3. SITE 526[1]

Shipboard Scientific Party[2]

HOLE 526[3]

Date occupied: 14 July 1980

Date departed: 14 July 1980

Time on hole: 9 hr., 46 min.

Position: 30°07.36′S; 03°08.28′E

Water depth (sea level; corrected m, echo-sounding): 1054

Water depth (rig floor; corrected m, echo-sounding): 1064

Bottom felt (m, drill pipe): 1065.5

Penetration (m): 6.3

Number of cores: 2

Total length of cored section (m): 6.3

Total core recovered (m): 3.6

Core recovery (%): 57

Oldest sediment cored:
Depth sub-bottom (m): 6.3
Nature: Sandy foraminifer ooze
Age: Pleistocene
Measured velocity (km/s): 1.54

HOLE 526A

Date occupied: 14 July

Date departed: 16 July

Time on hole: 1 day, 10 hr., 30 min.

Position: 30°07.36′S; 03°08.28′E

Water depth (sea level; corrected m, echo-sounding): 1054

Water depth (rig floor; corrected m, echo-sounding): 1064

Bottom felt (m, drill pipe): 1065.5

Penetration (m): 228.8

Number of cores: 46

Total length of cored section (m): 200.8

Total core recovered (m): 206.6

Core recovery (%): 100+

Oldest sediment cored:
Depth sub-bottom (m): 228.8
Nature: Rubbly fossiliferous limestone
Age: Middle Eocene
Measured velocity (km/s): 1.61

HOLE 526B

Date occupied: 16 July 1980

Date departed: 16 July 1980

Time on hole: 5 hr., 45 min.

Position: 30°07.36′S; 03°08.28′E

Water depth (sea level; corrected m, echo-sounding): 1054

Water depth (rig floor; corrected m, echo-sounding): 1064

Bottom felt (m, drill pipe): 1065.5

Penetration (m): 28.3

Number of cores: 5

Total length of cored section (m): 22.0

Total core recovered (m): 13.5

Core recovery (%): 61

Oldest sediment cored:
Depth sub-bottom (m): 28.3
Nature: Sandy foraminifer ooze
Age: Pleistocene–early Pliocene
Measured velocity (km/s): 1.63

HOLE 526C

Date occupied: 16 July 1980

Date departed: 17 July 1980

Time on hole: 1 day, 10 hr., 18 min.

Position: 30°07.36′S; 03°08.28′E

Water depth (sea level; corrected m, echo-sounding): 1054

Water depth (rig floor; corrected m, echo-sounding): 1064

Bottom felt (m, drill pipe): 1065.5

Penetration (m): 356.0

Number of cores: 21

Total length of cored section (m): 185.0

Total core recovered (m): 70.9

Core recovery (%): 38

Oldest sediment cored:
Depth sub-bottom (m): 356.0
Nature: Calcareous sand and sandstone
Age: Late Paleocene
Measured velocity (km/s): 1.57–4.45

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[1] Moore, T. C., Jr., Rabinowitz, P. D., et al., *Init. Repts. DSDP*, 74: Washington (U.S. Govt. Printing Office).

[2] Theodore C. Moore, Jr. (Co-chief Scientist), Graduate School of Oceanography, University of Rhode Island, Kingston, Rhode Island (present address: Exxon Production Research Co., P.O. Box 2189, Houston, TX 77001); Philip D. Rabinowitz (Co-chief Scientist), Lamont-Doherty Geological Observatory, Palisades, New York (present address: Department of Oceanography, Texas A&M University, College Station, TX 77843); Anne Boersma, Lamont-Doherty Geological Observatory, Palisades, New York (present address: P.O. Box 404, R.R. 1, Stony Point, NY 10980); Peter E. Borella, Deep Sea Drilling Project, Scripps Institution of Oceanography, La Jolla, California; Alan D. Chave, Geological Research Division, Scripps Institution of Oceanography, La Jolla, California (present address: Institute of Geophysics and Planetary Physics, University of California, San Diego, La Jolla, California); Gérard Duée, Laboratoire Géologie Stratigraphique, Université des Sciences et Techniques de Lille, Villeneuve d'Ascq, France; Dieter Fütterer, Geologisch-Paläontologisches Institut und Museum der Universität Kiel, Kiel, Federal Republic of Germany; Ming Jung Jiang, Department of Oceanography, Texas A&M University, College Station, Texas (present address: Robertson Research [U.S.] Inc., Houston, Tex.); Klaus Kleinert, Geologisches Institut der Universität Tübingen, Tübingen, Federal Republic of Germany; Andrew Lever, School of Environmental Sciences, University of East Anglia, Norwich, United Kingdom (present address: Department of Mineral Resources Engineering, Imperial College of Sciences and Technology, London, U.K.); Hélène Manivit, Laboratoire de Palynologie, BRGM, Orleans, France; Suzanne O'Connell, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts (present address: Lamont-Doherty Geological Observatory, Palisades, NY 10964); Stephen H. Richardson, Department of Earth and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, Massachusetts; and Nicholas J. Shackleton, Godwin Laboratory, University of Cambridge, Cambridge, United Kingdom.

[3] Principal results follow Hole 526C data.

Principal results:

1. A complete sedimentary section from the seafloor to 356 m sub-bottom was cored in a series of four holes; three were hydraulic-piston-cored and the fourth was rotary-drilled. Sediments varied from carbonate-rich oozes, often containing abundant foraminifers, to shallow-water calcareous sands.

2. A break in sediment accumulation of the pelagic section occurs in the lowermost Oligocene. Missing biostratigraphic zones in the mid-Pliocene and the upper part of the middle Miocene may indicate the presence of other small interruptions in accumulation. Within the shallow-water sand sequence found at the base of the section there is another apparent break in sediment accumulation which reaches from the upper Paleocene to the middle Eocene.

3. Carbonate preservation is good throughout the Neogene and upper Oligocene. It is moderate in the lower Oligocene and poor in the Eocene–Paleocene. This section contains the best-preserved and most fully recovered Oligocene through Pleistocene sediments recovered on Leg 74.

4. Common *Braarudosphaera* were found in Zones NP24 and NP23 of the Oligocene.

5. The average accumulation rate at this shallow site tends to be lower than at other, deeper sites in the Walvis Ridge transect. This is due primarily to the winnowing of fine-grained carbonate which is removed from the topographic highs and deposited on the flanks of the ridge. As a result, the sediments at this site tend to be enriched in the coarser-grained components. Reduced dissolution also leads to an increased accumulation rate of the sand-sized foraminifers at this site.

6. Maxima in the accumulation rate of the coarse fraction (>63 μm, dominated by foraminifers) occur in the lower Pliocene and upper part of the mid-Miocene. If it is assumed that dissolution has had little effect on the carbonate accumulation, these peaks in accumulation may represent an increased supply of carbonate to the seafloor.

7. Paleodepth estimates based on the crustal-cooling or "backtracking" technique, together with the age of the oldest fossils recovered, indicate that the site had sunk below sea level by the late Paleocene.

8. Age versus depth estimates using the crustal-cooling curve and estimates of the depth habitat of the benthic fauna show a broadly similar pattern of submergence. A rapid shoaling event is indicated by the benthic fauna of the mid- to lower-Oligocene. This may be associated with a eustatic change in sea level.

BACKGROUND AND OBJECTIVES

Geologic and Oceanographic Setting

Of all the sites in our depth transect, Site 526 is unique in many ways. First, at a depth of 1054 m (Fig. 1), it is by far the shallowest site drilled in the transect and one of the shallowest sites ever drilled by DSDP. As such, it was expected that the sedimentary section would be relatively complete and contain very well preserved calcareous fossils, particularly foraminifers. Winnow-

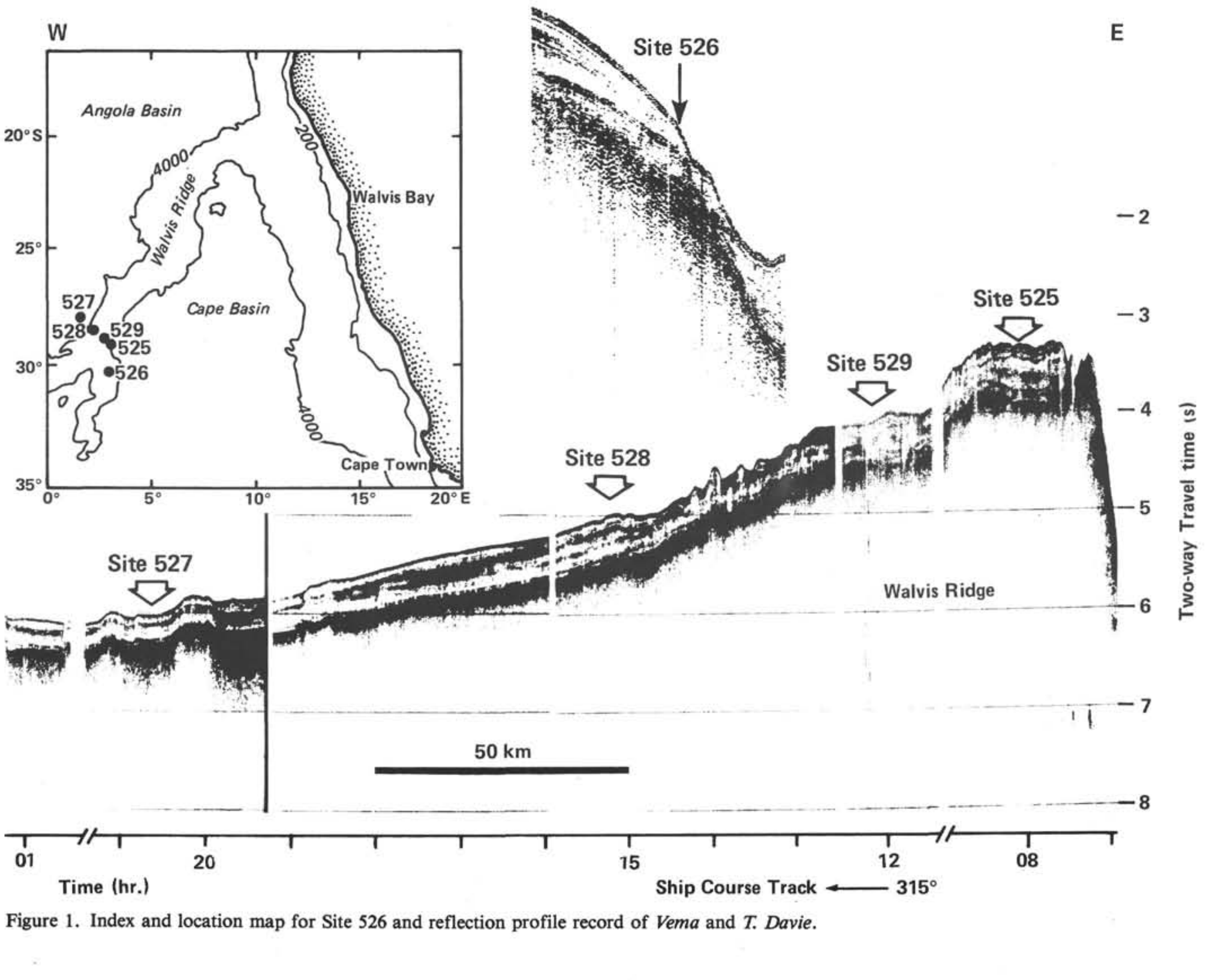

Figure 1. Index and location map for Site 526 and reflection profile record of *Vema* and *T. Davie*.

ing of the deposits by bottom currents appears to have removed much of the finer-grained material; as a result, the overall thickness of the section (0.37 s, approx. 330 m) is somewhat thinner than that at the next deeper site (Site 525).

Another difference between this site and others in the Walvis Ridge transect is that all the other sites lie on what appears to be a single structural block, whereas Site 526 lies near the crest of an adjacent block to the southwest. The crustal age of the crests of these two parts of the Walvis Ridge appears to be the same (approx. Anomaly 32 time, 70 Ma), and it is assumed that the subsidence history of the two blocks is identical. If this is correct, the application of the depth versus time crustal-cooling curve used for all the other sites indicates that Site 526 did not sink below sea level until the late Paleocene (55 Ma). Thus the crestal region of this block may have existed as an island for some 15 m.y.

Acoustic reflection records at this site (Fig. 1) show a very strong sediment surface reflector, which is probably associated with the winnowed character of the deposits, and only one prominent sub-bottom reflector overlying the basement reflector. This intermediate reflector lies at about 0.25 s sub-bottom and may be associated with an erosional hiatus or with the transition from a shallow-water depositional environment to that of the pelagic realm.

Even though Site 526 lies on a separate structural block, it is still within 100 km of the next deeper site (Site 525); thus the pelagic rain of biogenic and detrital material is assumed to be the same at Site 526 as it is at all other sites in the transect. The major oceanographic difference is its water depth.

Not only is it likely that winnowing by bottom currents has had a strong effect on the character of the sediments recovered at Site 526, but the character of the bottom waters at the depth of this site is markedly different. All other sites in the Walvis Ridge transect lie within the Angola Basin. Presently the bottom waters of this basin are dominated by North Atlantic Deep Water (NADW). Site 526, however, lies well within the depth interval covered by Antarctic Intermediate Water. This deep water mass is somewhat warmer, lower in dissolved oxygen and salt content, and higher in nutrients than NADW.

Scientific Objectives

The scientific objectives of this site, as part of the Walvis Ridge transect, focus on three main topics: (1) the history of bottom waters within the eastern South Atlantic, (2) the development of detailed biostratigraphies and paleomagnetic stratigraphies for this area, and (3) the tectonic evolution of the Walvis Ridge.

Results of previous drilling in the Angola Basin on this and other DSDP legs indicate marked changes in both the erosion of sediments and the corrosiveness of bottom waters with respect to calcite. Site 526 provides a comparison site which is assumed to have equivalent supply rates of biogenic debris but may have had a different history of erosion and dissolution.

Through most of the Tertiary, the benthic faunas at this site have been affected by waters of only intermediate depth. Thus they provide an important contrast to the benthic faunas in the deeper sites. Benthic faunas change rapidly with depth in the upper 1000 m; thus the extremely shallow location of this site affords us the opportunity to use the benthic population to check the consistency of our paleodepth estimates (based on simple crustal-cooling curves) as well as to determine whether or not there have been large differential crustal movements between the two structural blocks we have sampled.

This shallow location also assures good preservation of the carbonate fossils and provides a nearly complete Neogene and upper Paleogene section for biostratigraphic studies.

OPERATIONS

Glomar Challenger departed Site 528 on 13 July 1980 at 1336 hr. Continuous seismics, magnetics, and bathymetry were collected en route to Site 526.

A geophysical site survey on all of the Walvis Ridge sites to be drilled on this leg (Rabinowitz and Simpson, 1979) was conducted prior to Leg 74 by *Thomas B. Davie* of the University of Cape Town. Other geological/geophysical ships' tracks in the vicinity which were of importance in the site selection included those of *Vema* (L-DGO) and *Atlantis II* (WHOI). A predrilling survey by *Challenger* in the site area was not necessary.

A beacon had been dropped at this site prior to drilling Site 527 (see Site 527 operations report). We located the beacon without encountering problems and steamed over it before retrieving our towed geophysical equipment. We were at Site 526 at 0320 hr., 14 July 1980.

At Site 526 we planned to piston-core as deep as possible and then to rotary core to and through basement. The basement depth was 0.37 s of two-way seismic reflection time.

Four holes were drilled at this site (Table 1).

Hole 526

Two piston cores were obtained with a total penetration of 6.3 m sub-bottom (57% recovery). We encountered very sandy layers near the surface and bent a core barrel. We suspected that part of the bottom hole assembly was also bent and thus lifted the drill string. No bends were observed. We decided on the next hole at this site to wash with the piston core below the sand layers.

Hole 526A

We washed to 28.0 m and then proceeded to piston core continuously from 28.0 to 228.8 m sub-bottom (recovery rate an outstanding 100%). We were forced to terminate the piston coring when we encountered a hard carbonate rubble.

Hole 526B

After completion of Hole 526A, we lifted the drill string to the mud line, offset very slightly (negligible), and piston-cored between 6.3 and 28.3 m sub-bottom (recovery rate 61%). This was the sandy section missed in Holes 526 and 526A.

Table 1. Coring summary, Site 526.

Core No.	Date (July 1980)	Time	Depth from Drill Floor (m) Top Bottom	Depth below Seafloor (m) Top Bottom	Length Cored (m)	Length Recovered (m)	Recovery (%)
Hole 526							
1	14	1110	1065.5–1067.4	0.0–1.9	1.9	1.9	100
2	14	1210	1067.4–1071.8	1.9–6.3	4.4	1.7	39
					6.3	3.6	57
Hole 526A							
1	15	0000	1093.5–1097.9	28.0–32.4	4.4	4.6	100+
2	15	0040	1097.9–1102.3	32.4–36.8	4.4	4.4	100
3	15	0118	1102.3–1106.7	36.8–41.2	4.4	4.4	100
4	15	0158	1106.7–1111.1	41.2–45.6	4.4	4.9	100+
5	15	0235	1111.1–1115.5	45.6–50.0	4.4	4.4	100
6	15	0313	1115.5–1119.9	50.0–54.4	4.4	4.8	100+
7	15	0348	1119.9–1124.3	54.4–58.8	4.4	4.9	100+
8	15	0423	1124.3–1128.7	58.8–63.2	4.4	5.1	100+
9	15	0456	1128.7–1133.1	63.2–67.6	4.4	4.0	91
10	15	0539	1133.1–1137.5	67.6–72.0	4.4	4.2	95
11	15	0620	1137.5–1141.9	72.0–76.4	4.4	5.0	100+
12	15	0650	1141.9–1146.3	76.4–80.8	4.4	4.3	98
13	15	0718	1146.3–1150.7	80.8–85.2	4.4	4.8	100+
14	15	0750	1150.7–1155.1	85.2–89.6	4.4	5.0	100+
15	15	0824	1155.1–1159.5	89.6–94.0	4.4	4.6	100+
16	15	0852	1159.5–1163.9	94.0–98.4	4.4	4.9	100+
17	15	0923	1163.9–1168.3	98.4–102.8	4.4	4.8	100+
18	15	0953	1168.3–1172.7	102.8–107.2	4.4	4.5	100+
19	15	1023	1172.7–1177.1	107.2–111.6	4.4	4.9	100+
20	15	1116	1177.1–1181.5	111.6–116.0	4.4	4.9	100+
21	15	1148	1181.5–1185.9	116.0–120.4	4.4	5.0	100+
22	15	1215	1185.9–1190.3	120.4–124.8	4.4	4.8	100+
23	15	1251	1190.3–1194.7	124.8–129.2	4.4	5.3	100+
24	15	1318	1194.7–1199.1	129.2–133.6	4.4	4.8	100+
25	15	1347	1199.1–1203.5	133.6–138.0	4.4	4.8	100+
26	15	1414	1203.5–1207.9	138.0–142.4	4.4	4.8	100+
27	15	1442	1207.9–1212.3	142.4–146.8	4.4	4.5	100+
28	15	1513	1212.3–1216.7	146.8–151.2	4.4	4.6	100+
29	15	1537	1216.7–1221.1	151.2–155.6	4.4	4.8	100+
30	15	1604	1221.1–1225.5	155.6–160.0	4.4	4.1	93
31	15	1630	1225.5–1229.9	160.0–164.4	4.4	5.0	100+
32	15	1702	1229.9–1234.3	164.4–168.8	4.4	3.9	89
33	15	1750	1234.3–1238.7	168.8–173.2	4.4	3.4	77
34	15	1850	1238.7–1243.1	173.2–177.6	4.4	4.2	95
35	15	1915	1243.1–1247.5	177.6–182.0	4.4	4.2	95
36	15	1945	1247.5–1251.9	182.0–186.4	4.4	4.8	100+
37	15	2020	1251.9–1256.3	186.4–190.8	4.4	5.0	100+
38	15	2107	1256.3–1260.7	190.8–195.2	4.4	3.0	68
39	15	2135	1260.7–1265.1	195.2–199.6	4.4	4.0	91
40	15	2212	1265.1–1269.5	199.6–204.0	4.4	4.5	100+
41	15	2250	1269.5–1273.9	204.0–208.4	4.4	4.5	100+
42	15	2340	1273.9–1278.3	208.4–212.8	4.4	2.9	66
43	16	0017	1278.3–1282.7	212.8–217.2	4.4	5.0	100
44	16	0052	1282.7–1287.1	217.2–221.6	4.4	4.0	91
45	16	0118	1287.1–1291.5	221.6–226.0	4.4	4.5	100+
46	16	0310	1291.5–1294.3	226.0–228.8	2.8	2.8	100
				Totals	200.8	206.6	100+
Hole 526B							
1	16	0649	1071.8–1076.2	6.3–10.7	4.4	1.6	36
2	16	0737	1076.2–1080.6	10.7–15.1	4.4	0.0	0
3	16	0805	1080.6–1085.0	15.1–19.5	4.4	4.0	91
4	16	0840	1085.0–1089.4	19.5–23.9	4.4	3.1	70
5	16	0915	1089.4–1093.8	23.9–28.3	4.4	4.8	100+
				Totals	22.0	13.5	61
Hole 526C							
1	16	1915	1098.5–1108.0	33.0–42.5	9.5	1.0	11
2	16	2005	1108.0–1117.5	42.5–52.0	9.5	9.7	100+
3	16	2115	1117.5–1122.0	52.0–56.5	4.5	3.7	82
Wash			1122.0–1260.0				
4	17	0058	1260.0–1269.5	194.5–204.5	9.5	9.7	100+
5	17	0133	1269.5–1279.0	204.5–213.5	9.5	9.8	100+
6	17	0243	1279.0–1283.5	213.5–218.0	4.5	3.2	71
7	17	0320	1283.5–1288.5	218.0–223.0	5.0	6.6	100+
8	17	0425	1288.5–1298.0	223.0–232.5	9.5	6.2	65
9	17	0537	1298.0–1307.5	232.5–242.0	9.5	1.0	11
10	17	0625	1307.5–1317.0	242.0–251.5	9.5	0.0	0
11	17	0705	1317.0–1326.5	251.5–261.0	9.5	trace	0
12	17	0748	1326.5–1336.0	261.0–270.5	9.5	7.8	82
13	17	0839	1336.0–1345.5	270.5–280.0	9.5	2.2	23
14	17	0942	1345.5–1355.0	280.0–289.5	9.5	2.1	22
15	17	1025	1355.0–1364.5	289.5–299.0	9.5	2.5	26
16	17	1101	1364.5–1374.0	299.0–308.5	9.5	2.3	24
17	17	1152	1374.0–1383.5	308.5–318.0	9.5	0.1	1
18	17	1255	1383.5–1393.0	318.0–327.4	9.5	0.7	7
19	17	1324	1393.0–1402.5	327.5–337.0	9.5	1.3	14
20	17	1423	1402.5–1412.5	337.0–346.5	9.5	0.8	8
21	17	1520	1412.5–1422.0	346.5–356.0	9.5	0.2	2
				Totals	185.0	70.9	38

Hole 526C

We rotary-cored a total length of 185.0 m (recovery rate 38%). We repeated two important intervals obtained in the piston core (33.0–56.5 m sub-bottom; 194.5–228 m sub-bottom). We encountered a very thick fossiliferous sandy section from about 242 to 356 m sub-bottom, which created obvious hole problems. We terminated the hole because of the instability created by the thick sand layer.

Pressure core barrel and Drill Bit Motion Indicator tests were run with very encouraging results.

SEDIMENT LITHOLOGY

The sediments cored at Site 526 were recovered from sub-bottom depths between 0 and 356 m and are late Pleistocene to late Paleocene(?) in age (see Fig. 2). Nine lithologies are present: sandy foraminiferal ooze, nannofossil–foraminifer ooze, foraminifer–nannofossil ooze, nannofossil ooze, nannofossil chalk, foraminifer–nannofossil chalk, limestone, rubbly fossiliferous limestone, and calcareous sands and silts. The $CaCO_3$ content of these lithologies is high (generally greater than 95%). By considering lithology, color, and intensity of bioturbation (where recognized), five lithologic units are recognized.

Unit I (0–133.6 m)

The uppermost unit consists of predominantly homogeneous white (N9) sand-sized foraminifer ooze, nannofossil–foraminifer ooze, foraminifer–nannofossil ooze, and nannofossil ooze and was recovered in Hole 526, Cores 1 and 2; Hole 526A, Cores 1–24; Hole 526B, Cores 1–5; and Hole 526C, Cores 1–3. In the top 40 m of the unit, very pale orange (10YR6/2), pale yellowish brown (10YR6/2), and very light gray (N8) are apparent; similarly, the base of the unit in Hole 526A, Cores 19–24, shows very pale orange (10YR8/2) hues. In between the color is white (N9). The unit shows no sedimentary features, and bioturbation is evident between 30 and 60 m sub-bottom. In general, the foraminifer content decreases from 90% in Hole 526B, Core 1, to 12% in Hole 526A, Core 24, and this parameter is used to define Subunits Ia, Ib, and Ic (Fig. 2).

Subunit Ia: Sand-sized Foraminifer Ooze (Hole 526, Core 1; 0–1.8 m)

In this subunit, foraminifers constitute 73–90% of the sediment; the rest are nannofossils, echinoid spines, mollusk and pteropod debris, ostracodes, and fish remains. The sediment color is very light gray (N8) and very pale orange (10YR 8/2).

Subunit Ib: Nannofossil–Foraminifer Ooze and Foraminifer–Nannofossil Ooze (Hole 526, Core 2; Hole 526A, Cores 1–22; Hole 526B, Cores 1–5; Hole 526C, Cores 1–3; 1.8–124.8 m)

This is a predominantly white (N9) or bluish white (5B9/1) biogenic ooze with very pale orange (10YR8/2) layers occurring near contacts with Subunits Ia and Ic.

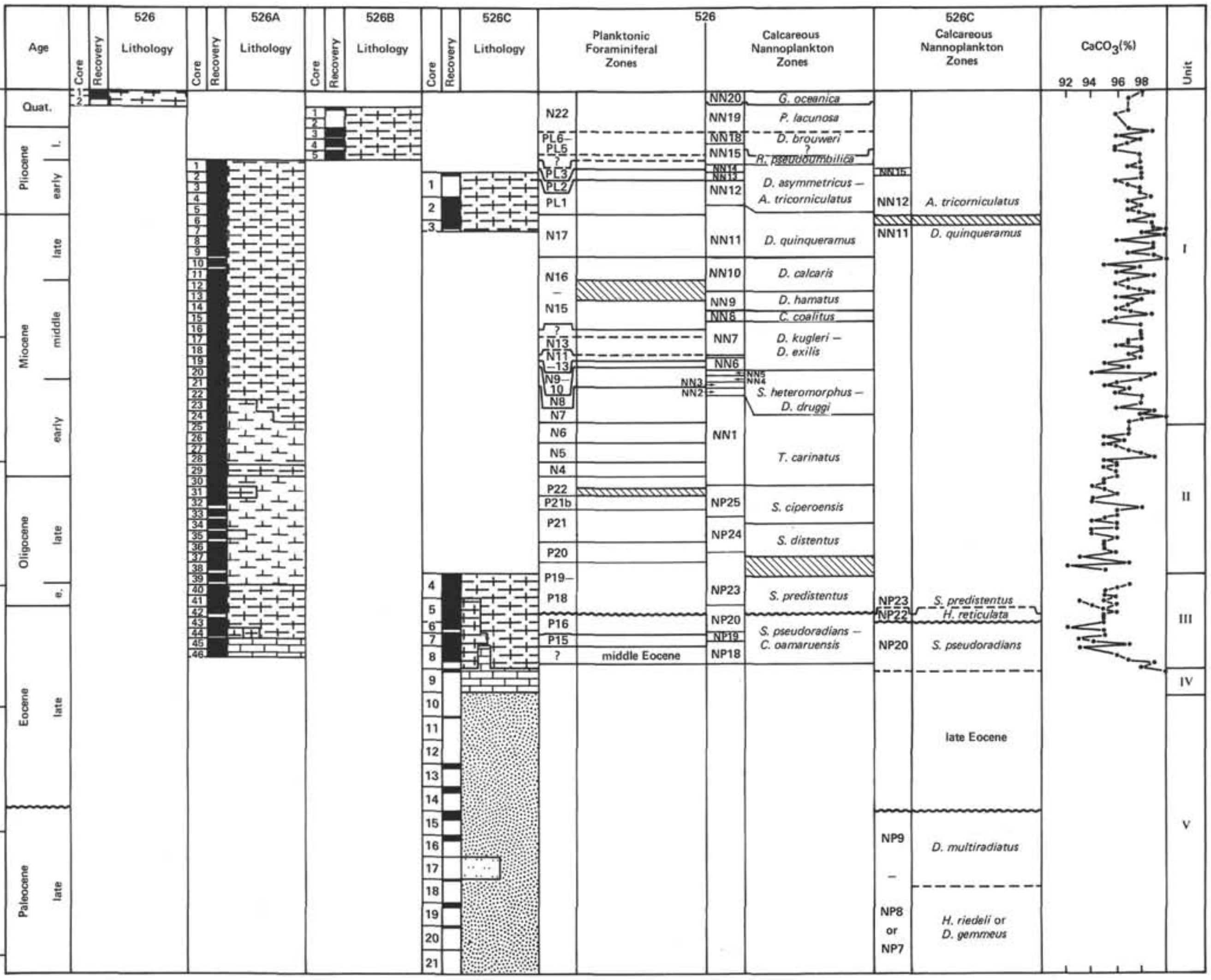

Figure 2. Lithostratigraphic and biostratigraphic summary for Site 526 (see Introduction, this volume, for explanation of symbols used).

It is distinguished from the sediment above by its lower foraminifer content and from that below by its greater foraminifer content. The top of the subunit (Hole 526, Core 2, and Hole 526B, Core 1) contains pteropod, pelecypod, echinoid, gastropod, ostracode, and fish debris and shows some evidence of burrow mottling and *Planolites*(?) burrows. In addition, washing the sediment and sieving the coarse fraction recovered several pyritized burrows up to 2 cm long in Hole 526A, Cores 5, 8, and 12, and a single solitary scleractinian coral in Hole 526A, Core 7.

Subunit Ic: Intercalated Foraminifer-Nannofossil Ooze and Nannofossil Ooze (Hole 526A, Core 23 and 24; 124.8–133.6 m)

This subunit is distinguished from the rest of Unit I by its nannofossil ooze content: approximately 33% of Hole 526A, Core 23, and 66% of Core 24. Also, this subunit is bioturbated, (e.g., halo burrows in Core 24) and is very pale orange (N9 to 10YR 8/2) and white to pinkish gray (N9–5YR 8/1). Subunit Ic is transitional in composition with Subunit Ib and Unit II.

Unit II (133.6–199.6 m)

The recovered sediment is a nannofossil-rich unit in contrast to Units I and III, which are relatively foraminifer-rich. Sediments are nannofossil ooze with minor intercalated foraminifer-nannofossil ooze and nannofossil chalk. The unit has no preserved primary sedimentary structures. Colors are primarily very pale orange (10YR8/2), very pale brown (10YR8/4), pinkish white (7.5YR8/2), pinkish gray (7.5YT6/2 and 5YR8/1), and pink (7.5YR8/4). Color and biogenic sedimentary structures distinguish two subunits.

Subunit IIa: Nannofossil Ooze and Foraminifer-Nannofossil Ooze (Hole 526A, Cores 25–29; 133.6–155.6 m)

Bioturbation in the top 22 m of Unit II is slight to moderate with halo burrows, *Planolites*, and vertical burrows identified within the foraminifer-nannofossil ooze. Large fragments (3–4 cm in diameter) of pelecypod debris are present in Core 29. Subunit IIa is very pale orange (10YR 8/2) with minor pinkish white (7.5YR 8/2) and very pale brown (10YR 8/4) layers.

Subunit IIb: Nannofossil Ooze, Nannofossil Chalk, and Foraminifer-Nannofossil Ooze (Hole 526A, Cores 30-39; 155.6-199.6 m)

In contrast to Subunit IIa, this part of the sedimentary record shows little or no evidence of bioturbation and is predominantly pinkish gray (5YR8/1), pinkish white (7.5YR8/2), and pink (7.5YR8/4). Bioturbation is present mainly as faint mottles, with some possible *Planolites, Zoophycos*, and halo burrows. Pelecypod debris is again observed. An important constituent of Cores 30-36 is the nannofossil *Braarudosphaera*, which is first noticed in trace quantities in Core 30 and increases to 95% of the sediment in the brecciated chalk of Core 35. A temporary increase in the number of foraminifers is noted in the foraminifer-nannofossil chalk recovered in Core 31.

Unit III (199.6-221.6 m)

Foraminifers account for >10% of the sediment in Unit III, which consists of foraminifer-nannofossil ooze with minor nannofossil ooze and foraminifer-nannofossil chalk. As with the other units, no primary sedimentary structures are preserved, and evidence of bioturbation is generally absent. The unit is predominantly pinkish gray (5YR8/1), pinkish white (7.5YR8/2), and pink (5YR8/3).

Subunit IIIa: Foraminifer-Nannofossil Ooze and Foraminifer-nannofossil Chalk (Hole 526A, Cores 40-43; 199.6-217.2 m; Hole 526C, Cores 4-7; 194.5-223.0 m)

This subunit consists of pink (5YR8/3), pinkish white (7.5YR8/2), and pinkish gray (5YR8/1) foraminifer-nannofossil ooze, which in Hole 526C has been partially lithified to chalk. Faint burrow mottling is present only in Cores 40 and 41 (Hole 526A), and *Braarudosphaera* is again observed in Cores 41 and 42.

Subunit IIIb: Foraminifer-Nannofossil Ooze, Foraminifer-Nannofossil Chalk, and Nannofossil Ooze (Hole 526A, Core 44; 217.2-221.6 m; Hole 526C, Core 8, Sections 1-4; 223.0-229.0 m)

Subunit IIIb is found in two cores and consists of intercalated pink (5YR8/3) and pinkish gray (5YR8/1) nannofossil ooze, foraminifer-nannofossil ooze, and foraminifer-nannofossil chalk. Primary sedimentary structures and evidences of bioturbation are absent.

Unit IV (Hole 526A, Cores 45 and 46; 221.6-228.8 m; Hole 526C, Core 8, Section 5-Core 9; 229.0-242.0[?] m)

Unit IV is composed of a white (N9) rubbly, highly fossiliferous limestone. The "rubble" consists of friable, vuggy oncoliths, crinoid fragments, pelecypod debris, and bryozoans and seems to be a primary textural characteristic rather than an artifact of drilling disturbance. Nannofossils are present in this unit. The unit appears to show several fining-upward sequences from pebbles to medium sand. This repeated graded sequence was cored with the HPC and is interpreted as being real. Because the limestone is rubbly and fragmented and contains both deep- and shallow-water fauna, it is reasonable to suggest that this material is transported, possibly a channel fill or small-scale turbidite (see Summary and Conclusions, this volume). In Hole 526C, Cores 10 and 11, recovery was zero, leaving the location of the base of this unit in question.

Unit V (242.0-356.0 m)

The bottommost unit is composed of very pale orange (10YR8/2), olive yellow (2.5Y6/6), light yellowish brown (2.5Y6/4), very pale brown (10YR7/4), and yellow (10 YR7/6) fossiliferous calcareous sands and sandstone. Particles are angular to subangular. The calcareous grains are recrystallized calcite, benthic foraminifers, bryozoans, echinoid spines, and pelecypod debris, and the noncalcareous fraction (20-40%) is volcanic glass, palagonite, quartz, K-feldspar, and glauconite(?). Grain size is generally coarse to fine sand and in some cases seems to fine upward, but this is probably caused by drilling. Many of the grains have iron-oxide coatings, which give the unit its overall yellow brown appearance.

Subunit Va: Calcareous Sand (Hole 526C, Cores 12-16; 261.0-308.5 m)

The sediment color is very pale orange (10YR 8/2), very pale brown (10YR 8/4), grayish orange (10YR7/4), and dark grayish orange (10YR6/6) with only one core (Core 15) being olive yellow (2.5Y 6/6). The sediments are entirely coarse- to fine-grained calcareous sands.

Subunit Vb: Calcareous Silt, Calcareous Sand, and Calcareous Sandstone (Hole 526C, Cores 17-21; 308.5-356.0 m)

This interval differs from the one above by color and degree of cementation of the sediments. Subunit Vb is generally olive yellow (2.5Y6/6), although pebbles of pinkish gray (5YR8/1), poorly cemented calcareous sandstones are also present. These pebbles are well rounded, but this may have been caused by abrasion during drilling since the material is relatively soft and friable. The material in Cores 18 and 19 is lithified sandstone, and dark green glauconite(?) grains were found in Cores 19 and 20. The high glauconite(?) content (~7%) of the sandstone in Core 19 probably gives it its green gray (2.5Y6/2) color. The last sediments recovered from Site 526 were light yellowish brown (2.5Y6/4) gravel, sand, and sandstone in the core catcher of Core 21. The gravel in this case was shell debris, including two large (3 × 4 cm) mollusk fragments.

Concluding Remarks

The units present define two different sedimentary facies. Units I, II, and III appear to be the result of biogenic calcareous sedimentation in a relatively deep-water environment, and the high percentage of sand-sized foraminifers may indicate that winnowing has removed much of the finer-grained biogenic material.

In comparison, Units IV and V seem to indicate relatively shallow-water deposition. The presence of abundant shell debris, oncoliths, and glauconite together with iron-oxide coatings on some of the grains in a sequence of immature calcareous sands and sandstones suggests these sediments were deposited in a well-oxygenated shelf

Table 2. Summary of shipboard pore water study, Site 526.

Sample No.	DSDP Sample (interval in cm)	Sub-bottom Depth (m)	pH	Alkalinity (meq/l)	Salinity (‰)	Calcium (mmoles/l)	Magnesium (mmoles/l)	Chlorinity (‰)
	IAPSO		7.408	2.406	35.2	—	—	—
	SSW		7.924	2.251	35.8	10.72	53.13	19.90
71	1-1, 143–150	29.43–29.50	7.258	2.607	35.2	10.88	52.82	19.20
72	6-2, 143–150	52.93–53.00	7.181	2.834	35.2	11.18	51.74	19.17
73	11-2, 140–150	74.90–75.00	7.204	2.566	34.9 (35.2)	11.26	51.84	19.27
74	16-2, 144–150	96.94–97.00	7.095	2.677	34.9 (35.2)	11.40	51.67	19.27
75	21-2, 140–150	118.90–119.00	7.262	2.733	35.2	11.43	51.62	19.34
76	26-2, 140–150	140.90–141.00	7.155	2.635	35.2	11.51	51.90	19.48
77	31-2, 140–150	162.90–163.00	7.245	2.643	35.2	11.49	52.16	19.69
78[a]	36-2, 140–150	184.90–185.00	7.230	2.489	35.5	11.69	53.33	19.86
79	41-2, 145–150	206.93–207.00	7.234	2.703	35.5	11.66	52.81	19.69
80	45-2, 145–150	224.53–224.60	7.288	2.725	35.5	11.69	53.12	19.66

[a] Possible drill water contamination.

Table 3. X-ray diffraction analysis, Site 526.

Sample (level in cm)		Minerals Identified	Remarks
	526A-43, 3 cm	Calcite, quartz	Pinkish carbonate
	526C-2-2, 105 cm	Calcite, unassigned peaks	Purple gray patch
	526C-16, 2 cm	Calcite, K-feldspar, quartz	Bulk sediment
Coarse fraction	526C-16, 2 cm; 526C-15, 2 cm	K-feldspars (orthoclase, anorthoclase, possible microcline)	Selected brown sand grain

sea. The calcareous material contains a high amount of recrystallized calcite, in contrast to Units I, II, and III.

INORGANIC GEOCHEMISTRY—INTERSTITIAL WATER STUDIES

The results of the interstitial water studies for Site 526 are summarized in Table 2 and shown graphically in Figure 3.

Salinity, alkalinity, and chlorinity are all fairly constant and are all within the range of normal seawater (see surface seawater, Fig. 3). pH is also constant, but values within the sediment pore waters are slightly lower than surface waters.

The calcium and magnesium curves are also constant, which is not true at the other sites. The vertical gradients indicate that calcium is not being dissolved and that magnesium is not being removed from the pore waters and precipitated as recrystallized carbonate. These trends indicate that this site was always above the lysocline and calcium carbonate compensation depth, at least as far back as the early Eocene.

No correlation exists between interstitial pore waters and lithology.

X-RAY DIFFRACTION ANALYSIS

Because of the highly calcareous nature of the sediments at Site 526, only five samples were analyzed by XRD. The results are shown in Table 3.

In Core 2, Hole 526C, a purple gray patchy sediment was discovered in the white soupy ooze. After concentration of the fine fraction, the X-ray diffractograms showed very strong calcite peaks as well as unassigned peaks at 44.6, 30.9, and 26.5°2θ. The peak at 30.9°2θ could be the calcite 006 peak, but this is usually very weak compared with the other calcite peaks. However, in this case it is the second-strongest peak. Pinkish gray carbonate material from Hole 526A, Core 43, was also analyzed and showed only calcite and minor quartz peaks.

The calcareous sands of Unit V were analyzed. Bulk analysis of the sand from Hole 526C, Core 16, showed the dominance of calcite as well as K-feldspar and quartz. From the coarse fraction of Cores 15 and 16, several brown grains were isolated, crushed, and analyzed. The samples were acid-treated to dissolve any carbonate. The insoluble residue was composed of K-feldspar (orthoclase and anorthoclase and possibly micro-

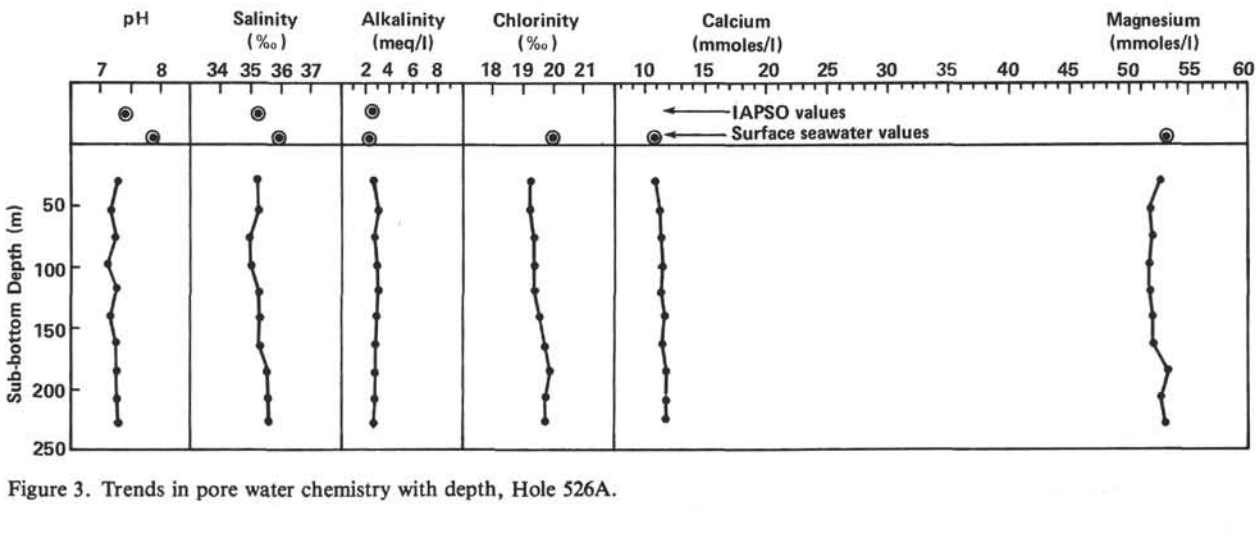

Figure 3. Trends in pore water chemistry with depth, Hole 526A.

cline as well). The presence of iron oxides or hydroxides was suspected, but unfortunately the HCl also dissolved some of the brown stain on the surface of the grains. These phases commonly form amorphous coatings on mineral grains, and it was not surprising that no hematite or goethite peaks were observed, although a broad "hump" was observed between 10° and 20°2θ in the "bulk" X-ray diffractogram from Core 16.

BIOSTRATIGRAPHY SUMMARY

Site 526, located at 30°07'S latitude and 3°08'E longitude, was drilled at a depth of 1054 m on the western arm of the Walvis Ridge. Four holes were drilled; drilling method and age are summarized as follows:

Hole	Drilling Method	Core	Age
526	HPC	1–2	Pleistocene
526A	HPC	1–46	early Pliocene–middle Eocene
526B	HPC	1–5	Pleistocene–early Pliocene
526C	Rotary Coring	1–20	early Pliocene–late Paleocene

Planktonic foraminifers and nannofossils were recovered from all cores from the Pleistocene to the middle Eocene; in cores below this level only a few nannofossils and large benthic foraminifers are present. Echinoids and ostracodes are found continuously through the section; bryozoans and mollusks, considered redeposited, occur in the Pliocene, Oligocene, and upper Eocene. The shallow-water benthic faunas of the middle Eocene through upper Paleocene, including bryozoans, large foraminifers, some smaller benthic foraminifers, echinoids, ostracodes, and mollusks, including oysters, are considered to be in place.

Biostratigraphy, done primarily on core catcher samples, is summarized in the biostratigraphic summary diagram (Fig. 2).

Calcareous Nannoplankton

Hole 526

Pleistocene (0–6.3 m)

The two cores recovered at this hole are Quaternary in age. Sample 526-1,CC, which contains common *Gephyrocapsa oceanica* and some questionable *Emiliana huxleyi*, belongs to the NN20–NN21 zonal interval. The first core also contains a few reworked species ranging from Miocene to Pliocene. Sample 526-2,CC is attributed to Zone NN19, based on the abundant occurrence of *G. oceanica* with *Pseudoemiliana lacunosa*. The calcareous nannoplankton found in both cores are well preserved.

Hole 526A

Pliocene (28.0–50.0 m)

Hole 526A was washed down to 28.0 m, where the first core was taken. Sample 526A-1-1, 40 cm, is placed within Zone NN15 of the lower Pliocene, based on the presence of *Reticulofenestra pseudoumbilica, Discoaster tamalis*, and *Pseudoemiliana lacunosa*. Samples 526A-2,CC through 526A-4,CC are assigned to Zone NN14–NN12 because they contain *Amaurolithus delicatus*, without *Discoaster tamalis* yet with questionable *Ceratolithus acutus*. Sample 526A-5,CC probably belongs to the NN12–NN11 zonal interval. Neither *C. rugosus* nor *D. quinqueramus* are found in this core.

Miocene (54.4–155.6 m)

Very rare *Discoaster quinqueramus* or *D. berggrenii* were found in Samples 526A-6,CC through 526A-8,CC, which places this interval within the Zone NN11 of the upper Miocene. *Amaurolithus* sp. could be traced down to Sample 526A-7-3, 123–125 cm, and very rare *D. neohamatus* first occurs in Sample 526A-7,CC. Samples 526A-9,CC through 526A-11,CC are attributed to Zone NN10, based on the absence of both *D. quinqueramus* and *D. hamatus. Discoaster neohamatus* and *Minylitha convallis* are quite common in this interval.

Samples 526A-12,CC through 526A-14,CC contain *D. hamatus* and belong to Zone NN9 of the middle Miocene. The base of NN9 could be traced down to Sample 526A-15-2, 30–32 cm, where very rare *D. bellus* occurs with common *C. calyculus* and *C. coalitus*. Then the presence of *Catinaster calyculus* and *C. coalitus* without *D. hamatus*, indicates the presence of Zone NN8 in Core 15,CC.

From Samples 526A-16,CC through 526A-19,CC age determinations are difficult because strong overgrowth has altered discoasters and made identification for *D. kugleri* impossible. Samples 526A-16,CC and 562A-17, CC probably belong to Zone NN7, based on the rare presence of *Cyclolithella nitescens*, without *Catinaster* sp. and *Coccolithus floridanus*. Samples 526A-18,CC and 562A-19,CC, *C. floridanus* occurs abundantly, which indicates Zone NN6 of the middle Miocene.

Sphenolithus heteromorphus, index species for Zones NN5 and NN4, first occurs in Sample 526A-20,CC. Very rare *S. belemnos* (without *S. heteromorphus*) are found in Sample 526A-21,CC, which indicates NN3 of the lower Miocene. The entire interval from Samples 526A-22,CC to 526A-29,CC is then dominated by *C. floridanus, D.* cf. *deflandrei, S. moriformis*, and *C. pelagicus* with rare *Cyclolithella nitescens* and *Helicosphaera euphratis*, an assemblage typical for NN2 and NN1 of the lower Miocene. Very rare *D. bisectus* was found in Sample 526A-29,CC, which indicates the transition to the upper Oligocene.

Oligocene (160.0–208.6 m)

The first Oligocene (Zone NP25) is found in Sample 526A-30,CC, which contains *Discoaster bisectus* and *Zygrhablithus bijugatus*. In Core 31,CC the first appearance (downhole) of *Sphenolithus ciperoensis* was encountered. Sample 526A-32,CC is the same as 526A-31,CC and belongs to Zone NP25, whereas Samples 526A-33,CC through 526A-35,CC are considered to belong to Zone NP24 of the upper Oligocene because of the appearance of *S. distentus*. The top of Zone NP23 is difficult to define because of the scarcity of *S. ciperoensis* at its first appearance. It is probably somewhere in Sample 526A-36,CC or 526A-37,CC. Zone NP23 can be traced down to Sample 526A-42-1, 20–21 cm.

The Oligocene interval at this site contains unusual nannofossil assemblages which were not encountered at other sites during this leg. First, *Chiasmolithus altus*, a high-latitude species, commonly occurs at this site and ranges up to the upper part of Zone NP25. Second, abundant *Braarudosphaera* were encountered in Samples 526A-33,CC and 526A-34,CC, which are within Zone NP24. This unusual species sporadically occurs downhole throughout the Oligocene interval.

The nannofossil preservation is in general moderate from the Pliocene through the Oligocene. However, preservation suddenly becomes poor in the Eocene.

Eocene (208.9–228.8 m)

Samples 526A-42-1, 52–53 cm, and 562A-42-1, 75 cm, are assigned to Zone NP20 of the upper Eocene, based on the rare occurrence of *Discoaster saipanensis* (usually with six arms). Samples 526A-42,CC and 526A-43,CC definitely belong to Zone NP20 because they contain common *D. barbadiensis, D. saipanensis*, and *Sphenolithus pseudoradians*. Then, the rare occurrence of *Isthmolithus recurvus* limits the age of Core 44-CC to not older than Zone NP19; and the rare occurrence of *Chiasmolithus oamaruensis* in Cores 45-CC and 46-CC limits their age to not older than Zone NP18 of the upper Eocene. However, it is worth mentioning that rare *S. pseudoradians* were still found in Samples 526A-44, CC through 526A-46,CC. Tentatively, they are considered to be contaminating specimens, because the original sediments are rather soupy.

Hole 526B

Pleistocene (6.3–15.1 m)

The first core was taken at 6.3 m. Sample 526B-1,CC contains abundant small *Gephyrocapsa* with rare *Pseudoemiliana lacunosa*. It therefore belongs to Zone NN19 of the lower Pleistocene, or to the small *Gephyrocapsa* acme interval of Gartner's late Neogene zonation (1977). Sample 526B-2,CC contains rare *Helicopontosphaera sellii* but no discoasters, which indicates the lower part of Zone NN19.

Pliocene (19.5–28.3 m)

The flora in Sample 526B-3,CC is late Pliocene (Zone NN18) in age, as indicated by the last appearance of *Discoaster brouweri*. Samples 526B-4,CC and 526B-5,CC, however, are already within Zone NN15 of the lower Pliocene because both of them contain *Reticulofenestra pseudoumbilica* and *D. tamalis*, without *Amaurolithus* species.

Hole 526C

Lower Pliocene–Upper Miocene (33.0–56.5 m)

We attempted to recover the Pliocene–Miocene transition at this hole. The first core, taken at 33.0 m, contains abundant *Reticulofenestra pseudoumbilica* together with *Discoaster tamalis*, without *Amaurolithus* species, and is typical of Zone NN15 of the lower Pliocene. The age assignment of the sediments at the depth of Sample 526C-1,CC of this hole is, however, questionable because, as indicated by Hole 526A, sediments from 42.5 m at this site should belong to Zones NN14 to NN13. The materials recovered in this core catcher are, therefore, not considered reliable. Sample 526C-2,CC contains a transitional assemblage between Zones NN12 and NN11. Both *Ceratolithus acutus* and *D.* cf. *quinqueramus* are present; however, no typical *D. quinqueramus* was found. Sample 526C-3,CC definitely belongs to Zone NN11 of the upper Miocene, based on the presence of typical *D. quinqueramus*.

Oligocene (194.5–213.7 m)

Core 4, drilled at 194.5 m, comes from within Zone NP23. It contains common *Coccolithus floridanus, Discoaster bisectus, Chiasmolithus altus, Sphenolithus predistentus, Zygrhablithus bijugatus*, and *Coccolithus pelagicus*, together with rare *Helicosphaera compacta*. Sample 526C-5,CC of this hole is, however, assigned to Zone NP22 of the lower Oligocene, based on the presence of *Reticulofenestra umbilica*. Zone NP22 can be traced down to Sample 526C-6-1, 20–21 cm, where it is underlain by upper Eocene.

Eocene (213.8–289.5 m)

Samples 526C-6-1, 30–31 cm, and 526C-6-1, 50–51 cm, are tentatively assigned to Zone NP20 of the upper Eocene because they contain rare *Discoaster saipanensis*. Samples 526C-6,CC through 526C-8,CC are also considered within the same zone because, besides common *D. barbadiensis* and *D. saipanensis*, these core catcher samples contain *Chiasmolithus oamaruensis, Isthmolithus recurvus*, and *Sphenolithus pseudoradians*.

Below Core 9 all the sediments recovered are coarse sands. The calcareous nannofossils extracted from the matrix are very rare and very poorly preserved. Some *S. moriformis, Coccolithus pelagicus, C. floridanus, D. bisectus, D. barbadiensis*, and *Reticulofenestra umbilica* were found sporadically in Samples 526C-9,CC through 526C-14,CC. This assemblage roughly indicates an upper Eocene age. In Sample 526C-14,CC, very rare *D. multiradiatus*, an upper Paleocene nannofossil, were found.

The lithology does not change much between Cores 14 and 15; however, the color of sediments changes significantly. This change also corresponds to a sharp floral change. The matrix extracted from Sample 526C-15,CC through 526C-20,CC yields some poorly preserved *Toweius eminens, T. craticulus, C. pelagicus*, and *C.* cf. *robustus*, which are typical of the upper Paleocene. Samples 526C-15,CC and 526C-17,CC belong to NP9 of the upper Paleocene, based on the presence of *D. multiradiatus*. Sample 526C-19,CC contains very rare *D. gemmeus*, a species not older than Zone NP7. Therefore it is possible that all the coarse sands recovered from Cores 15 through 20 belong to the upper Paleocene.

Foraminifers

Foraminifers were recovered from the top of the section in the upper Pleistocene to the basal sands of the middle Eocene age in Core 45 of Hole 526A. The section was a particularly complex one owing to contamination by Pleistocene sands throughout the section, contamination of some of the samples through the middle Miocene with upper Miocene materials, and influx of shallower-water sediments in parts of the Oligocene and Eocene.

Planktonic foraminifers were used to zone the section from the Pleistocene to the middle Eocene; large benthic foraminifers, not studied here, may be utilizable for dating some of the basal shallow-water sands.

Preservation of planktonic foraminifers is good from the Pleistocene through the upper Miocene, where even the smaller, solution-susceptible species were found. Some dissolution of coarse fractions is, however, apparent in the Miocene and occasionally in the Oligocene. Eocene foraminifers are recrystallized and strongly dissolved in some samples. Foraminifers in the shallow-water sands below the upper Eocene are abraded and recrystallized; in the lowest cores, most of the foraminifers are in pieces or recrystallized.

Pleistocene–Pliocene

Four holes were drilled at Site 526; three with HPC, followed by 526C with rotary coring. Pleistocene–Pliocene sediments were recovered in Core 526-1–Sample 526-2,CC; Samples 526A-1,CC–526A-4,CC; and Samples 526B-1–526B-5,CC.

Hole 526A

Hole 526A was started after washing down (25–30 m) to about the depth of the reflector seen on the seismic records. The top 30 cm or so of some cores contain reddish foraminiferal sand with abundant *Globorotalia truncatulinoides;* this part of the cores is probably material washed downhole. Zones PL3, 2 and 1 were recognized; typical faunas include *G. inflata, Globigerina nepenthes, Globorotalia conomiozea*, and also some *G. margaritae*.

Hole 526B

In Hole 526B, Cores 1 and 2 are Pleistocene in age and contain common *Globorotalia truncatulinoides*. Pliocene Zones PL5–6 were recognized but not separable. Zone PL3 was also present. Species were primarily characteristic of temperate waters. Sample 526B-5,CC also contains rare *G. multicamerata*, a tropical species which appears only sporadically in Leg 74 sites.

Hole 526C

In the rotary-cored Hole 526C, we washed through the Pleistocene and upper Pliocene before taking the first core. Zone PL5–6 mixed with Pleistocene was recognized. Preservation in this hole was particularly good.

Upper Miocene

Upper Miocene sediments were recovered in the interval from Section 526A-5–Sample 526A-11,CC.

Well-preserved sediments of upper Miocene Zones N17 and N16 contain enough specimens of *Neogloboquadrina acostaensis* to permit zonation. Ecologic events through this time period match those at Site 525. These include the disappearance of *Globoquadrina dehiscens* near the base of Zone N16, the presence of many individuals with wide apertures near the top of Zone N16, and the increased abundances of *Globigerinita* spp. near the base of Zone N17. Turborotalids are slightly more abundant in these samples than at Site 525.

Middle Miocene–Upper Lower Miocene

These sediments were recovered in the interval from Samples 526A-11,CC to 526A-19-1, 50 cm, and from Samples 526A-19-3, 50 cm to 526A-21-1, 128 cm.

Zonation throughout this interval was difficult because of the lack of index species for the tropical zones and the absence of magnetic data to correlate temperate faunal datums. Most datums have been related to the standard zonation by reference to the nannofossil zonation. Accordingly, Zones N13, N12–N13, and N10–11 were identified. Typical faunas contained *I. siakensis, Globorotalia miozea, Globigerina nepenthes, Sphaeroidinella seminulina*, and *Globorotalia miotumida*.

Benthic foraminifers throughout the Miocene are very similar and show little variation from sample to sample; however, they are relatively scarce. A typical fauna includes *Globocassidulina, subglobosa, Siphonodosaria abyssorum, Gyroidina girardana, Neogloboquadrina umbonatus, Angulogerina* cf. *angulosa, Cassidulina crassa, Uvigerina auberiana, U. spinulosa*, various nodosarids, cibicidids, bolivinids, lenticulinids, and pleurostomellids. The fauna suggests deposition at lower slope depths.

Lower Miocene

Lower Miocene sediments were found in the interval from Core 526A-21 to Sample 526A-30,CC.

Faunas contain few zonal markers and are correlated to the standard zonation by reference to the nannofossil zones. *Catapsydrax* spp. is more abundant than at Site 525. Zones N9, N7, and N6–4 were all recognized. Many of the typical New Zealand planktonic foraminiferal species found in these faunas include *Turborotalia pseudocontinuosa, Globigerinoides inusitatus, T. semivera*, and the *Globigerina woodi* group. Both turborotalids and neogloboquadrinids are more abundant at this site than at the others of this leg.

Benthic species resemble those above and in the upper Oligocene; their more characteristic feature is their lack of variation from sample to sample. Echinoids and ostracodes are present throughout the section in relatively small abundances.

Upper Oligocene

Upper Oligocene sediments were found in the interval from Core 526A-30 to Sample 526A-39,CC.

A good upper Oligocene sequence was recovered, including Zones P22, P21, and P20. Fossils are generally better preserved than at all the other sites. *Globigerina angulisuturalis*, susceptible to solution, is common in these fauna. However, some dissolution is observed in the globigerinids and globoquadrinids. *Catapsydrax* spp. is also less common than at the other sites, a fact that may indicate that some dissolution has taken place.

Among the benthic foraminifers are common specimens of the genus *Uvigerina*, including *U. rippensis, U. semivestita, U. auberiana, U. spinulosa*, and several intermediate forms. Accompanying benthic forms are *Globocassidulina subglobosa, Cassidulina crassa, Gyroidina girardana*, and larger numbers of *Cibicides* spp. and *Lenticulina*. The species of *Uvigerina*, used to estimate the depth of deposition (Fig. 4), indicate that the fossils of Zone P22 were deposited at depths similar to those of the lower Miocene—e.g., on the slope. In Zone P21, the faunas indicate depths closer to 600–800 m. Faunas of Zone P20 are similar except that toward the very base of this zone erosion of shallow-water materials is intensified and includes some Pleistocene sands and possibly upper Eocene benthic foraminifers. The *in situ* uvigerinids in Core 38 (P19–P18) suggest water depths closer to the 500-m range.

Lower Oligocene

Lower Oligocene sediments were found in the intervals from Core 526A-40 to Sample 526A-41,CC and in Sample 526-5,CC.

The upper portion of the P18–P19 zonal interval was recovered at 526A, and the lower part, but not the bottom, was retrieved at Hole 526C. Faunas include *Chiloguembelina cubensis, Globigerina gortanii, T. nana, Catapsydrax martini*, and *G. pseudovenezuelana inter alia*. Preservation is only moderate in Hole 526A but good in the sample from 526C. Benthic faunas contain larger proportions of shallow-water material, much of which may be redeposited. The uvigerinids suggest deposition on the upper slope, as does the large amount of inmixed shallower-water material. The basal Oligocene was not recovered at this site.

Upper Eocene

Upper Eocene sediment were found in the intervals from Core 526A-42 to Sample 526A-44,CC and from Core 526C-6 to Sample 526A-7,CC.

Zone P16 contains abundant recrystallized *Globigerinatheka index* and *G. subconglobatus* and *Turborotalia cocoaensis, T. frontosa*, and *T. centralis*, which give it its age designation. Planktonic foraminifers are very dissolved; nevertheless, *Hantkenina alabamensis* and *Cribrohantkenina inflata*, not found at the other sites, are preserved here. Benthic foraminifers and coarse benthic invertebrate debris with bryozoans, echinoids, ostracodes, large echinoid spines and pieces, and mollusk fragments are common. The *in situ* uvigerinids, however, suggest deposition near 200–500 m of water. Species include *Uvigerina auberiana* and *U. semivestita* forma *camagueyana*.

The presence of *G. semiinvoluta* in faunas including *Turborotalia pomeroli, T. frontosa*, and *T. cerroazulen-*

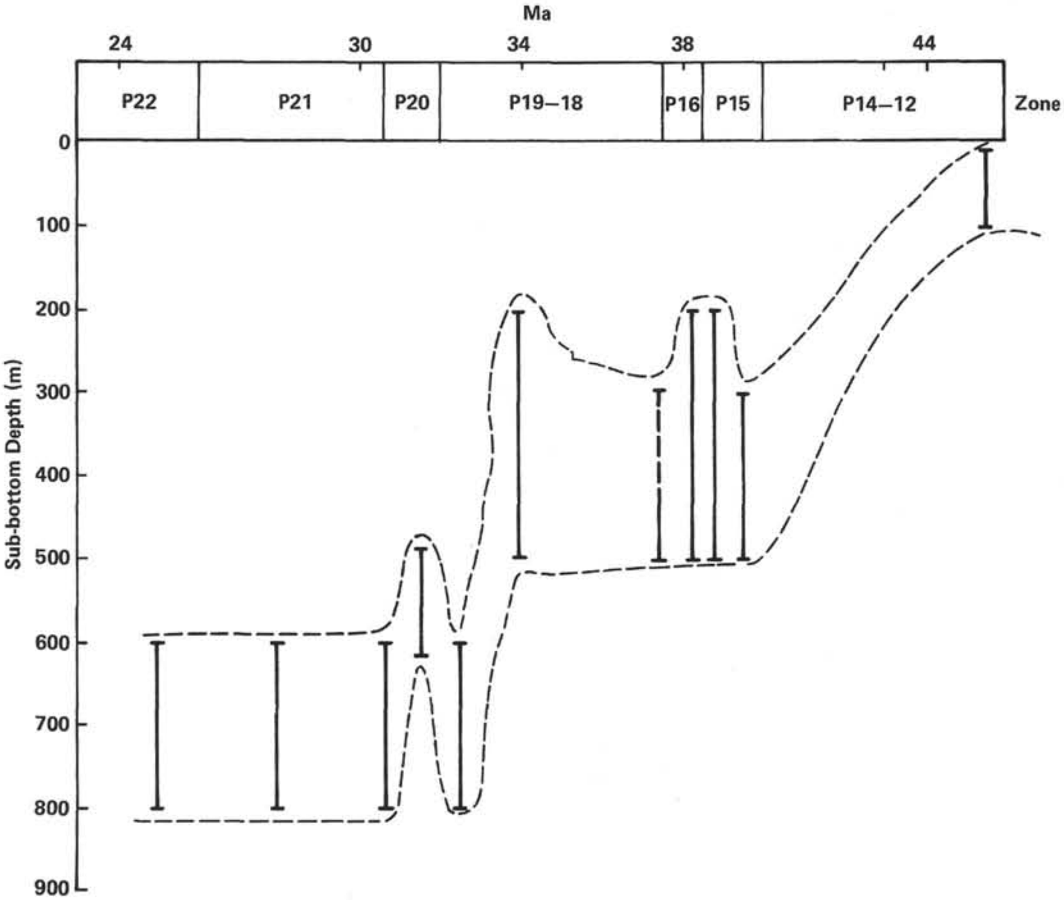

Figure 4. Depositional depth estimates based on species of *Uvigerina*, Site 526.

sis indicates Zone P15. Foraminifers are moderately well preserved and constitute a *Globigerina* ooze with some shelf debris. The proportion of shelf-depth material is, however, less than in the overlying zone. The uvigerinids present suggest deposition at depths close to 500 m (see Fig. 4).

Middle Eocene

Middle Eocene sediments were found in Sample 526A-45-1, 28 cm.

Most of the sediments below Core 44 contain large pieces of invertebrates, amorphous carbonate, glauconite, quartz, and some large benthic foraminifers such as *Heterostegina* and *Asterocyclina*. The transition between these sediments and those containing planktonic foraminifers in abundance occurs rapidly in Core 45.

Summary

The combined sections from 526, 526A, 526B, and 526C contain a relatively complete record from the Pleistocene to the late Paleocene. Results of core catcher studies including the following:

1) Preservation of all fossil groups at this site is markedly better than at the deeper sites of this leg. Both foraminifers and nannofossils are well to moderately well preserved throughout the Neogene and into the upper Oligocene with one exception: nannofossils are very dissolved in the parts of the middle Miocene that correspond to the hiatuses or intensified dissolution at other sites on this leg. Preservation is only moderate through the remainder of the Oligocene and poor in the upper and middle Eocene; below this level all planktonic foraminifers are recrystallized to very fine-grained carbonate, benthic foraminifers are strongly dissolved and/or abraded, and nannofossil faunas are much reduced in diversity and poorly preserved.

2) Based on the identified foraminiferal zones, four intervals may be missing from the section: the top of the early Pliocene, Zone P14, and earliest Oligocene Zones NP22–21. It is difficult to establish continuity in the shallow-water sands underlying the middle Eocene, but it appears that there is a major hiatus from the middle Eocene to the late Paleocene.

3) The temperate-water nannofossil assemblages resemble those of the other sites of this leg except in the upper Oligocene, where a high-latitude species, *C. altus*, occurs in abundance. The species continues sporadically through the lower Oligocene, but in lesser abundances. Below the occurrence of this species, *Braarudosphaera*-rich samples are found and attributed to Zone NP24 of the upper Oligocene.

4) The temperate planktonic foraminiferal faunas of the Neogene resemble those at other sites of this leg, except that species of *Neogloboquadrina* are much less abundant in the upper and middle Miocene, and *Catapsydrax* spp. more abundant in the lower Miocene. These differences cannot be ascribed to dissolution alone.

5) Benthic foraminiferal faunas throughout the Neogene and upper Oligocene are low in diversity and do not vary markedly from sample to sample, suggesting high stability of this bathymetric zone (800–1000 m). Faunas do not resemble those at Site 525 or appear intermediate between those at Site 525 and those expected on the upper slope. Rather, there is a unique assemblage that may be specific to mid-oceanic sites underlying intermediate waters.

6) Estimates of the depositional depth of the site, made according to the presence of specific species of the benthic foraminiferal genus *Uvigerina*, suggest that the site lay in the 600 m to greater than 800 m range through the Neogene and into the upper Oligocene, when depositional depths were probably closer to 600–800 m. By the middle Oligocene, a shallowing can be inferred both from the uvigerinids and the extreme amount of inmixed shallow-water debris. Such episodes of intense erosion in shallower-water sites have been related to regressions, and our results suggest that this occurred near the base of Zone P20 at Site 526. During the lower Oligocene, depositional depths were close to 600 m, but shallowed to depths closer to the shelf/slope intercept above the lower Oligocene hiatus. In the underlying upper Eocene, deposition from 200–500 m water depth is indicated at the top of the sequence, with slightly greater depths in the top of Zone P15 and lower ones in the upper Eocene. An extreme shallowing is indicated between the upper and middle Eocene, with the middle Eocene probably deposited at shelf depths.

SEDIMENT ACCUMULATION RATES

Figure 5 is an age–depth plot for Site 526, constructed as for the other Leg 74 sites. The time scale is discussed in the Introduction (this volume). Between the lower Oligocene and the top of the section, there is no indication of a significant break in sediment accumulation. There may be a small hiatus at the Eocene/Oligocene boundary, as Zone NP21 was not recognized in either Hole 526A or 526C, but even here the evenness of the age–depth plot suggests that the hiatus must be shorter than at other sites.

In general, accumulation rates appear to be lower than at other Leg 74 sites; the lower Pliocene, in particular, shows only about 1.2 $cm/10^3y.$, whereas at other sites this interval showed accumulation at over 2 $cm/10^3y$.

Figure 6 shows accumulation rates broken up into components, using the same methods discussed for Site 525. It is immediately clear from this figure that the reason for the low accumulation at this site, particularly in the Neogene, is the remarkably reduced accumulation of fine-grained (coccolith) carbonate. This is the result of winnowing, as was predicted for this crestal site. What is more surprising, however, is that the foraminiferal accumulation rate is so high. At Site 525, in a water depth of 2479 m, foraminiferal preservation was very good in the Pleistocene and Pliocene, yet a comparison of foraminifer accumulation rates between Sites 525 and 526 in this interval shows that 526 accumulated foraminifers almost twice as fast, implying that about half the foraminiferal rain at 525 was removed by dissolution.

Even this comparison does not adequately portray this situation, because smear slides of the fine (<63 μm)

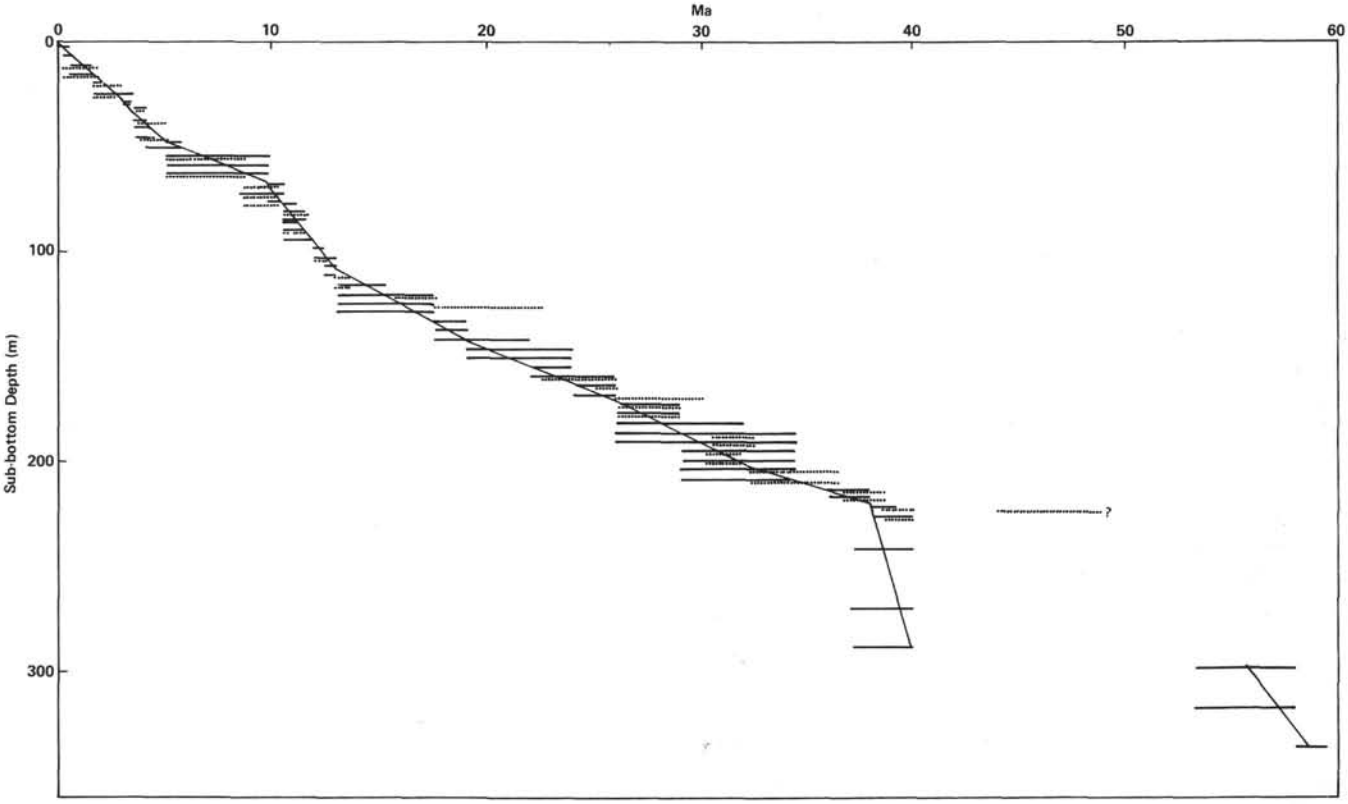

Figure 5. Age-depth plot for Site 526. Horizontal lines represent ranges in ages determined by nannofossils (solid line) and foraminifers (dashed line).

fraction at Site 526 shows that it comprises up to 40% foraminifers (60% coccoliths), whereas at deeper sites this fraction is 80 to 90% coccoliths. Two factors are operative: first, winnowing has removed coccoliths, preferentially enriching the fine fraction in foraminifers that are in the larger end of this fraction. Second, it is the very small foraminifers that dissolve most readily, so that the accumulation rate for very small foraminifers (in the <63 μm fraction) is probably higher at Site 526. Further study of the fine fraction will be needed to assess the relative importance of these two factors.

Of particular interest is the remarkably high foraminiferal accumulation in the interval from 13 to 10 Ma. Even at Site 527, our deepest site, there was some carbonate accumulation in this interval, and the fact that it is associated with high accumulation at Site 526 shows that it is the result of greatly enhanced productivity in the region.

Although the age-depth plot is rather regular through the Oligocene, this interval was broken into segments for Figure 6 because the foraminiferal content varied. It will be seen that between 32 and 38 Ma foraminiferal accumulation was about 0.05 $g/cm^2/10^3y$. only (about one tenth of the Pliocene-Pleistocene rate). On the one hand, this is interesting (in contrast with the mid-Miocene interval discussed in the foregoing) because it explains the very low or negligible foraminiferal accumulation in this interval at the deeper sites. On the other hand, it emphasizes the value of drilling the shallow Site 526; without it, a continuous sequence of planktonic foraminifers in reasonably good preservation would not have been available for faunal and isotope studies.

It is obvious from Figure 5 that the accumulation rates for shallow-water carbonate in the deepest part of the section are only the crudest approximations. On the other hand, it is a tribute to the pervasiveness of nannofossils, and the persistence of nannofossil biostratigraphers, that we can make any approximations at all.

MAGNETICS

As in Hole 525B, the remanence in the piston-cored sediments at Site 526 proved to be magnetically unstable. No polarity information is available for it.

PHYSICAL PROPERTIES

The cylinder technique was used for gravimetric measurements in Holes 526, 526A, 526B, and down to Core 8 of Hole 526C. Below that, the bulk piece method was used. Owing to the high sand content in sediments recovered at this site, only a few vane shear tests were performed, and the needle penetrometer was not used (see Fig. 7 and Table 4 for details).

The upper three lithologic units (ooze and transition ooze/chalk) have fairly uniform physical properties. The gravimetric data show a slight trend to increasing diagenesis with increasing depth, which can be seen as a slight increase of wet-bulk density and a decrease of water content and porosity. Superimposed on these trends, there is a zone between 60 and 120 m sub-bottom which shows low values of bulk density (and thermal

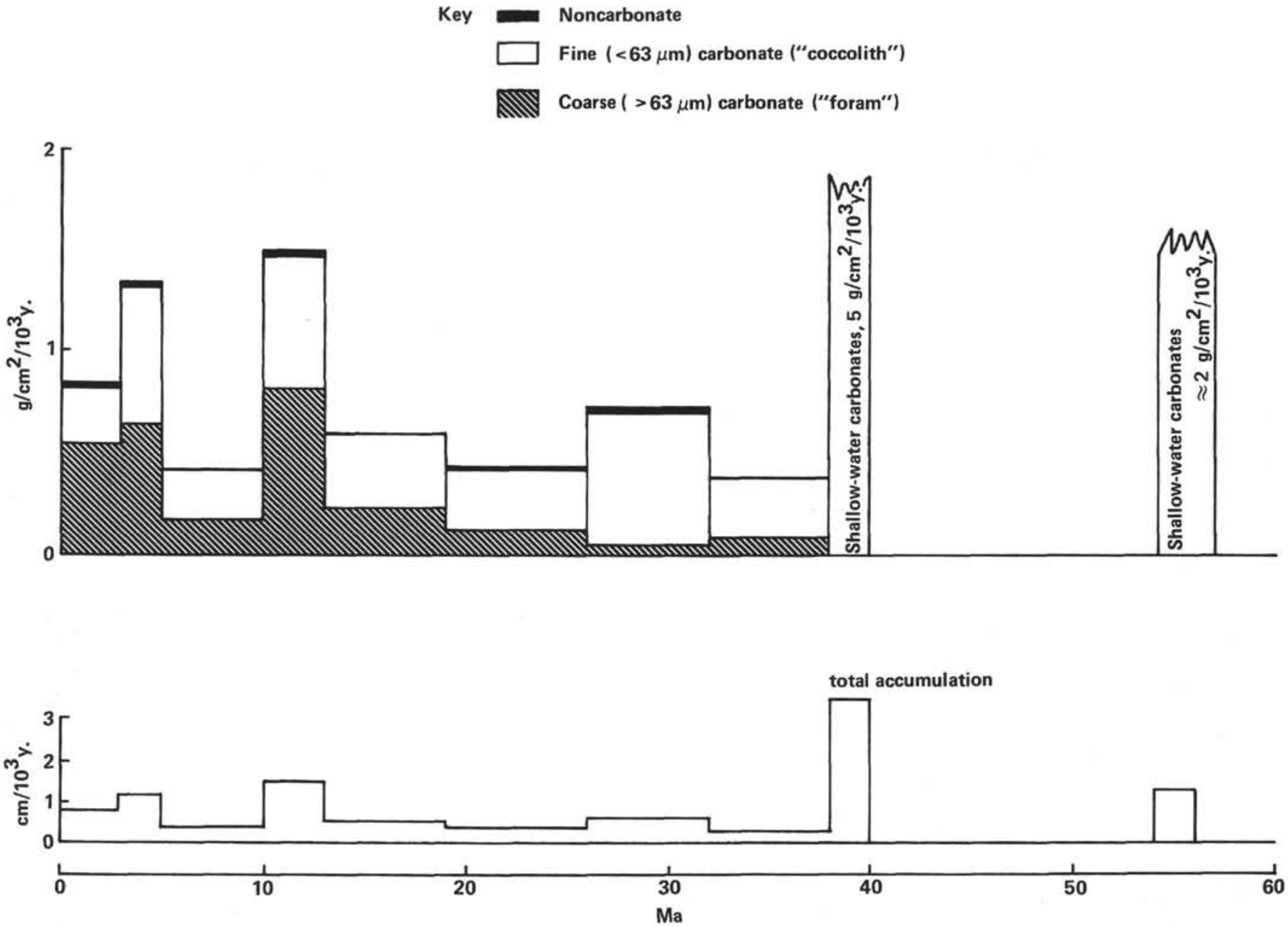

Figure 6. Accumulation rates broken up into component parts, Site 526.

conductivity) and high values of water content and porosity. It cannot be clearly distinguished whether these variations are due to drilling disturbance or whether they represent changes in sedimentary features. The GRAPE densities throughout Units I to III are generally about 0.1 g/cm^3 higher than the gravimetric density values.

Because of low recovery and high disturbance, only a few data could obtained from Units IV and V. Unit IV, consisting of chalks and limestone layers, is characterized by a sharp increase of bulk density with a corresponding decrease of water content and porosity. The limestone recovered in Core 9 of Hole 526C had a bulk density of 2.46 g/cm^3, water content of 6.24%, and porosity of 15%. In Unit V, there seems to be a slight trend of increasing bulk density and decreasing water content and porosity with depth, but owing to the low recovery it cannot be seen clearly. Bulk density lies between 2.0 and 2.1 g/cm^3, water content is about 20%, and porosity is about 40%. Shear strength was measured on only a few cores of Hole 526A (Units I–III). The data reveal a strength of less than 50 g/cm^2, indicating that the sediment has hardly any cohesion.

The shrinkage of the sediments of Units I through III varies between 0 and 10% of volume, without an obvious trend in the upper two units. In Unit III and the uppermost part of Unit IV, shrinkage clearly decreases. Sonic velocity is constant in the upper three units with only small variation. The limestone in Unit III (Hole 526C, Core 9) revealed a relatively high sonic velocity of about 4.5 km/s. In Unit V, sonic velocity varies between 2.2 and 2.7 km/s, and there seems to be a slight increase with depth. Though thermal conductivity varies widely, it shows a trend of increasing conductivity with depth. In Units IV and V, no further measurements were possible because the samples were too small.

SUMMARY AND CONCLUSIONS

Site 526 (SAII-7) is on crust of Anomalies 31–32 age (about mid-Maestrichtian) and located on what appears to be a NNE-SSW-trending block of the Walvis Ridge just to the south of Site 525 (SAII-1) and the Walvis Ridge "transect" (SAII-1–6). It is by far the shoalest site drilled on this cruise. The four holes give a complete section from the seafloor through the sedimentary layers to 356 m sub-bottom. The basement complex was not encountered.

Hole 256. We obtained 2 piston cores with a total penetration of 6.3 m sub-bottom and 57% recovery.

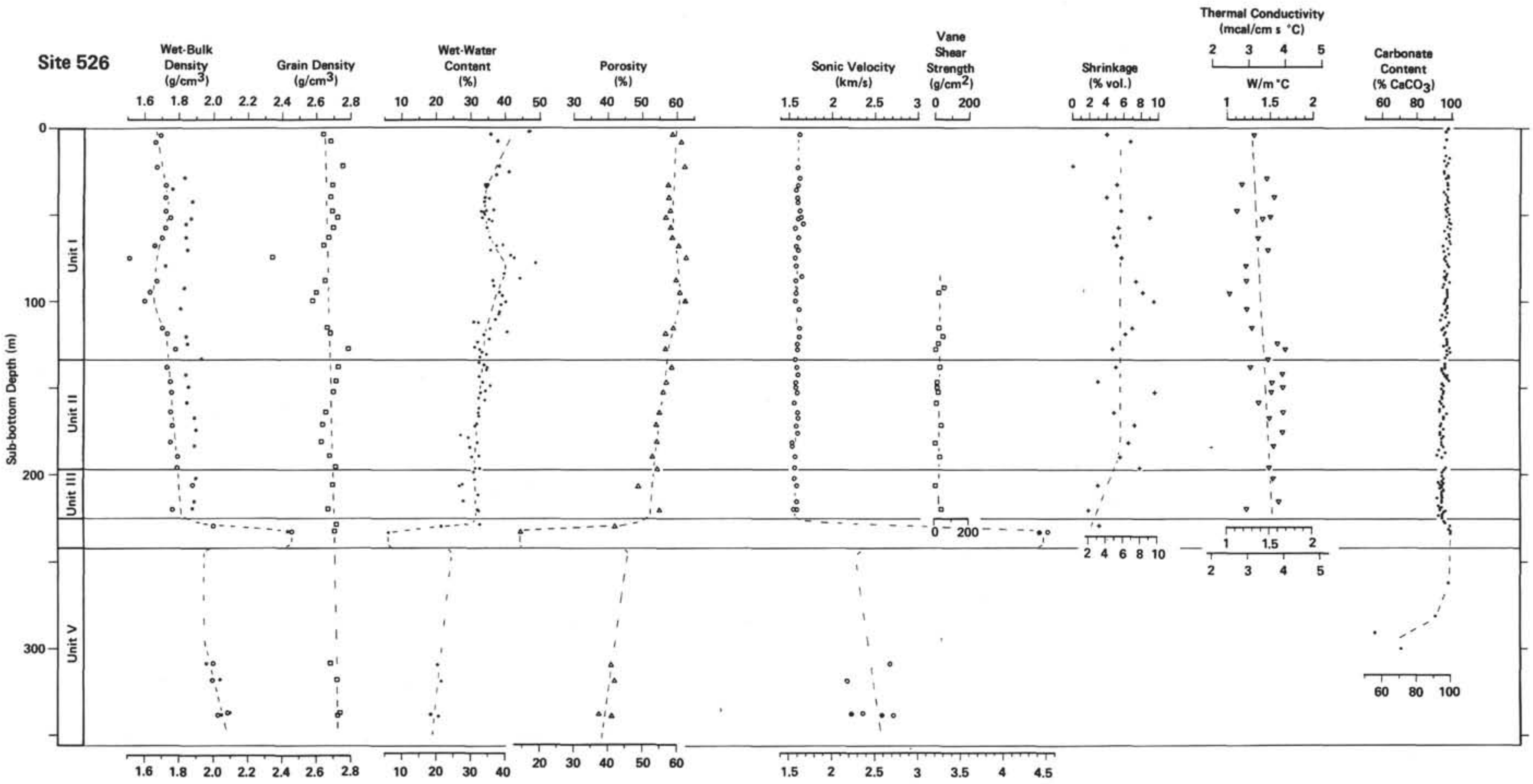

Figure 7. Summary of downhole physical properties, Site 526.

Table 4. Physical properties summary, Site 526.

Sample (interval in cm)	Sub-bottom Depth (m approx.)	2-Min. Count GRAPE Density (g/cm^3) ∥ To Bedding	2-Min. Count GRAPE Density (g/cm^3) ⊥ To Bedding	Gravimetric Data: Wet-Bulk Density (g/cm^3 approx.)	Gravimetric Data: Grain Density (g/cm^3 approx.)	Gravimetric Data, Salt-Corrected: Wet-Water Content (%)	Gravimetric Data, Salt-Corrected: Porosity (%)	Shrinkage (vol.%)	Vane Shear Strength ( ) = remolded (g/cm^3)	Sonic Velocity ∥ to Bedding (km/s)	Sonic Velocity ⊥ to Bedding (km/s)	Acoustic Impedance ∥ to Bedding (10^5 g/cm^2 s)	Acoustic Impedance ⊥ to Bedding (10^5 g/cm^2 s)	Thermal Conductivity (W/m °C)
Hole 526														
1-1, 144–147	1.4					47.0								
2-1, 141–143	3.4			1.69	2.64	35.7	58.8	4.0		1.63		2.75		1.32
Hole 526A														
1,CC, 14–22	32.4			1.72	2.69	34.4	57.6	5.2		1.61		2.77		1.18
1,CC, 29–31	32.4					34.9								
2-2, 2–4	33.9					34.6								
2-2, 137–140	35.3	1.76								1.55		2.72		
3-3, 12–20	39.9			1.72	2.68	34.3	57.7	4.0		1.61		2.76	1.55	
3-3, 34–36	40.1					35.5								
4-1, 114–117	42.4	1.88												
4-1, 124–139	42.6					34.1				1.60		3.02		
5-2, 20–28	47.3			1.72	2.69	34.8	58.3	5.7		1.63		2.81		1.12
5-2, 34–36	47.5					33.1								
6-2, 15–17	51.7					33.4								
6-2, 36–48	52.0	1.87								1.62		3.04		1.42
6-2, 85–87	52.4					35.3								
7-2, 129–132	57.2			1.72	2.70	34.8	58.5	5.4		1.58		2.72		
8-3, 116–126	63.0	1.84		1.70	2.67	35.5	58.9	4.9		1.62		2.75		1.37
9-3, 94–96	67.1					39.3								
9-3, 138–141	67.6			1.66	2.64	37.6	60.7	5.2		1.60		2.65		
10-2, 105–107	70.2					35.7								
10-2, 119–126	70.4	1.85												
11-1, 117–119	73.2					41.5				1.61		2.99		1.49
11-2, 117–121	74.7			1.51	2.34	42.5	62.7	5.8		1.58		2.39		
12-1, 136–139	77.8					48.8								
12-2, 136–150	79.3	1.72								1.59		2.73		1.23
13-2, 146–149	83.8					39.9								
13,CC, 15	85.2									1.66				
14-1, 147–150	86.7					44.1								
14-2, 126–143	88.0			1.67	2.65	36.5	60.0	7.5		1.59		2.66		1.23
15-1, 125–128	90.9					36.8								
15-2, 125–135	92.4	1.83							51	1.59		2.91		
16-1, 84–92	94.9			1.63	2.60	38.3	61.1	8.3	26					
16-1, 126–130	95.3									1.60		2.60		1.04
16-2, 84–87	96.4					39.2								
17-2, 5–12	100.0			1.60	2.58	40.2	62.8	9.6		1.59		2.54		
17-3, 5–8	101.5					39.0								
18-2, 11–18	104.5	1.81								1.62		2.94		1.24
18-3, 5–7	105.9					38.5								
18-4, 5–7	107.0					38.3								
19-2, 142–145	110.1					37.4								
19,CC, 31–34	111.6					30.8								
20-1, 5–7	111.7					32.4								
20-3, 87–100	115.5			1.70	2.67	35.7	59.0	7.1	25	1.64		2.79		1.30
21-1, 135–138	117.4					40.4								
21-2, 135–138	118.9			1.73	2.68	33.8	57.1	6.3						
21-3, 135–147	120.4	1.84							48	1.63		3.00		
22-1, 135–138	121.8					35.5								
22-2, 135–138	123.3					32.1								
22-3, 127–138	124.8	1.85							21	1.61		2.98		1.60
23-1, 145–148	126.3					31.1								
23-2, 137–150	127.8			1.78	2.79	32.8	57.0	4.8	7	1.61		2.86		1.69
23-3, 147–150	129.2					33.1								
24-1, 139–142	130.6					34.5								
24-2, 141–142	132.1					32.6								
24-3, 106–142	133.4	1.93								1.58		3.06		1.49
25-1, 139–142	135.0					32.5								
25-2, 139–142	136.5					33.8								
25-3, 132–142	138.0			1.73	2.73	34.9	58.8	5.2	30	1.60		2.77		1.28
26-2, 138–141	139.4					34.7								
26-3, 140–149	142.3	1.84								1.61		2.96		1.66
27-2, 106–109	143.5					32.5								
27-3, 97–109	146.5			1.75	2.72	33.4	57.1	3.1	15	1.59		2.79		
27-3, 137–141	146.8													1.53
28-1, 135–138	148.2					35.7								
28-2, 134–147	149.7	1.86							18	1.59		2.96		1.66
28-3, 124–127	151.1					34.4								
29-1, 130–149	152.6			1.76	2.70	32.9	56.3	9.7	24	1.60		2.82		1.53
29-3, 146–149	155.6					32.3								
30-1, 125–127	156.9					34.2								
30-2, 128–139	158.4	1.85							15	1.57		2.90		1.38
31-1, 144–146	161.4					32.5								
31-3, 114–132	164.2			1.75	2.66	32.4	55.3	5.0		1.61		2.81		1.66
32-1, 135–138	165.8					32.5								
32-2, 131–138	167.2	1.89								1.62		3.06		1.51

Table 4. (Continued.)

Sample (interval in cm)	Sub-bottom Depth (m approx.)	2-Min. Count GRAPE Density (g/cm³) ∥ To Bedding	2-Min. Count GRAPE Density (g/cm³) ⊥ To Bedding	Gravimetric Data: Wet-Bulk Density (g/cm³ approx.)	Gravimetric Data: Grain Density (g/cm³ approx.)	Gravimetric Data, Salt-Corrected: Wet-Water Content (%)	Gravimetric Data, Salt-Corrected: Porosity (%)	Shrinkage (vol.%)	Vane Shear Strength ( ) = remolded (g/cm³)	Sonic Velocity ∥ to Bedding (km/s)	Sonic Velocity ⊥ to Bedding (km/s)	Acoustic Impedance ∥ to Bedding (10^5 g/cm² s)	Acoustic Impedance ⊥ to Bedding (10^5 g/cm² s)	Thermal Conductivity (W/m °C)
Hole 526A (Cont.)														
33-1, 146–149	170.3					31.9								
33-2, 138–149	171.7			1.76	2.64	31.4	54.1	7.3	41	1.60		2.81		
34-1, 138–141	174.6	1.90												
34-2, 126–130	176.0									1.61				1.66
34-3, 101–104	177.2					27.2								
35-1, 88–90	178.5					29.3								
35-3, 80–89	181.5			1.75	2.63	31.9	54.6	6.7	3	1.55		2.71		
36-2, 11–19	183.7	1.89								1.56		2.94		1.55
36-2, 75–77	184.2					29.8								
37-2, 114–116	189.0					32.6								
37-3, 28–34	189.7			1.79	2.68	30.4	53.2	5.7	33	1.58		2.83		
39-2, 137–139	198.1					30.8								
40-2, 114–126	202.3	1.90								1.58		3.0		1.55
40-2, 137–139	202.5					31.1								
41-2, 10–12	205.6					27.6								
41-2, 94–106	206.5			1.88	2.70	26.8	49.1	3.2	9	1.60		3.02		
43-2, 62–63	214.9					28.0								
43-2, 125–139	215.6	1.89								1.61		3.04		1.62
44-2, 130–136	220.0			1.76	2.67	32.1	55.1	2.1	42	1.61		2.83		
44-2, 145–147	220.2					32.3								
Hole 526B														
1-1, 124–126	7.7			1.66	2.68	37.7	61.3	6.8						
4-2, 93–103	21.9			1.67	2.75	38.3	62.4	0.1		1.61		2.68		
5-1, 138–140	25.3					41.0								
5-2, 139–142	26.8					37.4								
5-3, 135–148	28.3	1.83								1.63		2.98		1.47
Hole 526C														
2-3, 135–138	46.9					36.7								
2-4, 135–138	48.4					33.8								
2-5, 135–138	49.9					34.1								
2-6, 122–138	51.3			1.75	2.72	33.4	57.0	9.1		1.66		2.90		1.51
3-1, 147–150	53.5					36.3								
3-2, 140–150	55.0	1.84								1.67		3.08		
4-2, 7–28	196.1			1.79	2.71	32.6	54.7	8.0		1.58		2.82		1.50
4-2, 7–28	196.1					31.3								
5-6, 16–18	211.7					32.3								
7-2, 40–48	219.9	1.88								1.57		2.96		1.24
8-4, 46–48	228.0					32.7								
8-5, 27–44	229.3			2.00	2.72	21.5	42.4	3.4						
8-5, 27–44	229.3					21.7								
9-1, 36–41	232.9	2.44	2.46	2.46	2.71	6.2	15.0			4.53	4.42	11.15	10.88	
17,CC, 18–20	309.0	1.96		2.00	2.68	20.4	41.2			2.68		5.36		
18-1, 31–33	318.3	2.04		2.00	2.72	21.6	42.2			2.19		4.38		
20-1, 44–48	337.5	2.10	2.10	2.09	2.74	18.4	37.6			2.37	2.23	4.95	4.66	
20,CC, 14–16	338.6	2.05	2.04	2.03	2.73	20.8	41.1			2.74	2.59	5.55	5.25	

Hole 526A. We obtained 46 piston cores with a total penetration of 200.8 m and a recovery rate of 100+ %.

Hole 526B. We obtained 5 piston cores with a total penetration of 22.0 m and 61% recovery.

Hole 526C. Twenty-one rotary drilled cores were recovered with a total penetration of 185 m and recovery rate of 38%.

The major geological results are given in the following paragraphs.

Lithology: Sediments

Five major lithologic units are observed.

Unit I extends from the mud line to 133.6 m sub-bottom (early Miocene) and consists predominantly of very homogeneous white foraminifer ooze, nannofossil–foraminifer ooze, foraminifer–nannofossil ooze, and nannofossil ooze. Carbonate content is generally greater than 95%. Sedimentary structures are not observed in this unit. Bioturbation is present only between 30 to 60 m sub-bottom. In general, the foraminifer content decreases from about 94% at the top to 12% at the bottom of the unit. This parameter divides the unit into three subunits (see sediment lithology, this chapter).

Unit II extends from 133.6 to 199.6 m sub-bottom (early Oligocene) and consists predominantly of very pale orange and brown, pinkish white and gray, and pink nannofossil ooze with minor intercalated foraminifer–nannofossil oozes and chalks. It is relatively nannofossil-rich, whereas I and III are foraminifer-rich. Carbonate content is about 95%. Bioturbation is slight to moderate in the upper 22 m, with identifiable *Planolites*, halo, and vertical burrows. Little bioturbation is present below this interval in the unit.

Unit III extends from 199.6 m to 221.6 m sub-bottom (late Eocene) and consists predominantly of a homogeneous pinkish gray and white foraminifer–nannofossil ooze with minor nannofossil ooze and foraminifer-nannofossil chalk. Carbonate content is 95%. Sedimentary structures and bioturbation are generally absent.

Unit IV extends from 221.6 m to about 242(?) m sub-bottom (late Eocene) and consists of a white, rubbly, highly fossiliferous limestone. The rubble consists of friable, vuggy oncoliths, crinoid fragments, pelecypod debris, and bryozoans.

Unit V extends from about 242(?) m to 356 m sub-bottom (the depth at which drilling terminated owing to hole instability) and consists of yellow to pale brown fossiliferous calcareous sands and sandstones. Benthic foraminifers, bryozoans, echinoid spines, and pelecypod debris are recognized.

In summary, two different sedimentary facies are observed. Units I to III result from a deep-water sedimentary environment. The high percentage of sand-sized foraminifers suggests that winnowing has removed much of the finer material. The presence of abundant shell debris, oncoliths, and the like suggest shallow-water deposition of the two lowermost units.

Seismic Stratigraphy

The seismic stratigraphy is shown in Figure 8. The basal, very smooth dark reflector is interpreted as the basement complex—similar to that at Sites 525, 527, and 528. We did not reach this reflector at this site. The top of the reflector at about 0.12 s above basement is interpreted as representing the top of the fossiliferous limestone layer (near the Oligocene/Eocene boundary). The opaque layer between the limestone and basement reflectors is a manifestation of the fossiliferous sands. No convincing correlation of stratigraphy with the upper stratified seismic reflectors is observed at the present time. There was no logging at this site.

Accumulation Rates

Until the late Eocene, this site accumulated shallow-water sands and limestones; thus comparisons between it and other, deeper sections on the transect of sites are meaningful only back to 38 Ma. The overall pattern of change in accumulation rates for the latter two-thirds of the Tertiary is very similar to that identified at the deeper sites of the transect. The accumulation rate maxima in the lower Pliocene and upper part of the middle Miocene are clearly present at Site 526. If it is assumed that the carbonate section at Site 526 has suffered minimal dissolution, these maxima in accumulation would represent maxima in the supply of carbonate to the seafloor.

Although the preservation of calcareous microfossils at Site 526 exceeds that at any other site of the transect, the average accumulation is somewhat lower than at some of the deeper sites. For example, the lower Pliocene maximum in accumulation rate is approximately 1.3 $g/cm^2/10^3y.$, whereas at Site 527, the same interval has an average accumulation rate more than twice this value. The difference lies not in preservation but in the winnowing of the fine-grained carbonate from the shoaler areas of the Walvis Ridge and the deposition of this chaff on the flanks of the Ridge. Thus only the accumulation rate of the coarse-grained carbonate, which remains in place, gives an indication of the amount of dissolution taking place. For example, during the same lower Pliocene interval, the coarse-grained carbonate (>63 μm) at Site 526 accumulated at a rate five times greater than that at Site 527, near the bottom of Walvis Ridge. The result of this combination of strong winnowing and low dissolution is a nearly complete and well-preserved section that is relatively coarse grained and has moderate to low average accumulation rates.

Biostratigraphy and History of the Walvis Ridge

A continuous section was drilled from the seafloor to 356 m sub-bottom near the crest of a block of the Walvis Ridge. This block appears to be structurally separate from the one to the north on which the rest of the Leg 74 sites are located. However, the age of the crust, as determined by crustal magnetic anomalies, appears to be the same as that of the neighboring part of the ridge. The depth versus time subsidence curve based on crustal cooling indicates that this site was above sea level until the late Paleocene (about 55 Ma) and has gradually sunk to its present depth of 1054 m. Paleontologic evidence generally supports this estimate of the time of submergence; however, the very sandy deposits recovered in the deepest cores contain few fossils that could provide a very precise age.

The rate of submergence can be estimated both by the crustal-cooling or "backtracking" technique and by estimates of the depth habitat of the benthic fauna. In shallow waters, these depth habitats are more finely divided; thus a rather detailed comparison can be made between the two methods of estimating paleodepths (see biostratigraphy, this volume). The results of such a comparison show generally good agreement in the overall deepening trend; however, the faunal evidence suggests shoaler depths than the backtracking technique in the oldest part of the section. Given the assumptions inherent in the two techniques, the discrepancies may not be significant. In the Oligocene part of the section, agreement between the two techniques is good; however, the benthic faunas indicate a temporary shoaling at about 32 m.y. that may reflect a brief eustatic fall in sea level.

The section overlying the shallow-water sands from the middle Eocene to the Pleistocene is relatively complete and well preserved. Based on biostratigraphic zones not found in the section, we believe that a few short hiatuses may exist in the lowermost Oligocene, the upper middle Miocene, and the mid-Pliocene. However, accumulation rate plots show no significant breaks in sedimentation above the lower Oligocene.

The average accumulation rate at this site is generally lower than at deeper sites. This difference results from the removal of fine-grained material by winnowing. The remaining sediments tend to be rich in the sand fraction, particularly in the Neogene. If it is assumed that little or no carbonate has been dissolved in this section, then the accumulation rate of the coarse-grained carbonate debris indicates maxima in the carbonate rain during the early Pliocene and the late part of the middle Miocene.

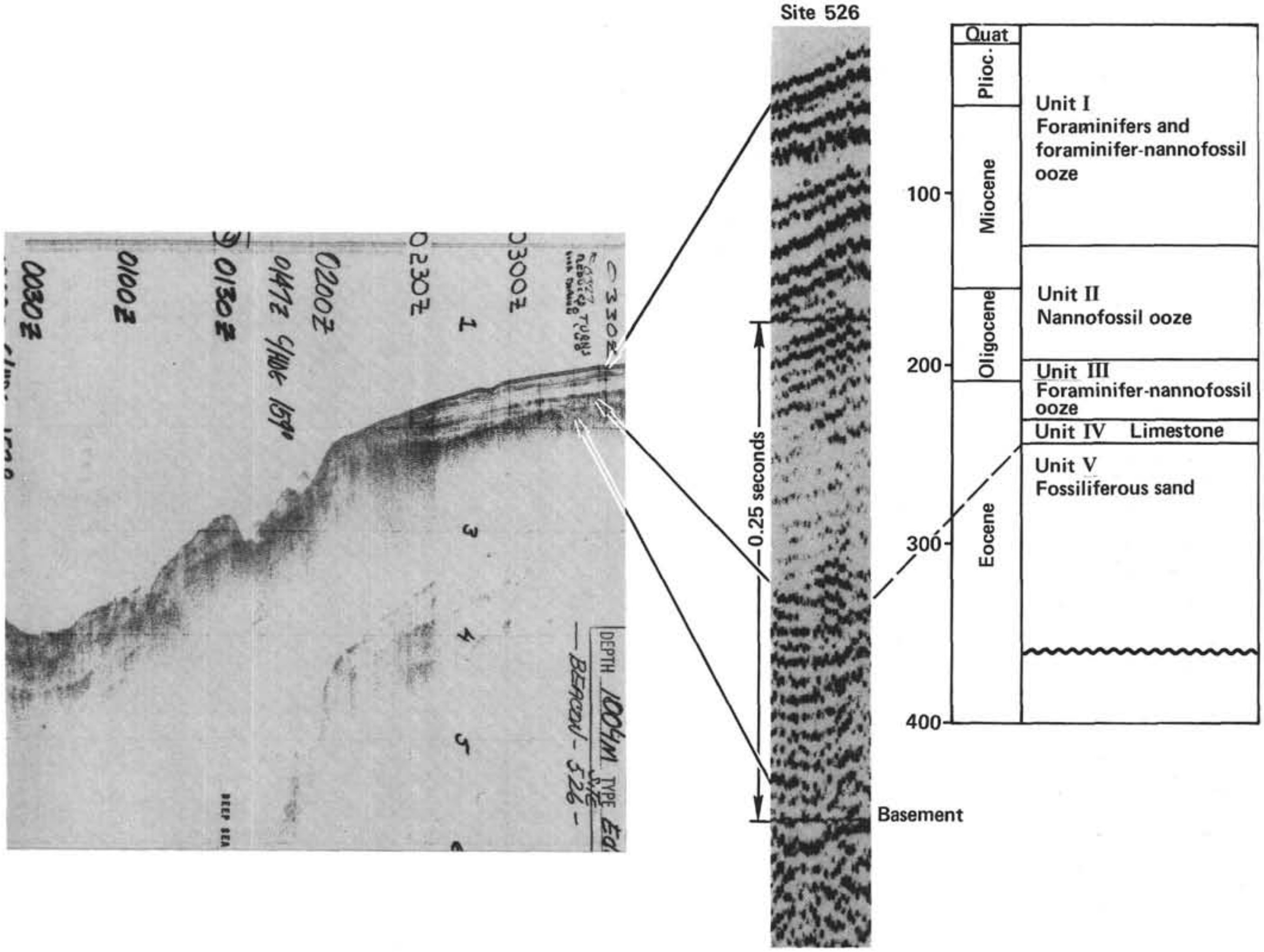

Figure 8. Correlation between seismic records and lithostratigraphy, Site 526.

Both foraminifers and calcareous nannofossils are well preserved throughout the Neogene and into the upper Oligocene, but deeper in the section alteration of the carbonate results in preservation ranging from moderate in the Oligocene to poor in the Eocene.

Like other sites in the Walvis Ridge transect, the planktonic fauna and flora indicate temperate conditions; however, there are differences in the relative abundances of certain species that cannot be attributed to differences in preservation. Although the benthic foraminiferal fauna does not vary greatly through the upper Oligocene and Neogene, its composition is quite different from that at deeper sites on the Walvis Ridge and from what is expected on the upper continental slope. Thus it is probably representative of the open ocean benthic fauna found in intermediate waters.

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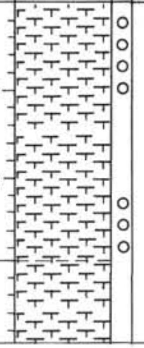
Rabinowitz, P. D., and Simpson, E. S. W., 1979. Results of IPOD site surveys aboard R/V *Thomas B. Davie:* Walvis Ridge Survey. *L-DGO Tech. Rept.*, JOI Inc.

SITE 526 HOLE CORE (HPC) 1 CORED INTERVAL 0.0–1.9 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
late Pleistocene	NN20 (N)	AG	AG			1, CC	0.5, 1.0				



N8

10YR 8/2

10YR 8/3

LITHOLOGIC DESCRIPTION

SAND-SIZE FORAMINIFER OOZE

This core contains a sand-size foraminifer ooze. The color is a very light grey (N8) to very pale orange (10YR 8/2).

This is the mudline core which is soupy. Echinoderm fragments, pteropods, and small mollusk were identified in addition to foraminifers and nannofossils.

The upper part of Section 1 contained a white zone which appeared to be more consolidated and contains a higher amount of nannofossils (nannofossil foraminifera ooze).

SMEAR SLIDE SUMMARY:

	1-20 D	1-140 D	1-140[a] D
Texture:			
Sand	70	80	–
Silt	20	10	–
Clay	11	10	–
Composition:			
Volcanic glass	1	–	–
Foraminifers	73	85	90
Calcareous nannofossils	20	15	–
Radiolarians	–	TR	–
Sponge spicules	2	TR	–
Fish remains	4	–	–
Ostracods	–	TR	1
Pteropods	–	–	1
Mullusk	–	–	5
Echinoderms	–	–	2

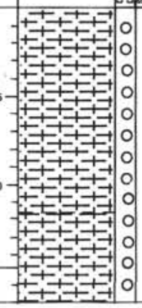
[a] Coarse fraction

ORGANIC CARBON AND CARBONATE:

	1-2
Organic carbon	–
Carbonate	98

SITE 526 HOLE CORE (HPC) 2 CORED INTERVAL 1.9–6.3 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
late Pleistocene	NN20 (N)					1	0.5, 1.0				
early Pleistocene	N22 (F) NN19 (N)	AG	AG			CC					



N8 +
10YR 7/4

N9

LITHOLOGIC DESCRIPTION

NANNOFOSSIL-FORAMINIFER OOZE

This core contains a homogeneous highly fluidized nannofossil-foraminifer ooze. The dominant colors are very light gray (N8) and very pale brown (10YR 7/4).

The ooze in the bottom of Section 1 (120–150 cm) and the Core-Catcher is more coherent, contains more nannofossils and is white (N9) to pale orange (10YR 8/2).

Large fossil fragments are present in the coarser fraction (pelecypods, gastropods, pteropods, scaphopods and echinoderm fragments.

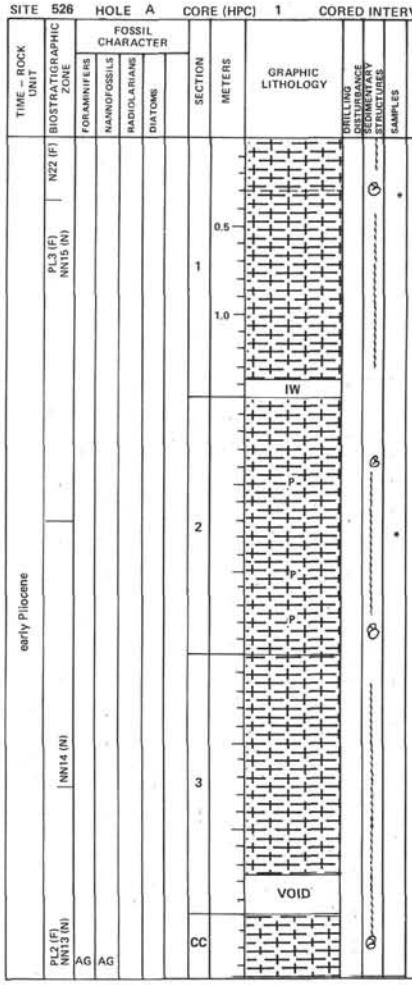
SMEAR SLIDE SUMMARY:

	1-50 D	1-80 D	1-140 D	CC D
Texture:				
Sand	40	–	15	40
Silt	10	–	20	1-
Clay	50	–	65	50
Composition:				
Quartz	–	TR	–	–
Volcanic glass	TR	–	–	–
Palagonite	TR	–	–	–
Pteropods	TR	3	1	2
Echinoids	1	2	1	2
Mollusk	1	–	–	–
Ostracods	1	10	3	5
Carbonate unspecified	–	3	–	–
Foraminifers	45	30	15	29
Calcareous nannofossils	51	50	80	60
Fish remains	–	2	–	2
Dinoflagellates	1	–	–	–

ORGANIC CARBON AND CARBONATE:

	1-2
Organic carbon	–
Carbonate	97

SITE 526 HOLE A CORE (HPC) 1 CORED INTERVAL 28.0–32.4 m



LITHOLOGIC DESCRIPTION

10YR 8/2
10YR 6/2
N9

SANDY NANNOFOSSIL FORAMINIFER OOZE

This core contains a very pale orange (10YR 8/2) to white (N9) sandy nannofossil foraminifer ooze. Scattered throughout the section are gray to black mottles and blotches suggestive of biogenic activity. Three large mineralized burrows were found at 50 cm (Section 1) and 60 and 140 cm (Section 2).

Large fossil shells are observed. These include gastropods, pelecypods, echinoderm fragments, and large foraminifers. Ostracods, scaphopods, and pteropods are also identified.

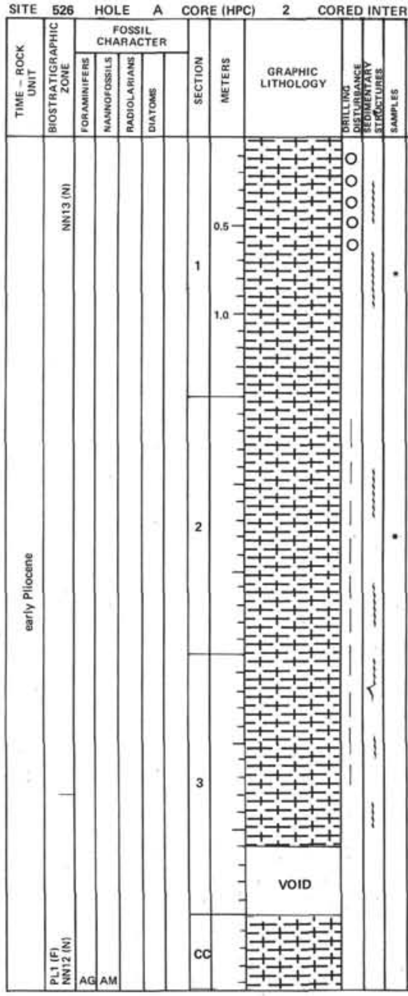
SMEAR SLIDE SUMMARY:

	1-35	2-80
	D	D
Composition:		
Foraminifers	70	90
Calcareous nannofossils	30	10

ORGANIC CARBON AND CARBONATE:

	1-10	2-10	3-10
Organic carbon	–	–	–
Carbonate	98	97	98

SITE 526 HOLE A CORE (HPC) 2 CORED INTERVAL 32.4–36.8 m



LITHOLOGIC DESCRIPTION

N9

SANDY NANNOFOSSIL FORAMINIFER OOZE

This core contains a white (N9) sandy nannofossil foraminifer ooze. Faint mottles, suggestive of biologic activity are scattered throughout. In Sections 2 and 3 gray bands or lamination occur which are horizontal to sub-horizontal. They may be either bedding or horizontal burrows.

The sand fraction of the samples are composed mostly of foraminifer.

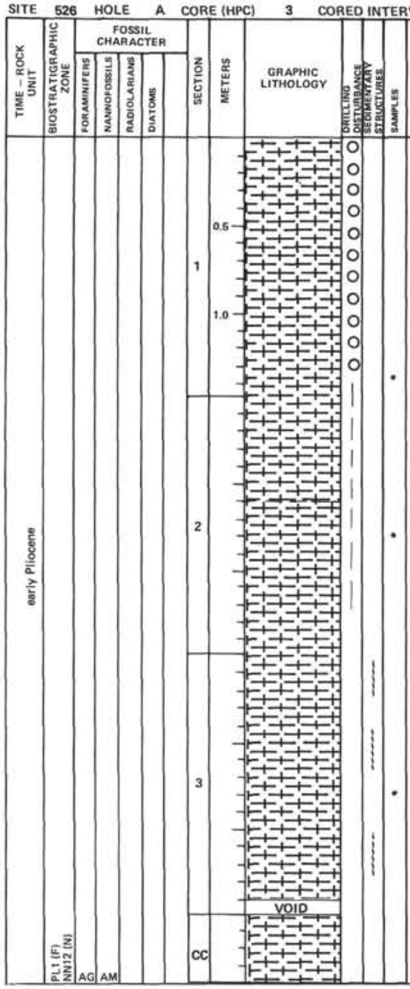
SMEAR SLIDE SUMMARY:

	1-80	2-80
	D	D
Texture:		
Sand	60	60
Silt	30	30
Clay	10	10
Composition:		
Foraminifers	65	60
Calcareous nannofossils	35	40
Calcareous dinoflagellates	–	TR

ORGANIC CARBON AND CARBONATE:

	1-100	2-110	3-100
Organic carbon	–	–	–
Carbonate	98	98	96

SITE 526 HOLE A CORE (HPC) 3 CORED INTERVAL 36.8–41.2 m



LITHOLOGIC DESCRIPTION

N9

SANDY NANNOFOSSIL FORAMINIFER OOZE

The core contains a white (N9) slightly mottled sandy nannofossil foraminifer ooze. Some light to very light gray (N8, N7) beds or bands occur in Section 2 (20–60 cm) and Section 3 (90–100 cm). They are horizontal to sub-horizontal and suggest some alternation in sedimentation pattern. They may also be zones of burrowing.

The coarse fraction of Section 1 contains very large shell fragments (gastropods, pelecypods, echinoderms, and large foraminifers).

The sand fraction is entirely biogenic. Sand to silty clay fraction is approximately 3:2.

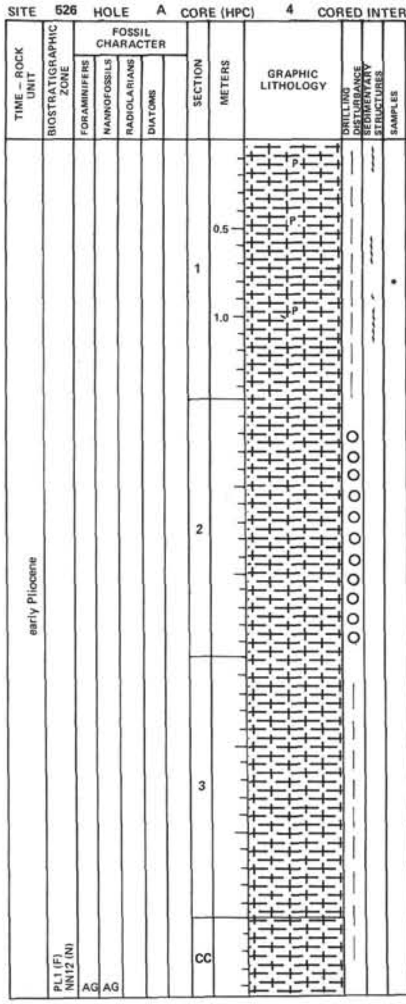
SMEAR SLIDE SUMMARY:

	1-135	2-80	3-80
	D	D	D
Texture:			
Sand (Biogenic)	60	60	60
Silt	30	30	30
Clay	10	10	10
Composition:			
Palagonite	–	–	TR
Foraminifers	64	69	70
Calcareous nannofossils	35	30	29
Calcareous dinoflagellates	1	1	1

ORGANIC CARBON AND CARBONATE:

	1-121	2-121	3-121
Organic carbon	–	–	–
Carbonate	97	98	98

SITE 526 HOLE A CORE (HPC) 4 CORED INTERVAL 41.2–45.6 m



LITHOLOGIC DESCRIPTION

SANDY NANNOFOSSIL FORAMINIFER OOZE

A white (N9) sandy nannofossil foraminifer ooze was recovered. Gray to yellowish gray (5Y 8/1) mottles are scattered throughout.

The coarse fraction contains pelecypods, pteropods, scaphopods and other gastropods, echinoderms, and large foraminifers.

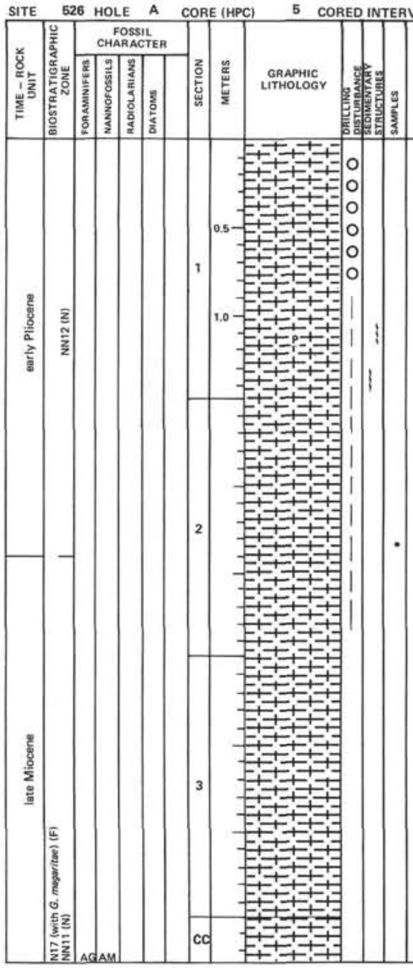
SMEAR SLIDE SUMMARY:

	1-80
	D
Composition:	
Foraminifers	64
Calcareous nannofossils	35
Calcareous dinoflagellates	1

ORGANIC CARBON AND CARBONATE:

	1-99	2-99	3-99
Organic carbon	–	–	–
Carbonate	99	97	98

SITE 526 HOLE A CORE (HPC) 5 CORED INTERVAL 45.6–50.0 m



LITHOLOGIC DESCRIPTION

N9

SANDY NANNOFOSSIL FORAMINIFERA OOZE

A homogeneous white (N9) nannofossil foraminifera ooze is present. Black wisps and gray mottles are sparse but present. Some gray laminations are also present but these are very minor.

The sand fraction is biogenic but foraminifers make up the bulk. Gastropods, scaphopods, pteropods, and pelecypods were identified.

A pyritized burrow was found in the washed coarse fraction.

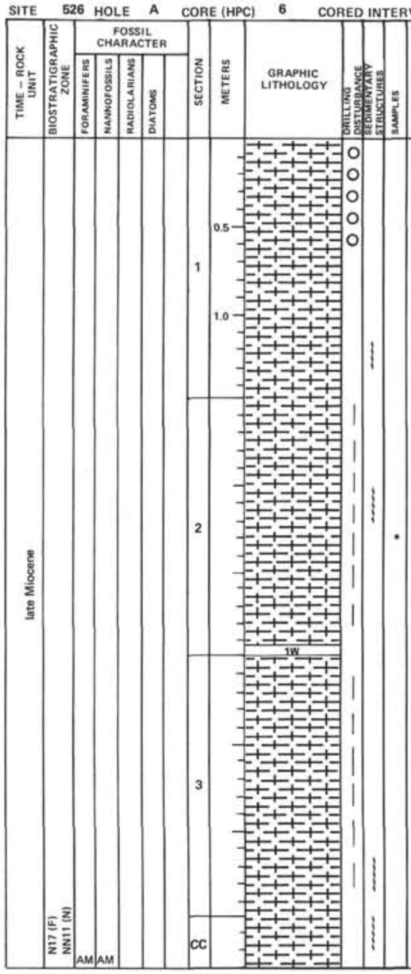
SMEAR SLIDE SUMMARY:

	2-80
	D
Composition:	
Volcanic glass	1
Foraminifers	75
Calcareous nannofossils	28
Calcareous dinoflagellates	1

ORGANIC CARBON AND CARBONATE:

	1-80	2-80	3-80
Organic carbon	–	–	–
Carbonate	97	98	99

SITE 526 HOLE A CORE (HPC) 6 CORED INTERVAL 50.0–54.4 m



LITHOLOGIC DESCRIPTION

N9

SANDY NANNOFOSSIL FORAMINIFER OOZE

A very white (N9) homogeneous nannofossil foraminifer ooze was recovered. Some mottling suggesting biologic activity is observed toward the bottom of each section.

The sand fraction (about 60% of samples) is biogenic. Gastropods, including pteropods and scaphopods(?), pelecypods, in addition to foraminifer were observed.

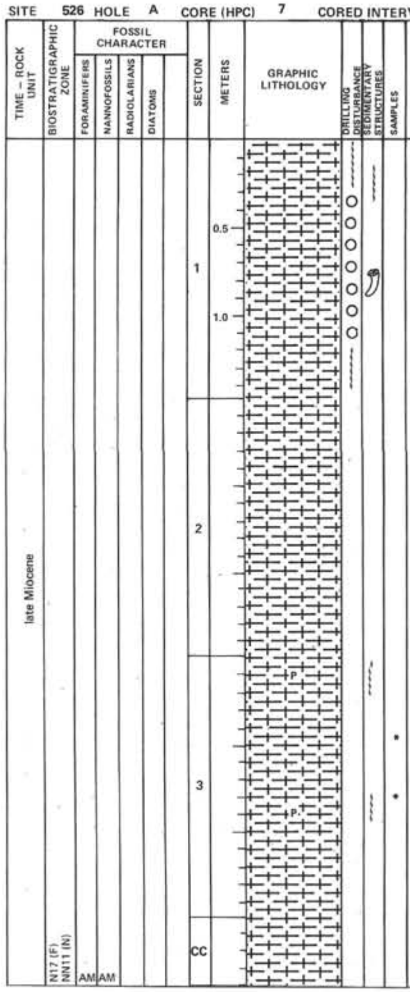
SMEAR SLIDE SUMMARY:

	2-80
	D
Composition:	
Carbonate unspecified	5
Foraminifers	60
Calcareous nannofossils	75

ORGANIC CARBON AND CARBONATE

	1-65	2-65	3-65
Organic carbon	–	–	–
Carbonate	97	99	99

SITE 526 HOLE A CORE (HPC) 7 CORED INTERVAL 54.4–58.8 m



LITHOLOGIC DESCRIPTION

N9

N7

N9

N7

N9

SANDY NANNOFOSSIL FORAMINIFER OOZE

This core contain a homogeneous white (N19) nannofossil foraminifer ooze.

The coarse fraction (more than 62 µm) contains a solitary coral (scleractinian), plus gastropods (pteropods especially) pelecypods and echinoderms.

Dark bands of light gray (N7) color are found in Sections 2 and 3. In smear slides the dark layers are the same as the white areas.

Some mottling due to biologic activity is present. Planolites(?) and vertical burrows are observed.

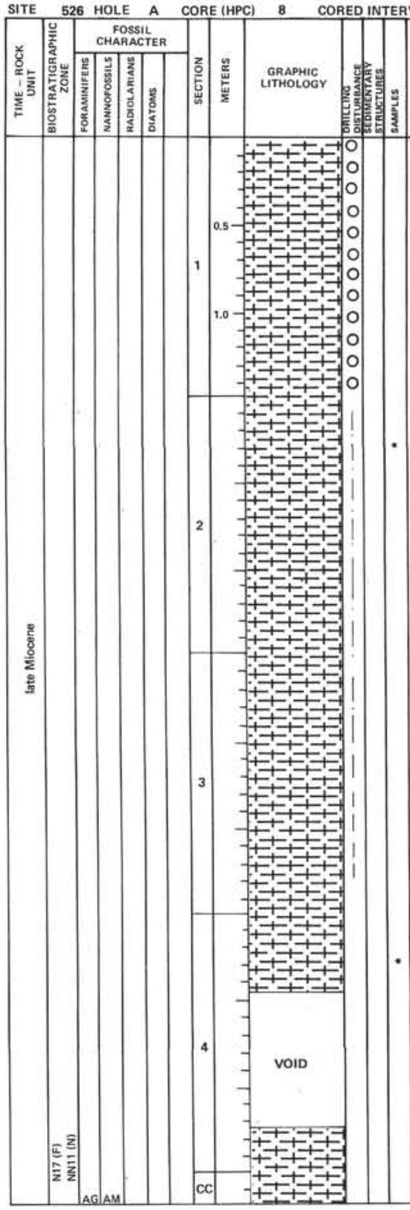
SMEAR SLIDE SUMMARY:

	3-42	3-80
	M	D
Composition:		
Volcanic glass	TR	–
Foraminifers	60	50
Calcareous nannofossils	40	50
Calcareous dinoflagellates	TR	–

ORGANIC CARBON AND CARBONATE:

	1-37	2-27	3-43
Organic carbon	–	–	–
Carbonate	100	98	100

SITE 526 HOLE A CORE (HPC) 8 CORED INTERVAL 58.8–63.2 m



LITHOLOGIC DESCRIPTION

N9

NANNOFOSSIL FORAMINIFER OOZE to FORAMINIFER NANNOFOSSIL OOZE

A homogeneous white (N9) nannofossil foraminifer to foraminifer nannofossil ooze is present.

A pyritized burrow is present at 70 cm, Section 2.

No sedimentary structure were observed.

The coarse fraction contains sand size foraminifers.

It appears that Cores 1–7 contain larger and more diversified invertebrates. The environment is changing with Cores 1–7 representing an environment where currents winnowed sediments or transported large fossils to the deposition site. It is also possible that contamination from the surface is an explanation for the large amounts of invertebrates in Cores 1–7.

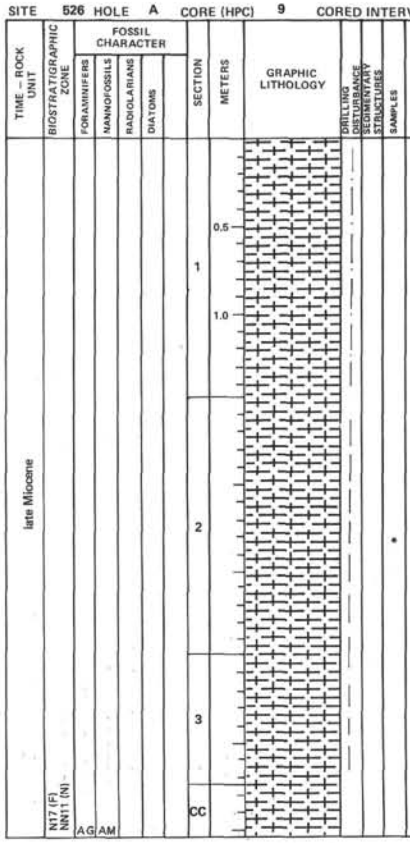
SMEAR SLIDE SUMMARY:

	2-30	4-30
	D	D
Composition:		
Foraminifers	50	40
Calcareous nannofossils	50	60

ORGANIC CARBON AND CARBONATE:

	1-20	2-20	3-20
Organic carbon	–	–	–
Carbonate	96	99	99

SITE 526 HOLE A CORE (HPC) 9 CORED INTERVAL 63.2–67.6 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL-FORAMINIFER OOZE

A white (N9) homogeneous moderate deformed nannofossil-foraminifer ooze is present.

No sedimentary structures are present.

The coarse fraction contain only sand size foraminifers.

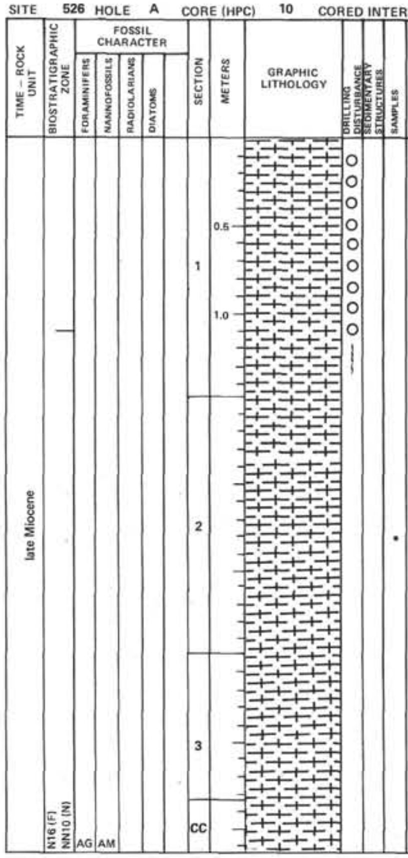
SMEAR SLIDE SUMMARY:

	2-80
	D
Composition:	
Foraminifers	50
Calcareous nannofossils	50

ORGANIC CARBON AND CARBONATE:

	1-3	2-3	3-3
Organic carbon	—	—	—
Carbonate	97	99	101

SITE 526 HOLE A CORE (HPC) 10 CORED INTERVAL 67.6–72.0 m



LITHOLOGIC DESCRIPTION

N9

NANNOFOSSIL-FORAMINIFER OOZE

A homogeneous white (N9) nannofossil-foraminifer ooze was recovered.

No sedimentary structures are present. Drilling disturbance in Section 1 is severe. Sections 2, 3, and Core-Catcher show no disturbance.

The coarse fraction contains mostly foraminifer but minor amounts of echinoderm spines and corals (solitary?) are observed.

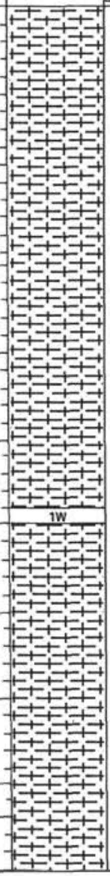
SMEAR SLIDE SUMMARY:

	2-80
	D
Composition:	
Foraminifers	60
Calcareous nannofossils	40

ORGANIC CARBON AND CARBONATE:

	1-8	2-8	3-8
Organic carbon	—	—	—
Carbonate	95	98	96

SITE 526 HOLE A CORE (HPC) 11 CORED INTERVAL 72.0–76.4 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Miocene	N16 (F) NN10 (N)	AG	AM			1, 2, 3, 4, CC	0.5, 1.0	 1W			•	N9

NANNOFOSSIL-FORAMINIFER OOZE

This core contains a white (N9) homogeneous nannofossil-foraminifer ooze. No sedimentary structures are present.

The coarse fraction (more than 62 µm) contains foraminifers.

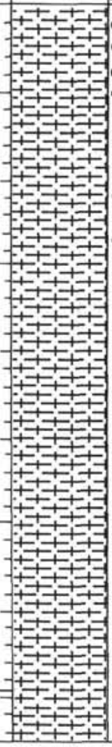
SMEAR SLIDE SUMMARY:

	3-80
	D
Composition:	
Foraminifers	50
Calcareous nannofossils	50

ORGANIC CARBON AND CARBONATE:

	1-8	2-8	3-8
Organic carbon	–	–	–
Carbonate	99	97	96

SITE 526 HOLE A CORE (HPC) 12 CORED INTERVAL 76.4–80.8 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Miocene	NN10 (N)					1, 2, 3	0.5, 1.0				•	
middle Miocene	N13 (F) NN9 (N)	AG	AM			CC						

NANNOFOSSIL-FORAMINIFER OOZE

This core consists of a white (N9) homogeneous nannofossil-foraminifer ooze. No sedimentary structures are preserved. The coarse fraction contains mostly forams but a few pteropods and some pyritized burrows, pelecypod and some solitary corals are present.

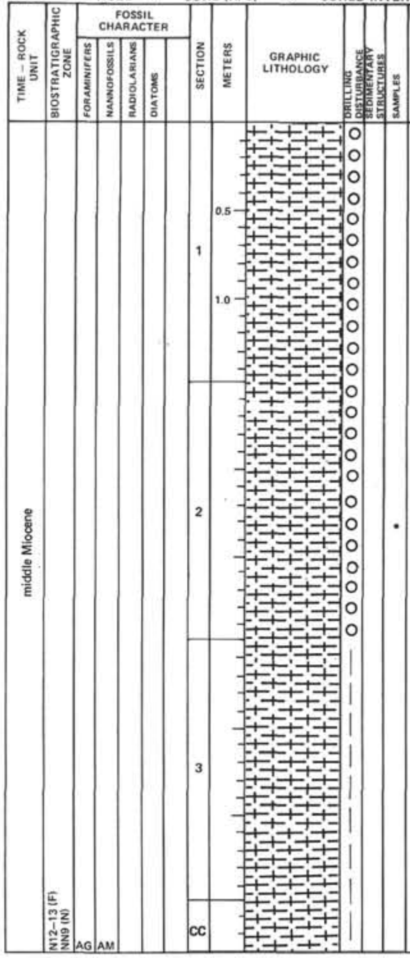
SMEAR SLIDE SUMMARY:

	3-70
	D
Composition:	
Foraminifers	40
Calcareous nannofossils	60

ORGANIC CARBON AND CARBONATE:

	1-30	2-30	3-30
Organic carbon	–	–	–
Carbonate	97	98	99

SITE 526 HOLE A CORE (HPC) 13 CORED INTERVAL 80.8–85.2 m



LITHOLOGIC DESCRIPTION

FORAMINIFER-NANNOFOSSIL OOZE

A white (N9), homogeneous soupy to highly disturbed foraminifer-nannofossil ooze is present.

No sedimentary structures are preserved.

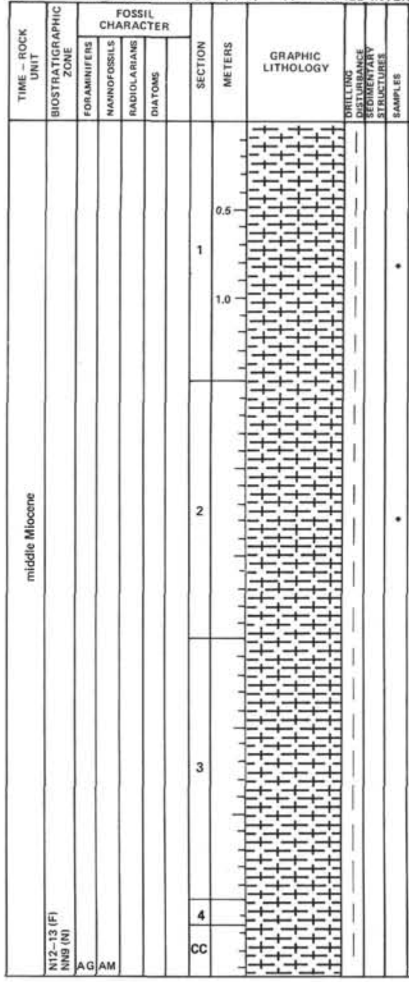
SMEAR SLIDE SUMMARY:

	2-80
	D
Composition:	
Foraminifers	50
Calcareous nannofossils	50

ORGANIC CARBON AND CARBONATE:

	1-130	2-130	3-130
Organic carbon	–	–	–
Carbonate	96	98	97

SITE 526 HOLE A CORE (HPC) 14 CORED INTERVAL 85.2–89.6 m



LITHOLOGIC DESCRIPTION

FORAMINIFER-NANNOFOSSIL OOZE

This core contains a homogeneous white (N9) foraminifer-nannofossil ooze.

No sedimentary structures are preserved.

The coarse fraction contains foraminifers.

SMEAR SLIDE SUMMARY:

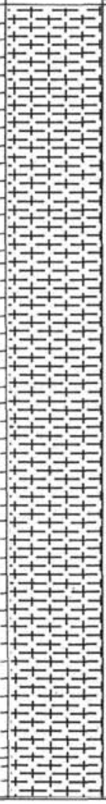
	2-80
	D
Composition:	
Foraminifers	50
Calcareous nannofossils	50

ORGANIC CARBON AND CARBONATE:

	1-30	2-30	3-30
Organic carbon	–	–	–
Carbonate	96	97	99

SITE 526 HOLE A CORE (HPC) 15 CORED INTERVAL 89.6–94.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
middle Miocene	N12–13 (F) NN6 (N)	AG	AM			1, 2, 3, CC	0.5, 1.0				•	N9



FORAMINIFER-NANNOFOSSIL OOZE

A monotonous, homogeneous white (N9) foraminifer-nannofossil ooze was recovered.

No sedimentary structures are preserved.

The coarse fraction, much of which is considered contamination from the top 30 meters contains in addition to foraminifer, coral fragments, pteropods, echinoid spines, and pelecypods.

SMEAR SLIDE SUMMARY:

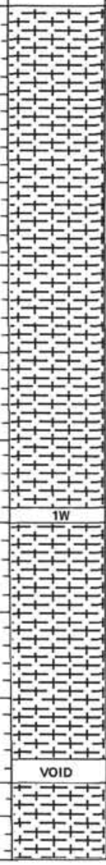
	2-80
	D
Composition:	
Foraminifers	40
Calcareous nannofossils	60

ORGANIC CARBON AND CARBONATE:

	1-30	2-30	3-30
Organic carbon	–	–	–
Carbonate	96	95	98

SITE 526 HOLE A CORE (HPC) 16 CORED INTERVAL 94.0–98.4 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
middle Miocene	N12 (F) NN7 (N)	AM	AM			1, 2, 3, 4, CC	0.5, 1.0	1W, VOID			•	



SANDY NANNOFOSSIL-FORAMINIFER OOZE

A white (N9) homogeneous nannofossil-foraminifer ooze is present.

No sedimentary structures are preserved.

The coarse fraction is biogenic and is composed of - foraminifer.

Section 2 (100 cm) and Section 3 (55–60 and 132–134 cm) contain slightly indurated ooze.

SMEAR SLIDE SUMMARY:

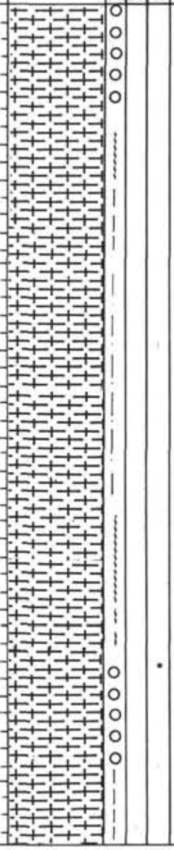
	1-80
	D
Composition:	
Foraminifers	60
Calcareous nannofossils	40

ORGANIC CARBON AND CARBONATE:

	1-12	2-12	3-12	4-12
Organic carbon	–	–	–	–
Carbonate	98	98	98	97

SITE 526 HOLE A CORE (HPC) 17 CORED INTERVAL 98.4–102.8 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
middle Miocene	? (F) NN7 (N)	AM	AM			1, 2, 3, CC	0.5, 1.0



N9

NANNOFOSSIL-FORAMINIFER OOZE

A white (N9) homogeneous moderate to highly disturbed nannofossil-foraminifer ooze was recovered.

No sedimentary structures are present.

Section 2 (0–100 cm) contain a slightly more consolidated ooze. The entire core is fluidized by the drilling process.

The coarse fraction is composed of foraminifers.

SMEAR SLIDE SUMMARY:

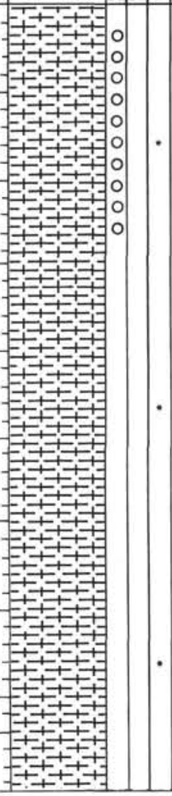
	3-80
	D
Composition:	
Foraminifers	60
Calcareous nannofossils	40

ORGANIC CARBON AND CARBONATE:

	1-75	2-75	3-75
Organic carbon	–	–	–
Carbonate	97	96	98

SITE 526 HOLE A CORE (HPC) 18 CORED INTERVAL 102.8–107.2 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
middle Miocene	NN7 (N); N10–11 (F) NN6 (N)	AM	AM			1, 2, 3, CC	0.5, 1.0



N9

N9 to 10YR 8/2

10YR 8/2

NANNOFOSSIL-FORAMINIFER OOZE

This core contains a white (N9) to very pale orange (10YR 8/2) nannofossil-foraminifer ooze. The sediment is homogeneous, with no sedimentary structures preserved.

The coarse fraction contains foraminifers.

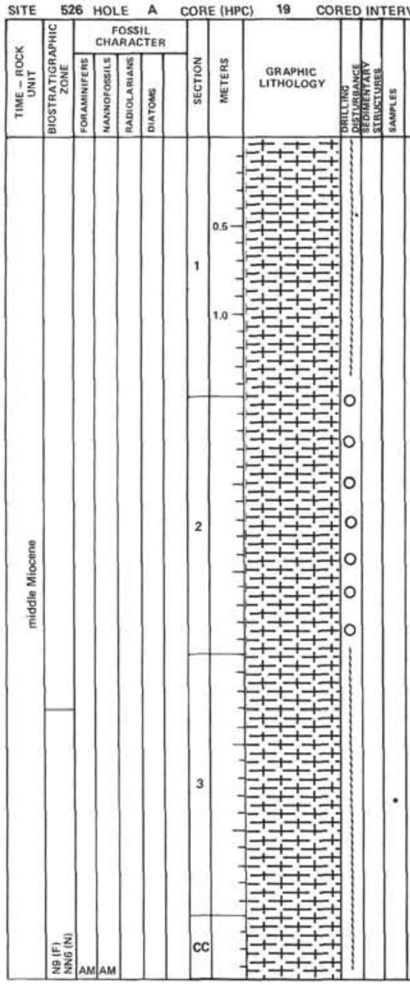
SMEAR SLIDE SUMMARY:

	1-80	2-80	3-80
	D	D	D
Composition:			
Quartz	–	TR	–
Volcanic glass	–	TR	–
Echinoid	–	1	–
Dinoflagellates	3	–	TR
Ostracods	TR	–	TR
Foraminifers	30	20	15
Calcareous nannofossils	67	79	85

ORGANIC CARBON AND CARBONATE:

	1-25	2-25	3-25
Organic carbon	–	–	–
Carbonate	98	97	98

SITE 526 HOLE A CORE (HPC) 19 CORED INTERVAL 107.2–111.6 m



LITHOLOGIC DESCRIPTION

10YR 8/2

N9

NANNOFOSSIL-FORAMINIFER OOZE

The core liner of this core was completely fractured, thus the core is completely mixed.

A very pale orange (10YR 8/2) to white (N9) nannofossil foraminifer ooze was recovered.

No sedimentary structures are preserved.

Section 1 at 85–90 and 103–107 cm and Section 2, 0–10 cm contain patches of more consolidated oozes or unconsolidated chalks.

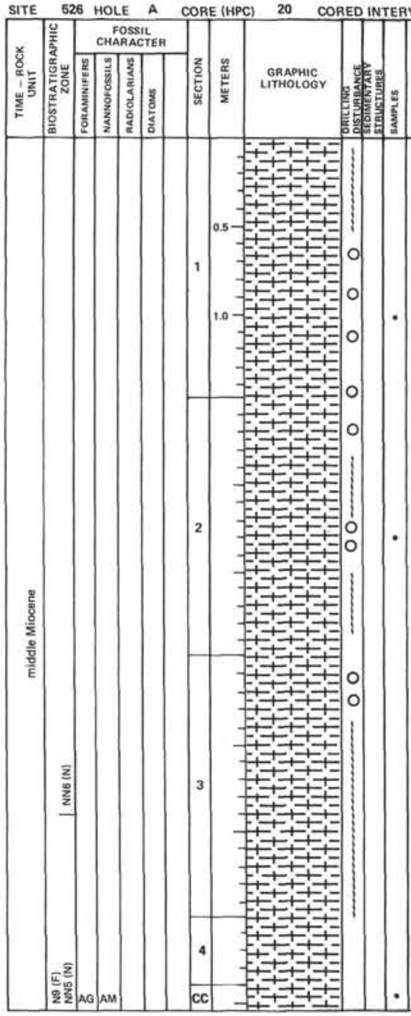
SMEAR SLIDE SUMMARY:

	3-80
	D
Composition:	
Foraminifers	80
Calcareous nannofossils	20

ORGANIC CARBON AND CARBONATE:

	1-12	2-12	3-12
Organic carbon	–	–	–
Carbonate	95	97	94

SITE 526 HOLE A CORE (HPC) 20 CORED INTERVAL 111.6–116.0 m



LITHOLOGIC DESCRIPTION

N9

10YR 8/2

SANDY NANNOFOSSIL FORAMINIFER OOZE

The core consists of a homogeneous, highly disturbed, white (N9) to very pale orange (10YR 8/2).

NANNOFOSSIL-FORAMINIFER OOZE

Two nodules were found in Section 1 and appear to be reworked material. They are composed almost entirely of nannofossils.

SMEAR SLIDE SUMMARY:

	1-100	1-80	CC
	M	D	D
Composition:			
Quartz	–	TR	TR
Carbonate unspecified	3	2	TR
Foraminifers	7	15	30
Calcareous nannofossils	90	81	65
Ostracods	–	TR	–
Discoasters	1	1	5
Dinoflagellates	–	1	–
Echinoids	–	–	TR

ORGANIC CARBON AND CARBONATE:

	1-32	2-32	3-32
Organic carbon	–	–	–
Carbonate	99	98	96

SITE 526 HOLE A CORE (HPC) 21 CORED INTERVAL 116.0–120.4 m

TIME – ROCK UNIT: early Miocene

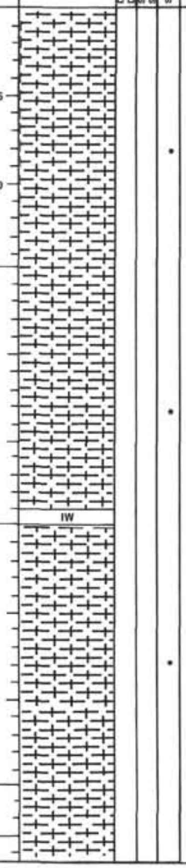
BIOSTRATIGRAPHIC ZONE: NN4 (N); N7 (F) NN3 (N)

FOSSIL CHARACTER: FORAMINIFERS AG; NANNOFOSSILS AM; RADIOLARIANS; DIATOMS

SECTION: 1, 2, 3, 4, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

SANDY NANNOFOSSIL-FORAMINIFER OOZE

A white (N9) to very pale orange (10YR 8/2) sandy textured nannofossil-foraminifer ooze was recovered.

No sedimentary structures are preserved.

Some areas within the sections are more consolidated. This is due most likely to compaction.

SMEAR SLIDE SUMMARY:

	1-80	2-80	3-80
	D	D	D
Composition:			
Heavy minerals	–	TR	TR
Volcanic glass	TR	TR	–
Carbonate unspecified	–	–	TR
Foraminifers	30	10	50
Calcareous nannofossils	70	90	50
Dinoflagellates	–	TR	–
Ostracods	–	–	TR
Fish remains	TR	TR	–
Echinoids	TR	TR	–

ORGANIC CARBON AND CARBONATE:

	1-14	2-14	3-14
Organic carbon	–	–	–
Carbonate	95	97	96

SITE 526 HOLE A CORE (HPC) 22 CORED INTERVAL 120.4–124.8 m

TIME – ROCK UNIT: early Miocene

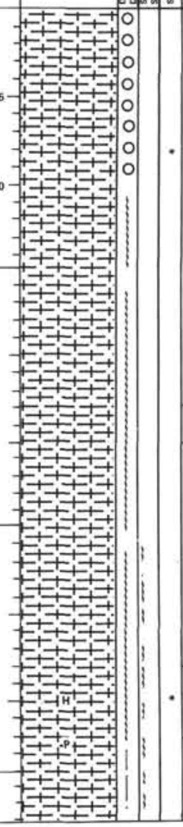
BIOSTRATIGRAPHIC ZONE: NN2 (N); N6 (F) NN1 (N)

FOSSIL CHARACTER: FORAMINIFERS AG; NANNOFOSSILS AM; RADIOLARIANS; DIATOMS

SECTION: 1, 2, 3, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

10YR 8/2

10YR 8/2–
N9

N9

N9–
10YR 8/2

N9

10YR 8/2
+ N9

10YR 8/2

N9

FORAMINIFER-NANNOFOSSIL OOZE

A white (N9) to very pale orange (10YR 8/2) highly disturbed foraminifer-nannofossil ooze is present.

The third section is preserved enough for some biogenic sedimentary structures to be recognized.

SMEAR SLIDE SUMMARY:

	1-80	3-100
	D	D
Composition:		
Quartz	TR	–
Feldspar	–	TR
Volcanic glass	1	TR
Carbonate unspecified	TR	TR
Foraminifers	15	15
Calcareous nannofossils	81	85
Radiolarians	TR	–
Dinoflagellates	1	–
Echinoids	TR	–

ORGANIC CARBON AND CARBONATE:

	1-132	2-132	3-132
Organic carbon	–	–	–
Carbonate	98	98	98

SITE 526 HOLE A CORE (HPC) 23 CORED INTERVAL 124.8–129.2 m

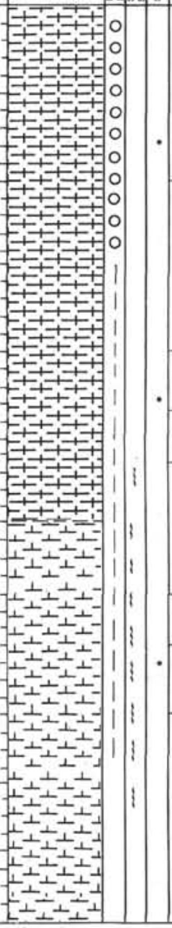
TIME-ROCK UNIT: early Miocene

BIOSTRATIGRAPHIC ZONE: N6 (F) NN1 (N)

FOSSIL CHARACTER: FORAMINIFERS AG; NANNOFOSSILS AM

SECTION: 1, 2, 3, 4, CC

METERS: 0.5, 1.0



LITHOLOGIC DESCRIPTION

N9 to 10YR 8/2

N9

10YR 8/2

N9

10YR 8/2

N9

10YR 8/2

N9

FORAMINIFER-NANNOFOSSIL OOZE

This core contains a highly to slightly disturbed white (N9) to very pale orange (10YR 8/2) foraminifer-nannofossil ooze.

Some biogenic sedimentary structures are recognized in Sections 2 and 3.

In Sections 3 and 5 the colors alternate fairly regularly at about 5 cm intervals.

SMEAR SLIDE SUMMARY:

	1-80	2-80	3-80
	D	D	D
Composition:			
Heavy minerals	–	TR	–
Volcanic glass	TR	TR	TR
Palagonite	–	TR	–
Foraminifers	15	20	5
Calcareous nannofossils	85	80	95
Fish remains	–	–	TR
Dinoflagellates	–	TR	–
Echinoids	TR	TR	TR

ORGANIC CARBON AND CARBONATE:

	1-27	2-27	3-27
Organic carbon	–	–	–
Carbonate	96	99	98

SITE 526 HOLE A CORE (HPC) 24 CORED INTERVAL 129.2–133.6 m

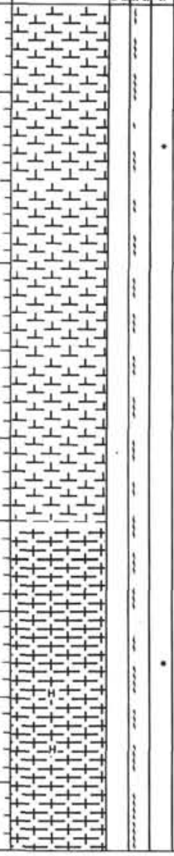
TIME-ROCK UNIT: early Miocene

BIOSTRATIGRAPHIC ZONE: N5 (F) NN1 (N)

FOSSIL CHARACTER: FORAMINIFERS AM; NANNOFOSSILS AM

SECTION: 1, 2, 3, CC

METERS: 0.5, 1.0



LITHOLOGIC DESCRIPTION

N9 to 5YR 8/1

10YR 8/2

N9 to 5YR 8/1

NANNOFOSSIL AND FORAMINIFER NANNOFOSSIL OOZE

A homogeneous white (N9) to pinkish gray (5YR 8/1) foraminifer nannofossil ooze is present.

Mottling due to bioturbation is present throughout the cores.

In Section 2 colors are faint but they do alternate.

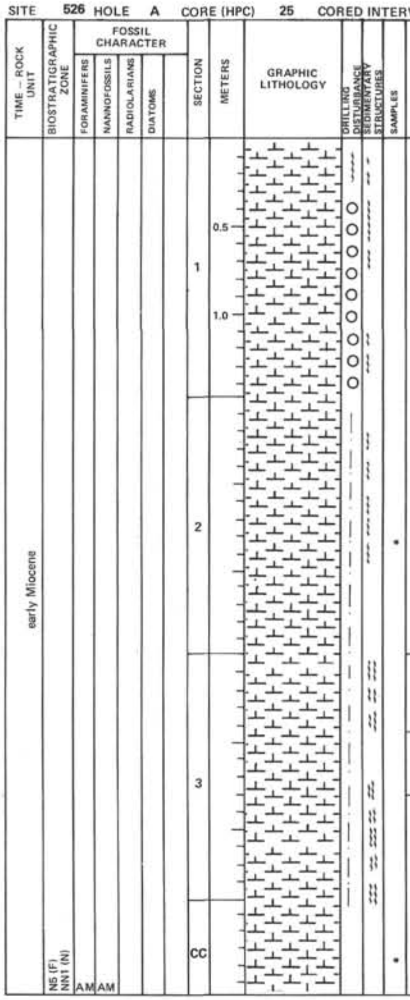
SMEAR SLIDE SUMMARY:

	1-80	3-80
	D	D
Composition:		
Heavy minerals	TR	TR
Volcanic glass	TR	TR
Palagonite	TR	–
Foraminifers	5	20
Calcareous nannofossils	95	80
Dinoflagellates	–	TR
Ostracods	–	TR

ORGANIC CARBON AND CARBONATE:

	1-14	2-14	3-14
Organic carbon	–	–	–
Carbonate	100	98	97

SITE 526 HOLE A CORE (HPC) 25 CORED INTERVAL 133.6–138.0 m



LITHOLOGIC DESCRIPTION

10YR 8/2

10YR 8/2
+ N7

N7

10YR 8/2
+ N7

NANNOFOSSIL OOZE

A slightly to moderately bioturbated very pale orange (10YR 8/2) nannofossil ooze was recovered.

Halo burrows are the most noticeable ichnofossil.

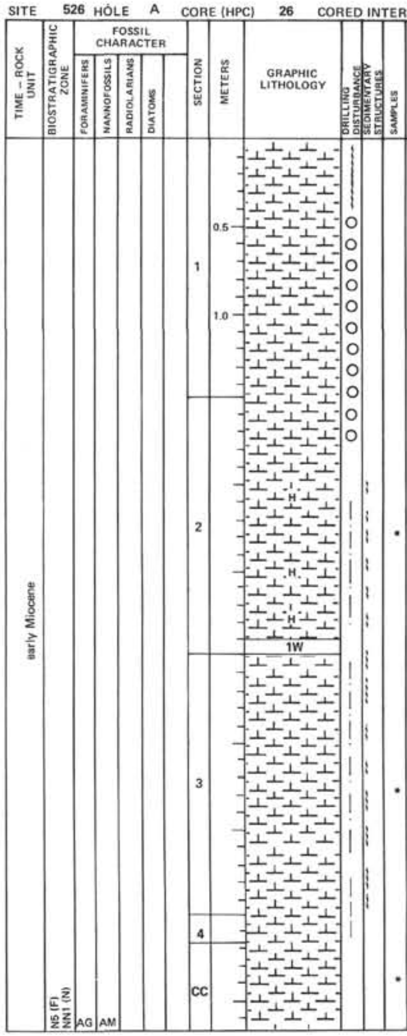
SMEAR SLIDE SUMMARY:

	2-80	CC
	D	D
Compoisition:		
Feldspar	–	TR
Volcanic glass	–	1
Carbonate unspecified	1	–
Foraminifers	5	7
Calcareous nannofossils	94	91
Dinoflagellates	–	1
Echinoids	TR	–

ORGANIC CARBON AND CARBONATE:

	1-14	2-14	3-14
Organic carbon	–	–	–
Carbonate	97	97	95

SITE 526 HOLE A CORE (HPC) 26 CORED INTERVAL 138.0–142.4 m



LITHOLOGIC DESCRIPTION

N9

10YR 8/2

10YR 8/2–
N9

NANNOFOSSIL OOZE

A soupy to slightly disturbed white (N9) to very pale orange (10YR 8/2) slightly bioturbated nannofossil ooze is present.

More consolidated ooze layers occur in the Core-Catcher.

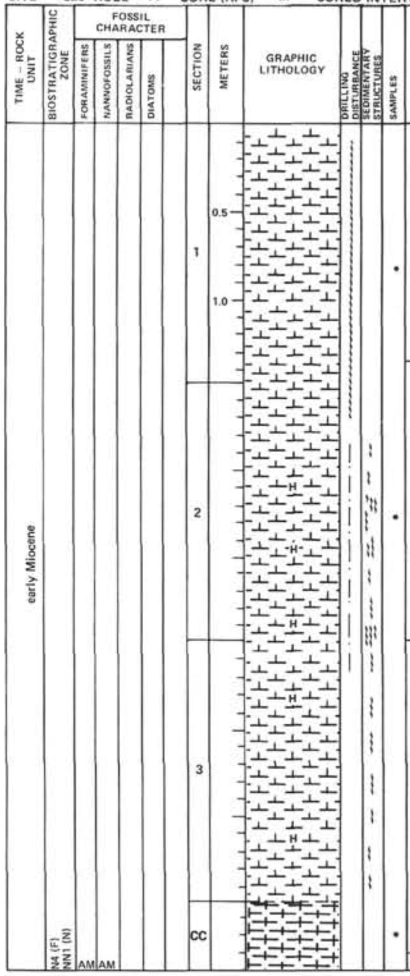
SMEAR SLIDE SUMMARY:

	2-80	3-80	CC
	D	D	D
Composition:			
Volcanic glass	TR	TR	TR
Palagonite	TR	–	–
Carbonate unspecified	2	–	TR
Foraminifers	7	7	7
Calcareous nannofossils	92	93	92
Dinoflagellates	1	TR	–
Echinoids	–	–	1

ORGANIC CARBON AND CARBONATE:

	1-12	2-12	3-12	4-12
Organic carbon	–	–	–	–
Carbonate	97	95	96	98

SITE 526 HOLE A CORE (HPC) 27 CORED INTERVAL 142.4–146.8 m



LITHOLOGIC DESCRIPTION

5YR 8/1

N9 to 5YR 8/1

N9

5YR 8/1

NANNOFOSSIL OOZE AND
FORAMINIFER NANNOFOSSIL OOZE

This core consists of a white (N9) to pinkish grey (5YR 8/1) nannofossil ooze.

Biogenic sedimentary structures are present in Sections 2 and 3.

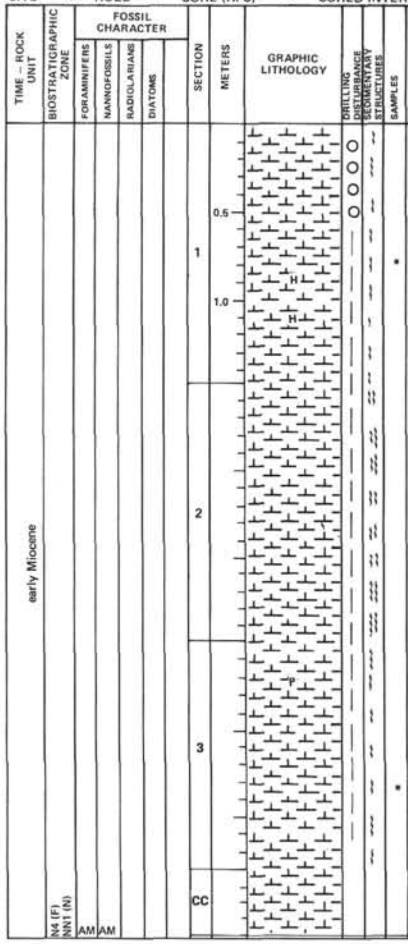
SMEAR SLIDE SUMMARY:

	1-80	2-80	CC
	D	D	D
Composition:			
Heavy minerals	–	TR	–
Volcanic glass	TR	–	TR
Palagonite	–	–	TR
Foraminifers	10	5	15
Calcareous nannofossils	90	95	85
Fish remains	TR	TR	–
Dinoflagellates	TR	–	–

ORGANIC CARBON AND CARBONATE:

	1-42	2-42	3-42
Organic carbon	–	–	–
Carbonate	97	98	99

SITE 526 HOLE A CORE (HPC) 28 CORED INTERVAL 146.8–151.2 m



LITHOLOGIC DESCRIPTION

10YR 8/2

10YR 8/4

7.5YR 8/2

NANNOFOSSIL OOZE

This core contains a homogeneous very pale orange (10YR 8/2) to pinkish white (7.5YR 8/2) nannofossil ooze.

Biogenic sedimentary structures are present with planolites and vertical burrows being the most prevalent.

SMEAR SLIDE SUMMARY:

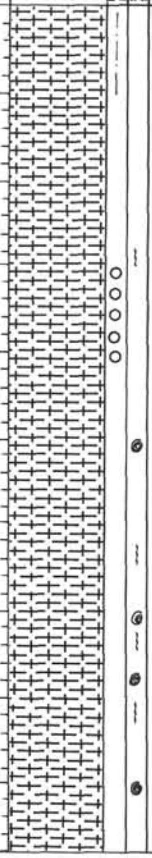
	1-80	3-80
	D	D
Composition:		
Volcanic glass	–	TR
Palagonite	TR	TR
Foraminifers	5	5
Calcareous nannofossils	95	95
Ostracods	TR	–
Echinoids	TR	–

ORGANIC CARBON AND CARBONATE:

	1-43	2-43	3-43
Organic carbon	–	–	–
Carbonate	95	96	95

SITE 526 HOLE A CORE (HPC) 29 CORED INTERVAL 151.2–155.6 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
early Miocene	N4 (F) NN1 (N)	AM	AM			1, 2, 3, CC	0.5, 1.0				



LITHOLOGIC DESCRIPTION

5YR 8/1

FORAMINIFER NANNOFOSSIL OOZE

The core contains a homogeneous pinkish gray (5YR 8/1) foraminifer nannofossil ooze. Pelecypod shell fragments are found in Sections 2 and 3. In addition faint mottles are also observed.

SMEAR SLIDE SUMMARY:

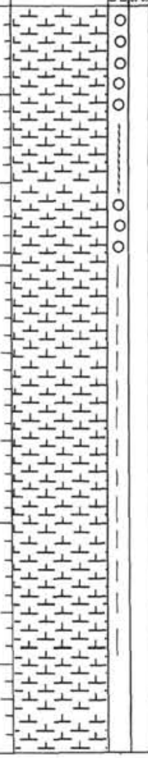
	1-80	3-80
	D	D
Composition:		
Heavy minerals	TR	TR
Volcanic glass	TR	–
Palagonite	–	TR
Foraminifers	20	20
Calcareous nannofossils	80	80

ORGANIC CARBON AND CARBONATE:

	1-42	2-42	3-42
Organic carbon	–	–	–
Carbonate	96	96	95

SITE 526 HOLE A CORE (HPC) 30 CORED INTERVAL 155.6–160.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
late Oligocene–early Pliocene	N4 (F) NN1 (N)	AG	AM			1, 2, 3, CC	0.5, 1.0				



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

A homogeneous pinkish white (7.5YR 6/2) nannofossil ooze was recovered.

No sedimentary structures are preserved.

7.5YR 8/4

SMEAR SLIDE SUMMARY:

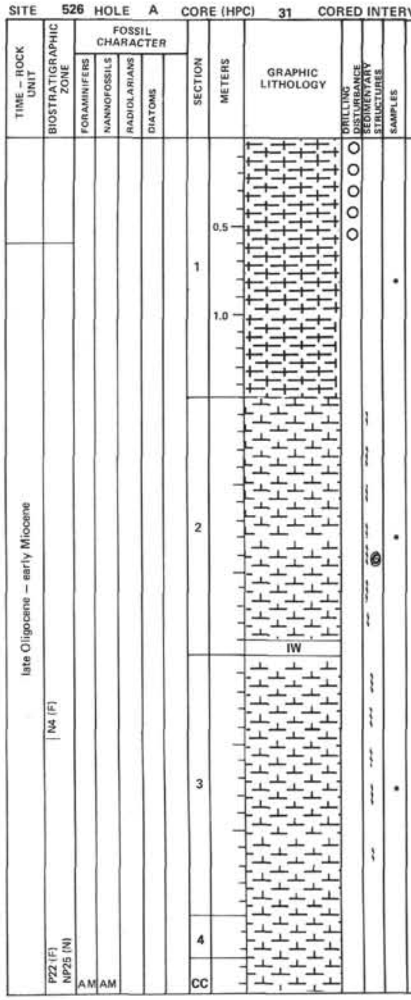
	1-70	3-40	CC
	D	D	D
Composition:			
Quartz	TR	–	–
Feldspar	–	TR	TR
Volcanic glass	1	TR	–
Palagonite	TR	TR	1
Foraminifers	3	2	3
Calcareous nannofossils	90	98	97
Dinoflagellates	–	TR	–
Hematite	TR	TR	–

ORGANIC CARBON AND CARBONATE:

	1-42	2-42	3-42
Organic carbon	–	–	–
Carbonate	95	94	95

7.5YR 6/2

SITE 526 HOLE A CORE (HPC) 31 CORED INTERVAL 160.0–164.4 m



LITHOLOGIC DESCRIPTION

5YR 8/1

FORAMINIFER NANNOFOSSIL AND NANNOFOSSIL OOZE

This core contains a homogeneous pinkish gray (5YR 8/1) predominantly nannofossil ooze.

Sections 2 and 3 are slightly bioturbated with zoophycus and planolites identified. A shell fragment is present at 93 cm (Section 2).

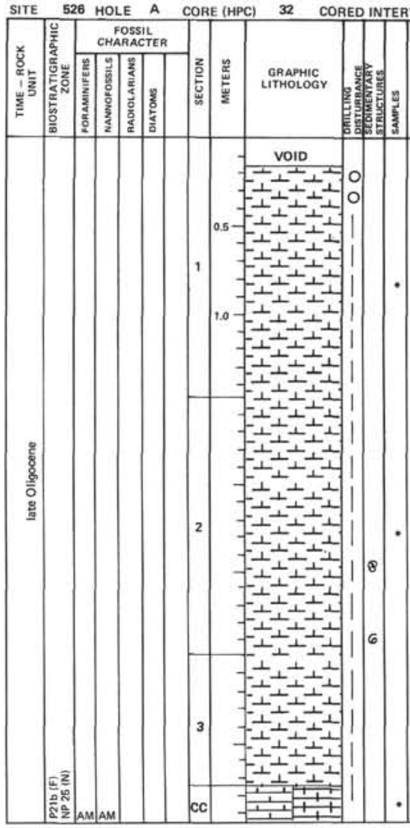
SMEAR SLIDE SUMMARY:

	1-80	2-80	3-80
	D	D	D
Composition:			
Heavy minerals	TR	TR	TR
Volcanic glass	–	TR	TR
Palagonite	–	–	2
Foraminifers	20	5	10
Calcareous nannofossils	80	95	88
Ostracods	TR	–	–
Dinoflagellates	–	TR	–
Fish remains	TR	–	–

ORGANIC CARBON AND CARBONATE:

	1-42	2-42	3-42
Organic carbon	–	–	–
Carbonate	96	94	94

SITE 526 HOLE A CORE (HPC) 32 CORED INTERVAL 164.4–168.8 m



LITHOLOGIC DESCRIPTION

7.5YR 8/4

NANNOFOSSIL OOZE WITH SOME CHALK LAYERS

This core contains a pink (7.5YR 8/4) homogeneous nannofossil ooze with minor chalk layers.

The chalk layers (approximately 5 cm thick) are found in Sections 2 and 3. Pelecypod shells are also present.

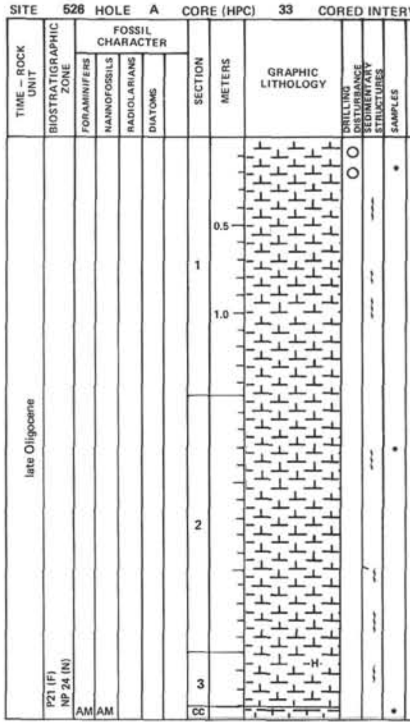
SMEAR SLIDE SUMMARY:

	1-80	2-80	CC
	D	D	D
Composition:			
Quartz	–	–	TR
Volcanic glass	TR	1	TR
Palagonite	1	–	TR
Carbonate unspecified	TR	1	1
Foraminifers	8	7	5
Calcareous nannofossils	91	90	93
Ostracods	TR	–	–
Dinoflagellates	1	–	–
Echinoids	–	–	TR

ORGANIC CARBON AND CARBONATE:

	1-42	2-42	3-42
Organic carbon	–	–	–
Carbonate	98	96	96

SITE 526 HOLE A CORE (HPC) 33 CORED INTERVAL 168.8–173.2 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

This core contains a homogeneous pinkish gray (5YR 8/1) nannofossil ooze with medium gray (N5) mottles. The mottles are interpreted to be biogenic in origin.

Braarudosphaera Sp? are present within this core.

Foraminifers are abundant in the Core-Catcher.

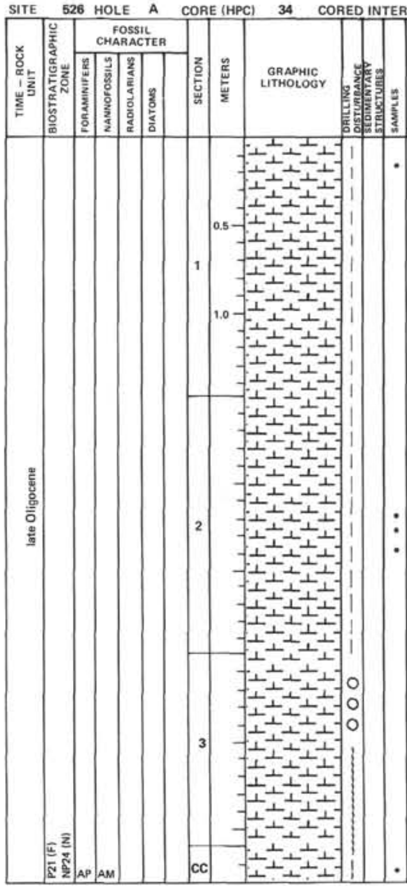
SMEAR SLIDE SUMMARY:

	1-20	2-30	CC
	D	D	D
Composition:			
Feldspar	–	TR	TR
Heavy minerals	–	TR	TR
Volcanic glass	TR	TR	–
Foraminifers	5	5	30
Calcareous nannofossils	95	95	70
Dinoflagellates	–	TR	–
Ostracods	TR	–	–

ORGANIC CARBON AND CARBONATE:

	1-149	2-149
Organic carbon	–	–
Carbonate	95	94

SITE 526 HOLE A CORE (HPC) 34 CORED INTERVAL 173.2–177.6



LITHOLOGIC DESCRIPTION

7.5YR 5/2

7.5YR 8/2

NANNOFOSSIL OOZE

A homogeneous pinkish white (7.5YR 5/2) nannofossil ooze with patchy chalk areas is present.

No sedimentary structures are preserved.

Section 2 contains abundant Braarudosphaera.

SMEAR SLIDE SUMMARY:

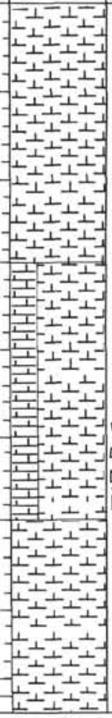
	1-20	2-70	2-80	2-90	CC
	D	D	D	D	D
Composition:					
Feldspar	–	–	TR	–	–
Heavy minerals	TR	TR	–	–	–
Volcanic glass	–	–	–	–	1
Foraminifers	3	1	TR	TR	5
Calcareous nannofossils (coccoliths)	82	35	55	58	88
Dinoflagellates	1	1	–	TR	1
Braarudosphaera	3	5	60	45	2
Discoasters	10	5	5	–	2

ORGANIC CARBON AND CARBONATE:

	1-70	2-70	3-70
Organic carbon	–	–	–
Carbonate	96	94	94

SITE 526 HOLE A CORE (HPC) 35 CORED INTERVAL 177.6–182.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Oligocene	P21a (F) NP24 (N)	AM	AM			1, 2, 3, CC	0.5, 1.0					



5YR 8/1

5YR 8/1 to N9

7.5YR 8/4

N9

5YR 8/1

NANNOFOSSIL OOZE AND CHALK

This core consists of a homogeneous pinkish gray (5YR 8/1) nannofossil ooze.

Section 2, highly disturbed due to a broken core liner contains a white to pinkish gray ooze from 0–77 cm.

A chalk bed occurs from 77–90 cm. From 90–150 cm a brecciated chalk occurs. This chalk is a Braarudosphaera chalk.

SMEAR SLIDE SUMMARY:

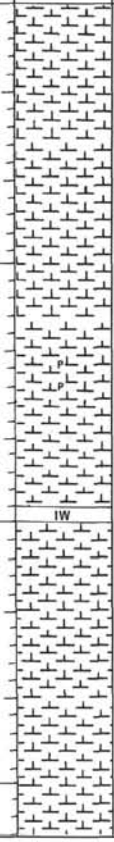
	1-80	2-80	2-105	3-70
	D	D	M	D
Composition:				
Quartz	–	TR	–	–
Feldspar	–	TR	–	–
Mica	–	TR	–	–
Heavy minerals	TR	TR	–	–
Clay	–	TR	–	–
Volcanic glass	TR	–	–	TR
Palagonite	–	–	TR	TR
Foraminifers	5	–	1	2
Calcareous nannofossils	92	100	4	98
Dinoflagellates	TR	–	–	TR
Braarudosphaera	3	–	95	–

ORGANIC CARBON AND CARBONATE:

	1-9	2-9	3-9
Organic carbon	–	–	–
Carbonate	96	95	95

SITE 526 HOLE A CORE (HPC) 36 CORED INTERVAL 182.0–186.4 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Oligocene	P20 (F) NP23/24 (N)	AM	AM			1, 2, 3, CC	0.5, 1.0					



7.5YR 8/2

7.5YR 8/4

NANNOFOSSIL OOZE

This core contains a homogeneous pinkish white (7.5YR 8/2) nannofossil ooze.

No sedimentary structures are preserved.

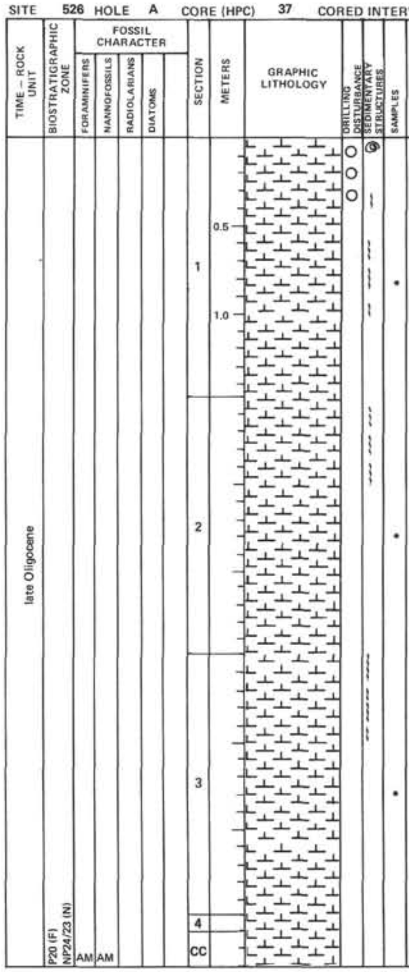
SMEAR SLIDE SUMMARY:

	1-80	3-80
	D	D
Composition:		
Quartz	TR	TR
Palagonite	TR	TR
Foraminifers	1	2
Calcareous nannofossils	92	95
Dinoflagellates	TR	TR
Discoasters	5	2
Braarudosphaera	2	1

ORGANIC CARBON AND CARBONATE:

	1-43	2-43	3-43
Organic carbon	–	–	–
Carbonate	95	96	93

SITE 526 HOLE A CORE (HPC) 37 CORED INTERVAL 186.4–190.8 m



LITHOLOGIC DESCRIPTION

7.5YR 8/2

NANNOFOSSIL OOZE

This core contains a homogeneous pink (7.5YR 8/2) to grayish orange pink (5YR 7/2) nannofossil ooze.

Sections 2 and 3 show alternating soft to firm ooze layers which repeat every 6–7 cm.

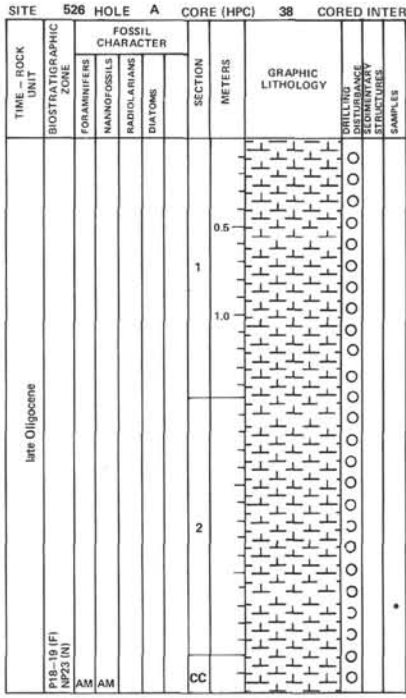
SMEAR SLIDE SUMMARY:

	1-80	2-80	3-80
	D	D	D
Composition:			
Feldspar	TR	–	–
Heavy minerals	–	TR	–
Volcanic glass	TR	–	–
Palagonite	TR	TR	–
Foraminifers	TR	1	2
Calcareous nannofossils	100	99	98
Fish remains	–	TR	–
Dinoflagellates	TR	TR	TR

ORGANIC CARBON AND CARBONATE:

	1-63	2-63	3-63
Organic carbon	–	–	–
Carbonate	97	92	95

SITE 526 HOLE A CORE (HPC) 38 CORED INTERVAL 190.8–195.2 m



LITHOLOGIC DESCRIPTION

7.5YR 8/4

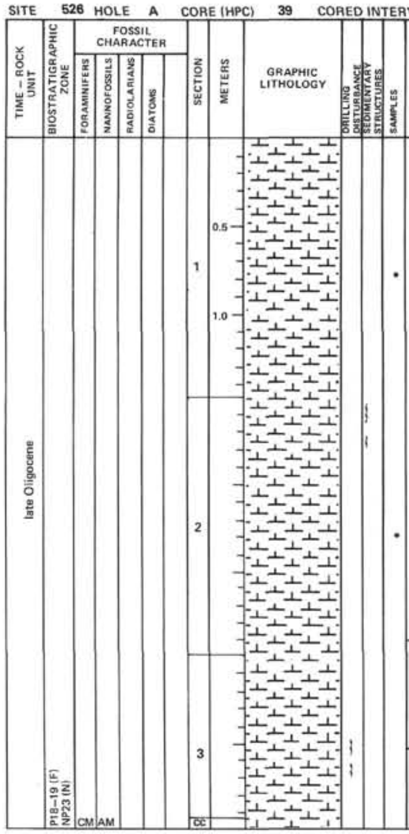
NANNOFOSSIL OOZE

A soupy to highly disturbed pink (7.5YR 8/4) nannofossil ooze was recovered.

SMEAR SLIDE SUMMARY:

	2-120
	D
Composition:	
Heavy minerals	TR
Palagonite	TR
Foraminifers	5
Calcareous nannofossils	95
Discoasters	TR

SITE 526 HOLE A CORE (HPC) 39 CORED INTERVAL 195.2–199.6 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE

This core consists of a pinkish white (7.5YR 8/2) nannofossil ooze. Faint mottles occur in Sections 2 and 3. These are biogenic in origin.

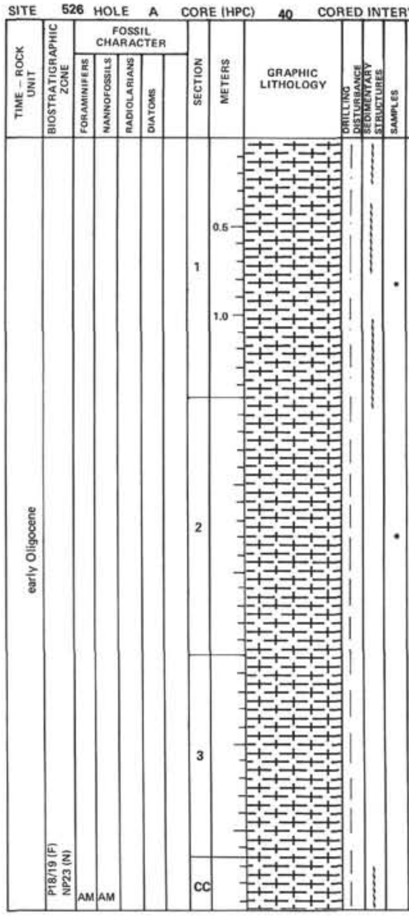
SMEAR SLIDE SUMMARY:

	1-80	2-80
	D	D
Composition:		
Heavy minerals	–	TR
Foraminifers	10	1
Calcareous nannofossils	90	99
Dinoflagellates	TR	TR

ORGANIC CARBON AND CARBONATE:

	1-60	2-60	3-60
Organic carbon	–	–	–
Carbonate	97	96	95

SITE 526 HOLE A CORE (HPC) 40 CORED INTERVAL 199.6–204.0 m



LITHOLOGIC DESCRIPTION

7.5YR 8/2

FORAMINIFER NANNOFOSSIL OOZE

This core contains a homogeneous pinkish white (7.5YR 8/2) foraminifer nannofossil ooze.

No sedimentary structures are positively identified, but Section 1 contains faint mottles which may be biogenic in origin.

SMEAR SLIDE SUMMARY:

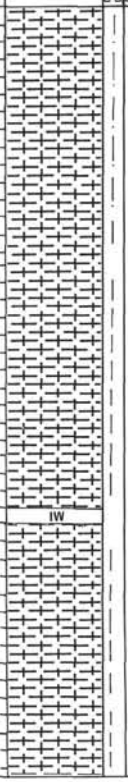
	1-80	2-80
	D	D
Composition:		
Volcanic glass	–	1
Carbonate unspecified	TR	–
Foraminifers	36	40
Calcareous nannofossils	64	58
Calcareous dinoflagellates	1	1

ORGANIC CARBON AND CARBONATE:

	1-100	2-100	3-100
Organic carbon	–	–	–
Carbonate	95	96	95

SITE 526 HOLE A CORE (HPC) 41 CORED INTERVAL 204.0–208.4 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
early Oligocene	P18/19 (F) NP23 (N)	AM	AM			1, 2, 3, CC	0.5, 1.0	IW			* *	7.5YR 8/2



FORAMINIFER NANNOFOSSIL OOZE

A homogeneous, moderately disturbed pinkish white (7.5YR 8/2) foraminifer nannofossil ooze was recovered.

Section 2 contains a high amount of *Braarudosphaera* Sp?

No sedimentary structures are identified. However, a few faint bioturbated zone are noticed.

SMEAR SLIDE SUMMARY:

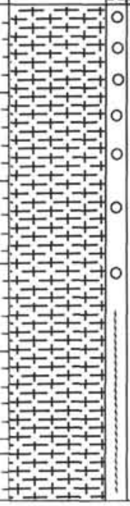
	1-80	2-80
	D	D
Composition:		
Volcanic glass	3	2
Palagonite	–	TR
Carbonate unspecified	TR	2
Foraminifers	30	30
Calcareous nannofossils	64	65
Calcareous dinoflagellates	3	1

ORGANIC CARBON AND CARBONATE:

	1-53	2-53	3-53
Organic carbon	–	–	–
Carbonate	96	95	94

SITE 526 HOLE A CORE (HPC) 42 CORED INTERVAL 208.4–212.8 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Eocene	NP23 (N); P17 (F) NP20 (N)	CP	AP			1, 2, CC	0.5, 1.0				* * *	7.5YR 8/2 pinkish white; 5YR 8/4 pink



FORAMINIFER NANNOFOSSIL OOZE

This core contains a soupy to highly disturbed foraminifer nannofossil ooze. The color is pink (5YR 8/4) to pinkish white (7.5YR 8/2).

Braarudosphaera Sp? are present in the nannofossil population.

No sedimentary structures are preserved.

A *Braarudosphaera* ooze is present at 50–55 cm Section 1.

SMEAR SLIDE SUMMARY:

	1-40	1-50	2-60
	D	D	D
Composition:			
Foraminifers	15	10	10
Calcareous nannofossils	85	90[a]	90

[a] Braarudosphaera

SITE 526 HOLE A CORE (HPC) 43 CORED INTERVAL 212.8–217.2 m

TIME-ROCK UNIT: late Eocene

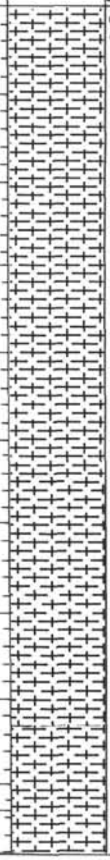
BIOSTRATIGRAPHIC ZONE: P16 (F) N20 (N)

FOSSIL CHARACTER: FORAMINIFERS CP; NANNOFOSSILS AP; RADIOLARIANS; DIATOMS

SECTION: 1, 2, 3, 4, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY



DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES

LITHOLOGIC DESCRIPTION

5YR 8/3
pink

FORAMINIFER NANNOFOSSIL OOZE

This core contains a homogeneous pink (5YR 8/3) moderately disturbed foraminifer nannofossil ooze.

No sedimentary structures are visible.

SMEAR SLIDE SUMMARY:

	1-80	2-110	3-80
Composition:			
Volcanic glass	2	–	1
Palagonite	1	–	–
Foraminifers	15	10	10
Calcareous nannofossils	72	90	88
Fish remains	–	–	1
Calcareous dinoflagellates	10	15	–

ORGANIC CARBON AND CARBONATE:

	1-2	2-2	3-2
Organic carbon	–	–	–
Carbonate	92	95	95

SITE 526 HOLE A CORE (HPC) 44 CORED INTERVAL 217.2–221.6 m

TIME-ROCK UNIT: late Eocene

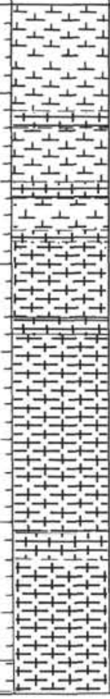
BIOSTRATIGRAPHIC ZONE: NP19 or 20? (N); P15 (F) — N18/19 (N)

FOSSIL CHARACTER: FORAMINIFERS AM; NANNOFOSSILS AM; RADIOLARIANS; DIATOMS

SECTION: 1, 2, 3, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY



DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES

LITHOLOGIC DESCRIPTION

5YR 8/3

NANNOFOSSIL OOZE AND FORAMINIFER NANNOFOSSIL OOZE WITH MINOR CHALKS

This core consists of a nannofossil and foraminifer nannofossil ooze with minor chalk interbeds.

No sedimentary structures are preserved.

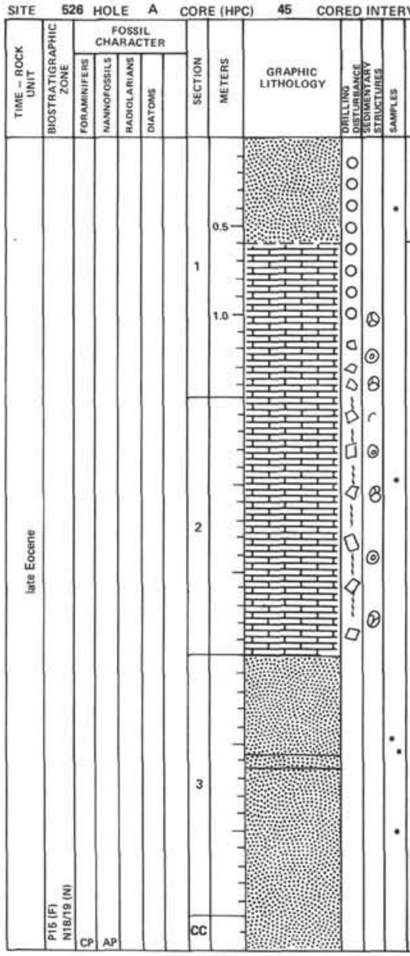
SMEAR SLIDE SUMMARY:

	1-50	1-103	2-60
Composition:			
Heavy minerals	TR	–	–
Volcanic glass	2	–	1
Palagonite	1	–	TR
Foraminifers	5	10	35
Calcareous nannofossils	90	72	54
Calcareous dinoflagellates	4	15	10

ORGANIC CARBON AND CARBONATE:

	1-20	2-20	3-20
Organic carbon	–	–	–
Carbonate	93	94	97

SITE 526 HOLE A CORE (HPC) 45 CORED INTERVAL 221.6–226.0 m



5YR 8/3

N9

5YR 8/3

10YR 8/2

10YR 8/4

LITHOLOGIC DESCRIPTION

NANNOFOSSIL FORAMINIFER SANDS AND RUBBLY FOSSILIFEROUS LIMESTONES

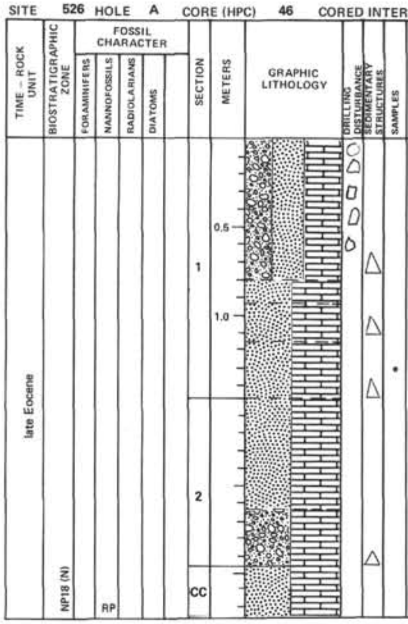
The core contains two major lithologies which alternate. Nannofossil foraminifer sands are present at the top of Section 1 and Section 3. They are pink (5YR 8/3) to very pale yellow (10YR 8/2). In Section 3 the sands are well preserved and the bedding color alternates.

A rubbly fossiliferous limestone is present from 60 cm (Section 1) through Section 2. It is white (N9) and is highly fossiliferous. A large oyster shel (more than 4 cm), oncolites, crinozoa, and bryozoa are present. The fragments are vuggy and friable. The rubbly limestone may indicate the accumulation do carbonates in a shallow water environment or a patch reef.

SMEAR SLIDE SUMMARY:

	1-40	2-50	3-50	3-58[a]	3-100
	D	D	D	M	D
Composition:					
Carbonate unspecified	–	80	–	–	–
Foraminifers	20	10	43	–	60
Calcareous nannofossils	75	10	55	–	35
Calcareous dinoflagellates	5	–	2	–	5
Shell fragments	–	–	–	–	100

SITE 526 HOLE A CORE (HPC) 46 CORED INTERVAL 226.0–228.8 m



N9

N9 to 10YR 8/2

10YR 8/2

LITHOLOGIC DESCRIPTION

RUBBLY SAND-SIZE LIMESTONE

This core contains a series of graded rubbly sand-size limestone sediments. The first section to 80 cm is contaminated but is still graded. From 80–110 cm the sand-sized limestone grades from a fine sand with muddy matrix to medium sand. The sequence repeats again to the bottom of Section 1.

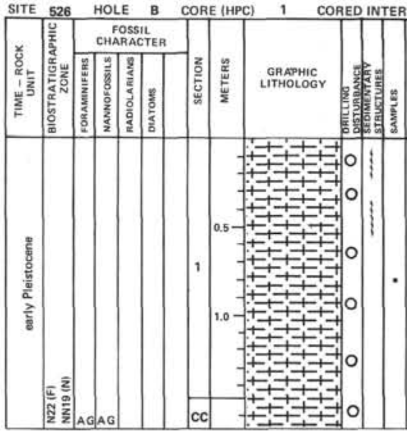
Section 2 is also a graded sequence. It begins with medium sand-size particles and coarsens to pebbles at the bottom.

The matrix contains pelagic nannofossils which is mixed with shallow water, oncolites, and shell fragments. This suggests that the material is transported, possibly a carbonate channel fill or turbidite sequence.

SMEAR SLIDE SUMMARY:

	1-130
	D
Composition:	
Carbonate unspecified	40
Calcareous nannofossils	30
Algal fragments	30

SITE 526 HOLE B CORE (HPC) 1 CORED INTERVAL 6.3–10.7 m



10YR 8/2

LITHOLOGIC DESCRIPTION

SANDY NANNOFOSSIL-FORAMINIFER OOZE

A soupy very pale orange (10YR 8/2) sandy nannofossil foraminifer ooze is present. From 0–30 cm slight mottling is observed.

SMEAR SLIDE SUMMARY:

	1-80
	D
Composition:	
Foraminifers	90
Calcareous nannofossils	10

ORGANIC CARBON AND CARBONATE:

	1-2	CC
Organic carbon	–	–
Carbonate	97	96

SITE 526 HOLE B CORE (HPC) 2 CORED INTERVAL 10.7–15.1 m

TIME – ROCK UNIT | BIOSTRATIGRAPHIC ZONE | FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS | SECTION | METERS | GRAPHIC LITHOLOGY | DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES | LITHOLOGIC DESCRIPTION

early Pleistocene

N22 (F)
NN19 (N)

AG AG

CC

SANDY NANNOFOSSIL-FORAMINIFER OOZE
Trace found in Core-Catcher.

SITE 526 HOLE B CORE (HPC) 3 CORED INTERVAL 15.1–19.5 m

TIME – ROCK UNIT | BIOSTRATIGRAPHIC ZONE | FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS | SECTION | METERS | GRAPHIC LITHOLOGY | DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES | LITHOLOGIC DESCRIPTION

early Pleistocene

NN19 (N)

late Pliocene

PL5/6 (F)
NN18 (N)

AG AG

1 (0.5, 1.0)
2
3
CC

N9

NANNOFOSSIL FORAMINIFER OOZE

This core contains a white (N9) homogeneous nannofossil foraminifer ooze.

No sedimentary structures are present.

SMEAR SLIDE SUMMARY:

	1-50
	D
Composition:	
Foraminifers	50
Calcareous nannofossils	50
Pteropods	TR
Urchin spine	TR

ORGANIC CARBON AND CARBONATE:

	1-46	2-46	6-46
Organic carbon	–	–	–
Carbonate	97	99	96

SITE 526 HOLE B CORE (HPC) 4 CORED INTERVAL 19.5–23.9 m

TIME – ROCK UNIT | BIOSTRATIGRAPHIC ZONE | FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS | SECTION | METERS | GRAPHIC LITHOLOGY | DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES | LITHOLOGIC DESCRIPTION

early Pliocene

PL5/6 (F)
NN15 (N)

AG AG

1 (0.5, 1.0)
2
CC

N9

5W 8/1

NANNOFOSSIL FORAMINIFER OOZE

This core contains a homogeneous white (N9) nannofossil foraminifer ooze.

Light gray laminations are present in Section 2 at 60 and 80 cm and in the Core-Catcher. No other sedimentary structures are present.

SMEAR SLIDE SUMMARY:

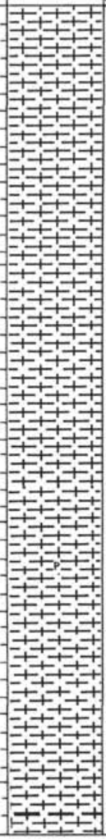
	2-80
	D
Composition:	
Foraminifers	50
Calcareous nannofossils	50
Calcareous dinoflagellates	TR

ORGANIC CARBON AND CARBONATE:

	1-46	2-46
Organic carbon	–	–
Carbonate	97	98

SITE 526 HOLE B CORE (HPC) 5 CORED INTERVAL 23.9–28.3 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
early Pliocene	PL3 (F) NN15 (N)	AG	AG			1, 2, 3, CC	0.5, 1.0				*



N9

5Y 6/1

LITHOLOGIC DESCRIPTION

NANNOFOSSIL-FORAMINIFER OOZE

This core contains a white (N9) homogeneous nannofossil foraminifer ooze.

A couple of light gray laminations are present in Section 2 at 129 and 139 cm.

Some light olive gray mottles (5Y 6/1) are found in Section 3. They are interpreted as being biogenic.

The coarse fraction is composed of foraminifer.

SMEAR SLIDE SUMMARY:

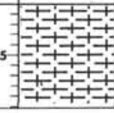
	2-80 D
Composition:	
Foraminifers	48
Calcareous nannofossils	50
Calcareous dinoflagellates	1
Pteropods	1

ORGANIC CARBON AND CARBONATE:

	1-46	2-46	3-46
Organic carbon	–	–	–
Carbonate	96	96	98

SITE 526 HOLE C CORE 1 CORED INTERVAL 33.0–42.5 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
Pliocene and Pleistocene mixed	N22 (F) NN15 (N)	AG	AG			1	0.5		O O O O		*



N8

LITHOLOGIC DESCRIPTION

SAND-SIZE NANNOFOSSIL FORAMINIFER OOZE

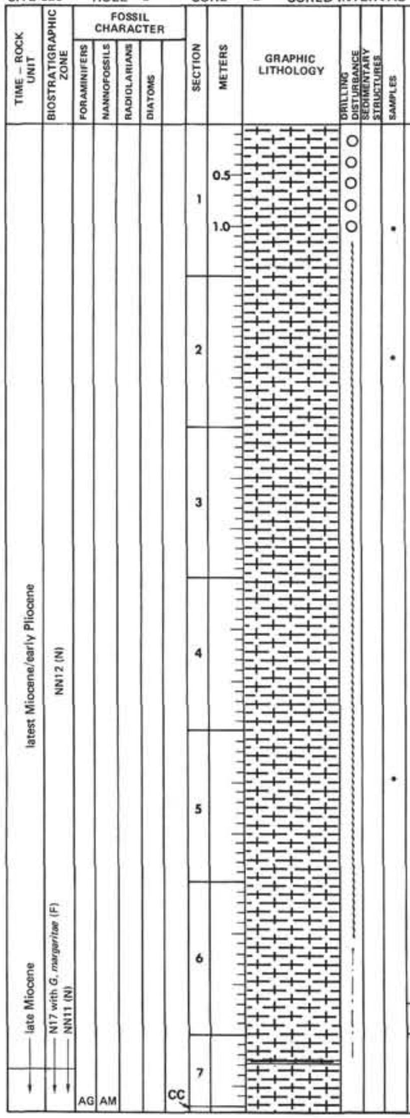
A homogeneous, very light gray (N8) nannofossil-foraminifer ooze was recovered. Rust from the drill pipe has contaminated the core.

Some white (N9) shell fragments are observed. The coarse fragment fracture is virtually all foraminifers with the exception of a few echinoid spines.

SMEAR SLIDE SUMMARY:

	1-80 D
Texture:	
Sand	50
Silt	10
Clay	40
Composition:	
Heavy minerals	TR
Carbonate unspecified	TR
Foraminifers	50
Calcareous nannofossils	40
Ostracods	10
Pteropods	TR

SITE 526 HOLE C CORE 2 CORED INTERVAL 42.5–52.0 m



LITHOLOGIC DESCRIPTION

FORAMINIFER NANNOFOSSIL OOZE

This core contains a very deformed bluish white (5B 9/1) to white (N9) foraminifer nannofossil ooze.

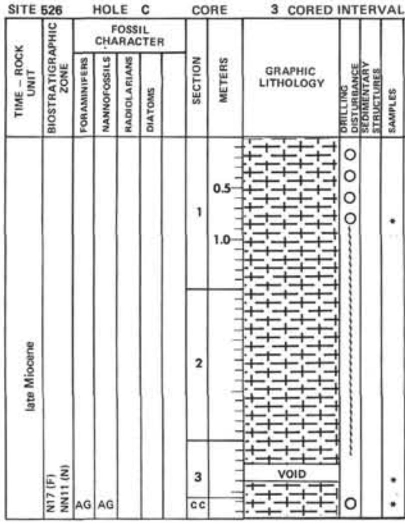
The bottom of Section 7 and the Core-Catcher contain a foraminifer nannofossil chalk.

The ooze and chalk have a gritty feeling which indicates a high amount of sand-sized particles. Foraminifer are the overwhelming majority of the coarse fraction.

SMEAR SLIDE SUMMARY:

	1-100	2-80	5-50
	D	D	D
Composition:			
Volcanic glass	1	TR	TR
Carbonate unspecified	1	–	–
Foraminifers	20	15	20
Calcareous nannofossils	67	79	77
Dinoflagellates	1	1	TR
Discoasters	10	5	2
Echinoids	–	TR	TR

SITE 526 HOLE C CORE 3 CORED INTERVAL 52.0–56.5 m



LITHOLOGIC DESCRIPTION

FORAMINIFER NANNOFOSSIL OOZE

This core contains a white (N9) homogeneous foraminifer nannofossil ooze. Some faint traces of a yellowish gray and bluish gray areas are recognized.

No primary or secondary sedimentary structures are present.

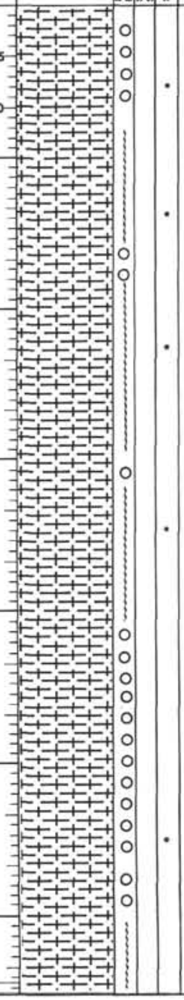
SMEAR SLIDE SUMMARY:

	1-80	3-45	CC
	D	D	D
Composition:			
Quartz	TR	–	–
Heavy minerals	TR	–	–
Volcanic glass	TR	–	2
Palagonite	–	TR	TR
Foraminifers	10	10	15
Calcareous nannofossils	88	89	83
Dinoflagellates	–	1	–
Ostracods	2	TR	–
Pteropods	TR	–	–

SITE 526 HOLE C CORE 4 CORED INTERVAL 194.5–204.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
late/early Oligocene	NP23 (N)		AM			1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

5YR 8/1

FORAMINIFER NANNOFOSSIL OOZE

This core consists of a soupy to highly disturbed pinkish gray (5YR 8/1) homogeneous foraminifer nannofossil ooze.

No sedimentary structures are preserved.

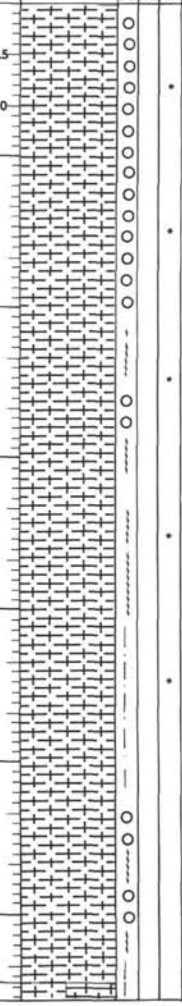
SMEAR SLIDE SUMMARY:

	1-80	2-60	3-40	4-80	6-80
	D	D	D	D	D
Composition:					
Volcanic glass	–	–	TR	TR	–
Palagonite	–	–	1	–	–
Forminifers	20	15	15	25	40
Calcareous nannofossils	79	84	83	75	59
Dinoflagellates	1	1	1	TR	1

SITE 526 HOLE C CORE 5 CORED INTERVAL 204.0–213.5 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
early Oligocene	P18 (F) NP 22 (N)		AM			1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

5YR 8/1

FORAMINIFER NANNOFOSSIL OOZE

This core contains a pinkish gray (5YR 8/1) foraminifer nannofossil chalk.

Several consolidated ooze or chalky zones approximately 5 cm thick are found in the lower 3 sections. They are less than 10% of the sections.

No sedimentary structures are preserved.

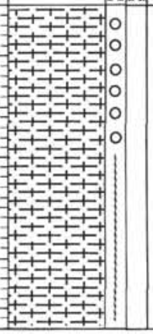
SMEAR SLIDE SUMMARY:

	1-80	2-80	3-80	4-80	5-76
	D	D	D	D	D
Composition:					
Volcanic glass	1	TR	1	1	1
Palagonite	–	–	–	–	1
Foraminifers	30	25	35	30	35
Calcareous nannofossils	68	74	63	68	63
Calcareous dinoflagellates	1	1	1	1	1

ORGANIC CARBON AND CARBONATE:

	1-2	2-2	3-2	4-2	5-2	6-2	7-2
Organic carbon	–	–	–	–	–	–	–
Carbonate	93	94	95	96	95	95	95

SITE 526 HOLE C CORE 6 CORED INTERVAL 213.5–218.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Eocene	P16/17 (F) NP20 (N)		AP			1, 2, CC	0.5, 1.0				* *	5Y 8/1

FORAMINIFER NANNOFOSSIL OOZE

This core consists of a pinkish gray (5YR 8/1) homogeneous foraminifer nannofossil ooze.

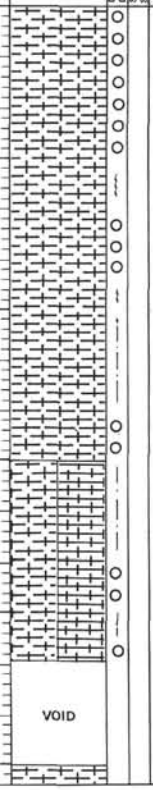
Chalky patches are observed throughout the core. They comprise about 10% of the core.

No sedimentary structures are preserved.

SMEAR SLIDE SUMMARY:

	1-80	2-80
	D	D
Composition:		
Heavy minerals	–	TR
Volcanic glass	1	–
Palagonite	1	–
Foraminifers	20	15
Calcareous nannofossils	73	73
Calcareous dinoflagellates	1	2

SITE 526 HOLE C CORE 7 CORED INTERVAL 218.0–223.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Eocene	P16/17 (F) NP20 (N)		AM			1, 2, 3, 4, 5, CC	0.5, 1.0	 VOID			* *	5YR 8/1

FORAMINIFER NANNOFOSSIL OOZE AND CHALK

This core contains a pinkish gray (5YR 8/1) alternating series of foraminifer nannofossil ooze and chalk.

Chalk in the upper 3 sections is approximately 10%. This changes to 50% in Sections 4 and 5.

No sedimentary structures are preserved.

Calcium dinoflagellates are extremely abundant in the core.

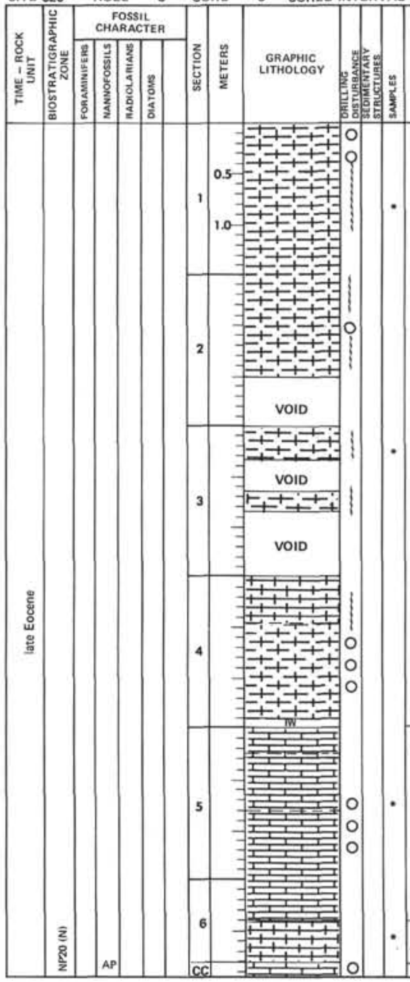
SMEAR SLIDE SUMMARY:

	1-80	3-80
	D	D
Composition:		
Heavy minerals	–	1
Volcanic glass	1	1
Palagonite	–	TR
Foraminifers	20	15
Calcareous nannofossils	69	63
Calcium dinoflagellates	10	20

ORGANIC CARBON AND CARBONATE:

	1-2	1-75	2-2	3-2	4-2	5-2
Organic carbon	–	–	–	–	–	–
Carbonate	95	98	94	96	95	95

SITE 526 HOLE C CORE 8 CORED INTERVAL 223.0–232.5 m



LITHOLOGIC DESCRIPTION

5YR 8/1

FORAMINIFER NANNOFOSSIL OOZE/CHALK AND SAND TO COBBLE-SIZED FOSSILIFEROUS LIMESTONE AND CHALK RUBBLE

The first thee sections of this core contain a foraminifer nannofossil ooze. Section 4 contains a foraminifer-nannofossil chalk and ooze.

The top of Section 5 marks the contact of the ooze and chalk with a white sand to cobble limestone and chalk rubble. Large mollusk shells, oncolites, and other fossil debris are present. The sediment is crusty and angular in shape with the oncolites being subrounded. This rubble continues into Section 6 where at 40 cm an abrupt contact occurs. Below the contact is a coarse sand to pebbly pink foraminifer nannofossil ooze.

The Core-Catcher marks another contact at which the rubble reappears.

SMEAR SLIDE SUMMARY:

	1-80	3-25	5-70	6-55
	D	D	D	D
Composition:				
Carbonate unspecified	–	30	30	30
Foraminifers	30	50	40	20
Calcareous nannofossils	50	35	25	45
Calcareous dinoflagellates	20	–	5	5

ORGANIC CARBON AND CARBONATE:

	1-2	2-2	3-18	4-2	5-2	6-2
Organic carbon	–	–	–	–	–	–
Carbonate	93	95	98	97	100	99

Contact

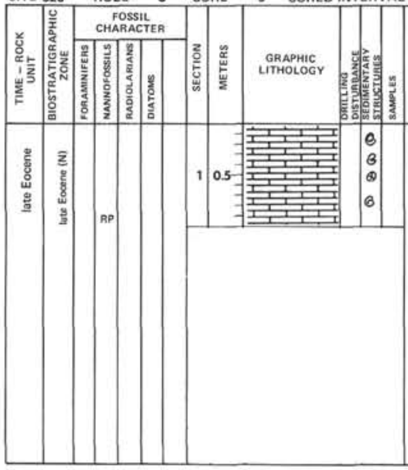
N9

Contact

7.5 YR 8/4

Contact

SITE 526 HOLE C CORE 9 CORED INTERVAL 232.5–242.0 m



LITHOLOGIC DESCRIPTION

N9

FOSSILIFEROUS LIMESTONE

This core contains 27 pieces of limestone. They are white but pinkish, yellowish, and grayish areas are present.

All pieces are highly fossiliferous and vuggy. The uppermost 4 pieces are finer-grained and pink. From 47–53 cm a yellowish area is present in two pieces at 64–67 cm grayish areas are present.

The last piece contains brown clay intraclasts which are rounded to subrounded.

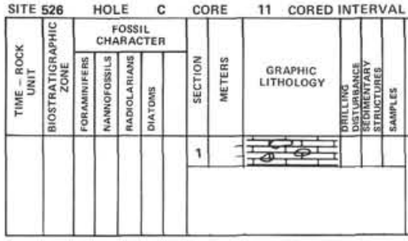
The dominant fossil fragments are tentatively identified as algal fragments.

ORGANIC CARBON AND CARBONATE:

	1-2	1-75
Organic carbon	–	–
Carbonate	100	100

NOTE: Core 10, 242.0–251.5 m (1307.5–1317.0 mbsf): No recovery.

SITE 526 HOLE C CORE 11 CORED INTERVAL 251.5–261.0 m

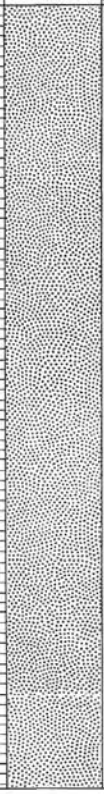


LITHOLOGIC DESCRIPTION

LIMESTONE

Trace recovered – three limestone fragments (2.5, 1.2, and 2 cm long) were recovered. The pieces are highly fossiliferous and angular.

SITE 526 HOLE C CORE 12 CORED INTERVAL 261.0–270.5 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Eocene	late Eocene (N,F)					1, 2, 3, 4, 5, 6, CC	0.5, 1.0					10YR 8/2

CALCAREOUS FOSSILIFEROUS SAND

This core contains a fossiliferous sand. It is very pale orange (10YR 8/2) and is composed entirely of calcareous fossil debris.

The particles are angular to subangular. Foraminifer, bryozoa, echinoderm, and algal(?) fragments are present. The particles (fossil fragment) show poor preservation and some recrystalization.

The grain-size ranges from fine to coarse sand.

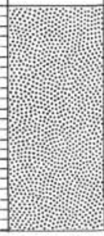
SMEAR SLIDE SUMMARY:

	D
Composition:	
Carbonate fragments	30
Foraminifers	35
Echinoderms	5
Bryozoan	30

ORGANIC CARBON AND CARBONATE:

	1-75
Organic carbon	–
Carbonate	99

SITE 526 HOLE C CORE 13 CORED INTERVAL 270.5–280.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Eocene	late Eocene		RP			1, 2	0.5, 1.0					10YR 8/2

CALCAREOUS FOSSILIFEROUS SAND

This core contains a very pale orange (10YR 8/2) calcareous fossiliferous sand.

Section 2 contains coarser-grained sand than Section 1. This is the result of pouring the sand into the core liners. The grading is artifical.

Identified fossil fragments include foraminifers, bryozoa, and echinoderms.

The preservation of fossils is poor with recrystallization apparent. Clear recrystallized calcite is present.

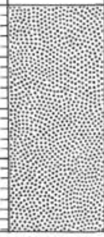
Grain shape is angular to subangular.

SMEAR SLIDE SUMMARY:

	D[a]
Composition:	
Carbonate recrystallized	40
Foraminifers	20
Echinoderms	5
Bryozoan	35

[a] Coarse fraction

SITE 526 HOLE C CORE 14 CORED INTERVAL 280.0–289.5 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
late Eocene	late Eocene with NP9 mixed		RP			1, 2, CC	0.5, 1.0					10YR 8/4

CALCAREOUS SAND

This core contains a moderate orange pink (10YR 8/4) calcareous sand. It is medium- to fine-grained and is 80% carbonate.

Carbonate fossils include foraminifer and bryozoa, and many recrystallized and poorly preserved carbonate fragments.

In the non-carbonate fractions angular (fresh) quartz is most abundant mineral.

Volcanic rock fragments and palagonite are also observed.

SMEAR SLIDE SUMMARY:

	D[a]	D[b]
Texture:		
Sand	100	100
Silt	–	–
Clay	–	–
Composition:		
Quartz	–	30
Feldspar	10	–
Volcanic glass	10	30
Palagonite	5	30
Carbonate unspecified	50	–
Foraminifers	20	–

[a] Coarse [b] Coarse – insoluble

ORGANIC CARBON AND CARBONATE:

	1-75
Organic carbon	–
Carbonate	91

SITE 526 HOLE C CORE 15 CORED INTERVAL 289.5–299.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
late Paleocene	NP9 (N)		RP			1, 2	0.5, 1.0				

LITHOLOGIC DESCRIPTION

2.5Y 6/6 olive yellow

CALCAREOUS SAND

This core contains a olive yellow calcareous sand.

The carbonte fraction contains mosly recrystallized calcite grains and poorly preserved bryozoa to benthic foraminifer.

The insoluble fraction, approximately 30%, contains abundant quartz, volcanic rock fragments and palagonite, and K-feldspar.

All grains are angular and are definitely immature. No grading or stuctures are observed.

SMEAR SLIDE SUMMARY:

	D[a]	D[b]
Textures:		
Sand	100	100
Silt	–	–
Clay	–	–
Composition:		
Quartz	10	40
Heavy minerals	5	–
Volcanic rock fragments	10	20
Palagonite	5	40
Glauconite	–	12
Carbonate unspecified	50	–
Foraminifers	10	–
Bryozoans	10	–

[a] Float coarse [b] Float coarse – insoluble

ORGANIC CARBON AND CARBONATE:

	1-75
Organic carbon	–
Carbonate	56

SITE 526 HOLE C CORE 16 CORED INTERVAL 299.0–308.5 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
						1, 2	0.5, 1.0				

LITHOLOGIC DESCRIPTION

10YR 7/4

10YR 7/4 to 10YR 6/6

CLACAREOUS SAND

This section contains a predominantly grayish orange (10YR 7/4) and dark yellowish orange (10YR 6/6) fine to very coarse sand.

The sands are composed of white, pink, brown, and black grains. The calcareous fraction (60%) contains some benthic foram, bryozoa, and unidentified carbonate fragments. The non-calcareous fraction (40%) contains fresh quartz, K-feldspar (XRD) volcanic fragments, palagonite, and possibly some glauconite. Many of the grains have a iron-oxide coating.

The non-calcareous grains are subangular to angular while the calcareous grains are subangular to subrounded.

SMEAR SLIDE SUMMARY:

	D
Texture:	
Sand	100
Silt	–
Clay	–
Composition:	
Quartz	30
Heavy minerals	TR
Volcanic glass	10
Glauconite	TR
Carbonate unspecified	25
Foraminifers	10
Echinoids	5
Bryozoans	20

[a] Float

ORGANIC CARBON AND CARBONATE:

	1-75
Organic carbon	–
Carbonate	71

SITE 526 HOLE C CORE 17 CORED INTERVAL 308.5–318.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
late Paleocene	NP9 (N)		RP			CC					

LITHOLOGIC DESCRIPTION

2.5YR 6/6
5YR 8/1

CALCAREOUS SAND AND CALCAREOUS SANDSTONE

This core (10 cm recovered) contains a olive yellow silt to coarse sand.

Two cobbles of pinkish gray (5YR 8/1) cemented calcareous sandstone were also present.

SITE 526 HOLE C CORE 18 CORED INTERVAL 318.0–327.5 m

TIME – ROCK UNIT: late Paleocene ?
BIOSTRATIGRAPHIC ZONE: late Paleocene ? (N)
FOSSIL CHARACTER: FORAMINIFERS | NANNOFOSSILS | RADIOLARIANS | DIATOMS — RP
SECTION: 0, 1
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY: VOID
DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

2.5Y 6/6

CALCAREOUS SANDSTONES AND SAND

Two cobbles of calcareous sandstone, medium-olive yellow (2.5Y 6/6) in color were recovered. Bryozoan and shell fragments are present.

A coarse-grained olive yellow calcareous sand was also recovered.

The sand contains 60% carbonate grains, with quartz, feldspar, and volcanic rock fragments making up the bulk of the non-carbonate fraction.

SMEAR SLIDE SUMMARY:

	1-30[a]
	D
Texture:	
Sand	100
Silt	–
Clay	–
Composition:	
Quartz	30
Feldspar	5
Volcanic glass	5
Glauconite	TR
Carbonate unspecified	60
Calcareous nannofossils	TR

[a] Coarse fraction

SITE 526 HOLE C CORE 19 CORED INTERVAL 327.5–337.0 m

TIME – ROCK UNIT: late Paleocene
BIOSTRATIGRAPHIC ZONE: NP7/8? (N)
FOSSIL CHARACTER: FORAMINIFERS | NANNOFOSSILS | RADIOLARIANS | DIATOMS — RP
SECTION: 1, CC
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY
DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

SAND

This core contains a homogeneous, light brownish gray (2.5Y 6/2) sand grading from medium- to coarse-grained. This apparent fining upward is due to drilling.

The sand grains are angular to subangular. Individual carbonate grains are difficult to identify because of recrystallization and poor preservation. Quartz, feldspar, and volcanic rock fragments are the most abundant non-carbonate materials. Some bright to dull green glauconite(?) is also present.

SMEAR SLIDE SUMMARY:

	1-60[a]	1-100
	D	D
Texture:		
Sand	100	60
Silt	–	20
Clay	–	20
Composition:		
Quartz	20	9
Feldspar	3	5
Heavy minerals	3	–
Volcanic glass (rock fragments)	25	5
Glauconite	7	1
Carbonate unspecified	40	60
Foraminifers	–	TR
Calcareous nannofossils	–	20
Fish remains	TR	–
Echinoids	2	–

[a] Coarse fraction

SITE 526 HOLE C CORE 20 CORED INTERVAL 337.0–346.5 m

TIME – ROCK UNIT: late Paleocene
BIOSTRATIGRAPHIC ZONE: late Paleocene (N)
FOSSIL CHARACTER: FORAMINIFERS | NANNOFOSSILS | RADIOLARIANS | DIATOMS — RP
SECTION: 1, CC
METERS: 0.5
GRAPHIC LITHOLOGY
DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

2.5Y 6/4 to 2.5YN 7

2.5Y 6/4

CALCAREOUS SANDSTONE

This core contains 19 cobbles of light yellowish brown (2.5Y 6/4) calcareous sandstone. Pelecypods, bryozoa, and urchin spines are present in addition to foraminifers. Quartz, K-feldspar, and glauconite(?) are the most abundant non-calcareous constituents.

SMEAR SLIDE SUMMARY:

	1-52
	M
Composition:	
Quartz	5
Feldspar	1
Heavy minerals	1
Palagonite	1
Glauconite	2
Carbonate unspecified	30
Foraminifers	60

SITE 526 HOLE C CORE 21 CORED INTERVAL 346.5–356.0 m

TIME – ROCK UNIT
BIOSTRATIGRAPHIC ZONE
FOSSIL CHARACTER: FORAMINIFERS | NANNOFOSSILS | RADIOLARIANS | DIATOMS
SECTION: CC
METERS
GRAPHIC LITHOLOGY
DRILLING DISTURBANCE | SEDIMENTARY STRUCTURES | SAMPLES

LITHOLOGIC DESCRIPTION

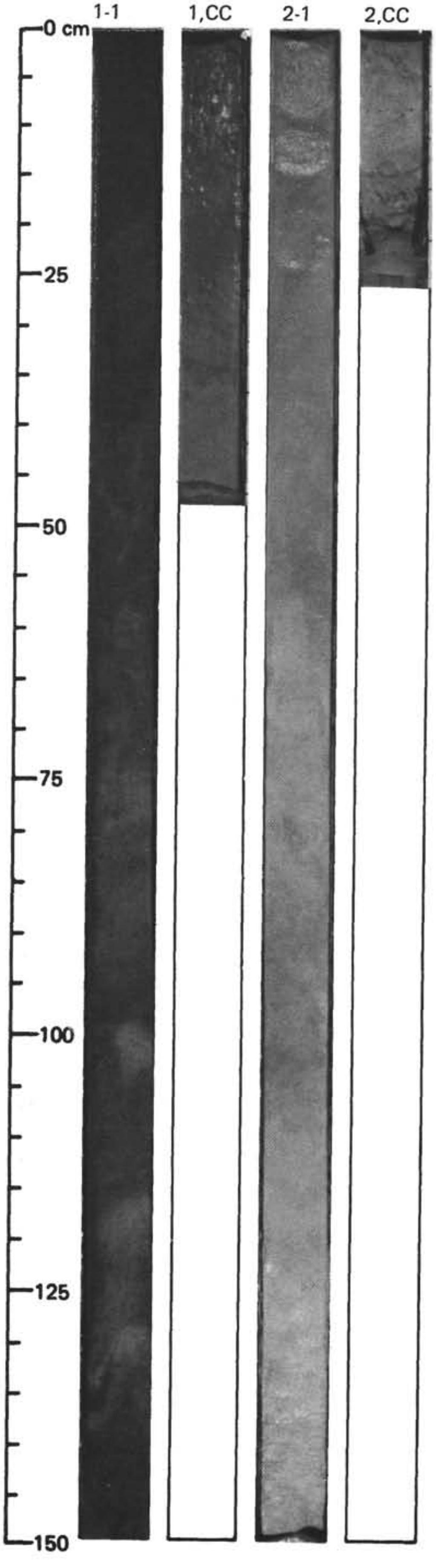
2.5Y 6/4

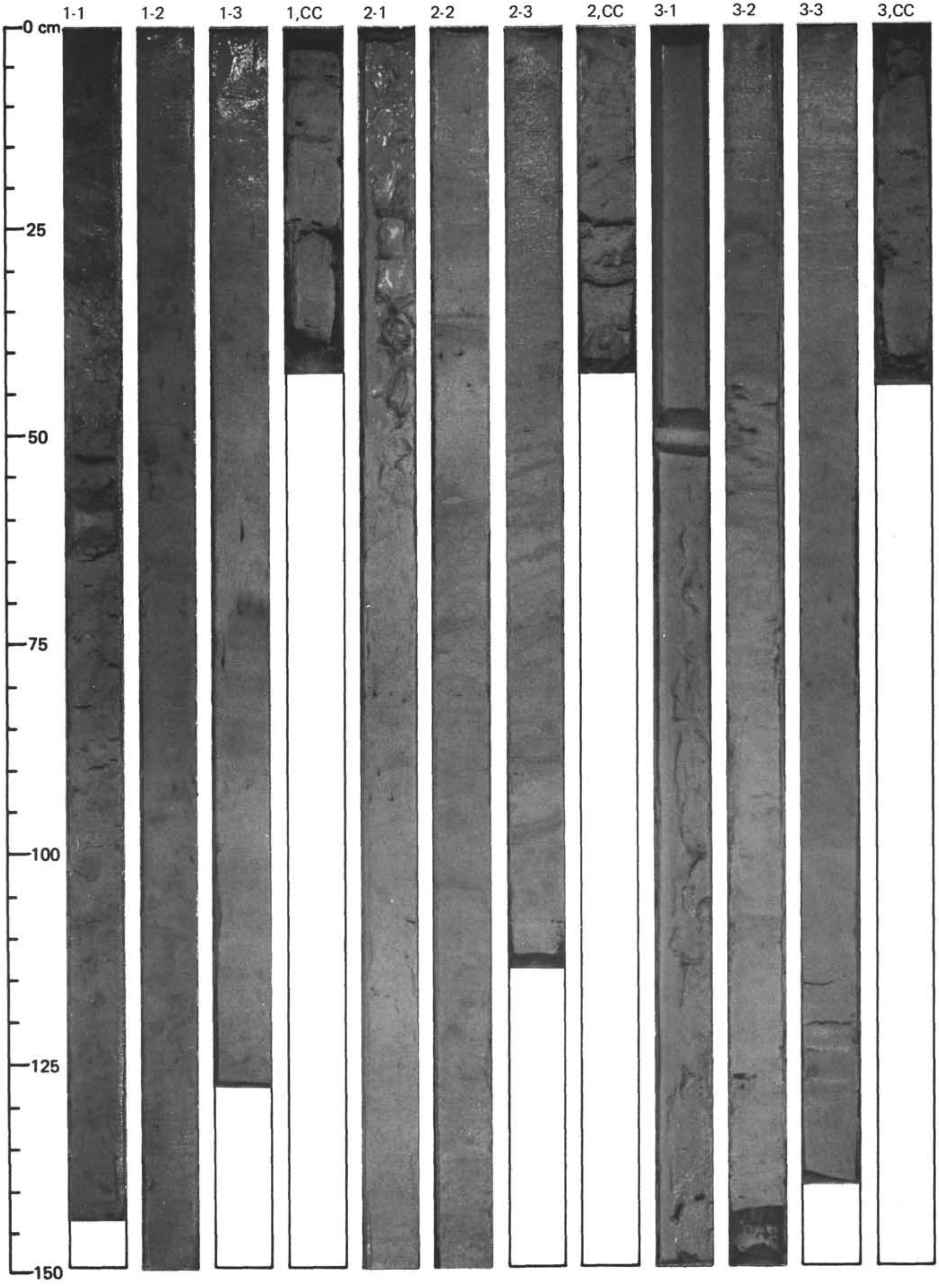
COARSE SAND AND GRAVEL

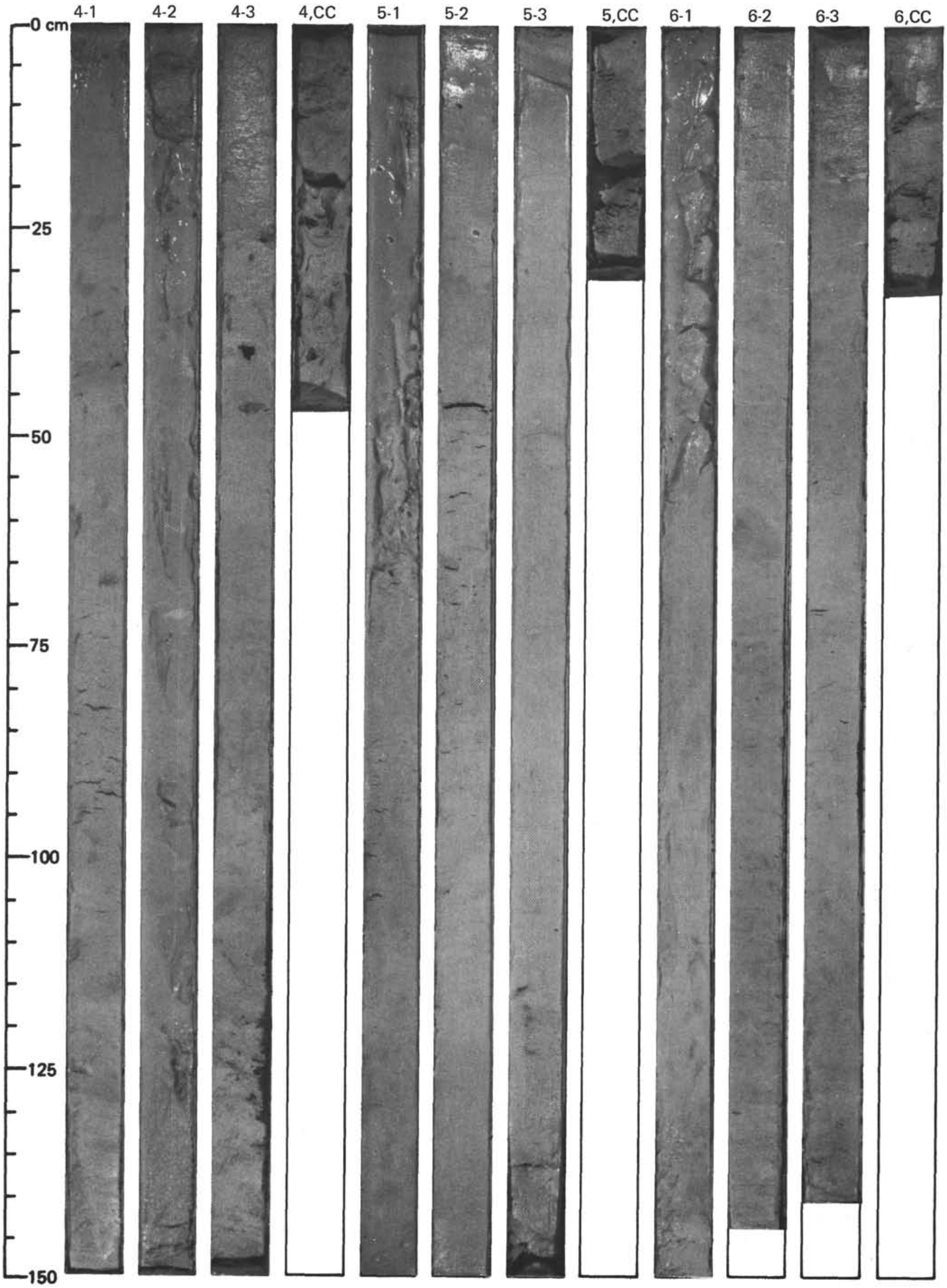
This core contains a light yellowish brown (2.5Y 6/4) gravel and coarse sand. Three cobbles of cemented sandstone and two large 3x4 cm mollusk shells are present. Quartz, volcanic rock fragments, palagonite, and glaucontie(?) were identified in the non-carbonate fraction.

SMEAR SLIDE SUMMARY:

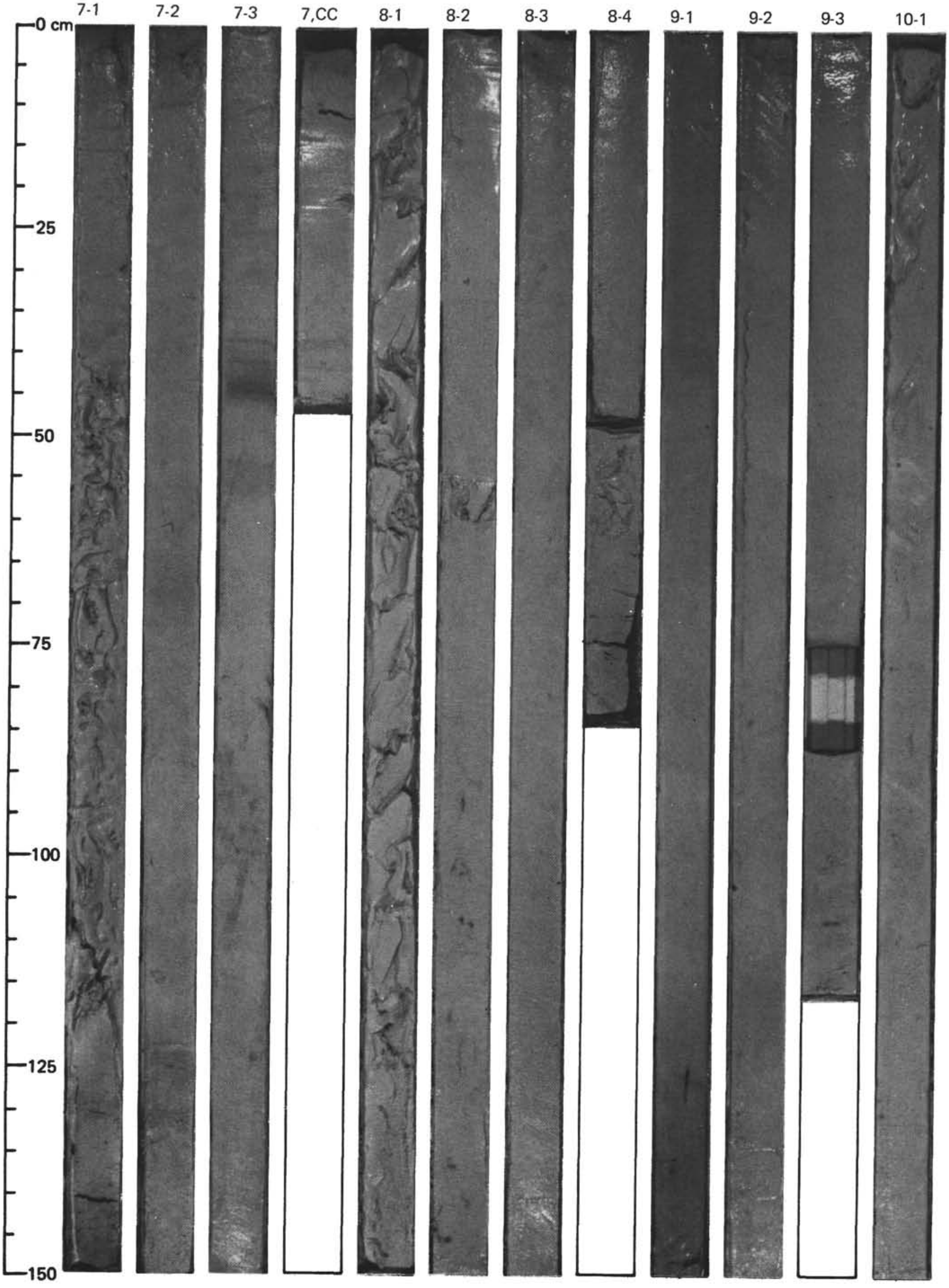
	CC-10
	D
Texture:	
Sand	40
Silt	20
Clay	20
Composition:	
Quartz	2
Volcanic glass	1
Palagonite	1
Glauconite	1
Opaques	1
Carbonate unspecified	54
Calcareous nannofossils	40
Dolomites	TR

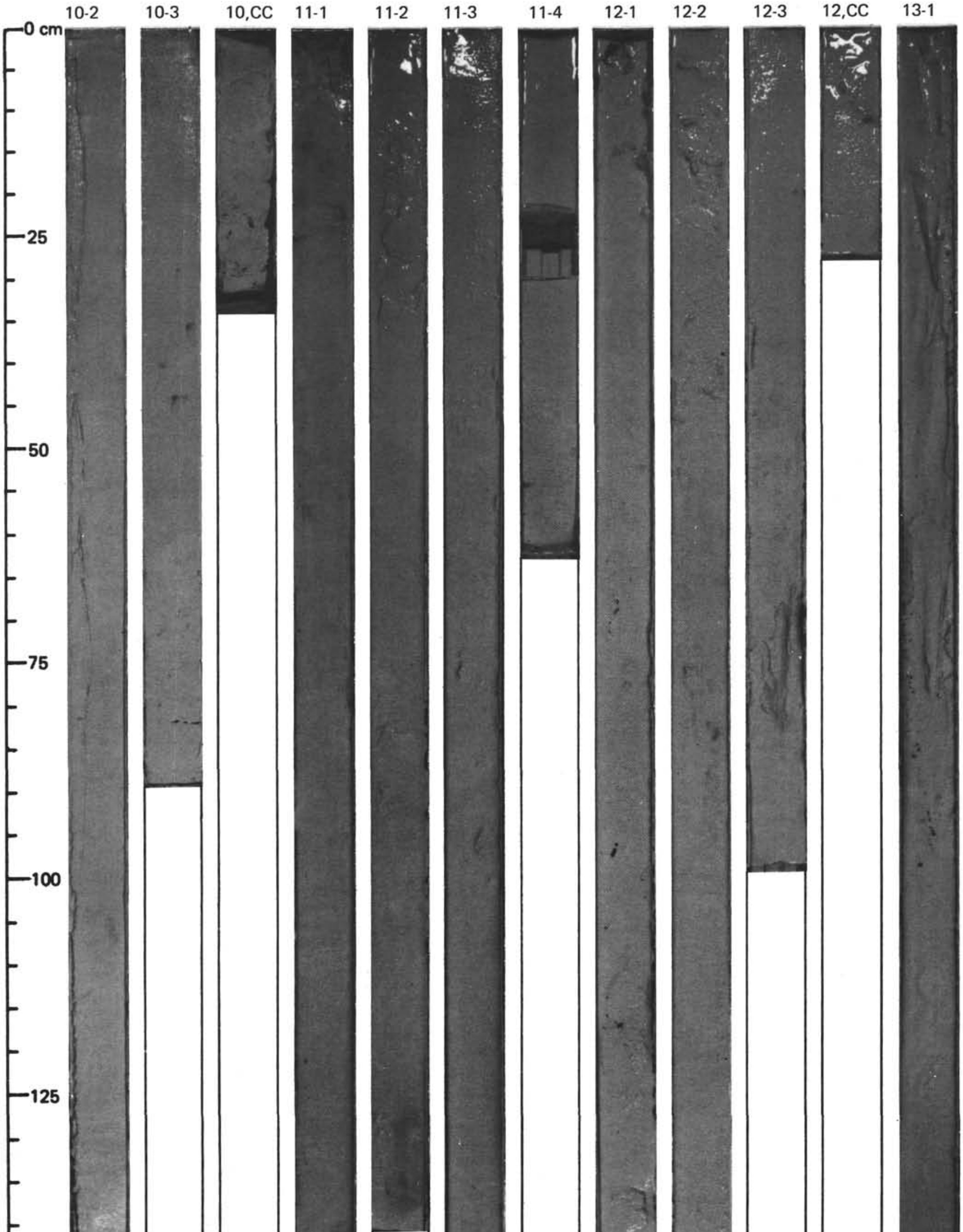

1-1
1,CC
2-1
2,CC
0 cm
25
50
75
100
125
150

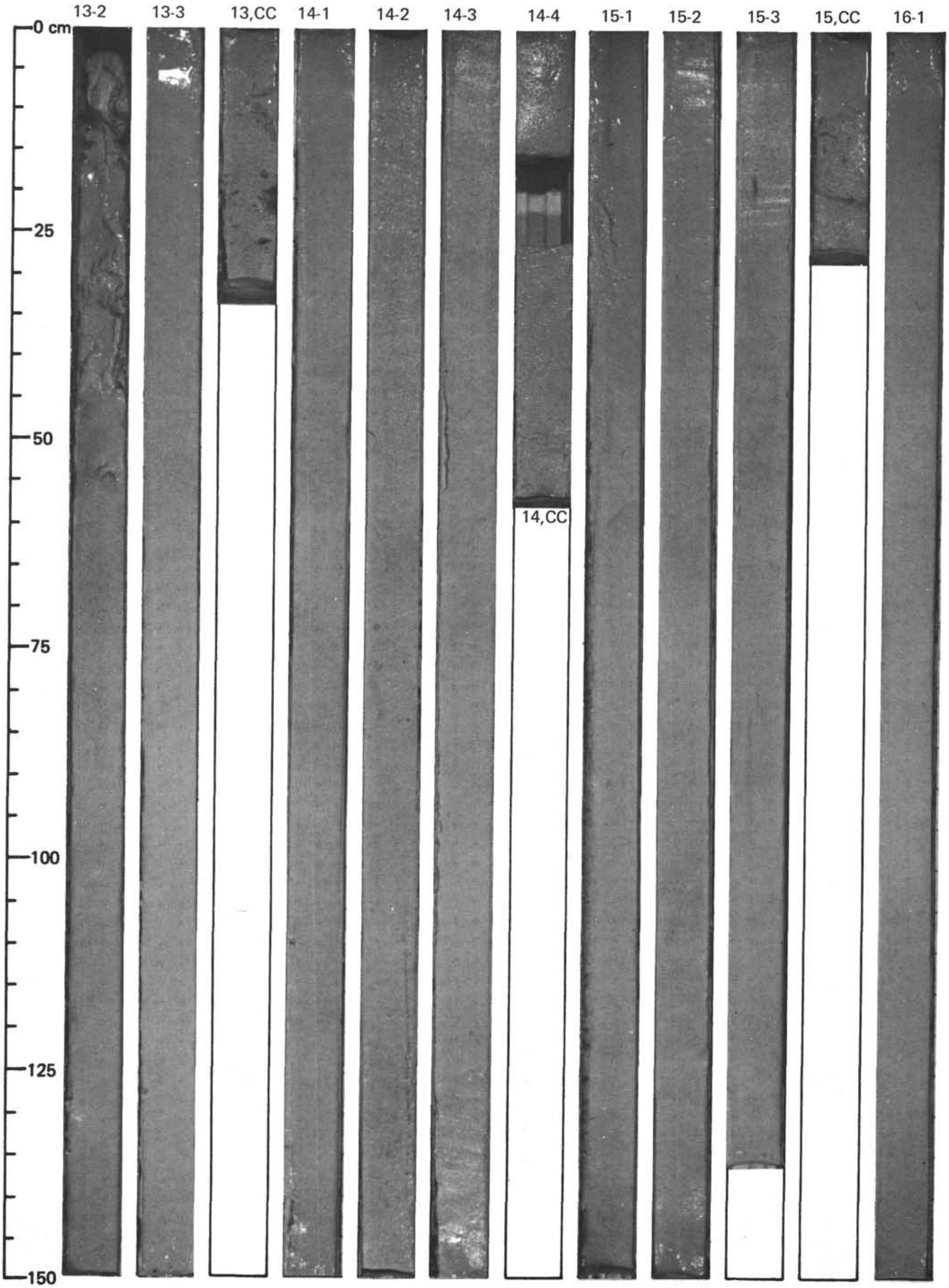

1-1
1-2
1-3
1,CC
2-1
2-2
2-3
2,CC
3-1
3-2
3-3
3,CC
0 cm
25
50
75
100
125
150

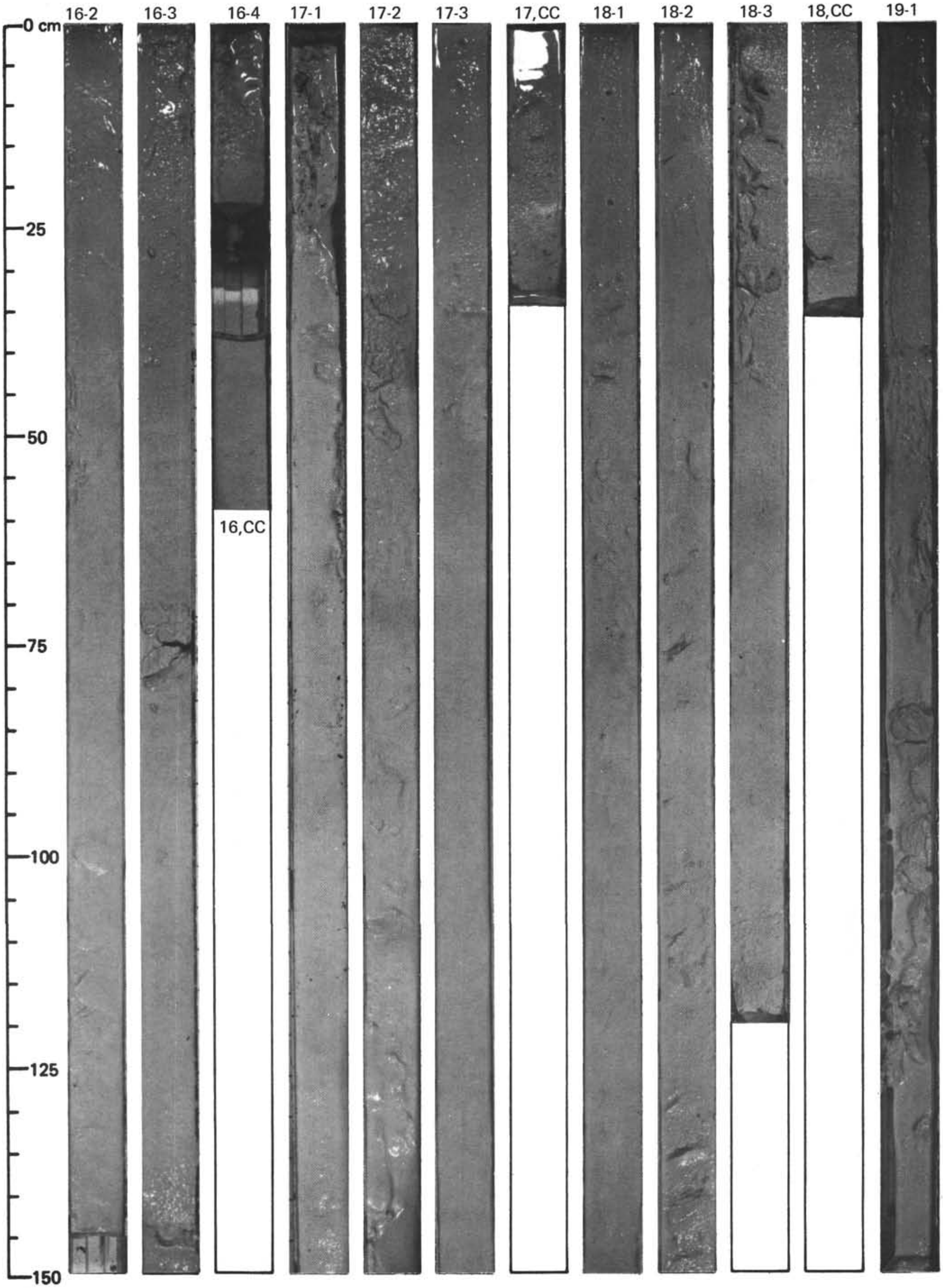


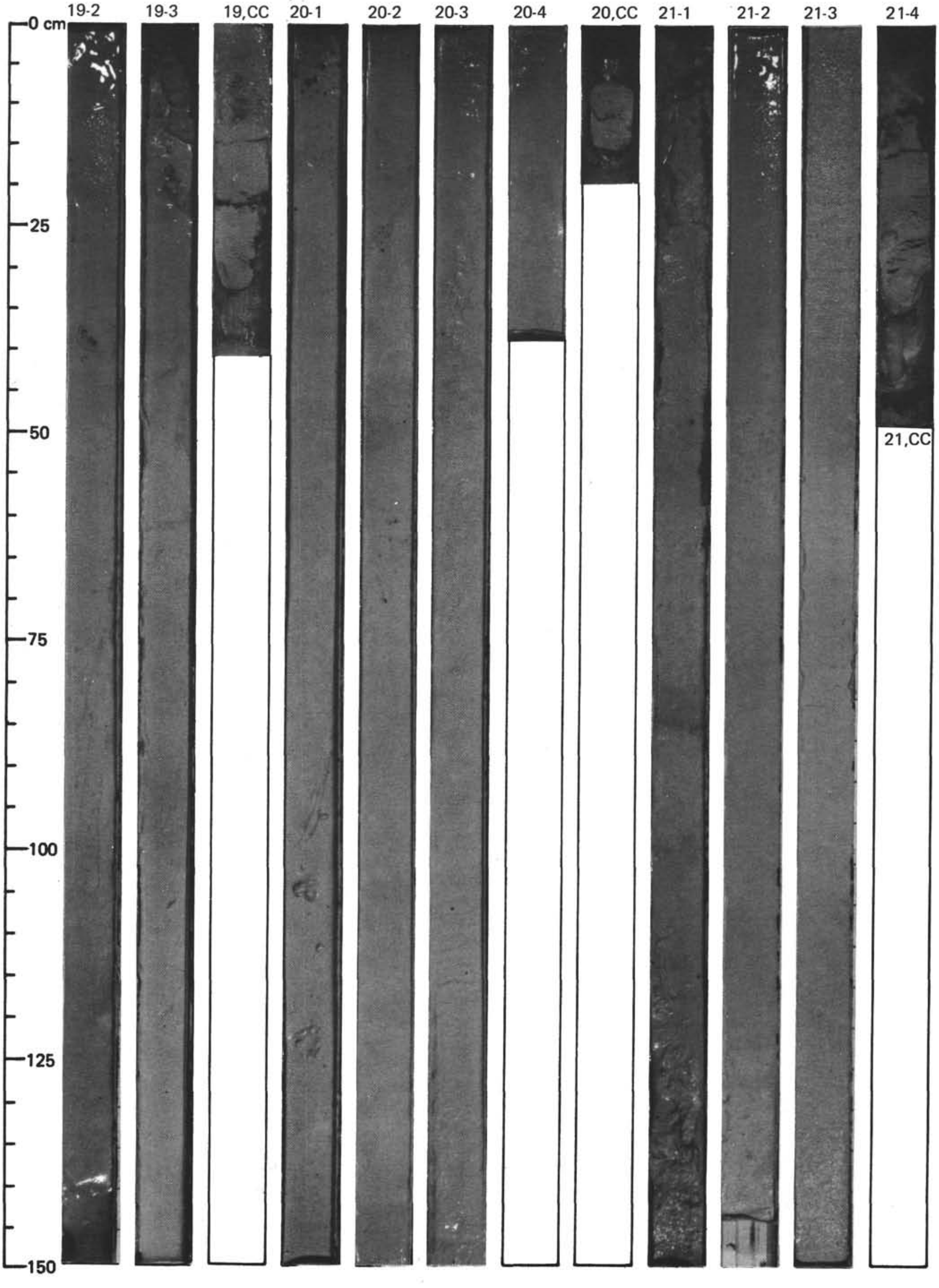
4-1
4-2
4-3
4,CC
5-1
5-2
5-3
5,CC
6-1
6-2
6-3
6,CC
0 cm
25
50
75
100
125
150

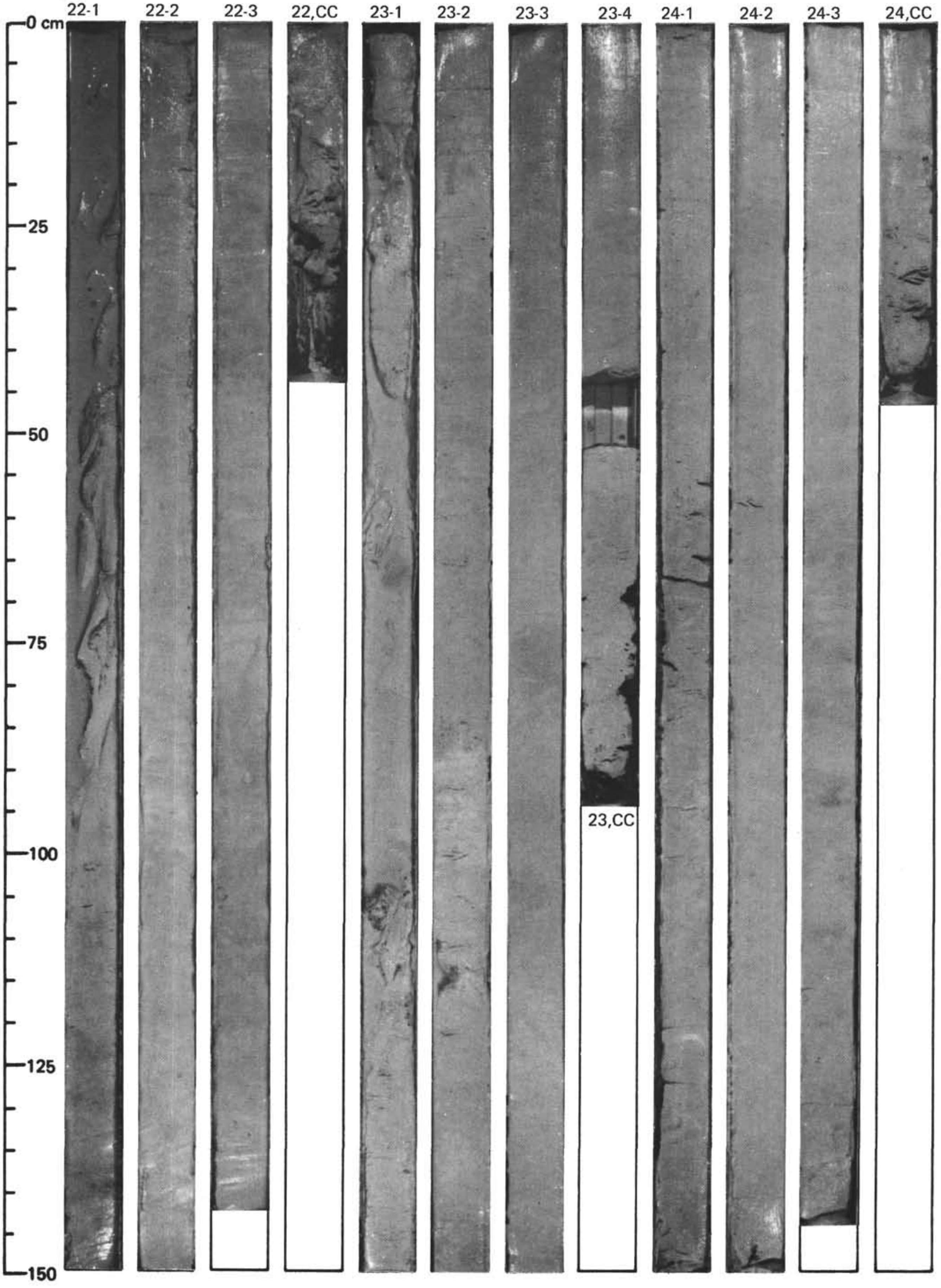

7-1
7-2
7-3
7,CC
8-1
8-2
8-3
8-4
9-1
9-2
9-3
10-1
0 cm
25
50
75
100
125
150

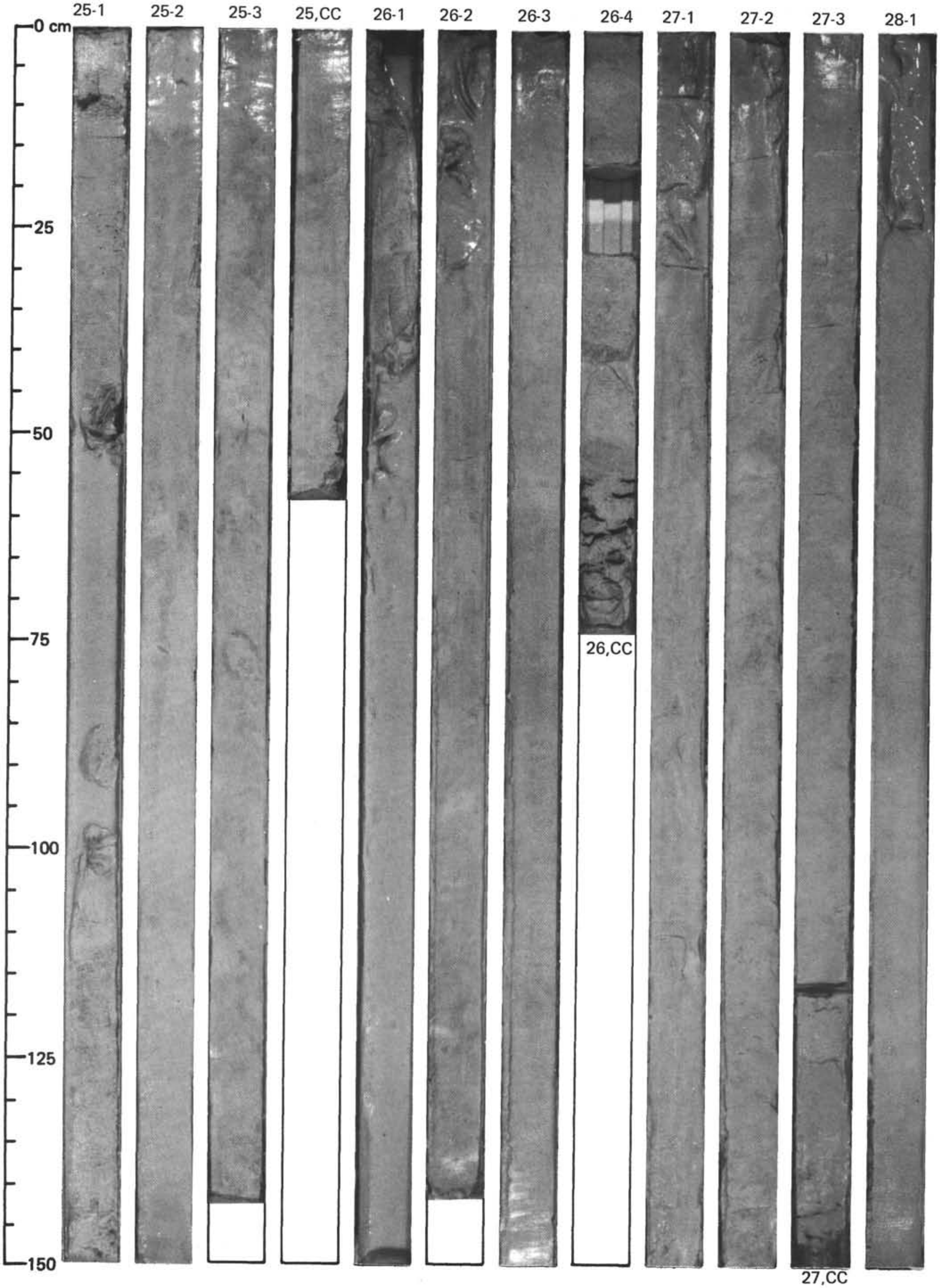

10-2
10-3
10,CC
11-1
11-2
11-3
11-4
12-1
12-2
12-3
12,CC
13-1
0 cm
25
50
75
100
125
150

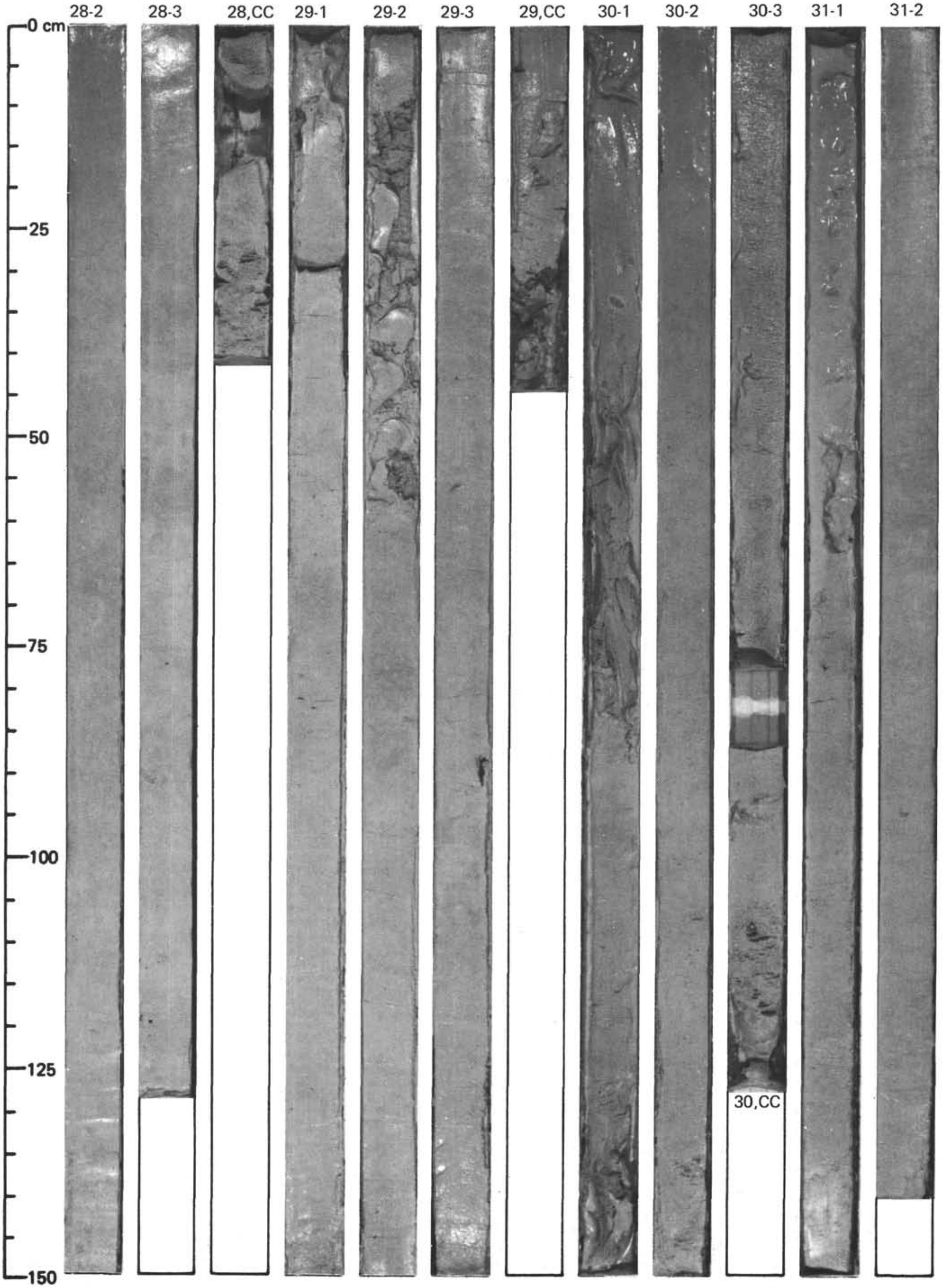

13-2
13-3
13,CC
14-1
14-2
14-3
14-4
15-1
15-2
15-3
15,CC
16-1
14,CC
0 cm
25
50
75
100
125
150

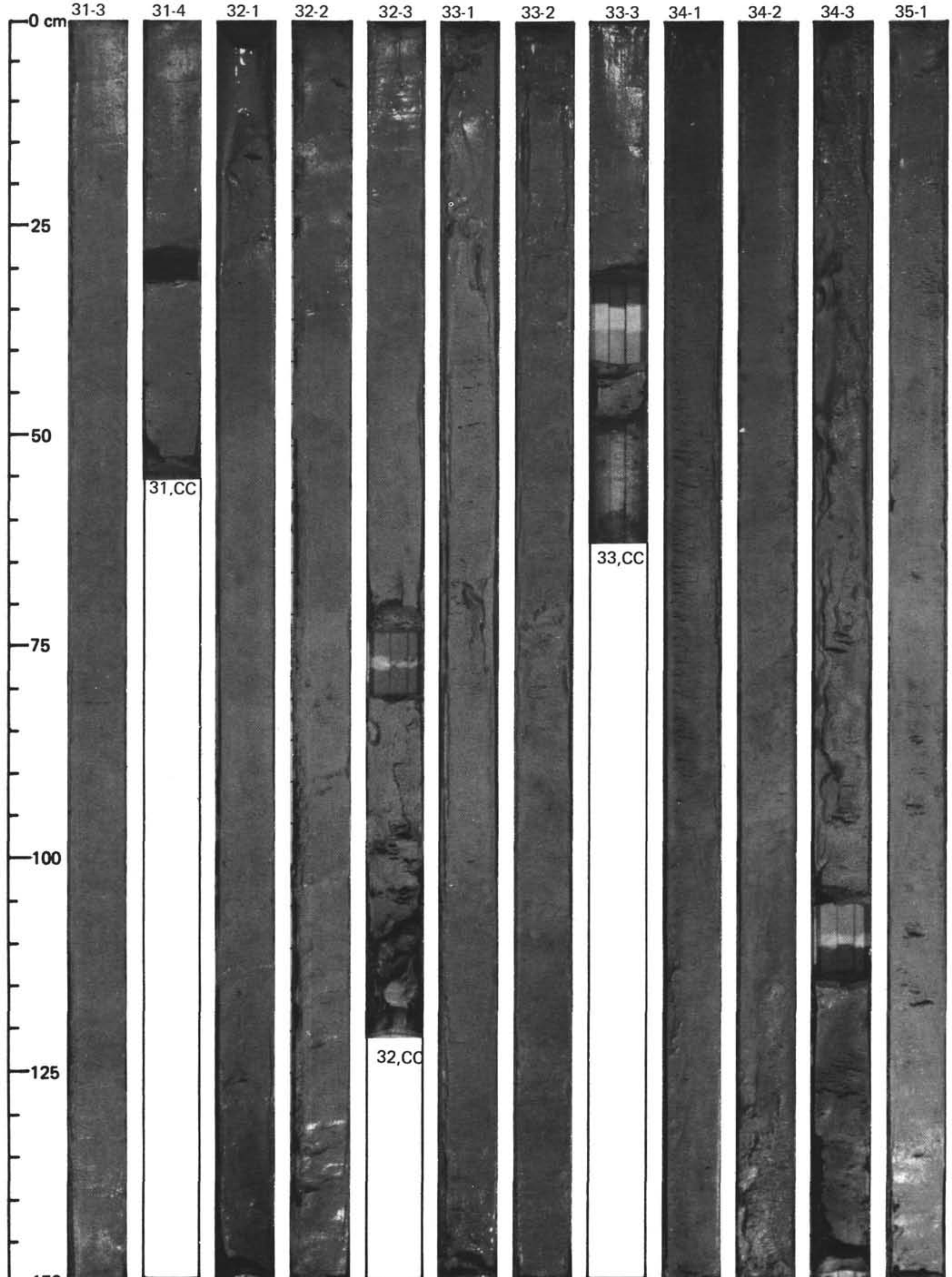

16-2
16-3
16-4
17-1
17-2
17-3
17,CC
18-1
18-2
18-3
18,CC
19-1
0 cm
25
50
75
100
125
150
16,CC

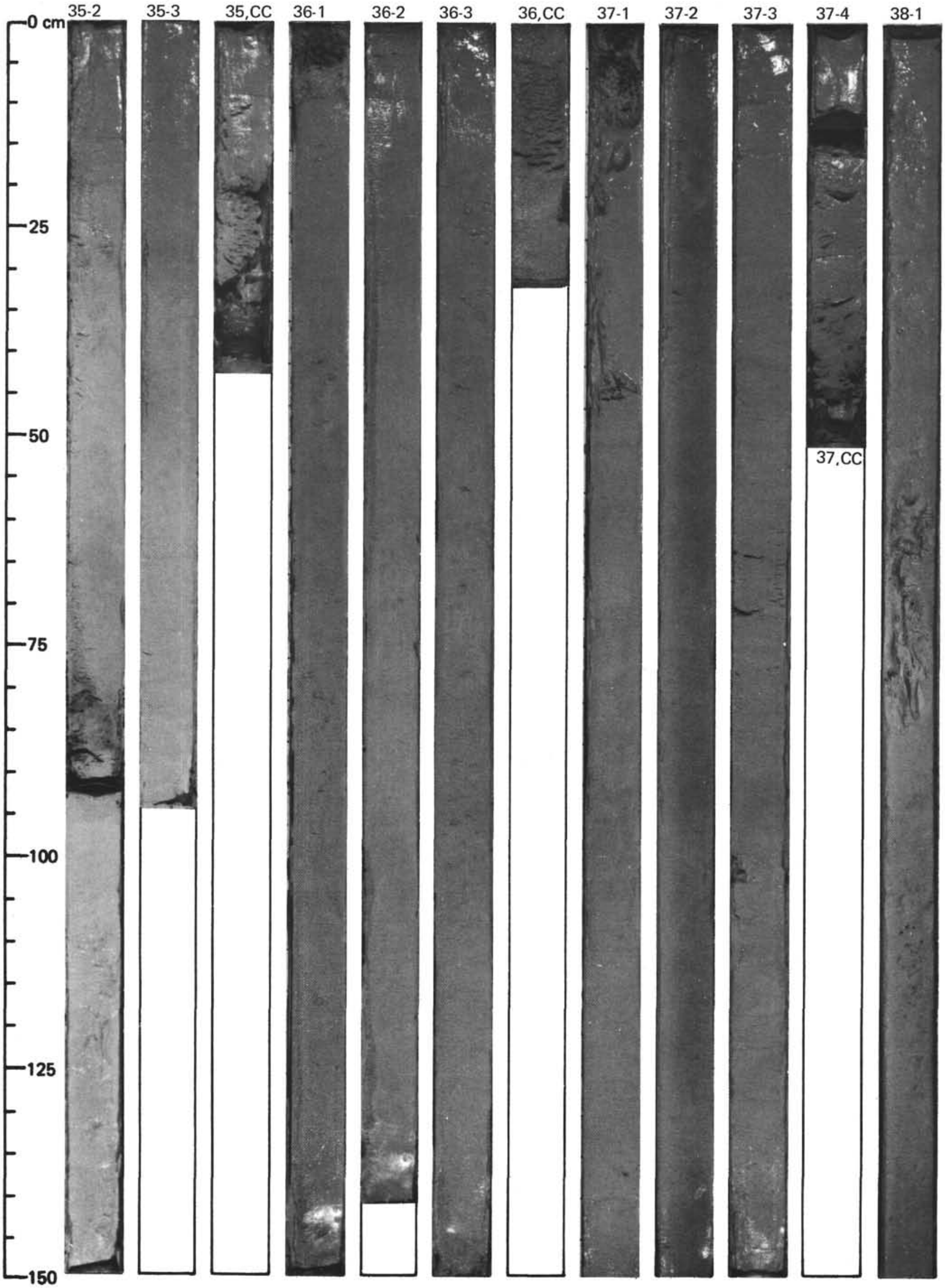

19-2
19-3
19,CC
20-1
20-2
20-3
20-4
20,CC
21-1
21-2
21-3
21-4
21,CC
0 cm
25
50
75
100
125
150

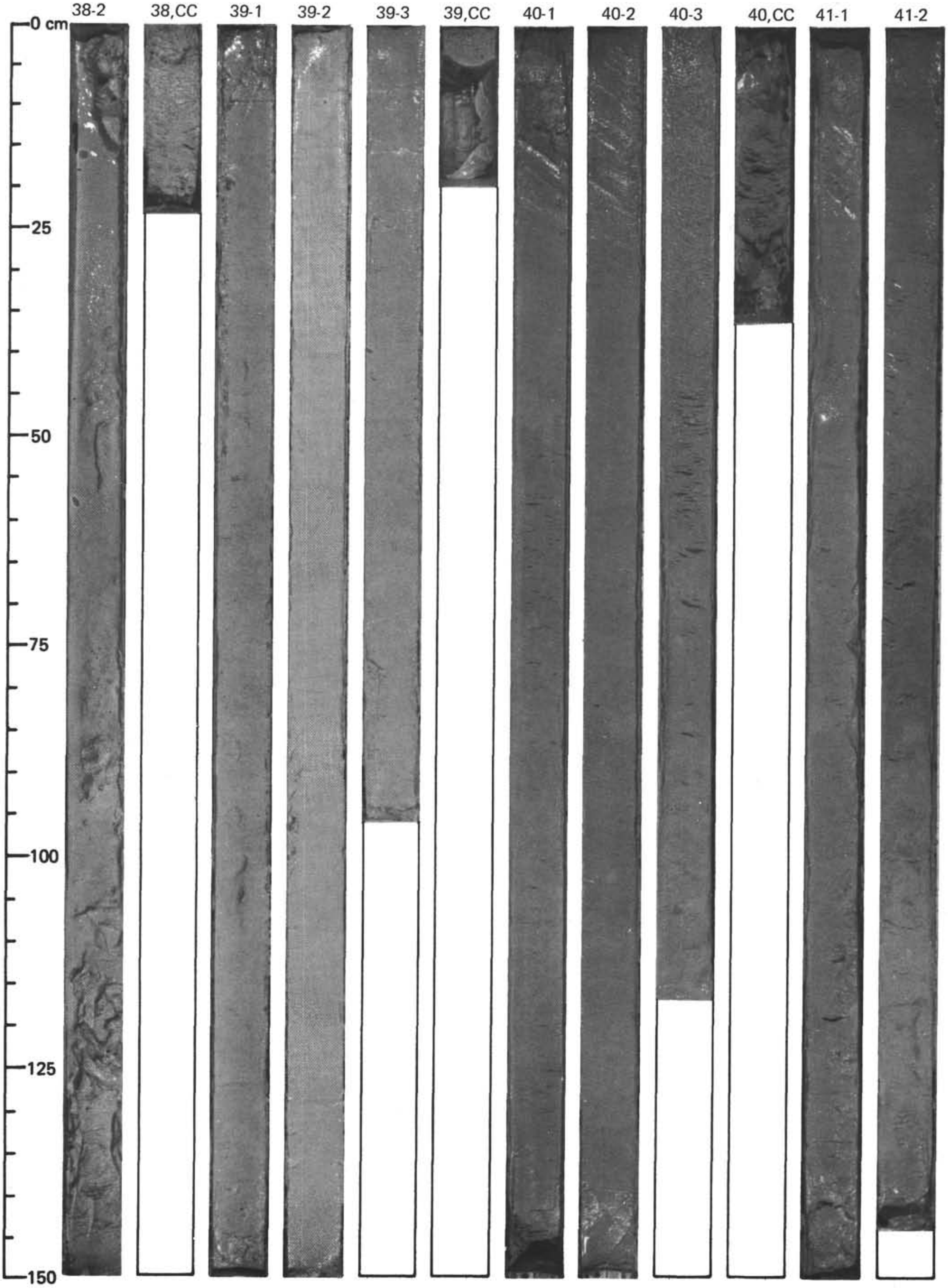

22-1
22-2
22-3
22,CC
23-1
23-2
23-3
23-4
24-1
24-2
24-3
24,CC
0 cm
25
50
75
100
125
150
23,CC


25-1
25-2
25-3
25,CC
26-1
26-2
26-3
26-4
27-1
27-2
27-3
28-1
0 cm
25
50
75
100
125
150
26,CC
27,CC

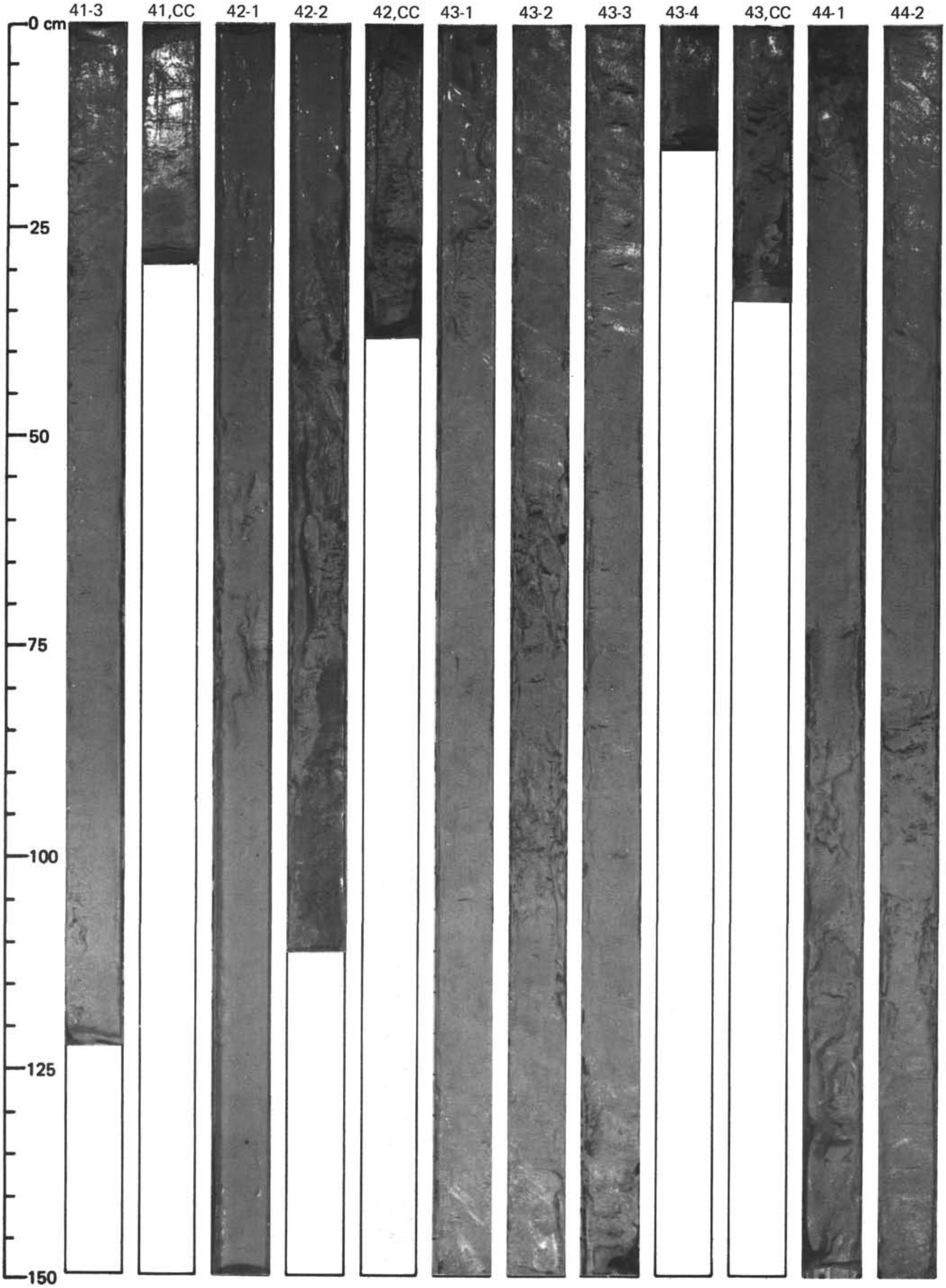

28-2
28-3
28,CC
29-1
29-2
29-3
29,CC
30-1
30-2
30-3
31-1
31-2
0 cm
25
50
75
100
125
150
30,CC

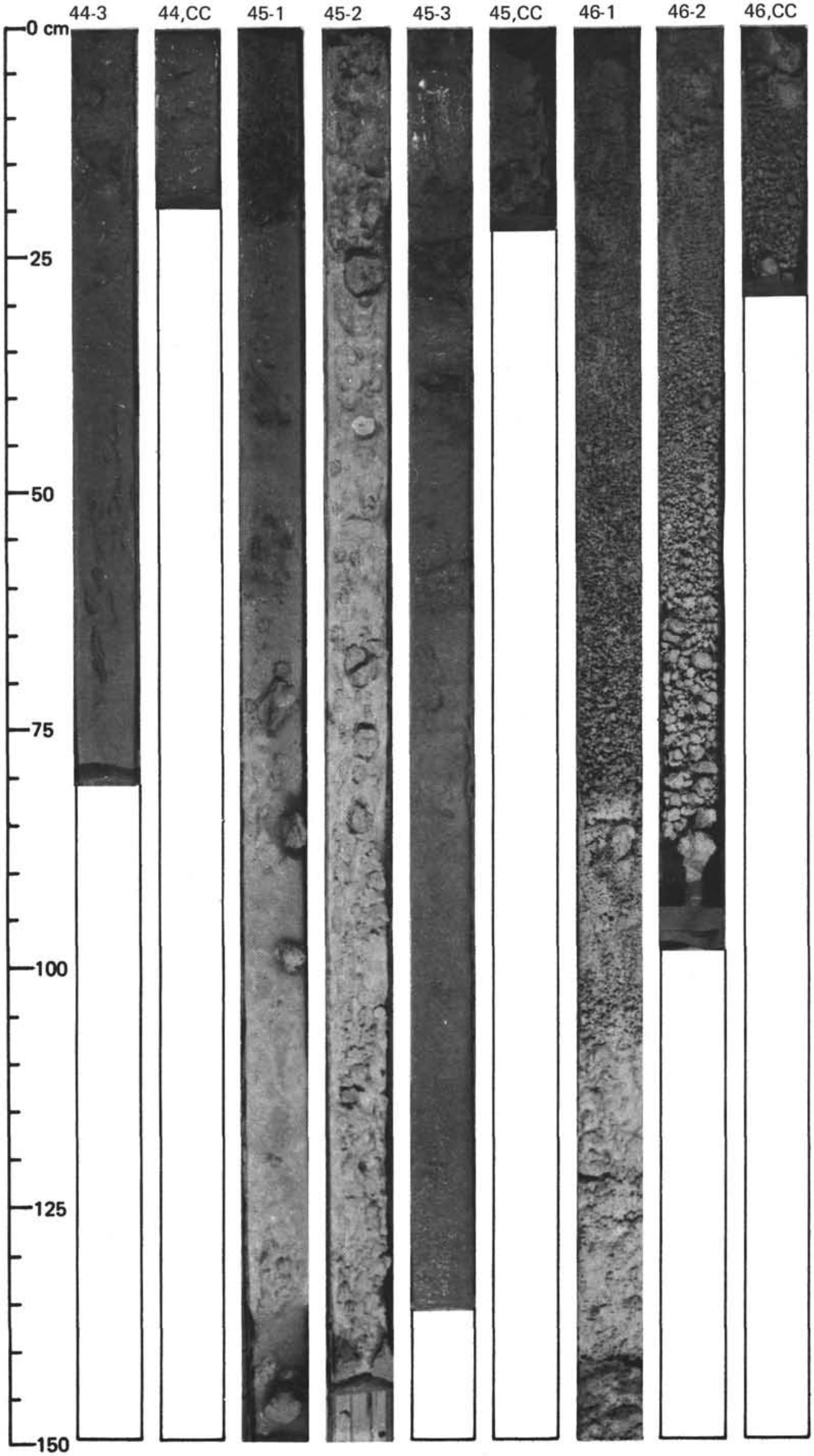

0 cm
25
50
75
100
125
150
31-3
31-4
32-1
32-2
32-3
33-1
33-2
33-3
34-1
34-2
34-3
35-1
31,CC
32,CC
33,CC
34,CC

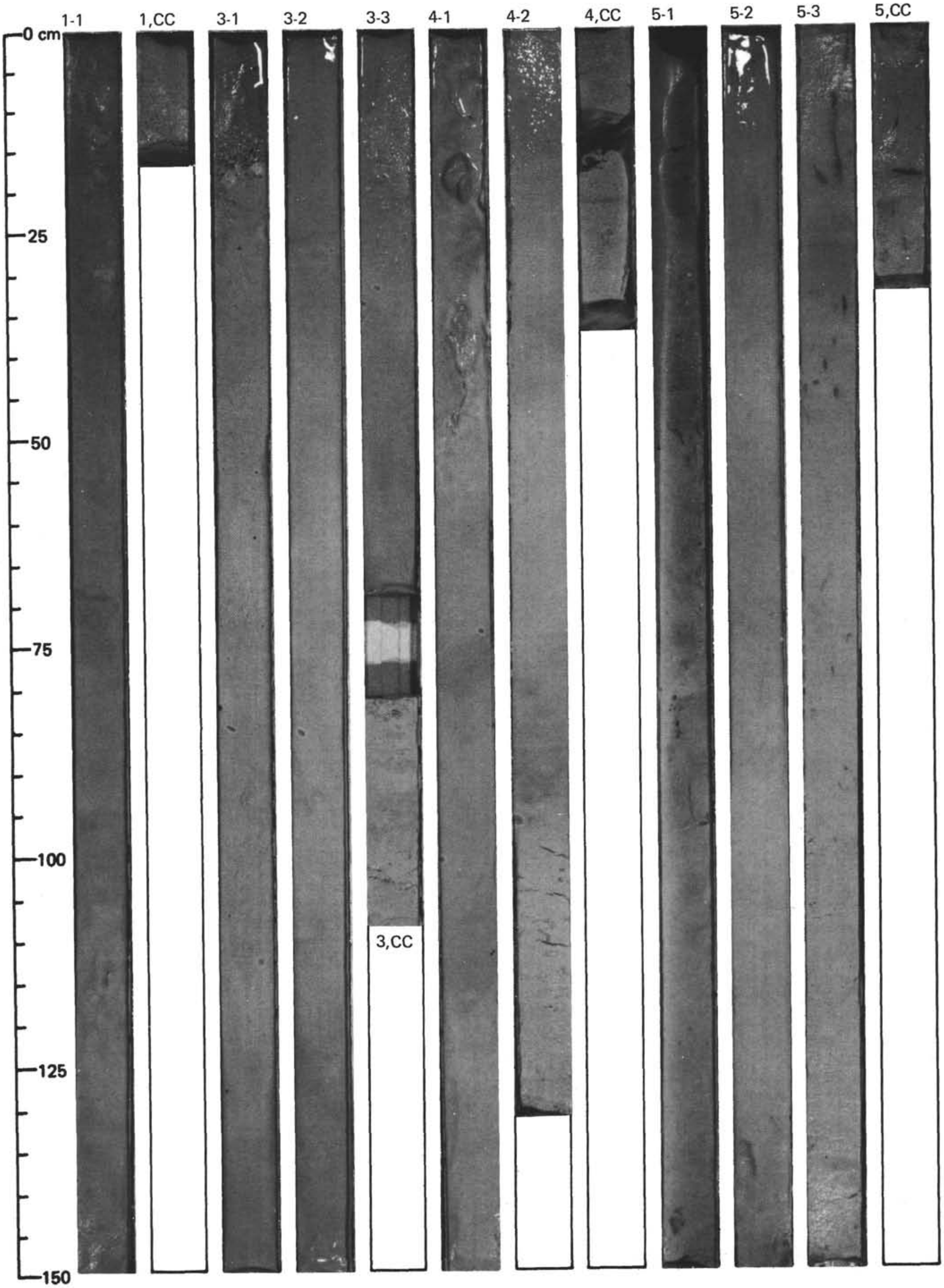

0 cm
25
50
75
100
125
150
35-2
35-3
35,CC
36-1
36-2
36-3
36,CC
37-1
37-2
37-3
37-4
37,CC
38-1

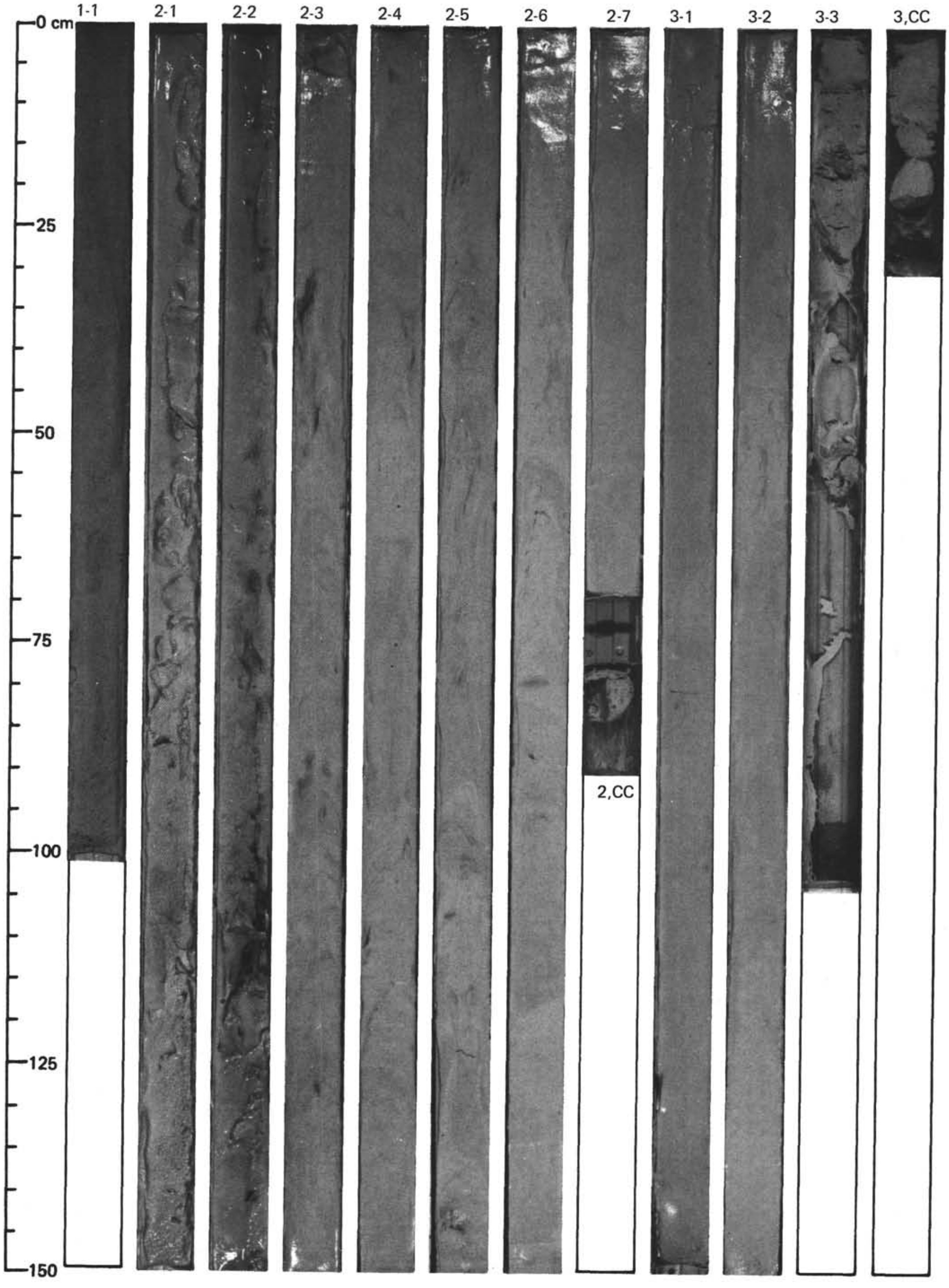


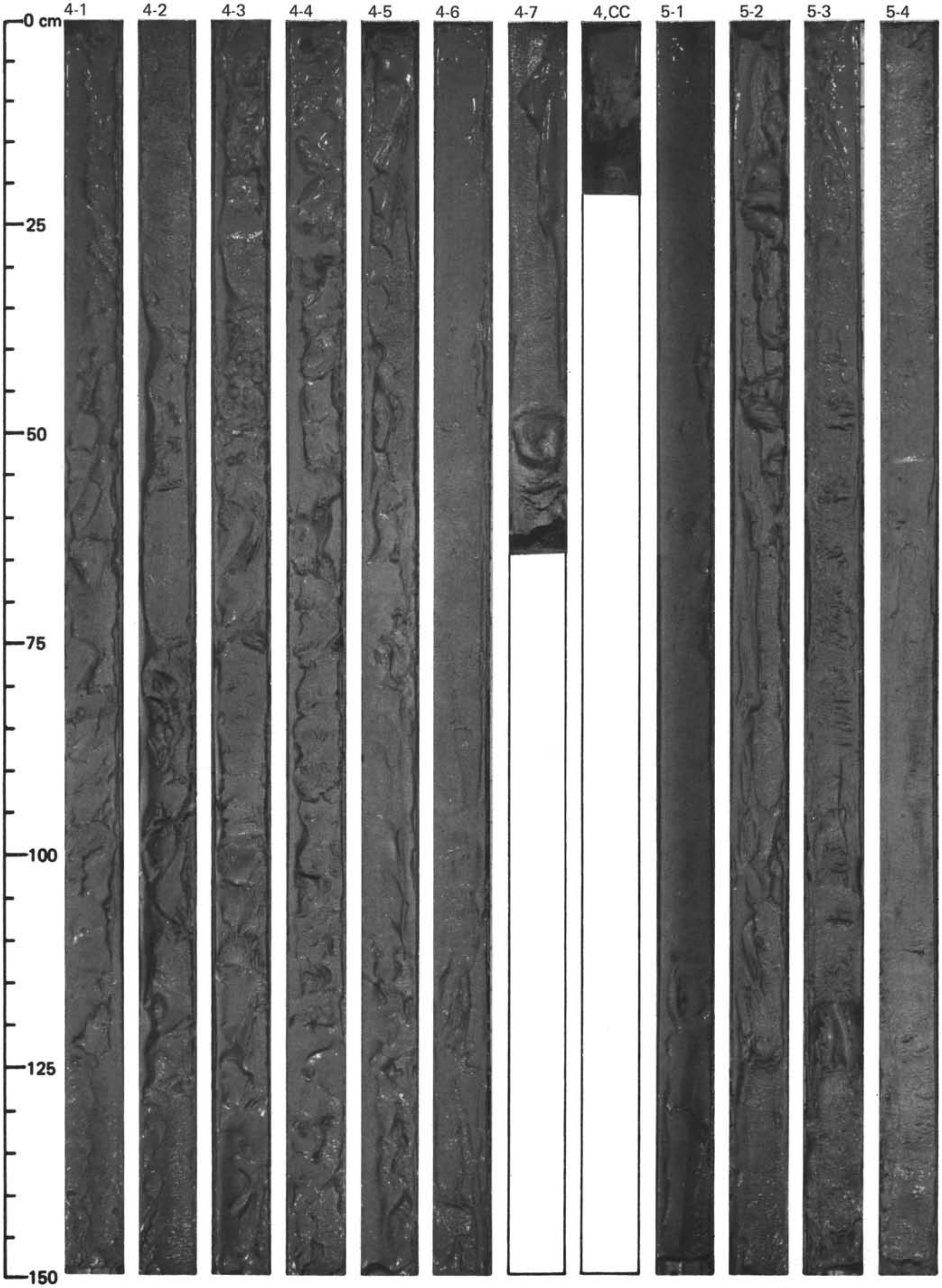
38-2
38,CC
39-1
39-2
39-3
39,CC
40-1
40-2
40-3
40,CC
41-1
41-2
0 cm
25
50
75
100
125
150

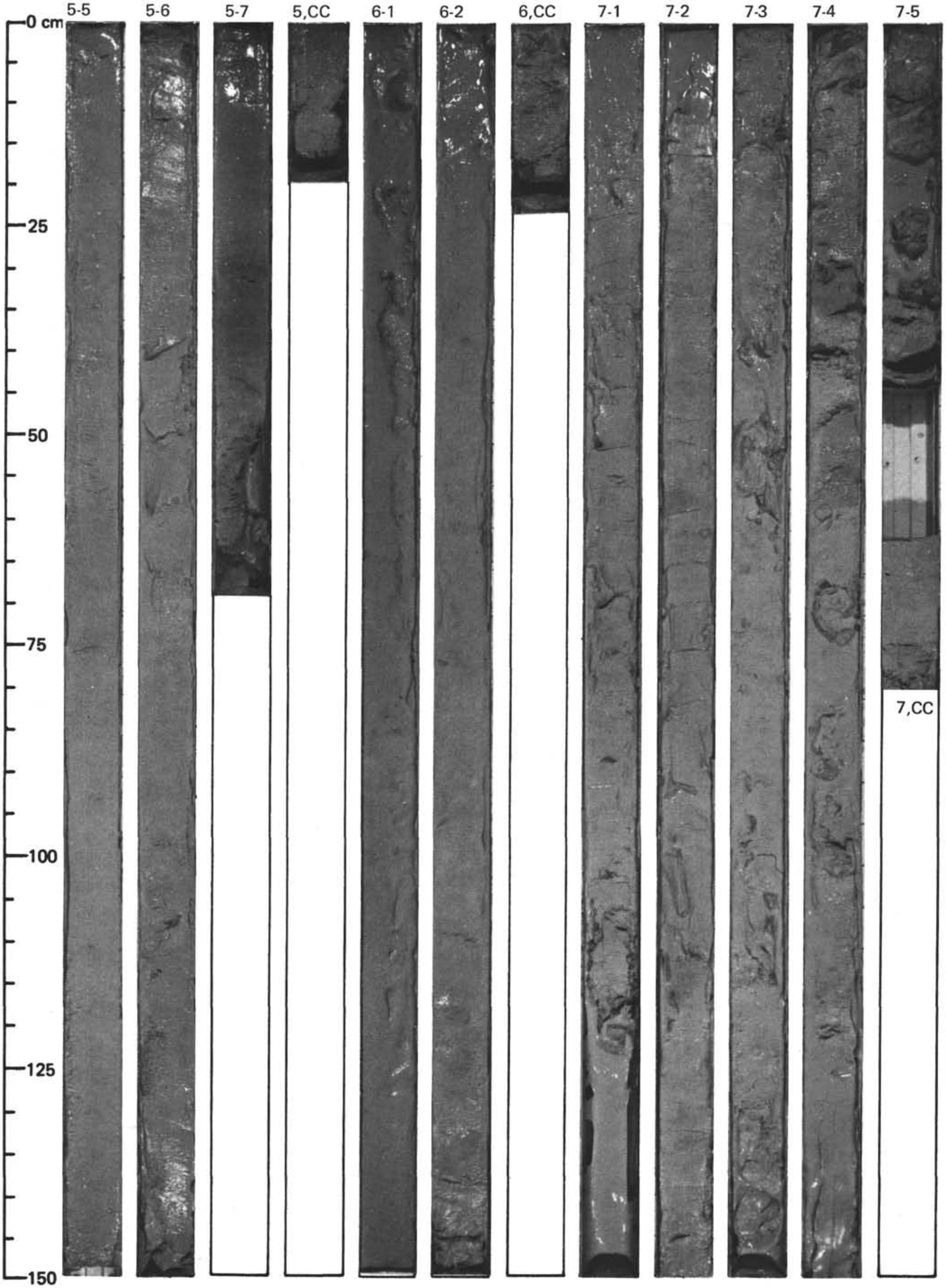

41-3
41,CC
42-1
42-2
42,CC
43-1
43-2
43-3
43-4
43,CC
44-1
44-2
0 cm
25
50
75
100
125
150
44-1

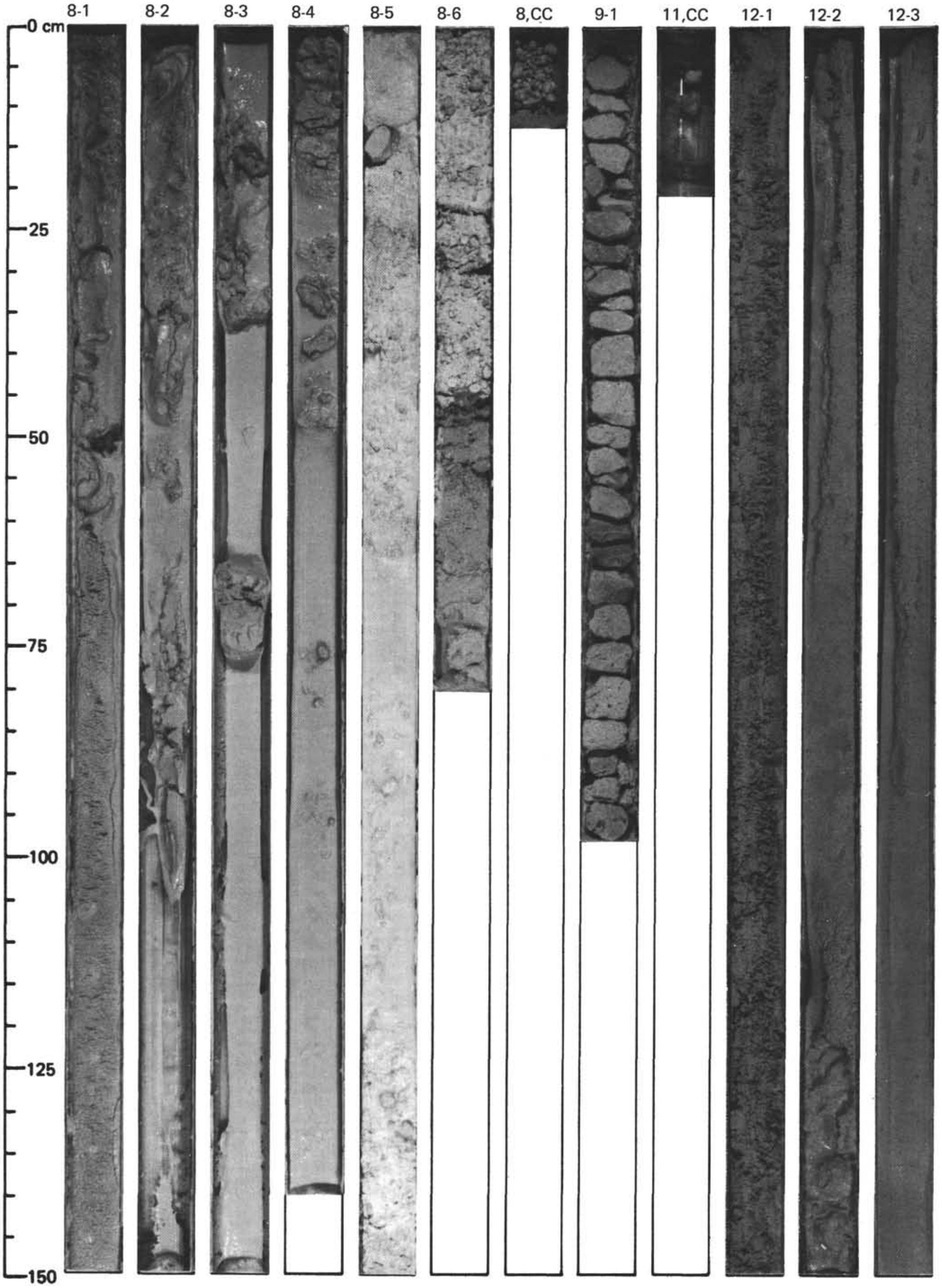

44-3
44,CC
45-1
45-2
45-3
45,CC
46-1
46-2
46,CC
0 cm
25
50
75
100
125
150

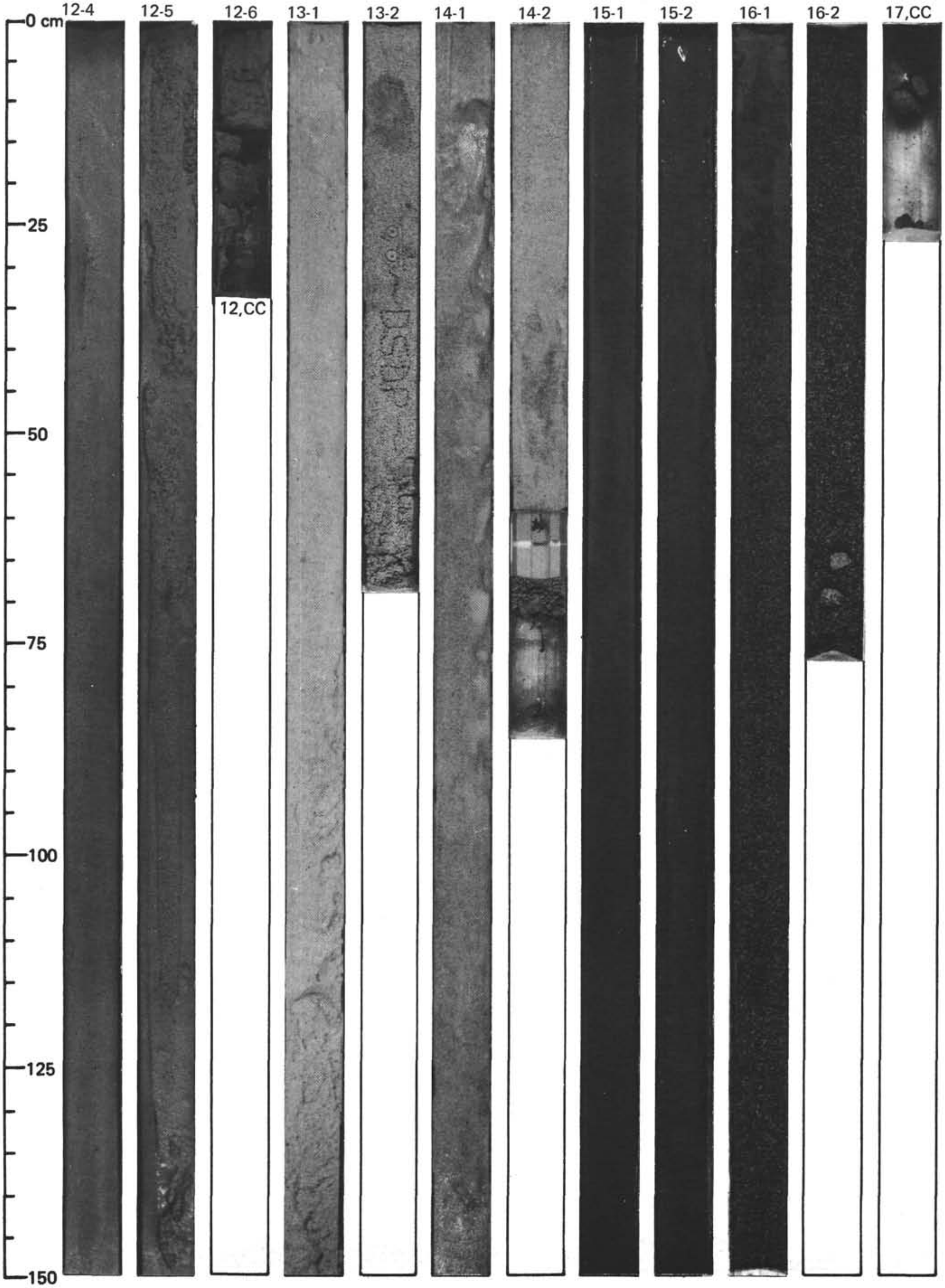

1-1
1,CC
3-1
3-2
3-3
4-1
4-2
4,CC
5-1
5-2
5-3
5,CC
3,CC
0 cm
25
50
75
100
125
150

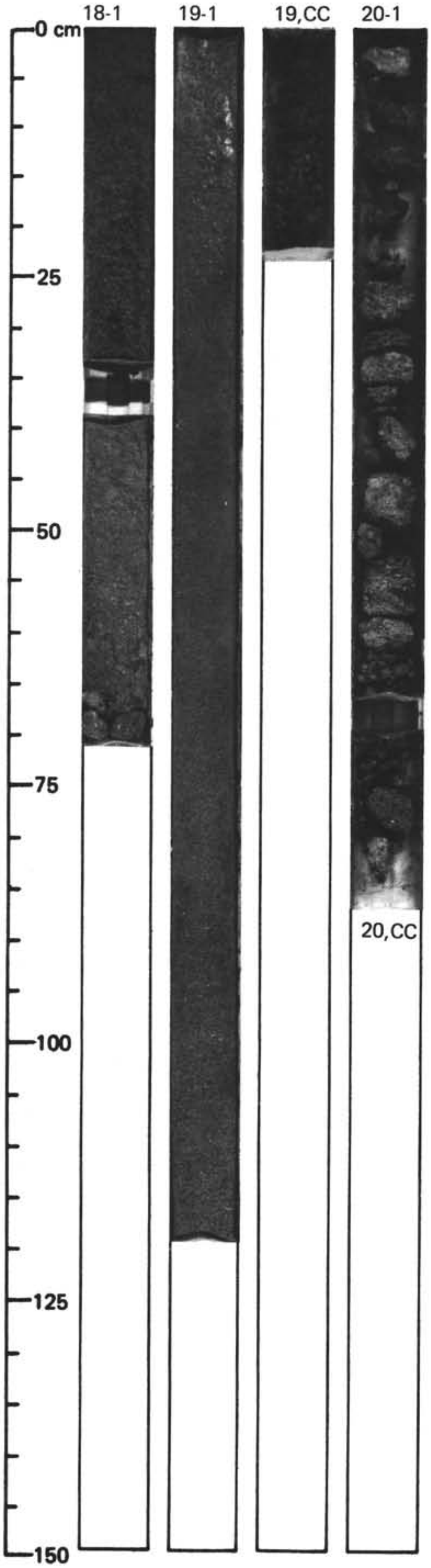

0 cm
25
50
75
100
125
150
1-1
2-1
2-2
2-3
2-4
2-5
2-6
2-7
2,CC
3-1
3-2
3-3
3,CC


4-1
4-2
4-3
4-4
4-5
4-6
4-7
4,CC
5-1
5-2
5-3
5-4
0 cm
25
50
75
100
125
150


0 cm
25
50
75
100
125
150
5-5
5-6
5-7
5,CC
6-1
6-2
6,CC
7-1
7-2
7-3
7-4
7-5
7,CC


8-1
8-2
8-3
8-4
8-5
8-6
8,CC
9-1
11,CC
12-1
12-2
12-3
0 cm
25
50
75
100
125
150


12-4
12-5
12-6
13-1
13-2
14-1
14-2
15-1
15-2
16-1
16-2
17,CC
0 cm
25
50
75
100
125
150
12,CC


18-1
19-1
19,CC
20-1
0 cm
25
50
75
100
125
150
20,CC