3. SITE 607[1]

Shipboard Scientific Party[2]

HOLE 607

Date occupied: 6 July 1983 (2030 hr.)

Date departed: 9 July 1983 (0300 hr.)

Time on hole: 2 days, 6.5 hr.

Position: 41°00.068′N; 32°57.438′W

Water depth (sea level; corrected m, echo-sounding): 3426.8

Water depth (rig floor; corrected m, echo-sounding): 3436.8

Bottom felt (m, drill pipe): 3426.1

Penetration (m): 284.4

Number of cores: 30

Total length of cored section (m): 284.4

Total core recovered (m): 248.2

Core recovery (%): 87.2

Oldest sediment cored:
Sub-bottom depth (m): 284.4
Nature: nannofossil ooze (friable)
Age: late Miocene (6.5 Ma [NN11])
Measured velocity (km/s): 1.57

Basement: Not reached

HOLE 607A

Date occupied: 9 July 1983 (0315 hr.)

Date departed: 11 July 1983 (0458 hr.)

Time on hole: 2 days, 1.75 hr.

Position: 41°00.068′N; 32°57.438′W

Water depth (sea level; corrected m, echo-sounding): 3426.8

Water depth (rig floor; corrected m, echo-sounding): 3436.8

Bottom felt (m, drill pipe): 3424.7

Penetration (m): 311.3

Number of cores: 26

Total length of cored section (m): 226.6

Total core recovered (m): 205.0

Core recovery (%): 90.5

Oldest sediment cored:
Sub-bottom depth (m): 311.3
Nature: friable nannofossil ooze
Age: late Miocene (7.0 Ma [NN11])
Measured velocity (km/s): 1.57

Basement: Not reached

Principal results: Site 607 consists of two holes located on the upper middle western flank of the Mid-Atlantic Ridge at 41°00.0′N, 32°57.4′W. Hole 607 was cored with the variable-length hydraulic piston corer (VLHPC) to a sub-bottom depth of 140.9 m (3.2 Ma) and then cored with the extended core barrel (XCB) to a total depth of 284.4 m (6.5 Ma). Hole 607A was VLHPC-cored to a sub-bottom depth of 159 m (3.6 Ma), XCB-cored to 173.6 m (3.9 Ma), washed down to 258.3 m (5.8 Ma), and XCB-cored to a total depth of 311.3 m (7.0 Ma). Recovery averaged 87.2% in Hole 607 and 90.5% in Hole 607A. Contorted layering due to coring disturbances was seen only below 255 m. Paleomagnetic and lithologic tie-lines between holes indicate that the composite section is 100% complete to at least 116 m sub-bottom depth. All calcareous microfossil zones are well represented; no hiatuses are evident at the chosen density of sampling. The paleomagnetic stratigraphy is excellent through 4.75 Ma (early Pliocene) and then marginal to total depth. The upper 116 m consists of interbedded Pleistocene and upper Pliocene foraminifer nannofossil oozes and marls representing the North Atlantic glacial marine cycles. Deeper sediments are lower Pliocene and upper Miocene foraminifer–nannofossil oozes as well as nannofossil oozes. Deposition rates averaged 43 m/m.y. throughout. As at Site 606, these rates are consistent with an environment of dominantly pelagic deposition in which sedimentation rates were subtly enhanced as a result of continuous transportation and redeposition of mostly contemporaneous sediment by gentle current activity on the seafloor. Several "pelagic" turbidites, as well as ash layers and diatom evidence, suggest that periods of more energetic sediment redistribution may have occurred sporadically.

BACKGROUND AND OBJECTIVES

Site 607 is located at the base of the upper western flank of the Mid-Atlantic Ridge, roughly 240 n. mi. northwest of the Azores. *Vema* Cruise 30 previously collected a conventional piston core at this location, as well as seismic (air-gun) lines coming into and leaving the site (Figs. 1 and 2). The seismic records indicate prevalent sediment cover of 500 to 900 m (0.5–0.9 s of two-way traveltime) in this region, with the rougher crustal topography largely buried by relatively transparent sediment cover (Fig. 2). Some evidence of current redeposition is shown by the lack of sediment cover over the few basement peaks that emerge to the surface, and scour is evident around some of the peaks. There is a rippled wavelike structure evident in the upper sedimentary lay-

[1] Ruddiman, W. F., Kidd, R. B., Thomas, E., et al., *Init. Repts. DSDP*, 94: Washington (U.S. Govt. Printing Office).

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ers in many areas. Despite these features, conventional piston cores taken in these sediment piles record a detailed late Quaternary climatic sequence indicative of predominantly pelagic deposition (Ruddiman and McIntyre, 1981). The late Quaternary piston-core sequence consists of calcareous oozes interbedded with calcareous marls containing glacial marine sediments. Deposition rates in the late Quaternary averaged about 30 m/m.y. The total sediment thickness of 800 m (0.8 s) at this site, combined with an estimated basement age of 25 Ma, gives an average sedimentation rate of 30 m/m.y. for the whole sediment column. There is no additional knowledge of the deeper sediment column available from other drilling.

The principal objectives at Site 607 were paleoenvironmental. Site 607 is located along the northernmost part of the subtropical gyre in the modern circulation regime, but during Quaternary glaciations it felt the impact of major circulation changes. Sea-surface temperatures (SST) in this region were lower by 12°C or more, ice-rafted detritus was dropped from icebergs, and carbonate productivity decreased. The rhythm of SST change

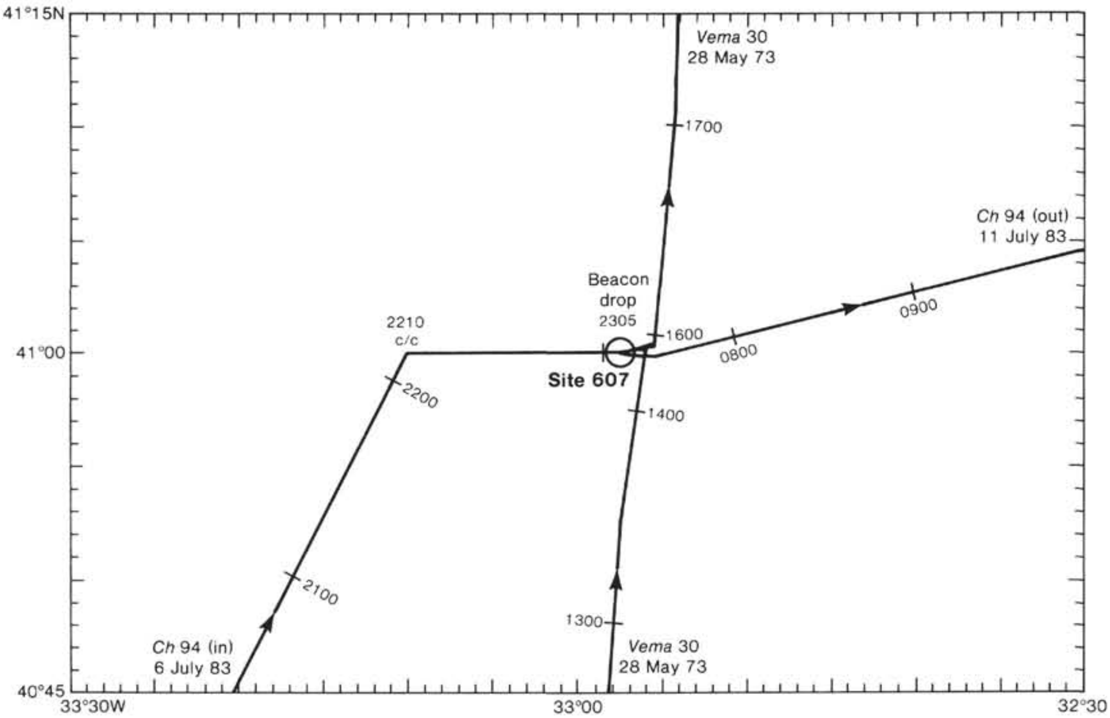


Figure 1. Track lines near Site 607. All times are GMT (Greenwich Mean Time); *Ch* 94 = *Glomar Challenger*, Leg 94; c/c = course change.

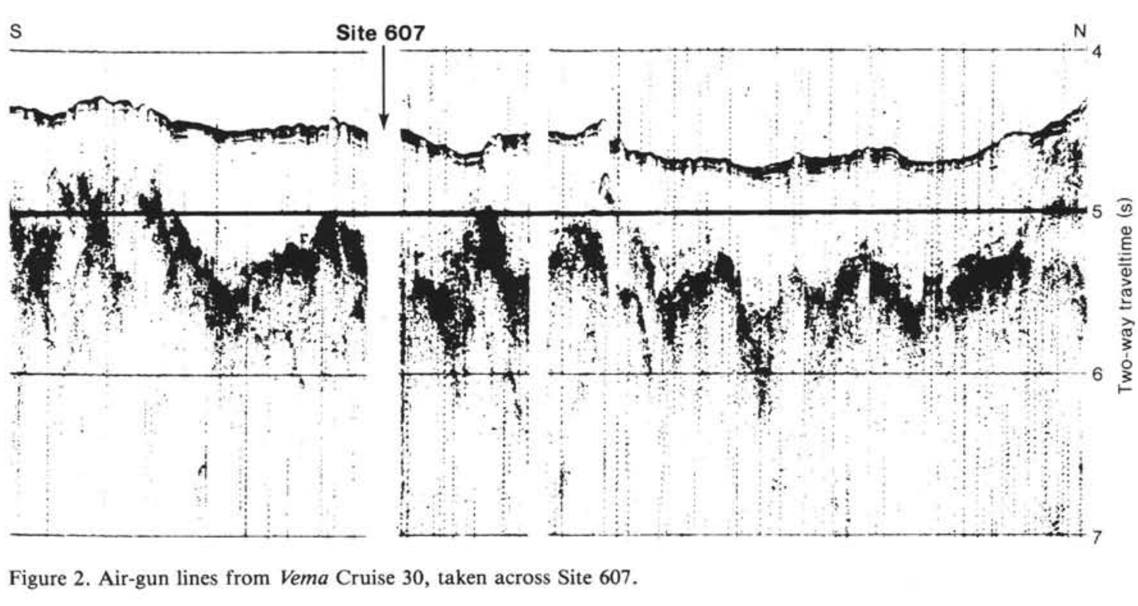


Figure 2. Air-gun lines from *Vema* Cruise 30, taken across Site 607.

in this area was very strong at the 23,000- and 100,000-yr. orbital periods. The primary objective at Site 607 was to trace these rhythmic changes back into the late Neogene—during times of lesser or no ice volume—to determine how the rhythmic response changed. Ancillary objectives included determining the history of deep-water flow, using both isotopic and faunal evidence; a detailed sequence of paleomagnetic transitions, both to define the magnetic stratigraphy and to study the details of polarity shifts; long stable isotope sequences; and the history of late Neogene ice rafting.

OPERATIONS

Following departure from Site 606, we headed to the north-northwest to a turning point at 41°00′N, 33°10′W (Fig. 1). We made the turn at 2010 hr.[3] on 6 July 1983 to a course of 090° toward Site 607. We passed over the planned site at 2105 hr., decided from the seismic records that we would hold to the proposed location, and dropped a beacon. We retrieved the underway gear and returned to the beacon at 2130 hr. Rigging for the VLHPC took until 2230 hr., at which time we began running in to Hole 607, finishing at 0630 hr. on 7 July. From 0630 until 0830 hr., we felt for bottom and then spudded in at 0830 hr. The first VLHPC core from Hole 607 came on board at 0905 hr. We cored continuously with the VLHPC until Core 607-15, which stuck in the sediments to an over-pull of 40,000 lbs. We washed over the core barrel and brought it on board at 0331 hr., 8 July. The VLHPC reached 140.4 m sub-bottom depth. We then began coring with the extended core barrel (XCB) on Core 607-16. The first few XCBs had shattered liners, apparently because they had been dropped without sufficient back-pressure to slow their descent. Core barrels 18 through 29 were wirelined to prevent impact problems. Recovery improved at Core 607-18 and continued good until Core 607-25, where it began to fall off. By Core 607-28, the recovered portions were very soupy. Cores 607-29 and 607-30 were also soupy and not measurably better than what could be obtained with conventional rotary drilling, so we terminated Hole 607 at a total depth of 284.4 m at 0126 hr. on 9 July (Table 1). The reason for the soupy quality was not definitely established, but it appeared to be due to the friable nature of the semi-consolidated sediments, which broke off in hunks and pushed ahead of the bit. The weather at Hole 607 was excellent throughout our operations.

We pulled pipe from 0130 to 0300 hr. on 9 July, offset 100 ft. due north from 0300 to 0315 hr., and spudded in to Hole 607A at 0400 hr. The first VLHPC core was on deck at 0457 hr., and we then cored continuously with the VLHPC until Core 607A-18, which came onboard at 0420 hr. on 10 July. Because of increasing over-pull values, we switched to XCB coring on Core 607A-19. Cores 607A-19 and 607A-20 were taken at sub-bottom depths of 159.0 to 173.6 m, immediately below the preceding HPC sequence, in order to obtain overlapped cores through an important section of the sediment column (Fig. 3). D. Cameron ran a successful test of the Core Barrel Pressure Tool (CBPT) on Core 19. After Core 607A-20 came on board at 0705 hr. on 10 July, we washed down to a sub-bottom depth of 258.3 m to begin

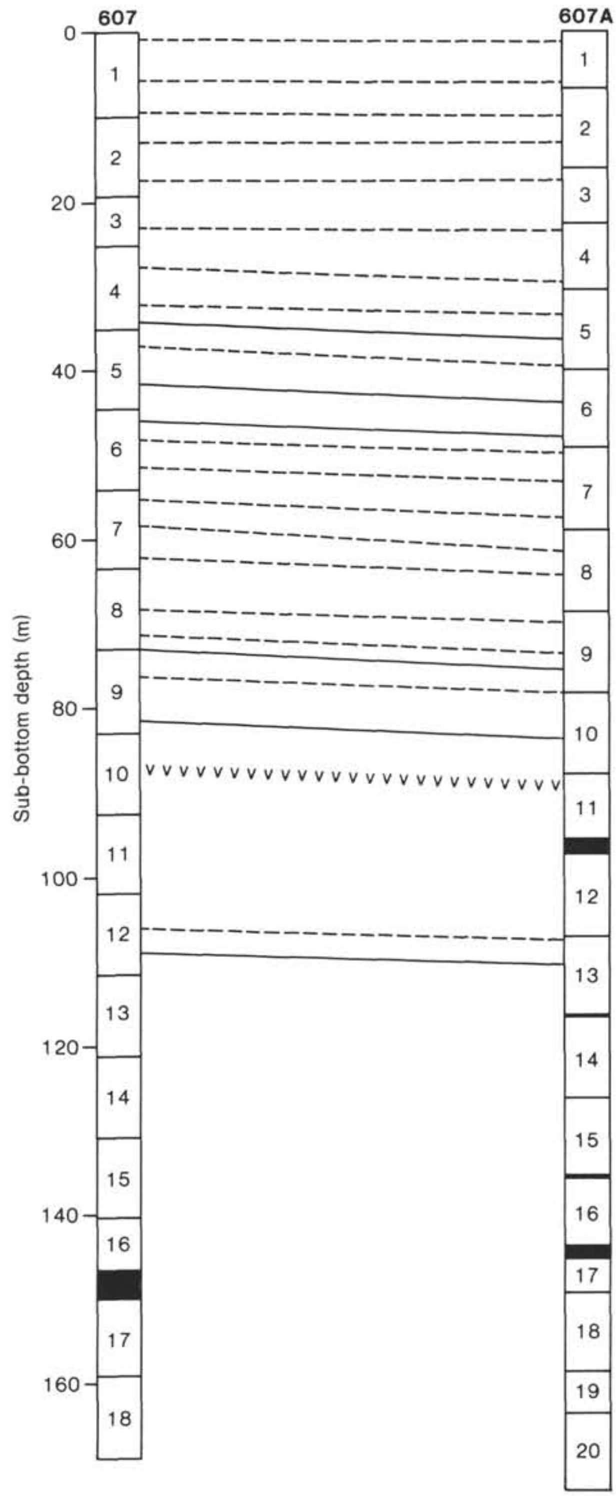


Figure 3. Coring gaps (shown in black) and relative offsets between correlative levels in Holes 607 and 607A. Paleomagnetic tielines are solid, $CaCO_3$ tielines, dashed; and volcanic ash is indicated by vvvvvv.

[3] All times are local (ship's time).

XCB coring just above the depth at which the recovery had deteriorated in Hole 607. We then cored continuously to a sub-bottom depth of 311.3 m; the final XCB core (607A-26) came on board at 1850 hr. on 10 July. D. Cameron ran an additional CBPT pressure test on Core 607A-21. The quality of recovery with the XCB was generally better than at comparable levels in Hole 607, possibly because the driller kept adjusting the drilling rates in response to perceived changes in resistance. D. Cameron conducted three go-devil tests on the last XCB, but could not determine the cause of the liner shattering. We began pulling pipe at 2100 hr. on 10 July and cleared the mudline at 2215 hr. We finished pulling pipe at 0440 hr. on 11 July and, after maneuvering while streaming seismic gear, got underway to Site 608 on a course of 068°. The weather was excellent throughout operations at Hole 607A.

Table 1. Coring summary, Site 607.

Core	Date (July, 1983)	Time (hr.)	Depth from drill floor (m) Top–Bottom	Depth below seafloor (m) Top–Bottom	Length cored (m)	Length recovered (m)	Recovery (%)
Hole 607							
1	7	0905	3426.1-3435.7	0.0-9.6	9.6	9.44	98.3
2	7	1006	3435.7-3445.3	9.6-19.2	9.6	9.53	99.3
3	7	1128	3445.3-3451.3	19.2-25.2	6.0	5.77	96.2
4	7	1257	3451.3-3460.9	25.2-34.8	9.6	9.47	98.6
5	7	1417	3460.9-3470.5	34.8-44.4	9.6	9.34	97.3
6	7	1531	3470.5-3480.1	44.4-54.0	9.6	9.38	97.7
7	7	1653	3480.1-3489.7	54.0-63.6	9.6	9.59	100.0
8	7	1830	3489.7-3499.3	63.6-73.2	9.6	9.29	96.8
9	7	2000	3499.3-3508.9	73.2-82.8	9.6	9.24	96.2
10	7	2123	3508.9-3518.5	82.8-92.4	9.6	9.57	100.0
11	7	2244	3518.5-3528.1	92.4-102.0	9.6	9.30	96.9
12	7	2359	3528.1-3537.7	102.0-111.6	9.6	9.28	96.7
13	8	0125	3537.7-3547.3	111.6-121.2	9.6	9.55	99.5
14	8	0226	3547.3-3556.9	121.2-130.8	9.6	9.44	98.3
15	8	0331	3556.9-3566.5	130.8-140.4	9.6	9.45	98.4
16	8	0641	3566.5-3576.1	140.4-150.0	9.6	6.17	64.3
17	8	0740	3576.1-3585.7	150.0-159.6	9.6	2.56	26.7
18	8	0855	3585.7-3595.3	159.6-169.2	9.6	8.66	90.2
19	8	1003	3595.3-3604.9	169.2-178.8	9.6	8.62	89.8
20	8	1109	3604.9-3614.5	178.8-188.4	9.6	9.24	96.3
21	8	1245	3614.5-3624.1	188.4-198.0	9.6	9.36	97.5
22	8	1405	3624.1-3633.7	198.0-207.6	9.6	9.73	101.3
23	8	1512	3633.7-3643.3	207.6-217.2	9.6	9.39	97.8
24	8	1627	3643.3-3652.9	217.2-226.8	9.6	9.68	100.8
25	8	1749	3652.9-3662.5	226.8-236.4	9.6	4.07	42.4
26	8	1924	3662.5-3672.1	236.4-246.0	9.6	8.16	85.0
27	8	2051	3672.1-3681.7	246.0-255.6	9.6	5.44	56.7
28	8	2215	3681.7-3691.3	255.6-265.2	9.6	9.85	100.0
29	8	2328	3691.3-3700.9	265.2-274.8	9.6	4.27	44.5
30	9	0126	3700.9-3710.5	274.8-284.4	9.6	5.32	55.4
					284.4	248.2	87.2
Hole 607A							
1	9	0457	3424.7-3431.1	0.0-6.4	6.4	6.33	98.9
2	9	0606	3431.1-3440.7	6.4-16.0	9.6	8.97	93.4
3	9	0748	3440.7-3447.2	16.0-22.5	6.5	8.68	133.8[a]
4	9	0854	3447.2-3455.2	22.5-30.5	8.0	9.02	112.8[a]
5	9	1018	3455.2-3464.8	30.5-40.1	9.6	9.25	96.4
6	9	1140	3464.8-3474.4	40.1-49.7	9.6	9.24	96.3
7	9	1301	3474.4-3484.0	49.7-59.3	9.6	9.47	98.6
8	9	1421	3484.0-3493.6	59.3-68.9	9.6	8.69	90.5
9	9	1540	3493.6-3503.2	68.9-78.5	9.6	9.25	96.4
10	9	1655	3503.2-3512.8	78.5-88.1	9.6	9.32	97.1
11	9	1759	3512.8-3522.4	88.1-97.7	9.6	6.99	72.8
12	9	1913	3522.4-3532.0	97.7-107.3	9.6	9.45	98.4
13	9	2113	3532.0-3541.6	107.3-116.9	9.6	9.10	94.8
14	9	2231	3541.6-3551.2	116.9-126.5	9.6	7.08	73.7
15	9	2350	3551.2-3560.8	126.5-136.1	9.6	9.21	95.9
16	10	0116	3560.8-3570.4	136.1-145.7	9.6	7.99	83.2
17	10	0248	3570.4-3574.1	145.7-149.4	3.7	3.70	100.0
18	10	0420	3574.1-3583.7	149.4-159.0	9.6	8.77	91.4
19	10	0545	3583.7-3588.7	159.0-164.0	5.0	4.81	96.2
20	10	0705	3588.7-3598.3	164.0-173.6	9.6	8.37	87.2
21	10	1120	3683.0-3688.0	258.3-263.3	5.0	4.74	97.4
22	10	1208	3688.0-3697.6	263.3-272.9	9.6	8.45	88.0
23	10	1431	3697.6-3707.2	272.9-282.5	9.6	5.00	52.1
24	10	1555	3707.2-3716.8	282.5-292.1	9.6	8.84	92.1
25	10	1715	3716.8-3726.4	292.1-301.7	9.6	8.52	88.7
26	10	1850	3726.4-3736.0	301.7-311.3	9.6	5.75	59.9
					226.6	205.0	90.5

[a] Actual recovery of good core less than 100%; upper portions that are not valid core are obvious from the contortions.

SEDIMENT LITHOLOGY

Two holes (607 and 607A) were drilled at Site 607, each with both the VLHPC and the XCB (see Operations section and Fig. 4). Sediments recovered with the VLHPC are generally undisturbed, whereas sediments recovered with the XCB range from undisturbed to slightly disturbed and typically contain numerous indurated "drill biscuits" 1 to 10 cm thick. In addition, Core 607-28 (255.6–265.2 m sub-bottom) was soupy.

The sediments recovered at Site 607 consist predominantly of calcareous biogenic ooze with variable amounts of fine-grained terrigenous material. Lithology ranges from foraminiferal–nannofossil ooze and nannofossil ooze with minor nannofossil–foraminiferal sand to marly foraminiferal–nannofossil ooze and nannofossil ooze.

Carbonate bomb analyses and later shore-based work (Ruddiman et al., this volume) indicate that noncalcareous sediment makes up 5 to 55% of the cored material. Biogenic silica, composed of diatoms, radiolarians (commonly fragmented), sponge spicules, and silicoflagellates, ranges in abundance from 0 to 7%, but generally makes up less than 1% of the noncalcareous portion of the sediment. The remainder of the noncalcareous material consists predominantly of clay-sized detrital particles and rare silt- and sand-sized grains of quartz and feldspar. The small size of clay-sized particles makes mineralogic identification difficult, but it appears that they are mainly very fine-grained detrital quartz and feldspar rather than clay minerals.

The sediments recovered from Site 607 can be divided into two major lithologic units on the basis of changes in color and carbonate content (Figs. 4, 5). Unit II can be further separated into two subunits on the basis of changes in the percentage of foraminifers within the sediment.

Unit I extends from the seafloor to 114.8 m in Hole 607 and to 116.9 m in Hole 607A. The uppermost 28 cm of this unit in Hole 607 and the uppermost 60 cm in Hole 607A consist of yellow gray foraminiferal–nannofossil ooze. The yellowish color of this zone reflects the circulation of oxygen-rich seawater through the sediment.

The remainder of Unit I is characterized by cyclically interlayered zones of dark-colored sediment rich in fine-grained terrigenous material and lighter-colored ooze with a relatively small terrigenous component. Contacts between these zones are gradational because of bioturbation, and individual dark-to-light cycles range in thickness from 0.4 to 6 m. This unit represents the Pliocene–Pleistocene glacial marine cycles of the North Atlantic.

The darker-colored layers are composed of marly foraminiferal–nannofossil ooze with subordinate quantities of marly nannofossil ooze. Sediment color is highly variable: predominantly pale olive gray with varying amounts of green; medium to dark gray mottles and laminae; and olive and pale gray mottles. Carbonate measurements indicate that noncalcareous detritus makes up 23 to 55% of these layers. The relatively high per-

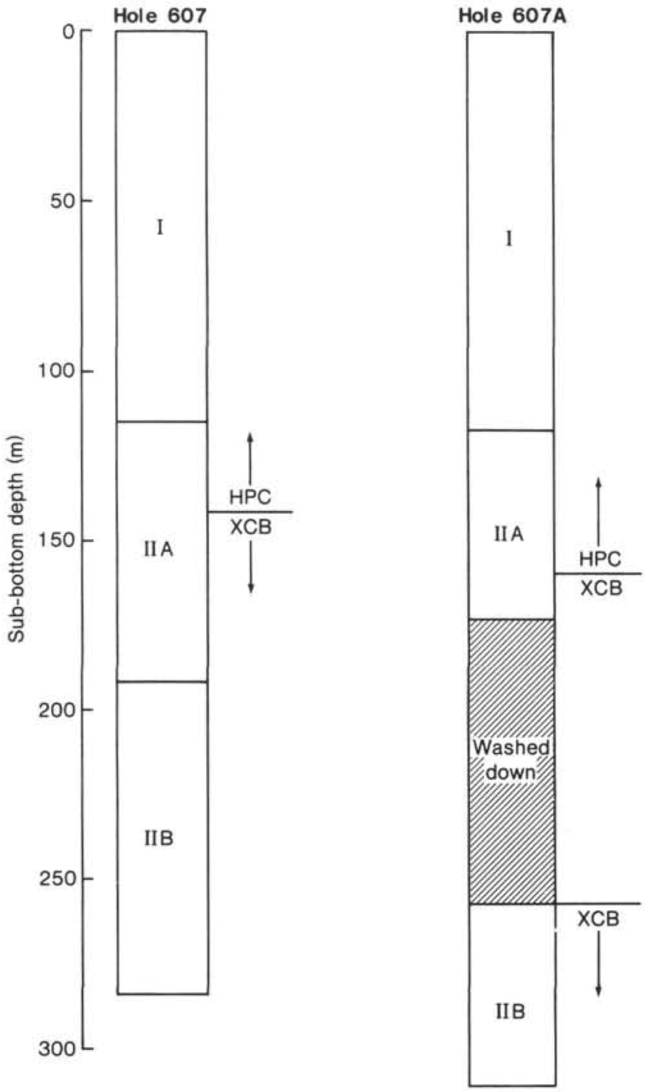


Figure 4. Coring techniques used and lithologic units recognized at Site 607. HPC = hydraulic-piston coring; XCB = extended-core-barrel coring.

centage of terrigenous sediment probably reflects deposition during glacial periods.

The lighter-colored portions of Unit I contain much less terrigenous material (5–30%), and consist of foraminiferal-nannofossil ooze and minor amounts of nannofossil ooze. These layers are typically pale gray to white, and contain scattered diffuse dark gray pyrite-rich mottles and laminations. Below approximately 65 m sub-bottom, the intensity of color in the darker layers of Unit I begins to decrease, and below approximately 116 m sub-bottom the dark-light glacial marine cycles die out completely.

Subunit IIA consists of a relatively homogeneous sequence of pale gray to white foraminiferal-nannofossil ooze with minor amounts of nannofossil ooze, and is generally similar to the lighter-colored portions of Unit I. Dark gray pyrite-rich mottles are scattered throughout the unit, and these sediments contain 5 to 18% ter-

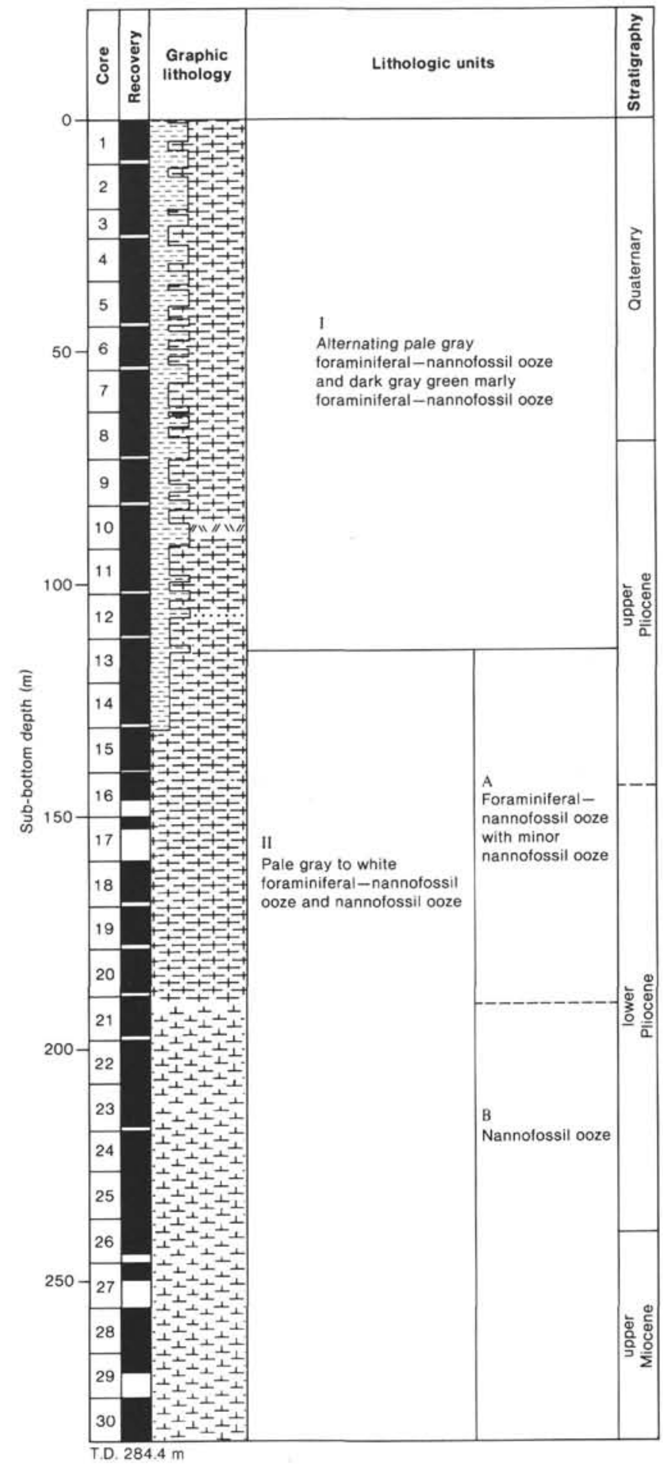


Figure 5. Lithologic units recognized at Hole 607.

rigenous material. The percentage of foraminifers in Subunit IIA ranges from 8 to 18% and averages approximately 12%. This percentage gradually decreases to approximately 5% in the homogeneous white to pale gray nannofossil ooze of Subunit IIB, at 192 m in Hole 607 and 260 m in Hole 607A (there are no data for the interval 173.6–258.3 m in Hole 607A, because this was not cored). No color changes occur between Subunits IIA and IIB. Subunit IIB extends to the total depth of each hole.

The relatively homogeneous nature of Unit II and the relative scarcity of terrigenous material in this portion of the sequence suggest that Unit II was deposited during stable oceanographic conditions.

Several 1- to 20-cm-thick white to dark gray nannofossil foraminiferal sand layers occur in Unit II and the lowermost portions of Unit I. These beds typically have sharp bases, but may have either sharp or gradational upper contacts. The relative paucity of fine-grained particles within some of the sand layers suggests that they were deposited during periods of increased current activity. Several (Sections 607-19-5, 607A-12-3, 607A-12-4, 607A-20-5, and 607A-21-2) are normally graded; the maximum size of foraminifers ranges from approximately 0.4 mm at their bases to 0.1 mm near their upper contacts. This grading suggests that these layers are probably turbidites. Because no grading was observed in the other sand layers, it is not clear whether they are also turbidites or are simply current-winnowed sands.

Dark gray layers of mixed nannofossil ooze and volcanic ash, 2 to 34 cm thick, and rich in fibrous glass and smaller quantities of plagioclase feldspar, occur in Hole 607 in Sample 607-10-4, 115–121 cm and in Hole 607A in Samples 607A-5-4, 83–85 cm, 607A-11-1, 71–105 cm, and 607A-25-1, 50–62 cm. The diffuse upper and lower contacts of the thicker ash layers indicate that they have been extensively bioturbated.

It is not clear whether these ash layers (1) were directly deposited by airfall and subsequent settling through the water column; (2) were deposited as in (1), but subjected to major redeposition before burial; or (3) are artifacts of erosion and redeposition of older ashfalls.

Several facts argue against simple primary deposition and burial. First, one of the three layers (Cores 607-10 and 607A-11) is common to both holes, but is roughly six times thicker in Hole 607A than in Hole 607. The equivalent of the ash in Core 607A-5 was not observed in Hole 607, but it could have been lost in a small unrecovered interval between Cores 607-4 and 607-5. There is no sediment recovered at Hole 607 from the depth equivalent to the deepest ash in Hole 607A. The differences between holes imply a significant degree of local redeposition. The lack of perceptible size grading argues against turbidity-current redeposition. This leaves bottom-current redeposition of either a primary (contemporaneous) ash or an eroded older ash layer as the most likely explanation.

A reworked diatom assemblage rich in volcanic glass occurs just above the ash layer in Core 607A-25. This could indicate erosion and redeposition of an older ash layer, in this instance. Deposition and reworking of a contemporaneous ash is not ruled out, however, for either this layer or the other two ash layers.

Small quantities of authigenic pyrite are scattered throughout the sequence as burrow casts and diffuse dark gray mottles, laminations, and halos that consist of concentrations of pyrite spheres (diameter 0.1 mm) and pyrite-filled foraminiferal tests. The pyrite was probably precipitated in localized reducing microenvironments associated with relatively high concentrations of organic matter.

Abundant burrows, including Zoophycos and Chondrites, are visible in the darker-colored portions of the sediment only, but the diffuse dark gray pyrite-rich mottles scattered throughout the lighter-colored portions of both cores indicate that the entire sequence is probably extensively bioturbated.

PHYSICAL PROPERTIES

The physical properties measured on samples from Site 607 are shown in Figure 6. The measured values of dry water content, wet water content, porosity, and void ratio (Figs. 6A–6D) decrease with sub-bottom depth. The 130% dry water content in the near-surface sediments decreases rapidly to 70% at 40 m depth, and then falls off more slowly below (Fig. 6A). Wet water content shows the same trend (Fig. 6B).

The measured porosity and void-ratio values in Hole 607 (Figs. 6C and 6D) show a rapid decrease with depth down to 50 m, but for deeper sediments they tend to decrease almost linearly with depth. Near-surface sediments have up to 80% porosity and a void ratio of 3.0; this is reduced to 65% porosity and a void ratio of 1.7 at 50 m and 55% porosity and a void ratio of 1.1 at a depth of 300 m.

Grain densities for Hole 607 are between 2.8 and 2.6 g/cm^3 (Fig. 6E).

Wet-bulk density is 1.4 g/cm^3 at the surface, rises rapidly to 1.62 g/cm^3 at 50 m depth, and then increases linearly to 1.8 g/cm^3 at 300 m depth (Fig. 6F).

Sonic velocity increases linearly from 1.5 km/s at the surface to 1.57 km/s at 300 m depth (Fig. 6G).

Shear strength (Fig. 6H) increases from 100 g/cm^2 at the surface to over 40 g/cm^2 at 140 m depth. Measured shear strengths below 140 m show a large shift toward lower values; this shift can be explained by disturbance of material recovered by the XCB below 140 m.

SEISMIC STRATIGRAPHY

Air-gun records from the *Glomar Challenger*'s Leg 94 approach to Site 607 are shown in Figure 7. In the expanded section shown, basement at Site 607 lies at 5.28 s, just beyond the lower limit of the figure, but is visible at 4.9 to 5.0 s in the left and middle sections of the record. Other seismic data recorded at a less expanded scale indicate that basement occurs at about 5.20 s at the location of Site 607, giving a total acoustic thickness of the sediment section of 0.72 s.

The seismic section can be divided into two acoustic units (Fig. 7). The upper unit (A) consists of acoustically reverberant reflectors that are wavy in form and blend together because they are closely spaced. This reflective unit extends from the surface to about 0.08 s sub-bottom. The lower unit (B) shows scattered, less reflective layering extending from 0.08 s sub-bottom to well below the depths cored. There may be some decrease in reflectivity with depth within this sequence. Widely scattered reflectors show faintly at some points along the track where acoustic energy is focused.

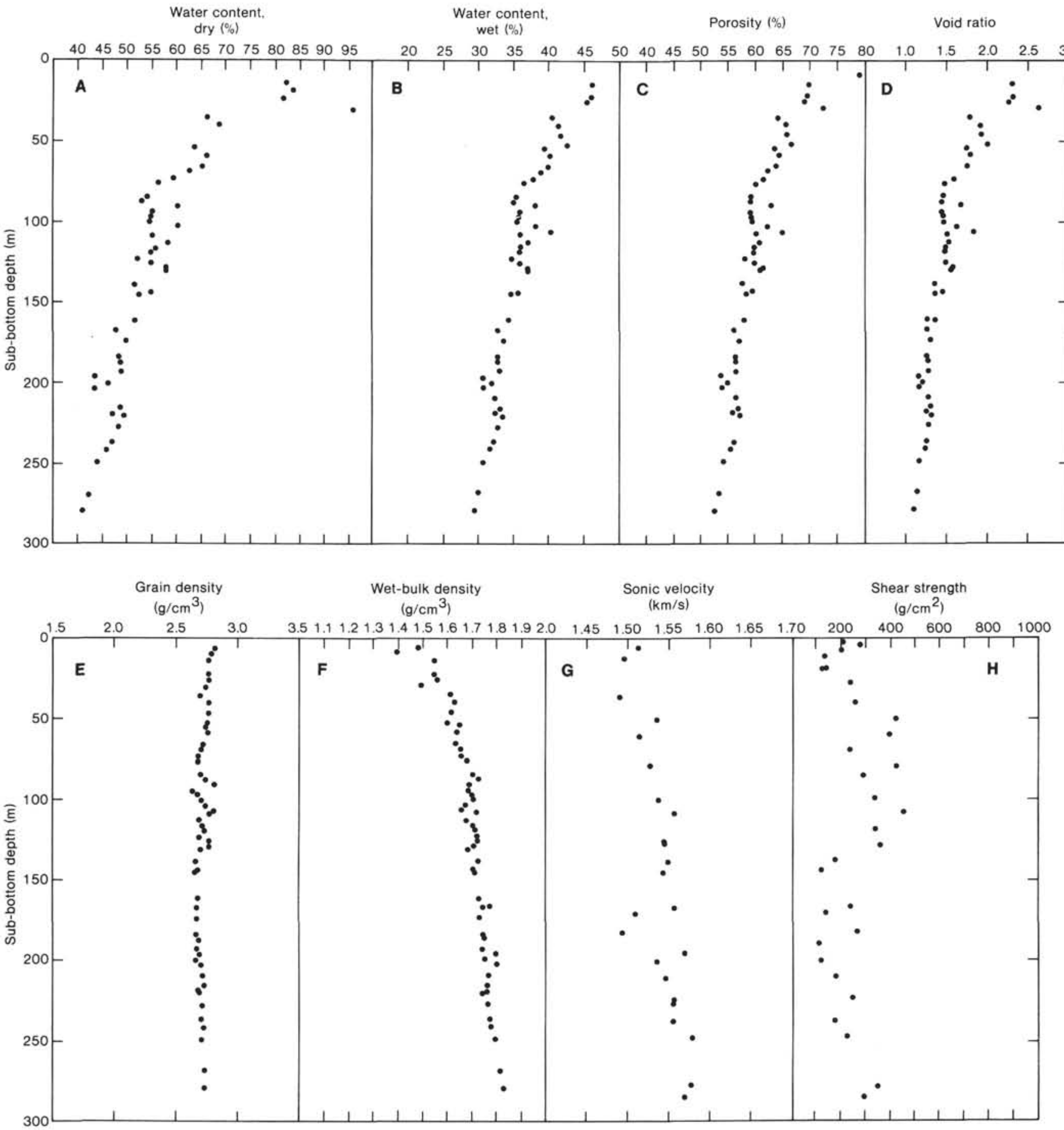


Figure 6. A–H. Physical properties of the sediments at Site 607.

Hole 607A penetrated to a total depth of 311 m. At the measured average seismic velocity of 1.56 km/s, this would equate to a depth of 0.250 s in the acoustic record.

Lithologic Unit I (Pleistocene and upper Pliocene carbonate cycles of nannofossil ooze and nannofossil marl) correlates very closely with acoustic Unit A, suggesting that the $CaCO_3$ variations impart some degree of reflectivity to otherwise largely transparent sections. Lithologic Unit II correlates with the topmost part of acoustic Unit B.

BIOSTRATIGRAPHY

A stratigraphically continuous sequence of upper Miocene through Quaternary sediments was recovered from the two holes drilled at Site 607 (Fig. 8; for an updated version, see Baldauf et al., this volume). Calcareous nannofossils are abundant throughout these two holes. The

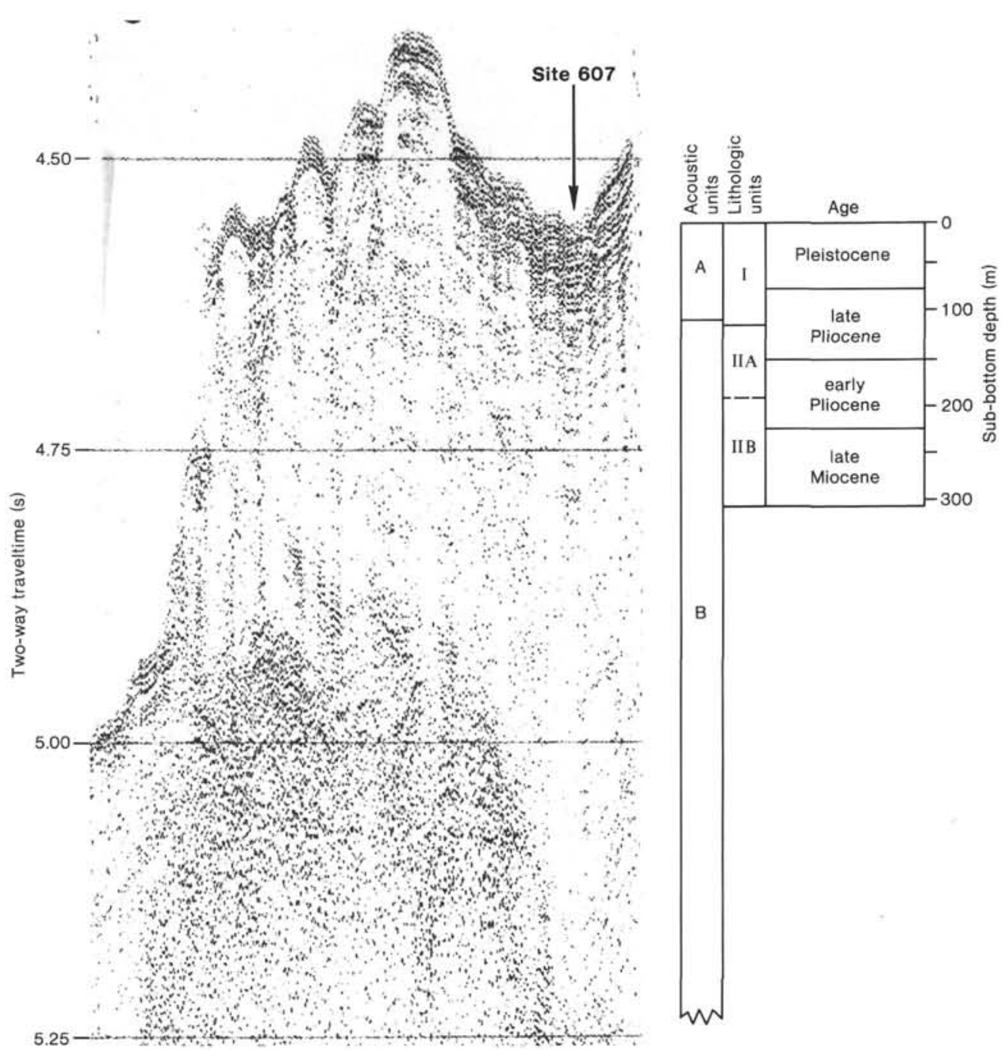


Figure 7. Comparison of acoustic units (A, B) with lithologic units (I, II) cored at Site 607. For the shipboard water-gun seismic profile collected during approach to the site, depths in meters are estimated using a seismic velocity of 1.56 km/s.

flora is characterized by good to moderate preservation, and species diversity is comparatively high. On the basis of the stratigraphic distribution of species, 10 datum planes were observed in Hole 607 and 7 in Hole 607A; a total of 11 calcareous nannofossil zones, ranging from NN11 to NN21, was recognized in both holes.

The sediments also contain abundant, generally well preserved and diverse planktonic foraminifers. The species present permit recognition of all of Berggren's (1973, 1977) PL Zones. Benthic foraminifers constitute much less than 1% of the total foraminiferal assemblage. The benthic foraminiferal diversity is relatively low in the Quaternary and upper Pliocene, and increases downsection in the lower Pliocene. The diversity decreases again in the upper Miocene.

Abundant to rare diatoms, similar to those observed at Site 606, occur in the uppermost Pliocene through Quaternary sediments. However, the increase in frequency and abundance of some species indicates intervals with slightly different surface water conditions during the late Cenozoic at this site.

The Pliocene/Pleistocene boundary derived by extrapolation from the sedimentation rate curves lies in Cores 607-8 and 607A-9. Similarly, the upper/lower Pliocene boundary is placed between Samples 607-16,CC and 607A-18,CC, and the Miocene/Pliocene boundary is placed in Core 607-26.

Ages for the bottom of Hole 607 and of Hole 607A are extrapolated from the accumulation curve and result in an age of 6.5 Ma for Hole 607 and 7.0 for Hole 607A.

Calcareous Nannofossils

Core-catcher samples of all 56 cores recovered from the two holes at Site 607 were examined. Calcareous nannofossils are abundant throughout. The assemblages are characterized by good to moderate preservation, and species diversity is comparatively high. Nannofossil assemblages ranging from Quaternary to upper Miocene occur at this site.

Because of the abundant occurrence of *Emiliania huxleyi*, the uppermost samples of both holes (Samples 607-

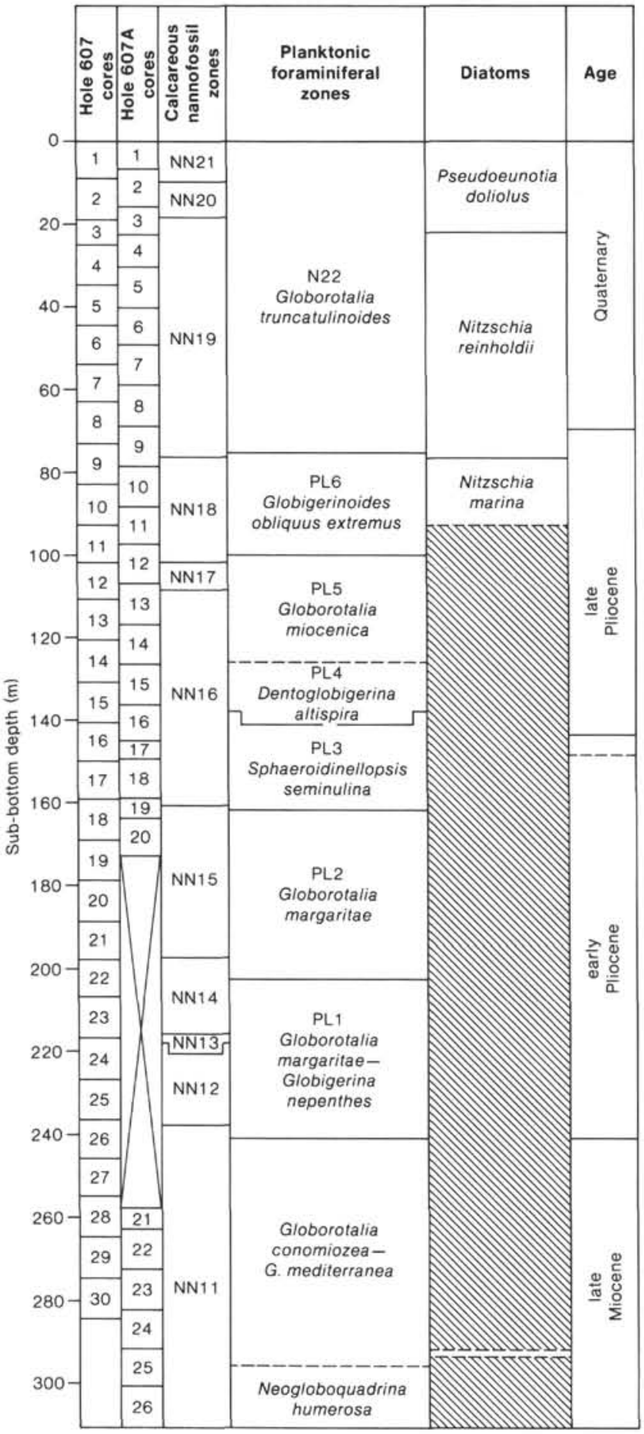


Figure 8. Biostratigraphic summary, Site 607 (for updated version, see Baldauf et al., this volume). Hachured area is barren of diatoms or contains rare, non-age-diagnostic fragments. Dashed line in Age column gives early/late Pliocene boundary as placed in Hole 607A, solid line as in Hole 607.

1,CC and 607A-1,CC) can be correlated with the upper Pleistocene to Holocene NN21 *Emiliania huxleyi* Zone. In these samples, *Calcidiscus leptoporus, Coccolithus pelagicus*, and the gephyrocapsid species such as *Gephyrocapsa caribbeanica* and *G. oceanica* are also abundant. A few specimens of *Helicosphaera sellii* in these samples are considered to be reworked. Because of the absence of *Emiliania huxleyi* and *Pseudoemiliania lacunosa*, Sample 607A-2,CC belongs to the Pleistocene NN20 *Gephyrocapsa oceanica* Zone. The next seven samples from Hole 607 (Samples 607-2,CC to 607-8,CC) and also seven samples from Hole 607A (Samples 607A-3,CC to 607A-8,CC) are placed in the basal Pleistocene NN19 (*Pseudoemiliania lacunosa* Zone). This zone is characterized by the abundant occurrence of *Pseudoemiliania lacunosa* together with *Calcidiscus leptoporus, Coccolithus pelagicus, Discolithina japonica*, and *Helicosphaera carteri*. In addition, the FAD (first appearance datum) of *Gephyrocapsa oceanica* and *G. caribbeanica*, and the LAD (last appearance datum) of *Helicosphaera sellii* and *Calcidiscus macintyrei* are recognized in this zone. Because of the absence of *G. oceanica* and *G. caribbeanica*, Sample 607A-9,CC is referred to the lowest Pleistocene *Emiliania annula* Subzone CN13a (lower part of *Crenalithus doronicoides* Zone CN13) established by Okada and Bukry (1980). Below samples 607-9,CC and 607A-9,CC, discoasters are continuously present; therefore, the Pliocene/Pleistocene boundary is placed between Samples 607-8,CC and 607-9,CC and Samples 607A-8,CC and 607A-9,CC.

Samples 607-9,CC, 607-10,CC, and 607A-9,CC through 607A-11,CC are assigned to the uppermost Pliocene NN18 *Discoaster brouweri* Zone. In this zone, *Discoaster brouweri* and *D. triradiatus* are common; *Calcidiscus leptoporus, C. macintyrei, Coccolithus pelagicus, Helicosphaera carteri, H. sellii*, and *Pseudoemiliania lacunosa* are present. Sample 607A-12,CC contains *Discoaster brouweri* and *D. pentaradiatus*, together with *Helicosphaera carteri, Coccolithus pelagicus, Pseudoemiliania lacunosa*, and *Calcidiscus leptoporus*. This sample may thus represent the upper Pliocene NN17 *Discoaster pentaradiatus* Zone. From Sample 607-12,CC on down to Sample 607-17,CC, NN16 (*Discoaster surculus* Zone) is represented by an assemblage rich in asteroliths such as *Discoaster brouweri, D. pentaradiatus, D. surculus, D. intercalaris, D. adamanteus*, and *D. variabilis*. These samples also contain comparatively abundant *Discoaster asymmetricus, D. tamalis*, and *Ceratolithus rugosus*. In the section from Hole 607A, Samples 607A-13,CC to 607A-18,CC belong to this zone, on the basis of the occurrence of *Discoaster surculus* together with the aforementioned coccolith species. Specimens of small *Reticulofenestra pseudoumbilica*-like coccoliths occur throughout Zone NN16. Their abundance and the size of the coccoliths, however, drastically increase in Samples 607-18,CC and 607A-19,CC. This is interpreted to mean that *R. pseudoumbilica* becomes extinct in Samples 607-17,CC and 607A-18,CC, and that the occurrences of this species above these samples represent reworking or transitional forms. Therefore, Samples 607-18,CC to 607-20,CC and Samples 607A-19,CC and 607A-20,CC are placed in the upper Pliocene NN15 *Reticulofenestra pseudoumbilica* Zone. *Sphenolithus abies* also occurs in Samples 607-18,CC and 607A-19,CC; therefore, the extinction level of this species coincides with that of *R. pseudoumbilica*. The occurrence of *Discoaster asymmetricus* together with *Amaurolithus tricorniculatus* allows assignment of the next two samples of Hole 607 (Samples 607-21,CC and 607-22,CC) to NN14 (*Discoaster asymmetricus* Zone). The underlying NN13 *Ceratolithus rugosus* Zone is recognized in Sample 607-23,CC. The *Amaurolithus tricorniculatus* Zone (NN12) extends down to Sample 607-25,CC in Hole 607. The assemblage in these samples is characterized by the abundant occurrences of *Reticulofenestra pseudoumbilica, Calcidiscus leptoporus, Sphenolithus abies*, and various discoasters except *Discoaster asymmetricus* and *D. quinqueramus. Discoaster quinqueramus*, the marker species for the late Miocene NN11 *Discoaster quinqueramus* Zone, is found together with *Discoaster berggrenii* below Samples 607-26,CC and 607A-21,CC. Although *D. quinqueramus* occurs occasionally in small numbers below these samples, NN11 (*Discoaster quinqueramus* Zone) seems to be represented from Samples 607-26,CC and 607A-21,CC on down to the bottoms of these holes. Asteroliths and ceratoliths such as *D. quinqueramus, D. berggrenii, D. decorus, D. variabilis, D. pentaradiatus, D. surculus, D. intercalaris, D. challengeri, D. brouweri, D. bellus, D. prepentaradiatus, Amaurolithus tricorniculatus, A. primus*, and *A. delicatus* are well represented in these assemblages. The state of preservation is somewhat poor, however, owing to overgrowths of calcite.

The occurrences of *Cyclicargolithus floridanus, Helicosphaera recta*, and *Triquetrorhabdulus carinatus* below NN15 at this site are considered to result from reworking from Miocene to Oligocene sediments.

According to Haq and Takayama (1984), *Discoaster berggrenii* and *D. quinqueramus* disappear simultaneously within Anomaly 3A of the paleomagnetic stratigraphy (5.4 Ma). Absolute ages assigned to the bottom sediments of these two holes are therefore assigned as slightly older than 5.4 Ma.

Planktonic Foraminifers

All Pliocene and Quaternary samples from Site 607 contain abundant well-preserved planktonic foraminifers. Many of the upper Miocene samples, however, contain greatly reduced numbers of individuals, and those that do occur are of small size.

Pliocene and Quaternary samples contain typical mid-latitude assemblages dominated by *Globorotalia inflata* and its ancestor *G. puncticulata*, together with *Globigerina bulloides, Neogloboquadrina pachyderma* (dextral), *Globorotalia crassaformis*, and *Globigerinoides ruber.* Subtropical to tropical influences are evident in some samples having sporadic occurrences of *Globigerinoides sacculifer, Globigerinoides conglobatus, and Pulleniatina obliquiloculata.* In the Quaternary, glacial intervals are dominated by *N. pachyderma* (sinistral), together with *Globigerina bulloides* and *Globigerina quinqueloba;* however, samples from these intervals (e.g., 607A-5,CC) also contain warmer-water indicators such as *Globorotalia truncatulinoides, Globigerinoides ruber*, and *Globorotalia crassaformis.*

The position of this site allows the use of Berggren's subtropical/temperate zonation for the Pliocene (Berggren 1973, 1977). The base of the *G. truncatulinoides* Zone occurs in Core 607-9, but in Hole 607A it has not been ascertained, because of the absence of both *G. truncatulinoides* and *Globigerinoides obliquus extremus* in Sample 607A-8,CC. Within this zone, pink *G. ruber* can be found in Cores 607-1 through 607-3 and 607A-1 through 607A-4; *Globorotalia hirsuta* is present in Cores 607-1 through 607-3 and 607A-1 through 607A-4. Both suggest a late Quaternary age; the presence of *G. hirsuta* denotes an age younger than oxygen-isotope State 12 (Pujol and Duprat, 1983). The faunas of this zone are diverse; *Globigerina bulloides, Globorotalia inflata*, and *N. pachyderma* (d) are generally common. Interglacial intervals contain *Globigerinoides ruber* and occasionally *G. sacculifer* or *G. conglobatus*, whereas glacial intervals contain increased numbers of *Globigerina bulloides* and, in some cases (e.g., Sample 607A-5,CC), large numbers of *N. pachyderma* (sinistrally coiled).

Zone PL6 is easily recognized by the presence of *Globigerinoides obliquus extremus.* The base of this zone is marked by the extinction of *Globorotalia miocenica*, which occurs in Cores 607-11 and 607A-12. This zone contains a fauna similar to that of the warmer Quaternary intervals. The transition from *G. puncticulata* to *G. inflata* occurs at the boundary between Zones PL5 and PL6. It was therefore a little earlier here than at Site 606.

The base of Zone PL5 is marked by the extinction of *Dentoglobigerina altispira.* This species, however, is very rare at this site, and consequently its extinction may not be a reliable marker. Its last occurrence appears to be in Core 607-13, but the species has not been recorded in Hole 607A. Zones PL4 and PL5 are therefore grouped together at this site. The base of Zone PL4 is marked by the extinction of *Sphaeroidinellopsis seminulina*, which occurs in Cores 607-15 and 607A-16. The faunas of Zones PL4 and PL5 are similar to that of Zone PL6, with the addition of *Globorotalia miocenica* and the substitution of *G. puncticulata* for *G. inflata. G. crassaformis* is also common in this interval.

Zone PL3 is identified by the occurrence of *S. seminulina* above the extinction of *Globorotalia margaritae. G. margaritae* becomes extinct in Cores 607-18 and 607A-19. The fauna of this interval is similar to that of Zone PL4, with the addition of *S. seminulina* and the occurrence of common specimens of *Globorotalia* cf. *G. pliozea.*

Zone PL2 contains numerous specimens of *G. margaritae;* the base is marked by the disappearance of *Globigerina nepenthes* in Core 607-22. The base of Zone PL2 and all of Zone PL1 were washed through in Hole 607A. As at Site 606, both *Globorotalia puncticulata* and *G. crassaformis* first appear near the base of Zone PL2. In the Rio Grande Rise, these first occurrences are recorded in Zone PL1 (Berggren, 1977).

Zone PL1 is present in Hole 607, but it is not possible to define its base, because of the absence of *Globoquadrina dehiscens* at this site. Berggren et al. (in press) have suggested that this species has a patchy distribution, and it therefore seems inadequate as a zonal marker. The base of Zone PL1 is therefore taken informally at the first appearance of *Globorotalia margaritae* in Core 607-26, and thus should more properly be termed the *Globigerina nepenthes/Globorotalia margaritae* overlap zone. Defined in this way this zone spans the Miocene/Pliocene boundary. As mentioned previously, neither *G. puncticulata* nor *G. crassaformis* overlap with *Globigerina nepenthes;* therefore, no subdivision of Zone PL1 using these species can be produced. *Globorotalia cibaoensis*, however, does occur, and therefore Subzone PL1a of Berggren (1977) can be recognized. The last occurrence of *G. cibaoensis* is in Core 607-25, but the base of the subzone must be extended to the base of the *Globigerina nepenthes/Globorotalia margaritae* overlap Zone.

Below the *Globigerina nepenthes/Globorotalia margaritae* overlap Zone, Berggren (1977) erected the *Globorotalia conomiozea/Globorotalia mediterranea* Zone, and, below this, the *G. miozea/G. conoidea* Zone, to subdivide the upper Miocene. None of these four species occurs at Site 607, and subdivision of the upper Miocene is difficult and tentative.

Poore and Berggren (1975) do, however, place the first appearance of *Neogloboquadrina atlantica* near the base of the *Globorotalia conomiozea* Zone. This species is present to the base of Hole 607, and first appears in Core 607A-25. I therefore place Cores 607-26 through 607-30 and 607A-21 through 607A-24 in the *G. conomiozea/G. mediterranea* Zone. Core 607A-26 and the lower part of Core 607A-25 probably belong to the *N. humerosa* Zone. Specimens in these upper Miocene samples are generally of small average size, and are much less common than in the Pliocene.

Benthic Foraminifers

Benthic foraminifers constitute much less than 1% of the total foraminiferal fauna in the >63-μm size fraction of the samples studied (mudline sample; Samples 607-1,CC, -5,CC, -9,CC, -13,CC, -15,CC, -17,C, -21,CC, -25,CC, -29,CC; and 607A-24,CC; 607A-12-4, 30–33 cm; 607A-12-4, 39–42 cm; 607A-26,CC). All samples, however, contained sufficient specimens for counts of 200 individuals.

The diversity is relatively low (30–40 species) in the Quaternary and upper Pliocene (above Sample 607-9,CC), and increases downsection to a maximum of 58 species in Sample 607-17,CC (at about the boundary between lower and upper Pliocene). The diversity decreases to values around 40 in the lower part of the cored sequence. In the Miocene samples, the benthic foraminifers are commonly small.

The preservation is good in most samples, with only minor dissolution damage in the solution-prone miliolids. Miliolids are common in most samples (5–10%). The aragonitic species *Hoeglundina elegans* is preserved in the mudline sample. The preservation is moderate in Samples 607A-24,CC and -26,CC: in those samples, the miliolids are heavily damaged. Other species are commonly broken. No calcite overgrowths were observed.

The relative abundances of the most common species show the largest fluctuations in the Quaternary and uppermost Pliocene. Species showing the strongest variation in abundance are *Uvigerina peregrina* and *Bolivina translucens*, and *Epistominella exigua. E. exigua* is common in the mud-line sample, which shows a faunal composition typical for the Recent faunas in the area (Schnitker, 1974). *Nuttallides umbonifera*, presently common in Antarctic Bottom Water faunas, is common (7–14%) from Sample 606A-12-4, 39–41 cm downward, that is, in sediments older than about 2.3 Ma. At Site 607 there is a general change in the benthic fauna at about the level where *N. umbonifera* increases in abundance (downsection): the diversity increases, the uniserial group (*Nodosaria* spp., *Dentalina* spp., *Orthomorphina* spp., *Chrysalogonium tenuicostatum*) increases in abundance, and the amplitude of fluctuations in the faunal composition decreases.

In the cyclic sediments of the Quaternary and upper Pliocene, there is no obvious correlation between benthic faunal composition and lithology. Two samples—607A-3,CC and 607A-4,CC, of which the upper is white and the lower dark gray green—contain relatively large numbers of *E. exigua.* At the latitude of Site 607, this species is reportedly more common in interglacial periods (Streeter and Shackleton, 1979). *Uvigerina* is reportedly more common in glacial periods (Streeter and Shackleton, 1979); in the white ooze sample, however, both *Uvigerina* and *E. exigua* are common, whereas *Uvigerina* is absent in the green sample.

Sample 607A-12-4, 30–33 cm was taken in a foraminiferal sand layer, just above the base of the sand. Sample 607A-12-4, 39–42 cm was taken in the ooze just below the foraminiferal sand layer. In the foraminiferal sand, miliolids are rare (less than 1%), and large, thick-walled, roundish specimens are common (*Cibicidoides kullenbergi, Oridorsalis umbonatus, Pullenia bulloides, Globocassidulina subglobosa*). This sorting, not only by size but also by shape, suggests that the foraminiferal sand was transported downslope rather than winnowed.

Diatoms

Abundant to rare diatoms occur in the uppermost Pliocene through Quaternary sediments recovered from Site 607. Except for approximately 50 cm of upper Miocene sediment, all upper Miocene through lower upper Pliocene samples examined are barren of diatoms. Preservation of diatoms varies, but is generally moderate.

Although the Quaternary diatom assemblage observed at Site 607 is similar to the assemblage observed at Site 606, the increase in frequency and abundance at Site 607 of *Rhizosolenia barboi, Rhizosolenia curvirostris*, and of robust forms of *Coscinodiscus marginatus*, as well as the occurrence of *Denticulopsis seminae*, indicate an interval with slightly different surface-water conditions at Site 607.

Samples examined, from 607-1-3, 43–45 cm through 607-3-2, 43–45 cm and from 607A-1,CC through 607A-2,CC, are assigned to the *Pseudoeunotia doliolus* Zone of Burckle (1977) on the basis of the occurrence of *P. doliolus* above the last occurrences of *Nitzschia reinholdii.* Samples 607-3-3, 43–45 cm to 607-9-3, 43–45 cm and 607A-3,CC to 607A-9,CC are placed in the *N. reinholdii* Zone of Burckle (1977).

Samples 607-9-4, 43–45 cm, 607-10,CC, and 607A-10,CC are assigned to the *Nitzschia marina* Zone of Baldauf (1985).

Except for Samples 607-15,CC, 607A-24,CC, and 607A-25-1, 43–45 cm, all samples examined that lie stratigraphically below Samples 607-10,CC and 607A-10,CC are barren of diatoms. One specimen of *Hemidiscus cuneiformis* was observed in Sample 607-15,CC. This species has a long stratigraphic range and is therefore not useful in the lower Pliocene for age control. Samples 607A-24,CC and 607A-25-1, 43–45 cm contain common and diverse diatoms and silicoflagellates. The presence of *Thalassiosira* cf. *nativa* without *Thalassiosira oestrupii* suggests that Samples 607A-24,CC and 607A-25-1, 43–45 cm are late Miocene in age.

Radiolarians

Radiolarians are present and well preserved in most of the upper Pliocene to Pleistocene samples examined from Holes 607 and 607A, and in several upper Miocene samples from Hole 607A (Table 2). Abundance and preservation are generally better in Hole 607A than in Hole 607, and the sieved samples (>44 μm) from Hole 607 contain more nonbiogenic components than those from Hole 607A.

The last occurrence of *Stylatractus universus* occurs between Samples 607-2-6, 40–42 cm and 607-1,CC and between Samples 607A-3,CC and 607A-2,CC. Samples that contain abundant, diverse assemblages of radiolarians, including species considered indicative of warm surface water, are interspersed with a few samples containing only rare, long-ranging species believed to inhabit cold or deep water, or containing no radiolarians at all. The samples in which radiolarians are very rare or absent are 607-6-3, 40–42 cm; 607-6,CC; 607-8,CC; 607-9,CC; and from 607-11,CC to the bottom of the hole. Between these barren samples, there are well-preserved and abundant assemblages. In the core-catcher samples from the Pliocene and Pleistocene sediments of Hole 607A, radiolarians are very rare or absent below Core 607A-9, except for Sample 607A-12,CC. Radiolarians are present in upper Miocene Samples 607A-23,CC and 607A-24,CC, but only in 607A-24,CC are they abundant and diverse. In this sample, *Stichocorys peregrina* is common, but it is not possible to say, on the basis of radiolarians alone, that this sample belongs to the *S. peregrina* Zone.

Table 2. Preservation[a] and abundance[b] of radiolarians in Holes 607 and 607A.

Hole 607			Hole 607A		
Sample (interval in cm)	Abundance	Preservation	Sample	Abundance	Preservation
1-2, 40–42	C	G	1,CC	C	G
1,CC	F	G	2,CC	C	G
2-6, 40–42	C	G	3,CC	F	G
2,CC	C	G	4,CC	C	G
3-2, 40–42	A	G	5,CC	C	G
3,CC	R	M	6,CC	A	G
4-2, 40–42	F	M	7,CC	C	G
5-2, 40–42	F	M	8,CC	C	G
5,CC	F	M	9,CC	C	G
6-3, 40–42	B		10,CC	B	
6,CC	B		11,CC	R	P
7-2, 40–42	A	G	12,CC	F	M
7,CC	R	M	13,CC	R	P
8-3, 40–42	A	G	14,CC	R	P
8,CC	B		15,CC	R	P
9-3, 40–42	C	G	16,CC	B	
9,CC	R	M	17,CC	B	
10-3, 40–42	F	G	18,CC	B	
10,CC	F	G	19,CC	B	
11-3, 40–42	B		20,CC	B	
11,CC	B		21,CC	R	P
All CC below	B		22,CC	B	
			23,CC	R	M
			24,CC	C	M
			25,CC	B	
			26,CC	R	M

[a] G = good; M = moderate; P = poor.
[b] A = >10,000 specimens/slide; C = 5000–10,000 specimens/slide; F = 1000–5000 specimens/slide; R = <1000 specimens/slide; B = barren.

PALEOMAGNETISM

Hole 607

Hydraulic piston coring and extended-core-barrel coring in Hole 607 recovered over 280 m of undisturbed sediment suitable for paleomagnetic study. The sediment was sampled at an interval of one sample per 1.5 m (one per section) using 7-cm^3 plastic boxes. The direction and intensity of the sample magnetizations were measured with a Molspin portable spinner magnetometer. Progressive alternating-field demagnetization studies revealed that treatment at 10 mT was adequate to remove any viscous or soft components of magnetization.

Because the cores were not routinely oriented, the declinations were not consistent between cores, and therefore the inclination record alone was used to determine the polarity log for this hole (see Clement and Robinson, this volume).

The correlation with the time scale was straightforward down to the bottom of the normal-polarity interval ending at 145 m (correlated with the Gauss/Gilbert boundary). The quality of the shipboard data decreases below this level because below this level the magnetic intensities approached the noise level of the instrument, so that the polarity determinations became more difficult. Samples below this level were remeasured on shore using a two-axis cryogenic magnetometer. The polarity log obtained using these results is readily correlated with the time scale of Berggren et al. (in press) as discussed by Clement and Robinson (this volume). The depths of the polarity boundaries are given in Table 3.

Hole 607A

The same procedures were followed for samples from this hole as for those from the previous hole, except that samples were taken only in intervals surrounding polarity reversals suggested by the results from Hole 607. The results are given in detail in Clement and Robinson (this volume), and the depths of the polarity boundaries are given in Table 3.

SEDIMENTATION RATES

The sedimentation rates at Site 607 (Fig. 9) were calculated on the basis of calcareous nannofossil and foraminiferal zones, diatom zones, and paleomagnetic stratigraphy. All sediments are nannofossil oozes, except for some glacial-age nannofossil marl layers above the top of the Gauss Chron at 2.4 Ma.

The sedimentation rates were remarkably uniform through the first 3.5 m.y. of record, averaging 43 m/

Table 3. Depth of reversal boundaries, Site 607.

Reversal		Age (Ma)	Sample (core-section, cm level)	Sub-bottom depth (m)[a]
Hole 607				
Brunhes		0.73	4-6, 97/5-1, 90	33.68/35.71
Jaramillo	(top)	0.91	5-5, 97/6-2, 97	41.78/43.28
	(bottom)	0.98	6-1, 97/6-2, 97	45.38/46.88
Olduvai	(top)	1.66	8-6, 97/9-1, 97	72.08/74.18
	(bottom)	1.88	9-6, 97/9-7, 25	81.68/82.46
Matuyama/Gauss		2.47	12-5, 97/12-6, 106	108.98/110.57
Kaena	(top)	2.92	14-4, 97/14-5, 97	126.68/128.18
	(bottom)	2.99	14-6, 97/15-1, 97	129.68/131.78
Mammoth	(top)	3.08	15-2, 97/15-3, 124	133.28/135.05
	(bottom)	3.18	15-5, 97/15-6, 97	137.78/139.28
Gauss/Gilbert		3.40	16-3, 97/16-4, 97	144.38/145.88
Cochiti	(top)	3.88	19-4, 97/19-6, 72	175.68/177.41
	(bottom)	3.97	20-2, 97/20-3, 97	181.28/182.78
Nunivak	(top)	4.10	21-2, 97/21-3, 97	190.88/192.38
	(bottom)	4.24	21-4, 97/21-5, 97	193.88/195.38
C1	(top)	4.40	22-2, 97/22-6, 97	200.48/206.48
	(bottom)	4.47	22-6, 97/23-1, 97	206.48/208.58
C2	(top)	4.57	23-1, 97/23-4, 97	208.58/213.08
	(bottom)	4.77	24-4, 123/24-5, 110	222.94/224.31
Hole 607A				
Brunhes		0.73	5-5, 25/5-5, 97	36.76/37.48
Jaramillo	(top)	0.91	6-3, 45/6-3, 97	43.56/44.08
	(bottom)	0.98	6-5, 144/6-6, 40	47.46/47.80
Olduvai	(top)	1.66	9-5, 97/9-5, 145	75.88/76.36
	(bottom)	1.88	10-4, 97/10-5, 97	83.98/85.48
Matuyama/Gauss		2.47	13-3, 97/13-4, 97	111.28/112.78
Kaena	(top)	2.92	15-2, 100/15-3, 97	129.01/130.48
	(bottom)	2.99	15-4, 97/15-5, 97	131.98/133.48
Gauss/Gilbert		3.40	18-1, 97/18-2, 97	150.38/151.88

[a] Midpoint depths of samples in third column.

m.y. A straight line on the time/depth curve (Fig. 9) passes through virtually every datum level in the upper 150 m (3.5 m.y.) of the record; this defines a constant sedimentation rate with unusual clarity and precision (Table 4). Below 150 m there is an increase in the sedimentation rate. Although the rate varies somewhat, an average of 57.3 m/m.y. is determined.

Below 240 m, there are no datum levels for control in the upper Miocene portion of the record.

GEOCHEMISTRY

Samples for carbonate bomb analysis were taken at regular intervals from Hole 607, but included very few marly intervals. This omission was corrected by preferentially sampling the marly intervals from Hole 607A. A total of seven samples was collected from the two holes for interstitial-water analysis.

Carbonate Bomb

The calcium carbonate concentrations in sediments at Site 607 range from 45 to 90% in the top 116 m of the sediment column (Fig. 10), where the lithology varies from marly ooze to nannofossil ooze. Below 116 m, the $CaCO_3$ percentage remains above 80%, although a single sample from a green lamina at 292.7 m in Hole 607A gave a value of 70%. $CaCO_3$ analyses at 15-cm intervals of the upper 160 m of Hole 607 are presented by Ruddiman et al. (this volume).

Interstitial Water

The pH of the squeezed interstitial water decreases downhole very slightly, from 7.20 to 7.06 (Fig. 11); the alkalinity shows a slight increase with depth, with values ranging from 4.0 to 5.0 meq dm^{-3}. The salinity shows a significant downhole decrease from 35 to 34.2‰.

SUMMARY AND CONCLUSIONS

Site 607 is on the upper middle western flank of the Mid-Atlantic Ridge at 41°00.0′N, 32°57.4′W. It was chosen to provide an extended late Neogene record in an area known to have been dominated in the late Quaternary by 100,000- and 23,000-yr. oscillations of sea-surface temperature and other water-mass characteristics. The most important results from this site will emerge gradually from detailed laboratory analyses over the next several years. As at the previous site, conclusions here are accordingly limited, in large part, to an assessment of our success in obtaining a complete pelagic sequence useful for future studies.

As indicated in Figures 3 and 5, we succeeded in obtaining a complete upper Pleistocene to upper Miocene section, using the variable-length hydraulic piston corer to refusal depth (150 m) and the extended core barrel to total depth. Hole 607 penetrated to a total depth of 284.4 m (6.5 Ma). Hole 607A penetrated to 173.6 m (3.9 Ma), then was washed down to 258.3 m (5.9 Ma), and ended at a total depth of 311.3 m (7.0 Ma). Paleomagnetic, biostratigraphic, and lithologic tie-lines (Fig. 3) between the two holes indicate conclusively that we obtained a 100% complete composite section to at least 116 m sub-bottom. Below that depth, the lack of tie-lines does not permit us to prove a 100% complete section. Between 173.6 and 258.3 m, and below 284.4 m, gaps will exist because we cored only one hole and under-recovered about 10% or more of the section.

The lithologies of Holes 607 and 607A are foraminiferal-nannofossil oozes and nannofossil oozes, except for a few foraminiferal-nannofossil marls in glacial-age sediments in the upper 116 m (Unit I) (Fig. 5). The noncarbonate fraction in this unit is a clay or silty clay; quartz (and to a lesser extent feldspar) dominates in the identifiable silt-sized grains. Unit I represents the glacial marine sequence of the Pleistocene and late Pliocene; it gives an age of 2.4 Ma for the initiation of large-scale Northern Hemisphere ice rafting, in agreement with evidence obtained on Leg 81 at Site 552A (Shackleton et al., 1984). This age appears to define the initiation of large-scale Northern Hemisphere glaciation. Unit I ends at 116 m, yielding to the uniformly carbonate-rich oozes of Unit II below. Unit II is subdivided at 192 m into a foraminifer-rich upper unit (IIA) and a foraminifer-poor lower unit (IIB).

Silica contents are low (0–7%) throughout these sediments. Three volcanic ash layers with bioturbated contacts occur, one of which is adjacent to reworked diatoms indicative of redeposition. In general, these ash layers suggest: (1) significant local redistribution of older eroded ash layers, or (2) contemporaneous ash falls. Several nannofossil–foraminiferal sands occur in Units I and

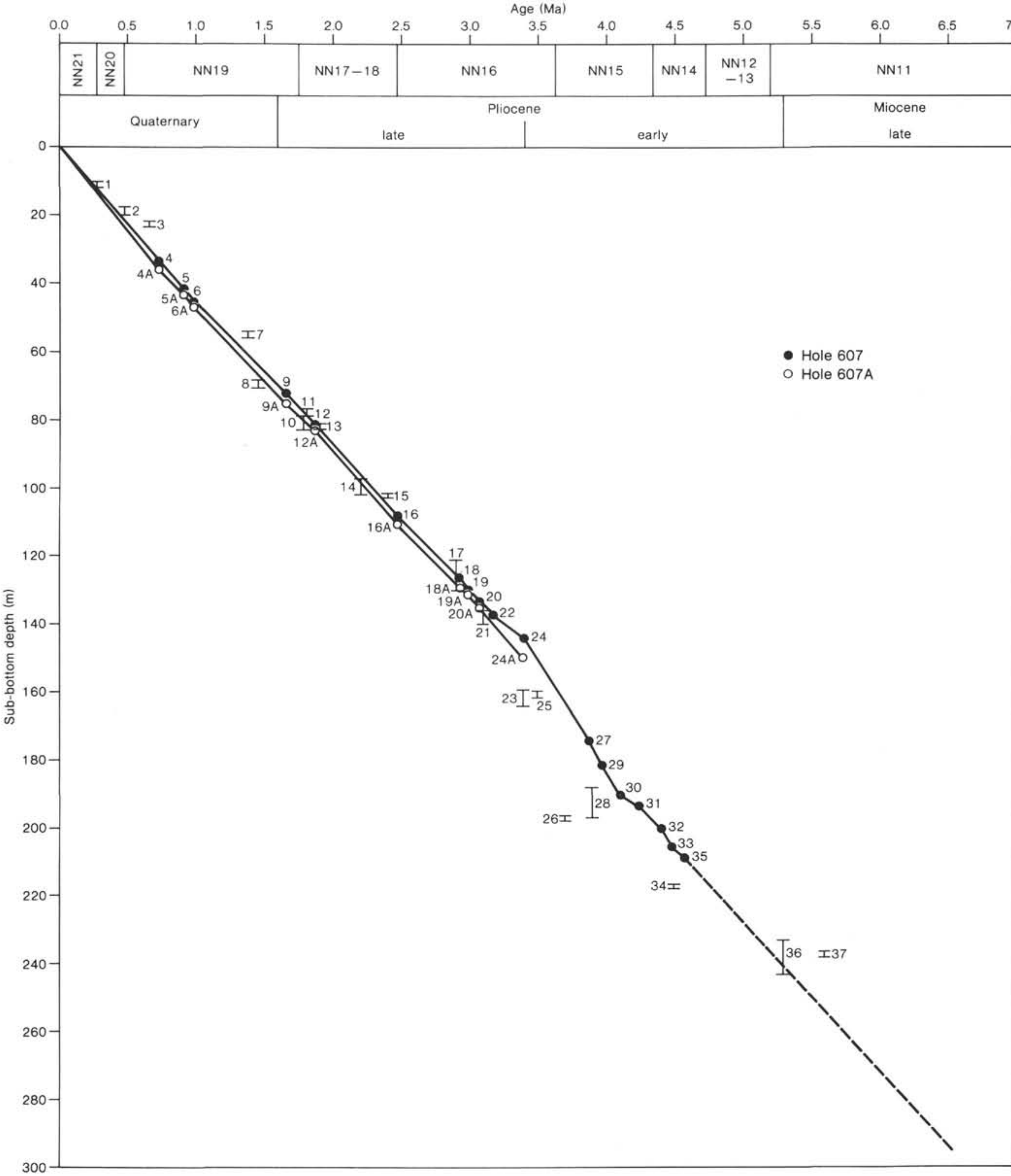


Figure 9. Time-versus-depth plot of cores taken in Holes 607 and 607A, with nannofossil zonation shown at the top. The datum levels used are listed in Table 4. Numbers followed by A indicate Hole 607A (open circles, lower curve). (For updated version, see Baldauf et al., this volume.)

II. Graded bedding suggests pelagic turbidite deposition in some; others have no grading, and transport by bottom currents is a second possibility. Sorting of benthic foraminifers as to size and shape indicates a turbiditic origin for at least some of the layers. The rate of deposition was a remarkably uniform 43 m/m.y. throughout the first 3.5 m.y. of record; variations were greater, around a mean of about 57 m/m.y., in the lower 100 m of the recovered section. The calcareous fraction is well preserved throughout, indicating little dissolution. All up-

Table 4. Datum levels used to construct the time-versus-depth plot for Site 607 (Fig. 9).

Number[a]	Datum level	Age (Ma)
1	Top of *Emiliania huxleyi*	0.28
2	Top of *Pseudoemiliania lacunosa*	0.47
3	Top of *Nitzschia reinholdii*	0.65
4	Matuyama/Brunhes	0.73
5	Top of Jaramillo	0.91
6	Bottom of Jaramillo	0.98
7	Top of *Helicosphaera sellii*	1.37
8	Top of *Calcidiscus macintyrei*	1.45
9	Top of Olduvai	1.66
10	Bottom of *Globorotalia truncatulinoides*	1.78
11	Bottom of *Pseudoeunotia doliolus*	1.80
12	Bottom of Olduvai	1.88
13	Top of discoasters	1.90
14	Top of *Globorotalia miocenica*	2.20
15	Top of *Discoaster pentaradiatus*	2.40
16	Top of Gauss	2.47
17	Top of *Dentoglobigerina altispira*	2.90
18	Top of Kaena	2.92
19	Bottom of Kaena	2.99
20	Top of Mammoth	3.08
21	Top of *Sphaeroidinellopsis seminulina*	3.10
22	Bottom of Mammoth	3.15
23	Top of *Globorotalia margaritae*	3.40
24	Gilbert/Gauss	3.40
25	Top of *Reticulofenestra pseudoumbilica*	3.50
26	Top of *Amaurolithus tricorniculatus*	3.70
27	Top of Cochiti	3.88
28	Top of *Globigerina nepenthes*	3.90
29	Bottom of Cochiti	3.97
30	Top of Nunivak	4.10
31	Bottom of Nunivak	4.24
32	Top of C1	4.40
33	Bottom of C1	4.47
34	Bottom of *Ceratolithus rugosus*	4.50
35	Top of C2	4.57
36	Bottom of *Globorotalia margaritae*	5.30
37	Top of *Discoaster quinqueramus*	5.60

[a] Numbers indicate age sequence; see Figure 9.

per Miocene sediments are barren of diatoms, but diatoms occur in uppermost Pliocene through Pleistocene sediments.

As at Site 606, the lithologies indicate basically pelagic deposition, but the enhanced deposition rates suggest, in addition, redistribution of mostly contemporaneous sediment along the seafloor. Because of a greater basement age and a longer interval for subsequent burial by sediment, there are fewer outcrops in this area than at Site 606. Nevertheless, the topography still retains much of the initial basement relief: basement highs are now sediment-covered (~ 0.5 s) topographic highs marked by hummocky surficial relief; basement lows are now filled by thicker sediment sequences (~ 0.5–1.0 s) with smoothed surfaces. This represents a later stage in the evolution of pelagic cover on a mid-ocean ridge than did the previous site.

Site 607 sits on the edge of a topographic low in a region with thick cover and thus enhanced deposition over a long span of time. The high sedimentation rates calculated for Holes 607 and 607A show that this site has also received excess sediments from surrounding high topography. The excellent quality of the various stratigraphic records indicates that, again, this redistribution has been gentle enough to enhance depositional rates without disturbing the essentially pelagic nature of the record.

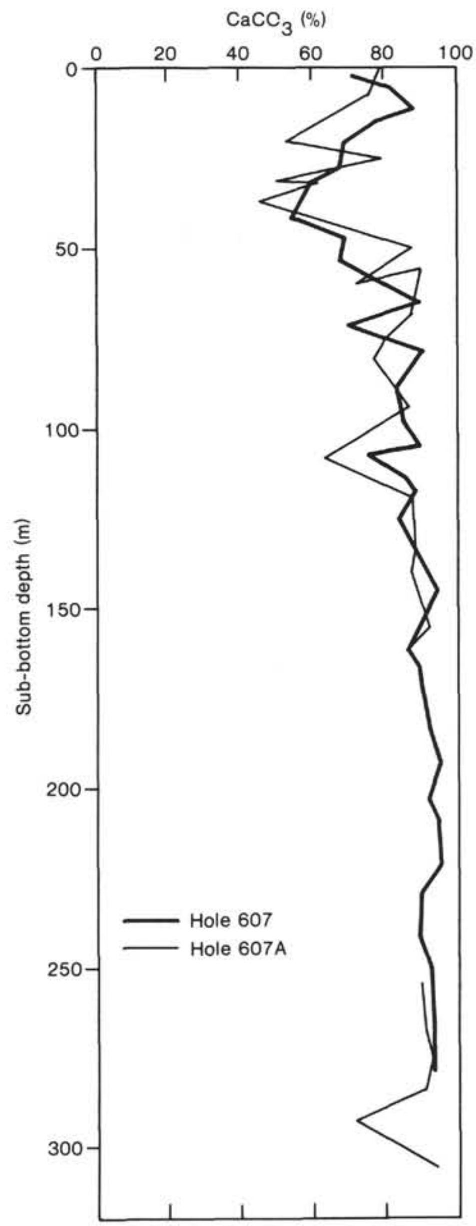


Figure 10. Plot of $CaCO_3$ content (from carbonate bomb analyses) versus sub-bottom depth, Site 607.

The ash layers, the "pelagic" turbidites, and the reworked diatoms all suggest that this environment of continuous pelagic deposition and gentle redeposition was occasionally punctuated by intervals of more energetic sediment movement.

REFERENCES

Baldauf, J. G., 1985. Cenozoic diatom biostratigraphy and paleoceanography of the Rockall Plateau region, North Atlantic, DSDP Leg 81. *In* Roberts, D. G., Schnitker, D., et al., *Init. Repts. DSDP*, 81: Washington (U.S. Govt. Printing Office), 439–477.

Berggren, W. A., 1973. The Pliocene timescale calibration of planktonic foraminiferal and calcareous nannoplankton zones. *Nature*, 243:391–397.

———, 1977. Late Neogene planktonic foraminiferal zonation of the Rio Grande Rise (South Atlantic). *Mar. Micropaleontol.*, 2: 251–256.

Berggren, W. A., Kent, D. V., and Van Couvering, J. A., in press. Neogene geochronology and chronobiostratigraphy. *In* Snelling, N. J. (Ed.), *Geochronology and the Geological Record.* J. Geol. Soc. London Mem.

Burckle, L. H., 1977. Pliocene and Pleistocene diatom datum levels from the equatorial Pacific. *Quat. Geol.*, 7:330–340.

Haq, B. U., and Takayama, T., 1984. Neogene calcareous nannoplankton datum levels and their calibration to magnetostratigraphy. *Proc. Pacific Neogene Datum Workshop* (Osaka, 1981), pp. 27–33.

Okada, H., and Bukry, D., 1980. Supplementary modification and introduction of code numbers to the low latitude coccolith biostratigraphic zonation (Bukry, 1973, 1975). *Mar. Micropaleontol.*, 5:321–325.

Poore, R. Z., and Berggren, W. A., 1975. Late Cenozoic planktonic foraminiferal biostratigraphy and paleoclimatology of Hatton-Rockall Basin: DSDP Site 116. *J. Foraminif. Res.*, 5:77–84.

Pujol, C., and Duprat, J., 1983. Quaternary planktonic foraminifers of the southwestern Atlantic (Rio Grande Rise), DSDP Leg 72. *In* Barker, P. F., Carlson, R. L., Johnson, D. A., et al., *Init. Repts. DSDP*, 72: Washington (U.S. Govt. Printing Office), 601–622.

Ruddiman, W. F., and MacIntyre, A., 1981. Oceanic mechanisms for amplification of the 23,000 years ice volume cycle. *Science*, 212: 617–627.

Schnitker, D., 1974. West Atlantic abyssal circulation during the past 120,000 years. *Nature*, 248:385–387.

Shackleton, N. J., Backman, J., Zimmerman, H., Kent, D. V., Hall, M. A., et al., 1984. Oxygen isotope calibration of the onset of ice-rafting in DSDP Site 522A: history of glaciation in the North Atlantic. *Nature*, 307:620–623.

Streeter, S. S., and Shackleton, N. J., 1979. Paleocirculation of the deep North Atlantic: 150,00 year record of benthic foraminifera and oxygen-18. *Science*, 203:168–170.

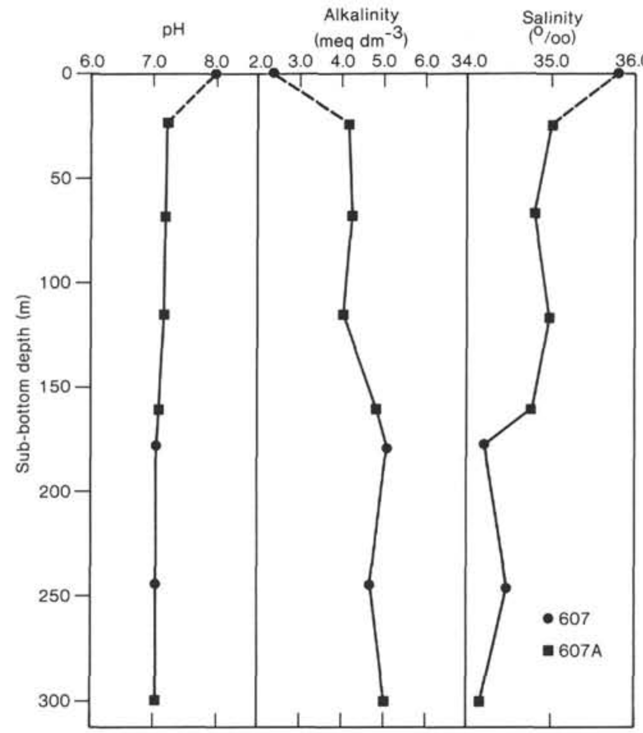
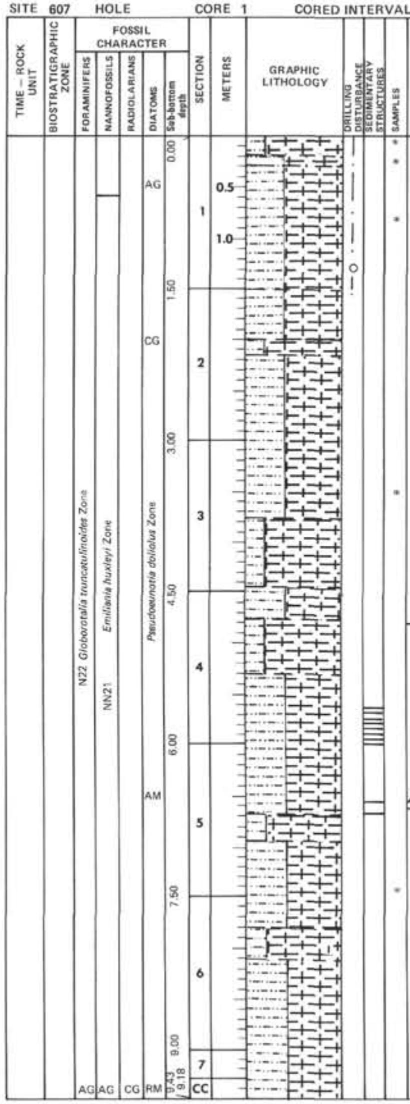


Figure 11. Plot of pH, alkalinity, and salinity of interstitial water versus depth, Site 607.

SITE 607 HOLE CORE 1 CORED INTERVAL 0.0–9.6 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, top 18 cm of core is yellow/orange/gray (10YR 7/3); remainder of these layers are pale gray (N8) to white (N9) with local olive cast (5Y 6/1), common gray (N6–7) mottles

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 7/1), gray (N7), and very pale olive (10Y 6/2); extensively mottled, local dark gray (N6) and olive (5Y 6/1) laminae, all contacts gradational

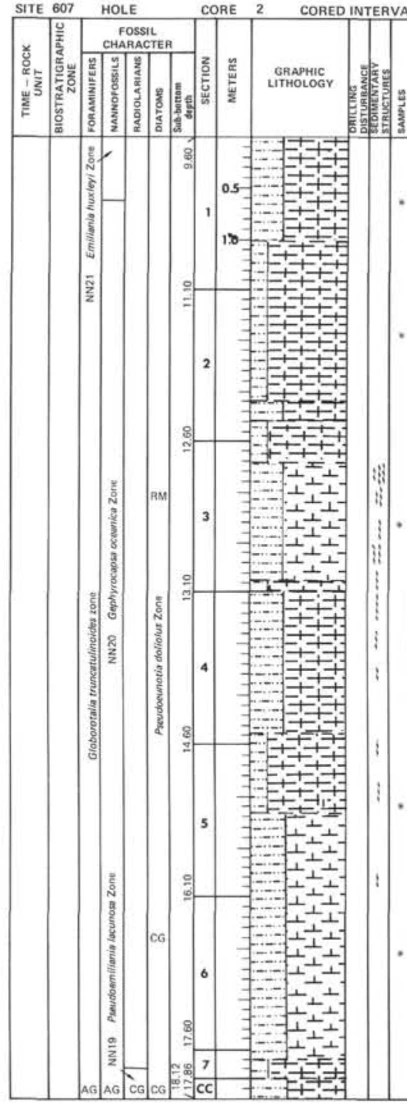
SMEAR SLIDE SUMMARY (%):

	1, 3	1, 25	1, 70	3, 49	5, 143
	D	D	D	D	D
Composition:					
Quartz	TR	TR	TR	–	–
Feldspar	–	TR	TR	TR	TR
Heavy minerals	–	TR	–	–	–
Micronodules	TR	TR	–	–	–
Carbonate unspec.	1	3	2	TR	1
Foraminifers	13	14	8	14	13
Calc. nannofossils	86	83	90	66	86
Diatoms	–	–	–	–	TR
Radiolarians	–	–	TR	TR	–
Sponge spicules	TR	TR	TR	TR	–
Silicoflagellates	–	–	TR	–	TR

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	71	82

SITE 607 HOLE CORE 2 CORED INTERVAL 9.6–19.2 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/ FORAMINIFERAL NANNOFOSSIL OOZE

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly pale olive/gray (5Y 7/1) with common gray (N5–N7) mottles and laminae, olive (5Y 6/1) mottling increasing towards base of each unit, green (5GY 7/1) laminations increase in abundance down unit; gradational tops and bases, typically bioturbated tops

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), local minor dark gray (N5–7) mottling and laminations; local minor pale green (5G 7/1) laminae

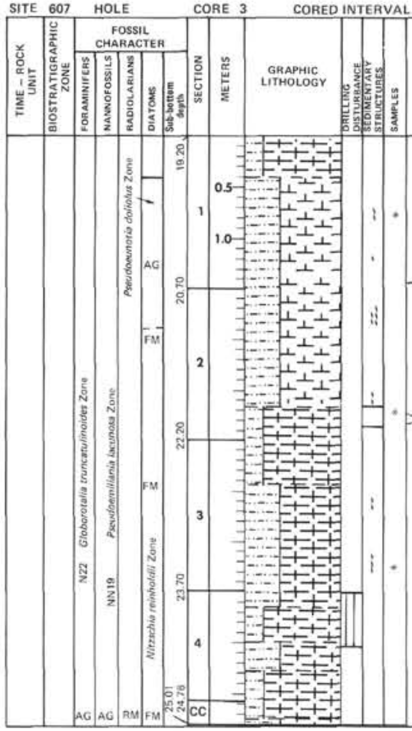
SMEAR SLIDE SUMMARY (%):

	1, 66	2, 56	3, 80	5, 57	6, 59
	D	D	D	D	D
Composition:					
Quartz	TR	TR	TR	1	TR
Heavy minerals	TR	–	–	–	TR
Glauconite	–	–	TR	–	–
Foraminifers	15	15	5	10	8
Calc. nannofossils	85	85	95	89	92
Diatoms	–	–	TR	–	TR
Radiolarians	TR	–	TR	–	TR
Sponge spicules	TR	–	–	–	–

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	88	77

SITE 607 HOLE CORE 3 CORED INTERVAL 19.2–25.2 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N8) to pale gray (N8) with minor pale green (5GY 8/1) and olive (5Y 7/1) rare dark gray (N4) burrow outlines

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6/1 to 8/1), common dark gray (N4–6) laminations and mottles throughout, minor pale green (5GY 7/1) mottles and laminations; typically extensively burrowed with common subhorizontal laminae; all contacts gradational

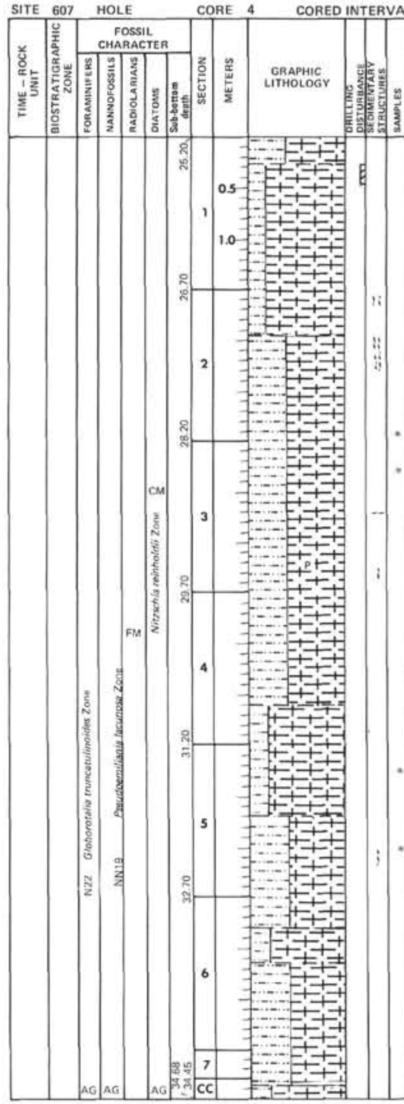
SMEAR SLIDE SUMMARY (%):

	1, 75	2, 124	3, 124
	D	D	D
Composition:			
Quartz	1	–	–
Heavy minerals	TR	TR	TR
Foraminifers	5	10	15
Calc. nannofossils	95	90	85
Diatoms	TR	–	–
Radiolarians	TR	–	–
Sponge spicules	TR	–	–
Silicoflagellates	TR	–	–

ORGANIC CARRON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	69	NR

SITE 607 HOLE CORE 4 CORED INTERVAL



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to pale gray (N8), local olive (5Y 7/1) cast; minor dark gray (N4–6) and white (N9) mottling throughout

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly pale olive gray (5Y 6/1–7/1) to pale green (5GY 6/1), common dark gray (N4–6) and green (5GY 8/1) laminae and mottles; units typically well laminated; all contacts gradational

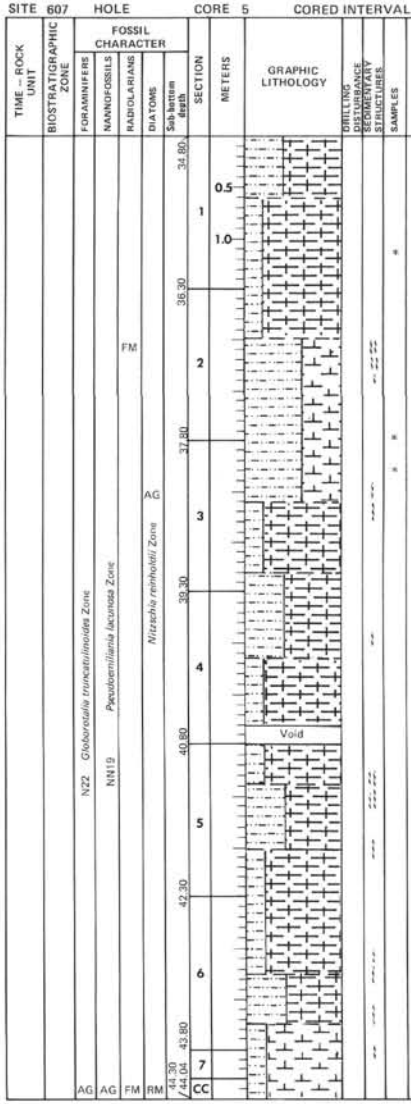
SMEAR SLIDE SUMMARY (%):

	2, 138	3, 27	5, 27	5, 98
	D	D	D	D
Composition:				
Quartz	2	1	1	TR
Heavy minerals	TR	TR	TR	TR
Carbonate unspec.	–	–	TR	–
Foraminifers	15	20	20	20
Calc. nannofossils	83	79	79	80
Diatoms	TR	TR	1	TR
Radiolarians	TR	TR	–	–
Sponge spicules	–	–	TR	–
Silicoflagellates	TR	TR	–	–

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	68	62

SITE 607 HOLE CORE 5 CORED INTERVAL 34.8–44.4 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL/NANNOFOSSIL OOZE

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) with local pale olive (5Y 7/1) cast, minor dark gray (N4–7) mottling scattered throughout, local olive (5Y 7/2) mottles

MARLY FORAMINIFERAL NANNOFOSSIL/NANNOFOSSIL OOZE, varicolored; predominantly pale olive gray (5Y 7/1) and pale green gray (5GY 7/1); common dark-medium gray (N4–7) laminae and mottles, extensively burrowed, local minor green (5GY 7/1) mottling; all contacts gradational

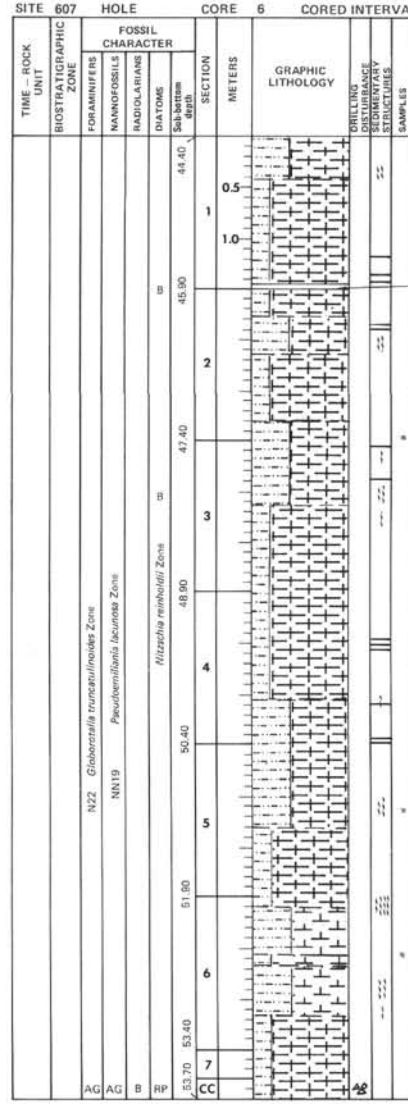
SMEAR SLIDE SUMMARY (%):

	1, 116	2, 146	3, 36
	D	D	D
Composition:			
Quartz	TR	TR	–
Heavy minerals	–	TR	1
Clay	–	13	–
Carbonate unspec.	–	TR	–
Foraminifers	10	5	10
Calc.nannofossils	90	81	89

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	45	NR

SITE 607 HOLE CORE 6 CORED INTERVAL 44.4–54.0 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to very pale olive gray (5Y 7/1); local minor dark gray (N2–6) mottles and laminations; minor green (5GY 7/1) laminations

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominant pale olive gray (5Y 6/1–7/1) with common green gray (5GY 6/1); common green (5GY 7/1–5G 6/2) laminae; local dark gray (N4) mottles and laminations; all contacts gradational

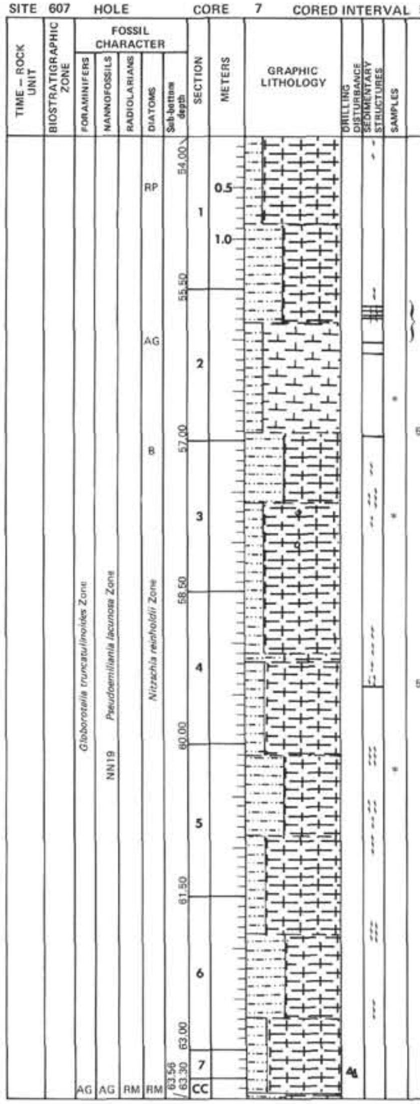
SMEAR SLIDE SUMMARY (%):

	2, 147	5, 64	6, 59
	D	D	D
Composition:			
Quartz	TR	–	TR
Pyrite	–	10	–
Foraminifers	10	10	5
Calc. nannofossils	90	80	95
Diatoms	–	–	TR
Radiolarians	–	–	TR
Silicoflagellates	–	–	TR

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	88

SITE 607 HOLE CORE 7 CORED INTERVAL 54.0–63.6 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to pale olive gray (5Y 7/1), common dark gray (N4–5) mottles and laminations; local minor green (5GY 7/1) laminations; small (1 cm) volcanic pebbles at Section 3, 69 and 98 cm

MARLY FORAMINIFER NANNOFOSSIL OOZE, varicolored; predominantly pale olive gray (5Y 6/1–7/1), with common dark gray (N5) laminations and mottles, common green (5G 6/2–5GY 8/1) laminations and mottles; typically well laminated; all contacts gradational

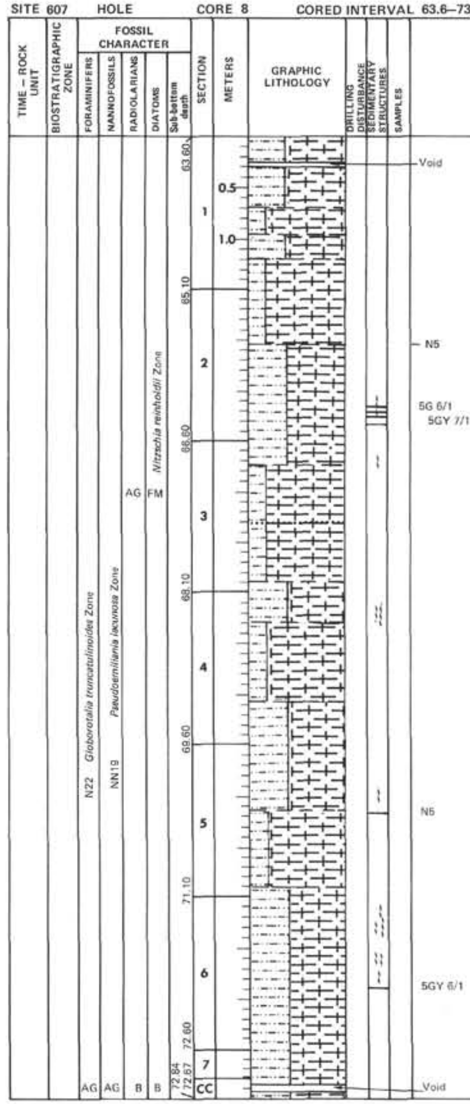
SMEAR SLIDE SUMMARY (%):

	2, 100	3, 72	5, 53
	D	D	D
Composition:			
Quartz	TR	TR	–
Feldspar	–	TR	–
Volcanic glass	TR	TR	TR
Foraminifers	5	15	10
Calc. nannofossils	95	85	90
Sponge spicules	–	TR	–
Silicoflagellates	–	TR	–

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	90	73

SITE 607 HOLE CORE 8 CORED INTERVAL 63.6–73.2 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) with common pale olive gray (5Y 7/1) cast; common dark gray (N5) mottles and laminations

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6–7/1), common dark gray (N4–6) mottles and laminations, common green (5G 6/2–5GY 8/1) laminations; gradational tops and bases; extensively mottled

MINOR LITHOLOGY: Section 3, 79–80 cm NANNOFOSSIL FORAMINIFERAL SAND, dark gray (N5); lower contact sharp, upper contact gradational; pyrite-rich

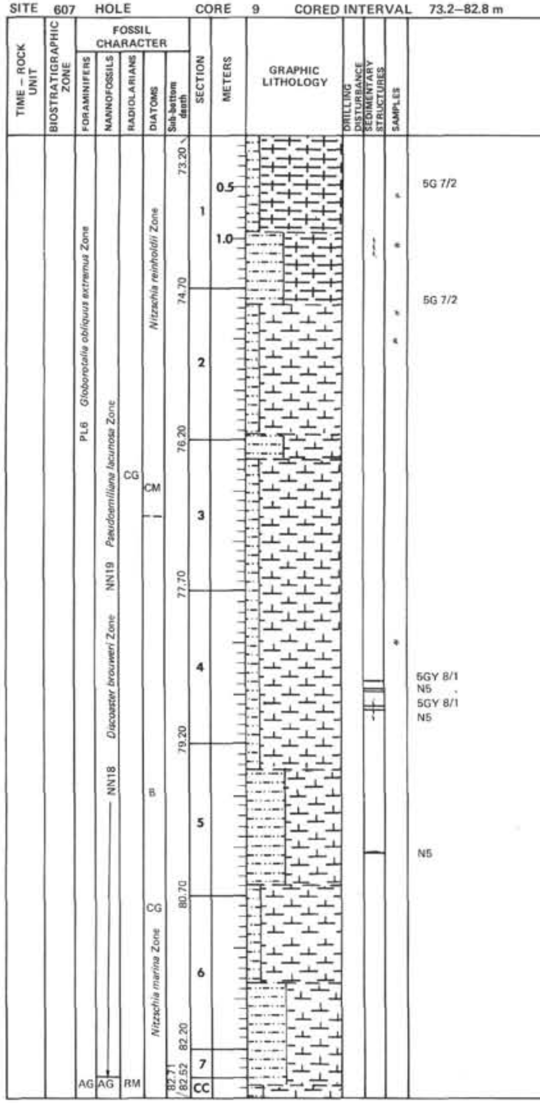
SMEAR SLIDE SUMMARY (%):

	1, 5	1, 142	3, 82	5, 100
	D	D	M	D
Composition:				
Quartz	–	–	–	TR
Feldspar	–	–	TR	–
Volcanic glass	TR	TR	TR	–
Carbonate unspec.	TR	–	–	–
Foraminifers	10	10	60	12
Calc. nannofossils	90	90	40	82
Sponge spicules	–	TR	–	TR

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	87

SITE 607 HOLE CORE 9 CORED INTERVAL 73.2–82.8 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/ FORAMINIFERAL NANNOFOSSIL OOZE

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), common dark gray (N4–7) pyrite-rich mottles; local green (5G 7/2) laminations; pyritized burrow at Section 1, 105 cm

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6–7/2), local gray (N4) laminations and mottles; extensively mottled; all contacts gradational

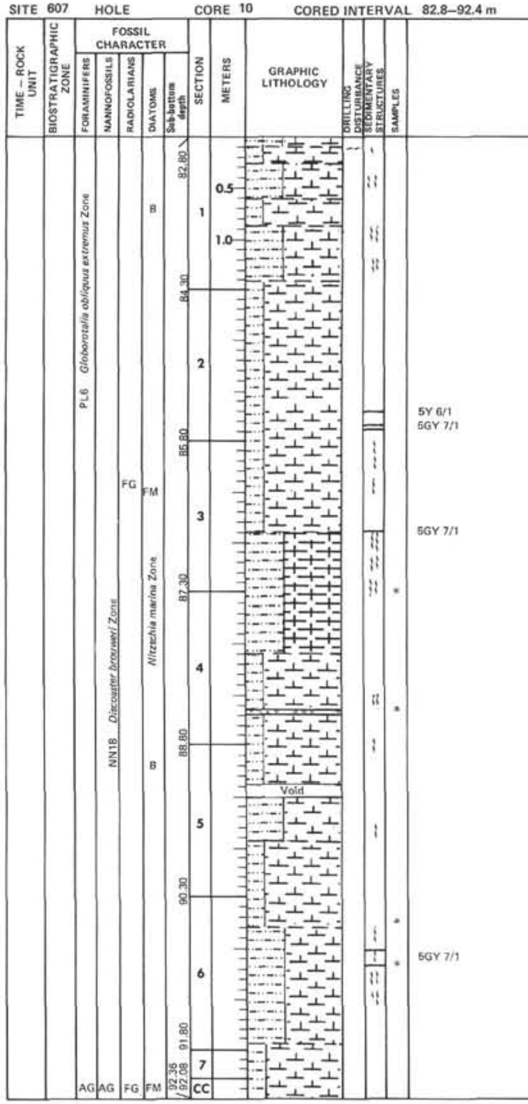
SMEAR SLIDE SUMMARY (%):

	1, 61	1, 106	2, 26	2, 67	4, 50
	D	D	D	D	D
Composition:					
Quartz	–	TR	–	TR	–
Feldspar	TR	TR	–	–	1
Heavy minerals	–	TR	–	–	–
Glauconite	–	TR	–	–	–
Pyrite	–	TR	–	–	–
Carbonate unspec.	–	–	3	2	1
Foraminifers	8	10	8	3	8
Calc. nannofossils	92	90	89	95	90
Diatoms	TR	–	–	–	–

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	81	90

SITE 607 HOLE CORE 10 CORED INTERVAL 82.8–92.4 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8); common olive gray (5Y 6–7/1) and gray (N4–7) mottles; local green (5GY 7/1) and olive (5Y 6/1) laminae, gradational contacts

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly pale olive gray (5Y 7–6/1) with minor gray (N4–7); extensively mottled, local green (5GY 7/1) laminae

MINOR LITHOLOGY: Section 4, 115–121 cm, dark gray green (5Y 5/1–4/1), bioturbated, gradational contacts

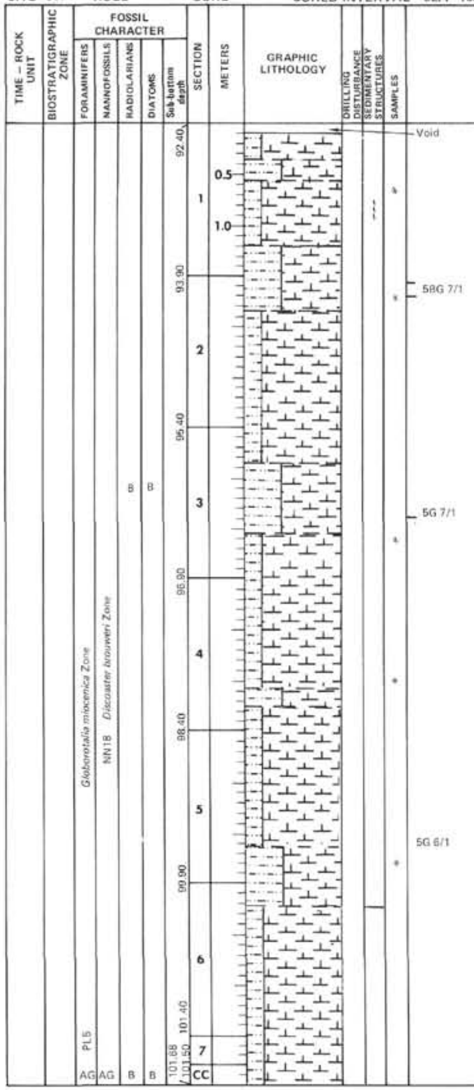
SMEAR SLIDE SUMMARY (%):

	4, 4	6, 26	6, 65	4, 119
	D	D	D	M
Composition:				
Feldspar	TR	TR	TR	8
Heavy minerals	–	TR	–	2
Volcanic glass	–	–	–	55
Foraminifers	10	8	5	3
Calc. nannofossils	90	92	95	32

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	84

SITE 607 HOLE CORE 11 CORED INTERVAL 92.4–102.0 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL OOZE and MARLY NANNOFOSSIL OOZE

NANNOFOSSIL OOZE, white (N9) to pale gray (N8), homogeneous, gradational contacts, local minor dark gray (N5) mottles

MARLY NANNOFOSSIL OOZE, medium gray (N7), extensively mottled with darker gray (N6), local green (5G 6–7/1) laminae, all contacts gradational; pyrite burrow cast at Section 3, 36 cm

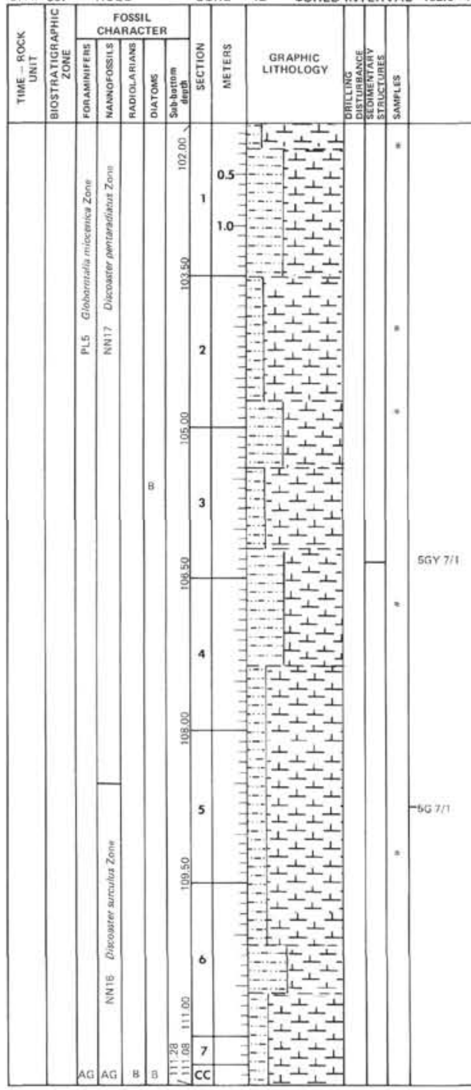
SMEAR SLIDE SUMMARY (%):

	1, 65	2, 19	3, 109	4, 95	5, 124
	D	D	D	D	D
Composition:					
Feldspar	–	TR	TR	–	TR
Pyrite	TR	–	–	–	–
Carbonate unspec.	TR	–	–	–	–
Foraminifers	8	8	8	8	9
Calc. nannofossils	94	92	92	92	91
Radiolarians	TR	TR	–	–	–

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	85

SITE 607 HOLE CORE 12 CORED INTERVAL 102.0–111.6 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL OOZE and MARLY NANNOFOSSIL OOZE

NANNOFOSSIL OOZE, pale gray (N8) with minor local pyrite-rich dark gray (N4) mottles

MARLY NANNOFOSSIL OOZE, medium gray (N7) to pale olive gray (5Y 7/1) and green (5G 7/1), local green (5G 7/1–5GY 7/1) and gray (N6–7) laminae, extensively mottled, gradational contacts

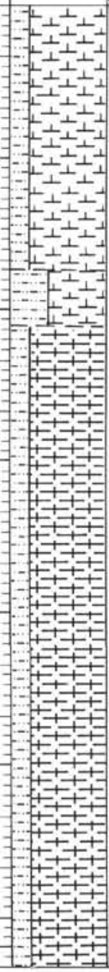
SMEAR SLIDE SUMMARY (%):

	1, 23	2, 43	2, 131	4, 24	5, 118
	D	D	D	D	D
Composition:					
Feldspar	TR	TR	–	TR	TR
Pyrite	–	–	2	TR	–
Carbonate unspec.	–	TR	1	TR	TR
Foraminifers	5	4	7	6	9
Calc. nannofossils	95	96	90	94	91

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	89	75

SITE 607 HOLE CORE 13 CORED INTERVAL 111.6–121.2 m

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	Sub-bottom depth	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
	PL5 *Globorotalia miocenica* Zone; NN16 *Discoaster surculus* Zone	AG	AG	B	B	111.60, 113.10, 114.60, 116.10, 117.60, 119.10, 120.60, 121.07, 120.83	1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0				

LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL OOZE, white (N8–5) to pale gray (N8), dark gray (N5–6) mottles scattered throughout unit

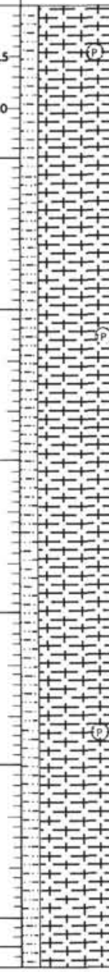
SMEAR SLIDE SUMMARY (%):

	1, 30	2, 100	3, 140	4, 114	5, 130
	D	D	D	D	D
Composition:					
Feldspar	TR	TR	TR	TR	TR
Pyrite	TR	TR	–	–	–
Foraminifers	6	9	12	10	11
Calc. nannofossils	94	91	88	90	89

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	86	88

SITE 607 HOLE CORE 14 CORED INTERVAL 121.2–130.8 m

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	Sub-bottom depth	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
	PL4 *Globorotalia altispira* Zone; NN16 *Discoaster surculus* Zone	AG	AG	B	B	121.20, 122.70, 124.20, 125.70, 127.20, 128.70, 130.20, 130.64, 130.39	1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0				5G 7/1; N6; 5GY 7/1

LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (predominantly N8 with minor N7), local minor pale green (5GY 7/1), 5G 7/1, and dark gray (N6); dark gray patches (rich in pyrite?) scattered throughout core

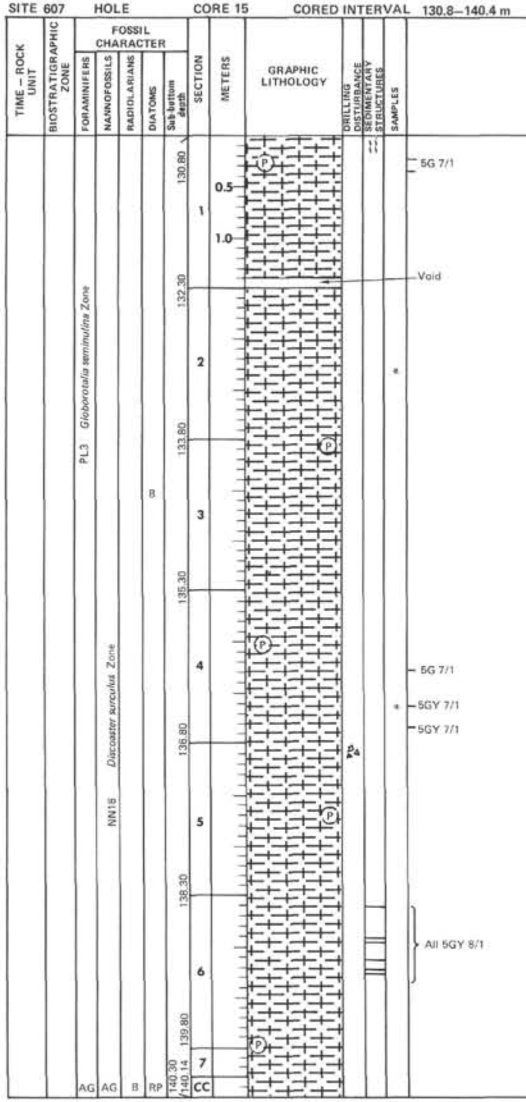
SMEAR SLIDE SUMMARY (%):

	1, 60	2, 122	3, 140	4, 28	7, 10
	D	D	D	D	D
Composition:					
Feldspar	TR	TR	1	TR	TR
Foraminifers	11	10	13	12	12
Calc. nannofossils	89	90	87	88	88

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	82

SITE 607 HOLE CORE 15 CORED INTERVAL 130.8–140.4 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), faint green (5GY 8/1–5G 7/1) laminations and dark gray (N6–7) pyritic(?) patches scattered through unit.

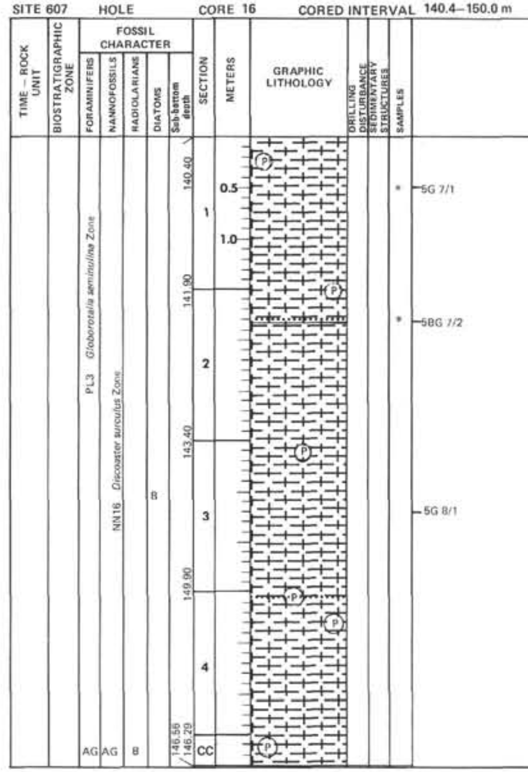
SMEAR SLIDE SUMMARY (%):

	2, 80	4, 111
	D	D
Composition:		
Feldspar	TR	–
Pyrite	–	TR
Carbonate unspec.	TR	TR
Foraminifers	13	13
Calc. nannofossils	87	87

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	89

SITE 607 HOLE CORE 16 CORED INTERVAL 140.4–150.0 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8); green laminae (5G 7/1, 5GY 8/1, 5BG 7/2) and dark gray (N6–7) pyritic(?) patches scattered through unit; Section 4, 2 cm thin layer of pyritic sand, pyritic burrow cast Section 3, 13.5 cm.

MINOR LITHOLOGY: NANNOFOSSIL FORAMINIFERAL SAND, pale gray (N7) with dark gray pyrite-rich base.

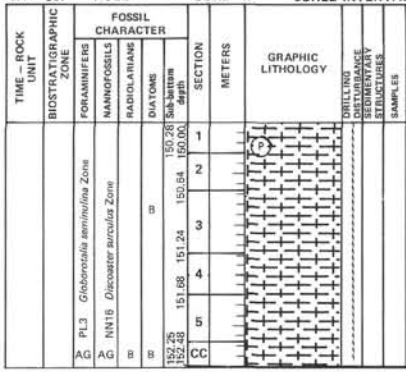
SMEAR SLIDE SUMMARY (%):

	1, 50	2, 30
	D	M
Composition:		
Feldspar	TR	TR
Foraminifers	10	68
Calc. nannofossils	90	32

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	94

SITE 607 HOLE CORE 17 CORED INTERVAL 150.0–159.6 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8); entire core probably disturbed due to shattered liner.

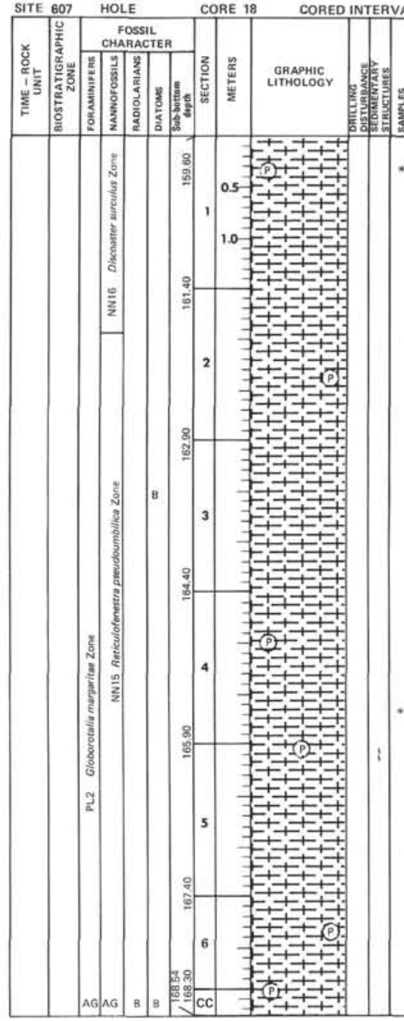
SMEAR SLIDE SUMMARY (%):

	3, 21
	D
Composition:	
Feldspar	TR
Foraminifers	11
Calc. nannofossils	89

ORGANIC CARBON AND CARBONATE (%):

	3, 53–54
Organic carbon	–
Carbonate	91

SITE 607 HOLE CORE 18 CORED INTERVAL 159.6–169.2 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8); minor dark-medium gray (N6–7) patches (pyritic?) scattered throughout unit; pyritized burrow at Section 5, 7 cm.

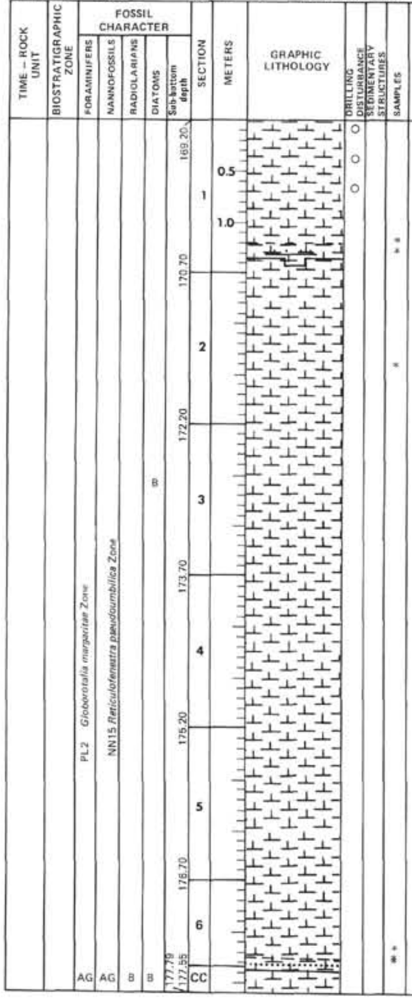
SMEAR SLIDE SUMMARY (%):

	1, 30	4, 115
	D	D
Composition:		
Feldspar	TR	TR
Pyrite	TR	–
Foraminifers	13	11
Calc. nannofossils	87	89

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	86	89

SITE 607 HOLE CORE 19 CORED INTERVAL 169.2–178.8 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N8.5–9), minor dark gray (N5–6) mottling scattered throughout unit; upper 60 cm of Section 1 soupy.

MINOR LITHOLOGY: Section 1, 120–134 cm and Section 6, 75–85 cm NANNOFOSSIL FORAMINIFERAL SAND, white (N9) to dark gray (N2) at pyritic bases; bases sharp, tops gradational; unit in Section 1 is normally graded (turbidite?) – unit in Section 6 is not graded; base of unit in Section 1 contains a load cast (probably drilling induced).

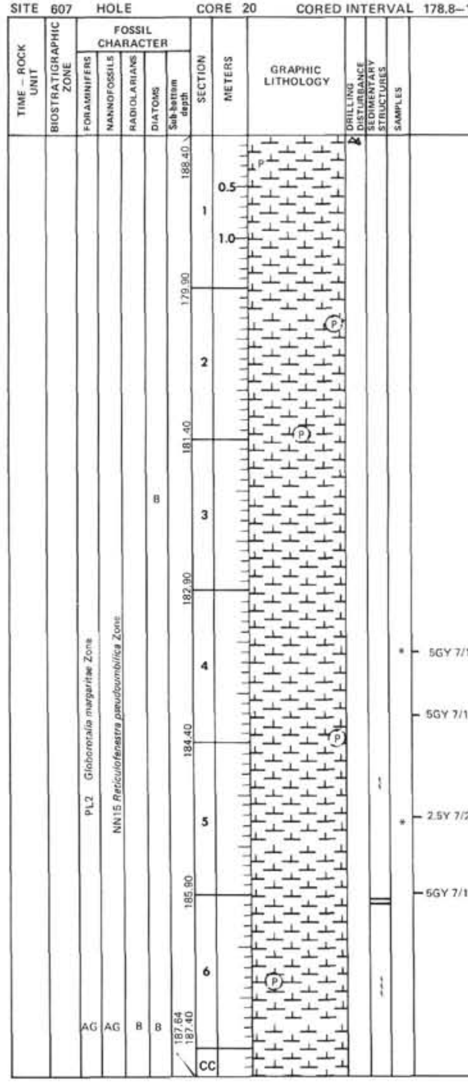
SMEAR SLIDE SUMMARY (%):

	1, 120	1, 131	2, 93	6, 73	6, 82
	M	M	D	D	M
Composition:					
Carbonate unspec.	–	TR	–	–	–
Foraminifers	60	65	2	2	70
Calc. nannofossils	40	35	98	98	30

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	90	91

SITE 607 HOLE CORE 20 CORED INTERVAL 178.8–188.4 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), minor dark gray (N4–N6) mottling scattered throughout unit; olive mottling (2.5Y 7/2) present in Sections 5 and 6; green (5GY 7/1) laminations in Sections 5–6.

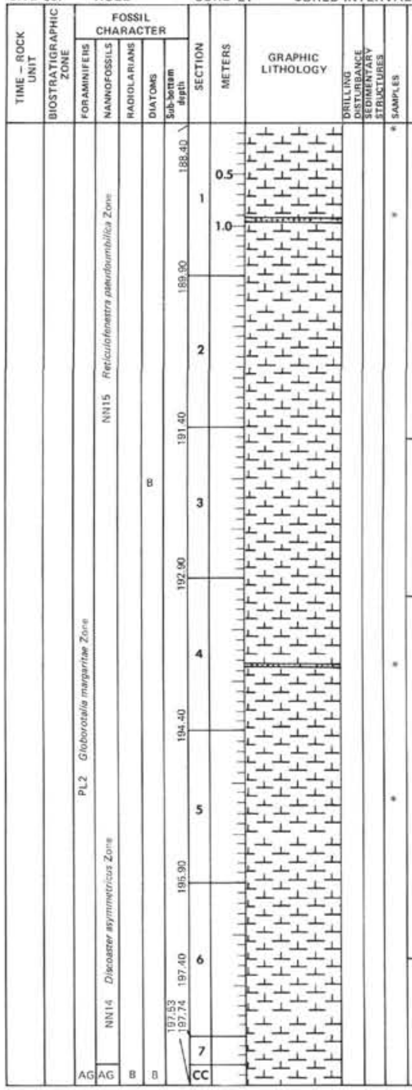
SMEAR SLIDE SUMMARY (%):

	4, 58	5, 75
	D	D
Composition:		
Glauconite	1	–
Foraminifers	5	5
Calc. nannofossils	94	95

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	92	92

SITE 607 HOLE CORE 21 CORED INTERVAL 188.4–198.0 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), dark gray (N4–6) mottling and green (5GY 7/2) scattered throughout unit, 3 cm pyritic burrow(?) at Section 5, 74 cm.

MINOR LITHOLOGY: Section 1, 93–94 cm and Section 4, 82 cm NANNOFOSSIL FORAMINIFERAL SAND, white (N9), sharp upper and lower contacts.

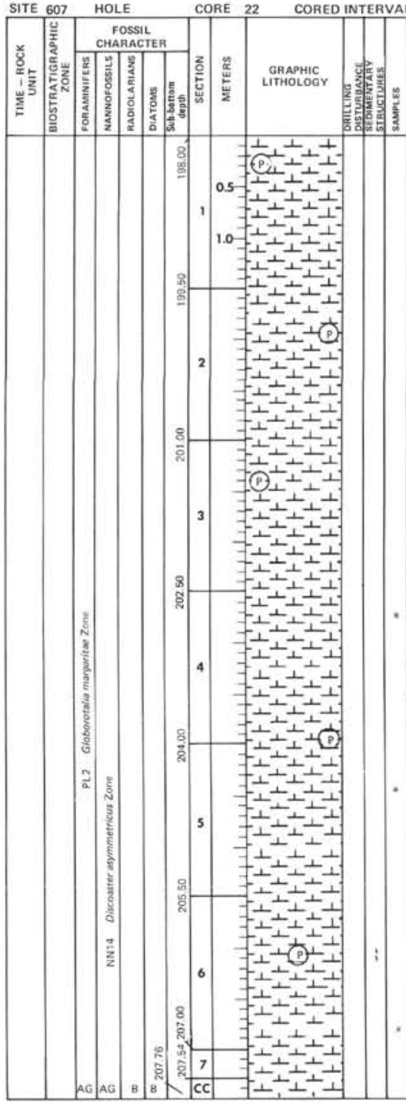
SMEAR SLIDE SUMMARY (%):

	1, 7	1, 93	4, 82	5, 65
	D	M	M	D
Composition:				
Quartz	TR	TR	–	–
Feldspar	–	TR	–	TR
Foraminifers	10	70	60	8
Calc. nannofossils	90	30	40	92

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	94	95

SITE 607 HOLE CORE 22 CORED INTERVAL 198.0–207.6 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), dark gray (N5) mottling common throughout unit, olive (2.5Y 7/2) mottling and green (5G 7/1) laminae in Section 4, pyrite burrow cast at Section 6, 55 cm.

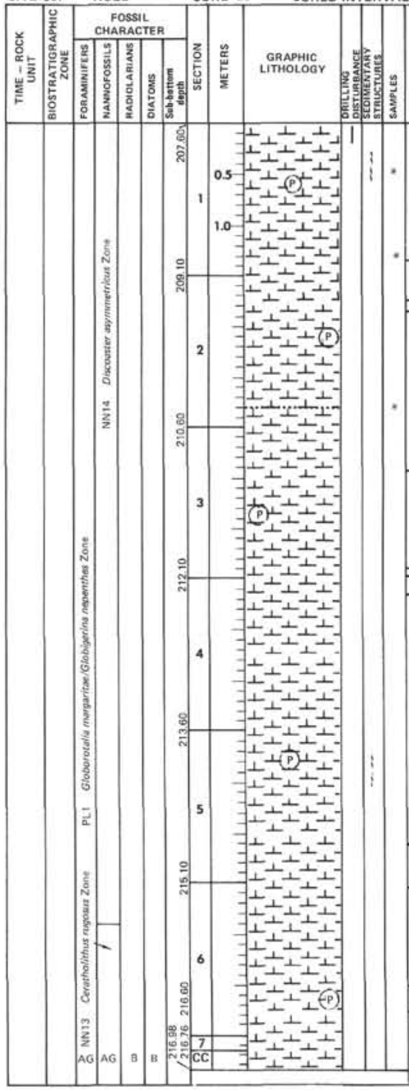
SMEAR SLIDE SUMMARY (%):

	4, 16	5, 38	6, 80
	D	D	D
Composition:			
Quartz	TR	–	–
Volcanic glass	TR?	–	–
Foraminifers	5	8	5
Calc. nannofossils	95	92	95

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	NR	92

SITE 607 HOLE CORE 23 CORED INTERVAL 207.6–217.2 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9) to very pale gray (N8), dark gray (N4–N6) mottling (pyrite?) of varying intensity scattered throughout unit, olive (2–2.5Y 7/2) mottling present in Sections 1, 3, 4, and 6; green (5GY 7/1) laminations (5–10 mm) scattered through Sections 2 and 6.

MINOR LITHOLOGY: Section 2, 129 cm pyritic NANNOFOSSIL-FORAMINIFERAL SAND, dark gray (N4), 5 mm thick.

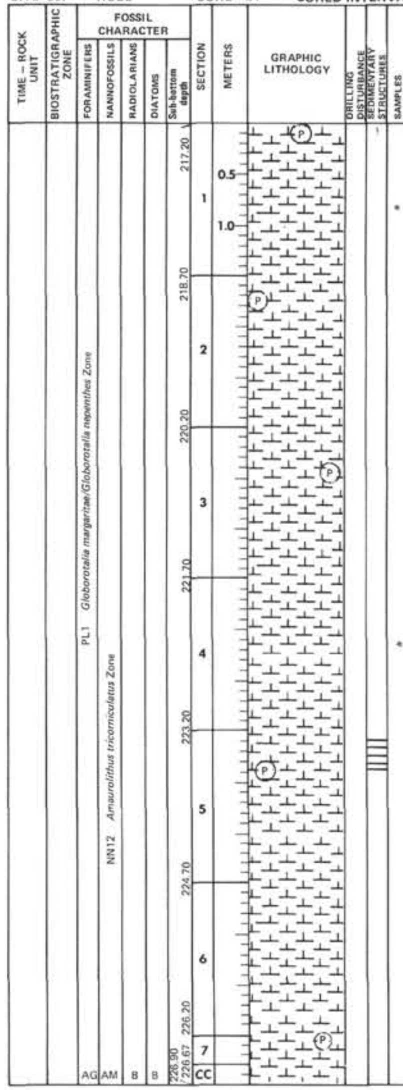
SMEAR SLIDE SUMMARY (%):

	1, 40	1, 120	2, 129
	D	D	M
Composition:			
Feldspar	TR	–	–
Pyrite	–	–	5
Foraminifers	8	2	70
Calc. nannofossils	92	98	25
Radiolarians	–	–	TR

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66	4, 65–66
Organic carbon	–	–
Carbonate	94	NR

SITE 607 HOLE CORE 24 CORED INTERVAL 217.2–226.8 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9) to very pale gray (N8.5), dark gray mottling (N4–6) of varying intensity scattered throughout core (pyrite?). Olive (5Y 6/2) mottling at Section 2, 112 cm, pale green (5G 6/2–5G 8/1) (5–10 mm) laminations in Sections 1, 4, 5, and 6; indurated 2 cm-thick chalk(?) layers beginning at Section 3, 106 cm and increasing in abundance down section (drill biscuits?).

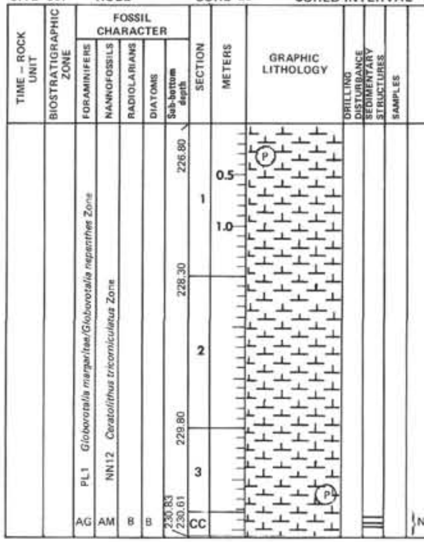
SMEAR SLIDE SUMMARY (%):

	1, 75	4, 65
	D	D
Foraminifers	5	5
Calc. nannofossils	95	95
Silicoflagellates	–	TR

ORGANIC CARBON AND CARBONATE (%):

	4, 65–66
Organic carbon	–
Carbonate	95

SITE 607 HOLE CORE 25 CORED INTERVAL 226.8–236.4 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9) to very pale gray (N8.5), dark gray (N4–N6) mottling (pyrite?) common throughout core, dark gray (N6) laminae common in Core Catcher. Indurated 1–2 cm chalk layers (drill biscuits?) scattered throughout core; especially common at Section 2, 29–77 cm.

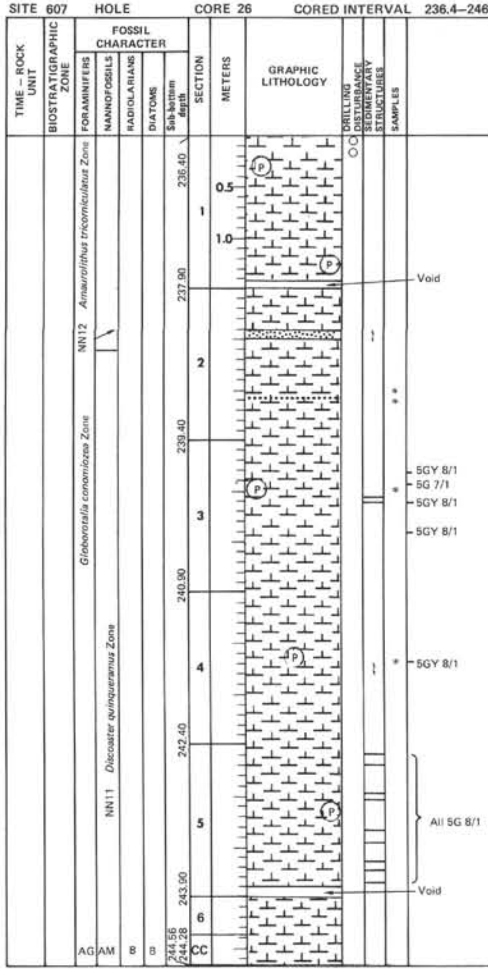
SMEAR SLIDE SUMMARY (%):

	2, 65
	D
Composition:	
Heavy minerals	TR
Foraminifers	3
Calc. nannofossils	97

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66
Organic carbon	–
Carbonate	90

SITE 607 HOLE CORE 26 CORED INTERVAL 236.4–246.0 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), minor dark gray (N4–N7) patches (pyrite?) scattered throughout core, pale green (5GY 8/1) laminations common in Sections 3, 4, and 5, pyritized burrow casts; Section 2, 55 cm and Section 4, 67 cm.

MINOR LITHOLOGY: Section 2, 52–58, 106–107 cm NANNOFOSSIL FORAMINIFERAL SAND, pale gray (N8), sharp contacts.

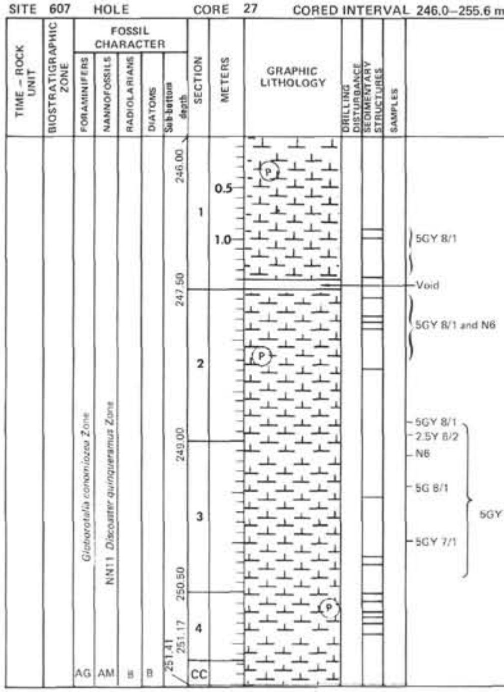
SMEAR SLIDE SUMMARY (%):

	2, 107	2, 109	3, 44	4, 65
	D	D	D	D
Composition:				
Quartz	–	–	TR	–
Feldspar	TR	TR	–	–
Volcanic glass	–	–	TR	TR
Foraminifers	30	10	7	3
Calc. nannofossils	70	90	93	97
Silicoflagellates	–	–	–	TR

ORGANIC CARBON AND CARBONATE (%):

	4, 65–66
Organic carbon	–
Carbonate	89

SITE 607 HOLE CORE 27 CORED INTERVAL 246.0–255.6 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), dark gray (N4–6) mottles (pyrite?) scattered throughout core, dark gray (N4–7) and green (5GY 8/1, 6GY 7/1), 5–15 mm horizontal laminae common throughout core, olive (2.5Y 6/2) mottling at Section 2, 146 cm.

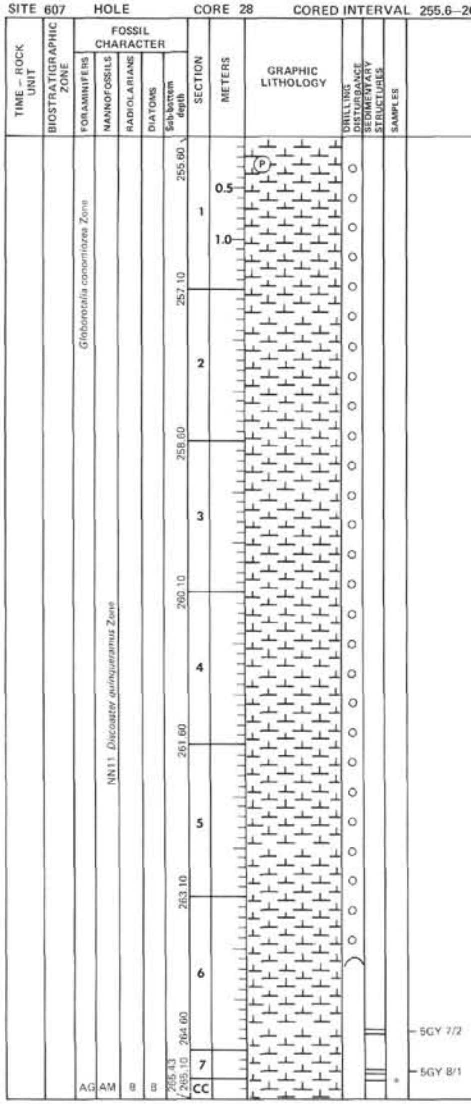
SMEAR SLIDE SUMMARY (%):

	3, 65
	D
Composition:	
Foraminifers	2
Calc. nannofossils	98

ORGANIC CARBON AND CARBONATE (%):

	3, 65–66
Organic carbon	—
Carbonate	92

SITE 607 HOLE CORE 28 CORED INTERVAL 255.6–265.2 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, very pale gray (N8) to white (N8.5), green (5GY 7/2, 5GY 8/1) laminations (5–10 cm) common in Sections 6, 7, and Core Catcher. Sections 1–6, 58 cm very soupy.

SMEAR SLIDE SUMMARY (%):

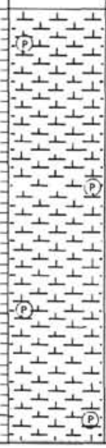
	7, 40
	D
Composition:	
Quartz	TR
Foraminifers	2
Calc. nannofossils	98

ORGANIC CARBON AND CARBONATE (%):

	7, 39–40
Organic carbon	—
Carbonate	93

SITE 607 HOLE CORE 29 CORED INTERVAL 265.2–274.8 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	Sub-bottom depth	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
	Globorotalia conomiozea Zone; NN11 *Discoaster quinqueramus* Zone	AG	AM	B	B	265.20 / 266.70 / 268.20 / 269.18 / 269.44	1, 2, 3, CC	0.5, 1.0				* *



5GY 8/1

5Y 7/3

LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, very pale gray (N8), faint green (5GY 8/1?), 5–10 mm laminae common in Section 1. Dark gray (N4–N6?) patches (pyrite?) common throughout core. Olive (5Y 7/3) lamination at Section 2, 79 cm.

SMEAR SLIDE SUMMARY (%):

	1, 70	3, 89
	D	D
Composition:		
Feldspar	TR	TR
Foraminifers	91	10
Calc. nannofossils	91	90

ORGANIC CARBON AND CARBONATE (%):

	1, 70–71
Organic carbon	–
Carbonate	93

SITE 607 HOLE CORE 30 CORED INTERVAL 274.8–284.4 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	Sub-bottom depth	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
	Globorotalia conomiozea Zone; NN11 *Discoaster quinqueramus* Zone	AG	AM	B	B	274.80 / 276.30 / 277.80 / 279.30 / 279.88 / 280.15	1, 2, 3, 4, CC	0.5, 1.0				* *

5GY 7/2

LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), dark gray (N5) pyrite(?) patches common throughout core. Green laminae (5GY 7/2) (5 mm) at Section 3, 87–92 cm.

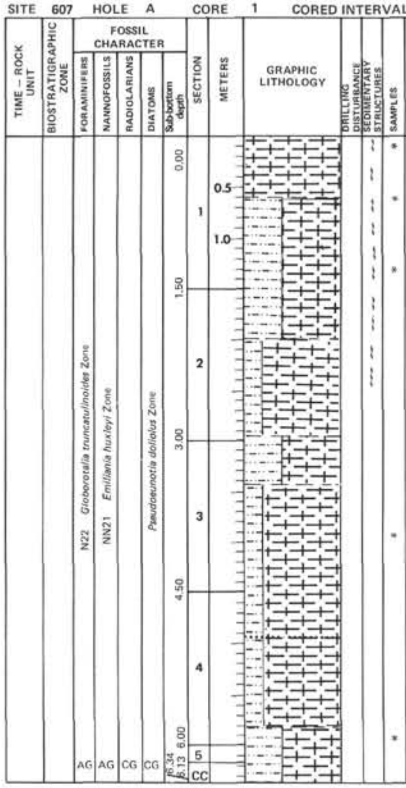
SMEAR SLIDE SUMMARY (%):

	1, 58	3, 89
	D	D
Composition:		
Feldspar	TR	TR
Pyrite	–	TR
Foraminifers	11	10
Calc. nannofossils	89	90

ORGANIC CARBON AND CARBONATE (%):

	3, 73–74
Organic carbon	–
Carbonate	93

SITE 607 HOLE A CORE 1 CORED INTERVAL 0.0–6.4 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, upper 60 cm yellow-tan gray (10YR 7/3–10YR 8/2), remainder pale gray (N7–8) with common dark gray (N5) mottling throughout. Section 2 contains several open burrows.

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly light olive gray (5Y 6/1) and medium gray (N7) with varying amounts of pale bluish gray (5BG 7/2) laminae; common dark gray (N4–6) mottling throughout.

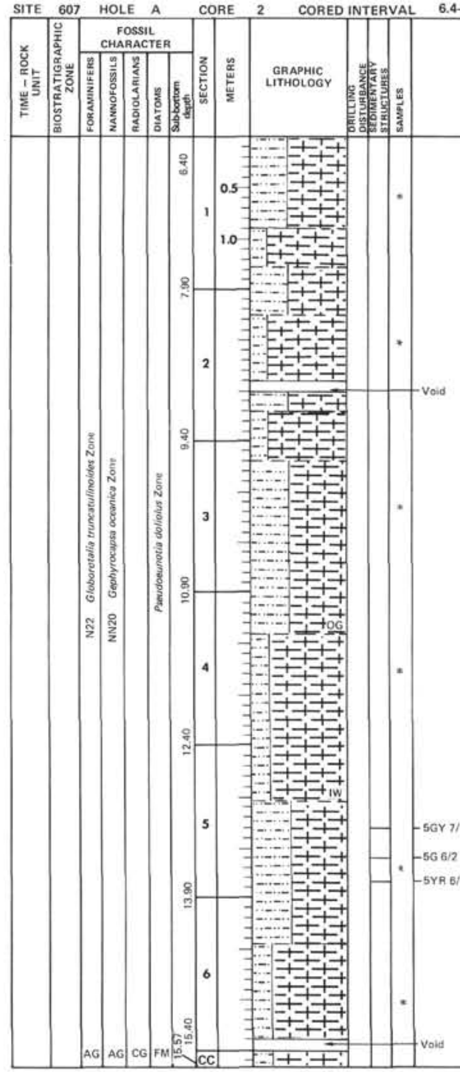
SMEAR SLIDE SUMMARY (%)

	1, 59	1, 124	3, 90	4, 140
	D	D	D	D
Composition:				
Feldspar	1	1	1	TR
Heavy minerals	–	TR	–	–
Clay	TR	–	–	–
Pyrite	TR	–	TR	TR
Carbonate unspec.	3	2	1	1
Foraminifers	14	15	19	13
Calc. nannofossils	82	82	79	86
Diatoms	–	TR	–	–
Radiolarians	–	–	–	TR
Sponge spicules	TR	TR	TR	TR
Silicoflagellates	–	TR	–	TR

ORGANIC CARBON AND CARBONATE (%):

	1, 14–15
Organic carbon	–
Carbonate	79

SITE 607 HOLE A CORE 2 CORED INTERVAL 6.4–16.0 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8) with minor medium grey (N7) and pale tan gray (5YR 6/1–8/1), dark gray (N4–6) mottling common.

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive (5Y 6/1–8/1), gray (N5–7), common (5YR 6/1–8/1), common dark gray (N4–8) mottling.

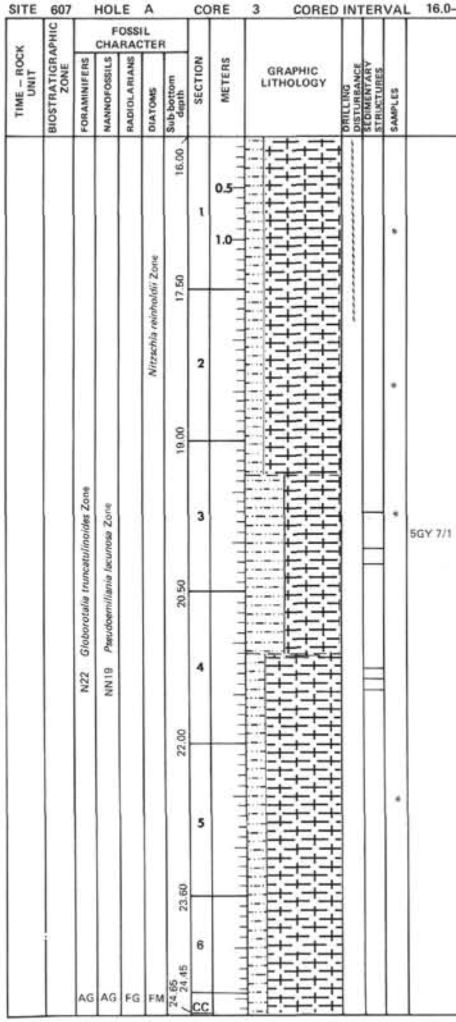
SMEAR SLIDE SUMMARY (%)

	1, 54	3, 141	5, 122	6, 106
	D	D	D	D
Composition:				
Feldspar	TR	TR	TR	TR
Pyrite	TR	–	TR	–
Carbonate unspec.	TR	1	TR	1
Foraminifers	12	11	9	7
Calc. nannofossils	88	88	91	92
Diatoms	–	TR	TR	–
Radiolarians	–	TR	–	TR
Sponge spicules	TR	TR	TR	TR
Silicoflagellates	TR	–	–	–

ORGANIC CARBON AND CARBONATE (%):

	1, 100–101
Organic carbon	–
Carbonate	76

SITE 607 HOLE A CORE 3 CORED INTERVAL 16.0–22.5 m (+ 1.9 m wash in = 8.68)



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8) with minor medium gray (N7) and pale green gray (5GY 8/1), common dark gray (N4–7) mottling throughout; minor dark gray (N5) and green (5GY 8/1) laminae.

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray/green (5GY 7/1) with common green (5GY 7/1) laminae.

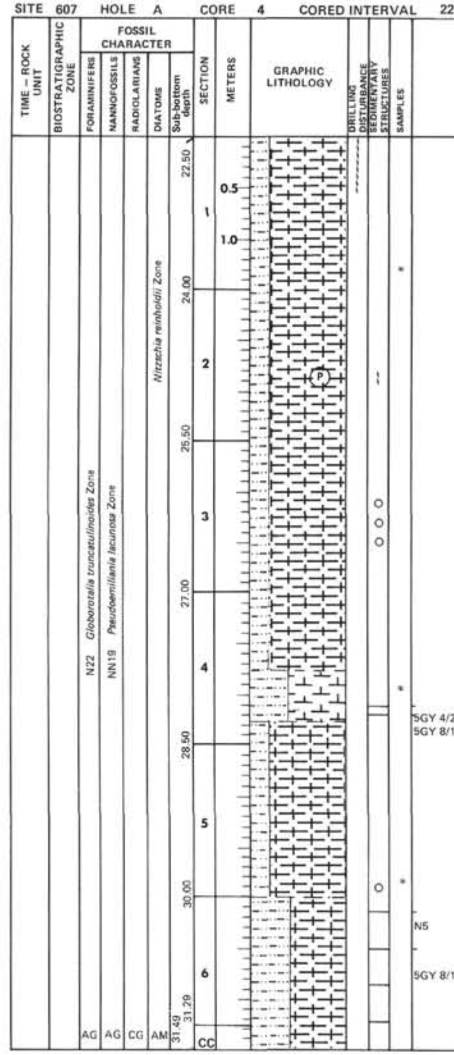
SMEAR SLIDE SUMMARY (%)

	1, 90	2, 91	3, 71	5, 52
	D	D	D	D
Composition:				
Quartz	–	1	–	TR
Pyrite	–	–	TR	–
Carbonate unspec.	1	TR	1	–
Foraminifers	13	14	10	11
Calc. nannofossils	84	85	89	89
Diatoms	–	–	TR	–
Radiolarians	–	–	TR	–
Sponge spicules	–	–	TR	–

ORGANIC CARBON AND CARBONATE (%):

	3, 100–102
Organic carbon	–
Carbonate	53

SITE 607 HOLE A CORE 4 CORED INTERVAL 22.50–30.50 m (+ 0.69 m wash in = 31.49)



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8) with minor medium gray (N7), common dark gray burrow mottling, pyrite-filled burrow at Section 2, 83 cm; glacial dropstones (<1 cm) at Section 3, 60–109 cm and Section 5, 142 cm.

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6/1) to green gray (5GY 6/1) with dark gray (N5); common green laminae (5G 4/1–5GY 8/1) all contacts except Section 4, 125 cm gradational.

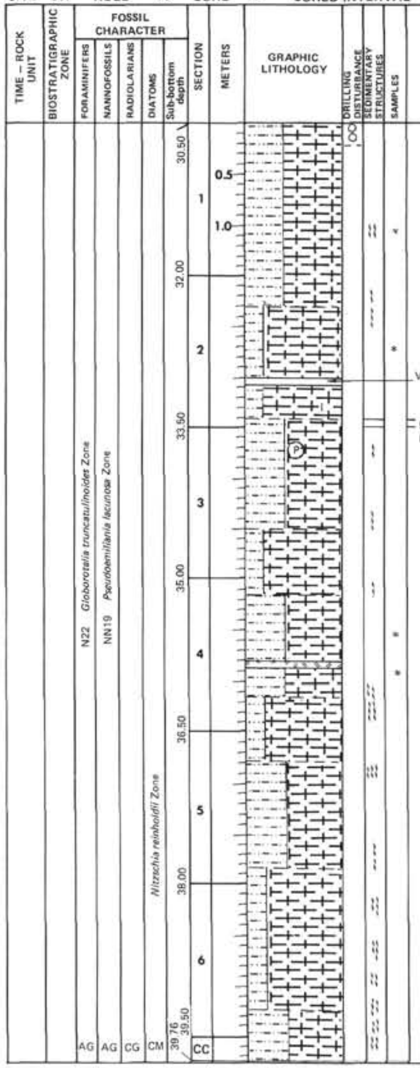
SMEAR SLIDE SUMMARY (%)

	1, 130	4, 89	5, 133
	D	D	D
Composition:			
Feldspar	TR	TR	TR
Pyrite	–	TR	–
Carbonate unspec.	TR	8	2
Foraminifers	10	10	12
Calc. nannofossils	90	82	86
Sponge spicules	–	–	TR

ORGANIC CARBON AND CARBONATE (%):

	2, 70–72	6, 50–51
Organic carbon	–	–
Carbonate	80	50

SITE 607 HOLE A CORE 5 CORED INTERVAL 30.5–40.1 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to light gray (N8–5Y 7/1), common dark gray (N4–6) burrow mottles and laminae, common green (5GY 7/1–5G 6/2) mottling and laminae.

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly gray to greenish-gray (5Y 6/1–5GY 6/1) with common dark gray (N4–5) laminae and mottles; extensively bioturbated; all contacts gradational.

MINOR LITHOLOGY: Section 4, 82–84 cm: VOLCANIC ASH, dark gray (N6), sharp upper and lower contacts.

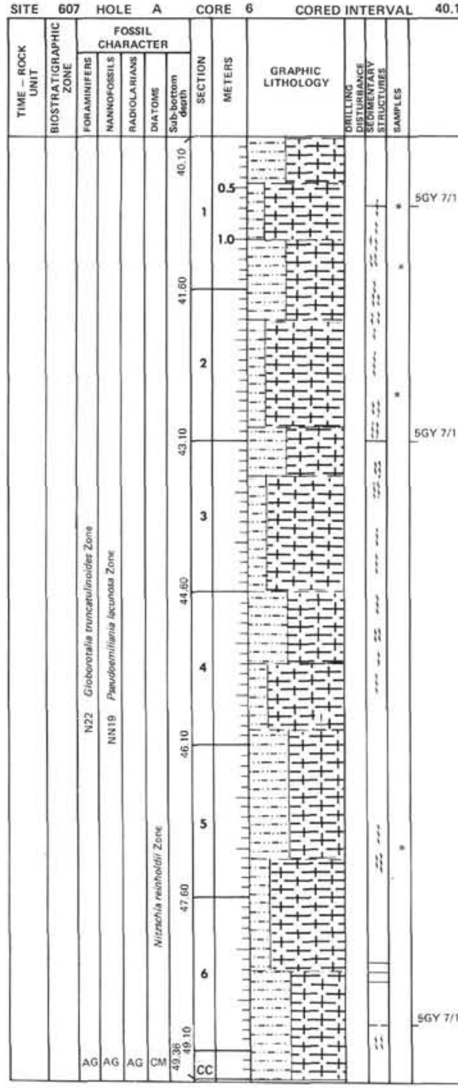
SMEAR SLIDE SUMMARY (%)

	1, 102	2, 80	4, 50	4, 83
	D	D	D	M
Texture:				
Silt	40	30	40	–
Composition:				
Quartz	30	20	30	
Feldspar	9	–	9	5
Heavy minerals	1	–	1	–
Volcanic glass	–	TR	–	90
Foraminifers	15	10	10	–
Calc. nannofossils	45	70	50	5
Silicoflagellates	–	TR	TR	–

ORGANIC CARBON AND CARBONATE (%):

	1, 102–103
Organic carbon	–
Carbonate	60

SITE 607 HOLE A CORE 6 CORED INTERVAL 40.1–49.7 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), common dark gray (N4–7) mottling, minor pale green laminae (5GY 7/1).

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6/1) to green gray (5GY 6/1), common dark gray (N4–6) mottling and lamination, common green (5GY 7/1) laminae and mottles, common olive (5Y 7/3) mottles, all contacts gradational.

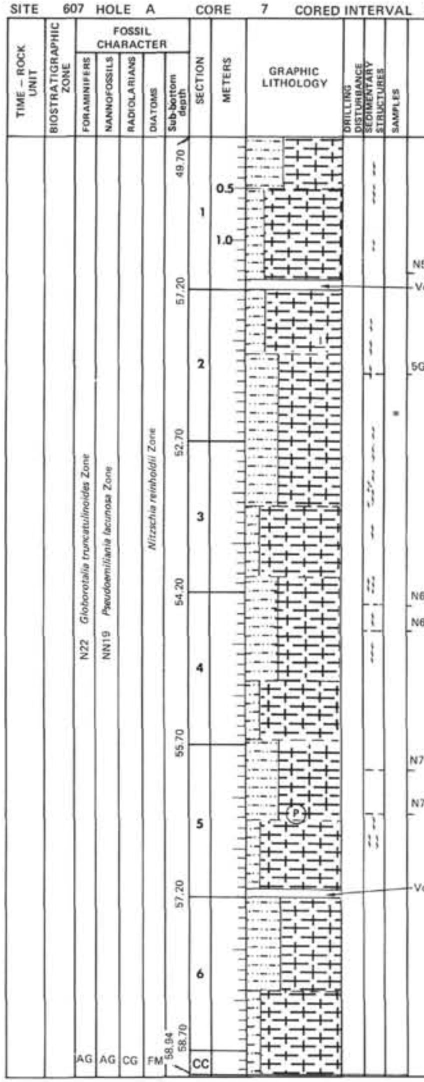
SMEAR SLIDE SUMMARY (%)

	1, 127	2, 103	5, 96
	D	D	D
Texture:			
Silt	30	15	40
Composition:			
Quartz	30	15	40
Foraminifers	15	10	10
Calc. nannofossils	55	75	50
Silicoflagellates	–	TR	–

ORGANIC CARBON AND CARBONATE (%):

	1, 100–101	5, 100–101
Organic carbon	–	–
Carbonate	55	69

SITE 607 HOLE A CORE 7 CORED INTERVAL 49.7–59.3 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8) with common dark gray (N4–7) mottling, local pale green (5GY 8/1) cast, common diffuse green (5G 7/1) and medium gray (N6/7).

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6/1) with common green (5GY 6/1) and gray (N6–8), common yellow/gray (5Y 8/1) and dark gray mottles; green (5GY 6/1) and gray (N6–7) laminae common; all contacts gradational.

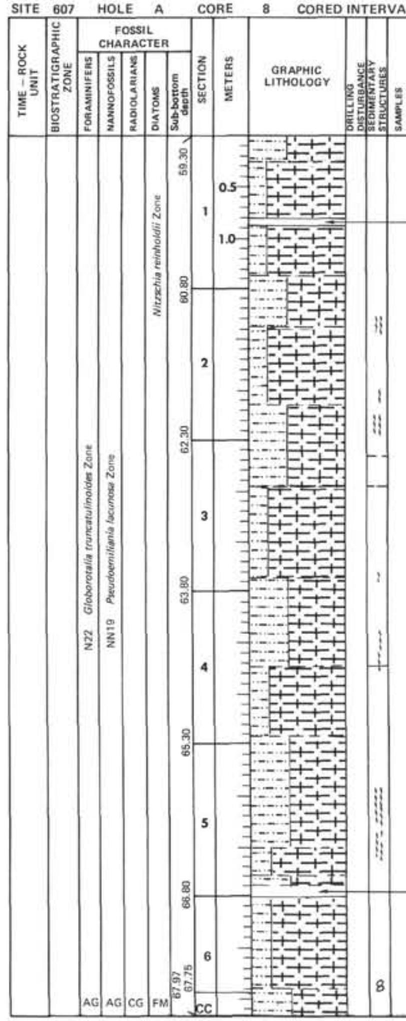
SMEAR SLIDE SUMMARY (%)

	2, 125	6, 120
	D	D
Texture:		
Silt	30	?
Composition:		
Quartz	30	–
Foraminifers	10	12
Calc. nannofossils	60	88
Silicoflagellates	TR	–

ORGANIC CARBON AND CARBONATE (%):

	2, 126–127
Organic carbon	–
Carbonate	68

SITE 607 HOLE A CORE 8 CORED INTERVAL 59.3–68.9 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N8.5) to pale gray (N8) with common dark gray (N6–8) mottling and lamination; 2 small (1/2 cm) glacial dropstones at Section 6, 88 cm.

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly olive gray (5Y 6–7/1), common gray (N5–8) mottles and laminae, common green (5GY 6–7/1) laminae, common olive (5Y 6/1) mottling towards base of units; extensively burrowed; percentage of laminae increases towards base of units.

SMEAR SLIDE SUMMARY (%)

	1, 23	4, 100
	D	D
Texture:		
Silt	?	15
Composition:		
Quartz	TR	–
Volcanic glass	TR	TR
Foraminifers	12	10
Calc. nannofossils	88	73
Diatoms	TR	–
Radiolarians	–	2

ORGANIC CARBON AND CARBONATE (%):

	4, 100–101
Organic carbon	–
Carbonate	89

SITE 607 HOLE A CORE 9 CORED INTERVAL 66.9–78.5 m

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

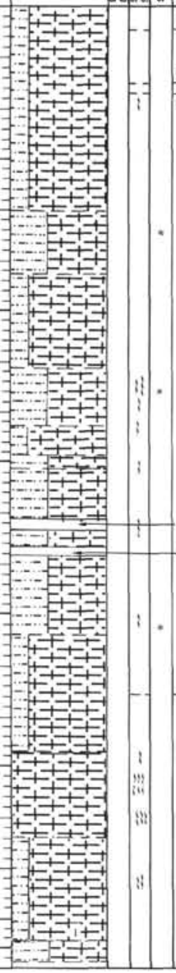
Biostratigraphic zones: PL6 *Globorotalia obliquus extremus* Zone; NN19 *Pseudoemiliania lacunosa* Zone; *Nitzschia reinholdii* Zone

Fossil character: AG AG CG CM

Sub-bottom depth: 68.90, 70.40, 71.90, 73.40, 74.90, 76.40, 77.90, 78.34, 78.50

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

Meters: 0.5, 1.0



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to pale green/gray (5Y 7–8/1), minor light gray (N7) laminae, minor dark gray (N5–7) pyrite-rich burrow mottling.

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly pale gray (5Y 8/1) to pale green gray (5GY 6/1), minor dark gray (N4–6) mottling and pale gray (N8) laminae, minor green (5GY 8/1) laminae scattered through unit; all contacts gradational.

SMEAR SLIDE SUMMARY (%)

	2, 80 D	3, 84 D	5, 10 D
Texture:			
Silt	3	30	15
Composition:			
Quartz	TR	30	15
Feldspar	TR	–	–
Heavy minerals	–	TR	TR
Volcanic glass	TR	–	–
Glauconite	TR	–	–
Carbonate unspec.	–	–	TR
Foraminifers	10	5	15
Calc. nannofossils	75	95	70

ORGANIC CARBON AND CARBONATE (%):

	2, 79–80	5, 10–11
Organic carbon	–	–
Carbonate	70	79

SITE 607 HOLE A CORE 10 CORED INTERVAL 78.5–88.1 m

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

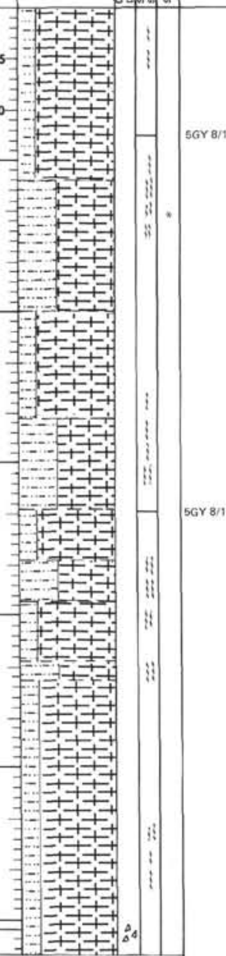
Biostratigraphic zones: PL6 *Globorotalia obliquus extremus* Zone; NN18 *Discoaster brouweri* Zone

Fossil character: AG AG B B

Sub-bottom depth: 78.50, 80.00, 81.50, 83.00, 84.50, 86.00, 87.50, 87.58, 87.84

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

Meters: 0.5, 1.0



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to pale gray (N8) with local green (5GY 8/1) and medium gray (N6–7) laminae, minor dark gray (N5–7) pyrite-rich? burrow mottling.

MARLY FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; pale gray (N8) to pale olive gray (5Y 7/1), common dark gray (N4–7) mottles, local green (5G 6/1–5GY 8/1) laminae; all contacts gradational.

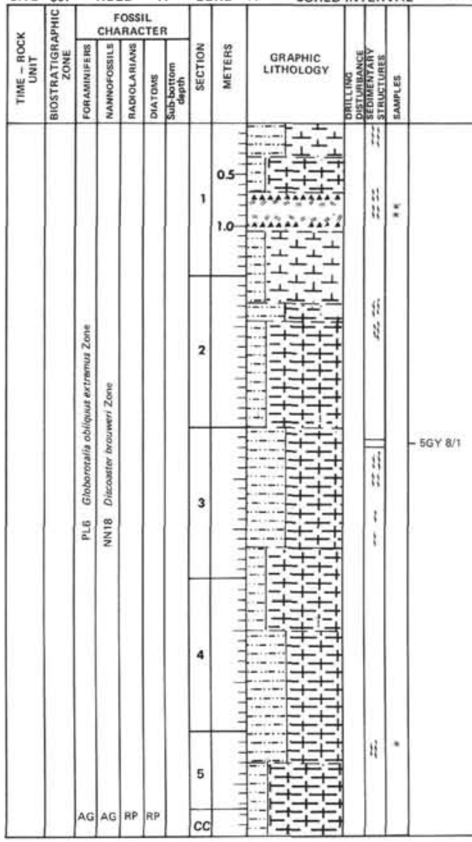
SMEAR SLIDE SUMMARY (%)

	2, 70 D
Texture:	
Silt	30
Composition:	
Quartz	30
Heavy minerals	TR
Foraminifers	10
Calc. nannofossils	60
Sponge spicules	TR

ORGANIC CARBON AND CARBONATE (%):

	2, 70–71
Organic carbon	–
Carbonate	77

SITE 607 HOLE A CORE 11 CORED INTERVAL 88.1–97.7 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE and MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE

NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to pale gray (N8), generally homogeneous but contains minor dark gray (N6) mottles and laminations.

MARLY NANNOFOSSIL/FORAMINIFERAL NANNOFOSSIL OOZE, varicolored; predominantly pale olive gray (5Y 7/1) with common medium to pale gray (N6–8), common green (5GY 8/1) laminae and dark gray (N6) laminae and mottles.

MINOR LITHOLOGY: Section 1, 71–105 cm: VOLCANIC ASH-BEARING NANNOFOSSIL OOZE, dark to pale gray (N3–8), extensively mottled; pumice fragments at 76–79 and 94–97 cm; gradational contacts.

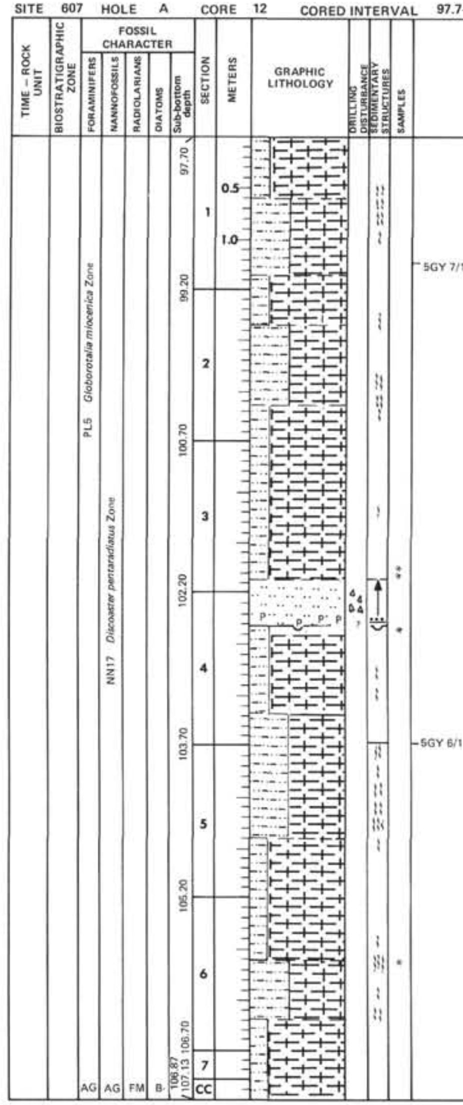
SMEAR SLIDE SUMMARY (%)

	1, 79 M	1, 80 M	5, 10 D
Texture:			
Silt	50	81	30
Composition:			
Quartz	–	20	30
Feldspar	5	1	–
Heavy minerals	TR	TR	TR
Volcanic glass	–	60	–
Foraminifers	5	–	10
Calc. nannofossils	40	19	60

ORGANIC CARBON AND CARBONATE (%):

	5, 10–11
Organic carbon	–
Carbonate	86

SITE 607 HOLE A CORE 12 CORED INTERVAL 97.7–107.3 m



LITHOLOGIC DESCRIPTION

Interlayered FORAMINIFERAL NANNOFOSSIL OOZE and MARLY FORAMINIFERAL NANNOFOSSIL OOZE

FORAMINIFERAL NANNOFOSSIL OOZE, white (N8) to pale gray (N8–5Y 8/1); common dark gray (N5–6) mottles and laminae local green (5GY 7/1) laminae.

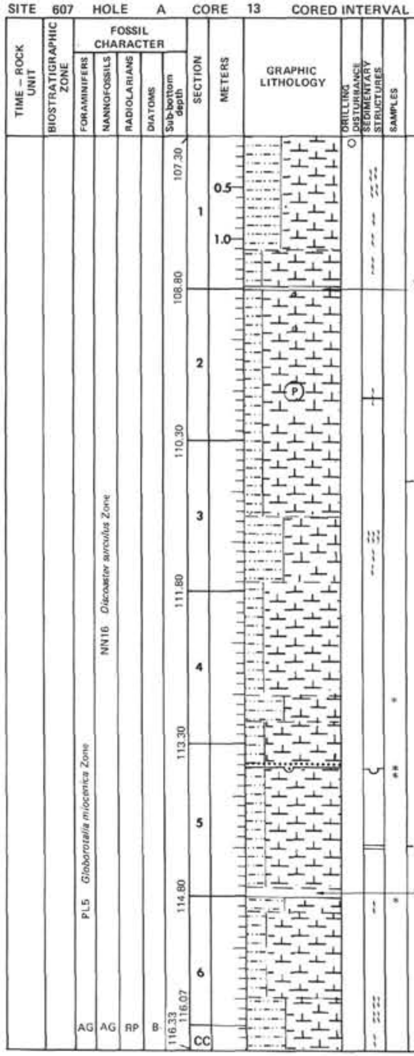
MARLY FORAMINIFERAL NANNOFOSSIL OOZE, predominantly pale olive gray (5Y 6/1) with common dark gray (N5–6) mottles and laminations, minor green (5G 6/2) mottling in Section 4, common diffuse green (5GY 7–8/1) laminae.

MINOR LITHOLOGY: Section 3, 136 cm to Section 4, 35 cm: NANNOFOSSIL FORAMINIFERAL SAND, pale olive gray (5Y 7/1); sharp, dark gray (N6), pyrite-rich base, gradational top; graded; watery.

SMEAR SLIDE SUMMARY (%)

	3, 130 M	3, 142 M	4, 32 M	6, 63 D
Texture:				
Silt	–	–	–	30
Composition:				
Quartz	–	–	–	10
Heavy minerals	–	–	–	20
Foraminifers	70	70	70	20
Calc. nannofossils	25	30	30	50
Sponge spicules	5	–	–	–

SITE 607 HOLE A CORE 13 CORED INTERVAL 107.3–116.9 m



LITHOLOGIC DESCRIPTION

Interlayered NANNOFOSSIL OOZE and MARLY NANNOFOSSIL OOZE

NANNOFOSSIL OOZE, white (N9) to pale gray (N8), slight dark gray (N6) mottling scattered throughout unit; local minor green (5GY 7/1) laminae.

MARLY NANNOFOSSIL OOZE, predominantly pale olive gray (5Y 7/1) and pale green gray (5GY 7/1), local minor green (5G 5/2) mottling, common dark gray (N2–8) mottling and laminations.

MINOR LITHOLOGY: Section 5, 23 cm: NANNOFOSSIL FORAMINIFERAL SAND, white (N9), very sharp basal contact, gradational upper contact.

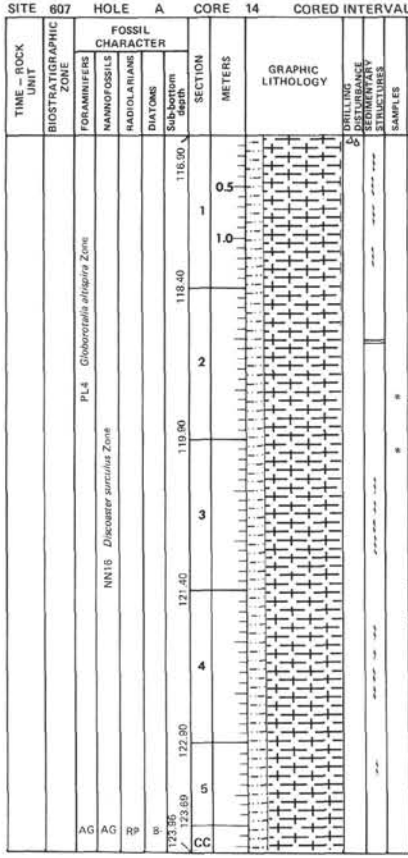
SMEAR SLIDE SUMMARY (%)

	1, 5	1, 50	4, 109	5, 24	5, 25
	D	D	D	M	D
Composition:					
Clay	20	30	38	40	40
Volcanic glass	TR				
Foraminifers	10	5	2	45	45
Calc. nannofossils	65	65	60	15	15
Radiolarians	5				

ORGANIC CARBON AND CARBONATE (%):

	1, 50–51
Organic carbon	–
Carbonate	64

SITE 607 HOLE A CORE 14 CORED INTERVAL 116.9–126.5 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, white (N9) to pale gray (N8), local minor dark gray (N6) mottles and laminae scattered throughout core, green (5G 8/1) laminations in Sections 2, 3, and 4.

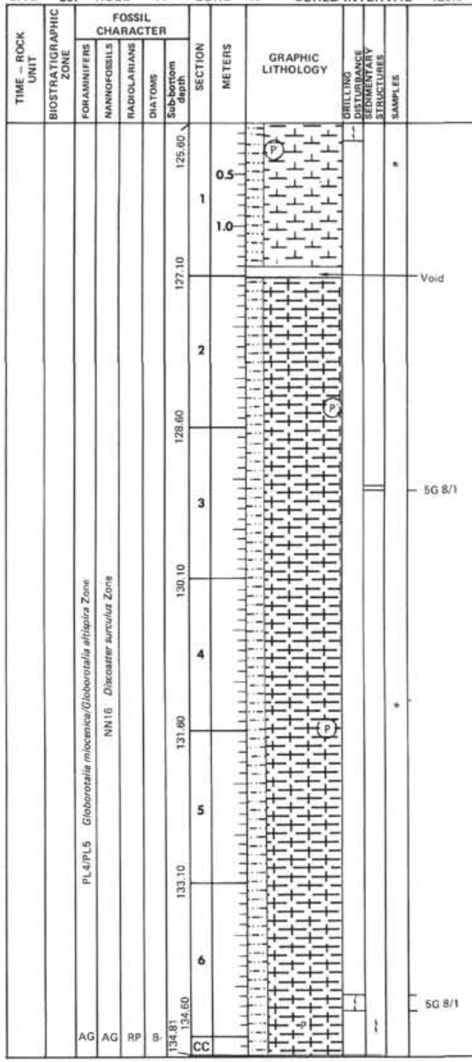
SMEAR SLIDE SUMMARY (%)

	2, 102	3, 9
	D	D
Composition:		
Clay	10	20
Foraminifers	10	10
Calc. nannofossils	80	70

ORGANIC CARBON AND CARBONATE (%):

	2, 101–102
Organic carbon	–
Carbonate	87

SITE 607 HOLE A CORE 15 CORED INTERVAL 125.6–136.1 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE and FORAMINIFERAL NANNOFOSSIL OOZE, very pale gray (N8), dark gray (N5–7) pyritic(?) patches scattered throughout core, green (5G 8/1) laminations (5–10 mm) in Sections 3 and 6; 0–19 cm in Section 1 highly disturbed.

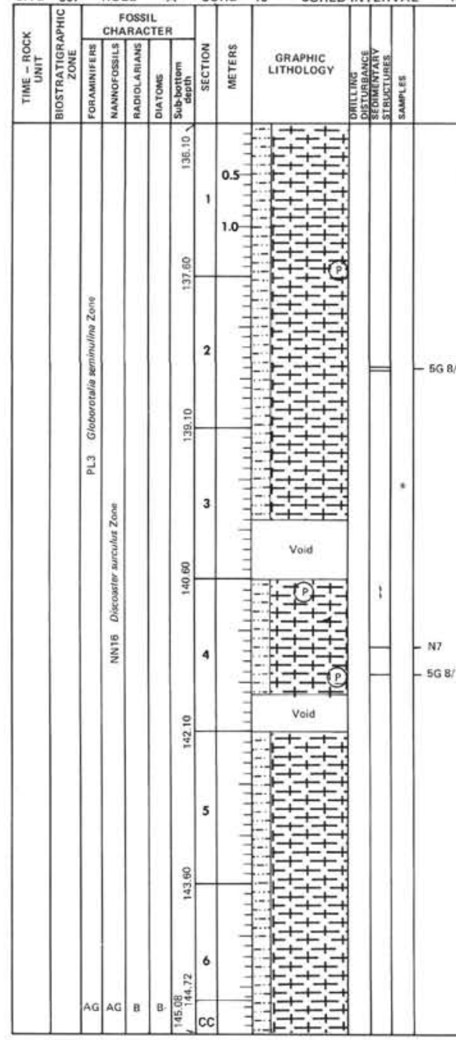
SMEAR SLIDE SUMMARY (%)

	1, 38	4, 122
	D	D
Composition:		
Feldspar	TR	–
Clay	18	18
Pyrite	–	TR
Carbonate unspec.	TR	–
Foraminifers	7	12
Calc. nannofossils	75	70

ORGANIC CARBON AND CARBONATE (%):

	4, 122–123
Organic carbon	–
Carbonate	88

SITE 607 HOLE A CORE 16 CORED INTERVAL 136.1–145.7 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, very pale to pale gray (N8); minor dark gray (N4–6) pyritic(?) patches scattered throughout core; green (5G 8/1) laminations (5–10 mm) present in Sections 2 and 4.

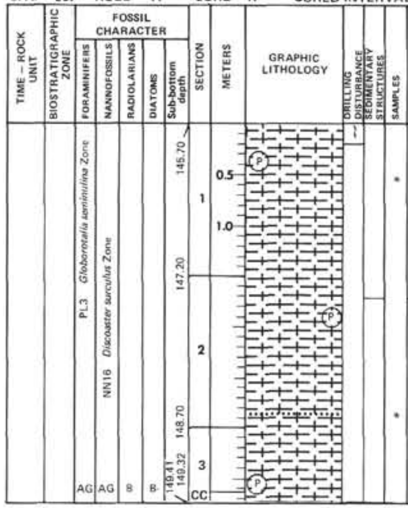
SMEAR SLIDE SUMMARY (%)

	1, 80	3, 50	4, 55
	D	D	D
Composition:			
Feldspar	TR	–	TR
Clay	15	12	16
Carbonate unspec.	–	TR	TR
Foraminifers	8	16	14
Calc. nannofossils	77	72	70

ORGANIC CARBON AND CARBONATE (%):

	3, 50–51
Organic carbon	–
Carbonate	87

SITE 607 HOLE A CORE 17 CORED INTERVAL 145.7–149.4 m



LITHOLOGIC DESCRIPTION

5G 7/1

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), dark gray (N4–6) pyrite-rich(?) patches scattered throughout section; green (5G 7/1) lamination at Section 2, 22 cm.

MINOR LITHOLOGY: Section 2, 145 cm: NANNOFOSSIL FORAMINIFERAL SAND, medium gray (N7).

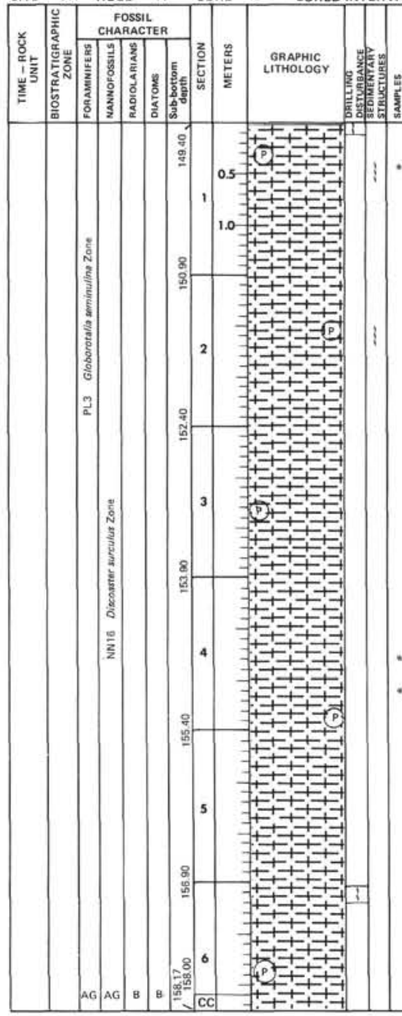
SMEAR SLIDE SUMMARY (%)

	1, 50	2, 136
	D	M
Composition:		
Feldspar	TR	–
Clay	20	–
Foraminifers	18	60
Calc. nannofossils	62	40

ORGANIC CARBON AND CARBONATE (%):

	1, 50–51
Organic carbon	–
Carbonate	89

SITE 607 HOLE A CORE 18 CORED INTERVAL 149.4–159.0 m



LITHOLOGIC DESCRIPTION

5G 7/1

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), minor dark gray (N5–6) pyrite-rich(?) patches scattered throughout core, 1 cm thick green (5G 7/1) lamination at Section 2, 22 cm.

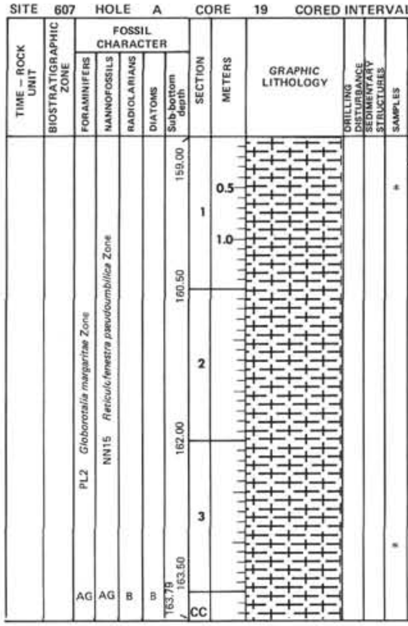
SMEAR SLIDE SUMMARY (%)

	1, 42	4, 80
	D	D
Composition:		
Quartz	5	1
Feldspar	5	–
Clay	–	12
Foraminifers	10	14
Calc. nannofossils	80	74

ORGANIC CARBON AND CARBONATE (%):

	4, 80–81
Organic carbon	–
Carbonate	92

SITE 607 HOLE A CORE 19 CORED INTERVAL 159.0–164.0 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), dark gray (N5–7) pyrite patches scattered throughout unit, 5 mm green (5G 7/1) lamination at Section 1, 24 cm.

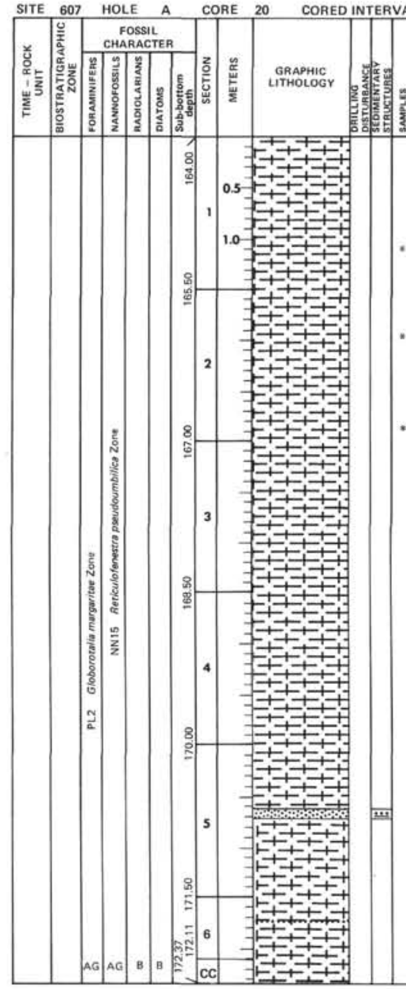
SMEAR SLIDE SUMMARY (%)

	1, 50	3, 100
	D	D
Composition:		
Quartz	TR	5
Feldspar	TR	TR
Foraminifers	10	10
Calc. nannofossils	90	85

ORGANIC CARBON AND CARBONATE (%):

	2, 50–51
Organic carbon	–
Carbonate	87

SITE 607 HOLE A CORE 20 CORED INTERVAL 164.0–173.6 m



LITHOLOGIC DESCRIPTION

FORAMINIFERAL NANNOFOSSIL OOZE, pale gray (N8), very scattered dark gray (N5–7) patches (pyritic?) present throughout core, rare thin (1–2 cm) indurated chalky intervals in Sections 1, 2, and 3.

MINOR LITHOLOGY: Section 5, 63–72 cm and Section 6, 26 cm: NANNOFOSSIL FORAMINIFERAL SAND, dark gray (N4) to medium gray (N7), sequence in Section 5 is graded with very sharp basal contact and less sharp upper contact, base of unit is dark gray (N4) and pyrite rich.

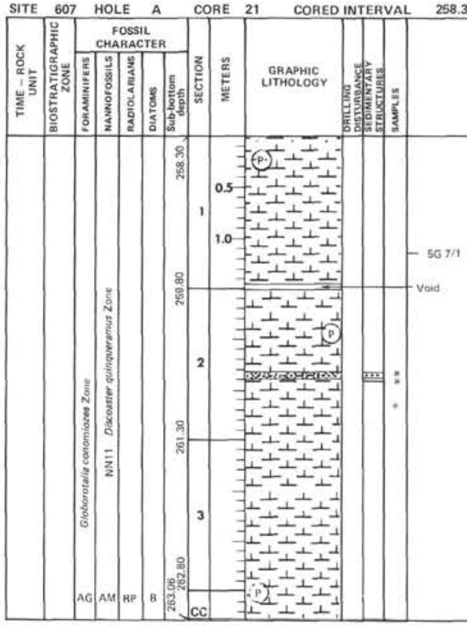
SMEAR SLIDE SUMMARY (%)

	2, 129
	D
Composition:	
Feldspar	TR
Clay	19
Foraminifers	18
Calc. nannofossils	63

ORGANIC CARBON AND CARBONATE (%):

	2, 50–51
Organic carbon	–
Carbonate	81

SITE 607 HOLE A CORE 21 CORED INTERVAL 258.3–263.3 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, pale gray (N8) to white (N8.5), minor dark gray (N6) pyritic patches scattered throughout core, local pale green cast in Sections 1 and Core Catcher; local minor indurated chalky layers (1–2 cm) (drill biscuits?).

MINOR LITHOLOGY: Section 2, 84–88 cm: NANNOFOSSIL FORAMINIFERAL SAND, medium gray (N7) to dark gray (N5), graded; sharp upper and lower contacts; pyrite burrow cast at 86 cm.

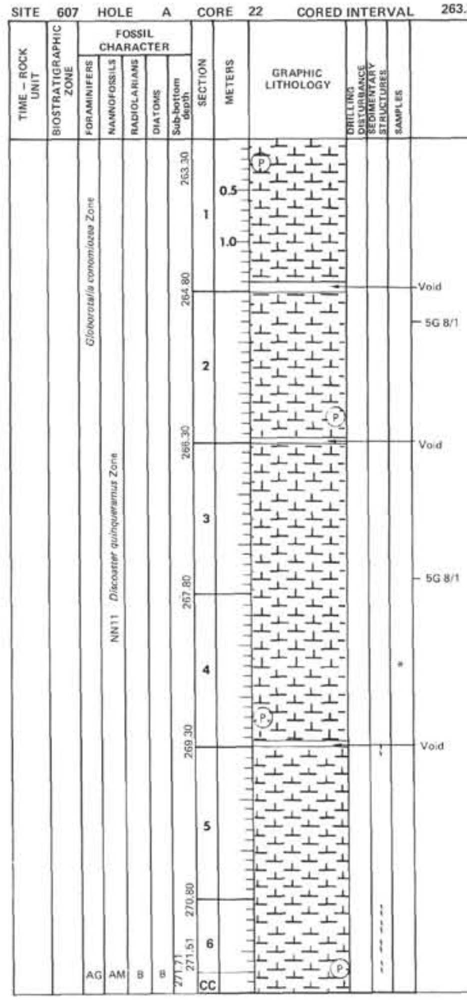
SMEAR SLIDE SUMMARY (%)

	2, 87	2, 110
	M	D
Composition:		
Quartz	5	5
Feldspar	5	–
Volcanic glass	TR	–
Foraminifers	70	2
Calc. nannofossils	20	93

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66
Organic carbon	–
Carbonate	89

SITE 607 HOLE A CORE 22 CORED INTERVAL 263.3–272.9 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N8.5), dark–medium gray (N6–7) pyritic(?) patches scattered throughout core; green (5G 5/2, 5G 8/1) laminations present in Sections 2 and 3; chalky intervals scattered throughout unit, Section 3, 0–25 cm is predominantly chalky (drill biscuits?).

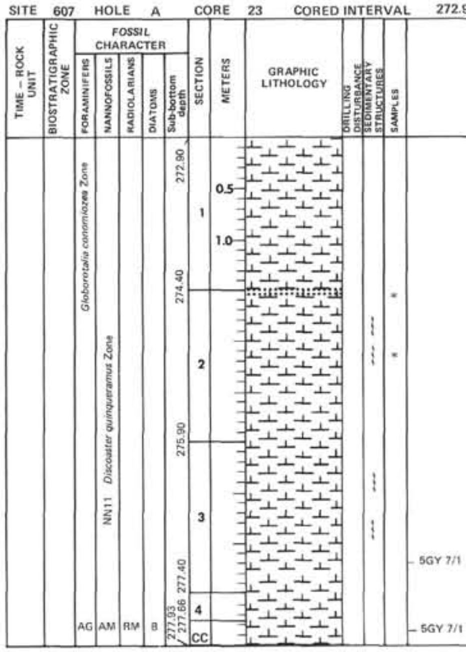
SMEAR SLIDE SUMMARY (%)

	4, 65
	D
Composition:	
Clay	10
Volcanic glass	TR
Foraminifers	8
Calc. nannofossils	82

ORGANIC CARBON AND CARBONATE (%):

	3, 65–66
Organic carbon	–
Carbonate	91

SITE 607 HOLE A CORE 23 CORED INTERVAL 272.9–282.5 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), dark gray (N6) mottling scattered throughout core – common in Sections 1, 2, and 3; green (5GY 7/1) laminations (5 mm) in Sections 3 and Core Catcher; 1–2 cm chalky intervals (drill biscuits?) scattered throughout core.

MINOR LITHOLOGY: Section 1, 149–150 cm: NANNOFOSSIL FORAMINIFERAL SAND, white (N8.5), 1 cm thick, nongraded.

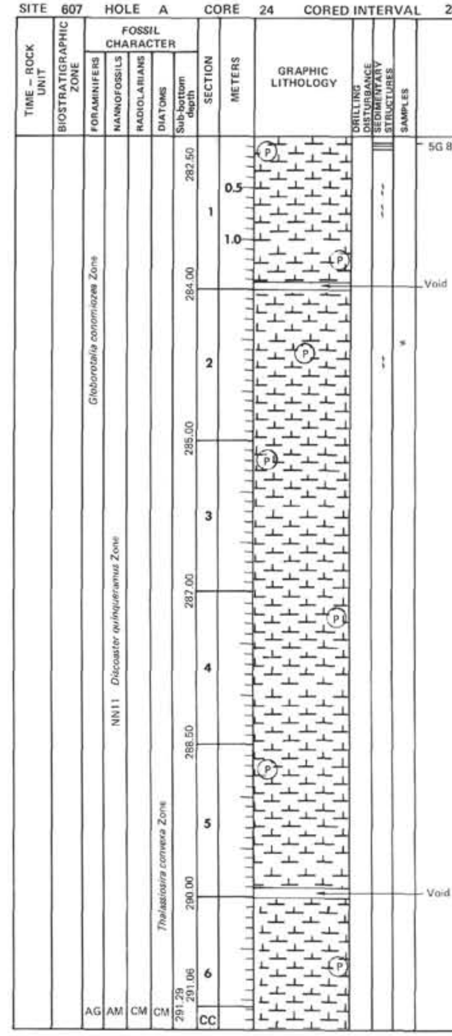
SMEAR SLIDE SUMMARY (%)

	1, 149	2, 65
	M	D
Composition:		
Clay	15	10
Foraminifers	60	5
Calc. nannofossils	25	85

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66
Organic carbon	–
Carbonate	92

SITE 607 HOLE A CORE 24 CORED INTERVAL 282.5–292.1 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N8.5), faint pale green cast in Section 5, dark gray (N6) pyrite(?) patches present throughout unit, upper 12 cm of Section 1 has common green (5G 8/1) 5 mm laminations, 1–9 cm chalk layers (drill biscuits?) common throughout core; pyrite burrow cast Section 2, 78 cm.

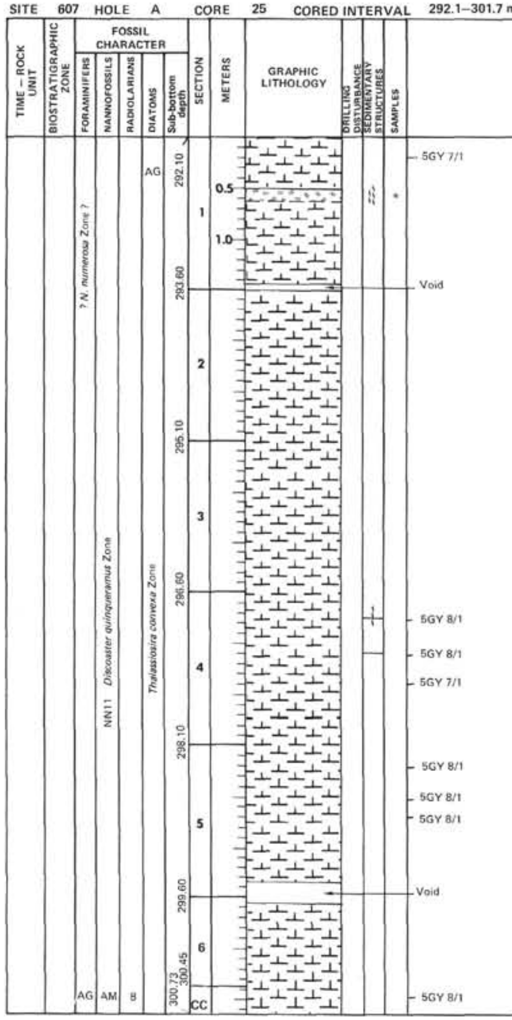
SMEAR SLIDE SUMMARY (%)

	2, 65
	D
Composition:	
Clay	5
Foraminifers	5
Calc. nannofossils	90

ORGANIC CARBON AND CARBONATE (%):

	2, 65–66
Organic carbon	–
Carbonate	90

SITE 607 HOLE A CORE 25 CORED INTERVAL 292.1–301.7 m



LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE, white (N9), dark gray (N6) mottling common throughout core, pale green (5GY 7/1, 5GY 8/1) laminations present in Sections 4, 5, and Core Catcher; chalky interlayers (drill biscuits?) common throughout core (to a maximum of 40% Section 3).

MINOR LITHOLOGY: Section 1, 50–62 cm: VOLCANIC ASH, predominantly N7 with slight olive cast, gradational contacts, glass is typically fibrous; very few bubble wall shards.

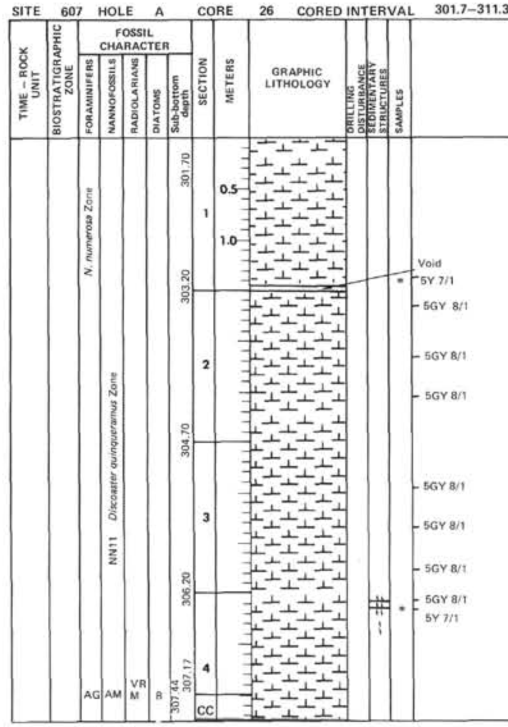
SMEAR SLIDE SUMMARY (%)

	1, 60 M
Texture:	
Sand	60
Silt	15
Clay	5
Composition:	
Feldspar	TR
Clay	5
Volcanic glass	75
Calc. nannofossils	20

ORGANIC CARBON AND CARBONATE (%):

	1, 60–61
Organic carbon	–
Carbonate	70

SITE 607 HOLE A CORE 26 CORED INTERVAL 301.7–311.3 m



LITHOLOGIC DESCRIPTION

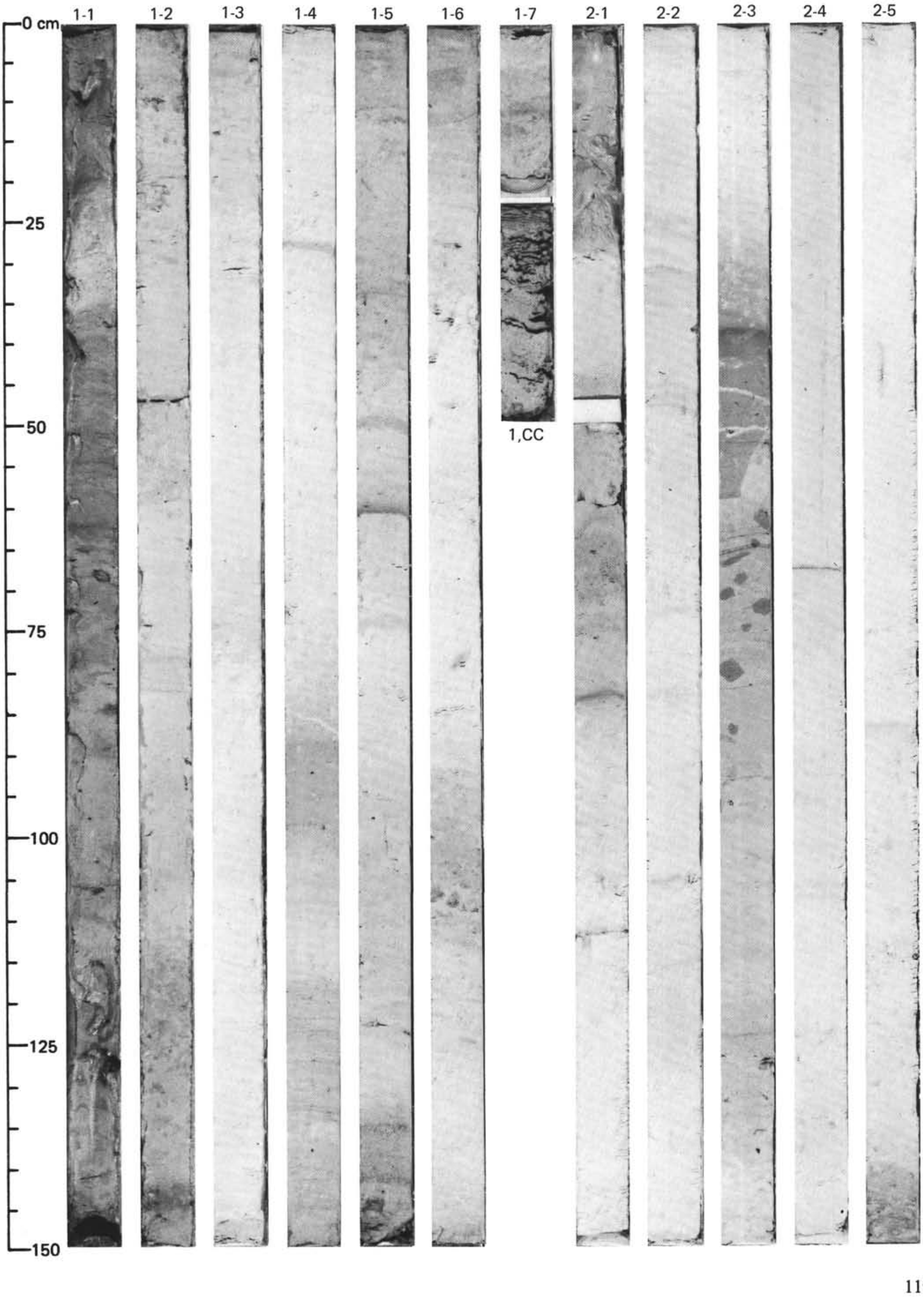
NANNOFOSSIL OOZE, white (N9), dark gray (N6) pyrite-rich(?) mottling scattered throughout unit, pale green (5GY 8/1) laminations common in units 2, 3, and 4; olive (5Y 7/1) laminations in Sections 1 and 4; chalky intervals (drill biscuits?) common throughout core.

SMEAR SLIDE SUMMARY (%)

	1, 135 D	4, 10 D
Composition:		
Quartz	–	TR
Mica	–	TR
Heavy minerals	–	TR
Clay	20	10
Foraminifers	5	5
Calc. nannofossils	75	85

ORGANIC CARBON AND CARBONATE (%):

	4, 10–11
Organic carbon	–
Carbonate	86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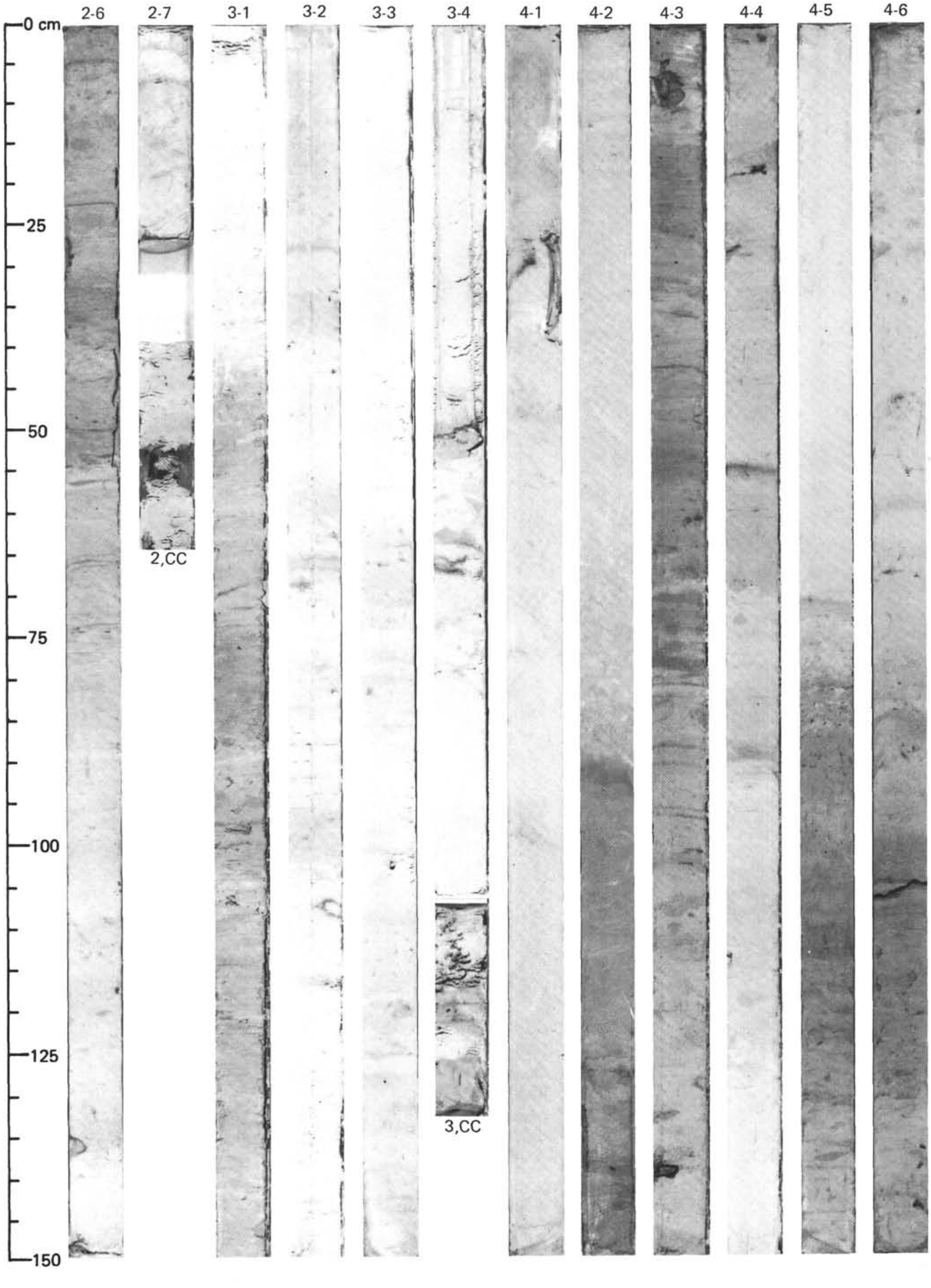
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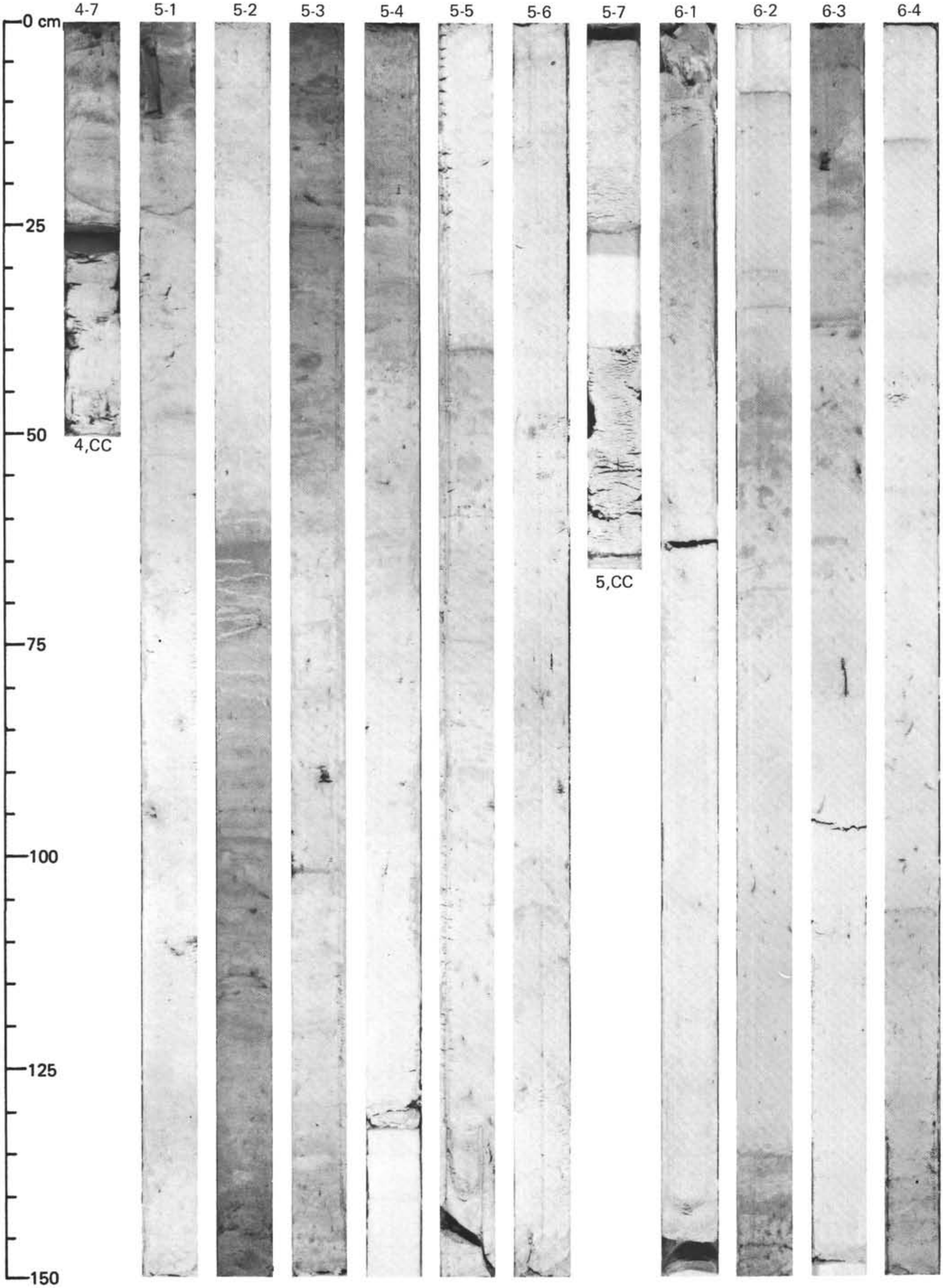
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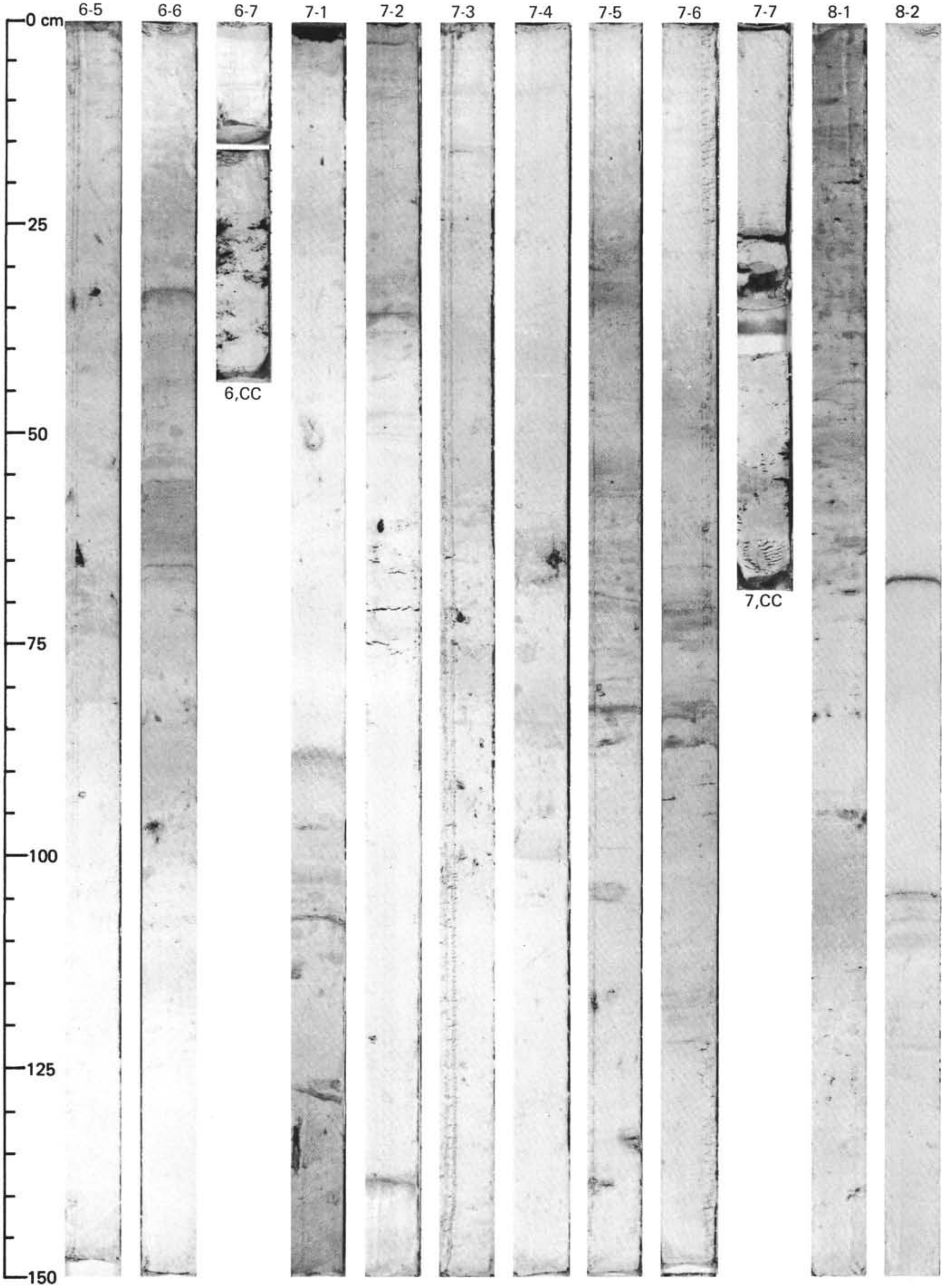
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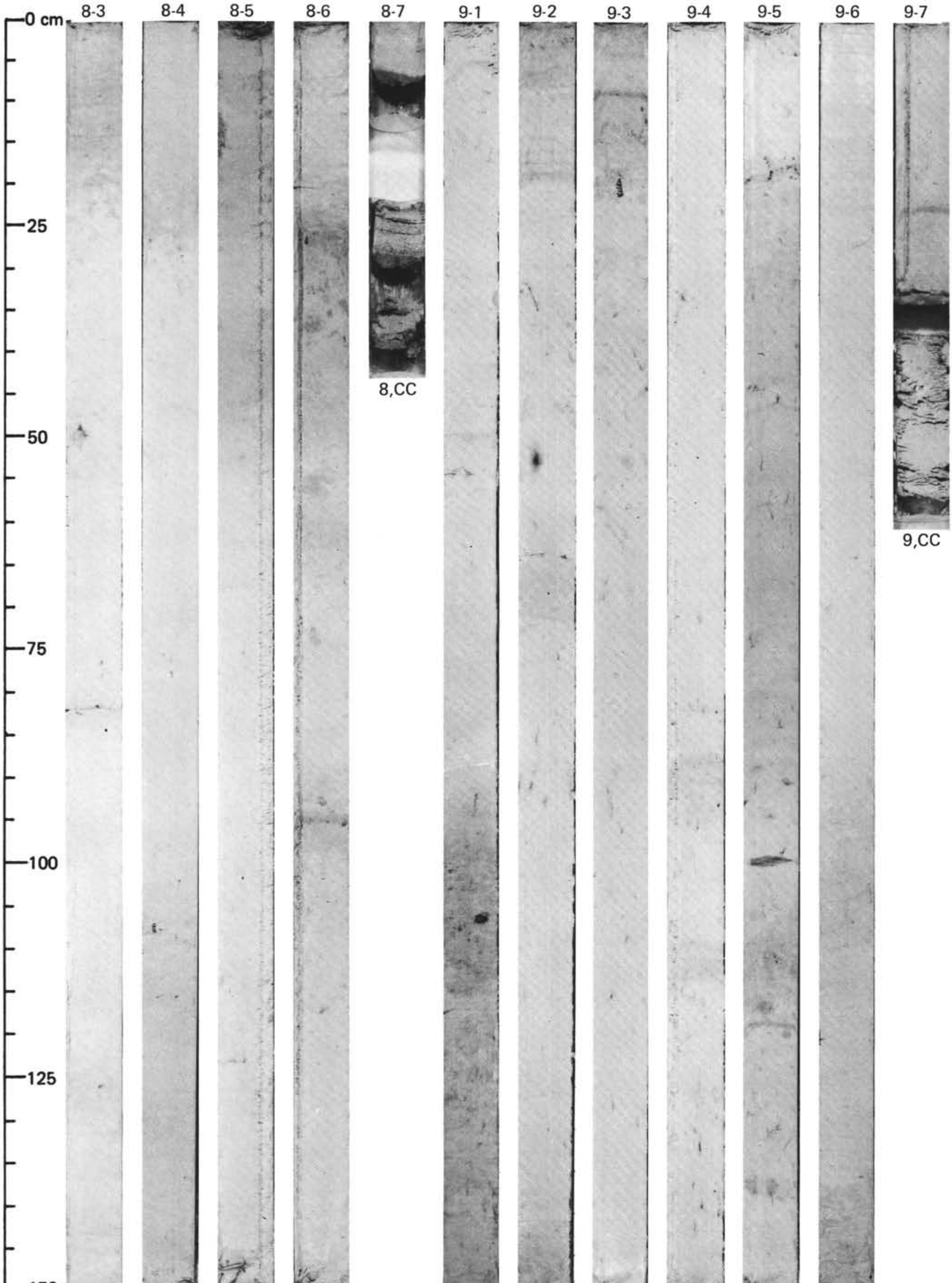

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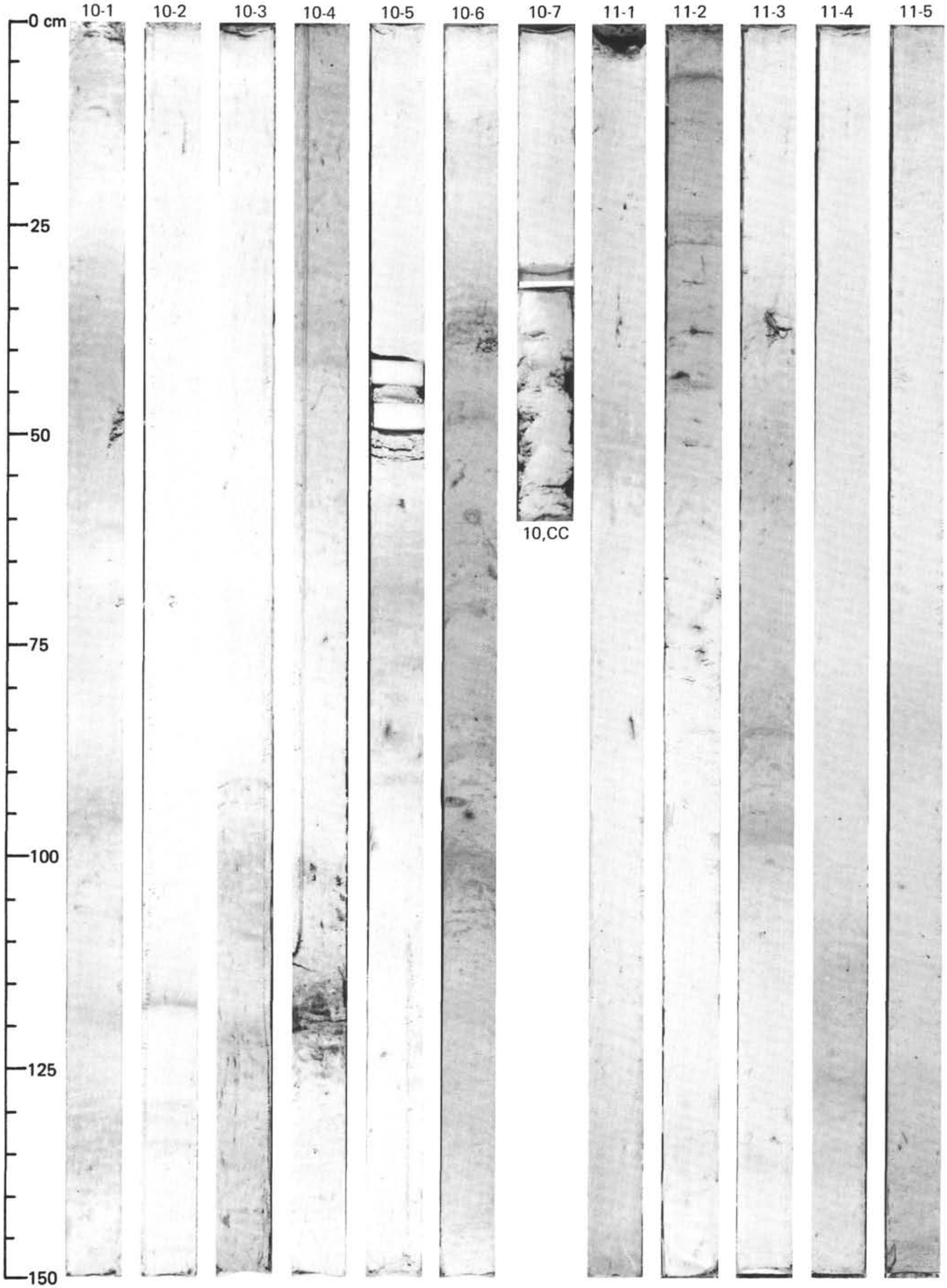

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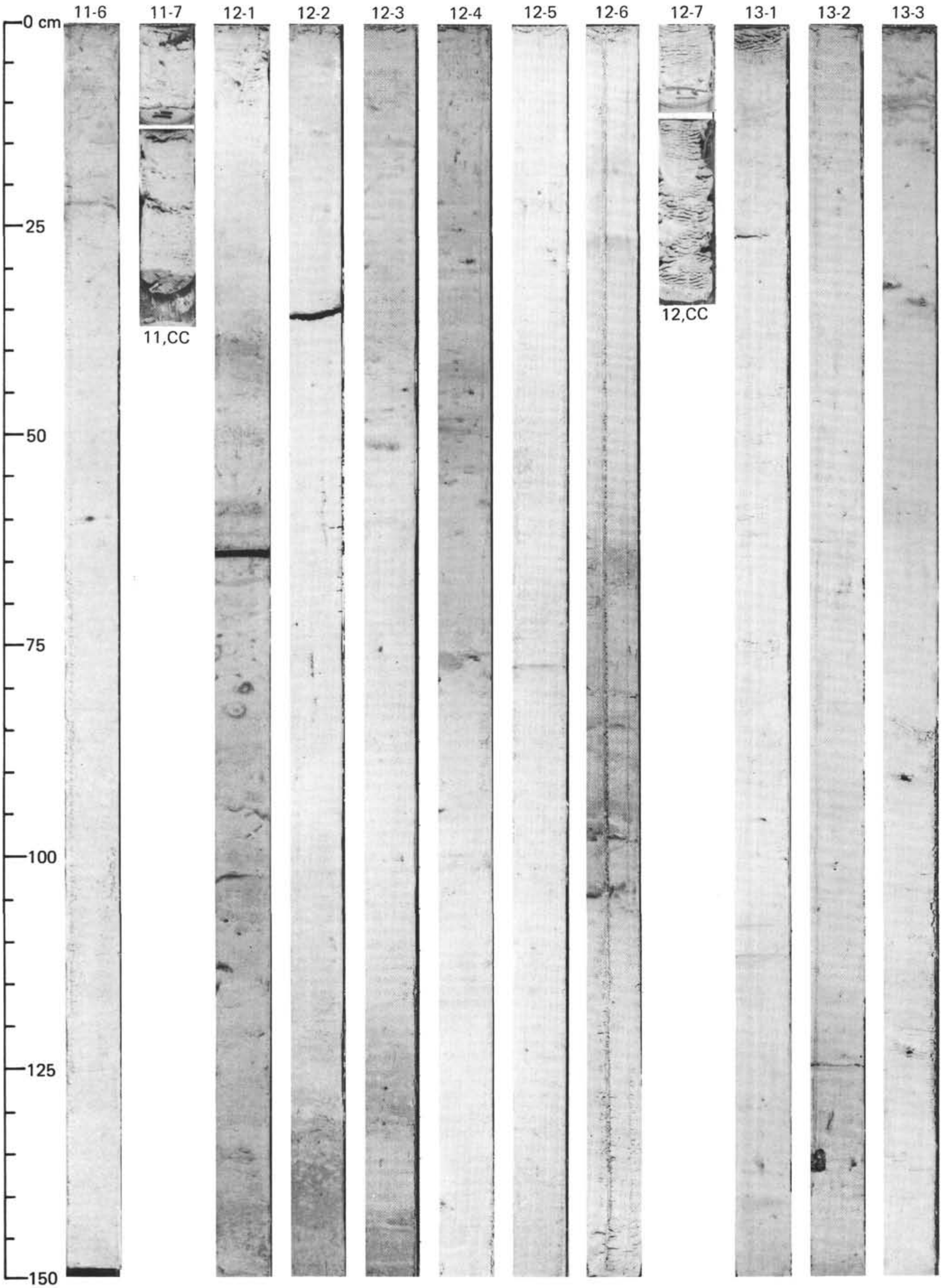
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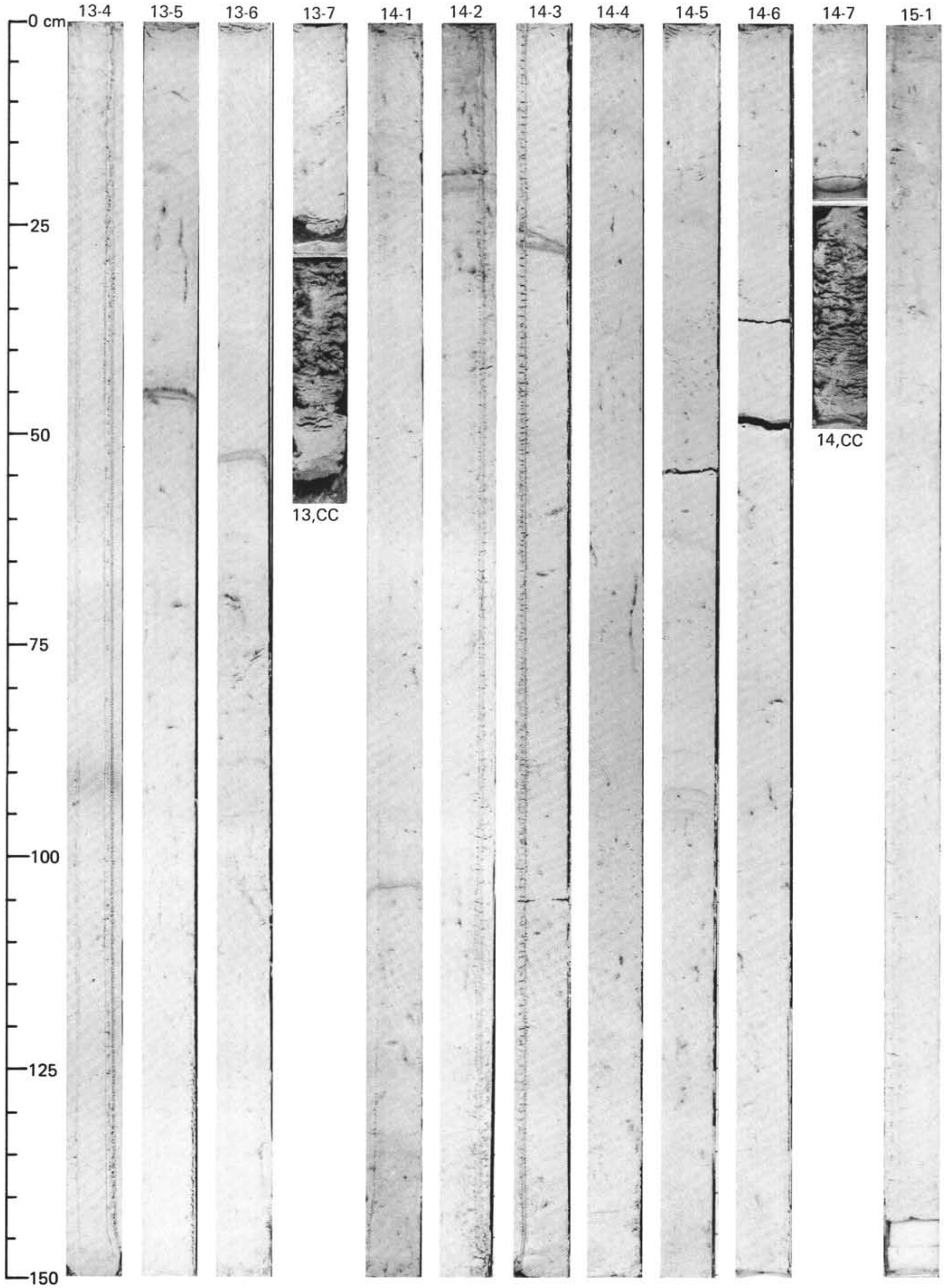

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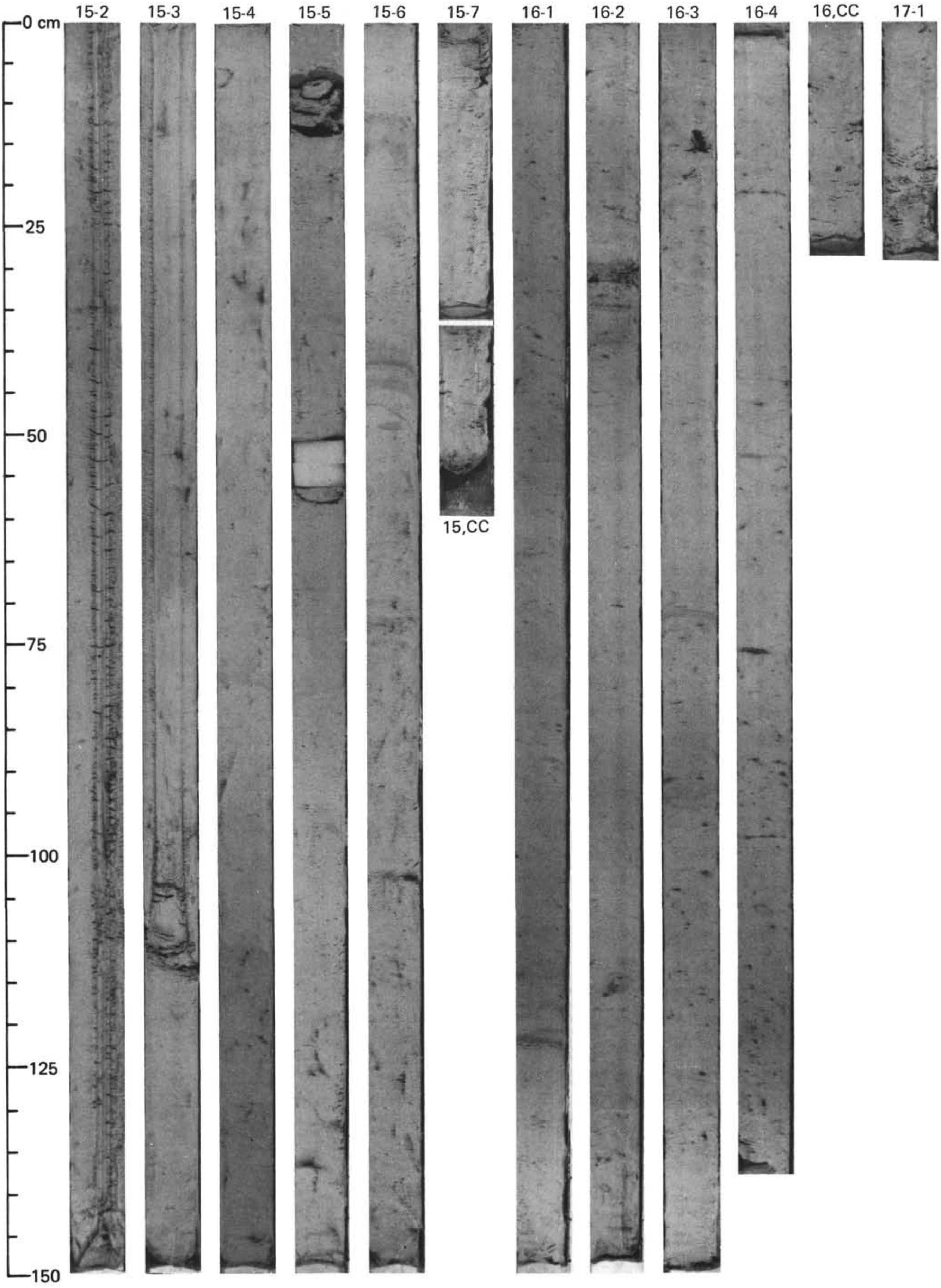
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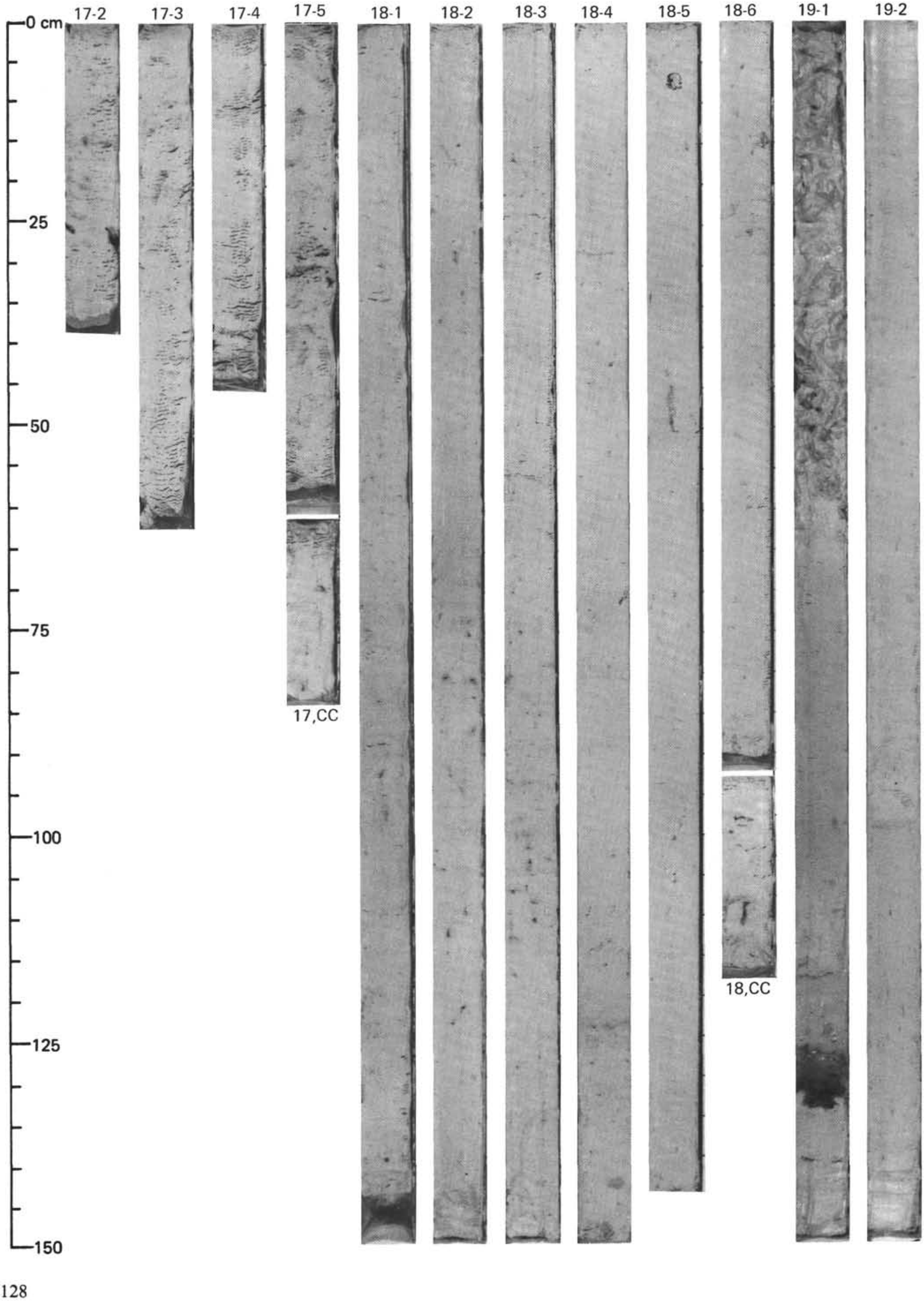
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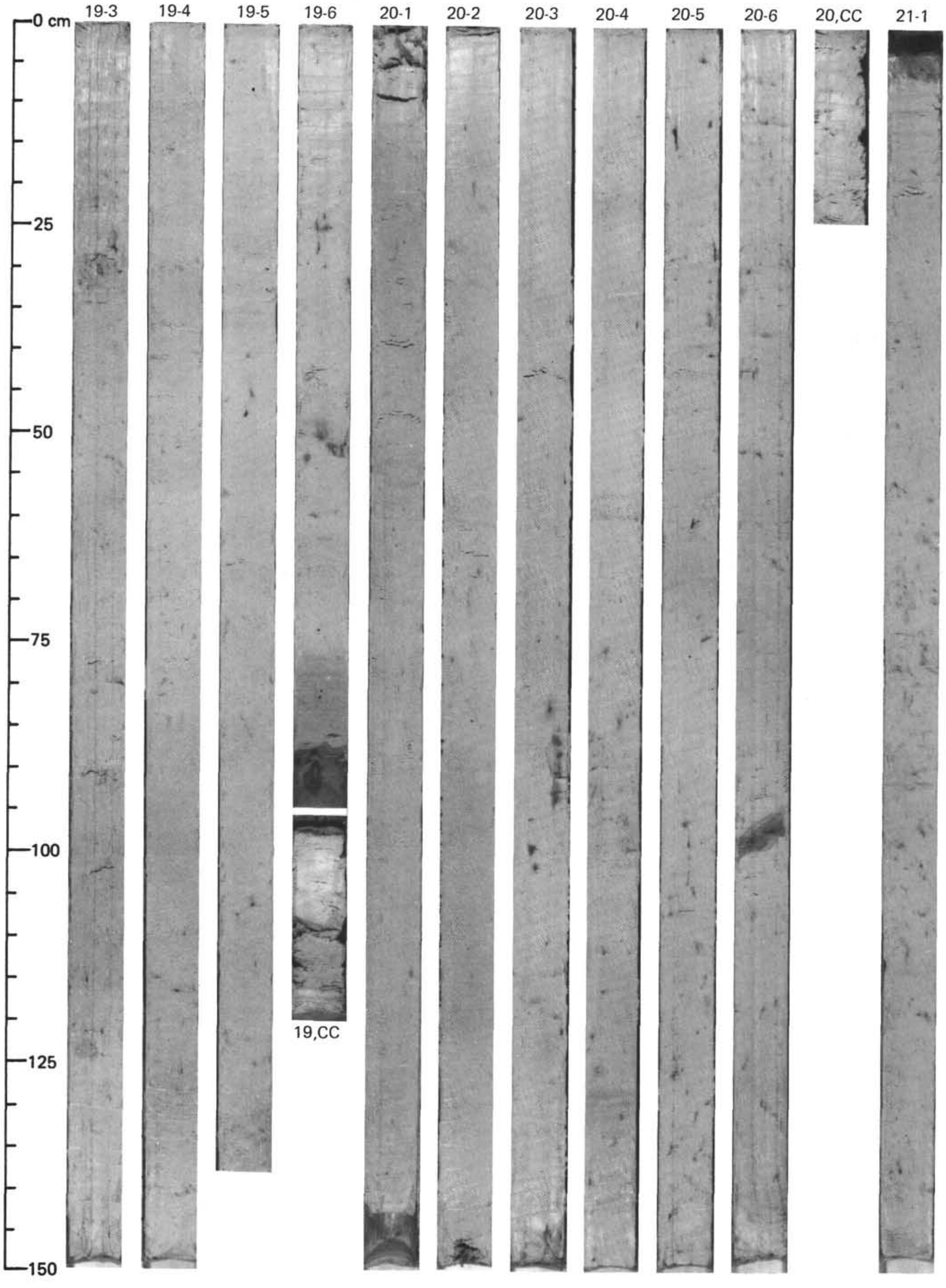
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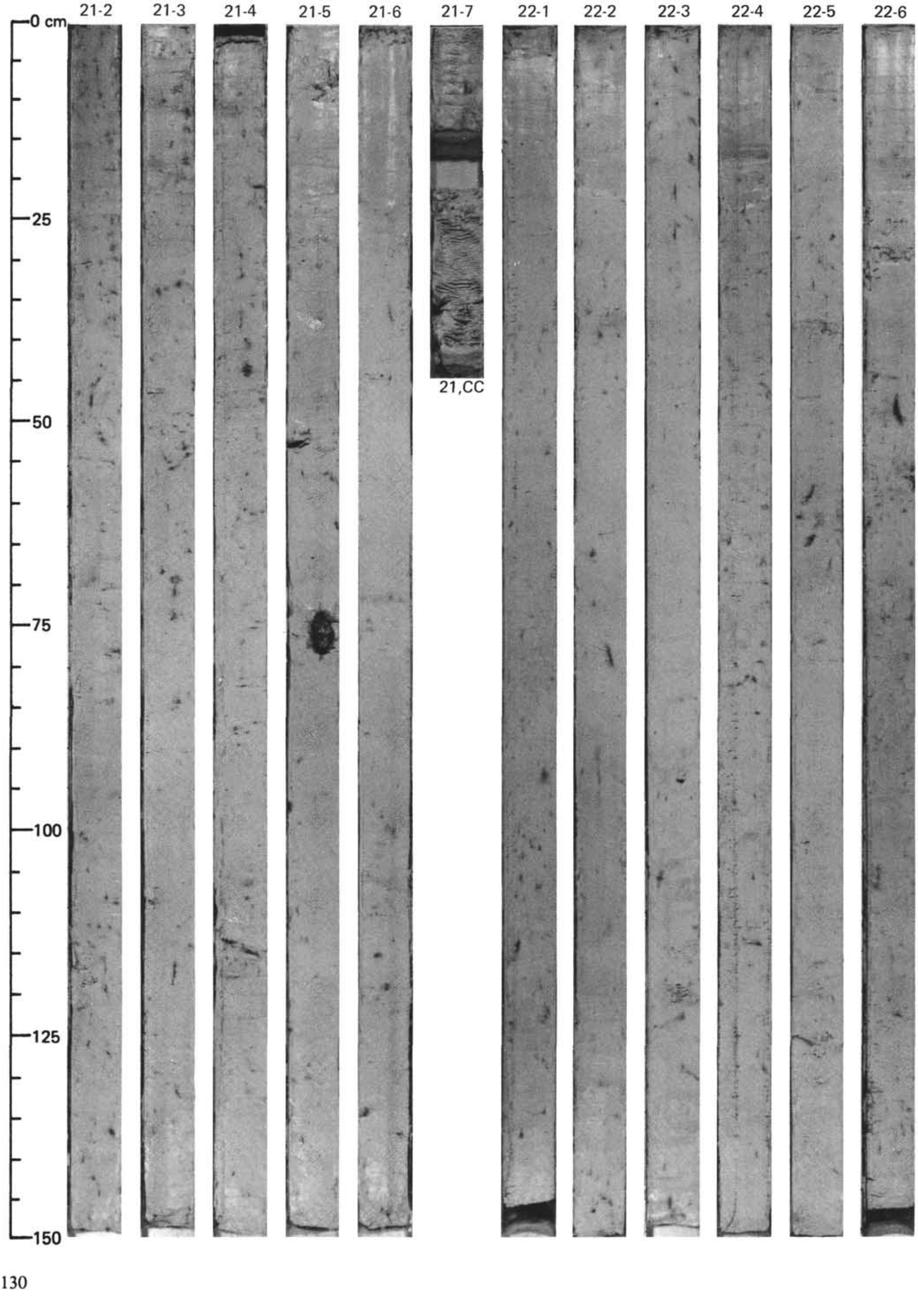
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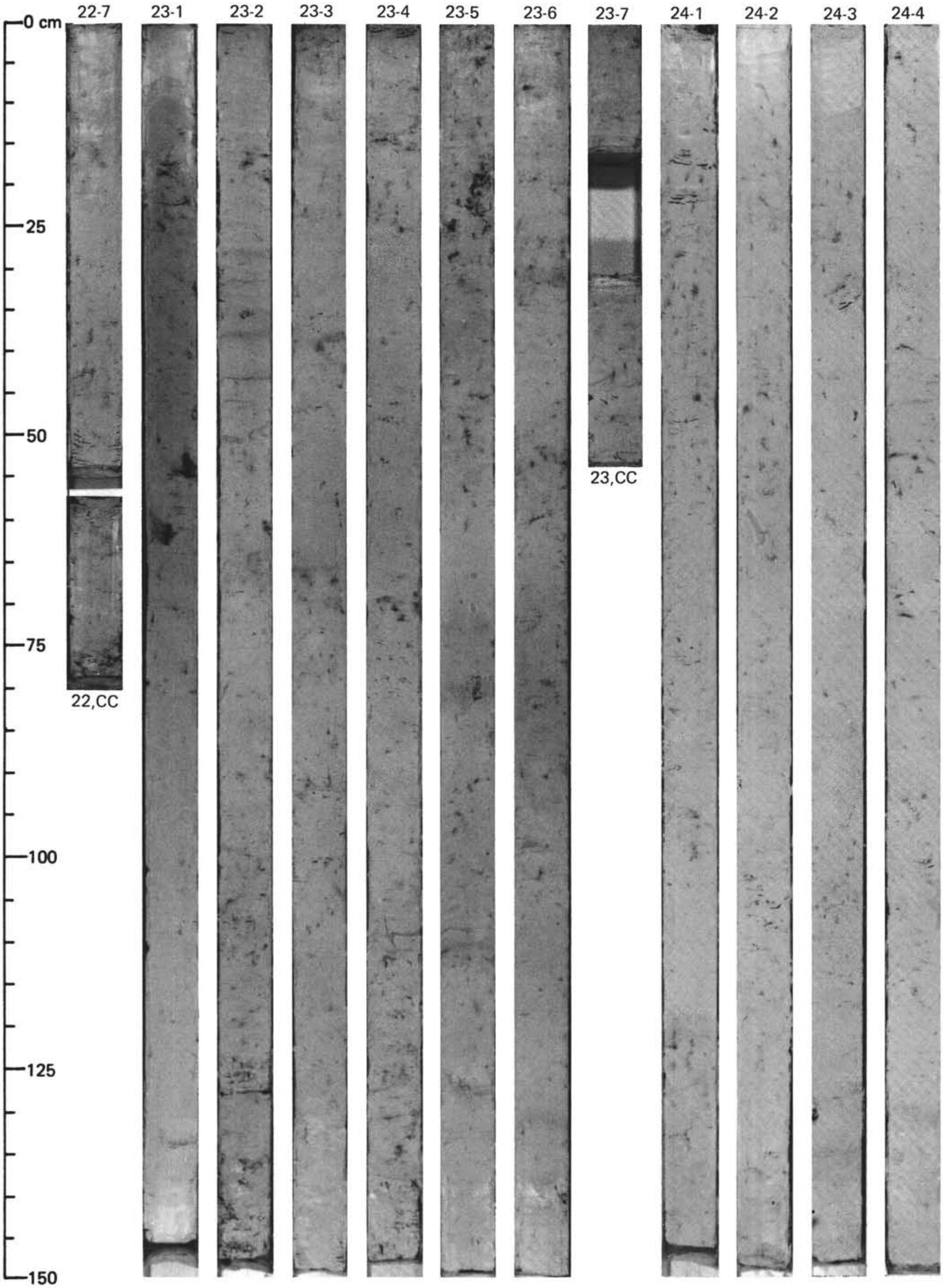
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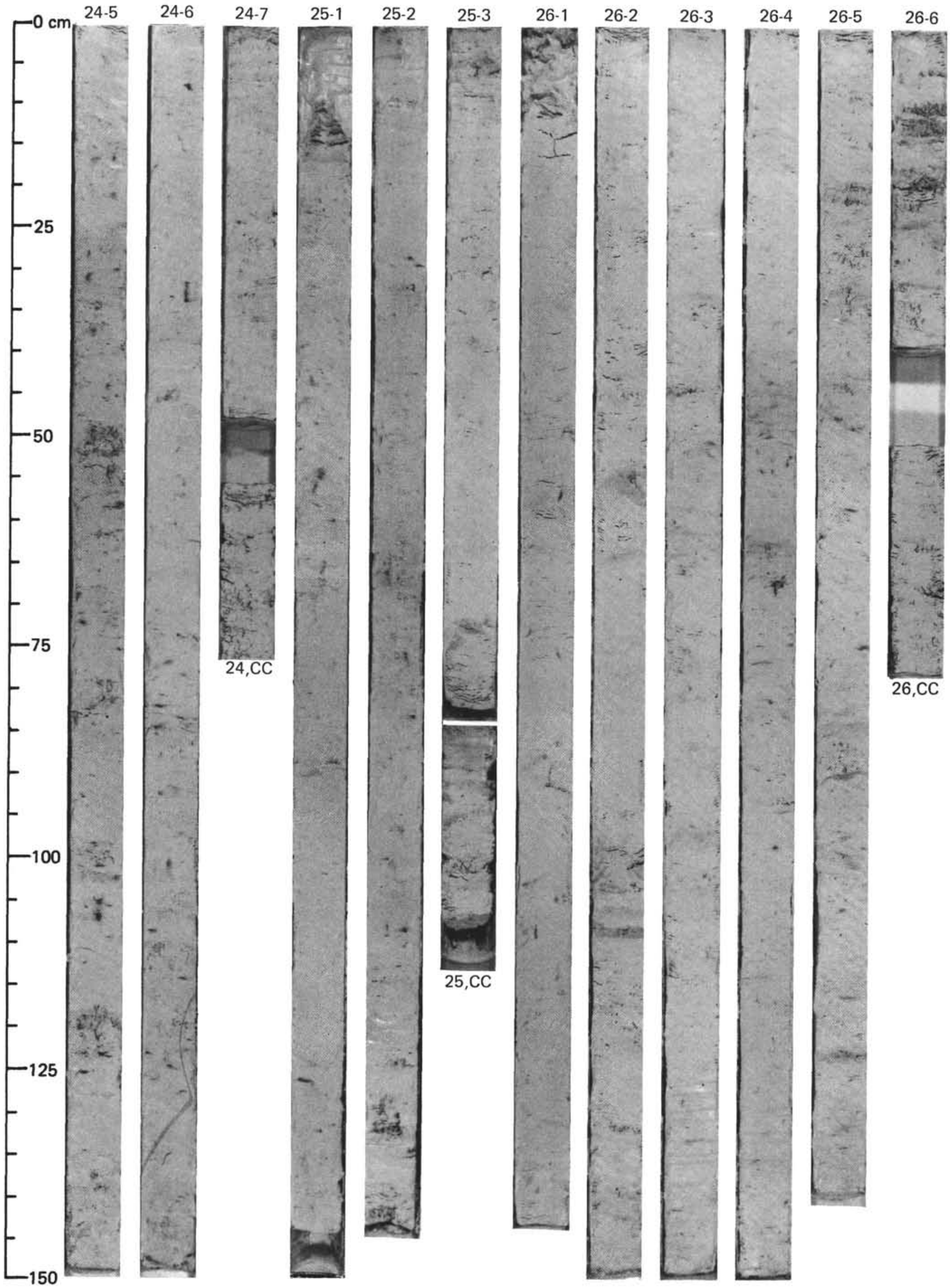
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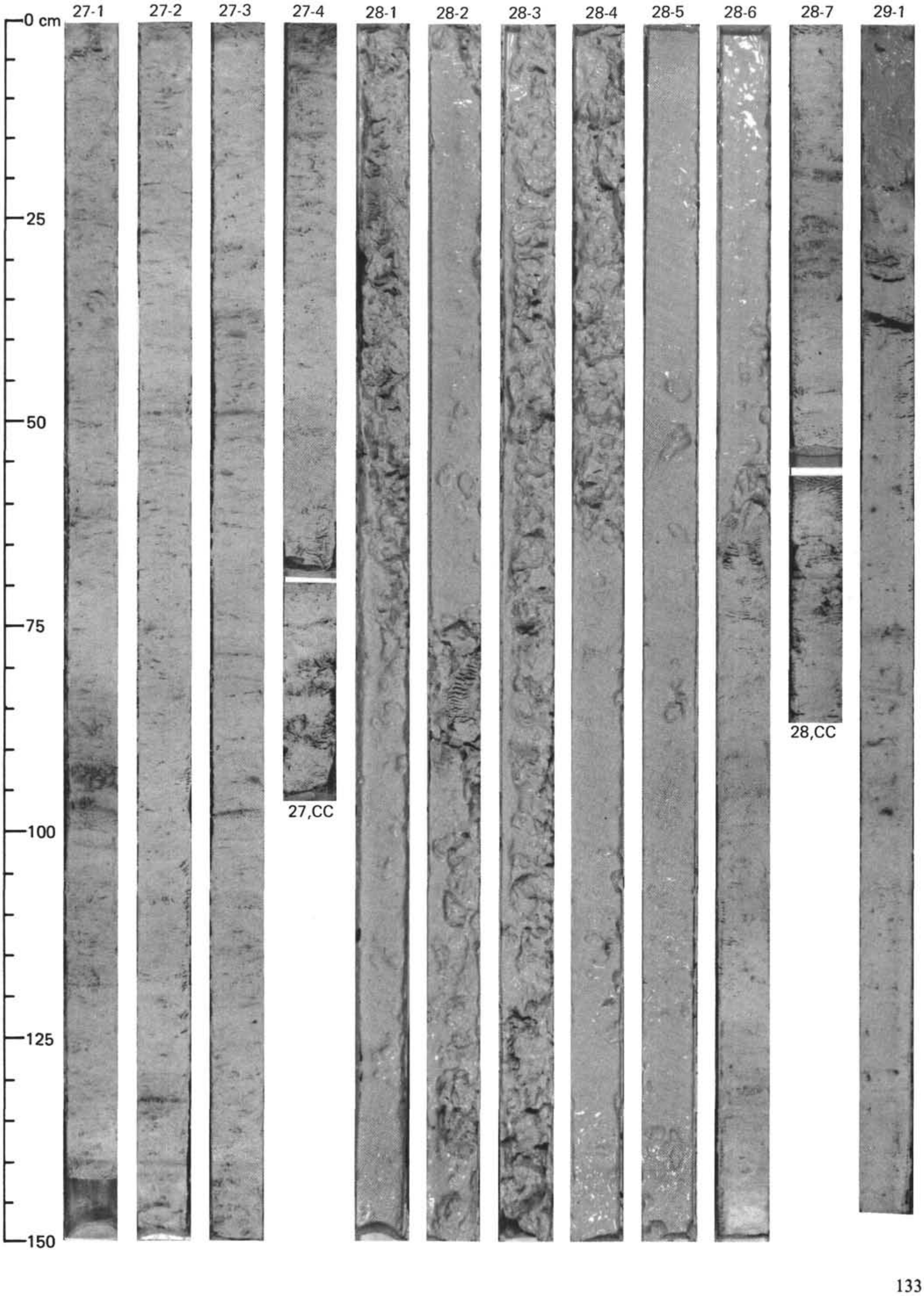
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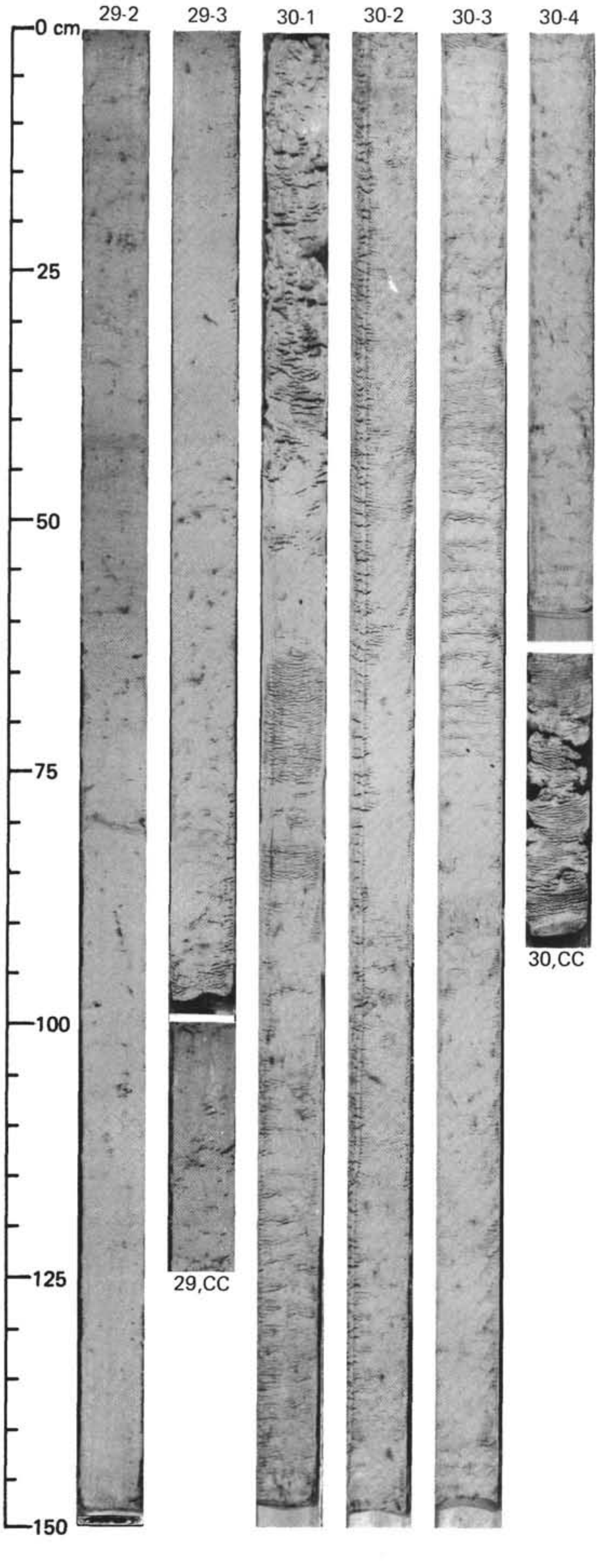
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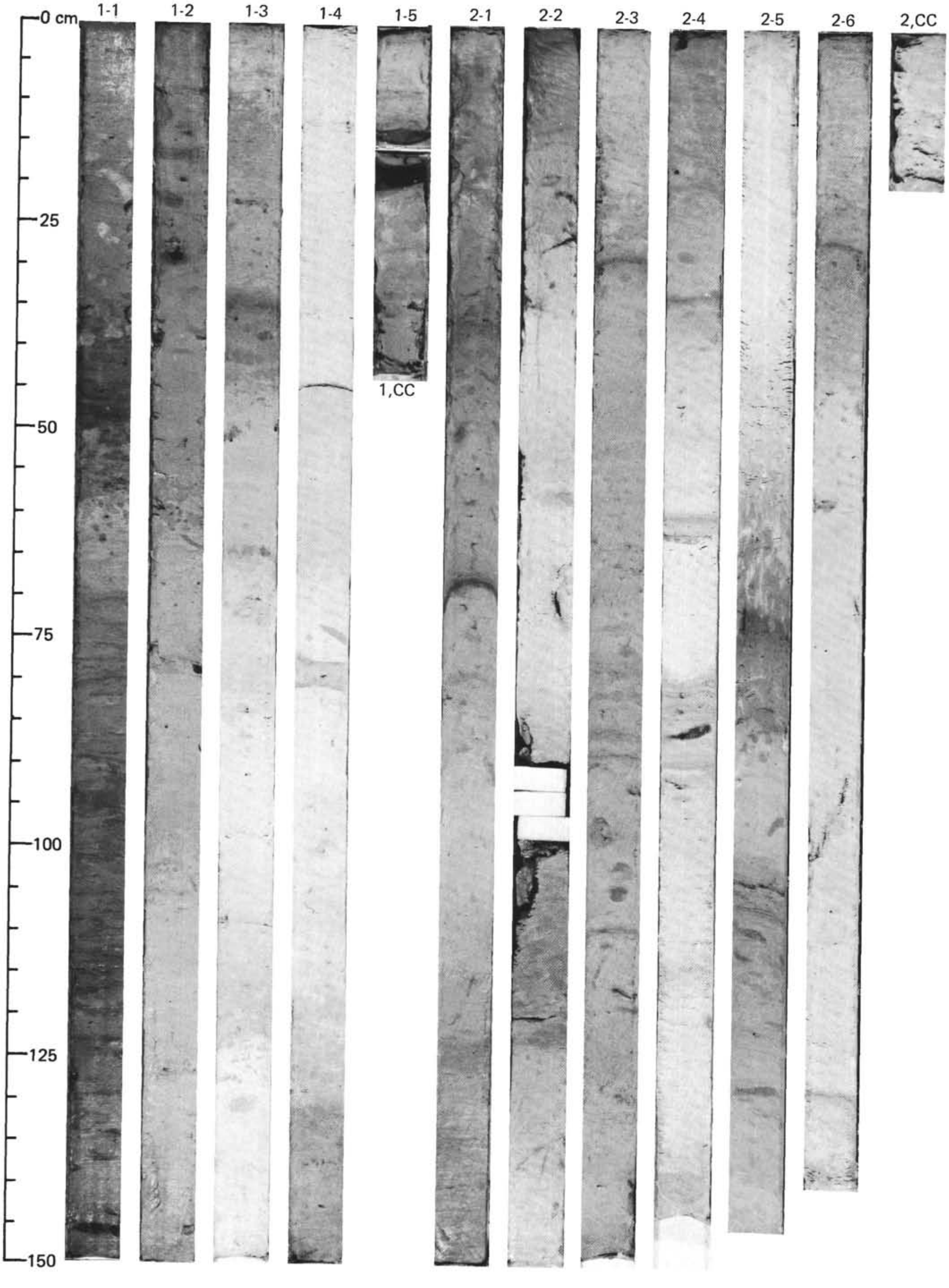
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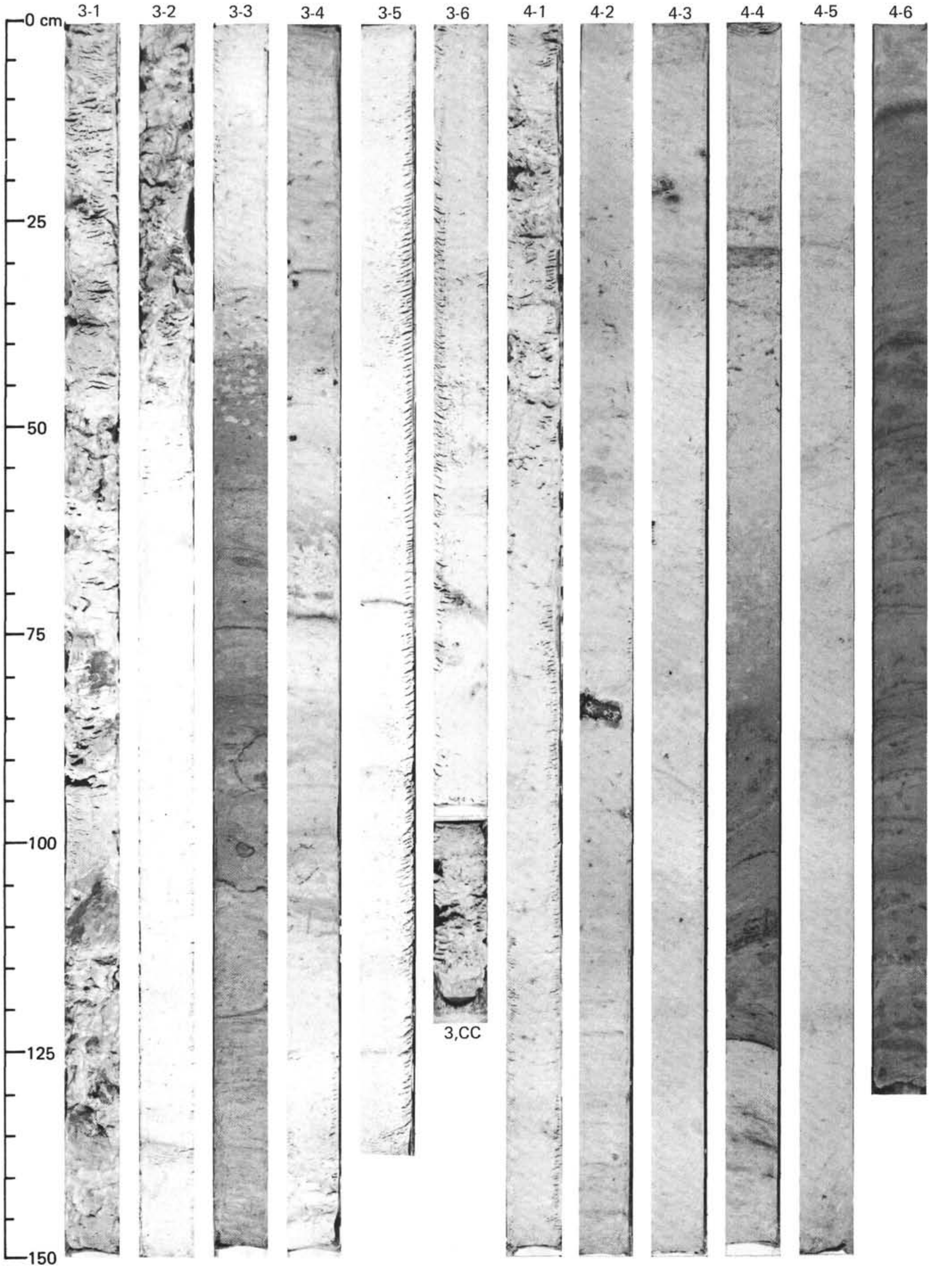
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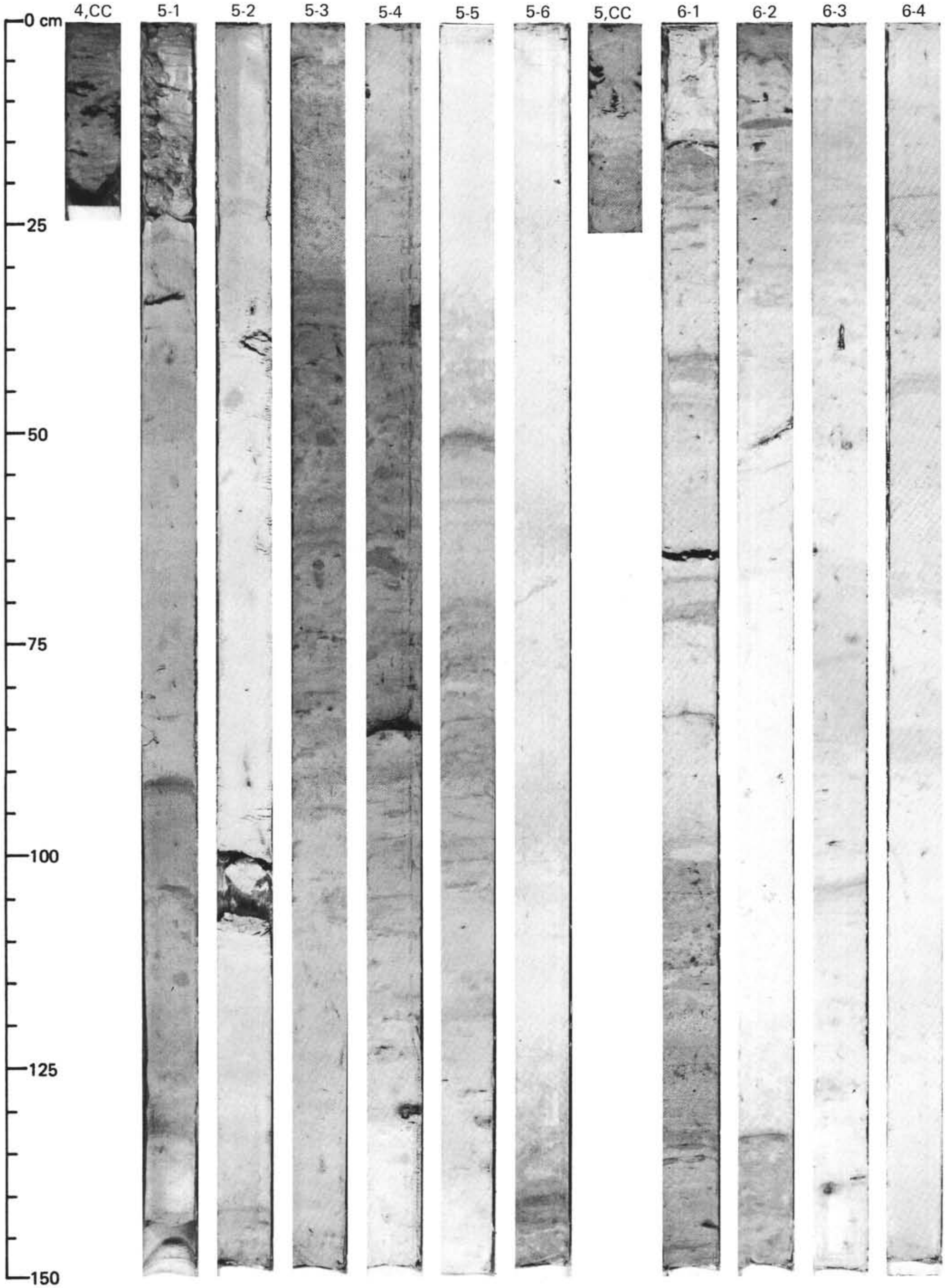
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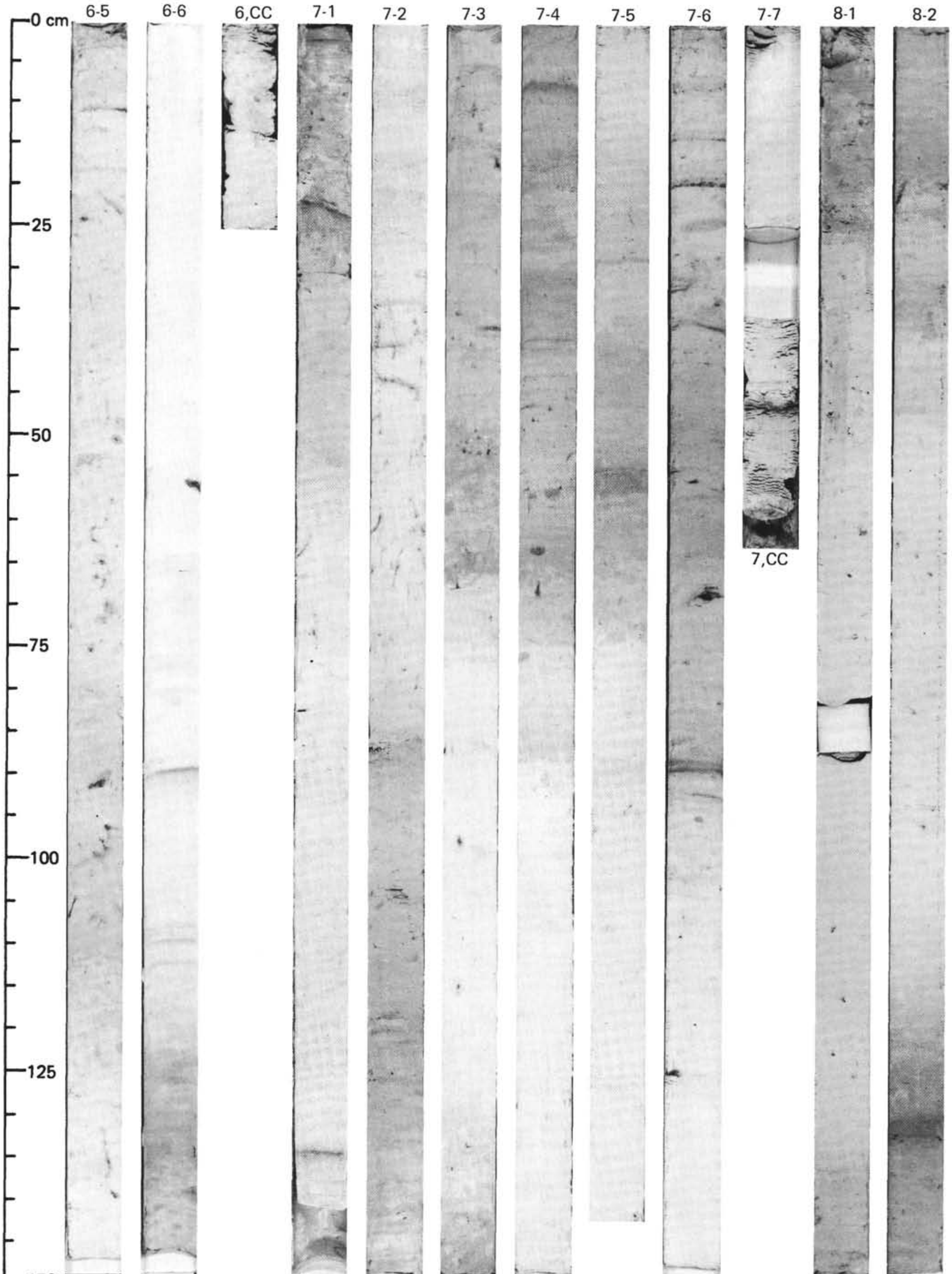
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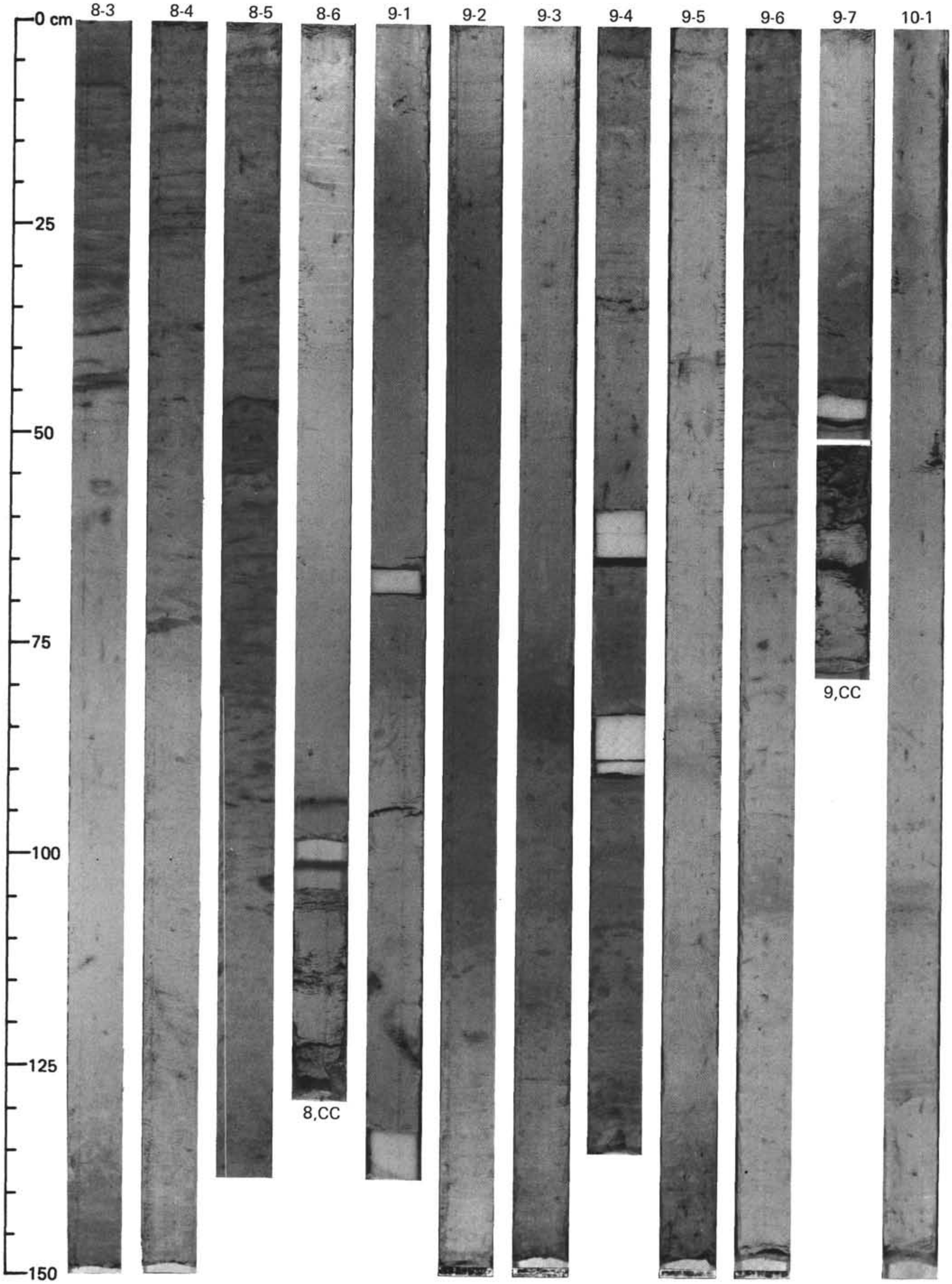
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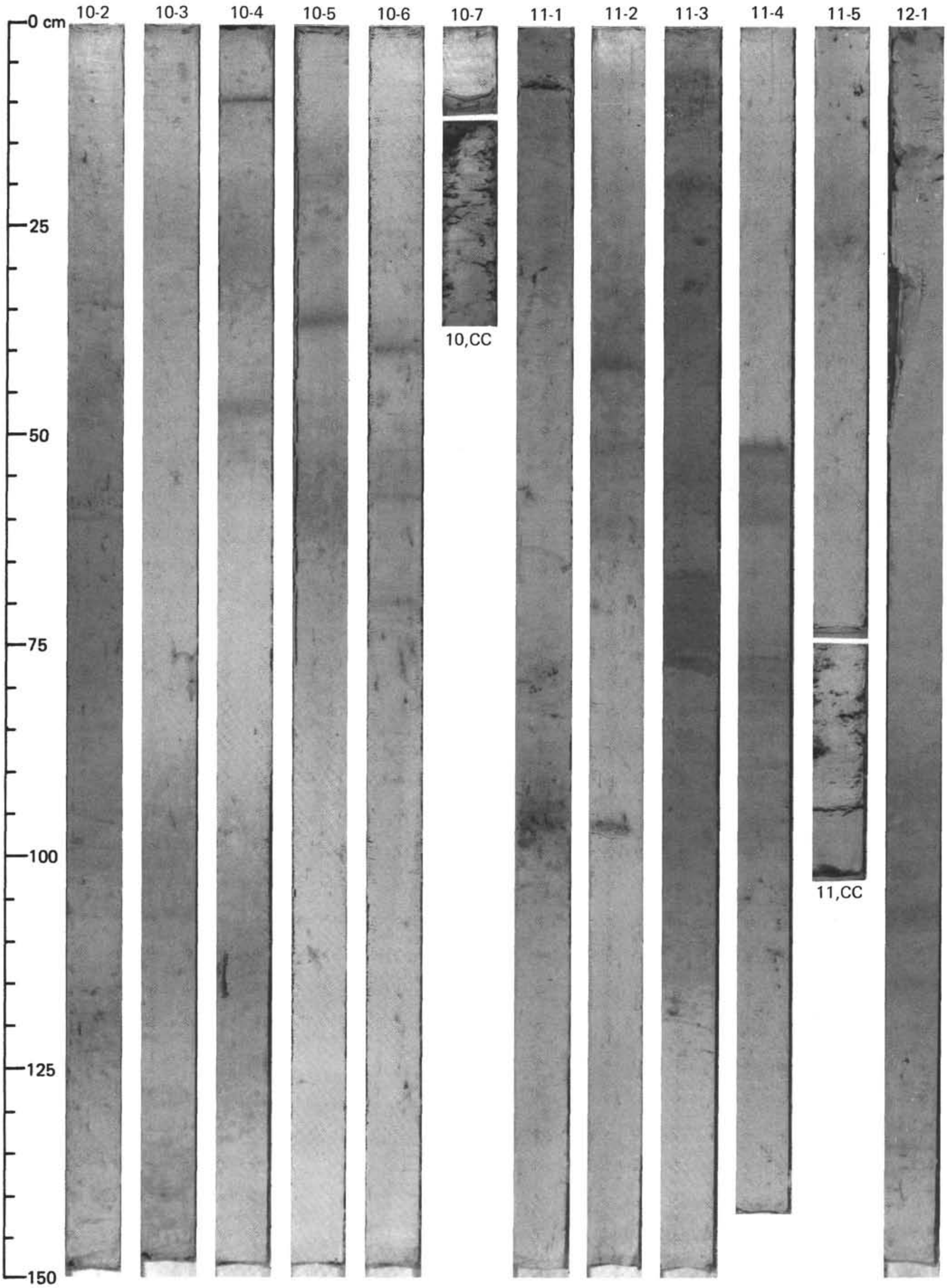
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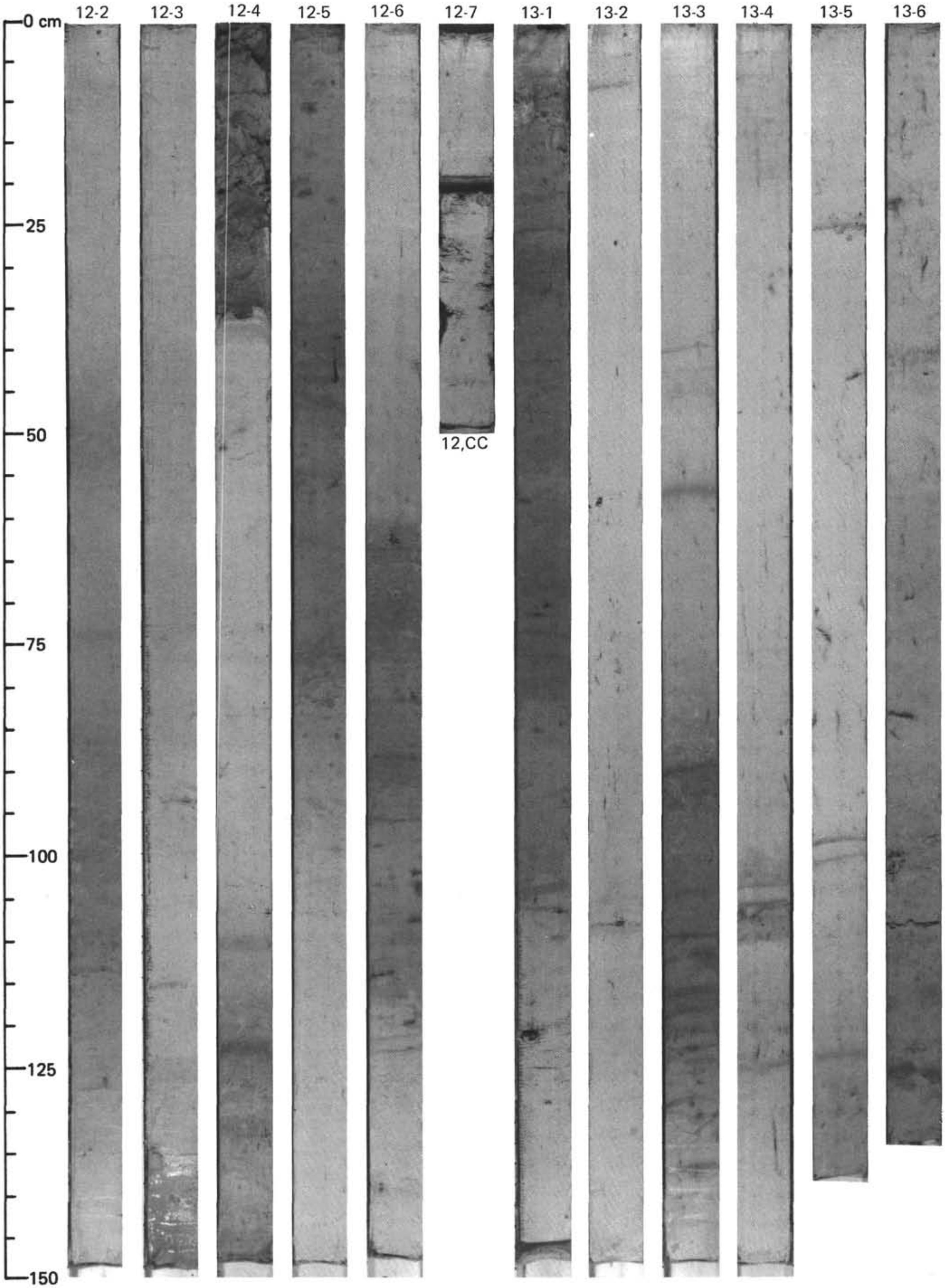

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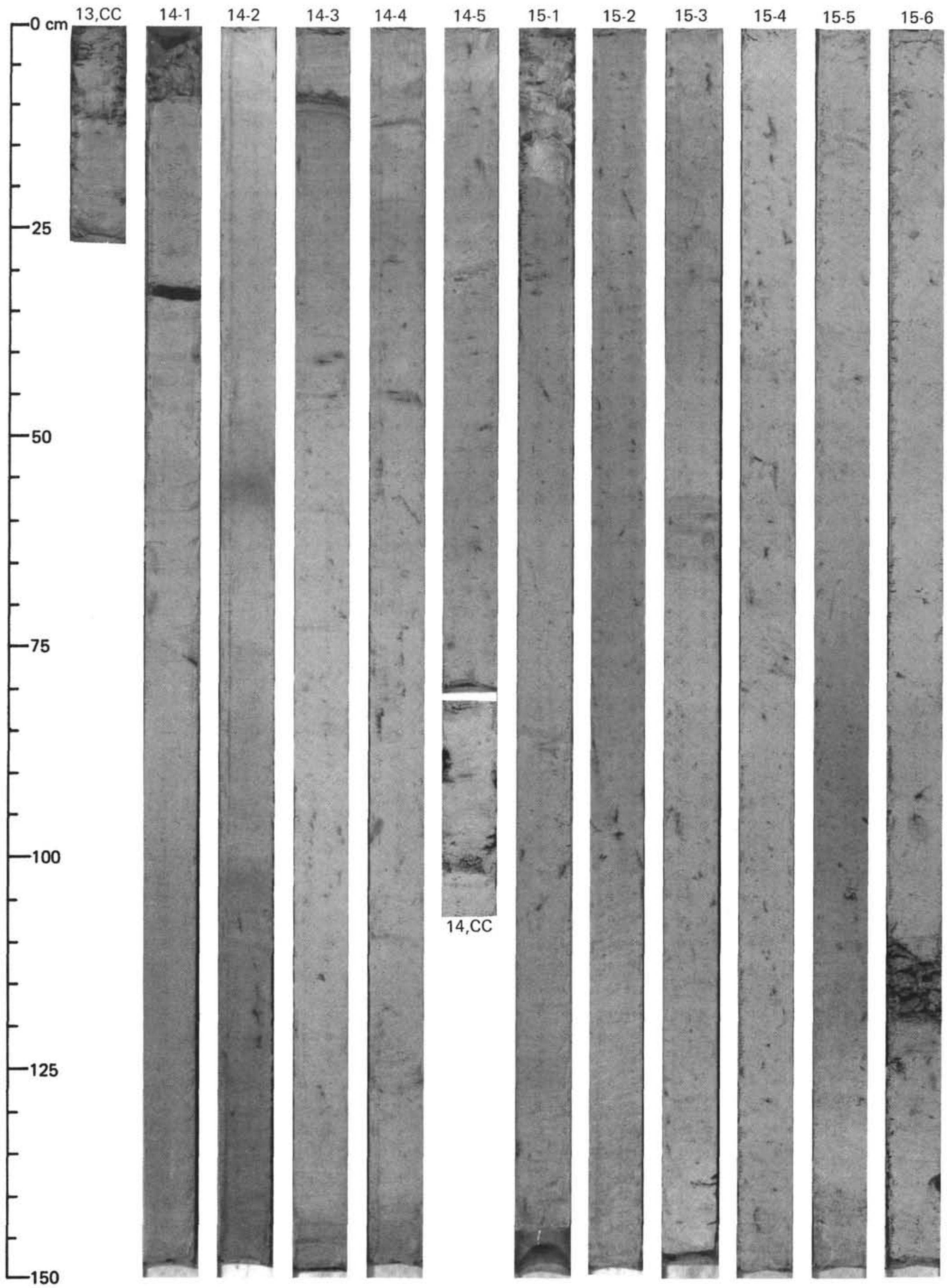
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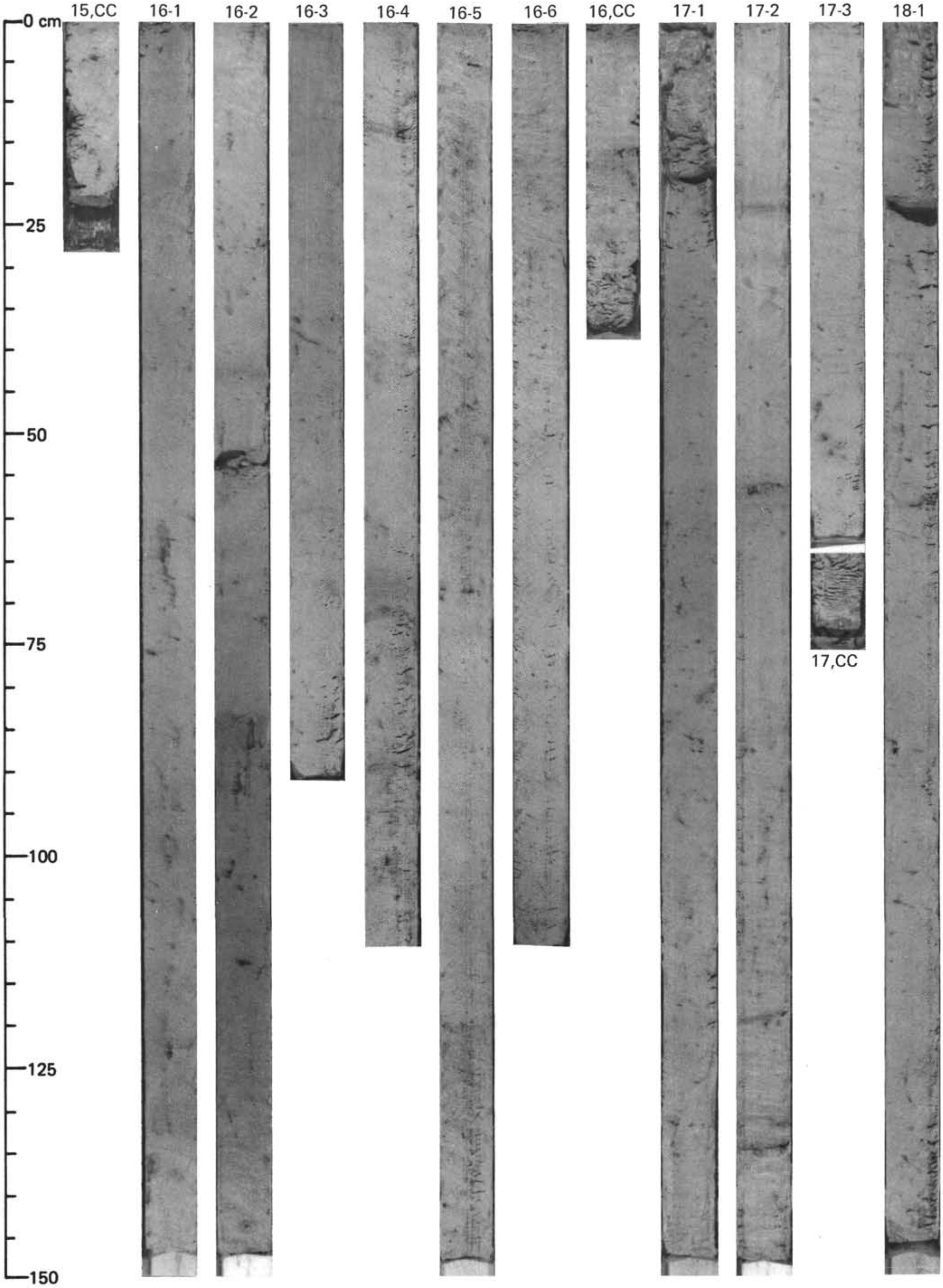
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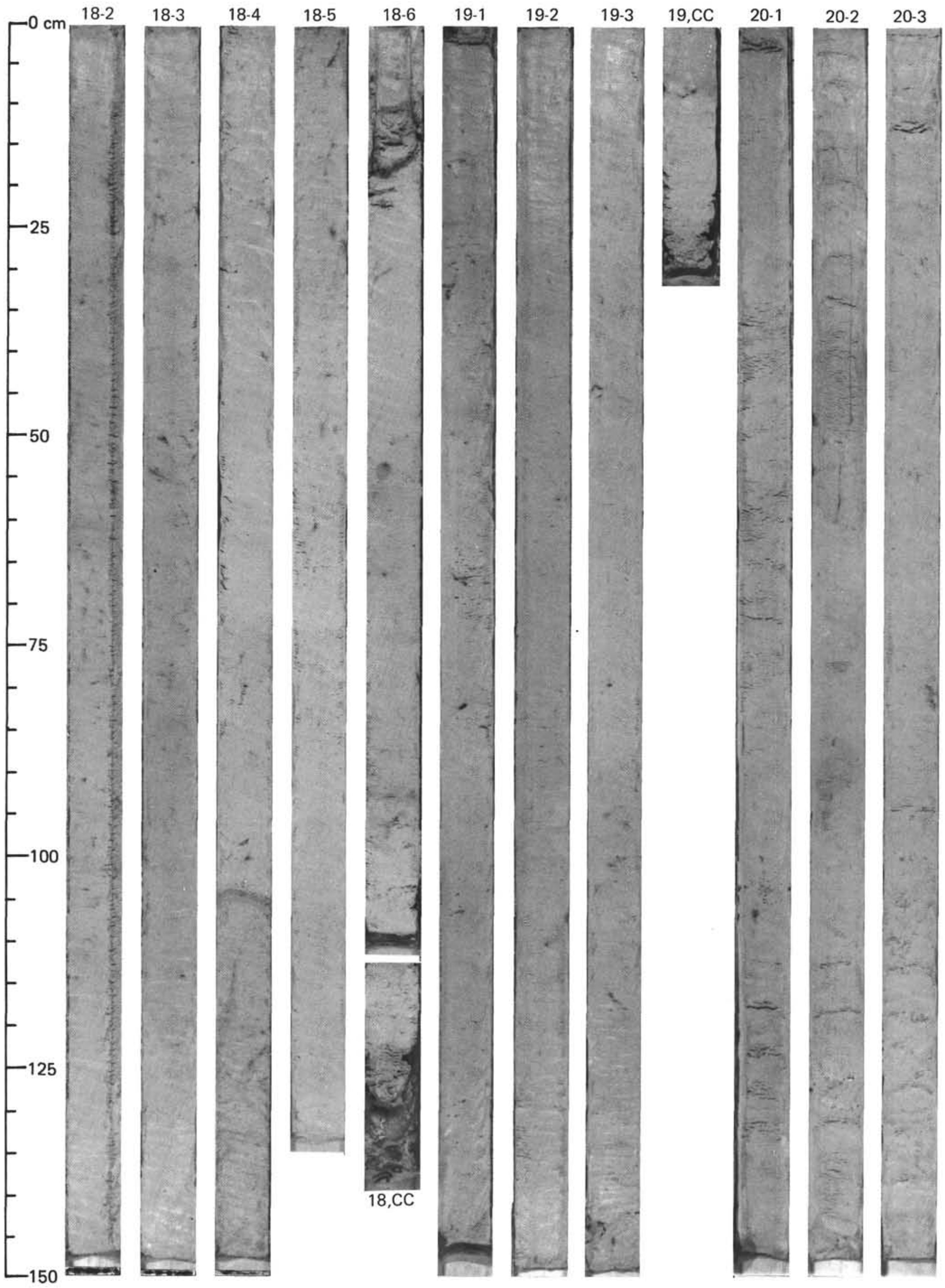
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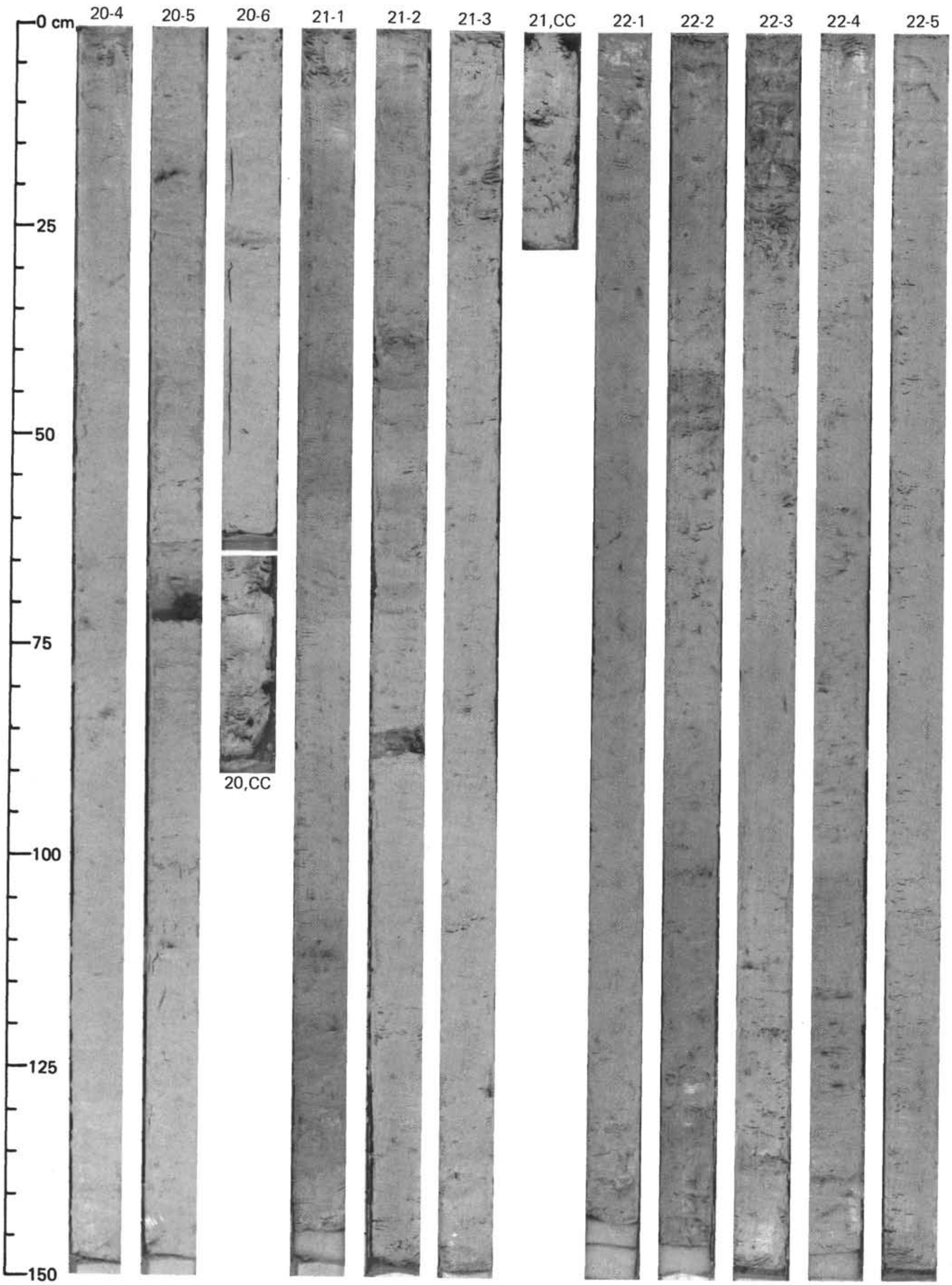

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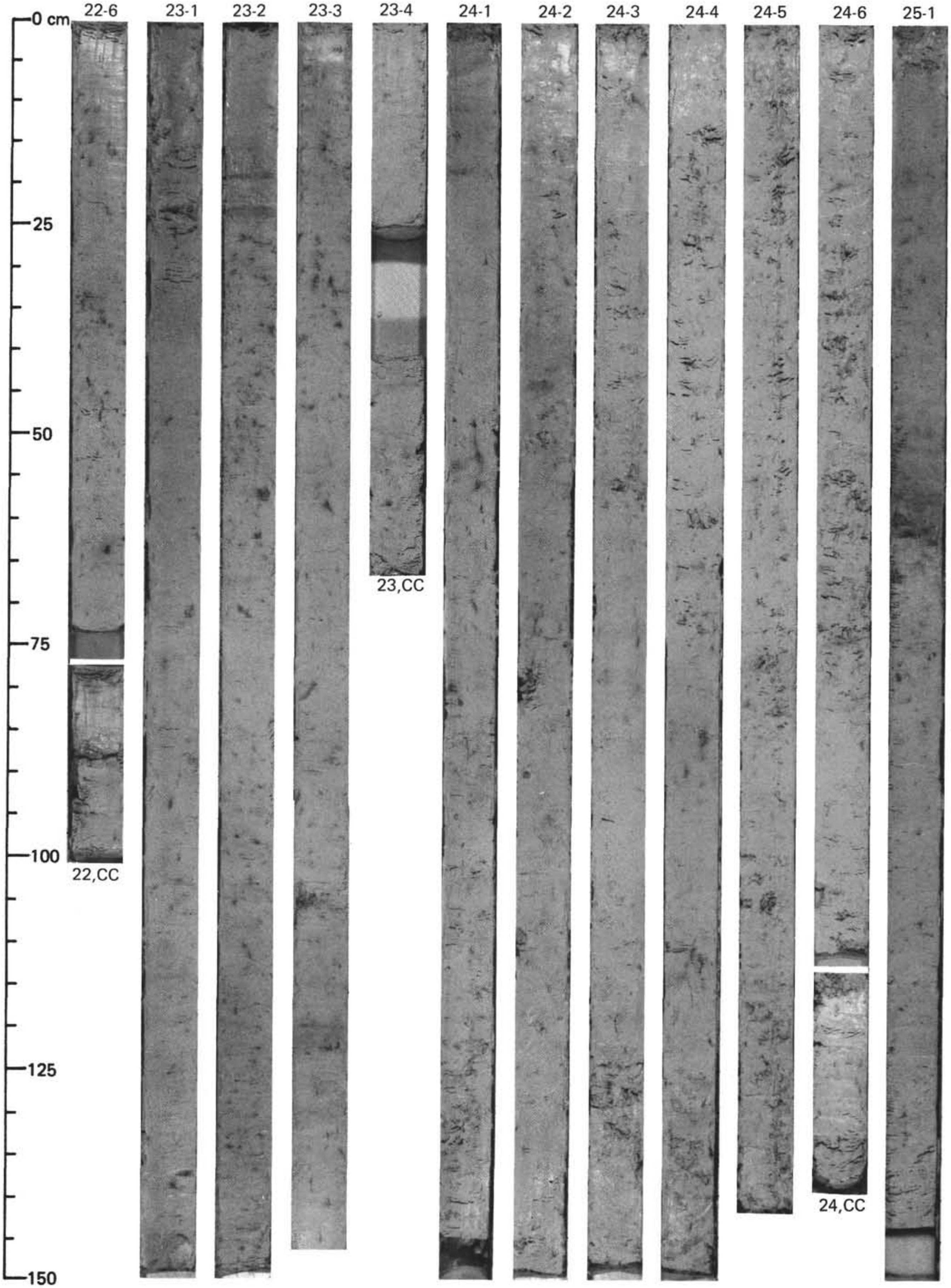
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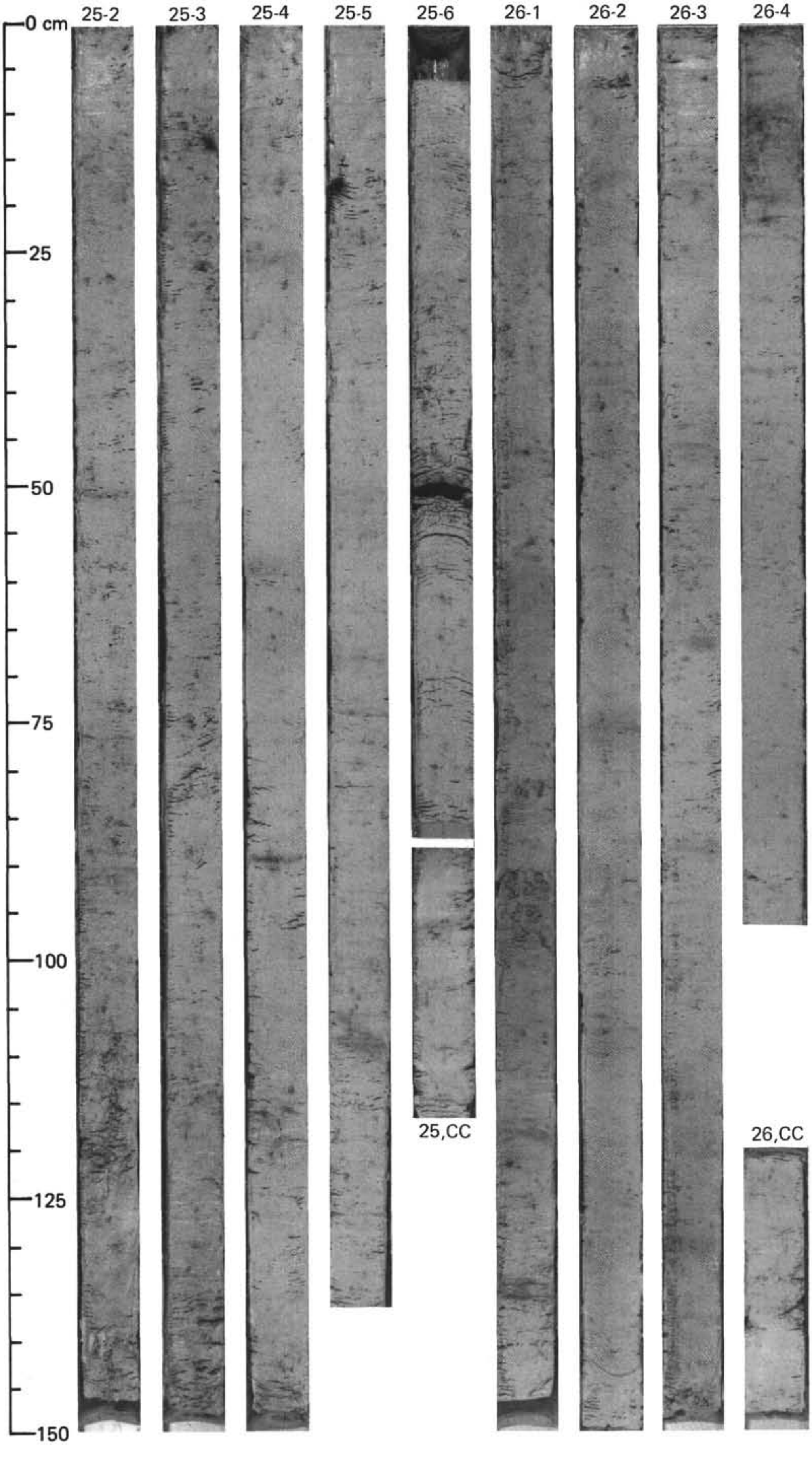
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