SITE 758 HOLE A CORE 1H CORED INTERVAL 0-6.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	CHEMISTRY	PHYS. PROPERTIES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	N22						1	0.5				*
HOLOCENE	A/G	CN14b			Normal				1.0				
	C/G	N. reinholdii B		P. doliolus				2					*
													*
								3					*
								4					
								CC					

NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS, AND CLAYEY NANNOFOSSIL OOZE WITH FORAMINIFERS

The core is undisturbed.

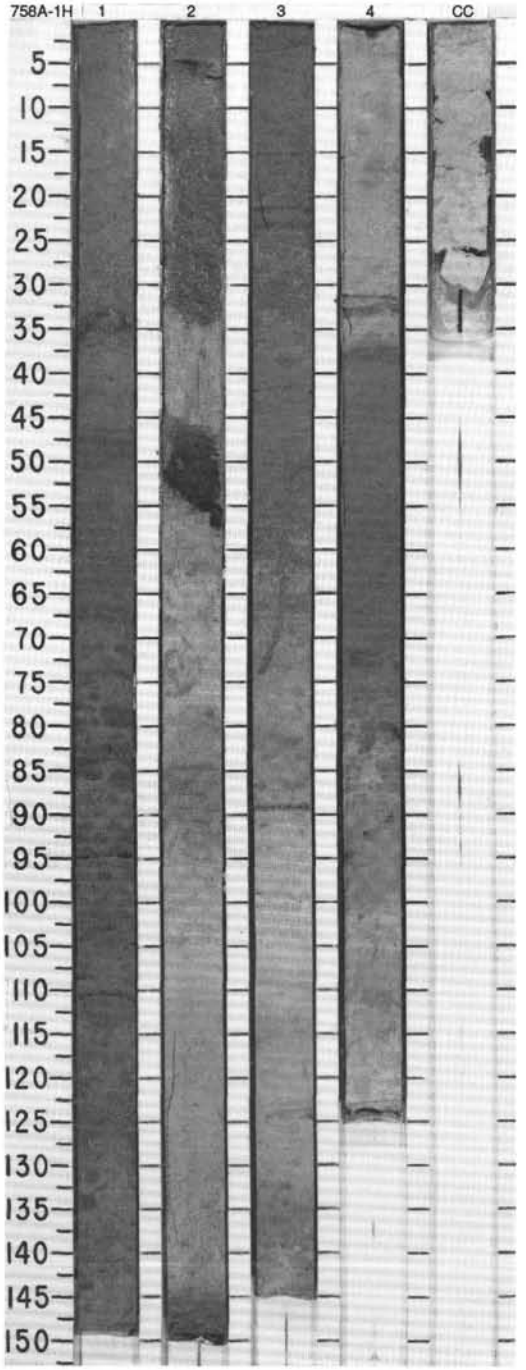
Major lithology: Alternating intervals of NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, and CLAYEY NANNOFOSSIL OOZE with FORAMINIFERS. The nannofossil ooze is generally light gray (5Y 6/1), sparsely mottled, and bioturbated. Section 1, 0-46 cm, is brown (10YR 5/3) (the oxidized, near core top?). The clayey nannofossil ooze is generally gray (5Y 5/1). Most transitions between lithologies occur gradually, over 5 to 10 cm. The dark intervals are mottled near contacts with the underlying lighter units and grade up section into nearly homogeneous dark sediment. The thickness of the lithologic intervals range from 30-100 cm. Millimeter-scale black blebs occur scattered throughout the core.

Minor lithology: Volcanic ash, with sharp contacts. Massive, olive gray (5Y 4/2) and thin bedded, green (10Y 6/3) layers. Massive ash occurs in Section 2, 0-34 cm (Toba Ash?), and 44-51 cm. Thin green ash beds occur throughout the core.

Grain size: The mean grain size for Section 2, 65 cm is 21.3 μm, Section 4, 65 cm is 19.7 μm, and CC is 11.9 μm.

SMEAR SLIDE SUMMARY (%):

	1, 25 D	2, 19 M	2, 51 M	3, 42 D	4, 15 D
TEXTURE:					
Sand	10	95	25	5	10
Silt	70	5	60	65	60
Clay	20	—	15	30	30
COMPOSITION:					
Clay	20	—	—	32	17
Diatoms	5	—	Tr	3	3
Feldspar	Tr	Tr	Tr	Tr	Tr
Foraminifers	10	—	5	20	15
Glass	Tr	100	93	5	3
Nannofossils	60	—	2	40	60
Quartz	Tr	—	—	—	—
Radiolarians	5	—	Tr	Tr	2
Silicoflagellates	Tr	—	—	Tr	Tr
Spicules	Tr	—	—	—	Tr



SITE 758 HOLE A CORE 2H CORED INTERVAL 6-15.6 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS A/G; N22; A/G; CN14a; NANNOFOSSILS A/G; CN14b; RADIOLARIANS F/M; DIATOMS *Nitzschia reinholdii* B

PALEOMAGNETICS: Rev. | Normal | Reversed | Normal | Reversed | Normal

CHEMISTRY: ● 66.3 ● 59.3 ● 62.4 ● 55.0 ● 47.3 ● 55.6 ● 65.6 ● 69.8 ● 54.4 ● 66.3 ● 55.5 ● 55.8

PHYS. PROPERTIES: ● 70.7 ρ 1.55 ● 71.7 ρ 1.54 ● 70.2 ρ 1.58 ● 71.8 ρ 1.53 ● 69.2 ρ 1.54 ● 72.7 ρ 1.52 ● 71.9 ρ 1.52 ● 71.3 ρ 1.53 ● 73.2 ρ 1.48 ● 70.5 ρ 1.52 ● 73.5 ρ 1.50 ● 73.6 ρ 1.50

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.: Sb J

SED. STRUCTURES

SAMPLES: PP

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS, AND CLAYEY NANNOFOSSIL OOZE WITHFORAMINIFERS

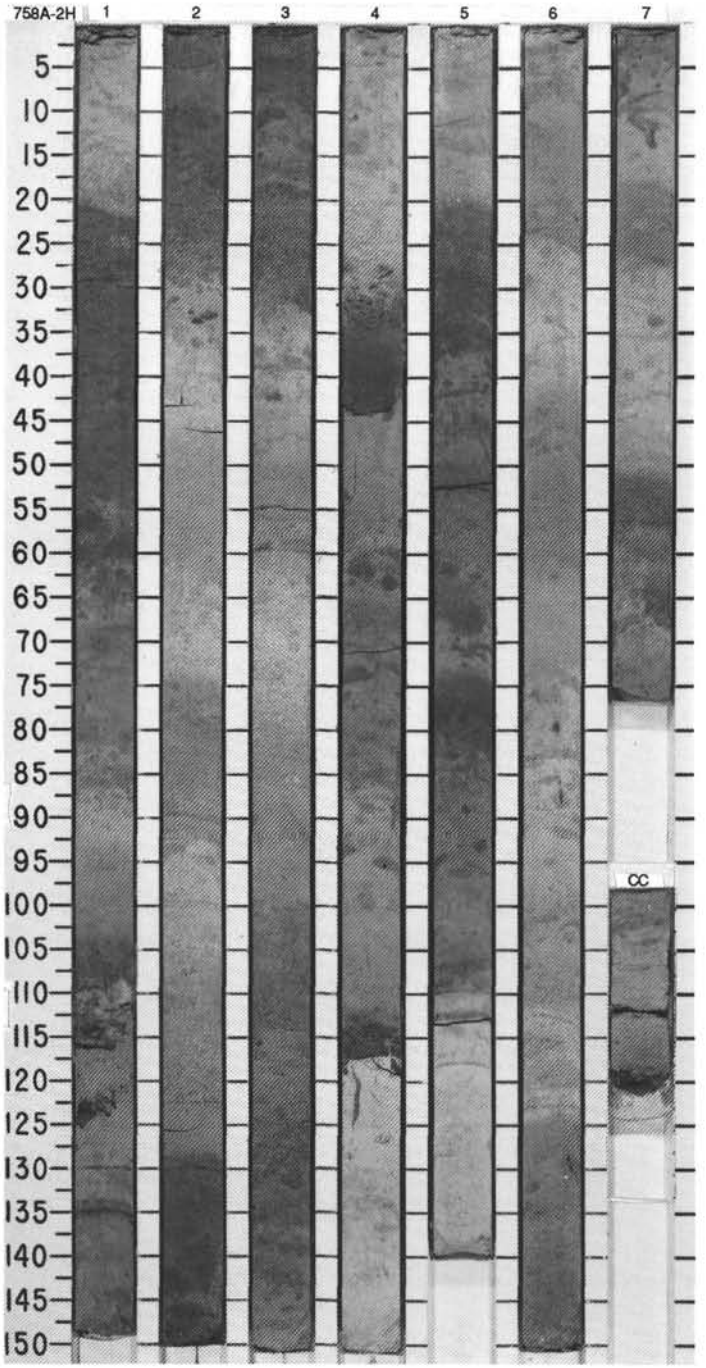
The core is undisturbed.

Major lithology: Alternating intervals of NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, and CLAYEY NANNOFOSSIL OOZE with FORAMINIFERS. The nannofossil ooze is generally light gray (5Y 6/1 to 7/1), sparsely mottled, and bioturbated. The darker clayey nannofossil ooze is gray (5Y 5/1). Although one sharp ooze contact occurs at Section 1, 20 cm, the other transitions occur gradually, over 5 to 10 cm. The dark intervals are mottled near contacts with underlying lighter units, then grade up section into nearly homogeneous dark sediment. The lithologic intervals range in thickness from 20-100 cm. Mm-scale black and dark green blebs are scattered throughout the core.

Minor lithology: Volcanic ash, light gray (10YR 7/1), occurs in Section 1, 112-135 cm as a massive deposit, in Section 4, 30-43 cm as a fining upwards deposit, and at 112-117 cm, with a sharp contact at the base and a gradual one at the top. Discrete, thin bedded, green (10Y 6/3) ash layers occur in Section 1, 130 and 135 cm, Section 2, 89-92, and 99-100 cm, and Section 5, 110, 113, and 119 cm.
Grain size: The mean grain size for Section 2, 65 cm is 16.5 µm, Section 4, 65 cm is 17.5 µm, and CC is 14.2 µm.

SMEAR SLIDE SUMMARY (%):

	1, 112 M	3, 134 D	4, 39 M	4, 116 M	4, 123 D
TEXTURE:					
Sand	25	10	40	40	15
Silt	70	60	60	60	70
Clay	5	30	0	0	15
COMPOSITION:					
Clay	2	25	—	—	15
Diatoms	Tr	1	—	—	1
Feldspar	—	—	—	5	—
Foraminifers	Tr	19	—	Tr	15
Glass	70	5	98	95	2
Nannofossils	28	50	2	—	65
Radiolarians	Tr	Tr	Tr	Tr	2
Silicoflagellates	—	Tr	—	—	—
Spicules	Tr	Tr	—	—	—



SITE 758 HOLE A CORE 3H CORED INTERVAL 15.6-25.2 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N22; NANNOFOSSILS A/G CN13; RADIOLARIANS F/P; DIATOMS *N. reinholdii* B

PALEOMAGNETICS: Reversed

CHEMISTRY

PHYS. PROPERTIES

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: F

SAMPLES: OG, TW

LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL OOZE

The core is undisturbed.

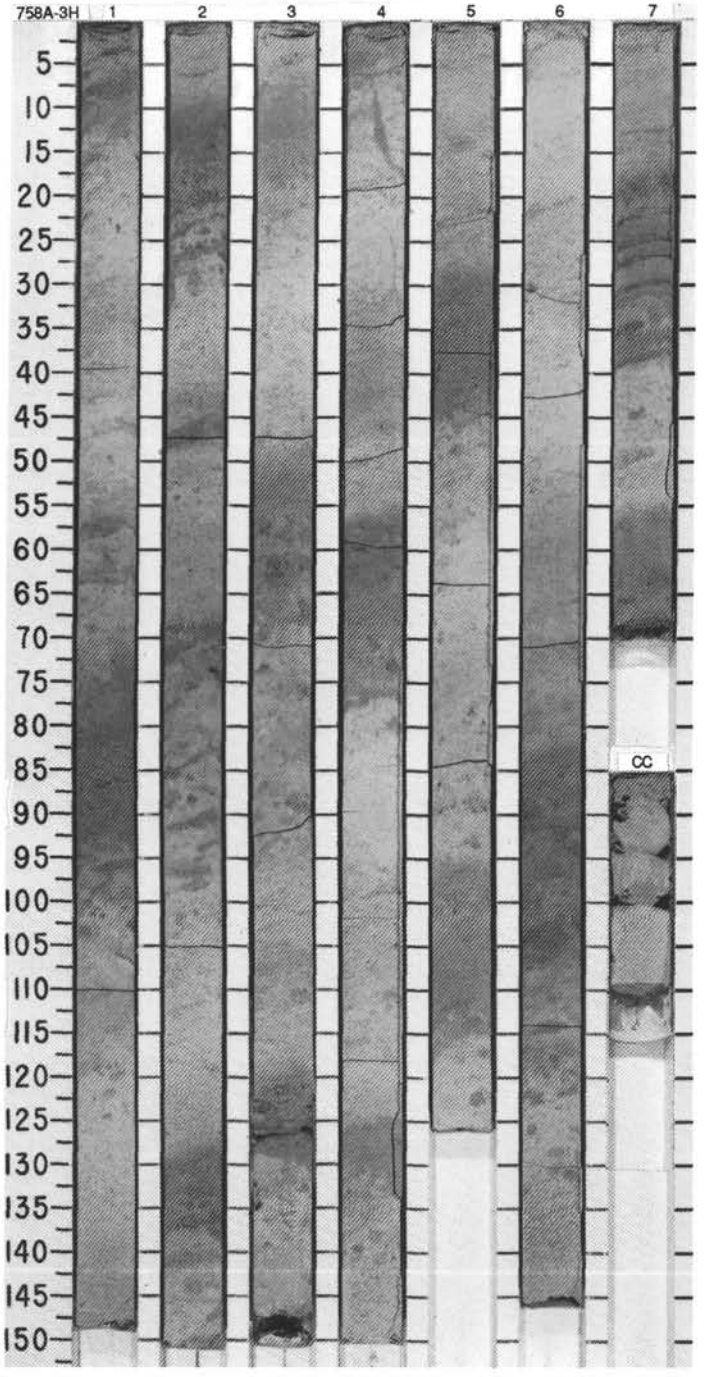
Major lithology: CLAYEY NANNOFOSSIL OOZE, alternating between light gray (5Y 6/1 and 7/1) and gray (5Y 5/1) intervals with gradational contacts over 5 to 10 cm. The dark intervals are mottled near contacts with underlying lighter units, then grade up section into nearly homogeneous dark sediment. The lithologic intervals range in thickness from 10-110 cm. Dark mottles and some black blebs occur throughout the bioturbated core.

Minor lithology: Volcanic ash, fining upwards, light gray (10YR 7/1) occurs in Section 3, 122-127 cm and several discrete, thin beds of green (10Y 6/3) ash occur in Section 7, 12-31 cm.

Grain size: The mean grain size for Section 2, 66 cm is 20.2 µm, Section 4, 136 cm is 18.7 µm, and CC is 16.2 µm.

SMEAR SLIDE SUMMARY (%):

	2, 125 D
TEXTURE:	
Sand	10
Silt	70
Clay	20
COMPOSITION:	
Clay	40
Diatoms	1
Feldspar	Tr
Foraminifers	5
Glass	Tr
Nannofossils	50
Radiolarians	1
Silicoflagellates	1
Spicules	1



SITE 758 HOLE A CORE 4H CORED INTERVAL 25.2-34.8 mbsf

TIME-ROCK UNIT: UPPER PLIOCENE (LOWER PLEISTOCENE)

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: A/G; NANNOFOSSILS: A/G; RADIOLARIANS: F/P; DIATOMS: *Rhizosolenia praebergonii* / *N. reinholdii* A

FORAMINIFERS: N21

NANNOFOSSILS: CN12 / CN13

PALEOMAGNETICS: Normal / Reversed / Normal

CHEMISTRY: ● 69.0 ● 73.7 ● 70.9 ● 67.9 ● 68.1 ● 64.5 ● 65.5 ● 63.6 ● 69.0 ● 67.9 ● 71.0

PHYS. PROPERTIES: ● 66.9 ● 69.0 ● 66.3 ● 70.0 ● 68.9 ● 68.5 ● 66.3 ● 66.9 ● 64.5 ● 65.8 ● 67.4 ● 67.5 ● 69.4 ● 68.4 ● 67.2

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS

Section 1, 0-25 cm, and the core catcher are moderately disturbed, remainder of core is undisturbed.

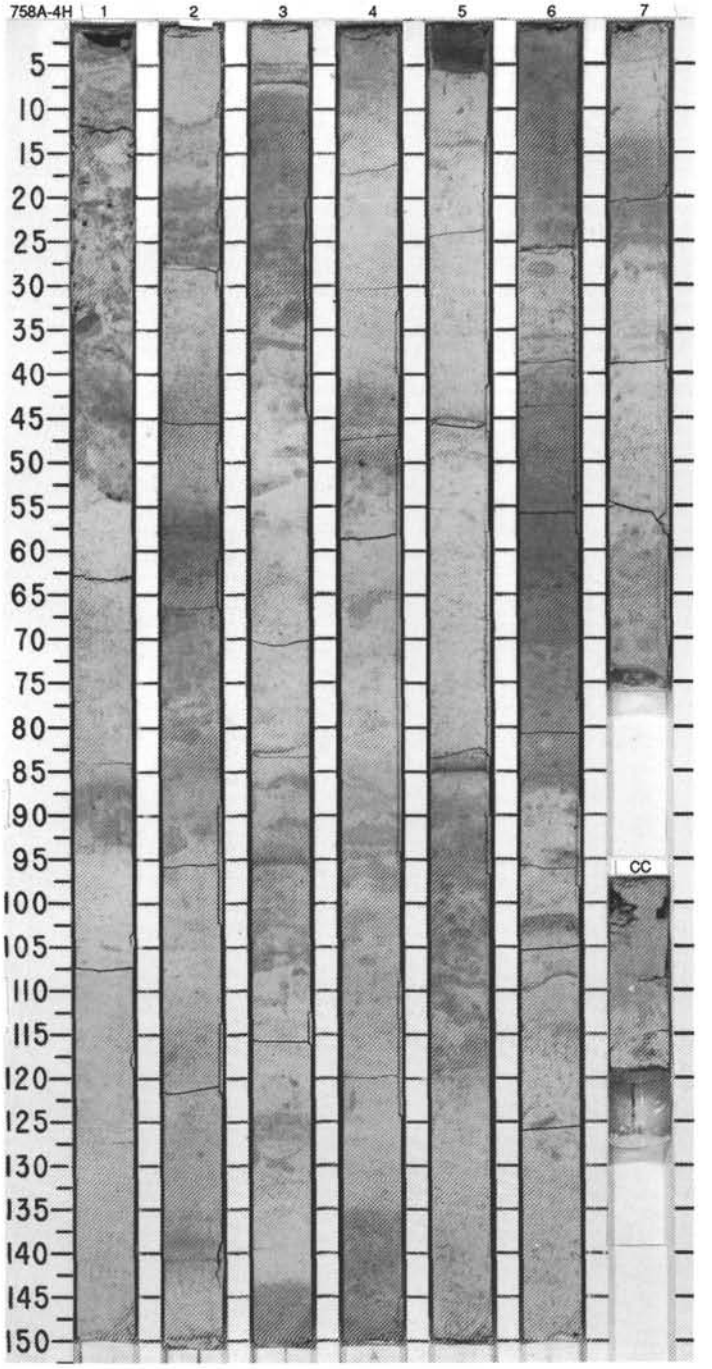
Major lithology: NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, alternating between light gray (5Y 6/1 and 7/1), gray (5Y5/1), light greenish gray (10Y 7/1 & 6/1) gray (5Y 5/1), and dark gray (5Y 4/1) intervals with a few sharp (in Section 1), but mostly gradational contacts that span 5 to 10 cm. The dark intervals are mottled near contacts with underlying lighter units, then grade up section into nearly homogeneous dark sediment. The lithologic intervals range in thickness from 10-90 cm. Dark mottles and some black blebs occur throughout the core.

Minor lithology: Volcanic ash appears in Section 4, 135-150 with a gradational upper contact. A dark grayish brown (2.5YR 3/2) ash with a sharp basal contact occurs in Section 5, at 5 cm.Thin, horizontal ash layers occur at 45 and 85 cm. Horizontal gray and green ash beds occur in Section 5, 26, 34-36, 43, 85, and 101-102 cm.

Grain size: The mean grain size for Section 2, 125 cm is 28.2 µm, Section 4, 125 cm is 32.1 µm, and CC is 19.1 µm.

SMEAR SLIDE SUMMARY (%):

	2, 108 D
TEXTURE:	
Sand	10
Silt	70
Clay	20
COMPOSITION:	
Clay	20
Diatoms	1
Foraminifers	10
Glass	Tr
Nannofossils	67
Radiolarians	2
Spicules	Tr



SITE 758 HOLE A CORE 5H CORED INTERVAL 34.8-44.4 mbsf

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH CLAY

The core catcher is moderately disturbed, remainder of core is undisturbed.

Major lithology: NANNOFOSSIL OOZE with CLAY, alternating between light gray (5Y 6/1 and 7/1), and gray (5Y 5/1 6/1) with gradational contacts spanning 5 to 10 cm. The dark intervals are mottled near contacts with underlying lighter units, then grade up section into nearly homogeneous dark sediment. The lithologic intervals range in thickness from 10-150 cm. This section is more homogeneous, less distinctly layered than previous sections. Dark mottles and some black blebs (ash?) occur throughout the core.

Grain size: The mean grain size for Section 2, 125 cm is 25.5 µm, Section 4, 125 cm is 18.3 µm, and CC is 22.9 µm.

SMEAR SLIDE SUMMARY (%):

	1, 35 D	2, 108 D
TEXTURE:		
Sand	3	3
Silt	80	75
Clay	17	22
COMPOSITION:		
Clay	20	20
Diatoms	—	Tr
Foraminifers	3	10
Glass	2	5
Nannofossils	75	63
Radiolarians	—	2
Spicules	—	Tr

SITE 758 HOLE A CORE 6H CORED INTERVAL 44.4-54.0 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE (UPPER PLIOCENE)

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/M N20; NANNOFOSSILS CN11 CN12; RADIOLARIANS; DIATOMS R/P

PALEOMAGNETICS: Reversed

CHEMISTRY: ● 76.2 ● 75.6 ● 61.6 ● 70.6 ● 72.1 ● 77.0 ● 70.5 ● 74.3 ● 72.0 ● 68.6 ● 68.6 ● 68.6

PHYS. PROPERTIES: ● 67.7 ● 66.3 ● 66.8 ● 67.4 ● 67.6 ● 67.7 ● 66.5 ● 67.4 ● 68.1 ● 68.70 ● 65.4 ● 68.4

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: *

SAMPLES: OG IW

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS

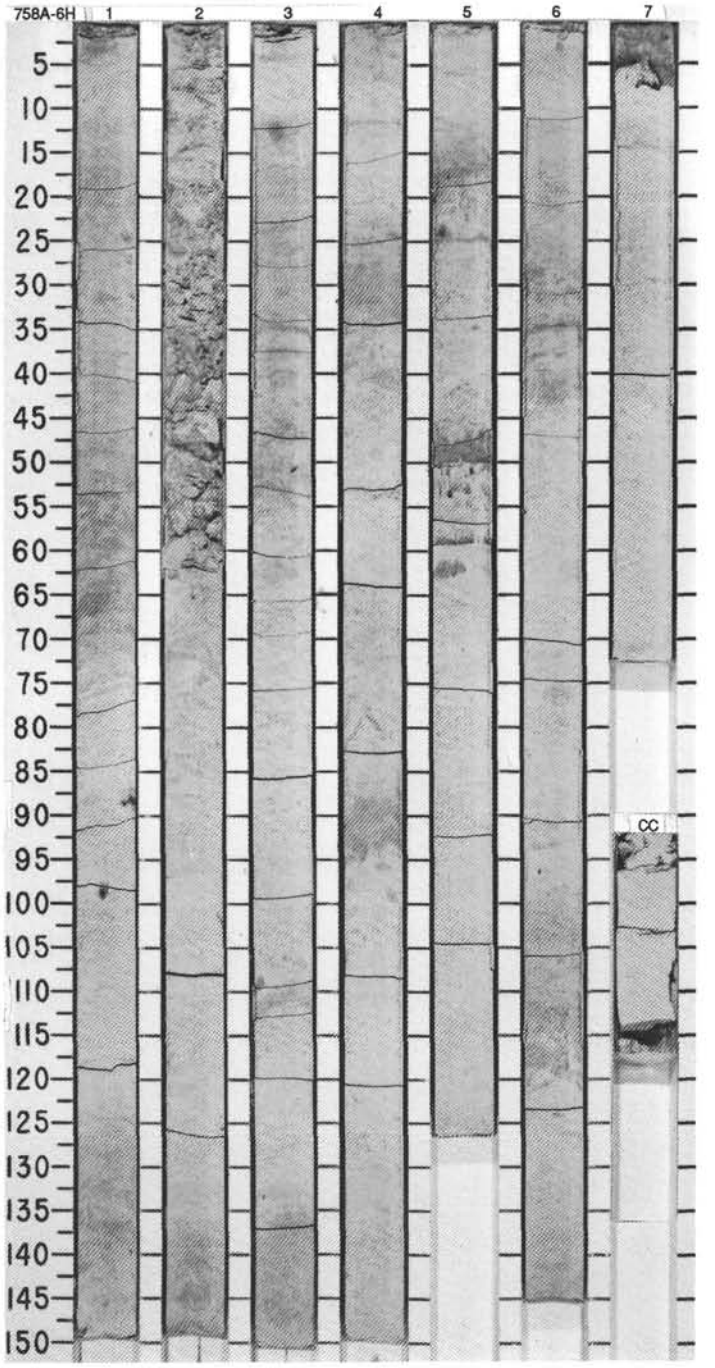
The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, light gray (5Y 7/1) with scattered black (5Y 2.5/1) blebs. More concentrated black (5Y 2.5/1) intervals occur in Section 5, 43-48 cm and 57-59 cm and Section 7, 0-6 cm, and presumably are ash layers. A sharp contact exists at the base of these ash layers which are normally graded, fining upwards. Slight to moderate dark gray (5Y 5/1) mottles occur throughout. The core is strongly bioturbated, and, in non-mottled regions, is very homogeneous.

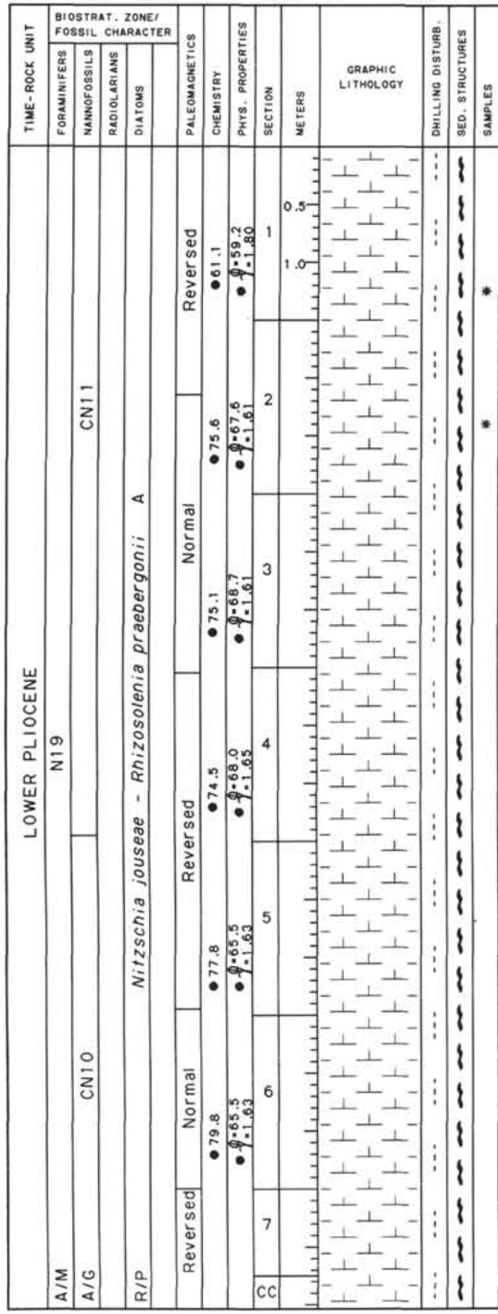
Grain Size: The mean grain size for Section 2, 125 cm is 19.1μm, Section 4, 125 cm is 13.4 μm, and Section 6, 125 cm is 17.4 μm.

SMEAR SLIDE SUMMARY (%):

	2, 125 D
TEXTURE:	
Sand	3
Silt	70
Clay	27
COMPOSITION:	
Clay	15
Diatoms	Tr
Foraminifers	10
Glass	2
Nannofossils	72
Radiolarians	1
Spicules	Tr



SITE 758 HOLE A CORE 7H CORED INTERVAL 54.0-63.7 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH MICRITE AND CLAY.

The core is slightly disturbed.

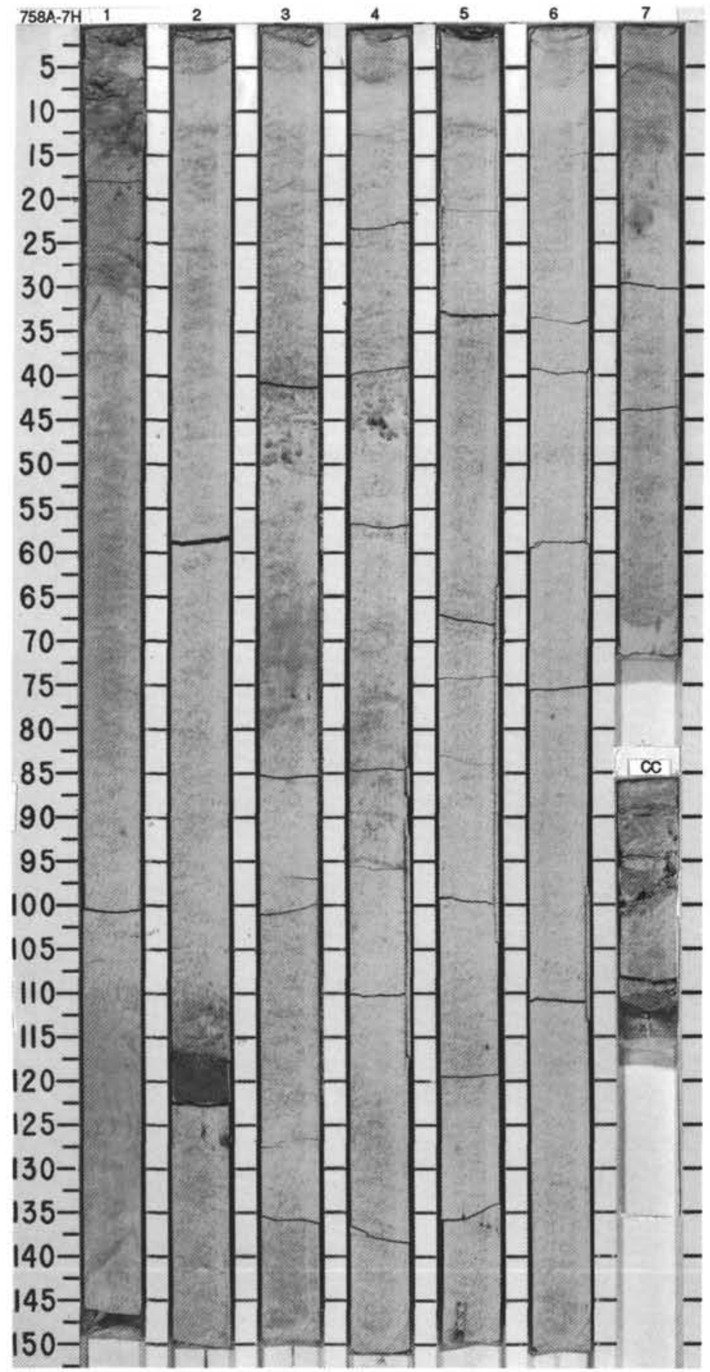
Major lithology: NANNOFOSSIL OOZE with MICRITE and CLAY. Light gray (5Y 7/1) with faint, scattered dark gray (5Y 5/1) mottles. Black (5Y 2.5/1) blebs are scattered throughout Sections 4-CC. The core is moderately bioturbated.An ash layer occurs in Section 2, 117-125 cm and has a sharp basal contact.

Minor lithology: Nannofossil ooze with micrite in Section 1, 110-130 cm. Light gray (5Y 7/1) with faint, scattered dark gray (5Y 5/1) mottles.

Grain size: The mean grain size for Section 2, 125 cm is 15.9 µm, Section 4, 125 cm is 15.0 µm, and Section 6, 125 cm is 9.5 µm.

SMEAR SLIDE SUMMARY (%):

	1, 125 M	2, 90 D
TEXTURE:		
Sand	2	3
Silt	85	80
Clay	13	17
COMPOSITION:		
Clay	5	18
Foraminifers	3	5
Micrite	12	12
Nannofossils	80	60



SITE 758 HOLE A CORE 8H CORED INTERVAL 63.7-73.4 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/P N18 - 19; NANNOFOSSILS A/G CN10; RADIOLARIANS; DIATOMS R/P *Nitzschia jouseae - Rhizosolenia praebergonii* A

PALEOMAGNETICS: Reversed / Normal

CHEMISTRY: ● 68.4 ● 73.6 ● 77.7 ● 80.3 ● 74.6 ● 82.2

PHYS. PROPERTIES: ● 64.3 ±1.62 ● 65.9 ±1.65 ● 63.2 ±1.67 ● 66.24 ±1.61 ● 65.9 ±1.64 ● 63.5 ±1.64 V=1561

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: * PP

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH CLAY AND MICRITE

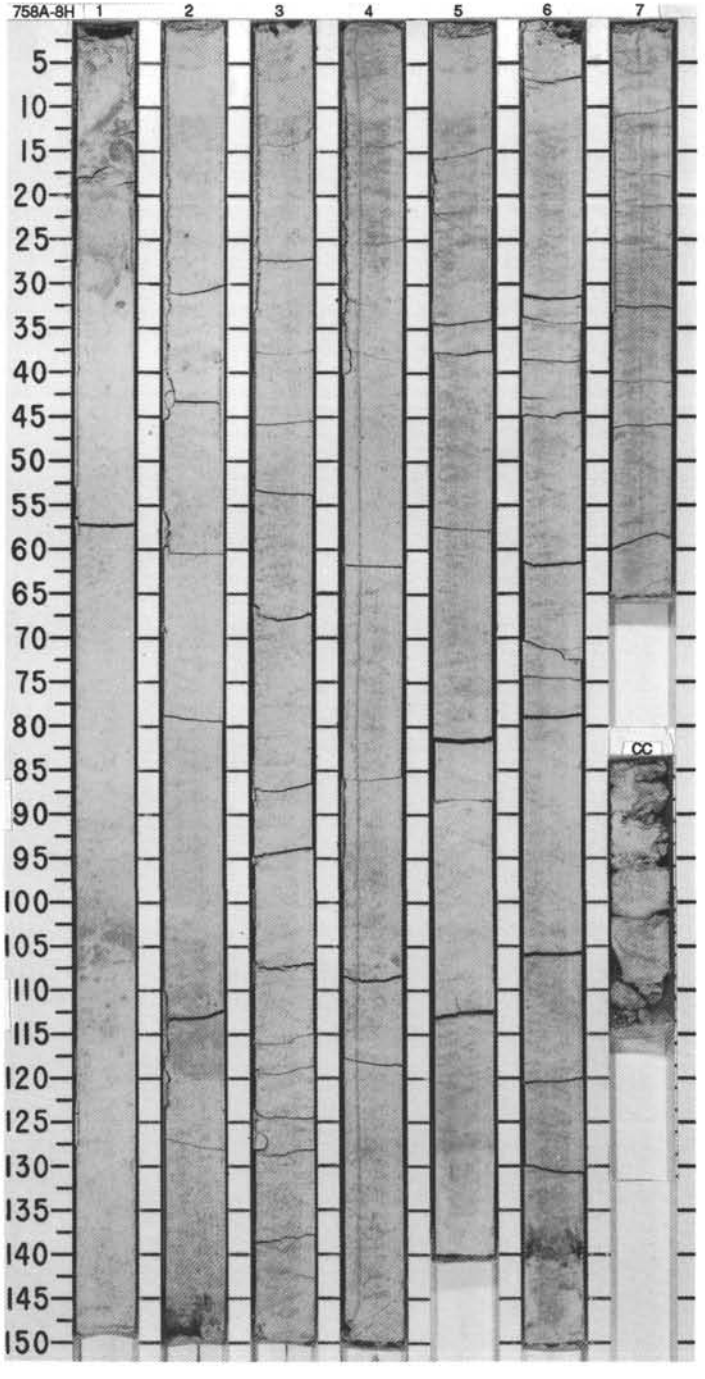
The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with CLAY and MICRITE. Light gray (5Y 7/1) with faint, scattered dark gray (5Y 5/1) mottles. The core is strongly bioturbated and homogeneous in the non-mottled regions. Ash layers occur in Section 2, 146-150 cm and Section 6, 138-140 cm.

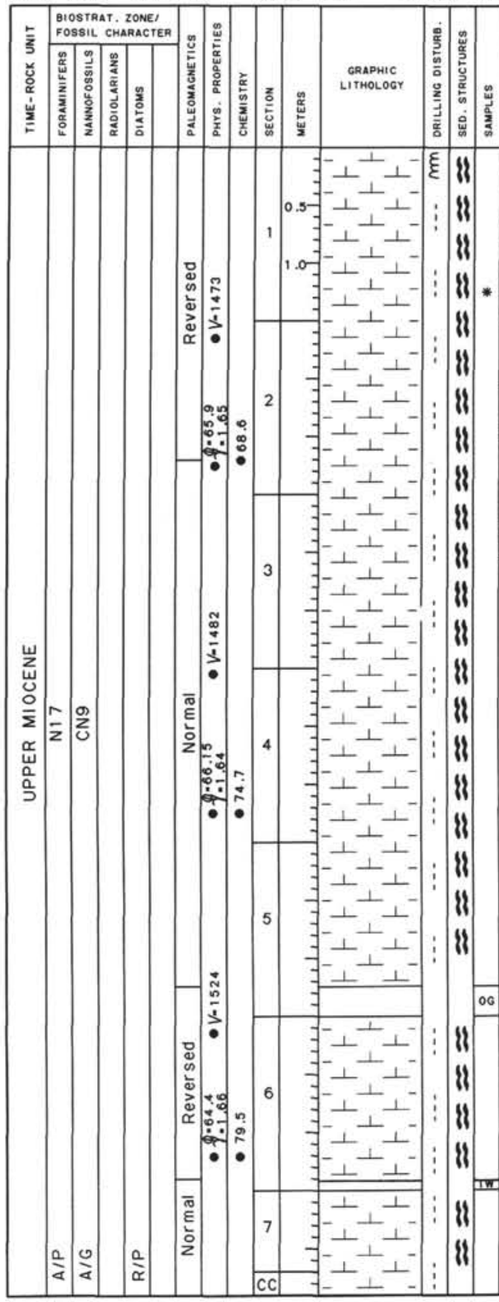
Grain size: The mean grain size for Section 2, 125 cm is 30.2 µm, Section 4, 125 cm is 14.0 µm, and Section 6, 125 cm, is 11.6 µm.

SMEAR SLIDE SUMMARY (%):

	2, 125 D
TEXTURE:	
Sand	4
Silt	80
Clay	16
COMPOSITION:	
Clay	11
Foraminifers	7
Micrite	10
Nannofossils	70



SITE 758 HOLE A CORE 9H CORED INTERVAL 73.4-83.1 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH MICRITE

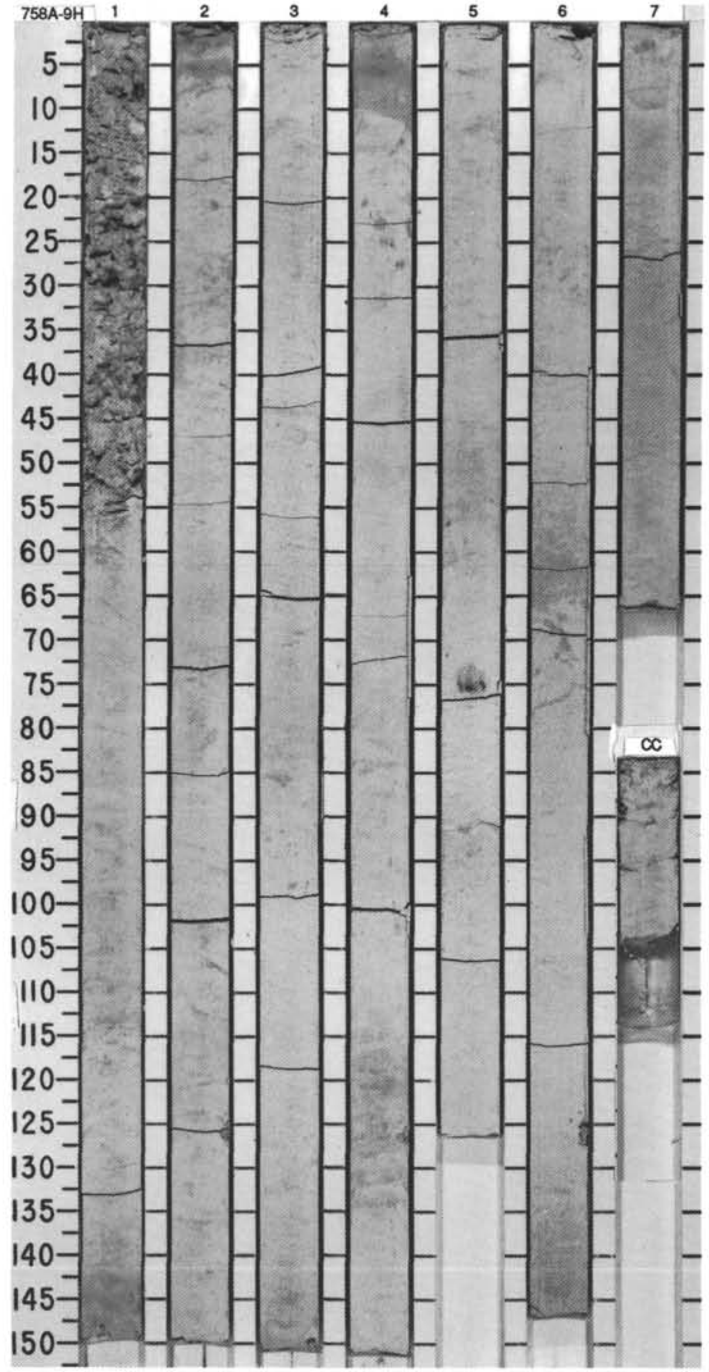
The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with MICRITE, light gray (5Y 7/1) with scattered, faint dark gray (5Y 5/1) mottles. The core is strongly bioturbated, and, in non-mottled regions, very homogeneous.

Grain Size: The mean grain size for Section 2, 125 cm is 27.5 µm, Section 4, 125 cm is 15.6 µm, and Section 6, 125 cm 26.6 µm.

SMEAR SLIDE SUMMARY (%):

	1, 125 D
TEXTURE:	
Sand	2
Silt	83
Clay	15
COMPOSITION:	
Clay	7
Foraminifers	3
Micrite	15
Nannofossils	70
Spicules	Tr



SITE 758 HOLE A CORE 10H CORED INTERVAL 83.1-92.8 mbsf

Column	Entries
Time-rock unit	UPPER MIOCENE
Biostrat. zone/fossil character: Foraminifers	N17; A/P
Nannofossils	CN9; A/G
Radiolarians	
Diatoms	R/P
Paleomagnetics	Normal (Section 1); Reversed (Sections 1–5); Normal (Sections 5–6); Reversed (Section 7)
Phys. properties	Section 2: ● φ=65.0 γ=1.67 ● V=1509; Section 4: ● φ=60.6 γ=1.73 ● V=1511; Section 6: ● φ=63.3 γ=1.67 ● V=1549
Chemistry	● 82.1 (Section 2); ● 85.2 (Section 4); ● 82.8 (Section 6)
Section	1, 2, 3, 4, 5, 6, 7, CC
Meters	0.5, 1.0
Samples	* (Section 2)

GRAPHIC LITHOLOGY

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH MICRITE

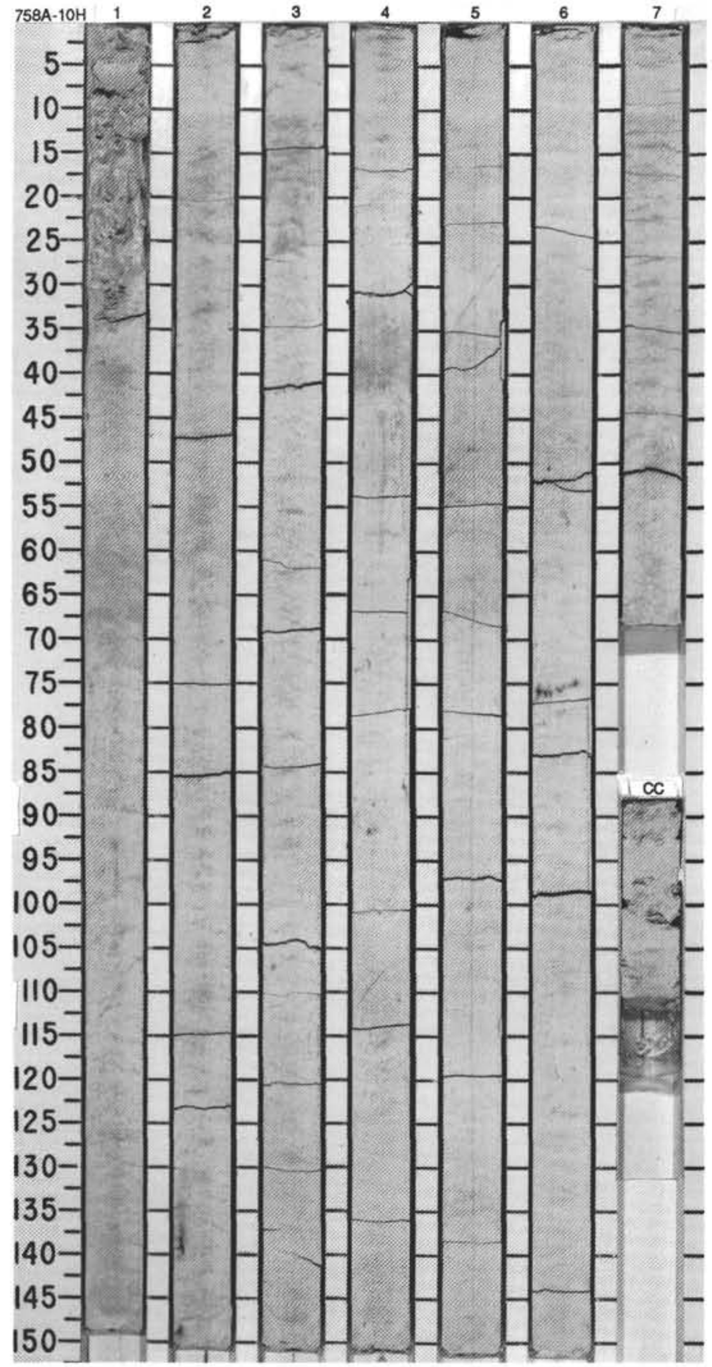
The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with MICRITE, light gray (5Y 7/1) with scattered faint dark gray (5Y 5/1) mottles, and some black (5Y 2.5/1) blebs. The core is strongly bioturbated, and, in non-mottled regions, very homogeneous.

Grain Size: The mean grain size for Section 2, 90 cm is 19.7 µm, Section 4, 95 cm is 8.9 µm, and Section 6, 95 cm is 18.1 µm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	2
Silt	85
Clay	13
COMPOSITION:	
Clay	5
Foraminifers	4
Micrite	15
Nannofossils	71
Spicules	Tr



SITE 758 HOLE A CORE 11H CORED INTERVAL 92.8-102.4 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N17 A/G	CN9 A/G		R/P	Indeterminate	Φ=61.3 γ=1.73 V=1530; Φ=63.4 γ=1.75; Φ=63.8 γ=1.68 V=1538	85.6; 79.0; 80.1	1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0				* ; PP

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH MICRITE

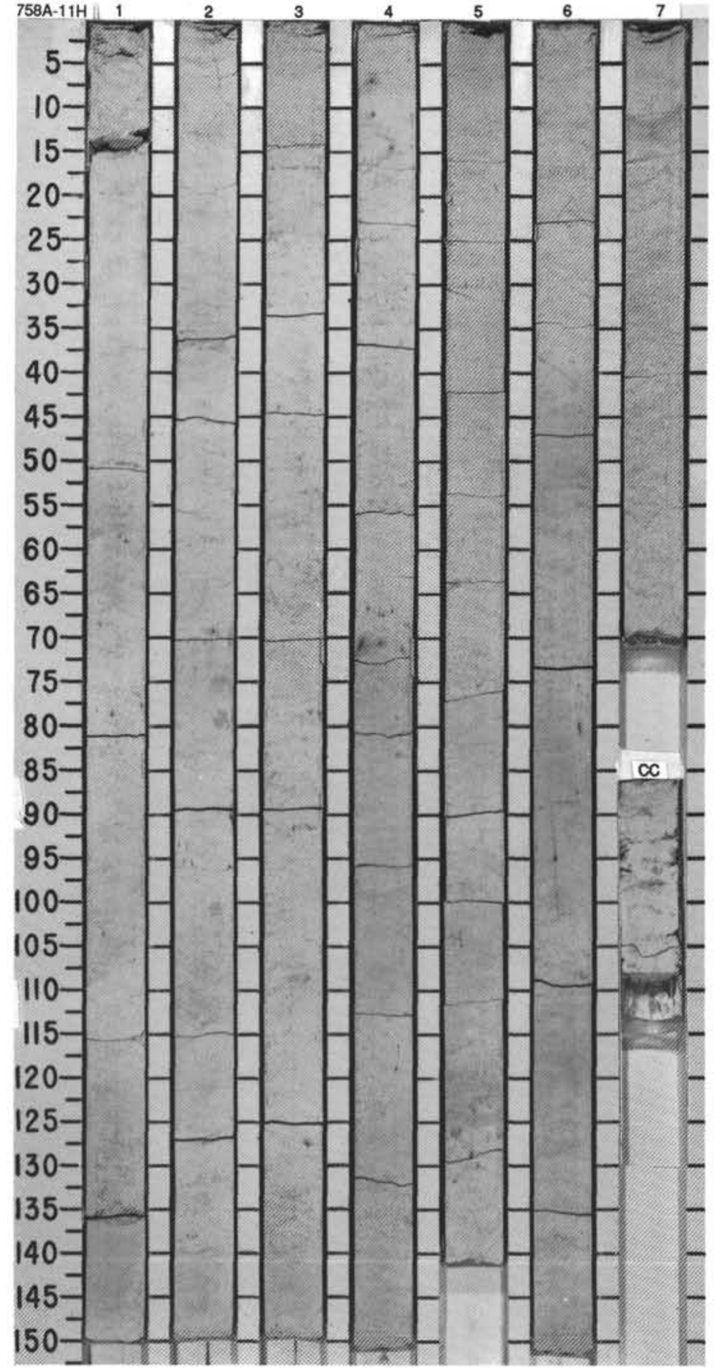
The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with MICRITE, white (10YR 8/1) with scattered, faint light gray (10YR 7/1 and 5Y 7/1) mottles; and sparse black (10YR2/1) blebs, presumably pumice, occur throughout. The core is strongly bioturbated and very homogeneous in the non-mottled areas.

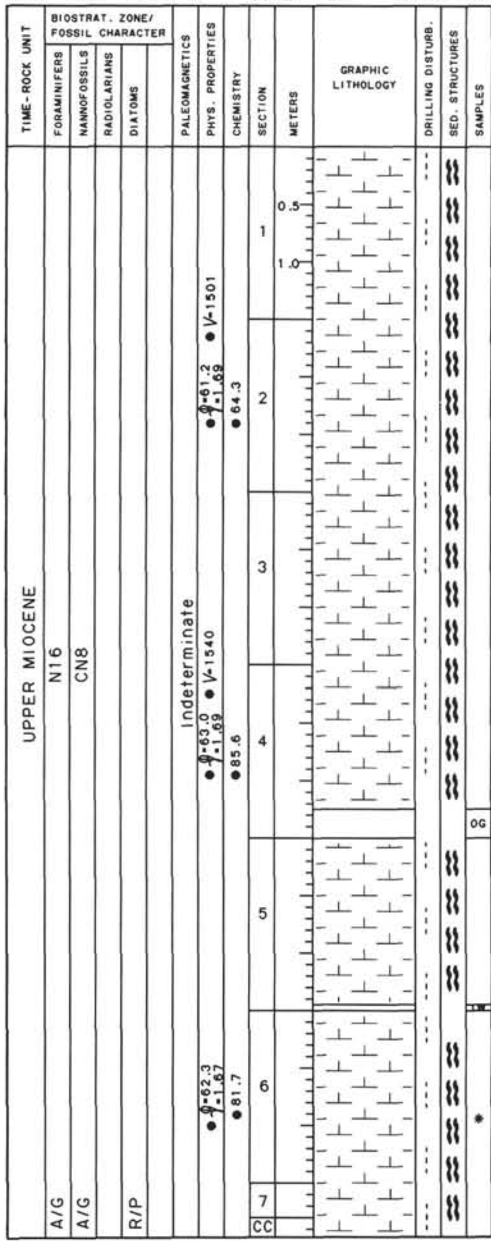
Grain Size: The mean grain size for Section 2, 95 cm is 10.8 µm, Section 4, 95 is 23.7 cm, and Section 6, 95 cm is 14.0 µm.

SMEAR SLIDE SUMMARY (%):

	2, 95 D
TEXTURE:	
Sand	2
Silt	80
Clay	18
COMPOSITION:	
Clay	2
Foraminifers	3
Micrite	20
Nannofossils	70



SITE 758 HOLE A CORE 12X CORED INTERVAL 102.4-112.1 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH MICRITE

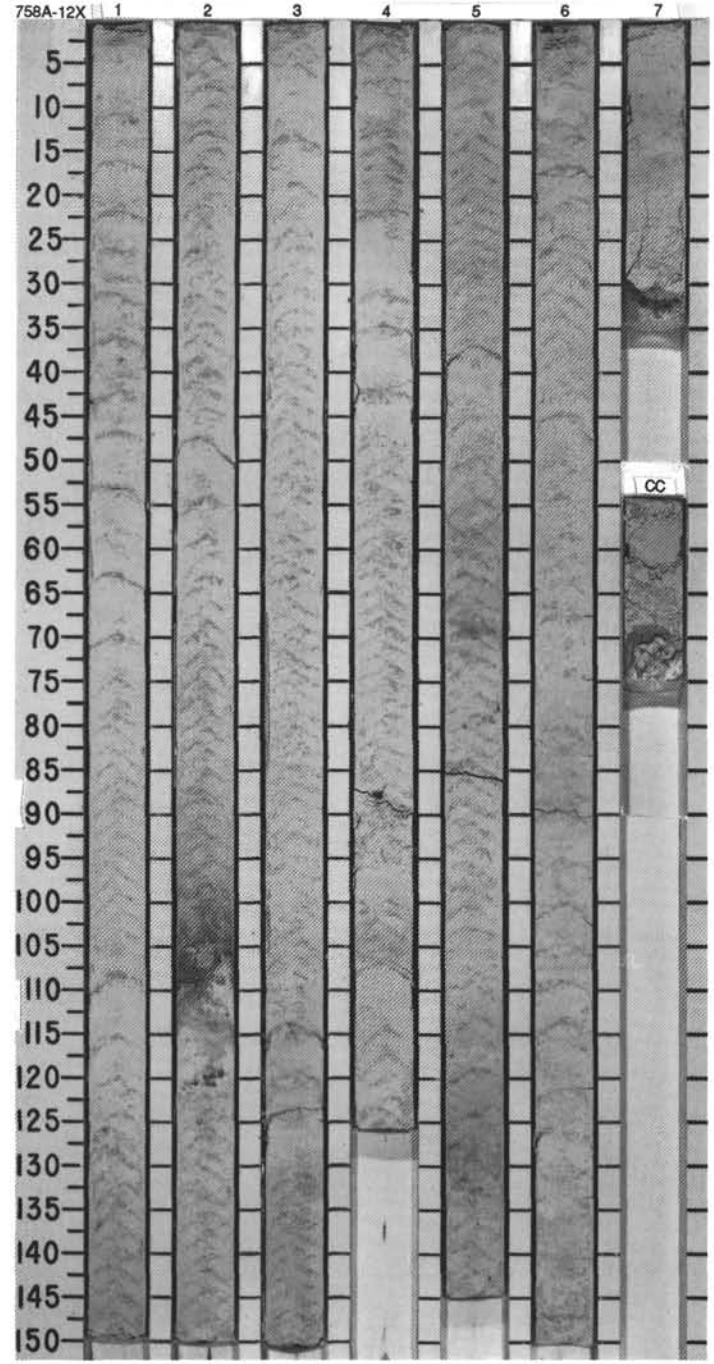
The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with MICRITE, white (10YR 8/1) with scattered faint light gray (10YR 7/1 and 5Y 7/1) mottles. Sparse black (10YR 2/1) blebs of pumice occur throughout. The core is strongly bioturbated and very homogeneous in the non-mottled areas.

Grain Size: The mean grain size for Section 2, 95 cm is 15.6 µm, Section 4, 95 cm is 16.2 µm, and Section 6 is 13.4 µm.

SMEAR SLIDE SUMMARY (%):

	6, 95
	D
TEXTURE:	
Sand	3
Silt	80
Clay	17
COMPOSITION:	
Clay	2
Foraminifers	3
Micrite	25
Nannofossils	65
Quartz	Tr



SITE 758 HOLE A CORE 13X CORED INTERVAL 112.1-121.7 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE - UPPER MIOCENE	N13	CN8			Indeterminate	●φ=62.5 ●γ=1.67 ● V-1554	●80.1	1	0.5, 1.0				
								2					
								3					
		CN7				●φ=62.9 ●γ=1.71 ● V-1576	●75.7	4					*
								5					
						●φ=66.2 ●γ=1.64	●71.3	6					
								7					
	C/G	A/M	R/P					CC					

LITHOLOGIC DESCRIPTION

CALCAREOUS NANNOFOSSIL OOZE

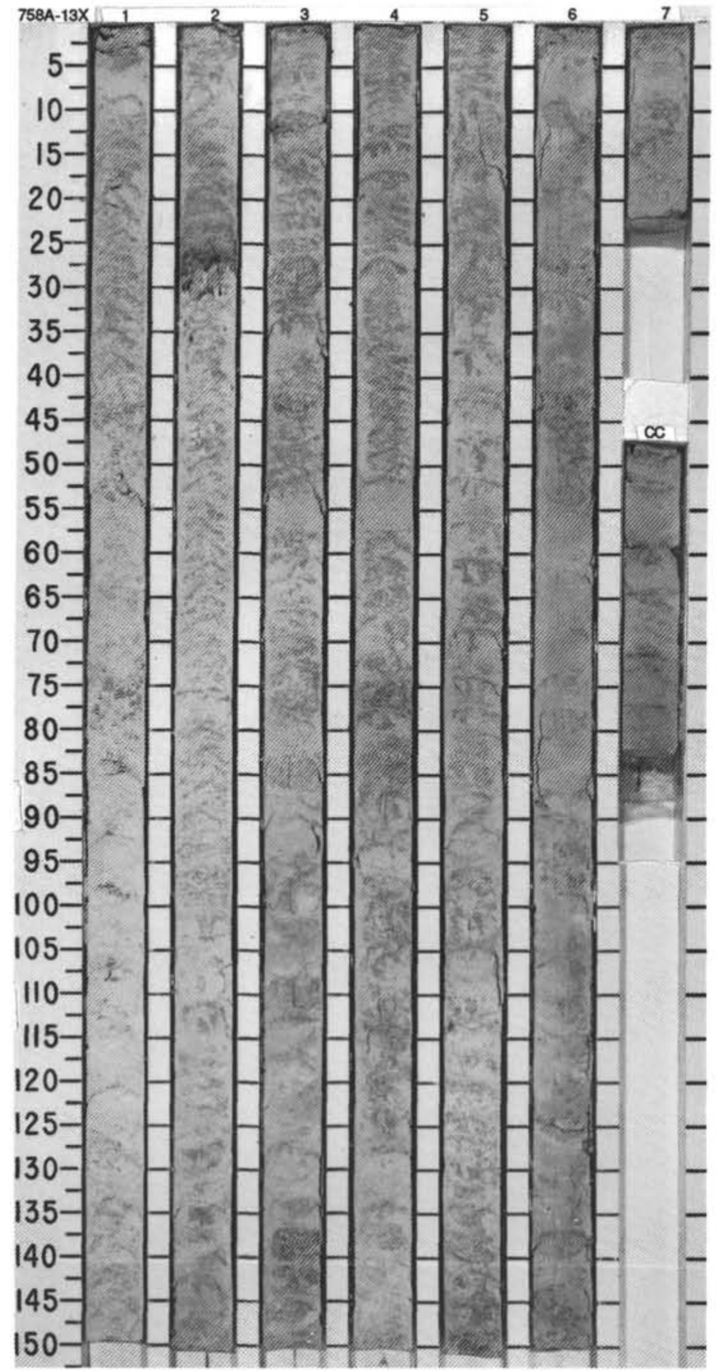
The core is slightly disturbed.

Major lithology: CALCAREOUS NANNOFOSSIL OOZE. Sections 1 and 2 are light gray (5Y 7/1) with scattered black (10YR 2/1) blebs of pumice. Sections 3-CC are light gray (5Y 7/2) with some light gray (5Y 7/1) mottles. The sediment is more indurated in Sections 3-CC. The core is strongly bioturbated and homogeneous in non-mottled regions.

Grain size: The mean grain size for Section 2, 95 cm is 29.8 µm, Section 4, 95 cm is 12.8 µm and Section 6, 95 cm is 18.9 µm.

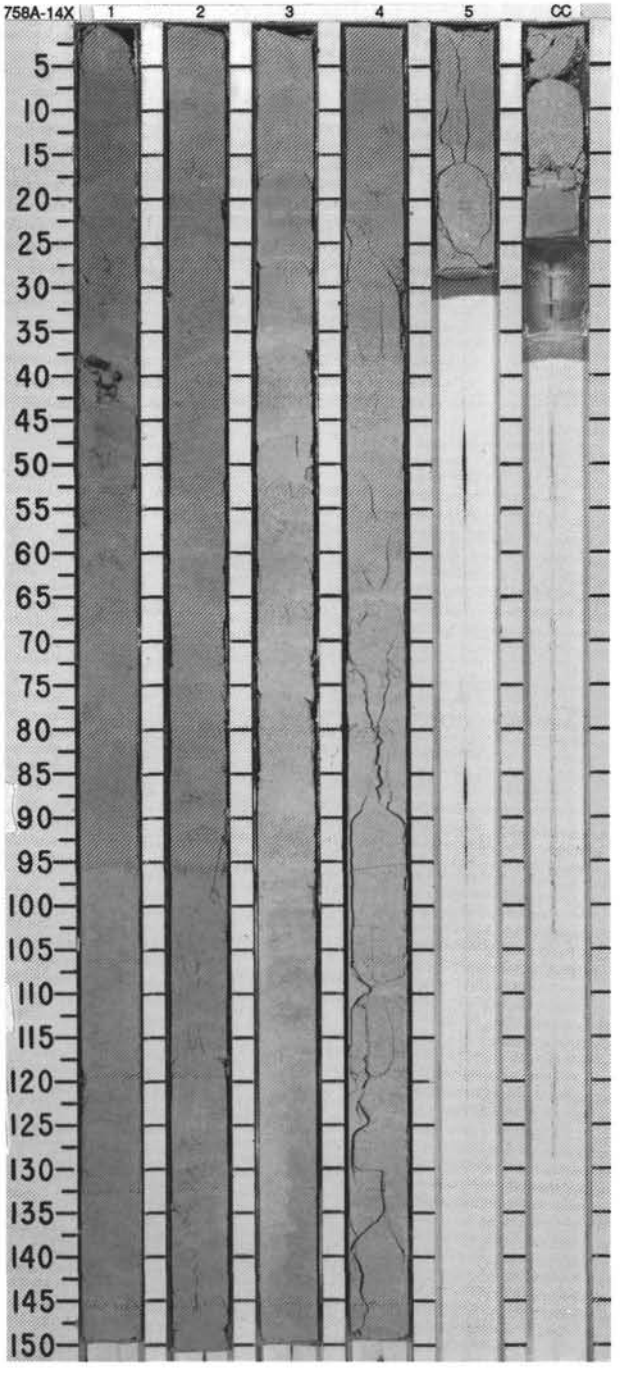
SMEAR SLIDE SUMMARY (%):

	4, 95 D
TEXTURE:	
Sand	1
Silt	80
Clay	19
COMPOSITION:	
Clay	Tr
Foraminifers	1
Micrite	35
Nannofossils	60
Quartz	Tr



SITE 758 HOLE A CORE 14X CORED INTERVAL 121.7-131.4 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	LITHOLOGIC DESCRIPTION
MIDDLE MIOCENE	N12 A/G	CN5-CN6 A/M		Barren	Indeterminate	● 60.7 1.70 V-1562 ● 62.0 1.71 V-1567	● 76.9 ● 84.8	1 2 3 4 5 CC	0.5 1.0			P	*	NANNOFOSSIL CHALK WITH MICRITE AND FORAMINIFERS The core is slightly to moderately fragmented. Major lithology: NANNOFOSSIL CHALK with MICRITE and FORAMINIFERS, very pale brown (10YR 7/3 to 10YR 8/3) in "proto-biscuit" form. The core is bioturbated, and mottling, of mm to 1 or 2 cm size, is common. A pyrite pebble, 0.6 by 2.3 cm, occurs in Section 1 at 38-39 cm. SMEAR SLIDE SUMMARY (%): 2, 70 D TEXTURE: Sand 10 Silt 75 Clay 15 COMPOSITION: Foraminifers 16 Glass 2 Micrite 20 Nannofossils 60 Radiolarians 2



SITE 758 HOLE A CORE 15X CORED INTERVAL 131.4-141.0 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
LOWER MIOCENE	A/G N8	A/M CN3 - CN4	Barren		Indeterminate	ρ=64.2 V=1629 ● 1.67 ● 90.2		1 2 3 4 CC	0.5 1.0				IW OG

LITHOLOGIC DESCRIPTION

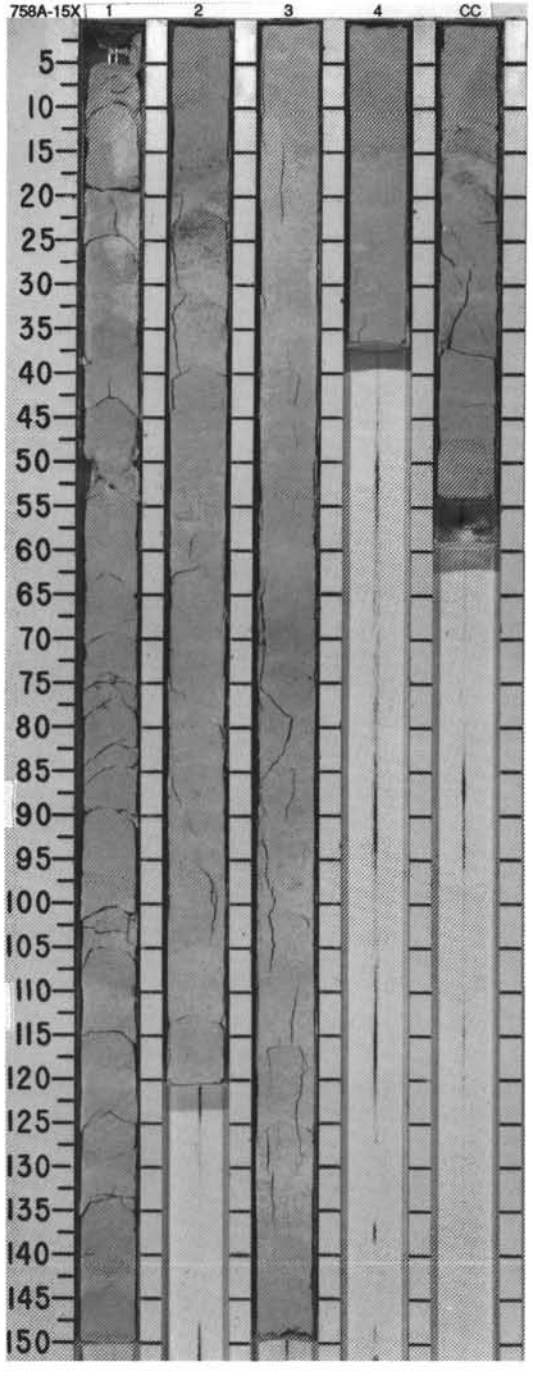
CALCAREOUS NANNOFOSSIL CHALK WITH FORAMINIFERS

The core is slightly to moderately fragmented.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK with FORAMINIFERS, very pale brown (10YR 8/3 to 10YR 7/3) in faintly outlined biscuit form. Sparse and faint mottling, of mm to 1 or 2 cm size, occurs throughout the core suggesting bioturbation. Distinct light gray (10YR 7/1) mottles appear in Section 2, 14-25 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	10
Silt	70
Clay	20
COMPOSITION:	
Foraminifers	15
Glass	Tr
Micrite	30
Nannofossils	55
Radiolarians	Tr



SITE 758 HOLE A CORE 16X CORED INTERVAL 141.0-150.7 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS
LOWER MIOCENE	N5	CN3 - CN4			Indeterminate	● φ=63.8 ● γ=1.66 V=1573	● 79.2	1, 2, 3	0.5, 1.0
		CN2				● φ=65.6 ● γ=1.62	● 87.6	4	
	A/P	A/M		R/M					

GRAPHIC LITHOLOGY | DRILLING DISTURB. | SED. STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

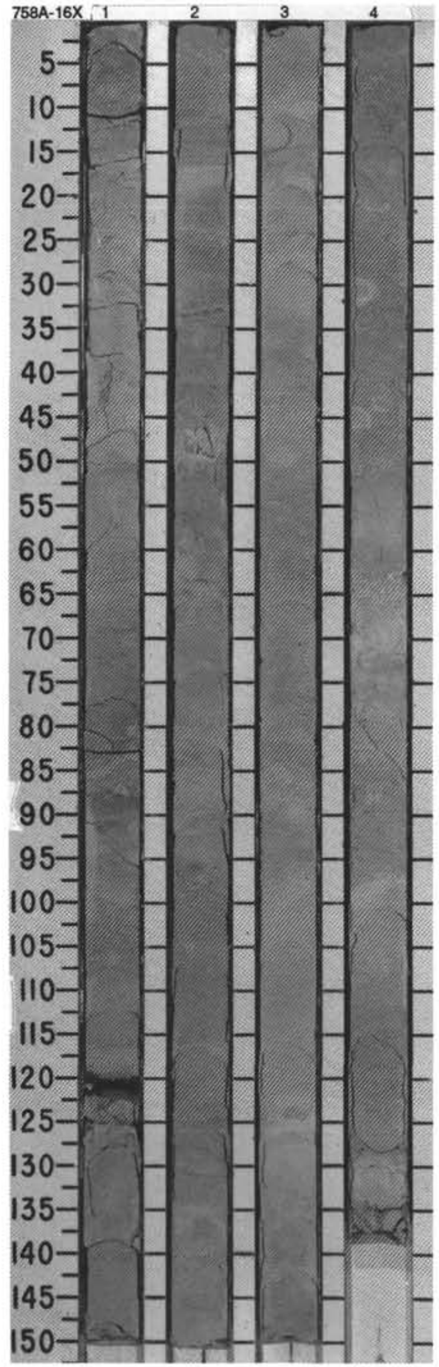
CALCAREOUS NANNOFOSSIL CHALK WITH FORAMINIFERS

The core is moderately fragmented.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK with FORAMINIFERS, very pale brown (10YR 8/3 to 10YR 7/3) in discrete biscuits, 5 to 12 cm long. Distinct mottling and burrow structures are common in the biscuits indicating bioturbation.

SMEAR SLIDE SUMMARY (%):

	2, 70
	D
TEXTURE:	
Sand	10
Silt	70
Clay	20
COMPOSITION:	
Foraminifers	13
Glass	Tr
Micrite	25
Nannofossils	60
Radiolarians	2
Silicoflagellates	Tr
Spicules	Tr



SITE 758 HOLE A CORE 17X CORED INTERVAL 150.7-160.4 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER MIOCENE	N5 A/G	CN1 A/M		*C. elegans* F/M *R. paleacea*	Indeterminate	● φ=65.5 γ=1.66 V=1612; ● φ=65.5 γ=1.66 V=1632	● 84.6; ● 84.3	1, 2, 3, 4, CC	0.5, 1.0				*

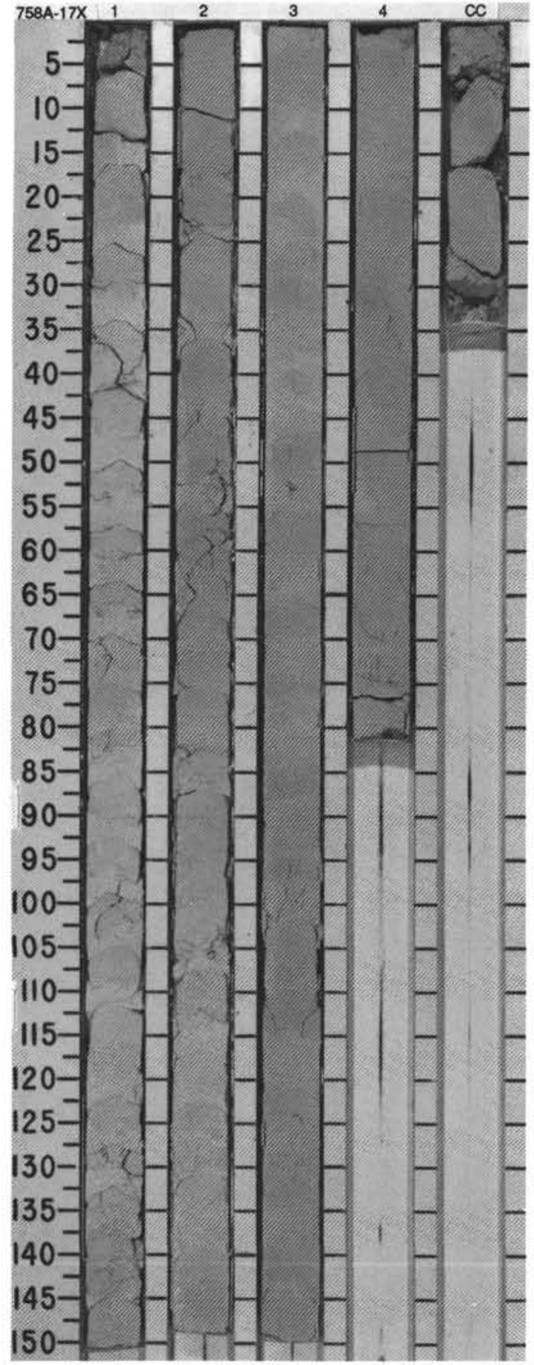
CALCAREOUS NANNOFOSSIL CHALK

The core is slightly to moderately fragmented.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK occurring as discrete biscuits, 5 to 12 cm long. White(10YR 8/2), very faintly mottled, bioturbated.

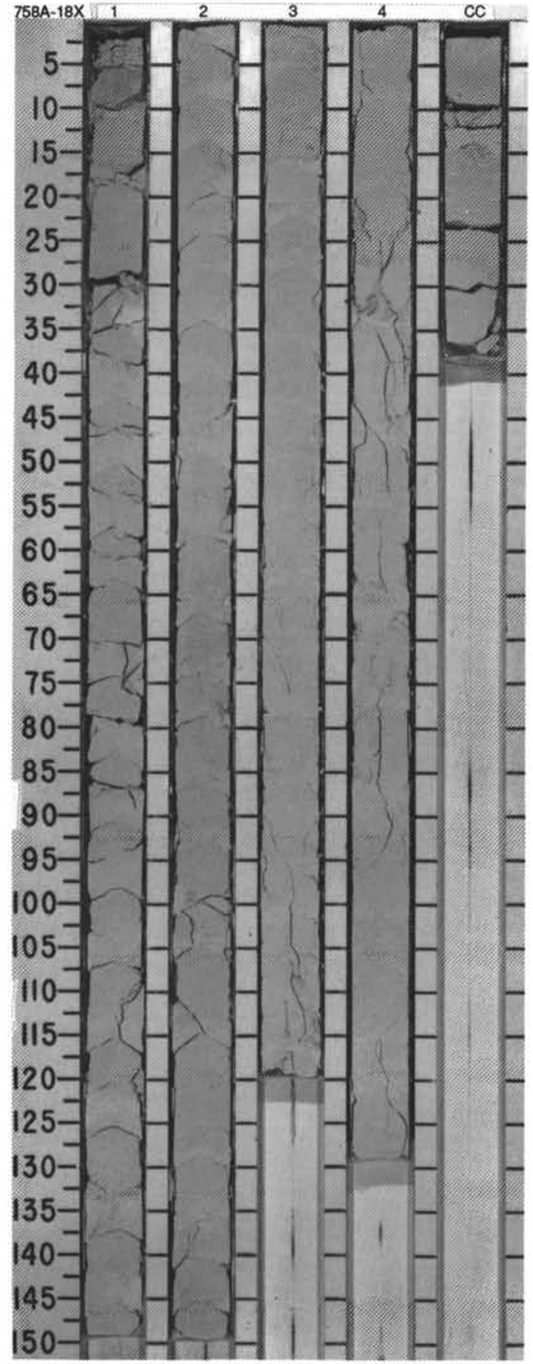
SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	10
Silt	80
Clay	10
COMPOSITION:	
Clay	3
Foraminifers	5
Micrite	35
Nannofossils	50
Quartz	Tr
Radiolarians	2
Spicules	5



SITE 758 HOLE A CORE 18X CORED INTERVAL 160.4-170.0 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER MIOCENE	N4 A/G	CN1 A/M		*Rossiella paleacea* C/M	Indeterminate	• φ=63.0 γ=1.67 • V=1592 V=1619 • φ=63.4 γ=1.66	• 83.2 • 85.3	1 2 3 4 CC	0.5 1.0				IW OG	CALCAREOUS NANNOFOSSIL CHALK The core is moderately fragmented. Major lithology: CALCAREOUS NANNOFOSSIL CHALK,white (10YR 8/2), very faintly mottled, bioturbated. Occurs as discrete biscuits, 3 to 12 cm long, separated by up to 5 cm of drilling matrix.



SITE 758 HOLE A CORE 19X CORED INTERVAL 170.0-179.7 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 MIOCENE	A/G	N4						1	0.5				
	A/M	CN1							1.0				
				Rossiella paleacea	Indeterminate			2					*
					Reversed	● 9-62.0 V-1590 7-1.68	● 87.4	3					
						● 9-60.9 V-1576 7-1.70	● 82.8	4					
								5					
								CC					

LITHOLOGIC DESCRIPTION

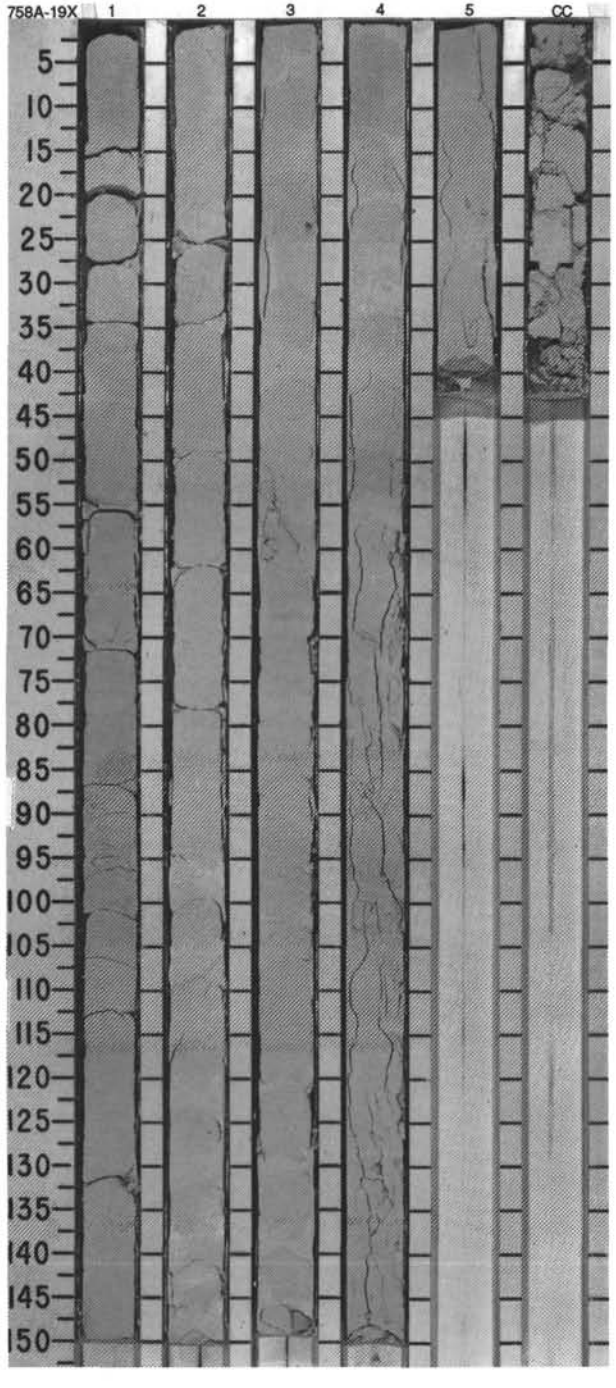
CALCAREOUS NANNOFOSSIL CHALK

The core is slightly to highly fragmented.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2), very faintly mottled, bioturbated. Occurs as discreet biscuits, 4 to 25 cm long, separated by up to 5 cm of drilling matrix. A pebble, pale brown (10YR 6/3), 0.5 cm long, occurs in Section 3, 23 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	15
Silt	75
Clay	10
COMPOSITION:	
Clay	5
Foraminifers	5
Glass	Tr
Micrite	25
Nannofossils	56
Radiolarians	2
Silicoflagellates	2
Spicules	5



SITE 758 HOLE A CORE 20X CORED INTERVAL 179.7-189.3 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 MIOCENE	N4 A/G	CN1 A/M		*Rossiella paleacea* R/M		Indeterminate	• φ=64.9 γ=1.63 V=1590	• 84.4	1, 2, 3, CC	0.5, 1.0				* *

LITHOLOGIC DESCRIPTION

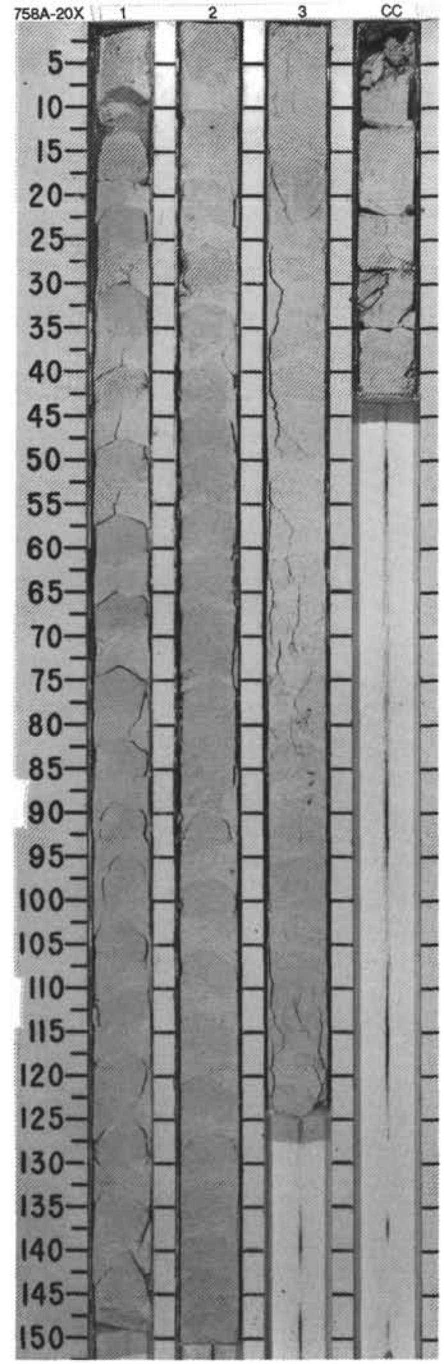
NANNOFOSSIL CHALK WITH MICRITE AND FORAMINIFERS

The core is moderately fragmented.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2), very faintly mottled, bioturbated, approaching homogeneity. The chalk occurs as discrete biscuits, 3-12 cm long, separated by up to 5 cm of drilling matrix. Mm-scale pebbles (chert?), light gray (10YR 6/1), occur in Sections 2, 12 and 94 cm, and 3, 81-89 cm.

SMEAR SLIDE SUMMARY (%):

	2, 12 D	2, 70 D
TEXTURE:		
Sand	30	13
Silt	60	67
Clay	10	20
COMPOSITION:		
Accessory Minerals	Tr	—
Foraminifers	10	20
Glass	30	Tr
Micrite	20	20
Nannofossils	40	55
Radiolarians	—	5



SITE 758 HOLE A CORE 21X CORED INTERVAL 189.3-199.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS
LOWER MIOCENE	P22 - N4	CN1		Bogorovia veniamini - Rocella gelida	Indeterminate	●φ•61.9 γ•1.66 V-1600	● 85.3	1, 2, 3	0.5, 1.0
UPPER OLIGOCENE		(CP19)				●φ•63.5 γ•1.65 V-1670	● 83.5	4, 5, CC	
	A/G	A/M		C/M					

Samples: * (Section 2); OG (Section 4/5 boundary)

LITHOLOGIC DESCRIPTION

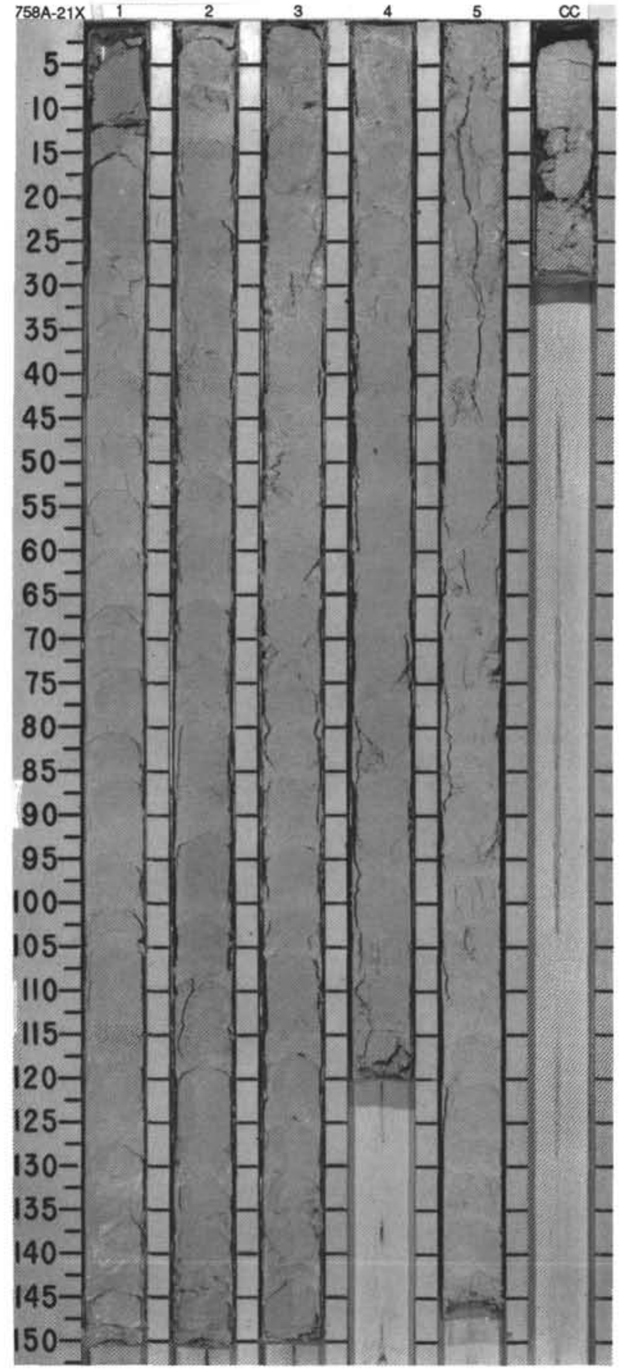
FORAMINIFERAL NANNOFOSSIL CHALK WITH MICRITE

The core is moderately to highly fragmented.

Major lithology: FORAMINIFERAL NANNOFOSSIL CHALK with MICRITE, white (10YR 8/2), very faintly mottled and bioturbated, approaching homogeneity. Chalk occurs as discrete biscuits, 3-12 cm long, separated by up to 5 cm of drilling matrix. Light gray (10YR 6/1), mm-scale pebbles (chert?), occur in Sections 2, 37 and 94 cm, and 3, 81-89 cm. Faint gray ash appears as blebs in Sections 2, 148 cm, 4, 49 cm, and 5, 134 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	25
Silt	60
Clay	15
COMPOSITION:	
Foraminifers	30
Glass	Tr
Micrite	15
Nannofossils	50
Radiolarians	5



SITE 758 HOLE A CORE 22X CORED INTERVAL 199.0-208.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION
UPPER OLIGOCENE	P22	CP19		*Bogorovia veniamini*	Indeterminate	● φ=60.5 ● γ=1.70 V=1677	● 89.0	1, 2, 3, 4
	A/G	A/M		C/M			● 88.0	CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY | DRILLING DISTURB. | SED. STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

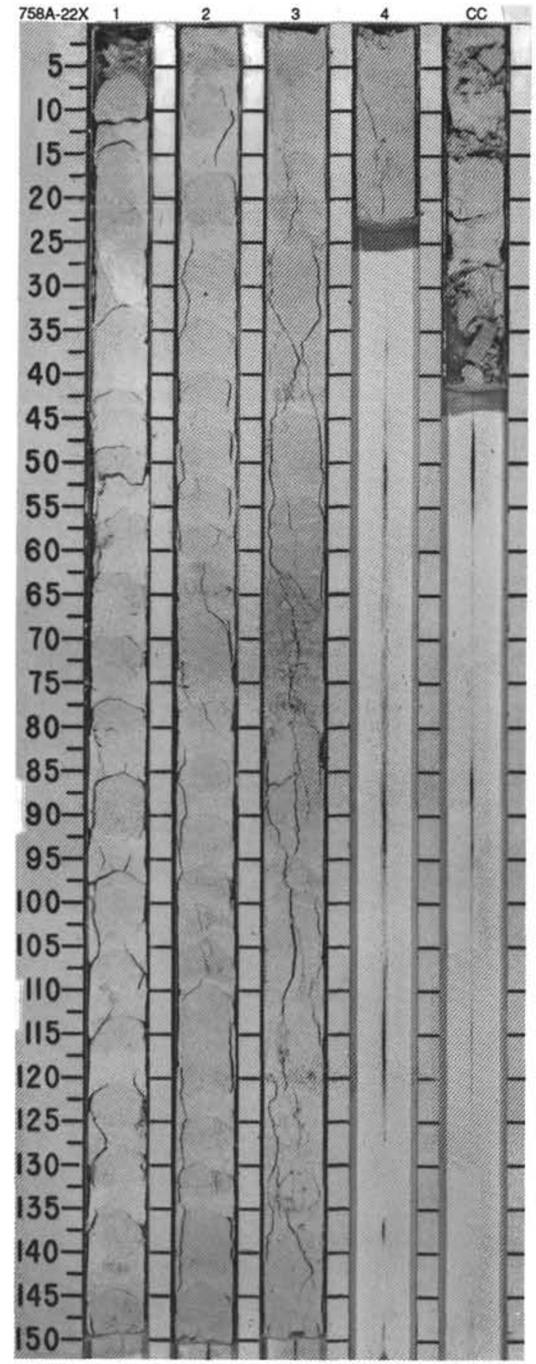
NANNOFOSSIL CHALK WITH FORAMINIFERS AND MICRITE

The core is moderately to highly fragmented.

Major lithology: NANNOFOSSIL CHALK with FORAMINIFERS and MICRITE white (10YR 8/2), very faintly mottled and nearly homogeneous. Chalk occurs as discrete biscuits, 3-12 cm long, separated by up to 5 cm of drilling matrix. Light gray (10YR 6/1), mm-scale pebbles (chert) occur in Sections 2, 31 and 64 cm, and 4, 13 cm. Faint black mottling occurs in Section 3, 63-78 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70
	D
TEXTURE:	
Sand	13
Silt	70
Clay	17
COMPOSITION:	
Feldspar	Tr
Foraminifers	15
Glass	Tr
Micrite	15
Nannofossils	65
Radiolarians	5
Spicules	Tr



SITE 758 HOLE A CORE 23X CORED INTERVAL 208.7-218.3 mbsf

Field	Entry
TIME-ROCK UNIT	UPPER OLIGOCENE
BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	P22; A/G
NANNOFOSSILS	CP19; A/M
RADIOLARIANS	
DIATOMS	*Bogorovia veniamini*; C/M
PALEOMAGNETICS	Reversed
PHYS. PROPERTIES	Section 2: • φ=61.7, γ=1.74, V=1660; Section 4: • φ=61.0, γ=1.71, V=1658; Section 6/CC: • V=1644
CHEMISTRY	Section 2: • 87.1; Section 4: • 88.8
SECTION	1, 2, 3, 4, 5, 6, CC
METERS	0.5, 1.0
GRAPHIC LITHOLOGY	
DRILLING DISTURB.	
SED. STRUCTURES	
SAMPLES	* (Section 4)

LITHOLOGIC DESCRIPTION

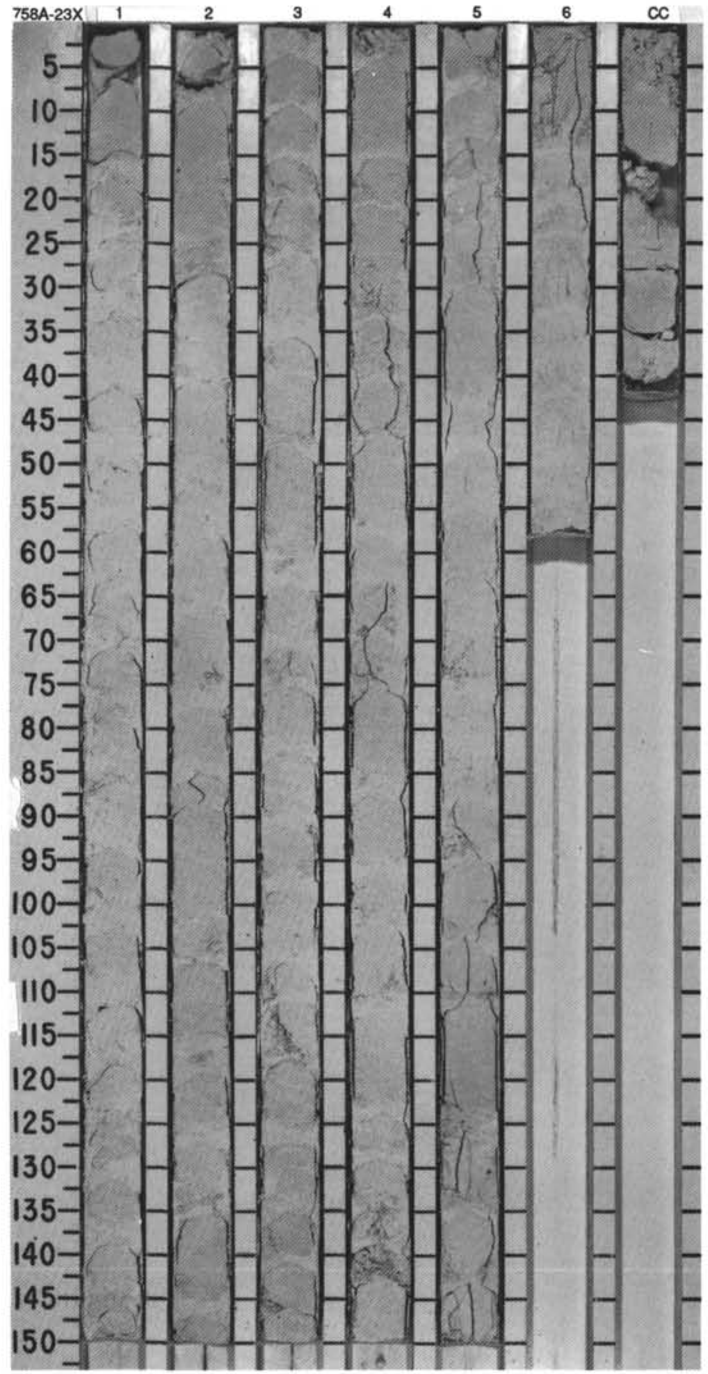
CALCAREOUS NANNOFOSSIL CHALK

The core is moderately fractured and consists of drilling biscuits throughout.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, stark white (whiter than 10YR 8/1). Drilling biscuits are 5-7 cm in length, spaced approximately 5-10 cm apart and separated by drilling matrix. The biscuits are homogeneous.

SMEAR SLIDE SUMMARY (%):

	4, 100
	D
TEXTURE:	
Sand	1
Silt	80
Clay	19
COMPOSITION:	
Foraminifers	2
Micrite	30
Nannofossils	65
Quartz	Tr
Spicules	Tr



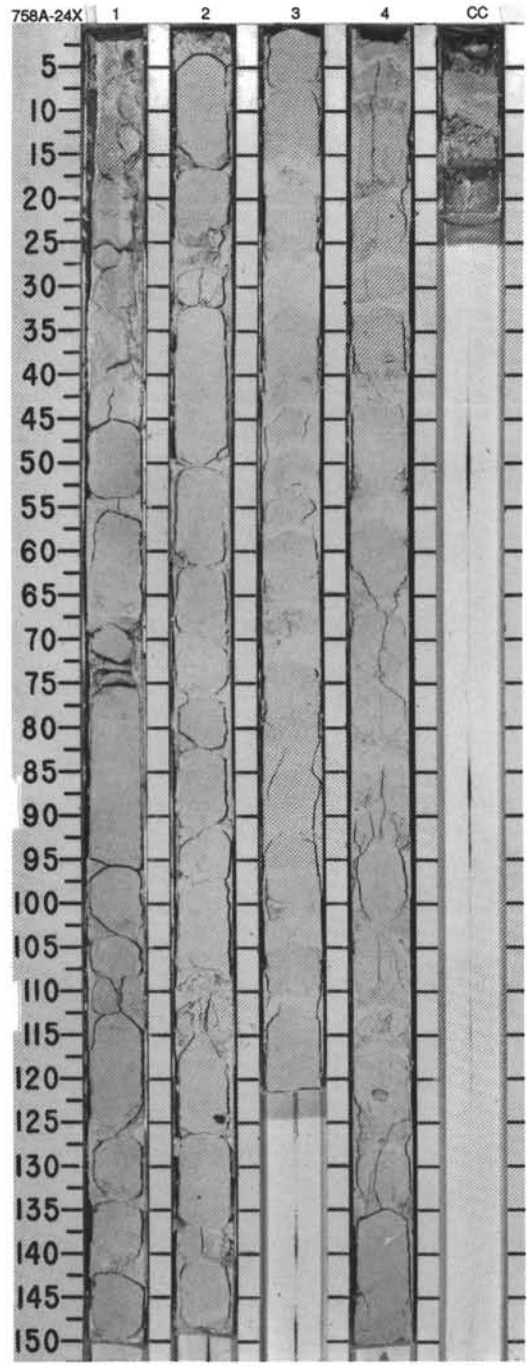
SITE 758 HOLE A CORE 24X CORED INTERVAL 218.3-228.0 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER OLIGOCENE	P21b	CP18		*Rocella vigilans*	Indeterminate	● φ=62.9 ● γ=1.76 V=1668	● 88.4	1	0.5 1.0					CALCAREOUS NANNOFOSSIL CHALK
								2						
								3					IW OG	
						V=1521 ● ● φ=61.5 ● γ=1.77	● 86.3	4						
	A/G	A/M		F/M				CC						

CALCAREOUS NANNOFOSSIL CHALK

The core is moderately fractured and consists of drilling biscuits throughout.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/1) grading to white (10YR 8/2) at the base of the core. Drilling biscuits are 5-7 cm in length, spaced 2-10 cm apart, and separated by drilling matrix. The biscuits are homogeneous except for the CC which has slight mottling. A black (10YR 2.5/1) pumice (?) bleb occurs in Section 2, 124 cm.



SITE 758 HOLE A CORE 25X CORED INTERVAL 228.0-237.7 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
MIDDLE OLIGOCENE	P21b A/G	CP18 A/M		R/P	Reversed	φ=60.25 γ=1.72; V=1682; φ=63.6 γ=1.69 V=1699; φ=60.9 γ=1.74 V=1706	85.7; 87.0; 85.9	1, 2, 3, 4, 5, 6, CC	0.5, 1.0				*	

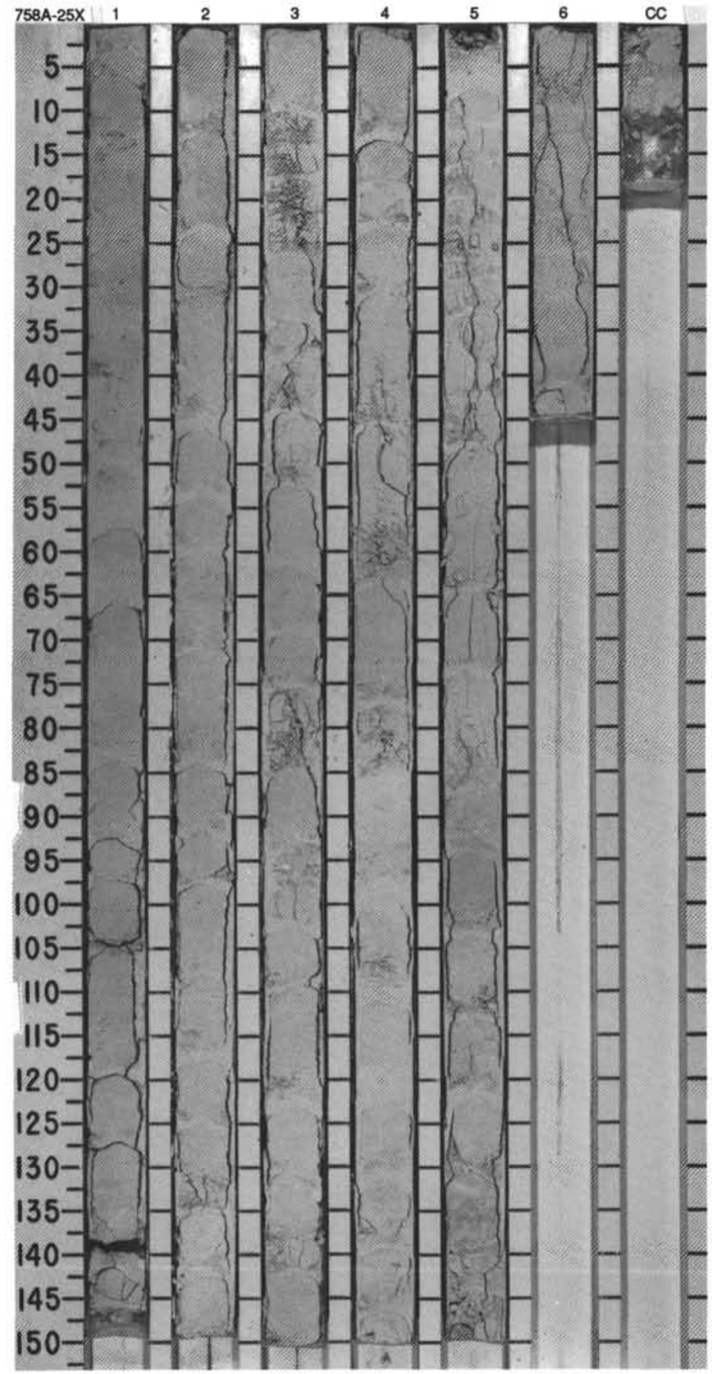
CALCAREOUS NANNOFOSSIL CHALK

The core is moderately fractured and consists of drilling biscuits throughout.

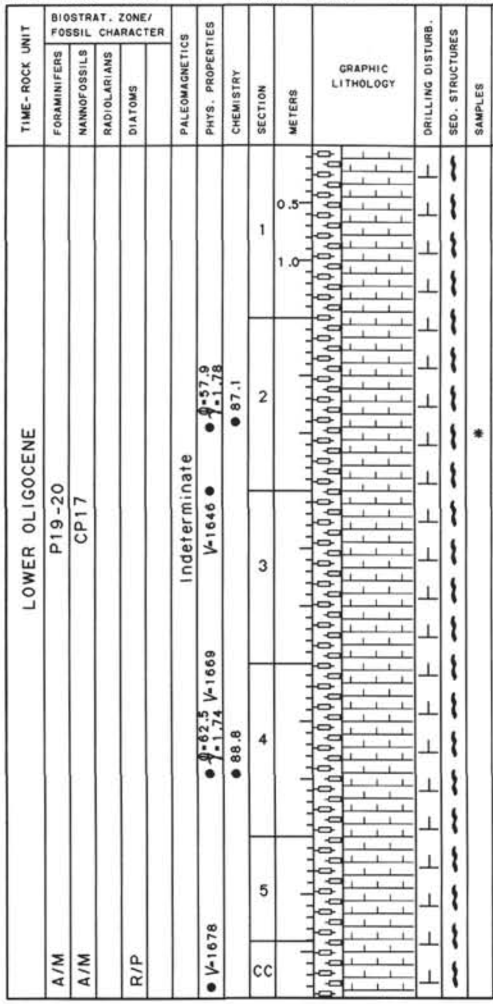
Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2). Drilling biscuits are 5-15 cm in length, spaced 2-10 cm apart and are separated by drilling matrix. The biscuits are homogeneous.

SMEAR SLIDE SUMMARY (%):

	2, 95
	D
TEXTURE:	
Sand	2
Silt	80
Clay	18
COMPOSITION:	
Diatoms	Tr
Foraminifers	1
Micrite	28
Nannofossils	70
Spicules	Tr



SITE 758 HOLE A CORE 26X CORED INTERVAL 237.7-247.3 mbsf



LITHOLOGIC DESCRIPTION

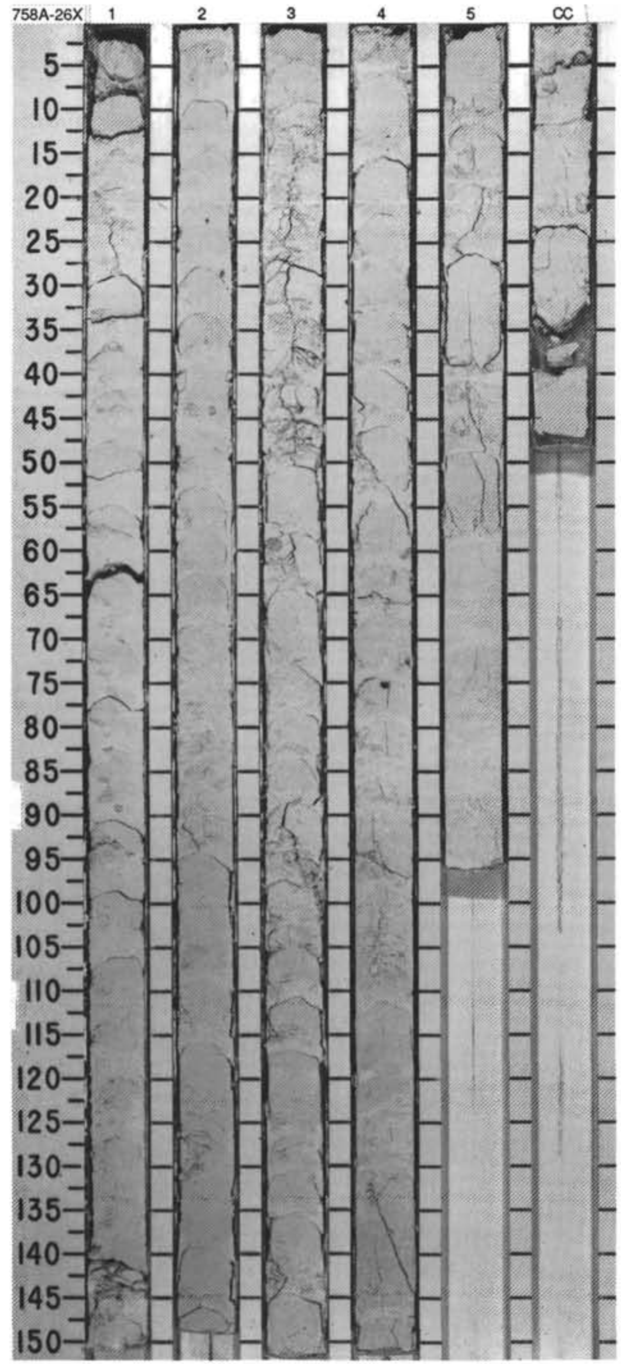
CALCAREOUS NANNOFOSSIL CHALK

The core is moderately fractured and consists of drilling biscuits throughout.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2), with black (10YR 2.5/1) blebs occurring in Section 4, 75 cm. Drilling biscuits are 2-10 cm in length and are spaced 2-5 cm apart. The drilling biscuits are homogeneous.

SMEAR SLIDE SUMMARY (%):

	2, 100
	D
TEXTURE:	
Silt	80
Clay	20
COMPOSITION:	
Foraminifers	Tr
Micrite	30
Nannofossils	65
Spicules	Tr



SITE 758 HOLE A CORE 27X CORED INTERVAL 247.3-256.9 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER EOCENE / LOWER OLIGOCENE	P15 A/P P18 A/G P19	CP15a A/M A/M CP17	Barren		Reversed (V-1751)	V-1898 ● 47.2 ● 1.99	● 89.7	1, CC	0.5, 1.0				

LITHOLOGIC DESCRIPTION

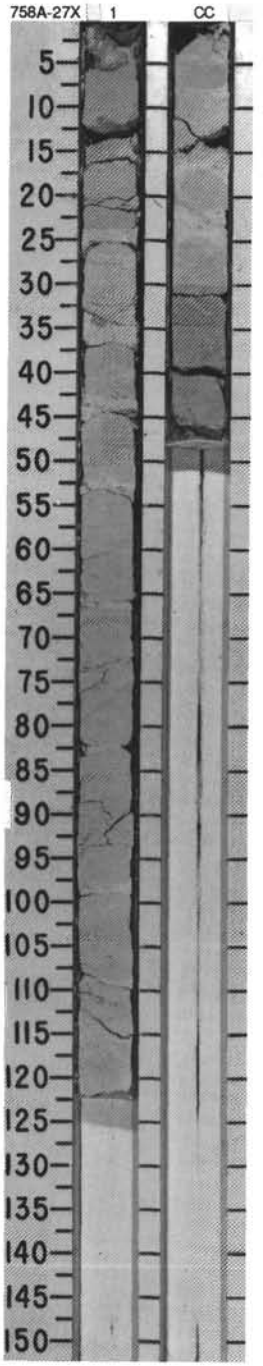
CALCAREOUS NANNOFOSSIL CHALK

The core is moderately fractured and consists of drilling biscuits throughout.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, very pale brown (10YR 8/3) in Section 1 grading to white (10YR 8/2) in the upper part of the CC. An abrupt change to very pale brown (10YR 8/4) occurs in the CC, 30 cm. Scattered planar laminae occur in Section 1. A pebble occurs in the CC, 40 cm. The drilling biscuits are moderately bioturbated.

SMEAR SLIDE SUMMARY (%):

	1, 90 D	CC, 40 D
TEXTURE:		
Sand	3	5
Silt	80	75
Clay	17	20
COMPOSITION:		
Feldspar	—	Tr
Foraminifers	5	—
Glass	Tr	2
Micrite	30	30
Nannofossils	60	63
Opaques	—	Tr
Quartz	—	Tr
Spicules	—	Tr



SITE 758 HOLE A CORE 28X CORED INTERVAL 256.9-266.6 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
UPPER PALEOCENE	A/G P4	A/G CP8	Barren		not measured	ϕ=52.7 ρ=1.93 V=1614	95.7	1	0.5				
									1.0				
						ϕ=51.3 ρ=1.91 V=1612		2					
								3					
								4					
	A/G CP7					ϕ=51.87 ρ=1.88 V=1452	94.6	5					IW OG
								6					
								7					
								CC					

LITHOLOGIC DESCRIPTION

CALCAREOUS NANNOFOSSIL OOZE

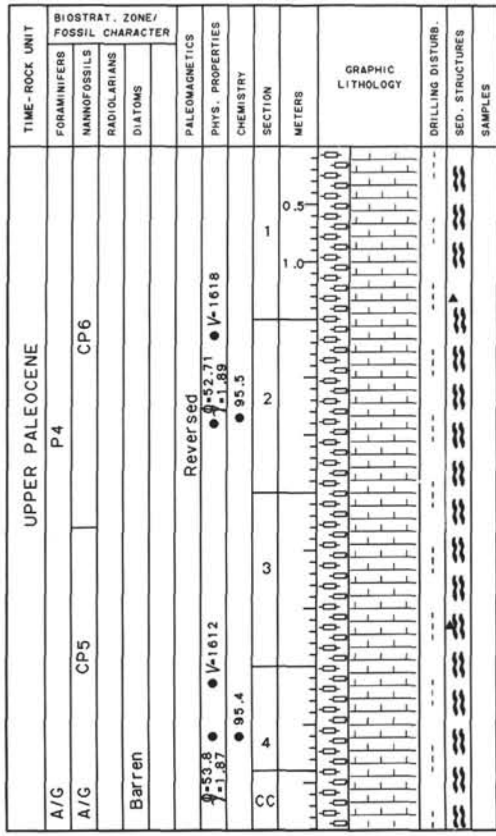
Section 1 is soupy, and the remainder of the core is slightly to moderately disturbed.

Major lithology: CALCAREOUS NANNOFOSSIL OOZE, white (10YR 8/2) with scattered faint white (10YR 8/1) mottles. Black (10YR 2.5/1) blebs occur in Section 2, 124 cm. The drilling biscuits are only slightly firmer than surrounding matrix and are moderately to strongly bioturbated. (This core and the next three were opened with the pull-wire instead of the saw as were preceding cores; they have a somewhat different appearance on the photographs.)

SMEAR SLIDE SUMMARY (%):

	4 D	100
TEXTURE:		
Sand	7	
Silt	80	
Clay	12	
COMPOSITION:		
Foraminifers	5	
Glass	Tr	
Micrite	35	
Nannofossils	55	
Radiolarians	Tr	
Spicules	Tr	

SITE 758 HOLE A CORE 29X CORED INTERVAL 266.6-276.3 mbsf

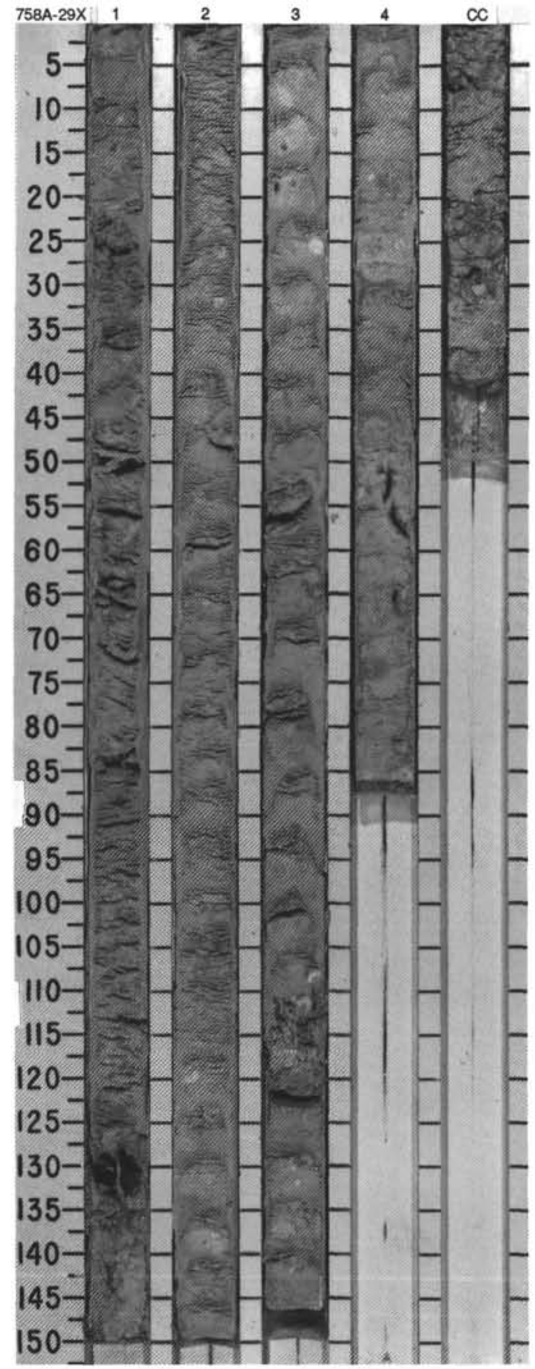


LITHOLOGIC DESCRIPTION

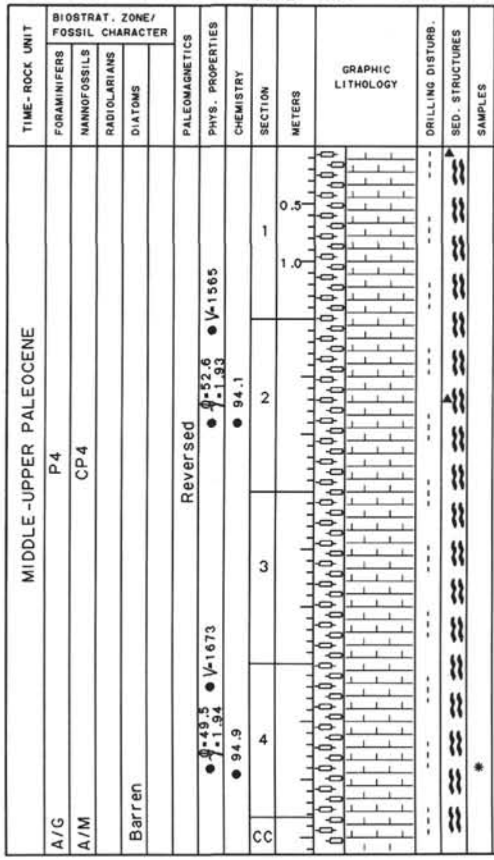
CALCAREOUS NANNOFOSSIL OOZE and CALCAREOUS NANNOFOSSIL CHALK

The core is slightly to moderately disturbed.

Major lithology: CALCAREOUS NANNOFOSSIL OOZE in Sections 1-3, and chalk in Sections 4-CC, white (10YR 8/2) with scattered white (10YR 8/1) mottles. Chert nodules occur in Section 1, 128-132 cm and in Section 3, 110-115 cm. Scattered and distorted black blebs of pumice occur in Section 4, 50-70 cm. Otherwise, the core is strongly bioturbated and generally homogeneous.



SITE 758 HOLE A CORE 30X CORED INTERVAL 276.3-285.9 mbsf



LITHOLOGIC DESCRIPTION

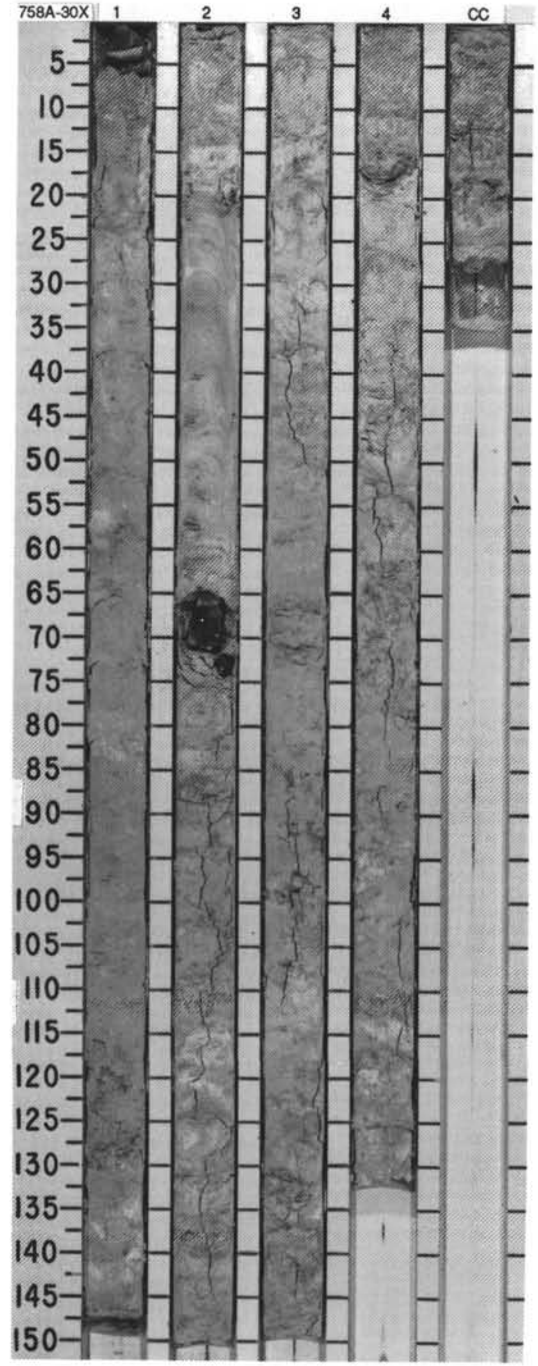
CALCAREOUS NANNOFOSSIL CHALK

The core is slightly to moderately disturbed.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2) with scattered white (10YR 8/1) mottles, that become more common in Section 4, 90-130 cm. Chert nodules occur in Section 1, 0-4 cm and Section 2, 65-70 cm. The core is strongly bioturbated, and the degree of induration increases down section.

SMEAR SLIDE SUMMARY (%):

	4, 90 D
TEXTURE:	
Silt	85
Clay	15
COMPOSITION:	
Foraminifers	Tr
Glass	Tr
Micrite	27
Nannofossils	70
Spicules	Tr



SITE 758 HOLE A CORE 31X CORED INTERVAL 285.9-295.6 mbsf

TIME-ROCK UNIT: MIDDLE PALEOCENE / LOWER PALEOCENE / (UPPER MAESTRICHTIAN - LOWER PALEOCENE)

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: P1c A/M A/G | P1c | A/M P2 A/G | A/M (CP1b) | (CC26)
- NANNOFOSSILS: P3 | CP2 / 3 A/M | CP4 | Barren
- RADIOLARIANS
- DIATOMS

PALEOMAGNETICS: Reversed

PHYS. PROPERTIES: 56.3 1.90 V-1884; 56.6 1.83 V-1768; 51.3 1.95 V-1695; 52.3 1.95 V-1632

CHEMISTRY: 81.8; 87.6; 92.7; 92.2

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG, LW, *

LITHOLOGIC DESCRIPTION

CALCAREOUS NANNOFOSSIL CHALK, AND CALCAREOUS NANNOFOSSIL CHALK WITH FORAMINIFERS

The core is slightly to moderately fractured; drilling biscuits occur.

Major lithologies:
a. CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2) with scattered white (10YR 8/1) mottles, some to 5 cm across, occurring in Section 1 to 5. A chert nodule occurs in Section 1, 5-10 cm. Scattered black (10YR 2.5/1) blebs of pumice occur in Section 2. Several faint white (10YR 8/1) laminae occur in Section 3, 5-15 cm. Generally homogeneous.
b. CALCAREOUS NANNOFOSSIL CHALK with FORAMINIFERS, light yellowish brown (10YR 6/4) with scattered faint white (10YR 8/2) and dark yellowish brown (10YR 3/4) mottles occurs in Section 6, 7, and CC. A white (10YR 8/2) interval occurs in Section 6, 8-28 cm. Generally homogeneous.

SMEAR SLIDE SUMMARY (%):

	6, 90 D
TEXTURE:	
Sand	10
Silt	75
Clay	15
COMPOSITION:	
Foraminifers	10
Glass	Tr
Micrite	26
Nannofossils	60
Spicules	Tr

SITE 758 HOLE A CORE 32X CORED INTERVAL 295.6-305.3 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 MAESTRICHTIAN	C/G *A. mayaroensis* (P1b + *A. mayaroensis*)	A/M CC24-25	Barren		Reversed Normal			1 2 3 4 5 6 CC	0.5 1.0				*

LITHOLOGIC DESCRIPTION

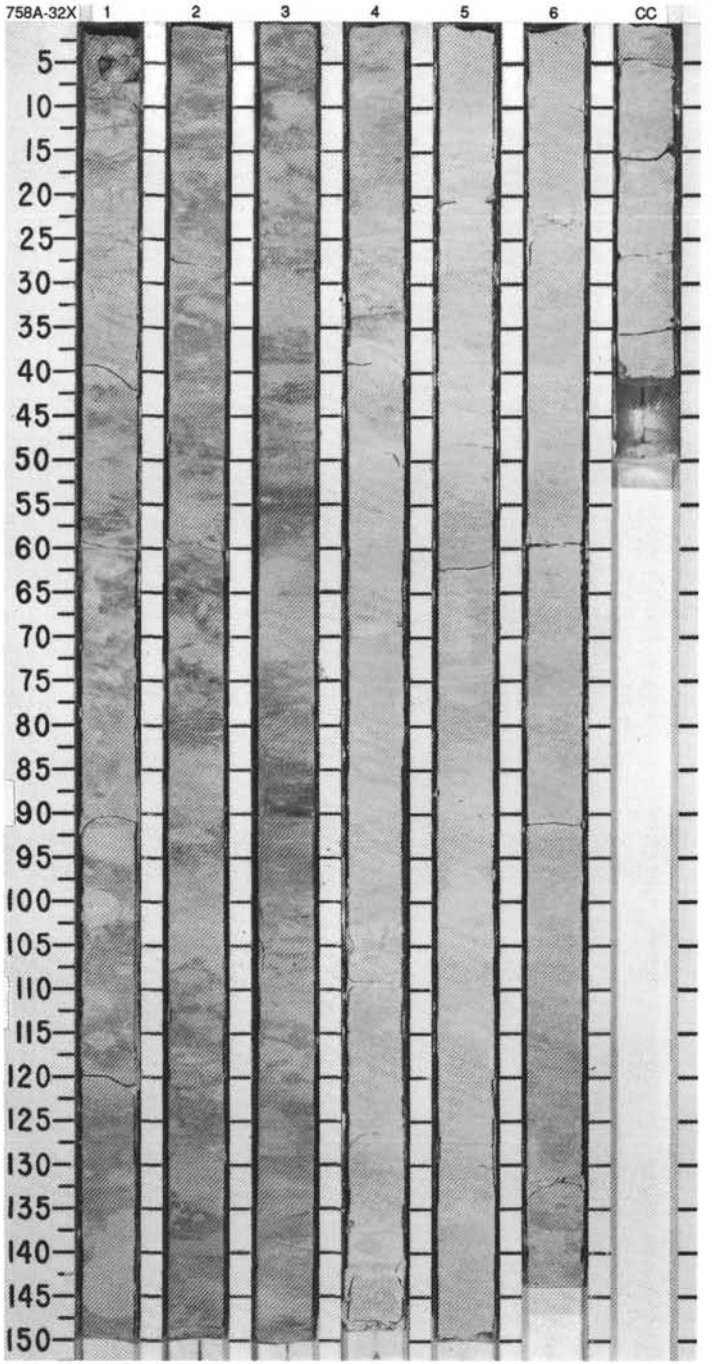
CALCAREOUS NANNOFOSSIL CHALK

The core is slightly fractured.

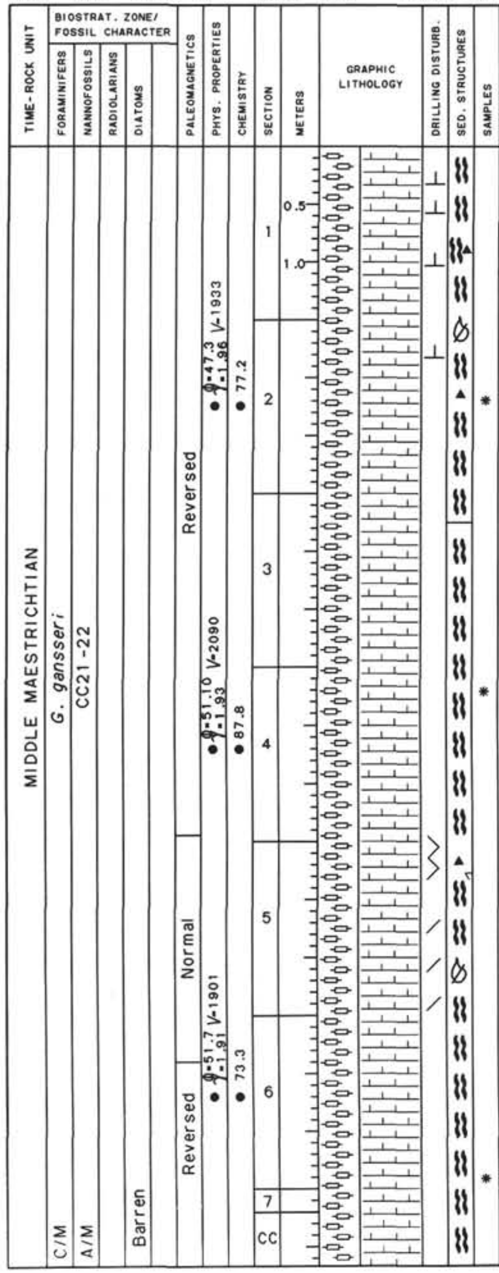
Major lithology: CALCAREOUS NANNOFOSSIL CHALK, very pale brown (10YR 8/3) with very pale brown (10YR8/2) and white (10YR 8/2) mottles. Diffuse ash layers occur in Section 1, 2, 3, and the top 30 cm of Section 4. Shell fragments (*Inoceramus*) occur in Section 6, 23 cm. A microfault, possibly a reverse fault, occurs in Section 1, 74 cm. The core is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	3, 55 D
TEXTURE:	
Silt	80
Clay	20
COMPOSITION:	
Glass	Tr
Micrite	30
Nannofossils	65
Quartz	Tr
Spicules	Tr



SITE 758 HOLE A CORE 33X CORED INTERVAL 305.3-314.9 mbsf



LITHOLOGIC DESCRIPTION

CALCAREOUS NANNOFOSSIL CHALK

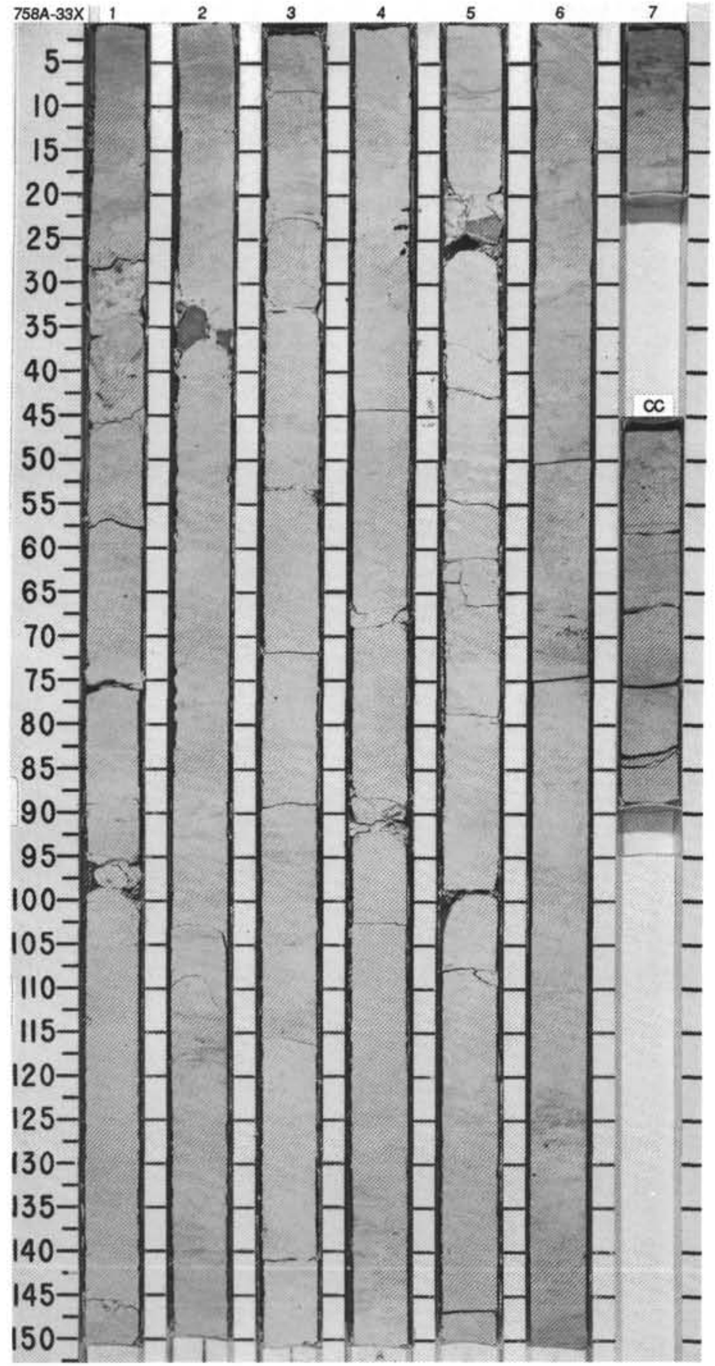
The core is moderately fractured in Section 1, 25-45 and 95-100 cm, and slightly fractured in Section 5.The remainder of the core is undisturbed.

Major lithology: CALCAREOUS NANNOFOSSIL CHALK, white (10YR 8/2 and 10YR 8/1) grading to very light greenish gray (10Y 8/1) in Section 6. The entire core is streaked and mottled. Faint grayish blobs which may be ash are present in Section 1, 28-45 cm. Black and green blebs of a non-ash or chert material are present in Sections 3 at 76 cm, and 4 at 21-26 cm. A shell fragment 2.5 cm in length is seen in Section 5, 121 cm.

Minor lithology: Porcellanite and chert, yellowish brown (10YR 5/6). The porcellanite is seen in Section 1 at 97 cm, and chert in Section 2, 33-38 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D	4, 21 M	6, 141 M
TEXTURE:			
Sand	5	—	5
Silt	80	100	75
Clay	15	0	20
COMPOSITION:			
Accessory Minerals	—	—	Tr
Clay	—	—	7
Feldspar	—	—	Tr
Foraminifers	5	—	3
Glass	Tr	—	Tr
Micrite	40	—	30
Nannofossils	55	—	20
Opaques	—	100	40
Quartz	—	—	Tr
Radiolarians	Tr	—	Tr



SITE 758 HOLE A CORE 34X CORED INTERVAL 314.9-324.6 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
MIDDLE MAESTRICHTIAN	A/M	A/M	Barren		Indeterminate / Normal	● 52.2 V-2105 1.90 ● 48.0 V-2123 1.97 ● 51.7 V-2027 1.89	● 75.5 ● 74.6 ● 82.6	1 2 3 4 5 6 7 CC	0.5 1.0				IW GC

G. havanensis - Gt. aegyptiaca

CC21-22

LITHOLOGIC DESCRIPTION

CALCAREOUS NANNOFOSSIL FORAMINIFERAL CHALK

The core is slightly fractured to highly fragmented.

Major lithology: CALCAREOUS NANNOFOSSIL FORAMINIFERAL CHALK, light gray (5Y 7/1) to light greenish gray (5GY 7/1), mottled, burrowed and bioturbated, occurring in sections and occasionally biscuits 5-43 cm long. The entire core contains green and black blebs and smaller speckles. *Inoceramus* fragments begin in Section 2, 145 cm and extend through Section 5, 8 cm. A pale green (5G 6/2) chert pebble occurs in Section 3, 84 cm. Pyrite was found in Section 5, 113 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	35
Silt	55
Clay	10
COMPOSITION:	
Accessory Minerals	Tr
Feldspar	Tr
Foraminifers	40
Glass	Tr
Micrite	30
Nannofossils	30

SITE 758 HOLE A CORE 35X CORED INTERVAL 324.6-334.3 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER CAMPANIAN - LOWER MAESTRICHTIAN	G. havanensis - Gl. aegyptiacu; A/M	CC21-22; A/M		Barren	Reversed	● φ=48.9 γ=1.92 V=2017	● 72.5	1	0.5; 1.0				
								2					*
								CC					

LITHOLOGIC DESCRIPTION

FORAMINIFERAL CALCAREOUS CHALK WITH NANNOFOSSILS

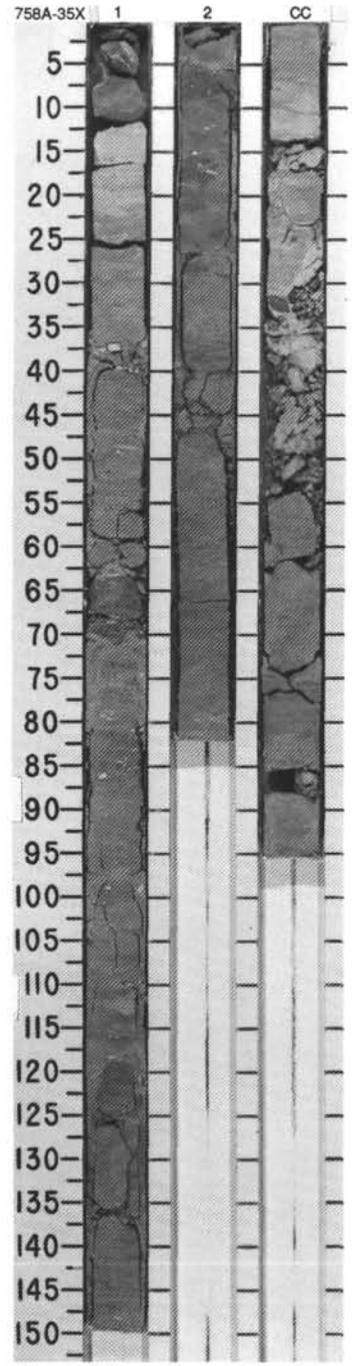
The core is moderately to highly fractured.

Major lithology: FORAMINIFERAL CALCAREOUS CHALK with NANNOFOSSILS, light greenish gray (5G7/1), in the form of mottled, burrowed, and bioturbated drilling biscuits 2-19 cm long. Shell fragments, both thin and thick, white and fibrous (*Inoceramus ?*) occur throughout most of the core.

Minor lithology: Porcellanite, light greenish gray (5G 7/1), occurs in Section 1, 0-11, and 63-71 cm. Chert occurs in the CC at 32-33 and 57 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	26
Silt	64
Clay	10
COMPOSITION:	
Accessory Minerals	Tr
Feldspar	Tr
Foraminifers	30
Glass	2
Micrite	50
Nannofossils	18



SITE 758 HOLE A CORE 36X CORED INTERVAL 334.3-343.9 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
UPPER CAMPANIAN	C/P *G. elevata - G. havanensis*	A/M CC21-22		Barren	Reversed	● ϕ=51.2 V=2120 ● 1.82	● 80.8	1	0.5 1.0				
								2					*
								3					
								CC					

LITHOLOGIC DESCRIPTION

FORAMINIFERAL CALCAREOUS CHALK

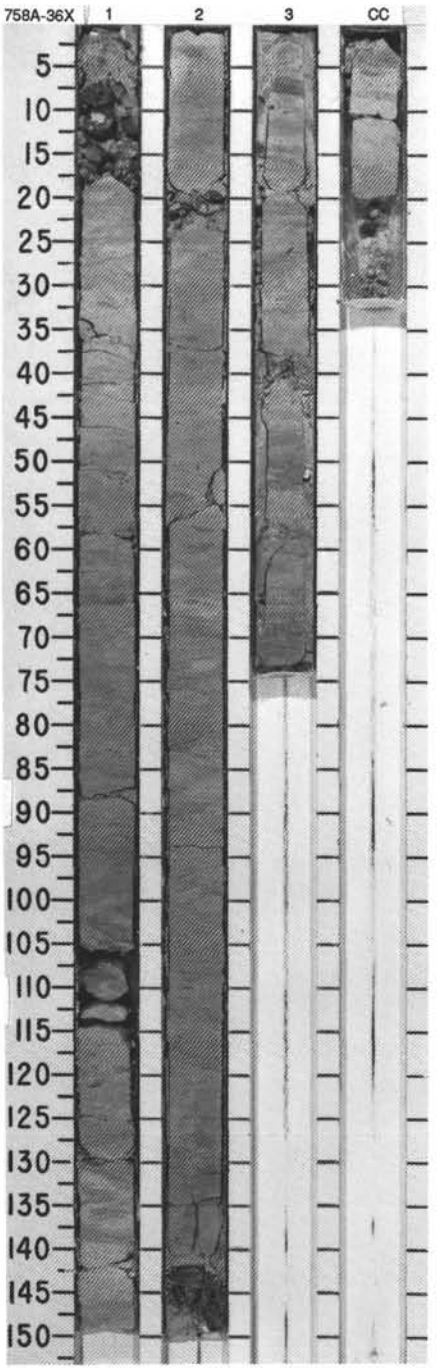
The core is slightly to highly fractured.

Major lithology: FORAMINIFERAL CALCAREOUS CHALK, light greenish gray (5G 7/1), in the form of mottled, burrowed, and bioturbated drilling biscuits 2-25 cm long. Thin, horizontal green laminae occur in Sections 2, 107-110 cm, and 3, 7-27, and 56-70 cm. Shell fragments, both thin and thick, white and fibrous (*Inoceramus*?) occur throughout most of the core.

Minor lithology: Porcellanite/chert, green to gray (10YR 5/1), occurs in Sections 1, 7-17, and 106-111 cm, 2, 19-23 and 142-150 cm, and CC, 20-22 cm.

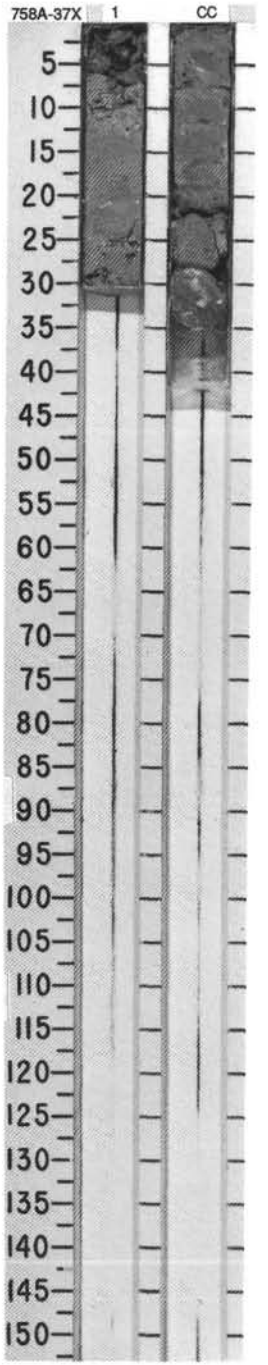
SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	13
Silt	80
Clay	7
COMPOSITION:	
Foraminifers	30
Glass	Tr
Micrite	60
Nannofossils	10

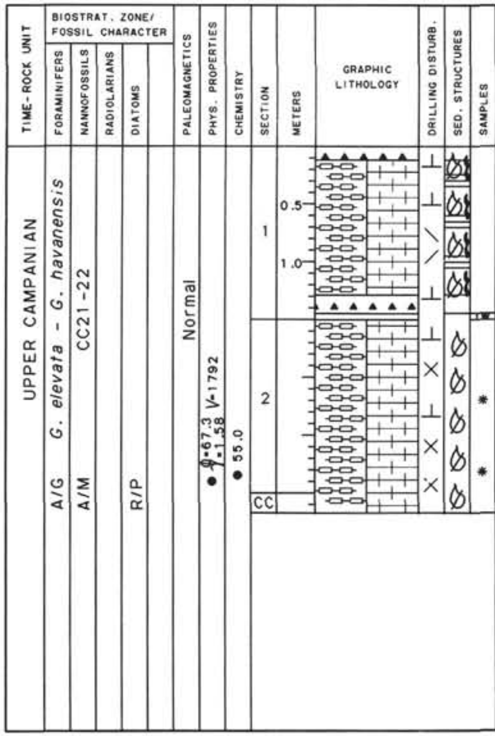


SITE 758 HOLE A CORE 37X CORED INTERVAL 343.9 - 352.6 mbsf

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
UPPER CAMPANIAN	*G. elevata - G. havanensis* C/M	CC21-22 C/M		Barren	not measured	Φ=46.7 ● ρ=1.99	● 81.8	1 CC			X X			FORAMINIFERAL CALCAREOUS CHALK The core is moderately fractured to brecciated. Major lithology: FORAMINIFERAL CALCAREOUS CHALK, light greenish gray (5G 7/1), mottled, burrowed, and bioturbated. Thick shell fragments, white and fibrous (*Inoceramus?*) occur throughout the core. Minor lithology: Chert, dark greenish gray (5G4/1) occurs in Section 1, 2-4 cm while gray (N6/) chert occurs in CC, 28-35 cm as one solid piece.



SITE 758 HOLE A CORE 38X CORED INTERVAL 352.6-357.6 mbsf



LITHOLOGIC DESCRIPTION

FORAMINIFERAL CALCAREOUS CHALK WITH NANNOFOSSILS

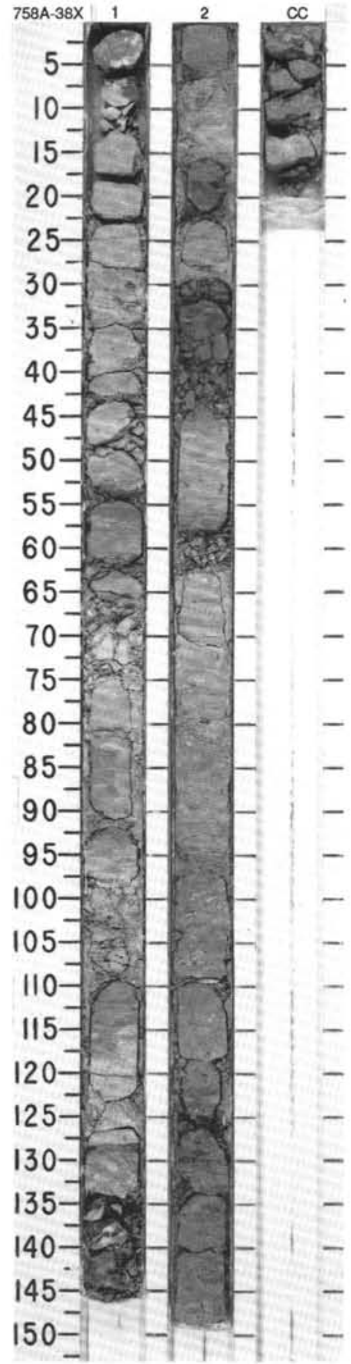
The core is moderately fractured to brecciated.

Major lithology: FORAMINIFERAL CALCAREOUS CHALK with NANNOFOSSILS, light greenish gray (5GY 5/1 to 6/1), in 3-11 cm biscuits that are mottled, and bioturbated. Horizontal green laminae in bundles 1-2 cm thick are common. Thick shell fragments, white and fibrous (*Inoceramus?*) occur throughout the core.

Minor lithologies: Chert, dark gray (5Y 4/1) to gray (5Y 5/1) occurs with porcellanite in Section 1, 0-13, and 128-146 cm. Black to dark green ash occurs in Sections 1, 96-114 cm, and 2, 129-131 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D	2, 131 M
TEXTURE:		
Sand	15	20
Silt	65	70
Clay	20	10
COMPOSITION:		
Accessory Minerals	—	1
Bioclast	Tr	—
Clay	5	3
Feldspar	5	Tr
Foraminifers	25	15
Glass	2	41
Micrite	48	15
Nannofossils	15	10
Opaques	—	5
Plagioclase	—	5
Quartz	Tr	Tr
Radiolarians	—	2
Spicules	—	3



SITE 758 HOLE A CORE 39X CORED INTERVAL 357.6-367.3 mbsf

TIME-ROCK UNIT: UPPER CAMPANIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: *G. elevata - G. havanensis* C/G
- NANNOFOSSILS: CC21-22 A/M
- RADIOLARIANS: —
- DIATOMS: R/P

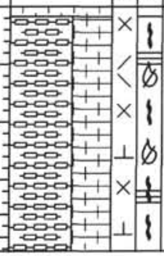
PALEOMAGNETICS: Normal

PHYS. PROPERTIES: ● φ-49.7 γ-1.95 V-1975

CHEMISTRY: ● 17.9 ● 73.3

SECTION: 1, 2, CC

METERS: 0.5, 1.0



GRAPHIC LITHOLOGY | DRILLING DISTURB. | SED. STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

CALCAREOUS CHALK WITH FORAMINIFERS AND NANNOFOSSILS

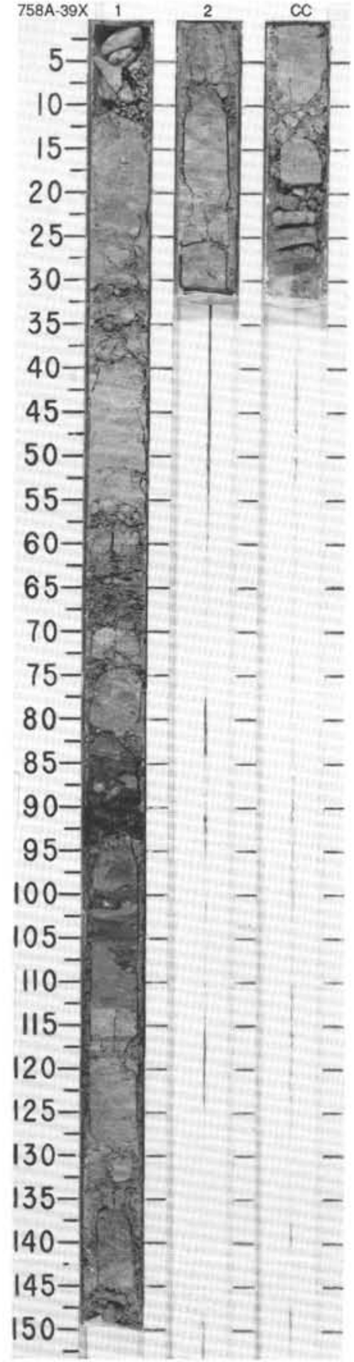
The core is moderately fractured to brecciated.

Major lithology: CALCAREOUS CHALK with FORAMINIFERS and NANNOFOSSILS, dark greenish gray (5G 4/1), in 2-20 cm biscuits that are mottled and bioturbated. Sub-horizontal streaks are common to abundant. Thick shell fragments, white and fibrous (*Inoceramus?*) occur throughout the core.

Minor lithologies: Chert, dark greenish gray (5GY 4/1) to gray (5Y 5/1) occurs in Section 1, 0-11. Dark ash occurs in Section 1, 83-93, 100-102, and 107-110 cm.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	1, 93 M
TEXTURE:		
Sand	15	25
Silt	65	55
Clay	20	20
COMPOSITION:		
Accessory Minerals	Tr	—
Bioclast	Tr	Tr
Chlorite	—	Tr
Clay	5	10
Foraminifers	20	Tr
Glass	2	60
Micrite	62	5
Nannofossils	10	Tr
Opaques	—	15
Plagioclase	1	10
Quartz	Tr	Tr
Radiolarians	—	Tr
Silicoflagellates	Tr	—
Spicules	Tr	Tr



SITE 758 HOLE A CORE 40X CORED INTERVAL 367.3-377.0 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 CAMPANIAN	C/G *G. elevata - G. havanensis*	A/M CC21-22		C/M	Normal	(18.7) 9-12.49 7-2.48 V-3598	15.5 ● ● 44.0	1 2	0.5 1.0		×		*

LITHOLOGIC DESCRIPTION

FORAMINIFER CLAY WITH NANNOFOSSILS

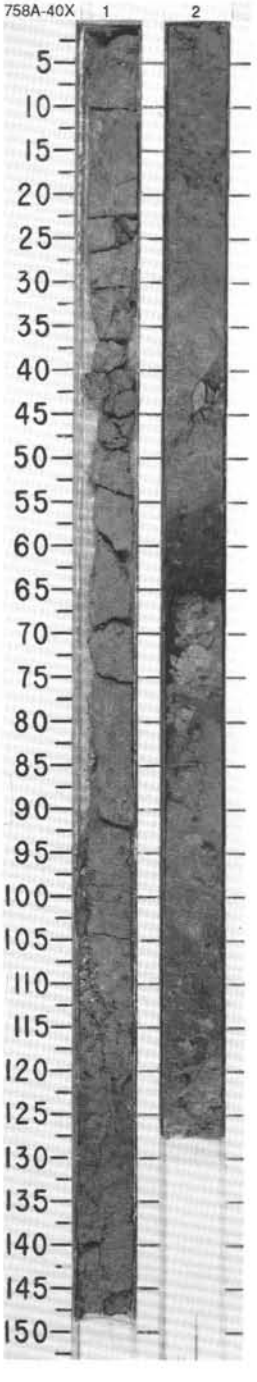
The core is entirely brecciated.

Major lithology: FORAMINIFER CLAY with NANNOFOSSILS, greenish gray (5G 5/1), in the form of matrix, not biscuits. Thick shell fragments, white and fibrous (*Inoceramus?*) occur commonly throughout the core.

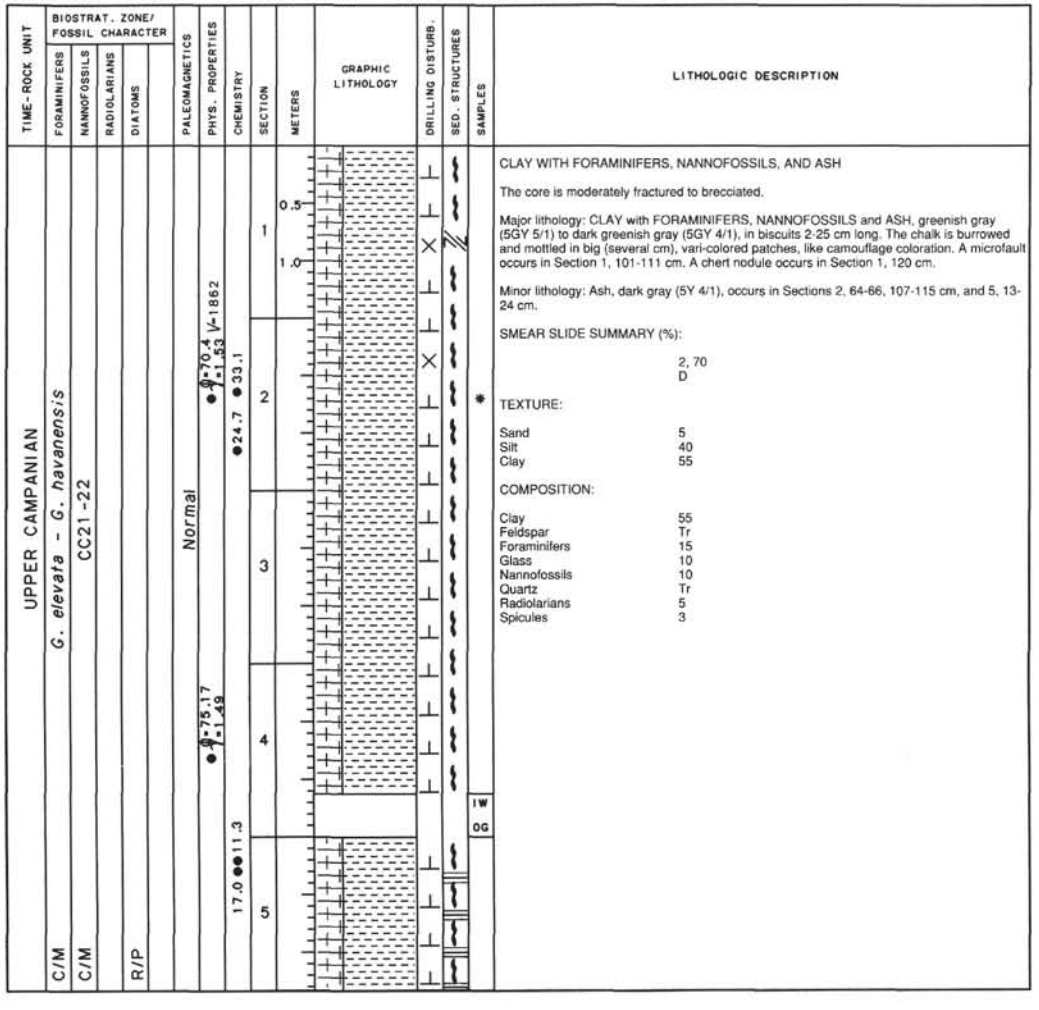
Minor lithologies: Chert, dark greenish gray (5GY 4/1) occurs in Section 2, 41-44, and 70-72 cm. Ash, dark greenish gray (5G 4/1), occurs throughout the core but is concentrated in Sections 1, 120-135 cm, and 2, 55-75 cm.

SMEAR SLIDE SUMMARY (%):

	1, 70 D
TEXTURE:	
Sand	20
Silt	40
Clay	40
COMPOSITION:	
Clay	40
Foraminifers	30
Glass	8
Nannofossils	15
Radiolarians	7
Spicules	Tr



SITE 758 HOLE A CORE 41X CORED INTERVAL 377.0-386.6 mbsf



CLAY WITH FORAMINIFERS, NANNOFOSSILS, AND ASH

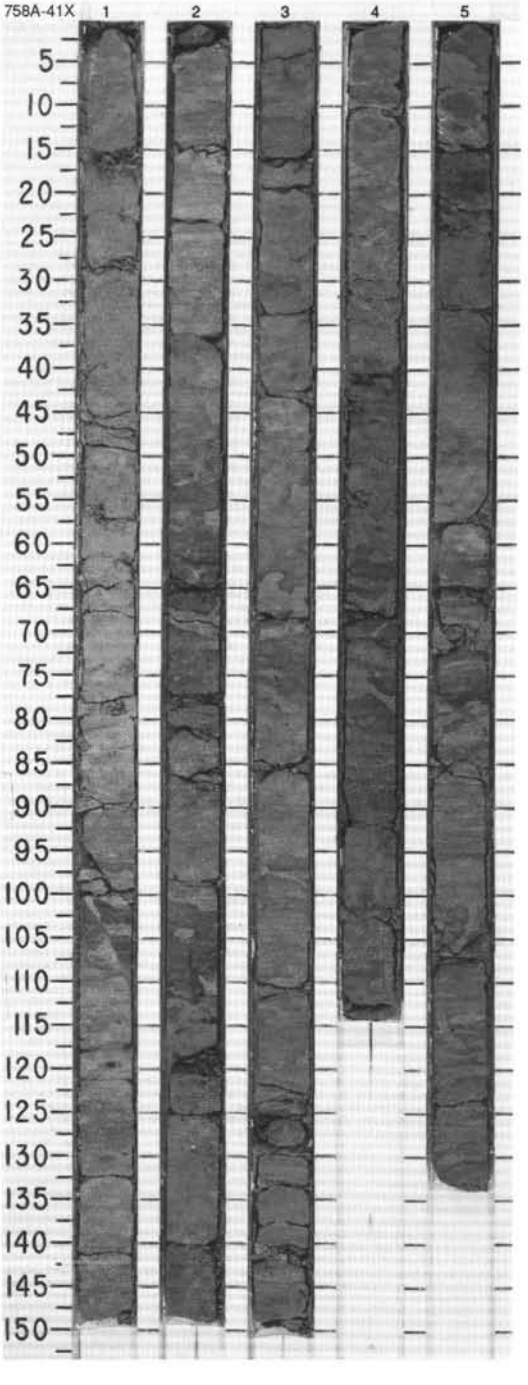
The core is moderately fractured to brecciated.

Major lithology: CLAY with FORAMINIFERS, NANNOFOSSILS and ASH, greenish gray (5GY 5/1) to dark greenish gray (5GY 4/1), in biscuits 2-25 cm long. The chalk is burrowed and mottled in big (several cm), vari-colored patches, like camouflage coloration. A microfault occurs in Section 1, 101-111 cm. A chert nodule occurs in Section 1, 120 cm.

Minor lithology: Ash, dark gray (5Y 4/1), occurs in Sections 2, 64-66, 107-115 cm, and 5, 13-24 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	5
Silt	40
Clay	55
COMPOSITION:	
Clay	55
Feldspar	Tr
Foraminifers	15
Glass	10
Nannofossils	10
Quartz	Tr
Radiolarians	5
Spicules	3



SITE 758 HOLE A CORE 42X CORED INTERVAL 386.6-396.3 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
CAMPANIAN	F/P *G. elevata - G. havanensis*	C/M CC19 - 22		Barren	Normal	V=1746 ● 57.8 1.78 ● 68.2 1.62 V=1728 ● 40.7 28.7 ● 10.2		1 2 3 4 CC	0.5 1.0				*

LITHOLOGIC DESCRIPTION

CLAY WITH FORAMINIFERS AND NANNOFOSSILS

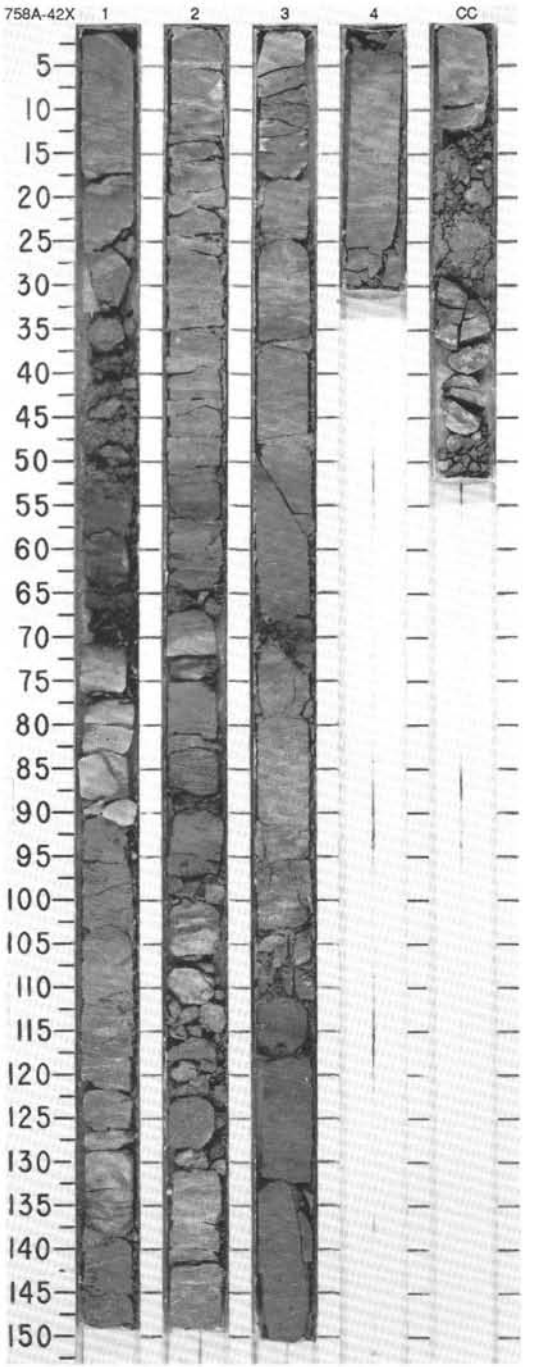
The core is moderately fractured to brecciated.

Major lithology: CLAY with FORAMINIFERS and NANNOFOSSILS, greenish gray (5GY 5/1) to dark greenish gray (5GY 4/1), in biscuits 2-25 cm long. The chalk is burrowed and mottled in big (several cm), vari-colored patches, similar to camouflage coloration.

Minor lithology: Porcellanite of the same colors as above and with the same sedimentary structure occurs in Sections 1, 77-90, 129-138 cm, 2, 70-75, 102-112, and 129-131 cm, 3, 0-16, 98-102 cm, and CC, 0-10, and 31-52 cm. Ash, dark gray (5Y 4/1), occurs in Sections 2, 64-66, 107-115 cm,and 5, 13-24 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70 D
TEXTURE:	
Sand	10
Silt	25
Clay	65
COMPOSITION:	
Clay	65
Foraminifers	15
Glass	5
Nannofossils	10
Plagioclase	Tr



SITE 758 HOLE A CORE 43X CORED INTERVAL 396.3-399.6 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
CAMPANIAN	C/G; *G. elevata - G. havanensis*	A/M; CC19 - 22		Barren	Normal	V-3015 φ-21.0 γ-2.29	35.2	1; CC						

CLAY WITH FORAMINIFERS AND NANNOFOSSILS and PORCELLANITE

The core is moderately fractured with drilling breccia in Section 1, 30-40 cm.

Major lithologies:
a.CLAY with FORAMINIFERS and NANNOFOSSILS, greenish gray (5G 5/1) with patchy mottles of light greenish gray (5G 7/1) and dark greenish gray (5G 4/1), occurs in Section 1, 0-42 cm. This interval is strongly bioturbated.
b. PORCELLANITE, greenish gray (5G 5/1) with patchy mottles of light greenish gray (5G 7/1) and dark greenish gray (5G 4/1), occurs in Section 1, 42-49 cm and all of Section 2. This interval is strongly bioturbated.

SITE 758 HOLE A CORE 44X CORED INTERVAL 399.6-405.6 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
CAMPANIAN	C/P; *G. elevata - G. havanensis*	A/M; CC19 - 22		Barren	not measured	V-3049 φ-22.9 γ-2.23	35.0	CC					*	

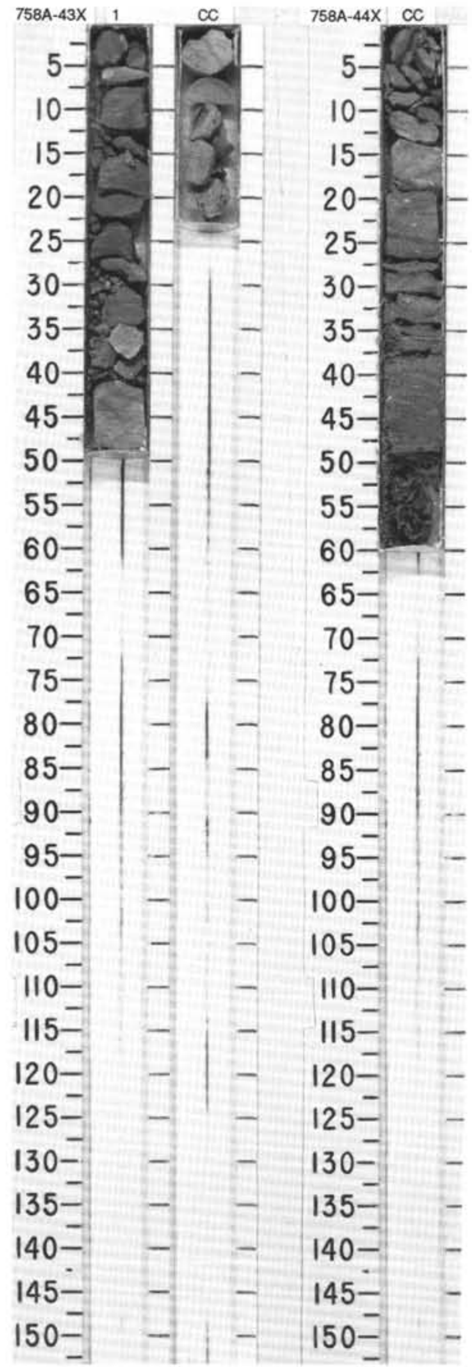
CLAY WITH NANNOFOSSILS, AND PORCELLANITE

The core is moderately fractured with drilling breccia in the CC, 50-60 cm.

Major lithologies:
a. CLAY with NANNOFOSSILS, greenish gray (5G 5/1) with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles, occurs in the CC, 33-60 cm. Thin (2 mm thick) white (10YR 8/2) *Inoceramus* shell fragments occur in the CC, 37 cm. This interval is strongly bioturbated.
b. PORCELLANITE, greenish gray (5G 5/1) with light greenish gray (5G 7/1) and dark greenish gray (5G4/1) mottles, occurs in the CC, 0-33 cm. This interval is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	CC, 45 D
TEXTURE:	
Sand	5
Silt	27
Clay	68
COMPOSITION:	
Clay	68
Foraminifers	7
Glass	2
Glauconite	Tr
Nannofossils	20
Quartz	Tr



SITE 758 HOLE A CORE 45X CORED INTERVAL 405.6-415.2 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
CAMPANIAN	C/P	A/M		Barren	not measured	ϕ=29.9 ρ=2.00	9.4	CC			X			CLAY WITH NANNOFOSSILS

G. elevata - G. havanensis

CC19 - 22

The core is severely disturbed,consisting of drilling breccia.

Major lithology: CLAY with NANNOFOSSILS, greenish gray (5G 5/1) with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles occurs in the CC, 5-30 cm.

Minor lithology: Porcellanite, greenish gray (5G 5/1) with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles occurs in the CC, 0-5 cm.

SITE 758 HOLE A CORE 46X CORED INTERVAL 415.2-421.5 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	LITHOLOGIC DESCRIPTION
CAMPANIAN	C/G	A/G		Barren	not measured	ϕ=53.8 ρ=1.88	39.0	CC			X		*	CLAY WITH NANNOFOSSILS

G. elevata - G. havanensis

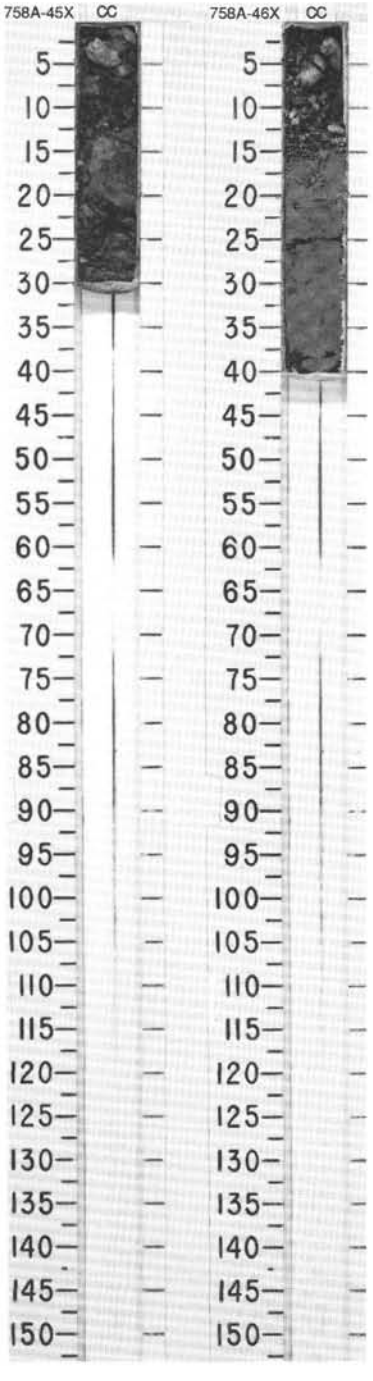
CC19 - 22

The core is moderately to severely disturbed, consisting of drilling breccia in the CC, 20-40 cm.

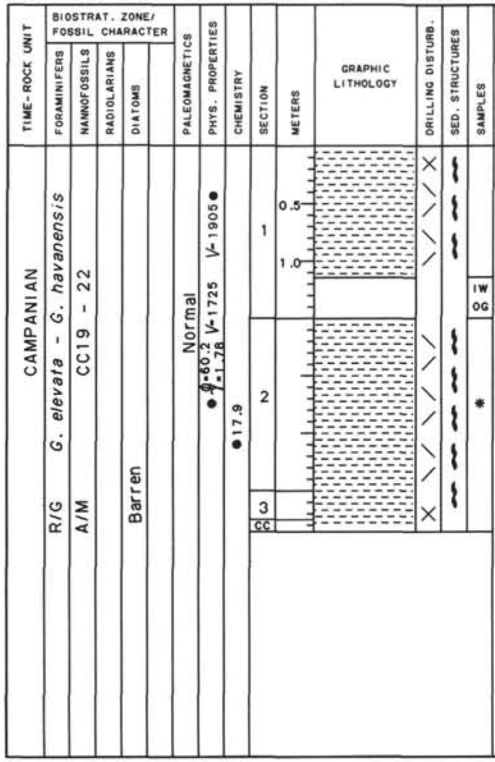
Major lithology: CLAY with NANNOFOSSILS, greenish gray (5G 5/1) with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles. The core is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	CC, 30 D
TEXTURE:	
Sand	2
Silt	24
Clay	74
COMPOSITION:	
Clay	74
Foraminifers	3
Glass	5
Nannofossils	18
Quartz	Tr



SITE 758 HOLE A CORE 47R CORED INTERVAL 421.5-431.2 mbsf



LITHOLOGIC DESCRIPTION

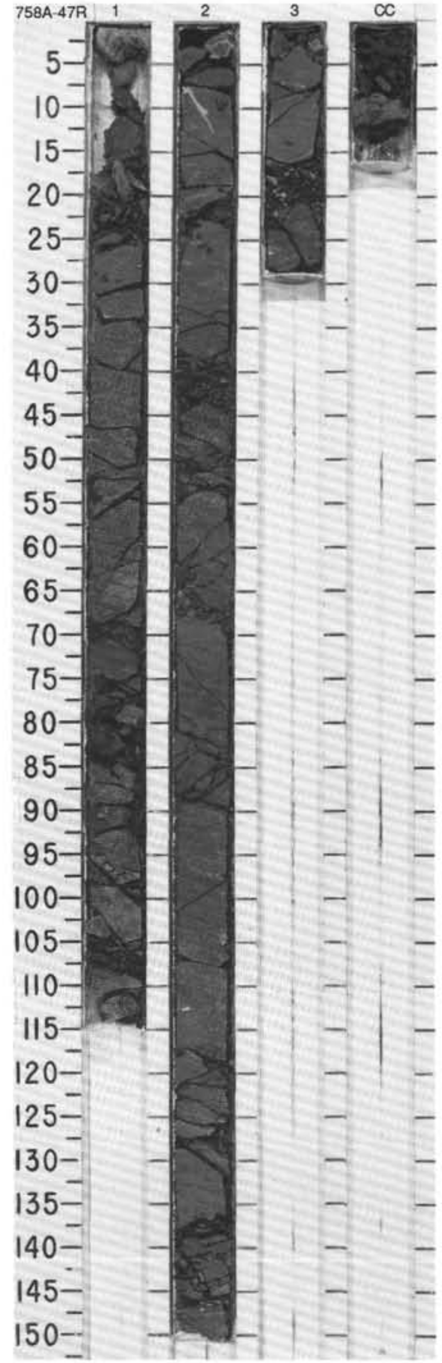
CLAY WITH NANNOFOSSILS AND ASH

The core is slightly to moderately fractured.

Major lithology: CLAY with NANNOFOSSILS and ASH, greenish gray (5G 5/1) drilling biscuits with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles. Scattered olive (5Y 4/3) mottles occur in Section 2, 130-150 cm. The entire core is bioturbated.

SMEAR SLIDE SUMMARY (%):

	2, 75
	D
TEXTURE:	
Silt	27
Clay	73
COMPOSITION:	
Glass	85
Micrite	3
Nannofossils	11
Opaques	Tr
Quartz	Tr



SITE 758 HOLE A CORE 48R CORED INTERVAL 431.2-440.9 mbsf

CAMPANIAN	TIME-ROCK UNIT
F/G *G. elevata - G. havanensis*	FORAMINIFERS (BIOSTRAT. ZONE/FOSSIL CHARACTER)
A/G CC19 - 22	NANNOFOSSILS
	RADIOLARIANS
Barren	DIATOMS
Normal	PALEOMAGNETICS
● Φ=64.2 V=1974 ρ=1.73 ● Φ=57.5 V=1958 ρ=1.77	PHYS. PROPERTIES
● 10.3 ● 2.5 ● 2.8	CHEMISTRY
4 3 2 1	SECTION
1.0 0.5	METERS
	GRAPHIC LITHOLOGY
	DRILLING DISTURB.
	SED. STRUCTURES
*	SAMPLES

LITHOLOGIC DESCRIPTION

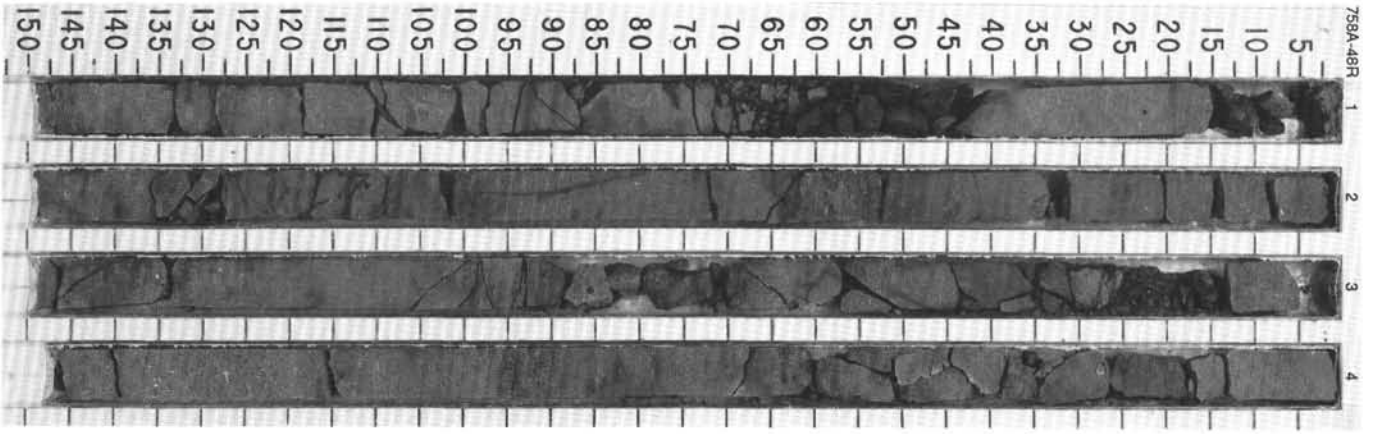
TUFF

The core is slightly to moderately disturbed.

Major lithology: TUFF, greenish gray (5G 5/1) drilling biscuits with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles. Greenish gray (5GY 6/1) zone occurs in Section 2, 125-132, with a smoother texture than the remainder of the core. Layers of lapilli size lithic and pumice fragments occur in Section 4, 64-65 cm, 95-96 cm, and 125-127 cm. A dark greenish gray (5BG 4/1) coarse ash layer occurs in Section 3, 60-90, and displays weakly graded bedding. Shell fragments occur throughout the core. The core is strongly biotubated.

SMEAR SLIDE SUMMARY (%):

	2, 90 D
TEXTURE:	
Sand	3
Silt	85
Clay	12
COMPOSITION:	
Glass	93
Micrite	Tr
Nannofossils	Tr
Quartz	2

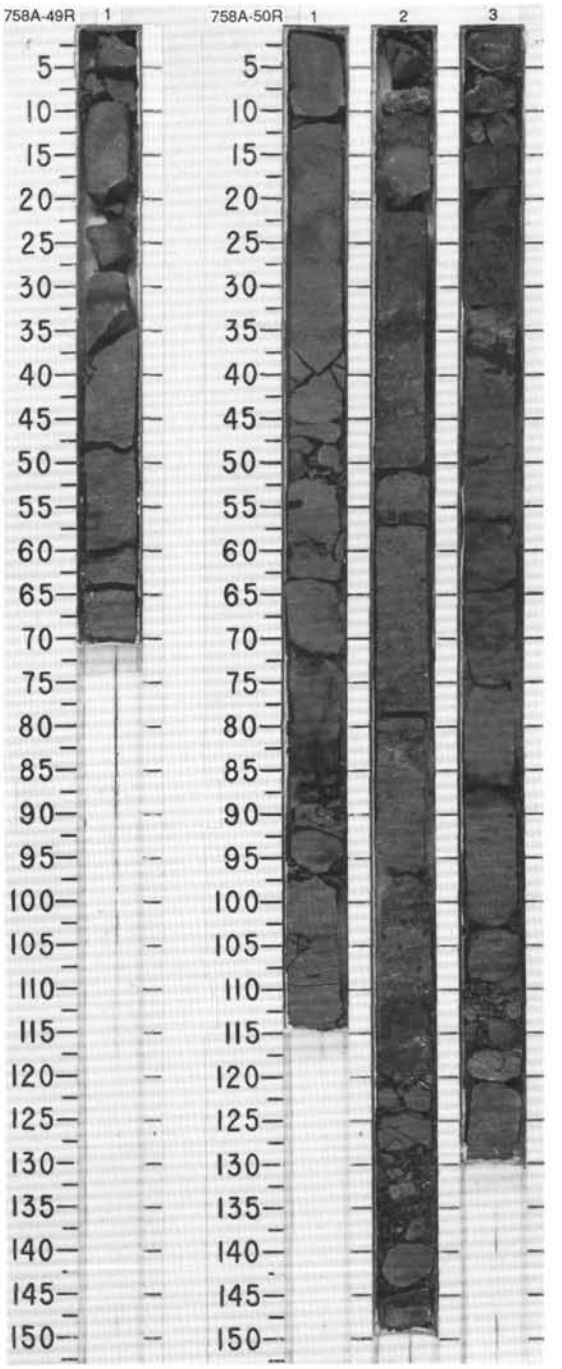


SITE 758 HOLE A CORE 49R CORED INTERVAL 440.9-450.6 mbsf

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
CAMPANIAN	*G. elevata - G. havanensis*	CC19 - 22	Barren	Barren	Normal	V-1675 ● 69.6 ● 1.62	4.8 ● ● 1.9	1						TUFF The core is moderately fractured. Major lithology: TUFF, greenish gray (5G6/1) with light greenish gray (5G 7/1) and dark greenish gray (5G 4/1) mottles.The core is faintly layered and strongly bioturbated.

SITE 758 HOLE A CORE 50R CORED INTERVAL 450.6-460.2 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
LOWER CAMPANIAN	F/M *G. elevata - G. havanensis*	C/G CC19 - 20	Barren	Barren	Normal	● 49.1 ● 67.8 ● 1.97 ● 1.64 V-1697 V-2737	● 11.6 ● 0.6	1	0.5 1.0					TUFF The core is moderately disturbed. Major lithology: TUFF, grayish green (5G 5/1) with light grayish green (5G 7/1) and dark grayish green(5G 4/1) mottles. Scattered grayish green (5G 4/2) mottles occur in Section 3. Intervals of lapilli-sized fragments, 2-5 cm thick, occur throughout. Coarser lapilli-like layers show weak size gradation. Small basalt pebbles, less than 1 cm in diameter, occur in the coarse layers. A sharp, scoured contact occurs in Section 2 at 13 cm. A sharp contact between a greenish gray (5G 6/1) and a light greenish gray (5GY 7/1) interval occurs in Section 3, 38 cm. The core is strongly bioturbated. SMEAR SLIDE SUMMARY (%): 3, 35 D TEXTURE: Sand 3 Silt 85 Clay 12 COMPOSITION: Glass 90 Micrite Tr Nannofossils 3 Quartz 2
								2					OG IW	
								3					*	



SITE 758 HOLE A CORE 51R CORED INTERVAL 460.2-469.9 mbsf

TUFF

The core is moderately disturbed.

Major lithology: TUFF, grayish green (5G 5/1) with light grayish green (5G 7/1) and dark grayish green (5G 4/1) mottles in Section 1 that grades into a gray (5Y 5/1) with light grayish green (5G 7/1) and dark grayish green (5G 4/1) mottles in Section 2. Several 3-5 cm thick intervals of lapilli-sized fragments occur throughout, and some are graded, fining upward. Shell fragments occur throughout. The core is bioturbated and large burrow structures are common.

SMEAR SLIDE SUMMARY (%):

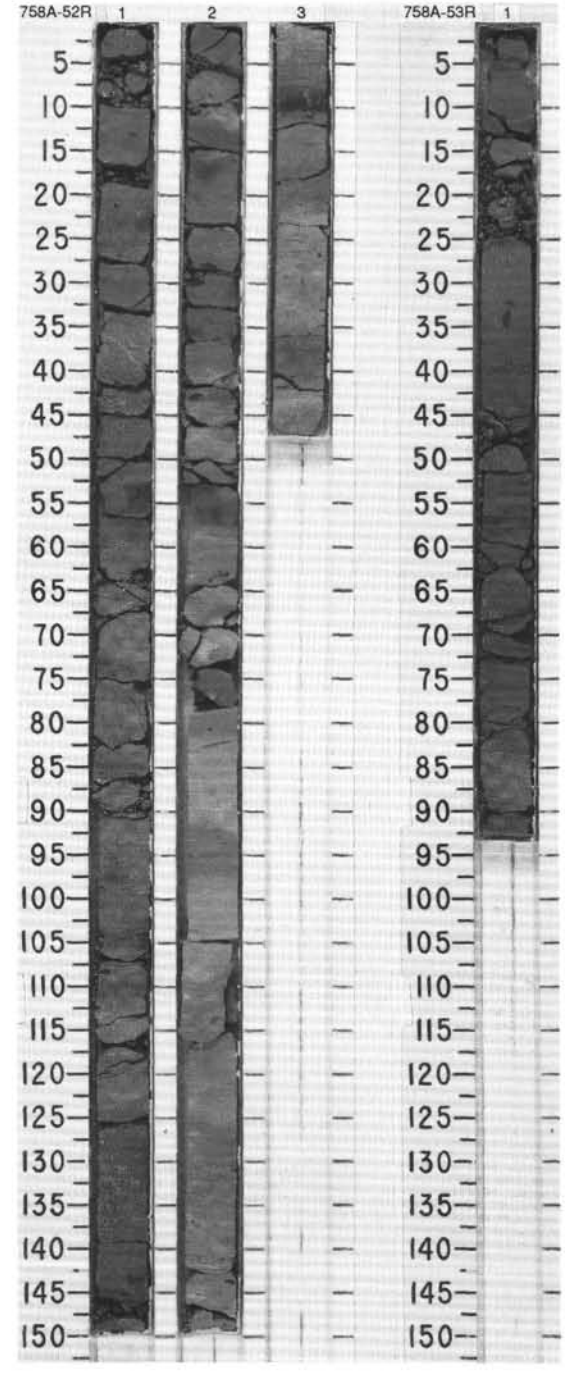
	4, 90
	D
TEXTURE:	
Sand	4
Silt	80
Clay	16
COMPOSITION:	
Glass	94
Micrite	Tr
Nannofossils	Tr
Quartz	2

SITE 758 HOLE A CORE 52R CORED INTERVAL 469.9-479.6 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
LOWER CAMPANIAN	F/M *G. elevata* - *G. havanensis*	C/M CC19 - 20	Barren		not measured	▽-2010 ● 0-56.9 1.74 ▽-1662 ● 0-54.9 1.83	● 27.5 ● 13.4	1 2 3	0.5 1.0			P	*	TUFF, AND ASHY CALCAREOUS CHALK The core is slightly to moderately fractured. Major lithologies: a. TUFF, in Section 1, dark gray (5Y5/1) drilling biscuits 3-15 cm long. Greenish gray (5G 6/1) mottles. Lapilli-sized material throughout. b. ASHY CALCAREOUS CHALK, in Sections 2-3. Greenish gray (5G 5/1, 6/1), in 3-25 cm long biscuits. Pyrite in burrow in Section 2, 77 cm, mottles and black blebs throughout. Minor lithology: Ash, dark greenish gray (5GY 4/1), in Section 1, 145-150 cm, and Section 3, 7-11 and 37-40 cm. SMEAR SLIDE SUMMARY (%): 2, 90 D TEXTURE: Sand 3 Silt 85 Clay 12 COMPOSITION: Glass 30 Micrite 57 Nannofossils 8 Quartz 1

SITE 758 HOLE A CORE 53R CORED INTERVAL 479.6-489.2 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
LOWER CAMPANIAN	A/G *G. elevata* - *G. havanensis*	A/G CC19 - 20	Barren		not measured	▽-1788 ● 0-62.9 1.86	● 6.3	1					*	CALCAREOUS TUFF The core is moderately disturbed. Major lithology: CALCAREOUS TUFF, dark greenish gray (5G 4/1), in biscuits. Heavily mottled, black blebs scattered throughout. SMEAR SLIDE SUMMARY (%): 1, 50 D TEXTURE: Sand 3 Silt 85 Clay 12 COMPOSITION: Glass 65 Micrite 30 Nannofossils 3 Quartz Tr



SITE 758 HOLE A CORE 54R CORED INTERVAL 489.2-498.9 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
LOWER CAMPANIAN	Barren	CC19 - 20 C/G	Barren		not measured	V-2069 ρ=44.6 ● 2.02	10.6 ●	1	0.5 1.0				IW *
								2					
								CC					

LITHOLOGIC DESCRIPTION

CALCAREOUS TUFF WITH CLAY AND BASALT

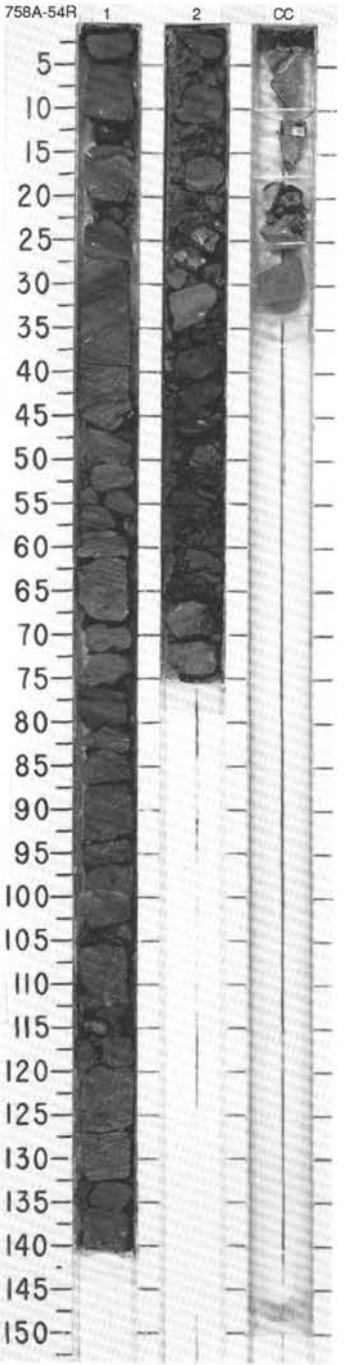
The core is severely fractured.

Major lithology: CALCAREOUS TUFF with CLAY, very dark greenish gray (10Y 3/1). The core is strongly layered, and three sets of graded beds from pebble to sand sized particles occur from 84 to 95 cm in Section 1. Soft sediment deformation is present at 100 cm in Section 1. Microfractures are seen in Section 1, 20 and 63 cm. Shell fragments occur often, specifically in Section 1, 10 and 26 cm, as well as in Section 2, 33 and 45 cm. Basalt pebbles are common clasts in the tuff unit.

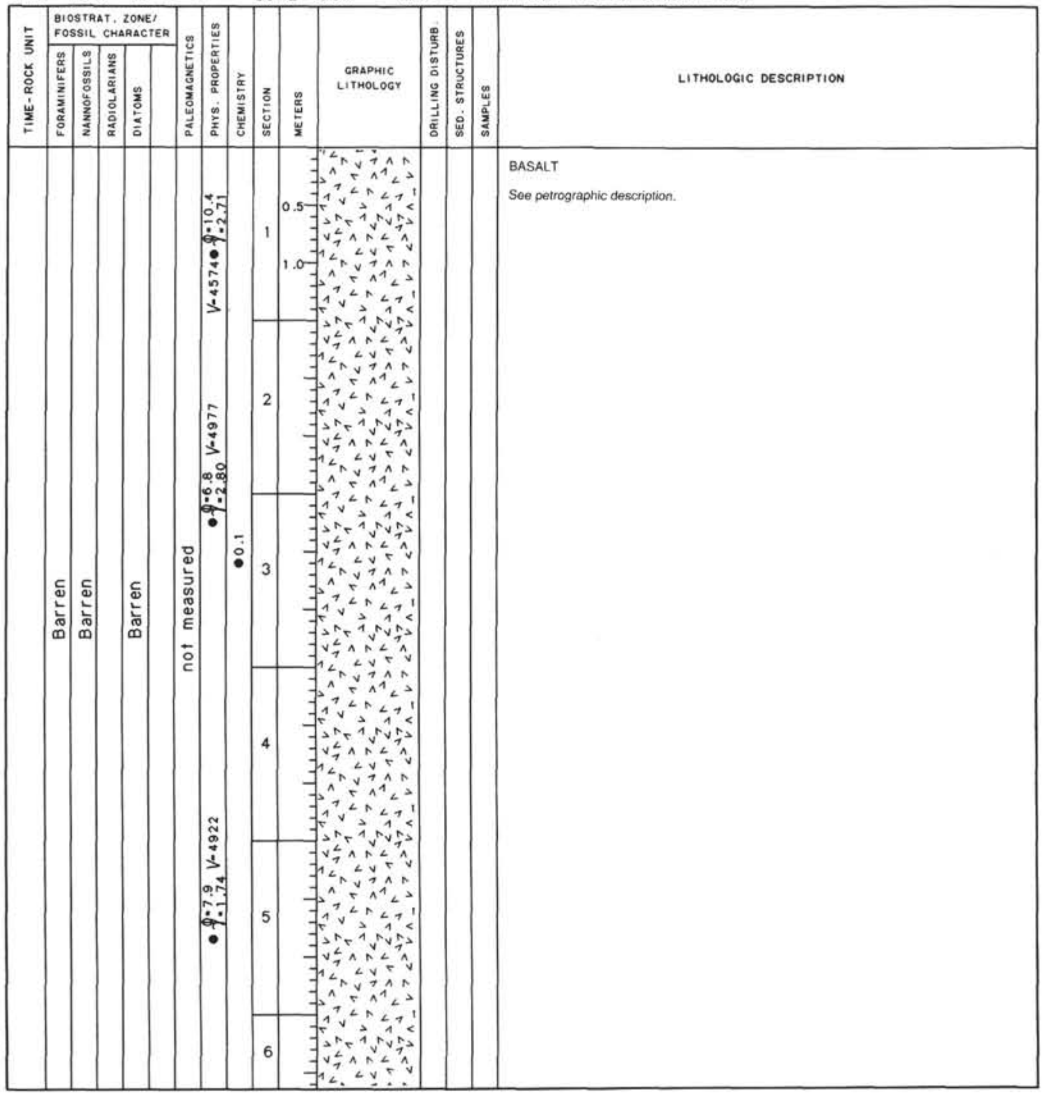
Minor lithology: Basalt, black (N2/), porphyritic with euhedral plagioclase crystals of no more than 2 mm length. The basalt is not highly vesicular, and contains carbonate filled fractures. See petrographic description.

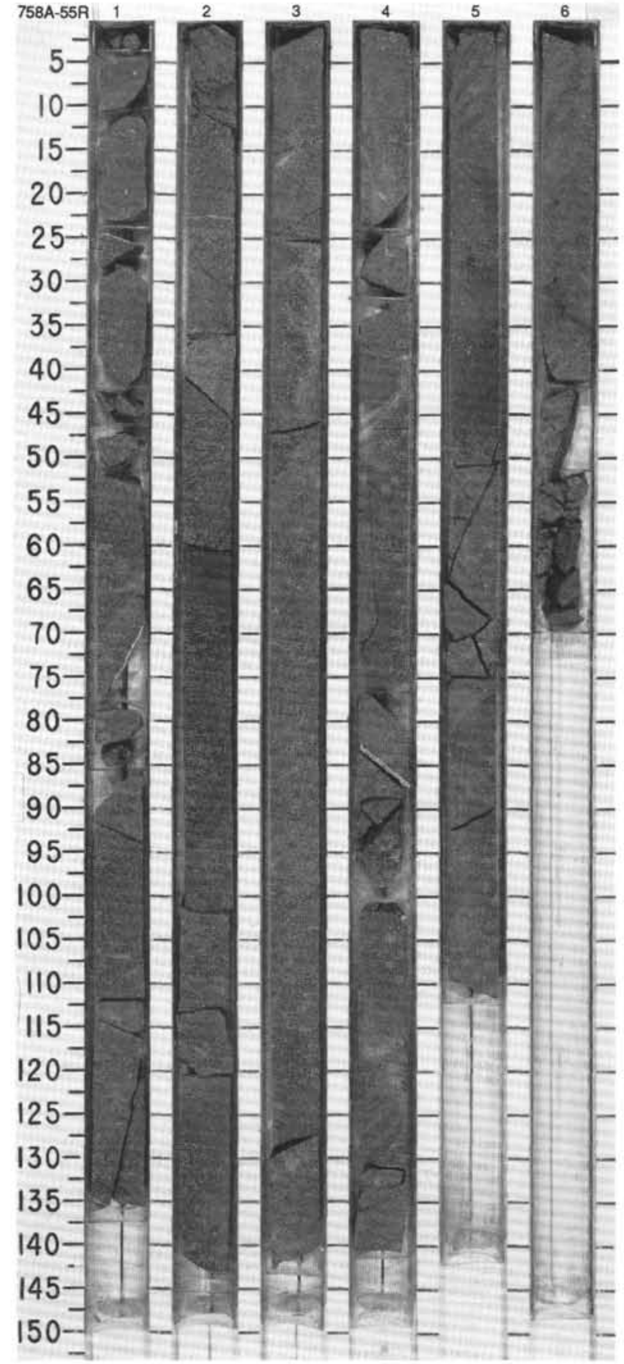
SMEAR SLIDE SUMMARY (%):

	1, 65 D
TEXTURE:	
Sand	5
Silt	65
Clay	30
COMPOSITION:	
Accessory Minerals	Tr
Clay	10
Foraminifers	5
Glass	58
Micrite	25
Nannofossils	1
Plagioclase	1

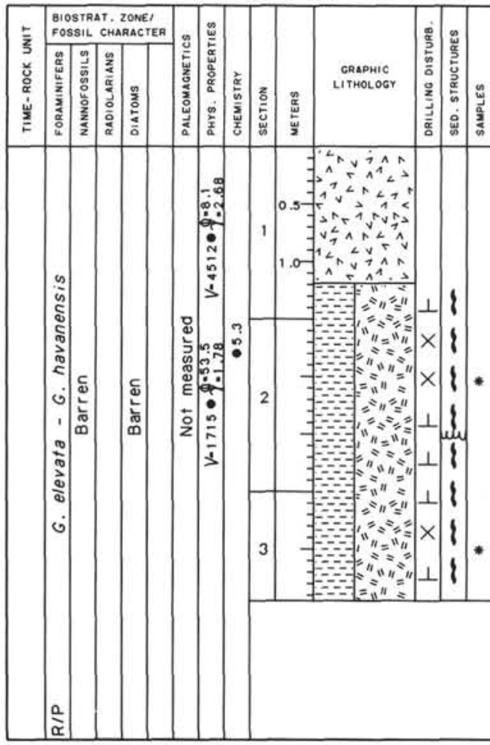


SITE 758 HOLE A CORE 55R CORED INTERVAL 498.9-508.4 mbsf





SITE 758 HOLE A CORE 56R CORED INTERVAL 508.4-517.9 mbsf



LITHOLOGIC DESCRIPTION

BASALT AND CLAYEY TUFF WITH MICRITE

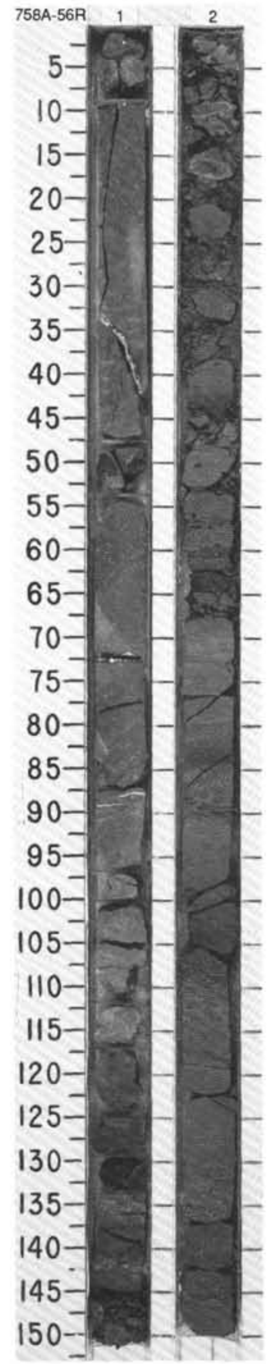
Core is moderately to highly fractured.

Major lithologies:
a. BASALT, Section 1, 0-118 cm.
b. CLAYEY TUFF with MICRITE. Black (10GY 2.5/1), very dark greenish gray (10GY 3/1), and dark greenish gray(5GY4/1). Horizontal streaks and mottles throughout. Soft sediment deformation structure at Section 2, 88-90 cm. The top 17 cm of tuff, Section 1, 118-135 cm, is much harder than the underlying material and appears to be baked. Lowermost basalt pebble contains basalt-tuff contact.

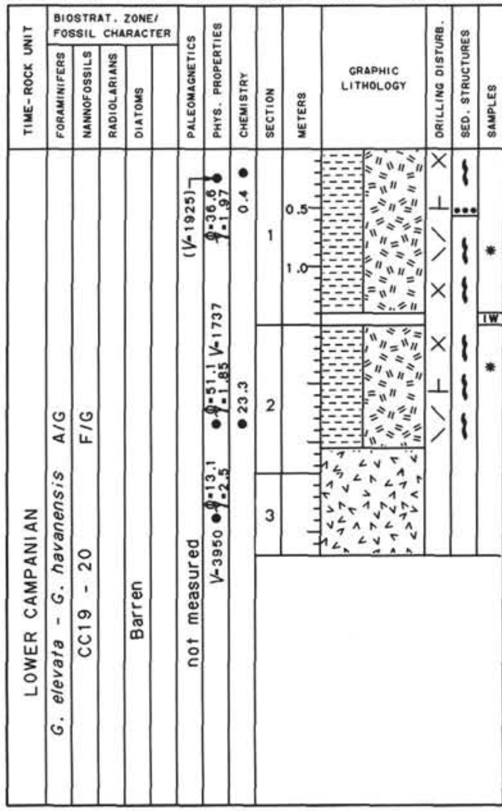
Minor lithology: Volcanic sandstone,colors as above. Layers occur at Section 1, 136-150 cm.; Section 2, 63-64, 103-108, 124-129, and 138-143 cm; Section 3, 34-37, 50-51, and 70-71 cm. Medium to coarse grained sandstone with grains of basalt and tuff. Large green mottle at Section 1, 142-144 cm is filled with rounded glauconite grains. Sandstones show much less bioturbation than the tuffs.

SMEAR SLIDE SUMMARY (%):

	2, 55 D	3, 51 D
TEXTURE:		
Silt	70	60
Clay	30	40
COMPOSITION:		
Clay	49	45
Foraminifers	1	Tr
Glass	40	50
Micrite	10	5
Nannofossils	Tr	—
Plagioclase	Tr	Tr
Pyroxene	Tr	Tr
Quartz	—	Tr
Radiolarians	Tr	—



SITE 758 HOLE A CORE 57R CORED INTERVAL 517.9-527.1 mbsf



LITHOLOGIC DESCRIPTION

CLAYEY TUFF WITH MICRITE and BASALT

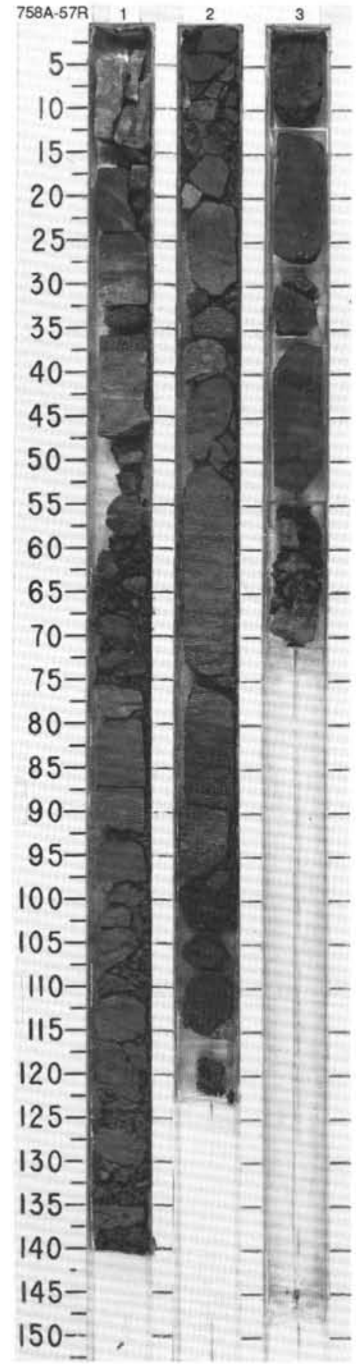
The core is moderately fractured to brecciated.

Major lithology: CLAYEY TUFF with MICRITE, dark greenish gray (10GY 3/1 to 4/1), occurs as drilling biscuits and fragments. Horizontally mottled, streaked, and bioturbated. Section 1, 24-47 cm contains at least 6 fining upwards, graded beds from 2 to 10 cm thick each. The intervals of mm-sized, coarser grains, are rounded basalt and tuff fragments. A piece of tuff in Section 1, 127-129 cm contains a distinct bed of lapilli.

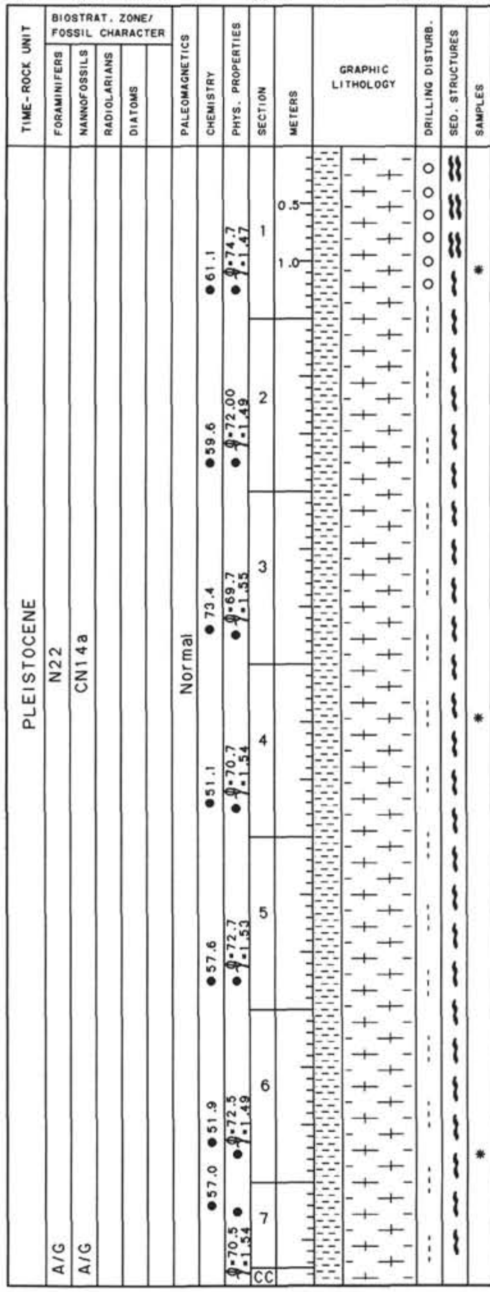
BASALT first occurs in Section 2, 103 cm.

SMEAR SLIDE SUMMARY (%):

	1, 87 D	2, 37 M
TEXTURE:		
Sand	—	3
Silt	70	80
Clay	30	17
COMPOSITION:		
Clay	35	—
Feldspar	—	Tr
Foraminifers	3	1
Glass	40	60
Micrite	10	39
Nannofossils	2	—
Opaques	5	—
Plagioclase	Tr	—
Pyroxene	Tr	—
Quartz	Tr	—



SITE 758 HOLE B CORE 1H CORED INTERVAL 0.0-9.5 mbsf



LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL OOZE

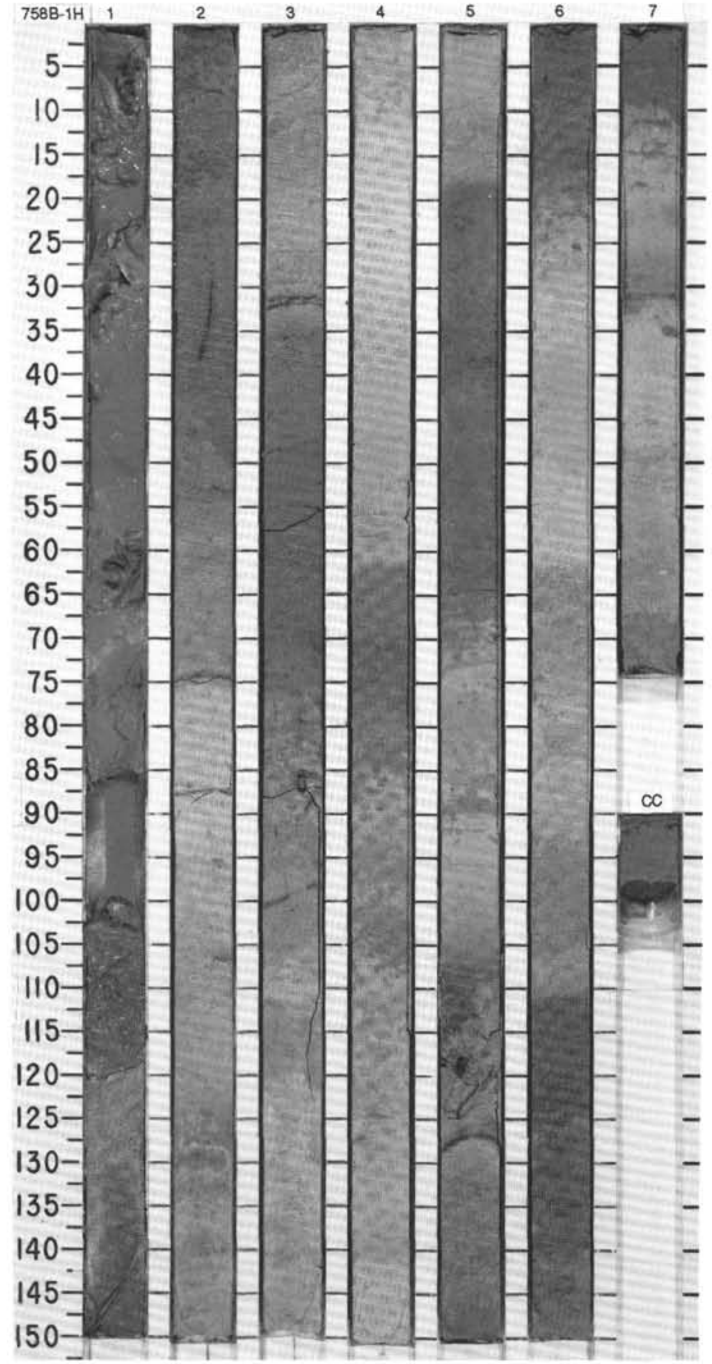
Section 1 is soupy, the remainder of the core is slightly disturbed.

Major lithology: CLAYEY NANNOFOSSIL OOZE, alternating from gray (5Y 6/1 and 5Y 6/1), olive gray (5Y 5/2), to dark gray (5Y 4/1), with slight to moderate mottling throughout. Dark gray (5Y 4/1) mottles are more common in Section 4, 86-120 cm and in Section 5, 75-150 cm. The core is strongly bioturbated.

Minor lithology: Ash, dark gray (5Y 4/1), occurs in Section 1, 105-110 cm and Section 2, 72 cm and 88 cm.The ash layers have sharp basal contacts an upwards. Discrete, thin, green and in places dark gray ash layers occur throughout the core.

SMEAR SLIDE SUMMARY (%):

	1, 108 M	4, 47 D	6, 126 D
TEXTURE:			
Sand	13	10	10
Silt	80	75	70
Clay	7	15	20
COMPOSITION:			
Foraminifers	Tr	8	8
Glass	94	Tr	—
Micrite	—	7	8
Nannofossils	2	80	80
Quartz	Tr	Tr	Tr



SITE 758 HOLE B CORE 2H CORED INTERVAL 9.5-18.9 mbsf

TIME-ROCK UNIT	PLEISTOCENE
BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	A/G N22
BIOSTRAT. ZONE/ FOSSIL CHARACTER: NANNOFOSSILS	A/G CN14
BIOSTRAT. ZONE/ FOSSIL CHARACTER: RADIOLARIANS	
BIOSTRAT. ZONE/ FOSSIL CHARACTER: DIATOMS	
PALEOMAGNETICS	Reversed / Normal / Reversed / Normal
CHEMISTRY	● 57.2 ● 60.5 ● 64.8 ● 58.8 ● 64.4
PHYS. PROPERTIES	ρ=69.3 γ=1.56; ρ=72.9 γ=1.55; ρ=71.2 γ=1.54; ρ=72.1 γ=1.52; ρ=73.0 γ=1.50
SECTION	CC 7 6 5 4 3 2 1
METERS	1.0 0.5
GRAPHIC LITHOLOGY	
DRILLING DISTURB.	
SED. STRUCTURES	
SAMPLES	*

LITHOLOGIC DESCRIPTION

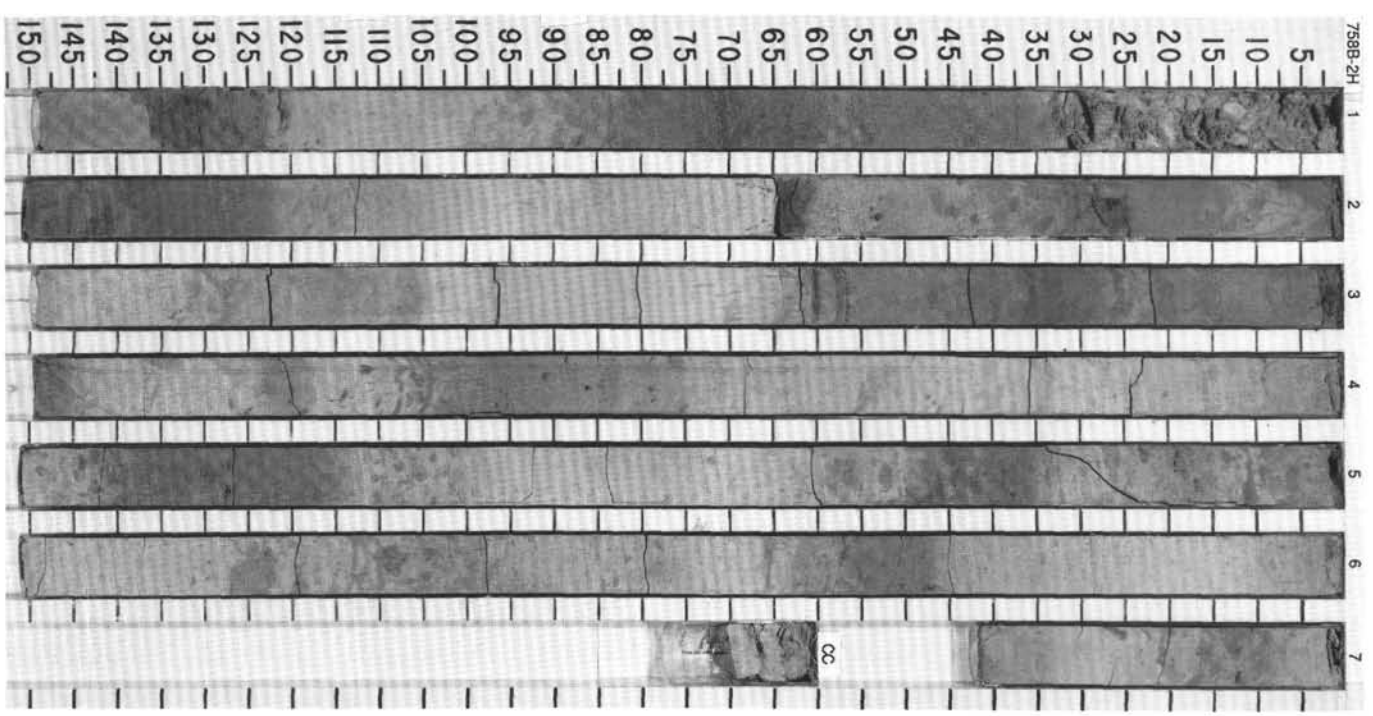
CLAYEY NANNOFOSSIL OOZE WITH FORAMINIFERS AND MICRITE

The core is slightly disturbed.

Major lithology: CLAYEY NANNOFOSSIL OOZE with FORAMINIFERS and MICRITE, in alternating intervals of dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 5/2). Faint mottles in lighter intervals, darker intervals have more distinct mottles. Scattered black blebs occur throughout. Ash layers occur in Section 2,60-63 cm and in Section 3, 54-60 cm. The core is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	4, 20 D
TEXTURE:	
Sand	15
Silt	75
Clay	10
COMPOSITION:	
Clay	15
Foraminifers	14
Micrite	10
Nannofossils	56
Quartz	Tr
Spicules	Tr



SITE 758 HOLE B CORE 3H CORED INTERVAL 18.9-28.4 mbsf

TIME-ROCK UNIT: PLEISTOCENE; UPPER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G; N21 - N22; A/G; NANNOFOSSILS A/G; CN12; A/G; CN13; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: Reversed; Normal; Reversed

CHEMISTRY: ● 64.8 ● 68.3 ● 66.6 ● 66.1 ● 66.5 ● 60.6 ● 68.5

PHYS. PROPERTIES: ● 69.4 ±1.60 ● 70.4 ±1.58 ● 67.4 ±1.60 ● 66.1 ±1.63 ● 70.6 ±1.56 ● 69.4 ±1.34 ● 72.1 ±1.53

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: * *

LITHOLOGIC DESCRIPTION

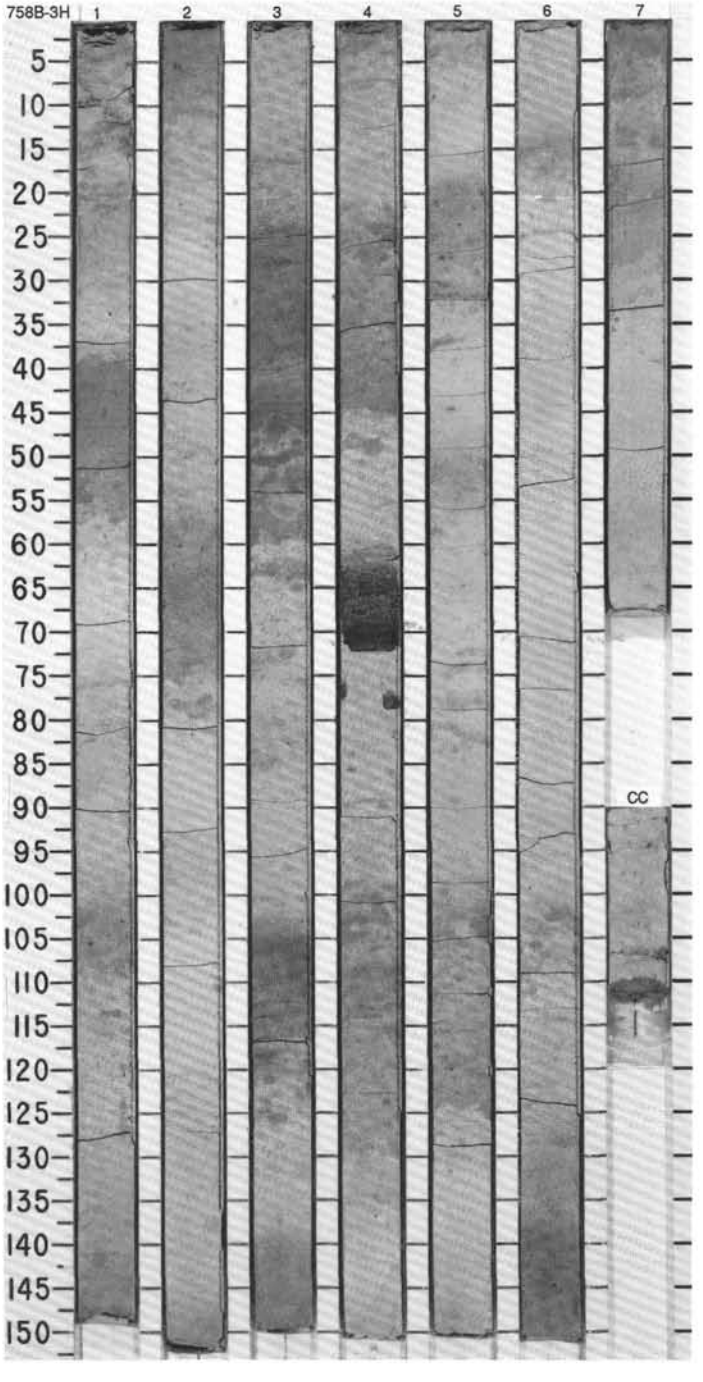
NANNOFOSSIL OOZE WITH FORAMINIFERS, MICRITE, AND CLAY

The core is slightly disturbed.

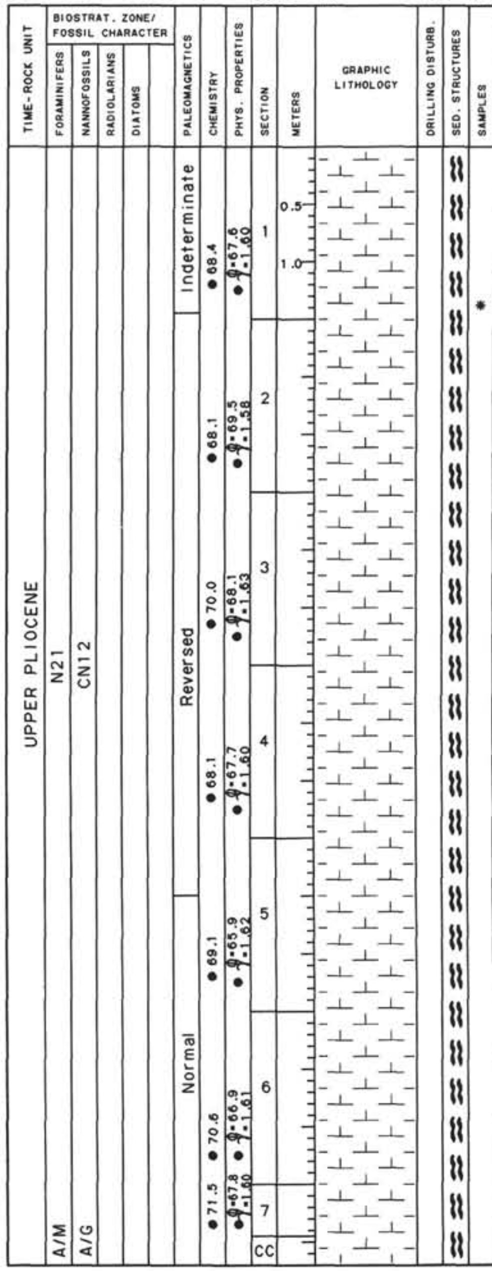
Major lithology: NANNOFOSSIL OOZE with FORAMINIFERS, MICRITE, and CLAY, in alternating intervals of dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 5/2). Faint mottles in lighter intervals, darker intervals have more frequent and distinct mottles. Scattered black blebs occur throughout, but are more concentrated in the darker intervals. A pronounced ash layer occurs in Section 4, 60-73 cm. The core is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	2, 125 D	4, 125 D
TEXTURE:		
Sand	12	5
Silt	75	80
Clay	13	15
COMPOSITION:		
Clay	21	22
Foraminifers	10	4
Glass	2	Tr
Micrite	15	13
Nannofossils	50	60
Quartz	Tr	Tr
Radiolarians	Tr	—
Spicules	Tr	Tr



SITE 758 HOLE B CORE 4H CORED INTERVAL 28.4-38.0 mbsf



LITHOLOGIC DESCRIPTION

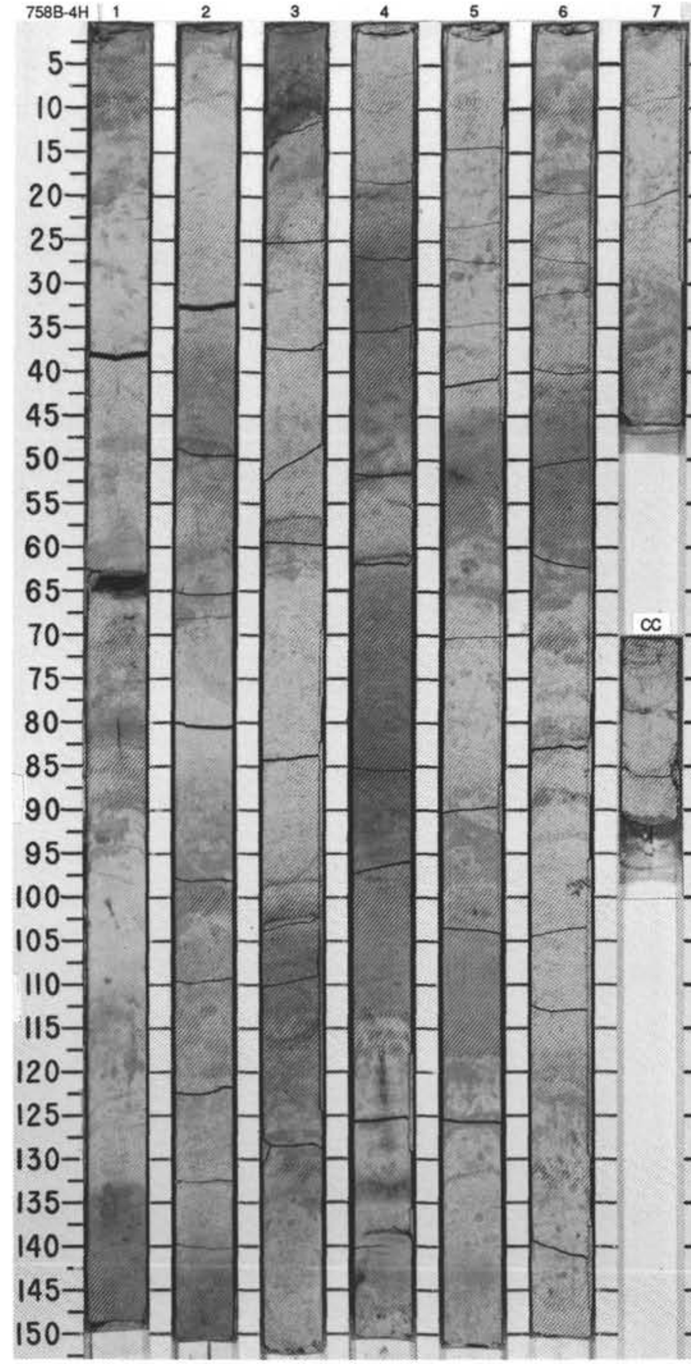
NANNOFOSSIL OOZE WITH MICRITE AND CLAY

The core is not disturbed.

Major lithology: NANNOFOSSIL OOZE with MICRITE and CLAY, in alternating intervals of dark gray (5Y 4/1), gray (5Y 5/1), and olive gray (5Y 5/2). Faint mottles in lighter intervals, darker intervals have more frequent and distinct mottles. Scattered black blebs occur throughout the darker intervals. Ash layers occur in Section 3, 9-13 cm, 55-56 cm, 62-65 cm, and 98-103 cm and in Section 4, 18-19 cm, 51-52 cm, 61-62 cm, and 139-140 cm. A thin bluish gray (5G 5/1) interval (2 cm thick) occurs in Section 4, 133-135 cm. The core is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	1, 125 D
TEXTURE:	
Sand	2
Silt	80
Clay	19
COMPOSITION:	
Clay	12
Foraminifers	3
Glass	2
Micrite	13
Nannofossils	65
Quartz	Tr
Sponge spicules	Tr



SITE 758 HOLE B CORE 5H CORED INTERVAL 38.0-47.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	CHEMISTRY	PHYS. PROPERTIES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER PLIOCENE	A/M	N20	CN12		Reversed / Normal / Reversed / Normal / Reversed	● 59.8 ● 73.6 ● 68.6 ● 76.9 ● 67.0	ρ=68.8 π=1.59 ρ=67.5 π=1.63 ρ=67.6 π=1.59 ρ=67.0 π=1.61	1 2 3 4 5 6 7 CC	0.5 1.0		0 (none) (none)		*	

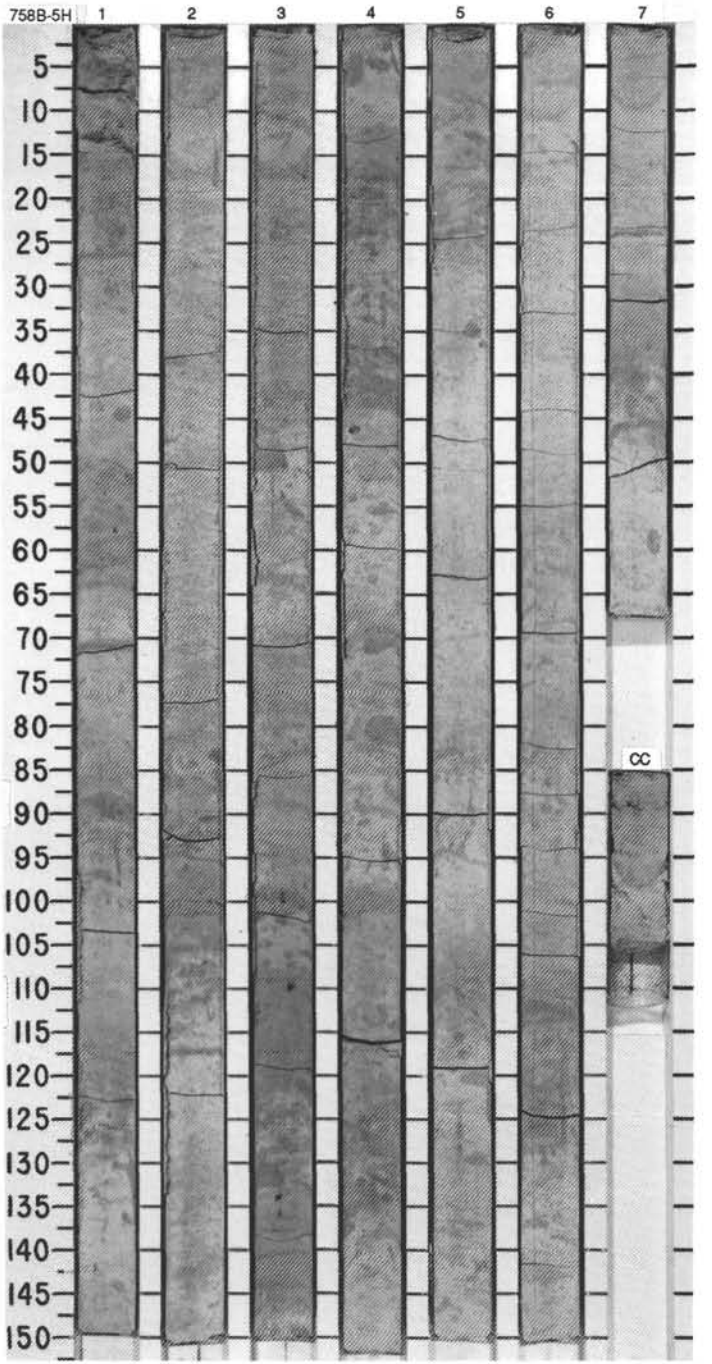
NANNOFOSSIL OOZE WITH MICRITE AND CLAY

The core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with MICRITE and CLAY, light gray (5Y 7/1) with gray (5Y 5/1) mottles in Section 1 to 4, and changes to alternating intervals of light gray (5Y 7/1) and gray (5Y 6/1) in Sections 5, 6, 7, and CC, with scattered mottles. Scattered black (5Y 2.5/1) blebs occur in Section 3, 100-150 cm and in Section 5, 37 cm. The core is strongly bioturbated.

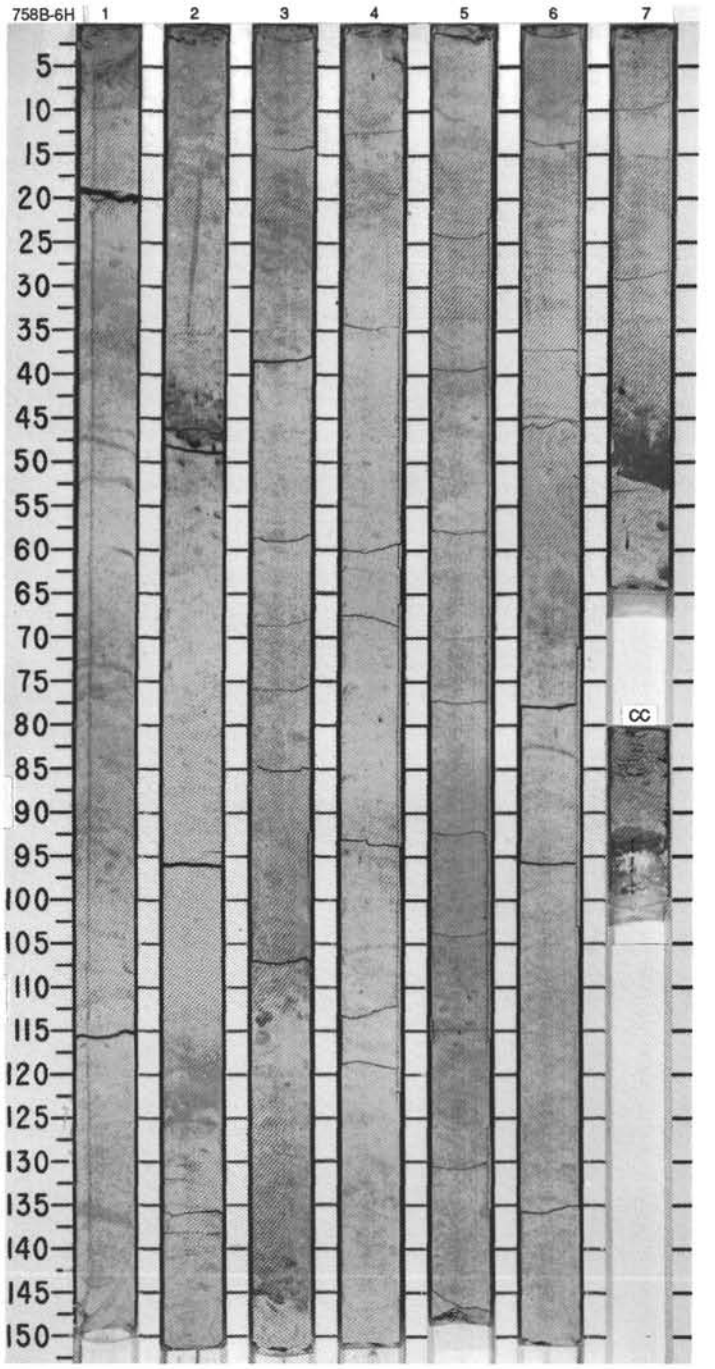
SMEAR SLIDE SUMMARY (%):

	5, 70 D
TEXTURE:	
Sand	1
Silt	80
Clay	19
COMPOSITION:	
Clay	10
Foraminifers	2
Glass	Tr
Micrite	20
Nannofossils	65
Quartz	Tr



SITE 758 HOLE B CORE 6H CORED INTERVAL 47.7-57.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	CHEMISTRY	PHYS. PROPERTIES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER PLIOCENE	C/P N19	A/G CN11			Normal / Reversed / Normal / Reversed / Normal	71.5; 69.7; 67.1; 75.9; 65.6; 73.1; 76.6	65.8 / 1.60; 66.4 / 1.63; 67.9 / 1.39; 64.9 / 1.65; 67.3 / 1.61; 67.0 / 1.60; 68.50 / 1.59	1; 2; 3; 4; 5; 6; 7; CC	0.5; 1.0		0 --- (none)				NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS *The core is slightly disturbed.* Major lithology: NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, light gray (5Y 7/1) with scattered faint dark gray (5Y 5/1) mottles. Scattered black (10YR 2/1) blebs of pumice occur throughout, with a concentrated pumice layer in Section 2, 41-48 cm. Dark gray (5Y 5/1) ash layers occur in Section 1, 46-52 cm, 70-75 cm, 108-111, and 137-139 cm, Section 5, 110-115 cm, and Section 7, 43-54 cm. The core is strongly bioturbated. *Minor lithology: Nannofossil ooze with micrite, light greenish gray* (5GY 7/1), *occurs in* Section 6, 46-67 cm. Vertical wavy green laminae occur within this interval, and it is strongly bioturbated.



SITE 758 HOLE B CORE 7H CORED INTERVAL 57.3-67.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	CHEMISTRY	PHYS. PROPERTIES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	C/P	N19			Normal	73.4	67.9 / 1.60	1	0.5				
	A/G	CN11							1.0				
					Reversed	77.9	67.9 / 1.60	2					*
						80.6	66.5 / 1.61	3					
					Normal	77.6	66.2 / 1.62	4					
					Reversed	82.1	65.2 / 1.69	5					
					Normal	77.1	66.3 / 1.65	6					
						73.2	67.4 / 1.59	7					
								CC					

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS

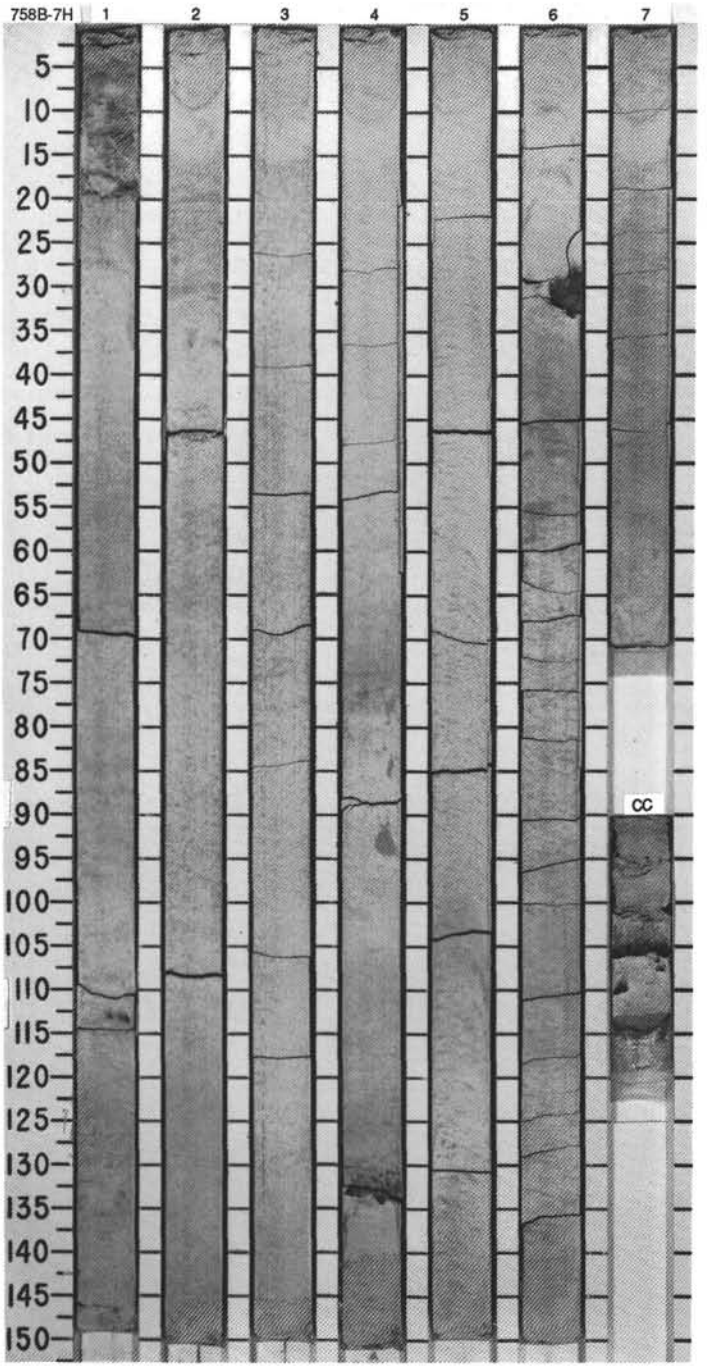
The core is severely disturbed in Section 1, 0 to 20 cm, and slightly disturbed in Section 1, 2, 3, and 4. The remainder is undisturbed.

Major lithology: NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, light gray (5Y 7/1) homogeneous, with rare faint mottling of (gray (2.5Y 6/) in Section 4, and fainter mottles in Sections 5, 6, 7, and the core catcher.

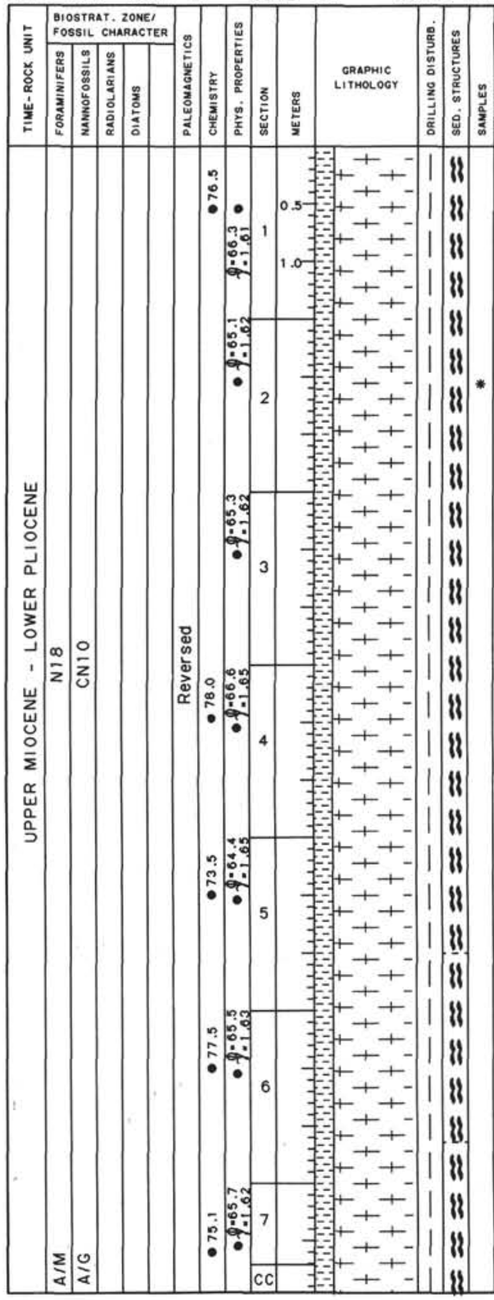
Minor lithology: Ash, present in discrete layers or blebs in Section 1, 114 cm, Section 4, 133 cm, Section 6, 28-33 cm, and CC, 10-16 cm.

SMEAR SLIDE SUMMARY (%):

	2, 70
	D
TEXTURE:	
Sand	5
Silt	75
Clay	20
COMPOSITION:	
Bioclast	Tr
Clay	20
Diatoms	Tr
Foraminifers	20
Glass	Tr
Nannofossils	58
Radiolarians	2
Spicules	Tr



SITE 758 HOLE B CORE 8H CORED INTERVAL 67.0-76.7 mbsf



LITHOLOGIC DESCRIPTION

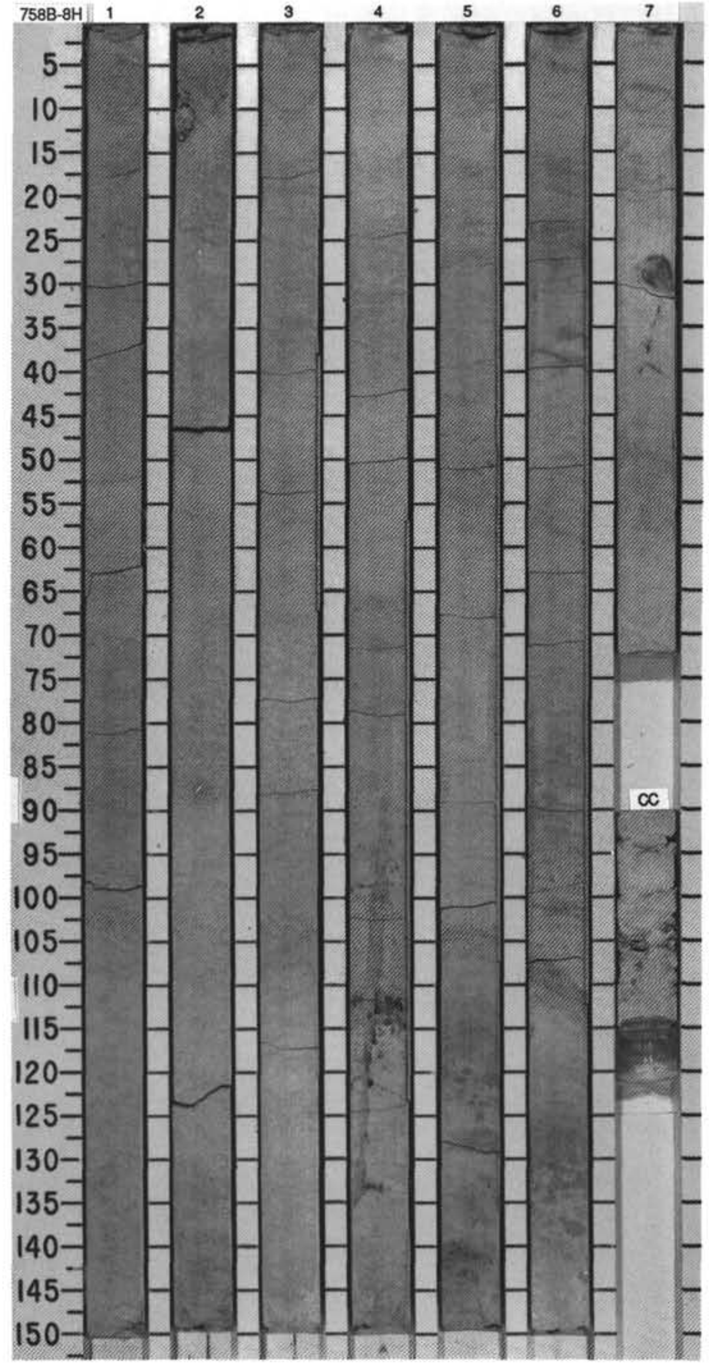
NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS

The entire core is slightly disturbed.

Major lithology: NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, light gray (5Y 7/1). Generally homogeneous with mottles and streaks of very dark gray (2.5Y 3/) ash and gray (5Y 6/1) clay present primarily in Sections 4 to 7. The entire core is strongly bioturbated.

SMEAR SLIDE SUMMARY (%):

	2, 56
	D
TEXTURE:	
Sand	10
Silt	70
Clay	20
COMPOSITION:	
Clay	20
Diatoms	Tr
Foraminifers	20
Glass	Tr
Nannofossils	55
Quartz	Tr
Radiolarians	5



SITE 758 HOLE B CORE 9H CORED INTERVAL 76.7-86.3 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	A/M	N17			Reversed			1	0.5				
	A/G	CN9							1.0				
					Normal			2					*
								3					
					Reversed			4					
					Normal			5					
								6					
					Reversed			7					
								CC					

LITHOLOGIC DESCRIPTION

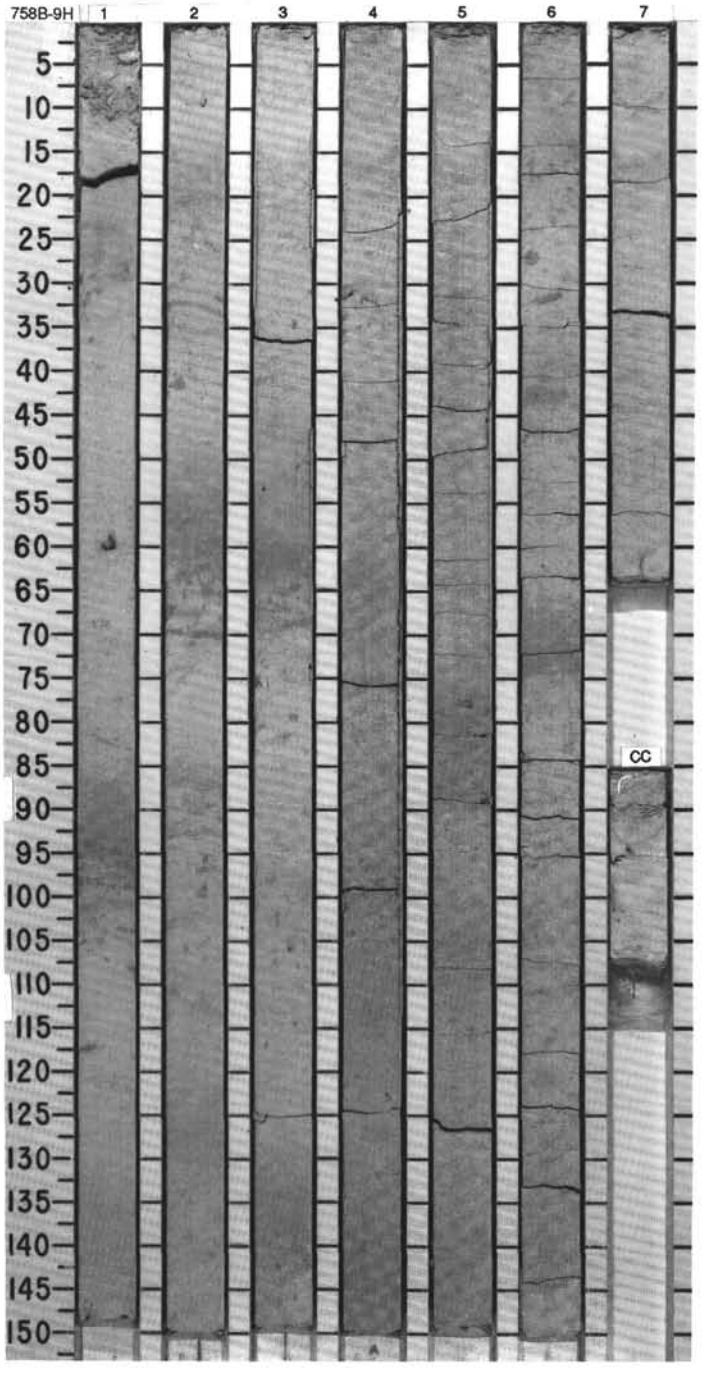
CLAYEY NANNOFOSSIL OOZE WITH FORAMINIFERS

The core is undisturbed.

Major lithology: CLAYEY NANNOFOSSIL OOZE with FORAMINIFERS, white (N8/) to light gray (5Y 7/1), to white (10YR 8/1) with mottles of light gray (5Y 7/1) and gray (5Y 6/1). Dark blebs of ash occur sparsely through the core and are no larger than 0.5 cm in diameter. Mottling occurs in layers, with broadly gradational contacts, the upper contacts more diffuse than the lower ones. The entire core is heavily to moderately bioturbated.

SMEAR SLIDE SUMMARY (%):

	2, 56 D
TEXTURE:	
Sand	10
Silt	60
Clay	30
COMPOSITION:	
Clay	40
Foraminifers	10
Glass	Tr
Nannofossils	45
Quartz	Tr
Radiolarians	5



SITE 758 HOLE B CORE 10H CORED INTERVAL 86.3-96.0 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N17	CN9			Reversed	ϕ=60.70, γ=1.69	81.5	1	0.5, 1.0				
					Reversed	ϕ=63.1, γ=1.70	81.1	2					*
					Normal	ϕ=60.6, γ=1.76	84.7	3					
					Reversed	ϕ=62.6, γ=1.70	77.8	4					
					Reversed	ϕ=59.0, γ=1.76	81.9	5					
					Reversed	ϕ=57.6, γ=1.76	79.1	6					
	A/M	A/G				ϕ=62.4, γ=1.69	83.0	7					
								CC					

LITHOLOGIC DESCRIPTION

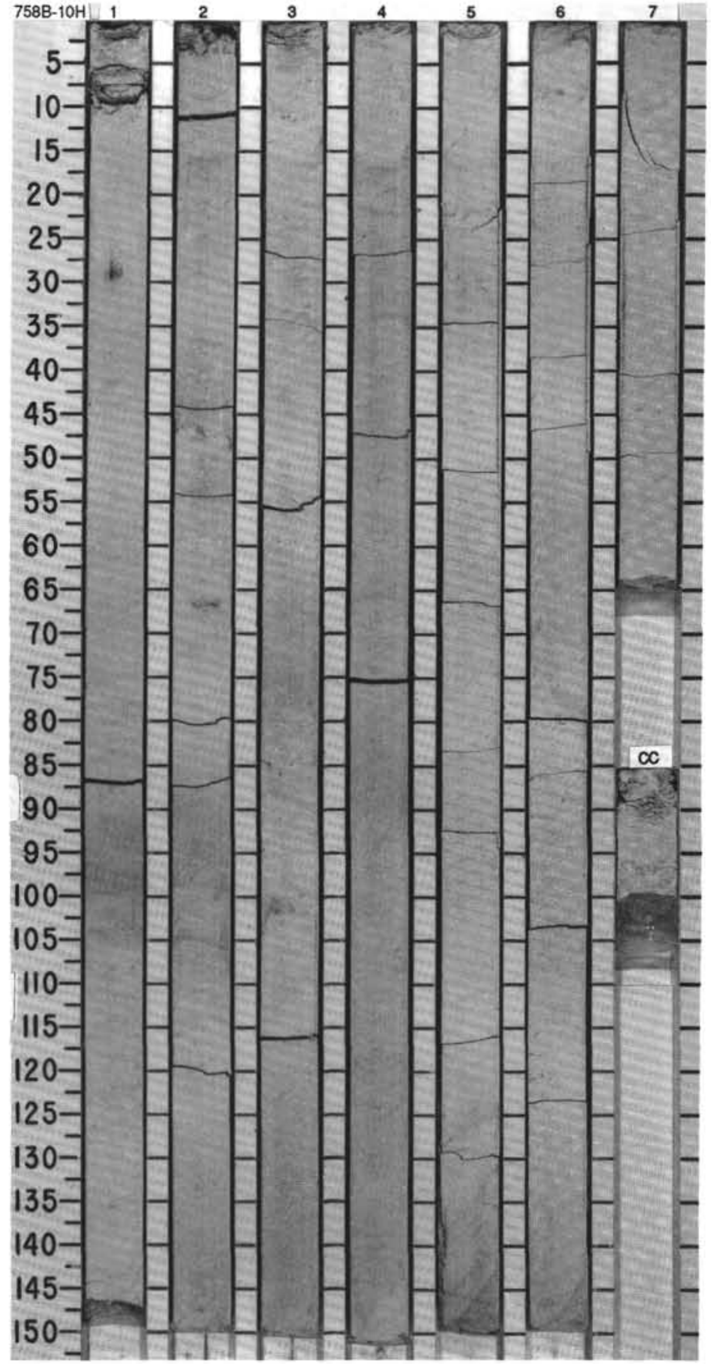
NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS

The top of Section 1 is slightly disturbed and the CC is moderately disturbed.

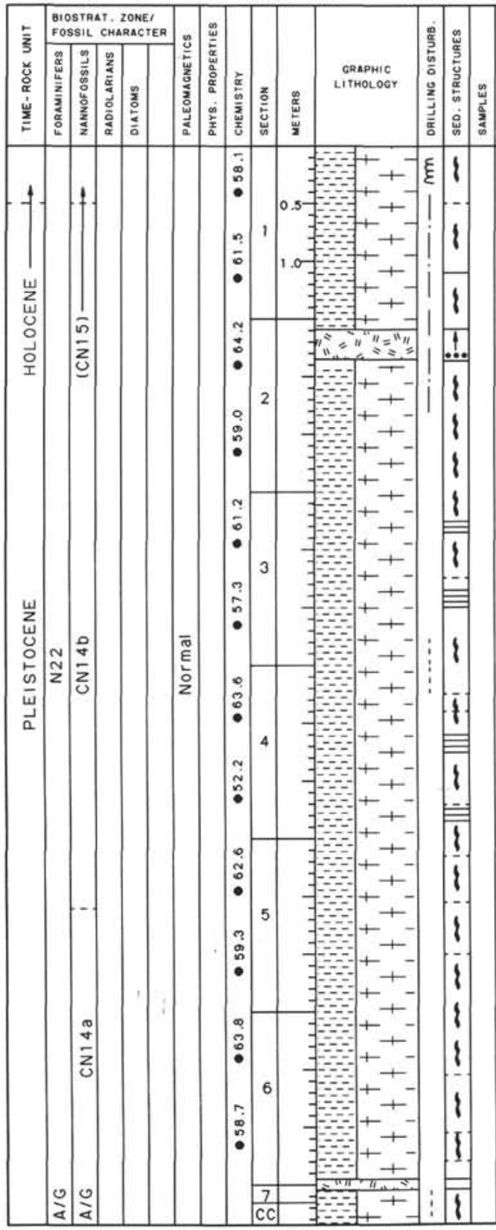
Major lithology: NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, white (N8/) to light gray (5Y 7/1), with mottles, often extremely faint, of light gray (5Y 7/1) and gray (5Y 6/1). Dark blebs of ash occur sparsely through the core and are no larger than 0.5 cm in diameter. The entire core is heavily to moderately bioturbated.

SMEAR SLIDE SUMMARY (%):

	2, 56 D
TEXTURE:	
Sand	5
Silt	70
Clay	25
COMPOSITION:	
Clay	15
Foraminifers	10
Glass	Tr
Micrite	5
Nannofossils	69
Quartz	Tr
Radiolarians	1



SITE 758 HOLE C CORE 1H CORED INTERVAL 0.0-9.4 mbsf



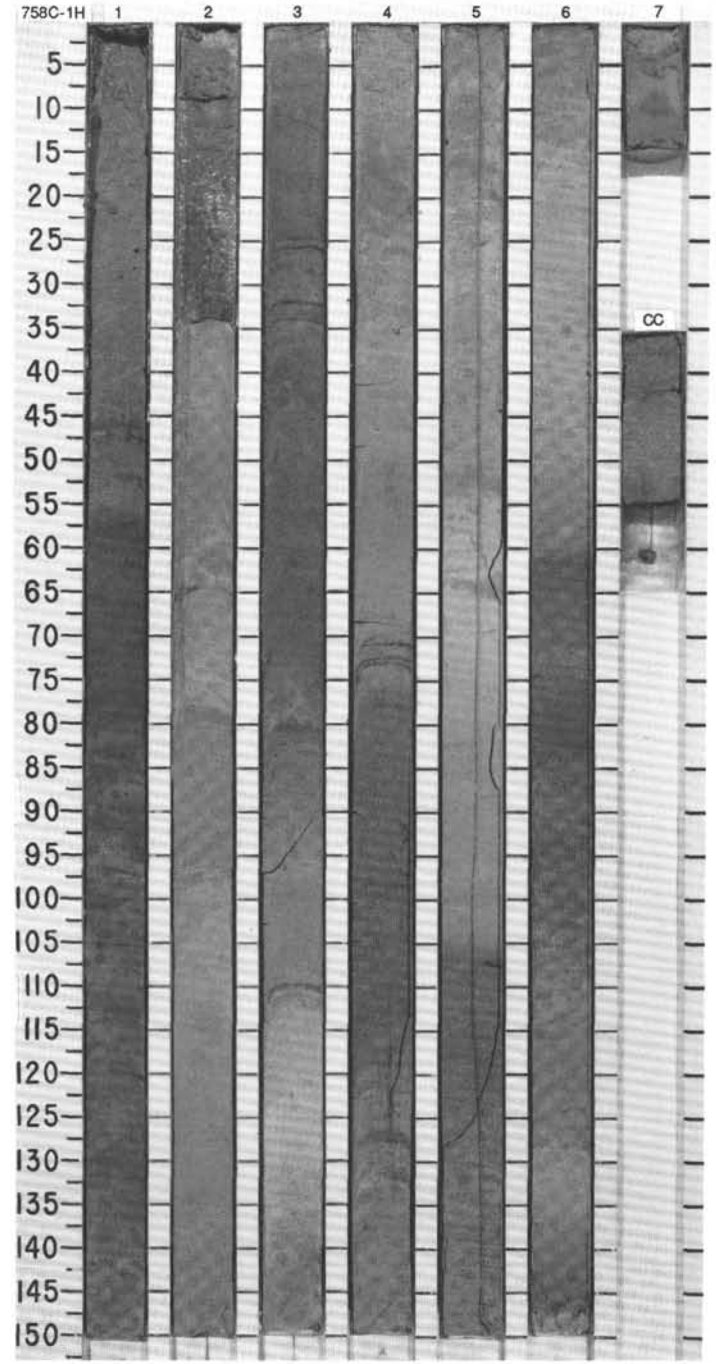
LITHOLOGIC DESCRIPTION

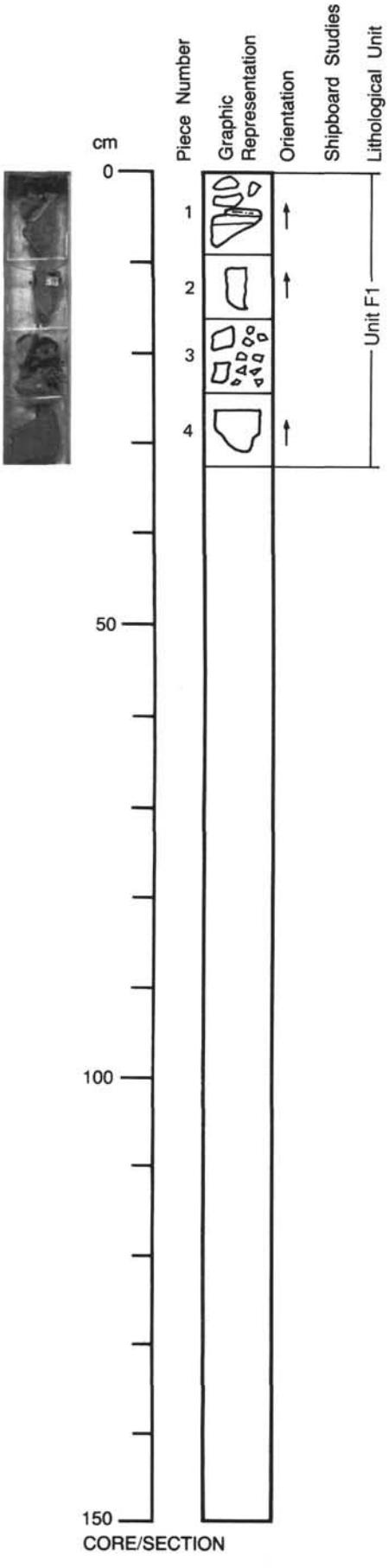
CLAYEY NANNOFOSSIL OOZE WITH FORAMINIFERS, AND NANNOFOSSIL OOZE WITH CLAY AND FORAMINIFERS

The core is slightly disturbed.

Major lithology: Alternating intervals of NANNOFOSSIL OOZE with CLAY and FORAMINIFERS, and clayey nannofossil ooze with foraminifers. The nannofossil ooze is generally light gray (5Y 6/1 to 7/1), sparsely mottled, and bioturbated. The top 56 cm interval of Section 1 is the only brown (10YR 5/3) layer in the core (the oxidized core top). The clayey nannofossil ooze, darker than the nannofossil ooze, is gray to dark gray (5Y 5/1 to 4/1). Most transitions between lithologies occur gradually, within 5 to 10 cm. The dark intervals begin as sparsely, then heavily mottled, and finally grade up section into nearly homogeneous dark sediment. Thickness of the lithologic intervals ranges from 30-100 cm. Millimeter-scale black blebs occur scattered throughout the bioturbated core.

Minor lithology: Volcanic ash, in both massive and thin beds.Massive ash, dark gray (5Y 4/1),with a sharp basal contact and fining upwards, occurs in Section 2, 8-34 cm (Toba Ash?). A light gray (5Y 7/1) massive ash occurs as one deposit between Sections 6, 147 cm to Section 7, 4 cm. Discrete, thin, green (10YR 6/3) and in places dark gray ash layers occur throughout the core.





121-758A-54R-CC

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (121-758A-54R-CC, Piece 1 to 121-758A-56R-1, Piece 7).

PIECES: 1 - 4.

CURATED LENGTH: 33 cm. The total curated length of Unit F1 is 8.92 m.

CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7A. Fragments of similar basalt occur within the lower part of 121-758A-54R-2.

PHENOCRYSTS: 5% euhedral to subhedral plagioclase, 1 to 5 mm.

GROUNDMASS: Fine grained.

COLOR: Gray (2.5Y N5/0).

VESICLES: None.

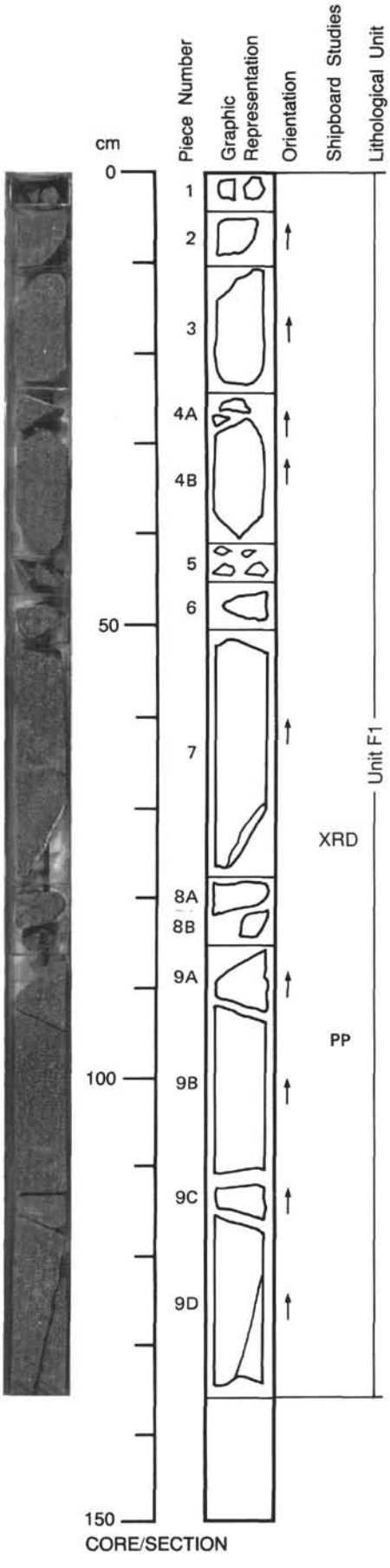
STRUCTURE: Flow or perhaps a sill.

ALTERATION: Moderate.

VEINS: Two types: (a) Pieces 1 and 2 have 1-2 mm calcite veins. Fragments broke along these calcite filled fractures. One fragment in Piece 3 also has a small vein remnant on one surface. (b) Piece 1 also has 1 mm dark gray horizontal vein (smectite?).

COMMENTS: Important features of Unit F1 include: (a) the finer grained, chilled nature of the basalt at both the upper and lower margins of the unit, (b) the scarcity of vesicles within the marginal zones, and the generally massive character of the unit, (c) the symmetrical nature of the grain size distribution within the unit, (d) the presence of sulfides within the unit, and (e) the presence of possible baking of the underlying sediments in Section 121-758A-56R-1.

Unit F1 continues in Section 121-758A-55R-1.



121-758A-55R-1

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 to 9E.

CURATED LENGTH: 138 cm.

PHENOCRYSTS: Plagioclase, up to 5 mm euhedral to subhedral,5 to 10%.

GROUNDMASS: Plagioclase and pyroxene fine grained but variable in Piece 1 from less than 0. 1 mm to 0.5 mm. Uniform fine grained in remainder of Section but becoming ophitic in lower half of Section.

COLOR: Gray (2.5Y N4/0).

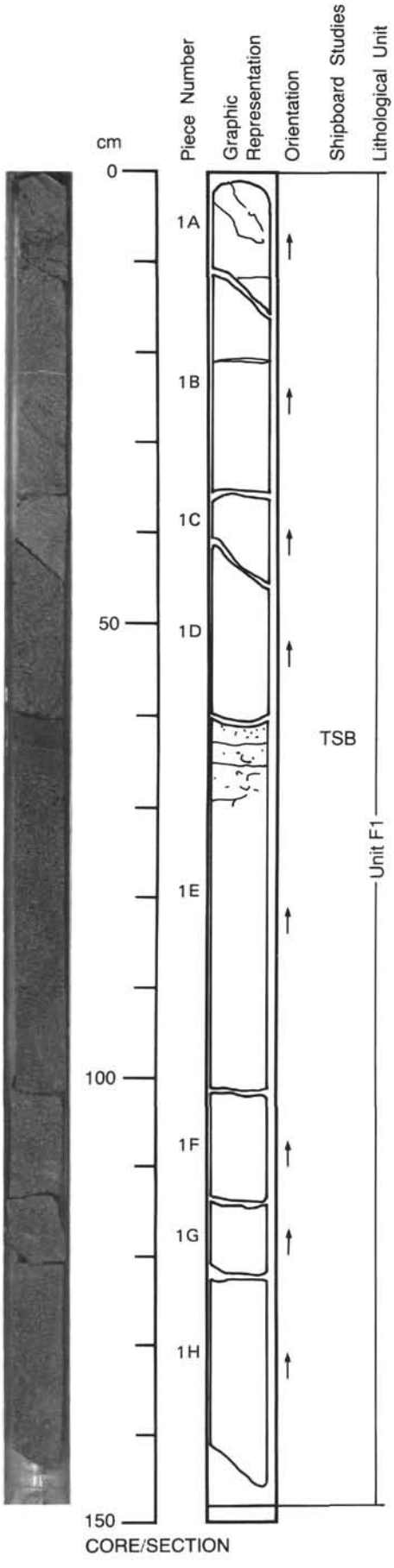
VESICLES: About 5% of very dark gray smectite patches. Some are filled vesicles. Some may be altered mafic phenocrysts.

STRUCTURE: Flow or perhaps a sill.

ALTERATION: Moderate.

VEINS/FRACTURES: 1-2 mm calcite veins in Pieces 4A and 6. Lower broken surface of Piece 7 has 2-3 mm calcite smectite vein.

COMMENTS: Unit F1 continues from Section 121-758A-54R-CC and continues in Section 121-758A-55R-2.



121-758A-55R-2

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A to 1H.

CURATED LENGTH: 145 cm.

CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7.

COMMENTS: Unit F1 extends from Section 121-758A-55R-1 and continues in Section 121-758A-55R-3. The description for Section 1 applies except as noted below.

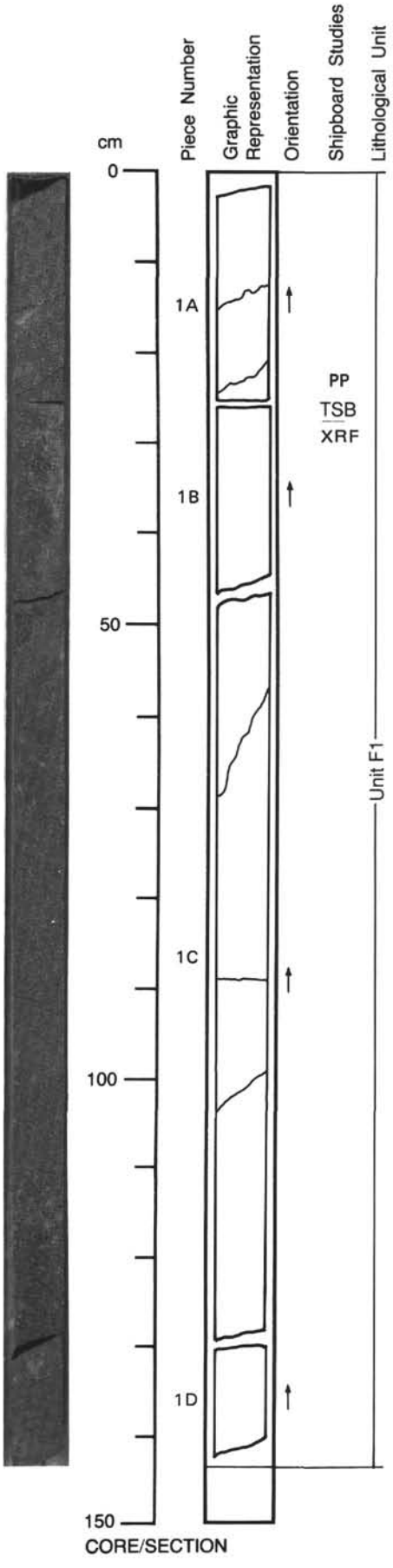
GROUNDMASS: Coarser grained than Section 121-788A-55R-1, especially below 65 cm. This lower part of the Section has larger ophitic clinopyroxene (up to 3 mm). Here 40-50% of the medium-grained groundmass appears to be mostly clinopyroxene.

COLOR: Dark gray (5Y 4/1).

STRUCTURE: Piece 1E has two small layers within it: 60-63 cm, fine grained, <1 mm, darker. 63 - 66 cm, 1-3 mm. Below 66 cm there is a slight increase in the clinopyroxene concentration over 5 cm. These two distinct bands are fine-grained chill zones, of indeterminate origin.

ALTERATION: Moderate.

VEINS/FRACTURES: Piece 1A contains a thin calcite smectite vein (<1 mm) and below this an irregular finer-grained zone which is phenocryst free. This zone resembles the zone between 60-63 cm. Piece 1B (19 cm) is cut by a 2-3 mm calcite vein lined with dark brown green smectite.



121-758A-55R-3

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A to 1D.

CURATED LENGTH: 144 cm.

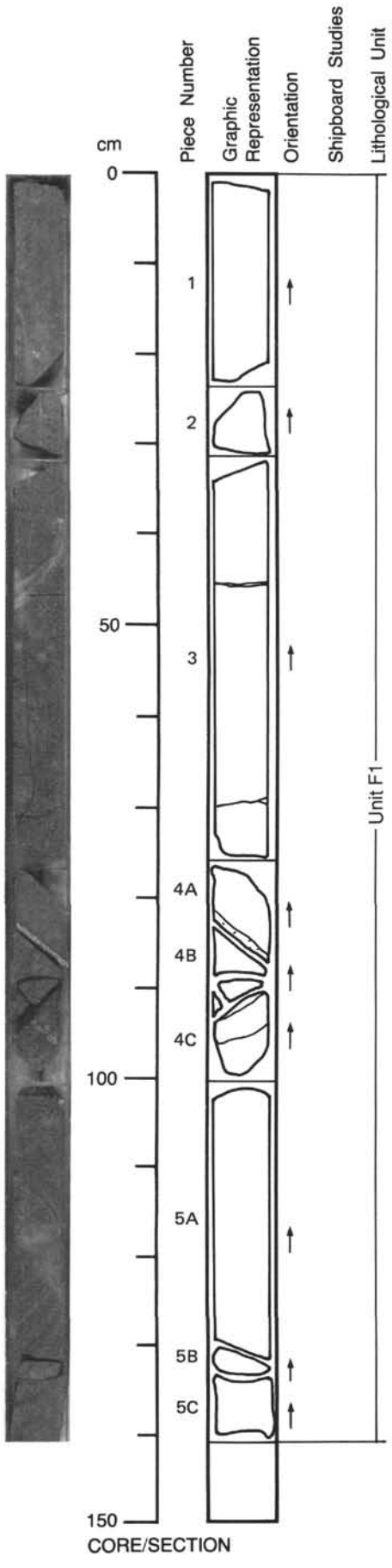
CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7.

COMMENTS: Unit F1 extends from Section 121-758A-55R-2 and continues in Section 121-758A-55R-4. The description for Section 1 applies except as noted below.

GROUNDMASS: Clinopyroxene concentration (about 40%) lower than in the lower part of 121-758A-55R-2.

ALTERATION: Moderate.

VEINS/FRACTURES: Pieces 1A and 1C have very dark gray 1 mm veins of smectite. In Piece 1A, the upper vein has outer disrupted margins of calcite and pyrite.



121-758A-55R-4

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 - 5C.

CURATED LENGTH: 141 cm.

CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7.

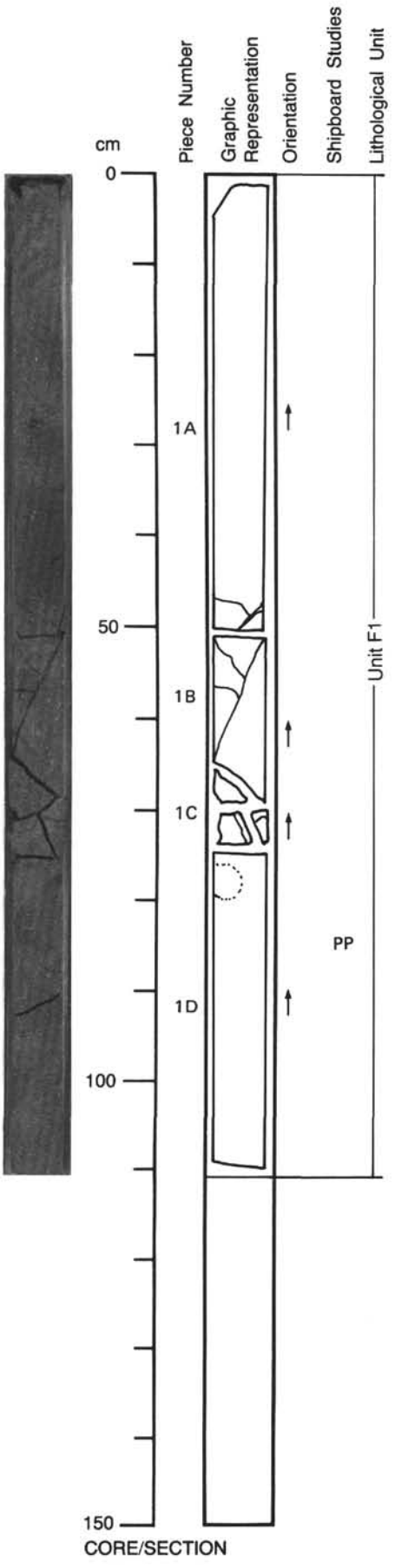
COMMENTS: Unit F1 extends from Section 121-758A-55R-3 and continues in Section 121-758A-55R-5. The description for Section 1 applies except as noted below.

PHENOCRYSTS: Proportion of plagioclase phenocrysts lower (about 2%).

GROUNDMASS: Finer grained (<1 mm) than Sections 121-758A-55R-2 and 3. Few larger clinopyroxene grains in the groundmass.

VESICLES: Rare (<1%) smectite filled vesicles.

VEINS/FRACTURES: Piece 2 has pyrite cubes on the surface of the Piece, which were probably distributed along abounding fracture. Piece 3 (45 cm) 2 mm vein with smectite, calcite,and pyrite. Piece 3 (70 cm) thin smectite vein. Piece 4A (82-86 cm) smectite calcite vein with additional unknown pale green fibrous mineral + zeolites? Piece 4C (91-95 cm) 2 mm smectite vein.



121-758A-55R-5

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A - 1D.

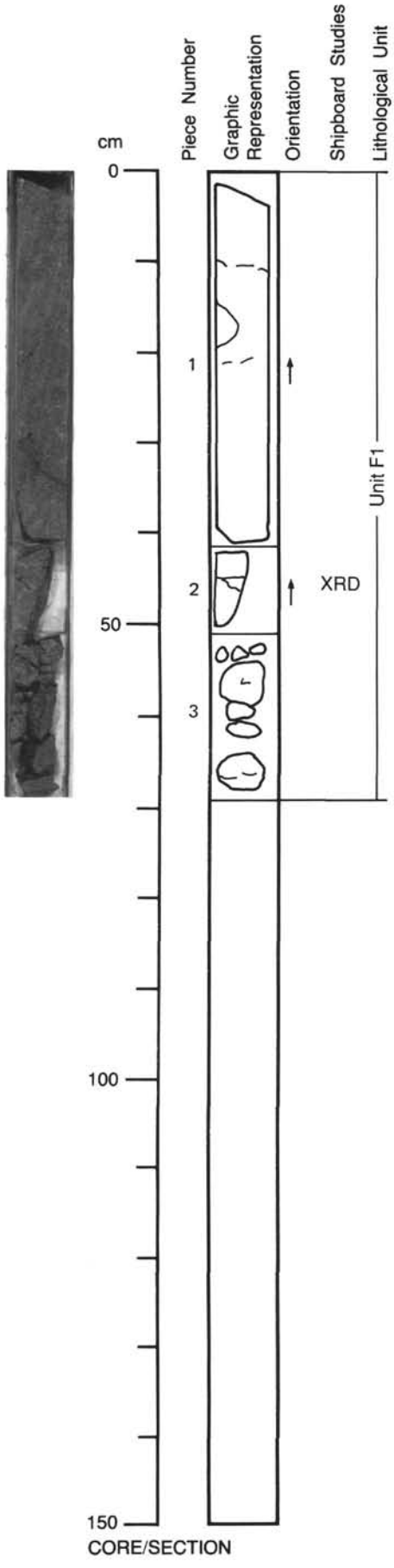
CURATED LENGTH: 112 cm.

CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7.

COMMENTS: Unit F1 extends from Section 121-758A-55R-4 and continues in Section 121-758A-55R-6. The description for Section 1 applies except as noted below.

STRUCTURE: Top of Piece 1D contains finer grained circular leucocratic patch about 6 cm in diameter. This is probably a cognate feature. A similar feature occurs within Piece 1A at 30 cm.

VEINS/FRACTURES: Smectite veins in Pieces 1A and 1B. The latter is 3 mm thick and also contains sparse sulfides. Some sulfides also present in rare vesicles. Piece 1C is also fractured along a vein.



121-758A-55R-6

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 - 3.

CURATED LENGTH: 69 cm.

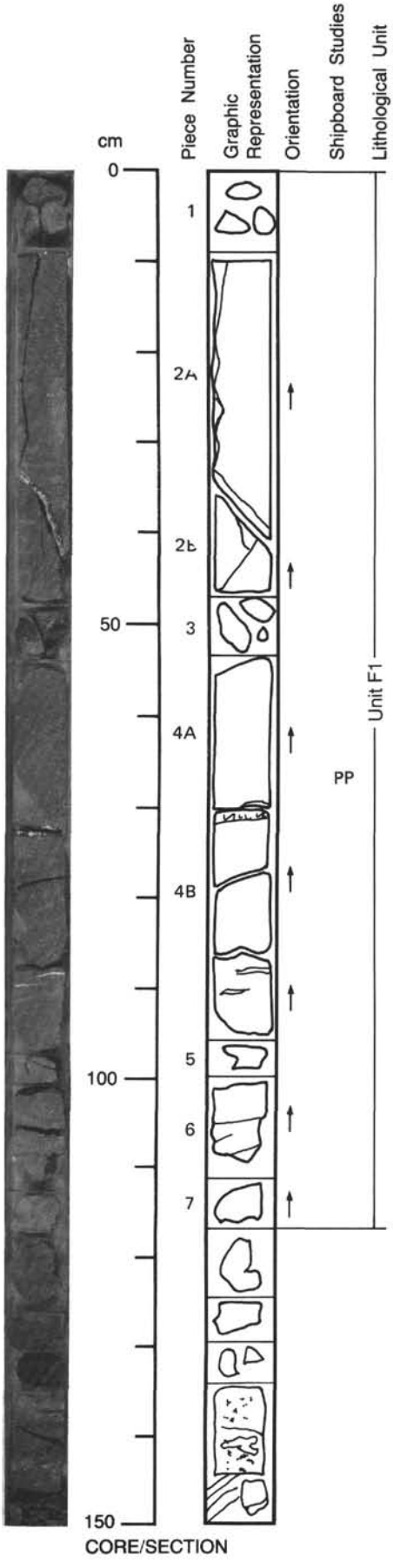
CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7.

COMMENTS: Unit F1 extends from Section 121-758A-55R-5 and continues in Section 121-758A-56R-1. The description for Section 1 applies except as noted below.

VESICLES: Some small vesicles with smectite, calcite, and sulfides.

STRUCTURE: Piece 1 13-19 cm is light gray, much finer grained (<<1 mm), and has no feldspar phenocrysts or large clinopyroxene. Between 20 and 42 in Piece 1, visible on the outside of the core, is a 2-3 cm zone of much finer-grained material with just plagioclase micro-phenocrysts in a basaltic groundmass. Finer material is bounded by a zone rich in calcite and smectite.Piece 3 is a drilling breccia composed largely off fragments of Unit F1.

VEINS/FRACTURES: Veins with calcite/smectite fillings cut Piece 2.



121-758A-56R-1

UNIT F1: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 through 7.

CURATED LENGTH: 117 cm.

CONTACTS: The upper contact with the overlying ash horizons not exposed. The lower contact of Unit F1 is near the base of 121-758A-56R-1, Piece 7.

COMMENTS: Unit F1 extends from Section 121-758A-55R-6 and ends in this Section, Piece 7. The description for Section 1 applies except as noted below. The core beyond 115 cm is described in the Sedimentary visual core description.

PHENOCRYSTS: 5-10% feldspar phenocrysts in the chilled margin (Piece 7) where they are 3-7 mm long and about 2 mm in diameter.

GROUNDMASS: <<1 mm. Only small amounts (5-10%) of larger clinopyroxene.

STRUCTURE: The markedly finer grained character of the basalt in this Section is interpreted as the lower chilled facies of F1. The reduction in grain size from Piece 4B to 7 is particularly marked, the rock being microcrystalline in Piece 7.

ALTERATION: Alteration with smectites and calcite is more abundant than in Section 121-758A-55R-6.

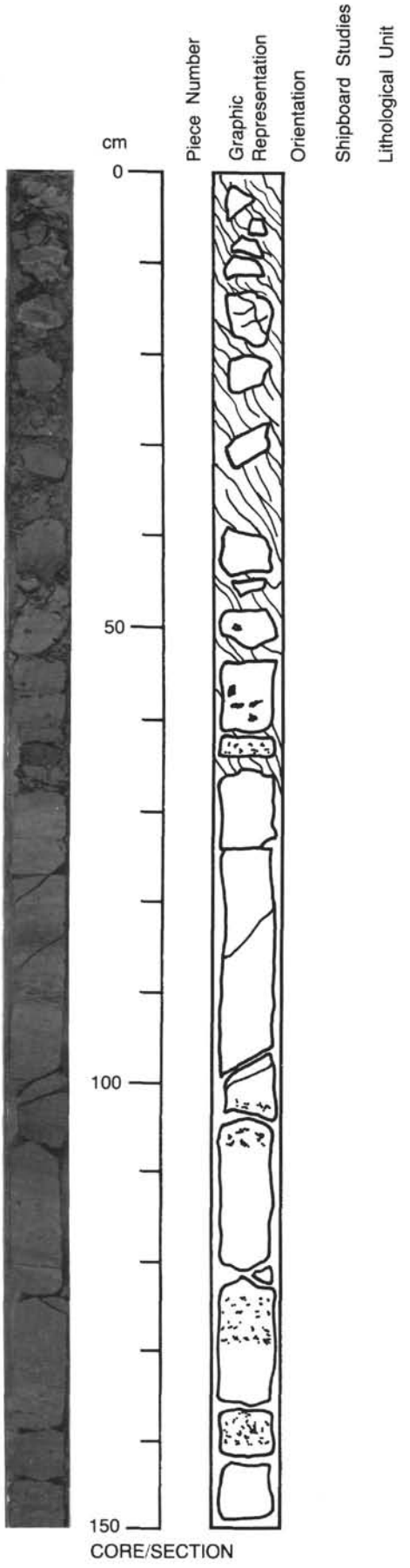
VEINS/FRACTURES: A calcite smectite vein (>1 cm thick) separates Piece 2A and 2B. A 3 mm vein with smectites and zeolites divides Pieces 4A and 4B.

0-150 cm: CLAYEY TUFF WITH MICRITE AND VOLCANIC SANDSTONE

0-118 cm: Basalt.

TUFF: 118-150 cm. Pieces at 118-125, 125-131, and 131-135 cm. Black (10GY 2.5Y) and very dark greenish gray (10GY 3/1) very hard, probably baked.

136-150 cm: 11 cm biscuit of volcanic sandstone grains of tuff and glauconite in a large green mottle at 142-144 cm. A few grains are basalt. 4 cm of matrix with pebbles of above.



121-758A-56R-2

CLAYEY TUFF WITH MICRITE AND VOLCANIC SANDSTONE

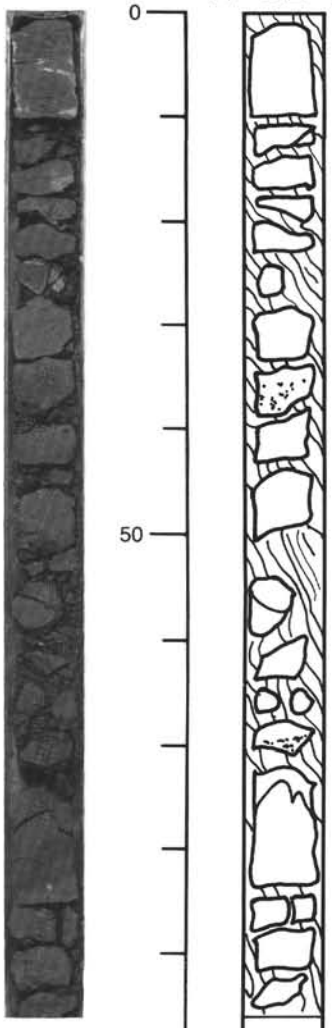
0-150 cm: Biscuits and matrix of tuff, with minor sandstone layers dark greenish gray (5GY 4/1). Badly brecciated above 48 cm. Horizontal streaks and mottles. Very dark green spots in burrows at 50-61 cm. Soft-sediment deformation structures at 88-90 cm.

SANDSTONE: Tuff with minor basalt and glauconite grains - layers at 63-64 cm, 103-108 cm, 124-129 cm, 138-143 cm. Less bioturbation in sandy units medium to coarse grained sandstone.

121-758A-56R-3

CLAYEY TUFF

0-97 cm: Tuff. Very dark greenish gray (10GY 3/1). Biscuits and matrix. Horizontal smears and mottles throughout. Sandstone layers at 34-37 cm 50-51 (?) cm, 70-71 cm, grains of tuffaceous material.



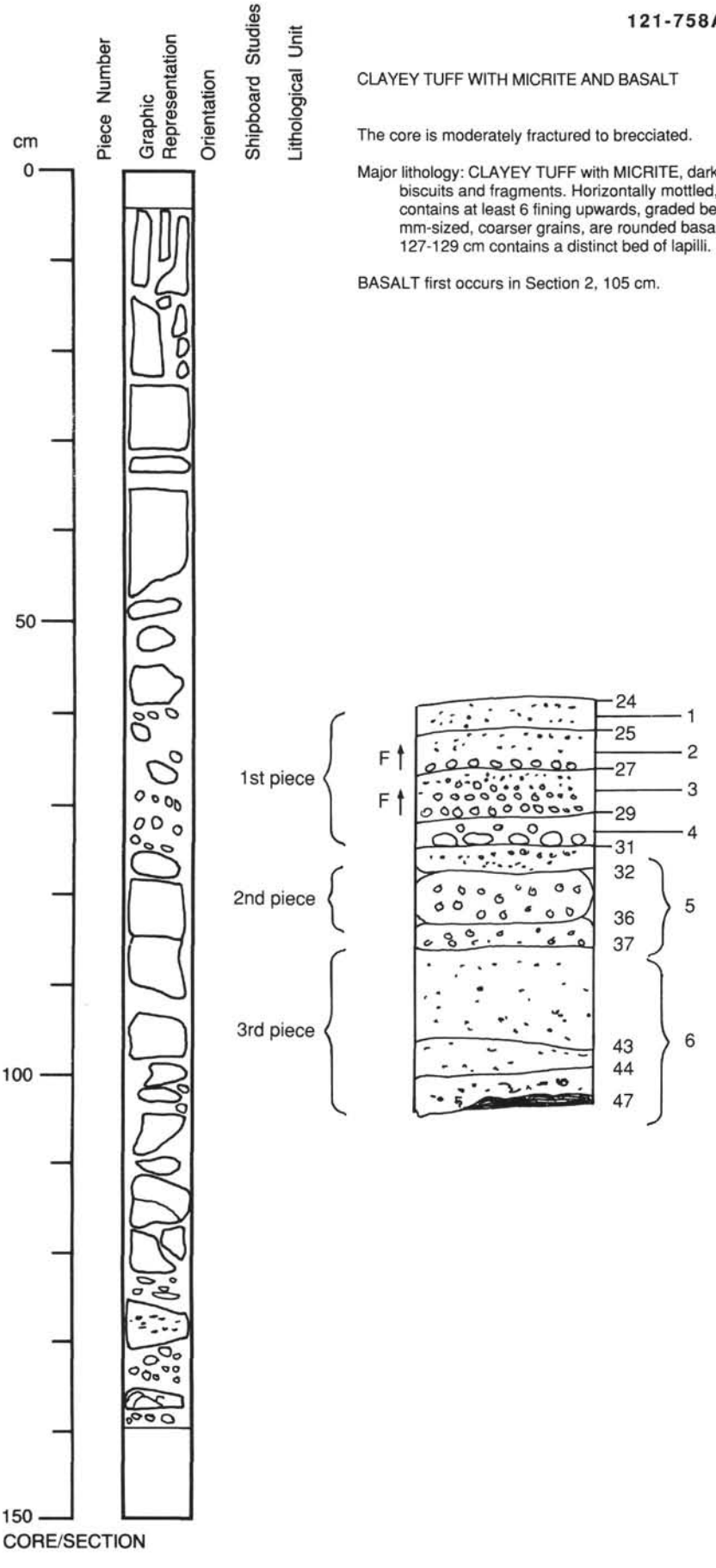
121-758A-57R-1

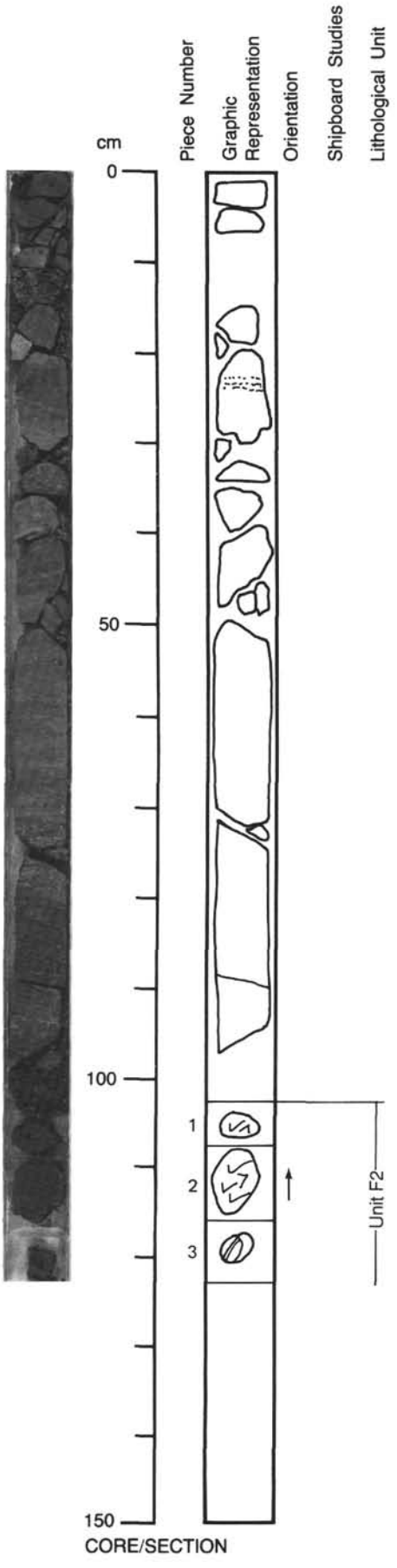
CLAYEY TUFF WITH MICRITE AND BASALT

The core is moderately fractured to brecciated.

Major lithology: CLAYEY TUFF with MICRITE, dark greenish gray (10GY 3/1 to 4/1), occur as drilling biscuits and fragments. Horizontally mottled, streaked, and bioturbated. Section 1, 24-47 cm contains at least 6 fining upwards, graded beds from 2 to 10 cm thick each. The intervals of mm-sized, coarser grains, are rounded basalt and tuff fragments. A piece of tuff in Section 1, 127-129 cm contains a distinct bed of lapilli.

BASALT first occurs in Section 2, 105 cm.





121-758A-57R-2

0-105 cm: Clay-rich tuffs and volcanic sandstone. (See Sedimentary visual core description).

UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (121-758A-57R-2,Piece 1 to 121-758A-60R-1, Piece 2A).

PIECES: 1 - 3.

CURATED LENGTH: 20 cm. Total curated length of Unit F2 = 20.34 m.

CONTACTS: The upper contact is not seen but basalt appears rapidly cooled in Pieces 1-3 and in 121-758A-57R-3, Pieces 1-3. The lower contact is in 121-758A-60R-1.

PHENOCRYSTS: Plagioclase 1-2% equant crystals, 1-3 mm. and 5% elongate plagioclase laths 0.2-5 mm.

GROUNDMASS: Microcrystalline from 121-758A-57R-2, Piece 1 through 121-758A-57R-3, Piece 3. Fine grained, 121-758A-57R-3, Pieces 4 and 5. Plagioclase and clinopyroxene.

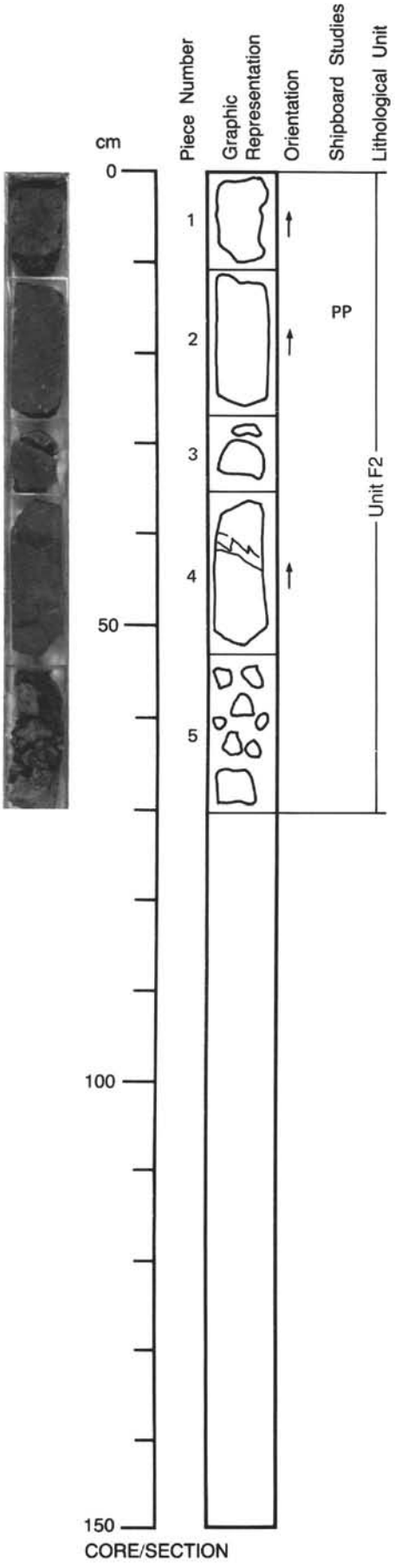
COLOR: Very dark gray (2.5Y 3/0).

VESICLES: 1-10 mm, increasing in size and frequency in 121-758A-57R-3, Pieces 1 and 2 to about 10%. Irregular, all filled with black clay.

STRUCTURE: Flow possibly a sill.

ALTERATION: Moderate. Dark smectite infillings to vesicles and possible replacement of groundmass. Some pyrite present.

COMMENT: Description of Unit F2 continues in 121-758A-57R-3.



121-758A-57R-3

UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

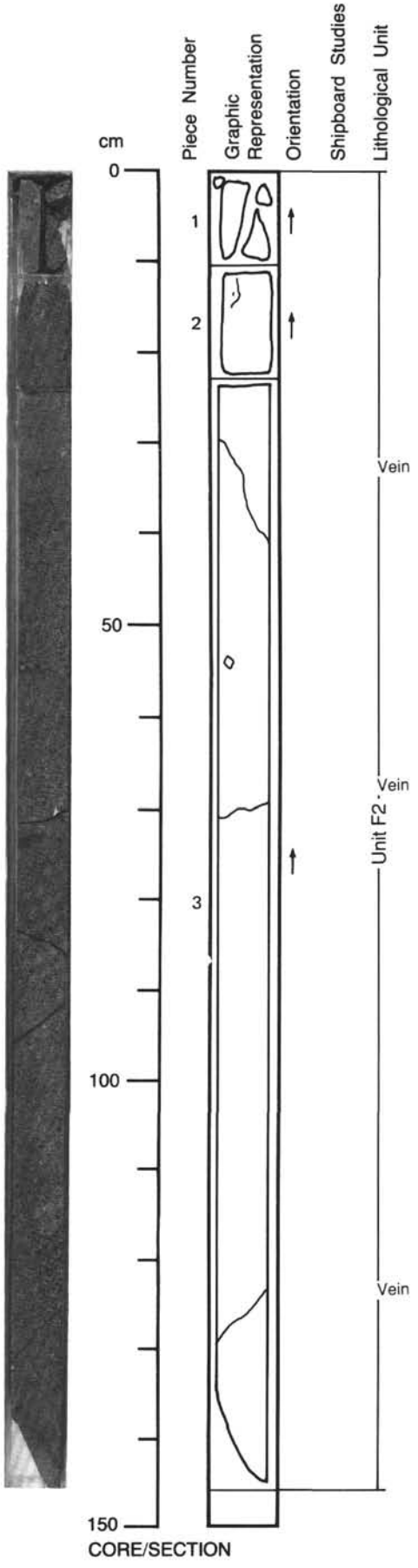
PIECES: 1 through 5.

CURATED LENGTH: 70 cm.

COMMENTS: Unit F2 extends from Section 121-758A-57R-2 and continues in Section 121-758A-58R-1. The description of Unit F2 starts on the previous section and continues here.

VEINS/FRACTURES: Several sub-horizontal mm-scale fractures at the top of the unit, all filled with black smectite. Thick, clay-rich horizon cuts in Piece 4.

STRUCTURE: This section appears to be from the upper part of a thick flow or sill.



121-758A-58R-1

UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1, 2, and 3.

CURATED LENGTH: 146 cm.

COMMENTS: Unit F2 extends from Section 121-758A-57R-3 and continues in Section 121-758A-58R-2 with no missing core. The following description applies to the whole of Core 121-758A-58R. Notes on the individual Sections within this core follow.

PHENOCRYSTS: Plagioclase 2%, subhedral, up to 5 mm, uniformly distributed throughout core.

GROUNDMASS: Fine to medium grained; distribution of clinopyroxene and plagioclase variable through unit clinopyroxene occurs as 0.5-5 mm patches throughout, but in some 1-5 cm wide zones the feldspar and pyroxene are more equigranular. In general plagioclase laths are <1 mm long and included in ophitic clinopyroxene. 121-758A-58R-1, Piece 1 is finer grained than Pieces 2 and 3 of the same Section, compatible with an upward chilled contact.

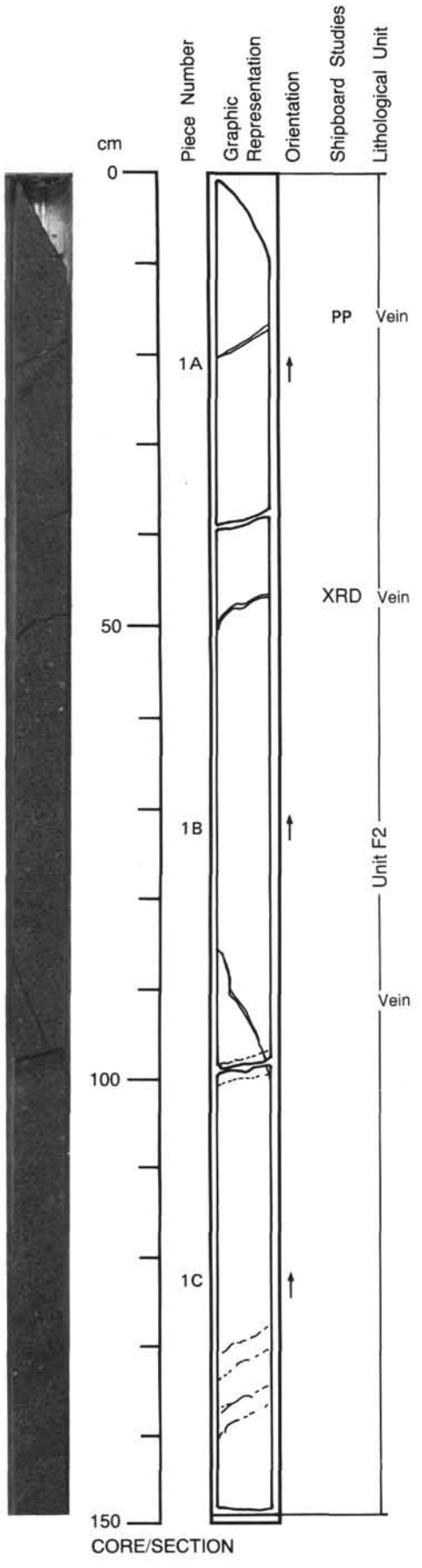
COLOR: Mottled dark gray (2.5Y 4/0) to very dark gray (2.5Y 5/0) in narrow bands.

VESICLES: Generally sparse (<5%) but vesicle rich bands occur (e.g. Piece 2). Vesicles are 2-5 mm diameter, irregular, and generally filled with dark gray or black smectite.

STRUCTURE: Massive flow, perhaps a sill.

ALTERATION: Slight to moderate with clinopyroxene partly altered to green smectites throughout much of unit; vesicles filled with clay. Pyrite in vesicles and groundmass (about 1%).

VEINS/FRACTURES: The following veins occur in 121-578A-58R-1: Piece 3A 30-40 cm, dark green smectite 1 mm, 70 degrees; Piece 3A 70-71 cm, dark green smectite 1-2 mm, 10 degrees; Piece 3A 93-96 cm, dark green smectite 3 mm, 45 degrees; Piece 3A 125-130 cm, dark green smectite 3 mm, 45 degrees;



121-758A-58R-2

UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

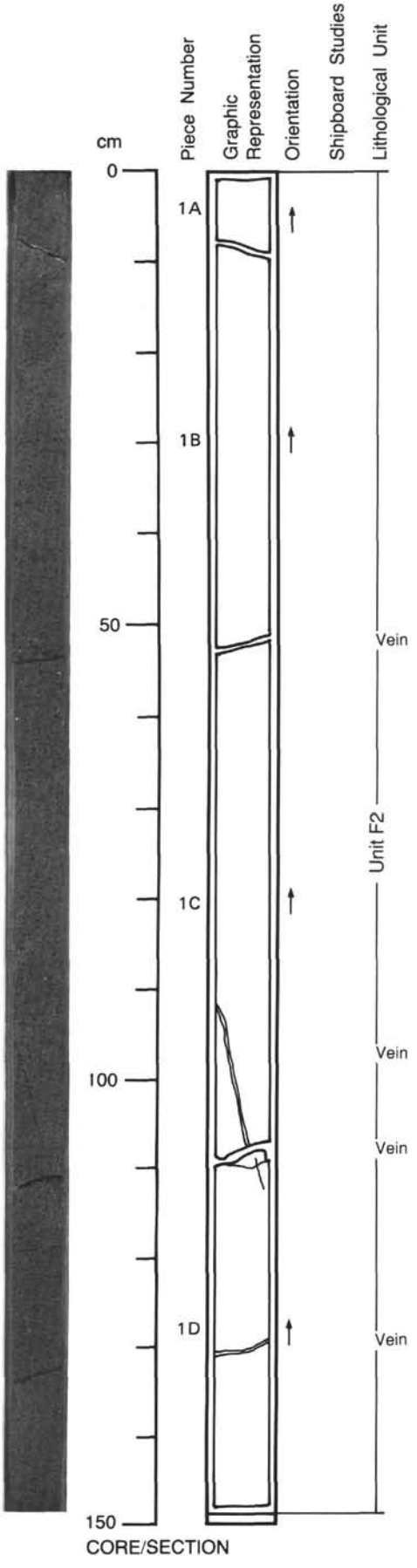
PIECES: 1A and 1B.

CURATED LENGTH: 149 cm.

COMMENTS: Unit F2 extends from Section 121-758A-58R-1 and continues into Section 121-758A-58R-3 without a break or loss of material (cut for curation purposes). The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments:

GROUNDMASS: Mottle-free zone in Piece 1A at 20-40 cm. Darker bands in Piece 1B at 132-135 cm and 140-142 cm. These two zones appear to be more clinopyroxene rich or have more mesostasis/vesicles.

VEINS/FRACTURES: The following veins occur in 121-578A-58R-2: Piece 1A, 17 cm dark green smectite with calcite core 2-3 mm 20 degrees; Piece 1B, 48 cm dark green smectite 3 mm 0-30 degrees; Piece 1B, 85 cm black smectite 2-4 mm 65 degrees; Piece 1B, 120 cm black smectite 1 mm 45 degrees.



121-758A-58R-3

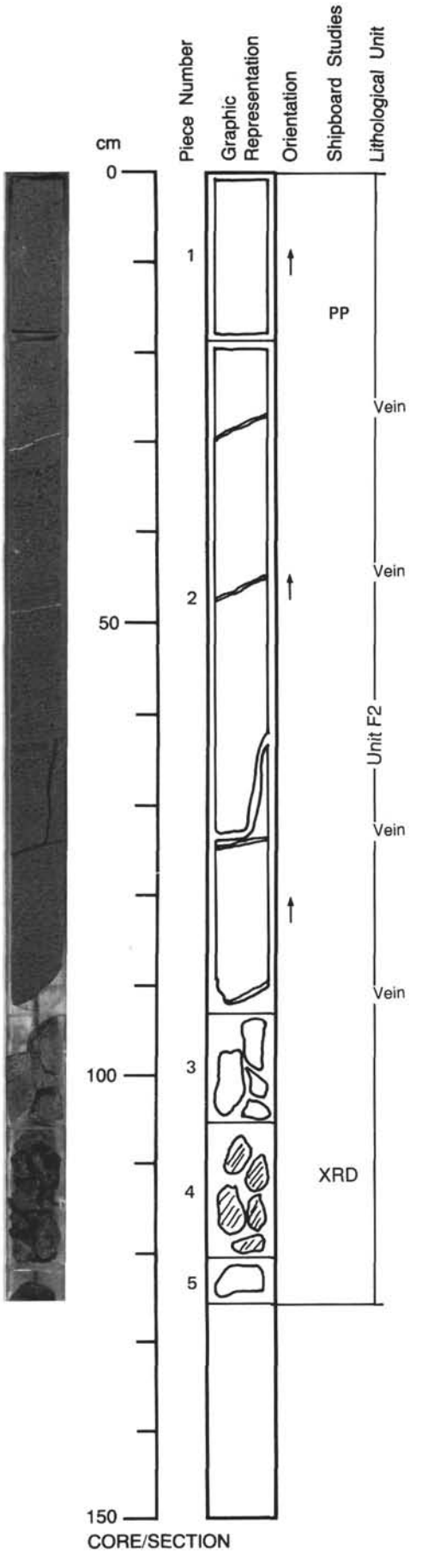
UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A and 1D.

CURATED LENGTH: 148 cm.

COMMENTS: Unit F2 extends from Section 121-758A-58R-2 and continues into Section 121-758A-58R-4 without a break or loss of material (cut for curation purposes). The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

VEINS/FRACTURES: The following veins occur in 121-758A-58R-3: Piece 1A/1B, 7 cm fibrous calcite 3 mm 10 degrees; Piece 1C, 95 cm smectite with calcite lenses 0-2 mm 80 degrees; Piece 1D, 118 cm black smectite 1-2 mm 0 degrees; Piece 1D, 132 cm black smectite 3-4 mm 10 degrees.



121-758A-58R-4

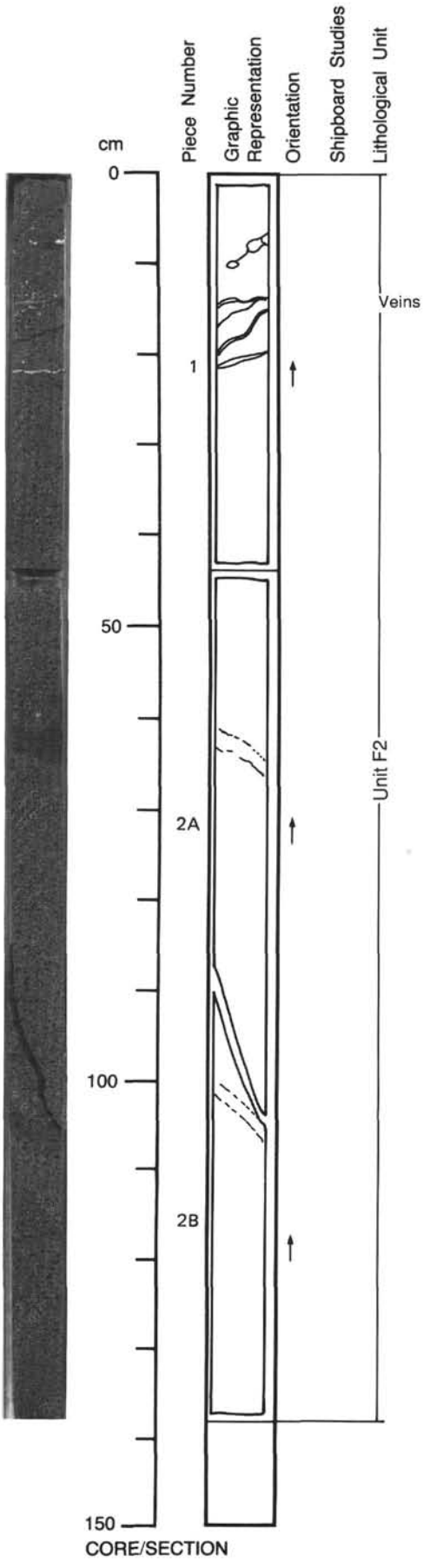
UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 through 5.

CURATED LENGTH: 126 cm.

COMMENTS: Unit F2 extends from Section 121-758A-58R-3 and continues into Section 121-758A-58R-5. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments:

VEINS/FRACTURES: Piece 4 is a fragmented chlorite or smectite vein with greasy slickensided pebbles. The following veins occur in 121-578A-58R-4: Piece 2, 30 cm fibrous calcite 2 mm lenses, 48 cm 2 mm 10 degrees; Piece 2, 75 cm black smectite, 2 mm 10 degrees.



121-758A-58R-5

UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

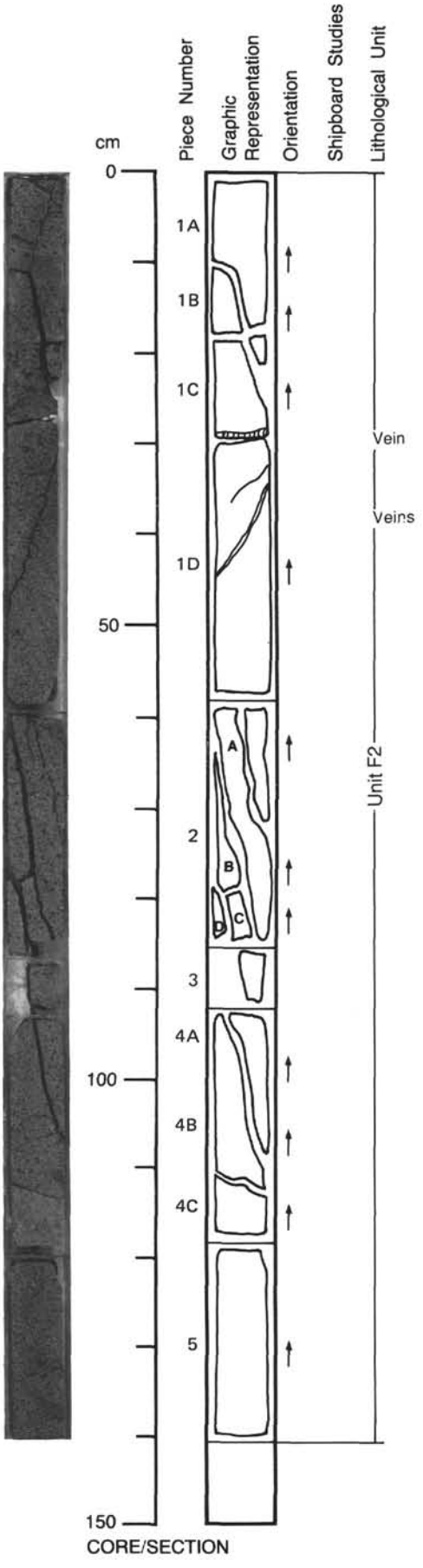
PIECES: 1 through 2B.

CURATED LENGTH: 137 cm.

COMMENTS: Unit F2 extends from Section 121-758A-58R-4 and continues into Section 121-758A-58R-6. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

GROUNDMASS: Dark bands of finer material between 61-64 cm and 103-105 cm.

VEINS/FRACTURES: The following veins occur in 121-578A-58R-5: Piece 1, 15 cm calcite 1 mm 5 degrees; Piece 1, 16 cm, intergrown calcite and dark green smectite, 4 mm 8 degrees, Piece 1, 19 cm dark green smectite, 3 mm 10 degrees. Piece 1, 23 cm thin dark green smectite selvage with calcite core, 3.5 mm, 0 degrees. Piece 2B, 118 cm, black smectite, 1 mm, 5 degrees. Extensive fracture system separates Pieces 2A and 2B.



121-758A-58R-6

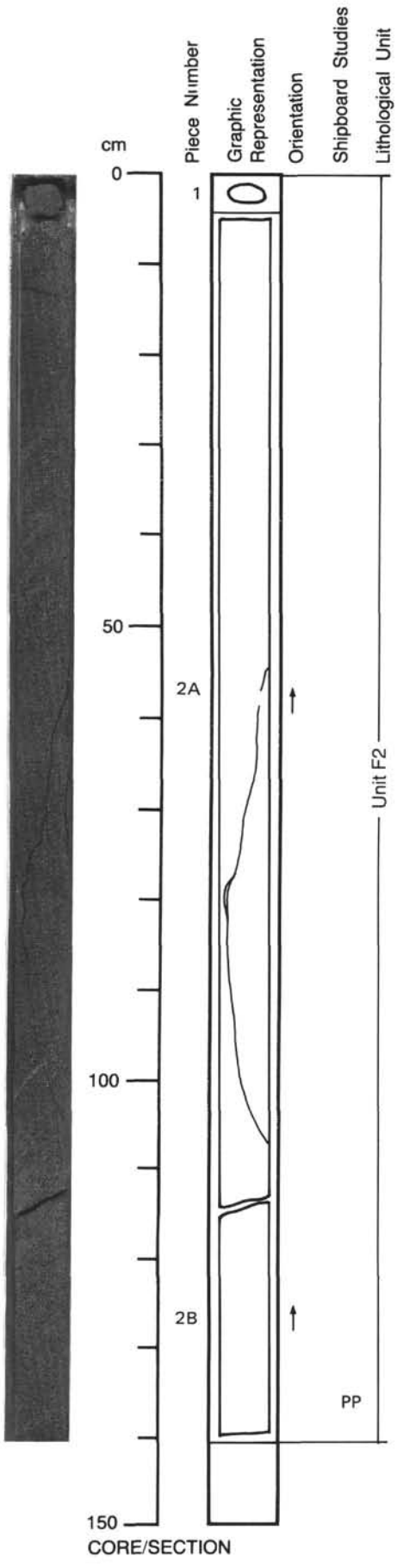
UNIT F2: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A through 5.

CURATED LENGTH: 142 cm.

COMMENTS: Unit F2 extends from Section 121-758A-58R-5 and continues into Section 121-758A-58R-7, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments:

VEINS/FRACTURES: Throughout Piece 1, 1-4 mm black smectite, sub-vertical anastomosing. Piece 1, 27 cm, 2-5 mm. Fibrous calcite and black smectite 5 degrees. Piece 2 fractured by sub-vertical cracks.



121-758A-59R-1

UNIT F2: APHYRIC BASALT (Cont.).

PIECES: 1A through 2B.

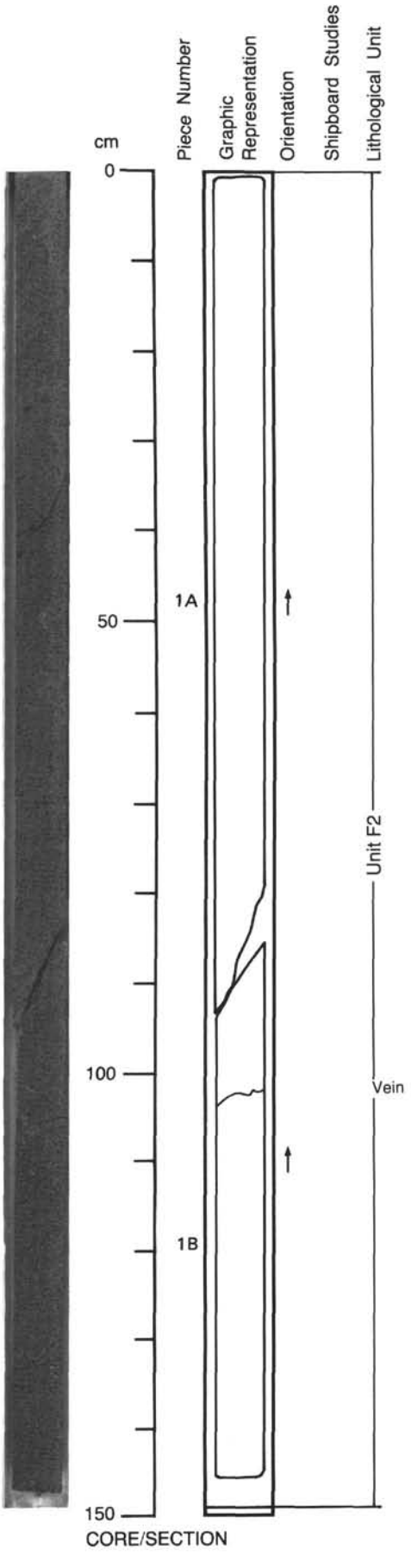
CURATED LENGTH: 141 cm.

COMMENTS: Unit F2 extends from Section 121-758A-58R-7 and continues into Section 121-758A-59R-2, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

PHENOCRYSTS: The proportion of plagioclase phenocrysts is lower (<2%) in the basal part of the flow (sill?) in relation to the upper part.

GROUNDMASS: The darker layers seen in Core 121-758A-58R are absent in 121-758A-59R.

VEINS/FRACTURES: The following veins occur in 121-758A-58R-1: Sub-vertical vein of black and (in center of vein) olive green smectite runs from 54 cm to 104 cm in Piece 2A. 1-2 mm wide.



121-758A-59R-2

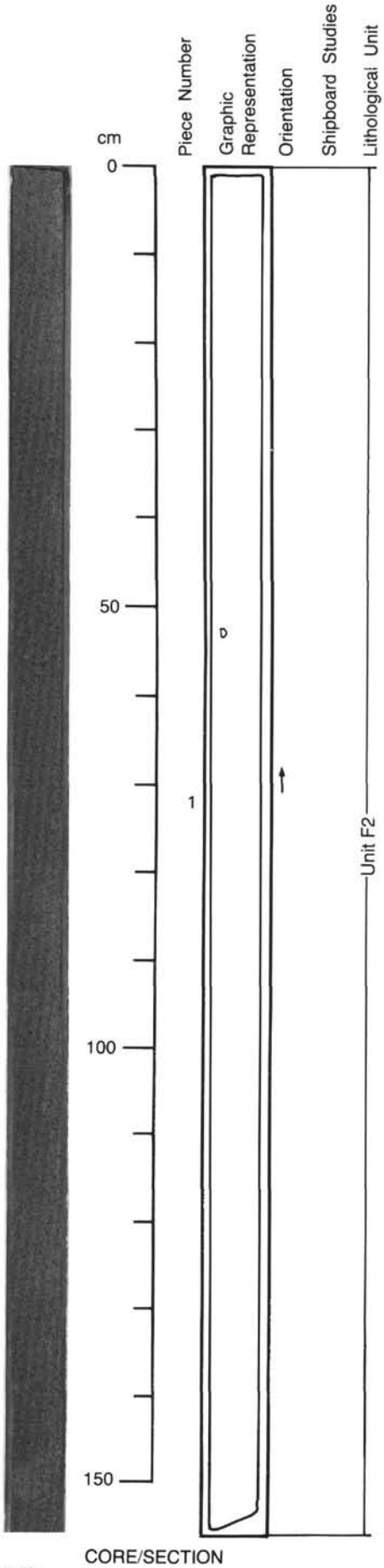
UNIT F2: APHYRIC BASALT (Cont.).

PIECES: 1A and 1B.

CURATED LENGTH: 150 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-1 and continues into Section 121-758A-59R-3, without loss of material (This Section is part of a 3.01 meter continuous recovered length!). The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

VEINS/FRACTURES: The following veins occur in 121-758A-59R-2: Piece 1B, 101 cm, black smectite and calcite vein 1 mm 5 degrees. Piece 1B, 106 cm black smectite 1 mm 5 degrees.



121-758A-59R-3

UNIT F2: APHYRIC BASALT (Cont.).

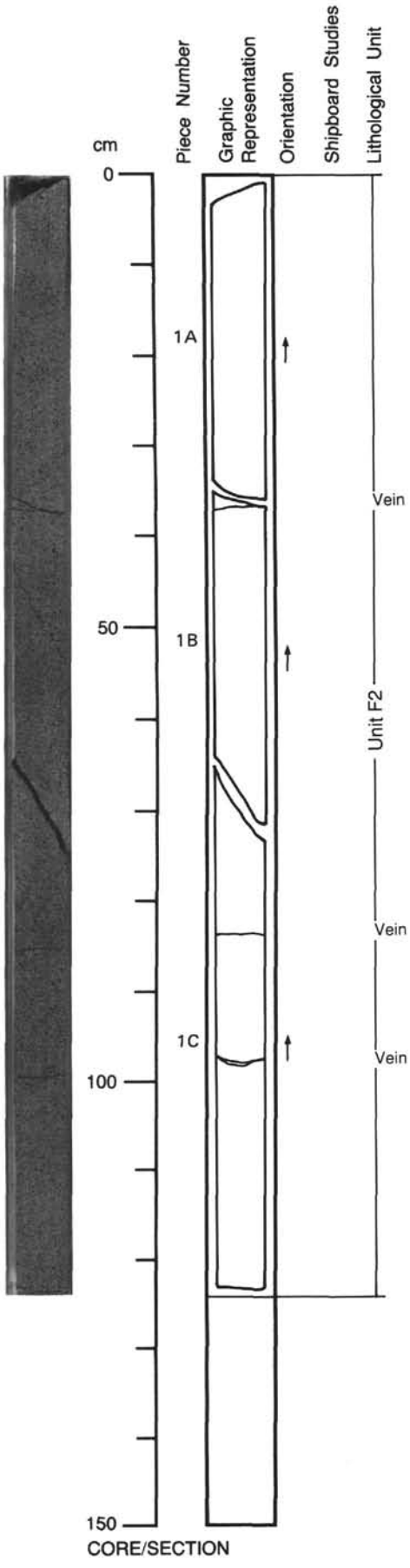
PIECE: 1 only.

CURATED LENGTH: 157.5 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-2 and continues into Section 121-758A-59R-4, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

PHENOCRYSTS: Less than 1% plagioclase.

VEINS/FRACTURES: None. Marked absence of veins and fractures.



121-758A-59R-4

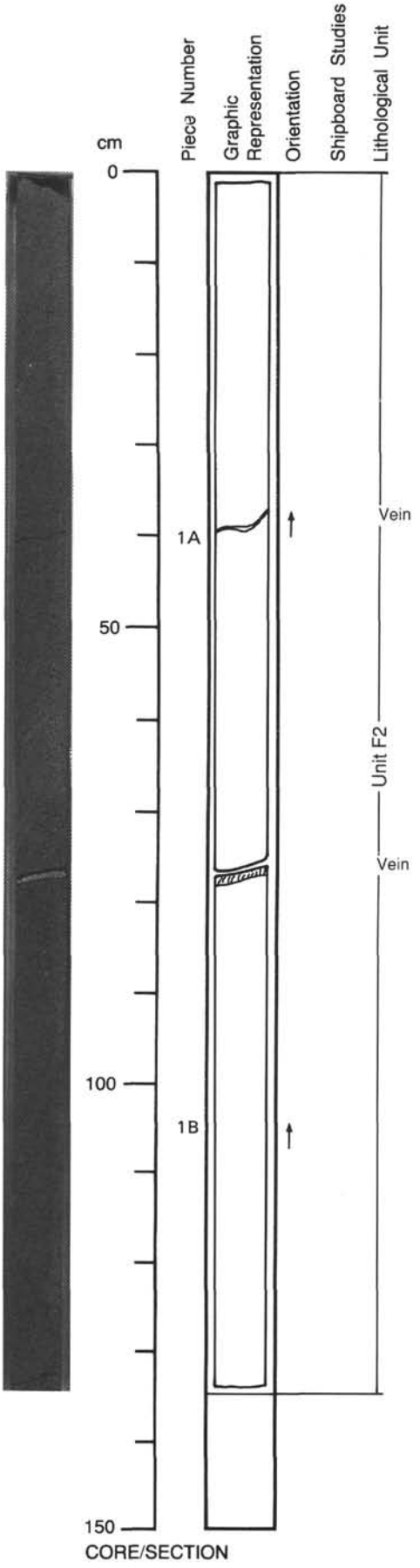
UNIT F2: APHYRIC BASALT (Cont.).

PIECES: 1A through 1C.

CURATED LENGTH: 125 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-3 and continues into Section 121-758A-59R-5, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

VEINS/FRACTURES: The following veins occur in 121-758A-59R-4: Piece 1B, 38 cm black smectite and pyrite 1-2 mm, sub-horizontal. Piece 1B/1C, 65 cm, black smectite coated fracture surface with abundant pyrite. Piece 1C, 86 cm, black smectite, 1 mm, 0 degrees. Piece 1C, 100 cm, black smectite, 2 mm, 0 degrees. Piece 1C, 123 cm, black smectite, 1 mm, 0 degrees.



121-758A-59R-5

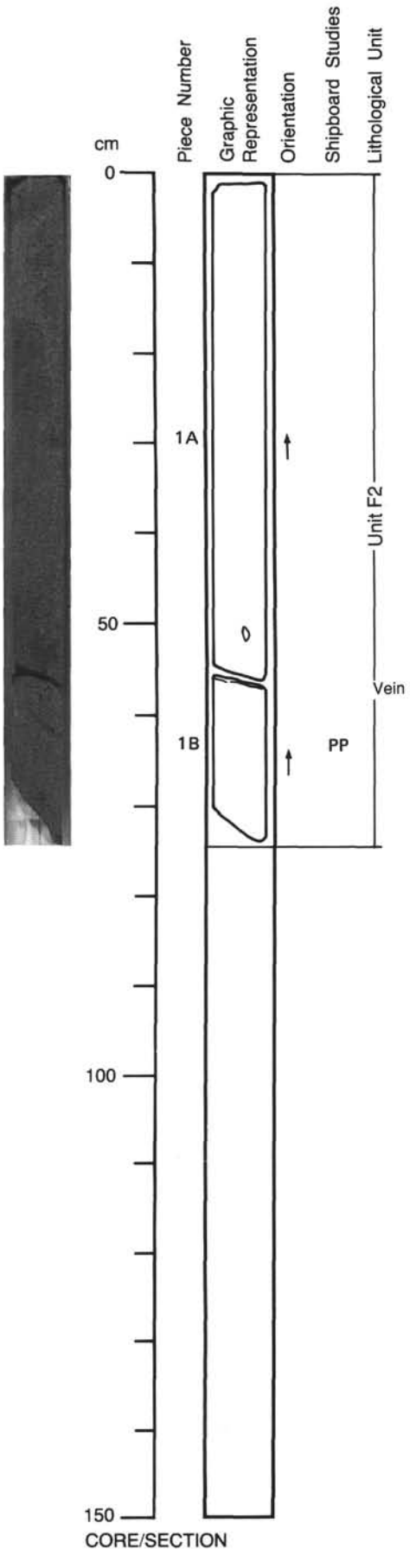
UNIT F2: APHYRIC BASALT (Cont.).

PIECES: 1A and 1B.

CURATED LENGTH: 134 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-4 and continues into Section 121-758A-59R-6, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

VEINS/FRACTURES: The following veins occur in 121-758A-59R-5: Piece 1A, 40 cm black smectite 2 mm, 5 degrees. Piece 1B, 76 cm, calcite with black smectite margins 1 mm 5 degrees. Piece 1B, 132 cm black smectite 2 mm 5 degrees.



121-758A-59R-6

UNIT F2: APHYRIC BASALT (Cont.).

PIECES: 1A and 1B.

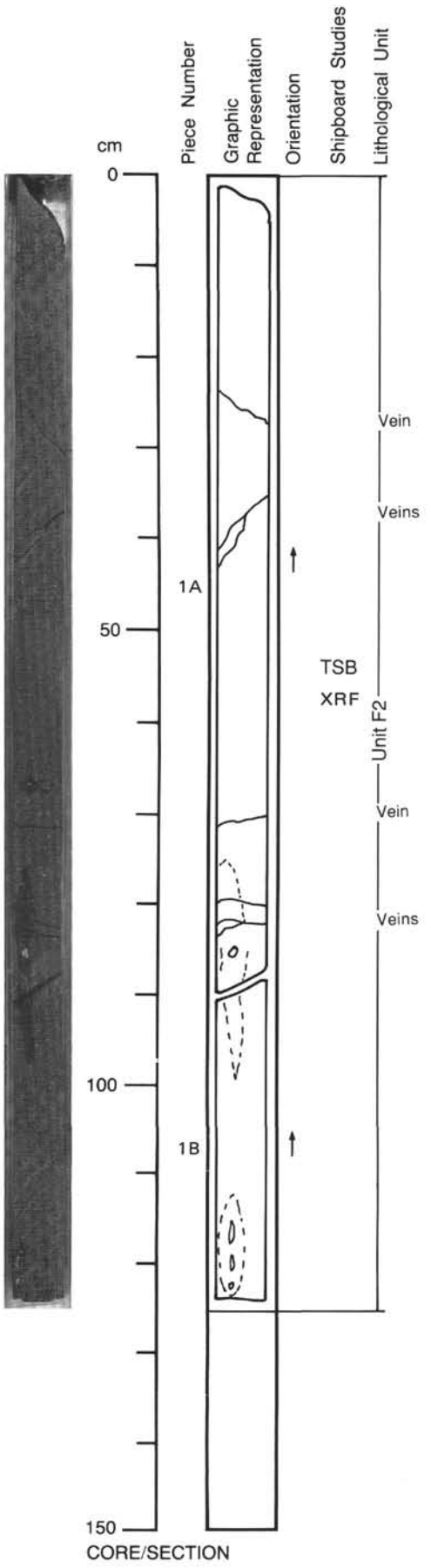
CURATED LENGTH: 73 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-5 and continues into Section 121-758A-59R-7, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

GROUNDMASS: *The groundmass grain size is markedly smaller than in* 121-758A-59R-5.

VESICLES: 1 cm diameter, calcite-filled vesicle at 50 cm in Piece 1A.

VEINS/FRACTURES: The following veins occur in 121-758A-59R-6: Piece 1A/1B, 55 cm black smectite-lined fracture.



121-758A-59R-7

UNIT F2: APHYRIC BASALT (Cont.).

PIECES: 1A and 1B.

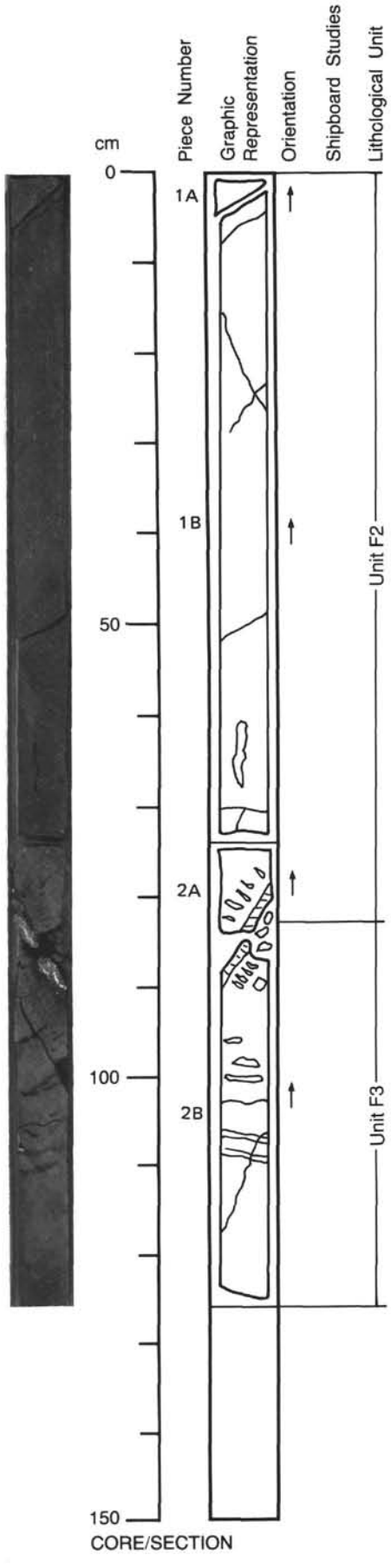
CURATED LENGTH: 123 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-6 and continues into Section 121-758A-60R-1, without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments:

GROUNDMASS: The groundmass grain size is markedly smaller than in 121-758A-59R-6 as the boundary of Unit F2 is approached.

VESICLES: Occasional calcite or green black smectite-filled vesicles in lower part of Piece 1A and in Piece 1B. Vesicles are associated with gray haloes in the groundmass. A large vertical vesicle pipe occurs in the core between 75 and 95 cm. This is more a string of smaller (5-15 mm) smectite filled cavities than a single pipe vesicle.

VEINS/FRACTURES: The following veins occur in 121-758A-59R-7: Piece 1A, 25 cm black smectite 1 mm 50 degrees. Piece 1A, 35 cm black smectite 3 mm 40 degrees. Pieces 1A, 71 cm black smectite 1 mm 0 degrees. Piece 1A, 80-82 cm black smectite 1 mm 5 degrees.



121-758A-60R-1

UNIT F2: APHYRIC BASALT (Cont).

PIECES: 1A to 2A.

CURATED LENGTH: 85 cm.

COMMENTS: Unit F2 extends from Section 121-758A-59R-7 without loss of material. The general description of Unit F2, given for Section 121-758A-58R-1, applies to this Section with the following additional comments.

CONTACTS: The lower contact of Unit F2 is a complex zone which forms the boundary between Pieces 2A and 2B. This zone, which dips at about 60 degrees, is marked by calcite/smectite alteration. The grain size in unit F2 above the boundary increases away from contact, from cryptocrystalline at the contact to microcrystalline in Piece 2A, to fine grained in Piece 1A, with obvious plagioclase phenocrysts in a fine-grained groundmass. A 1 cm pumice rich ash layer separates Unit F2 from the underlying unit F3. The ash is dark greenish gray (5G 4/1) with a white(10YR 8/1) mineral infilling (ankerite?). Fragments of basalt also occur within the tuff. The latter is in intimate contact with the underlying unit F3. This lower unit is upwardly chilled. See also below under VESICLES.

PHENOCRYSTS: Plagioclase, 1 to 5 mm, euhedral to subhedral. The abundance is variable, ranging from <1% in Piece 1A and the upper 50 cm of Piece 1B to between 2 and 3% from 55 to 83 cm (crystal settling?), just above the unit contact.

GROUNDMASS: Fine grained in Piece 1A and top of 1B, grading to microcrystalline from 60 to 85 cm to cryptocrystalline at the contact.

COLOR: Dark gray 2.5YR N4/0 to very dark gray 2.5YR N3/0 near contact.

VESICLES: A line of elongate vesicles (5 - 15 mm) occur just above the contact. The vesicles, now filled with black smectite, are elongate normal to the contact and strikingly similar to radial vesicles at the quenched margins of pillows in the lower part of Hole 758A. These elongate vesicles are not vertical.

ALTERATION: Slight to moderate when there are veins and vesicles.

VEINS/FRACTURES: Several 1-2 mm veins occur as elongated ovoid patches oriented perpendicular to the contact (Piece 2A). The veins are filled with black smectites and some sulfides.

UNIT F3: APHYRIC BASALT (Unit extends from Piece 2B, 85 cm, through the rest of Core 60 (121-758A-60R-1 to -7), the whole of Core 61 (121-758A-61R-1 to -7) and ends in 121-758A-62R-1, Piece 3).

PIECES: Piece 2B.

CURATED LENGTH: 42 cm. The total curated length of Unit F3 is 16.39 m.

CONTACTS: Piece 2B is conspicuously quenched with a microcrystalline upper surface in contact with the 1 cm ash layer.

PHENOCRYSTS: Plagioclase, <1%, 1-2 mm, subhedral.

GROUNDMASS: Microcrystalline, near contact to fine grained in lower 20 cm of Piece 2B.

COLOR: Very dark gray (2.5YR N4/0) near contact to dark gray (2.5YR N3/0) in lower 20 cm of Piece 2B.

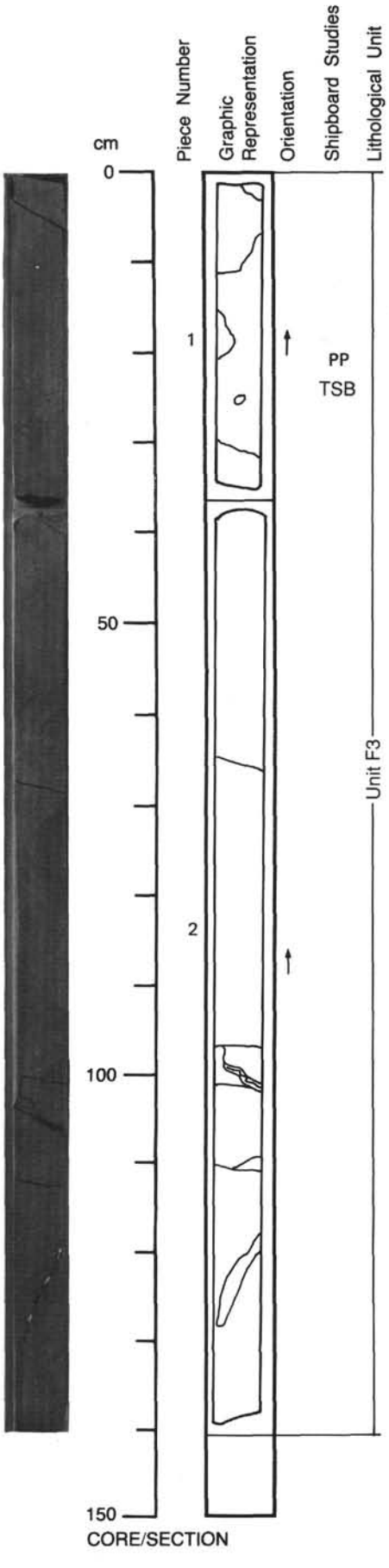
VESICLES: Rounded, <1%, black smectite fillings. Elongate ovoid patches or amygdales of black smectites, up to 1 cm in length, are oriented perpendicular to the contact. (See comments on basal part of Unit F2).

STRUCTURE: Thick flow or sill.

ALTERATION: On average, slight but moderate in patches within 25 cm of contact.

VEINS/FRACTURES: Several horizontal veins (1-5 mm) of black smectites, some with 1-3 cm localized calcite patches in the ash near the contact. Elongate ovoid patches of amygdales of black smectites, up to 1 cm in length and oriented perpendicular to the contact.

COMMENTS: Unit F3 continues in 121-758A-60R-2.



121-758A-60R-2

UNIT F3: APHYRIC BASALT (Cont.).

PIECES: 1A - 2A.

CURATED LENGTH: 141 cm.

COMMENTS: Unit is as described for 121-758A-60R-1 except as noted below.

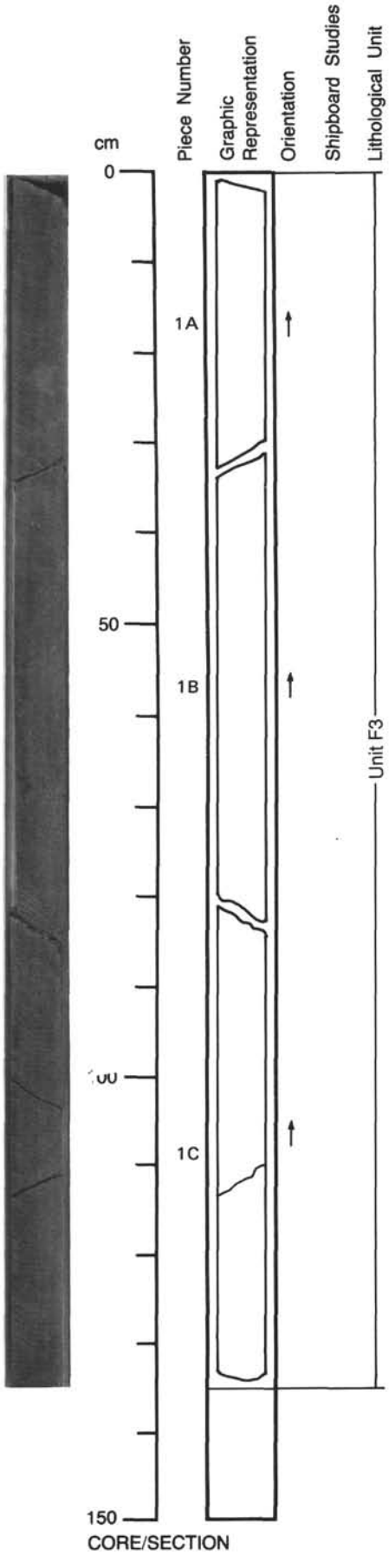
GROUNDMASS: Clinopyroxene (1-2 mm), increases in size down the section. Large grains make up about 10% in Piece 2.

VESICLES: <1%, one in Piece 1, 2-4 mm with a calcite center and black smectites rim.

ALTERATION: Smectite along the whole section.

VEINS/FRACTURES: Majority about 1 mm, black smectites. Plus, a 1 cm, greasy, black smectite vein in Piece 2 at 103 cm where the Piece broke and 3 mm smectite vein from 118 to 128 cm which has locally patches (2-5 mm) of calcite in the center of the vein.

COMMENTS: Unit F3 continues in 121-758A-60R-3.



121-758A-60R-3

UNIT F3: APHYRIC BASALT (Cont.) grading to MEDIUM-GRAINED BASALT as pyroxene increases in size.

PIECES: 1A - 1C.

CURATED LENGTH: 135 cm.

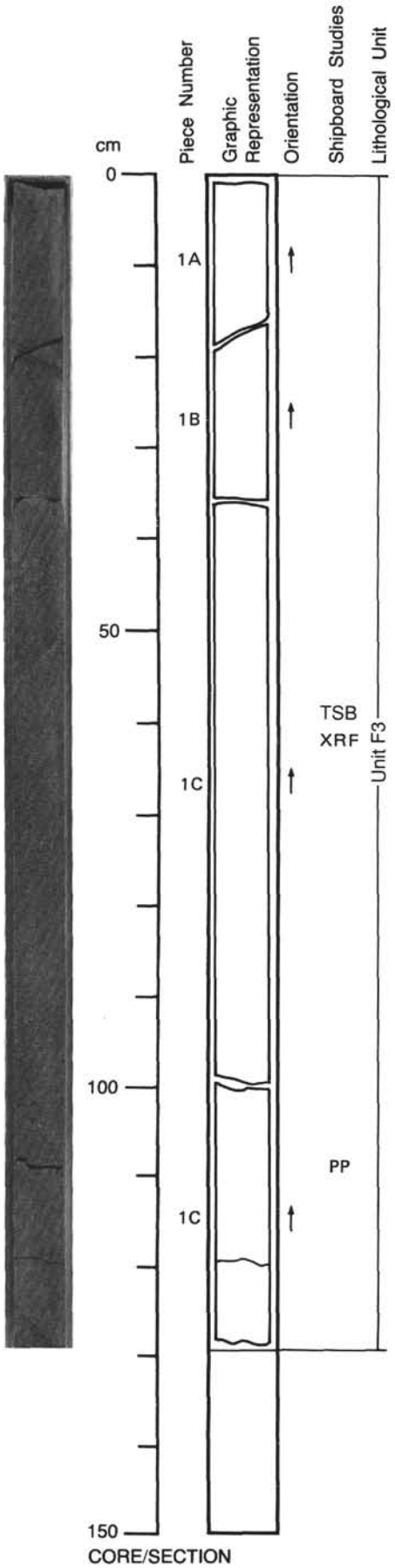
COMMENTS: Unit is as described for 121-758A-60R-1 except as noted below.

GROUNDMASS: Clinopyroxene, 1-2 mm, becomes larger in size than in 121-758A-60R-2 and makes up 20-40% (average 30%) and appears altered to smectite.

ALTERATION: Moderate.

VEINS/FRACTURES: Pieces 1A and 1B broke along a 1 mm dark smectite vein with minor calcite, with 5 mm patches of sulfide.

COMMENTS: Unit F3 continues in 121-758A-60R-4.



121-758A-60R-4

UNIT F3: COARSE-GRAINED BASALT (Cont.).

PIECES: 1A - 1D.

CURATED LENGTH: 129.5 cm.

COMMENTS: Unit is as described for 121-758A-60R-1 except as noted below.

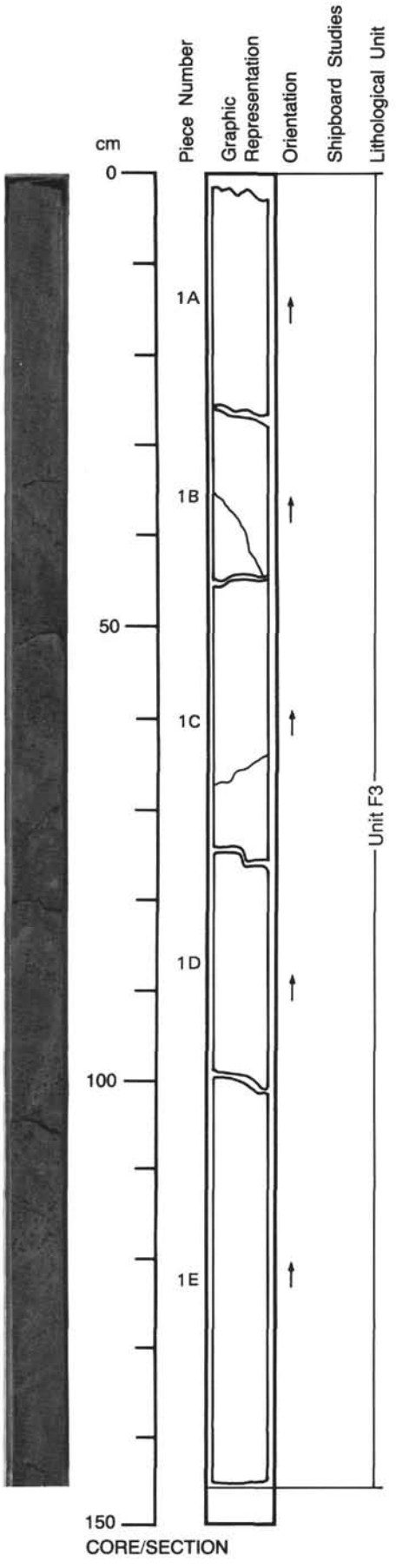
GROUNDMASS: Pyroxenes are larger, 1-4 mm, and remain at about 30% in abundance. They appear altered to smectite.

VESICLES: 103-115 cm, several 1-3 cm irregular ovoid amygdales of calcite surrounded by dark smectites.

ALTERATION: Moderate, and more intense around the areas where there are veins and vesicles.

VEINS/FRACTURES: Dark, black, smectite vein at 120 cm.

COMMENTS: Unit F3 continues in 121-758A-60R-5.



121-758A-60R-5

UNIT F3: COARSE-GRAINED BASALT (Cont.).

PIECES: 1A - 1E.

CURATED LENGTH: 145 cm.

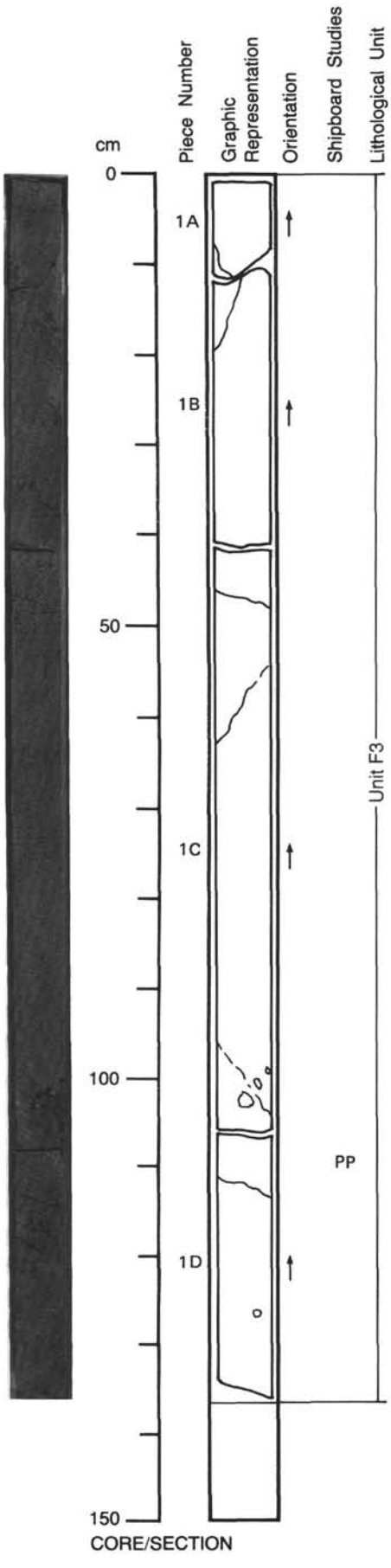
COMMENTS: Unit is as described for 121-758A-60R-1 except as noted below.

GROUNDMASS: Pyroxenes are up to 4 mm, euhedral shape and showing ophitic texture, surrounding and including smaller plagioclase laths.

VESICLES: 5-10 mm irregular vesicles filled by brown black smectites make up 10% of the rock. These are more concentrated in zones at 45-60, 80-87 and 97-118 cm.

VEINS/FRACTURES: Piece 1B, thick dark brown, black smectites vein and Piece 1C, black smectites vein (1-2 mm thick).

COMMENTS: Unit F3 continues in 121-758A-60R-6.



121-758A-60R-6

UNIT F3: COARSE-GRAINED BASALT (Cont.).

PIECES: 1A - 1D.

CURATED LENGTH.H: 136 cm.

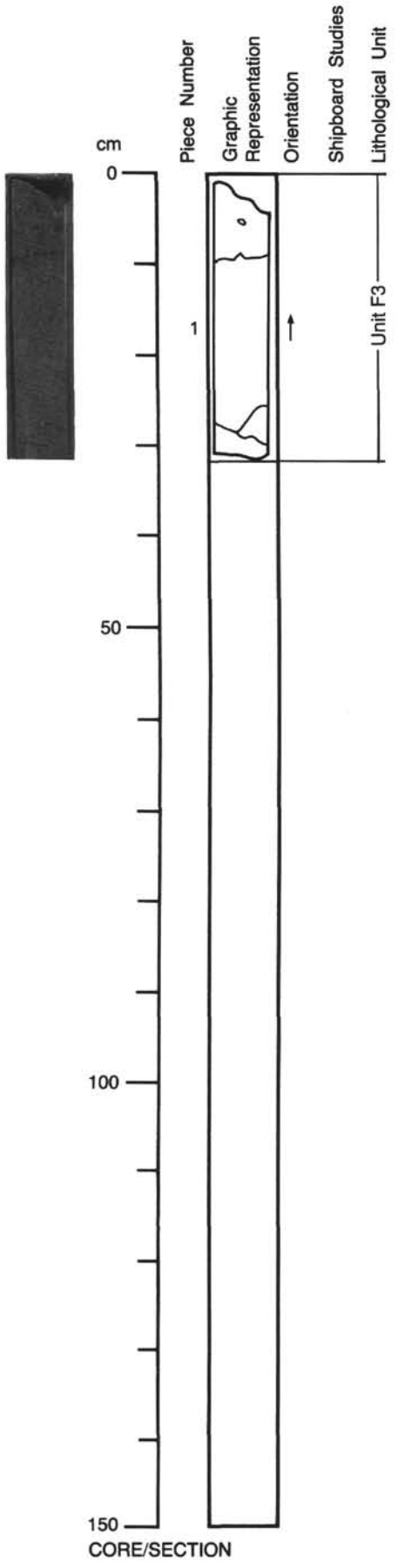
COMMENTS: Unit is as described for 121-758A-60R-1 except as noted below.

GROUNDMASS: Grain size remains similar to 121-758A-60R-5, pyroxenes 0.5 to 4 mm in a finer-grained groundmass with larger amygdales.

VESICLES: Locally make up to 10% of the rock between 13-20 cm, 33-45 cm, and 98-102 cm. The vesicles are 0.3 to 0.6 cm and have black smectites with calcite and iron oxides.

VEINS/FRACTURES: Piece 1A and 1B show a thin (1-2 mm) vein with smectites (black), or smectites and calcite and sulfide. There is also a thin (<1 mm) black veinlet between 100-102 cm.

COMMENTS: Unit F3 continues in 121-758A-60R-7.



121-758A-60R-7

UNIT F3: COARSE-GRAINED BASALT (Cont.).

PIECES: 1.

CURATED LENGTH: 32 cm.

COMMENTS: Unit is as described for 121-758A-60R-1 except as noted below.

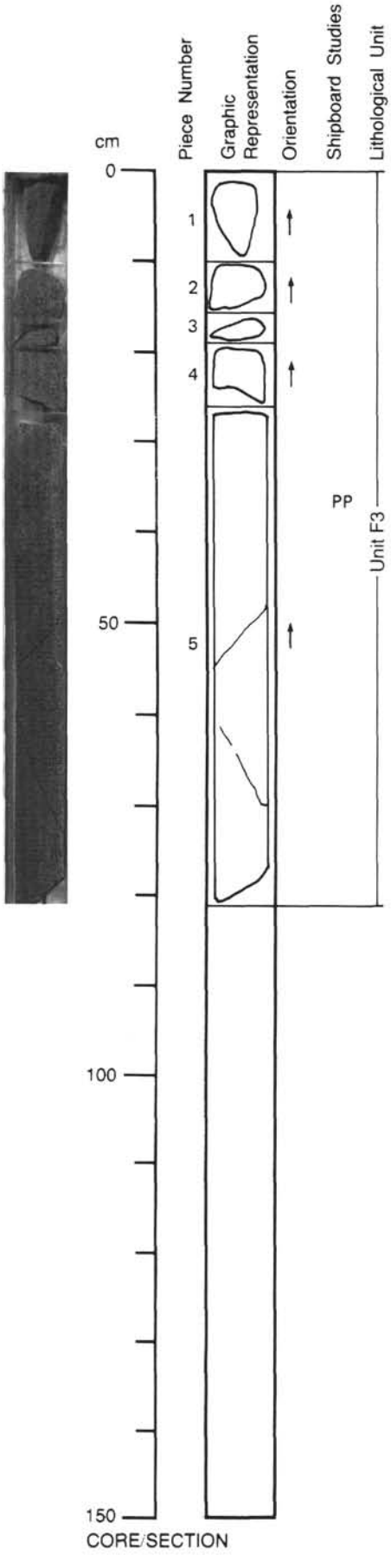
GROUNDMASS: No change in grain size.

VESICLES: Calcite and smectite filled vesicles up to 5 mm.

ALTERATION: Moderate.

VEINS/FRACTURES: Small veinlets, 1-2 mm thick, with a black appearance (the differences of colors are enhanced when the basalt is wet), and these veins appear to be an association of smectites (dark green) and a white mineral (no reaction to HCl) = zeolites(?) with some sulfide (pyrite).

COMMENTS: Unit F3 continues in 121-758A-61R-1.



121-758A-61R-1

UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

PIECES: 1 to 5.

CURATED LENGTH: 82 cm.

COMMENTS: Unit F3 extends from Section 121-758A-60R-7 and continues into Section 121-758A-61R-2, without loss of material. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

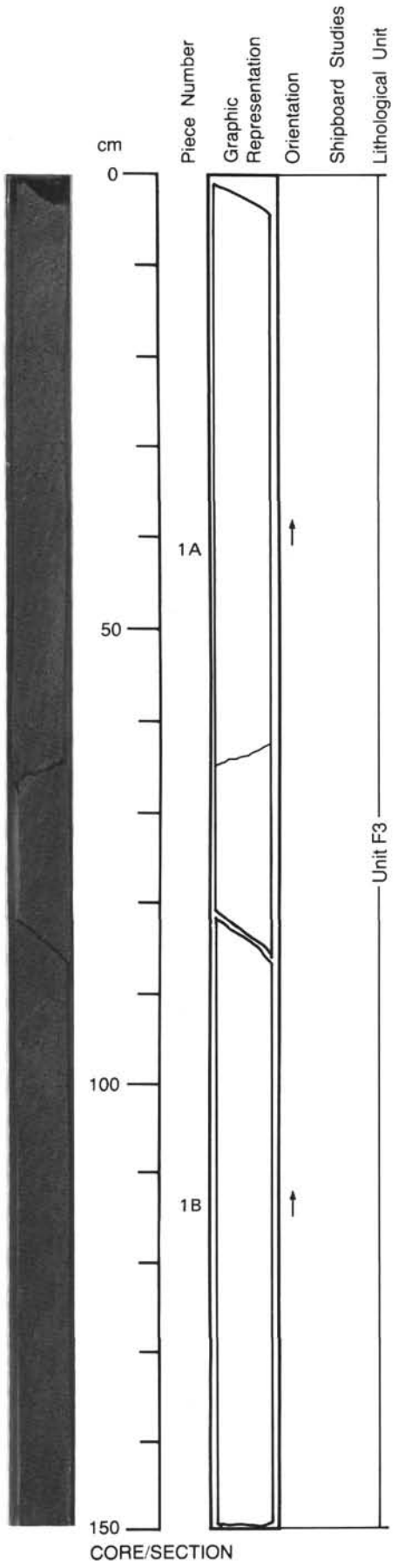
GROUNDMASS: About 25% is composed of irregular very dark gray patches. The 0.5-2 mm size range is clinopyroxene. The larger patches (2-5 mm) are smectite patches some with radial cracks, some with sulfide blobs.

COLOR: Gray (2.5YR N5/0) to very dark gray (2.5YR N3/0).

STRUCTURE: Thick flow or sill.

ALTERATION: Moderate, increasing with the proportion of smectite.

VEINS/FRACTURES: The following veins occur in 121-758A-61R-1: Vein at 50-55 cm has calcite and sulfides irregularly distributed in vein center. Vein at 60-72 cm has 3 1-2 mm segments filled with sulfides.



121-758A-61R-2

UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

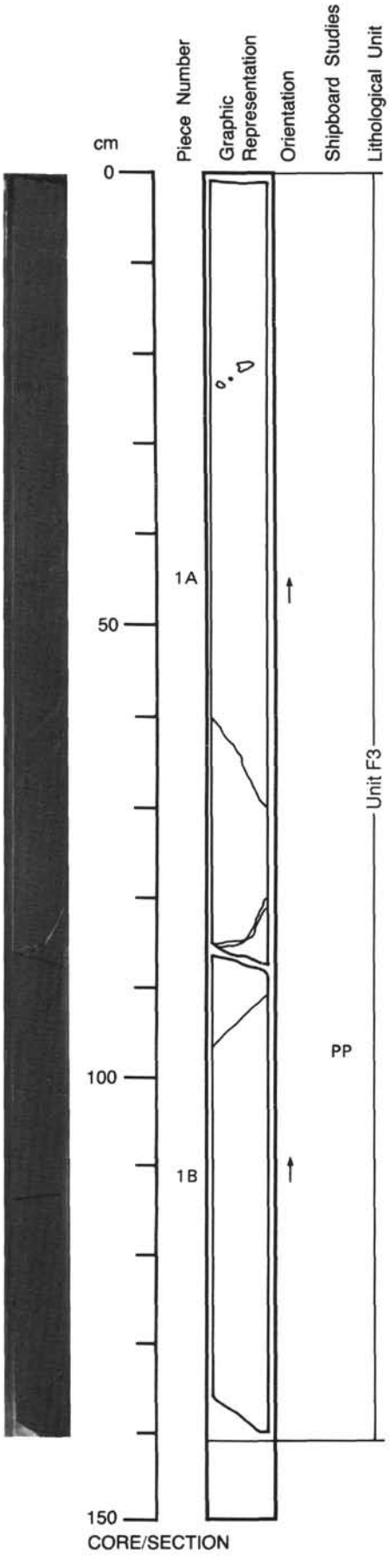
PIECES: 1A and 1B.

CURATED LENGTH: 151 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-1 and continues into Section 121-758A-61R-3, without loss of material. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

PHENOCRYSTS: Rare plagioclase (<1%).

VEINS/FRACTURES: Vein at 65 cm contains 1 mm sulfide patches. Fracture between Pieces 1A and 1B has sulfide patches on the surface.



121-758A-61R-3

UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

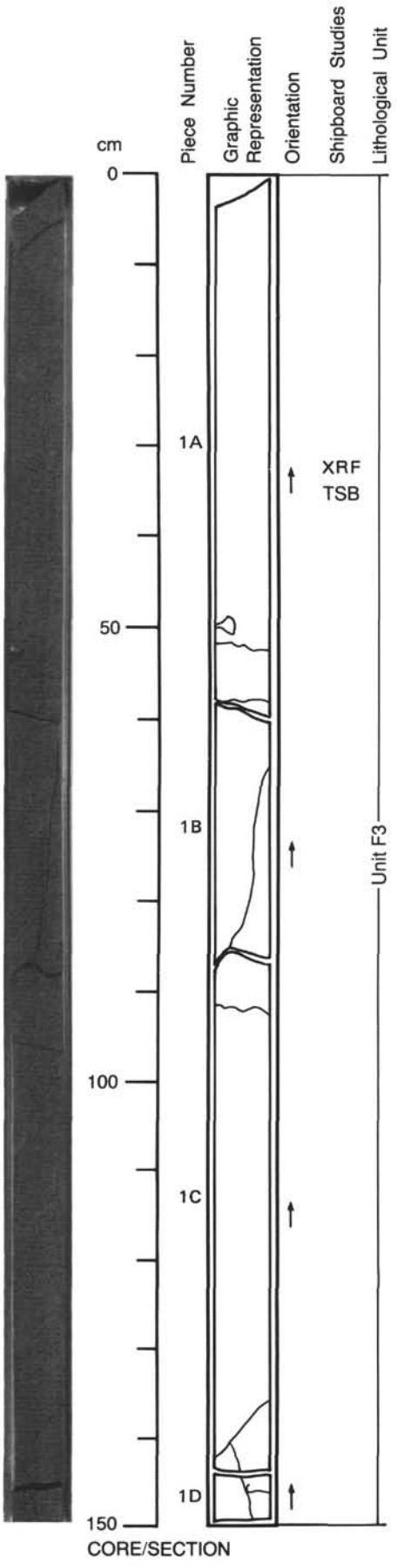
PIECES: 1 only.

CURATED LENGTH: 141 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-2 and continues into Section 121-758A-61R-4, without loss of material. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

VESICLES: A 5-7 mm vesicle containing calcite and smectite occurs at 22 cm.

VEINS/FRACTURES: Vein at 80-85 cm. 3 mm wide with calcite. Other thin veins contain smectite and pyrite patches.



121-758A-61R-4

UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

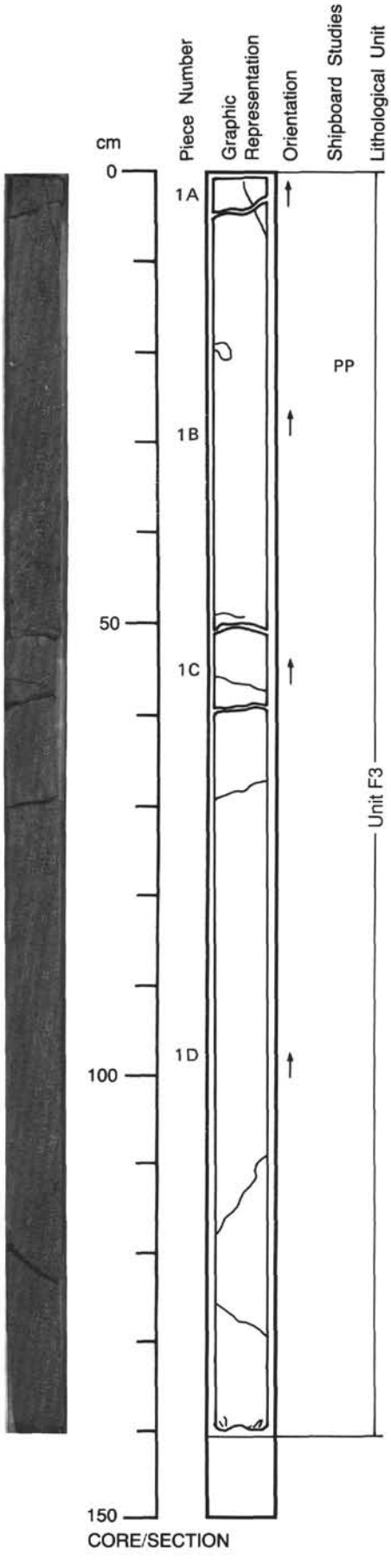
PIECE: 1.

CURATED LENGTH: 149 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-3 and continues into Section 121-758A-61R-5, without loss of material. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

VESICLES: A cavity filling at 50 cm, about 1 cm in diameter, is pinkish white, probably chalcedony.

VEINS/FRACTURES: All veins are black smectite with abundant sulfide, 1-3 mm segments.



121-758A-61R-5

UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

PIECES: 1A and 1B.

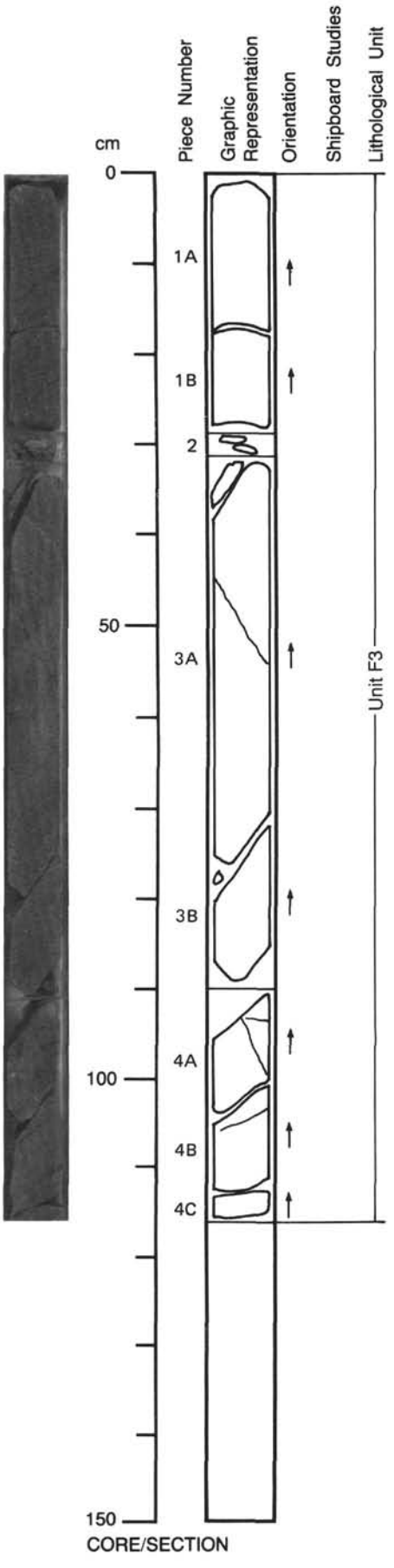
CURATED LENGTH: 140 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-4 and continues into Section 121-758A-61R-6, without loss of material. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

GROUNDMASS: A slight decrease in size occurs in Piece 1B, with a further decrease obvious in Section 121-758A-61R-6.

VESICLES: Cavity 0.7 cm filled with white gray chalcedony(?) occurs at 20 cm.

VEINS/FRACTURES: Veins at 110-120 cm and 125-130 cm in Piece 1B have 0.5 mm smectite borders with calcite centers plus sulfide patches.



121-758A-61R-6

UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

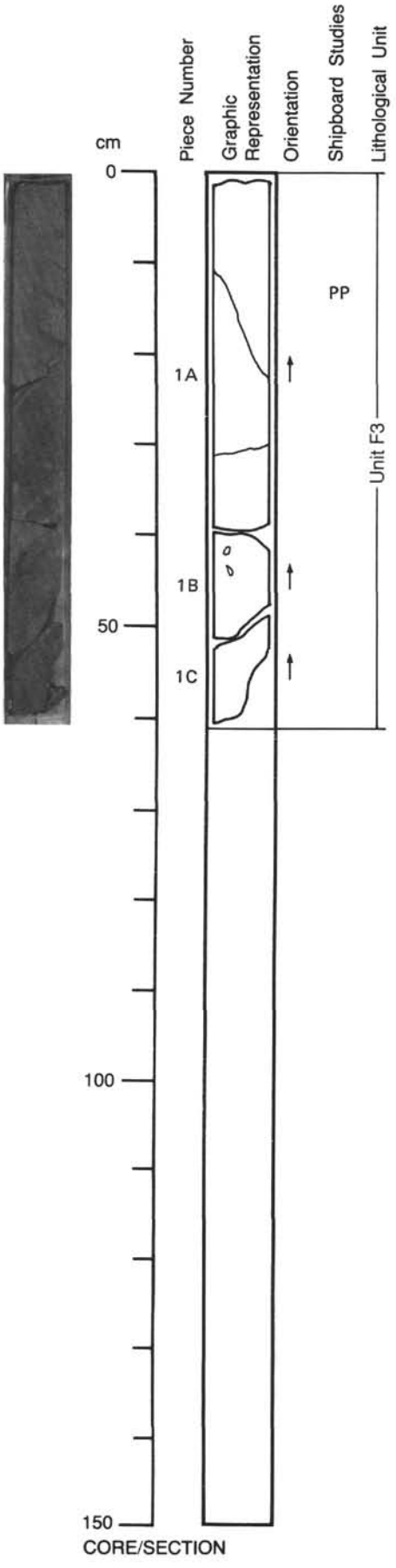
PIECES: 1A to 4C.

CURATED LENGTH: 117 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-5 and continues into Section 121-758A-61R-7, without loss of material. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

GROUNDMASS: Beginning in Piece 3A and markedly in Pieces 4A, 4B and 4C, the dark gray pyroxenes and the vesicles decrease in size from >2 mm to generally less than 1.5 mm. This decrease is patchy and variable in Pieces 4A, 4B, and 4C. The feldspar grain size change is much less.

VEINS/FRACTURES: Mostly thin <1 mm smectite with sulfide patches. Vein at 32-38 cm (Piece 3) is 4 mm wide and contains soft greasy black material.



121-758A-61R-7

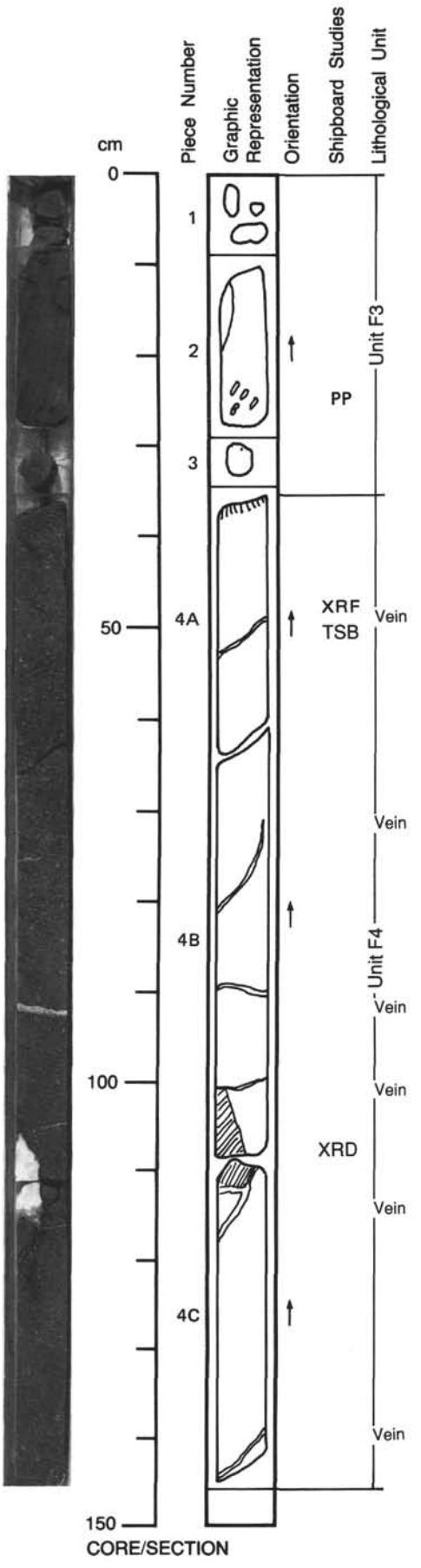
UNIT F3: MEDIUM-GRAINED BASALT (Cont.).

PIECES: 1A to 1C.

CURATED LENGTH: 61 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-6 and continues into Section 121-758A-62R-1, where the unit ends. The general description of Unit F3, given for Section 121-758A-60R-1, applies to this Section with the following additional comments.

GROUNDMASS: The dark gray pyroxenes and the vesicles decrease in size to less than 1.5 mm with portions of the core where the majority are less than 1 mm.



121-758A-62R-1

UNIT F3: APHYRIC BASALT (Cont.).

PIECES: 1 to 3.

CURATED LENGTH: 34 cm.

COMMENTS: Unit F3 extends from Section 121-758A-61R-7 and terminates in this Section. The general description of Unit F3, given for Section 121-758A-60R-1, applies this section with the following additional comments.

CONTACTS: The lower contact of Unit F3 is between Pieces 3 and 4A.

GROUNDMASS: Fine-grained dark gray basalt with trace amounts of plagioclase microphenocrysts. Elongate vesicles (20 mm x 4 mm) filled with dark gray smectite, aligned at a dip of 70 degrees (cf upper contact).

UNIT F4: MODERATELY TO HIGHLY PLAGIOCLASE-PHYRIC BASALT(121-758A-62R-1, Piece 4A to 121-758A-62R-3, Piece 3).

PIECES: 4A to 4C.

CURATED LENGTH: 113 cm. Total curated length of Unit F4 = 3.05 m.

CONTACTS: Upper contact of Unit F4 is at the top of 121-758A-62R-1, Piece 4A, and is marked by a thin (about 8 mm) black, greasy mineral with fluted conchoidal fracture. Soft. Probably a glass selvage now replaced by clays. Dip about 15 degrees. Plagioclase phenocrysts are present in this selvage. Lower contact is marked by the presence (121-758A-62R-3, Piece 3) of black altered glass adjacent to porphyritic basalt.

PHENOCRYSTS: Plagioclase, 1-10 mm, subhedral phenocrysts. Approximately 10% near contact, increasing to 25-30% in Sections 121-758A-62R-2 and -3. Zone adjacent to lower. contact has 15% phenocrysts. Most have darker patchy cores suggesting replacement by clay. Also 1% olivine phenocryst pseudomorphs.

GROUNDMASS: Fine grained, comprising plagioclase and black pyroxene. Ranges in texture from cryptocrystalline (glassy) at the contacts to microcrystalline to fine grained at the center.

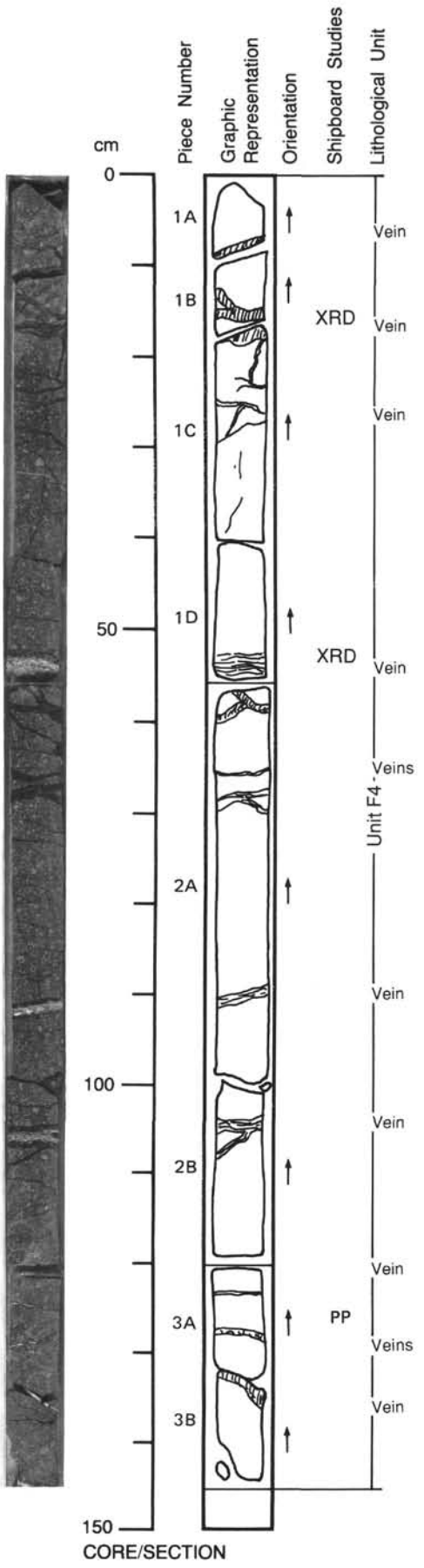
COLOR: Dark gray (2.5YR 4/0) with faint green tint in vesicle rich areas.

VESICLES: In 121-758A-62R-1, Pieces 4A and 4B, (about 37-90 cm) vesicle content increases from about 5% adjacent to contact, to approximately 10% at 60 cm, beginning to fall to 5% by 90 cm. Vesicles spherical, 1-2 mm, rarely 3 mm, all filled with pale green and blue green smectite. Rarely filled with calcite. Below 121-758A-62R-1, 90 cm, vesicle content drops to 1-2% (possibly smaller vesicles are masked or lost by higher degree of crystallinity). Large vug (121-758A-62R-1), 104-113 cm, filled with two white minerals and chlorite.

ALTERATION: Slight to moderate. 10% clay minerals (green smectite) in groundmass. Some large vesicle infillings (see above). Some calcite + smectite fracture fillings (see below). Total replacement of glassy salvages by black green clay minerals.

STRUCTURE: Selvages suggest rapid chilling. General absence of large vesicles suggest high confining pressure. Massive subaqueous flow or sill.

VEINS/FRACTURES: Section 121-758A-62R-1: Piece 4B, 40 cm, network of 1 mm smectite filled veins. 53 cm calcite + smectite 3 mm 15 degrees. 70 cm calcite + smectite 0-3 mm 70 degrees. 90 cm calcite 8 mm 5 degrees. 103 cm calcite 2 mm 5 degrees. 142 cm calcite + smectite 5 mm 30 degrees. Most smectite in veins is fibrous.



121-758A-62R-2

UNIT F4: MODERATELY TO HIGHLY PLAGIOCLASE-PHYRIC BASALT

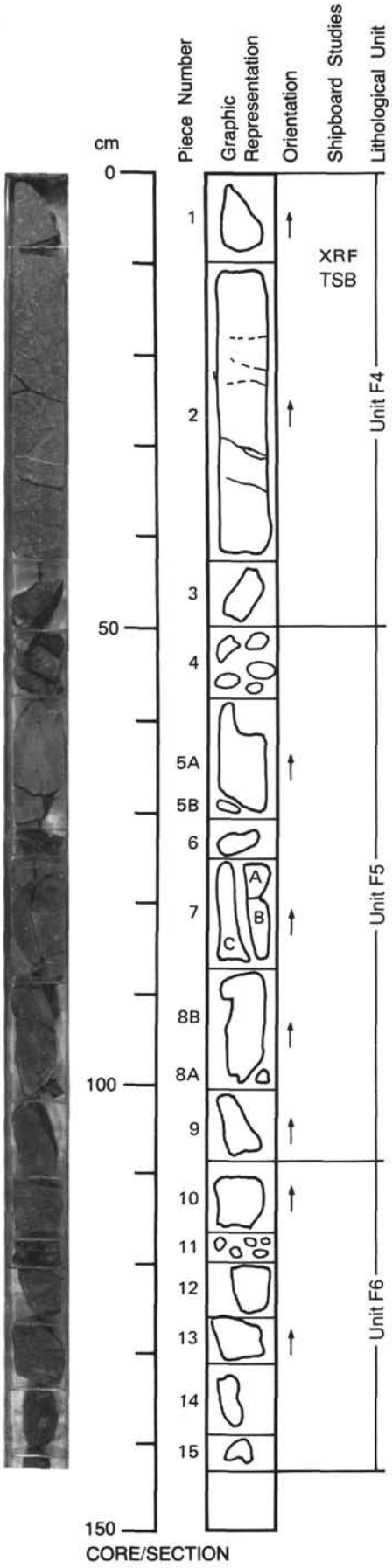
PIECES: 1A to 3B.

CURATED LENGTH: 145 cm.

COMMENTS: Unit F4 extends from Section 121-758A-62R-1 and continues in Section 121-758A-62R-3. The general description of Unit F4, given for Section 121-758A-62R-1, applies to this section with the following additional comments.

PHENOCRYSTS: Proportion (up to 30%) and size (up to 10 mm) of plagioclase phenocrysts greater than in Section 121-758A-62R-1.

VEINS/FRACTURES: This Section is heavily veined. Piece 1B, 13-17 cm, dark green clayey vein filling, 5-20 mm wide, with calcite stringers, sub-horizontal; Piece 1B, 20-30 cm, numerous dark green smectite filled veins, one calcite vein; Piece 1B, 52-55 cm, 30 mm wide vein of dark green smectite and calcite an anastomizing veinlets; Piece 1B, 52-55 cm, 30 mm wide dark green smectite veins all sub-horizontal; Piece 2A, 90-92 cm, 10-20 mm veins of anastomizing calcite and dark green smectite; Piece 2B, 104-106 cm, 10-20 mm veins of anastomizing calcite and dark green smectite; Piece 3A and 3B numerous calcite stringers 1-3 mm. 1-3 mm.



121-758A-62R-3

UNIT F4: MODERATELY TO HIGHLY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1 to 3.

CURATED LENGTH: 49 cm.

COMMENTS: Unit F4 extends from Section 121-758A-62R-1 but ends at the bottom of Piece 3 in this Section. The general description of Unit F4, given for Section 121-758A-62R-1, applies to this section with the following additional comments.

PHENOCRYSTS: Proportion of plagioclase phenocrysts falls to about 10% near bottom contact.

GROUNDMASS: Piece 3 and perhaps some fragments in Piece 4 are altered black green smectite after glass.

VEINS/FRACTURES: This Section is heavily veined with numerous 1-2 mm wide veins of calcite and fibrous green smectite/chlorite.

UNIT F5: SPARSELY PLAGIOCLASE-PHYRIC BASALT (121-758A-62R-3,Pieces 4-9).

PIECES: 4 - 9.

CURATED LENGTH: 0.60 m (= total curated length of Unit F5).

CONTACTS: Not seen.

PHENOCRYSTS: Plagioclase 0.5-2 mm; glomerophyric clusters, about 5%.

GROUNDMASS: Very fine grained, clinopyroxene and plagioclase microlites.

COLOR: Dark gray or very dark gray (5Y 3/1).

VESICLES: 2% large, 5-10 mm irregular cavities filled with amorphous green smectite.

STRUCTURE: Flow or sill.

ALTERATION: Moderate with replacement of groundmass by smectite.

VEINS/FRACTURES: A few 1-2 mm veins with smectite chlorite.

COMMENTS: This unit may be the chilled marginal part of the underlying Unit F6.

UNIT F6: APHYRIC BASALT (121-758A-62R-3, Piece 10 to 121-758A-62R-4, Piece 3).

PIECES: 10 - 15.

CURATED LENGTH: 33 cm = total curated length of Unit F6.

CONTACTS: Not seen.

PHENOCRYSTS: None.

GROUNDMASS: Fine-grained clinopyroxene and plagioclase, with mottled appearance (like in Units F2 and F3) due to segregation of the mesostasis which is now replaced by dark green chlorite/smectite.

COLOR: Medium to dark gray (5Y 4/1).

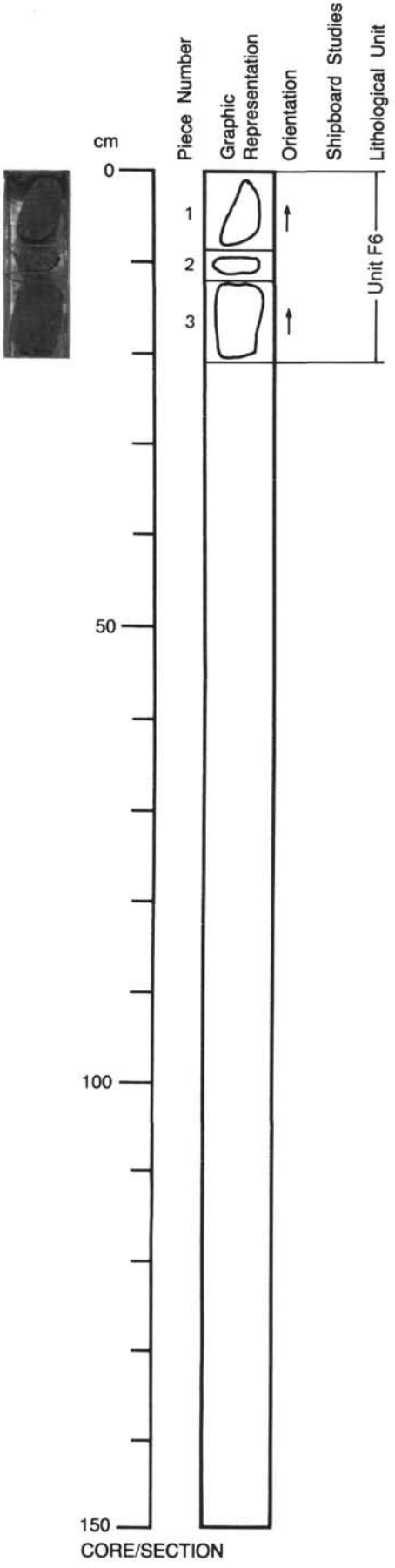
VESICLES: Few (<3%).

STRUCTURE: Uniform, flow, or sill.

ALTERATION: High. Pervasive alteration of the groundmass to chlorite/smectite. In addition <1% 0.5-1 mm pyrite crystals.

VEINS/FRACTURES: Occasional smectite-filled veinlets.

COMMENTS: Unit F6 extends into Section 121-758A-62R-4.



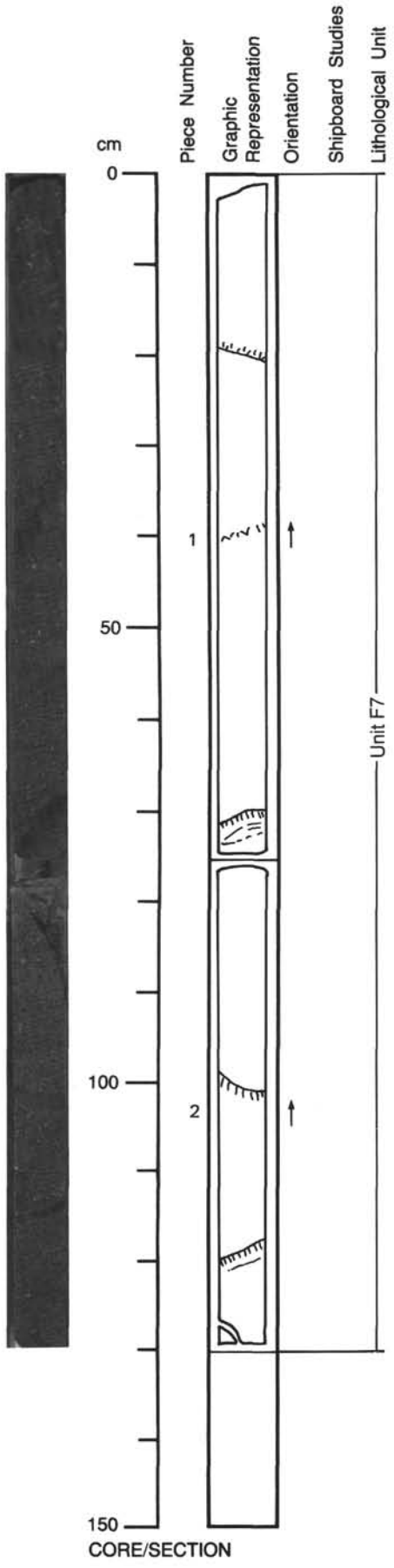
121-758A-62R-4

UNIT F6: APHYRIC BASALT (Cont.).

PIECES: 1 - 3.

CURATED LENGTH: 21 cm.

COMMENTS: Description of Unit F6, given for Section 121-758A-62R-3, applies to these Pieces. See comments on contact relations for Section 121-758A-62R-3, Unit F5.



121-758A-63R-1

UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (121-758A-63R-1, Piece 1 to 121-758A-64R-2, Piece 1B).

PIECES: 1 and 2.

CURATED LENGTH: 132 cm. Total curated length of Unit F7 = 12.73 m.

CONTACTS: This may be the same Unit as F5 in 121-758A-62R-3. 0-20 cm of Piece 1 is a fine-grained vesicular and clay-rich zone suggestive of a chilled internal contact at 20 cm, with a progressive upward increase in grain size. Other internal contacts are indicated in the graphic representation by a line with hatch marks on the quenched side with progressive increase in grain size away from the line on the side of the hatch marks. These internal contacts do not appear to represent marked lithological breaks and are not used to subdivide the unit. Internal contacts at 20 cm, 39 cm, 70 cm, 102 cm, 114 cm. In most cases the facing direction of the contact is such that the grain size increases downwards.

PHENOCRYSTS: Plagioclase about 4%, 1-5 mm decreasing down unit (almost disappears in Section 121-758A-63R-5).

GROUNDMASS: Microcrystalline in 63R-1, 0-20 cm and adjacent to the internal contacts through the core; otherwise fine to medium grained. Plagioclase and clinopyroxene, becoming hyalophitic in the coarser parts of the flow.

ALTERATION: Very comparable to Units F2 and F3 with black smectite patches after clinopyroxene and/or mesostasis. Very smectite-rich in 121-758A-63R-1, 0-20 cm. 1-2% pyritic clusters throughout.

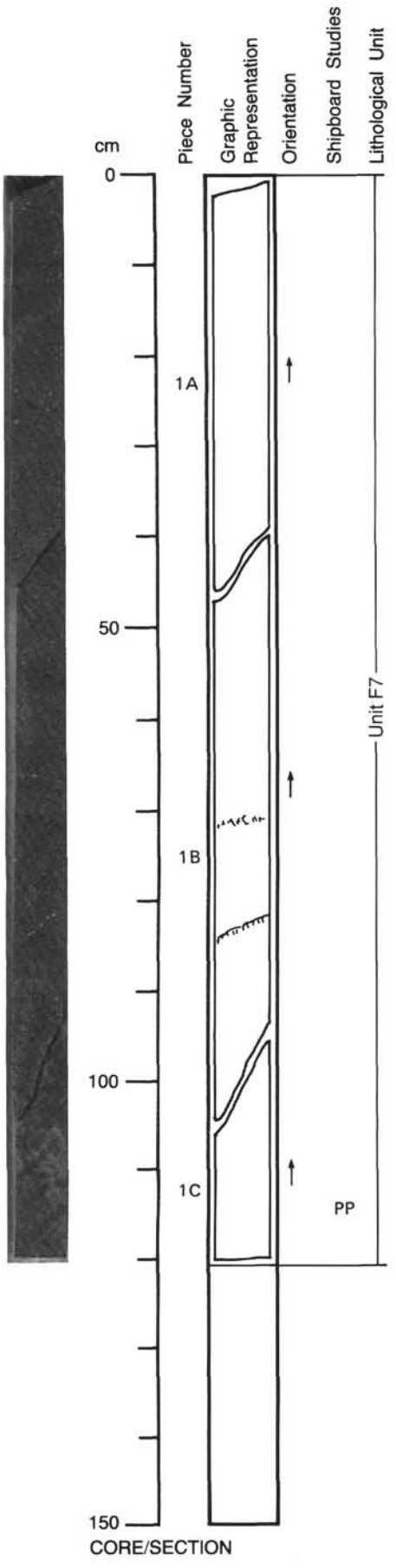
COLOR: Dark gray (5Y 3/1).

VESICLES: <2% through most of Unit, but the chilled internal contacts are associated with 10-20% large (up to 10 mm) irregular vesicles filled with gray brown smectite.

STRUCTURE: Massive flow or sill. No obvious brecciated top, internal contacts with upwards chilling (except at 121-758A-63R-1, 20 cm) implying central multiple injections of magma. Few vesicles. No oxidized zones. Thick nature of the Unit (>10 m).

VEINS/FRACTURES: 1 mm black, chlorite smectite vein in Piece 1, sub-vertical.

COMMENTS: Unit F7 extends into Section 121-758A-63R-2.



121-758A-63R-2

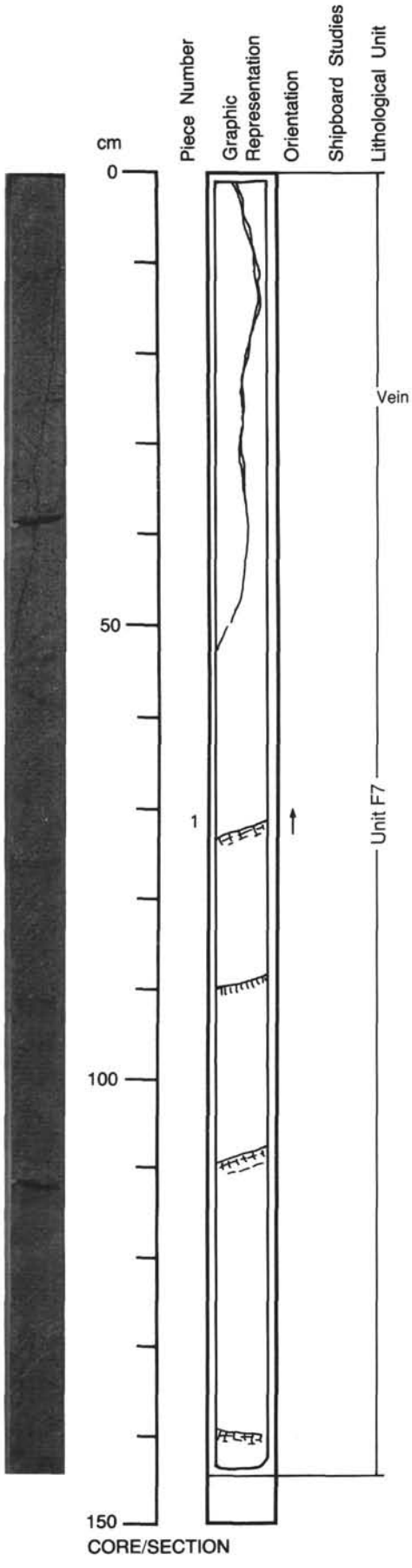
UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

PIECES: 1A - 1C.

CURATED LENGTH: 121 cm.

COMMENTS: Unit F7 extends from Section 121-758A-63R-1 and continues into Section 121-758A-63R-3, without loss of material. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this Section with the following additional comments.

CONTACTS: Faint internal contacts in Piece 1B at 72 and 86 cm.



121-758A-63R-3

UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

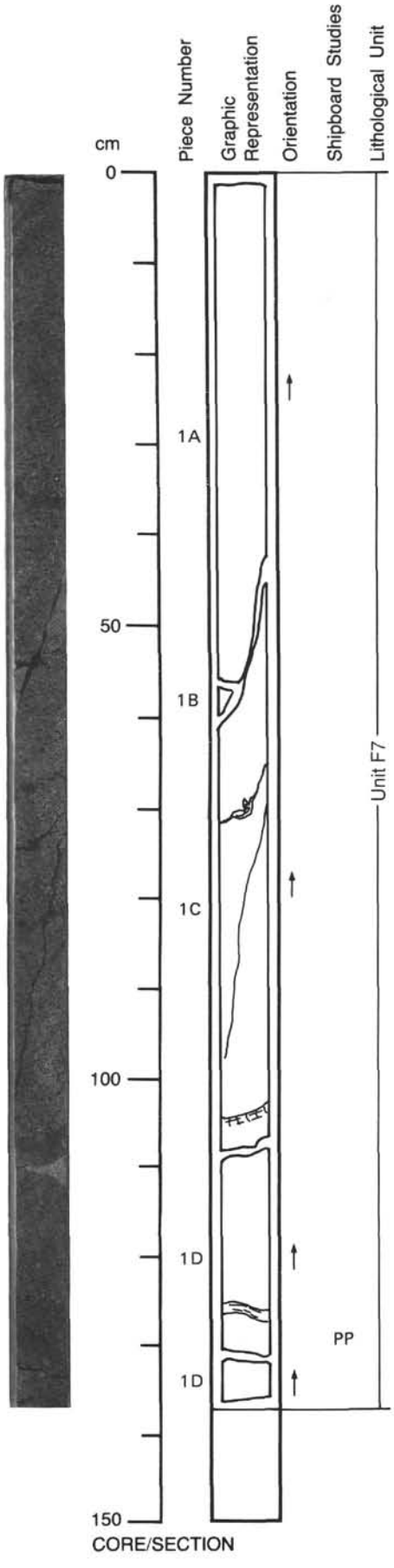
PIECE: 1 only.

CURATED LENGTH: 143 cm.

COMMENTS: Unit F7 extends from Section 121-758A-63R-2 and continues into Section 121-758A-63R-4, without loss of material. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this Section with the following additional comments.

CONTACTS: Faint internal contacts in Piece 1 at 75, 90, 110,and 139 cm.

VEINS: 1-2 mm chlorite/smectite vein, sub-vertical between 0 and 52 cm.



121-758A-63R-4

UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

PIECES: 1A - 1D.

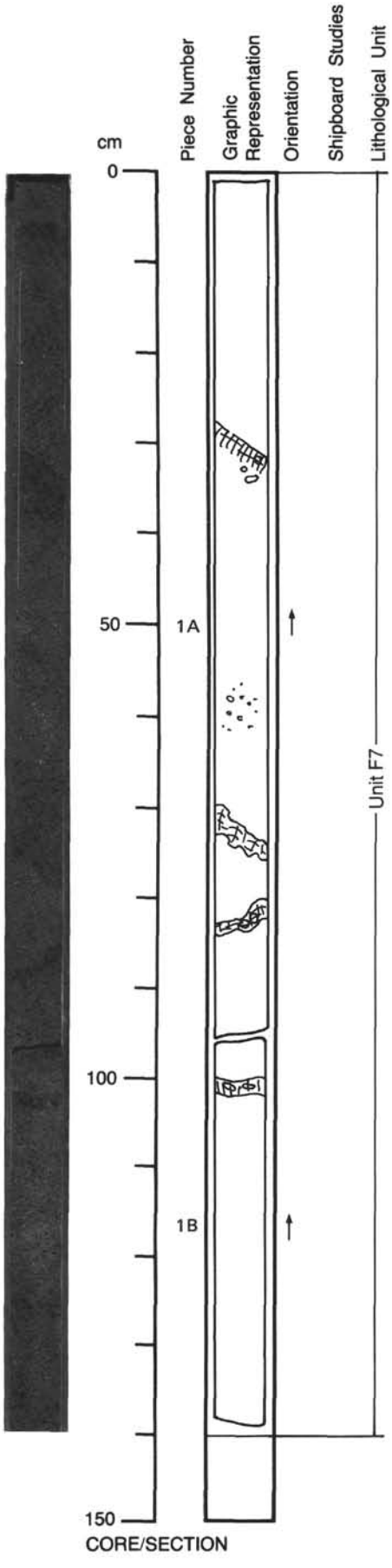
CURATED LENGTH: 137 cm.

COMMENTS: Unit F7 extends from Section 121-758A-63R-3 and continues into Section 121-758A-63R-5, without loss of material. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this Section with the following additional comments.

CONTACTS: Internal contacts in Piece 1C at 105 cm and in Piece 1D at 126 cm.

PHENOCRYSTS: Plagioclase content less than 2%.

VEINS: Thick necking veins (0-10 mm) of brown smectite at Piece 1C, 73 cm, 0-20 degrees. Subvertical, black brown 1-3 mm smectite vein at 74-101 cm.



121-758A-63R-5

UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

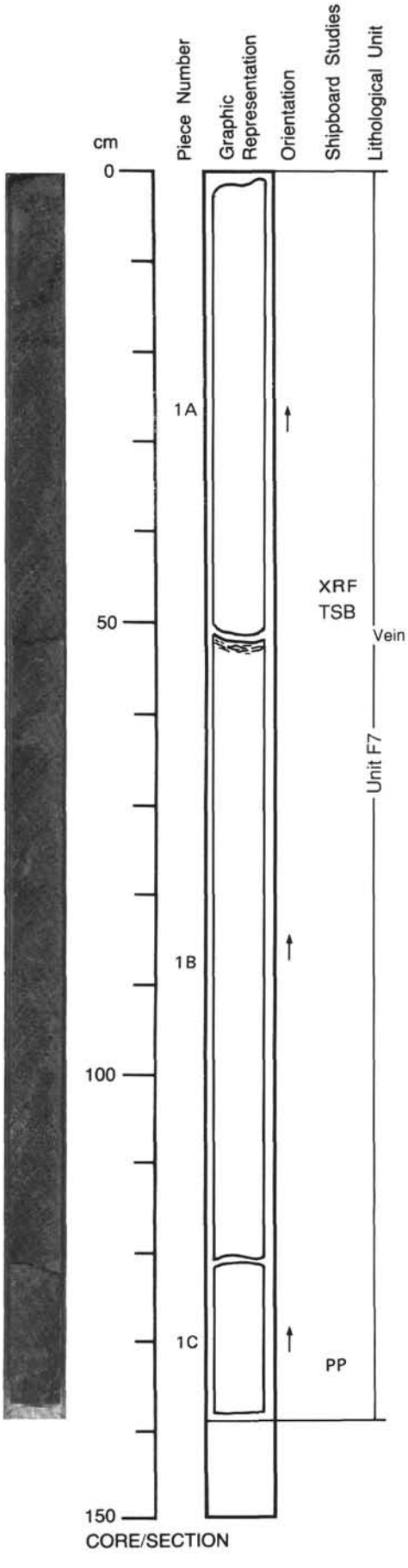
PIECES: 1A - 1B.

CURATED LENGTH: 140 cm.

COMMENTS: Unit F7 extends from Section 121-758A-63R-4 and continues into Section 121-758A-63R-6, without loss of material. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this Section with the following additional comments.

CONTACTS: Internal contacts in Piece 1A at 30, 72 and 87 cm. The latter two contacts may be reaction around veins. No obvious chilling polarity. Piece 1B, 101 cm (no polarity). It is possible that in the center of the Unit, the rock was too hot to cause detectable grain size differences.

VESICLES: Piece 1A, 57 to 65 cm. Calcite-filled vesicles, 0.5-1 mm, spherical.



121-758A-63R-6

UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

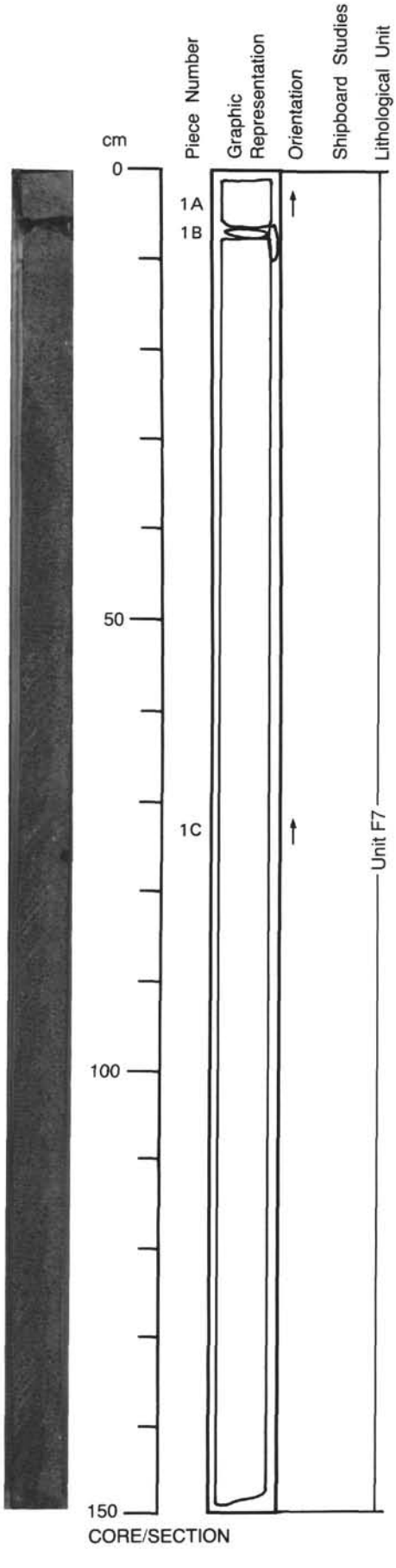
PIECES: 1A - 1C.

CURATED LENGTH: 137 cm.

COMMENTS: Unit F7 extends from Section 121-758A-63R-5 and continues into Section 121-758A-63R-7, without loss of material. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this Section with the following additional comments.

PHENOCRYSTS: Plagioclase phenocryst content is less than 1%.

VEIN: 3 mm. Black smectite vein in Piece 1B 52 cm.



121-758A-63R-7

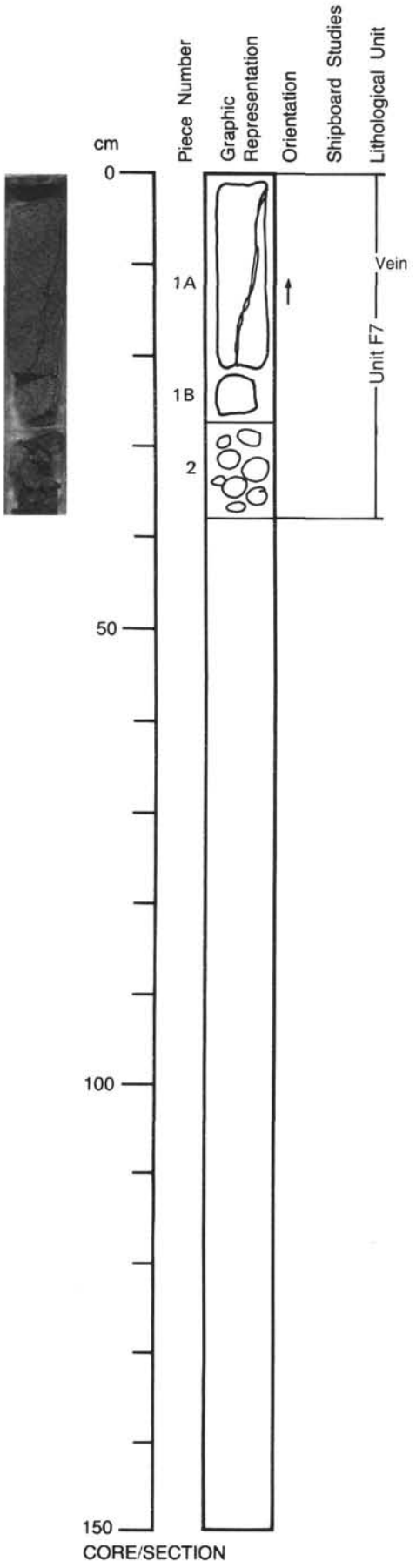
UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

PIECES: 1A - 1C.

CURATED LENGTH: 149 cm.

COMMENTS: Unit F7 extends from Section 121-758A-63R-6 and continues into Section 121-758A-63R-8, without loss of material. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this Section with the following additional comments.

PHENOCRYSTS: Less than 2% plagioclase phenocrysts.



121-758A-63R-8

UNIT F7: SPARSELY PLAGIOCLASE-PHYRIC BASALT grading to APHYRIC BASALT (Cont.).

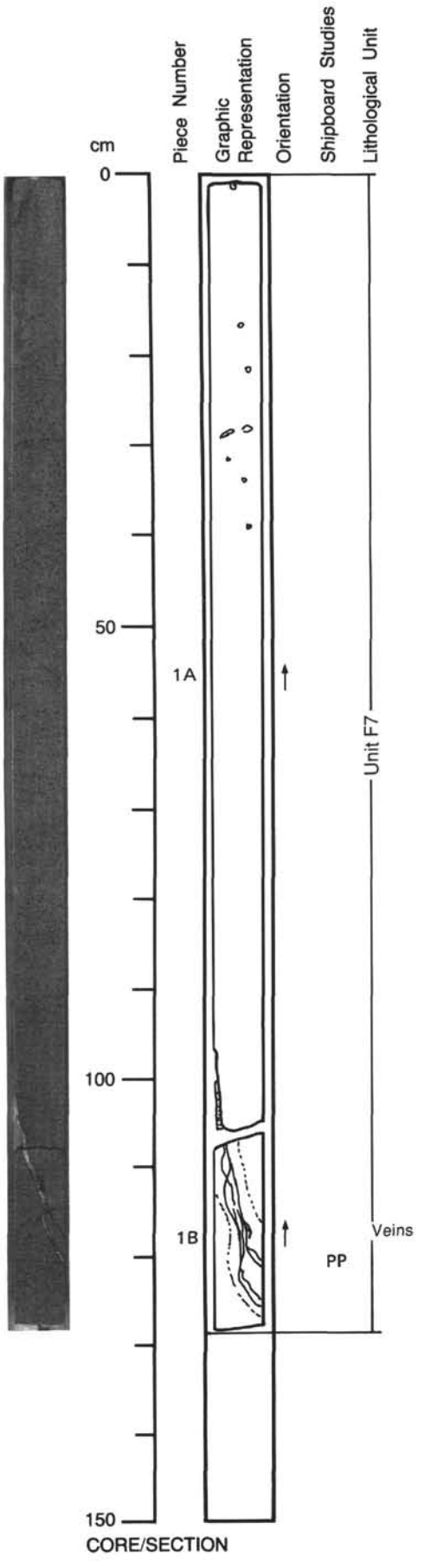
PIECES: 1A - 2.

CURATED LENGTH: 37 cm (Piece 2 is rubble).

COMMENTS: Unit F7 extends from Section 121-758A-63R-7 and continues in 121-758A-64R-1. The general description of Unit F7, given for Section 121-758A-63R-1, applies to this. Section with the following additional comments.

PHENOCRYSTS: <2% plagioclase.

VEINS: Black smectite vein in Piece 1, 1-20 cm, sub-vertical, 1-3 mm.



121-758A-64R-1

UNIT F7: APHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 128 cm.

COMMENTS: Unit F7 starts in Core 121-758A-63R-1, continues through the whole Core 63, i.e. through 121-758A-63R-8, and ends in Core 121-758A-64R-2 (Piece 1B). The general description of Unit F7 is given in 121-758A-63R-1, applies here except for the following additional comments.

PHENOCRYSTS: Plagioclase, 1-2 mm, 1-2%.

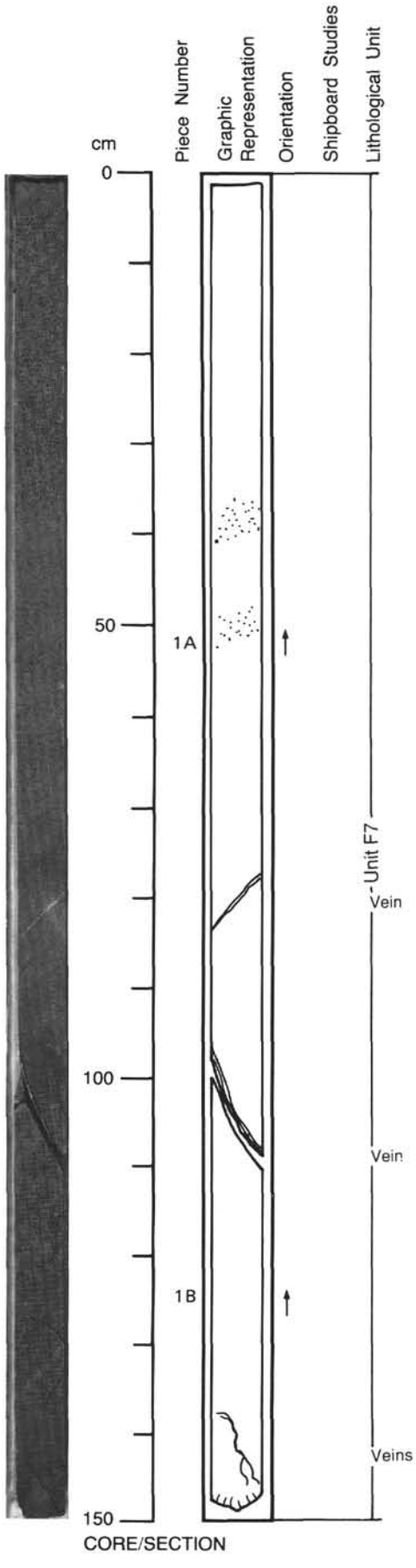
GROUNDMASS: Mafic clots replaced by black smectites.

VESICLES: Irregular, 5-8 mm diameter up to 20%, between 20 cm and 50 cm. Filled with green olive (5Y 5/3) amorphous smectites.

ALTERATION: Moderate to high.

VEINS: 102-120 cm, composite vein of chalcedony (center) with pyrite, and dark green and olive green smectites. No calcite seen. Total width 7 mm.

COMMENTS: Unit F7 continues in 121-758A-64R-2



121-758A-64R-2

UNIT F7: APHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 149 cm.

COMMENTS: Unit F7 continues from section 121-758A-64R-1 and ends at the bottom of this section, 121-758A-64R-2, Piece 1B.

CONTACTS: The lower part of the section corresponds almost certainly to a chilled contact.

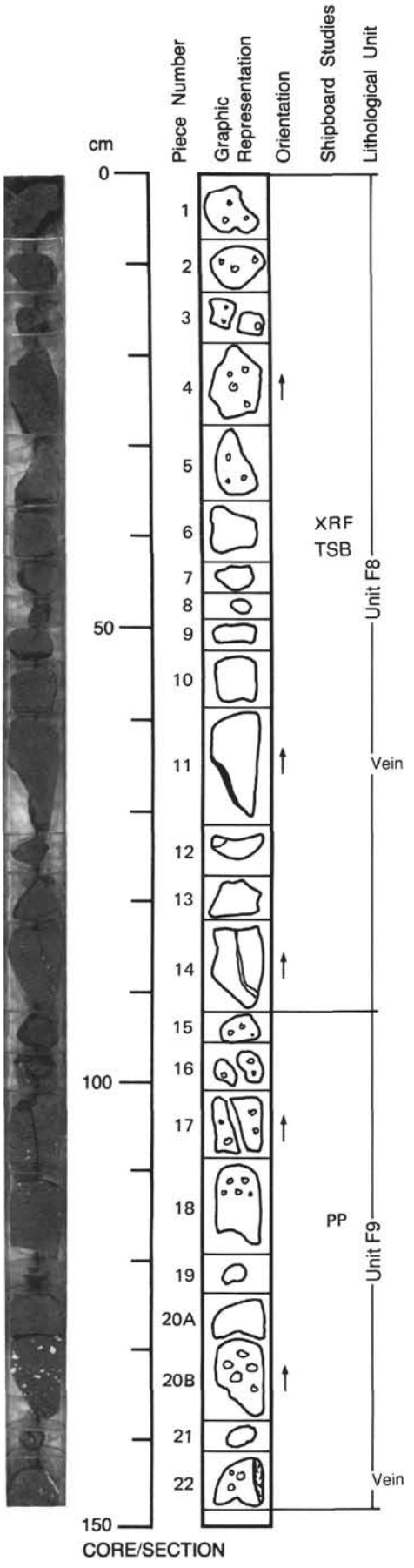
GROUNDMASS: The basalt becomes increasingly finer grained down the section, from medium grained at 0-70 cm, 70-130 cm fine grained, to 145 cm where the rock becomes microcrystalline, to cryptocrystalline at the base. The contact basalt contains about 2-3% of plagioclase micro-phenocrysts.

VESICLES: Numerous, less than 1 mm spherical calcite filled amygdales, 38 to 54 cm.

ALTERATION: Moderate to high.

VEINS: Calcite, 1 mm, 45 degree dip, 79-85 cm; pyrite, black smectites and chalcedony, 4 mm, 70 degrees - 97-107 cm.

COMMENTS: End of Unit F7.



121-758A-64R-3

UNIT F8: APHYRIC BASALT (121-758A-64R-3, Pieces 1 to 14).

PIECES: 1 to 14.

CURATED LENGTH: 91 cm = total curated length of Unit F8.

CONTACTS: Upper: The actual contact is not seen but Piece 1 is very fine grained, to microcrystalline indicating rapid cooling. Basalt grain size increases to fine grained in Piece 14. Lower: Not seen. Unit F8 terminates against Unit F9.

PHENOCRYSTS: None seen.

GROUNDMASS: As described above.

COLOR: Dark gray to very dark gray (7.54R 4/0-3/0).

VESICLES: Non-uniform distribution: Pieces 1-3; 10%; 1-2 mm; filled with green (chloritic) smectites. Zone of calcite filled vesicles in Piece 1. All vesicles are more or less spherical (Note: clay minerals dehydrate to give dusty pale gray green coating). Piece 4: 20%; 1-5 mm. Filled with green clay. Pieces 5-6: 10%; 1-3 mm. Green clay filling. Pieces 7-14: <3%; <1 mm; clay filled again.

STRUCTURE: Thin flow.

ALTERATION: Moderate to high. The greenish tint suggests clay replacement, as well as the soft touch. Vesicles full of clay.

VEINS: 1 mm, black smectites in Piece 4; 3 mm, smectites calcite(?) in Piece 11; 3 mm, smectites calcite(?) in Piece 14.

COMMENTS: Unit F8 is only half a core long, 121-758A-64R-3, Piece 1 to 121-758A-64R-3, Piece 14, where it ends.

UNIT F9: APHYRIC BASALT (121-758A-64R-3, Piece 15 to 121-758A-64R-4, Piece 6).

PIECES: 15 - 22.

CURATED LENGTH: 56 cm. Total curated length of Unit F9 = 1.34 m.

CONTACTS: Top: Not seen but Piece 15 is very fine-grained, microcrystalline. Lower: Unit F9 ends at the end of Section 121-758A-64R-4, relatively abruptly.

COMMENTS: Unit F9 continues in Section 121-758A-64R-4.

PHENOCRYSTS: None seen at the top of the unit but the phenocryst content increases down the section, appearing in the middle of Piece 20B, up to 2-5%. Plagioclase phenocrysts: 2-4 mm, subhedral.

GROUNDMASS: The groundmass becomes coarser grained going down the section, especially in 121-758A-64R-4. Fine to medium grained.

COLOR: Dark gray to very dark gray.

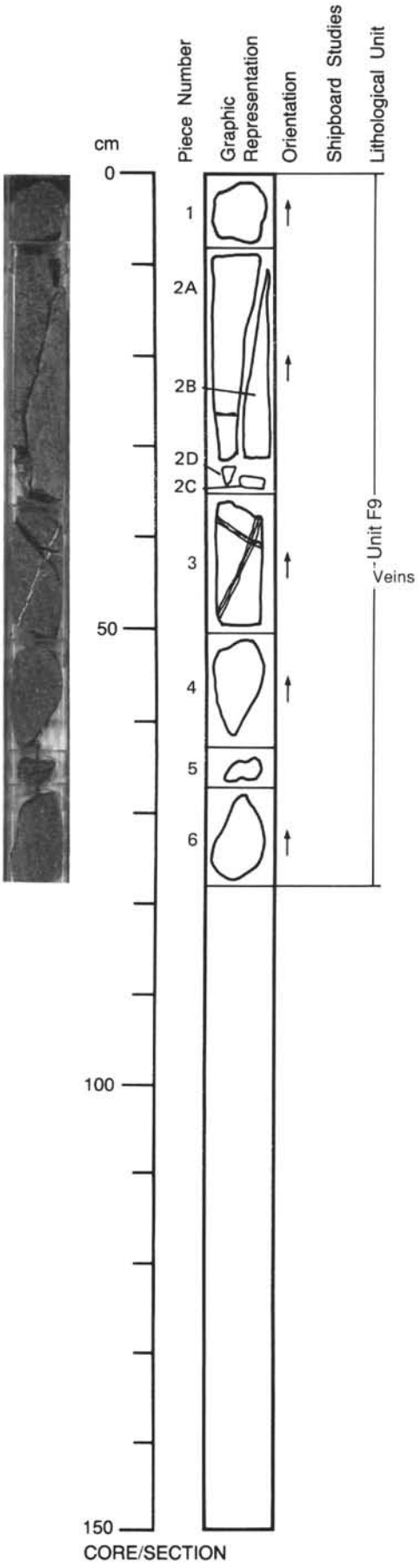
VESICLES: Non-uniform distribution: Pieces 15, 16 and top of 17; 1-5 mm, 10-15%, predominantly filled with dark green fibrous smectites. Some zeolites(?) and calcite. Pieces 17-22; 1-10 mm, 10-20%, again filled predominantly by clays but Piece 20B contains numerous white amygdales of calcite.

STRUCTURE: Thin lava flow.

ALTERATION: Moderate to high, clay in groundmass and vesicles.

VEINS: 3 mm, calcite vein in Piece 22.

COMMENTS: Unit F9 continues in Section 121-758A-64R-4 where it is moderately plagioclase phyric.



121-758A-64R-4

UNIT F9: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1 to 6.

CURATED LENGTH: 78.5 cm.

CONTACTS: This unit starts in the middle of the previous section 121-758A-64R-3 and ends abruptly at the end of this section, 121-758A-64R-4.

PHENOCRYSTS: Plagioclase, 2-4 mm, subhedral, 2-4%.

GROUNDMASS: Fine to medium grained; the clinopyroxenes of the groundmass are 1-2 mm, subhedral.

COLOR: Dark greenish (staining of the mesostasis) gray (5GY 4/1 - 5G 4/1).

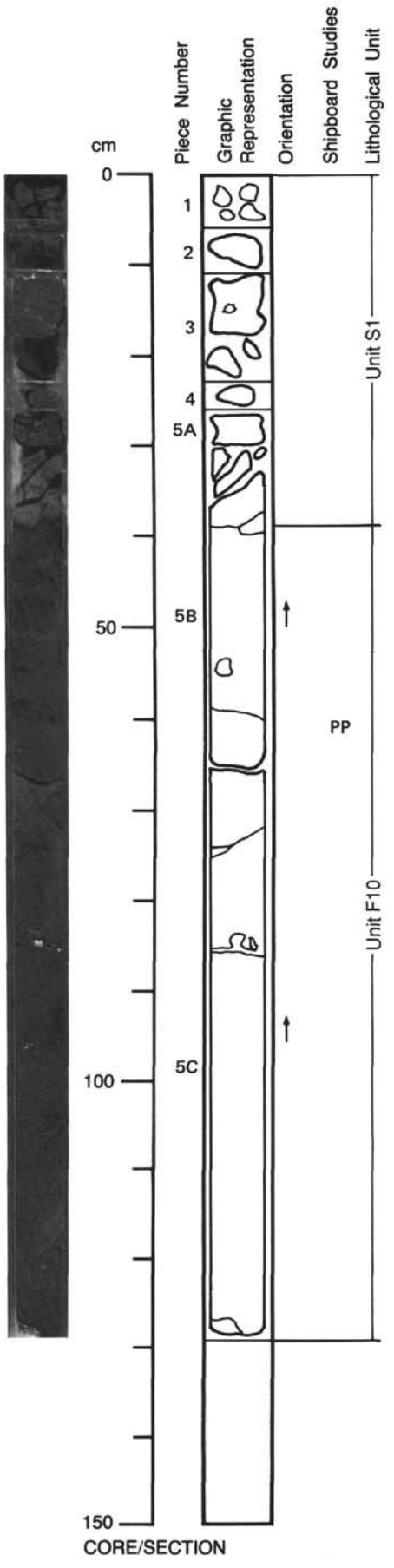
VESICLES: Abundant, but with a non-uniform distribution. The concentration decreases down the section, from up to 20% in Piece 1 to less than 5% in Piece 6. They are all filled by dark green smectite and calcite, some minor sulfides or just smectites.

STRUCTURE: Thin lava flow.

ALTERATION: Moderate to high with a high clay (smectite?) content. The alteration is more developed near veins and fractures where the rock often brakes.

VEINS: Piece 2 is fractured along its length and the crack is filled by a white, soft, fibrous mineral (zeolites?) and pale green smectites(?). Piece 3 shows two veins, one, 4-5 mm thick, is filled by zeolites and dark green smectites and the other, 3-4 mm thick, appears very dark, filled by dark green smectites. The two fractures containing the white mineral (zeolites?), in Pieces 2 and 3, show the same orientation, 150 degrees dip.

COMMENTS: Unit F9 stops at the end of this section, 121-758A-64R-4.



121-758A-65R-1 (Sedimentary Rocks)

TUFF: Small tuff layers between submarine lava flows. Upper contact not recovered.

0-11 cm. Piece 1A. Drilling breccia of dark greenish gray (5G 4/1) fine-grained structureless tuff.

11-16 cm. Piece 2A. Dark gray (N4/), very fine-grained, clay-rich tuffs with slickensided fracture surfaces.

16-30 cm. Pieces 3A, 4A, and part of 5A. Coarser grained, dark gray (N4/) clay-rich tuff. Basalt pebbles spherical and sub-rounded, <5 mm diameter.

30-40 cm. Dark greenish gray (5GY 4/1) very fine-grained clay-rich altered ash. The contact with the underlying ash is a convoluted rough surface filled by ash. The ash is either baked or altered at the contact, and much darker than the remainder.

121-758A-65R-1 (Igneous Rocks)

UNIT F10: APHYRIC BASALT (121-758A-65R-1, Piece 5B, to 121-758A-65R-6, Piece 1C).

PIECES: 5B - 5C.

CURATED LENGTH: 90 cm. Total curated length of Unit = 7.04 m.

CONTACTS: Top: At 38-39 cm in Piece 5B. The upper part of this thin basalt lava flow is very fine grained, cryptocrystalline and is in contact with a tuff layer. Within 1 cm of the contact of the basalt (irregular), the ash is dark greenish gray, but is paler further from the basalt. The dark zone may be the result of baking or alteration.

PHENOCRYSTS: Plagioclase micro-phenocrysts (<1 mm) make up less than 2% in the chilled marginal zone but are indistinguishable in the coarser parts of the Unit.

GROUNDMASS: Very fine and altered.

COLOR: Dark greenish gray (N45B 4/1).

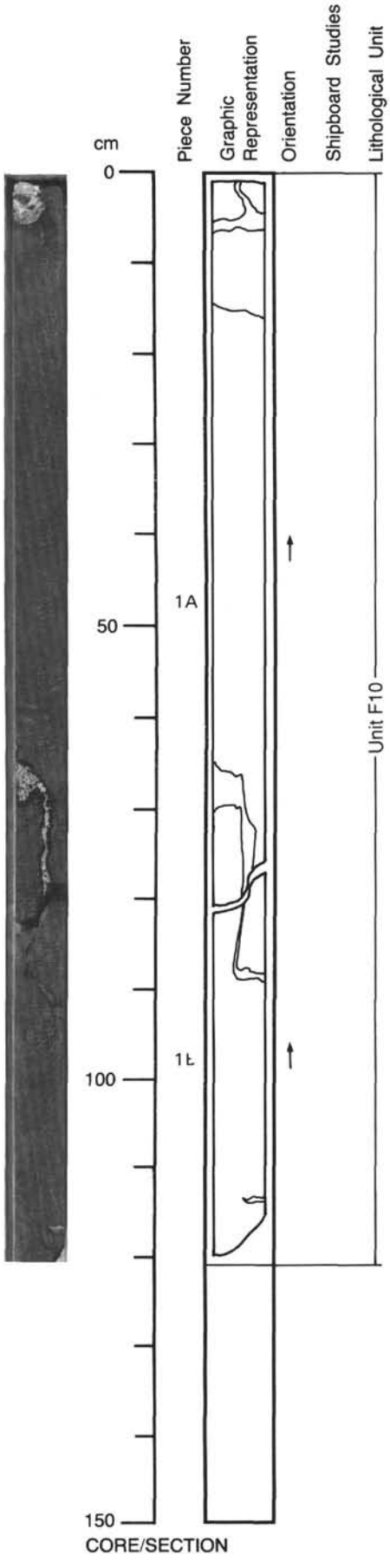
VESICLES: Numerous (3-5%), various shapes (usually ovoid or spherical) and all filled by a dark green material (smectites?) 1 to 10 mm. Their concentration is higher between 43 and 54 cm or near small veinlets. The fillings are: Green smectites, sulfides and minor calcite. At 55 cm, a vesicle is filled by a mixture of calcite and smectites. At 127 cm, there is a big vesicle, >2-3 cm which continues in Section 121-758A-65R-2 and is filled by green smectites, minor calcite and zeolites (?). Around 85 cm, the vesicles are filled by green smectites, calcite and are associated with a thin veinlet (2-3 mm) filled by pale green smectites.

STRUCTURE: Lava flow.

ALTERATION: Moderate to high.

VEINS: 58-60 cm, 75 cm and 85 cm. Thin veinlets filled by green, dark green smectites.

COMMENTS: This unit continues in Section 121-758A-65R-2.



121-758A-65R-2

UNIT F10: APHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 123 cm.

COMMENTS: This unit is described in Section 121-758A-65R-1, the first section of this Unit. The description for Section 121-758A-65R-1 applies here except as noted below.

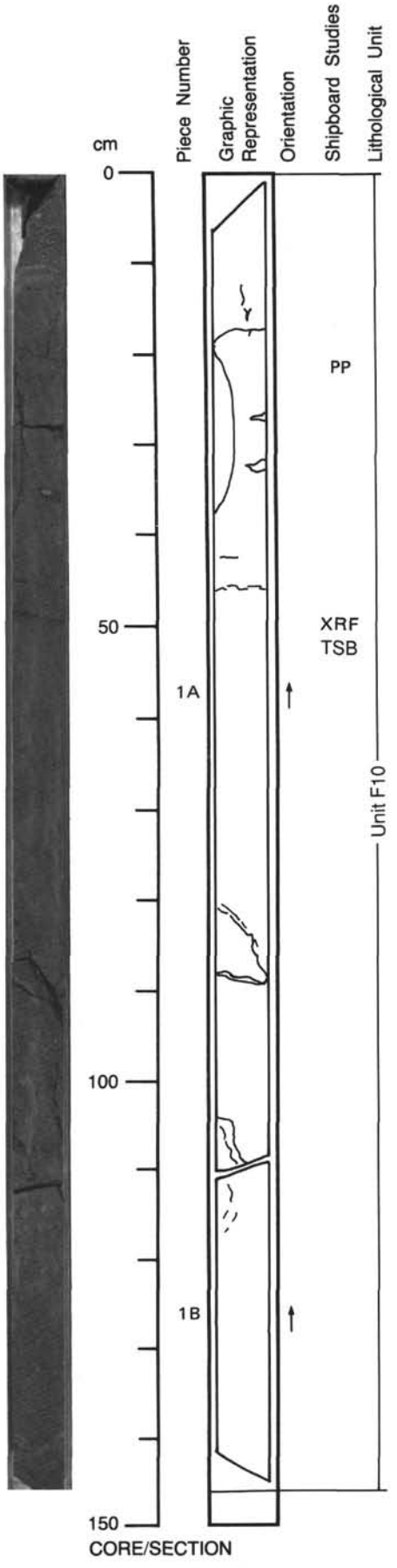
GROUNDMASS: Coarser than in Section 121-758A-65R-1 but still fine grained (<1mm). Dark anhedral patches of mesostasis are more abundant and larger as the rock gets coarser. The sizes of these patches vary from 1 to 3 mm and they also appear to be bigger closer to veins.

COLOR: Light gray (N4/5B 4/1-N5/5B 5/1).

VESICLES: More random distribution and smaller (<5 mm) than in Section 121-758A-65R-1. At the top of the section, (1-4 cm) in Piece 1A, there is a big vug filled by green smectites, minor calcite and zeolites(?). Part of this vug occurs in the bottom of Section 121-758A-65R-1.

VEINS: Between 65 and 70 cm, a vein, with green lining (smectites?) and calcite fillings wide to form an amygdale 5 cm diameter.

COMMENTS: This unit continues in Section 121-758A-65R-3.



121-758A-65R-3

UNIT F10: APHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 146 cm.

COMMENTS: This unit starts in Section 121-758A-65R-1. The description given in that section for Unit F10 applies here except as noted below.

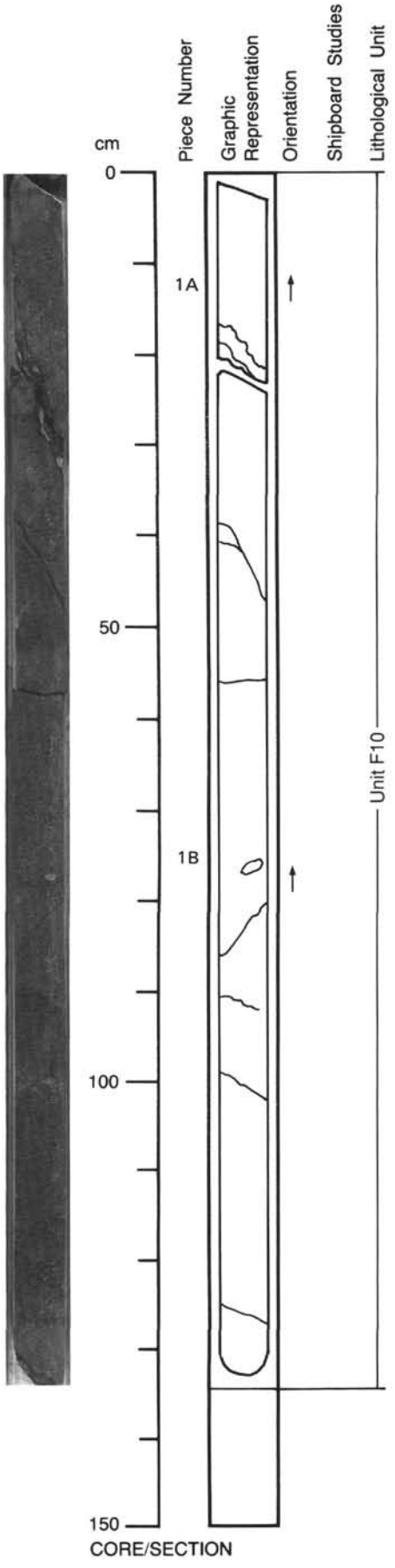
GROUNDMASS: Generally, similar to Section 121-758A-65R-2 but from 48 to 62 cm, there is a region where larger (>1 to 2 mm) dark (altered mesostasis ?) patches are absent. This region begins abruptly at 48 cm where a smectite vein connecting several vesicles occurs (0 degrees). At about 60 cm, a gradation to a groundmass texture characterized by larger dark patches appears and below 90 cm, the rock is more medium grained, and the black patches have sizes between 1 and 4 mm.

VESICLES: 15 mm calcite filled cavity at 35 cm; a region of 1-2 mm calcite vesicles from 70 to 85 cm.

ALTERATION: Moderate to high.

VEINS: 0-10 cm, thin, <1 mm, dark, 45 degrees, smectite vein on surface along fracture separating Piece 1A from Piece 1B; 18 cm, 0 degrees, <1 mm smectite vein connecting several 1-4 mm vesicles; 21-38 cm, network of 1-3 mm, smectite veins, some with calcite centers; 82-112 cm, several 1-3 mm gray brown smectite-filled veins, varying dips as drawn with calcite centers in larger veins. An interesting feature of many of these veins is that they are connected by 1-4 mm ovoid vesicles. This is especially obvious at 98-104 cm.

COMMENTS: This unit continues in Section 121-758A-65R-4.



121-758A-65R-4

UNIT F10: APHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 134 cm.

COMMENTS: This unit starts in Section 121-758A-65R-1. The description given in that section for Unit F10 applies here except as noted below.

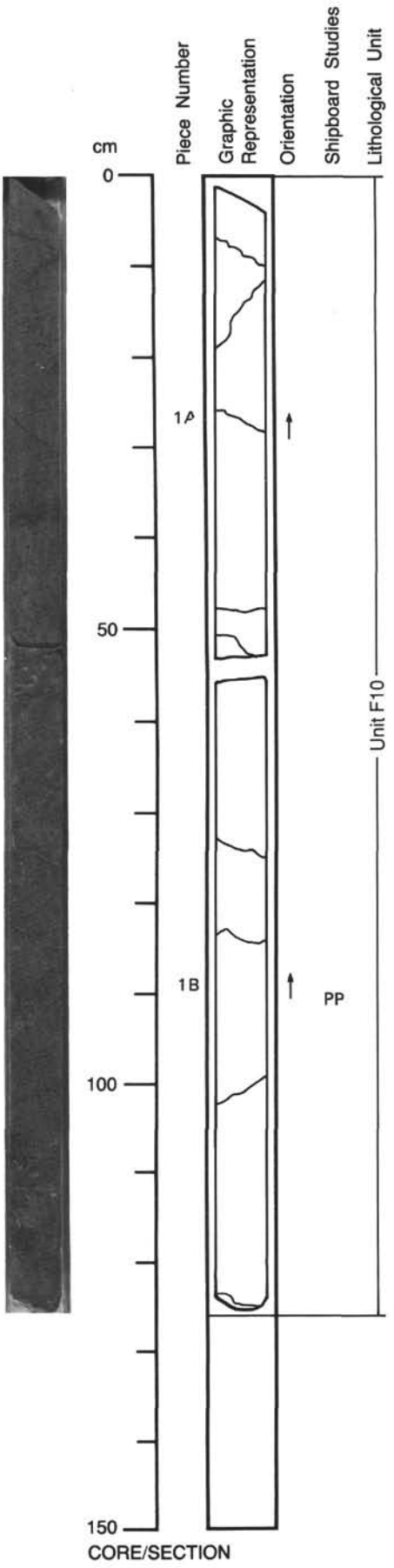
GROUNDMASS: Similar to Section 121-758A-65R-3 (90 to 146 cm). However, there are variations in the distribution of the dark patches in this section: from 90 to 126 cm, the dark patches are vesicles and mesostasis(?) are 2-5 mm while from 52 to 62 cm and 126 to 134 cm, these dark patches are absent.

VESICLES: 13 mm calcite filled cavity at 77 cm which contains 2-3 mm sulfide in central portions. 1 mm vesicles are calcite filled and occur from 58 to 90 cm, especially at 73-77 cm and 126-130 cm.

ALTERATION: Moderate to high.

VEINS: Upper fracture surface of Piece 1A has 2 mm calcite vein (30 degrees); complex vein network from 14 to 33 cm is filled by smectites (1-10 mm) with calcite patches in thicker parts of the vein; 38 to 49 cm (70 degrees), smectite vein (2 mm); 57 cm (0 degrees) smectite vein (1 mm); 81 to 86 cm (45 degrees) smectite vein (1 mm); 126 to 130 cm (45 degrees), calcite vein (1 mm).

COMMENTS: This unit continues in Section 121-758A-65R-5.



121-758A-65R-5

UNIT F10: APHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 127 cm.

COMMENTS: This unit starts in Section 121-758A-65R-1. The description given in that section for Unit F10 applies here except as noted below.

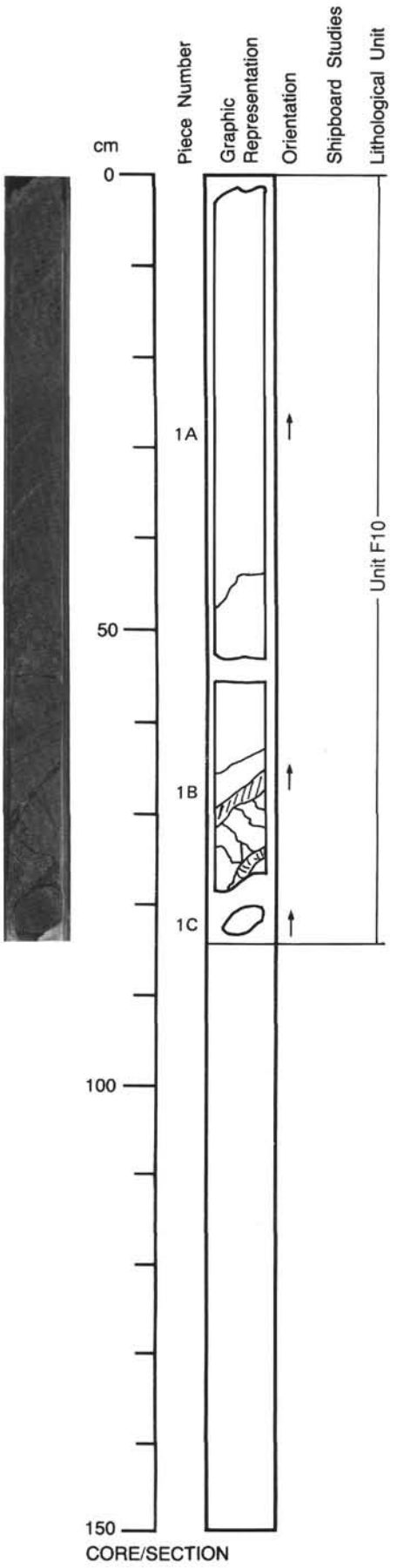
GROUNDMASS: Generally similar to Section 121-758A-65R-4, dark patches (vesicles + mesostasis) appear to be replaced by calcite fillings between 0 and 3 cm, 22 and 30 cm, 54 and 59 cm and 72 and 78 cm. From 86 to 111 cm, black (2-5 mm) patches are abundant (25%).

VESICLES: 1-5 mm, calcite filled, many with black smectites borders between 0 and 3 cm, 22 and 30 cm, 54 and 59 cm and 72 and 78 cm.

ALTERATION: Moderate to high.

VEINS: 7 cm, 1 mm smectites (10 degrees); 8 to 13 cm, <1 mm, smectites (45 degrees); 25 to 30 cm, 1-2 mm, smectite with intermittent calcite in center and sulfide (30 degrees); 72 to 76 cm and 82 to 85 cm, 1-2 mm calcite/smectites, (15 degrees); 99 to 102 cm, 1 mm smectites (30 degrees); 119 to 122 cm, 1 mm smectites (15 degrees); 127 cm, 1-2 mm calcite (15 degrees).

COMMENTS: This unit continues in Section 121-758A-65R-6.



121-758A-65R-6

UNIT F10: APHYRIC BASALT (Cont).

PIECES: 1A - 1C.

CURATED LENGTH: 84 cm.

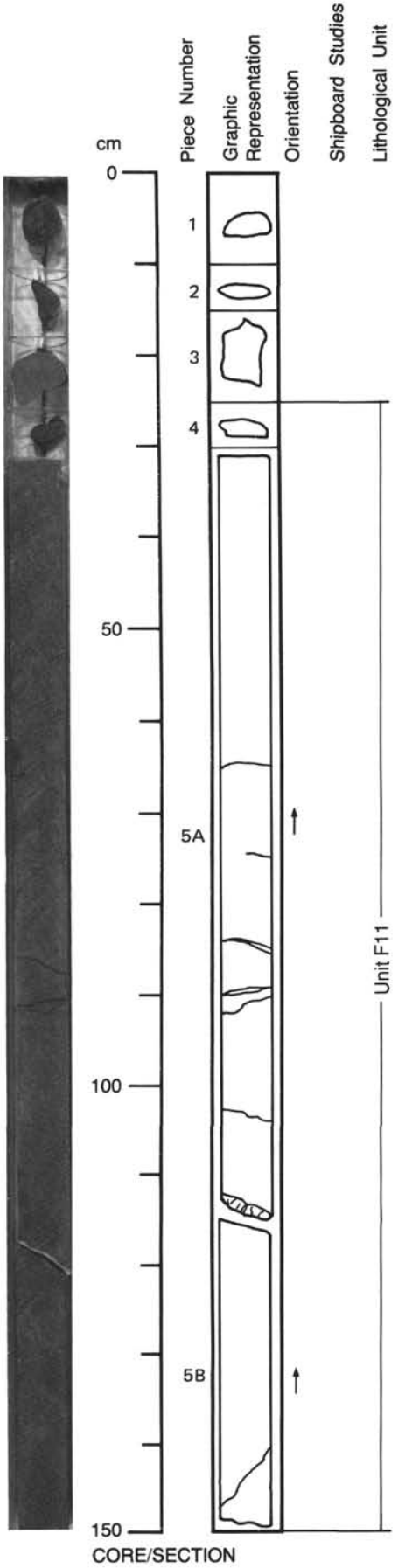
COMMENTS: This unit starts in Section 121-758A-65R-1. The description given in that section for Unit F10 applies here except as noted below.

GROUNDMASS: Variable as in previous sections. 8 to 20 cm, more abundant (25%), 2-5 mm black vesicles (smectites replacing mesostasis). 20 to 35 cm, dark patches, all <1.5 mm. 62 to 73 cm, slightly more fine-grained groundmass and altered.

ALTERATION: Moderate to high.

VEINS: 45 to 48 cm, 1 mm smectites vein with sulfides; 60 to 65 cm, 1 mm smectites vein (30 degrees); 65 to 73 cm, 2 - 8 mm set of anastomosing smectite veins (45 degrees) with smaller 1 mm emanating perpendicularly to larger vein which has chalcedony(?) locally in the center.

COMMENTS: Piece 1C is taken as the last part of Unit F10, as the first three Pieces in 121-758A-66R-1 are fragments of sediment. HOWEVER, it is likely that these three sediment fragments are drilling rubble. It is particularly noteworthy that Pieces 1A and 1B of 121-758A-65R-6 are not very fine grained, but resemble the central parts of the Unit. Thus it is likely that the next flow unit (F11) is a continuation of F10, and the two are very similar in character.



121-758A-66R-1

Pieces: 1 - 3. (0-26 cm).
TUFF: Dark Greenish gray, fine-grained layered ash and clayey ash with visible burrowing in Piece 3. These Pieces may be derived from the section of tuffs exposed in 121-758A-65R-1 and may NOT be in their correct relative position in the core.

UNIT F11: APHYRIC BASALT (121-758A-66R-1, Piece 4 to 121-758A-66R-5, Piece 1E).

PIECES: 5A and 5B.

CURATED LENGTH: 120 cm. Total curated length of Unit F11 = 5.84 m.

CONTACTS: Upper contact of unit not recovered. HOWEVER the first three Pieces in 121-758A-66R-1 are fragments of sediment which may be drilling rubble. It is particularly noteworthy that Pieces 5A and 5B of 121-758A-66R-1 are not very fine grained, but resemble the central parts of Units. Thus it is likely that this flow unit (F11) is a continuation of F10, and the two are indeed very similar in character. The lower contact of F11 is well preserved and lies beneath a normal thickness of finer-grained chilled material at the base of the Unit at 121-758A-66R-5, Piece E.

GROUNDMASS: No phenocrysts. Fine-grained groundmass, about 0.5 mm feldspar and pyroxene with 0.5 to 2 mm irregular dark patches of clay after vesicles and mesostasis.

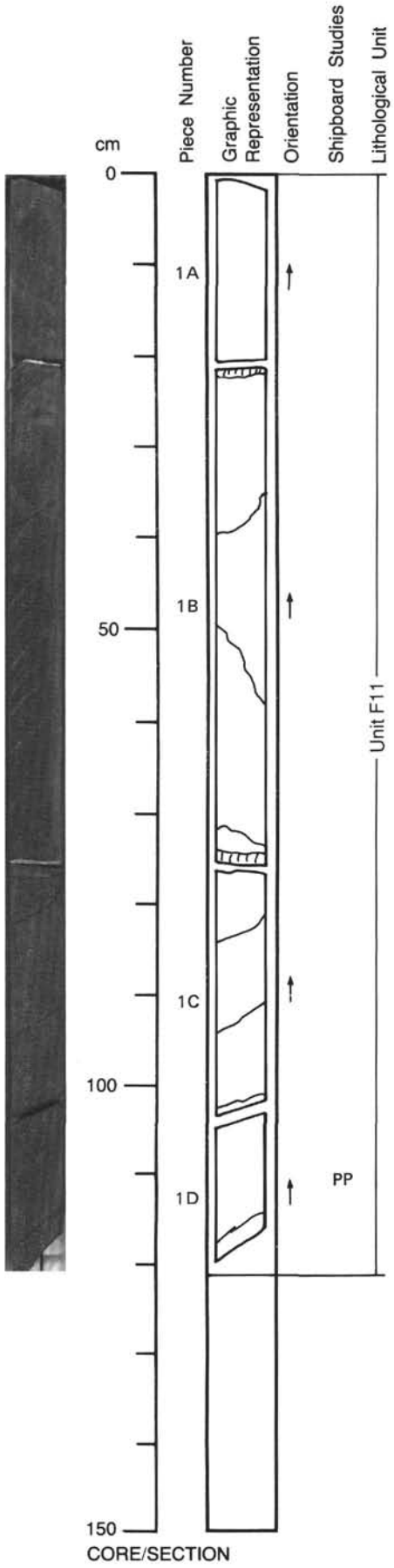
COLOR: Mottled from gray 2.5YN 5/0 to dark gray 2.5YN 4/0.

VESICLES: From 31-47 cm, 0.5 to 2 mm cavities filled with calcite but lined with thin films of smectite. Similar region at 75-77 cm. Elsewhere, these cavities contain a gray green clay.

STRUCTURE: Massive flow.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 1 mm black smectite vein at 65-67 cm dips at 5 degrees; <1 mm black smectite vein at 75 cm dips at 0 degrees; 2-3 mm olive green smectite vein at 85-87 cm dips at 0 degrees; 90 cm, several less than 1 mm dark smectite veins with 0 degree dip; 104 cm, 1 mm calcite vein with smectite border and sulfide patches, 1-2 mm; 118-120 cm 2-3 mm calcite vein at lower surface of Piece 5A with several 2-3 mm sulfide patches. 137-147 <1 mm stringer of sulfide blobs extend for 10 cm.



121-758A-66R-2

UNIT F11: APHYRIC BASALT (Cont.).

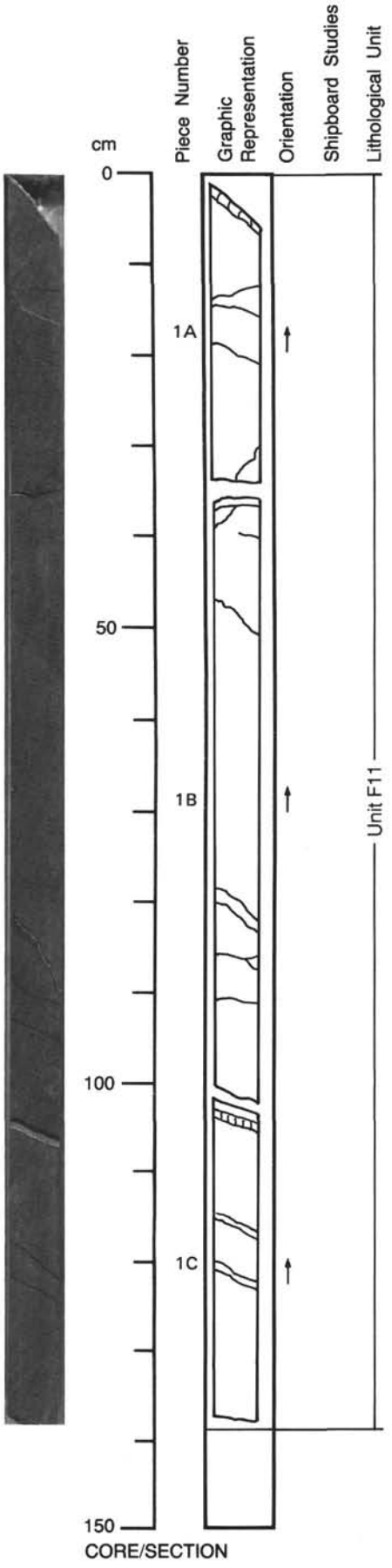
PIECES: 1A to 1D.

CURATED LENGTH: 122 cm.

COMMENTS: Unit F11 extends from Section 121-758A-66R-1 and continues into Section 121-758A-66R-3. The general description of Unit F11, given for Section 121-758A-66R-1, applies to this Section with the following additional comments.

GRAIN SIZE: Section 2 has a relatively uniform grain size and distribution of 0.5-2 mm dark mesostasis patches.

VEINS: 21 cm calcite 2-3 mm, 0 degrees, at boundary between Pieces 1A and 1B; 36-39 cm, smectite, black 1 mm; 50-59 cm, calcite <1 mm, 45 degrees; 75 cm fibrous calcite and dark smectite, 3 mm, 0 degrees forming boundary between Pieces 1B and 1C; 70-82 cm, several 1 mm black smectite anastomosing veins with sulfides; 102-104 cm, black smectite with intermittent calcite zone (3 mm) in center (80 degrees); 114-118, black smectite, 1 mm, 30 degrees.



121-758A-66R-3

UNIT F11: APHYRIC BASALT (Cont.).

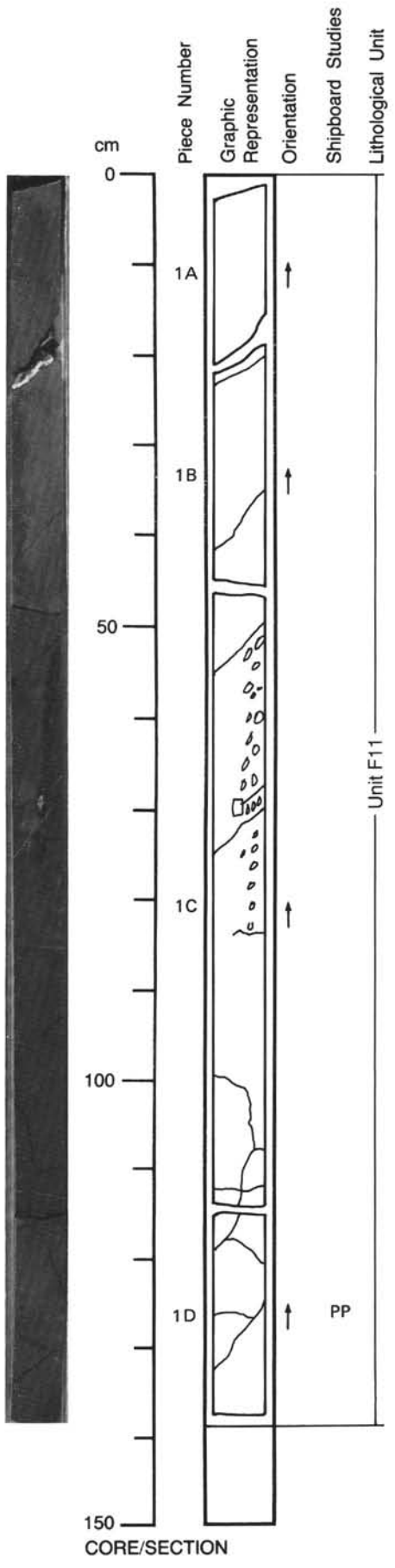
PIECES: 1A to 1C.

CURATED LENGTH: 138 cm.

COMMENTS: Unit F11 extends from Section 121-758A-66R-2 and continues into Section 121-758A-66R-4. The general description of Unit F11, given for Section 121-758A-66R-1, applies to this Section with the following additional comments.

GROUNDMASS: Piece 1C is slightly finer grained, and marks the start of the reduction in grain size associated with the bottom contact exposed in Section 121-758A-66R-5.

VEINS: In general, basalt Pieces in this core are bounded by 2-6 mm calcite veins. 0 cm, calcite vein 4 mm, 45 degrees with black smectite margins and sulfides; 12 cm, black smectite (1 mm, 0 degrees) with sulfides; 14-16 cm, dominantly calcite vein (1 mm 5 degrees) which grades into a dominantly smectite vein; 19-24 cm, black smectite with sulfides (2 mm, 45 degrees); 34-35 cm calcite vein (2 mm, 0 degrees) at contact with Piece 1B 1 mm smectite vein above contact has alternating smectite calcite; 48 and 76 cm, black smectite veins, variable orientation; 80-89 cm, large compound vein, 3-7 mm. 60 degrees with black smectite rims, calcite interiors, with sulfide rich, 2 cm long segment; 88 and 92 cm, black smectite veins, 1 mm, 30 degrees with sulfides; 103-105 cm, 8 mm vein (15 degrees) between Pieces 1B and 1C. Lower edge is 2 mm fibrous calcite, upper thicker portion of vein is gray green (non-carbonate) smectite(?). 116 and 120, 2-3 mm black smectite (30 degrees).



121-758A-66R-4

UNIT F11: APHYRIC BASALT (Cont.).

PIECES: 1A to 1D.

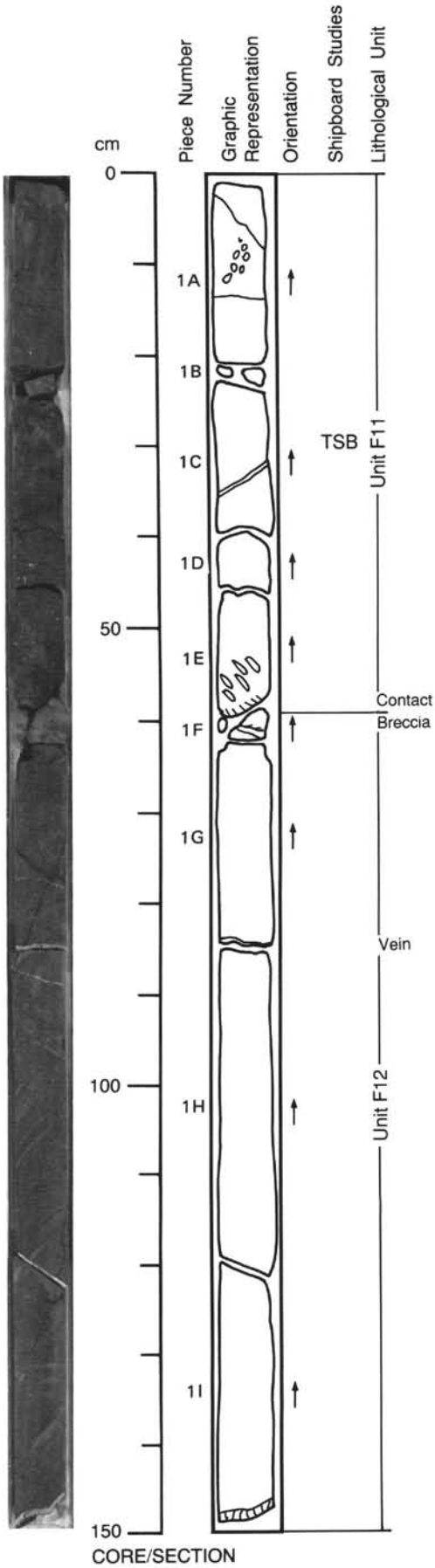
CURATED LENGTH: 139 cm.

COMMENTS: Unit F11 extends from Section 121-758A-66R-3 and continues into Section 121-758A-66R-5. The general description of Unit F11, given for Section 121-758A-66R-1, applies to this Section with the following additional comments.

GROUNDMASS: Fine grained, noticeably finer than in previous section through F11.

VESICLES: From 50-75 cm (less clearly to 85 cm) there is a vertically orientated train of vesicles, each up to 15 mm and also elongated in a vertical direction. Zone is about 2 cm wide. Most vesicles filled with clay and sulfides. One 15 mm cavity filled with calcite.

VEINS: 18-22 cm, 3-4 mm calcite vein between Pieces 1A and 1B (45 degrees dip); 36-41 cm, 1-2 mm gray green smectite, (45 degrees dip); 48-53 cm, 1 mm black smectite vein (45 degrees dip); 83 cm, 1 mm calcite vein grades into smectite vein. (0 degrees); 100-130 cm, several gray green 1-2 mm smectite layers. 110 cm, 1 mm calcite with dark smectite borders.



121-758A-66R-5

UNIT F11: APHYRIC BASALT (Cont).

PIECES: 1A - 1E.

CURATED LENGTH: 58 cm.

COMMENTS: Unit F11 extends from Section 121-758A-66R-4 and continues into Section 121-758A-66R-6. The general description of Unit F11, given for Section 121-758A-66R-1, applies to this Section with the following additional comments.

CONTACTS: Lower contact not observed but may be very close to the bottom of Piece 1E which has clay (black smectite) filled vesicles, elongate, 1-10 mm, oriented at 45 degrees. These extend for about 6 cm above the bottom of Piece 1E.

GROUNDMASS: Microcrystalline, significantly more fine grained than 121-758A-66R-4.

VESICLES: 5 to 20 mm, irregularly distributed: Piece 1A, 5-10 cm line of vesicles, 80 degrees orientation, individual vesicles, 0.5 to 2 mm, clay filled. Piece 1D, irregular shape, 2 to 20 mm clay filled vesicles. In both Pieces 1D and 1E, a few small (1-5 mm) vesicles, are calcite filled.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 1 to 10 cm, 1-2 mm black smectites edge, calcite center. 15 cm, 1 mm black smectites. 37-40 cm, 1 to 3 mm, black smectite, 0 degrees.

COMMENTS: End of Unit F11 at Piece 1E. Unit F12 is described in Section 121-758A-66R-5.

UNIT F12: APHYRIC BASALT (121-758A-66R-5, Piece 1F to 121-758A-67R-1, Piece 4B.

PIECES: 1F - 1I.

CURATED LENGTH: 90 cm. Total curated length of Unit F12 = 3.73 m.

CONTACTS: The upper contact (Piece 1F) is marked by brecciated basalt with fragments 0.1-4 cm long in a microcrystalline matrix. Basalt in these fragments and in Piece 1G is very fine grained, increasing to fine grained in Piece 1H. The basalt is slightly darker gray near the contact. The lower contact occurs in 121-758A-67R-1.

PHENOCRYSTS: Dark green, subhedral crystals occur in the basalt about 10 cm from the contact. They are either olivine (now replaced by dark green smectites), or clinopyroxene. Size, 0.5 mm, <1%.

GROUNDMASS: Fine grained to very fine grained or microcrystalline adjacent to the upper contact.

COLOR: Dark gray to very dark gray.

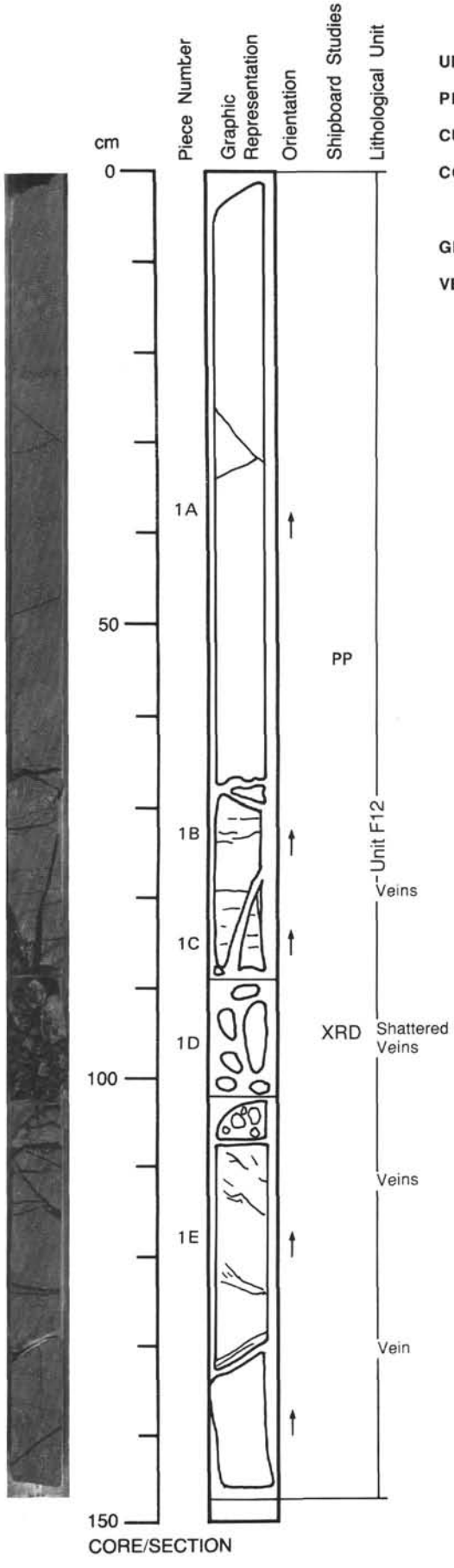
VESICLES: Sporadic 1 mm diameter dark green smectite-filled vesicles from about 80 cm. Up to 5%.

STRUCTURE: Massive flow (or sill ?).

ALTERATION: Moderate, with dark green smectites replacing the groundmass mesostasis and filling vesicles.

VEINS/FRACTURES: 70 to 83 cm, Piece 1G is interesting. Three types of veins: (1) 1 mm black smectite plus pyrite, 70 degrees cut by (2) 1-2 mm fibrous calcite (vertical+horizontal, vertical earlier) (3) 3 mm fibrous olive green smectite (most recent vein), 20 degrees.

COMMENTS: This unit continues in Section 121-758A-66R-6.



121-758A-66R-6

UNIT F12: APHYRIC BASALT (Cont).

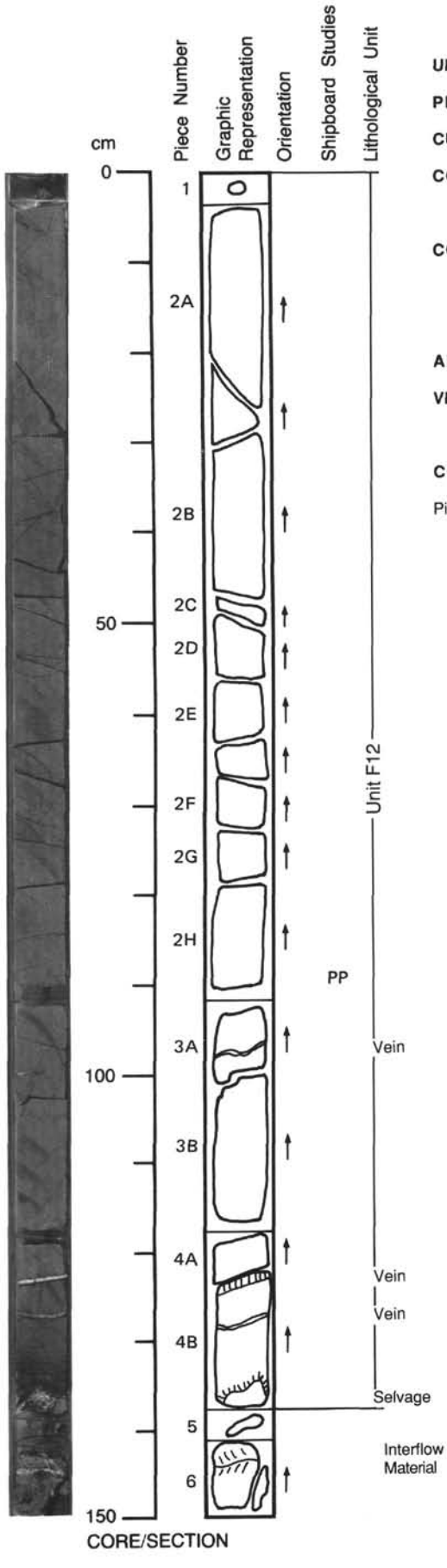
PIECES: 1A - 1F.

CURATED LENGTH: 146 cm.

COMMENTS: Unit F12 extends from Section 121-758A-66R-5 and continues into Section 121-758A-67R-1. The general description of Unit F12, given for Section 121-758A-66R-5, applies to this Section with the following additional comments.

GROUNDMASS: Fine grained.

VEINS/FRACTURES: Brecciated basalt between 90 and 108 cm (Piece 1D and top of 1E). Angular fragments of basalt embedded in dark green smectites (chlorite?) with strong development of platy cleavage (with slickensides). Piece 1D is disrupted by drilling. Top of Piece 1E shows evidence of hydraulic fracturing by vein material. Fragment size 2 to 15 mm, angular fragments that were in part contiguous with each other. Smectites and pyrite veins at: Piece 1D, 25-30 cm, 2 mm, 45 and 0 degrees. Pieces 1B and 1E, 66-124 cm, 1-10 mm, several sub-horizontal veins. Calcite and smectites: Pieces 1E and 1F (junction), 10 mm, 10 degrees.



121-758A-67R-1

UNIT F12: APHYRIC BASALT (Cont).

PIECES: 2A - 4B.

CURATED LENGTH: 137 cm.

COMMENTS: Unit F12 extends from Section 121-758A-66R-6. The general description of Unit F12, given for Section 121-758A-66R-5, applies to this Section with the following additional comments.

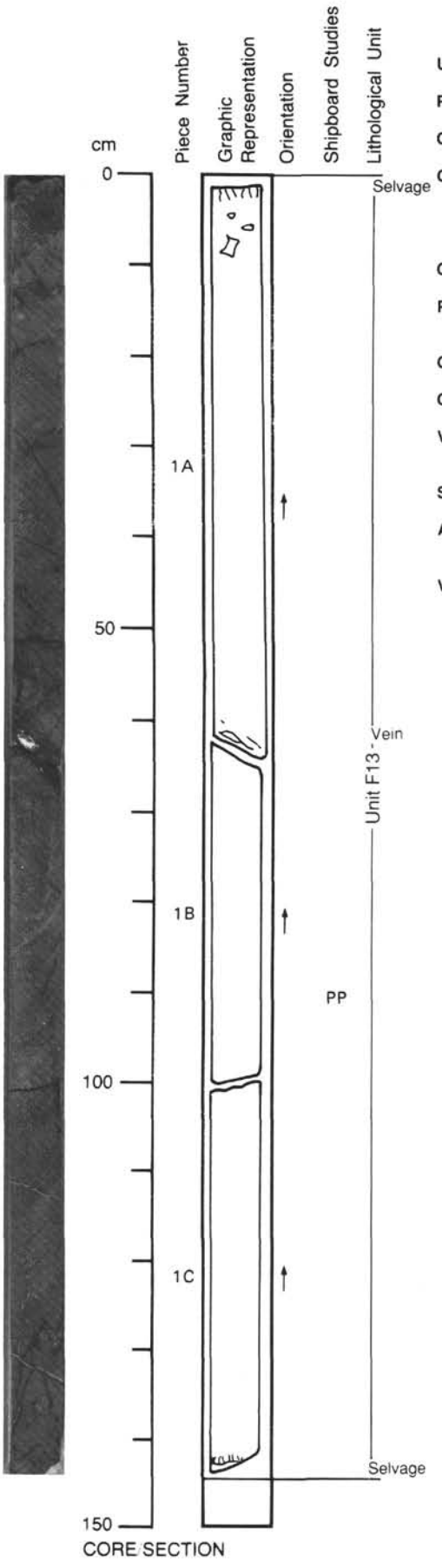
CONTACTS: Piece 4B. Basalt grades from fine grained to microcrystalline in Piece 4B. Breccia zone and black microcrystalline selvage (now replaced by black smectite) mark the contact with light gray, veined basalt(?). Zone of vesicles about 2 cm above contact; 1-5 mm irregular but extended normal to the contact. Contact is curved but sub-horizontal. Plagioclase micro-phenocrysts (about 3%) are obvious in the contact zone.

ALTERATION: Moderate.

VEINS/FRACTURES: Many thin (<0.5 mm) calcite and black smectite veins with pyrite filling sub-horizontal fractures. Mostly sub-horizontal. Piece 4B: Two 4 to 6 mm thick fibrous calcite plus smectites veins; sub-horizontal.

COMMENTS: End of Unit F12.

Pieces 5 and 6: Hard inter flow material. Probably highly indurated, carbonated siliceous sediment. Highly altered.



121-758A-67R-2

UNIT F13: APHYRIC BASALT. (121-758A-67R-2, Pieces 1A to 1C).

PIECES: 1A - 1C.

CURATED LENGTH: 1.44 m. (= Total curated length of Unit F13).

CONTACTS: Upper: Black, cryptocrystalline facies at the top of Piece 1 is probably a selvage. Basalt coarsens to fine grained at about 20 cm. Lower: Base of Piece 1C, and upper part of Section 121-758A-67R-3, comprises black cryptocrystalline basalt which is probably a selvage.

COMMENTS: The whole of this unit appears to have been recovered.

PHENOCRYSTS: In the finer-grained contact zone, micro-phenocrysts of green clinopyroxene (or olivine) and plagioclase occur. Size, about <0.5 mm, 2% of each.

GROUNDMASS: Cryptocrystalline to microcrystalline to fine grained in center of unit.

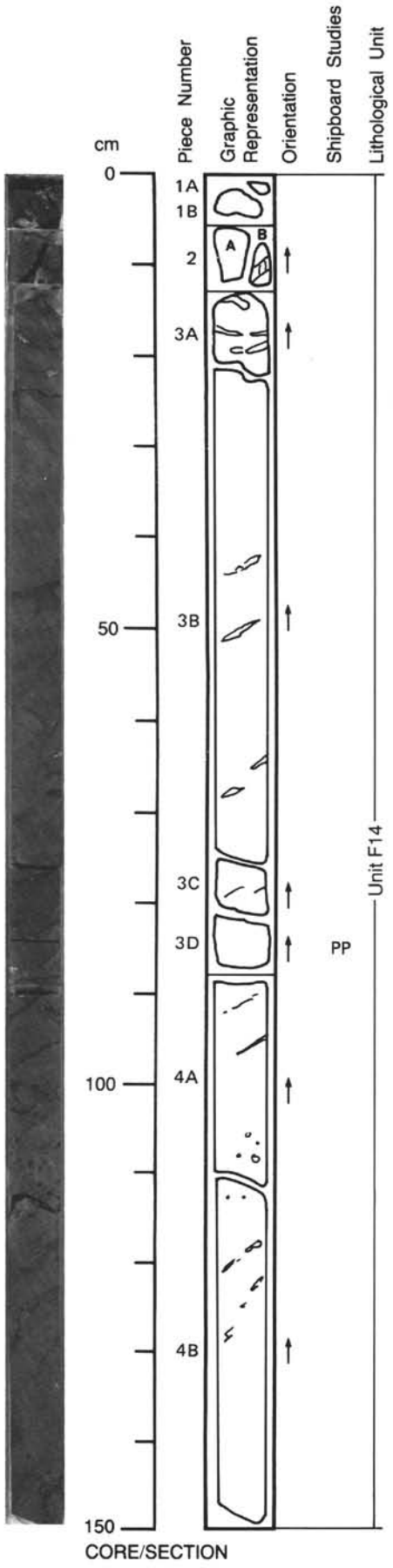
COLOR: Dark gray (2.5Y 4/0) to very dark gray (2.5Y 3/0) or black at margins (2.5Y 2/0).

VESICLES: Large irregular vesicles, 2 cm across about 4 to 13 cm below upper contact. Rare 3 cm pipe vesicles, about 8 cm above lower contact.

STRUCTURE: Thin (144 cm) flow.

ALTERATION: Looks fresh but probably moderate as groundmass contains clays. Selvages completely replaced by clay.

VEINS/FRACTURES: Sporadic veins of black smectites and calcite. Large vein and fracture at 63 cm, 40 degrees, smectites/chlorites/calcite.



121-758A-67R-3

UNIT F14: APHYRIC BASALT (121-758A-67R-3, Piece 1A to 121-758A-67R-4, Piece 3).

PIECES: 1A - 4B.

CURATED LENGTH: 148 cm. Total curated length of Unit 14 = 2.36 m.

CONTACTS: Upper: Top of Piece 3A is microcrystalline to cryptocrystalline dark gray basalt with a thin selvage. Fragments in Pieces 1 and 2 are cryptocrystalline basalt and selvage. All selvage material is now replaced by black clays. Lower: Base of Piece 3 in Section 121-758A-67R-4.

PHENOCRYSTS: Plagioclase: <1%, micro-phenocrysts occur in chilled zone. Possible clinopyroxene phenocrysts.

GROUNDMASS: Cryptocrystalline to fine grained in center of the unit. Black layers associated with vesicles stringers (e.g. at 98 cm) may be internal quench zones.

COLOR: Dark gray to very dark gray at contacts.

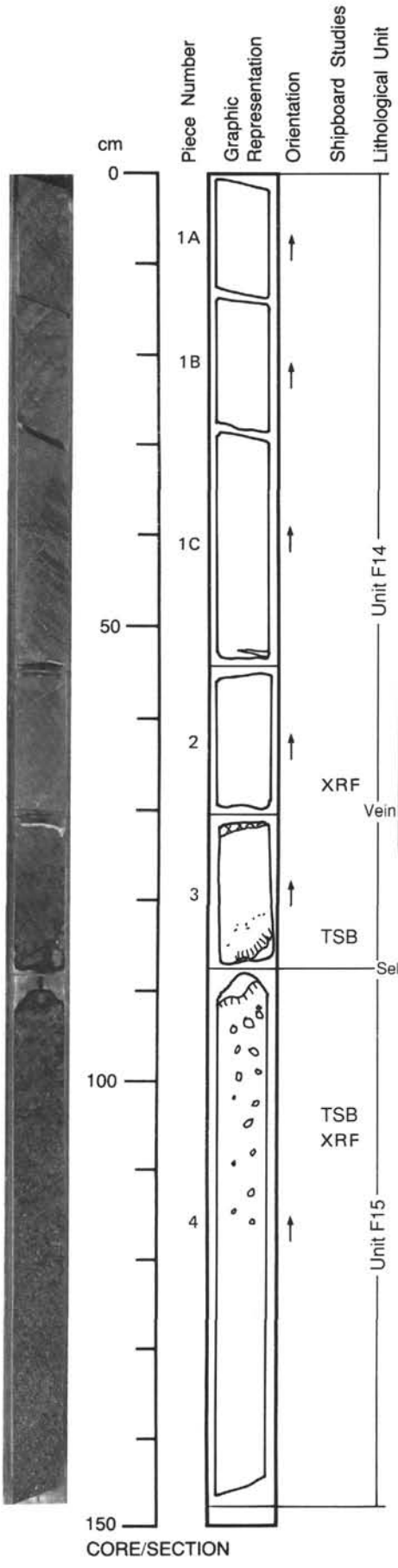
VESICLES: Stringers of irregular vesicles occur at: 17, 21, 26, 46, 66, 78, 82, 92, 98, 107, 120 and 128 cm. Attitude of stringers is 0 degrees at the top of the section, 70 degrees at the base. Flow orientation? All vesicles filled with green smectites.

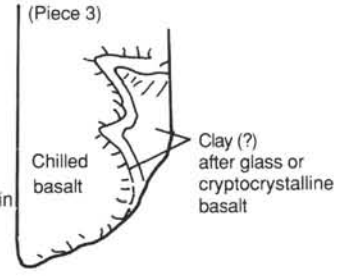
STRUCTURE: Thin flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Infrequent black smectites veins.

COMMENTS: This unit continues in Section 121-758A-67R-4.





121-758A-67R-4

UNIT F14: APHYRIC BASALT (Cont).

PIECES: 1 - 3.

CURATED LENGTH: 88 cm.

COMMENTS: The description of this Unit in Section 121-758A-67R-3 applies here except for the following features.

CONTACTS: Lower contact in Piece 3. Irregular selvage at the base of Piece 3, black and now replaced by clays. Appearance similar to upper contact. Attitude, about 80 degrees but may be part of undulation of curved selvage.

VESICLES: Vesicles string at about 10 cm above the contact.

ALTERATION: Moderate.

VEINS/FRACTURES: Piece 3: 3 mm, fibrous calcite and smectites (at 72 cm), horizontal.

UNIT F15: SPARSELY PLAGIOCLASE-PHYRIC BASALT (121-758A-67R-4, Piece 4 to 121-758A-67R-6, Piece 2).

PIECES: 4.

CURATED LENGTH: 57 cm. Total curated length of Unit = 2.44 m.

CONTACTS: Upper: Top of Piece 4, this section, 0.2 cm thick black undulating, sub-horizontal layer of clay (after glass selvage?) adjacent to cryptocrystalline and microcrystalline basalt. Spherulites close to selvage. Lower: Piece 2, Section 121-758A-67R-6.

PHENOCRYSTS: Plagioclase, 0.5 to 3 mm, 5 to 8%; pyroxene (?), < 2%.

GROUNDMASS: Cryptocrystalline to fine grained possibly subophitic towards base of the section 121-758A-67R-4, possibly finer grained in center of Section 121-758A-67R-5.

COLOR: Dark gray.

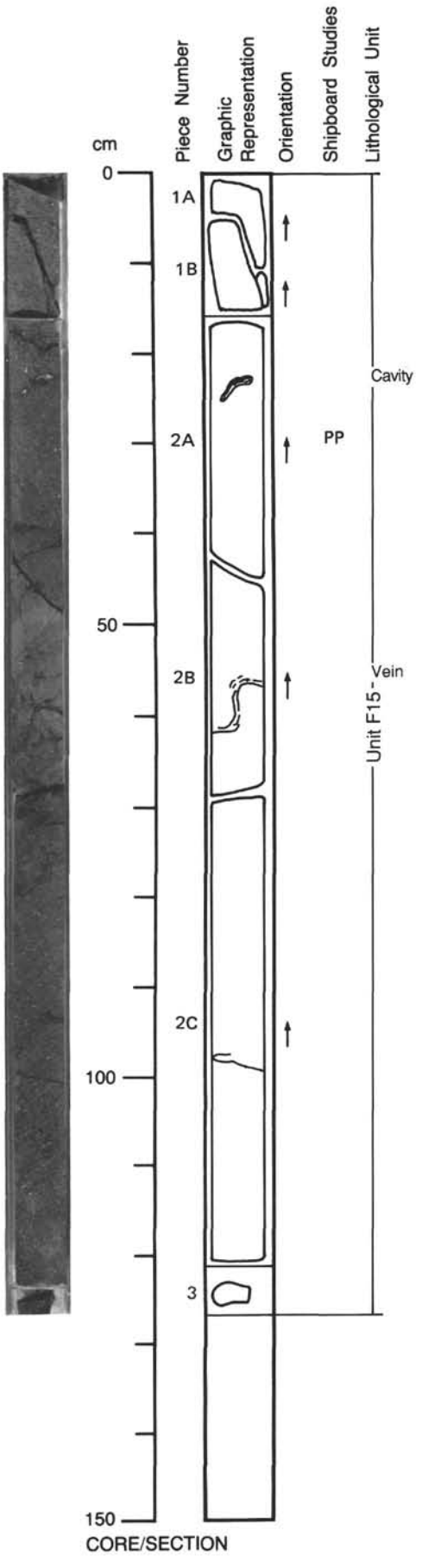
VESICLES: Zone of large smectites filled cavities up to 30 cm below contact. Size up to 30 mm diameter. Proportion of vesicles decreases down unit.

STRUCTURE: Thin flow.

ALTERATION: Moderate to high. Unit is vesicular and all vesicles are filled with either green smectites or calcite.

VEINS/FRACTURES: Thin sub-vertical black smectite-filled vein. Immediately below upper contact.

COMMENTS: This unit is distinct from overlying basalt in its high proportion of plagioclase and its larger cavities. Unit F15 continues in Sections 121-758A-67R-5 and -6.



121-758A-67R-5

UNIT F15: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1A - 3.

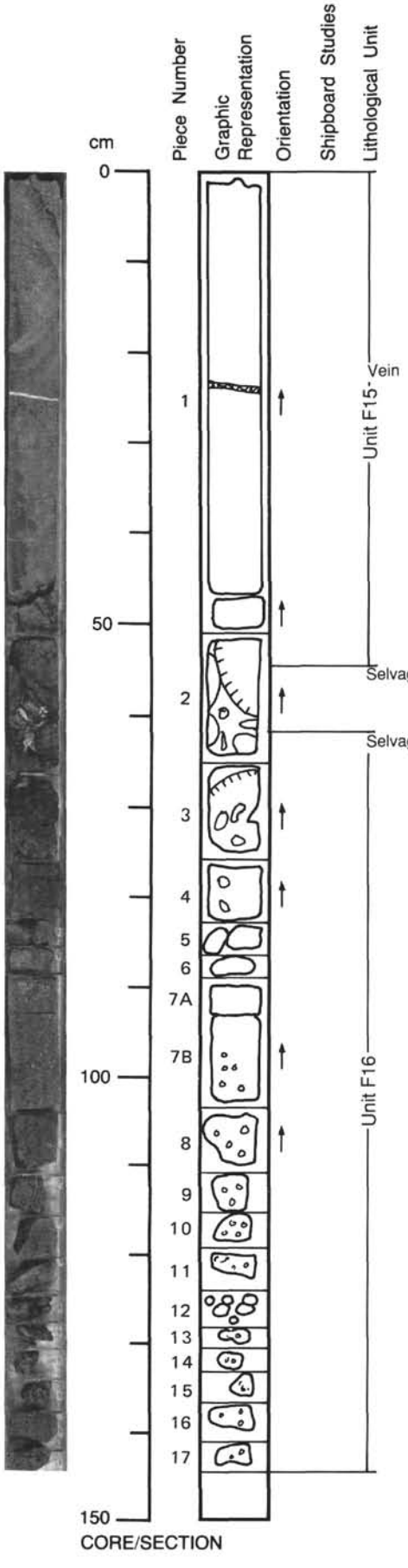
CURATED LENGTH: 127 cm.

COMMENTS: This unit is described in Section 121-758A-67R-4. That description applies here except for the following features. This unit continues in Section 121-758A-67R-6. 67R-6, Piece 2.

VESICLES: Calcite green smectite cavity at 24 cm.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 10 mm green and black smectite vein at 60 cm. 2 mm green and black smectites vein at 100 cm.



121-758A-67R-6

UNIT F15: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1 - 2.

CURATED LENGTH: 60 cm.

COMMENTS: This unit is described in detail in Section 121-758A-67R-4. This description applies here except for the following features.

CONTACTS: Lower: Distinctive chilled contact in Piece 2. Pillowed, black basalt contacts basaltic breccia with green matrix. Breccia zone: about 5 - 1 cm across. Hyaloclastite ?

ALTERATION: Moderate to high.

VEINS/FRACTURES: Calcite vein, 2.5 mm, 24 cm, 0 degrees.

UNIT F16: APHYRIC BASALT (121-758A-67R-6, Piece 3 to 121-758A-68R-3, Piece 4).

PIECES: 3 - 17 (may include base of Piece 2).

CURATED LENGTH: 77 cm. Total curated length of Unit = 4.26 m.

CONTACTS: Upper: Selvage of black basalt, now clay rich, above breccia. Between Pieces 2 and 3. Strongly vesicular below contact.

PHENOCRYSTS: Micro-phenocrysts of feldspar, clinopyroxene and possibly olivine occur in quenched area near margin. All are less than 1% abundance and smaller than 0.5 mm.

GROUNDMASS: Cryptocrystalline to fine grained.

COLOR: Greenish gray (5Y 4/1).

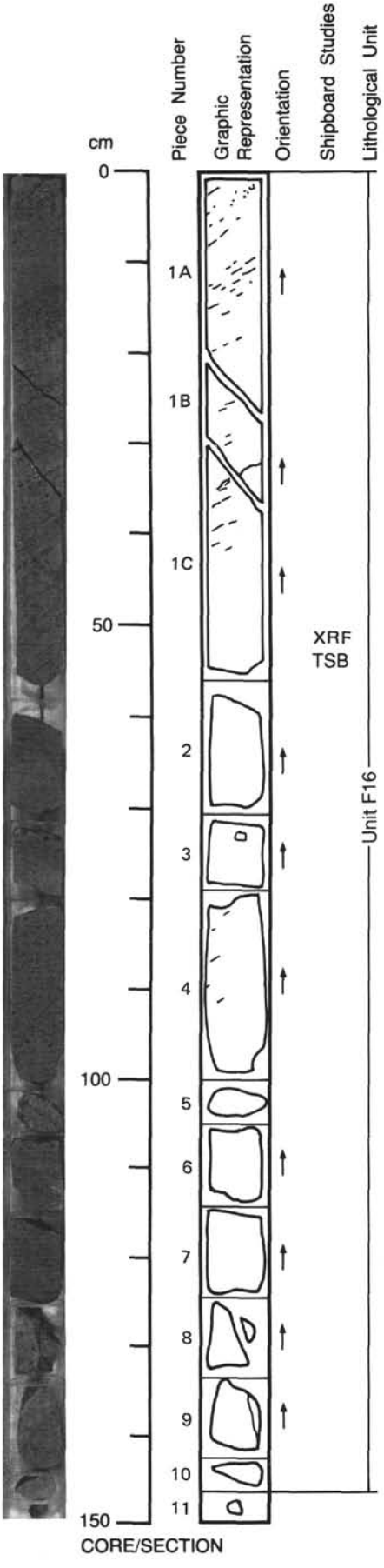
VESICLES: Beneath contact, from 69 to 82 cm, there are about 10%, large (10 to 30 mm), cavities. Rest of the unit in this section is highly vesicular, with about 20% vesicles. These are well rounded. All vesicles are filled with green, amorphous smectites, except between 90 and 100 cm where they are filled with calcite.

STRUCTURE: Flow (top part).

ALTERATION: Moderate to high. There is high percentage of vesicles which are filled with clays. The groundmass is greenish, probably because of clay replacement of mesostasis.

VEINS/FRACTURES: None.

COMMENTS: This unit continues in Section 121-758A-68R-1.



121-758A-68R-1

UNIT F16: APHYRIC BASALT (Cont).

PIECES: 1A - 11.

CURATED LENGTH: 149 cm.

CONTACTS: Upper contact in Section 121-758A-67R-6.

COMMENTS: This unit is described in detail in Section 121-758A-67R-6. This applies here except for the following features.

PHENOCRYSTS: None seen.

GROUNDMASS: Fine grained, with plagioclase microlites and clinopyroxene (some are micro-phenocrysts, 0.3 to 0.5 mm).

COLOR: Dark greenish gray (N4/5B 4/1 or 5G 4/1).

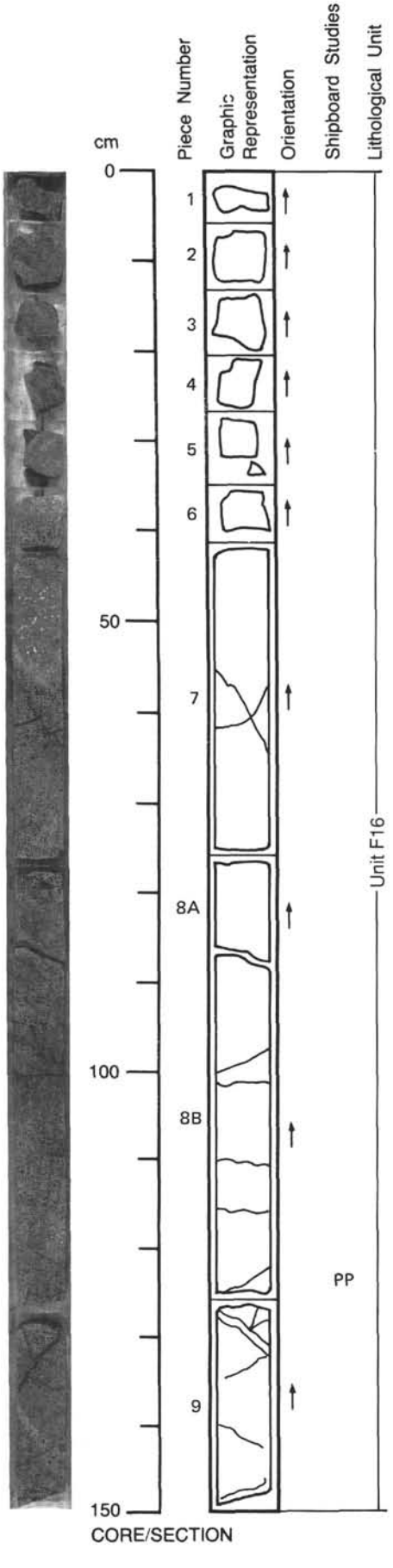
VESICLES: Numerous, green smectites plus calcite and sulfide. Up to 30% in certain areas. General orientation of the vesicles along strings, with a 10 to 30 degrees dip, which continues in Section 121-758A-68R-2 and appears parallel to the upper contact in Section 121-758A-67R-6, Piece 2. Usually, these amygdales have the same size along a single string. Over the section, the sizes vary from 1 to 10 mm, averaging at 2-4 mm. There are also some preferential areas where the vesicles are filled with calcite, occurring by patches; 20-22, 65-68, 75-78, 108-110, 126-128 *cm*.

STRUCTURE: Thin lava flow, with flow(?) orientation.

ALTERATION: Moderate to high.

VEINS/FRACTURES: Few, either along the alignment shown by the vesicles, e.g. at 4 cm, 18 cm in Piece 1A, smectites filled, or perpendicular to that alignment which is also a direction of preferential fracturation (e.g. Pieces 1A-1B-1C).

COMMENTS: This unit continues in Section 121-758A-68R-2.



121-758A-68R-2

UNIT F16: APHYRIC BASALT (Cont).

PIECES: 1 - 9.

CURATED LENGTH: 149 cm.

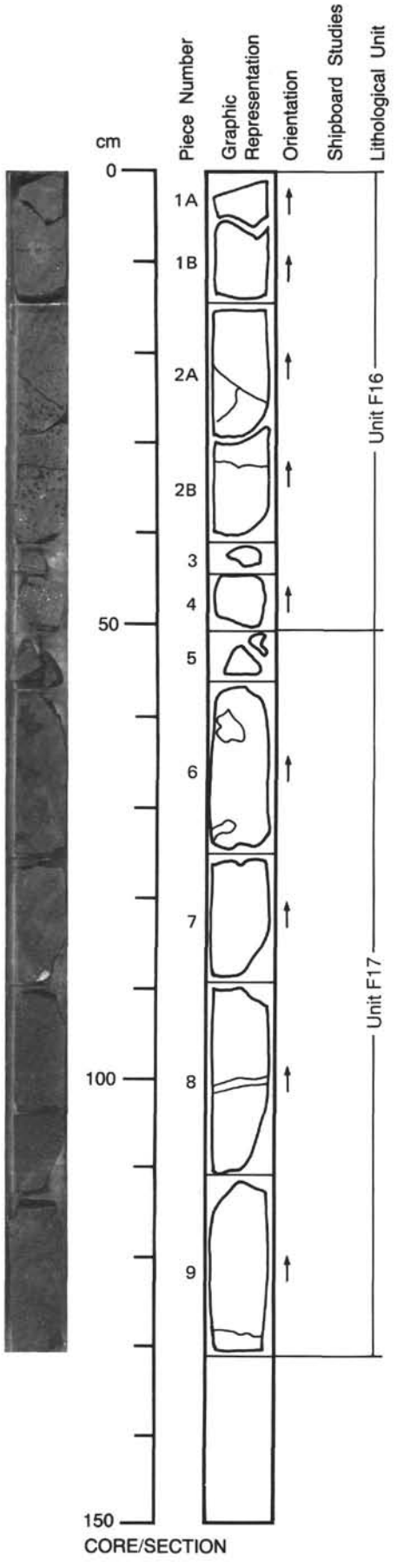
COMMENTS: This unit is described in Section 121-758A-67R-6. This description applies here except for the following features.

VESICLES: Fillings more variable, i.e. more calcite patches which are also bigger: 31-33, 36-39, 47-57, 64-76, 116-119 cm. Same orientation of the vesicles along 10-30 degrees dip up to the bottom of the section and the end of Unit F16 in Section 121-758A-68R-3.

ALTERATION: Moderate to high, especially where there are veins.

VEINS/FRACTURES: At 57, 62, 95, 100, 110, 115 and 137 cm, thin veins (1 to 3 mm), filled by green or dark green smectites.

COMMENTS: This unit continues in Section 121-758A-68R-3.



121-758A-68R-3

UNIT F16: APHYRIC BASALT (Cont).

PIECES: 1A - 4.

CURATED LENGTH: 50.5 cm.

CONTACTS: Lower contact not seen. Unit F16 becomes finer grained down the section with progressively less mesostasis. Lower contact drawn at the base of Piece 4 at marked lithologic break.

COMMENTS: This unit is described in detail in Section 121-758A-67R-6. This description applies here except for the following features.

GROUNDMASS: Becomes finer grained down the section.

COLOR: Lighter gray (N55BG 5/1).

VESICLES: More bluish color than in Section 121-758A-68R-2 and larger, 1 to 15 mm, in certain areas, smectite/calcite mixed (4-10, 25-30, 33-36 cm). Apparently, sulfide is more abundant (bigger fillings).

ALTERATION: High, more than in 121-758A-68R-2.

VEINS/FRACTURES: Dark green smectites veins, 2-3 mm.

COMMENTS: End of Unit F16 at Piece 4.

UNIT F17: SPARSELY PLAGIOCLASE-PHYRIC BASALT (121-758A-68R-3, Piece 5 to 121-758A-69R-5, Piece 1C).

PIECES: 5 - 9.

CURATED LENGTH: 80 cm. Total curated length of unit F17 = 9.62 m.

CONTACTS: Not seen.

PHENOCRYSTS: Plagioclase, 1-3 mm varying from 1 to 3%, subhedral.

GROUNDMASS: Fine-grained plagioclase and clinopyroxene.

COLOR: Mottled, gray to dark gray, 2.5Y N5/0 to 2.5Y N3/0.

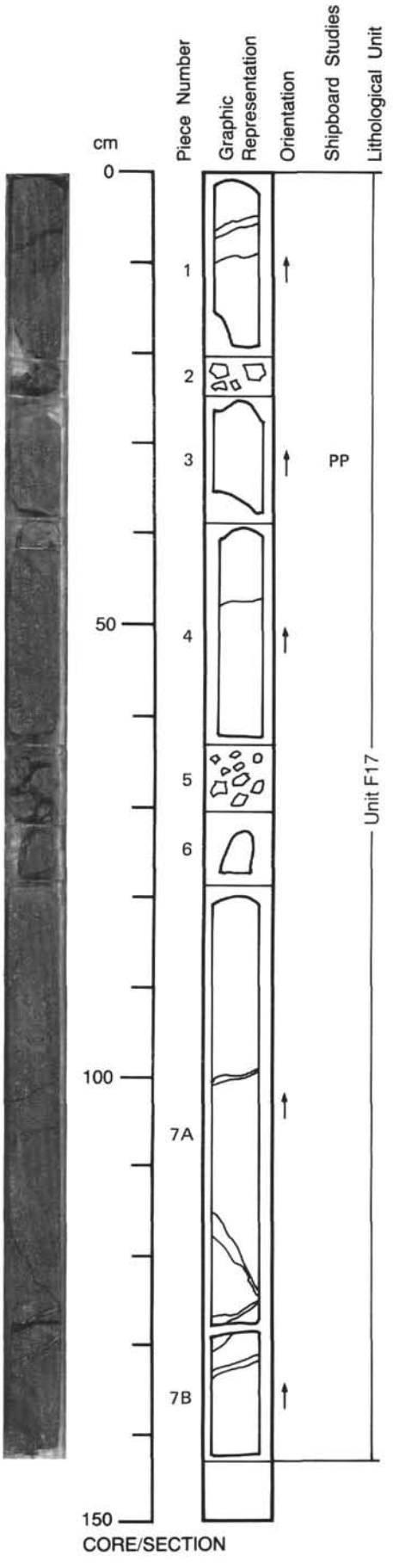
VESICLES: 10%, 0.5 to 2 mm, filled with dark gray to black smectites. Piece 6 contains 1 to 3 cm patches filled with gray green clay; some contain sulfide (5 mm).

STRUCTURE: Thick flow (this unit continues in Sections 121-758A-68R-4, -5, and through most of Core 121-758A-69R).

ALTERATION: Highly altered, plagioclase phenocrysts not fresh.

VEINS/FRACTURES: 88 cm, lower surface of Piece 7, 1 to 5 mm gray green smectite/calcite. 102-103 and 128-130 cm: These regions are more altered with abundant gray green smectites related to poorly defined veins.

COMMENTS: This unit continues in Section 121-758A-68R-4.



121-758A-68R-4

UNIT F17: SPARSELY TO MODERATELY PHYRIC BASALT (Cont.).

PIECES: 1 - 7B.

CURATED LENGTH: 143 cm.

COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features.

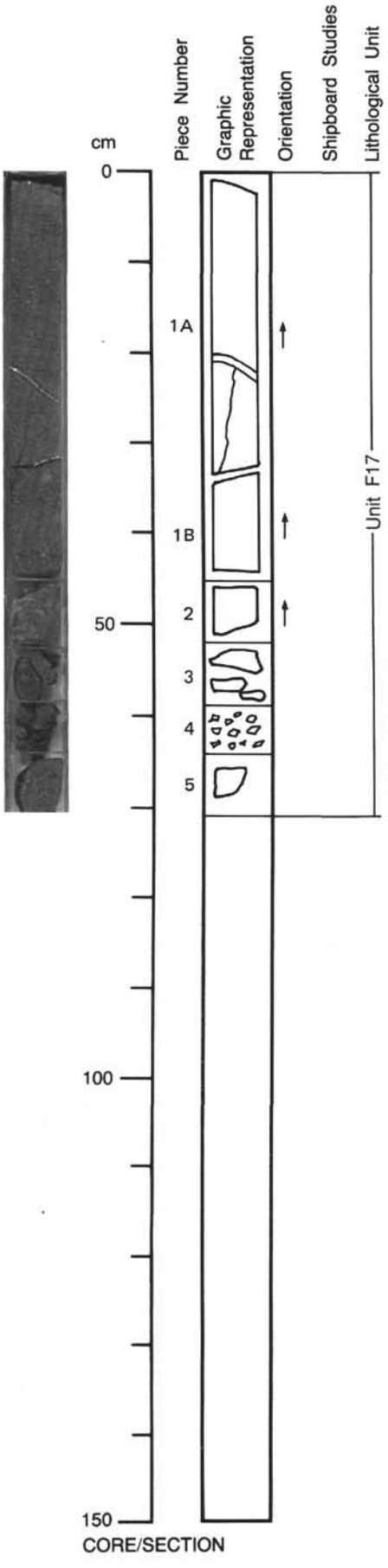
PHENOCRYSTS: Plagioclase slightly larger (to 5 mm) and more abundant (2 to 5%) than in Section 121-758A-68R-3.

VESICLES: In patches, e.g., Piece 3 has up to 25% of vesicles which contain calcite centers and smectite rims.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 6-8 cm: 2-4 mm, black smectites; 9-10 cm: <1 mm, black smectites; 48 cm: 1 mm, black smectites, 0 degrees; 100-102 cm: 2 mm, black smectites with calcite center, 15 degrees; 115-126 cm: 2-4 mm, black smectites, 45 degrees; 126-127 and 129-132 cm, 2-4 mm, black smectites, with 1-2 mm calcite centers plus sulfide patches, 30 degrees.

COMMENTS: This unit continues in Section 121-758A-68R-5.



121-758A-68R-5

UNIT F17: SPARSELY TO MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A - 5.

CURATED LENGTH: 71.5 cm.

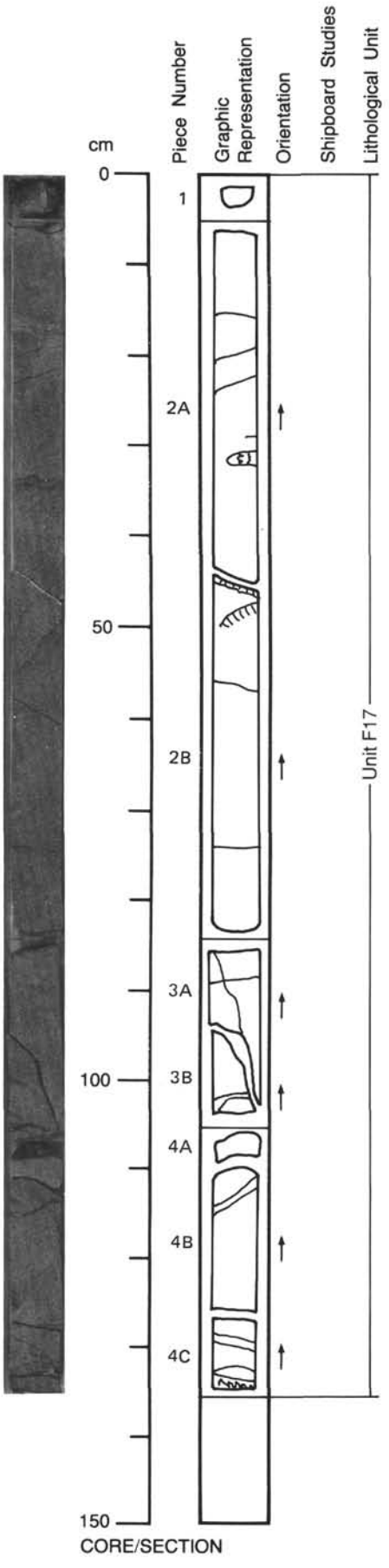
COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features:

VESICLES: Fragments (Piece 3) contain about 1% sulfide, associated with vesicles.

ALTERATION: *Moderate to high.*

VEINS/FRACTURES: 22-26 cm, 4 mm thick, black smectites filled with 2-3 mm calcite center (30 degrees). 23-36 cm, 1 mm thick, black smectites (80 degrees). 32-35 cm, calcite-smectites veins, 2 mm thick, separating Pieces 1A and 1B.

COMMENTS: This unit continues in Section 121-758A-69R-1.



121-758A-69R-1

UNIT F17: SPARSELY TO MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 - 4C.

CURATED LENGTH: 136 cm.

COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features.

PHENOCRYSTS: Plagioclase, 1 to 5 mm, euhedral to subhedral, 1-2%.

GROUNDMASS: Fine grained, in addition, at 33-34 and 50-53 cm, there are very fine-grained zones (internal chills?).

COLOR: Mottled, dark gray (2.5Y N5/0 to 2.5 N3/0).

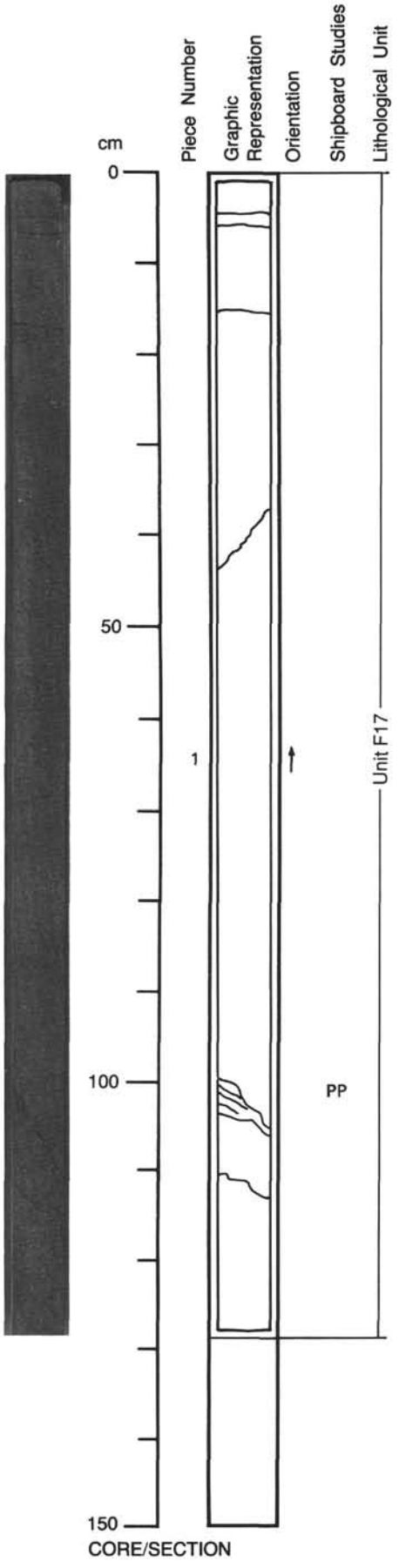
VESICLES: 20-25% patches filled by gray green (when wet) to black (when dry) clays.

STRUCTURE: Thick flow.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 17 cm, 2 mm thick, yellow green smectite and calcite (0 degrees), 5 mm sulfide; 20 cm, 1 mm thick, gray green smectite and calcite (5 degrees); 23 cm, 1 mm thick, yellow green smectite (10 degrees); 33-34 cm, 1 cm wide (0 degrees) band with light gray matrix (see groundmass discussion); 43-46 cm, 2 mm thick, calcite vein separating Piece 2A and 2B; 57-60 cm, 1 mm thick, smectite with sulfide (15 degrees); 73 cm, 1 mm thick, smectite with sulfide (0 degrees). 89 cm, 1 mm thick, smectite with calcite center (0 degrees); 105 and 115 cm, 3 mm thick, smectite with calcite centers (0 degrees); Piece 4C, 128-136 cm anastomosing smectite veins, larger vein, 4 mm, with calcite center; 136 cm, 10 mm, calcite-smectite vein at bottom surface.

COMMENTS: This unit continues in Section 121-758A-69R-2.



121-758A-69R-2

UNIT F17: MODERATELY PHYRIC PLAGIOCLASE BASALT.

PIECES: 1.

CURATED LENGTH: 129 cm (one continuous Piece).

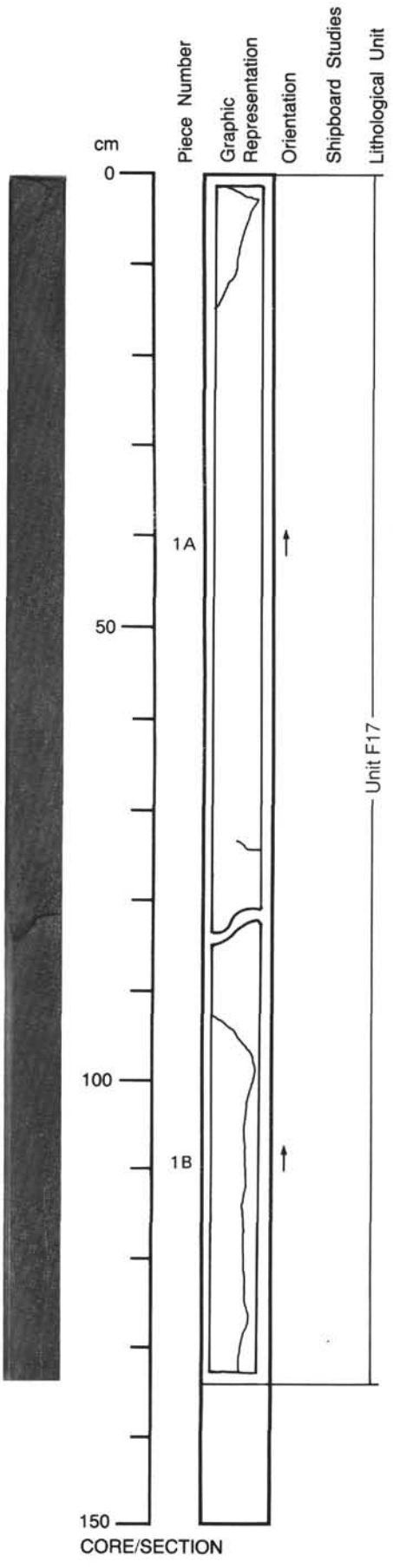
COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features.

VESICLES: In places, 1 to 10 % of the vesicles are calcite filled.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 5-6 cm, 1 mm thick, black smectite (0 degrees). 16 cm, 2 mm thick, black smectite with sulfide patches (0 degreees). 40-45 cm, 1 mm thick, irregular smectite vein with calcite center. 100-110 cm, 1 mm thick, anastomosing smectite vein with sulfide.

COMMENTS: This unit continues in Section 121-758A-69R-3.



121-758A-69R-3

UNIT F17: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1A - 1B.

CURATED LENGTH: 134 cm.

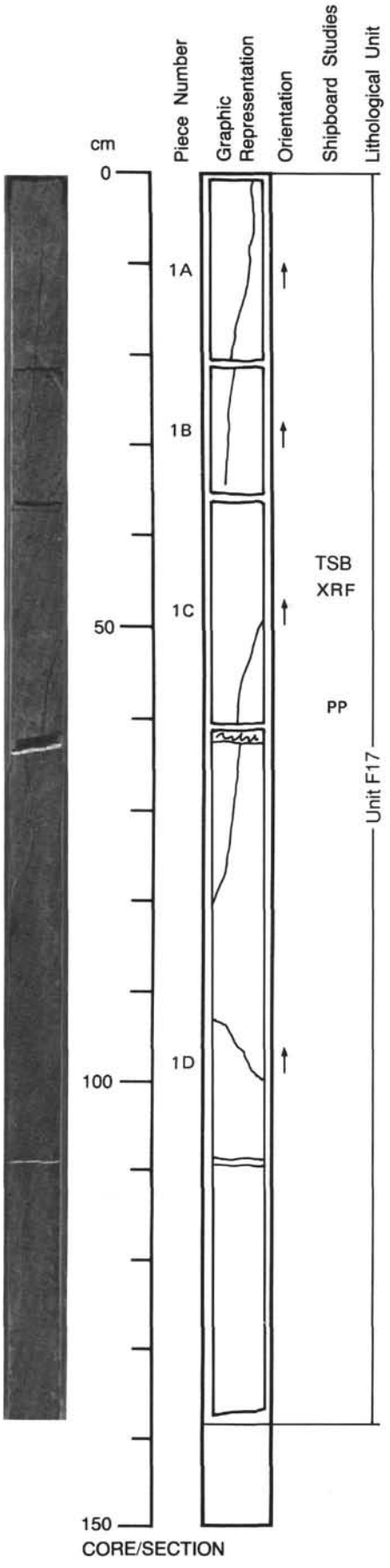
COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features.

GROUNDMASS: From 89 to 103 cm, there is a zone which is finer grained and has only sparse plagioclase phenocrysts. Not an obvious chill zone but clear grain size difference.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 1-13 cm, 1 mm thick, smectite with sulfide (80 degrees); 80-82 cm, 1-2 mm, smectite-calcite vein separating Pieces 1A - 1B; 94-134 cm, 1-2 mm, calcite vein with dark smectite lining.

COMMENTS: This unit continues in Section 121-758A-69R-4.



121-758A-69R-4

UNIT F17: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1A - 1D.

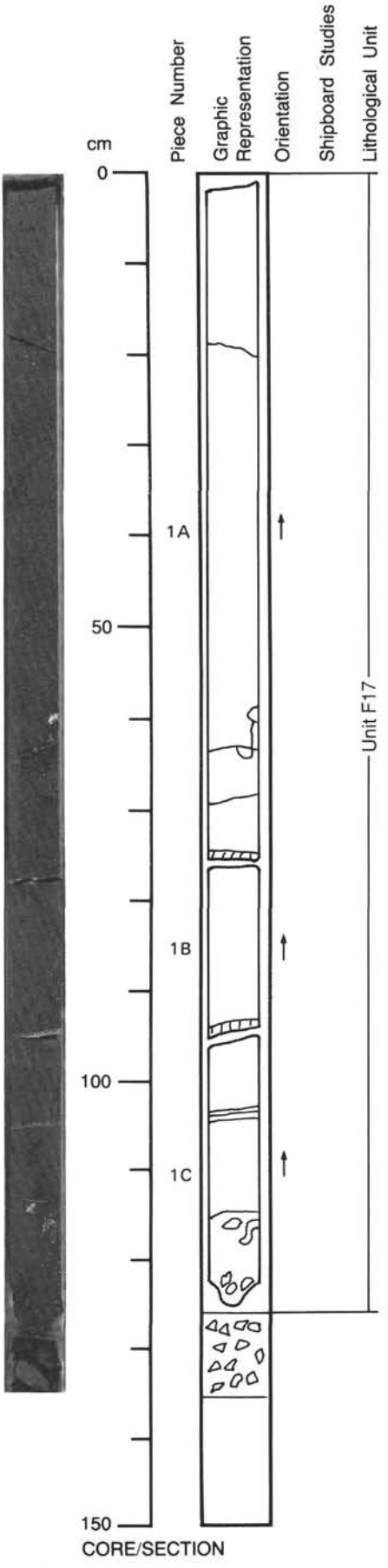
CURATED LENGTH: 138.5 cm.

COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 1-36 cm, 2 mm thick, 90 degrees, smectite with calcite contacts in upper 12 cm and lower 7 cm; 58-63 cm, 1-2 mm thick, black smectite with sulfide; 63 cm, 4 mm thick, calcite vein separating Pieces 1C - 1D; 63-80 cm, 1 mm thick, calcite smectite (90 degrees); 108 cm, 3 mm thick, calcite vein (0 degrees).

COMMENTS: This unit continues in Section 121-758A-69R-5.



121-758A-69R-5

UNIT F17: MODERATELY PLAGIOCLASE-PHYRIC BASALT (Cont).

PIECES: 1A - 1C.

CURATED LENGTH: 128 cm.

CONTACTS: Lower contact not seen but Piece 1C has larger vesicles and is finer grained.

COMMENTS: This unit is described in detail in Section 121-758A-68R-3. This description applies here except for the following features.

PHENOCRYSTS: Plagioclase phenocrysts have a yellow green color.

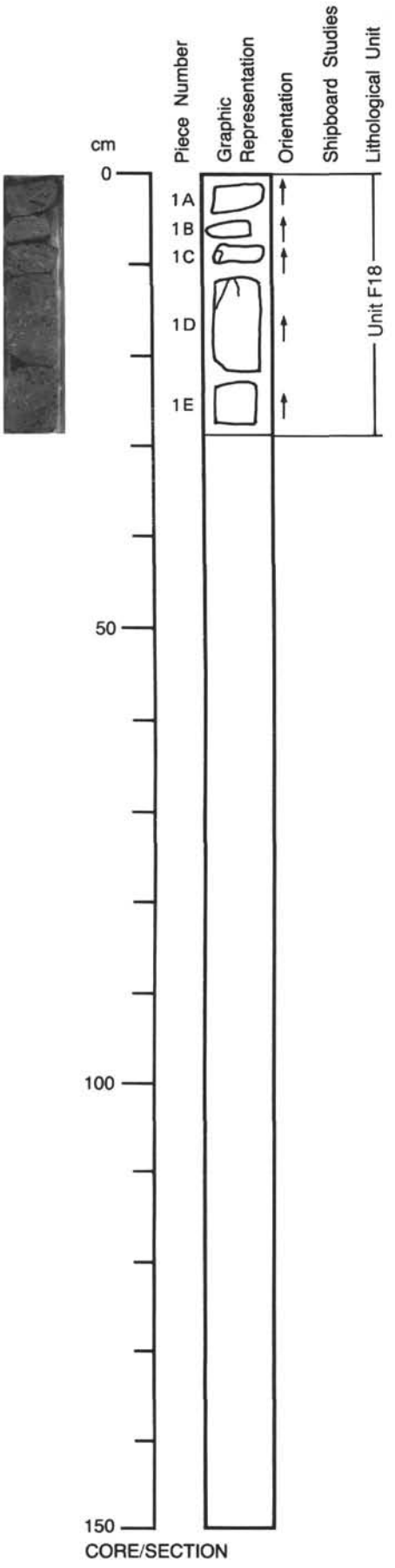
GROUNDMASS: At 55 cm, the groundmass gradually decreases in size and becomes microcrystalline in Piece 1C as the contact is approached.

VESICLES: From 122 to 127, in Piece 1C, there are 0.5 to 2 cm elongated vesicles filled with black smectite and at 113 to 116 cm, cavities filled with calcite. In addition, abundant vesicles (smectite filled) at 33-35 cm and 60-65 cm.

ALTERATION: Moderate to high.

VEINS/FRACTURES: 19-20 cm, 1 mm thick, black smectite (5 degrees); 59-63 cm, complex system of veins (black smectite sulfide) and calcite filled cavities; 67-69 cm, 1 mm thick, vein alternating calcite black smectite segments; 77 cm, 3 mm thick, calcite (2 degrees); 93-94 cm, 5 mm thick, calcite separating Pieces 1B - 1C (5 degrees); 104 cm, 5 mm thick, complex compound vein with calcite, 1 mm, forming boundary then 2-4 mm of gray green smectite with thin calcite center (0 degrees); 112 cm, 1 mm thick, calcite (0 degrees).

COMMENTS: End of Unit F17 at 128 cm. A very dark greenish gray (darker than 5GY4/1) silt to sand size tuff containing some larger clasts less than 0.5 cm in diameter make up the interval from 128-136 cm and form an intercalation between Units F17 and F18 in Section 121-758A-69R-6. One microcrystalline 4 cm basalt fragment occurs with the Pieces of tuff.



121-758A-69R-6

UNIT F18: APHYRIC BASALT (121-758A-69R-6, Piece 1A to 121-758A-70R-1, Piece 11D).

PIECES: 1A to 1E.

CURATED LENGTH: 28 cm. Total curated length of Unit F18 = 1.77 m.

CONTACTS: Upper contact not recovered but these Pieces are microcrystalline, and the next section (121-758A-70R-1) is coarser grained.

PHENOCRYSTS: None.

GROUNDMASS: Microcrystalline.

COLOR: Dark gray 7.5YR N4/0.

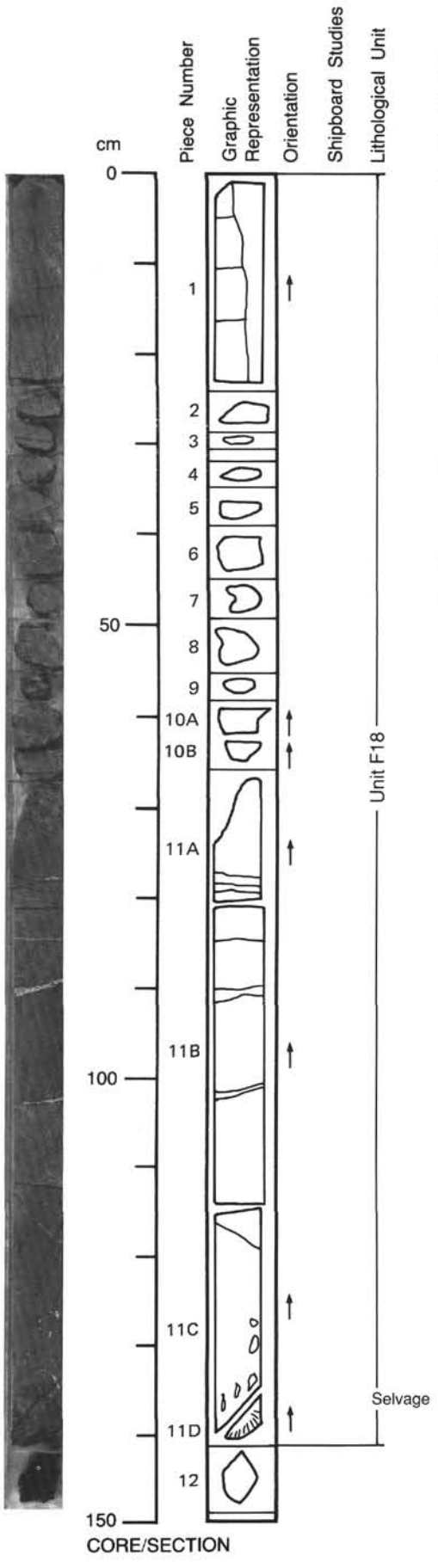
VESICLES: About 25% of the 1-2 mm vesicles in Piece 1A are filled with black to gray green smectite. A 2 cm open cavity occurs in Piece 1A. In Piece 1B, 25% of the vesicles are calcite filled. Unusually, 10% are only partially filled. Vesicles larger (5-10 mm) in Pieces 1D and 1E, many filled with calcite centers and smectite rims or half and half with calcite and smectite.

STRUCTURE: Thin flow.

ALTERATION: Highly altered.

VEINS/FRACTURES: <1 mm smectite veins in Pieces 1C and 1D.

COMMENTS: This unit continues in Section 121-758A-70R-1.



121-758A-70R-1

UNIT F18: APHYRIC BASALT (Cont.).

PIECES: 1 - 11D.

CURATED LENGTH: 149 cm.

CONTACTS: Unit F18 becomes microcrystalline approaching the base of Piece 11D (140-142 cm) and has vertically orientated, elongate vesicles 5 mm above contact with the breccia. The latter is composed of light green, dark green and dusky red 0.5 mm fragments.

COMMENTS: Part of this unit is described in Section 121-758A-69R-6. This description applies here except for the following features.

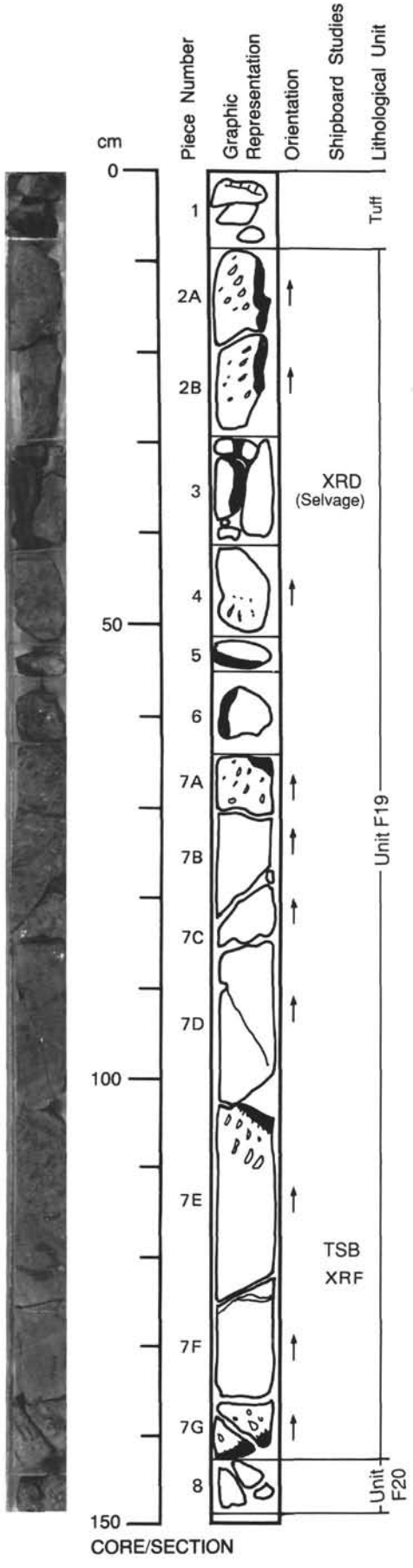
GROUNDMASS: Pieces 1-11B are slightly more coarse grained than in 121-758A-69R-6. Piece 11C and 11D are microcrystalline.

VESICLES: Rare, 1%, rounded 1-2 mm filled with black smectite plus irregular 1-2 mm patches of black smectite. Pieces 11C and 11D have larger vesicles up to 1 cm filled with calcite, elongate vertically 5-15 mm at contact of Pieces 11C and 11D, and filled with black smectite. In Piece 11D these vertically oriented, 1-5 mm, vesicles overlie the contact breccia at the base of Piece 11D.

VEINS/FRACTURES: 0 to 23 cm: 1-2 mm smectite vein (90 degrees) with 0 degree branches. From 7 to 9 cm the veins have yellow brown smectite borders. Yellow brown smectite also fills a vesicle at 2 cm. At 63 cm, 78-80 cm, 89-90 cm, and 102 cm: 1-5 mm wide veins of calcite and gray green smectite (0 degrees). At 85 cm: 1 mm-wide vein of calcite and black smectite.

COMMENTS: End of Unit F18 at the bottom of Piece 11D.

TUFF: The interval from 140-149 cm is dark greenish gray (5BG 4/1) and dark bluish gray (5B 4/1) mottled and highly altered. It is interpreted as a tuff. The contact with the basalt is mildly convoluted and partially preserved in Piece 11D. The Piece has slickensided surfaces and is clearly clay rich. The top of the following section (121-758A-70R-2, 0-7.5 cm) also contains some structureless tuff fragments and a 2 cm basalt Piece.



121-758A-70R-2

UNIT F19: APHYRIC PILLOWED BASALT (121-758A-70R-2, Piece 2A to Piece 7G).

CURATED LENGTH: 1.36 m = total curated length of Unit F19.

CONTACTS: The unit comprises basalt pillows with glassy salvages in Pieces 2A, 2B, 3, 5, 7A, 7E, and 7G. The upper contact is the statigraphically highest selvage of Piece 2A, which is adjacent to greenish tuff of Piece 1. The lower contact is marked by Piece 7G which is adjacent to vesicular basalt of Unit 20.

PHENOCRYSTS: None seen.

GROUNDMASS: Glassy (now replaced by black clay) to microcrystalline in pillow cores.

COLOR: Dark gray (7.5YR 4/0) in pillow interiors to black (7.5YR 2/0) at margins.

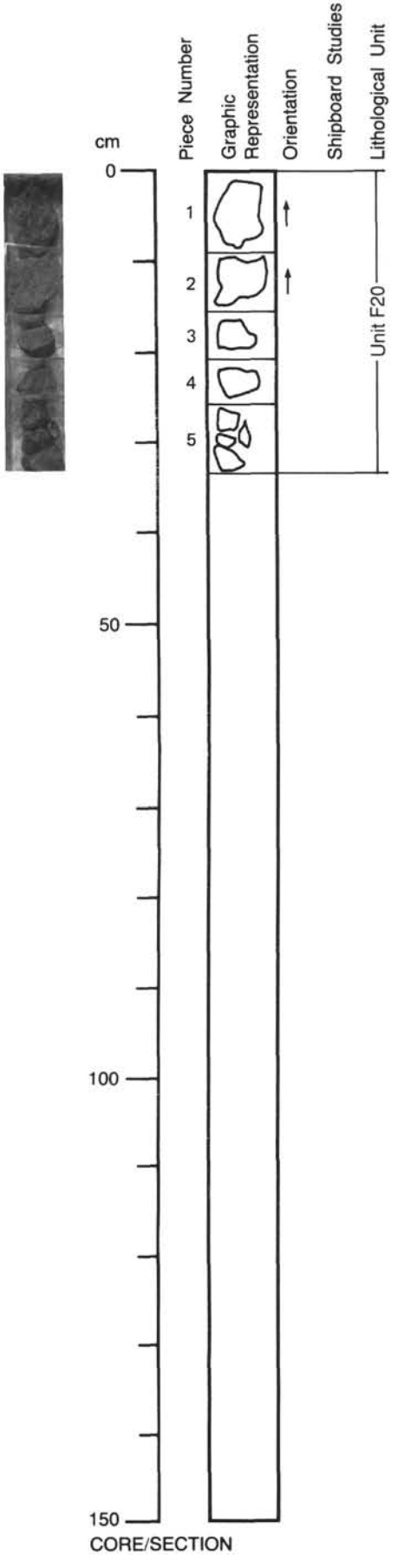
VESICLES: Nonuniform distribution. About 15 mm below glassy margins is a zone of 5-10 mm irregular vesicles. 10 mm below this is a second zone of elongated vesicles 5-15 mm long, orientated normal to the margin. This arrangement is observed in Pieces 2A, 4, 7A, and 7E. All the vesicles are filled, the majority with amorphous olive green smectite. In Pieces 7C and 7D, calcite also occurs.

STRUCTURE: Pillowed basalt flow. (At least three pillow sections).

ALTERATION: Moderate. All glass replaced by clay but vitreous lustre retained. Groundmass gray, apparently fresh; vesicles infilled by green smectite.

VEINS/FRACTURES: Fractures normal to the margins of the pillows are common especially in Pieces 2, 3, and 4. Fractures are lined with black smectite and clay.

COMMENTS: Piece 1 in this section is a green tuff. Piece 5 is carbonated(?) basalt(?). Piece 8 is described in Section 121-758A-70R-3.



121-758A-70R-3

UNIT F20: APHYRIC BASALT (Section 121-758A-70R-2, Piece 8 to 121-758A-71R-2, Piece 4).

PIECES: 1 - 5.

CURATED LENGTH: 33 cm. Total curated length of Unit F20 = 2.22 m.

CONTACTS: None seen. Boundaries drawn between Pieces with marked lithologic contrast.

PHENOCRYSTS: None seen.

GROUNDMASS: Fine-grained plagioclase + clinopyroxene with clay-rich mesostasis.

COLOR: Dark gray 7.5YR 4/6 with pale greenish tint.

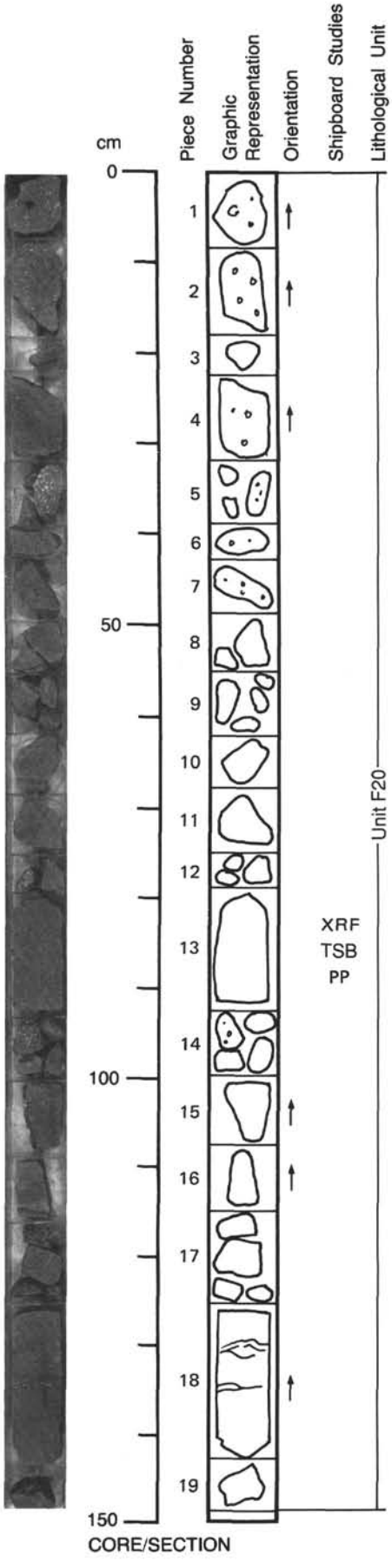
VESICLES: 121-758A-70R-2, Piece 8 and 121-758A-70R-3, Pieces 1-3, contain 10-20% vesicles, 1-3 mm spherical all filled with calcite or green black smectite or both. 121-758A-70R-3, Pieces 4-5 are sparsely vesicular (<5%).

STRUCTURE: Thin flow.

ALTERATION: Moderate to high. Rock has a dusty appearance due to the high clay content.

VEINS/FRACTURES: None visible.

COMMENTS: Unit F20 continues in 121-758A-71R-1.



121-758A-71R-1

UNIT F20: APHYRIC BASALT (Cont.).

PIECES: 1 - 19.

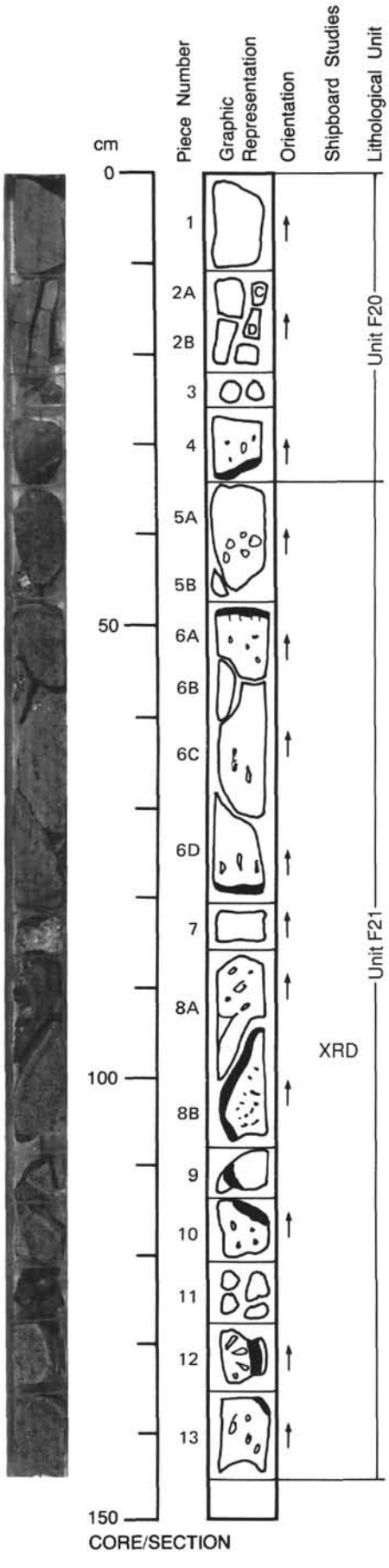
CURATED LENGTH: 149 cm.

COMMENTS: Unit F20 continues from 121-758A-70R-3 and the description in that section applies here along with the following additional comments.

VESICLES: Pieces 1-7 and 14 contain up to 20% vesicles, 1-2 mm spherical. Fillings generally dark green smectite. In Pieces 1, 2, 5, and 14 the filling is also calcite. Piece 1 has 8 mm diameter cavity lined with smectite.

VEINS/FRACTURES: Piece 18 has 3 smectite and calcite lined fractures. Sub-horizontal. Thickness 1-3 mm.

COMMENTS: Unit F20 continues in 121-758A-71R-2.



121-758A-71R-2

UNIT F20: APHYRIC BASALT (Cont).

PIECES: 1- 4.

CURATED LENGTH: 26 cm.

COMMENTS: This unit has been described in detail in 121-758A-70R-3. The same description applies here except for the following.

CONTACTS: Lower contact: Piece 4. Unit F20 abuts against chilled upper margin of Unit F21. Contact is preserved as black selvage, now replaced by clays, fused onto base of Unit F20. The selvage is probably from the underlying pillow

COMMENTS: End of Unit F20.

UNIT F21: APHYRIC PILLOW BASALT (121-758A-71R-2, Piece 5A to 121-758A-71R-3, Piece 1).

PIECES: 5A - 13.

CURATED LENGTH: 121 cm.

CONTACTS: Upper contact, glassy selvage (now replaced by clay) attached to base of Piece 4. There are glassy salvages in Pieces 6A, 6D, 8B, 9, 10 and 12, now replaced by clays which can be related to five separate pillows. The lower contact is at the base of 121-758A-71R-3 Piece 1).

GROUNDMASS: Glassy to microcrystalline.

COLOR: Dark gray to black.

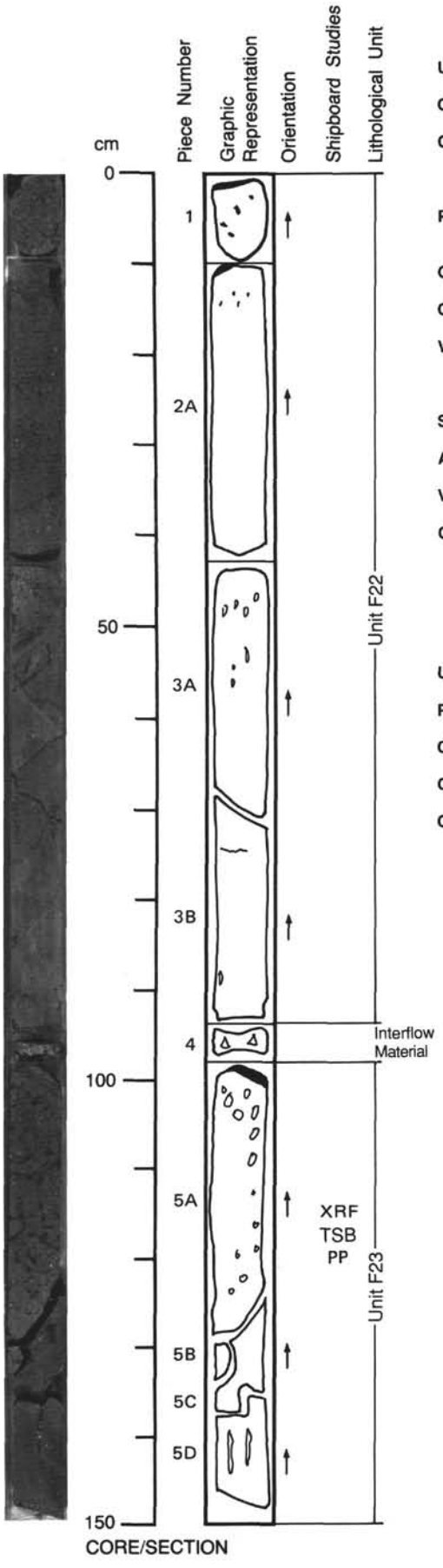
VESICLES: Large vesicles up to 10 mm occur radially, ca. 3 cm inside salvages. All filled with green smectite, or more rarely (Pieces 6B, 6C) with calcite. Pipe vesicles about 20 mm long occur in Pieces 6C and 6D.

STRUCTURE: Pillowed basalt, four or five separate pillows.

ALTERATION: Groundmass alteration is difficult to determine but probably extensive. Vesicles and fractures are smectite filled.

VEINS/FRACTURES: Highly fractured, with radial fractures.

COMMENTS: Pieces 7 and 8A comprise smectite-calcite rich interflow material (breccia).



121-758A-71R-3

UNIT F22: APHYRIC BASALT (121-758A-71R-3, Pieces 2 to 3B).

CURATED LENGTH: 85 cm. = Total curated length of Unit.

CONTACTS: Upper contact: Piece 1 has a chilled margin, almost a selvage on its upper surface. Lower contact: Unit shows fining of grain size at base of Piece 3B. Piece 4 is interflow carbonated basaltic breccia.

PHENOCRYSTS: None near upper contact. Plagioclase phenocrysts occur in trace amounts lower down the unit.

GROUNDMASS: Cryptocrystalline to fine grained. Clinopyroxene and plagioclase.

COLOR: Medium gray, dark gray near contacts.

VESICLES: Variable, 10-20% in Pieces 1 and 2 and top of Piece 3; few vesicles in rest of Piece 3. Pipe vesicles 1-3 cm long in Piece 3. Sizes range from 1 to 30 mm. Fillings: Green, black smectite and pyrite cores.

STRUCTURE: Thin flow. May be part of the Unit F21 pillow basalt sequence.

ALTERATION: Moderate to high; Piece 2 looks clay rich.

VEINS/FRACTURES: Occasional thin black smectite veins.

COMMENTS: Piece 4 is a 2 cm thick disc of green and white rock with black angular fragments. Carbonated. Probably a highly altered hyaloclastite (interflow material, cf Section 121-758A-71R-2, Pieces 7 - 8A).

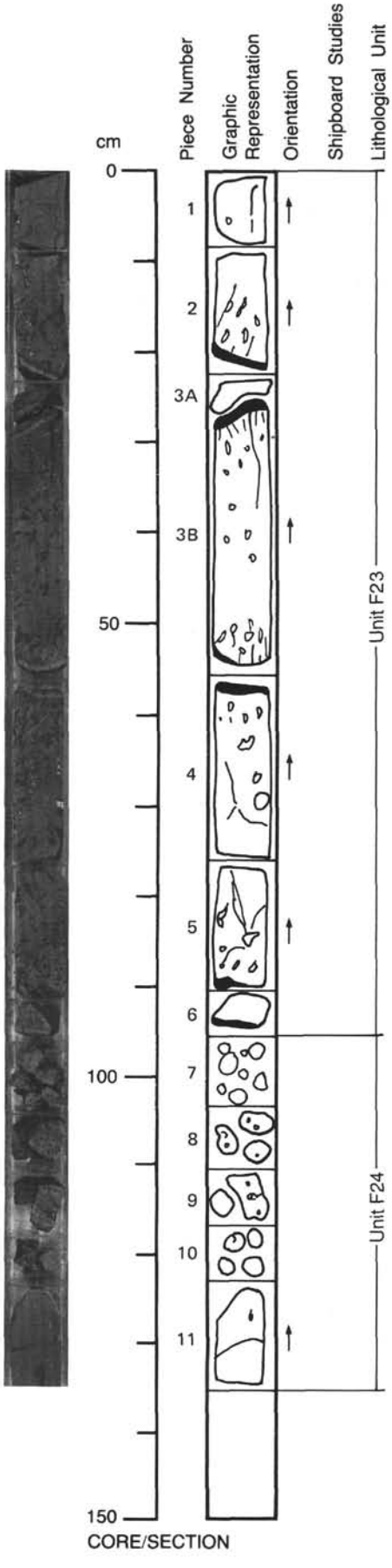
UNIT F23: APHYRIC BASALT (121-758A-71R-3, Piece 5A to 121-758A-71R-4, Piece 6).

PIECES: 5A - 5D.

CURATED LENGTH: 50 cm. Total curated length of Unit = 1.46 m.

COMMENTS: This unit is described in detail in 121-758A-71R-4.

CONTACTS: Upper, glass selvage now replaced by black clay is at the top of Piece 5A.



121-758A-71R-4

UNIT F23: APHYRIC BASALT.

PIECES: 1 - 6.

CURATED LENGTH: 96 cm.

COMMENTS: This unit starts at Piece 5A in Section 121-758A-71R-3.

CONTACTS: Lower contact not seen in the core.

PHENOCRYSTS: Plagioclase 2-3 mm, traces.

GROUNDMASS: Glassy to fine grained in pillow centers.

COLOR: Black to dark gray.

VESICLES: Piece 5A, Section 121-758A-71R-3 and all Pieces in this section are strongly vesicular with up to 20% vesicles oriented radially and in zones 0.5-15 cm below salvages. All filled with dark green smectite.

STRUCTURE: Pillow basalts. Selvage indicates margins of pillow. Uppermost pillow is similar to Unit F22 which may simply be a thicker than normal pillow(?).

ALTERATION: The degree of alteration is difficult to determine; full vesicles and altered glass suggest `moderate'.

VEINS/FRACTURES: Few smectite and calcite filled veins. Pieces 7, 8 and 9 and fragmentary. Small radial fractures, 1-2 cm long occur beneath the selvages.

COMMENTS: Unit F23 ends at Piece 6.

UNIT F24: APHYRIC BASALT (121-758A-71R-4, Piece 7 to 121-758A-72R-2, Piece 1C).

PIECES: 7 - 11.

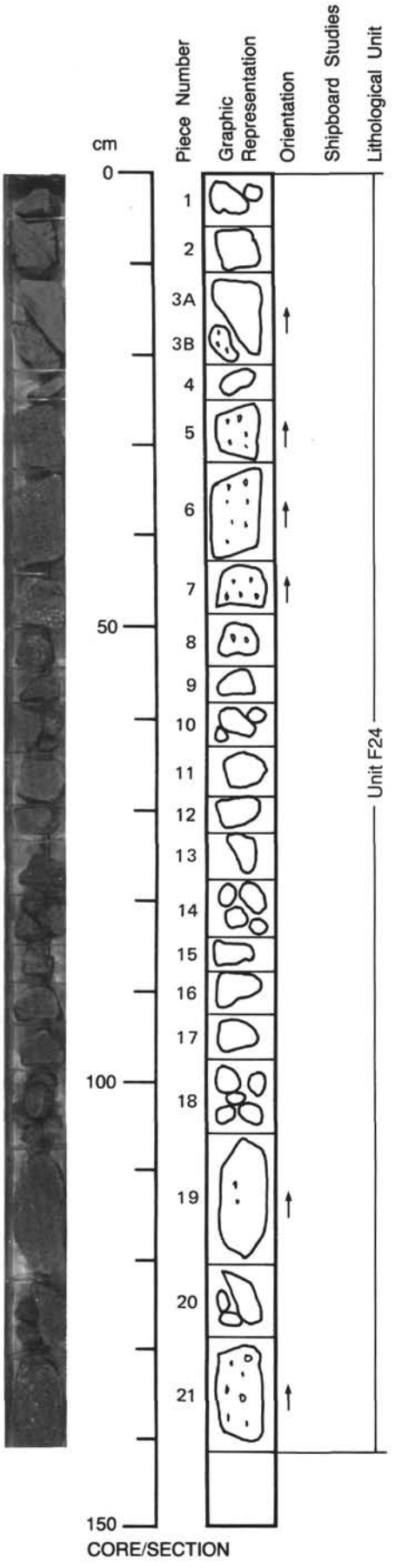
CURATED LENGTH: 39 cm. Total curated length of Unit = 2.91 m.

COMMENTS: This unit is described in detail in Section 121-758A-72R-1 plus:

CONTACTS: Upper: Pieces 7 to 10 are fragments of basalt.

VESICLES: About 15% spherical vesicles 1-2 mm filled with green smectite, calcite or sulfide.

COMMENTS: This Unit continues in Section 121-758A-72R-1.



121-758A-72R-1

UNIT F24: APHYRIC BASALT.

PIECES: 1 - 21.

CURATED LENGTH: 141 cm.

COMMENTS: This unit starts in Section 121-758A-71R-4.

CONTACTS: Upper, in Section 121-758A-71R-4. Lower, in Section 121-758A-72R-2.

PHENOCRYSTS: Micro-phenocrysts of altered olivine or clinopyroxene; traces, <0.5 mm.

GROUNDMASS: Cryptocrystalline to fine grained. Felty texture produced by feldspar laths.

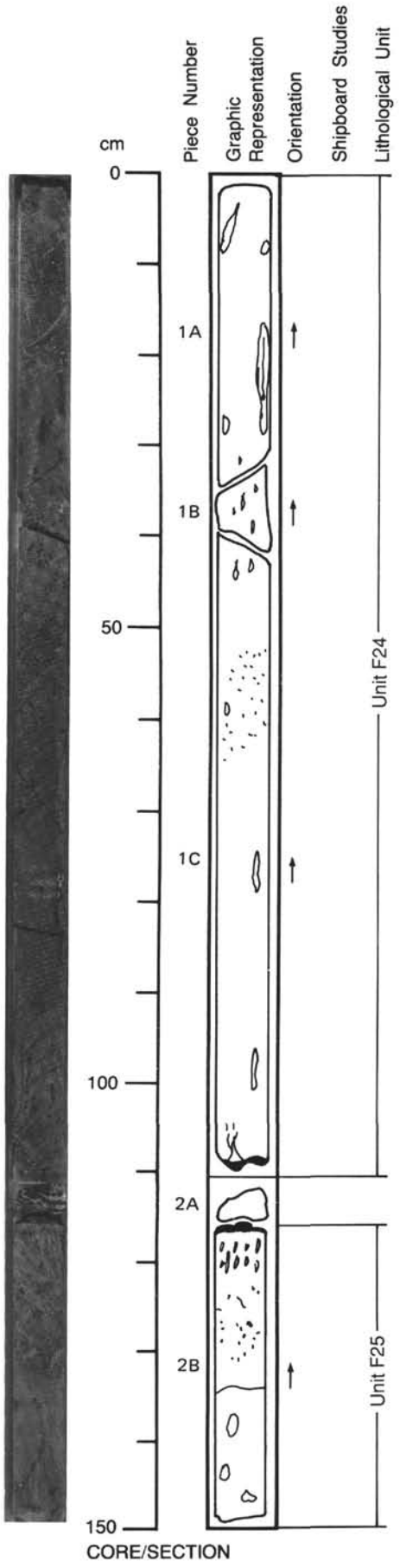
COLOR: Medium gray with a faint green tint.

VESICLES: Piece 3B to Piece 15 and Pieces 20-21: about 15% spherical vesicles. 1-2 mm filled with green smectites, calcite or sulfide. Other Pieces, <5% vesicles.

STRUCTURE: Thin flow.

ALTERATION: Groundmass pervasively replaced by green smectites. Moderate to high.

COMMENTS: This unit continues in Section 121-758A-72R-2.



121-758A-72R-2

UNIT F24: APHYRIC BASALT.

PIECES: 1A - 1C.

CURATED LENGTH: 111 cm.

COMMENTS: This unit is described in Section 121-758A-72R-1, plus the following observations:

CONTACTS: Lower, in Piece 1C which shows a selvage at its lower end. Very thin black selvage now replaced by clays. Also, Piece 2A is interflow material, basaltic breccia probably a hyaloclastite, now replaced by black/green smectite. Carbonated. Also, sulfides.

VESICLES: Elongated, vertical vesicles between 23 and 44 cm and 76 and 106 cm: Up to 6 cm long. These may be radial vesicles within a pillow. Spherical, 1 mm diameter vesicles in zones between 10 and 15 cm and, 48 and 65 cm.

COMMENTS: End of Unit F24 in Piece 1C. It is possible that the pillowed units and thin flows of Units F19 to F26, are all one series of pillowed units with some large one meter plus pillows within the section.

UNIT F25: APHYRIC PILLOW BASALT (121-758A-72R-2, Piece 2B to 121-758-72R-5, Piece 2).

PIECES: 2B.

CURATED LENGTH: 39 cm. Total curated length of Unit F25 = 3.40 m.

COMMENTS: This unit is described in detail in Section 121-758A-72R-3, except for the following points:

CONTACTS: The upper contact is in Piece 2A. The first cm of Piece 2B shows a very dark layer, fitting with the bottom of Piece 2A, with black and green smectite and carbonate vesicles. The next three cm of Piece 2B shows 0.5-1 cm dark green smectite vesicles, oriented perpendicular to the contact, i.e. radially. The vesicles then decrease in size and in abundance down to the Section.

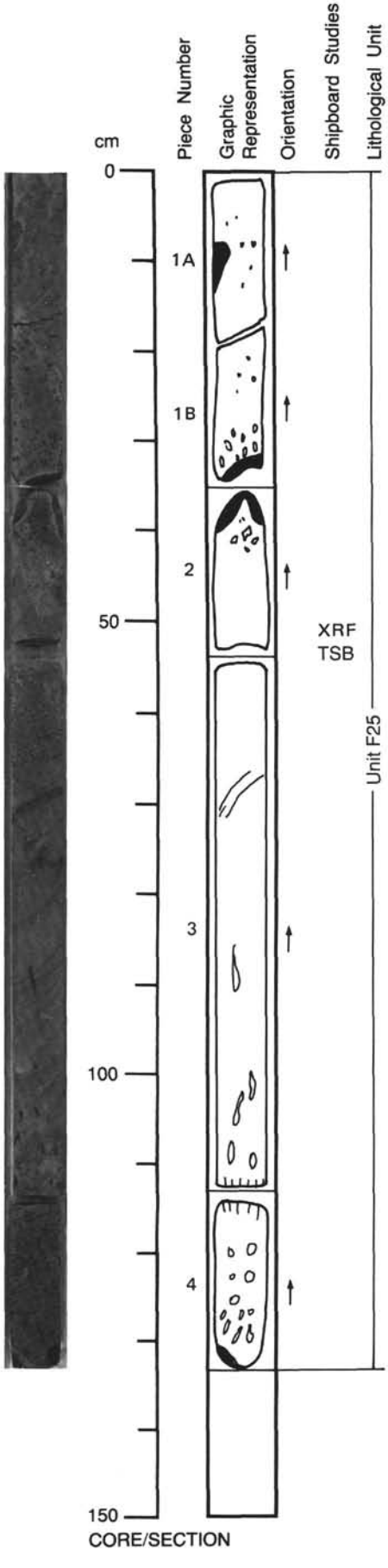
PHENOCRYSTS: Rare plagioclase phenocrysts (up to 3 mm in size), 1-2% in very fine cryptocrystalline groundmass, especially below 135 cm.

GROUNDMASS: Cryptocrystalline near the contact to fine grained, <<1 mm plagioclase and clinopyroxene.

VESICLES: See contact description in Section 121-758A-72R-1 plus: 115-119 cm, large, up to 1 cm, dark green smectite and minor calcite and sulfide filled vesicles; 119-126 cm, small round vesicles, 0.5 mm, dark green smectite; 126-132 cm, more varied shapes, 1-2 mm, dark green smectite and sulfide.

VEINS/FRACTURES: A thin, (<1 mm) vein at 135 cm.

COMMENTS: Unit F25 continues in Section 121-758A-72R-3.



121-758A-72R-3

UNIT F25: APHYRIC PILLOW BASALT (Cont.).

PIECES: 1A - 4.

CURATED LENGTH: 133 cm.

COMMENTS: Unit F25 starts in Section 121-758A-72R-1 where specific features to that section are described.

PHENOCRYSTS: Rare plagioclase phenocrysts, <2 mm and <1%.

GROUNDMASS: Very fine grained to cryptocrystalline, <<1 mm, so fine that it is difficult to distinguish the constituents. Almost glassy in Piece 1A but coarser in the center of the pillow, e.g. 70 to 100 cm and clinopyroxene almost euhedral.

COLOR: Gray greenish gray N4/5B 4/1-5BG 4/1.

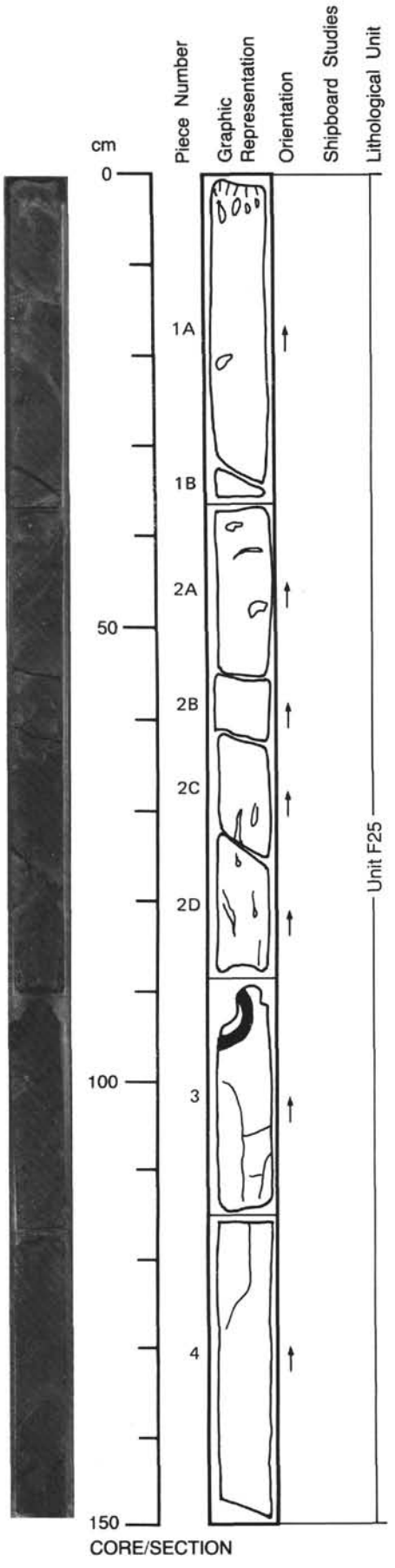
VESICLES: The vesicles reflect the pillow lava structure: 34-35 cm, big vesicles, 0.5-0.8 cm, radiating from the contact. 30%; 37-41 cm, big vesicles (1-2 cm long) 1 cm thick zone, calcite filled vesicles 1-2 mm; 56-67 cm, 1-2 mm dark vesicles, 25-30%; 67-104 cm, much less vesicles, <3%; 104-113 cm, 3-5%, 1-2 cm. Pieces 4: Big, rounded vesicles, 1 cm in diameter and up to 30%, especially in the first 10 cm of the Piece then radial orientation towards the contact. Fillings, more than 90% are dark green smectite, 10-5% calcite and minor sulfide.

STRUCTURE: Pillow lava, at least four in the unit (to 121-758A-72R-5).

ALTERATION: High to moderate in the center of each pillow.

VEINS/FRACTURES: About 70 cm, 1 cm thick vein, dark green smectite.

COMMENTS: This unit continues in Section 121-758A-72R-4. Piece 1A shows between 7 and 9 cm a quenched patch with fresh volcanic glass(?) in a breccia with a green, dark smectite matrix. There is also in the breccia pieces of an orange red mineral.



121-758A-72R-4

UNIT F25: APHYRIC PILLOW BASALT (Cont).

PIECES: 1A - 4.

CURATED LENGTH: 150 cm.

CONTACTS: Pillow contacts: At 0 cm, but no real contact seen (no selvage left); the first cm is totally glassy and the grain size increases to cryptocrystalline at 10-15 cm. At 89 cm, the bottom selvage of the upper pillow (88 cm thick) is lacking, while the selvage of the upper part of the next pillow is replaced by green dark smectite and a round Piece of brown material (glass ?). This bottom pillow ends in Section 121-758A-72R-5 and is about 70 cm thick.

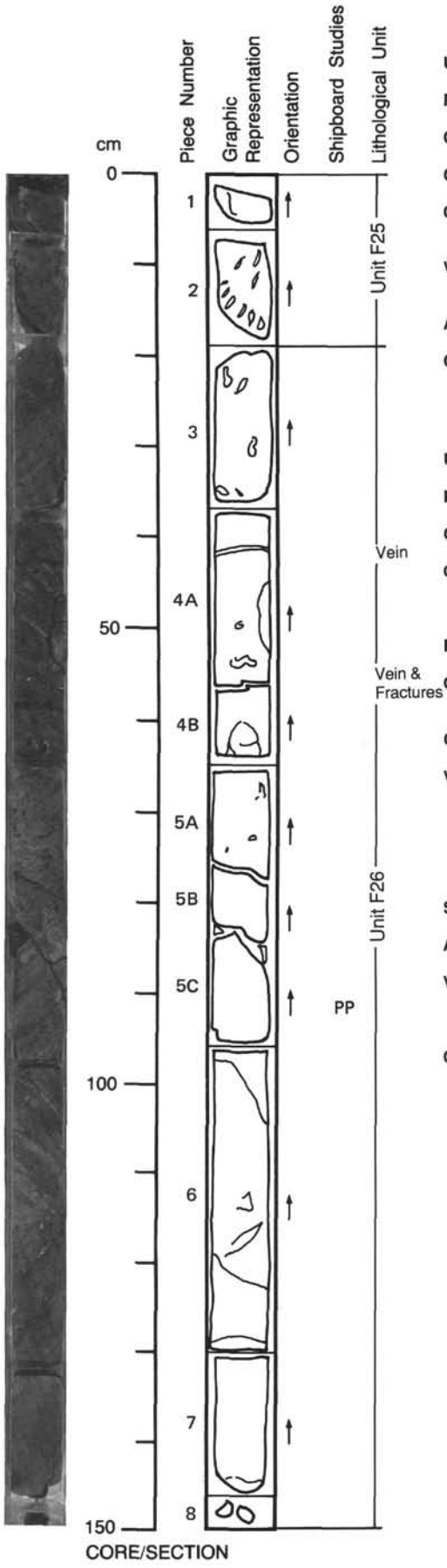
COMMENTS: This unit is described in detail in Section 121-758A-72R-3 except for the following points:

COLOR: Dark gray to greenish gray, with a mottled aspect because of the vesicles near/at the contact. The greenish tint is due to smectite replacement of the mesostasis.

VESICLES: All vesicles are dark, green smectite filled except when specified: 2-4 cm, 1-2 cm thick, big radiating vesicles; 4-14 cm, 1-2 mm diameter, round vesicles, 15-20%; 16-20 cm, 5% and much less afterwards except between 37 and 47 cm, where there are small well rounded 1-2 mm in diameter vesicles. Bigger vesicles at 21, 38, 43, 49 cm with calcite-smectite fillings; 62-66 cm - 72-88 cm, long elongated vesicles perpendicular to the pillow contact, up to 3 cm; 90-97 cm, 15-20%, big, 1-2 cm, vesicles perpendicular to the pillow contact; 97-100 cm and 107-114 cm, same size but with minor calcite and sulfide as fillings. Between 97-114 cm, small, <1 mm, round vesicles, 10%. Piece 4 shows less vesicles (< 3%) in the top part; 130-138 cm, very small, <0.5 mm, becoming bigger, between 1 and 3 mm below 140 cm and 5 to 10%.

ALTERATION: Moderate to high.

COMMENTS: This unit continues in Section 121-758A-72R-5.



121-758A-72R-5

UNIT F25: APHYRIC PILLOW BASALT (Cont).

PIECES: 1 - 2.

CURATED LENGTH: 18 cm.

CONTACTS: Lower contact: Partially preserved selvage at the base of Piece 2.

COMMENTS: This unit is described in detail in Section 121-758R-72R-3, except for the following points:

VESICLES: Bottom part of the 4th pillow in this unit has a particularly large proportion of vesicles (10-15%) in Piece 1, becoming bigger (1-2 cm) in Piece 2 near the contact at 18 cm.

ALTERATION: Smectite alteration.

COMMENTS: Unit F25 ends at Piece 2.

UNIT F26: APHYRIC BASALT (121-758A-72R-5, Piece 3 to 121-758A-72R-6, Piece 5.)

PIECES: 3 to 8.

CURATED LENGTH: 132 cm. Total curated length of Unit = 2.19 m.

CONTACTS: No upper contact recovered, but Pieces 3, 4A, and 4B constitute a very fine grained chill zone, with grain size increasing in Pieces 6,7, and 8. Pieces 3, 4A and 4B have larger (up to 1 cm) vesicles without preferred orientation.

PHENOCRYSTS: Rare, <1%, 1-2 mm plagioclase, euhedral to subhedral.

GROUNDMASS: Microcrystalline in Pieces 3, 4A and 4B, coarsening to fine grained in Pieces 6,7, and 8.

COLOR: Dark gray (2.5YR N4/0).

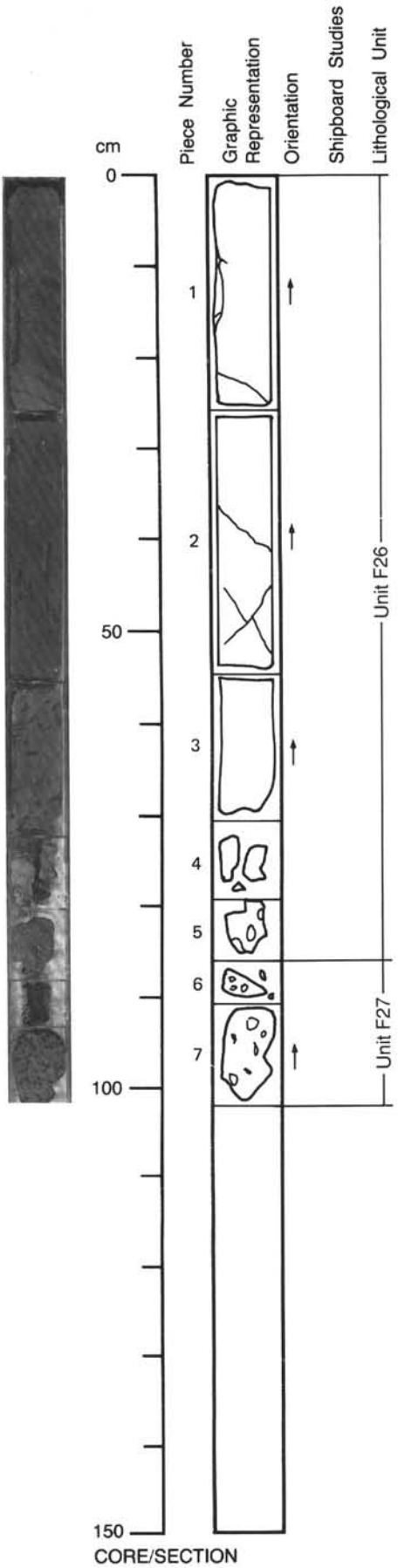
VESICLES: Pieces 3, 4A, 4B, 5A, 5B have variable size vesicles ranging from irregular shaped, 1 cm vesicles, 2-3%, filled with gray black smectite to smaller, 0.5 to 2 mm rounded vesicles (10%) filled with gray black smectite and sulfide. Only these smaller vesicles occur in Pieces 5C, 6, 7 and 8, except in Piece 6, 115-128 cm there is a 1-5 cm vesicle train, oriented at 45 degrees. These vesicles have gray black smectite borders grading into yellow green smectite with centers of calcite and sulfide patches.

STRUCTURE: Thin flow interbedded in a pillow sequence.

ALTERATION: Moderate to highly altered.

VEINS/FRACTURES: Piece 3 has numerous <1 mm smectite veins. 42 cm and 57 cm black smectite, 0 degrees; 98-106 cm, 1 mm black smectite with calcite and sulfides; 119-122 and 138-143 - 1 mm smectite veins

COMMENTS: Unit F26 continues in 121-758A-72R-6.



121-758A-72R-6

UNIT F26: APHYRIC TO SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1 - 5.

CURATED LENGTH: 87 cm.

COMMENTS: Unit is described in and continues from 121-758A-72R-5. That description applied here except for:

GROUNDMASS: Groundmass size decreases slightly towards bottom of Piece 2.

VESICLES: 4-19 cm in Piece 1, vertically oriented stringer of elongate vesicles, 2-5 mm, filled with green smectite with black borders. Randomly oriented 1 cm vesicles in Pieces 3,4, and 5 with green to black smectite + sulfides. Piece 5 also has an 8 mm circular calcite filled area.

VEINS/FRACTURES: 22-24, 36-40, and 44-50 cm. 1 mm smectite veins with sulfides.

UNIT F27: APHYRIC TO SPARSELY PLAGIOCLASE-PHYRIC BASALT (121-758A-72R-6, Piece 6 to 121-758A-73R-2, Piece 1D).

PIECES: 6 and 7.

CURATED LENGTH: 15.5 cm. Total curated length of Unit = 2.47 m.

CONTACTS: No upper contact recovered.

COMMENTS: The distinction between F26 and F27 in 121-758A-72R-6, between Pieces 5 and 6 is not clear. Pieces 5 and 6 are much more vesicular than the overlying Pieces but may still be part of F25. Here they are taken as part of F26.

PHENOCRYSTS: Plagioclase 1-3 mm, <1%, euhedral to subhedral.

GROUNDMASS: Microcrystalline.

COLOR: Mottled, dark gray (2.5YR N4/0) to very dark gray (2.5YR N3/0).

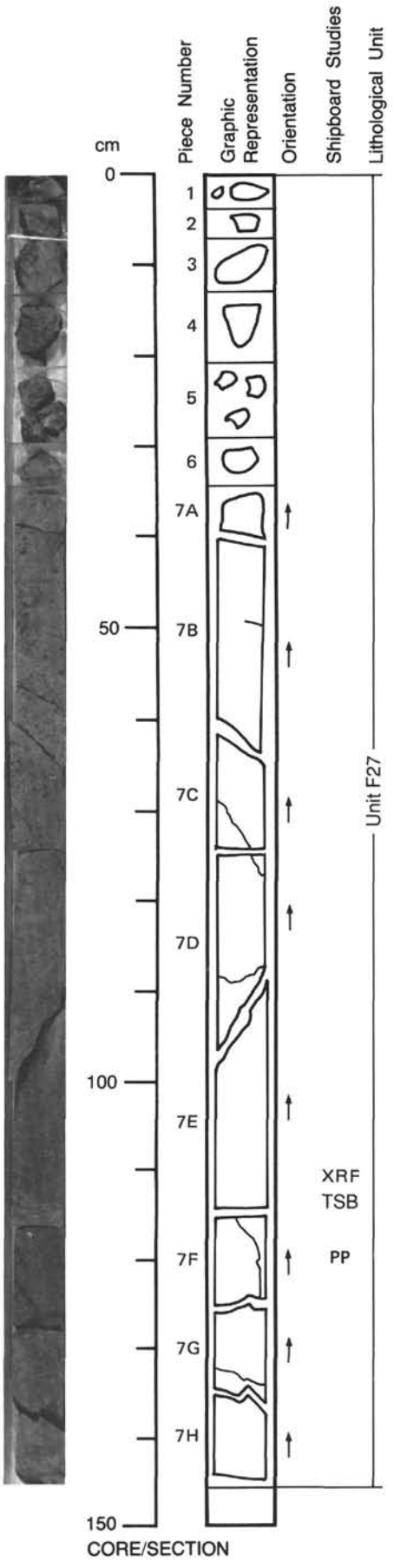
VESICLES: Highly vesicular about 30%, homogeneously distributed, 0.5-6 mm, rounded and filled with gray to black smectite, rare sulfide patches.

STRUCTURE: Thin flow.

ALTERATION: High.

VEINS/FRACTURES: None in these two Pieces.

COMMENTS: Unit F27 continues in 121-758A-73R-1.



121-758A-73R-1

UNIT F27: APHYRIC TO SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

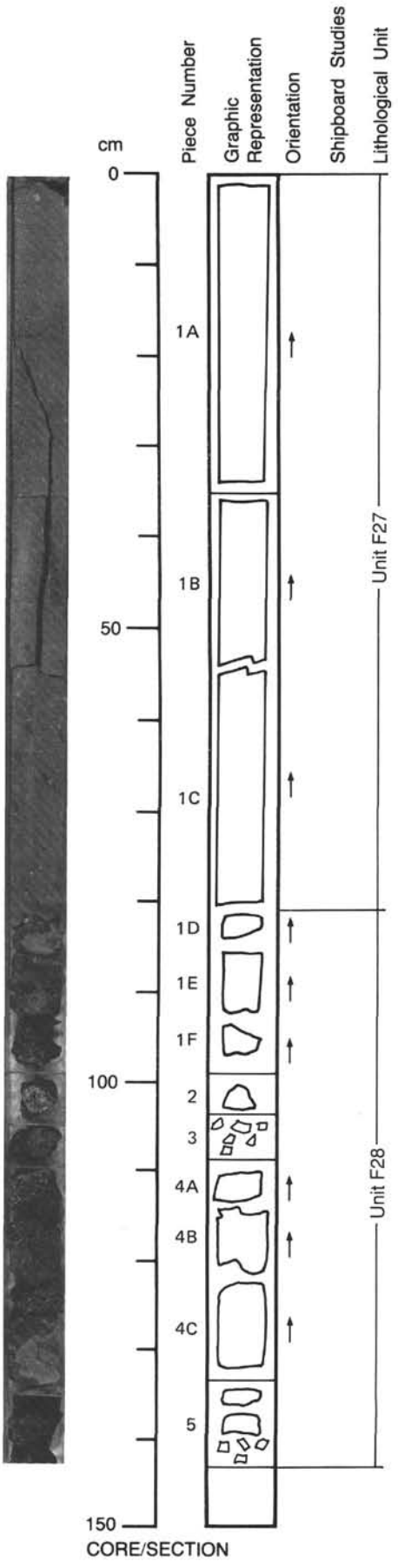
PIECES: 1 to 7H.

CURATED LENGTH: 147.5 cm.

PHENOCRYSTS: Pieces 1 through 5 are microcrystalline with 1%, 1-3 mm plagioclase phenocrysts. They are a continuation of the chill zone represented by 121-758A-72R-6, Pieces 6 and 7. Pieces 7A through 7D are fine grained and phenocrysts are absent. In Piece 7E through 7H they increase to 2-3%. Clear case of plagioclase settling.

VESICLES: Pieces 7A through 7D show vesicle size and abundance decreasing and they are absent in Pieces 7E through 7H.

VEINS/FRACTURES: Thin (<1 mm) black smectite veins at 69-77 cm, 88-90 cm, 115-125 cm and 132-136 cm.



121-758A-73R-2

UNIT F27: APHYRIC TO SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A - 1C.

CURATED LENGTH: 82 cm.

COMMENTS: *Unit F27 continues from 121-758A-73R-1 and ends below Piece 1C.*

CONTACTS: Lower contact recovered in Pieces 1D and 1E. It is a breccia of 1-10 mm basaltic fragments in greenish black matrix.

PHENOCRYSTS: Plagioclase increases in abundance from 5-10% and crystals are larger (5-10 mm) than in quench zones. Plagioclase is absent or rare from 72-82 cm.

VESICLES: 1-5 mm vesicles begin to occur at 74 cm and from 77 cm to 82 cm they are elongated and oriented vertically typical of contacts in overlying flows. Vesicles filled with gray green to black smectite with some calcite in larger vesicles.

UNIT F28: PILLOW BRECCIA (121-758A-73R-2, Piece 1D to 121-758A-73R-3, Piece 4E).

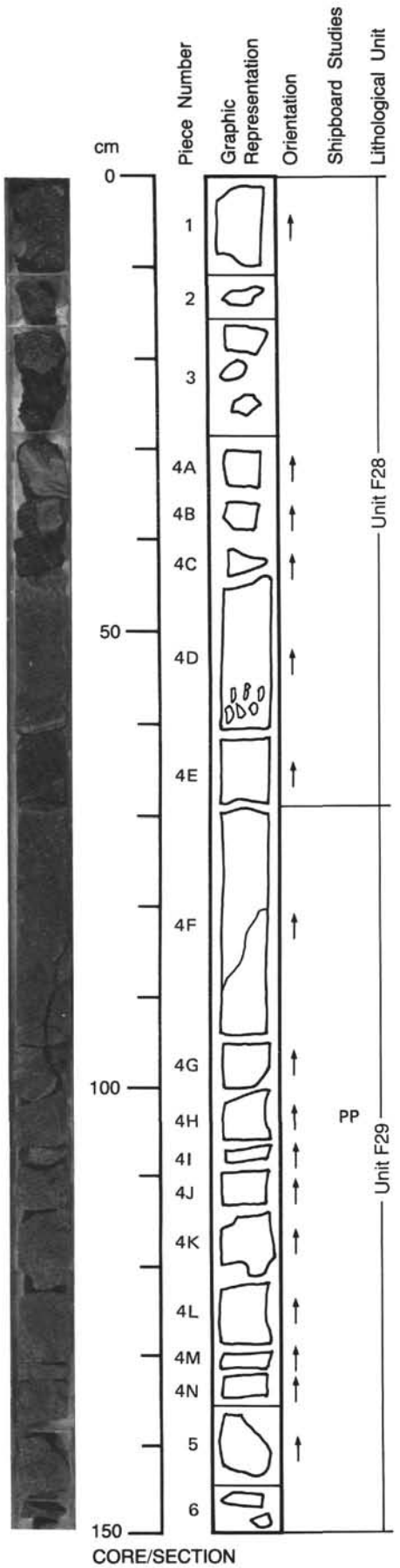
PIECES: 1D - 5.

CURATED LENGTH: 61 cm (82 to 143 cm). Total curated length of Unit F28 = 1.29 m.

CONTACTS: No sharp upper contact.

GROUNDMASS: This unit is an aesthetically pleasing visual experience! The breccia in Pieces 1E through 5 is 1-5 mm fragments of various colors, white plagioclase, plus dusky red, yellow green and green fragments plus circular gray blue (0.5 mm) fillings in a dark gray to black matrix.

COMMENT: Piece 1D is a 3 x 5 cm basalt fragment with 1% plagioclase phenocrysts (1-3 mm) in a microcrystalline groundmass. Piece 4C contains a 5 x 7 cm microcrystalline basalt fragment with about 3% plagioclase phenocrysts (1-3 mm).



121-758A-73R-3

UNIT F28: PILLOW BRECCIA.

PIECES: 1 - 4E.

CURATED LENGTH: 68 cm.

COMMENTS: Unit continues from 121-758A-73R-2 but ends at the bottom of Piece 4E. Pieces 1, 2, 3, 4C and 4E are breccia as described in 121-758A-73R-2.

PHENOCRYSTS: Pieces 4A and 4B contain sparsely plagioclase-phyric (2-4%) basalt surrounded by breccia. Piece 4D is almost entirely sparsely plagioclase-phyric basalt (2-4%, 1-3 mm plagioclase) with <1 cm breccia at both upper and lower surfaces.

VESICLES: Between 57-60 cm (i.e. adjacent to lower contact) the basalt contains vertically elongated, up to 1 cm, vesicles filled with smectite.

UNIT F29: SPARSELY PLAGIOCLASE-PHYRIC BASALT (121-758A-73R-3, Piece 4F to 121-758A-73R-4, Piece 9).

PIECES: 4F - 6.

CURATED LENGTH: 82 cm (68-150 cm). Total curated length of Unit F29 = 2.00 m.

CONTACTS: Upper 1 cm of Piece 4F is a breccia.

PHENOCRYSTS: Plagioclase (2-4%, 1-3 mm) in upper part of Piece 4F 68-90 cm. These phenocrysts become much less abundant from Piece 4H to 6.

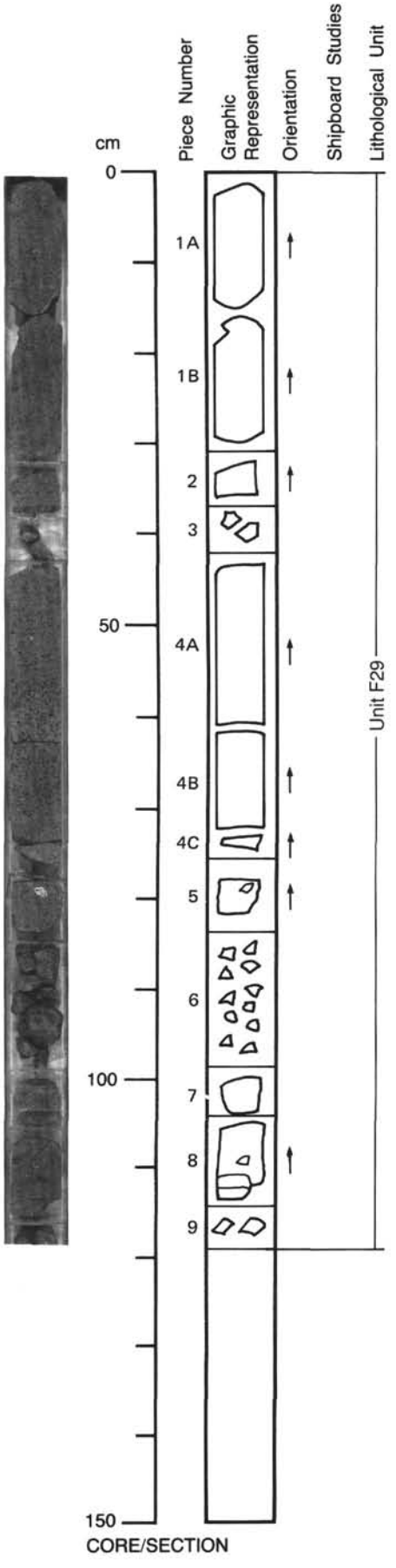
GROUNDMASS: Microcrystalline in 4F to fine grained in Pieces 4H to 6.

COLOR: From dark gray (2.5YR N4/0) in Piece 4F to gray (2.5YR N5/0) in Piece 4A to 6.

VESICLES: Decrease in size from 1-5 mm in Piece 4F to 0.5 to 3 mm, 25%, in Pieces 4G to 6. All are filled with smectite.

ALTERATION: Highly altered.

VEINS/FRACTURES: 1 mm smectite vein 82-88 cm.



121-758A-73R-4

UNIT F29: SPARSELY PLAGIOCLASE-PHYRIC BASALT (Cont.).

PIECES: 1A - 9.

CURATED LENGTH: 119.5 cm.

CONTACTS: No lower contact recovered.

COMMENTS: Unit continues from 121-758A-73R-3. Description for that Section applies here, except as below.

PHENOCRYSTS: None.

VESICLES: Abundance continues at 20 to 25%. Larger vesicles contain calcite and sulfides with black smectite rims. Large 15 mm cavity at 78 cm is filled partially with a white mineral (not calcite). Pieces 7 and 8 are vesicle free except for a single 15 mm filled vesicle at 110 cm in Piece 8.

VEINS: 110-112 cm 1 mm smectite vein.

THIN SECTION DESCRIPTION — 121-758A-55R-02 (Piece 1E, 69-73 cm)

ROCK NAME: BASALT (APHYRIC)

WHERE SAMPLED: Unit F1; internal chill zone

TEXTURE: Hyalopilitic

GRAIN SIZE: Microcrystalline-fine

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPOSITION	MORPHOLOGY	COMMENTS
GROUNDMASS						
Plagioclase	9-25	-	0.3-1.0		Solid-skeletal laths	
Augite	10	-	-		-	
Opaques	<5	-	<0.1	Sulphide, Ti-mag	Equant + skeletal overgrowths	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	65	Mesostasis	Brown smectite

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	?	in mesostasis	2	Brown smectite	Round

COMMENTS: This forms the fine-grained, chilled, internal facies of Unit 758A-F1.

THIN SECTION DESCRIPTION — 121-758A-55R-03 (Piece 1B, 25-27 cm)

ROCK NAME: PLAGIOCLASE-PHYRIC BASALT

WHERE SAMPLED: Internal portion of Unit F1

TEXTURE: Hyalophitic/porphyritic

GRAIN SIZE: Fine-medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	8-10	-	1-2	An82	Equant;glomerophyric	clusters.
GROUNDMASS						
Plagioclase	35	-	0.2-1		Laths	Intergrown to form stellate, subophitic glomerocrysts.
Augite	30	-	< 0.2		Anhedral grain.	Intergrown to form stellate, subophitic glomerocrysts.
Opaques	2-5	-	< 0.1	Sulfides Ti Mag.	Anhedral, subhedral-euhedral	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	20	Masostasis.	Brown smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: None.

THIN SECTION DESCRIPTION — 121-758A-58R-07 (Piece 1 , 32-36 cm)

ROCK NAME: SPARSELY PLAGIOCLASE-PHYRIC BASALT

WHERE SAMPLED: Unit F2, internal

TEXTURE: Hyalophitic/porphyritic

GRAIN SIZE: Medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	2-3	-	1-3	-	Equant, laths	Some clay replacement of cores.
GROUNDMASS						
Plagioclase	30	-	0.5-2		Laths	Clay grownth replacing ~5% of plagioclase.
Augite	20	-	0.3-0.5		Equant grain	Augite & plagioclase intergrown to form stellate glomerocrysts.
Opaque	< 5	-	< 0.1	Sulfide + Ti-Mag	Equant grain with skeletal overgrowth.	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	45-50	Mesostasis	Brown clay.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	2	Mesostasis	2	Brown smectite.	Round

THIN SECTION DESCRIPTION — 121-758A-59R-07 (Piece 1A, 52-56 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F2; flow interior

TEXTURE: Hyalophitic

GRAIN SIZE: Fine-medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	< 2	-	0.5		Anhedral fragments	
GROUNDMASS						
Plagioclase	25	-	< 2.0		Laths	Intergrown form stellate glomerocrysts.
Plagioclase	20	-	< 1.0		-	Intergrown form stellate glomerocrysts.
Opaque	< 5	-	< 0.1		-	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	50	Mesostasis	Brown smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Phenocryst dimension < length of groundmass plagioclase crystals; phenocrysts distinguished on basis of fragmental, more equant-appearance.

THIN SECTION DESCRIPTION — 121-758A-60R-02 (Piece 1 , 22-24 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F3; internal

TEXTURE: Hyalophitic

GRAIN SIZE: Fine grained

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	< 1	–	~ 1		Subhedral, equant	
GROUNDMASS						
Plagioclase	30	–	0.2-0.5		Laths	Intergrown stellate glomerocrysts.
Augite	23	–	0.2-0.3		Anhedral grains	Intergrown stellate glomerocrysts.
Opaques	< 5	–	< 0.1		–	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	45	Mesostasis	Brown smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

THIN SECTION DESCRIPTION — 121-758A-61R-04 (Piece 1 , 28-33 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F3 interior of flow

TEXTURE: (Porphyritic) hyalophitic

GRAIN SIZE: Fine-medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: This rock is texturally and mineralogically similar to 758A-60R-4, 58-62 cm.

THIN SECTION DESCRIPTION 121-758A-62R-01 (Piece 4A, 44-48 cm)

ROCK NAME: PLAGIOCLASE-PHYRIC BASALT

WHERE SAMPLED: Unit F4; 15 cm below margin

TEXTURE: Porphyritic/variolitic

GRAIN SIZE: Fine

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	-	< 1	1-2		-	Pseudomorphs of brown/green smectite.
Plagioclase	10	-	1-4		Glomerocrystic. Anhedral and subhedral crystals	
GROUNDMASS						
Plagioclase	40	-	< 0.5		Skeletal laths	Quenched.
Clinopyroxene	30	-	< 0.1		Plumose and acicular	Quenched.
Opaque	2-3	-	<< 0.1		Disseminated	Quenched.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING		COMMENTS
Clays	< 1	Olivine	See above.	
Clays	10-20	Mesostasis		

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	5	Groundmass	0.8-1.0	Brown smectite.	Round

THIN SECTION DESCRIPTION — 121-758A-62R-03 (Piece 2 , 8-13 cm)

ROCK NAME: MODERATELY PLAGIOCLASE PHYRIC BASALT

WHERE SAMPLED: Unit F4 ~ 40 above lower crystal

TEXTURE: Subophitic/granular/porphyritic

GRAIN SIZE: Fine-medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	–	2-3	~ 1		Pseudomorphs of smectite	
Plagioclase	10	–	2-6		Glomerocrystic aggregates	
GROUNDMASS						
Plagioclase	30	–	1-2		Laths	
Augite (1)	10	–	< 4		Ophitic intergrowth with plagioclase	
Augite (2)	30	–	< 0.5		Anhedral, interstitial grains	
Opaques	2-3	–	< 0.1		Equant grains with overgrowths	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	5	Mesostasis	Greenish-brown smectite.
Clays	2-3	Olivine	See above.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Note that this section has a higher olivine content than the T.S. from higher in the unit.

THIN SECTION DESCRIPTION — 121-758A-60R-04 (Piece 1C, 58-62 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F3 (interior flow)

TEXTURE: (Porphyritic) hyalophyitic

GRAIN SIZE: Fine-medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	< 2	–	1-3		Equant/subhedral	
GROUNDMASS						
Plagioclase	35	–	~ 1		Lath	
Augite	20	–	0.5		Anhedral grains and laths	
Opaques	< 5	–	0.1-0.3		–	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	40	Mesostasis	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

THIN SECTION DESCRIPTION — 121-758A-63R-06 (Piece 1A, 44-48 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F7; flow interior

TEXTURE: Hyalophitic

GRAIN SIZE: Medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPOSITION	MORPHOLOGY	COMMENTS
GROUNDMASS						
Plagioclase	40	-	1-2		Laths	
Augite	40	-	1		Ophitic intergrowths with plagioclase, and grains	
Opaques	< 5	-	< 0.2		Equant grains	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	10-15	Mesostasis	Brown-green smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	5-10	Mesostasis? (?)		Brown smectite.	Round

THIN SECTION DESCRIPTION — 121-758A-64R-03 (Piece 6 , 37-38 cm)

ROCK NAME: BASALT (APHYRIC)

WHERE SAMPLED: Unit F8 interior of thin flow

TEXTURE: Variolitic

GRAIN SIZE: Microcrystalline

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPOSITION	MORPHOLOGY	COMMENTS
GROUNDMASS						
Plagioclase	30	-	0.1-0.5		Needle skeletal lath & interstitial anhedral plag	
Augite	30	-	< 0.5		Anhedral grains & interstitial crystallites	
Opaques	2	-	< 0.2		Equant and disseminated	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	30	Mesostasis	Brown smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	15	Mesostasis	1-2	Brown smectite.	Rounded

THIN SECTION DESCRIPTION — 121-758A-65R-03 (Piece 1A, 52-57 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F10, flow interior

TEXTURE: Hyalophitic

GRAIN SIZE: Fine to medium

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	Trace	–	4		Subhedral equant	
GROUNDMASS						
Plagioclase	40	–	0.5–1.0		–	Intergrown as glomerocrystic aggregates.
Clinopyroxene	15	–	0.2		–	Intergrown as glomerocrystic aggregates.
Opaques	< 5	–	< 0.2		Equant	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	30	Mesostasis.	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

THIN SECTION DESCRIPTION — 121-758A-67R-04 (Piece 3 , 84-86 cm)

ROCK NAME: BASALT

WHERE SAMPLED: Unit F14, 20 cm above lower crystal

TEXTURE: Micro-porphyritic/crypstalline

GRAIN SIZE: Cryptocrystalline

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	< 10	–	<1		Elongate, skeletal crystals (cores-clays)	
Clinopyroxene	< 5	–	~ 0.1		Anhedral grains	Forming glomerocrysts with feldspar.
GROUNDMASS						
See comments	–	–	–		–	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clay		Mesostasis	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Groundmass comprises on indistinguishable, dark brown assemblage of plumose crystal, disseminated op0aques and plagioclase crystalline.

THIN SECTION DESCRIPTION 121-758A-67R-04 (Piece 4 , 106-110 cm)

ROCK NAME: PLAGIOCLASE-CLINOPYROXENE-PHYRIC BASALT

WHERE SAMPLED: Unit F15; 15 cm below the crystal

TEXTURE: Porphyritic

GRAIN SIZE: Microcrystalline

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	10	-	0.5-3		Skeletal laths, equant subhedral	
Clinopyroxene	5	-	0.5-2		Anhedral	Pale green augite.
GROUNDMASS						
See comments	-	-	-		-	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	> 10	Mesostasis	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				

COMMENTS: Groundmass: Quenched assemblage of clinopyroxene, plagioclase, opaques, and mesostasis (now partly replaced by clay).

THIN SECTION DESCRIPTION 121-758A-68R-01 (Piece 4 , 51-54 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F16; flow interior

TEXTURE: Aphyric/variolitic

GRAIN SIZE: Fine

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
GROUNDMASS						
Plagioclase	40	-	0.1-1.0		Partly skeletal lath	Some clay replacement in cores.
Augite	15	-	< 0.5		Anhedral grain.	
Opaques	2-3	-	~ 0.1		Granular & dendritic	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	40	Mesostasis	Green smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	15	Mesostasis	2	Brown smecite.	Round

THIN SECTION DESCRIPTION 121-758A-69R-04 (Piece 1C, 43-46 cm)

ROCK NAME: APHYRIC BASALT

WHERE SAMPLED: Unit F16; flow interior

TEXTURE: Aphyric/variolitic

GRAIN SIZE: Fine

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE RANGE (mm)	APPROX. COMPO-SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	5	–	1–4		Equant, subhedral	
Clinopyroxene	20	–	1–3		Equant, anhedral and subhedral grains	Pleochroic augite.
GROUNDMASS						
Plagioclase	30	–	0.5–1		Laths	
Clinopyroxene	15	–	< 0.5		Anhedral	
Opaques	2–3	–	0.4		Euhedral, equant	

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	20	Mesostasis	Olivine–green smectite.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE RANGE (mm)	FILLING	SHAPE
Vesicles	0				