4. SITE 185

The Shipboard Scientific Party[1]

SITE DATA

Date Occupied: 5-7 Aug 71.

Position:
54°25.73′N
169°14.59′W.

Water Depth: 2110 meters.

Penetration: 728 meters.

Number of Holes: One.

Number of Cores: 27.

Total Core Recovered: 98 meters.

Acoustic Basement:
Depth: greater than 1.5 second
Nature: Unknown
Velocity: Unknown.

Age of Oldest Sediment: Not determinable, but must be upper Miocene or older.

Basement: Not determinable.

SUMMARY

Site 185 is located on the southern flank of the broad spur separating Bristol and Bering canyons, southeastern Bering Sea, in water 2110 meters deep.

The drilled and cored sedimentary sequence consists of 728 meters of Holocene, Pliocene, and upper Miocene hemipelagic clay-rich diatom ooze and diatomaceous silty clay or clayey silt. Thin, terrigenous sand and silt beds, a few ash layers, and some limestone beds also occur. A gradual decrease in diatom content and enrichment in clay takes place between 600 meters and 728 meters.

The terrigenous fraction is most likely derived from a terrane underlain by volcanic rocks or rocks rich in volcanic debris. The upper portion of the section (above 250 m at Core 10) contains discrete beds of pyroclastic and volcanoclastic debris composed of glass- and feldspar-rich sand and sandy silt, thin ash layers, scattered erratics, and pumice fragments. Additionally, above 250 meters the section locally contains up to 20 percent glass as a constituent of the terrigenous fraction. Unlike Site 184, only a few neritic diatoms occur and these are scattered throughout the sediment sequence.

Because the sediments at this site are characterized by gradual lithologic and age changes, with superimposed minor fluctuations in the relative amounts of terrigenous and pelagic components, the section was not subdivided into units. However, from 0 to 587 meters (through Core 17) the sediments are similar to Unit A defined at Site 184. The sediments of the lower portion of the hole from 644 to 728 meters are either Site 184, Unit B equivalents (in which case they are less indurated, less extensively burrowed, and contain more diatom remains) or are a thicker equivalent of the thin transition zone separating Units A and B at Site 184.

At Site 185 the bottom-simulating reflector (BSR) occurs at 670 meters and is apparently coincident (unlike Site 184) with a 10- to 15-meter thick section of gaseous (virtually all methane) sediment and a lithologic transition from terrigenous-rich diatomaceous deposits to a virtually unfossiliferous siltstone sequence.

The lithologic transition found near the BSR may represent an upward migrating zone of diagenesis involving the alteration of former detritus-rich diatomaceous beds to siltstone or claystone units that bear only vestiges of its original siliceous microflora. The lithologic transition may in part account for some of the reflected energy encountered at the bottom-simulating horizon and may be locally associated with gas accumulations (see Scholl and Creager, and Fullam et al., this volume).

BACKGROUND AND OBJECTIVES

Description

Site 185, at a water depth of 2110 meters, is located on the southern flank of the broad spur separating Bristol and Bering canyons, southeastern Bering Sea (Figure 1). Acoustically, three stratigraphic units are distinguishable: (1) a surface mantling unit (160 m thick), (2) an underlying layered sequence characterized by strong internal reflecting horizons (600-700 m thick), and (3) a lower stratified sequence having rather weak internal reflecting surfaces. Separating Units 2 and 3 is the presumed "clathrate" reflecting surface, a surface that crosses phase returns that presumably trace bedding planes. This surface follows the topography of the sea floor at a subbottom depth close to 670 meters (0.82 sec), which is close to the theoretical base of a clathrated zone, if, in fact, one exists.

Objectives

The objectives sought at Site 185 were identical to those described for Site 184. The primary reason for occupying Site 185 was to confirm or challenge the results obtained at Site 184, which needed clarification.

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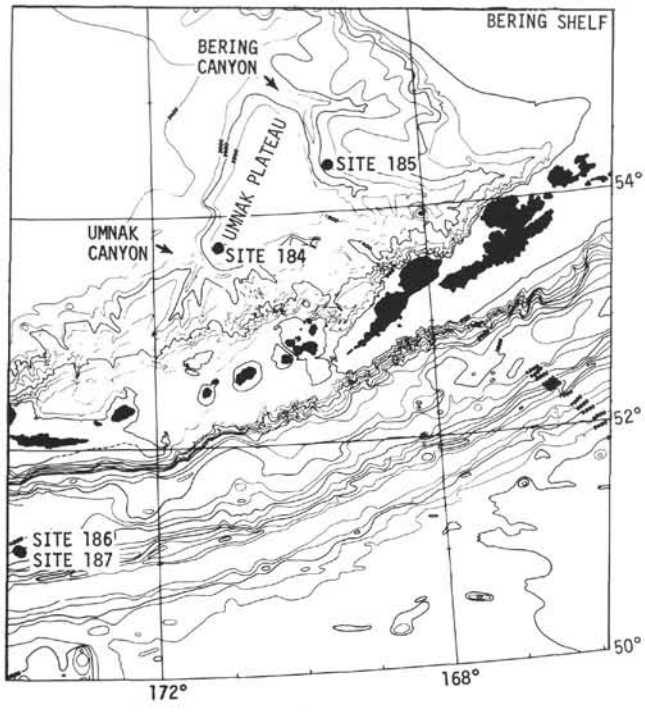


Figure 1. *Base map showing the location of Site 185.*

OPERATIONS

Pre- and Post-drilling Survey

Site 185 was approached with a ship's heading of 122°T. Continuing on across the site, the ship turned to a heading of 048°T (the reciprocal of the heading of the reference profile collected by D. W. Scholl on 1 Jul 65). After about three quarters of an hour at 5 knots on this heading, the ship returned on a course of 246°T to a DR site picked at 54°26.5′N, 169°13.2′W. The beacon was dropped on the fly during the second pass over the chosen site, at 0500 hrs on 5 Aug 71. The finally accepted satellite position is: 54°25.73′N; 169°14.59′W. The reference seismic profile is shown in Figure 2. The air-gun profile (Figure 3) taken crossing the site and then returning to it revealed a stratigraphic section similar to the reference profile and one which appeared to have a good "clathrate-type" reflective structure.

No post-drilling survey was deemed necessary. A map showing the pre-drilling survey track is given on Figure 4.

Drilling Program

Site 185 was occupied from 0500 hrs 5 Aug 72 (beacon away) until 0930 hrs 7 Aug 71 with alternating coring and washing from the sea floor to a subbottom depth of 728 meters. At this depth a stiff clay silt caused the special "clathrate" core barrel to jam, shearing the pin in the sand line recovery mechanism, forcing abandonment of the hole.

Using Matthews Tables and information from the U.S. Navy Undersea Research and Development Center, the sonic depth of 1135 fms was corrected to 2094 meters giving a water depth of 2100 meters and a drill-floor depth of 2110 meters. This compares with 2120 meters below drill floor established on the basis of the first core (which recovered Holocene sediment). The 2120 meters below drill floor, or 2110 meters below sea level, is the accepted depth for this site.

The section penetrated from the bottom to 690 meters consists of diatomaceous ooze and diatom-rich silty clay with some pumice and ash and occasionally a hard-to-drill layer. From 690 meters to the bottom of the hole at 728 meters the sediment is silty clay.

Core 20 (662-671 m) recovered 9.5 meters of sediment which contained methane and traces of other gases, as was the case also in Core 21 (671-680 m). The special pressure core barrel was used for Cores 22 (680-683 m), 24 (690-691 m), and 27 (727-728 m) without success. Possible sources of trouble include: a) changes made in the configuration to accommodate the float valve in the drill string; 2) insufficient clearance between piston and barrell (Corrected before Core 27); 3) possible failure of the flapper valve to seat properly. A coring summary is given in Table 1.

LITHOSTRATIGRAPHY

The sediments at Site 185 are characterized by gradual lithologic and age changes and by superimposed minor fluctuations in the relative amounts of the terrigenous and pelagic components. Lack of distinct lithologic changes discourages subdividing the section into separate units. Except for thin, wholly terrigenous sand and silt beds, a few ash layers, and some limestone beds, the entire section is diatomaceous with a gradual decrease in diatom content from about 600 meters to T.D. The terrigenous fraction of the cored and drilled hemipelagic muds probably is largely derived from a volcanic terrane. The upper portion of the section, above approximately 250 meters below bottom (Core 10), contains discrete beds of pyroclastic and volcanoclastic debris composed of glass- and feldspar-rich sand and sandy silts, thin ash layers, and scattered erratic pebbles, some of which are pumice. In addition, sediments above about 250 meters locally contain up to 10% glass as a constituent of the terrigenous fraction.

Dominant Lithology

From 0 to 653 meters below bottom, the terrigenous and pelagic components are subequal. Diatom content ranges from 40% (diatomaceous silty clay or diatomaceous clayey silt) to a maximum of 90% (clay-rich diatom ooze) and averages about 65%. Typical colors are dark grayish olive, grayish olive, dark olive gray, light olive gray, and olive brown, the darker colors generally being associated with larger amounts of terrigenous silt and clay. The silt/clay ratio of the terrigenous component averages about 1:2.

Below about 600 meters the diatom content decreases, caused in part by the dissolution and alteration of the diatoms. From about 667 meters below bottom (Core 20) to T.D. a few zones devoid of diatoms were observed; however, most smear slides contained at least a small percentage of diatom fragments in various stages of alteration. The lower 3.6 meters of Core 20, which was examined in greatest detail, consists of zones of altered diatoms, zones of well-preserved diatoms, and zones without diatoms (Section 4), although there were no obvious

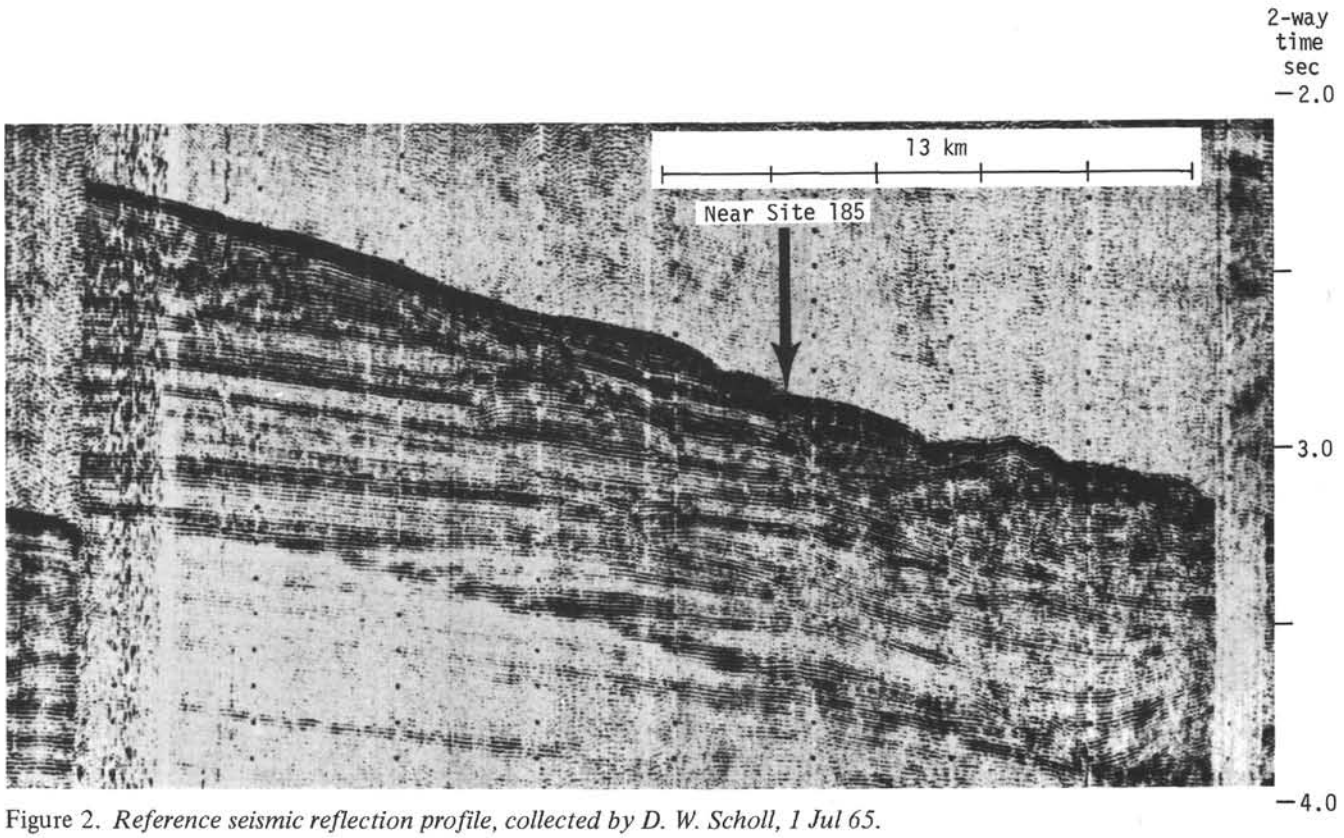


Figure 2. *Reference seismic reflection profile, collected by D. W. Scholl, 1 Jul 65.*

color or textural differences in the sediments. At T.D. (728 m below bottom) the Core 27 core catcher sample contained few, if any, diatoms, and consisted of indurated dark olive gray silty clay. Sponge spicules (up to 10%) are a locally important constituent of the diatomaceous sediments.

The terrigenous component throughout the section contains abundant plagioclase grains (in the silt fraction), many of which are zoned. Based on this observation and the occurrence of glass in the terrigenous admixture, it seems reasonable to conclude that the source terrane was underlain by volcanic rocks and that it included active volcanoes. Reworked Cretaceous nannofossils strongly imply that the mainland of Alaska was part of the terrane.

Volcanic Constituents

The upper 250 meters of the drilled and cored section contain three types of volcanic material occurring as discrete beds.

1. Volcanic sand and sandy silt. These units contain 20 to 40% light- and dark-colored glass (frequently iron oxide stained), feldspar, volcanic lithic fragments, and associated heavy minerals. Many of the glass shards and lithic fragments are altered. The sands and silts occur both as isolated pods and streaks in disturbed cores and as distinct beds from 1 to 20 cm thick. Some size grading was observed in the thicker units (Core 10, 225 to 225.3 m below bottom). Colors range from blackish red to black.

2. Vitric ash beds. Five ash layers up to 5 cm thick were observed. Four of the ashes are composed of virtually 100% fine-grained glass shards and/or pumice pebbles. Typical colors are light brownish gray to pale yellowish brown. The fifth ash (Core 7, 131.5 m below bottom) is transitional between the light-colored ashes and the volcanic sands and contains 25% or more lithic fragments as well as some diatoms.

3. Pumice fragments. These occur singly and in zones, are usually rounded, and are up to 2 cm in diameter. Ice-rafted (?) erratics of other compositions occur in the same interval (above 250 m) and may be of nonvolcanic origin. Concentrations of erratics occur at 96 to 100 meters (Core 6), 132 to 133 meters (Core 7), and about 168 meters (Core 8).

Limestones

Local concentrations of finely crystalline calcium carbonate occur from about 171 meters to T.D. They are found as pods, as zones in silty clay, and as limestone beds up to 50 cm thick. Some of the limestone contains nannofossils and/or scattered diatom fragments.

General Comments

Site 185 is approximately 150 km northeast of Site 184, and the sediments recovered at the two sites are very similar. However, the sediments at Site 185 contain a greater amount of terrigenous material. Whereas the average diatom percentage in the pelagic sequence at Site 184 was about 80%, the equivalent unit at Site 185 contains an average of only about 65% diatoms. The difference may be

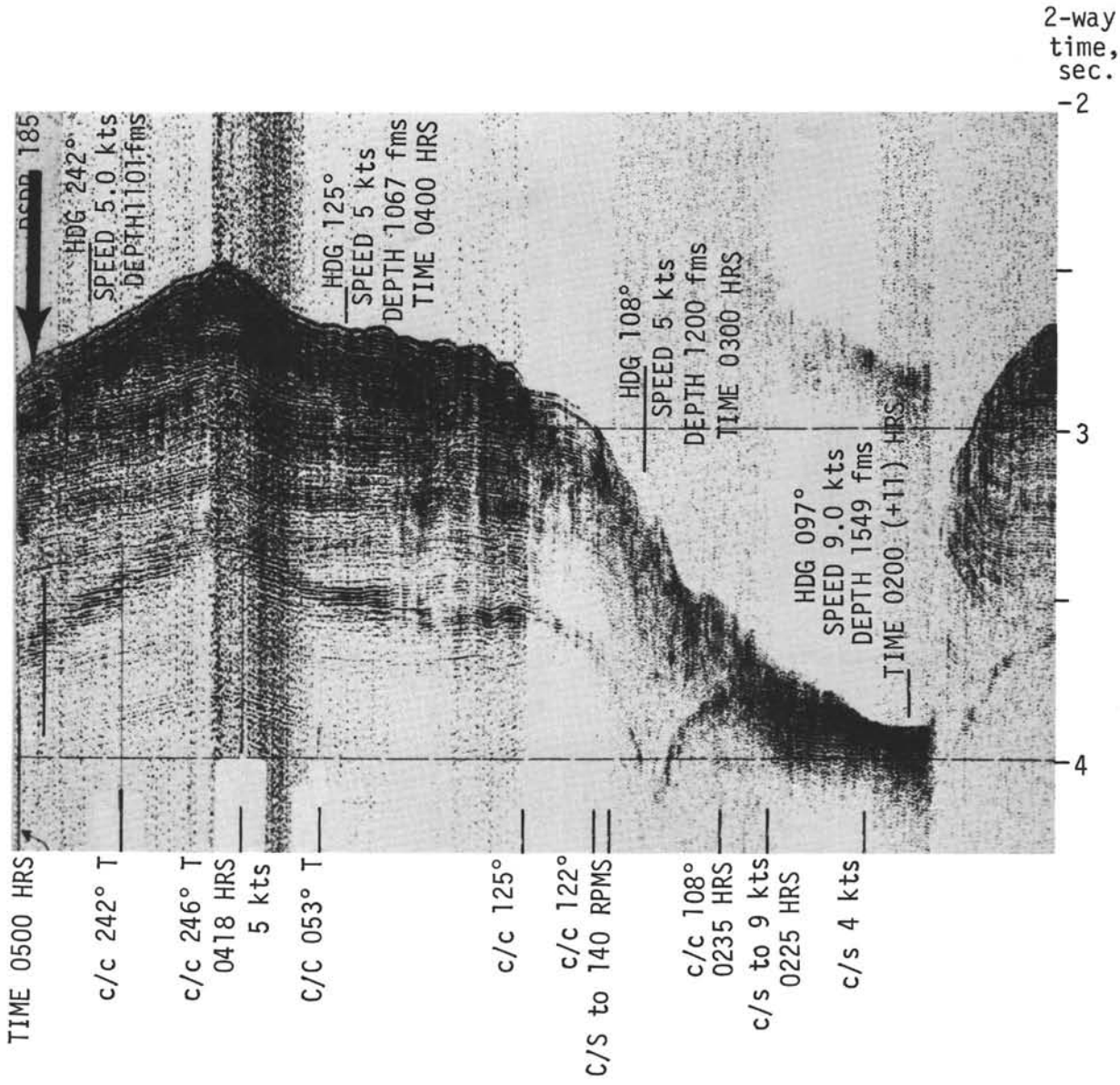


Figure 3. Glomar Challenger *air-gun profile coming onto Site 185.*

explained by the closer proximity of the Alaska mainland and Bering Sea shelf to Site 185.

The first seventeen cores (0-587 m) contain sediments comparable to Unit A defined at Site 184. The remainder of the cores (644-728 m) contain either Site 184, Unit B equivalents (in which case they are less indurated, less extensively burrowed, and contain more diatom remains) or a thicker equivalent of the mudstone separating Units A and B at Site 184.

PHYSICAL PROPERTIES

Physical properties measured at Site 185 include bulk density, water content, natural gamma radiation, acoustic velocity, and vane shear strength. Bulk density was measured with the GRAPE system, calculated from tests on sealed samples taken to a shore laboratory, and, for the harder materials, measured by the water displacement method. The bulk densities and the acoustic velocities are presented on the site summary sheet.

Bulk Density

GRAPE densities were measured to a sediment depth of about 230 meters and also on Core 20 in the vicinity of 670 meters. The remainder of the cores were badly fractured or discontinuous and would have yielded invalid density measurements. The GRAPE measurements are supplemented by the shore laboratory values. At great depths the GRAPE measurements are supplemented by the water displacement values.

The densities obtained indicate a rather uniform sediment of low density (1.6 g/cm^3) for the zone 0 to 230 meters and a relatively dense (1.7-1.8 g/cm^3) zone from 650 to 730 meters. At around 665 meters, a short (4 m),

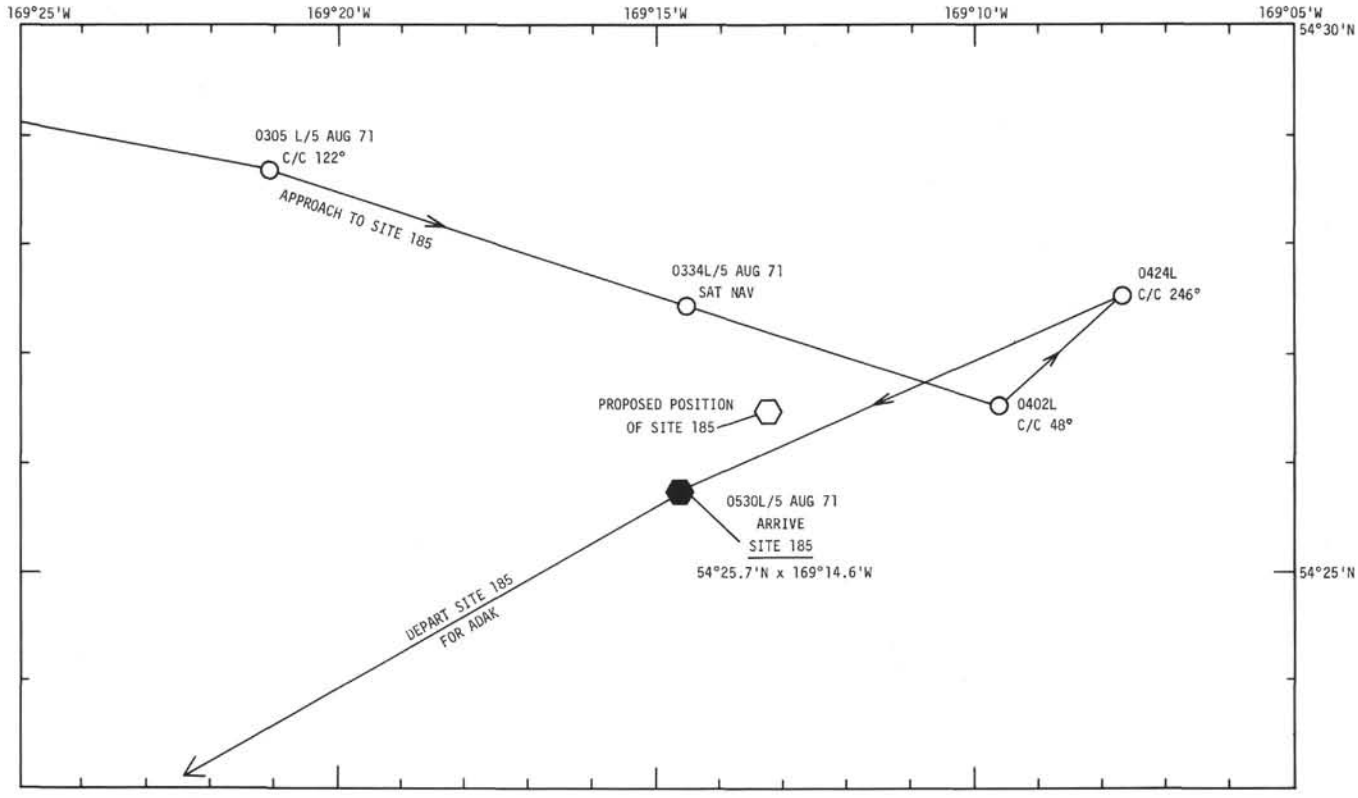


Figure 4. Glomar Challenger *pre-drilling survey track, Site 185.*

disturbed section containing gas yielded a mean density of 1.5 g/cm^3.

Acoustic Velocity

The acoustic velocities measured with the Hamilton Frame indicate the existence of two zones. The first extends from 0 to 650 meters and is characterized by an acoustic velocity which gradually increases from about 1.5 to 1.75 km/sec. The second zone extends from 650 meters to the bottom of the hole and has an acoustic velocity of 2 to 2.05 km/sec. A rapid increase in velocity occurs over the transition zone, 650-670 meters.

Summary

The physical property data (primarily the acoustic velocities) suggest the existence of two zones. The upper zone extends from 0 to 650 meters and has a low density (1.6 g/cm^3) and an acoustic velocity of 1.5-1.75 km/sec. The lower zone extends from about 670 meters to the bottom of the hole. It has a density of 1.7-1.85 g/cm^3 and an acoustic velocity of 2-2.05 km/sec.

PALEONTOLOGY

Sediments at Site 185 are lithologically similar to those observed at Site 184 and thus provide an opportunity to reexamine the stratigraphic occurrence of microfossils, their zonations, or an individual taxon. Ages of diatomaceous sediments recognized here range from Holocene to late Miocene. Starting from Core 18, and particularly from Core 21, down to the bottom of the hole, only fragments of diatom valves were encountered.

Diatoms dominate the microfossil assemblage, while silicoflagellates show a slight increase in numbers and varieties over previous Sites 183 and 184. Both radiolaria and nannofossils are rather scarce throughout.

Foraminifera

Dominantly calcareous assemblages occur down through Core 7. Cores 8 and 10 have only arenaceous assemblages. Deeper cores were not examined.

Sinistral *Globorotalia (T.) pachyderma* populations occur down through Core 5, indicating upper and middle Pleistocene, and dominantly dextral populations occur in Cores 6 and 7, indicating lower Pleistocene or older.

Calcareous benthonic assemblages are usually dominated by *Elphidium batialis* and *Islandiella teretis* as at Site 184. Undoubted displaced forms were not found. *Martinottiella communos* has its highest occurrence in Core 7, which is within the Pliocene according to diatoms.

Calcareous nannoflora

Site 185 contains a sparse assemblage of Pleistocene coccoliths in Cores 1 to 3. Cores 4 to 7 contain rare specimens of non-age-diagnostic species dominated by *Coccolithus pelagicus.* Below Core 7, Site 185 is essentially barren of nannofossils except for isolated specimens of *Watznaueria* probably derived from a Mesozoic outcrop on the shelf.

Small (3-5μ) calcite needles were observed in Core 4 in association with partially dissolved placoliths. The needles are probably isolated elements from decomposed placoliths. The needles were noted in lower cores without associated

TABLE 1
Core Summary – Site 185

Core	Cored Interval Below Bottom (m)	Cored (m)	Recovered (m)	Recovered (%)
1	0-9	9	9.5	105.6
2	9-16	7	1.5	21.4
3	16-25	9	1.5	16.7
Wash				
4	35-44	9	8.4	93.3
Wash				
5	63-72	9	2.3	25.6
Wash				
6	91-100	9	9.5	105.6
Wash				
7	129-138	9	7.0	77.8
Wash				
8	167-176	9	6.4	71.1
Wash				
9	213-222	9	1.5	16.7
10	222-231	9	4.9	54.4
Wash				
11	269-278	9	2.2	24.4
Wash				
12	335-344	9	2.2	24.4
Wash				
13	372-381	9	2.2	24.2
14	381-390	9	1.2	13.3
Wash				
15	447-456	9	2.0	22.2
Wash				
16	513-522	9	2.3	25.6
Wash				
17	578-587	9	3.2	35.6
Wash				
18	644-653	9	2.7	30.0
19	653-662	9	2.6	28.9
20	662-671	9	9.5	105.6 Gas
21	671-680	9	3.7	41.1 Gas
22	680-683	3	Special Clathrate Corer Used Only small section recovered	
23	683-690	7	2.0	28.6
24	690-691	1	0.2	20.0
			Clathrate Corer Used	
25	691-699	8	2.2	27.5
Wash				
26	718-727	9	7.0	77.8
27	727-728	1	Clathrate Corer Used	
		216	98.0	45.4

nannofossils, suggesting that the entire diatomaceous part of the sequence once contained nannofossils, but the nannofossils in its lower part were disaggregated by diagenesis.

Radiolaria and Silicoflagellates

At Site 185, Radiolaria and silicoflagellates were found in the upper diatomaceous sediments, while the lower clayey unit, Cores 18 through 27, was barren of these microfossils.

Most of the identifiable radiolarian taxa from this site are noted in Table 4, Chapter 28. Occurrence of *Theocyrtis redondoensis* in Core 17 requires some attention. The species was originally described from sediments of the upper Mohnian Stage of Southern California and reported subsequently from California by Bandy et al. (1971) and from Japan by Nakaseko (1963). This species was also found in a dredge sample from the continental margin of the western Bering Sea (collected by D. W. Scholl, USNS *Bartlett*, 1970).

Silicoflagellate specimens at Site 185 are more abundant than at the previous sites and their occurrences are discussed in Chapter 27 (Ling, this volume).

Diatoms

The vertical distribution of important taxa at the site is given in Table 3, Chapter 30. The species composition in the planktonic marine diatom assemblage is rather a monotonous subarctic type and is similar to that of Site 184. Note here that Unit II, which is of Pliocene age, consists of only two samples and is very thin compared with that of the previous site.

A few benthonic to sublittoral species are present in samples throughout the core levels, but they are never as abundant as in the Pliocene section at Site 184.

CORRELATION BETWEEN REFLECTION PROFILE AND STRATIGRAPHIC COLUMN

The reflection profile taken by D. W. Scholl (in 1965) which was used for the selection of Site 185, is shown in Figure 5 along with the stratigraphic column and physical properties. The profile, similar to Site 184, again shows fine scale internal reflectors well developed in the upper 0.8 sec and less well developed below the bottom simulating reflector (BSR, as discussed under Site 184), which cuts discordantly through the internal layers. Although the change in lithology across the BSR is more gradual here than at Site 184, the appearance of some gas at 670 meters, along with distinct increases in the lithification, bulk density, and velocity, seems to correlate with the BSR at about 0.82 sec.

Although the reflection profile in Figure 5 does not suggest any other significant acoustical subdivisions, the Glomar *Challenger's* profile coming onto Site 185 (see Figure 3) and other profiles in this area clearly show a "surface mantling" unit between the bottom and about 0.2 sec. The base of this surface mantling unit may correlate with some hard drilling at 158 meters; although a time hiatus occurs here, no significant lithologic change was observed between the recovered cores at 129 to 138 meters (Core 7) and 167 to 176 meters (Core 8).

The interval velocity between the bottom and the BSR (0.82 sec at 670 m) is 1.65 km/sec and is quite similar to the laboratory observations and those obtained at Site 184.

REFERENCES

Bandy, O. L., Casey, R. E. and Wright, R. C., 1971. Late Neogene planktonic zonation, magnetic reversals, and radiometric dates, Antarctic to the Tropics. *In* Antarctic Oceanology I, Reid, J. L. (Ed.), Am. Geophys. Union, Antarctic Res. Ser. **15**, 1.

Nakaseko, K. 1963. Neogene Cyrtoidea (Radiolaria) from the Isozaki Formation in Ibaraki Prefecture, Japan. Osaka Univ. Sci. Rept. **12**(2), 165.

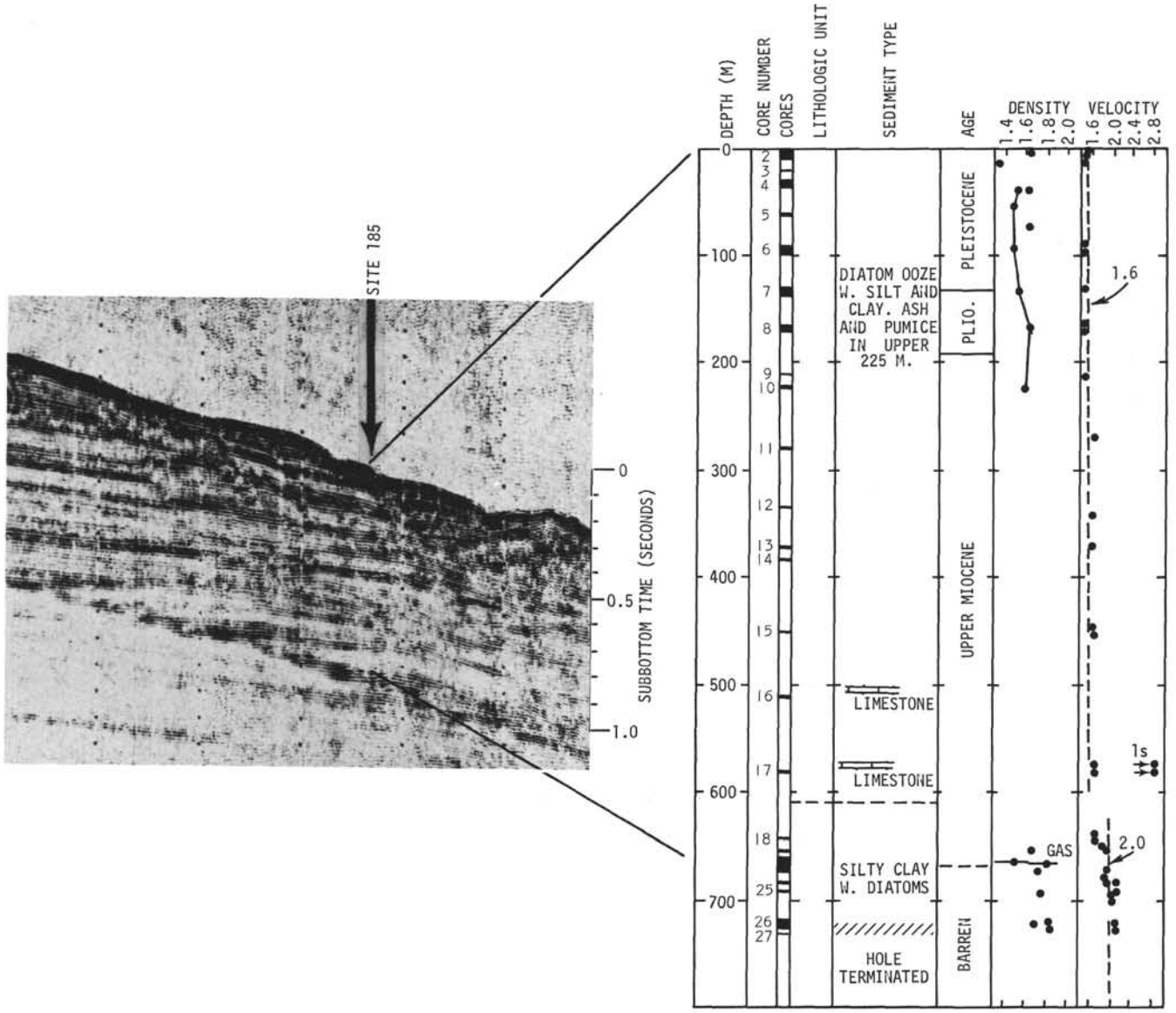
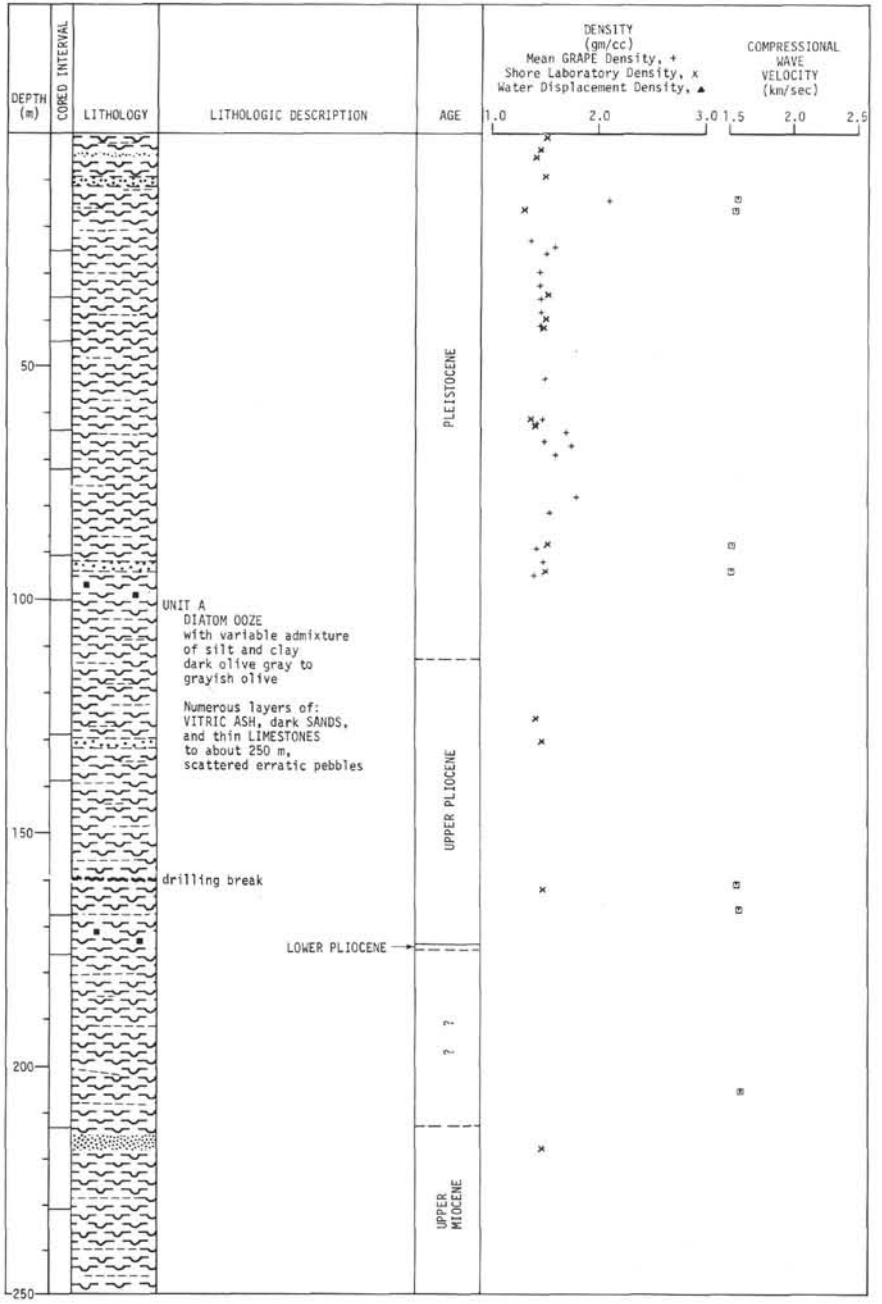
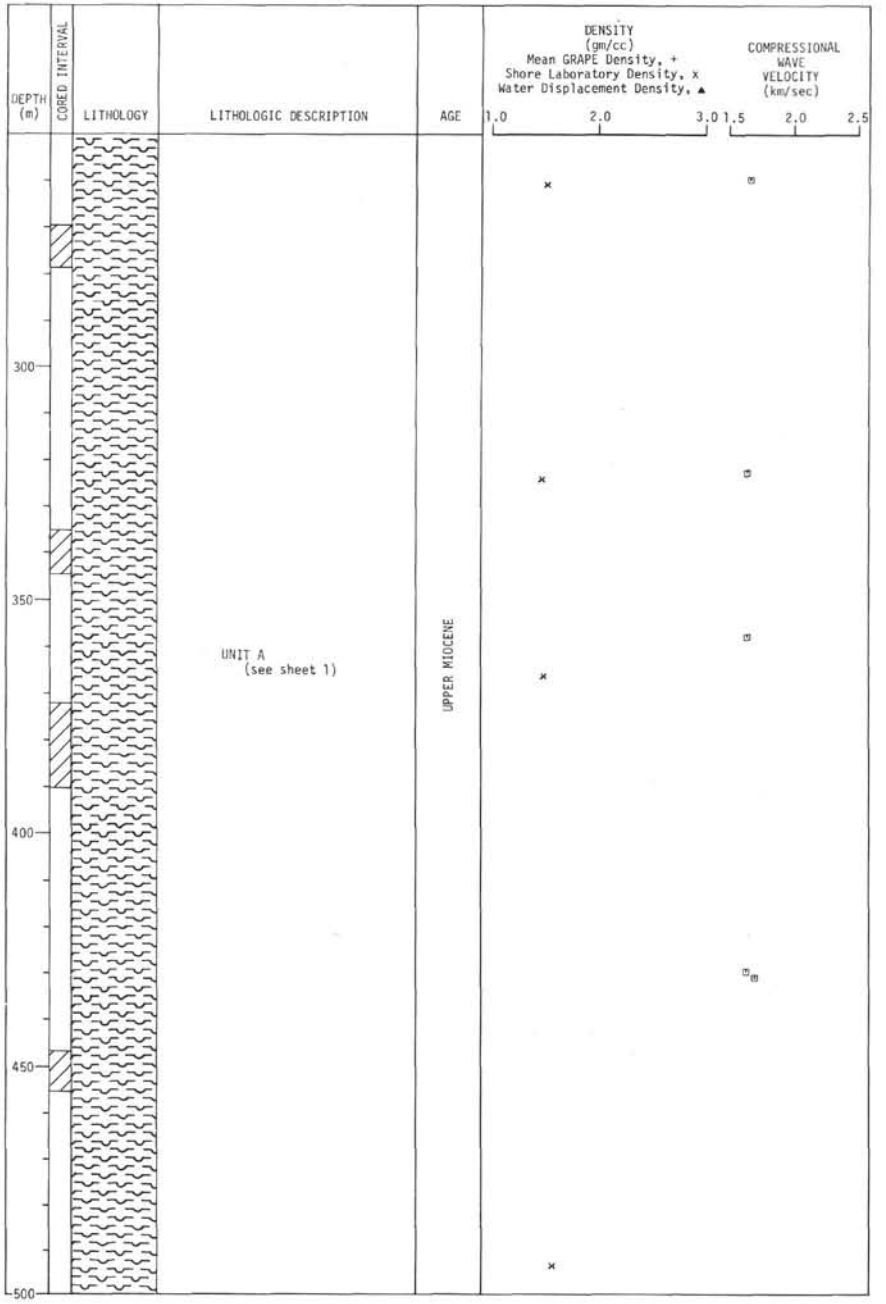


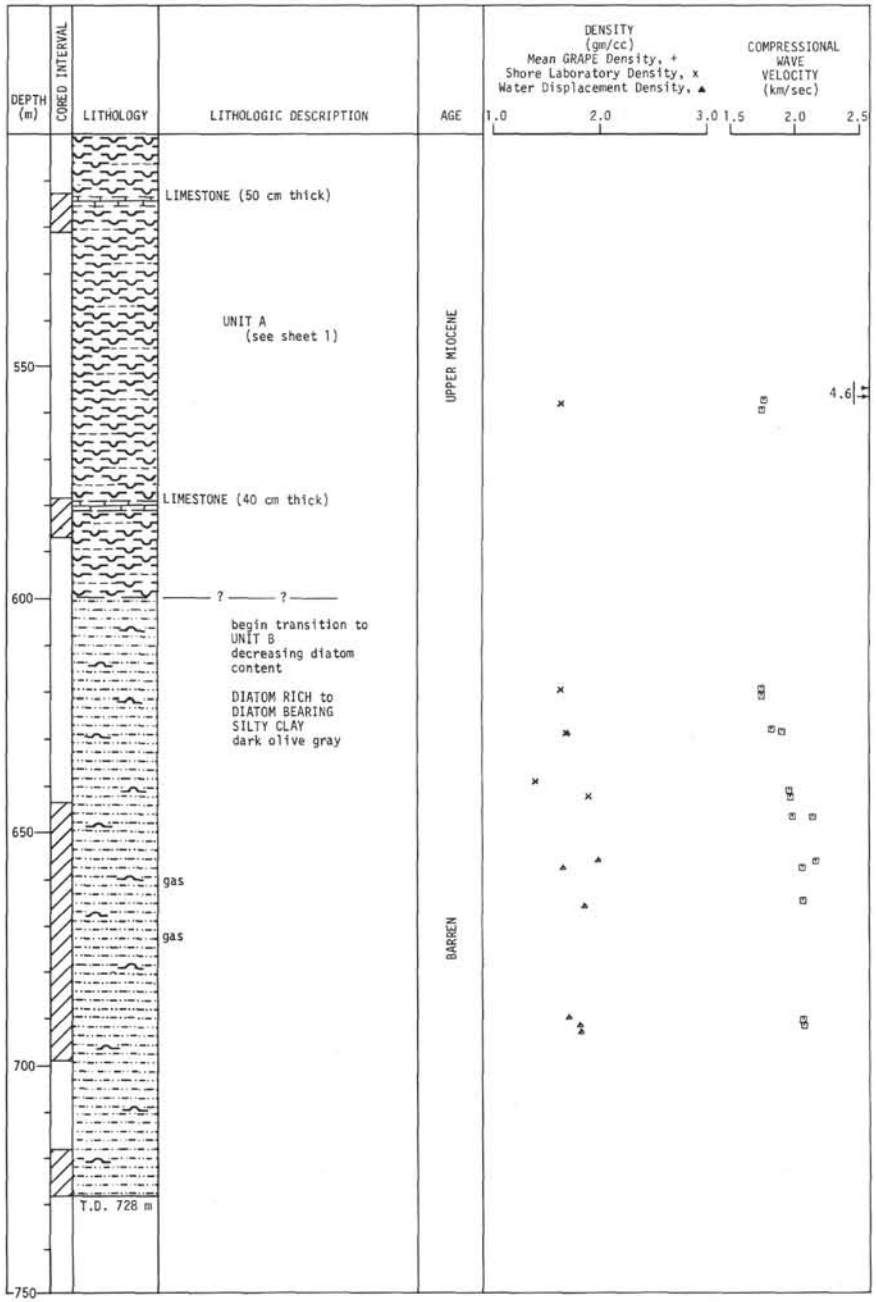
Figure 5. *Correlation of seismic reflection profile with physical properties and lithologic column, Site 185.*

SITE 185

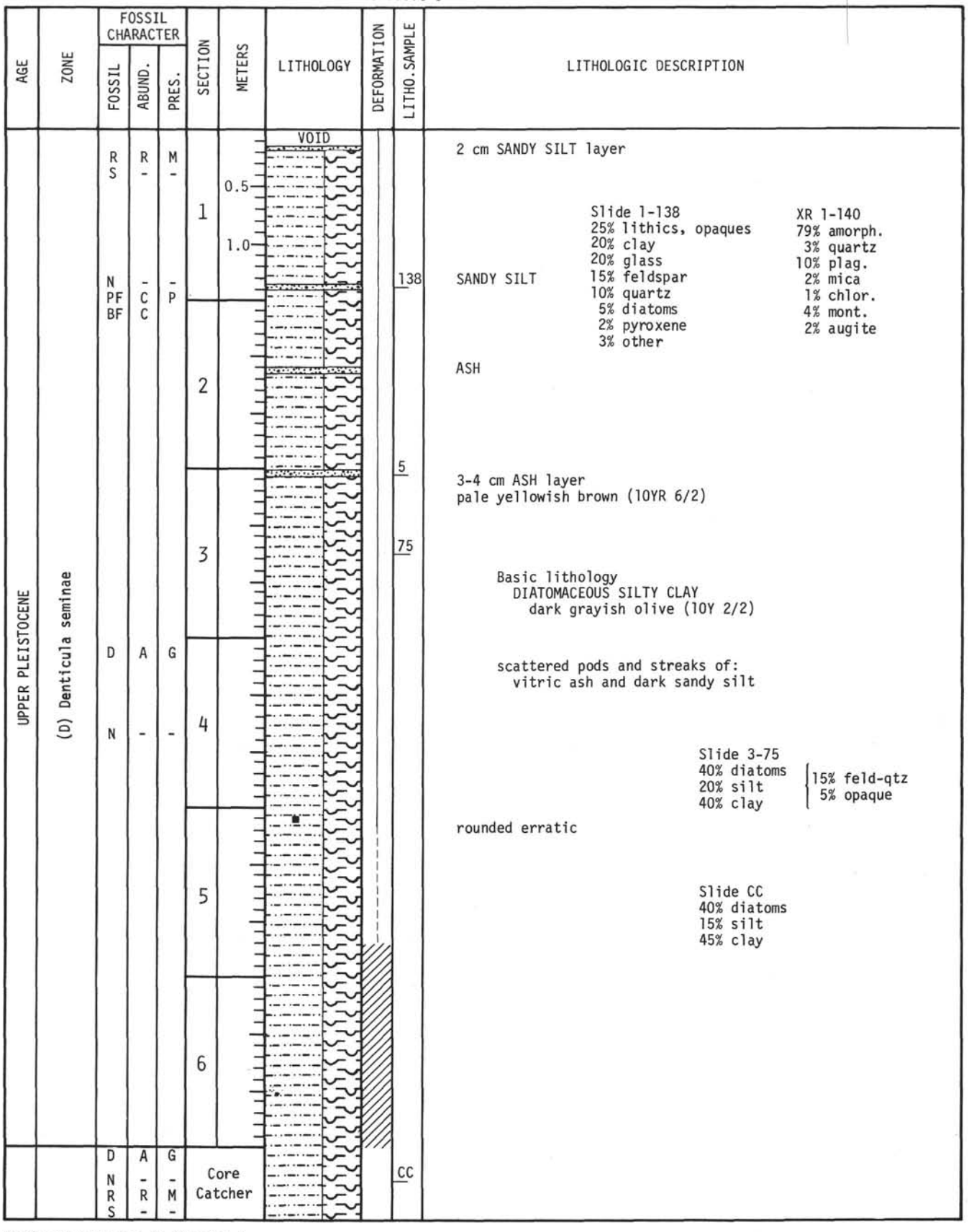


SITE 185

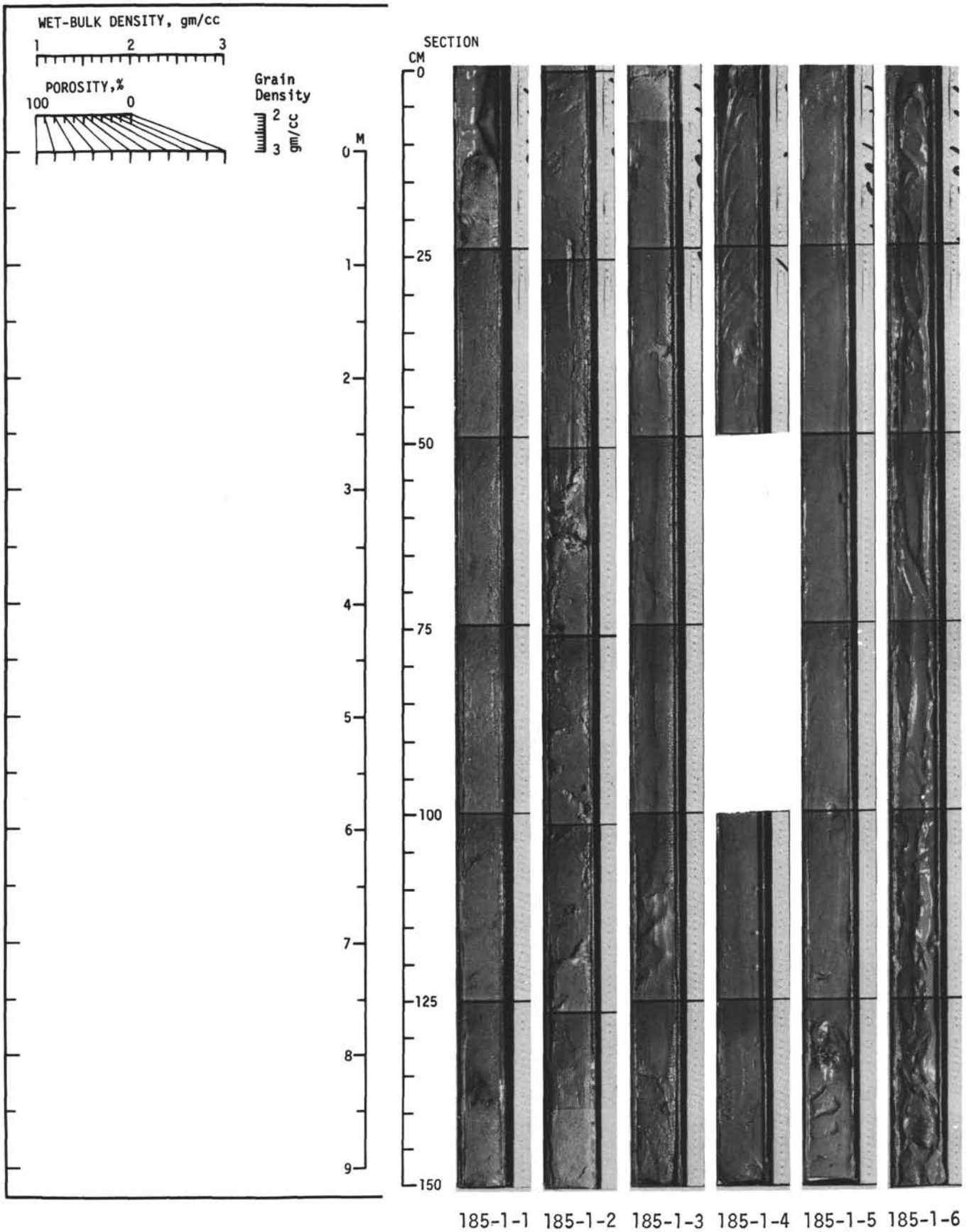



DEPTH (m)
CORED INTERVAL
LITHOLOGY
LITHOLOGIC DESCRIPTION
AGE
DENSITY (gm/cc)
Mean GRAPE Density, +
Shore Laboratory Density, x
Water Displacement Density, ▲
1.0
2.0
3.0
COMPRESSIONAL WAVE VELOCITY (km/sec)
1.5
2.0
2.5
LIMESTONE (50 cm thick)
UNIT A
(see sheet 1)
UPPER MIOCENE
4.6
LIMESTONE (40 cm thick)
? ? ?
begin transition to UNIT B
decreasing diatom content
DIATOM RICH to DIATOM BEARING SILTY CLAY
dark olive gray
gas
gas
BARREN
T.D. 728 m
550
600
650
700
750

Site 185 Hole Core 1 Cored Interval: 0-9



Explanatory notes in Chapter 1


WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-1-1
185-1-2
185-1-3
185-1-4
185-1-5
185-1-6

Site 185 Hole Core 2 Cored Interval: 9-16

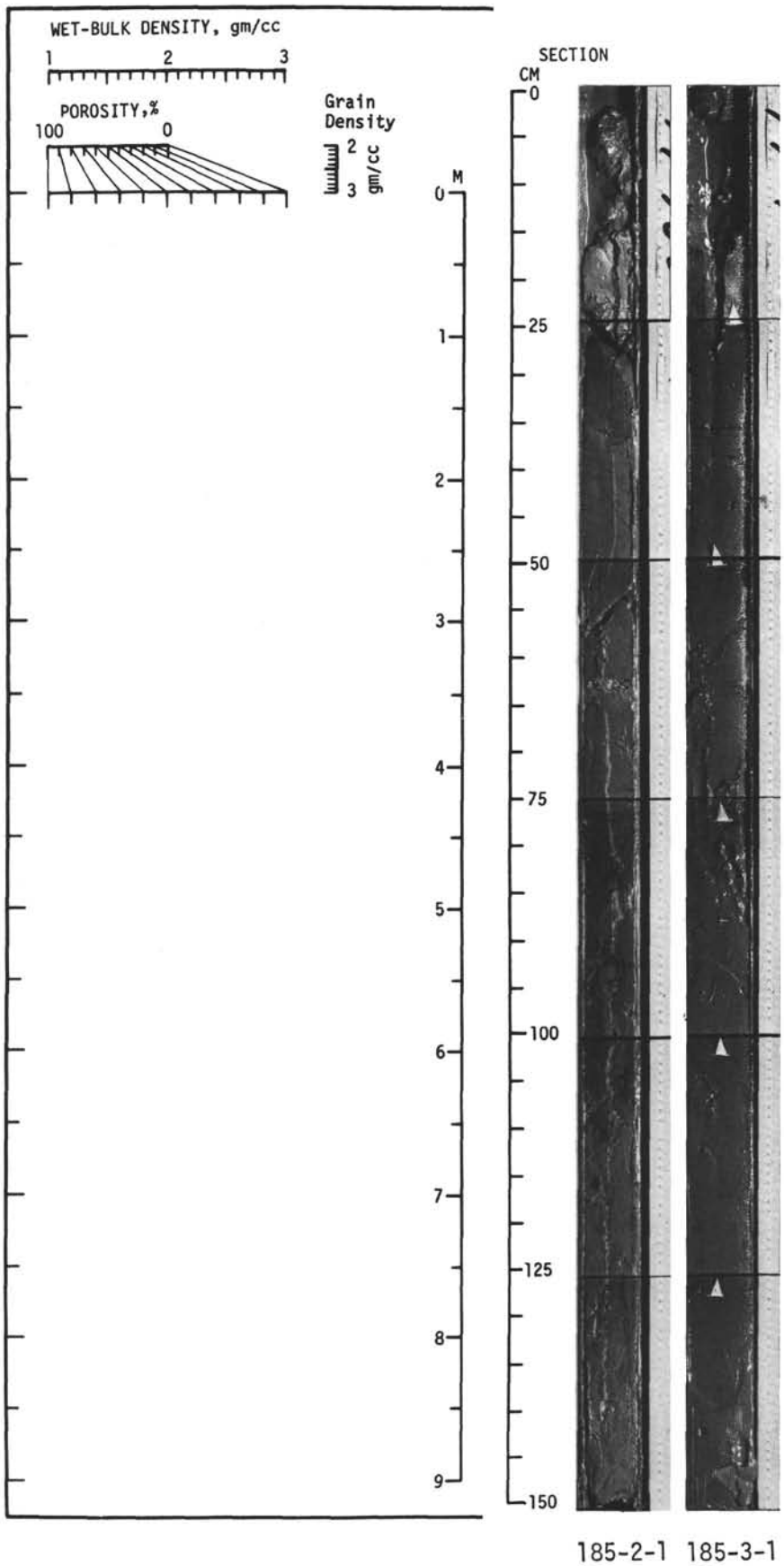
AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
		N PF BF	- C C	- M	1	0.5 1.0			123	VITRIC ASH pod, light brownish gray (10YR 6/2) SILT RICH CLAYEY DIATOM OOZE dark grayish olive (10Y 2/2)
†	*	D N R S	C - R R	G - M M	Core Catcher					pumice (0.5 - 1.0 cm size) pods of black (10YR 2/1) SANDY SILT below 75 cm in sec. 1

Explanatory notes in Chapter 1 † UPPER PLEISTOCENE * (D) Denticula seminae (S) Distephanus octangulatus

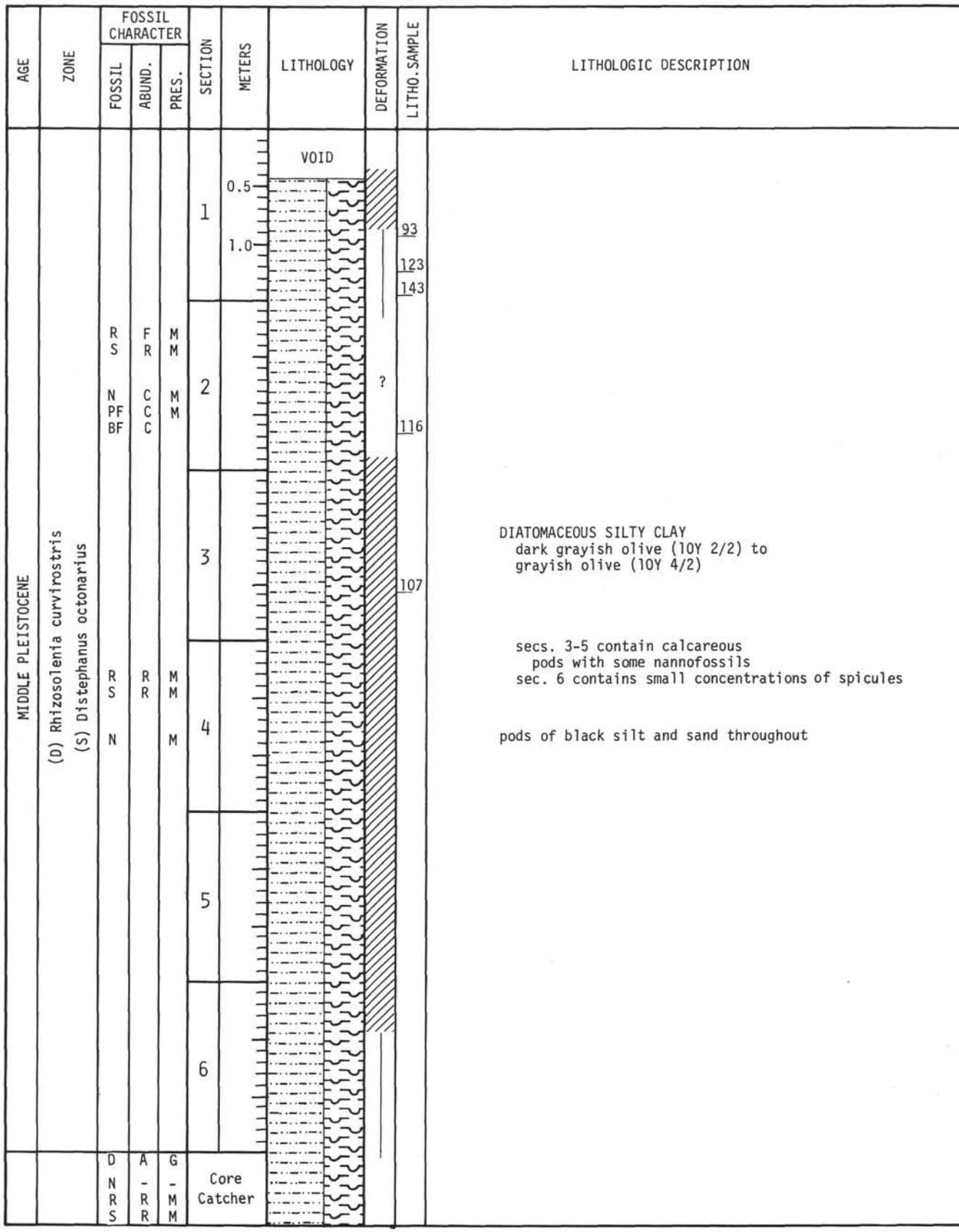
Site 185 Hole Core 3 Cored Interval: 16-25

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
		R S N PF BF	F C C A C	M M M P	1	0.5 1.0	VOID		98	CLAY RICH SILTY DIATOM OOZE olive brown (5Y 4/6) minor pods of black silt Slide 1-98 60% diatoms 30% silt 10% clay
†	*	D N R S	C - R R	G - M M	Core Catcher					

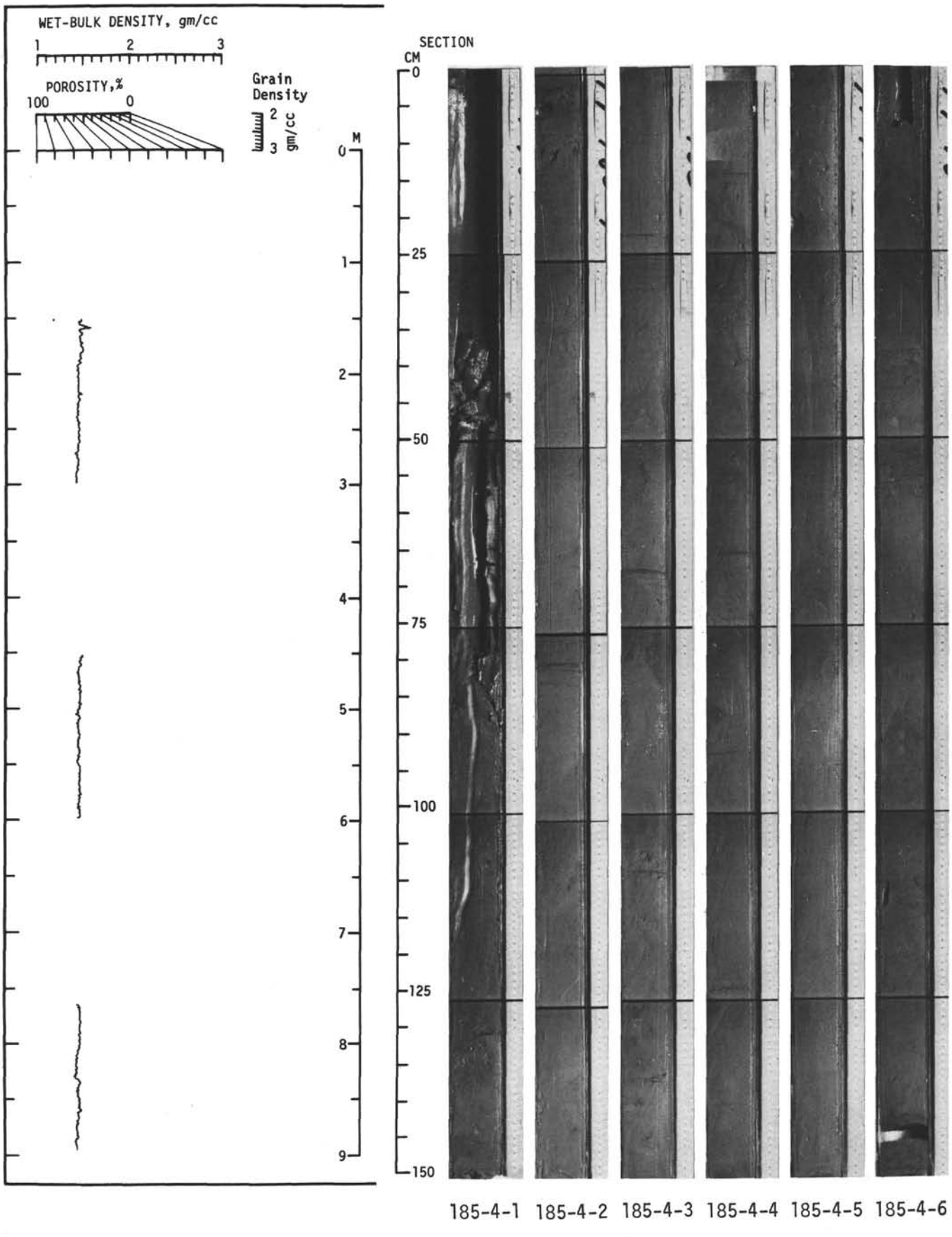
Explanatory notes in Chapter 1 † UPPER PLEISTOCENE * (D) Denticula seminae (S) Distephanus octangulatus


WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-2-1
185-3-1

Site 185 Hole Core 4 Cored Interval: 35-44



Explanatory notes in Chapter 1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2
3
POROSITY,%
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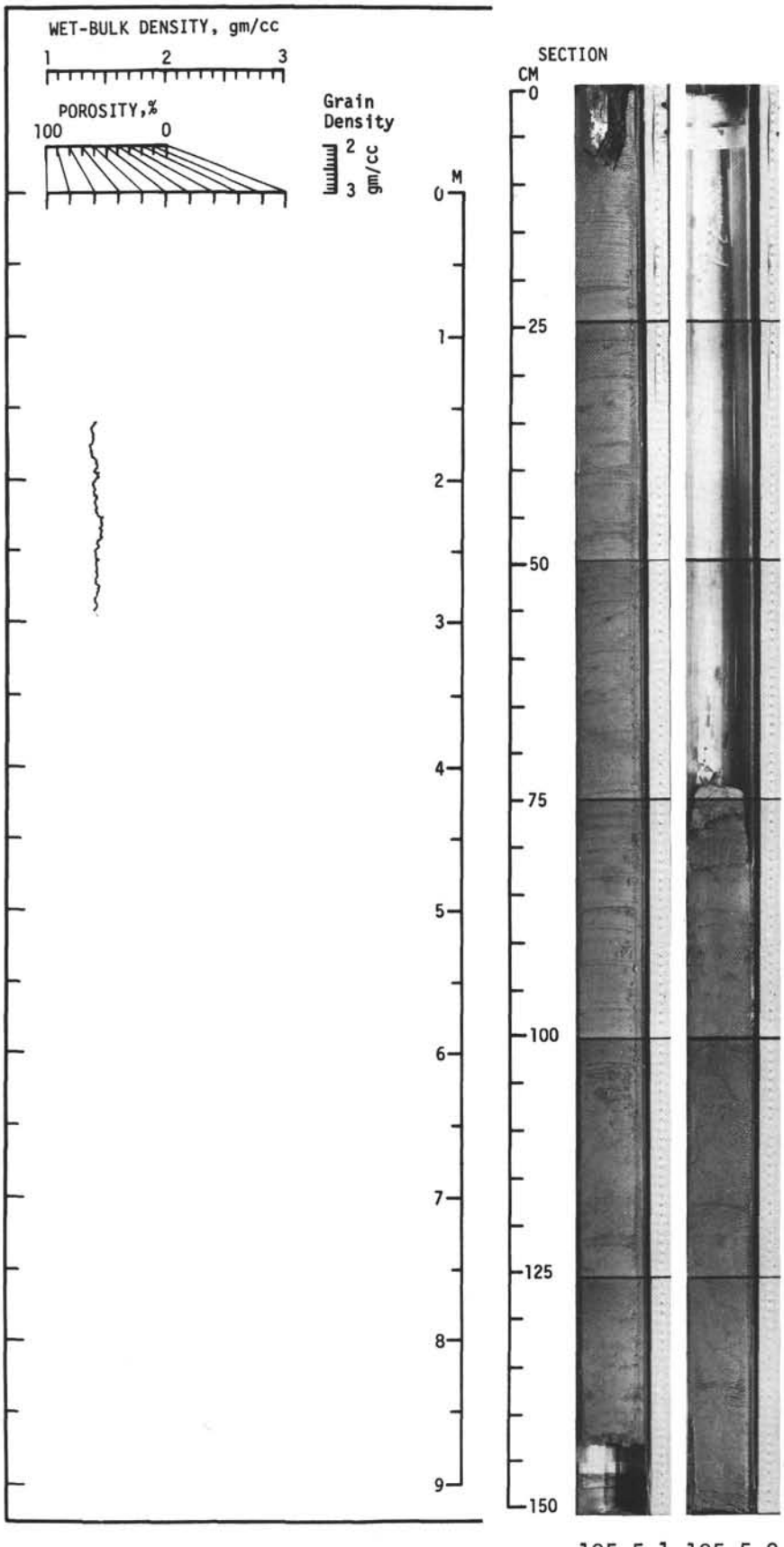
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-4-1
185-4-2
185-4-3
185-4-4
185-4-5
185-4-6

Site 185 Hole Core 5 Cored Interval: 63-72

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
MIDDLE PLEISTOCENE	(D) Rhizosolenia curvirostris (S) Distephanus octonarius	N PF BF	- R F	-	1	0.5 1.0	VOID		100	SILT and CLAY RICH DIATOM OOZE dark grayish olive (10Y 3/2)
					2				56	70% diatoms 10% silt 20% clay
		D N R S	A - F F	G - M M	Core Catcher					scattered white concentrations of spicules, and black pods containing Fe and/or Mn stained material

Explanatory notes in Chapter 1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2
3
POROSITY,%
100
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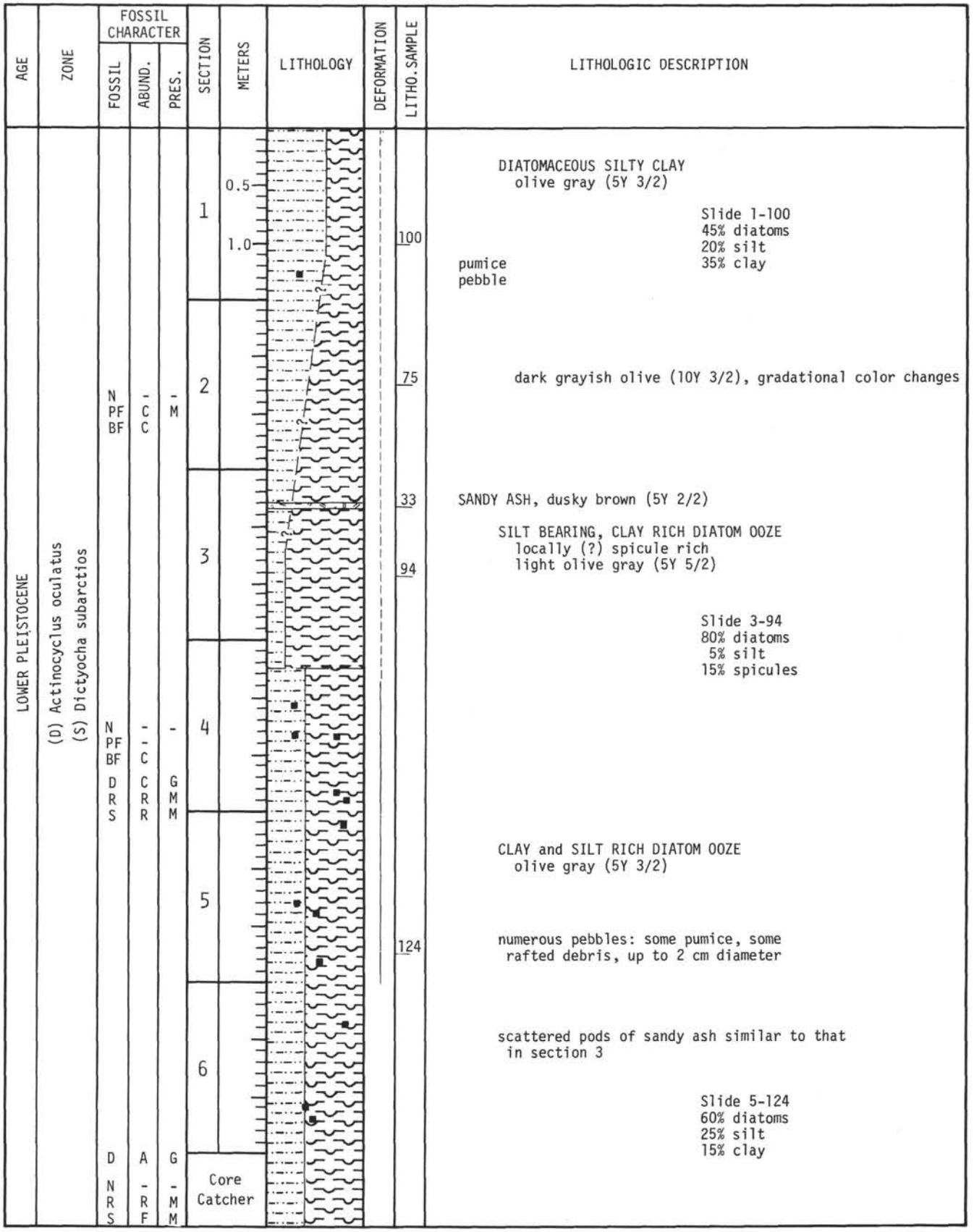
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9

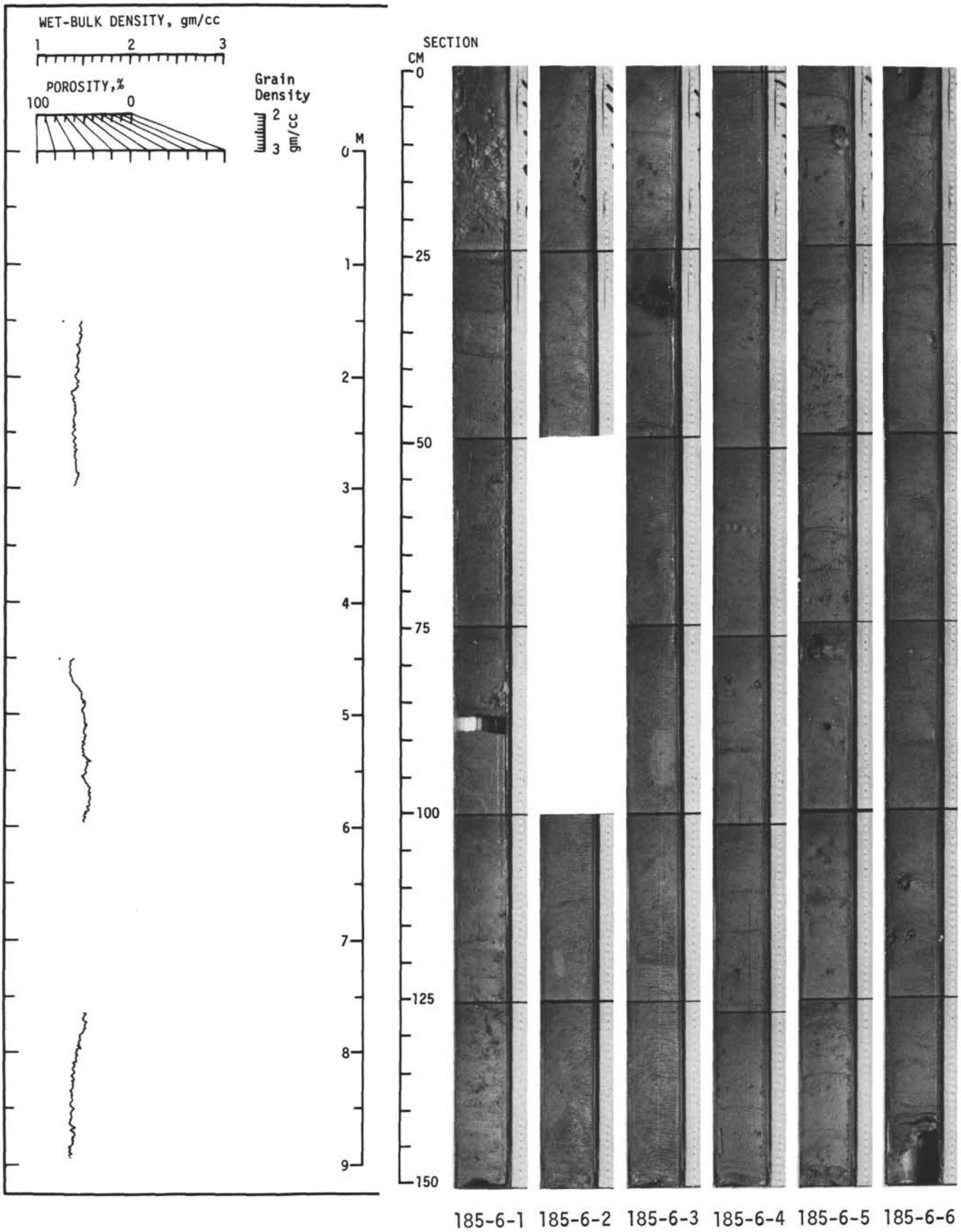
SECTION
CM
0
25
50
75
100
125
150

185-5-1 185-5-2

Site 185 Hole Core 6 Cored Interval: 91-100



Explanatory notes in Chapter 1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2
3
POROSITY,%
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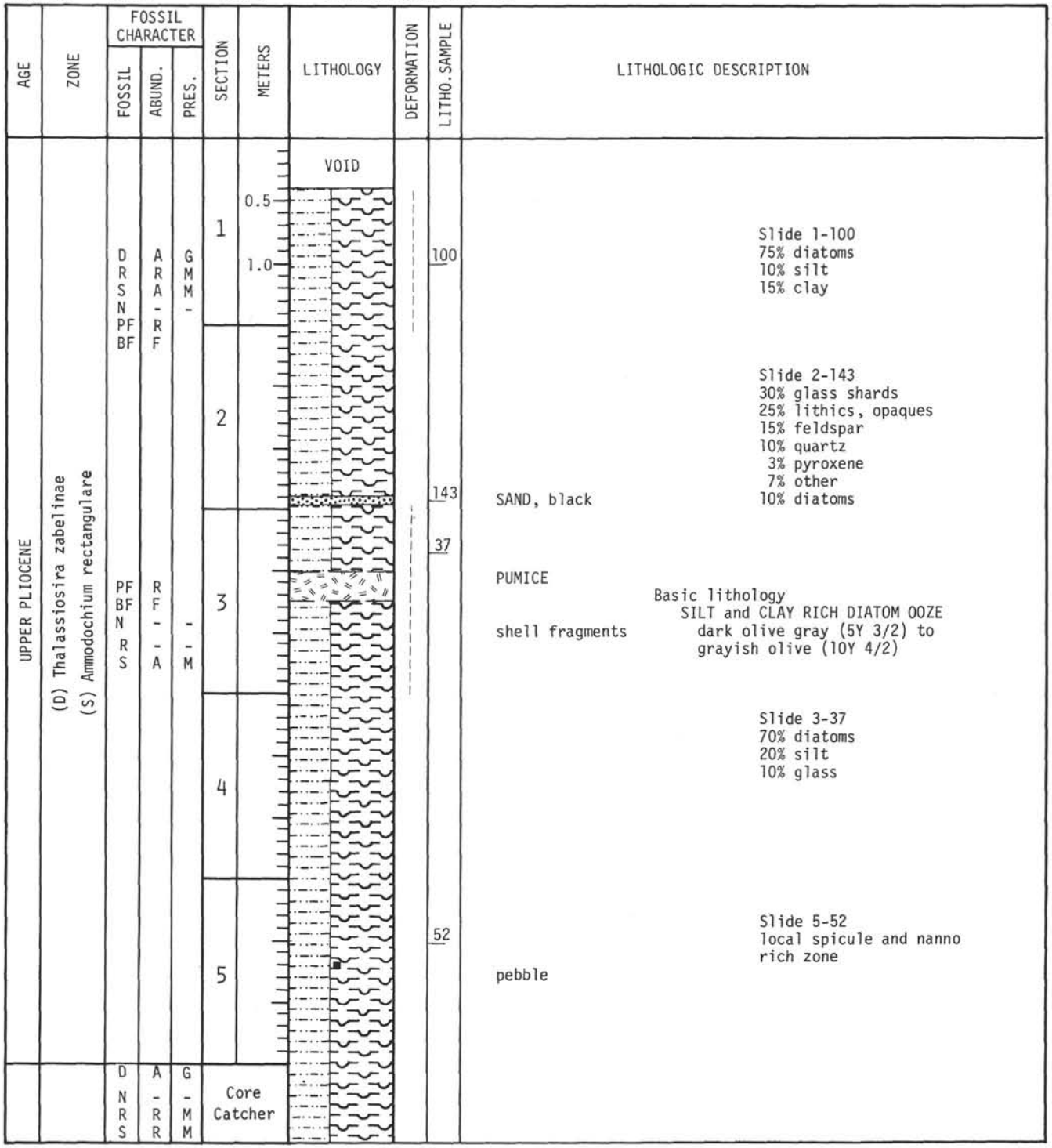
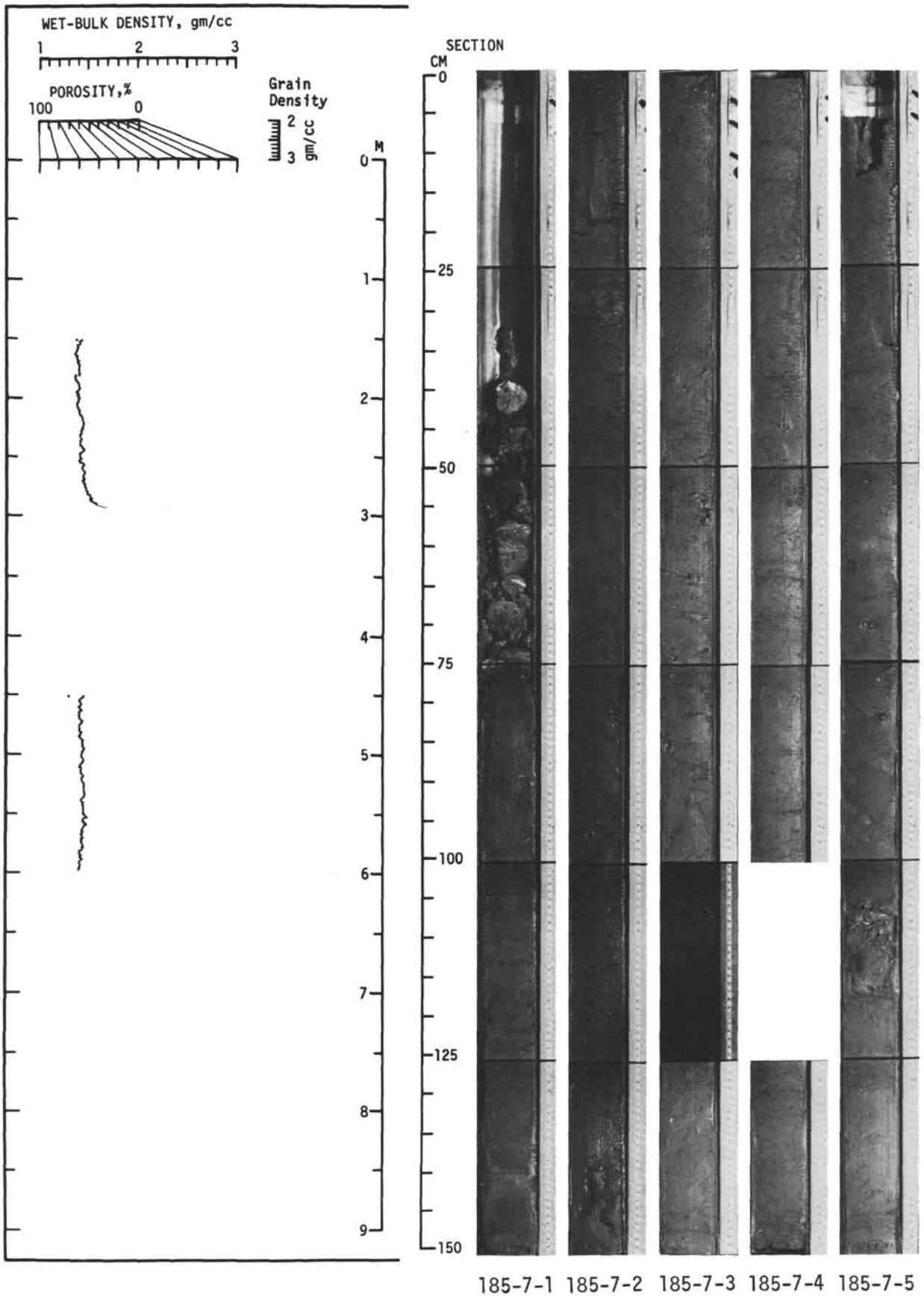
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-6-1
185-6-2
185-6-3
185-6-4
185-6-5
185-6-6

Site 185 Hole Core 7 Cored Interval: 129-138



Explanatory notes in Chapter 1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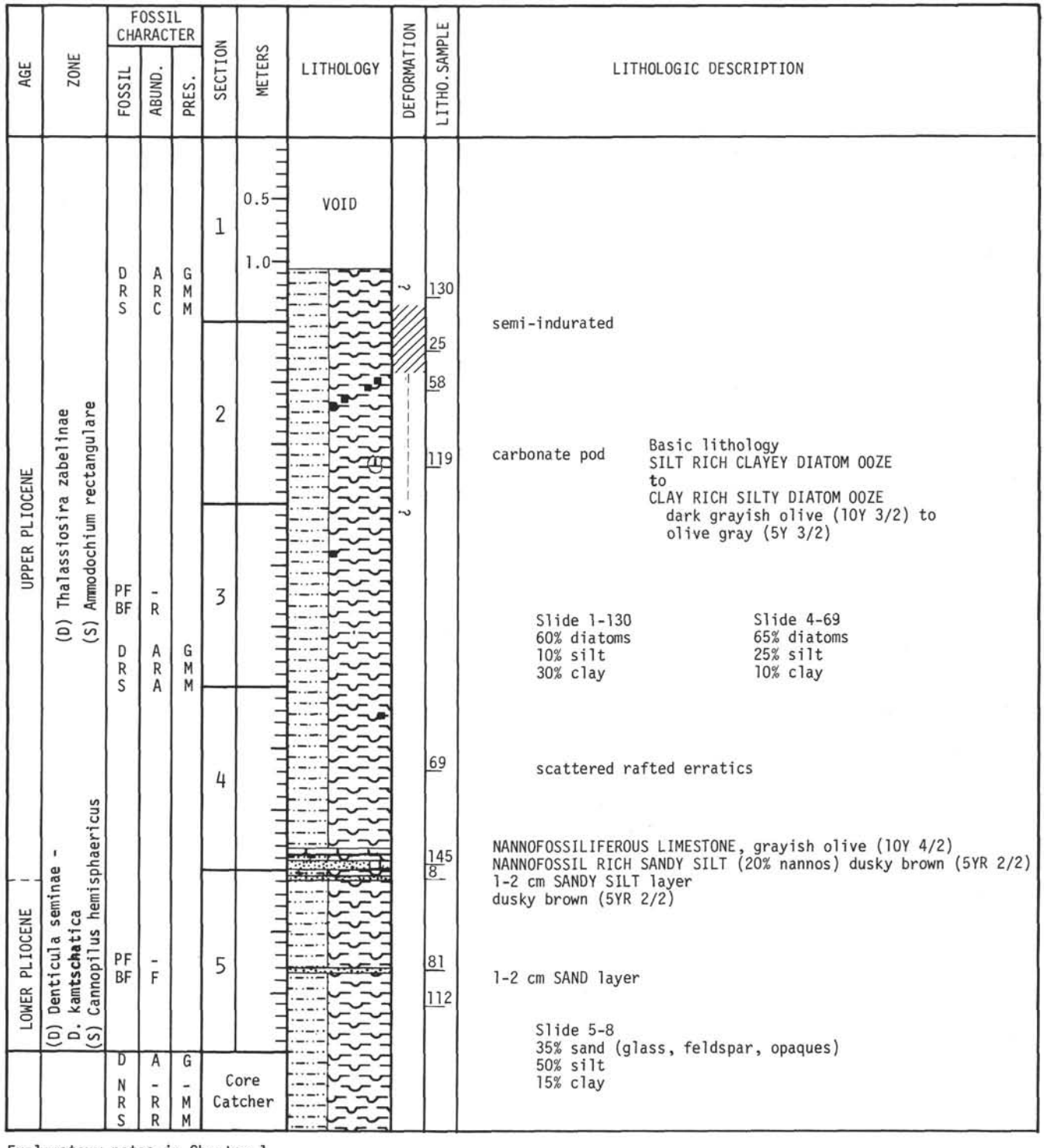
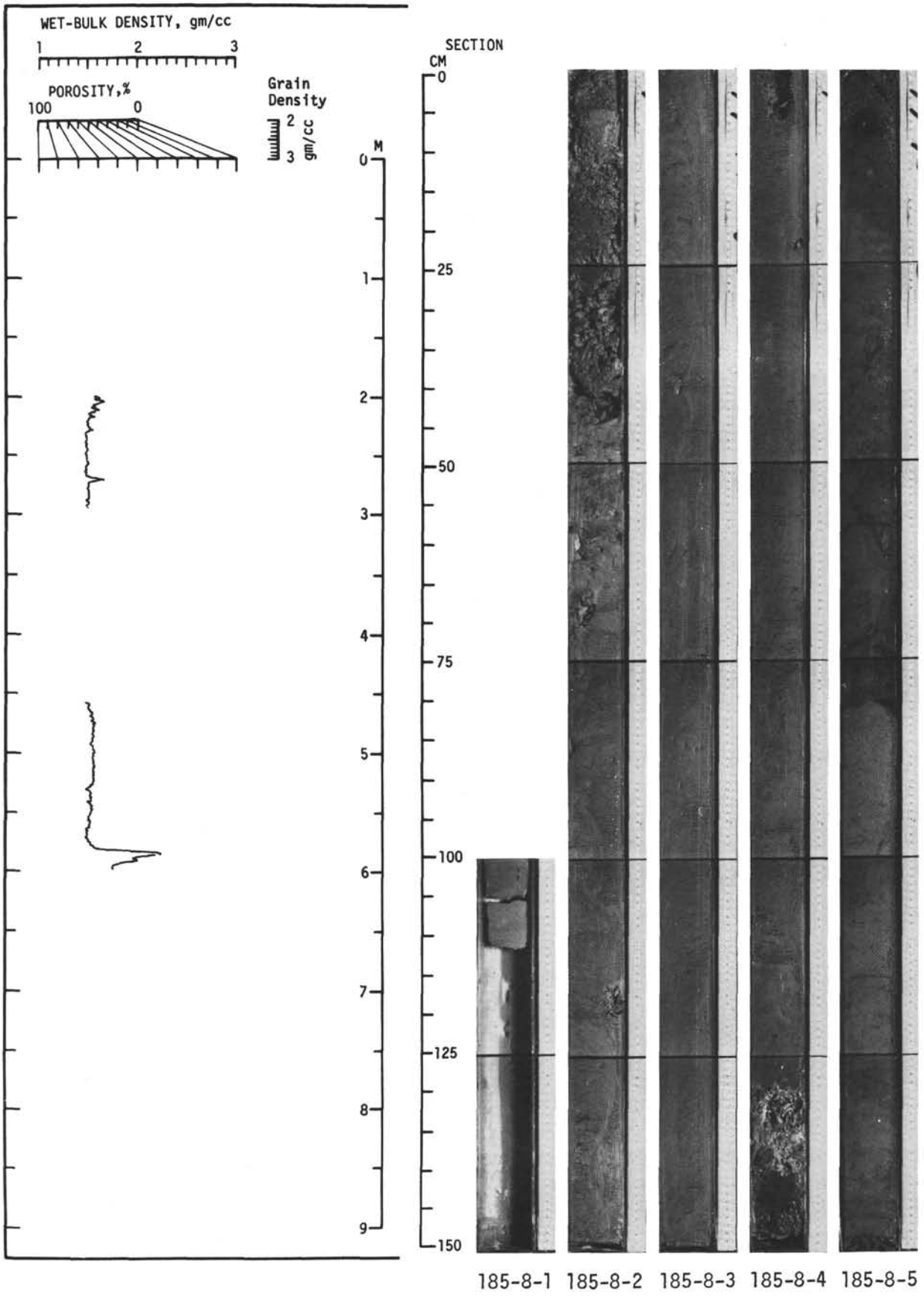
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-7-1
185-7-2
185-7-3
185-7-4
185-7-5

Site 185 Hole Core 8 Cored Interval: 167-176



Explanatory notes in Chapter 1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2
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POROSITY,%
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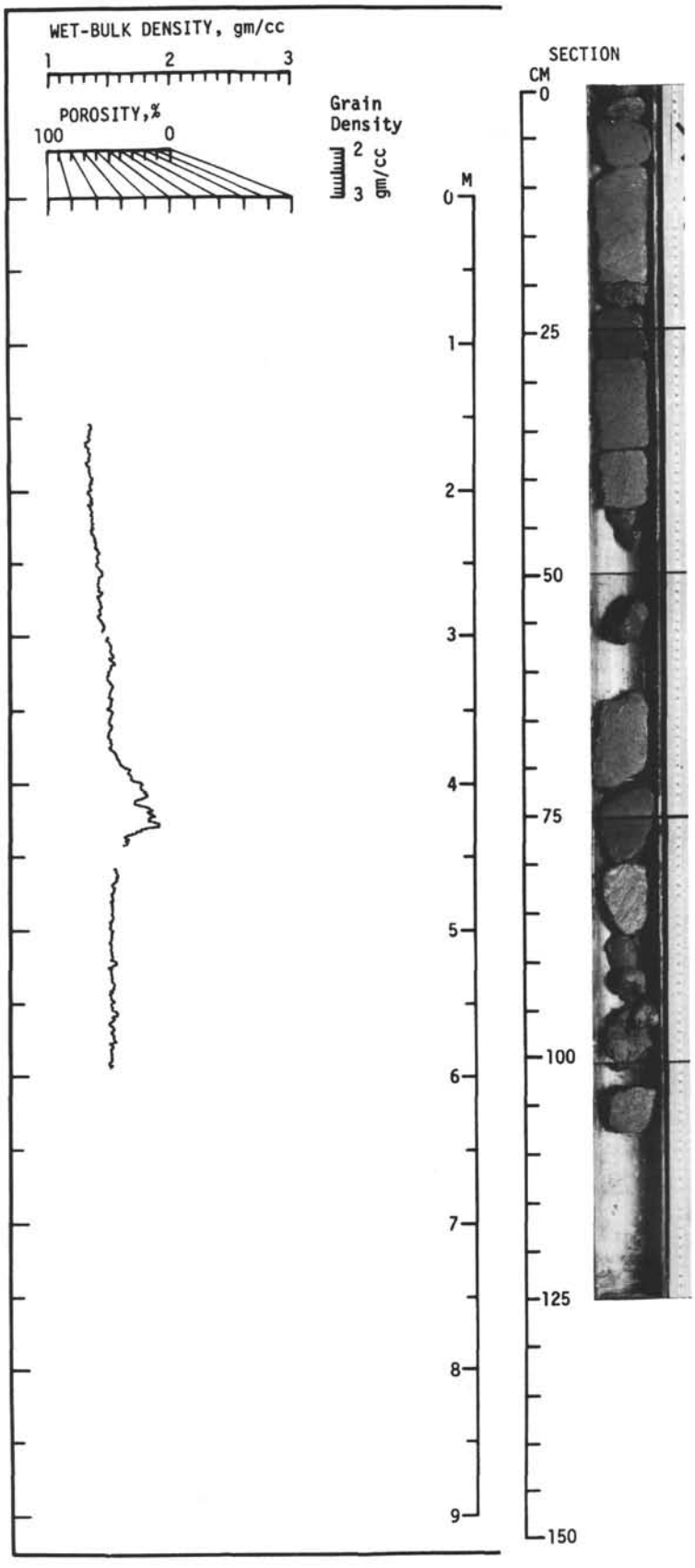
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-8-1
185-8-2
185-8-3
185-8-4
185-8-5

Site 185 Hole Core 9 Cored Interval: 213-222

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	*				1	0.5 1.0	VOID		90	Semi-indurated CLAY RICH DIATOM OOZE dark grayish olive (10Y 3/2) Slide 1-90 90% diatoms 10% clay
		D N R S	A - R F	G - M M	Core Catcher					

Explanatory notes in Chapter 1 *(D) Denticula kamtschatica


WET-BULK DENSITY, gm/cc
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3
POROSITY,%
100
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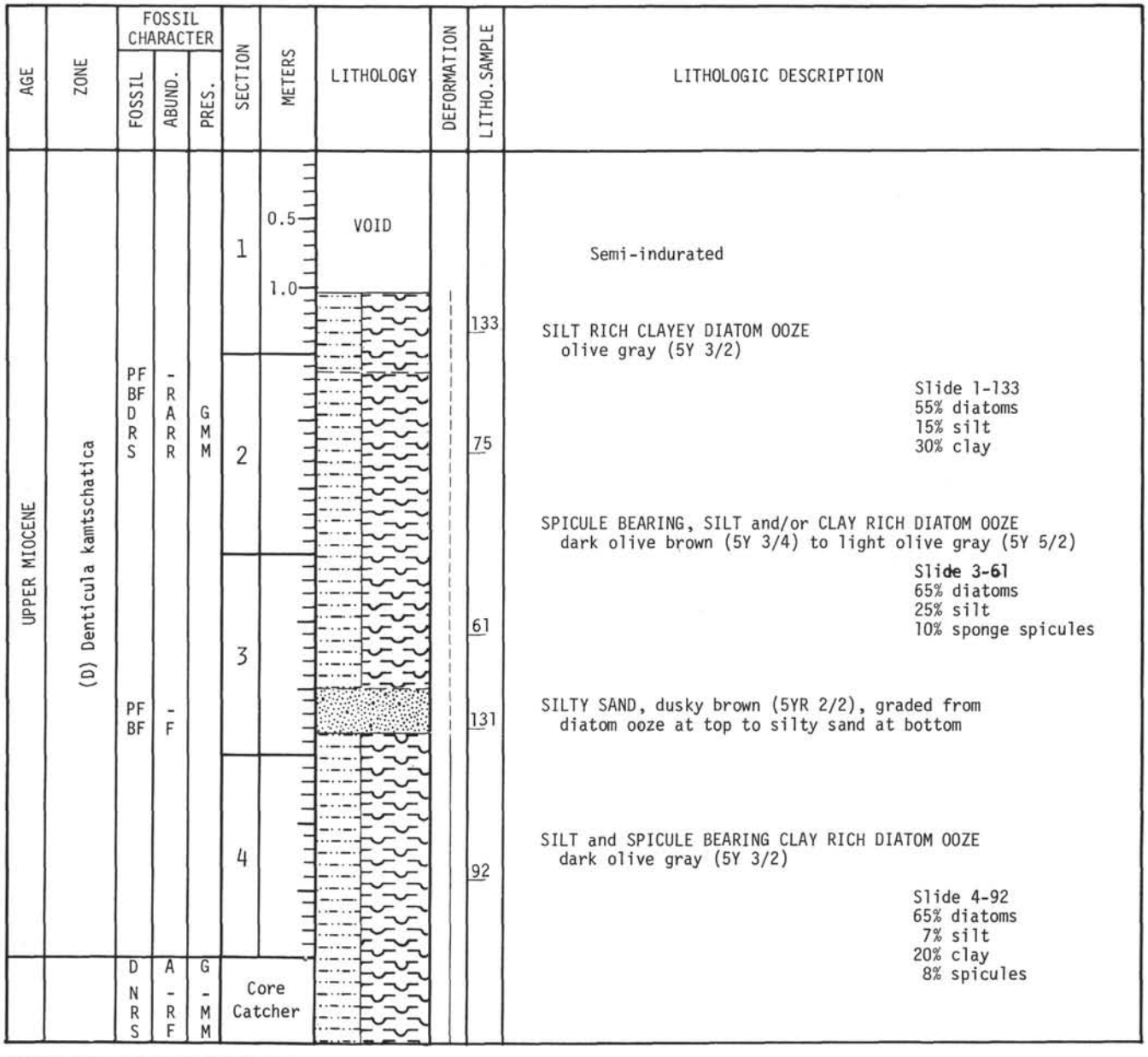
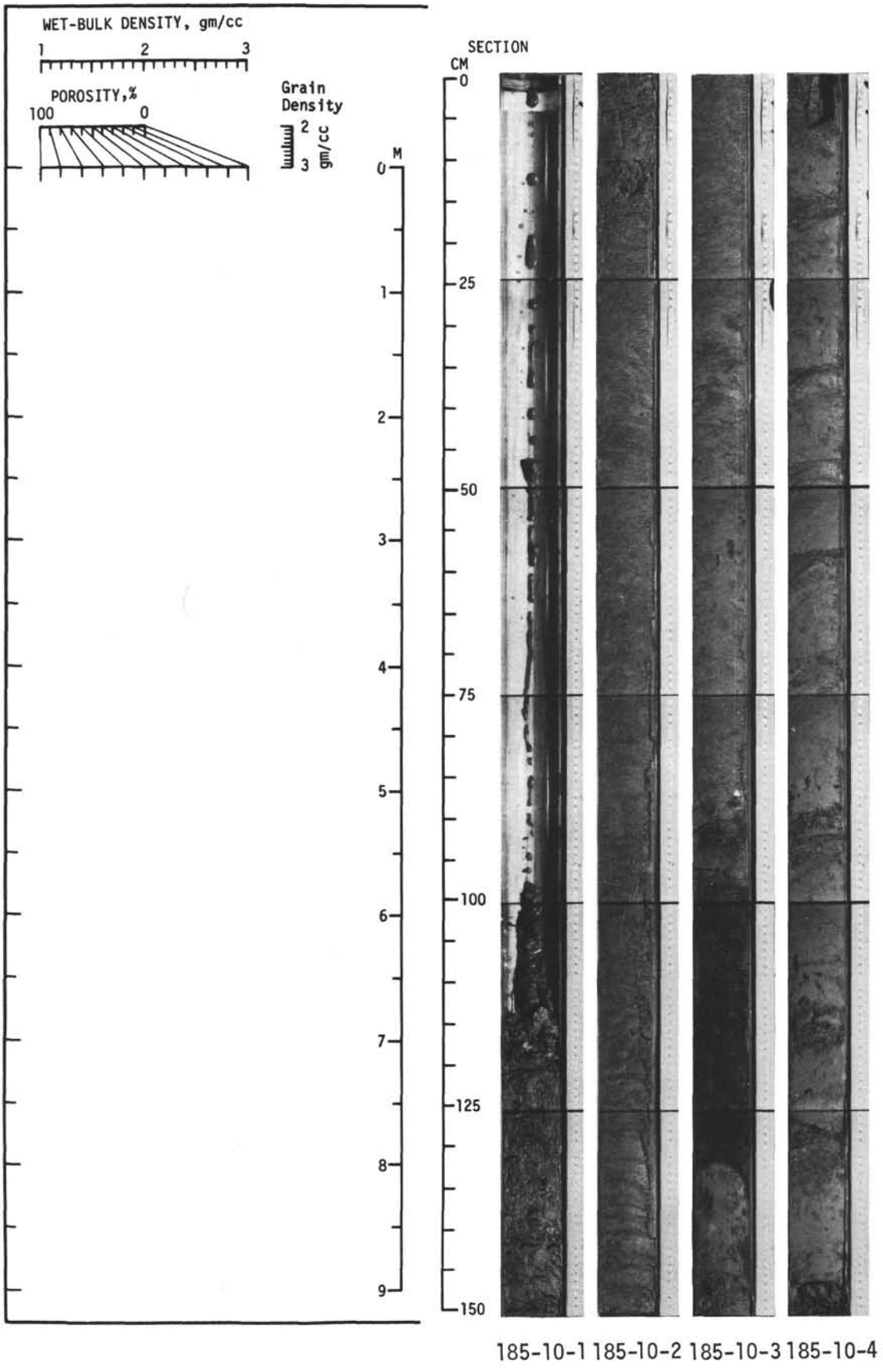
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150

185-9-1

Site 185 Hole Core 10 Cored Interval: 222-231



Explanatory notes in Chapter 1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2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-10-1
185-10-2
185-10-3
185-10-4

Site 185 Hole Core 11 Cored Interval: 269-278

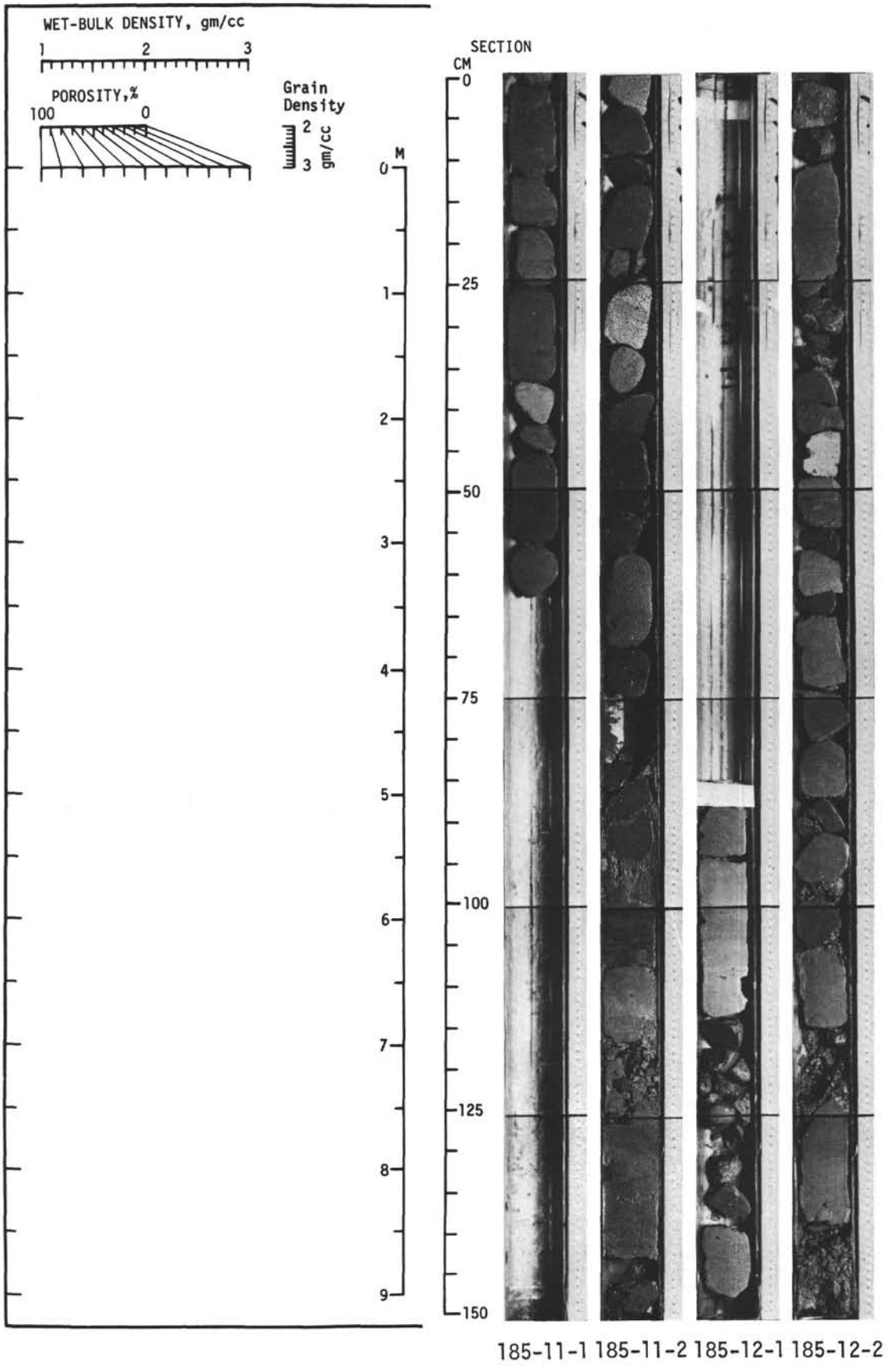
AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschatica (S) Distephanus speculum var. pentagonus	R S	F	M	1	0.5 – 1.0	VOID		120	Semi-indurated, burrowed
					2				55	SPICULE BEARING to SPICULE RICH, SILT and CLAY RICH DIATOM OOZE dark olive gray (5Y 3/2) to grayish olive (10Y 4/2) Slide 1-120 70% diatoms 10% silt 15% clay 5% spicules
		D N R S	C - R R	G - M M	Core Catcher					

Explanatory notes in Chapter 1

Site 185 Hole Core 12 Cored Interval: 335-344

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschatica (S) Distephanus speculum var. pentagonus	D R S	A R F	G M M	1	0.5 – 1.0	VOID		110	Semi-indurated, burrowed
					2				104	SPICULE and SILT BEARING, CLAY RICH DIATOM OOZE dark olive gray (5Y 3/2) scattered concentrations of sponge spicules Slide 1-110 75% diatoms 5% silt 15% clay 5% spicules
		D N R S	A - R R	G - M M	Core Catcher					

Explanatory notes in Chapter 1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3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-11-1
185-11-2
185-12-1
185-12-2

Site 185 Hole Core 13 Cored Interval: 372-381

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschtica (S) Distephanus speculum var. pentagonus	R S	R F	M M	1	0.5 – 1.0	VOID			Semi-indurated, burrowed
										SPICULE and SILT BEARING CLAY RICH DIATOM OOZE dark olive gray (5Y 3/2)
					2				60 | 83	1.5 cm diam. pod of NANNOFOSSIL OOZE
		D N R S	A - R R	G - M M	Core Catcher					

Explanatory notes in Chapter 1

Site 185 Hole Core 14 Cored Interval: 381-390

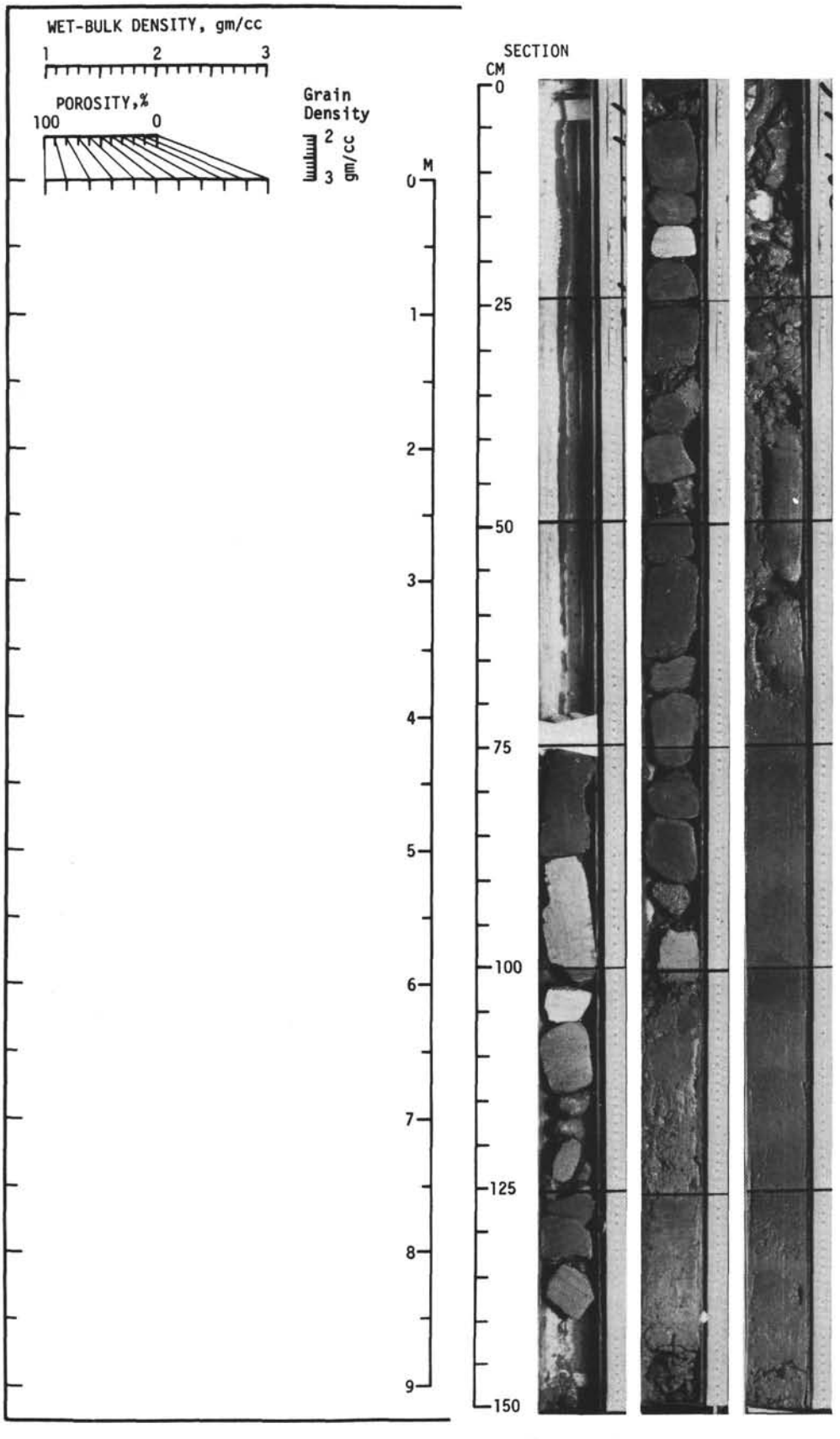
AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschatica *	R S	R C	M M	1	0.5 – 1.0	VOID		90	SPICULE and SILT BEARING CLAY RICH DIATOM OOZE dark grayish olive (10Y 3/2)
					Core Catcher					Semi-indurated

Slide 1-90
75% diatoms
5% silt
15% clay
5% spicules

Core Catcher:

D	A	G
N	-	-
R	R	M
S	R	M

Explanatory notes in Chapter 1 * (S) Distephanus speculum var. pentagonus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1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-13-1
185-13-2
185-14-1

Site 185 Hole Core 5 Cored Interval: 447-456

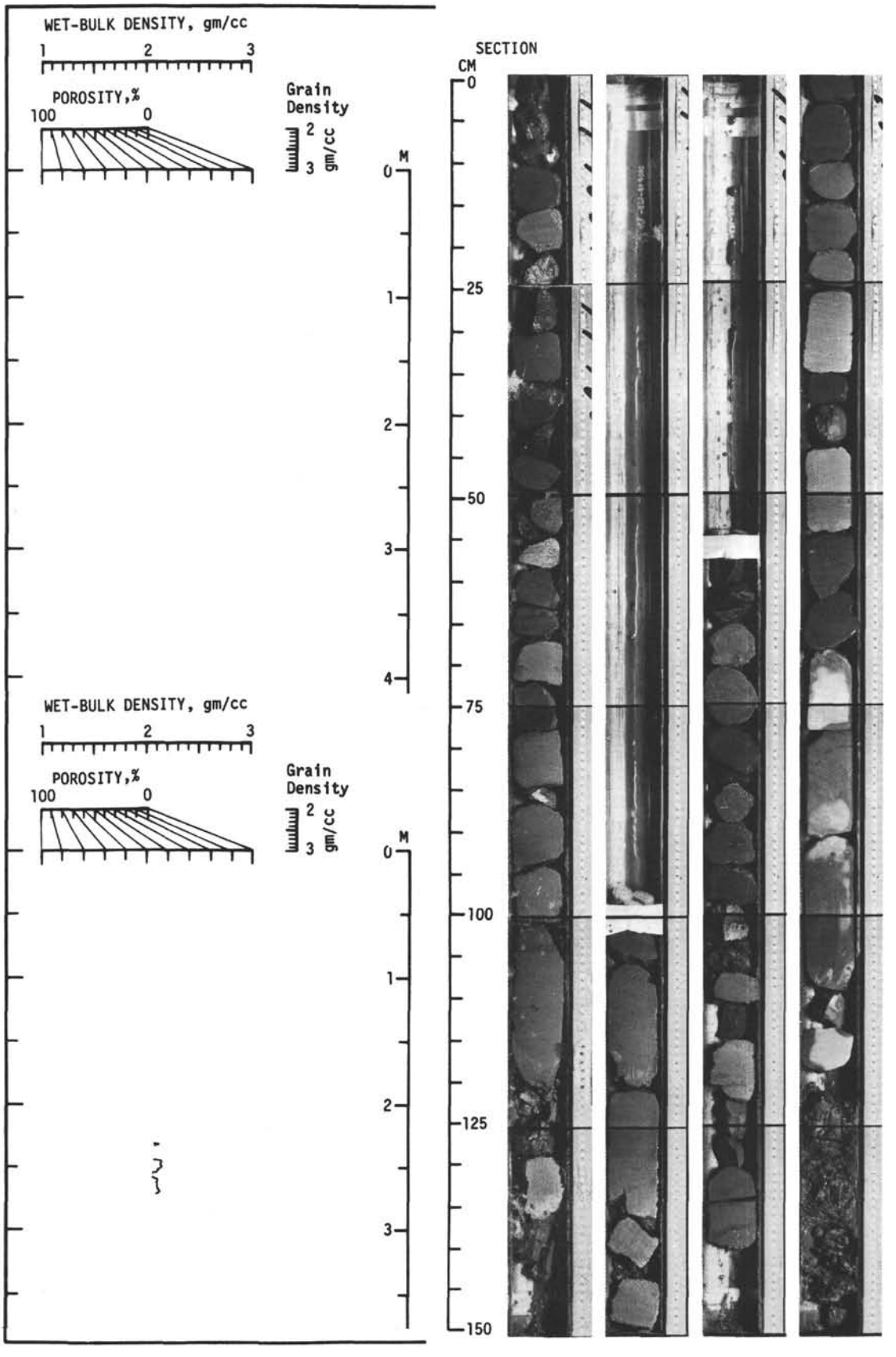
AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschatica (S) Distephanus speculum var. pentagonus	R S	C	M	1	0.5 1.0	VOID			SILT and CLAY RICH DIATOM OOZE olive gray (5Y 3/2)
					2				118	
		D N R S	R - - -	M - - -	Core Catcher					

Explanatory notes in Chapter 1

Site 185 Hole Core 6 Cored Interval: 513-522

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschatica (S) Distephanus speculum var. pentagonus	R S	R R	M M	1	0.5 1.0	VOID		100	pod of calcite crystals Basic lithology SILT RICH DIATOMACEOUS CLAY dark olive gray (5Y 3/2) semi-indurated
					2				100	DIATOM FRAGMENT BEARING LIMESTONE, dark olive gray (5Y 3/2)
		D N R S	- R R	- M M	Core Catcher					Slide 1-100 40% diatoms 10% feldspar 5% quartz 5% opaque 40% clay Slide 2-100 5% diatom fragments 95% calcite (probably includes some clay)

Explanatory notes in Chapter 1


WET-BULK DENSITY, gm/cc
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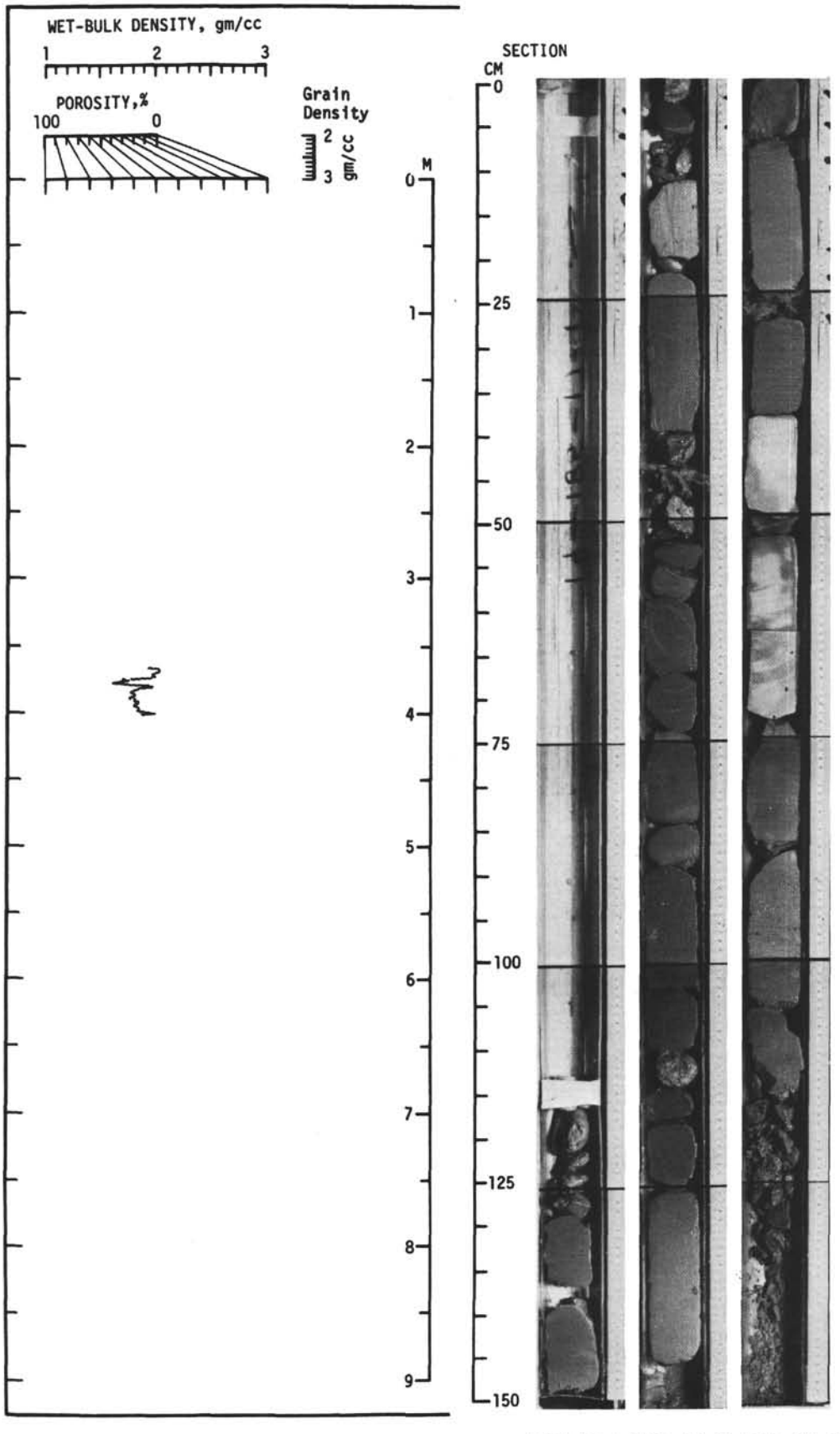
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
0 M
1
2
3
4
WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
0 M
1
2
3
SECTION
CM
0
25
50
75
100
125
150
185-15-1
185-15-2
185-16-1
185-16-2

Site 185 Hole Core 17 Cored Interval: 578-587

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	(D) Denticula kamtschatica (S) Distephanus speculum var. pentagonus				1	0.5	VOID			
						1.0				Semi-indurated
					2				75	SILT BEARING CLAY RICH DIATOM OOZE dark olive gray (5Y 3/2)
										Slide 2-75 75% diatoms 5% silt 20% clay
					3					LIMESTONE (microspar cemented diatom ooze)
		D N R S	A - R R	G - M M	Core Catcher					

Explanatory notes in Chapter 1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POROSITY,%
100
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Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
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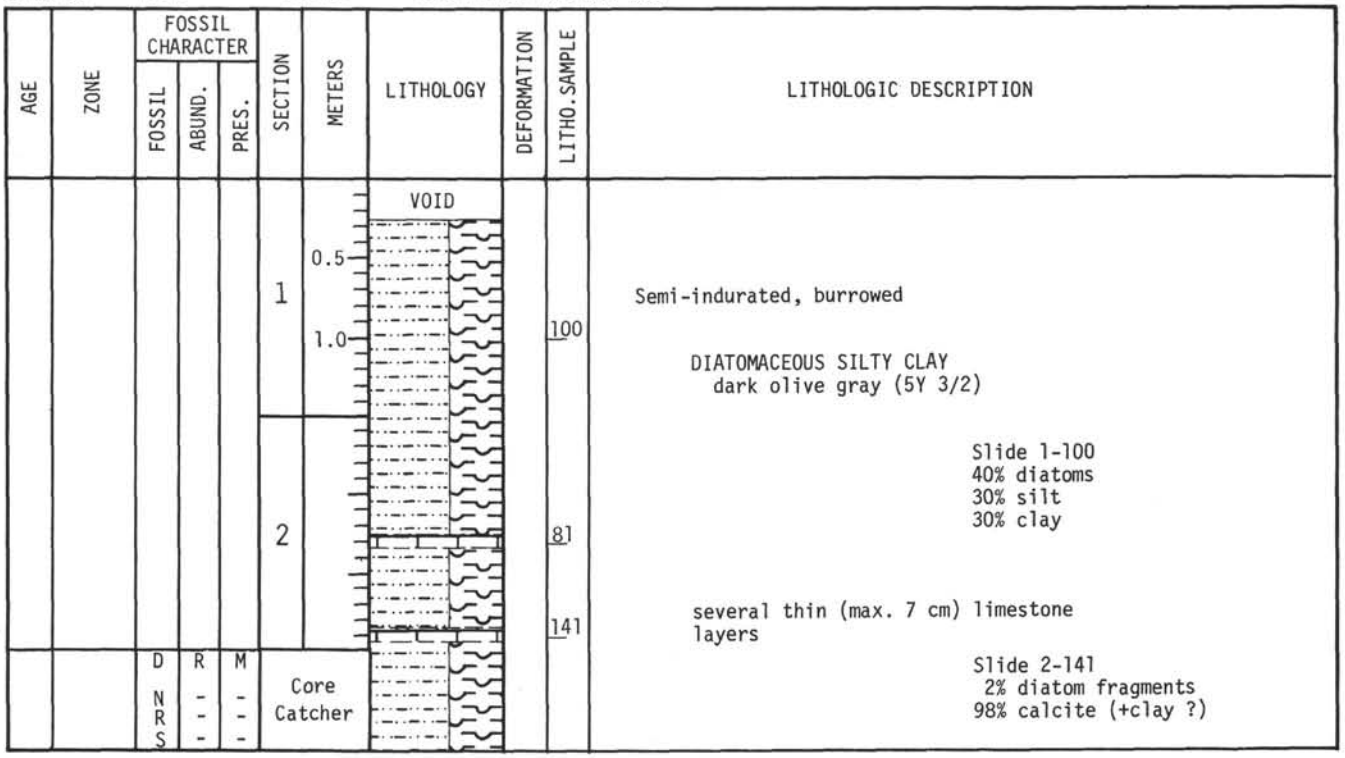
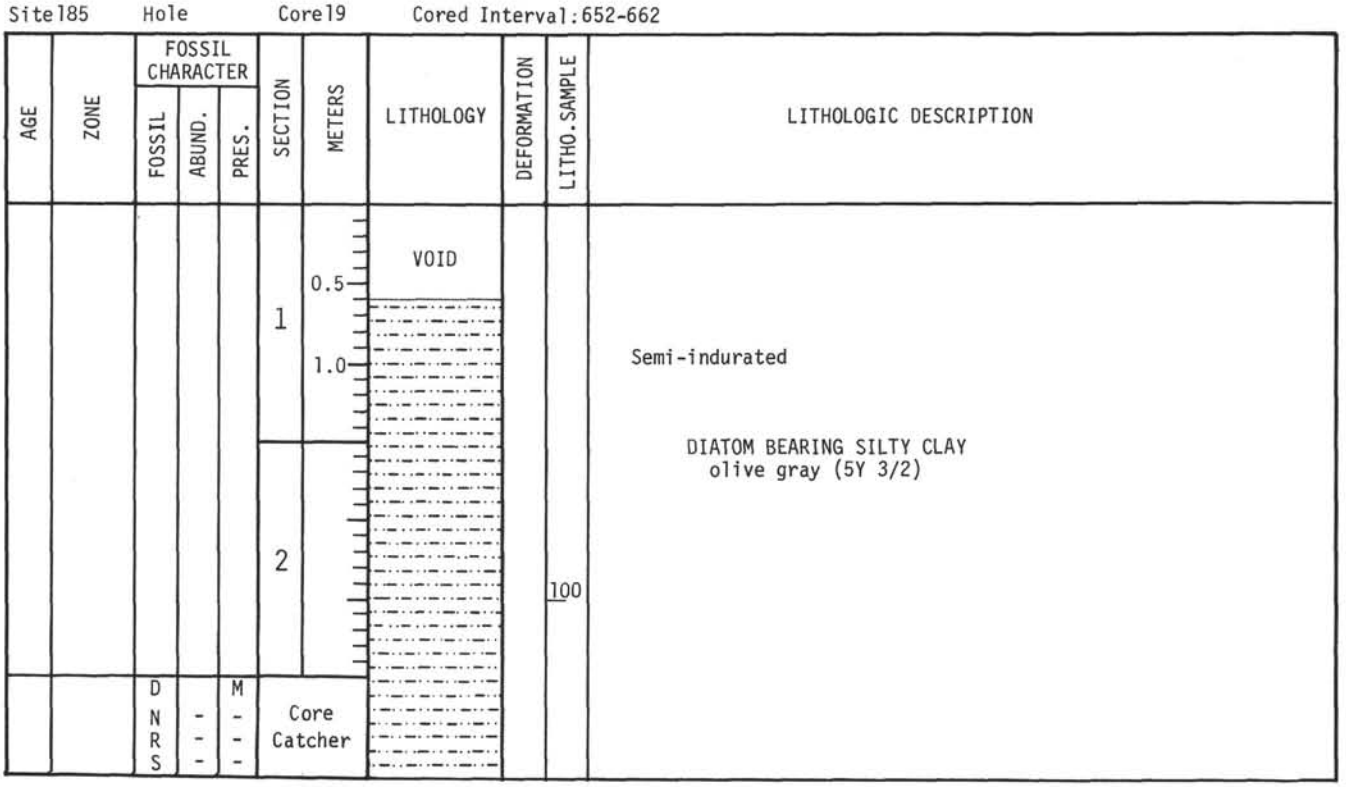
75
100
125
150
185-17-1
185-17-2
185-17-3

Site 185 Hole Core 18 Cored Interval: 644-653

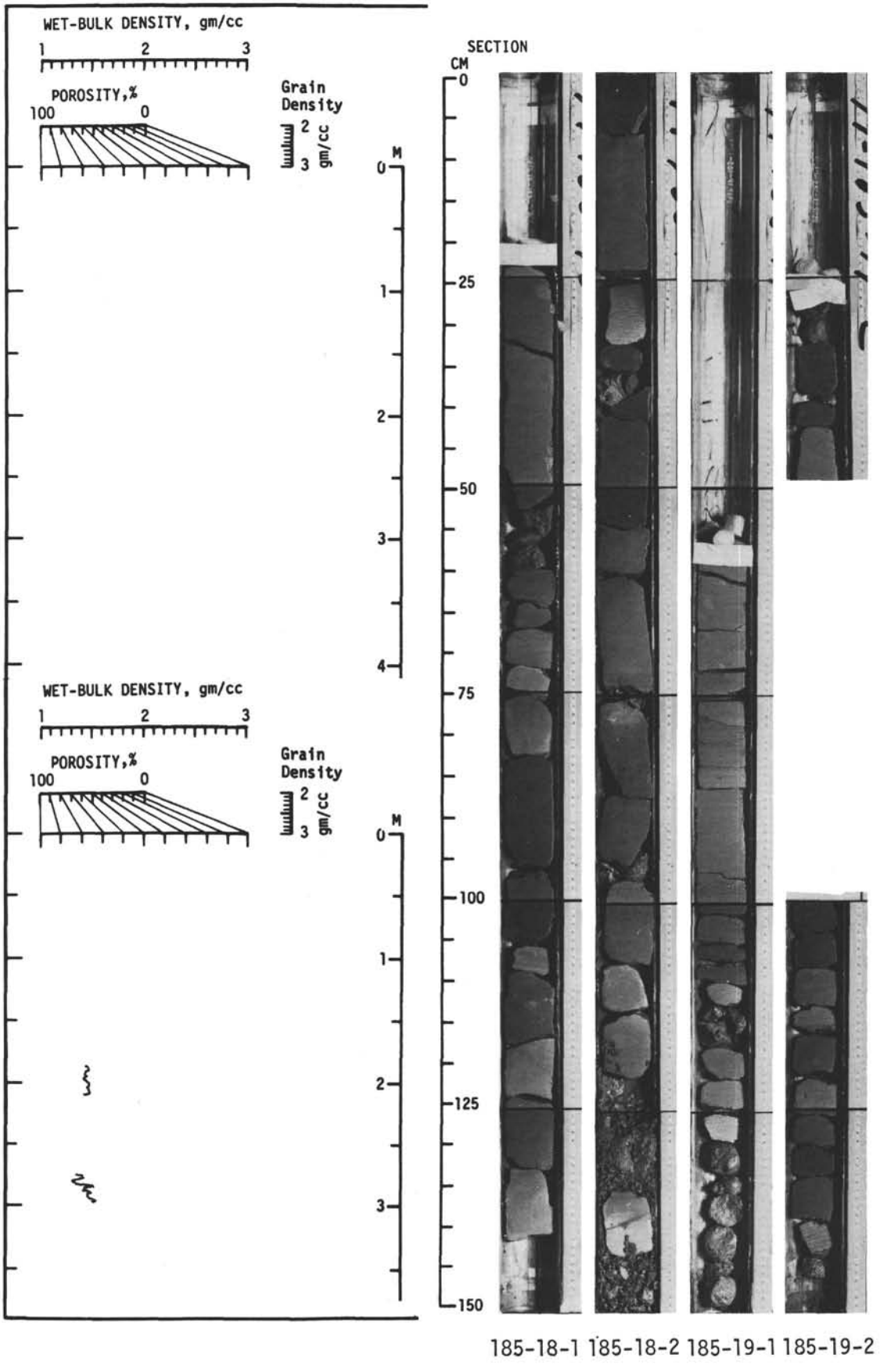


Explanatory notes in Chapter 1

Site 185 Hole Core 19 Cored Interval: 652-662



Explanatory notes in Chapter 1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2
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POROSITY,%
100
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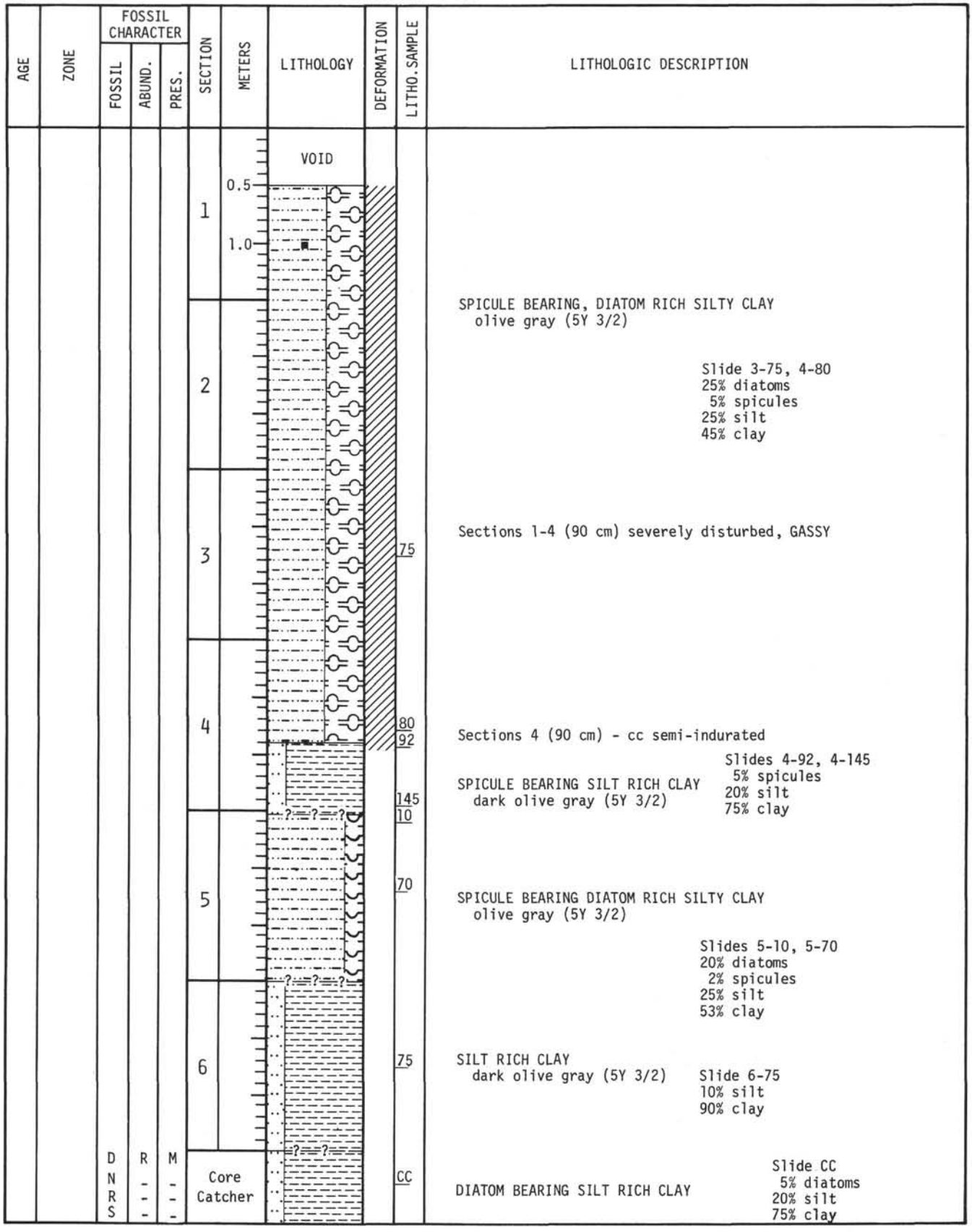
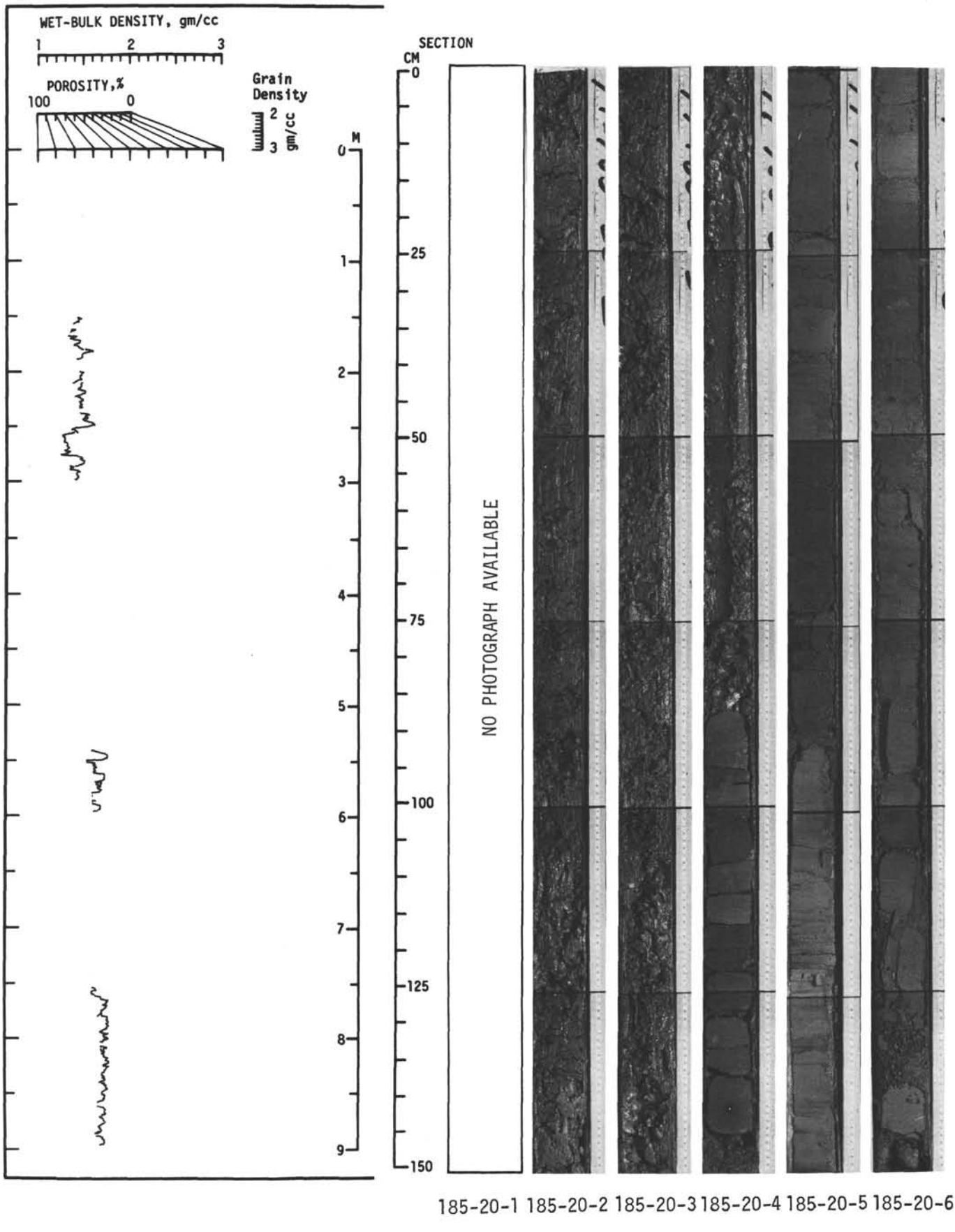
Grain Density
2
3
gm/cc
M
0
1
2
3
4
WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
SECTION
CM
0
25
50
75
100
125
150
185-18-1
185-18-2
185-19-1
185-19-2

Site 185 Hole Core 20 Cored Interval: 662-671



Explanatory notes in Chapter 1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POROSITY,%
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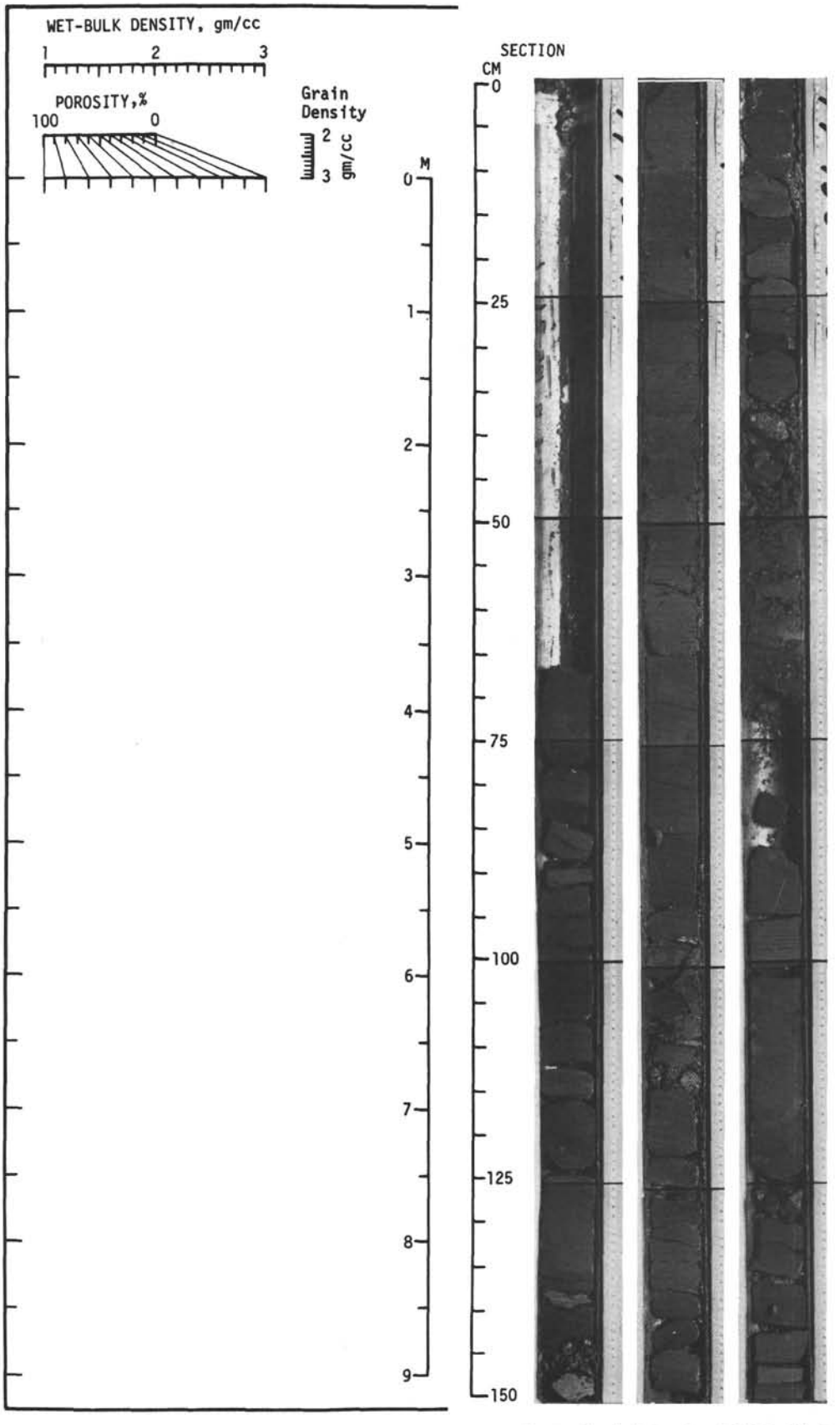
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
NO PHOTOGRAPH AVAILABLE
185-20-1
185-20-2
185-20-3
185-20-4
185-20-5
185-20-6

Site 185 Hole Core 21 Cored Interval: 671-680

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
					1	0.5	VOID			
						1.0			120	Semi-indurated
					2					Interbedded SILTY CLAY and DIATOM BEARING SILTY CLAY dark olive gray (5Y 3/2)
					3					layers indistinguishable without aid of microscope Slide 1-120 10% diatoms 40% silt 50% clay
									75	Slide 3-75 no diatoms
		D N R S	- - - -	- - - -	Core Catcher					

Explanatory notes in Chapter 1


WET-BULK DENSITY, gm/cc
1
2
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POROSITY,%
100
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Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-21-1
185-21-2
185-21-3

Site 185 Hole Core 22 Cored Interval: 680-683

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
		D	R	M						Clathrate corer test
		N	-	-		0.5				
		R	-	-	1					minor recovery - no description available
		S	-	-						

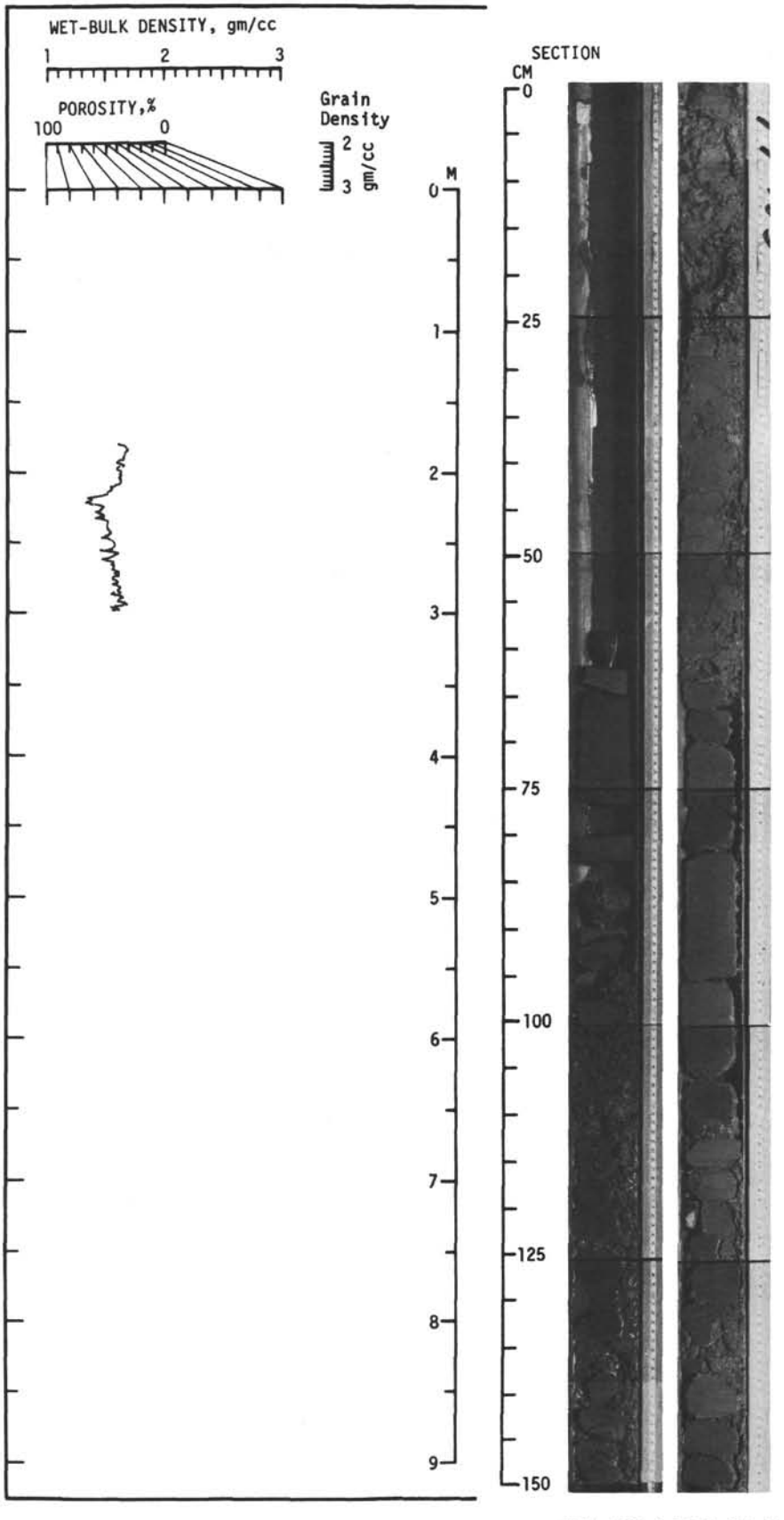
Site 185 Hole Core 23 Cored Interval: 683-690

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
					1	0.5	VOID			
						1.0			114	DIATOM BEARING SILTY CLAY to SILTY CLAY dark olive gray (5Y 3/2)
					2					diatoms in diatom bearing layers are largely dissolved
		D	R	M						core consists of 1-10 cm semi-indurated pieces in highly disturbed matrix of same material
		N	-	-	Core					
		R	-	-	Catcher					
		S	-	-						

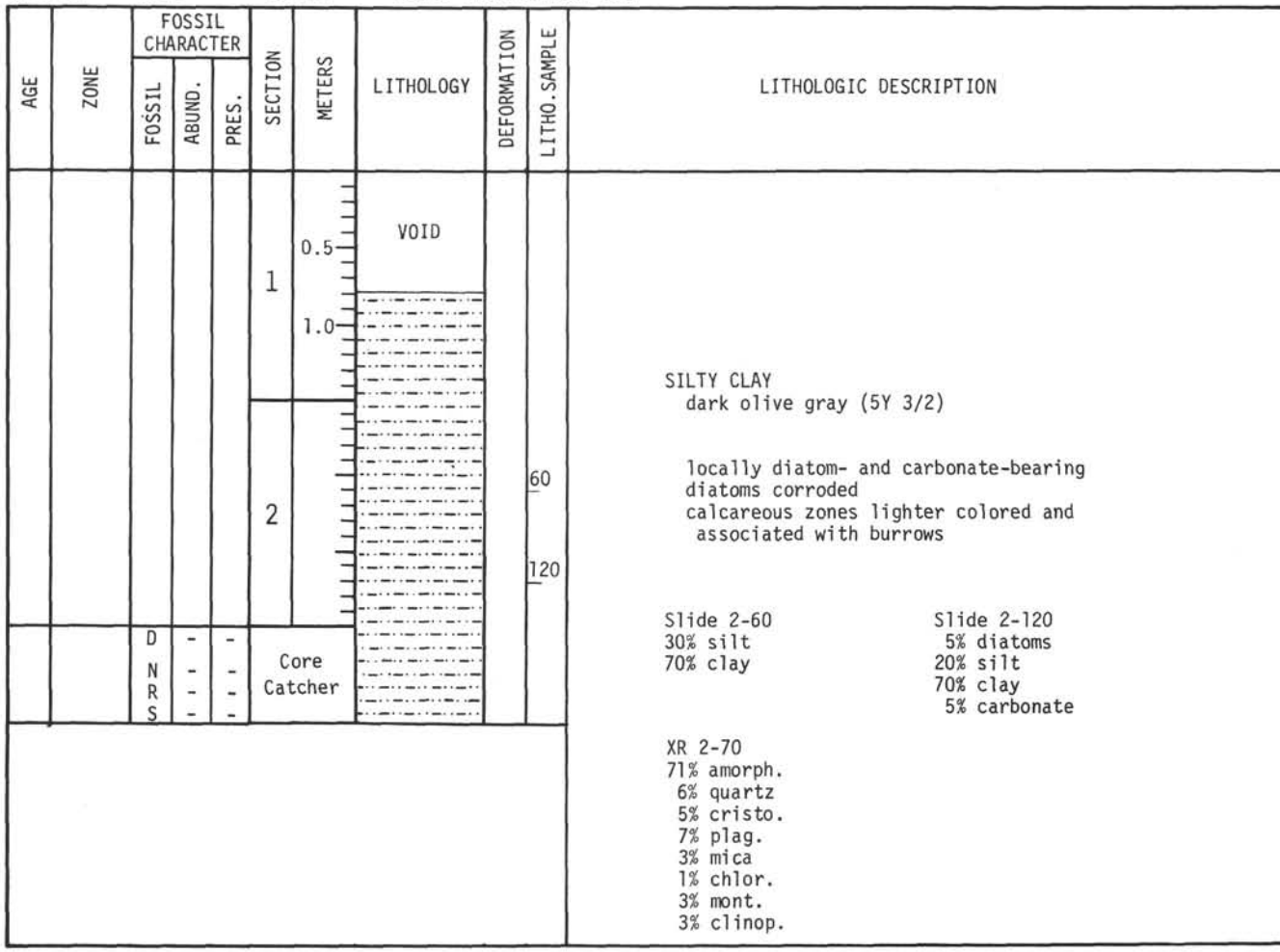
Site 185 Hole Core 24 Cored Interval: 690-691

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
		D	R	M						Clathrate corer test
		N	-	-	Core					
		R	-	-	Catcher					CC recovery only - no description available
		S	-	-						

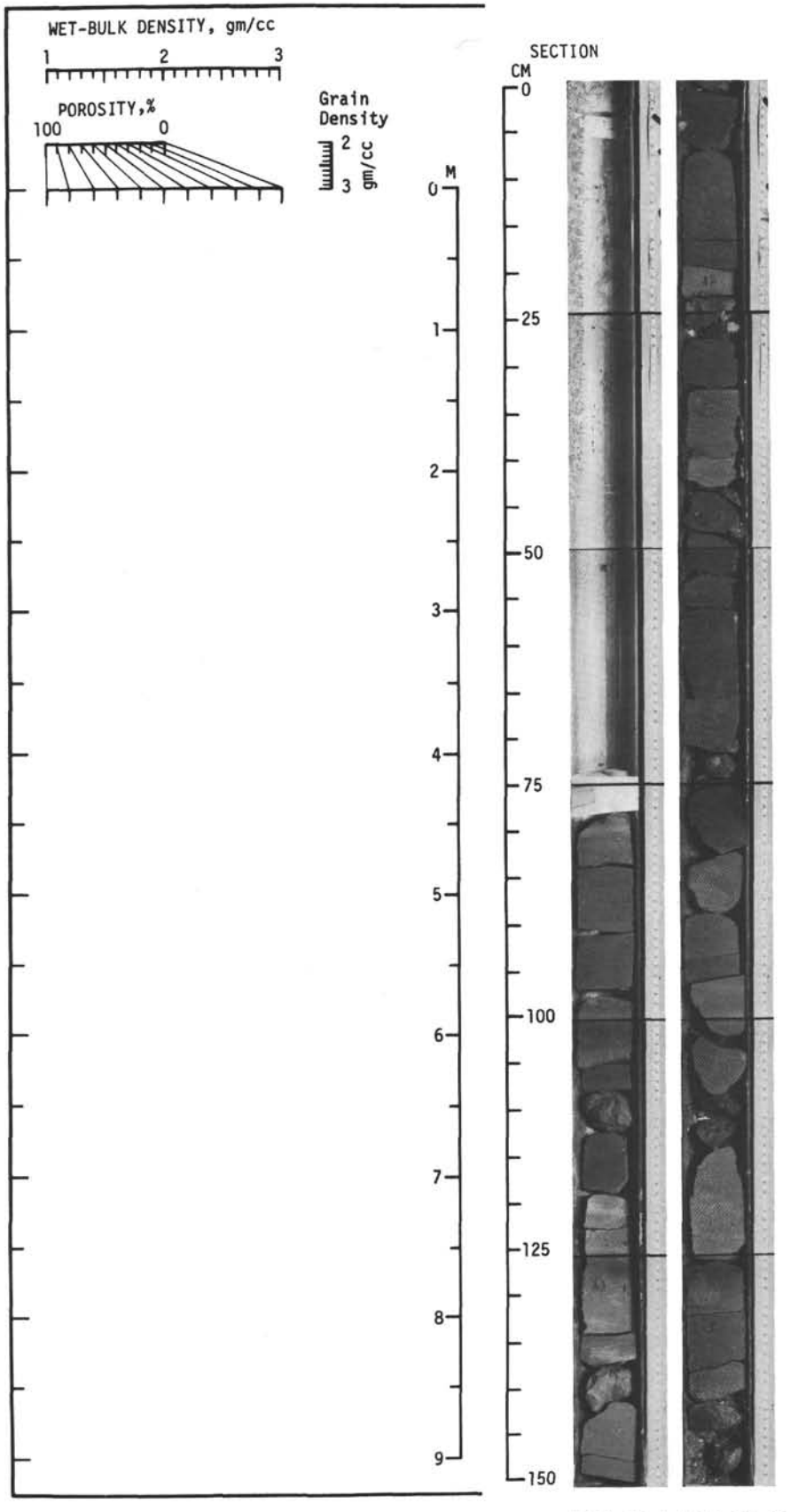
Explanatory notes in Chapter 1


WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-23-1
185-23-2

Site185 Hole Core25 Cored Interval:691-699



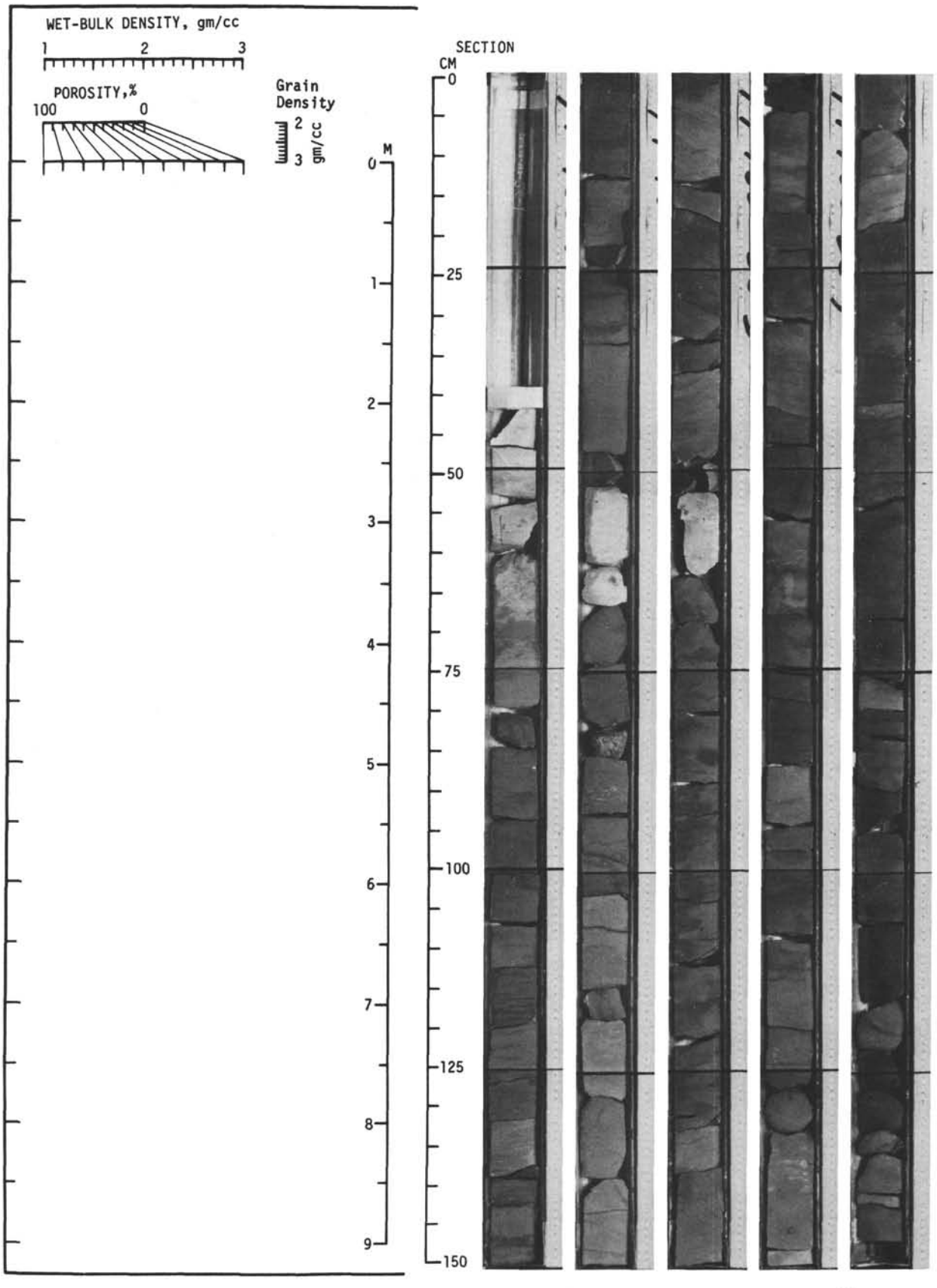
Explanatory notes in Chapter 1


WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain
Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-25-1
185-25-2

Site 185 Hole Core 26 Cored Interval: 718-727

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
					1	0.5 1.0	VOID		100	
					2					LIMESTONE, dark olive gray (5Y 3/2) burrowed near top
					3					Basic lithology DIATOM BEARING SILTY CLAY dark olive gray (5Y 3/2)
					4					diatoms largely corroded locally burrowed scattered concentrations of spicules
					5				75	
		D N R S	- - - -	-	Core Catcher					

Explanatory notes in Chapter 1


WET-BULK DENSITY, gm/cc
1
2
3
POROSITY,%
100
0
Grain Density
2
3
gm/cc
M
0
1
2
3
4
5
6
7
8
9
SECTION
CM
0
25
50
75
100
125
150
185-26-1
185-26-2
185-26-3
185-26-4
185-26-5

Site 185 Hole Core 27 Cored Interval: 727-728

AGE	ZONE	FOSSIL CHARACTER: FOSSIL	FOSSIL CHARACTER: ABUND.	FOSSIL CHARACTER: PRES.	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION
		D N R S	- - - -	- - - -	Core Catcher					Clathrate corer test core catcher recovery only SILTY CLAY as in previous core

Explanatory notes in Chapter 1