7. SITE 620[1]

Shipboard Scientific Party[2]

HOLE 620

Date occupied: 23 October 1983, 2040 LCT

Date departed: 26 October 1983, 0930 LCT

Time on hole: 2 days, 13 hr.

Position: 26°50.12′N, 88°22.25′W

Water depth (sea level; corrected m, echo-sounding): 2608

Water depth (rig floor; corrected m, echo-sounding): 2618

Bottom felt (m, drill pipe): 2612.4

Penetration (m): 422.7

Number of cores: 45

Total length of cored section (m): 421.3

Total core recovered (m): 197.95

Core recovery (%): 47

Oldest sediment cored:
Depth sub-bottom (m): 422.7
Nature: Clay
Age: Pleistocene (Ericson Zone Y)
Measured velocity (km/s): N/A

Basement: N/A

BACKGROUND AND OBJECTIVES

Site 620 is about 18.3 km from the central channel on the middle fan. Its location is 21.6 km from Site 617 in a north-northeast direction and 144.5 km from Site 616. The site is just inside the Walker and Massingill (1970) slump, near its southern boundary.

This site was moved from the initial proposed location to its final position to ensure a good stratigraphic column and more or less constant sedimentation by various processes without any significant erosional interruptions. The initial site was too close to the channel to ensure a continuous sedimentological and paleontological record without severe interruptions by sandy turbidity currents or debris flows. It was expected that the deposits at Site 620 would be rather muddy, with only thin-bedded fine-grained turbidites, allowing us to understand the construction of the midfan area more precisely.

Seismically, a number of fanwide reflectors can be identified that, once dated paleontologically, will help us to understand better the timing and method of construction of the midfan. Integration of these data with those from Sites 616, 617, and the central channel sites (621 and 622) should make it possible to develop a model for the Mississippi Fan, its transport and constructional processes, its distribution of coarser material, and the relationship between fan formation and sea-level variations.

Hole 620 was drilled to satisfy the following main objectives:

1. To obtain sedimentological, paleontological, geochemical, and geotechnical properties of the sediments comprising the overbank area in the middle fan region,
2. To obtain good paleontological dates for the different faunal zones in order to calculate sedimentation rates and to obtain a good stratigraphic framework for the upper fan lobes.
3. To determine the sedimentary processes active at this part of the fan, and
4. To integrate these data with all other Mississippi Fan data to develop a good model for the mechanism and timing of the sediment deposition of the upper fan lobes, to understand the main transport and depositional processes, and to tie the events to sea-level fluctuations.

OPERATIONS

The 141-km eastward transit from Site 619 took 7-3/4 hr., and the positioning beacon was dropped at 2040 hr., 23 October. As the ship was brought onto station, it became apparent that the strong current had persisted in the area and remained an operational factor.

Hole 620 was intended to be the deepest penetration of the voyage, with a target depth of 774 m below the seafloor. A standard rotary-coring bit and bottom-hole assembly (BHA) were made up, and the drill string was run toward the seafloor.

[1] Bouma, A. H., Coleman, J. M., Meyer, A. W., et al., *Init. Repts. DSDP*, 96: Washington (U.S. Govt. Printing Office).

[2] Addresses: Arnold H. Bouma (Co-Chief Scientist), Gulf Research and Development Company, P.O. Box 37048, Houston, TX 77236, (present address: Chevron Oil Field Research Company, P.O. Box 36506, Houston, TX 77236); James M. Coleman (Co-Chief Scientist), Coastal Studies Institute, Louisiana State University, Baton Rouge, LA 70803; Audrey W. Meyer (Shipboard Science Representative), Deep Sea Drilling Project, Scripps Institution of Oceanography, La Jolla, CA 92093, (present address: Ocean Drilling Program, 500 University Drive West, Texas A&M University, College Station, TX 77843); James Brooks, Department of Oceanography, Texas A&M University, College Station, TX 77843; William R. Bryant, Department of Oceanography, Texas A&M University, College Station, TX 77843; Richard Constans, Paleontology Section, Chevron U.S.A. Inc., 935 Gravier Street, New Orleans, LA 70112; Michel Cremer, Département de Géologie et Océanographie, Université de Bordeaux I, Avenue des Facultés, 33405 Talence Cedex, France; Laurence I. Droz, Laboratoire de Géodynamique Sous-Marine, 06230 Villefranche-sur-Mer, France; Toshio Ishizuka, Ocean Research Institute, University of Tokyo, Tokyo 164, Japan; Mahlon C. Kennicutt II, Department of Oceanography, Texas A&M University, College Station, TX 77843; Barry Kohl, Chevron U.S.A. Inc., 935 Gravier Street, New Orleans, LA 70112; William R. Normark, Pacific Branch of Marine Geology, U.S. Geological Survey (MS-999), 345 Middlefield Road, Menlo Park, CA 94025; Suzanne O'Connell, Lamont-Doherty Geological Observatory of Columbia University, Palisades, NY 10964, (present address: Ocean Drilling Program, 500 University Drive West, Texas A&M University, College Station, TX 77843); Mary Parker, Department of Geology, Florida State University, Tallahassee, FL 32306, (present address: AMOCO Production Company, P.O. Box 50879, New Orleans, LA 70150); Kevin T. Pickering, Department of Earth Sciences, University of London, Goldsmith's College, London SE14 6NW, United Kingdom, (present address: Department of Geology, University of Leicester, Leicester LE1 7RH, United Kingdom); Claudia Schroeder, Department of Geology, Dalhousie University, Halifax, Nova Scotia B3H 3J5, Canada; Charles E. Stelting, Gulf Research and Development Company, P.O. Box 37048, Houston, TX 77236, (present address: Chevron Oil Field Research Company, P.O. Box 36506, Houston, TX 77236); Dorrik A. V. Stow, University of Edinburgh, Edinburgh EH9 3JW, Scotland, United Kingdom, (present address: Geology Department, University of Nottingham, Nottingham NG7 2RD, United Kingdom); William E. Sweet, Mineral Management Service, P.O. Box 7944, Metairie, LA 77010; Andreas Wetzel, Geologisches Palaeontologisches Institut der Universität, Sigwartstrasse 10, D7400 Tübingen, Federal Republic of Germany; and Jean K. Whelan, Chemistry Department, Woods Hole Oceanographic Institution, Woods Hole, MA 02543.

The bit was lowered to 2615.4 m for a "mud line punch core," and the 3 m of sediment recovered set the water depth at 2612.4 m (Table 1). Continuous coring then progressed through soft, sticky "gumbo" clay. Cores were highly disturbed and recovery was only fair. Very low circulation rates were required to prevent washing the core away, but only one mud flush was required to clean the hole until a sand/silt interval was penetrated at about 260 to 270 m sub-bottom. This zone was apparently overpressured, as persistent torquing problems occurred each time rotation was stopped for the recovery of a core barrel. High back pressure on the drill pipe indicated that the sediment was "heaving" and closing off the pipe/hole annulus. This repeated a pattern noted on earlier holes, with the problem becoming more severe with depth. By the time a depth of 422.7 m sub-bottom had been reached, it was apparent that chances of reaching the target depth of 774 m sub-bottom were slim and that chances of losing the hole (and BHA) were high. It was therefore decided to terminate drilling operations and to log the hole before the opportunity was lost.

The bit-release shifting tool was pumped to the bit on an inner core barrel. The barrel was then retrieved with the sand line, actuating the mechanical bit release routinely to leave the pipe open ended for logging. The end of the drill string was then pulled to about 100 m below the seafloor and the logging equipment was rigged.

The first attempt to run an induction/sonic velocity/caliper/gamma ray log was aborted when the sonde apparently found an obstruction in the drill pipe at about 2290 m below the rig floor. The logging tool had been worked and "spudded" for about 60 m when electrical problems developed in the sonic and gamma-ray presentations. The tool was retrieved and was found to be covered with soft, sticky clay. The circulating head was rigged and the pipe was circulated to clear the "mud ball" that had apparently been forced up the pipe by the high formation pressure. (No resistance to pumping was noted.) The 10–31 pin adapter below the cable head was replaced after troubleshooting revealed that it was the source of the tool trouble. The two caliper modules were removed from the tool, and it was started back down the pipe.

No obstruction was encountered in the pipe, but the tool stopped in the hole just a few meters below the end of the pipe. The sonde was worked past about 20 m of tight hole and two other obstructions before it encountered a solid bridge at about 2900 m (288 m sub-bottom). A log of good quality was then recorded, but the homogeneity of the sediment and the shortness of the open-hole interval would have rendered a second log of little value.

The logging equipment was then rigged down and the drill string was recovered. The ship was underway for Site 621 at 1400 hr., 26 October.

Table 1. Site 620 coring summary.

Core[a]	Date (Oct. 1983)	Time	Depth from drill floor (m)	Depth below seafloor (m)	Length cored (m)	Length recovered (m)	Amount recovered (%)
1R	24	0332	2612.4–2615.4	0.0–3.0	3.0	2.98	99
2R	24	0425	2615.4–2625.0	3.0–12.6	9.6	6.72	70
3R	24	0512	2625.0–2634.6	12.6–22.2	9.6	3.41	36
4R	24	0600	2634.6–2644.2	22.2–31.8	9.6	4.28	45
5R	24	0640	2644.2–2653.8	31.8–41.4	9.6	2.75	29
6R	24	0724	2653.8–2663.4	41.4–51.0	9.6	5.83	61
7R	24	0805	2663.4–2673.0	51.0–60.6	9.6	3.90	41
8R	24	0843	2673.0–2682.6	60.6–70.2	9.6	1.50	16
9R	24	0917	2682.6–2692.2	70.2–79.8	9.6	5.32	55
10R	24	0955	2692.2–2701.8	79.8–89.4	9.6	4.43	46
11R	24	1037	2701.8–2711.0	89.4–98.6	9.2	1.87	20
12R	24	1115	2711.0–2720.2	98.6–107.8	9.2	7.07	77
13R	24	1201	2720.2–2729.4	107.8–117.0	9.2	4.52	49
14R	24	1245	2729.4–2739.0	117.0–126.6	9.6	4.13	43
15R	24	1325	2739.0–2748.6	126.6–136.2	9.6	7.76	81
16R	24	1420	2748.6–2758.2	136.2–145.8	9.6	5.97	62
17R	24	1505	2758.2–2767.8	145.8–155.4	9.6	5.97	62
18R	24	1540	2767.8–2777.4	155.4–165.0	9.6	5.07	53
19R	24	1615	2777.4–2787.0	165.0–174.6	9.6	1.26	13
20R	24	1725	2787.0–2795.0	174.6–182.6	8.0	4.63	58
Wash	24		2795.0–2796.4	182.6–184.0	—	—	—
21R	24	1820	2796.4–2805.8	184.0–193.4	9.4	2.86	30
22R	24	1910	2805.8–2815.2	193.4–202.8	9.4	4.62	49
23R	24	1955	2815.2–2824.7	202.8–212.3	9.5	4.87	51
24R	24	2045	2824.7–2834.2	212.3–221.8	9.5	4.35	46
25R	24	2130	2834.2–2843.7	221.8–231.3	9.5	3.15	33
26R	24	2225	2843.7–2853.3	231.3–240.9	9.6	5.85	61
27R	24	2345	2853.3–2862.9	240.9–250.5	9.6	0.79	8
28R	25	0128	2862.9–2872.5	250.5–260.1	9.6	4.28	45
29R	25	0230	2872.5–2882.1	260.1–269.7	9.6	1.17	12
30R	25	0324	2882.1–2891.7	269.7–279.3	9.6	8.25	86
31R	25	0624	2891.7–2901.3	279.3–288.9	9.6	3.73	39
32R	25	0717	2901.3–2910.9	288.9–298.5	9.6	5.84	61
33R	25	0806	2910.9–2920.5	298.5–308.1	9.6	8.89	93
34R	25	0903	2920.5–2930.1	308.1–317.7	9.6	2.35	24
35R	25	1000	2930.1–2939.7	317.7–327.3	9.6	6.67	69
36R	25	1054	2939.7–2949.3	327.3–336.9	9.6	3.14	33
37R	25	1151	2949.3–2958.9	336.9–346.5	9.6	6.39	67
38R	25	1248	2958.9–2968.4	346.5–356.0	9.5	9.01	95
39R	25	1413	2968.4–2977.9	356.0–365.5	9.5	0.51	5
40R	25	1515	2977.9–2987.4	365.5–375.0	9.5	6.64	70
41R	25	1605	2987.4–2996.9	375.0–384.5	9.5	5.35	56
42R	25	1705	2996.6–3006.4	384.5–394.0	9.5	2.92	31
43R	25	1805	3006.4–3015.9	394.0–403.5	9.5	0.59	6
44R	25	1918	3015.9–3025.5	403.5–413.1	9.6	3.84	40
45R	25	2053	3025.5–3035.1	413.1–422.7	9.6	2.52	26
					421.3	197.95	47

[a] R following core number indicates rotary core.

SEISMIC STRATIGRAPHY AND ACOUSTIC FACIES

Site 620 is approximately 18 km northeast of the most recent Mississippi Fan channel, interpreted to be an overbank area (introductory chapter, this volume). This area was examined during the December 1982 site survey using the Sea MARC I deep-towed side-scan sonar and 4.5-kHz acoustic profiler, a hull-mounted 3.5-kHz high-resolution profiler, and a single-channel seismic reflection profiling system with an 80-cm^3 water gun acoustic source. An additional seismic line (40-in^3 air gun) was collected by the *Glomar Challenger* en route to the middle fan sites (Fig. 1).

Seismic Stratigraphy

Poor lithologic control resulting from the coring technique and the poor quality of the available seismic profiles does not allow for a detailed correlation between seismic reflectors and sediment characteristics at Site 620. The data collected by the *Glomar Challenger* provide a regional view (Fig. 2A). Six reflectors have been tentatively identified at Site 620 (Table 2). The silty units shown in Figure 2B appear to "pinch out" by onlap and downlap onto the underlying finer grained units.

Acoustic Facies

The 4.5-kHz deep-towed data and shipboard 3.5-kHz data show a rough, slightly hyperbolic surface and subsurface topography with no sub-bottom reflectors (Fig. 3). These reflector characteristics suggest sandy or disturbed sediments although the recovered samples are similar to those at Site 617. As Hole 620 was cored entirely by rotary drilling, sedimentary structures were not preserved in the cores. Compositionally, the sediments are mostly mud and clay, with occasional disrupted silt laminae.

BIOSTRATIGRAPHY AND SEDIMENTATION RATES

Biostratigraphy

The section penetrated in Hole 620 is Quaternary, correlating with planktonic foraminiferal Zone N23 and calcareous nannofossil Zone NN21. The interval includes the Holocene (Ericson Zone Z; Ericson and Wollin, 1968) and the late Wisconsin glacial (Ericson Zone Y). The warm interstadial of the Wisconsin glacial (Ericson Zone X or *Globorotalia flexuosa* Zone) was not encountered to a total depth of 422.7 m (Fig. 4).

Zone Y contains a poorly developed foraminifer fauna with predominantly reworked Cretaceous calcareous nannofossils in the silt-laminated mud sequence.

Rare well-preserved Pleistocene radiolarians occur in Samples 620-2,CC through 620-24,CC.

Foraminifers

Foraminifers from Hole 620 are Quaternary belonging to Zone N23 (Blow, 1969). A warm-water, high-diversity planktonic ooze occurs in the upper portion of Section 620-1-1. This Holocene (Zone Z) fauna contains abundant *Globorotalia menardii* and common *G. tumida*, along with the associated bathyal foraminifers: *Cibicides wuellerstorfi*, *Cibicidoides kullenbergi*, and *Laticarinia pauperata*.

The remainder of the hole is late Wisconsin glacial (Zone Y) and is composed of mud with interbedded silt laminae. The foraminiferal fauna is poorly developed except in the interval from Samples 620-37,CC to 620-45,CC where there is an increase in planktonic–benthic foraminiferal diversity and abundance. The cool-water planktonic foraminifer *G. inflata* disappears in Sample 620-6,CC. Rapid sedimentation is evident in the Wisconsin glacial by the low numbers of foraminifers occurring in the washed residues (initial volumes of 70 to 140 cm^3 were used). Reworked Cretaceous foraminifers occur in Cores 620-32 through 620-37.

Calcareous Nannofossils

All cores recovered from this site are interpreted to be in the *Emiliania huxleyi* Zone (NN21) of Martini (1971). The Holocene calcareous ooze contains abundant, well-preserved Quaternary nannofossils. The nannofloral assemblage is dominated by very small coccoliths which are tentatively identified as *E. huxleyi*. Few reworked Cretaceous nannofossils are found in these samples.

Below this ooze, the sediment contains few nannofossils and the assemblage is dominated by reworked Cretaceous species. Because of the rapid sedimentation rate at this site, Pleistocene nannofossils are not always present in these sediments; when they do occur, they are very rare. Near the bottom of the hole, a slight increase in Pleistocene species is noted.

Sedimentation Rates

The sedimentation rates are based on two datums. An age of 0.012 Ma is used for the Holocene/Pleistocene boundary (Z/Y zonal boundary) and 0.085 Ma for the Y/X zonal boundary (see Explanatory Notes, this volume).

A sedimentation rate of 6.3 cm/1000 yr. is calculated for the Holocene. This is a minimum rate assuming complete Holocene recovery (Fig. 5).

The Y/X zonal boundary was not encountered. By using a seismic projection to the top of Zone X (614 m for seismic Horizon "30"), a projected minimum sedimentation rate of 840 cm/1000 yr. is computed for Zone Y.

These calculations are based on nondecompacted sediment thicknesses.

LITHOSTRATIGRAPHY

Two lithologic units are recognized in the section drilled at Site 620 (Table 3, Fig. 4).

Coring at Site 620 was accomplished with a rotary corer. The designation and interpretation of facies are greatly hindered by low recovery (47%) and by the disturbed condition of the recovered sediment because of the drilling technique.

Lithologic Unit I: Muddy Ooze

A 20-cm-thick brown to dark brown muddy ooze is present at the top of the section, 0 to 20 cm sub-bottom. Texturally, the ooze is composed of 15% sand, 70% silt, and 15% clay. Foraminifers are the most common constituent, and they comprise the entire sand fraction and part of the silt fraction. The other part of the silt fraction is mainly subrounded to angular quartz (37%).

Lithologic Unit II: Clay, Mud, and Silt

This unit constitutes the remainder of the hole, extending from 0.20 to 422.7 m sub-bottom. The sediments are generally dominated by the mud fraction. They appear to be clay-rich and increases in the silt content occur over relatively short intervals. The disturbed condition of the recovered sediment precludes evaluation of minor lithologic changes and of sedimentary structures. Three facies were recognized: (1) clay and mud, (2) silt-laminated mud, and (3) silty mud and muddy silt. Clay and mud are the dominant facies in this lithologic unit. The clay is composed of about 20% silt and 80% clay. These values range from 7 to 25% and 75 to 93%, respectively. The composition of the mud is more constant, ranging from 1 to 2% sand, 35 to 45% silt, and 59 to 70% clay. In both cases, carbonate averages 4%.

Silt-Laminated Mud Facies

Silt-laminated mud is present in about 20% of the recovered section. The laminae are poorly preserved, and where observed, they tend to be less than 2 mm thick. Thicker layers (2 cm in Sample 620-28-1, 25 cm) generally have a sharp scoured base and a sharp top. Silt

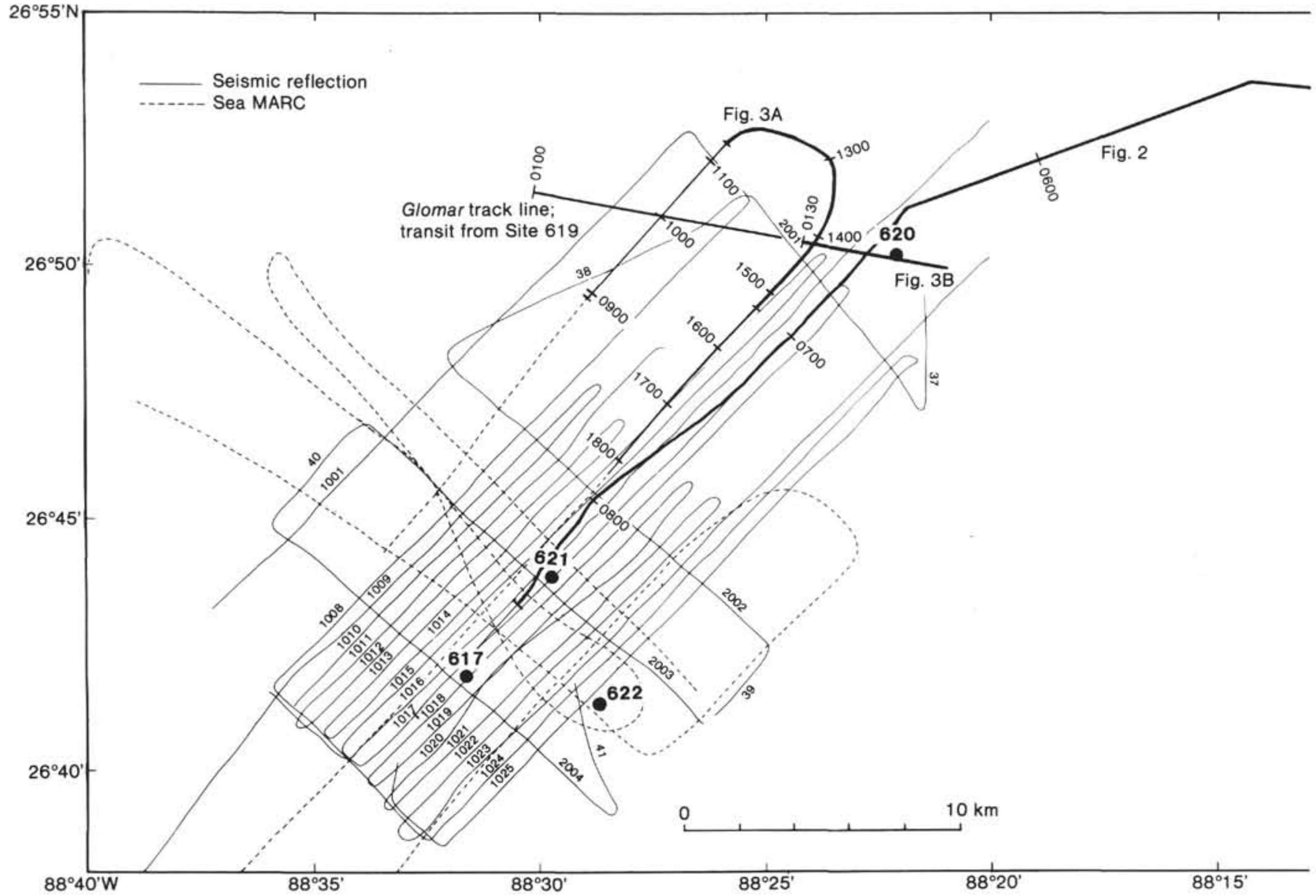


Figure 1. Map showing location of Site 620, adjacent site survey tracklines, and locations of Figures 2 and 3.

lenses occur as both individual fragments and as disrupted laminae. The silt contains up to 10%, and rarely up to 20%, clay.

Silty Mud and Muddy Silt Facies

This facies occurs in only two sections of the hole (Sections 620-28-1 and 620-29-1). These sediments appear to be structureless and are composed of about 5% sand, 55% silt, and 40% clay. The gamma log, however, suggests that this facies may actually comprise 10 to 15% of the logged interval.

Vertical Succession

Two intervals are distinguished from 70 to 289 m sub-bottom. From bottom to top these intervals include:

Interval 1, extending from 289 to 217 m sub-bottom. Sediment types inferred from the wireline logs indicate that this interval begins with a clayey mud at the base and passes upward rather abruptly to a mud (silty mud or mud with silt laminae) at 258 m sub-bottom. The log has a saw-toothed pattern from 258 to 237 m sub-bottom, suggesting a variability in the silt and clay content of the mud (see Constans et al., this volume). At 237 m sub-bottom, the silt component becomes dominant and continues to the top of the interval at 217 m sub-bottom.

Interval 2 extends from 217 to 70 m sub-bottom and is similar to Interval 1. The interval begins as a clayey mud that continues upward to 172 m sub-bottom, and is overlain by a section of alternating clayey mud, silty mud, and silt-laminated mud.

Because the recovered sediment is extensively disrupted by the coring technique, no interpretation will be made of the uppermost 70 m section. The core lithologies indicate that the sediments are clay with silt laminae that increase toward the top of the core.

GEOCHEMISTRY

Organic Geochemistry

Gas was encountered in only two sections, 620-41-3 (40% methane and 0.05% CO_2) and 620-42-3 (35% methane and 0.05% CO_2). The quantities present were small.

Inorganic Geochemistry

No samples were collected between the mud line and Core 620-12. Interstitial water samples were not as closely spaced for Site 620 as for other Leg 96 sites. Results are detailed in Ishizuka, Kawahata, et al. (this volume), and can be summarized as follows:

1. The pH value ranges between 6.6 and 7.2.
2. Total alkalinity is from 3.8 to 6.5 mEq/L.

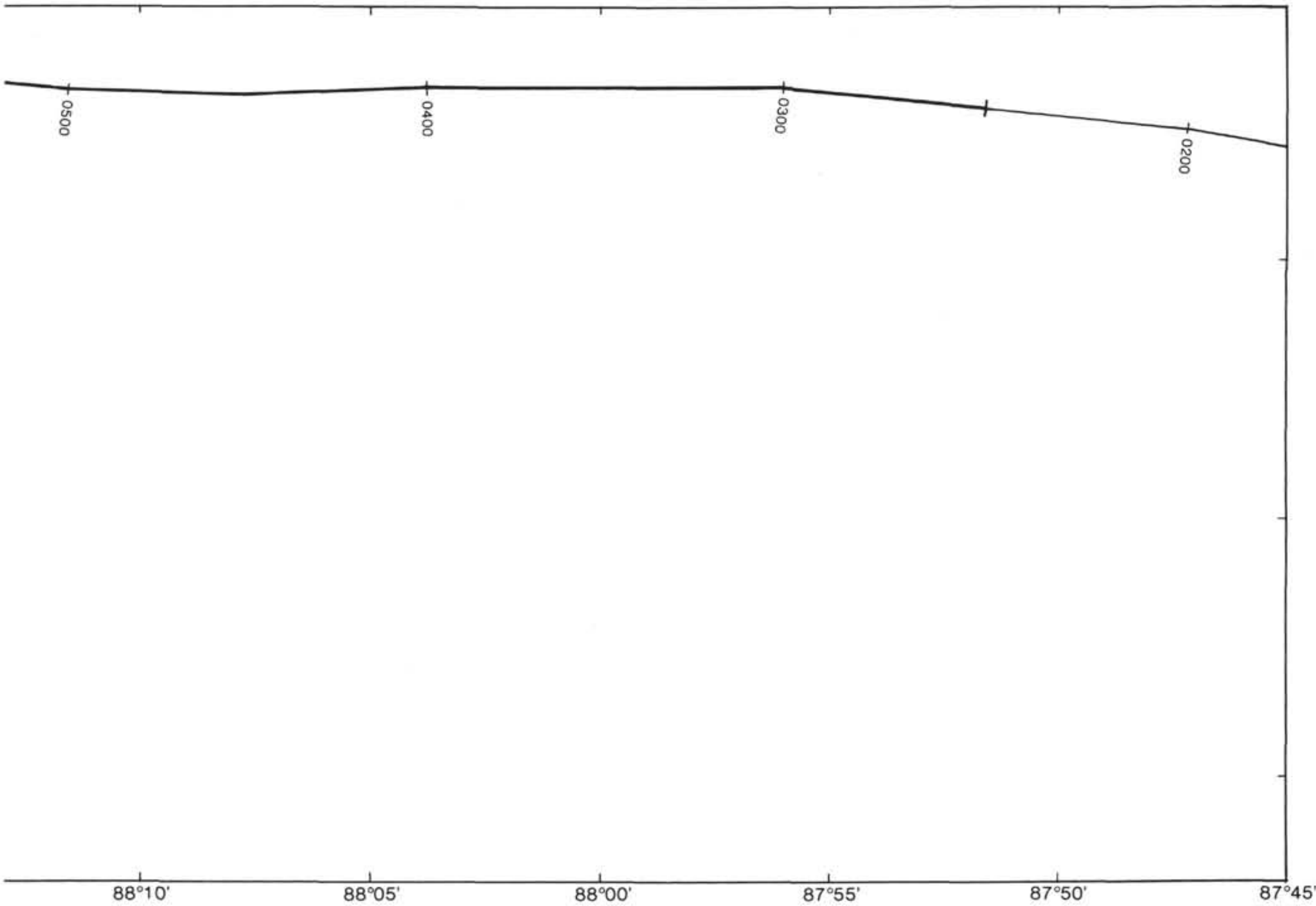


Figure 1 (continued).

3. Salinity decreases slightly with depth to Core 620-35, from 36.2 to 35.5‰. Salinities in Cores 620-40 and 620-44 are 32.5 and 33.8‰, respectively.

PHYSICAL PROPERTIES

One of the characteristics of rotary drilling is the highly disturbed nature of the sediments recovered. Hole 620 was cored by the use of a wireline corer and rotary cone drill bit. The results were a series of cores that consisted of chunks of clayey sediment floating in a matrix of soupy mud. Samples of sediment intended for geotechnical analysis were chosen with great care. Only samples that appeared to have some degree of internal integrity were analyzed. There were cores where many of the sections could not be sampled because of the high degree of disturbance.

Figure 6 displays the effects of disturbance on the physical properties. In all cases, the property measured deviates drastically from the standard trends established by the analyses performed at other Leg 96 sites. Examination of Figures 6B and 6C, in particular, shows that the relationship between water content and depth is essentially a straight line. At all other sites, the water content has a very large gradient in the shallow depth section (see other site chapters, this volume).

Figure 7 is a field consolidation curve (log overburden pressure versus void ratio). Usually, for a normally consolidated sediment a line of best fit of void ratio (e) versus overburden pressure (σ) is a straight line when plotted on a semilogarithmic scale. As can be seen on Figure 7, the points plotted do not form a straight line but have a large degree of scatter.

During drilling operations, downhole pressures can be measured by determining the pressures required to maintain circulation. At the 395-m level at Site 620 a pressure of about 2.46 mPa was required to maintain circulation, and even then the drill string started to stick. Downhole pressures of 2.46 mPa translate to an excess pressure (abnormal pressure) almost equal to the lithostatic pressure.

Abnormal pressures are created and maintained by the inability of pore fluids to migrate within a reasonable geologic time period when subjected to stresses causing increased fluid pressure. In general, several types of stresses can increase fluid pressure. Here rapid loading in connection with a low permeability may be responsible for the abnormal pressures similar to those found in other regions of the Gulf Coast area.

The lithostatic gradient (the pressure increase caused by sediment and liquid) varies according to the nature of

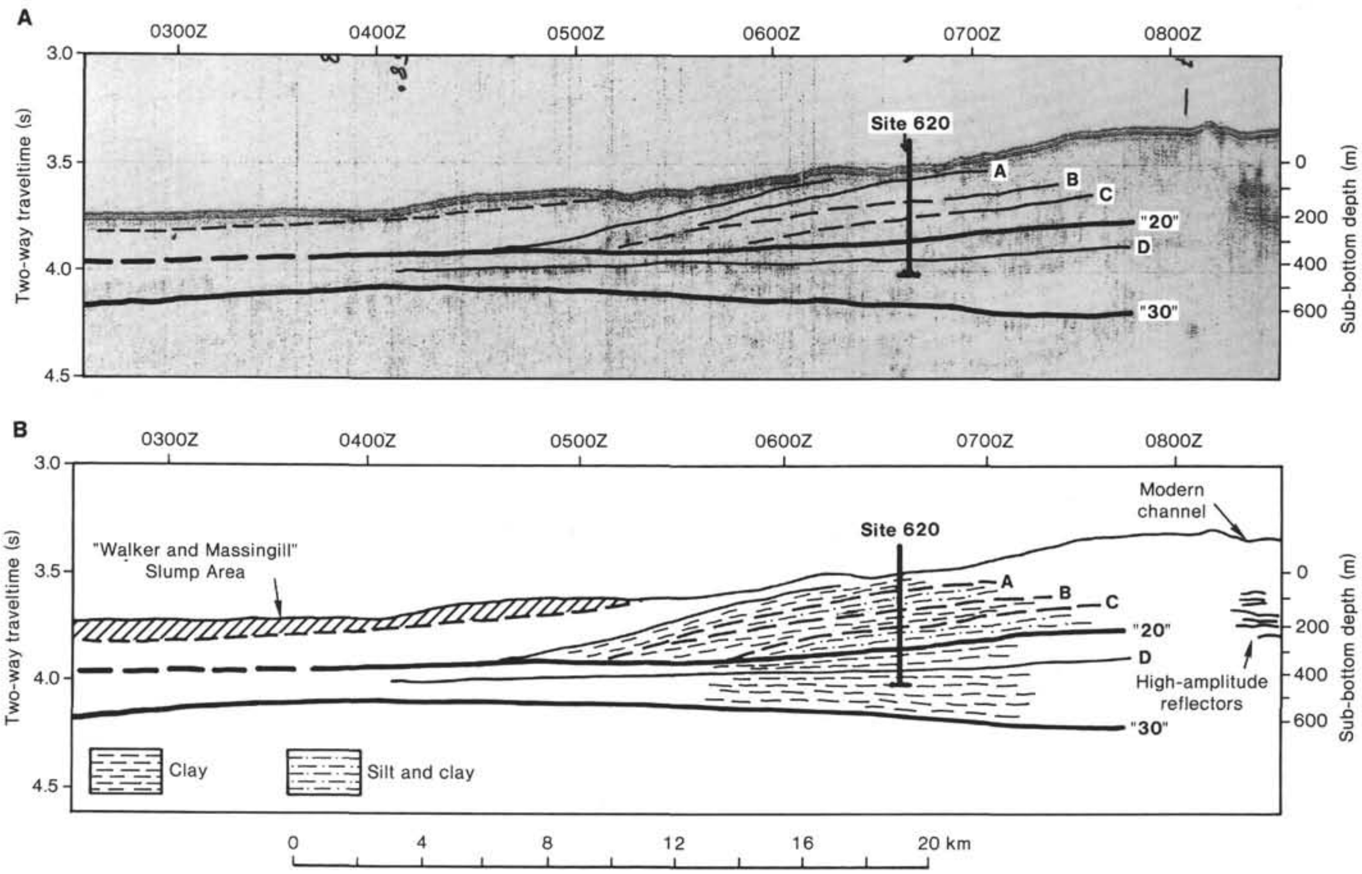


Figure 2. Annotated water gun single-channel reflection profile near Site 620 taken by *Glomar Challenger*. A. Seismic stratigraphy. B. Interpreted lithologies of the overbank deposits. Location of profile shown in Figure 1.

Table 2. Site 620 seismic reflectors[a].

Reflectors	Sub-bottom depth (m)	Sub-bottom depth (ms)
A	74	95
B	151	190
C	217	270
"20"	285	349
D	371	445
"30"	614	702

[a] Reflectors are shown on the seismic profile in Figure 2.

the sediments. At Site 620, the lithostatic gradient is 18.71 kPa/m. At the 395-m level the lithostatic pressure (accounting only for the hydrostatic pressure from the seafloor to the 395-m level) is 7.39 mPa. The pressure of about 7.17 mPa measured at the pumps is thus almost equal to the lithostatic pressure. This would suggest that the sediments at Site 620 are totally underconsolidated and the weight of the sediment grains is totally supported by the interstitial waters.

The plot of undrained shear strength with depth reflects the highly disturbed nature of sediments recovered by rotary drilling techniques (Fig. 6E). The increase of undrained shear strength with depth is negligible.

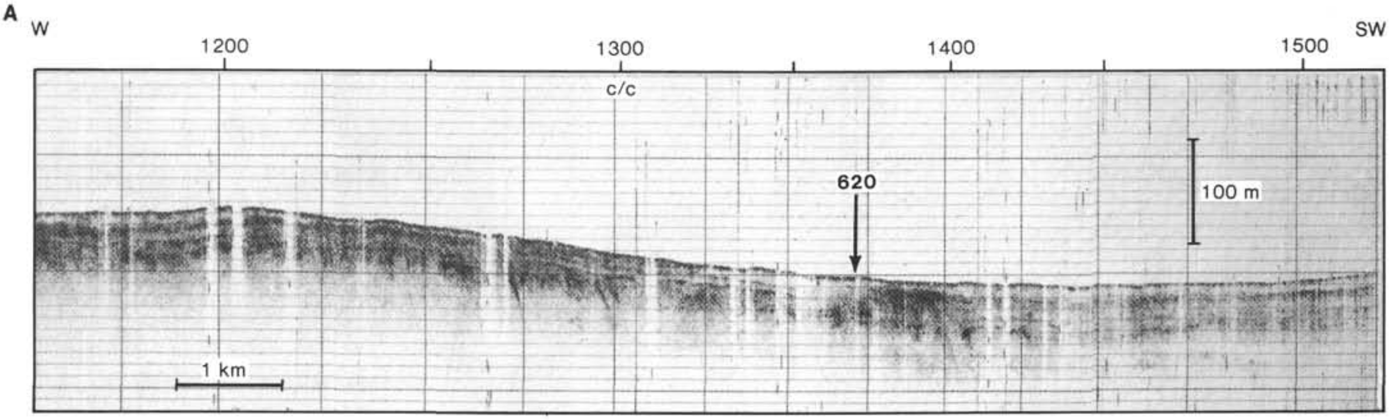
One way to determine the degree of disturbance of a sediment is to examine its sensitivity. Sensitivity is the ratio of the natural peak strength to the ultimate undrained shear strength when a sample is completely remolded at unaltered water content. The sensitivity of clays ranges from 2 to 64. Most of the Gulf of Mexico sediments have a sensitivity ranging from a low of 1 to a high of 1.62, suggesting that the recovered sediments range from being completely remolded to highly disturbed.

Sonic velocities are plotted against depth in Figure 6F. The disturbed nature of the sediment adversely affected the sonic velocity measurements. For a great portion of the cored material, measurements could not be made because of our inability to obtain sections large enough to measure. The velocities displayed a large variation with depth. The acoustic anisotropy was in some cases very large and conflicting.

The results of the GRAPE analysis are probably of little value because of the highly disturbed nature of the cores.

SUMMARY AND CONCLUSIONS

Hole 620 was drilled in a water depth of 2612.4 m in overbank sediments. The site is located approximately 18.3 km north of the channel. Seismic data indicate that a few reflectors offlap onto an underlying reflector that marks the base of the youngest fan lobe. These low angle dipping reflectors terminate on the basal reflector approximately 70 km away from the channel, forming broad lateral margins to the channel–levee complex.



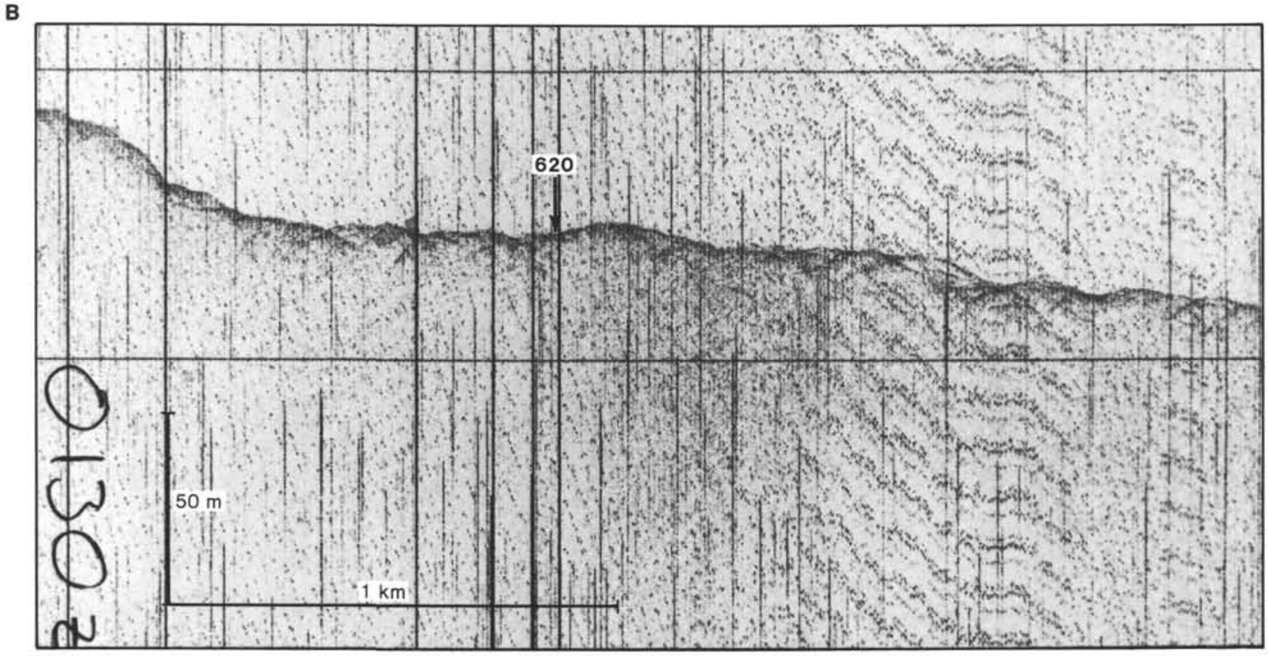


Figure 3. A. 4.5-kHz deep-towed profile northwest of Site 620 showing projected location of site. B. Shipboard 3.5-kHz high resolution profile taken on board *Glomar Challenger*, showing location of Site 620. Location of profiles shown in Figure 1.

A pressured formation at a depth of 422.7 m caused hole problems and it was anticipated that attaining the drilling objective of 774 m was remote; a decision was made to abandon the hole and obtain a well log to aid in the interpretation of the poorly recovered cored section. A successful log was obtained from a depth of 292 m to the seafloor. This gamma log was especially useful in filling in the missing cored sections.

The major scientific results obtained from the cores were

1. The overbank sediments are composed primarily of fine-grained clay, silty clay, and silt that are basically arranged in successive coarsening-upward trends. The clay and mud are rather massive, displaying few sedimentary structures except for color banding.

2. Only a minor percentage of coarser-grained clastic sediment escaped the channel complex to be deposited marginally in the overbank environment. Thus the channel served primarily as a conduit for transporting the coarser sediment downslope, and only suspended sediments were delivered overbank to build up the marginal areas of the fan lobe. The few layers of coarser material probably represent times of extreme sediment delivery down the channel or small splays that emanate from lows along the channel levee.

3. The cored section bottomed in Ericson Zone Y (late Wisconsin glacial); the seismically projected depth to Ericson Zone X being 614 m. The Holocene/Pleistocene boundary occurred at a depth of 3 m. The base of the modern fan lobe was encountered at a depth of 366 m at a point where an increase in benthic and planktonic foraminifers occurred. This zone agrees quite well with the seismic reflector traced from Site 616, approximately 140 km to the east.

4. Computed sedimentation rates were 6.3 cm/1000 yr. for the Holocene (Ericson Zone Z). Based on the seismic correlation, a computed sedimentation rate for Zone Y is 840 cm/1000 yr.

5. The overbank sediments do not contain a high percentage of displaced shallow-water benthic fauna, yet accumulation rates were extremely high. Cores in the channel fill (Sites 621 and 622) and in the lower fan (Sites 614

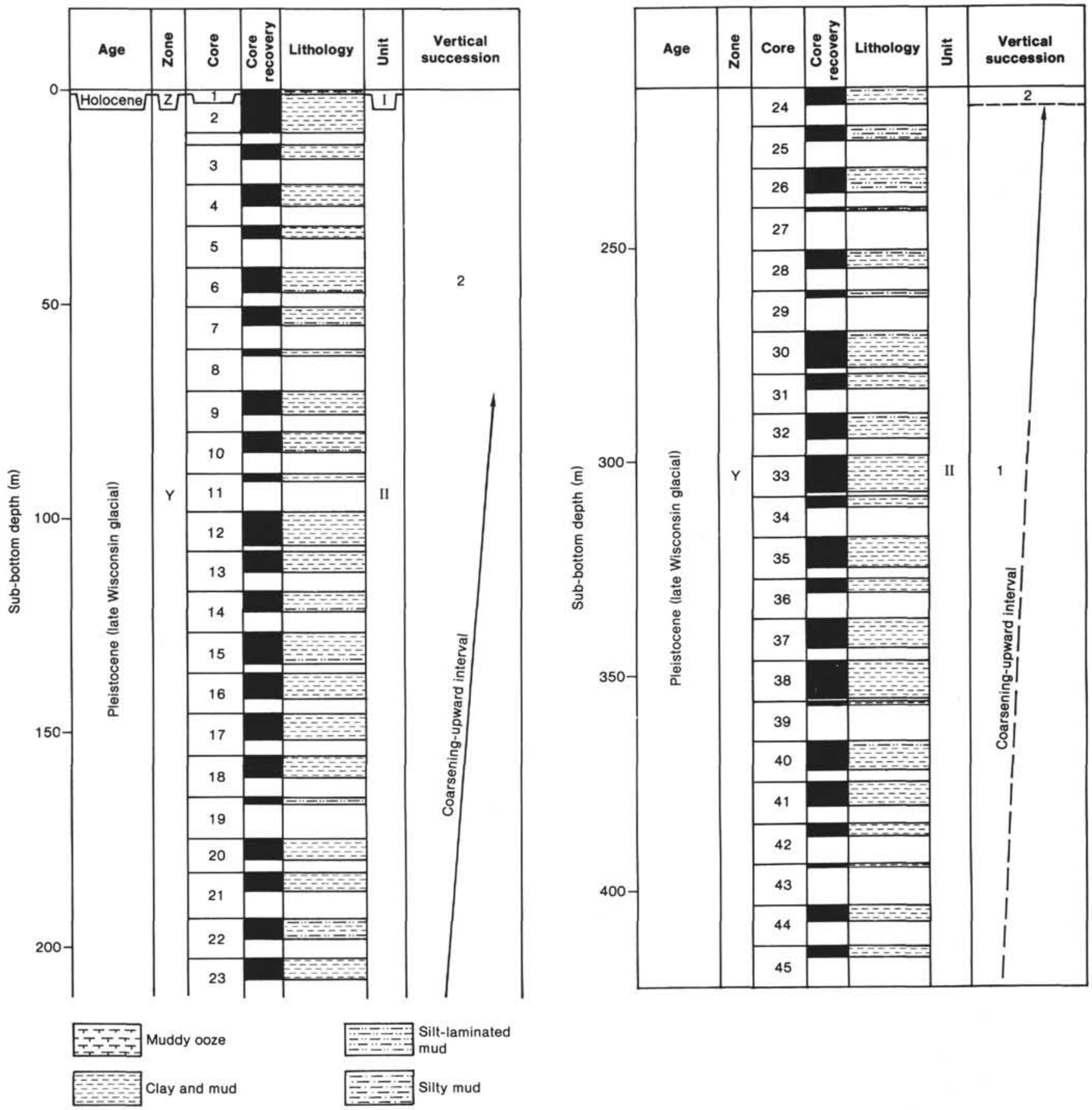


Figure 4. Lithostratigraphic summary for Site 620 showing age, core recovery, graphic lithology, lithologic units and intervals.

and 615) all contain a much higher percentage of displaced fauna. This tends to indicate that the channel does indeed function as a conduit for coarser-grained particles and only very few of the larger faunal elements were moved out of the adjacent channel onto the overbank area.

6. The gamma log indicates that the overbank sequences consist of succeeding units of coarsening-upward trends often separated by rather thick units of clay and mud. In a rotary cored hole, especially in soft unconsolidated sediments, sample disturbance is high and core recovery is often poor. Well logs, therefore, are especially useful in reconstructing the vertical sedimentary sequences.

REFERENCES

Blow, W. H., 1969. Late middle Eocene to Recent planktonic foraminiferal biostratigraphy. *In* Brönnimann, P., and Renz, H. H. (Eds.), *Proc. First Int. Conf. Plankt. Microfossils*: Leiden (E. J. Brill), 1: 199–421.

Ericson, D. B., and Wollin, G., 1968. Pleistocene climates and chronology in deep-sea sediments. *Science*, 162:1227–1234.

Martini, E., 1971. Standard Tertiary and Quaternary calcareous nannoplankton zonation. *In* Farinacci, A. (Ed.), *Proc. II Plankt. Conf. Roma*: Rome (Edizioni Tecnoscienza), 2:739–785.

Walker, J. R., and Massingill, J. V., 1970. Slump features on the Mississippi Fan, northeastern Gulf of Mexico. *Geol. Soc. Am. Bull.*, 81:3101–3108.

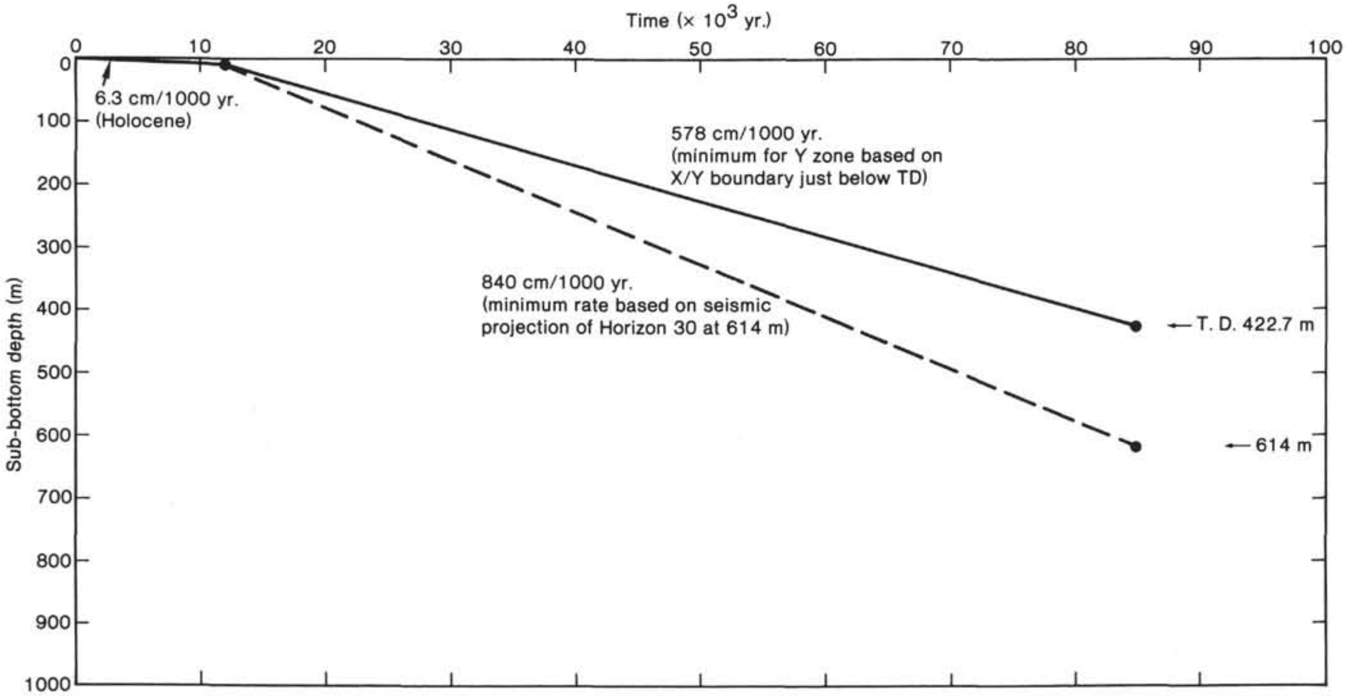


Figure 5. Site 620 sedimentation rates.

Table 3. Lithologic units at Site 620.

Lithologic unit	Sediment	Cored interval	Sub-bottom depth (m)
I	Muddy ooze	620-1-1, 0–20 cm	0–0.2
II	Clay, mud, and silt	620-1-1, 20 cm through 620-45,CC	0.2–422.7

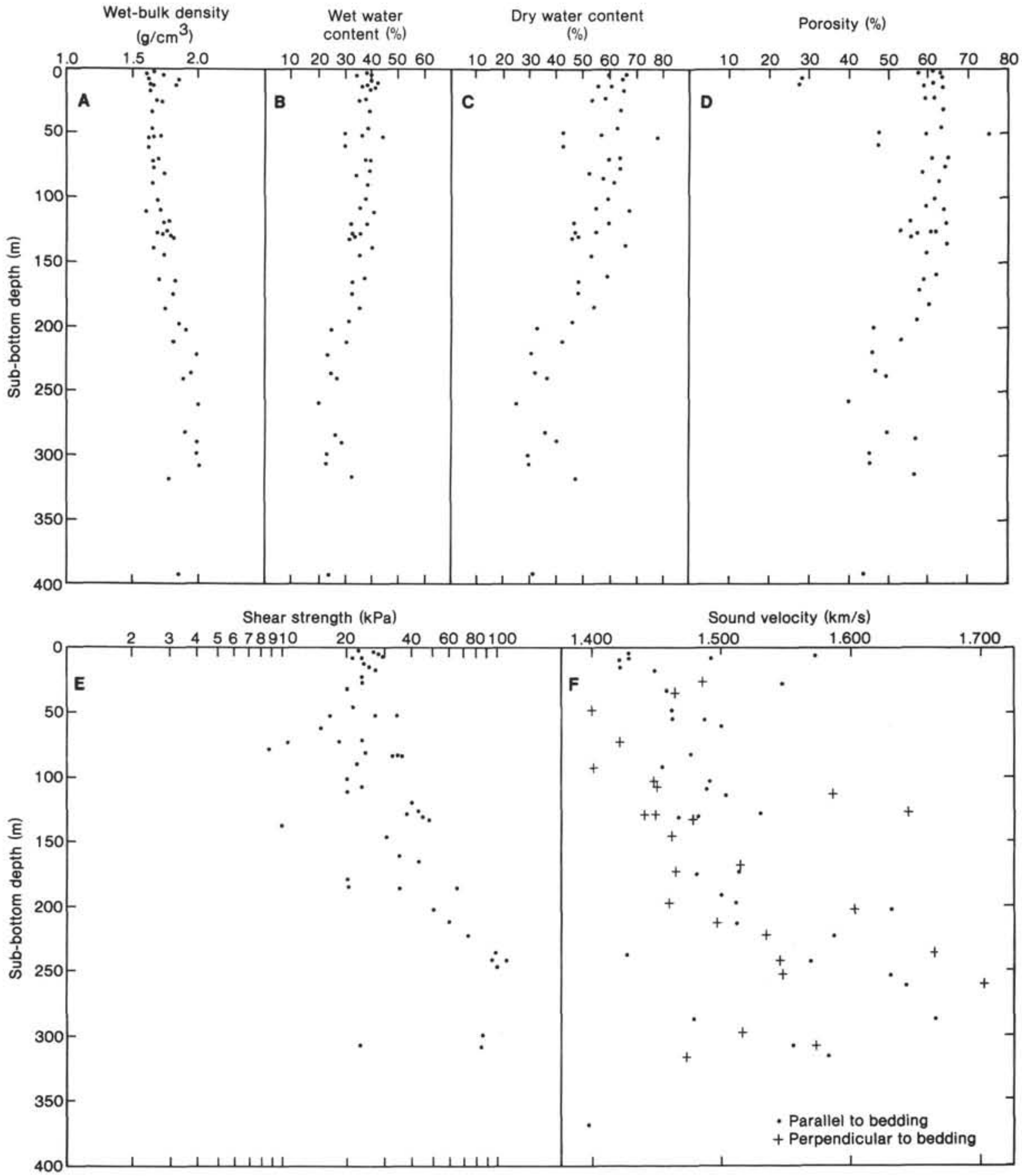


Figure 6. Mass physical properties of Site 620 sediments. A. Wet-bulk density. B. Water content related to weight of wet sediment. C. Water content related to weight of dry sediment. D. Porosity. E. Undrained shear strength. F. Sound velocity.

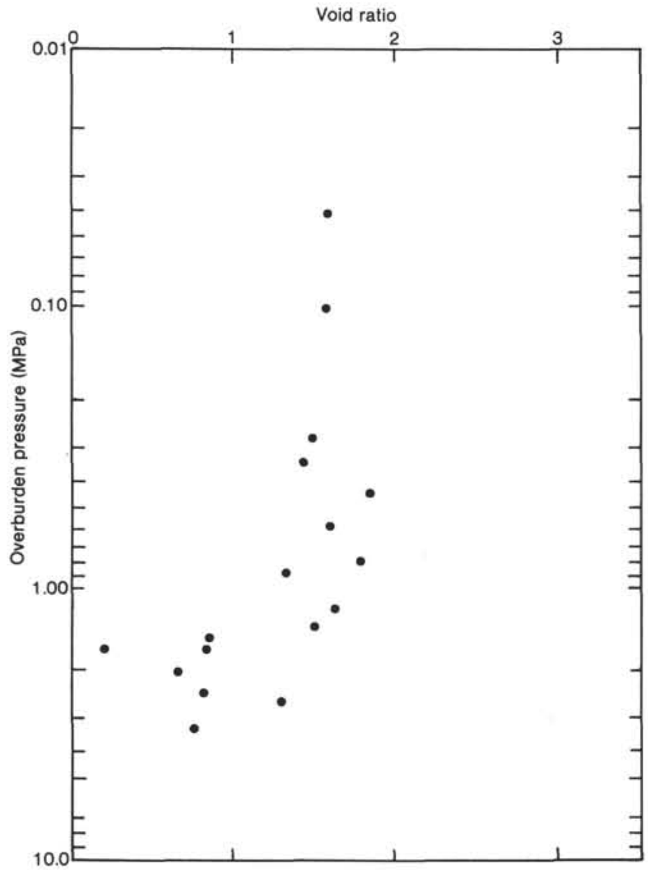
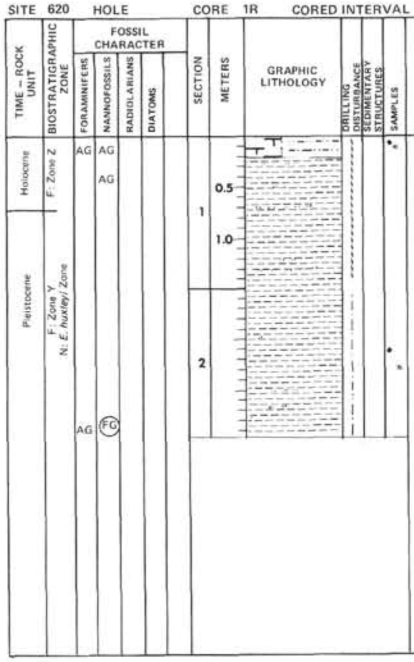


Figure 7. Void ratio versus log overburden pressure at Site 620.

SITE 620 HOLE CORE 1R CORED INTERVAL 2612.4–2615.4 mbsl; 0.0–3.0 mbsf



LITHOLOGIC DESCRIPTION

Section 1, 0–20 cm: MARLY FORAM OOZE, dark brown (10YR 4/3); highly disturbed by drilling.

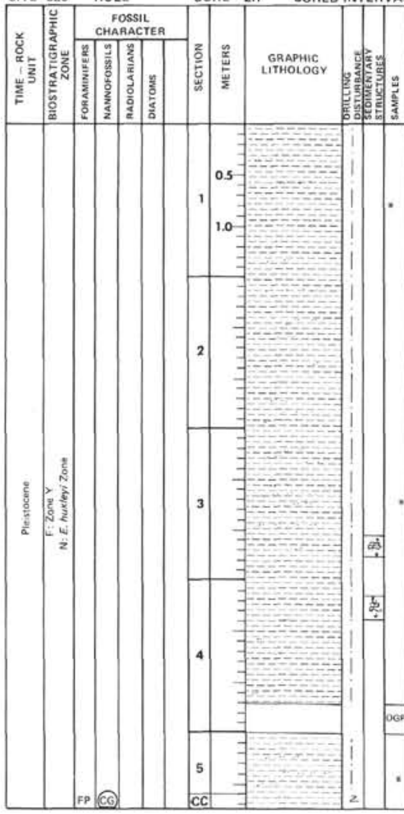
Section 1, 20 cm–end of core: CLAY. Dark gray (5Y 4/1) in Section 1; very dark gray (10YR 3/1) in Section 2. Homogeneous; very deformed and disturbed by drilling. Dark brown (10YR 3/3) and very dark grayish brown (10YR 3/2) oxidation zones occur at Section 1, 65 and 41–48 cm; Section 2, 2–4 cm and 103–114 cm. Core contains rare SILT blebs and very deformed laminae.

SMEAR SLIDE SUMMARY (%):

	1, 10	2, 80
	D	D
Texture:		
Sand	15	0
Silt	70	20
Clay	15	80
Composition:		
Quartz	37	17
Feldspar	–	1
Heavy minerals	–	1
Clay	15	77
Volcanic glass	–	T
Carbonate unspec.	5	–
Foraminifers	40	1
Calc. nannofossils	T	3
Sponge spicules	T	–
Plant debris (spores)	–	T
Altered minerals	3	–

CARBONATE BOMB DATA:
•1, 7–9 cm = 15%
2, 80–82 cm = 6%

SITE 620 HOLE CORE 2R CORED INTERVAL 2615.4–2625.0 mbsl; 3.0–12.6 mbsf



LITHOLOGIC DESCRIPTION

CLAY with minor SILT blebs and laminae. CLAY is very dark grayish brown (2.5Y 3/2) in Section 1; dark gray (5Y 4/1) in Section 2 and 3; very dark gray (5Y 3/1) in Section 4; and dark olive gray (5Y 3/2) in Section 5 and Core Catcher. CLAY is dominantly homogeneous, with subtle CLAY-laminae in Section 3 and 4. Section 1 and 3 contain oxidized, dark brown (10YR 3/3) intervals. Core contains SILT blebs and minor, deformed, discontinuous and continuous thin SILT laminae.

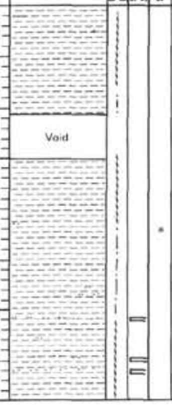
SMEAR SLIDE SUMMARY (%):

	1, 80	3, 77	5, 45
	D	M	D
Texture:			
Sand	0	5	0
Silt	15	75	10
Clay	85	20	90
Composition:			
Quartz	11	46	8
Feldspar	–	2	T
Mica	T	–	–
Heavy minerals	2	2	–
Clay	70	18	85
Volcanic glass	T	T	–
Carbonate unspec.	–	5	1
Foraminifers	T	20	4
Calc. nannofossils	15	2	1
Radiolarians	T	–	–
Sponge spicules	T	–	–
Plant debris (spores)	T	–	–
Altered minerals	2	5	1

SITE 620 HOLE CORE 3R CORED INTERVAL 2625.0–2634.6 mbsl; 12.6–22.2 mbsf

TIME–ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER (FORAMINIFERS / NANNOFOSSILS / RADIOLARIANS / DIATOMS)	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	FP (FG)	1, 2, 3	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY, dark gray (5Y 4/1) and homogenized with minor, tiny SILT blebs. Several thin, deformed, olive gray (5Y 5/2) SILT laminae occur in Section 3.

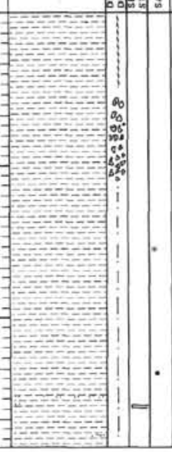
SMEAR SLIDE SUMMARY (%):

	2, 70
	D
Texture:	
Sand	0
Silt	15
Clay	85
Composition:	
Quartz	11
Feldspar	T
Mica	T
Heavy minerals	2
Clay	83
Volcanic glass	1
Foraminifers	1
Calc. nannofossils	2
Fish remains	T
Altered minerals	T

SITE 620 HOLE CORE 4R CORED INTERVAL 2634.6–2644.2 mbsl; 22.2–31.8 mbsf

TIME–ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER (FORAMINIFERS / NANNOFOSSILS / RADIOLARIANS / DIATOMS)	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	FM (FG)	1, 2, 3	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY, homogeneous, dark olive gray (5Y 3/2), and moderately to very deformed by drilling. Section 3 contains a 1.5 cm thick SILT laminae interbedded with CLAY at Section 3, 80 cm. A few tiny SILT blebs occur at the base of Section 3.

SMEAR SLIDE SUMMARY (%):

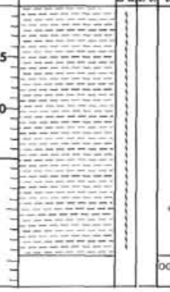
	2, 80
	D
Texture:	
Sand	0
Silt	25
Clay	75
Composition:	
Quartz	19
Feldspar	T
Heavy minerals	2
Clay	73
Volcanic glass	T
Carbonate unspec.	1
Foraminifers	2
Calc. nannofossils	2
Altered minerals	1

CARBONATE BOMB DATA:
•3, 59–61 cm = 8%

SITE 620 HOLE CORE 5R CORED INTERVAL 2644.2–2653.8 mbsl; 31.8–41.4 mbsf

TIME–ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER (FORAMINIFERS / NANNOFOSSILS / RADIOLARIANS / DIATOMS)	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	FM (FG)	1, 2	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

Dark olive gray (5Y 3/2), homogeneous CLAY with minor blebs and deformed color bands of weak red (2.5YR 4/2) CLAY. Entire core very deformed by drilling.

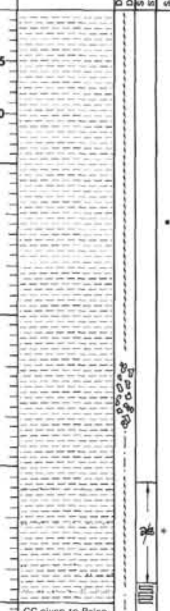
SMEAR SLIDE SUMMARY (%):

	2, 50
	D
Texture:	
Sand	0
Silt	25
Clay	75
Composition:	
Quartz	23
Feldspar	T
Clay	72
Volcanic glass	1
Glauconite	T
Foraminifers	T
Calc. nannofossils	3
Altered minerals	1

SITE 620 HOLE CORE 6R CORED INTERVAL 2653.8–2663.4 mbsl; 41.4–51.0 mbsf

TIME–ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER (FORAMINIFERS / NANNOFOSSILS / RADIOLARIANS / DIATOMS)	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	CM (FG)	1, 2, 3, 4, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY, dark gray (5Y 4/1 to 10YR 4/1) and highly deformed by drilling. Homogeneous to Section 4, 17 cm; faintly laminated from Section 4, 17–113 cm; distinctly laminated from Section 4, 113–134 cm with red, gray, and green laminae. Minor dark brown (10YR 3/3) CLAY blebs occur at Section 1, 70–150 cm and Section 2, 80–150 cm. Laminae in Section 4 are highly deformed, thin SILT and CLAY.

SMEAR SLIDE SUMMARY (%):

	4, 65
	D
Texture:	
Sand	0
Silt	15
Clay	85
Composition:	
Quartz	5
Clay	83
Volcanic glass	1
Pyrite (opaques)	3
Carbonate unspec.	1
Calc. nannofossils	2
Altered minerals	5

CARBONATE BOMB DATA:
•2, 60–62 cm = 4%

SITE 620 HOLE CORE 7R CORED INTERVAL 2663.4–2673.0 mbsl; 51.0–60.6 mbsf

TIME – ROCK UNIT: Pleistocene
BIOSTRATIGRAPHIC ZONE: F: Zone Y; N: *E. huxleyi* Zone
FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS — CM, FG
SECTION: 1, 2, 3, CC
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY: CC given to Paleo.
DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES

LITHOLOGIC DESCRIPTION

CLAY, Section 1 is dark gray (5Y 4/1); Section 2 and 3 are very dark grayish brown (2.5Y 3/2). CLAY is homogeneous and very disturbed and deformed by drilling. Section 2, 100–150 cm contains rare SILT blebs; Section 3 contains minor, very deformed SILT laminae.

SMEAR SLIDE SUMMARY (%):

	2, 115	3, 37	3, 41
	D	D	M
Texture:			
Sand	0	0	0
Silt	7	20	98
Clay	93	80	2
Composition:			
Quartz	10	10	89
Feldspar	–	T	1
Mica	–	–	T
Heavy minerals	2	–	–
Clay	85	79	2
Volcanic glass	–	2	1
Pyrite and opaques	–	3	2
Carbonate unspec.	2	3	4
Foraminifers	1	–	T
Calc. nannofossils	T	1	T
Plant debris (spores)	–	T	–
Altered minerals	–	2	1

CARBONATE BOMB DATA:
•2, 130–132 cm = 4%

SITE 620 HOLE CORE 8R CORED INTERVAL 2673.0–2682.6 mbsl; 60.6–70.2 mbsf

TIME – ROCK UNIT: Pleistocene
BIOSTRATIGRAPHIC ZONE: F: Zone Y; N: *E. huxleyi* Zone
FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS — CM, FG
SECTION: 1, CC
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY: CC given to Paleo.
DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES

LITHOLOGIC DESCRIPTION

CLAY, dark gray (10YR 4/1); homogeneous; very deformed by drilling.

SMEAR SLIDE SUMMARY (%):

	1, 74
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	5
Clay	80
Volcanic glass	T
Opaques	2
Carbonate unspec.	2
Calc. nannofossils	3
Altered minerals	8

SITE 620 HOLE CORE 9R CORED INTERVAL 2682.6–2692.2 mbsl; 70.2–79.8 mbsf

TIME – ROCK UNIT: Pleistocene
BIOSTRATIGRAPHIC ZONE: F: Zone Y; N: *E. huxleyi* Zone
FOSSIL CHARACTER: FORAMINIFERS, NANNOFOSSILS, RADIOLARIANS, DIATOMS — CM
SECTION: 1, 2, 3, 4, 5, 6
METERS: 0.5, 1.0
GRAPHIC LITHOLOGY: Void; Void; Void
DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES: OGP

LITHOLOGIC DESCRIPTION

CLAY, Section 1 is dark gray (10YR 4/1) becoming very dark grayish brown (2.5Y 3/2) downsection; Section 2, 5, and 6 are dark gray to very dark gray (5Y 3.5/1). CLAY is homogeneous and very disturbed and deformed by drilling. Section 1 and 2 contain minor dark gray (5Y 4/1) SILT blebs and discontinuous, inclined laminae.

SMEAR SLIDE SUMMARY (%):

	2, 105
	D
Texture:	
Sand	0
Silt	35
Clay	65
Composition:	
Quartz	12
Clay	60
Volcanic glass	2
Opaques	3
Carbonate unspec.	T
Calc. nannofossils	5
Altered minerals	8

SITE 620 HOLE CORE 10R CORED INTERVAL 2692.2–2701.8 mbsl; 79.8–89.4 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER	SECTION	METERS	GRAPHIC LITHOLOGY
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	CM FG	1, 2, 3, CC	0.5, 1.0	CC given to Paleo.

LITHOLOGIC DESCRIPTION

CLAY, dark gray (5Y 4/1) in Section 1; dark gray to very dark gray (5Y 3.5/1) in Section 2 and in Section 3, 30–144 cm; dark olive gray (5Y 3/2) in Section 3, 0–30 cm. CLAY is homogeneous and very disturbed and deformed by drilling. Section 3 contains minor inclined, folded, and discontinuous SILT laminae and SILT blebs.

SMEAR SLIDE SUMMARY (%):

	3, 22	3, 80
	D	D
Texture:		
Sand	T	0
Silt	15	10
Clay	85	90
Composition:		
Quartz	8	7
Feldspar	T	–
Heavy minerals	–	1
Clay	83	88
Volcanic glass	5	–
Carbonate unspec.	1	1
Foraminifers	T	1
Calc. nannofossils	2	2
Altered minerals	1	T

CARBONATE BOMB DATA:

•3, 50–52 cm = 6%

SITE 620 HOLE CORE 11R CORED INTERVAL 2701.8–2711.0 mbsl; 89.4–98.6 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER	SECTION	METERS	GRAPHIC LITHOLOGY
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	AM	1, 2, CC	0.5, 1.0	CC given to Paleo.

LITHOLOGIC DESCRIPTION

CLAY. Very dark gray (5Y 3/1); homogeneous; moderately deformed by drilling. Section 1 contains rare SILT blebs and discontinuous SILT laminae.

SMEAR SLIDE SUMMARY (%):

	1, 70
	D
Texture:	
Sand	0
Silt	25
Clay	75
Composition:	
Quartz	10
Clay	72
Volcanic glass	T
Opaques	5
Carbonate unspec.	5
Calc. nannofossils	3
Altered minerals	5

SITE 620 HOLE CORE 12R CORED INTERVAL 2711.0–2720.2 mbsl; 98.6–107.8 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER	SECTION	METERS	GRAPHIC LITHOLOGY	SAMPLES
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	CM FG	1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0	Void; Void; Void; Void; CC given to Paleo.	OGP

LITHOLOGIC DESCRIPTION

CLAY. Very dark grayish brown (2.5YR 3/2); homogeneous; very disturbed by drilling. Rare SILT blebs in Section 2 and 3.

SMEAR SLIDE SUMMARY (%):

	3, 10
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	15
Heavy minerals	1
Clay	68
Volcanic glass	5
Pyrite and opaques	1
Micronodules	1
Carbonate unspec.	8
Calc. nannofossils	1
Plant debris (spores)	T

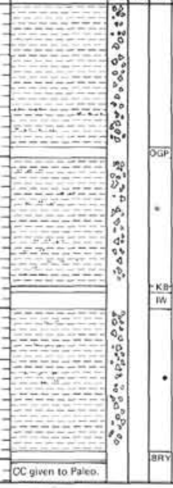
CARBONATE BOMB DATA:

•3, 30–32 cm = 6%

SITE 620 HOLE CORE 13R CORED INTERVAL 2720.2–2729.4 mbsl; 107.8–117.0 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	CM				1, 2, 3, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY with minor SILT blebs. Homogeneous; highly disturbed by drilling. CLAY is olive gray (5Y 4/2), changing to dark olive gray (5Y 3/2) in Section 3.

SMEAR SLIDE SUMMARY (%):

	2, 50 D
Texture:	
Sand	0
Silt	25
Clay	75
Composition:	
Quartz	20
Clay	70
Pyrite and opaques	1
Carbonate unspec.	5
Foraminfiers	T
Calc. nannofossils	3

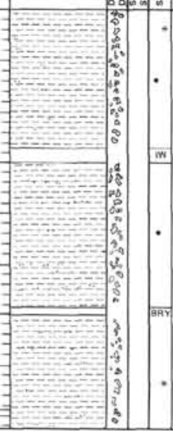
CARBONATE BOMB DATA:

•3, 70–72 cm = 5%

SITE 620 HOLE CORE 14R CORED INTERVAL 2729.4–2739.0 mbsl; 117.0–126.6 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	FM	FG			1, 2, 3, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY. Very dark grayish brown (2.5YR 3/2); homogeneous; brecciated and very deformed by drilling. Minor SILT blebs and deformed laminae.

SMEAR SLIDE SUMMARY (%):

	1, 20 D	3, 70 D
Texture:		
Sand	0	0
Silt	20	10
Clay	80	90
Composition:		
Quartz	15	8
Heavy minerals	T	T
Clay	79	89
Volcanic glass	—	1
Carbonate unspec.	T	T
Foraminifers	1	1
Calc. nannofossils	1	1
Plant debris (spores)	T	—
Altered minerals	4	T

CARBONATE BOMB DATA:

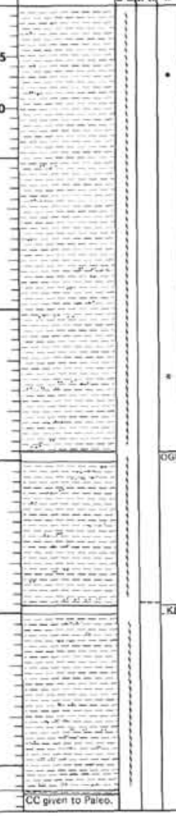
•1, 70–72 cm = 6%

2, 70–72 cm = 8%

SITE 620 HOLE CORE 15R CORED INTERVAL 2739.0–2748.6 mbsl; 126.6–136.2 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	CM				1, 2, 3, 4, 5, 6, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY. Very dark gray (10YR 3/1) changing to dark gray (5Y 4/1) at Section 4, 135 cm; very weak color-banding is present. CLAY is homogeneous and very deformed by drilling. Entire core contains tiny SILT blebs; these blebs seem to increase in abundance downcore.

SMEAR SLIDE SUMMARY (%):

	3, 70 D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	8
Feldspar	2
Mica	8
Heavy minerals	T
Clay	80
Carbonate unspec.	2
Foraminifers	T
Calc. nannofossils	T

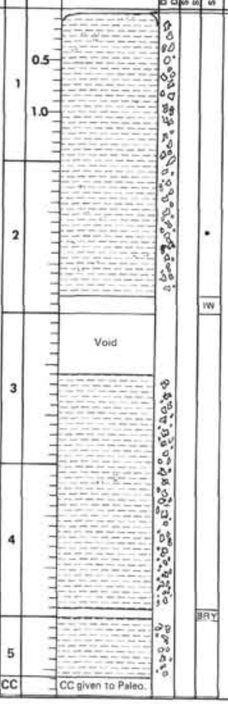
CARBONATE BOMB DATA:

•1, 70–72 cm = 8%

SITE 620 HOLE CORE 16R CORED INTERVAL 2748.6–2758.2 mbsl; 136.2–145.8 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	CM	FG		

SECTION / METERS / GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY. Section 1, 4, and 5 are dark olive gray (5Y 3/2); Section 2 and 3 are very dark grayish brown (2.5Y 3/2). Color change is gradational and very subtle. CLAY is homogeneous; very disturbed by drilling; and contains rare, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

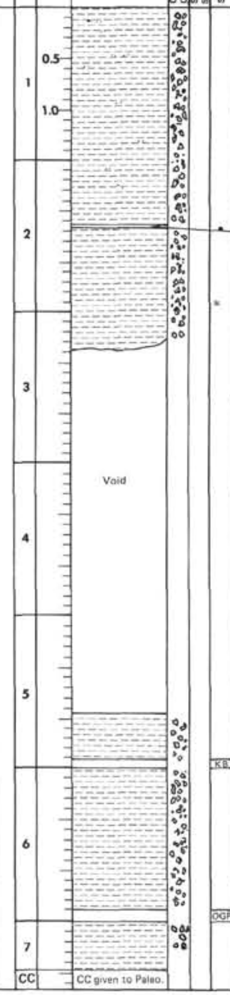
	2, 70
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	10
Heavy minerals	1
Clay	76
Volcanic glass	3
Palagonite	1
Pyrite and opaques	2
Micronodules	T
Carbonate unspec.	2
Calc. nannofossils	5
Plant debris (spores)	T

CARBONATE BOMB DATA:
*2, 70–72 cm = 8%

SITE 620 HOLE CORE 17R CORED INTERVAL 2758.2–2767.8 mbsl; 145.8–155.4 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	AM			

SECTION / METERS / GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY, dark olive gray (5Y 3/2); homogeneous; very disturbed by drilling. Core contains large void space. CLAY includes rare, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

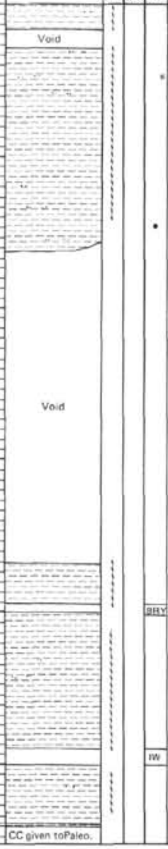
	2, 140
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	10
Heavy minerals	2
Clay	78
Volcanic glass	3
Pyrite and opaques	3
Micronodules	1
Carbonate unspec.	2
Calc. nannofossils	1
Sponge spicules	T
Plant debris (spores)	T

CARBONATE BOMB DATA:
*2, 70–72 cm = 4%

SITE 620 HOLE CORE 18R CORED INTERVAL 2767.8–2777.4 mbsl; 155.4–165.0 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	CM	FG			1, 2, 3, 4, 5, 6, CC	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

CLAY: Dark olive gray (5Y 3/2), with subtle color mottling that's not distinguishable enough to sketch. CLAY is very deformed by drilling; core contains many void spaces. CLAY is homogeneous with rare, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

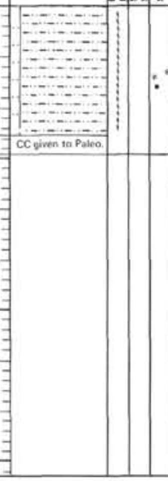
	1, 70
	D
Texture:	
Sand	0
Silt	12
Clay	88
Composition:	
Quartz	15
Feldspar	2
Mica	5
Heavy minerals	1
Clay	72
Carbonate unspec.	3
Foraminifers	T
Calc. nannofossils	2

CARBONATE BOMB DATA:
•2, 70–72 cm = 5%

SITE 620 HOLE CORE 19R CORED INTERVAL 2777.4–2787.0 mbsl; 165.0–174.6 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	CM				1, CC, 2, 3	0.5, 1.0

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

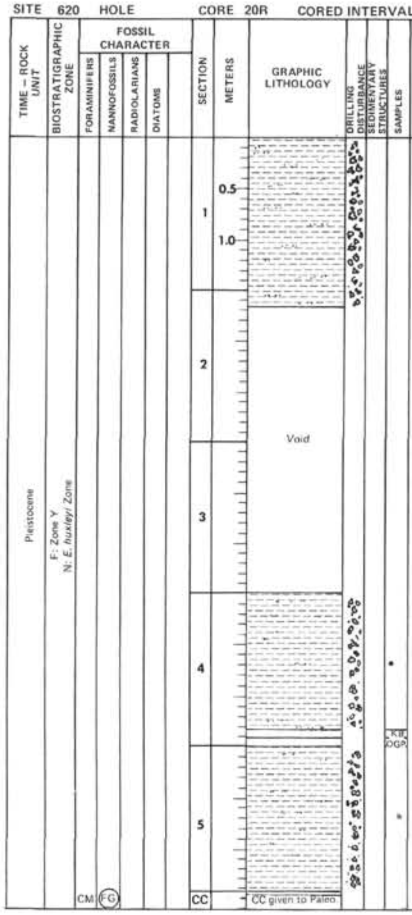
CLAY with SILT laminae. Dark olive gray (5Y 3/2). Core is very deformed by drilling. Minor color bands of very dark grayish brown (10YR 3/2) and black (5Y 2.5/2) MUD. Laminae of SILT are abundant; no grading observed, but may be due to core disturbance.

SMEAR SLIDE SUMMARY (%):

	1, 62	1, 70
	M	D
Texture:		
Sand	5	0
Silt	90	10
Clay	5	90
Composition:		
Quartz	60	3
Feldspar	5	–
Mica	1	1
Heavy minerals	1	T
Clay	20	87
Volcanic glass	1	2
Pyrite and opaques	1	1
Micronodules	1	1
Carbonate unspec.	10	3
Foraminifers	T	–
Calc. nannofossils	–	2
Diatoms	T	–
Sponge spicules	T	–

CARBONATE BOMB DATA:
•1, 80–82 cm = 10%

SITE 620 HOLE CORE 20R CORED INTERVAL 2787.0–2795.0 mbsl; 174.6–182.6 mbsf



LITHOLOGIC DESCRIPTION

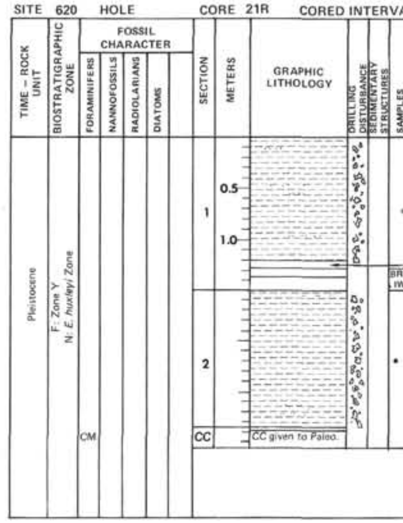
CLAY. Dark olive gray (5Y 3/2–5Y 2.5/2), homogeneous, and very disturbed by drilling. Core contains common, tiny SILT and SAND blebs; no layering evident.

SMEAR SLIDE SUMMARY (%):

	5, 70
	D
Texture:	
Sand	0
Silt	10
Clay	90
Composition:	
Quartz	5
Clay	90
Volcanic glass	2
Pyrite and opaques	1
Carbonate unspec.	2

CARBONATE BOMB DATA:
*4, 70–72 cm = 5%

SITE 620 HOLE CORE 21R CORED INTERVAL 2796.4–2805.8 mbsl; 184.0–193.4 mbsf



LITHOLOGIC DESCRIPTION

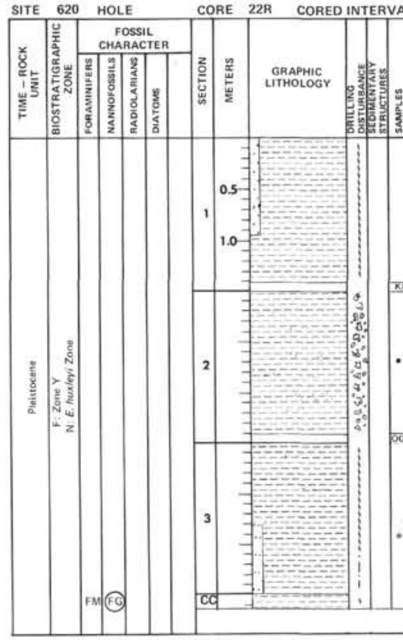
CLAY. Dark gray–very dark gray (10YR 4/1–10YR 3.5/1) with rare SILT blebs (<1% of core) and minor color mottling.

SMEAR SLIDE SUMMARY (%):

	1, 70
	D
Texture:	
Sand	0
Silt	25
Clay	75
Composition:	
Quartz	10
Feldspar	2
Mica	3
Heavy minerals	2
Clay	74
Volcanic glass	4
Pyrite and opaques	1
Carbonate unspec.	3
Calc. nannofossils	1

CARBONTE BOMB DATA:
*2, 70–72 cm = 5%

SITE 620 HOLE CORE 22R CORED INTERVAL 2805.8–2815.2 mbsl; 193.4–202.8 mbsf



LITHOLOGIC DESCRIPTION

CLAY with SILT blebs and distorted SILT laminae.

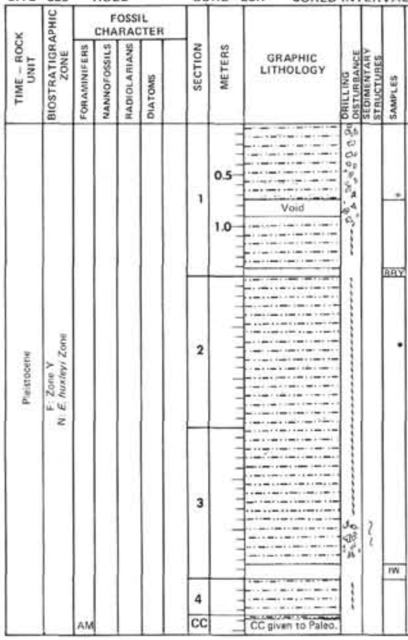
CLAY is dark gray (5Y 4/1) in Section 1 and 2; dark greenish gray (5GY 4/1) in Section 3; dark olive gray (5Y 3/2) in the Core Catcher. SILT blebs are gray (5Y 5/1) and are common in Section 1, 0–95 cm and Section 2, 20–115 cm. Section 3 contain SILT blebs (more abundant toward base of the section) and minor very dark grayish brown (10YR 3/2) color bands of CLAY.

SMEAR SLIDE SUMMARY (%):

	3, 81	3, 91
	D	M
Texture:		
Sand	0	T
Silt	10	40
Clay	90	60
Composition:		
Quartz	6	22
Feldspar	–	2
Mica	–	1
Heavy minerals	–	1
Clay	90	60
Volcanic glass	2	2
Glauconite	–	5
Pyrite and opaques	1	2
Micronodules	–	T
Carbonate unspec.	T	5
Calc. nannofossils	1	–

CARBONATE BOMB DATA:
*2, 70–72 cm = 7%

SITE 620 HOLE CORE 23R CORED INTERVAL 2815.2–2824.7 mbsl; 202.8–212.3 mbsf



LITHOLOGIC DESCRIPTION

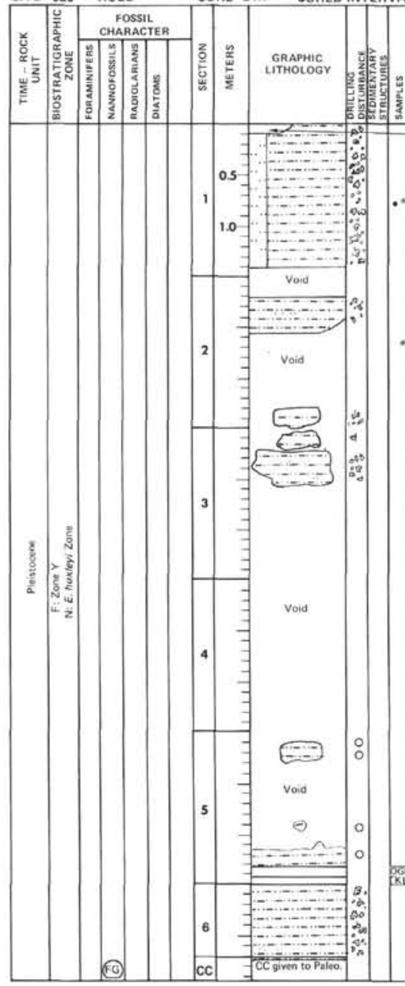
MUD. Very dark gray (5Y 3/1) with minor bands of dark grayish brown (10YR 4/2) MUD in Section 1. Core is homogeneous; very deformed by drilling. Sections 1–3 contain very rare, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

	1, 70
	D
Texture:	
Sand	2
Silt	35
Clay	63
Composition:	
Quartz	50
Feldspar	5
Mica	4
Heavy minerals	2
Clay	35
Carbonate unspec.	4
Calc. nannofossils	T
Radiolarians	T

CARBONATE BOMB DATA:
*2, 70–72 cm = 7%

SITE 620 HOLE CORE 24R CORED INTERVAL 2824.7–2834.2 mbsl; 212.3–221.8 mbsf



LITHOLOGIC DESCRIPTION

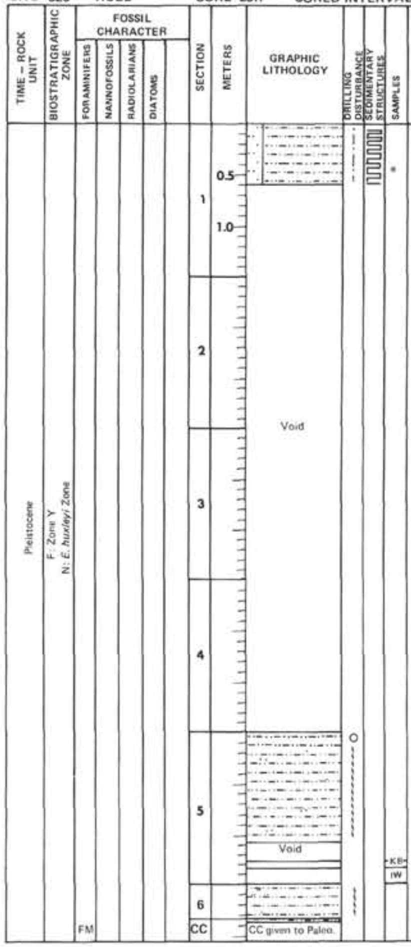
MUD. Dark olive gray (5Y 3/2). Very deformed by drilling; this core contains a lot of void spaces. Section 1 contains abundant SILT to very fine grained SAND blebs and deformed laminae up to 1 cm thick. Rest of core consists of homogeneous MUD with only rare, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

	1, 78	2, 66
	D	M
Texture:		
Sand	0	T
Silt	40	40
Clay	60	60
Composition:		
Quartz	12	16
Feldspar	2	1
Mica	1	2
Heavy minerals	1	1
Clay	70	60
Volcanic glass	4	2
Glauconite	–	10
Pyrite and opaques	3	2
Micronodules	1	T
Carbonate unspec.	5	4
Foraminifers	T	1
Calc. nannofossils	1	1
Radiolarians	T	–
Sponge spicules	T	–
Plant debris	–	T

CARBONATE BOMB DATA:
*1, 80–82 cm = 7%

SITE 620 HOLE CORE 25R CORED INTERVAL 2834.2–2843.7 mbsl; 221.8–231.3 mbsf



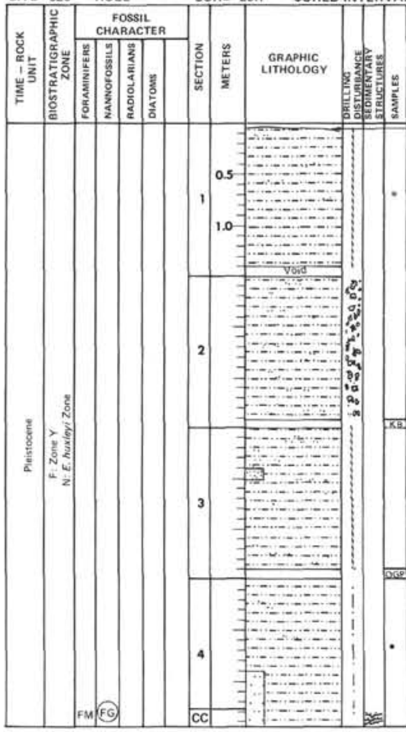
LITHOLOGIC DESCRIPTION

MUD. Very dark gray (5Y 3/1). Section 1 is only moderately disturbed and contains abundant, thin SILT laminae. Section 2, 3, and 4 are entirely void. Section 5 and 6 are very deformed and the MUD in them contains minor to common, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

	1, 48
	D
Texture:	
Sand	1
Silt	30
Clay	69
Composition:	
Quartz	50
Feldspar	4
Mica	8
Heavy minerals	2
Clay	30
Pyrite	1
Carbonate unspec.	5
Radiolarians	T

SITE 620 HOLE CORE 26R CORED INTERVAL 2843.7–2853.3 mbsl; 231.3–240.9 mbsf



LITHOLOGIC DESCRIPTION

MUD with minor SILT blebs. MUD is dark olive gray (5Y 3/2), and dominantly homogeneous and very disturbed by drilling. SILT blebs become more abundant downcore; Section 3, 40–50 cm, Section 4, 100–130 cm, and the Core Catcher contain distorted SILT laminae and dense SILT blebs. The SILT laminae in Core Catcher are T_{cd} turbidites with microlaminations showing low-angle climbing ripple-laminae.

SMEAR SLIDE SUMMARY (%):

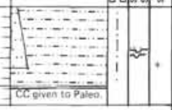
	1, 70
	D
Texture:	
Sand	1
Silt	40
Clay	59
Composition:	
Quartz	40
Feldspar	6
Mica	7
Heavy minerals	2
Clay	41
Pyrite	1
Carbonate unspec.	3
Calc. nannofossils	T

CARBONATE BOMB DATA:
*4, 70–72 cm = 7%

SITE 620 HOLE CORE 27R CORED INTERVAL 2853.3–2862.9 mbsl; 240.9–250.5 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	FM				1	0.5
						CC	

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

MUD with SILT laminae.

MUD is very dark gray (5Y 3/1).

SILT laminae are dark gray (5Y 4/1). Laminae are graded, have scoured bases; some have climbing ripples. Vary in thickness from ~2 cm to 0.2 cm; some of the thinner ones are interlaminated with MUD.

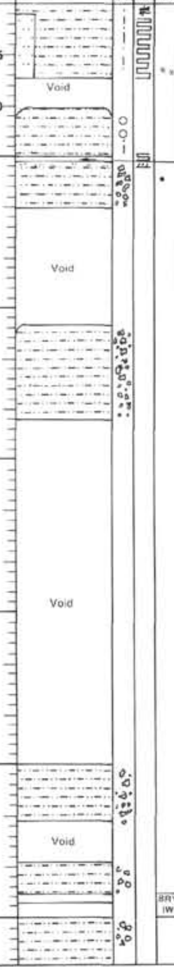
SMEAR SLIDE SUMMARY (%):

	1, 60
	D
Texture:	
Sand	0
Silt	40
Clay	60
Composition:	
Quartz	15
Feldspar	4
Mica	5
Heavy minerals	2
Clay	57
Volcanic glass	2
Glauconite	5
Pyrite and opaques	2
Micronodules	1
Carbonate unspec.	4
Calc. nannofossils	3
Radiolarians	T

SITE 620 HOLE CORE 28R CORED INTERVAL 2862.9–2872.5 mbsl; 250.5–260.1 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS
Pleistocene	F: Zone Y; N: *E. huxleyi* Zone	CM	FG			1	0.5, 1.0
						2	
						3	
						4	
						5	
						6	
						7	

GRAPHIC LITHOLOGY / DRILLING DISTURBANCE / SEDIMENTARY STRUCTURES / SAMPLES



LITHOLOGIC DESCRIPTION

MUD. Dominantly very dark gray (10YR 3/1); moderately to very deformed or brecciated by drilling. Many voids.

Section 1, 0–73 cm contains abundant SILT laminae. SILT laminae are dominantly olive gray (5Y 4.5/2), range from 1–3 cm thick, and have sharp scoured bases and sharp tops. SILT laminae also occur at Section 1, 140–150 cm and Section 2, 0–10 cm.

Core below Section 2, 10 cm contains homogeneous MUD with very rare SILT blebs.

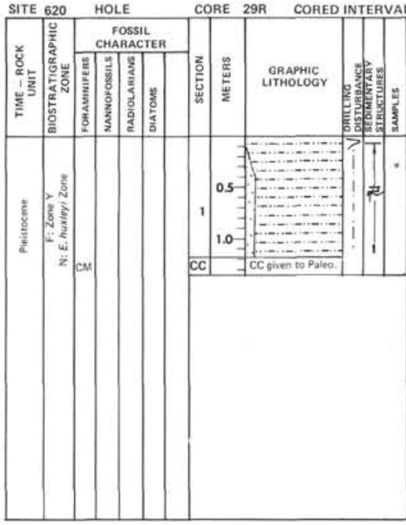
SMEAR SLIDE SUMMARY (%):

	1, 63	1, 67
	M	D
Texture:		
Sand	3	0
Silt	87	35
Clay	10	65
Composition:		
Quartz	60	32
Feldspar	5	T
Mica	3	–
Heavy minerals	13	1
Clay	8	60
Volcanic glass	–	2
Glauconite	T	–
Opaques	2	–
Carbonate unspec.	2	–
Foraminifers	–	2
Calc. nannofossils	–	T
Altered minerals	7	3

CARBONATE BOMB DATA:

•2, 22–24 cm = 8%

SITE 620 HOLE CORE 29R CORED INTERVAL 2872.5–2882.1 mbsl; 260.1–269.7 mbsf



LITHOLOGIC DESCRIPTION

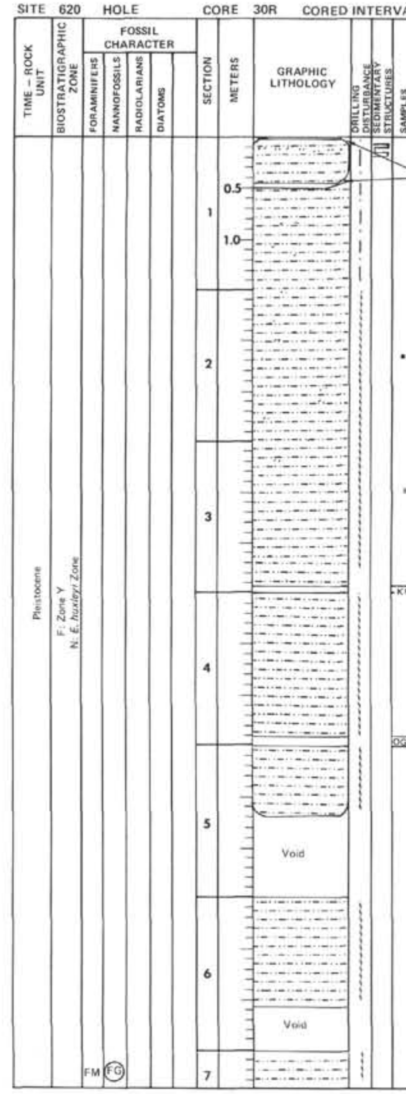
Section 1, 0–7 cm: MUD, dark olive gray (5Y 3/2), homogeneous, and very deformed.

Section 1, 7–118 cm: faintly laminated, dark olive gray (5Y 3/2), moderately deformed MUD. Laminae are thin SILTS.

SMEAR SLIDE SUMMARY (%):

	1, 30
	D
Texture:	
Sand	4
Silt	55
Clay	41
Composition:	
Quartz	53
Feldspar	2
Mica	T
Heavy minerals	2
Clay	31
Volcanic glass	T
Carbonate unspec.	2
Foraminifers	5
Calc. nannofossils	T
Altered minerals	5

SITE 620 HOLE CORE 30R CORED INTERVAL 2882.1–2891.7 mbsl; 269.7–279.3 mbsf



LITHOLOGIC DESCRIPTION

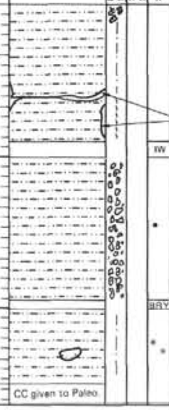
MUD. Very dark gray (10YR 3/1), homogeneous, very disturbed by drilling, with rare, tiny SILT blebs. Section 1, 10–40 cm contains several deformed, thin SILT laminae.

SMEAR SLIDE SUMMARY (%):

	3, 50
	D
Texture:	
Sand	0
Silt	35
Clay	65
Composition:	
Quartz	32
Feldspar	4
Heavy minerals	1
Clay	55
Carbonate unspec.	1
Foraminifers	1
Calc. nannofossils	1
Plant debris (spores)	T
Altered minerals	5

CARBONATE BOMB DATA:
•2, 70–72 cm = 8%

SITE 620 HOLE CORE 31R CORED INTERVAL 2891.7–2901.3 mbsl; 279.3–288.9 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	CM				1, 2, 3, CC	0.5, 1.0				IW, BRY	see below

LITHOLOGIC DESCRIPTION

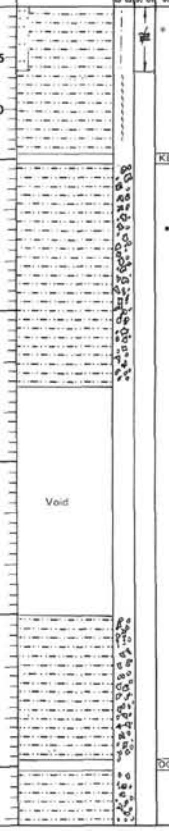
MUD. Very dark gray (10YR 3/1) and homogeneous. Section 3 contains a very dark gray (5Y 3/1) SILT clast at 42–47 cm.

SMEAR SLIDE SUMMARY (%):

	3, 35	3, 45
	D	M
Texture:		
Sand	0	1
Silt	35	79
Clay	65	20
Composition:		
Quartz	35	60
Feldspar	T	2
Heavy minerals	3	—
Clay	60	20
Volcanic glass	T	—
Opaques	—	5
Carbonate unspec.	T	5
Foraminifers	1	—
Calc. nannofossils	T	1
Altered minerals	1	7

CARBONATE BOMB DATA:
•2, 70–72 cm = 8%

SITE 620 HOLE CORE 32R CORED INTERVAL 2901.3–2910.9 mbsl; 288.9–298.5 mbsf

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	FM	FG			1, 2, 3, 4, 5, 6	0.5, 1.0				KB, OGP	see below

LITHOLOGIC DESCRIPTION

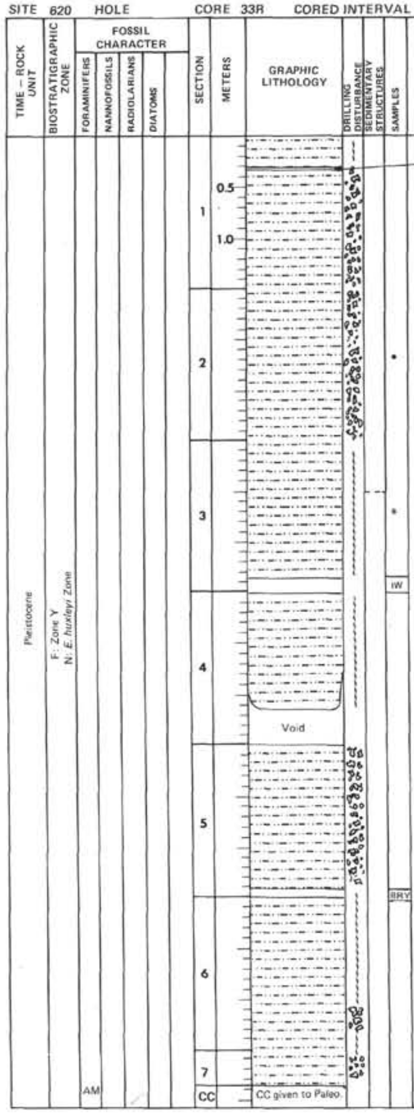
MUD. Very dark gray (10YR 3/1), homogeneous, and very disturbed by drilling. Section 1, 0–60 cm is faintly laminated with irregular SILT and MUD laminae. Section 5 and 6 contain rare, tiny SILT blebs.

SMEAR SLIDE SUMMARY (%):

	1, 24
	D
Texture:	
Sand	0
Silt	30
Clay	70
Composition:	
Quartz	10
Clay	66
Volcanic glass	T
Opaques	5
Micronodules	2
Carbonate unspec.	5
Calc. nannofossils	4
Altered minerals	8

CARBONATE BOMB DATA:
•2, 70–72 cm = 9%

SITE 620 HOLE CORE 33R CORED INTERVAL 2910.9–2920.5 mbsl; 298.5–308.1 mbsf



LITHOLOGIC DESCRIPTION

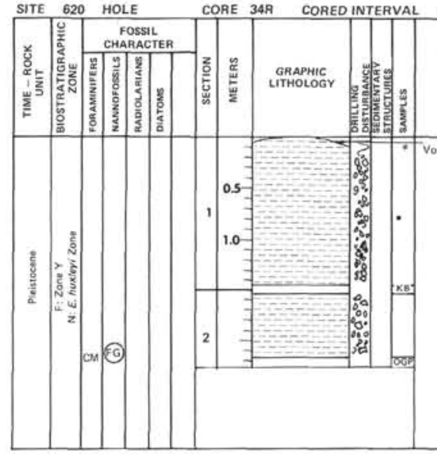
MUD. Very dark gray (10YR 3/1) changing to dark gray (10YR 4/1) at Section 3, 50 cm; color change is gradational. MUD is homogeneous and very disturbed by drilling.

SMEAR SLIDE SUMMARY (%):

	3, 70
	D
Texture:	
Sand	0
Silt	30
Clay	70
Composition:	
Quartz	27
Feldspar	T
Clay	65
Volcanic glass	T
Carbonate unspec.	1
Foraminifers	4
Calc. nannofossils	1
Sponge spicules	T
Altered minerals	2

CARBONATE BOMB DATA:
*2, 70–72 cm = 10%

SITE 620 HOLE CORE 34R CORED INTERVAL 2920.5–2930.1 mbsl; 308.1–317.7 mbsf



LITHOLOGIC DESCRIPTION

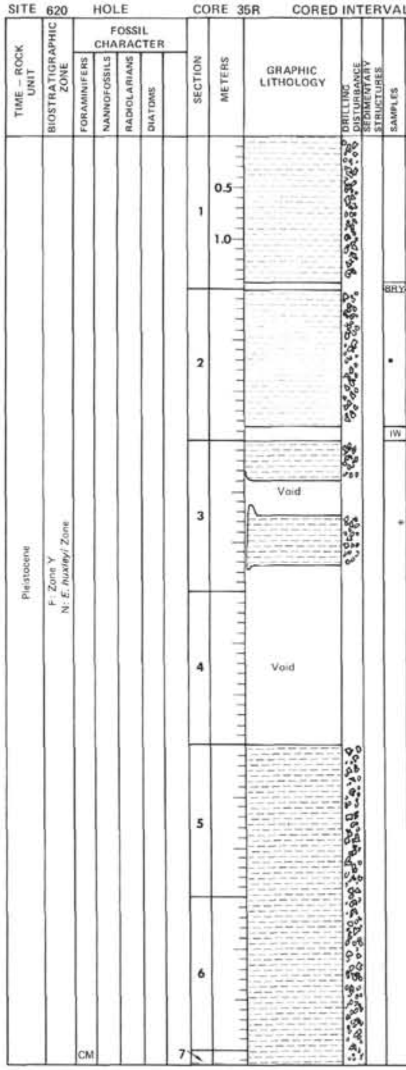
CLAY. Very dark gray (10YR 3/1), homogeneous, and very disturbed by drilling.

SMEAR SLIDE SUMMARY (%):

	1, 10
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	10
Clay	77
Carbonate unspec.	6
Calc. nannofossils	3
Plant debris (spores)	T
Altered minerals	4

CARBONATE BOMB DATA:
*1, 80–82 cm = 11%

SITE 620 HOLE CORE 35R CORED INTERVAL 2930.1–2939.7 mbsl; 317.7–327.3 mbsf



LITHOLOGIC DESCRIPTION

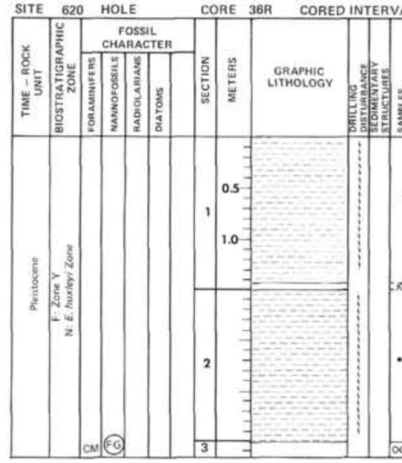
CLAY. Dark gray to very dark gray (5Y 4/1–5Y 3/1), homogeneous, and very disturbed by drilling.

SMEAR SLIDE SUMMARY (%):

	3, 83
	D
Texture:	
Sand	0
Silt	10
Clay	90
Composition:	
Quartz	7
Heavy minerals	T
Clay	90
Volcanic glass	T
Carbonate unspec.	T
Foraminifers	T
Calc. nannofossils	3

CARBONATE BOMB DATA:
•2, 70–72 cm = 8%

SITE 620 HOLE CORE 36R CORED INTERVAL 2939.7–2949.3 mbsl; 327.3–336.9 mbsf



LITHOLOGIC DESCRIPTION

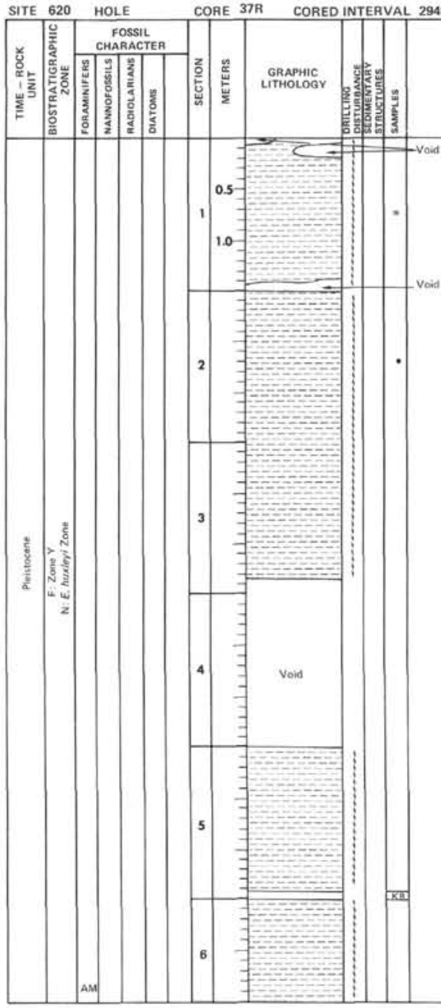
CLAY. Very dark gray (5Y 3/1), homogeneous, and very deformed by drilling.

SMEAR SLIDE SUMMARY (%):

	1, 60
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	10
Feldspar	2
Mica	5
Heavy minerals	2
Clay	80
Pyrite and opaques	1
Radiolarians	T

CARBONATE BOMB DATA:
•2, 70–72 cm = 10%

SITE 620 HOLE CORE 37R CORED INTERVAL 2949.3–2958.9 mbsl; 336.9–346.5 mbsf



LITHOLOGIC DESCRIPTION

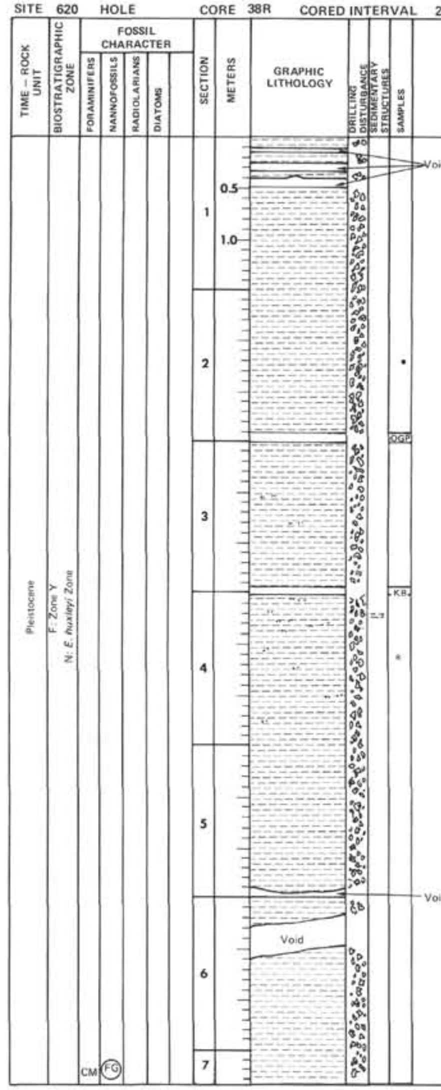
CLAY. Dark olive gray (5Y 3/2), homogeneous, and very deformed by drilling.

SMEAR SLIDE SUMMRY (%):

	1, 78
	D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	15
Feldspar	4
Mica	8
Heavy minerals	1
Clay	64
Opaques	1
Carbonate unspec.	6
Calc. nannofossils	1
Plant debris	T

CARBONATE BOMB DATA:
*2, 70–72 cm = 9%

SITE 620 HOLE CORE 38R CORED INTERVAL 2958.9–2968.4 mbsl; 346.5–356.0 mbsf



LITHOLOGIC DESCRIPTION

CLAY. Dark olive gray (5Y 3/2), homogeneous, and very disturbed by drilling. Section 3 and 4 contain rare, tiny SILT blebs. Section 4 contains several, very faint brown CLAY color bands at 15–20 cm.

SMEAR SLIDE SUMMARY (%):

	4, 60
	D
Texture:	
Sand	T
Silt	20
Clay	80
Composition:	
Quartz	15
Mica	3
Heavy minerals	1
Clay	73
Glauconite	1
Pyrite and opaques	1
Micronodules	1
Carbonate unspec.	5
Calc. nannofossils	T
Sponge spicules	5

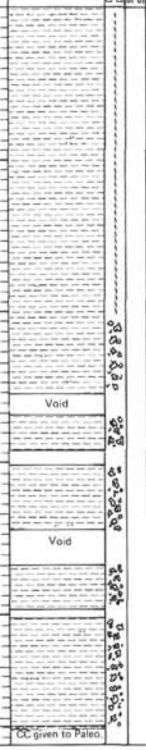
CARBONATE BOMB DATA:
*2, 70–72 cm = 10%

SITE 620 HOLE CORE 39R CORED INTERVAL 2968.4–2977.9 mbsl; 356.0–365.5 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	AG				1 CC	0.5	CC given to Paleo.				CLAY. Dark olive gray (5Y 3/2); homogeneous; very disturbed by drilling.

SITE 620 HOLE CORE 40R CORED INTERVAL 2977.9–2987.4 mbsl; 365.5–375.0 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	AG	FG			1 2 3 4 5 CC	0.5 1.0	Void Void CC given to Paleo.			* • IW BRY	see below



CLAY. Dark gray (5Y 4/1) with very minor color banding of very dark gray (5Y 3/1) CLAY. Core is very disturbed by drilling; disturbance increases downcore. CLAY includes rare SILT blebs; Section 1 contains two very thin SILT laminae.

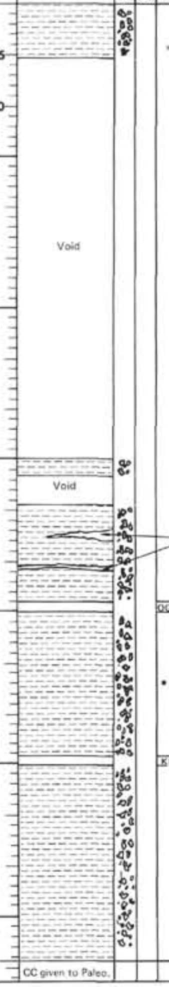
SMEAR SLIDE SUMMARY (%):

	1, 80
	D
Texture:	
Sand	0
Silt	10
Clay	90
Composition:	
Quartz	8
Feldspar	2
Mica	5
Heavy minerals	1
Clay	80
Opaques	1
Carbonate unspec.	3
Calc. nannofossils	T

CARBONATE BOMB DATA:
•2, 70–72 cm = 11%

SITE 620 HOLE CORE 41R CORED INTERVAL 2987.4–2996.9 mbsl; 375.0–384.5 mbsf

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
Pleistocene	F: Zone Y N: *E. huxleyi* Zone	AG				1 2 3 4 5 6 7 CC	0.5 1.0	Void Void Void CC given to Paleo.			* OGP • KB	see below



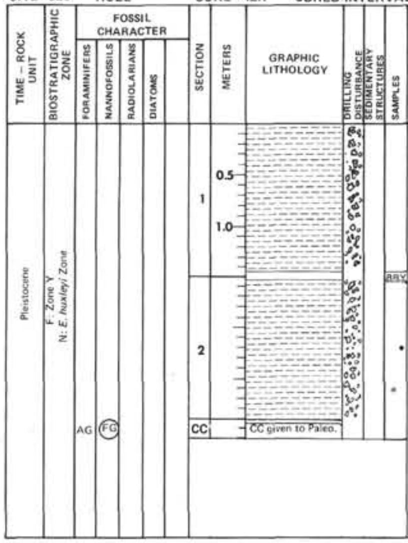
CLAY. Very dark grayish brown (2.5Y 3/2). Very disturbed by drilling; entire core contains gas bubble "pockets" typically 1–10 mm in diameter, giving core surface a somewhat spongy texture.

SMEAR SLIDE SUMMARY (%):

	1, 40
	D
Texture:	
Sand	0
Silt	12
Clay	88
Composition:	
Quartz	5
Mica	2
Heavy minerals	T
Clay	89
Pyrite and opaques	1
Carbonate unspec.	3
Calc. nannofossils	T

CARBONATE BOMB DATA:
•5, 70–72 cm = 19%

SITE 620 HOLE CORE 42R CORED INTERVAL 3996.9–3006.4 mbsl; 384.5–394.0 mbsf



LITHOLOGIC DESCRIPTION

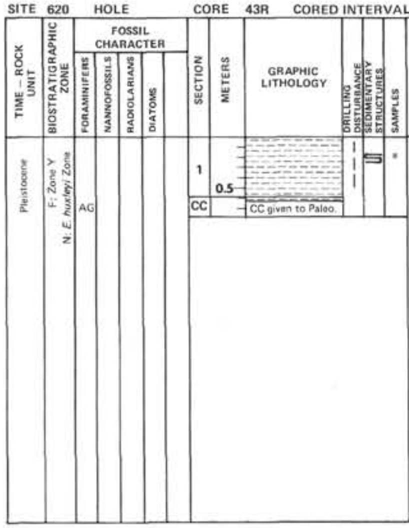
CLAY. Very disturbed by drilling; entire core contains gas bubble "pockets" commonly up to ~1 cm diameter, giving core surface a spongy texture. Section 1 is dark grayish brown (10YR 4/2) with tiny, rare dark gray (10YR 4/1) CLAY zones. Section 2 is dark brown (7.5YR 3/2) with dark olive gray (5Y 3/2) CLAY zones.

SMEAR SLIDE SUMMARY (%):

	2, 110 D
Texture:	
Sand	0
Silt	15
Clay	85
Composition:	
Quartz	7
Mica	2
Heavy minerals	1
Clay	83
Volcanic glass	T
Pyrite and opaques	2
Carbonate unspec.	5
Calc. nannofossils	T
Sponge spicules	T

CARBONATE BOMB DATA:
•2, 70–72 cm = 9%

SITE 620 HOLE CORE 43R CORED INTERVAL 3006.4–3015.4 mbsl; 394.0–403.5 mbsf



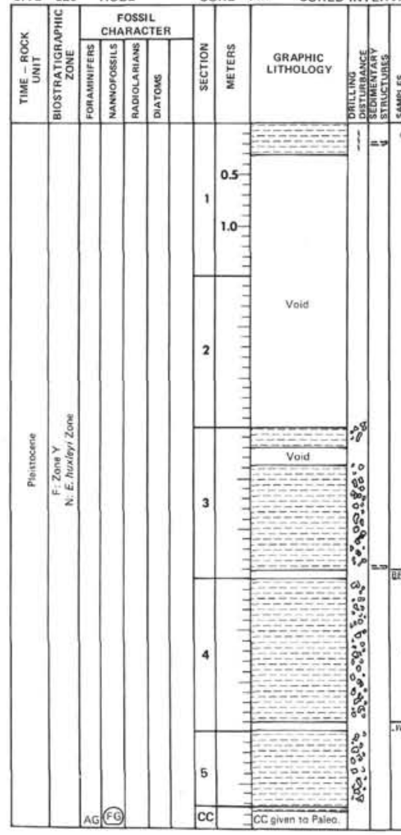
LITHOLOGIC DESCRIPTION

CLAY. Dark brown (7.5YR 3/2) from Section 1, 0–23 cm; distinctly color banded with dark brown (7.5YR 3/2) and very dark grayish brown (10YR 3/2) from Section 1, 23–35 cm; very dark grayish brown (10YR 3/2) from Section 1, 35–58 cm. Small gas bubble "pockets" give core surface a somewhat spongy texture.

SMEAR SLIDE SUMMARY (%):

	1, 20 D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	25
Feldspar	4
Mica	3
Heavy minerals	1
Clay	63
Opaques	1
Carbonate unspec.	2
Foraminifers	T
Calc. nannofossils	1
Sponge spicules	T

SITE 620 HOLE CORE 44R CORED INTERVAL 3015.9–3025.5 mbsl; 403.5–413.1 mbsf



LITHOLOGIC DESCRIPTION

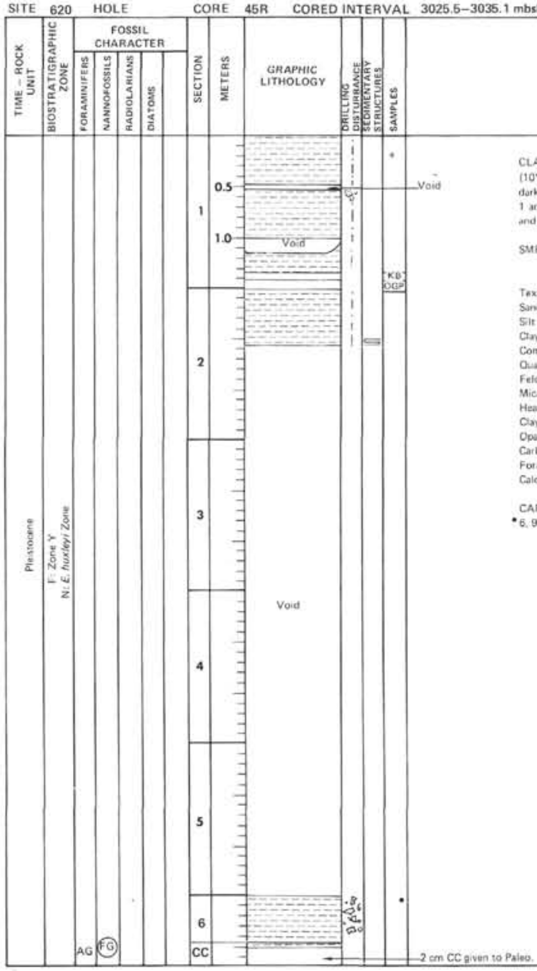
CLAY. Homogeneous; very disturbed by drilling. Section 1 is very dark grayish brown (10YR 3/2); Section 3 is dark gray (10YR 4/1); Section 4 and 5 are dark brown (7.5YR 3/2). Section 1 (20–30 cm, Section 3 (130–140 cm), and Section 4 contain very faint, discontinuous color banding of dark brown (7.5YR 3/2–7.5YR 4/2).

SMEAR SLIDE SUMMARY (%):

	1, 15 D
Texture:	
Sand	0
Silt	20
Clay	80
Composition:	
Quartz	10
Mica	1
Heavy minerals	1
Clay	77
Pyrite and opaques	1
Micronodules	T
Carbonate unspec.	10
Calc. nannofossils	T

CARBONATE BOMB DATA:
•4, 70–72 cm = 14%

SITE 620 HOLE CORE 45R CORED INTERVAL 3025.5–3035.1 mbsl; 413.1–422.7 mbsf



LITHOLOGIC DESCRIPTION

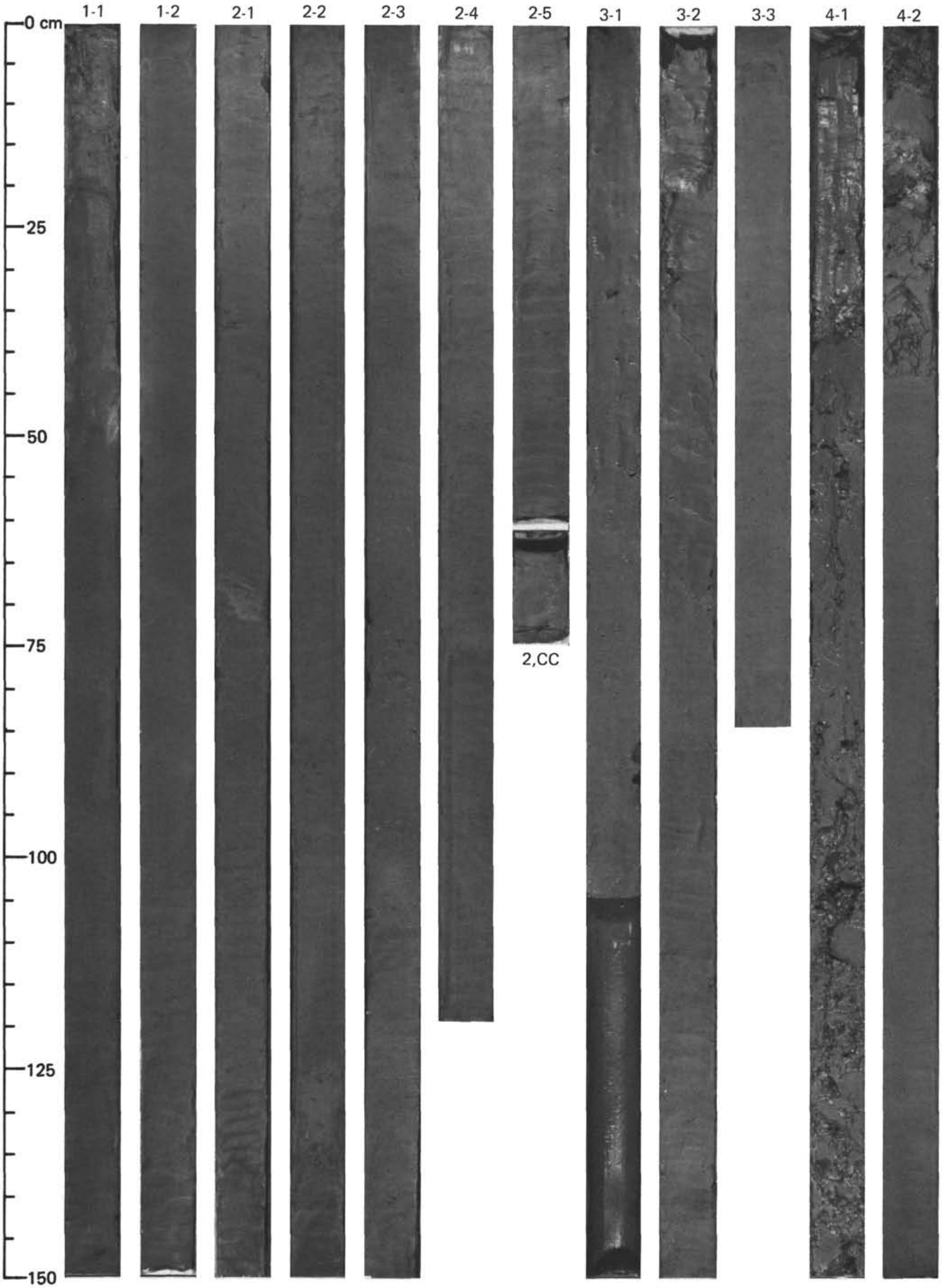
CLAY. Very dark gray (5Y 3/1) with rare black (10YR 2.5/1) blebs. Section 2, 45–53 cm contains very dark grayish brown (10YR 3/2) CLAY color bands. Section 1 and 3 contain gas bubble "pockets", expansion cracks, and brecciated areas.

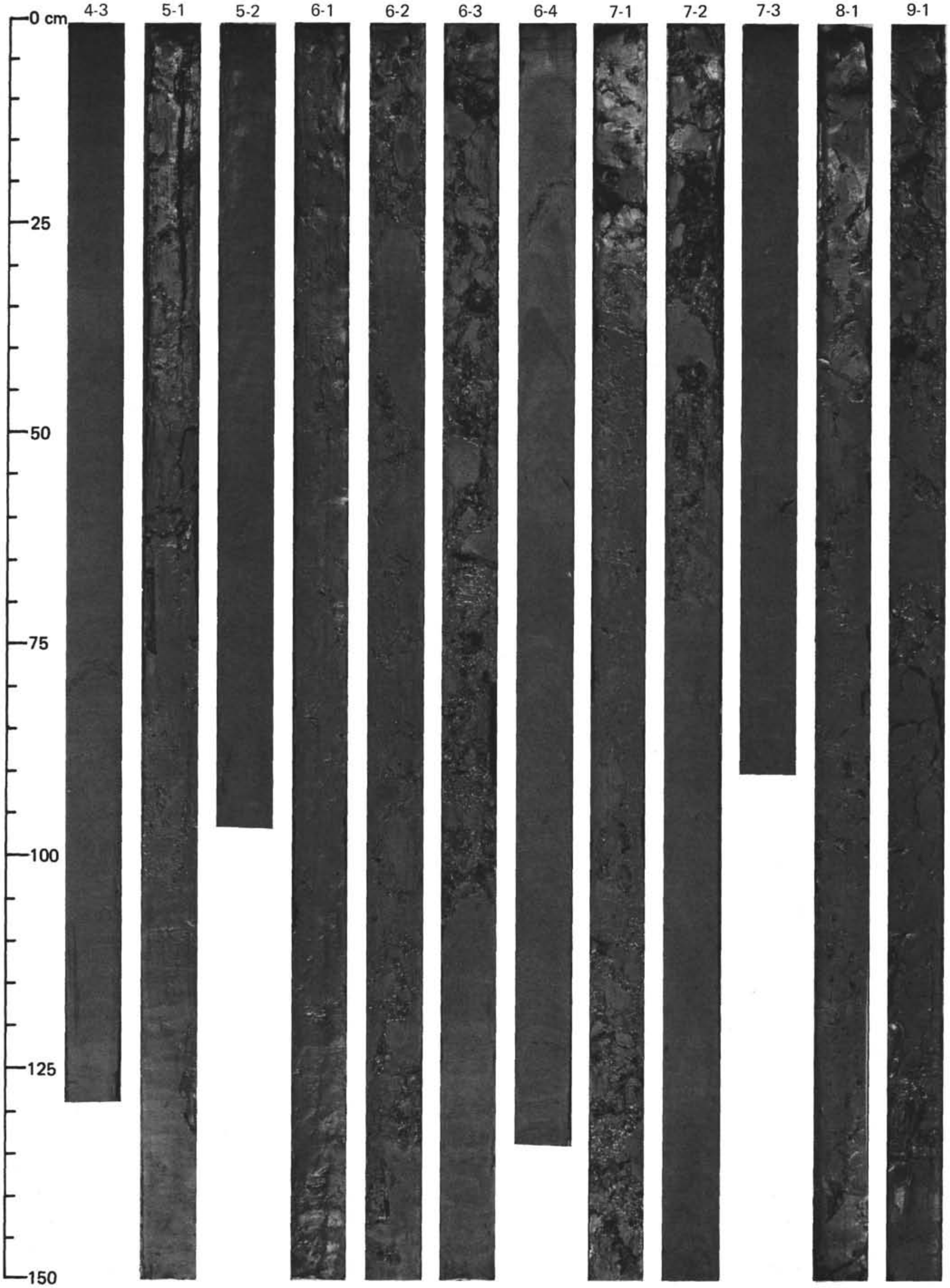
SMEAR SLIDE SUMMARY (%):

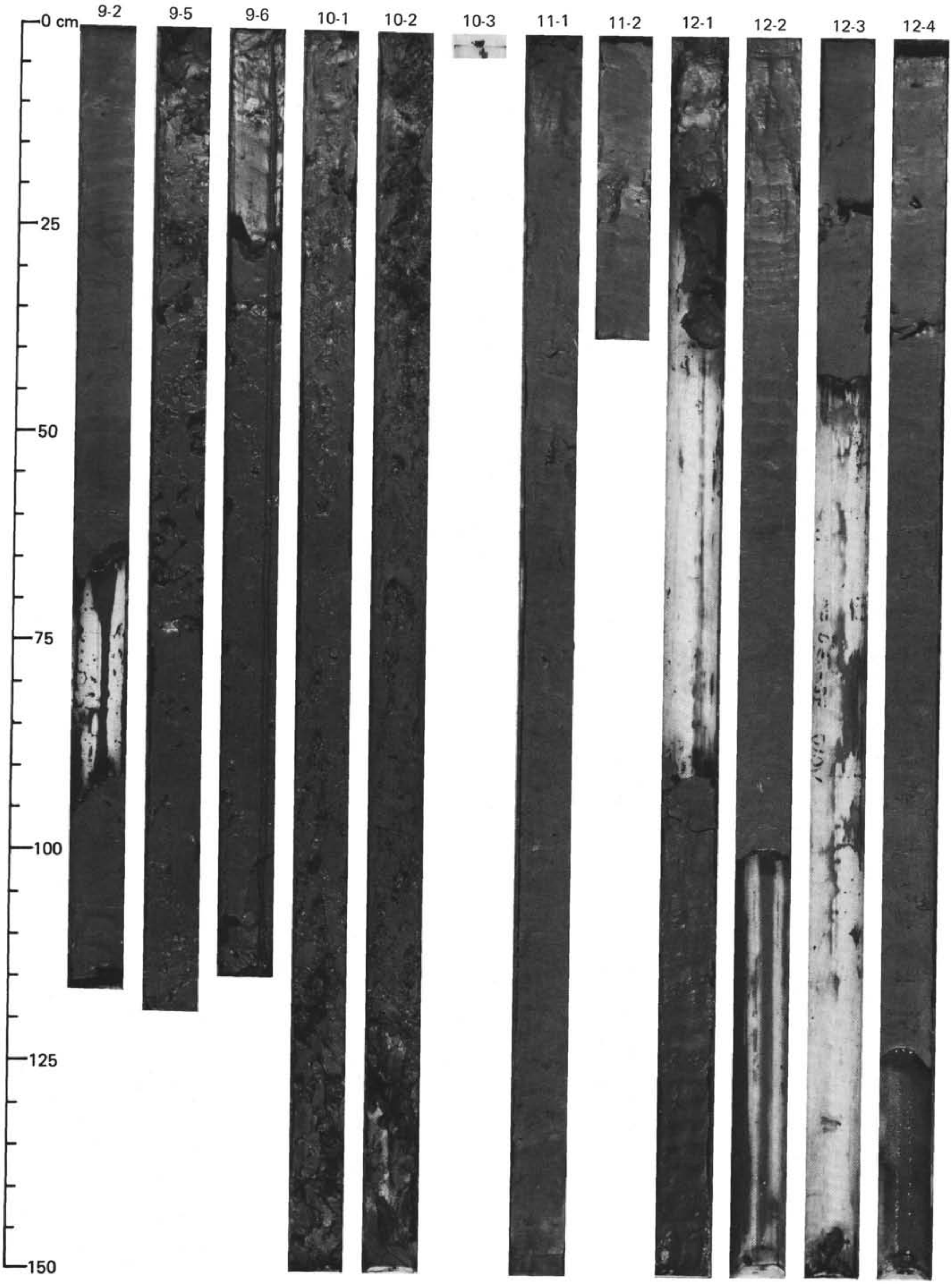
	1, 20
	D
Texture:	
Sand	0
Silt	10
Clay	90
Composition:	
Quartz	18
Feldspar	4
Mica	4
Heavy minerals	1
Clay	69
Opaques	1
Carbonate unspec.	3
Foraminifers	T
Calc. nannofossils	T

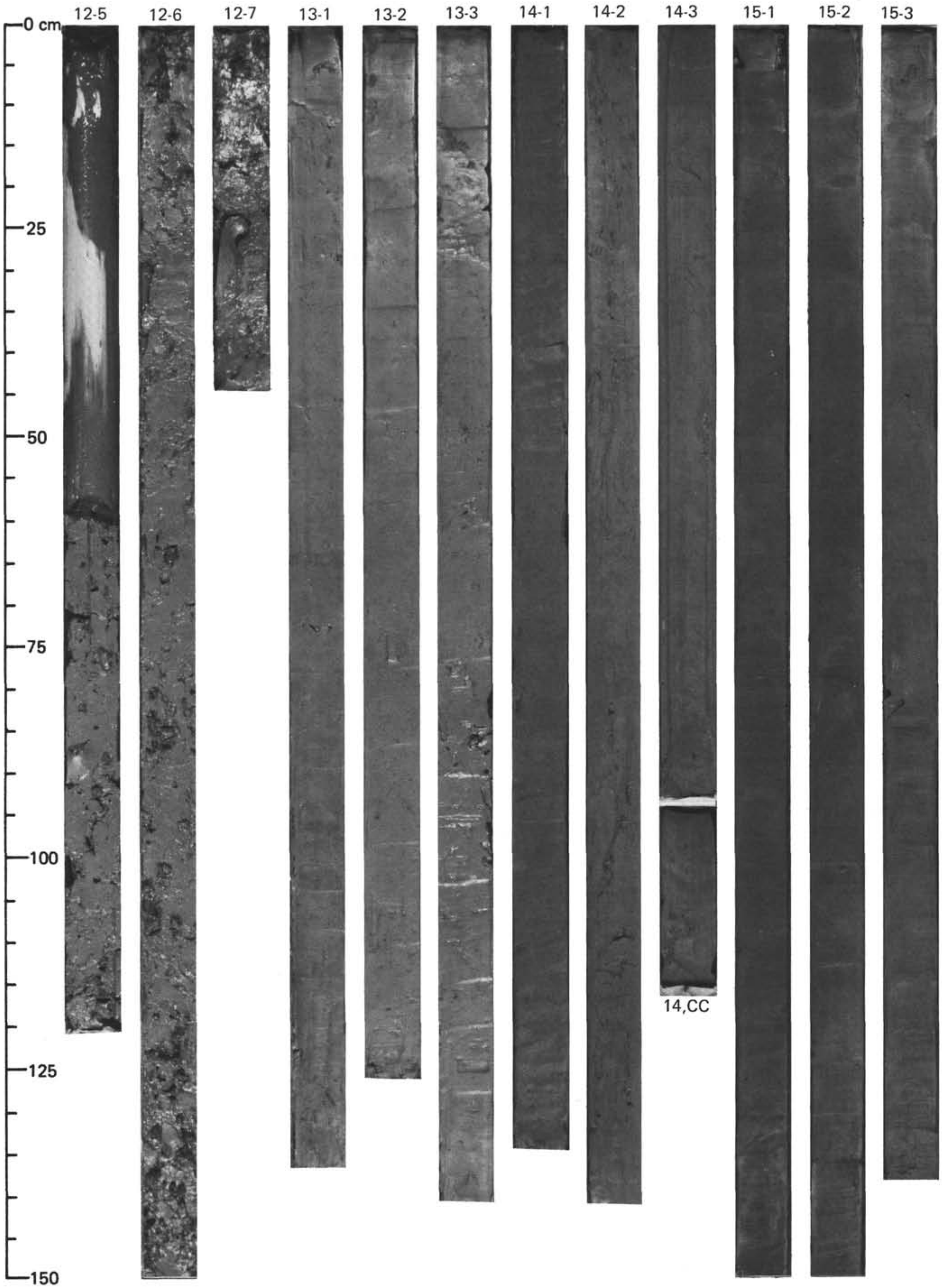
CARBONATE BOMB DATA:

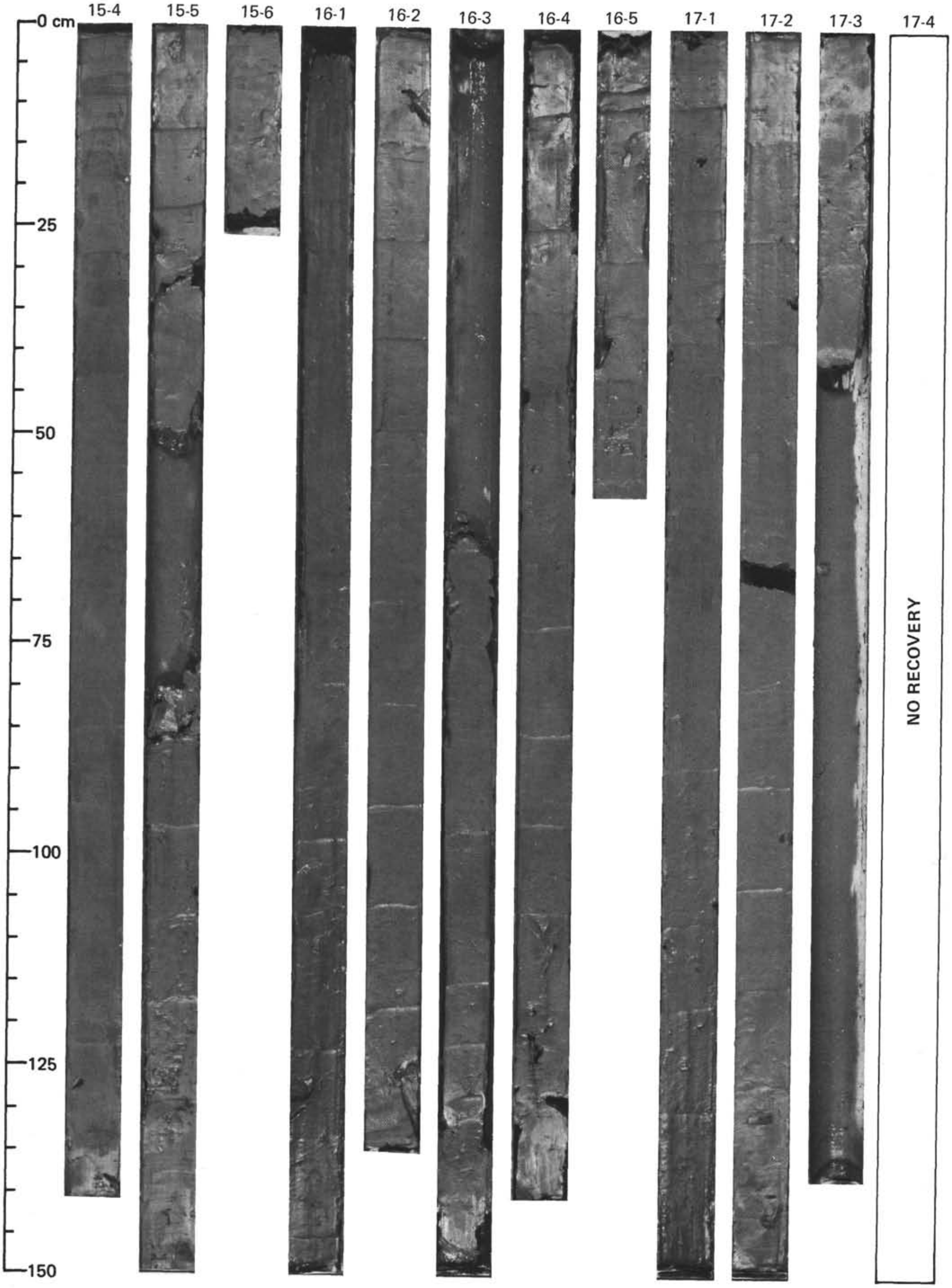
• 6, 9–11 cm = 14%

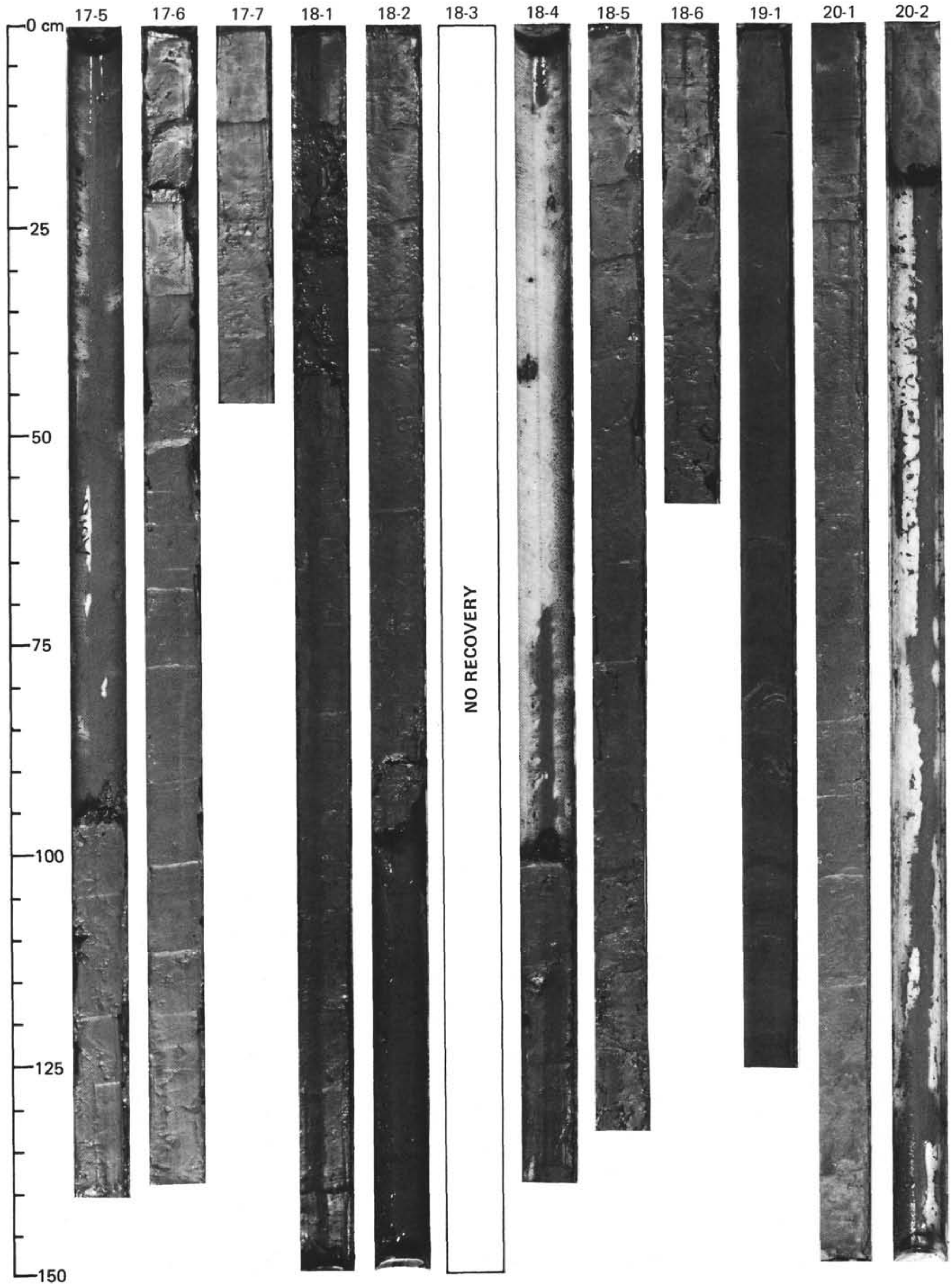

1-1
1-2
2-1
2-2
2-3
2-4
2-5
3-1
3-2
3-3
4-1
4-2
0 cm
25
50
75
100
125
150
2,CC

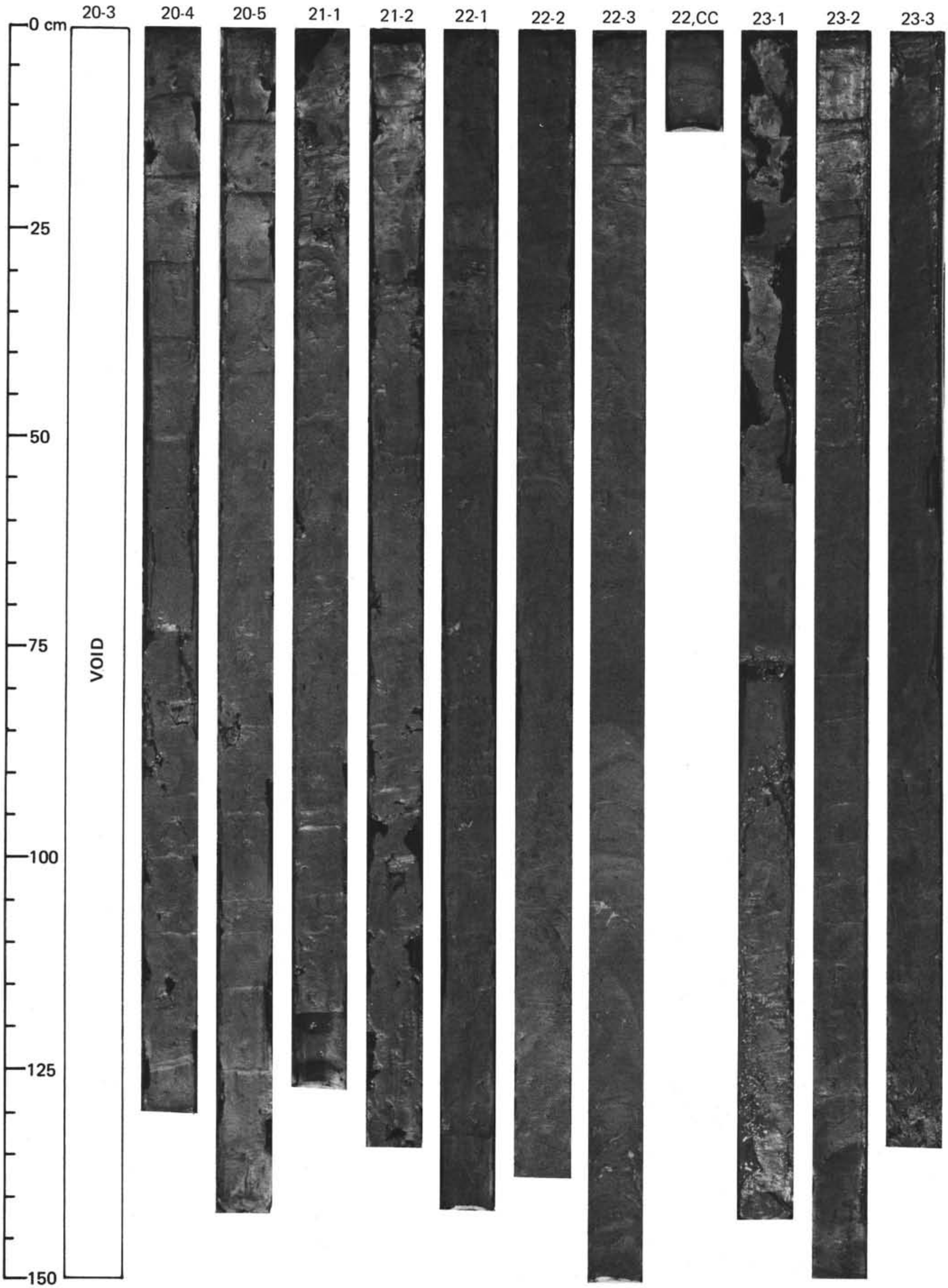

0 cm
25
50
75
100
125
150
4-3
5-1
5-2
6-1
6-2
6-3
6-4
7-1
7-2
7-3
8-1
9-1

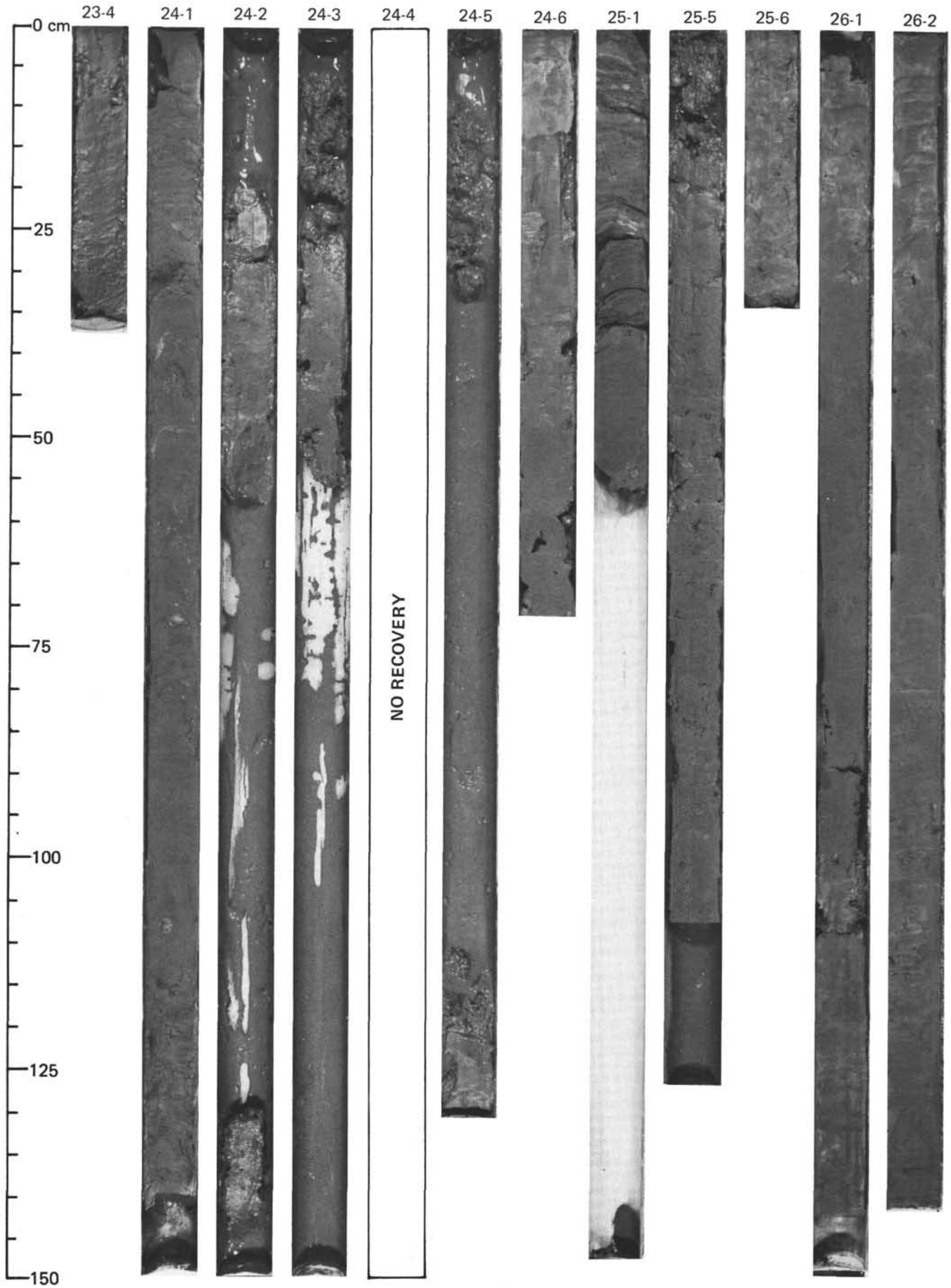

0 cm
25
50
75
100
125
150
9-2
9-5
9-6
10-1
10-2
10-3
11-1
11-2
12-1
12-2
12-3
12-4

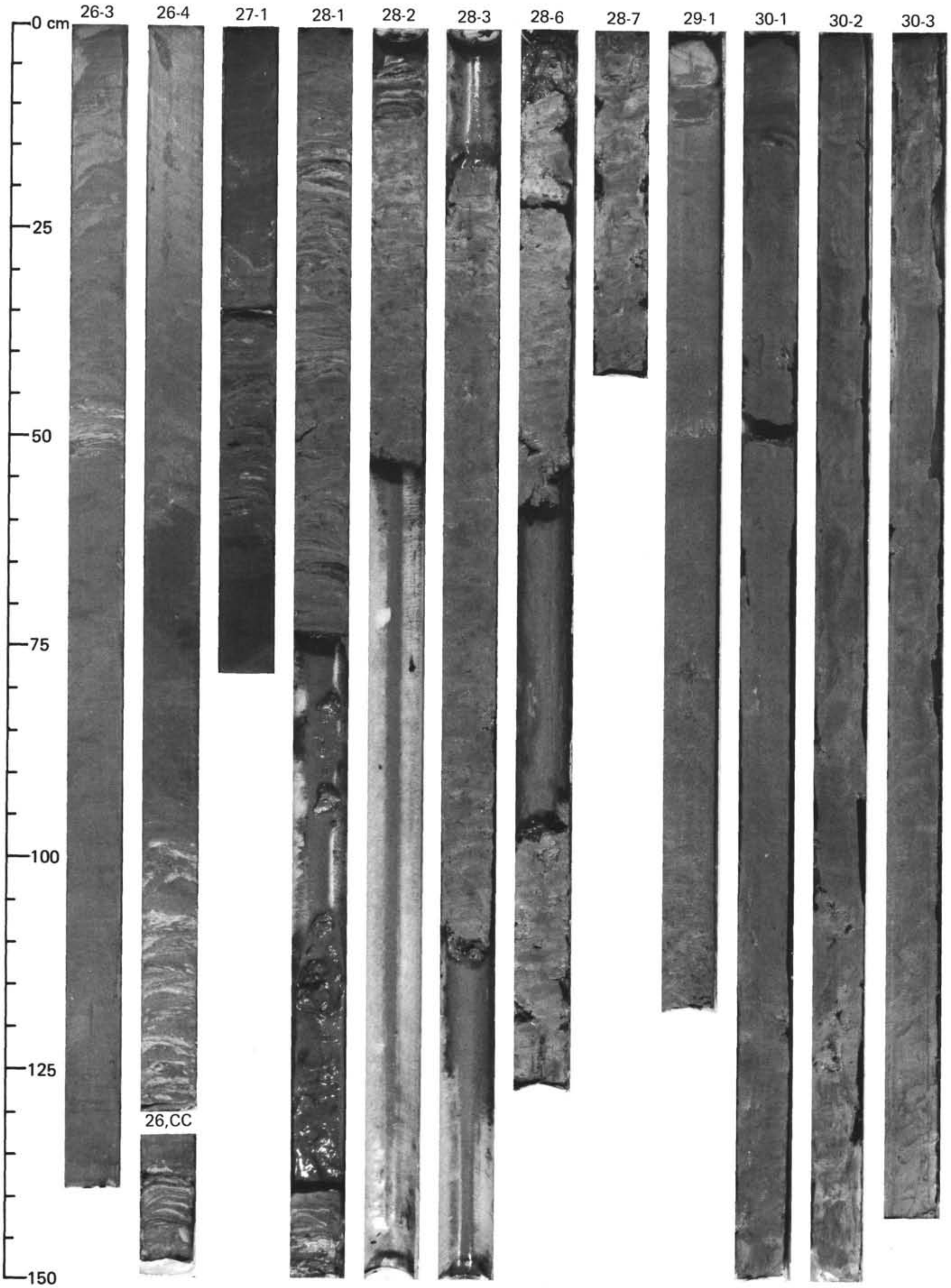

12-5
12-6
12-7
13-1
13-2
13-3
14-1
14-2
14-3
15-1
15-2
15-3
0 cm
25
50
75
100
125
150
14,CC


0 cm
25
50
75
100
125
150
15-4
15-5
15-6
16-1
16-2
16-3
16-4
16-5
17-1
17-2
17-3
17-4
NO RECOVERY

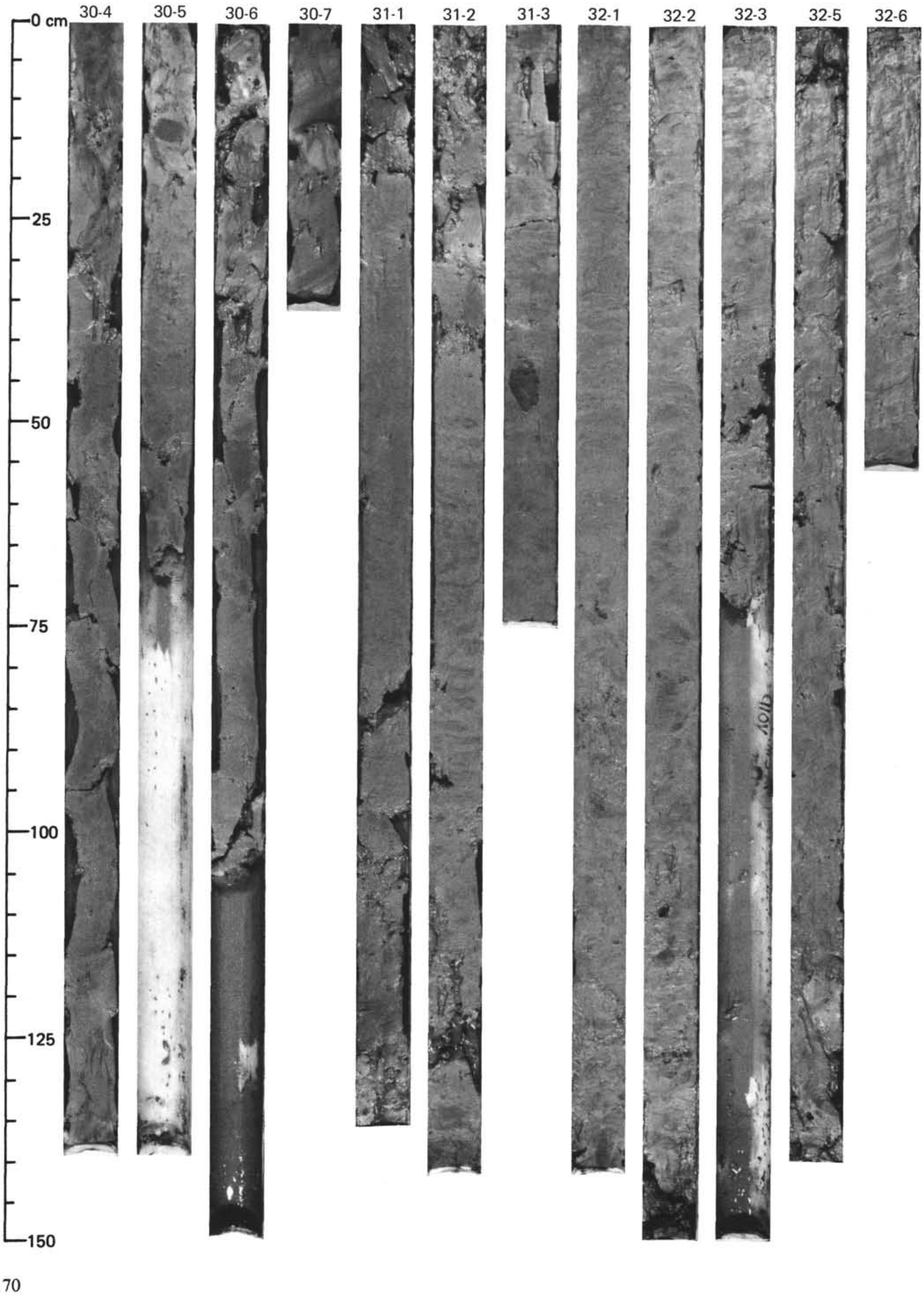

17-5
17-6
17-7
18-1
18-2
18-3
18-4
18-5
18-6
19-1
20-1
20-2
0 cm
25
50
75
100
125
150
NO RECOVERY


20-3
20-4
20-5
21-1
21-2
22-1
22-2
22-3
22,CC
23-1
23-2
23-3
0 cm
25
50
75
100
125
150
VOID

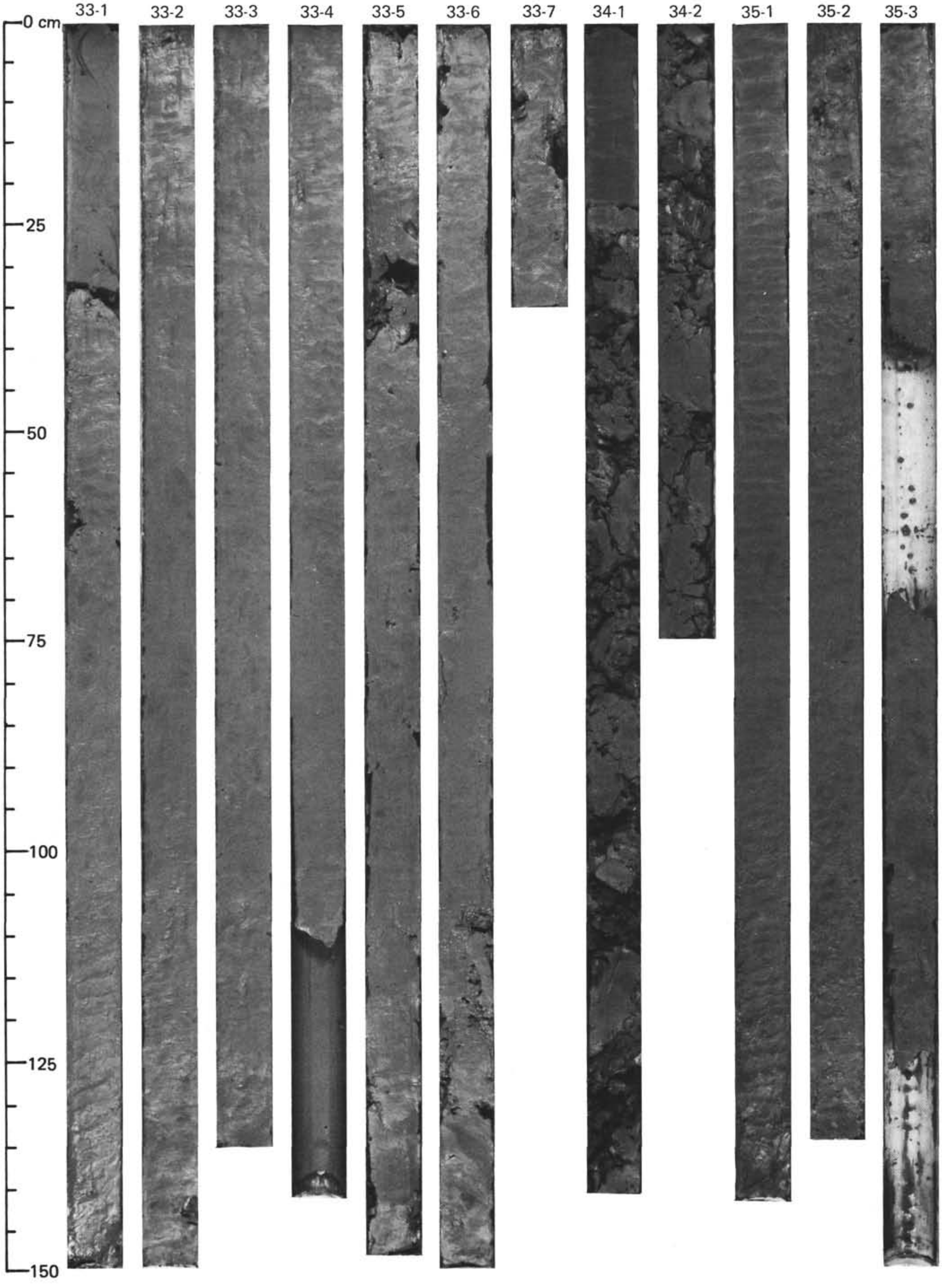

0 cm
25
50
75
100
125
150
23-4
24-1
24-2
24-3
24-4
24-5
24-6
25-1
25-5
25-6
26-1
26-2
NO RECOVERY

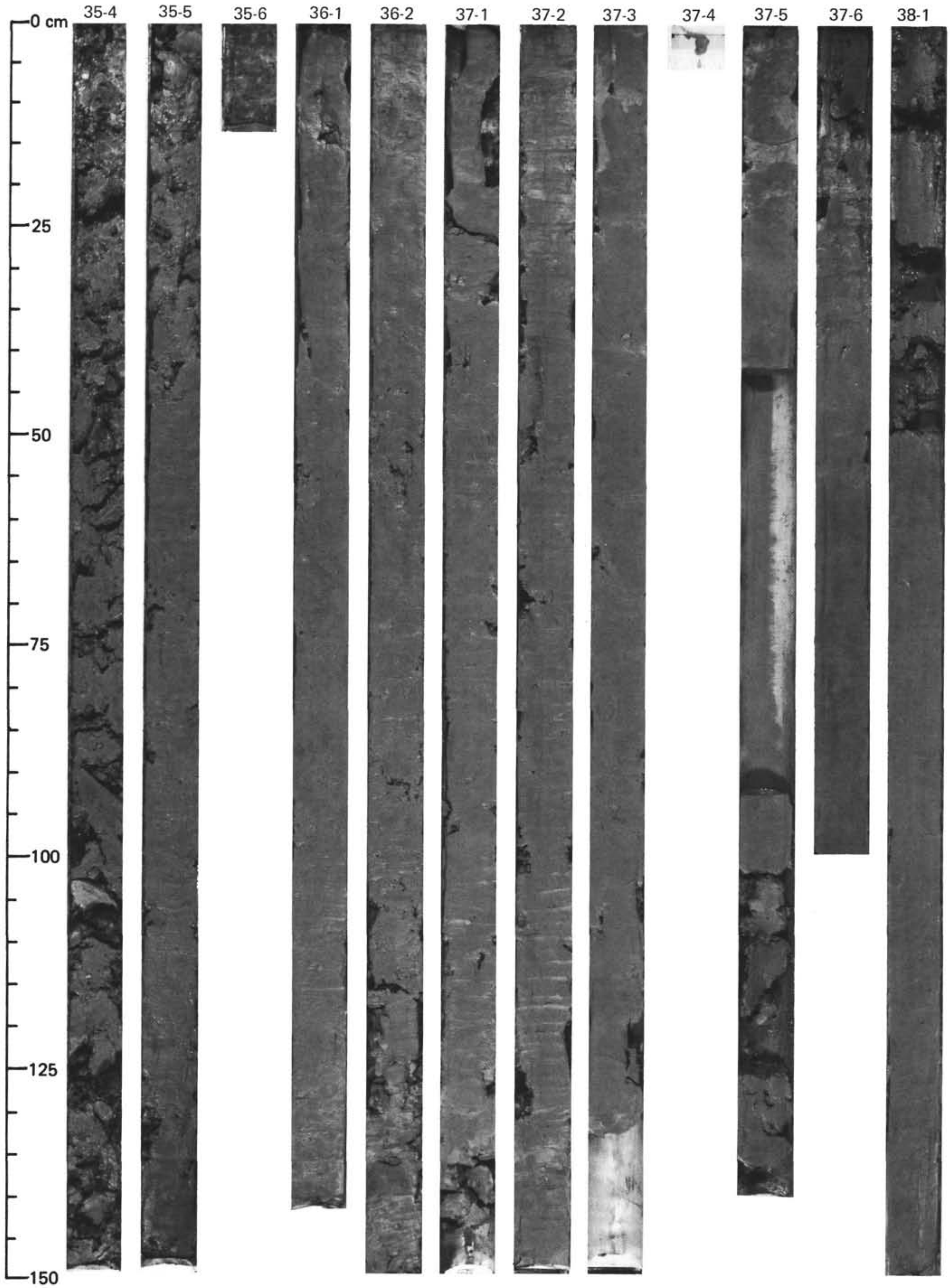


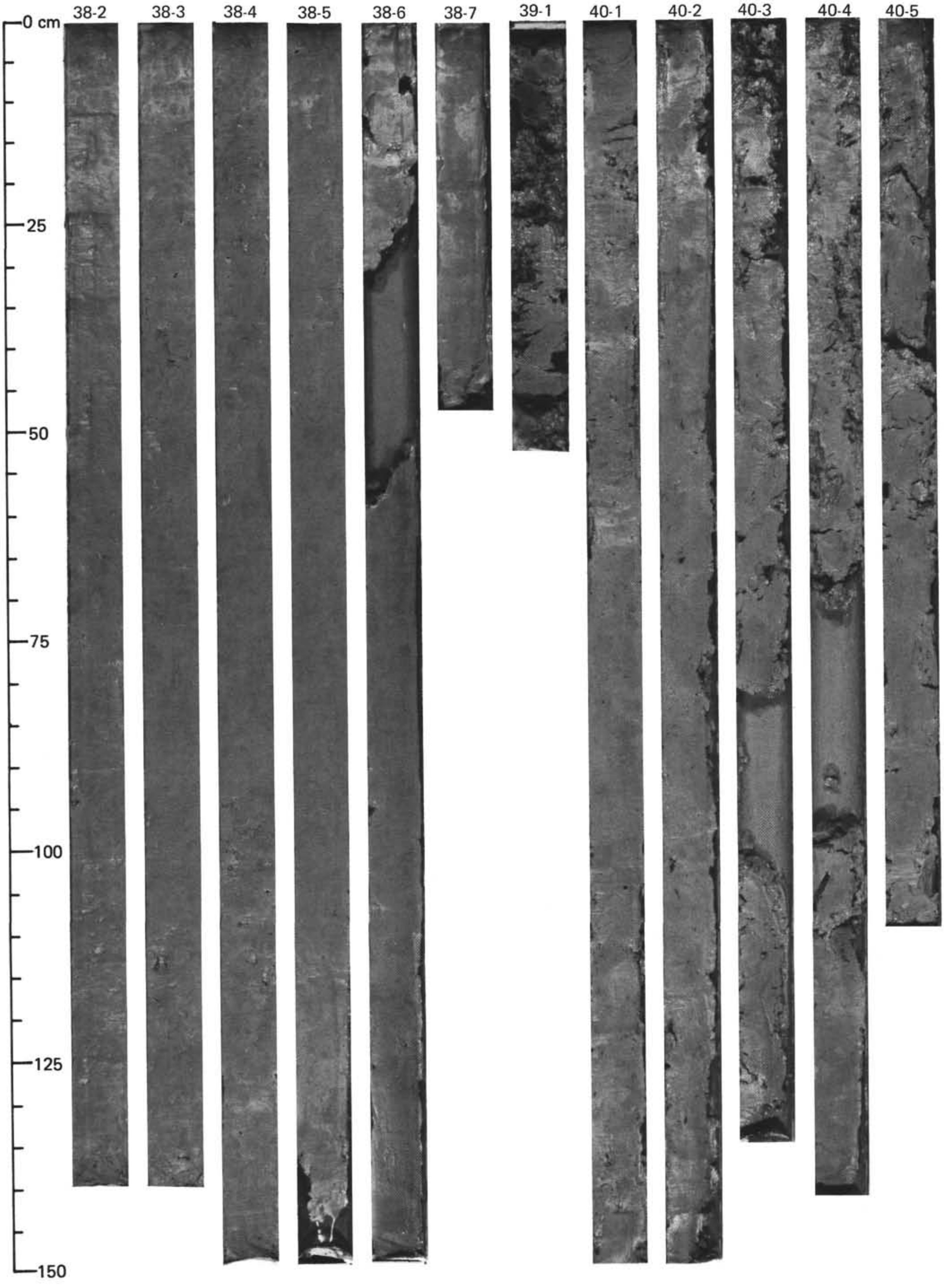
0 cm
25
50
75
100
125
150
26-3
26-4
26,CC
27-1
28-1
28-2
28-3
28-6
28-7
29-1
30-1
30-2
30-3

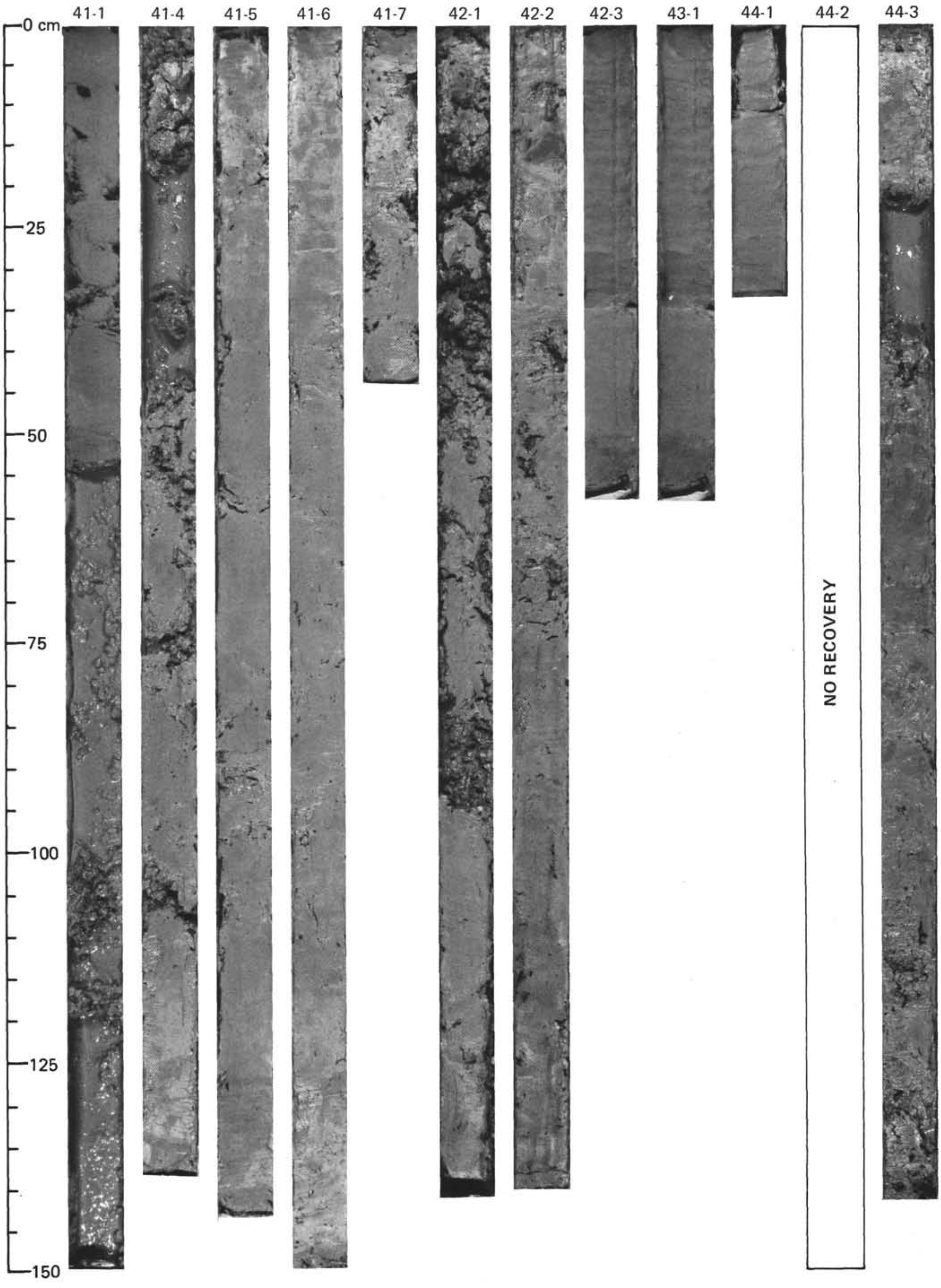


30-4
30-5
30-6
30-7
31-1
31-2
31-3
32-1
32-2
32-3
32-5
32-6
0 cm
25
50
75
100
125
150

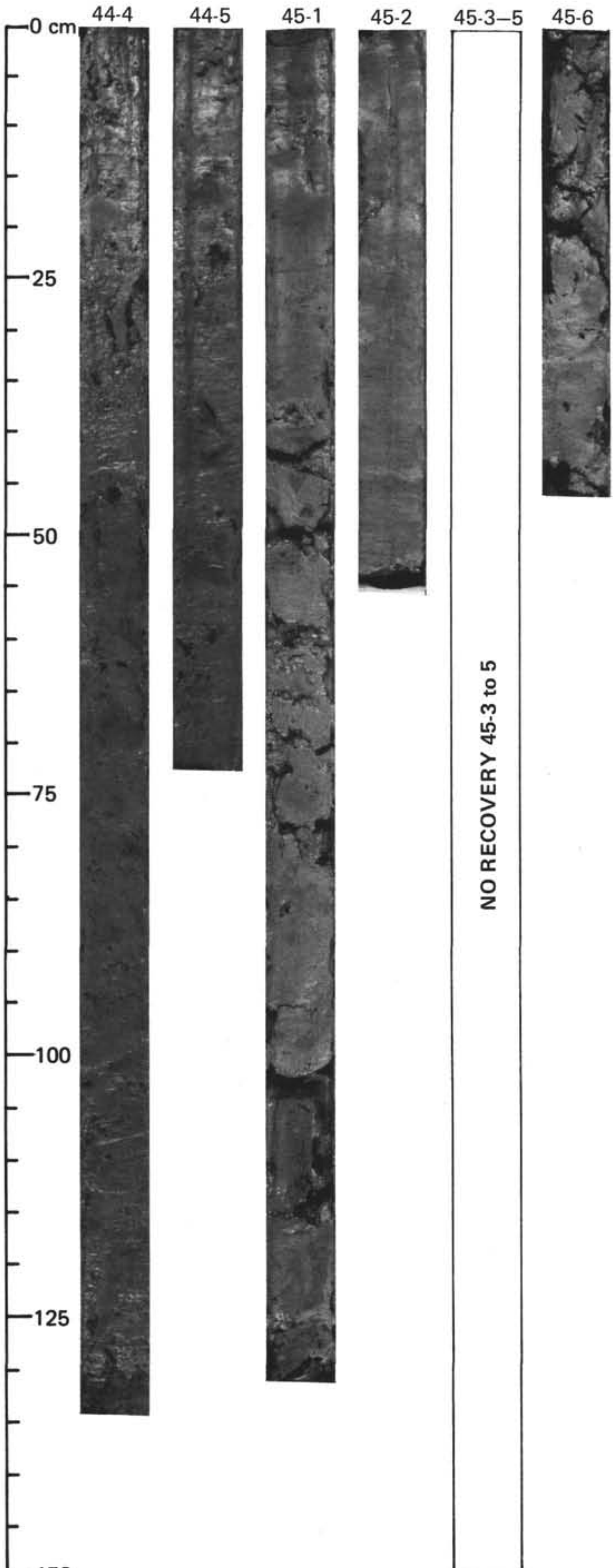

33-1
33-2
33-3
33-4
33-5
33-6
33-7
34-1
34-2
35-1
35-2
35-3
0 cm
25
50
75
100
125
150


0 cm
25
50
75
100
125
150
35-4
35-5
35-6
36-1
36-2
37-1
37-2
37-3
37-4
37-5
37-6
38-1


38-2
38-3
38-4
38-5
38-6
38-7
39-1
40-1
40-2
40-3
40-4
40-5
0 cm
25
50
75
100
125
150



41-1
41-4
41-5
41-6
41-7
42-1
42-2
42-3
43-1
44-1
44-2
44-3
0 cm
25
50
75
100
125
150
NO RECOVERY


0 cm
25
50
75
100
125
150
44-4
44-5
45-1
45-2
45-3—5
45-6
NO RECOVERY 45-3 to 5