SITE 801 HOLE A CORE 1R CORED INTERVAL 5681.8-5688.3 mbsl; 8.0-14.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
?	B	B	B		B		● 0-83.8 ● 2-1.28		1 CC	0.5 1.0				*

LITHOLOGIC DESCRIPTION

PELAGIC CLAY with ZEOLITES

Major lithology: PELAGIC CLAY with ZEOLITES, dark brown (7.5YR 3/2 -3/3), soft, homogeneous, very disturbed by drilling, composed of clay, iron-oxide/hydroxide aggregates and elongate zeolite crystals (phillipsite, commonly twinned) with minor opaque micronodules and quartz silt.

SLIDE SUMMARY (%):

	1, 57 D	CC, 1 D
TEXTURE:		
Silt	10	10
Clay	90	90
COMPOSITION:		
Accessory minerals	—	1
Clay	62	64
Fish	—	1
Micronodule	3	1
Nannofossils	Tr	—
Oxide	20	20
Quartz	Tr	2
Radiolarians	—	3
Zeolite	15	8

SITE 801 HOLE A CORE 2R CORED INTERVAL 5688.3-5694.2 mbsl; 14.5-20.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
?	B	B	B		B				1 CC					*

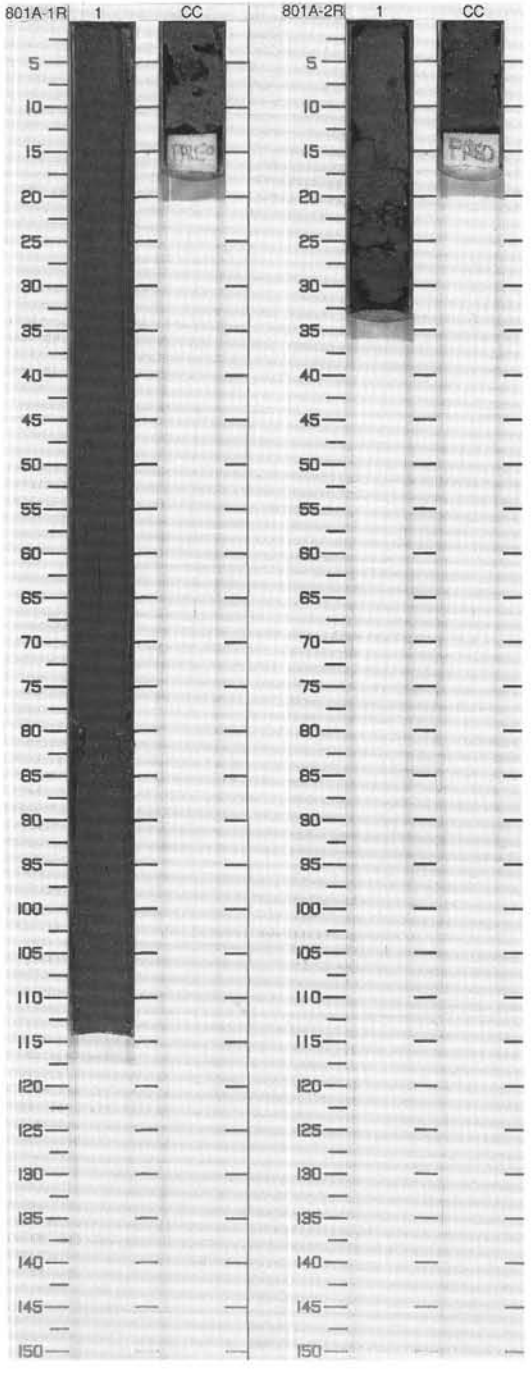
LITHOLOGIC DESCRIPTION

PELAGIC CLAY with ZEOLITES

Major lithology: PELAGIC CLAY with ZEOLITES, dark brown to dark reddish brown (7.5YR 3/2 7.5YR 3/3.5), soft, homogeneous, very disturbed by drilling, composed of clay, iron-oxide/hydroxide aggregates and zeolite crystals (phillipsite) with traces of opaque micronodules and quartz silt. Transition downward from lighter to darker color at Section 1, 18-19 cm.

SLIDE SUMMARY (%):

	1, 28 D
TEXTURE:	
Sand	1
Silt	15
Clay	84
COMPOSITION:	
Clay	55
Micronodule	1
Oxide	22
Quartz	Tr
Spicules	2
Zeolite	20



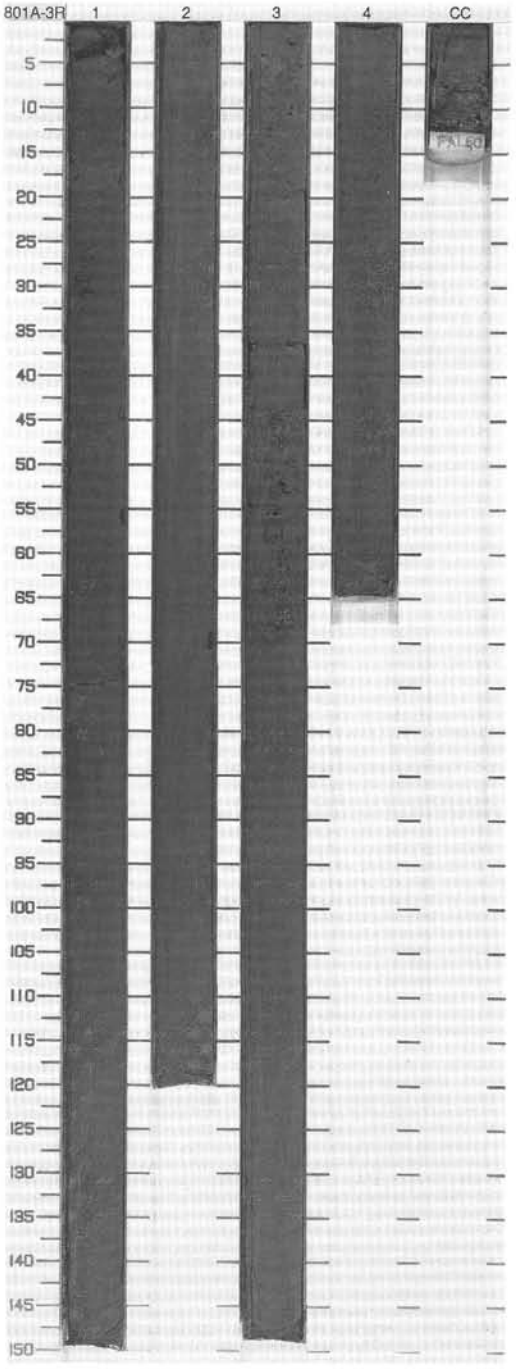
SITE 801 HOLE A CORE 3R CORED INTERVAL 5894.2-5703.8 mbsl; 20.4-30.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
?	B	B	B		B		ϕ=81.8 ±1.27 ϕ=77.4 ±1.32		1 2 3 4 CC	0.5 1.0		VV		* OG TW *	PELAGIC CLAY with ZEOLITES

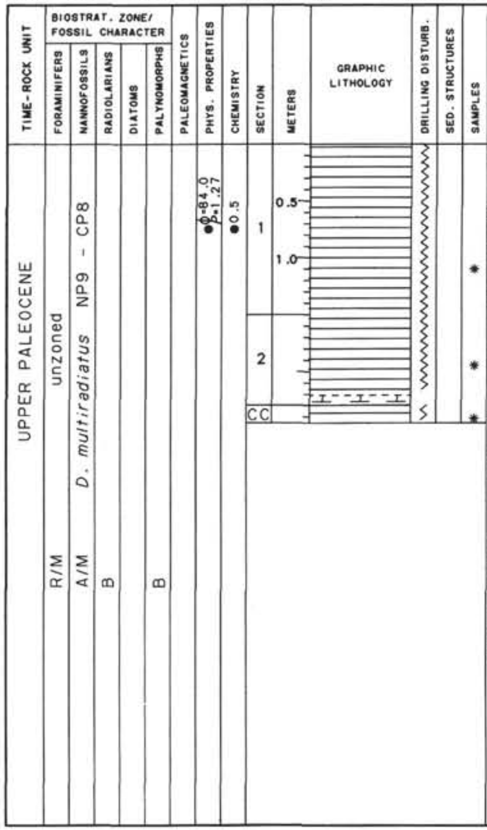
Major lithology: PELAGIC CLAY with ZEOLITES, dark reddish brown (7.5YR 2.5/2), soft, homogeneous, very disturbed by drilling, composed of iron-oxide/hydroxide aggregates, clay and zeolite crystals with traces of opaque micronodules, benthic foraminifers and quartz silt.

SLIDE SUMMARY (%):

	1, 85 D	3, 30 D
TEXTURE:		
Sand	Tr	2
Silt	30	45
Clay	70	53
COMPOSITION:		
Clay	39	38
Foraminifers	Tr	Tr
Micronodule	1	1
Oxide	50	45
Quartz	Tr	Tr
Spicules	—	1
Zeolite	10	15



SITE 801 HOLE A CORE 4R CORED INTERVAL 5703.8-5713.4 mbsl; 30.0-39.6 mbsf



LITHOLOGIC DESCRIPTION

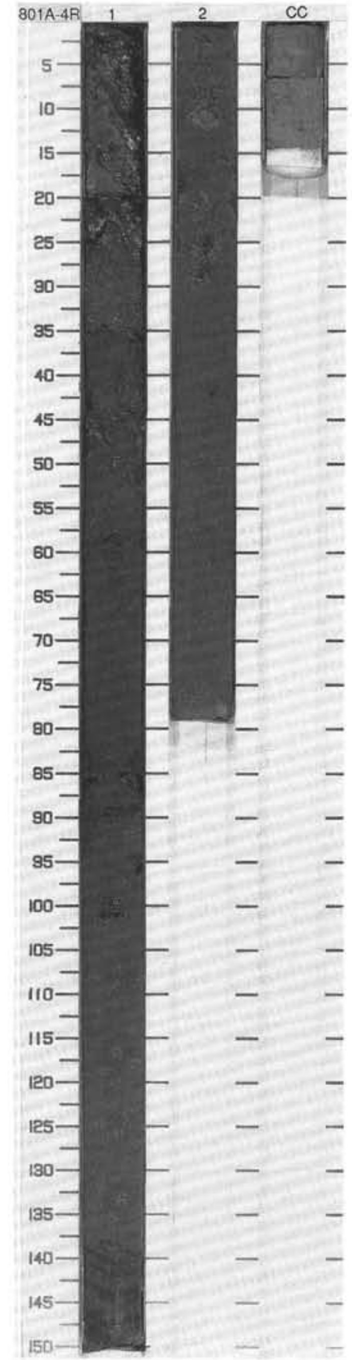
PELAGIC CLAY

Major lithology: PELAGIC CLAY, dark reddish brown to dark brown (5YR 2.5/2- 7.5YR 3.5/2), soft, *homogeneous, very disturbed by drilling, composed of clay and iron-oxide/hydroxide* aggregates with minor opaque micronodules and volcanic glass with traces of palagonite and benthic foraminifers. XRD data from Section 1, 110 cm and 139 cm, indicate the presence of phillipsite and celestite.

Minor lithology: NANNOFOSSIL OOZE, light yellowish brown (10YR 6/4) mottled with dark brown (7.5YR 3.5/2), composed of nannofossils with traces of metallic oxides, lower part of Section 2 and CC.

SLIDE SUMMARY (%):

	1, 110 D	2, 46 D	CC, 13 M
TEXTURE:			
Silt	10	10	25
Clay	90	90	75
COMPOSITION:			
Accessory minerals	—	Tr	—
Clay	50	50	Tr
Foraminifers	Tr	—	—
Glass	10	5	—
Micronodule	5	10	—
Nannofossils	—	—	99
Opaques	—	—	Tr
Oxide	35	35	1
Palagonite	Tr	Tr	—



SITE 801 HOLE A CORE 5R CORED INTERVAL 5713.4-5723.1 mbsl: 39.6-49.3 mbsf

TIME-ROCK UNIT: UPPER PALEOCENE
BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: unzoned; NANNOFOSSILS: *D. multiradiatus* NP9 - CP8; RADIOLARIANS: B; DIATOMS: B; PALYNOMORPHS: B
PALEOMAGNETICS
PHYS. PROPERTIES: Φ=60.1, ρ=1.69; Φ=73.5, ρ=1.44; Φ=73.3, ρ=1.45
CHEMISTRY: ● 73.9; 0.4 ● ● 0.2
SECTION: 1, 2, 3, 4, 5, 6, CC
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY
DRILLING DISTURB.
SED. STRUCTURES
SAMPLES: OG, TW

[PALEOCENE]

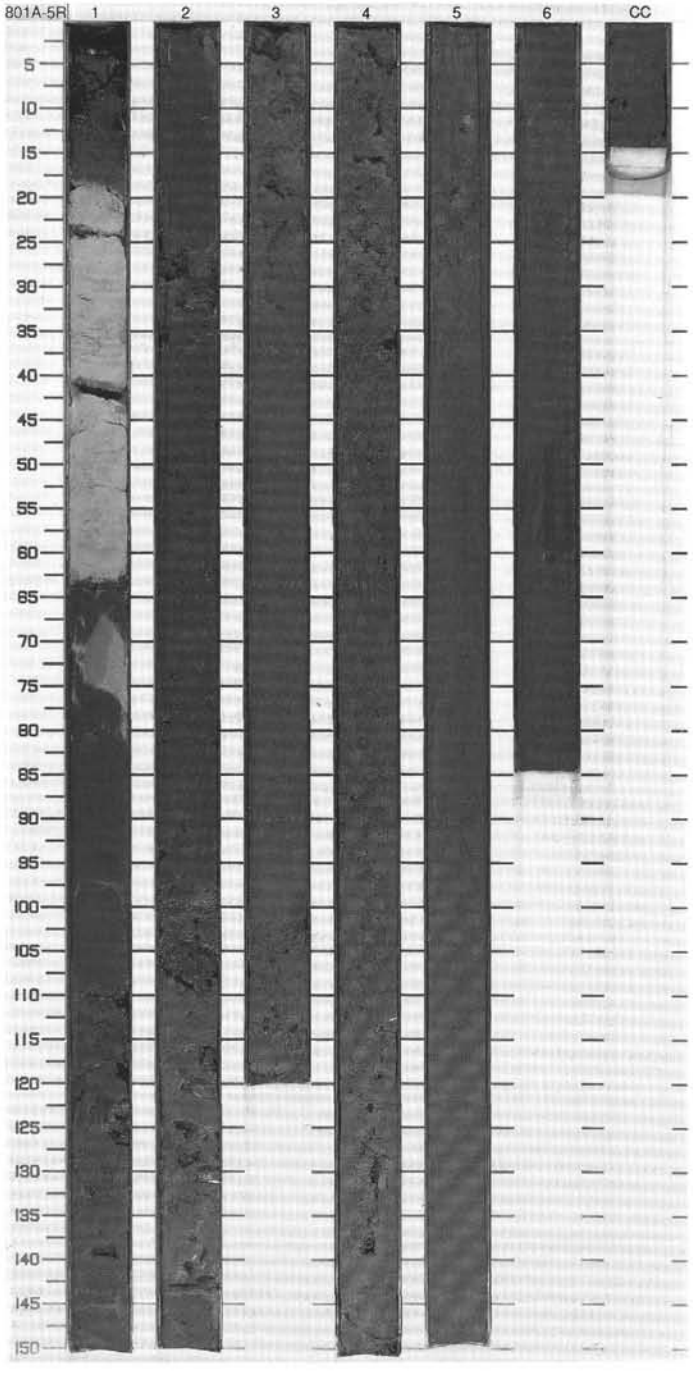
LITHOLOGIC DESCRIPTION

PELAGIC CLAY with ZEOLITES, and NANNOFOSSIL OOZE

Major lithologies:
a. PELAGIC CLAY with ZEOLITES, dark reddish brown (5YR 3/4) changing downward to dark brown (10YR 3/3) with small patches of light yellow (10YR 5/4) in Section 2 and below, soft, possible vague laminations but features mainly obliterated by drilling disturbance, consisting of clay, zeolites and iron-oxide/ hydroxide aggregates with traces of nannofossils.
b. NANNOFOSSIL OOZE, pale yellow (2.5Y 7/4) to light olive brown (2.5Y 5/4), in Section 1, 18-63 cm and 68-76 cm, featureless, sharp contacts to adjacent pelagic clay intervals (redeposited?).

SLIDE SUMMARY (%):

	1, 26 D	1, 74 M	1, 75 M	4, 60 D
TEXTURE:				
Sand	Tr	Tr	Tr	—
Silt	20	17	25	15
Clay	80	83	75	85
COMPOSITION:				
Accessory minerals	—	—	—	Tr
Clay	10	18	15	79
Micrite	15	20	20	—
Nannofossils	73	60	63	Tr
Oxide	2	2	2	5
Quartz	—	—	—	1
Zeolite	—	—	—	15



SITE 801 HOLE A CORE 6R CORED INTERVAL 5723.1-5732.8 mbsl; 49.3-59.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
CAMPANIAN - MAESTRICHTIAN UPPER CRETACEOUS	C/M	B	B		B				CC			?		*	PELAGIC CLAY Major lithology: PELAGIC CLAY, brown (10YR 4/3) with millimeter-scale mottles of reddish yellow (7.5YR 7/6), soft, homogenized by drilling, composed of clay with minor radiolarian spines, nannofossils, iron- oxide/hydroxide aggregates, quartz silt and opaque micronodules with traces of zeolites. Entire sample went to paleontology. SLIDE SUMMARY (%): CC D TEXTURE: Silt 5 Clay 95 COMPOSITION: Clay 70 Micronodule 3 Nannofossils 7 Oxide 5 Quartz 5 Spines 10 Zeolite Tr

SITE 801 HOLE A CORE 7R CORED INTERVAL 5732.8-5742.4 mbsl; 59.0-68.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CAMPANIAN - MAESTRICHTIAN	C/M	B	B	A/P	B	N	ϕ=72.3 ρ=1.47	0.2	1	0.5				
										1.0				
							ϕ=73.8 ρ=1.46		2					*
									3					
						R	ϕ=8.30 ρ=2.33	0.2	4					*
									CC					#

LITHOLOGIC DESCRIPTION

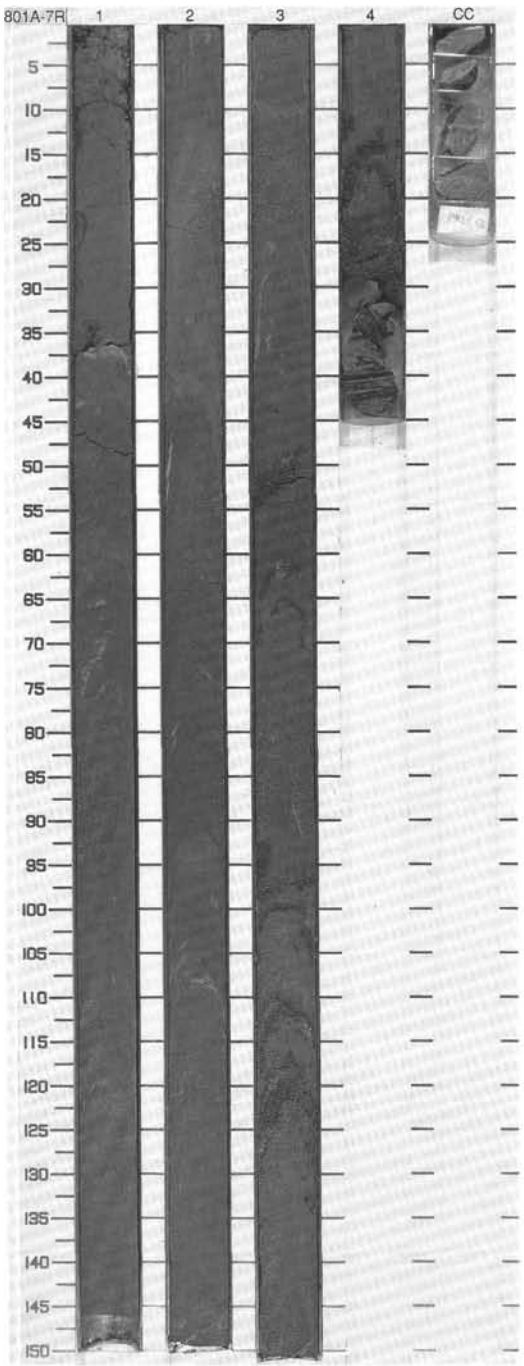
PELAGIC CLAY with ZEOLITES

Major lithology: PELAGIC CLAY with ZEOLITES, overall dark reddish gray (5YR 4/2.5) with intermixed streaks and mottles ranging from light brown (7.5YR 6/4) to grayish brown (5YR 3/2), probably originally banded but has been highly distorted by drilling, composed of clay and zeolites with minor iron-oxide/hydroxide aggregates and opaques.

Minor lithologies:
a. RADIOLARIAN CLAY, brown (7.5YR 5/4), occurring in distorted bands in Section 3 (49-51, 63-65, 96-100, and 113-122 cm) and Section 4 (14-29 cm), contains up to 50% radiolarians.
b. CLAYEY RADIOLARIAN PORCELLANITE to CHERT, grayish brown (5YR 3/2 - 7.5YR 3/3) mottled with grayish orange pink or light reddish pink (5YR 7/2 - 5YR 6/4), planar or flaser laminated with bioturbation, variable silicification from CLAYEY PORCELLANITE to conchoidal-fracturing CHERT, occurring from Section 4, 29 cm to base of core.

SLIDE SUMMARY (%):

	2, 80 D	3, 117 M	4, 32 D
TEXTURE:			
Sand	—	30	10
Silt	20	15	10
Clay	80	55	80
COMPOSITION:			
Clay	74	50	19
Glass	Tr	—	—
Opaques	1	—	1
Oxide	3	5	Tr
Quartz	1	Tr	—
Radiolarians	1	45	15
Silica	—	—	60
Spicules	—	—	5
Zeolite	20	Tr	—



SITE 801 HOLE A CORE 8R CORED INTERVAL 5742.4-5752.0 mbsl; 68.6-78.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CONIACIAN - COMPANIAN *Amphipyndax pseudoconulus - Amphipyndax tylotus*	B		A/P	B	B	N N R? R?	R?		1			X X		# *

LITHOLOGIC DESCRIPTION

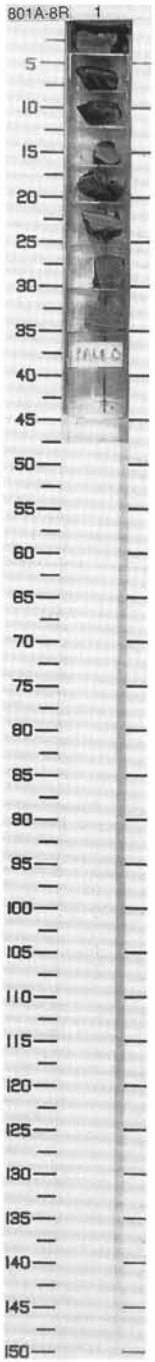
RADIOLARIAN CHERT with PORCELLANITE

Major lithology: RADIOLARIAN CHERT with PORCELLANITE, moderate brown (5YR 4/4 - 5YR 3/4), thin bedded with distinct planar and flaser laminations (laminations are a function of relative concentrations of radiolarians and clay), cross-lamination (at Section 1, 21-23 cm) and minor bioturbation; manganese oxide dendrites on some fracture surfaces.

Minor lithology: CLAYSTONE (16-20 cm), dark yellowish brown (10YR 4/2), mottled and totally disrupted by drilling, and light brown (7.5YR 6/4), on basal bedding plane of banded chert piece at Section 1, 34 cm, contains clay with minor zeolites, iron oxides and radiolarians, possibly represents interbeds between cherty horizons.

SLIDE SUMMARY (%):

	1, 1 D	1, 34 M
TEXTURE:		
Sand	10	—
Silt	15	2
Clay	75	98
COMPOSITION:		
Clay	25	90
Fish	Tr	—
Glass	—	Tr
Opaques	3	—
Oxide	2	6
Radiolarians	20	2
Silica	50	—
Zeolite	—	2



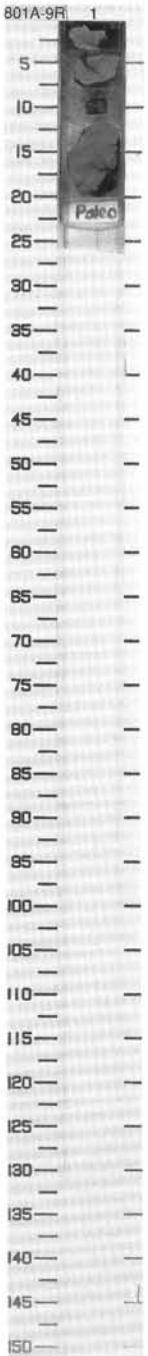
SITE 801 HOLE A CORE 9R CORED INTERVAL 5752.0-5767.3 mbsl; 78.2-87.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
CONIACIAN - CAMPANIAN	B	B	A/P *Theocampe urna* - *Amphipyndax pseudoconulus*		B	N	ϕ= 21.7 ρ_b= 1.97	0.1	1					#	RADIOLARIAN CHERT

Major lithology: RADIOLARIAN CHERT, moderate brown (5YR 4/4) to grayish brown (5YR 3/2), mottled to planar-laminated to massive, minor bioturbation, manganese oxide dendrites on some fracture surfaces, lowest piece has vertical fracture filled with grayish orange pink (5YR 7/2) material.

SLIDE SUMMARY (%):

	1, 0 D
TEXTURE:	
Sand	5
Silt	15
Clay	80
COMPOSITION:	
Clay	40
Oxide	5
Radiolarians	20
Silica	20
Spines	15



SITE 801 HOLE A CORE 10R CORED INTERVAL 5761.3-6770.9 mbsl; 87.5-97.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CENOMANIAN - CONIACIAN	B	B	R/M unzoned		B	N	Φ=21.7 ● ρ=1.97		1	0.5				#

LITHOLOGIC DESCRIPTION

RADIOLARIAN PORCELLANITE with CHERT

Major lithology: RADIOLARIAN PORCELLANITE with CHERT, grayish brown (5YR 3/2) to moderate brown (5YR 4/4), porcellanite and chert are interlaminated in variable proportions with chert being generally lighter in color than porcellanite.

Minor lithology: CLAYEY RADIOLARIAN PORCELLANITE to RADIOLARIAN SILICEOUS CLAYSTONE, dusky brown (5YR 2/2), moderate brown (5YR 3/4) and dark yellowish brown (10YR 4/2), easily scratched (pieces at 15-20, 30-45 and 49-58 cm).

SLIDE SUMMARY (%):

	1, 0 D
TEXTURE:	
Sand	15
Silt	8
Clay	77
COMPOSITION:	
Clay	12
Opaques	1
Organic matter	Tr
Radiolarians	23
Silica	64

SITE 801 HOLE A CORE 11R CORED INTERVAL 5770.9-5780.6 mbsl; 97.1-106.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CENOMANIAN - CONIACIAN	B	B	A/M *Obesacpsula somphedia*		B	N			1					#

LITHOLOGIC DESCRIPTION

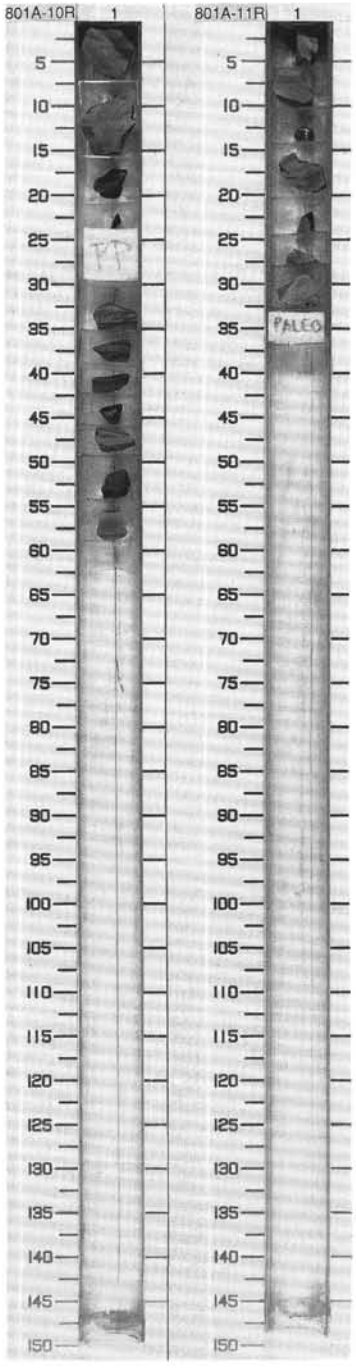
RADIOLARIAN CHERT with PORCELLANITE

Major lithology: RADIOLARIAN CHERT with PORCELLANITE, moderate brown (5YR 3/4 - 5YR 4/4) and light brown (5YR 5/6), banded to laminated with minor bioturbation, top piece has black (N2) laminations.

Minor lithology: (Section 1, 14-20 cm):
a. RADIOLARIAN PORCELLANITE, grayish brown (5YR 3/2) with dark laminations.
b. CLAYSTONE, light brown (5YR 5/6), as a thin "rind" to chert in piece at Section 1, 22 cm.

SLIDE SUMMARY (%):

	1, 25 M
TEXTURE:	
Sand	2
Silt	10
Clay	88
COMPOSITION:	
Clay	53
Mica	2
Oxide	5
Radiolarians	15
Silica	15
Spines	10
Zeolite	Tr



SITE 801 HOLE A CORE 12R CORED INTERVAL 5780.6-5790.3 mbsl; 106.8-116.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CENOMANIAN - CONIACIAN	B	B	A/P *Acaeniotyle umbilicata - Obesacapsula somphedia*		B	N	Φ= 26.3 ρ= 1.98	0.1	1					#

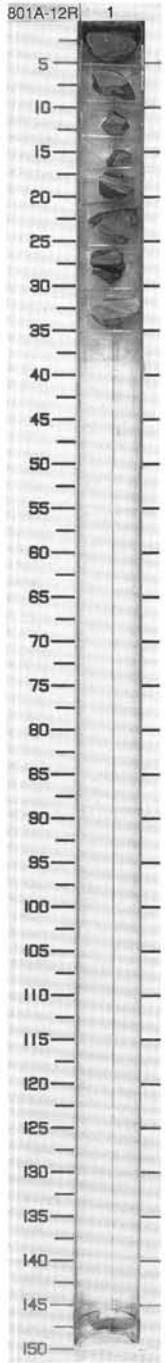
LITHOLOGIC DESCRIPTION

RADIOLARIAN CHERT with PORCELLANITE

Major lithology: RADIOLARIAN CHERT with PORCELLANITE, moderate brown (5YR 4/4) grading to light brown (5YR 5/6), some pieces display thin bedding to planar lamination, rare fractures filled with black manganese oxide. Chert is dark yellowish orange (10YR 6/6) in a thin band at Section 1, 28-30 cm. Thin section at Section 1, 6-8 cm, contains radiolarians filled with silica and radiolarians filled with clay.

SLIDE SUMMARY (%):

	1, 6 D
TEXTURE:	
Sand	Tr
Silt	20
Clay	80
COMPOSITION:	
Clay	46
Glass	1
Oxide	3
Radiolarians	20
Silica	20
Spines	10



SITE 801 HOLE A CORE 13R CORED INTERVAL 5790.3-5800.0 mbsl; 116.5-126.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CENOMANIAN - CONIACIAN	B	B	A/M *Acaeniotyle umbilicata - Obesacapsula somphedia*		B	N	ϕ=21.7 ● ρ_a=2.13	5.4 ●	1					* #

LITHOLOGIC DESCRIPTION

RADIOLARIAN PORCELLANITE with CALCAREOUS RADIOLARIAN PORCELLANITE

Major lithology: RADIOLARIAN PORCELLANITE, grayish brown (10YR 5/2) interlaminated with CALCAREOUS RADIOLARIAN PORCELLANITE, light brownish gray (10YR 6/2), small lenses, truncated laminations, and minor bioturbation. Very dark green (10GY 3/2) clay filling and pale green (5G 7/2) zones of alteration or staining at microfractures.

Minor lithology: RADIOLARIAN CHERT, thinly laminated light to dark brown (7.5YR 6/4 - 7.5YR 4/2), minor bioturbation.
Note: Abrupt color change from browns and reddish browns (5YR-) downward to grays (10YR 5/2-10YR 6/2) at Section 1, 2.5 cm.

SLIDE SUMMARY (%):

	1, 1 D	1, 18 D
TEXTURE:		
Sand	—	15
Silt	15	10
Clay	85	75
COMPOSITION:		
Barite	—	1
Clay	20	20
Micrite	—	40
Opaques	1	—
Oxide	2	2
Radiolarians	15	15
Silica	62	15
Spines	—	4
Zeolite	Tr	—

SITE 801 HOLE A CORE 14R CORED INTERVAL 5800.0-5809.7 mbsl; 126.2-135.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CENOMANIAN	B	A/M	A/M *Eiffellithus turriseiffelii* (CC9) (NC10)	unzoned	B	N	ϕ= 36.1 ρ_b= 1.93	0.2	1	0.5				

LITHOLOGIC DESCRIPTION

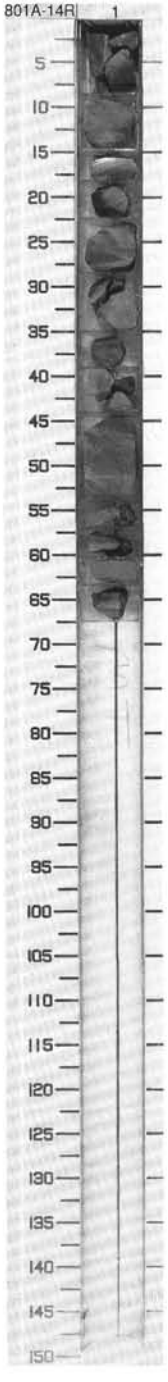
RADIOLARIAN PORCELLANITE

Major lithology: RADIOLARIAN PORCELLANITE, dark gray, (5Y 4/1 - 5Y 3/1), locally microlaminated, scattered bioturbation, dull luster and rougher fracture indicates increased clay content.

Minor lithologies:
a. TUFFACEOUS NANNOFOSSIL CLAYSTONE grading to NANNOFOSSIL CHALK, gray to dark gray (N5 -N4).
b. FELDSPATHIC RADIOLARIAN VOLCANICLASTIC SANDSTONE TURBIDITE (Section 1, 35-37 cm), dark gray (N4), scoured base, micro-load casts, contains volcanic glass, plagioclase, oxides, and radiolarians.

SLIDE SUMMARY (%):

	1, 32 D	1, 40 M	1, 61 M
TEXTURE:			
Sand	5	Tr	3
Silt	30	40	35
Clay	65	60	62
COMPOSITION:			
Accessory minerals	—	Tr	—
Calcite	—	—	6
Clay	42	35	10
Feldspar	—	15	—
Glass	—	20	5
Nannofossils	—	15	65
Opaques	—	3	3
Oxide	5	2	1
Radiolarians	30	10	10
Silica	10	—	—
Smectite	3	—	—
Spines	10	—	—



SITE 801 HOLE A CORE 15R CORED INTERVAL 5809.7-5819.4 mbsl: 135.9-145.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CENOMANIAN	B	A/M	A/P		B	N	Φ=49.1 ρ=1.99	1.2	1					* #

LITHOLOGIC DESCRIPTION

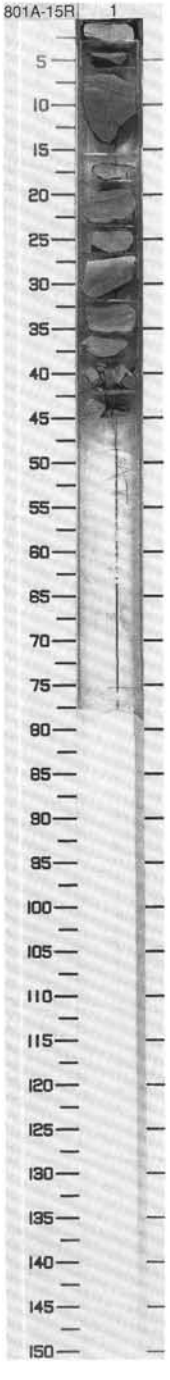
VOLCANICLASTIC SANDSTONE and RADIOLARIAN PORCELLANITE

Major lithologies:
a. VOLCANICLASTIC SANDSTONE, dark blue gray to greenish gray (5B 4/1 - 5BG 5/1), chiefly fresh glass with thin altered rims, oxides, plagioclase, and olivine(?). Grades to VOLCANICLASTIC CLAYEY RADIOLARITE.
b. RADIOLARIAN PORCELLANITE, dark gray (5Y 3/1 - 5Y 4/1), is interbedded with the volcaniclastic sandstone, locally with calcareous laminations and scoured contacts.

Minor lithology: TUFFACEOUS NANNOFOSSIL CHALK, gray (5Y 5/1), mostly homogeneous, rare microlaminations.

SLIDE SUMMARY (%):

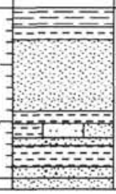
	1, 16 M	1, 36 D
TEXTURE:		
Sand	35	10
Silt	35	10
Clay	30	80
COMPOSITION:		
Accessory minerals	1	—
Clay	34	30
Feldspar	5	—
Glass	5	—
Opaques	—	2
Oxide	—	1
Radiolarians	55	15
Silica	—	52



SITE 801 HOLE A CORE 16R CORED INTERVAL 5819.4-5829.0 mbsl; 145.6-155.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS
UPPER ALBIAN	*Rotalipara appenninica* R/M	*Eiffellithus turriseiffelii* (CC9) (NC10) A/M	unzoned R/P		B	N ?	ϕ=60.6 ρ=1.80	2.8	1, CC	0.5, 1.0

GRAPHIC LITHOLOGY



LITHOLOGIC DESCRIPTION

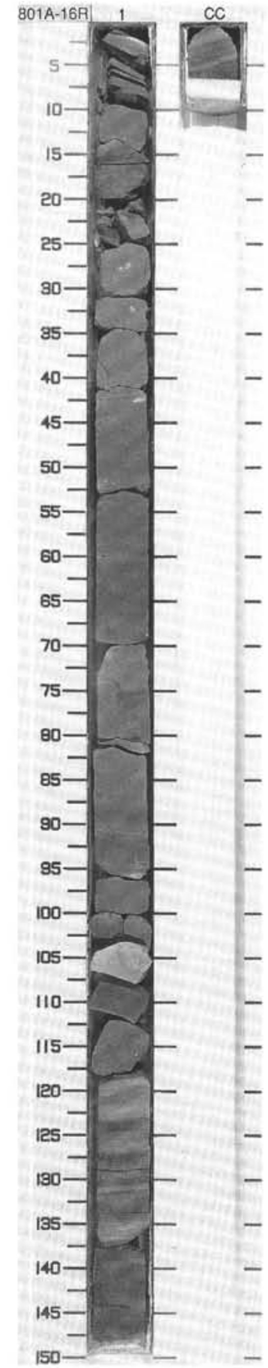
VOLCANICLASTIC SANDSTONE to CLAYSTONE

Major lithology: VOLCANICLASTIC SANDSTONE to CLAYSTONE, dark greenish gray, greenish gray and bluish gray (5G 4/1, 5BG 4/1, 5GY 4/1, 5G 5/1, 5B 4/1). Finer-grained intervals are fine- to micro-laminated. The sandstone intervals are mostly well-sorted; thick bed at Section 1, 25-91 cm, has various intraclasts including a laminated 3 cm-wide mud clast near the base (turbiditic origin?). Claystone contains radiolarians and micrite.

Minor lithology: TUFFACEOUS SANDSTONE, dark gray to blacK (N4-N2), well- sorted, in Section 1, 115-120 and 128-150 cm. May represent a coarse ash-tuff deposit.

SLIDE SUMMARY (%):

	1, 8 D	1, 117 D	1, 133 M	CC, 1 M
TEXTURE:				
Sand	30	15	15	—
Silt	30	70	5	10
Clay	40	15	80	90
COMPOSITION:				
Calcite	5	Tr	—	1
Clay	30	15	40	72
Feldspar	Tr	—	—	Tr
Glass	45	60	—	—
Igneous rock fragments	—	10	—	—
Mica	—	—	—	5
Micrite	—	—	20	—
Nannofossils	10	—	—	20
Opaques	10	10	—	—
Oxide	—	—	3	—
Palagonite	—	5	—	—
Pyroxene	—	—	—	2
Radiolarians	Tr	—	15	—
Silica	—	—	15	—
Smectite	—	—	5	—
Spines	—	—	2	—



SITE 801 HOLE A CORE 17R CORED INTERVAL 5829.0-5838.8 mbsl; 155.2-165.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER ALBIAN	B	A/M *Eiffellithus turriseiffelii* (CC9) (NC10)	C/P unzoned		B	(?)	Φ 32.4 ρ 1.98	0.2	1	0.5				* #

LITHOLOGIC DESCRIPTION

CLAYEY RADIOLARITE interbedded with CALCAREOUS CLAYSTONE, and RADIOLARIAN CHERT with PORCELLANITE

Major lithologies:
a. CLAYEY RADIOLARITE, grayish olive green (5GY 3/2), laminated to vaguely flaser laminated, interbedded with CALCAREOUS CLAYSTONE, dusky green (5G 3/2), minor bioturbation.
b. RADIOLARIAN CHERT with PORCELLANITE, olive gray, grayish olive green and grayish olive (5Y 3/2, 5GY 3/2 and 10Y 4/2), piece at Section 1, 75 cm, has a band of vitreous, smoky-transparent quartz as fracture-fill. Thin section of porcellanite at Section 1, 59-60 cm, contains 25% volcanic glass.

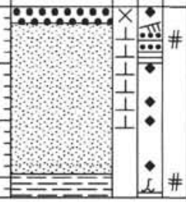
Minor lithologies:
a. (Section 1, 1-6 cm) CALCAREOUS SILTY SANDSTONE, light gray (N7), contains nannofossils and coarse-sand-size mud clasts.
b. (Section 1, 38-48 cm) NANNOFOSSIL CLAYSTONE, dusky green (5G 3/2), contains minor amounts of volcanic glass, mica and zeolites.

SLIDE SUMMARY (%):

	1, 40 D	1, 59 D
TEXTURE:		
Silt	10	35
Clay	90	65
COMPOSITION:		
Clay	49	10
Feldspar	—	5
Glass	3	22
Mica	3	—
Nannofossils	40	—
Opaques	—	3
Oxide	3	1
Radiolarians	—	2
Silica	—	56
Zeolite	2	—

SITE 801 HOLE A CORE 18R CORED INTERVAL 583.8.8-5848.5 mbsl; 165.0-174.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS
UPPER ALBIAN	B	B	A/P *Acaeniotyle umbilicata* - *Obesacapsula somphedia*		B	N	● φ=62.0, ρ=1.70	● 3.4	1 CC	0.5 1.0



LITHOLOGIC DESCRIPTION

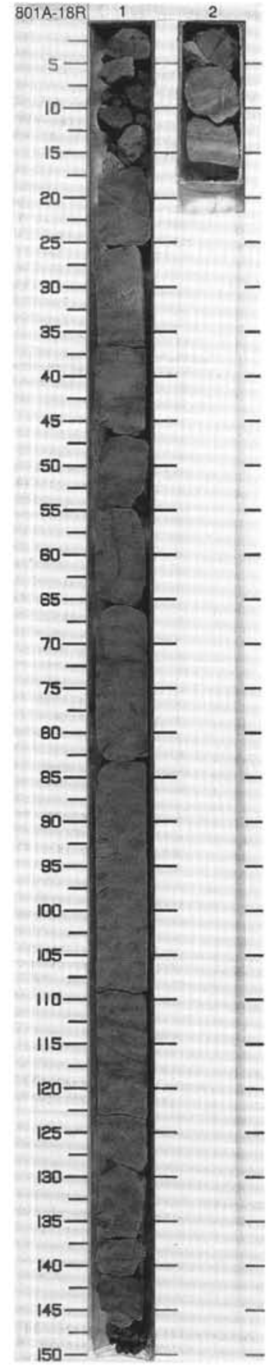
VOLCANICLASTIC SANDSTONE

Major lithology: VOLCANICLASTIC SANDSTONE, dark greenish gray (5G 4/1), poorly-sorted with abundant claystone clasts in a calcareous sandy matrix, amalgamation of grain and debris flows is suggested, maximum clast size is >2 cm (at Section 1, 93 cm), laminated and cross-laminated near top of core.

Minor lithologies:
a. VOLCANICLASTIC GRITSTONE, dark greenish gray (5G 4/1), with angular to subrounded clasts of claystone, chert and Ignesous rock fragments up to 1 cm long, some possible algal clasts, Section 1, 0-14 cm.
b. VOLCANICLASTIC SILTSTONE and CLAYSTONE, finely laminated with brownish gray (5YR 4/1), olive gray (5Y 4/1) and dark greenish gray (5G 4/1), some millimeter-scale lenses of light greenish gray (5G 8/1), Section 2, 0-18 cm. Claystone contains radiolarians.

SLIDE SUMMARY (%):

	1, 29 D	2, 4 M
TEXTURE:		
Sand	40	10
Silt	30	5
Clay	30	85
COMPOSITION:		
Calcite	20	—
Clay	10	48
Feldspar	10	—
Glass	32	5
Igneous rock fragments	20	—
Opaques	—	5
Oxide	2	Tr
Pyroxene	5	—
Radiolarians	—	12
Red algae	1	—
Silica	—	30



SITE 801 HOLE A CORE 19R CORED INTERVAL 5848.5-5858.2 mbsl; 174.7-184.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER ALBIAN	B	C/M *Eiffellithus turriseiffelii* (CC9) (NC10)	A/P *Acaeniotyle umbilicata* - *Obesacapsula somphedia*		B	N?	ϕ=71.9 ρ_a=1.50	7.7	1 CC	0.5				# * TW

LITHOLOGIC DESCRIPTION

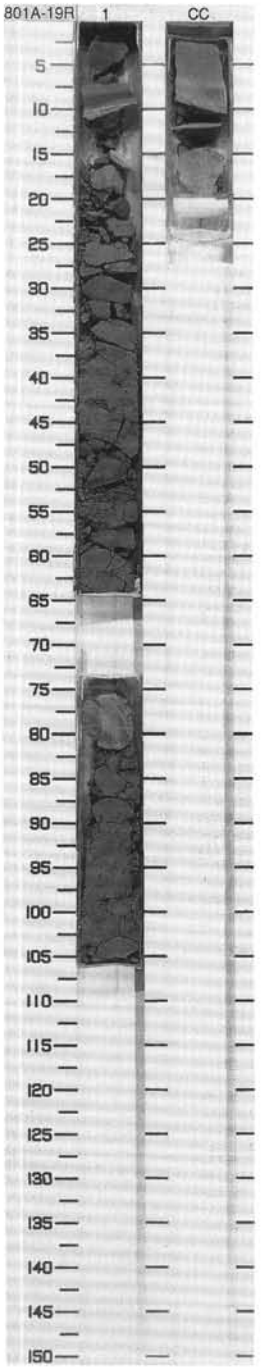
VOLCANICLASTIC SILTY CLAYSTONE and VOLCANICLASTIC SANDY SILTSTONE

Major lithologies:
a. VOLCANICLASTIC SILTY CLAYSTONE, dark greenish gray (5G 4/1), contains clay, volcanic glass and calcite with minor nannofossils and quartz, poorly consolidated and commonly reduced to drilling slurry.
b. VOLCANICLASTIC SANDY SILTSTONE, brownish black to greenish black (5YR 2/1, 5Y 2/1, 5GY 2/1), laminated to massive, XRD data from Section 1, 3 cm, indicates the presence of clinoptilolite.

Minor lithology: CLAYEY SILTSTONE, dark greenish gray (5GY 4/1) and massive, or olive gray (5Y 4/1) and laminated with minor mud clasts, comprises CC, 0-18 cm.

SLIDE SUMMARY (%):

	1, 1 D	1, 43 D
TEXTURE:		
Sand	90	5
Silt	10	30
Clay	Tr	65
COMPOSITION:		
Accessory minerals	—	2
Calcite	2	10
Clay	—	60
Feldspar	5	1
Glass	72	20
Igneous rock fragments	10	—
Nannofossils	—	4
Opaques	5	—
Oxide	3	—
Pyroxene	3	—
Quartz	—	3



SITE 801 HOLE A CORE 20R CORED INTERVAL 5858.2-5867.8 mbsl; 184.4-194.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE ALBIAN	B	R/P	A/P		B	N	Φ=21.7 ● P=2.09	0.2 ●	1					#

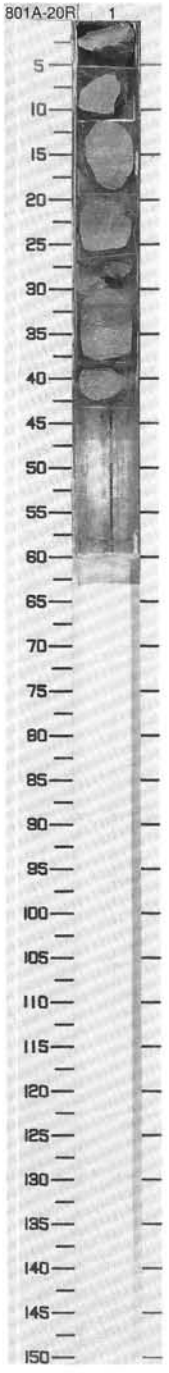
LITHOLOGIC DESCRIPTION

RADIOLARIAN CLAYSTONE

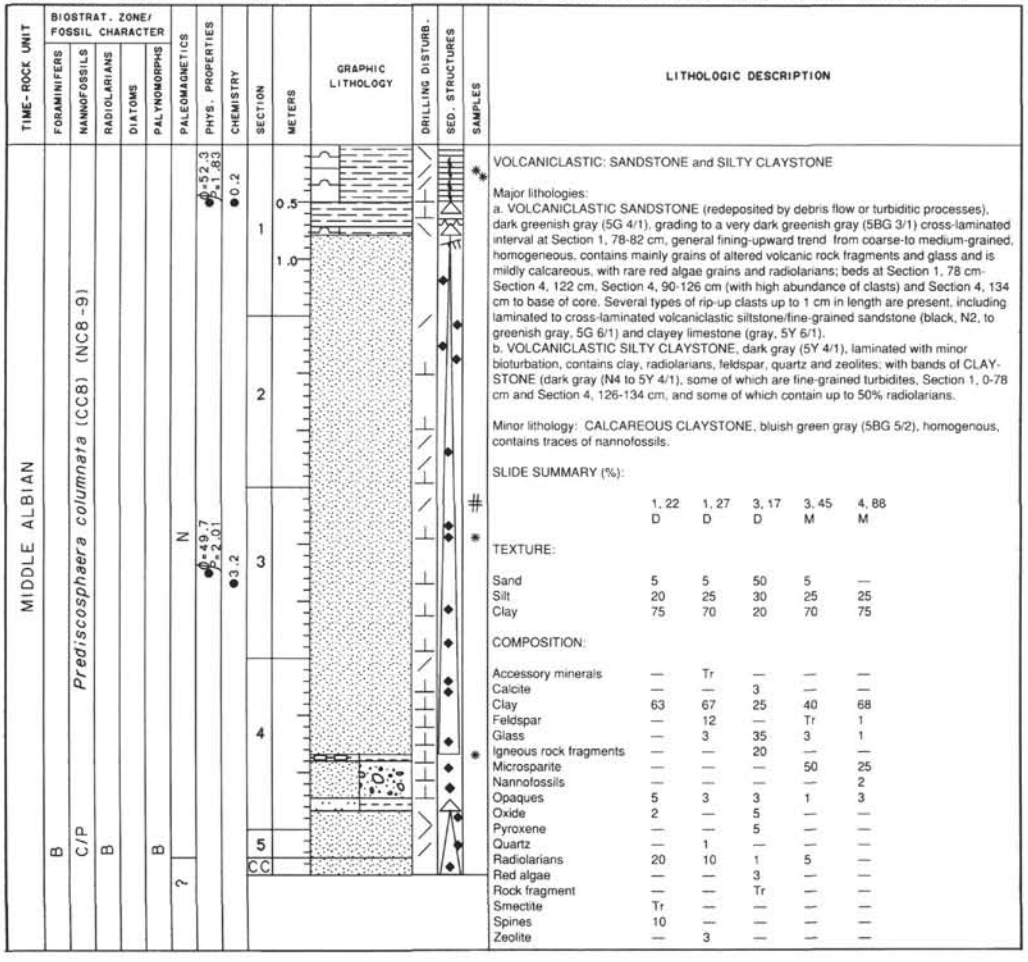
Major lithology: RADIOLARIAN CLAYSTONE, greenish gray (5BG 5/1) from 0-4 cm then dark olive gray (5Y 3/1 and 5Y 3/2) from 4-33 cm, rich in radiolarians, laminated with rare dark (N2) streaks 1-2 cm long, siliceous recrystallization is in homogenous with some zones of 1-5 mm thick being almost porcellaneous.

SLIDE SUMMARY (%):

	1, 8 D
TEXTURE:	
Silt	20
Clay	80
COMPOSITION:	
Clay	62
Foraminifers	1
Oxide	2
Radiolarians	20
Silica	10
Spines	5



SITE 801 HOLE B CORE 1R CORED INTERVAL 5867.8-5877.3 mbsl; 194.0-203.5 mbsf



LITHOLOGIC DESCRIPTION

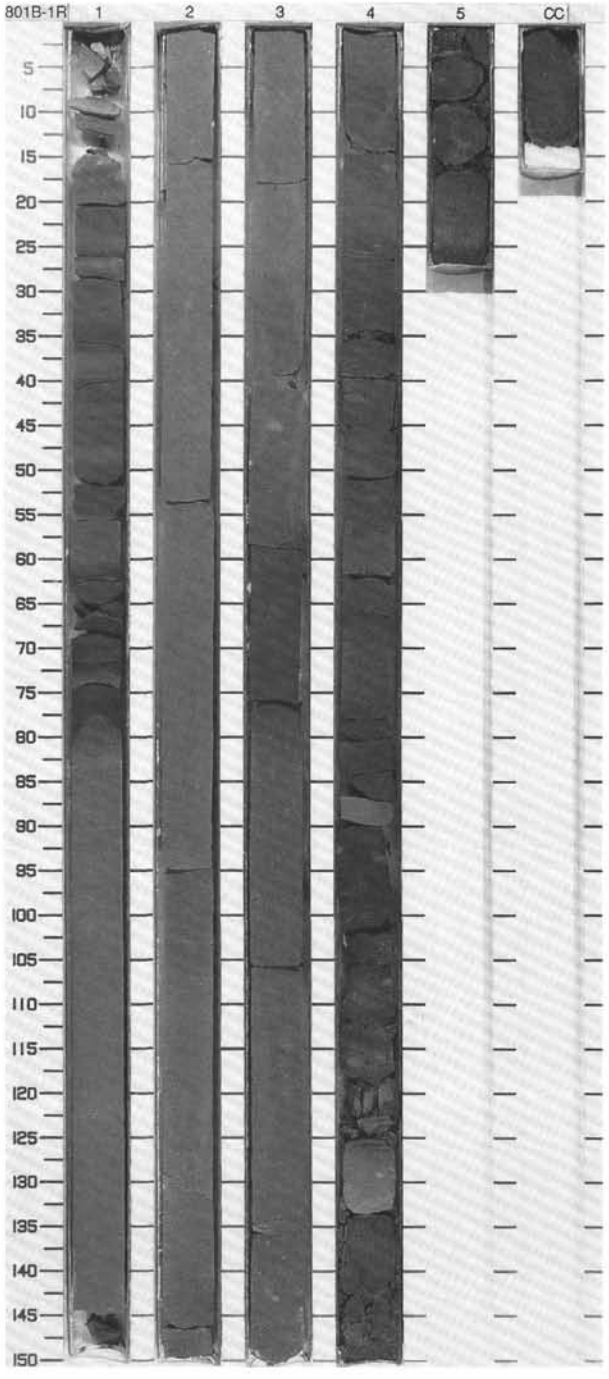
VOLCANICLASTIC: SANDSTONE and SILTY CLAYSTONE

Major lithologies:
a. VOLCANICLASTIC SANDSTONE (redeposited by debris flow or turbiditic processes), dark greenish gray (5G 4/1), grading to a very dark greenish gray (5BG 3/1) cross-laminated interval at Section 1, 78-82 cm, general fining-upward trend from coarse-to medium-grained, homogeneous, contains mainly grains of altered volcanic rock fragments and glass and is mildly calcareous, with rare red algae grains and radiolarians; beds at Section 1, 78 cm-Section 4, 122 cm, Section 4, 90-126 cm (with high abundance of clasts) and Section 4, 134 cm to base of core. Several types of rip-up clasts up to 1 cm in length are present, including laminated to cross-laminated volcaniclastic siltstone/fine-grained sandstone (black, N2, to greenish gray, 5G 6/1) and clayey limestone (gray, 5Y 6/1).
b. VOLCANICLASTIC SILTY CLAYSTONE, dark gray (5Y 4/1), laminated with minor bioturbation, contains clay, radiolarians, feldspar, quartz and zeolites; with bands of CLAYSTONE (dark gray (N4 to 5Y 4/1), some of which are fine-grained turbidites, Section 1, 0-78 cm and Section 4, 126-134 cm, and some of which contain up to 50% radiolarians.

Minor lithology: CALCAREOUS CLAYSTONE, bluish green gray (5BG 5/2), homogenous, contains traces of nannofossils.

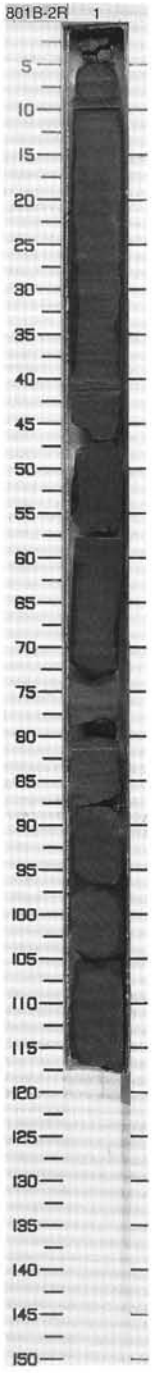
SLIDE SUMMARY (%):

	1, 22 D	1, 27 D	3, 17 D	3, 45 M	4, 88 M
TEXTURE:					
Sand	5	5	50	5	—
Silt	20	25	30	25	25
Clay	75	70	20	70	75
COMPOSITION:					
Accessory minerals	—	Tr	—	—	—
Calcite	—	—	3	—	—
Clay	63	67	25	40	68
Feldspar	—	12	—	Tr	1
Glass	—	3	35	3	1
Igneous rock fragments	—	—	20	—	—
Microsparite	—	—	—	50	25
Nannofossils	—	—	—	—	2
Opaques	5	3	3	1	3
Oxide	2	—	5	—	—
Pyroxene	—	—	5	—	—
Quartz	—	1	—	—	—
Radiolarians	20	10	1	5	—
Red algae	—	—	3	—	—
Rock fragment	—	—	Tr	—	—
Smectite	Tr	—	—	—	—
Spines	10	—	—	—	—
Zeolite	—	3	—	—	—



SITE 801 HOLE B CORE 2R CORED INTERVAL 5877.3-5886.7 mbsl; 203.5-212.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
MIDDLE ALBIAN	B	B	B		B	N	ϕ=43.1 ρ=2.05	● 1.2	1	0.5 1.0				# IW	VOLCANICLASTIC SILTY SANDSTONE Major lithology: VOLCANICLASTIC SILTY SANDSTONE, olive black (5Y 2/1) to dark greenish gray (5Y 4/1), laminated with variable texture from fine-grained sand to silt, contains abundant glass, igneous rock fragments, and rare radiolarians. SLIDE SUMMARY (%): 1, 73 D TEXTURE: Sand 40 Silt 30 Clay 30 COMPOSITION: Calcite 3 Feldspar 4 Glass 60 Igneous rock fragments 16 Opaques 3 Oxide 5 Pyroxene 5 Radiolarians 2 Smectite 2



SITE 801 HOLE B CORE 3R CORED INTERVAL 5886.7-5896.1 mbsl; 212.9-222.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE ALBIAN	B	R/P *Prediscosphaera columnata* (CC8) (NC8-9)	B		B	? N? I N	ϕ= 68.4 ρ_b= 1.59	1.2 ● 1.1 ●● 0.3	1 CC	0.5 1.0				* * #

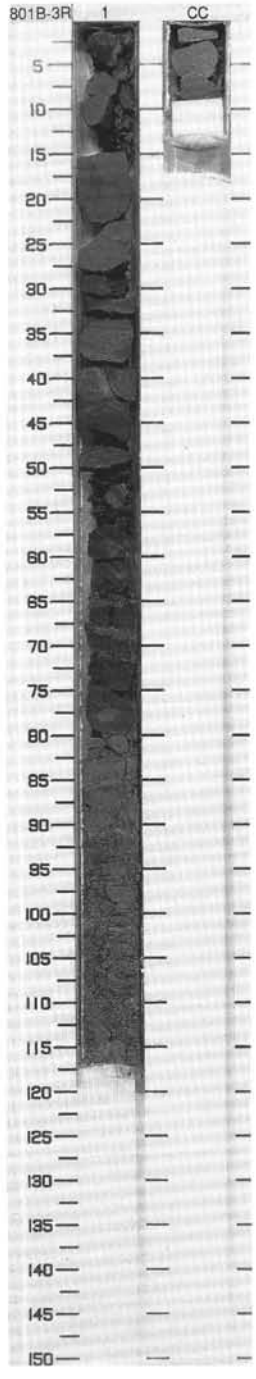
LITHOLOGIC DESCRIPTION

VOLCANICLASTIC: SILTY SANDSTONE and CLAYEY SILTSTONE

Major lithologies:
a. VOLCANICLASTIC SILTY SANDSTONE, dark greenish gray (5GY 4/1), laminated, contains darker-colored clayey siltstone laminations, Section 1, 0-75 cm.
b.VOLCANICLASTIC CLAYEY SILTSTONE, medium gray (N5, 5B 5/1) to medium light gray (N6), thin-bedded, contains clay, volcanic glass, smectite, feldspar, pyroxene, igneous rock fragments, radiolarians, nannofossils and traces of zeolites, finely laminated to homogenous with some beds displaying fining-upward grading.

SLIDE SUMMARY (%):

	1, 63 D	1, 84 D	CC, 4 D	CC, 6 D
TEXTURE:				
Sand	60	—	—	—
Silt	40	70	40	20
Clay	—	30	60	80
COMPOSITION:				
Calcite	1	—	—	1
Clay	—	30	60	54
Feldspar	1	1	1	5
Glass	75	30	15	5
Igneous rock fragments	10	20	5	—
Nannofossils	—	5	5	—
Opaques	5	—	—	5
Oxide	3	2	2	10
Pyroxene	3	—	—	5
Radiolarians	1	—	—	10
Smectite	1	12	10	5
Zeolite	—	Tr	2	—



SITE 801 HOLE B CORE 4R CORED INTERVAL 5896.1-5905.5 mbsl; 222.3-231.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE ALBIAN	B	B	R/P unzoned		B	N?	ϕ=62.7 ρ=1.70	3.7 ●	1				◆	# *

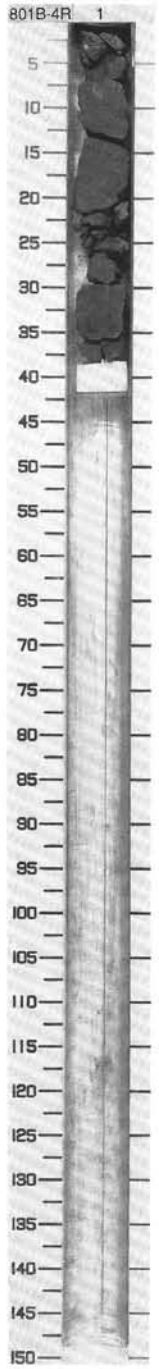
LITHOLOGIC DESCRIPTION

VOLCANICLASTIC: SANDY CLAYSTONE and SANDSTONE

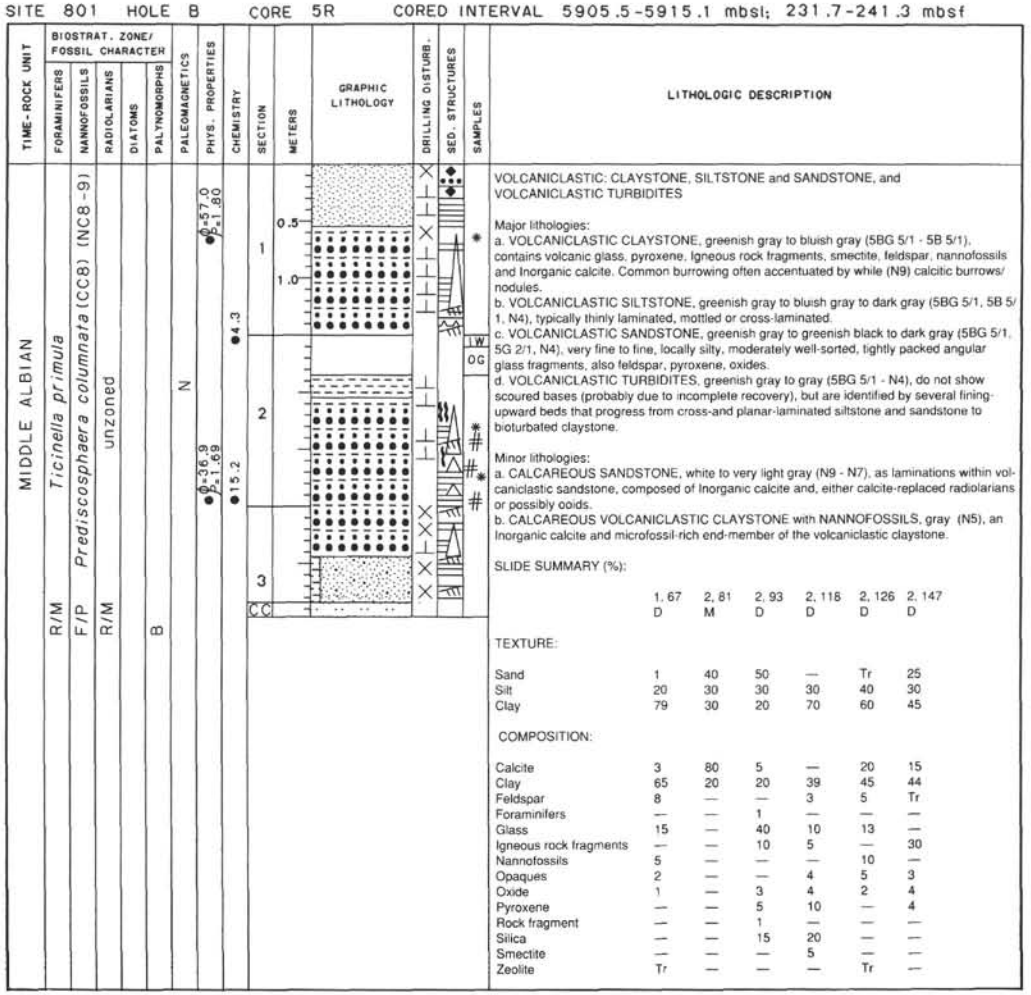
Major lithologies:
a. VOLCANICLASTIC SANDY CLAYSTONE, gray (N5), structureless, very poorly-sorted grains from clay to 4 mm. Grains include: mudstone clasts, glass, radiolarians, volcanic rock fragments, pyroxene and Inorganic calcite. Probably a debris flow deposit.
b. VOLCANICLASTIC SANDSTONE, very dark green to dark greenish gray (5G 3/1-5G 4/1), moderately well-sorted, very fine-grained angular grains, chiefly composed of volcanic glass shards, with rare red algae and radiolarians; well developed bedding-parallel fabric of elongate glass grains enhances thin planar laminations.

SLIDE SUMMARY (%):

	1, 15 D	1, 31 D
TEXTURE:		
Sand	25	80
Silt	35	10
Clay	40	10
COMPOSITION:		
Accessory minerals	2	—
Calcite	5	1
Clay	40	10
Feldspar	15	—
Glass	15	50
Igneous rock fragments	5	—
Mica	—	1
Opaques	2	3
Oxide	Tr	1
Pyroxene	8	5
Radiolarians	5	5
Red algae	—	2
Silica	—	20
Zeolite	Tr	—



SITE 801 HOLE B CORE 5R CORED INTERVAL 5905.5-5915.1 mbsl; 231.7-241.3 mbsf



LITHOLOGIC DESCRIPTION

VOLCANICLASTIC: CLAYSTONE, SILTSTONE and SANDSTONE, and VOLCANICLASTIC TURBIDITES

Major lithologies:

a. VOLCANICLASTIC CLAYSTONE, greenish gray to bluish gray (5BG 5/1 - 5B 5/1), contains volcanic glass, pyroxene, Igneous rock fragments, smectite, feldspar, nannofossils and Inorganic calcite. Common burrowing often accentuated by while (N9) calcitic burrows/ nodules.

b. VOLCANICLASTIC SILTSTONE, greenish gray to bluish gray to dark gray (5BG 5/1, 5B 5/1, N4), typically thinly laminated, mottled or cross-laminated.

c. VOLCANICLASTIC SANDSTONE, greenish gray to greenish black to dark gray (5BG 5/1, 5G 2/1, N4), very fine to fine, locally silty, moderately well-sorted, tightly packed angular glass fragments, also feldspar, pyroxene, oxides.

d. VOLCANICLASTIC TURBIDITES, greenish gray to gray (5BG 5/1 - N4), do not show scoured bases (probably due to incomplete recovery), but are identified by several fining-upward beds that progress from cross-and planar-laminated siltstone and sandstone to bioturbated claystone.

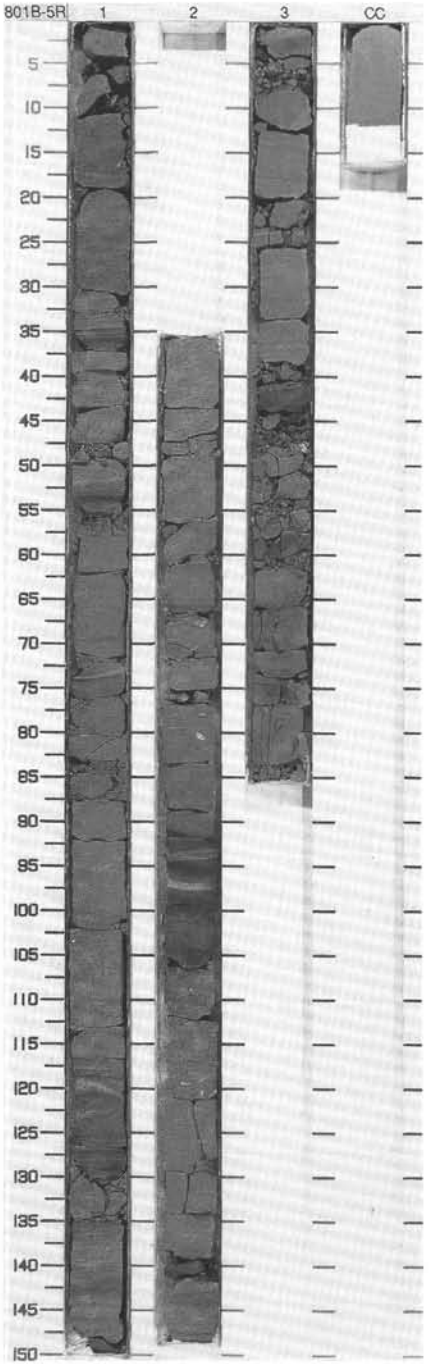
Minor lithologies:

a. CALCAREOUS SANDSTONE, white to very light gray (N9 - N7), as laminations within volcaniclastic sandstone, composed of Inorganic calcite and, either calcite-replaced radiolarians or possibly ooids.

b. CALCAREOUS VOLCANICLASTIC CLAYSTONE with NANNOFOSSILS, gray (N5), an Inorganic calcite and microfossil-rich end-member of the volcaniclastic claystone.

SLIDE SUMMARY (%):

	1, 67 D	2, 81 M	2, 93 D	2, 118 D	2, 126 D	2, 147 D
TEXTURE:						
Sand	1	40	50	—	Tr	25
Silt	20	30	30	30	40	30
Clay	79	30	20	70	60	45
COMPOSITION:						
Calcite	3	80	5	—	20	15
Clay	65	20	20	39	45	44
Feldspar	8	—	—	3	5	Tr
Foraminifers	—	—	1	—	—	—
Glass	15	—	40	10	13	—
Igneous rock fragments	—	—	10	5	—	30
Nannofossils	5	—	—	—	10	—
Opaques	2	—	—	4	5	3
Oxide	1	—	3	4	2	4
Pyroxene	—	—	5	10	—	4
Rock fragment	—	—	1	—	—	—
Silica	—	—	15	20	—	—
Smectite	—	—	—	5	—	—
Zeolite	Tr	—	—	—	Tr	—



SITE 801 HOLE B CORE 6R CORED INTERVAL 5915.1-5924.8 mbsl; 241.3-251.0 mbsf

TIME-ROCK UNIT: MIDDLE ALBIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: R/M *Ticinella primula*
- NANNOFOSSILS: C/M *Prediscosphaera columnata* (CC8/NC8-9)
- RADIOLARIANS: C/P unzoned
- DIATOMS
- PALYNOMORPHS: B

PALEOMAGNETICS: N

PHYS. PROPERTIES: Φ=64.6, ρ=1.68; Φ=56.9, ρ=1.81; Φ=60.2, ρ=1.71

CHEMISTRY: ● 2.3

SECTION: 1, 2, 3, 4

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

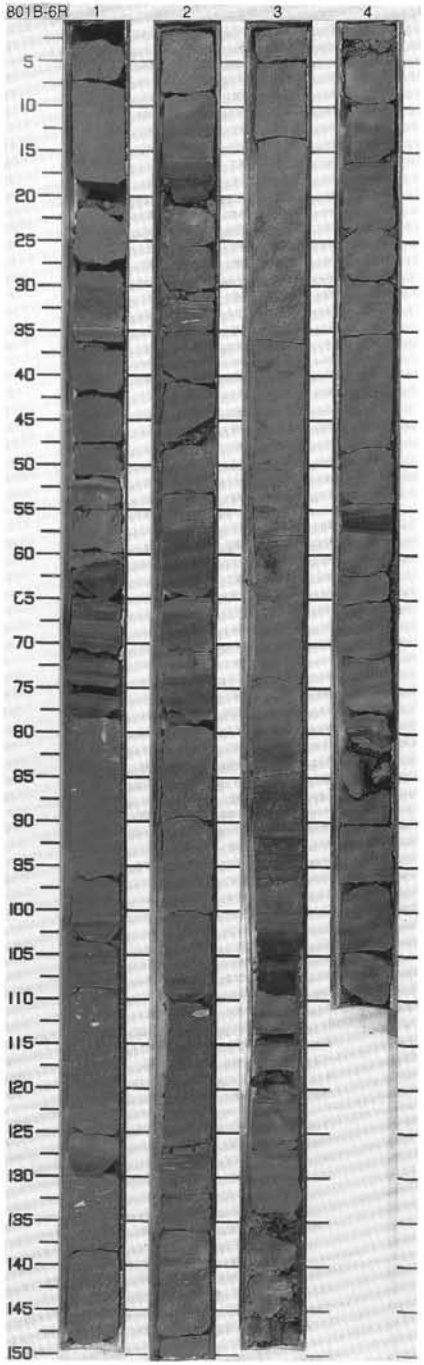
VOLCANICLASTIC TURBIDITES

Major lithology: VOLCANICLASTIC TURBIDITES, composed of CLAYSTONE, SILTSTONE and SANDSTONE, various shades of greenish gray (5G 5/1, 5BG 4/1), with greenish black (5GY 2/1) silty laminations locally accenting sedimentary structure. SILTY SANDSTONE or siltstone, planar-to cross-laminated, grades upward to claystone, which is mostly lighter in color, massive, and includes nannofossils. Some igneous rock fragments are rounded. Claystone contains volcanic glass and rare radiolarians. Burrows are sometimes filled by recrystallized calcite. Fining-upward beds range from 20 to over 50 cm in size.

Minor lithology: CHERT, in Section 4, 80-82 cm, dark gray to black (5Y 4/1 - N1), apparently formed by silicification a claystone precursor.

SLIDE SUMMARY (%):

	1, 52 D	2, 138 D	4, 80 M
TEXTURE:			
Sand	5	15	10
Silt	10	30	40
Clay	85	55	50
COMPOSITION:			
Accessory minerals	—	—	5
Calcite	1	—	5
Clay	72	57	40
Feldspar	5	2	—
Glass	—	30	50
Igneous rock fragments	7	—	—
Nannofossils	—	—	Tr
Opaques	2	3	—
Oxide	3	5	—
Palagonite	—	—	Tr
Pyroxene	—	1	—
Radiolarians	—	2	Tr
Silica	10	—	—



SITE 801 HOLE B CORE 7R CORED INTERVAL 5924.8-5934.5 mbsl; 251.0-260.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE ALBIAN	R/M	A/M	R/P		B	N?	ϕ=57.1 ρ=1.81 ●	15.5 ●	1	0.5 1.0				*

LITHOLOGIC DESCRIPTION

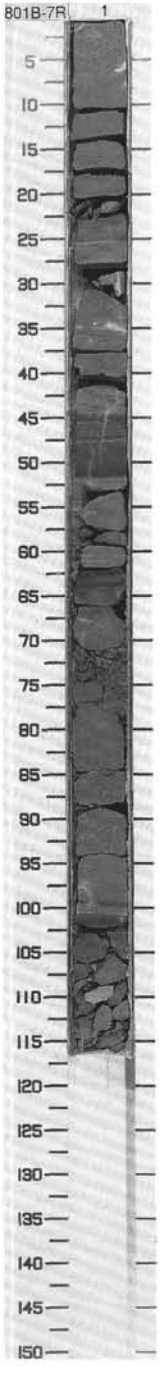
VOLCANICLASTIC TURBIDITES

Major lithology: VOLCANICLASTIC TURBIDITES, composed of CLAYEY and/or SANDY SILTSTONES which grade upward into CLAYSTONE. Siltstone is greenish gray to dark greenish gray (5G 5/1 - 5G4/1), massive to thinly laminated, and contains abundant radiolarians in the coarsest intervals. Volcaniclastic claystone is greenish gray (5G 5/1), largely homogeneous, with small, light greenish gray (5GY 7/1) patches of burrowing, contains volcanic glass, calcite, zeolites, smectite, radiolarians.

Tricinella primula / *Prediscosphaera columnata* (CCB/NC8-9) / unzoned

SLIDE SUMMARY (%):

	1, 36 D
TEXTURE:	
Silt	15
Clay	85
COMPOSITION:	
Calcite	3
Clay	39
Feldspar	2
Glass	10
Mica	3
Opaques	10
Oxide	3
Pyroxene	Tr
Quartz	Tr
Radiolarians	5
Silica	20
Zeolite	5



SITE 801 HOLE B CORE 8R CORED INTERVAL 5934.5-5944.1 mbsl; 260.7-270.3 mbsf

TIME-ROCK UNIT: MIDDLE ALBIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER: *Prediscosphaera columnata* (CC8)/(NC8-9)

FORAMINIFERS: B

NANNOFOSSILS: F/P

RADIOLARIANS: B

DIATOMS:

PALYNOMORPHS: B

PALEOMAGNETICS: ? N N ?

PHYS. PROPERTIES: ϕ=65.7 ρ=1.59; ϕ=57.7 ρ=1.76

CHEMISTRY: ● 2.8; ● 4.0

SECTION: 1 2 3 4 5 6 CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: LW, OG, #

SAMPLES: *

LITHOLOGIC DESCRIPTION

VOLCANICLASTIC SILTY CLAYSTONE

Major lithology: VOLCANICLASTIC SILTY CLAYSTONE forming turbidites, medium bluish gray to dark greenish gray (5B 5/1 5G 4/1), contain clay, volcanic glass, rock fragments and minor amounts of radiolarians, feldspar, opaques and calcareous grains. XRD data indicate clinoptilolite at Section 1, 118 cm, and Section 4, 8 cm; vague fining-upward beds with bioturbation and darker coloration in upper portions, lower portions of beds commonly display some lamination to cross-lamination, average turbidite thickness is about 1 m.

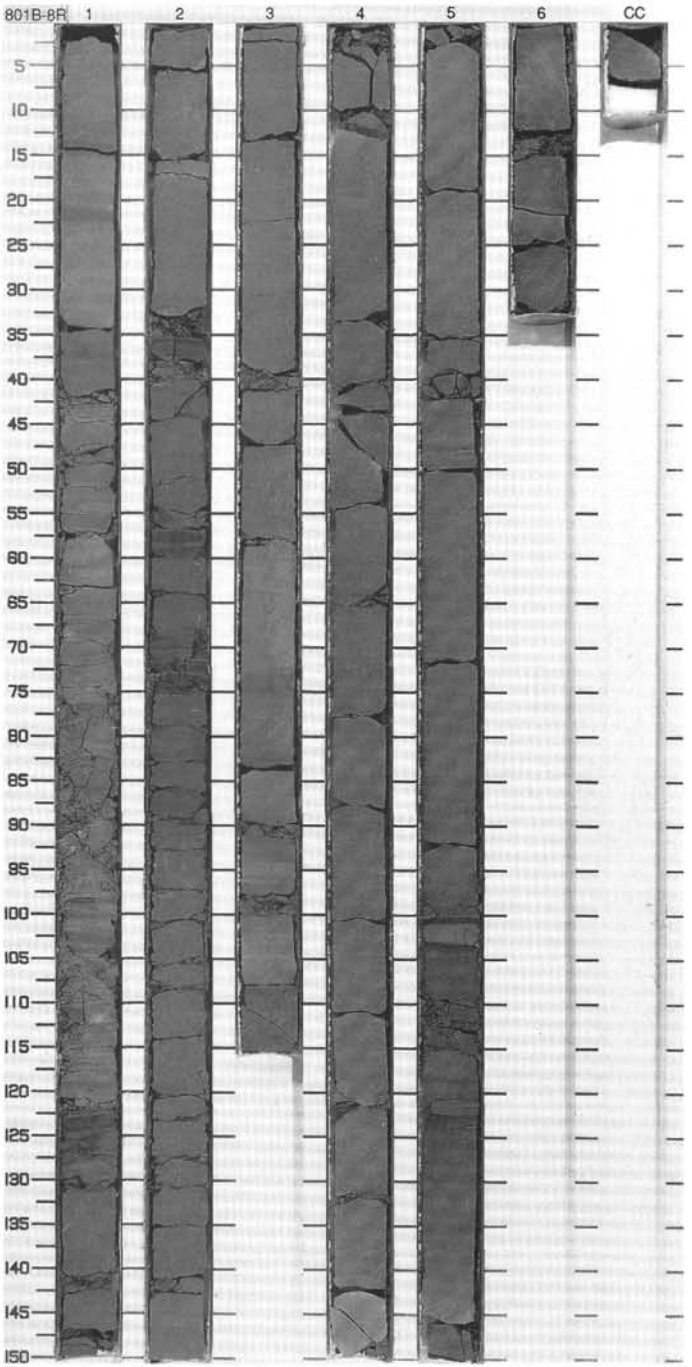
Minor lithologies:

a. VOLCANICLASTIC SILTY SANDSTONE, Section 1, 0-131 cm, greenish gray (5G 6/1) to light greenish gray (5G 8/1), laminated especially in lower portion, general fining-upward sequence.

b. CLAYEY RADIOLARITE with SILT, to RADIOLARITE, olive gray to light olive gray (5Y 4/1 - 5Y 6/1), laminated to flaser laminated, six layers of 1-3 cm thickness occur in Sections 2 and 5 between turbidites.

SLIDE SUMMARY (%):

	1, 111 D	1, 133 D	2, 57 M	4, 7 D
TEXTURE:				
Sand	5	1	35	Tr
Silt	35	12	35	20
Clay	60	87	30	80
COMPOSITION:				
Accessory minerals	3	Tr	Tr	—
Calcite	1	1	—	2
Clay	58	84	25	65
Feldspar	2	3	1	—
Glass	15	3	5	2
Igneous rock fragments	15	2	6	—
Nannofossils	—	1	—	—
Opaques	5	3	3	10
Oxide	—	—	—	1
Radiolarians	—	2	60	10
Silica	—	—	—	10
Zeolite	—	1	—	—



SITE 801 HOLE B CORE 9R CORED INTERVAL 5944.1-5953.8 mbsl; 270.3-280.0 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER CRETACEOUS	B	B	C/P unzoned		B				1	0.5, 1.0					VOLCANICLASTIC SILTSTONE (SLURRY) Major lithology: VOLCANICLASTIC SILTSTONE (SLURRY), greenish gray (5GY 5/1), entire sample went to paleontology.

SITE 801 HOLE B CORE 10R CORED INTERVAL 5953.8-5963.5 mbsl; 280.0-289.7 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER CRETACEOUS	B	B	R/P unzoned		B	N	ϕ=37.6 ρ=2.03	5.7 0.1	1	0.5				#	CALCAREOUS CLAYSTONE and RADIOLARITE

CALCAREOUS CLAYSTONE and RADIOLARITE

Major lithologies:

a. CALCAREOUS CLAYSTONE, dark greenish gray (5BG 4/1), massive with irregular calcite-filled fractures, Section 1, 0-23 cm.

b. RADIOLARITE, light olive gray (5Y 6/2), laminated and ripple-laminated, Section 1, 35-51, 55-68 cm.

Minor lithologies:

a. CALCAREOUS SILTSTONE, greenish gray (5G 5/1), laminated, Section 1, 23-35 cm.

b. CHERT, olive black (5Y 2.5/1), laminated, contains traces of volcanic glass and calcite, secondary replacement of silty textured radiolarite, gradational contacts, Section 1, 51-55 and 68-73 cm.

SLIDE SUMMARY (%):

	1, 68
	M
TEXTURE:	
Sand	10
Silt	5
Clay	85
COMPOSITION:	
Calcite	Tr
Clay	18
Feldspar	1
Glass	2
Igneous rock fragments	3
Opaques	3
Oxide	1
Radiolarians	15
Silica	57

SITE 801 HOLE B CORE 11R CORED INTERVAL 5963.5-5973.1 mbls; 289.7-299.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER CRETACEOUS	B	B	B		B	N	ϕ=25.9 ρ=2.17	0.3	1					* #

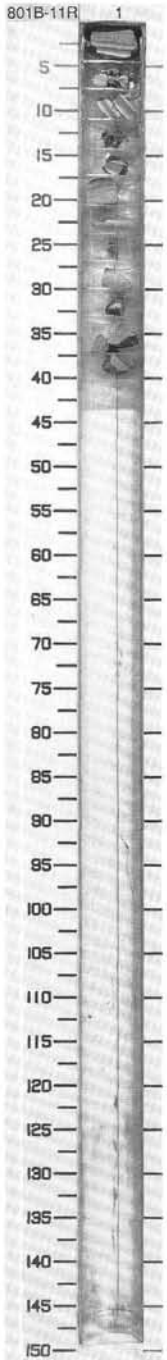
LITHOLOGIC DESCRIPTION

RADIOLARITE with PORCELLANITE

Major lithology: RADIOLARITE with PORCELLANITE, light brown to pink (7.5YR 6/4 to 7.5YR 7/4) radiolarite with 0.5-1.0 cm-thick bands of dark brown (7.5YR 3/4) porcellanite, some pieces are CLAYEY RADIOLARITE, sometimes laminated to flaser-laminated with bioturbation, barite crystals in the center of some radiolarians.
Minor lithology: CLAYSTONE with RADIOLARIANS, very dark gray (5Y 3/1), bioturbated, piece at Section 1, 37-40 cm.

SLIDE SUMMARY (%):

	1, 2 D	1, 28 D
TEXTURE:		
Sand	30	10
Silt	45	10
Clay	25	80
COMPOSITION:		
Accessory minerals	Tr	—
Barite	—	Tr
Calcite	Tr	—
Clay	25	22
Glass	Tr	—
Opaques	—	3
Oxide	3	25
Radiolarians	70	15
Silica	—	35
Zeolite	2	—



SITE 801 HOLE B CORE 12R CORED INTERVAL 5973.1-5982.8 mbsl; 299.3-309.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER CRETACEOUS	B	B	B		B	N	ϕ-50.2 ρ-1.92	0.6	1 CC	0.5		X X		* * #

LITHOLOGIC DESCRIPTION

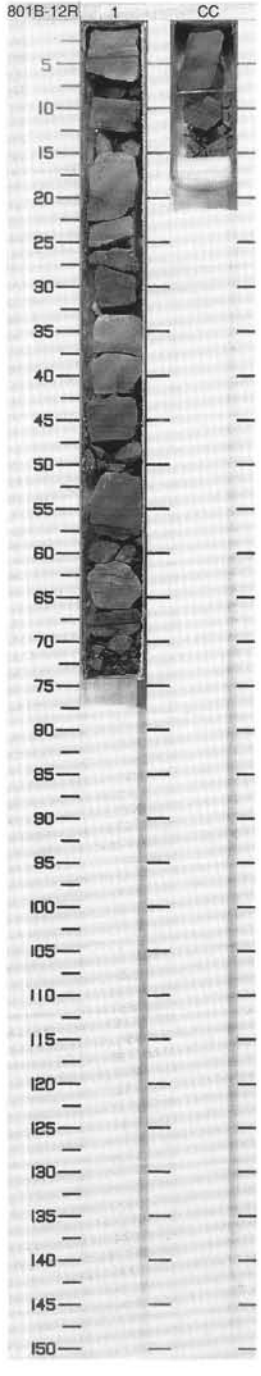
VOLCANICLASTIC TURBIDITES

Major lithology: VOLCANICLASTIC TURBIDITES of fine-grained SANDSTONE to CLAYSTONE, grayish blue green (5BG 5/2), olive gray (5Y 4/1), dark greenish gray (5G 4/1), light greenish gray (5G 8/1) and brownish gray (5YR 4/1), sedimentary features include load casts, convolute and flame structures, laminated intervals and graded beds with bioturbated upper portions.

Minor lithologies:
a. CHERT with PORCELLANITE, grayish black (N2) to very dusky red (10R 2/2), laminated, Section 1, 26-34 cm and CC, 9-12 cm.
b. CLAYEY RADIOLARITE, mottled dark yellowish brown (10YR 4/6) and reddish brown (2.5YR 4/4), finely laminated, slightly calcareous, Section CC, 0-9 cm.
c. CLAYEY SILTSTONE, gray (N4), laminated, Section CC, 12-15 cm.

SLIDE SUMMARY (%):

	1, 55 D	1, 63 M	CC, 6 D
TEXTURE:			
Silt	60	2	25
Clay	40	98	75
COMPOSITION:			
Accessory minerals	2	—	—
Calcite	—	—	10
Clay	35	75	45
Feldspar	2	—	—
Glass	40	—	—
Igneous rock fragments	10	—	—
Mica	—	2	—
Opaques	5	—	—
Oxide	—	—	30
Radiolarians	—	3	15
Silica	—	20	—
Zeolite	6	—	—



SITE 801 HOLE B CORE 13R CORED INTERVAL 5982.8-5992.1 mbsl; 309.0-318.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER CRETACEOUS	B	B	B		B	N	ϕ=61.5 ρ=1.69 ●	1.4 ●	1 CC	0.5				

LITHOLOGIC DESCRIPTION

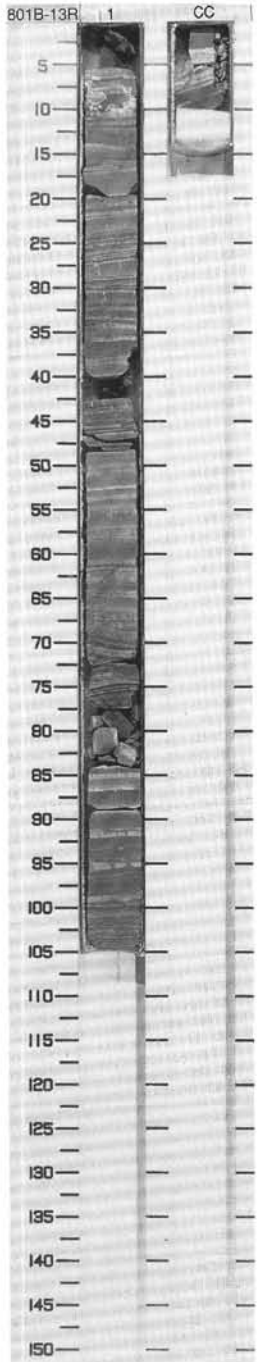
VOLCANICLASTIC TURBIDITES

Major lithologies:
a. VOLCANICLASTIC TURBIDITES composed of SILTSTONE grading to CLAYSTONE, grayish green (5BG 5/1) to green (10G 5/4), containing mainly altered volcanic glass and igneous rock fragments; layers are generally less than 2 cm thick, fining upward with some bioturbation in upper portions. Claystone portions of volcaniclastic turbidites are grayish green (5BG 5/1) to pinkish gray (7.5YR 6/2) contain abundant radiolarians and rare traces of nannofossils. <1 cm-thick beds probably represent pelagic intervals between turbidites.

Minor lithologies: Clasts at top of Section 1 which may be downhole contamination:
a. CHERT, yellow, red and brown striped (10YR 2/2 to 10YR 4/4), laminated, at 0-4 cm;
b.SANDY SILTSTONE, gray (N5) with subtle laminations. Interval in Section 1, 7-12 cm, has post-depositional fractures and microfaults filled with clear to white calcite with a zone of angular fragments in a calcite matrix.

SLIDE SUMMARY (%):

	1, 40 D	1, 41 D	1, 100 D
TEXTURE:			
Sand	10	—	—
Silt	75	15	45
Clay	15	85	55
COMPOSITION:			
Accessory minerals	—	Tr	—
Calcite	—	—	13
Clay	10	80	51
Feldspar	5	2	—
Glass	50	2	—
Igneous rock fragments	30	—	—
Mica	—	—	1
Nannofossils	—	1	—
Opaques	5	2	5
Oxide	—	—	20
Radiolarians	—	12	—
Silica	—	—	10



SITE 801 HOLE B CORE 14R CORED INTERVAL 5992.1-6001.5 mbsl; 318.3-327.7 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
VALANGINIAN	B	B	C/P *Cecrops septemporatus*		B	R I N	ρ=49.6 ρ=1.91 ●	0.2 ●	1	0.5				*

LITHOLOGIC DESCRIPTION

CLAYEY RADIOLARITE with PORCELLANITE

Major lithology: CLAYEY RADIOLARITE with PORCELLANITE, dark yellowish brown, dusky brown to moderate brown (10YR 4/2, 5YR 2/2, 5YR 4/4), color variation may partially reflect manganese mobilization, varying degrees of silicification, laminated to flaser-laminated, fractures have black specks of possible Mn oxide.

SLIDE SUMMARY (%):

	1, 5 D
TEXTURE:	
Silt	10
Clay	90
COMPOSITION:	
Clay	43
Opaques	40
Radiolarians	15
Spines	2

SITE 801 HOLE B CORE 15R CORED INTERVAL 6001.5-6011.0 mbsl; 327.7-337.2 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
BERRIASIAN - VALANGINIAN	B	B	R/P *Pseudodictyomitra carpatica*		B	N			1					*

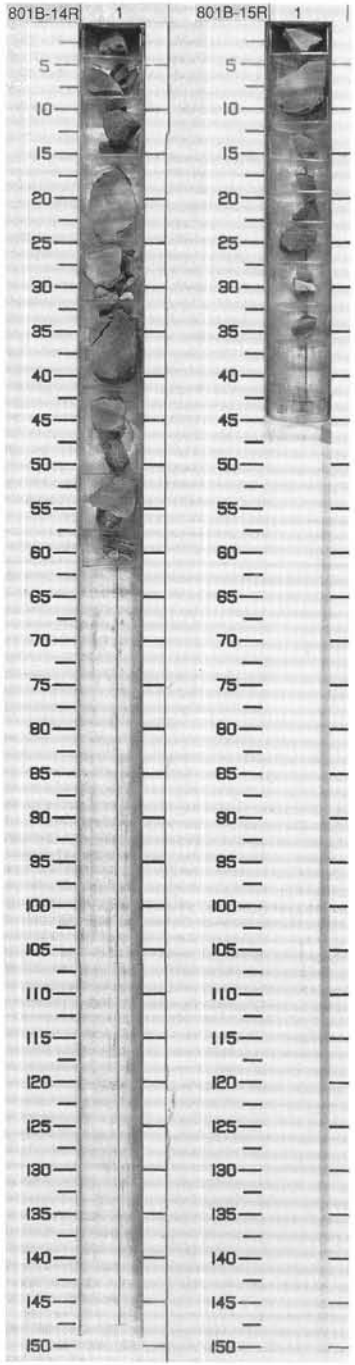
LITHOLOGIC DESCRIPTION

RADIOLARITE to CHERT

Major lithology: RADIOLARITE, tan to dusky yellowish brown (5YR 7/4 - 10YR 2/2), laminated with some minor bioturbation, streaky, Mn(?) oxide fracture coatings, varying degrees of silification to PORCELLANITE (Section 1, 15-18 cm) or CHERT (Section 1, 18-22 cm) of laminated yellowish red (5YR 4/6) and massive dusky brown (5YR 2/2) respectively.

SLIDE SUMMARY (%):

	1, 1 D
TEXTURE:	
Silt	30
Clay	70
COMPOSITION:	
Clay	35
Opaques	20
Radiolarians	30
Silica	10
Spines	5



SITE 801 HOLE B CORE 16R CORED INTERVAL 6011.0-6020.4 mbsl; 337.2-346.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
BERRIASIAN - VALANGINIAN	B	B	A/P *Pseudodictyomitra carpatica*		B	R? R	ϕ=3.70 ρ=2.54	0.4	1					#

LITHOLOGIC DESCRIPTION

RADIOLARIAN CHERT and RADIOLARITE

Major lithologies:
a. RADIOLARIAN CHERT, chiefly dark brown to dusky yellowish brown (7.5YR 4/2 - 10YR 2/2), infrequent laminations are yellowish red to light brown (5YR 5/8 - 5YR 6/4), with scattered light-colored lenses and burrows. Fractures are filled with quartz or a silvery metallic mineral.
b. RADIOLARITE, reddish yellow to dark grayish brown (7.5YR 6/4- 10YR 4/2), arenaceous texture and friable (from detached radiolarians), variable clay content, becomes porcellaneous with decreased clay and increased silica cementation.

SLIDE SUMMARY (%):

	1, 27 D	1, 36 D
TEXTURE:		
Sand	—	35
Silt	35	15
Clay	65	50
COMPOSITION:		
Clay	33	27
Glass	—	5
Opaques	2	1
Oxide	20	—
Radiolarians	35	45
Silica	10	20
Zeolite	—	2

SITE 801 HOLE B CORE 17R CORED INTERVAL 6020.4-6029.6 mbsl; 346.6-355.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
BERRIASIAN - VALANGINIAN	B	B	C/P *Pseudodictyomitra carpatica*		B	R?	ϕ=2.1 ρ=1.96	0.2	1					#

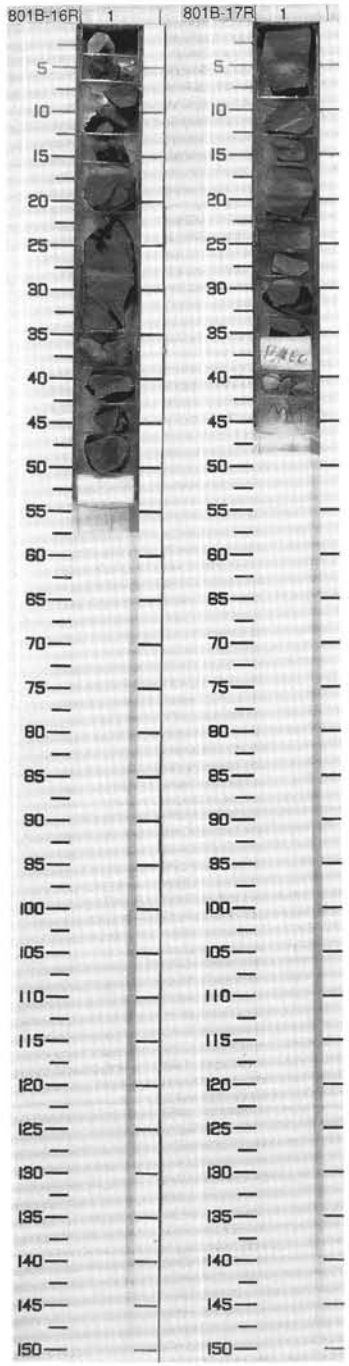
LITHOLOGIC DESCRIPTION

RADIOLARITE and RADIOLARIAN CHERT

Major lithologies:
a. RADIOLARITE, brown to very dark grayish brown (10YR 3/2-10YR 4/3), with minor lenses and patches of pink (5YR 7/4), texture ranges from medium to fine silty sand, with radiolarians making up all of the sand-sized fraction, increased clay (up to 30%) relative to overlying Core 16. Pervasive, very thin (~0.1 mm), discontinuous dark microlaminations. Black (N1), 0.1 to 1.0 mm circular deposits of Mn(?) oxide on most natural fractures.
b. RADIOLARIAN CHERT, dusky yellowish brown (10 YR 2/2), hematite on grain boundaries of microcrystalline quartz in matrix, typically massive. Generally bedding-parallel contacts with radiolarite, but one cross-cutting diagenetic nodule boundary is displayed in piece from Section 1, 29 - 33 cm.

SLIDE SUMMARY (%):

	1, 34 D
TEXTURE:	
Silt	5
Clay	95
COMPOSITION:	
Clay	23
Opaques	2
Oxide	20
Radiolarians	15
Silica	40
Zeolite	Tr



SITE 801 HOLE B CORE 18R CORED INTERVAL 6029.6-6039.1 mbsl; 355.8-365.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
BERRIASIAN - VALANGINIAN	B	B	A/M *Pseudodictyomitra carpatica*		B	N?	Φ=1.41 ρ=1.99	0.3	1					# #

LITHOLOGIC DESCRIPTION

RADIOLARITE and RADIOLARIAN CHERT

Major lithologies:
a. RADIOLARITE, dark grayish brown to very dark gray (10YR 4/3- 10YR 3/1), very thinly laminated, very small (3 X 0.4 mm) light and dark patches may be microbioturbation. Cemented fractures are filled with quartz, Mn oxide white, elongate zeolite (?) crystals. Less clayey, more siliceous than uphole.
b. RADIOLARIAN CHERT, dusky yellowish brown (10YR 2/2) with sparse thin lenses of reddish brown (5YR 5/4), fractured, mostly cemented as above. Some light colored layers in chert show many radiolarian molds (hollow), as opposed to chalcedony-filled radiolarians elsewhere.

SLIDE SUMMARY (%):

	1, 9 D	1, 37 D
TEXTURE:		
Silt	15	2
Clay	85	98
COMPOSITION:		
Clay	10	14
Opaques	8	1
Oxide	3	30
Radiolarians	15	30
Silica	60	20
Spines	3	5
Zeolite	1	—

SITE 801 HOLE B CORE 19R CORED INTERVAL 6039.1-6048.3 mbsl; 365.3-374.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
BERRIASIAN - VALANGINIAN	B	B	A/P *Pseudodictyomitra carpatica*		B [R?]	N?	Φ=2.50 ρ=2.61	0.2	1					#

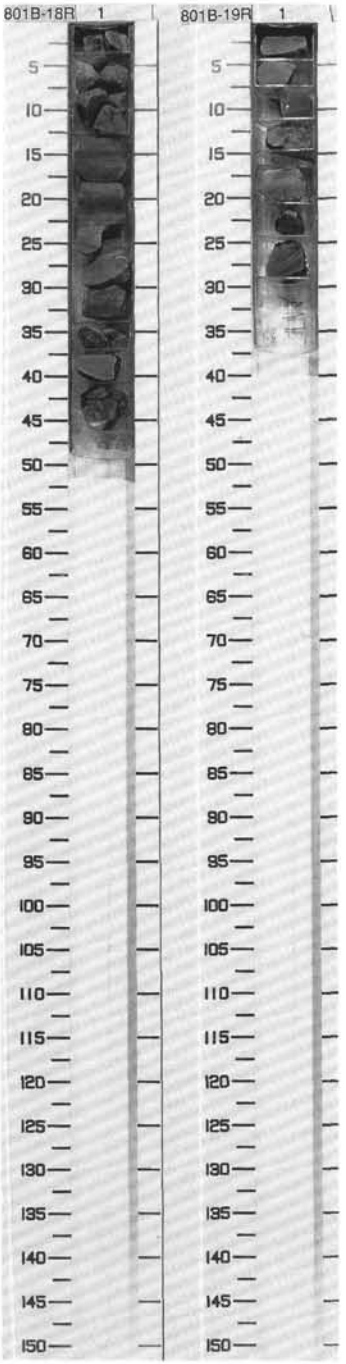
LITHOLOGIC DESCRIPTION

RADIOLARITE and CHERT

Major lithologies:
a. RADIOLARITE, light brown to brown (7.5YR 6/4 - 7.5YR 5/2), very thinly laminated, siliceous matrix-not clayey in texture, Mn oxide on fracture surfaces and along a thin horizon with vugs. Brecciated in part, becomes cherty near fractures.
b. CHERT, dark brown (7.5YR 3/3), decreased radiolarians evident. Chert is commonly brecciated with quartz cemented fractures. Quartz filled fractures act as permeability barriers that separate "compartments" of rock inferred to be originally identical, now siliceous radiolarite and glassy chert.

SLIDE SUMMARY (%):

	1, 12 M
TEXTURE:	
Silt	10
Clay	90
COMPOSITION:	
Clay	Tr
Opaques	15
Radiolarians	60
Silica	25



SITE 801 HOLE B CORE 20R CORED INTERVAL 6048.3-6057.5 mbsl; 374.5-383.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
TITHONIAN - BERRIASIAN	B	B	C/M *Pseudodictyomitra carpatica*		B	R	ϕ=2.50 ρ=2.61	0.2	1			X	//	*

LITHOLOGIC DESCRIPTION

CHERT

Major lithology: CHERT, dark brown (7.5YR 3/2) with minor yellowish red (5YR 5/6) and red (5R 5/6) small streaks and patches associated with fractures (oxidation?). Increasingly fractured, most fractures are completely filled with quartz; one small (1 X 3 mm) open void lined by drusy quartz. Fewer radiolarians than above (10-35%). Trace components in chert include volcanic glass, clay, zeolites, opaques, iron oxides.

Minor lithology: RADIOLARITE, light brown (7.5YR 6/4), silty sandy texture, siliceous, approaching radiolarian porcellanite in texture and hardness.

SLIDE SUMMARY (%):

	1, 6 D	1, 8 D
TEXTURE:		
Sand	—	15
Silt	1	20
Clay	99	65
COMPOSITION:		
Clay	—	15
Glass	2	—
Opaques	1	Tr
Oxide	10	Tr
Radiolarians	10	35
Silica	76	50
Zeolite	1	—

SITE 801 HOLE B CORE 21R CORED INTERVAL 6057.5-6063.6 mbsl; 383.7-389.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
TITHONIAN	B	B	C/M *Pseudodictyomitra primitiva*		B	N	ϕ=3.30 ρ=2.46	0.1	1			X	//	*

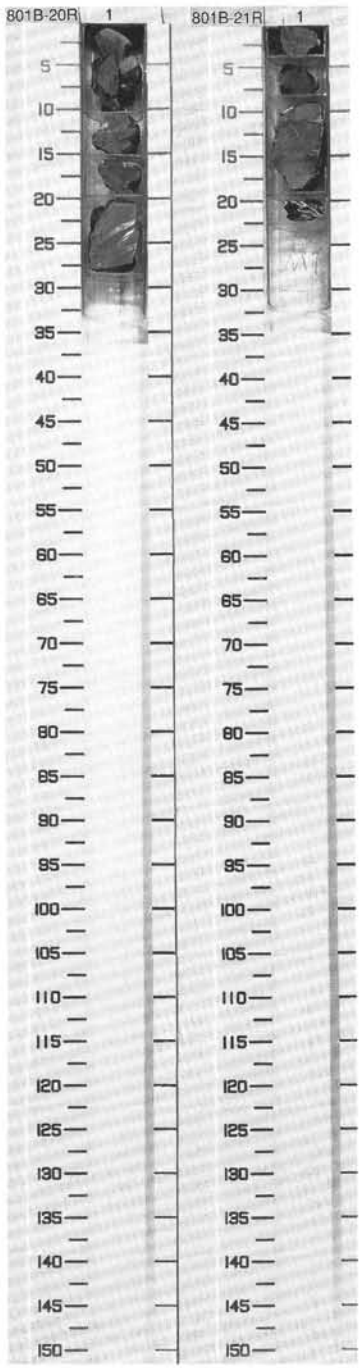
LITHOLOGIC DESCRIPTION

CHERT

Major lithology: CHERT, very dark grayish brown to dark brown (10YR 3/2 - 10YR 3/3), with minor streaks and patches of yellowish red (5YR 5/6) or red (10R 5/6). Reddish areas are either thin zones adjacent to microfractures, or irregular amoeboid shapes, sometimes subtlely discordant to bedding. Fractures are more common than in overlying cores; several generations of silica deposition are evident in open voids up to 3 X 8 mm. Drusy quartz on the side of one piece suggests existence of much larger cavities in situ. "Compartmented" fragments of soft, CLAYEY RADIOLARITE shows that some brecciation took place prior to full chertification.

SLIDE SUMMARY (%):

	1, 17 D
TEXTURE:	
Silt	1
Clay	99
COMPOSITION:	
Clay	30
Opaques	2
Oxide	20
Radiolarians	10
Silica	36
Zeolite	1



SITE 801 HOLE B CORE 22R CORED INTERVAL 6063.6-6069.7 mbsl; 381.8-387.9 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
TITHONIAN	B	B	A/P *Pseudodictyomitra primitiva*		B	R?			CC					*	CHERT

BIOSTRAT. ZONE/ FOSSIL CHARACTER

CHERT

Major lithology: CHERT, very dark grayish brown (10YR 3/2) with tan (10YR 6/3) mottling and slightly reddish oxidation (2.5YR 5/4) near unfilled fractures, subtle laminations. An opal-filled fracture is parallel to laminations. Chert contains up to 10% clay.

SLIDE SUMMARY (%):

	CC, 2
	D
TEXTURE:	
Silt	1
Clay	99
COMPOSITION:	
Clay	10
Opaques	1
Oxide	5
Radiolarians	15
Silica	69

SITE 801 HOLE B CORE 23R CORED INTERVAL 6069.7-6074.4 mbsl; 395.9-400.6 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
TITHONIAN	B	B	C/P *Pseudodictyomitra primitiva*		B	[N] R	● φ 4.50 ρ 2.58	● 0.1	CC			X		*	CHERT and PORCELLANITE with CLAY

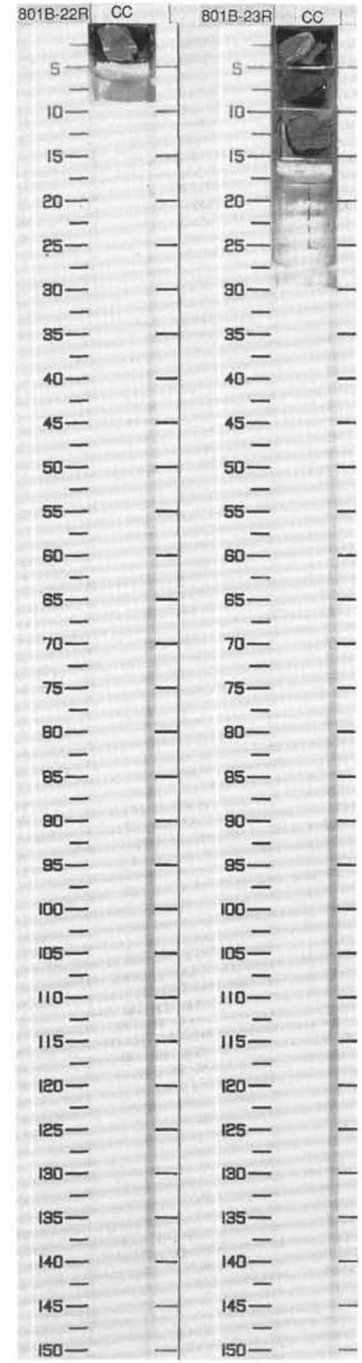
BIOSTRAT. ZONE/ FOSSIL CHARACTER

CHERT and PORCELLANITE with CLAY

Major lithologies:
a. CHERT, dusky brown to grayish brown (5YR 2/2 to 5YR 3/2) with subtle flaser laminations or compacted bioturbation and tiny black flecks. Fractures are infilled by variously colored materials including grayish black (N2) Mn(?) oxide and medium brown (5YR 4/4) and dusky yellow (5Y 6/4) chert.
b. PORCELLANITE with CLAY, Section CC, 0-5 cm, dark yellowish brown to moderate brown (10YR 4/2 to 10YR 4/4) with tiny black flecks, variable degrees of silicification, flaser-laminated to bioturbated.

SLIDE SUMMARY (%):

	CC, 1
	D
TEXTURE:	
Silt	10
Clay	90
COMPOSITION:	
Clay	20
Opaques	2
Oxide	20
Radiolarians	35
Silica	18
Spines	5



SITE 801 HOLE B CORE 24R CORED INTERVAL 6074.4-6079.0 mbsl; 400.6-405.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
TITHONIAN	B	B	A/P unzoned	B		N ↓ R?			1	0.5				* *

LITHOLOGIC DESCRIPTION

CLAYEY RADIOLARITE and CHERT

Major lithologies:
a. CLAYEY RADIOLARITE is dark brown (10YR 4/3) with light yellowish brown (10YR 6/4) bleached mottles and bands, finely laminated by black (N1) streaks or with moderate subhorizontal bioturbation. Thin section from Section 1, 28-31 cm, has a possible burrow structure which contains more abundant opaque micronodules than the host radiolarite. Micronodules of possible manganite are common secondary features which apparently predate silicification; a 1 cm-long string of micronodules is present at Section 1, 55 cm.
b. CHERT, very dark brown (10YR 2/2), occurs as lenses of secondary silicification within the radiolarite with fairly abrupt but gradational boundaries, can contain black micronodules.

SLIDE SUMMARY (%):

	1, 28 D	1, 50 D
TEXTURE:		
Silt	20	30
Clay	80	70
COMPOSITION:		
Clay	20	10
Glass	1	—
Opaques	10	15
Oxide	2	3
Radiolarians	30	30
Silica	35	38
Spines	2	4

SITE 801 HOLE B CORE 25R CORED INTERVAL 6079.0-6083.8 mbsl; 405.2-410.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
TITHONIAN	B	R/M *Hexalithus noelae*	A/P *Pseudodictyomitra primitiva*		B	R	Φ=45.7 ● ρ=1.95	0.2 ●	1	0.5				* * #

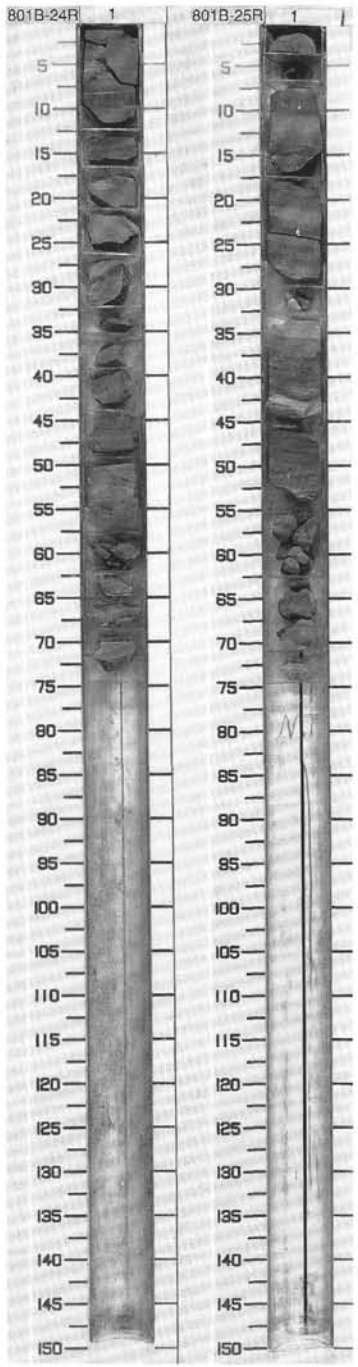
LITHOLOGIC DESCRIPTION

CLAYEY RADIOLARITE with CHERT

Major lithology: CLAYEY RADIOLARITE, brown (10YR 5/3) grading to mottled to pink (7.5YR 7/4), moderately bioturbated to finely laminated, darker bands have more abundant volcanic glass, lighter bands are richer in radiolarians, contains black (N1) micronodules of probable manganite. Contains silicified zones ranging from 1 mm, round to ovoid, to chert nodules or lenses greater than 10 cm thick. CHERT is very dark brown (10YR 2/2), hematitic, pieces at Section 1, 69-74 cm have a 3-5 mm rim of reddish brown chert in transition to pink radiolarite.

SLIDE SUMMARY (%):

	1, 7 D	1, 9 D	1, 12 D	1, 35 D	1, 50 D	1, 59 D
TEXTURE:						
Sand	—	1	4	5	—	—
Silt	30	29	50	35	30	25
Clay	70	70	46	60	70	75
COMPOSITION:						
Accessory minerals	—	1	1	Tr	Tr	—
Clay	2	65	40	63	67	5
Feldspar	—	—	1	—	—	—
Glass	—	6	3	1	5	—
Opaques	30	—	—	1	3	15
Oxide	10	—	—	—	—	2
Quartz	—	3	5	—	—	—
Radiolarians	35	25	50	30	25	20
Silica	20	—	—	—	—	57
Spines	3	—	—	—	—	1
Zeolite	—	—	—	5	—	—



SITE 801 HOLE B CORE 26R CORED INTERVAL 6083.8-6088.5 mbsl; 410.0-414.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
TITHONIAN	B	R/P unzoned	C/P unzoned		B	R			CC					#	CLAYEY RADIOLARITE and CHERT

Major lithologies:
a. CLAYEY RADIOLARITE, dark grayish brown (10YR 4/2), with small dark patches as micronodules replacing radiolarian tests; deposits are thinly laminated.
b. CHERT, dark brown (7.5YR 3/2) with lighter reddish brown (5YR 5/4) layers and patches, small pieces.

SLIDE SUMMARY (%):

	CC, 14 D
TEXTURE:	
Silt	5
Clay	95
COMPOSITION:	
Clay	5
Opaques	2
Oxide	5
Radiolarians	30
Silica	58

SITE 801 HOLE B CORE 27R CORED INTERVAL 6088.5-6093.2 mbsl; 414.7-419.4 mbsf

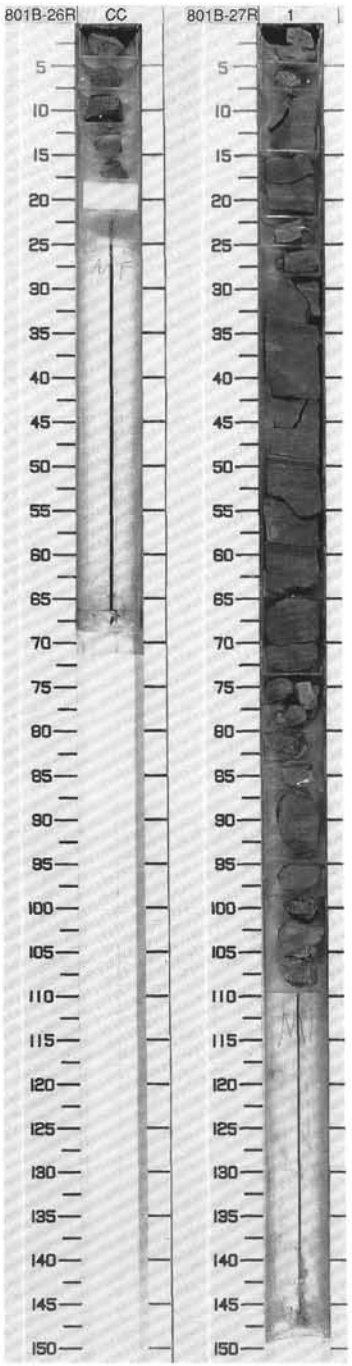
TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
KIMMERIDGIAN - TITHONIAN	B	B	C/P unzoned		B	N	ϕ=44.3 ρ=1.99	0.2	1	0.5 1.0				*#	RADIOLARIAN CLAYSTONE to CLAYEY RADIOLARITE, and CHERT

Major lithologies:
a. RADIOLARIAN CLAYSTONE gradational to CLAYEY RADIOLARITE, finely laminated, dark grayish brown (10YR 4/2), with small dark patches as micronodules replacing and nucleating from radiolarian tests; some layers are dark brown (7.5YR 4/4).
b. CHERT, small varicolored pieces, dark browns (5YR 3/2) with lighter reddish brown and yellowish red (5YR 4/6-4/6) layers and lenses (burrows?) with mostly diffuse boundaries. Chert pieces have fractures filled by quartz.

Note: These beds have an apparent dip of 8-10 degrees.

SLIDE SUMMARY (%):

	1, 10 D	1, 16 D
TEXTURE:		
Sand	10	—
Silt	40	5
Clay	50	95
COMPOSITION:		
Clay	35	48
Feldspar	—	Tr
Glass	—	Tr
Micronodule	10	—
Opaques	—	5
Oxide	—	2
Radiolarians	55	15
Silica	—	30
Zeolite	—	Tr

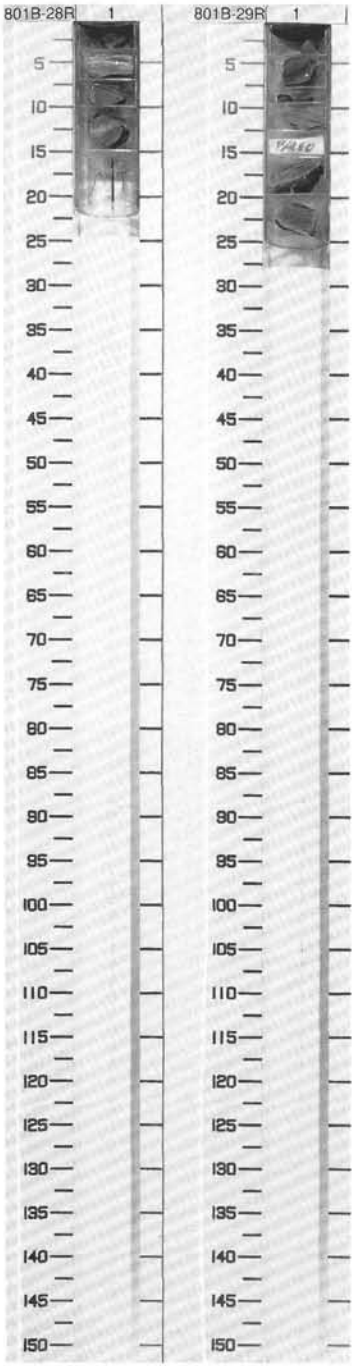


SITE 801 HOLE B CORE 28R CORED INTERVAL 6093.2-6098.0 mbsl; 419.4-424.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
KIMMERIDGIAN - TITHONIAN	B	B	A/M *Pseudodictyomitra primitiva*		B	N			1						CHERT, RADIOLARIAN PORCELLANITE, and CLAYEY RADIOLARITE Major lithologies: a. CHERT, dark brown (7.5YR 3/2) with reddish brown (2.5YR 5/4) patches that may be oxidized burrows. Other oxidized areas have diffuse boundaries and do not appear to reflect any primary features. Microquartz-and chalcedony-filled fractures in some pieces. b. RADIOLARIAN PORCELLANITE, yellowish red to brown (5YR 5/6 - 7.5YR 4/4), smooth to slightly matte texture, angular and blocky fracture, grades to c. CLAYEY RADIOLARITE. Planar fabric, not continuous lamination developed from horizontal alignment of very small (<1 mm X 1-8 mm) compositionally different areas (burrows or micronodules?).

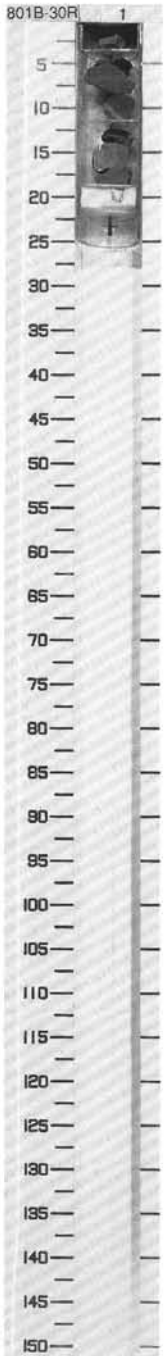
SITE 801 HOLE B CORE 29R CORED INTERVAL 6098.0-6102.7 mbsl; 424.2-428.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
KIMMERIDGIAN - TITHONIAN	B	B	A/M *Pseudodictyomitra primitiva*		B	N			1					#	CHERT and CLAYEY RADIOLARITE Major lithologies: a. CHERT, varicolored, dark reddish brown (5YR3/4) weak red (10Y 4/3), with scarce quartz-filled fractures; the boundaries between the various colored zones are mostly diffuse; b. CLAYEY RADIOLARITE, dark brown, (7.5YR 4/4) with thin laminae overlaid by darker zones and patches. SLIDE SUMMARY (%): 1, 0 D TEXTURE: Silt 2 Clay 98 COMPOSITION: Calcite 1 Clay 42 Glass Tr Opaques 5 Oxide 2 Radiolarians 20 Silica 30 Zeolite Tr



SITE 801 HOLE B CORE 30R CORED INTERVAL 6102.7-6107.4 mbsl; 428.9-433.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
KIMMERIDGIAN - TITHONIAN	B	B	A/M *Pseudodictyomitra primitiva*		B	N			1	-	▲ ▲ ▲	X		*	CHERT and CLAYEY RADIOLARITE Major lithologies: a. CHERT, dark reddish brown to dark brown (5YR 2.5/2 - 7.5YR 3/2), mottled with reddish brown (2.5YR 5/4). Most pieces show some fractures filled with up to three generations of clear, white (N9) or light gray (N7) botryoidal quartz/chalcedony. Relatively few radiolarians are evident. b. CLAYEY RADIOLARITE, dark brown to pink (7.5YR 3/2 - 7.5YR 7/4), mostly firm and clayey to locally hard and siliceous, friable. Radiolarians are more abundant in lighter-colored areas. SLIDE SUMMARY (%): 1, 7 D TEXTURE: Sand 30 Silt 40 Clay 30 COMPOSITION: Clay 20 Micronodule 2 Radiolarians 45 Silica 33



SITE 801 HOLE B CORE 31R CORED INTERVAL 6107.4-6112.0 mbsl; 433.6-438.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
OXFORDIAN - KIMMERIDGIAN ?	B	R/P	A/P		B	N	ϕ=35.3 β=2.21	0.2	1			X		

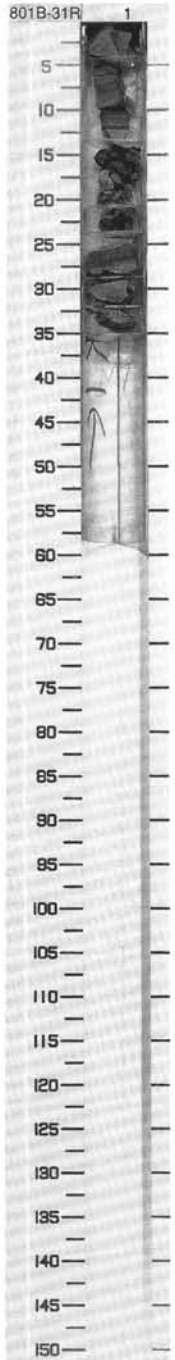
LITHOLOGIC DESCRIPTION

CHERT and CLAYEY RADIOLARITE to CLAYSTONE with RADIOLARIANS

Major lithologies:
a. CHERT, dark brown (7.5YR 3/2) to yellowish red (5YR 4/4), very hard, conchoidal fracture, structureless except for vague planar fabric created by subparallel orientation of lighter colored, irregular lenticular areas, possibly small (.2-1.0 mm X 3-10 mm) burrows. Same color oxidized zone surrounds open, unmineralized fractures.
b. CLAYEY RADIOLARITE gradational to CLAYSTONE with RADIOLARIANS, brown to reddish brown (7.5YR 4/4 - 2.5YR 4/4), sandy texture from radiolarians, rough, irregular fracture, firm, friable. 5-10 mm-thick diffuse lamination, and vague planar, bedding-parallel fabric. Areas of reddish oxidation. Thin section at Section 11-12 cm, contains a radiolarian test which is wedged apart by opaque oxides and the halves were subsequently filled with opal surrounding central crystals of cristobalite. Same thin section also contains traces of zeolites, volcanic glass, and pieces of articulated fish(?) skeletal material.

SLIDE SUMMARY (%):

	1, 11 D
TEXTURE:	
Silt	5
Clay	95
COMPOSITION:	
Clay	47
Feldspar	Tr
Fish	2
Glass	1
Opaques	15
Oxide	5
Quartz	Tr
Radiolarians	10
Silica	20
Zeolite	Tr



SITE 801 HOLE B CORE 32R CORED INTERVAL 6112.0-6116.6 mbsl; 438.2-442.8 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
OXFORDIAN	B	B	A/P *Cinguloturis carpatica*		B				1					

BIOSTRAT. ZONE/FOSSIL CHARACTER

LITHOLOGIC DESCRIPTION

CLAYEY RADIOLARITE

Major lithology: CLAYEY RADIOLARITE, dark brown to reddish yellow (7.5YR 3/2 - 5YR 6/5), light colored lenses and irregular patches appear less clayey and more radiolarian-rich than dark areas. Planar fabric, not distinct lamination.

Minor lithology: CHERT, dark brown to brown (7.5YR 3/4 - 7.5YR 4/4), more transparent than previous chert samples, also contains white microfossil molds (foraminifers?). Probably caving from overlying unit and not in place.

SITE 801 HOLE B CORE 33R CORED INTERVAL 6116.6-6121.4 mbsl; 442.8-447.6 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CALLOVIAN	B	R/P unzoned	A/P *Stylocapsa (?) spiralis*		B	N R? R?:N? ?	●φ=46.2 γ=1.96	● 0.2	1, 2, CC	0.5, 1.0				OG, IW

BIOSTRAT. ZONE/FOSSIL CHARACTER

LITHOLOGIC DESCRIPTION

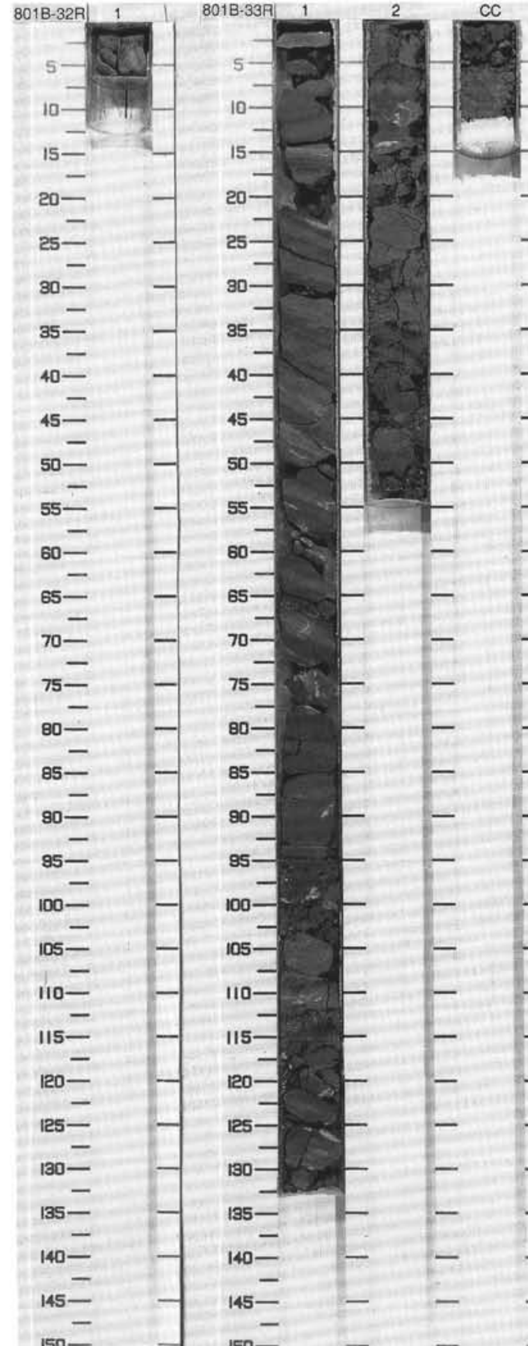
RADIOLARITE with CLAY, and CLAYSTONE with RADIOLARIANS

Major lithologies: Alternations of
a. RADIOLARITE with CLAY, yellowish red (5YR 5/6), vaguely laminated to flaser-mottled to bioturbated with some intervals displaying anastomosing flaser-type structures (especially Section 1, 40-50 cm), rare lenses of partial silification; and
b. CLAYSTONE with RADIOLARIANS, red (2.5YR 4/6), moderately bioturbated. These alternations occur with approximately a 5 cm cyclicity; contacts between the two lithologies are fairly sharp, especially the tops of the radiolarite bands.
Alteration features: (1) opal-lined (<1 mm coating) fractures, white (N8), especially common in lower part of core, (2) brownish yellow (10YR 6/8 - 5/8) diffuse zones adjacent to some fractures, probably goethite/limonite staining, and (3) white (N8-N9) bleached zones occurring as reduction mottles, narrow bands parallel to bedding and adjacent to some fractures.

Note: These beds have an apparent dip of 27-30 degrees.

SLIDE SUMMARY (%):

	1, 33 D	1, 37 D	1, 70 M	2, 20 D	2, 42 D	CC D
TEXTURE:						
Sand	1	6	10	3	—	0
Silt	35	50	15	10	60	10
Clay	64	44	75	87	40	90
COMPOSITION:						
Accessory minerals	—	1	—	—	—	—
Clay	61	30	40	79	15	28
Glass	1	—	—	—	—	—
Opaques	···	···	···	···	5	···
Oxide	7	5	45	20	10	40
Quartz	15	—	—	—	—	—
Radiolarians	15	49	15	1	50	30
Silica	—	15	—	—	20	—
Spines	—	—	—	—	—	2
Zeolite	—	—	—	Tr	—	—



SITE 801 HOLE B CORE 34R CORED INTERVAL 6121.4-6126.1 mbsl; 447.6-452.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CALLOVIAN	B	B	C/P *Tricolocapsa conexa*		B	R? I N?			1	0.5				# *

LITHOLOGIC DESCRIPTION

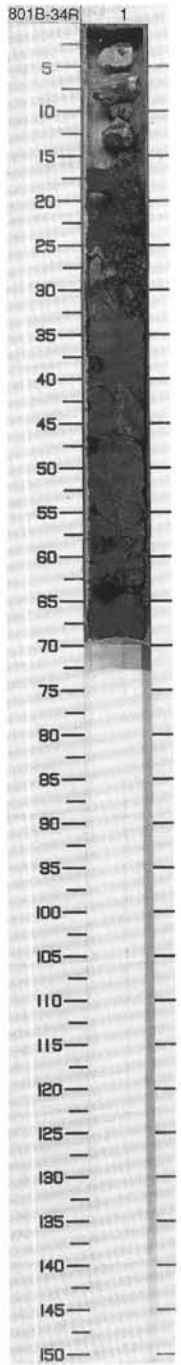
CLAYSTONE and CLAYEY RADIOLARITE

Major lithologies:
a. CLAYSTONE, brownish red (2.5YR 4/6) grading upward to brick ed (10YR 4/5) at Section 1, 15-30 cm, with light greenish gray (5GY 6.5/1) mottle (2 X 3 cm) at 25-28 cm, has moderate bioturbation, reddish yellow (7.5YR 6/8) mottles and streaks and rare opal-coated *fractures (Section 1, 58-64 cm).*
b. CLAYEY RADIOLARITE, in Section 1, 30-34 cm and in bands highly distorted by drilling, similar red (10YR 4/5) coloration as adjacent claystone beds.

Minor lithologies: 5 pieces of silicified sediment comprising top 15 cm of recovery, including CHERT PEBBLE CONGLOMERATE and CHERTIFIED BRECCIA, dark gray (N2) to dark reddish gray (5Y 4/4) angular to rounded 1-3 mm clasts in a light reddish brown (2.5YR 6/4) matrix, later chertified or partially silicified. CHERT varies considerably piece to piece from: (1) olive yellow (2.5Y 6/6) and pale yellow (2.5Y 8/4), thin banded, with a 0.5 X 0.5 cm vug, to (2) light reddish brown (5YR 6/3) with yellowish mottles and black (Mn oxide?) surface stains, to (3) a silicified version of underlying claystone, red (10R 4/5) with black specks.

SLIDE SUMMARY (%):

	1, 8 M	1, 44 D
TEXTURE:		
Sand	95	—
Silt	—	15
Clay	5	85
COMPOSITION:		
Accessory minerals	—	1
Clay	—	83
Feldspar	—	1
Opaques	5	—
Oxide	10	5
Quartz	—	1
Radiolarians	25	5
Silica	60	—



SITE 801 HOLE B CORE 35R CORED INTERVAL 6126.1-6130.7 mbsl; 452.3-456.9 mbsf

TIME-ROCK UNIT: CALLOVIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER: Foraminifers B; Nannofossils B; Radiolarians A/P, *Tricolocapsa conexa*; Palynomorphs B

PALEOMAGNETICS: N?, ?, ? N?, ? N?, ? ?, ?

PHYS. PROPERTIES: ●Φ=46.8, ●ρ=1.93

CHEMISTRY: ●0.2

SECTION: 1, 2, 3, CC

METERS: 0.5, 1.0

SAMPLES: *, #, *, IW

LITHOLOGIC DESCRIPTION

CLAYSTONE with RADIOLARIANS, and RADIOLARITE

Major lithologies: Alternations of
a. CLAYSTONE with RADIOLARIANS, red (2.5YR 4/6 - 2.5YR 5/6); and
b. RADIOLARITE red (2.5YR 5/6), yellowish red (5YR 5/6) to brownish yellow (10YR 6/8), hematitic. These alternations have a 5 cm average spacing, but claystone layers are 0.5 -2 cm thick and of radiolarites are 1-20 cm thick. White (10YR 8/1) bleach zones and patches cut across layering. Bioturbation abundant at Section 2, 95-100 cm, and locally present throughout. Thin coatings of silica (<1 mm thick) are found on some fractured pieces, and black (N1) manganese-or iron-oxide coats a fracture in Section 3, 12-14 cm.

SLIDE SUMMARY (%):

	1, 26 D	1, 62 D	1, 103 D
TEXTURE:			
Sand	Tr	—	10
Silt	35	5	48
Clay	65	95	42
COMPOSITION:			
Accessory minerals	—	—	1
Clay	60	—	36
Opal	—	5	—
Opaques	—	5	—
Oxide	10	3	8
Quartz	10	—	15
Radiolarians	20	50	40
Silica	—	37	—

SITE 801 HOLE B CORE 36R CORED INTERVAL 6130.7-6135.3 mbsl; 456.9-461.5 mbsf

TIME-ROCK UNIT: CALLOVIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER: Foraminifers B; Nannofossils B; Radiolarians B; Palynomorphs B

SECTION: CC

SAMPLES: *

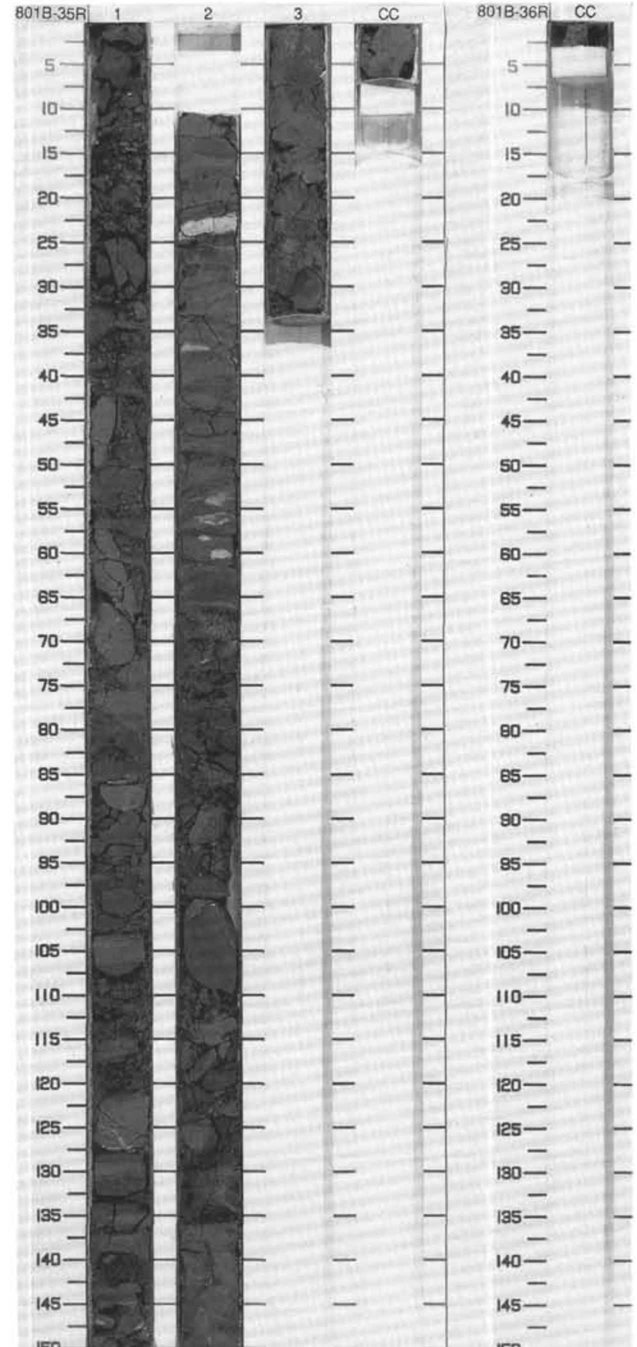
LITHOLOGIC DESCRIPTION

CLAYEY RADIOLARITE and CLAYSTONE with RADIOLARIANS

Major lithologies: Adjacent layers of
a. CLAYEY RADIOLARITE and
b. CLAYSTONE with RADIOLARIANS, both are red (2.5YR 4/8) with lighter-colored silt-sized radiolarians, bioturbation vaguely present as compacted lenticular mottles. Only one piece recovered.

SLIDE SUMMARY (%):

	CC, 1 D
TEXTURE:	
Sand	10
Silt	45
Clay	45
COMPOSITION:	
Accessory minerals	Tr
Clay	39
Glass	1
Oxide	10
Radiolarians	50

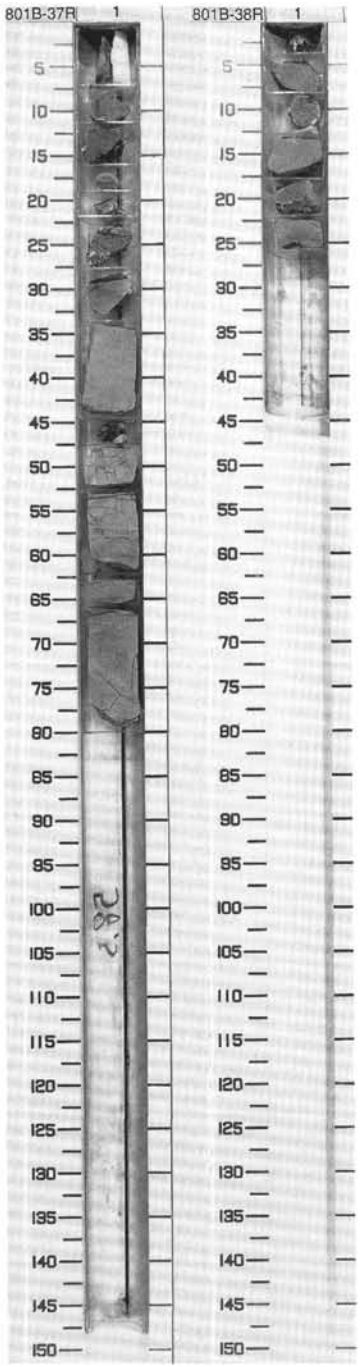


SITE 801 HOLE B CORE 37R CORED INTERVAL 6135.3-3139.9 mbsl; 461.5-466.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
BATHONIAN-CALLOVIAN	B	B	A/P *Tricolocapsa conexa*		B	?	Φ=19.3 ● ρ=2.38 ● 0.5 ● 0.4 ●		1	0.5	BASALT				CHERT Major sedimentary lithology: CHERT, light brown or reddish brown (5YR 5/4, 5YR 4/4, or 2.5YR 3/4), crackle breccia in which the pieces fit back together, with clear and white silica as matrix filler. Chert was brittly fractured, probably as softer sediment in some cases forming feathered sets of fractures penetrating into the host rock, then silica was introduced to form drusy quartz. Minor lithology: Piece at of RADIOLARITE top of core, pink (5YR 6/4) and PORCELLANITE, brown (5YR 5/2), laminated with wispy bioturbation mottling.

SITE 801 HOLE B CORE 38R CORED INTERVAL 6139.9-6144.5 mbsl; 466.1-470.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
BATHONIAN-CALLOVIAN	B	B	B		B	?			1		BASALT			#	CHERT Major lithology: CHERT, dark reddish brown (2.5YR 3/4 - 5YR 3/4), intensely brecciated, drusy quartz fills most fractures, but some open voids exist. No primary structures or visible radiolarians, completely recrystallized. Brecciation probably occurred while sediment was still somewhat soft, possibly by rapid dewatering or fluid injection; this is suggested by quartz filled fractures that have curved, nonparallel surfaces that taper into the host rock with a feathery or horsetail look. Some pieces can be reassembled into their original fit, i.e., a crackle breccia. Elsewhere, lenticular and sigmoidal gashes are present, whereas fractures in hard chert typically have matched and parallel sides. SLIDE SUMMARY (%): 1, 4 M TEXTURE: Silt 1 Clay 99 COMPOSITION: Clay 30 Opaques 1 Oxide 3 Quartz Tr Silica 66



SITE 801 HOLE B CORE 39R CORED INTERVAL 6144.5-6150.7 mbsl; 470.7-476.9 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
BATHONIAN-CALLOVIAN	B	B	C/P *Tricolocapsa conexa*	B		?	ϕ=3.30 ρ=2.66	0.4	1					

LITHOLOGIC DESCRIPTION

CHERT

Major lithology: CHERT, dark brown (7.5YR 3/2) with some dark reddish gray (5YR 4/2), hematitic, very hard, but dull with rougher, subconchoidal fracture-probably chertified claystone and radiolarite. Superficially massive, faint burrow mottling is marked by concentrations of radiolarians, which are each infilled by clear, dark quartz.

Minor lithology: SILICIFIED RADIOLARITE (the bottom piece, Section 1, 26 -32 cm), mostly dark reddish gray (5YR 4/2), radiolarians are replaced by opaque white (N9) silica, making burrowing much more clearly evident. In this piece, there is reaction front that makes a sharp contact between the slightly porous light colored radiolarite and a dark reddish brown, more silicified region where all radiolarians are filled with clear quartz, as in the chert.

SLIDE SUMMARY (%):

	1, 15 D	1, 22 M
TEXTURE:		
Silt	1	5
Clay	99	95
COMPOSITION:		
Clay	5	2
Opaques	2	3
Oxide	10	—
Radiolarians	40	60
Silica	28	35
Spines	15	—

SITE 801 HOLE B CORE 40R CORED INTERVAL 6150.7-6156.8 mbsl; 476.9-483.0 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE JURASSIC	B	B	B		B	?	ϕ=19.1 ρ=2.42	9.1 1.7 0.2	1	0.5	BASALT / BASALT			*

LITHOLOGIC DESCRIPTION

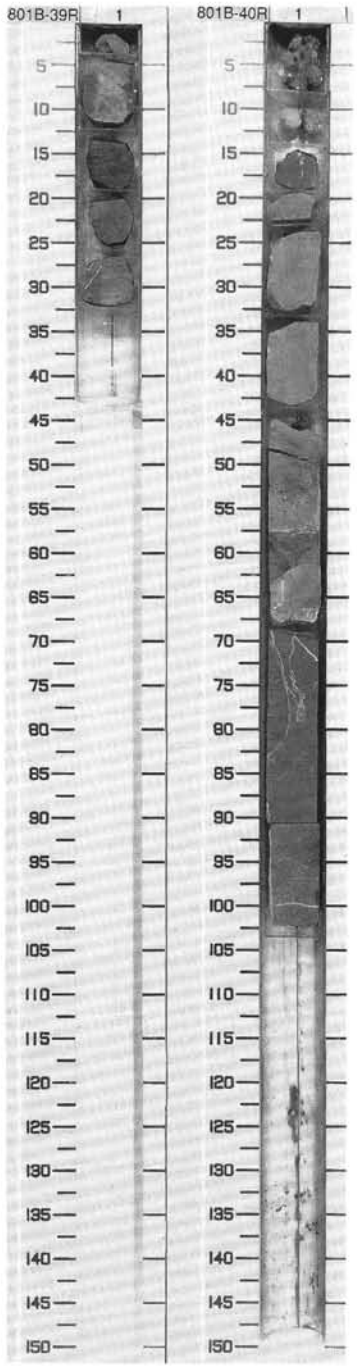
CHERT

Major lithology: CHERT, red (2.5YR 4/6), intensely brecciated, fractures filled with drusy quartz. No primary sedimentary structures. One fragment is slightly lighter red (2.5YR 5/6), less hard, and less silicified. Fracture walls are generally not parallel, some fractures are lenticular, like tension gashes or mud cracks. Nearly identical with brecciated chert in core 37R, probably caving from above.

Minor lithology: METALLIFEROUS CLAY, red (2.5YR 4/8), 1 cm of clay recovered between basalt pieces in section 1, 66 cm. It is uncertain whether this clay was recovered in situ. Contains: 55% Fe oxides, 45% clay, traces of feldspar and pyroxene.

SLIDE SUMMARY (%):

	1, 66 M
TEXTURE:	
Silt	20
Clay	80
COMPOSITION:	
Clay	45
Feldspar	Tr
Oxide	55
Quartz	Tr



SITE 801 HOLE B CORE 41R CORED INTERVAL 6156.8-6161.4 mbsl; 483.0-487.6 mbsf

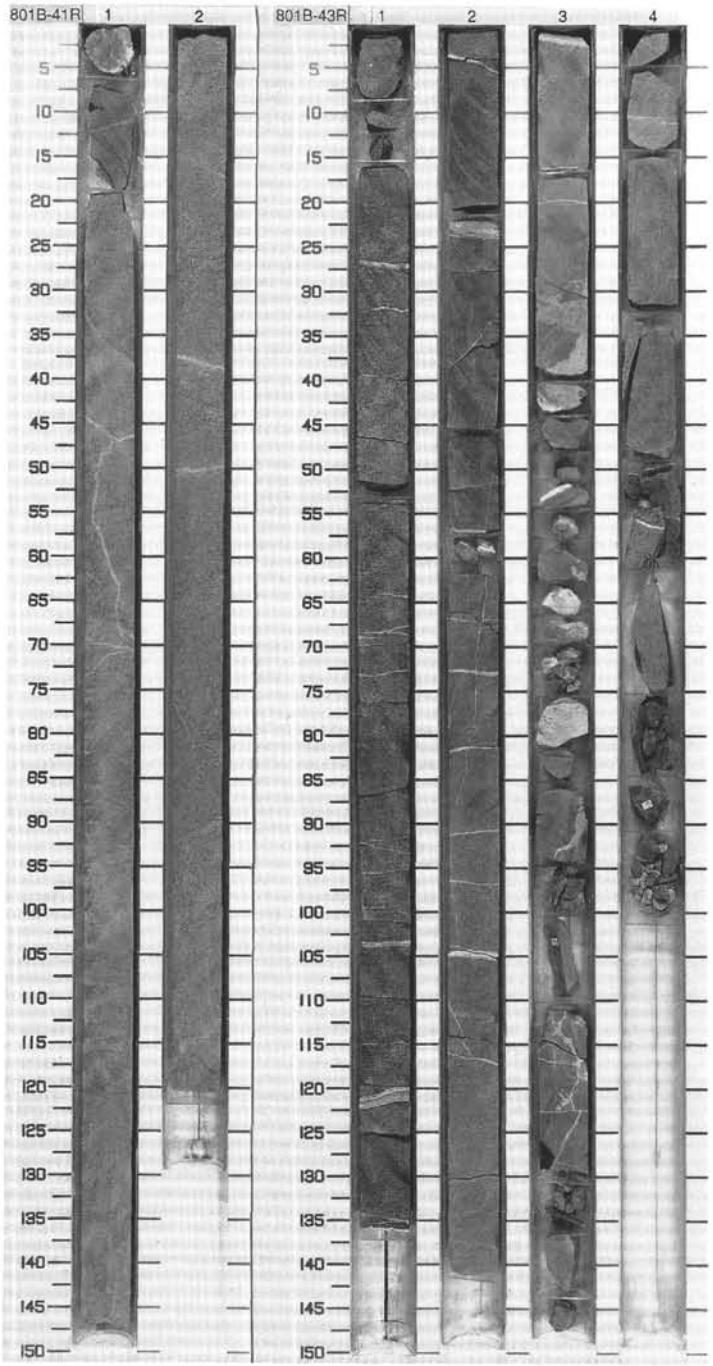
TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
MIDDLE JURASSIC	B	B	B		B	?	ϕ=11.6 ρ=2.63	6.8 ● 8.2 ●	1 2	0.5 1.0	BASALT				CHERT Major lithology: CHERT, red (2.5YR 4/6), intensely brecciated, fractures filled with drusy quartz. Identical to samples in Cores 37R, 38R, and 40R. Chert breccia fragments were only recovered at the tops of Cores 38R, 40R, and 41R, thus suggesting that these pieces are *probably cavings from the breccia zone first encountered in Core 37R.*

801B 42R HARD ROCK

SITE 801 HOLE B CORE 43R CORED INTERVAL 6166.0-6175.5 mbsl; 492.2-501.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
MIDDLE JURASSIC	B R/P B	unzoned			B	?	ϕ=12.7 ρ=2.71 ϕ=9.80 ρ=2.63	2.0 ● ● 23.0	1 2 3 4	0.5 1.0	BASALT BASALT			# *	LIMESTONE Major lithology: LIMESTONE between basalt pillows and sills, overall gray (N6), but actually composed of irregular pods of darker (N5) gray, densely crystalline calcite within a matrix of white (N9), more porous calcite. Very small (<0.3 mm) bean- shaped patches may be recrystallized foraminifers. Structure somewhat resembles a micro- "chicken-wire" fabric which may represent disruption or injection. Scraped smear slides reveal only inorganic calcite and one wide-ranging nannofossil. SLIDE SUMMARY (%):

	3, 76 M	3, 77 M	3, 116 M
TEXTURE:			
Sand	—	20	—
Silt	1	50	5
Clay	99	30	95
COMPOSITION:			
Calcite	91	—	55
Epidote	—	—	45
Foraminifers	1	—	—
Opaques	5	—	—
Radiolarians	3	—	—



SITE 801 HOLE B CORE 44R CORED INTERVAL 6175.5-6185.0 mbsl; 501.7-511.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
?	B	B	A/P unzoned		B	N R?		●8.8	1	0.5 1.0	BASALT			# #	CALCAREOUS SILICIFIED TUFF and RADIOLARIAN METASILTSTONE Major lithology: a. CALCAREOUS SILICIFIED TUFF, reddish gray (5R 6/1 to N4), finely laminated, 1-3 mm calcareous ovoids with coarser crystalline calcite centers - possibly organic forms (foraminifers?). Aphanitic groundmass. b. RADIOLARIAN METASILTSTONE, dark reddish brown (2.5YR 3/6), hematitic, cryptocrystalline to microcrystalline matrix, radiolarian ghosts. In depositional contact over the tuff.
									2		BASALT			#	
									3		BASALT				

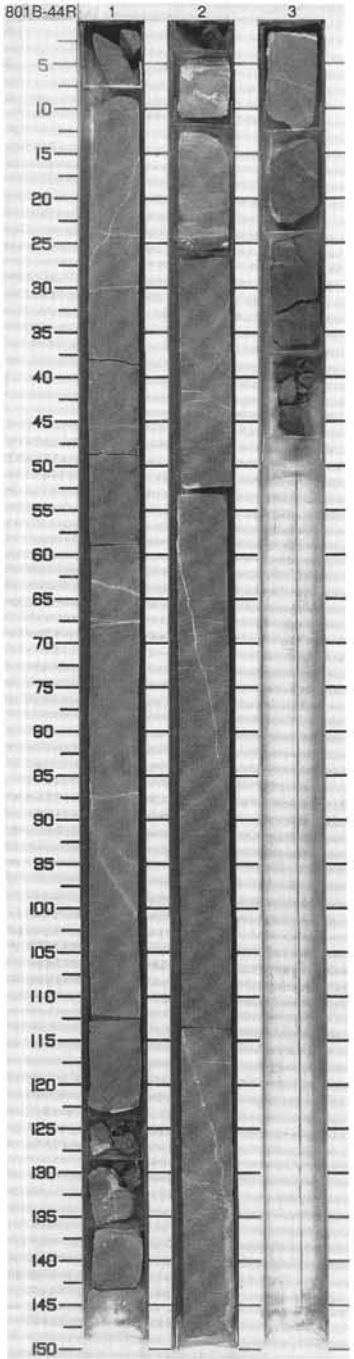
SLIDE SUMMARY (%):

	1, 130 M	1, 132 M	1, 134 M	1, 138 M	2, 4 M	2, 12 D
TEXTURE:						
Sand	—	10	—	—	—	—
Silt	55	—	10	5	5	2
Clay	45	90	90	95	95	98
COMPOSITION:						
Calcite	—	20	10	65	—	70
Clay	—	5	5	2	2	5
Feldspar	—	—	—	—	—	2
Glass	—	10	20	5	—	10
Opaques	15	15	10	3	8	3
Oxide	30	—	—	—	5	—
Radiolarians	10	—	Tr	5	25	—
Silica	45	50	55	20	60	10

801C 1R HARD ROCK

801C 2R HARD ROCK

801C 3R HARD ROCK



SITE 801 HOLE C CORE 4R CORED INTERVAL 6195.3-6204.8 mbsl; 521.7-531.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
?	B	B	B		B		● Φ=8.0 ρ=2.52		1, 2	0.5, 1.0				#

LITHOLOGIC DESCRIPTION

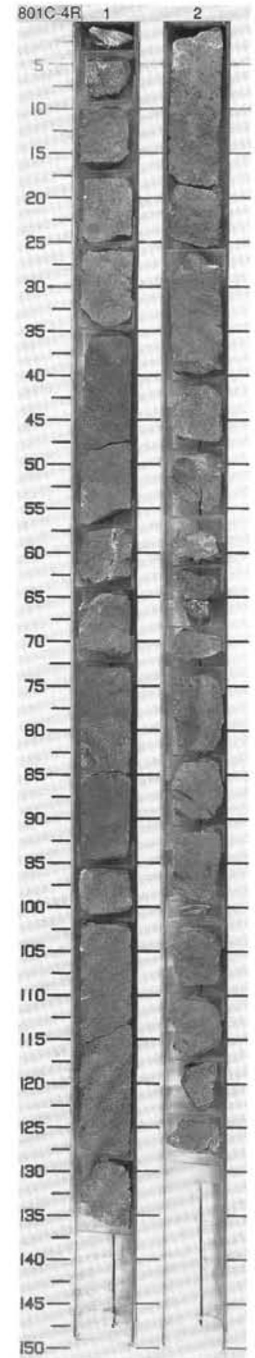
HYDROTHERMAL DEPOSIT

Major lithology: HYDROTHERMAL DEPOSIT, mainly a siliceous to clay-rich iron-oxide/hydroxide chemical precipitate (goethite), yellow (10Y 8/6 - 5Y 8/8), pseudo-nodular texture of concentric-laminated precipitate growths in a silica-replaced matrix. Quartz-filled veins and drusy cavities are common; rare intervals of chert formation. Some vein fillings of dark gray (N3 to N5) are calcareous (e.g., Section 1, 96-101 cm, Piece 10). Thin Section (Section 1, 70-71 cm, Piece 8) indicates that yellow iron-oxyhydroxide deposits mainly grew outwards as radially-fibrous coalescing botryoidal masses, commonly zoned; with later division into platelets, followed by partial replacement by small-segment triple-junctioned quartz grains; larger quartz grains fill secondary veins that traverse the whole laminated deposit. See accompanying igneous barrel sheet description.

Minor lithology: SILICEOUS BRECCIA, moderate reddish brown (10R 4/6) at Section 1, 0-4 cm (Piece 1) with white (N9) silica-filled fractures and dark gray (N4-N3) calcareous sediment mottled with yellow (5Y 8/6) material. No depositional features.

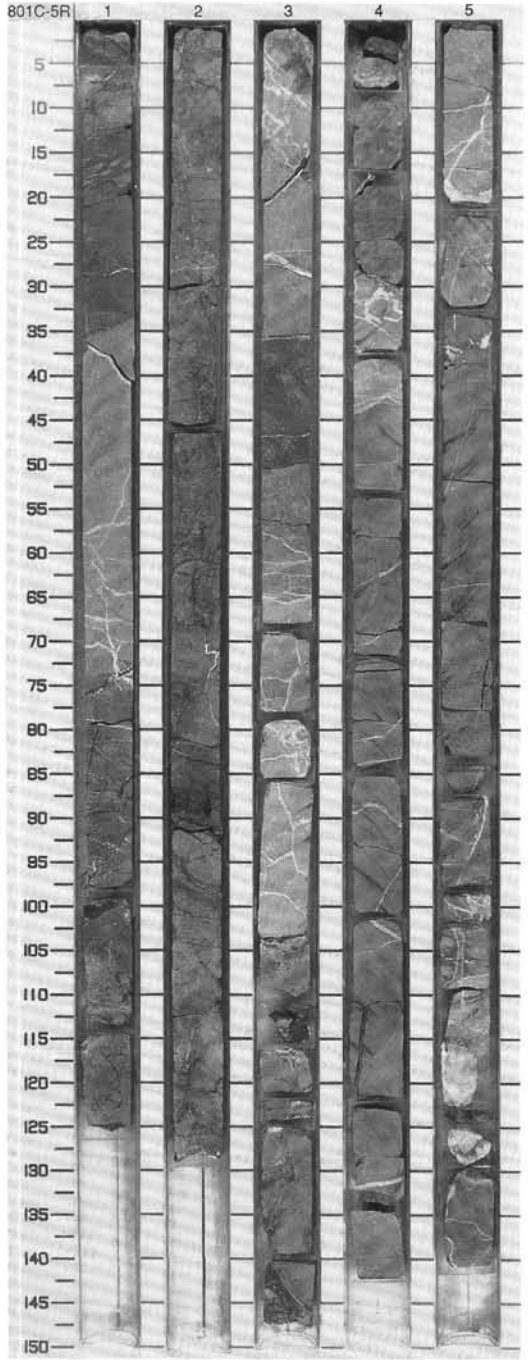
SLIDE SUMMARY (%):

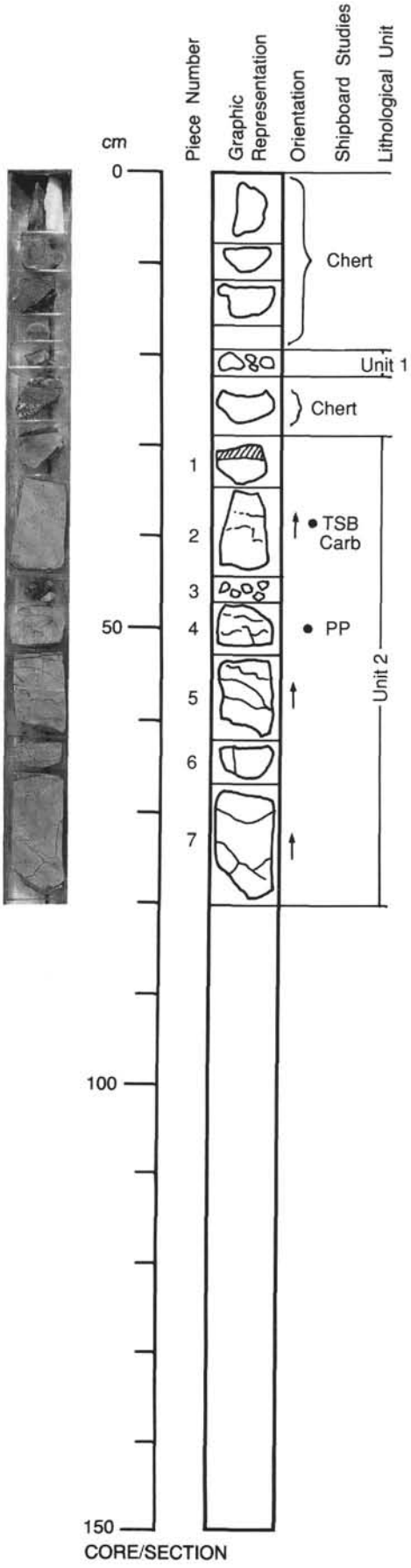
	1, 70
	D
COMPOSITION:	
Oxide	75
Silica	25



SITE 801 HOLE C CORE 5R CORED INTERVAL 6204.8-6214.1 mbsl; 531.2-540.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	DINO-FLAGELLATES	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
?	B	B	B		B		ϕ=16.0 ρ=2.41 ϕ=14.0 ρ=2.53 ϕ=10.8 ρ=2.64		1 2 3 4 5	0.5 1.0	BASALT BASALT				LIMESTONE Minor lithology: LIMESTONE (or SILICEOUS LIMESTONE) (Section 4, 1-31 cm, Pieces 1 through top part of 3C), dusky red (2.5YR 3/2) with irregular shades of black, gray, green and orange. Zone of dark greenish gray (5G 4/1) medium-sand-sized grains or igneous rock fragments or volcanic glass at Section 1, 22 cm. Depositional contact of this sediment with calcite-veined basalt chilled margin is inclined about 40 degrees and has calcite-filled fractures and small fine-grained basaltic fragments. Piece 1 has abundant calcite veining.





129-801B-37R-1

UNIT 1: APHYRIC BASALT

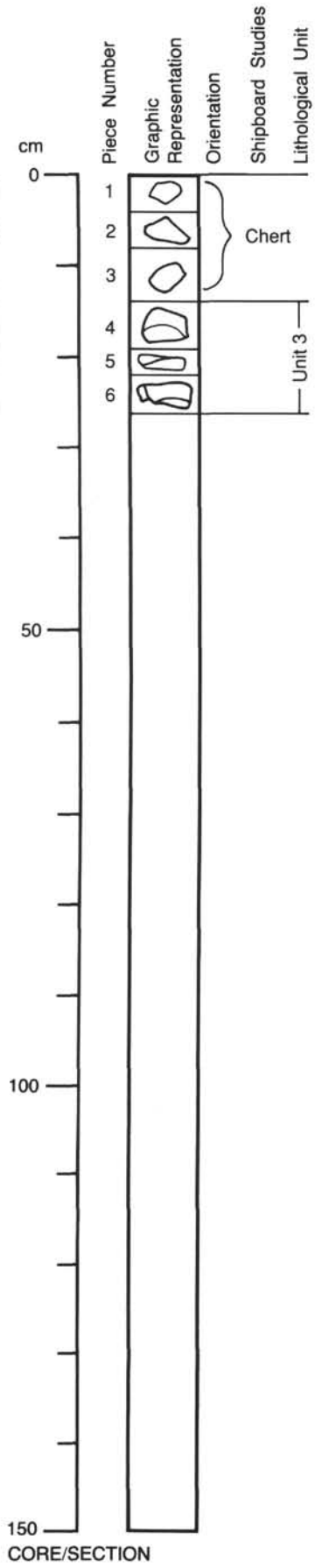
Pieces Small fragments

CONTACTS: Not seen.
PHENOCRYSTS: No phenocrysts.
GROUNDMASS: Fine-grained, quenched textured.
VESICLES: No vesicles.
COLOR: Gray-green (5Y 5/1).
STRUCTURE: Possibly thin flow.
ALTERATION: Slight, yellowish patch of clay.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Although separated by chert from Unit 2 below, both units are very similar and could be the same; chert may be a cave-in fragment.

UNIT 2: APHYRIC BASALT

Pieces 1 to 7

CONTACTS: Not observed; oxidized and quenched texture of piece 1 suggests this is near top of unit.
PHENOCRYSTS: No phenocrysts.
GROUNDMASS: Fine-grained, hypocrystalline, quench textured. Grain-size increases from Pieces 1 & 2 to 3 through to 7.
VESICLES: No vesicles.
COLOR: Speckled gray-green (5GY 5/1).
STRUCTURE: Possibly a thin flow.
ALTERATION: Moderate. Oxidized 8 mm thick top to Piece 1; rest of pieces have irregular oxidized veinlets.
VEINS/FRACTURES: 2%; 0.5-1.0 mm; random; some with oxidized margins, coloring plagioclase yellow. Three types: metallic opaque ore; yellow oxidized clay; calcite (latest).
ADDITIONAL COMMENTS: Microphenocrysts of plagioclase, but <1%, random distribution.

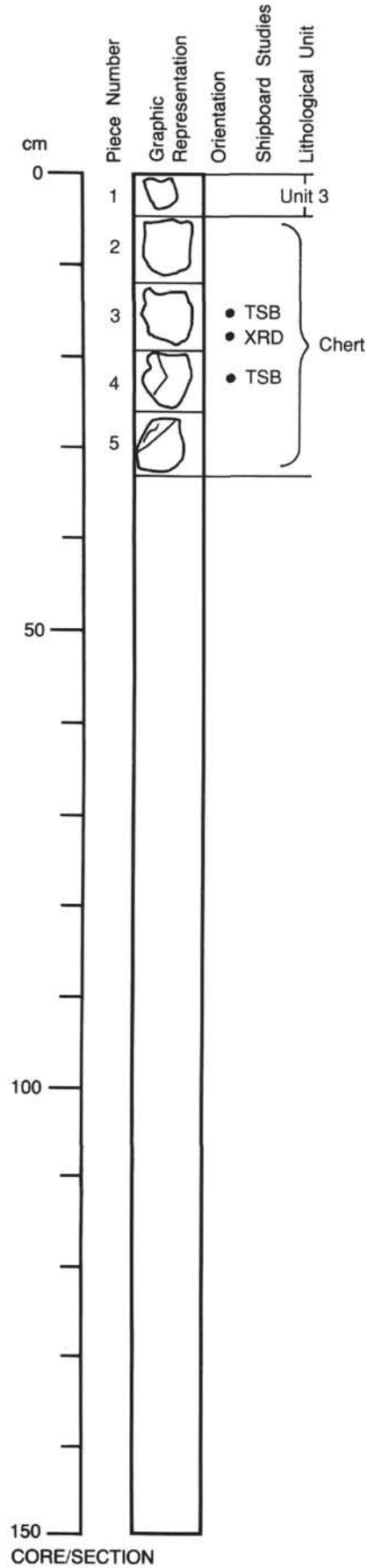


129-801B-38R-1

UNIT 3: APHYRIC BASALT

Pieces 4, 5, 6

CONTACTS: None observed.
PHENOCRYSTS: No phenocrysts.
GROUNDMASS: Fine-grained, hypocrystalline; similar to 37R-1, Piece 7.
VESICLES: No vesicles.
COLOR: Speckled grayish-green (5G 5/1).
STRUCTURE: Possibly a thin flow.
ALTERATION: High; green clays replacing glass in matrix, pervasive brown oxidized zones and veinlets, calcite veinlets.
VEINS/FRACTURES: 2%; 0.25-1.00 mm; random; pervasive oxidized zones and calcite veinlets with oxidized margins, also oxidized clay veinlets.
ADDITIONAL COMMENTS: Petrographically and texturally similar to 37R-1 pieces, however the presence of possible in situ chert fragments indicate this is probably another unit.

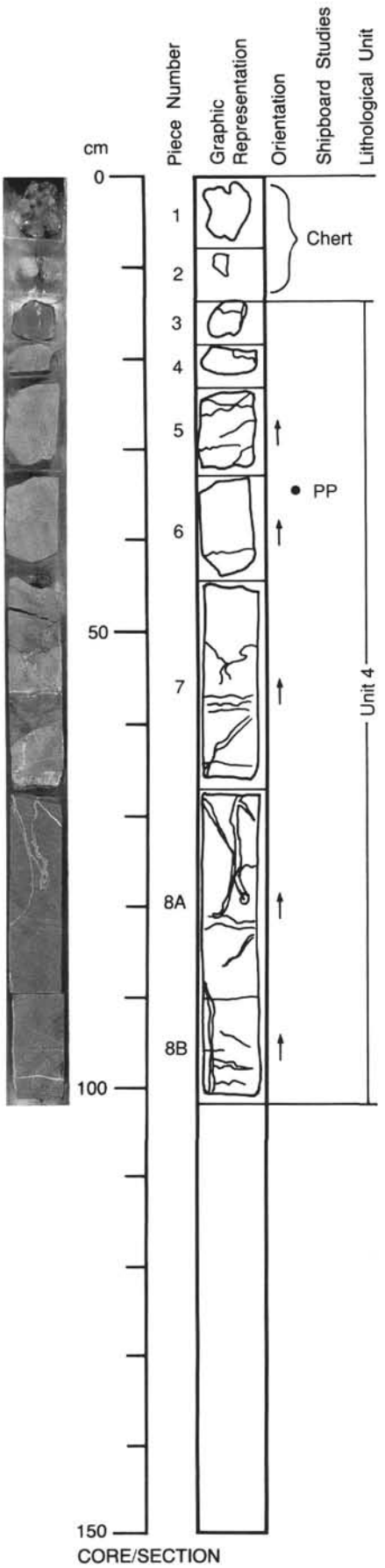


129-801B-39R-1

UNIT 3: APHYRIC BASALT

Piece 1

CONTACTS: None observed.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Fine-grained; hypocrystalline.
VESICLES: None.
COLOR: Speckled gray-green (5GY 5/1).
STRUCTURE: Possibly a thin flow.
ALTERATION: Moderate to high; green clays replacing mesostasis; leucoxene and hematite/limonite replacing opaques; calcite along plagioclase margins.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Piece 1 is slightly darker green than the other parts of the same unit in lower portion of Core 38R-1, texture and mineralogy basically the same. The presence of cherts above, in between and at the bottom of the units suggests that the basalts are sills; these were intruded into soft sediments that later became cherts. Soft sediment structures prior to silicification and soft sediment deformational structures are preserved in the intercalated cherts.

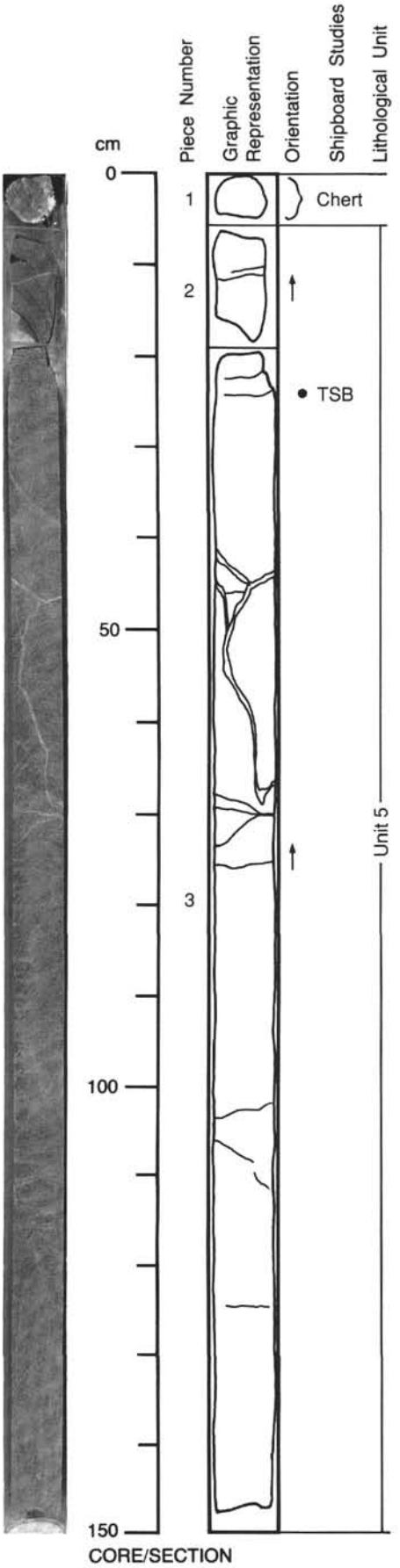


129-801B-40R-1

UNIT 4: APHYRIC BASALT

Pieces 3-8B

CONTACTS: Not observed although Piece 3 is finer-grained than the rest of the unit suggesting that it may be a piece of the chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained; holocrystalline to hypocrystalline.
VESICLES: None.
COLOR: Gray (N5).
STRUCTURE: Possibly a thin flow.
ALTERATION: Slight to moderate; leucoxene (?) after opaques; green clay after mesostasis and some plagioclases; Fe-hydroxides after opaques; calcite along plagioclase margins.
VEINS/FRACTURES: 3%; 0.01 to 1.5 cm; 0-90 degrees; some are curved/irregular; ~90% are filled with carbonates with ocassional green clays whereas others are black, metallic ores and Fe-hydroxides. Metallic ores are older than the Fe-hydroxides but carbonates have a wide range resulting in several generations of carbonate veinlets.
ADDITIONAL COMMENTS: Unit 4 is relatively finer-grained, less green, and fresher than the other units above it.

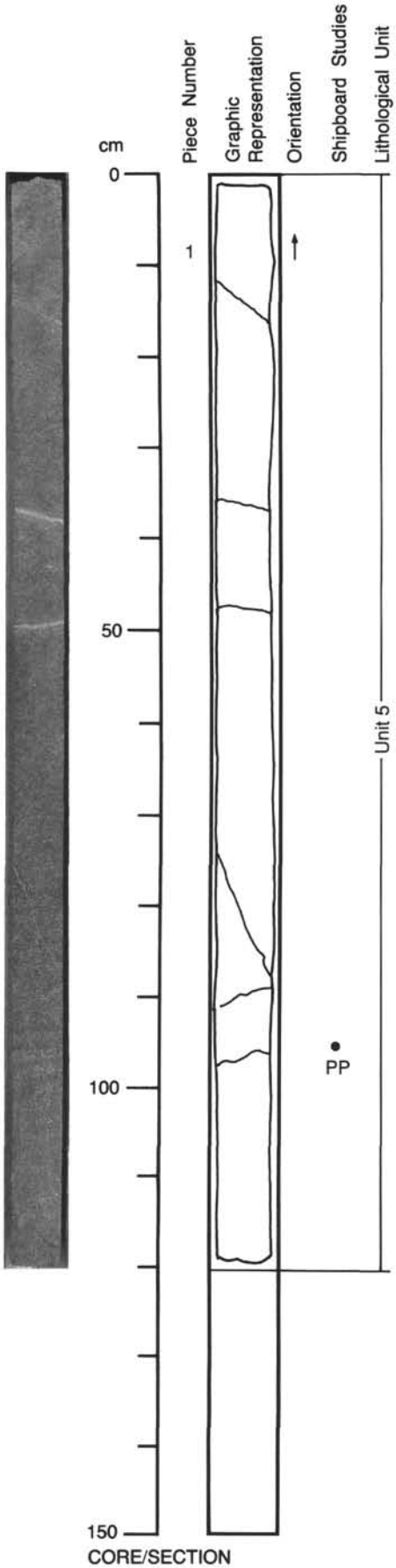


129-801B-41R-1

UNIT 5: APHYRIC BASALT

Pieces 2 and 3

CONTACTS: Not observed.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Fine-grained to medium-grained towards the bottom of the unit; hypocrystalline with some quench-textured minerals (pyroxene).
VESICLES: None.
COLOR: Bluish-gray (5B 5/1).
STRUCTURE: Massive; either a flow or thin sill.
ALTERATION: Slightly to moderately altered; some plagioclase crystals are pseudo - morphed by carbonate, a majority are altered to greenish clay; leucoxene (?) after opaques; some Fe stains around some opaques.
VEINS/FRACTURES: ~2%; 0.1 to 5.0 mm; 0-90 degrees, curved/irregular; veins composed of carbonate, with some green clays ocassionally.
ADDITIONAL COMMENTS: Unit 5 is relatively fresher than the other units above it. The top part of the unit has relatively stubby crystals whereas the bottom has lath-like, quench-textured pyroxenes that are coarser-grained

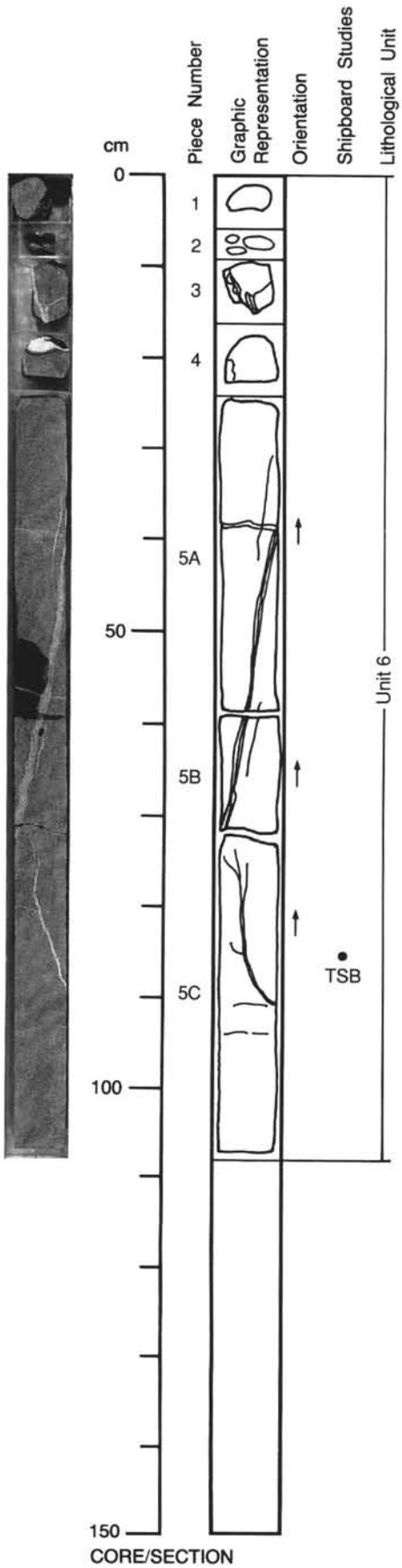


129-801B-41R-2

UNIT 5: APHYRIC MICRODOLERITE

Piece 1

CONTACTS: None observed.
PHENOCRYSTS: No phenocrysts.
GROUNDMASS: Medium-grained, holocrystalline generally, minor glassy mesostasis. Overall coarser than same unit in 41R-1.
VESICLES: No vesicles.
COLOR: Mottled greenish-gray (5BG 5/1).
STRUCTURE: Massive; either the interior of a flow or thin sill.
ALTERATION: Moderate green clay replacement of matrix, especially plagioclase; uniform distribution down piece 1, but patchy. Random distribution of carbonate, with or without green clay, veinlets and disseminated pyrite.
VEINS/FRACTURES: 1%; 0.2-2.0 mm; 25-50 dip; random distribution of calcite, with or without green clay, veinlets. No marginal alteration zones.
ADDITIONAL COMMENTS: Continuation of Unit 5 with systematic increase in grain-size, especially growth of black elongate (4-5 mm) pyroxene prisms, towards base of Piece 1.

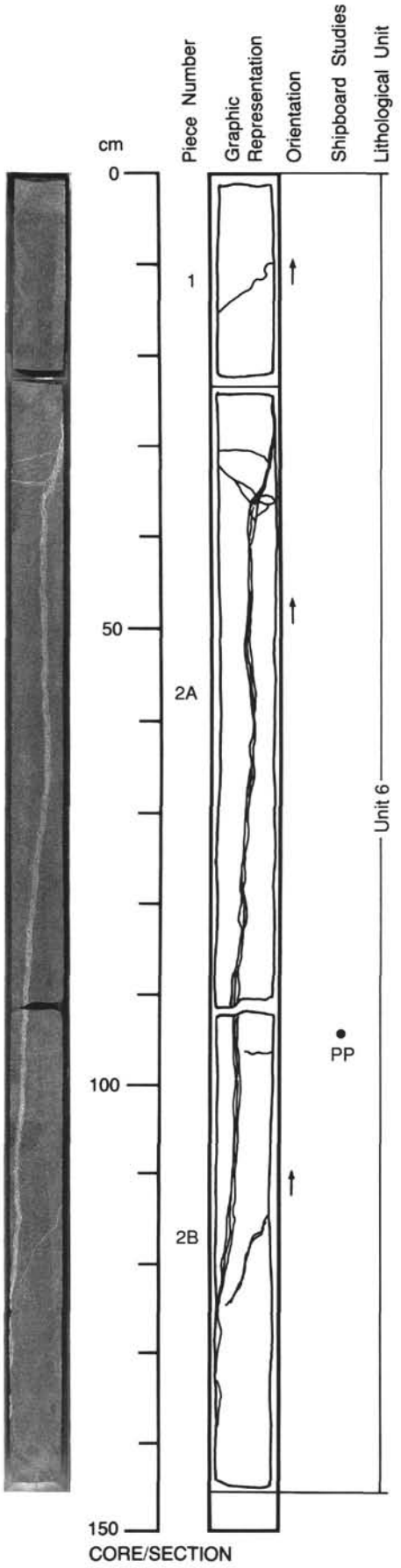


129-801B-42R-1

UNIT 6: APHYRIC MICRODOLERITE

Pieces 1 to 5C

CONTACTS: None observed, but Pieces 1 and 2 are fine-grained with dark matrix and probably represent a chilled margin. Different texture to Unit 5 in 41R-2, Piece 1.
PHENOCRYSTS: None observed.
GROUNDMASS: Grading from fine (Pieces 1 and 2) to medium (Pieces 3 to 5) grained down unit. Generally holocrystalline; minor glassy mesostasis replaced by green clay.
VESICLES: None observed.
COLOR: Mottled gray (5B 5/1).
STRUCTURE: Massive; either a flow or thin sill.
ALTERATION: Slight/moderate (about 10-20%). Green clay in matrix and calcite-clay veins.
VEINS/FRACTURES: 4-5%; 0.2-6.0 mm; either near 0 or 80 dip; random distribution. Smaller veins of calcite tend to be subhorizontal, whereas larger greenish-yellow clay-calcite veins near vertical to 80 dip. Vein branching common with veinlet offshoots.
ADDITIONAL COMMENTS: Textural differences, pyroxene morphology and lack of patchy alteration distinguish this unit from Unit 5 above.

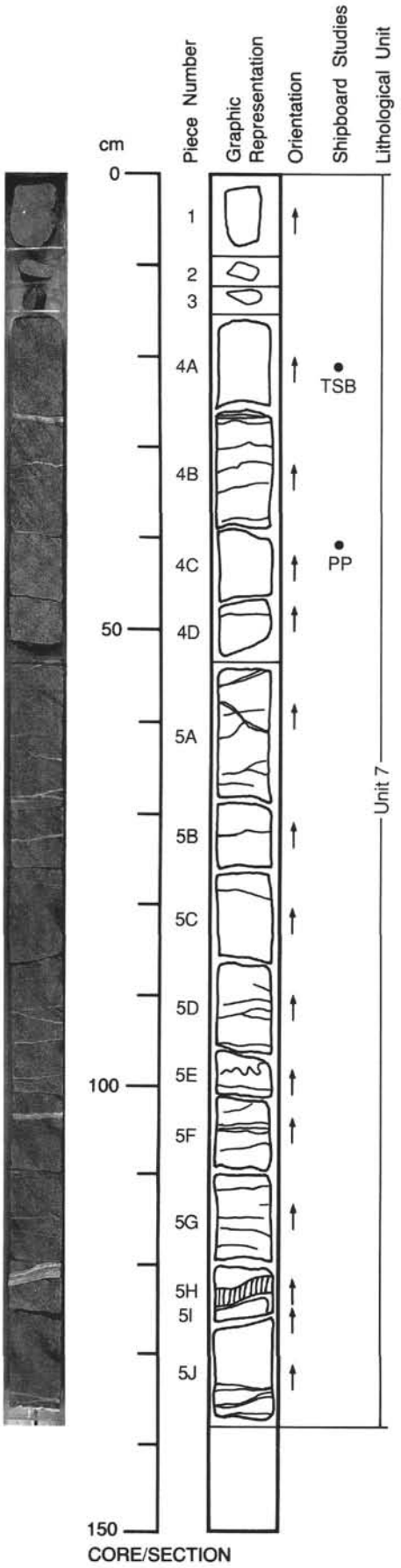


129-801B-42R-2

UNIT 6: APHYRIC DOLERITE

Pieces 1, 2A & 2B

CONTACTS: None observed, continuation of Unit 6.
PHENOCRYSTS: None observed.
GROUNDMASS: Medium-grained, generally holocrystalline; minor green clay-replaced, glassy mesostasis. Marginally coarser than same unit in 42R-1.
VESICLES: None observed.
COLOR: Flecked medium gray (N5).
STRUCTURE: Massive; *either a flow or a thin sill interior.*
ALTERATION: Slight (about 10%). Mainly green clay and calcite replacing plagioclase and mesostasis. Minor disseminated pyrite. Green clay-calcite veins.
VEINS/FRACTURES: 5%; 0.2-5.0 mm; sub-vertical; veins almost totally represented by a single, sub-vertical, green clay-calcite complex vein with a microbrecciated interior and central calcite veinlet; cross-cuts earlier calcite-only veinlets.
ADDITIONAL COMMENTS: Slight increase in grain-size relative to 42R-1, especially in length of black pyroxene crystals and altered plagioclase laths. Additional feature is presence of bronzy colored plates replacing and/or associated with pyroxene throughout Pieces 1 and 2.

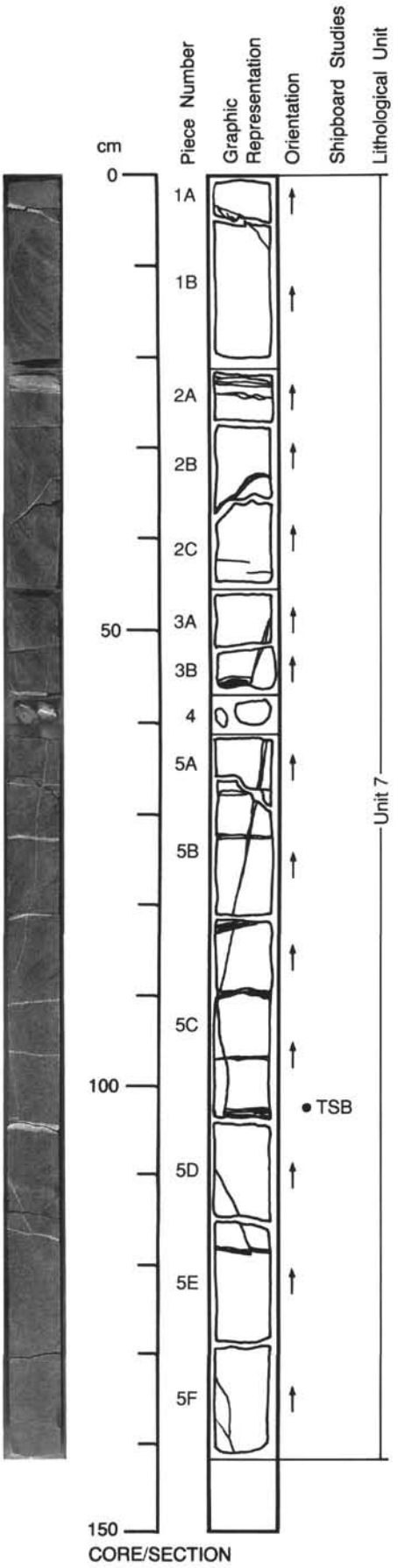


129-801B-43R-1

UNIT 7: APHYRIC DOLERITE

Pieces 1 to 5J

CONTACTS: None observed, but Pieces 1 and 2 finer grained and exhibit different pyroxene morphology to rest of pieces; suggests part of chilled margin to this unit.
PHENOCRYSTS: None observed.
GROUNDMASS: Medium-grained; generally holocrystalline, but some green clay-replaced glassy mesostasis in piece 1.
VESICLES: None observed.
COLOR: Flecked medium gray (N5).
STRUCTURE: Massive; either a thin sill or flow with part of chilled upper contact.
ALTERATION: Slight, some green clays replacing non-pyroxene matrix. Calcite-greenish clay veins.
VEINS/FRACTURES: 5%; 0.5-15.0 mm; sub-horizontal; random distribution. Composed of calcite or dull green clay or admixture dominated by calcite; the finest calcite veinlets appear to be last filling event. Characteristic feature of large veins is the multiple infilling of open fractures by fibrous calcite normal to vein walls (up to 2 or 3 calcite zones).
ADDITIONAL COMMENTS: Pieces 1 and 2 different to Unit 6 in 42R-2. Due to the elongate pyroxenes being set in an altered matrix which makes them pronounced, they give the appearance of being microphenocrysts.

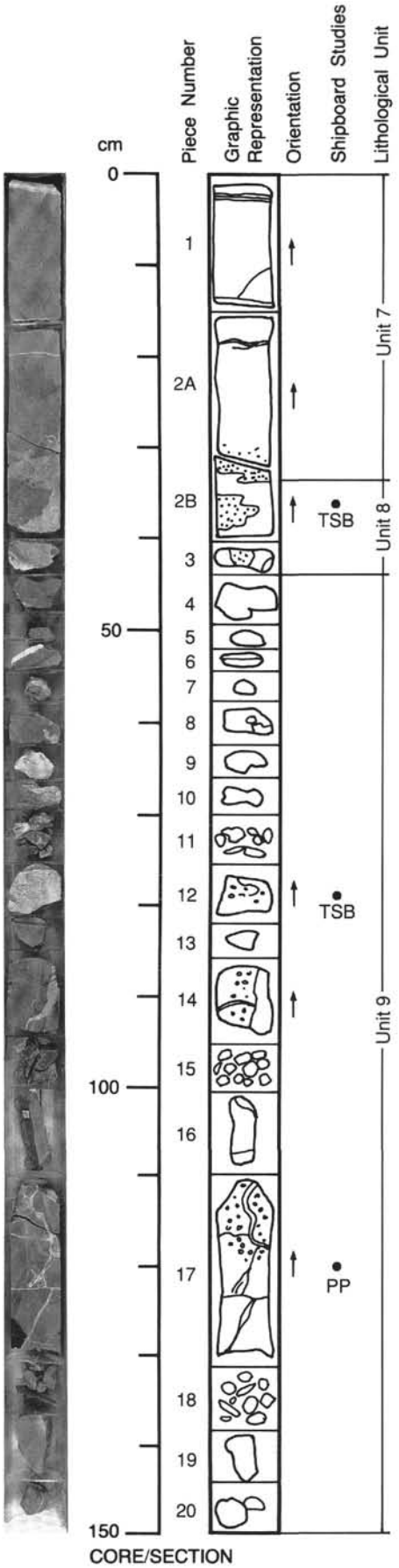


129-801B-43R-2

UNIT 7: APHYRIC DOLERITE

Pieces 1 to 5F

CONTACTS: None observed, continuation of Unit 7. Piece 5F finer grained (microdolerite) and may represent lower chilled margin of this unit.
PHENOCRYSTS: None observed.
GROUNDMASS: Medium-grained generally, but decreasing in grain-size down unit (much finer in piece 5F). Holocrystalline.
VESICLES: None observed.
COLOR: Speckled gray (from N5 to N6 down unit).
STRUCTURE: Massive; either a thin sill or flow with part of chilled lower contact;
ALTERATION: Slight. Some greenish clays replacing plagioclase. Calcite, silica and green clay veins.
VEINS/FRACTURES: 5%; 0.2-11.0 mm; 0-15 and 70-80; composed of calcite-green clay, calcite calcite-ribbon silica. Two main sets: an earlier teeply inclined minor group cut by later sub-horizontal, generally thicker group. Smaller of the two pieces numbered 4 is calcite with green and blue clays veneer.
ADDITIONAL COMMENTS: Decrease in grain-size of Piece 5F probably represents the start of the lower chilled margin to this unit.



129-801B-43R-3

UNIT 7: APHYRIC MICRODOLERITE GRADING TO SPARSELY PLAGIOCLASE-PYROXENE ICROPHYRIC BASALT

Pieces 1 and 2A

CONTACTS: Lower contact seen between 29-43 cm interval. Irregular with bulbous protrusions with good glassy (replaced by greenish clay) chilled zone. Lithology now microphyric basalt.
PHENOCRYSTS: Only seen in the glassy lower chilled zone of this unit.
Plagioclase - 1%; 0.5-1.0; minute laths.
Pyroxene - 1%; 1.0-1.5; black prisms.
GROUNDMASS: Microcrystalline in Piece 2B. Rapid decrease in grain-size from fine/medium grained in Piece 1.
VESICLES: None observed.
COLOR: Gray (N5).
STRUCTURE: Massive; possibly a thin flow with curved and quenched base.
ALTERATION: Blue-green clays in fine matrix.
VEINS/FRACTURES: 4%; 1-5 mm; 50-60 dip; dominated by calcite or calcite-yellow clay infillings.
ADDITIONAL COMMENTS: Base of Unit 7 shows chilled glassy zone (2 mm) typified by acicular plagioclase microphenocrysts. This zone has been intruded and disrupted by Unit 8; partly digested, stoped inclusions of Unit 7 basalt seen within Unit 8 basalt.

UNIT 8: SPARSELY PLAGIOCLASE PHYRIC FELDSPAR-RICH BASALT

Pieces 2B and 3

CONTACTS: Sharp, bit irregular, Unit 8 intrudes Unit 7, showing cross-cutting relationship, disruption and inclusion stoping.
PHENOCRYSTS: Often packed close together in orientation stacks showing good fluidal or trachytic texture.
Plagioclase-2%; 0.5-1.0; elongate flow oriented laths
GROUNDMASS: Fine-grained overall, but medium-grained in trachytic regions. Hypocrystalline.
VESICLES: 0.5%; 0.5-1.0 mm; irregular; random; one example filled with sulfide.
COLOR: Speckled light greenish-gray (%G 7/1).
STRUCTURE: Intrusive.
ALTERATION: Slight to moderate (~15%). Plagioclase replaced by bluish-green clay.
VEINS/FRACTURES: <1%; 0.1-1.0 mm; 0-45; calcite infillings. Veins cut both Units 7 and 8.
ADDITIONAL COMMENTS: Unit 8 is plagioclase-rich and mafic mineral poor relative to other basic rocks to date-possibly a more differentiated, late-stage intrusion.

129-801B-43R-3 (continued)

UNIT 9: SPARSELY PLAGIOCLASE PHYRIC BASALT

Pieces 4 to 20

CONTACTS: Piece 3 has sharp, embayed boundary with Unit 8. Piece 14 shows typical curved, glassy pillow lava margin. Piece 17 and other pieces have sharp contact with veinlets.

PHENOCRYSTS: Random distribution, but some clumping into groups.
Plagioclase - 1-2%; 1-2; subhedral, elongate laths.

GROUNDMASS: Pieces with sharp contacts have devitrified, hypohyalline texture grading towards spherulitic and hypocrystalline texture away from the contact.

VESICLES: None observed.

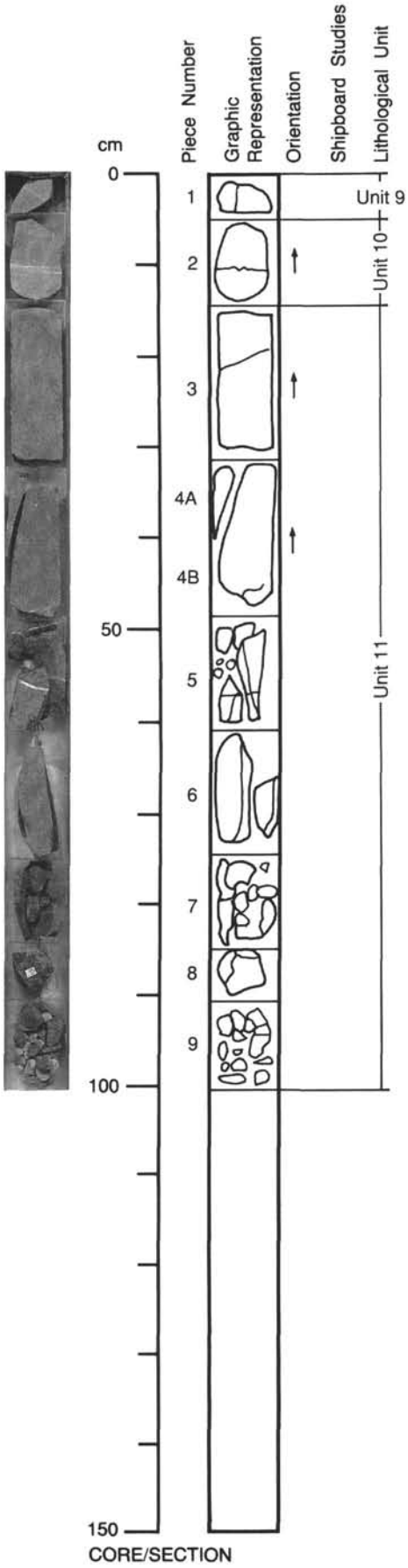
COLOR: Different shades: Piece 14 ranges from gray (N5) to speckled pale red (5G 6/2) to gray again (N6) towards pillow interior; holocrystalline fragments range from dark gray (N4) to pale green (5G 6/2).

STRUCTURE: Pillow lavas. Other lava fragments and breccia.

ALTERATION: Moderate (pillows and other lava fragments) to high (greenish, breccia fragments). Most common alteration is greenish to bluish-green clays and carbonate; leucoxene (?) and Fe stains are present around opaques of the hypocrystalline fragments.

VEINS/FRACTURES: 15%; 1.0-15.0 mm; wide range 0-90; generally irregular, curved and braided. Some filled with calcite, with or without green clays; vein in Piece 17 has silicified clay inclusion.

ADDITIONAL COMMENTS: Unit 9 is an assemblage of pillow and other lava fragments, pieces of intrusive vein materials (i.e. Pieces 9, 12 and some of 11 and 15) and altered fragments (i.e. Pieces 7, 10 and some of 11 and 15). Some lava fragments are bounded by veins (Piece 6). Piece 8 has an infilling of bluish-green clay.



129-801B-43R-4

UNIT 9: APHYRIC BASALT

Piece 1

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline.
VESICLES: None observed.
COLOR: Gray (N6).
STRUCTURE: Lava fragment.
ALTERATION: Slight to moderate. Largely green clays after plagioclase, but leucoxene and Fe stains around opaques still preserved.
VEINS/FRACTURES: 1%; 0.1-1.0 mm; 0 with 45 veinlet; carbonate infilling.
ADDITIONAL COMMENTS: A lava fragment similar to other hypocrystalline fragments in 43R-3.

UNIT 10: APHYRIC MICRODOLERITE

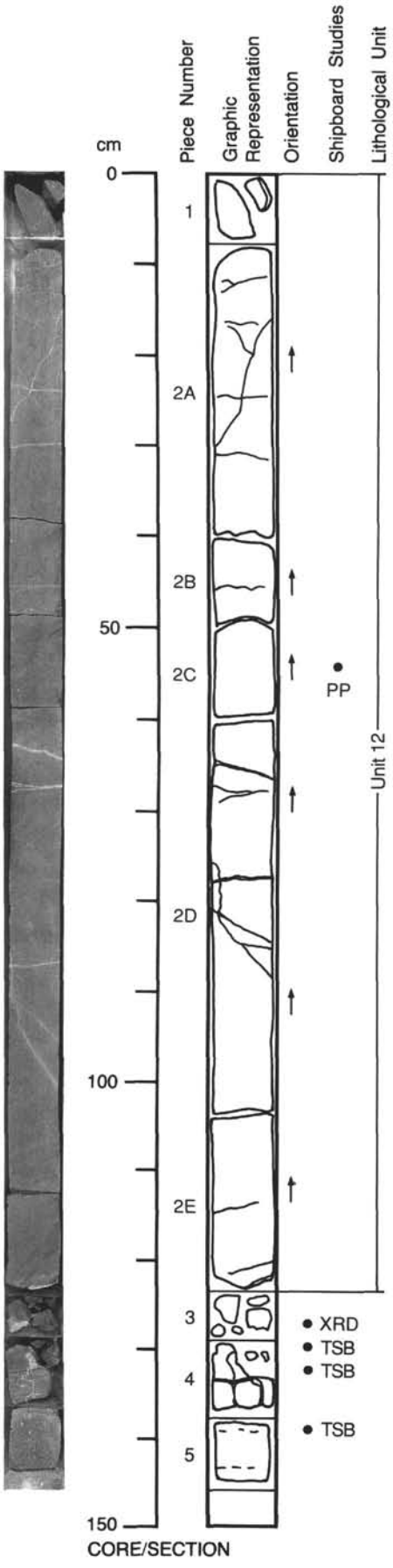
Piece 2

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Medium-grained, holocrystalline to hypocrystalline.
VESICLES: None observed.
COLOR: Speckled gray (N6).
STRUCTURE: Lava fragment.
ALTERATION: Slight to moderate. Plagioclase generally replaced by green to bluish-green clays; opaques by leucoxene and Fe hydroxides.
VEINS/FRACTURES: 5%; 0.1-4.0 mm; all 0, one at 80; carbonate filling, with or without green clay.
ADDITIONAL COMMENTS: Separated from Units 9 and 11 by its quench textured appearance.

UNIT 11: APHYRIC BASALT

Pieces 3 to 9

CONTACTS: Not observed, but upper part (near Unit 10) is fine-grained.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, a few patches containing >1 mm plagioclase laths. Holocrystalline to slightly hypocrystalline.
VESICLES: None observed.
COLOR: Speckled gray (N5).
STRUCTURE: Perhaps a lava flow.
ALTERATION: Moderate; plagioclase replaced by green and bluish-green clays and carbonate; opaques to Fe hydroxides, with rare leucoxene replacement.
VEINS/FRACTURES: 1%; 0.1-2.0 mm; horizontal, few 30-45; infilled with carbonate, with or without green clays.
ADDITIONAL COMMENTS: The top of Unit 11 is fine-grained, slightly increasing in grain-size towards bottom. Pieces 5, 7, 8 and 9 are a breccia of the same material. Unit 11 may be a lava flow with non-preserved top and bottom margins.

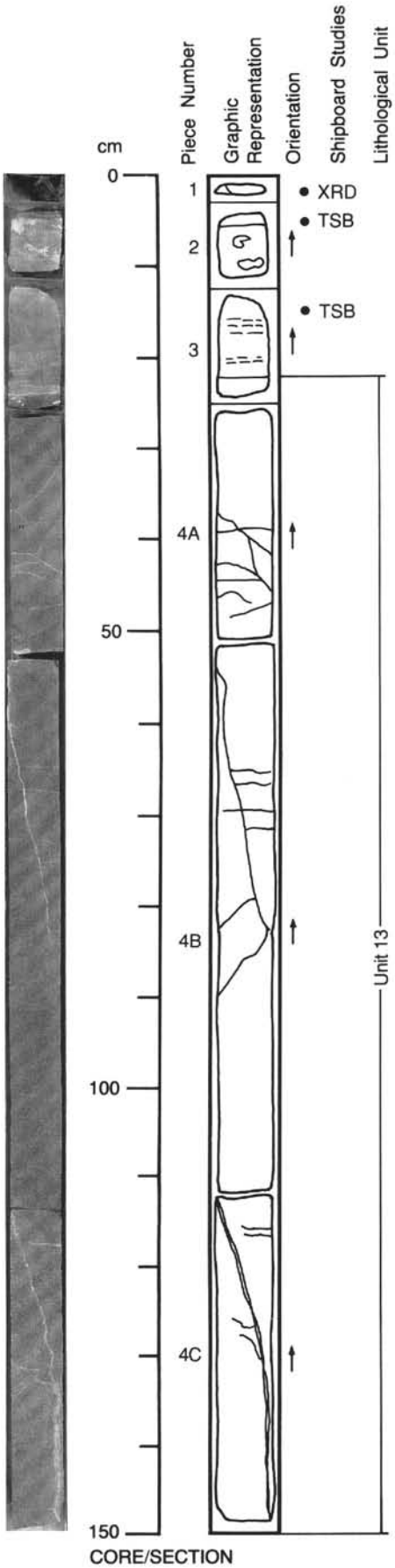


129-801B-44R-1

UNIT 12: APHYRIC BASALT

Pieces 1 to 2E

CONTACTS: Devitrified, hypocrystalline top and bottom observed. Base resting on a carbonate veinlet and adjacent brown silicified clays.
PHENOCRYSTS: None observed, except top and bottom margins have 1-2% stubby plagioclase crystals.
GROUNDMASS: Fine-grained, slightly coarsening towards Pieces 2B, C and D. Hypocrystalline to holocrystalline.
VESICLES: None observed.
COLOR: Speckled gray (N5).
STRUCTURE: Massive; perhaps a thin lava flow.
ALTERATION: Moderate. Plagioclase replaced by green clays and carbonate; opaques to leucoxene and Fe hydroxides.
VEINS/FRACTURES: 1%; 0.1-4.0 mm; horizotal some 50-60; most filled with carbonate, with or without green clays. More than one generation of veins.
ADDITIONAL COMMENTS: Unit has preserved slightly plagioclase phyric top and bottom margins that coarsen towards the center. Interpreted as a sheet flow over sediment surface.

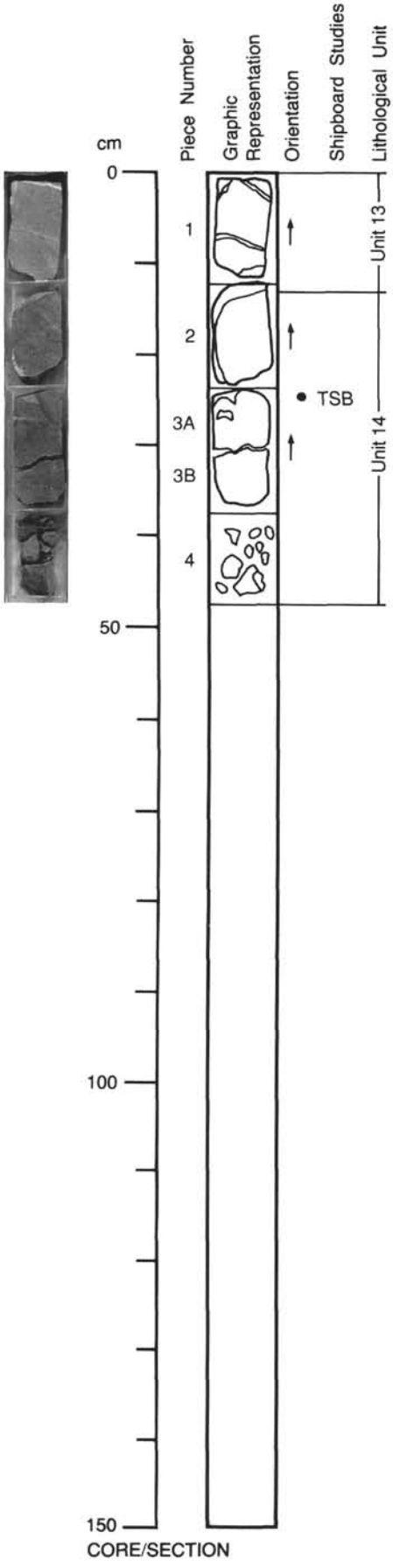


129-801B-44R-2

UNIT 13: APHYRIC BASALT

Pieces 3 (lower part) to 4C

CONTACTS: Sharp contact with sediments; fine-grained coarsening towards the bottom.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained; holocrystalline to hypocrystalline.
VESICLES: None observed.
COLOR: Speckled gray (N6).
STRUCTURE: Massive, perhaps a thin flow or possibly a thin sill.
ALTERATION: Moderate. Plagioclase replaced by green clays and carbonate; opaques by leucoxene and Fe hydroxides.
VEINS/FRACTURES: 2%; 1-3 mm; sub-horizontal; infilled with carbonate, with or without green clays.
ADDITIONAL COMMENTS: Top contact is well-defined with glassy margin but bottom contact with Unit 14 appears to be sharp and lacks any apparent quenching effect.



129-801B-44R-3

UNIT 13: APHYRIC BASALT

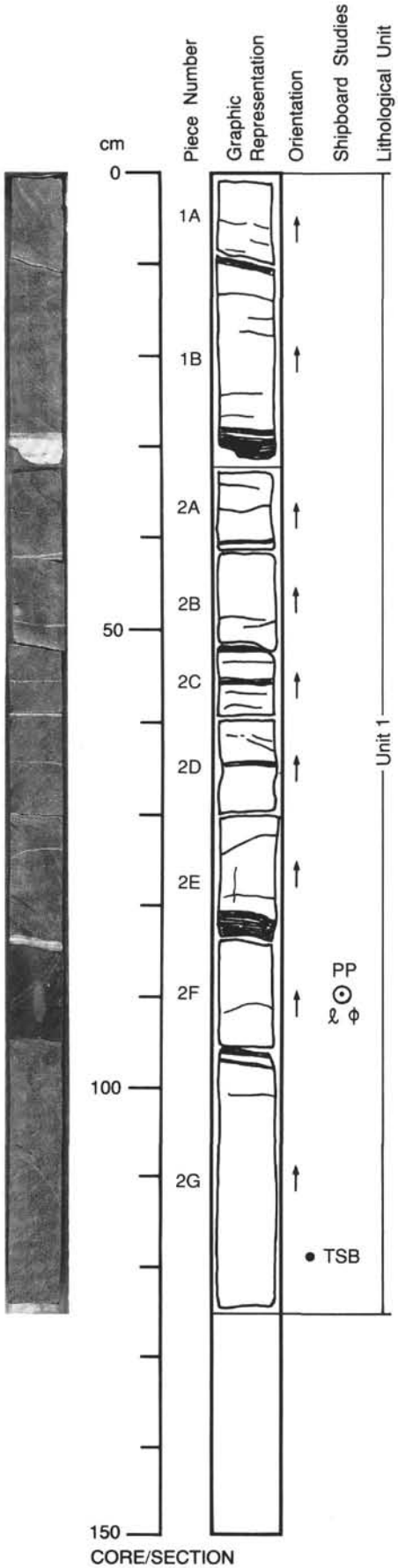
Pieces 1, 2 (top part) & 3 (top part)

CONTACTS: Sharp contact with Unit 14 but no change in grain size.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained; holocrystalline to hypocrystalline.
VESICLES: None observed.
COLOR: Speckled gray (N6).
STRUCTURE: Bottom part of thin flow or possibly thin sill.
ALTERATION: Moderate; plagioclase altered to green clays and carbonate; opaques to leucoxene and Fe-hydroxides.
VEINS/FRACTURES: 2%; 1-3 mm; sub-horizontal; infilled with carbonate with or without green clays.
ADDITIONAL COMMENTS: Curved contact with Unit 14.

UNIT 14: MODERATE PLAGIOCLASE MICROPHYRIC BASALT

Pieces 2 to 4

CONTACTS: Concentric, well-defined glassy margin; slight coarsening towards the interior.
PHENOCRYSTS:
Plagioclase - 8%; 2 mm; subhedral laths, slightly altered.
GROUNDMASS: Holohyaline.
VESICLES: None observed.
COLOR: Dark gray (N4).
STRUCTURE: Rounded outline.
ALTERATION: Slight; microphenocrysts slightly altered to green clays.
VEINS/FRACTURES: 1%; 0.1 to 1.0 mm; 30 to 45 degrees; infilled with carbonate and green clays.
ADDITIONAL COMMENTS: Either portion of a pillow lava or an apophysis of an intrusion.

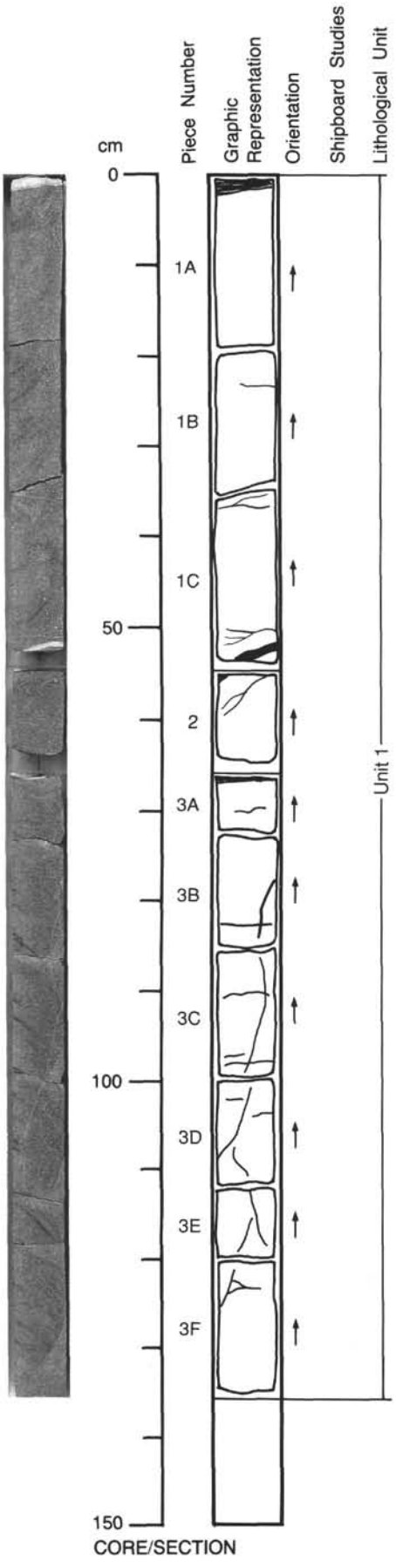


129-801C-1R-1

UNIT 1: APHYRIC MICRODOLERITE

Pieces 1A-2G

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-to medium-grained, hypocrystalline. Possible very slight decrease down section (Piece 2G being finer than Piece 1A). Matrix plagioclase accentuated by white alteration.
VESICLES: None observed.
COLOR: White speckled gray (N5).
STRUCTURE: Massive, flow or sill interior.
ALTERATION: Moderate. Plagioclase partly replaced by white clay and general greenish tinge to matrix indicates replacement by smectite. Pyrite scattered throughout. Distribution of alteration relatively uniform.
VEINS/FRACTURES: 8%; 0.5-30 mm; subhorizontal; wide range in vein width, majority about 2 mm. Fine veins infilled with fibrous carbonate, larger veins have multiple infillings with carbonate, silica, smectite and pyrite, suggesting many opening and infilling events.
ADDITIONAL COMMENTS: None.

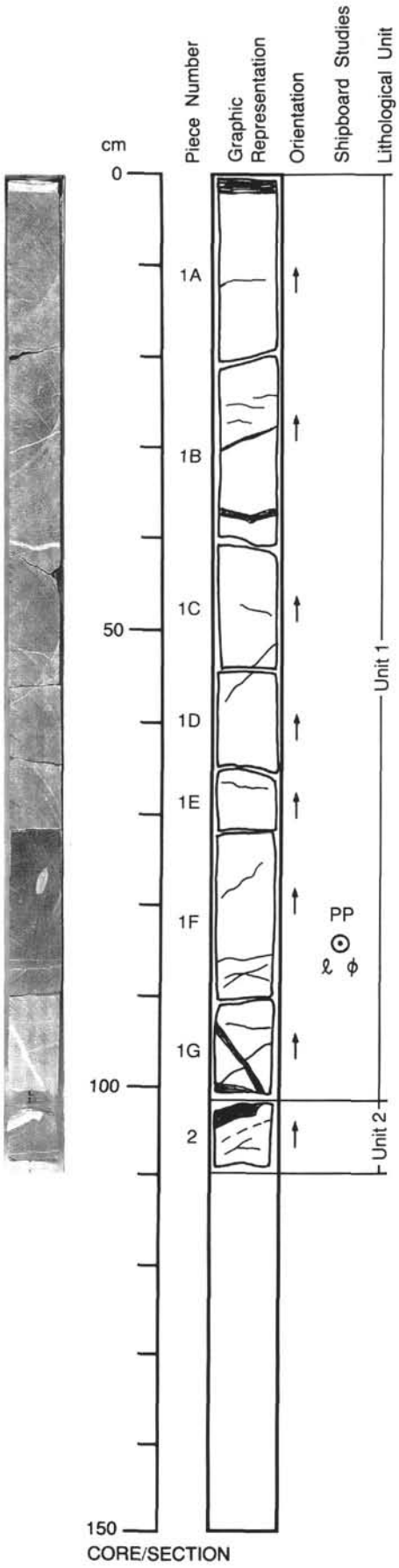


129-801C-1R-2

UNIT 1: APHYRIC MICRODOLERITE

Pieces 1A-3F

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Holocrystalline to slightly hypocrystalline. Fine-to medium-grained, but patchy distribution; bottom Piece (3F) is slightly finer than top pieces. Occasional crystals larger than matrix present.
VESICLES: None observed.
COLOR: White speckled black (N2); white areas are plagioclase altered to white clay.
STRUCTURE: Massive; perhaps flow or sill interior.
ALTERATION: Moderate. Plagioclase altered to whitish and greenish clays, some with Fe-hydroxide stains. Dark green matrix generally. Relict clinopyroxene grains within original crystal morphology.
VEINS/FRACTURES: 5%; 1-12 mm; subhorizontal, vertical; wider veins are subhorizontal, narrower veins are vertical; both infilled with carbonate and green clays. Narrow veinlets are generally branching and cross-cutting. No alteration halos observed.
ADDITIONAL COMMENTS: Patchy texture with some portions slightly coarser than rest, but gradational boundaries. An autolith (3x4 cm oblong shape) is present in Piece 1C with pronounced outline relative to matrix.



129-801C-1R-3

UNIT 1: APHYRIC MICRODOLERITE GRADING TO SPARSELY PLAGIOCLASE PHYRIC BASALT

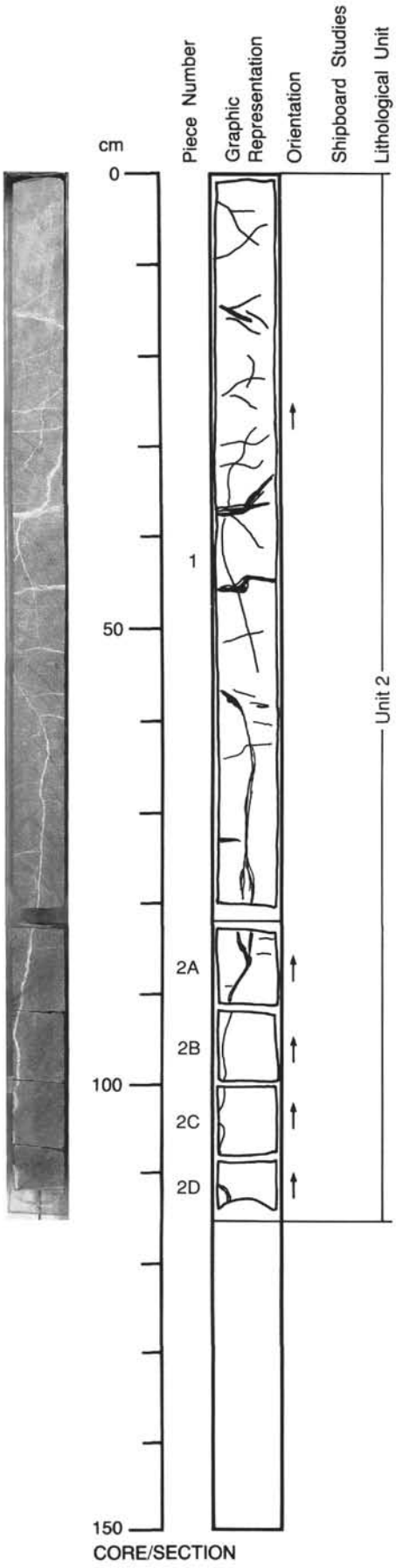
Pieces 1A-1G

CONTACTS: Not actually observed, but grain-size fines towards the bottom (cut by veinlet).
PHENOCRYSTS:
Plagioclase - 1%; c.1.0; euhedral/subhedral laths, altered to white and green clays.
GROUNDMASS: Holocrystalline to hypocrystalline, particularly at bottom. Medium to fine grained, fining towards the bottom.
VESICLES: None observed.
COLOR: White fine-speckled black (N2)
STRUCTURE: *Massive, perhaps base of sill or flow.*
ALTERATION: Moderate. Plagioclase replaced by whitish and greenish clays, some with Fe-hydroxide staining. Generally greenish matrix. Whitish leucoxene associated with relict opaques. Carbonate present along grain boundaries. Short, whitish veinlets present in some areas.
VEINS/FRACTURES: 10%; 0.2-13 mm; 0-90 degrees; wide veins (0-45 orientation) and narrow veins (0-90 orinetation), both infilled with carbonate and greenish clays. Veinlets often branching and cross-cutting.
ADDITIONAL COMMENTS: Generally finer grained than Sections 1 and 2 and fining steadily towards the base.

UNIT 2: SPARSELY PLAGIOCLASE-OLIVINE MICROPHYRIC BASALT

Piece 2

CONTACTS: Not actually observed. Well preserved, devitrified glassy margin in contact with veinlet at margin. Glassy rim zone grades downwards to a cryptocrystalline bottom. 45 degree inclination.
PHENOCRYSTS:
Plagioclase - 1%; <1; Subhedral/euhedral; mostly altered to carbonate.
Olivine - trace; <1; Subhedral/euhedral (hopper crystal morphology).
GROUNDMASS: Ranges from (a) devitrified glassy rim, (b) transition zone consisting of glass mesostasis and spherulites, (c) spherulite zone, and (d) cryptocrystalline zone with plenty of feathery and plumose variolites. Plagioclase microlites present in transition zone downwards.
VESICLES: None observed.
COLOR: Brownish gray top (5Y 5/1) to dark gray bottom (N5).
STRUCTURE: Inclined; glassy margin of a pillow or thin flow.
ALTERATION: Moderate. Plagioclase phenocrysts and microlites mostly altered to carbonate; olivine phenocrysts pseudomorphed by whitish clay. Glass is devitrified, spherulites and glass interstices altered to brown clays.
VEINS/FRACTURES: 15%; 1-80 mm; irregular; most are subparallel to glassy rim, but rest are irregular; generally branching and cross-cutting. Infilled with carbonate +/- green clays. No halos observed.
ADDITIONAL COMMENTS: Typical quenched margin to a flow.

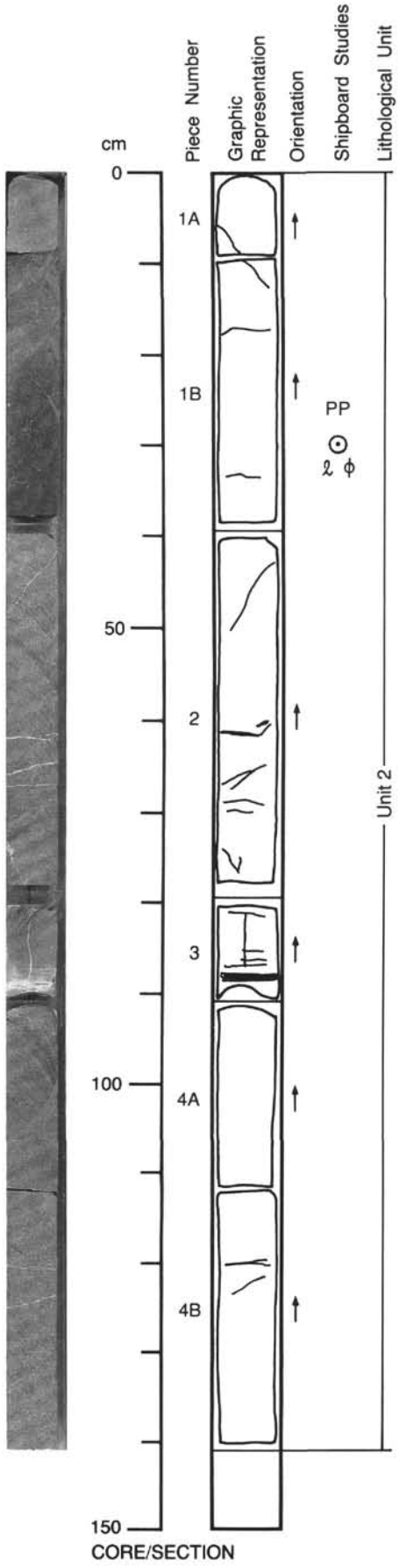


129-801C-1R-4

UNIT 2: SPARSELY PLAGIOCLASE MICROPHYRIC BASALT GRADING TO APHYRIC BASALT

Pieces 1-2D

CONTACTS: None observed.
PHENOCRYSTS: None.
Plagioclase - 1%; c.1.0; Subhedral laths altered to carbonate.
GROUNDMASS: Hypocrystalline, but with holocrystalline patches, particularly towards bottom part. Fine-grained/crypocrystalline; plenty of quenched, fan-shaped microlites. Minor mesostasis.
VESICLES: None observed.
COLOR: Bluish-gray top (5B 6/1) grading to gray bottom (N5).
STRUCTURE: Massive Piece 1, moderately fractured Pleces 2A-2D; perhaps top of an extrusive flow.
ALTERATION: Moderate. Plagioclase phenocrysts altered to carbonate; plagioclase in groundmass altered to white and green clays; green matrix throughout; carbonate also present along crystal margins.
VEINS/FRACTURES: 8%; 0.1-7.0 mm; very irregular; most infilled with carbonate +/- green clays, a few specks of pyrite. Subvertical veinlet in lower part of piece 1 and in Pieces 2A-2D has Fe-hydroxide grains and a 1-2 cm wide halo of more altered groundmass. Higher proportion of veinlets, branching and cross-cutting, in Piece 1 than rest.
ADDITIONAL COMMENTS: Continuation of same Unit (2) represented by glassy margin in base of 1R-3.

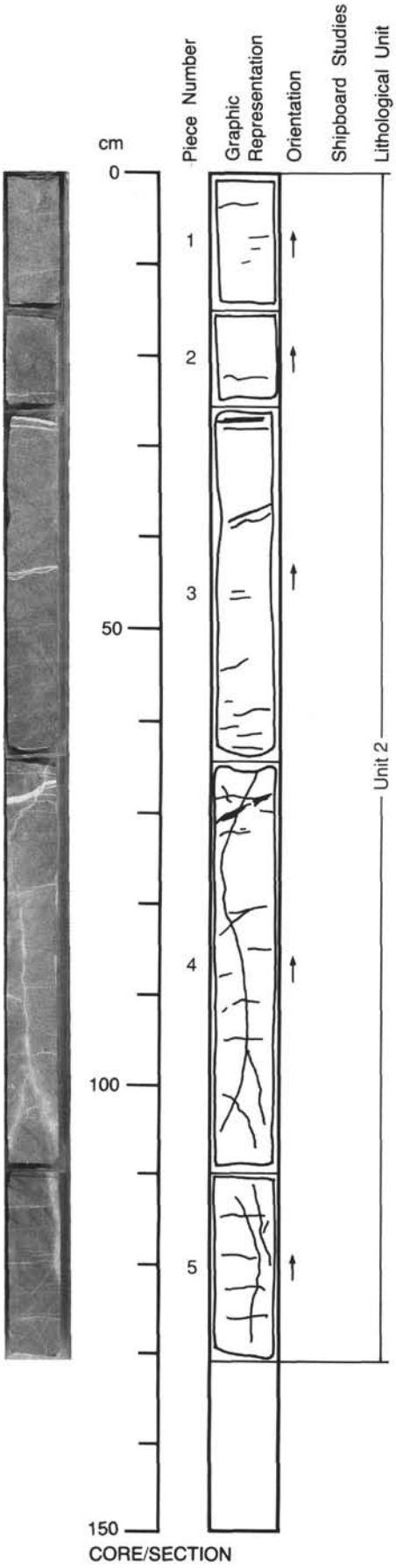


129-801C-1R-5

UNIT 2: APHYRIC BASALT

Pieces 1A-4B

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Hypocrystalline to slightly holocrystalline in some parts. Fine-grained, but with patchy coarse-grained appearance due to differential alteration. Fan-shaped and glomerophyric microlites of plagioclase.
VESICLES: None observed.
COLOR: Fine-speckled gray (N5).
STRUCTURE: Almost massive; perhaps interior of flow or pillow lava.
ALTERATION: Moderate. Plagioclase altered to white and green clays, some of which have orange colored Fe-hydroxide stains. Greenish matrix throughout. Carbonate along some grain margins. Minor pyrite.
VEINS/FRACTURES: 3%; 0.1-7.0 mm (piece 3); highly irregular, most subhorizontal; infilled with carbonate +/- green clays, but one veinlet (Piece 4) entirely infilled with green clays. Widest veinlet near base of Piece 3.
ADDITIONAL COMMENTS: Overall basalt, although some groundmass crystals >1 mm in size.

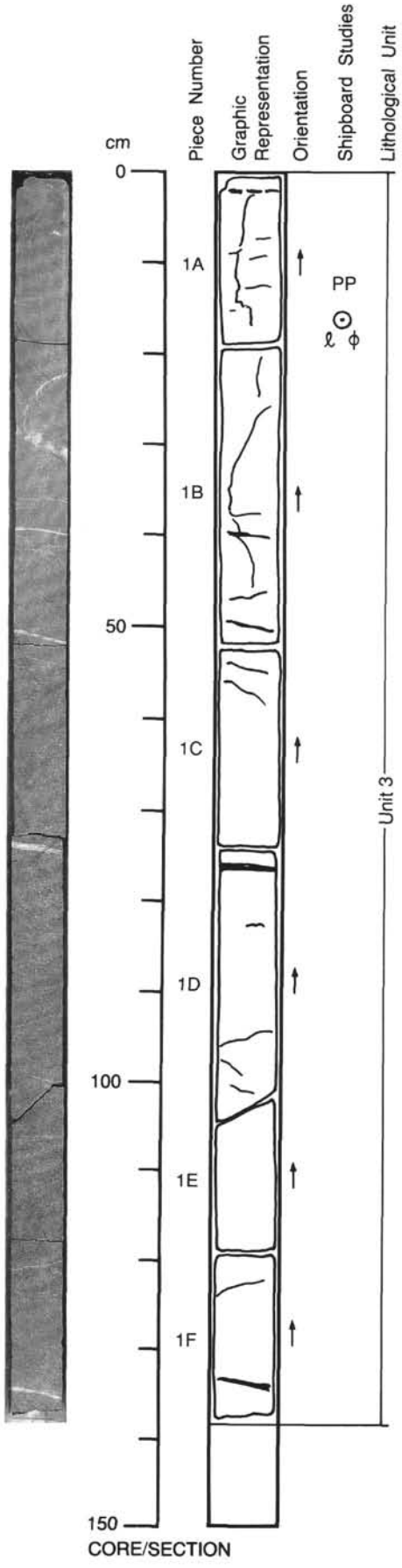


129-801C-1R-6

UNIT 2: APHYRIC BASALT

Pieces 1-5

CONTACTS: None observed, but fining towards bottom.
PHENOCRYSTS: None observed.
GROUNDMASS: Hypocrystalline grading to variolitic towards bottom. Fine-grained, quenched variolites with radiate plagioclase. Mesostasis common in basal part.
VESICLES: None observed.
COLOR: Fine speckled gray, top (N5) grading to lighter gray at bottom (N6).
STRUCTURE: Almost massive; perhaps bottom of extrusive unit, flow or pillow lava.
ALTERATION: Moderate. Plagioclase altered to white and green clays; orange colored Fe-hydroxide stained clays now make up 20% of top portion, but decreases in amount toward bottom. Matrix greenish. Yellowish-white fine-grained leucoxene very common in variolitic zone.
VEINS/FRACTURES: 2%; 0.1-6.0 mm (piece 4); subhorizontal, but irregular; top veins filled with carbonate +/- green clays, bottom veins narrower and mostly infilled by green clays +/- carbonate. An irregular sub-vertical green clay veinlet (Pieces 4 & 5) has 1 cm wide diffuse halo of more altered groundmass. Most veinlets are branching and cross-cutting.
ADDITIONAL COMMENTS: None.

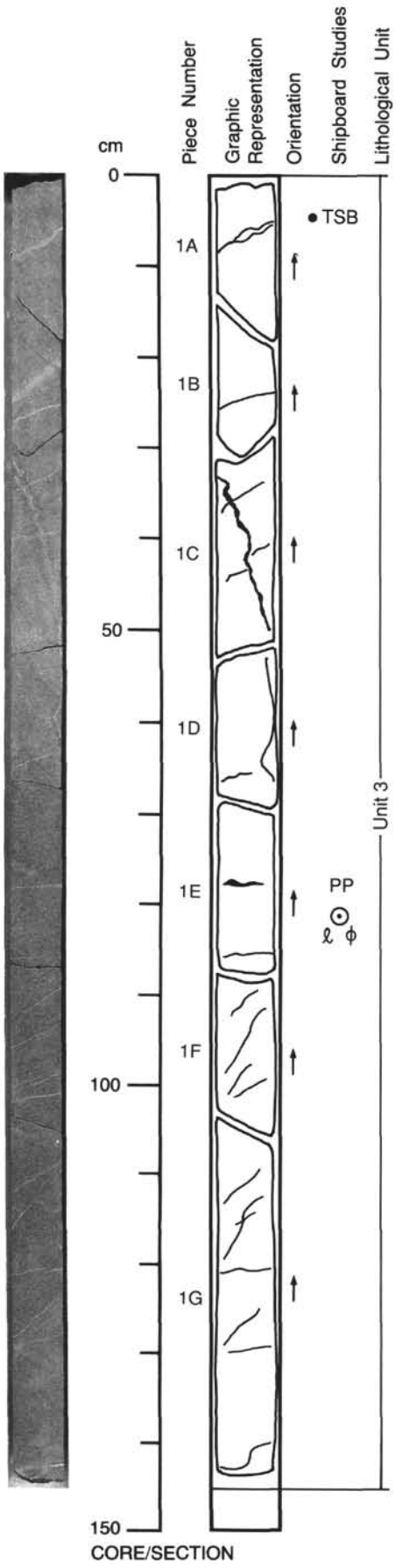


129-801C-2R-1

UNIT 3: SPARSELY PLAGIOCLASE PHYRIC BASALT GRADING TO APHYRIC BASALT

Pieces 1A-1F

CONTACTS: Not observed, but top (Piece 1A) has devitrified glassy rim that coarsens downwards.
PHENOCRYSTS: None.
Plagioclase - 1%; 1-2; Subhedral/anhedral, altered to carbonate. A 10 mm megacryst with feathery edges present.
GROUNDMASS: Devitrified glassy rim followed by a wide (10-15 cm) variolitic zone and finally coarsening downwards to fine-grained hypocrystalline base.
VESICLES: None observed.
COLOR: Grayish-brown rim (5/2) grading to white-speckled gray (N5).
STRUCTURE: Almost massive; perhaps top of a flow.
ALTERATION: Moderate. Glass devitrified and together with variolitic zone altered to brown clays. Plagioclase phenocrysts altered to carbonate, matrix plagioclase either altered to green clays or milky-white in color. Leucoxene in variolitic and hypocrystalline portions. Occasional pyrite. Matrix generally greenish throughout hypocrystalline zone.
VEINS/FRACTURES: 2%; 0.1-3.0 mm; sub-horizontal, few vertical; carbonate and green clay infillings.
ADDITIONAL COMMENTS: None.

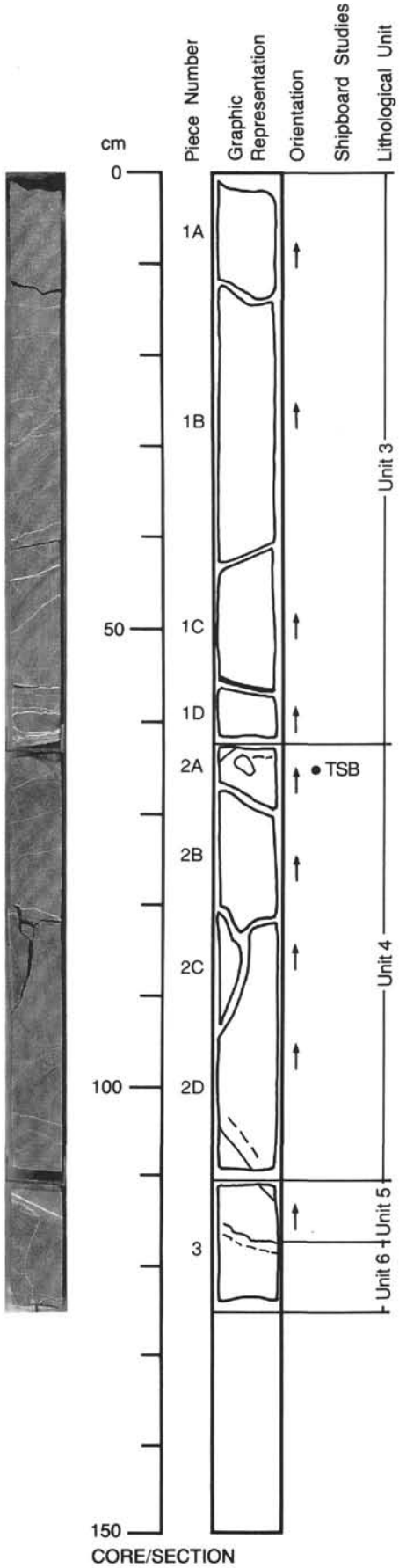


129-801C-2R-2

UNIT 3: APHYRIC BASALT

Pieces 1A-1G

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Hypocrystalline to slightly holocrystalline. Generally fine-grained, mesostasis and quenched crystals throughout section.
VESICLES: None observed.
COLOR: Speckled gray (N5).
STRUCTURE: Almost massive; interior of flow.
ALTERATION: Moderate. Plagioclase altered to white and green clays, pyroxene relicts, subhedral yellowish-white leucoxene around opaques common throughout. Clumps of pyrite grains. Mesostasis altered to greenish clays.
VEINS/FRACTURES: 2%; 0.1-6.0 mm; irregular, most inclined 20-45 degrees; often highly irregular. Infilled with carbonate or green clays or both. Branching and cross-cutting.
ADDITIONAL COMMENTS: Occasional, subrounded carbonate grains (after plagioclase?) present throughout, but preferentially concentrated at base of Piece 1C.



129-801C-2R-3

UNIT 3: APHYRIC BASALT

Pieces 1A-1D

CONTACTS: None observed, but fining towards Piece 1D.
PHENOCRYSTS: None observed.
GROUNDMASS: Holocrystalline top, but mostly hypocrystalline, particularly in lower portion (Piece 1D). Fine-grained.
VESICLES: None observed.
COLOR: Speckled gray (N5).
STRUCTURE: Almost massive, bottom portion of a flow.
ALTERATION: Moderate. Plagioclase altered to white and green clays, relict pyroxene, minor leucoxene, occasional pyrite clumps. Mesostasis altered to greenish clays.
VEINS/FRACTURES: 4%; 0.1-2.5 mm; mostly sub-horizontal, but irregular; infilled with carbonate or green clays or both. Branching and cross-cutting.
ADDITIONAL COMMENTS: None.

UNIT 4: MODERATELY PLAGIOCLASE MICROPHYRIC BASALT GRADING TO APHYRIC BASALT

Pieces 2A-2D

CONTACTS: Top contact with Unit 3 (above) and Unit 5 (below) are quenched, now devitrified glass. Contact with Unit 3 is irregular (carbonate veinlet present), contact with Unit 5 inclined at 40 degrees.
PHENOCRYSTS: None.
Plagioclase - 2%; 0.5; anhedral & euhedral laths, altered to milky white clay and trace of carbonate.
GROUNDMASS: Both top and bottom rims are glassy (now devitrified) that grade inwards to a variolitic zone, and finally to a hypocrystalline interior. Fine-grained.
VESICLES: None observed.
COLOR: Gray-brown rim (6/2) grading to fine speckled gray interior (N5).
STRUCTURE: Intrusive body with apparent thickness of 42 cm.
ALTERATION: Moderate. Glass now completely devitrified, and together with variolites, is replaced by brown clays. Plagioclase altered to milky white and green clays. Mesostasis altered to green clays.
VEINS/FRACTURES: 5%; 0.1-1.5 mm; mostly subpallel to glassy rim; green clay, some carbonate infilling. Branching and cross-cutting.
ADDITIONAL COMMENTS: Probably small apophysis derived from larger intrusive Unit 6 below which cuts and contains fragments of Units 3 & 5.

UNIT 5: APHYRIC BASALT

Pieces 2D (bottom part) & 3 (top part)

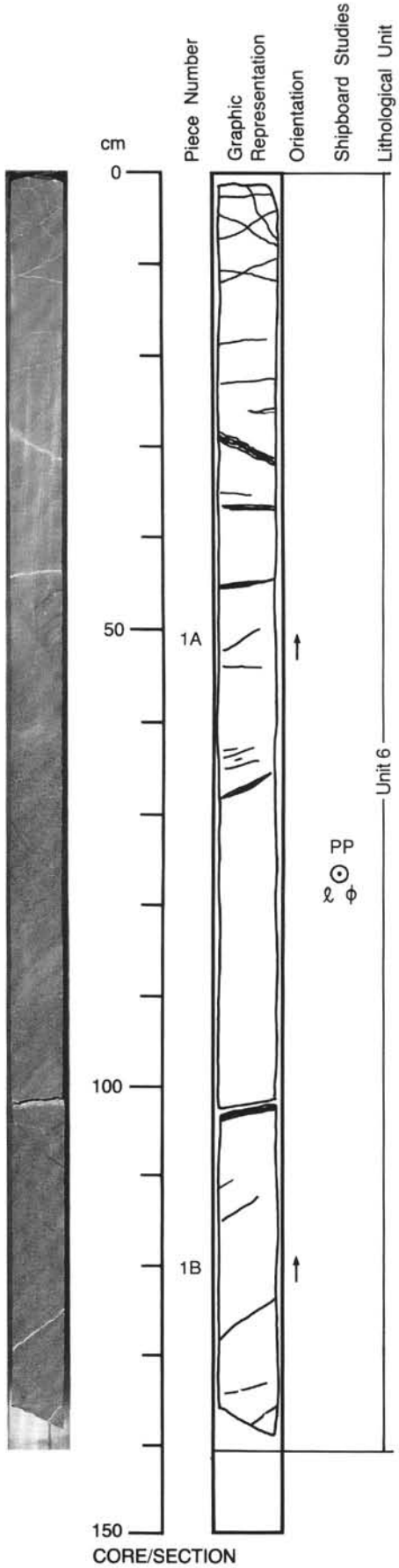
CONTACTS: Top contact (with Unit 4) defined by irregular, embayed boundary, whereas bottom contact (with Unit 6) is complicated by presence of veinlets, although margin appears inclined (60 degrees).
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline.
VESICLES: None observed.
COLOR: Gray (N6).
STRUCTURE: Thin sliver of lava flow caught between intrusion of Units 4 & 6.
ALTERATION: Moderate, similar to Unit 2.
VEINS/FRACTURES: 10%; 0.1-3.0 mm; subparallel to intrusion margins; vein between Units 5 & 6 irregularly infilled with green clays; other veins contain carbonate +/- green clay and few pyrite specks.
ADDITIONAL COMMENTS: This Unit probably represents a lower portion of Unit 3 separated by the intrusion of Unit 4.

129-801C-2R-3 (continued)

UNIT 6: SPARSELY PLAGIOCLASE PHYRIC BASALT

Piece 3 (bottom part)

CONTACTS: Upper contact inclined (20 degrees), but partly obscurred by carbonate-smectite vein. Crypocrystalline at margin and grading to quenched textured zone in 5 cm. No fresh glass.
PHENOCRYSTS: Micro- and mega-phenocrysts present scattered throughout piece. Plagioclase - 1-2%; 0.3-1.0; Subhedral laths and tablets.
GROUNDMASS: Cryptocrystalline at margin grading to fine-grained quenched texture downwards.
VESICLES: None observed.
COLOR: Purplish-brown (5YR 4/1).
STRUCTURE: Possibly chilled margin of small intrusive.
ALTERATION: Moderate. Orginally glassy margin devitrified and much glass between variolites replaced by brownish clays. Mottled appearance of matrix due to variable alteration.
VEINS/FRACTURES: 5%; 0.2-3.0 mm; irregular; branching and cross-cutting common. Thickest vein runs along actual contact. Infilling of carbonate +/- green smectite.
ADDITIONAL COMMENTS: Similar features to Unit 4 above and part of same small intrusive.



129-801C-2R-4

UNIT 6: SPARSELY PLAGIOCLASE MICROPHYRIC BASALT GRADING TO APHYRIC BASALT

Pieces 1A and 1B

CONTACTS: None observed, but top of Piece 1A very fine-grained and quench textured grading downwards to coarser-grained base.

PHENOCRYSTS:
Plagioclase - 1%; 2.5 average; fresh-looking, subhedral, random distribution in top 20 cm, then visible

GROUNDMASS: Fine-grained, but coarsening rapidly downwards until approaching medium-grained. Holocrystalline, some minor mesostasis.

VESICLES: None observed.

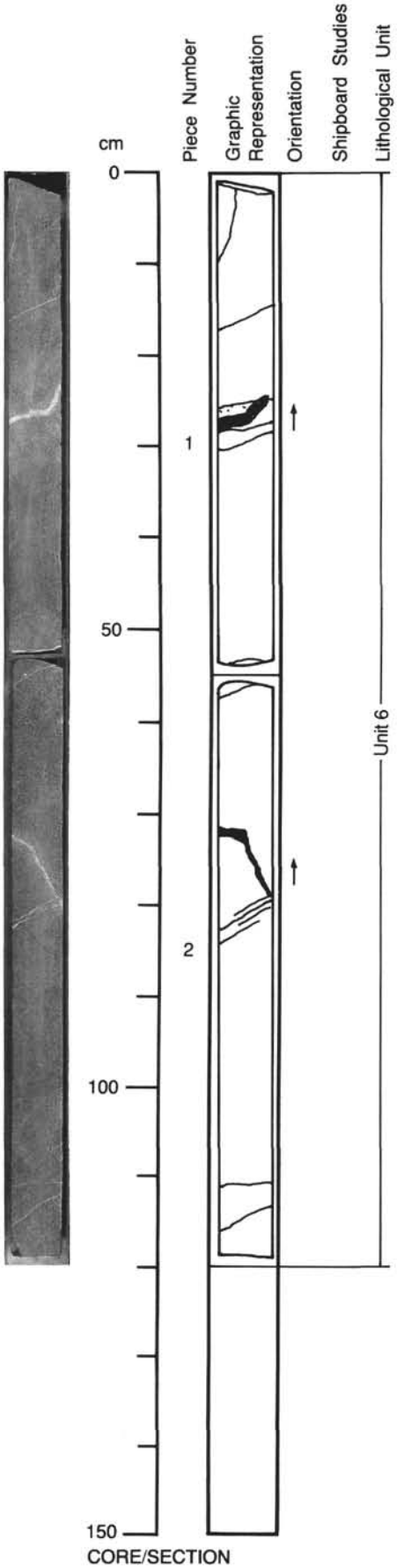
COLOR: Speckled medium gray (5B 6/1).

STRUCTURE: Massive; top to central portion of a flow or more likely intrusive.

ALTERATION: Moderate. Patchy matrix replacement by carbonate, opaques replaced by white leucoxene, mesostasis by blue-green zoned smectites. Minor scattered pyrite and acicular crystals (zeolite) in Piece 1B. Veinlets throughout.

VEINS/FRACTURES: ~4%; <0.2 - 4 mm; majority are subhorizontal; branching and cross-cutting. Few larger green clay margined veins dip at steep angle (~70 degrees). Innumerable very fine carbonate and smectite veinlets are typical.

ADDITIONAL COMMENTS: As similar to Unit 4 and both 4 and 6 have inclined contacts, this unit is interpreted as a dyke-like intrusive.

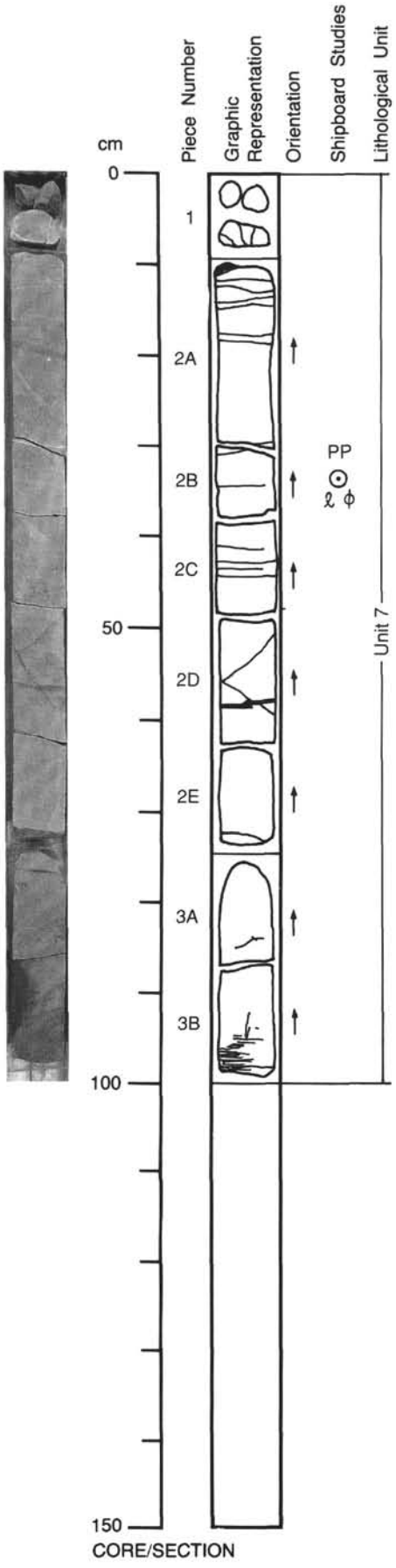


129-801C-2R-5

UNIT 6: APHYRIC MICRODOLERITE

Pieces 1 and 2

CONTACTS: None observed, except base of Piece 2 shows a slight decrease in grain-size relative to top portion of Piece 1. Contacts between small fine-grained a cm wide intrusive at ~27 cm and Unit 6.
PHENOCRYSTS: None observed (very occasional large plagioclase crystals).
GROUNDMASS: Fine to medium grained, hypocrystalline. Some textural variation with (1) spasmodic development of acicular black clinopyroxene prisms (up to 8 mm long) as well as as more stubby prisms, (2) base of Piece 2, texture finer, more granular and clinopyroxene prisms shorter.
VESICLES: None observed.
COLOR: Medium gray (N5).
STRUCTURE: Massive (central and lower part of the intrusive).
ALTERATION: Moderate. Mesostasis replaced by blue-green smectite, random carbonate patches, scattered pyrite. Acicular black clinopyroxene replaced by brown material adjacent to small intrusive (at 27 cm).
VEINS/FRACTURES: 3%; 0.5 - 4.0 mm; irregular; branching; 2 sets (i) thicker veins with irregular smectite margins and carbonate +/- pyrite concentrated in central region, and (ii) very fine carbonate only veins.
ADDITIONAL COMMENTS: Continuation of Unit 6, perhaps approaching base of intrusion.

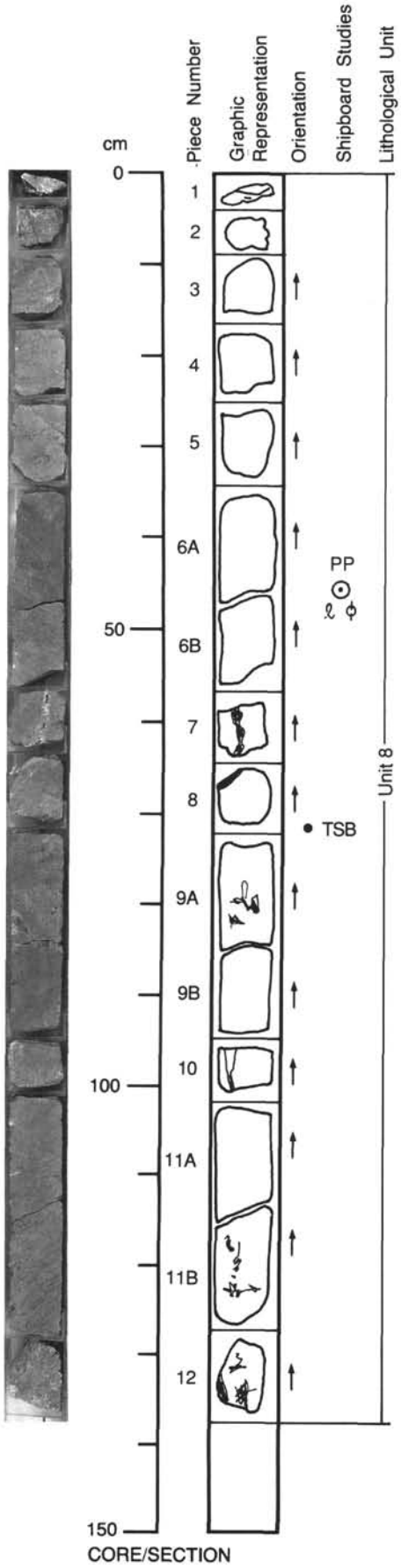


129-801C-3R-1

UNIT 7: APHYRIC BASALT

Pieces 1-3B

CONTACTS: None observed, except Pieces 1 are partially recrystallized, quench textured basalt and different to preceeding coarser Unit 6. Piece 3B with plume variolites and few plagioclase microphenocrysts; possibly near base of unit.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline and quench textured throughout. Pieces 1 have a granular texture superimposed on normal quench texture due to recrystallization.
VESICLES: None observed.
COLOR: Purplish-gray (5YR 4/1) with brown at base of Piece 3 (5YR 4/4).
STRUCTURE: Thin flow.
ALTERATION: Highly altered. Mainly green (replacing mesostatsis), carbonate (plagioclase and around mineral grains) and Fe oxyhydroxides (throughout matrix) - later includes yellowish oxide material and red hematite. White leucoxene after opaques. Dominant alteration are oxidation products that are concentrated at base of Piece 3B and completely color the basalt brown with Fe oxyhydroxides coating variolite plumes.
VEINS/FRACTURES: 1-2%; 0.1-1.0 mm; subhorizontal & steep (c.60 degrees); most are irregular and cross-cutting. Infilled with carbonate or green oxidized smectite with Fe oxyhydroxides, some hematite.
ADDITIONAL COMMENTS: Whole unit affected by dominant oxidative alteration.

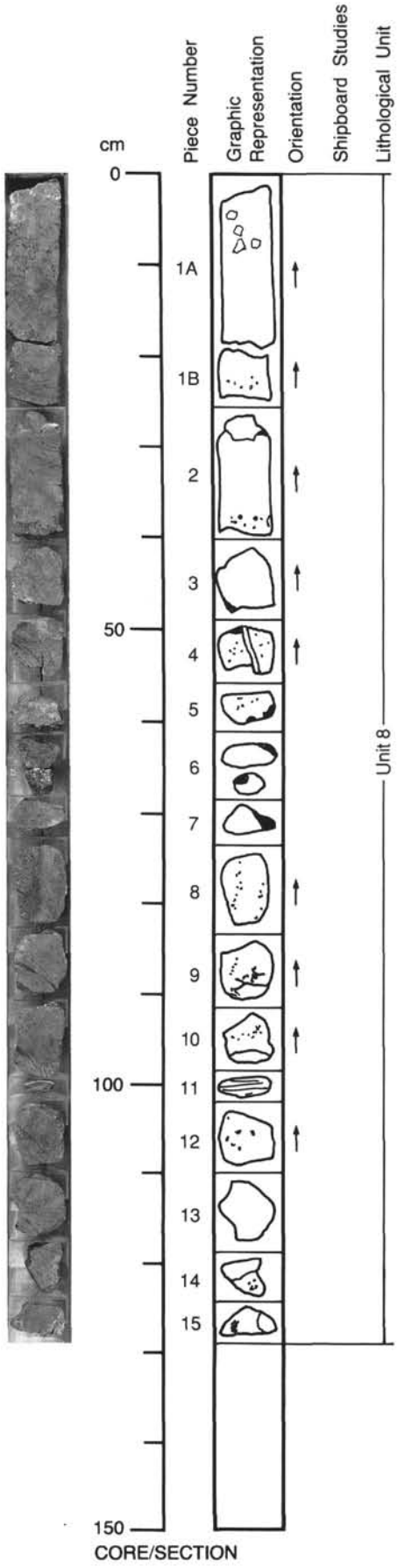


129-801C-4R-1

UNIT 8: HYDROTHERMAL DEPOSIT

Pieces 1-12

CONTACTS: None observed. Piece 1 is a highly silicified red breccia and clearly different to the oxidized base of basalt Unit 7. Rest of pieces are silicified yellow breccia.
PHENOCRYSTS: None observed.
GROUNDMASS: Generally fine-grained with various sized disrupted yellow fragments (1-50 mm) within a yellow highly siliceous "matrix". Some Pieces (9A & 9B) show an inclined crude wavy lamination partly disrupted by silica "veinlets". Small disorientated fragments have color zoned margins and shinkage cracks. Yellow matrix is sometimes crumbly, highly porous (c.5-10%), but very hard in small silica-rich areas.
VESICLES: None observed.
COLOR: Piece 1 red-brown (10R 4/6); Pieces 2-12 yellows (10YR 7/7, 10YR 6/8).
STRUCTURE: Probably an Fe-Si hydrothermal chemical deposit.
ALTERATION: Complete. Dominated by silica as "matrix" and veins and ochrous yellow Fe oxyhydroxides(?) fragments and "matrix".
VEINS/FRACTURES: 5%; 1-10 mm; random; silica infilling with larger veins exhibiting a central cavity with quartz crystal terminations growing inwards. Numerous small irregular silica ramifications throughout. Piece 1 has shinkage cracks filled with white opaline silica, also similar deposit around margins of red clast.
ADDITIONAL COMMENTS: As almost entirely composed of yellow oxyhydroxides and colorless silica interpretated as a hydrothermal deposit formed by precipitation from Fe-Si charged seawater. Some subsequent replacive silica veining. No evidence of any basaltic textures or relicts, so not directly derived from extensive oxidation of seafloor basalt. Good evidence for sedimentary lamination and their subsequent disruption.

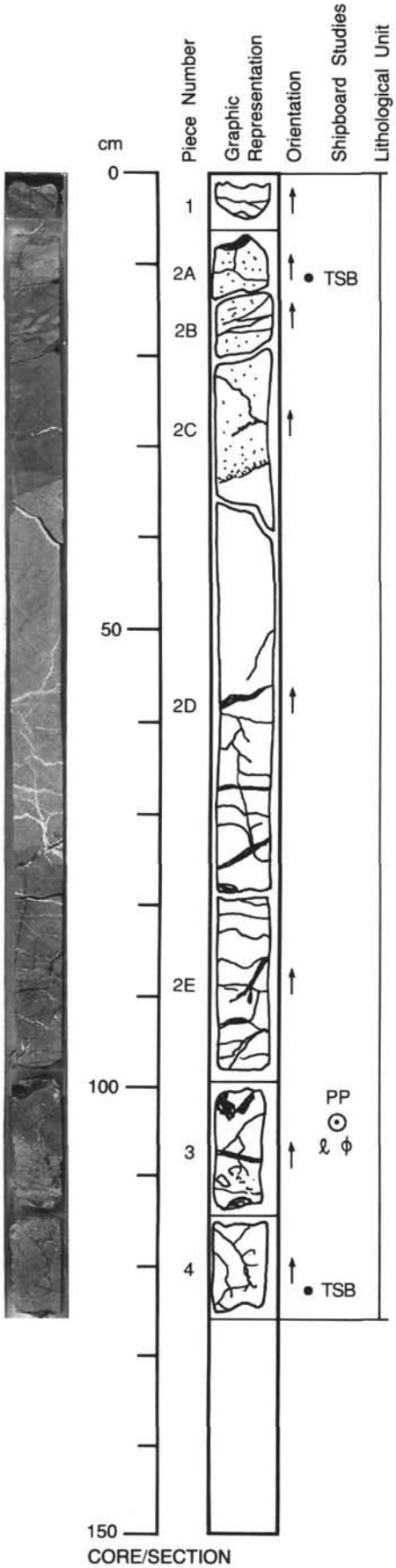


129-801C-4R-2

UNIT 8: HYDROTHERMAL DEPOSIT

Pieces 1A-15

CONTACTS: None observed. Slight differences in apparent fragmentary nature of yellow portions and also degree of regular lamination and disruption.
PHENOCRYSTS: None observed.
GROUNDMASS: Largely disrupted yellow laminations and fragments set in siliceous "matrix". Some areas are very porous (c.10%) due to dissolution and/or shrinkage, e.g. around fragments in Piece 1A and throughout Piece 8. Porous areas for a box-work with yellow coated silica walls. Laminated structure in Piece 11.
VESICLES: None observed.
COLOR: Yellows (10YR 7/8 & 10YR 6/8).
STRUCTURE: Probably an Fe-Si hydrothermal chemical deposit.
ALTERATION: Complete. Dominated by silica and yellowish Fe oxyhydroxides developed throughout. Hematite impregnated silica in Piece 2.
VEINS/FRACTURES: 5%; 1-5 mm; random; silica, with central cavity of larger veins lined with quartz crystals.
ADDITIONAL COMMENTS: Continuation of Fe-Si hydrothermal deposit from 4R-1. Again lack of basaltic relicts and partly preserved laminated nature suggests a chemical Fe-Si precipitate followed by silicification and attendant disruption.



129-801C-5R-1

UNIT 9: HIGHLY PLAGIOCLASE MEGAPHYRIC BASALT

Pieces 1-4

CONTACTS: None observed. Piece 1 is spherulitic with numerous plagioclase microlites and could represent zone near top of a cooling unit.

PHENOCRYSTS: Two size populations for plagioclase phenocrysts: megacrysts (1-3 mm) sometimes in glomerocrystic groups and smaller laths (0.5 mm).
Plagioclase - 10%; 0.5-3; all extensively replaced by green smectite (Piece 1) or carbonate (Piece 2D) or combination of both with smectite on rims and carbonate in core.

GROUNDMASS: Microcrystalline and quench textured throughout with spherulites and attendant plagioclase microlites.

VESICLES: None observed.

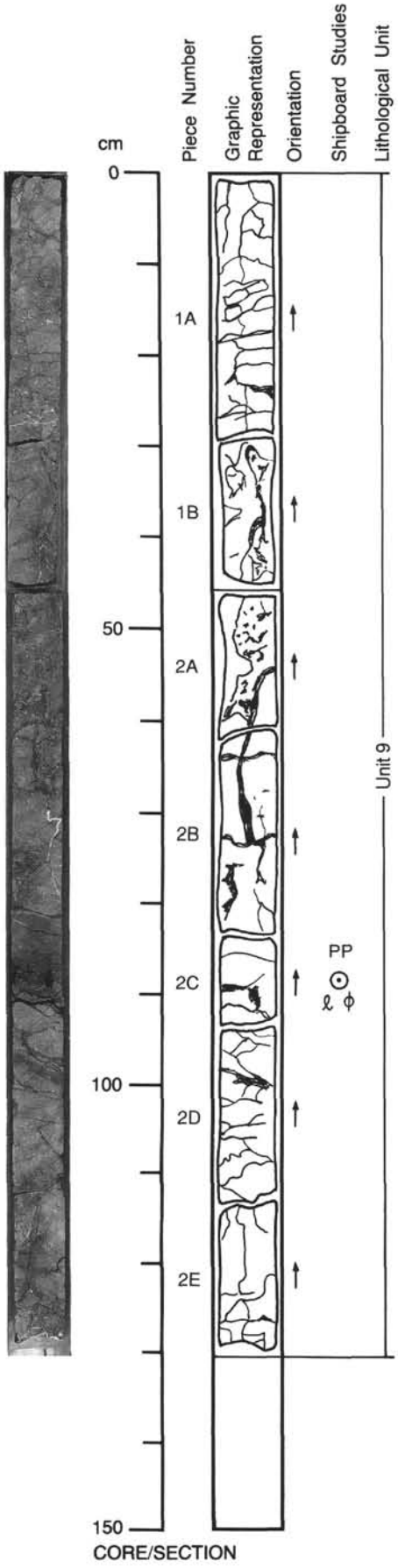
COLOR: Variable from brownish green at top (Y 4/3 & 10YR 4/4) to light gray in center (5BG 6/1) and green at base (5G 5/2).

STRUCTURE: Thin flow.

ALTERATION: Highly altered. Development of yellow Fe oxyhydroxides and hematite in top section with sharp downward diffusion boundary at c. 35 cm. Carbonate replaces plagioclase phenocrysts. Lower portion generally greenish due to extensive smectite replacing microlites and phenocrysts. Highly altered zone at 107-114 cm showing patchy carbonate in smectite matrix with relict carbonate pseudomorphed plagioclase phenocrysts.

VEINS/FRACTURES: 15%; 0.5-3.0 mm; irregular; numerous irregular, branching and cross-cutting veins. One contains hematite and limonite replacing pyrite(?). Dark oxidized smectite net veining in Piece 4 gives fragmentary appearance.

ADDITIONAL COMMENTS: Highly altered thin flow with oxidized top.

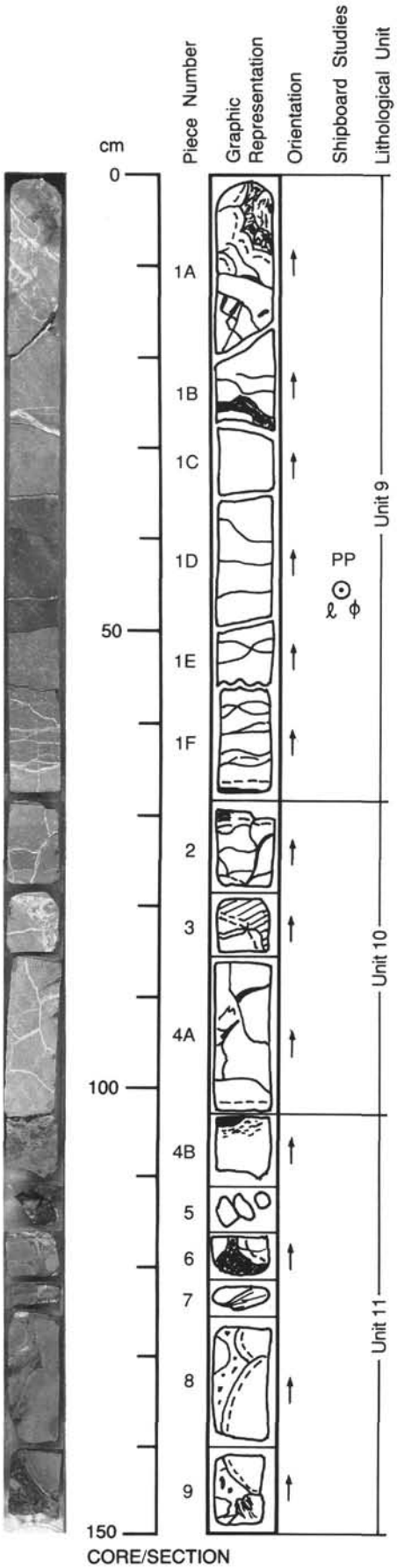


129-801C-5R-2

UNIT 9: MODERATELY PLAGIOCLASE MEGAPHYRIC BASALT

Pieces 1A-2E

CONTACTS: None observed, although Piece 2E is cryptocrystalline with much smaller spherulites and could represent basal part of unit.
PHENOCRYSTS: Possibly some small mafic phenocrysts in Piece 2E.
Plagioclase - 3%; 1-4; random distribution throughout.
GROUNDMASS: Spherulitic throughout, cryptocrystalline. General matrix disrupted in most pieces (especially 2A & 1B) by network of dark "veins" that enclose frgaments of basalt and phenocrysts, and finally end in a net vein breccia in Piece 1A. Some of the vein material retain originally glassy material with minute spherulites, now seen as white spots.
VESICLES: None observed.
COLOR: Pale grayish green (5G 5/2 & 5BG 5/1).
STRUCTURE: Probably lower half of thin flow.
ALTERATION: Highly altered. Greenish tinge to matrix due to smectite; plagioclase phenocrysts totally replaced by carbonate.
VEINS/FRACTURES: 25%; 0.5-2.0 mm; irregular; numerous irregular carbonate veinlets. Main feature is series of dark smectite-bearing veins that form a network complex up the section and infill brecciated portions of flow. Pieces 2A and top of 2B show an infill of spherulitic basalt, variously altered fragments and broken phenocrysts, together with white devitrified spots in original glassy fragments.
ADDITIONAL COMMENTS: Thin flow unit invaded by forceful hydrothermal fluids that brecciated and altered basalt as they moved upwards.



129-801C-5R-3

UNIT 9: MODERATELY PLAGIOCLASE MEGAPHYRIC BASALT

Pieces 1A - 1F

CONTACTS: Not observed, but the bottom Piece (1F) has a devitrified, almost black, glassy rim that could had been the margin of Unit 9.

PHENOCRYSTS:
Plagioclase - 10%; 2.5 on the average; anhedral to subhedral, glomerophyric, and slightly altered to white clays; trace of carbonate along grain margins.

GROUNDMASS: Variolitic; cryptocrystalline; perhaps variolites were in a glassy matrix that is now completely devitrified; devitrified glassy rims on top of pieces 1A and 1B; spalled glassy rims are enclosed in the dark green, interpillow sediments.

VESICLES: None observed.

COLOR: Light greenish gray (5GY 7/1) top, spotted gray (N6) mid-section, and darker gray (N5) bottom.

STRUCTURE: Most probably the lower portion of a pile of pillow lavas.

ALTERATION: Highly altered, particularly piece 1A; plagioclase are replaced partly with whitish clays and carbonate; groundmass had been completely devitrified and partly replaced by clays.

VEINS/FRACTURES: 20%; 0.1 to 7.0 mm; very irregular; Mostly infilled with carbonate and green clays; Piece 1A has dark green to almost black infillings.

ADDITIONAL COMMENTS: This lowermost portion of Unit 9 shows the transition from a highly altered top to a less altered bottom. The bottom pieces still show the texture and structure of the margin of a typical pillow. The higher portion of this Unit is most probabaly the highly fractured, altered, and clay-rich equivalent of the lower portion.

UNIT 10: MODERATELY PLAGIOCLASE MEGAPHYRIC BASALT

Pieces 2 - 4A

CONTACTS: Part of the glassy rim of Piece 2 is in contact with a secondary carbonate veinlet; the bottom glassy rim of Piece 4A is also in contact with a secondary smectite infilling.

PHENOCRYSTS:
Plagioclase - 6%; 2.0 on the average; Subhedral; some are partly altered to whitish clays and carbonate; the rest are fairly fresh; a few are glomerophyric.

GROUNDMASS: Devitrified, glassy rims to variolitic interior; cryptocrystalline; matrix is most probably originally holohyaline to hypohyaline but is now completely devitrified.

VESICLES: None observed.

COLOR: Spotted light greenish gray (5GY 7/1).

STRUCTURE: Most probably pillows.

ALTERATION: High; glassy rims and groundmass are highly altered to clays; phenocrystic plagioclase are partly altered to clays and carbonate; a few specks of pyrite present.

VEINS/FRACTURES: 15%; 0.1 - 4.0 mm; very irregular; infilled mostly with carbonate and less commonly with green clays; some veinlets assume stockwork networks.

ADDITIONAL COMMENTS: Consisting of two pieces of texturally and compositionally similar pillow lavas. The pillows are separated by interpillow sediments that are now completely replaced by carbonate, autogenic clays, and silica.

129-801C-5R-3 (continued)

UNIT 11: SPARSELY PLAGIOCLASE-OLIVINE MICROPHYRIC BASALT

Pieces 4B - 9

CONTACTS: Original contacts not actually observed because the surrounding materials consist of secondary minerals, but individual pieces have subrounded glassy rim that grades to holohyaline or hypohyaline interior.

PHENOCRYSTS:

Plagioclase - 1%; <1; Subhedral; some are glomerophyric and concentrated near the glassy rim.

Olivine - trace; <1; Subhedral to euhedral; completely pseudomorphed by clays and Fe-hydroxides.

GROUNDMASS: Devitrified glassy rims and holohyaline or hypohyaline interiors; variolitic texture common; cryptocrystalline.

VESICLES: Trace; 0.5 mm maximum; rounded; irregular but generally near the rim; infilled with green clays.

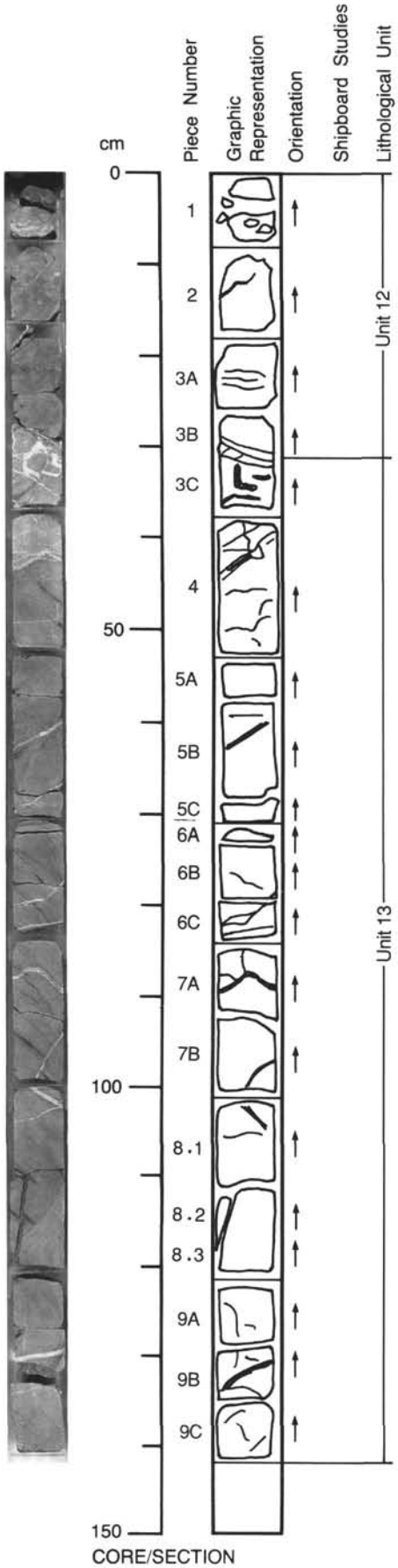
COLOR: Grayish green (5G 5/2) with blackish rim.

STRUCTURE: Fragments of pillow lavas.

ALTERATION: High; devitrified rims and interior groundmass now altered to green clays.

VEINS/FRACTURES: Trace; 0.1 mm; subhorizontal; boundaries of pillows are also generally lined with veinlets; infilled mostly with carbonate and less commonly with green clays.

ADDITIONAL COMMENTS: Pillow fragments are texturally and compositionally similar. The degree of alteration is the same throughout. Interpillow materials, which include spalled off pillow rims, are now altered to autogenic, dark green clays. Pieces 4B and 5 are actually pieces or rubbles of greenish and reddish (oxidized) interpillow materials.



129-801C-5R-4

UNIT 12: HIGHLY CALCIFIED INTERPILLOW MATERIALS

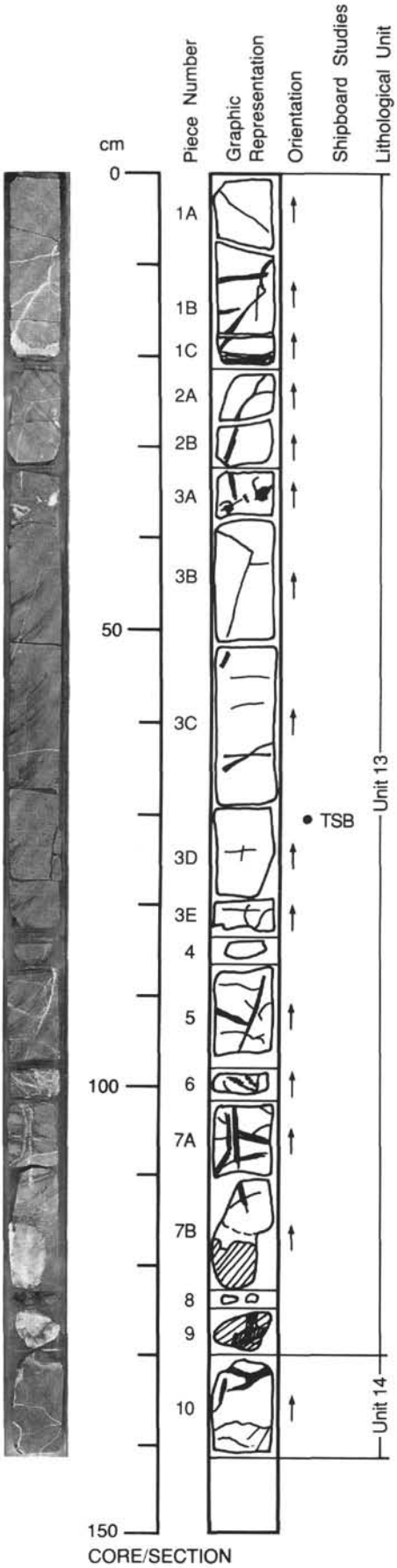
Pieces 1 - 3C (top portion)

CONTACTS: Only bottom part observed - very irregular, inclined at 35 degrees, embayed, and seems to penetrate the underlying Unit 13.
PHENOCRYSTS: None observed.
GROUNDMASS: A mixture of cryptocrystalline carbonate.
VESICLES: None observed.
COLOR: Weak red (4/3) with irregular tinge of black, gray, green, and orange (Fe-hydroxides).
STRUCTURE: Fragmented, irregular pieces; Piece 3A shows some layering.
ALTERATION: Very high; almost completely altered to reddish carbonate and green clays.
VEINS/FRACTURES: 3%; 0.2 - 2.0 mm; irregular; Infilled with white carbonate and dark green clays.
ADDITIONAL COMMENTS: Most probably, this unit originally consisted of a mixture of broken basalt fragments, pieces of hydrothermal precipitates similar to Unit 8, pieces of claystone, pieces of veinlet materials, calcareous sediments, but are now completely altered to carbonate and green clays. Pseudomorphs of some of these pieces are present in the Unit. A similar, but smaller type of material is present between pillow Units 10 and 11.

UNIT 13: APHYRIC BASALT GRADING TO MODERATELY PLAGIOCLASE-OLIVINE PHYRIC BASALT

Pieces 3C (bottom part) - 9C

CONTACTS: Top contact with Unit 12 embayed; rim is devitrified glass followed by a spherulitic zone; 35 degrees inclination.
PHENOCRYSTS:
Plagioclase - 2%; 1.5 on the average; mostly anhedral due to alteration to carbonate.
Olivine - 1%; 1.5 on the average; mostly anhedral due to alteration to carbonate.
GROUNDMASS: Devitrified glassy rim grading to a spherulitic zone, then to a variolitic zone, and finally to a hypocrystalline bottom; generally quench textured.
VESICLES: None observed.
COLOR: Light gray (N7) grading to fine-speckled gray (N6).
STRUCTURE: Fractured; perhaps a moderate-sized pillow because of the inclined, glassy margin; can also be a thin flow.
ALTERATION: Moderate to high; devitrified glassy rim and mesostasis altered to light green clays; phenocrysts altered to carbonate; a few specks of pyrite present.
VEINS/FRACTURES: 5%; 0.2 - 6 mm; very irregular; infilled with carbonate +/- green clays; branching and cross-cutting, with some veinlets displaced by at least, 4 mm; some have irregular, darker than normal groundmass halos.
ADDITIONAL COMMENTS: There seems to be differential alteration as the to portion is mostly altered to lighter green clays whereas the bottom part is mostly altered to darker green clays.



129-801C-5R-5

UNIT 13: MODERATELY OLIVINE-PLAGIOCLASE PHYRIC BASALT WITH BAND OF APHYRIC BASALT

Pieces 1A - 9

CONTACTS: Bottom contact is very irregular and highly shattered/replaced by bluish green clays; unit is directly in contact with secondary white carbonate, and thus, most probably not original.

PHENOCRYSTS:
Plagioclase - 1%; 1.5 on the average; Subhedral; completely replaced.
Olivine - 2%; 1.5 on the average; Subhedral to euhedral; completely pseudomorphed; can be recognized by the euhedral lantern and skeletal crystal morphologies typical of olivine.

GROUNDMASS: Hypocrystalline; fine-grained and quench textured throughout; overall texture is patchy, with some bands, particularly top and bottom are aphyric.

VESICLES: None observed.

COLOR: Fine-speckled gray (N5) grading to pale green (5G 6/2) at the bottom.

STRUCTURE: Possibly the bottom of a flow-differentiated thin lava flow; highly fractured bottom.

ALTERATION: High to very high; phenocrysts altered to clays and/or carbonate; mesostasis and groundmass microlites are greenish due to clay alteration; bottom margin is more altered than top.

VEINS/FRACTURES: 20%; 0.2 mm - 7 cm; very irregular; infilled with carbonate and green clays; cross-cutting and branching.

ADDITIONAL COMMENTS: Carbonate infillings (bottom of Piece 7B and Piece 9) are included in the Unit. Phenocryst alteration, similar to their distribution, is variable - those at the top bands are altered mostly to carbonate, those in mid-section to dark green clays, and those at the bottom are back to carbonate again.

UNIT 14: APHYRIC BASALT

Piece 10

CONTACTS: Not observed but topmost part is a devitrified, blackish glass grading to a spherulitic zone downwards.

PHENOCRYSTS: None observed.

GROUNDMASS: Devitrified glassy rim grading to a spherulitic zone, and finally to a variolitic bottom; cryptocrystalline overall.

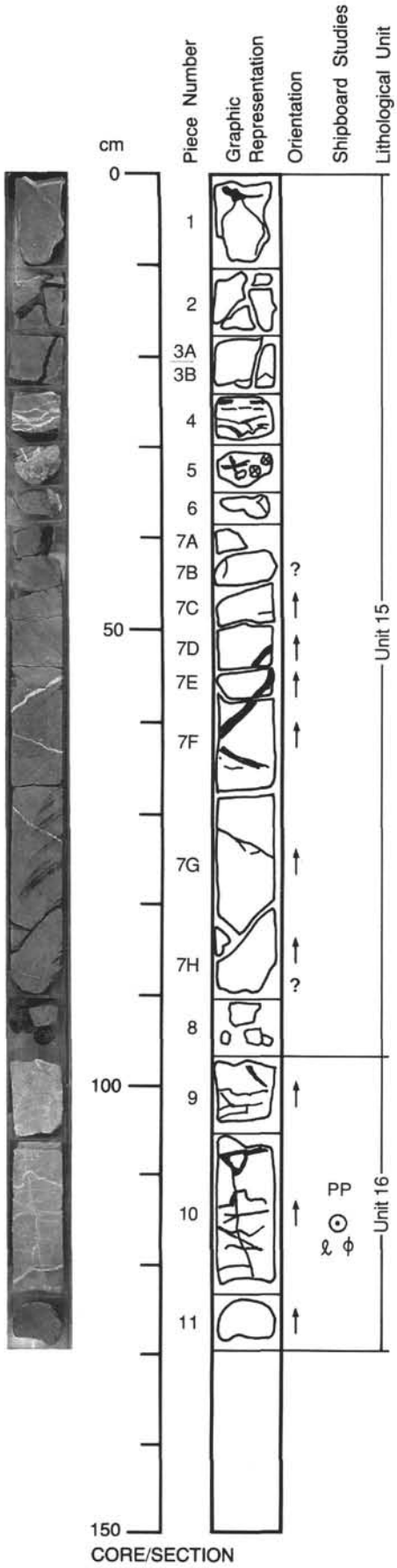
VESICLES: None observed.

COLOR: Fine-speckled gray (N5).

STRUCTURE: Either a top of a pillow or a thin flow.

ALTERATION: Highly devitrified glassy rim altered to light brown clays; glass interstitial to spherulites altered to dark green clays; carbonate is present along grain boundaries. Ferromagnesian microlites are also altered to dark green clays.

VEINS/FRACTURES: 20%; 0.1 - 10 mm; very irregular; infilled mostly with reddish or white carbonate /- green clays; branching and cross cutting; the top glassy rim is separated from the rest of the Unit by a 10 mm wide, red and white carbonate veinlet.



129-801C-6R-1

UNIT 15: A COLLECTION OF BASALTIC FRAGMENTS WITH UNVERIFIED ORIENTATION AND ORDERING.

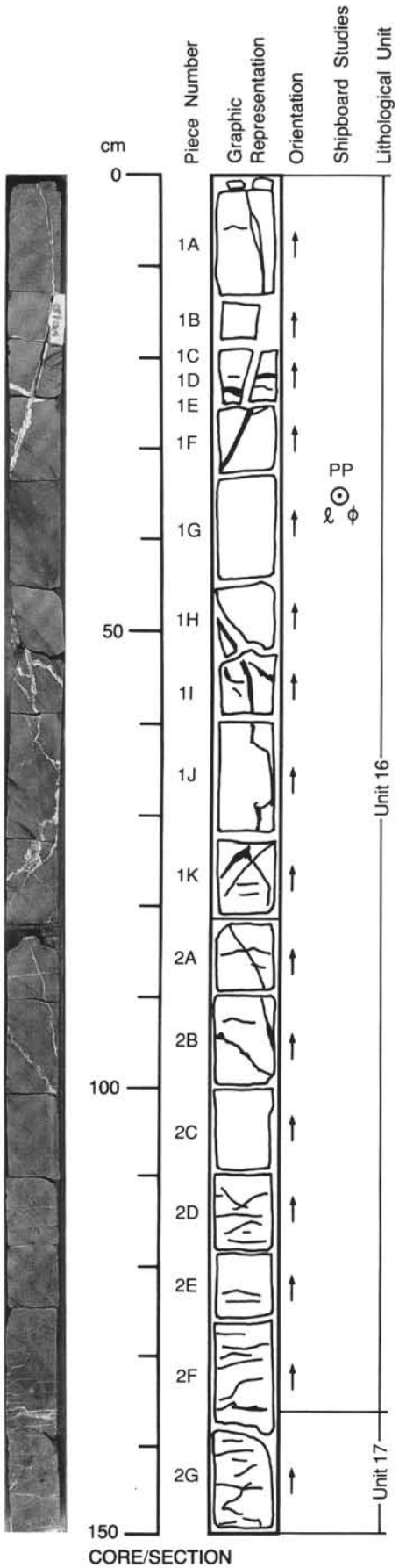
Pieces 1 - 8

CONTACTS: None observed.
PHENOCRYSTS:
Plagioclase - 2%; 2 on average; Subhedral; only in Pieces 7A - 7H.
Pyroxene - 2%; 2 on average; Anhedral plates; also in Pieces 7A - 7H but hard to differentiate from plagioclase because of intense alteration; could be olivine.
GROUNDMASS: Pieces 4 and 5 have devitrified glassy rims; Pieces 1 - 3 are variolitic to hypocrystalline; Pieces 7A - 7H are hypocrystalline with abundant quenched microlites; overall, fragments are fine-grained.
VESICLES: None observed.
COLOR: Various shades of gray with greenish tinge.
STRUCTURE: Different fragments of basalts; Pieces 4 and 5 may represent a ~6 cm sheet flow with glassy top and bottom.
ALTERATION: Moderate to high; all pieces have greenish tinge indicating green clay alteration; devitrified glassy rims are most probabaly altered to brown clays; phenocrysts in Pieces 7A - 7H are altered to whitish clays.
VEINS/FRACTURES: 15%; 0.1 - 4.0 mm; irregular; some are infilled with whitish to greenish clays; others are infilled with carbonate.
ADDITIONAL COMMENTS: Pieces 1 - 8 fell from the drill pipe directly to the rig floor and so their orientations and ordering, except for Pieces 7C - 7H, perhaps, are uncertain.

UNIT 16: SPARSELY PLAGIOCLASE PHYRIC BASALT GRADING TO APHYRIC BASALT

Pieces 9 - 11

CONTACTS: Not observed but top margin has a devitrified glass rim.
PHENOCRYSTS:
Plagioclase - 1%; 1 on the average; Subhedral and concentrated near the top margin.
GROUNDMASS: Devitrified glassy rim grading to a spherulitic zone and then to a variolitic zone at the bottom; fine-grained throughout.
VESICLES: None observed.
COLOR: Light greenish gray (5GY 7/1) grading to greenish gray (5G 5/1).
STRUCTURE: Perhaps top of a thin lava flow.
ALTERATION: High; devitrified rim and mesostasis glass altered to light green clays; phenocrysts are altered to green clays and carbonate; carbonate grains and pyrite specks are occasionally present.
VEINS/FRACTURES: 20%; 0.2 - 4.0 mm; very irregular; Infilled with carbonate and whitish and greenish clays; stockwork orientation.



129-801C-6R-2

UNIT 16: APHYRIC BASALT WITH BANDS OF MODERATELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

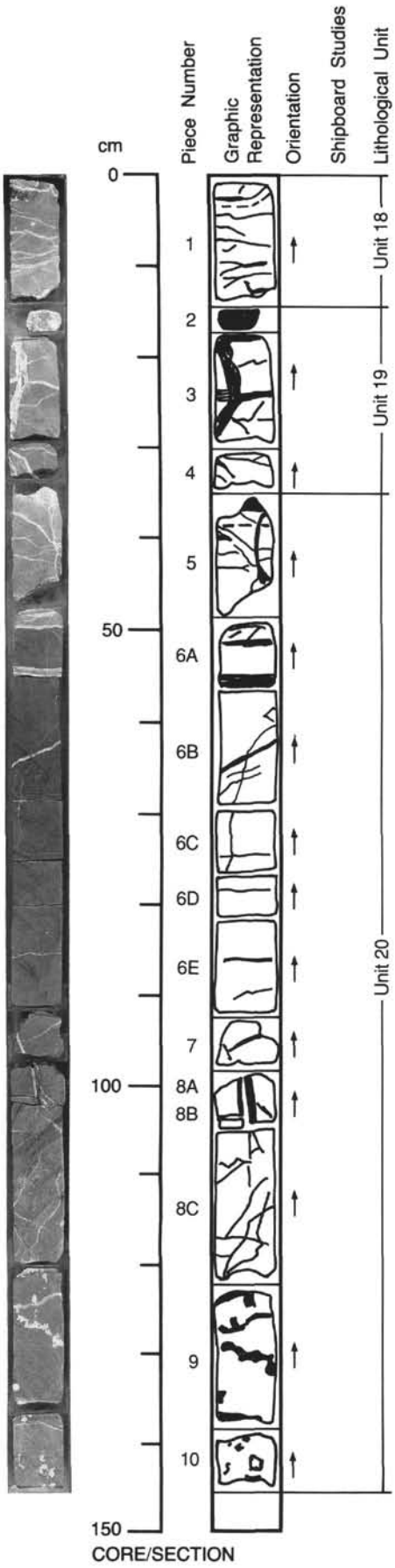
Pieces 1A - 2F

CONTACTS: None observed but bottom piece is variolitic with a devitrified glassy rim.
PHENOCRYSTS:
Plagioclase - 1%; 1 on the average; Subhedral; completely altered and so hard to differentiate from the olivine
Olivine - 3%; 1 on the average; Subhedral to skeletal; completely altered.
GROUNDMASS: Hypocrystalline with devitrified, glassy mesostasis; bottom part is variolitic although variolitic patches are common throughout; fine-grained; presence of subhorizontal veinlets with cryptocrystalline, very dark gray halos complicates the overall groundmass texture.
VESICLES: None observed.
COLOR: Fine-speckled gray (N5) grading to greenish gray (5G 5/1) at the bottom Piece (2G).
STRUCTURE: Perhaps a thin lava flow showing flow differentiation.
ALTERATION: Moderate-high; devitrified glassy mesostasis and rim are altered to green clays; phenocrysts are altered to clays; occasional carbonate grains and pyrite specks are present in the groundmass.
VEINS/FRACTURES: 4%; 0.1 - 10 mm; very irregular; infilled with carbonate and green clays; branching and cross-cutting; most of the fractures have very irregular, slightly darker gray or green halos.
ADDITIONAL COMMENTS: Very similar to Unit 13 in that it contains olivine-plagioclase phyric bands, which may indicate flow differentiation. Alteration of phenocrysts is also banded in that some layers are altered to whitish clays whereas others are altered to dark green clays. Fracture halos range from cryptocrystalline margins to more clay-altered groundmass.

UNIT 17: MODERATELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

Pieces 2F (botttom part) and 2G

CONTACTS: Top and bottom contacts (obscurred by carbonate veinlets) are characterized by devitrified, glassy rims grading to variolitic interior.
PHENOCRYSTS:
Plagioclase - trace; 1 - 2; Subhedral; completely altered and difficult to differentiate from either pyroxene or olivine.
Olivine - 2%; 1 - 2; skeletal to subhedral; complete pseudomorphed.
GROUNDMASS: Devitrified, glassy rims grading to hypocrystalline, variolitic interior; quench textured minerals throughout.
VESICLES: None observed.
COLOR: Dark greenish gray (5GY 4/1 to 5G 4/1) with blackish patches.
STRUCTURE: A sheet flow with glassy top and bottom margins.
ALTERATION: High; phenocrysts altered to whitish clays; greenish throughout indicating that groundmass and devitrified glassy rims and mesostasis are altered to green clays.
VEINS/FRACTURES: 10%; 0.1 - 2.0 mm; mostly subhorizontal but irregular; infilled with carbonate and green clays; most with attendant black halos.



129-801C-6R-3

UNIT 18: MODERATELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

Piece 1

CONTACTS: Top rim is devitrified glass in contact with secondary carbonate veinlet; bottom margin not observed.
PHENOCRYSTS:
Plagioclase - trace; 1.0 on average; Subhedral; hard to differentiate from olivine due to high alteration.
Olivine - 2%; 1.5 on average; skeletal to subhedral; completely pseudomorphed.
GROUNDMASS: Glassy top rim grading to a variolitic zone, and then to a hypocrystalline bottom; fine-grained.
VESICLES: None observed.
COLOR: Greenish gray (5G 6/1) with grayish tinge (N6) on top.
STRUCTURE: Perhaps top of a sheet flow or thin lava flow.
ALTERATION: High; phenocrysts altered to whitish clays; greenish throughout suggesting that groundmass and devitrified glassy rim had been altered to green clays; carbonate grains occasionally present in the groundmass.
VEINS/FRACTURES: 20%; 0.1 - 4.0 mm; mostly subhorizontal but irregular; infilled with carbonate and green clays +/- pyrite; branching and cross-cutting.

UNIT 19: APHYRIC BASALT

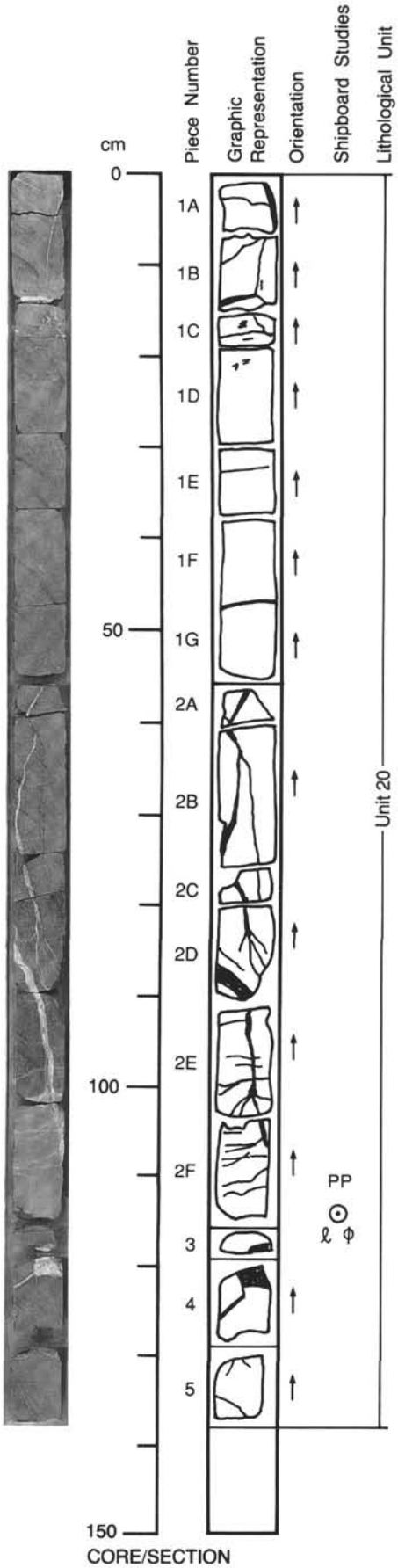
Pieces 2 - 4

CONTACTS: Top margin is devitrified glass grading to a spherulitic zone; in direct contact with a carbonate veinlet (including Piece 2); bottom contact not observed.
PHENOCRYSTS: None observed (<1% total).
GROUNDMASS: Devitrified glassy rim grades to a spherulitic zone, and then to a variolitic zone, and finally to a hypocrystalline bottom; cryptocrystalline overall.
VESICLES: None observed.
COLOR: Greenish gray (5G 6/1) with grayish tinge (N6) on the top margin.
STRUCTURE: Top of a sheet flow or a thin lava flow.
ALTERATION: High; few microlites present altered to carbonate; trace of carbonate also present along grain boundaries; mesostasis altered to green clays; greenish throughout.
VEINS/FRACTURES: 25%; 0.2 - 13 mm; orthogonal, generally; infilled with red and white carbonate and white clays +/- pyrite; the top of the Unit is a piece of red and white carbonate materials containing green clays which most probably are altered interpillow/inter-lava flow sediments.

UNIT 20: APHYRIC BASALT WITH SPARSELY PLAGIOCLASE PHYRIC PATCHES

Pieces 5 - 10

CONTACTS: Top has double, devitrified glass rims, one on top of the other; second rim at the bottom is subrounded and inclined at 65 degrees; bottom contact not observed.
PHENOCRYSTS:
Plagioclase - 1%; 0.8 on average; Subhedral and stubby; widely dispersed.
GROUNDMASS: Devitrified glassy rims grading to spherulitic zone, then to a variolitic zone, and finally to a hypocrystalline interior; cryptocrystalline groundmass in general; very patchy groundmass texture with abundant variolites near top and bottom.
VESICLES: Some miarolitic cavities present in the carbonate veinlet in Piece 9; lined with calcite crystal terminations.
COLOR: Light greenish gray (5G 6/1) top with grayish tinge (N6) at the rim, grading to fine speckled gray (N5) towards the bottom.
STRUCTURE: Perhaps top of a pillow or a thin flow capped by another thin flow.
ALTERATION: High; most phenocrysts are altered to green clays and carbonate; greenish throughout suggesting groundmass and devitrified glassy rims had been altered to green clays.
VEINS/FRACTURES: 5%; 0.2 - 10 mm.; irregular; infilled with carbonarte and green clays; branching and cross-cutting; pieces 9 and 10 have very irregular, botryoidal carbonate veinlets with miaroles.
ADDITIONAL COMMENTS: Perhaps a pillow overran by another, thin, pillow or sheet flow.



129-801C-6R-4

UNIT 20: MODERATELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

Pieces 1A - 5

CONTACTS: None observed, although grain size decreases downwards and spherulitic texture developed in Piece 2F (at color change) and continued to base.

PHENOCRYSTS: Irregular distribution down section and in size developed - concentrated in 2A - 2E (large size) and lesser extent in 4 and 5 (small microphenocrysts).
Plagioclase - 1%; 0.5 - 1.0; Subhedral; sometimes corroded margins.
Olivine - 5%; 0.5 - 1.0; Subhedral; totally replaced by dark green smectite and laminated white clay.

GROUNDMASS: Fine-grained, hypocrystalline with spherulitic base.

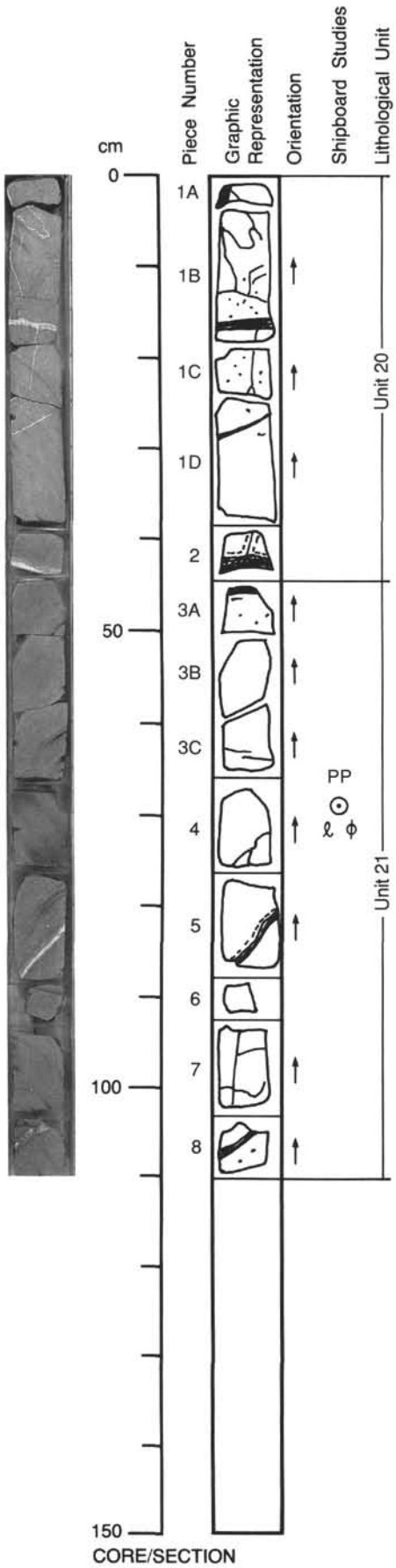
VESICLES: None observed.

COLOR: Dominantly medium gray (N5) grading to pale green (5GY 7/1) in Pieces 2F, 3 and 4 (top).

STRUCTURE: Interior to basal portion of a flow.

ALTERATION: Moderate, but variable; olivine phenocrysts replaced by greenand white smectite clays, except in Pieces 4 and 5 where totally pseudomorphed by bright blue clay (celadonite?) and carbonate. Alteration of mesostasis to green clays in Pieces 2F and 3 produces paler color here. Some pyrite in lower section.

VEINS/FRACTURES: 5%; 0.2 - 6.0 mm; mostly subhorizontal; subhorizontal veinlets cut subvertical vein that traverses Pieces 2A to 2F. Alteration associated with carbonate concentration and vein in Piece 4 includes hematite replacing microlites and microphenocrysts marginal to veins.



129-801C-6R-5

UNIT 20: SPARSELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

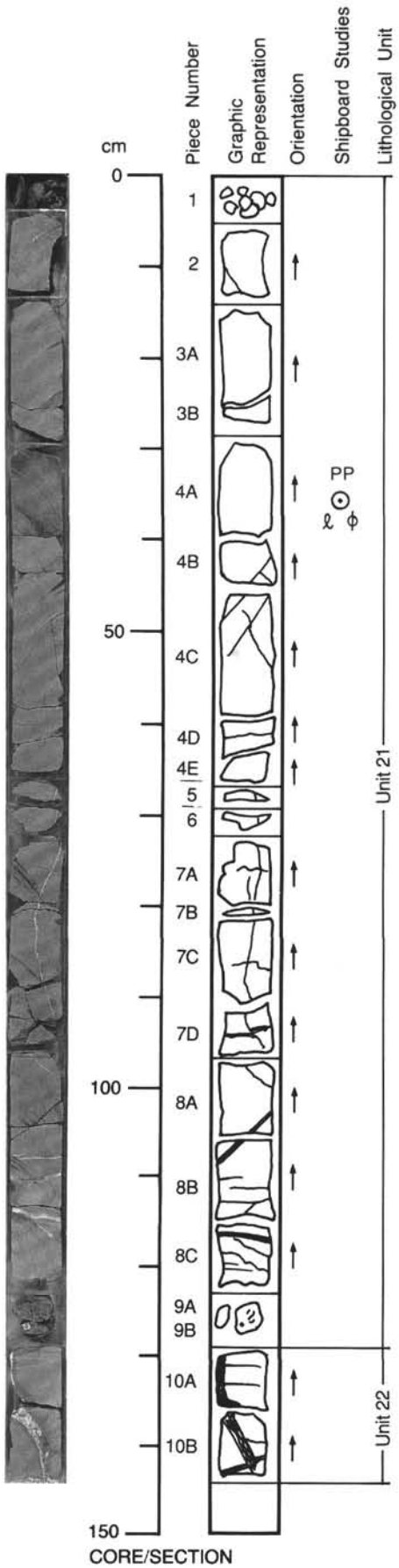
Pieces 1A-2

CONTACTS: None observed, except Piece 2 has spherulitic texture and microlites; much finer grained than pieces above and represents basal part of Unit.
PHENOCRYSTS: Both types concentrated in basal portion (Piece 2).
Plagioclase - c.1%; 0.1-0.2; Subhedral to anhedral.
Olivine - c.1%; <0.1; replaced by green clays.
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout, with spherulitic zone and elongate microlites in Piece 2. Matrix and microphenocrysts affected by adjacent carbonate veins and altered to green clays.
VESICLES: 2%; 0.5-1.0 mm; circular; random; infilled with carbonate or green smectite with walls decorated with pyrite granules. Some vesicle centers all pyrite possibly replacing carbonate.
COLOR: Medium gray (N5).
STRUCTURE: Basal portion of thin flow.
ALTERATION: Moderate. Mesostasis and phenocrysts replaced by carbonate and green smectite, rarely pyrite. Carbonate and smectite infill vesicles. Green smectite alteration adjacent to carbonate vein in Piece 2.
VEINS/FRACTURES: 8%; 0.5-0.7 mm; random; most veins highly irregular, except for two major horizontal veins (Pieces 1B & 2) that cut all others. Carbonate infilling +/- minor green smectite.
ADDITIONAL COMMENTS: Continuation of Unit 20.

UNIT 21: APHYRIC BASALT

Pieces 3A-8

CONTACTS: None observed, except top of Piece 3A is spherulitic with plagioclase microlites and grain-size increases downwards.
PHENOCRYSTS: Generally aphyric, but very minor plagioclase microphenocrysts and plagioclase-olivine glomerocrystic groups in contact zone (Piece 3A).
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout with elongate plagioclase microlites. Spherulitic contact zone.
VESICLES: <1%; 0.5-1.0 mm; circular; random; generally carbonate infilling, some zoned with pale green smectite and core of dark green clay (smectite or celadonite).
COLOR: Medium gray (N5).
STRUCTURE: Top and central portion of thin flow.
ALTERATION: Slight. Minor mesostasis replaced by smectite. Most alteration adjacent to large veins with development of smectite-rich 2-5 mm wide halos. Vesciles infilled with carbonate and variously colored smectites. Scattered pyrite, especially near veins.
VEINS/FRACTURES: 3%; 0.2-6.0 mm; Inclined 45-55 degrees; carbonate infilling, sometimes thin bright green smectite margins. Rarer pyrite-carbonate veinlets.



129-801C-7R-1

UNIT 21: APHYRIC BASALT

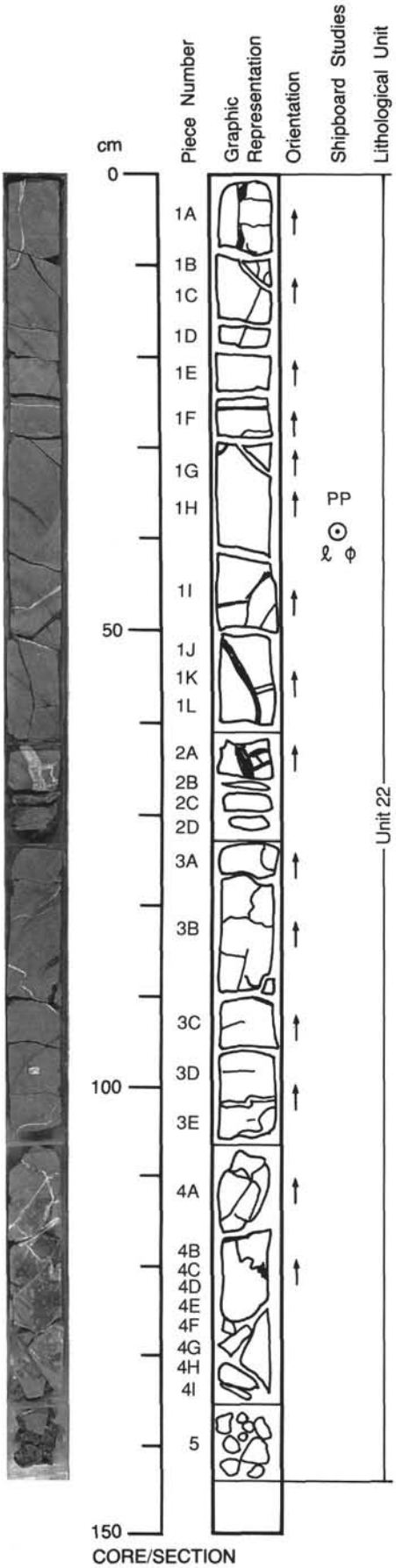
Pieces 1-9B

CONTACTS: None observed, but Piece 8C finer grained and more spherulitic relative to those above. Piece 9A contains fragmented spherulitic margins with plagioclase microlites and represents lower contact.
PHENOCRYSTS: None observed. Few plagioclase microphenocrysts in spherulitic lower contact.
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout with variolites; spherulitic in lower contact zone (Piece 8C).
VESICLES: <1%; 0.2-0.5 mm; circular; random; infilled with carbonate or zoned with narrow rim of white smectite and cente of dark green smectite.
COLOR: Medium gray (N6).
STRUCTURE: Interior and lower portion of thin flow.
ALTERATION: Slight. Mesostasis replaced by pale yellow-green clays. Spherulitic zone has pale green tinge due to smectite replacement; some associated pyrite granules here also. Fragments in 9A totally replaced by bright green smectite with orange oxidized margins.
VEINS/FRACTURES: 3%; 0.1-4.0 mm; subhorizontal; mainly veinlets, but cut by later subvertical thicker long vein traversing pieces 5 to 7D. Infilling carbonate +/- green clays. Some oxidation adjacent to vein in Pieces 8B & 8C.
ADDITIONAL COMMENTS: None.

UNIT 22: APHYRIC BASALT

Pieces 10A & 10B

CONTACTS: None observed, but Piece 10A has spherulitic texture that coarsens in adjacent Piece 10B.
PHENOCRYSTS: None observed.
GROUNDMASS: Spherulitic grading to variolitic. Cryprocrystalline and fine-grained.
VESICLES: 2%; 0.2-0.5 mm; circular; random; Carbonate infilling, green smectite infilling near veins.
COLOR: Medium gray (N5).
STRUCTURE: Top of thin flow.
ALTERATION: Slight. Greenish tinge to matrix indicates replacement by smectite. Oxidation halos (2-4 mm wide) to major vein in Pieces 10A & 10B. Vesicles infilled with carbonate and smectite.
VEINS/FRACTURES: 10%; 0.5-12.0 mm; subhorizontal; early subhorizontal carbonate-clay veinlets cut by later, wide (12 mm) Fe-stained carbonate-smectite vein infilling fracture that offsets smaller vein at base of Piece 10B.
ADDITIONAL COMMENTS: None.

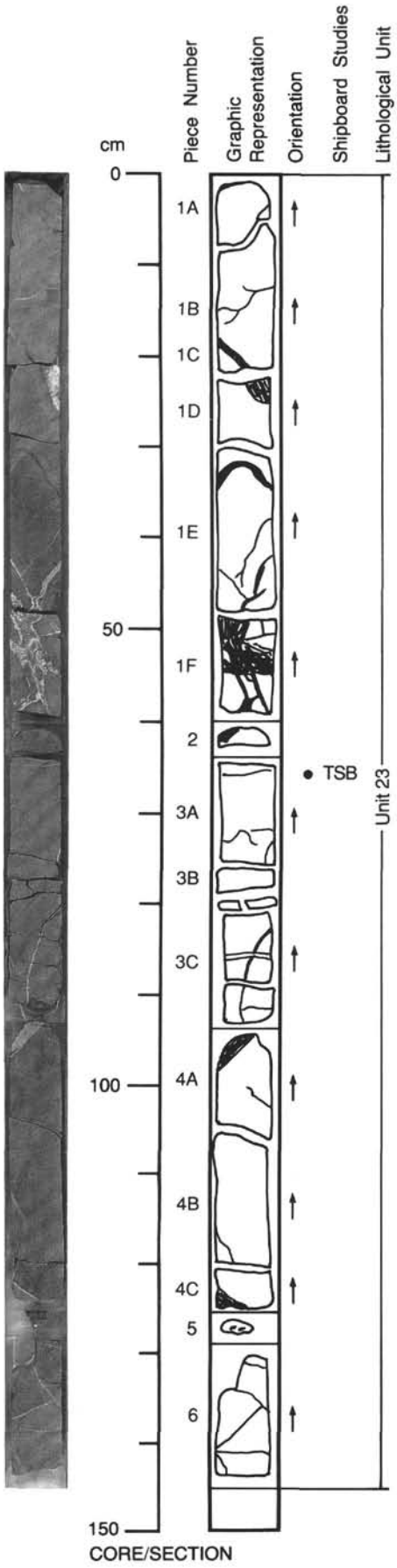


129-801C-7R-2

UNIT 22: APHYRIC BASALT

Pieces 1A-5

CONTACTS: None observed. Drilling rubble (Pieces 5) marginally finer grained than rest of Unit above in 7R-1.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout with fan variolites.
VESICLES: 2%; 0.1-0.4 mm; circular; random; infilled with either (mainly carbonate or zoned with green smectites and very occasionally a core of pyrite.
COLOR: Medium gray (N5).
STRUCTURE: Internal part of thin flow.
ALTERATION: Slight. Largely associated with vein material, then matrix adjacent replaced by smectite and/or pyrite.
VEINS/FRACTURES: 3%; 0.1-12.0 mm; random; irregular hair-like veinlets often cross-cut by large multiple carbonate-smectite +/- pyrite veins (Piece 2A); smectite may be oxidized and yellow stained.
ADDITIONAL COMMENTS: Continuation of Unit 22.

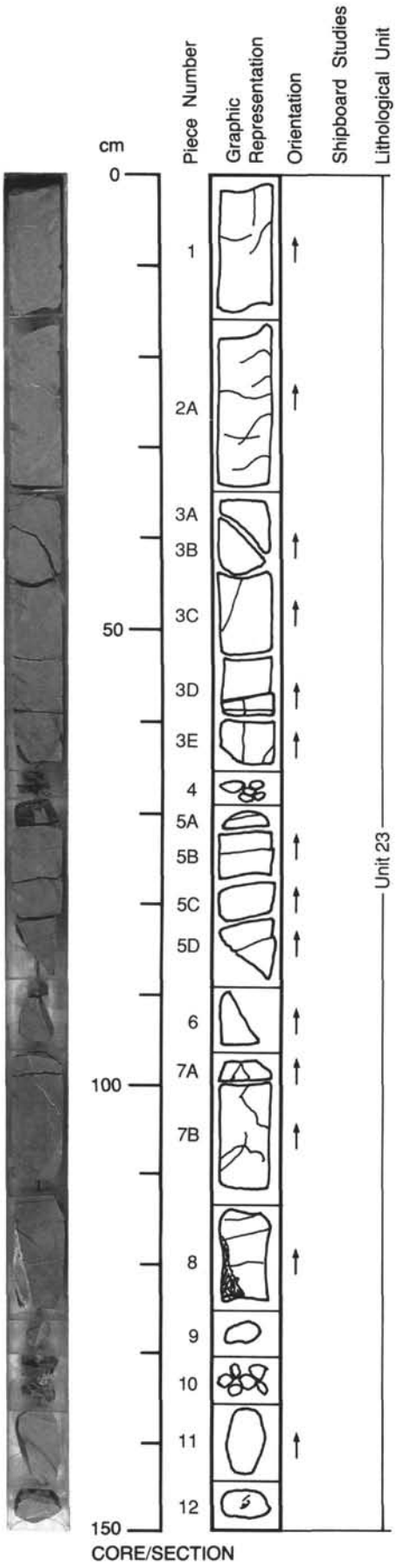


129-801C-7R-3

UNIT 23: APHYRIC BASALT

Pieces 1A-6

CONTACTS: None observed, but Piece 1A slightly finer in grain than rest of Unit below and may be near original flow top.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout with fan variolites and skeletal plagioclase needles. Slight decrease in grain-size in Piece 3C and then increases again (no contacts seen).
VESICLES: 5%; 0.2-0.5 mm; circular; random; infilled with carbonate or green smectites; some with smectite rim and centre of coarse carbonate.
COLOR: Medium gray (N6).
STRUCTURE: Central portion of thin flow.
ALTERATION: Slight. Green smectites replace minor mesostasis. Carbonate and smectites infill vesicles. Smectite development in matrix adjacent to some veins.
VEINS/FRACTURES: 8%; 0.2-17.0 mm; variable; two sets (a) generally fine carbonate veins (<1 mm width) cut by (b) wide hydrothermal breccia zone (Pieces 1E, 1F, and 5); zone fragments coated with thin green smectite and then carbonate zones, with internal space filled with fine green smectite, sometimes oxidized, and carbonate.
ADDITIONAL COMMENTS: Hydrothermal breccia zone.

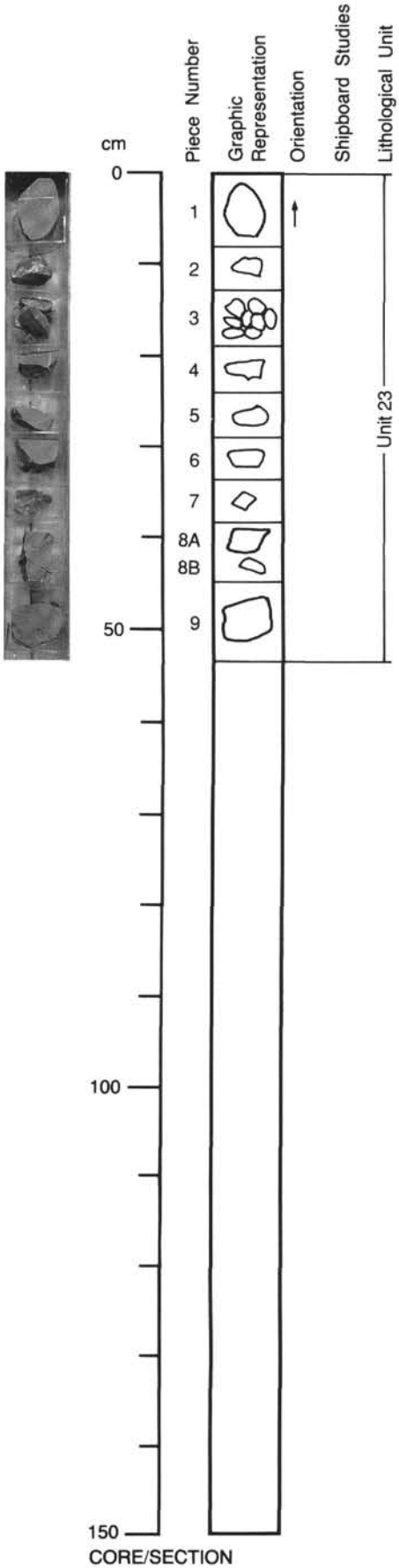


129-801C-7R-4

UNIT 23: APHYRIC BASALT

Pieces 1-12

CONTACTS: None observed. Piece 12 is marginally finer grained than rest of section and includes a few plagioclase microphenocrysts (possibly appraching Unit base?).
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout, but more granular appearance in some pieces.
VESICLES: 3%; 0.1-0.4 mm; circular; random; infilled with either carbonate or zoned smectites; rare pyrite granule-decorated vesicle walls with center of smectite or carbonate. Carbonate appears later and to replace smectite.
COLOR: Medium gray (N6).
STRUCTURE: Central portion of thin flow.
ALTERATION: Slight. Largely involving minor mesostasis, vesicles and matrix adjacent to the larger veins; smectite and carbonate replacements.
VEINS/FRACTURES: 2%; 0.1-16.0 mm; random; Often irregular, mainly small (0.1-1.0 mm) carbonate or smectite filled veinlets. Larger (16 mm wide) vein in Piece 8 composed of red & yellow oxidized green smectite and carbonate.
ADDITIONAL COMMENTS: None.

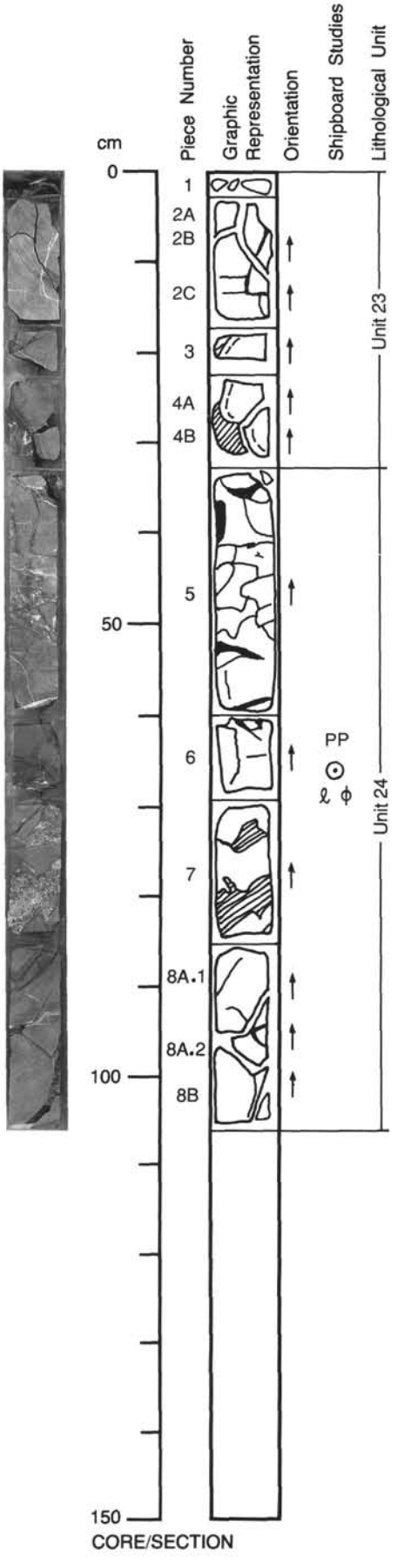


129-801C-7R-5

UNIT 23: APHYRIC BASALT

Pieces 1-9

CONTACTS: None observed. Piece 9 slightly finer grained than Piece 1 (and Section 7R-4 above.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline. Quench textured throughout, slight decrease in grain-size in Piece 9.
VESICLES: 1%; 0.2-0.4 mm; circular; spasmodic; carbonate or smectite infilling, some zoned with thin yellowish smectite rim, core of green smectite that may be replaced in the center by carbonate.
COLOR: Medium gray (N6).
STRUCTURE: Basal portion of a thin flow.
ALTERATION: Slight. Smectite and/or carbonate replacing mesostasis or infilling vesicles.
VEINS/FRACTURES: 1.0%; 0.2-1.0 mm; irregular; carbonate +/- smectite infilling.
ADDITIONAL COMMENTS: Continuation of Unit 23.



129-801C-8R-1

UNIT 23: APHYRIC BASALT

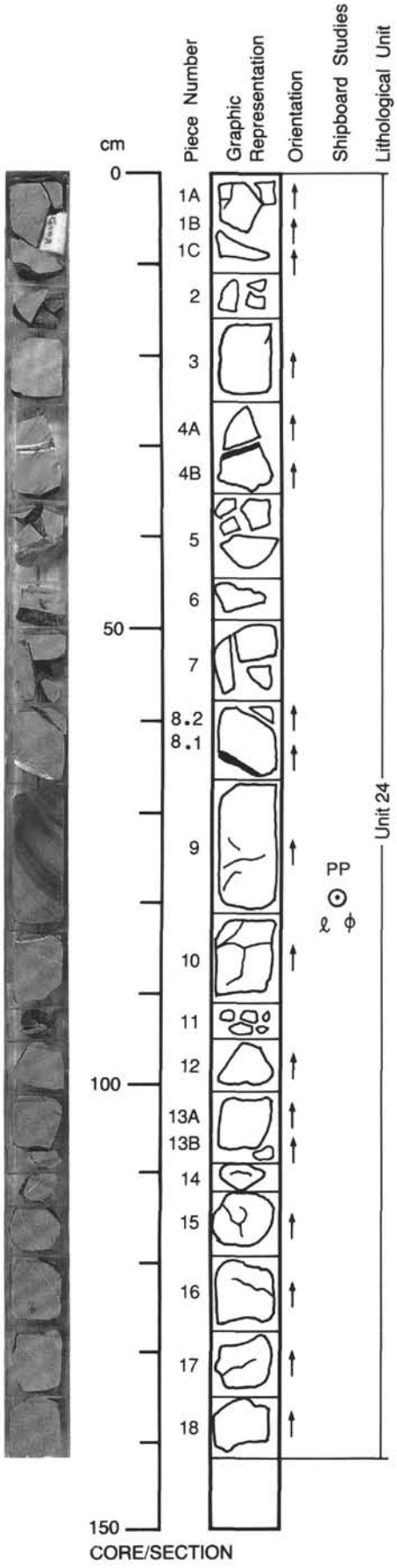
Pieces 1-4B

CONTACTS: Bottom margin is subrounded and adjacent to indurated, slightly calcareous, dark brown claystone.
PHENOCRYSTS: None observed.
GROUNDMASS: Glassy, devitrified rim grading to spherulitic zone, and finally to a hypocrystalline interior. Quench textured throughout; cryptocrystalline.
VESICLES: 1%; 0.2-0.5; subrounded; random; infilled with carbonate and smectite, sometimes zoned.
COLOR: Gray (N5-N6) with yellowish-brown tinge near the margin and grayish-green (5G 4/2) at the very rim.
STRUCTURE: Perhaps bottom part of a large pillow or thin flow.
ALTERATION: Moderate/high. Glassy rim shattered and replaced by white and green clays, spherulites and microlites turned to clays, vesicles all filled with carbonate and clays.
VEINS/FRACTURES: 5%; 0.1-2.0 mm; orthogonal; very irregular shapes and infilled with carbonate and green clays +/- pyrite.
ADDITIONAL COMMENTS: The upper Pieces (2A-2C) are texturally and compositionally similar to Unit 23 in 7R-5 and the above pieces probably represent the glassy margin to the whole Unit.

UNIT 24: APHYRIC BASALT

Pieces 5-8B

CONTACTS: None observed, but the top Pieces (5-7), which are cemented breccias, grade from glassy to variolitic from top to bottom.
PHENOCRYSTS: Few plagioclase, but <1%.
GROUNDMASS: Devitrified glassy fragments near the top, grading to spherulitic and variolitic fragments near the bottom of Piece 5. Pieces 6-8B are generally hypocrystalline. Fine-grained throughout.
VESICLES: 2%; 0.3-0.6 mm; round; random; infilled with dark green clays, or carbonate, or both.
COLOR: Greenish gray (5G 5/1) with brownish, Fe-hydroxoide stains grading to gray (N5) towards bottom Pieces (8A & 8B).
STRUCTURE: Top pieces are basically cemented breccias, but fragments of the breccia are texturally continuous and probably part of a pillow or lava flow top.
ALTERATION: Highly altered top to moderately altered bottom. Fragments in the cemented breccia on top are greenish throughout with Fe-hydroxide stained margins. Cementing the breccia are dark green clays and white carbonate; large cemented areas present in Piece 7; Pieces 8A & 8 are only moderately altered.
VEINS/FRACTURES: 45%; variable to 6 cm; irregular; infilled with green clays and carbonate. Narrow, regular veinlets are infilled with carbonate and pyrite +/- lighter green clays.
ADDITIONAL COMMENTS: Perhaps the top portion of this Unit was brecciated and then cemented in situ; consecutive fragments coarsen downwards.

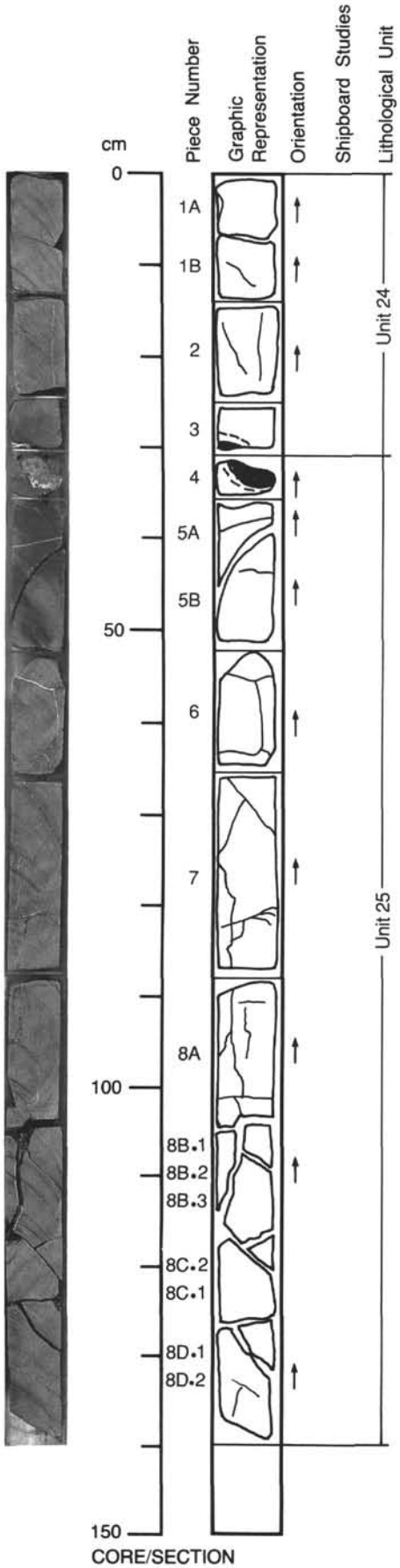


129-801C-8R-2

UNIT 24: APHYRIC BASALT

Pieces 1A-18

CONTACTS: Not observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline throughout, but slightly coarsening towards the bottom; more quench textured towards top portion.
VESICLES: 1%; 0.2-0.6 mm; rounded/subrounded; random; infilled with carbonate and clays that are sometimes interlayered together. A few vesicles near veinlets are infilled with dark green clays interlayered with fine pyrite grains.
COLOR: Gray (N5) with sparse, fine black and white dots.
STRUCTURE: Perhaps fragmented portion of pillow or thin flow.
ALTERATION: Slight/moderate. Glassy mesostasis turned into green clays; clays and carbonate vesicle infillings throughout. A few larger plagioclase microlites are altered to carbonate.
VEINS/FRACTURES: 10%; 0.1-6.0 mm; irregular; the pieces of 8R-2 are basically broken along fractures infilled with green clays or carbonate, some carbonate veinlets are lined with fine pyrite crystals.
ADDITIONAL COMMENTS: None.



129-801C-9R-1

UNIT 24: APHYRIC BASALT

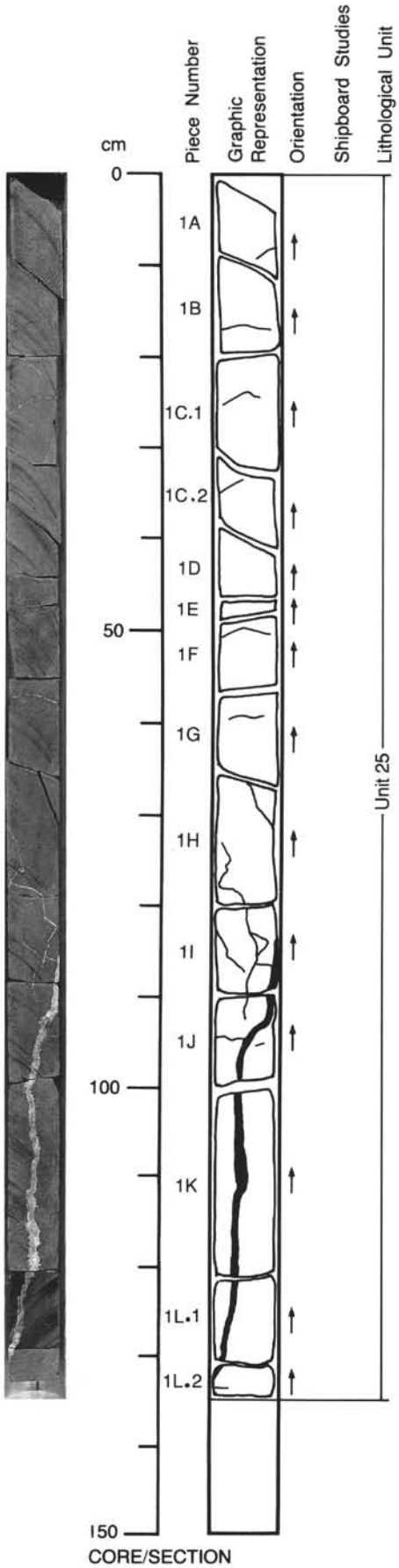
Pieces 1A-3

CONTACTS: Bottom contact with calcified reddish, interpillow sediment is a devitrified glassy rim with a few plagioclase and olivine microphenocrysts that grades upwards to a spherulitic zone.
PHENOCRYSTS: None observed, except for relatively few near bottom contact.
GROUNDMASS: Hypocrystalline, fine-grained. Devitrified glassy base coarsening upwards to a spherulitic zone. Abundant pyrite near rim zone.
VESICLES: 0.5%; 0.2-0.4 mm; Rounded/subrounded; random; infilled with translucent dark green clay, or more rarely carbonate +/- pyrite near base.
COLOR: Gray (N5).
STRUCTURE: Bottom of thin flow.
ALTERATION: Slight to moderate. Vesicles filled with clays and carbonate; original glassy mesostasis altered to greenish clays. Pyrite partly replaces crystals near base.
VEINS/FRACTURES: 2%; 0.2-1.5 mm; irregular; mostly infilled with carbonate; thicker veins (e.g. piece 2) have zones of greenish clays and a few specks of pyrite along the walls.
ADDITIONAL COMMENTS: Similar to upper part of Unit 24 in 8R-4, continuation of Unit. Pyrite replaces microlites and rim fractures at bottom margin.

UNIT 25: APHYRIC BASALT (PATCHES OF SPARSELY PLAGIOCLASE MICROPHYRIC BASALT)

Pieces 4-8D.2

CONTACTS: Top margin is in contact with green clay and red carbonate- altered interpillow material. Rim is devitrified glass tha grades downwards to a variolitic zone.
PHENOCRYSTS: Microphenocrysts very sparsely scattered throughout rest of section which is essentially aphyric.
Plagioclase -1%; 0.4 average; Subhedral small laths (one 2 mm long megacryst near glassy rim). Slight to moderate alteration to clays, carbonate and occasionally pyrite.
GROUNDMASS: Devitrified glassy rim grading to variolitic zone and then hypocrystalline interior. Generally fine-grained, but with patchy distribution of glassy mesostasis.
VESICLES: 2%; 0.15-0.60 mm; rounded/subrounded; random; infilled with carbonate, clays and occasional pyrite (zoning common). Patchy distribution, Piece 2 has >2%, other areas <1%.
COLOR: Gray (N5).
STRUCTURE: Thin flow top (drilling fractured, Piece 8).
ALTERATION: Slight to moderate. Vesicles infilled with green clays and carbonate; mesostasis and plagioclase variably replaced by green clays and carbonate. Specks of pyrite in groundmass and replacing microlites in rim zone near fractures.
VEINS/FRACTURES: 2%; 0.1-2.0 mm; irregular; mostly infilled with carbonate and some green clays. Green clays in fracture in Pieces 7& 8A. Pyrite fillings and attendant halos conspicous near top margin.
ADDITIONAL COMMENTS: Concentration of pyrite near top margin as vein infilling and replacement material.

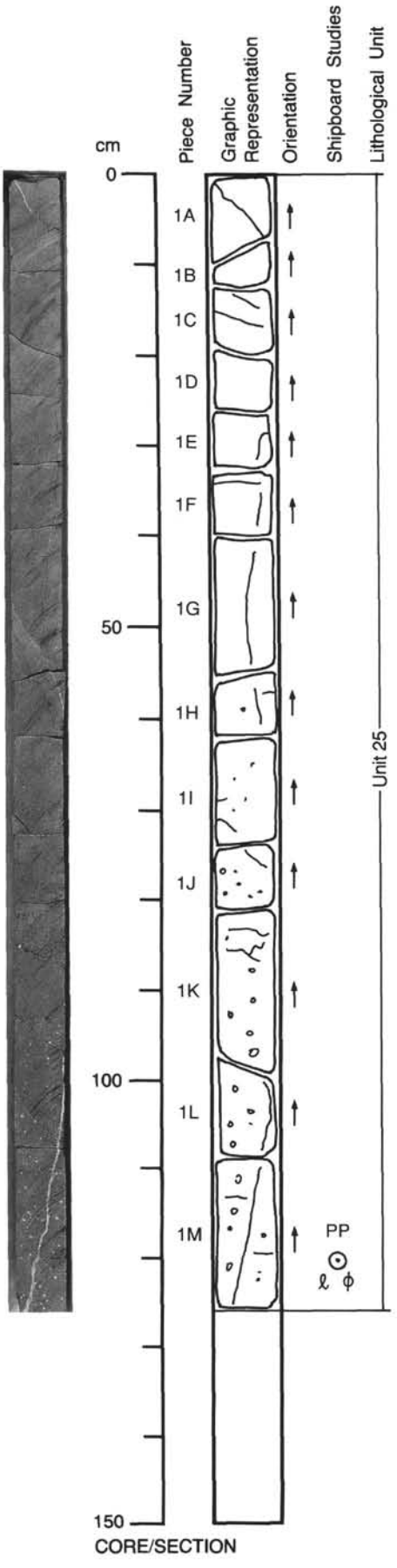


129-801C-9R-2

UNIT 25: APHYRIC BASALT (PATCHES OF SPARSELY PLAGIOCLASE-OLIVINE MICROPHYRIC BASALT)

Pieces 1A-1L.2

CONTACTS: Not observed.
PHENOCRYSTS: Highly variable and patchy distribution.
Plagioclase - 1%; 0.4; Subhedral laths. Partly altered to clays, carbonate and occasional pyrite when close to fracture.
Olivine - trace; 0.3; skeletal to subhedral. Altered to green clays.
GROUNDMASS: Hypocrystalline and fine-grained. Patchy distribution of glassy mesostasis and vesicles. Slight coarsening downwards.
VESICLES: 4-5%; 0.1-0.6 mm; subrounded; random; infilled with carbonate, pale and dark green clays, occasionally pyrite; zoning of infilling material not uncommon.
COLOR: Gray (N5).
STRUCTURE: Interior of a flow.
ALTERATION: Slight to moderate. Vesicles infilled, mesostasis, plagioclase and olivine replaced by green clays and carbonate. Replacement also by pyrite if near fracture. Occasional pyrite in groundmass.
VEINS/FRACTURES: 4%; 0.1-8.0 mm; random; irregular, branching and cross-cutting. infilled with white (or red stained) carbonate and less commonly green clay, sometimes pyrite; zoning common. Wide (c.8 mm), irregular carbonate infilled fracture in pieces 1I-1L.2 may be lined with zeolites.
ADDITIONAL COMMENTS: Patchy distribution of microphenocrysts and vesicles probably due to flow differentiation.

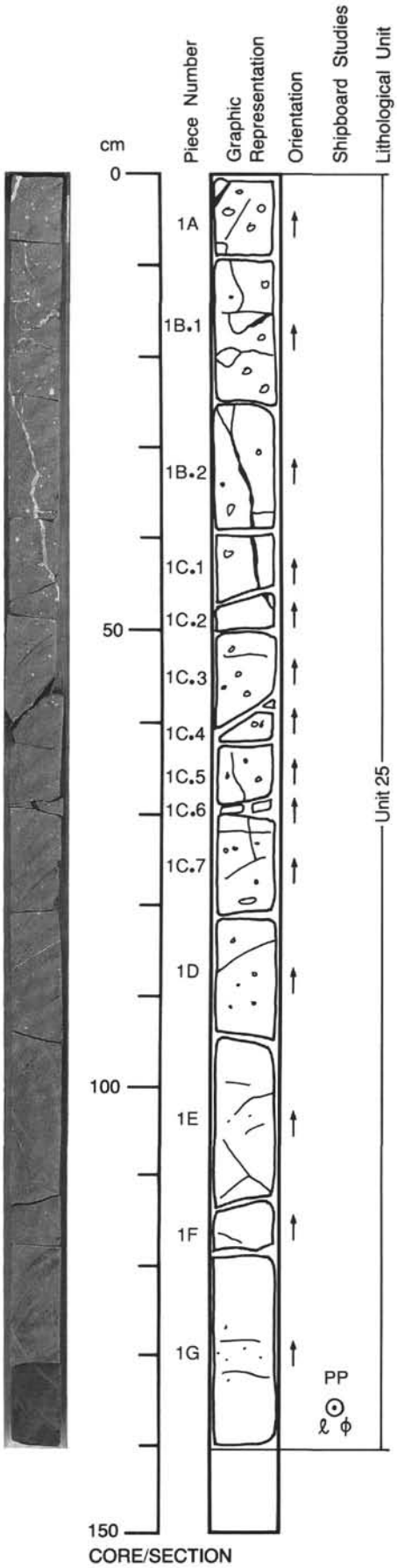


129-801C-9R-3

UNIT 25: APHYRIC BASALT (PATCHS OF SPARSELY PLAGIOCLASE MICROPHYRIC BASALT)

Pieces 1A-1M

CONTACTS: None observed.
PHENOCRYSTS: Patchy distribution.
Plagioclase - c.1%; 0.3; Subhedral laths. Altered to clays and carbonate.
GROUNDMASS: Hypocrystalline and fine-grained grading to slightly coarser, holocrystalline towards base. Patchy distribution of mesostasis, vesicles and microphenocrysts.
VESICLES: 10%; 0.2-5.0 mm; rounded/subrounded; random; infilled with carbonate, pale and dark green clays, occasionally pyrite; sometimes all three in concentric fashion. Vesicle size increases from top to bottom, with basal vesicles exclusively infilled with carbonate, often as large clear crystals in centre. Occasional pyrite specks on vesicle margins.
COLOR: Gray (N5) with dark green spots at the top and white spots at the base.
STRUCTURE: Massive, but fractured. Interior of thin flow.
ALTERATION: Slight to moderate, similar to 9R-2.
VEINS/FRACTURES: 3%; 0.1-3.0 mm; random; irregular, branching and cross-cutting. infilled with mostly carbonate, less commonly green clays which are typical infill of narrower veinlets. Rarer pyrite infill.
ADDITIONAL COMMENTS: Unusually large, carbonate infilled vesicles at base. Flow distribution of microphenocrysts.

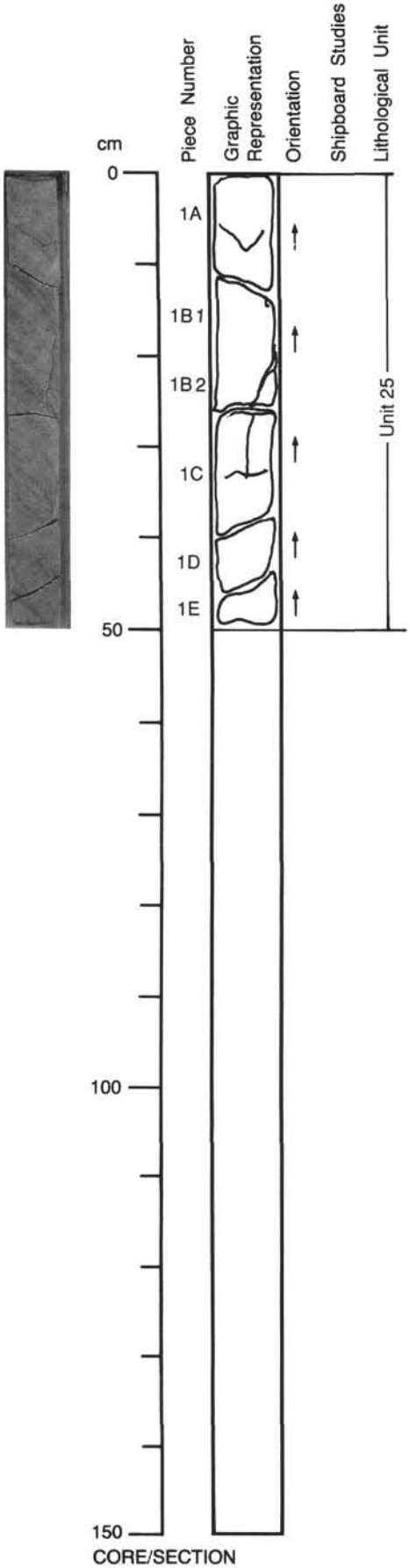


129-801C-9R-4

UNIT 25: APHYRIC BASALT (PATCHES OF SPARSELY PLAGIOCLASE MICROPHYRIC BASALT)

Pieces 1A-1G

CONTACTS: None observed.
PHENOCRYSTS: Very patchy distribution.
Plagioclase - c.1%; 0.4; Subhedral laths. Partly altered to clays and carbonate
GROUNDMASS: Holocrystalline at top grading to slightly finer grained, hypocrystalline base. Random, patchy distribution of vesicles, microphenocrysts and mesostasis.
VESICLES: 8%; 0.6-7.0 mm; rounded to subangular; random; larger ones commonly infilled with carbonate +/- green clays and specks of pyrite on walls. Smaller ones infilled with pale and dark green clays with little pyrite. Larger vesicles may exhibit clear calcite crystals in center or a small cavity.
COLOR: Generally gray (N5) with white spots at the top grading to smaller dark green spots at base.
STRUCTURE: Massive, but fractured. Interior of a flow.
ALTERATION: Slight to moderate; similar to 9R-2.
VEINS/FRACTURES: 4%; 0.1-5.0 mm; irregular; infilled with carbonate +/- green clays and pyrite, with narrower veinlets preferentially infilled with green clays. Branching and cross-cutting. Traces of zeolites along the margin of wider veins.
ADDITIONAL COMMENTS: General tendency for grain-size and vesicle abundance to decrease towards base.

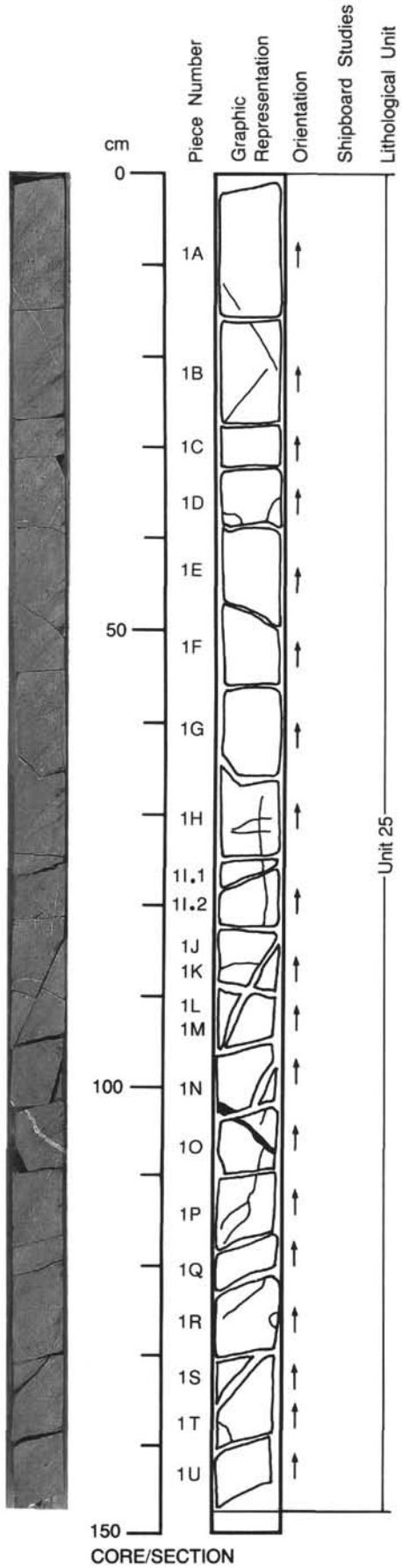


129-801C-9R-5

UNIT 25: APHYRIC BASALT (PATCHES OF SPARSELY PLAGIOCLASE MICROPHYRIC BASALT)

Pieces 1A-1E

CONTACTS: None observed, but fining towards bottom.
PHENOCRYSTS: Variable distribution.
Plagioclase - c.1%; 0.3; Subhedral laths. Partial replcement by carbonate and green clays.
GROUNDMASS: Hypocrystalline; fine-grained throughout but slight fining towards the bottom. Quench textured throughout with glassy mesostasis.
VESICLES: 1%; 0.8-1.9 mm; rounded/subrounded; random; infilled with pale and dark green clays; some pyrite lining walls. Vesicles in Pieces 1D & 1E show green clay infilling partly replaced by carbonate.
COLOR: Gray (N5) with some dark green spots.
STRUCTURE: Thin flow, but approaching base(?).
ALTERATION: Slight to moderate, similar to 9R-2.
VEINS/FRACTURES: 1%; 0.1-0.2 mm; mostly subhorizontal; infilled with carbonate, green clays and few specks of pyrite.
ADDITIONAL COMMENTS: Continuation of Unit 25 and still slightly fining downwards. Carbonate in vesicles replaces earlier green clays.

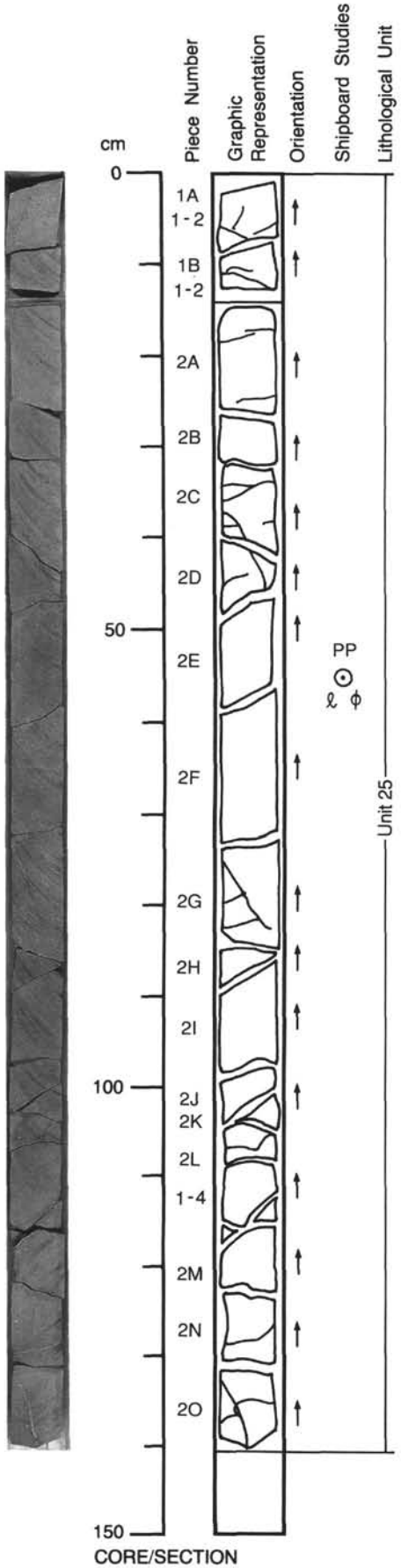


129-801C-10R-1

UNIT 25: APHYRIC BASALT (PATCHES OF SPARSELY PLAGIOCLASE MICROPHYRIC BASALT)

Pieces 1A - 1U

CONTACTS: Not observed.
PHENOCRYSTS: Patchy distribution of microphenocrysts that have better morphologies than often quench textured matrix plagioclase.
Plagioclase - c.1%; 0.3; Subhedral laths. Slight alteration to greenish clays; some have specks of pyrite.
GROUNDMASS: *Fine-grained and hypocrystalline throughout.*
VESICLES: Trace; 0.5-1.0 mm; rounded/subrounded; random; mostly infilled with green clays and some carbonate; some zonation of clay and carbonate. Occasional pyrite infills.
COLOR: Grays (N5 & N6).
STRUCTURE: Interior of thick flow.
ALTERATION: Slight. Vesicles in filled with clays and carbonate; similar products replace microphenocrysts and mesostasis. Occasional specks of pyrite.
VEINS/FRACTURES: 3%; 0.1-5.0 mm; random; very irregular and infilled with mostly carbonate and, less commonly, green clays. Occasional specks of pyrite present in some veinlets. Radiate zeolite fibers present on margin of largest vein (Piece 1O).
ADDITIONAL COMMENTS: Texturally and compositionally the continuation of Unit 25.

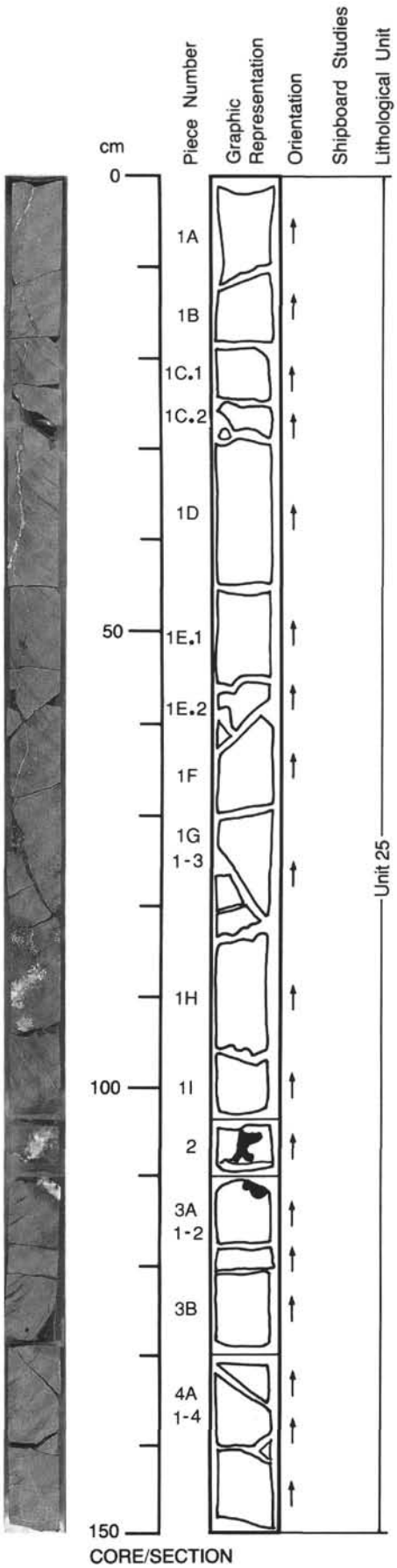


129-801C-10R-2

UNIT 25: APHYRIC BASALT

Pieces (1A-2O)

CONTACTS: None observed.
PHENOCRYSTS: Very occasional olivine microphenocrysts and a lesser proportion of plagioclase (all <1%) randomly scattered throughout.
GROUNDMASS: Fine-grained, hypocrystalline. Often elongated quenched crystals; more intergranular texture elsewhere. Random mesostasis distribution.
VESICLES: <1%; 0.5-1.5 mm; circular; random; green smectite infilling.
COLOR: Gray (N5) with few dark green spots (Pieces 1A and 2C).
STRUCTURE: Massive, but fractured. Central portion of thick flow.
ALTERATION: Slight. Relatively uniform throughout. Largely pale and dark green smectite replacing original glassy mesostasis and infilling the few vesicles.
VEINS/FRACTURES: c.1%; 0.1-1.0 mm; random; no preferred orientation, irregular veinlets cross-cutting, infilled with either carbonate or green smectite.
ADDITIONAL COMMENTS: Continuation of Unit 25; decrease in proportion of vesicles relative to same unit in core 9R.

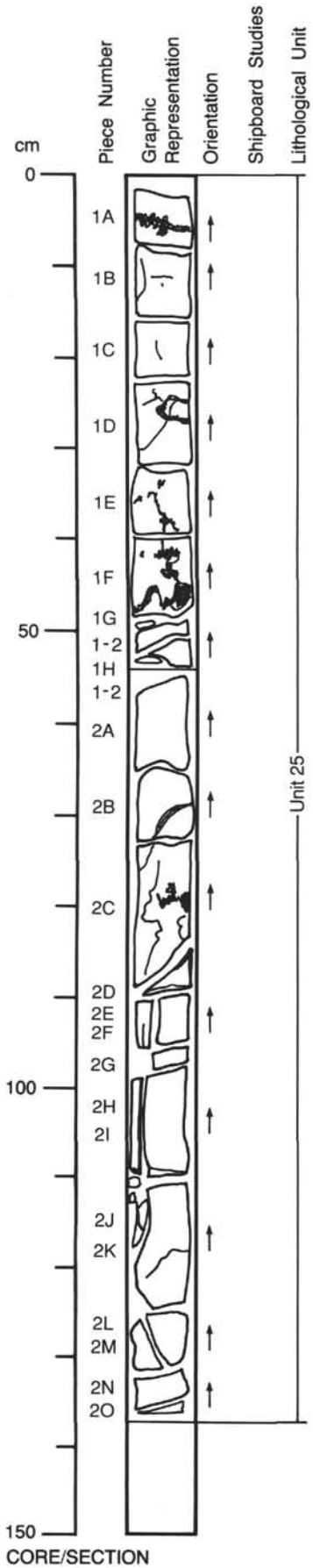


129-801C-10R-3

UNIT 25: APHYRIC BASALT

Pieces 1A-4A.4

CONTACTS: None seen.
PHENOCRYSTS: Few olivine (and possibly pyroxene) microphenocrysts scattered throughout section, but overall <1%.
GROUNDMASS: Fine-grained, with gradation downwards from holocrystalline, intergranular texture to well-defined quench texture with occasional mesostasis (now replaced).
VESICLES: None observed.
COLOR: Medium gray (N6).
STRUCTURE: Massive, but fractured. Interior of thick flow.
ALTERATION: Slight. Dark green smectite replaces olivine microphenocrysts and mesostasis.
VEINS/FRACTURES: 5%; 0.2-4.0 mm; mainly subvertical; infilled with mainly carbonate (larger veinlets) and dark green smectite (very fine veinlets). Also irregular carbonate-smectite replacement patches in matrix (e.g. Piece 2) with smectite halos (10 mm wide); three generations of carbonate replacement leaving smectite relicts, minor pyrite associated.
ADDITIONAL COMMENTS: Continuation of Unit 25.

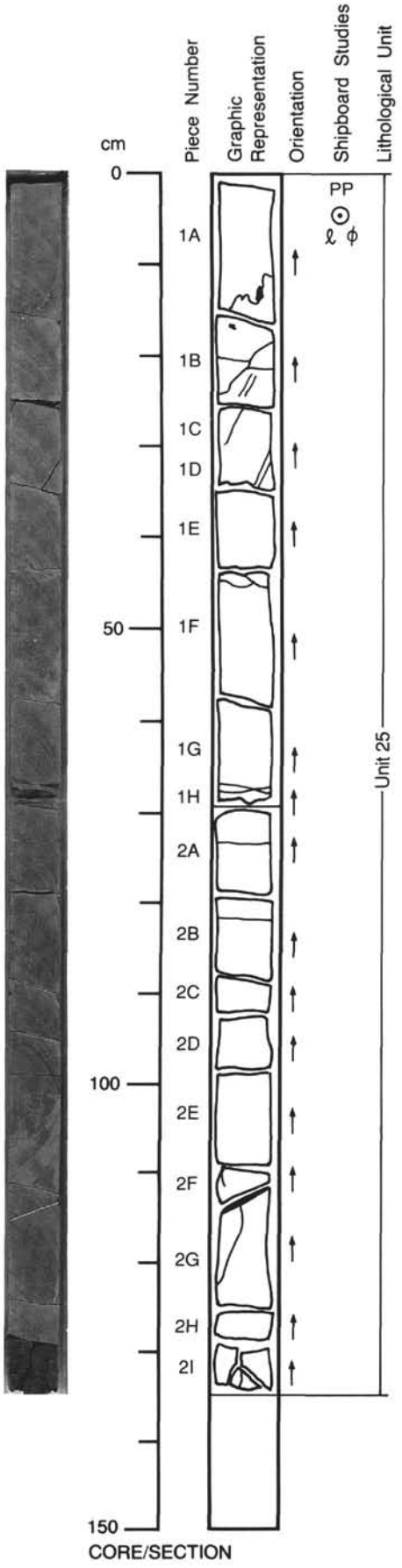


129-801C-10R-4

UNIT 25: APHYRIC BASALT

Pieces 1A-2O

CONTACTS: None observed.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline; often intergranular texture, but still with some quenched crystals. Relative uniform throughout with little grain-size variation down section.
VESICLES: <0.5%; 0.5-1.0 mm; circular; random; carbonate infilling.
COLOR: Medium gray (N6) and finely speckled.
STRUCTURE: Massive, but fractured. Interior of thick flow.
ALTERATION: Slight. Green smectite replaces mesostasis; carbonate infills vesicles and veins; carbonate and smectite irregularly replace matrix adjacent to very irregular veins.
VEINS/FRACTURES: 8%; 0.2-3.0 mm; random; either green smectite or carbonate infillings. Larger very irregular, ramifying veins that also replace adjacent matrix - mainly carbonate with green smectite and pyrite (good crystal form).
ADDITIONAL COMMENTS: Continuation of Unit 25. Few occasional olivine microphenocrysts.

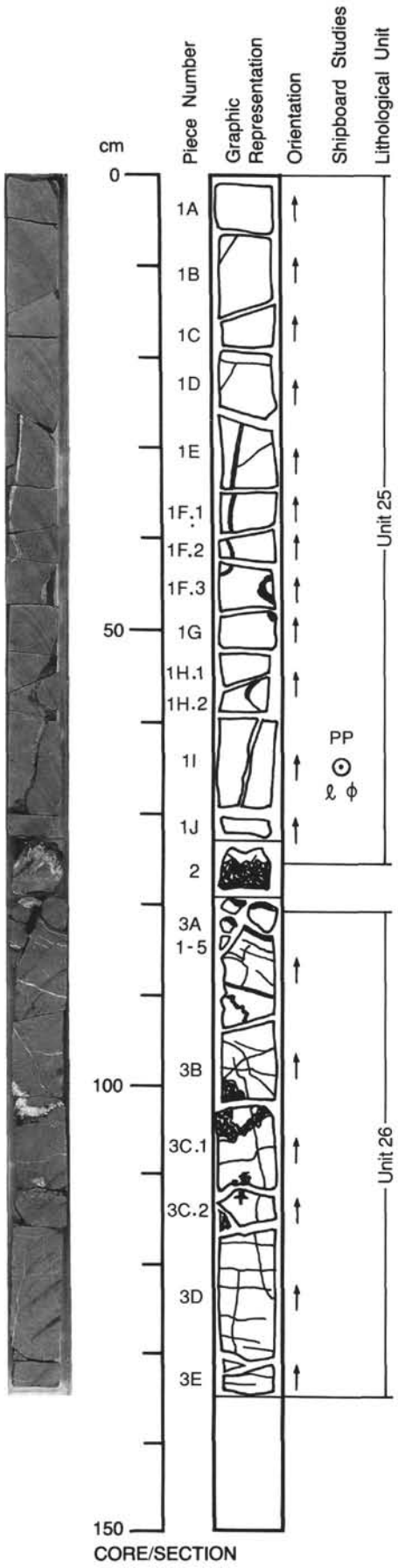


129-801C-10R-5

UNIT 25: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 1A-2I

CONTACTS: None observed.
PHENOCRYSTS: Some of the smaller olivines may not be true microphenocrysts, but part of matrix.
Olivine - 1-2%; 0.1-0.2; Subhedral, replaced by green smectite.
GROUNDMASS: Fine-grained, largely holocrystalline, with very minor mesostasis. Intergranular with some long skeletal crystals.
VESICLES: <1%; 0.2 mm; circular; random; green smectite infilling.
COLOR: Medium gray (N5).
STRUCTURE: Massive, but fractured. Interior of thick flow.
ALTERATION: Slight few % only. Green smectite infilling vesicles, replacing olivine and mesostasis.
VEINS/FRACTURES: <1%; 0.2-0.8 mm; generally subhorizontal; carbonate and green smectite infillings.
ADDITIONAL COMMENTS: Continuation if Unit 25.



129-801C-10R-6

UNIT 25: SPARSELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

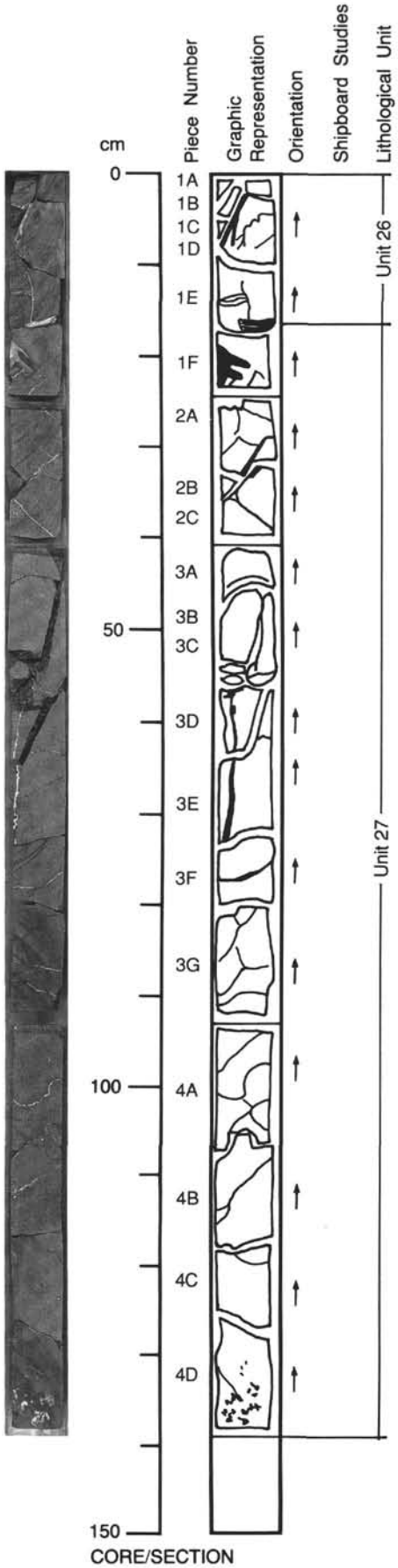
Pieces 1A-2 (top part)

CONTACTS: Base observed with interflow sediment in Piece 2. Also decrease downwards of grain-size and textural change from intergranular to fine quenched textured and spherultic margin at contact.
PHENOCRYSTS: Concentrated in upper part (generally absent in Pieces 1I & 1J) and basal contact zone.
Plagioclase - 1%; 0.3-0.5; two generations, larger crystals and small laths within margin spherulitic zone.
Olivine - 1%; 0.2; Subhedral. Replaced by green smectite.
GROUNDMASS: Fine-grained, holocrystalline in upper part, replaced by quenched textured matrix and spherulitic zone at contact.
VESICLES: <0.5%; 0.1-0.2 mm; circular; random; infilled with carbonate and green smectite.
COLOR: Medium/darkish gray (N5).
STRUCTURE: Fractured. Basal portion of thick flow.
ALTERATION: Slight (few % only). Olivine microphenocrysts replaced by green smectite. Vesicles and veins infilled with carbonate and/or clay.
VEINS/FRACTURES: 1%; 0.1-0.4 mm; random; finer veinlets infilled with dark green smectite, larger subvertical vein show coarse carbonate replacing dark green smectite. Intermittant pyrite veinlets, especially in contact zone.
ADDITIONAL COMMENTS: Base of thick flow Unit 25 adjacent to calcareous (replacement?) red claystone which represents interflow material.

UNIT 26: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 3A.1-3E

CONTACTS: Top margin indicated by interflow sediment adjacent to spherulitic zone that coarsens downwards with good quench texture developed.
PHENOCRYSTS: Glomerophyric groups of olivine in top margin zone.
Plagioclase - 1%; 0.1-0.2; Subhedral. Largely concentrated in top margin zone with few lower down Unit.
Olivine - 3%; 0.1; euhedral/subhedral. Partial replacement by green smectite and red "iddingsite" or hematite veinlets.
GROUNDMASS: Microcrystalline, fine-grained. Spherulitic in top margin zone, quenched crystals throughout.
VESICLES: None observed.
COLOR: Medium gray (N5/N6).
STRUCTURE: Top of thin flow.
ALTERATION: Slight. Largely green smectite replacing microphenocrysts with minor red "iddingsite" or hematite. Minor pyrite granules.
VEINS/FRACTURES: 10%; 0.2-2.0 mm; random, mainly subvertical or subhorizontal; infilling either carbonate or smectite with carbonate in centre. Patchy replacement of matrix adjacent to veins in Piece 3C.1 with smectite margins and dominant carbonate cores.



129-801C-11R-1

UNIT 26: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

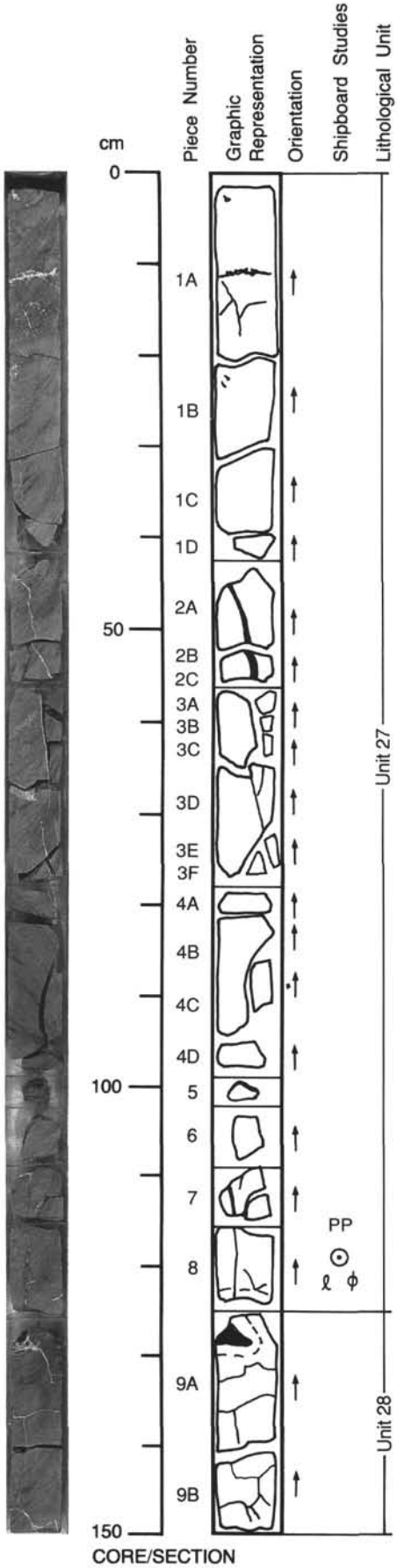
Pieces 1A - 1E

CONTACTS: Small 4 mm wide carbonated interflow material (?) at base of Piece 1E with an adjacent oxidized spherulitic zone that coarsens upwards.
PHENOCRYSTS:
Plagioclase - 2%; 0.7-1.2; Subhedral laths.
Olivine - 2%; 0.4; Euhedral/subhedral; minor smectite replacement.
GROUNDMASS: Fine-grained/microcrystalline with spherulites at contact. Grain-size coarsens upwards.
VESICLES: 3%; 0.2-0.4 mm; circular; random; infilled with carbonate, dark green smectite or late red hematite in oxidized zones of basal margin.
COLOR: Dark gray (N4).
STRUCTURE: Basal section of thin flow.
ALTERATION: Slight. Thin (2-4 mm) oxidation halos to veins in basal zone with development of hematite in matrix and vesicles. Scattered pyrite and yellow oxidized green smectite in veinlets.
VEINS/FRACTURES: 5%; 0.2-3.0 mm; random; irregular and branching with carbonate, smectite +/- pyrite infilling. Oxidized halos adjacent to veins in basal zone.

UNIT 27: SPARSELY PLAGIOCLASE MICROPHYRIC BASALT

Pieces 1F - 4D

CONTACTS: Not observed but top margin is cryptocrystalline and contains a xenolith of calcified interpillow sediments (?) rimmed with devitrified glass; coarsens slightly towards the bottom.
PHENOCRYSTS: A few olivine (+ pyroxene ?) microphenocrysts are present but the amount is <<1%; altered to dark green clays.
Plagioclase - ~1%; 0.3 - 1.5; Subhedral stubby to slender laths; a few are fairly fresh but others are moderately altered.
GROUNDMASS: Cryptocrystalline top grading to hypocrystalline bottom; a devitrified glassy rim around a reddish xenolith (?) near the top.
VESICLES: 5%; 0.2 - 0.8 mm; subrounded - rounded; random; infilled with carbonate and clays, or both, +/- pyrite; A few are completely infilled with pyrite, particularly those near the top or near veinlets; large, very irregular cavities in piece 4D are infilled with carbonate +/- green clays and occasionally rimmed with pyrite.
COLOR: Dark gray (N4) grading to gray (N5) towards the bottom; with fine, black or white dots.
STRUCTURE: Perhaps top of a thin flow.
ALTERATION: Slight to moderate; vesicles are infilled with secondary minerals; lots of pyrite near the top and along veinlets; mesostasis and olivine are altered to green clays.
VEINS/FRACTURES: 5%; 0.5 - 2.0 mm; very irregular; infilled with carbonate but rimmed with green clays +/- a few specks of pyrite; generally have well-defined and more altered than groundmass halos containing disseminated fine pyrite; branching and cross-cutting.



129-801C-11R-2

UNIT 27: SPARSELY PLAGIOCLASE-OLIVINE MICROPHYRIC BASALT

Pieces 1A - 8

CONTACTS: Not observed but the bottom margin has a portion of a devitrified glassy rim that coarsens towards the top.

PHENOCRYSTS:
Plagioclase - 1%; 0.4 - 1.2; Subhedral stubby and slender laths; slight to moderately altered; a couple of megaphyric ones (up to 1.2 cm) in piece 4B.
Olivine - trace; 0.2 - 1.0 mm; Subhedral plates and a few hopper shaped ones; altered to green clays veined with whitish clays; a couple of megacrysts (up to 3 mm) are attached to plagioclase megacrysts.

GROUNDMASS: Hypocrystalline with a devitrified, glass rims at the bottom; cryptocrystalline throughout.

VESICLES: ~2%; 0.3 - 0.6; subrounded - rounded; random; infilled with green clays, carbonate, and occasionally, pyrite.

COLOR: Dark gray (N4) with black (and a few white) fine spots.

STRUCTURE: Perhaps the bottom of a thin flow.

ALTERATION: Slight-moderate; vesicles are infilled with secondary minerals; mesostasis and microphenocrysts slight to moderately altered; a few specks of pyrite present in the groundmass.

VEINS/FRACTURES: 3%; 0.2 - 3.0 mm; very irregular; infilled with carbonate and lined by dark green clays and pyrite.

UNIT 28: APHYRIC BASALT

Pieces 9A and 9B

CONTACTS: Not observed but a piece of reddish, calcified, interpillow sediments included near the top margin is enclosed by a devitrified glass rim; top margin cryptocrystalline overall that coarsens slightly towards the bottom.

PHENOCRYSTS: Generally <1%; consisting of dark green clay-altered olivine (+ pyroxene ?) and slightly altered plagioclase.

GROUNDMASS: Devitrified glass along the contact with the included sediment grading to slightly variolitic zone, and then to a hypocrystalline bottom.

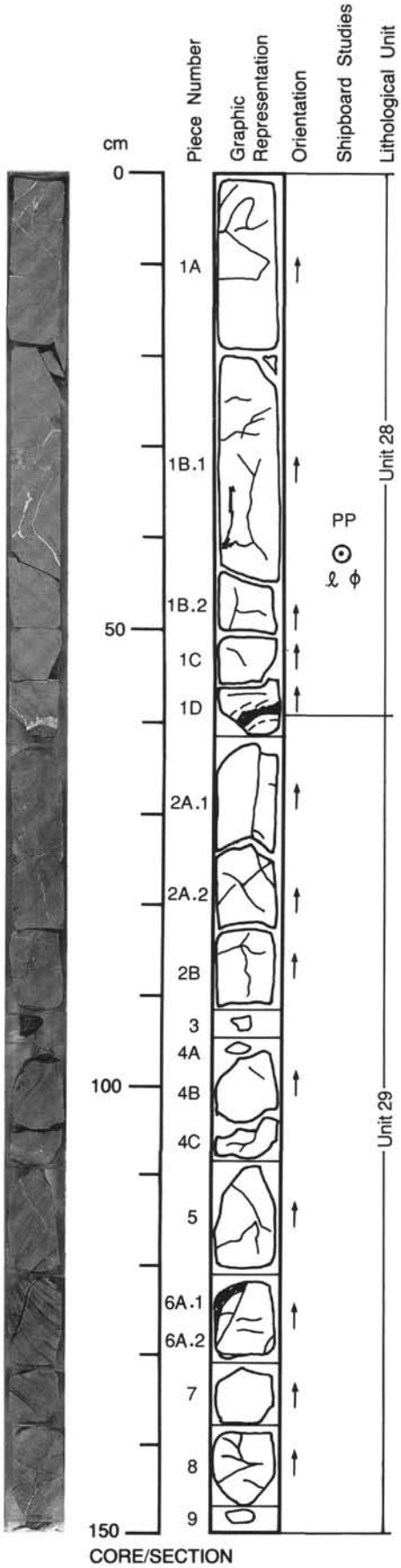
VESICLES: 1%; 0.3 - 0.5 mm; subrounded - rounded; random; infilled with dark green clays, pyrite, and less commonly, carbonate; these infillings sometimes occur together.

COLOR: Dark gray (N4).

STRUCTURE: Perhaps the top portion of a thin lava flow.

ALTERATION: Slight - moderate; vesicles are infilled with secondary minerals; mesostasis and the few microphenocrysts are altered, generally to green clays.

VEINS/FRACTURES: 6%; 0.2 - 3.0 mm; irregular but some are orthogonal; infilled with carbonate and green clays +/- pyrite; branching and cross-cutting.



129-801C-11R-3

UNIT 28: APHYRIC BASALT

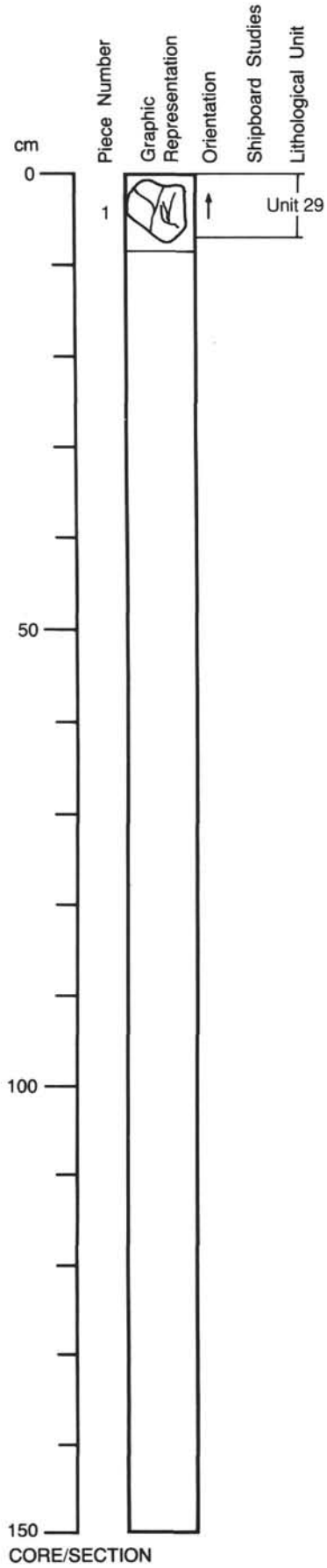
Pieces 1A - top portion of 1D

CONTACTS: Not observed although there is a general coarsening towards the middle; bottom contact is with a carbonate veinlet lined with green clays and pyrite.
PHENOCRYSTS: Generally aphyric but occasional olivine and plagioclase microphenocrysts (<1% total) are present.
GROUNDMASS: Hypocrystalline; cryptocrystalline but middle Piece (1.1B) is slightly coarser than other pieces.
VESICLES: ~1%; 0.3 - 0.6 mm; subrounded - rounded; random; infilled with green clays and carbonate, or both, and occasional pyrite.
COLOR: Dark gray (N4).
STRUCTURE: Perhaps the interior and bottom portions of a thin flow.
ALTERATION: Slight - moderate; vesicles are infilled with secondary minerals; the few olivine microphenocryts and mesostasis are altered to clays; a few specks of pyrite throughout the Unit.
VEINS/FRACTURES: 5%; 0.2 - 10 mm; very irregular; infilled with green clays and carbonate +/- clumps of pyrite; some have well-defined and more altered than groundmass halos containing fine particles of pyrite.

UNIT 29: APHYRIC BASALT

Pieces bottom of 1D - 9

CONTACTS: Not actually observed because the top glassy rim is in contact with a secondary carbonate veinlet; the devitrified glass rim grades downwards to a cryptocrystalline zone with plenty of variolites; subrounded top rim.
PHENOCRYSTS: Generally none but occasional microphenocrysts of olivine (+ pyroxene ?) and slightly altered plagioclase (<1% total) are present at random.
GROUNDMASS: Devitrified glass rim coarsening downwards to a hypocrystalline interior but fines again, to a variolitic, almost spherulitic bottom; groundmass texture is complicated by the presence of veinlet halos containing more clays than groundmass and disseminated fine pyrite.
VESICLES: ~1%; 0.3 - 0.4 mm; subrounded - rounded; random; infilled with green clays or carbonate, or both; a few are completely filled with pyrite.
COLOR: Dark gray (N4).
STRUCTURE: Perhaps a pillow with, a subrounded, originally glassy top rim.
ALTERATION: Slight - moderate; vesicles are infilled with secondary minerals; veinlets have altered halos with clays and pyrite; the few microphenocrysts, olivine in the groundmass, and mesostasis are altered to clays.
VEINS/FRACTURES: 7%; 0.2 - 1.5 mm; irregular; infilled with green clays and carbonate +/- pyrite; branching and cross-cutting; have well-developed halos containing more clays than groundmass and disseminated fine particles of pyrite.

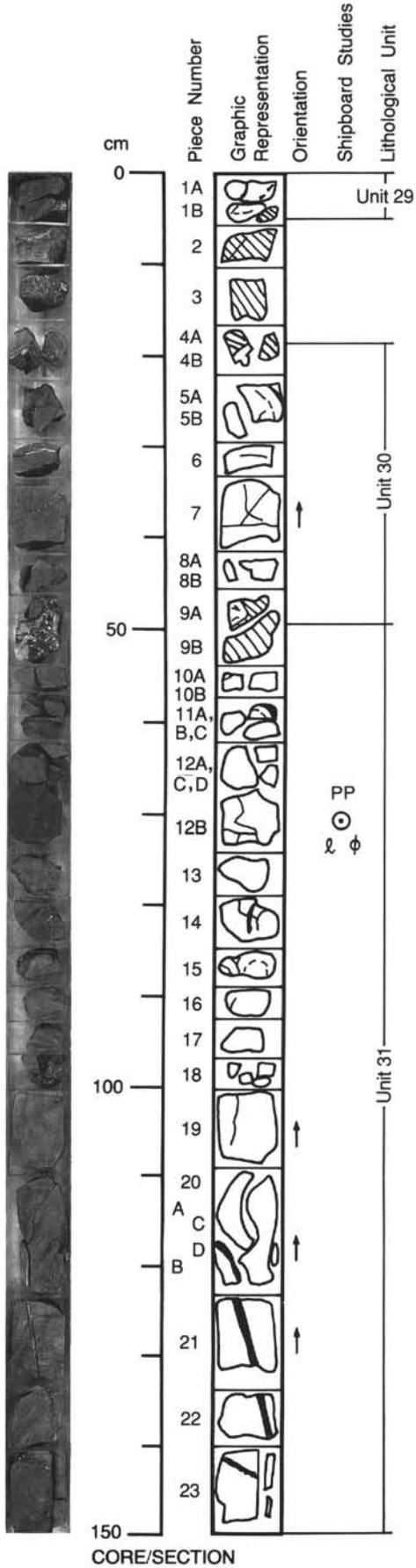


129-801C-11R-4

UNIT 29: APHYRIC BASALT

Piece 1

CONTACTS: None observed.
PHENOCRYSTS: Generally none; a few completely altered olivine and slightly altered plagioclase (<1% total) are randomly distributed.
GROUNDMASS: Variolitic to hypocrystalline fine-grained. Texture complicated by the presence of veinlets with conspicous halos.
VESICLES: ~1%; 0.2 - 0.6 mm; subrounded - rounded; random; filled with green clays, or carbonate, or both.
COLOR: Dark gray (N4) with a few white, fine spots.
STRUCTURE: A fragment of Unit 29 which is most probably a pillow lava.
ALTERATION: Slight - moderate; vesicles infilled with secondary minerals; halos along fractures heavily altered to clays and limonite (oxidized pyrite ?); glassy mesostasis and olivine altered to green clays.
VEINS/FRACTURES: 10%; 0.2 - 3.0 mm; irregular; infilled with carbonate or carbonate and green clays with limonite stains (oxidized pyrite ?); branching.



129-801C-12R-1

UNIT 29: APHYRIC BASALT

Pieces 1A and 1B

CONTACTS: Devitrified glass on the bottom rim that is contact with green clays and white carbonate, which most probably are altered interpillow sediments; glassy rim grades to a variolitic to spherulitic zone upwards; margin is subrounded.
PHENOCRYSTS: Generally <1%; the few microphenocrysts that are present are mostly altered olivine that rarely gets larger than 0.15 mm; a few plagioclase microphenocrysts are also present.
GROUNDMASS: Devitrified glass along the rim grades into a variolitic to spherulitic zone towards the top; cryptocrystalline with a few, subhedral olivine and plagioclase groundmass microlites.
VESICLES: <1%; 0.2 - 0.5; subrounded - rounded; random; infilled with green clays mostly and rarely with carbonate; green clays have limonitic stains and these are most probably due to the oxidation of pyrite.
COLOR: Dark gray (N5) with a blackish rim at the bottom.
STRUCTURE: Bottom of Unit 9 which is most probably a pillow because of subrounded top and bottom, and textural variations typical of pillow lavas.
ALTERATION: Slight - moderate; devitrified glass and most of the variolites and spherulites are altered to brown clays; vesicles are infilled with secondary minerals; olivine is altered to green clays.
VEINS/FRACTURES: 2%; 0.2 mm on the average; irregular; infilled with green clays stained with limonite (after pyrite ?).

UNIT 30: APHYRIC BASALT

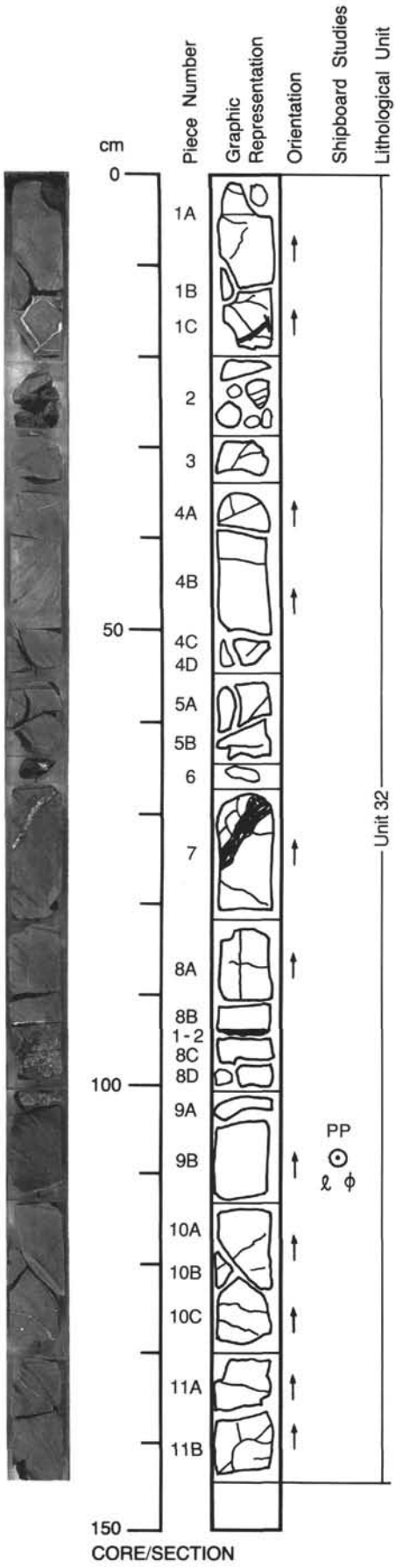
Pieces 4A (bottom portion) - 9A

CONTACTS: Subrounded top and a lava toe-like bottom; both are rimmed by devitrified glass and are in contact with white carbonate and green clay, interpillow sediments; slightly coarsening towards the center.
PHENOCRYSTS: Generally <1%; microphenocrysts consist of a few clusters of plagioclase laths and dark green olivine pseudomorphs; some of the groundmass olivine and plagioclase microlites rarely exceed 0.1 mm.
GROUNDMASS: Devitrified glass along the rims grade toward a variolitic to almost spherulitic interior; cryptocrystalline with some groundmass microlites.
VESICLES: Trace; 0.2 - 0.3 mm; subrounded; random; infilled with green clays mostly and rarely with carbonate; limonitic stains are most probably due to oxidation of pyrite.
COLOR: Dark gray (N4).
STRUCTURE: A pillow as suggested by subrounded top and bottom margins and textural criteria.
ALTERATION: Slight - moderate; vesicles are infilled; microphenocrysts, groundmass phases, and mesostasis are altered to clays.
VEINS/FRACTURES: 3%; 0.2 - 2.0 mm; irregular; infilled with carbonate or clays, or both; limonitic stains are most probably due to oxidation of pyrite.

UNIT 31: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 9B - 23

CONTACTS: None observed, except Pieces 10A and B are directly below altered interlayered material and a number of Pieces (11B, 12A, 13, 15, and 19) have thin glassy and/or spherulitic margins retained that could represent the curved subvertical margin to a pillow.
PHENOCRYSTS:
Plagioclase - 1%; 0.2 - 0.4; Subhedral.
Olivine - 3%; 0.1 - 0.3; Subhedral, altered to dark green.
GROUNDMASS: Cryptocrystalline to fine-grained. Coalesced small spherulites in rim, larger and better crystallized plume variolites furt her away.
VESICLES: None observed.
COLOR: Dark gray (N4).
STRUCTURE: Pillow lava.
ALTERATION: Slight. Glassy rim zones replaced by bright green smectite and microlites outlined with white clay. Olivine microphenocrysts replaced by dark green smectite. Scattered carbonate-smectite and pyrite veinlets. Some green smectite oxidized with yellow coating which also stains adjacent matrix variolites.
VEINS/FRACTURES: 1%; 0.5-4.0 mm; subhorizontal & subvertical; infilled with yellow oxidized and stained green smectite with center of replacive carbonate.
ADDITIONAL COMMENTS: Presence of fragments of glassy curved margins throughout suggests the rim zone of a single pillow.

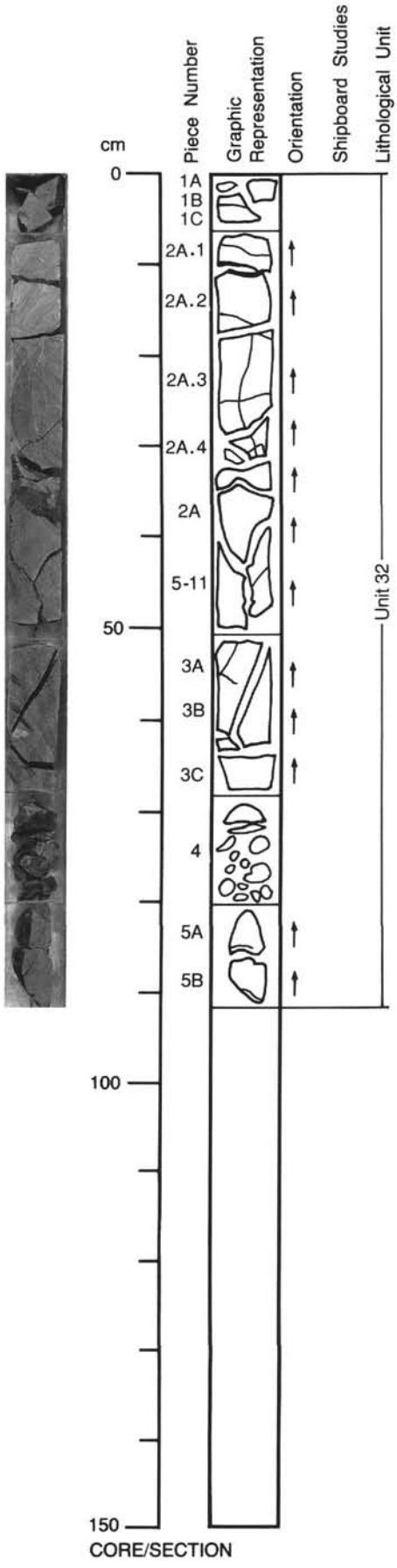


129-801C-12R-2

UNIT 32: APHYRIC BASALT

Pieces 1A-11B

CONTACTS: None observed, except Piece 1A is aphyric and vesicular relative to the phyric and non-vesicular Unit 31 in previous section (12R-1).
PHENOCRYSTS: Few, small, green smectite-replaced olivine microphenocrysts.
GROUNDMASS: Fine-grained and hypocrystalline throughout; variolitic with quench texture.
VESICLES: 3%; 0.2-0.5 mm; circular; random; infilled with either carbonate or dark green smectite.
COLOR: Medium grays (N5 & N6).
STRUCTURE: Thin flow.
ALTERATION: Slight. Largely veins and vesicle infillings. One larger vein has a dark 2-3 mm wide alteration halo in adjacent matrix composed of clays and pyrite granules.
VEINS/FRACTURES: 3%; 0.2-5.0 mm; random; irregular, often with corrugated margins. Smaller veins are either infilled with green smectite or carbonate; pyrite may sometimes be associated with smectite veins as plumose radiate crystals (Piece 4D). Larger veins (Piece 7) show carbonate replacing green smectite with pyrite granules along margins.



129-801C-12R-3

UNIT 32: APHYRIC BASALT

Pieces 1A-5B

CONTACTS: None observed; uniform grain-size and texture throughout.
PHENOCRYSTS: Few olivine smectite-replaced microphenocrysts (<1%).
GROUNDMASS: Fine-grained and hypocrystalline; quenched textured with variolites.
VESICLES: 4%; 0.2-0.4 mm; circular, some more irregular shapes.; random; infilled with either smectite or carbonate.
COLOR: Medium gray (N5).
STRUCTURE: Interior of thin flow.
ALTERATION: Slight. Largely represented by veins and vesicle infillings; narrow halos to larger veins.
VEINS/FRACTURES: <1%; 0.2-1.5 mm; Subhorizontal & subvertical; infilled with green smectite and/or carbonate.