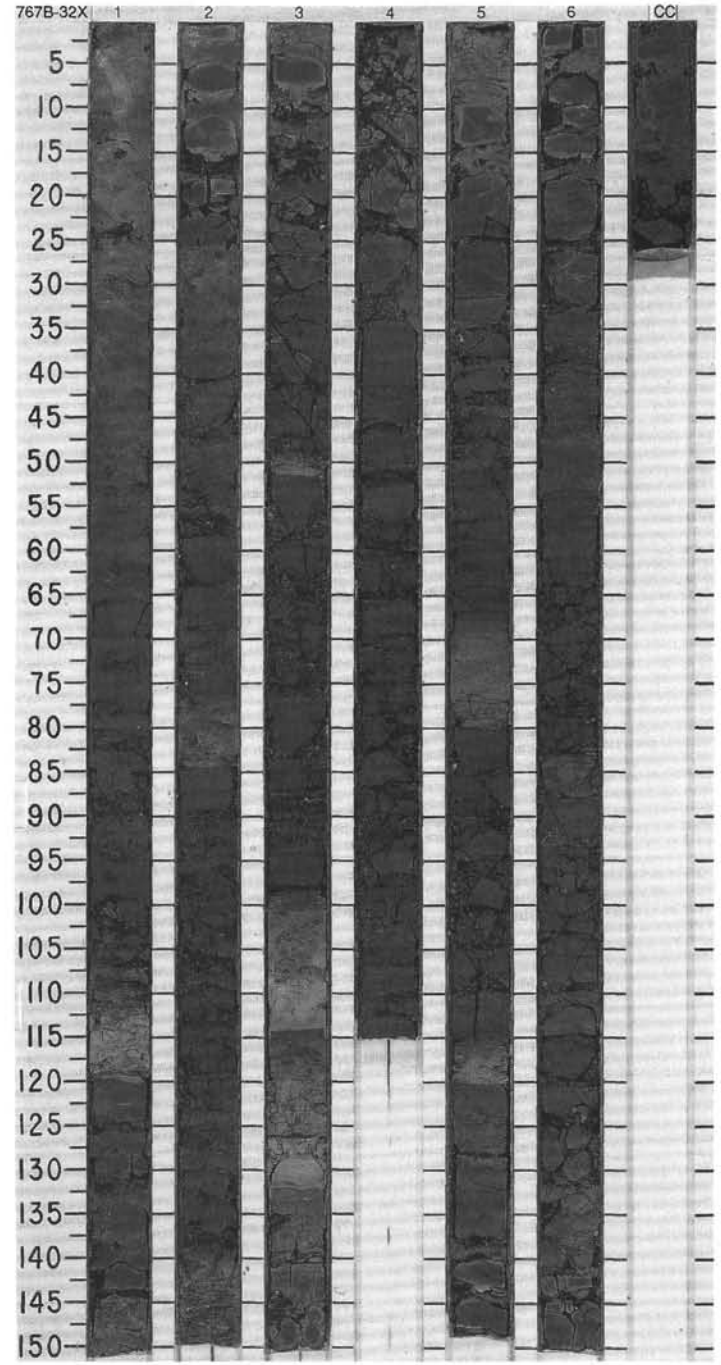
CARBONATE SILTSTONE and VOLCANIC CLAYEY SILTSTONE

Major lithologies:
a. CARBONATE SILTSTONE. Olive (5Y 4/3) and gray (5Y 5/1) in color, medium bedded, laminated, cross laminated, and normally graded. It is made up of micritic pellet and lithic material. Moderately bioturbated, including *Chondrites* and *Zoophycos*.
b. VOLCANIC CLAYEY SILTSTONE. Massive and weakly laminated, medium to thin bedded and bioturbated (*Zoophycos*); they are mottled dark greenish gray (10Y 4/1) and dark gray (5Y 4/1) and very dark gray (5Y 3/1). Composed largely of clay with some altered volcanic lithic material and feldspar.

Minor lithology: Carbonate silty sandstone. Laminated, cross laminated, normally graded thin beds, continuous with overlying carbonate clayey siltstone, pale olive (5Y 6/3) in color. Occurs as thin beds at the base of fining-up sequences amongst the carbonate siltstones in Section 4. Very thin, black (5Y 6/3), lithic ash beds occur throughout this core. The carbonate beds are interpreted as turbidites.

SMEAR SLIDE SUMMARY (%):

	1, 40 D	1, 123 D	2, 35 D	3, 112 M	4, 51 M
TEXTURE:					
Sand	—	—	—	—	60
Silt	40	80	30	70	30
Clay	60	20	70	30	10
COMPOSITION:					
Accessory minerals	2	2	5	—	5
Biotite	1	Tr	—	—	—
Chlorite	—	Tr	5	—	—
Clay	60	15	65	30	10
Feldspar	20	10	10	10	20
Hornblende	2	—	—	2	—
Intraclasts	—	—	—	25	—
Pellets	—	—	—	30	—
Pyroxene	—	1	2	—	5
Radiolarians	Tr	—	—	—	—
Rock fragment	10	70	10	—	60



SITE 767 HOLE B CORE 33X CORED INTERVAL 300.1-309.8 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: ●B ●R/P
- NANNOFOSSILS: ●A/S ●C/M ●A/G; N17; NN12-14
- RADIOLARIANS
- DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: WC=72 Φ=66 ρ=2.57 ρ=1.63 ● ● WC=65 WC=70 Φ=65 Φ=69 WC=78 ρ=1.62 ρ=2.47 ρ=1.61 ρ=2.63

CHEMISTRY: $CaCO_3$=2.7%● ●$CaCO_3$=0.38% ●TOC=0.38% ●$CaCO_3$=0.3% ●$CaCO_3$=0.3%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

VOLCANIC SILTY CLAYSTONE and CLAYSTONE

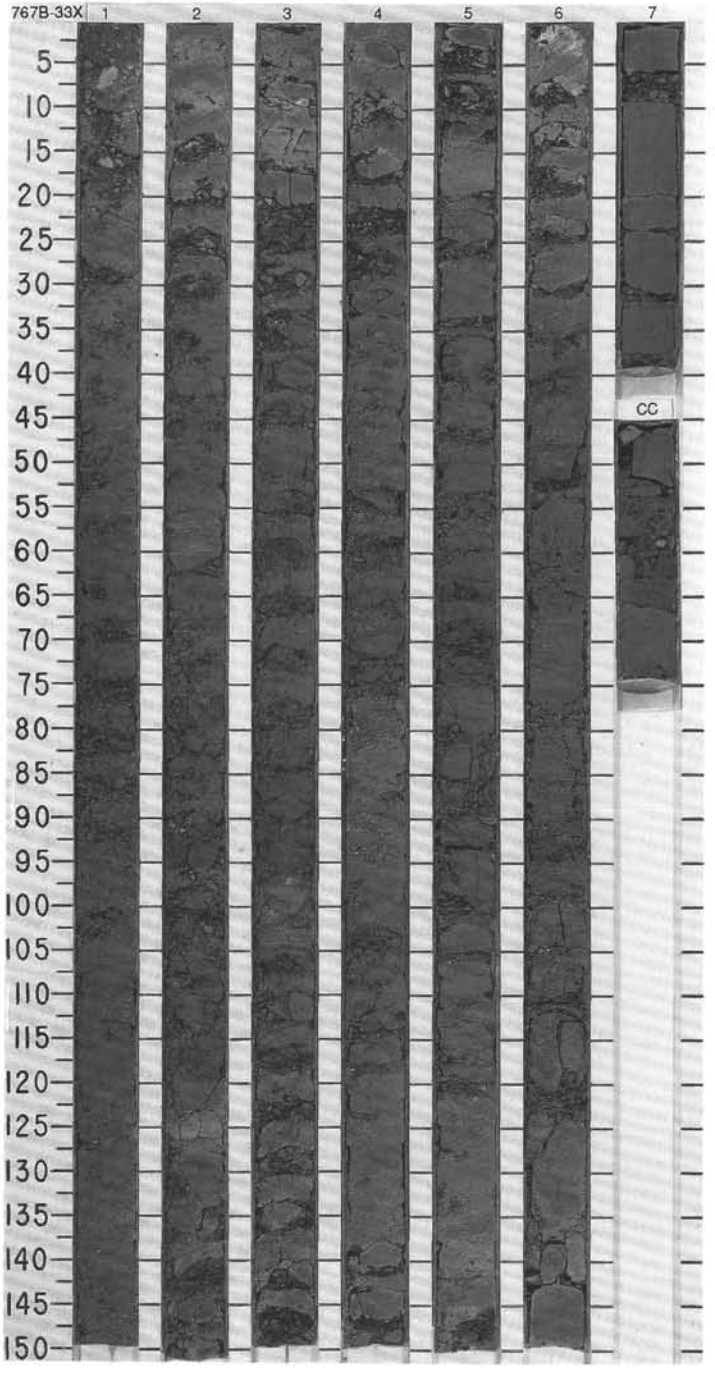
Major lithologies:

a. VOLCANIC SILTY CLAYSTONE. Massive, thick bedded claystones with variable amounts of silt, dark gray (5Y 4/1) and dark olive gray (5Y 4/2) in color. Composed of clay, rock fragments and feldspar, with small amounts of pyrite, hornblende and biotite. Bioturbation is very variable in this lithology.
b. CLAYSTONE. Massive, dark greenish gray (10Y 4/1) claystones, mottled dark grayish green (5G 4/2), very dark gray (5Y 3/1) and olive gray (5Y 5/2) due to intense bioturbation by *Chondrites* and *Planolites*. The composition is apparently similar to the silty claystone.

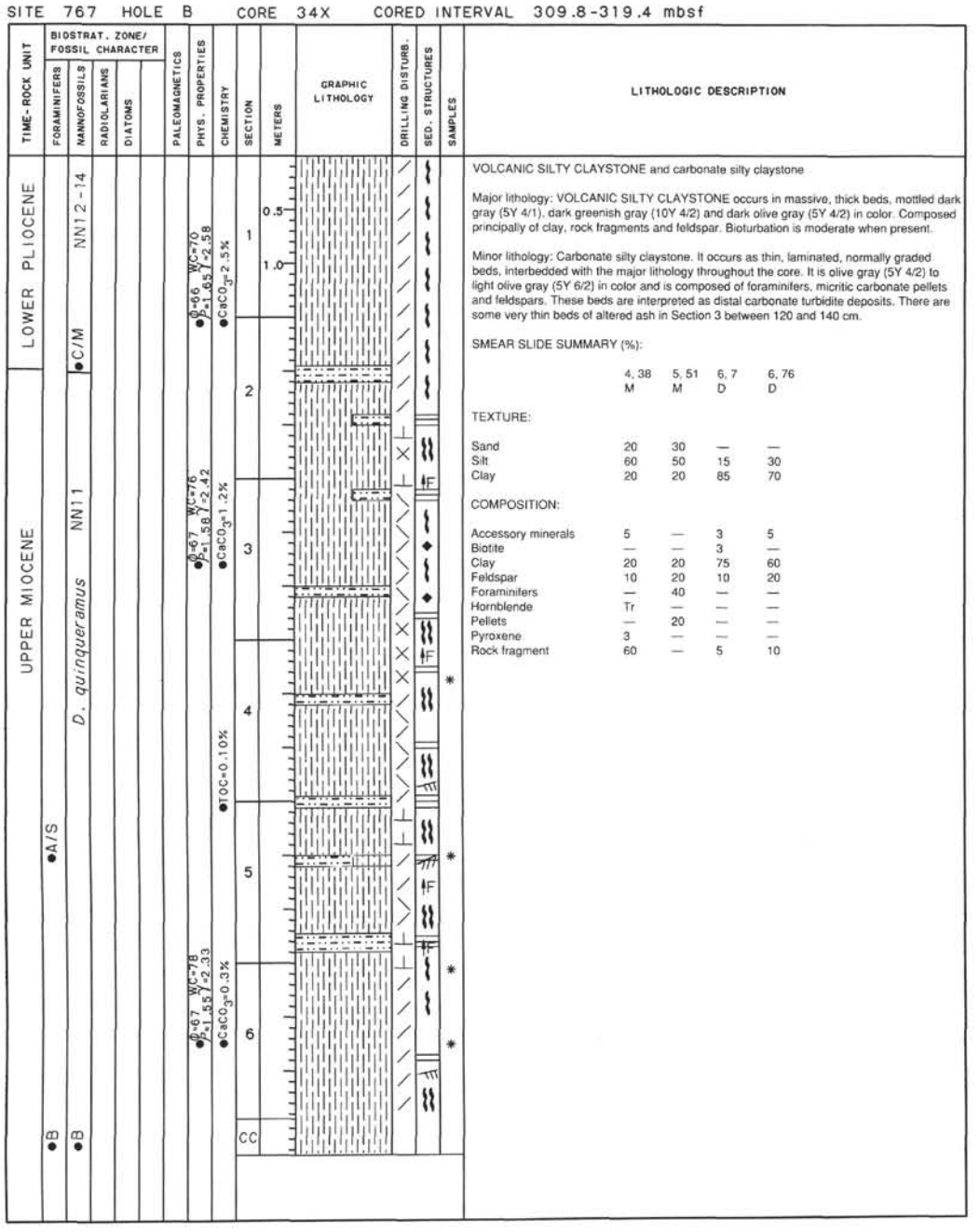
Minor lithology: Carbonate silty claystone. Occurs in thin beds, 5-10 cm thick, interbedded with the volcanic silty claystones in Sections 2 and 3; olive gray (5Y 4/2) in color. A very thin black ash bed occurs at 140 cm in Section 5.

SMEAR SLIDE SUMMARY (%):

	1, 60 D	2, 68 M	5, 117 M	7, 10 D
TEXTURE:				
Sand	—	40	—	—
Silt	40	40	—	60
Clay	60	20	—	40
COMPOSITION:				
Accessory minerals	5	10	2	—
Biotite	Tr	—	—	5
Clay	55	20	80	30
Feldspar	20	15	—	30
Hornblende	—	Tr	—	1
Pyrite	—	—	15	—
Pyroxene	—	Tr	—	—
Rock fragment	20	50	—	30



SITE 767 HOLE B CORE 34X CORED INTERVAL 309.8-319.4 mbsf



LITHOLOGIC DESCRIPTION

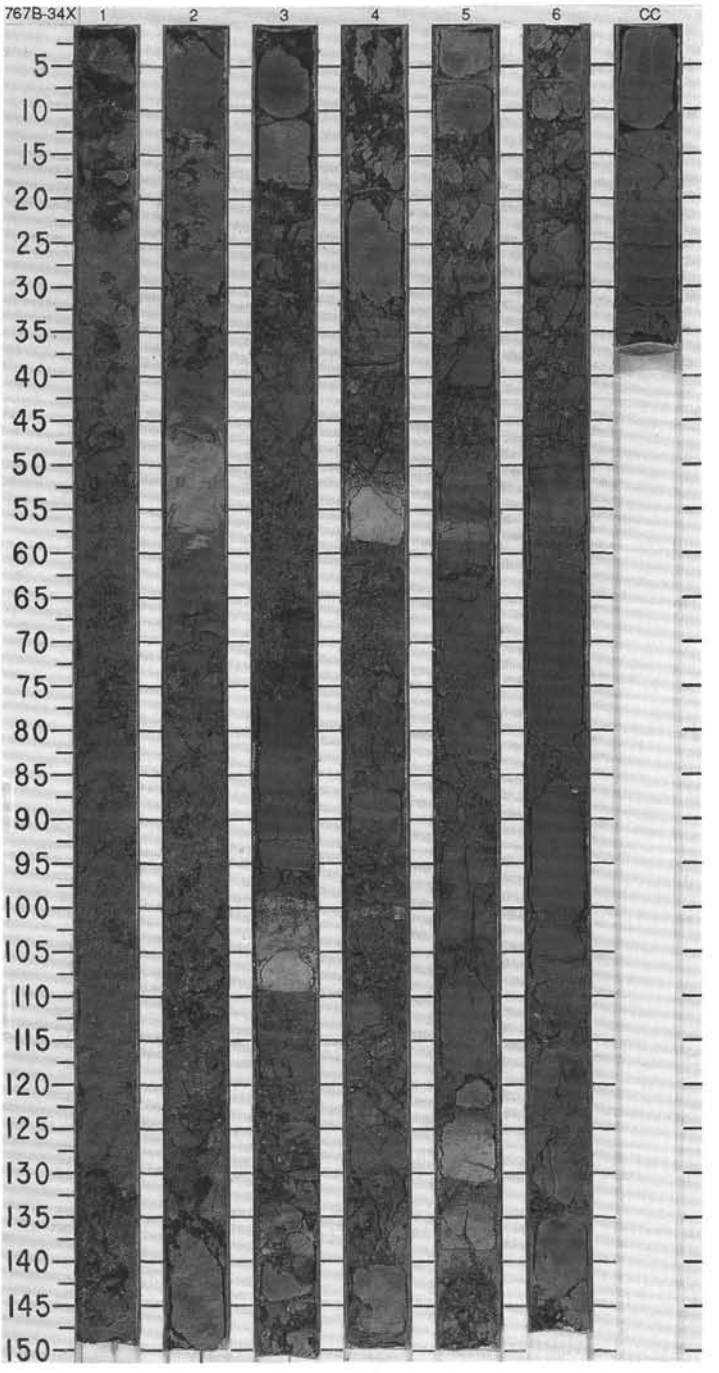
VOLCANIC SILTY CLAYSTONE and carbonate silty claystone

Major lithology: VOLCANIC SILTY CLAYSTONE occurs in massive, thick beds, mottled dark gray (5Y 4/1), dark greenish gray (10Y 4/2) and dark olive gray (5Y 4/2) in color. Composed principaliy of clay, rock fragments and feldspar. Bioturbation is moderate when present.

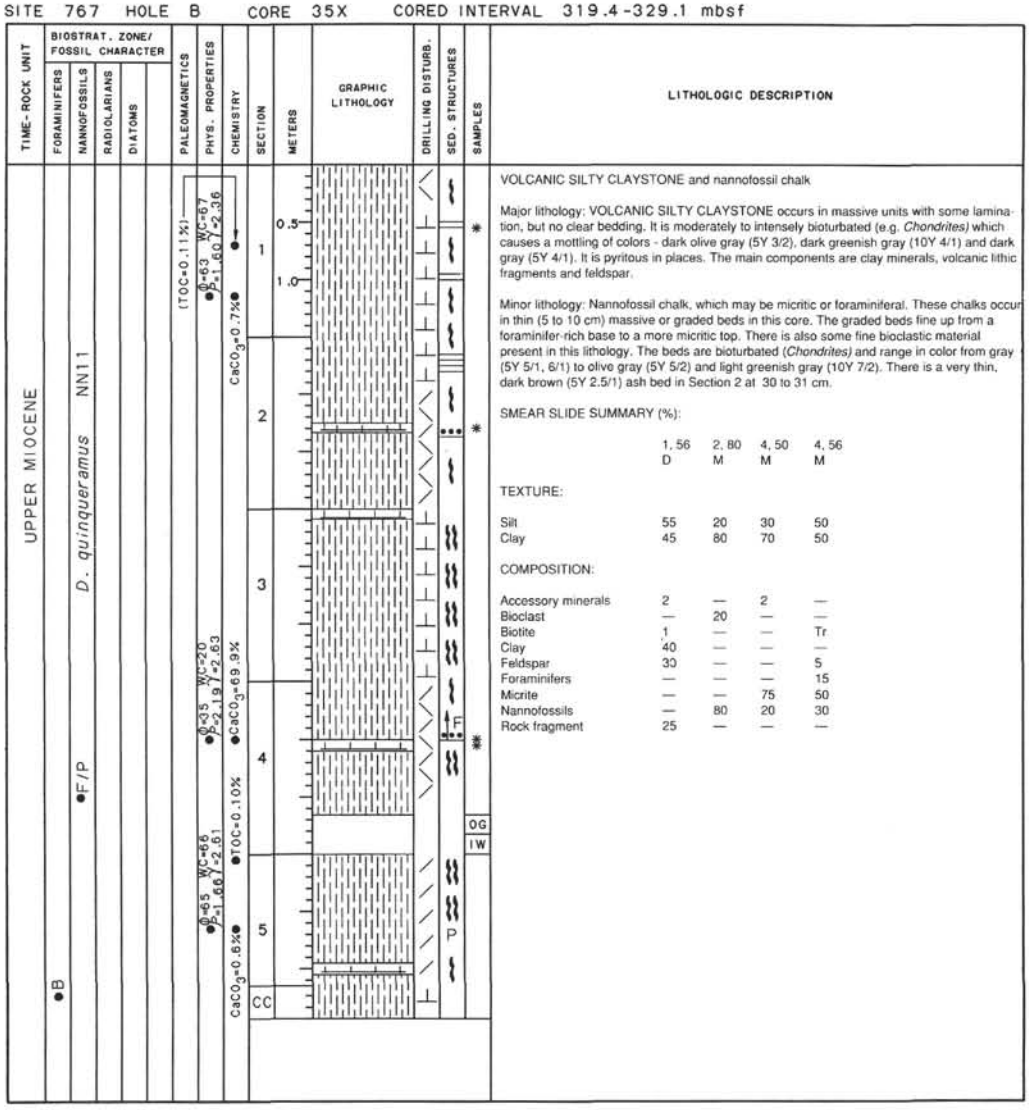
Minor lithology: Carbonate silty claystone. It occurs as thin, laminated, normally graded beds, interbedded with the major lithology throughout the core. It is olive gray (5Y 4/2) to light olive gray (5Y 6/2) in color and is composed of foraminifers, micritic carbonate pellets and feldspars. These beds are interpreted as distal carbonate turbidite deposits. There are some very thin beds of altered ash in Section 3 between 120 and 140 cm.

SMEAR SLIDE SUMMARY (%):

	4, 38 M	5, 51 M	6, 7 D	6, 76 D
TEXTURE:				
Sand	20	30	—	—
Silt	60	50	15	30
Clay	20	20	85	70
COMPOSITION:				
Accessory minerals	5	—	3	5
Biotite	—	—	3	—
Clay	20	20	75	60
Feldspar	10	20	10	20
Foraminifers	—	40	—	—
Hornblende	Tr	—	—	—
Pellets	—	20	—	—
Pyroxene	3	—	—	—
Rock fragment	60	—	5	10



SITE 767 HOLE B CORE 35X CORED INTERVAL 319.4-329.1 mbsf



LITHOLOGIC DESCRIPTION

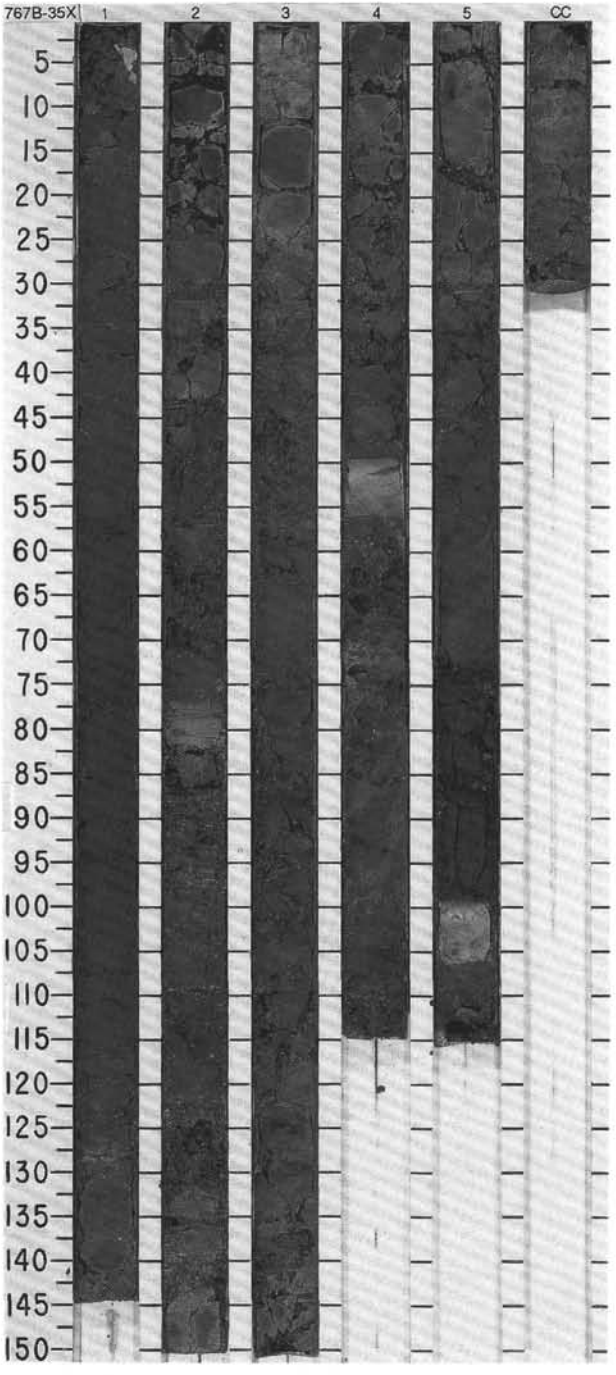
VOLCANIC SILTY CLAYSTONE and nannofossil chalk

Major lithology: VOLCANIC SILTY CLAYSTONE occurs in massive units with some lamination, but no clear bedding. It is moderately to intensely bioturbated (e.g. *Chondrites)* which causes a mottling of colors - dark olive gray (5Y 3/2), dark greenish gray (10Y 4/1) and dark gray (5Y 4/1). It is pyritous in places. The main components are clay minerals, volcanic lithic fragments and feldspar.

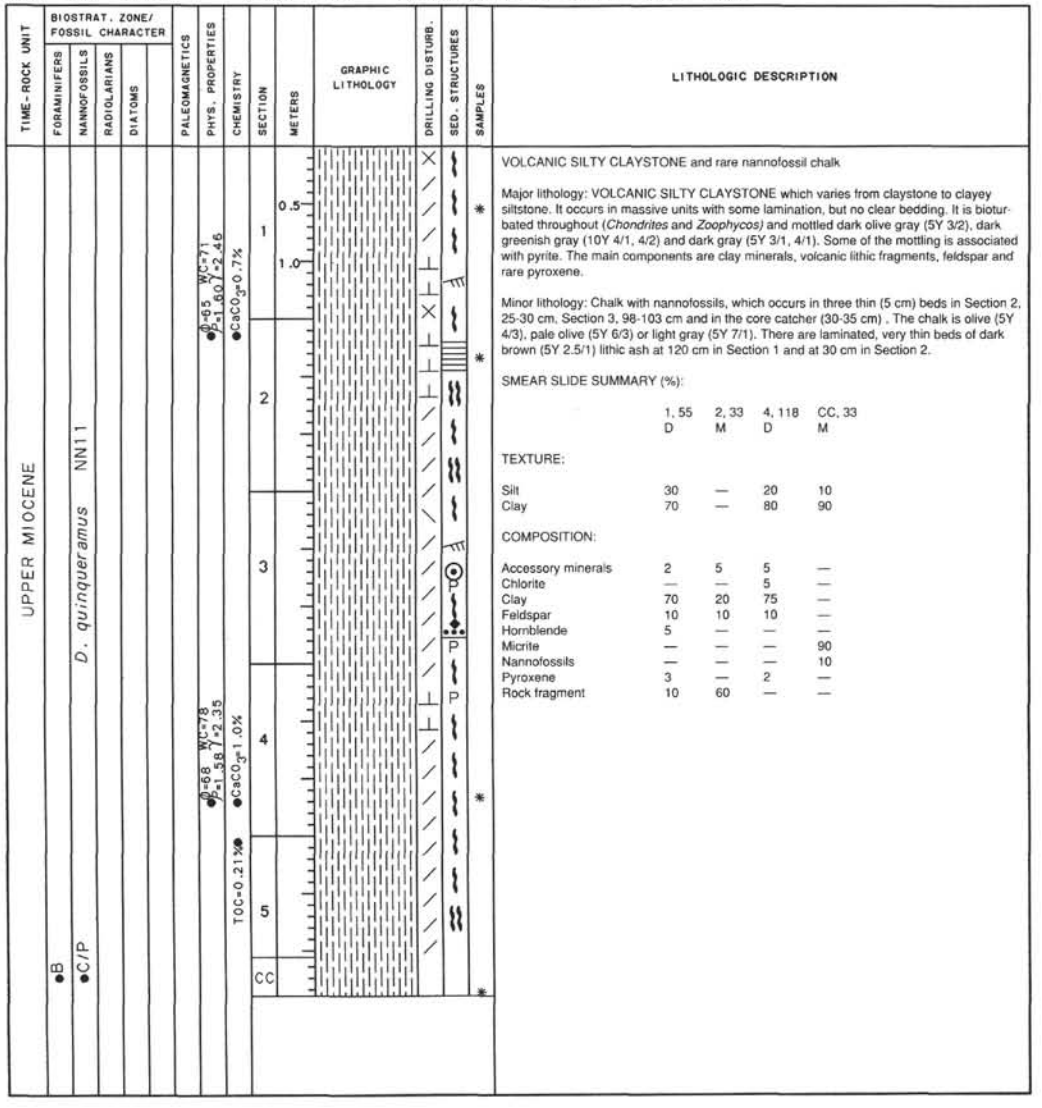
Minor lithology: Nannofossil chalk, which may be micritic or foraminiferal. These chalks occur in thin (5 to 10 cm) massive or graded beds in this core. The graded beds fine up from a foraminifer-rich base to a more micritic top. There is also some fine bioclastic material present in this lithology. The beds are bioturbated (*Chondrites)* and range in color from gray (5Y 5/1, 6/1) to olive gray (5Y 5/2) and light greenish gray (10Y 7/2). There is a very thin, dark brown (5Y 2.5/1) ash bed in Section 2 at 30 to 31 cm.

SMEAR SLIDE SUMMARY (%):

	1, 56 D	2, 80 M	4, 50 M	4, 56 M
TEXTURE:				
Silt	55	20	30	50
Clay	45	80	70	50
COMPOSITION:				
Accessory minerals	2	—	2	—
Bioclast	—	20	—	—
Biotite	1	—	—	Tr
Clay	40	—	—	—
Feldspar	30	—	—	5
Foraminifers	—	—	—	15
Micrite	—	—	75	50
Nannofossils	—	80	20	30
Rock fragment	25	—	—	—



SITE 767 HOLE B CORE 36X CORED INTERVAL 329.1-338.8 mbsf



LITHOLOGIC DESCRIPTION

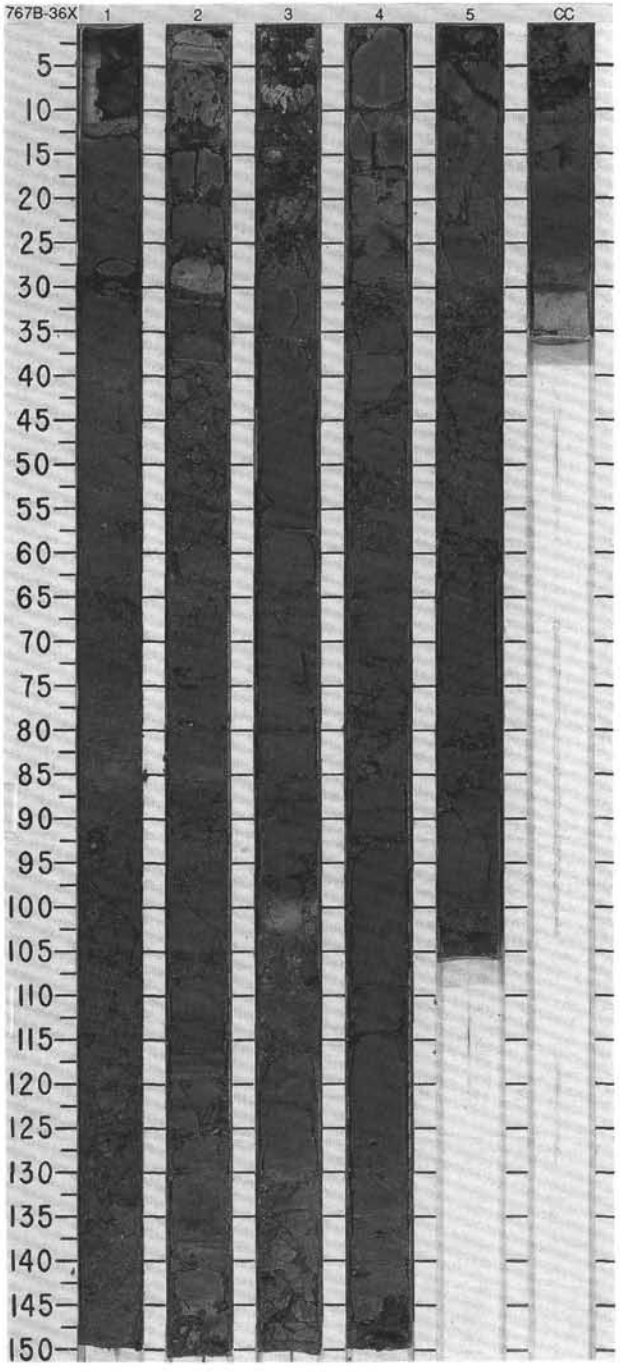
VOLCANIC SILTY CLAYSTONE and rare nannofossil chalk

Major lithology: VOLCANIC SILTY CLAYSTONE which varies from claystone to clayey siltstone. It occurs in massive units with some lamination, but no clear bedding. It is bioturbated throughout (*Chondrites* and *Zoophycos)* and mottled dark olive gray (5Y 3/2), dark greenish gray (10Y 4/1, 4/2) and dark gray (5Y 3/1, 4/1). Some of the mottling is associated with pyrite. The main components are clay minerals, volcanic lithic fragments, feldspar and rare pyroxene.

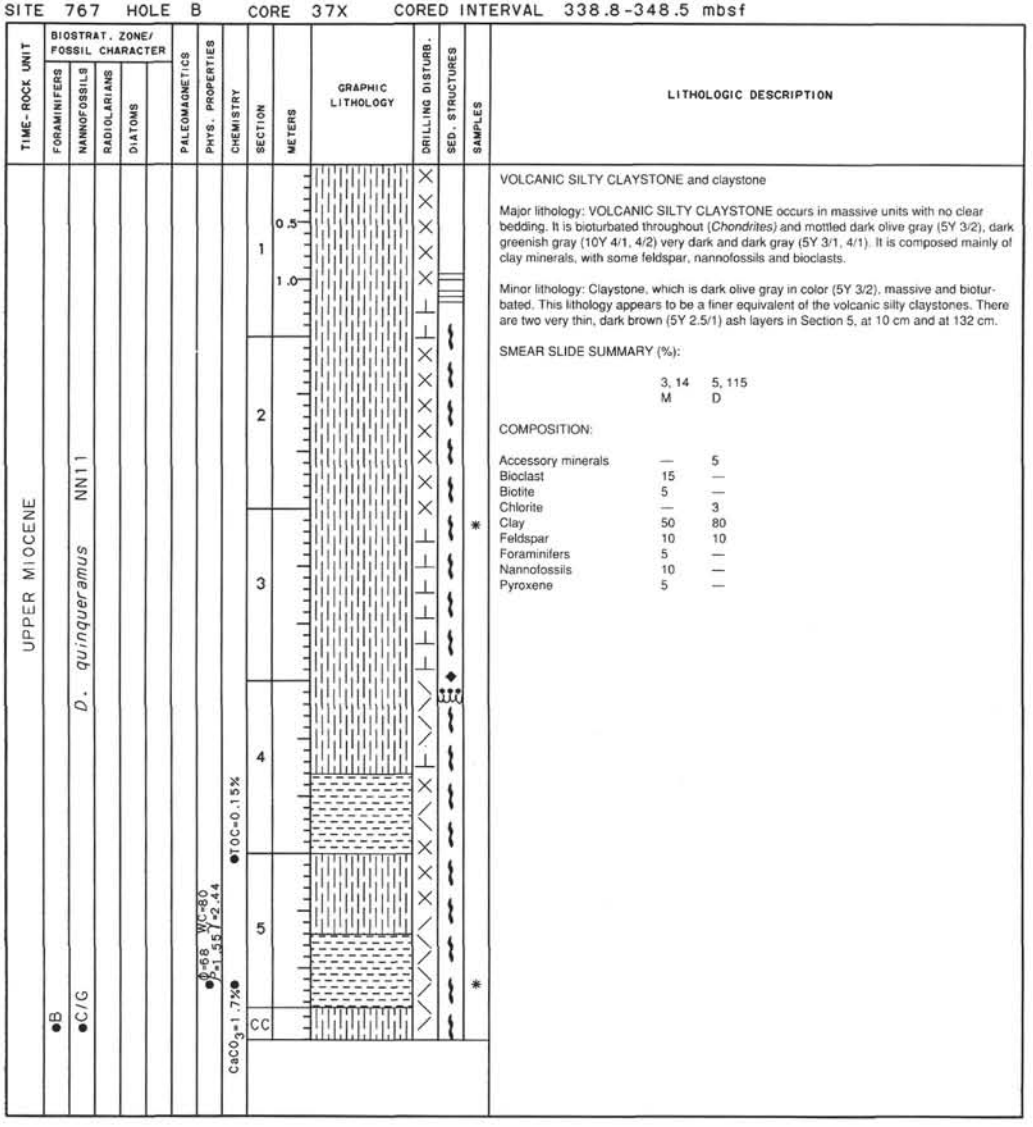
Minor lithology: Chalk with nannofossils, which occurs in three thin (5 cm) beds in Section 2, 25-30 cm, Section 3, 98-103 cm and in the core catcher (30-35 cm) . The chalk is olive (5Y 4/3), pale olive (5Y 6/3) or light gray (5Y 7/1). There are laminated, very thin beds of dark brown (5Y 2.5/1) lithic ash at 120 cm in Section 1 and at 30 cm in Section 2.

SMEAR SLIDE SUMMARY (%):

	1, 55 D	2, 33 M	4, 118 D	CC, 33 M
TEXTURE:				
Silt	30	—	20	10
Clay	70	—	80	90
COMPOSITION:				
Accessory minerals	2	5	5	—
Chlorite	—	—	5	—
Clay	70	20	75	—
Feldspar	10	10	10	—
Hornblende	5	—	—	—
Micrite	—	—	—	90
Nannofossils	—	—	—	10
Pyroxene	3	—	2	—
Rock fragment	10	60	—	—



SITE 767 HOLE B CORE 37X CORED INTERVAL 338.8-348.5 mbsf



LITHOLOGIC DESCRIPTION

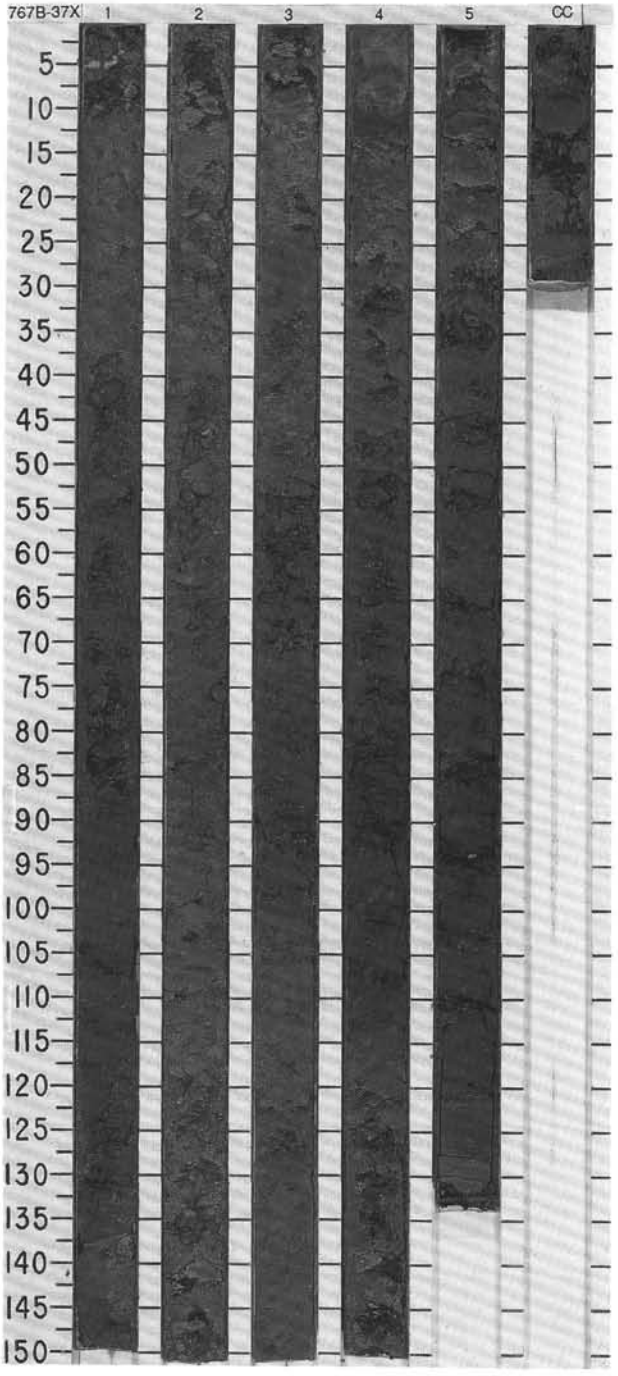
VOLCANIC SILTY CLAYSTONE and claystone

Major lithology: VOLCANIC SILTY CLAYSTONE occurs in massive units with no clear bedding. It is bioturbated throughout (*Chondrites*) and mottled dark olive gray (5Y 3/2), dark greenish gray (10Y 4/1, 4/2) very dark and dark gray (5Y 3/1, 4/1). It is composed mainly of clay minerals, with some feldspar, nannofossils and bioclasts.

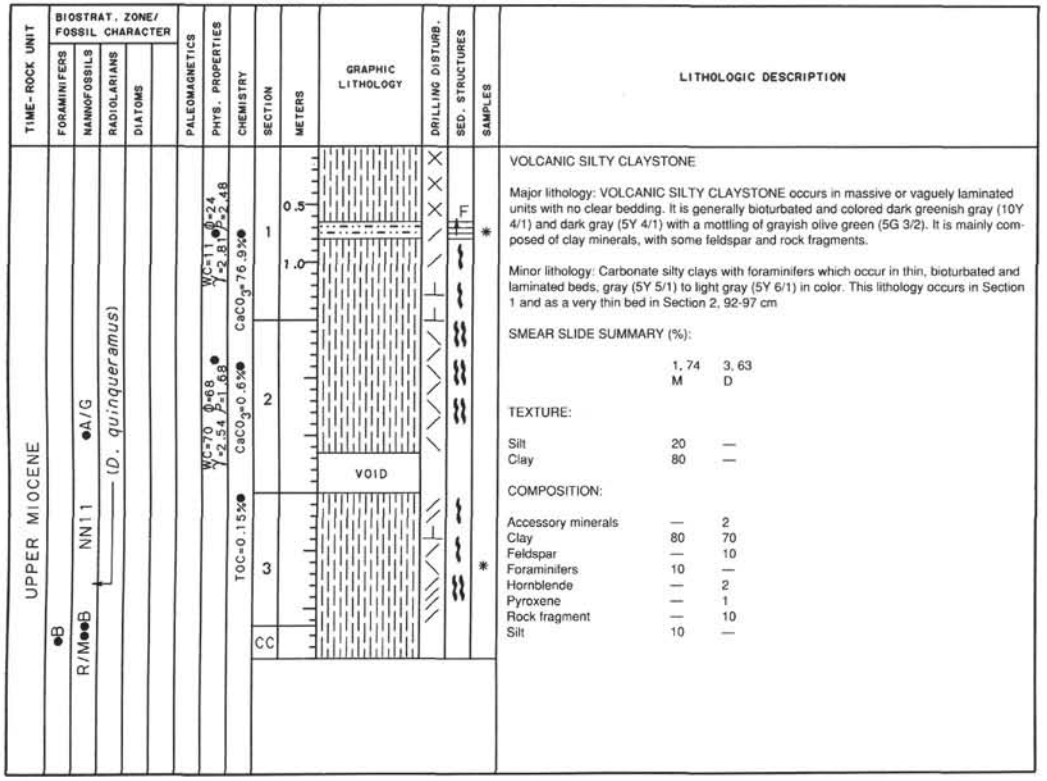
Minor lithology: Claystone, which is dark olive gray in color (5Y 3/2), massive and bioturbated. This lithology appears to be a finer equivalent of the volcanic silty claystones. There are two very thin, dark brown (5Y 2.5/1) ash layers in Section 5, at 10 cm and at 132 cm.

SMEAR SLIDE SUMMARY (%):

	3, 14 M	5, 115 D
COMPOSITION:		
Accessory minerals	—	5
Bioclast	15	—
Biotite	5	—
Chlorite	—	3
Clay	50	80
Feldspar	10	10
Foraminifers	5	—
Nannofossils	10	—
Pyroxene	5	—



SITE 767 HOLE B CORE 38X CORED INTERVAL 348.5-358.1 mbsf



LITHOLOGIC DESCRIPTION

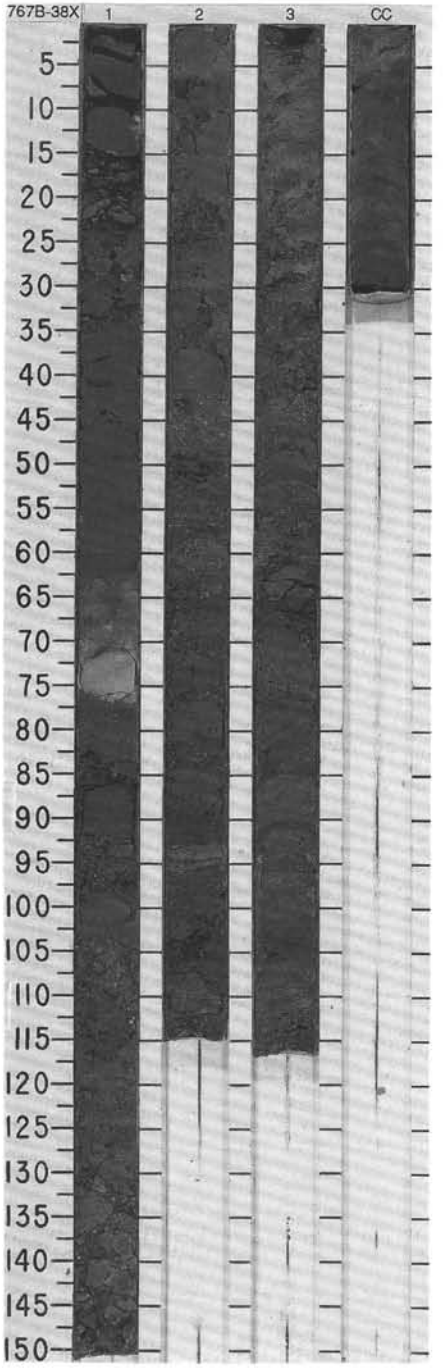
VOLCANIC SILTY CLAYSTONE

Major lithology: VOLCANIC SILTY CLAYSTONE occurs in massive or vaguely laminated units with no clear bedding. It is generally bioturbated and colored dark greenish gray (10Y 4/1) and dark gray (5Y 4/1) with a mottling of grayish olive green (5G 3/2). It is mainly composed of clay minerals, with some feldspar and rock fragments.

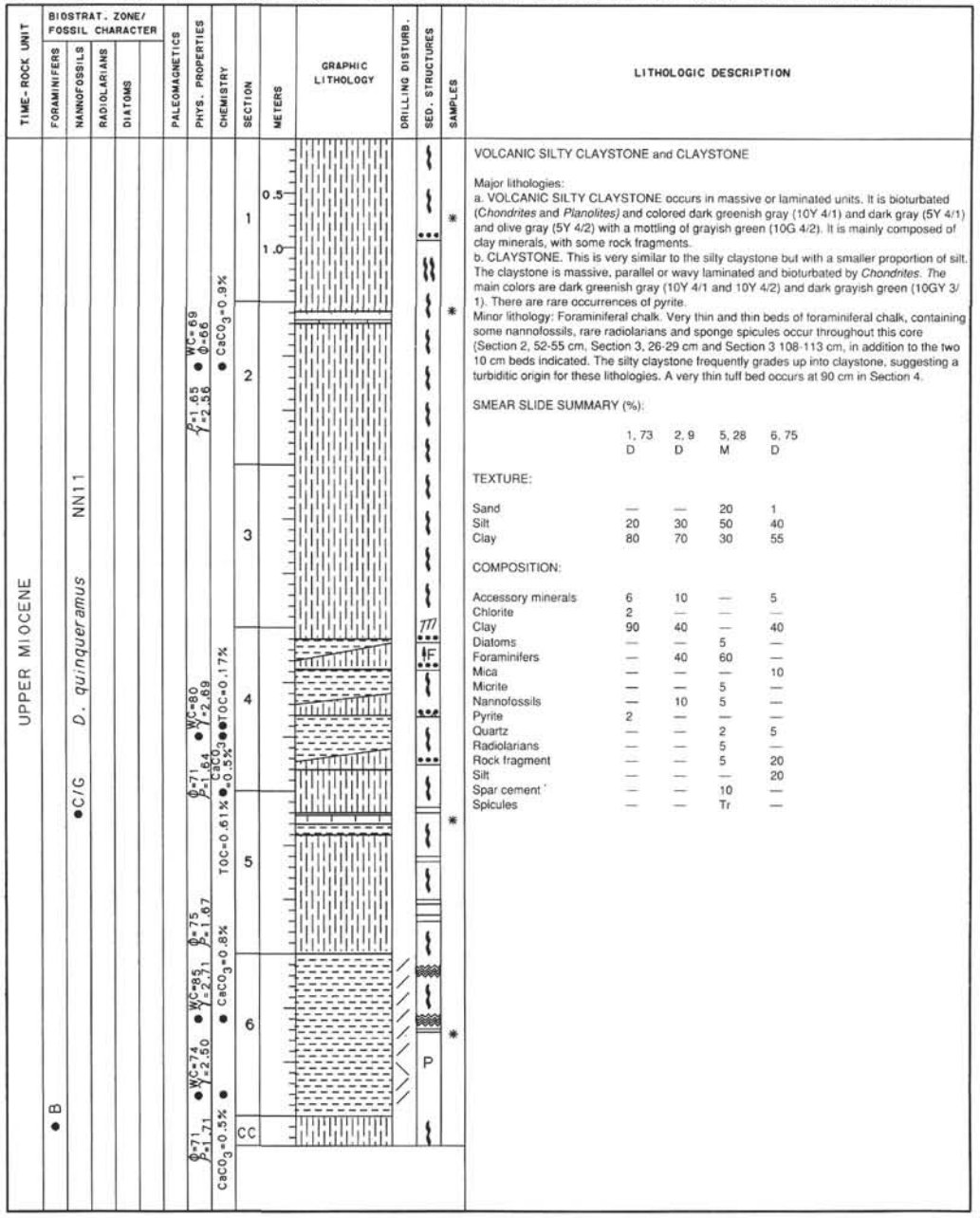
Minor lithology: Carbonate silty clays with foraminifers which occur in thin, bioturbated and laminated beds, gray (5Y 5/1) to light gray (5Y 6/1) in color. This lithology occurs in Section 1 and as a very thin bed in Section 2, 92-97 cm

SMEAR SLIDE SUMMARY (%):

	1, 74 M	3, 63 D
TEXTURE:		
Silt	20	—
Clay	80	—
COMPOSITION:		
Accessory minerals	—	2
Clay	80	70
Feldspar	—	10
Foraminifers	10	—
Hornblende	—	2
Pyroxene	—	1
Rock fragment	—	10
Silt	10	—



SITE 767 HOLE B CORE 39X CORED INTERVAL 5263.3-5273.0 mbsl; 358.1-367.8 mbsf



LITHOLOGIC DESCRIPTION

VOLCANIC SILTY CLAYSTONE and CLAYSTONE

Major lithologies:

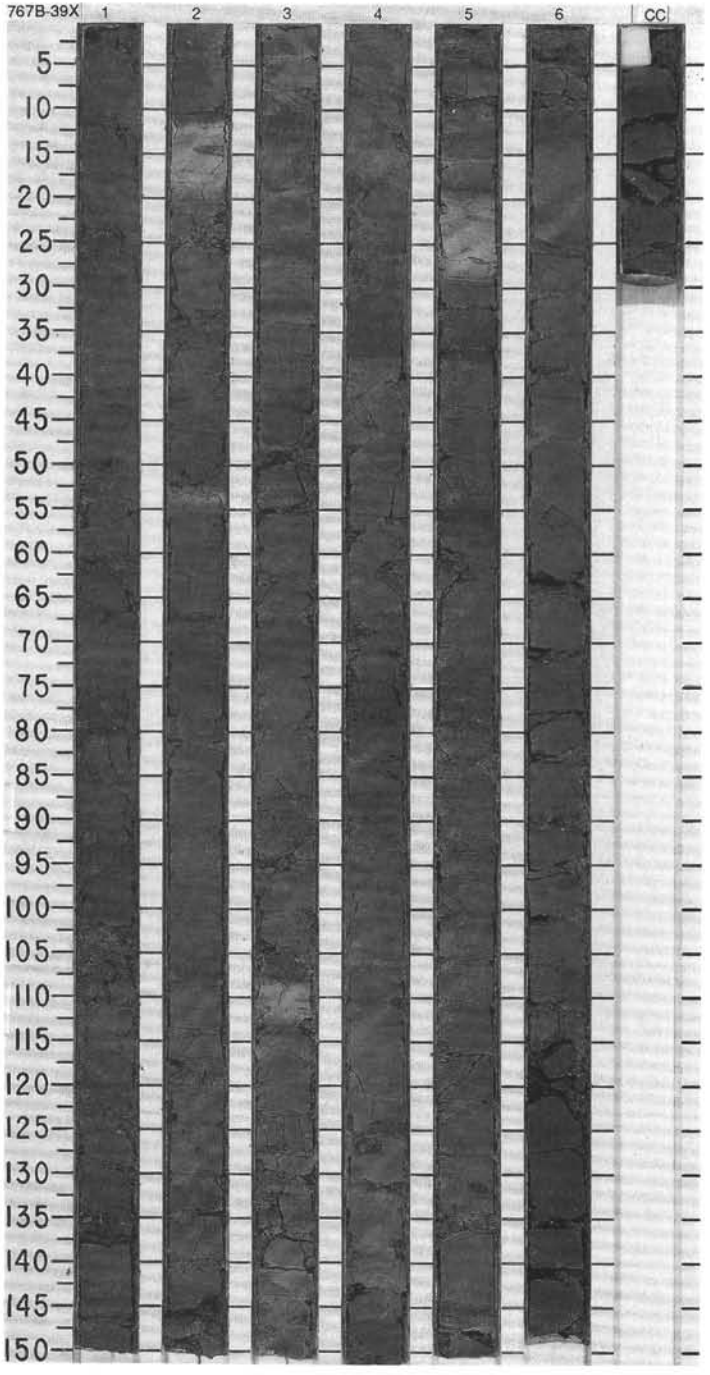
a. VOLCANIC SILTY CLAYSTONE occurs in massive or laminated units. It is bioturbated (*Chondrites* and *Planolites)* and colored dark greenish gray (10Y 4/1) and dark gray (5Y 4/1) and olive gray (5Y 4/2) with a mottling of grayish green (10G 4/2). It is mainly composed of clay minerals, with some rock fragments.

b. CLAYSTONE. This is very similar to the silty claystone but with a smaller proportion of silt. The claystone is massive, parallel or wavy laminated and bioturbated by *Chondrites. The* main colors are dark greenish gray (10Y 4/1 and 10Y 4/2) and dark grayish green (10GY 3/ 1). There are rare occurrences of pyrite.

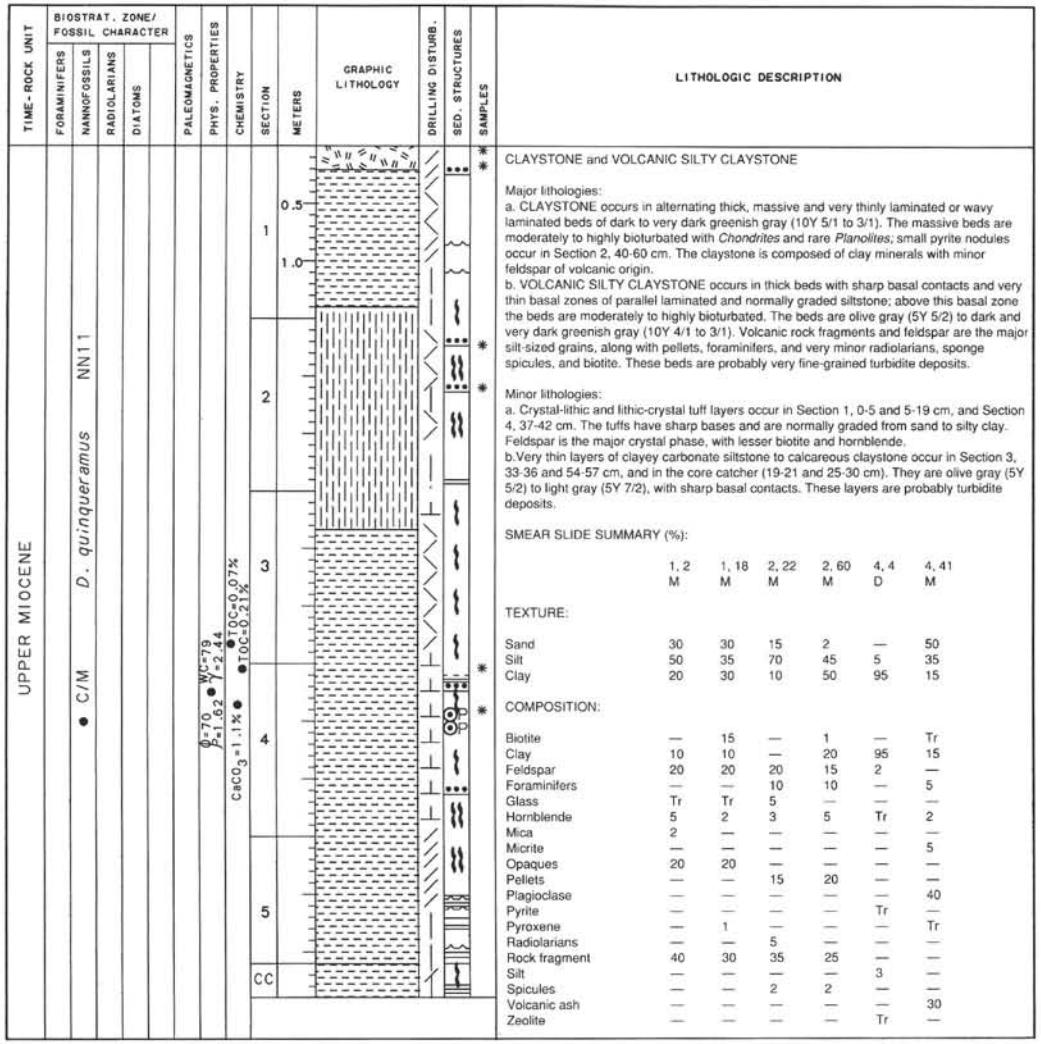
Minor lithology: Foraminiferal chalk. Very thin and thin beds of foraminiferal chalk, containing some nannofossils, rare radiolarians and sponge spicules occur throughout this core (Section 2, 52-55 cm, Section 3, 26-29 cm and Section 3 108-113 cm, in addition to the two 10 cm beds indicated. The silty claystone frequently grades up into claystone, suggesting a turbiditic origin for these lithologies. A very thin tuff bed occurs at 90 cm in Section 4.

SMEAR SLIDE SUMMARY (%):

	1, 73 D	2, 9 D	5, 28 M	6, 75 D
TEXTURE:				
Sand	—	—	20	1
Silt	20	30	50	40
Clay	80	70	30	55
COMPOSITION:				
Accessory minerals	6	10	—	5
Chlorite	2	—	—	—
Clay	90	40	—	40
Diatoms	—	—	5	—
Foraminifers	—	40	60	—
Mica	—	—	—	10
Micrite	—	—	5	—
Nannofossils	—	10	5	—
Pyrite	2	—	—	—
Quartz	—	—	2	5
Radiolarians	—	—	5	—
Rock fragment	—	—	5	20
Silt	—	—	—	20
Spar cement	—	—	10	—
Spicules	—	—	Tr	—



SITE 767 HOLE B CORE 40X CORED INTERVAL 5273.0-5282.7 mbsl; 307.8-377.5 mbsf



LITHOLOGIC DESCRIPTION

CLAYSTONE and VOLCANIC SILTY CLAYSTONE

Major lithologies:

a. CLAYSTONE occurs in alternating thick, massive and very thinly laminated or wavy laminated beds of dark to very dark greenish gray (10Y 5/1 to 3/1). The massive beds are moderately to highly bioturbated with *Chondrites* and rare *Planolites;* small pyrite nodules occur in Section 2, 40-60 cm. The claystone is composed of clay minerals with minor feldspar of volcanic origin.

b. VOLCANIC SILTY CLAYSTONE occurs in thick beds with sharp basal contacts and very thin basal zones of parallel laminated and normally graded siltstone; above this basal zone the beds are moderately to highly bioturbated. The beds are olive gray (5Y 5/2) to dark and very dark greenish gray (10Y 4/1 to 3/1). Volcanic rock fragments and feldspar are the major silt-sized grains, along with pellets, foraminifers, and very minor radiolarians, sponge spicules, and biotite. These beds are probably very fine-grained turbidite deposits.

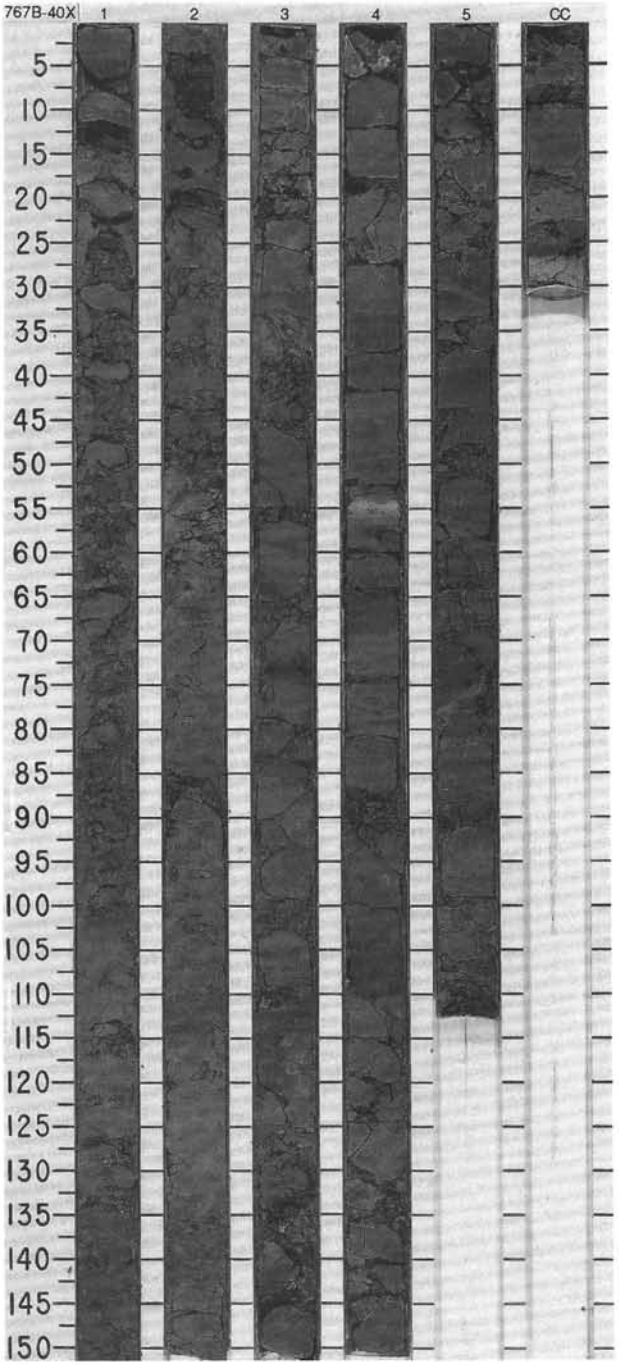
Minor lithologies:

a. Crystal-lithic and lithic-crystal tuff layers occur in Section 1, 0-5 and 5-19 cm, and Section 4, 37-42 cm. The tuffs have sharp bases and are normally graded from sand to silty clay. Feldspar is the major crystal phase, with lesser biotite and hornblende.

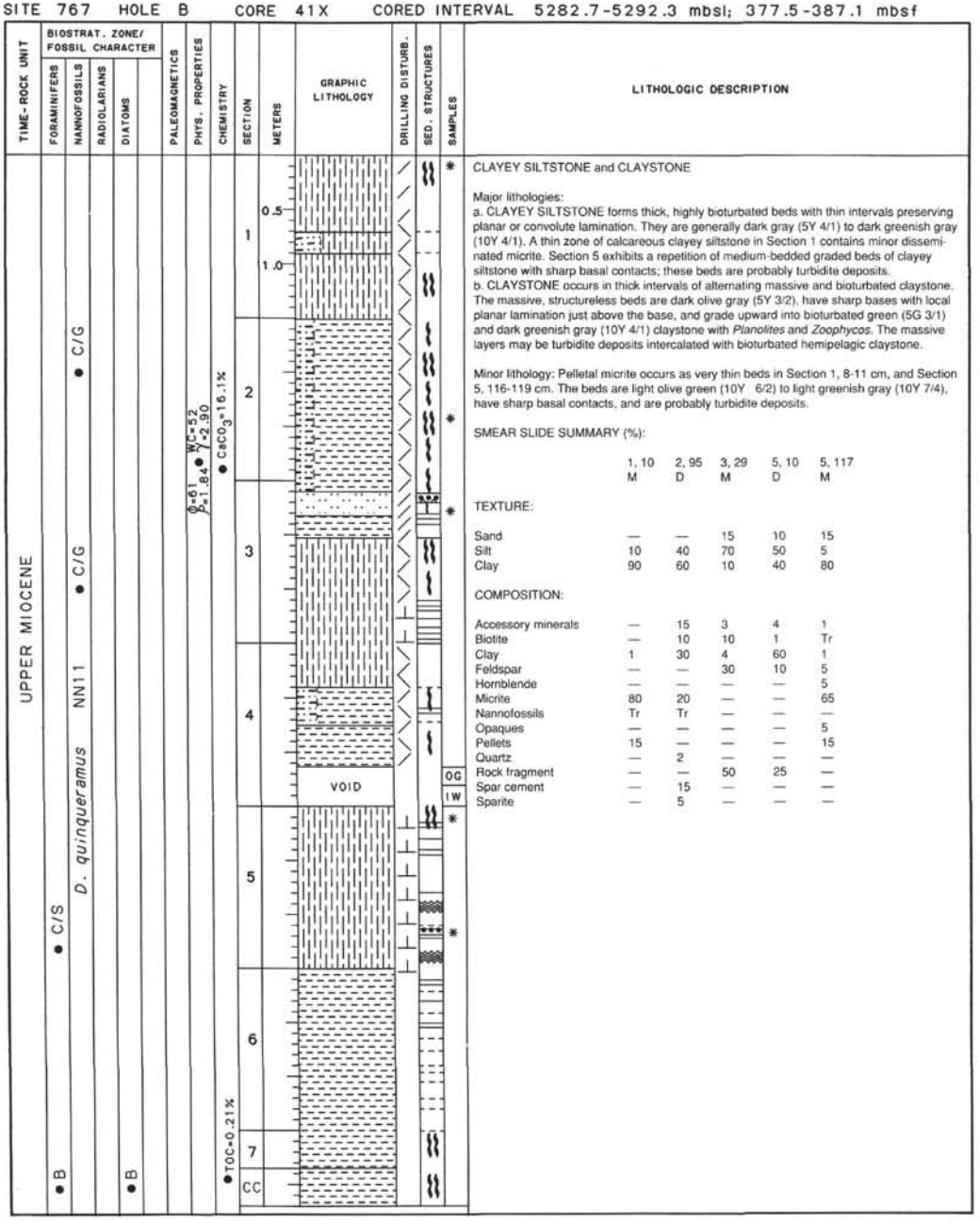
b. Very thin layers of clayey carbonate siltstone to calcareous claystone occur in Section 3, 33-36 and 54-57 cm, and in the core catcher (19-21 and 25-30 cm). They are olive gray (5Y 5/2) to light gray (5Y 7/2), with sharp basal contacts. These layers are probably turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 2 M	1, 18 M	2, 22 M	2, 60 M	4, 4 D	4, 41 M
TEXTURE:						
Sand	30	30	15	2	—	50
Silt	50	35	70	45	5	35
Clay	20	30	10	50	95	15
COMPOSITION:						
Biotite	—	15	—	1	—	Tr
Clay	10	10	—	20	95	15
Feldspar	20	20	20	15	2	—
Foraminifers	—	—	10	10	—	5
Glass	Tr	Tr	5	—	—	—
Hornblende	5	2	3	5	Tr	2
Mica	2	—	—	—	—	—
Micrite	—	—	—	—	—	5
Opaques	20	20	—	—	—	—
Pellets	—	—	15	20	—	—
Plagioclase	—	—	—	—	—	40
Pyrite	—	—	—	—	Tr	—
Pyroxene	—	1	—	—	—	Tr
Radiolarians	—	—	5	—	—	—
Rock fragment	40	30	35	25	—	—
Silt	—	—	—	—	3	—
Spicules	—	—	2	2	—	—
Volcanic ash	—	—	—	—	—	30
Zeolite	—	—	—	—	Tr	—



SITE 767 HOLE B CORE 41X CORED INTERVAL 5282.7-5292.3 mbsl; 377.5-387.1 mbsf



LITHOLOGIC DESCRIPTION

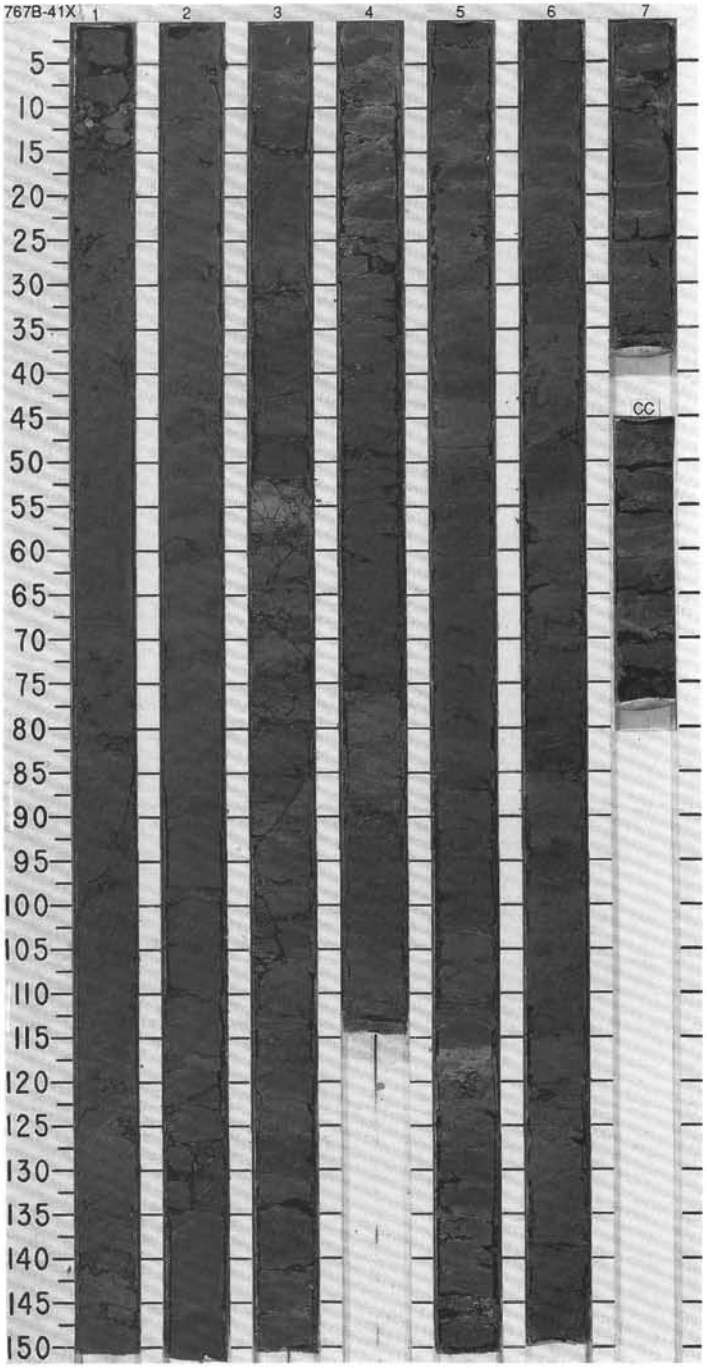
CLAYEY SILTSTONE and CLAYSTONE

Major lithologies:
a. CLAYEY SILTSTONE forms thick, highly bioturbated beds with thin intervals preserving planar or convolute lamination. They are generally dark gray (5Y 4/1) to dark greenish gray (10Y 4/1). A thin zone of calcareous clayey siltstone in Section 1 contains minor disseminated micrite. Section 5 exhibits a repetition of medium-bedded graded beds of clayey siltstone with sharp basal contacts; these beds are probably turbidite deposits.
b. CLAYSTONE occurs in thick intervals of alternating massive and bioturbated claystone. The massive, structureless beds are dark olive gray (5Y 3/2), have sharp bases with local planar lamination just above the base, and grade upward into bioturbated green (5G 3/1) and dark greenish gray (10Y 4/1) claystone with *Planolites* and *Zoophycos*. The massive layers may be turbidite deposits intercalated with bioturbated hemipelagic claystone.

Minor lithology: Pelletal micrite occurs as very thin beds in Section 1, 8-11 cm, and Section 5, 116-119 cm. The beds are light olive green (10Y 6/2) to light greenish gray (10Y 7/4), have sharp basal contacts, and are probably turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 10 M	2, 95 D	3, 29 M	5, 10 D	5, 117 M
TEXTURE:					
Sand	—	—	15	10	15
Silt	10	40	70	50	5
Clay	90	60	10	40	80
COMPOSITION:					
Accessory minerals	—	15	3	4	1
Biotite	—	10	10	1	Tr
Clay	1	30	4	60	1
Feldspar	—	—	30	10	5
Hornblende	—	—	—	—	5
Micrite	80	20	—	—	65
Nannofossils	Tr	Tr	—	—	—
Opaques	—	—	—	—	5
Pellets	15	—	—	—	15
Quartz	—	2	—	—	—
Rock fragment	—	—	50	25	—
Spar cement	—	15	—	—	—
Sparite	—	5	—	—	—



SITE 767 HOLE B CORE 42X CORED INTERVAL 5292.3-5302.0 mbsl; 387.1-396.8 mbsf

TIME-ROCK UNIT: UPPER MIOCENE

BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS: • B (N17) • A/S • B; NANNOFOSSILS: • C/G (NN10) D. calcaris; • C/G (NN11) D. quinqueramus; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ϕ=73 ρ=1.62 • WC=85 ρ=2.74

CHEMISTRY: • TOC=0.42% • TOC=0.25% • $CaCO_3$=2.2%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: *, *

SAMPLES

LITHOLOGIC DESCRIPTION

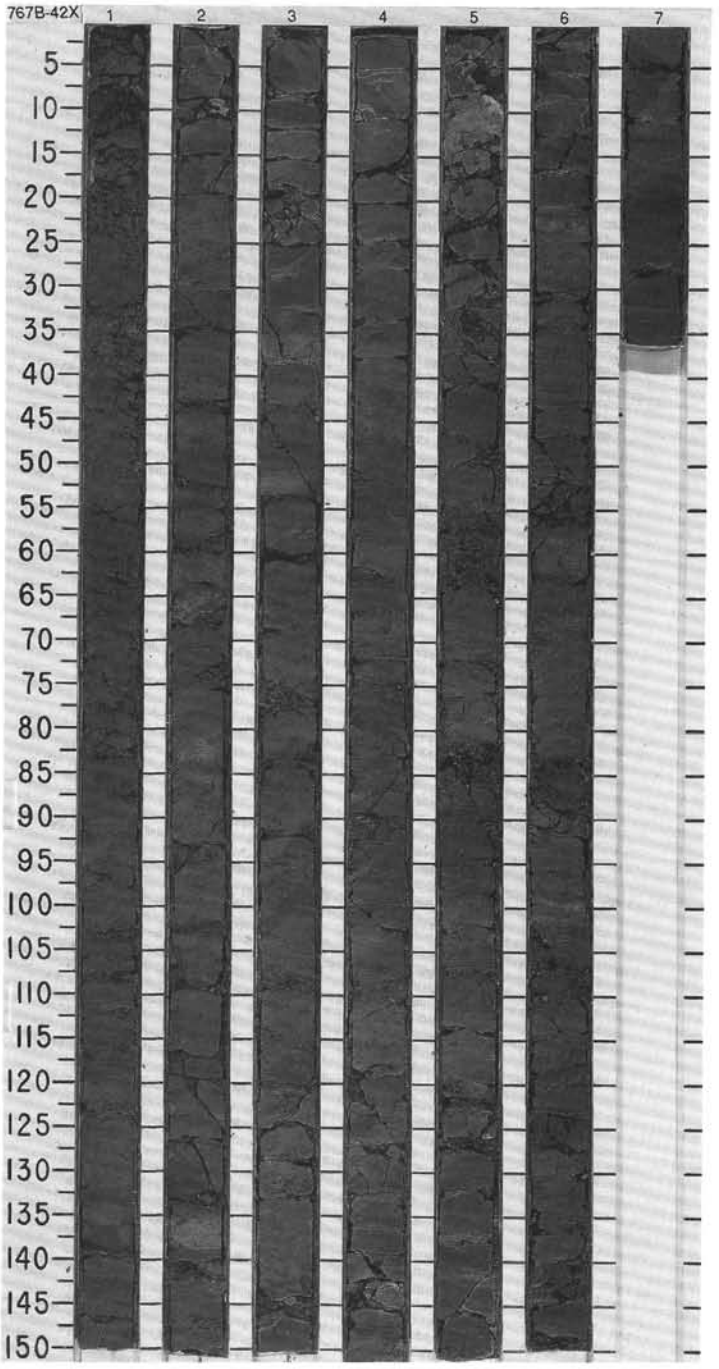
CLAYSTONE and VOLCANIC SILTY CLAYSTONE

Major lithologies:
a. CLAYSTONE occurs in thick, highly bioturbated beds with common *Zoophycos*, *Planolites*, and *Chondrites*. Its color is mottled due to bioturbation; dark greenish gray (10Y 4/2, 3/2), dark olive gray (5Y 3/2), and grayish olive green (5GY 3/2) predominate. The claystone consists of clay with minor volcanic ash components (plagioclase and rock fragments).
b. VOLCANIC SILTY CLAYSTONE is similar to the claystone but contains a higher proportion of admixed silt-sized ash particles. It is dusky yellowish green (10GY 4/2) to dark olive gray (5Y 3/2), and highly bioturbated.

Minor lithologies:
a. Very thin lithic volcanic tuff layers occur in Section 6, 21-25, 58-67, and 99-101 cm. These layers are dark gray (2.5Y 4/0), with sharp basal contacts and normal grading.
b. Volcanic tuff with foraminifers occurs as thin beds in Section 4, 0-8 cm. This layer has a sharp basal contact and planar lamination throughout, and is composed of volcanic rock fragments with minor feldspar, foraminifers, and radiolarians. Based on its composition and structures, this bed is interpreted as a turbidite deposit.
c. Clayey carbonate siltstone and calcareous claystone form thin beds with sharp bases and local planar lamination. Thick beds grade from carbonate siltstone at the base to calcareous claystone at the top. The beds are slightly to moderately bioturbated, and are gray to light gray (5Y 5/1 to 7/2), light olive gray (5Y 6/2) and pale yellow (5Y 7/3).

SMEAR SLIDE SUMMARY (%):

	2, 50 D	4, 6 M
TEXTURE:		
Sand	—	5
Silt	10	80
Clay	90	10
COMPOSITION:		
Biotite	1	—
Clay	90	5
Feldspar	—	20
Foraminifers	—	15
Glass	—	2
Opaques	—	3
Plagioclase	5	—
Radiolarians	—	5
Rock fragment	3	45



SITE 767 HOLE B CORE 43X CORED INTERVAL 5302.0-5311.7 mbsl; 396.8-406.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	● B	● C/G	*D. calcaris*	NN10			● TOC=0.27%	1	0.5				*
									1.0				
								2				TD	*
								3					
								4					

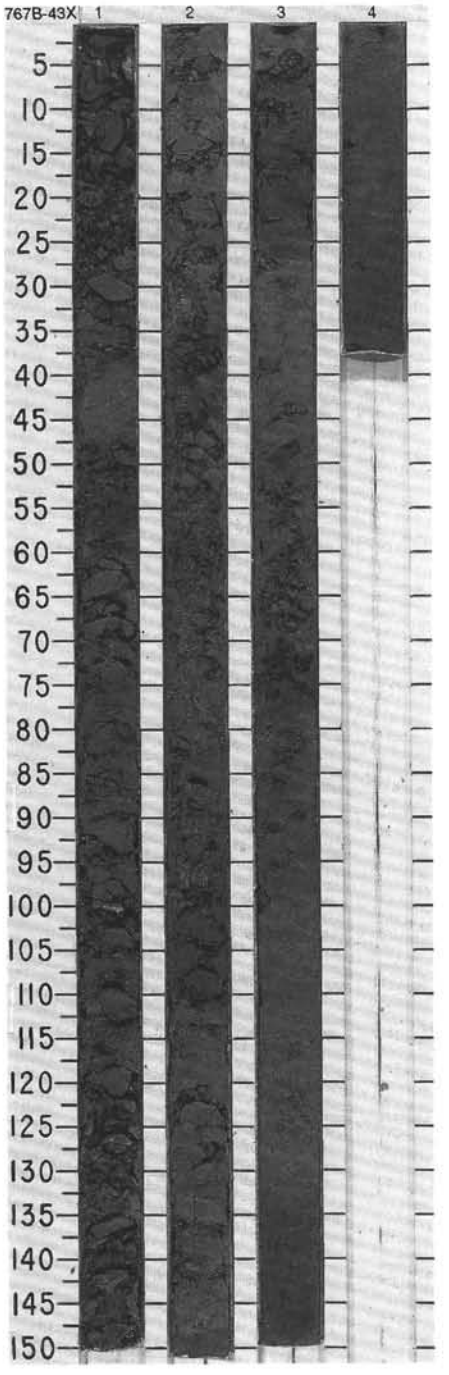
LITHOLOGIC DESCRIPTION

VOLCANIC SILTY CLAYSTONE to VOLCANIC CLAYEY SILTSTONE

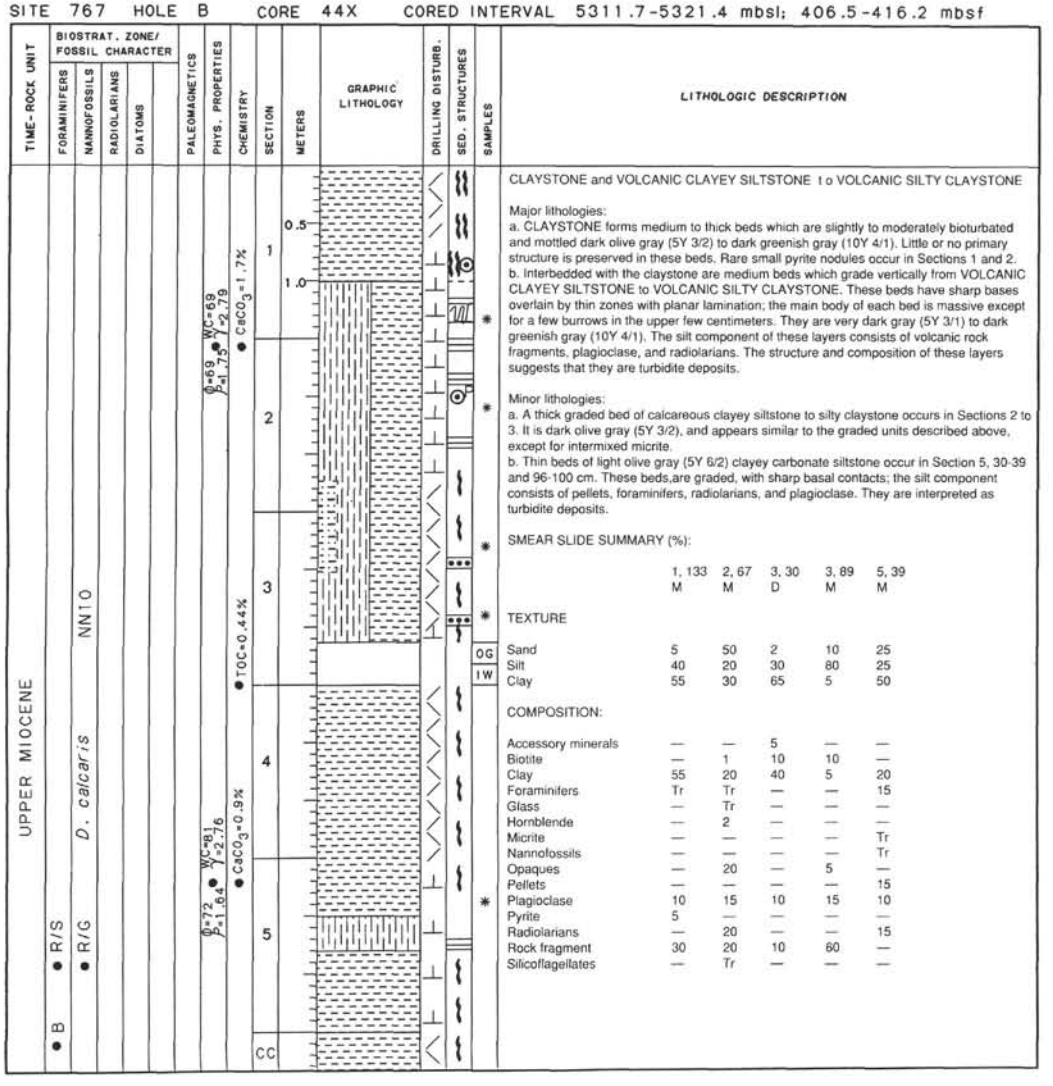
Major lithology: VOLCANIC SILTY CLAYSTONE to VOLCANIC CLAYEY SILTSTONE. These lithologies intergrade due to varying proportions of disseminated silt-sized ash particles, primarily volcanic lithic fragments with lesser plagioclase and biotite. They are massive and highly bioturbated, and dark olive gray (5Y 3/2) to dark greenish gray (10Y 4/1). Small pyrite nodules occur in Section 3.

SMEAR SLIDE SUMMARY (%):

	1, 64 D	3, 25 D
TEXTURE:		
Sand	5	2
Silt	20	70
Clay	75	25
COMPOSITION:		
Accessory minerals	3	—
Biotite	—	5
Clay	40	25
Feldspar	10	—
Hornblende	—	3
Micrite	Tr	—
Opaques	—	10
Plagioclase	—	20
Pyrite	15	—
Rock fragment	30	35



SITE 767 HOLE B CORE 44X CORED INTERVAL 5311.7-5321.4 mbsl; 406.5-416.2 mbsf



LITHOLOGIC DESCRIPTION

CLAYSTONE and VOLCANIC CLAYEY SILTSTONE to VOLCANIC SILTY CLAYSTONE

Major lithologies:

a. CLAYSTONE forms medium to thick beds which are slightly to moderately bioturbated and mottled dark olive gray (5Y 3/2) to dark greenish gray (10Y 4/1). Little or no primary structure is preserved in these beds. Rare small pyrite nodules occur in Sections 1 and 2.

b. Interbedded with the claystone are medium beds which grade vertically from VOLCANIC CLAYEY SILTSTONE to VOLCANIC SILTY CLAYSTONE. These beds have sharp bases overlain by thin zones with planar lamination; the main body of each bed is massive except for a few burrows in the upper few centimeters. They are very dark gray (5Y 3/1) to dark greenish gray (10Y 4/1). The silt component of these layers consists of volcanic rock fragments, plagioclase, and radiolarians. The structure and composition of these layers suggests that they are turbidite deposits.

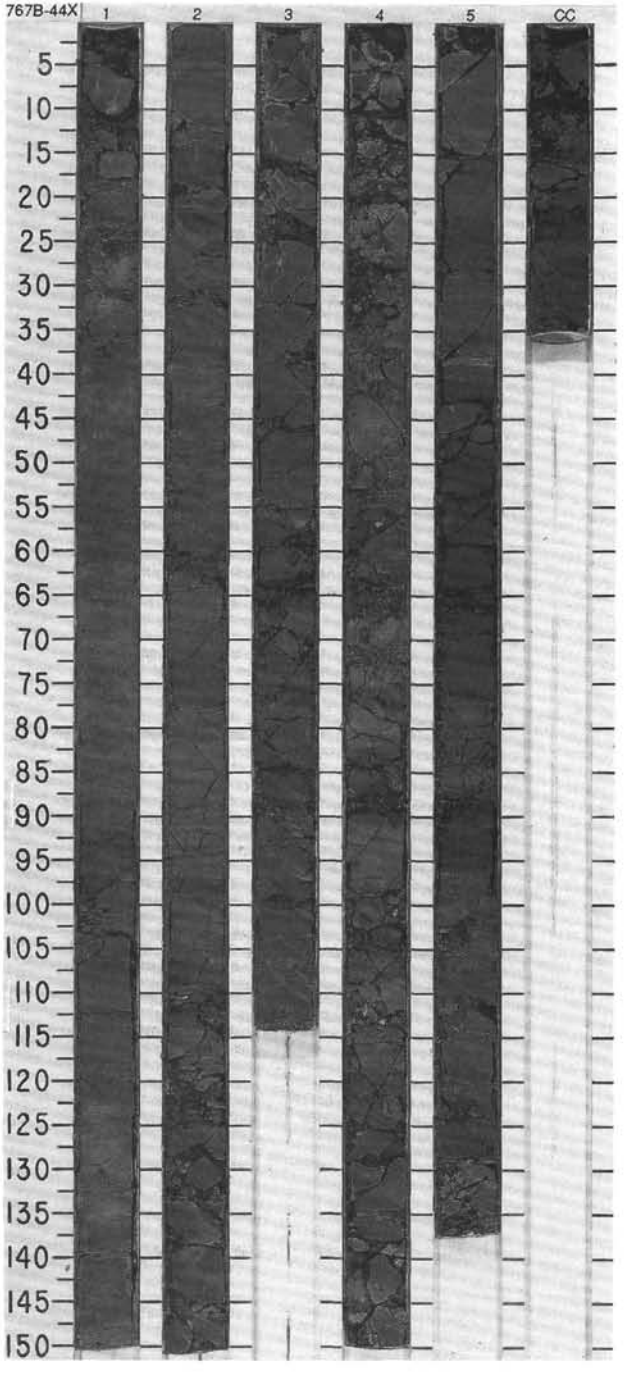
Minor lithologies:

a. A thick graded bed of calcareous clayey siltstone to silty claystone occurs in Sections 2 to 3. It is dark olive gray (5Y 3/2), and appears similar to the graded units described above, except for intermixed micrite.

b. Thin beds of light olive gray (5Y 6/2) clayey carbonate siltstone occur in Section 5, 30-39 and 96-100 cm. These beds,are graded, with sharp basal contacts; the silt component consists of pellets, foraminifers, radiolarians, and plagioclase. They are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 133 M	2, 67 M	3, 30 D	3, 89 M	5, 39 M
TEXTURE					
Sand	5	50	2	10	25
Silt	40	20	30	80	25
Clay	55	30	65	5	50
COMPOSITION:					
Accessory minerals	—	—	5	—	—
Biotite	—	1	10	10	—
Clay	55	20	40	5	20
Foraminifers	Tr	Tr	—	—	15
Glass	—	Tr	—	—	—
Hornblende	—	2	—	—	—
Micrite	—	—	—	—	Tr
Nannofossils	—	—	—	—	Tr
Opaques	—	20	—	5	—
Pellets	—	—	—	—	15
Plagioclase	10	15	10	15	10
Pyrite	5	—	—	—	—
Radiolarians	—	20	—	—	15
Rock fragment	30	20	10	60	—
Silicoflagellates	—	Tr	—	—	—



SITE 767 HOLE B CORE 45X CORED INTERVAL 5321.4-5331.0mbsl; 416.2-425.8mbsf

TIME-ROCK UNIT: UPPER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: • B; NANNOFOSSILS: • A/G *D. calcaris* NN10; RADIOLARIANS; DIATOMS; • B

PALEOMAGNETICS

PHYS. PROPERTIES: Ø=65 ρ=1.86 ● WC=56 γ=2.74; Ø=69 ρ=2.01 ● WC=43 γ=3.07; Ø=71 ρ=2.59 ● WC=7 γ=2.74

CHEMISTRY: • TOC=0.59%; $CaCO_3$=44.7% • TOC=0.36% • $CaCO_3$=7.7% • $CaCO_3$=75.8%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

CALCAREOUS CLAYSTONE to CALCAREOUS SILTY CLAYSTONE and CLAYSTONE

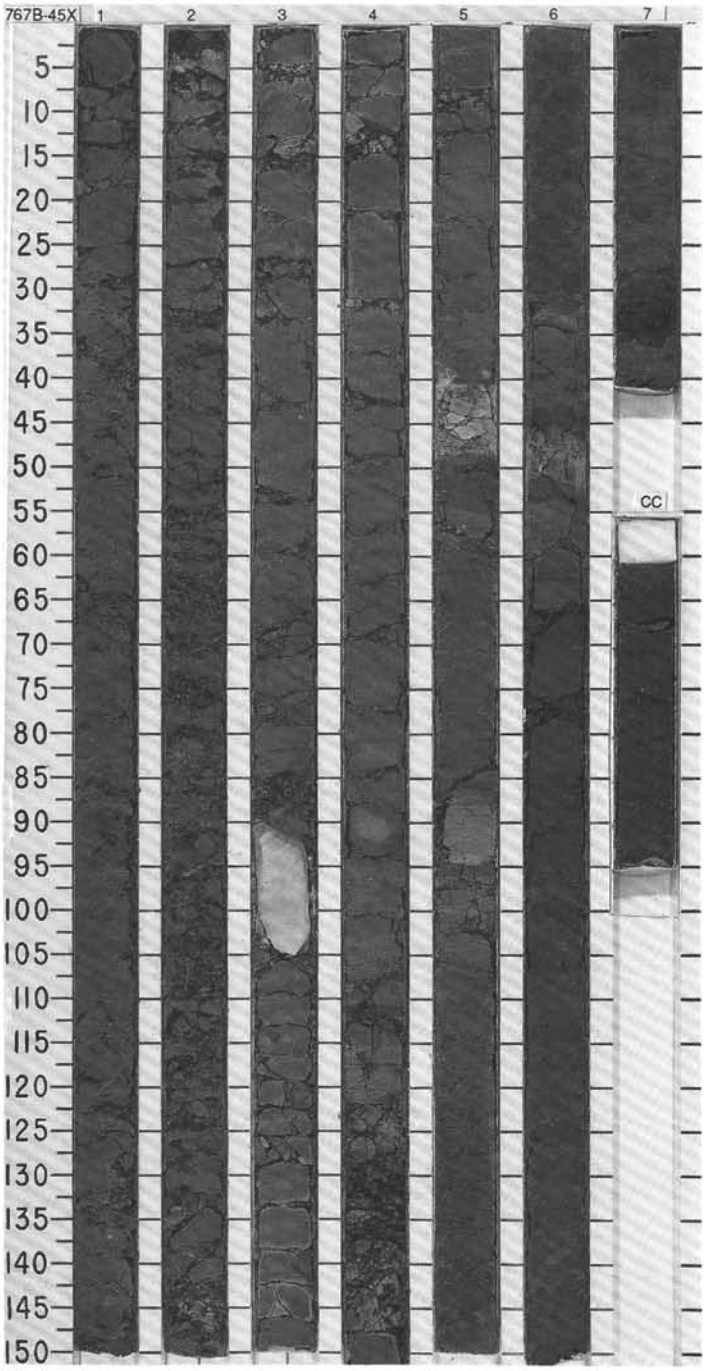
Major lithologies:

a. CALCAREOUS CLAYSTONE to CALCAREOUS SILTY CLAYSTONE occurs in several very thick beds which are very homogeneous in color and largely lack indications of bioturbations. They range from dark gray to very dark gray (5Y 4/1 to 3/1) to dark greenish gray (10Y 5/1). They have sharp basal contacts, normal grading, planar lamination near the base, and grade upward into bioturbated claystone. They consist of clay with micrite and bioclasts, and contain minor foraminifers, volcanic rock fragments, and plant debris. These units are interpreted as turbidite deposits.

b. CLAYSTONE forms medium to thick, massive, unbioturbated beds with sharp basal contacts which grade upward into thinner beds of bioturbated claystone. The basal part of the massive units is locally silty claystone, and commonly has parallel lamination. The thicker, massive beds are interpreted as turbidite deposits which grade upward into bioturbated hemipelagic claystone. These beds are gray to dark gray (5Y 5/1 to 4/1) and dark to very dark greenish gray (10Y 5/1 to 3/1).

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 100 M	T 3, 96 M	3, 102 M	4, 97 M	6, 49 M	6, 54 M
TEXTURE:						
Sand	—	—	—	—	—	60
Silt	5	95	100	—	10	35
Clay	95	5	—	—	90	3
COMPOSITION:						
Accessory minerals	—	—	1	—	—	—
Bioclast	—	—	—	15	—	—
Calcite	—	—	—	5	—	—
Chlorite	—	—	—	5	—	—
Clay	70	5	—	20	40	—
Epidote	—	—	—	Tr	—	—
Feldspar	—	Tr	—	20	—	—
Foraminifers	5	—	—	15	20	10
Hornblende	—	—	—	Tr	—	—
Mica	5	—	—	—	—	—
Micrite	10	—	—	0	10	—
Opaques	—	—	—	10	—	15
Organic matter	—	3	—	—	—	—
Oxide	—	—	5	—	—	—
Plagioclase	5	—	—	—	10	20
Radiolarians	—	—	—	—	15	10
Rock fragment	—	—	—	10	—	40
Sparite	—	90	90	—	—	—
Spicules	—	—	—	—	—	1



SITE 767 HOLE B CORE 46X CORED INTERVAL 5331.0-5340.6mbsl; 425.9-435.4mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE / UPPER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: • B; • C/G; NANNOFOSSILS: NN9 • B *D. hamatus*; *D. calcaris* NN10 • R/M; RADIOLARIANS; DIATOMS; PALEOMAGNETICS; PHYS. PROPERTIES: Φ=67 ρ=1.71 • WC=67 γ=2.87 • WC=37 Φ=33 γ=2.65 ρ=1.26; CHEMISTRY: $CaCO_3$=0.6% • $CaCO_3$=1.4% • TOC=1.02%; SECTION: 1, 2, 3, 4, 5, 6, 7, CC; METERS: 0.5, 1.0; GRAPHIC LITHOLOGY; DRILLING DISTURB.; SED. STRUCTURES; SAMPLES

LITHOLOGIC DESCRIPTION

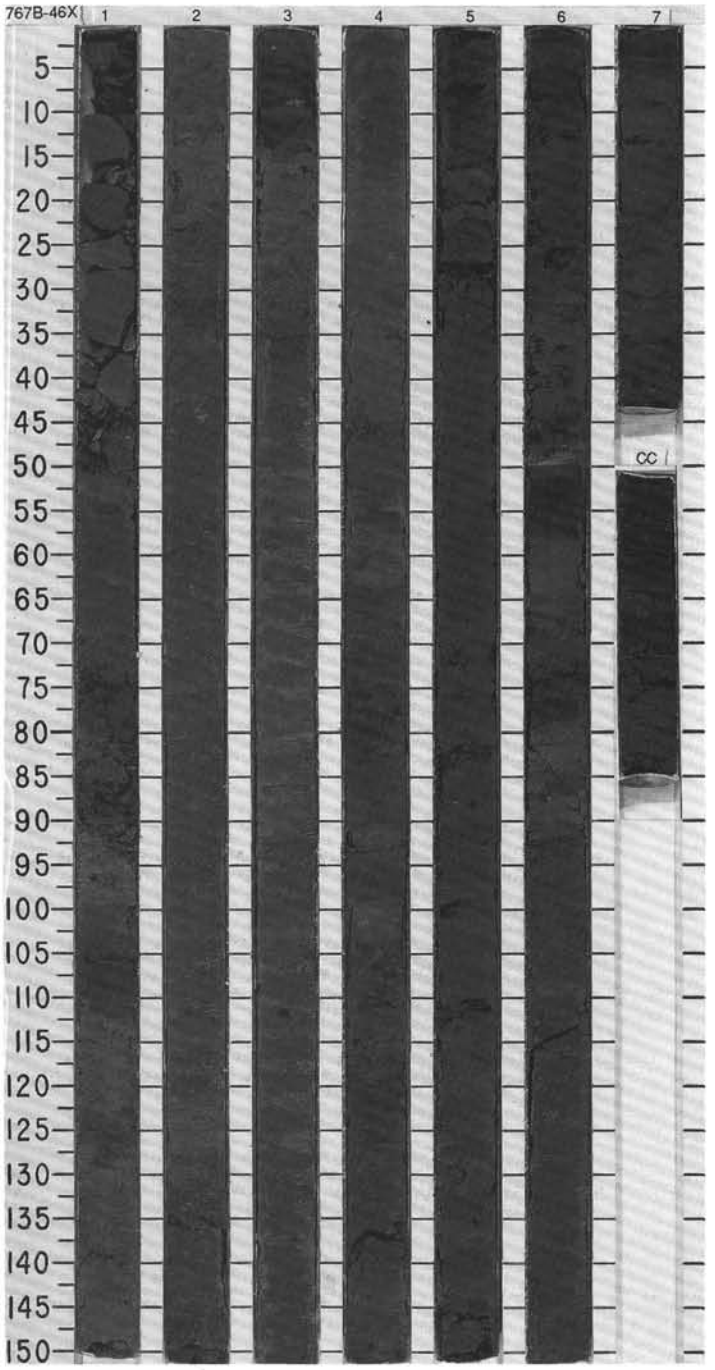
CLAYSTONE and thin, graded silty claystone

Major lithology: CLAYSTONE occurs in massive bioturbated units in this core; ichnofauna include *Chondrites*. It is made up of clay minerals, feldspar and lithic fragments with pyrite occurring in nodular concentrations throughout the core. It is mottled, varying from dark gray (5Y 4/1) through dark greenish gray (10Y 4/1, 5G 4/1) to dark olive gray (5Y 3/2).

Minor lithology: Silty claystones occur in thin beds which grade up into claystone in Section 6. They are variable in color from pale olive (5Y 6/3) to dark olive gray (5Y 3/2) and dusky green (2.5G 5/2). These graded, laminated thin beds are considered to be turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	2, 26 M	2, 60 D	4, 62 D
TEXTURE:			
Silt	—	20	10
Clay	—	80	90
COMPOSITION:			
Accessory minerals	—	1	—
Bioclast	—	5	—
Chlorite	2	—	—
Clay	20	50	85
Feldspar	5	—	10
Mica	—	10	—
Micrite	—	15	—
Opaques	—	—	5
Oxide	—	1	—
Pyrite	50	—	—
Rock fragment	20	15	—



SITE 767 HOLE B CORE 47X CORED INTERVAL 5340.6-5350.3 mbsl; 435.4-445.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	● R/M	● C/M				Φ=45 ● WC=30 ρ=2.02 γ=2.76	● TOC=2.7%	CC				P	
							● TOC=0.76% ●	3					*
						Φ=36 ● WC=30 ρ=1.44 γ=2.75	● $CaCO_3$=2.2%	2					OG IW
		D. hamatus						1	1.0				*
		NN9							0.5				*

LITHOLOGIC DESCRIPTION

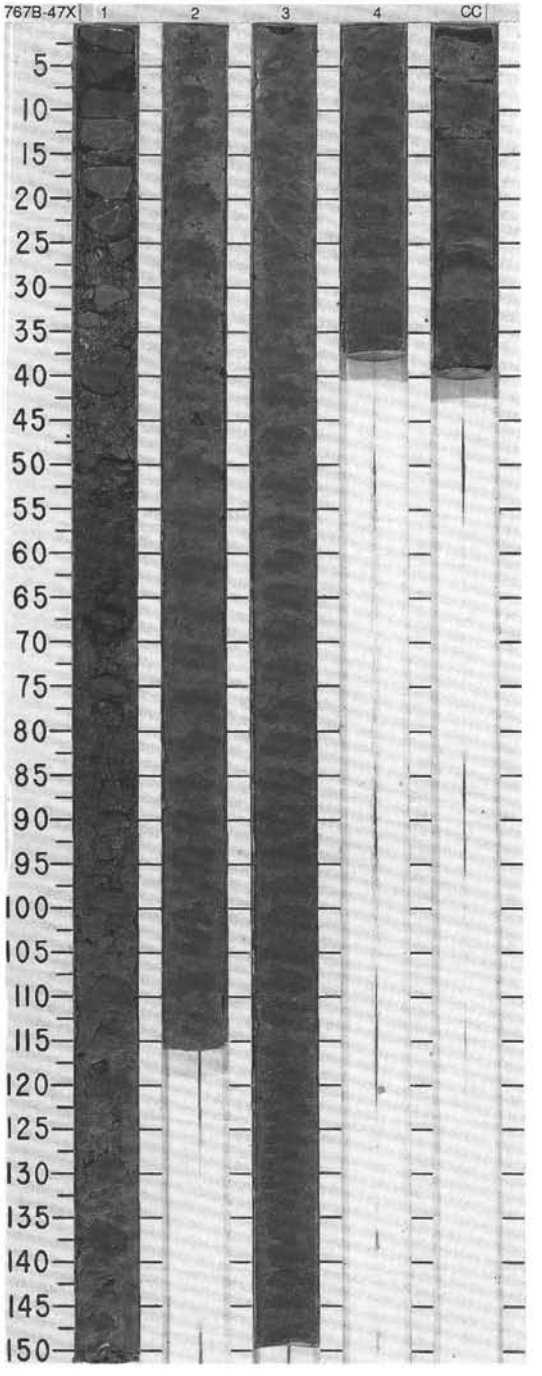
CLAYSTONE and silty claystone

Major lithology: CLAYSTONE occurs in massive homogeneous units in this core. It consists of clay minerals, a high proportion of pyrite (up to 20%) and some feldspar. It is dark gray (5Y 4/1), dark olive gray (5Y 3/2), very dark greenish gray (10Y 3/1) and mottled grayish green (10G 4/2).

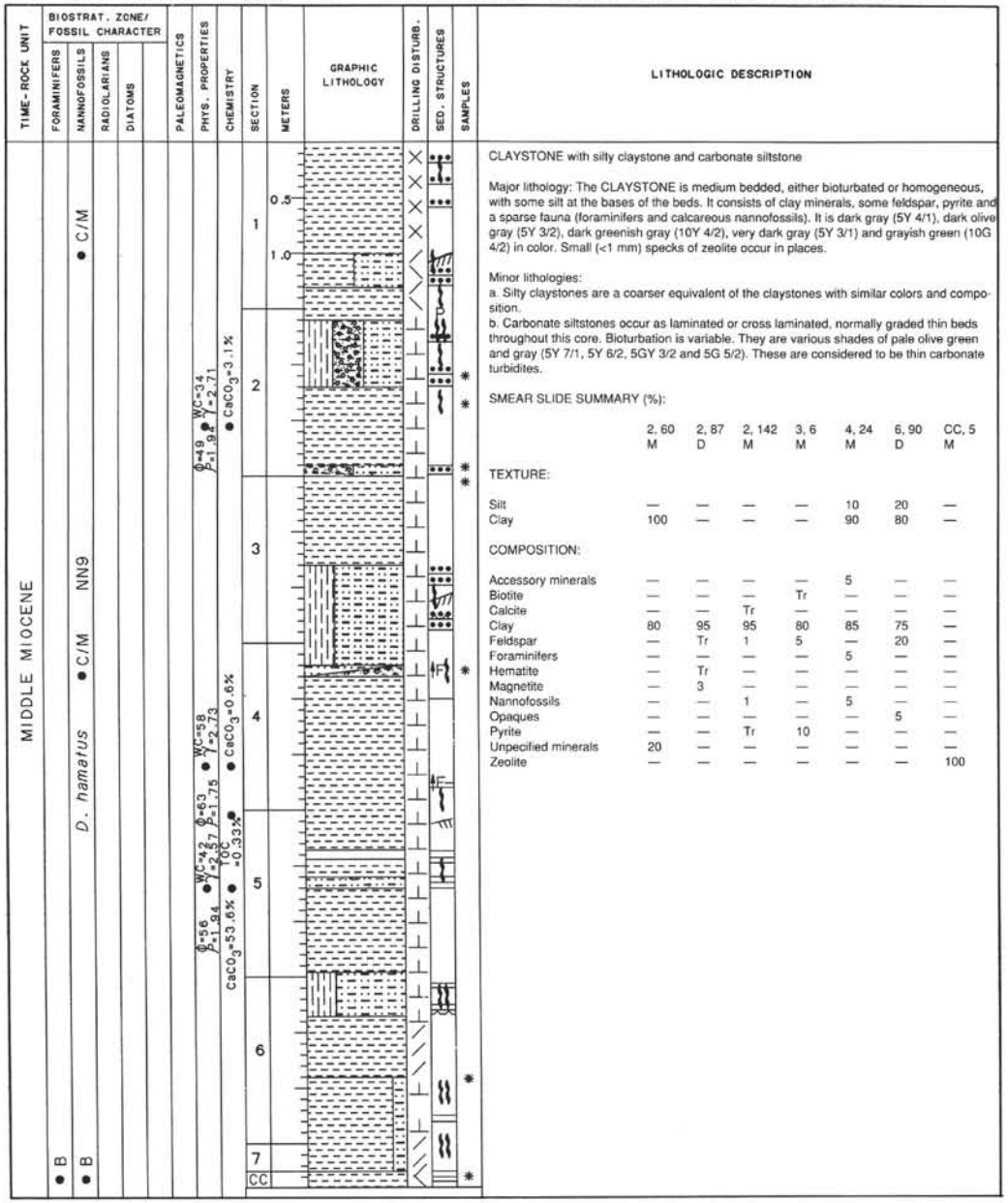
Minor lithology: Silty claystones occur in thin beds in Section 1. They are pale olive (5Y 6/3) and grayish green (10G 4/2) in color.

SMEAR SLIDE SUMMARY (%):

	1, 51 M	1, 68 M	3, 75 D
TEXTURE:			
Silt	—	—	15
Clay	—	—	85
COMPOSITION:			
Biotite	Tr	—	—
Clay	75	90	80
Feldspar	2	2	5
Hematite	—	Tr	—
Nannofossils	—	—	Tr
Opaques	—	—	5
Pyrite	20	5	—
Rock fragment	0	—	—
Unspecified minerals	—	—	5



SITE 767 HOLE B CORE 48X CORED INTERVAL 5350.3-5360.3 mbsl; 445.1-454.8 mbsf



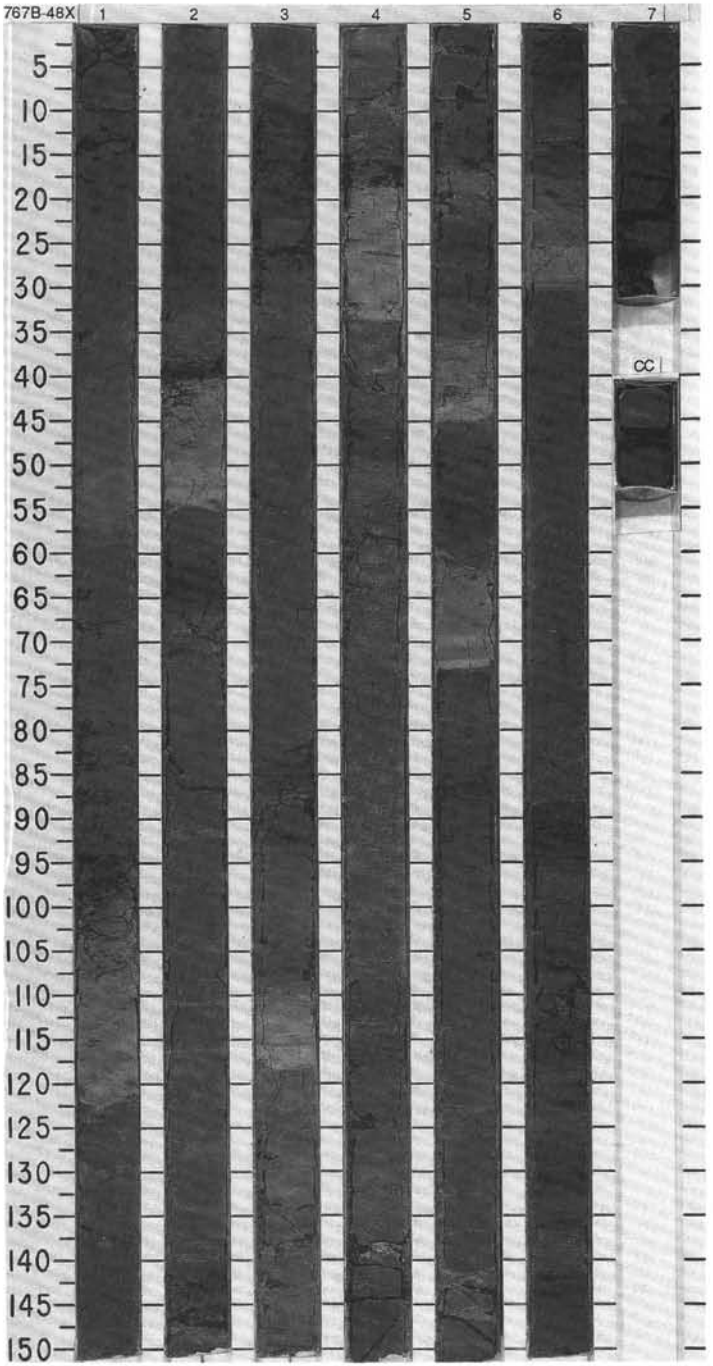
CLAYSTONE with silty claystone and carbonate siltstone

Major lithology: The CLAYSTONE is medium bedded, either bioturbated or homogeneous, with some silt at the bases of the beds. It consists of clay minerals, some feldspar, pyrite and a sparse fauna (foraminifers and calcareous nannofossils). It is dark gray (5Y 4/1), dark olive gray (5Y 3/2), dark greenish gray (10Y 4/2), very dark gray (5Y 3/1) and grayish green (10G 4/2) in color. Small (<1 mm) specks of zeolite occur in places.

Minor lithologies:
a. Silty claystones are a coarser equivalent of the claystones with similar colors and composition.
b. Carbonate siltstones occur as laminated or cross laminated, normally graded thin beds throughout this core. Bioturbation is variable. They are various shades of pale olive green and gray (5Y 7/1, 5Y 6/2, 5GY 3/2 and 5G 5/2). These are considered to be thin carbonate turbidites.

SMEAR SLIDE SUMMARY (%):

	2, 60 M	2, 87 D	2, 142 M	3, 6 M	4, 24 M	6, 90 D	CC, 5 M
TEXTURE:							
Silt	—	—	—	—	10	20	—
Clay	100	—	—	—	90	80	—
COMPOSITION:							
Accessory minerals	—	—	—	—	5	—	—
Biotite	—	—	—	Tr	—	—	—
Calcite	—	—	Tr	—	—	—	—
Clay	80	95	95	80	85	75	—
Feldspar	—	Tr	1	5	—	20	—
Foraminifers	—	—	—	—	5	—	—
Hematite	—	Tr	—	—	—	—	—
Magnetite	—	3	—	—	—	—	—
Nannofossils	—	—	1	—	5	—	—
Opaques	—	—	—	—	—	5	—
Pyrite	—	—	Tr	10	—	—	—
Unpecified minerals	20	—	—	—	—	—	—
Zeolite	—	—	—	—	—	—	100



SITE 767 HOLE B CORE 49X CORED INTERVAL 5360.0-5369.3 mbsl; 454.8-464.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	B F/G	*D. hamatus* NN9				WC=30 Φ=47 ρ=2.86 ρ=2.08 WC=62 Φ=64 ρ=2.66 ρ=1.74 $CaCO_3$=57.6% $CaCO_3$ =2.22%	TOC=0.81%	1 2 CC	0.5 1.0				*

LITHOLOGIC DESCRIPTION

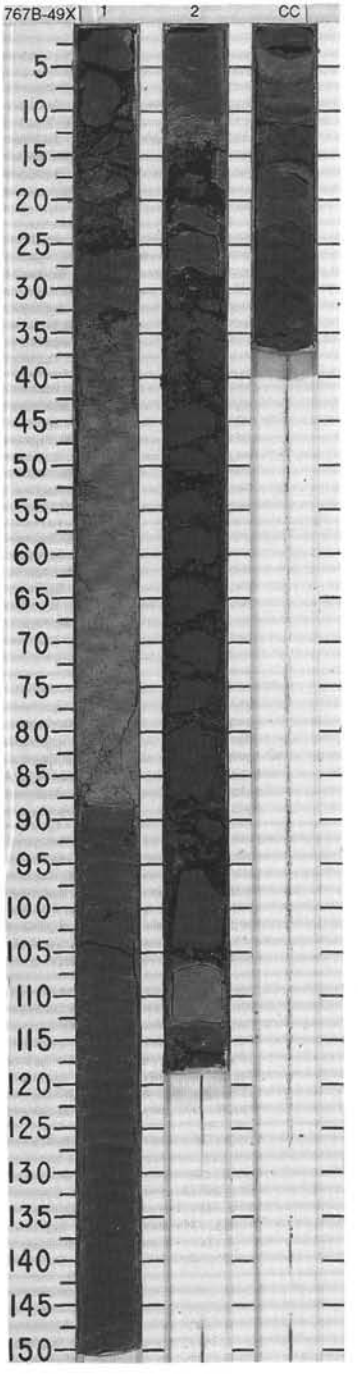
CLAYSTONE with carbonate claystone and carbonate

Major lithology: The CLAYSTONE is medium bedded, either slightly bioturbated or homogeneous. It consists of clay minerals, with rare feldspar and nannofossils. It is dark gray (5Y 4/1), dark greenish gray (10Y 5/2), very dark gray (5Y 3/1) and dark greenish gray (5G 4/1) in color.

Minor lithologies:
a. Carbonate sandstone occurs in a single laminated bed which fines up into an overlying carbonate claystone bed. It is light olive gray in color (5Y 6/2) and moderately bioturbated.
b. Carbonate claystone is thin to medium bedded, homogeneous, bioturbated and pale olive in color (5Y 6/3). The carbonate lithologies are likely to be turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	2, 54 M
TEXTURE:	
Silt	10
Clay	90
COMPOSITION:	
Accessory minerals	5
Clay	85
Feldspar	5
Nannofossils	5



SITE 767 HOLE B CORE 50X CORED INTERVAL 5369.3-5329.0 mbsl; 464.1-474.8 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: ● A/S; ● C/G; NANNOFOSSILS: *D. namatus* NN9; RADIOLARIANS; DIATOMS; PALEOMAGNETICS

PHYS. PROPERTIES: WC=39 Φ=52 γ=2.68 P=1.92; WC=39 Φ=46 γ=2.75 P=1.98; WC=49 γ=2.77 P=1.82 Φ=59

CHEMISTRY: $CaCO_3$=60.1% ● TOC=0.42%; $CaCO_3$=7.2% ● ; $CaCO_3$=5.9% ● TOC=0.10%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: W, P, P

SAMPLES: OG, IW

LITHOLOGIC DESCRIPTION

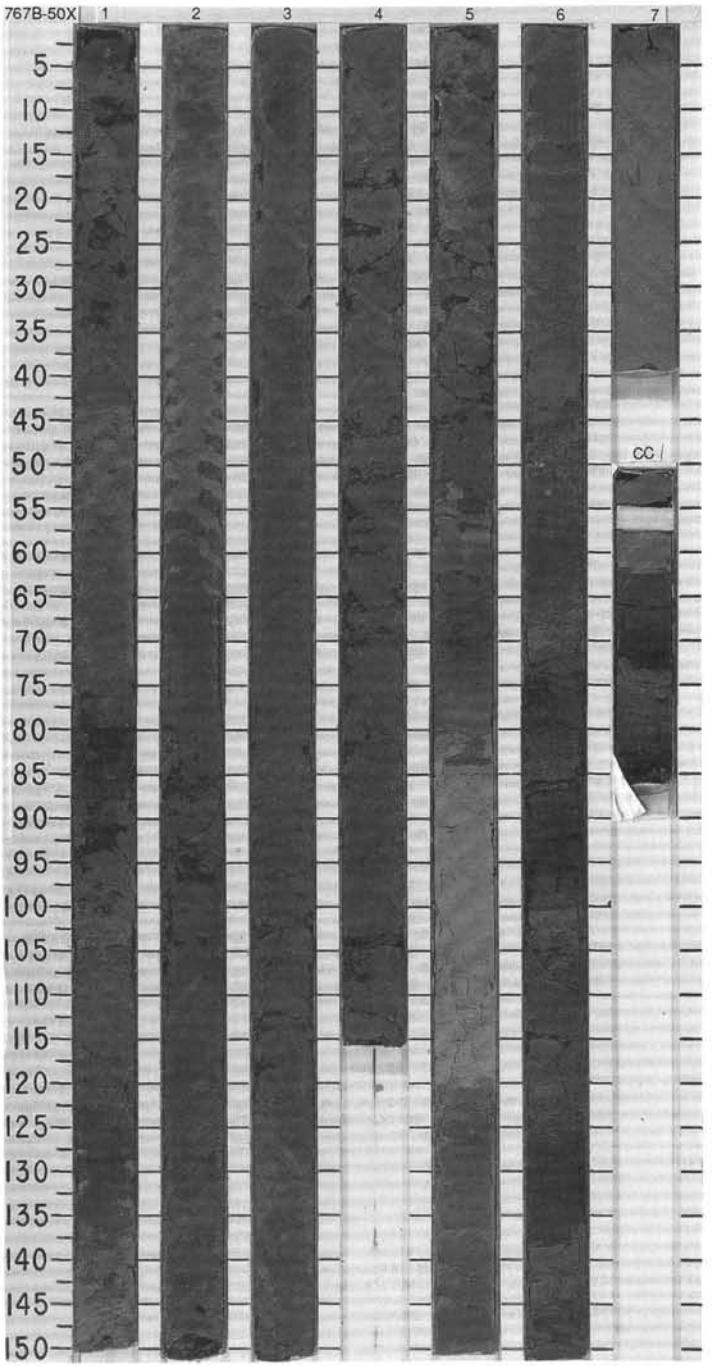
CLAYSTONE with silty claystone and chalk silty claystone and chalk with nannofossils

Major lithology: CLAYSTONE occurs in medium bedded or massive units in this core. It is only bioturbated in places. It is made up of clay minerals, some feldspar, pyrite and a sparse fauna (foraminifers and calcareous nannofossils). It is dark gray (5Y 4/1), dark greenish gray (5G 4/1), and very dark gray (5Y 3/1) in color.

Minor lithologies:
a. Silty claystone occurs in normally graded thin beds in Section 6.The silt material is principally feldspar, pyrite and chlorite. It is dark gray (5Y 4/1) and very dark olive gray (5Y 3/2) in color.
b. Chalk with nannofossils is found in the lower part of this core in thin, graded, laminated and cross laminated beds with sharp or scoured bases. These beds are light olive gray (10Y 6/2) and olive gray (5Y 5/2) in color. These chalks are considered to be redeposited material (turbidites).

SMEAR SLIDE SUMMARY (%):

	3, 30 D	5, 96 M	6, 29 D	6, 130 D	CC, 15 M
TEXTURE:					
Silt	40	10	10	25	20
Clay	60	90	90	75	80
COMPOSITION:					
Chlorite	—	—	—	5	—
Clay	60	—	80	75	85
Feldspar	10	5	—	5	5
Foraminifers	5	—	—	—	Tr
Micrite	—	70	5	—	—
Nannofossils	10	25	5	—	—
Opaques	5	—	—	5	—
Plant	—	—	—	—	5
Silt	—	—	—	—	5
Unpecified minerals	5	—	5	10	—



SITE 767 HOLE B CORE 51X CORED INTERVAL 5379-5388.8 mbsl; 476.8-484.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	● B												
	● F/G	● R/G *D. hamatus* NN9				Φ=46 ρ=2.02 ● WC=30 ρ=2.71 Φ=43 ρ=2.07 ● WC=27 ρ=2.69	● $CaCO_3$=3.3% ● TOC=0.67% ● $CaCO_3$=3.2%	1 2 3 4 CC	0.5 1.0				* * *

LITHOLOGIC DESCRIPTION

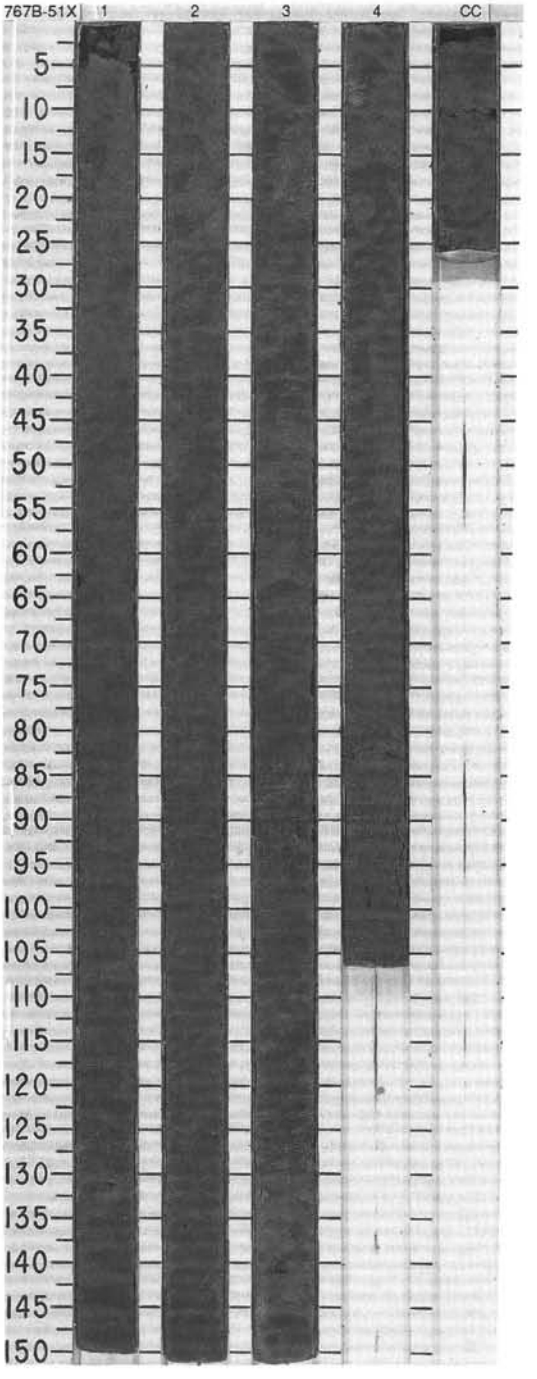
CLAYSTONE with quartz silty claystone

Major lithology: The CLAYSTONE is homogeneous in this core. It is mainly made up of clay minerals, but also contains pyrite, plant material, rare spores and dinoflagellates. It is dark gray (5Y 4/1) to olive gray (5Y 4/2) in color. In the lower part of Section 4 (80-105 cm) it is slightly silty. Minor lithology: quartz silty claystone is found in finely laminated, thin beds in the core catcher. It is dark gray in color (5Y 4/1).

This core is somewhat disturbed by drilling, destroying any bedding detail in the claystones.

SMEAR SLIDE SUMMARY (%):

	1, 146 D	4, 26 D	CC, 17 M
TEXTURE:			
Sand	—	—	90
Silt	15	15	10
Clay	85	85	—
COMPOSITION:			
Accessory minerals	—	—	10
Clay	75	60	—
Dinoflagellate	Tr	Tr	—
Plant	20	15	—
Pyrite	5	5	—
Quartz	—	—	90
Spores	—	Tr	—
Unpecified minerals	—	20	—



SITE 767 HOLE B CORE 52X CORED INTERVAL 5388.8-5398.2mbsl; 484.6-693.0mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: • B; • A/S; • C/S; NANNOFOSSILS: D. hamatus; NN9; • F/G; RADIOLARIANS; DIATOMS; PALEOMAGNETICS; PHYS. PROPERTIES: Φ=32 ρ=1.43 • WC=30 ρ=2.75 • $CaCO_3$=4.4%; Φ=81 • WC=47 ρ=2.60 • TOC 0.41% • $CaCO_3$=30.0%; CHEMISTRY; SECTION; METERS; GRAPHIC LITHOLOGY; DRILLING DISTURB.; SED. STRUCTURES; SAMPLES

LITHOLOGIC DESCRIPTION

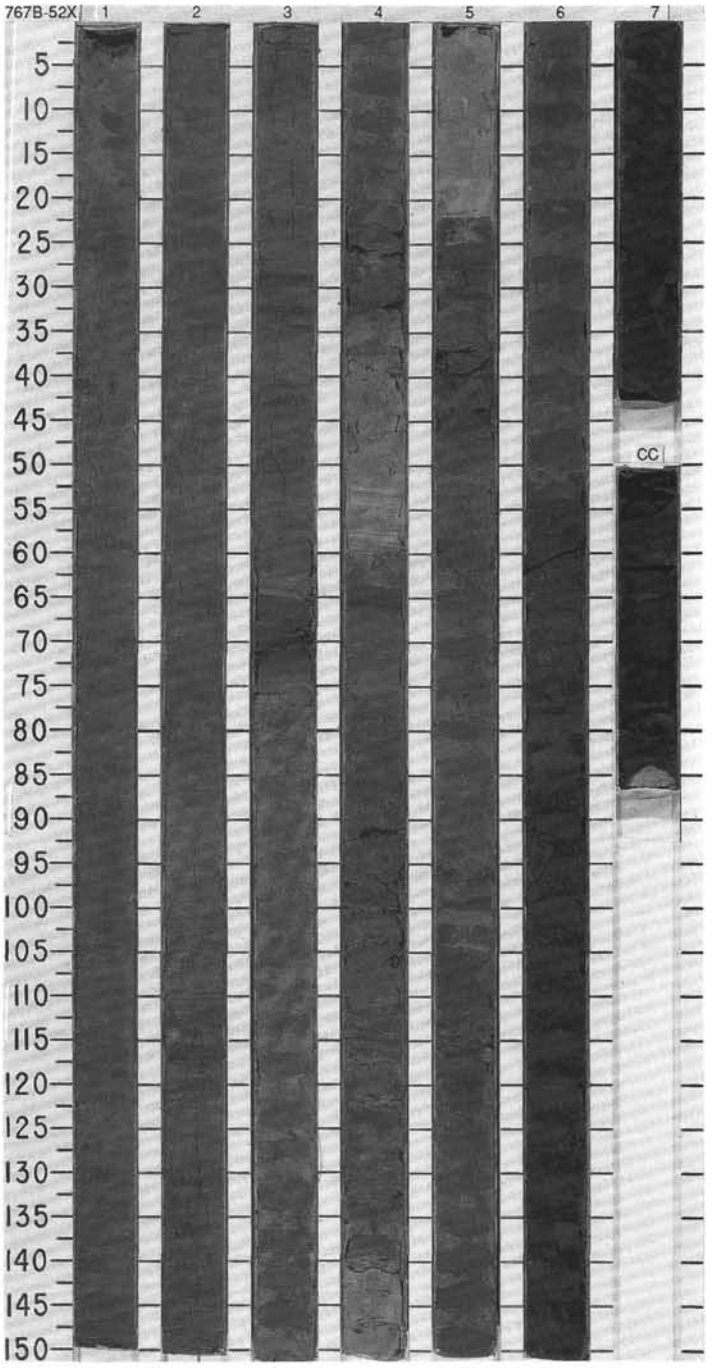
CLAYSTONE, QUARTZ SILTY SANDSTONE and CLAYEY SILTSTONE with carbonate sandstone, siltstone and claystone

Major lithologies:
a. The CLAYSTONE is homogeneous and either massive or bioturbated. It is mainly made up of clay minerals, but also contains pyrite, plant material, rare dinoflagellates and nannofossils. The color varies from very dark gray (5Y 3/1) to dark gray (5Y 4/1), dark olive gray (5Y 3/2), olive gray (5Y 4/2) and gray 5Y 5/1). b. QUARTZ SANDY SILTSTONE and QUARTZ CLAYEY SILTSTONE occur as poorly consolidated, thickly planar laminated (or rarely cross laminated) fining-up medium beds. The laminae are sharply picked out by variations in the concentrations of black plant fragments. Quartz is the dominant mineral species present, occurring as rounded, well sorted grains in the laminae. The sand grade material contains a rich heavy mineral assemblage. These quartz-rich sediments are found in the upper part of this core, down to Section 3, 60 cm.

Minor lithologies: Carbonate sandstones, siltstones and claystones occur in 20-40 cm fining-up sequences in Sections 4 and 5 and interbedded with dark claystones in Section 3. They are light olive gray (5Y 6/2, 6/3) to gray (5Y 5/1) in color, becoming darker as the material becomes finer. A few foraminifers and calcareous nannofossils are found in this lithology. The quartz-rich clastics are in planar laminated fining-up sequences which indicate deposition as turbidites. The textural and mineralogical maturity indicates a continental source area.

SMEAR SLIDE SUMMARY (%):

	2, 83 D	2, 130 M	4, 56 D	6, 21 D
TEXTURE:				
Sand	80	80	—	—
Silt	20	20	80	10
Clay	—	—	20	90
COMPOSITION:				
Accessory minerals	Tr	—	10	—
Apatite	—	Tr	—	—
Clay	—	—	—	90
Dinoflagellate	—	—	—	Tr
Epidote	—	Tr	—	—
Feldspar	—	2	—	—
Foraminifers	Tr	Tr	5	—
Glauconite	—	2	—	—
Hornblende	—	Tr	—	—
Monazite	—	Tr	—	—
Nannofossils	—	Tr	5	Tr
Opaques	—	5	—	—
Plant	10	5	—	5
Pyrite	5	—	5	5
Quartz	85	66	—	—
Radiolarians	Tr	—	—	—
Rock fragment	—	15	—	—
Rutile	—	Tr	—	—
Silt	—	—	70	—
Titanite	—	Tr	—	—
Tourmaline	—	Tr	—	—
Zircon	—	Tr	—	—



SITE 767 HOLE B CORE 53X CORED INTERVAL 5298.2-5407.7 mbsl; 493.0-502.5 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: B; NANNOFOSSILS: B; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ϕ=44, ρ=2.07 ● WC=28, ρ=2.71

CHEMISTRY: TOC=0.75% ● $CaCO_3$=3.7%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.: D

SED. STRUCTURES

SAMPLES: OG, IW

LITHOLOGIC DESCRIPTION

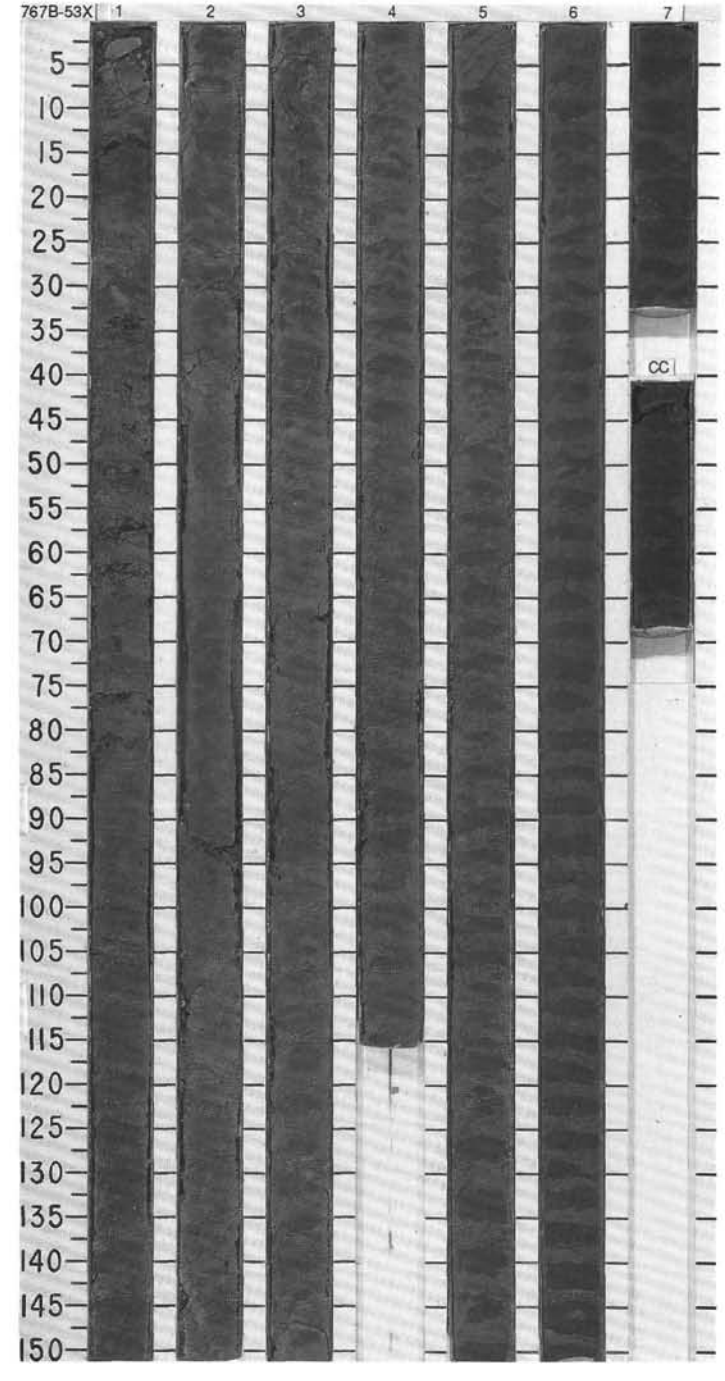
CLAYSTONE with quartz siltstone

Major lithology: CLAYSTONE makes up most of the sequence in this core. It is apparently homogeneous with only rare signs of bioturbation and occurrences of pyrite, although drilling disturbance is quite severe. It is mainly made up of clay minerals, but also contains pyrite, plant material, rare spores and nannofossils. The color is dark gray (5Y 4/1), dark greenish gray (5G 4/1) and gray 5Y 5/1).

Minor lithology: Quartz siltstones occur in Section 1, 34-58 cm. They are poorly consolidated, thickly laminated alternations of clayey and sandy silt, composed of rounded quartz grains, pyrite, feldspar and rare plant material. The laminations are very dark gray (5Y 3/1) and olive gray (5Y 4/2). A turbiditic origin is suggested for these silts: some of the claystones may be of the same origin.

SMEAR SLIDE SUMMARY (%):

	1, 50 M	1, 93 M	3, 59 D
TEXTURE:			
Sand	80	—	—
Silt	20	10	10
Clay	—	90	90
COMPOSITION:			
Accessory minerals	—	—	5
Clay	—	80	70
Feldspar	5	—	—
Nannofossils	—	Tr	Tr
Plant	Tr	15	20
Pyrite	5	5	5
Quartz	90	—	—



SITE 767 HOLE B CORE 54X CORED INTERVAL 5407.7-5417.4mbsl; 502.5-512.2mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: • B; • B; NANNOFOSSILS: D. *hamatus* NN9 • C/G; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES

CHEMISTRY: • TOC=2.61% • TOC=0.65%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

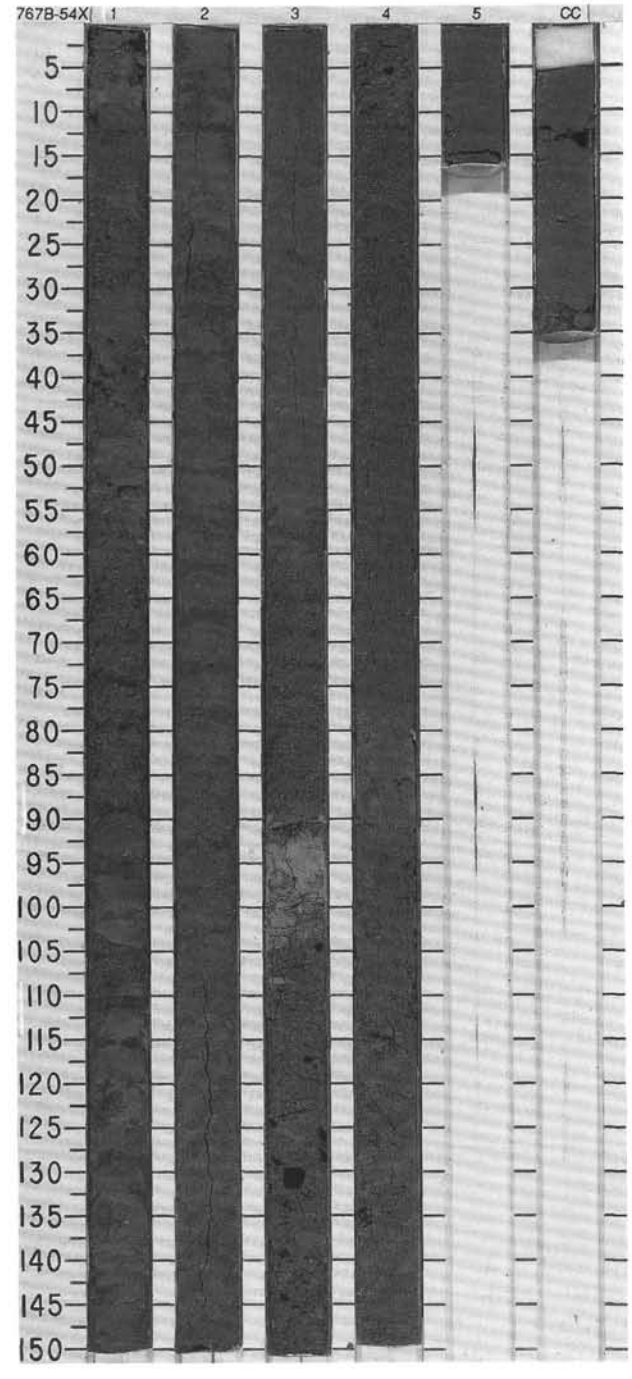
SILTY QUARTZ SANDSTONE

Major lithology: SILTY QUARTZ SANDSTONE occurs in thick to very thick beds which are gray (5Y 5/1) to dark greenish gray (10Y 5/1). The beds have sharp basal contacts, and most are homogeneous, but some are normally graded, and locally grade into sandy siltstone. The sandstone is composed of subangular quartz with some feldspar, rock fragments, mudclasts, and carbonaceous plant debris. Plant debris forms a major component of the sandy siltstone intervals.

Minor lithologies:
a. Conglomerate forms a thick bed in Sections 3 and 4. It is dark grayish green (10GY 5/1), and contains well-rounded pebbles of grayish green (10GY 5/1) claystone and black coal in a matrix of quartz silty sandstone to sandy siltstone. The claystone clasts are similar in color and induration to claystones present in underlying cores, and may therefore be rip-up clasts.
b. A single layer of clayey carbonate silt grading to clayey micrite is present in Section 3 above a sharp basal contact. It is olive (5Y 5/3), and is composed of clay, micrite, and pellets. This beds are interpreted as a turbidite deposit.
c. A single thin layer of calcareous claystone occurs in Section 1, 46-51 cm. It is dark greenish gray, and contains foraminifers, nannofossils, and radiolarians. The bed has sharp upper and lower contacts, and may be a turbidite deposit.

SMEAR SLIDE SUMMARY (%):

	1, 14 D	1, 48 M	1, 136 D	3, 50 D	3, 98 D	4, 60 D
TEXTURE:						
Sand	60	—	60	20	30	65
Silt	40	10	40	75	40	20
Clay	—	90	—	5	30	15
COMPOSITION:						
Accessory minerals	2	3	—	5	—	10
Bioclast	—	—	—	—	1	—
Clay	—	60	—	—	40	10
Feldspar	20	—	15	30	1	—
Foraminifers	—	10	—	—	1	—
Mica	5	5	5	Tr	1	5
Micrite	—	—	—	—	20	—
Nannofossils	—	15	—	—	—	—
Pellets	—	—	—	—	35	—
Plant	20	—	10	10	Tr	20
Quartz	40	—	40	40	1	35
Radiolarians	—	5	—	—	—	—
Rock fragment	10	—	30	15	—	20



SITE 767 HOLE B CORE 55X CORED INTERVAL 5417.4-5426.3 mbsl; 512.2-521.1 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: A/S; B; NANNOFOSSILS: C/G; *D. hamatus* NN9; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES

CHEMISTRY: $CaCO_3$ = 59.7% ● ● TOC=0.52%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

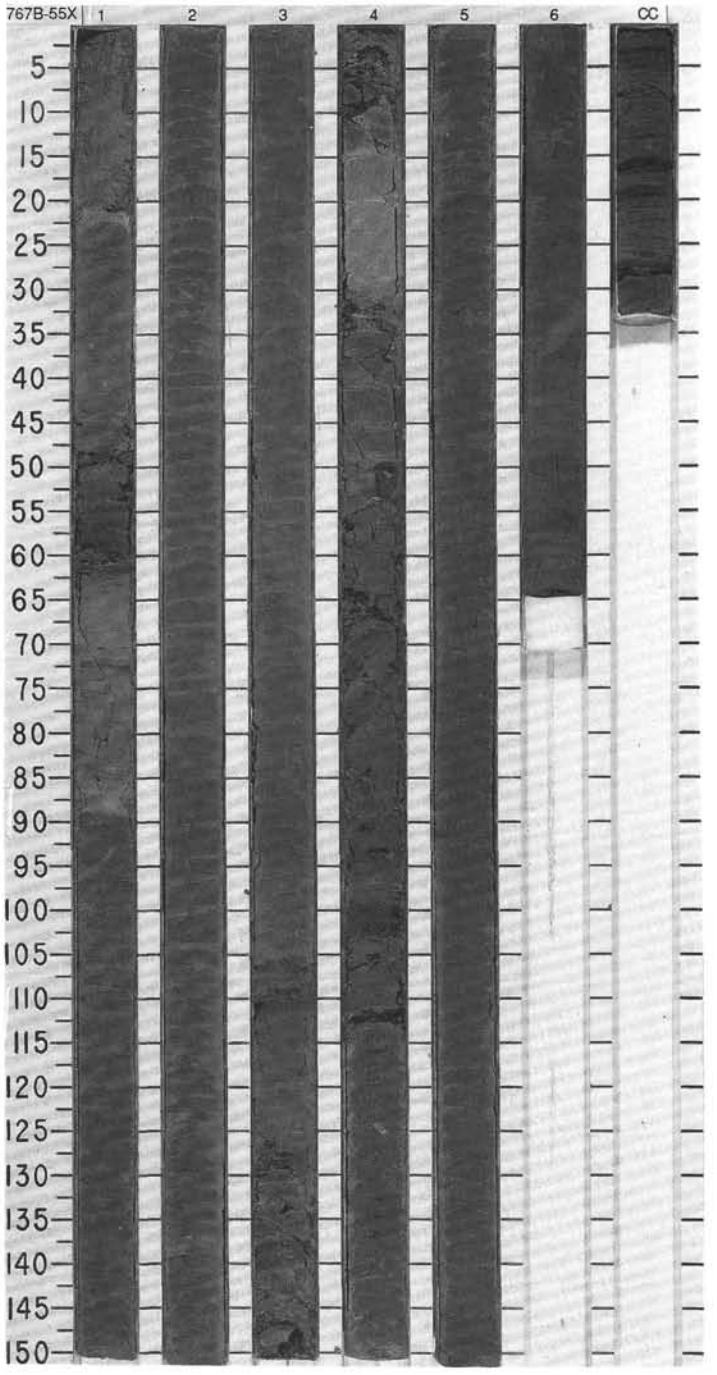
CLAYSTONE and QUARTZ SILTY SANDSTONE

Major lithologies:
a. CLAYSTONE is present primarily as thick, structureless beds with sharp basal contacts; they are dark gray (5Y 4/1) to dark olive gray (5Y 3/2). At the base of Section 5, massive claystone grades downward into silty sandstone, forming the upper part of a very thick fining-upward sequence. These massive claystone beds are interpreted as turbidite deposits. They consist of clay minerals with very minor quartz, feldspar, and rock fragments. Locally separating these beds are thin beds of dusky yellow green (10GY 3/2), highly bioturbated claystone, which probably are hemipelagic deposits.
b. QUARTZ SILTY SANDSTONE is dark gray (5Y 4/1), and occurs at the base of the core as the lower part of a very thick fining-upward sequence, grading upward into claystone. The silty sandstone has planar lamination, and is composed of quartz, feldspar, rock fragments, and carbonized plant fragments.

Minor lithology: Carbonate siltstone to clayey micrite occurs as thin graded beds with sharp basal contacts in Section 1, 60-72 and 73-89 cm, and Section 4, 29-34 cm. The beds are light olive gray (5Y 3/2); the basal silty portion of the beds has planar lamination. They consist of clay, micrite, bioclasts, and minor quartz, feldspar, and rock fragments. These beds are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 82 M	2, 100 D	3, 140 D	CC, 5 D
TEXTURE:				
Sand	5	1	—	50
Silt	40	5	5	50
Clay	55	94	95	—
COMPOSITION:				
Accessory minerals	—	—	5	2
Bioclast	10	1	—	—
Clay	30	80	80	—
Feldspar	5	1	10	20
Foraminifers	1	—	—	—
Mica	5	1	1	—
Micrite	20	—	—	—
Plant	5	5	—	15
Quartz	5	3	—	40
Radiolarians	—	—	—	2
Rock fragment	10	5	—	20
Silicoflagellates	5	—	—	—



SITE 767 HOLE B CORE 56X CORED INTERVAL 5426.2-5436.0 mbsl; 521.1-530.8 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: • B • R/G; NANNOFOSSILS: *D. hamatus* NN9; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES

CHEMISTRY: • TOC=0.85%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: *, *, *, *, OG, IW

LITHOLOGIC DESCRIPTION

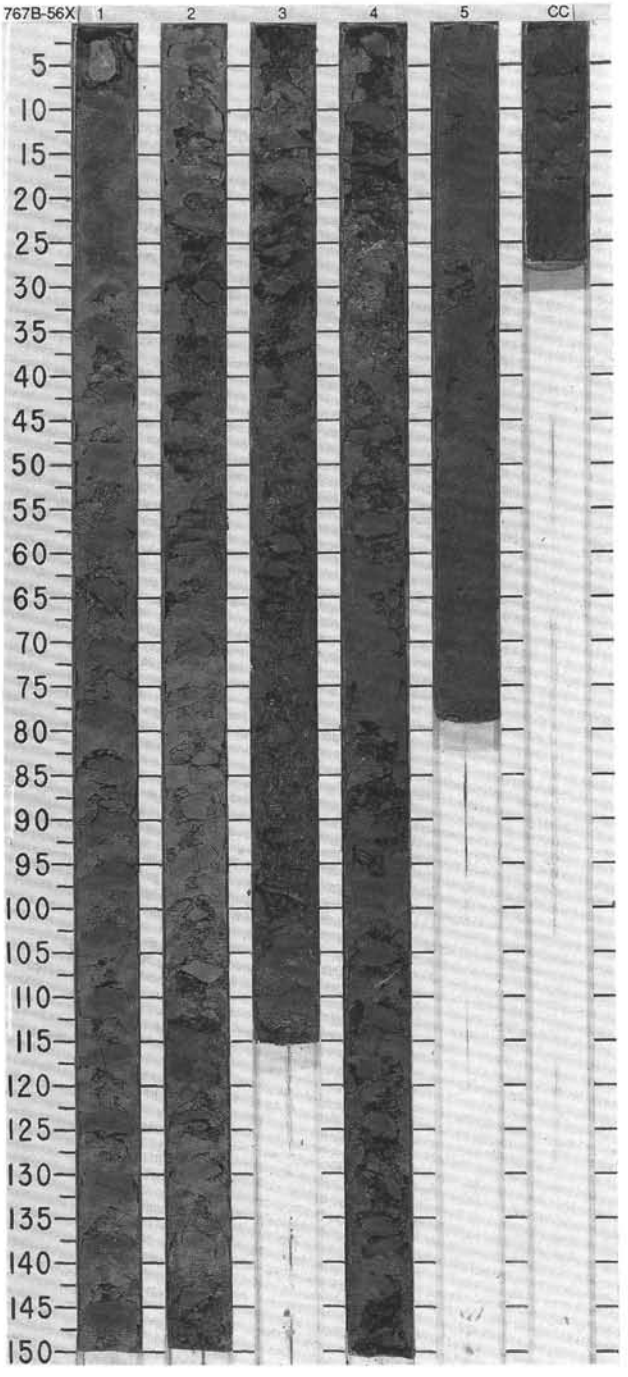
CLAYSTONE

Major lithology: CLAYSTONE makes up essentially all of this core. It occurs mainly in very thick, structureless beds with local planar to wavy lamination. One such bed has a very thin zone of planar-laminated clayey silt at the base, containing abundant quartz and minor feldspar, rock fragments, mica, radiolarians, and foraminifers. The claystone consists of clay with minor feldspar and mica, and locally contains siliceous spicules and abundant carbonized plant fragments. These beds are dark greenish gray (10Y 4/1), and locally show minor bioturbation; they are interpreted as turbidite deposits. Interbedded with them are thinner beds of dusky yellowish green (10GY 3/2), highly bioturbated claystone, which are probably hemipelagic deposits.

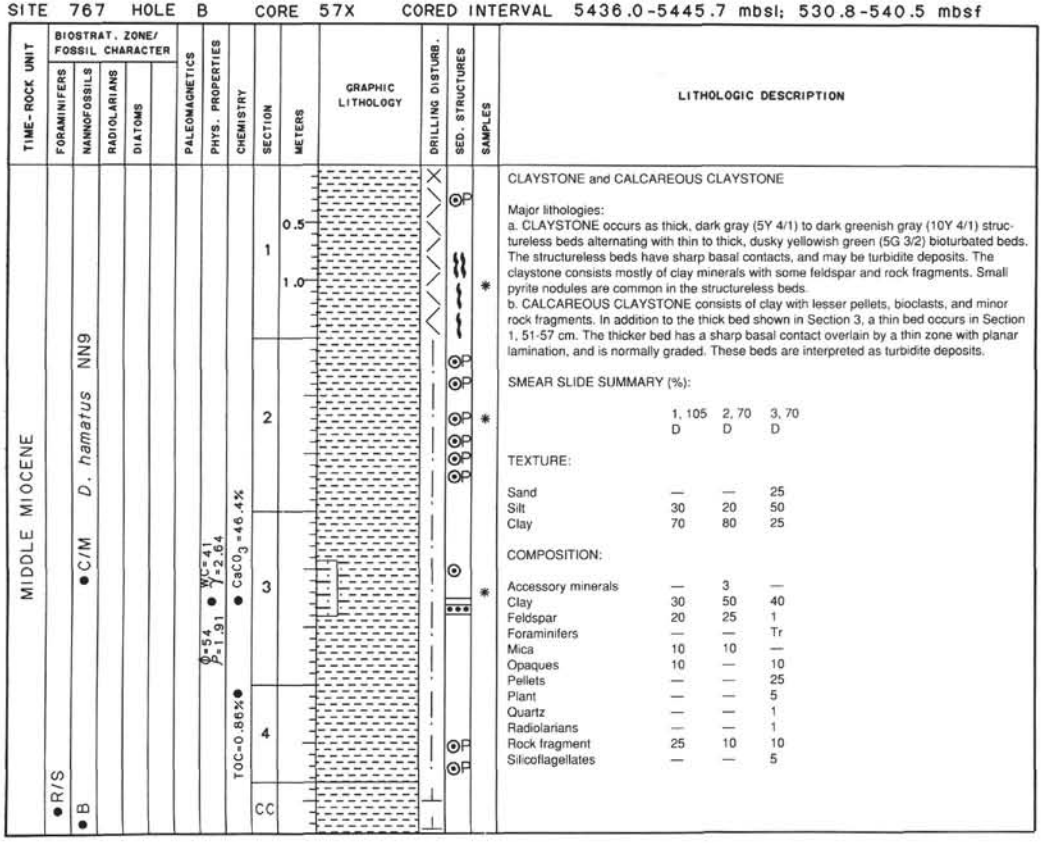
Minor lithology: In the drilling breccia at the top of the core there are fragments of carbonate siltstone which are dark greenish gray (10Y 5/4).

SMEAR SLIDE SUMMARY (%):

	2, 10 D	2, 22 M	2, 139 M	3, 70 D
TEXTURE:				
Silt	10	60	80	15
Clay	85	40	20	85
COMPOSITION:				
Accessory minerals	2	—	—	—
Clay	65	—	20	65
Feldspar	15	20	5	5
Foraminifers	—	—	25	—
Glauconite	—	—	—	1
Mica	15	7	10	—
Micrite	—	—	10	—
Plant	—	5	—	15
Quartz	—	50	—	5
Radiolarians	—	—	25	—
Rock fragment	—	15	—	5
Silicoflagellates	—	—	—	Tr
Spicules	1	—	—	—



SITE 767 HOLE B CORE 57X CORED INTERVAL 5436.0-5445.7 mbsl; 530.8-540.5 mbsf



LITHOLOGIC DESCRIPTION

CLAYSTONE and CALCAREOUS CLAYSTONE

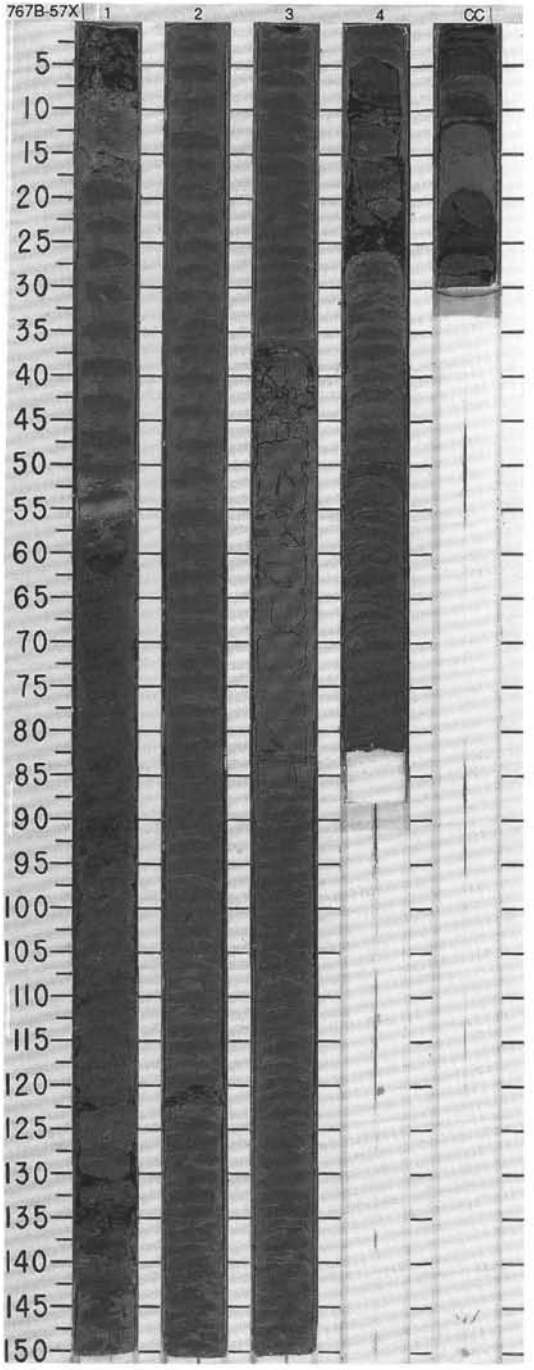
Major lithologies:

a. CLAYSTONE occurs as thick, dark gray (5Y 4/1) to dark greenish gray (10Y 4/1) structureless beds alternating with thin to thick, dusky yellowish green (5G 3/2) bioturbated beds. The structureless beds have sharp basal contacts, and may be turbidite deposits. The claystone consists mostly of clay minerals with some feldspar and rock fragments. Small pyrite nodules are common in the structureless beds.

b. CALCAREOUS CLAYSTONE consists of clay with lesser pellets, bioclasts, and minor rock fragments. In addition to the thick bed shown in Section 3, a thin bed occurs in Section 1, 51-57 cm. The thicker bed has a sharp basal contact overlain by a thin zone with planar lamination, and is normally graded. These beds are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

	1, 105 D	2, 70 D	3, 70 D
TEXTURE:			
Sand	—	—	25
Silt	30	20	50
Clay	70	80	25
COMPOSITION:			
Accessory minerals	—	3	—
Clay	30	50	40
Feldspar	20	25	1
Foraminifers	—	—	Tr
Mica	10	10	—
Opaques	10	—	10
Pellets	—	—	25
Plant	—	—	5
Quartz	—	—	1
Radiolarians	—	—	1
Rock fragment	25	10	10
Silicoflagellates	—	—	5



SITE 767 HOLE B CORE 58X CORED INTERVAL 5445.7-5455.4 mbsl; 540.5-550.2 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS • C/S; NANNOFOSSILS • C/G; *D. hamatus* NN9; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ϕ=57 ρ=1.89 ● WC=47 ?=2.66; ϕ=57 ρ=1.83 ● WC=45 ?=2.76

CHEMISTRY: ● TOC=0.49%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: ⊙P, F

SAMPLES: *

LITHOLOGIC DESCRIPTION

CLAYSTONE, CLAYEY SILTSTONE, QUARTZ SANDSTONE, and CALCAREOUS CLAYSTONE

Major lithologies:

a. CLAYSTONE occurs primarily in thick to very thick, dark gray (5Y 4/1), homogeneous and structureless beds. Several of these intervals grade downward into clayey siltstone, and form the upper part of very thick fining-upward sequences. They are interpreted as turbidite deposits. Thin beds of bioturbated dusky green (5G 3/2) claystone occur locally in the core, and are probably hemipelagic deposits.

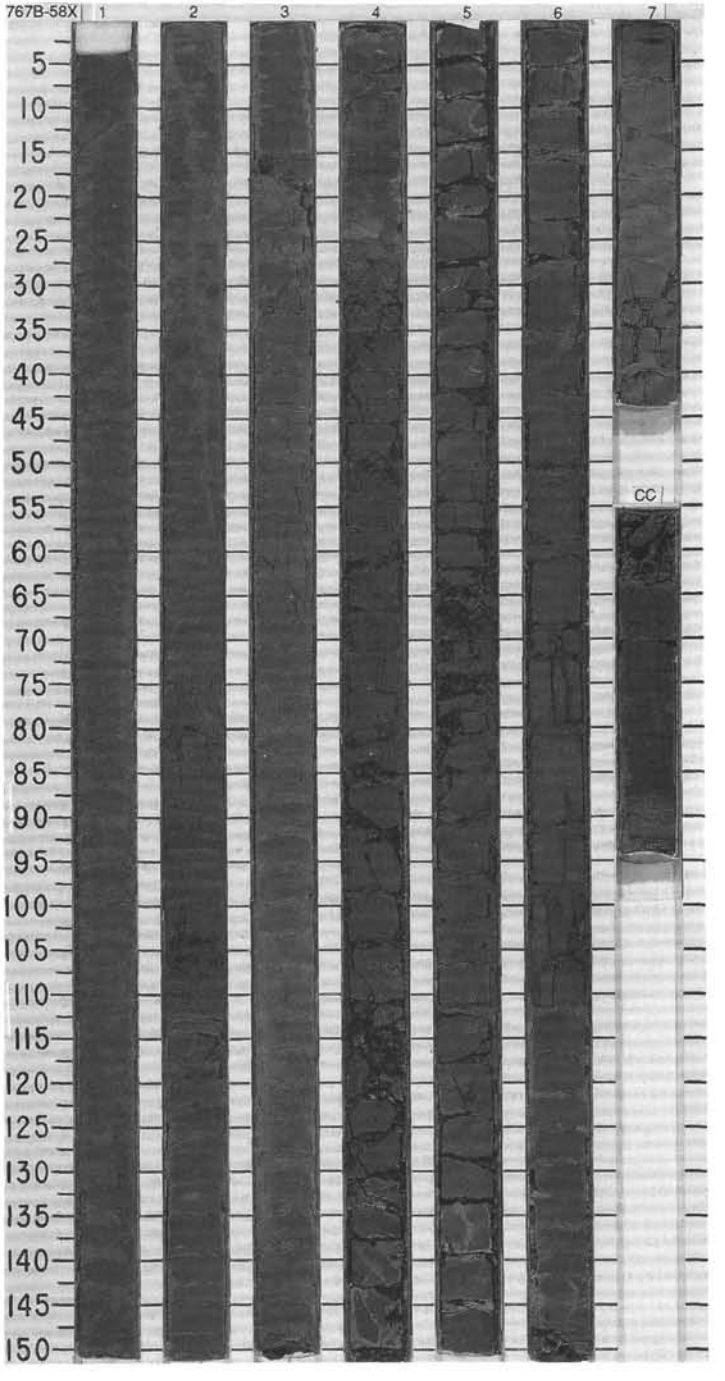
b. CLAYEY SILTSTONE occurs as medium to thick beds which grade upward into massive claystone, forming part of very thick fining-upward sequences interpreted as turbidite deposits. The clayey siltstone is dark gray (5Y 4/1), and consists of clay minerals and quartz, with minor rock fragments, feldspar, and carbonized plant fragments.

c. QUARTZ SANDSTONE occurs in Section 2 as a single fine-grained bed with planar lamination, which forms the basal unit of a very thick fining-upward sequence interpreted as a turbidite deposit. In addition to quartz, it contains feldspar and plant fragments, and is dark gray (5Y 4/1).

d. CALCAREOUS CLAYSTONE occurs as a very thick bed which is black (5Y 2.5/1) and structureless except for small horizontal burrows in the upper part. It consists of clay minerals and minor micrite, rock fragments, quartz, and mica. The base of the bed is sharp, overlying bioturbated claystone. The bed may be a turbidite deposit.

SMEAR SLIDE SUMMARY (%):

	2, 13 D	2, 103 D	3, 73 D	5, 40 D	7, 23 D
TEXTURE:					
Sand	2	70	10	3	—
Silt	70	20	40	15	20
Clay	25	5	50	80	80
COMPOSITION:					
Accessory minerals	5	—	2	—	—
Bioclast	—	—	—	—	1
Clay	15	—	60	60	20
Feldspar	40	15	15	—	—
Foraminifers	—	—	—	—	1
Hornblende	—	—	1	—	—
Mica	5	5	—	5	—
Micrite	—	—	—	20	75
Nannofossils	Tr	—	—	—	—
Plant	10	20	5	—	—
Quartz	3	40	10	5	—
Rock fragment	20	20	5	5	—



SITE 767 HOLE B CORE 59X CORED INTERVAL 5455.4-5405.0 mbsl; 550.2-559.8 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ● A/S; NANNOFOSSILS ● R/G, NN9 *D. hamatus*; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: Φ=47 ρ=2.04

PHYS. PROPERTIES: ● WC=31 γ=2.73; ● WC=26 Φ=44 γ=2.79 ρ=2.19

CHEMISTRY: $CaCO_3$=72.4% ● ● $CaCO_3$=1.3% ● $CaCO_3$=2.4% ● TOC=0.79%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG, IW

LITHOLOGIC DESCRIPTION

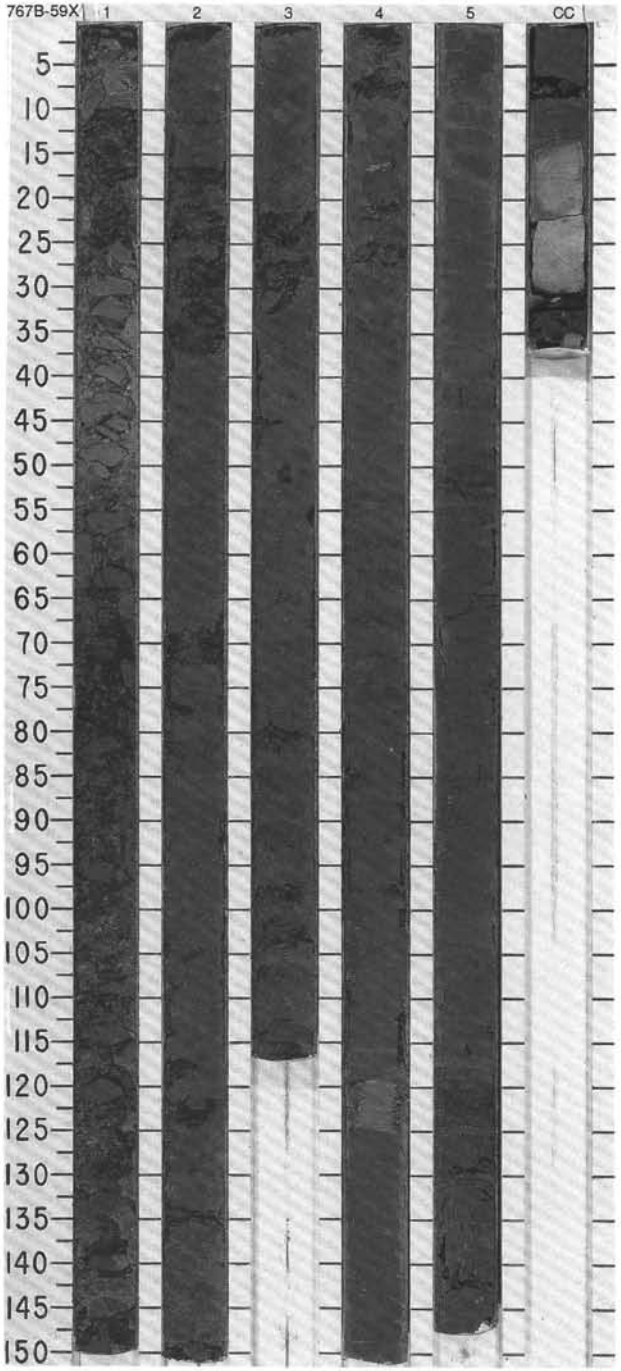
CLAYSTONE and limestone

Major lithology: CLAYSTONE makes up most of the sequence in this core. It is generally homogeneous with some bioturbation and lamination in Section 5 (36-53 and 113-124 cm). It is mainly made up of clay minerals, but it also contains quartz silt, plant material, feldspar and rare nannofossils. The color is dark gray (5Y 4/1), dark greenish gray (5G 4/1, 10Y 4/2) and gray (5Y 5/1) with grayish green (10GY 4/2) where laminated.

Minor lithology: Limestone is found in the core catcher between 14 and 31 cm. It is a highly indurated micritic limestone with vague laminations at the top and bottom of the bed.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	4, 113 D	5, 23 D	5, 53 M	T CC, 29 M
TEXTURE:				
Silt	—	—	—	10
Clay	—	—	—	90
COMPOSITION:				
Accessory minerals	1	2	2	—
Bioclast	Tr	—	—	—
Clay	85	85	95	10
Dinoflagellate	—	Tr	—	—
Feldspar	5	—	2	8
Micrite	—	—	—	60
Nannofossils	Tr	Tr	—	—
Opaques	—	—	—	1
Plant	5	10	Tr	5
Pore space	—	—	—	2
Quartz	2	—	—	—
Rock fragment	—	—	—	4
Sparite	—	—	—	10
Spores	—	Tr	—	—



SITE 767 HOLE B CORE 60X CORED INTERVAL 5465.0-5474.6 mbsl; 559.8-569.4 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: ●B; NANNOFOSSILS: ●B NN8 *C. coalitus*; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: Φ=25 ρ=1.24; Φ=42 ρ=2.08; Φ=22 ρ=1.25 WC=22 γ=2.63; WC=26 γ=2.59; WC=26 γ=2.64

CHEMISTRY: $CaCO_3$=2.8%; TOC=0.75% TOC=0.69%; TOC =2.93%; TOC =0.25% TOC =4.99%; $CaCO_3$ =1.7% TOC=0.64%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: P

SAMPLES

LITHOLOGIC DESCRIPTION

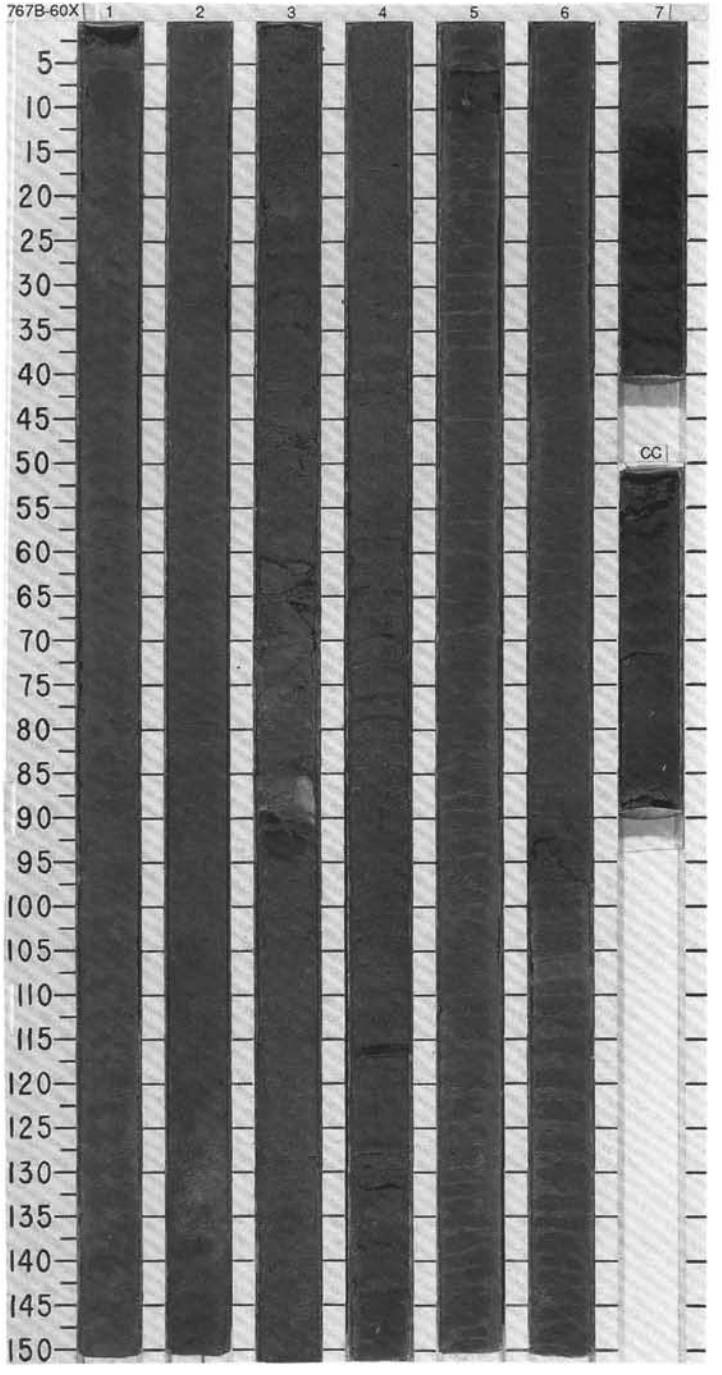
QUARTZ SILTY SANDSTONE, SILTSTONE, SILTY CLAYSTONE and CLAYSTONE with claystone and dolomite

Major lithologies:
QUARTZ SILTY SANDSTONE, SILTSTONE and CLAYSTONE occur in a single fining-up unit starting at 18 cm in Section 3 and continuing to the top of the core. Quartz is the dominant mineral species present, but there is also a high proportion of plant material present in these lithologies. Claystone clasts occur at the base of the unit. This unit is dark greenish gray (10Y 4/1) throughout. Silty sandstones of the same type occur as a single thick bed in Section 3 and 4 and interbedded with claystones in Section 3, 18-80 cm. Similar SILTY CLAYSTONES form a massive dark olive gray (5Y 3/2) unit in Section 5 and 6. Here they contain plant debris, some pyrite and are slightly bioturbated.

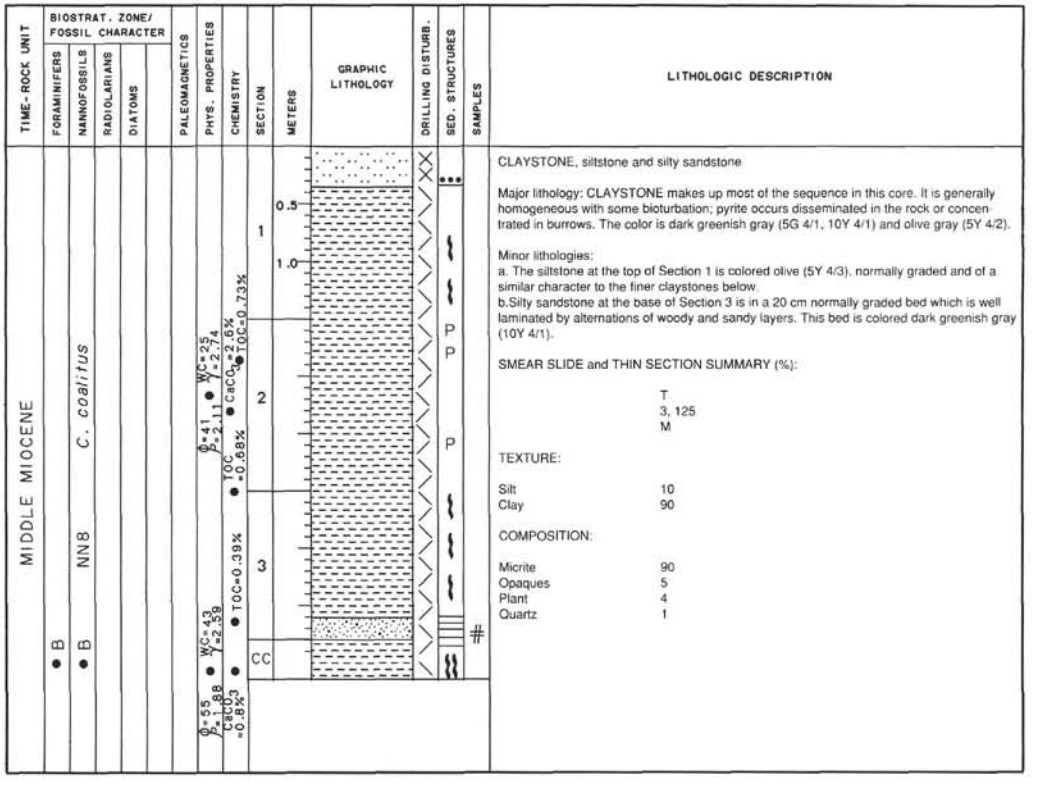
Minor lithologies:
a. Claystone of a different character to that related to the quartz sandstones and siltstones occurs in Section 3 (between 45 and 80 cm), in Section 7 and in the core catcher. These thin beds are very dark greenish gray (10Y 3/1), dark olive gray (5Y 3/2) and dark yellowish green (10GY 4/2) in color, mottled and bioturbated. This lithology is mainly clay minerals, but also contains rare plant material and feldspar.
b. Dolomite occurs in a single thin bed in Section 3. It is well indurated and light olive gray in color (5Y 6/2).

SMEAR SLIDE SUMMARY (%):

	1, 80 D	2, 124 D	3, 72 M	3, 88 M	4, 118 M
TEXTURE:					
Sand	10	80	—	—	90
Silt	10	20	—	—	10
Clay	80	—	—	—	—
COMPOSITION:					
Accessory minerals	5	10	1	—	10
Clay	70	—	90	—	—
Dolomite	—	—	—	100	—
Feldspar	—	—	2	—	—
Plant	10	30	2	—	45
Quartz	15	60	—	—	45



SITE 767 HOLE B CORE 61X CORED INTERVAL 5474.6-5484.3 mbsl; 569.4-579.1 mbsf



LITHOLOGIC DESCRIPTION

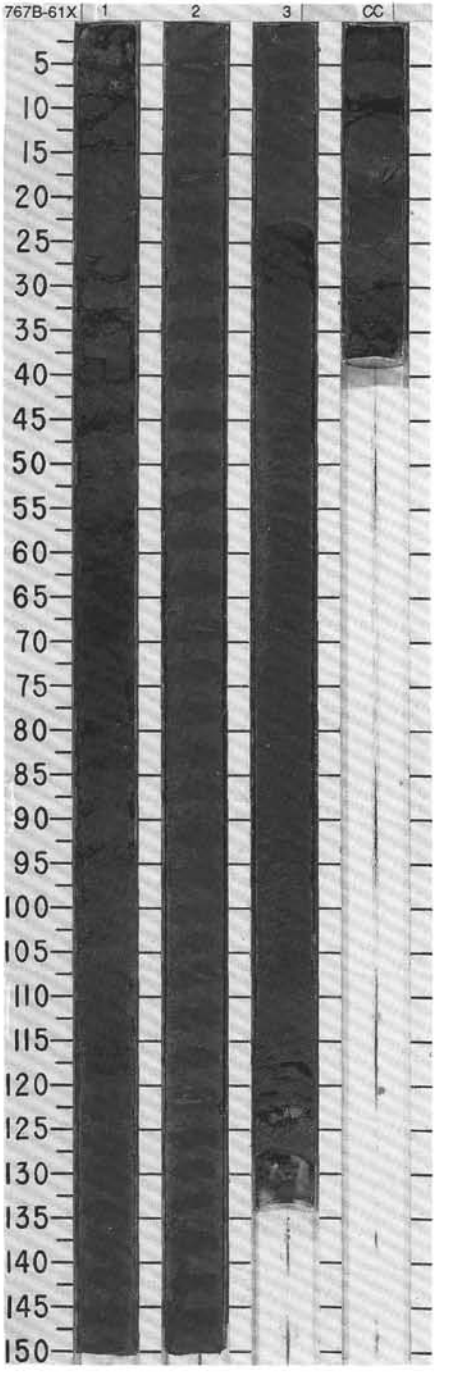
CLAYSTONE, siltstone and silty sandstone

Major lithology: CLAYSTONE makes up most of the sequence in this core. It is generally homogeneous with some bioturbation; pyrite occurs disseminated in the rock or concentrated in burrows. The color is dark greenish gray (5G 4/1, 10Y 4/1) and olive gray (5Y 4/2).

Minor lithologies:
a. The siltstone at the top of Section 1 is colored olive (5Y 4/3), normally graded and of a similar character to the finer claystones below.
b.Silty sandstone at the base of Section 3 is in a 20 cm normally graded bed which is well laminated by alternations of woody and sandy layers. This bed is colored dark greenish gray (10Y 4/1).

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	T 3, 125 M
TEXTURE:	
Silt	10
Clay	90
COMPOSITION:	
Micrite	90
Opaques	5
Plant	4
Quartz	1



SITE 767 HOLE B CORE 62X CORED INTERVAL 5484.3-5494.0 mbsl; 579.1-588.0 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS ●B; NANNOFOSSILS *C. coalitus* NN8 ●F/G; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: Φ=49 ρ=1.96 ● WC=35 ρ=2.71; Φ=42 ρ=2.15 ● WC=25 ρ=2.73; WC=23 Φ=27 ρ=2.62 ρ=1.50

CHEMISTRY: ● $CaCO_3$=9.2%; ● TOC=0.09%; ● $CaCO_3$=2.2%; ● $CaCO_3$=2.3%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: P

SAMPLES: #, *, OG, IW

LITHOLOGIC DESCRIPTION

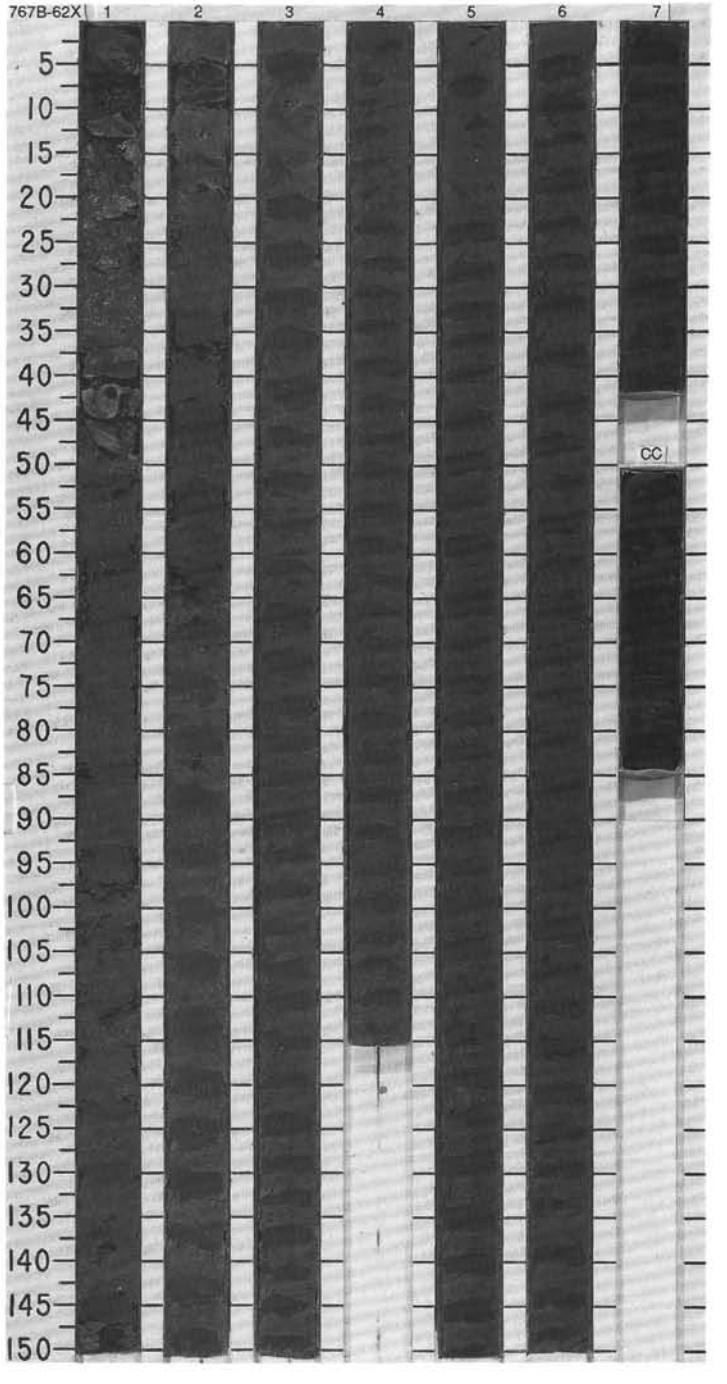
CLAYSTONE and silty claystone

Major lithology: CLAYSTONE is the dominant lithology in this core. It is generally homogeneous with some bioturbation; pyrite occurs disseminated in the rock or concentrated in burrows. The color is very dark and dark gray (5Y 3/1 and 5Y 4/1) and dark greenish gray (5G 4/1) in the more bioturbated beds (Section 2, 10-70 cm). This lithology is slightly calcareous in the upper part of the core. The principal component is clay, with some of pyrite, plant debris and quartz plus rare nannofossils and dinoflagellates.

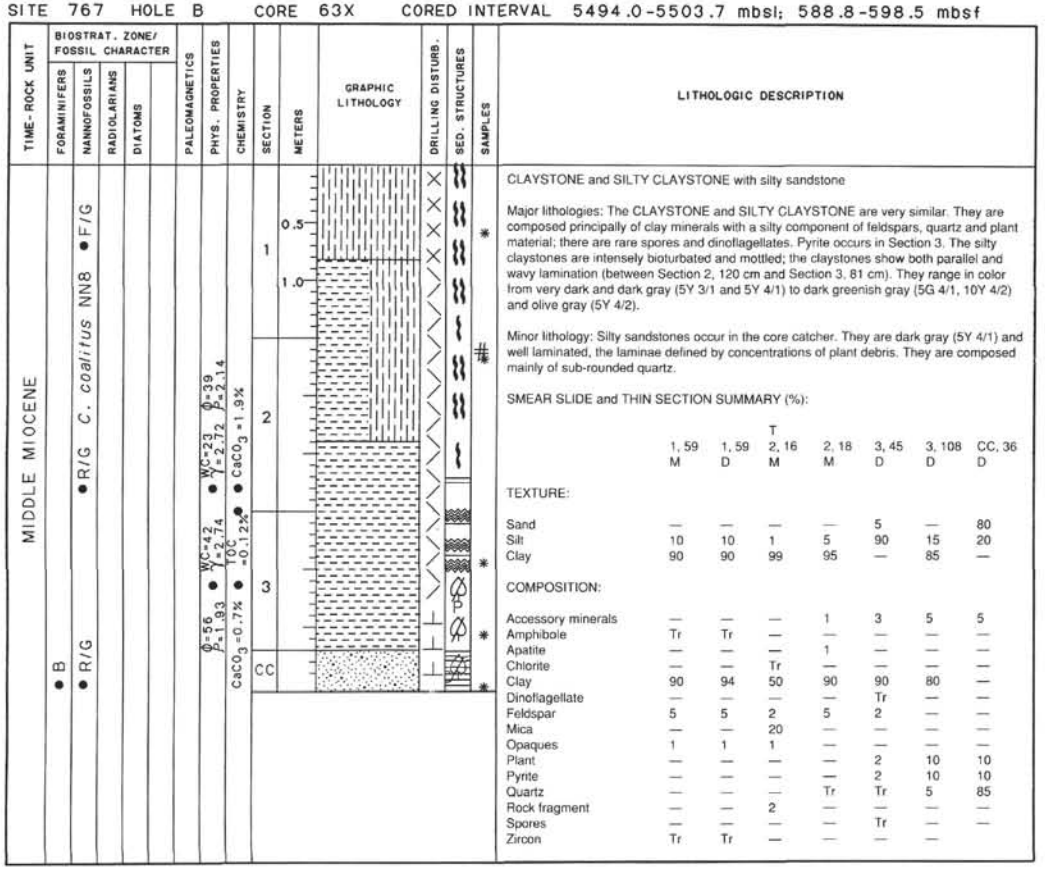
Minor lithology: Clayey siltstones at the bottom of the core catcher form a normally graded, laminated and cross laminated thin bed.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	T 1, 42 M	1, 95 D	3, 79 D
TEXTURE:			
Sand	—	—	10
Silt	—	10	10
Clay	100	90	80
COMPOSITION:			
Accessory minerals	—	Tr	Tr
Clay	15	75	80
Dinoflagellate	—	—	Tr
Micrite	80	—	—
Nannofossils	—	5	—
Organic matter	5	—	—
Plant	—	10	5
Pyrite	—	5	—
Quartz	—	Tr	10



SITE 767 HOLE B CORE 63X CORED INTERVAL 5494.0-5503.7 mbsl; 588.8-598.5 mbsf



LITHOLOGIC DESCRIPTION

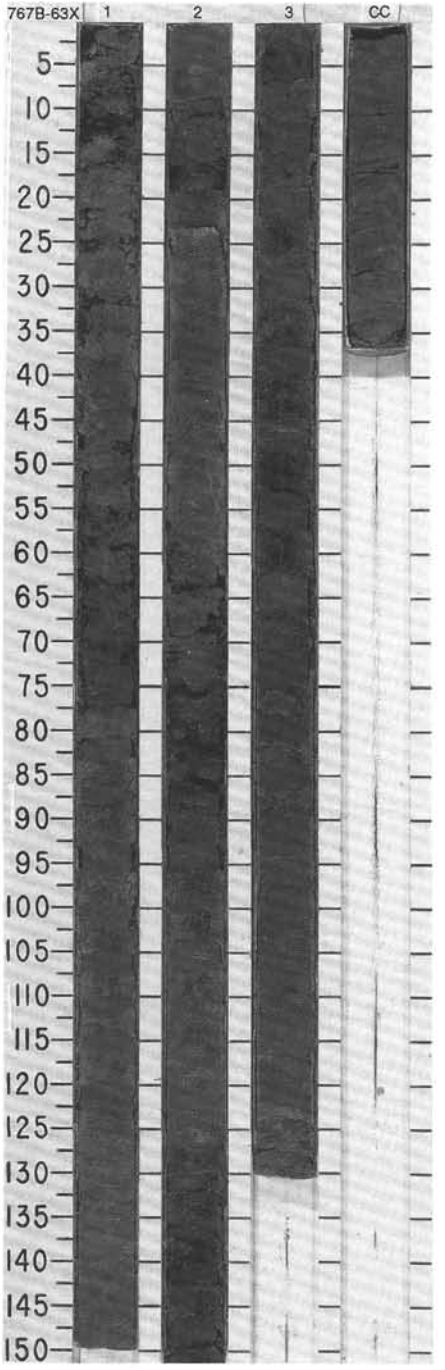
CLAYSTONE and SILTY CLAYSTONE with silty sandstone

Major lithologies: The CLAYSTONE and SILTY CLAYSTONE are very similar. They are composed principally of clay minerals with a silty component of feldspars, quartz and plant material; there are rare spores and dinoflagellates. Pyrite occurs in Section 3. The silty claystones are intensely bioturbated and mottled; the claystones show both parallel and wavy lamination (between Section 2, 120 cm and Section 3, 81 cm). They range in color from very dark and dark gray (5Y 3/1 and 5Y 4/1) to dark greenish gray (5G 4/1, 10Y 4/2) and olive gray (5Y 4/2).

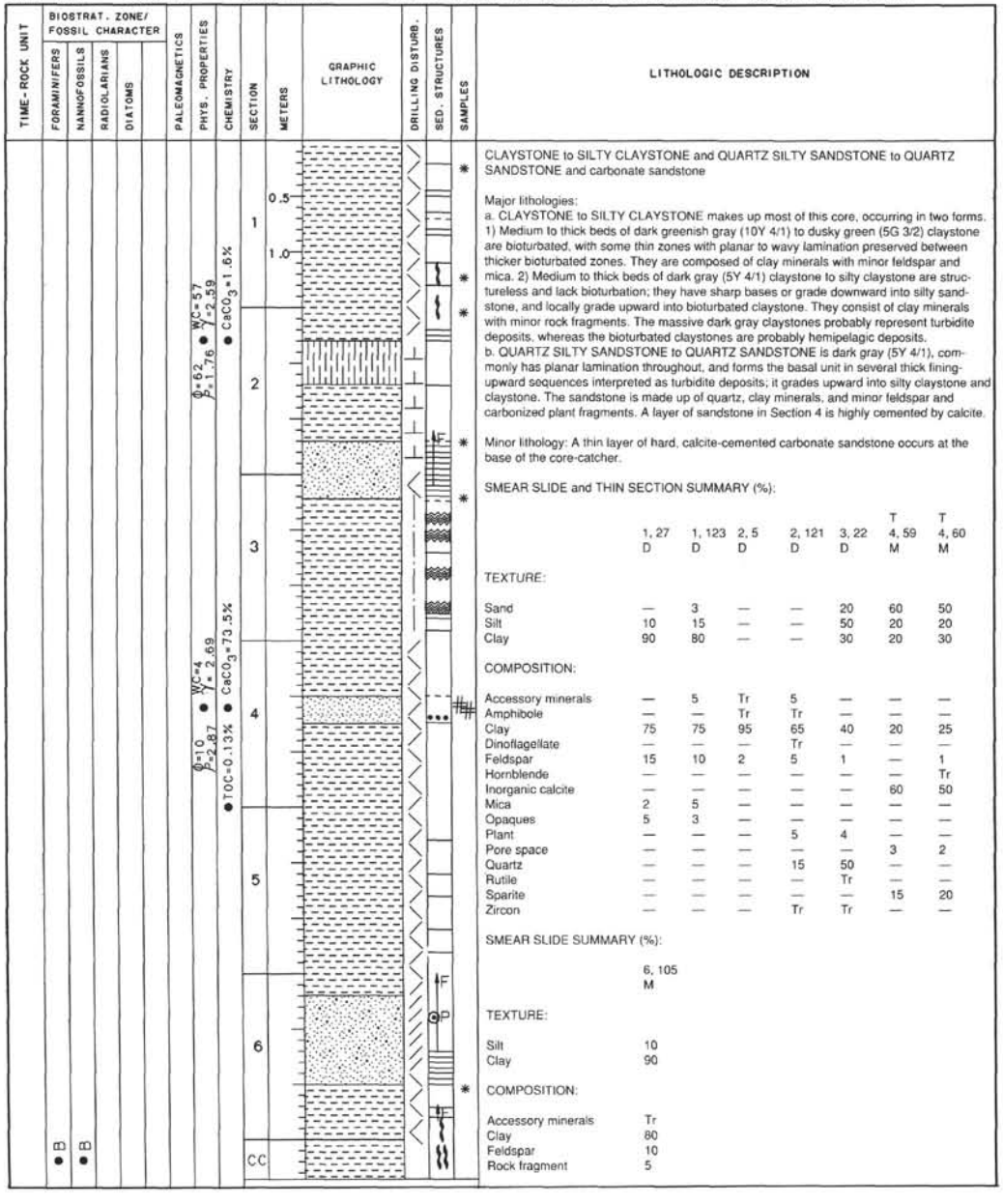
Minor lithology: Silty sandstones occur in the core catcher. They are dark gray (5Y 4/1) and well laminated, the laminae defined by concentrations of plant debris. They are composed mainly of sub-rounded quartz.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 59 M	1, 59 D	T 2, 16 M	2, 18 M	3, 45 D	3, 108 D	CC, 36 D
TEXTURE:							
Sand	—	—	—	—	5	—	80
Silt	10	10	1	5	90	15	20
Clay	90	90	99	95	—	85	—
COMPOSITION:							
Accessory minerals	—	—	—	1	3	5	5
Amphibole	Tr	Tr	—	—	—	—	—
Apatite	—	—	—	1	—	—	—
Chlorite	—	—	Tr	—	—	—	—
Clay	90	94	50	90	90	80	—
Dinoflagellate	—	—	—	—	Tr	—	—
Feldspar	5	5	2	5	2	—	—
Mica	—	—	20	—	—	—	—
Opaques	1	1	1	—	—	—	—
Plant	—	—	—	—	2	10	10
Pyrite	—	—	—	—	2	10	10
Quartz	—	—	—	Tr	Tr	5	85
Rock fragment	—	—	2	—	—	—	—
Spores	—	—	—	—	Tr	—	—
Zircon	Tr	Tr	—	—	—	—	



SITE 767 HOLE B CORE 64X CORED INTERVAL 5503.7-5513.4mbsl: 598.5-608.2mbsf



LITHOLOGIC DESCRIPTION

CLAYSTONE to SILTY CLAYSTONE and QUARTZ SILTY SANDSTONE to QUARTZ SANDSTONE and carbonate sandstone

Major lithologies:

a. CLAYSTONE to SILTY CLAYSTONE makes up most of this core, occurring in two forms. 1) Medium to thick beds of dark greenish gray (10Y 4/1) to dusky green (5G 3/2) claystone are bioturbated, with some thin zones with planar to wavy lamination preserved between thicker bioturbated zones. They are composed of clay minerals with minor feldspar and mica. 2) Medium to thick beds of dark gray (5Y 4/1) claystone to silty claystone are structureless and lack bioturbation; they have sharp bases or grade downward into silty sandstone, and locally grade upward into bioturbated claystone. They consist of clay minerals with minor rock fragments. The massive dark gray claystones probably represent turbidite deposits, whereas the bioturbated claystones are probably hemipelagic deposits.

b. QUARTZ SILTY SANDSTONE to QUARTZ SANDSTONE is dark gray (5Y 4/1), commonly has planar lamination throughout, and forms the basal unit in several thick fining-upward sequences interpreted as turbidite deposits; it grades upward into silty claystone and claystone. The sandstone is made up of quartz, clay minerals, and minor feldspar and carbonized plant fragments. A layer of sandstone in Section 4 is highly cemented by calcite.

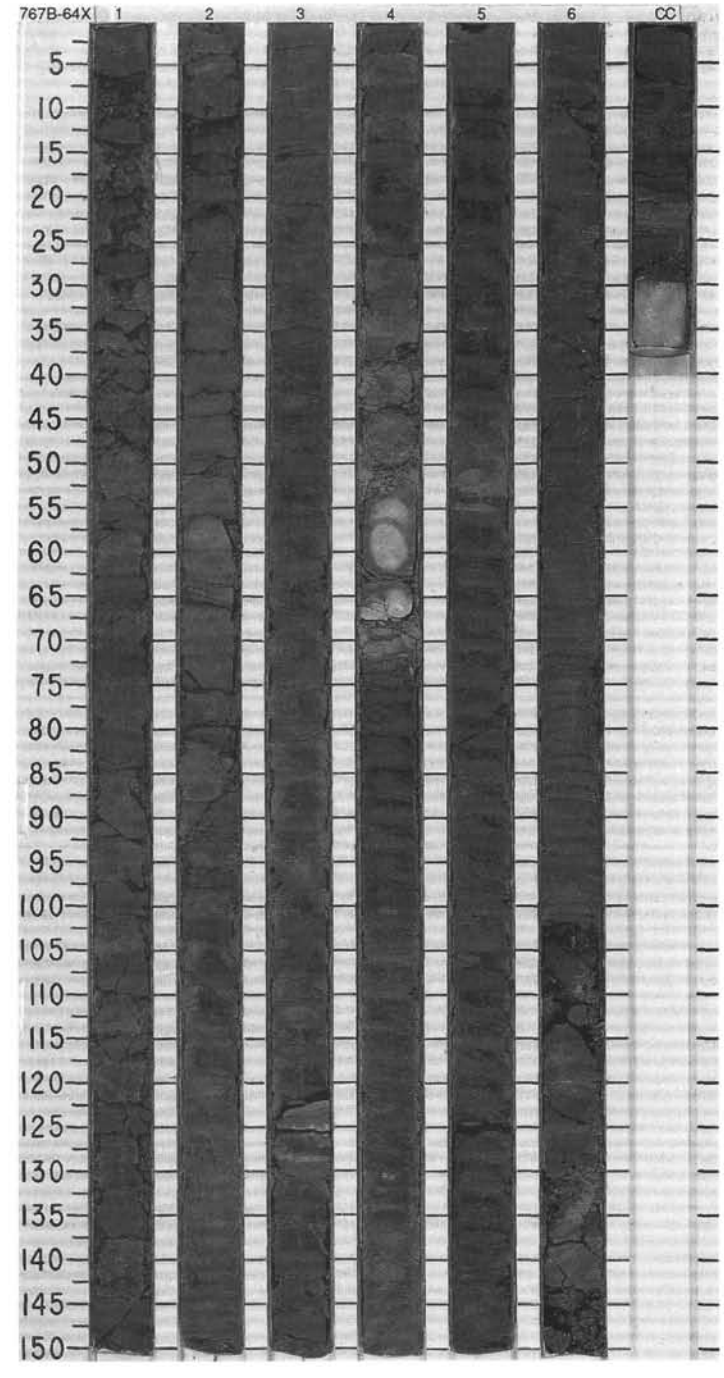
Minor lithology: A thin layer of hard, calcite-cemented carbonate sandstone occurs at the base of the core-catcher.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 27 D	1, 123 D	2, 5 D	2, 121 D	3, 22 D	T 4, 59 M	T 4, 60 M
TEXTURE:							
Sand	—	3	—	—	20	60	50
Silt	10	15	—	—	50	20	20
Clay	90	80	—	—	30	20	30
COMPOSITION:							
Accessory minerals	—	5	Tr	5	—	—	—
Amphibole	—	—	Tr	Tr	—	—	—
Clay	75	75	95	65	40	20	25
Dinoflagellate	—	—	—	Tr	—	—	—
Feldspar	15	10	2	5	1	—	1
Hornblende	—	—	—	—	—	—	Tr
Inorganic calcite	—	—	—	—	—	60	50
Mica	2	5	—	—	—	—	—
Opaques	5	3	—	—	—	—	—
Plant	—	—	—	5	4	—	—
Pore space	—	—	—	—	—	3	2
Quartz	—	—	—	15	50	—	—
Rutile	—	—	—	—	Tr	—	—
Sparite	—	—	—	—	—	15	20
Zircon	—	—	—	Tr	Tr	—	—

SMEAR SLIDE SUMMARY (%):

	6, 105 M
TEXTURE:	
Silt	10
Clay	90
COMPOSITION:	
Accessory minerals	Tr
Clay	80
Feldspar	10
Rock fragment	5



SITE 767 HOLE B CORE 65X CORED INTERVAL 5513.4-5523.0 mbsl; 608.2-617.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	● B	● B					● TOC=0.21%	1	0.5				OG IW *
								1	1.0				
								2					
								3					
								CC					

LITHOLOGIC DESCRIPTION

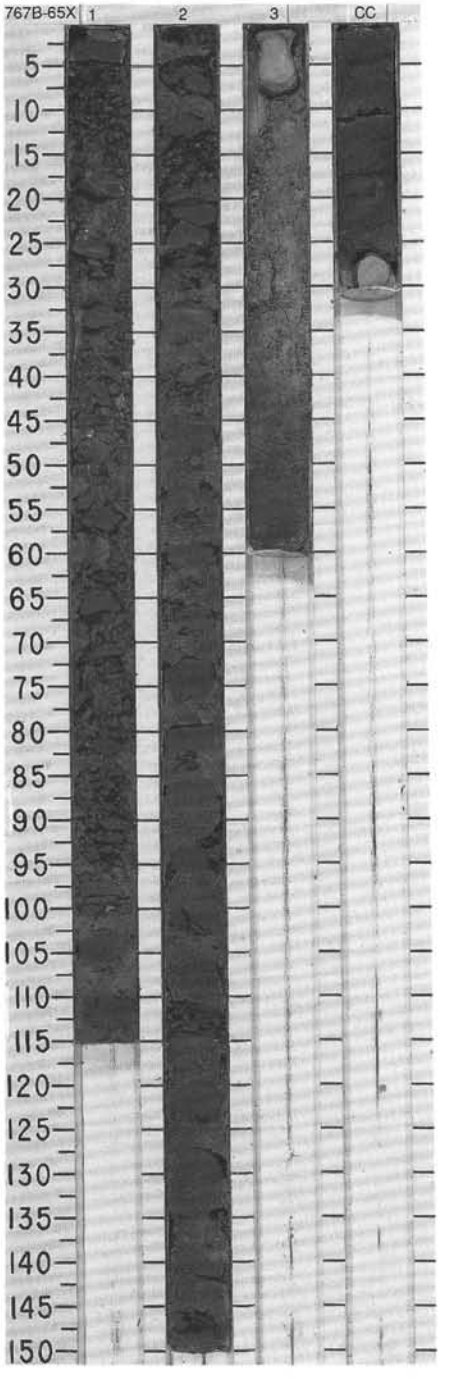
CLAYSTONE with siltstone and sandstone

Major lithology: This core contains CLAYSTONE which is primarily light to dark greenish gray (10Y 6/1 to 4/1) and slightly to moderately bioturbated, with *Chondrites* and *Planolites*. Thin zones with very thin planar lamination separate thicker bioturbated zones at some levels. Intercalated with the bioturbated claystone in Section 2 are several medium to thick beds of massive to finely laminated dark greenish gray (10Y 4/1) claystone which lack bioturbation; these layers may be turbidite deposits.

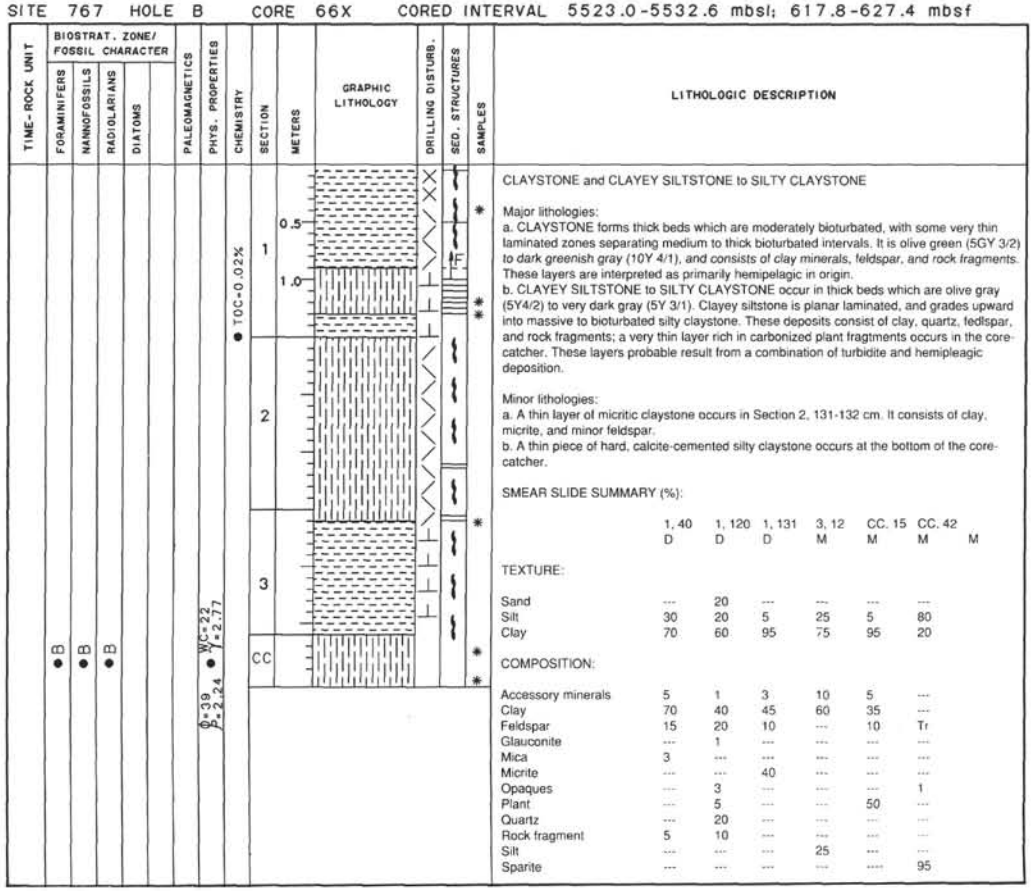
Minor lithologies:
a. A thin layer of siltstone occurs in Section 2, 16-21 cm. It is dusky green (5G 3/2), has a sharp base and gradational top, and is highly disrupted by burrowing. Altered feldspar grains make up most of the siltstone, accompanied by clay, rock fragments, and biotite.
b. A thin zone of hard, calcite-cemented fine sandstone occurs at the top of Section 3.

SMEAR SLIDE SUMMARY (%):

	2, 17 M
TEXTURE:	
Sand	20
Silt	50
Clay	30
COMPOSITION:	
Accessory minerals	2
Biotite	1
Clay	5
Feldspar	80
Rock fragment	10



SITE 767 HOLE B CORE 66X CORED INTERVAL 5523.0-5532.6 mbsl; 617.8-627.4 mbsf



LITHOLOGIC DESCRIPTION

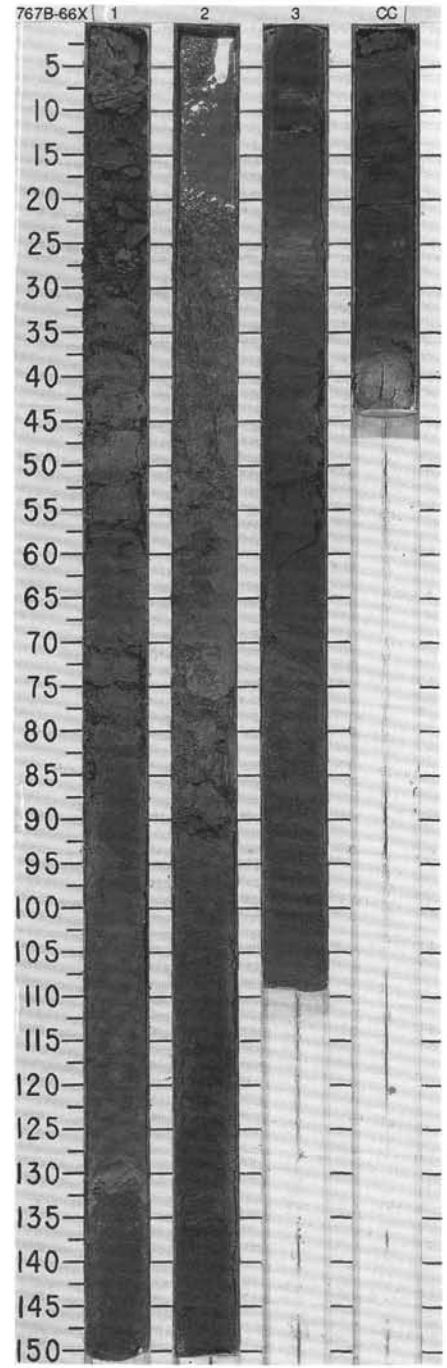
CLAYSTONE and CLAYEY SILTSTONE to SILTY CLAYSTONE

Major lithologies:
a. CLAYSTONE forms thick beds which are moderately bioturbated, with some very thin laminated zones separating medium to thick bioturbated intervals. It is olive green (5GY 3/2) to dark greenish gray (10Y 4/1), and consists of clay minerals, feldspar, and rock fragments. These layers are interpreted as primarily hemipelagic in origin.
b. CLAYEY SILTSTONE to SILTY CLAYSTONE occur in thick beds which are olive gray (5Y4/2) to very dark gray (5Y 3/1). Clayey siltstone is planar laminated, and grades upward into massive to bioturbated silty claystone. These deposits consist of clay, quartz, fedlspar, and rock fragments; a very thin layer rich in carbonized plant fragtments occurs in the core-catcher. These layers probable result from a combination of turbidite and hemipleagic deposition.

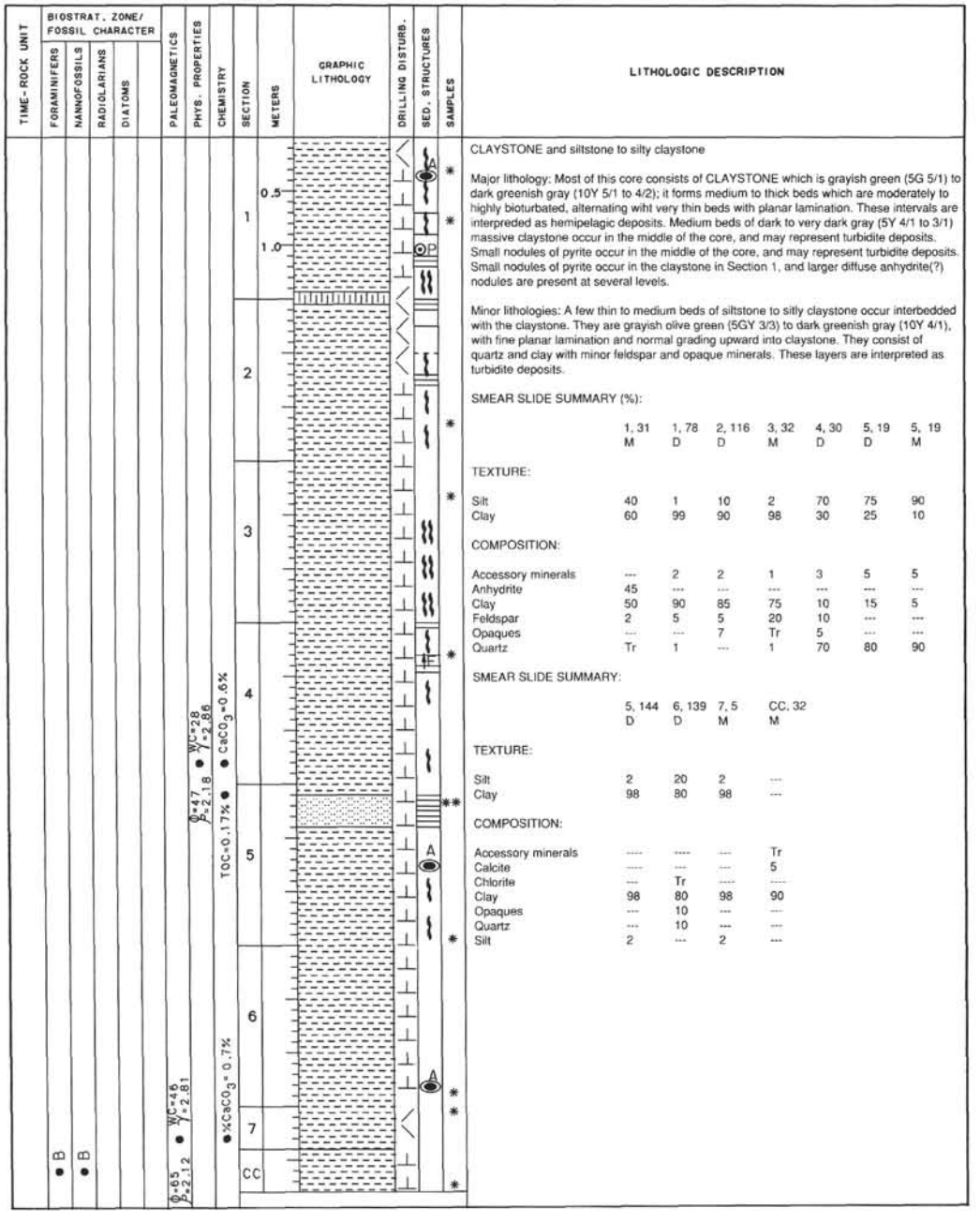
Minor lithologies:
a. A thin layer of micritic claystone occurs in Section 2, 131-132 cm. It consists of clay, micrite, and minor feldspar.
b. A thin piece of hard, calcite-cemented silty claystone occurs at the bottom of the core-catcher.

SMEAR SLIDE SUMMARY (%):

	1, 40 D	1, 120 D	1, 131 D	3, 12 M	CC, 15 M	CC, 42 M	M
TEXTURE:							
Sand	---	20	---	---	---	---	
Silt	30	20	5	25	5	80	
Clay	70	60	95	75	95	20	
COMPOSITION:							
Accessory minerals	5	1	3	10	5	---	
Clay	70	40	45	60	35	---	
Feldspar	15	20	10	---	10	Tr	
Glauconite	---	1	---	---	---	---	
Mica	3	---	---	---	---	---	
Micrite	---	---	40	---	---	---	
Opaques	---	3	---	---	---	1	
Plant	---	5	---	---	50	---	
Quartz	---	20	---	---	---	---	
Rock fragment	5	10	---	---	---	---	
Silt	---	---	---	25	---	---	
Sparite	---	---	---	---	---	95	



SITE 767 HOLE B CORE 67X CORED INTERVAL 5532.6-5542.3 mbsl; 627.4-637.1 mbsf



LITHOLOGIC DESCRIPTION

CLAYSTONE and siltstone to silty claystone

Major lithology: Most of this core consists of CLAYSTONE which is grayish green (5G 5/1) to dark greenish gray (10Y 5/1 to 4/2); it forms medium to thick beds which are moderately to highly bioturbated, alternating wiht very thin beds with planar lamination. These intervals are interpreded as hemipelagic deposits. Medium beds of dark to very dark gray (5Y 4/1 to 3/1) massive claystone occur in the middle of the core, and may represent turbidite deposits. Small nodules of pyrite occur in the middle of the core, and may represent turbidite deposits. Small nodules of pyrite occur in the claystone in Section 1, and larger diffuse anhydrite(?) nodules are present at several levels.

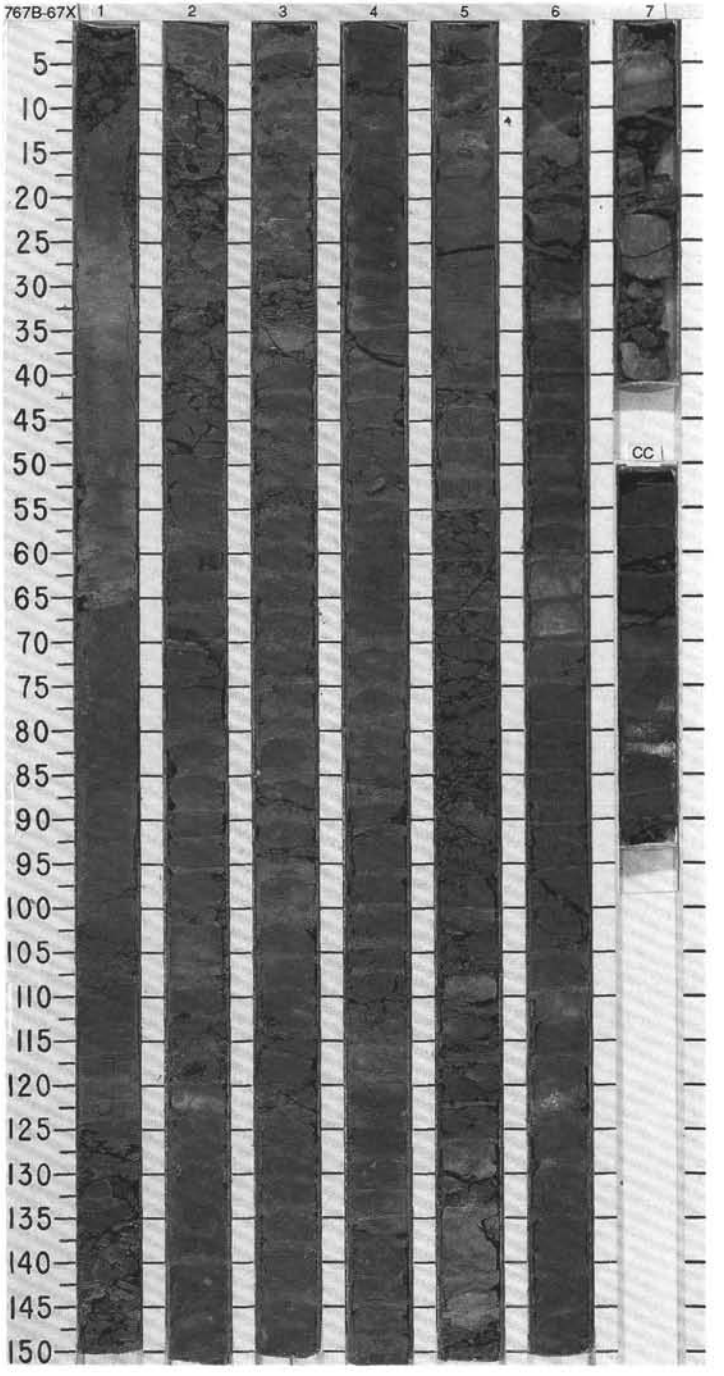
Minor lithologies: A few thin to medium beds of siltstone to sitly claystone occur interbedded with the claystone. They are grayish olive green (5GY 3/3) to dark greenish gray (10Y 4/1), with fine planar lamination and normal grading upward into claystone. They consist of quartz and clay with minor feldspar and opaque minerals. These layers are interpreted as turbidite deposits.

SMEAR SLIDE SUMMARY (%):

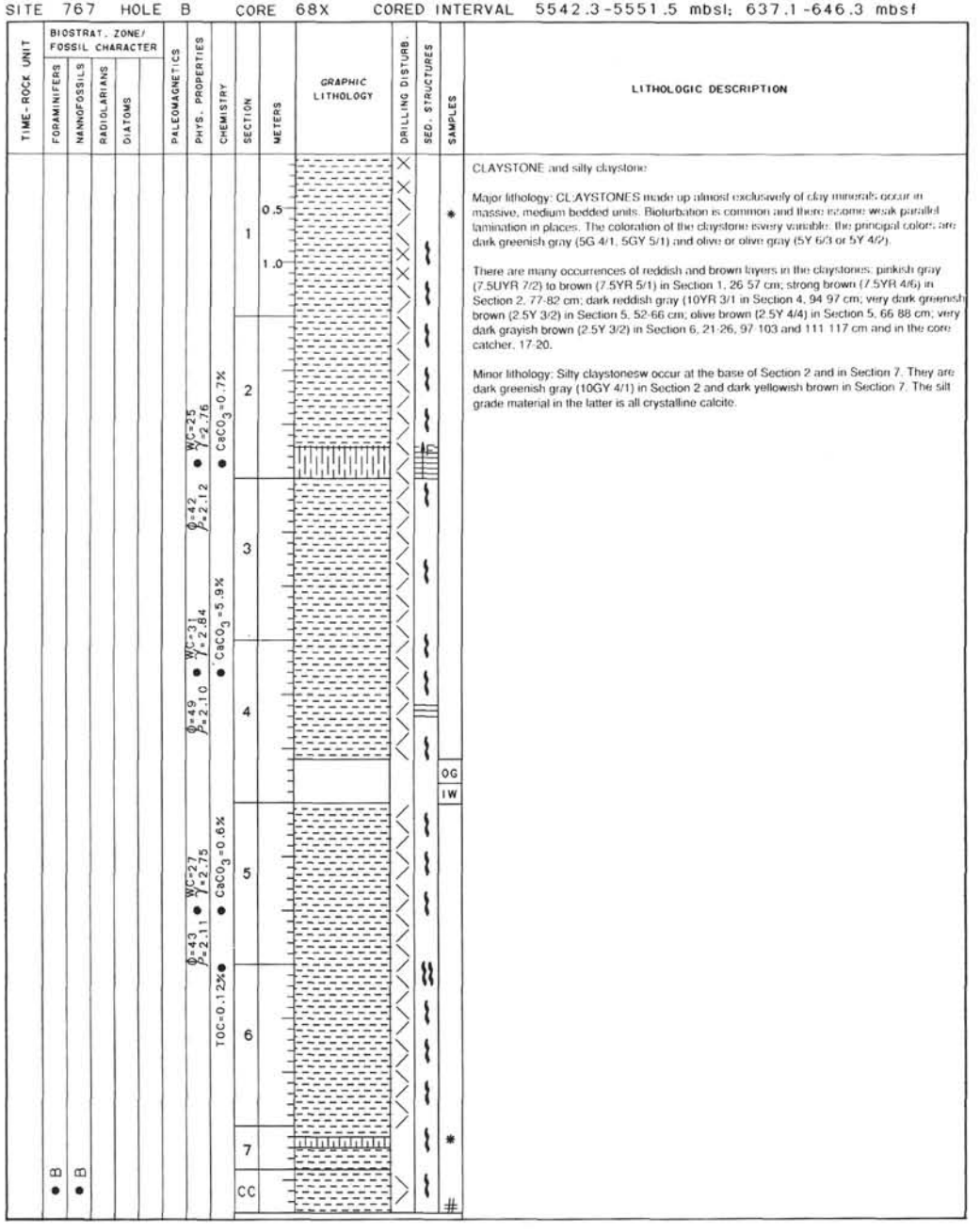
	1, 31 M	1, 78 D	2, 116 D	3, 32 M	4, 30 D	5, 19 D	5, 19 M
TEXTURE:							
Silt	40	1	10	2	70	75	90
Clay	60	99	90	98	30	25	10
COMPOSITION:							
Accessory minerals	---	2	2	1	3	5	5
Anhydrite	45	---	---	---	---	---	---
Clay	50	90	85	75	10	15	5
Feldspar	2	5	5	20	10	---	---
Opaques	---	---	7	Tr	5	---	---
Quartz	Tr	1	---	1	70	80	90

SMEAR SLIDE SUMMARY:

	5, 144 D	6, 139 D	7, 5 M	CC, 32 M
TEXTURE:				
Silt	2	20	2	---
Clay	98	80	98	---
COMPOSITION:				
Accessory minerals	----	----	---	Tr
Calcite	----	---	---	5
Chlorite	---	Tr	----	----
Clay	98	80	98	90
Opaques	---	10	---	---
Quartz	---	10	---	---
Silt	2	---	2	---



SITE 767 HOLE B CORE 68X CORED INTERVAL 5542.3-5551.5 mbsl; 637.1-646.3 mbsf

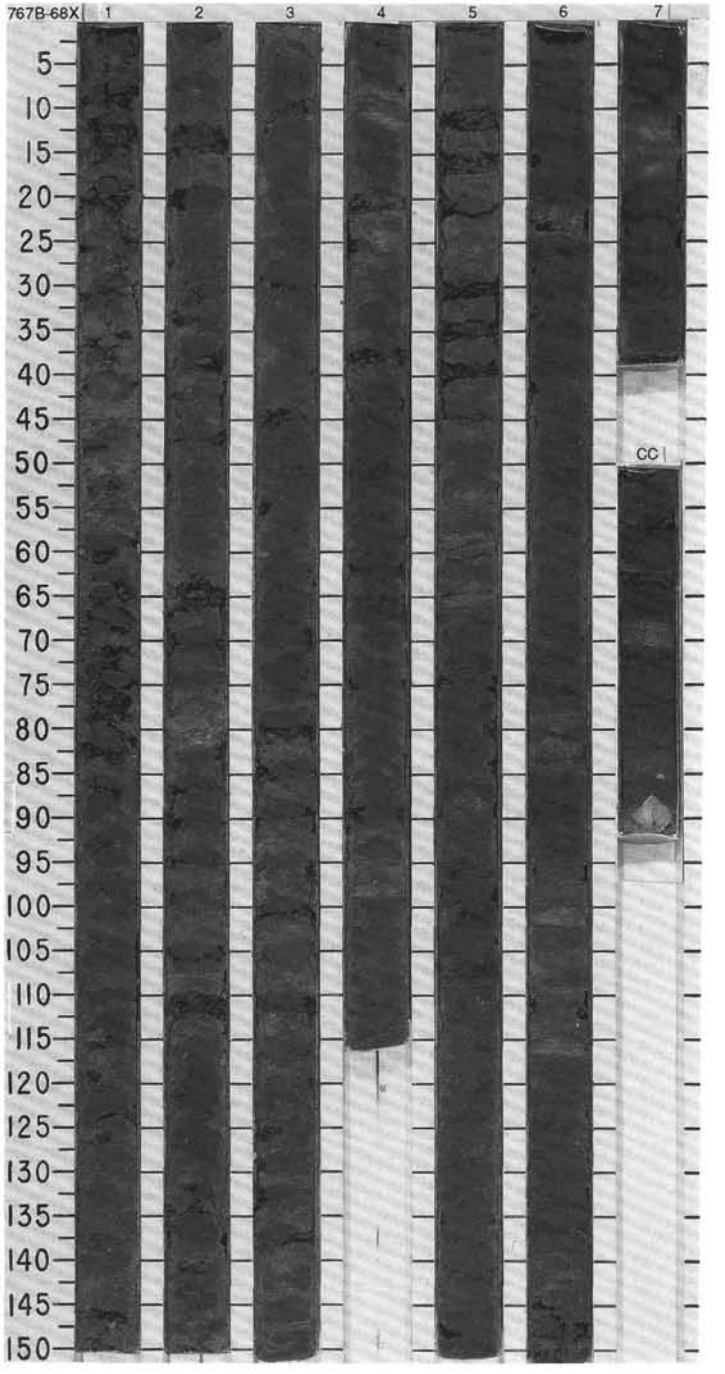


CLAYSTONE and silty claystone

Major lithology: CLAYSTONES made up almost exclusively of clay minerals occur in massive, medium bedded units. Bioturbation is common and there is some weak parallel lamination in places. The coloration of the claystone is very variable; the principal colors are dark greenish gray (5G 4/1, 5GY 5/1) and olive or olive gray (5Y 6/3 or 5Y 4/2).

There are many occurrences of reddish and brown layers in the claystones; pinkish gray (7.5UYR 7/2) to brown (7.5YR 5/1) in Section 1, 26 57 cm; strong brown (7.5YR 4/6) in Section 2, 77-82 cm; dark reddish gray (10YR 3/1 in Section 4, 94 97 cm; very dark greenish brown (2.5Y 3/2) in Section 5, 52-66 cm; olive brown (2.5Y 4/4) in Section 5, 66 88 cm; very dark grayish brown (2.5Y 3/2) in Section 6, 21-26, 97-103 and 111 117 cm and in the core catcher, 17-20.

Minor lithology: Silty claystonesw occur at the base of Section 2 and in Section 7. They are dark greenish gray (10GY 4/1) in Section 2 and dark yellowish brown in Section 7. The silt grade material in the latter is all crystalline calcite.



SITE 767 HOLE B CORE 69X CORED INTERVAL 5551.5-5561.2 mbsl; 646.3-656.0 mbsf

TIME-ROCK UNIT | BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS | PALEOMAGNETICS | PHYS. PROPERTIES | CHEMISTRY | SECTION | METERS | GRAPHIC LITHOLOGY | DRILLING DISTURB. | SED. STRUCTURES | SAMPLES

PHYS. PROPERTIES: Ø=46 ρ=2.14 ● WC=28 γ=2.82 ● $CaCO_3$=0.3% | Ø=48 ρ=2.07 ● WC=31 γ=2.75 ● $CaCO_3$=0.5% ● TOC=0.10% | Ø=50 ρ=2.08 ● WC=33 γ=2.82 ● $CaCO_3$=0.6%

FORAMINIFERS: ● B

NANNOFOSSILS: ● B

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

METERS: 0.5, 1.0

DRILLING DISTURB.: D

SAMPLES: *, *

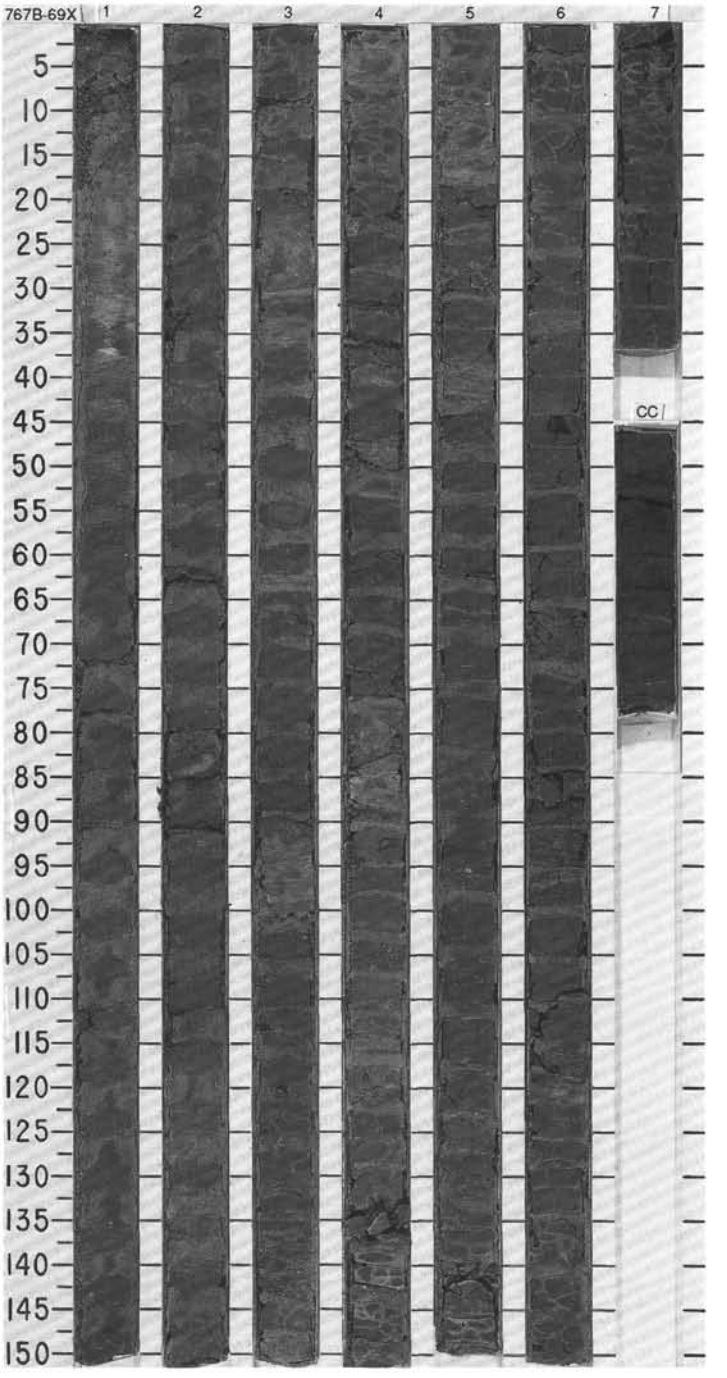
LITHOLOGIC DESCRIPTION

CLAYSTONE

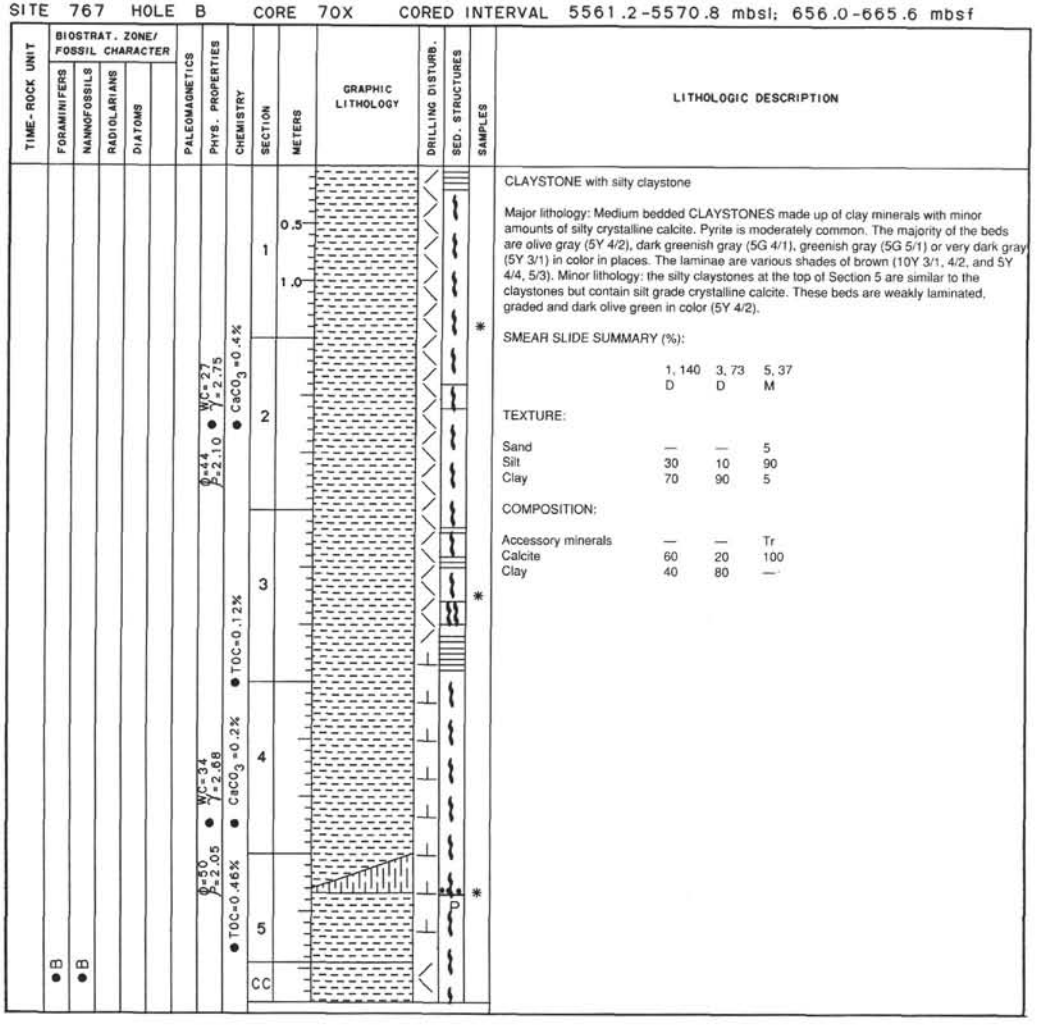
Major lithology: Medium bedded CLAYSTONES made up of clay minerals with minor amounts of feldspar and pyrite occur in massive bioturbated units. The lighter colored beds (olive - 5Y 4/3) contain small amounts of bioclastic material. The majority of the beds are dark g eenish gray (5G 4/1) to gray (5Y 5/1) in color. Reddish and brown thin beds occur in Section 2, 111-115 cm (5R 4/2), Section 4, 47-50 and 110-115 cm (10R 4/1), Section 5, 117-119 cm (5YR 4/3) and Section 6, 93-96 cm (10R 4/2). Slightly silty, laminated, graded beds occur in Section 3, suggesting that some of his material may have been deposited as muddy turbidites.

SMEAR SLIDE SUMMARY (%):

	4, 52	5, 71
	M	D
COMPOSITION:		
Bioclast	—	15
Calcite	—	3
Clay	80	80
Feldspar	5	Tr
Pyrite	10	—
Quartz	—	Tr



SITE 767 HOLE B CORE 70X CORED INTERVAL 5561.2-5570.8 mbsl; 656.0-665.6 mbsf



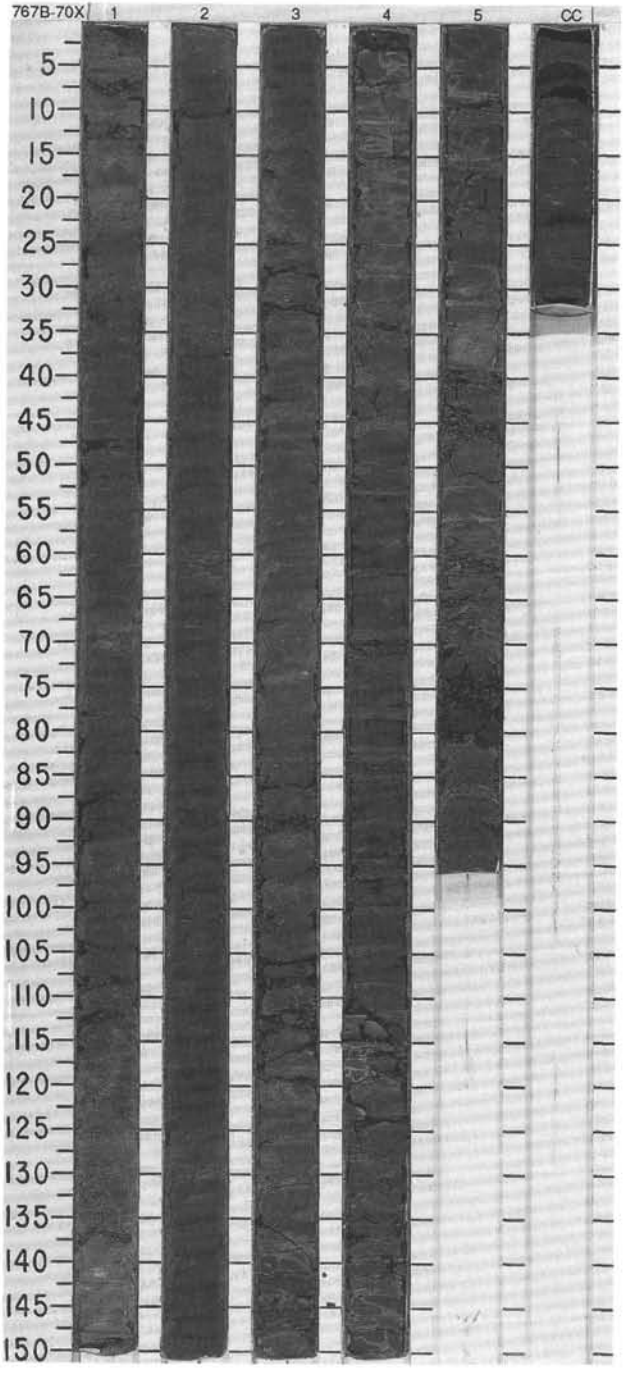
LITHOLOGIC DESCRIPTION

CLAYSTONE with silty claystone

Major lithology: Medium bedded CLAYSTONES made up of clay minerals with minor amounts of silty crystalline calcite. Pyrite is moderately common. The majority of the beds are olive gray (5Y 4/2), dark greenish gray (5G 4/1), greenish gray (5G 5/1) or very dark gray (5Y 3/1) in color in places. The laminae are various shades of brown (10Y 3/1, 4/2, and 5Y 4/4, 5/3). Minor lithology: the silty claystones at the top of Section 5 are similar to the claystones but contain silt grade crystalline calcite. These beds are weakly laminated, graded and dark olive green in color (5Y 4/2).

SMEAR SLIDE SUMMARY (%):

	1, 140 D	3, 73 D	5, 37 M
TEXTURE:			
Sand	—	—	5
Silt	30	10	90
Clay	70	90	5
COMPOSITION:			
Accessory minerals	—	—	Tr
Calcite	60	20	100
Clay	40	80	—



SITE 767 HOLE B CORE 71X CORED INTERVAL 5570.8mbsl: 665.6-675.3mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	● B	● B					● TOC=0.10%	1	0.5, 1.0				
								2					
								3					
								4					OG, IW
								5					
								6					*
								7					*
								CC					

LITHOLOGIC DESCRIPTION

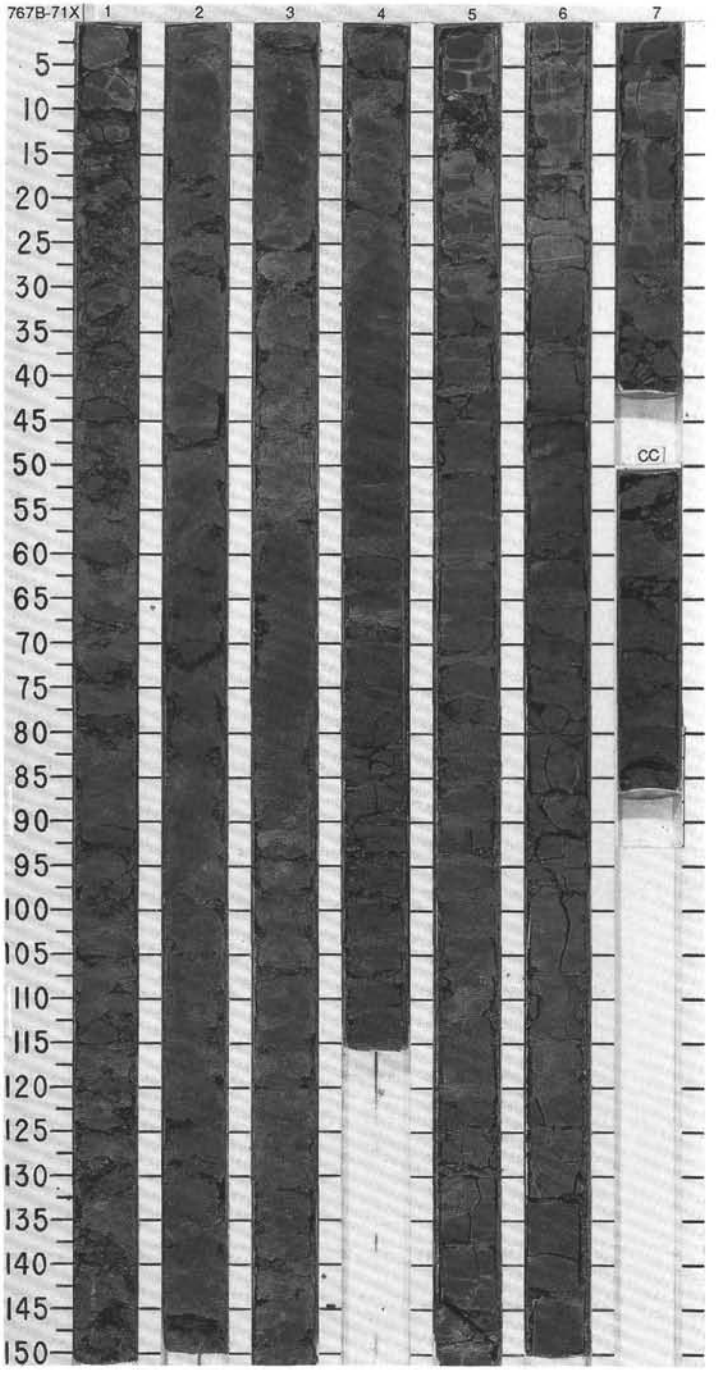
CLAYSTONE with silty claystone

Major lithology: Medium bedded CLAYSTONES made up of clay minerals with minor amounts of quartz. The majority of the beds are olive gray (5Y 4/2), dark greenish gray (5G 4/1) and greenish gray (5GY 5/1) in color. These beds are moderately bioturbated throughout the core, including *Zoophycos* in Section 6, 70-100 cm. The claystones have thick laminations in Section 3 and Section 6 and also show normal grading (Section 6, 45-50 cm). The laminae are greenish gray (10GY 4/1).

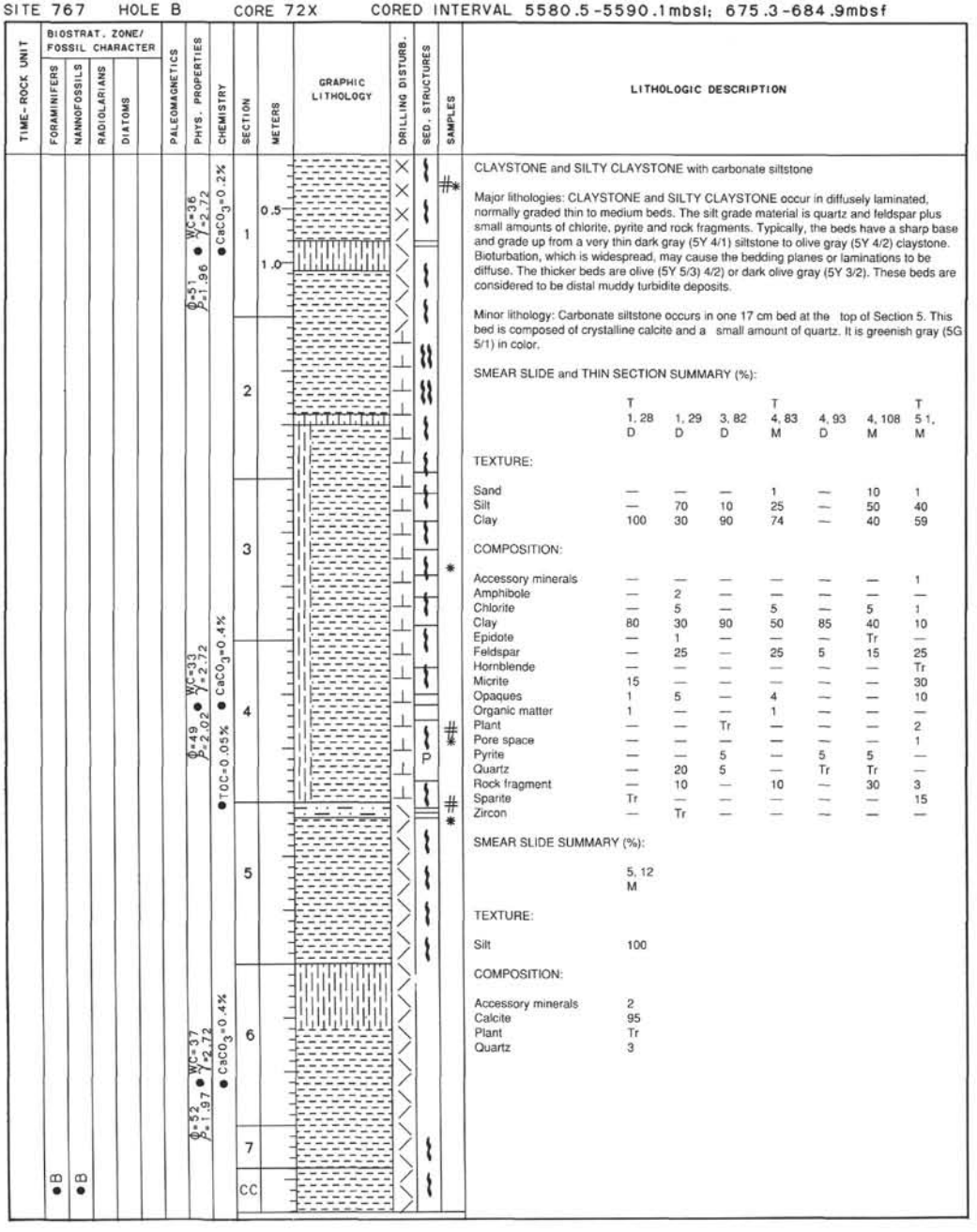
Minor lithology: Silty claystone occurs in Section 1 and there are silt laminae in the claystone beds in Section 3, 45-65 cm and Section 6, 24-65 cm. The silt grade material is mainly quartz. These beds are weakly laminated, graded and dark olive gray in color (5Y 3/2). These beds are considered to be mud turbidite deposits on the basis of the grading and lamination present in many parts of the core.

SMEAR SLIDE SUMMARY (%):

	1, 104 D	6, 23 M	6, 100 D
TEXTURE:			
Sand	5	—	5
Silt	80	5	10
Clay	15	95	85
COMPOSITION:			
Accessory minerals	20	Tr	5
Clay	—	100	90
Quartz	80	Tr	5



SITE 767 HOLE B CORE 72X CORED INTERVAL 5580.5-5590.1mbsl; 675.3-684.9mbsf



CLAYSTONE and SILTY CLAYSTONE with carbonate siltstone

Major lithologies: CLAYSTONE and SILTY CLAYSTONE occur in diffusely laminated, normally graded thin to medium beds. The silt grade material is quartz and feldspar plus small amounts of chlorite, pyrite and rock fragments. Typically, the beds have a sharp base and grade up from a very thin dark gray (5Y 4/1) siltstone to olive gray (5Y 4/2) claystone. Bioturbation, which is widespread, may cause the bedding planes or laminations to be diffuse. The thicker beds are olive (5Y 5/3) 4/2) or dark olive gray (5Y 3/2). These beds are considered to be distal muddy turbidite deposits.

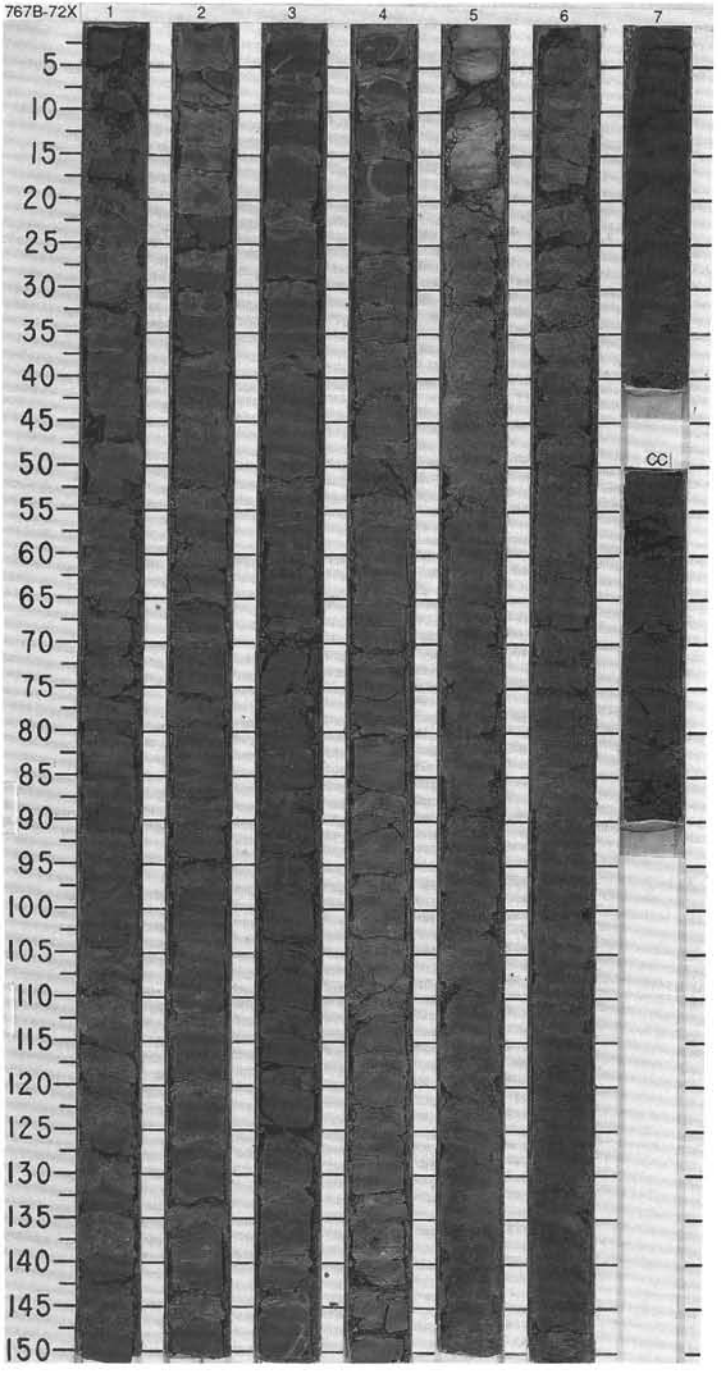
Minor lithology: Carbonate siltstone occurs in one 17 cm bed at the top of Section 5. This bed is composed of crystalline calcite and a small amount of quartz. It is greenish gray (5G 5/1) in color.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

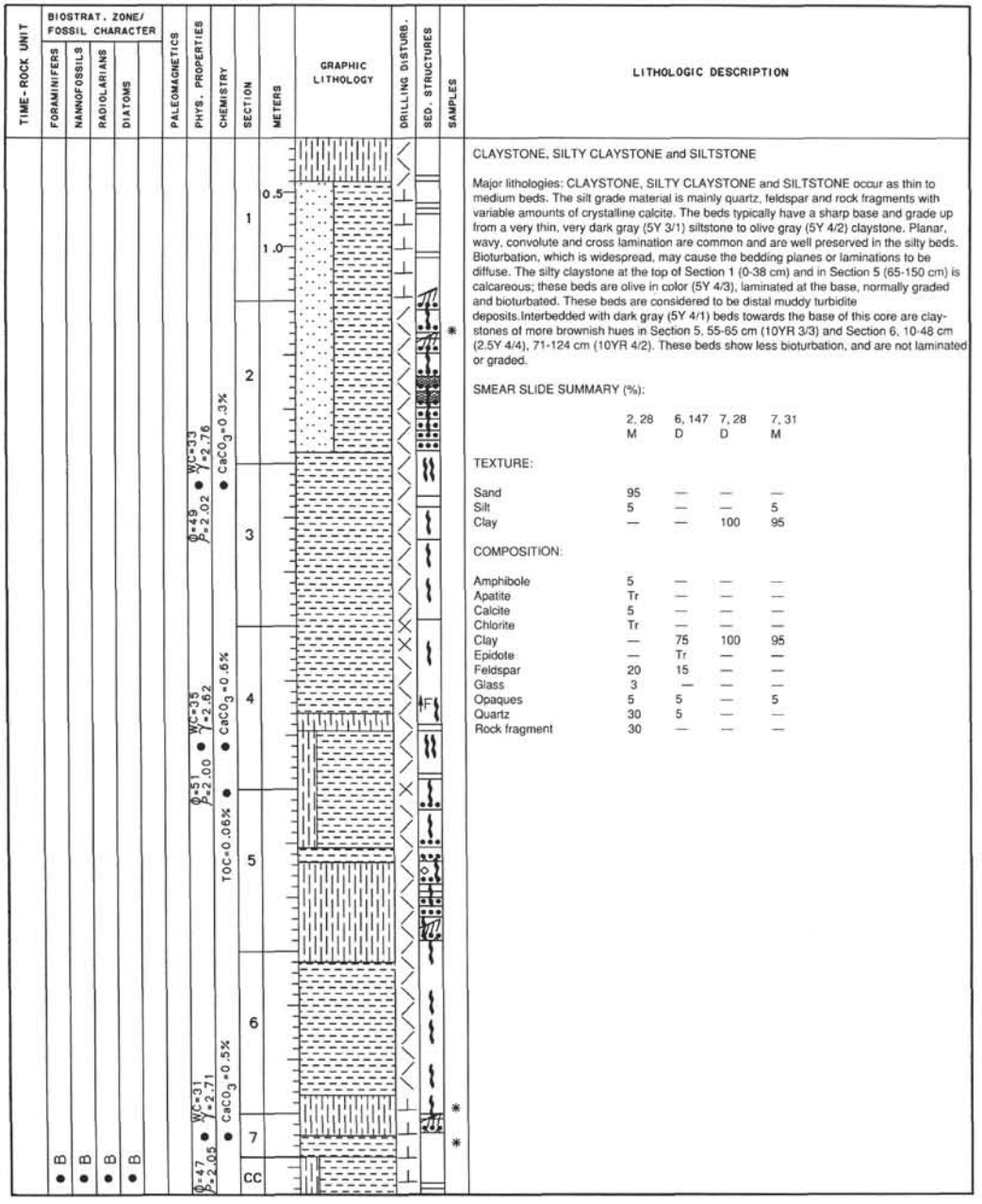
	T 1, 28 D	1, 29 D	3, 82 D	T 4, 83 M	4, 93 D	4, 108 M	T 5 1, M
TEXTURE:							
Sand	—	—	—	1	—	10	1
Silt	—	70	10	25	—	50	40
Clay	100	30	90	74	—	40	59
COMPOSITION:							
Accessory minerals	—	—	—	—	—	—	1
Amphibole	—	2	—	—	—	—	—
Chlorite	—	5	—	5	—	5	1
Clay	80	30	90	50	85	40	10
Epidote	—	1	—	—	—	Tr	—
Feldspar	—	25	—	25	5	15	25
Hornblende	—	—	—	—	—	—	Tr
Micrite	15	—	—	—	—	—	30
Opaques	1	5	—	4	—	—	10
Organic matter	1	—	—	1	—	—	—
Plant	—	—	Tr	—	—	—	2
Pore space	—	—	—	—	—	—	1
Pyrite	—	—	5	—	5	5	—
Quartz	—	20	5	—	Tr	Tr	—
Rock fragment	—	10	—	10	—	30	3
Sparite	Tr	—	—	—	—	—	15
Zircon	—	Tr	—	—	—	—	—

SMEAR SLIDE SUMMARY (%):

	5, 12 M
TEXTURE:	
Silt	100
COMPOSITION:	
Accessory minerals	2
Calcite	95
Plant	Tr
Quartz	3



SITE 767 HOLE B CORE 73X CORED INTERVAL 5590.1-5599.8mbsl; 684.9-694.6mbsf



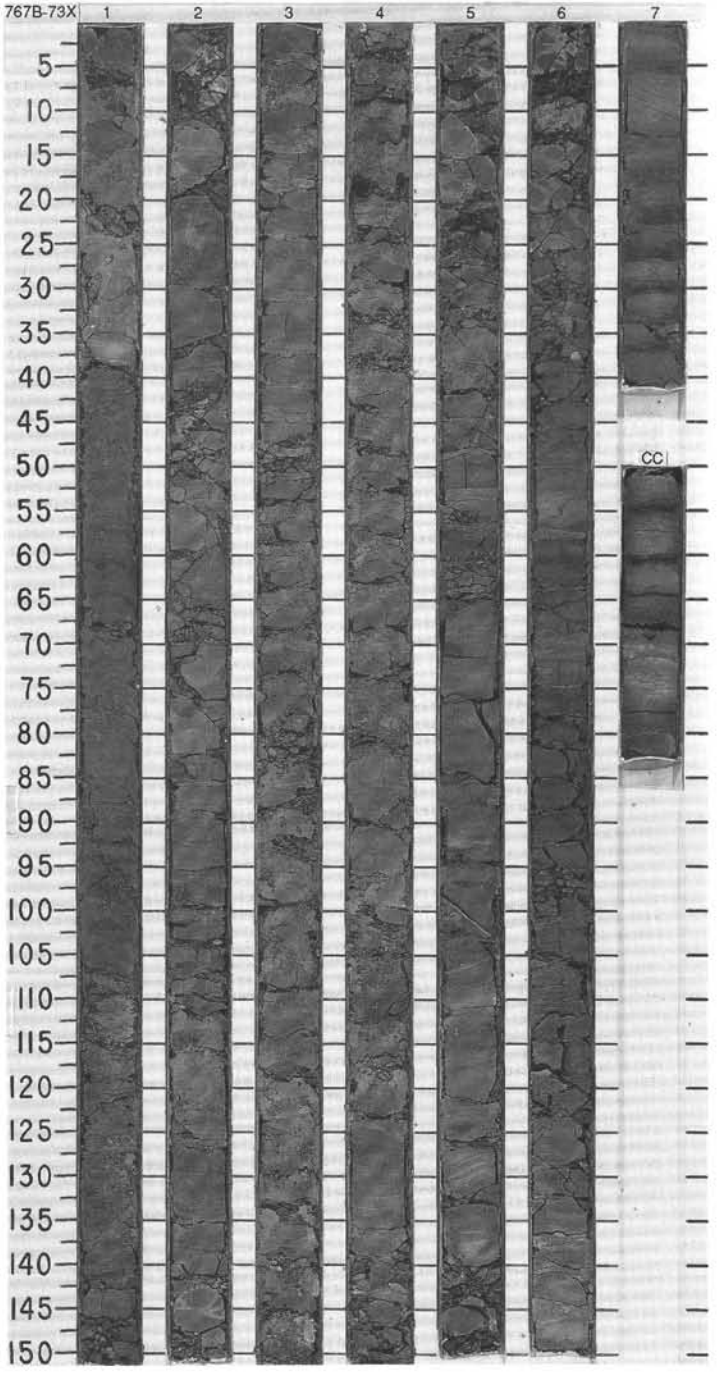
LITHOLOGIC DESCRIPTION

CLAYSTONE, SILTY CLAYSTONE and SILTSTONE

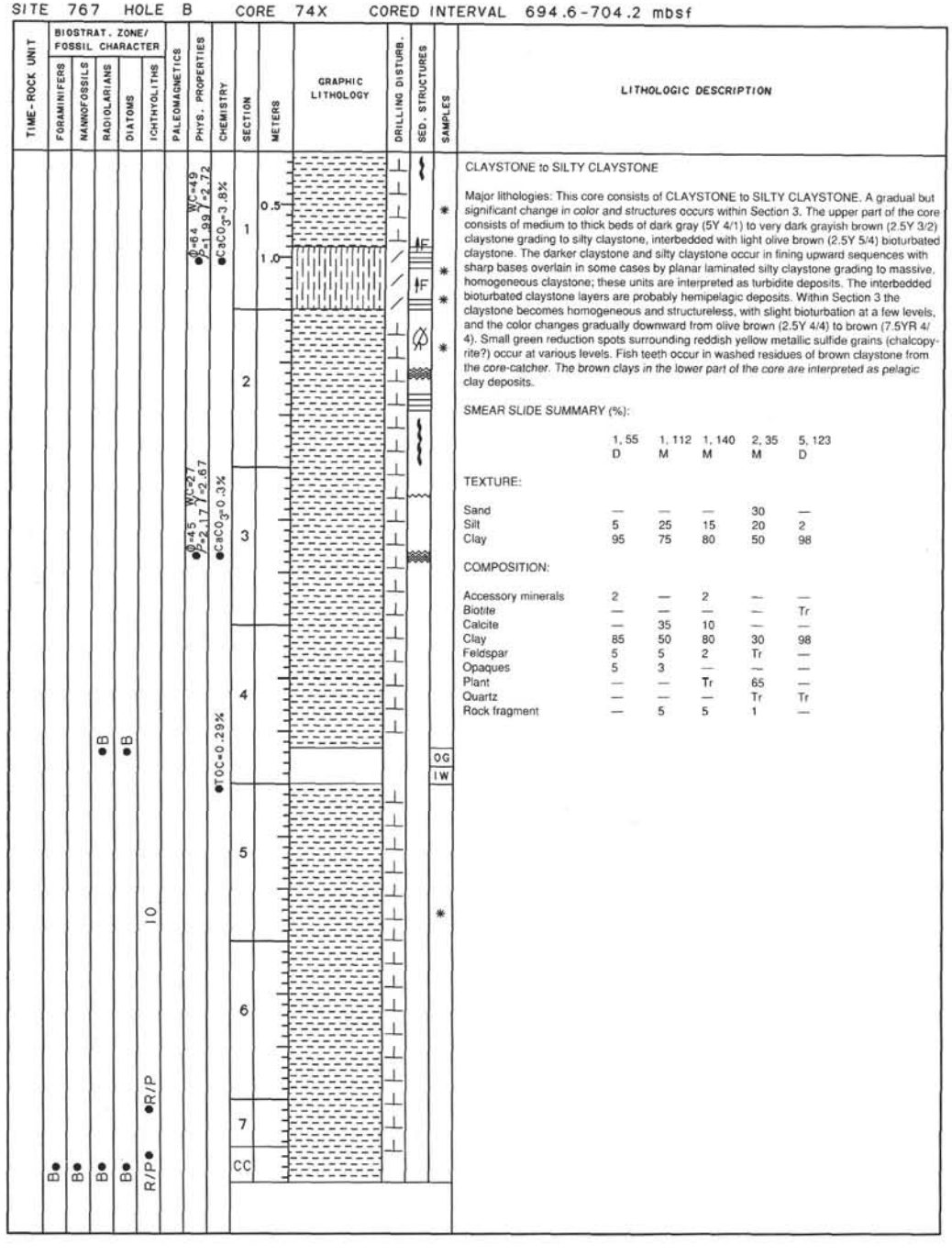
Major lithologies: CLAYSTONE, SILTY CLAYSTONE and SILTSTONE occur as thin to medium beds. The silt grade material is mainly quartz, feldspar and rock fragments with variable amounts of crystalline calcite. The beds typically have a sharp base and grade up from a very thin, very dark gray (5Y 3/1) siltstone to olive gray (5Y 4/2) claystone. Planar, wavy, convolute and cross lamination are common and are well preserved in the silty beds. Bioturbation, which is widespread, may cause the bedding planes or laminations to be diffuse. The silty claystone at the top of Section 1 (0-38 cm) and in Section 5 (65-150 cm) is calcareous; these beds are olive in color (5Y 4/3), laminated at the base, normally graded and bioturbated. These beds are considered to be distal muddy turbidite deposits.Interbedded with dark gray (5Y 4/1) beds towards the base of this core are claystones of more brownish hues in Section 5, 55-65 cm (10YR 3/3) and Section 6, 10-48 cm (2.5Y 4/4), 71-124 cm (10YR 4/2). These beds show less bioturbation, and are not laminated or graded.

SMEAR SLIDE SUMMARY (%):

	2, 28 M	6, 147 D	7, 28 D	7, 31 M
TEXTURE:				
Sand	95	—	—	—
Silt	5	—	—	5
Clay	—	—	100	95
COMPOSITION:				
Amphibole	5	—	—	—
Apatite	Tr	—	—	—
Calcite	5	—	—	—
Chlorite	Tr	—	—	—
Clay	—	75	100	95
Epidote	—	Tr	—	—
Feldspar	20	15	—	—
Glass	3	—	—	—
Opaques	5	5	—	5
Quartz	30	5	—	—
Rock fragment	30	—	—	—



SITE 767 HOLE B CORE 74X CORED INTERVAL 694.6-704.2 mbsf

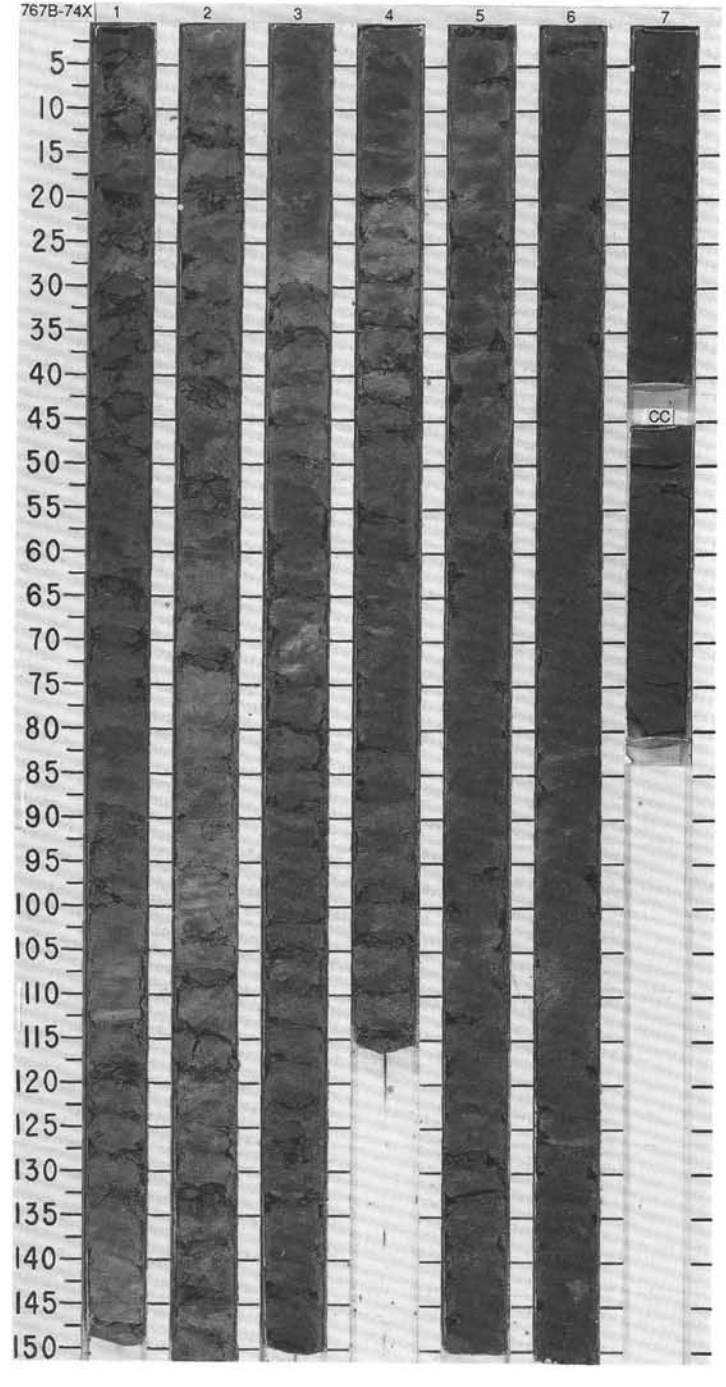


CLAYSTONE to SILTY CLAYSTONE

Major lithologies: This core consists of CLAYSTONE to SILTY CLAYSTONE. A gradual but *significant change in color and structures occurs within Section 3.* The upper part of the core consists of medium to thick beds of dark gray (5Y 4/1) to very dark grayish brown (2.5Y 3/2) claystone grading to silty claystone, interbedded with light olive brown (2.5Y 5/4) bioturbated claystone. The darker claystone and silty claystone occur in fining upward sequences with sharp bases overlain in some cases by planar laminated silty claystone grading to massive, homogeneous claystone; these units are interpreted as turbidite deposits. The interbedded bioturbated claystone layers are probably hemipelagic deposits. Within Section 3 the claystone becomes homogeneous and structureless, with slight bioturbation at a few levels, and the color changes gradually downward from olive brown (2.5Y 4/4) to brown (7.5YR 4/4). Small green reduction spots surrounding reddish yellow metallic sulfide grains (chalcopyrite?) occur at various levels. Fish teeth occur in washed residues of brown claystone from the core-catcher. *The brown clays in the lower part of the core are interpreted as pelagic* clay deposits.

SMEAR SLIDE SUMMARY (%):

	1, 55 D	1, 112 M	1, 140 M	2, 35 M	5, 123 D
TEXTURE:					
Sand	—	—	—	30	—
Silt	5	25	15	20	2
Clay	95	75	80	50	98
COMPOSITION:					
Accessory minerals	2	—	2	—	—
Biotite	—	—	—	—	Tr
Calcite	—	35	10	—	—
Clay	85	50	80	30	98
Feldspar	5	5	2	Tr	—
Opaques	5	3	—	—	—
Plant	—	—	Tr	65	—
Quartz	—	—	—	Tr	Tr
Rock fragment	—	5	5	1	—



SITE 767 HOLE B CORE 75X CORED INTERVAL 704.2-713.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	B							1	0.5				*
	B								1.0				
			B					2					*
				B									
	B			B				3					
	B			C/P									
								4					
													IW
								5					
								6					*
								7					*
								CC					

10

ϕ=42, WC=25
ρ=2.14-2.70

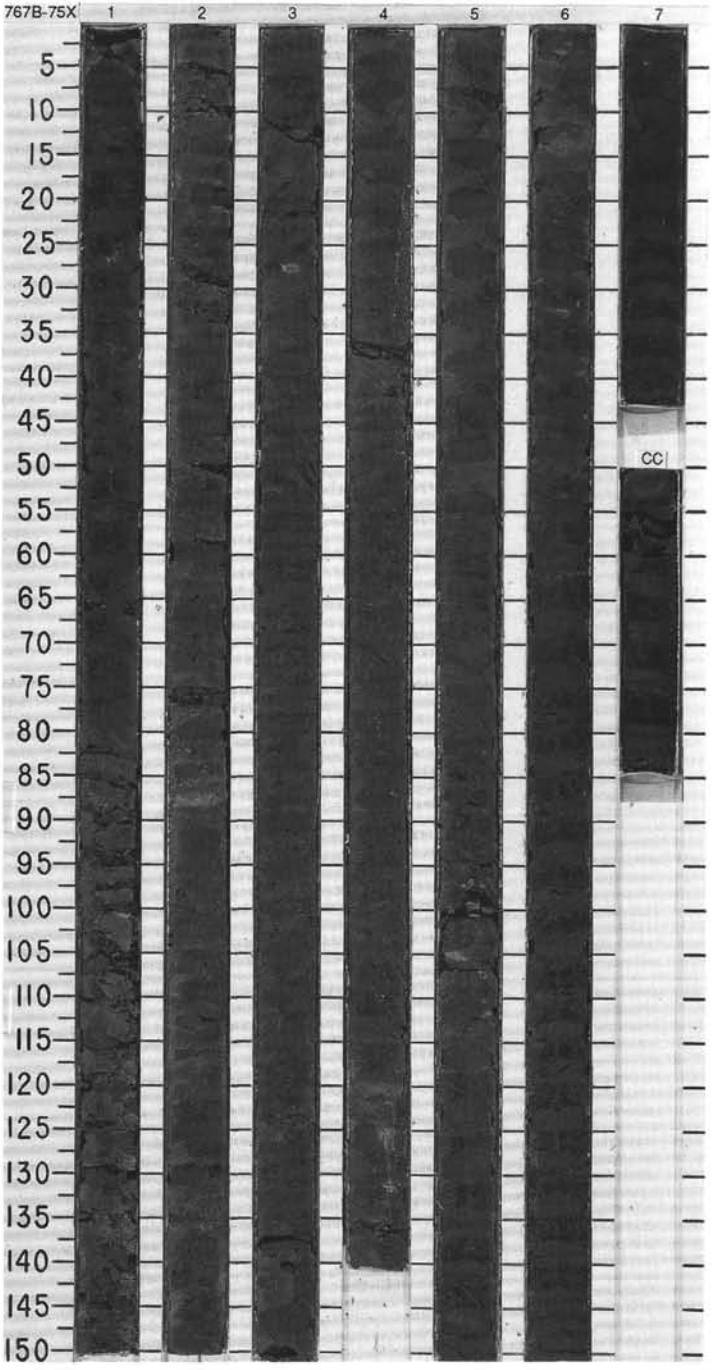
●$CaCO_3$=0.2%

CLAYSTONE and clayey tuff

Major lithology: This core contains CLAYSTONE, which is homogeneous and structureless, with slight bioturbation evident at a few levels. It is brown (7.5YR 5/4 to 4/4 and 10YR 4/3) with local pale green reduction spots surrounding grains of a reddish-yellow metallic mineral (chalcopyrite?).

SMEAR SLIDE SUMMARY (%):

	1, 49 D	2, 86 M	6, 30 D	7, 30 D
TEXTURE:				
Sand	20	—	5	1
Silt	10	7	30	20
Clay	70	90	65	75
COMPOSITION:				
Accessory minerals	Tr	5	5	5
Clay	75	90	75	75
Feldspar	Tr	3	—	—
Plant	—	Tr	—	—
Radiolarians	—	—	2	2
Rock fragment	20	—	—	—
Silt	—	—	15	15



SITE 767 HOLE B CORE 76X CORED INTERVAL 713.5-723.2 mbsf

TIME-ROCK UNIT: UPPER OLIGOCENE / LOWER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: ●B; NANNOFOSSILS: B● (Dorcadospyris ateuchus); RADIOLARIANS: A/M●●A/M Lychnocanoma elongata ●B; DIATOMS: B●●B ●B; ICHTHYOLITHS: C/M● ●R/M

PALEOMAGNETICS

PHYS. PROPERTIES: ●0.54 WC=40 ●1.95 P=2.47

CHEMISTRY: $CaCO_3$=0.2%● ●TOC=0.18%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: M, M

SAMPLES: *, *, *, *, *, #

LITHOLOGIC DESCRIPTION

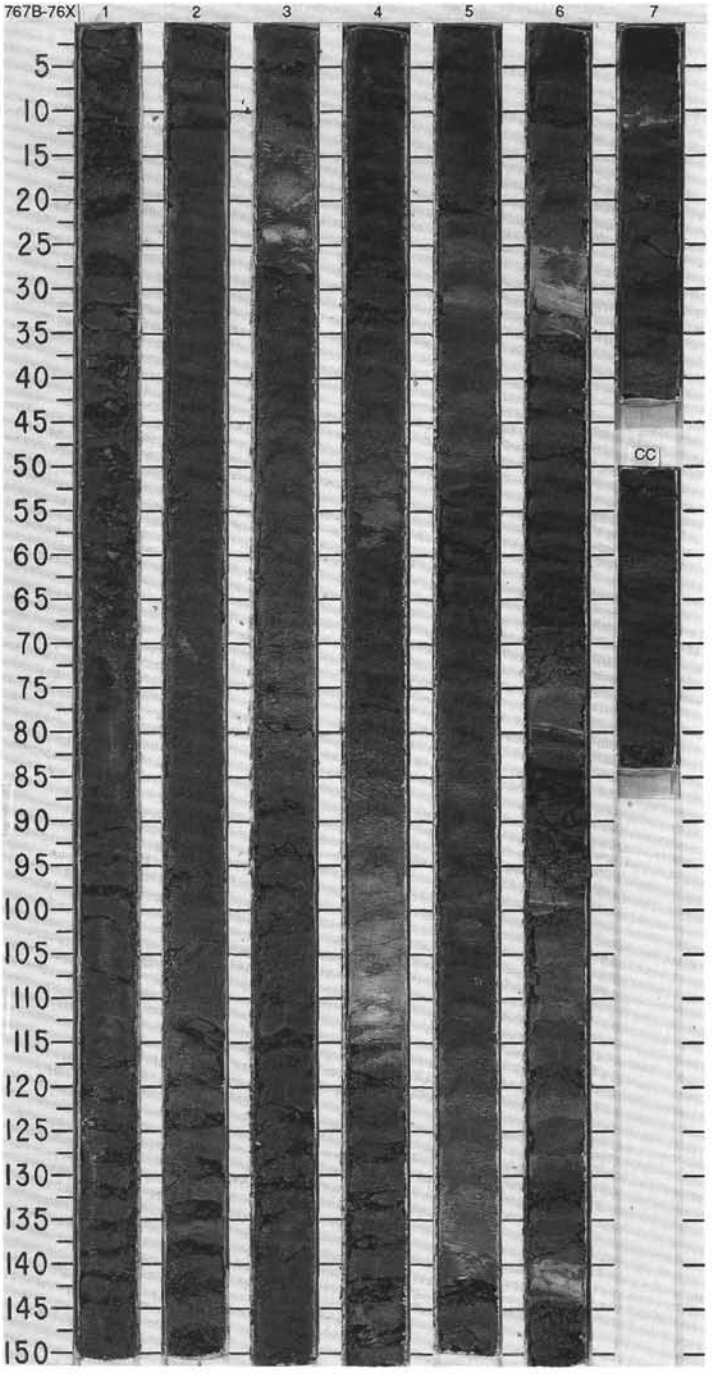
CLAYSTONE and clayey tuff

Major lithology: CLAYSTONE is dark brown (7.5YR 4/4) in Sections 1 and 2, becoming strong brown to dark brown (7.5YR 4/6 to 3/4) in Sections 3 and 4, and reddish brown (5YR 5/4 to 7.5YR 5/4) in Section 5 and below. It consists of clay minerals with minor opaque minerals, apatite, and feldspar; fish teeth and radiolarians are present in washed residues. From Section 3 down there is a cyclic vertical repetition of claystone lithologies, with each cycle beginning with a thin tuff layer: 1) reddish brown claystone with red mottling; 2) structureless red claystone; 3) reddish brown claystone with scattered small black nodules and streaks of manganese oxide; at the top of some cycles there are additional layers of structureless red and mottled reddish brown claystone. The thickness of the cycles varies from 20-70 cm.

Minor lithology: Very thin clayey tuff layers are light greenish gray (10Y 6/2), in places mottled with reddish brown (2.5YR 5/6), and have fine planar lamination. They consist of plagioclase feldspar and clay, with minor rock fragments. They probably represent turbidite deposits.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	3, 23 M	3, 97 D	4, 76 D	4, 108 M	6, 30 M	6, 85 M	T 6, 96 M
TEXTURE:							
Sand	—	—	—	30	20	5	—
Silt	10	5	5	30	50	35	30
Clay	90	95	95	40	30	60	70
COMPOSITION:							
Accessory minerals	1	—	1	—	2	—	—
Apatite	10	10	—	—	—	—	Tr
Biotite	—	—	—	—	—	1	—
Clay	85	80	95	20	30	60	60
Feldspar	—	—	1	65	30	—	20
Glass	—	—	—	—	13	—	15
Mica	—	2	—	—	—	—	—
Opaques	3	5	—	—	—	10	—
Organic matter	—	—	—	—	—	—	3
Oxide	—	—	2	5	—	—	—
Quartz	—	—	—	—	—	2	—
Rock fragment	—	—	—	10	25	—	1
Silt	—	—	—	—	—	25	—



SITE 767 HOLE B CORE 77X CORED INTERVAL 723.2-732.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER OLIGOCENE	B●	B●	A/M● *Dorcadospyris ateuchus*	B●	R/M● 11+13 ●R/M		χc=31 ρ=2.68 φ=48 γ=2.07	●$CaCO_3$=0.2% TOC=0.22%●	1	0.5 1.0				*
									2					*
									CC					*

LITHOLOGIC DESCRIPTION

CLAYSTONE and clayey tuff

Major lithology: CLAYSTONE is reddish brown (5Y 4/3 to 5/3) with minor yellowish red (5Y 4/6) and dark brown (7.5YR 3/2). Most of the claystone is massive and structureless, but a number of thin zones exhibit mottling of light brown to red within the overall reddish brown color. Thin zones of dark reddish brown (5YR 3/2) claystone with black streaks of manganese oxide are also present. The claystone contains clay minerals with minor feldspar, opaque minerals, rock fragments, and radiolarians.

Minor lithology: A thin layer of clayey tuff is present in Section 1. It is light brown with streaks of pale green, and has planar lamination. It is composed of rock fragments, feldspar, and clay.

SMEAR SLIDE SUMMARY (%):

	1, 103 M	2, 36 D	2, 70 M	CC, 23 D
TEXTURE:				
Sand	5	—	—	—
Silt	60	10	—	—
Clay	30	90	—	—
COMPOSITION:				
Apatite	Tr	—	Tr	Tr
Clay	30	90	90	70
Feldspar	25	—	5	5
Opaques	2	—	2	5
Plant	—	Tr	—	—
Quartz	—	5	—	—
Radiolarians	—	5	—	10
Rock fragment	40	—	—	5

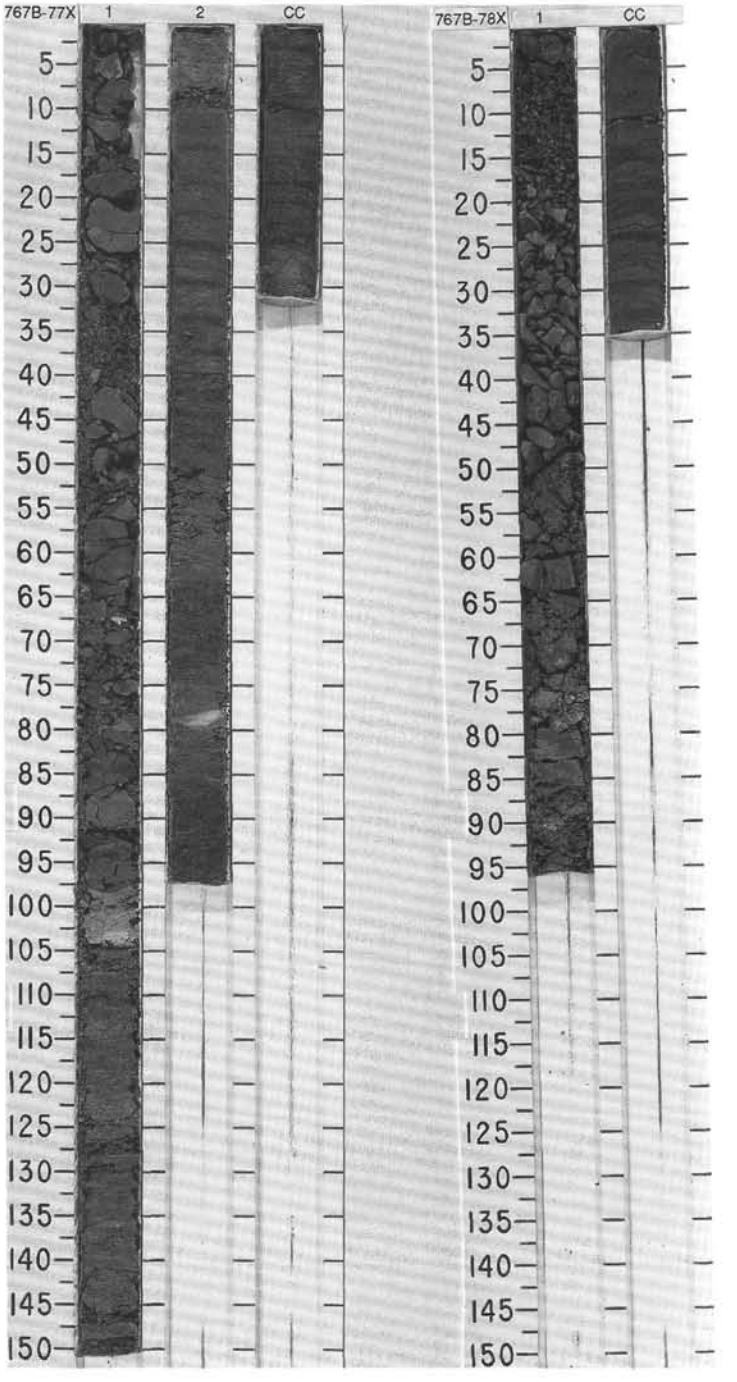
SITE 767 HOLE B CORE 78X CORED INTERVAL 732.9-739.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
(T. *tuberosa*) 11 + 14	B●	B●	A/M● A/P●	B●	R/M● R/M			●TOC=0.07%	1					
									CC				Mn	

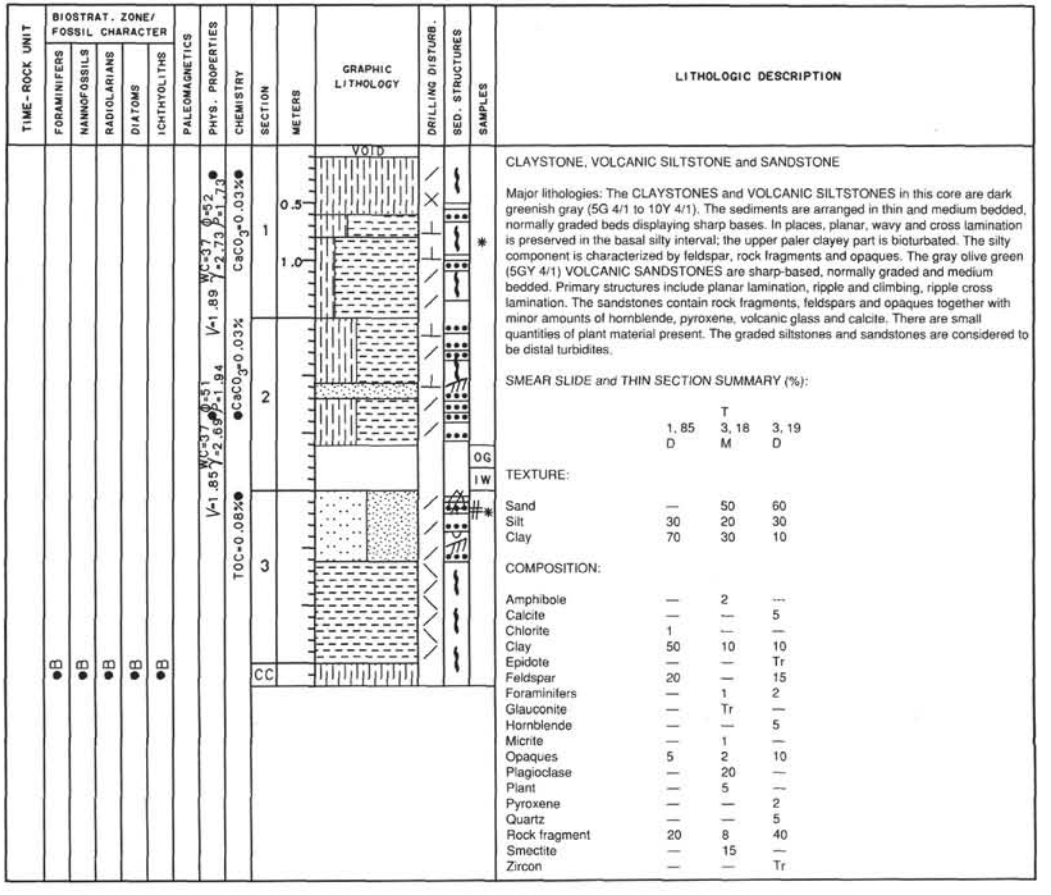
LITHOLOGIC DESCRIPTION

CLAYSTONE and SILTY CLAYSTONE

Major lithologies: The CLAYSTONE and SILTY CLAYSTONE in this core are reddish brown (5YR 4/3) and dark reddish brown (5YR 3/2) respectively. Little structure apart from some bioturbation can be observed in Section 1 because of severe drilling disturbance. In the core catcher, the claystone is mottled light gray (5YR 7/1) and there are distinct black (5YR 2.5/1) nodules of manganese oxide up to 2 mm in diameter.



SITE 767 HOLE C CORE 1R CORED INTERVAL 680.0-689.5 mbsf



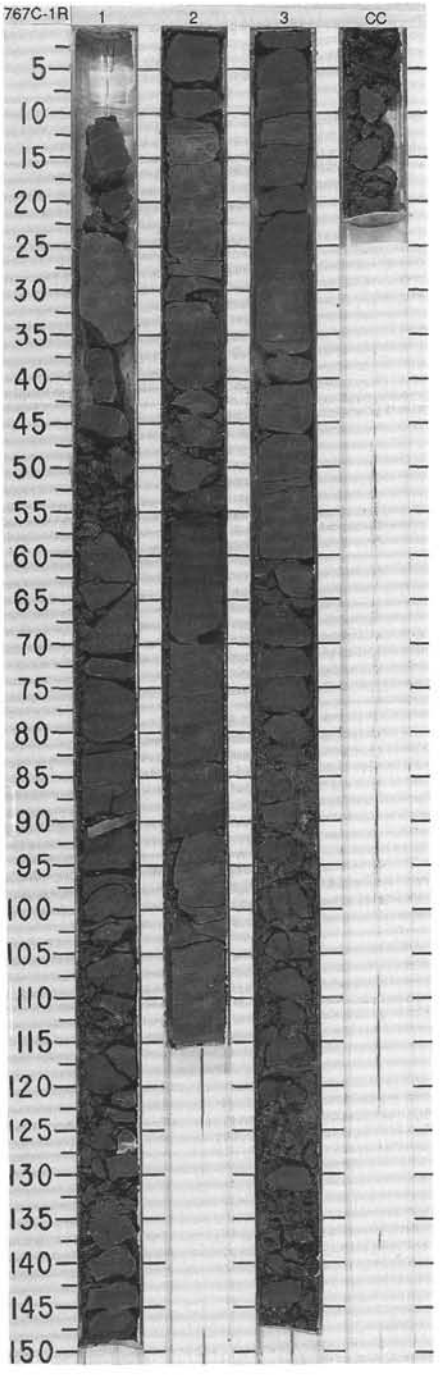
LITHOLOGIC DESCRIPTION

CLAYSTONE, VOLCANIC SILTSTONE and SANDSTONE

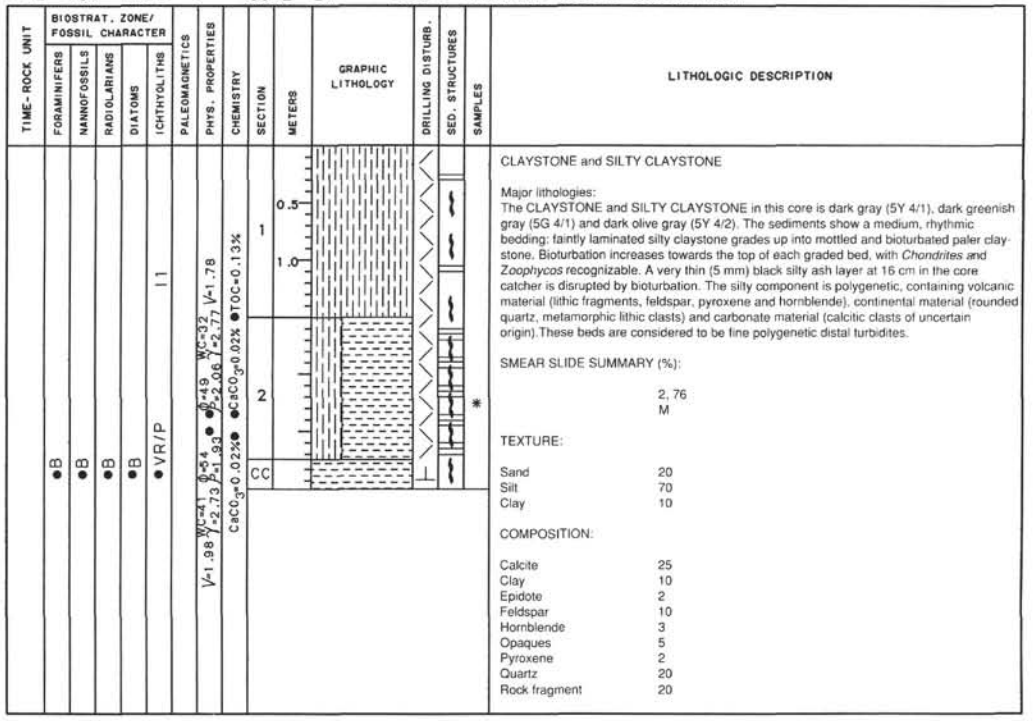
Major lithologies: The CLAYSTONES and VOLCANIC SILTSTONES in this core are dark greenish gray (5G 4/1 to 10Y 4/1). The sediments are arranged in thin and medium bedded, normally graded beds displaying sharp bases. In places, planar, wavy and cross lamination is preserved in the basal silty interval; the upper paler clayey part is bioturbated. The silty component is characterized by feldspar, rock fragments and opaques. The gray olive green (5GY 4/1) VOLCANIC SANDSTONES are sharp-based, normally graded and medium bedded. Primary structures include planar lamination, ripple and climbing, ripple cross lamination. The sandstones contain rock fragments, feldspars and opaques together with minor amounts of hornblende, pyroxene, volcanic glass and calcite. There are small quantities of plant material present. The graded siltstones and sandstones are considered to be distal turbidites.

SMEAR SLIDE and THIN SECTION SUMMARY (%):

	1, 85 D	T 3, 18 M	3, 19 D
TEXTURE:			
Sand	—	50	60
Silt	30	20	30
Clay	70	30	10
COMPOSITION:			
Amphibole	—	2	—
Calcite	—	—	5
Chlorite	1	—	—
Clay	50	10	10
Epidote	—	—	Tr
Feldspar	20	—	15
Foraminifers	—	1	2
Glauconite	—	Tr	—
Hornblende	—	—	5
Micrite	—	1	—
Opaques	5	2	10
Plagioclase	—	20	—
Plant	—	5	—
Pyroxene	—	—	2
Quartz	—	—	5
Rock fragment	20	8	40
Smectite	—	15	—
Zircon	—	—	Tr



SITE 767 HOLE C CORE 2R CORED INTERVAL 689.5-698.5 mbsf



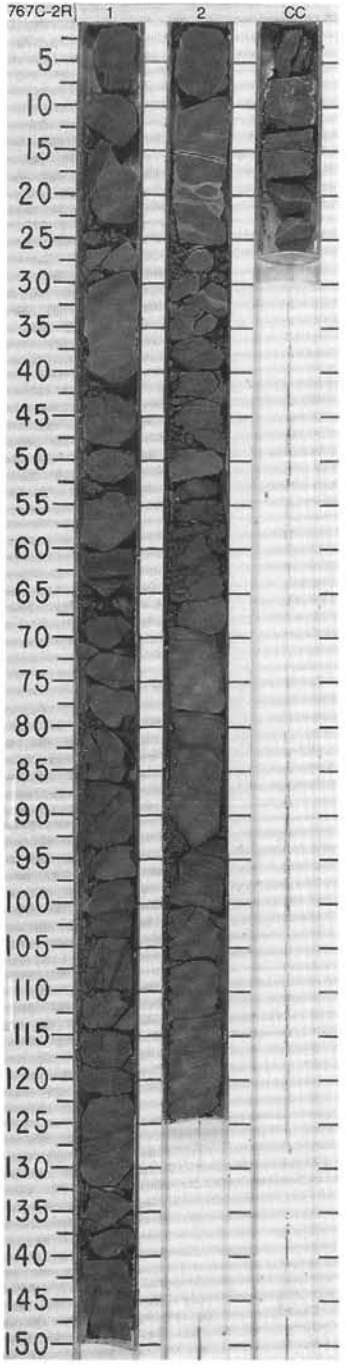
LITHOLOGIC DESCRIPTION

CLAYSTONE and SILTY CLAYSTONE

Major lithologies:
The CLAYSTONE and SILTY CLAYSTONE in this core is dark gray (5Y 4/1), dark greenish gray (5G 4/1) and dark olive gray (5Y 4/2). The sediments show a medium, rhythmic bedding; faintly laminated silty claystone grades up into mottled and bioturbated paler claystone. Bioturbation increases towards the top of each graded bed, with *Chondrites* and *Zoophycos* recognizable. A very thin (5 mm) black silty ash layer at 16 cm in the core catcher is disrupted by bioturbation. The silty component is polygenetic, containing volcanic material (lithic fragments, feldspar, pyroxene and hornblende), continental material (rounded quartz, metamorphic lithic clasts) and carbonate material (calcitic clasts of uncertain origin). These beds are considered to be fine polygenetic distal turbidites.

SMEAR SLIDE SUMMARY (%):

	2, 76 M
TEXTURE:	
Sand	20
Silt	70
Clay	10
COMPOSITION:	
Calcite	25
Clay	10
Epidote	2
Feldspar	10
Hornblende	3
Opaques	5
Pyroxene	2
Quartz	20
Rock fragment	20



SITE 767 HOLE C CORE 3R CORED INTERVAL 698.5-707.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	●B	●B	●B	●B	●C/P		●Φ=46 WC=29 ρ=2.17-2.75	TOC=0.07%● $CaCO_3$=0.01%●	1	0.5 1.0			OG	*
									2					
									CC					*

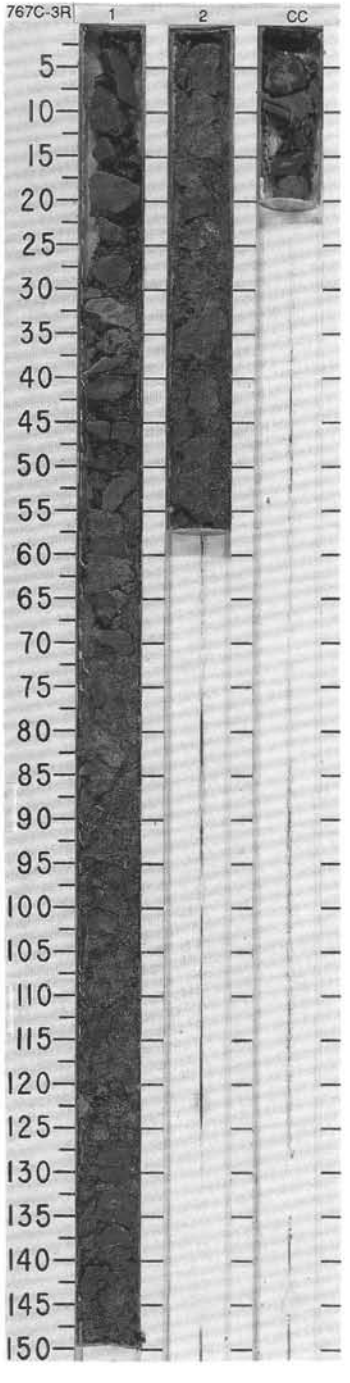
LITHOLOGIC DESCRIPTION

CLAYSTONE

Major lithology: Two distinct types of CLAYSTONE are recognized in this core.
a. Dark greenish gray (5G 4/1) to olive gray (5Y 4/2), strongly bioturbated claystone occurs in Section 1, 0-38 cm.
b. Grayish brown (10YR 5/2) claystone between 38 and 70 cm in Section 1 is moderately bioturbated. Below this, the claystone is dark brown (7.5YR 4/2), homogeneous and not bioturbated. These claystones are composed of clay minerals with very rare quartz and opaque minerals. Native copper occurs localized in small (1-3 mm) nodules (Section 1, 140-145 cm). The change in color and the degree of bioturbation of the sediment at 38 cm in Section 1 is considered an important boundary.

SMEAR SLIDE SUMMARY (%):

	1, 122 D	CC, 6 D
TEXTURE:		
Silt	5	5
Clay	95	95
COMPOSITION:		
Biotite	1	—
Calcite	Tr	—
Clay	95	95
Opaques	2	1
Quartz	—	1
Rock fragment	—	2



SITE 767 HOLE C CORE 4R CORED INTERVAL 707.5-716.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	●B	●B	●B	●B	●R/P		V=1.88 WC=26 Φ=43 ρ=2.70 ρ=2.12 ●	CaCO$_3$=0.01% ● TOC=0.09% ●	1	0.5 1.0				*
									2				Cu	OG IW *
									3					
									CC					

LITHOLOGIC DESCRIPTION

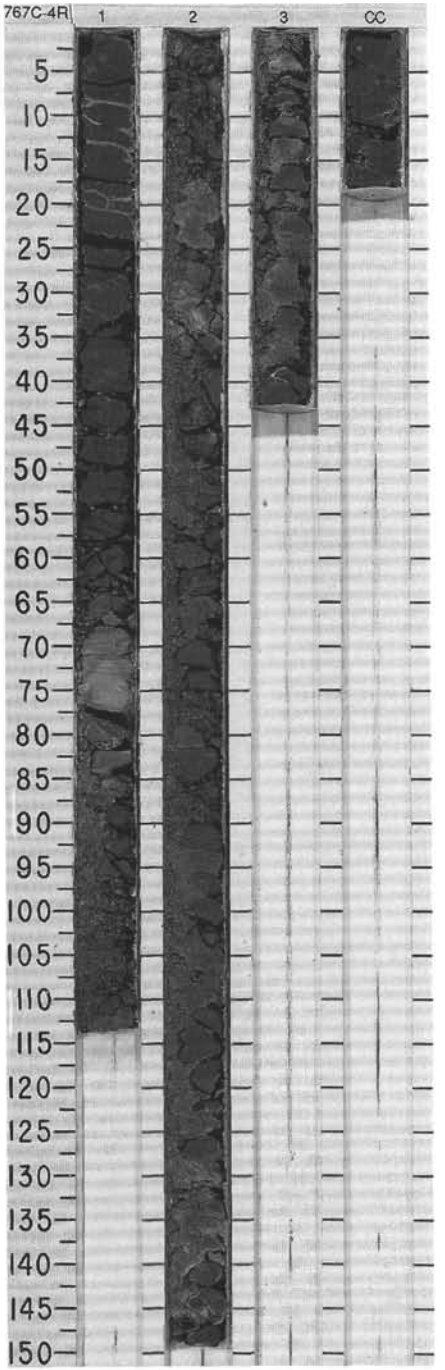
CLAYSTONE and clayey siltstone

Major lithology: dark yellowish brown (10YR 4/4) CLAYSTONE is the dominant lithology. It is slightly to moderately bioturbated. Native copper occurs in small (1-3 mm) nodules, around which the claystone is colored greenish gray (5G 7/1). Other small diffuse patches of greenish gray may also be related to copper mineralization. The claystone is otherwise homogeneous and composed entirely of clay minerals.

Minor lithology: Clayey siltstone occurs in a single bed in Section 1 (65-87 cm). It is greenish gray (5G 6/1, 5/1) and weakly laminated, alternating with weak red (10Y 5/2) silty claystone. It grades up into mottled, bioturbated dark gray (10YR 4/1) claystone which in turn grades up into the dark yellowish brown claystone. The silt component includes quartz, feldspar, rock fragments and some calcite (which may be diagenetic).

SMEAR SLIDE SUMMARY (%):

	1, 77 M	2, 62 D
TEXTURE:		
Silt	55	—
Clay	45	100
COMPOSITION:		
Calcite	10	—
Clay	50	100
Feldspar	20	—
Opaques	—	Tr
Quartz	5	—
Rock fragment	15	—



SITE 767 HOLE C CORE 5R CORED INTERVAL 716.5-726.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	●B	●B	●B	●B	●C/M	I I	WC-27 0.46 P-2.21 2.69 V-1.83 WC-28 0.47 P-2.17 2.85	$CaCO_3$=0.03% $CaCO_3$=0.02% TOC=0.21%	1 2 3 CC	0.5 1.0	VOID			*

LITHOLOGIC DESCRIPTION

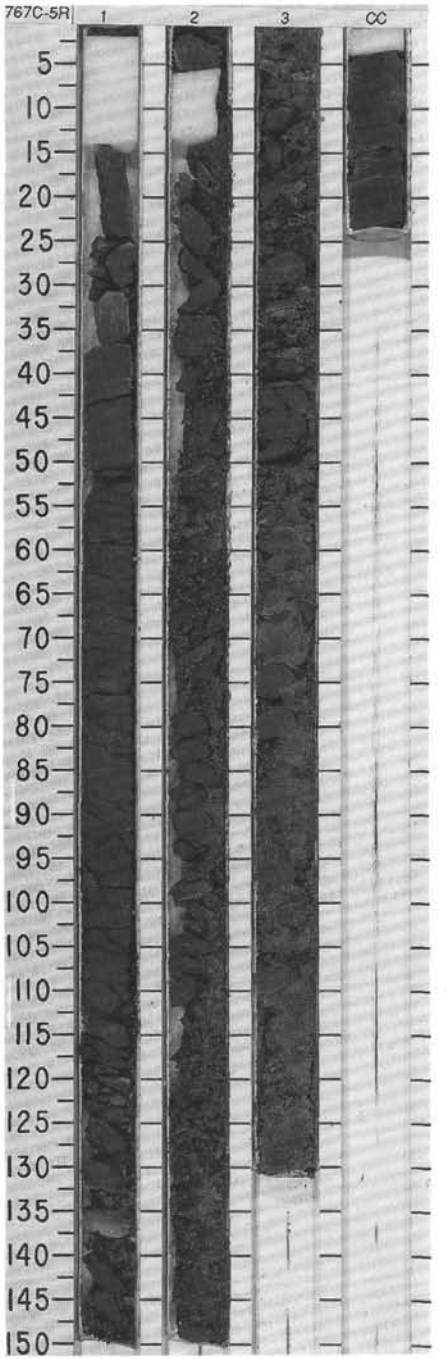
CLAYSTONE and clayey tuff

Major lithology: CLAYSTONE is the dominant lithology in this core. It is dark brown (7.5YR 3/2) to reddish brown (7.5YR 5/4 to 5YR 4/4), with color mottling due to slight to moderate bioturbation. At several levels in the core there is a medium-bedded alteration of three claystone lithologies: nearly structureless reddish brown claystone, burrow-mottled reddish-brown claystone, and dark brown mottled claystone with small (few mm diameter) black manganese nodules and disseminated black streaks of manganese oxide. The contacts between these different types of claystone are gradational. The claystones are composed of clay minerals with minor silt-sized plagioclase, rock fragments, and opaque minerals.

Minor lithology: clayey tuff grading to feldspathic silty claystone. In addition to the bed shown at the bottom of Section 2, thin beds of this lithology occur in Section 1, 12-16, 119-124, and 137 cm; and Section 2, 22-24 and 103-108 cm. These beds have sharp basal contacts and normal grading, with basal tuff with planar lamination (clayey sand to sandy silt grade) *grading upward into massive or bioturbated feldspathic silty claystone. The silt- to sand-sized grains in these beds are chiefly twinned and zoned plagioclase, with rock fragments, opaque minerals, and biotite. These beds are interpreted as volcanogenic turbidites.*

SMEAR SLIDE SUMMARY (%):

	1, 14 M	1, 101 M	2, 24 M	2, 148 M
TEXTURE:				
Sand	40	—	15	15
Silt	20	5	60	45
Clay	40	95	25	40
COMPOSITION:				
Accessory minerals	—	—	1	—
Biotite	—	—	—	1
Calcite	—	—	5	—
Chlorite	—	—	5	—
Clay	50	95	60	40
Feldspar	—	2	—	—
Mica	1	—	—	—
Opaques	20	1	2	2
Plagioclase	20	—	20	30
Rock fragment	5	1	5	25



SITE 767 HOLE C CORE 6R CORED INTERVAL 726.2-735.8 mbsf

TIME-ROCK UNIT: UPPER OLIGOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS B● B● A/M● B● R/M● | NANNOFOSSILS B● | RADIOLARIANS (Dorcadospyris ateuchus) ●B ●C/M ●A/M | DIATOMS ●B ●B | ICHTHYOLITHS 11+2

PALEOMAGNETICS: TOC=0.12%

PHYS. PROPERTIES: WC=27 0-46 ●, V=2.06 V=2.76/2.42 ●; WC=35 0-52 ●, V=2.74/2.03 ●

CHEMISTRY: $CaCO_3$=0.01% ●; $CaCO_3$=0.01% ●

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY: VOID, VOID, VOID

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

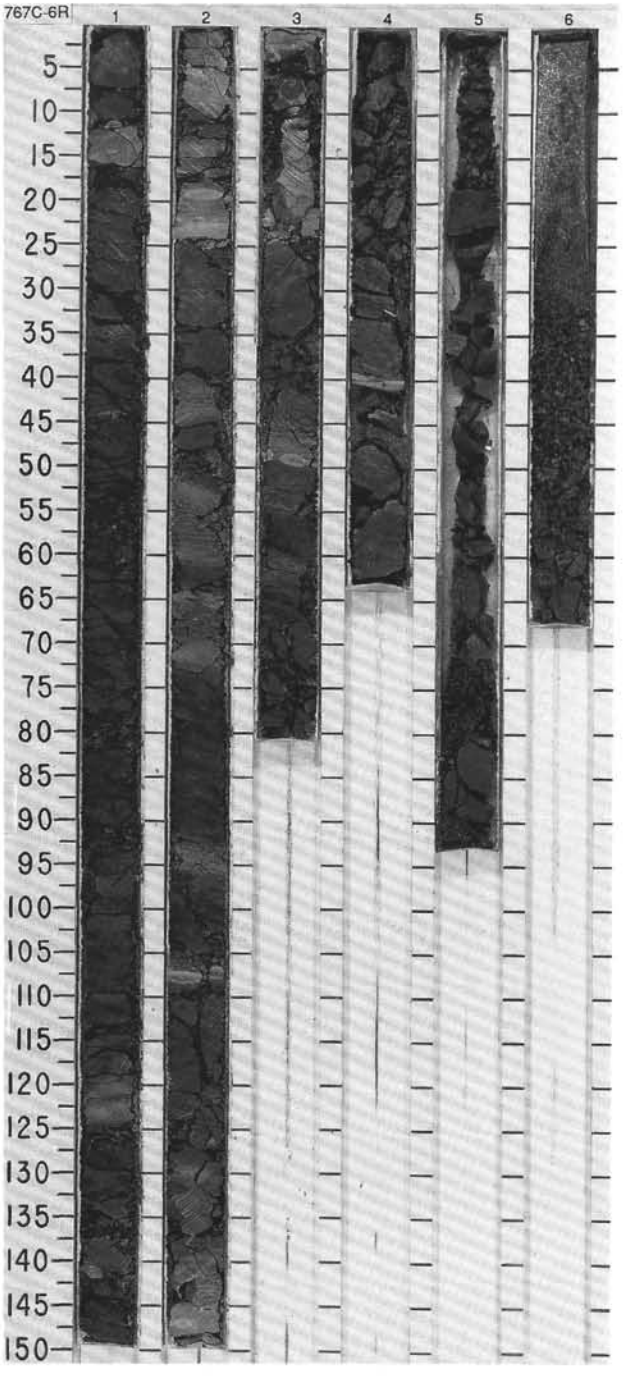
CLAYSTONE and clayey tuff

Major lithology: CLAYSTONE is the dominant lithology in this core. It is dark brown (7.5YR 3/2) to reddish brown (7.5YR 5/4 to 5YR 4/4), with color mottling due to slight to moderate bioturbation. At several levels in the core there is a medium-bedded alteration of three claystone lithologies: nearly structureless reddish brown claystone, burrow-mottled reddish-brown claystone, and dark brown mottled claystone with small (few mm diameter) black manganese nodules and disseminated black streaks of manganese oxide. The contacts between these different types of claystone are gradational. The claystones are composed of clay minerals with minor silt-sized plagioclase, rock fragments, and opaque minerals.

Minor lithology: clayey tuff grading to feldspathic silty claystone. In addition to the bed shown at the bottom of Section 2, thin beds of this lithology occur in Section 1, 12-16, 119-124, and 137 cm; and Section 2, 22-24 and 103-108 cm. These beds have sharp basal contacts and normal grading, with basal tuff with planar lamination (clayey sand to sandy silt grade) grading upward into massive or bioturbated feldspathic silty claystone. The silt- to sand-sized grains in these beds are chiefly twinned and zoned plagioclase, with rock fragments, opaque minerals, and biotite. These beds are interpreted as volcanogenic turbidites.

SMEAR SLIDE SUMMARY (%):

	1, 14 M	1, 101 M	2, 24 M	2, 148 M
TEXTURE:				
Sand	40	—	15	15
Silt	20	5	60	45
Clay	40	95	25	40
COMPOSITION:				
Accessory minerals	—	—	1	—
Biotite	—	—	—	1
Calcite	—	—	5	—
Chlorite	—	—	5	—
Clay	50	95	60	40
Feldspar	—	2	—	—
Mica	1	—	—	—
Opaques	20	1	2	2
Plagioclase	20	—	20	30
Rock fragment	5	1	5	25



SITE 767 HOLE C CORE 7R CORED INTERVAL 735.8-743.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
	B	B	B	B	R/M	($CaCO_3$=0.01%)	WC=27 Φ=45 V=1.83 P=2.16 WC=27 Φ=46 V=2.84 P=2.21	TOC=0.10% $CaCO_3$=0.04%	1 2 CC	0.5 1.0				* *

LITHOLOGIC DESCRIPTION

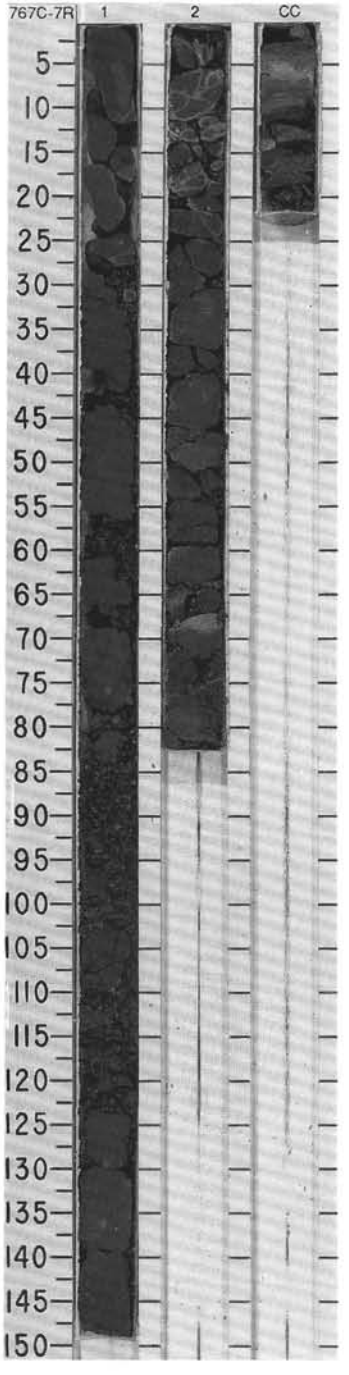
CLAYSTONE and sandy claystone

Major lithology: CLAYSTONE, varying from dark brown (10YR 3/3, 7.5YR 3/2) to reddish brown (5YR 5/4, 4/4, 4/6), is the main lithology. It is slightly to moderately bioturbated, thin to medium bedded with concentrations of copper and disseminated manganese oxide in places. Clay minerals are predominant, with rare quartz and opaques.

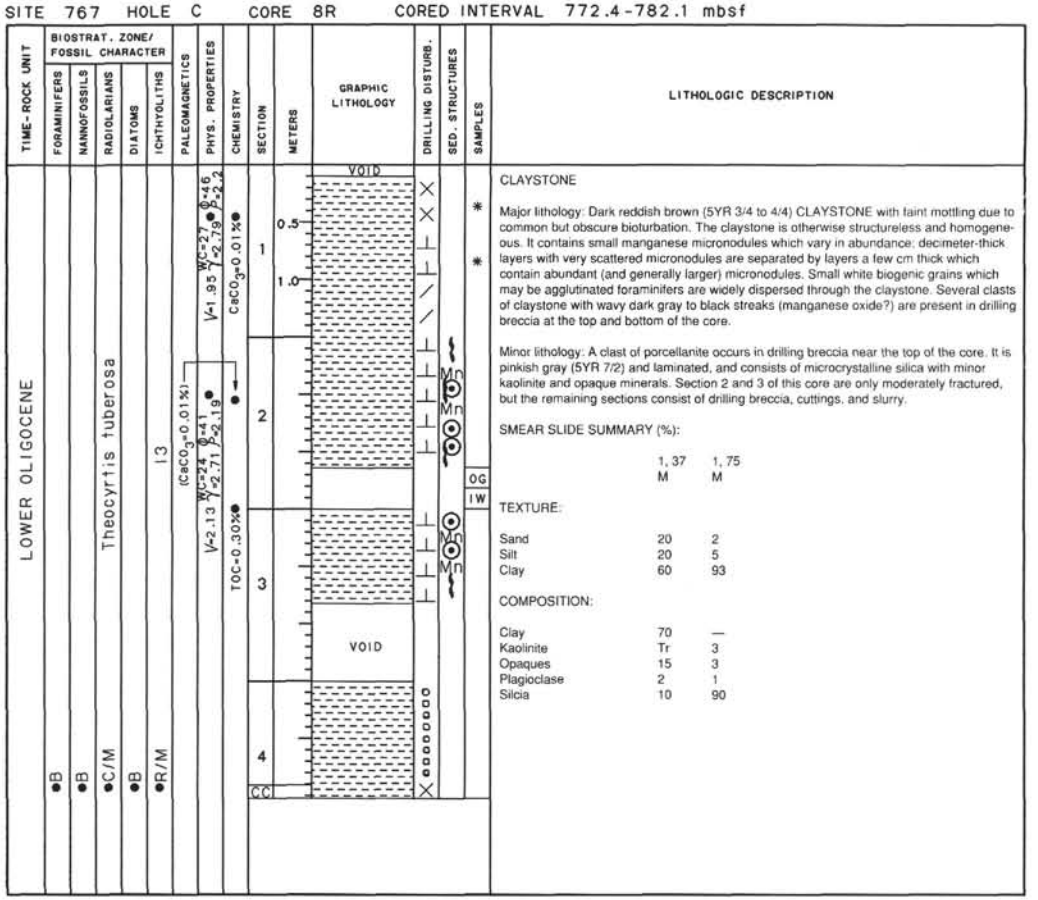
Minor lithology: feldspathic sandy claystone occurs in a thin, graded bed in the core catcher. It is thinly laminated and bioturbated towards the top of the bed; the color is light brown (7.5YR 6/2). Plagioclase feldspar occurs in this bed as sand grade grains, along with rock fragments, opaques and biotite. The graded coarser bed in the core catcher is interpreted as a thin turbidite of volcanogenic material in an otherwise uniform sequence of pelagic red muds.

SMEAR SLIDE SUMMARY (%):

	CC, 6 M	CC, 19 D
TEXTURE:		
Sand	25	—
Silt	15	15
Clay	60	85
COMPOSITION:		
Accessory minerals	1	2
Biotite	1	—
Clay	60	95
Opaques	3	1
Plagioclase	30	—
Quartz	—	1
Rock fragment	3	1



SITE 767 HOLE C CORE 8R CORED INTERVAL 772.4-782.1 mbsf



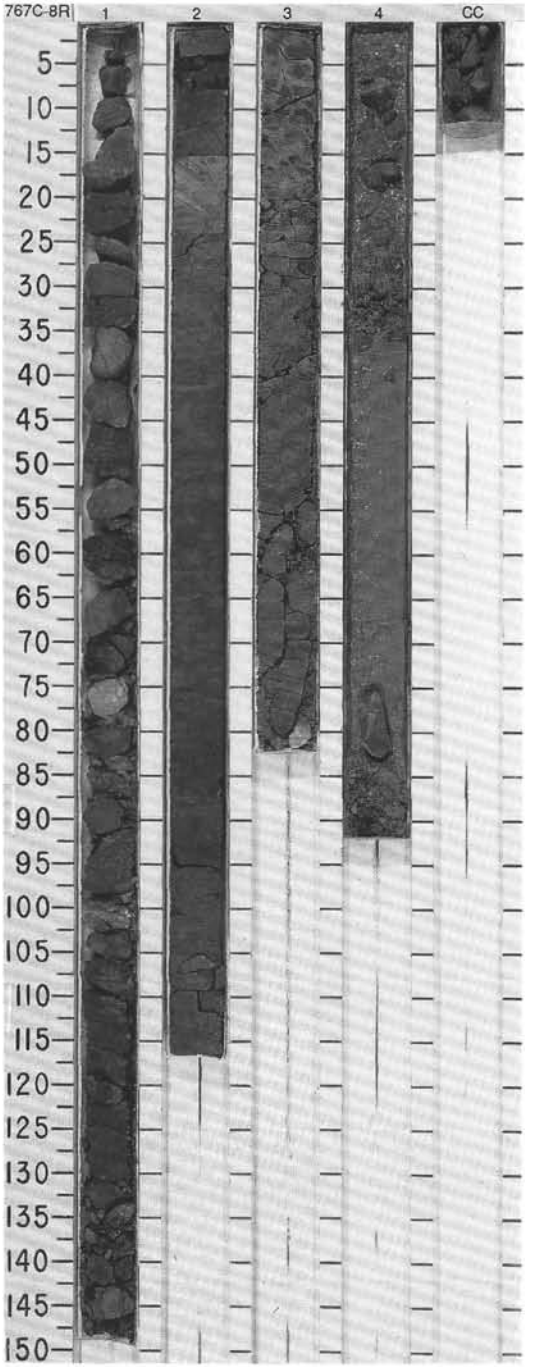
CLAYSTONE

Major lithology: Dark reddish brown (5YR 3/4 to 4/4) CLAYSTONE with faint mottling due to common but obscure bioturbation. The claystone is otherwise structureless and homogeneous. It contains small manganese micronodules which vary in abundance; decimeter-thick layers with very scattered micronodules are separated by layers a few cm thick which contain abundant (and generally larger) micronodules. Small white biogenic grains which may be agglutinated foraminifers are widely dispersed through the claystone. Several clasts of claystone with wavy dark gray to black streaks (manganese oxide?) are present in drilling breccia at the top and bottom of the core.

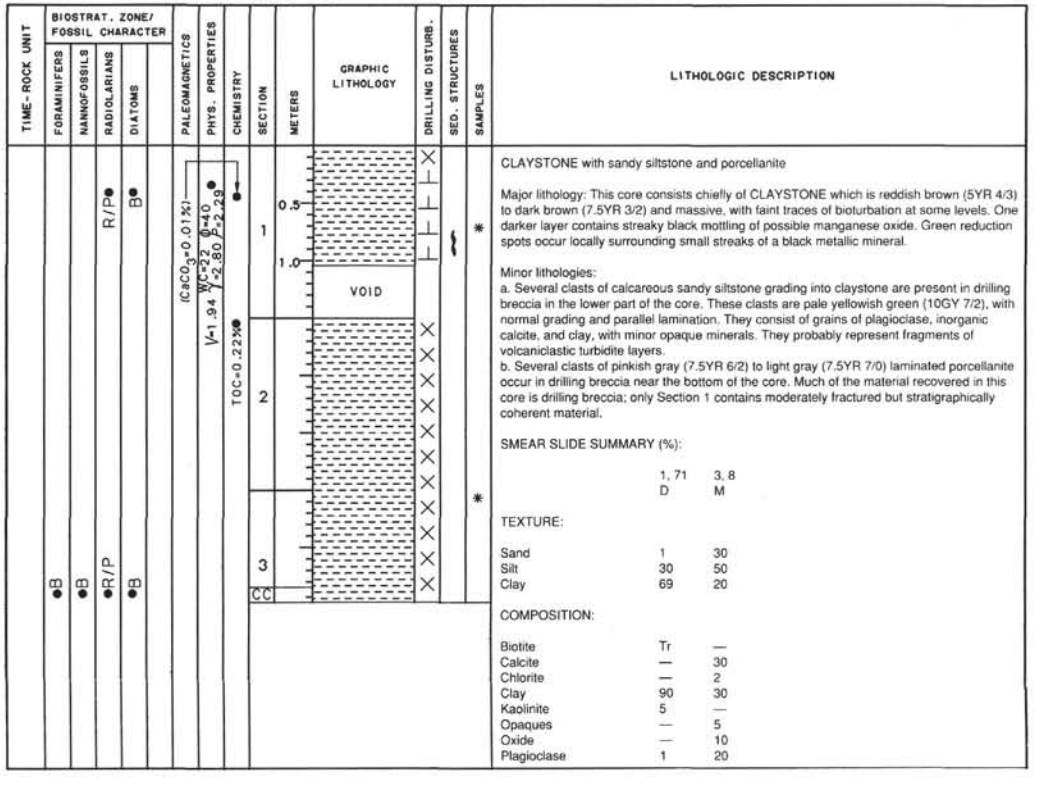
Minor lithology: A clast of porcellanite occurs in drilling breccia near the top of the core. It is pinkish gray (5YR 7/2) and laminated, and consists of microcrystalline silica with minor kaolinite and opaque minerals. Section 2 and 3 of this core are only moderately fractured, but the remaining sections consist of drilling breccia, cuttings, and slurry.

SMEAR SLIDE SUMMARY (%):

	1, 37 M	1, 75 M
TEXTURE:		
Sand	20	2
Silt	20	5
Clay	60	93
COMPOSITION:		
Clay	70	—
Kaolinite	Tr	3
Opaques	15	3
Plagioclase	2	1
Silcia	10	90



SITE 767 HOLE C CORE 9R CORED INTERVAL 753.0-762.7 mbsf



CLAYSTONE with sandy siltstone and porcellanite

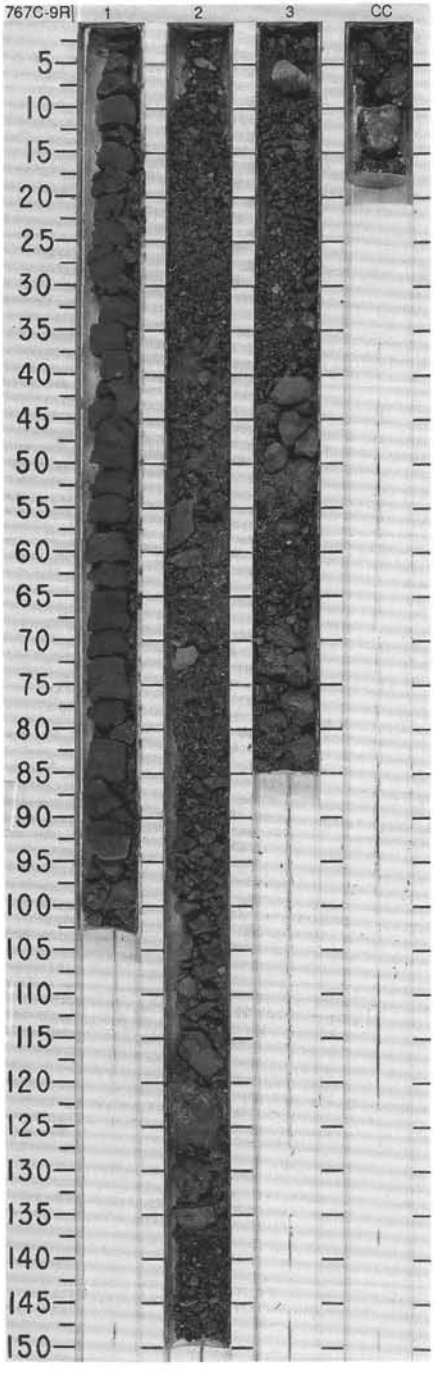
Major lithology: This core consists chiefly of CLAYSTONE which is reddish brown (5YR 4/3) to dark brown (7.5YR 3/2) and massive, with faint traces of bioturbation at some levels. One darker layer contains streaky black mottling of possible manganese oxide. Green reduction spots occur locally surrounding small streaks of a black metallic mineral.

Minor lithologies:
a. Several clasts of calcareous sandy siltstone grading into claystone are present in drilling breccia in the lower part of the core. These clasts are pale yellowish green (10GY 7/2), with normal grading and parallel lamination. They consist of grains of plagioclase, inorganic calcite, and clay, with minor opaque minerals. They probably represent fragments of volcaniclastic turbidite layers.
b. Several clasts of pinkish gray (7.5YR 6/2) to light gray (7.5YR 7/0) laminated porcellanite occur in drilling breccia near the bottom of the core. Much of the material recovered in this core is drilling breccia; only Section 1 contains moderately fractured but stratigraphically coherent material.

SMEAR SLIDE SUMMARY (%):

	1, 71 D	3, 8 M
TEXTURE:		
Sand	1	30
Silt	30	50
Clay	69	20
COMPOSITION:		
Biotite	Tr	—
Calcite	—	30
Chlorite	—	2
Clay	90	30
Kaolinite	5	—
Opaques	—	5
Oxide	—	10
Plagioclase	1	20

767C-10R NO RECOVERY

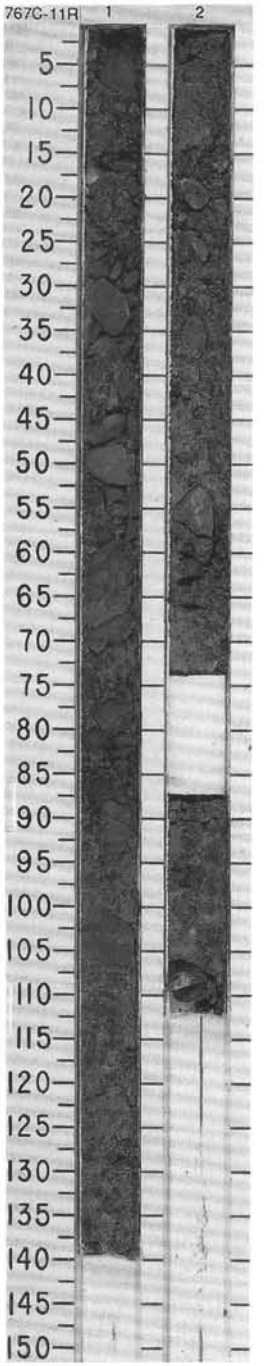


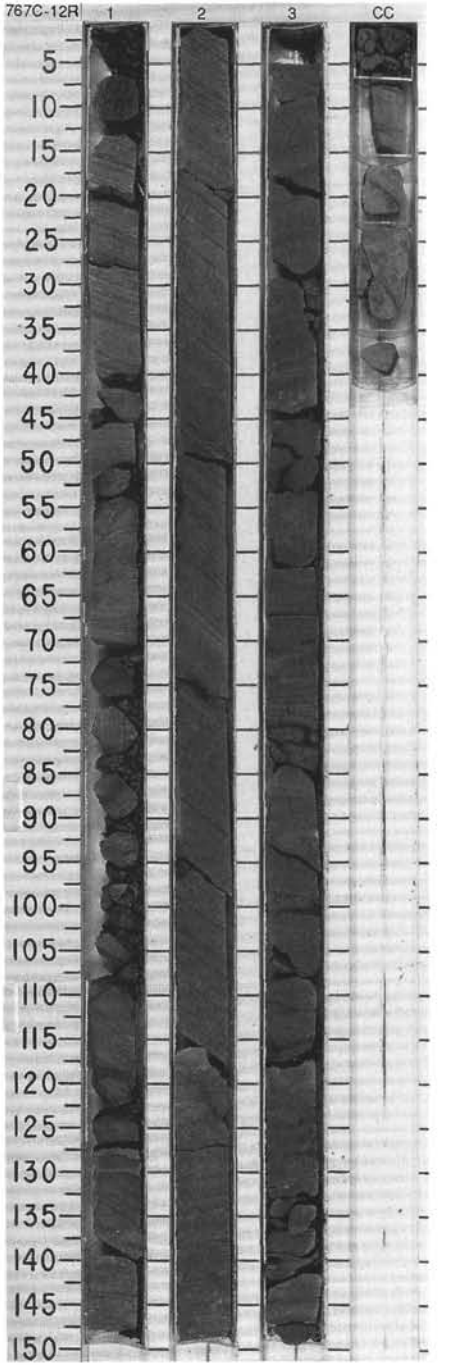
SITE 767 HOLE C CORE 11R CORED INTERVAL 772.4-782.1 mbsf

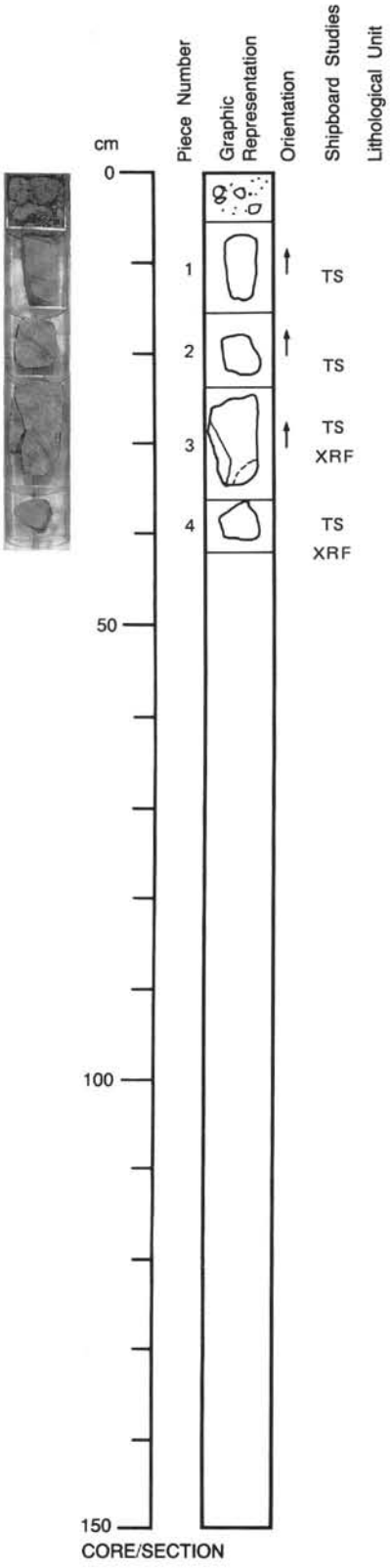
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	B●	B●	R/P●	B●	R/M●	11 + 13	V=2.03 ρ=2.24 Ø=39 WC=22 F=2.71	TOC=0.22% ●$CaCO_3$=0.01%	1	0.5 1.0		X	*	TW	CLAYSTONE Major lithology: CLAYSTONE is the only lithology represented in this core, occurring as clasts in drilling breccia. The clasts are structureless but variable in color from brown and dark brown (7.5YR 4/4 to 4/2) to reddish brown (5YR 4/3) to yellowish red (5YR 4/8). Small manganese micronodules occur in some of the claystone clasts, along with rare very small biogenic grains which could be agglutinated foraminifers. The claystone consists of clay minerals with very minor plagioclase and oxide grains. SMEAR SLIDE SUMMARY (%): 1, 93 D TEXTURE: Clay 100 COMPOSITION: Clay 99 Oxide Tr Plagioclase 1
									2		VOID				

SITE 767 HOLE C CORE 12R CORED INTERVAL 782.1-791.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	ICHTHYOLITHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
MIDDLE EOCENE	B●	B● (*Podocyrtis goetheana* / *P. chalara*)	R/P●●R/P	B●●B	R/M●	11 ($CaCO_3$=0.01%)	(V=1.93) V=1.91 ρ=2.69 WC=26 Ø=43 F=2.14 (V=1.93 ρ=2.59 WC=27 Ø=43 F=2.08 (V=1.93 ρ=2.56 WC=27 Ø=42 F=2.05) V=1.93 ρ=2.17 WC=27 Ø=43 F=2.60	$CaCO_3$=0.01%● $CaCO_3$=0.01%● $CaCO_3$=0.01%● $CaCO_3$=0.01%● TOC=0.01%	1 2 3 CC	0.5 1.0			*		CLAYSTONE Major lithology: Dark grayish brown (10YR 4/2, 5/3) and reddish brown (5YR 5/3) CLAYSTONE constitutes all of Sections 1-3. These claystones are thickly laminated and the laminae are picked out by color variations. Manganese oxide occurs as discrete nodules in most of this core, and the darker brown coloration of some laminae may be due to manganese minerals. White silt to fine sand sized particles occur scattered or concentrated in laminae: these appear to be grains of zeolite (phillipsite?). A light greenish gray (5G 7/1) concretion 8 mm in diameter occurs at 93 cm in Section 3, which appears to be fine silica. The claystone is otherwise composed of clay minerals and rare plagioclase feldspar. Bioturbation is slight, but occurs throughout the core. Minor lithology: A basic igneous rock occurs in the core catcher. Structure: The true dip of the bedding varies in this core. In Section 1 it is 25-300, in Section 2 the dips are consistently steeper, 450 and in Section 3 the dip ranges from 5-200. These dips cannot be accounted for by deviation of the drill string (around 100) and must represent some variable rotation of the original bedding by local faulting. Disturbance of the sediments and microfaults are recognized in Section 1, 45-70 cm, and are further indication of tectonic disturbance. Drilling disturbance is slight and Section 3 is almost intact throughout. SMEAR SLIDE SUMMARY (%): 1, 55 M — 3, 139 D TEXTURE: Clay — 100 COMPOSITION: Clay 80 — 95 Plagioclase — — 2 Zeolite 20 — Tr







124-767C-12R-CC

UNIT 1: APHYRIC OLIVINE BASALT

Piece 1

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained, patchy distribution of spinifex olivine and plagioclase aggregates and unresolvable areas of plagioclase and mafic minerals. Very fine-grained iron oxide throughout.
VESICLES: Sparse, < 1 mm, filled with green clay.
COLOR: Light yellow-brown to gray.
STRUCTURE: Massive.
ALTERATION: Moderately altered, olivine and mesostasis replaced by green and brown clay. Much of the rock stained with iron oxide.
VEINS/FRACTURES: <1%, filled with green clay and carbonate.

UNIT 1: APHYRIC OLIVINE BASALT

Piece 2

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained, patchy distribution of spinifex olivine, plagioclase and pyroxene aggregates and unresolvable areas of plagioclase and mafic minerals. Very fine-grained iron oxide throughout.
VESICLES: Sparse, <1 mm, filled with green and brown clay and iron oxide in layers.
COLOR: Gray to orange-brown.
STRUCTURE: Massive.
ALTERATION: Moderately altered, olivine and mesostasis replaced by green clay and (?) iddingsite.
VEINS/FRACTURES: <1% irregular, discontinuous veins filled with green clay.

UNIT 1: APHYRIC OLIVINE BASALT

Piece 3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained spinifex aggregates of olivine, plagioclase and pyroxene. Very fine-grained iron oxide throughout.
VESICLES: Sparse spherical and irregular <2 mm, containing brown clays and zeolites.
COLOR: Light yellow-brown to gray.
STRUCTURE: Massive.
ALTERATION: Slightly altered, olivine and mesostasis replaced by brown clay, much of the rock is stained with iron oxide.
VEINS/FRACTURES: One discontinuous irregular vein <1 mm of chalcedony.

UNIT 1: APHYRIC OLIVINE BASALT

Piece 4

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained, fasciculate texture made up of radiating aggregates of skeletal olivine, plagioclase and pyroxene. Very fine-grained iron oxide is distributed throughout.
VESICLES: Irregular < 2mm, filled with brown clays.
COLOR: Greenish-gray to light gray brown.
STRUCTURE: Massive.
ALTERATION: Slightly altered, iddingsite and brown clay replacing olivine and mesostasis.
VEINS/FRACTURES: None.

124–767C–12R–CC (Piece 1, 9–11 cm) OBSERVER: SPA WHERE SAMPLED:

ROCK NAME: Olivine basalt

GRAIN SIZE: Fine to very fine–grained

TEXTURE: Variolitic with plate–shaped olivine

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Olivine	0	5	1.5		Plate	Skeletal relict forms.
Plagioclase	10	10	Max. 0.5		Laths	
Clinopyroxene	5	5	Max. 0.07		Skeletal microliths	
Fe–Ti oxides	5	5	0.0051		N/A	
Devitrified glass	58	72	N/A		N/A	Including crystallites, varioles ~1 mm in diameter.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	2	Olivine	
Clays	15	Glass, fractures, vesicles	Replacing glassy mesostasis – filling fractures and vesicles.
Carbonate	2	Fractures and vesicles	
Fe–oxides	3	Olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	3	Even	0.5–0.1	Calcite, smectite	Spherical	Partly filled.

COMMENTS: The habit of the relict olivine and the microvariolitic texture of the groundmass indicate rapid chilling. (NO UNIT NUMBER GIVEN).

124–767C–12R–CC (Piece 2, 18–20 cm) OBSERVER: SPA WHERE SAMPLED:

ROCK NAME: Olivine basalt

GRAIN SIZE: Fine to very fine–grained

TEXTURE: Arborescent/variolitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Olivine	0	3	1–0.5		Plate	Skeletal form, irregularly distributed.
Plagioclase	25	25	Max. 0.6	Labradorite	Lath	
Clinopyroxene	10	10	Max. 0.1		Microliths, skeletal, crystals	
Fe–Ti oxides	5	5	.015–.002		Subhedral grains	
Dev. glass	48	55	N/A		N/A	Dense irresolvable radiate aggregates with crystallites.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	5	Glass	Replacing glassy mesostasis.
Clays	2	Fractures	Sinuous veinlets.
Fe–oxide	3	Olivine	
Fe–oxide, clay	2	Fractures	?Smectites, hematitized p.p. magnetite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	2	Even		Clay, Fe–oxides	Spherical

COMMENTS: Texture is transitional between variolitic and arborescent. (NO UNIT NUMBER GIVEN).

124–767C–12R–CC (Piece 3A, 26–28 cm) OBSERVER: SPA WHERE SAMPLED:

ROCK NAME: ?olivine basalt

GRAIN SIZE: Fine to very fine–grained

TEXTURE: Arborescent, with plate–shaped olivine and skeletal clinopyroxene

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Olivine	0	10	5–1		Plates	Completely altered.
Plagioclase	10	10	Max. 0.1	N.D.	Laths, P.P., or microliths	
Pyroxene	5	5	Max. .01	N.D.	Prisms, skeletal crystals	Feathery aggregate of plagioclase and clinopyroxene with interstitial devitrified glass.
Fe–Ti oxides	3	5	few microns		Small grain	Partly altered.
Mesostasis	60	60	N/A		N/A	Feathery aggregate of plagioclase and clino pyroxene with interstitial devitrified glass.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	10	Olivine	Mostly orange yellow, also pale green.
Clays	8	Vesicles, cavities	
Zeolites	2	Cavities	Fibro–radiate aggregates.
Hematite	2	Fe–Ti oxides.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Both	10	Various	2.0–.03	Clay, Zeolites	Various	Partly filled enlongated cavities near olivine plates, circular amygdules.

COMMENTS: Texture and resolvable mineralogy suggest an origin by rapid chilling. (NO UNIT NUMBER GIVEN).

124–767C–12R–CC (Piece 4, 36–39 cm) OBSERVER: SPA WHERE SAMPLED:

ROCK NAME: Olivine basalt

GRAIN SIZE: Fine

TEXTURE: Aphyric, intersertal radiate, with granular olivine and p.p. skeletal clinopyroxene and plagioclase

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Plagioclase	55	55	2–0.03	An65–55	Lath, skeletal	Fresh, poorly zoned with rare twinning.
Clinopyroxene	30	30	0.1–0.01		Microlith, skeletal	Fresh, skeletal crystals frequent.
Fe–Ti oxides	3	3	.03–.007		Euhedral grains	Disseminated in groundmass.
Olivine	0	5	0.3–0.2		Euhedral prism	Completely altered to iddingsite.
Mesostasis	0	2	N/A		N/A	Altered glass.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	5	Olivine	Green or orange brown, mesh texture frequent.
Clays	7	Mesostasis, amygdules	Green, in amygdules often orange yellow in color.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Vesicles	5	Even	0.5–1.0	Clay	Lobate circular

COMMENTS: Texture suggests rapid chilling (occurrence of skeletal crystals of plagioclase and clinopyroxene).