SITE 802 HOLE A CORE 1R CORED INTERVAL 5968.6-5973.6 mbsl; 0.0-5.0 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
UPPER PLIOCENE - QUATERNARY	B	B	F/G unzoned		B				CC					*	PELAGIC CLAY

Major lithology: PELAGIC CLAY, dark brown (7.5YR 3/3), homogeneous, contains clay and metal-oxide/hydroxide aggregates with minor zeolites and traces of quartz silt and spines. Entire sample went to paleontologists.

SLIDE SUMMARY (%):

	CC D
TEXTURE:	
Silt	35
Clay	65
COMPOSITION:	
Accessory minerals	1
Clay	50
Micronodule	2
Oxide	38
Quartz	2
Spines	1
Zeolite	6

802 A 2R NO RECOVERY

SITE 802 HOLE A CORE 3R CORED INTERVAL 5983.2-5992.9 mbsl; 14.6-24.3 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
UPPER MIOCENE - MIDDLE PLIOCENE	B	R/P	B		B		ϕ=86.0 ρ=1.25 ● ϕ=45.0 ρ=1.88 ●	0.3 ● 0.2 ●	1 CC	0.5 1.0				*

LITHOLOGIC DESCRIPTION

TUFF and PELAGIC CLAY with ZEOLITES

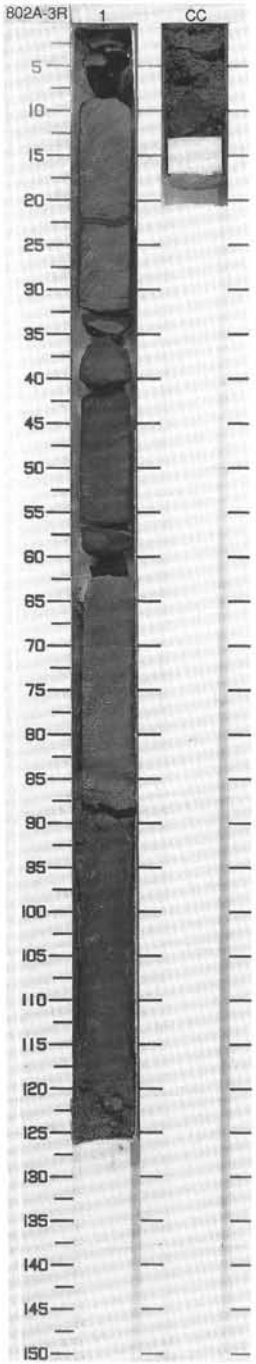
Major lithologies:
a. TUFF, dark brown to dark yellowish brown (7.5YR 3/4 10YR 3/5), in Section 1, 0-72 cm, silty to sandy, speckled with manganese oxides (especially Section 1, 42-45 cm), minor palagonitization of volcanic glass; a few planar laminations of fine-grained ash and claystone fragments, through cross-laminations at Section 1, 64-72 cm, redeposited as grain flows or turbidites.
b. PELAGIC CLAY with ZEOLITES, dark brown to brown (7.5YR 4/2 10YR 5/3) to greenish gray (5GY 4/1); contains clay,metal-oxide/hydroxide aggregate 10-15% zeolites; homogenized by drilling.

Minor lithology: LAPILLI TUFF, dark greenish gray (5GY 4/1), Section 1, 72-90 cm; clasts up to 7 mm in diameter consist of fine-grained tuff or volcaniclastic claystone are discrete in a matrix of very fine-grained volcaniclastic material and glass shards; normally graded.

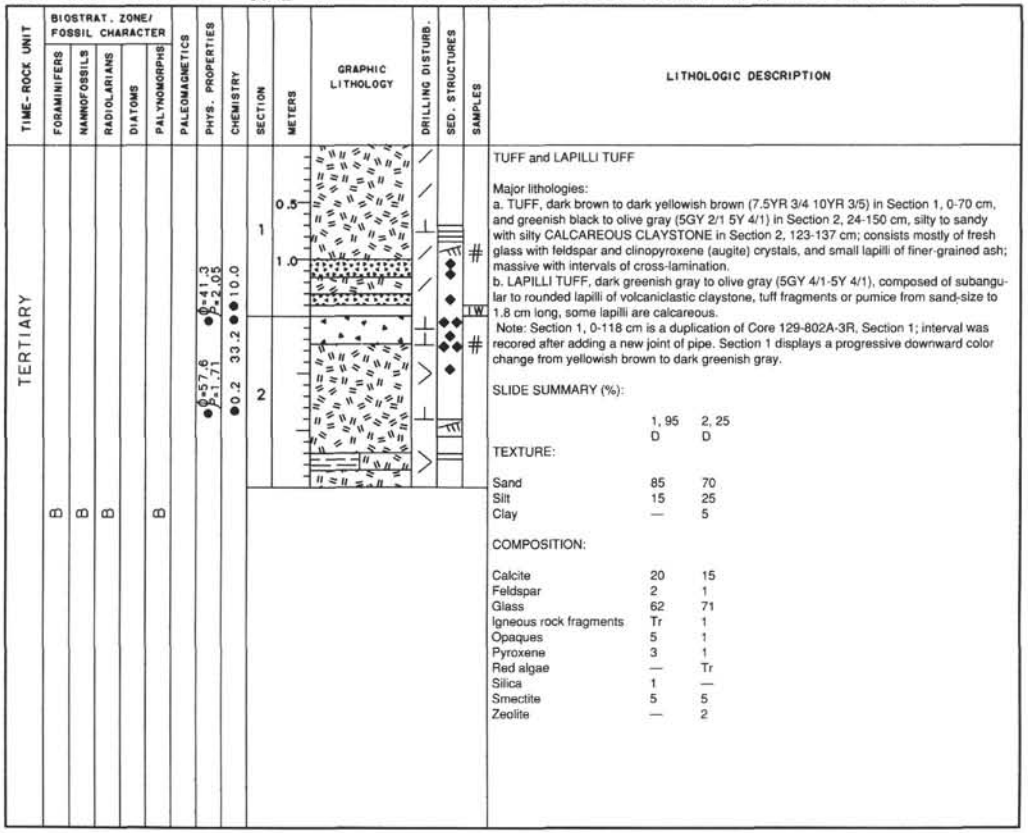
Note: The recovered sediment displays a progressive downward color change from yellowish brown to dark greenish gray.

SLIDE SUMMARY (%):

	1, 1 M	1, 90 M	1, 108 D	CC, 2 D	CC, 11 D
TEXTURE:					
Sand	—	—	2	2	1
Silt	15	30	20	35	25
Clay	85	70	78	63	74
COMPOSITION:					
Calcite	—	64	—	Tr	—
Clay	30	10	51	62	60
Feldspar	5	1	—	—	—
Foraminifers	—	—	Tr	—	—
Glass	62	20	5	10	—
Micronodule	—	—	—	2	5
Nannofossils	—	Tr	—	—	—
Opaques	Tr	—	—	—	—
Oxide	2	2	30	20	20
Quartz	1	—	—	—	—
Zeolite	Tr	3	10	6	15



SITE 802 HOLE A CORE 4R CORED INTERVAL 5992.9-6002.3 mbsl; 24.3-33.7 mbsf



LITHOLOGIC DESCRIPTION

TUFF and LAPILLI TUFF

Major lithologies:

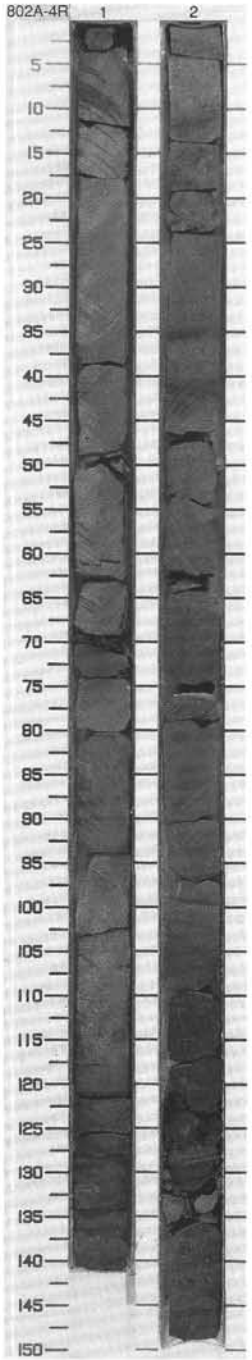
a. TUFF, dark brown to dark yellowish brown (7.5YR 3/4 10YR 3/5) in Section 1, 0-70 cm, and greenish black to olive gray (5GY 2/1 5Y 4/1) in Section 2, 24-150 cm, silty to sandy with silty CALCAREOUS CLAYSTONE in Section 2, 123-137 cm; consists mostly of fresh glass with feldspar and clinopyroxene (augite) crystals, and small lapilli of finer-grained ash; massive with intervals of cross-lamination.

b. LAPILLI TUFF, dark greenish gray to olive gray (5GY 4/1-5Y 4/1), composed of subangular to rounded lapilli of volcaniclastic claystone, tuff fragments or pumice from sand-size to 1.8 cm long, some lapilli are calcareous.

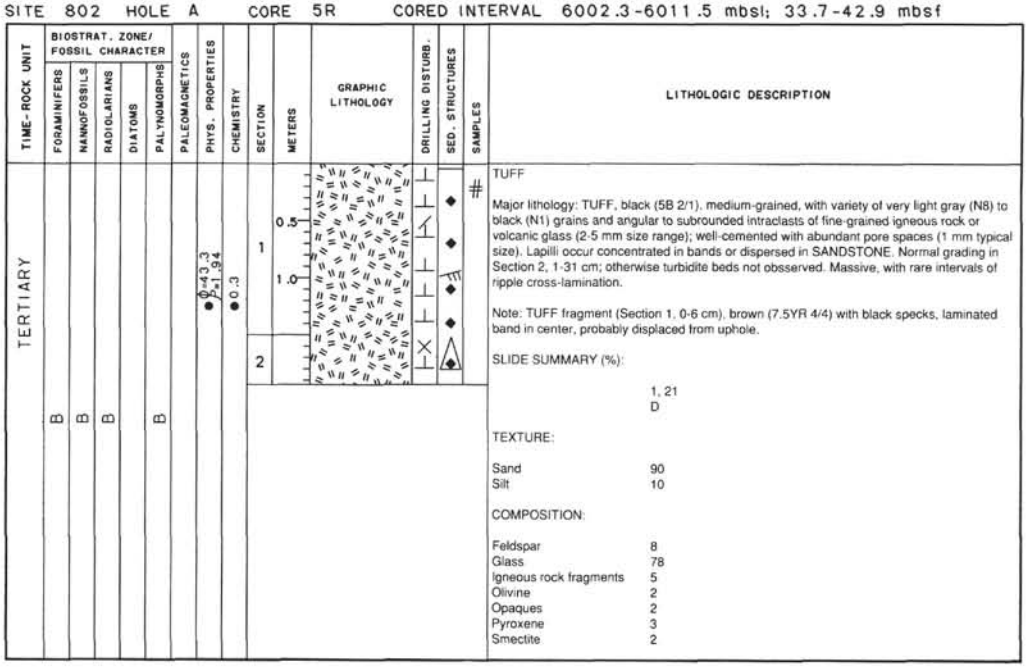
Note: Section 1, 0-118 cm is a duplication of Core 129-802A-3R, Section 1; interval was recored after adding a new joint of pipe. Section 1 displays a progressive downward color change from yellowish brown to dark greenish gray.

SLIDE SUMMARY (%):

	1, 95 D	2, 25 D
TEXTURE:		
Sand	85	70
Silt	15	25
Clay	—	5
COMPOSITION:		
Calcite	20	15
Feldspar	2	1
Glass	62	71
Igneous rock fragments	Tr	1
Opaques	5	1
Pyroxene	3	1
Red algae	—	Tr
Silica	1	—
Smectite	5	5
Zeolite	—	2



SITE 802 HOLE A CORE 5R CORED INTERVAL 6002.3-6011.5 mbsl; 33.7-42.9 mbsf



LITHOLOGIC DESCRIPTION

TUFF

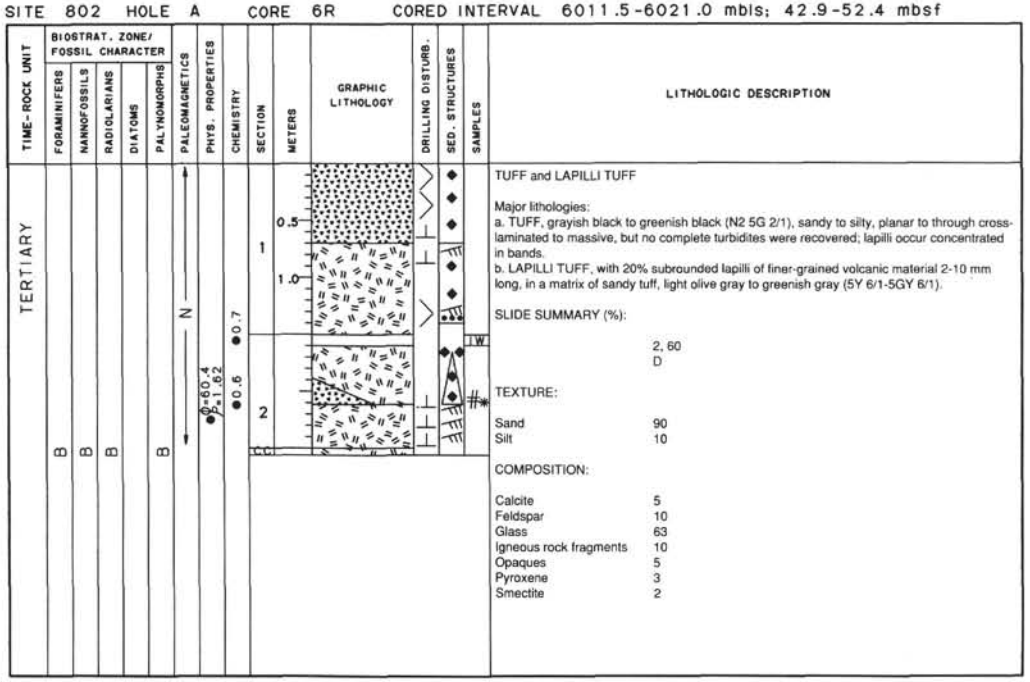
Major lithology: TUFF, black (5B 2/1), medium-grained, with variety of very light gray (N8) to black (N1) grains and angular to subrounded intraclasts of fine-grained igneous rock or volcanic glass (2-5 mm size range); well-cemented with abundant pore spaces (1 mm typical size). Lapilli occur concentrated in bands or dispersed in SANDSTONE. Normal grading in Section 2, 1-31 cm; otherwise turbidite beds not obsserved. Massive, with rare intervals of ripple cross-lamination.

Note: TUFF fragment (Section 1, 0-6 cm), brown (7.5YR 4/4) with black specks, laminated band in center, probably displaced from uphole.

SLIDE SUMMARY (%):

	1, 21 D
TEXTURE:	
Sand	90
Silt	10
COMPOSITION:	
Feldspar	8
Glass	78
Igneous rock fragments	5
Olivine	2
Opaques	2
Pyroxene	3
Smectite	2

SITE 802 HOLE A CORE 6R CORED INTERVAL 6011.5-6021.0 mbsl; 42.9-52.4 mbsf



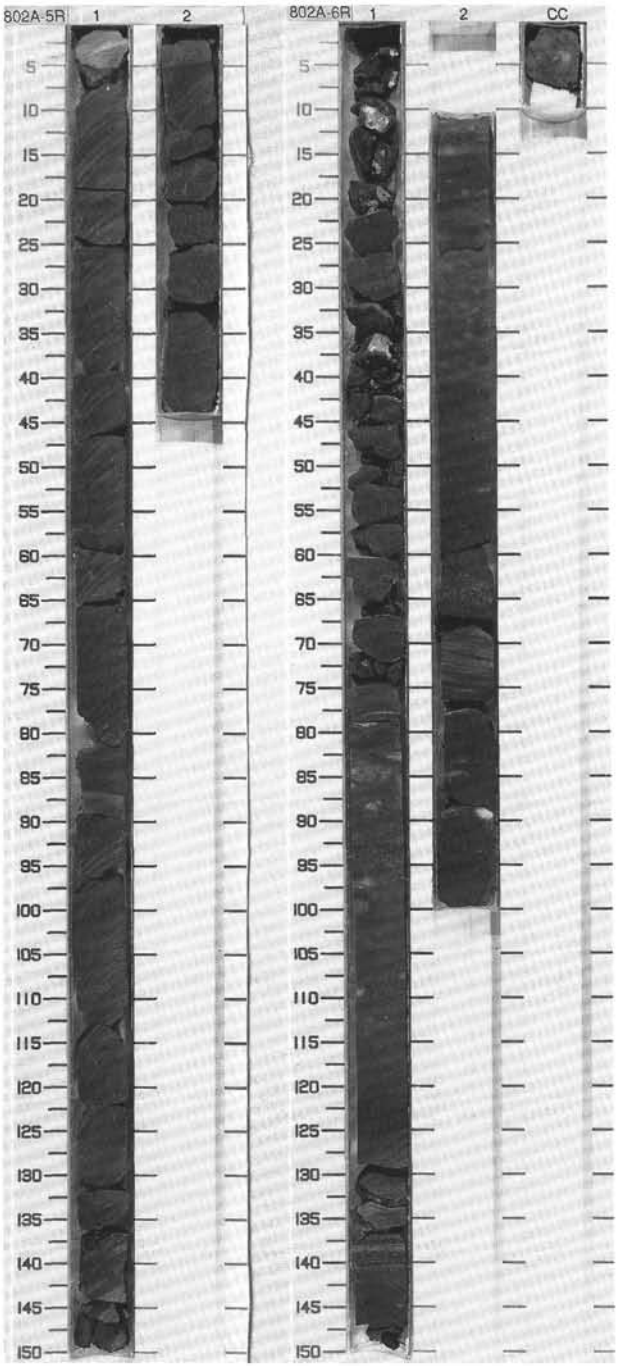
LITHOLOGIC DESCRIPTION

TUFF and LAPILLI TUFF

Major lithologies:
a. TUFF, grayish black to greenish black (N2 5G 2/1), sandy to silty, planar to through cross-laminated to massive, but no complete turbidites were recovered; lapilli occur concentrated in bands.
b. LAPILLI TUFF, with 20% subrounded lapilli of finer-grained volcanic material 2-10 mm long, in a matrix of sandy tuff, light olive gray to greenish gray (5Y 6/1-5GY 6/1).

SLIDE SUMMARY (%):

	2, 60 D
TEXTURE:	
Sand	90
Silt	10
COMPOSITION:	
Calcite	5
Feldspar	10
Glass	63
Igneous rock fragments	10
Opaques	5
Pyroxene	3
Smectite	2



SITE 802 HOLE A CORE 7R CORED INTERVAL 6021.0-6030.5 mbsl; 52.4-61.9 mbsf

TUFF to LAPILLI TUFF

Major lithology: TUFF to LAPILLI TUFF, grayish black to greenish black (N2 5G 2/1), fine-to medium-grained, consists of grains of volcanic rock fragments, glass and pyroxene in a clayey matrix; sedimentary structures include dish and pipe fluid-escape features, subtle normal and reverse grading, large, subrounded lapilli occurring dispersed in matrix or concentrated in bands. Lapilli are finer-grained volcanic material up to 1.6 cm long, commonly sub-parallel to bedding. Millimeter-size cavities and some fractures are filled with a micro-fibrous/platy white minerals, a combination of Ca-rich zeolite probably laumontite and some member(s) of the analcime-wairakite solid-solution series, according to preliminary XRD analysis.

laumontite and some member(s) of the analcime-wairakite solid-solution series, according to preliminary XRD analysis.

SLIDE SUMMARY (%):

	1, 50 D	1, 61 M
TEXTURE:		
Sand	80	—
Silt	20	100
COMPOSITION:		
Feldspar	8	—
Glass	75	—
Igneous rock fragments	3	—
Olivine	Tr	—
Opaques	5	—
Pyroxene	2	—
Silica	2	—
Smectite	5	—
Zeolite	—	100

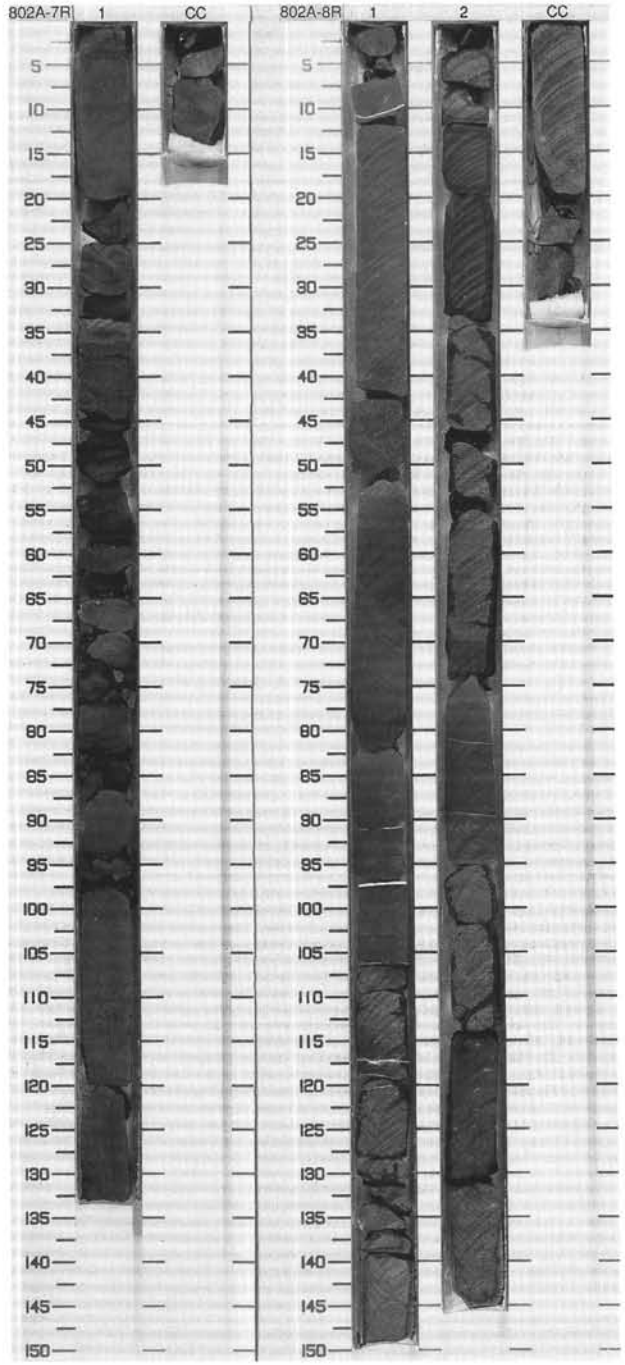
SITE 802 HOLE A CORE 8R CORED INTERVAL 6030.5-6039.7 mbsl; 61.9-71.1 mbsf

TUFF

Major lithology: TUFF, grayish black (5BG 2/1), consists primarily of grains of volcanic glass, pyroxene and feldspar crystals, and volcanic rock fragments, moderately to poorly sorted with common lapilli of subrounded aphanitic volcanic material that are isolated in the sandy matrix or sometimes form indistinct layers. Horizontal fractures are filled with up to 3 mm of micro-fibrous/platy white Ca-zeolite minerals.

SLIDE SUMMARY (%):

	1, 96 D	1, 106 D
TEXTURE:		
Sand	70	70
Silt	30	30
COMPOSITION:		
Feldspar	—	7
Glass	75	77
Igneous rock fragments	20	—
Olivine	—	2
Opaques	—	3
Pyroxene	5	10
Smectite	—	Tr



802A 9R NO RECOVERY

SITE 802 HOLE A CORE 10R CORED INTERVAL 6049.4-6058.2 mbsl; 80.4-89.6 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
MIDDLE MIOCENE	B	R/P CN3	B		B		●58.3 ρ=1.71	●1.5 ●1.8	1 2 3	0.5 1.0				TW

LITHOLOGIC DESCRIPTION

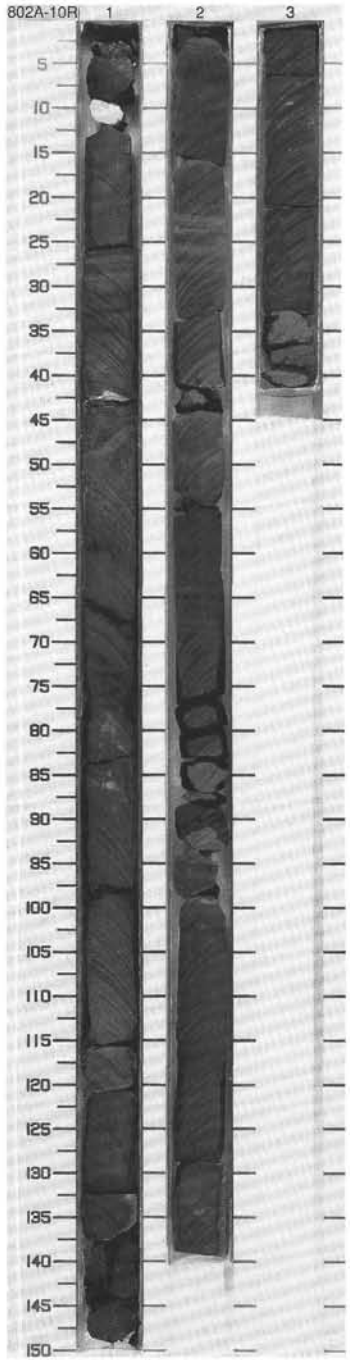
TUFF

Major lithology: TUFF, black to greenish black (N1 5G 2/1), poorly to moderately sorted, angular grains of volcanic glass, crystals of pyroxene and feldspar, igneous rock fragments, and oxides in an altered clayey matrix. Massive to planar laminated, with infrequent cross-lamination. Rip-up clasts are subrounded fragments of gray (N5) tuff (VOLCANICLASTIC CLAYSTONE). Large, spherical foraminifers middle Miocene Orbulina universal (Section 2, 12-32 cm). Possible fluid-escape pipe at Section 2, 95-100 cm.

Minor lithology: LAPILLI TUFF, black (N1), lapilli are 2-8 mm long, gray (N5).

SLIDE SUMMARY (%):

	2, 20 D	2, 49 D
TEXTURE:		
Sand	80	30
Silt	15	50
Clay	5	20
COMPOSITION:		
Clay	10	10
Feldspar	Tr	2
Foraminifers	2	—
Glass	75	75
Igneous rock fragments	Tr	5
Opaques	3	—
Oxide	2	Tr
Pore space	5	—
Pyroxene	3	8
Smectite	Tr	—



SITE 802 HOLE A CORE 11R CORED INTERVAL 6058.2-6067.5 mbsl; 89.6-98.9 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	A/G	C/M	B		B		ϕ=57.4 β=1.75 ● 2.5		1 2	0.5 1.0				# *

LITHOLOGIC DESCRIPTION

B *Globorotalia fohsi peripheroronda* CN3

TUFF

Major lithology: TUFF, black to greenish black (N1 5G 2/1), angular glass fragments with oxides, pyroxene and some feldspar. Mostly massive, thinly laminated in some places, rare irregular scoured surfaces; fine, white cross-laminations at Section 1, 112-120 cm, with abundant Miocene foraminifers and common nannofossils.
Minor lithology: LAPILLI TUFF, black to greenish black (N1 5G 2/1) with larger (2-8 mm) gray (N5) tuff-ash lapilli that often define planar or cross lamination. Foraminifers present in intervals with 1-3 mm clasts.

SLIDE SUMMARY (%):

	1, 20 M	1, 64 D
TEXTURE:		
Sand	20	85
Silt	50	15
Clay	30	Tr
COMPOSITION:		
Calcite	10	—
Clay	15	5
Feldspar	—	Tr
Foraminifers	10	3
Glass	60	80
Nannofossils	5	—
Opaques	—	8
Oxide	—	2
Pyroxene	Tr	2

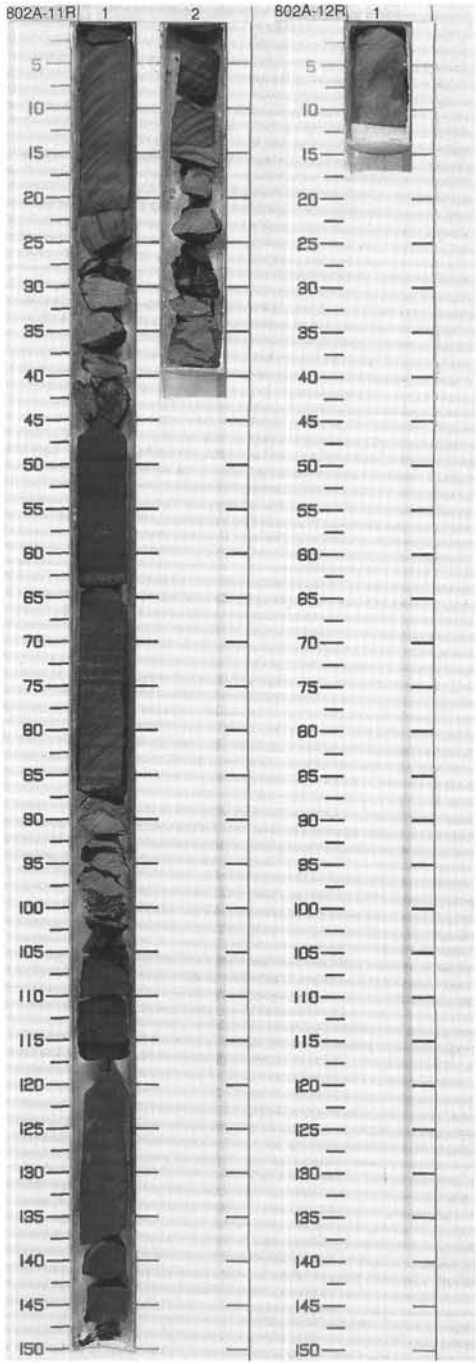
SITE 802 HOLE A CORE 12R CORED INTERVAL 6067.5-6076.9 mbsl; 98.9-108.3 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	B	F/M	B		B		ϕ=49.4 β=1.83 ● 1.0	●	1					

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, black (N1), sandy, moderately to poorly sorted, composed of angular glass and volcanic rock fragments with oxides, pyroxene and some feldspar. Massive to thinly laminated with 0.5-5.0 mm lighter-colored clasts that are brownish gray (5YR 4/2), olive gray (5Y 4/1), and dark greenish gray (5GY 4/1).



SITE 802 HOLE A CORE 13R CORED INTERVAL 6076.9-6083.0 mbsl; 108.3-114.4 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
MIDDLE MIOCENE	C/M	C/M	B		B		ϕ=78.4 ρ_b=1.35	0.5 ● ● 0.3	1, 2, CC	0.5, 1.0				*

Globorotalia fohsi peripheroronda CN3

LITHOLOGIC DESCRIPTION

PELAGIC CLAY and TUFF

Major lithologies:
a. PELAGIC CLAY, dark brown, (10YR 3/2), with mottles of reddish yellow (7.5YR 7/6), thoroughly disrupted by drilling, contains rare volcanic glass, radiolarian spines, and zeolites, lighter colored clay contains fewer iron oxide aggregates;
b. TUFF, dark greenish gray (5BG 4/1), depositionally underlies pelagic clay but contact is disturbed by drilling, contains volcanic glass, feldspar, zeolites, and nannofossils.

SLIDE SUMMARY (%):

	1, 8 M	1, 46 D	2, 74 D
TEXTURE:			
Silt	5	5	40
Clay	95	95	60
COMPOSITION:			
Clay	85	79	52
Feldspar	—	—	2
Glass	Tr	—	10
Igneous rock fragments	—	—	5
Nannofossils	—	—	20
Opaques	2	Tr	3
Oxide	2	10	2
Silica	3	—	—
Smectite	—	—	3
Spines	3	5	Tr
Zeolite	5	6	3

SITE 802 HOLE A CORE 14R CORED INTERVAL 6083.0-6090.7 mbsl; 114.4-122.1 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
MIDDLE MIOCENE	B	R/M	B		B		ϕ=31.3 ρ_b=2.14 ● 0.5		1, 2, 3	0.5, 1.0				

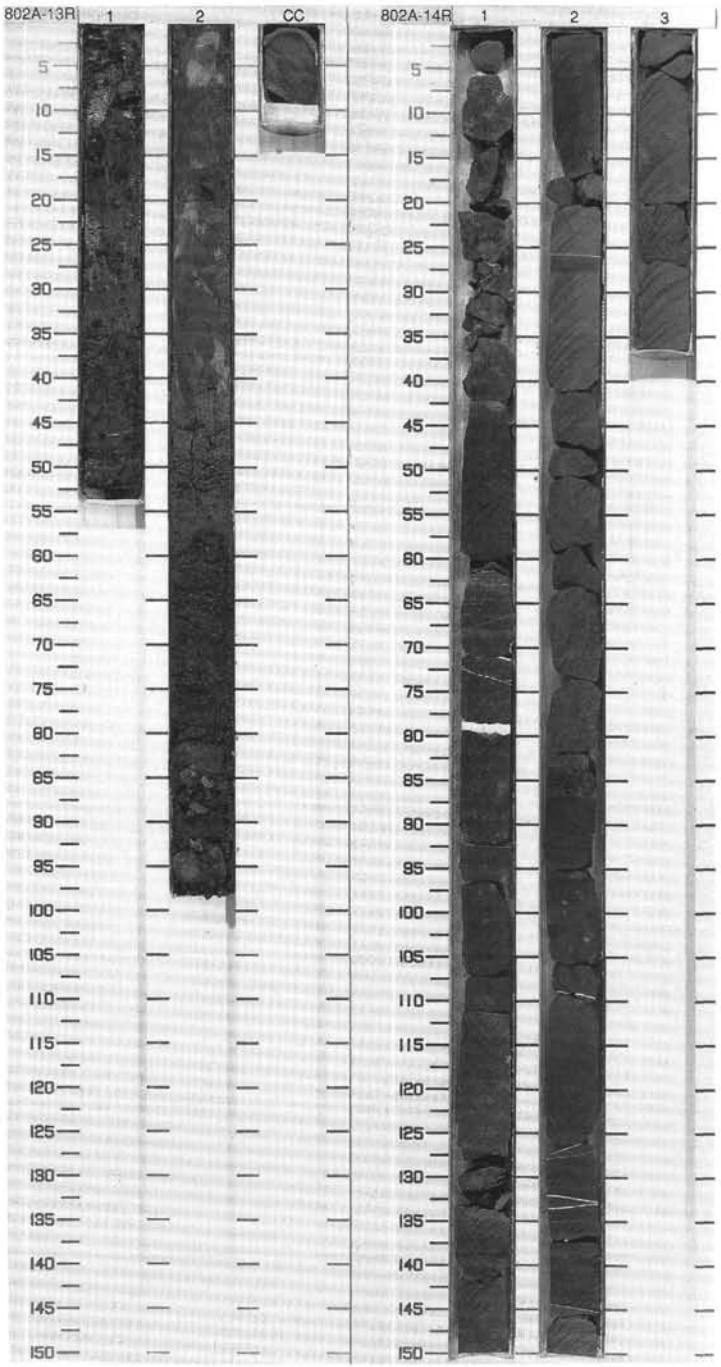
CN3

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, greenish black to grayish black (5BG 2/1 to N2), medium-to coarse-grained sandy texture; some beds are turbidites and display basal scour or flame structures and fine upwards; subrounded lapilli of aphanitic to tuffaceous igneous rock are grayish black to very dark gray (N2-N3), and are abundant in portion of some beds. Some sub-horizontal fractures are filled with up to 1 cm of white (N9) slightly fibrous fill of Ca-zeolites.

Minor lithology: (Section 1, 0-6 cm): CLAYSTONE, light yellowish brown (10YR 6/4), homogeneous. Probably displaced from uphole.



SITE 802 HOLE A CORE 15R CORED INTERVAL 6090.7-6099.7 mbsl; 122.1-131.1 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER MIOCENE	C/M	unzoned	A/M	CN3	B	B	Φ=58.5 P=1.71	● 1.0	1 2 CC	0.5 1.0		X X		# *

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, greenish black to brownish black to greenish gray (5G 2/1 5YR 2/1 5G 4/1), silty to coarse sandy texture; massive, poorly sorted sandy tuff of Section 1, 0-141 cm, contains glass, igneous rock fragments, ash, foraminifers and pyroxene; laminated tuff of Section 1, 140-150 cm, contains clay (50%), volcanic glass (20%), zeolites (15%) and minor nannofossils, smectite and Igneous rock fragments. Minor white patches, 1-3 mm, are probably zeolites. Sedimentary structures include isolate to concentrated subangular aphanitic lapilli up to 1 cm in diameter, cross lamination (in some finer-grained intervals), planar lamination, normally graded beds, and concretions and vein-fillings of white (N9) zeolites and acicular anhydrite.

SLIDE SUMMARY (%):

	1, 133 D	1, 147 M
TEXTURE:		
Sand	40	—
Silt	30	1
Clay	30	99
COMPOSITION:		
Clay	—	52
Feldspar	2	1
Foraminifers	1	—
Glass	74	20
Igneous rock fragments	3	2
Nannofossils	—	5
Opaques	Tr	Tr
Oxide	Tr	Tr
Pyroxene	15	—
Smectite	5	5
Zeolite	—	15

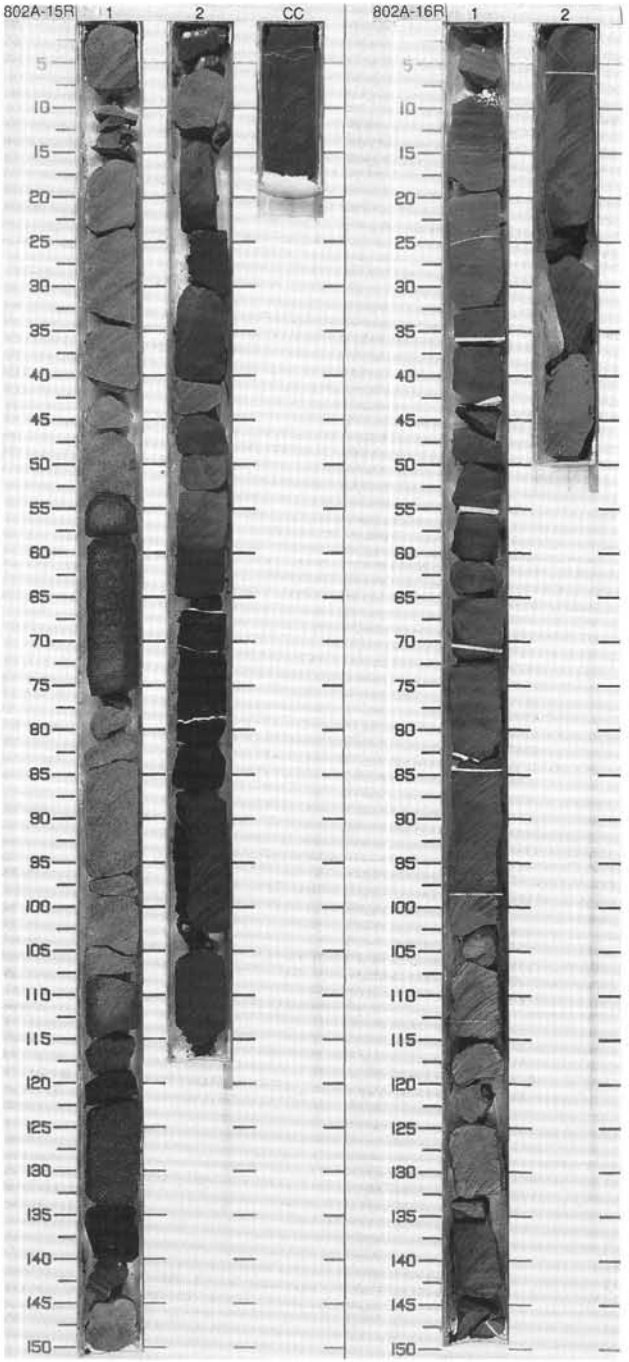
SITE 802 HOLE A CORE 16R CORED INTERVAL 6099.7-6109.0 mbsl; 131.1-140.4 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER MIOCENE	B	B	B		B		Φ=34.4 P=2.01	● 0.9	1 2	0.5 1.0	VOID			

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, greenish black to olive black (5G 2/1 to 5Y 2/1), fine-sand to silty sandstone textures, composed mostly of glass and volcanic rock fragments Sedimentary structures include normally graded beds, through cross-lamination, planar lamination, and dispersed lapilli of finer-grained volcanic material; beds are turbidites and grain flows with meter-scale thicknesses. Concretions and horizontal fracture-fillings of white (N9) Ca-zeolites are diagenetic features.



SITE 802 HOLE A CORE 17R CORED INTERVAL 6109.0-6118.3 mbsl; 140.4-149.7 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
LOWER MIOCENE	B	C/M CN3	B		B		Φ=56.0 ρb=1.74	1.1 ●	1 2	0.5 1.0				

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, greenish black to brownish black (5G 2/1 5YR 2/1), medium- to coarse-sandy texture, contains volcanic glass, clay, zeolites, smectite, feldspar and igneous rock fragments, with minor nannofossils in fine-grained tops of turbidite beds. Sedimentary structures include meter-scale normally graded beds with basal scour, isolated subrounded aphanitic lapilli up to 7 mm in diameter, planar laminations;nodules (1-2 mm across) and small veins of white Ca-zeolites.

SLIDE SUMMARY (%):

	1, 99 D	1, 107 M
TEXTURE:		
Sand	30	—
Silt	50	15
Clay	20	85
COMPOSITION:		
Clay	10	25
Feldspar	Tr	3
Foraminifers	2	—
Glass	70	50
Igneous rock fragments	—	2
Nannofossils	—	5
Opaques	10	Tr
Oxide	3	—
Pyroxene	2	—
Smectite	3	5
Zeolite	—	10

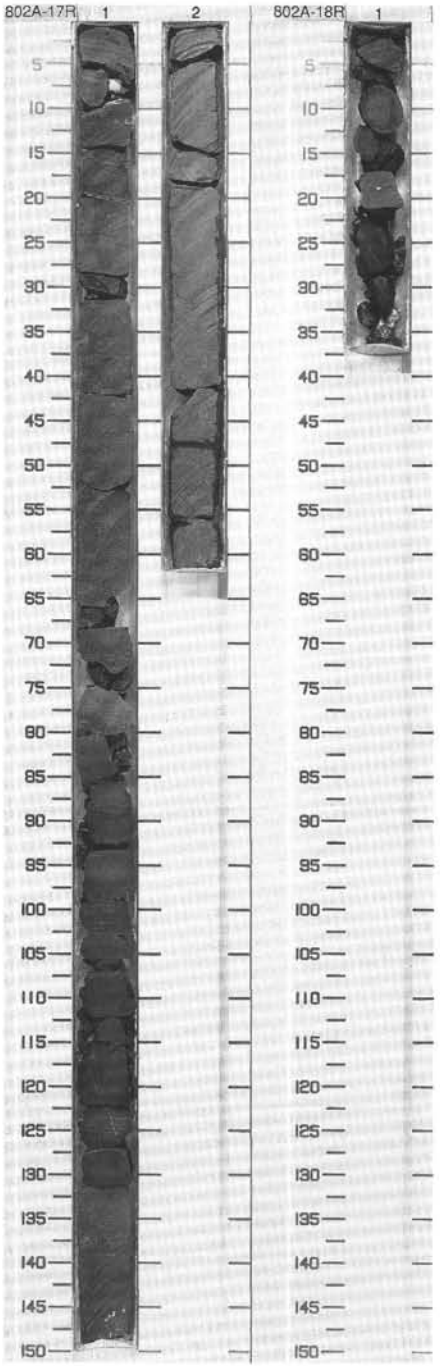
SITE 802 HOLE A CORE 18R CORED INTERVAL 6118.3-6127.7 mbsl; 149.7-159.1 mbsf

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
LOWER MIOCENE	B	B	B		B		Φ=49.5 ρb=1.88	1.0 ●	1					

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, dark greenish gray (5G 2/1), sandy, massive; 1-cm thick vein of zeolites at Section 1, 35 cm. The disrupted pieces do not allow identification of any sedimentary structures.



SITE 802 HOLE A CORE 19R CORED INTERVAL 6127.7-6136.9 mbsl; 159.1-168.3 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER MIOCENE	R/P	unzoned	A/P	CN3	B	B	Φ=60.5 p=1.71 Φ=58.7 p=1.73	1.1 2.1 3.0	1 2 3 CC	0.5 1.0	VOID			OG TW

LITHOLOGIC DESCRIPTION

TUFF, CLAYSTONE and TURBIDITES

Major lithologies:
a. TUFF, black to very dark gray (5Y 3/1), sand to clay size grains of volcanic rock fragments, glass, and pyroxene; typically planar or cross-laminated, abundant flame structures especially in Section 2, 50-90 cm, where tuffaceous turbidites grade upward to nonvolcaniclastic turbidites;
b. CLAYSTONE, gray to dark grayish brown (5Y 5/1 5YR 5/2), soft, massive locally thinly laminated, scattered microfaults and deformed beds, contains up to 30% nannofossils and 20% volcanic glass.
c. TURBIDITES, dark gray (5Y 4/1) and gray (N3), silty to clayey, thinly laminated with cross-laminations, wavy laminations and flame structures. Minor volcaniclastic or biogenic components.

Minor lithology: CLAYEY NANNOFOSSIL CHALK, brown (10YR 5/3), massive, composed of 30% nannofossils, 30% inorganic calcite, 25% clay.

SLIDE SUMMARY (%):

	1, 58 D	1, 82 D	1, 103 D	2, 33 D	3, 17 D	CC, 6 D
TEXTURE:						
Sand	1	—	—	Tr	50	25
Silt	60	35	20	15	45	45
Clay	39	65	80	85	5	30
COMPOSITION:						
Accessory minerals	3	—	—	10	—	—
Calcite	3	3	—	30	—	3
Clay	49	56	75	25	20	Tr
Feldspar	Tr	—	—	—	3	—
Foraminifers	1	—	—	—	1	Tr
Glass	20	10	10	5	30	69
Igneous rock fragments	—	—	—	—	36	20
Nannofossils	15	20	—	30	—	—
Opaques	2	5	10	—	3	Tr
Oxide	2	3	5	Tr	2	Tr
Pyroxene	—	—	—	—	5	5
Quartz	Tr	Tr	—	—	—	—
Smectite	Tr	—	—	—	—	3
Zeolite	5	3	—	—	—	—

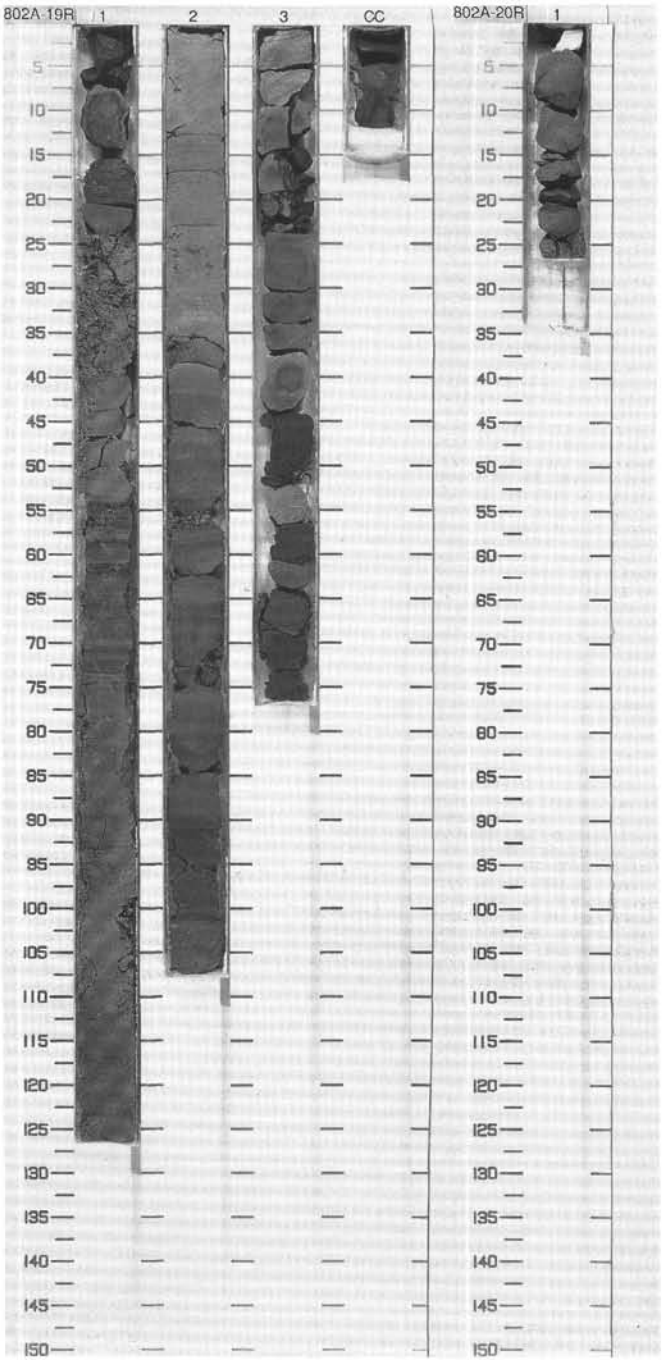
SITE 802 HOLE A CORE 20R CORED INTERVAL 6136.9-6196.2 mbsl; 168.3-177.6 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER MIOCENE	R/M	unzoned	R/P	CN3	B	B	Φ=44.6 p=2.02	1.1	1					

LITHOLOGIC DESCRIPTION

TUFF

Major lithology: TUFF, dark gray (N3), very fine- to fine-grained sandy texture mostly volcanic rock fragments and glass, no sedimentary structures. One large separate piece of dolomite is inferred to be a fracture filling.



SITE 802 HOLE A CORE 21R CORED INTERVAL 6146.2-6155.6 mbsl; 177.6-187.0 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 MIOCENE	R/M unzoned	R/P CN3	B		B		Φ=53.9 ρs=1.80 / Φ=68.1 ρs=1.54	●1.2 ●2.2 ●2.7	1, 2	0.5, 1.0				*

LITHOLOGIC DESCRIPTION

TUFF, CLAYSTONE and CLAYEY SILTSTONE

Major lithologies:
a. TUFF, grayish black to dark gray (N2 N3), silty to fine-grained sandy texture, consisting of volcanic rock fragments and glass, massive.
b. CLAYSTONE, gray to olive gray (N5.5 5Y 4/2), massive to thinly laminated, firm and fissile to completely disrupted by drilling, <15% volcaniclastic in composition. Grades to, and interlaminated with:
c. CLAYEY SILTSTONE, dark gray to olive gray (N4 5Y 4/2), predominantly thinly laminated, volcaniclastic content (glass, rock fragments, pyroxene, feldspar) 25-40%, up to 20% nannofossils.

SLIDE SUMMARY (%):

	1, 62 D	2, 16 D
TEXTURE:		
Sand	—	5
Silt	30	40
Clay	70	55
COMPOSITION:		
Accessory minerals	5	15
Calcite	—	20
Clay	77	20
Feldspar	1	—
Glass	10	25
Igneous rock fragments	4	—
Nannofossils	—	20
Opaques	2	—
Oxide	Tr	Tr
Pyroxene	1	—

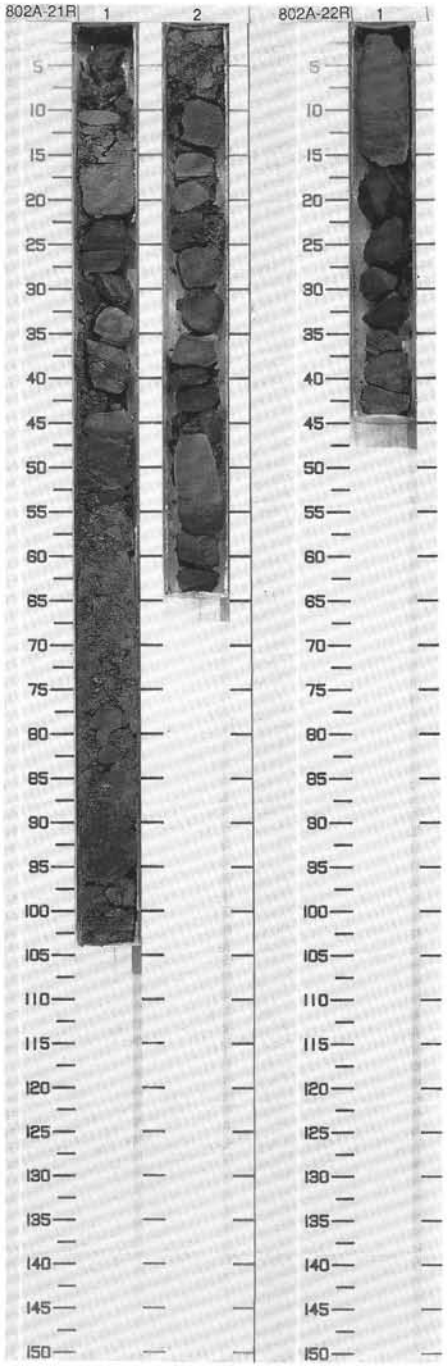
SITE 802 HOLE A CORE 22R CORED INTERVAL 6155.6-6165.0 mbsl; 187.0-196.4 mbsf

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
LOWER MIOCENE	C/M unzoned	F/M CN3	B		B		Φ=18.3 ρs=2.41	1.2 ●	1					

LITHOLOGIC DESCRIPTION

TUFF and TUFFACEOUS CLAYSTONE

Major lithologies:
a. TUFF, black to dark gray (N1 N3), sandy to silty, massive, highly porous with abundant authigenic clays and zeolites as spherules and euhedral crystals in cavities. Cavities are of unknown origin possibly microfossil molds.
b. TUFFACEOUS CLAYSTONE, medium dark gray (N4), sharp change to dark greenish gray (5GY 4/1) at Section 1, 42 cm, homogeneous, massive.



SITE 802 HOLE A CORE 23R CORED INTERVAL 6165.0-6175.1 mbsl; 196.4-206.1 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
LOWER MIOCENE	R/M unzoned	F/P CN3	F/P unzoned		B		Φ=47.7 ρ=1.93; Φ=67.2 ρ=1.63	1.1 ● 14.1 ●	1, 2, CC	0.5, 1.0				*

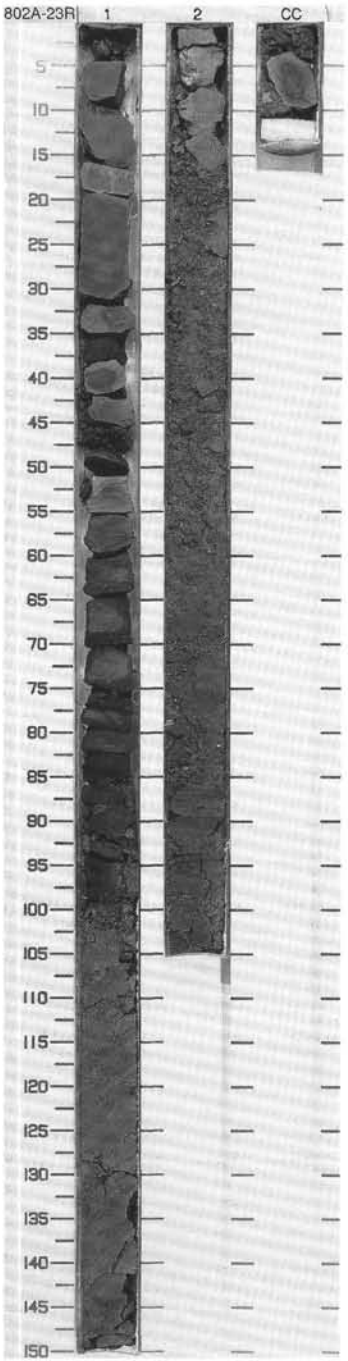
LITHOLOGIC DESCRIPTION

TUFF and CALCAREOUS NANNOFOSSIL CLAY

Major lithologies:
a. TUFF, sandy to clayey, coarser lithologies are brownish black to black (5Y 2/1 N1), finer lithologies are mostly gray (5Y 4/1). Largely crushed to puree in this core, coherent pieces are massive to thinly laminated (<1 mm). The interval from Section 1, 130 cm, to Section 2, 16 cm, displays numerous microfaults and deformed laminations probably synsedimentary slumping.
b. CALCAREOUS NANNOFOSSIL CLAY, gray (5Y 5/1 5Y 6/1), firm to soft, mostly massive, locally thinly laminated, rare burrows. Up to 30% nannofossils and 20% inorganic calcite.

SLIDE SUMMARY (%):

	1, 13 D	1, 122 D	2, 88 D
TEXTURE:			
Sand	Tr	Tr	10
Silt	30	50	50
Clay	70	50	40
COMPOSITION:			
Accessory minerals	5	15	20
Calcite	20	5	10
Clay	35	40	40
Glass	10	30	30
Nannofossils	30	10	Tr



SITE 802 HOLE A CORE 24R CORED INTERVAL 6174.7-6184.3 mbsl; 206.1-215.7 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
LOWER MIOCENE	C/M unzoned	A/P CN2 - NN3	B		B		ϕ=66.7 /=1.57	29.7	1			X		**

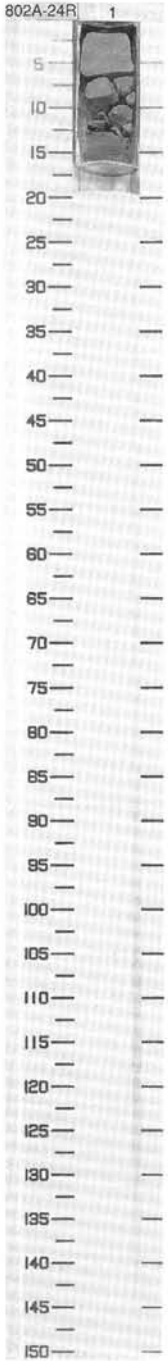
LITHOLOGIC DESCRIPTION

CALCAREOUS NANNOFOSSIL CHALK and NANNOFOSSIL CLAYEY SILTSTONE

Major lithologies:
a. CALCAREOUS NANNOFOSSIL CHALK, gray (5Y 5/1), firm, massive, composed of 50% nannofossils, 10% calcite, 20% clay, and 10% volcanic glass.
b. NANNOFOSSIL CLAYEY SILTSTONE, gray (5Y 5/1), firm, thinly laminated. Compositionally similar to a., except for increased volcaniclastic component (>35%), also contains rare foraminifers.

SLIDE SUMMARY (%):

	1, 4 D	1, 13 D
TEXTURE:		
Sand	Tr	5
Silt	30	45
Clay	70	50
COMPOSITION:		
Accessory minerals	10	5
Calcite	10	10
Clay	20	25
Foraminifers	—	Tr
Glass	10	30
Nannofossils	50	30
Oxide	Tr	—



SITE 802 HOLE A CORE 25R CORED INTERVAL 6784.3-6194.0 mbsl: 215.7-225.4 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
LOWER MIOCENE	unzoned	CN2 - NN3	B		unzoned	N	Φ=72.3 ρ=1.48	5.2	1	0.5		X		*
	R/M	A/P			R/M			4.2	CC					*

LITHOLOGIC DESCRIPTION

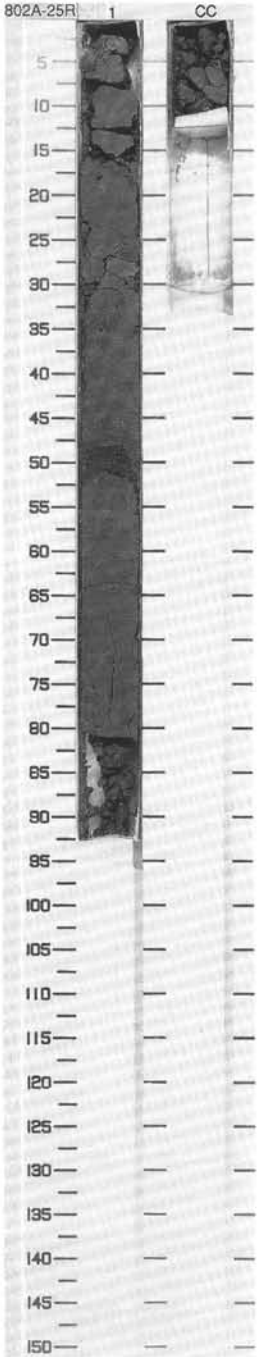
CLAYSTONE with NANNOFOSSILS

Major lithology: CLAYSTONE with NANNOFOSSILS, olive brown (2.5YR 4/4) in Section 1, 0-50 cm, in sharp contact above gray (N5) claystone, with a layer (2-4 mm) of more indurated claystone of blue gray (5BG 4/1) at the contact; color change apparently due to a downward decrease in opaques and a lesser increase in nannofossil content. Reddish spots (1 mm in diameter) at Section 1, 20 cm and 32-37 cm. Rare subtle laminations.

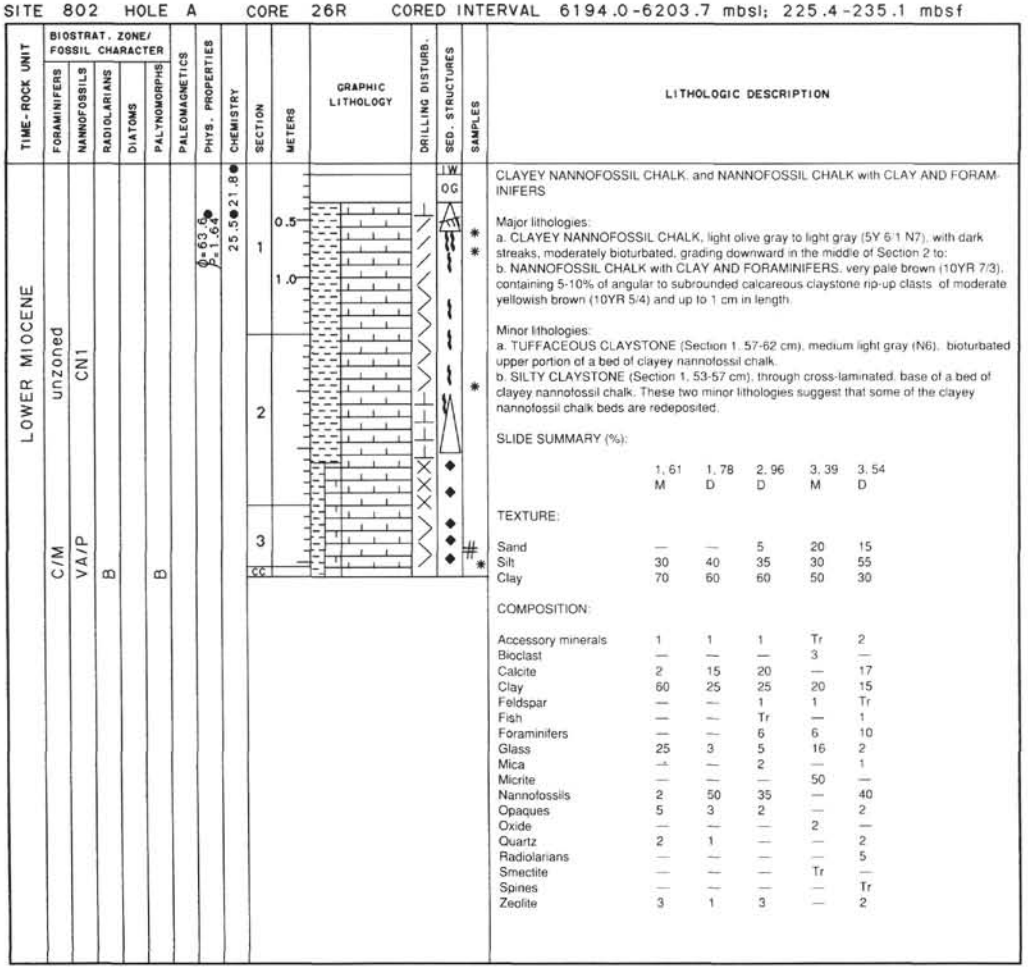
Minor lithology: Core catcher contains pieces of TUFFACEOUS CLAYSTONE with NANNOFOSSILS, medium gray (N5), containing wood fragments.

SLIDE SUMMARY (%):

	1, 35 D	1, 75 D	CC, 6 D
TEXTURE:			
Sand	—	—	10
Silt	15	10	35
Clay	85	90	55
COMPOSITION:			
Accessory minerals	—	—	1
Calcite	—	—	7
Clay	57	59	57
Glass	5	3	25
Nannofossils	20	30	10
Opaques	1	2	—
Oxide	15	1	—
Zeolite	2	5	—



SITE 802 HOLE A CORE 26R CORED INTERVAL 6194.0-6203.7 mbsl; 225.4-235.1 mbsf



LITHOLOGIC DESCRIPTION

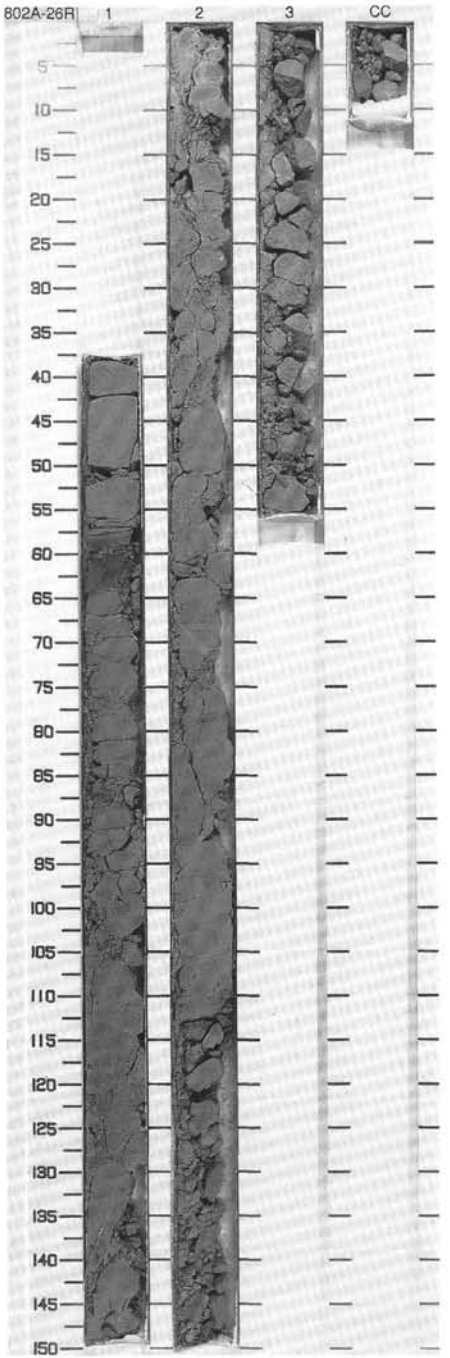
CLAYEY NANNOFOSSIL CHALK and NANNOFOSSIL CHALK with CLAY AND FORAMINIFERS

Major lithologies:
a. CLAYEY NANNOFOSSIL CHALK, light olive gray to light gray (5Y 6/1 N7), with dark streaks, moderately bioturbated, grading downward in the middle of Section 2 to:
b. NANNOFOSSIL CHALK with CLAY AND FORAMINIFERS, very pale brown (10YR 7/3), containing 5-10% of angular to subrounded calcareous claystone rip-up clasts of moderate yellowish brown (10YR 5/4) and up to 1 cm in length.

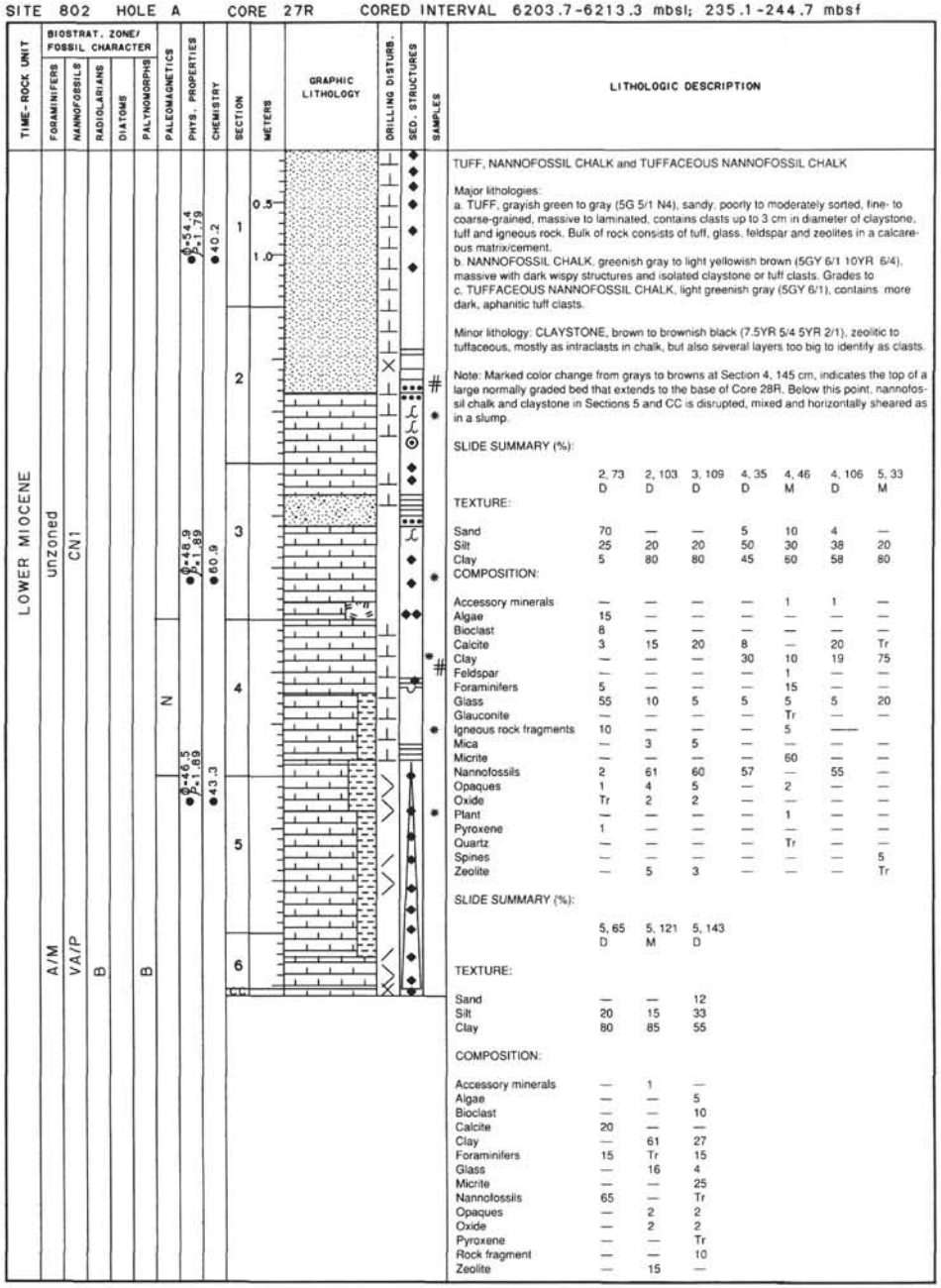
Minor lithologies:
a. TUFFACEOUS CLAYSTONE (Section 1, 57-62 cm), medium light gray (N6), bioturbated upper portion of a bed of clayey nannofossil chalk.
b. SILTY CLAYSTONE (Section 1, 53-57 cm), through cross-laminated, base of a bed of clayey nannofossil chalk. These two minor lithologies suggest that some of the clayey nannofossil chalk beds are redeposited.

SLIDE SUMMARY (%):

	1, 61 M	1, 78 D	2, 96 D	3, 39 M	3, 54 D
TEXTURE:					
Sand	—	—	5	20	15
Silt	30	40	35	30	55
Clay	70	60	60	50	30
COMPOSITION:					
Accessory minerals	1	1	1	Tr	2
Bioclast	—	—	—	3	—
Calcite	2	15	20	—	17
Clay	60	25	25	20	15
Feldspar	—	—	1	1	Tr
Fish	—	—	Tr	—	1
Foraminifers	—	—	6	6	10
Glass	25	3	5	16	2
Mica	—	—	2	—	1
Micrite	—	—	—	50	—
Nannofossils	2	50	35	—	40
Opaques	5	3	2	—	2
Oxide	—	—	—	2	—
Quartz	2	1	—	—	2
Radiolarians	—	—	—	—	5
Smectite	—	—	—	Tr	—
Spines	—	—	—	—	Tr
Zeolite	3	1	3	—	2



SITE 802 HOLE A CORE 27R CORED INTERVAL 6203.7-6213.3 mbsl; 235.1-244.7 mbsf



LITHOLOGIC DESCRIPTION

TUFF, NANNOFOSSIL CHALK and TUFFACEOUS NANNOFOSSIL CHALK

Major lithologies:
a. TUFF, grayish green to gray (5G 5/1 N4), sandy, poorly to moderately sorted, fine- to coarse-grained, massive to laminated, contains clasts up to 3 cm in diameter of claystone, tuff and igneous rock. Bulk of rock consists of tuff, glass, feldspar and zeolites in a calcareous matrix/cement.
b. NANNOFOSSIL CHALK, greenish gray to light yellowish brown (5GY 6/1 10YR 6/4), massive with dark wispy structures and isolated claystone or tuff clasts. Grades to
c. TUFFACEOUS NANNOFOSSIL CHALK, light greenish gray (5GY 6/1), contains more dark, aphanitic tuff clasts.

Minor lithology: CLAYSTONE, brown to brownish black (7.5YR 5/4 5YR 2/1), zeolitic to tuffaceous, mostly as intraclasts in chalk, but also several layers too big to identify as clasts.

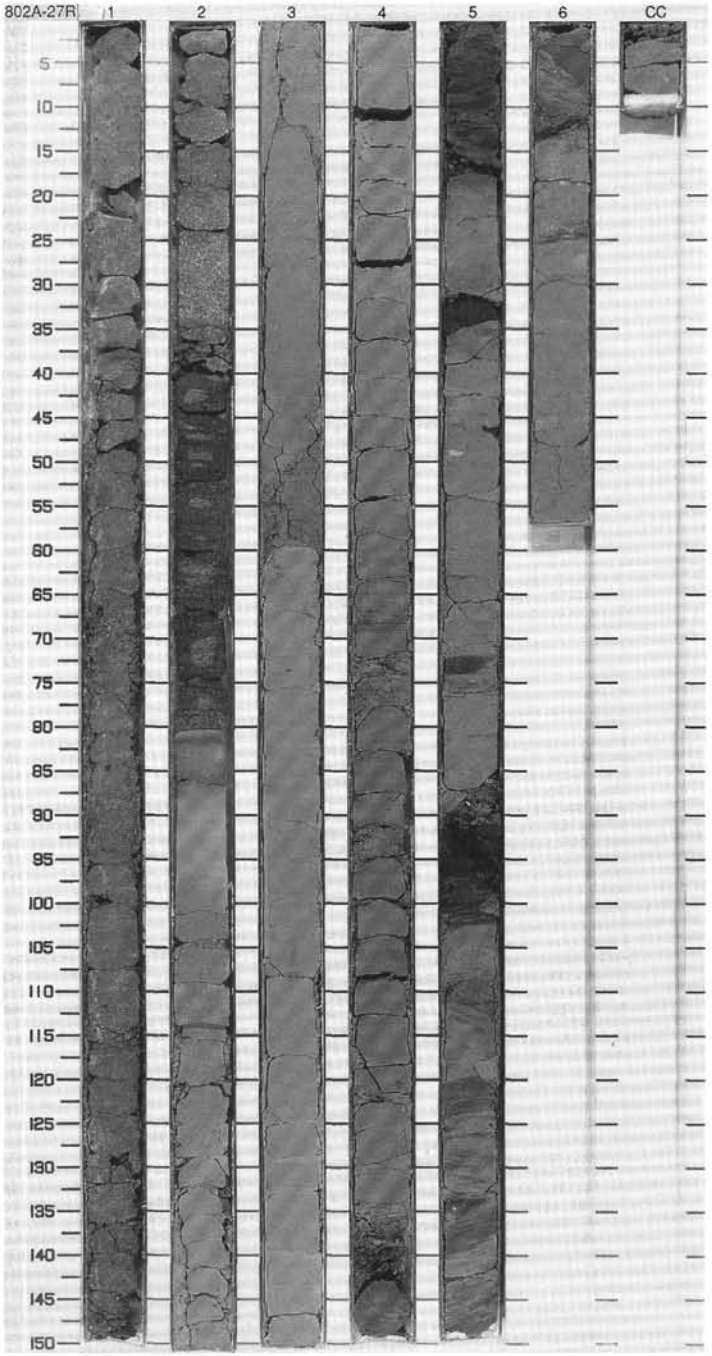
Note: Marked color change from grays to browns at Section 4, 145 cm, indicates the top of a large normally graded bed that extends to the base of Core 28R. Below this point, nannofossil chalk and claystone in Sections 5 and CC is disrupted, mixed and horizontally sheared as in a slump.

SLIDE SUMMARY (%):

	2, 73 D	2, 103 D	3, 109 D	4, 35 D	4, 46 M	4, 106 D	5, 33 M
TEXTURE:							
Sand	70	—	—	5	10	4	—
Silt	25	20	20	50	30	38	20
Clay	5	80	80	45	60	58	80
COMPOSITION:							
Accessory minerals	—	—	—	—	1	1	—
Algae	15	—	—	—	—	—	—
Bioclast	8	—	—	—	—	—	—
Calcite	3	15	20	8	—	20	Tr
Clay	—	—	—	30	10	19	75
Feldspar	—	—	—	—	1	—	—
Foraminifers	5	—	—	—	15	—	—
Glass	55	10	5	5	5	5	20
Glauconite	—	—	—	—	Tr	—	—
Igneous rock fragments	10	—	—	—	5	—	
Mica	—	3	5	—	—	—	—
Micrite	—	—	—	—	60	—	—
Nannofossils	2	61	60	57	—	55	—
Opaques	1	4	5	—	2	—	—
Oxide	Tr	2	2	—	—	—	—
Plant	—	—	—	—	1	—	—
Pyroxene	1	—	—	—	—	—	—
Quartz	—	—	—	—	Tr	—	—
Spines	—	—	—	—	—	—	5
Zeolite	—	5	3	—	—	—	Tr

SLIDE SUMMARY (%):

	5, 65 D	5, 121 M	5, 143 D
TEXTURE:			
Sand	—	—	12
Silt	20	15	33
Clay	80	85	55
COMPOSITION:			
Accessory minerals	—	1	—
Algae	—	—	5
Bioclast	—	—	10
Calcite	20	—	—
Clay	—	61	27
Foraminifers	15	Tr	15
Glass	—	16	4
Micrite	—	—	25
Nannofossils	65	—	Tr
Opaques	—	2	2
Oxide	—	2	2
Pyroxene	—	—	Tr
Rock fragment	—	—	10
Zeolite	—	15	—



SITE 802 HOLE A CORE 28R CORED INTERVAL 6213.3-6223.1 mbsl; 244.7-254.5 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
LOWER MIOCENE	A/M	unzoned	B		B		●45.3 ●21.93	53.6 ●	1	0.5				*
	A/G	CN1							1	1.0				
									2					*
							●37.2 ●22.06							#
								●78.3	3					#

LITHOLOGIC DESCRIPTION

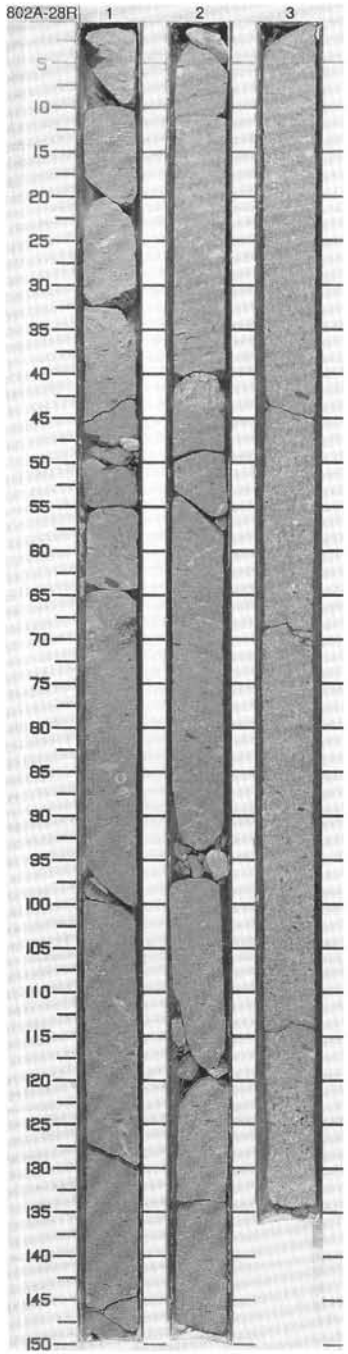
CLAYEY NANNOFOSSIL CHALK with VOLCANICLASTICS, and NANNOFOSSIL ALGAL FORAMINIFERAL PACKSTONE with VOLCANICLASTICS

Major lithologies:
a. CLAYEY NANNOFOSSIL CHALK with VOLCANICLASTICS, light yellowish brown (10YR 6/4), firm, mixed pelagic and volcanigenic sediments, contains sheared subhorizontally oriented flakes of claystone, tuff and coarse-grained carbonates.
b. NANNOFOSSIL FORAMINIFERAL PACKSTONE with VOLCANICLASTICS, light gray to light greenish gray (5Y 7/1 5GY 7/1), continuous gradation from a. above with increased grain size and neritic carbonate content. Silty to very coarse-grained, poorly sorted, mostly neritic foraminifers, Red algae and other coarse carbonate clasts, including bryozoans, coated grains and shell fragments. Packstone also includes large clasts of mudstone and tuff, minor amounts of nannofossil matrix. Moderately well cemented by calcite, still very porous and friable.

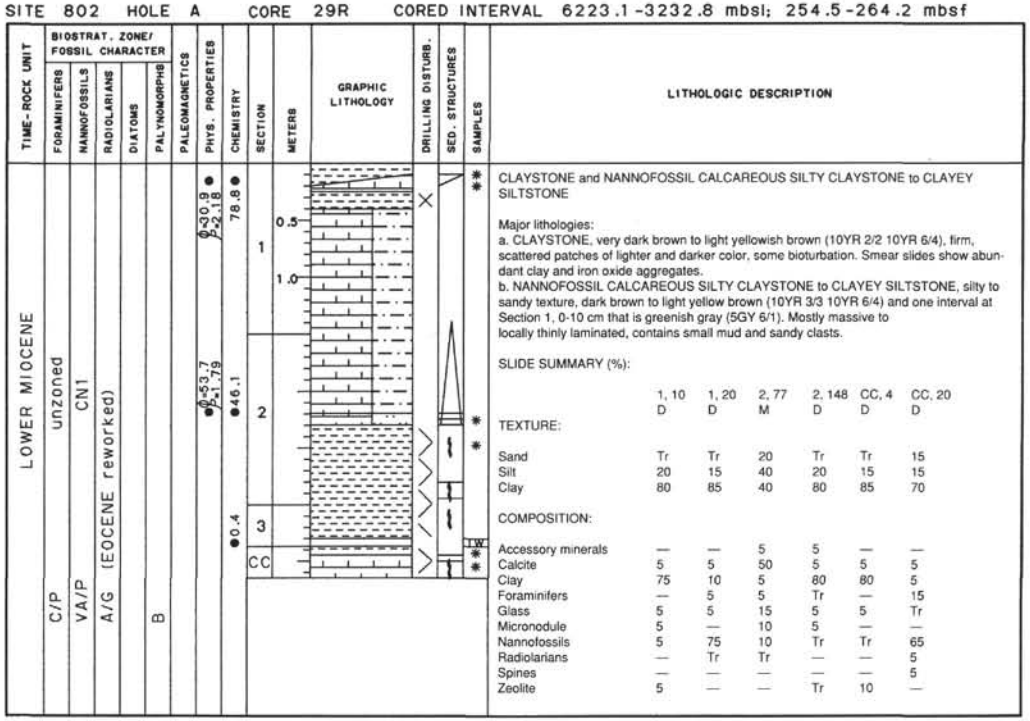
Note: This entire core consists of one fining upward bed that starts with coarse packstone and grades medium-grained packstone to chalk ultimately in Core 27R, Section 5. Mixed and disrupted sediments at top suggest a slump or mass flow deposit, whereas the lower part may be a coarse-grained turbidite. All lithologies are tuffaceous (10-15% glass and lapilli) and variably clayey.

SLIDE SUMMARY (%):

	1, 67 D	2, 20 D	3, 85 M	3, 117 M
TEXTURE:				
Sand	15	20	75	75
Silt	25	20	15	15
Clay	60	60	10	10
COMPOSITION:				
Accessory minerals	5	5	1	—
Bioclast	—	—	30	54
Calcite	15	15	—	—
Clay	20	20	—	—
Foraminifers	5	15	20	15
Glass	15	15	2	—
Igneous rock fragments	—	—	5	10
Intraclasts	—	—	10	5
Micrite	—	—	20	15
Nannofossils	40	30	—	—
Opaques	—	—	2	1
Plant	—	—	1	—
Quartz	—	—	1	—
Radiolarians	—	—	5	—
Smectite	—	—	2	Tr
Spicules	—	—	1	—



SITE 802 HOLE A CORE 29R CORED INTERVAL 6223.1-3232.8 mbsl; 254.5-264.2 mbsf



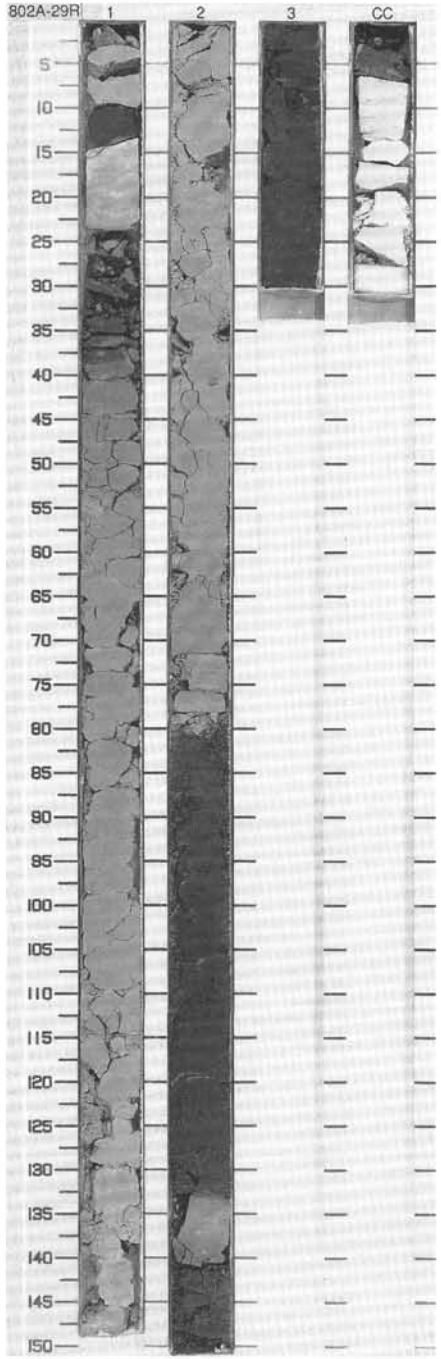
LITHOLOGIC DESCRIPTION

CLAYSTONE and NANNOFOSSIL CALCAREOUS SILTY CLAYSTONE to CLAYEY SILTSTONE

Major lithologies:
a. CLAYSTONE, very dark brown to light yellowish brown (10YR 2/2 10YR 6/4), firm, scattered patches of lighter and darker color, some bioturbation. Smear slides show abundant clay and iron oxide aggregates.
b. NANNOFOSSIL CALCAREOUS SILTY CLAYSTONE to CLAYEY SILTSTONE, silty to sandy texture, dark brown to light yellow brown (10YR 3/3 10YR 6/4) and one interval at Section 1, 0-10 cm that is greenish gray (5GY 6/1). Mostly massive to locally thinly laminated, contains small mud and sandy clasts.

SLIDE SUMMARY (%):

	1, 10 D	1, 20 D	2, 77 M	2, 148 D	CC, 4 D	CC, 20 D
TEXTURE:						
Sand	Tr	Tr	20	Tr	Tr	15
Silt	20	15	40	20	15	15
Clay	80	85	40	80	85	70
COMPOSITION:						
Accessory minerals	—	—	5	5	—	—
Calcite	5	5	50	5	5	5
Clay	75	10	5	80	80	5
Foraminifers	—	5	5	Tr	—	15
Glass	5	5	15	5	5	Tr
Micronodule	5	—	10	5	—	—
Nannofossils	5	75	10	Tr	Tr	65
Radiolarians	—	Tr	Tr	—	—	5
Spines	—	—	—	—	—	5
Zeolite	5	—	—	Tr	10	—



SITE 802 HOLE A CORE 30R CORED INTERVAL 6232.8-6242.4 mbsl; 264.2-273.8 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
LOWER MIOCENE	unzoned	CN1				N	ϕ=53.8 ρ=1.78	75.5	1	0.5 1.0				* *
	R/P	VA/P	B		B	R			2					*

LITHOLOGIC DESCRIPTION

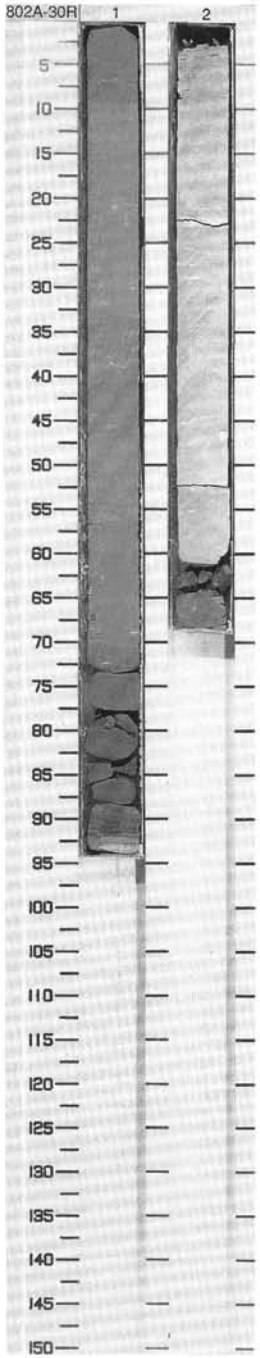
NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, pale brown to yellowish brown to light gray (10YR 6/3 10YR 4/4 10YR 7/2), firm, laminated to massive with wispy lenticular patches of different hue (bioturbation?), small oxidation aureoles around some flaky claystone inclusions. Darkens with increased radiolarian and sponge spicule content.

Minor lithology: SPICULAR BIOGENIC SANDSTONE at Section 1, 87-94 cm, white and dark yellowish brown (10YR 8/1 & 10YR 4/4), thinly laminated and cross-laminated, large cross-cutting U-shaped burrow.

SLIDE SUMMARY (%):

	1, 12 D	1, 91 M	2, 55 D
TEXTURE:			
Sand	—	40	2
Silt	35	30	10
Clay	65	30	88
COMPOSITION:			
Calcite	15	10	40
Clay	5	—	5
Foraminifers	Tr	10	5
Glass	5	—	—
Nannofossils	65	25	45
Opaques	—	—	Tr
Oxide	—	—	Tr
Radiolarians	Tr	40	5
Spicules	10	10	—
Spines	—	5	—
Zeolite	—	—	Tr



SITE 802 HOLE A CORE 31R CORED INTERVAL 6242.4-6252.1 mbsl; 273.8-283.5 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
(? UPPER OLIGOCENE) LOWER MIOCENE	C/M unzoned	A/P CN1	B		B	R R?	ϕ40.2 ● ρ2.00	52.2 ●	1 2	0.5 1.0				* *

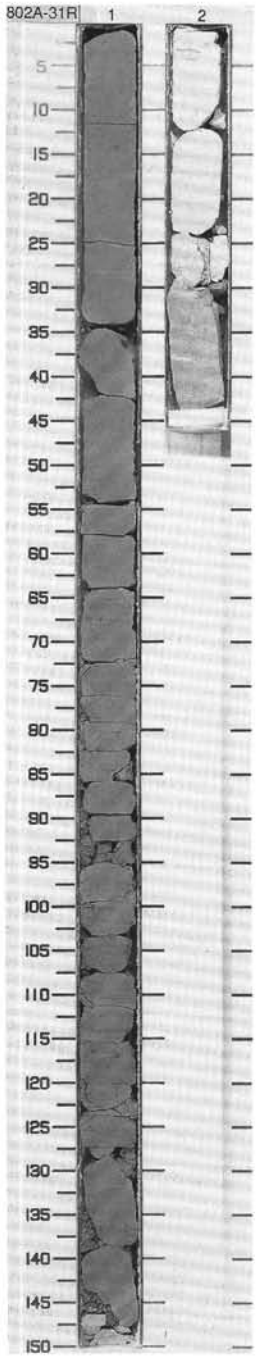
LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, light brown (10YR 6/3 grading to 7.5YR 8.2) with grayish brown (10YR 6/2) in Section 2, 30-45 cm, laminated with common bioturbation. Chalk consists mainly of nannofossils (mixed upper Cretaceous and Paleocene assemblage) and micrite with traces of FeMn oxides, clay, mica and zeolites. Dark grains in Section 1, 120-150 cm may be metal oxide concretions.

SLIDE SUMMARY (%):

	1, 75 D	2, 17 D
TEXTURE:		
Silt	3	1
Clay	97	99
COMPOSITION:		
Clay	1	—
Glass	1	—
Mica	2	1
Nannofossils	90	94
Opaques	2	3
Oxide	3	2
Zeolite	1	—



SITE 802 HOLE A CORE 32R CORED INTERVAL 6252.1-6261.4 mbsl; 283.5-292.8 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
(? UPPER OLIGOCENE) LOWER MIOCENE	R/P unzoned	VA/P CN1	B		B	R N	Φ=48.9 ρ=1.77 Φ=19.2 ρ=2.38	83.5 40.4 53.5	1 2 3	0.5 1.0				* * TW

LITHOLOGIC DESCRIPTION

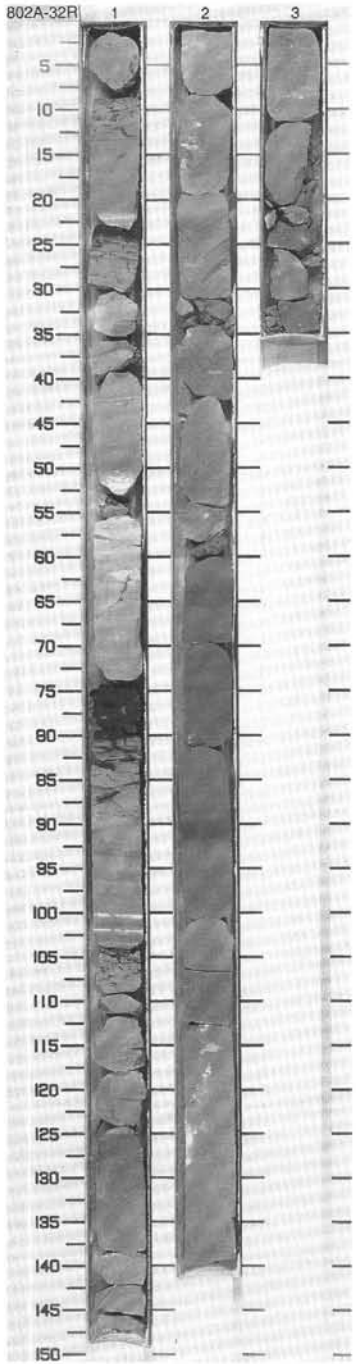
NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, dark grayish brown to light brownish gray (10YR 4/2 10YR 6/2) with upper portions of beds commonly having the lighter coloration, moderately bioturbated by 0.5 cm oval to irregular corkscrew burrows penetrating up to 15 cm. Some beds have a laminated basal coarse- grained interval that is foraminifer-and radiolarian-rich and white to light gray (10YR 8/2- 10YR 7/2). Black 1-4 mm flakes or streaks parallel to bedding may be FeMn oxide concen-trations.

Minor lithologies: ZEOLITIC CLAYSTONE, very dark gray (10YR 3/1) with minor burrows infilled by nannofossil chalk. Section 1, 21-23 cm and 75-80 cm. Claystone is carried downward by bioturbation into upper portion of underlying nannofossil chalk beds. Nannofossil chalk is locally silified to CALCAREOUS PORCELLANITE (Section 1, 35-41 cm; Section 2, 56-60 cm; Section 3, 21-23 cm).

SLIDE SUMMARY (%):

	1, 79 M	2, 46 D
TEXTURE:		
Silt	30	40
Clay	70	60
COMPOSITION:		
Clay	54	—
Foraminifers	—	1
Micrite	—	60
Nannofossils	—	36
Oxide	10	1
Quartz	—	1
Radiolarians	6	—
Zeolite	30	—



SITE 802 HOLE A CORE 33R CORED INTERVAL 6261.4-6270.9 mbsl; 292.8-302.3 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER EOCENE	A/M *Morozovella edgari*	VA/M (NP9)(CP8)-(NP10)(CP9)	B		B	R	ϕ=34.8 β=2.12	81.8	1	0.5 1.0	VOID		⊙	#
						R			2				≡	*

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, light grayish brown to yellowish gray (10YR 7/2, 10YR 6/2, 5Y 8/1), massive with rare bleached spots of 1-3 mm diameter. Interval containing smeared grains (1 x 2- 6 mm) of black (N2) metal oxide concentrations occur in lower Section 1 and upper Section 2.

Minor lithology: CHERT nodule, brown (10YR 2/2) with irregular contact with chalk, containing inclusions of chalk up to 1 cm in diameter, Section 1, 16-22 cm.

SLIDE SUMMARY (%):

	1, 113 D	2, 7 D
TEXTURE:		
Sand	5	10
Silt	50	35
Clay	45	55
COMPOSITION:		
Bioclast	5	—
Calcite	10	11
Clay	—	5
Foraminifers	10	10
Glass	5	2
Micrite	65	—
Nannofossils	—	70
Oxide	5	2

SITE 802 HOLE A CORE 34R CORED INTERVAL 627.9-628.2 mbsl; 302.3-311.5 mbsf

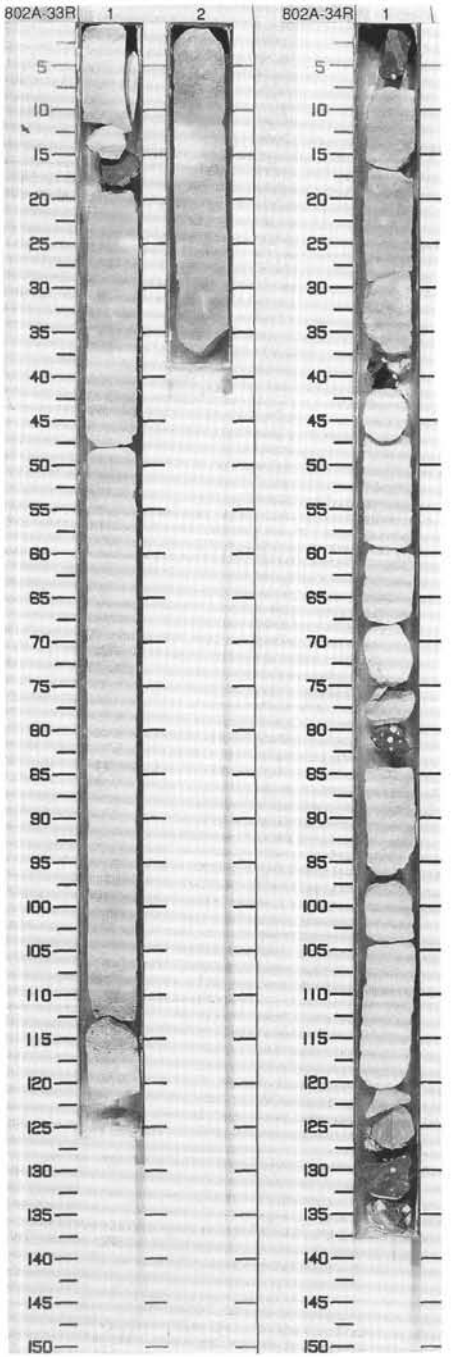
TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER EOCENE	A/M *Morozovella edgari*	VA/M (NP9)(CP8) - (NP10)(CP9)	B		B	? R N	R ϕ=18.5 β=2.39	90.3	1	0.5 1.0			⊙	

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, light gray to pinkish white (10YR 7/ to 10YR 8/1), with faint, fine laminations and rare light-colored burrows, contains traces of metal oxide micronodules and radiolarians.

Minor lithology: CHERT, dark brown (10YR 2/1) and dark reddish brown (5YR 4/4), as nodules, with sharp, irregular contacts and chalk inclusions up to 8 mm in diameter. One nodule contains irregular rounded cavities lined with calcite crystals.



SITE 802 HOLE A CORE 35R CORED INTERVAL 6280.2-6289.3 mbsl; 311.5-320.7 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
UPPER PALEOCENE	R/P unzoned	VA/G (NP9)(CP8) - (NP10)(CP9)	B		B	R	ϕ=49.7 ρ=1.76 ●	42.6 ●	1 CC	0.5				# *

LITHOLOGIC DESCRIPTION

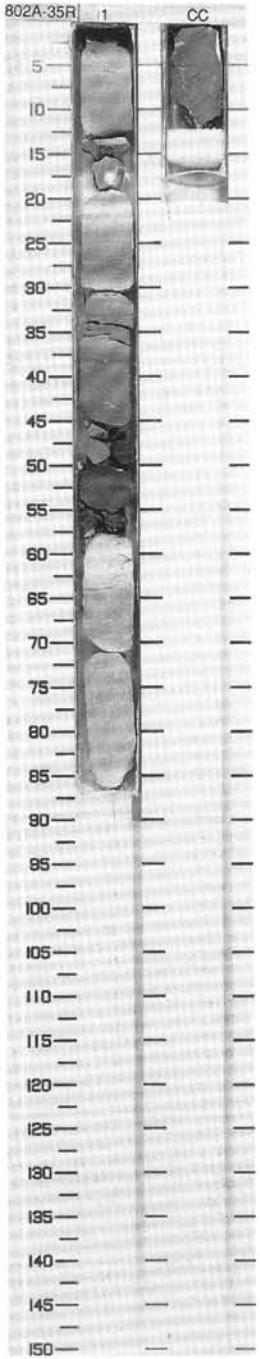
NANNOFOSSIL CHALK and CHERT

Major lithologies:
a. NANNOFOSSIL CHALK, light olive gray (5Y 6/1) and pinkish gray (5YR 8/1) to pale yellowish brown (10YR 6/2), moderate bioturbation with laminations and fining-upward grading in lower portions of some beds. Locally siliceous with up to 25% microquartz replacement. Contains nodules of
b. CHERT, olive gray to olive black (5Y 4/1 - 5Y 2/1) with pinkish gray (5YR 8/1) calcareous spots of less silicified sediment.

Minor lithology: CLAYEY NANNOFOSSIL CHALK with ZEOLITES, dark yellowish brown (10YR 4/2), at the bioturbated top of a chalk bed; the zeolitic clay component may represent in situ sedimentation churned downward into the redeposited chalk.

SLIDE SUMMARY (%):

	1, 25 D	1, 52 M
TEXTURE:		
Sand	5	5
Silt	45	30
Clay	50	65
COMPOSITION:		
Calcite	—	11
Chert	25	—
Clay	—	30
Foraminifers	10	—
Glass	—	4
Micrite	63	—
Nannofossils	—	40
Opaques	1	—
Radiolarians	1	—
Zeolite	—	15



SITE 802 HOLE A CORE 36R CORED INTERVAL 6289.3-6298.5 mbsl; 320.7-329.9 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
UPPER PALEOCENE	R/P	A/P	B		B	R	ϕ 22.0 ρ 2.33	85.4 ● 91.0 ●	1	0.5				* #
	unzoned	(NP9)(CP8)-(NP10)(CP9)							CC	1.0				IW

LITHOLOGIC DESCRIPTION

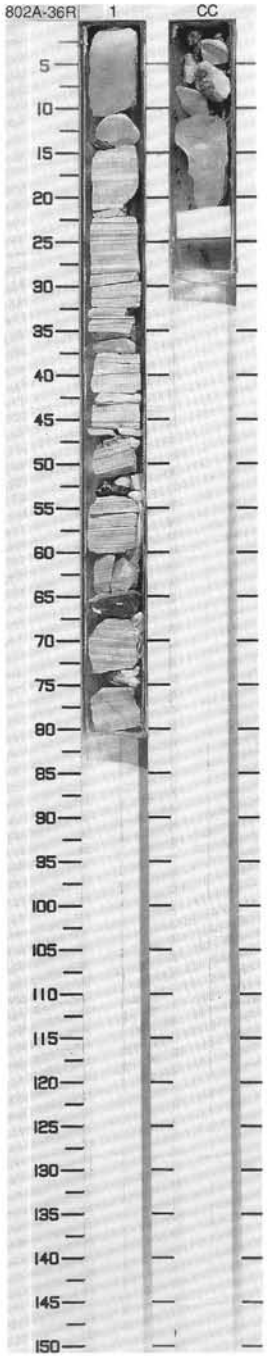
NANNOFOSSIL CHALK with FORAMINIFERS

Major lithology: NANNOFOSSIL CHALK with FORAMINIFERS, generally pinkish gray (7.5YR 7/2), but composed of laminations of pinkish white (7.5YR 8/2) chalk and light brown (7.5YR 6/4) chalk with clay, contains 15% foraminifers and 5% radiolarians; fine bedding displays wavy to planar laminations, through cross- laminations, flame structures, and contorted laminations.

Minor lithologies:
a. NANNOFOSSIL CHALK, light brownish gray (10YR 6.5/2) grading upward to pinkish gray (7.5YR 7/2) in Section 1, 0-15 cm, weakly bioturbated at top; and yellowish gray to light olive gray (5Y 8/1 5Y 6/1) in Section CC, with laminations, and minor bioturbation mottling.
b. CHERT, as nodules and layers in chalk, olive gray (5Y 4/1) to dark brown (7.5YR 4/4 7.5YR 3/4), with internal laminations and abundant calcareous inclusions of light brown.

SLIDE SUMMARY (%):

	1, 40 D	1, 61 D
TEXTURE:		
Sand	2	20
Silt	35	50
Clay	63	30
COMPOSITION:		
Calcite	40	—
Clay	5	—
Foraminifers	15	35
Glass	—	5
Micrite	—	55
Nannofossils	30	—
Oxide	—	2
Quartz	5	1
Radiolarians	5	1



SITE 802 HOLE A CORE 37R CORED INTERVAL 6298.5-6307.8 mbsl; 329.9-339.2 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
PALEOCENE	unzoned R/P	unzoned R/M	B		B	N			CC					*	PELAGIC CLAYSTONE

Major lithology: PELAGIC CLAYSTONE (ZEOLITIC CLAYSTONE), brownish gray (5YR 4/1) with thin laminations and oval reduction mottles of light brown (5YR 6/4), weakly bioturbated and with wedge-shaped and flaser laminations.

Minor lithology: CHERT, pale yellowish brown (10YR 6/2) and very pale orange (10YR 8/2), conchoidal fractures, laminated to weakly bioturbated, in Section CC, 10-15 cm.

SLIDE SUMMARY (%):

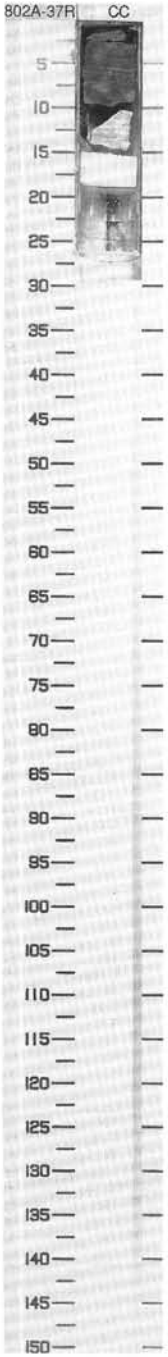
CC, 6
D

TEXTURE:

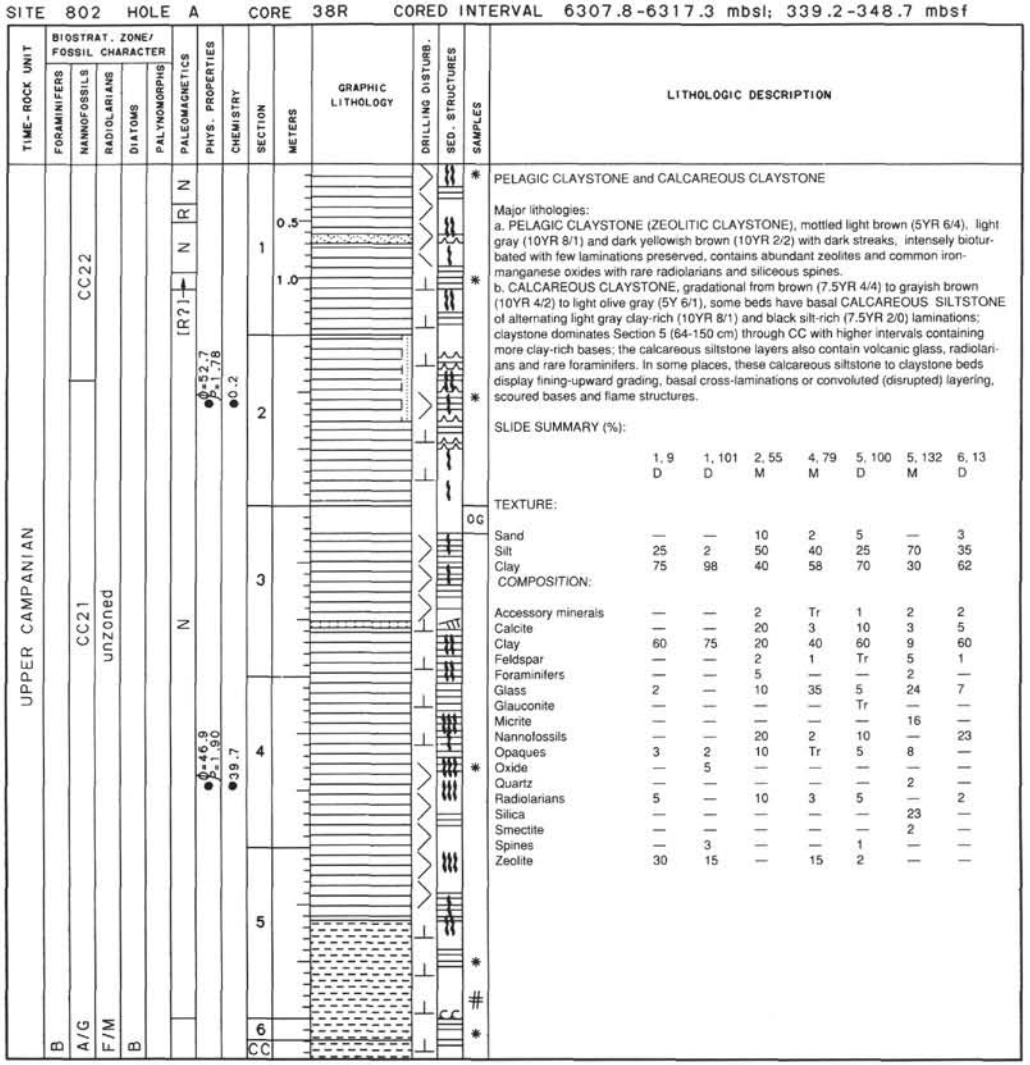
Sand	1
Silt	30
Clay	69

COMPOSITION:

Clay	50
Glass	2
Nannofossils	Tr
Oxide	1
Spines	7
Zeolite	40



SITE 802 HOLE A CORE 38R CORED INTERVAL 6307.8-6317.3 mbsl; 339.2-348.7 mbsf



LITHOLOGIC DESCRIPTION

PELAGIC CLAYSTONE and CALCAREOUS CLAYSTONE

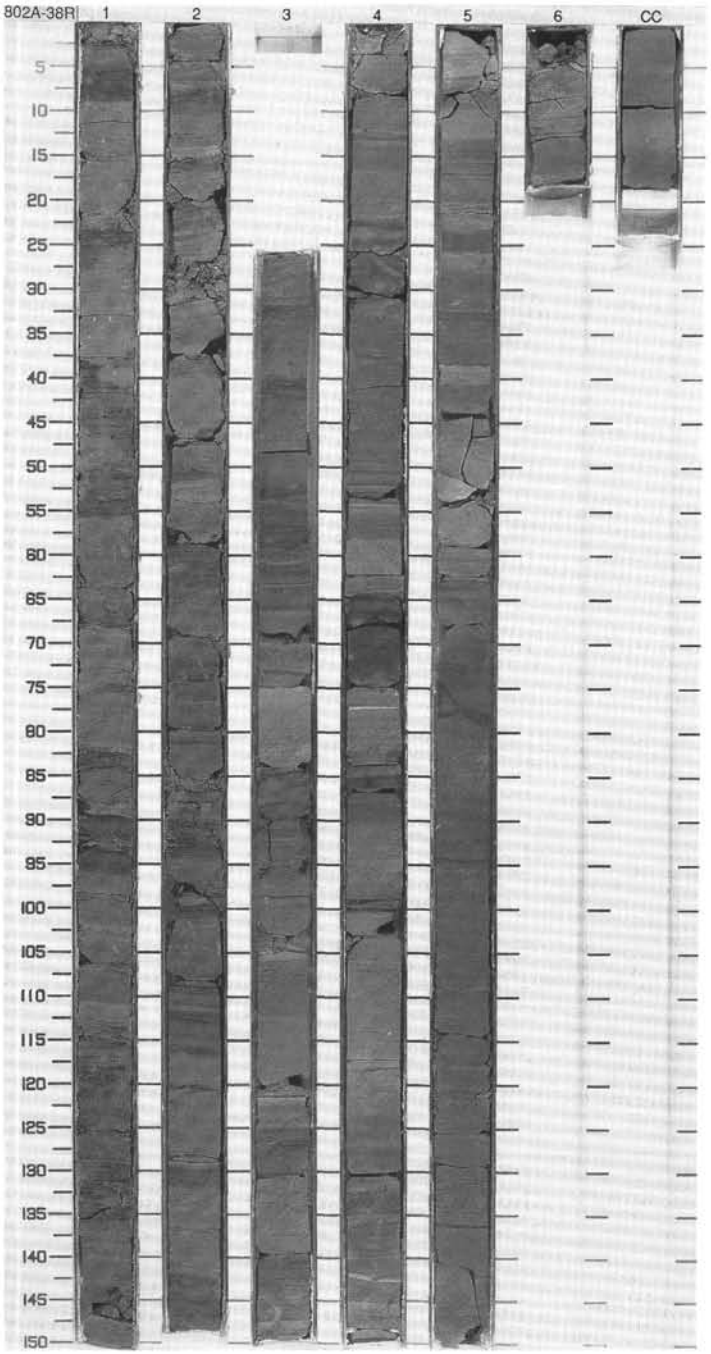
Major lithologies:

a. PELAGIC CLAYSTONE (ZEOLITIC CLAYSTONE), mottled light brown (5YR 6/4), light gray (10YR 8/1) and dark yellowish brown (10YR 2/2) with dark streaks, intensely bioturbated with few laminations preserved, contains abundant zeolites and common iron-manganese oxides with rare radiolarians and siliceous spines.

b. CALCAREOUS CLAYSTONE, gradational from brown (7.5YR 4/4) to grayish brown (10YR 4/2) to light olive gray (5Y 6/1), some beds have basal CALCAREOUS SILTSTONE of alternating light gray clay-rich (10YR 8/1) and black silt-rich (7.5YR 2/0) laminations; claystone dominates Section 5 (64-150 cm) through CC with higher intervals containing more clay-rich bases; the calcareous siltstone layers also contain volcanic glass, radiolarians and rare foraminifers. In some places, these calcareous siltstone to claystone beds display fining-upward grading, basal cross-laminations or convoluted (disrupted) layering, scoured bases and flame structures.

SLIDE SUMMARY (%):

	1, 9 D	1, 101 D	2, 55 M	4, 79 M	5, 100 D	5, 132 M	6, 13 D
TEXTURE:							
Sand	—	—	10	2	5	—	3
Silt	25	2	50	40	25	70	35
Clay	75	98	40	58	70	30	62
COMPOSITION:							
Accessory minerals	—	—	2	Tr	1	2	2
Calcite	—	—	20	3	10	3	5
Clay	60	75	20	40	60	9	60
Feldspar	—	—	2	1	Tr	5	1
Foraminifers	—	—	5	—	—	2	—
Glass	2	—	10	35	5	24	7
Glauconite	—	—	—	—	Tr	—	—
Micrite	—	—	—	—	—	16	—
Nannofossils	—	—	20	2	10	—	23
Opaques	3	2	10	Tr	5	8	—
Oxide	—	5	—	—	—	—	—
Quartz	—	—	—	—	—	2	—
Radiolarians	5	—	10	3	5	—	2
Silica	—	—	—	—	—	23	—
Smectite	—	—	—	—	—	2	—
Spines	—	3	—	—	1	—	—
Zeolite	30	15	—	15	2	—	—



SITE 802 HOLE A CORE 39R CORED INTERVAL 6317.3-6326.7 mbsl; 348.7-358.1 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER CAMPANIAN	unzoned C/M	CC21 VA/G	B		B	N R N	●Φ=51.7 ρ=1.86	●3.0	1	0.5				# *

Header group over FORAMINIFERS–PALYNOMORPHS: BIOSTRAT. ZONE/ FOSSIL CHARACTER

LITHOLOGIC DESCRIPTION

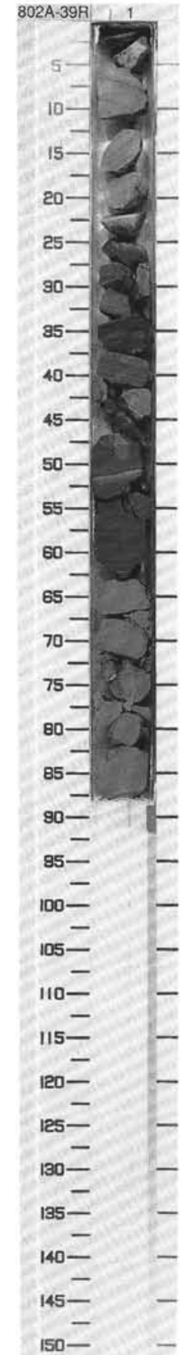
PORCELLANITE and CLAYEY NANNOFOSSIL CHALK

Major lithologies:
a. PORCELLANITE, reddish brown (5YR 4/4 5YR 3/4), finely laminated, contains grains of oxides.
b. CLAYEY NANNOFOSSIL CHALK, grayish blue (5BG 5/1) or olive gray (5Y 4/1), massive, nannofossils plus clay, volcanic glass, iron oxides and zeolites.

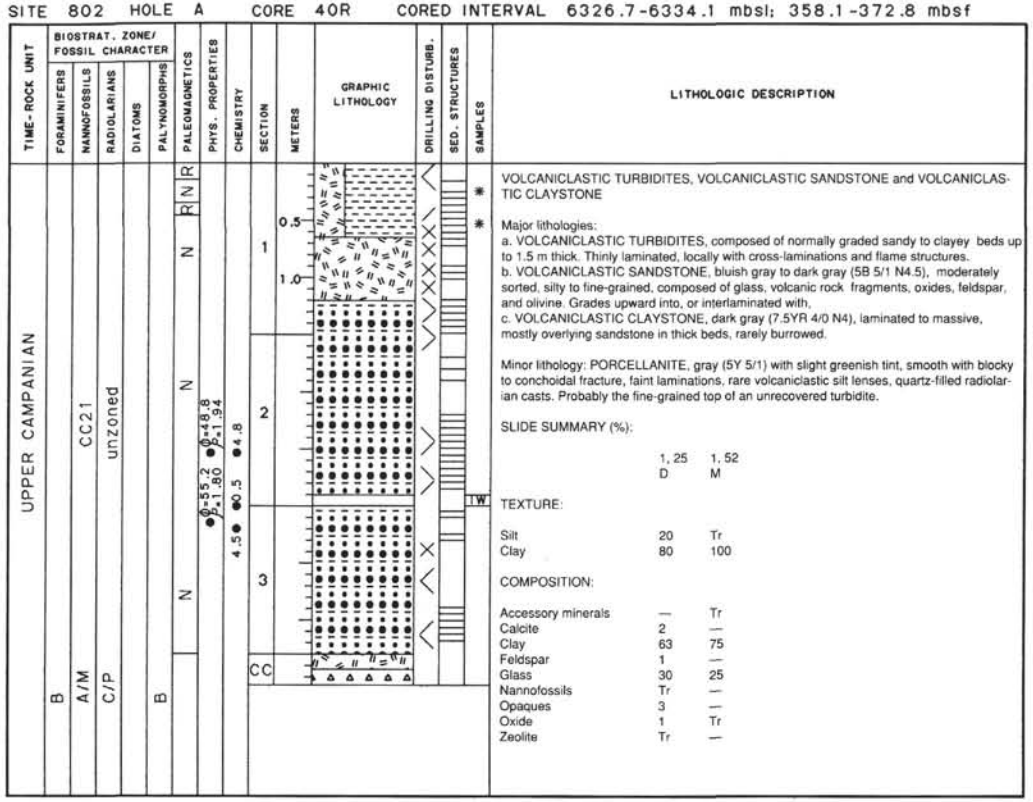
Minor lithologies:
a. CLAYSTONE, moderate brown (5YR 5/2) to olive gray (5Y 4/1), burrowed, with diagenetically controlled color changes.
b. VOLCANICLASTIC SANDSTONE, greenish gray (5G 4/1), normally graded bed with basal scour, fine-grained, moderately well sorted, contains glass, oxides, zeolites and igneous rock fragments.

SLIDE SUMMARY (%):

	1, 52 M	1, 64 D
TEXTURE:		
Sand	90	Tr
Silt	10	5
Clay	—	95
COMPOSITION:		
Algae	3	—
Calcite	2	—
Clay	—	25
Feldspar	3	—
Glass	29	5
Igneous rock fragments	15	—
Nannofossils	—	60
Opaques	5	3
Oxide	3	5
Palagonite	30	—
Pyroxene	6	—
Radiolarians	2	—
Smectite	2	—
Zeolite	—	2



SITE 802 HOLE A CORE 40R CORED INTERVAL 6326.7-6334.1 mbsl; 358.1-372.8 mbsf



LITHOLOGIC DESCRIPTION

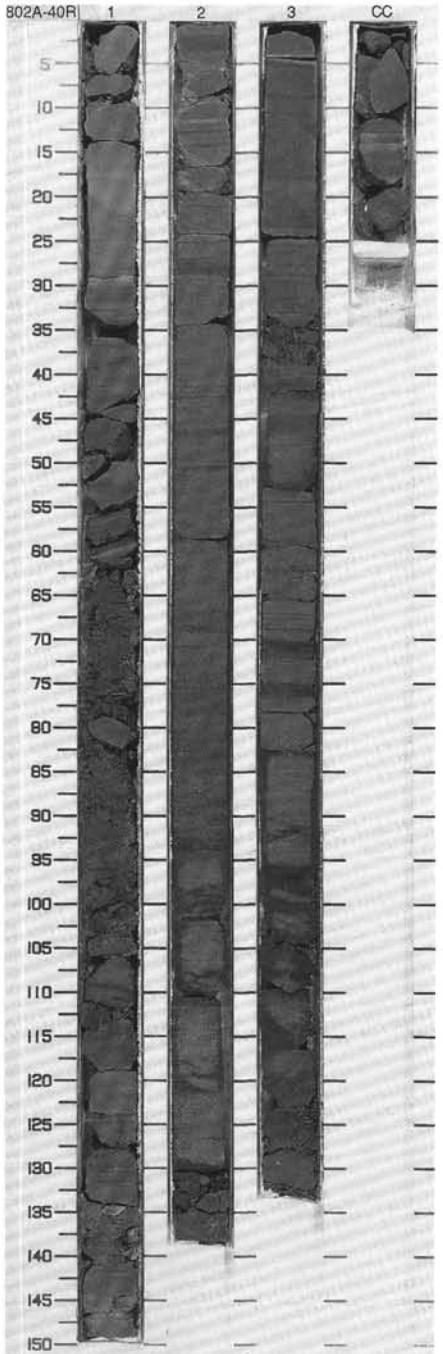
VOLCANICLASTIC TURBIDITES, VOLCANICLASTIC SANDSTONE and VOLCANICLASTIC CLAYSTONE

Major lithologies:
a. VOLCANICLASTIC TURBIDITES, composed of normally graded sandy to clayey beds up to 1.5 m thick. Thinly laminated, locally with cross-laminations and flame structures.
b. VOLCANICLASTIC SANDSTONE, bluish gray to dark gray (5B 5/1 N4.5), moderately sorted, silty to fine-grained, composed of glass, volcanic rock fragments, oxides, feldspar, and olivine. Grades upward into, or interlaminated with,
c. VOLCANICLASTIC CLAYSTONE, dark gray (7.5YR 4/0 N4), laminated to massive, mostly overlying sandstone in thick beds, rarely burrowed.

Minor lithology: PORCELLANITE, gray (5Y 5/1) with slight greenish tint, smooth with blocky to conchoidal fracture, faint laminations, rare volcaniclastic silt lenses, quartz-filled radiolarian casts. Probably the fine-grained top of an unrecovered turbidite.

SLIDE SUMMARY (%):

	1, 25 D	1, 52 M
TEXTURE:		
Silt	20	Tr
Clay	80	100
COMPOSITION:		
Accessory minerals	—	Tr
Calcite	2	—
Clay	63	75
Feldspar	1	—
Glass	30	25
Nannofossils	Tr	—
Opaques	3	—
Oxide	1	Tr
Zeolite	Tr	—



SITE 802 HOLE A CORE 41R CORED INTERVAL 6334.1-6341.4 mbsl; 365.5-372.8 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
UPPER CAMPANIAN	B	C/M	B		B	N	Φ=55.7 ρ=1.76	0.2	1	0.5 1.0				
		CC21				N			2					
						N	Φ=57.9 ρ=1.78	9.3	3					OG
						N			4					

LITHOLOGIC DESCRIPTION

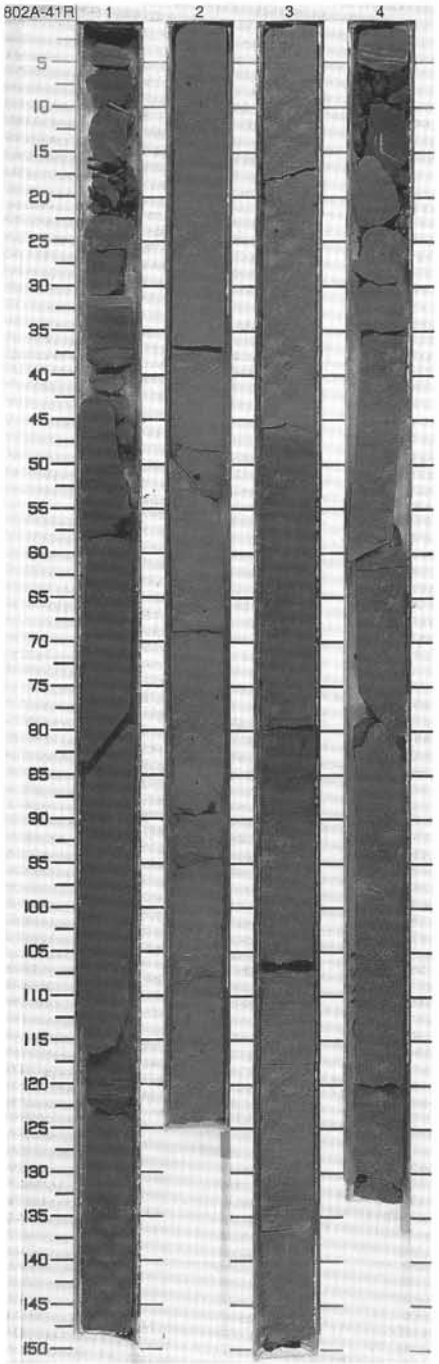
VOLCANICLASTIC CLAYSTONE

Major lithology: VOLCANICLASTIC CLAYSTONE, dark gray (N4 N5), massive to thinly laminated in greenish grays (5GY 4/1 5Y 5/1), in some intervals laminations are convolute, other massive beds are gently graded. Common spherules in Sections 2 and 3 have a glassy luster, but are composed of clay (glauconite/celadonite?).

Minor lithology: VOLCANICLASTIC SILTSTONE, dark greenish gray (5BG 4/1), very similar to volcaniclastic claystone, but silty-sandy, contains scattered 0.5 mm claystone clasts.

SLIDE SUMMARY (%):

	3, 130 D	4, 131 M
TEXTURE:		
Sand	25	30
Silt	25	30
Clay	50	40
COMPOSITION:		
Accessory minerals	15	—
Calcite	Tr	Tr
Clay	45	80
Glass	35	20
Opaques	5	—
Oxide	—	Tr
Radiolarians	Tr	—



SITE 802 HOLE A CORE 42R CORED INTERVAL 6341.4-6350.7 mbsl; 372.8-382.1 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
UPPER CAMPANIAN	B	A/M	B		B	N	ϕ=59.3 ρ=1.74 ϕ=54.1 ρ=1.78	7.0 6.4	1 2	0.5 1.0	VOID			*

LITHOLOGIC DESCRIPTION

VOLCANICLASTIC CLAYSTONE and VOLCANICLASTIC SANDY SILTSTONE

Major lithologies:

a. VOLCANICLASTIC CLAYSTONE, dark gray (N4 N5), relatively homogeneoue, massive to locally laminated, cherty brownish gray (5Y 4/1) horizon at bottom of Section 2.

b. VOLCANICLASTIC SANDY SILTSTONE, dark gray to dark bluish gray (N4 5B 4/1), fines upward to volcaniclastic claystone in a turbidite bed 1 m thick, sharp base, contains abundant claystone clasts of varied colors at Section 1, 50-75 cm, one light-colored clast is rich in cubic zeolite(?).

SLIDE SUMMARY (%):

	1, 62 M
TEXTURE:	
Sand	3
Silt	74
Clay	23
COMPOSITION:	
Clay	20
Feldspar	1
Glass	79

SITE 802 HOLE A CORE 43R CORED INTERVAL 6350.7-6359.9 mbsl; 382.1-391.3 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
SANTONIAN	B	VA/M	R/P		B	N R N R	ϕ=54.2 ρ=1.83 ϕ=43.2 ρ=2.06	13.0 9.1 8.8	1 2 3 CC	0.5 1.0			IW	*

LITHOLOGIC DESCRIPTION

VOLCANICLASTIC TURBIDITES and CALCAREOUS VOLCANICLASTIC CLAYSTONE

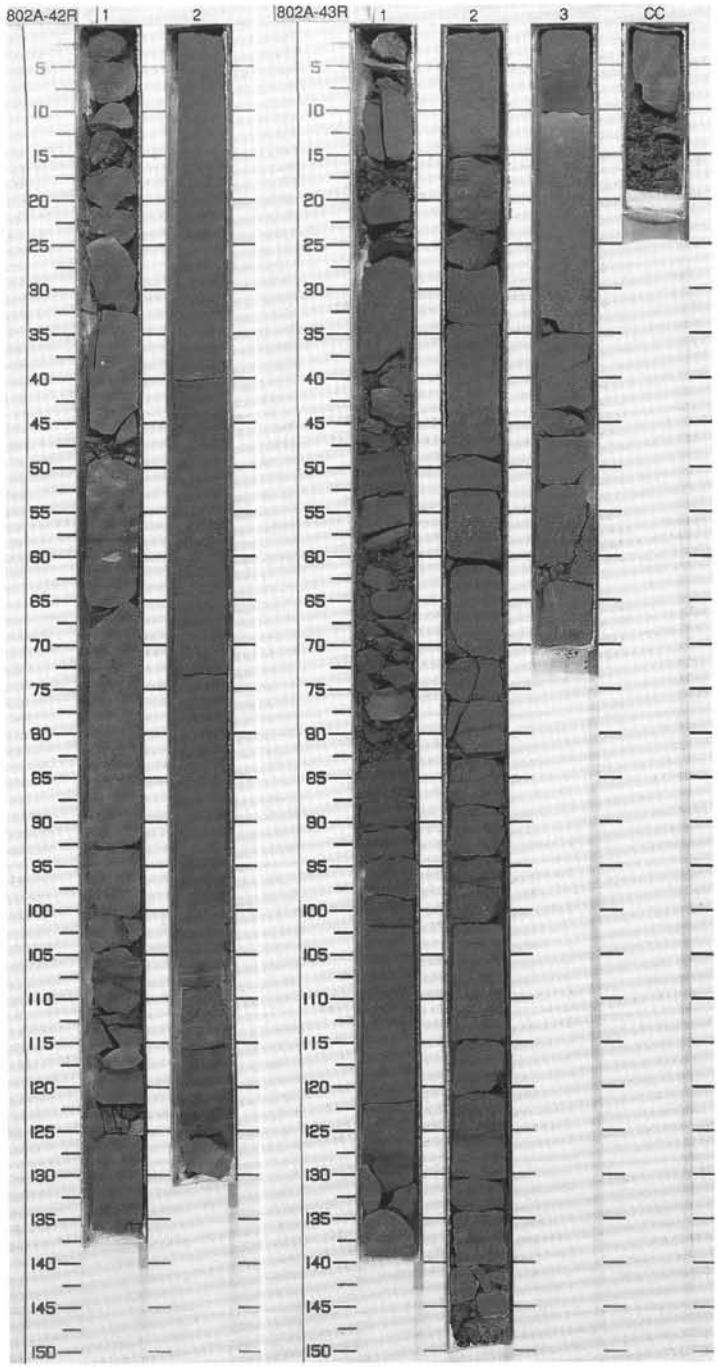
Major lithologies:

a. VOLCANICLASTIC TURBIDITES, dark gray to dark bluish gray (N3 5B 4/1), sandy to clayey, normally graded beds, moderately well sorted, composed of volcanic rock fragments, glass, rip-up clasts of claystone, oxides and pyroxene, thinly laminated and locally cross-laminated. Sharp contacts with underlying

b. CALCAREOUS VOLCANICLASTIC CLAYSTONE, bluish gray (5B 4/1 5BG 4/1), mostly massive, burrows in 3-10 cm below the contact with the overlying turbidites. Contains nannofossils and inorganic calcite; total calcite content increases upward within turbidite beds into the silt to clay grain-size interval, then diminishes in the fine-grained claystone top. Present as part of turbidites, and as beds of uncertain depositional process.

SLIDE SUMMARY (%):

	2, 65 D
TEXTURE:	
Sand	2
Silt	55
Clay	43
COMPOSITION:	
Calcite	25
Clay	39
Glass	20
Nannofossils	5
Opaques	2
Oxide	3
Pyroxene	1
Radiolarians	2
Smectite	1
Zeolite	2



SITE 802 HOLE A CORE 44R CORED INTERVAL 6359.9-6369.1 mbsl; 391.3-400.5 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
SANTONIAN		CC15 - CC16 ?	unzoned			R N	●φ=56.2 ρ=1.67	●2.2	1	0.5 1.0				*
	B	F/P	F/P		B									

LITHOLOGIC DESCRIPTION

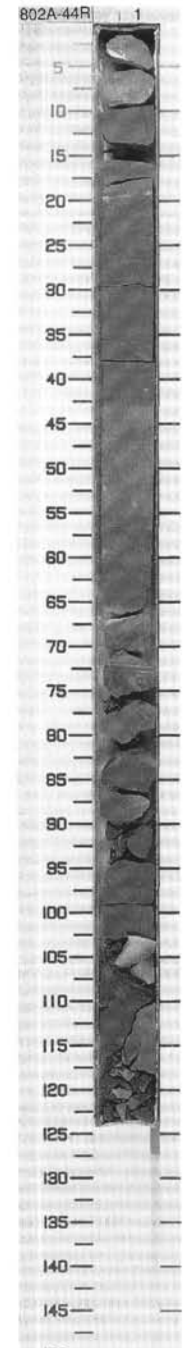
SILTY CLAYSTONE and CLAYSTONE

Major lithologies:
a. SILTY CLAYSTONE, dark bluish gray (5B 4/1), massive to faintly laminated, and
b. CLAYSTONE, also dark bluish gray (5B 4/1), massive, contains only traces of nannofossils, volcanic glass, feldspar, opaques, and zeolites.

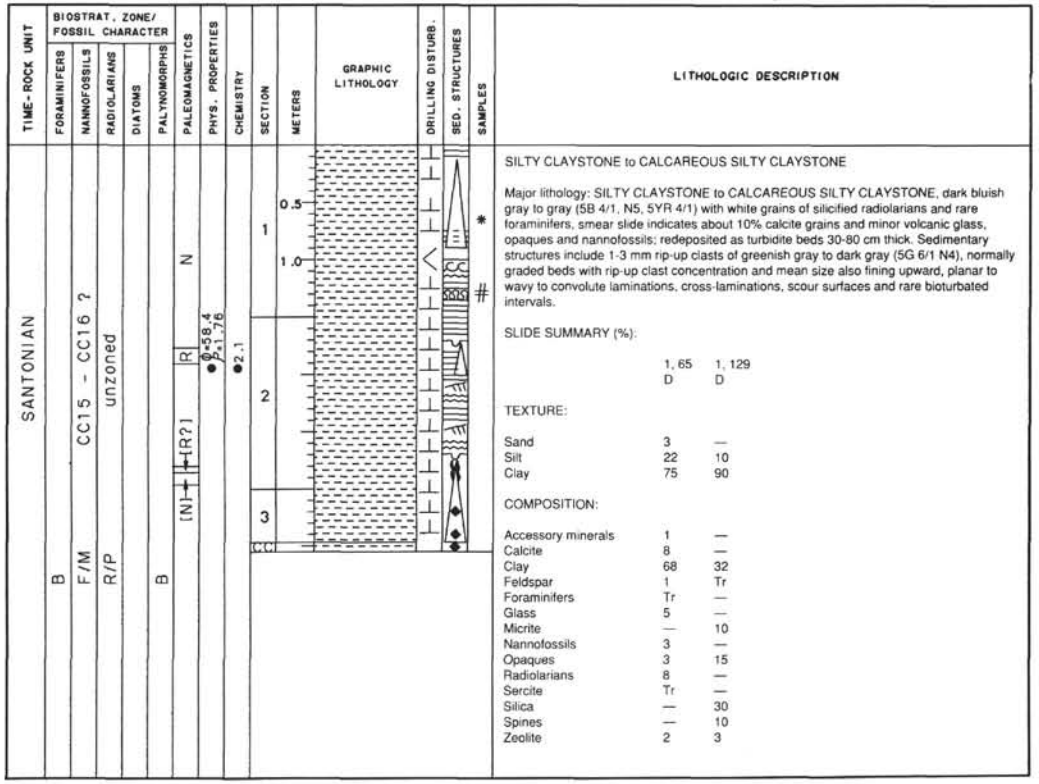
Minor lithology: CLAYEY SANDSTONE, dark bluish gray (5B 4/1), *fine-grained*, 3 cm layer, contains volcanic glass, feldspar, zeolites, red oxidized grains; scoured base.

SLIDE SUMMARY (%):

	1, 86 D
TEXTURE:	
Silt	1
Clay	99
COMPOSITION:	
Clay	84
Feldspar	1
Glass	3
Nannofossils	3
Opaques	5
Oxide	2
Smectite	1
Zeolite	1



SITE 802 HOLE A CORE 45R CORED INTERVAL 6369.1-6378.6 mbsl; 400.5-410.0 mbsf



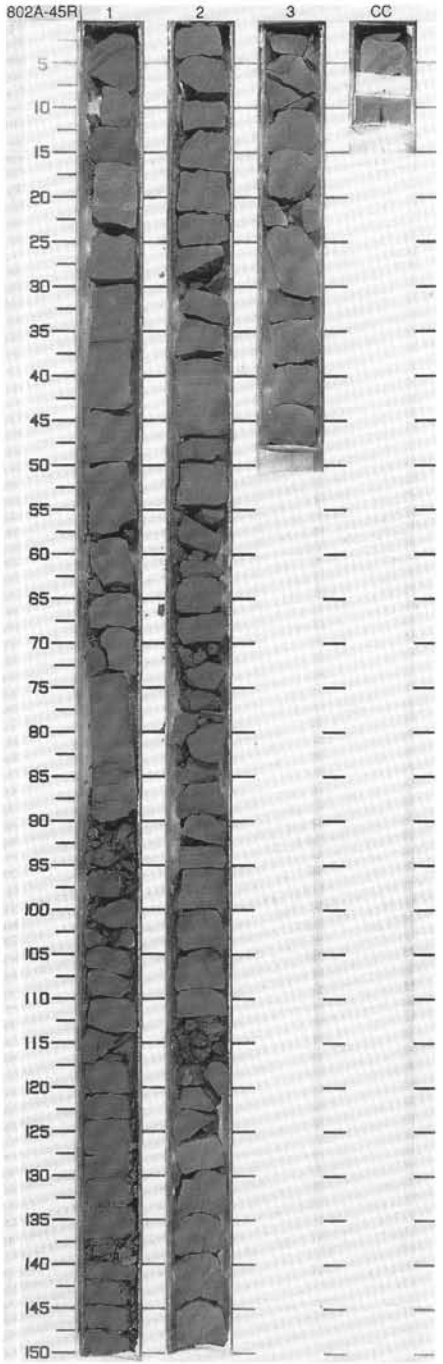
LITHOLOGIC DESCRIPTION

SILTY CLAYSTONE to CALCAREOUS SILTY CLAYSTONE

Major lithology: SILTY CLAYSTONE to CALCAREOUS SILTY CLAYSTONE, dark bluish gray to gray (5B 4/1, N5, 5YR 4/1) with white grains of silicified radiolarians and rare foraminifers, smear slide indicates about 10% calcite grains and minor volcanic glass, opaques and nannofossils; redeposited as turbidite beds 30-80 cm thick. Sedimentary structures include 1-3 mm rip-up clasts of greenish gray to dark gray (5G 6/1 N4), normally graded beds with rip-up clast concentration and mean size also fining upward, planar to wavy to convolute laminations, cross-laminations, scour surfaces and rare bioturbated intervals.

SLIDE SUMMARY (%):

	1, 65 D	1, 129 D
TEXTURE:		
Sand	3	—
Silt	22	10
Clay	75	90
COMPOSITION:		
Accessory minerals	1	—
Calcite	8	—
Clay	68	32
Feldspar	1	Tr
Foraminifers	Tr	—
Glass	5	—
Micrite	—	10
Nannofossils	3	—
Opaques	3	15
Radiolarians	8	—
Sercite	Tr	—
Silica	—	30
Spines	—	10
Zeolite	2	3



SITE 802 HOLE A CORE 46R CORED INTERVAL 6378.6-6387.8 mbsl; 410.0-419.2 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
SANTONIAN	B	F/M CC15 - CC16 ?	F/P unzoned		B	N R? N	ρ=1.61.8 ρ=1.69	● 7.6	1	0.5 1.0				*

LITHOLOGIC DESCRIPTION

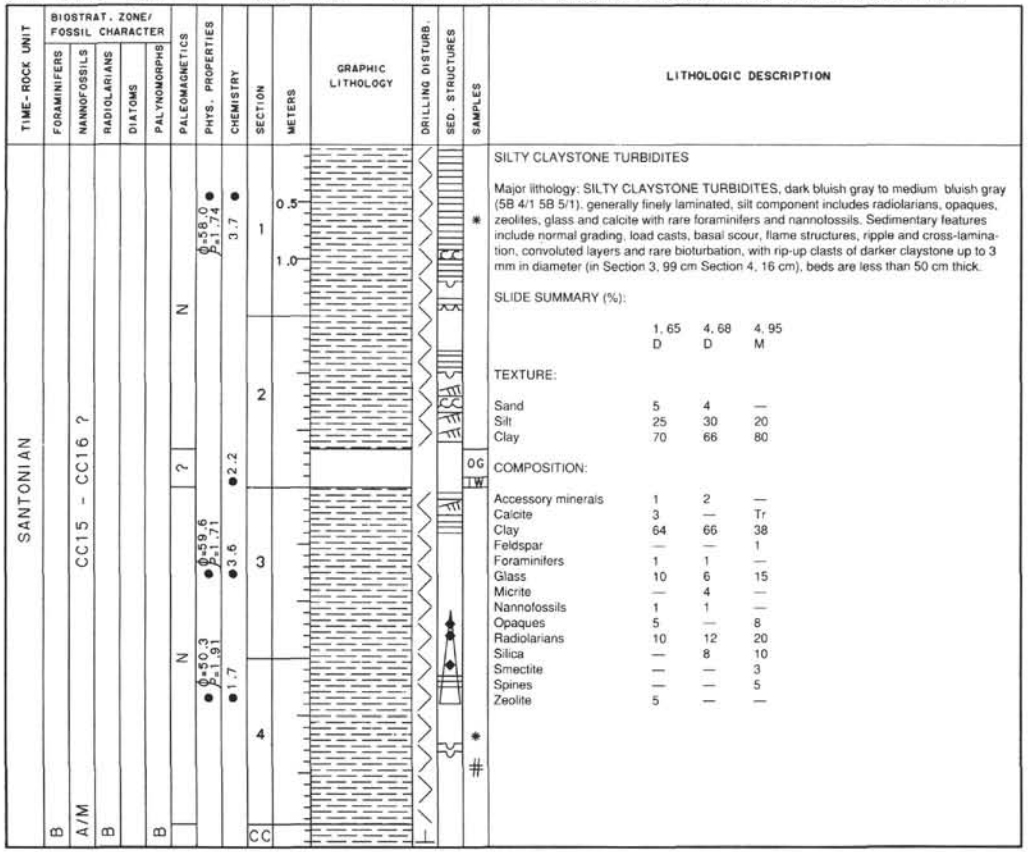
CLAYEY SILTSTONE to SILTY CLAYSTONE

Major lithology: CLAYEY SILTSTONE to SILTY CLAYSTONE, dark bluish gray to brownish gray (5B 4/1 5YR 4/1), fining upward progression from clayey siltstone to silty claystone dominates Section 1 (89-0 cm), turbidite beds are 40-50 cm thick; a second underlying progression was incompletely recovered. Silt component of claystone includes volcanic glass, calcite and zeolites with rare nannofossils and foraminifers. Clayey siltstone has planar, cross and convolute laminations.

SLIDE SUMMARY (%):

	1, 51 D
TEXTURE:	
Sand	5
Silt	30
Clay	65
COMPOSITION:	
Accessory minerals	1
Calcite	8
Clay	70
Feldspar	1
Foraminifers	1
Glass	10
Nannofossils	1
Zeolite	8

SITE 802 HOLE A CORE 47R CORED INTERVAL 6387.8-6397.3 mbsl; 419.2-428.7 mbsf



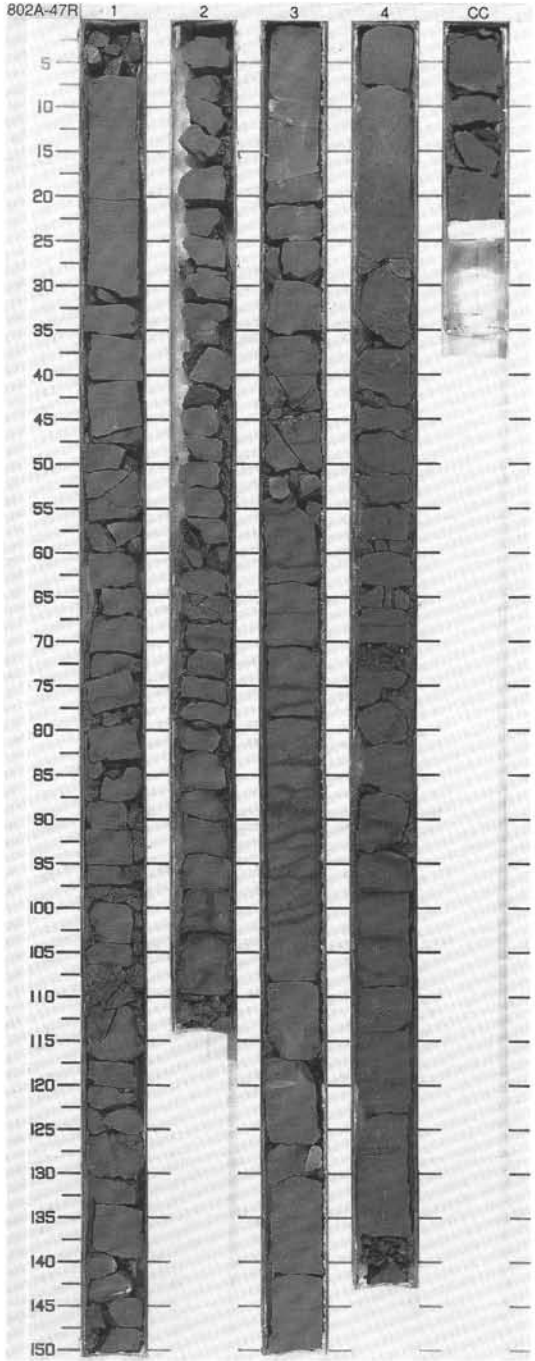
LITHOLOGIC DESCRIPTION

SILTY CLAYSTONE TURBIDITES

Major lithology: SILTY CLAYSTONE TURBIDITES, dark bluish gray to medium bluish gray (5B 4/1 5B 5/1), generally finely laminated, silt component includes radiolarians, opaques, zeolites, glass and calcite with rare foraminifers and nannofossils. Sedimentary features include normal grading, load casts, basal scour, flame structures, ripple and cross-lamination, convoluted layers and rare bioturbation, with rip-up clasts of darker claystone up to 3 mm in diameter (in Section 3, 99 cm Section 4, 16 cm), beds are less than 50 cm thick.

SLIDE SUMMARY (%):

	1, 65 D	4, 68 D	4, 95 M
TEXTURE:			
Sand	5	4	—
Silt	25	30	20
Clay	70	66	80
COMPOSITION:			
Accessory minerals	1	2	—
Calcite	3	—	Tr
Clay	64	66	38
Feldspar	—	—	1
Foraminifers	1	1	—
Glass	10	6	15
Micrite	—	4	—
Nannofossils	1	1	—
Opaques	5	—	8
Radiolarians	10	12	20
Silica	—	8	10
Smectite	—	—	3
Spines	—	—	5
Zeolite	5	—	—



SITE 802 HOLE A CORE 48R CORED INTERVAL 6397.3-6406.7 mbsl: 428.7-432.1 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
SANTONIAN	B	A/M CC15 - CC16 ?	B		B	[N?] [N?] [N?]	●0-53.6 ●1.84	●2.0	1 CC	0.5				*

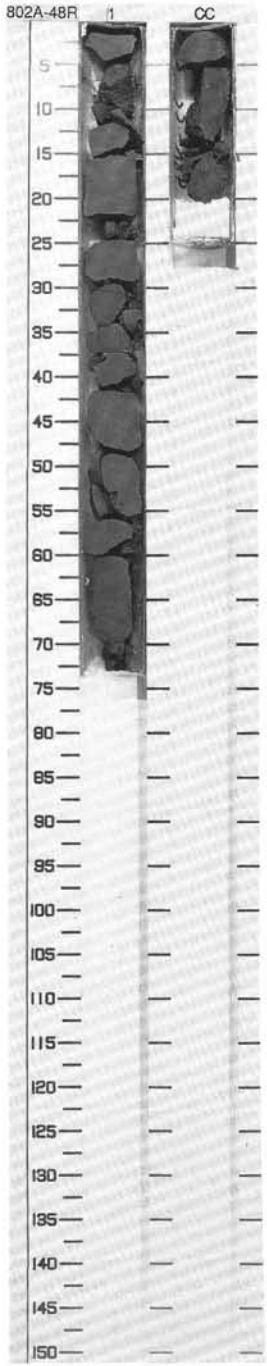
LITHOLOGIC DESCRIPTION

VOLCANICLASTIC TURBIDITES to NANNOFOSSIL CLAYSTONE

Major lithologies: VOLCANICLASTIC TURBIDITES grading upward to NANNOFOSSIL CLAYSTONE, dark bluish gray to dark gray (5B 4/1 N3). Volcaniclastic turbidites consist of VOLCANICLASTIC SANDSTONE, subtlely laminated with subangular clasts, grading to VOLCANICLASTIC SILTY CLAYSTONE, finely laminated to massive, and finally to massive nannofossil claystone.

SLIDE SUMMARY (%):

	1, 16 D
TEXTURE:	
Silt	3
Clay	97
COMPOSITION:	
Calcite	5
Clay	63
Feldspar	1
Glass	5
Nannofossils	20
Opaques	3
Smectite	2
Zeolite	1



SITE 802 HOLE A CORE 49R CORED INTERVAL 6406.7-6416.0 mbsl; 438.1-447.4 mbsf

TIME-ROCK UNIT: SANTONIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: B; R/P; B
- NANNOFOSSILS: CC14; CC15 - CC16 ?
- RADIOLARIANS: B
- DIATOMS
- PALYNOMORPHS: B

PALEOMAGNETICS: N; N

PHYS. PROPERTIES: ϕ=59.3 ρ=1.60; ϕ=59.3 ρ=1.71

CHEMISTRY: 0.3; 6.1

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

SILTY CLAYSTONE and SILTSTONE

Major lithologies:

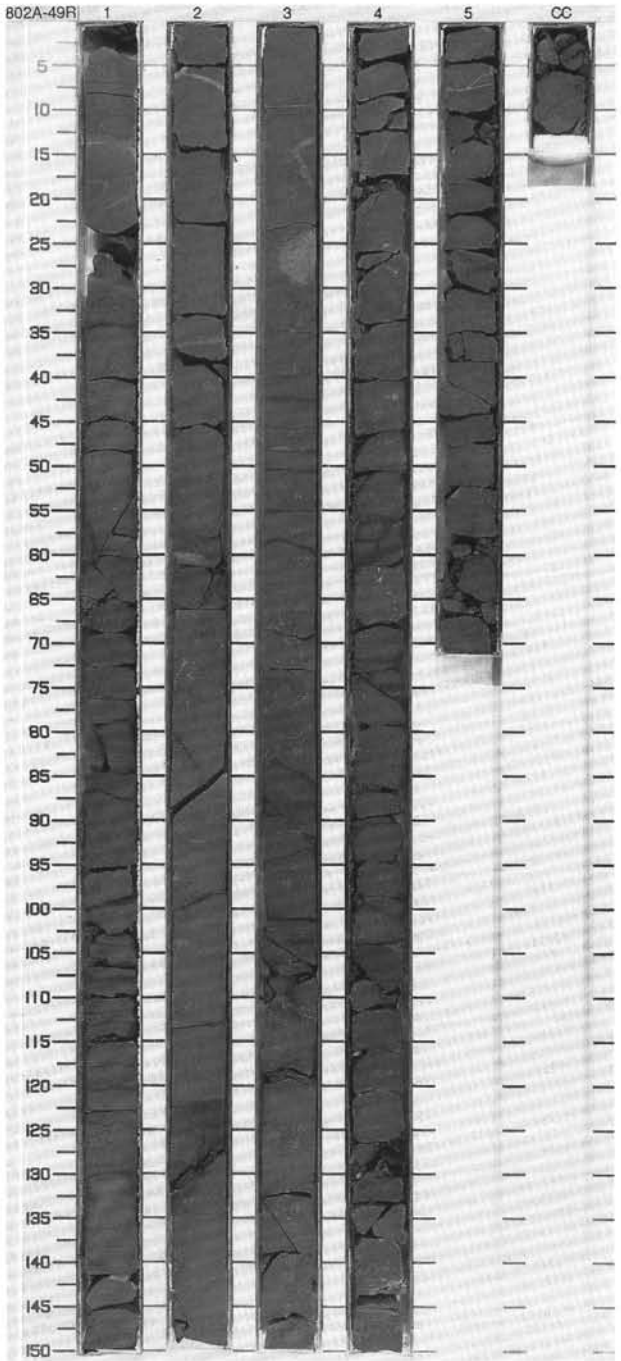
a. SILTY CLAYSTONE, dark blue gray to dark green gray (5B 4/1 5BG 4/1), generally massive, but with weak horizontal fabric from aligned inclusions and small isolated clasts, locally laminated. Minor calcareous content and <20% volcaniclastic. Clasts are mostly 1-5 mm in diameter; one large (>7 cm) clast is a microcrystalline quartz radiolarite. Claystone at Section 4, 59-72 cm contains numerous authigenic acicular to bladed crystals (0.5 X 6 mm) possibly celestite;

b. SILTSTONE, blue green to dark greenish gray (5BG 4/1 5GY 4/1), massive to thinly laminated, locally graded, calcareous to clayey, flame structures at some preserved basal contacts; silty claystone and siltstone deposited as mass flows and turbidites.

Minor lithology: SILICIFIED CLAYSTONE, at Section 5, 58-60 cm, greenish gray (5GY 5/1), hard, blocky to subconchoidal fracture.

SLIDE SUMMARY (%):

	1, 64 M	3, 25 M	3, 128 D	4, 66 M	4, 68 M
TEXTURE:					
Sand	—	50	5	50	5
Silt	25	30	20	30	10
Clay	75	20	70	20	85
COMPOSITION:					
Accessory minerals	1	—	1	—	—
Calcite	4	Tr	5	—	—
Celestite	—	—	—	—	5
Clay	65	15	68	20	40
Feldspar	—	—	—	—	Tr
Glass	—	Tr	8	—	—
Igneous rock fragments	—	—	7	—	—
Micrite	—	—	—	—	10
Nannofossils	2	Tr	1	—	—
Opaques	3	—	2	—	4
Pyroxene	—	1	—	—	—
Radiolarians	10	60	3	—	10
Silica	—	24	—	—	25
Smectite	—	—	—	—	Tr
Spicules	—	—	1	—	—
Unknown	—	—	—	80	—
Zeolite	15	—	4	—	6



SITE 802 HOLE A CORE 50R CORED INTERVAL 6416.0-6422.1 mbsl: 447.4-453.5 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
CONIACIAN (SANTONIAN)	B	CC14	B		B	N	Φ=49.7 ρ=1.89	●0.4	1	0.5				
	F/M									1.0				*
						N	Φ=52.2 ρ=1.79	●1.3	2					*
		CC13				?		●1.7	CC			X		W

LITHOLOGIC DESCRIPTION

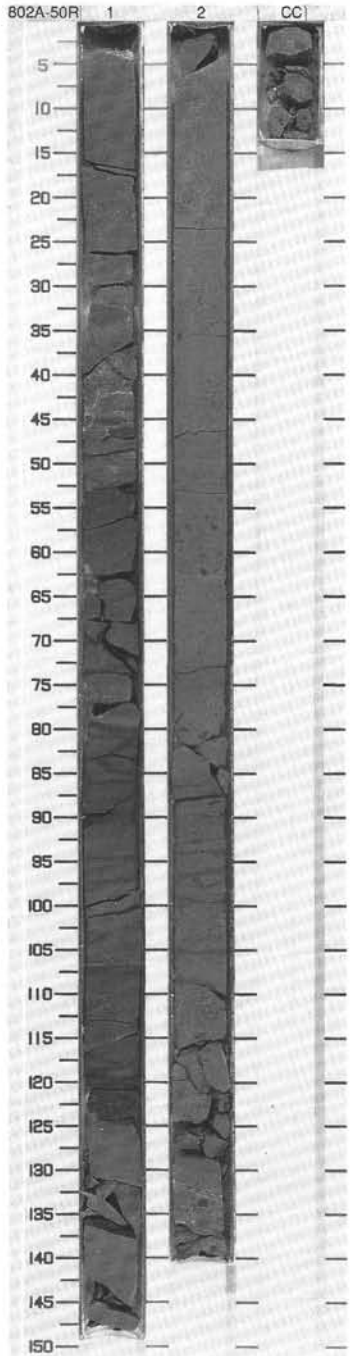
VOLCANICLASTIC SILTY CLAYSTONE

Major lithology: VOLCANICLASTIC SILTY CLAYSTONE, dark blue gray to greenish gray (5B 4/1 5BG 5/1), firm, massive, rarely thinly laminated, contains 0-10% matrix-supported fine-grained sedimentary clasts (as in a pebbly mudstone). Faint horizontal fabric from orientation of clasts. Probably deposited as a debris flow.

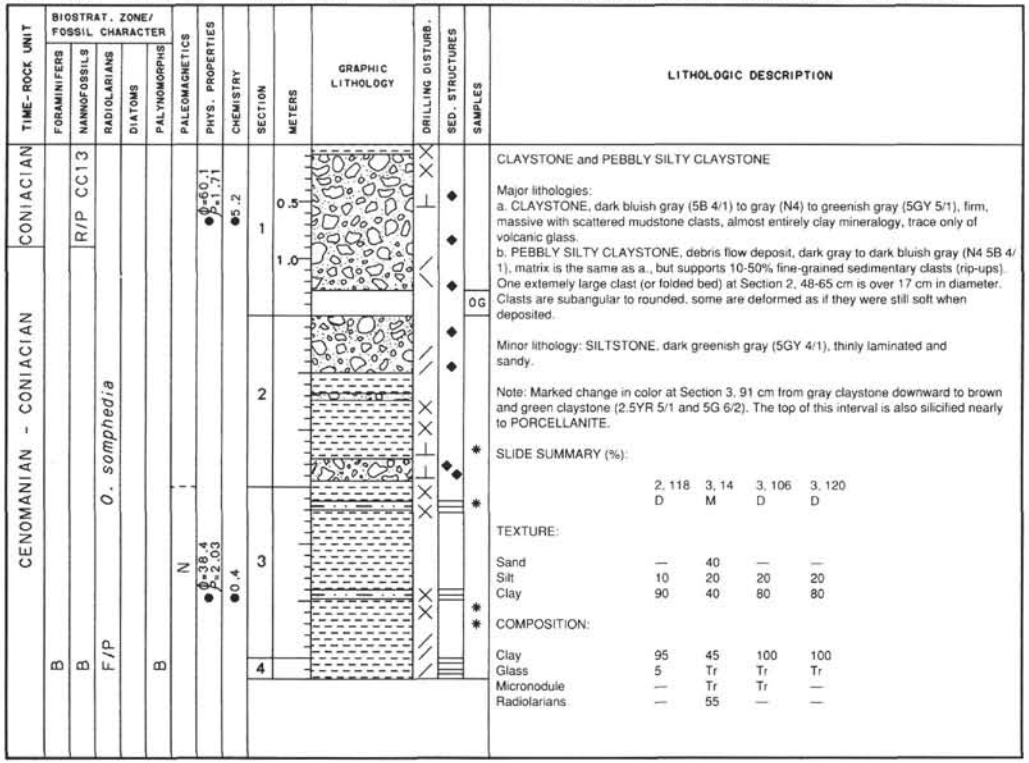
Minor lithology: PEBBLY SILTY CLAYSTONE, dark greenish gray (5g 4/1 5BG 4.5/1), matrix is identical to volcaniclastic silty claystone, matrix supported, fine- grained volcaniclastic sedimentary clasts are mostly dark blue gray to dark gray (5B4/1 5Y 4/1). 30:70 clast to matrix ratio; debris flow.

SLIDE SUMMARY (%):

	1, 112 D	2, 44 D
TEXTURE:		
Silt	20	30
Clay	80	70
COMPOSITION:		
Calcite	—	1
Clay	70	64
Glass	20	30
Nannofossils	—	Tr
Smectite	10	5



SITE 802 HOLE A CORE 51R CORED INTERVAL 6422.1-6428.2 mbsl; 453.5-459.8 mbsf



CLAYSTONE and PEBBLY SILTY CLAYSTONE

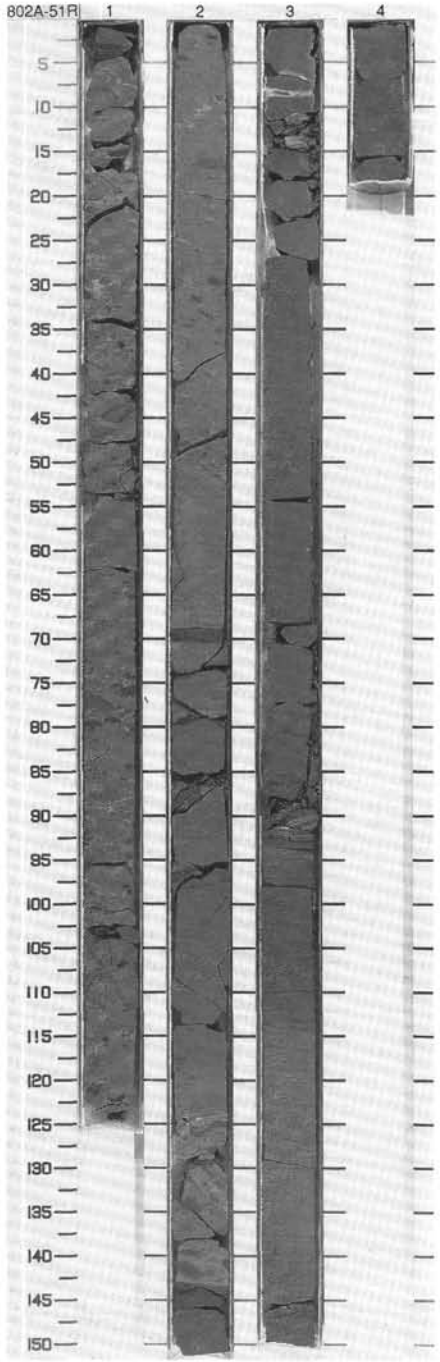
Major lithologies:
a. CLAYSTONE, dark bluish gray (5B 4/1) to gray (N4) to greenish gray (5GY 5/1), firm, massive with scattered mudstone clasts, almost entirely clay mineralogy, trace only of volcanic glass.
b. PEBBLY SILTY CLAYSTONE, debris flow deposit, dark gray to dark bluish gray (N4 5B 4/1), matrix is the same as a., but supports 10-50% fine-grained sedimentary clasts (rip-ups). One extremely large clast (or folded bed) at Section 2, 48-65 cm is over 17 cm in diameter. Clasts are subangular to rounded, some are deformed as if they were still soft when deposited.

Minor lithology: SILTSTONE, dark greenish gray (5GY 4/1), thinly laminated and sandy.

Note: Marked change in color at Section 3, 91 cm from gray claystone downward to brown and green claystone (2.5YR 5/1 and 5G 6/2). The top of this interval is also silicified nearly to PORCELLANITE.

SLIDE SUMMARY (%):

	2, 118 D	3, 14 M	3, 106 D	3, 120 D
TEXTURE:				
Sand	—	40	—	—
Silt	10	20	20	20
Clay	90	40	80	80
COMPOSITION:				
Clay	95	45	100	100
Glass	5	Tr	Tr	Tr
Micronodule	—	Tr	Tr	—
Radiolarians	—	55	—	—



SITE 802 HOLE A CORE 52R CORED INTERVAL 6428.4-6438.0 mbsl; 459.8-469.4 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
CENOMANIAN-CONIACIAN	B	B	A/P *O. sompedia*		B	N	N	ϕ=42.0 ρ=1.90 ϕ=45.7 ρ=1.90 ●0.2 ●0.2	1 2 3 CC	0.5 1.0				* * *

LITHOLOGIC DESCRIPTION

CLAYSTONE and CLAYEY RADIOLARITE

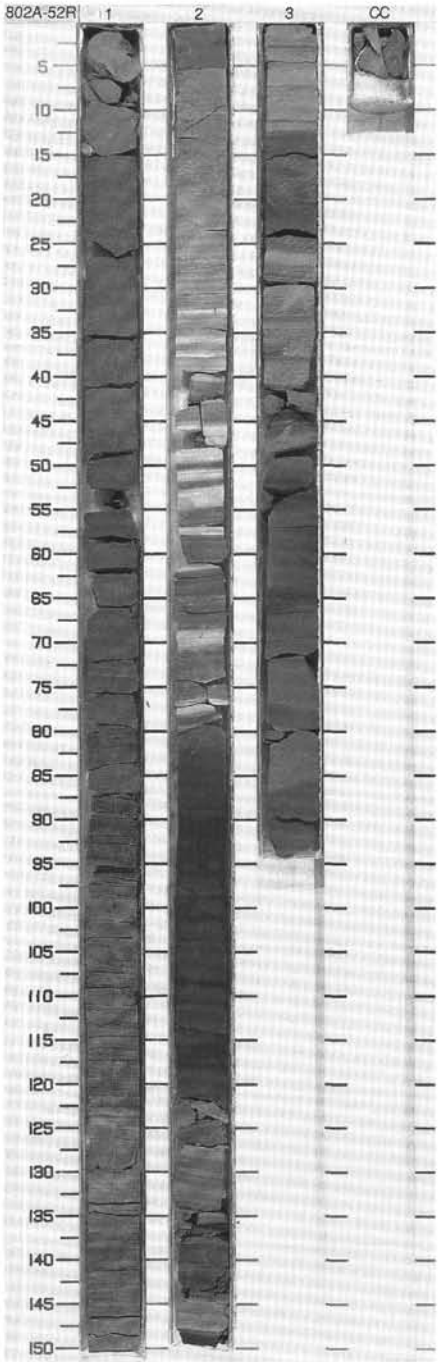
Major lithologies:

a. CLAYSTONE, dark reddish brown to reddish brown (7.5YR 3/4 10YR 4/4), massive to subtly laminated; some intervals have discontinuous black streaks or greenish gray (5G 5/2) clasts (0.5 3.0 mm) or oval reduction mottle; dark bluish gray (5B 4/2), pieces at top of core may be contamination from uphole, similar to the claystone of upper Core 51; very dark brown (10YR 3/2 10YR 2/2), contains 30% iron-manganese oxides, layers in Section 2, 136-137 and 148-150 cm.

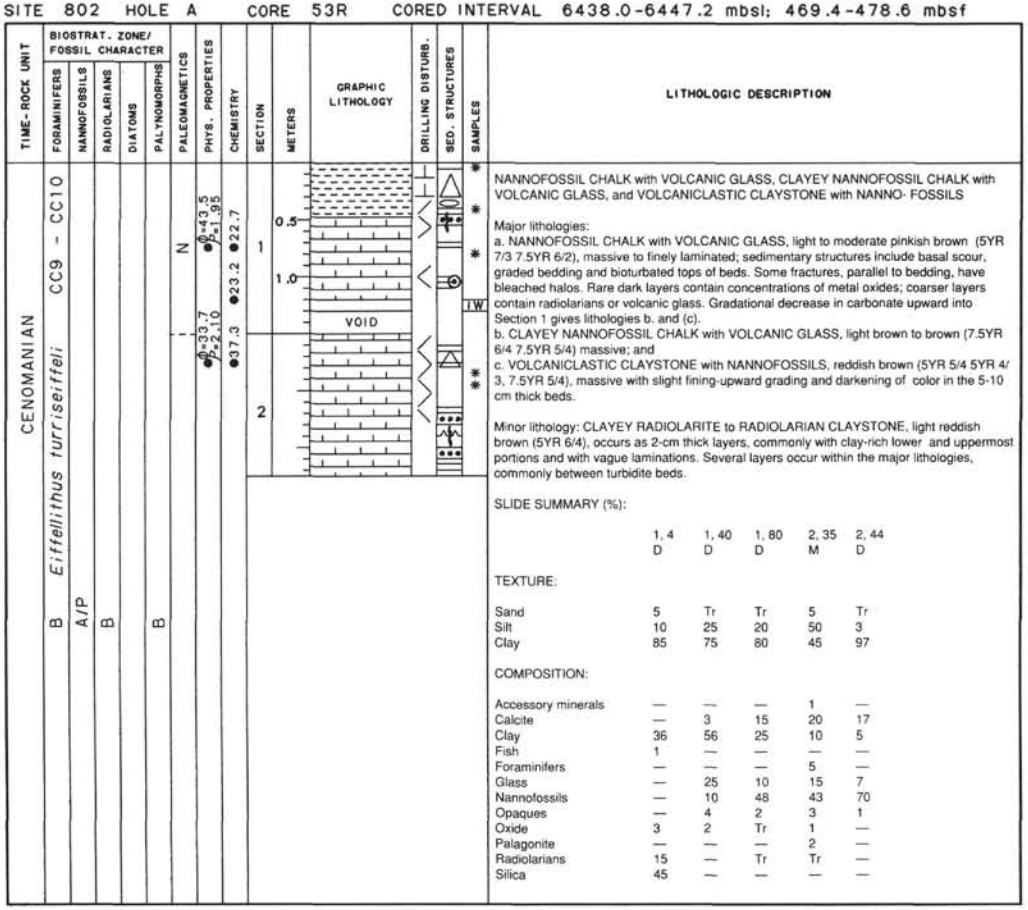
b. CLAYEY RADIOLARITE, generally brown (7.5YR 4/4) with thin (2-3 mm) layers of strong brown (7.5YR 4/4 to 7.5YR 5/6) claystone, but many intervals are grayish green to light grayish green (5G 5/2 5GY 7/1), generally finely laminated; occurs as bands within the claystone.

SLIDE SUMMARY (%):

	1, 86 M	2, 47 D	2, 149 M
TEXTURE:			
Sand	—	40	5
Silt	10	30	25
Clay	90	30	70
COMPOSITION:			
Clay	50	50	70
Glass	Tr	—	Tr
Oxide	50	—	30
Radiolarians	—	50	Tr
Zeolite	Tr	—	Tr



SITE 802 HOLE A CORE 53R CORED INTERVAL 6438.0-6447.2 mbsl; 469.4-478.6 mbsf



LITHOLOGIC DESCRIPTION

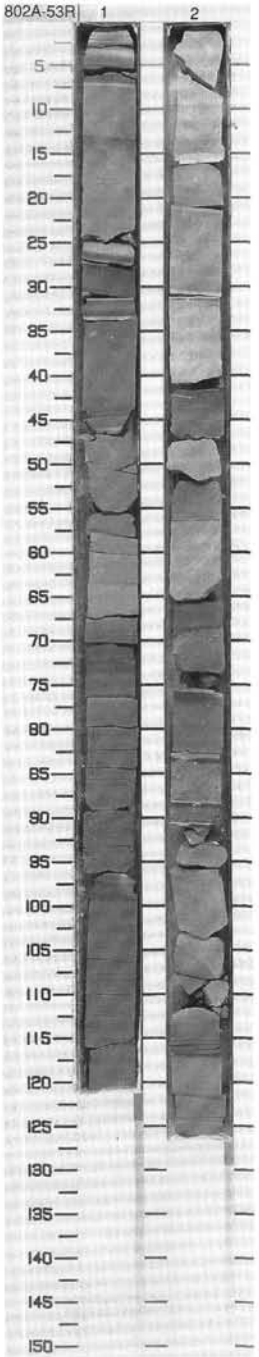
NANNOFOSSIL CHALK with VOLCANIC GLASS, CLAYEY NANNOFOSSIL CHALK with VOLCANIC GLASS, and VOLCANICLASTIC CLAYSTONE with NANNO- FOSSILS

Major lithologies:
a. NANNOFOSSIL CHALK with VOLCANIC GLASS, light to moderate pinkish brown (5YR 7/3 7.5YR 6/2), massive to finely laminated; sedimentary structures include basal scour, graded bedding and bioturbated tops of beds. Some fractures, parallel to bedding, have bleached halos. Rare dark layers contain concentrations of metal oxides; coarser layers contain radiolarians or volcanic glass. Gradational decrease in carbonate upward into Section 1 gives lithologies b. and (c).
b. CLAYEY NANNOFOSSIL CHALK with VOLCANIC GLASS, light brown to brown (7.5YR 6/4 7.5YR 5/4) massive; and
c. VOLCANICLASTIC CLAYSTONE with NANNOFOSSILS, reddish brown (5YR 5/4 5YR 4/3, 7.5YR 5/4), massive with slight fining-upward grading and darkening of color in the 5-10 cm thick beds.

Minor lithology: CLAYEY RADIOLARITE to RADIOLARIAN CLAYSTONE, light reddish brown (5YR 6/4), occurs as 2-cm thick layers, commonly with clay-rich lower and uppermost portions and with vague laminations. Several layers occur within the major lithologies, commonly between turbidite beds.

SLIDE SUMMARY (%):

	1, 4 D	1, 40 D	1, 80 D	2, 35 M	2, 44 D
TEXTURE:					
Sand	5	Tr	Tr	5	Tr
Silt	10	25	20	50	3
Clay	85	75	80	45	97
COMPOSITION:					
Accessory minerals	—	—	—	1	—
Calcite	—	3	15	20	17
Clay	36	56	25	10	5
Fish	1	—	—	—	—
Foraminifers	—	—	—	5	—
Glass	—	25	10	15	7
Nannofossils	—	10	48	43	70
Opaques	—	4	2	3	1
Oxide	3	2	Tr	1	—
Palagonite	—	—	—	2	—
Radiolarians	15	—	Tr	Tr	—
Silica	45	—	—	—	—



SITE 802 HOLE A CORE 54R CORED INTERVAL 6447.2-6456.5 mbsl; 478.6-487.9 mbsf

TIME-ROCK UNIT: CENOMANIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: unzoned; NANNOFOSSILS: *Eiffellithus turriseiffelii* (CC9 - C10); RADIOLARIANS: *O. somphedia*; DIATOMS; PALYNOMORPHS

PALEOMAGNETICS: B; N; N; N

PHYS. PROPERTIES: ϕ=41.3 ● ϕ=42.8 ϕ=2.00 ρ=1.98

CHEMISTRY: 28.7 ● 31.8 ● 59.9 ●

SECTION: 1, 2, 3, 4, 5

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG

LITHOLOGIC DESCRIPTION

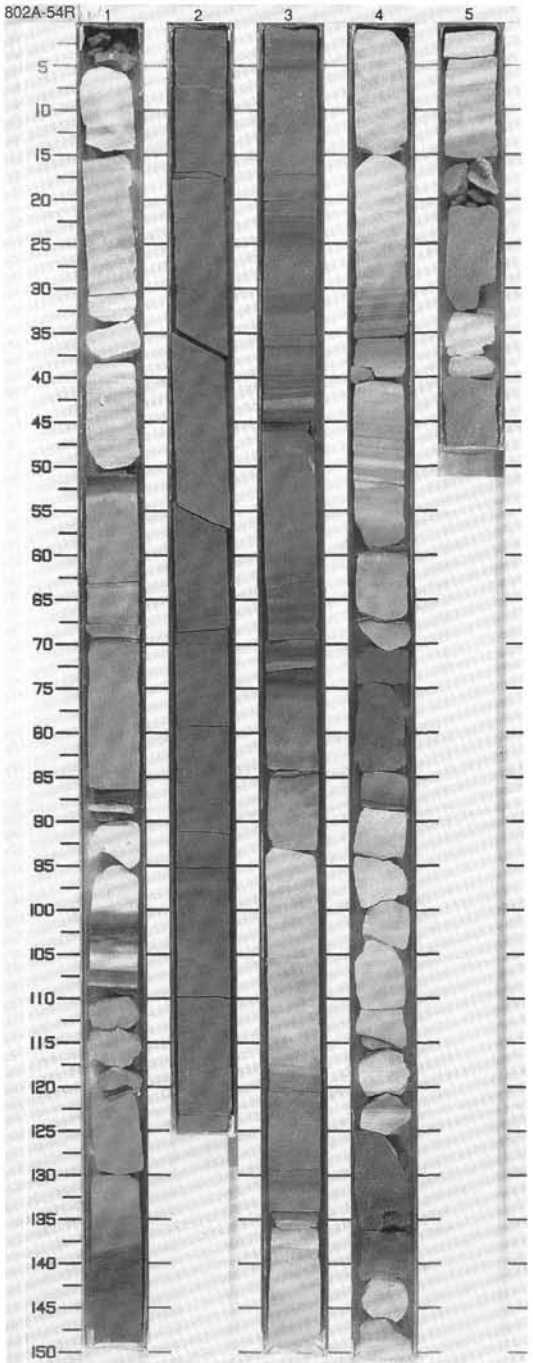
LIMESTONE, CALCAREOUS CLAYSTONE, and CLAYEY SILTSTONE

Major lithologies:
a. LIMESTONE, light gray to blue gray, (N7, N8, 5BG 5/1), massive, with rare burrows, rare laminations, clayey to sandy with calcified radiolarians, with CHERT nodules, brown (5YR 4/1);
b. CALCAREOUS CLAYSTONE, shades of grayish blue and green (5G 5/1, 5G 4/1, 5BG 5/2, 5Y 6/1, 5GY 5/1), mostly laminated, rare burrows;
c. CLAYEY SILTSTONE, bluish gray to gray (5BG 4/1 to N7), slightly calcareous massive or laminated.

Minor lithology: CLAYEY SANDSTONE, various shades of gray and green (5BG 5/1, 5G 5/1, 5GY 4/1, 5BG 4/2, 5Y 7/1) from diagenetic alteration, laminated or massive, some graded beds and scoured bases. Contains foraminifers, radiolarians, volcanic glass, zeolites.

SLIDE SUMMARY (%):

	1, 78 D	1, 90 D	1, 127 M	2, 48 D
TEXTURE:				
Sand	3	—	15	5
Silt	17	30	15	20
Clay	80	70	70	70
COMPOSITION:				
Accessory minerals	1	—	—	—
Calcite	15	—	10	5
Clay	35	—	10	57
Feldspar	1	Tr	—	—
Foraminifers	—	1	—	2
Micrite	45	94	29	10
Nannofossils	3	—	30	20
Opaques	—	—	1	Tr
Quartz	—	Tr	—	—
Radiolarians	—	5	20	5
Smectite	—	—	—	1
Spicules	—	Tr	—	—



SITE 802 HOLE A CORE 55R CORED INTERVAL 6456.5-5465.7 mbsl; 487.9-497.1 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALYNOMORPHS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
?UPPER ALBIAN - CENOMANIAN	B	A/P *Eiffellithus turriseiffelii* (CC9 - CC10)	C/P *A. umbilicata - O. somphedia*		B	N	ϕ=26.1 ρ=2.22	●35.9	1	0.5, 1.0				* #

LITHOLOGIC DESCRIPTION

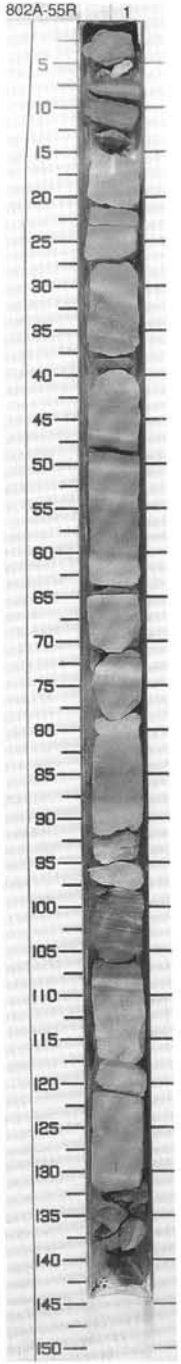
RADIOLARIAN LIMESTONE and LIMESTONE with RADIOLARIANS

Major lithologies:
a. *RADIOLARIAN LIMESTONE*, dark brown to gray (10YR 4/3 5Y 6/1), mostly massive with some laminations, locally burrowed, locally siliceous. Radiolarians are calcitized; grades to
b. LIMESTONE with RADIOLARIANS, identical except for reduced quantity of radiolarians.

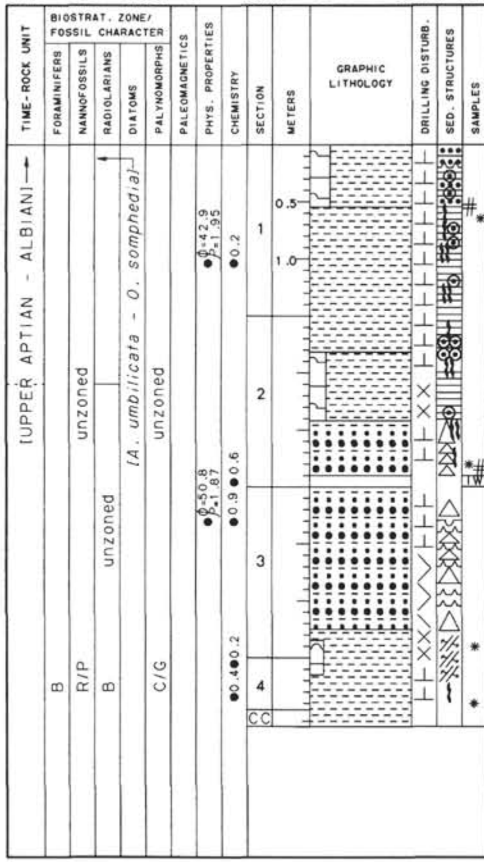
Minor lithologies:
a. PORCELLANITE, pinkish gray (5YR 6/3 5YR 7/2), weakly bioturbated, and
b. CLAYEY CALCAREOUS RADIOLARITE, brown (10YR 5/3), laminated and fractured by drilling.

SLIDE SUMMARY (%):

	1, 53 D	1, 86 D
TEXTURE:		
Sand	5	10
Silt	35	40
Clay	60	50
COMPOSITION:		
Calcite	15	10
Clay	10	—
Fish	—	Tr
Foraminifers	—	1
Glass	—	10
Micrite	54	60
Nannofossils	10	—
Opaques	1	4
Radiolarians	10	15



SITE 802 HOLE A CORE 56R CORED INTERVAL 6465.7-6475.2 mbsl; 497.1-506.6 mbsf



LITHOLOGIC DESCRIPTION

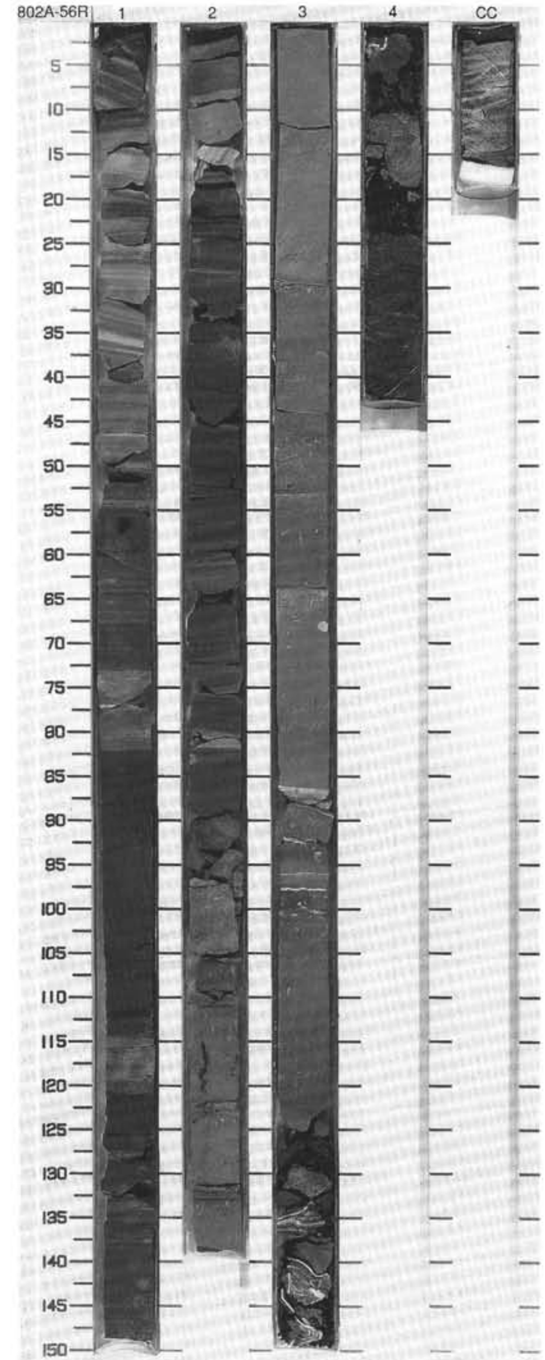
CLAYSTONE and VOLCANICLASTIC TURBIDITES

Major lithologies:
a. CLAYSTONE, light brown to dusky yellowish brown to brownish black (5YR 6/4 10YR 2/2 5YR 2/1), mostly hematitic, zeolitic, locally radiolarian-rich. Thinly laminated to massive, commonly burrowed, 1-2 mm metalliferous nodules of oxides or pyrite. Interval from Section 3, 127 cm to Section 4, 7 cm contains numerous folded and refractured calcareous veins.
b. VOLCANICLASTIC TURBIDITES, greenish gray to dusky green (5GY 6/1 5G 3/2), graded beds with load casts and sharp erosional bases. Typically fines upward from fine sand to clay size in beds 2-25 cm thick.

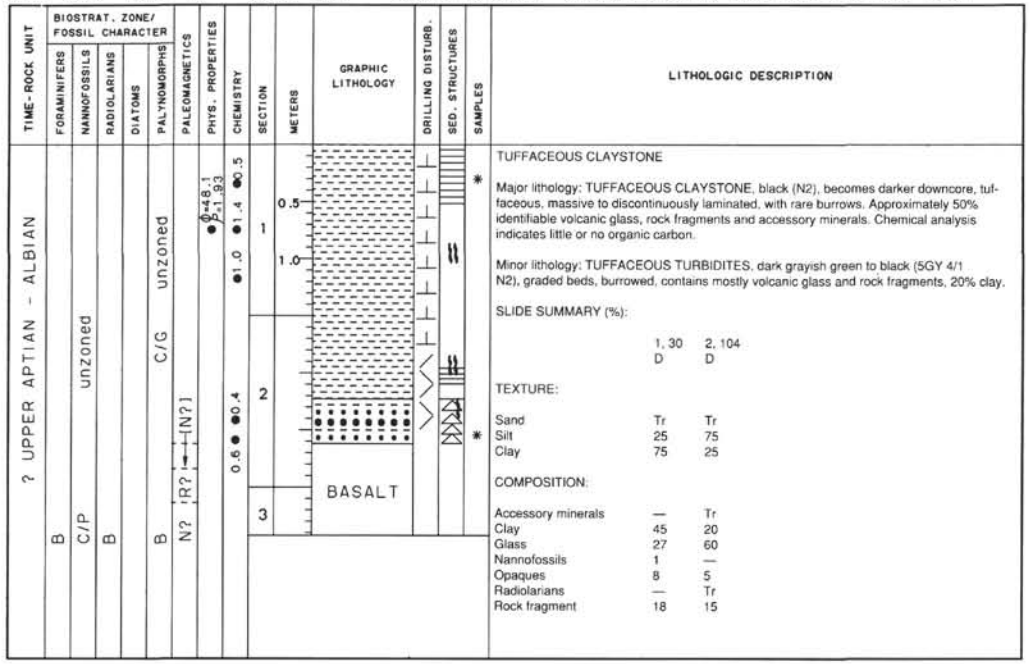
Minor lithology: RADIOLARITE, light to moderate brown (5YR 6/4 5YR 3/4), locally altered and mottled olive green (5GY 6/1), medium-grained, sometimes graded, sharp top and bottom, but not scoured.

SLIDE SUMMARY (%):

	1, 55 D	1, 67 D	2, 130 D	2, 133 D	3, 140 M	4, 40 M
TEXTURE:						
Sand	10	—	Tr	10	Tr	Tr
Silt	15	10	45	20	15	20
Clay	75	90	55	70	85	80
COMPOSITION:						
Calcite	—	—	—	—	3	—
Clay	65	77	55	60	72	75
Feldspar	—	—	—	—	—	1
Glass	—	—	21	10	5	15
Igneous rock fragments	—	—	—	5	—	—
Nannofossils	—	—	Tr	—	—	—
Opaques	—	10	3	—	10	8
Oxide	10	—	—	5	—	—
Quartz	—	—	—	Tr	—	—
Radiolarians	20	10	20	5	10	1
Silica	5	—	—	5	—	—
Smectite	—	—	1	10	—	—
Zeolite	—	3	—	—	—	—



SITE 802 HOLE A CORE 57R CORED INTERVAL 6475.2-6484.6 mbsl; 506.6-516.0 mbsf



LITHOLOGIC DESCRIPTION

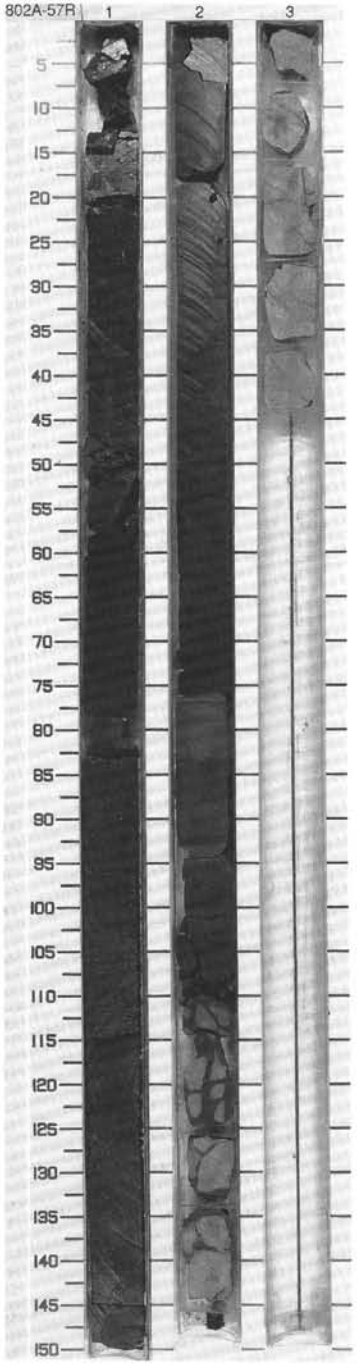
TUFFACEOUS CLAYSTONE

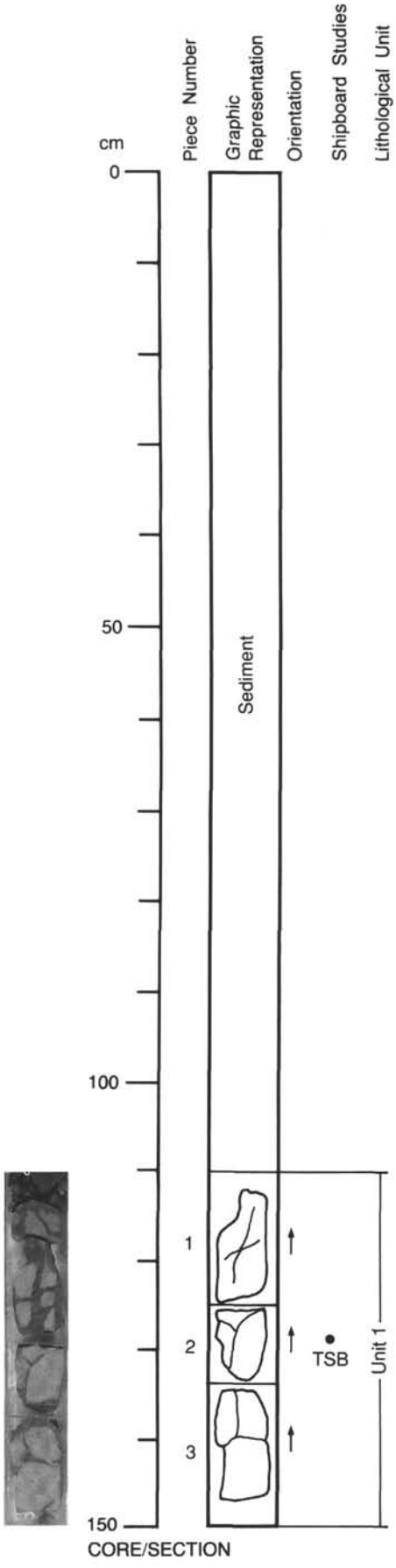
Major lithology: TUFFACEOUS CLAYSTONE, black (N2), becomes darker downcore, tuffaceous, massive to discontinuously laminated, with rare burrows. Approximately 50% identifiable volcanic glass, rock fragments and accessory minerals. Chemical analysis indicates little or no organic carbon.

Minor lithology: TUFFACEOUS TURBIDITES, dark grayish green to black (5GY 4/1 N2), graded beds, burrowed, contains mostly volcanic glass and rock fragments, 20% clay.

SLIDE SUMMARY (%):

	1, 30 D	2, 104 D
TEXTURE:		
Sand	Tr	Tr
Silt	25	75
Clay	75	25
COMPOSITION:		
Accessory minerals	—	Tr
Clay	45	20
Glass	27	60
Nannofossils	1	—
Opaques	8	5
Radiolarians	—	Tr
Rock fragment	18	15





129-802A-57R-2

UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: Not observed, but inferred from glassy zone to represent flow top. Directly above is drilling rubble of a vitric tuff; possibly c.4m of contact zone missing (basalt & sediment) from the record.

PHENOCRYSTS: One or two plagioclase and pyroxene microphenocrysts only in glassy spherulitic zone.

GROUNDMASS: Adjacent to contact (at 110 cm) is green smectite-replaced glass (2-3 mm preserved) that grades into a pale gray zone with spherulites that progressively coalesce away from contact. Rest of unit is fine-grained, quench textured with fan variolites and patches of green smectite-replaced glassy mesostasis.

VESICLES: 1%; <1 mm; irregular; concentrated at 114 cm; infilled with green smectite and sometimes calcite in central part.

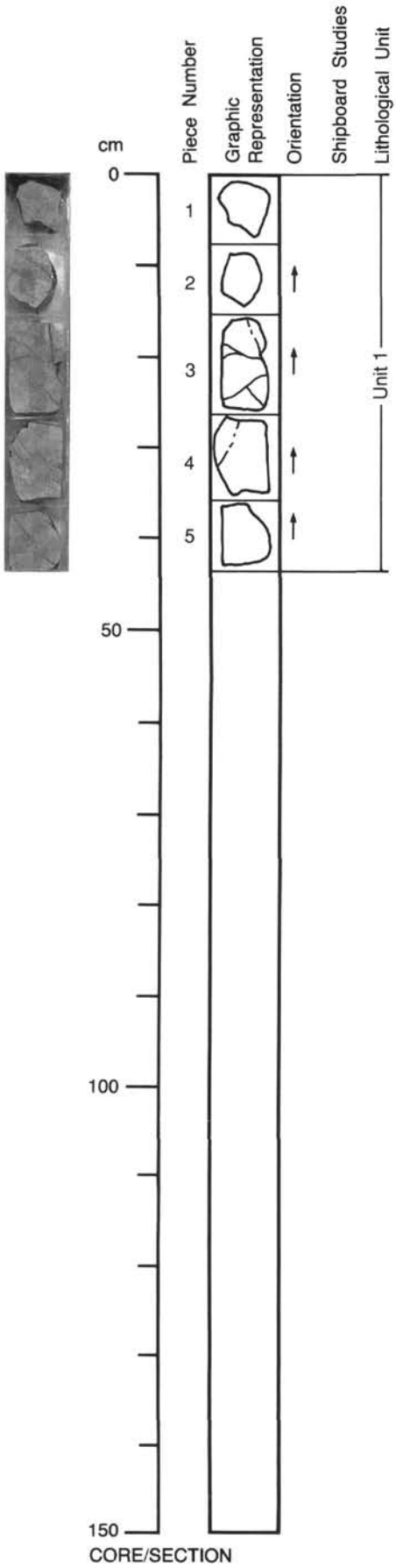
COLOR: Dark to medium-gray (N4 at contact but generally N5).

STRUCTURE: Thin flow, possibly pillowed as curving "fracture" in Piece 2 appears to be a green smectite-replaced glassy selvage with variolitic fans further away from margin.

ALTERATION: Slight. Green smectite replacing glass margins and vesicles. Pyrite sometimes asssociated with glass. Minor carbonate.

VEINS/FRACTURES: 1%; 0.2 mm; sub-vertical & horizontal.

ADDTIONAL COMMENTS: Glassy sperulitic zone indicates top of lava flow, possibly pillowed, although curved selvages not well developed.

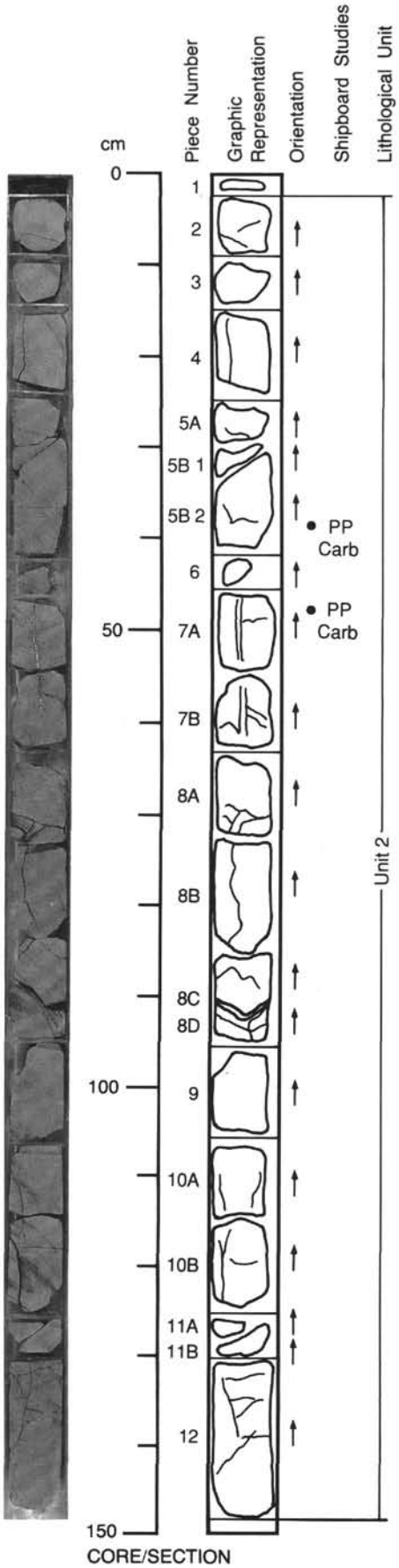


129-802A-57R-3

UNIT 1: APHYRIC BASALT

Pieces 1-5

CONTACTS: None observed, although all pieces have quench textures with smectite-replaced interstitial glass.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline. Uniform throughout all pieces with plagioclase-bearing fan and plume variolites.
VESICLES: None observed.
COLOR: Speckled pale gray (N6).
STRUCTURE: Part of a lava flow; no evidence for pillow surfaces.
ALTERATION: Slight. Largely replacement of mesostasis glass by green smectite and clay-pyrite veinlets.
VEINS/FRACTURES: 2%; <0.1 mm; 30-45 degrees; infilled with green smectite +/- pyrite and carbonate. Larger veins show zoned, semi-botryoidal growth of radiate smectite fibers with central zone infilled with carbonate, together with variable oxidized coating.
ADDITIONAL COMMENTS: All quenched texture suggests a thin flow.

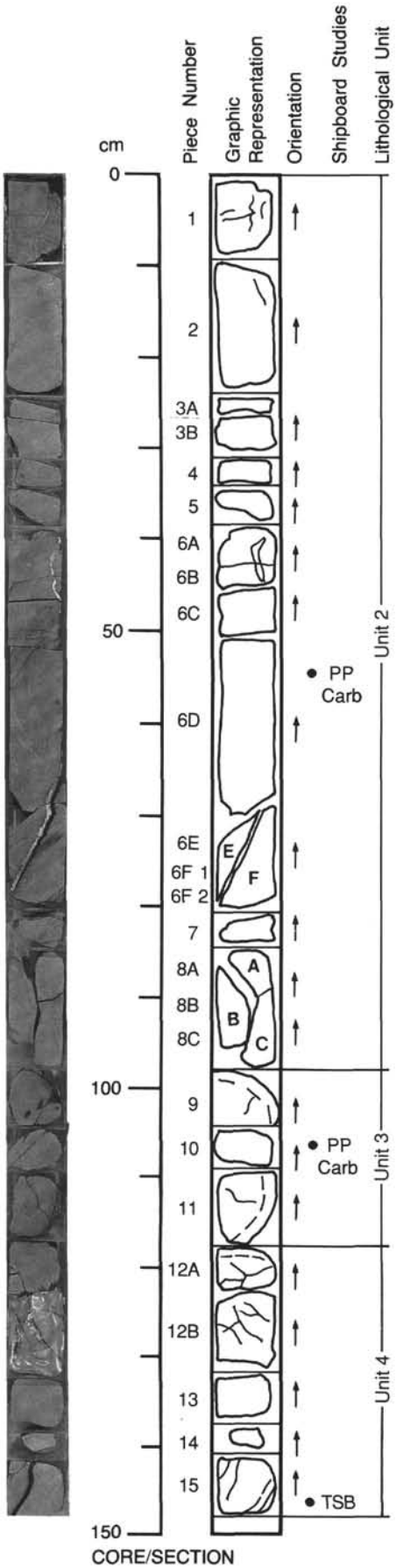


129-802A-58R-1

UNIT 2: APHYRIC BASALT

Pieces 2-12

CONTACTS: *None observed.*
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline; traces of quenched plagioclase microlites.
VESICLES: <<1%; <0.5 mm; irregular; irregular; a majority are infilled are completely infilled with green clays
COLOR: Speckled gray (N6).
STRUCTURE: Since no contacts recovered, possibly part of a lava flow.
ALTERATION: Slight to moderate. Glassy mesostasis altered to dark green clays; some plagioclase laths completely replaced by carbonate.
VEINS/FRACTURES: 2%; <0.1-3.0 mm; highly irregular; veins in Pieces 7A &7B infilled with green clays and carbonate, whereas rest filled with green clays. Dark green-gray halo, up to 3 cm wide in Piece 12.
ADDITIONAL COMMENTS: Could be a continuation of Unit 1 as (a) texturally very similar to lower portion of Unit 1, (b) no actual contacts recovered and (c) sediment at top of section could be a cave-in from higher up the hole.



129-802A-58R-2

UNIT 2: APHYRIC BASALT

Pieces 1-8C

CONTACTS: None observed, but grain-size fines downwards.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline. Glassy mesostasis and fan variolites of plagioclase. Quench texture more prevalent towards bottom part of Unit.
VESICLES: None observed.
COLOR: Speckled gray (N6).
STRUCTURE: Perhaps basal part of a lava flow.
ALTERATION: Slight to moderate. Glass altered to green clays; a few secondary calcite grains in matrix.
VEINS/FRACTURES: c.1%; <0.1-4.0 mm (P.4E); 0-90 degrees; irregular; often highly irregular and cross-cutting. Wider veins infilled with carbonate, narrower ones with green clay.
ADDITIONAL COMMENTS: Appears to be basal part of Unit 2 as suggested by the decreasing grain-size. Texturally the upper part is similar to Unit 2 in 58R-1.

UNIT 3: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

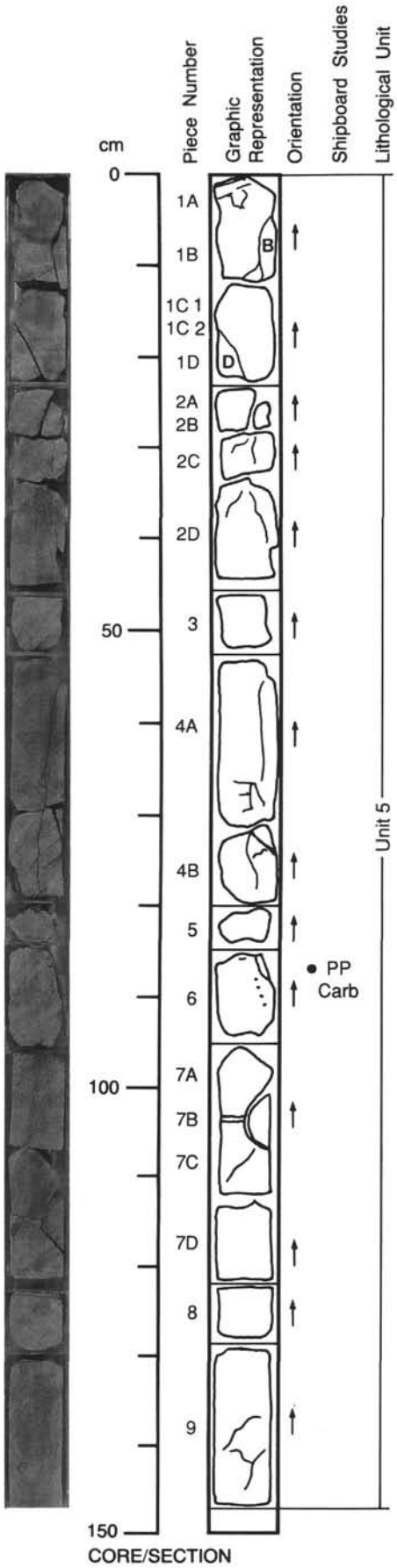
Pieces 9-11

CONTACTS: None observed, but rounded glassy margins are present in Piece 9 and 11.
PHENOCRYSTS:
Plagioclase - trace; <0.1; Subhedral, little alteration.
Olivine - ~3%; <0.1; Euhedral-subhedral, slightly altered.
GROUNDMASS: Glassy rim grading to a thin variolitic, hypohyaline zone, and then to a hypocrystalline interior. Quench textured throughout.
VESICLES: None observed.
COLOR: Gray (N5) with black glass rim (2/0).
STRUCTURE: Pillow lava.
ALTERATION: Slight. Most of glass rim is black and unaltered despite cracks filled with green clays. Some alteration to green smectite of phenocrysts.
VEINS/FRACTURES: <1%; <0.1 mm; parallel & radial to glassy rim; many fractures are also irregular and cross-cutting, infilled with green smectite (a few are open).
ADDITIONAL COMMENTS: Curved glassy margin and internal textural variations strongly suggest this is a pillow lava margin.

UNIT 4: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 12A-15

CONTACTS: Not observed, but top is sub-horizontal and glassy and part of bottom margin is glassy and inclined.
PHENOCRYSTS: Slightly more abundant near Unit margins.
Plagioclase - trace; <0.1; Subhedral.
Olivine - ~2%; <0.1; Euhedral-subhedral; slightly altered.
GROUNDMASS: Glassy rims grading into thin, variolitic zones and then to a fine-grained, hypocrystalline interior. Quenched texture throughout.
VESICLES: Generally none, although a few are present in the glassy rim.
COLOR: Speckled gray (N6).
STRUCTURE: Pillow lava.
ALTERATION: Slight. Olivine microphenocrysts and mesostasis replaced by green clays.
VEINS/FRACTURES: 1-2%; <0.1 mm; irregular; a few are perpendicular to glassy rim, but generally irregular. infilled with green clays.
ADDITIONAL COMMENTS: Texturally similar to Unit 3 and probably represents another pillow section with an inclined bottom margin.

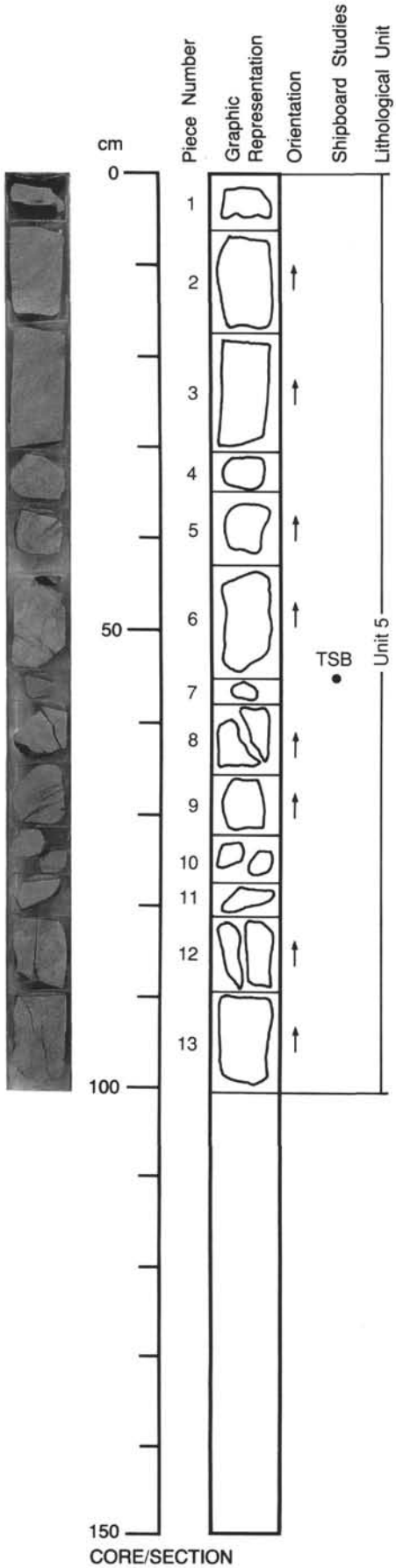


129-802A-58R-3

UNIT 5: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 1A-9

CONTACTS: None observed, but a part of the top margin is glassy and curved, and grain-size coarsens downwards.
PHENOCRYSTS: Slightly more abundant in top section.
Olivine - 1%; <0.1; Euhedral and subhedral; mostly altered to green smectite and/or yellowish-brown iddingsite(?).
GROUNDMASS: Glassy rim grading to a thin variolitic zone and then to a fine-grained, hypocrystalline zone (c.50 cm) which gradually gives way to an almost holocrystalline base. Quench texture dominant with patchy glassy mesostasis throughout.
VESICLES: <1%; up to 2 mm; irregular; in Piece 6; majority infilled with green clays but ~10% only partly filled.
COLOR: Speckled gray (N5).
STRUCTURE: Top of lava flow.
ALTERATION: Slight to moderate. Glassy rim is black and appears unaltered, although olivine microphenocrysts and mesostasis replaced by green smectite; minor granular carbonate in matrix.
VEINS/FRACTURES: c.1%; 0.05-0.1 mm; subhorizontal-vertical; infilled with green clays and carbonate; some with faint haloes. Cross-cutting relationship common.
ADDITIONAL COMMENTS: General increase in grain-size towards the base suggests a lava flow. Glassy mesostasis is generally larger and more irregular than olivine but both are altered to green clays so that these are hard to differentiate at times.

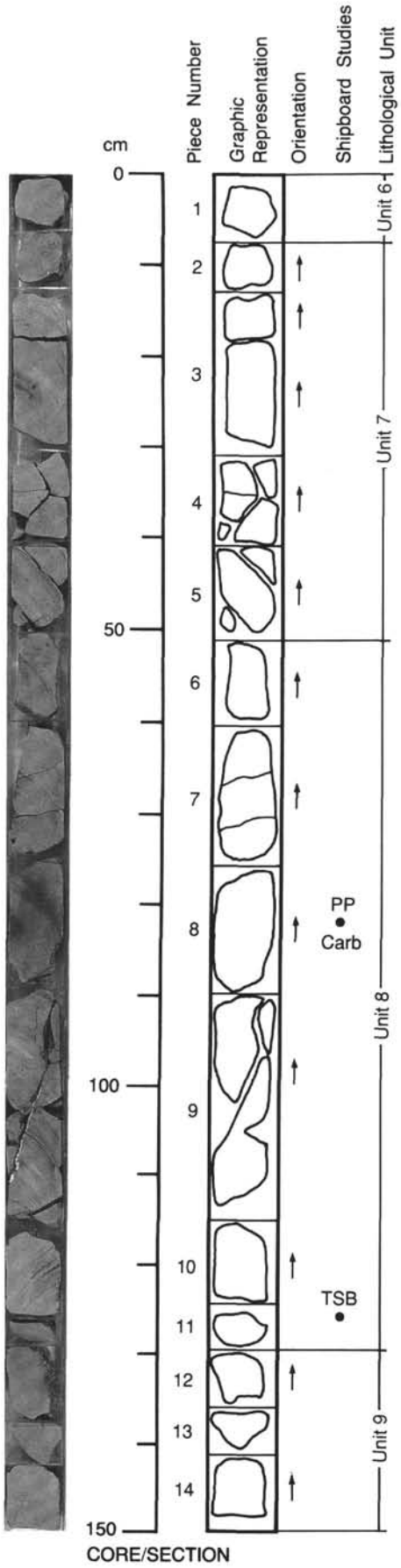


129-802A-58R-4

UNIT 5: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 1-13

CONTACTS: None observed, but grain-size fines towards the bottom of Unit.
PHENOCRYSTS: Very limited distribution.
Olivine - c.1%; <0.1; Euhedral to subhedral; slightly altered.
GROUNDMASS: Top is fine-grained, hypocrystalline to hypohyaline, then grades towards a hypocrystalline quench-textured base. Glassy mesostasis throughout.
VESICLES: None observed.
COLOR: Speckled gray (N6).
STRUCTURE: Basal portion of a thin flow.
ALTERATION: Slight to moderate. Glassy mesostasis and olivine altered to green smectite; minor carbonate along some plagioclase margins.
VEINS/FRACTURES: <1%; <0.1-0.1 mm; sub-vertical and irregular; veinlets often very irregular, but most are sub-vertical; infilled with green smectite and carbonate.
ADDITIONAL COMMENTS: Grain-size fines towards mid-section (Pieces 7-10) and then slightly coarsens towards the bottom (Pieces 11-13). This could either represent internal flow differentiation or the presence of an additional unit. However, because the compositional make-up of all the pieces are similar, they have all been included within Unit 5.



129-802A-59R-1

UNIT 6: APHYRIC BASALT

Piece 1

CONTACTS: None observed, but coarser grained and less glassy than base of Unit 5 (58R-4, Pieces 12 & 13).
PHENOCRYSTS: None observed, but possibly one or two olivine pseudomorphs.
GROUNDMASS: Fine-grained, hypocrystalline throughout.
VESICLES: None observed.
COLOR: Speckled pale gray (N6).
STRUCTURE: Possibly central part of thin flow.
ALTERATION: Slight. Glassy mesostasis replaced by green smectite.
VEINS/FRACTURES: None observed.
ADDITIONAL COMMENTS: Single piece, but sufficiently different to those above and below, to probably represent another small unit.

UNIT 7: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 2-5

CONTACTS: None observed, except Piece 2 is finer-grained, contains high proportion of smectite-replaced glassy patches and has plagioclase bearing plume variolites (all different features relative to Piece 1).
PHENOCRYSTS: Random distribution, with some concentration towards top of Unit. Olivine - 1-2%; 0.1; microphenocrysts replaced by green smectite and sometimes oxidized.
GROUNDMASS: Fine-grained, hypocrystalline throughout with plumose variolites at top, being replaced by more granular matrix lower in Unit.
VESICLES: None observed.
COLOR: Speckled pale gray (N6).
STRUCTURE: Thin flow, although glassy top and bottom missing.
ALTERATION: Slight. Glassy mesostasis replaced by zoned green smectite and a central core of carbonate.
VEINS/FRACTURES: <1%; 0.1-0.2 mm; 25 & 45 degrees; relatively minor occurrence, green smectite +/- pyrite infilling.
ADDITIONAL COMMENTS: None.

UNIT 8: SPARSELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

Pieces 6-11

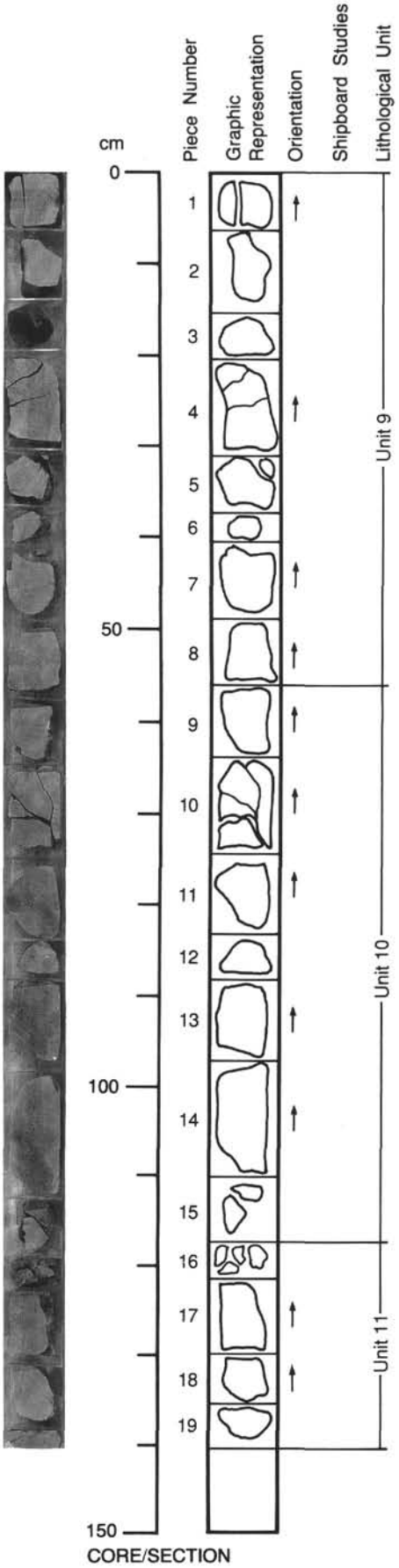
CONTACTS: Top contact not observed, except Piece 6 much finer grained and more glassy (replaced by green and blue clays and carbonate) than Piece 5 above. Bottom contact (Piece 11) of very fine-grained, spherulitic textured, dark gray basalt with sparse phenocrysts.
PHENOCRYSTS: Observed at basal contact, rarely seen throughout rest of Unit.
Plagioclase - trace; 0.1; Subhedral and unaltered.
Olivine - 2%; <0.1; invariably replaced by green smectite.
GROUNDMASS: Fine-grained, hypocrystalline throughout, except mesostasis distribution is patchy. Base of Unit much finer and formed of coalesing plagioclase-bearing spherulites and fan variolites interspersed by green smectite-replaced glass.
VESICLES: None observed.
COLOR: Speckled medium gray (N5 to N6) throughout, except dark gray at base (N4).
STRUCTURE: Thin flow.
ALTERATION: Slight. Green and blue clays replacing glassy mesostasis and themselves replaced by carbonate. Pyrite may occasionally be associated with carbonate. Clay and carbonate in veins.
VEINS/FRACTURES: 2%; 0.2-3.0 mm; two sets: 20 & 50; typically infilling is dark smectitic clay (saponite?), carbonate and pyrite.
ADDITIONAL COMMENTS: Small cooling unit, which could be a section of a pillow lava.

129-802A-59R-1 (continued)

UNIT 9: SPARSELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 12-14

CONTACTS: Only top contact observed adjacent to curved basal contact of Unit 8 above. Contact zone of coalesed spherulites and minor interstitial glass, that curves down parallel to green clay vein (Piece 12). Inwards from this quenched zone fan variolites are developed.
PHENOCRYSTS: Apparently concentrated in contact zone, although some olivine seen throughout Unit.
Plagioclase - trace; 0.1; very small and rare laths.
Olivine - 2%; <0.1; commonly euhedral and smectite replaced.
GROUNDMASS: Fine-grained, hypocrystalline throughout although higher proportion of glass at Unit top with spherulites and fan variolites which decrease downwards to more granular texture.
VESICLES: None observed.
COLOR: Uniform medium gray (N6).
STRUCTURE: Top of thin flow or possibly pillow lava.
ALTERATION: Slight. Glassy rim and mesostasis altered to green smectite. Blue-green clays and carbonate in veins.
VEINS/FRACTURES: <1%; <0.1 mm; sub-vertical; generally very fine fractures and curving veins infilled with blue-green clay (celadonite?) and carbonate.
ADDITIONAL COMMENTS: Base of this Unit seen in 59R-2 (Piece 8).



129-802A-59R-2

UNIT 9: SPARSELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 1-8

CONTACTS: Only basal contact seen in this section. Grain-size increases in Pieces 1-6 and then decreases in 7 & 8 to the very fine-grained spherulitic basal zone in Piece 8.
PHENOCRYSTS: Possibly a few pyroxene microphenocrysts within basal zone.
livine - 2%; <0.1; generally euhedral; smectite replaced.
Plagioclase - 0.5%; 0.1; subhedral
GROUNDMASS: Fine-grained, hypocrystalline, except in basal contact zone with spherulitic texture.
VESICLES: None observed.
COLOR: Uniform medium gray (N6).
STRUCTURE: Base of thin flow or possibly pillow lava.
ALTERATION: Slight. Glassy mesostasis replaced by green smectite. Blue-green and green clays +/- carbonate in veins.
VEINS/FRACTURES: 1%; 0.1 mm; irregular; infilling blue-green and green clays (smectite and celadonite?), sometimes associated with carbonate.
ADDITIONAL COMMENTS: Continuation of Unit 9 from 59R-1.

UNIT 10: SPARSELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

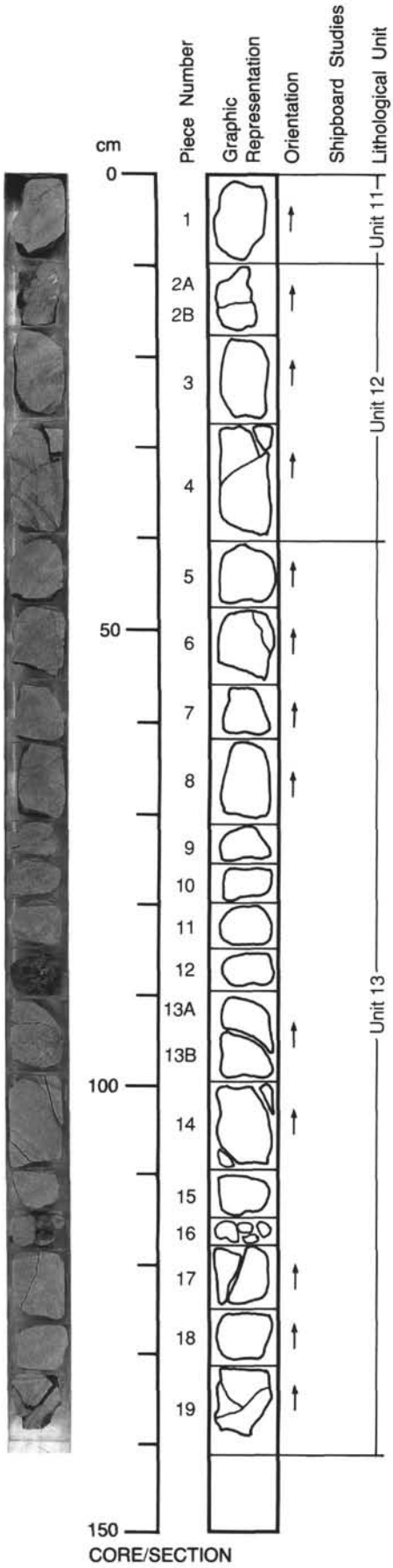
Pieces 9-15

CONTACTS: Top contact not observed, although Piece 9 is fine-grained compared to pieces following. Grain-size increases downwards until base which is very fine-grained, dark and spherulitic (Piece 15).
PHENOCRYSTS: Possibly one or two greenish pyroxene microphenocrysts concentrated with others in basal zone.
Plagioclase - trace; 0.1; subhedral
Olivine - 2%; <0.1; some eudral crystals, mostly replaced by green smectite.
GROUNDMASS: Fine-grained, hypocrystalline throughout with minor smectite-replaced mesostasis, basal zone with coalesed spherulites that give way to fan-shaped variolites.
VESICLES: none observed.
COLOR: Speckled medium gray (N6).
STRUCTURE: Thin flow.
ALTERATION: Slight. Green smectite after glassy mesostasis. Clay +/- carbonate veinlets.
VEINS/FRACTURES: 1%; 0.1 mm; irregular; infilled with dark clay (saponite?) +/- carbonate.
ADDITIONAL COMMENTS: Drilling rubble (piece 16) and quench textured Pieces 15 and 17 mark boundary between Units 10 and 11

UNIT 11: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 16-19

CONTACTS: Top contact marked by unaltered black glass and spherulitic zone (2 mm) at top of Piece 17. Drilling rubble also marks approximately boundary between Units 10 and 11.
PHENOCRYSTS: Apparently concentrated in upper quenched zone.
Plagioclase - 1%; 0.1; Subhedral.
Olivine - 3%; <0.1; often euhedral.
GROUNDMASS: Fine-grained, hypocrystalline throughout, except for upper quenched zone with interstitial glass and spherulites.
VESICLES: None observed.
COLOR: Speckled medium gray (N5).
STRUCTURE: Thin flow.
ALTERATION: Slight. Green smectite after mesostasis and olivine microphenocrysts.
VEINS/FRACTURES: <1%; 0.1 mm; vertical; two minor veinlets normal to quenched margin. Green smectite infilling.
ADDITIONAL COMMENTS: Preservation of apparently little altered black glass in quenched rim. Although no curved glassy zones have been observed, the extrusive units in 59R-2 (and previously) are charactereistically thin and could equally represent a series of pillow lava sections, rather than thin flows.



129-802A-59R-3

UNIT 11: APHYRIC BASALT

Piece 1

CONTACTS: None observed; coninuation of Unit 11.
PHENOCRYSTS: None observed.
GROUNDMASS: Fine-grained, hypocrystalline.
VESICLES: None observed.
COLOR: Speckled medium gray (N5).
STRUCTURE: Possibly fine-grained central portion of thin flow or pillow section.
ALTERATION: Slight; minor green smectite in matrix.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Continuation of Unit 11 from 59R-2.

129-802A-59R-3

UNIT 12: MODERATELY OLIVINE-PLAGIOCLASE-PYROXENE MICROPHYRIC BASALT

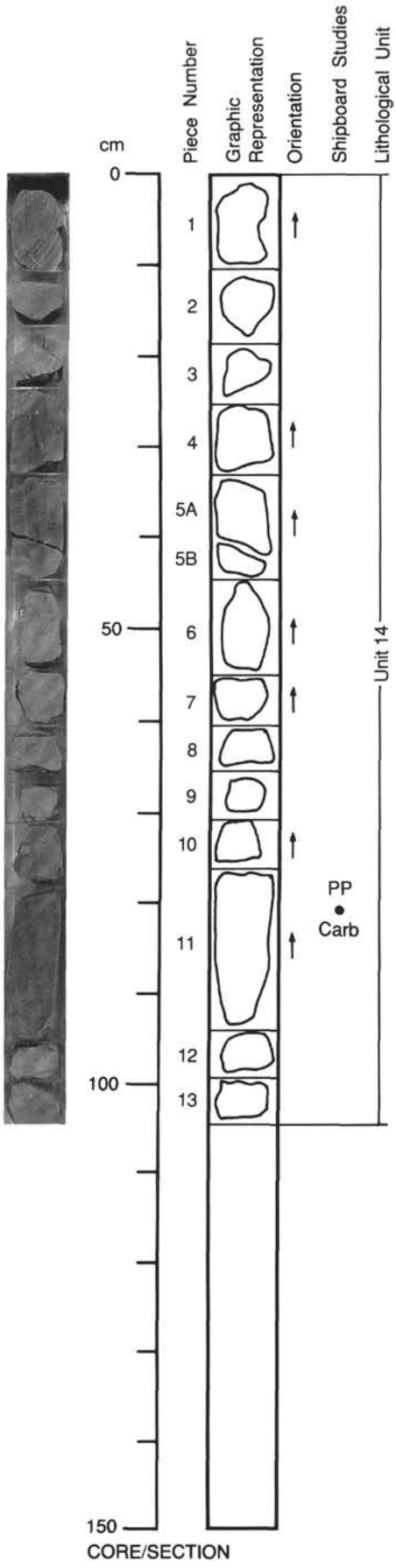
Pieces 2A - 4

CONTACTS: None observed, except Piece 2 is very fine-grained and spherulitic and marks approximate position of unit top. Piece 5 has fan variolitic texture and marks either the base of Unit 12 or more likely the top of Unit 13.
PHENOCRYSTS: Largely observed within upper spherulitic zone.
Plagioclase - 1%; 0.1-0.3; generally very small, a few larger subhedral laths.
Olivine - 4%; <0.1; smectite-replaced euhedra.
Pyroxene - trace; 0.1; rare subhedral prisms.
GROUNDMASS: Fine-grained, hypocrystalline. Coalesed spherulites in part of Piece 2 (contact zone).
VESICLES: None observed.
COLOR: Speckled, grading from N5 to N6.
STRUCTURE: Thin flow or part of pillow.
ALTERATION: Slight. Green smectite replacing mesostasis.
VEINS/FRACTURES: <1%; 0.2 mm; irregular; infilling of green smectite +/- carbonate.
ADDITIONAL COMMENTS: None.

UNIT 13: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 5-19

CONTACTS: None observed, except Piece 5 has a fan variolitic texture and possibly marks top of Unit 13, especially as grain-size increases away from this piece downwards.
PHENOCRYSTS: Olivine microphenocrysts randomly distributed.
Plagioclase - trace; 0.1-0.3; two size generations.
Olivine - 3%; <0.1; smectite-replaced euhedral.
GROUNDMASS: Fine-grained, hypocrystalline. Variable distribution of smectite-replaced mesostasis.
VESICLES: None observed.
COLOR: Speckled, medium gray (N6).
STRUCTURE: Thin flow.
ALTERATION: Slight. Mesostasis replaced by green smectite+/- carbonate and rarer pyrite. Clay-carbonate-pyrite veins.
VEINS/FRACTURES: 1%; 0.1-1.0 mm; variable; dark green smectite (saponite?) with central part of vein filled with carbonate and sometimes pyrite.
ADDITIONAL COMMENTS: None.

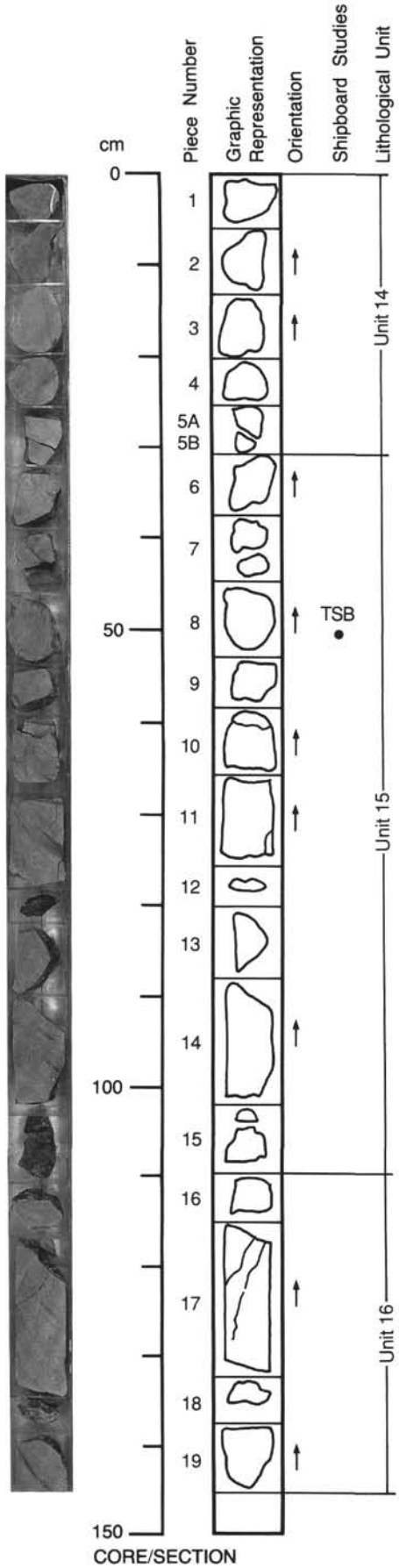


129-802A-60R-1

UNIT 14: SPARSELY PLAGIOCLASE MICROPHYRIC TO APHYRIC BASALT

Pieces 1-13

CONTACTS: None observed, but Piece 1 has a variolitic, very fine-grained texture that increases in grain-size downwards.
PHENOCRYSTS: Possibly one or two olivine and pyroxene microphenocrysts also. Plagioclase - 1-2%; 0.1-0.2; few subhedral laths.
GROUNDMASS: Generally fine-grained, hypocrystalline throughout, coarsening downwards. Fan variolites in upper quenched zone.
VESICLES: None observed.
COLOR: Medium gray (5B 5/1) grading downwards to speckled light gray (N6).
STRUCTURE: Thin flow.
ALTERATION: Slight. Darker gray and green alteration haloes in Pieces 6 and 10, with matrix replaced by green smectite and mesostasis by yellow palagonite (?) and green smectite. Green clay-carbonate veins.
VEINS/FRACTURES: 1%; 0.2-1.0 mm; variable; infilled with green smectite-carbonate.
ADDITIONAL COMMENTS: None.



129-802A-61R-1

UNIT 14: APHYRIC BASALT

Pieces 1-5B

CONTACTS: None observed, although slight decrease in grain-size towards Piece 5A & 5B. Continuation of Unit 14 from 60R-1.
PHENOCRYSTS: None observed in this part of Unit.
GROUNDMASS: Fine-grained, hypocrystalline.
VESICLES: None observed.
COLOR: Speckled light gray (N6).
STRUCTURE: Possibly lower portion of thin flow.
ALTERATION: Slight. Minor smectite in matrix.
VEINS/FRACTURES: <1%; 0.2 mm; vertical & horizontal; green smectite infilling.
ADDITIONAL COMMENTS: Possibly nearing basal portion of Unit 14.

UNIT 15: SPARSELY OLIVINE MICROPHYRIC BASALT

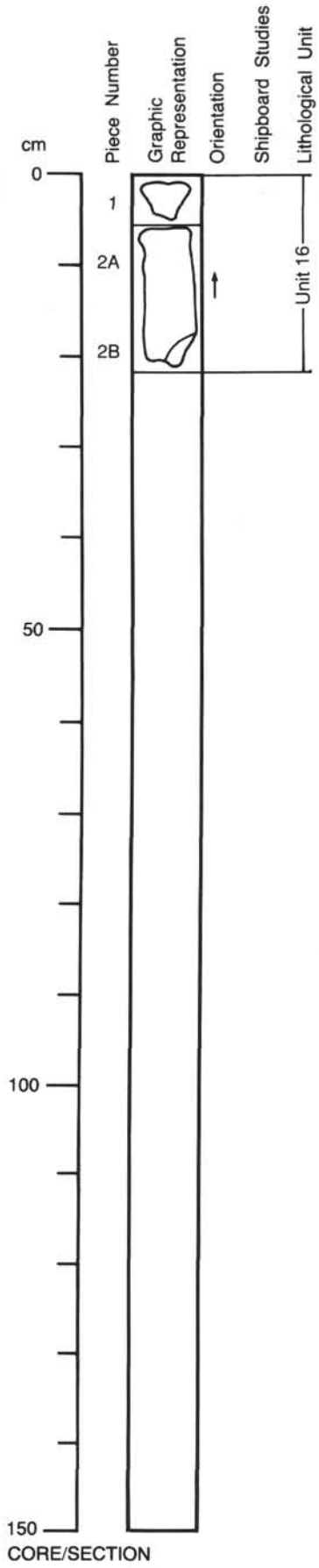
Pieces 6-15

CONTACTS: Not observed, except top 2 mm of piece is quenched with plume and fan variolites. Rest of pieces coarsen downwards and texture becomes more granular.
PHENOCRYSTS: Apparently concentrated within top portion of Unit. One or two possible pyroxene microphenocrysts.
Olivine - 1%; 0.1; replaced by green smectite.
GROUNDMASS: Mainly fine-grained, hypocrystalline with randomly distributed and smectite-replaced mesostasis.
VESICLES: None observed.
COLOR: Medium gray (N5 to N6).
STRUCTURE: Thin flow.
ALTERATION: Slight. Olivine microphenocrysts and mesostasis replaced by green smectite and minor carbonate.
VEINS/FRACTURES: 1-2%; 0.1 mm; irregular; infilled with green smectite +/- carbonate.
ADDITIONAL COMMENTS: None.

UNIT 16: MODERATELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 16-19

CONTACTS: None observed, but Pieces 16 & 17 are finer grained than Pieces 18 & 19.
PHENOCRYSTS: None.
Plagioclase - trace; 0.1; variably altered laths.
Olivine - ~2%; <0.1; Euhedral-subhedral; slightly altered.
GROUNDMASS: Fine-grained; hypohyaline top grading to hypocrystalline bottom. Quenched textures typical.
VESICLES: None observed.
COLOR: Speckled gray (N6).
STRUCTURE: Perhaps top of thin flow.
ALTERATION: Slight. Olivine microphenocrysts altered to green clays, traces of carbonate along some crystal margins. Occasional pyrite grains.
VEINS/FRACTURES: <1%; 0.1-1.0 mm; very irregular; infilled with green smectite +/- carbonate.
ADDITIONAL COMMENTS: This unit is recognized by a fine-grained top that coarsens towards the bottom.

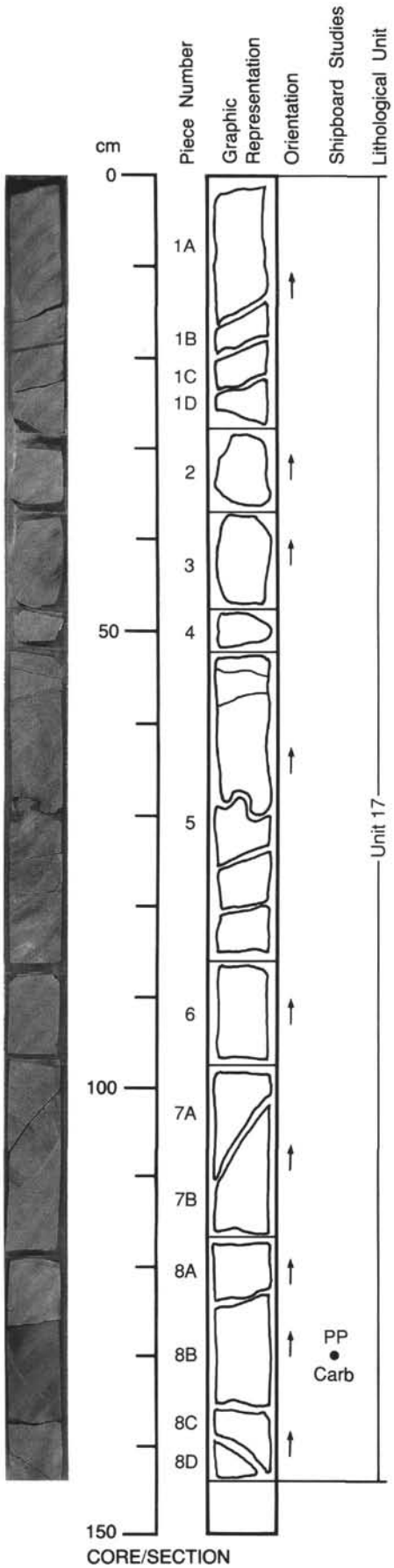


129-802A-61R-2

UNIT 16: SPARSELY OLIVINE-PLAGIOCLASE MICROPHYRIC BASALT

Pieces 1-2B

CONTACTS: None observed.
PHENOCRYSTS: Proportion and distribution of olivine relatively uniform throughout but groundmass becomes more granular.
Plagioclase - trace; <0.1; Subhedral laths
Olivine - 1%; <0.1; Euhedral to subhedral; some alteration.
GROUNDMASS: Fine-grained, hypocrystalline with quench textures.
VESICLES: None observed.
COLOR: Speckled gray (N5).
STRUCTURE: Probably portion of thin flow (Unit 16 continued from 61R-1).
ALTERATION: Slight. Olivine altered to green smectite, trace of carbonate.
VEINS/FRACTURES: 0.5%; <0.1 mm; irregular; irregular sub-vertical branching veinlets, none cross-cutting. Infilled with green smectite and carbonate.
ADDITIONAL COMMENTS: None.

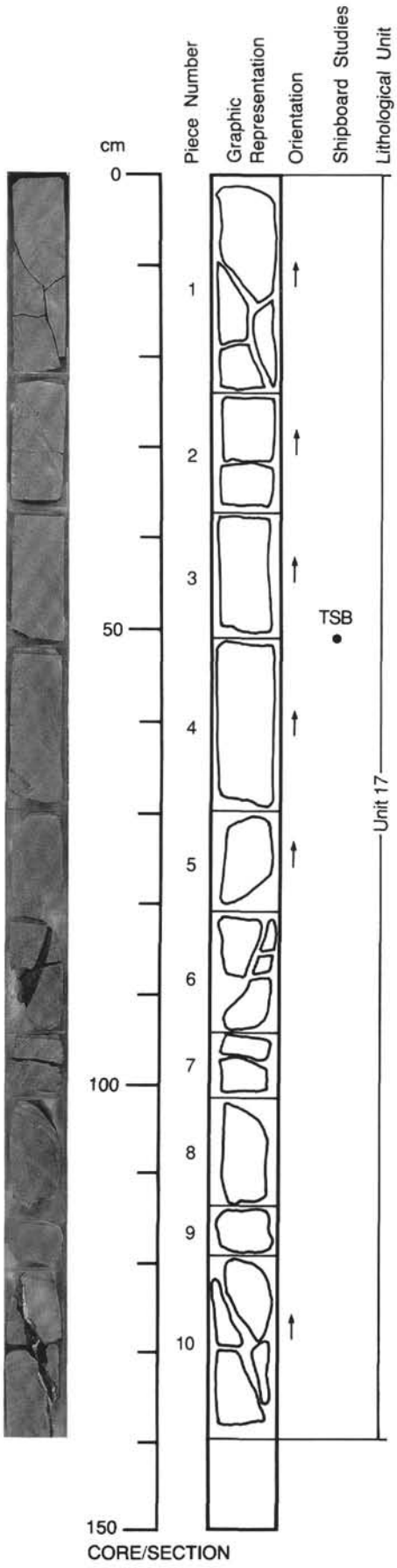


129-802A-62R-1

UNIT 17: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 1A-8D

CONTACTS: None observed and no systematic grain-size distribution.
PHENOCRYSTS: None
Olivine - 1%; <0.1; Slightly altered Euhedral and Subhedral grains.
GROUNDMASS: Fine-grained, hypocrystalline to slightly holocrystalline. Quenched textures.
VESICLES: Generally none observed, except piece 3 contains a few very irregular, green clay infilled miaroles.
COLOR: Fine-speckled gray (N5-N6)
STRUCTURE: Perhaps a lava flow.
ALTERATION: Slight. Olivine altered to green clays. Fractured boundary between pieces 5C and 5D is moderately altered with mesostasis changed to green clays.
VEINS/FRACTURES: <0.5%; <0.1-5.0 mm; Very irregular; infilled with green clays, pyrite and traces of carbonate and quartz. A sharp fracture in Piece 1B is filled with dark green clays.
ADDITIONAL COMMENTS: Although still fine-grained, this is the most holocrystalline and massive of all previous Units (see next two sections) and perhaps more representative of a lava flow rather than a pillow lava.

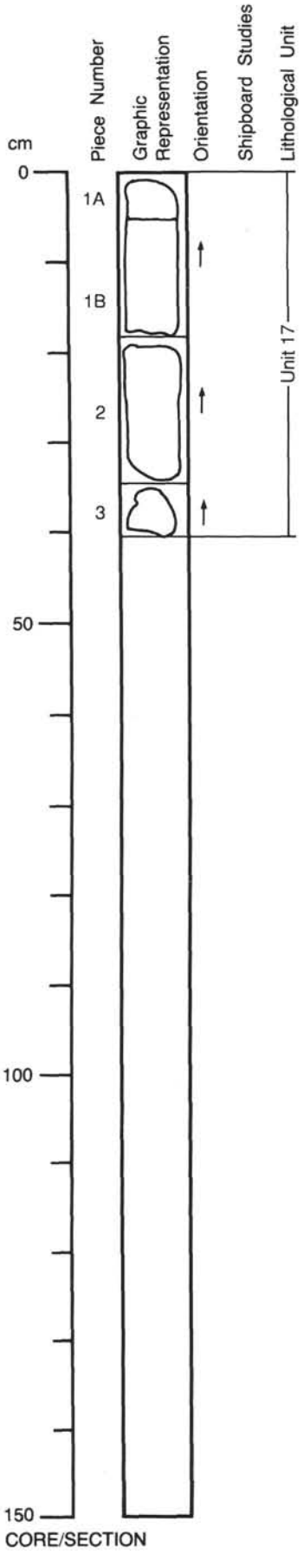


129-802A-62R-2

UNIT 17: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 1 - 10

CONTACTS: None observed.
PHENOCRYSTS: None.
Olivine - 1%; <0.1; slightly altered, Euhedral to Subhedral.
GROUNDMASS: *Fine-grained, hypocrystalline to holocrystalline, with quench-textured* crystal morphologies.
VESICLES: None observed.
COLOR: Fine-speckled gray (N5 to N6).
STRUCTURE: Perhaps a portion of a lava flow.
ALTERATION: Slight. Olivine altered to green smectite.
VEINS/FRACTURES: 0.5%; <0.1-5.0 mm; irregular; branching common, but little cross-cutting relationships. Pieces 10A and 10B are separated by a 5 mm wide fracture infilled with calcite and green clays. Pyrite in trace amounts may also be present as infill.
ADDITIONAL COMMENTS: Fairly uniform grain size throughout the section.



129-802A-62R-3

UNIT 17: SPARSELY OLIVINE MICROPHYRIC BASALT

Pieces 1A-3

CONTACTS: None observed, but Piece 3 is finer-grained than other pieces and may represent beginning of the lower margin of the unit.
PHENOCRYSTS: None.
Olivine - 1%; <0.1; Slightly altered euhedral and subhedral grains.
GROUNDMASS: Fine-grained, hypocrystalline with quenched textures in Piece 3.
VESICLES: None observed.
COLOR: Fine speckled gray (N5 to N6).
STRUCTURE: Perhaps bottom part of Unit 17 flow.
ALTERATION: Slight. Olivine altered to green smectite. Carbonate grains present in matrix, together with some Fe staining.
VEINS/FRACTURES: <1%; 0.1-1.0 mm; irregular; infilled with green smectite, pyrite and calcite.
ADDITIONAL COMMENTS: Abrupt change in grain-size and texture from Piece 2 to 3 and assumed that later piece represents basal portion of Unit 17 with intervening section not recovered.