4. SITE 573[1]

Shipboard Scientific Party[2]

HOLES 573, 573A, 573B

Dates occupied: 573—2 to 4 April 1982
573A—4 to 5 April 1982
573B—6 to 9 April 1982

Date departed Hole 573B: 9 April 1982

Time on site: 7.3 days

Position: 0°29.91′N; 133°18.57′W

Water depth (sea level; corrected m, echo-sounding): 4301

Water depth (rig floor; corrected m, echo-sounding): 4317

Bottom felt (m, drill pipe): 4311.5

Penetration (Hole 573B, m): 529

Number of cores: 573—19
573A—6
573B—43

Total length of cored section (m): 573—158.6
573A—53.2
573B—390.0

Total core recovered (m): 573—159.4
573A—53.5
573B—279.7

Core recovery (%): 573—100
573A—100
573B—71.6

Oldest sediment cored:
Depth sub-bottom (m): 528
Nature: Limestone
Age: late Eocene
Measured velocity (km/s): 1.74

Basement:
Depth sub-bottom (m): 529
Nature: Basalt

Principal results: Site 573 is located at 0°29.91′N, 133°18.57′W in 4300 m of eastern equatorial Pacific water over a basement trough covered by sediments that reach 0.68 s in thickness. The objective of drilling at the site, which was to obtain an expanded upper Eocene to Quaternary sedimentary section for high resolution stratigraphic and paleoceanographic studies, was met by drilling three holes. Hole 573 (hydraulic piston corer [HPC]) reached about 160 m sub-bottom; Hole 573A, a parallel HPC attempt, was abandoned at approximately 60 m sub-bottom; and Hole 573B (rotary drilling) was cored from about 140 to 529 m, with the recovery from its bottom of a baked sediment/basalt contact and about 1 m of basalt. As Hole 573B was being washed down to 140 m, the heat flow-pore water probe was deployed; it retrieved *in situ* pore water from 53 m sub-bottom.

The oldest sediment cored (Hole 573B, 528 m sub-bottom) was uppermost Eocene limestone. Four lithostratigraphic units were recognized in the sedimentary section. These units can be grouped so as to correlate with the three oceanic formations established for sediments at nearby Site 77 (DSDP Leg 9, Hays et al., 1972). In upsection order, the units are as follows:

1. An uppermost Eocene biogenic limestone (526.6 to 528.0 m).
2. A brown unit that contains metalliferous claystone and foraminiferal nannofossil chalk (520.5 to 526.6 m). This unit correlates with uppermost Eocene at its base, is virtually barren of fossils in its dark brown center, and correlates with lowermost Oligocene at its top.
3. Two units of siliceous calcareous oozes and chalks. These units make up the remaining part of the section (lower Oligocene to Pleistocene). The lower unit (calcareous chalk ooze) extends from 45.1 to 520.5 m, the upper unit (cyclic siliceous calcareous ooze) from 0 to 45.1 m.

Foraminifers, calcareous nannofossils, radiolarians, and diatoms are, with some exceptions, well represented in the cored sediments. Most Eocene to Quaternary biozonal and stratigraphic boundaries could be recognized and correlated. The Eocene/Oligocene boundary could not be located unequivocally, however. Either it falls within the barren midportion of the metalliferous unit or it coincides with a hiatus. Other brief hiatuses were found in the uppermost Oligocene and lower upper Miocene.

The sediment accumulation rates at Site 573 are relatively constant; they vary, in general, between 18 and 12 m/m.y. A peak of 30 m/m.y. occurs between 5.5 and 6 Ma, and a low of about 10 m/m.y. was recorded between 15 and 21 Ma. Some of the changes in rates of accumulation correlate with changes in lithology, physical properties, natural remanent magnetization (NRM) intensity, and interstitial-water geochemistry.

Except for the uncertainty associated with the Eocene/Oligocene boundary, the expanded, high resolution stratigraphic section recovered at Site 573 should enhance studies of the equatorial Pacific's Tertiary history.

BACKGROUND AND OBJECTIVES

Site 573 was proposed by the JOIDES Ocean Paleoenvironment Panel (OPP) as the southernmost drill site in a north-south transect of the equatorial high-productivity zone. The position of the site, just south of the axis of maximum sediment accumulation and just north of the equator, was chosen to duplicate the very popular section cored at DSDP Site 77, and to recover a detailed sedimentary record of the passage of this area from about 8°S, 39 Ma, into the equatorial high-productivity zone. Our operational objectives were to recover a complete and undisturbed section of Neogene sediments by using the HPC to core it twice and then to rotary drill and continuously core to basement. Our specific scientific objectives were to establish high-resolution bio-, magneto-,

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[1] Mayer, L., Theyer, F., et al., *Init. Repts. DSDP*, 85: Washington (U.S. Govt. Printing Office).

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seismic, carbonate, and stable isotope stratigraphies to improve our understanding of the paleoceanography and paleoclimatology of the region.

The area in the vicinity of DSDP Sites 573 and 77 has been traversed by Scripps' R/V *Argo* and Lamont's R/V *Conrad* (C-10-05, 1966, and C-15-10, 1971). More recently, a detailed site survey was conducted by the R/V *Thomas Washington* (Ariadne I; see Shipley et al., this volume); the survey used a single-channel, digital, water and air gun seismic system and also acquired Seabeam bathymetry. The area surveyed is characterized by generally low relief; water depths range from 4200 to 4300 m (uncorrected) (Fig. 1). A thick (0.40 to 0.68 s), acoustically well stratified sediment section conformably fills a series of basement peaks and troughs trending north-northwest/south-southeast (Fig. 2). Basement relief is typically 80 to 100 m. In some of the basement troughs, the sediment fill is significantly thicker than over the surrounding basement highs (Fig. 2). There is a small, circular, 350-m basement high in the northeast corner of the survey area. This high has a surficial expression of about 200 m and is free of sediment at its surface. It was carefully avoided in the selection of Site 573.

Drilling at DSDP Site 77 resulted in the recovery of 481 m of predominantly siliceous calcareous and calcareous siliceous oozes. The average sedimentation rate was 13 m/m.y., with the rates increasing from the base to the top of the section. The bottom 18 m of the section consisted of dusky brown clay rich in iron and manganese that overlay a baked limestone/basalt contact. Basement age was estimated to be 36 Ma. Van Andel et al. (1975) calculated that the crust in this area was formed at 39 Ma, at a latitude of 7°47′S, and at a water depth of 2799 m.

After reviewing the site survey data, the OPP selected a spot approximately 6 n. mi. west of Site 77 for Site 573. The drill site was directly over a north-northwest/south-southeast lineated basement depression where the sediment section is extremely thick (0.62 s)—approximately 50 m thicker than the section at Site 77. A thick section was desired to maximize the possibility of recovering the Eocene/Oligocene boundary.

OPERATIONS

The *Glomar Challenger* arrived in the vicinity of Site 573 at 2300Z on 2 April after a 5.25-day steam from Site 572 (average speed: 9.4 knots). In transit we collected continuous seismic profiles (air gun and 3.5 kHz) and bathymetric and magnetic data. Our plan was to aim for DSDP Site 77 (0°28.9′N, 133°13.7′W) and then to head due west about 6 n. mi. to the basement trough selected by the OPP as the target site.

We entered the area covered by the Ariadne I site survey at 2305Z but found that the Seabeam bathymetry provided disagreed with the depths we were measuring. We could find no consistent offset or rotation that rectified the discrepancies between the two data sets; thus, we could not use the Seabeam bathymetry to find the proposed drilling site. Fortunately, we were able to determine our location relative to the air gun profiles collected during the Ariadne site survey, and at 0006Z on 3 April we crossed the proposed drill site. We continued 2 n. mi. beyond the site, turned right to 045° at 0020Z, and then turned south-southeast 8 min. later, following the trend of the basement trough to the proposed site. At 0043Z on 3 April we dropped the beacon. We then continued profiling for 2 n. mi. past the beacon. We pulled the geophysical gear and returned to the site to begin drilling operations (Table 1).

Drill pipe run-in began at 0200Z, with the first HPC core on deck at 1615Z. The mudline was established at the rig floor as 4311.5 m. Drilling at Hole 573 began with the 9.5-m variable-length HPC (VLHPC). We collected 17 9.5-m cores and two 5-m cores with nearly 100% recovery. Disturbance was minimal. Pullout force reached 14,000 lb. for Core 14 but was absent for Cores 15 and 16. Pullout force became significant again for Core 17 (50,000 lb.), and it proved to have deformed the

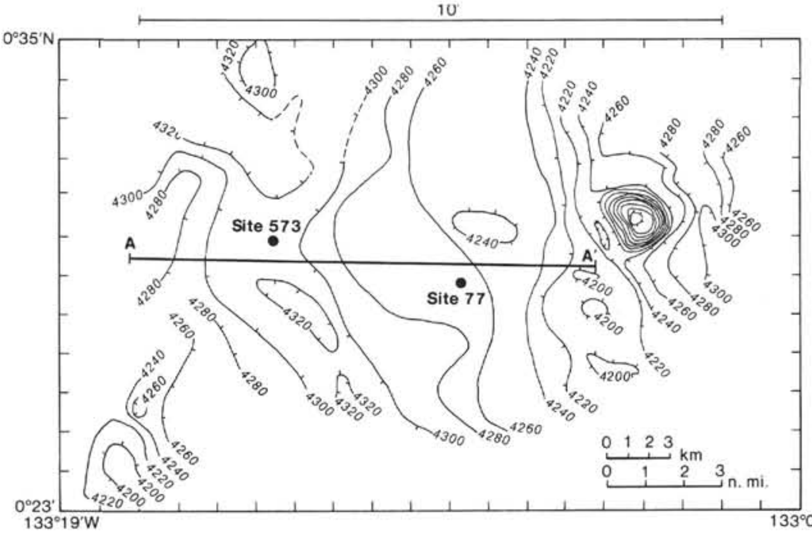

Figure 1. Bathymetry at Site 573. Profile A–A′ is the seismic profile shown in Figure 2.

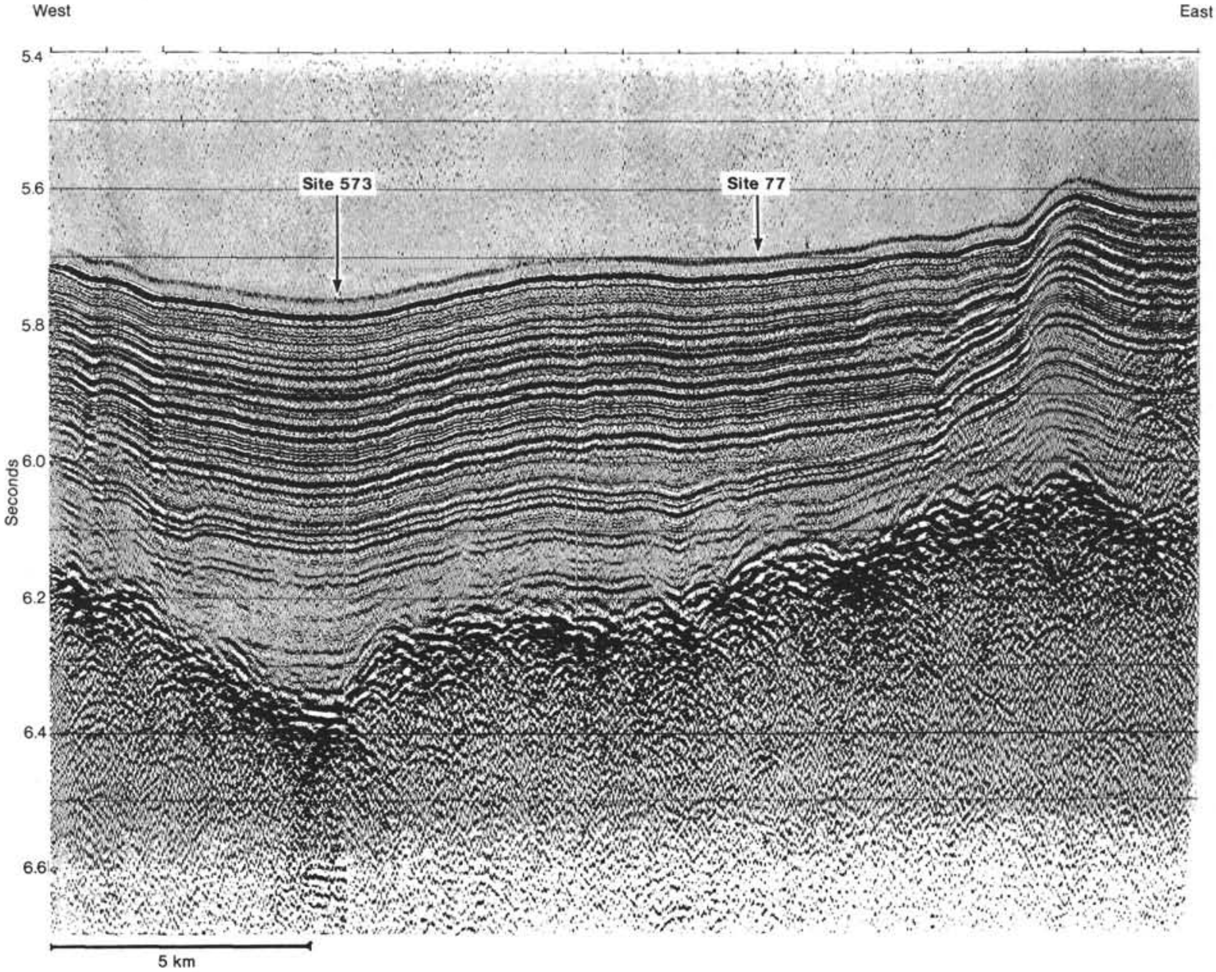

Figure 2. Seismic profile near Sites 573 and 77 (from Shipley et al., this volume).

ears of the quick disconnect when the equipment returned to the rig floor. We switched to the 5-m HPC and took two 5-m cores with no pullout force. We exerted 75,000 lb. of pullout force on the third 5-m core (Core 20), broke the quick disconnect, and lost the core in the bottom of the hole. We decided that it would be wise to terminate drilling, so we pulled back to the mudline and began to drill Hole 573A.

The drilling in Hole 573A began at 0200Z on 5 April with the depth of the HPC adjusted so as to minimize the loss of section due to intercore gaps. As we tried to retrieve the seventh core, the sandline parted, necessitating a drill string trip. To save time (we estimated that 12 hr. would be necessary to change sandlines, and continuing to drill with the second HPC and then changing to rotary drilling would involve two more pipe trips) and because recovery from the first HPC hole had been excellent, we decided to go directly to rotary drilling.

The sandline was changed and the drill pipe was run in and ready for rotary drilling by 1300Z on 6 April. We were to collect heat-flow measurements at this site, and we thought it most expedient to make them as we washed down to the starting point of Hole 573B (about 130 m sub-bottom). As the heat-flow probe was lowered down the pipe, a loop in the sandline (a result of the light weight of the tool) ran into a sheave; the wire parted, and the heat-flow probe and 1200 m of wire free fell down the pipe. A fishing tool retrieved the wire, and the slow task of hauling it in began. The heat-flow tool was finally retrieved at 0130Z on 7 April. The pore-water sampler in the heat-flow probe worked properly, but an analysis of the temperature data indicated that probe motion due to the inability of the sediment at 53 m sub-bottom (where the measurement was taken) to support the weight of the drill string had invalidated the heat-flow data.

Because of the large delays we had encountered, we decided to forgo further heat-flow measurements. We finally collected the first rotary-drilled core in Hole 573B from 138.5 m sub-bottom at 0430Z on 7 April. Rotary coring proceeded smoothly, although there was a significant amount of drilling disturbance in many of the upper few cores. The drilling rate and pumping pressure were lowered in an attempt to reduce the disturbance. The sediment in Core 20 became too stiff to cut with the wire splitter, and we switched to the rock saw. Coring proceeded smoothly to Core 43, which returned after 35 min. of drilling with a baked limestone/basalt contact and 1 m of basalt. Having reached basement (at 528 m sub-bottom), we ended Hole 573B (total recovery 72%) and tripped the pipe. We departed for Site 574 at 0800Z on 10 April.

Table 1. Coring summary, Site 573.

Core	Date (Apr. 1982)	Local time (hr.)	Depth from drill floor (m)	Depth below seafloor (m)	Length cored (m)	Length recovered (m)	Recovery (%)
Hole 573							
1	3	0815	4311.5-4313.5	0.0-2.0	2.0	2.0	100+
2	3	0940	4313.5-4323.0	2.0-11.5	9.5	9.42	100
3	3	1040	4323.0-4332.5	11.5-21.0	9.5	9.31	100
4	3	1211	4332.5-4342.0	21.0-30.5	9.5	9.56	100
5	3	1320	4342.0-4350.8	30.5-39.3	8.8	8.84	100
6	3	1440	4350.8-4359.5	39.3-48.0	8.7	8.71	100
7	3	1610	4359.5-4368.7	48.0-57.2	9.2	9.18	99
8	3	1720	4368.7-4378.2	57.2-66.7	9.5	9.69	100
9	3	1830	4378.2-4387.7	66.7-76.2	9.5	9.56	100
10	3	2000	4387.7-4397.2	76.2-85.7	9.5	9.66	100
11	3	2130	4397.2-4406.7	85.7-95.2	9.5	9.39	100
12	3	2255	4406.7-4415.5	95.2-104.0	8.8	9.04	100
13	4	0010	4415.5-4424.1	104.0-112.6	8.6	8.66	100
14	4	0123	4424.1-4433.6	112.6-122.1	9.5	9.50	100
15	4	0244	4433.6-4442.8	122.1-131.3	9.2	9.23	100
16	4	0401	4442.8-4451.6	131.3-140.1	8.8	8.87	100
17	4	0545	4451.6-4460.4	140.1-149.0	8.9	8.99	100
18	4	0750	4460.5-4465.5	149.0-154.0	5.0	4.63	93
19	4	0918	4465.5-4470.1	154.0-158.6	4.6	5.15	100
					158.60	159.39	100
Hole 573A							
1	4	1800	4316.0-4325.5	4.5-14.0	9.5	9.66	100+
2	4	1935	4325.5-4333.6	14.0-22.1	8.1	8.13	100+
3	4	2110	4333.6-4342.8	22.1-31.3	9.2	9.25	100+
4	4	2240	4342.8-4351.3	31.3-39.8	8.5	8.50	100
5	5	0005	4351.3-4360.7	39.8-49.2	9.4	9.41	100+
6	5	0800	4360.7-4369.2	49.2-57.7	8.5	8.55	100+
					53.20	53.52	100
Hole 537B							
		Heat flow to 4450.0					
1	6	2030	4450.0-4459.5	138.5-148.0	9.5	8.56	90
2	6	2230	4459.5-4469.0	148.0-157.5	9.5	9.64	100
3	7	0040	4469.0-4478.5	157.5-167.0	9.5	9.73	100
4	7	0140	4478.5-4488.0	167.0-176.5	9.5	9.63	100
5	7	0320	4488.0-4497.5	176.5-186.0	9.5	9.41	99
6	7	0455	4497.5-4507.0	186.0-195.5	9.5	9.70	100
7	7	0630	4507.0-4516.5	195.5-205.0	9.5	8.03	86
8	7	0805	4516.5-4526.0	205.0-214.5	9.5	9.79	100
9	7	0935	4526.0-4535.5	214.5-224.0	9.5	9.67	100
10	7	1120	4535.5-4545.0	224.0-233.5	9.5	8.84	93
11	7	1237	4545.0-4554.5	233.5-243.0	9.5	9.43	99
12	7	1353	4554.5-4564.0	243.0-252.5	9.5	7.25	76
13	7	1500	4564.0-4573.5	252.5-262.0	9.5	9.68	100
14	7	1620	4573.5-4583.0	262.0-271.5	9.5	9.62	100
15	7	1740	4583.0-4592.5	271.5-281.0	9.5	8.45	89
16	7	1907	4592.5-4602.0	281.0-290.5	9.5	7.80	100
17	7	2030	4602.0-4611.5	290.5-300.0	9.5	7.76	82
18	7	2147	4611.5-4621.0	300.0-309.5	9.5	4.64	49
19	7	2300	4621.0-4630.5	309.5-319.0	9.5	3.31	35
20	8	0038	4630.5-4640.0	319.0-328.5	9.5	9.32	98
21	8	0215	4640.0-4649.5	328.5-338.0	9.5	6.52	69
22	8	0347	4649.5-4659.0	338.0-347.5	9.5	6.05	64
23	8	0533	4659.0-4668.5	347.5-357.0	9.5	6.29	66
24	8	0700	4668.5-4678.0	357.0-366.5	9.5	5.28	56
25	8	0830	4678.0-4687.5	366.5-376.0	9.5	1.93	20
26	8	1008	4687.5-4697.0	376.0-385.5	9.5	7.76	82
27	8	1136	4697.0-4706.5	385.5-395.0	9.5	7.0	74
28	8	1330	4706.5-4716.0	395.0-404.5	9.5	4.91	52
29	8	1504	4716.0-4725.5	404.5-414.0	9.5	7.40	78
30	8	1622	4725.5-4735.0	414.0-423.5	9.5	6.40	67
31	8	1730	4735.0-4744.5	423.5-433.0	9.5	2.04	21
32	8	1910	4744.5-4754.0	433.0-442.5	9.5	4.04	43
33	8	2050	4754.0-4763.5	442.5-452.0	9.5	8.25	87
34	8	2220	4763.5-4773.0	452.0-461.5	9.5	2.48	26
35	8	2350	4773.0-4782.5	461.5-471.0	9.5	7.48	79
36	9	0130	4782.5-4792.0	471.0-480.5	9.5	5.36	56
37	9	0300	4792.0-4801.5	480.5-490.0	9.5	1.80	19
38	9	0436	4801.5-4811.0	490.0-499.5	9.5	4.48	47
39	9	0600	4811.0-4820.5	499.5-509.0	9.5	4.45	47
40	9	0730	4820.5-4825.5	509.0-514.0	5.0	2.06	41
41	9	0900	4825.5-4832.0	514.0-520.5	6.5	0.02	86
42	9	1035	4832.0-4839.5	520.5-528.0	7.5	6.44	86
43	9	1130	4839.5-4840.5	528.0-529.0	1.0	1.19	100
					390.0	279.69	71.6

LITHOSTRATIGRAPHY

Lithostratigraphic Subdivision

The lithostratigraphic succession at Site 573 consists of a variety of siliceous nannofossil oozes and pure nannofossil oozes, which pass down into chalks of similar composition. Metalliferous sediments and a pelagic limestone immediately overlie basalt at the base of the succession. Sediment composition is the primary criterion for dividing the section. We used color to subdivide the section. Color is not directly related to texture or microfossil content, but since texture and microfossil content display only a broad systematic variation, they are of limited lithostratigraphic use. The succession is divided into five units (Table 2): cyclic siliceous calcareous ooze, calcareous ooze chalk, metalliferous chalk claystone, pelagic limestone, and basalt. These units and their subunits can be correlated with the oceanic formations recognized at Site 77 by Hays et al. (1972).

Unit I: Cyclic Siliceous Calcareous Ooze (upper Pliocene to Quaternary)

The cyclic siliceous calcareous unit (0 to 45.1 m) is composed of 10- to 50-cm alternations of brown (10YR 5/2 to 6/2) and brownish white (10YR 8/2) to very pale brown (10YR 7/1 to 7/2) siliceous foraminiferal nannofossil oozes. The contacts between the beds are horizontal and sharp, although they are bioturbated. The burrow Planolites can be recognized in some of the darker beds.

The unit may be divided into three subunits. *Subunit IA* (0 to 6.6 m) is brown radiolarian foraminiferal diatom nannofossil ooze. *Subunit IB* (6.6 to 18.1 m) is light gray and consists of 50- to 90-cm beds of alternating white (N9 to 10YR 8/2) and very light greenish gray (5G 8/1 to 5GY 8.5/1) siliceous foraminiferal nannofossil ooze. *Subunit IC* (18.1 to 45.1 m) is brown radiolarian foraminiferal diatom nannofossil ooze. The color of the sediment is controlled by the presence of trace quantities of iron oxides, which color the oozes brown. The brown subunits contain a greater proportion of siliceous microfossils than the light gray subunit. The lower brown subunit is separated by a sharp planar contact from the underlying greenish gray calcareous ooze chalk unit.

Table 2. Lithostratigraphy of Site 573.

Lithologic unit	Unit sub-bottom depth (m)	Unit depth (Hole-Core-Section, level in cm)
I (cyclic siliceous calcareous ooze)		
A (brown ooze)	0-6.6	573-1-1, 1 to 573-2-4, 10 573A-1-1, 1 to 573A-1-3, 120
B (light gray ooze)	6.6-18.1	573-2-4, 10 to 573-3-5, 60 573A-1-3, 120 to 573A-2-4, 5
C (brown ooze)	18.1-45.1	573-3-5, 60 to 573-6-5, 1 573A-2-4, 5 to 573A-5-3, 145
II (calcareous ooze chalk)		
A (varicolored ooze)	45.1-160.2	573-6-5, 1 to 573-19,CC 573A-5-3, 145 to 573A-6,CC 573B-1-1, 1 to 573B-3-2, 125
B (gray ooze)	160.2-262.2	573B-3-2, 125 to 573B-14-1, 10
C (brown ooze)	262.2-290.6	573B-14-1, 10 to 573B-17-1, 5
D (white gray chalk)	290.6-520.5	573B-17-1, 5 to 573B-41-1, 3
III (metalliferous chalk claystone)		
A (brown chalk)	520.5-522.6	573B-42-1, 1 to 573B-42-2, 63
B (brown claystone)	522.6-526.6	573B-42-2, 63 to 573B-42-5, 6
IV (pelagic limestone)	526.6-528.0	573B-42-5, 6 to 573B-43-1, 1
V (basalt)	528.0-529.0	573B-43-1, 1

The sediments of the cylic siliceous calcareous ooze unit are generally abundant in clay-sized material (40 to 75%) and common to abundant in silt-sized (10 to 35%) and sand-sized (10 to 30%) material. In the light gray subunit (IB), the clay content reaches 85%, and the content of both silt and sand falls below 10%. Calcareous nannofossils are generally common to abundant (20 to 75%), but they are dominant (75 to 85%) in parts of the light gray unit. Foraminifers are common to abundant (5 to 30%), diatoms are rare to common (5 to 20%), and iron oxides occur as a rare component (<1 to 3%) in the brown beds. Clay minerals, volcanic glass, silicoflagellates, sponge spicules, and fish remains occur sporadically in trace amounts.

Unit II: Calcareous Ooze Chalk (lower Oligocene to upper Pliocene)

Unit I is underlain by a thick (45.1 to 520.0 m) succession of calcareous oozes and chalks that displays considerably less variation in siliceous microfossil content than the overlying sediment. Unit II may be divided into four subunits on the basis of color: varicolored ooze, gray ooze, brown ooze, and white gray chalk.

Subunit IIA: Varicolored Ooze (upper Miocene to upper Pliocene)

The varicolored ooze subunit (45.1 to 160.2 m) is characterized by shades of light green gray and purple. It consists of 10- to 50-cm beds of white (N9 to 5B 9/1) to light gray (N7 to N8) and light greenish gray (5G 6/1 to 8/1, 5GY 8/1) siliceous nannofossil oozes and radiolarian diatom nannofossil oozes, which pass down into similar beds of mottled light and dark purple (5PB 7/2, 5P 4/2 to 7/1). Thin beds and burrow fills (predominantly Planolites) of pale yellow gray (5Y 7/1 to 8/1) and greenish yellow (2.5Y 7/2) are common.

The contact with the overlying unit (Unit I) is marked by the appearance of green gray (5G 6/1 to 7/1) ooze. Purple bands do not occur until 50 m. The appearance of purple sediments coincides with the occurrence of H_2S in the cores, which continues down to the base of the varicolored subunit. Below 50 m, millimeter-scale purple bands are common in both the light and dark sediments, and the predominantly purple beds display numerous horizontal millimeter-thick laminations of dark purple (5P 2/2 to 4/2) sediment. Light green gray banding is visible occasionally.

At about 110 m the sediment becomes lighter in color (whites are dominant), and the purple coloration becomes less constrained by bedding, developing into diffusion-rings around burrows and forming sinuous discordant bands. Diatom nannofossil oozes and nannofossil oozes become more common downward. The sediments in the 10 to 20 cm at the base of the unit are characterized by the gradual disappearance of variegated pastel shades, purple banding, and H_2S.

In the varicolored subunit clay-sized material is abundant to dominant (50 to 95%), silt-sized material is rare to abundant (2 to 50%), and sand-sized material is rare to common (2 to 25%). Calcareous nannofossils are abundant to dominant (50 to 95%). Foraminifers represent 0 to 10%, diatoms 5 to 25%, and radiolarians 2 to 10% (rare to common) of the microfossil assemblage. Volcanic glass, pyrite, clay minerals, sponge spicules, and silicoflagellates occur in trace amounts throughout the subunit.

Subunit IIB: Gray Ooze (lower to upper Miocene)

The gray ooze subunit (160.2 to 262.2 m) is composed of white (N9 to 5B 9/1), very light gray (N8 to 8.5), and light greenish gray (5G 7/1 to 9/1, 5GY 7/1 to 9/1) beds 1 to 3 m thick that grade into each other over 10 to 20 cm. Pale purple (5P 9/1) horizons occur toward the top and light greenish gray horizons dominate toward the base of the subunit. Identifiable burrows are rare.

The top of the gray ooze subunit (160 to 200 m) is composed of radiolarian diatom nannofossil oozes and diatom nannofossil oozes, which are underlain by foraminiferal nannofossil oozes and nannofossil oozes (200 to 230 m) with occasional thin (<5 cm) beds of chalk. Below this portion of the subunit (i.e., from 230 to 262.2 m), beds of nannofossil chalk 3 to 5 cm thick alternate with beds of nannofossil ooze 20 cm thick. Radiolarians become common toward the base. Contacts between the lithologies are gradational.

The gray ooze subunit contains abundant to dominant (35 to 90%) clay-sized material, rare to abundant (2 to 70%) silt-sized material, and common (5 to 10%) sand-sized material. Foraminifers occur as trace constituents at the top of the subunit, but they rare to common (1 to 15%) in the underlying carbonate oozes and chalks. Conversely, diatoms are common (10 to 25%) at the top of the subunit, but they become rare (<1%) below. Calcareous nannofossils are uniformly abundant to dominant (60 to 85%), and radiolarians are rare to common (1 to 20%). Volcanic glass, pyrite, sponge spicules, and silicoflagellates occur as trace constituents. The base of the gray ooze subunit is marked by a sharp, planar contact with the light brown (10YR 8/2) sediment of the underlying subunit.

Subunit IIC: Brown Ooze (lower Miocene)

The brown ooze subunit (262.2 to 290.6 m) is composed of white (10YR 8/2) and very light brown (10YR 7/3 to 8/3) radiolarian nannofossil to nannofossil oozes and chalks. Beds are 1 to 3 m thick. They grade into each other over 10 to 20 cm and are composed of alternating bands of chalk (≈5 cm thick) and ooze (≈20 cm thick). Bioturbation is restricted to indeterminate burrow mottling within darker beds.

The subunit contains rare to common (2 to 20%) sand-sized material, common to abundant (20 to 48%) silt-sized material, and abundant (50 to 70%) clay-sized material. Calcareous nannofossils are abundant to dominant (70 to 98%), diatoms are absent to common (0 to 7%), and radiolarians are rare to common (<1 to 17%). The siliceous component decreases toward the base of the subunit. Clay minerals, volcanic glass, pyrite, foraminifers, sponge spicules, and silicoflagellates occur in trace (<1%) amounts. Occasional large (1 to 4 mm) fragments of pumice are present.

The base of the brown ooze subunit is marked by a sharp planar contact with pure white (N9) nannofossil oozes from the top of the underlying subunit.

Subunit IID: White Gray Chalk (lower Oligocene to lower Miocene)

Subunit IID (290.6 to 520.5 m) is composed primarily of brilliant white chalks (290.6 to 460 m), which are underlain by light gray chalks (460 to 520.5 m). The upper beds consist of alternating intervals of apparently unbedded white (N9) foraminiferal nannofossil and nannofossil oozes and chalks. Ooze–chalk alternations continue down to 320 m, below which chalks occur alone. Light gray (N7) banded horizons up to 10 cm thick occur at some levels. Burrows are rarely visible. The sediment is composed of abundant to dominant (40 to 90%) clay-sized material, common to abundant (5 to 50%) silt-sized material, and rare to common (1 to 20%) sand-sized components. Calcareous nannofossils are abundant to dominant (55 to 99%), and foraminifers are generally absent to common (0 to 20%). Radiolarians are rare (< 1 to 3%). Clay minerals, volcanic glass, sponge spicules, and pyrite occur in trace amounts. Diatoms are absent. Fragments of pumice up to 1 cm across occur throughout the sequence.

The light gray chalks are composed of white (N8.5 to 9), very light greenish gray (5GY 8.5 to 9/1), and very pale yellow to brown (5Y 8 to 9/1, 10YR 8 to 9/2) radiolarian diatom foraminiferal nannofossil chalks. These chalks are relatively uniform in composition; close examination shows that compositional variations should result in the exclusion of only one of the qualifiers from the formal lithological name of some horizons. Darker colors are concentrated in beds about 10 cm thick, some of which display indistinct banding. A diverse ichnofauna of Zoophycos, Planolites, and Chondrites is represented. The dominant lithology consists of abundant (30 tc 55%) clay-sized particles, common to abundant (20 to 40%) silt-sized particles, and common to abundant (20 to 35%) sand-sized components. Calcareous nannofossils are abundant (40 to 70%), foraminifers and radiolarians are common (5 to 15%), diatoms are common to abundant (5 to 30%), and sponge spicules are rare (< 1%).

Scattered fragments of pumice and thin (< 1 cm) bands of volcanic ash are found in the gray chalks. At 492.1 m there is a graded band 10 cm thick of volcanic glass and ash that has a sharp, planar base and a finely laminated and cross-bedded top (Fig. 3). Ash becomes progressively less abundant in the overlying meter of chalk. This ash band is interpreted as a turbidite. Lower in the section (at 501.3 m) there is a bed 80 cm thick of very pale yellow (5Y 8/1) chalk containing common 0.1-mm to 1-cm angular fragments of volcanic glass. This bed does not display bedding but has a sharp bottom and top, indicating deposition by mass flow rather than current action.

The base of the white gray chalk subunit is marked by the first appearance of white (5Y 9/1 to N9) chalks above the light brown (10YR 8/3) chalks of the underlying metalliferous chalk claystone unit. The boundary was not recovered, but it is sharp at Site 77 (Hays et al., 1972).

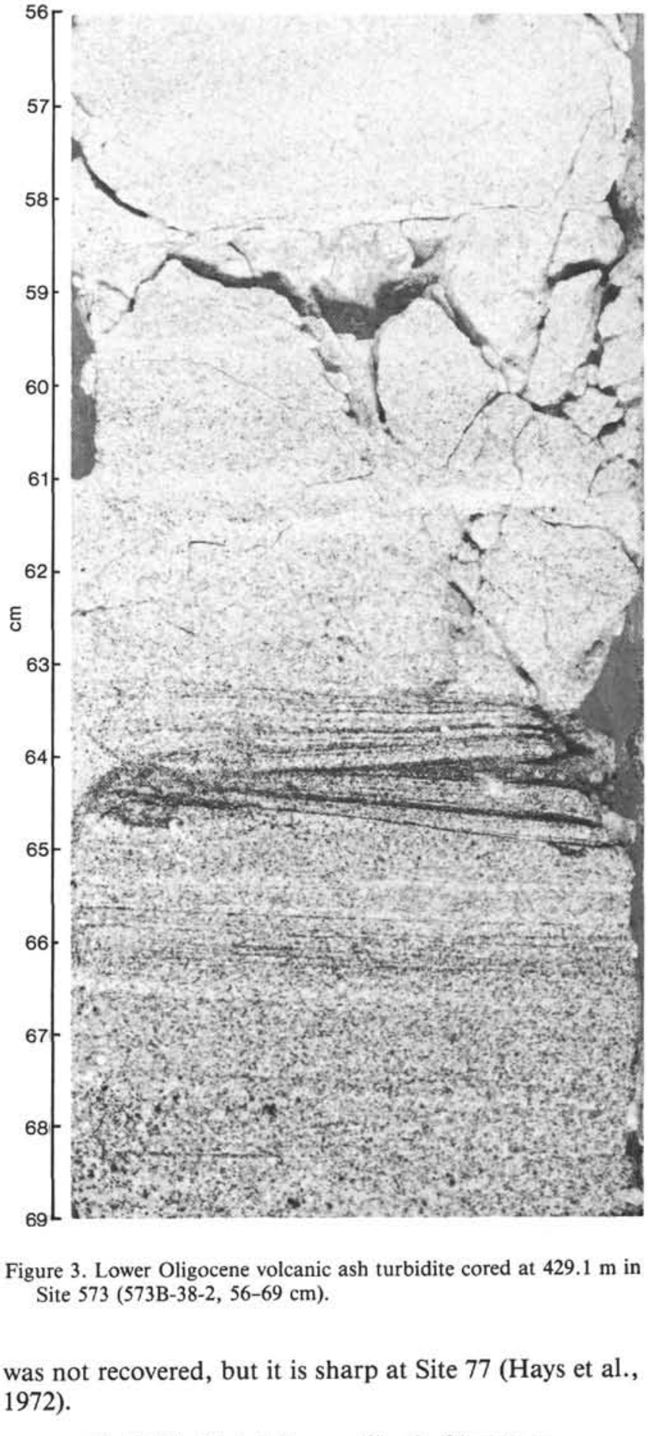

Figure 3. Lower Oligocene volcanic ash turbidite cored at 429.1 m in Site 573 (573B-38-2, 56–69 cm).

Unit III: Metalliferous Chalk Claystone (upper Eocene to lower Oligocene)

The sediment below 520.5 m becomes progressively darker brown as the result of the appearance of appreciable quantities of ferromanganese oxide. The sequence is divided into a brown chalk subunit at the top and a brown claystone subunit below.

Subunit IIIA: Brown Chalk (lower Oligocene)

The brown chalk subunit (520.5 to 522.6 m, lower Oligocene) consists of very pale brown (10YR 8/3) foraminiferal nannofossil chalk with abundant Zoophycos, Planolites, and Chondrites. The chalk has abundant (65%) clay-sized particles, common (5%) silt-sized particles, and abundant (30%) sand-grade material. Calcareous nannofossils (55%) and foraminifers (30%) are abundant. Palagonite is rare (1%), and radiolarians and sponge spicules occur in trace amounts.

The brown chalk subunit passes down via a 10-cm intensely burrowed pale brown (10YR 6/3) bed into the brown claystone subunit.

Subunit IIIB: Brown Claystone (upper Eocene to lower Oligocene)

The brown claystone subunit (522.6 to 526.6 m, upper Eocene to lower Oligocene) consists of very dark brown (10YR 2/2) metalliferous claystone. There are strongly compressed Chondrites and white rind-burrows at the top and, to a lesser extent, at the base of the subunit. Clay is dominant (90%), with common silt-sized material and only a trace of sand-grade material. Smear slide examination indicates abundant (60%) clay minerals and ferromanganese oxides (36%), with rare feldspar (2%), carbonate (1%), and calcareous nannofossils (1%).

The claystone passes down via pale brown (10YR 6/2) chalks into the underlying limestone.

Unit IV: Pelagic Limestone (upper Eocene)

A strongly indurated very pale yellow (2.5Y 8/2) pelagic biogenic limestone (526.6 to 528.0 m) directly overlies basalt. Composed primarily of pelagic and benthic foraminifers and calcareous nannofossils, the limestone contains abundant millimeter-scale fragments of green basalt(?). Manganese oxide ("pyrolusite") dendrites are common.

Unit V: Basalt

The drilling at Site 573 resulted in the recovery of 119 cm (25 pieces) of basalt. The basalt was recovered from sub-bottom depths of 528.0 to 529.0 m.

Correlation with Site 77

Site 573 is in close proximity to Site 77. The units recognized by Hays et al. (1972) at Site 77 are similar to those at Site 573, which were established independently. Our cyclic siliceous calcareous unit (Unit I) corresponds to the cyclic unit of the Clipperton Oceanic Formation, and our varicolored ooze subunit (IIA) correlates with varicolored unit of the same formation. The gray ooze subunit defined here (IIB) corresponds to the gray unit of the Marquesas Oceanic Formation, and our brown ooze subunit (IIC) is equated with the upper brown unit defined by Hays et al. (1972). Our white gray chalk subunit (IID), however, corresponds to the basal three units of their Marquesas Formation. This difference in classification occurs primarily because we cannot distinguish the lower brown unit of the Marquesas Formation. The lower brown unit occurs at 408.1 to 426.6 m at Site 77 (Hays et al., 1972) and consists of very light brown (10YR 8/2) and white (N9) foraminiferal radiolarian chalks to nannofossil chalks. If we allow for the marginally thicker section at Site 573 (528 m compared with 481 m), the unit should occur at about 420 to 440 m. At Site 573 this interval is characterized by extremely poor recovery and great core disturbance, so the presence of the unit cannot be confirmed.

Our brown chalk subunit (IIIA), brown claystone subunit (IIIB), and pelagic limestone unit (IV) can be correlated with the Line Islands Formation of Hays et al. (1972) and Cook (1972). The thickness of this formation is 10.2 m at Site 77 and 8 m at Site 573. The difference may be attributed to the 9.5-m gap in the relevant part of the section at Site 573. It appears, therefore, that the extra 47 m of sediment at Site 573 are distributed throughout the section, except that the varicolored ooze subunit (IIA) is 15 m thicker at Site 77.

Carbonate Stratigraphy

Shipboard carbonate bomb analyses were done at 1.5-m intervals. The carbonate fluctuations show that the Site 573 carbonate record (Fig. 4) may be divided into two parts: an upper Miocene to Quaternary interval (0 to 180 m) with high-amplitude cyclic fluctuations between sediments of high and low carbonate content and a lower Oligocene to middle Miocene interval (180 to 520 m) with lower amplitude fluctuations and relatively constant carbonate values. In the high-amplitude section, the high-carbonate sediments have a carbonate content that ranges from 80 to 90%, and the low-carbonate sediments generally have a carbonate content that ranges from 60 to 70%, although certain minima have a carbonate content as low as 40%. The Oligocene to middle Miocene section has a rather uniform average carbonate content of about 90%, with fluctuations between 98 and 80%.

Distinct changes in the Site 573 sedimentation rate curve at 49, 104, 243 and 412 m all coincide with carbonate minima. The correlation may be fortuitous, because not all the sedimentation rate changes correspond to carbonate minima. A hiatus at 160 m occurs just above a carbonate minimum, so the hiatus may have been produced by carbonate dissolution. A second possible hiatus at 335 m does not appear to coincide with carbonate dissolution, although the carbonate curve at this level is difficult to interpret because the carbonate content of the upper Oligocene sediment at Site 573 is uniformly high.

The carbonate curves for Holes 573, 573A, and 573B (Fig. 4) can be correlated to the equatorial Pacific carbonate event stratigraphy of the Neogene as given by Dunn and Moore (1981) and Dunn (1982).

BIOSTRATIGRAPHY

Upper Eocene through Quaternary sediments were recovered at Site 573. Planktonic foraminifers, calcareous nannofossils, radiolarians, and diatoms are generally present and zonable throughout; thus, the site provides a reference section for the equatorial Pacific (Fig. 5). An updated version of the biostratigraphic summary is presented in Barron et al. (this volume). The precise position of the Eocene/Oligocene boundary is unknown; if sediments that correlate to this stratigraphic boundary were recovered in Hole 573B, they occur in the barren, metalliferous claystone unit from 526.6 to 522.6 m sub-

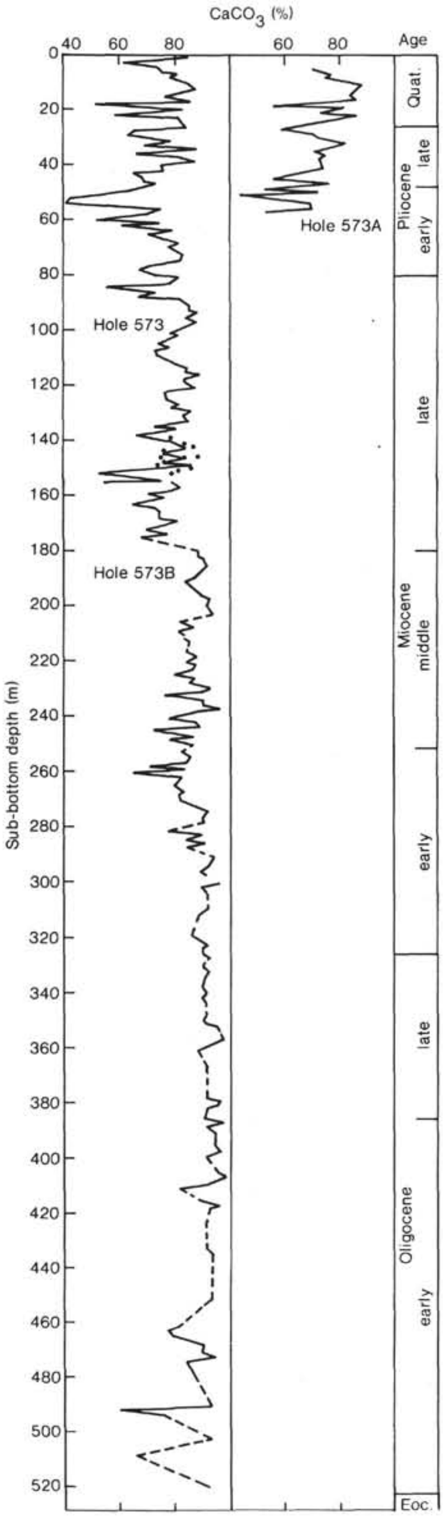

Figure 4. Shipboard carbonate data for Site 573; curves are for Holes 573 and 573B. In the depth interval where data from the holes overlap, the data for Hole 573B are shown as dots.

bottom (Core 573B-42, Sections 4 to 2). Planktonic and benthic foraminifers and calcareous nannofossils of latest Eocene and earliest Oligocene age bracket this barren 2-m interval. All four planktonic microfossil groups indicate that the lower/upper Oligocene boundary lies in Core 573B-27 (≈386 m). The planktonic foraminifers and radiolarians indicate that the Oligocene/Miocene boundary occurs in Core 573B-20 (≈326 m). The lower/middle Miocene boundary is near the base of Core 573B-12 (252 m), according to the radiolarians, diatoms, and calcareous nannofossils. Unfortunately, the *Orbulina* datum (planktonic foraminifers) could not be accurately determined. According to the diatoms and calcareous nannofossils, the middle/upper Miocene boundary occurs in the middle of Core 573B-5 (≈180 m). The planktonic foraminifers, calcareous nannofossils, and diatoms all place the Miocene/Pliocene boundary in Core 573-10 (≈80 m sub-bottom). The planktonic foraminifers indicate that the lower/upper Pliocene boundary lies in the lower parts of Cores 573-6 and 573A-5 (48 m). The Pliocene/Pleistocene boundary is placed in the upper part of Core 573-4 and the upper part of Core 573A-3 (at ≈25 m sub-bottom).

Hiatuses

Two hiatuses were recognized in the sediment section at Site 573, and three more were identified tentatively. Although the possibility that deposition across the Eocene/Oligocene boundary was continuous but slow cannot be ruled out entirely, biostratigraphic evidence suggests that there is a hiatus at the Eocene/Oligocene boundary (between Sections 2 and 3 of Core 573B-42). This hiatus would correspond to the absence of the lower part of planktonic foraminiferal Zone P18 and all of P17. A coeval hiatus is present at Site 289 on the Ontong-Java Plateau (Andrews et al., 1975) and over extensive areas of the Pacific (Kennett et al., 1975). Kennett et al. (1975) relate this hiatus to the onset of Antarctic glaciation in the early Oligocene and the intensification of bottom-water circulation.

A second hiatus or interval of greatly reduced sedimentation rate is present in the lower part of the upper Miocene (10.5 to 9.8 Ma). The first appearance datum of the diatom *Coscinodiscus yabei* var. *elliptica* (9.8 Ma) is immediately above a purple sedimentary unit 4.5 m thick in Core 573B-3 (573B-3-1, 71 cm). The last appearance of the diatom *Coscinodiscus vetustissimus* var. *javanicus* (10.7 Ma) appears to be immediately below the purple sedimentary unit, at 573B-3-4, 110 cm (Barron, this volume). This hiatus has also been reported at nearby Site 77 (Keller, 1981; Keller and Barron, 1983) and is extensive in the eastern equatorial Pacific.

One of the tentatively identified hiatuses occurs in the uppermost Oligocene (upper part of Core 573B-22 or the lower part of Core 573B-21), where the lower part of the *Lychnocanoma elongata* Zone (radiolarians) and the *Cyclococcolithus abisectus* Subzone (CN1a) of the *Triquetrorhabdulus carinatus* Zone (calcareous nannofossils) are absent. This hiatus has also been reported at nearby Site 77 by the Leg 9 scientists (Hays et al., 1972) and over extensive areas of the Pacific by Keller and Barron (1983).

Another possible hiatus or interval of decreased sediment accumulation occurs in the middle part of the lower Miocene (lower part of Core 573B-14 to Core 573B-16) (≈17.5 to 20.0 Ma). This hiatus corresponds to the two

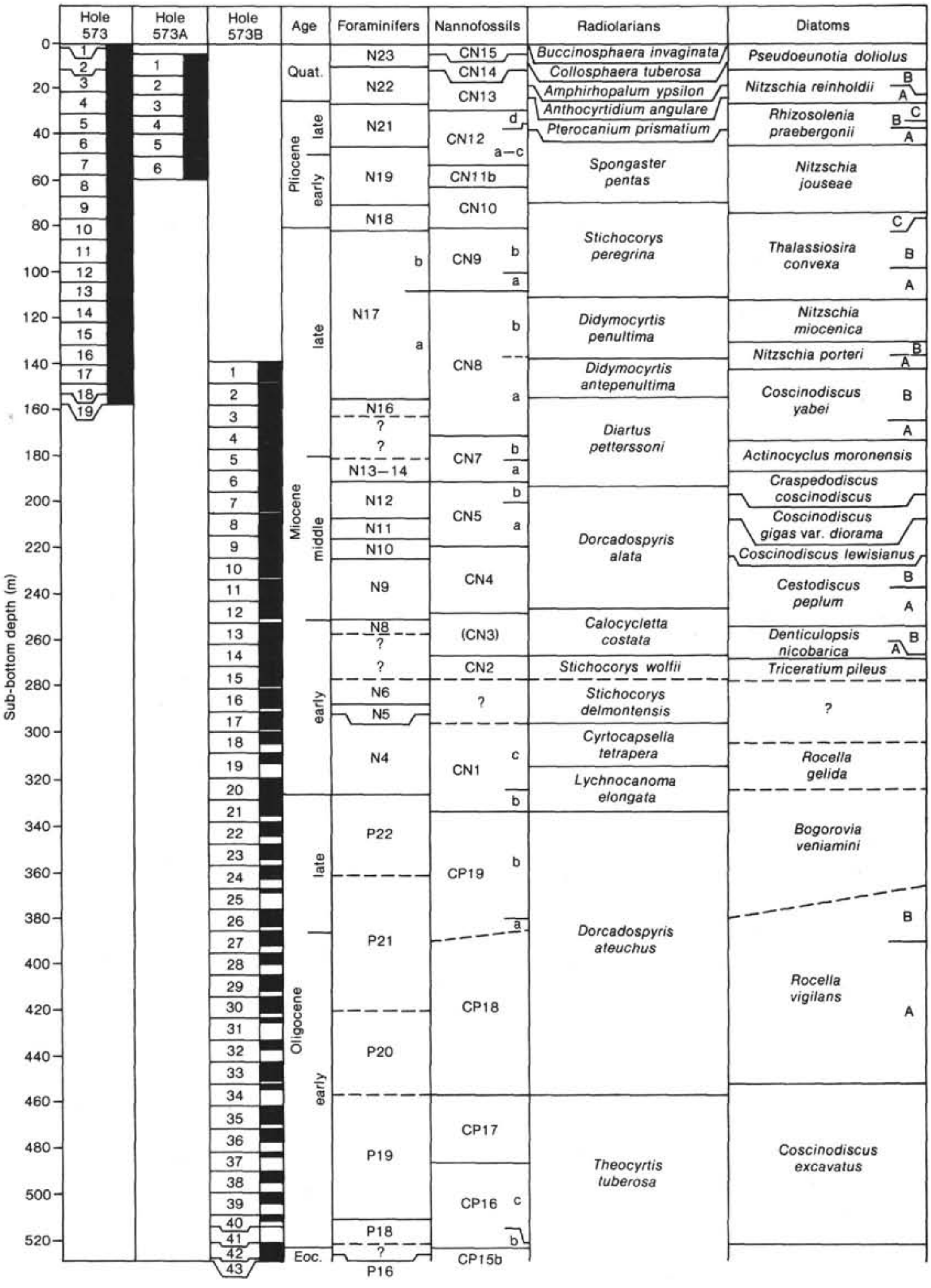

Figure 5. Summary of biostratigraphy at Site 573. Location of dashed boundaries is uncertain.

hiatuses reported by Keller (1981) in planktonic foraminiferal Zones N5 and N6 at nearby Site 77. More detailed study of these cores should reveal whether sedimentation rate is low or one or more hiatuses exist (see Barron et al., this volume).

Finally, a possible hiatus occurs in the middle part of the Pliocene (≈3.3 to 3.2 Ma, near the base of Section 573A-5-3), at a sharp break in lithology between gray sediment and overlying white sediment. Samples 573A-5-3, 129–140 cm and 573A-5-3, 144–145 cm bracket this lithologic boundary, and both lie between the first appearance datum of *Thalassiosira convexa* var. *convexa* (diatom) (3.6 Ma) and the first appearance datum of *Rhizosolenia praebergonii* (diatom) (3.0 Ma). The lower sample contains common *T. convexa*, whereas the upper sample contains very few *T. convexa*. According to the quantitative diatom data of Burckle and Trainer (1979) from Core V28-179 (4°37.0′N, 139°36.0′W), the lower sample correlates with the lowermost part of the normal event of the Gauss paleomagnetic Epoch (≈3.35 Ma), and the upper sample correlates with the uppermost part of that normal event or with the overlying reversed event (≈3.2 to 3.1 Ma). This sharp lithologic break (or hiatus) correlates with the positive (0.4 per mil) excursion in the oxygen-isotope record in Core V28-179, which Shackleton and Opdyke (1977) equate with the onset of Northern Hemisphere glaciation. A more detailed discussion of these possible hiatuses is given in Barron et al. (this volume).

Planktonic Foraminifers

Site 573 yielded upper Eocene through Pleistocene planktonic foraminifers of varying abundance. None of the fossil assemblages exhibits maximum diversity because of the great water depth at the site, and all consist predominantly of such solution-resistant forms as keeled *Globorotalia, Globoquadrina, Sphaeroidinellopsis*, and *Catapsydrax*. However, all the species present show good preservation throughout the sequence. The abundance of foraminifers decreases markedly in two intervals—from 112 to 186 m and 252.5 to 366.5 m sub-bottom. These intervals approximately correspond to the N17 through N14 and N8 through P21 zones, respectively.

Because of dissolution (see the dissolution curve shown in Fig. 6), many interesting evolutionary series of planktonic foraminifers could not be studied. A number of prominent evolutionary series known to have undergone rapid development in the tropical latitudes were not recovered at this site. These series include *Globigerinoides triloba–Praeorbulina sicana–Orbulina universa, Globigerinita glutinata–Candeina praenitida–Candeina nitida*, and *Globigerinita* sp.–*Globigerinatella insueta*. The absence of these evolutionary series also precluded the establishment of many foraminiferal zonal boundaries (Fig. 5).

Well preserved upper Eocene planktonic foraminifers occur near the base of the sedimentary column just below the dark brown metalliferous layer. Although they are only moderately well preserved, a few specimens of such delicate spine-bearing species as *Hantkenina primitiva* and *Cribrohantkenina inflata bermudezi* were found (573B-42-4, 140–144 and 123–124 cm). Species belonging to the characteristic Eocene genera *Globigerinatheka* and *Globigerapsis* are also present in large numbers. Because of the joint occurrence of *C. inflata bermudezi* and *Globigerapsis mexicana* in the interval below the metalliferous layer, this interval is dated as Zone P16 (late Eocene). The presence of these varied forms of Eocene foraminifers at Site 573 is in marked contrast to the meager fauna reported from nearby Site 77, where only one species diagnostic of late Eocene age, *G. insolita*, was found.

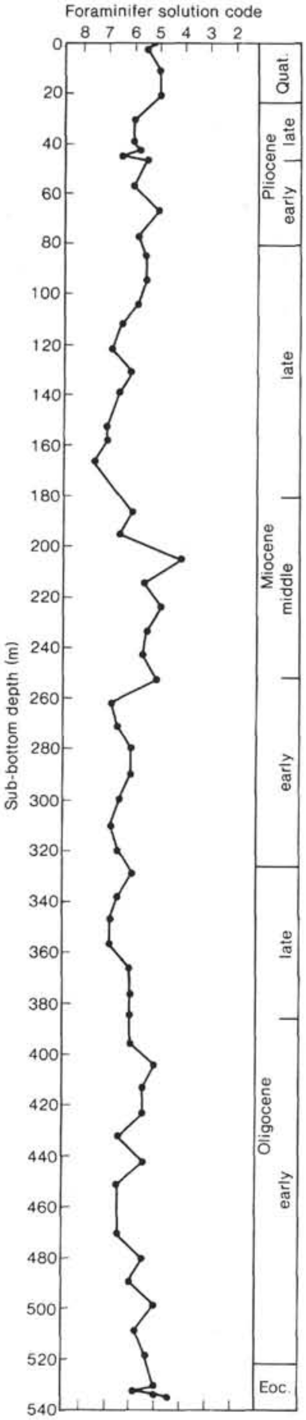

Figure 6. Foraminifer solution curve for Site 573; numbers after Berger and von Rad (1972).

The Eocene foraminifers decrease in number as the dark brown metalliferous layer is approached, and they are completely absent in that layer. Sample 573B-42-2, 48–50 cm, which was taken immediately above the metalliferous layer, contains rich benthic foraminifers dominated by calcareous forms, an assemblage that suggests the severe dissolution of planktonic species at this level. Forty cm above this sample there is an Oligocene planktonic assemblage indicative of the upper P18 Zone. These observations suggest the following: (1) the Eocene/Oligocene boundary is marked by a break in the foraminiferal sequence that encompasses at least the P17 and early P18 assemblages, which are absent, and (2) just before and immediately after the metalliferous layer was deposited, the area near Site 573 was affected by the severe dissolution of foraminifers, calcareous nannoplankton, and some or most of the benthic foraminifers. Thus, the metalliferous layer was most likely to have been deposited during a period when dissolution was severe.

Debate over the position and age of the Oligocene/Miocene boundary has a long history; the position of the boundary has fluctuated from the top through the middle to the base of the *Globorotalia kugleri* Zone, and the age assigned the boundary has varied as much as 4 m.y. We use the base of the *Globorotalia kugleri* Zone to mark the boundary.

Nannofossils

At Site 573, all the zones and most of the subzones between the upper Pleistocene and the upper Eocene in Bukry's zonation (1971; 1973a, b) can be found. However, some marker species are lacking, and it becomes necessary to use secondary marker taxa. The lower part of Hole 573 (Core 573-17 through Section 573-19,CC) can be correlated with the first three core catchers of Hole 573B. Nannofossil species occurrences are shown in Figure 7.

In terms of abundance, the Pleistocene nannofossils alternate between abundant (Sample 573-1-1, 0–1 cm and Section 573-2,CC; and Sections 573A-1,CC and -2,CC) and rare (Sections 573-1,CC and -3,CC), and these variations may correspond to cool and warm periods.

The Pliocene nannofossils are better preserved in Hole 573 than in Hole 573A, where strong dissolution reduces the abundance of placoliths.

The upper Miocene placoliths are better preserved, but in the middle and lower Miocene and in the lower Oligocene sediments most of them are partly dissolved. In Hole 573B, Cores 15, 16, and 42,CC contain very few nannofossils, and cannot be dated.

Discoasters are abundant from the top of the Pliocene to the middle/upper Miocene boundary. Below the boundary the abundance of discoasters varies; they are rare in the lower Oligocene and Eocene. Discoasters are generally overgrown below the upper Miocene.

Reticulofenestra pseudoumbilica is abundant from Zone CN11 (Section 573-7,CC) through Zone CN5 (Section 573B-8,CC) but rare between Sections 573-9,CC and -18,CC and 573B-1,CC and -2,CC. This late Miocene reduction in the abundance of *R. pseudoumbilica* in Zones CN10a to CN8a is typical of the equatorial Pacific (Bukry, 1972).

In the upper part of lower Miocene, Zone CN3 does not contain *Helicopontosphaera ampliaperta* (Sections 573B-12,CC and -13,CC). The zone is identified by the presence of *Discoaster trinidadensis* and *Reticulofenestra gartneri* and by the absence of *Helicopontosphaera granulata* (Bukry, 1973a).

The lowest part of the Miocene, Zone CN1, contains very abundant *Triquetrorhabdulus carinatus. Orthorhabdus serratus* is present from Sections 573B-17,CC to -19,CC and characterizes the Subzone CN1c; the disappearance of this species downsection (in Section 573B-20,CC) marks the lower boundary of a short CN1b Subzone. No microfossils from Subzone CN1a were found.

Sphenolithus ciperoensis s.s. does not seem to be present in Zone CP19 at Site 573. The top of the Oligocene is marked by the last occurrences of *Dictyococcites scrippsae* and *D. bisectus* and the first occurrence of *T. carinatus.*

The separation of Zones CP18 and CP17 is based on the downsection change in dominance from *Sphenolithus distentus* to *S. predistentus.*

The lowest Oligocene zone (CP16) is represented mainly by its upper subzone (CP16c), which is characterized by the presence of *Reticulofenestra hillae* and rare specimens of *Coccolithus subdistichus* and *Pontosphaera vadosa* (Sections 573B-37,CC through -41,CC). As at Site 77 (Bukry, 1972), *Helicopontosphaera reticulata* is absent. *Cyclococcolithina formosa*, an indicator of Subzone CP16b, is abundant in Sample 573B-42-2, 50–51 cm. Subzone CP16a was not found at Site 573. Below some barren samples (573B-42-2, 60 cm through 573B-42-4, 50 cm), there is a sample (573B-42-4, 145 cm) with rare specimens of *Discoaster barbadiensis* and *D. saipanensis* and abundant specimens of *Cyclicargolithus reticulatus*, which characterize upper Eocene Subzone CP15b. As in other low-latitude sections, *Isthmolithus recurvus*, a marker of the uppermost Eocene, is absent (Bukry, 1973b).

Radiolarians

Radiolarians are common to abundant and well preserved in most of the sediment recovered at Site 573. However, in the lower Miocene and uppermost Oligocene sediments from Hole 573B they decrease in abundance and diversity, and many specimens are broken. Orosphaerid fragments and spyroid radiolarians are common in this interval; samples from 573B-15,CC to -17,CC are dominated by spyroids, primarily *?Tholospyris anthophora.* The oldest, moderately well preserved fauna is found in Section 573B-40,CC and belongs to the lower Oligocene (*Theocyrtis tuberosa* Zone); an impoverished fauna belonging to the same radiolarian zone occurs in Sample 573B-42-1, 0–1 cm. Radiolarians are absent entirely from Sample 573B-42-1, 149–150 cm.

The radiolarian zonation determined for the sediments recovered at this site is summarized in Figure 5. It should be pointed out that in this zonation, unlike that for Site 572, the lower limit of the radiolarian *Spongaster pentas* Zone coincides with the lower limit of the diatom *Nitzschia jouseae* Zone. The Site 573 zonation agrees with previously published reports (Burckle and Opdyke, 1977).

In some published reports (e.g., Riedel and Sanfilippo, 1978), the *Didymocyrtis antipenultima/Diartus petterssoni* zonal boundary is considered to be equivalent to the late/middle Miocene boundary. However, the base of the late Miocene is defined as the base of the Tortonian stratotype, and Van Couvering and Berggren (1977) report that the base of the Tortonian lies within planktonic foraminiferal Zone N15 and within the *Discoaster hamatus* Zone (NN9 of Martini; CN7 of Bukry). San-

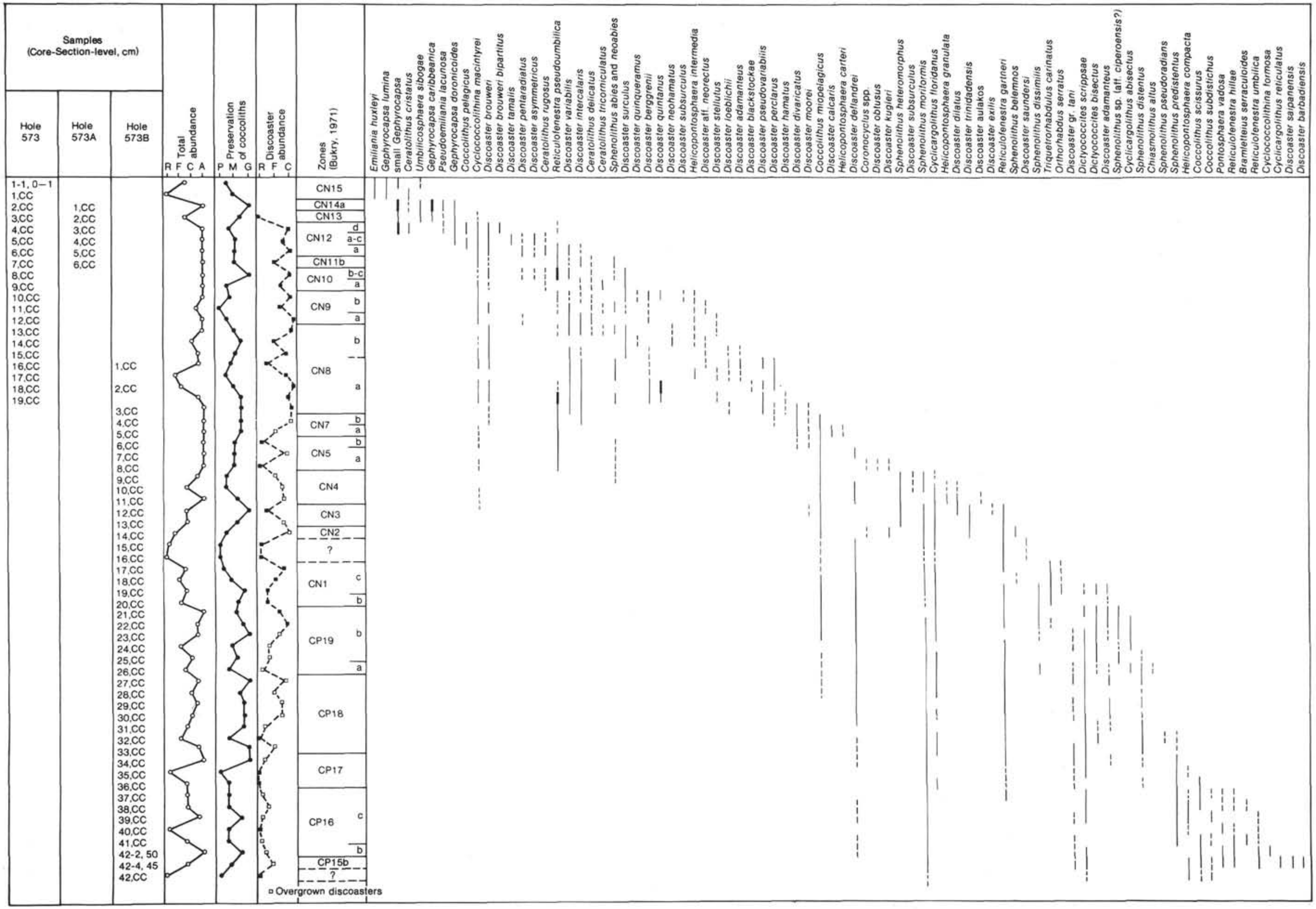

Figure 7. Occurrence of nannofossil species at Site 573; position of dashed zonal boundaries is uncertain.

filippo et al. have more recently (1981) placed the base of the *D. antepenultima* Zone within Zones NN10 and CN8 and, therefore, above the late/middle Miocene boundary. This latest correlation is consistent with our correlation for Site 573.

The shipboard examination of the Site 573 radiolarians could neither confirm nor deny the existence of the hiatuses suggested in the biostratigraphic summary.

Diatoms

Quaternary through lower Oligocene diatoms are present in the Site 573 sediment section. Above Core 573B-7 (upper middle Miocene), the diatoms are common to abundant, and preservation is generally good. Below Core 7 abundance and preservation vary from sample to sample, but abundance is generally smaller and preservation is generally worse. The diatoms decrease sharply in abundance and preservation as one moves downsection from Section 573B-14,CC to Sample 573B-15-1, 68–70 cm (≈17.5 Ma). Cores 573B-15 through 573B-22 contain only sparse, poorly preserved diatoms and are difficult to zone. Diatoms increase in abundance again in Core 573B-34 (top of the *Coscinodiscus excavatus* Zone), and they are common thereafter down to the base of the Oligocene section (Sample 573B-42-1, 0–1 cm).

The diatom datum sequence for the middle and upper Miocene is essentially identical to that obtained at Site 77 (Barron, 1981; Keller et al., 1982). The sequence for the middle Miocene through Quaternary is also very similar to that obtained at Site 572.

The first appearance datum of *Thalassiosira burckliana* has been identified precisely in Holes 573 and 573B. This datum occurs between the top and the base of the core-catcher sample for Core 573-18 (152.8 m), immediately above the top of a purple sediment layer. In Hole 573B this datum lies in Section 573B-3-1 between 71 and 81 cm (158.25 m), above a purple sediment layer. The inference is that the lithologies in Hole 573B are offset by about 5.5 m from those in Hole 573, those in the latter being shallower.

Benthic Foraminifers

Benthic foraminifers are present throughout the section. They are generally rare, although less so below Section 573B-33,CC. Diversity is high throughout (about 50 to 60 taxa per 200 counted specimens). There is no marked drop in diversity at the transition from ooze to chalk between 230 and 300 m, in contrast to observations by Douglas (1973) and Douglas and Woodruff (1981). Species that have been described as "least preservable" are present throughout the section (e.g., *Stilostomella* and *Pleurostomella* species).

The assemblage is similar to that found at Site 572. The main constituents of the Eocene through Quaternary faunas are *Nuttallides umbonifera* and species of *Pullenia, Cibicidoides, Gyroidinoides*, and *Oridorsalis*, and, above about 260 m, *Epistominella exigua* (i.e., from the beginning of the middle Miocene). The relative abundances of these constituents fluctuate, but overall the fauna is remarkably stable. Similar stability has been noted in benthic faunas in the Indian Ocean (Boltovskoy, 1978). *Stilostomella* and *Pleurostomella* are more abundant below Section 573B-9,CC than above. This change in abundance occurs in the early middle Miocene, at about the same time as important changes in faunas of the Ontong–Java Plateau (Woodruff and Douglas, 1981). At Site 573 the changes are much less striking (they do not constitute a faunal turnover), and they may occur slightly earlier (Thomas, this volume).

At the Eocene/Oligocene boundary there is a change in less common species. *Nuttallides truempyi*, the last occurrence of which marks the Eocene/Oligocene boundary (Miller et al., 1985), was found only in Sample 573B-42-4, 144–147 cm. *Alabamina dissonata* and *Osangularia mexicana* are present in the same sample. Just above the metalliferous sediments, *Stilostomella* and *Pleurostomella* decrease sharply in abundance. Peaks in the frequency of *Epistominella* occur from the middle Miocene upward.

The stratigraphic ranges of some rare species (e.g., *Favocassidulina favus, Bolivina striatula*, and *Bolivinopsis cubensis*) appear to be short; *B. striatula* occurs only between 15.5 and 18.7 Ma at Sites 573, 574, and 575. However, some of these species are found at different stratigraphic levels at Sites 572 and 573 (e.g., *Favocassidulina subfavus* occurs in planktonic foraminiferal Zone N9 at Site 572 and in Zone N17 at Site 573), so they cannot be used for biostratigraphy.

SEDIMENT ACCUMULATION RATES

Sedimentation rates (Fig. 8) were calculated for Site 573 from estimates of age ranges for all core-catcher

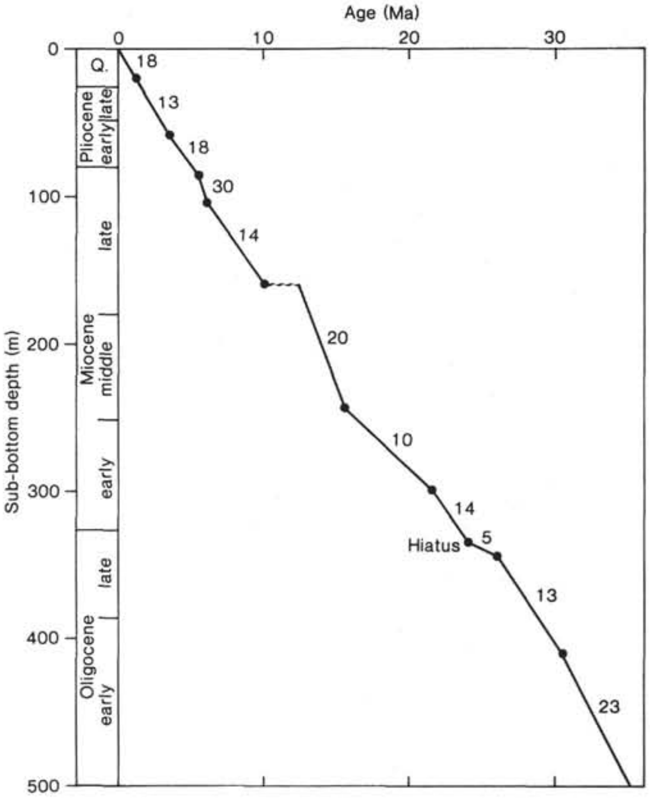

Figure 8. Age versus depth-in-hole based on biodatums at Site 573. Average sedimentation rate in m/m.y.

samples. In the upper 300 m we relied primarily on diatoms and radiolarians for age estimates. Sedimentation rates are relatively constant and hiatuses occur at 160 and 340 m sub-bottom. The hiatus at 340 m sub-bottom may be an interval of very low sedimentation rate and not a true hiatus. If so, the rate is at least a factor of 3 less than the sedimentation rates above and below.

The average sedimentation rate in the upper 85 m (0 to 5.5 Ma) is 16 m/m.y., with only small variations in this interval (Table 3). The maximum sedimentation rate observed at this site occurs between 85 and 104 m sub-bottom (30 m/m.y.). This maximum is separated from a secondary maximum (20 m/m.y., 160 to 243 m) by an interval of lower rate and the hiatus at 160 m. Below the secondary maximum, sedimentation rates are relatively constant at around 12 m/m.y. (with the exception of the hiatus at 340 m sub-bottom) until 100 m above basement, where sedimentation rates are high again (23 m/m.y.). For further discussion see Barron et al. (this volume).

The sedimentation rate changes at Site 573 correspond to changes in lithology. The hiatus at 160 m marks the boundary between the varicolored ooze of Subunit IIA and the upper gray ooze subunit (IIB). The silica-rich upper part of Subunit IIB (160 to 200 m sub-bottom) is an interval of high sedimentation rate (160 to 243 m), with the lower sedimentation rate interval between 243 and 300 m corresponding approximately to the brown ooze subunit (IIC, 260.2 to 290.6 m). The sedimentation rate increase at the base of the section and the hiatus at 340 m do not seem to correspond to changes in lithology.

Three factors that may have a bearing on the higher sedimentation rate observed 100 m above basement (and may operate independently or together) are (1) the proximity of the site to the ridge crest and the consequently good preservation of carbonate; (2) a regional peak in sediment accumulation during this time interval; and (3) the location of the site in a local basement depression in which sediment would accumulate more rapidly. Supporting evidence for the existence of the third factor is provided by the sedimentation rate calculated for the nearby Site 77, which averages around 10 m/m.y. for the entire Oligocene. In addition, the increase in accumulation rates occurs very close to the "sill" depth of the basement low occupied by Site 573.

Table 3. Sedimentation rates and carbonate and noncarbonate mass accumulation rates at Site 573.

Sub-bottom depth (m)	Age (m.y.)	Sedimentation rate (m/m.y.)	Mean dry bulk density (g/cm^3)	Mean $CaCO_3$ (%)	Mean mass accumulation rates ([g/cm^2]/1000 yr.)		
					Total	$CaCO_3$	Non $CaCO_3$
0	0.1						
		17.5	0.71	79	1.2	0.95	0.25
21	1.3						
		12.7	0.66	73	0.8	0.58	0.22
49	3.5						
		18.0	0.71	69	1.3	0.90	0.40
85	5.5						
		30.0	0.95	82	2.9	2.4	0.50
104	6.1						
		14.0	0.91	77	1.3	1.0	0.3
160	10.1						
Hiatus							
160	11.3						
		19.8	1.01	78	2.0	1.6	0.4
243	15.5						
		9.7	1.14	88	1.1	0.97	0.13
300	21.4						
		14.0	1.26	92	1.8	1.66	0.14
335	23.9						
		4.5					
344	25.9						
		12.6	1.28	92	1.6	1.50	0.10
412	31.3						
		23.3	1.24	89	2.9	2.58	0.31
510	35.5						

Shipboard carbonate analysis and wet-bulk density measurements were used to calculate average mass accumulation rates for each time interval listed in Table 3 and plotted in Figure 9. One reason for calculating sediment mass accumulation rates is to remove the effect of compaction, which alters sedimentation rates, which are estimated as unit distance per unit time interval. Compaction was not as apparent at Site 573 as at Site 572, but it does have marked effects on sedimentation rate. For example, the interval between 25.9 and 31.3 Ma has a sedimentation rate equal to that of the interval between 1.3 and 3.5 Ma (12.6 versus 12.7 m/m.y.), but it has a mass accumulation rate greater by a factor of 2, a difference that is consistent with the higher density and greater compaction of the Oligocene chalk. The mass accumulation rate data show that the highest sedimentation rates occurred at the base of the section, the Oligocene interval being a time of generally high sediment accumulation rate. Only during the middle Miocene (11.3 to 15.5 Ma) and a very short interval in the upper Miocene did the accumulation rates exceed the Oligocene rates.

There is no correlation between carbonate content and sedimentation rate at Site 573 (Table 3, Fig. 10), although an inverse correlation could be found in the Site

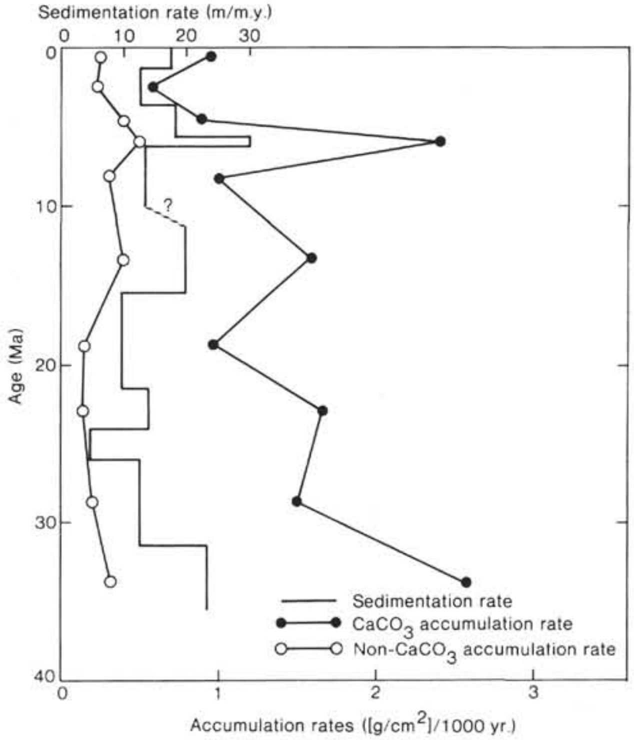

Figure 9. Sedimentation rates and average accumulation rates ([g/cm^2]/1000 yr.) for carbonate and carbonate-free sediments at Site 573.

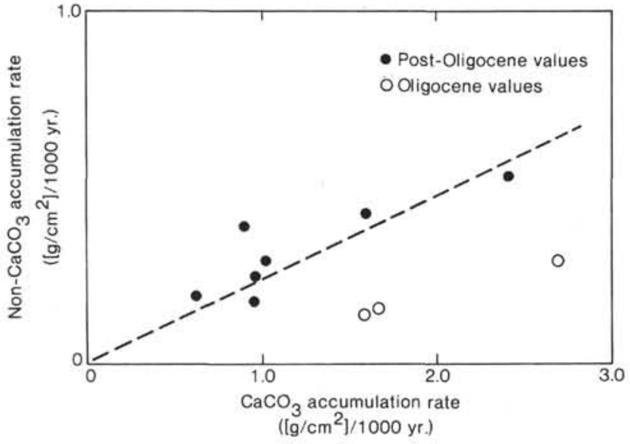

Figure 10. Carbonate versus carbonate-free accumulation rates at Site 573.

572 data. The absence of correlation reflects the relatively high carbonate contents observed at Site 573 and a different linear relationship between the mass accumulation rates of carbonate and noncarbonate sediments. (It is assumed that the noncarbonate fraction is dominated by biogenic silica.) At Site 572, the relationship between the carbonate and noncarbonate accumulation rates was linear and had a regression slope of 0.4 (noncarbonate rates = 0.5 carbonate rates; correlation coefficient $r = 0.95$). At Site 573 the regression slope is also linear (Fig. 10), but it is a factor of 2 less (slope 0.2, $r = 0.8$; the Oligocene intervals were not used in the calculations). Thus, at Site 573 increases in sedimentation rates are not accompanied by marked increases in noncarbonate mass accumulation rates, which would dilute the carbonate content. However, the linearity at both Sites 572 and 573 of the relationship between carbonate and noncarbonate sediment accumulation suggests that there are long-term controls on the deposition of these sediment components. In addition, the differences in the relationship between Oligocene and post-Oligocene times at Site 573 (Fig. 10) suggest that changes took place in these controls at the end of the Oligocene. Clearly, carbonate and siliceous sedimentation rates at this and other sites warrant more detailed study. See Theyer et al. (this volume) for an updated discussion.

PHYSICAL PROPERTIES

The physical properties measured for this site include wet-bulk density (ρ_b), sonic velocity (V_p), formation factor (F), thermal conductivity (K), and shear strength. Measurements were made at regular intervals in the HPC-cored sections except where the sediment was disturbed. In the rotary-cored sections, measurements were limited to selected, undisturbed parts of the core rather than at regular intervals. The Introduction (this volume) discusses the data collection techniques and procedures and gives pertinent references. A complete listing of numerical data is given in the Appendix (this volume).

Data from Site 573 are plotted versus depth in Figures 11 through 15. It is worth noting that where the piston- and rotary-cored intervals overlap (140 to 160 m) the measured values agree, suggesting that the effects of drilling disturbance can be minimized through careful sample selection. It is also noteworthy that the data from Holes 573 and 573A are virtually identical, indicating that the high-amplitude variations in the upper levels of the core are real excursions and not experimental noise.

Carbonate analyses discussed under Sediment Accumulation Rates indicate that the sediment silica/carbonate ratios at this site are rather uniform. This uniformity means that wet-bulk density is controlled by porosity; and, in fact, the plots of those properties are mirror images. Wet-bulk density (Fig. 11) gradually increases from values scattered around 1.4 g/cm³ near the top of the core to around 1.8 g/cm³ at 280 m. Porosity (Fig. 12) drops from 75% to less than 60% in the same interval. Below 280 m, both porosity and density show very little change in mean values until very near igneous basement.

Formation factor (Fig. 13) is a porosity-dependent property, and as such it also mirrors trends in the porosity-depth plot. F values of around 1.75 increase to near 3.00 at depths greater than 280 m. Sonic velocity values (Fig. 14) also increase in this interval, from near 1.5 km/s at the surface to 1.6 km/s at 280 m. Formation factor (Fig. 13) and thermal conductivity (Fig. 15) show similar maxima just above 100 m; both increase below 280 m. At this depth K increases from about 2.6 mcal/cm·s·°C to about 3.4 mcal/cm·s·°C.

Five shear strength measurements were made at this site. At depths of 42, 226, and 258 m the strengths were 245, 280, and 269 g/cm², respectively. At 287 m the value increases to 421 g/cm², and at 304 m, values of 464 and 718 g/cm² were recorded.

PALEOMAGNETISM

A shipboard survey of samples selected from Site 573 shows that the downhole intensities of untreated NRM (NRM_0) decrease rapidly (by a factor of at least 10) at the color change at about 45 m sub-bottom. It is hard to tell whether the change is caused by changes in the depositional environment or the chemical alteration of the sediments below the change; both factors can affect magnetic properties. In the upper parts of Holes 573 and 573A, polarity changes can be distinguished, but they are indicated only by a 180° change in the measured declination. The Matuyama/Gauss boundary can be identified (at a position in agreement with the biostratigraphy) in Holes 573 and 573A. In Hole 573 it falls between 34 and 37 m (Sections 573-5-3 to 573-5-5). In Hole 573A it occurs at 34 to 35 m (Section 573A-4-3). A mean sedimentation rate of 14 m/m.y. to 15 m/m.y. can be calculated for the upper 35 m of both holes by using these data.

With some reservations, we calculated a mean paleolatitude for Cores 573B-14 to -24, the only part of the section that permitted the calculation. The average NRM_0 inclination of $-15.2°$ corresponds to a paleolatitude of about 7.7°S, in reasonably good agreement with generally accepted rates of plate motion. For an updated discussion see Weinreich and Theyer (this volume).

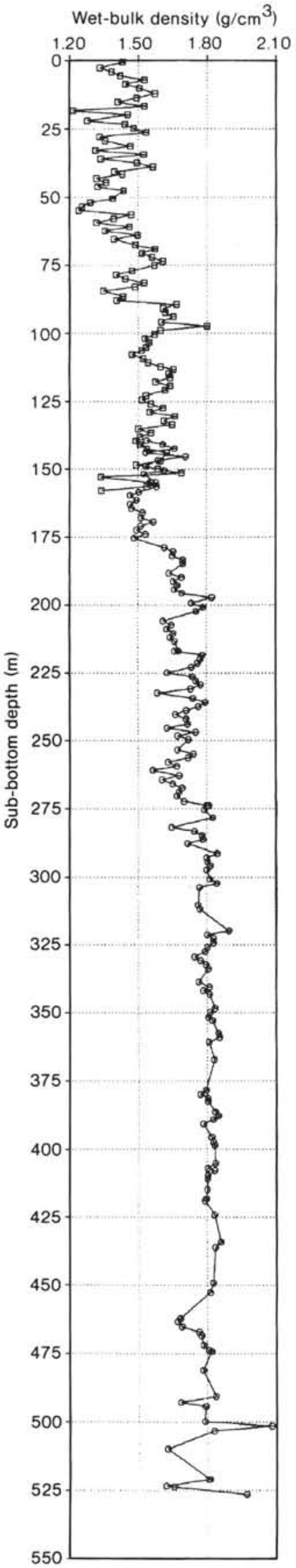

Figure 11. Wet-bulk density versus depth for Site 573.

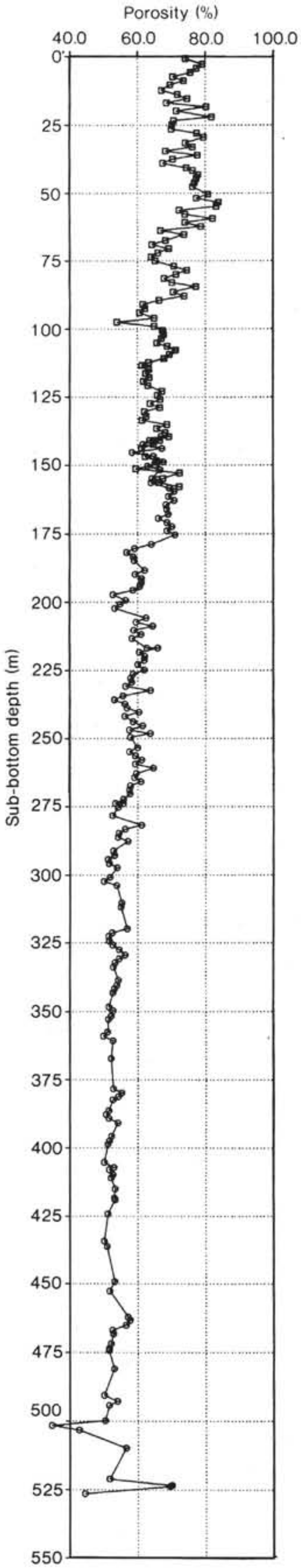

Figure 12. Porosity versus depth for Site 573.

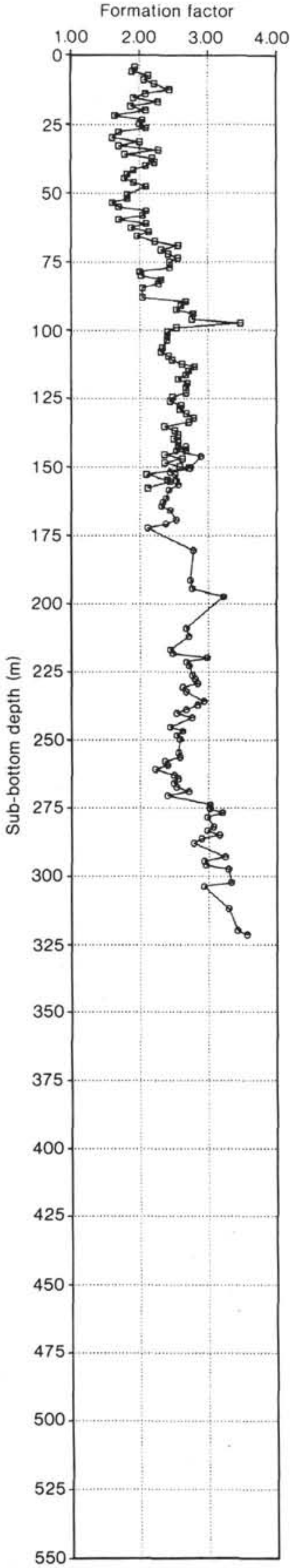

Figure 13. Formation factor (horizontal) versus depth for Site 573.

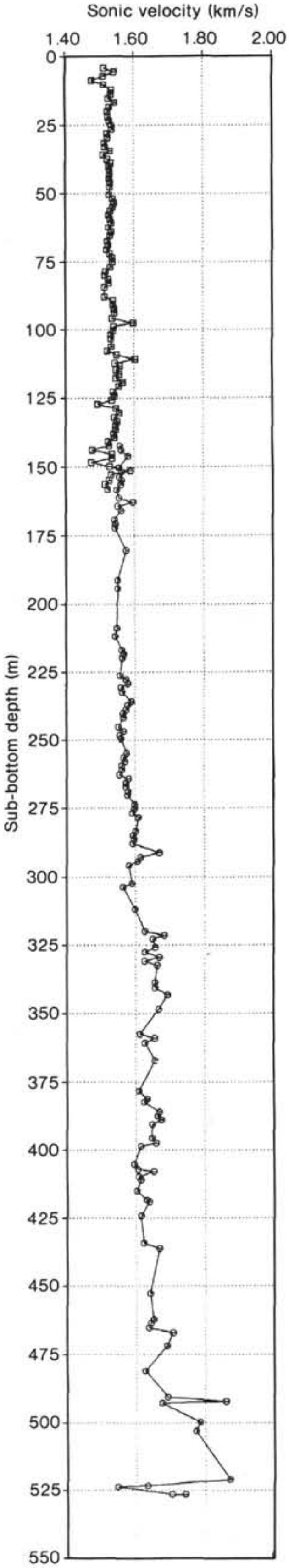

Figure 14. Sonic velocity versus depth for Site 573.

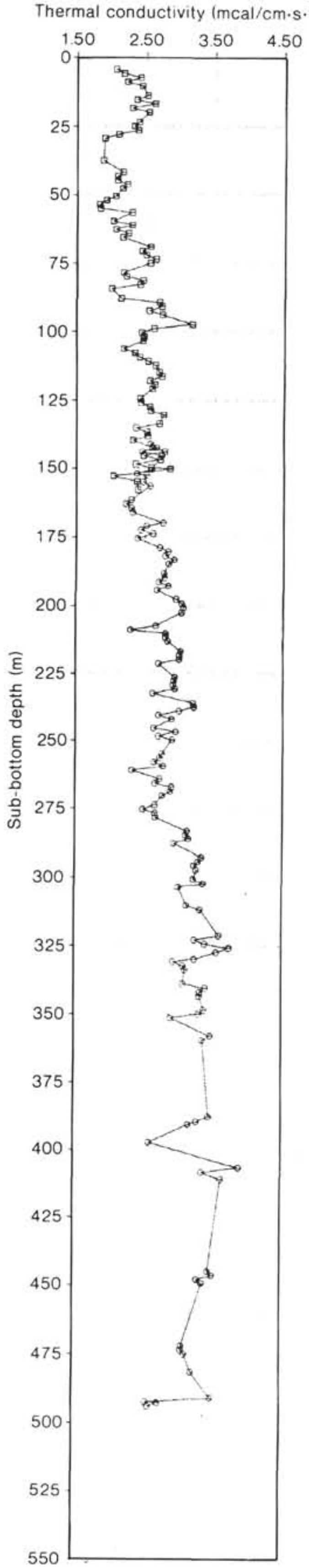

Figure 15. Thermal conductivity versus depth for Site 573.

INTERSTITIAL-WATER CHEMISTRY

Alkalinity and calcium gradually increase with increasing depth to maximum values between 250 and 300 m (Fig. 16). Both then decrease to lower levels near 360 m sub-bottom, increase again, and then show another decrease toward basement. The similarity in behavior of these chemical species is probably related to the chemistry of calcite solution. The profile for magnesium displays almost exactly opposite trends; values decrease to minimum concentrations between 150 and 250 m and then gradually increase downsection.

The strontium profile indicates that calcite recrystallization has occurred at relatively shallow depths. Values increase to a high level that remains roughly constant between depths of 140 and 210 m. The decrease below these depths may be related to downward diffusion and possibly authigenic mineral precipitation. Petrographic and mineralogic evidence suggest that celestite is present throughout the depth range from 280 to 400 m sub-bottom.

The data indicate that the *in situ* sampling device functioned properly. The high value for alkalinity relative to squeezed samples from similar depths makes contamination by surface seawater improbable. All values of chemical species measured, with the exception of salinity, were higher for the *in situ* samples than for the squeezed samples from similar depths.

SUMMARY AND CONCLUSIONS

Site 573 is located at 0°29.91′N, 133°18.57′W in 4301 m of eastern equatorial Pacific water over a basement trough covered by acoustically well stratified sediment that reaches 0.62 s in thickness. Site 77 (DSDP Leg 9), which is in the immediate vicinity (at 0°28.9′N, 133°13.7′W), was drilled on a basement flank with a 0.51 s-thick sediment cover of comparable stratification.

The primary objective of drilling the site was to obtain an expanded upper Eocene to Quaternary sedimentary section for high resolution stratigraphic and paleoceanographic studies. Three holes were drilled. Hole 573 (HPC) reached 158.6 m sub-bottom; Hole 573A, a parallel HPC attempt, was abandoned at 57.7 m sub-bottom; and Hole 573B (rotary) was cored from 138.5 to 529 m, terminating in basalt. We deployed the heat flow–pore water probe as we washed down to coring depth in Hole 573B (138.5 m) and retrieved *in situ* pore water from 53 m sub-bottom. In total, we spent 7.3 days on site and recovered 25 HPC and 43 rotary cores.

The oldest sediment recovered was uppermost Eocene limestone (Hole 573B, 528 m), below which we recovered 1.19 m of basalt that showed a baked sediment interface and glassy rinds. We divided the sedimentary section into four lithostratigraphic units and subdivided them on the basis of color. It proved to be possible to correlate our units with the three oceanic formations established for the sediments at Site 77. In upsection order, the lithostratigraphic subdivisions are as follows: an uppermost Eocene pelagic limestone (Unit IV) (528 to 526.6 m); metalliferous chalk claystone (Unit III) (526.6

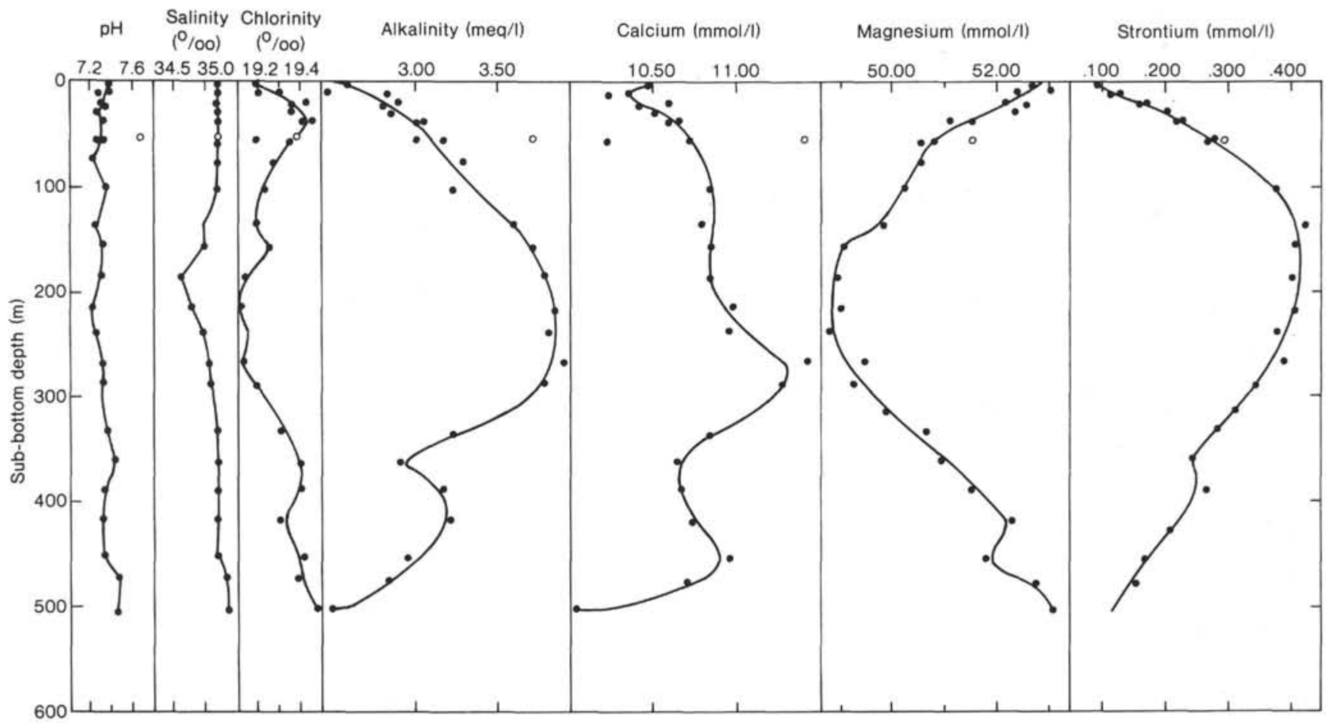

Figure 16. Interstitial-water chemistry, Site 573. Open circles are values for the *in situ* samples; solid circles are squeezed samples.

to 520.5 m), which correlates with the uppermost Eocene at its base, is virtually barren of fossils in its dark brown center, and contains lowermost Oligocene fossils at its top; a calcareous chalk ooze (Unit II) (520 to 45.1 m); and a cyclic siliceous calcareous ooze (45.1 to 0 m). Just above the brown Unit III there are turbidite layers that measure from centimeters to about 1 m in thickness and are composed of volcanic glass and ash intercalated with the pelagic sediments. The upper part of the section (0 to 180 m) is characterized by high-amplitude carbonate fluctuations; the lower part of the section (180 to 520 m) shows a relatively constant, high carbonate content with lower amplitude fluctuations.

Planktonic foraminifers, calcareous nannofossils, radiolarians, and diatoms are, with some exceptions, well represented in the cored sediments. They permit the recognition and correlation of nearly all of the Eocene to Quaternary biozonal and stratigraphic boundaries. For this reason it should be possible to use the cored sediments as a reference section for the equatorial Pacific, even though the Eocene/Oligocene boundary could not be located unequivocally. (The boundary either falls within the barren midportion of the metalliferous unit [528 to 524 m sub-bottom] or coincides with a hiatus.) The lower/upper Oligocene boundary falls in Core 573B-27 ($\approx$386 m). The Oligocene/Miocene boundary occurs at about 326 m (in Core 573B-20); the lower/middle Miocene boundary is at 252 m (in Core 573B-12); the middle/upper Miocene boundary is at approximately 180 m (in Core 573B-5); and the top of the Miocene occurs at about 80 m sub-bottom (in Core 573-10). The Pliocene gives way to the Pleistocene at about 25 m sub-bottom (in Core 4 of Hole 573 and Core 3 of Hole 573A).

Biostratigraphic evidence suggests that there are at least two hiatuses in the cored sequence, although the intervals in question might also represent periods of drastically slower rates of accumulation. Most prominent among these potential hiatuses is the interval near the base of Hole 573B between foraminiferal Zones P16 (uppermost Eocene) and P18 (basal Oligocene) and nannofossil Subzones CP15b (Eocene) and CP16b (Oligocene). This interval contains the Eocene/Oligocene boundary as generally accepted. The absence of Zone P17 (foraminifers) can be explained either by postulating a hiatus or by assuming that the dark brown, barren metalliferous claystone in Core 573B-42 (520.5 to 528 m) represents the record of greatly slowed deposition in the latest Eocene and earliest Oligocene. It is also not inconceivable that the metalliferous layer is normal biogenous ooze from which all microfossils have been removed by solution. Another brief hiatus occurs in the lower upper Miocene. Correlative gaps were found in the record at nearby Site 77.

Benthic foraminifers occur throughout the section, although they are generally rare. The assemblages contain mainly long ranging, Eocene to Recent species that fluctuate in their relative abundances but are remarkably stable in terms of overall character. A few Eocene marker species were found in the upper Eocene sediments of Sample 573B-42-4, 144–147 cm.

The overall sediment accumulation rates at Site 573 are relatively constant, varying generally between 18 and 12 m/m.y. A peak of 30 m/m.y. occurs between 5.5 and 6.1 Ma, and a low of about 10 m/m.y. occurs between 15.5 and 21.4 Ma. In some instances, the accumulation rate changes correlate with breaks in the lithology and with changes in NRM paleomagnetic intensities. Thus, the silica-rich sediments between about 160 and 200 m approximate an interval of rapid deposition, whereas the brown sedimentary unit between 260 and 300 m is roughly equivalent to a period of slower accumulation. In other parts of the record no relationship between lithology and rate of deposition seems to exist. Compaction at Site 573 has a marked effect on sedimentation rate estimates, as demonstrated by the mass accumulation rate calculations. For example, although the intervals between 25.9 and 31.3 Ma and 1.3 to 3.5 Ma show equal rates of sedimentation (about 13 m/m.y.), the Oligocene chalks—which are considerably denser—have a mass accumulation rate greater by a factor of 2 than the Pliocene-Pleistocene sediments. These estimates also show that the Oligocene interval at Site 573 was a time of generally high mass accumulation rate. See Theyer et al. (this volume) for an updated discussion.

The physical properties of the sediments at Site 573 are, by themselves, not very telling and are best reviewed in relation to the results from other sites. Noteworthy, nevertheless, is the constancy of grain density, which hovers near values of pure carbonate throughout most of the site's section. The grain density data thus suggest that the wet-bulk density of these sediments is controlled primarily by water content or porosity. Formation factor, another porosity-sensitive parameter, corroborates this idea.

The seismic section is characterized by the alternation of highly stratified and more transparent zones. The more acoustically stratified sections are correlated with high-amplitude, high-frequency fluctuations in saturated wet-bulk density (and calcium carbonate); the more transparent zones are correlated with intervals of lower amplitude, longer wavelength changes. Several distinct individual reflectors appear to correlate with major shifts in the wet-bulk density curve. See Mayer et al. (this volume) for more details.

Shipboard paleomagnetic results indicate that most of the samples analyzed are characterized by low NRM intensities. Except for the uppermost 50 m, a portion between 260 and 360 m, and the bottom 20 m of Hole 573B (where intensities on the order of 10^{-6} G and above were measured), the NRM_0 of most samples falls within, or barely above, the noise level of the shipboard magnetometer. Changes in intensity seem to coincide broadly with changes in lithology (color) and fluctuations in sedimentation rate. A preliminary Gauss to Matuyama magnetic stratigraphy can be recognized in the upper 50 m of Site 573, although it may be refined after the cores are demagnetized and oriented properly (see Weinreich and Theyer, this volume). A tentative paleolatitude calculation, based on the mean NRM_0 inclination of 22 specimens from Cores 573B-14 to -24, yields a paleolatitude of 7.7°S, somewhat farther north than that postulated for a comparable Oligocene-Miocene interval at Site 77.

Shipboard geochemical analysis of interstitial water suggests diagenetic activity within the sediments of the site. The trends in magnesium, calcium, and alkalinity concentration are nearly linear in the upper 100 m of the section; concavity in the curves below this level is significant (the magnesium trend is opposite to the other two). We interpret the concavity in the trends as being due to the production or consumption of these species and the more linear trends in the upper part of the section as the result of diffusional transport and exchange with seawater.

In conclusion, the tectonic and depositional history of Site 573 mirrors that of Site 77 (van Andel et al., 1975). Assuming that basement age at the site is about 39 Ma, these authors postulate an initial paleolatitude of nearly 8°S and a paleodepth of some 2800 m. The site's sediments should therefore record a descent into deeper, more corrosive waters near the lysocline and the northerly motion of the site into the equatorial belt. The metalliferous sediments and the presence of volcanic glass and/or ash turbidites in the upper Eocene to lowermost Oligocene sediments just above basement clearly indicate the proximity of the site to the ridge crest. The location of the site in a basement trough would cause such volcanic fragments and other mobile sediments from nearby highs to be trapped and explain why the section is thicker than that at Site 77, which is identical in age. During the subsequent Oligocene interval the site's water depth increased, but the sedimentary record remains relatively unchanged in terms of accumulation rate, which is almost uniformly high, and the solution of planktonic foraminifers, which increases very slowly and moderately until about 16 to 17 Ma (uppermost lower Miocene). The movement of the site into the equatorial high-productivity belt, which is dated as 1.5 Ma by van Andel et al., is hard to detect. It may be obscured by the increasing carbonate solution that would have accompanied the sinking of the site to its present depth of 4300 m; it is also possible, however, that the migration finds expression in the greater abundance and preservation of diatoms from the upper middle Miocene to Quaternary. Studies of the record of carbonate and silica accumulation, stratigraphy, and tectonic evolution will help to unravel details of the site's history.

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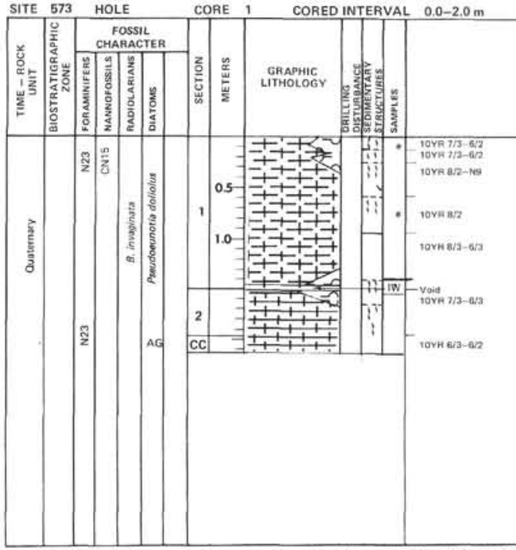
SITE 573 HOLE CORE 1 CORED INTERVAL 0.0–2.0 m



LITHOLOGIC DESCRIPTION

UPPER BROWN OOZE (SUBUNIT IA):

Very pale brown (10YR 7/3) to white (10YR 8/2) foram nanno oozes with pale brown (10YR 6/3) to brownish gray (10YR 6/2) 5–10 cm bands of rad diatom foram nanno ooze. The dark color of the siliceous bands is possibly related to clay content. *Planolites* occur throughout but are most prominent in the siliceous bands.

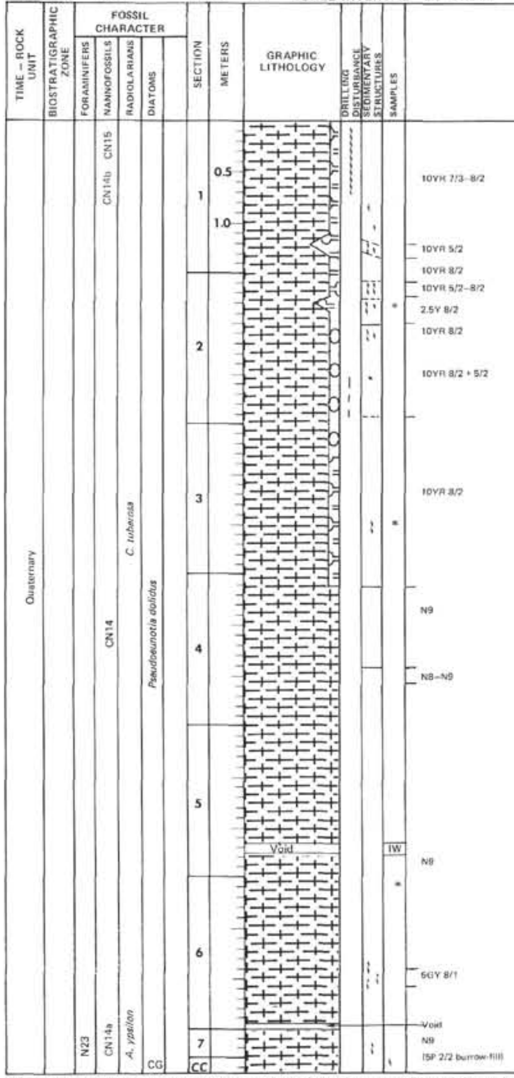
SMEAR SLIDE SUMMARY (%):

	1, 10	1, 80	2, 5
Texture:			
Sand	35	20	25
Silt	20	25	25
Clay	45	55	50
Composition:			
Clay	10	Tr	10
Volcanic glass	Tr	–	Tr
Carbonate unspec.	10	5	20
Foraminifers	20	30	20
Calc. nannofossils	32	55	30
Diatoms	15	7	10
Radiolarians	10	2	10
Silicoflagellates	Tr	Tr	Tr
Fe-oxides?	3	1	Tr

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

Hole 573, Core 1, CARBONATE BOMB: 1, 75 cm = 85%

SITE 573 HOLE CORE 2 CORED INTERVAL 2.0–11.5 m



LITHOLOGIC DESCRIPTION

UPPER BROWN OOZE (SUBUNIT IA) (2.0–4.6 m):

Very pale brown (10YR 7/3) to white (10YR 8/2) siliceous nanno oozes with grayish brown (10YR 5/2) ~ 10 cm bands and mottles of foram rad nanno ooze in upper part. *Planolites* mottles in darker units. Dark vertical stripes (?disturbance) in Section 2, 110–140 cm.

LIGHT GRAY OOZE (SUBUNIT IB) (4.6–11.5 m):

Cyclic brown unit passes down into white (N9) foram nanno ooze.

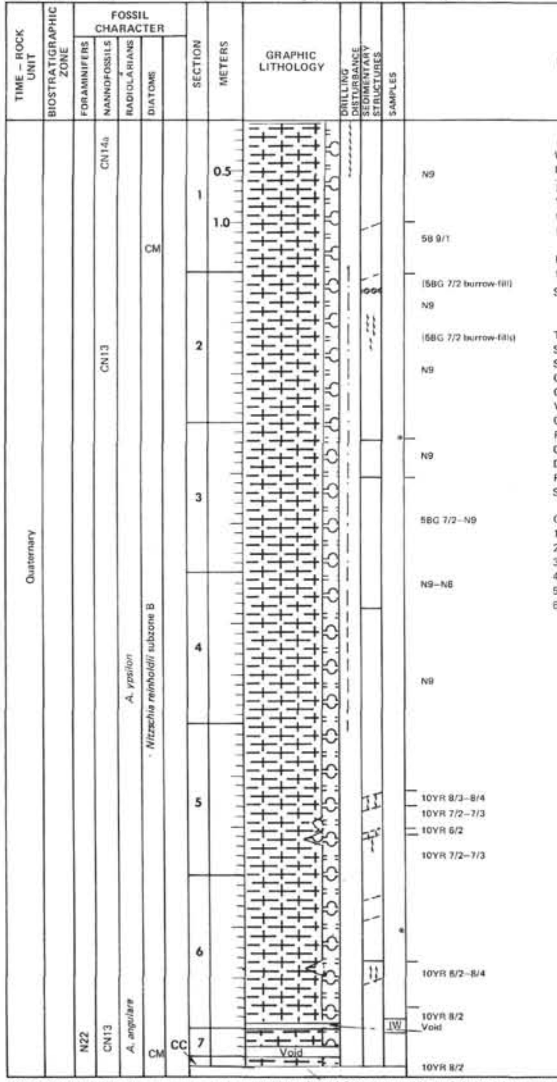
SMEAR SLIDE SUMMARY (%):

	2, 35	3, 100	6, 10
Texture:			
Sand	20	15	10
Silt	20	15	10
Clay	60	70	80
Composition:			
Clay	–	Tr	–
Volcanic glass	Tr	Tr	–
Carbonate unspec.	33	7	5
Foraminifers	12	8	12
Calc. nannofossils	30	70	80
Diatoms	8	6	1
Radiolarians	17	9	2
Fish remains	–	Tr	–

CARBONATE BOMB:
1, 75 cm = 62%
2, 75 cm = 74%
3, 75 cm = 75%
4, 75 cm = 81%
5, 75 cm = 78%
6, 75 cm = 85%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE CORE 3 CORED INTERVAL 11.5–21.0 m



LITHOLOGIC DESCRIPTION

LIGHT GRAY OOZE (SUBUNIT IB) (11.5–19.6 m): into:
White (N9 + 5B 9/1) siliceous foram nanno oozes with light greenish gray (5BG 7/2) burrow fills passing down

LOWER BROWN OOZE (SUBUNIT IC) (19.6–21.0 m):
Very pale brown (10YR 7/3) to white (10YR 8/2) siliceous foram nanno oozes with ~10 cm bands of brownish gray (10YR 6/2) rad diatom foram nanno ooze.

Pale blue green (5BG 7/2) and purple-gray (5P 2/2) burrow fills (*Planolites*).

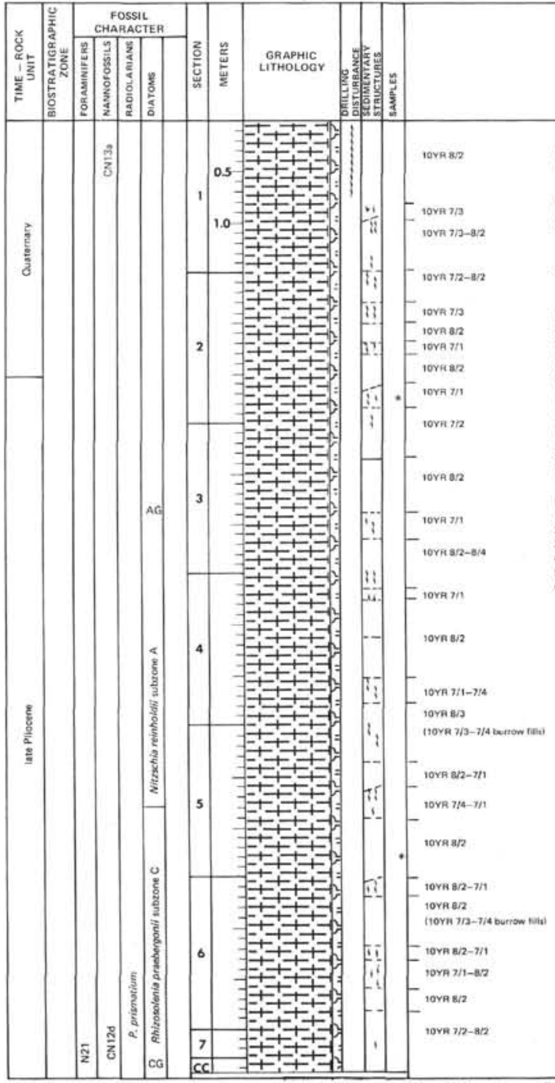
SMEAR SLIDE SUMMARY (%):

	3, 20	6, 60
Texture:		
Sand	25	15
Silt	10	20
Clay	65	65
Composition:		
Volcanic glass	–	Tr
Carbonate unspec.	6	12
Foraminifers	18	12
Calc. nannofossils	65	65
Diatoms	4	7
Radiolarians	7	4
Silicoflagellates	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 88%
2, 75 cm = 82%
3, 75 cm = 76%
4, 75 cm = 86%
5, 75 cm = 52%
6, 75 cm = 82%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE CORE 4 CORED INTERVAL 21.0–30.3 m



LITHOLOGIC DESCRIPTION

LOWER BROWN OOZE (SUBUNIT IC):
White (10YR 8/2) to very pale brown (10YR 7/3) foram nanno oozes and siliceous foram nanno oozes.

Contains alternations of white, very pale brown and light gray (10YR 7/1–7/2) mottled units with distinct *Planolites*. Silica content not simply related to color changes.

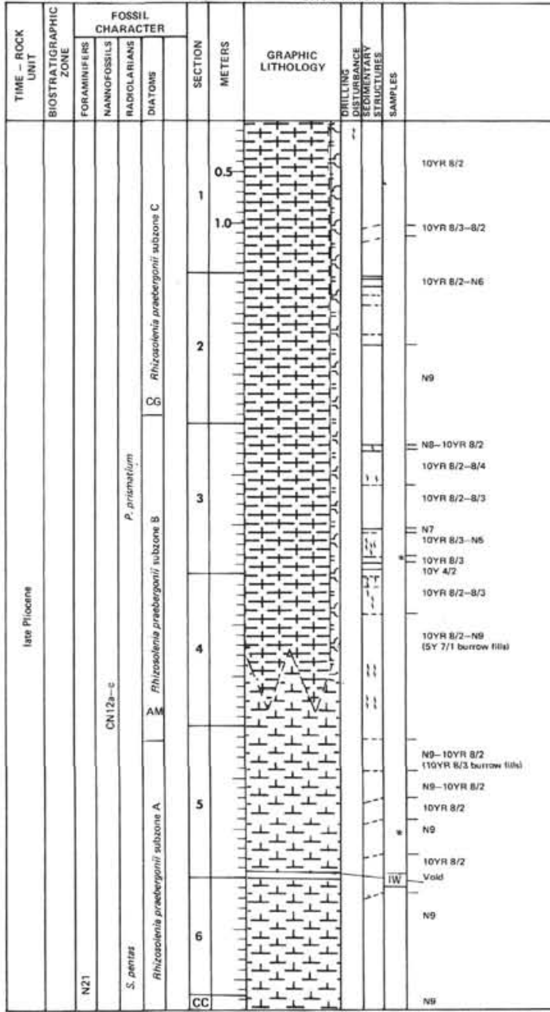
SMEAR SLIDE SUMMARY (%):

	2, 125	5, 130
Texture:		
Sand	25	15
Silt	10	15
Clay	65	70
Composition:		
Carbonate unspec.	13	18
Foraminifers	12	12
Calc. nannofossils	65	55
Diatoms	4	6
Radiolarians	5	9
Silicoflagellates	Tr	Tr
Fe-oxides	1	–

CARBONATE BOMB:
1, 102 cm = 58%
2, 82 cm = 81%
3, 75 cm = 83%
4, 75 cm = 84%
5, 75 cm = 65%
6, 75 cm = 63%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE CORE 5 CORED INTERVAL 30.3–39.1 m



LITHOLOGIC DESCRIPTION

LOWER BROWN OOZE (SUBUNIT IC):
White (10YR 8/2) and very pale brown (10YR 8/3) foram nanno oozes and nanno oozes with white (N9) and light gray (N7–N8) bands and mottles. Relatively uniform alternations of lighter and darker units. Indistinct bioturbation.

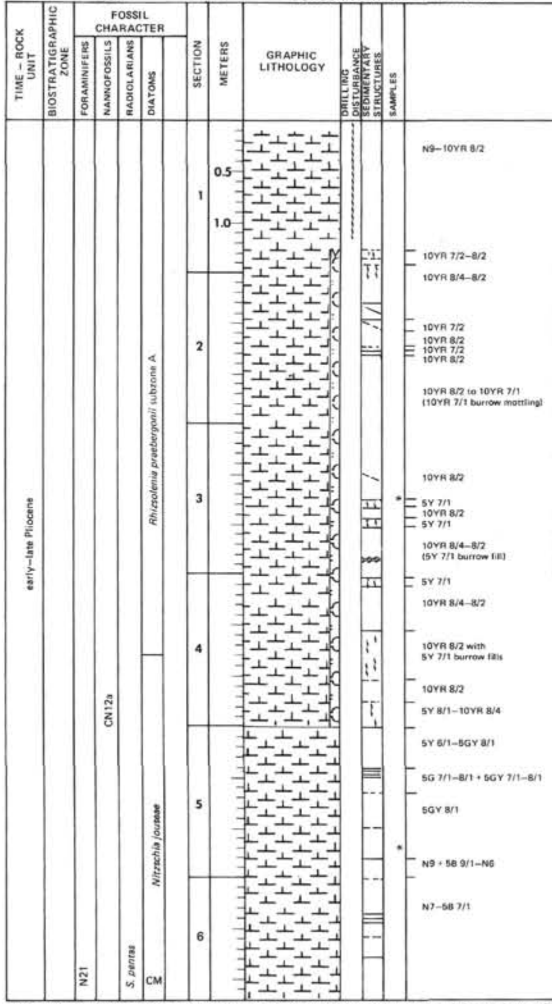
SMEAR SLIDE SUMMARY (%):

	3, 132 M	5, 105
Texture:		
Sand	10	5
Silt	10	10
Clay	80	85
Composition:		
Clay	–	Tr
Carbonate unspec.	5	5
Foraminifers	11	9
Calc. nannofossils	75	80
Diatoms	3	3
Radiolarians	4	3
Silicoflagellates	–	Tr
Fe-oxides	2	–

CARBONATE BOMB:
1, 75 cm = 79%
2, 75 cm = 69%
3, 75 cm = 88%
4, 75 cm = 66%
5, 75 cm = 81%
6, 75 cm = 88%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE CORE 6 CORED INTERVAL 39.1–47.8 m



LITHOLOGIC DESCRIPTION

LOWER BROWN OOZE (SUBUNIT IC) (39.1–45.1 m):
White (N9–10YR 8/2) to very pale brown (10YR 8/4) siliceous nanno oozes with light gray (10YR 7/1) burrow mottles and light gray (5Y 7/1) bands.

VARICOLORED OOZE (SUBUNIT IIA) (45.1–47.8 m):
Sharp contact with light greenish gray (5GY 7/1–5G 7/1) to white (5GY 8/1–5G 8/1) banded nanno oozes. Bioturbation fainter and laminations appear in lower unit.

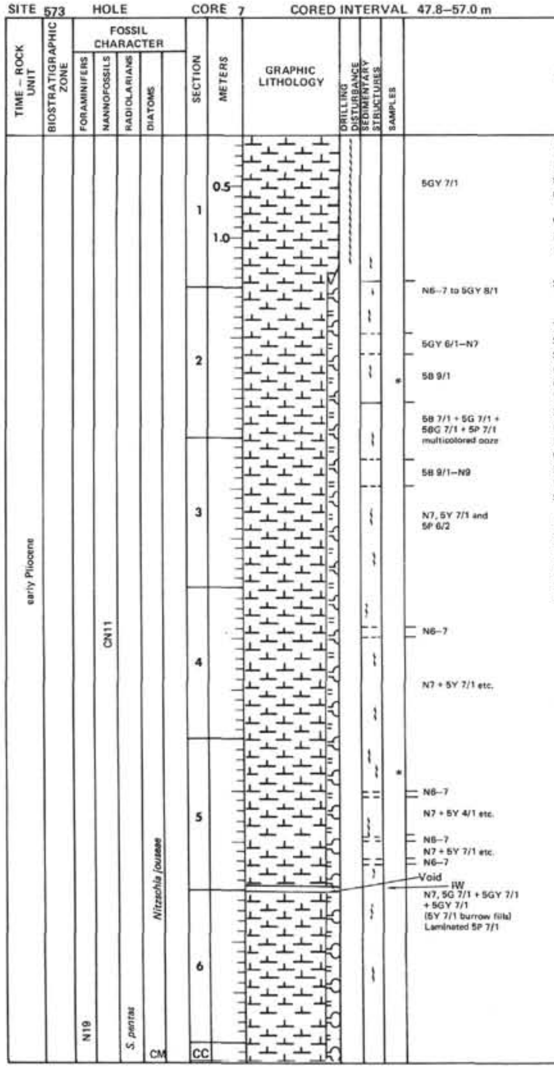
SMEAR SLIDE SUMMARY (%):

	3, 75	5, 120
Texture:		
Sand	15	7
Silt	10	8
Clay	75	85
Composition:		
Carbonate unspec.	20	10
Foraminifers	9	1
Calc. nannofossils	55	80
Diatoms	7	2
Radiolarians	9	7
Silicoflagellates	Tr	–

CARBONATE BOMB:
1, 125 cm = 75%
2, 75 cm = 76%
3, 75 cm = 65%
4, 75 cm = 68%
5, 75 cm = 69%
6, 75 cm = 74%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE CORE 7 CORED INTERVAL 47.8–57.0 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

Light gray (N6–N7) and light greenish gray (5GY 7/1) siliceous nanno oozes with light gray (5Y 7/1) burrow mottling (*Planolites*?) throughout.

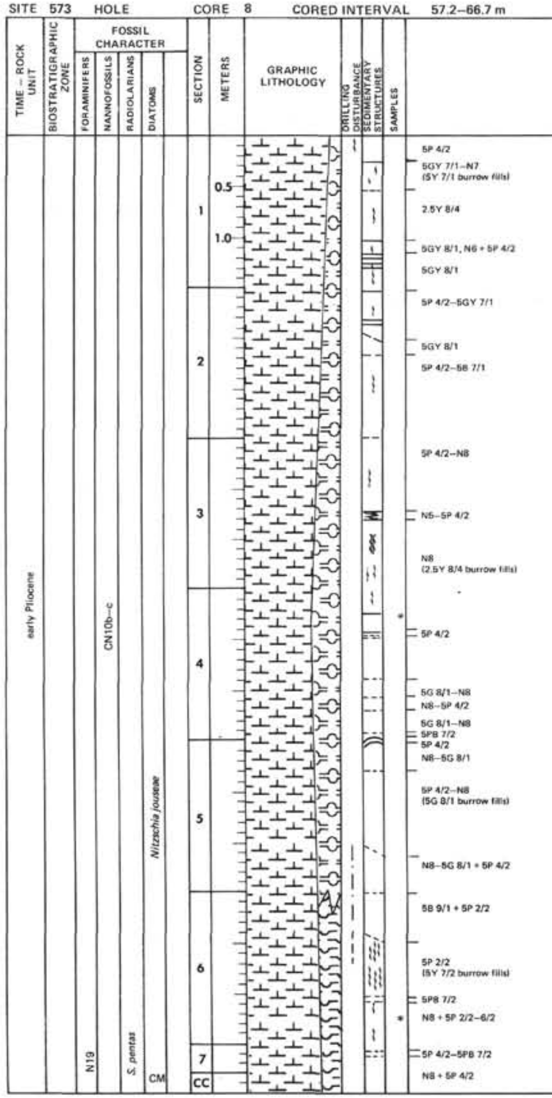
White (5B 9/1–N9) units in upper part of core pass down into darker mottled and banded oozes below. Pale purple (5P 7/1) laminations occur at some levels.

SMEAR SLIDE SUMMARY (%):

	2, 95	5, 35
Texture:		
Sand	10	–
Silt	5	–
Clay	85	–
Composition:		
Volcanic glass	–	Tr
Pyrite	–	Tr
Carbonate unspec.	20	30
Foraminifers	2	7
Calc. nannofossils	65	45
Diatoms	4	9
Radiolarians	9	9
Silicoflagellates	–	Tr

CARBONATE BOMB:
2, 75 cm = 63%
3, 75 cm = 60%
4, 75 cm = 42%
5, 75 cm = 40%
6, 75 cm = 76%

SITE 573 HOLE CORE 8 CORED INTERVAL 57.2–66.7 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

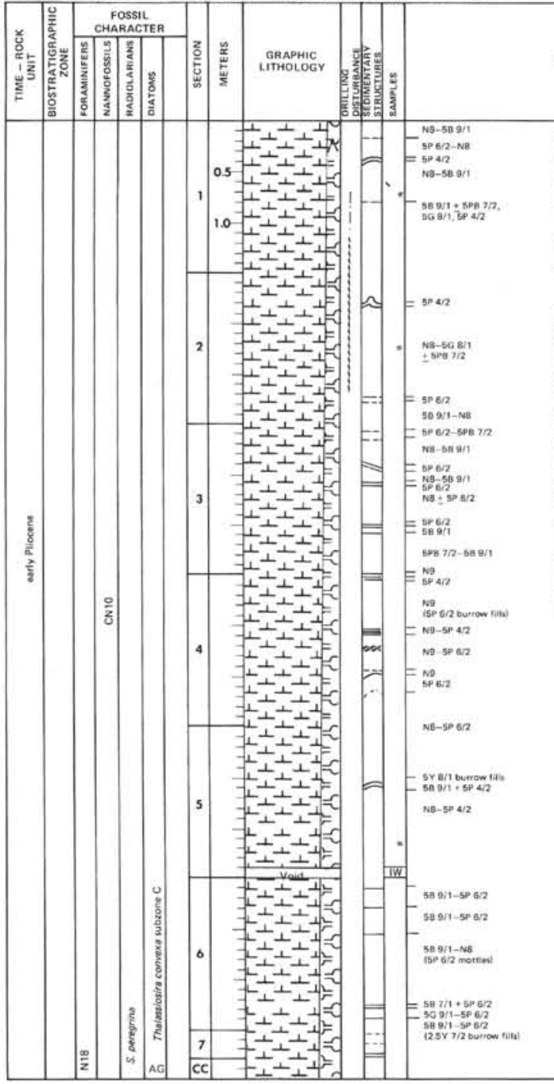
Light greenish gray (5GY 7/1–8/1) to light gray (N8) rad diatom nanno oozes and diatom nanno oozes. Banded intervals of purplish gray (5P 2/2–4/2) ooze are common. Light gray (5Y 7/2) mottles (?*Planolites*) are dominant type of bioturbation. Core gave an H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	4,30	6, 125
Texture:		
Sand	15	10
Silt	5	15
Clay	80	75
Composition:		
Foraminifers	2	5
Calc. nannofossils	63	80
Diatoms	25	10
Radiolarians	10	5
Sponge spicules	Tr	Tr
Silicoflagellates	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 69%
2, 75 cm = 52%
3, 75 cm = 75%
4, 75 cm = 61%
5, 75 cm = 79%
6, 75 cm = 70%

SITE 573 HOLE CORE 9 CORED INTERVAL 66.7–76.2 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (5B 9/1) to light gray (N8) siliceous nanno oozes and rad diatom nanno oozes. Composed of broad cycles with white passing down into gray and then banded purple grays (5P 6/2). Bioturbation characterized by purple gray or light gray (2.5Y 7/2) *Planolites*.

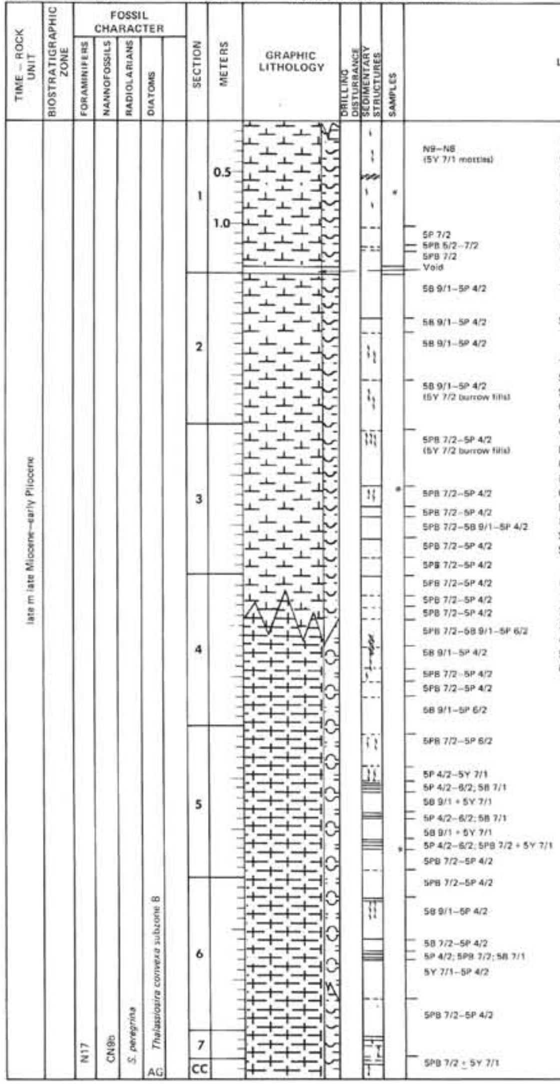
Core produced a strong H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	1, 76	2, 79	5, 120
Texture:			
Sand	5	15	15
Silt	10	10	10
Clay	85	75	75
Composition:			
Clay	–	Tr	Tr
Volcanic glass	–	–	Tr
Pyrite	Tr	–	Tr
Foraminifers	4	5	5
Calc. nannofossils	84	85	75
Diatoms	8	5	10
Radiolarians	4	5	10
Sponge spicules	Tr	Tr	Tr
Silicoflagellates	Tr	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 76%
2, 75 cm = 81%
3, 75 cm = 78%
4, 75 cm = 81%
5, 75 cm = 83%
6, 75 cm = 82%

SITE 573 HOLE CORE 10 CORED INTERVAL 76.2–85.7 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (N9, 5B 9/1) to light gray (N8, 5P 7/2, 5PB 7/2) diatom nanno oozes passing down into mottled light (5PB 7/2–5P 7/2) and dark (5P 4/2) purple cyclic units of diatom nanno ooze. Bottom half of core consists of laminated purple (5P 4/2–6/2) and gray (5B 7/1) beds alternating with light–dark purple rad foram diatom nanno ooze. Distinct *Planolites* contain light gray (5Y 7/1) fills. A single ?*Skolithos* occurs in Section 4.

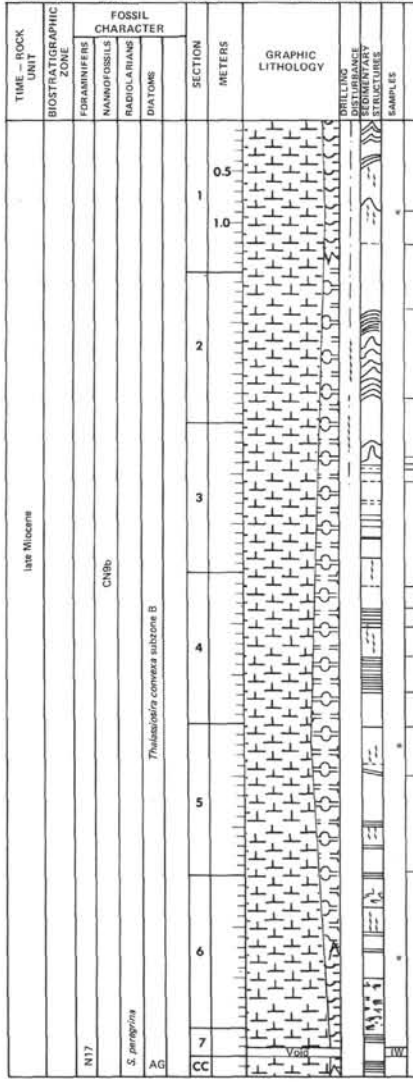
The core produced a strong H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	1, 70	3, 70	5, 125
Texture:			
Sand	3	5	25
Silt	15	25	25
Clay	82	70	50
Composition:			
Volcanic glass	–	–	Tr
Pyrite	Tr	Tr	–
Carbonate unspec.	–	15	–
Foraminifers	4	–	10
Calc. nannofossils	75	70	70
Diatoms	15	10	10
Radiolarians	5	5	10
Sponge spicules	Tr	Tr	–
Silicoflagellates	1	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 71%
2, 75 cm = 67%
3, 75 cm = 74%
4, 75 cm = 81%
5, 75 cm = 74%
6, 75 cm = 56%

SITE 573 HOLE CORE 11 CORED INTERVAL 85.7–95.2 m



5G 6/1–8/1 + N8
(5P 4/2–6/2 laminations)

5B 9/1–N8

5B 9/1–N8
(5Y 7/1 mottles)

5G 7/2–8/1
+ 5GY 8/1
with 5P 6/2
laminations

5B 9/1–5Y 8/1

5B 9/1–5G 7/1
5P 4/2
5Y 8/1–5B 9/1

5B 9/1
(5P 8/2–4/2 laminations)

(5Y 7/1–8/1 burrow fills)

5B 9/1
(5P 6/2 *Chondrites*)
5Y 8/1 + 5P 4/2

5B 9/1–5Y 8/1

5P 4/2–6/2; 5B 9/1; 5Y 8/1

5B 9/1 (5Y 8/1 mottles)

5Y 8/1; 5GY 8/1; 5P 4/2 (mottled)

5B 9/1–N8 with
5P 4/2 laminations
(5Y 8/2, 5GY 8/1 burrow fills)

5B 9/1 with 5P 4/2–6/2 laminations
(5Y 8/1 burrow fills)

LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (5B 9/1) to light greenish gray (5G 6/1–8/1, 5GY 8/1) diatom nanno oozes and rad diatom nanno oozes with pale purple (5P 4/2–6/2) laminated horizons and light gray (5Y 8/1–8/1) *Planolites*. Rare *Chondrites* and ?*Skolithos* at some levels. Normal microfaulting common at base of core.

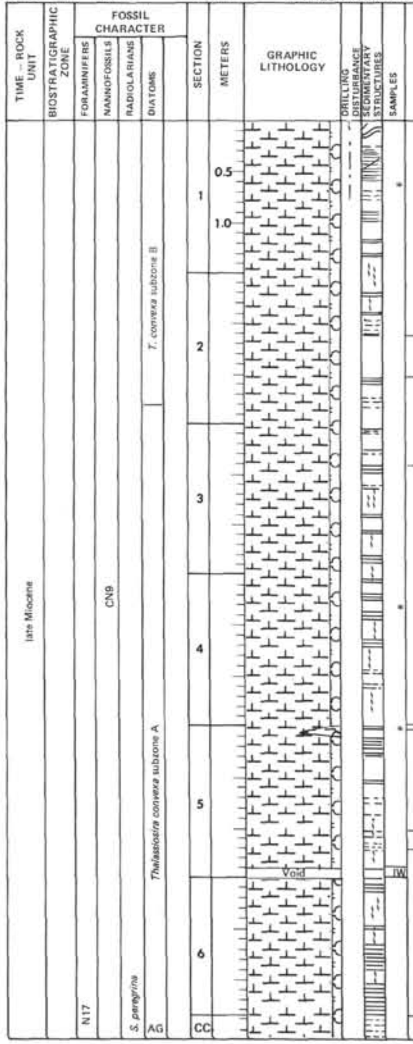
The core produced a strong H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	1, 90	5, 21	6, 80
Texture:			
Sand	10	20	10
Silt	15	30	20
Clay	75	50	70
Composition:			
Volcanic glass	Tr	–	–
Pyrite	–	Tr	Tr
Carbonate unspec.	10	9	5
Foraminifers	5	1	2
Calc. nannofossils	70	60	80
Diatoms	10	20	10
Radiolarians	5	10	3
Sponge spicules	Tr	Tr	Tr
Silicoflagellates	Tr	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 73%
2, 75 cm = 67%
3, 75 cm = 82%
4, 75 cm = 85%
5, 75 cm = 85%
6, 75 cm = 88%

SITE 573 HOLE CORE 12 CORED INTERVAL 95.2–104.0 m



5B 9/1–N9 with
5P 6/2 + N8 laminations
(5PB 4/2 + 5Y 7/1–8/1
burrow fills)

5B 9/1–N9

5B 9/1–N9
with 5P 4/2–6/2
lamination

5B 9/1–N9
with 5P 4/2–6/2
lamination
(5Y 7/1–8/1 burrows)

5Y 8/1

5Y 8/1

5B 9/1

LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (5B 9/1, N9) siliceous nanno oozes and nanno oozes with numerous purple (5P 6/2–4/2) banded and laminated horizons. Burrow fills dominantly light gray (5Y 7/1–8/1) *Planolites*. Some thin (cm) light gray (5Y 7/1–8/1) beds of diatom nanno ooze.

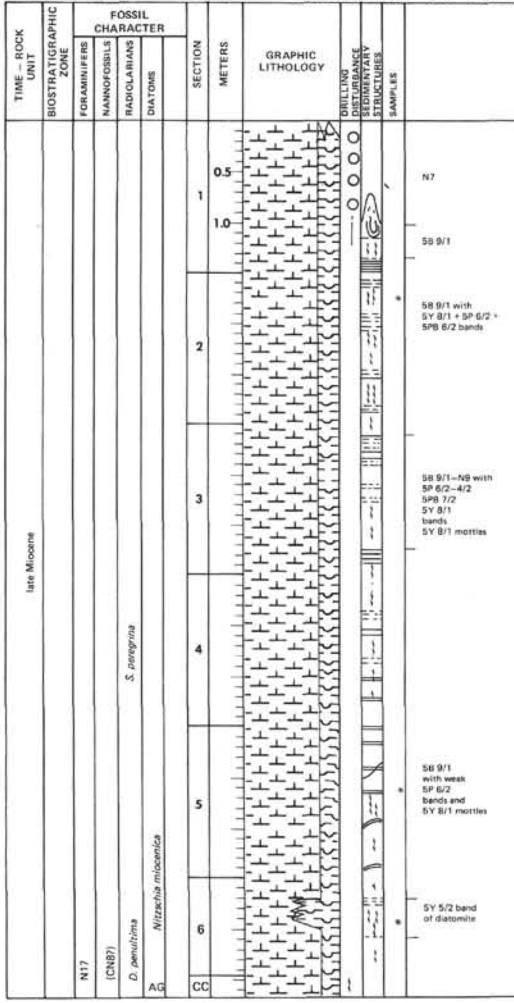
Strong H_2S odor on splitting.

SMEAR SLIDE SUMMARY (%):

	1, 68	4, 34	5, 9
	D	D	M
Texture:			
Sand	10	2	2
Silt	20	10	35
Clay	70	88	63
Composition:			
Pyrite	–	Tr	Tr
Carbonate unspec.	5	10	10
Foraminifers	4	1	Tr
Calc. nannofossils	81	83	44
Diatoms	8	4	40
Radiolarians	2	2	5
Sponge spicules	Tr	Tr	Tr
Silicoflagellates	–	–	Tr

CARBONATE BOMB:
1, 75 cm = 84%
2, 75 cm = 88%
3, 75 cm = 83%
4, 75 cm = 78%
5, 75 cm = 81%
6, 75 cm = 78%

SITE 573 HOLE CORE 13 CORED INTERVAL 104.0–112.6 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

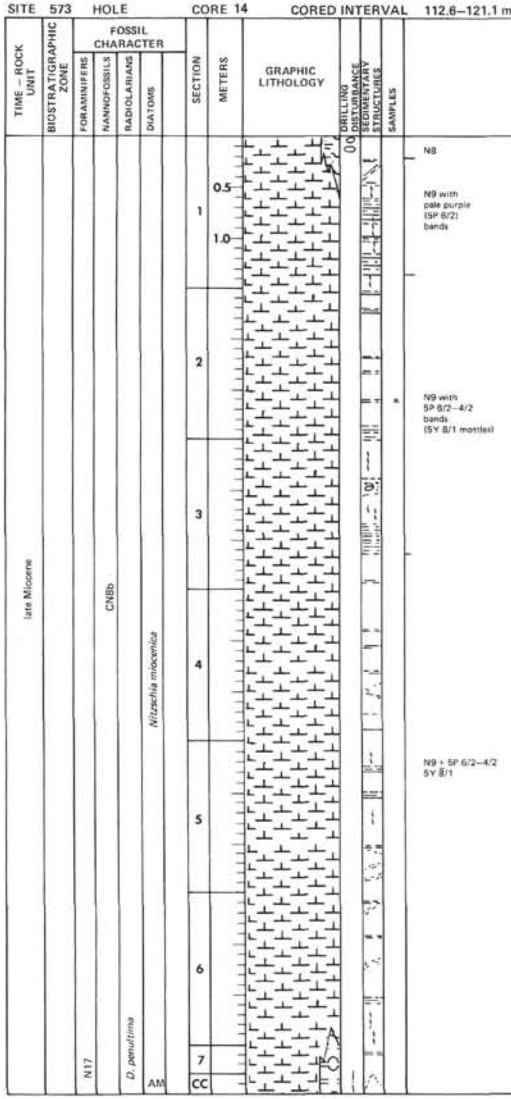
White (5B 9/1) diatom nanno oozes with pale purple (5P 6/2) and light gray (5PB 6/2) banding and lamination. Light gray (5Y 8/1) burrow fills (*Planolites*) common. A light olive gray (5Y 5/2) band of nanno diatom ooze occurs near base. Strong H_2S odor when core opened. Rare *Chondrites*.

SMEAR SLIDE SUMMARY (%):

	2, 30	5, 59	6, 45
Texture:			
Sand	10	10	1
Silt	10	30	30
Clay	80	60	69
Composition:			
Volcanic glass	Tr	Tr	–
Pyrite	Tr	Tr	Tr
Carbonate unspec.	10	10	–
Foraminifers	5	2	Tr
Calc. nannofossils	65	60	43
Diatoms	15	25	45
Radiolarians	5	2	Tr
Sponge spicules	–	Tr	–
Silicoflagellates	Tr	1	1
Fe-oxides	–	–	1

CARBONATE BOMB:
1, 115 cm = 74%
2, 75 cm = 78%
3, 75 cm = 73%
4, 75 cm = 74%
5, 75 cm = 77%
6, 75 cm = 81%

SITE 573 HOLE CORE 14 CORED INTERVAL 112.6–121.1 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

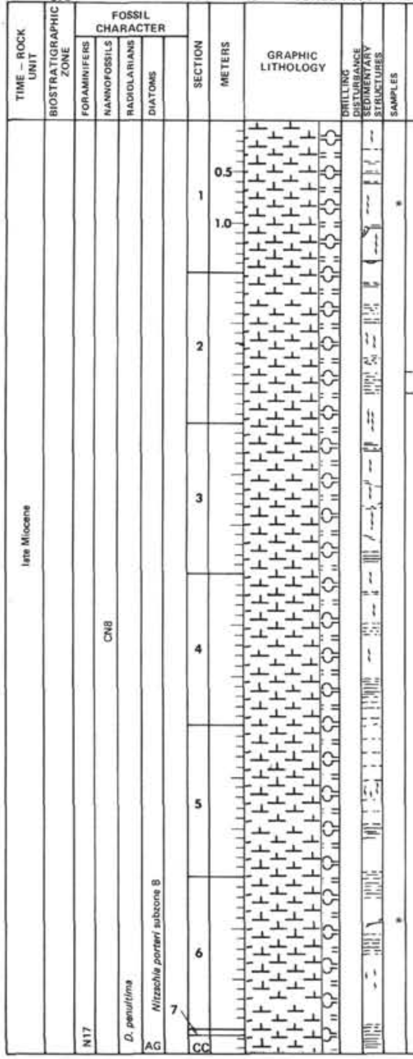
White (N9) nanno ooze with pale purple (5P 6/2–4/2) bands and light gray (5Y 8/1) *Planolites*, indeterminate mottles and occasional bands. Pale purple diffusion? rings around burrows common. Strong H_2S odor on splitting.

SMEAR SLIDE SUMMARY (%):

	2, 115
Texture:	
Sand	5
Silt	15
Clay	80
Composition:	
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	5
Foraminifers	1
Calc. nannofossils	85
Diatoms	6
Radiolarians	3
Sponge spicules	Tr
Silicoflagellates	Tr

CARBONATE BOMB:
1, 75 cm = 85%
2, 75 cm = 84%
3, 75 cm = 89%
4, 75 cm = 83%
5, 75 cm = 84%
6, 75 cm = 87%

SITE 573 HOLE CORE 15 CORED INTERVAL 121.1–130.3 m



5B 9/1–N9
± 5P 6/2–4/2
5Y 8/1 mottles

5P 6/2–4/2
5PB 6/2

5B 9/1–N9
± 5P 6/2
5Y 8/1 mottles + stripes

LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

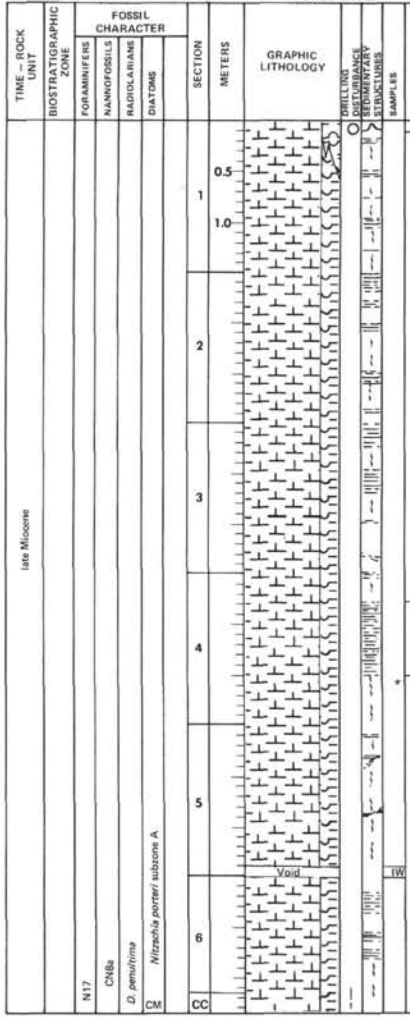
White (5B 9/1–N9) diatom nanno ooze and rad diatom nanno ooze. Pale purple (5P 6/2–4/2) laminae, bands and diffusion? rings. Burrow mottles and units of light gray–white (5Y 8/1) including identifiable *Planolites*. No strong lamination. Strong H_2S odor on splitting.

SMEAR SLIDE SUMMARY (%):

	1, 80 D	6, 45 M
Texture:		
Sand	5	–
Silt	30	–
Clay	65	–
Composition:		
Volcanic glass	Tr	–
Pyrite	Tr	1
Carbonate unspec.	5	10
Foraminifers	–	5
Calc. nannofossils	80	65
Diatoms	10	10
Radiolarians	5	10
Sponge spicules	Tr	Tr
Silicoflagellates	Tr	–

CARBONATE BOMB:
1, 75 cm = 77%
2, 75 cm = 77%
3, 75 cm = 77%
4, 75 cm = 82%
5, 75 cm = 79%
6, 75 cm = 86%

SITE 573 HOLE CORE 16 CORED INTERVAL 130.3–139.1 m



N7

5B 9/1–N9
+ 5G 8/1
with 5P 6/2 bands
5Y 8/1 mottles + units

5P 6/2 + 5G 8/1

5G 8/1 ± 5P 6/2 stripes
± 5Y 8/1 mottles

5B 9/1–N9
+ 5P 6/2
5Y 8/1

LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (5B 9/1–N9) and pale greenish gray (5G 8/1) diatom nanno oozes with pale purple (5P 6/2) laminae and bands and light gray (5Y 8/1) burrow mottles including identifiable *Planolites*.

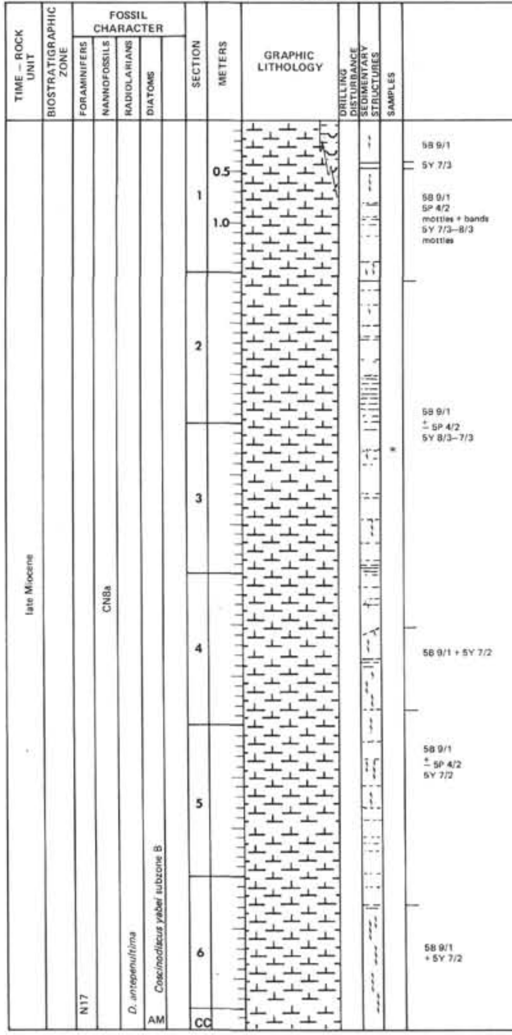
Strong H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	4, 102
Texture:	
Sand	10
Silt	20
Clay	70
Composition:	
Pyrite	Tr
Carbonate unspec.	10
Foraminifers	Tr
Calc. nannofossils	70
Diatoms	15
Radiolarians	5
Sponge spicules	Tr
Silicoflagellates	Tr

CARBONATE BOMB:
1, 75 cm = 83%
2, 75 cm = 85%
3, 75 cm = 73%
4, 75 cm = 81%
5, 75 cm = 76%
6, 75 cm = 66%

SITE 573 HOLE CORE 17 CORED INTERVAL 139.1–147.9 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

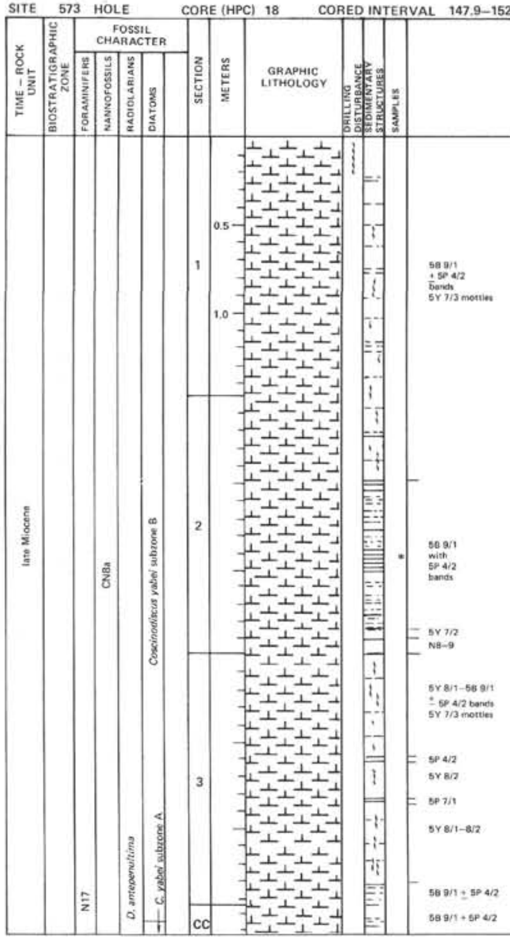
White (5B 9/1) nanno ooze with pale purple (5P 4/2) bands (and occasional mottles) and pale yellow (5Y 7/3–8/3) to light gray (5Y 8/2) burrow mottles. Strong H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	3, 25
Texture:	
Sand	3
Silt	2
Clay	95
Composition:	
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	60
Foraminifers	Tr
Calc. nannofossils	35
Diatoms	1
Radiolarians	4
Silicoflagellates	Tr

CARBONATE BOMB:
1, 75 cm = 78%
2, 75 cm = 79%
3, 75 cm = 84%
4, 75 cm = 76%
5, 75 cm = 84%
6, 75 cm = 77%

SITE 573 HOLE CORE (HPC) 18 CORED INTERVAL 147.9–152.9 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

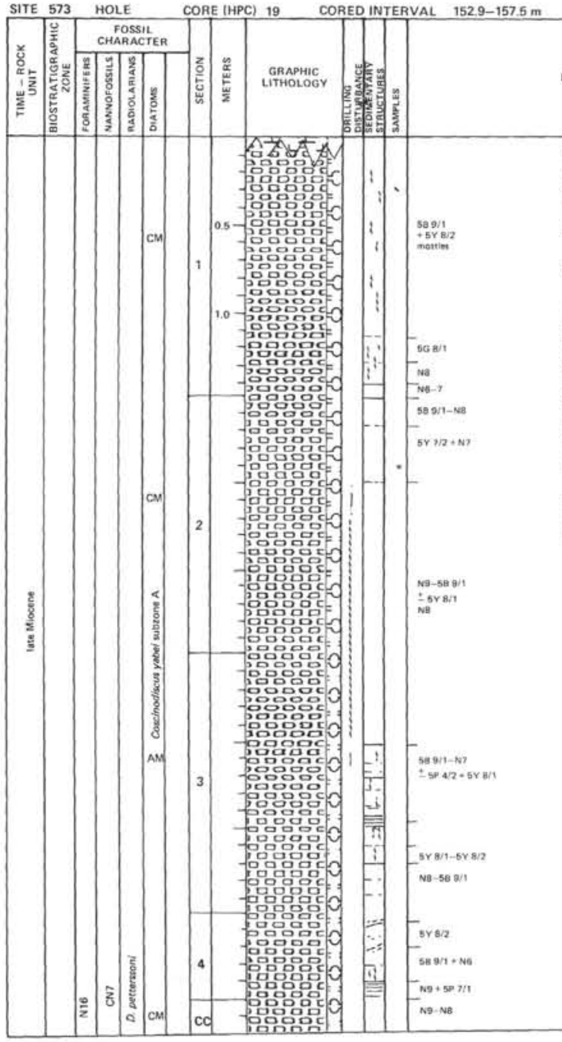
White (5B 9/1–5Y 8/1) and light gray (5Y 7/2) nanno oozes with numerous pale purple (5P 4/1–7/1) bands and laminae, and light gray (5Y 7/3) burrow mottles including *Planolites*. H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	2, 92
Texture:	
Sand	3
Silt	2
Clay	95
Composition:	
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	60
Foraminifers	1
Calc. nannofossils	35
Diatoms	1
Radiolarians	3
Silicoflagellates	Tr

CARBONATE BOMB:
1, 75 cm = 79%
2, 75 cm = 86%
3, 75 cm = 53%

SITE 573 HOLE CORE (HPC) 19 CORED INTERVAL 152.9–157.5 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

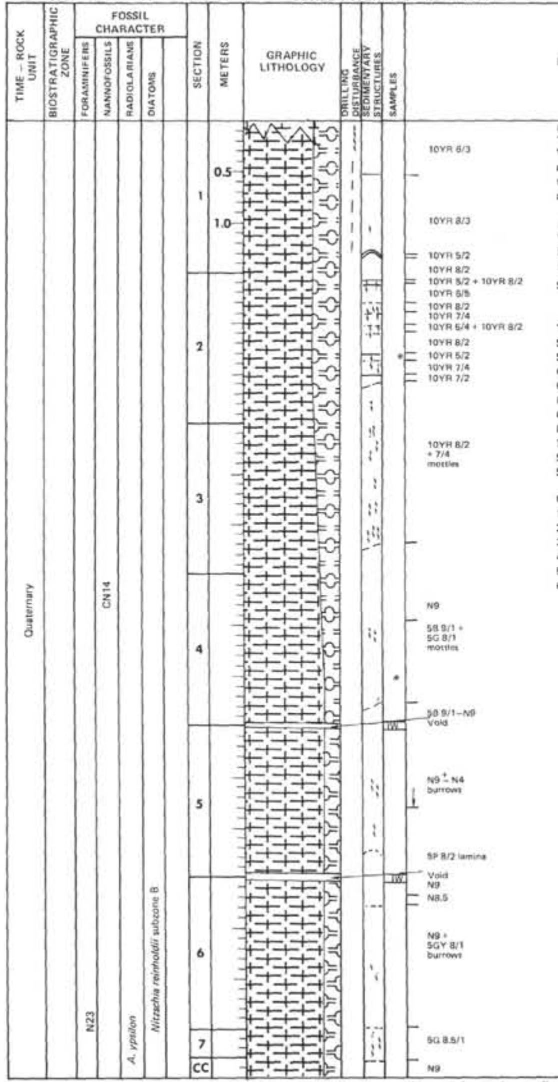
White (5B 9/1, N9, 5Y 8/1) to light gray (N7–8) siliceous calcareous oozes with pale purple (5P 4/1–7/1) bands and white–light gray (5Y 8/1–8/2) burrow mottles: predominantly *Planolites*. Occasional light green gray (5G 8/1) and gray (N6) beds.

SMEAR SLIDE SUMMARY (%):

	2, 40
Texture:	
Sand	5
Silt	10
Clay	85
Composition:	
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	75
Foraminifers	1
Calc. nannofossils	9
Diatoms	9
Radiolarians	6

CARBONATE BOMB:
1, 75 cm = 74%
2, 75 cm = 75%
3, 75 cm = 55%

SITE 573 HOLE A CORE 1 CORED INTERVAL 4.5–14.0 m



LITHOLOGIC DESCRIPTION

UPPER BROWN OOZE (SUBUNIT IA) (4.5–8.7 m):
The pale brown oozes pass down into:
Very pale brown (10YR 7/2–7/4) to white (10YR 8/2) rad foram diatom nanno ooze with pale brown (10YR 6/3) to brownish gray (10YR 5/2) 5–10 cm bands. *Planolites* are most prominent in the dark bands.

LIGHT GRAY OOZE (SUBUNIT IB) (8.7–14.0 m): White (10YR 8/2–N9) and light greenish gray (5G 8/1–8.5/1) siliceous foram nanno oozes with gray (N4) burrow fills.

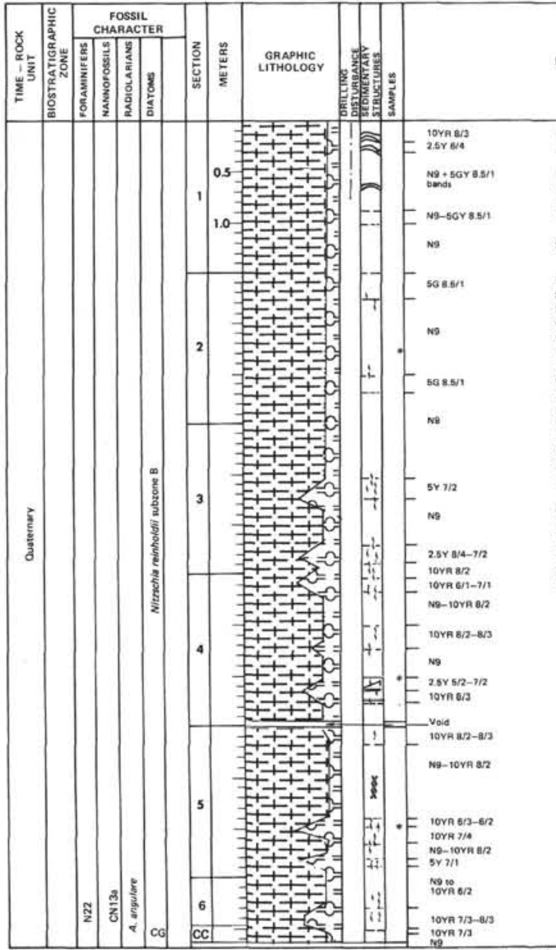
SMEAR SLIDE SUMMARY (%):

	2, 85	4, 100
Texture:		
Sand	30	30
Silt	25	15
Clay	45	55
Composition:		
Foraminifers	15	30
Calc. nannofossils	55	60
Diatoms	20	8
Radiolarians	10	2
Sponge spicules	Tr	Tr
Silicoflagellates	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 70%
2, 75 cm = 77%
3, 75 cm = 75%
4, 75 cm = 84%
5, 75 cm = 88%
6, 75 cm = 86%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE A CORE 2 CORED INTERVAL 14.0–22.1 m



LITHOLOGIC DESCRIPTION

LIGHT GRAY OOZE (SUBUNIT IB) (14.0–18.6 m): diatom oozes passing down into:

LOWER BROWN OOZE (SUBUNIT IC) (18.6–22.1 m): Very pale brown (10YR 7/3) to white (10YR 8/2) foram rad diatom nanno oozes. Light gray (10YR 8/2–8/3) burrow fills include *Planolites* and *?Skolithos*.

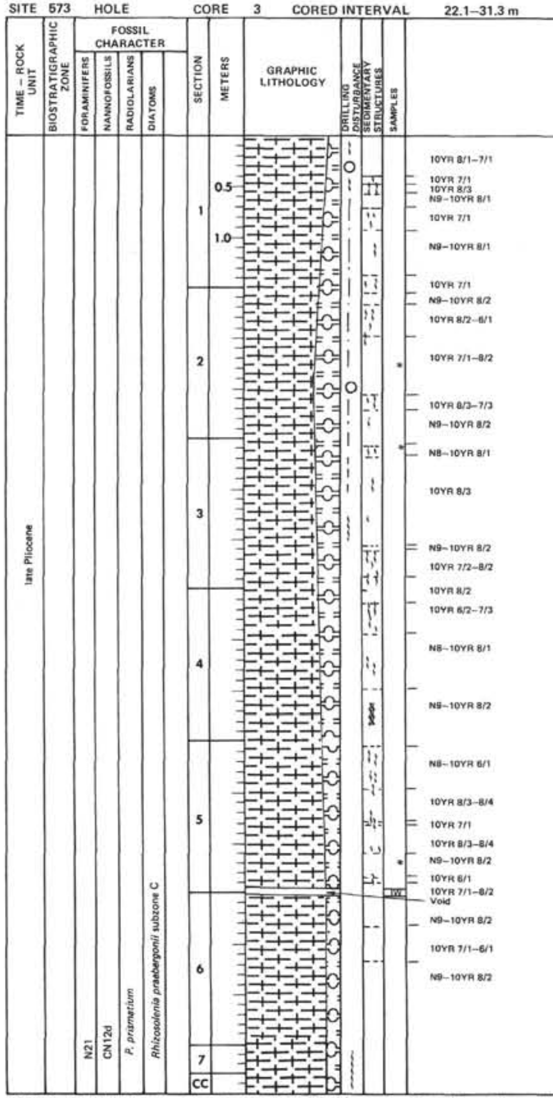
SMEAR SLIDE SUMMARY (%):

	2, 80 D	4, 107 M	5, 100 D
Texture:			
Sand	30	15	30
Silt	20	35	30
Clay	50	50	40
Composition:			
Volcanic glass	–	Tr	Tr
Pyrite	Tr	20	–
Carbonate unspec.	10	20	10
Foraminifers	15	5	20
Calc. nannofossils	65	20	20
Diatoms	5	25	30
Radiolarians	5	10	20
Sponge spicules	–	Tr	Tr
Silicoflagellates	Tr	Tr	Tr
Fe oxides	–	Tr	1

CARBONATE BOMB:
1, 75 cm = 84%
2, 75 cm = 86%
3, 75 cm = 57%
4, 75 cm = 82%
5, 75 cm = 73%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE CORE 3 CORED INTERVAL 22.1–31.3 m



LITHOLOGIC DESCRIPTION

LOWER BROWN OOZE (SUBUNIT IC):

White (N9, 10YR 8/1–8/2) and very pale brown (10YR 8/3) alternations of rad foram diatom nanno oozes to siliceous foram nanno oozes. Bioturbation is most obvious in the brown units which contain *Planolites*. Some light gray (N8) beds (e.g. Section 3, 10–20 cm) and burrow fills contain ~20% pyrite, despite "oxidized" appearance of sediments.

A single *?Skolithos* occurs in Section 4.

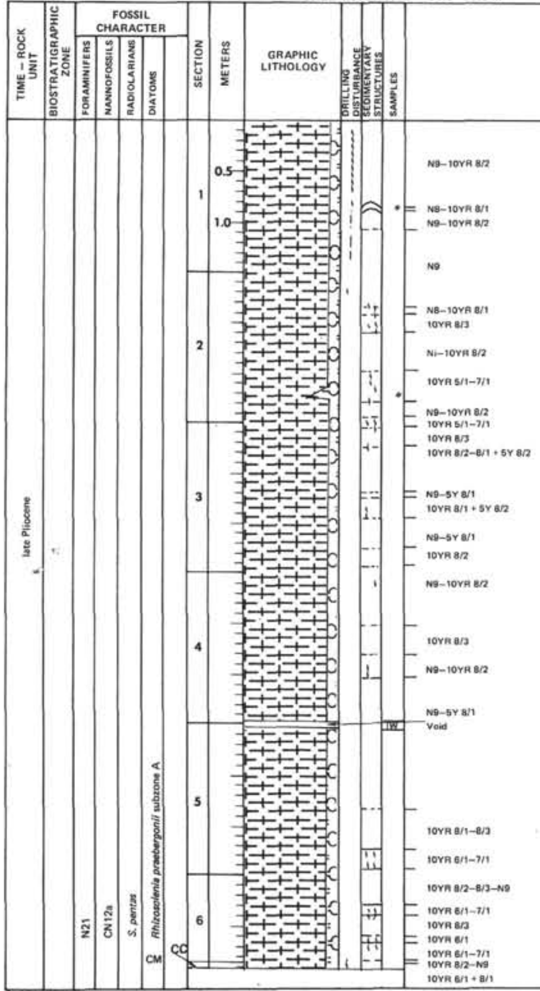
SMEAR SLIDE SUMMARY (%):

	2, 80 D	3, 16 M	5, 120 D
Texture:			
Sand	25	15	20
Silt	20	25	15
Clay	55	60	65
Composition:			
Pyrite	Tr	20	–
Carbonate unspec.*	20	–	10
Foraminifers	10	15	15
Calc. nannofossils	40	50	65
Diatoms	20	10	5
Radiolarians	10	5	5
Sponge spicules	Tr	Tr	Tr
Silicoflagellates	–	Tr	Tr
Fe-oxides	Tr	Tr	–

CARBONATE BOMB:
1, 75 cm = 85%
2, 75 cm = 78%
3, 75 cm = 73%
4, 75 cm = 67%
5, 75 cm = 58%
6, 75 cm = 71%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE A CORE 4 CORED INTERVAL 31.3–39.8 m



LITHOLOGIC DESCRIPTION

LOWER BROWN OOZE (SUBUNIT IC):

White (N9–10YR 8/2) and gray (10YR 5/1–7/1) siliceous foram nanno oozes with some gray levels composed of pyrite-rich diatom foram nanno ooze. Very pale browns (10YR 8/3) occur alongside pale yellowish greens (5Y 8/2). *Planolites* in darker beds.

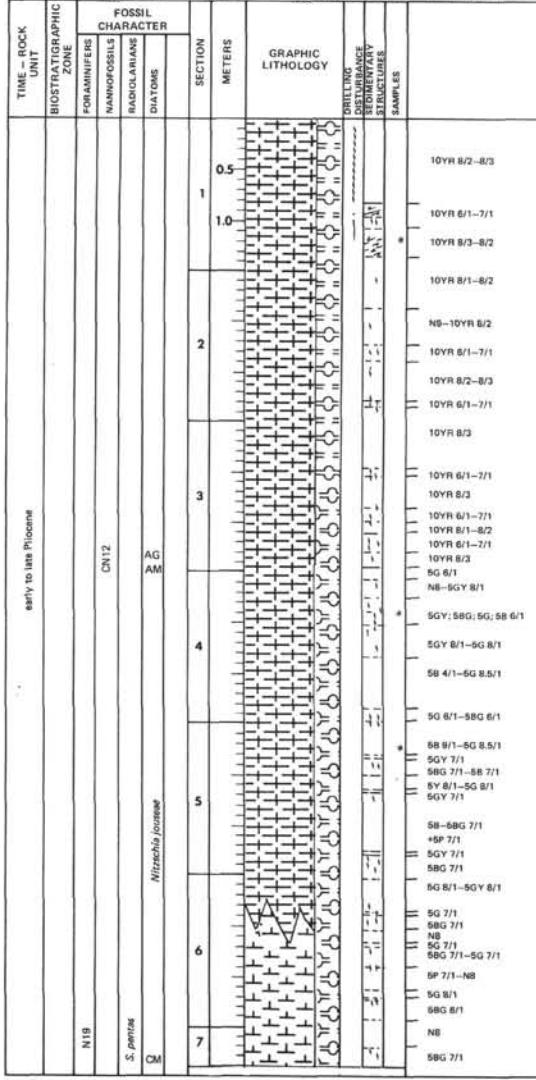
SMEAR SLIDE SUMMARY (%):

	1, 90 D	2, 127 M
Texture:		
Sand	15	30
Silt	30	30
Clay	65	40
Composition:		
Pyrite	–	30
Carbonate unspec.	20	10
Foraminifers	10	15
Calc. nannofossils	60	34
Diatoms	5	10
Radiolarians	5	1
Sponge spicules	–	Tr
Silicoflagellates	–	Tr

CARBONATE BOMB:
1, 75 cm = 72%
2, 75 cm = 82%
3, 75 cm = 74%
4, 75 cm = 70%
5, 75 cm = 75%
6, 75 cm = 73%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE A CORE 5 CORED INTERVAL 39.8–49.2 m



LITHOLOGIC DESCRIPTION

LOWER BROWN OOZE (SUBUNIT IC):

White (10YR 8/1–8/2) to very pale brown (10YR 8/3) and gray (10YR 6/1–7/1) rad diatom nanno oozes and foram diatom rad nanno oozes. Prominent *Planolites* in dark layers. Overlying with a sharp contact at 44.2 m.

VARICOLORED OOZE (SUBUNIT IIA):

Greenish gray (5G 6/1, 5BG 6/1, 5G 6/1, 5B 6/1) to light greenish gray (5G 7/1–8/1 etc.) foram diatom rad nanno oozes. Indistinct burrows occur throughout the lower unit and again include *Planolites*.

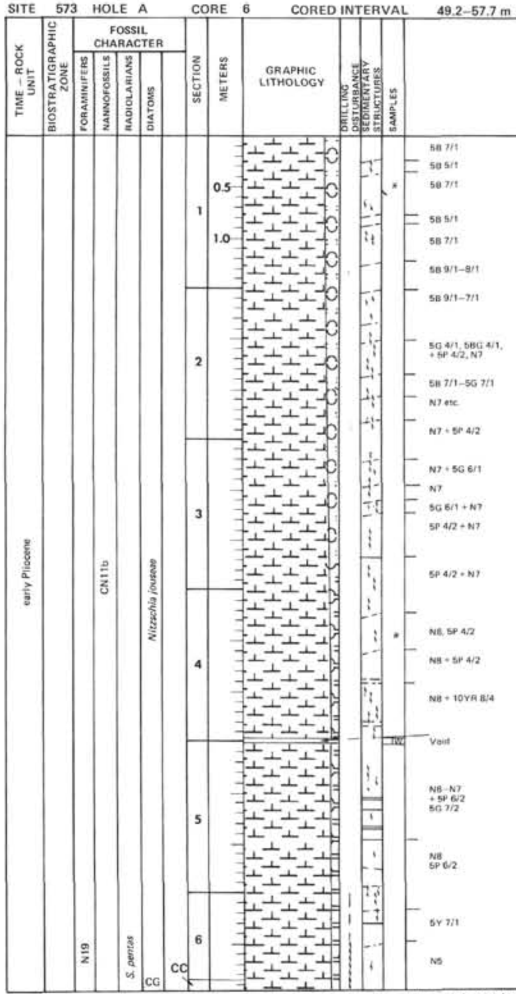
SMEAR SLIDE SUMMARY (%):

	1, 120	4, 40	5, 25
Texture:			
Sand	10	30	25
Silt	30	20	25
Clay	60	50	50
Composition:			
Volcanic glass	Tr	–	–
Carbonate unspec.	10	10	10
Foraminifers	5	10	10
Calc. nannofossils	60	50	50
Diatoms	15	15	15
Radiolarians	10	15	15
Sponge spicules	Tr	Tr	Tr
Silicoflagellates	Tr	Tr	Tr

CARBONATE BOMB:
1, 85 cm = 74%
2, 75 cm = 73%
3, 75 cm = 62%
4, 75 cm = 56%
5, 75 cm = 76%
6, 75 cm = 53%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE A CORE 6 CORED INTERVAL 49.2–57.7 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

Greenish gray (5B 5/1, 5BG 4/1, 5G 4/1) and gray (N6–N8) siliceous nanno oozes and nanno oozes with light purple (5P 4/2) bands and streaks. Many indistinct burrows particularly in the darker horizons.

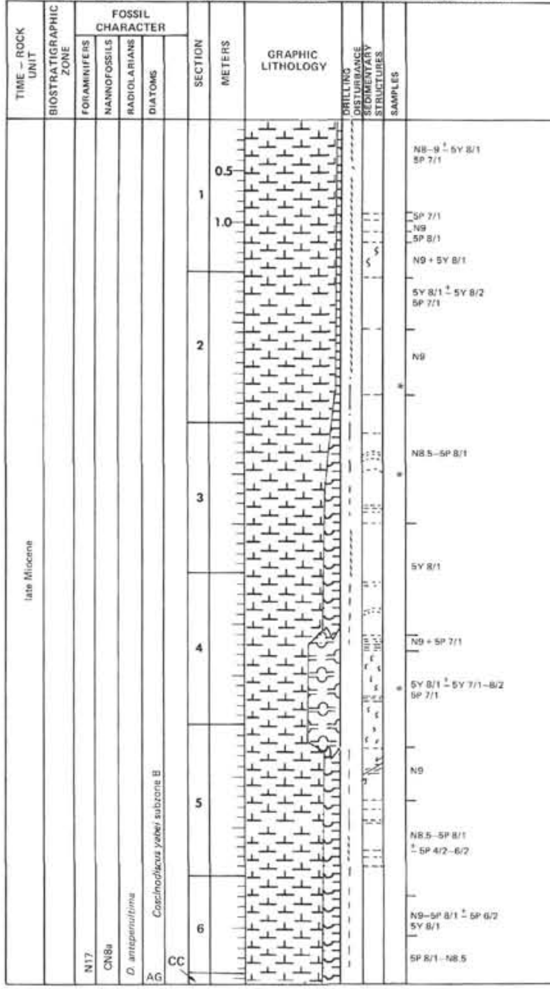
SMEAR SLIDE SUMMARY (%):

	1, 50	4, 45
Texture:		
Sand	5	5
Silt	10	15
Clay	85	80
Composition:		
Pyrite	Tr	–
Carbonate unspec.	14	–
Foraminifers	2	–
Calc. nannofossils	75	95
Diatoms	4	5
Radiolarians	5	Tr
Silicoflagellates	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 72%
2, 75 cm = 44%
3, 75 cm = 57%
4, 75 cm = 69%
5, 75 cm = 70%
6, 75 cm = 53%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 1 CORED INTERVAL 138.5–148.0 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (N8.5–9, 5P 8/1) nanno oozes and diatom nanno oozes with indistinct pale purple-white (5P 7/1–8/1) banding and occasional white-light gray (5Y 8/1) burrow mottling. Minor beds of white (5Y 8/1) rad diatom nanno oozes with abundant light gray (5Y 7/1–8/2) *Planolites* and other burrow mottling.

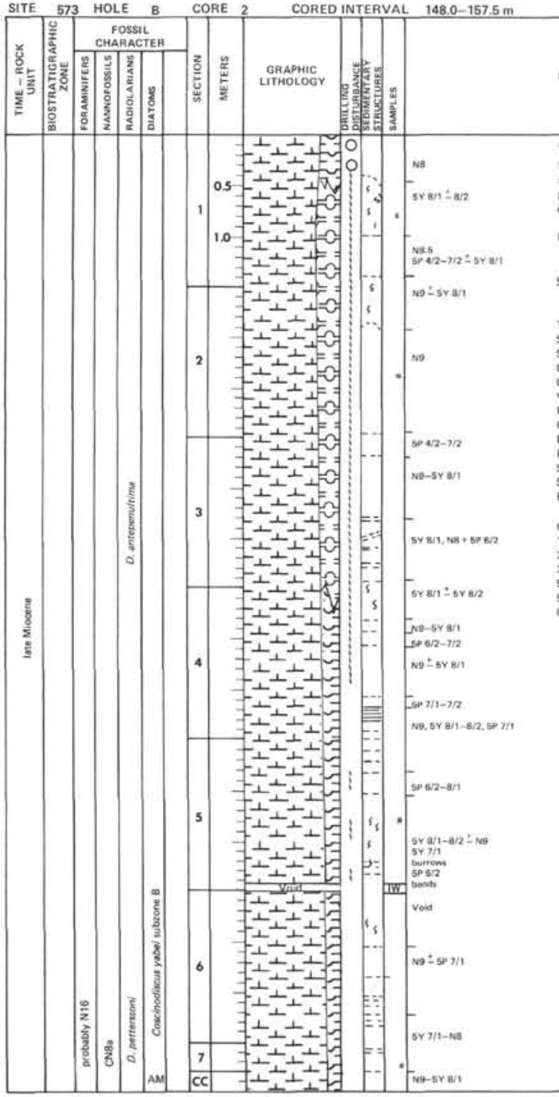
H_2S odor on opening.

SMEAR SLIDE SUMMARY (%):

	2, 112	3, 50	4, 112
Texture:			
Sand	5	13	10
Silt	15	15	25
Clay	80	70	65
Composition:			
Pyrite	–	–	Tr
Foraminifers	–	2	1
Calc. nannofossils	95	80	63
Diatoms	5	10	25
Radiolarians	Tr	8	10
Sponge spicules	–	Tr	Tr
Silicoflagellates	Tr	Tr	1

CARBONATE BOMB:
1, 75 cm = 79%
2, 75 cm = 84%
3, 75 cm = 87%
4, 75 cm = 76%
5, 75 cm = 89%
6, 58 cm = 79%

SITE 573 HOLE B CORE 2 CORED INTERVAL 148.0–157.5 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA):

White (N9–5Y 8/1) rad diatom nanno oozes and diatom nanno oozes with pale purple banding (5P 4/2–7/1) and pale yellow (5Y 8/1–8/2) burrow mottling including *Planolites*.

H_2S odor on opening.

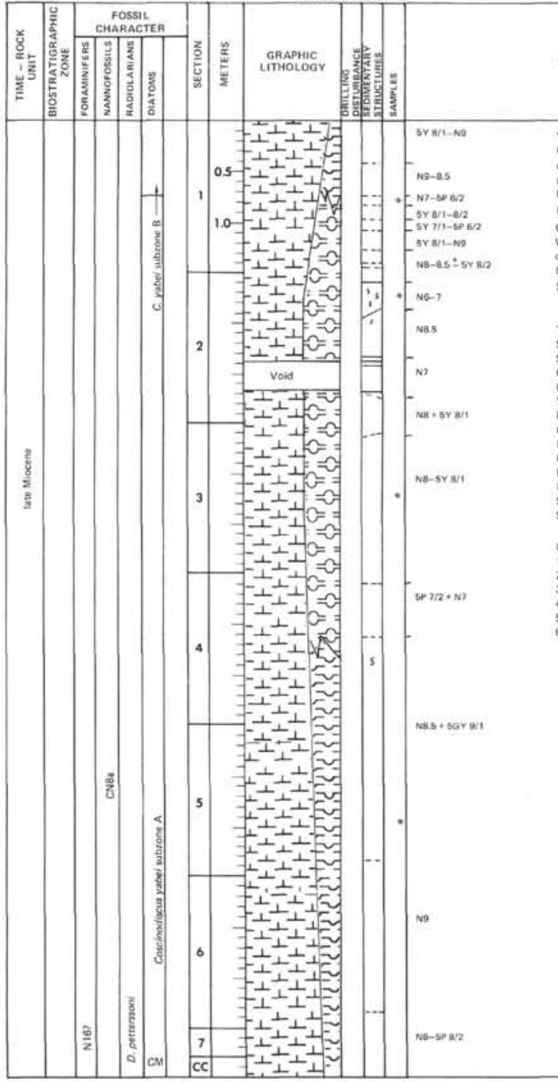
SMEAR SLIDE SUMMARY (%):

	1, 80	2, 90	5, 80	7, 32
	D	D	D	M
Texture:				
Sand	15	15	10	5
Silt	40	25	35	40
Clay	45	60	55	55
Composition:				
Volcanic glass	Tr	–	Tr	Tr
Foraminifers	Tr	Tr	Tr	Tr
Calc. nannofossils	75	80	85	70
Diatoms	15	10	10	25
Radiolarians	10	10	5	5
Sponge spicules	Tr	Tr	Tr	Tr
Silicoflagellates	Tr	Tr	Tr	Tr
Fe-oxides	–	–	–	Tr

CARBONATE BOMB:

1, 75 cm = 74%
2, 80 cm = 86%
3, 60 cm = 81%
5, 75 cm = 79%
5, 123 cm = 79%
6, 75 cm = 82%

SITE 573 HOLE B CORE 3 CORED INTERVAL 157.5–167.0 m



LITHOLOGIC DESCRIPTION

VARICOLORED OOZE (SUBUNIT IIA) (157.5–160.2 m):
White (N8–9) to light gray (N6–7) rad diatom nanno oozes with weakly developed pale purple (5P 6/2) banding at some levels and indistinct bioturbation throughout. H_2S odor on opening. This banded unit with decimeter-scale bedding passes down into:

GRAY OOZE (SUBUNIT IIB) (160.2–167.0 m):
White (N8–9, 5Y 8/1, 5P 8/2, 5GY 9/1) diatom nanno oozes and rad diatom nanno oozes with massive meter-scale beds and little sedimentary structure.

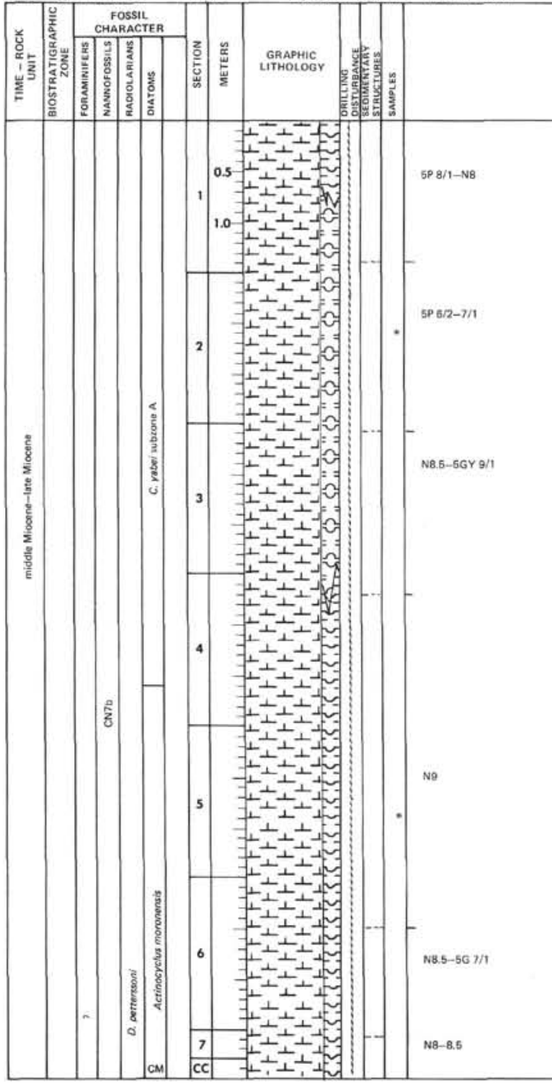
SMEAR SLIDE SUMMARY (%):

	1, 80	2, 27	3, 75	5, 95
Texture:				
Sand	10	25	5	5
Silt	30	30	40	40
Clay	60	45	55	55
Composition:				
Volcanic glass	Tr	–	–	Tr
Pyrite	1	Tr	–	–
Carbonate unspec.	5	–	–	–
Foraminifers	Tr	Tr	Tr	–
Calc. nannofossils	65	60	65	75
Diatoms	20	20	25	20
Radiolarians	10	20	10	5
Sponge spicules	Tr	Tr	Tr	Tr
Silicoflagellates	Tr	–	Tr	Tr

CARBONATE BOMB:

1, 75 cm = 78%
2, 55 cm = 71%
3, 75 cm = 76%
4, 75 cm = 65%
5, 75 cm = 73%
6, 75 cm = 75%

SITE 573 HOLE B CORE 4 CORED INTERVAL 167.0–176.5 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

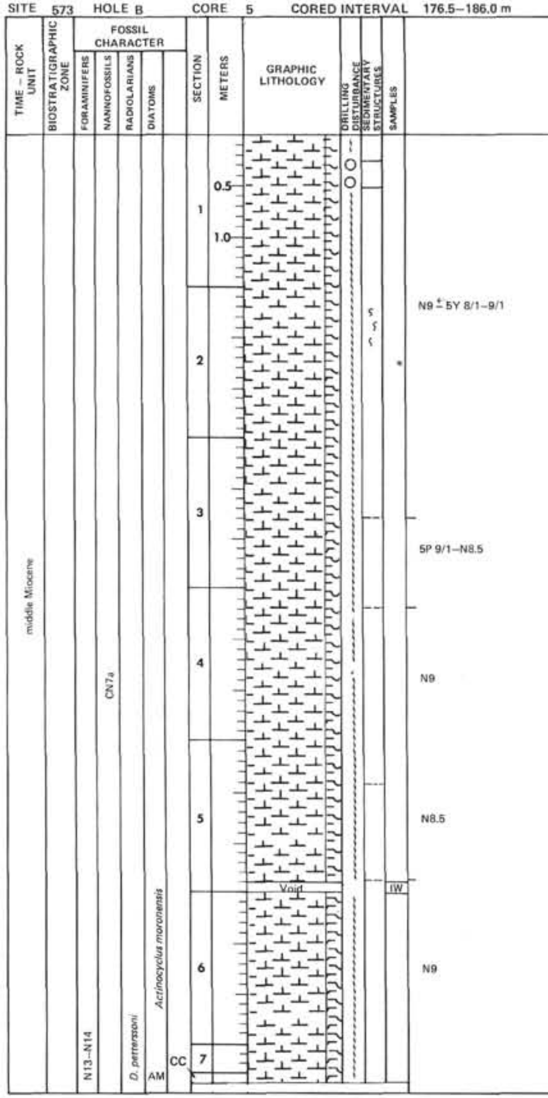
Thick (1–2 m) beds of monotonous pale purple (5P 8/11, purple (5P 6/2), very light green gray (5GY 9/1), white (N9) and light gray (N8–8.5) rad diatom nanno oozes to diatom nanno oozes. Color boundaries are transitional over 10–20 cm. No sedimentary structure or banding preserved.

SMEAR SLIDE SUMMARY (%):

	2, 60	5, 90
Texture:		
Sand	10	5
Silt	30	50
Clay	60	45
Composition:		
Calc. nannofossils	75	85
Diatoms	15	10
Radiolarians	10	5
Sponge spicules	–	Tr
Silicoflagellates	Tr	Tr

CARBONATE BOMB:
1, 75 cm - 75%
2, 75 cm = 82%
3, 75 cm = 74%
4, 75 cm = 70%
5, 75 cm = 78%
6, 75 cm = 68%

SITE 573 HOLE B CORE 5 CORED INTERVAL 176.5–186.0 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

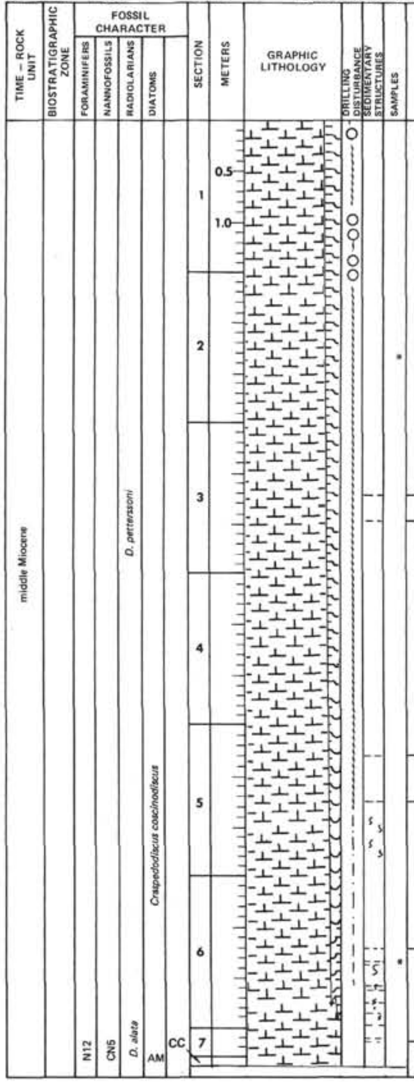
White and very pale shades of gray and purple (N8.5–9, 5Y 8/1–9/1, 5P 9/1) diatom nanno oozes. Massively bedded oozes with transitional boundarys over 10–20 cm and no sedimentary structure. Scattered distorted burrows in Section 2, 50–70 cm.

SMEAR SLIDE SUMMARY (%):

	2, 75
Texture:	
Sand	10
Silt	45
Clay	45
Composition:	
Pyrite	Tr
Foraminifers	Tr
Calc. nannofossils	82
Diatoms	15
Radiolarians	3
Silicoflagellates	Tr

CARBONATE BOMB:
2, 75 cm = 85%
3, 75 cm = 89%
4, 75 cm = 89%
5, 75 cm = 91%
6, 75 cm = 92%

SITE 573 HOLE B CORE 6 CORED INTERVAL 186.0–195.5 m



N9

5P 8/1 ± 6/2

N9

5P 7/1–8/1

N9 ± 5Y 8/1

N9 ± 5P 8/1

N8.5 ± 5P 8/1

LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

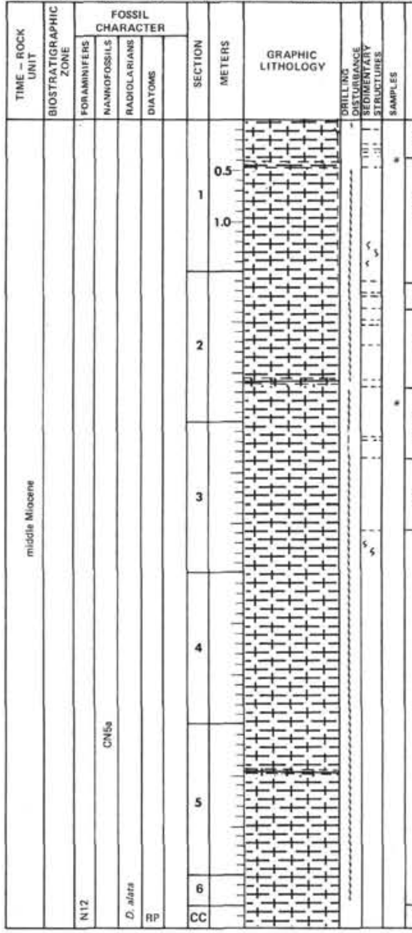
White (N9) and very pale purple diatom nanno oozes with rare white (5Y 8/1) burrows and very pale purple (5P 8/1) banding at the base.

SMEAR SLIDE SUMMARY (%):

	2, 82	6, 88
Texture:		
Sand	10	5
Silt	40	45
Clay	50	50
Composition:		
Foraminifers	Tr	Tr
Calc. nannofossils	83	88
Diatoms	15	10
Radiolarians	2	2
Sponge spicules	–	Tr
Silicoflagellates	Tr	Tr

CARBONATE BOMB:
2, 75 cm = 89%
3, 75 cm = 87%
4, 75 cm = 84%
5, 75 cm = 86%
6, 75 cm = 88%

SITE 573 HOLE B CORE 7 CORED INTERVAL 195.5–205.0 m



N9–5P 8/1

N9 ± 5P 7/1
burrows

N8–5P 8/1

N9 + 5P 8/1

N8.5 + 5P 8/1
± 5P 4/2

N9 ± 5P 7/1

N9 ± 5P 4/2–8/1

N9 ± 5P 8/2

LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

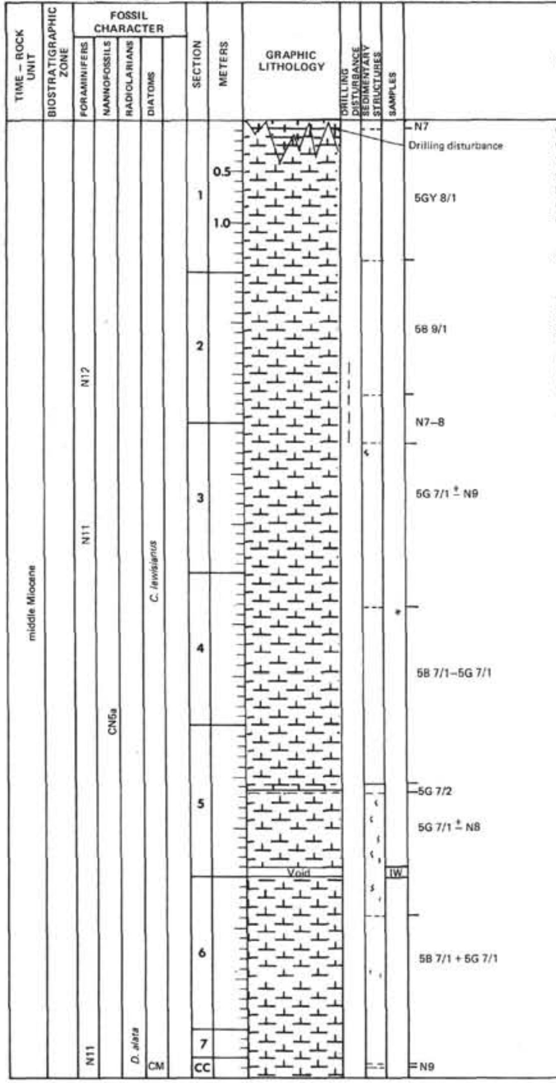
White (N9) foram nanno oozes with thin bands of foram nanno chalk. First thin chalk occurs at 195.9 m sub-bottom depth. Most beds contain streaks, bands and burrow fills of pale purple (5P 4/2–8/1) ooze.

SMEAR SLIDE SUMMARY (%):

	1, 40	2, 130
	M	D
Texture:		
Sand	5	5
Silt	60	45
Clay	35	50
Composition:		
Pyrite	Tr	–
Foraminifers	10	15
Calc. nannofossils	87	84
Diatoms	1	Tr
Radiolarians	2	1

CARBONATE BOMB:
1, 20 cm = 90%
2, 40 cm = 93%
3, 75 cm = 92%
4, 75 cm = 93%
5, 75 cm = 94%

SITE 573 HOLE B CORE 8 CORED INTERVAL 205.0–214.5 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

White (N9, 5B 9/1) and very pale green gray (5G 7/1–5B 7/1) nanno oozes with occasional stiff bands transitional to nanno chalks. Burrow mottling restricted to a few horizons (e.g. 5, 70 to 6, 30). Boundaries between color divisions are broadly transitional over 10–20 cm with no apparent depositional breaks.

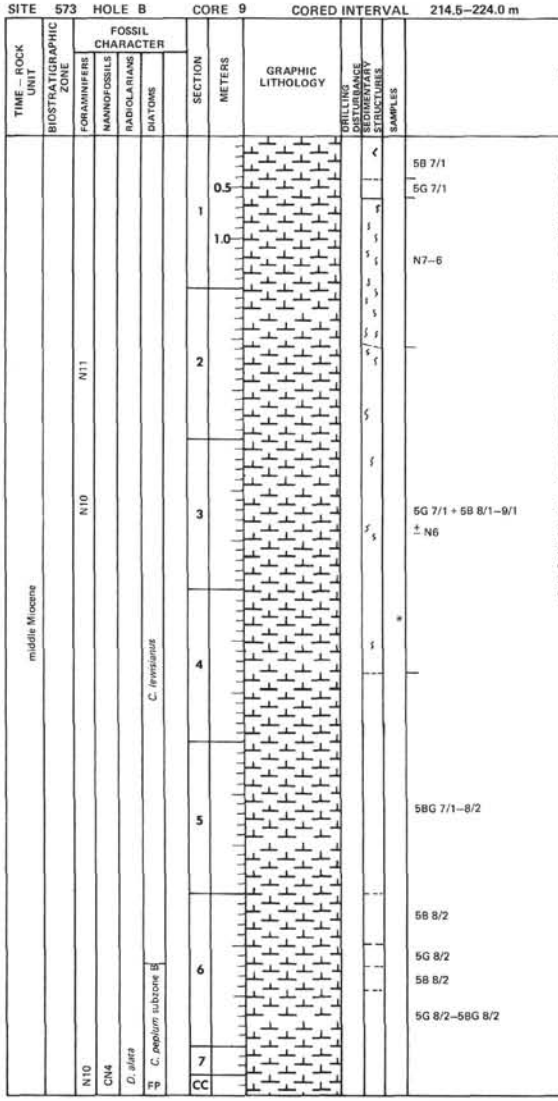
SMEAR SLIDE SUMMARY (%):

	4, 40
Texture:	
Sand	5
Silt	5
Clay	90
Composition:	
Pyrite	Tr
Carbonate unspec.	30
Foraminifers	3
Calc. nannofossils	60
Diatoms	1
Radiolarians	6

CARBONATE BOMB:

1, 75 cm = 82%
2, 75 cm = 88%
3, 75 cm = 81%
4, 75 cm = 84%
5, 75 cm = 84%
6, 75 cm = 86%

SITE 573 HOLE B CORE 9 CORED INTERVAL 214.5–224.0 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

Very light gray (N7, 5G 7/1) nanno oozes passing down into very light bluish green and greenish blue nanno oozes. Occasional stiff bands occur throughout the section. Junctions between beds again transitional over decimeters. Burrow mottling (*?Planolites*) most prominent in upper half of core.

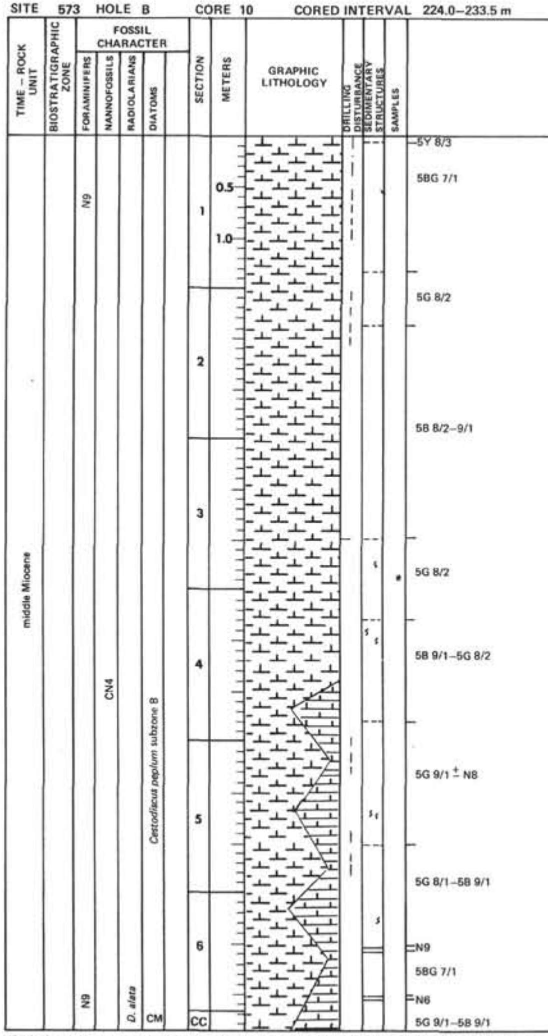
SMEAR SLIDE SUMMARY (%):

	4, 30
Texture:	
Sand	10
Silt	5
Clay	85
Composition:	
Pyrite	Tr
Carbonate unspec.	5
Foraminifers	2
Calc. nannofossils	85
Diatoms	Tr
Radiolarians	8
Silicoflagellates	Tr

CARBONATE BOMB:

1, 75 cm = 85%
2, 75 cm = 79%
3, 75 cm = 88%
4, 75 cm = 84%
5, 75 cm = 88%
6, 75 cm = 87%

SITE 573 HOLE B CORE 10 CORED INTERVAL 224.0–233.5 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

Very light gray (5BG 7/1–5B 8/2) to white (5G 9/1–5B 9/1) nanno oozes with occasional stiff bands. Broadly transitional junctions, monotonous colors and little burrow mottling.

Very pale yellow (5Y 8/3) band at top of core is probably a product of drilling disturbance.

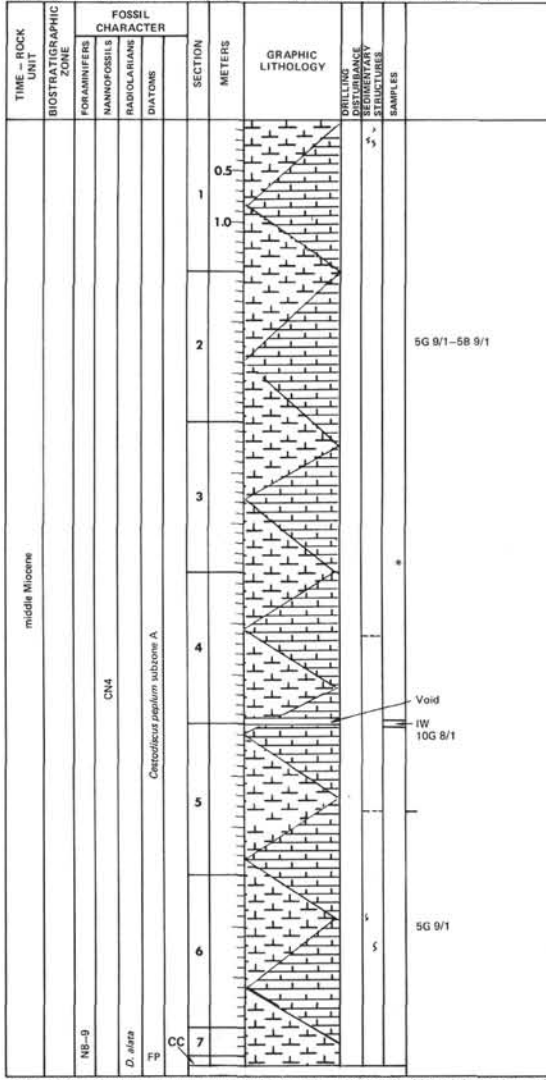
SMEAR SLIDE SUMMARY (%):

	3, 140
Texture:	
Sand	8
Silt	2
Clay	90
Composition:	
Pyrite	Tr
Carbonate unspec.	10
Foraminifers	1
Calc. nannofossils	80
Diatoms	1
Radiolarians	8
Sponge spicules	Tr

CARBONATE BOMB:
1, 75 cm = 81%
2, 85 cm = 88%
3, 75 cm = 86%
4, 75 cm = 94%
5, 75 cm = 90%
6, 75 cm = 77%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 11 CORED INTERVAL 233.5–243.0 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

White (5G 9/1–5B 9/1) to very pale green (10G 8/1) nanno oozes with 3–5 cm thick bands of stiff sediment (transitional to nanno chalk) every ~ 20 cm. Burrows rare.

Fragment of pumice recovered from Core Catcher.

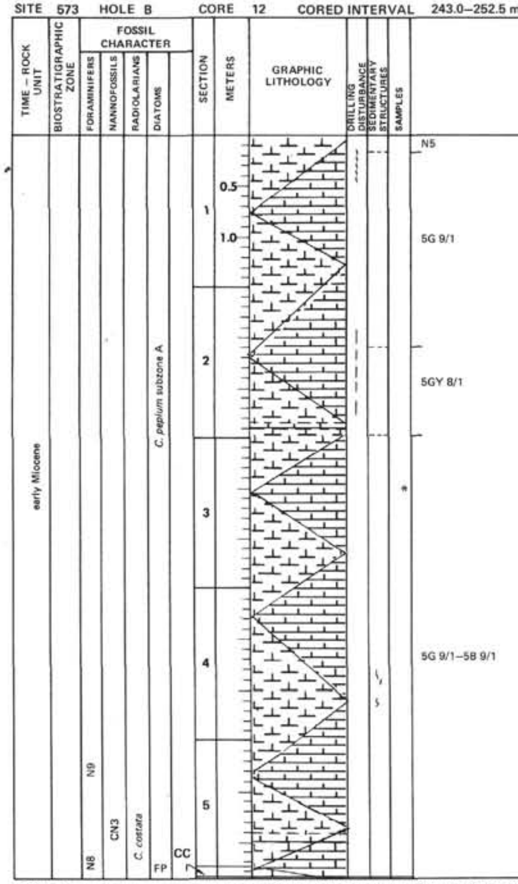
SMEAR SLIDE SUMMARY (%):

	3, 140
Texture:	
Sand	7
Silt	3
Clay	90
Composition:	
Pyrite	Tr
Carbonate unspec.	20
Foraminifers	4
Calc. nannofossils	70
Diatoms	1
Radiolarians	5
Sponge spicules	Tr

CARBONATE BOMB:
1, 75 cm = 91%
2, 75 cm = 91%
3, 75 cm = 97%
4, 75 cm = 88%
5, 75 cm = 78%
6, 75 cm = 88%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 12 CORED INTERVAL 243.0–252.5 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):
White (5G 9/1–5B 9/1) nanno oozes with 3–5 cm thick bands of very stiff sediment (transitional to nanno chalk) every ~20 cm. Burrows rare.

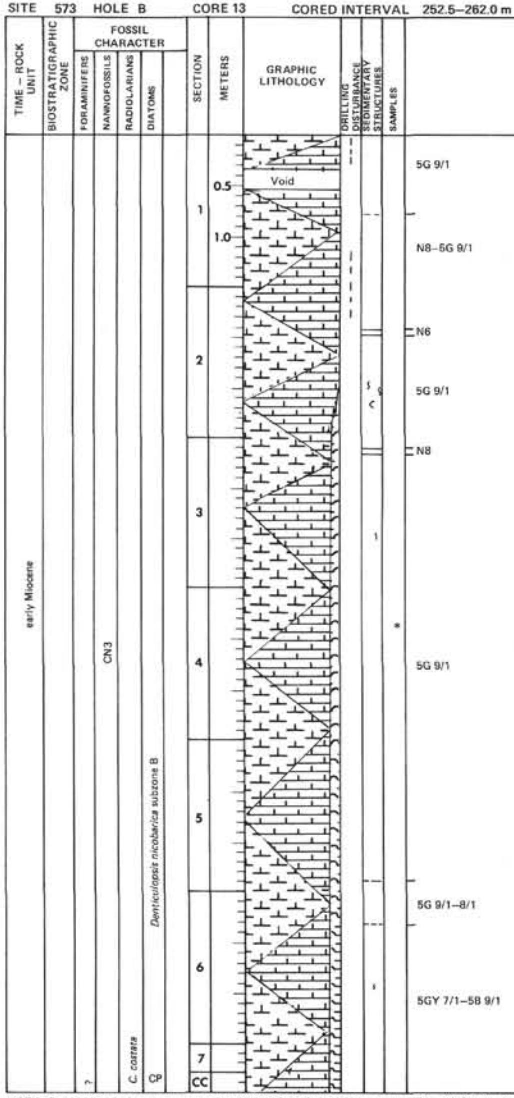
SMEAR SLIDE SUMMARY (%):

	3, 50
Texture:	
Sand	7
Silt	3
Clay	90
Composition:	
Pyrite	Tr
Carbonate unspec.	70
Foraminifers	5
Calc. nannofossils	20
Diatoms	Tr
Radiolarians	5
Sponge spicules	Tr

CARBONATE BOMB:
1, 75 cm = 89%
2, 75 cm = 73%
3, 75 cm = 88%
4, 70 cm = 79%
5, 50 cm = 87%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 13 CORED INTERVAL 252.5–262.0 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB):

White (5G 9/1) rad nanno oozes to nanno oozes with 3–5 cm thick very stiff units (transitional to chalks) every ~20 cm. Burrows rare.

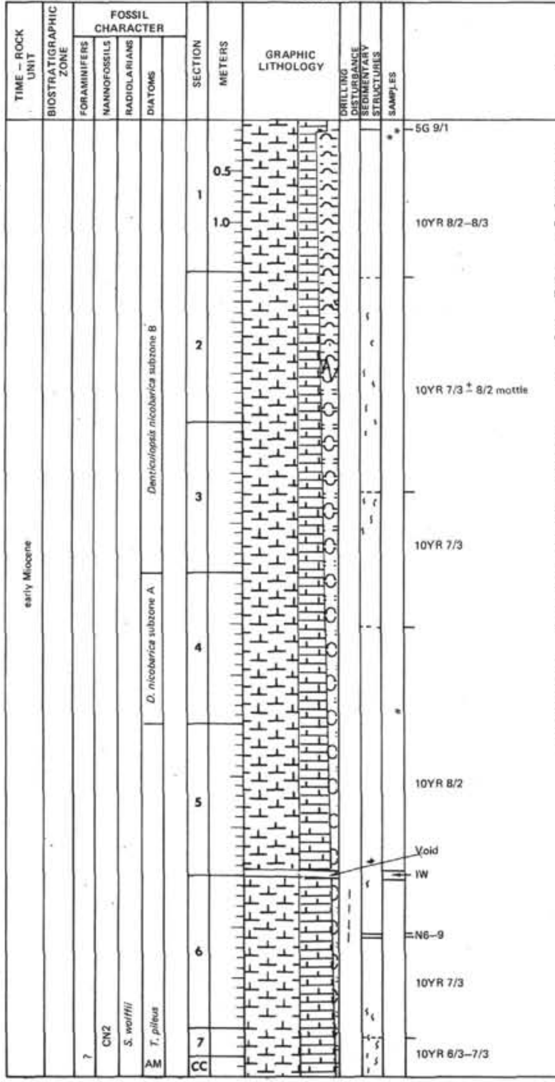
SMEAR SLIDE SUMMARY (%):

	4, 35
Texture:	
Sand	10
Silt	70
Clay	20
Composition:	
Pyrite	Tr
Carbonate unspec.	17
Foraminifers	Tr
Calc. nannofossils	70
Diatoms	Tr
Radiolarians	12
Sponge spicules	1

CARBONATE BOMB:
1, 75 cm = 83%
2, 75 cm = 86%
3, 75 cm = 85%
4, 75 cm = 72%
5, 75 cm = 84%
6, 75 cm = 66%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 14 CORED INTERVAL 262.0–271.5 m



LITHOLOGIC DESCRIPTION

GRAY OOZE (SUBUNIT IIB) (262.0–262.1 m):
White (5G 9/1) rad nanno ooze resting with a sharp contact on:
BROWN OOZE (SUBUNIT IIC) (262.1–271.5 m):
White (10YR 8/2) to very light brown (10YR 7/3) rad nanno oozes/chalks to siliceous nanno oozes/chalks. Chalk intervals are ~5 cm thick and spaced at ~20 cm intervals.

A 4 mm fragment of 'pumice' was recovered from Section 5, 138 cm and a further altered fragment at Section 7, 50 cm.

Sediments display weak mottling throughout but few distinct burrows.

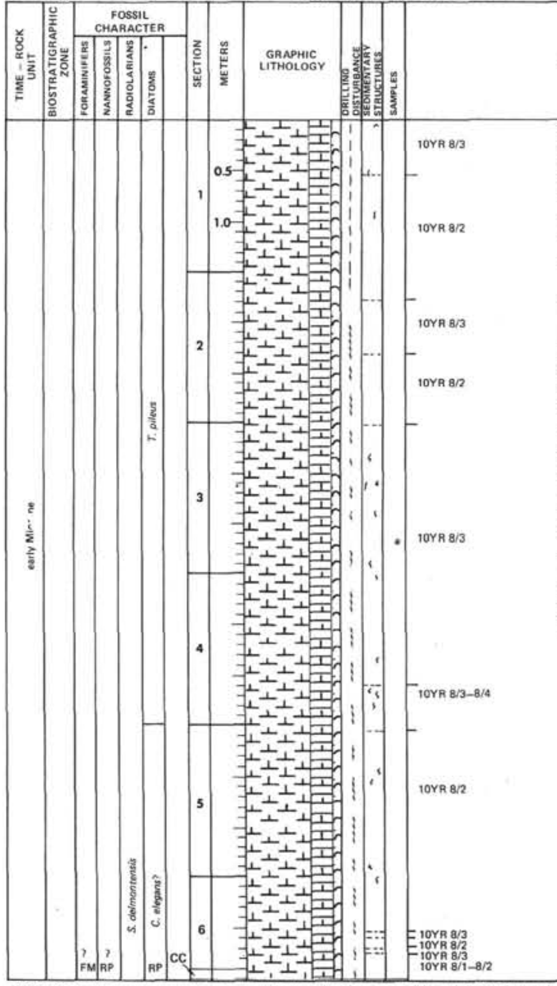
SMEAR SLIDE SUMMARY (%):

	1, 11	1, 17	4, 135
Texture:			
Sand	20	20	10
Silt	20	30	20
Clay	60	50	70
Composition:			
Clay	–	Tr	–
Volcanic glass	Tr	Tr	Tr
Pyrite	–	–	Tr
Carbonate unspec.	12	4	9
Foraminifers	Tr	1	Tr
Calc. nannofossils	70	70	80
Diatoms	2	7	1
Radiolarians	15	17	9
Sponge spicules	1	1	1
Silicoflagellates	Tr	Tr	Tr

CARBONATE BOMB:
1, 75 cm = 83%
2, 75 cm = 81%
3, 75 cm = 80%
4, 75 cm = 84%
5, 75 cm = 82%
6, 75 cm = 83%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 15 CORED INTERVAL 271.5–281.0 m



LITHOLOGIC DESCRIPTION

BROWN OOZE (SUBUNIT IIC):
White (10YR 8/2) to very pale brown (10YR 8/3) rad nanno oozes and rad nanno chalks. Chalk intervals ~5 cm thick, spaced at ~20 cm intervals. Drilling disturbance extreme in some soft units; chalks undeformed.

Fragments (mm) of pumice recovered from 1, 3; 2, 30; 3, 60; and 5, 143.

Burrow mottling in soft units.

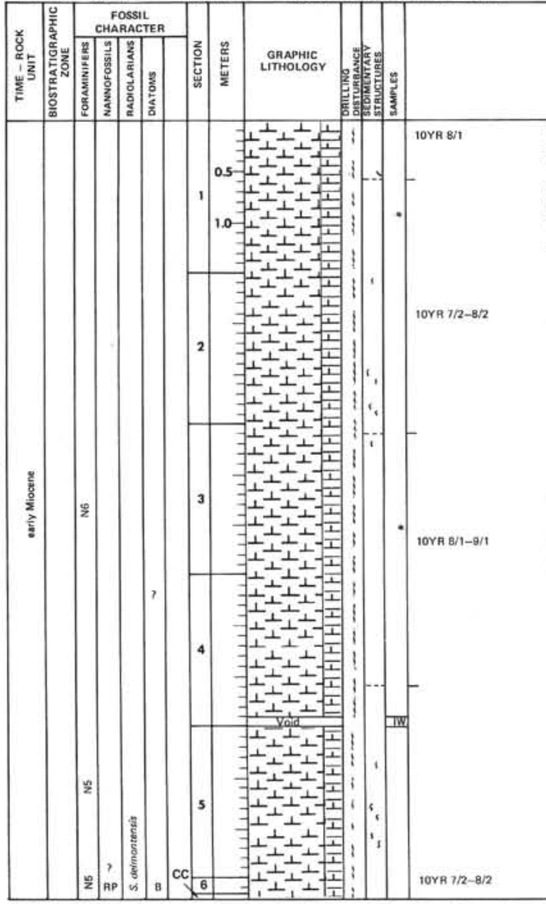
SMEAR SLIDE SUMMARY (%):

	3, 120
Texture:	
Sand	20
Silt	20
Clay	60
Composition:	
Clay	1
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	6
Foraminifers	Tr
Calc. nannofossils	80
Diatoms	Tr
Radiolarians	12
Sponge spicules	1

CARBONATE BOMB:
1, 75 cm = 90%
2, 75 cm = 89%
3, 75 cm = 91%
4, 75 cm = 93%
5, 75 cm = 91%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 16 CORED INTERVAL 281.0–290.5 m



LITHOLOGIC DESCRIPTION

BROWN OOZE (SUBUNIT IIC):
White (10YR 8/1–9/1) to very pale brown (10YR 7/2–8/2) nanno oozes and nanno chalks.

Chalk intervals ~ 5 cm thick, spaced at ~20 cm intervals. Oozes are very deformed but chalks are uneffected by drilling.

Burrow mottling occurs at some levels.

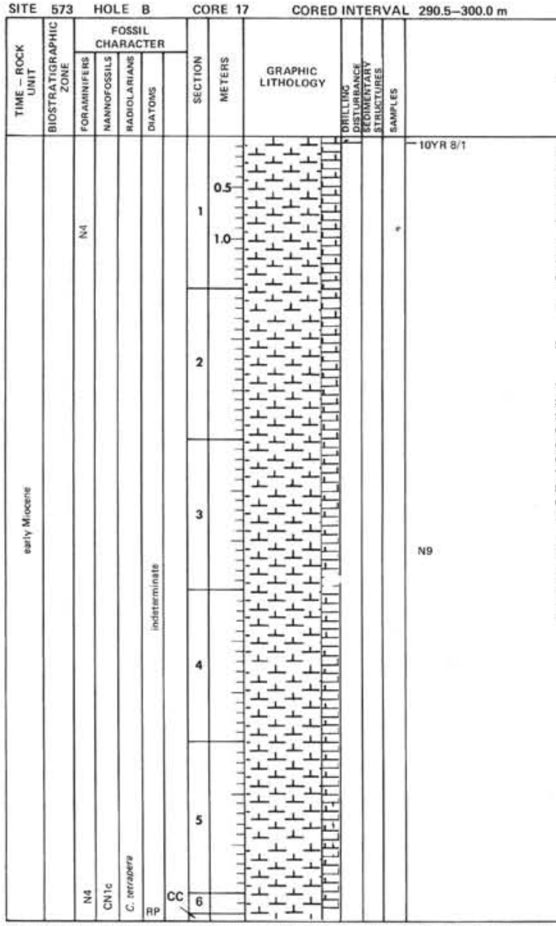
SMEAR SLIDE SUMMARY (%):

	1, 47	3, 103
Texture:		
Sand	2	3
Silt	48	40
Clay	50	57
Composition:		
Clay	1	–
Volcanic glass	Tr	–
Pyrite	Tr	Tr
Foraminifers	Tr	2
Calc. nannofossils	98	98
Radiolarians	1	Tr

CARBONATE BOMB:
1, 75 cm = 78%
2, 75 cm = 91%
3, 75 cm = 85%
4, 75 cm = 92%
5, 75 cm = 85%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 17 CORED INTERVAL 290.5–300.0 m



LITHOLOGIC DESCRIPTION

BROWN OOZE (SUBUNIT IIC) (290.5–290.6 m):
White (10YR 8/1) nanno ooze resting with a sharp contact on:
WHITE/GRAY CHALK (SUBUNIT IID) (290.6–300.0 m):
A monotonous succession of pure white (N9) nanno oozes and chalks.

Chalk intervals are ~5 cm thick and ~20 cm apart. Uniform color precludes recognition of burrows or drilling disturbance.

A 1 cm fragment of 'pumice' occurs at Section 1, 3 cm.

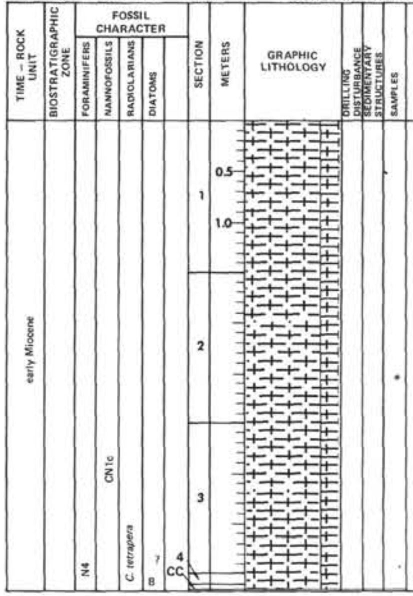
SMEAR SLIDE SUMMARY (%):

	1, 91
Texture:	
Sand	1
Silt	30
Clay	69
Composition:	
Clay	Tr
Volcanic glass	Tr
Pyrite	Tr
Calc. nannofossils	99
Radiolarians	Tr

CARBONATE BOMB:
1, 75 cm = 95%
2, 75 cm = 94%
3, 75 cm = 93%
4, 75 cm = 90%
5, 75 cm = 92%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 18 CORED INTERVAL 300.0–309.5 m



LITHOLOGIC DESCRIPTION

N9

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) foram nanno oozes with ~5 cm chalk intervals ~20 cm apart.

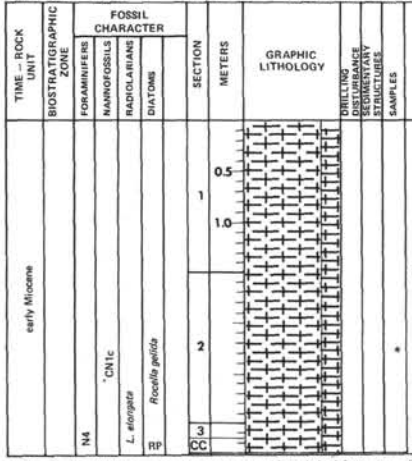
No visible bioturbation. Drilling disturbance restricted to oozes but impossible to estimate due to lack of color contrast.

SMEAR SLIDE SUMMARY (%):

	2, 105
Texture:	
Sand	15
Silt	40
Clay	45
Composition:	
Carbonate unspec.	10
Foraminifers	15
Calc. nannofossils	75
Sponge spicules	Tr

CARBONATE BOMB:
1, 75 cm = 97%
2, 75 cm = 90%
3, 75 cm = 92%

SITE 573 HOLE B CORE 19 CORED INTERVAL 309.5–319.0 m



LITHOLOGIC DESCRIPTION

N9

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) foram nanno oozes with ~5 cm thick chalk bands every ~20 cm. Burrows and drilling disturbance not discernable.

Lithification of oozes becoming more pronounced and less easily differentiated from chalk bands.

SMEAR SLIDE SUMMARY (%):

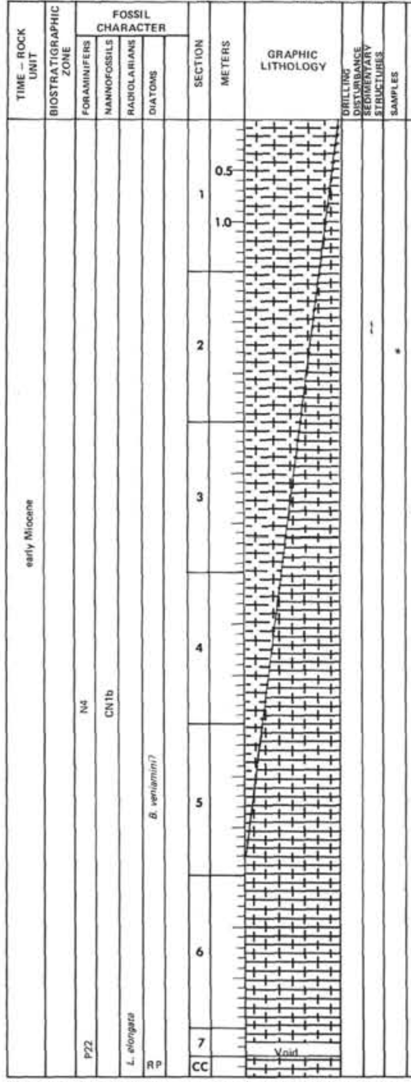
	2, 80
Texture:	
Sand	10
Silt	45
Clay	45
Composition:	
Carbonate unspec.	30
Foraminifers	15
Calc. nannofossils	55
Sponge spicules	Tr

Hole 573B, Core 19, CARBONATE BOMB: 1, 75 cm = 93% and 2, 75 cm = 90%

N9

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 20 CORED INTERVAL 319.0–328.5 m



LITHOLOGIC DESCRIPTION

N9

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) foram nanno chalk.

Induration remains variable with harder units every ~20 cm in most sections.

Occasional burrows visible on wet surfaces.

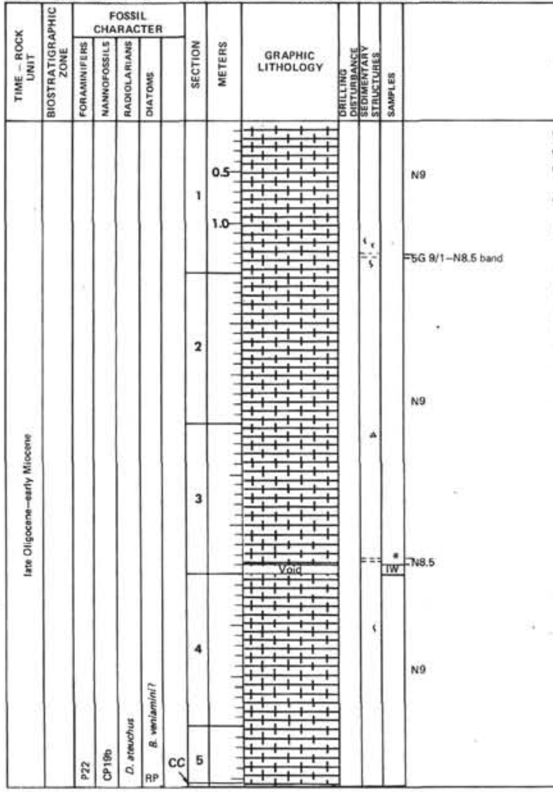
SMEAR SLIDE SUMMARY (%):

	2, 81
Texture:	
Sand	10
Silt	50
Clay	40
Composition:	
Carbonate unspec.	10
Foraminifers	10
Calc. nannofossils	80
Sponge spicules	Tr

CARBONATE BOMB:
1, 75 cm = 87%
2, 75 cm = 90%
3, 65 cm = 93%
4, 75 cm = 91%
5, 75 cm = 91%
6, 75 cm = 93%

NOTE: Graphic lithologies represent average compositions derived from smear slides and do not always reflect the detailed alternation of sediment types. Major lithologic boundaries are shown but gradational contacts, small-scale cyclicity and ooze-chalk alternations are represented schematically. Color changes approximate to lithologic changes.

SITE 573 HOLE B CORE 21 CORED INTERVAL 328.5–338.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) foram nanno chalk with occasional burrow mottles, including small (~5 cm) *Planolites*.

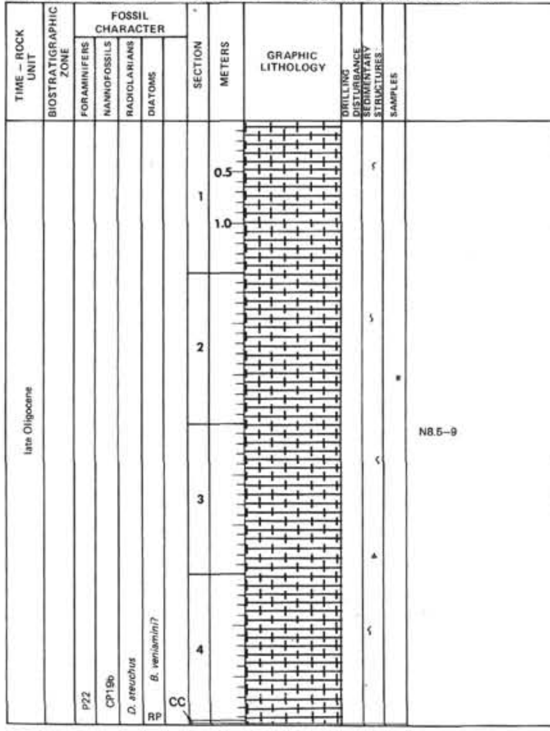
A 1 cm fragment of pumice at 3, 16.

SMEAR SLIDE SUMMARY (%):

	3, 135
Texture:	
Sand	10
Silt	30
Clay	60
Composition:	
Carbonate unspec.	2
Foraminifers	10
Calc. nannofossils	88
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
1, 100 cm = 91%
2, 85 cm = 91%
3, 88 cm = 93%
4, 75 cm = 92%

SITE 573 HOLE B CORE 22 CORED INTERVAL 338.0–347.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

White (N8.5–9) foram nanno chalk.

A 2 mm fragment of pumice occurs at 3, 137 and smaller (<1 mm) fragments occur scattered throughout the core.

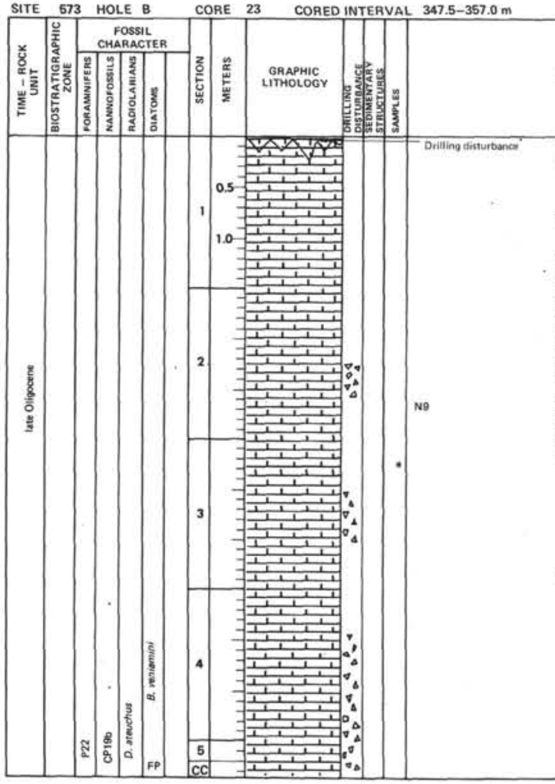
Occasional *Planolites* are visible on unfractured surfaces.

SMEAR SLIDE SUMMARY (%):

	2, 100
Texture:	
Sand	10
Silt	30
Clay	60
Composition:	
Carbonate unspec.	1
Foraminifers	10
Calc. nannofossils	89
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
1, 70 cm = 91%
2, 95 cm = 92%
3, 85 cm = 91%
4, 65 cm = 92%

SITE 573 HOLE B CORE 23 CORED INTERVAL 347.5–357.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

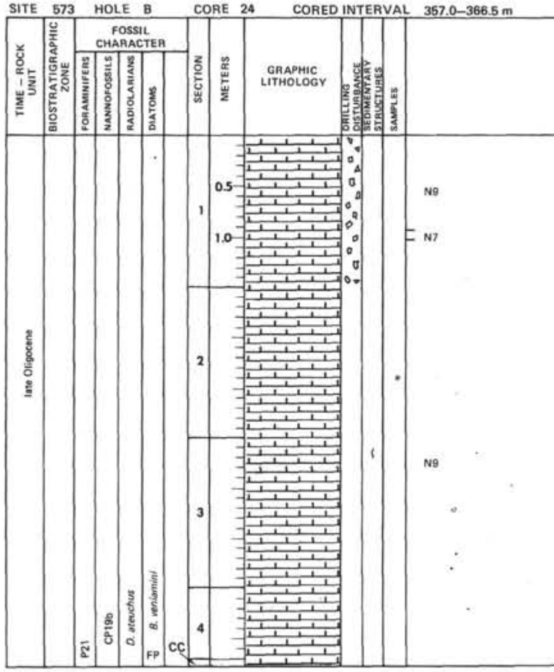
White (N9) nanno chalk. Occasional fragments of pumice.

SMEAR SLIDE SUMMARY (%):

	3, 28
Texture:	
Sand	5
Silt	40
Clay	55
Composition:	
Foraminifers	5
Calc. nannofossils	95
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
1, 90 cm = 92%
2, 73 cm = 91%
3, 110 cm = 92%
4, 80 cm = 96%

SITE 573 HOLE B CORE 24 CORED INTERVAL 357.0–366.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

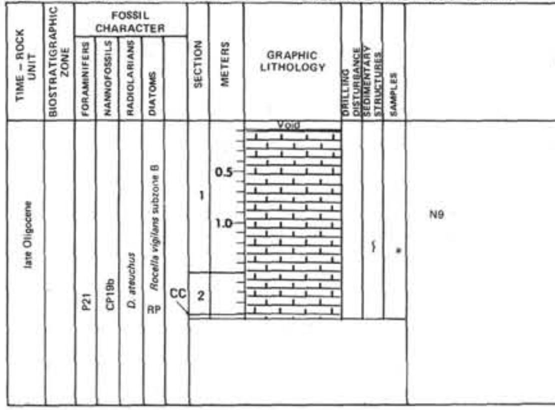
White (N9) nanno chalk with rare light gray (N7) bands and burrows.

SMEAR SLIDE SUMMARY (%):

	2, 90
Texture:	
Sand	5
Silt	25
Clay	70
Composition:	
Volcanic glass	Tr
Carbonate unspec.	6
Foraminifers	1
Calc. nannofossils	90
Radiolarians	3
Sponge spicules	Tr

CARBONATE BOMB:
1, 52 cm = 98%
2, 50 cm = 93%
3, 66 cm = 89%

SITE 573 HOLE B CORE 25 CORED INTERVAL 366.5–376.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

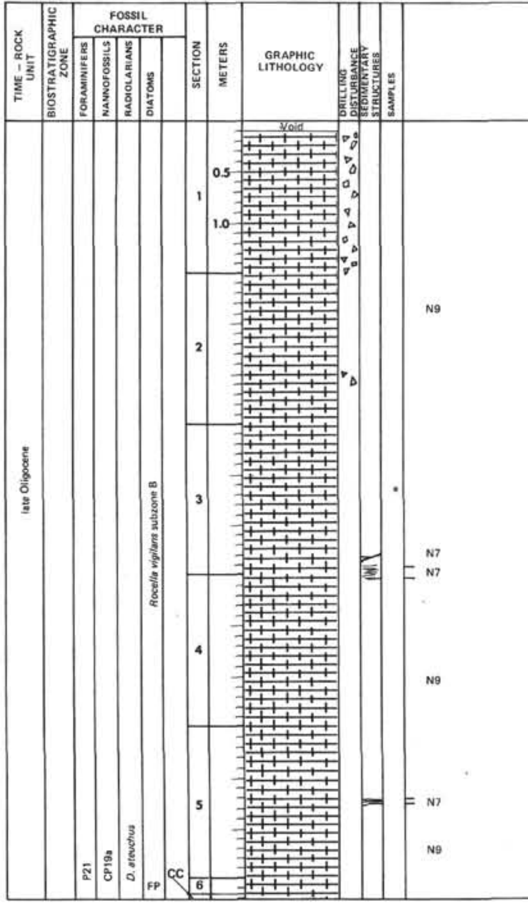
White (N9) nanno chalk with light gray (N7) dendritic streaks at 1, 125.

SMEAR SLIDE SUMMARY (%):

	1, 125
Texture:	
Sand	9
Silt	21
Clay	70
Composition:	
Volcanic glass	Tr
Carbonate unspec.	16
Foraminifers	9
Calc. nannofossils	75
Radiolarians	Tr
Sponge spicules	Tr

Hole 573B, Core 25, CARBONATE BOMB: 1, 71 cm = 92%

SITE 573 HOLE B CORE 26 CORED INTERVAL 376.0–385.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):
White (N9) foram nanno chalk with light gray (N7) bands.

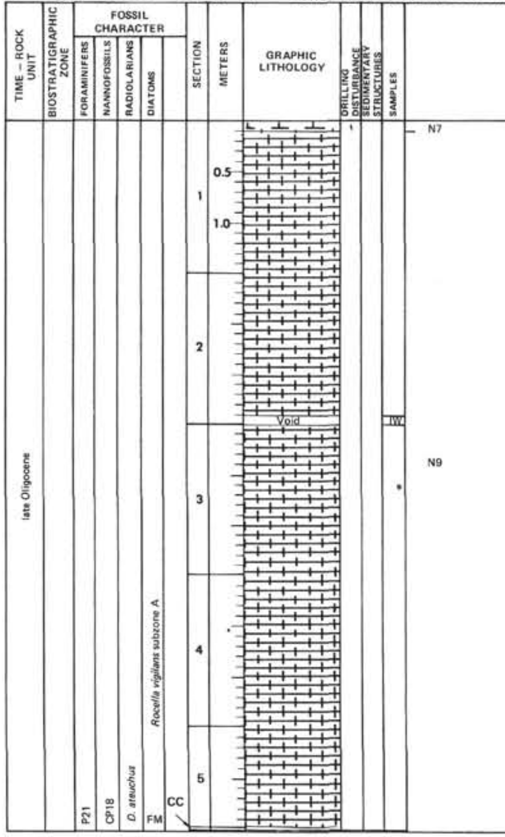
No recognizable burrows or other sedimentary structure.

SMEAR SLIDE SUMMARY (%):

	3, 68
Texture:	
Sand	20
Silt	5
Clay	75
Composition:	
Volcanic glass	Tr
Carbonate unspec.	5
Foraminifers	20
Calc. nannofossils	75
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
2, 89 cm = 92%
3, 74 cm = 97%
4, 69 cm = 96%
5, 32 cm = 92%

SITE 573 HOLE B CORE 27 CORED INTERVAL 385.5–395.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):
White (N9) foram nanno chalk.

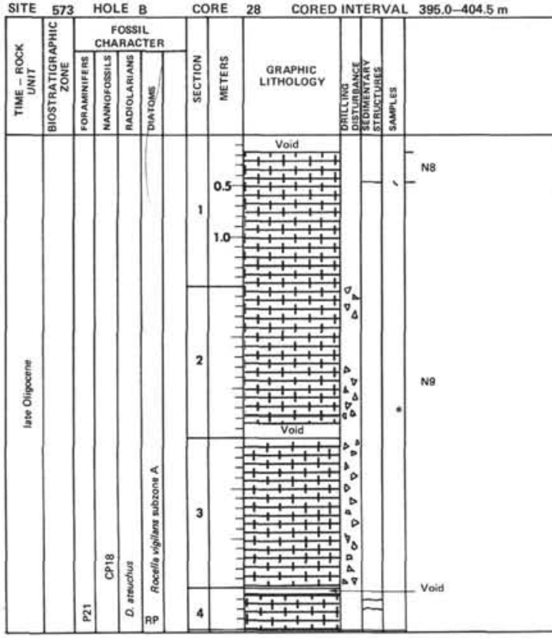
A 10 cm band of nanno ooze at the top of the core is Miocene and therefore clearly a product of wash-down.

SMEAR SLIDE SUMMARY (%):

	3, 62
Texture:	
Sand	10
Silt	5
Clay	85
Composition:	
Volcanic glass	Tr
Carbonate unspec.	8
Foraminifers	12
Calc. nannofossils	80
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
1, 58 cm = 91%
2, 60 cm = 98%
3, 43 cm = 92%
4, 62 cm = 95%

SITE 573 HOLE B CORE 28 CORED INTERVAL 395.0–404.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

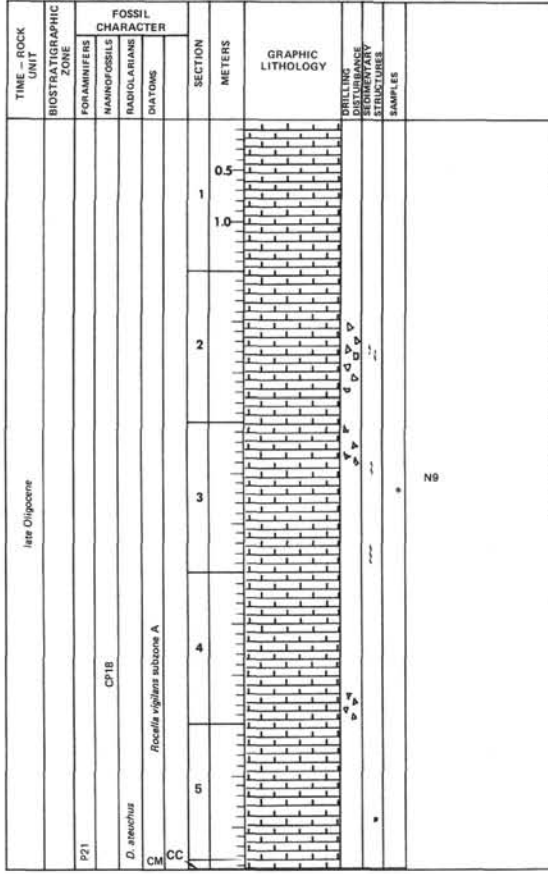
White (N9) foram nanno chalk with a 30 cm very light gray (N8) band at the summit and light gray wisps towards the base.

SMEAR SLIDE SUMMARY (%):

	2, 121
Texture:	
Sand	15
Silt	20
Clay	65
Composition:	
Carbonate unspec.	20
Foraminifers	15
Calc. nannofossils	65
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
1, 70 cm = 95%
2, 96 cm = 97%
3, 60 cm = 91%

SITE 573 HOLE B CORE 29 CORED INTERVAL 404.5–414.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

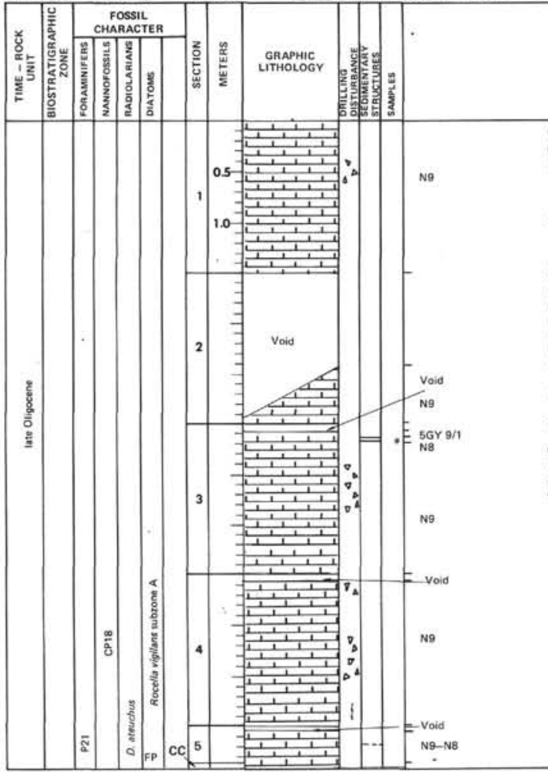
White (N9) nanno chalk with light gray (N7) burrows (?*Planolites*) at some levels and a 5 mm pebble of pumice at 5, 92.

SMEAR SLIDE SUMMARY (%):

	3, 69
Texture:	
Sand	9
Silt	11
Clay	80
Composition:	
Pyrite	Tr
Carbonate unspec.	21
Foraminifers	9
Calc. nannofossils	70
Radiolarians	Tr
Sponge spicules	Tr

CARBONATE BOMB:
1, 68 cm = 96%
2, 110 cm = 99%
3, 56 cm = 95%
4, 90 cm = 92%
5, 52 cm = 81%

SITE 573 HOLE B CORE 30 CORED INTERVAL 414.0–423.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

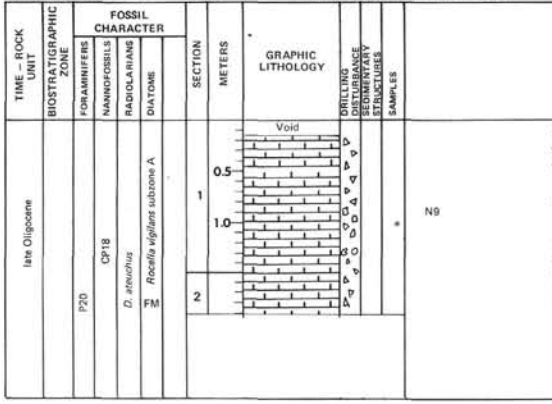
White (N9) nanno chalk with occasional light gray–white (5GY 9/1–N8) bands.

SMEAR SLIDE SUMMARY (%):
3, 18

Texture:	
Sand	5
Silt	10
Clay	85
Composition:	
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	13
Foraminifers	6
Calc. nannofossils	80
Radiolarians	1
Sponge spicules	Tr

CARBONATE BOMB:
1, 96 cm = 89%
3, 126 cm = 96%
4, 42 cm = 93%

SITE 573 HOLE B CORE 31 CORED INTERVAL 423.5–433.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

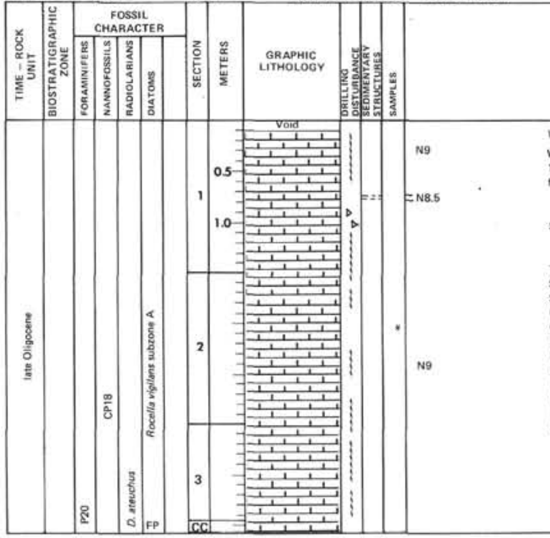
White (N9) nanno chalk with scattered darker (N8.5) streaks.

SMEAR SLIDE SUMMARY (%):
1, 100

Texture:	
Sand	3
Silt	7
Clay	90
Composition:	
Pyrite	Tr
Carbonate unspec.	16
Foraminifers	3
Calc. nannofossils	80
Radiolarians	1
Sponge spicules	Tr

Hole 573B, Core 31
CARBONATE BOMB:
1, 70 cm = 91%

SITE 573 HOLE B CORE 32 CORED INTERVAL 433.0–442.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) nanno chalk with a band of darker chalk at 1, 74–75. Alternating chalk/ooze intervals have resulted from severe drilling disturbance.

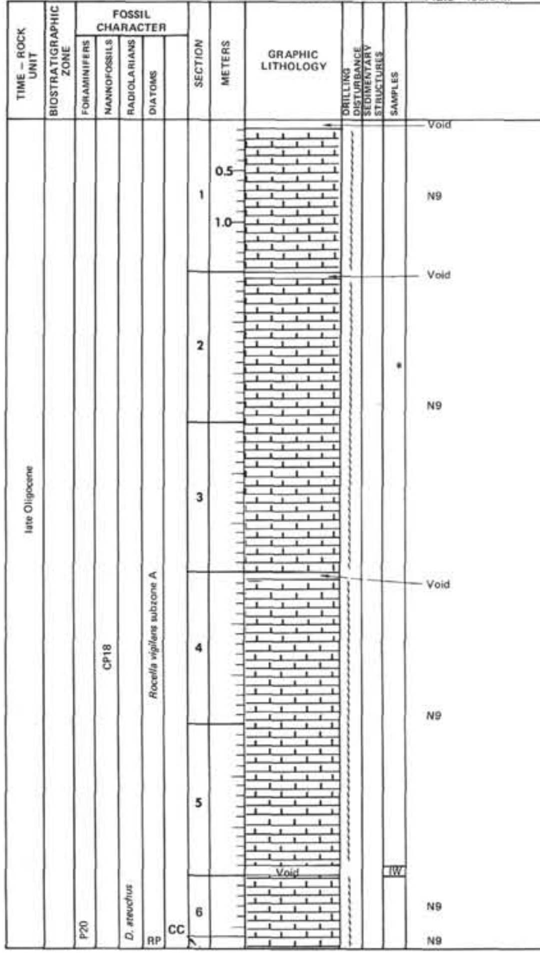
SMEAR SLIDE SUMMARY (%):
2, 51

Texture:	
Sand	2
Silt	8
Clay	90
Composition:	
Volcanic glass	Tr
Pyrite	Tr
Carbonate unspec.	12
Foraminifers	2
Calc. nannofossils	85
Radiolarians	1
Sponge spicules	Tr

573B-32

CARBONATE BOMB:
1, 68 cm = 92%
2, 110 cm = 94%

SITE 573 HOLE B CORE 33 CORED INTERVAL 442.5–452.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) nanno ?chalk. Entire section liquified during *drilling to produce a strongly disturbed ooze with scattered* fragments of chalk.

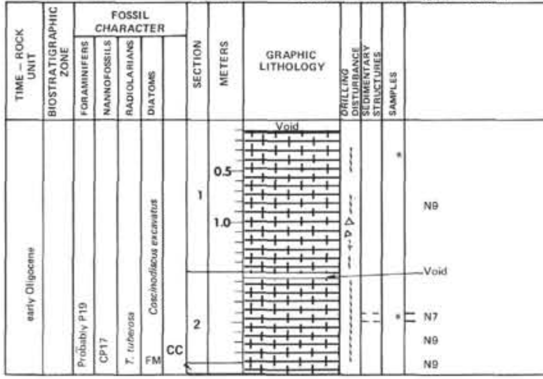
This may reflect poorer induration at this level.

SMEAR SLIDE SUMMARY (%):

	2, 99	5, 140
Texture:		
Sand	Tr	10
Silt	50	35
Clay	50	55
Composition:		
Foraminifers	Tr	8
Calc. nannofossils	99	90
Radiolarians	Tr	2
Sponge spicules	Tr	Tr

CARBONATE BOMB:
5, 64 cm = 93%

SITE 573 HOLE B CORE 34 CORED INTERVAL 452.0–461.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

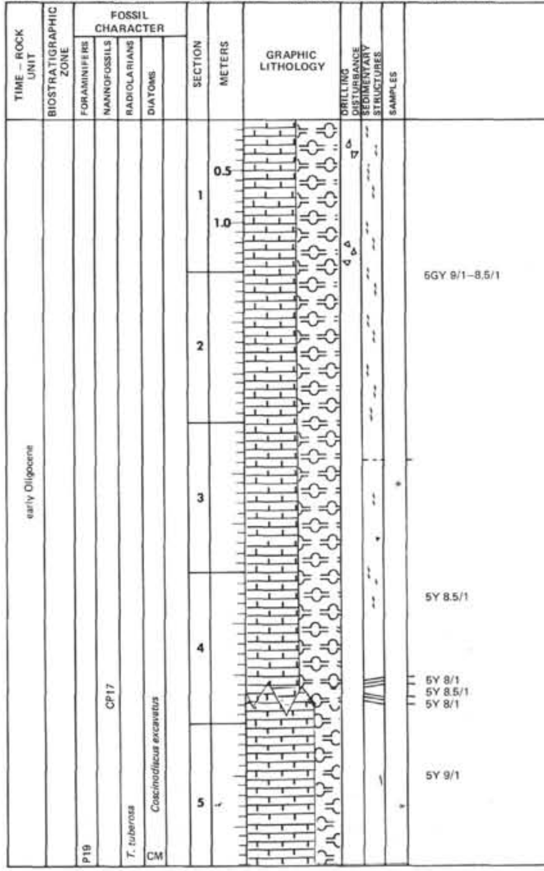
White (N9) foram nanno chalk with a single light gray band of coarser more foram-rich sediment. Much of the core has been badly disturbed by drilling liquifaction.

SMEAR SLIDE SUMMARY (%):

	1, 36	2, 44
Texture:		
Sand	10	20
Silt	35	40
Clay	55	40
Composition:		
Foraminifers	10	40
Calc. nannofossils	90	60
Radiolarians	Tr	Tr
Sponge spicules	Tr	–

Hole 573B, Core 34
CARBONATE BOMB:
1, 70 cm = 93%

SITE 573 HOLE B CORE 35 CORED INTERVAL 461.5–471.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

White (5GY 9/1–8.5/1) rad diatom nanno chalks to foram rad diatom nanno chalks.

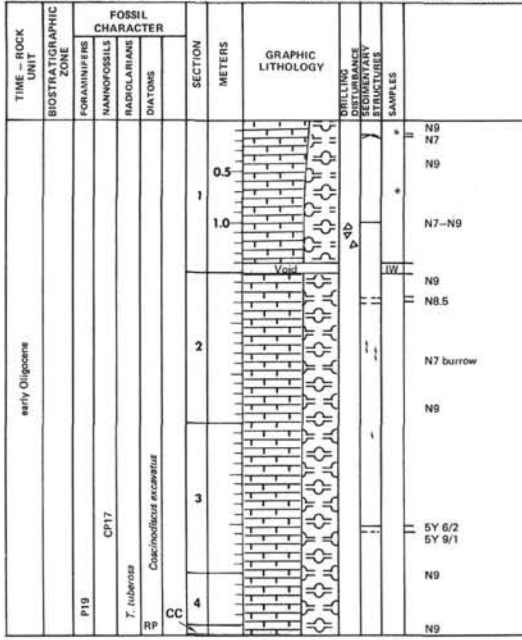
Zoophycos and compressed *Planolites* are common. Two banded units occur at the base of Section 2. A 0.5 cm pebble of pumice occurs at 3, 120.

SMEAR SLIDE SUMMARY (%):

	3, 60	5, 85
Texture:		
Sand	35	20
Silt	20	40
Clay	45	40
Composition:		
Foraminifers	5	10
Calc. nannofossils	55	60
Diatoms	30	20
Radiolarians	15	10
Sponge spicules	1	Tr

CARBONATE BOMB:
1, 65 cm = 81%
2, 35 cm = 77%
3, 70 cm = 79%
4, 105 cm = 87%
5, 80 cm = 91%

SITE 573 HOLE B CORE 36 CORED INTERVAL 471.0–480.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

White (N9) foram diatom rad nanno chalk with a few thin (mm-scale) black-speckled light gray (N7) ash layers.

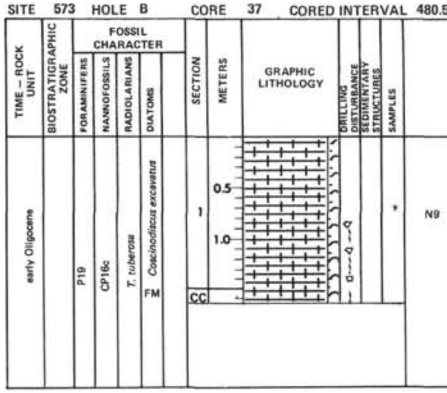
Rare ash-filled burrow mottles.

SMEAR SLIDE SUMMARY (%):

	1, 14	1, 70
	M	D
Texture:		
Sand	40	25
Silt	30	20
Clay	30	55
Composition:		
Volcanic glass	30	–
Foraminifers	10	10
Calc. nannofossils	40	65
Diatoms	10	10
Radiolarians	10	15
Sponge spicules	1	1

CARBONATE BOMB:
1, 75 cm = 90%

SITE 573 HOLE B CORE 37 CORED INTERVAL 480.5–490.0 m



LITHOLOGIC DESCRIPTION

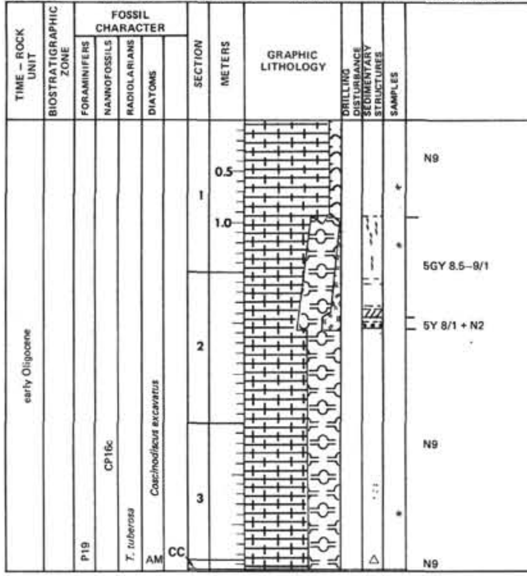
WHITE/GRAY CHALK (SUBUNIT IID):
White (N9) rad foram nanno chalk.

SMEAR SLIDE SUMMARY (%):

	1, 80
Texture:	
Sand	20
Silt	40
Clay	40
Composition:	
Foraminifers	15
Calc. nannofossils	70
Diatoms	5
Radiolarians	10
Sponge spicules	Tr

Hole 573B, Core 37
CARBONATE BOMB:
1, 53 cm = 88%

SITE 573 HOLE B CORE 38 CORED INTERVAL 490.0–499.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

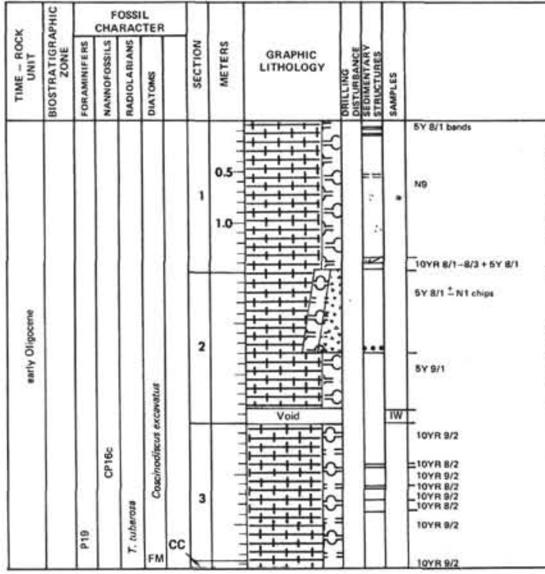
White (N9) foram rad nanno chalk overlying a very light gray (5GY 8.5–9/1) foram rad diatom nanno chalk with a ~10 cm finely (~ 0.2 mm) laminated and crossbedded ash band at the base. The ash band is graded and passes gradually into the overlying chalk, which also contains numerous fragments of volcanic glass. The top of the light gray chalk is mottled by white (N9) *Planolites* and *Chondrites*. The ash band overlies a white (N9) rad foram diatom nanno chalk with scattered fragments of volcanic glass at 3, 70–75.

SMEAR SLIDE SUMMARY (%):

	1, 69	1, 125	3, 90
Texture:			
Sand	25	25	30
Silt	20	25	30
Clay	55	50	40
Composition:			
Foraminifers	10	10	10
Calc. nannofossils	75	60	55
Diatoms	5	20	25
Radiolarians	10	10	10
Sponge spicules	Tr	Tr	Tr

CARBONATE BOMB:
1, 70 cm = 93%
2, 128 cm = 61%
3, 128 cm = 76%

SITE 573 HOLE B CORE 39 CORED INTERVAL 499.5–509.0 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):

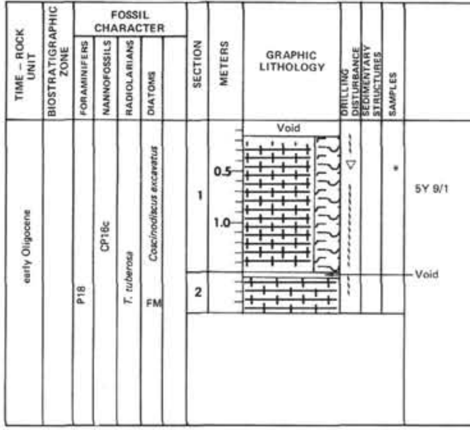
White (N9, 5Y 9/1) to very pale yellow (10YR 9/2) rad diatom foram nanno chalk with an ~ 80 cm band containing numerous 0.1 mm–1 cm angular fragments of black (N1) volcanic glass. Thin (2–3 cm) very pale yellow (5Y 8/1, 10YR 8/2) bands of chalk, also containing volcanic glass occur within the main chalk units.

SMEAR SLIDE SUMMARY (%):

	1, 78
Texture:	
Sand	25
Silt	35
Clay	40
Composition:	
Foraminifers	10
Calc. nannofossils	70
Diatoms	10
Radiolarians	10
Sponge spicules	Tr

CARBONATE BOMB:
1, 25 cm = 87%
3, 75 cm = 93%

SITE 573 HOLE B CORE 40 CORED INTERVAL 509.0–514.0 m



LITHOLOGIC DESCRIPTION

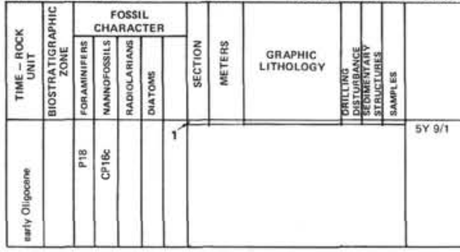
WHITE/GRAY CHALK (SUBUNIT IID):
White (5Y 9/1) foram diatom nanno chalk with much of the section transformed to ooze by drilling disturbance. This ooze contains abundant angular fragments of black volcanic glass.

SMEAR SLIDE SUMMARY (%):

	1, 50
Texture:	
Sand	30
Silt	20
Clay	50
Composition:	
Volcanic glass	Tr
Foraminifers	10
Calc. nannofossils	60
Diatoms	25
Radiolarians	5
Sponge spicules	Tr

Hole 573B, Core 40
CARBONATE BOMB:
1, 80 cm = 65%

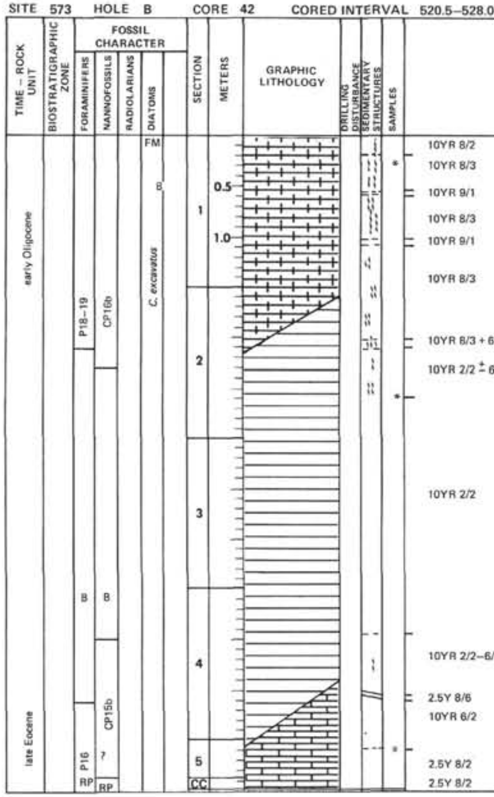
SITE 573 HOLE B CORE 41 CORED INTERVAL 514.0–520.5 m



LITHOLOGIC DESCRIPTION

WHITE/GRAY CHALK (SUBUNIT IID):
Single 3 cm fragment of white (5Y 9/1) foram diatom nanno chalk.

SITE 573 HOLE B CORE 42 CORED INTERVAL 520.5–528.0 m



LITHOLOGIC DESCRIPTION

BROWN CHALK (SUBUNIT IIIA) (520.5–522.6 m): *drites*; passing down via an even more intensely burrowed Heavily burrowed very pale brown (10YR 8/3) foram nanno chalk containing *Zoophycos*, *Planolites*, and *Chondrites*; passing down via an even more intensely burrowed pale brown (10YR 6/3) horizon into:

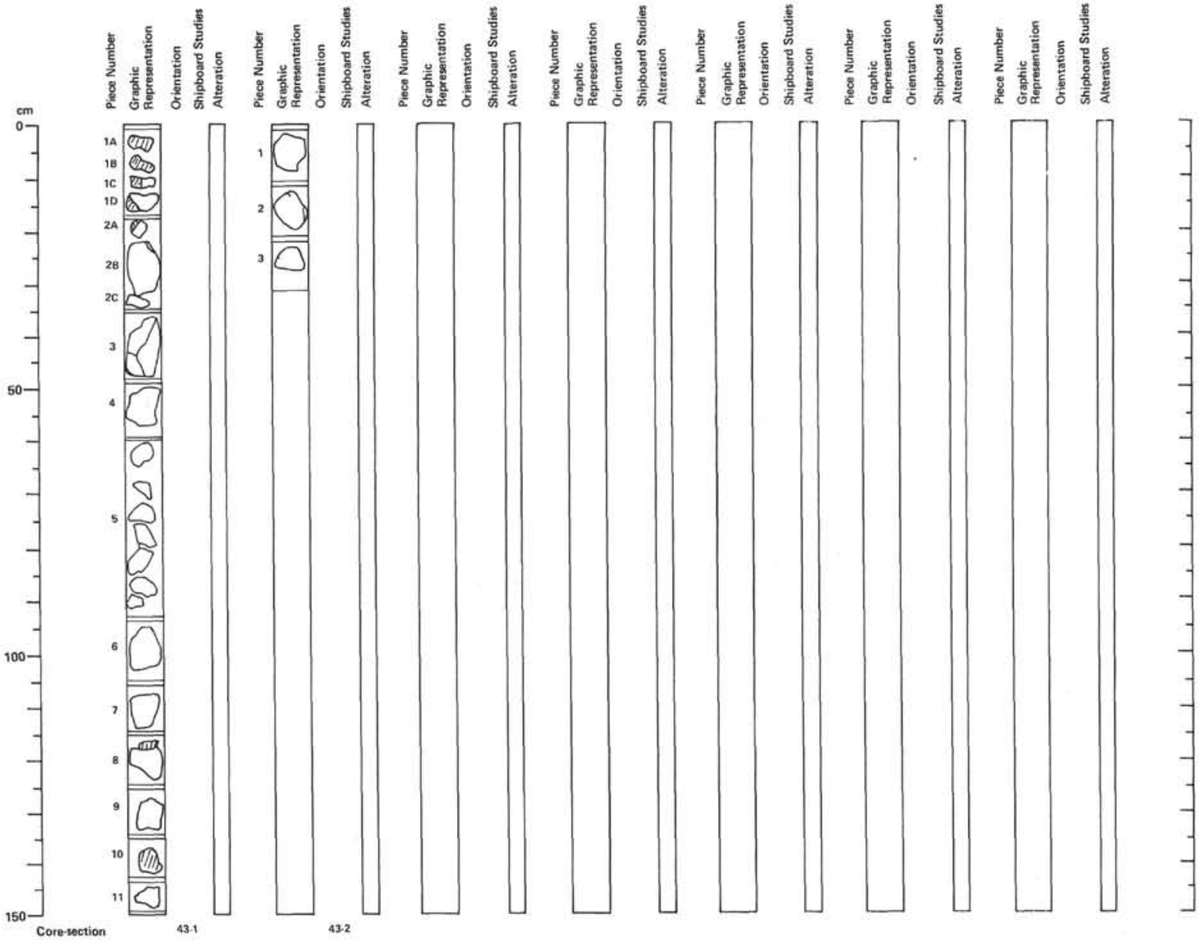
BROWN CLAYSTONE (SUBUNIT IIIB) (522.6–526.6 m): Very dark brown (10YR 2/2) metalliferous claystone. The claystone is underlain by:

PELAGIC LIMESTONE (UNIT IV) (526.6–528.0 m): Very pale yellow (2.5Y 8/2) pelagic biogenic limestone containing mm-scale fragments of ?basalt and green mineral grains, and 'pyrolusite' dendrites.

SMEAR SLIDE SUMMARY (%):

	1, 30	2, 110	5, 10
Texture:			
Sand	30	Tr	10
Silt	5	10	15
Clay	65	90	75
Composition:			
Feldspar	–	2	–
Clay	–	60	2
Volcanic glass	–	–	9
Palagonite	1	–	7
Carbonate unspec.	24	1	10
Foraminifers	30	–	Tr
Calc. nannofossils	55	1	65
Radiolarians	Tr	–	–
Sponge spicules	Tr	–	–
Fe/Mn-oxides	–	36	7

CARBONATE BOMB:
1, 43 cm = 92%
1, 130 cm = 93%
2, 18 cm = 2%
3, 142 cm = 3%
4, 43 cm = 88%

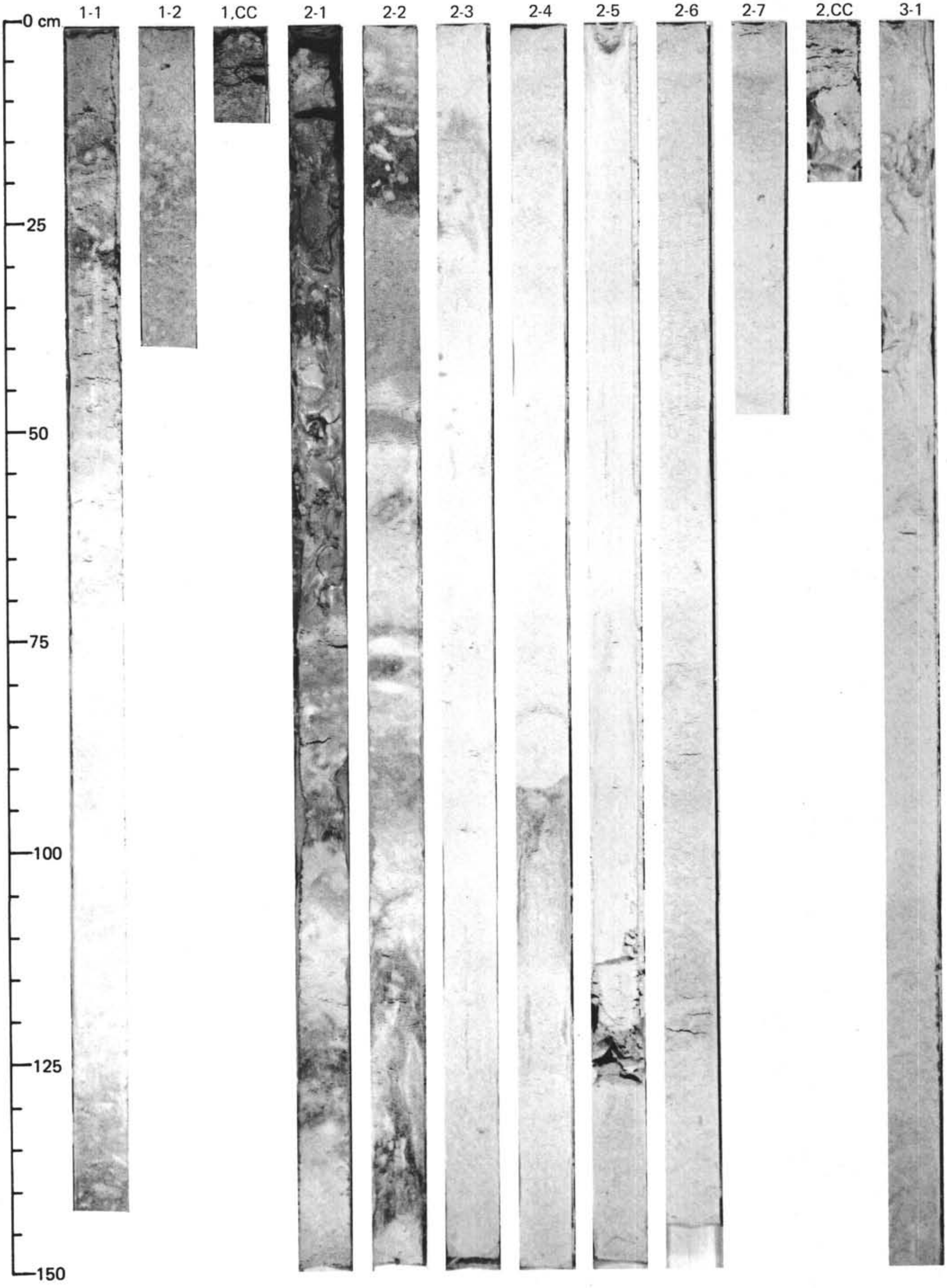


85-573B-43-1

Dark fine-grained basalt. Pieces 1A, 1B, and 10 are limestones. Pieces 1C, 1D, 2A, and 8 have limestone breccia attached to basalt. Several pieces (6, 7, and 8) have glassy cooling rinds.

85-573B-43-2

Dark fine-grained basalt. Piece 1 has a glassy cooling rind.



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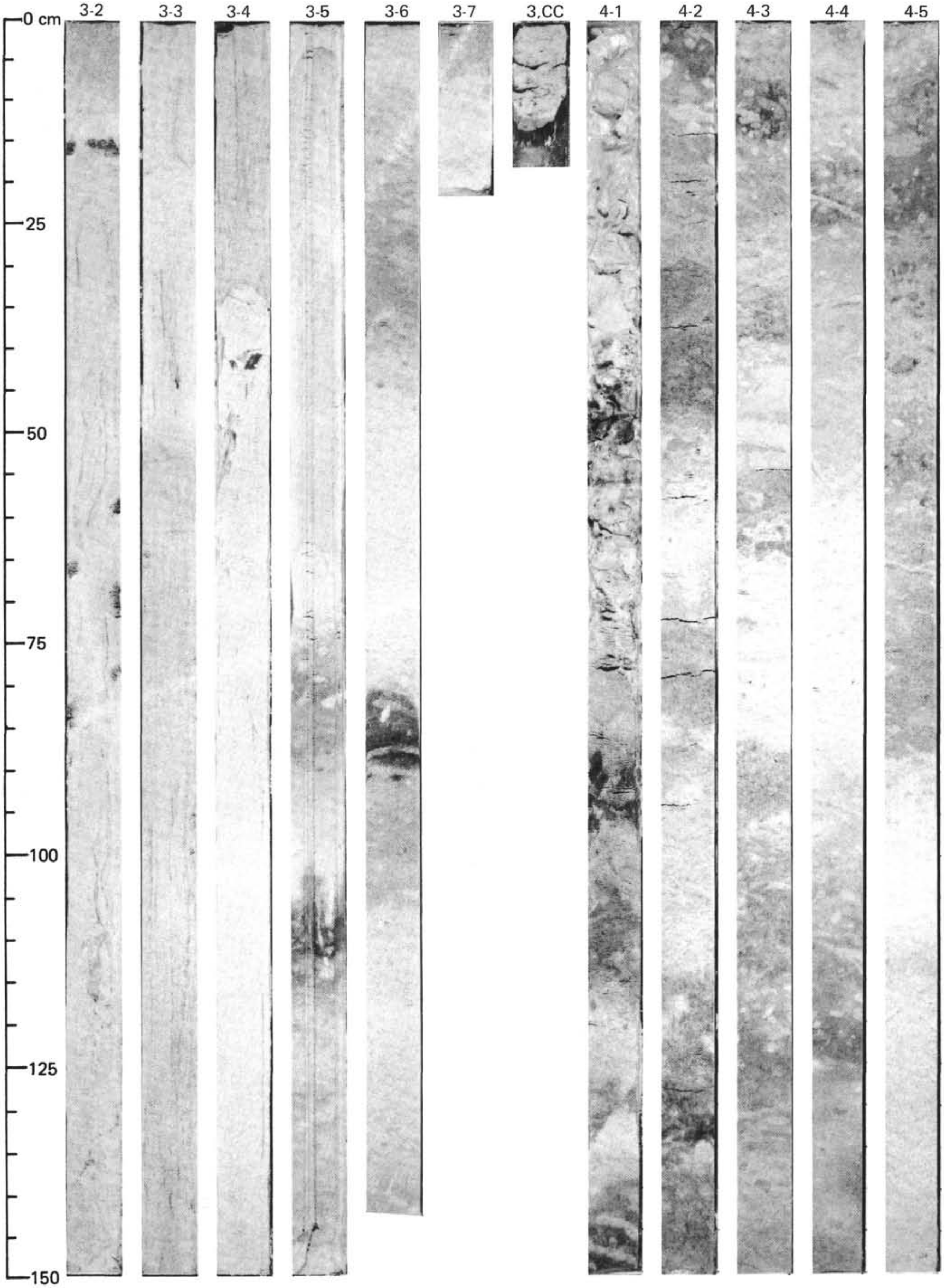
2-6
2-7
2,CC
3-1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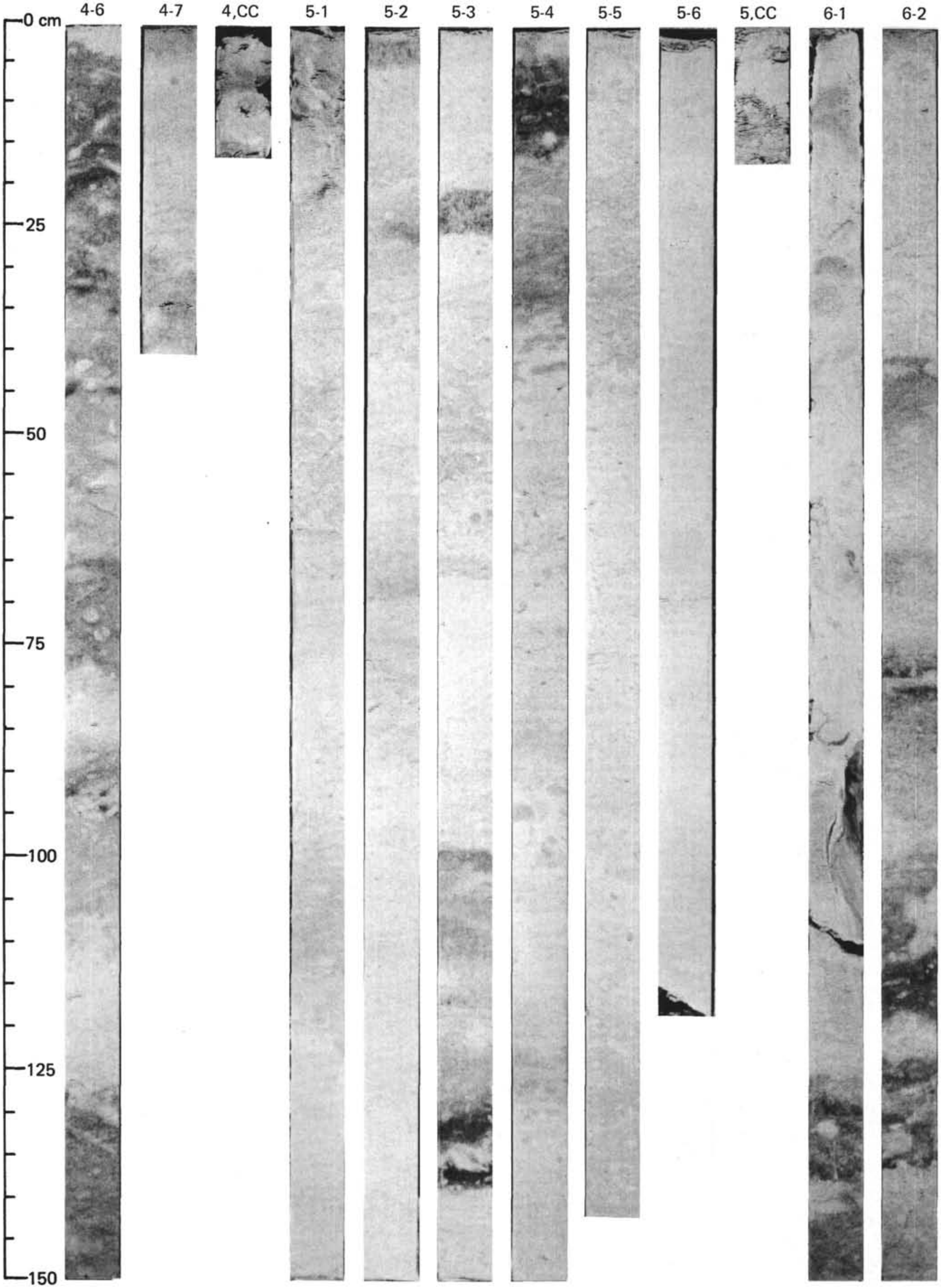
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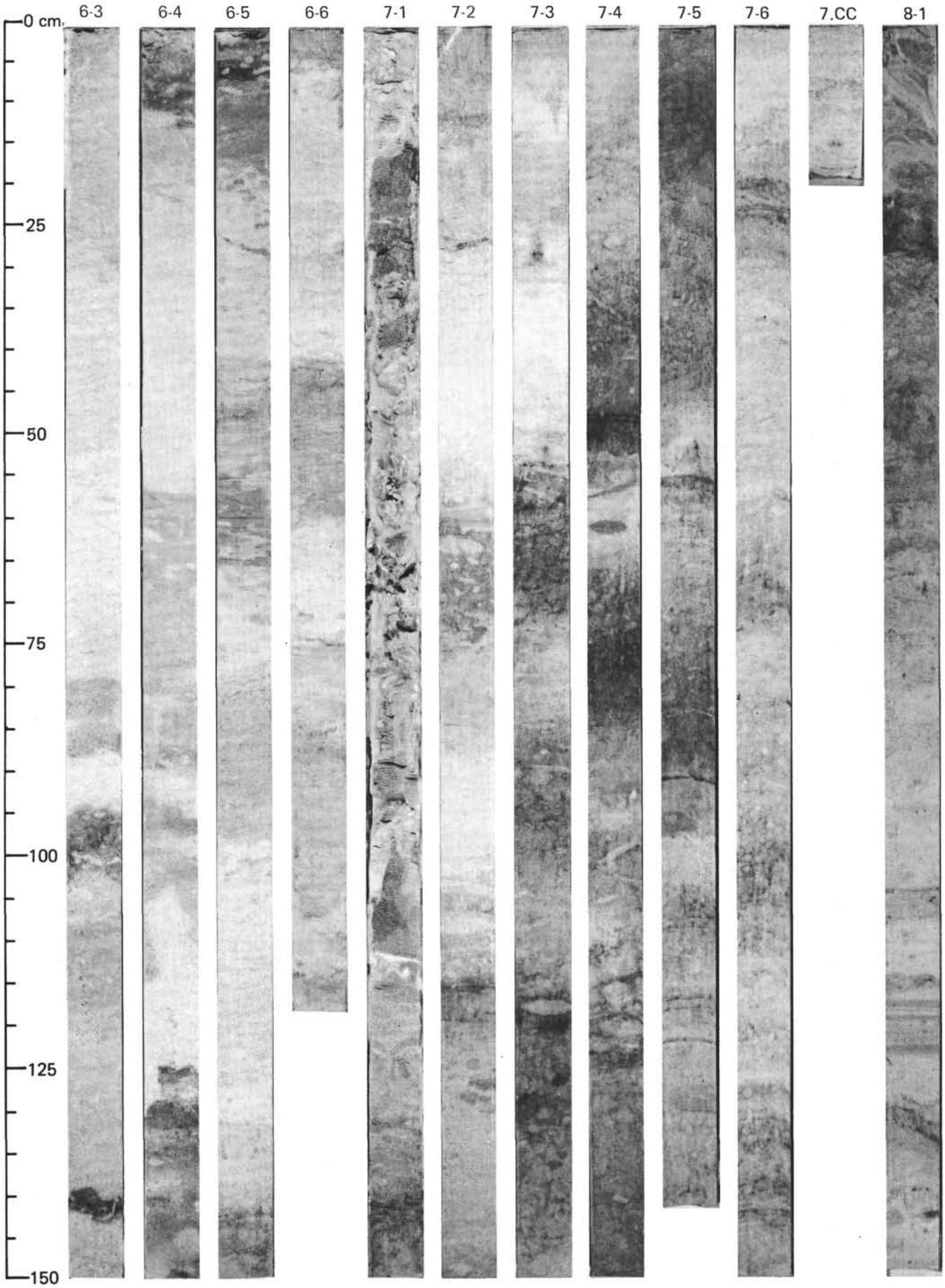
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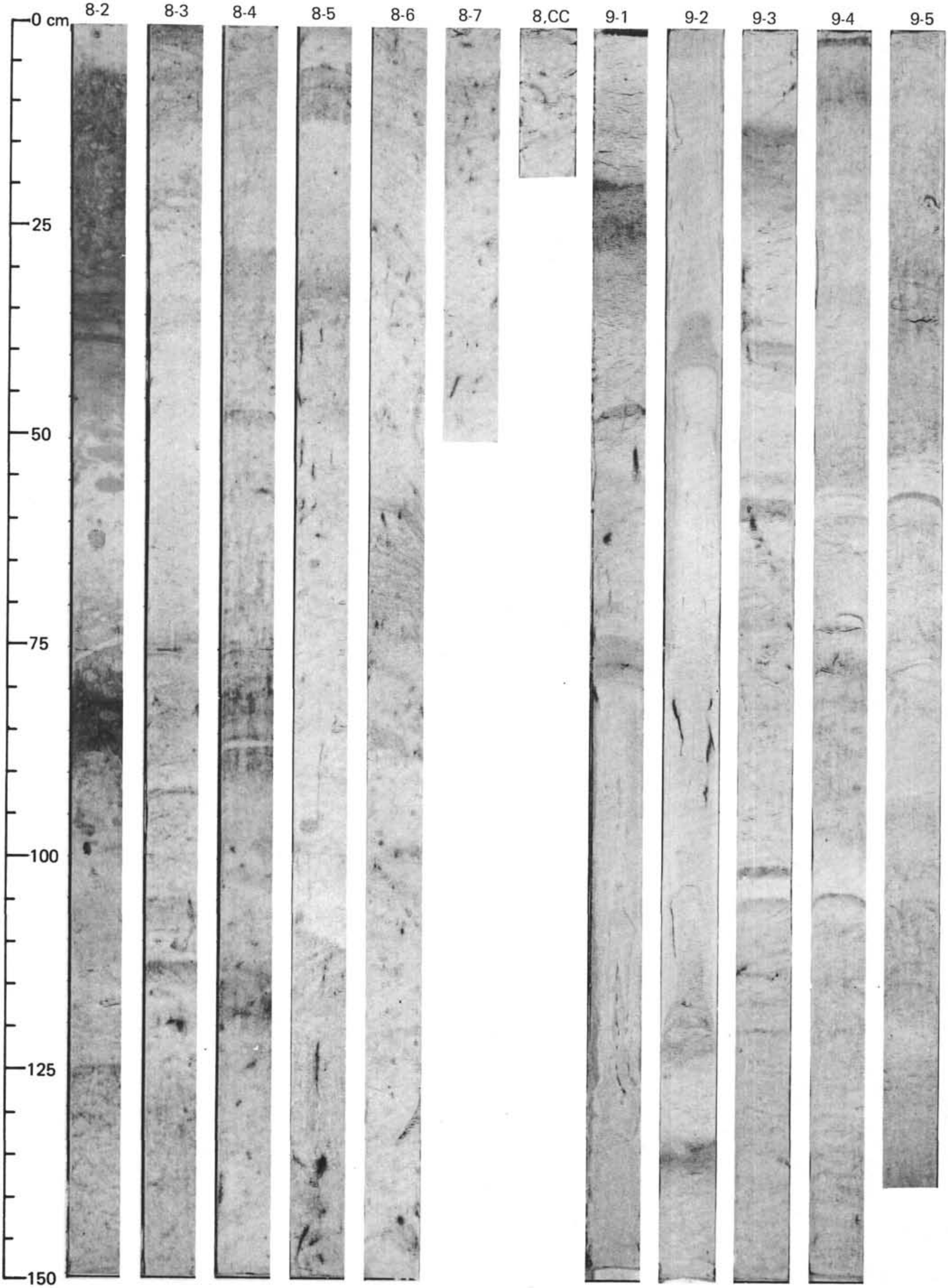
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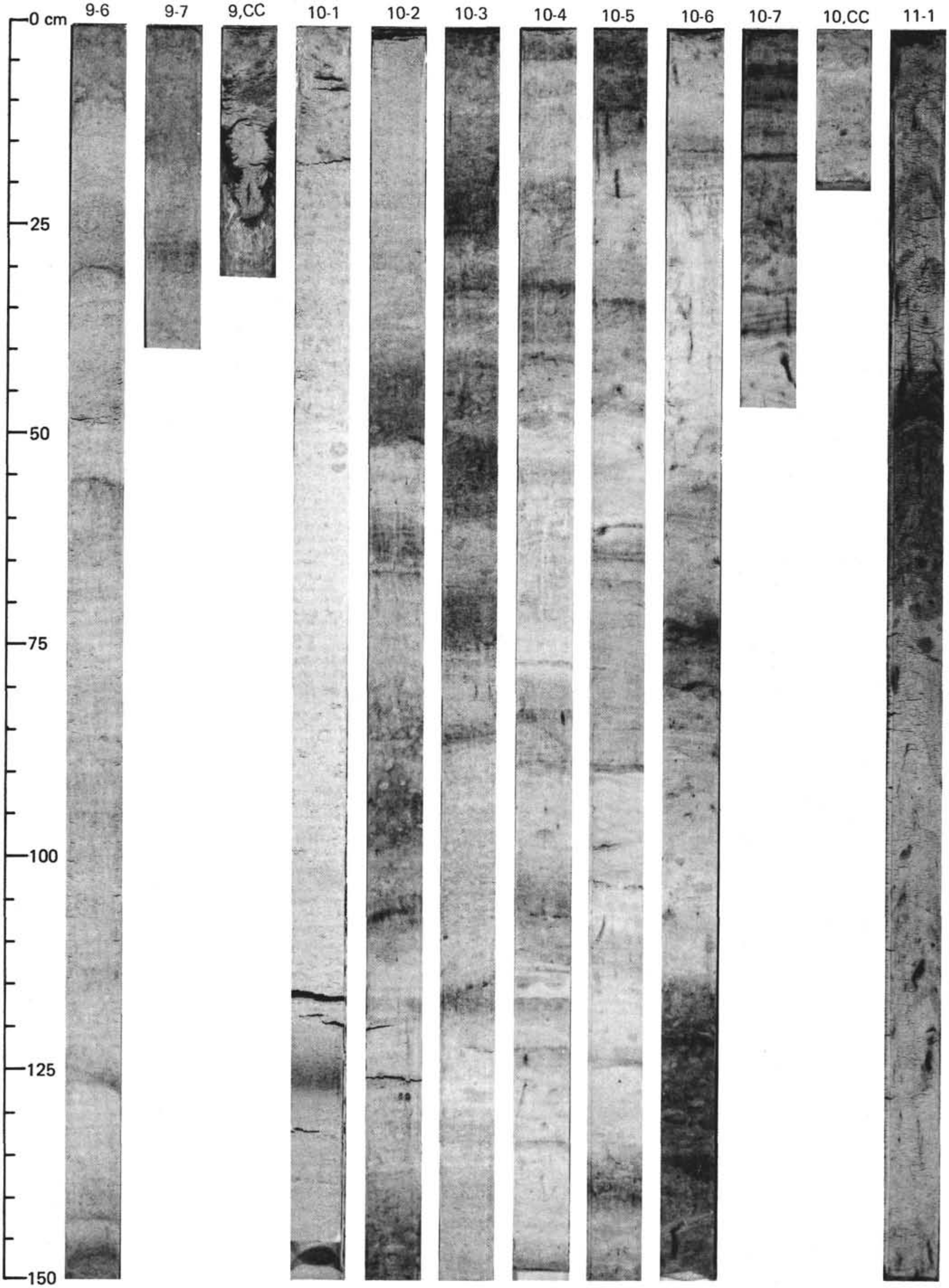
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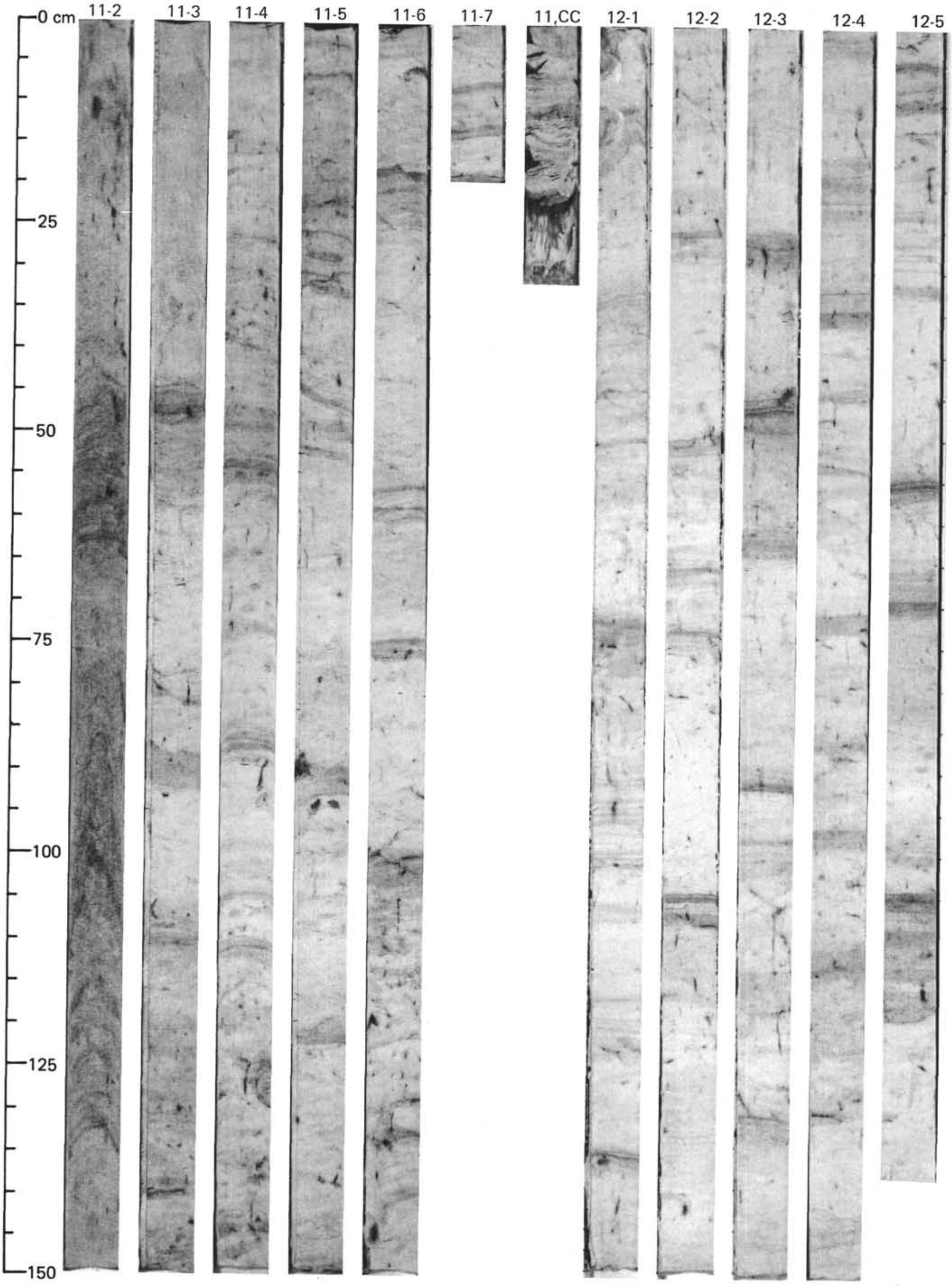
11-1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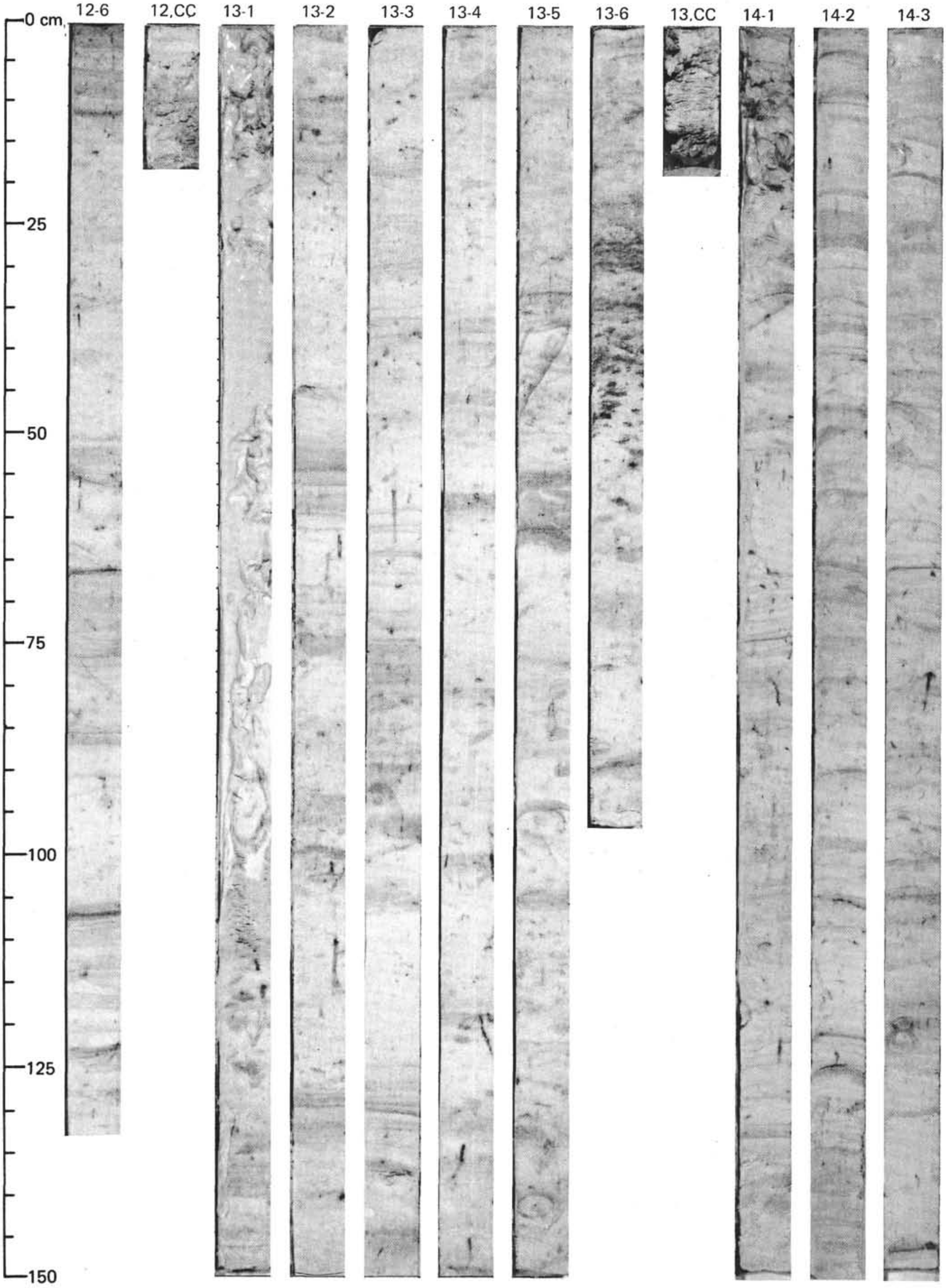
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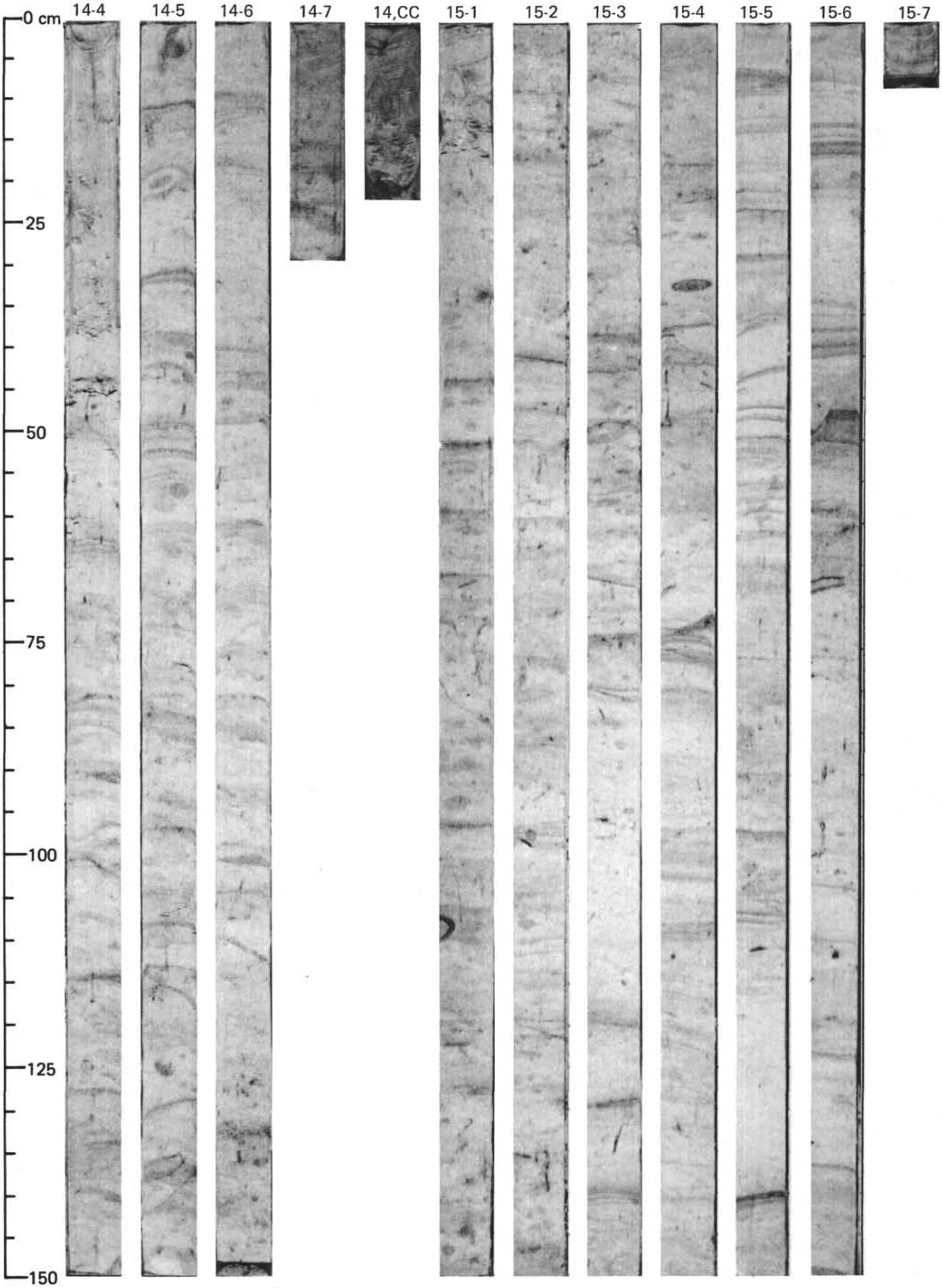
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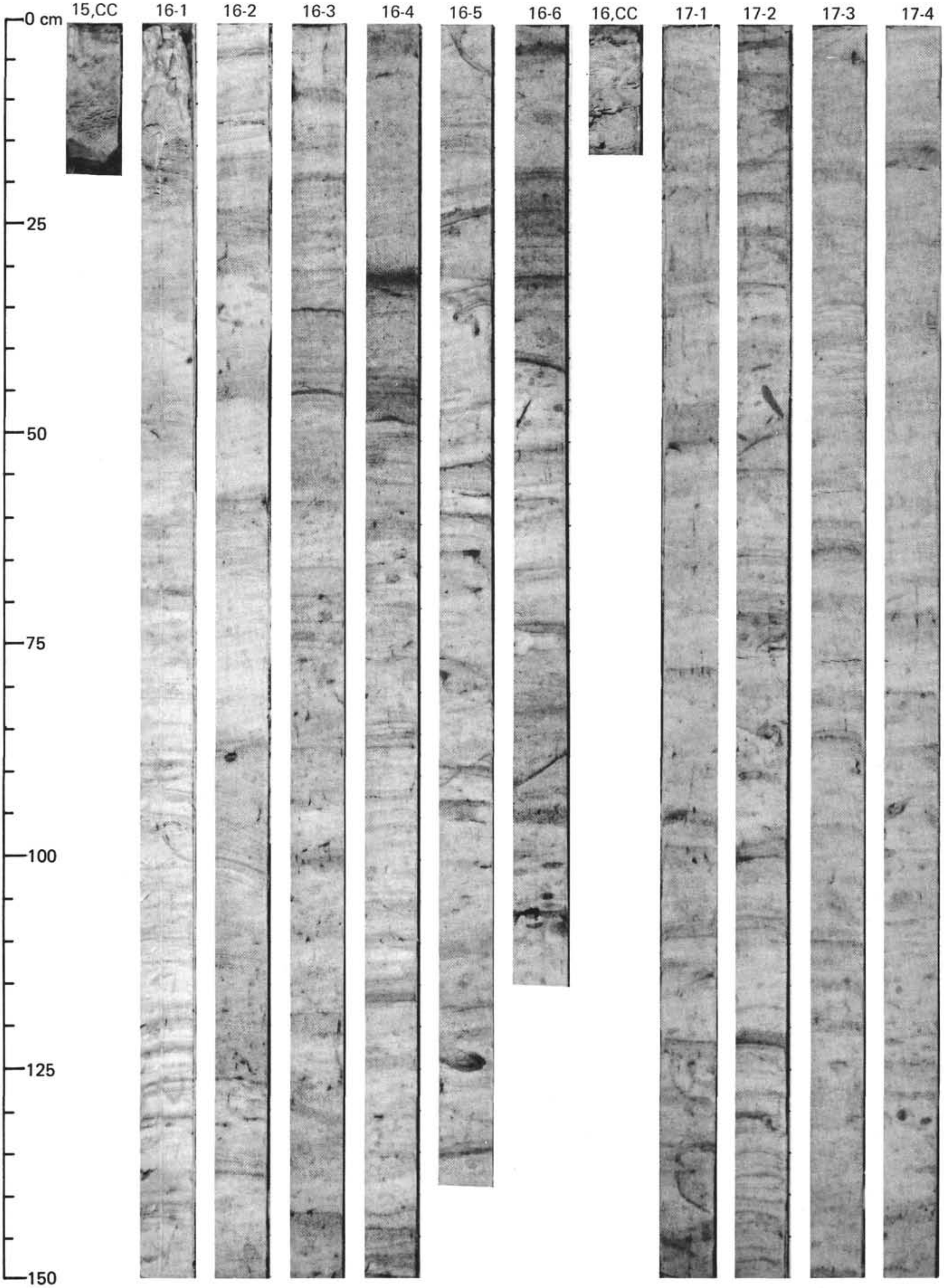
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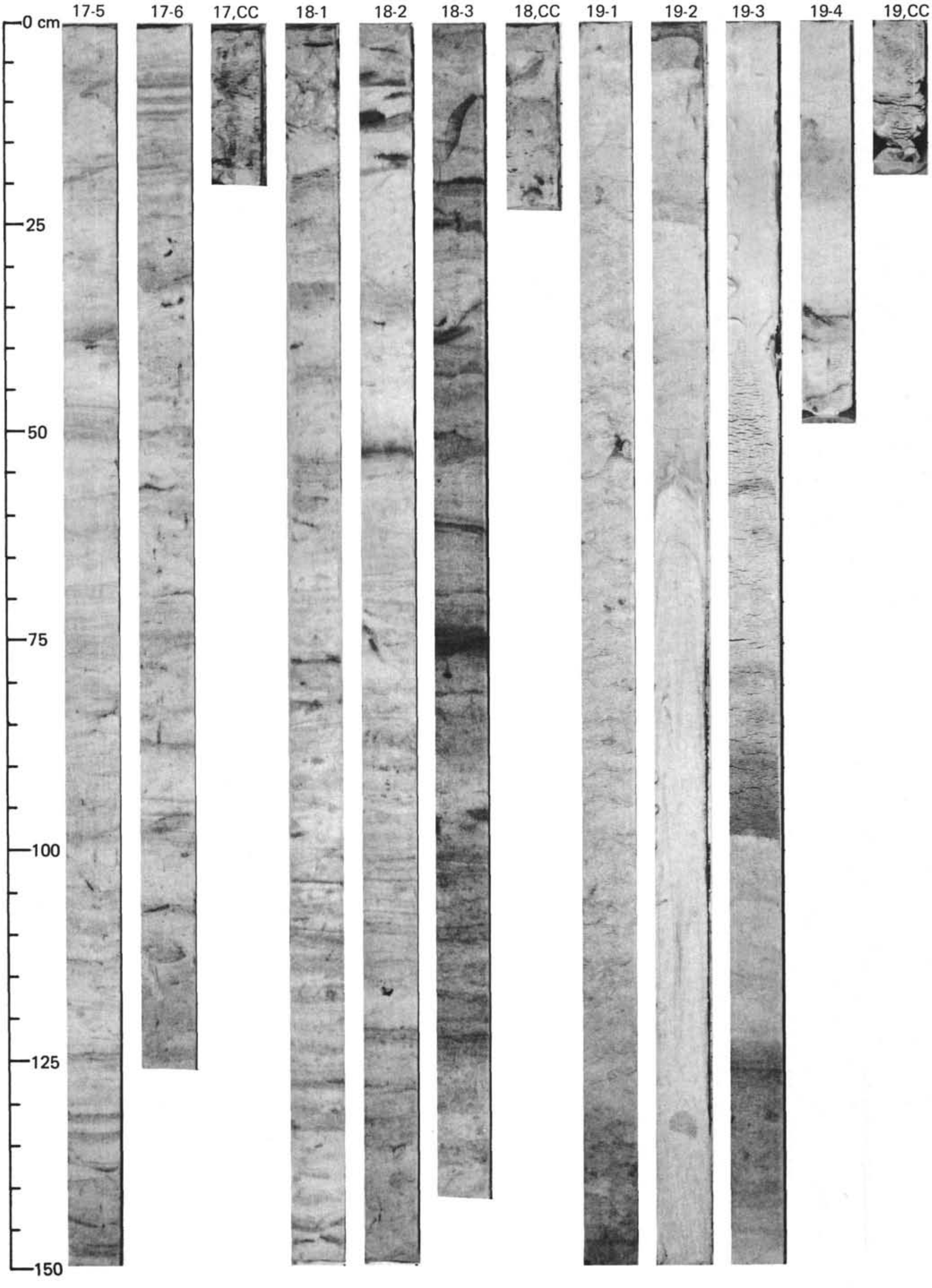
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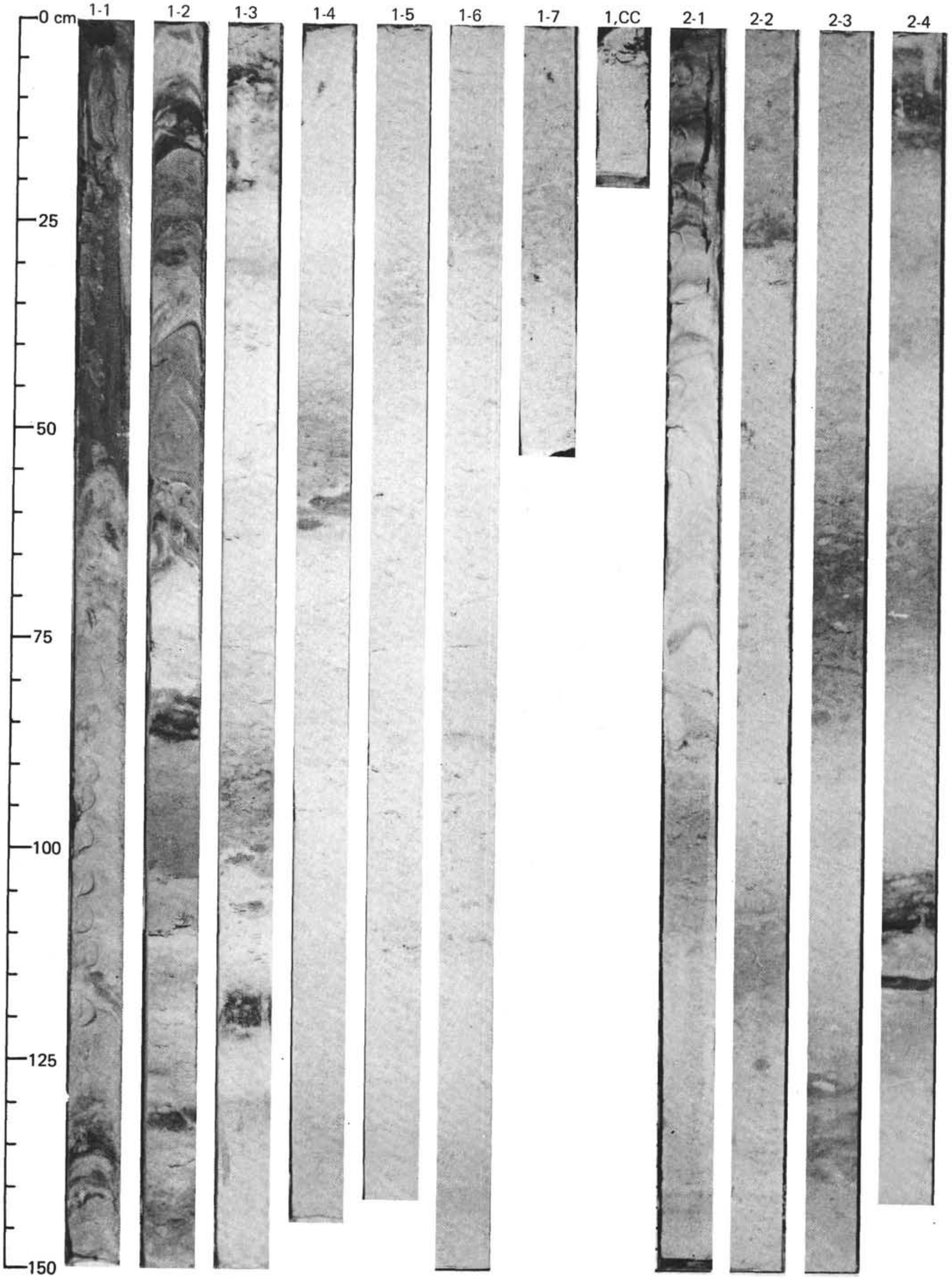
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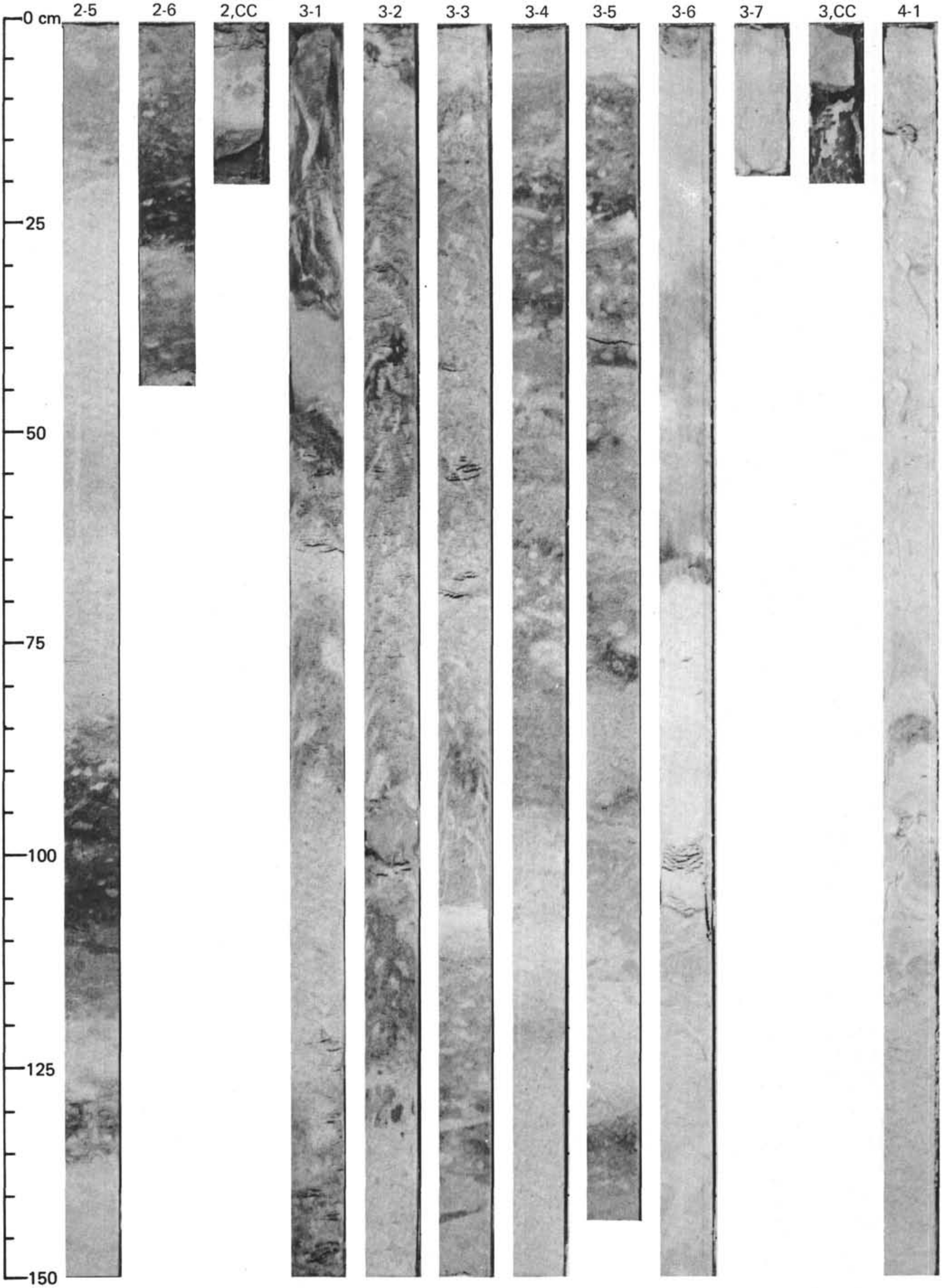
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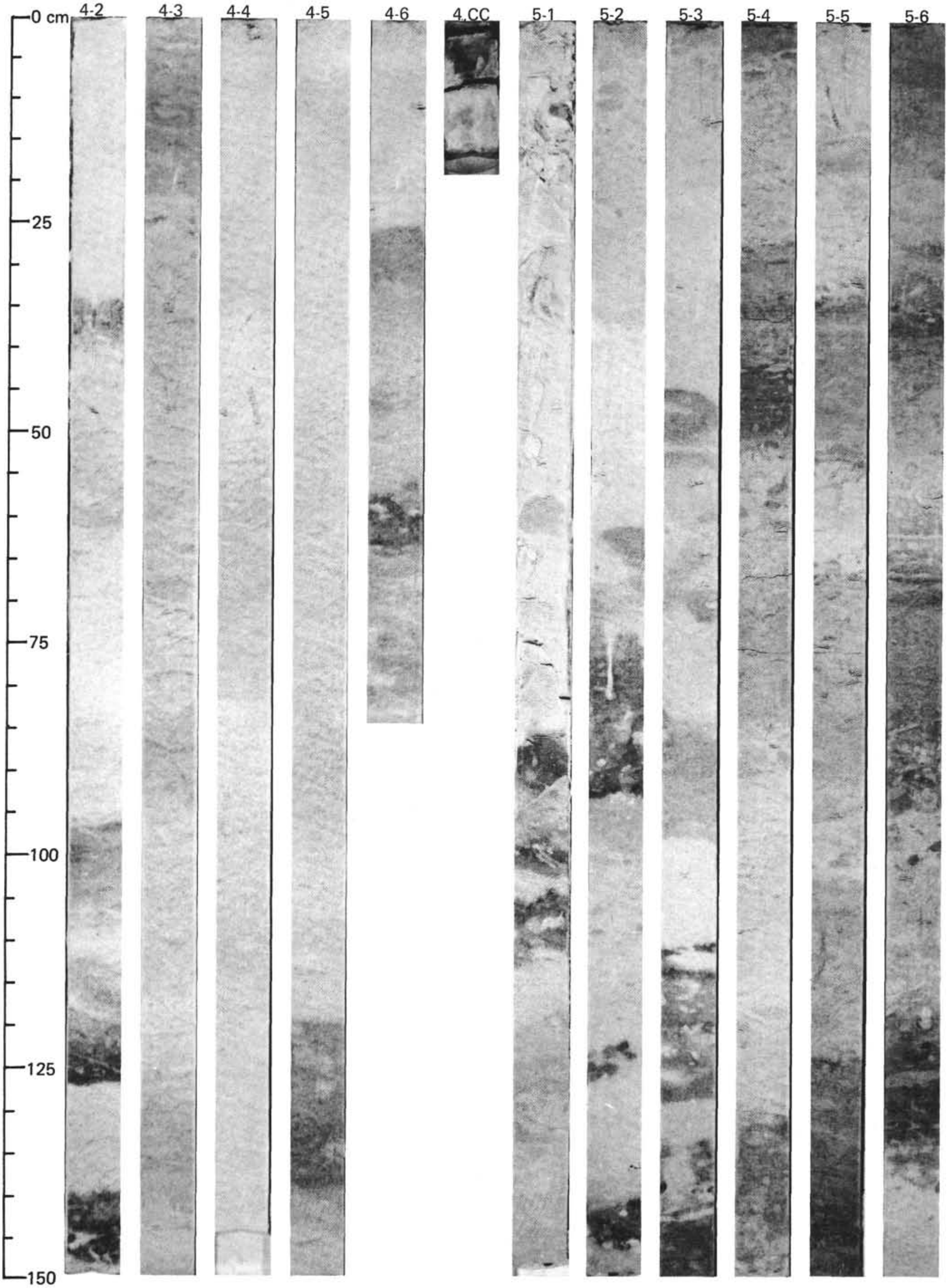
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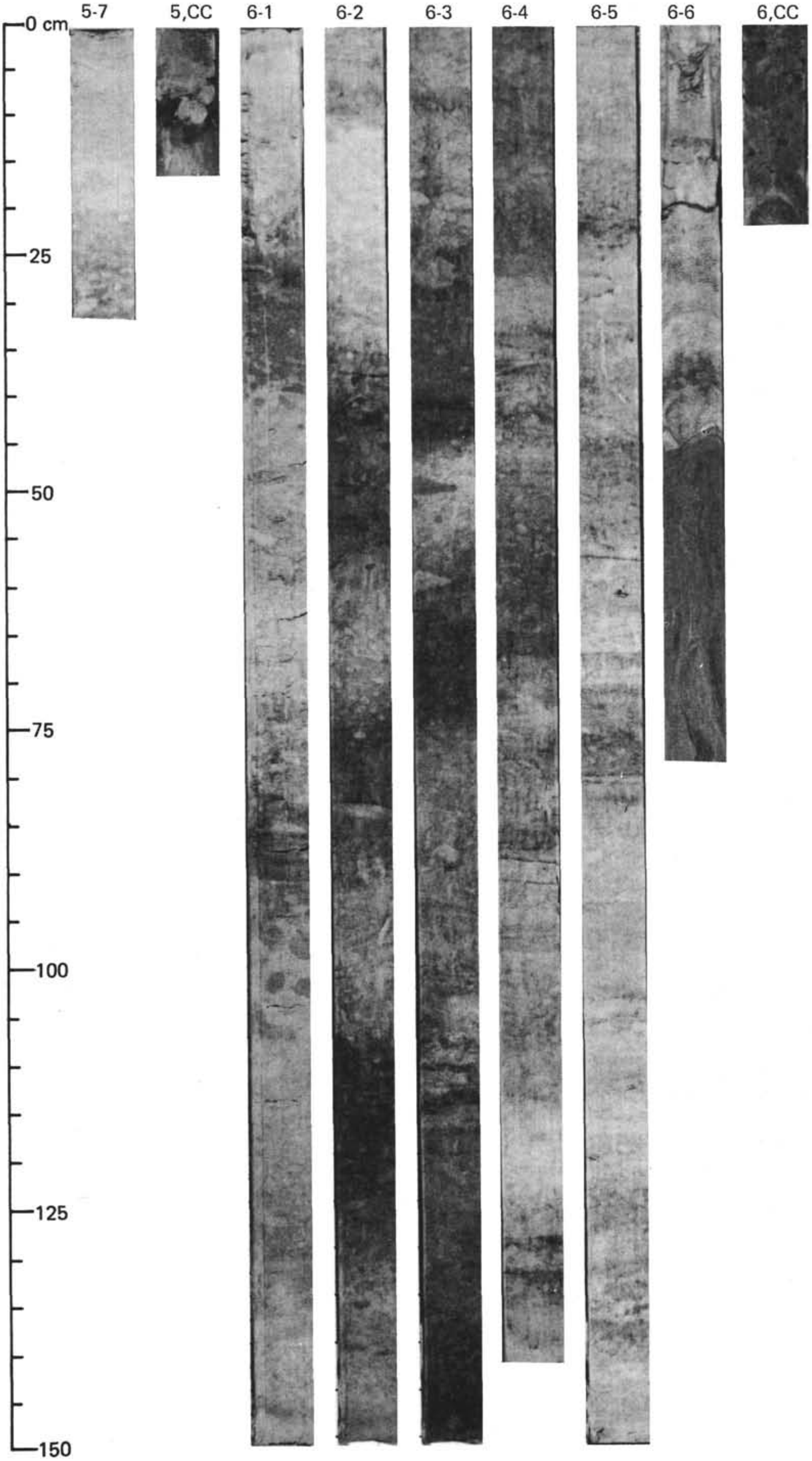
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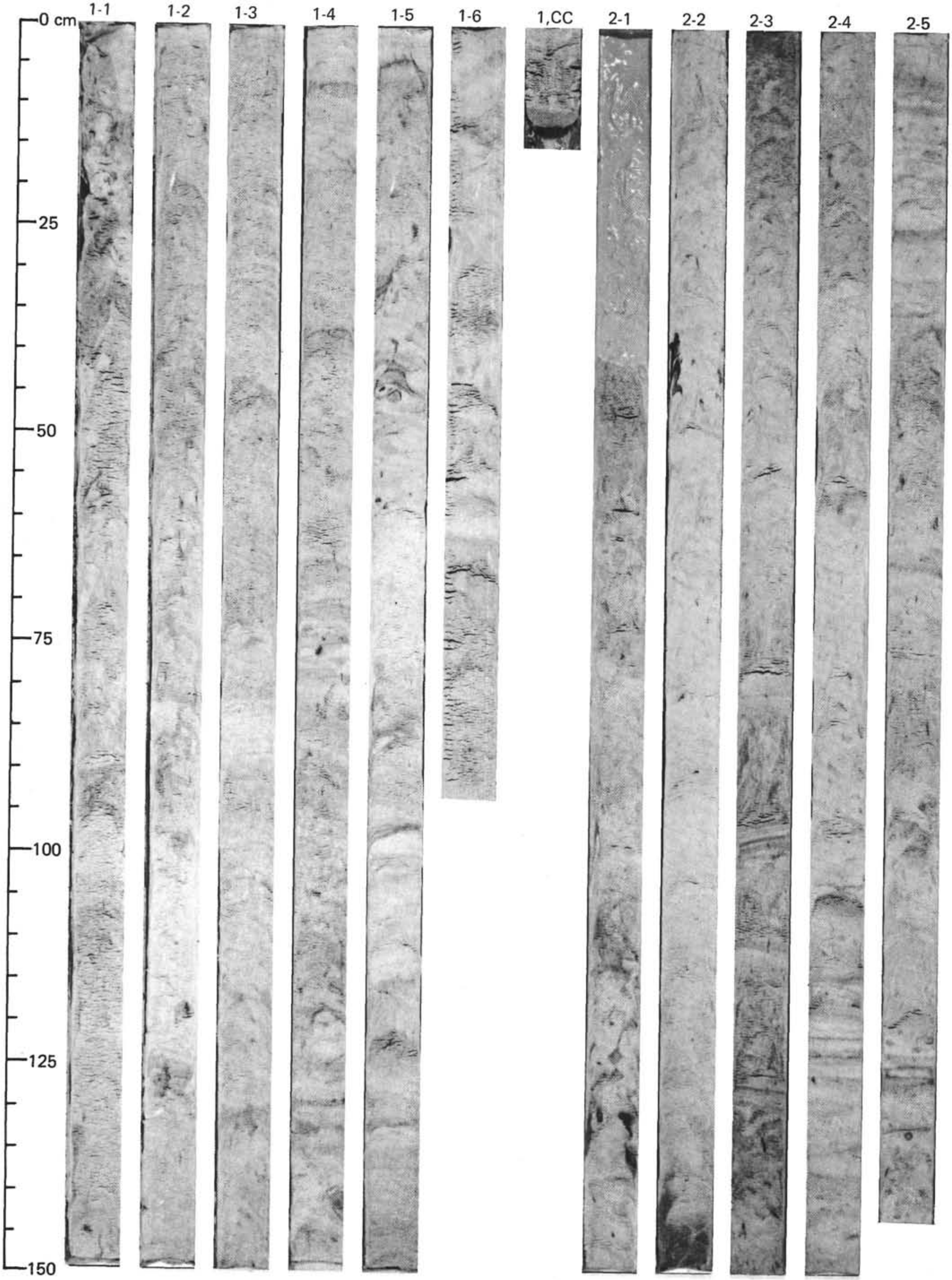
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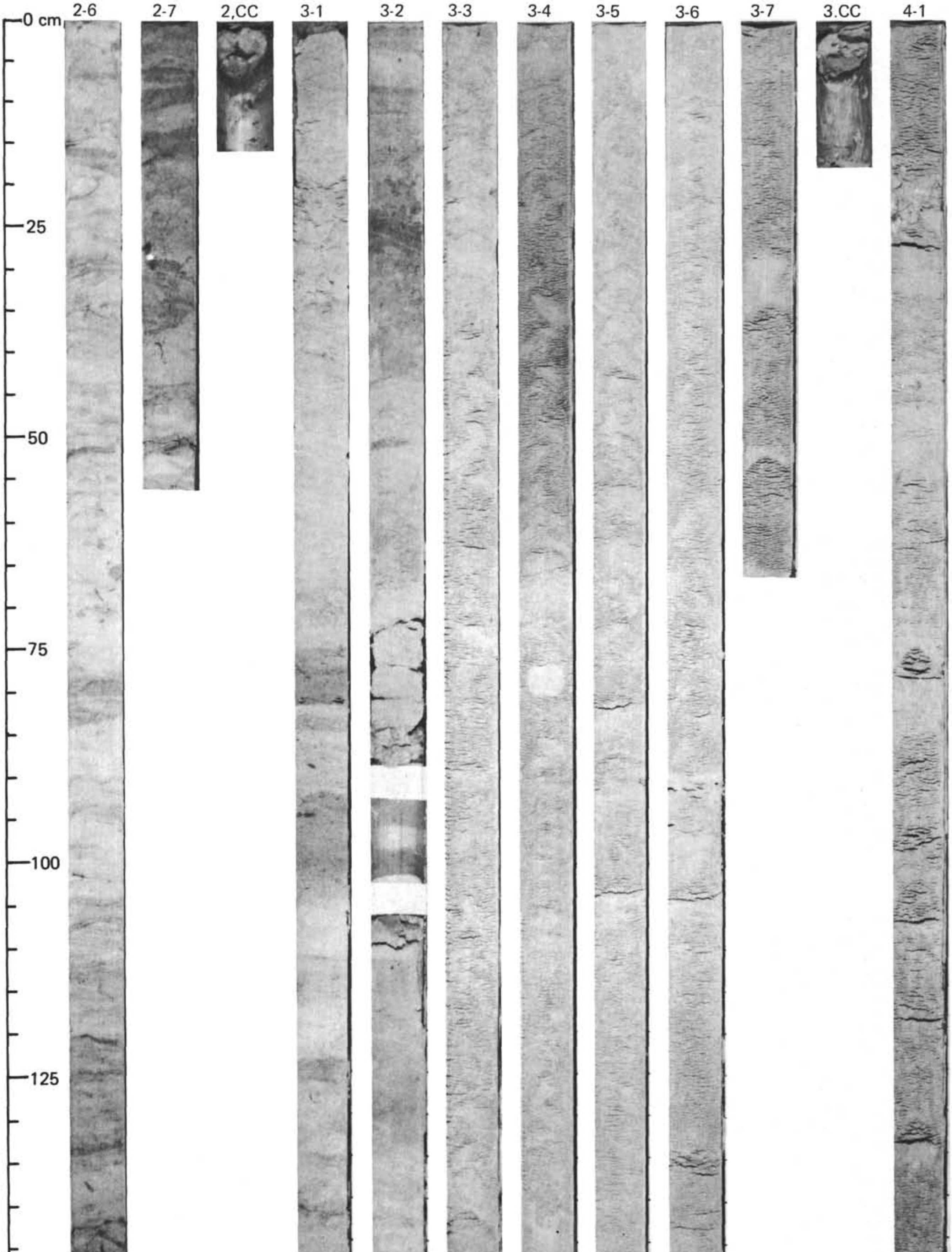
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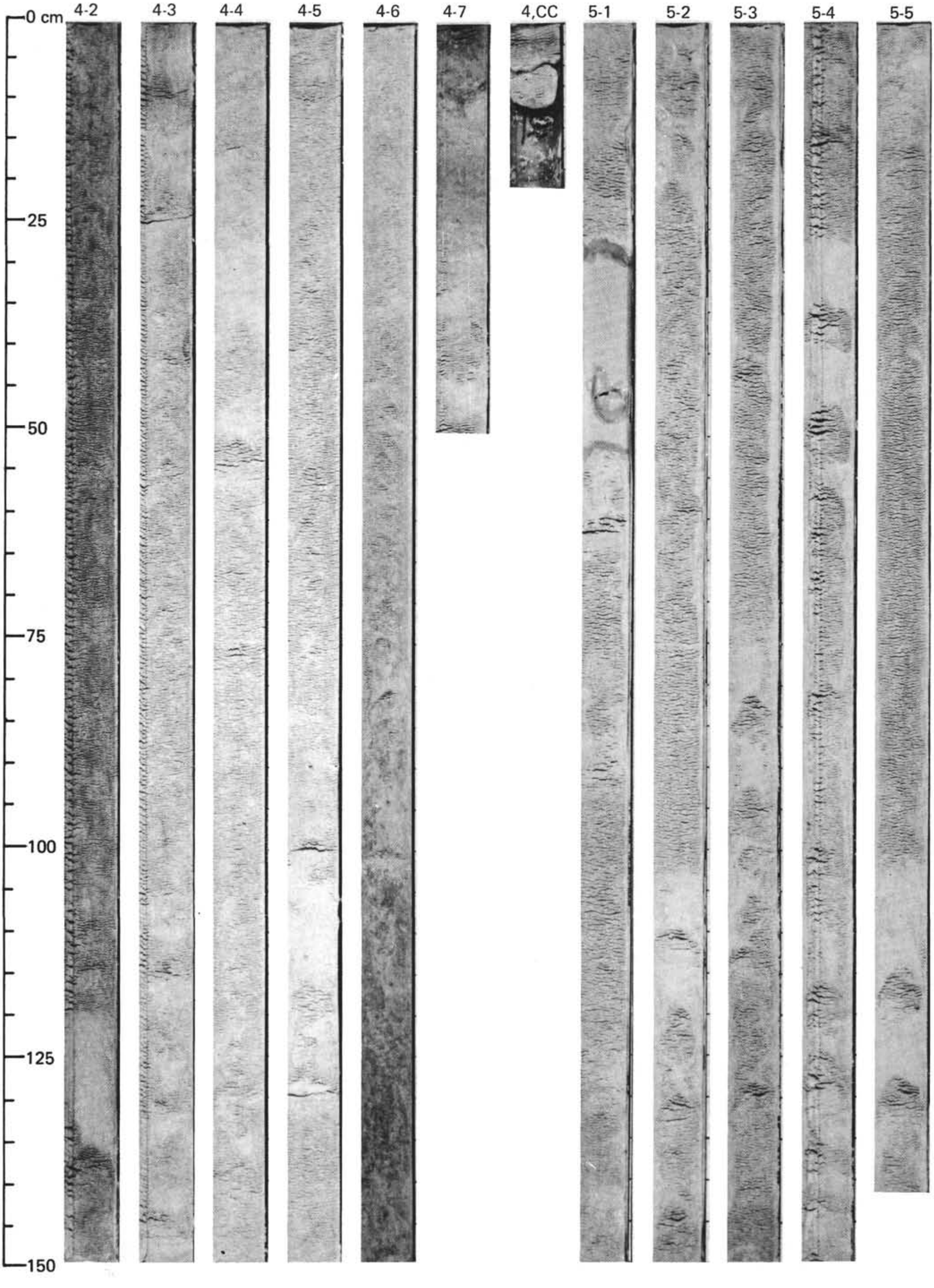
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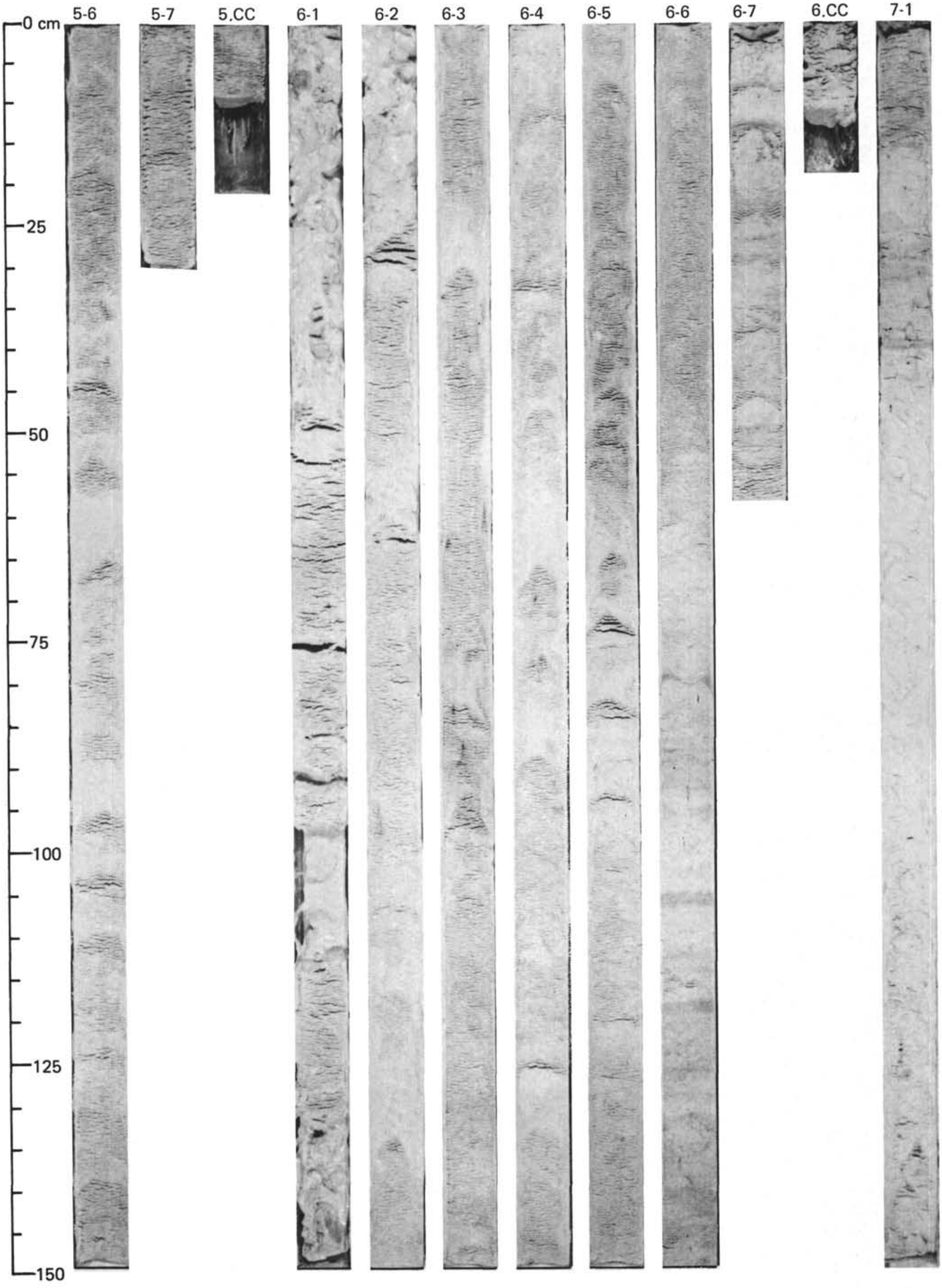
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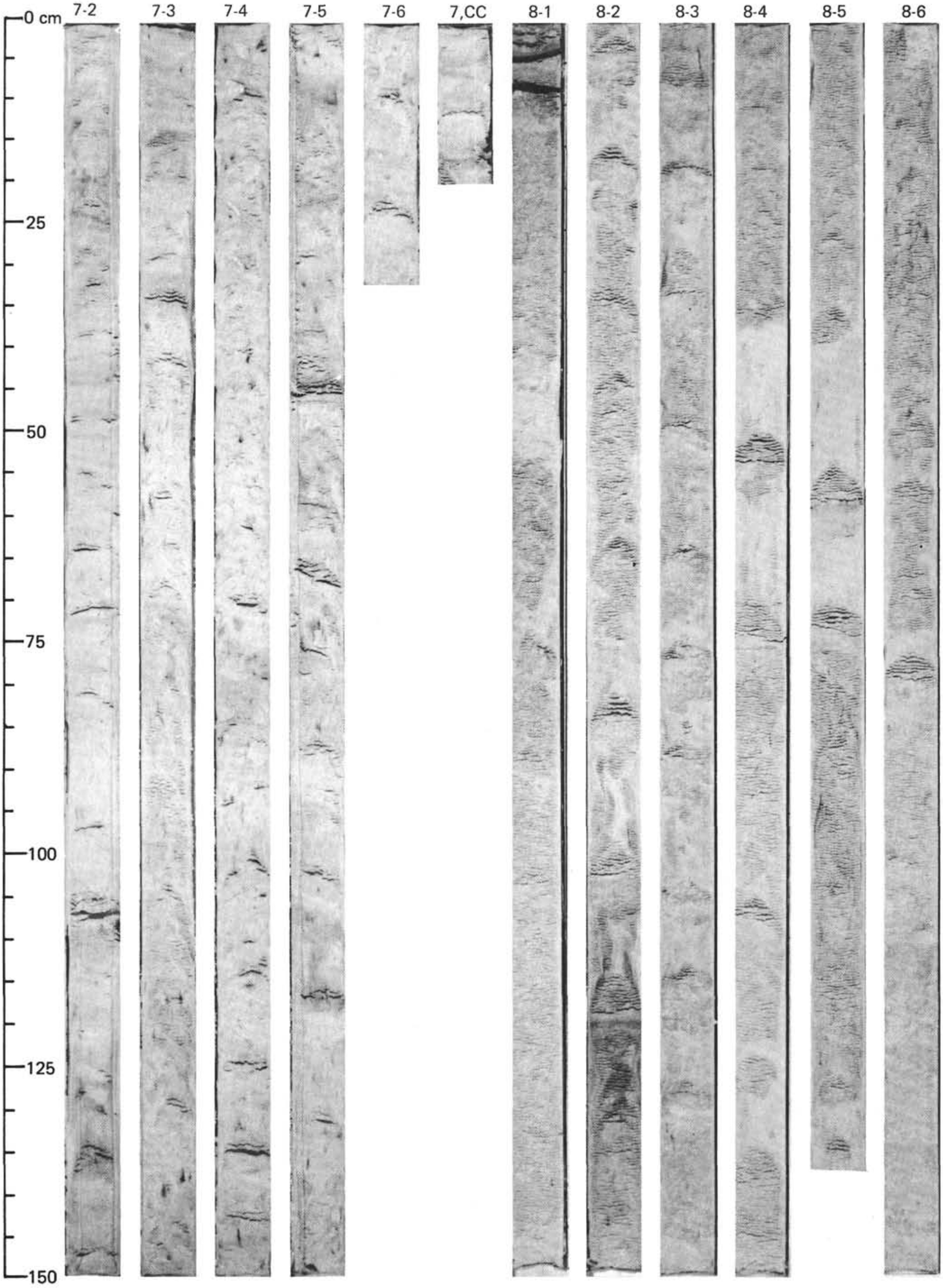
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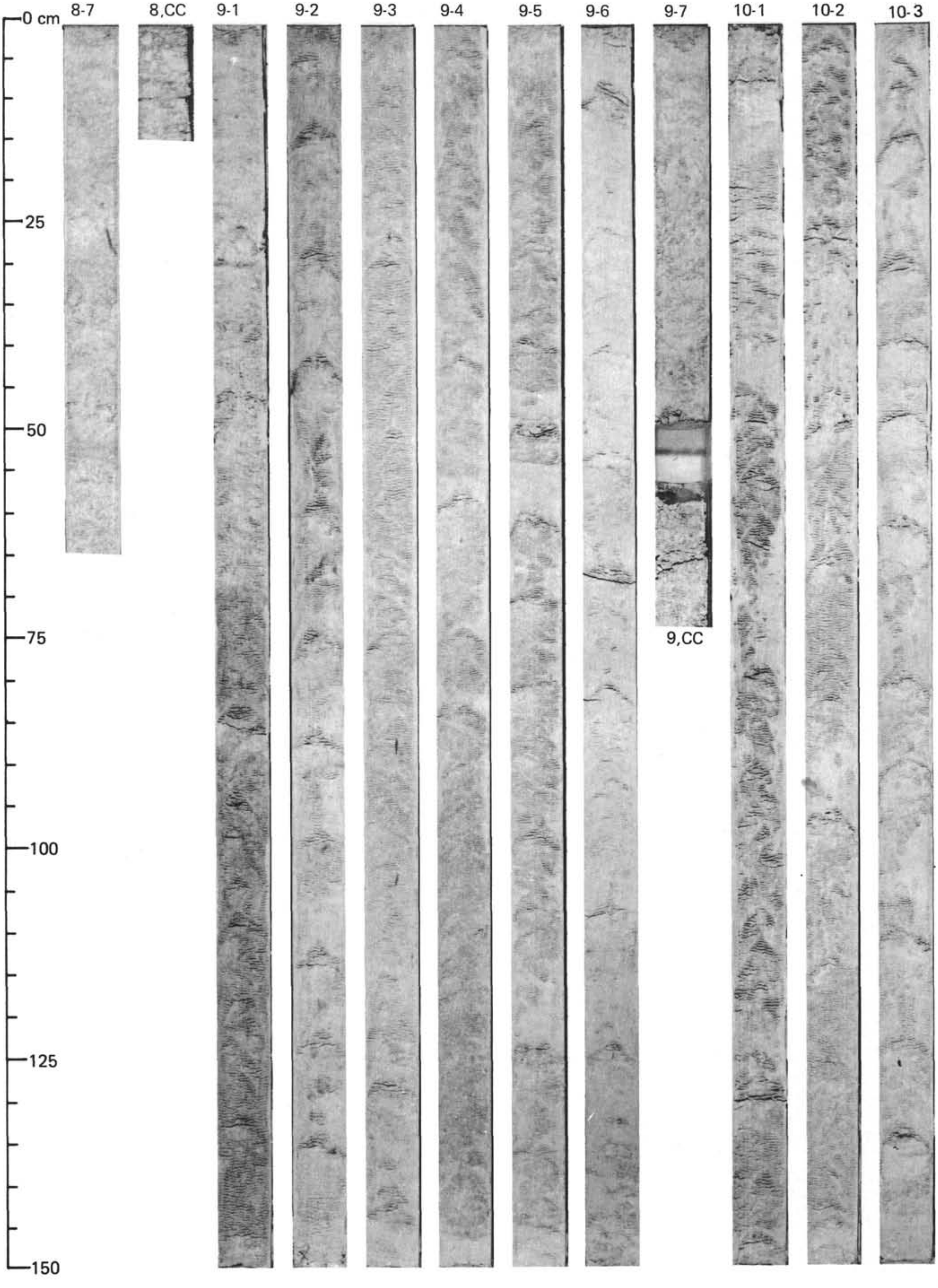
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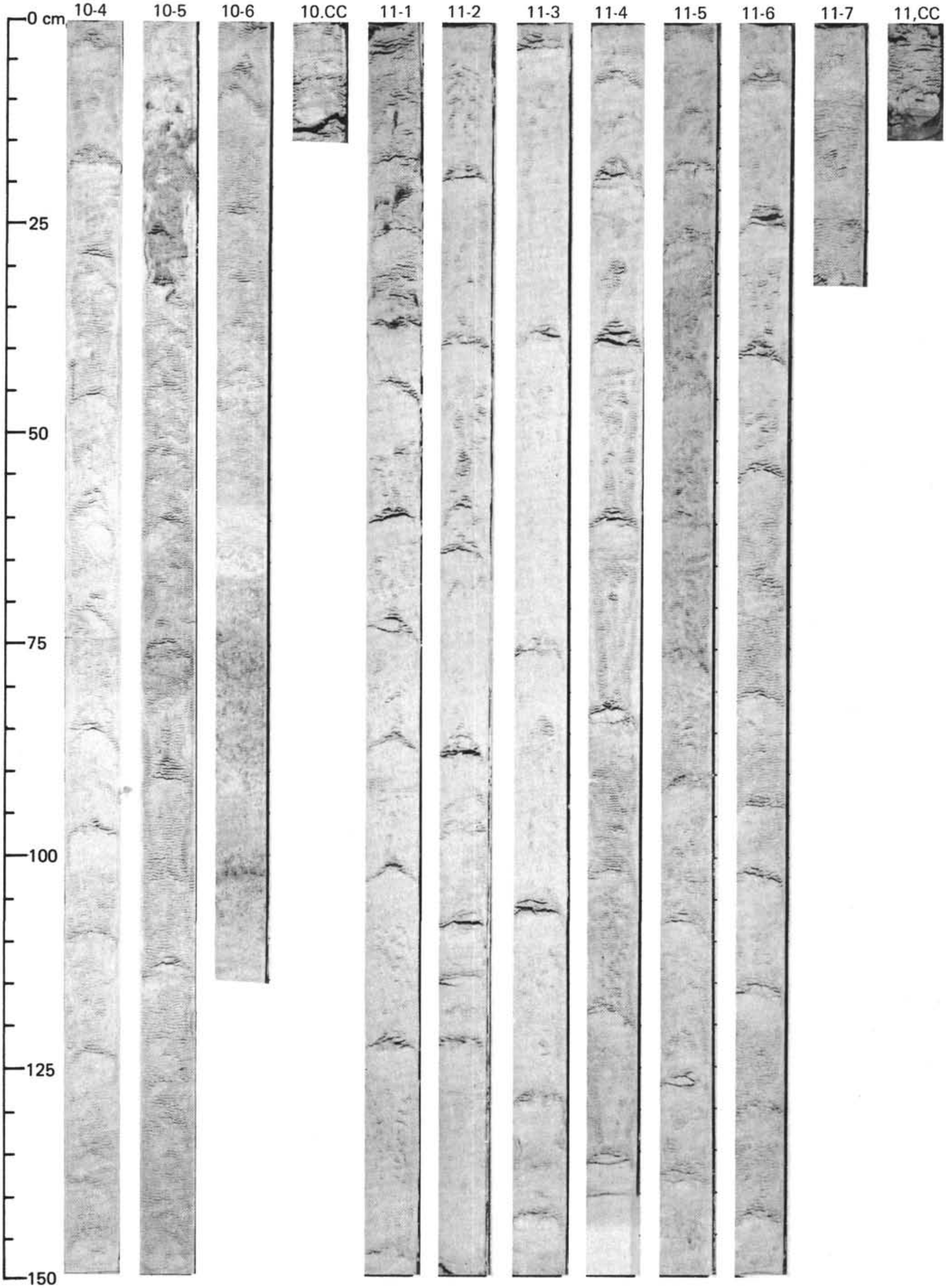
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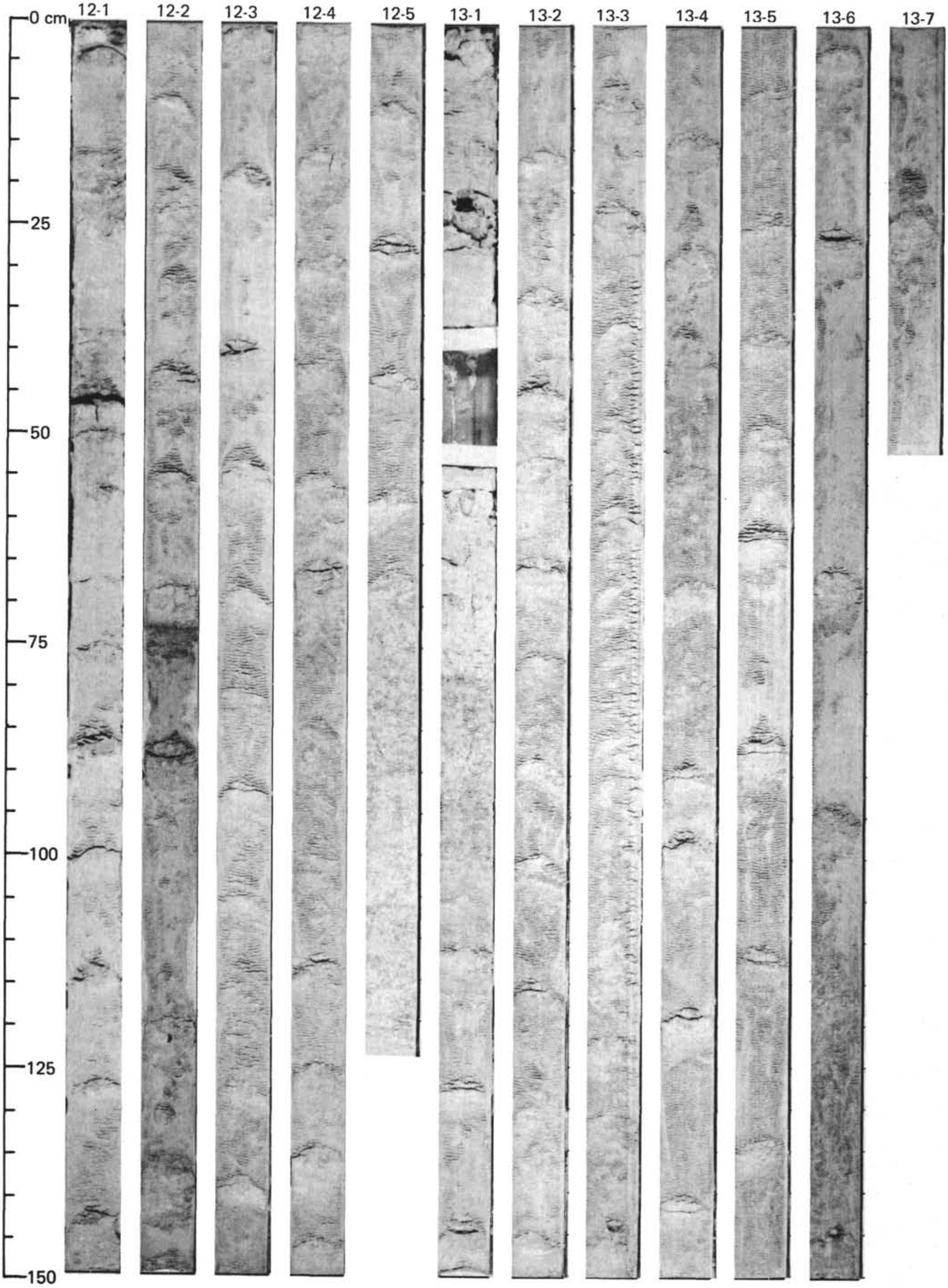
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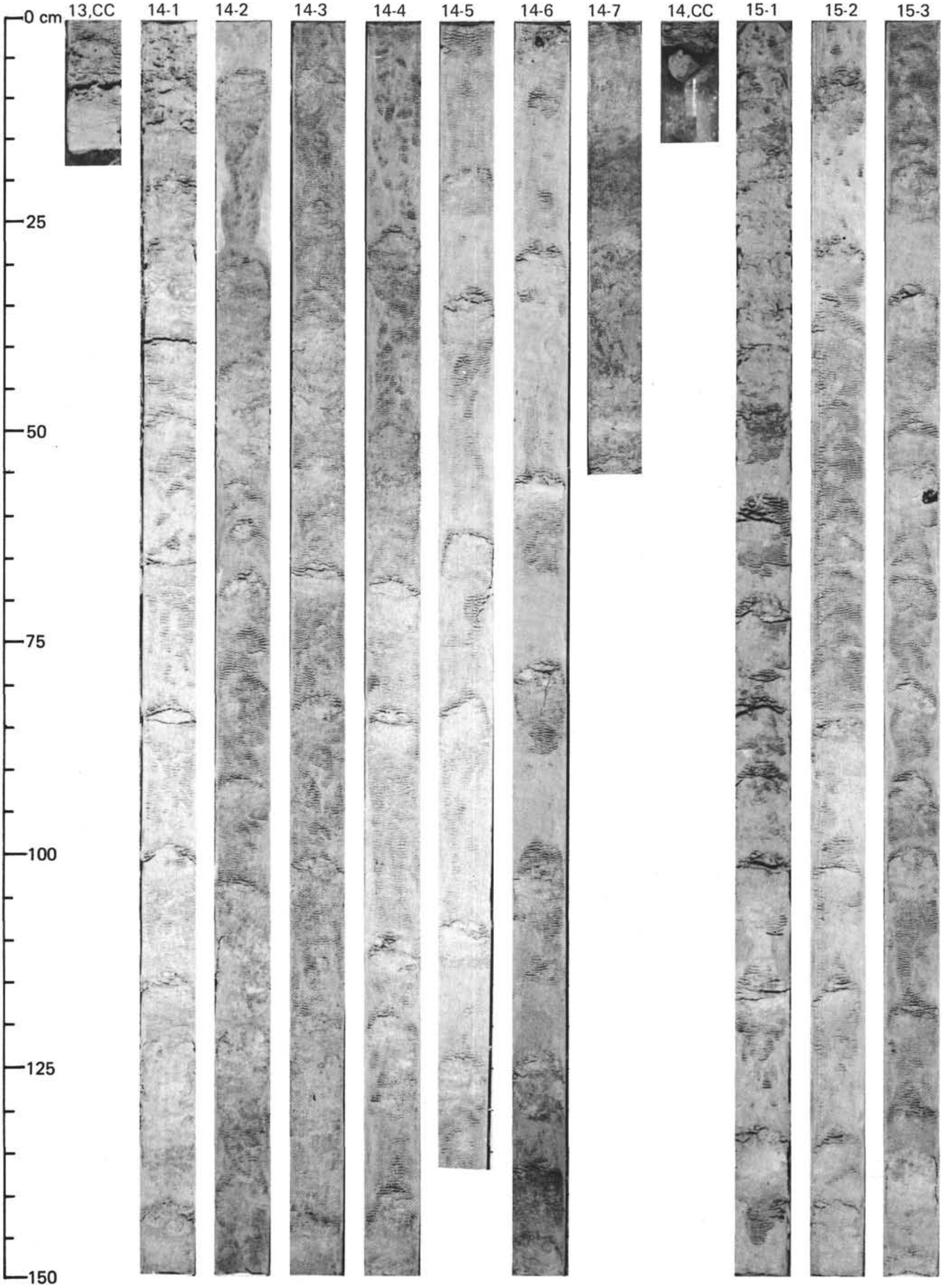
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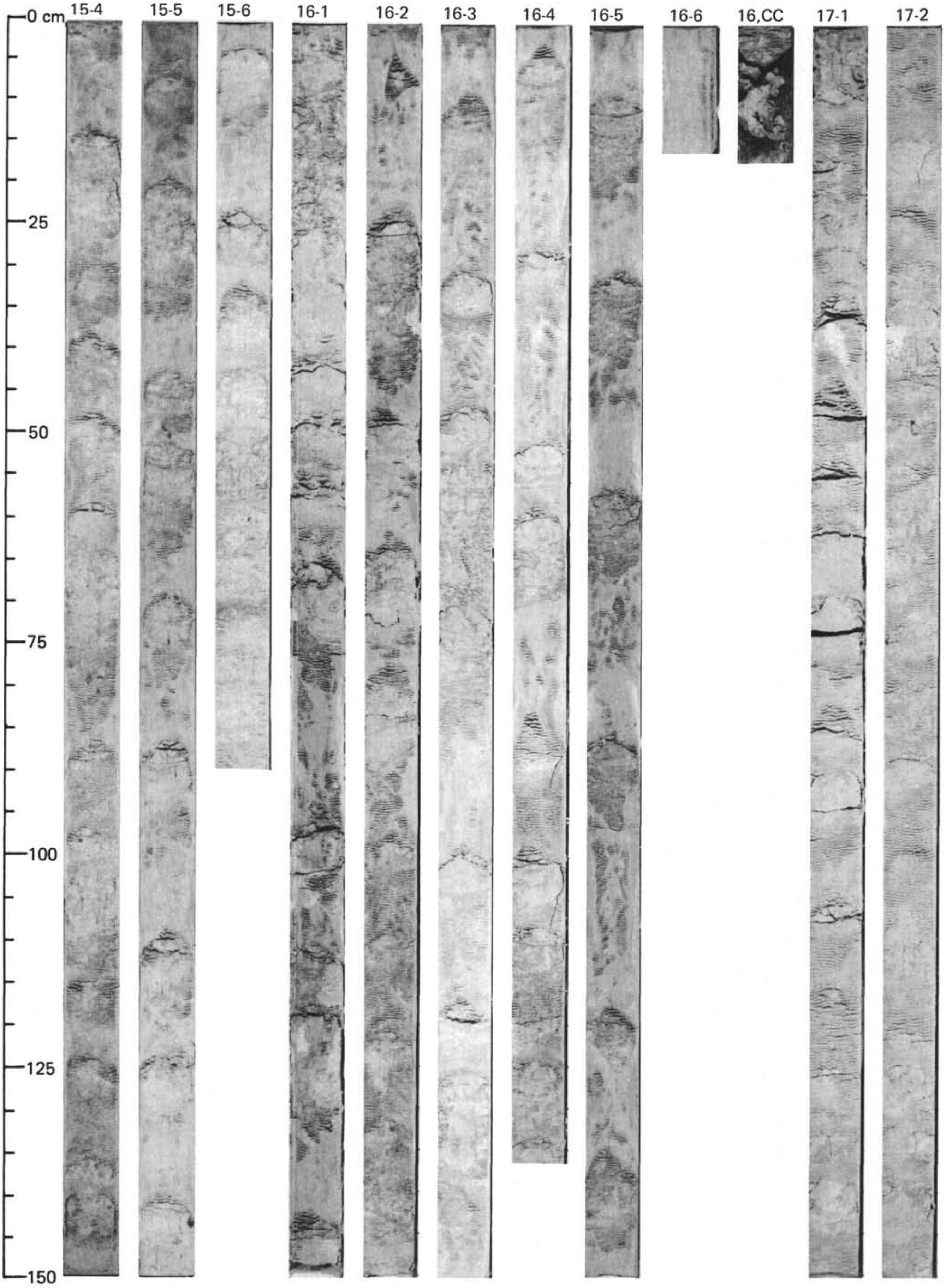
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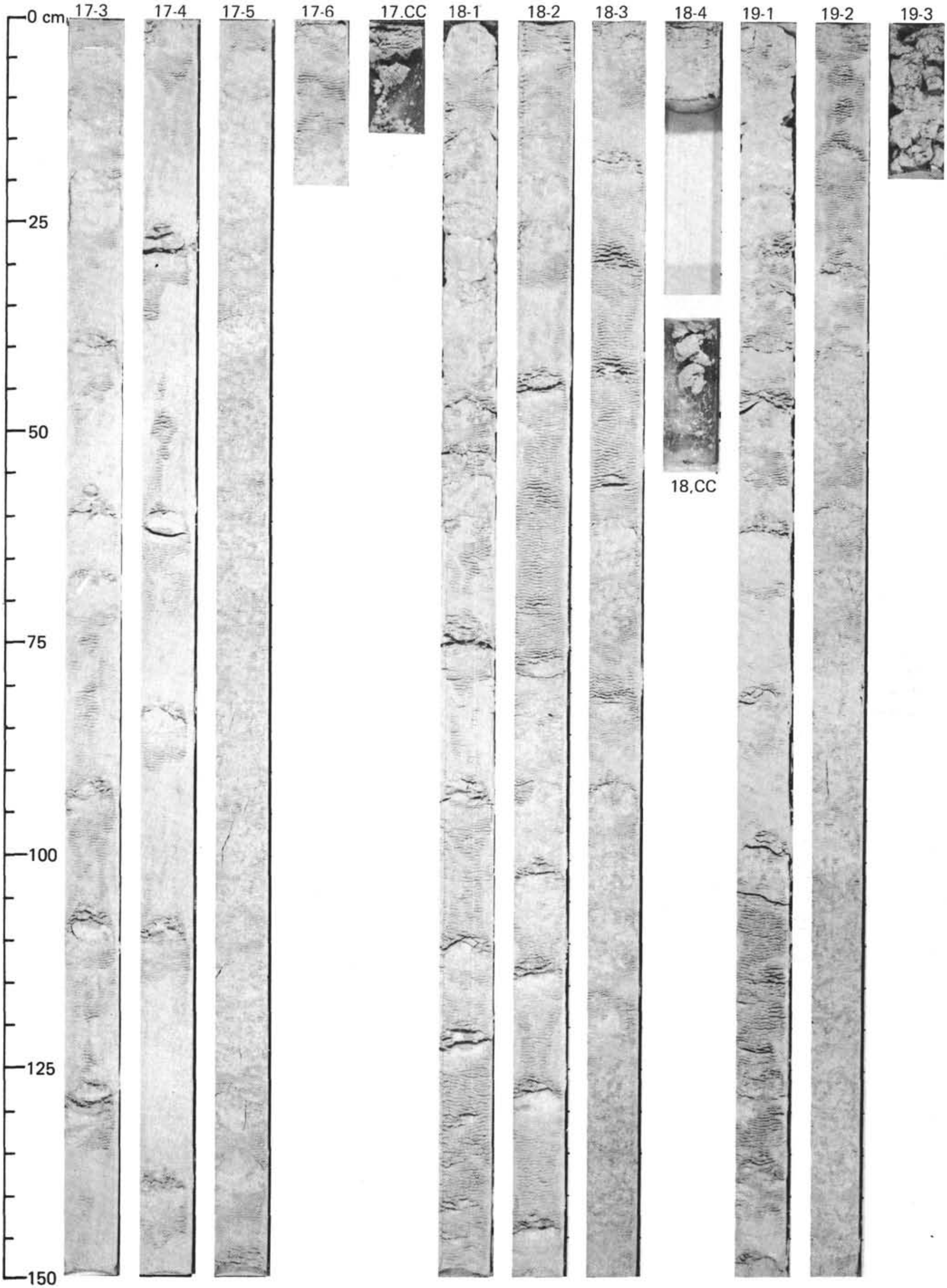
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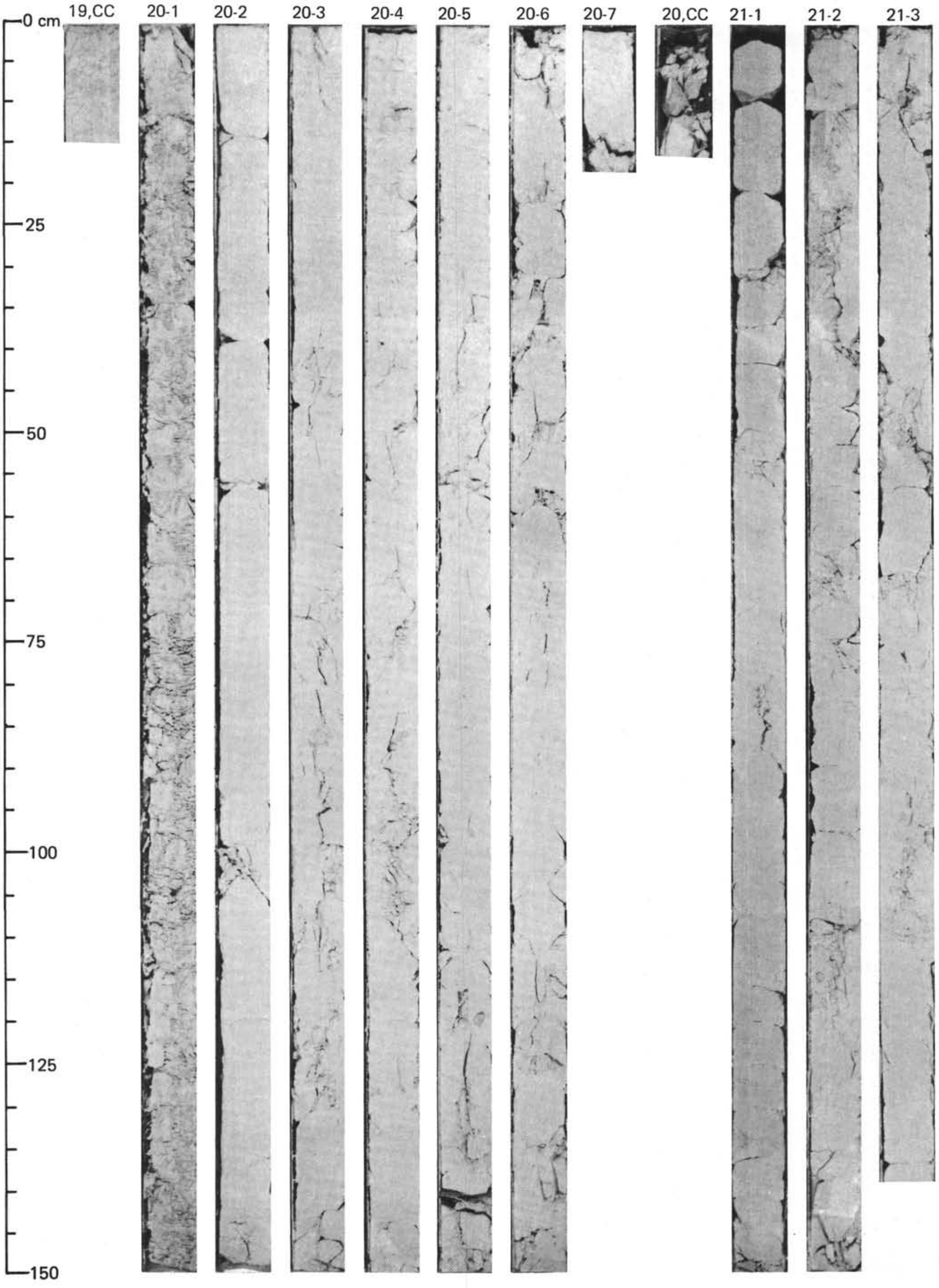
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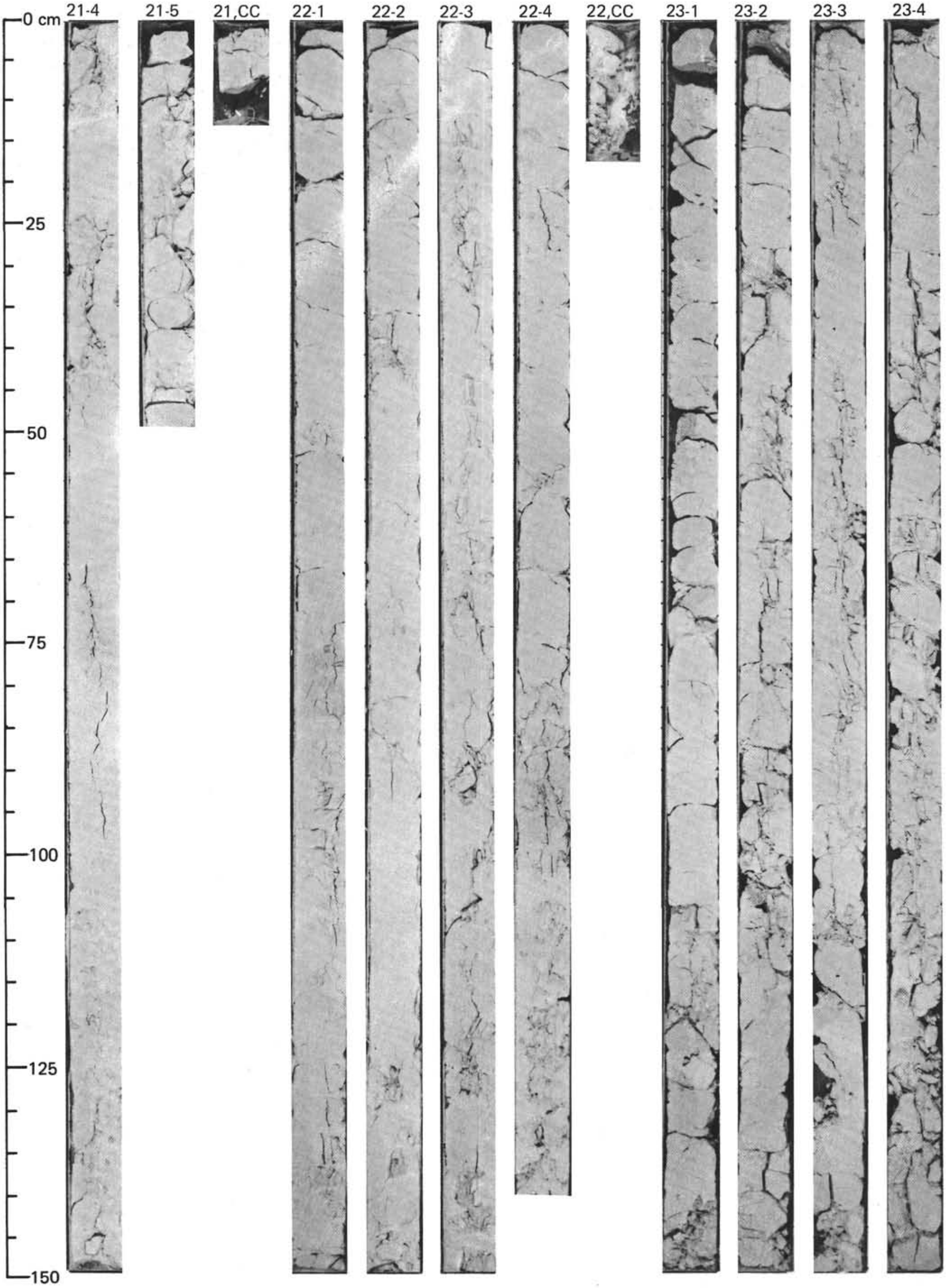
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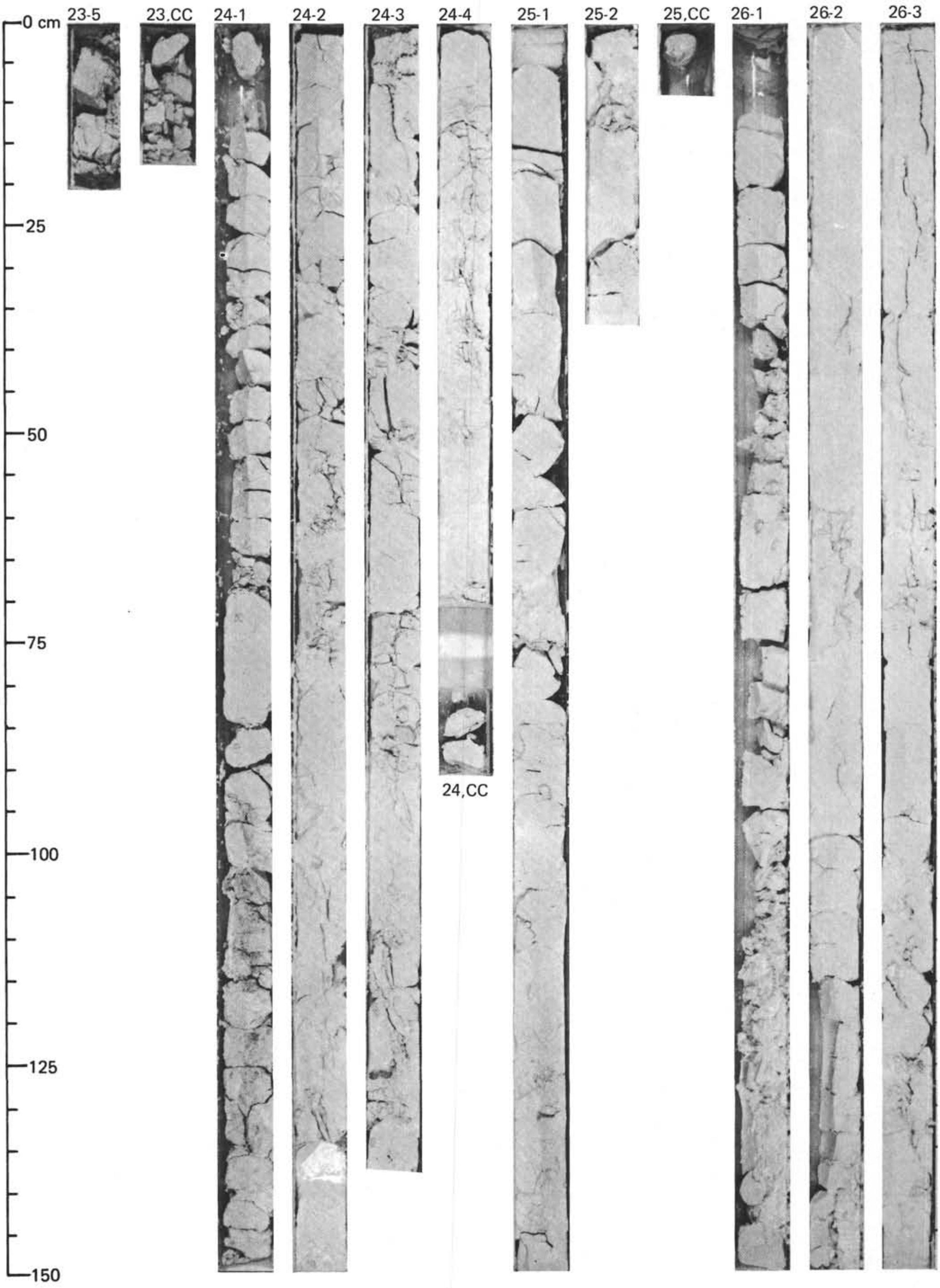
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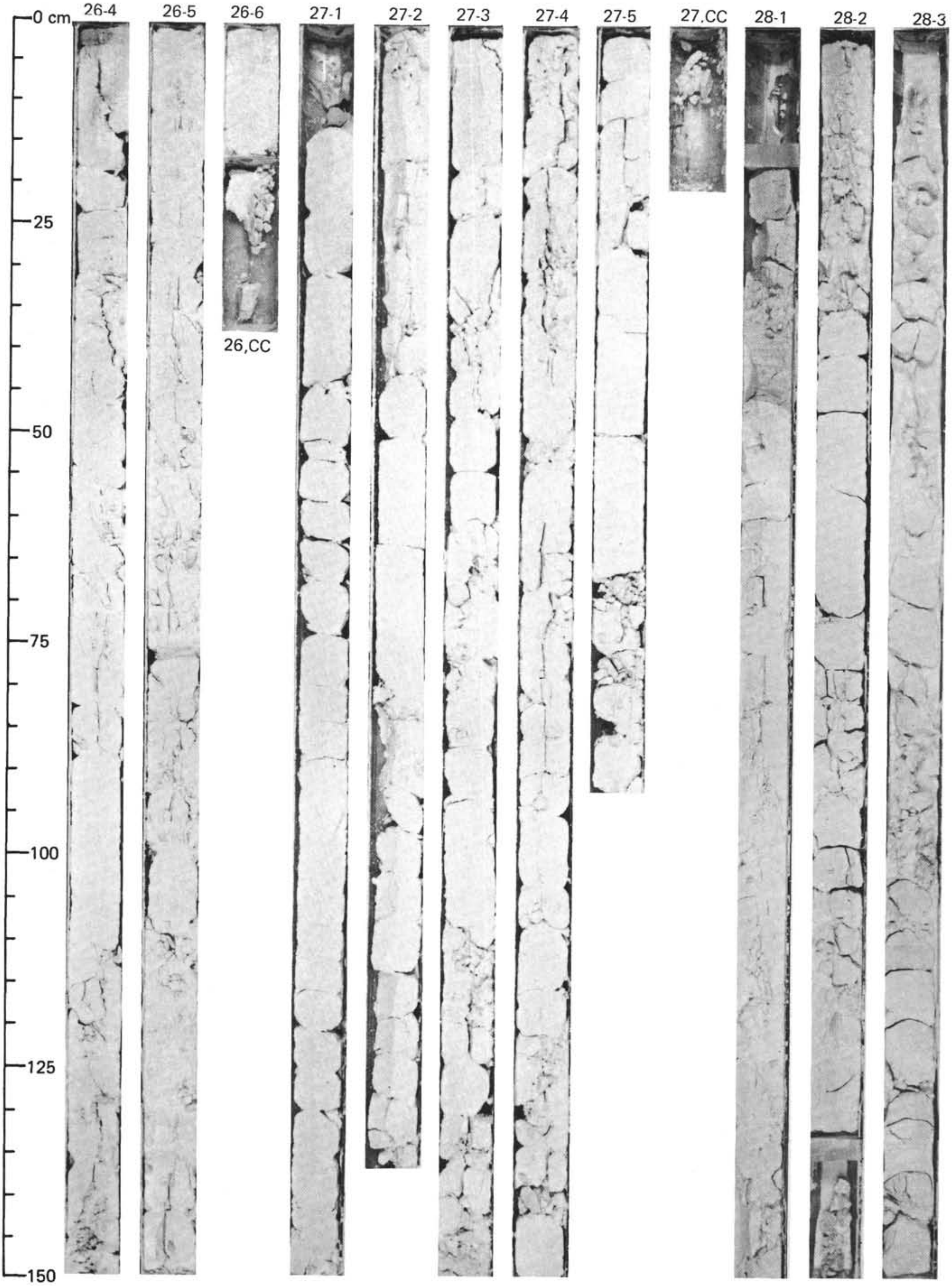
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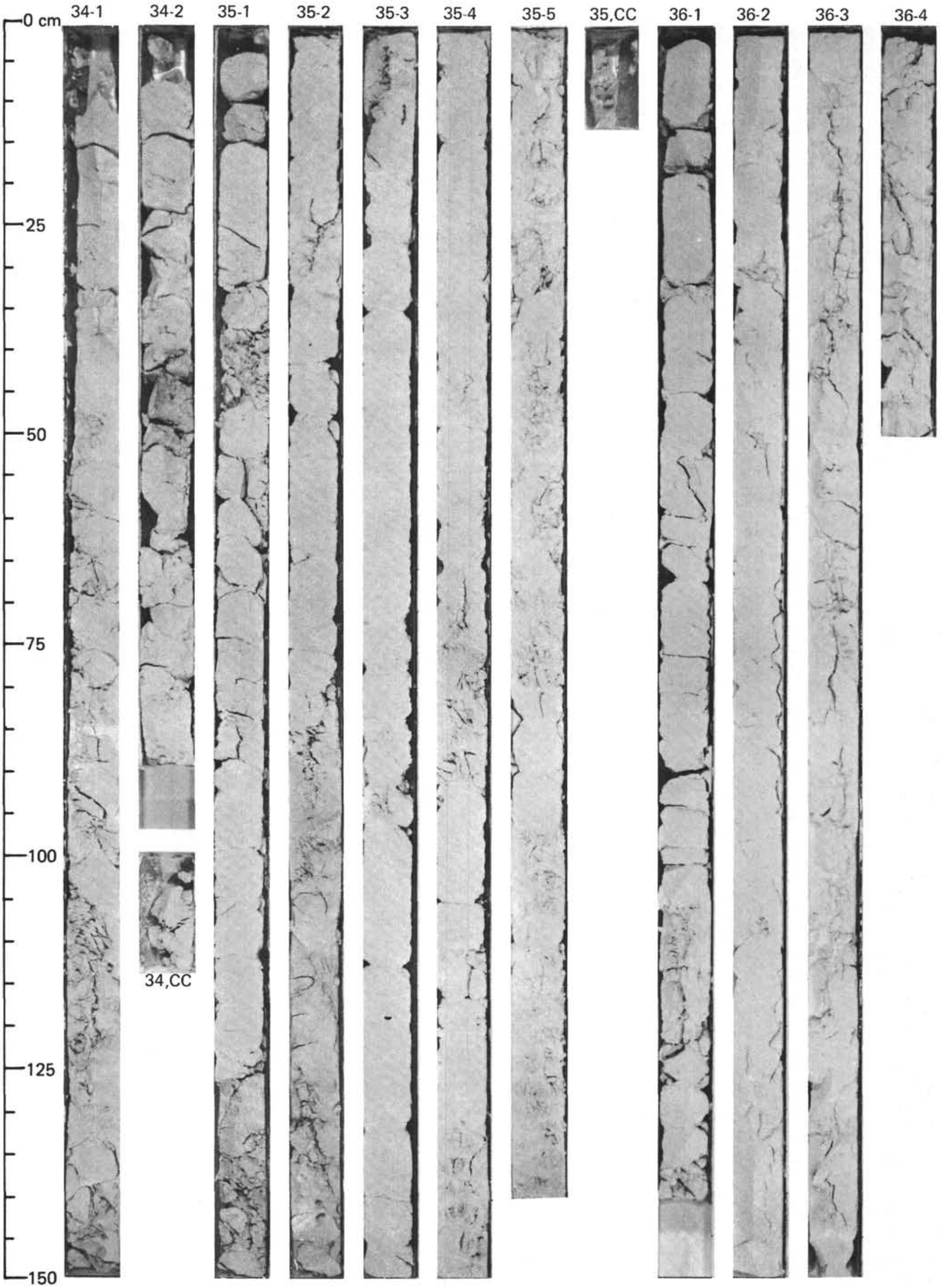

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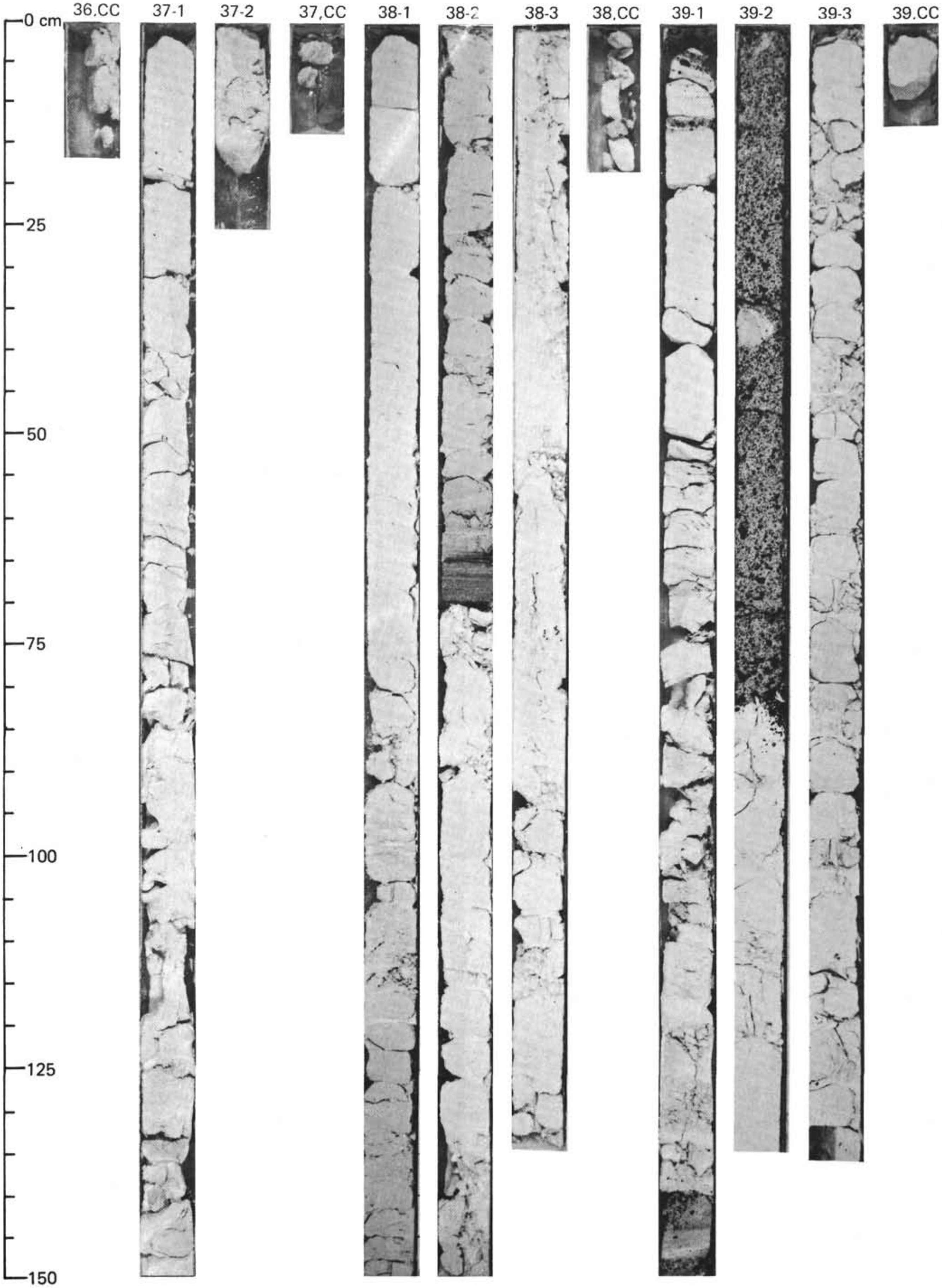
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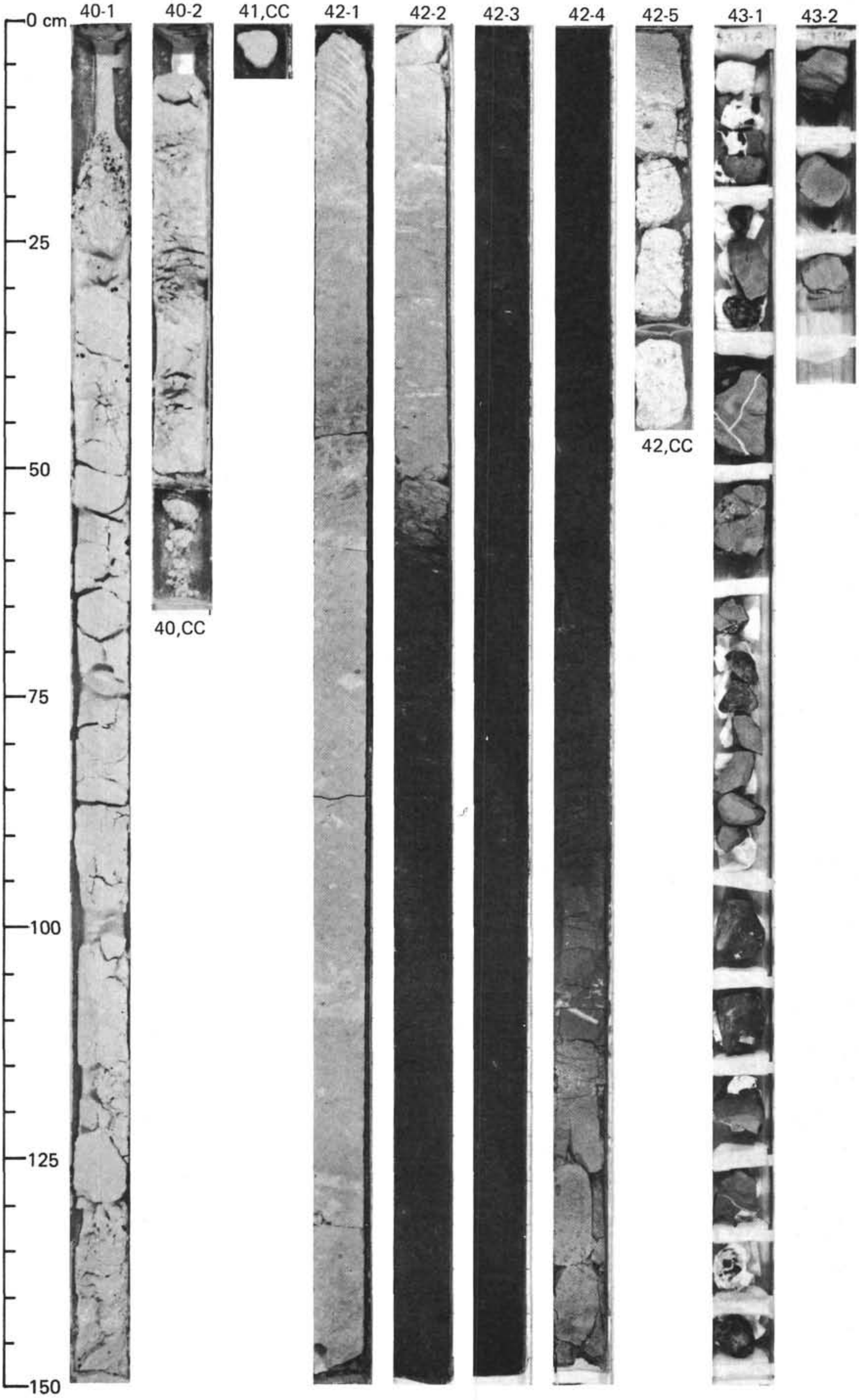
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