SITE 747 HOLE A CORE 1H CORED INTERVAL 0.0-9.0 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: *G. ruticulata* subzone; F/M NN19; Chi Psi-Omega; *C. elliptopora* - *A. ingens*; *T. lentiginosa*

FORAMINIFERS | NANNOFOSSILS | RADIOLARIANS | DIATOMS

PALEOMAGNETICS: O

PHYS. PROPERTIES: ϕ=71.6, 77.9, 80.8, 78.9, 97.7, 97.1; ρ=1.54, 1.40, 1.32, 1.35, 1.23, 1.19

CHEMISTRY: $CaCO_3$ = 77.1, 55.4, 42.6%, 59.4%, 34.0%, 19.2%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: IW

SAMPLES

LITHOLOGIC DESCRIPTION

FORAMINIFER DIATOM AND DIATOM FORAMINIFER OOZE

Major lithologies: FORAMINIFER DIATOM and DIATOM FORAMINIFER OOZE, color varies throughout from pink (5YR 7/3) to light gray (10YR 7/1); homogeneous; induration grades downcore from soft to firm; bioturbation (mottling) varies from minor to moderate; trace of volcanic ash and/or ice-rafted debris disseminated throughout Section 3, 0-104 cm, and Section 6, 0-110 cm.

Minor lithology: Foraminifer nannofossil ooze with diatoms, color whiter than (10YR 8/1), in Section 3, 91-102 cm and 104-105 cm, and Section 4 0-55 cm; homogeneous; soft to firm.

Drilling disturbance: 4 cm void in Section 1, 17-21 cm; soupy from Section 1 through Section 2; slightly disturbed from Section 3 through Section 5 and Section 7; Section 6 is moderately disturbed.

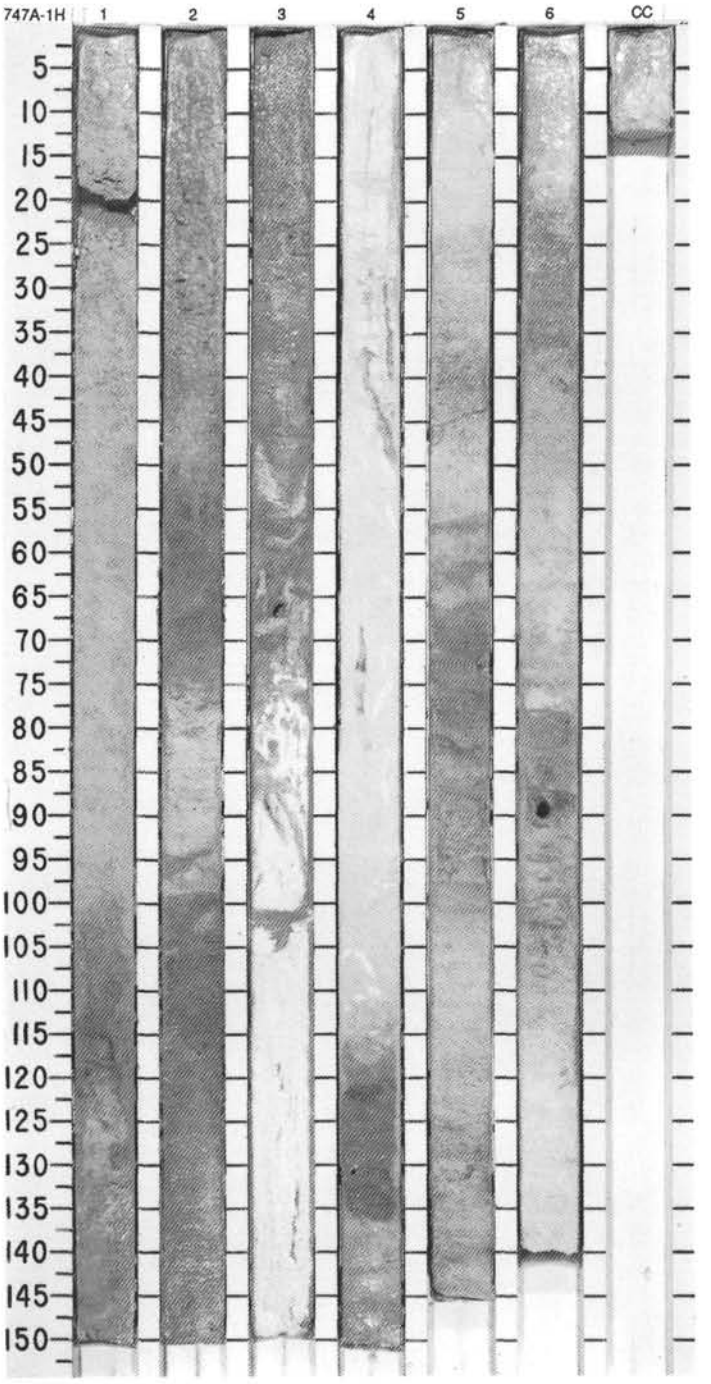
Dropstones: Section 3, 67-68 cm, basaltic, 1.5 cm; Section 6, 88-89 cm, quartz, 2.5 cm.

SMEAR SLIDE SUMMARY (%):

	1, 1 D	1, 58 D	2, 59 D	2, 84 M	2, 110 D	3, 16 D	3,116 D
TEXTURE:							
Sand	30	40	60	60	65	55	30
Silt	30	50	35	35	30	40	68
Clay	35	5	5	5	5	5	2
COMPOSITION:							
Diatoms	1	75	60	80	50	37	23
Feldspar	—	—	Tr	—	Tr	—	—
Foraminifers	99	13	30	16	45	60	35
Glass	—	Tr	Tr	—	Tr	—	—
Mica	—	—	Tr	—	—	—	—
Nannofossils	—	2	4	2	1	1	40
Opaques	—	—	—	—	—	Tr	—
Radiolarians	—	5	5	2	4	2	1
Silicoflagellates	—	5	1	Tr	Tr	—	1
Spicules	—	—	—	—	—	Tr	—

SMEAR SLIDE SUMMARY (%):

	4, 61 D	4, 142 D	5, 82 D	6, 46 D	6, 133 D	CC D
TEXTURE:						
Sand	45	55	70	55	39	40
Silt	50	40	27	43	60	55
Clay	5	5	3	2	1	5
COMPOSITION:						
Carbonate	—	—	—	10	—	4
Clay	—	—	1	Tr	—	—
Diatoms	73	42	25	30	74	37
Foraminifers	13	55	70	59	23	46
Glass	Tr	1	—	Tr	—	2
Heavy minerals	—	—	Tr	—	—	—
Mica	—	—	—	—	—	Tr
Nannofossils	7	—	—	—	—	2
Opaques	—	—	2	—	Tr	—
Quartz	—	Tr	—	—	—	—
Radiolarians	5	2	2	1	1	9
Silicoflagellates	2	Tr	Tr	Tr	2	Tr
Spicules	—	Tr	Tr	Tr	Tr	Tr



SITE 747 HOLE A CORE 2H CORED INTERVAL 9.0-18.5 mbsf

UPPER PLIOCENE

R. barboi - N. kerguelensis) — *N. pachyderma* (*G. puncticulata* Subzone)

F/M NN15-NN19

Phi — Lower Chi — Middle-Upper Chi

C. kolbei - R. barboi — *C. elliptopora - A. ingens*

(C. vulnificus)

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE					O	0-79.4 1.34	●47.7%	1	0.5 1.0				
						0-77.7 1.36	●46.7%	2					*
						0-76.9 1.44	●65.3%	3					*
						0-76.4 1.42	●64.9%	4					*
						0-74.7 1.49	●67.7%	5					
						0-71.5 1.55	●77.3%	6					*
						0-71.2 1.52	●70.7%	7					
							$CaCO_3$	CC					

LITHOLOGIC DESCRIPTION

DIATOM OOZE WITH FORAMINIFERS

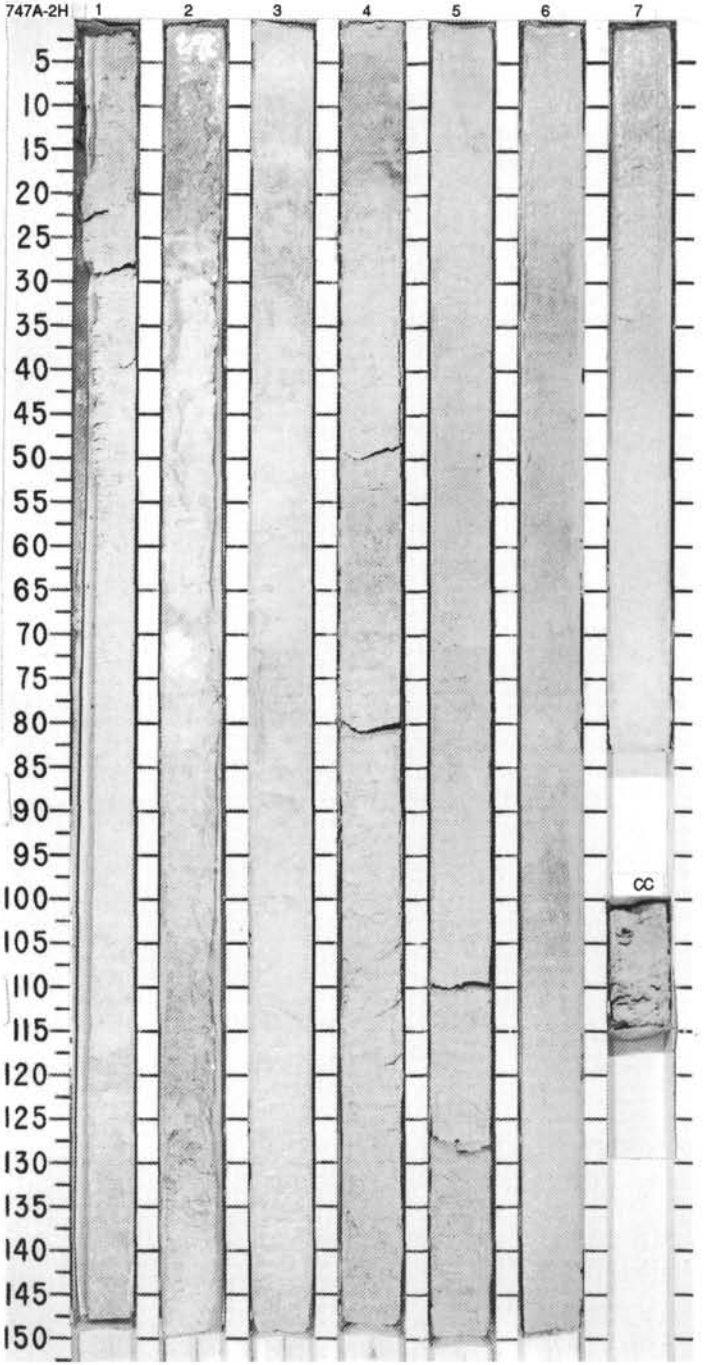
Major lithology: DIATOM OOZE with FORAMINIFERS, white (10YR 8/2) to pale brown (10YR 8/3); grades downward from soft to firm. Moderate to minor bioturbation throughout; mottles evident near color changes (e.g., Section 1, 116-150 cm).

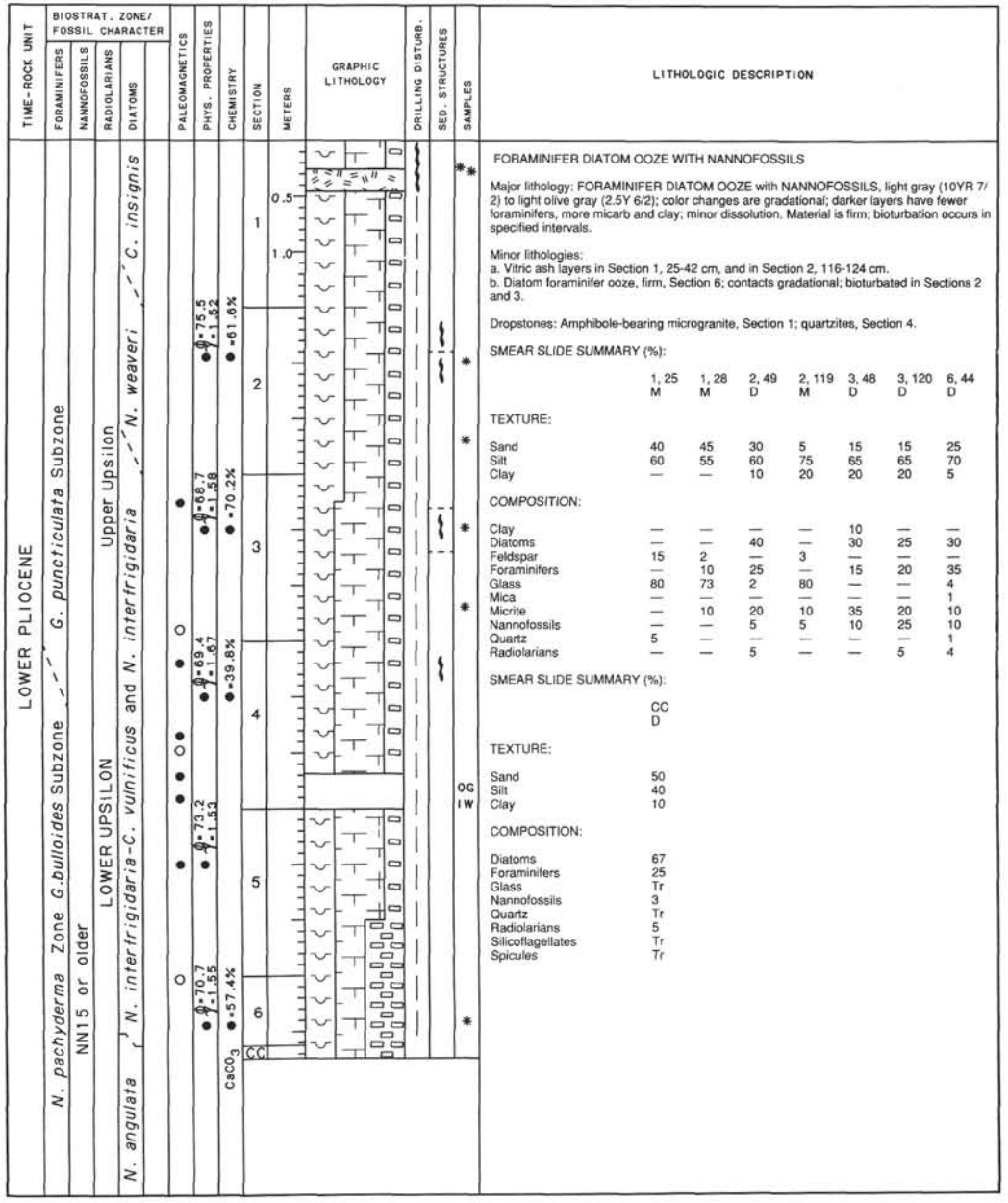
Drilling disturbance: Entire Section 1 thinned, Section 3 soupy (may have some flow-in).

Dropstones: Disseminated in Section 1, 0-15 cm (approximately 0.5 cm diameter); in Section 2, 0-23 cm, and Section 5, 49 cm.

SMEAR SLIDE SUMMARY (%):

	2, 20 D	2, 70 D	4, 87 D	6, 86 D
TEXTURE:				
Sand	12	50	10	15
Silt	80	40	80	75
Clay	8	10	10	5
COMPOSITION:				
Clay	—	Tr	Tr	Tr
Diatoms	75	35	80	75
Foraminifers	8	50	10	12
Glass	—	Tr	Tr	Tr
Nannofossils	5	5	Tr	Tr
Radiolarians	10	5	5	8
Spicules	1	Tr	5	5





LITHOLOGIC DESCRIPTION

FORAMINIFER DIATOM OOZE WITH NANNOFOSSILS

Major lithology: FORAMINIFER DIATOM OOZE with NANNOFOSSILS, light gray (10YR 7/2) to light olive gray (2.5Y 6/2); color changes are gradational; darker layers have fewer foraminifers, more micarb and clay; minor dissolution. Material is firm; bioturbation occurs in specified intervals.

Minor lithologies:
a. Vitric ash layers in Section 1, 25-42 cm, and in Section 2, 116-124 cm.
b. Diatom foraminifer ooze, firm, Section 6; contacts gradational; bioturbated in Sections 2 and 3.

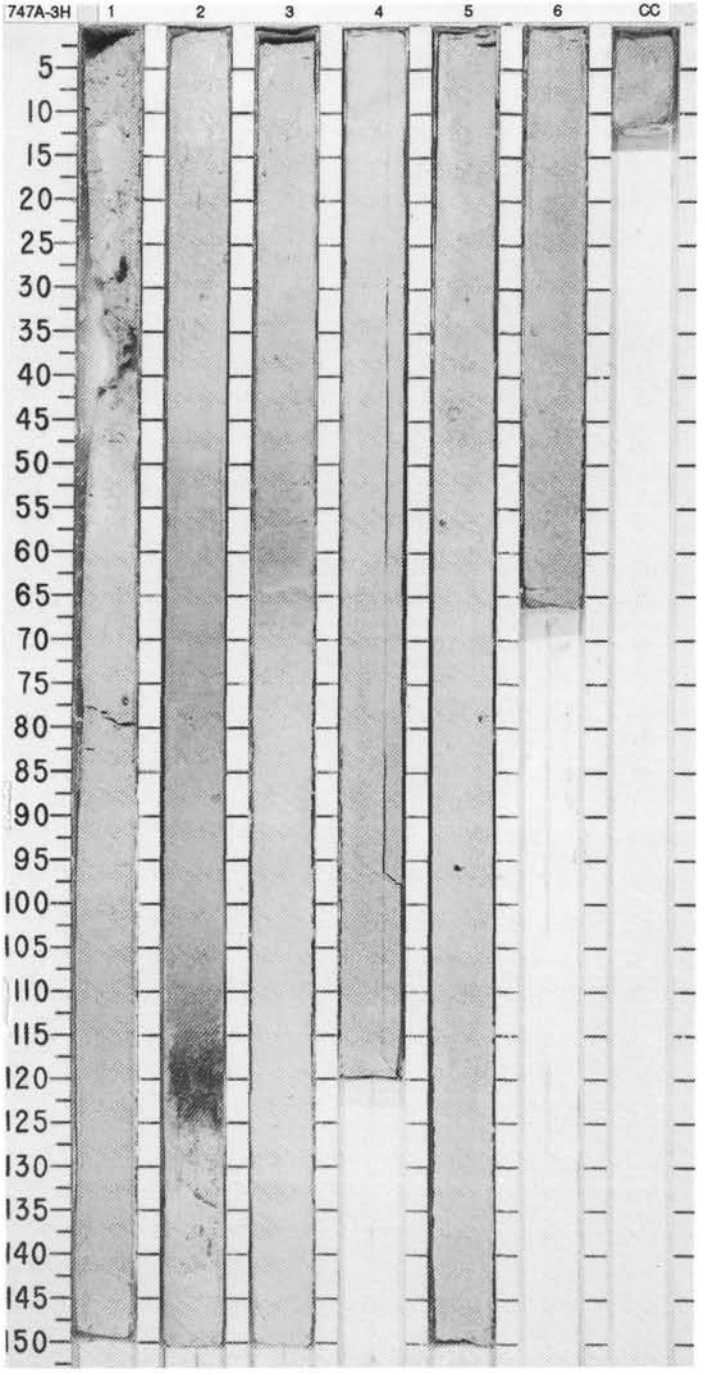
Dropstones: Amphibole-bearing microgranite, Section 1; quartzites, Section 4.

SMEAR SLIDE SUMMARY (%):

	1, 25 M	1, 28 M	2, 49 D	2, 119 M	3, 48 D	3, 120 D	6, 44 D
TEXTURE:							
Sand	40	45	30	5	15	15	25
Silt	60	55	60	75	65	65	70
Clay	—	—	10	20	20	20	5
COMPOSITION:							
Clay	—	—	—	—	10	—	—
Diatoms	—	—	40	—	30	25	30
Feldspar	15	2	—	3	—	—	—
Foraminifers	—	10	25	—	15	20	35
Glass	80	73	2	80	—	—	4
Mica	—	—	—	—	—	—	1
Micrite	—	10	20	10	35	20	10
Nannofossils	—	—	5	5	10	25	10
Quartz	5	—	—	—	—	—	1
Radiolarians	—	—	5	—	—	5	4

SMEAR SLIDE SUMMARY (%):

	CC D
TEXTURE:	
Sand	50
Silt	40
Clay	10
COMPOSITION:	
Diatoms	67
Foraminifers	25
Glass	Tr
Nannofossils	3
Quartz	Tr
Radiolarians	5
Silicoflagellates	Tr
Spicules	Tr



SITE 747 HOLE A CORE 4H CORED INTERVAL 28.0-37.5 mbsf

TIME-ROCK UNIT: UPPER MIOCENE / LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: A/G ? / upper *G. sciitula* / *N. pachyderma* Zone / *G. bulloides* Subzone; NANNOFOSSILS: upper *C. spongothorax* / LOWER TAU; RADIOLARIANS: LOWER TAU / UPPER TAU; DIATOMS: *D. hustedtii* / *N. reinholdii*

PALEOMAGNETICS

PHYS. PROPERTIES: 59.6 / 1.82; 62.2 / 1.77; 59.1 / 1.75; 65.3 / 1.67; 59.5 / 1.67; 68.7 / 1.62; 72.9 / 1.57

CHEMISTRY: $CaCO_3$ = 90.1%; 86.5%; 83.0%; 69.4%; 80.7%; 67.5%; 78.6%; OC = 0.12%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: PP

LITHOLOGIC DESCRIPTION

FORAMINIFER NANNOFOSSIL OOZE WITH DIATOMS

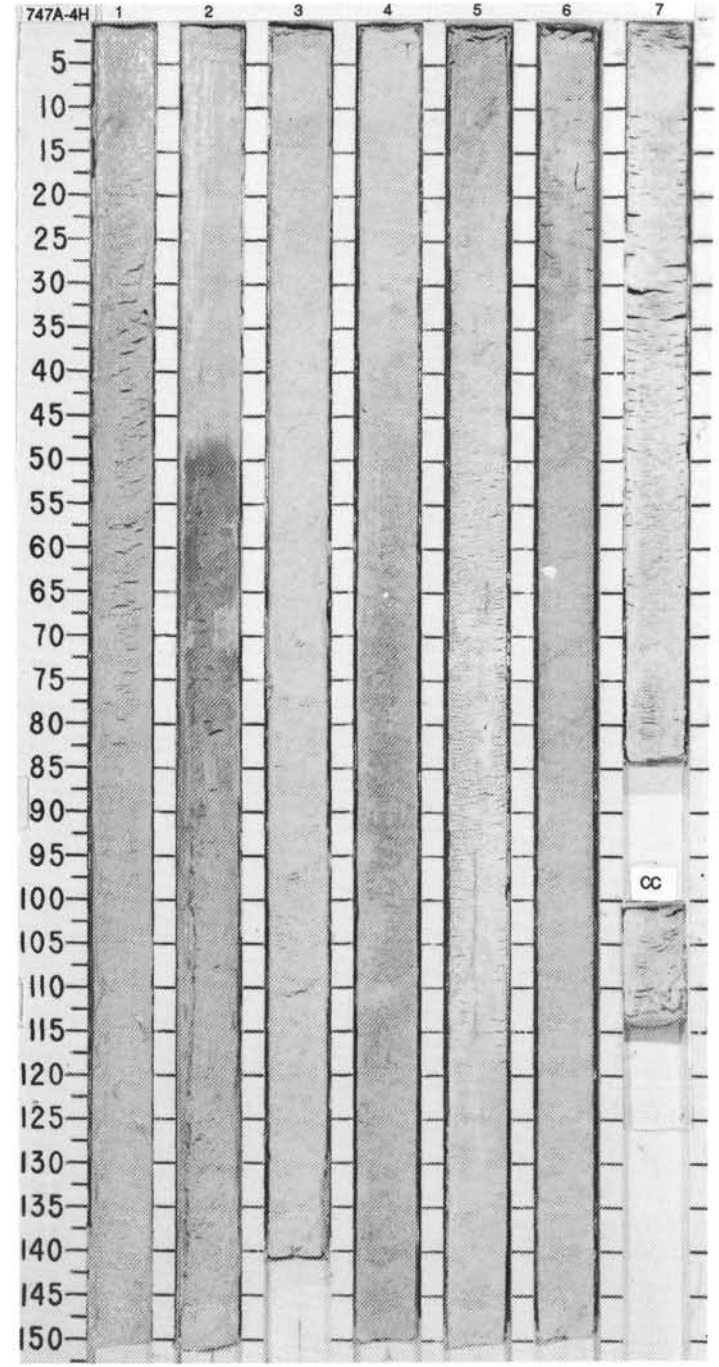
Major lithology: FORAMINIFER NANNOFOSSIL OOZE with DIATOMS; soft to firm; light gray (5Y 7/2) to white (5Y 8/2); bioturbation where indicated.

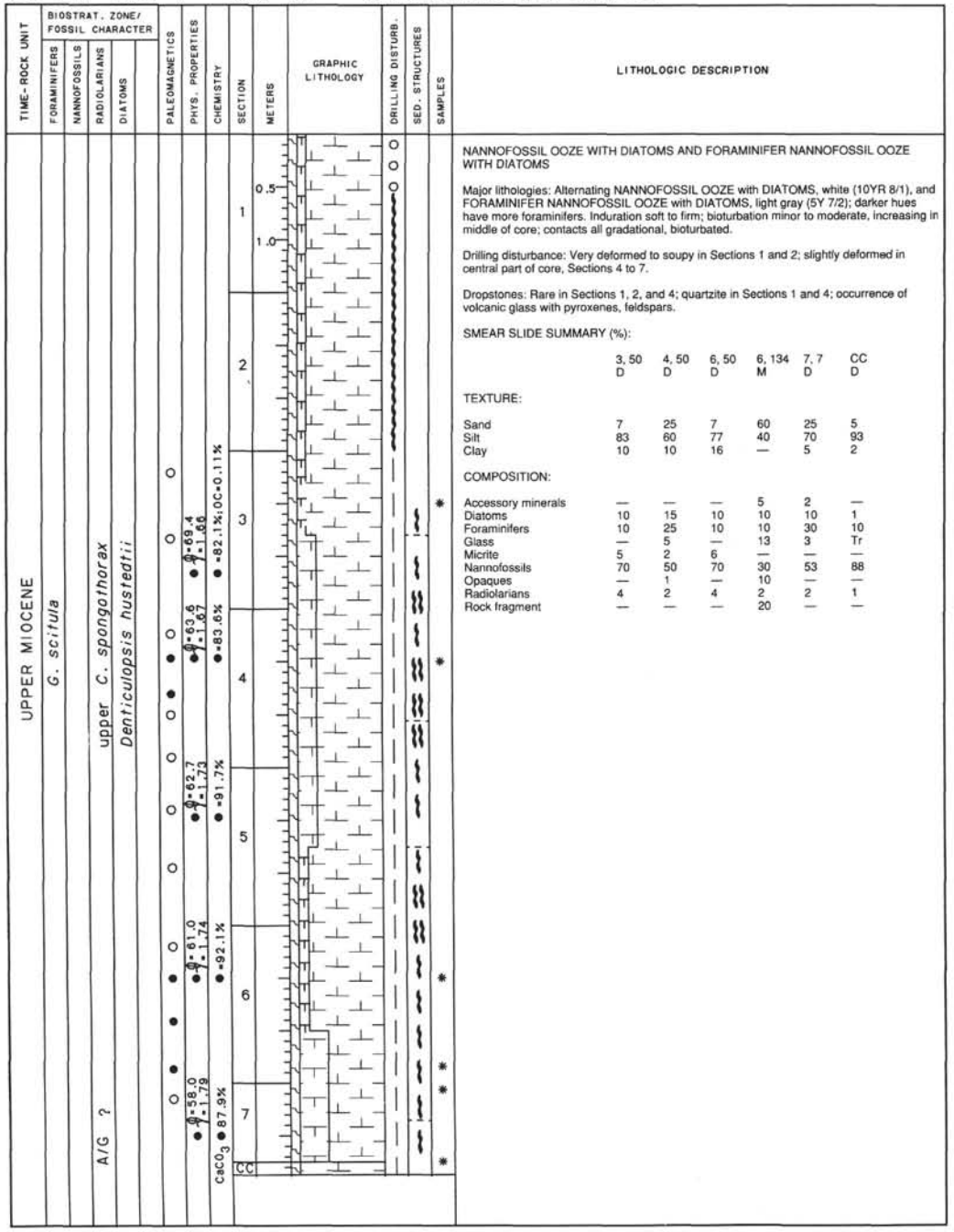
Minor lithologies:
a. Foraminifer diatom nannofossil ooze, olive (5Y 5/3) in Section 2; darkens and coarsens slightly upward.
b. Nannofossil ooze with foraminifers, pale yellow (5Y 7/3) in Section 5.
c. Nannofossil ooze with foraminifers, white (10YR 8/1); in Section 7 and CC; no volcanic clasts.

Drilling disturbance: Minor in Sections 1, 2, and 5 in central part of core (flow-in from ship heave?).

SMEAR SLIDE SUMMARY (%):

	2, 40 D	2, 50 D	2, 50 M	4, 50 D	5, 50 D	7, 5 D	CC D
TEXTURE:							
Sand	25	25	40	20	25	15	8
Silt	60	70	50	70	70	80	91
Clay	15	5	10	10	5	5	1
COMPOSITION:							
Accessory minerals	—	2	5	—	—	—	—
Diatoms	20	20	27	20	10	13	6
Feldspar	—	—	2	2	—	—	—
Foraminifers	30	25	15	15	25	20	13
Glass	1	2	10	5	—	—	Tr
Mica	—	Tr	—	—	—	—	—
Micrite	20	10	10	25	10	5	—
Nannofossils	20	35	20	26	50	60	80
Radiolarians	5	2	10	2	2	2	1
Silicoflagellates	—	—	—	—	1	—	—
Spicules	—	—	1	—	2	—	Tr





LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH DIATOMS AND FORAMINIFER NANNOFOSSIL OOZE WITH DIATOMS

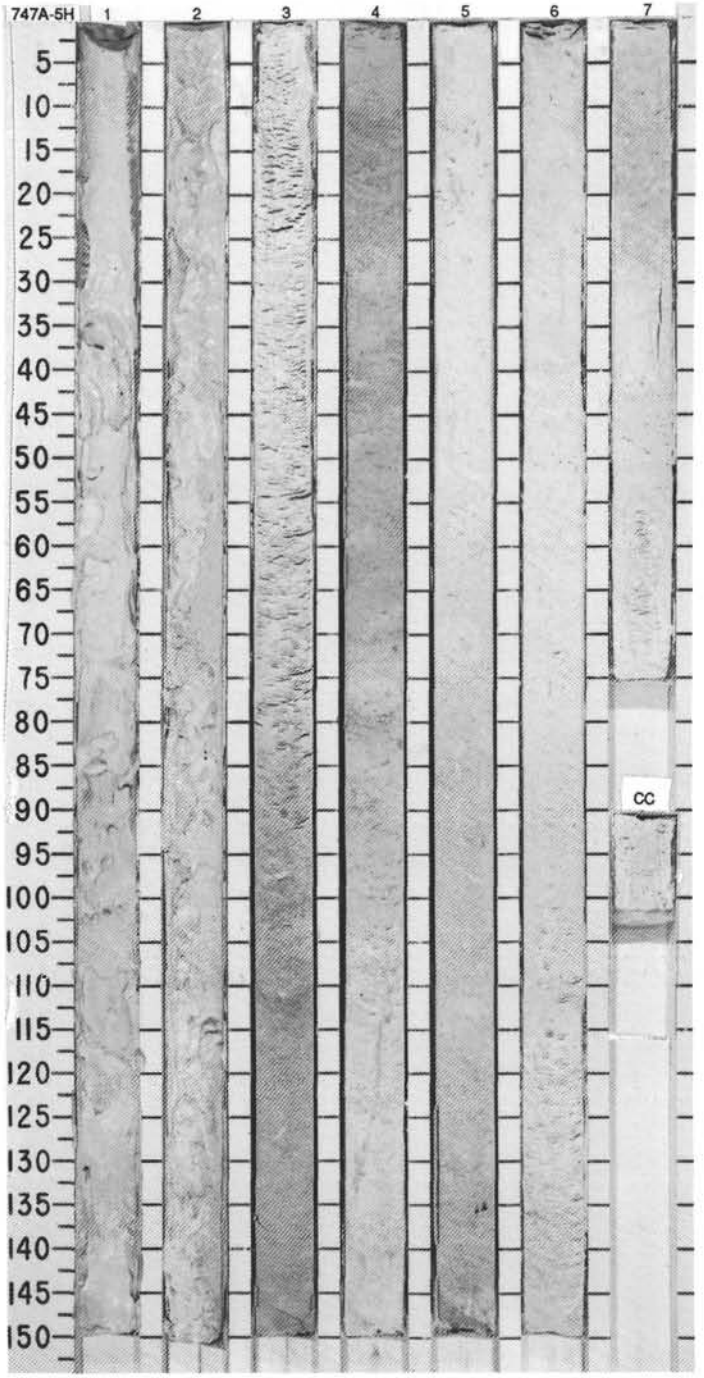
Major lithologies: Alternating NANNOFOSSIL OOZE with DIATOMS, white (10YR 8/1), and FORAMINIFER NANNOFOSSIL OOZE with DIATOMS, light gray (5Y 7/2); darker hues have more foraminifers. Induration soft to firm; bioturbation minor to moderate, increasing in middle of core; contacts all gradational, bioturbated.

Drilling disturbance: Very deformed to soupy in Sections 1 and 2; slightly deformed in central part of core, Sections 4 to 7.

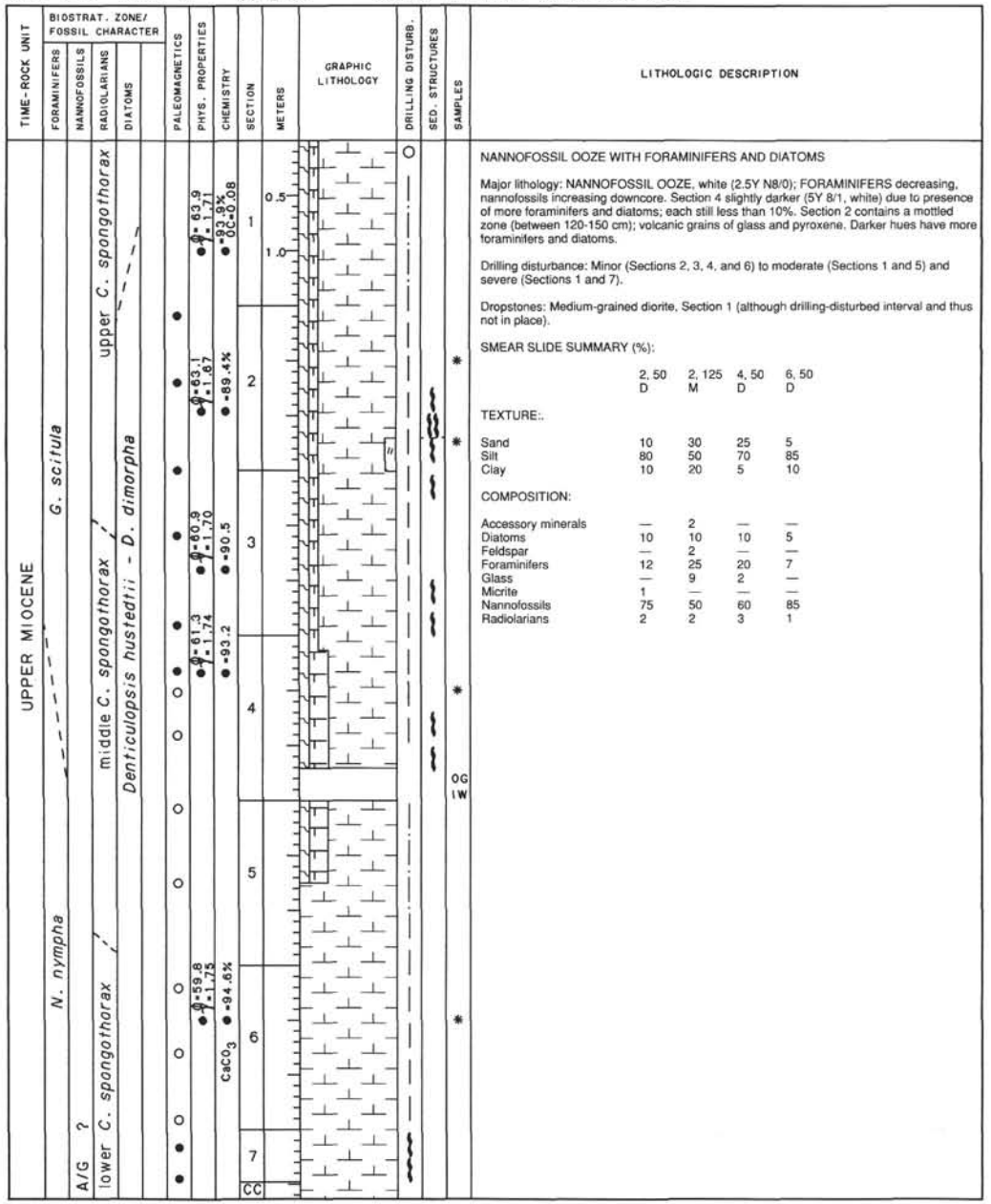
Dropstones: Rare in Sections 1, 2, and 4; quartzite in Sections 1 and 4; occurrence of volcanic glass with pyroxenes, feldspars.

SMEAR SLIDE SUMMARY (%):

	3, 50 D	4, 50 D	6, 50 D	6, 134 M	7, 7 D	CC D
TEXTURE:						
Sand	7	25	7	60	25	5
Silt	83	60	77	40	70	93
Clay	10	10	16	—	5	2
COMPOSITION:						
Accessory minerals	—	—	—	5	2	—
Diatoms	10	15	10	10	10	1
Foraminifers	10	25	10	10	30	10
Glass	—	5	—	13	3	Tr
Micrite	5	2	6	—	—	—
Nannofossils	70	50	70	30	53	88
Opaques	—	1	—	10	—	—
Radiolarians	4	2	4	2	2	1
Rock fragment	—	—	—	20	—	—



SITE 747 HOLE A CORE 6H CORED INTERVAL 47.0-56.5 mbsf



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH FORAMINIFERS AND DIATOMS

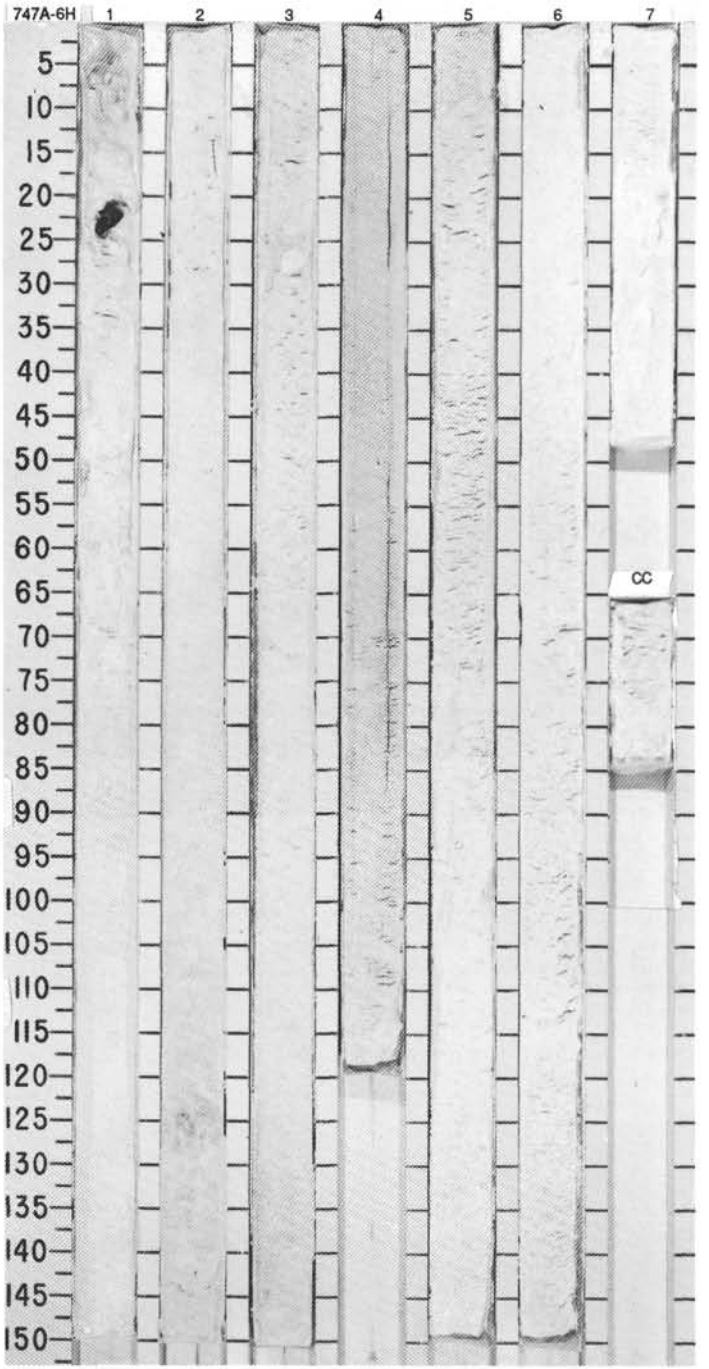
Major lithology: NANNOFOSSIL OOZE, white (2.5Y N8/0); FORAMINIFERS decreasing, nannofossils increasing downcore. Section 4 slightly darker (5Y 8/1, white) due to presence of more foraminifers and diatoms; each still less than 10%. Section 2 contains a mottled zone (between 120-150 cm); volcanic grains of glass and pyroxene. Darker hues have more foraminifers and diatoms.

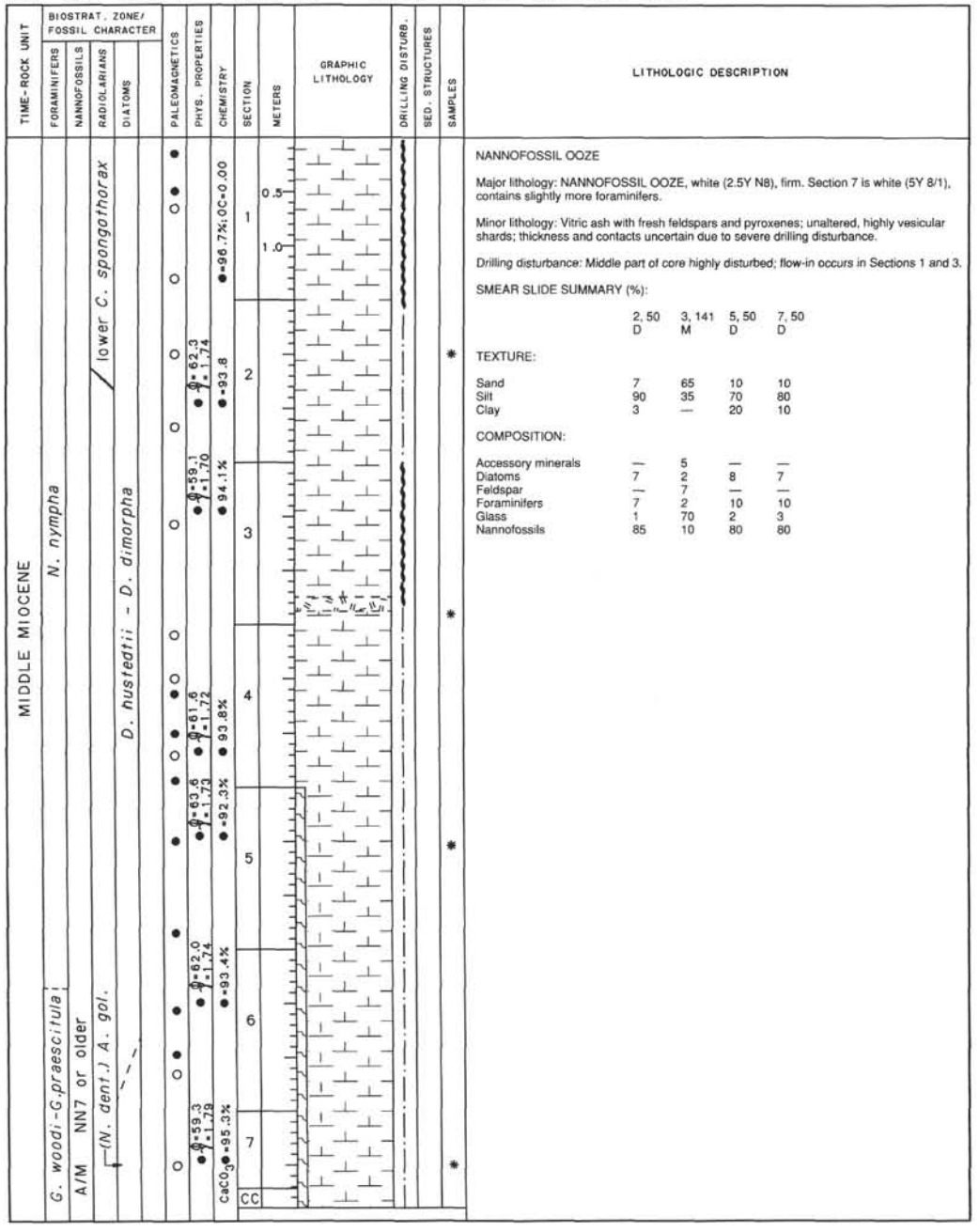
Drilling disturbance: Minor (Sections 2, 3, 4, and 6) to moderate (Sections 1 and 5) and severe (Sections 1 and 7).

Dropstones: Medium-grained diorite, Section 1 (although drilling-disturbed interval and thus not in place).

SMEAR SLIDE SUMMARY (%):

	2, 50 D	2, 125 M	4, 50 D	6, 50 D
TEXTURE:.				
Sand	10	30	25	5
Silt	80	50	70	85
Clay	10	20	5	10
COMPOSITION:				
Accessory minerals	—	2	—	—
Diatoms	10	10	10	5
Feldspar	—	2	—	—
Foraminifers	12	25	20	7
Glass	—	9	2	—
Micrite	1	—	—	—
Nannofossils	75	50	60	85
Radiolarians	2	2	3	1





NANNOFOSSIL OOZE

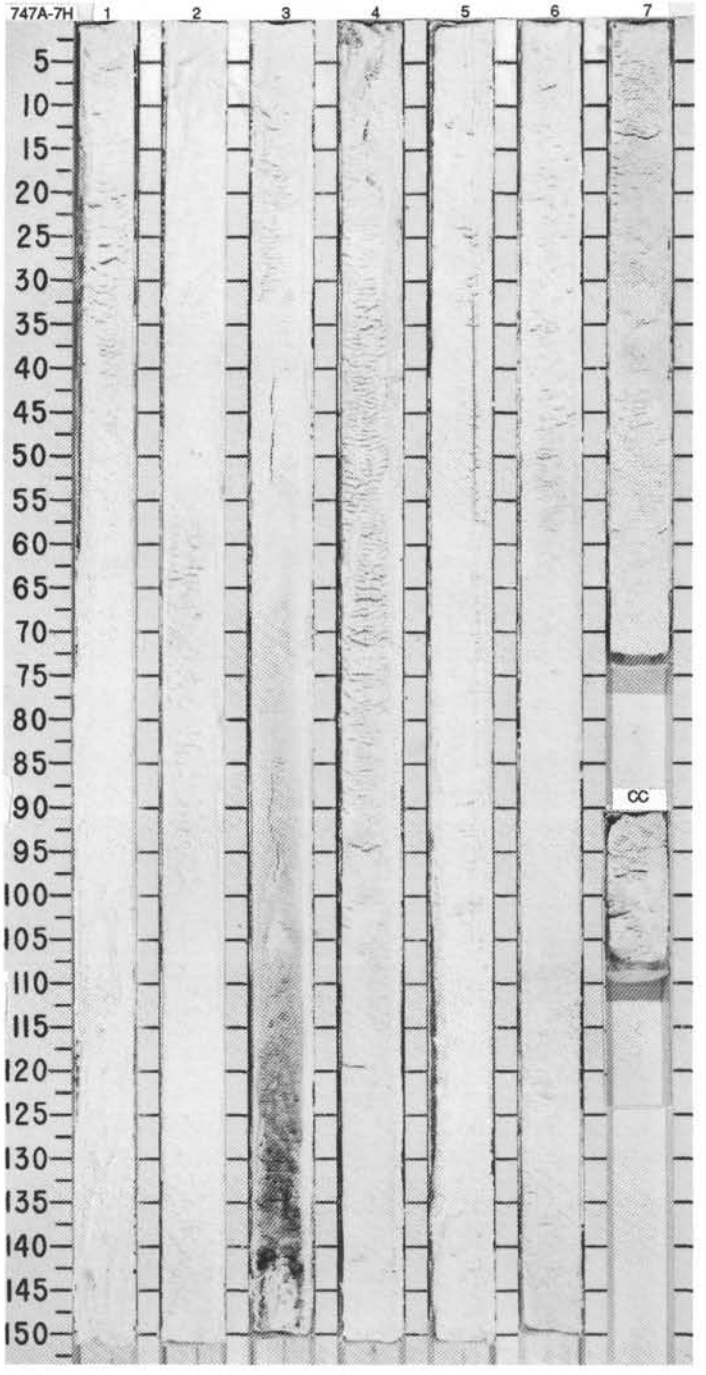
Major lithology: NANNOFOSSIL OOZE, white (2.5Y N8), firm. Section 7 is white (5Y 8/1), contains slightly more foraminifers.

Minor lithology: Vitric ash with fresh feldspars and pyroxenes; unaltered, highly vesicular shards; thickness and contacts uncertain due to severe drilling disturbance.

Drilling disturbance: Middle part of core highly disturbed; flow-in occurs in Sections 1 and 3.

SMEAR SLIDE SUMMARY (%):

	2, 50 D	3, 141 M	5, 50 D	7, 50 D
TEXTURE:				
Sand	7	65	10	10
Silt	90	35	70	80
Clay	3	—	20	10
COMPOSITION:				
Accessory minerals	—	5	—	—
Diatoms	7	2	8	7
Feldspar	—	7	—	—
Foraminifers	7	2	10	10
Glass	1	70	2	3
Nannofossils	85	10	80	80



SITE 747 HOLE A CORE 8H CORED INTERVAL 66.0-75.5 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: *G. woodi* - *G. praescitula*; A/G; NN7 or older
- NANNOFOSSILS: no zone (MIDDLE - UPPER MIOCENE)
- RADIOLARIANS: *N. denticuloides* - *D. dimorpha*
- DIATOMS: *N. grossepunctata*

PALEOMAGNETICS

PHYS. PROPERTIES: ρ=60.1, ρ=1.85; ρ=54.3, ρ=1.79; ρ=58.8, ρ=1.74; ρ=63.0, ρ=1.74; ρ=60.0, ρ=1.79; ρ=61.6, ρ=1.69

CHEMISTRY: $CaCO_3$ •91.9%; •93.0%; •93.6%; •93.5%; •91.1% OC=0.00%; •89.1%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: PP

LITHOLOGIC DESCRIPTION

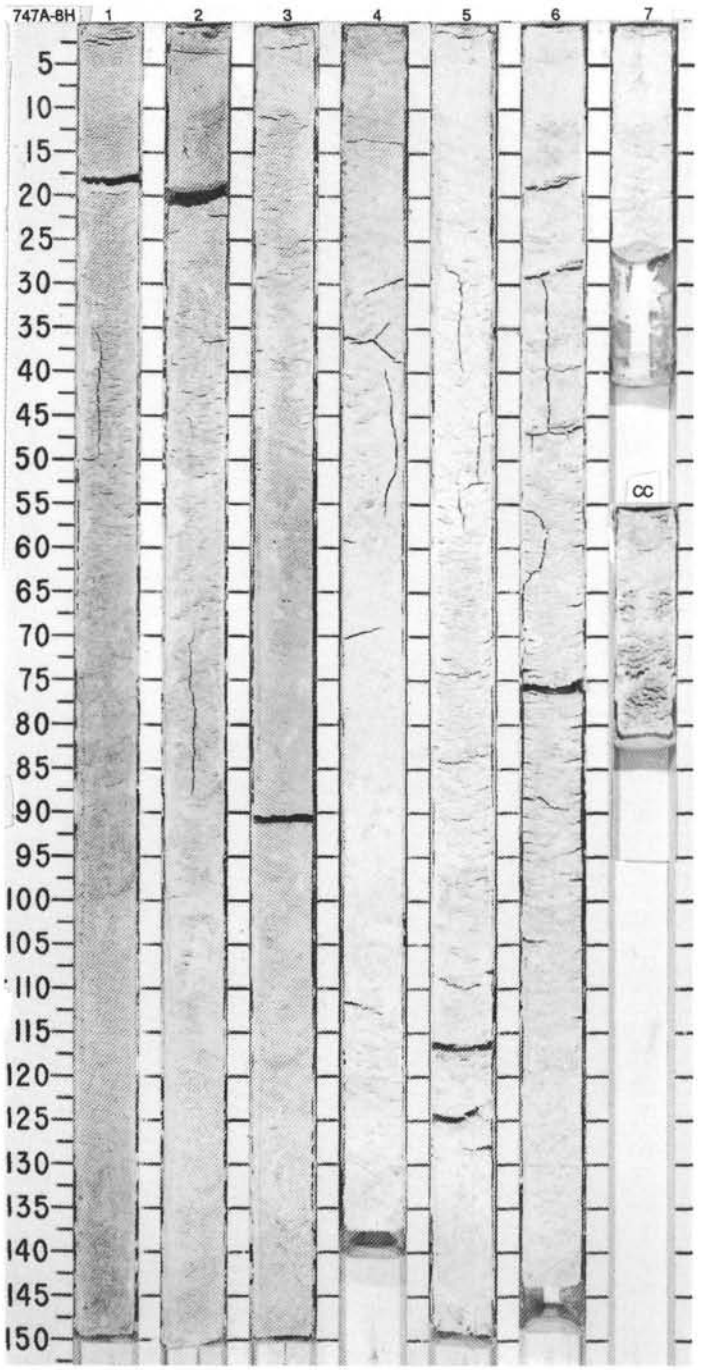
NANNOFOSSIL OOZE WITH FORAMINIFERS AND NANNOFOSSIL OOZE

Major lithologies: NANNOFOSSIL OOZE with FORAMINIFERS, light gray (2.5Y 7/2) in Sections 1, 2, and 3, 50-100 cm; nannofossil ooze, pinkish white (7.5YR 8/2) and white (10YR 8/1, 5YR 8/1) in Section 3, 0-50 cm and 100 cm, through base of the core. Faint mottling throughout; indistinct contacts between intervals of different color. Sediment is firm, and cracks developed as it dried.

Drilling Disturbance: Slight to moderate.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	3, 28 D	3, 65 D	3, 65 D	5, 50 D	6, 50 D
TEXTURE:						
Sand	20	5	7	13	7	10
Silt	75	80	80	80	88	80
Clay	5	15	13	7	5	10
COMPOSITION:						
Diatoms	8	2	2	5	7	5
Foraminifers	20	5	12	13	7	10
Glass	2	—	—	—	—	—
Micrite	2	—	—	—	—	—
Nannofossils	65	85	80	75	80	80
Radiolarians	1	2	1	4	4	2
Rock fragment	—	2	—	—	—	—



SITE 747 HOLE A CORE 9H CORED INTERVAL 75.5-85.0 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE / LOWER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: *G. zealandica-G. pseudomiozea* / *G. woodi-G. praescitula*; NANNOFOSSILS: A/M NN2-NN4; RADIOLARIANS: no zone (MIDDLE - UPPER MIOCENE); DIATOMS: *N. grossepunctata*

PALEOMAGNETICS

PHYS. PROPERTIES: ρ 59.3, 1.79 / ρ 58.7, 1.81 / ρ 58.3, 1.81 / ρ 57.6, 1.82 / ρ 57.6, 1.75 / ρ 58.4, 1.86

CHEMISTRY: ●95.6% / ●94.8% / ●96.1% / $CaCO_3$ ●92.3%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY: VOID, VOID, VOID

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OC, IW

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE WITH FORAMINIFERS AND NANNOFOSSIL OOZE

Major lithologies: NANNOFOSSIL OOZE with FORAMINIFERS, white (10YR 8/1), in Sections 1-6 and 8, to light gray in Section 7. Intermittent drilling disturbance throughout; incomplete recovery resulted in flow-in. Size distribution homogeneous; almost completely silt fraction (nannofossils), and sediment is almost entirely biogenic. Suggestion of laminae in Section 7, 127-128 cm. Few burrow mottles evident.

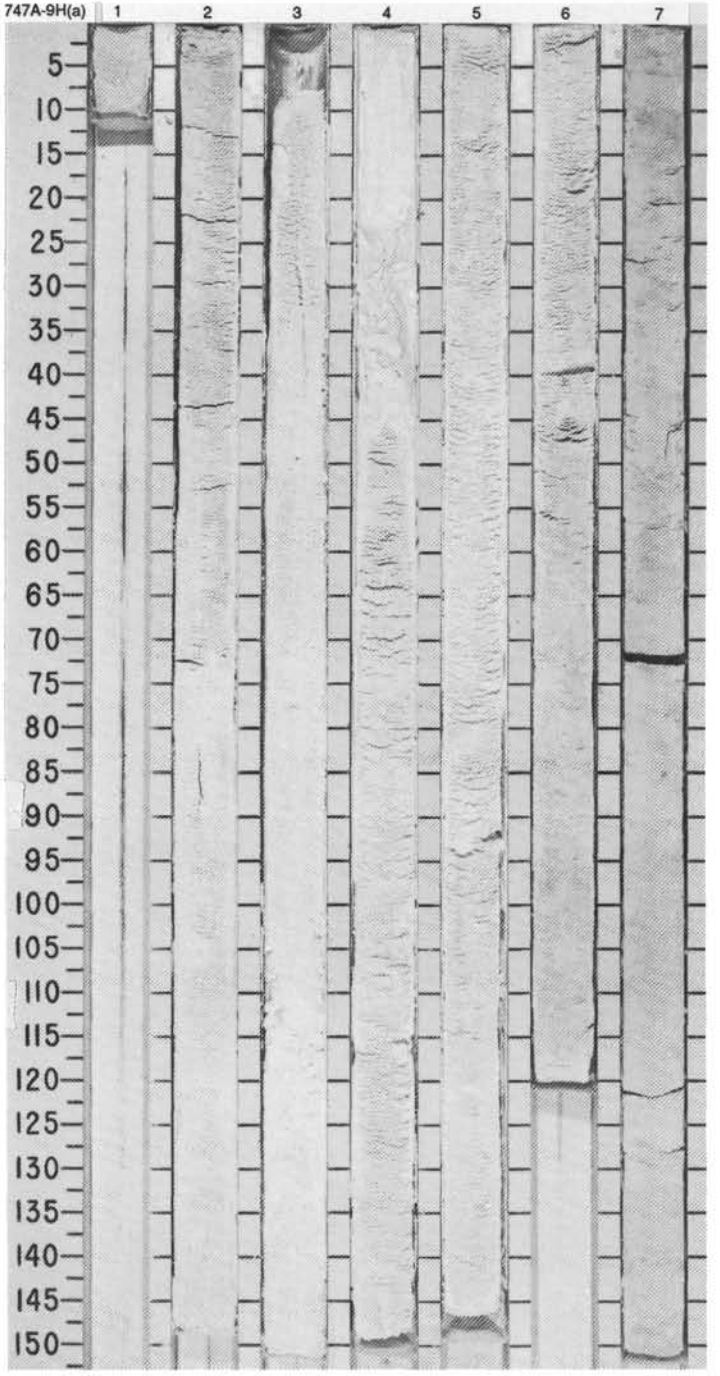
N.B.: Core has eight sections due to expansion after recovery.

SMEAR SLIDE SUMMARY (%):

	2, 71 D	3, 50 D	4, 50 D	5, 50 D	6, 73 D	7, 50 D	7, 86 D
TEXTURE:							
Sand	5	10	10	5	10	5	15
Silt	94	85	85	90	85	90	85
Clay	1	5	5	5	5	5	—
COMPOSITION:							
Calcite	—	—	—	—	2	—	—
Clay	—	—	Tr	—	2	—	—
Diatoms	Tr	—	—	—	—	—	1
Foraminifers	7	10	5	5	5	5	12
Glass	—	Tr	Tr	—	—	—	—
Nannofossils	93	90	90	95	90	95	85
Radiolarians	Tr	Tr	1	—	—	Tr	2
Rock fragment	—	—	—	—	—	—	Tr
Spicules	—	Tr	1	Tr	Tr	Tr	—

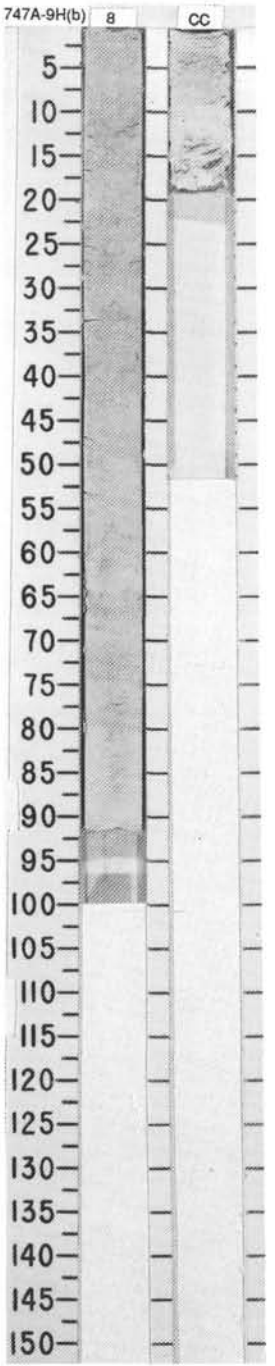
Continued

747A-9H(a) 1 2 3 4 5 6 7



SITE 747 HOLE A CORE 9H CORED INTERVAL 75.5-85.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS		PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
						O	●-59.5 ●1.83	$CaCO_3$ ●-90.6%	8						Continued.
									CC						



TIME-ROCK UNIT: LOWER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: *G. zealandica* (M3 Zone)
- NANNOFOSSILS: A/M NN1-NN4
- RADIOLARIANS: no zone (LOWER - MIDDLE MIOCENE)
- DIATOMS: *D. maccollumii* / *C. rhombicus* + *N. maleinterpretaria*

PALEOMAGNETICS

PHYS. PROPERTIES: ϕ=58.8, 60.1, 59.9, 60.4, 62.2; ρ=1.73, 1.76, 1.69, 1.76, 1.78

CHEMISTRY: =94.0%, =83.9%, =92.1%, =92.6%, =89.2%; OC=0.10%, =90.1%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

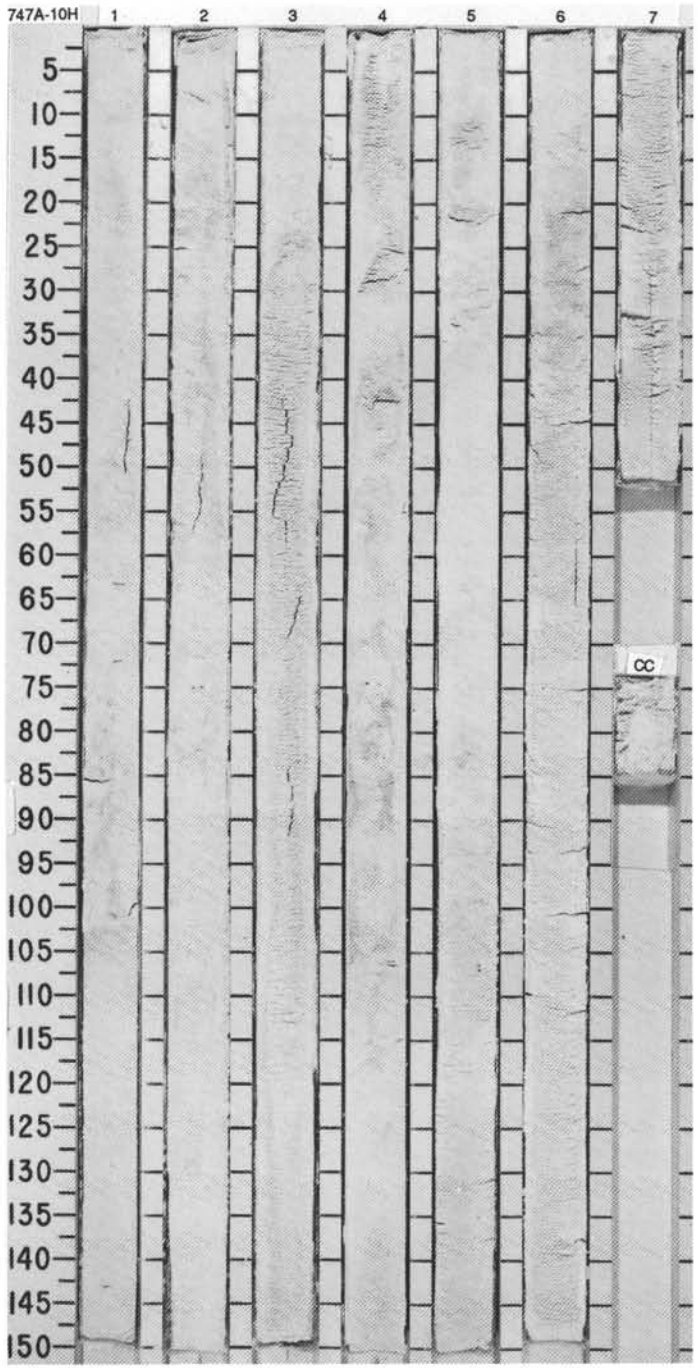
Major lithology: NANNOFOSSIL OOZE, white (10YR 8/2) from middle of Section 3 to base of core. Faint mottling and some light gray streaks.

Minor lithology: Nannofossil ooze with foraminifers, white (10YR 8/1), from top of core to approximately the middle of Section 3.

Drilling Disturbance: Slight.

SMEAR SLIDE SUMMARY (%):

	2, 74 D	4, 74 D	6, 74 D
TEXTURE:			
Sand	10	2	2
Silt	85	95	95
Clay	5	3	3
COMPOSITION:			
Diatoms	—	Tr	—
Foraminifers	10	2	2
Nannofossils	90	98	98
Radiolarians	Tr	Tr	—
Spicules	Tr	Tr	Tr



SITE 747 HOLE A CORE 11H CORED INTERVAL 94.5-104.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER MIOCENE	*G. cf. zealandica - praescitula gp.* (M3)	A/M NN1-NN4	no zone (LOWER - MIDDLE MIOCENE)	*R. gelida* / *C. rhombicus - N. maleinterpretaria*	?	? 0-58.1 ● 1.81 ● 0-61.5 1.84 ●	● 0-93.9% ● 91.4%	1 2 3 4 5 6 7 CC	0.5 1.0				* * *

● 0-57.6 1.80 ● 0-62.5 1.83 ● 0-55.8 1.81 ● 0-60.8 1.82 ● 0-58.1 1.79
$CaCO_3$ ● 98.3% ● 94.3% ● 97.5% ● 94.3%; OC=0.00 ● 98.0%

LITHOLOGIC DESCRIPTION

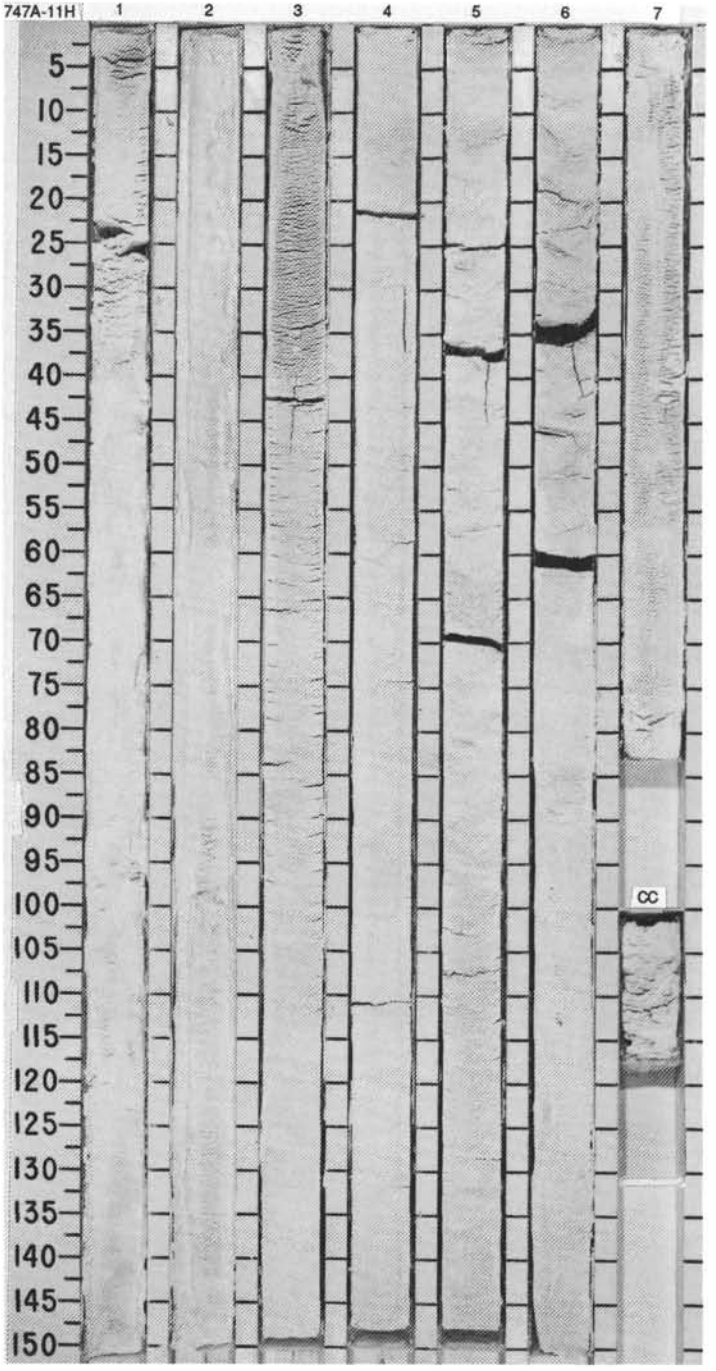
NANNOFOSSIL OOZE WITH FORAMINIFERS

Major lithology: NANNOFOSSIL OOZE with FORAMINIFERS, white (10YR 8/2 to 10YR 8/1) throughout core. Ooze is mostly firm in texture. No burrow mottles are evident.

Drilling disturbance: Slight to moderate. Some voids and cracks occur in Sections 4, 5, and 6 probably due to handling and settling after sections were cut. Section 1 washed along side entire 150 cm.

SMEAR SLIDE SUMMARY (%):

	2, 49 D	4, 49 D	7, 49 D
TEXTURE:			
Sand	20	20	10
Silt	77	77	87
Clay	3	3	3
COMPOSITION:			
Foraminifers	20	20	10
Glass	Tr	—	—
Nannofossils	77	80	90
Radiolarians	—	Tr	Tr
Spicules	Tr	—	Tr



TIME-ROCK UNIT: LOWER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: *P. incognita* - *P. semivera* (M2)
- NANNOFOSSILS: A/M NN1-NN4
- RADIOLARIANS: no zone (LOWER - MIDDLE MIOCENE)
- DIATOMS: *Rocella gelida*

PALEOMAGNETICS
PHYS. PROPERTIES
CHEMISTRY: $CaCO_3$ • 94.5% | • 58.9 | • 58.1 | • 55.6 | • 60.4 | • 61.5 | • 63.1 | • 63.2 | • 94.6% | • 96.6% | • 95.4% | • 95.6% | • 96.7% | OC=0.00% | • 97.4%
SECTION: 1 2 3 4 5 6 7 CC
METERS: 0.5 1.0
GRAPHIC LITHOLOGY
DRILLING DISTURB.
SED. STRUCTURES
SAMPLES: * * OG IW

LITHOLOGIC DESCRIPTION

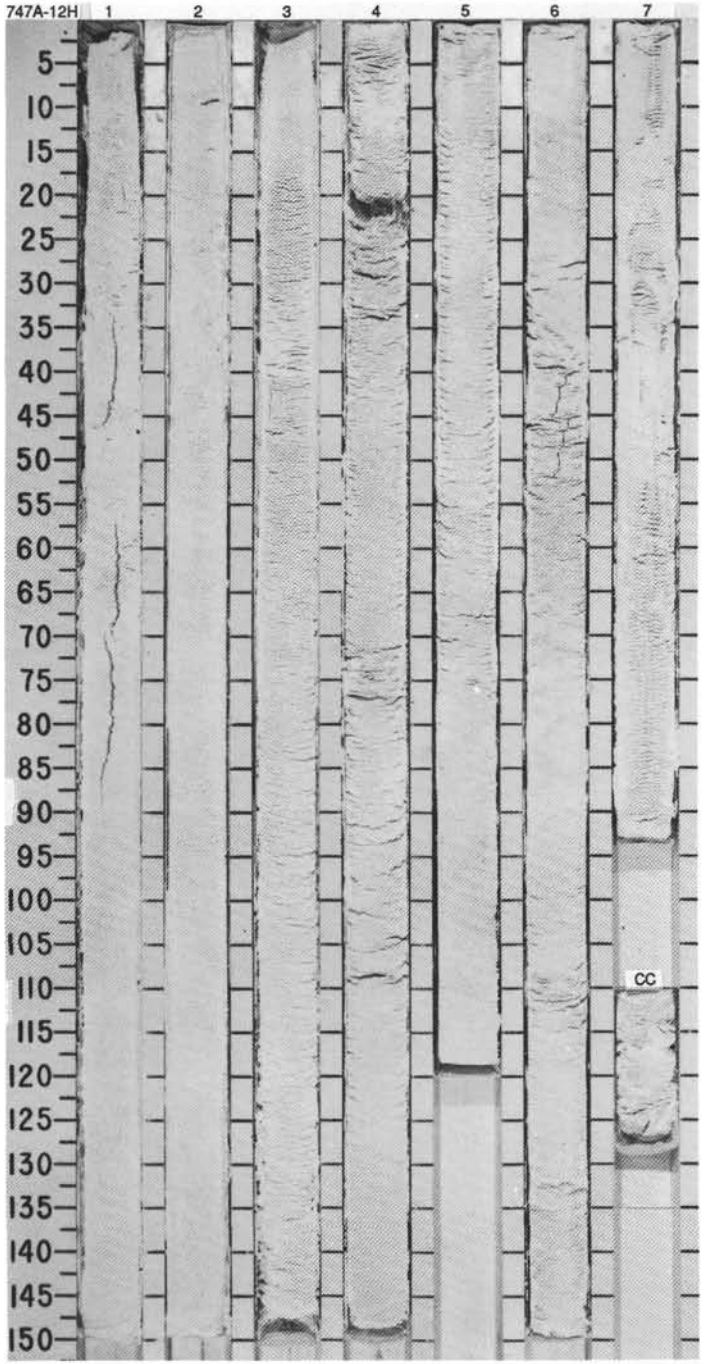
NANNOFOSSIL OOZE WITH FORAMINIFERS

Major lithology: NANNOFOSSIL OOZE grading into nannofossil ooze with foraminifers between Section 3 and Section 4; white (whiter than 10YR 8/1); homogeneous and firm throughout; no burrow mottles are evident.

Drilling disturbance: Slight throughout.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	4, 70 D
TEXTURE:		
Sand	7	10
Silt	91	90
Clay	2	—
COMPOSITION:		
Foraminifers	7	10
Nannofossils	93	90
Radiolarians	—	Tr
Spicules	Tr	Tr



SITE 747 HOLE A CORE 13H CORED INTERVAL 113.5-123.0 mbsf

TIME-ROCK UNIT: LOWER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: *P. incognita* - *P. semivera* (M2); A/M
- NANNOFOSSILS: NN1-NN2
- RADIOLARIANS: (PRE - MIOCENE)
- DIATOMS: *Rocella gelida*

PALEOMAGNETICS

PHYS. PROPERTIES: ρ=57.4, 1.84; ρ=58.4, 1.80; ρ=58.2, 1.80; ρ=59.6%, 1.78; ρ=60.5, 1.81; ρ=61.2, 1.75; ρ=60.6, 1.75

CHEMISTRY: $CaCO_3$ =91.0%; =94.1%; =92.6%; =92.8%; =92.8%; =93.8%; OC=0.00%; =93.4%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

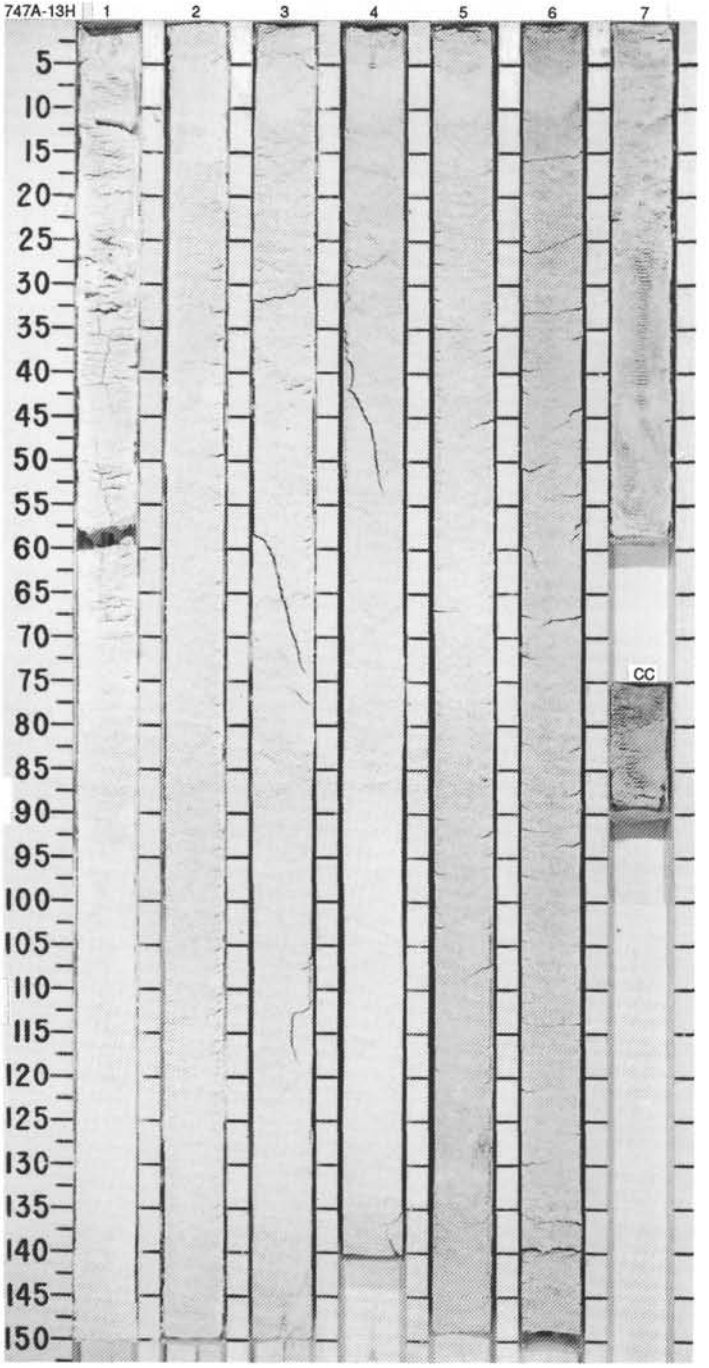
NANNOFOSSIL OOZE WITH FORAMINIFERS

Major lithology: NANNOFOSSIL OOZE with FORAMINIFERS; white (whiter than 10YR 8/1); homogeneous and firm throughout; gradual color change to a slightly darker interval in Section 5, 124 cm; trace of volcanic ash in Section 5, 124-134 cm; ice-rafted(?) 3 mm subangular quartz grain in Section 5, 85-86 cm; no burrow mottles are evident.

Drilling disturbance: Slightly disturbed throughout.

SMEAR SLIDE SUMMARY (%):

	3, 49 D	5, 128 D	6, 49 D
TEXTURE:			
Sand	10	6	08
Silt	89	93	90
Clay	1	1	2
COMPOSITION:			
Foraminifers	15	7	8
Glass	—	—	Tr
Nannofossils	85	93	90
Quartz	—	Tr	—
Radiolarians	Tr	Tr	2
Spicules	Tr	Tr	Tr



TIME-ROCK UNIT: UPPER OLIGOCENE / LOWER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: NP24-NP25; NANNOFOSSILS: NN1-NN2; RADIOLARIANS: (PRE - MIOCENE); DIATOMS: *Rocella gelida*

PALEOMAGNETICS

PHYS. PROPERTIES: Φ=56.9 ρ=1.81; Φ=60.2 ρ=1.73; Φ=62.6 ρ=1.76; Φ=62.3% ρ=1.77; Φ=65.2 ρ=1.78; Φ=62.2 ρ=1.66; Φ=58.1 ρ=1.81

CHEMISTRY: $CaCO_3$ ●=92.6%; ●=92.0%; ●=91.3%; ●=86.6%; ●=90.8%; ●=89.7%; OC=0.00% ●=90.8%

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY: VOID

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: *, *

LITHOLOGIC DESCRIPTION

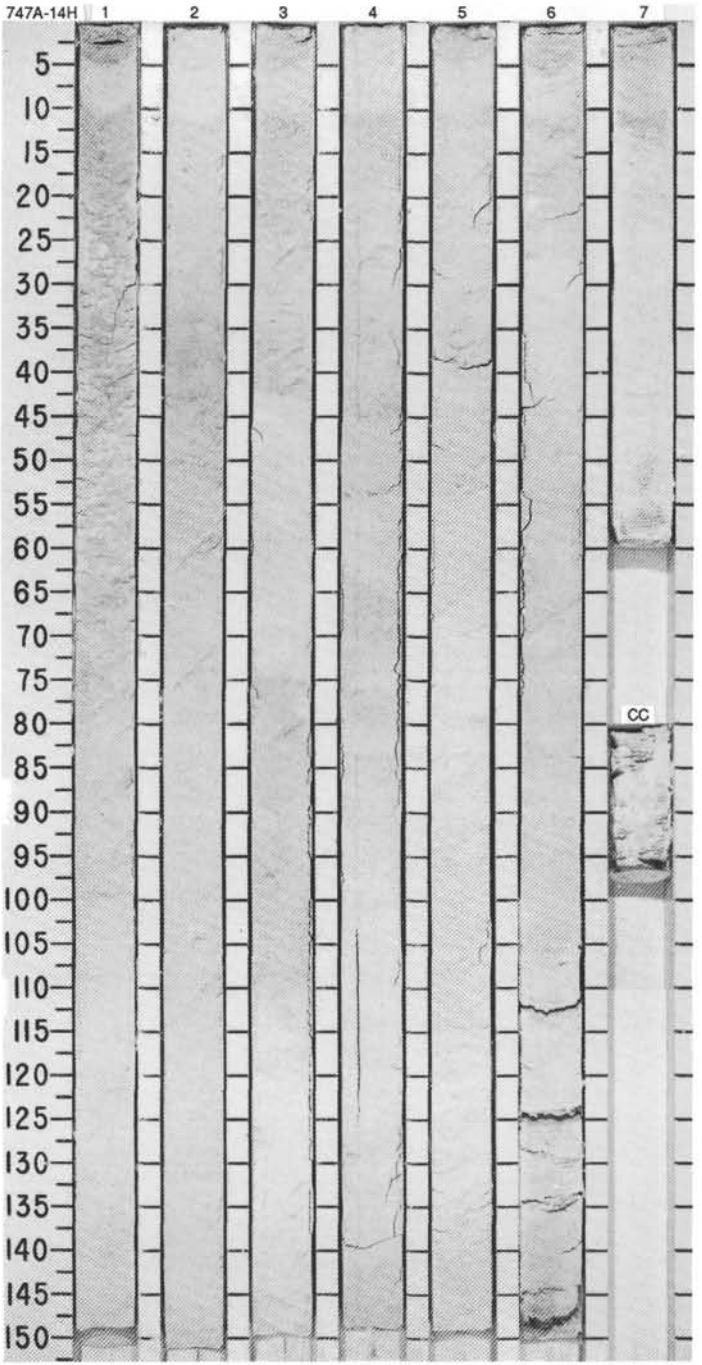
NANNOFOSSIL OOZE WITH FORAMINIFERS

Major lithology: NANNOFOSSIL OOZE with FORAMINIFERS; uniformly white (whiter than 10YR 8/1); firm. Minor mottling through Sections 3 through 6.

Drilling disturbance: Cracks occur in Section 6, 113-150 cm; otherwise core is undeformed.

SMEAR SLIDE SUMMARY (%):

	1, 49 D	4, 49 D
TEXTURE:		
Sand	10	15
Silt	88	80
Clay	2	5
COMPOSITION:		
Clay	—	Tr
Foraminifers	8	10
Nannofossils	92	85
Radiolarians	Tr	Tr
Spicules	Tr	Tr



SITE 747 HOLE A CORE 15H CORED INTERVAL 132.5-142.0 mbsf

UPPER OLIGICENE

BIOSTRAT. ZONE/ FOSSIL CHARACTER: *S. euapertura* / *S. labiacrassata* Subzone; A/M NP24-NP25; *T. groningensis* / *R. gelida*

TIME-ROCK UNIT | FORAMINIFERS | NANNOFOSSILS | RADIOLARIANS | DIATOMS | PALEOMAGNETICS | PHYS. PROPERTIES | CHEMISTRY | SECTION | METERS | GRAPHIC LITHOLOGY | DRILLING DISTURB. | SED. STRUCTURES | SAMPLES

CHEMISTRY: $CaCO_3$ ● -92.2% (CC); ● -89.2% (6); ● -91.6% (5); ● -93.1% (4); ● -92.3% (3); ● -90.5%; OC=0.09% (2); ● -89.7% (1)

PHYS. PROPERTIES: ● 0-56.3 / 1.79; ● 0-61.0 / 1.82; ● 0-60.1 / 1.80; ● 0-59.0 / 1.74; ● 0-60.1 / 1.77; ● 0-58.2 / 1.82; ● 0-56.6 / 1.84

SAMPLES: OC, IW

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

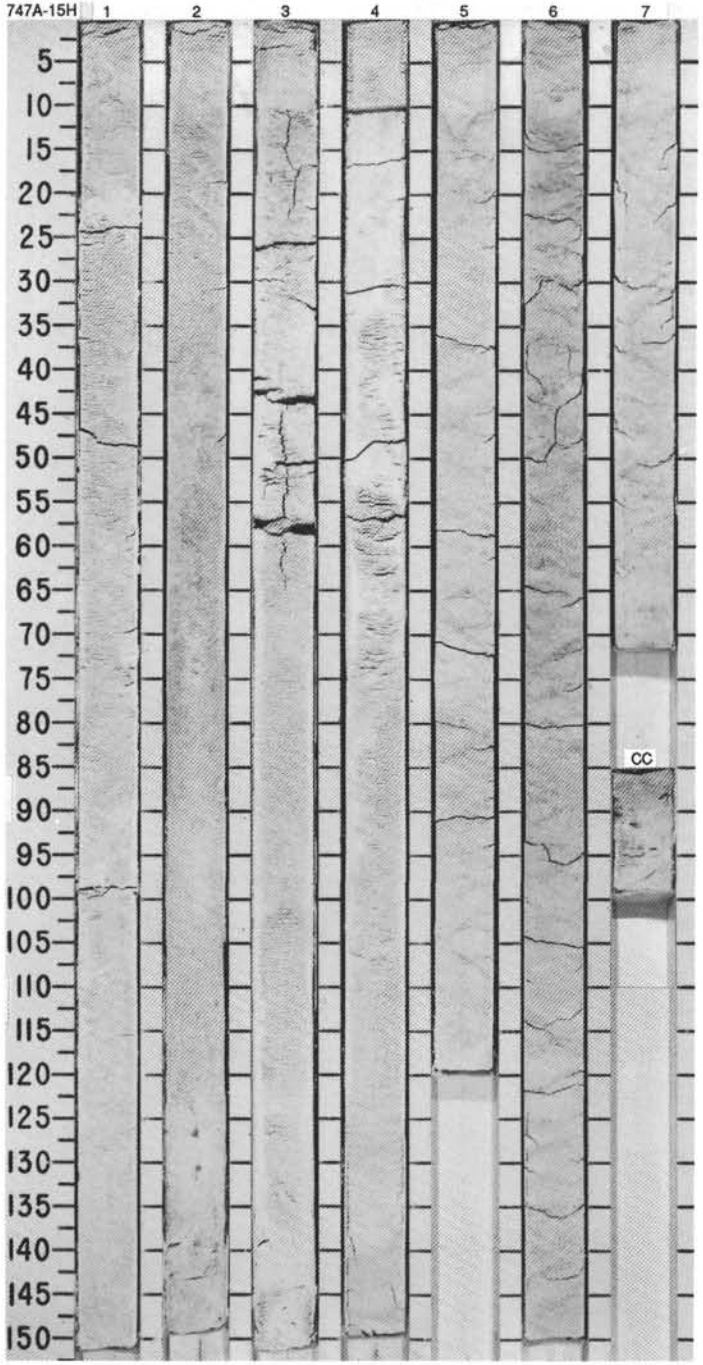
Major lithology: NANNOFOSSIL OOZE; color white (10YR 8/1) with a darker white interval from Section 2 to Section 3, 0-42 cm; firm and homogeneous throughout; slight burrow mottling in Sections 2 and 3;

Drilling disturbance: Section 3, 28-60 cm, highly disturbed (cracks and voids caused by stretching of core).

Trace of ash disseminated throughout Section 2 and Section 3, 0-42 cm.

SMEAR SLIDE SUMMARY (%):

	2, 73 D	2, 126 D	4, 73 D
TEXTURE:			
Sand	5	10	5
Silt	90	89	90
Clay	5	1	5
COMPOSITION:			
Clay	2	—	2
Diatoms	—	Tr	—
Foraminifers	2	4	2
Glass	Tr	3	Tr
Heavy minerals	—	Tr	—
Nannofossils	95	93	95
Quartz	—	Tr	—
Radiolarians	Tr	Tr	Tr
Spicules	Tr	Tr	Tr



TIME-ROCK UNIT: UPPER OLIGOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: *S. euapertura* Zone / *G. labiacrassata* Subzone
- NANNOFOSSILS: NP24-NP25
- RADIOLARIANS: ?
- DIATOMS: *R. vigilans* / *T. groningensis*

PALEOMAGNETICS
PHYS. PROPERTIES
CHEMISTRY: $CaCO_3$ ● =93.4% | ● =95.5% | ● =95.1% | ● =92.8% | ● =94.7%
SECTION
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY
DRILLING DISTURB.
SED. STRUCTURES
SAMPLES

	ρ	φ	
	1.76	57.1	
	1.83	57.6	
	1.89	55.7	
	1.83	59.4	
	1.83	60.0	

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE AND NANNOFOSSIL OOZE WITH FORAMS

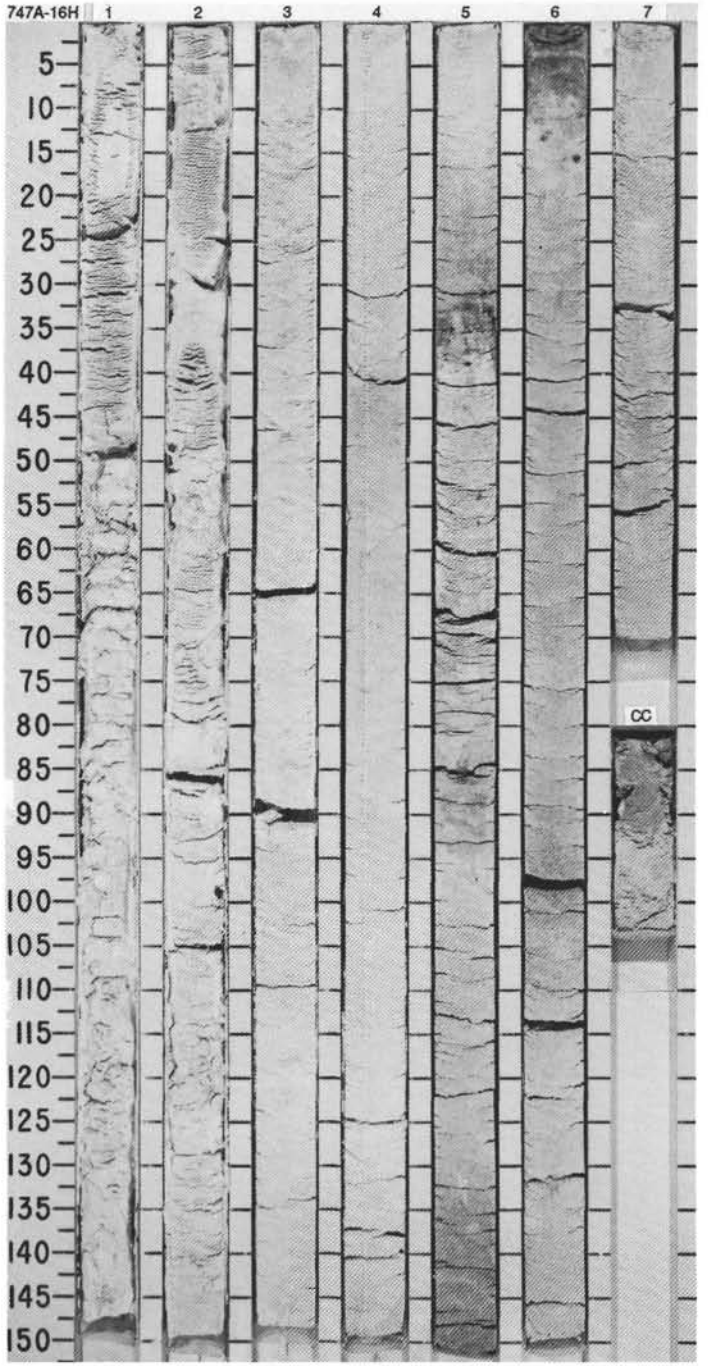
Major lithologies:
a. NANNOFOSSIL OOZE with FORAMINIFERS, Sections 1 to 5. White (2.5Y N8) in Sections 1 and 2; white (10YR 8/1), Sections 3 and 4.
b. Firm NANNOFOSSIL OOZE, pale yellow (10YR 8/4), bioturbated, in Sections 6 and 7.

Minor lithology: Vitric ash, olive gray (5Y 5/2), dispersed in Section 4, 36- 94 cm, 44-47 cm, and 57-65 cm. Ash is bioturbated, and mixed into dominant lithology in Section 5, 20-38 cm, 80-100 cm, and 135-150 cm. Section 6, 0-10 cm, contains bioturbated ash. Ash is highly dispersed in Section 3, 47-53 cm, and is concentrated in 33-35 cm.

Drilling disturbance: Highly disturbed in first two sections, then moderate through Section 6. Section 5 contains a trace of flow-in.

SMEAR SLIDE SUMMARY (%):

	3, 50 D	5, 32 M	6, 7 M	6, 50 D	7, 50 D
TEXTURE:					
Sand	13	50	20	5	8
Silt	80	50	70	90	85
Clay	7	—	10	5	7
COMPOSITION:					
Clay	—	—	8	—	—
Diatoms	—	—	4	—	2
Foraminifers	13	5	2	5	9
Glass	—	60	20	—	—
Igneous rock fragments	—	2	2	—	2
Micrite	7	—	—	—	—
Nannofossils	80	30	60	90	83
Quartz	—	Tr	1	—	Tr
Radiolarians	—	—	2	—	Tr
Silicia	—	—	—	2	Tr



SITE 747 HOLE A CORE 17X CORED INTERVAL 151.5-161.0 mbsf

TIME-ROCK UNIT: UPPER OLIGOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: *S. euapertura* Zone (*C. cubensis* Subzone)
- NANNOFOSSILS: *S. euapertura* Zone *G. labiacrassata* Subzone
- RADIOLARIANS: A / M NP24 - 25
- DIATOMS: ? *R. vigilans*

PALEOMAGNETICS
PHYS. PROPERTIES
CHEMISTRY: $CaCO_3$ = 77.9%; 76.1%; 86.7%; 85.9%; 84.2%; 83.8%; OC=0.23%
SECTION
METERS
GRAPHIC LITHOLOGY: VOID; VOID
DRILLING DISTURB.
SED. STRUCTURES
SAMPLES: PP

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, very pale brown (10YR 7/3) to light gray (10YR 7/2) to white (10YR 8/2). Cyclic variations from darker to lighter. Darker parts (Section 1; Section 3, 0-98 cm; Section 4, 79-140 cm; Section 5, 0-62 cm and 86-150 cm; Section 6) have more brown volcanic glass and slightly more foraminifers. Contacts are all gradational. Lighter intervals (white, 10YR 8/2) are in Section 3, 98-150 cm, and Section 4, 0-64 cm. An ash layer occurs in Section 4, 64-74 cm, olive (5Y 4/3). Contacts are gradational at base; diffuse due to bioturbation. Core is faintly bioturbated throughout. Scattered rare black flecks composed of angular, silt-sized glass and basaltic fragments throughout.

Minor lithology: Nannofossil chalk with foraminifers, light yellowish brown (10YR 6/4) in Section 1. Sharp basal contact, gradational (bioturbated) upper contact.

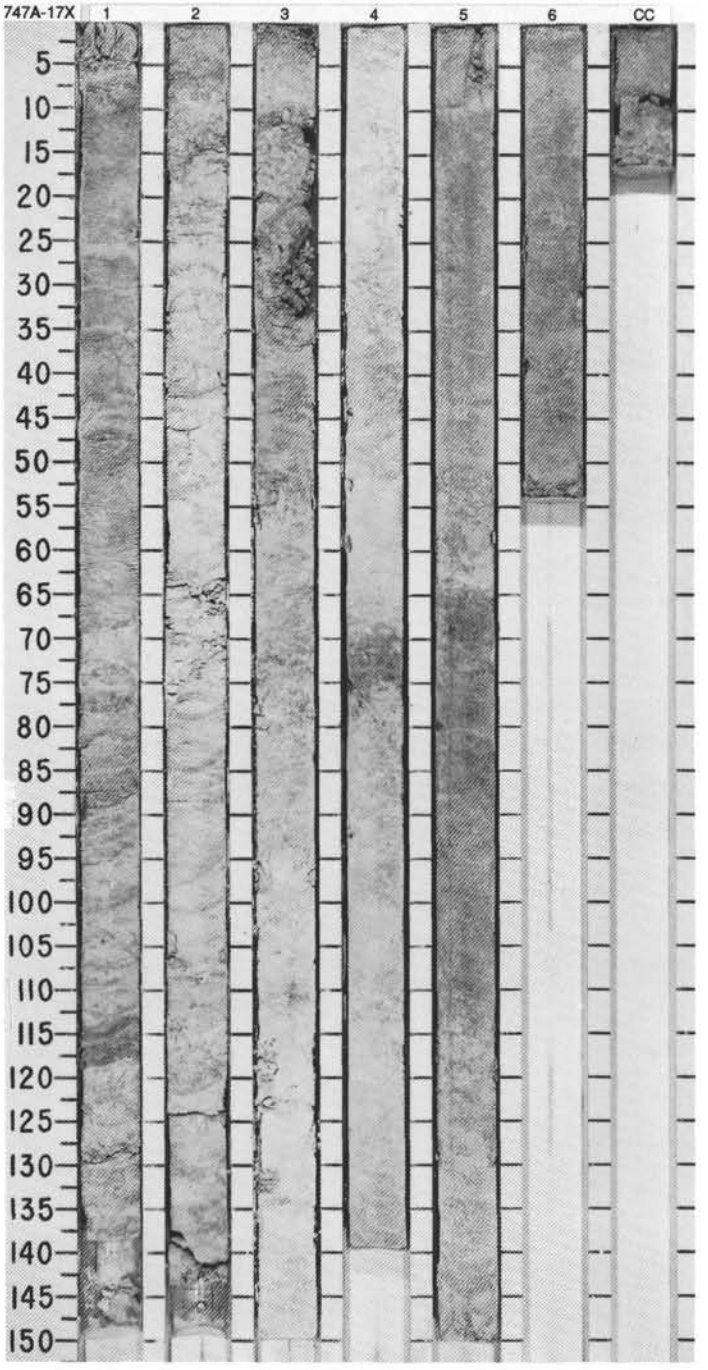
N.B.: Both Smear Slide and coarse fraction (100% sand) were examined in Section 4, 73-74 cm.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	1, 104 M	3, 120 D	4, 73 M	4, 73 M	4, 81 D	5, 70 D
TEXTURE:							
Sand	15	30	5	20	100	15	25
Silt	80	50	90	70	—	80	60
Clay	5	20	5	10	—	5	15
COMPOSITION:							
Clay	2	—	—	—	—	—	—
Diatoms	7	3	8	20	2	5	5
Foraminifers	10	2	5	4	2	10	3
Glass	2	8	1	10	10	5	5
Igneous rock fragments	8	10	2	10	10	3	10
Nannofossils	68	55	80	30	60	75	69
Opaques	—	10	—	10	5	1	—
Palagonite	—	2	—	10	8	—	5
Quartz	2	—	1	—	—	—	1
Radiolarians	1	—	1	5	1	1	1
Silicoflagellates	—	—	1	1	1	—	1

SMEAR SLIDE SUMMARY (%):

	6, 45 D
TEXTURE:	
Sand	25
Silt	70
Clay	5
COMPOSITION:	
Diatoms	5
Foraminifers	5
Glass	5
Igneous fragments	5
Nannofossils	63
Opaques	5
Plaglaonite	5
Radiolarians	1
Silicoflagellates	1



SITE 747 HOLE A CORE 18X CORED INTERVAL 161.0-170.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER OLIGICENE / LOWER OLIGOCENE	*S. euaperturа* Zone *C. cubensis* Subzone / *S. angiporoides*	A/M NP24-NP25	?	Barren	● ● ○ ○ ○ ○ ○ ○ ○ ○	ρ=87.4% ● ρ=65.0 ● ρ=63.6 ● ρ=1.72 ● ρ=1.66 ● ρ=1.73	$CaCO_3$ ● =81.8% ● =90.0% ● =90.1% OC=0.00%	1 2 3 CC	0.5 1.0	VOID			OG IW * * *

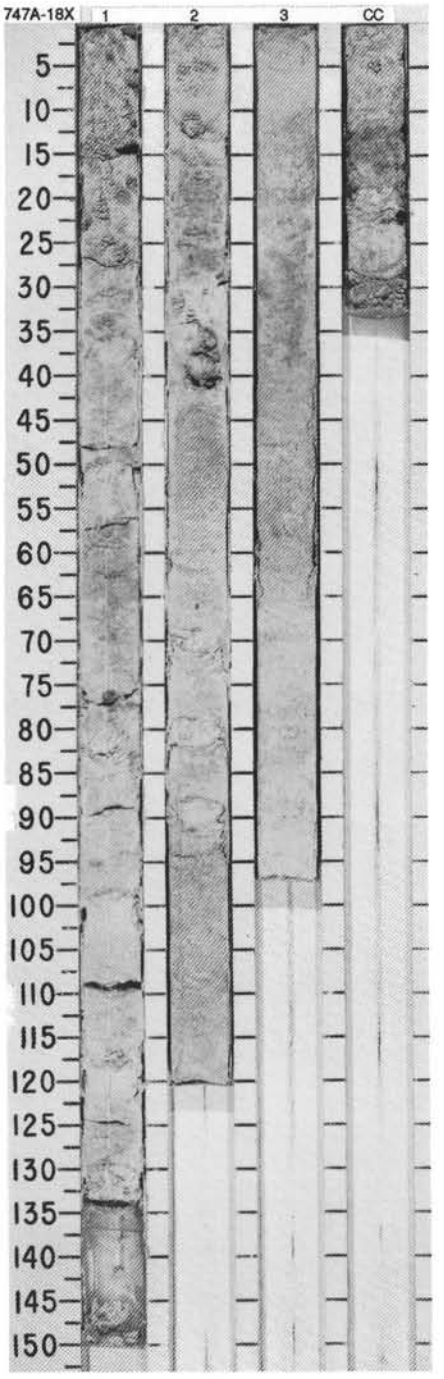
LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, alternating from light (white, 10YR 8/2) to dark (very pale brown, 10YR 7/4). The darker chalk has more foraminifers, clay, and (probably) volcaniclastic debris. Lighter intervals occur in Section 1, 0-55 cm and 68-133 cm; Section 2, 30-36 cm and 59- 90 cm; and Section 3, 0-27 and 64-97 cm. All contacts are gradational and the entire core has minor bioturbation.

SMEAR SLIDE SUMMARY (%):

	1, 62 D	1, 90 D	CC, 14 M
TEXTURE:			
Sand	15	5	15
Silt	80	85	70
Clay	5	10	15
COMPOSITION:			
Diatoms	3	—	5
Foraminifers	10	6	8
Glass	5	3	5
Igneous rock fragments	2	—	7
Nannofossils	73	85	63
Opaques	1	1	5
Palagonite	2	—	5
Radiolarians	2	—	1



SITE 747 HOLE A CORE 19X CORED INTERVAL 170.5-180.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER EOCENE / UPPER PALEOCENE / LOWER PALEOCENE	*S. angiporoides* / *S. trinidadensis* Subzone (DIC) / A/M NP3 (NP4?)	NP8-NP10 / NP11-NP13	Barren	Barren	● ○			1 2 3 4 CC	0.5 1.0				* ** * *

LITHOLOGIC DESCRIPTION

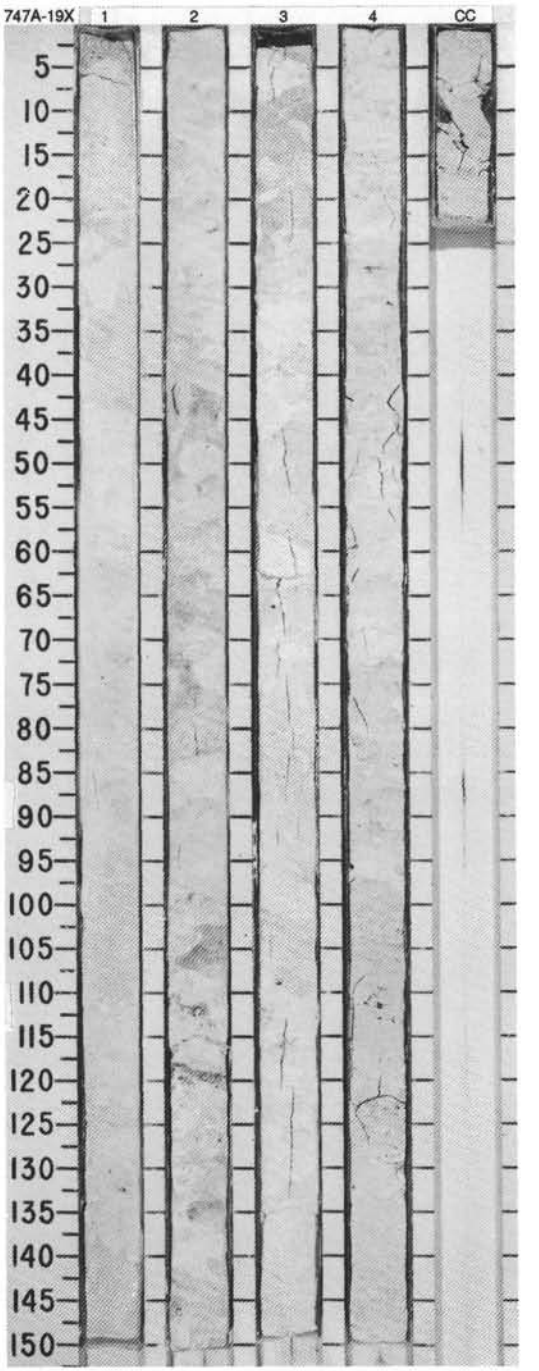
NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, highly bioturbated, with burrows 2 mm-5 cm across, filled with nannofossil chalk (lighter colors) or nannofossil foraminifer chalk with clay (darker colors). Mottled colors (10YR 7/2), gray (7.5YR N5), and pink (5YR 8/3). Molluscs and mollusc fragments are rare. Burrows overlap; many exhibit cocentric fills, with the outer zone often white, the inner zone brown to gray or pink (more foraminifers, clay). Abundant opaque flecks throughout.

A hardground occurs in Section 2, 110-119 cm; also a gray layer of Mn micronodules.

SMEAR SLIDE SUMMARY (%):

	1, 117 M	2, 116 M	2, 117 M	3, 59 D	4, 112 M
TEXTURE:					
Sand	—	15	5	3	1
Silt	95	80	66	95	40
Clay	5	5	29	2	59
COMPOSITION:					
Clay	—	—	—	—	40
Foraminifers	2	15	7	3	—
Ilgneous rock fragments	—	—	1	—	—
Micronodule	—	—	5	—	—
Micrite	30	5	—	—	20
Nannofossils	60	80	66	95	30
Opaques	—	—	10	—	10
Zeolite	5	—	10	—	—



SITE 747 HOLE A CORE 20X CORED INTERVAL 180.0-189.5 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PALEOCENE	Barren	NP2	Barren	Barren	● ● ○ ●			1 2 CC	0.5 1.0				● ● ●

LITHOLOGIC DESCRIPTION

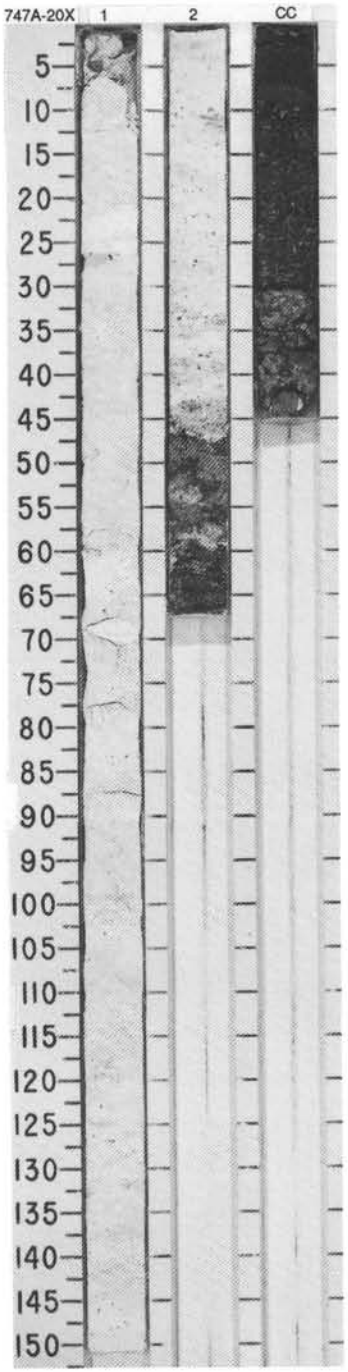
NANNOFOSSIL CHALK AND VOLCANICLASTIC SEDIMENTS

Major lithologies:

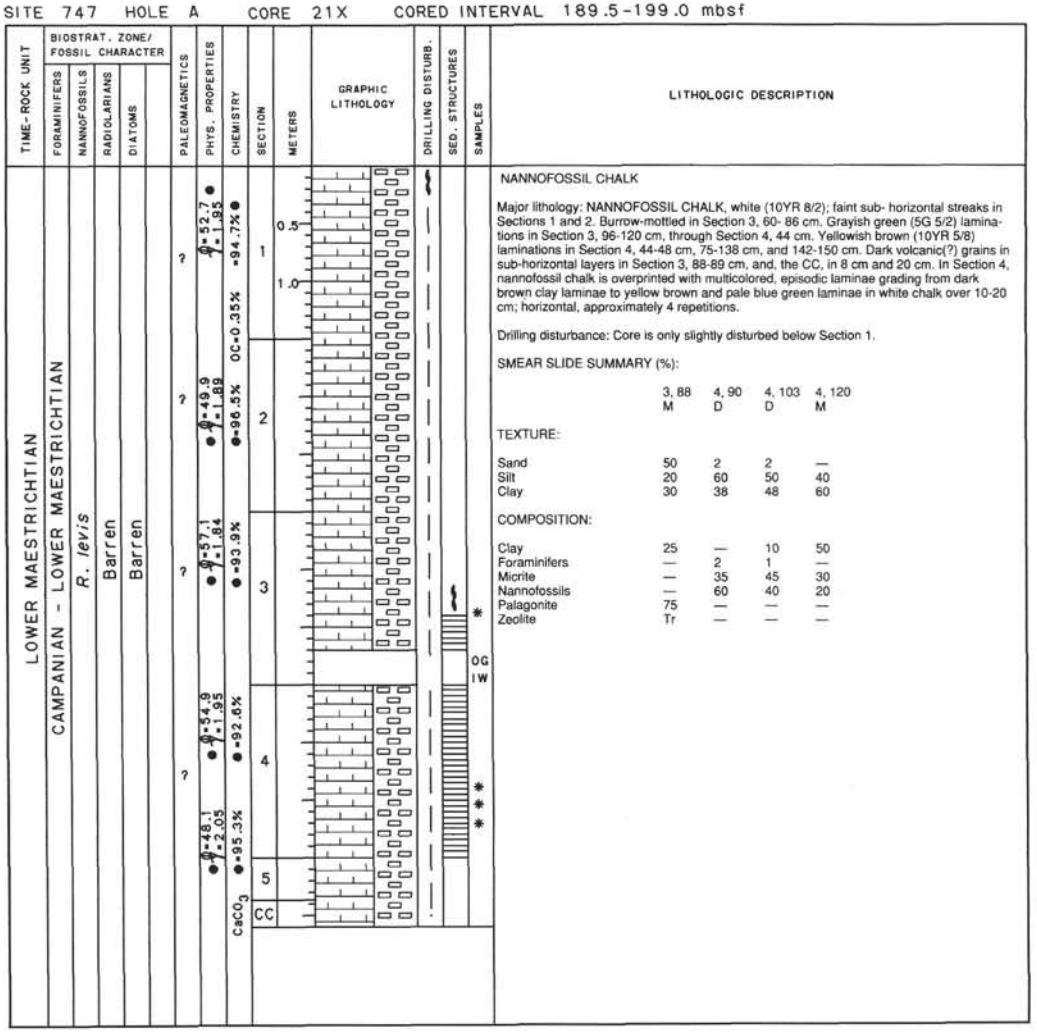
a. NANNOFOSSIL CHALK, white (2.5Y N8) and pale yellow (10YR 8/4). Intensely mottled, burrows up to 5 cm; white (2.5Y N8), light gray (2.5Y N7 and 10YR 7/2). From Section 1, 60 cm, downward increasing abundance of weathered volcaniclastic sand and red and black basalt fragments.
b. VOLCANICLASTIC clay to rounded pebbles in Section 2, 46-66 cm, and in fragments and clay pellets. Green, white, red, and brown smectite layered on a cm-scale; highly weathered components. Hard volcanic siltstone clast (5 cm) at base. Conglomerate set in white clay matrix.

SMEAR SLIDE SUMMARY (%):

	1, 101 D	1, 102 D	2, 48 D	CC, 40 D
TEXTURE:				
Sand	20	3	20	—
Silt	70	95	70	—
Clay	10	2	10	—
COMPOSITION:				
Algae	—	—	—	5
Bivalves	—	—	—	10
Bryozoa	—	—	—	10
Calcareous fragments	—	—	—	30
Chalcedony	—	—	—	5
	—	—	—	10
Fish	—	—	—	5
Foraminifers	15	3	15	Tr
Glauconite	—	—	—	8
Micrite	35	35	30	10
*Nannofossils	50	60	50	—
Pyrite	—	—	—	1
Spicules	—	—	—	5



SITE 747 HOLE A CORE 21X CORED INTERVAL 189.5-199.0 mbsf



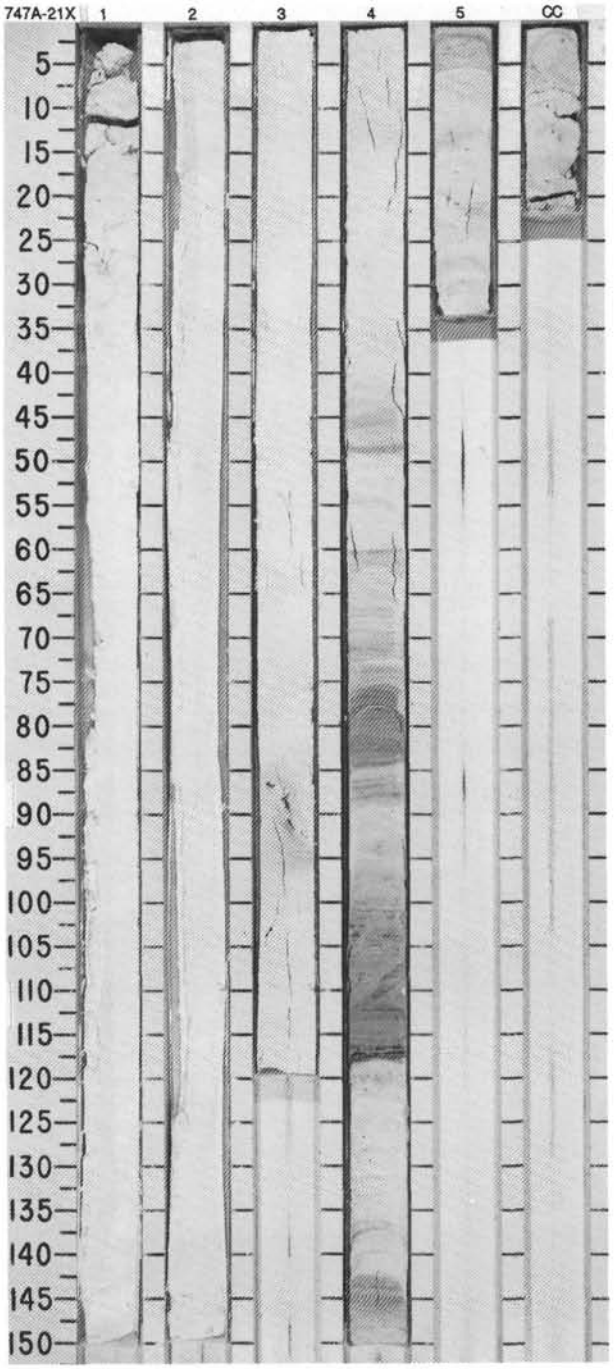
NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, white (10YR 8/2); faint sub- horizontal streaks in Sections 1 and 2. Burrow-mottled in Section 3, 60- 86 cm. Grayish green (5G 5/2) laminations in Section 3, 96-120 cm, through Section 4, 44 cm. Yellowish brown (10YR 5/8) laminations in Section 4, 44-48 cm, 75-138 cm, and 142-150 cm. Dark volcanic(?) grains in sub-horizontal layers in Section 3, 88-89 cm, and, the CC, in 8 cm and 20 cm. In Section 4, nannofossil chalk is overprinted with multicolored, episodic laminae grading from dark brown clay laminae to yellow brown and pale blue green laminae in white chalk over 10-20 cm; horizontal, approximately 4 repetitions.

Drilling disturbance: Core is only slightly disturbed below Section 1.

SMEAR SLIDE SUMMARY (%):

	3, 88 M	4, 90 D	4, 103 D	4, 120 M
TEXTURE:				
Sand	50	2	2	—
Silt	20	60	50	40
Clay	30	38	48	60
COMPOSITION:				
Clay	25	—	10	50
Foraminifers	—	2	1	—
Micrite	—	35	45	30
Nannofossils	—	60	40	20
Palagonite	75	—	—	—
Zeolite	Tr	—	—	—



SITE 747 HOLE A CORE 22X CORED INTERVAL 199.0-208.5 mbsf

TIME-ROCK UNIT: LOWER MAESTRICHTIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: LOWER - MIDDLE MAESTRICHTIAN
- NANNOFOSSILS: *R. levis*
- RADIOLARIANS: A/G
- DIATOMS: Barren
- PALEOMAGNETICS: Barren

PHYS. PROPERTIES: ? ? ? ? ?

CHEMISTRY: $CaCO_3$

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

PHYS. PROPERTIES	CHEMISTRY
ϕ=50.7, ρ=1.92	=95.0%
ϕ=49.4, ρ=1.94	=94.5%
ϕ=49.9, ρ=1.91	=94.4%
ϕ=48.8, ρ=1.93	=94.6%
ϕ=52.0, ρ=1.93	=94.2%
ϕ=47.2, ρ=1.99	=95.6%

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

Major lithology: NANNOFOSSIL OOZE, firm, white (2.5YR 8/1), with faint gray streaks throughout (probably owing to pyrite-filled foraminifers). Chert granules 0-8 cm, probably downhole contamination. Yellow STAIN (10YR 7/8) between 17-20 cm and 35-49 cm.

Drilling disturbance: Section 1 was split with the saw and was highly disturbed. The rest of the core was split with the wire, and drilling disturbance appears to be moderate.

SMEAR SLIDE SUMMARY (%):

	1, 20 D	1, 30 D	2, 60 D	3, 55 M
TEXTURE:				
Sand	—	3	4	3
Silt	92	60	92	93
Clay	8	37	4	4
COMPOSITION:				
Clay	4	3	1	Tr
Foraminifers	Tr	4	5	4
Glass	1	Tr	—	1
Nannofossils	95	93	94	93

SITE 747 HOLE A CORE 23X CORED INTERVAL 208.5-218.0 mbsf

TIME-ROCK UNIT: LOWER MAESTRICHTIAN / UPPER CAMPANIAN - LOWER MAESTRICHTIAN

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: A/G; NANNOFOSSILS: *R. levis*; RADIOLARIANS: Barren; DIATOMS: Barren

PALEOMAGNETICS

PHYS. PROPERTIES

CHEMISTRY: $CaCO_3$ ● 95.1% | ● 96.5% | ● 93.0% | ● 97.6% | ● 94.9% | ● 95.6% | ● 94.2%

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

METERS: 0.5 | 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

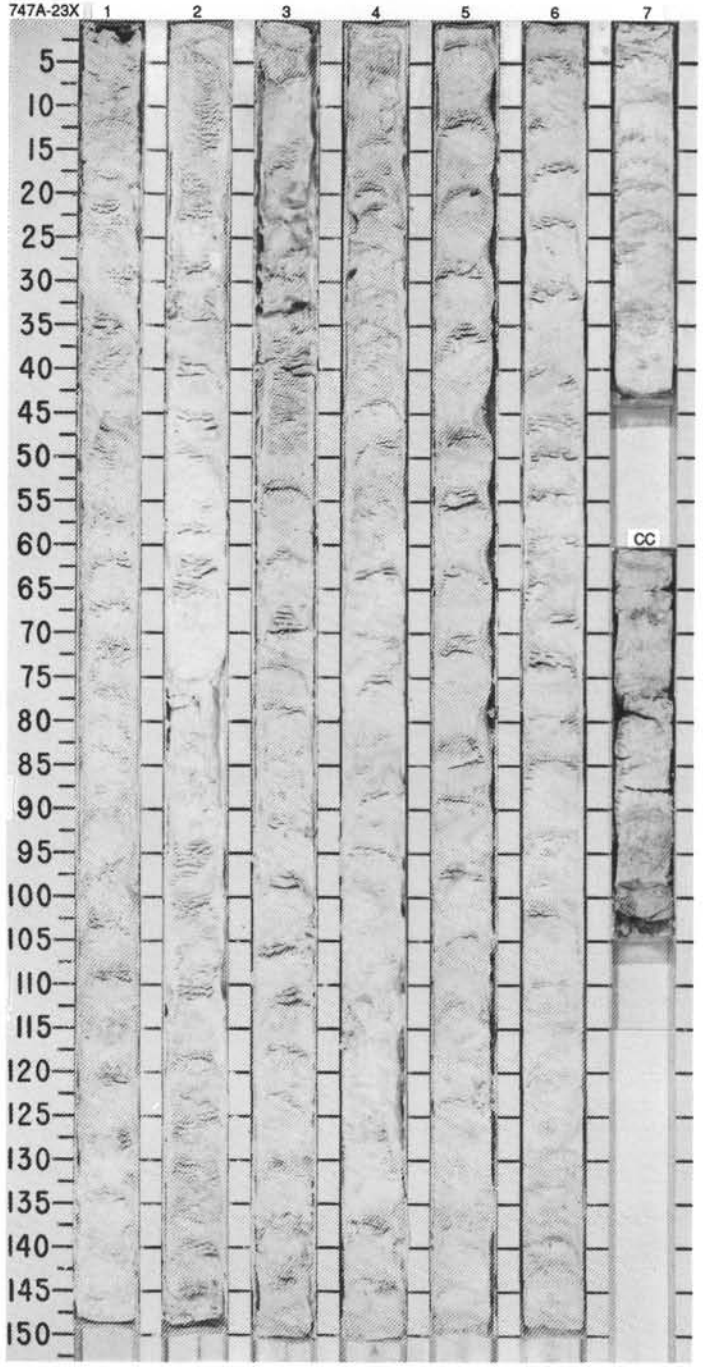
NANNOFOSSIL OOZE

Major lithology: NANNOFOSSIL OOZE, white (2.5YR 8/1), with faint gray streaks caused by pyrite-filled foraminifers; occurs from top of core through CC, 34 *cm*. Original structures are disturbed by splitting the cohesive sediment and possibly by drilling (biscuits?).

Minor lithology: Nannofossil chalk, light gray (10Y 7/1) at the very base of the core (CC, 34-43 cm).

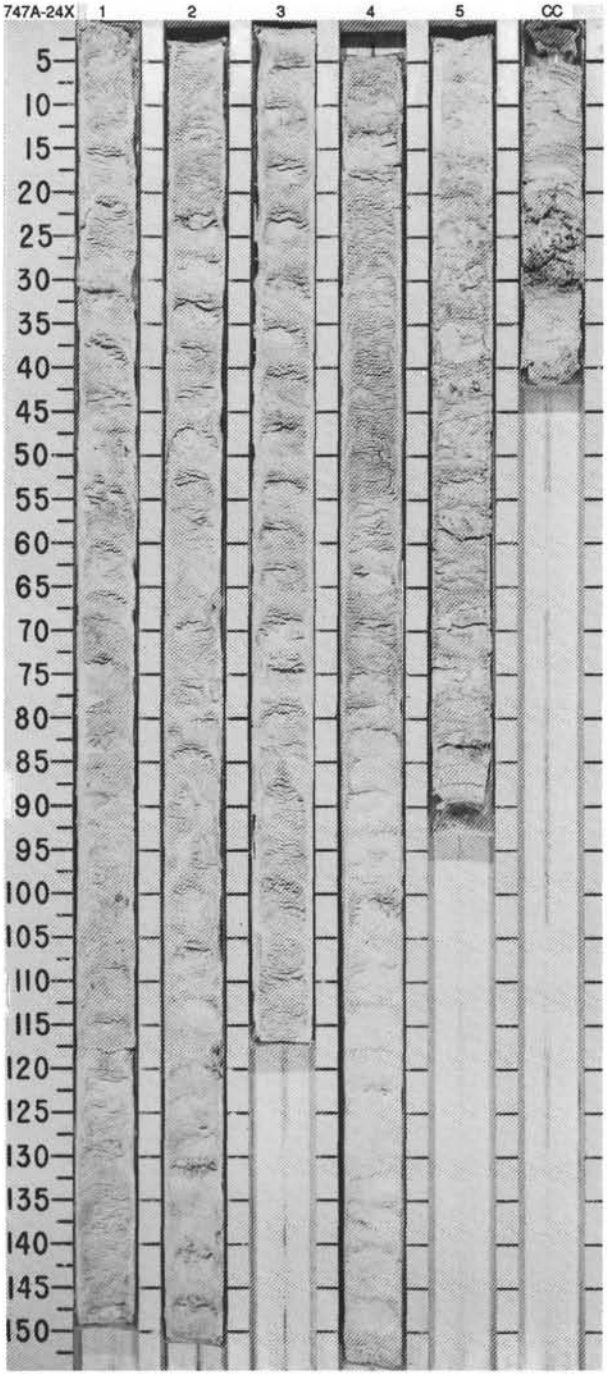
SMEAR SLIDE SUMMARY (%):

	1, 60 D	5, 20 M	5, 46 D	CC, 36 D
TEXTURE:				
Sand	1	7	3	2
Silt	94	85	85	88
Clay	4	5	12	10
COMPOSITION:				
Clay	Tr	4	5	5
Foraminifers	2	7	5	2
Glass	—	—	2	—
Micrite	—	—	—	22
Nannofossils	98	85	80	70
Pyrite	—	—	1	1
Zeolite	—	—	2	—



SITE 747 HOLE A CORE 24X CORED INTERVAL 218.0-227.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWERMOST MAESTRICHTIAN / UPPER CAMPANIAN - LOWER MAESTRICHTIAN	A/G	*T. phacelosus*	Barren	Barren	? ? ? ? ?	ϕ=49.2 ρ=2.00 ϕ=46.2 ρ=2.01 ϕ=46.9 ρ=2.03 ϕ=47.1 ρ=2.04 ϕ=41.4 ρ=2.10	●=95.8% ●=96.6% ●=95.2% ●=94.7% ●=95.2% $CaCO_3$	1 2 3 4 5 CC	0.5 1.0				OG IW	NANNOFOSSIL OOZE Major lithology: NANNOFOSSIL OOZE, white (2.5 YR 8/1). Sedimentary structures obscured by drilling disturbance, with biscuits caused by rilling and/or splitting throughout. Gray streaks throughout core from pyritized foraminifers. Inoceramid fragments in Section 5, 30-40 cm. Chert fragments in Section CC, 20-30 cm, in nannofossil ooze. Texture is firm throughout, with a few chalky layers.



SITE 747 HOLE A CORE 25X CORED INTERVAL 227.5-237.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPERMOST CAMPANIAN (?) to LOWERMOST MAESTRICHTIAN / UPPER CAMPANIAN - LOWER MAESTRICHTIAN	A/G	*O. trifidum*	Barren	Barren		ρ=1.44.0 / 1.2.04 ρ=1.43.5 / 1.2.07 ρ=1.45.1 / 1.1.95	$CaCO_3$ ●=94.6% ●=94.6% ●=94.6% OC=0.23% ●=90.0%	1 2 3 4 5 CC	0.5 1.0				* * PP

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

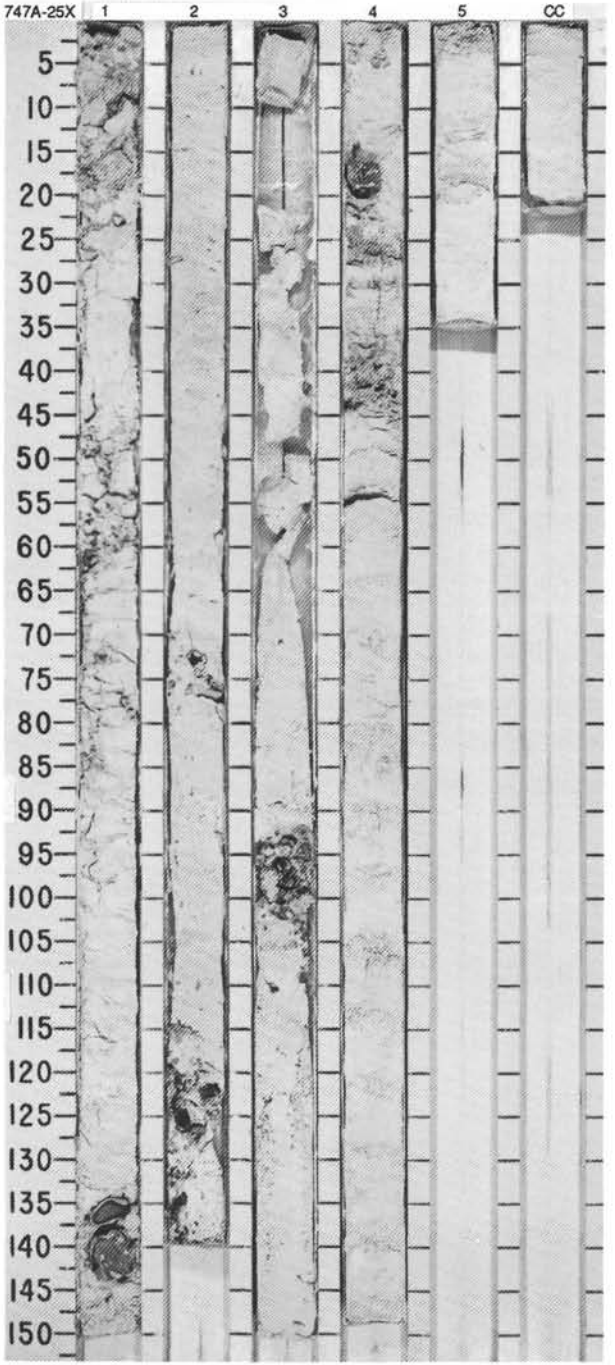
Major lithology: NANNOFOSSIL OOZE, white (2.5YR 8/1), firm to chalky. Faint gray streaks occur throughout, may be pyritized foraminifers or Mn- oxide. Inoceramid shell fragments occur scattered through Section 2.

Minor lithologies:
a. Nannofossil chalk, white (10YR 8/1) in Section 1 through Section 2, 10 cm.
b. Chert, black (10YR 2/1), sometimes with light gray rims, occurs as nodules up to 5 cm across in Section 1, 0-5 cm, 51-58 cm, and 132-141 in cm; Section 2, 70-77 cm and 120-128 cm; in Section 3, 92-99 cm; and in Section 4, 16-19 cm and 37-44 cm.

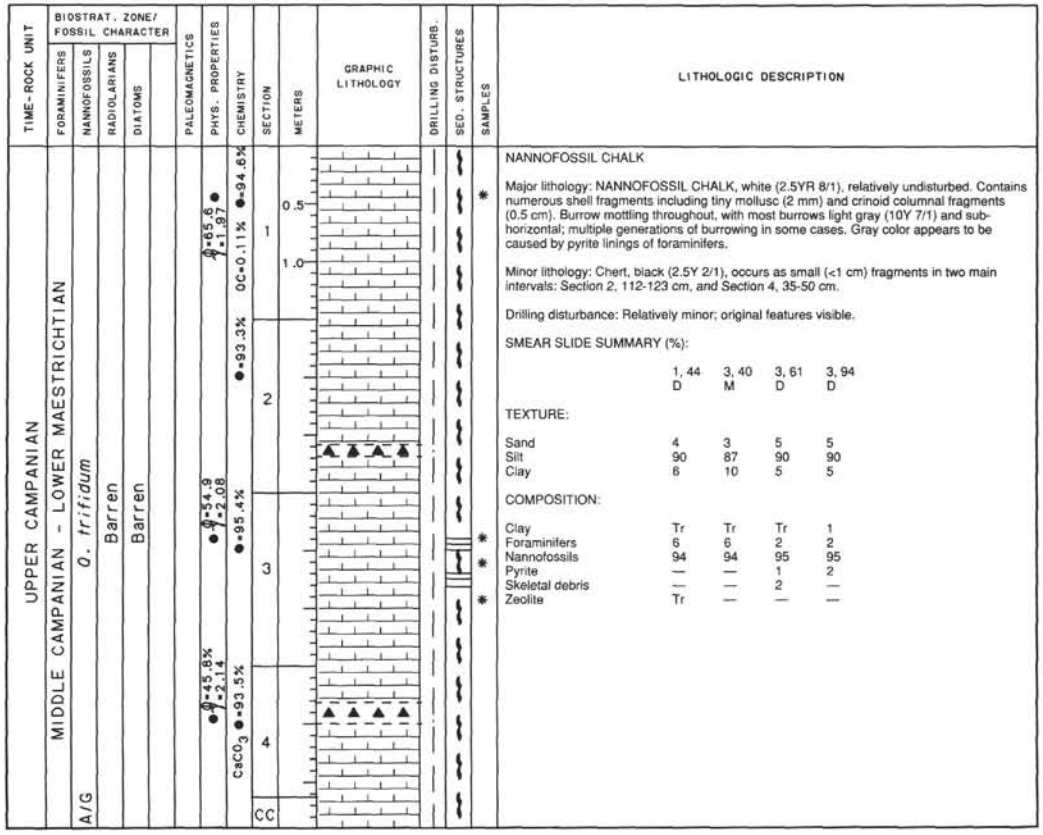
Drilling disturbance: Original structures have been mostly obscured by drilling disturbance, which includes formation of biscuits in firmer intervals.

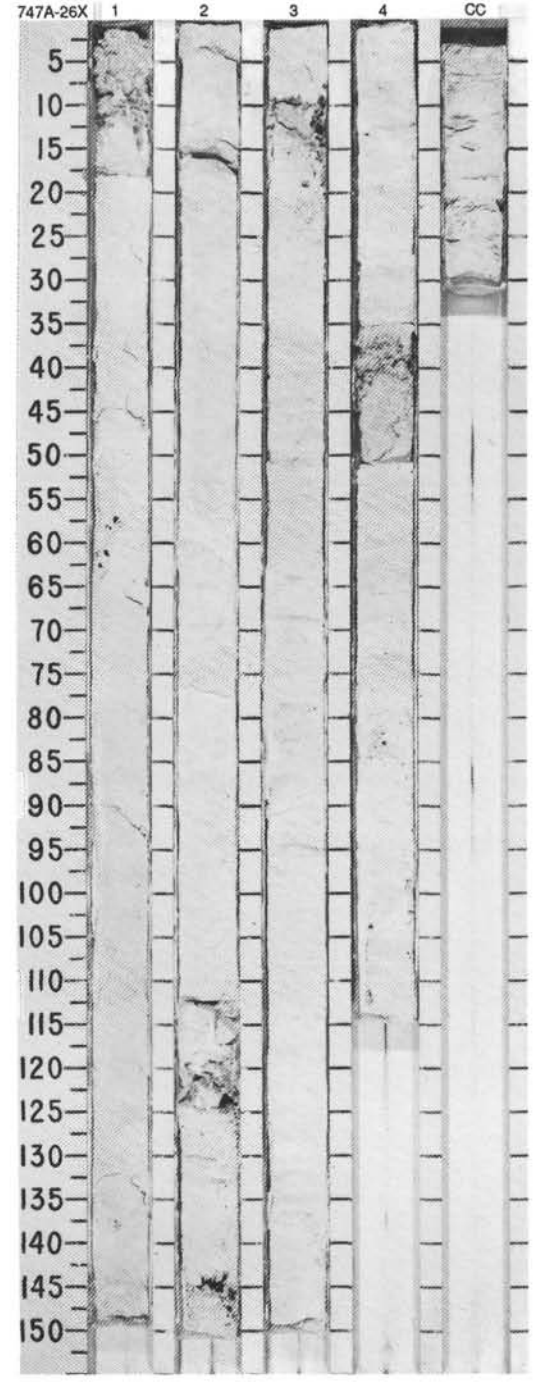
SMEAR SLIDE SUMMARY (%):

	1, 40 D	2, 14 D
TEXTURE:		
Sand	2	8
Silt	96	90
Clay	2	2
COMPOSITION:		
Clay	2	Tr
Foraminifers	2	5
Manganese oxide	—	2
Nannofossils	90	90
Pyrite	1	3
Skeletal debris	5	Tr



SITE 747 HOLE A CORE 26X CORED INTERVAL 237.0-246.5 mbsf





SITE 747 HOLE A CORE 27X CORED INTERVAL 246.5-256.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER CAMPANIAN / MIDDLE - UPPER CAMPANIAN	A/G	*G. trifidum*	Barren	Barren		ρ=47.5 ● ϕ=2.02	$CaCO_3$ ● =95.6%	CC					
						ρ=47.9 ● ϕ=2.04	=93.4% ●	3					
						ρ=45.7 ● ϕ=2.08	=94.1% ●	2					
						ρ=46.0 ● ϕ=2.03	OC=0.36% ●	1	0.5 / 1.0				OG / IW
							=87.1% ●						

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

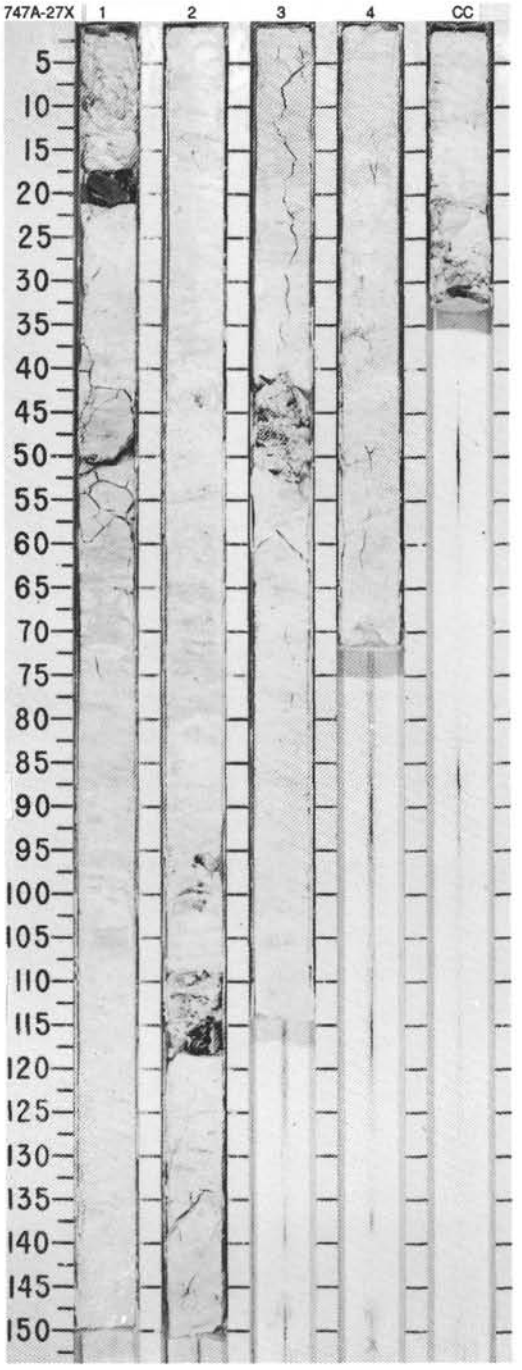
Major lithology: NANNOFOSSIL CHALK, white (2.5YR 8/1), burrow-mottled throughout; contains predominantly sub-horizontal burrows. A layer of pyritized foraminifers occurs in Section 2, 98-99 cm. A small (2 mm) mollusc shell occurs in Section 2, 47 cm.

Minor lithology: Chert, black (10YR 2/1), occurs in Section 2, 108-118 cm, and Section 3, 41-52 cm; chert is fractured into pieces <2 cm across.

Drilling disturbance: relatively undisturbed by drilling; original structures visible.

SMEAR SLIDE SUMMARY (%):

	1, 40 D	1, 70 M	1, 102 D	2, 98 M
TEXTURE:				
Sand	5	4	2	12
Silt	93	88	89	80
Clay	2	8	9	8
COMPOSITION:				
Foraminifers	2	5	2	7
Manganese oxide	2	—	—	—
Nannofossils	95	95	98	89
Pyrite	1	Tr	Tr	4
Zeolite	—	Tr	—	Tr



SITE 747 HOLE B CORE 1H CORED INTERVAL 0.0-2.80 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
CHI ? *C. elliptopora – A. ingens – Thalassiosira lentiginosa*								1, 2	0.5, 1.0		○	≀	*	DIATOM OOZE WITH FORAMINIFERS

Major lithology: DIATOM OOZE with FORAMINIFERS, *pinkish tan (5YR 7/3), from top of* core through Section 2, 90 cm.

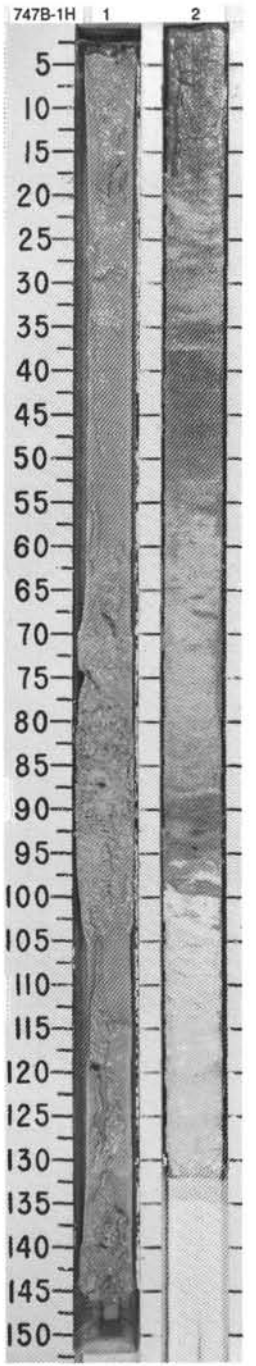
Minor lithologies:
a. *Foraminifer diatom ooze, light yellowish brown (2.5Y 6/4), Section 2, 5-15 cm, 35-55 cm,* and 90-100 cm.
b. Diatom nannofossil ooze with foraminifers, white (2.5Y 8/2, 5Y 8/1), Section 2, 15-35 cm, 100-132 cm.

Drilling disturbance: Entire core was water saturated; original structures are disturbed.

N.B.: No core catcher.

SMEAR SLIDE SUMMARY (%):

	1, 85 D	2, 92 D	2, 104 D
TEXTURE:			
Sand	30	60	20
Silt	68	36	72
Clay	2	4	3
COMPOSITION:			
Diatoms	89	68	30
Foraminifers	7	25	10
Glass	—	1	—
Nannofossils	—	Tr	58
Quartz	—	Tr	—
Radiolarians	2	6	2
Silicoflagellates	2	Tr	Tr



SITE 747 HOLE B CORE 2H CORED INTERVAL 2.8-12.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
CHI ? *Coscinodiscus eliptopora - Actinocyclus ingens*								1	0.5, 1.0				*
								2					*
								3					
								4					
								5					
								6					*
								CC					

LITHOLOGIC DESCRIPTION

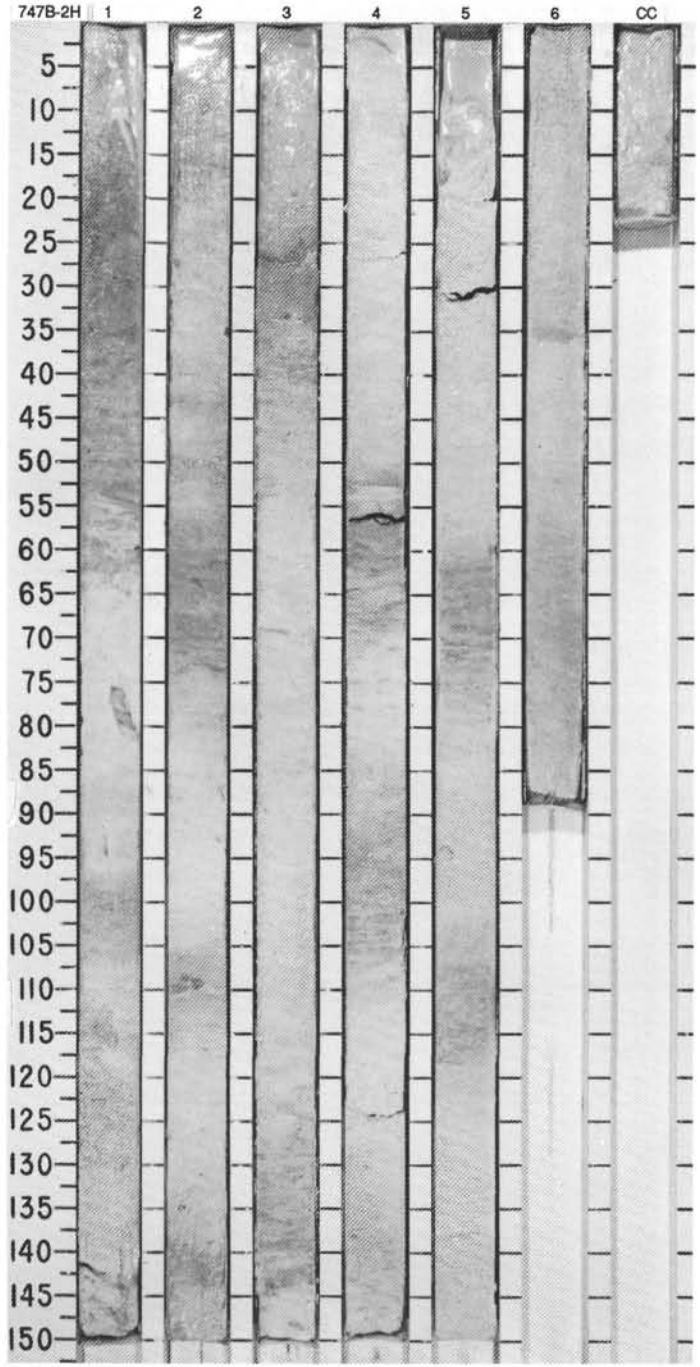
DIATOM OOZE WITH FORAMINIFERS

Major lithology: DIATOM OOZE with FORAMINIFERS. White (10YR 8/1) alternating on 50-100 cm scale with pale grays (10YR 8/2 and 10YR 7/2). Light gray intervals contain volcanic ash and possibly ice-rafted debris, as in Section 1, 0-60 cm and in Section 2. Bioturbation minor to moderate; bedding on 1-4 cm scale is preserved. Texture is soft to firm; some dewatering occurred after splitting.

Drilling disturbance: Minor to moderate.

SMEAR SLIDE SUMMARY (%):

	2, 20 D	2, 75 D	6, 70 D
TEXTURE:			
Sand	20	10	15
Silt	75	85	80
Clay	5	5	5
COMPOSITION:			
Diatoms	70	85	80
Foraminifers	20	9	15
Nannofossils	Tr	1	Tr
Radiolarians	8	4	5
Silicoflagellates	2	1	Tr



SITE 747 HOLE B CORE 3H CORED INTERVAL 12.3-21.8 mbsf

TIME-ROCK UNIT: UPSILON
Nitzschia interfrigidaria ~ *R. barboi* - *N. kerguelensis*
C. elliptopora - *A. ingens*

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

PALEOMAGNETICS

PHYS. PROPERTIES

CHEMISTRY

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

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

DIATOM OOZE WITH FORAMINIFERS

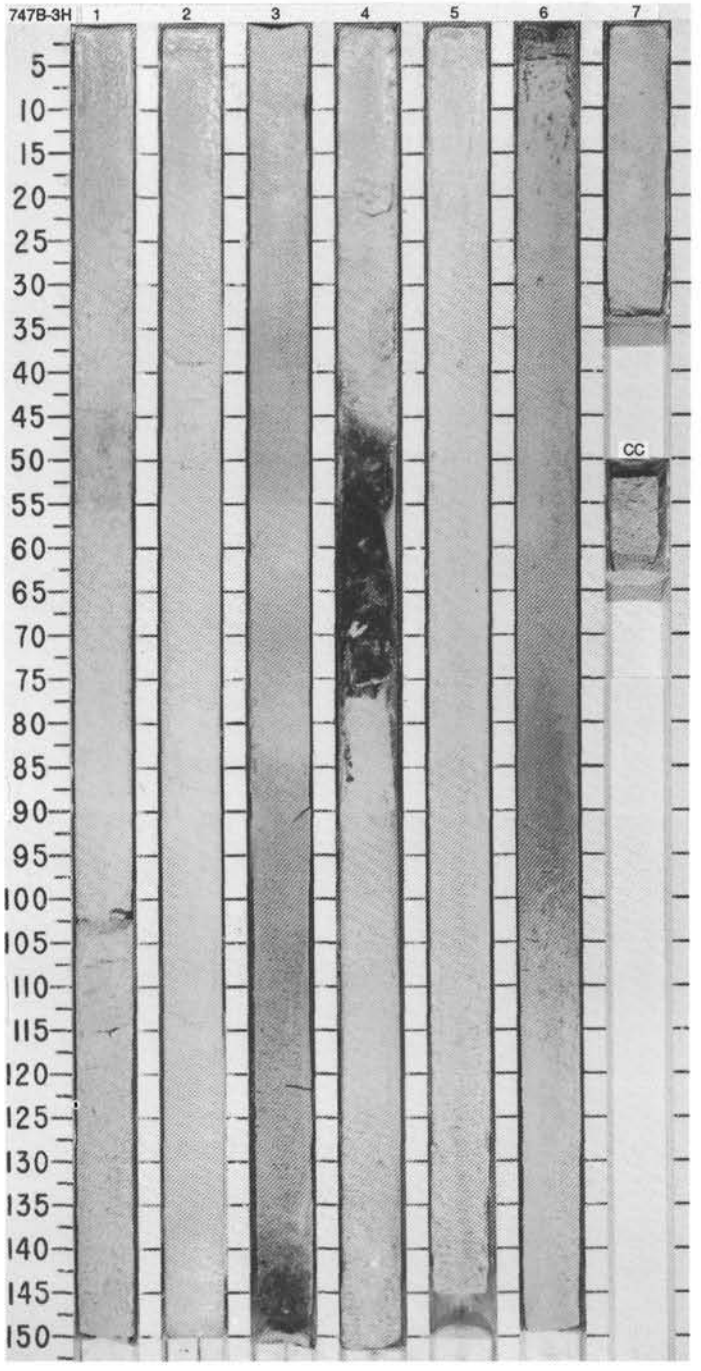
Major lithology: DIATOM OOZE with FORAMINIFERS, predominantly white (10YR 8/2) or cream-colored; decimeter-thick gradational bands of darker light gray (10YR 7/2) and light brown gray (10YR 6/2) contain slightly more foraminifers.

Minor lithologies:
a. Vitric ash, brown (10YR 2/2), sand sized with fresh angular vesicular shards and pipe vesicles; uniform, faintly graded.
b. Vitric ash, gray brown (10YR 5/2), silt sized, more altered appearance than the other ash.

Drilling disturbance: Minor; upper ash layer contacts are smeared.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	2, 50 D	4, 50 M	5, 147 M
TEXTURE:				
Sand	9	—	85	15
Silt	66	85	15	85
Clay	25	15	—	—
COMPOSITION:				
Clay	9	—	5	—
Diatoms	60	45	4	5
Foraminifers	15	10	3	—
Glass	—	—	85	95
Micrite	—	35	—	—
Nannofossils	Tr	5	3	—
Radiolarians	5	—	—	—
Silicoflagellates	10	5	Tr	—



SITE 747 HOLE B CORE 4H CORED INTERVAL 21.8-31.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
			TAU	*Nitzschia reinholdii* ~ *N. angulata* / *D. hustedtii*		ϕ=63.9 ρ=1.73; ϕ=67.4 ρ=1.61; ϕ=71.2 ρ=1.52; ϕ=73.9 ρ=1.45		1–6	0.5, 1.0				*

LITHOLOGIC DESCRIPTION

DIATOM FORAMINIFER OOZE AND FORAMINIFER DIATOM OOZE

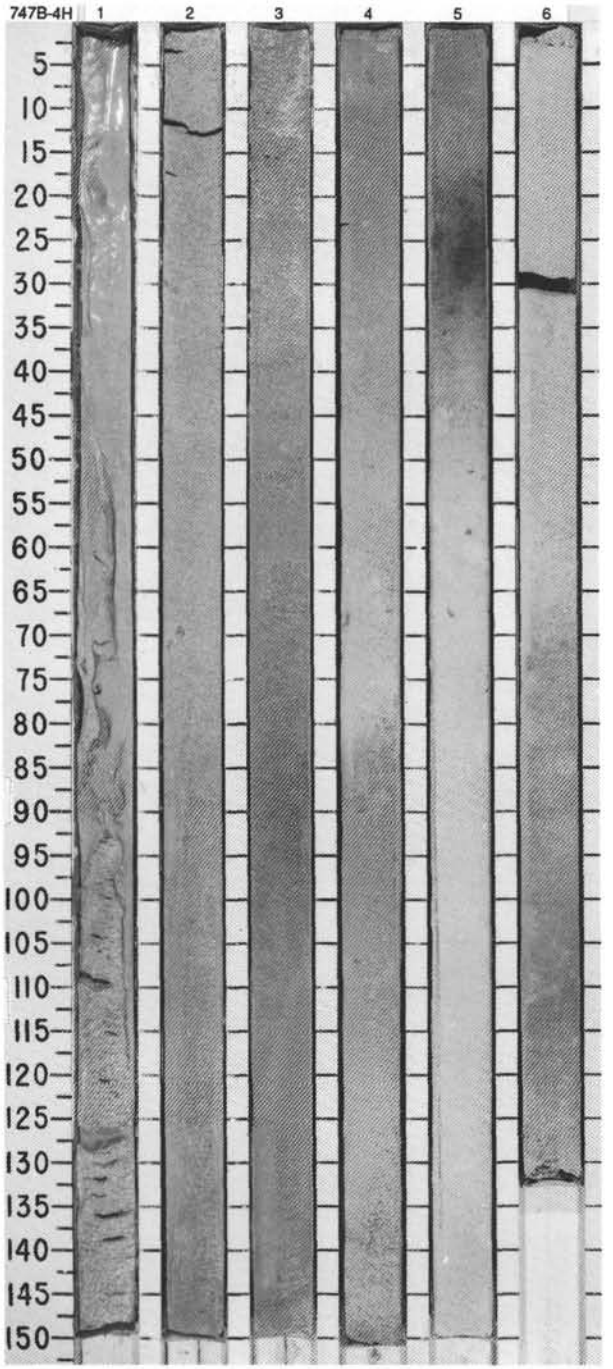
Major lithologies: DIATOM FORAMINIFER OOZE changing to foraminifer DIATOM OOZE in Section 4; colors are predominantly uniform with gradational contacts of light gray (10YR 7/2) lightening to white (10YR 8/2 and 10YR 8/1). Faint burrow mottles below darker boundaries.

Minor lithologies:
a. Diatom foraminifer ooze with vitric ash, brown (10YR 5/3), 20-cm bed in Section 5.
b. Foraminifer nannofossil ooze, white (10YR 8/1 to 10YR 8/2), below Section 5, 30 cm; grades downward to Section 6, 128 cm, darkening to light gray (10YR 7/2).

N.B.: No core catcher.

SMEAR SLIDE SUMMARY (%):

	2, 50 D	4, 50 D	5, 26 M	5, 50 D
TEXTURE:				
Sand	20	20	30	—
Silt	65	75	65	—
Clay	15	5	5	—
COMPOSITION:				
Diatoms	30	45	35	15
Foraminifers	40	35	40	40
Glass	5	5	10	Tr
Micrite	5	—	—	—
Nannofossils	5	5	5	45
Radiolarians	5	5	5	Tr
Silicoflagellates	5	5	3	Tr



SITE 747 HOLE B CORE 5H CORED INTERVAL 31.3-40.8 mbsf

TIME-ROCK UNIT: *C. spongothorax* / *Denticulopsis hustedtii*

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

PALEOMAGNETICS; PHYS. PROPERTIES; CHEMISTRY

SECTION; METERS; GRAPHIC LITHOLOGY; DRILLING DISTURB.; SED. STRUCTURES; SAMPLES

LITHOLOGIC DESCRIPTION

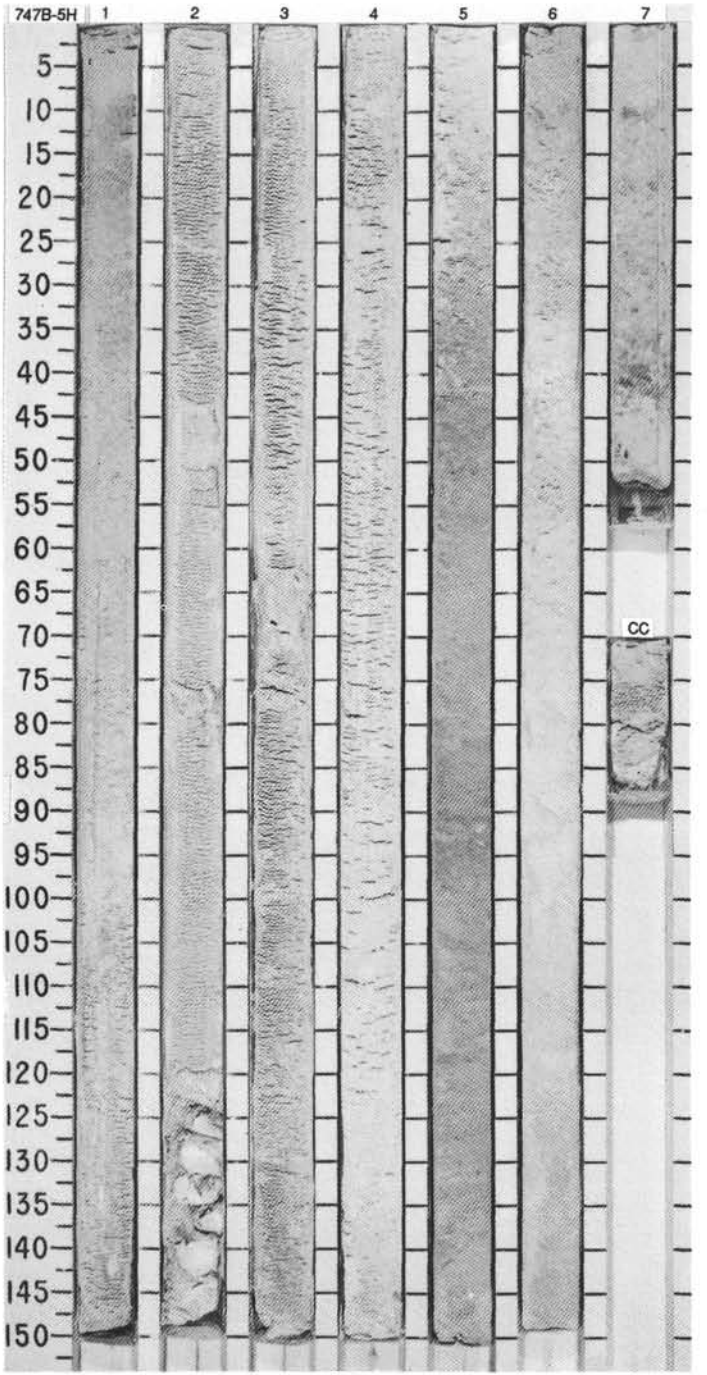
NANNOFOSSIL OOZE

Major lithology: NANNOFOSSIL OOZE, diatom and foraminifer content approaches 10% each. Uniformly white (10YR 8/2) in Section 2 to Section 5, 28 cm, and mottled from Section 6, 1 cm, to CC.

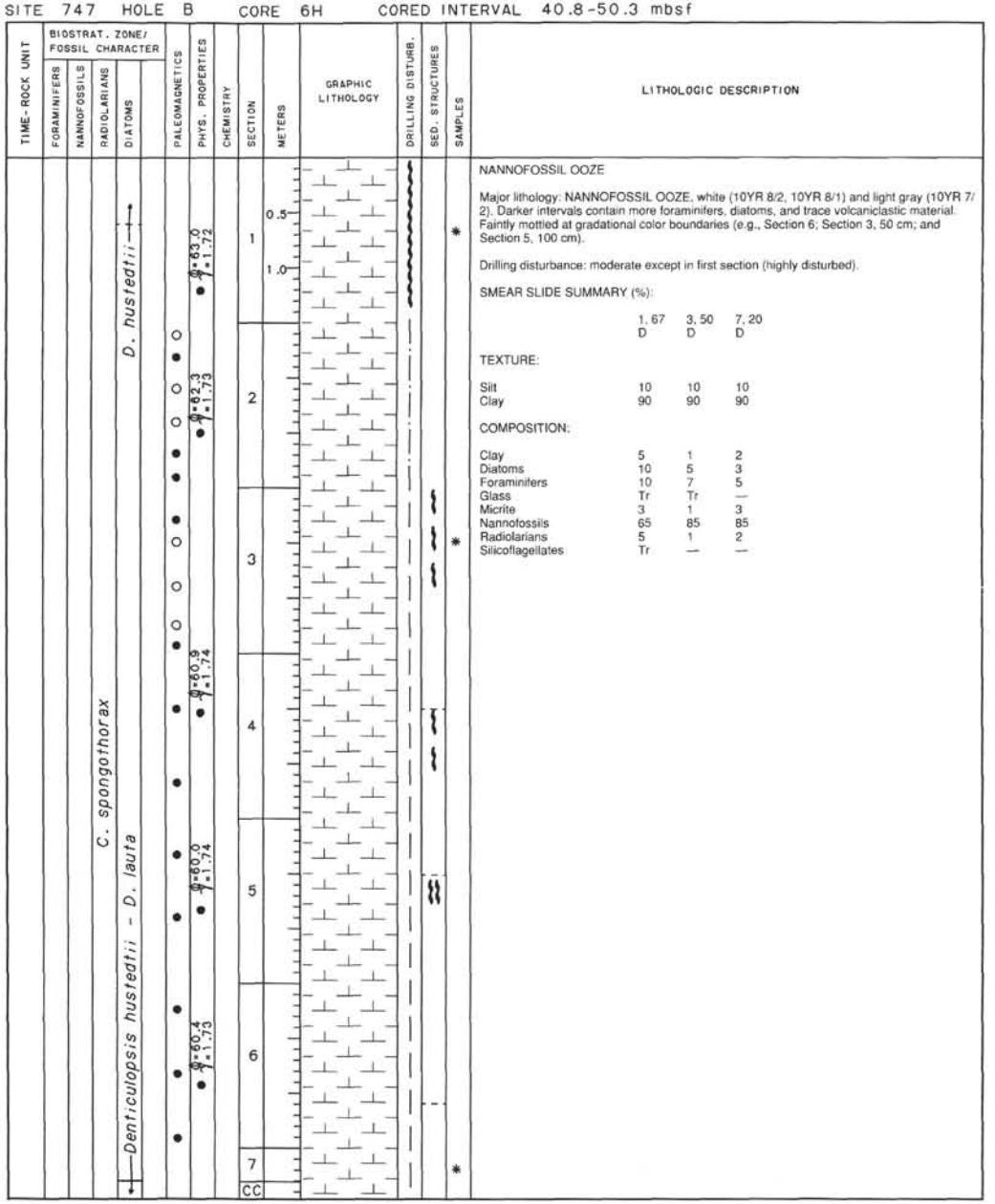
Minor lithologies:
a. Nannofossil ooze with foraminifers, light gray (10YR 7/2), in Section 1.
b. Nannofossil ooze with diatoms and foraminifers, white (10YR 8/2), mottled, in Section 6, with patches of very pale brown (10YR 7/3) in Section 7, 8-48 cm.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	4, 50 D	5, 50 D	6, 50 D
TEXTURE:				
Silt	10	10	10	10
Clay	90	90	90	90
COMPOSITION:				
Diatoms	5	5	15	5
Foraminifers	15	5	10	3
Glass	—	Tr	Tr	Tr
Nannofossils	80	85	70	85
Radiolarians	Tr	2	3	3
Silicoflagellates	Tr	—	Tr	3
Spicules	Tr	—	—	—



SITE 747 HOLE B CORE 6H CORED INTERVAL 40.8-50.3 mbsf



LITHOLOGIC DESCRIPTION

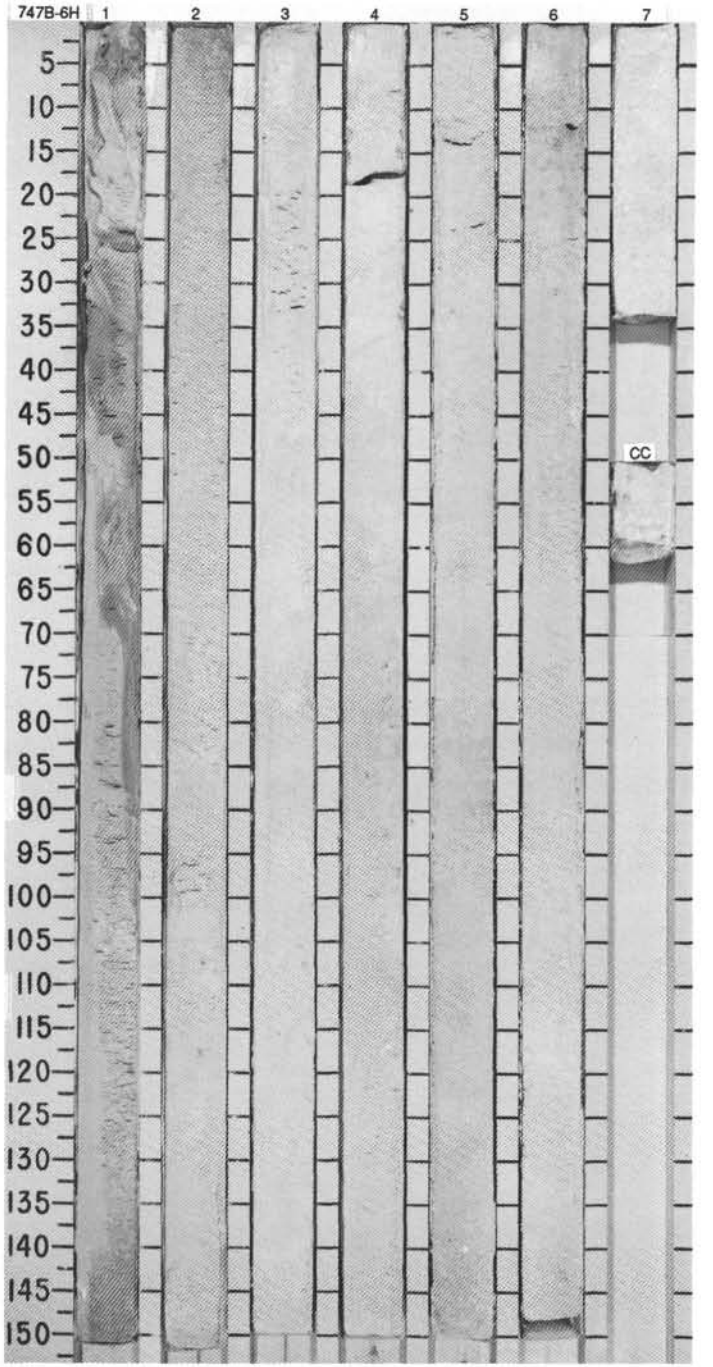
NANNOFOSSIL OOZE

Major lithology: NANNOFOSSIL OOZE, white (10YR 8/2, 10YR 8/1) and light gray (10YR 7/2). Darker intervals contain more foraminifers, diatoms, and trace volcaniclastic material. Faintly mottled at gradational color boundaries (e.g., Section 6; Section 3, 50 cm; and Section 5, 100 cm).

Drilling disturbance: moderate except in first section (highly disturbed).

SMEAR SLIDE SUMMARY (%):

	1, 67 D	3, 50 D	7, 20 D
TEXTURE:			
Silt	10	10	10
Clay	90	90	90
COMPOSITION:			
Clay	5	1	2
Diatoms	10	5	3
Foraminiters	10	7	5
Glass	Tr	Tr	—
Micrite	3	1	3
Nannofossils	65	85	85
Radiolarians	5	1	2
Silicoflagellates	Tr	—	—



SITE 747 HOLE C CORE 1R CORED INTERVAL 159.0-168.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER OLIGOCENE	*S. angiporoides*	A/M NP23-NP25		Barren	● ϕ=60.3 ↑=1.72	● ϕ=64.6 ↑=1.69 ● ϕ=66.1 ↑=1.69 ● ϕ=61.1 ↑=1.72 ● ϕ=64.5 ↑=1.75		1 2 3 4 5 6	0.5 1.0				* * *

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK

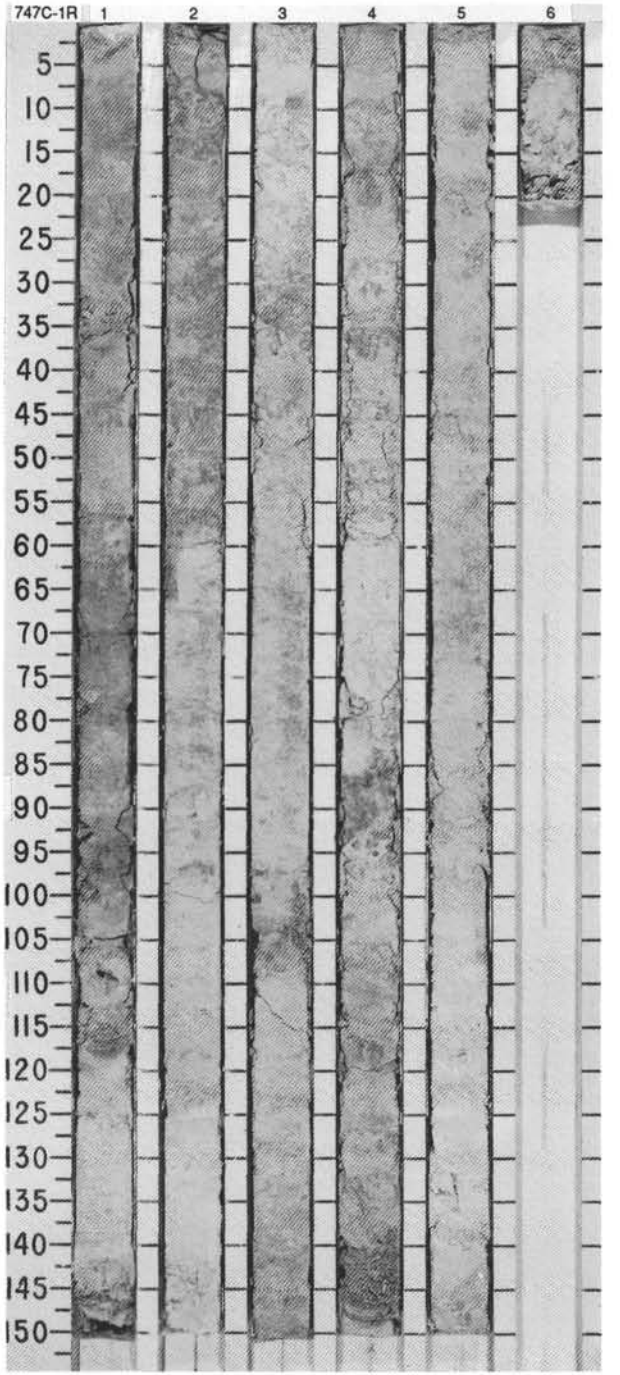
Major lithology: NANNOFOSSIL CHALK, light gray (10YR 7/2), white (10YR 8/2), and very pale brown (10YR 7/3), with some pale brown (10YR 6/3) intervals (e.g., Section 4, 82-91 cm). Brownish intervals contain increased minor foraminifer component. Sediment in this core is moderately well indurated and could barely be split with the wire. No bedding is visible, although faint mottling and gradational color changes are seen.

Minor lithology: Pebble composed of epidote and zeolite in Section 1, 108 cm.

N.B.: No core catcher.

SMEAR SLIDE SUMMARY (%):

	1, 70 D	4, 88 D	5, 114 D
TEXTURE:			
Silt	15	20	5
Clay	85	80	95
COMPOSITION:			
Clay	5	10	5
Diatoms	1	2	—
Foraminifers	13	15	5
Glass	1	2	—
Nannofossils	75	70	90
Radiolarians	1	Tr	—



SITE 747 HOLE C CORE 2R CORED INTERVAL 168.5-178.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PALEOCENE – UPPER PALEOCENE	P/C												
LOWER EOCENE – UPPER EOCENE	*S. trinidadensis* (=CC)												
LOWER OLIGOCENE													

NP3 (NP4?) | NP8/NP9 mixed to NP13 | NP19-20 | NP21 | NP22 | NP23 | Barren

Φ=54.7 ρ=1.95 | Φ=56.2 ρ=1.84 | Φ=57.6 ρ=1.72 | Φ=60.4 ρ=1.75 | Φ=58.7 ρ=1.80

Sections 1-5, CC; 0.5 m, 1.0 m

LITHOLOGIC DESCRIPTION

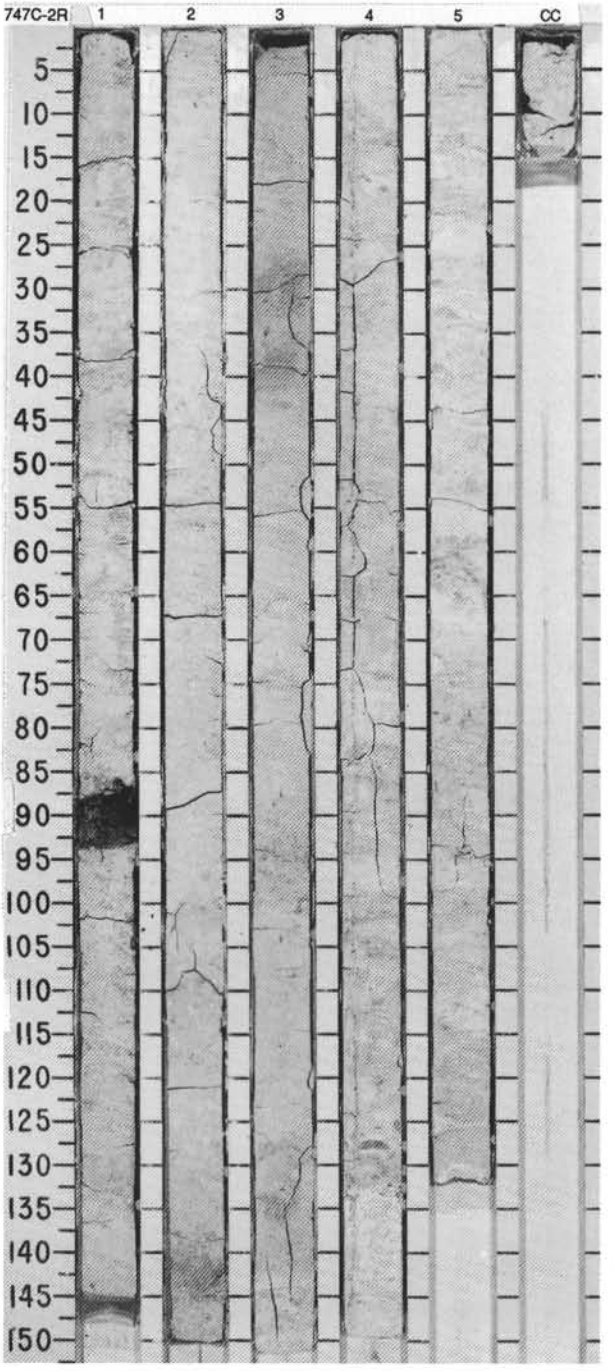
NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, white (10YR 8/2) and pale yellow (10YR 7/3), in Sections 1-3. Darker intervals (Section 1, 0-87 cm; Section 2, 140-150 cm, and Section 3, 0-41 cm and 127-142 cm) are richer in foraminifers and clay. Trace of zeolites occurs in darker interval in Section 3 and in Section 1, 92 cm. Nannofossil chalk in Section 3, 142-150 cm, and Sections 4 and 5 is highly bioturbated, white (10YR 8/2), very pale brown (10YR 7/2), light gray ((10YR N/8) and black (10YR 2/0). Burrows 2-5 mm across; simply or complexly (concentrically) filled; overlapping.

A hardground occurs in Section 1, 87-92 cm, with an upper black Mn layer overlying a cellophane layer (apatite).

SMEAR SLIDE SUMMARY (%):

	1, 50 D	3, 29 M	5, 50 D
TEXTURE:			
Sand	5	5	—
Silt	10	15	5
Clay	85	80	95
COMPOSITION:			
Accessory minerals	—	—	Tr
Clay	10	5	3
Foraminifers	10	13	3
Nannofossils	80	80	90
Zeolite	—	Tr	—



SITE 747 HOLE C CORE 3R CORED INTERVAL 178.0-187.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PALEOCENE (Danian)	P1b-P1c / P1c	NP2 / NP3	*C. spongothorax*	Barren (Top of core: *D. dimorpha* downhole contamination from MIOCENE)				1	0.5	VOID			*
									1.0				
								2					*
										VOID			*
								3					
								CC					*

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK WITH FORAMINIFERS AND VOLCANICLASTIC SEDIMENTS

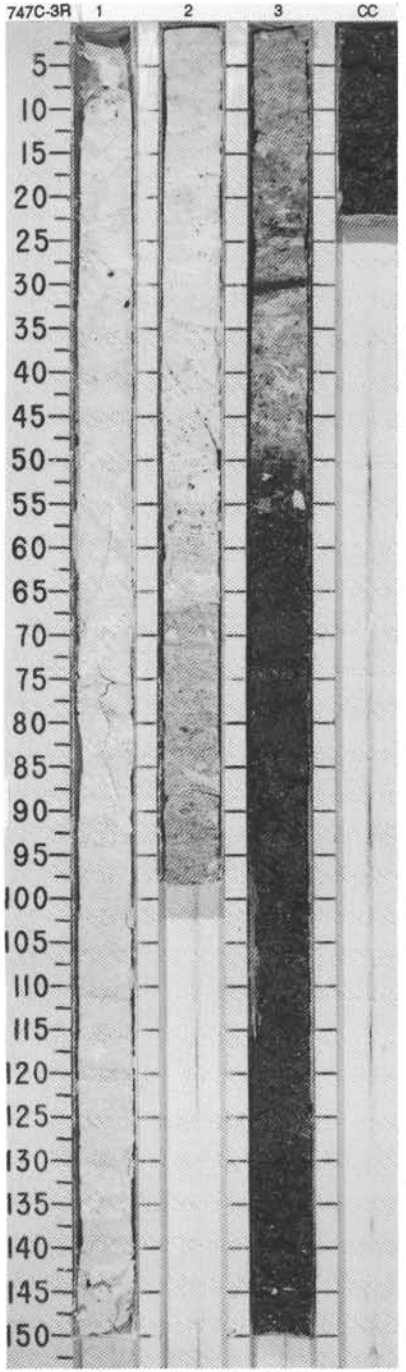
Major lithology:

a. NANNOFOSSIL CHALK with FORAMINIFERS in Section 1 through Section 3, 50 cm; white (10YR 8/1light); burrow mottling on cm scale with Zoophycos tracks, moderate throughout; large (cm-sized) worm burrows in white (10YR 8/1) chalk and filled with light gray (10YR 7/1) chalk, Section 1, 6-150 cm; numerous bedding parallel burrows in Section 1, 80- 150 cm, and Section 2, 0-46 cm. Note drilling disturbance in some intervals (e.g., laminations) caused by rotation of chalk pieces; from Section 2, 50 cm, downward increasing abundance of volcaniclastic sediments.

b. VOLCANICLASTIC SEDIMENTS in Section 3, 50-150 cm, and CC, dark gray (7.5 YR 4/0); consisting mainly of volcanic particles and claystone, scattered chert and chalk pieces; various clay clasts are rounded; colors vary from yellow, green, orange, white, dark brown, dark gray, reddish ferrugenous to pinkish waxy; hard brown limestone crust; lithology stratified but not graded.

SMEAR SLIDE SUMMARY (%):

	1, 50 D	2, 49 D	2, 79 D	3, 100 M
TEXTURE:				
Sand	—	10	15	—
Silt	95	89	78	—
Clay	5	1	2	100
COMPOSITION:				
Accessory minerals	—	—	1	15
Clay	Tr	1	5	85
Foraminifers	2	9	15	—
Glass	—	—	4	—
Nannofossils	98	90	75	—

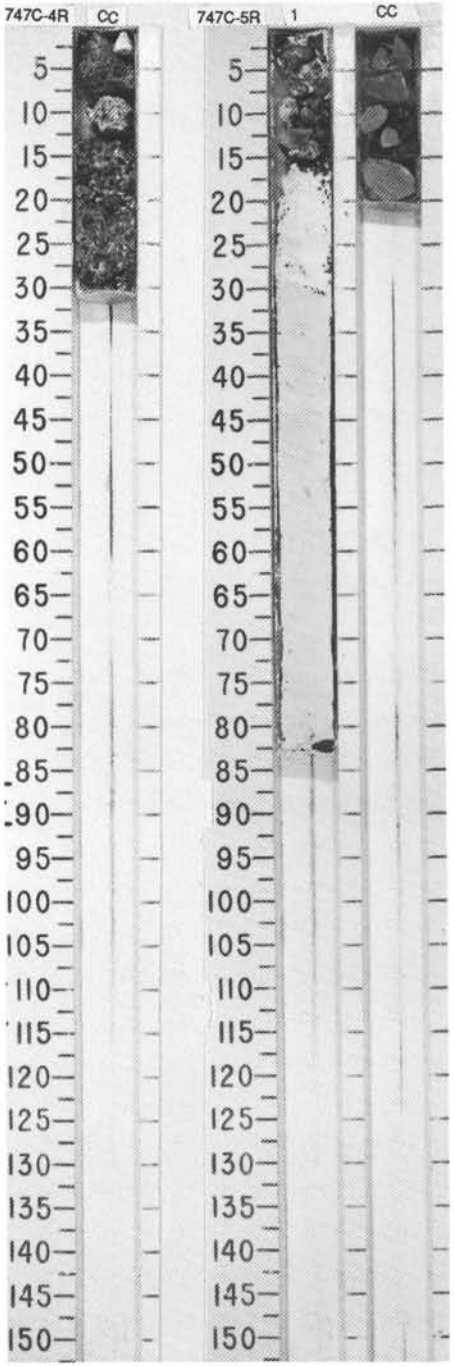


SITE 747 HOLE C CORE 4R CORED INTERVAL 187.5-197.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
								CC						NANNOFOSSIL CHALK AND POLYGENIC BRECCIA Major lithologies: a. NANNOFOSSIL CHALK, white (10YR 8/1), may be downhole contamination; contains inoceramid fragments. b. POLYGENIC BRECCIA, comprising a mosaic of colors, is cemented by white micritic limestone. Clasts are of polygenetic origin, range in size from approximately 1 cm and smaller, and include red, hematinic claystone; black chert with chalk patina; scoriaceous basalt weathered in *situ* to soft clay, green smectitic claystone; fresh basalt with filled vesicles, red brown weathered vesicular basalt, red ferruginous siltstone, vitreous chert; and inoceramid fragments. Most pieces are angular to subangular, except for the clay clasts, which are rounded. The remainder of the breccia is composed of the same type fragments, but, is uncemented.

SITE 747 HOLE C CORE 5R CORED INTERVAL 197.0-206.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
								1	0.5				*	NANNOFOSSIL CHALK WITH FORAMINIFERS AND BRECCIA Major lithologies: a. NANNOFOSSIL CHALK with FORAMINIFERS, white (7.5YR 8/1) with sub- horizontal laminations in Section 1, 16-30 cm, and white (10Y 8/1) with faint mottles in Section 1, 30-83 cm. The sharp contact between the chalk units may be a result of drilling disturbance. b. Volcaniclastic BRECCIA, polygenetic. Most clasts are altered aphanitic basalt, some cemented by chalk. Veins and vesicles of basalt are filled (zeolite crystals occur in veins). CC recovered altered basalt with olivine altered to clay, altered microgranular igneous rocks, vitric tuff, microgranular diorite, and siltstone. SMEAR SLIDE SUMMARY (%): 1, 23 M — 1, 35 D TEXTURE: Sand 6 3 Silt 90 93 Clay 4 4 COMPOSITION: Foraminifers 10 4 Nannofossils 90 96
								CC					*	



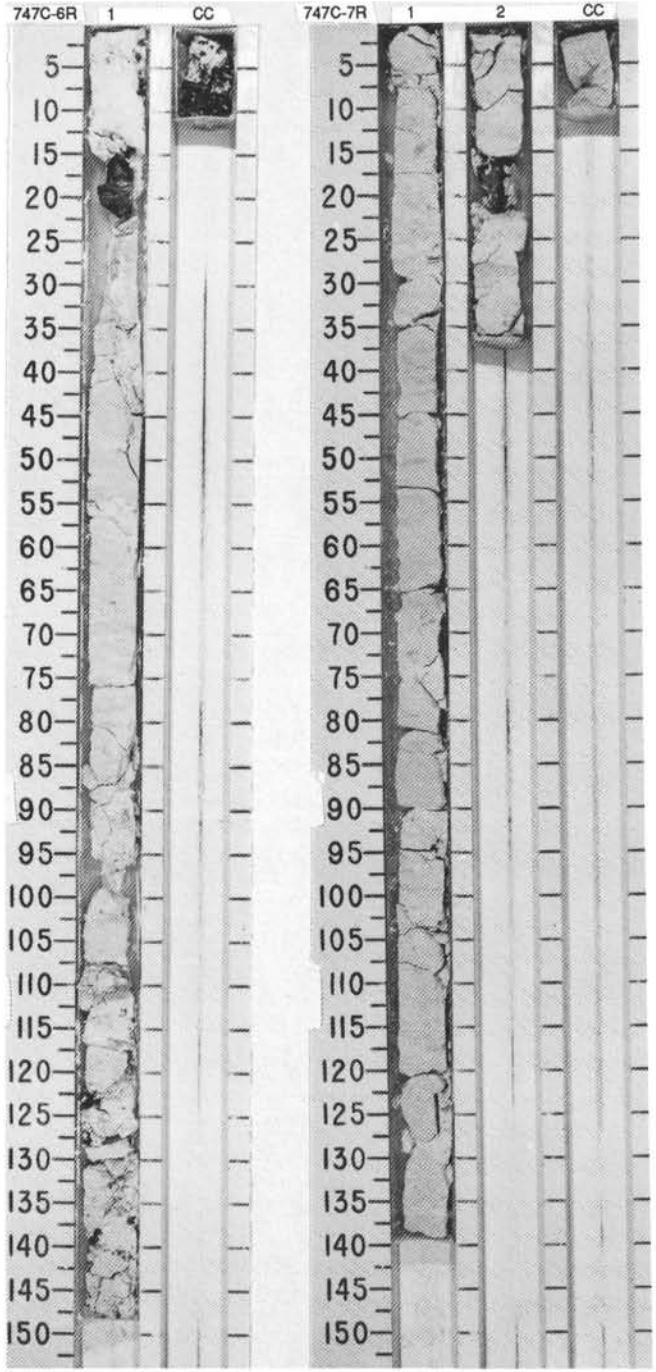
SITE 747 HOLE C CORE 6R CORED INTERVAL 252.0-261.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER (?) CAMPANIAN / MIDDLE to UPPER CAMPANIAN	C/P	? *O. trifidum*	Barren	Barren		ϕ=41.8 ρ=2.33	$CaCO_3$=94.0% OC=0.0%	1	0.5, 1.0					NANNOFOSSIL CHALK Major lithology: NANNOFOSSIL CHALK, white (10YR 8/1), burrow-mottled throughout, predominantly sub-horizontal burrows. Minor lithology: Chert, black (10YR 2/1), in Section 1, 12-23 cm. Pieces have lost their original orientation and possibly could be downhole contamination. Some small (1 cm) pieces of chert also occur at the base of Section 1 and in the CC. Drilling disturbance: Apart from Section 1, 70-120 cm, which is only moderately disturbed, this core is highly disturbed by drilling and splitting.
								CC						

SITE 747 HOLE C CORE 7R CORED INTERVAL 261.5-271.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER CAMPANIAN	not dated	C/M *O. trifidum*	Barren	Barren		ϕ=41.8 ρ=2.11	$CaCO_3$=94.1% OC=0.04%	1	0.5, 1.0				* * 1W	NANNOFOSSIL CHALK Major lithology: NANNOFOSSIL CHALK, white (whiter than 10YR 8/1); some laminations and burrows visible. Pyrite is concentrated in Section 1, 27 cm. Minor lithology: Chert, black (10YR 2/0), occurs as a nodule in Section 2, 14-20 cm. SMEAR SLIDE SUMMARY (%):
								2						
								CC						

	1, 26 M	1, 57 D
TEXTURE:		
Sand	3	4
Silt	90	93
Clay	7	3
COMPOSITION:		
Foraminifers	3	6
Nannofossils	90	94
Pyrite	7	Tr



SITE 747 HOLE C CORE 8R CORED INTERVAL 271.0-280.5 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER CAMPANIAN	not dated	C/M *O. trifidum*	Barren			ρ=2.19 ●	$CaCO_3$ =95.0% ● OC=0.00% ●	1 CC	0.5 1.0				* *	NANNOFOSSIL CHALK

Major lithology: NANNOFOSSIL CHALK, white (whiter than 10YR 8/1), contains inoceramid fragments in Section 1, 40-45 cm; chert pebbles in Section 1, 50 cm, 80 cm, and 108 cm. Burrows and laminations are mostly obscured by drilling disturbance.

SMEAR SLIDE SUMMARY (%):

	1, 52 D	1, 98 D
TEXTURE:		
Sand	7	5
Silt	93	95
Clay	—	—
COMPOSITION:		
Foraminifers	7	5
Nannofossils	93	95
Pyrite	Tr	Tr
Unspecified minerals	—	Tr

SITE 747 HOLE C CORE 9R CORED INTERVAL 280.5-290.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
MIDDLE - UPPER CAMPANIAN	MIDDLE - UPPER CAMPANIAN	C/M *O. trifidum*	Barren			ρ=2.17 ●	$CaCO_3$ =93.7% ● OC=0.00%	1 2 CC	0.5 1.0				*	NANNOFOSSIL CHALK

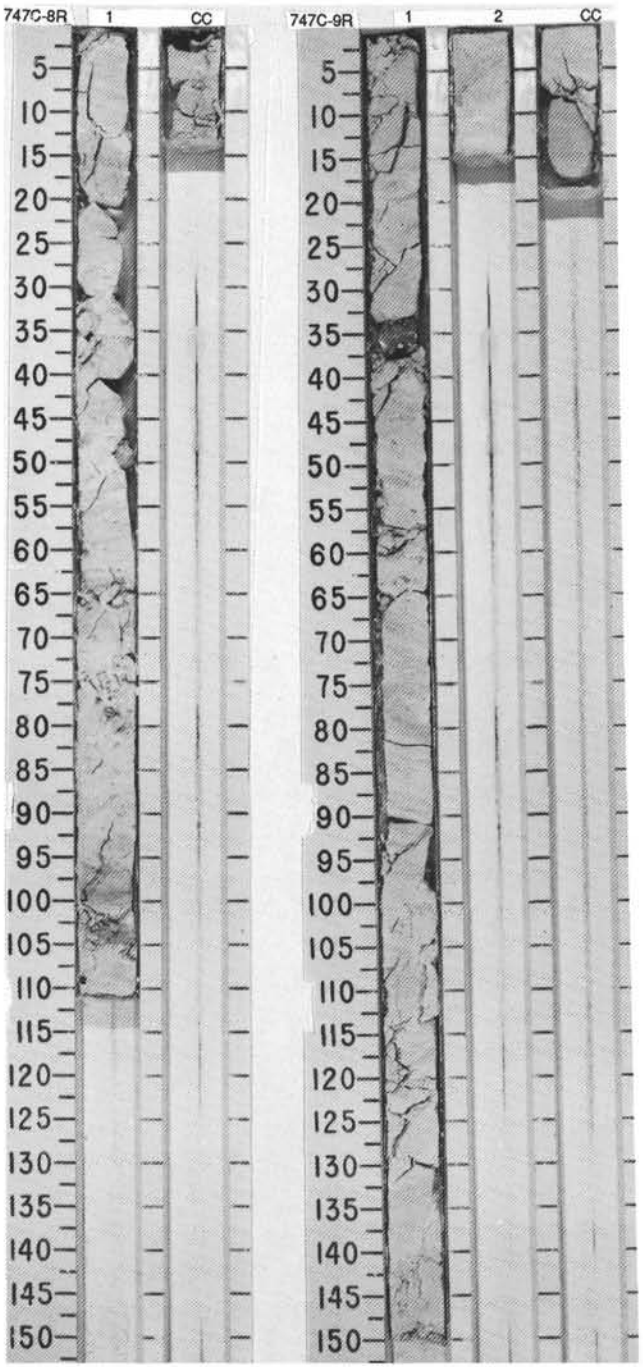
Major lithology: NANNOFOSSIL CHALK, white (5Y 8/1) from top of Section 1 (burrowed throughout), through CC, 8 cm; white (10YR 8/1) in CC, 8-17 cm, with some horizontal laminations. An inoceramid layer occurs in Section 1, 57-64 cm, and possibly represents a single shell now fragmented.

Minor lithology: chert, black (7.5YR 3/0), occurs in Section 1, 33-37 cm. Chalk is still visible in vugs in chert.

Drilling disturbance: core is fractured into numerous pieces which remain generally in place; the greatest disturbance is in Section 1, 138-150 cm.

SMEAR SLIDE SUMMARY (%):

	CC D
TEXTURE:	
Sand	1
Silt	99
COMPOSITION:	
Foraminifers	1
Nannofossils	99
Pyrite	Tr



SITE 747 HOLE C CORE 10R CORED INTERVAL 290.0-295.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER SANTONIAN	LOWER SANTONIAN	A/G *R. anthophorus*	Barren	Barren			$CaCO_3$ -64.6% OC-0.06% -92.2% OC-0.00%	1	0.5 1.0				*	NANNOFOSSIL CHALK AND CHERT
								2						
								CC					*	

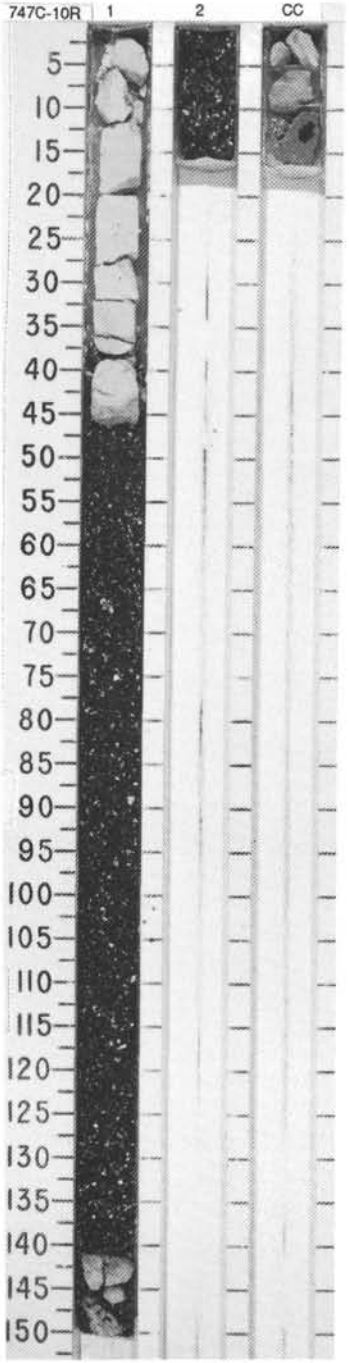
NANNOFOSSIL CHALK AND CHERT

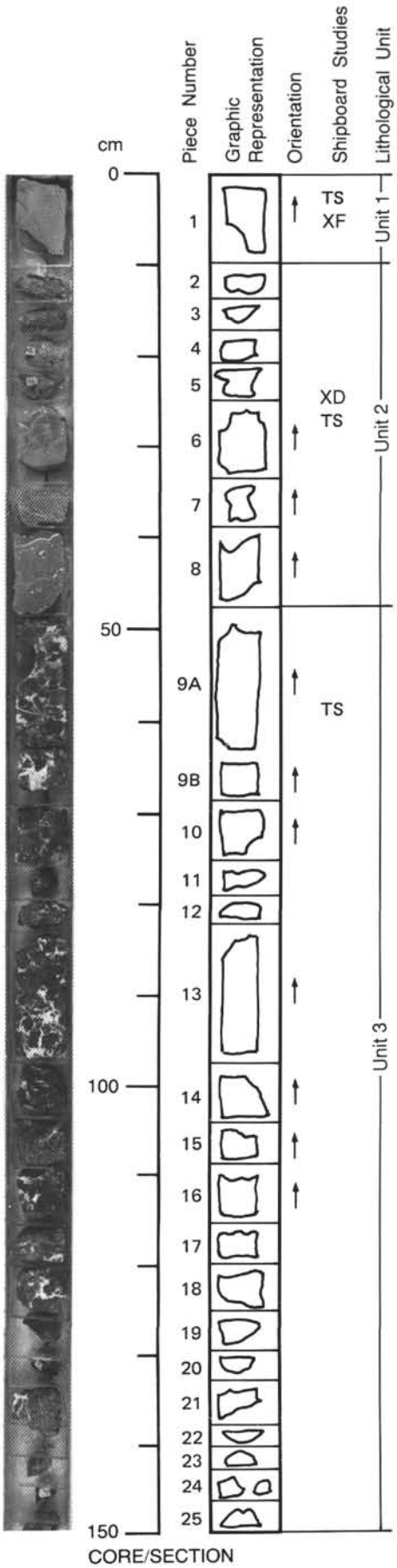
Major lithologies:
a. NANNOFOSSIL CHALK, white (10YR 8/1), contains inoceramid fragments and unidentified carbonate (corroded nannofossils?), Section 1, 0-45 cm. b. CHERT, black (10YR 2/1), occurs as angular gravel (3mm-1cm) along with volcanic and siltstone pebbles; in Section 1, 45 cm, through Section 2, 15 cm. Gravel is moderately well sorted, and appears to be a by-product of drilling.

Minor lithology: Rocks in CC include sandstone, greenish gray (5G 6/1), with silt-sized grains of a green mineral (glauconite, chlorite?); also highly weathered volcanic rock, dark greenish gray (5GY 4/1), may be derived from the volcaniclastic unit in this hole. These rocks have all lost their original orientation.

SMEAR SLIDE SUMMARY (%):

	1, 22 D	CC D
TEXTURE:		
Sand	1	20
Silt	94	75
Clay	5	5
COMPOSITION:		
Accessory minerals	—	3
Carbonate	10	—
Clay	—	5
Foraminifers	2	15
Glass	—	2
Nannofossils	88	75





120-747C-11R-1

UNIT 1: MODERATELY PLAGIOCLASE-PYROXENE PHYRIC BASALT

Pieces 1-2

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 5%, 1 mm, euhedral laths.
Pyroxene - 1%, 1 mm, subhedral.
GROUNDMASS: Microcrystalline.
VESICLES: 10%, 1 mm, show flow orientation, some infilling with calcite, zeolites and smectites.
COLOR: Medium gray.
STRUCTURE: Not determined.
ALTERATION: Slight.
VEINS/FRACTURES: Slightly fractured, infilled by calcite and zeolites.

UNIT 2: MODERATELY PLAGIOCLASE-PYROXENE PHYRIC BASALT

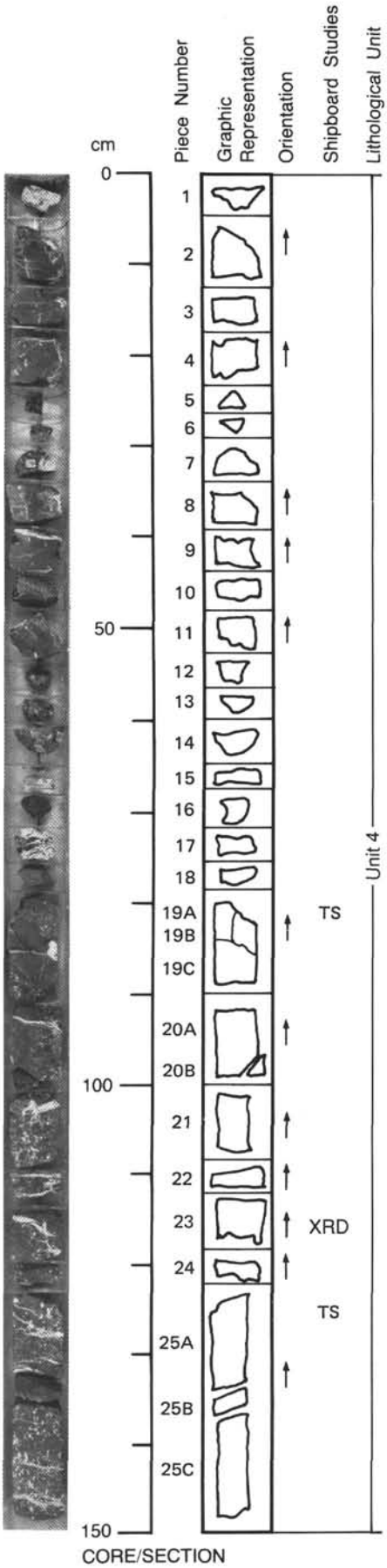
Pieces 3-8

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1%, 1 mm, euhedral laths.
Pyroxene - 1%, 0.5 mm, subhedral.
Olivine - 1%, 5 mm, altered to iddingsite.
GROUNDMASS: Microcrystalline.
VESICLES: 10%, 1-5 mm, filled with zeolites and greenish clay minerals.
COLOR: Dark gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: Moderately fractured, infilled by calcite.

UNIT 3: BRECCIATED SPARSELY PLAGIOCLASE PHYRIC BASALT

Pieces 9-25

CONTACTS: Not determined.
PHENOCRYSTS: Plagioclase - 2%, 0.5-1 mm, euhedral laths.
GROUNDMASS: Microcrystalline.
VESICLES: 20%, 1-6 mm, filled with zeolites and greenish clay minerals.
COLOR: Dark gray.
STRUCTURE: Not determined.
ALTERATION: Highly altered.
VEINS/FRACTURES: Highly brecciated, fractures infilled mainly with calcite but also some smectite.

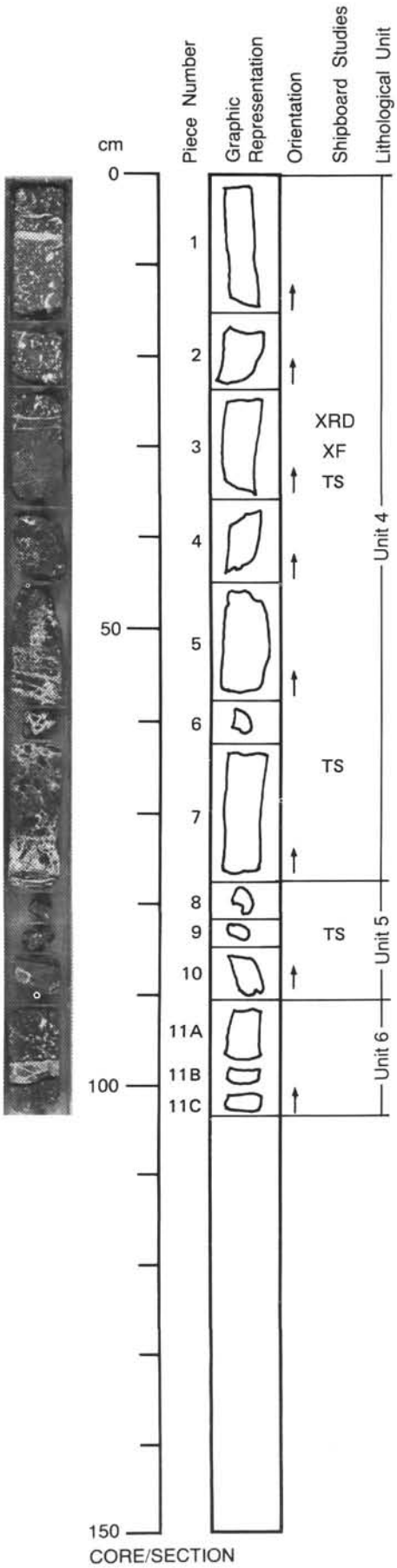


120-747C-11R-2

UNIT 4: SPARSELY CLINOPYROXENE-PLAGIOCLASE PHYRIC TO APHYRIC BASALT

Pieces 1-25

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - <1%, < 1 mm, anhedral.
Pyroxene - 2%, 1 mm, euhedral.
Olivine - < 1%, subhedral, weathered.
GROUNDMASS: *Microcrystalline.*
VESICLES: 1-6 mm, occasionally showing flow alignment (dip 15 degrees). Pieces 1-14: 5%. Pieces 16-20B: 0-3%, no vesicles. Pieces 21-25: 10-15%.Vesicles are filled with light green clay, calcite, and zeolites.
COLOR: Dark gray to green gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: Veins are distributed irregularly throughout, consisting of zeolites and calcite. Pieces 1 and 15: veins of calcite, zeolites and green clay minerals.



120-747C-11R-3

UNIT 4: SPARSELY CLINOPYROXENE-PLAGIOCLASE PHYRIC TO APHYRIC BASALT

Pieces 1-7

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - < 1%, 1 mm.
Pyroxene - 2%, 1 mm.
GROUNDMASS: Microcrystalline.
VESICLES: Pieces 1, 2, and top 3 cm of 3: 15%, 1-7 mm, filled with calcite, zeolites and green clay minerals
COLOR: Dark gray (brown).
STRUCTURE: Not determined.
ALTERATION: Moderate to high.
VEINS/FRACTURES: Mainly calcite infilling. Pieces 3-7: veining increased from 5% to 70%.

UNIT 5: APHYRIC BASALT

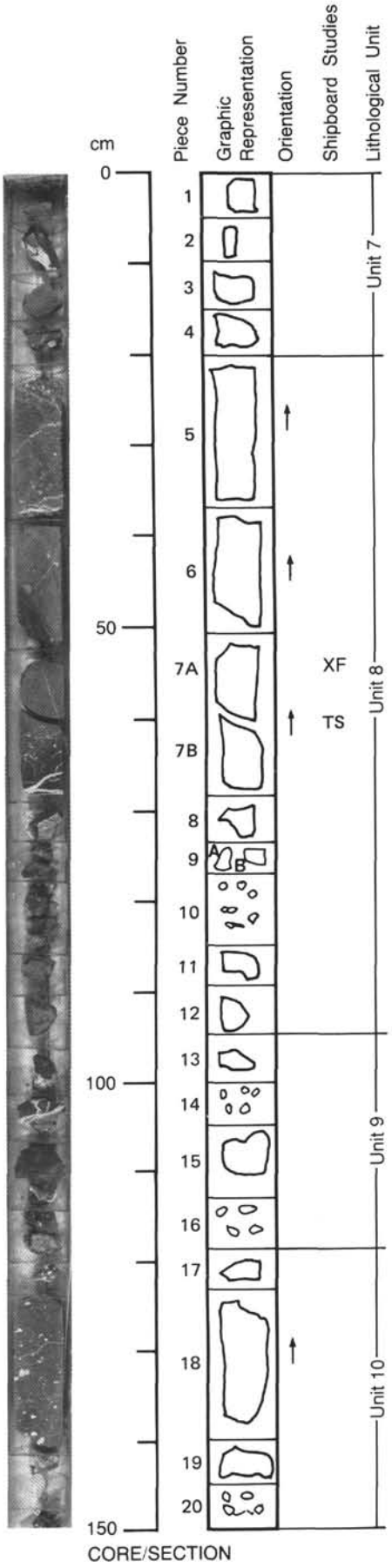
Pieces 8-10

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline, plagioclase and olivine crystals.
VESICLES: (?)%, 1-2 mm, mostly filled with green clay minerals.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Highly altered, olivine to iddingsite.
VEINS/FRACTURES: Piece 4: small fracture infilled with calcite.

UNIT 6: APHYRIC BASALT

Piece 11

CONTACTS: None.
PHENOCRYSTS: Plagioclase - < 0.5%, 1 mm.
GROUNDMASS: Highly altered.
VESICLES: 10%, filled with calcite.
COLOR: Green gray.
STRUCTURE: Not determined.
ALTERATION: High.
VEINS/FRACTURES: Piece 11B pervasively veined.



120-747C-12R-1

UNIT 7: ALTERED BASALT WITH CHERT FRAGMENTS

Pieces 1-4.

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Fine-grained.
VESICLES: Green-gray.
COLOR: Not determined.
STRUCTURE: Strongly altered to chlorite and epidote.
ALTERATION: Not determined.
VEINS/FRACTURES: Pieces 1, 2, and 4: chert fragments.

UNIT 8: APHYRIC TO MODERATELY CLINOPYROXENE PHYRIC BASALT

Pieces 5-12

CONTACTS: Not determined.
PHENOCRYSTS:
Pyroxene - 3%, 2 mm.
Olivine - < 1%, 2 mm.
GROUNDMASS: Microcrystalline.
VESICLES: Piece 5: 20%, 1-4 mm. Pieces 6-12: < 5%, 1-2 mm. Filled with calcite.
COLOR: Greenish gray to dark gray.
STRUCTURE: Not determined.
ALTERATION: Pervasive brownish alteration.
VEINS/FRACTURES: Vesicles filled with zeolites, veins filled with calcite. Criss-cross veinlets < 1 mm thick throughout.

UNIT 9: HIGHLY ALTERED AND BRECCIATED APHYRIC BASALT

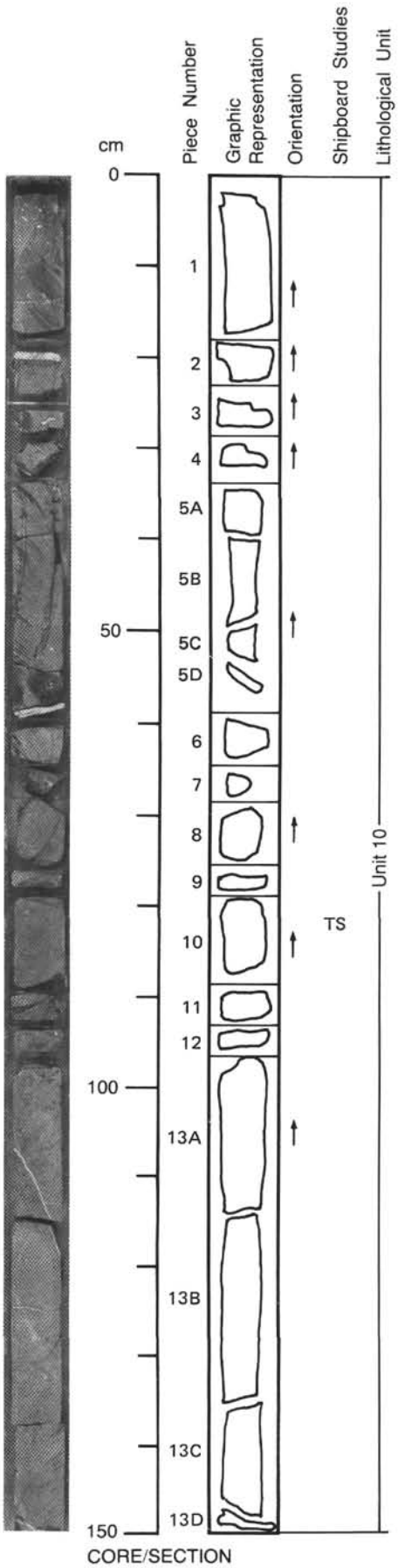
Pieces 13-16

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline.
VESICLES: 2%, 0.5 mm.
COLOR: Gray brown.
STRUCTURE: Not determined.
ALTERATION: Highly altered.
VEINS/FRACTURES: Calcite and green clay minerals in veins. Vesicles filled by green clay minerals. Breccia separates units.

UNIT 10: MODERATELY PLAGIOCLASE OLIVINE-PHYRIC BASALT

Pieces 17-20

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 7%, 2 mm.
Olivine - 2%, 3 mm.
GROUNDMASS: Microcrystalline.
VESICLES: (?)%, 2-15 mm, filled with zeolites and calcite.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Slight.
VEINS/FRACTURES: 1-5 mm, slightly veined, filled with calcite.

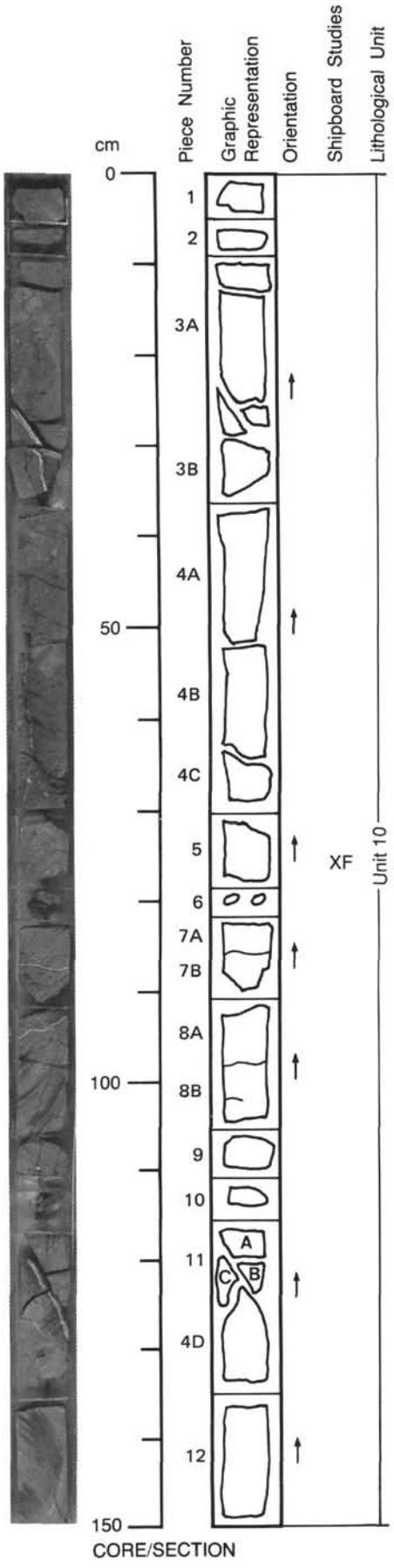


120-747C-12R-2

UNIT 10: CONTINUED

12R-2, Pieces 1-13, 12R-3, Pieces 1-12, 12R-4, Pieces 1-11, and 13R-1, Pieces 1-2

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 7%, 2 mm.
Olivine - 2%, 3 mm.
GROUNDMASS: Microcrystalline.
VESICLES: Piece 12R-2, 1: 2-10%, 2-15 mm filled with zeolites, calcite and green clay minerals. Top Section 12R-3 to bottom Section 12R-4, very few (< 1%) vesicles filled with greenish clay minerals and zeolites. Section 12R-4, least amount of vesicles. Piece 13R-1, 2: 3-5%, 8 mm, "stretched out" with dip of 10 degrees.
COLOR: Greenish gray.
STRUCTURE: Not determined.
ALTERATION: Slight to moderate. Section 12R-4 looks freshest.
VEINS/FRACTURES: (?)%, up to 3 mm in thickness, both horizontal and vertical, filled with calcite.

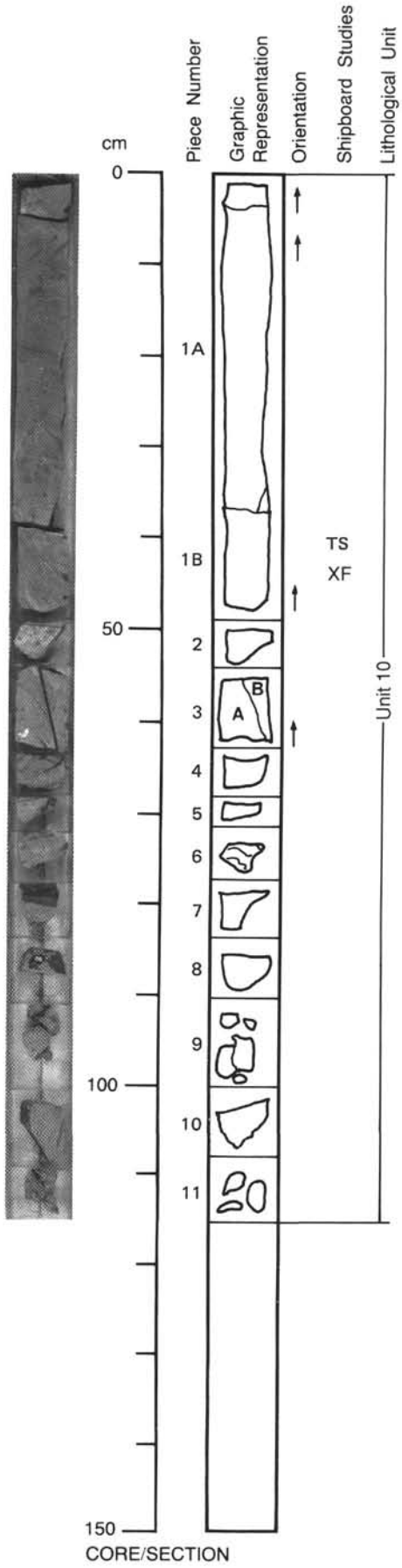


120-747C-12R-3

UNIT 10: CONTINUED

Pieces 1-12

See Section 120-747C-12R-2

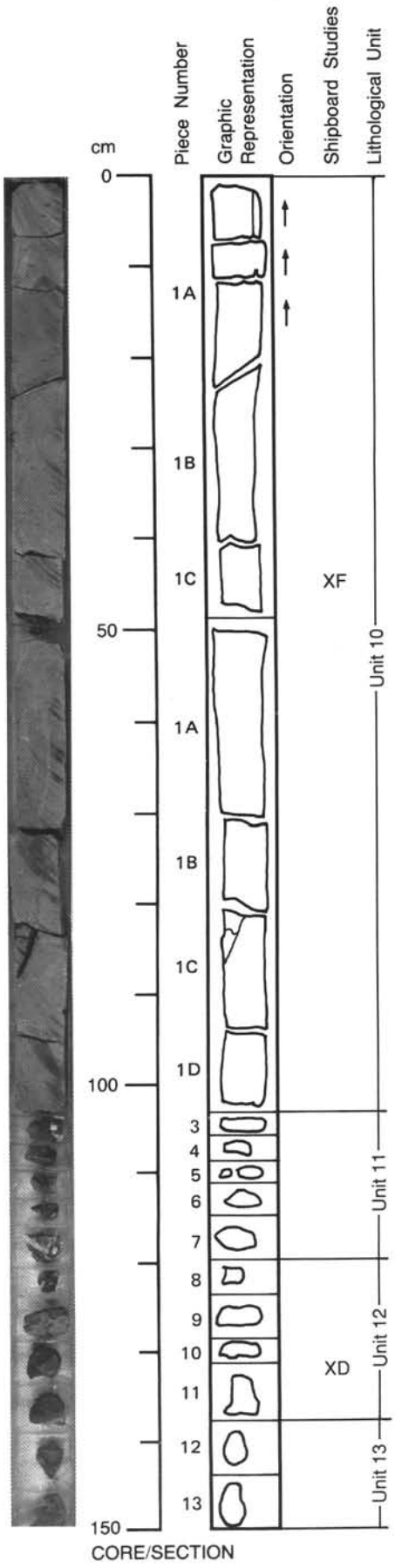


120-747C-12R-4

UNIT 10: CONTINUED

Pieces 1-11

See Section 120-747C-12R-2



120-747C-13R-1

UNIT 10: CONTINUED

Pieces 1-2

See Section 120-747C-12R-2

UNIT 11: ALTERED APHYRIC BASALT

Pieces 3-7

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline.
VESICLES: 10%, filled with green clay minerals.
COLOR: Gray to dark gray.
STRUCTURE: Not determined.
ALTERATION: Highly altered.
VEINS/FRACTURES: Filled with calcite and goethite.

UNIT 12: ALTERED APHYRIC BASALT

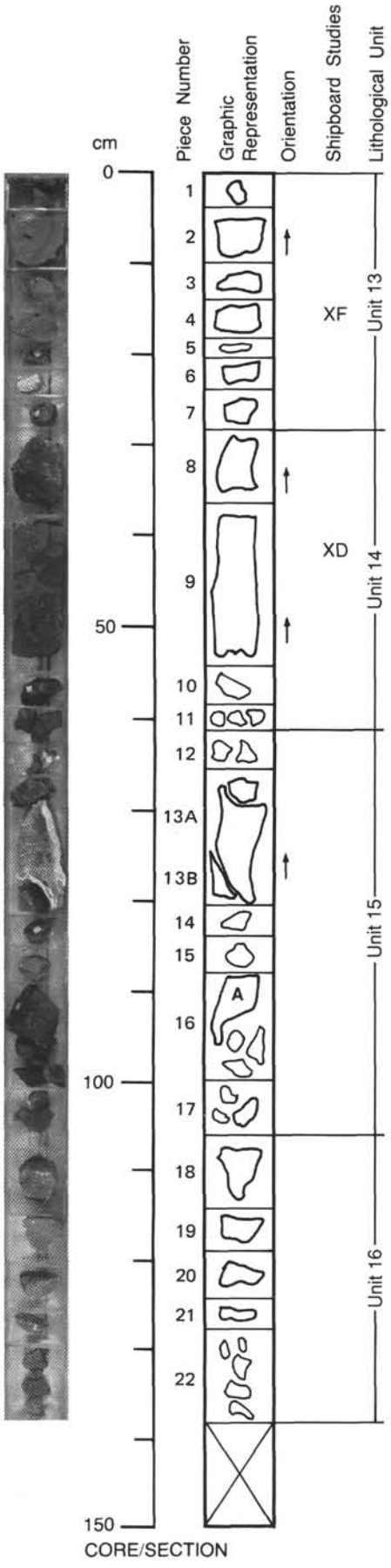
Pieces 8-11

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline.
VESICLES: None.
COLOR: Gray green.
STRUCTURE: Not determined.
ALTERATION: Highly altered.
VEINS/FRACTURES: Calcite, goethite (subaerial weathering?).

UNIT 13: SPARSELY PLAGIOCLASE-CLINOPYROXENE PHYRIC BASALT

13R-1, Pieces 12-13, and 13R-2, Pieces 1-7

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1%, 2 mm.
Clinopyroxene - 1%, 2 mm.
GROUNDMASS: Microcrystalline.
VESICLES: 3%, 3 mm, filled with zeolites and smectite.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Slight.
VEINS/FRACTURES: None.



120-747C-13R-2

UNIT 13: CONTINUED

Pieces 1-7

See Section 120-747C-13R-1

UNIT 14: ALTERED BRECCIATED APHYRIC BASALT

Pieces 8-11

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline.
VESICLES: 10%, 2 mm, filled with smectite, green clay minerals, and zeolites. Breccia pieces vary in vesicle content (7%-30%).
COLOR: Dark gray lava breccia in brown matrix.
STRUCTURE: Not determined.
ALTERATION: Highly altered.
VEINS/FRACTURES: Some fibrous calcite veins.

UNIT 15: ALTERED APHYRIC BASALT

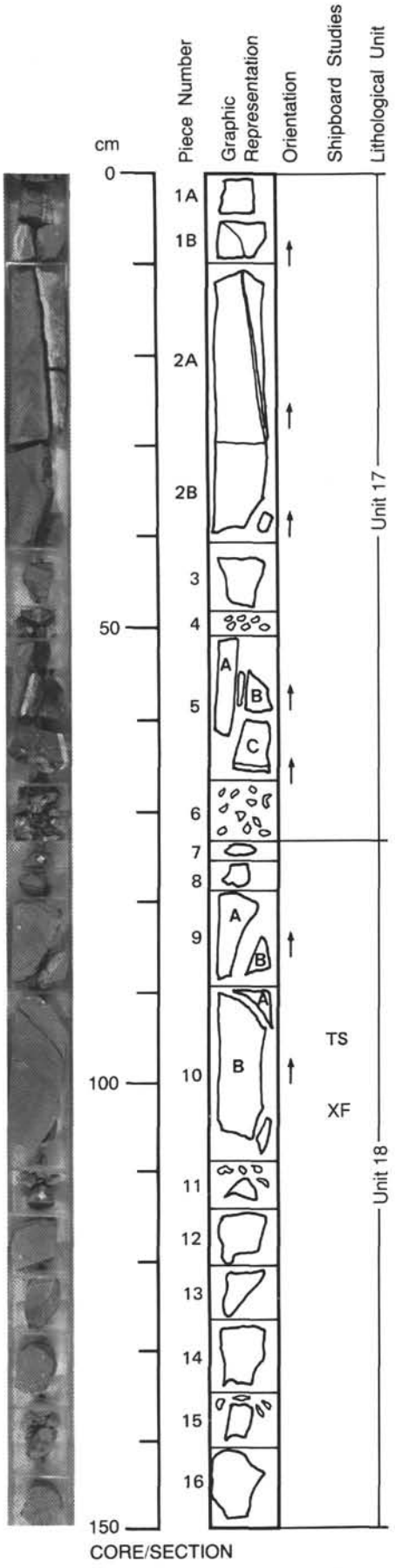
Pieces 12-17

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Not determined.
VESICLES: Not determined.
COLOR: Not determined.
STRUCTURE: Not determined.
ALTERATION: Not determined.
VEINS/FRACTURES: Not determined.
ADDITIONAL COMMENTS: Fractured, cut pervasively by veins of calcite, green clay minerals, and zeolites. Parts of Piece 16 completely altered to clay minerals - mainly smectite.

UNIT 16: APHYRIC BASALT

Pieces 18-22

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline.
VESICLES: 5%, 2-5 mm, filled with calcite.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: None.



120-747C-13R-3

UNIT 17: SPARSELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

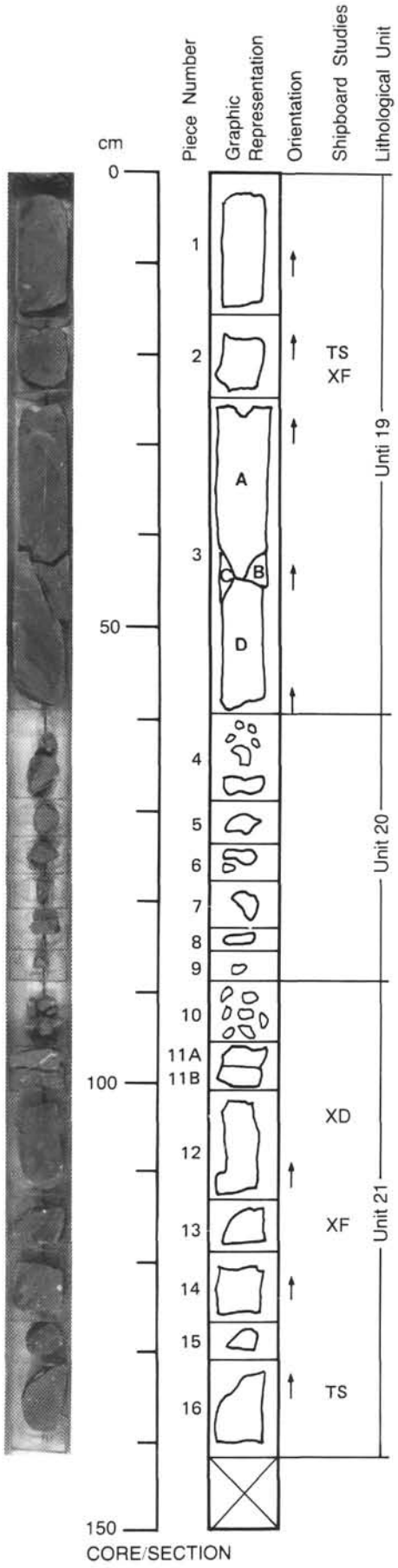
Pieces 1-6

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1%, 1 mm.
Olivine - 1%, 2 mm, altered.
GROUNDMASS: Microcrystalline.
VESICLES: < 3%, 2-3 mm.
COLOR: Gray
STRUCTURE: Not determined.
ALTERATION: Slight to moderate.
VEINS/FRACTURES: One vertical vein 4 mm across, filled with calcite. Some network veining (width < 1 mm).

UNIT 18: MODERATELY PLAGIOCLASE-PYROXENE-OLIVINE PHYRIC BASALT

Pieces 7-16

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 4%, 1-2 mm.
Clinopyroxene - 2%, 1 mm.
Olivine - 1%, 2-3 mm.
GROUNDMASS: Microcrystalline.
VESICLES: < 5%, filled with zeolite. One filled with green clay minerals.
COLOR: Green gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: None.



120-747C-14R-1

UNIT 19: SPARSELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

Pieces 1-3

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1%, 2 mm.
Olivine - 2%, < 0.5 mm, subhedral, altered.
GROUNDMASS: Microcrystalline.
VESICLES: (?)%, 1-6 mm, subround to round, irregularly distributed, filled with green clay minerals.
COLOR: Gray green.
STRUCTURE: Not determined.
ALTERATION: Mild to moderate.
VEINS/FRACTURES: Overall none, thin 1 mm, calcite vein in Piece 1D.

UNIT 20: MODERATELY OLIVINE-PLAGIOCLASE PHYRIC BASALT

Pieces 4-9

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 5%, radiating laths, unaltered(?).
Olivine - 5%, < 1 mm, partially altered.
GROUNDMASS: Fine grained with intergranular texture.
VESICLES: (?)%, 2-3 mm, rare except for Piece 8, infilled with green clay minerals and zeolites.
COLOR: Light green.
STRUCTURE: Not determined.
ALTERATION: Devitrified (chlorite?) glass in groundmass.
VEINS/FRACTURES: Rare.

UNIT 21: MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE PHYRIC BASALT

14R-1, Pieces 10-16, 14R-2, Pieces 1-8, and 15R-1, Pieces 1-2

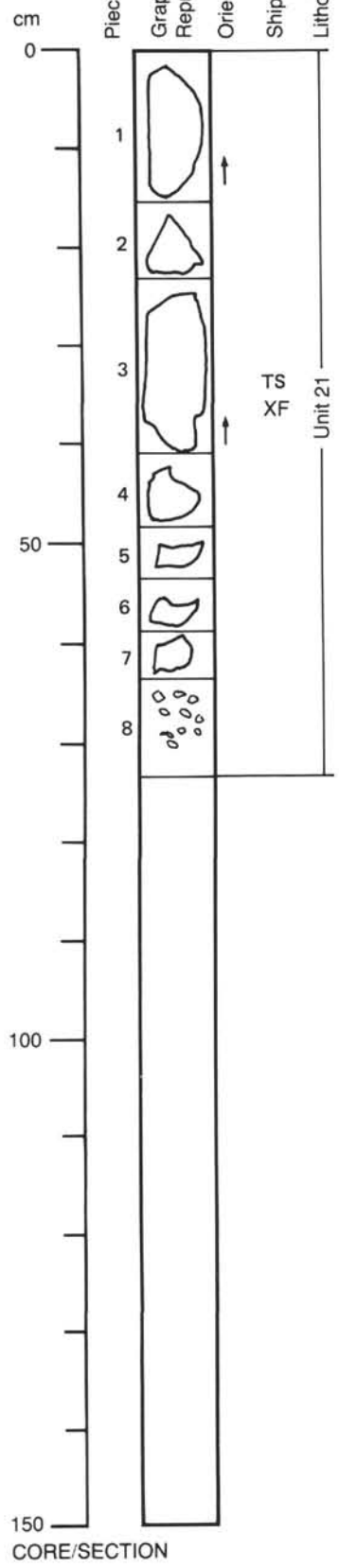
CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1-4%, euhedral laths. Up to 5% plagioclase in Piece 16.
Pyroxene - 1%, 1 mm.
Olivine - 1%, 1 mm, altered.
GROUNDMASS: Microcrystalline.
VESICLES: 2-4%, 2-5 mm, round, irregularly distributed, filled with green clay minerals and zeolites.
COLOR: Light green.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: Small microveinlets filled with calcite.

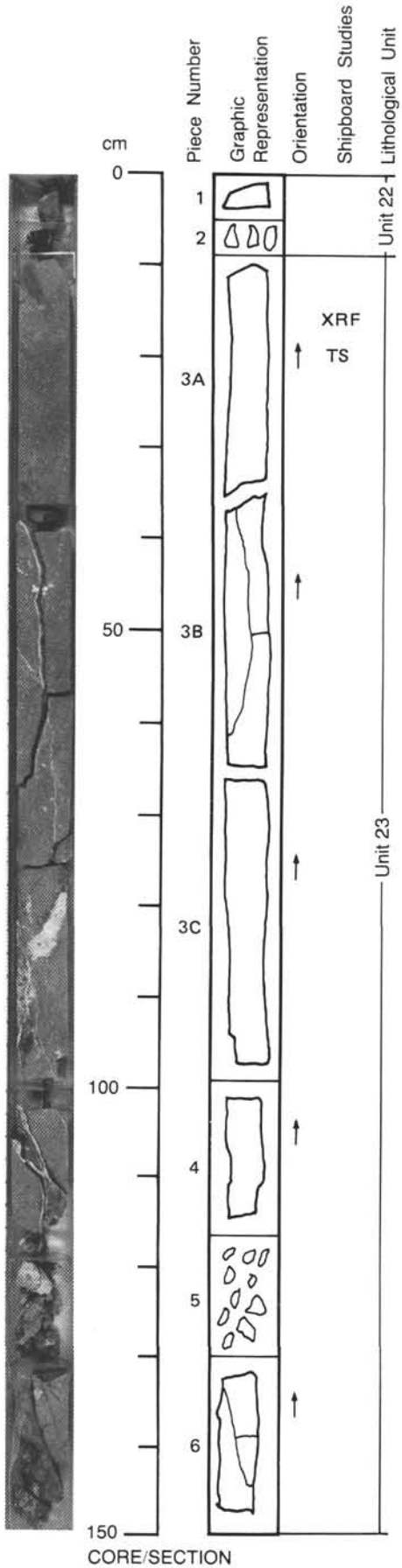
120-747C-14R-2

UNIT 21: CONTINUED

Piece 1-8

See Section 120-747C-14R-1





120-747C-15R-1

UNIT 22: CONTINUED

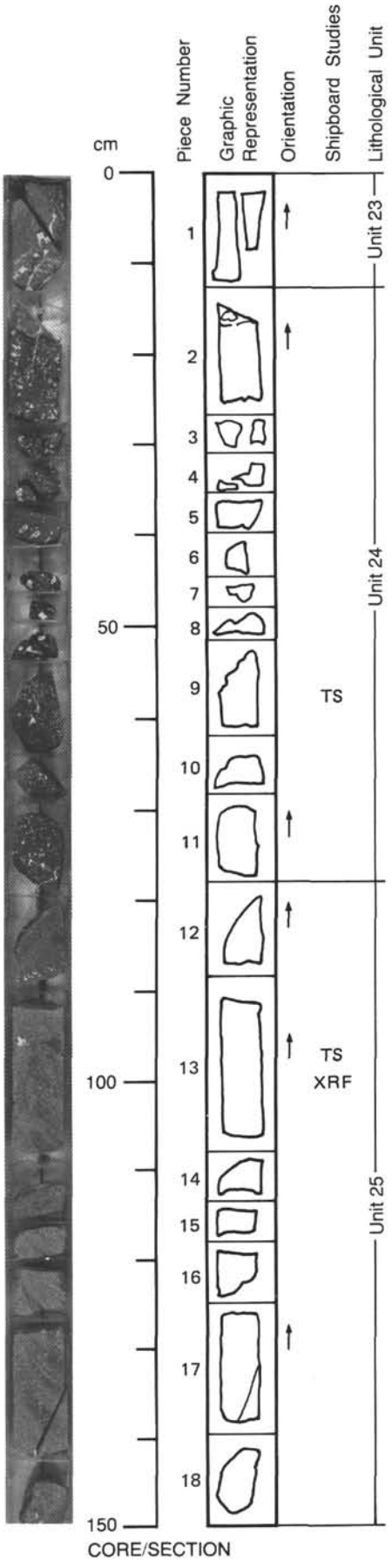
Pieces 1-2

See Section 120-747C-14R-1

UNIT 23: HIGHLY PLAGIOCLASE-PYROXENE PHYRIC BASALT

15R-1, Pieces 3-6, 15R-2, Piece 1

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 15-20%, 2 mm, euhedral to subhedral.
Clinopyroxene - 10-15%, 2-3 mm, euhedral.
Olivine - 7%, 2 mm, altered to iddingsite.
GROUNDMASS: Microcrystalline to fine-grained and secondary minerals (celadonite or chlorite?).
VESICLES: 1%. Piece 3B: 2-10 mm, filled with calcite. Section 15R-2: more vesicular.
COLOR: Medium gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: (?)%, 2 mm to 1.5 cm, almost vertical, filled with calcite.



120-747C-15R-2

UNIT 23: CONTINUED

Piece 1

See Section 120-747C-15R-1

UNIT 24: SPARSELY PLAGIOCLASE PHYRIC BASALT

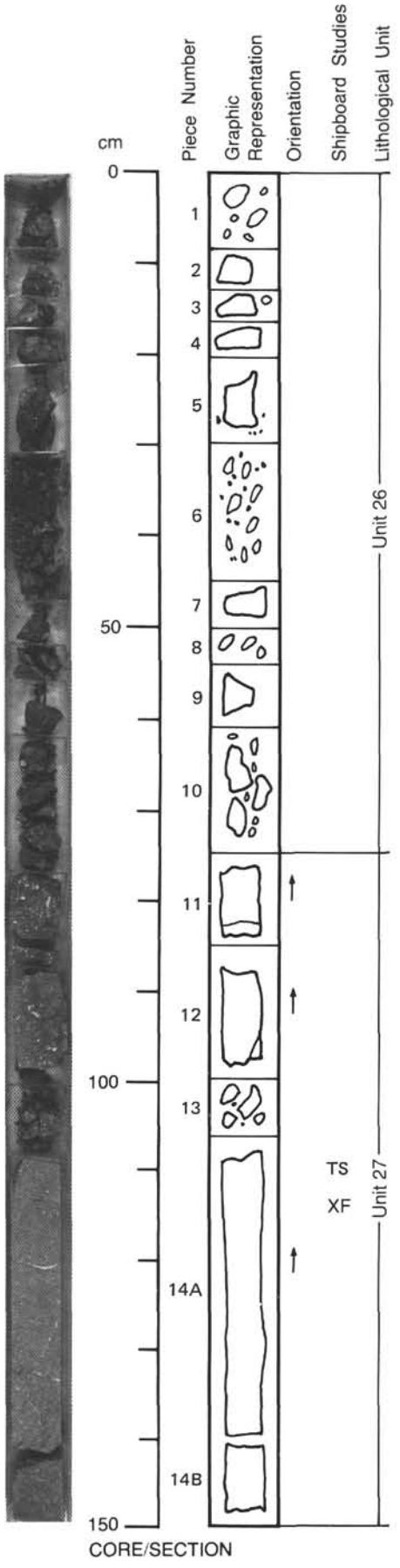
Pieces 2-11.

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1-2%, 2 mm, subhedral.
Olivine - 1%, 2 mm, altered.
GROUNDMASS: Microcrystalline.
VESICLES: 1-20 mm, filled with calcite and zeolites. Piece 2 up to 15%, other pieces up to 5%.
COLOR: Gray brown.
STRUCTURE: Not determined.
ALTERATION: Slight to moderate.
VEINS/FRACTURES: Not determined.

UNIT 25: MODERATELY CLINOPYROXENE PLAGIOCLASE PHYRIC BASALT

Pieces 12-18

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 1-2%, 1 mm, subhedral to euhedral laths.
Pyroxene - 5%, 1-5 mm.
GROUNDMASS: Fine-grained.
VESICLES: 1-5%, 1-5 mm, infilled with calcite and zeolites.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Slight to moderate.
VEINS/FRACTURES: No veins.



120-747C-15R-3

UNIT 26: ALTERED APHYRIC BASALT

Pieces 1-10

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Microcrystalline, altered.
VESICLES: Up to 15%, 2-3 mm, filled with zeolites and green clay minerals.
COLOR: Reddish brown.
STRUCTURE: Not determined.
ALTERATION: Very altered to smectite and iron hydroxides.
VEINS/FRACTURES: Brecciated in part.

UNIT 27: APHYRIC TO MODERATELY PLAGIOCLASE-OLIVINE PHYRIC BASALT

15R-3, Pieces 11-14, and 15R-4, Pieces 1-8

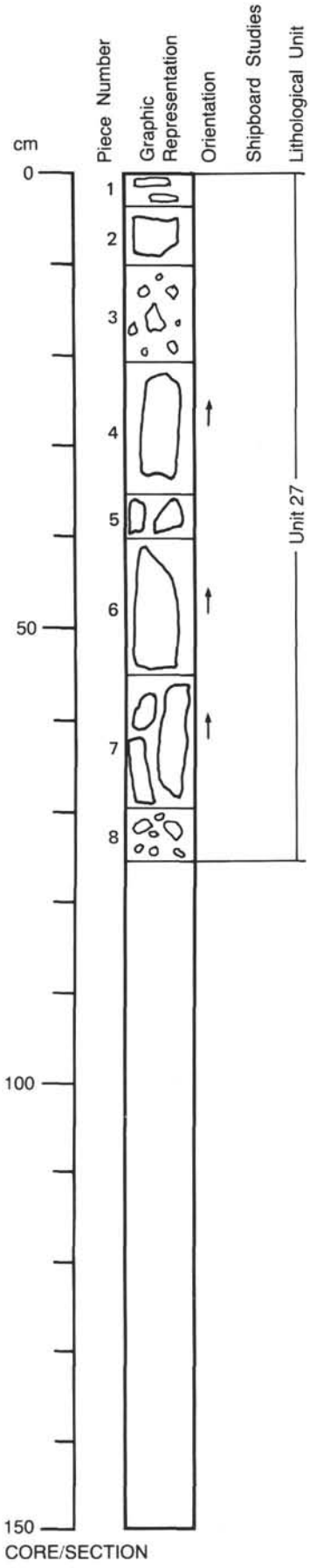
CONTACTS: Not determined.
PHENOCRYSTS: Pieces 15R-3, 11-13: aphyric. Piece 15R-3,14:
Plagioclase - 7%, 1-2 mm.
Pyroxene - 1%, 1 mm.
Olivine - 2-3%, 1 mm, altered to iddingsite.
GROUNDMASS: Pieces 15R-3, 11, 12, and 13: microcrystalline.
Piece 15R-3, 14: fine grained.
VESICLES: ~10%, 1-20 mm, filled with zeolites, calcite, and green clay minerals.
COLOR: Red-brown.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: Randomly distributed 1-2 mm, zeolites, chlorite, and celadonite(?).
ADDITIONAL COMMENTS: Unit has distinct red-brown color. Piece 11, top of lava flow?

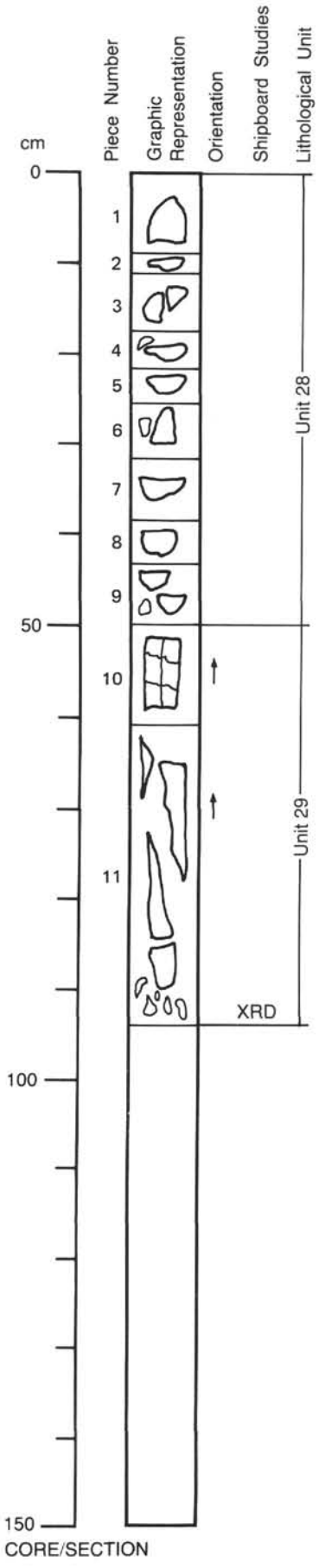
120-747C-15R-4

UNIT 27: CONTINUED

PIECES 1-8

See Section 120-747C-15R-3





120-747C-16R-1

UNIT 28: APHYRIC TO MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE PHYRIC BASALT

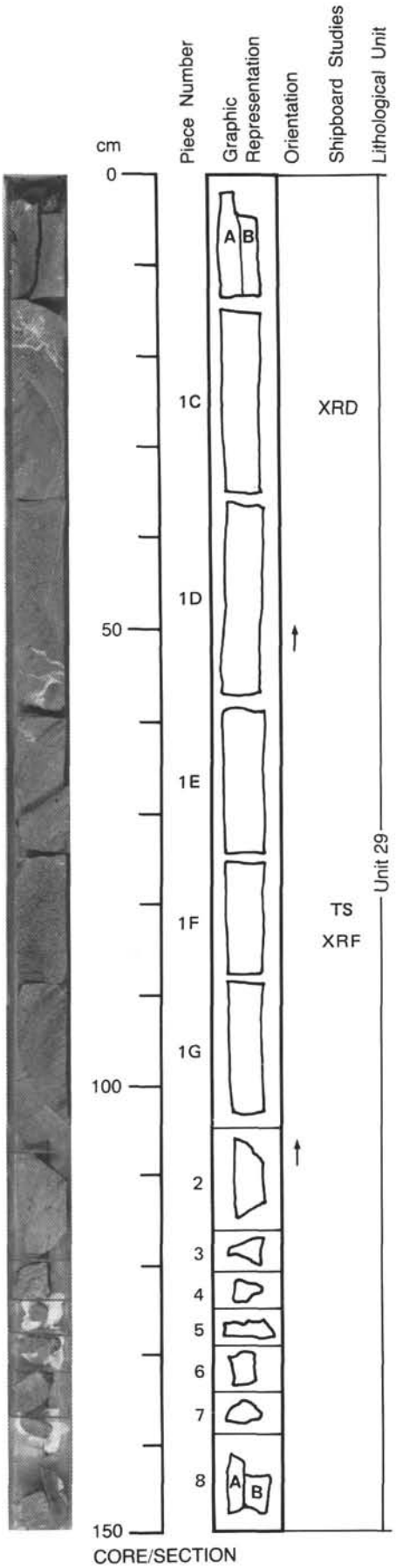
Pieces 1-9

CONTACTS: Not determined.
PHENOCRYSTS: Pieces 2-7 and 9: aphyric.
Plagioclase - 5%, 3 mm (Pieces 1 and 8).
Clinopyroxene - 2%, 1 mm (Pieces 1 and 8).
Olivine - 2%, 2 mm (Piece 1).
GROUNDMASS: Pieces 2-7 and 9: microcrystalline to fine-grained. Pieces 1 and 8: fine-grained.
VESICLES: Pieces 2-7 and 9: up to 15%, filled with zeolites and green clay minerals. Pieces 1 and 8: none.
COLOR: Pieces 2-7 and 9: dark brownish gray. Pieces 1 and 8: gray, speckled.
STRUCTURE: Not determined.
ALTERATION: Pieces 2-7 and 9: Strongly altered to smectite and iron hydroxides.
VEINS/FRACTURES: None.

UNIT 29: MODERATELY PLAGIOCLASE-CLINOPYROXENE PHYRIC BASALT

Pieces 10-11

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 10%, 1-3 mm.
Pyroxene - 1-5%, 1-3 mm.
GROUNDMASS: Fine-grained (plagioclase, clinopyroxene).
VESICLES: 1%, 1-3 mm, infilled with zeolites.
COLOR: Greenish gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: (?)%, 0.5-1.5 mm, calcite and green clay minerals.

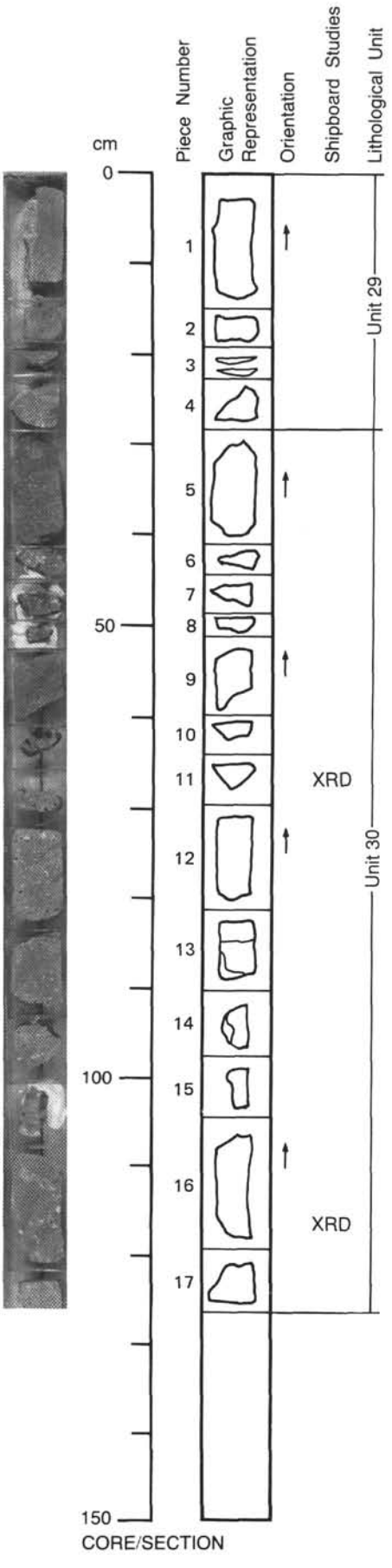


120-747C-16R-2

UNIT 29: CONTINUED

16R-2, Pieces 1-7, and 16R-3, Pieces 1-4

CONTACTS: Not determined.
PHENOCRYSTS:
Plagioclase - 5%, 1-3 mm.
Clinopyroxene - 5%, 1-3 mm.
GROUNDMASS: Microcrystalline.
VESICLES: < 5%, infilled with green clay minerals.
COLOR: Gray, speckled.
STRUCTURE: Not determined.
ALTERATION: Slightly altered.
VEINS/FRACTURES: (?)%, 1-8 mm, infilled with zeolites.



120-747C-16R-3

UNIT 29: CONTINUED

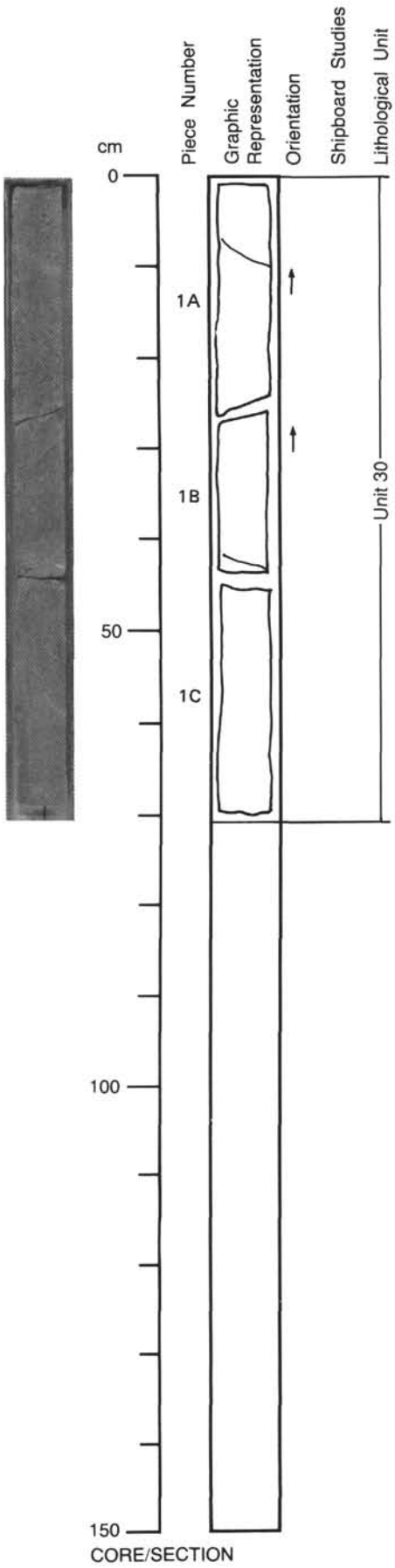
Pieces 1-4

See Section 120-747C-16R-2

UNIT 30: APHYRIC BASALT

Pieces 5-17

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS:
Pieces 5-8: Microcrystalline.
Pieces 9-17: Fine-grained, coarsening down section.
VESICLES: Pieces 5-8: 10-25%, 1-7 mm, irregular, infilled with zeolites and green clay minerals.
Pieces 9-17: 2%, 1-2 mm, up to 4 cm (Pieces 16-17), elongated, filled with pink zeolite and green clay minerals.
COLOR: Piece 5: red-brown; Pieces 6-8: brown-gray; Pieces 9-17: medium gray.
STRUCTURE: Not determined.
ALTERATION: Slight to moderate.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Piece 5 (top) has 2-3 cm, red colored, chilled, vesicle-poor zone. Probably oxidized top of lava flow.

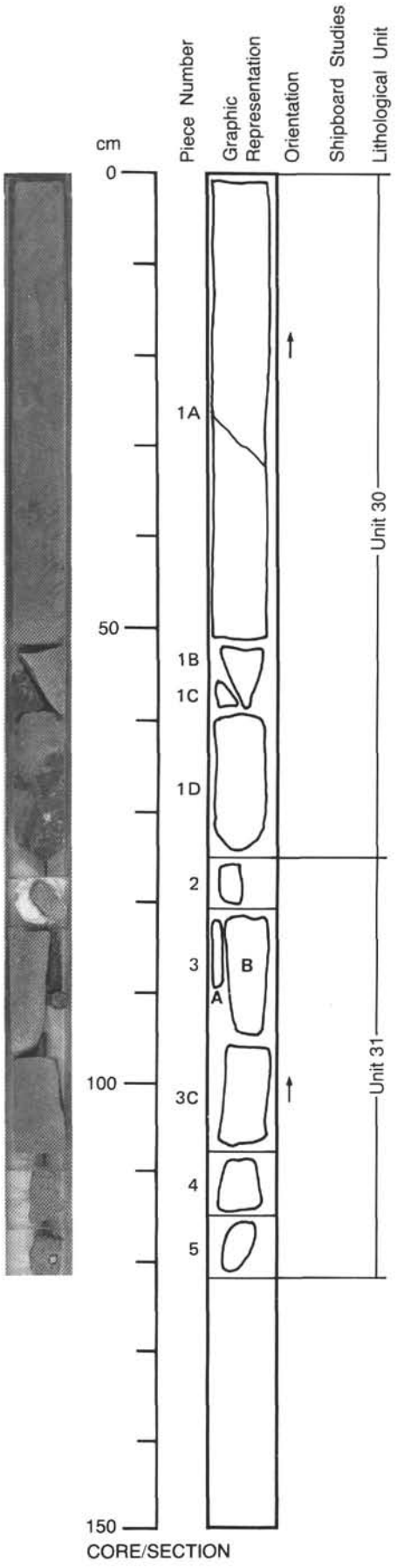


120-747C-16R-4

UNIT 30: CONTINUED

16R-4, Pieces 1A-1C, and 16R-5, Pieces 1A-1D

CONTACTS: Not determined.
PHENOCRYSTS: Clinopyroxene - < 1%, 2-3 mm, euhedral.
GROUNDMASS: Fine-grained. Becoming finer grained toward base of unit (Section 16R-5).
VESICLES: 1%, up to 5 mm, semi-circular, infilled with clays and zeolites.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Slight.
VEINS/FRACTURES: (?)%, thin (0.5 mm), filled by zeolites.
ADDITIONAL COMMENTS: Pieces 16R-5, 1B, 1C, and 1D are brecciated (base of flow?). Fragments of more vesicular and fine grained basalts are cemented by lava matrix.



120-747C-16R-5

UNIT 30: CONTINUED

Pieces 1A-1D

See Section 120-747C-16R-4

UNIT 31: APHYRIC BASALT

Pieces 2-5

CONTACTS: Not determined.
PHENOCRYSTS: Aphyric.
GROUNDMASS: Fine-grained.
VESICLES: Piece 5: 5%, 8 mm, irregular, infilled with green clay minerals.
COLOR: Gray.
STRUCTURE: Not determined.
ALTERATION: Moderate.
VEINS/FRACTURES: None.