8. SITE 66

Shipboard Scientific Party[1]

Occupied: September 19-22, 1969.

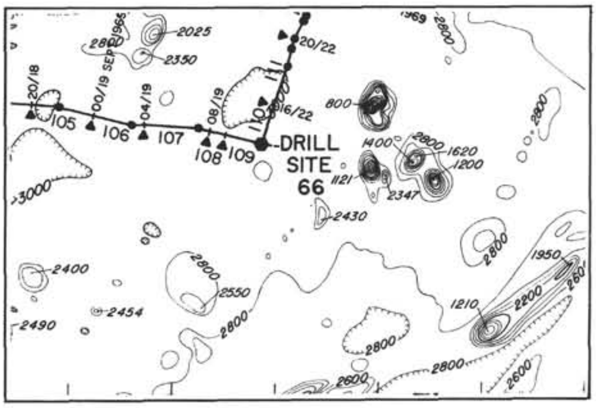
Position: 2° 23.63'N., 166° 07.28'W.

Water Depth: 5293 meters.

Total Depth: 193 meters, in basalt.

Holes Drilled: Two holes.

Cores Taken: Nineteen cores.



Main Results: An apparently uninterrupted sequence of radiolarian ooze about 163 meters thick, containing minor thin beds of chert in the lower 16 meters, overlies a section of stiff very fine-grained brown clay about 19 meters thick. Radiolarian range in age from Quaternary at the surface to Oligocene at a depth of 126 meters. Poorly preserved Cretaceous radiolarians of probable Turonian or Cenomanian age occur at 190 meters, just 2 meters above the base of the clay, interbedded with layers of volcanoclastic sand and pebbles. Lying unconformably beneath the clay is altered vesicular basalt.

The oozes are correlated with the seismic Transparent Layer, the interbedded cherts and oozes with the Opaque Layer, the clays with the Lower Transparent Layer, and the top of the basalt with Horizon B of Ewing *et al.* (1968).

Rates of accumulation were about 5 m/m.y. in the ooze, and probably less than 1 m/m.y. in the clay. Except for one brief time during the late Miocene, the sea floor at this site has been below the calcite compensation depth since the beginning of the sedimentary record.

BACKGROUND AND OBJECTIVES

One of the principal objectives in the Central Basin is to elucidate the paleobathymetric history of the region, which is located amidst groups of atolls and guyots that have subsided as much as 2 kilometers since mid-Cretaceous times (Menard, 1964). The question is: to what extent did the basin participate in this subsidence?

Failure to penetrate the entire sedimentary section and to sample basement at Site 65, on the west side of the Central Basin, along with evidence from the turbidites at that site that upper Cretaceous sediments are present in the region, sent us in search of another site in the Basin where basement rocks might be sampled. Likely places were known from unpublished reflection profiles on the east side of the Basin near the Line Islands by the Hawaii Institute of Geophysics (Figures 1 and 2). In that region the thin transparent sediments–identified as radiolarian oozes at Site 65–are replaced laterally by well stratified, presumably calcareous sediments, as much as 0.5 second thick. At first we intended to drill into the westernmost occurrences of these better stratified sediments, but on approaching the intended site our own reflection profiles (Figure 3) showed the stratified material to be present only in valleys between hills of transparent ooze, and to have the flat and parallel physiography of turbidites, perhaps equivalent in age to the adjacent ooze, but perhaps partly lying unconformably on them. In any event, the turbidites would consist of transported material and might yield a set of samples very difficult to interpret in terms of ages and paleobathymetry. It was, therefore, decided to drill a transparent section once again.

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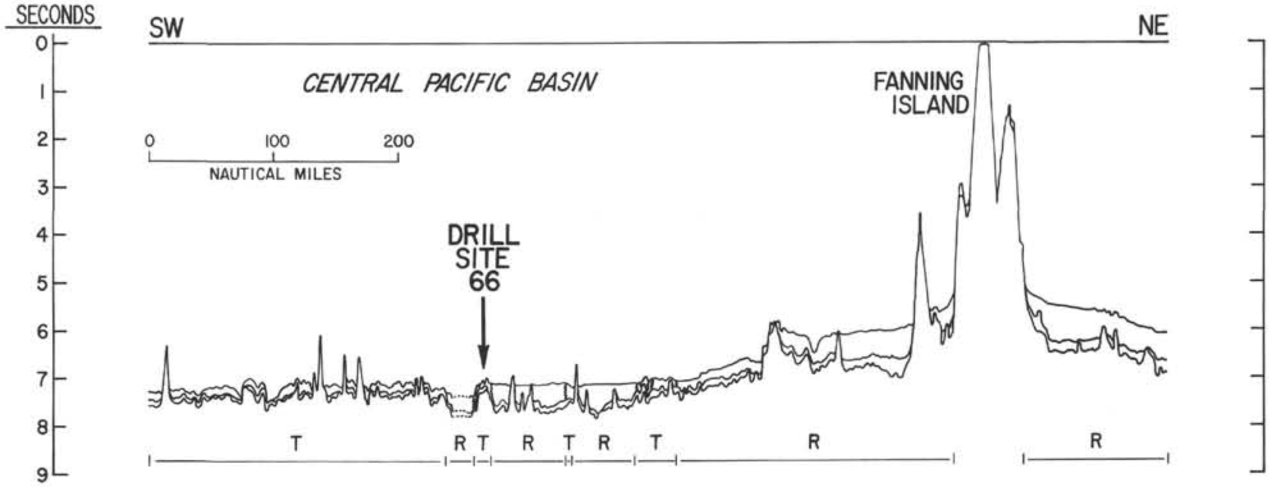

Figure 1. *Reflection profile taken by Hawaii Institute of Geophysics in vicinity of Site 66 showing thin upper transport layer (T) of Central Basin and thicker more reflective upper layer (R) near Line Islands.*

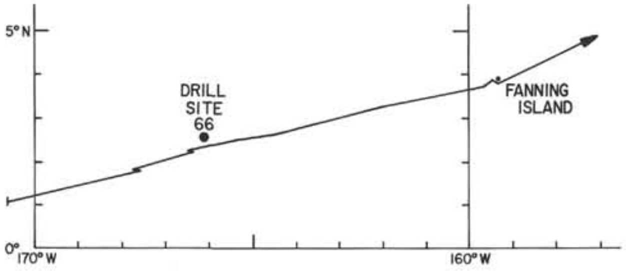

Figure 2. *Line of reflection profile shown in Figure 1.*

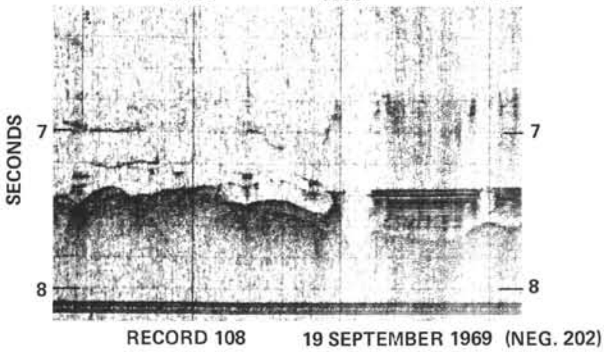

Figure 3. *Seismic reflection profile near Site 66 taken from D/V* Glomar Challenger. *Site 66 is located at 1135 hours, and also (on a reciprocal course) at 1225 hours. See Plate 1 for location. (Record No. 108)*

In crossing from Site 65 to 66 (Plate 1 and Reflection Records 79 through 109, in Reflection Seismology Chapter) we had observed a sequence of reflectors of widespread occurrence in the Central Basin (Ewing *et al.*, 1968): the upper transparent layer is generally underlain by a smooth, highly reflective layer with many internal reflectors–the "opaque layer". This "opaque" unit is from 0.05 to 0.15 seconds thick and in some places is underlain by a more or less transparent layer as much as 0.05 second thick, which rests in turn on the lowest seismic reflector detected on our profiles. This basal reflector is commonly smooth and would be identified as Horizon B according to the criteria of Ewing *et al.* (1968).

Tests of the inferences drawn from the results of Site 65 were needed. At Site 65, at least the upper part of the opaque layer was identified as alternating chert and ooze of Eocene and Oligocene age. Some arguments for the possible occurrence of Upper Cretaceous beds below the depth reached by the drill were adduced from detrital fossils in Tertiary turbidites. At Site 66 we planned to make every effort to reach basement and to sample any sediments between the transparent layer and basement.

OPERATIONS

Site Survey and Approach

A highly stratified section was observed before crossing an irregular basement rise west of Site 66 (Plate 1 and Figure 3). We decided on the basis of the smooth horizontal layering that this stratified accumulation was probably turbidites and represented a typical deposition on the eastern side of the Central Basin. For this reason Site 66 was located in a section of transparent sediment. The transparent layer at the chosen site is about 0.18-seconds thick on the flank of the irregular basement rise next to still another sequence of stratified material (Figure 3). Water depth during the first crossing of the site was approximately 5280 meters (2800 fathoms). The first reflector (base of the transparent ooze) was observed 0.18 to 0.19 seconds below the sea floor. A second reflector (base of the opaque layer) was observed 0.23 to 0.24 seconds below the sea floor and was taken to represent acoustic basement. At the site, the reflection profile does not show a "lower transparent" layer.

West of Site 66 (1100 to 1130 hours on Figure 3), the upper transparent layer thins to almost the vanishing point over a low abyssal hill, and at the same time a lower transparent layer about 0.04-second thick becomes discernible on the record (at 1105 hours), beneath a thin (0.02 second) opaque layer.

Drilling Operations

The beacon dropped at 1316 hours on September 19, and the drill string reached the sea floor at midnight. The first core, in soft ooze, was punched at 40 meters. After two more cores at 40-meter intervals the bit struck the first hard layer at about 148 meters. From Core 4, cut from 148 to 155 meters, we recovered only a handful of chert fragments from an interval with many alternating thin hard and thicker very soft layers. Core 5, from 155 to 165 meters, again contained only a few pieces of chert. The drilling characteristics for the upper part of Core 5 suggest a sequence like Core 4, but the lower 2 meters or so cut more slowly and smoothly. Cores 6, 7 and 8 cut easily and yielded nearly full barrels of still brown clay. While cutting Core 9, a very hard layer was met at 192 meters. The barrel was immediately pulled because we anticipated basement near this depth. Coarse hyaloclastites near the bottom of the brown clays recovered in this core indicated the basement might indeed be close at hand, and from Core 10 approximately 6 inches of broken basalt fragments were recovered after drilling for about an hour with weights of from 10,000 to 40,000 pounds. For Core 11 the weight on the bit was held to about 10,000 pounds, but only about the same amount of basalt was recovered.

This completed the first hole. The tools were raised above the sea floor to spud Hole 66.1, in order to core continuously down to the first cherts at about 148 meters and to retrieve cores from within the cherty section in the interval between 148 and 165 meters, where recovery was so poor on the first hole. All went well until the wire line broke during the attempt to retrieve Core 8 from 86 meters below the sea floor. This necessitated pulling up the entire drill string and, because time was running out, abandonment of the site. The wire line had weakened because of corrosion and repeated overstress during its six months of use in raising about 400 cores.

SITE SUMMARY

Lithology

This site, like Site 65, is in the deep-water Central Basin. Many of the lithologies encountered at the two locations are strikingly similar, and comparisons will be made throughout this summary wherever possible.

The lithologies encountered at Site 66 fall into four classes, which appear to correlate well with the principal acoustic units recognizable on continuous seismic profiler records: (1) unconsolidated siliceous, dominantly radiolarian, ooze (the upper transparent layer); (2) thin chert layers interbedded with soft sediment of unknown lithology (the opaque layer); (3) very stiff brown pelagic clay (the lower transparent layer); and (4) basalt overlain by a thin layer of Cretaceous hyaloclastic sediments (Layer B or basement).

Attempts to core the upper 15 meters in Hole 66.1 were unsuccessful, presumably due to severe cratering of the soft sediment during the drilling of Hole 66.0. This ease of erosion, and the nature of surface samples from the region suggest that the missing section, like the underlying material, is siliceous, dominantly radiolarian, ooze.

The interval from 15 to 126 and probably to 148 meters is soft, unconsolidated siliceous ooze with an opal content estimated to exceed 90 per cent throughout most of the section, and more than 98 per cent in the most pure, light yellow-brown sugary ooze. Radiolaria form the bulk of the siliceous remains, but diatom frustules are also common to abundant, particularly above about 80 meters. This ooze differs from that recovered at Site 65, where diatoms form a very minor portion of the section.

Phosphatic fish debris is present in most of the samples examined. Ferromanganese micronodules, sponge spicules, volcanic glass and palagonite occur in trivial amounts throughout the section of ooze.

TABLE 1
Drilling Summary, Site 66

Hole	Interval (ft)	Interval (m)	Cores Drilled	Core Cut (ft)	Core Cut (m)	Core Recovered (ft)	Core Recovered (m)	Core Recovered %
66.0	0-133		Drilled					
	133-163	41-50	Core 1	30	9.1	30.00	9.1	
	163-259		Drilled					
	259-289	79-88	Core 2	30	9.1	15.00	4.6	
	289-384		Drilled					
	384-414	117-126	Core 3	30	9.1	30.00	9.1	
	414-486		Drilled					
	486-511	148-155	Core 4	25	7.6	0.25	0.1	
	511-541	155-165	Core 5	30	9.1	0.75	0.2	
	541-571	165-174	Core 6	30	9.1	20.00	6.1	
	571-591	174-180	Core 7	20	6.1	20.00	6.1	
	591-615	180-187	Core 8	24	7.3	30.00	9.1	
	615-630	187-192	Core 9	15	4.6	14.00	4.3	
	630-631	192-192	Core 10	1	0.3	0.50	0.1	
	631-633	192-193	Core 11	2	0.6	0.50	0.1	
Totals	633	193	11	237	72.0	161.00	48.9	68
66.1	0-51		Drilled					
	51-66	15-20	Core 1	15	4.6	15	4.6	
	66-96	20-29	Core 2	30	9.1	30	9.1	
	96-126	29-38	Core 3	30	9.1	28	8.5	
	126-156	38-47	Core 4	30	9.1	30	9.1	
	156-186	47-56	Core 5	30	9.1	30	9.1	
	186-216	56-65	Core 6	30	9.1	30	9.1	
	216-222		Drilled					
	222-252	67-76	Core 7	30	9.1	30	9.1	
	252-282	76-86	Core 8	30	9.1	24	7.3	
Totals	282	86	8	225	68.3	217	65.9	96
Site Totals	915	279	19	462	140.3	378	114.8	82

The uppermost samples are richer in clay than the deeper material, but are still clearly siliceous oozes. Sections 2 and 3 of Core 2, Hole 66.0 (approximately 81 to 83 meters) include carbonate-bearing sediments. The carbonate, which is virtually all discoasters and fragments of coccoliths, forms less than 10 per cent of the sediment. Its presence within a pure siliceous sequence, together with its low concentration, suggests downslope transport (compare with 122 to 128 meters of Hole 65.0). However, because the paleontologists find no evidence of faunal mixing, they favor a temporary depression of the calcite compensation depth without lateral transport of sediment.

The radiolarian and diatomaceous ooze is dark yellowish brown with moderate grayish-orange and rarely darker mottling above about 48 meters; it becomes paler (light yellowish brown and grayish orange) through a purer siliceous interval and reverts to the original colors below 56 meters. Below about 76 meters in the less diatomaceous ooze—olive-brown is the dominant color with moderate to intense mottling of grayish orange and very dark brown, as above. The darker colors differ from the lighter only in their higher content of 5 to 10-micron flecks of ferromanganese oxides.

Unfortunately, the interval from 126 to 148 meters was not cored, but its drilling characteristics suggest that it is also siliceous ooze.

Cores 4 and 5 of Hole 66.0 penetrated the interval from 148 to 165 meters, but recovered only a few centimeters of sediment. The upper core contained a 5-centimeter cylinder of brownish-black porcelanite overlain by firm, but not indurated, dark brown cristobalite claystone. Both lithotypes are extremely fine-grained with the exception of the remains of Radiolaria, a few ferromanganese nodules, and the inevitable phosphatic fish debris.

The claystone cannot be distinguished from the porcelanite in thin section, although the latter may be less permeable and slightly richer in finely disseminated iron oxides.

Core 5 contains more fragments of the brown porcelanite (some with light brown lenses) as well as one fragment of layered yellow-brown and grayish orange-pink porcelanite. In thin section, this rock is seen to consist of graded layers, rich in spherical Radiolaria, without evidence of original calcareous components. Some of the graded beds have micro-erosional basal contacts. The siliceous laminae are heavily impregnated with cryptocrystalline cristobalite, much of which has inverted to chalcedony. Examples of saw-tooth inversion fronts are well displayed in the section.

The association of turbidites with porcelanite at the base of a siliceous ooze section, and the petrography of the brown porcelanite at Sites 65 and 66 are strikingly similar. The lack of carbonate turbidites at Site 66 may simply reflect local topography—the air-gun records suggest that a hole drilled in one of the nearby valleys would intersect turbidites which are probably calcareous.

The interval from 148 to 162 meters in Hole 66.0 consists of alternating hard and soft layers (four resistant beds in the top 10 meters and several more below). The hard material is presumably cherty. None of the soft sediment was recovered, so that neither the environmental conditions around the indurated layers nor their age are known. The more extensive porcelanite sequence at Site 65 is associated with siliceous ooze, but whether conditions at Site 66 are similar (as suggested by the minimal resistance of the soft layers to the bit), or whether silicification starts higher in the sequence at Site 65 cannot be determined.

The interval from 162 to 165 meters of Core 5 in Hole 66.0 was free of hard layers, but had to be drilled rather than washed. No sediment was recovered. Cores 6 through 8 in the same hole (165 to 187 meters) intersected very stiff, extremely fine-grained, pelagic clay. This sediment is intensely mottled, light brown and reddish to grayish brown, with lesser dark brown areas richer in 5 to 10-micron ferromanganese oxides. The coarse fraction of the brown clay contains fish debris, many ferromanganese micronodules, as well as a few larger nodules, and rare ash and palagonite fragments. The clay contains abundant quartz, potash feldspar and illite suggesting, by analogy with modern pelagic clays, a predominantly continental source.

Core 9 of Hole 66.0 (187 to 192 meters) recovered a complex sequence of chemical and volcanogenic sediments. These include semi-indurated ~~montmorillonitic~~ sandstone composed of altered hyaloclastic fragments, as well as multicolored (various shades of reddish orange, reddish brown, light brown, and yellowish brown) clays rich in palagonite, volcanic glass and ferromanganese micronodules, with lesser amounts of fish debris, and rare Cretaceous radiolarians. At 191 meters, a 5-centimeter bed of altered basalt fragments, several centimeters in diameter, was recovered.

The chemical sediments are ferromanganese oxide clays, which form three brownish-black layers 45, 33 and 18 centimeters thick in the interval 190.6 to 192.0 meters. Some of the clay is quite pure, but most is rich in detrital components which resemble the adjacent hyaloclastite-volcanic glass showing varying amounts of alteration, fish debris and feldspars. The nearness of the ferromanganese clay to igneous basement suggests a genetic link between the two.

Cores 10 and 11 of Hole 66.0 penetrated less than a meter into altered basalt basement. Only a few fragments of basalt were recovered, and no conclusions canbe drawn as to the thickness of altered material. The basalt consists of abundant acicular plagioclase microlites, up to 250 microns in length, separated by pale green and brown montmorillonite and fine-grained iron oxides. Patches of devitrified glass near the surface of fragments, and rare 250 to 350-micron phenocrysts of plagioclase and pyroxene are also present. All sections examined are shot through with dendritic ferromanganese oxides. The rock is slightly vesicular, the vesicules now being filled with acicular montmorillonite.

The basalt fragments from the bottom of Hole 66.0 are identical with those in the bed at 191 meters. This, together with the absence of any thermal metamorphism above the basalt, suggests that the basement is extrusive, and was exposed long enough to be fragmented, eroded and transported over short distances.

Physical and Chemical Properties

The physical and chemical properties of cores obtained at Site 66 are summarized in Table 2 and are displayed as a function of depth in the Site Summary at the end of this chapter. The significance of these data is discussed in separate contributions elsewhere in this volume.

Paleontologic-Biostratigraphic Summary

Calcareous Nannofossils

Sediments recovered in two holes of this site proved to be noncalcareous, except for a short interval in Core 2 of Hole 66.0 (lower half of Section 2 and several layers in Section 3), where an assemblage of discoasters and some other remains of the calcareous nannoplankton showing signs of heavy solution may represent Zone NN5 or NN6.

Radiolaria

Radiolarians are abundant in all cores to a depth of 126 meters below the sea floor (Core 66.0-3), and are well-preserved in all samples, except for those from the lower few meters which are somewhat corroded. Samples below this are barren of radiolarians to a depth of about 190 meters, where a Cretaceous assemblage was encountered in Core 66.0-9 (see chapter by H. P. Foreman in this volume).

The continuously cored section from about 16 to 88 meters below the sea floor (66.0-1 to 66.0-2 and 66.1-8) may represent a continuous section from early Quaternary to the upper part of the *Calocycletta costata* Zone. The base of the Quaternary is at 21 to 24 meters (between 66.1-2-1 and 66.1-2-3, the base of the *Pterocanium prismatium* Zone is at 24 to 27 meters (between 66.1-2-3 and 66.1-2-5), the base of the *Spongaster pentas* Zone is at 29 to 30 meters (between 66.1-2-CC and 66.1-3-1), the *Stichocorys peregrina* Zone is indistinct and apparently short at about 39 meters (bottom of 66.1-3-CC and/or top of 66.1-4-1), the base of the *Ommatartus antepenultimus* Zone is at 56 to 61 meters (between 66.1-5-CC and 66.1-6-4), the base of the *Cannartus* (?) *petterssoni* Zone is at 65 to 68 meters (between 66.1-6-CC and 66.1-7-1), and the base of the *Dorcadospyris alata* Zone is at 85 to 88 meters (between 66.1-8-CC and 66.0-2-CC). The base of the *Calocycletta costata* Zone is in the uncored interval between 88 and 118 meters (66.0-2-CC to 66.1-3-1), and the base of the *Calocycletta virginis* Zone is at about 121 to 122 meters (between 66.0-3-3 and 66.0-4-4).

There are a few reworked Miocene radiolarians at some levels in the Quaternary and late Miocene parts of the section, and Core 66.0-3 contains rare Eocene forms.

DISCUSSION

Paleobathymetry of the Darwin Rise

A knowledge of the character of any sediments of Mesozoic and early Tertiary age in the Central Basin is the *sine qua non* to a test of Menard's (1964) hypothesis that a Mesozoic rise–the Darwin Rise–extended over much of this part of the Pacific. During Middle Cretaceous times the crestal region of the rise, identified in the hypothesis as the present-day Central Basin, is supposed to have had a depth no greater than about 3.5 kilometers. Sometime during the early Tertiary, the rise, including its chains of volcanoes, flat volcanic islands and banks, and reefs, began a long slow subsidence of about 2 kilometers creating the groups of atolls and guyots on which much of Menard's argument is based.

If the subsidence was truly regional, then we should find a history of subsidence in the Central Basin as well as along the linear chains of volcanic mountains.

Drilling at Site 66 shows that at no time since the extrusion of the basalt that forms the basement has the area been at a depth where more than trace amounts of calcium carbonate could accumulate. At present the compensation depth for calcium carbonate in the equatorial Pacific is at about 4500 meters depth, but Heath (1969) presents evidence for a steady rise since the Oligocene from a depth about 600 meters deeper, owing perhaps to increasing deep-sea circulation rates and decreasing bottom-water temperatures. The maximum subsidence of the basement surface at the site is therefore put at about 5500 (the present depth) minus

4500, or 1000 meters, an amount insufficient to fit the regional paleobathymetry required by the Darwin Rise hypothesis (about 3500 meters).

The underlying assumptions in the hypothesis are that the guyots were all at sea level at some one time in the past, and that the subsidence has been on a vast regional scale. One can therefore connect by contours the subsidence figures on one group of guyots or atolls with those of other distant groups. On the other hand, it is possible to imagine the subsidence as being more local, both in space and in time. The widely different amounts of subsidence of different individual guyots and atolls in well-studied areas, for example, the Northern Marshall Islands (Menard, 1964, Figure 6.14) give some evidence of this tendency. Moreover, the fact that the paleobathymetric contours (Menard, 1964, Figure 6.15) are mainly parallel to the trend of the island or guyot groups also suggests that subsidence was local–in the sense of a large group or chain of volcanoes–rather than regional–in the sense of the whole central and western Pacific.

Rates of Accumulation

Inspection of the graph of accumulation rates (Figure 4) shows two slopes: (1) the radiolarian ooze, which accumulated at about 5 m/m.y., and (2) the brown and black clays, which accumulated at an unknown but possibly much slower rate. The rate for the ooze is close to that deduced for similar sediments of the same age at Site 65. At Site 65, however, the radiolarian assemblages showed substantial and persistent reworking of older fossils, while at Site 66 reworking is at a minimum. The difference is probably made up by the remains of diatoms, which are plentiful in the ooze at Site 66 but rare at Site 65. Perhaps winnowing of very fine sediments by bottom currents at Site 65 carried away most of the diatom frustules which fell there.

Because only the lowest part of the brown clay contains any dateable fossils, the 0.75 m/m.y. rate of accumulation shown on the curve (Figure 4) is an average for the whole interval between the base of the ooze and the base of the brown clay. By analogy with sediments of similar composition (Ku *et al.*, 1968) an accumulation rate of 1 to 2 m/m.y. would be reasonable. This implies one or more hiatus in the section between the Oligocene and the Turonian.

Velocity Profile

Water depth was shown to be 5314 to 5316 meters (2816 fathoms) at Site 66 during the final crossing of the site (Figure 5). Reflectors were observed at 0.175 seconds and 0.235 seconds. The results of the drilling suggest that the first reflector at the base of the transparent radiolarian ooze again is chert, and the second reflector is basaltic basement at the base of the brown clay. A velocity of 1.5 km/sec is indicated for both horizons giving the following velocity depth relation:

$\overline{V}$	Reflection Time	Depth Below Sea Floor
1.5 km/sec	0.175 second	131 meters
	0.235 second	176 meters

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APPENDIX – THIN SECTION DESCRIPTION

Leg 7, Site 66, Hole 0, Core 4, Core Catcher

Macro: The rock is a dark yellowish-brown to brownish-black porcelanite (10YR 3/2- 10 YR 2/1) in contact with overlying dark brown (10 YR 3/2-wet) mudstone. The porcelanite is uniform in appearance, apart from light brown (5 YR 5/6) lenses. It fractures conchoidally.

Micro: The rock is very fine grained, with 1 to 2 per cent of grains of sand size. The most abundant coarse particles are heavily silicified radiolarians. These are now solid masses of silica, usually cristobalite but occasionally very fine chalcedony. Ornamentation and structural elements are rarely preserved, and if present are chalcedonic. The radiolarians grade from clear masses, often outlined by iron oxides, to diffuse patches grading into the groundmass (and not really distinguishable from such aggregates as silicified fecal pellets). Recognizable blebs of this type form about 30 to 40 per cent of both mudstone and chert.

Fish debris is scattered throughout the section, with some tendency to be concentrated in diffuse laminae ~ 300 microns thick. Many of the remains are somewhat corroded.

Other coarse particles present include ferromanganese micronodules (rare, <200 microns in diameter) and one foraminifera. Sponge spicules are extremely rare.

TABLE 2
Physical Properties of Cores from Site 66

Identification	Lithology	Physical Properties								
		Saturated Bulk Density (Sect. Wt.)[a] gm/cm3	Saturated Bulk Density (GRAPE)[b] gm/cm3	Mean Grain Density[c] gm/cm3	Porosity (Calculated)[d] Per Cent	Porosity (Drying, Ship)[e]		Penetrometer[f] cm	Sonic Velocity[g] m/sec.	Natural Gamma Radiation[h]
						Interval cm	Per Cent			
Hole 66.0										
Core 1-1	Radiolarian Ooze									
1-2	Radiolarian Ooze									
1-3	Radiolarian Ooze									
1-4	Radiolarian Ooze									
1-5	Radiolarian Ooze									
1-6	Radiolarian Ooze									
Core 2-1	Radiolarian Ooze		1.104	2.27	92.0	20.0	91.5	0.98	1459	245
2-2	Radiolarian Ooze	1.110	1.115	2.27	92.7	25.0	93.7	0.84	1449	220
2-3	Radiolarian Ooze		1.102	2.27	93.8	45.0	79.1		1492	210
Core 3-1	Radiolarian Ooze	1.168	1.172	2.21	88.1	51.0	92.5	0.64	1506	273
3-2	Radiolarian Ooze	1.172	1.192	2.21	85.8			1.38	1496	257
3-3	Radiolarian Ooze	1.172	1.178	2.21	87.0	71.0	91.3	0.94	1507	312
3-4	Radiolarian Ooze	1.172	1.176	2.21	87.2				1492	294
3-5	Radiolarian Ooze	1.173	1.179	2.21	86.9	105.0	82.1	0.57	1519	297
3-6	Radiolarian Ooze		1.168	2.21	87.9			1.24	1507	332
Core 4-1										
Core 5-1										
Core 6-1	Pelagic Clay		1.469	2.74	62.5	43.0	67.3	0.41		1669
6-2	Pelagic Clay	1.493	1.524	2.74	70.8	20.0	72.2	0.29	1432	1782
6-3	Pelagic Clay	1.502	1.538	2.74	70.0	20.0	71.5	0.32	1412	1917
6-4	Pelagic Clay	1.544	1.575	2.74	67.9			0.26	1436	2002
Core 7-1	Pelagic Clay		1.555	2.77	69.1			0.30	1445	1867
7-2	Pelagic Clay	1.588	1.621	2.77	65.8			0.24	1456	2202
7-3	Pelagic Clay	1.628	1.619	2.77	65.9				1466	2360
7-4	Pelagic Clay		1.637	2.77	64.9	24.0	69.1		1459	2186
Core 8-1	Pelagic Clay		1.531	2.80	70.9	64.0	70.5	0.44	1440	2052
8-2	Pelagic Clay		1.511	2.80	72.6	33.0	71.1	0.39	1420	1831
8-3	Pelagic Clay		1.426	2.80	77.4			0.45	1447	1767
8-4	Pelagic Clay		1.382	2.80	79.9			0.54	1440	1597
8-5	Pelagic Clay		1.386	2.80	79.6				1443	1633
8-6	Pelagic Clay		1.242	2.80	87.7				1433	1148

[a] Saturated bulk density derived by dividing net section weight by volume.

[b] Saturated bulk density derived from gamma ray attenuation data (see text). Value given is average of all valid data points per section.

[c] Mean grain density is assigned, considering selected grain density measurements made and reported elsewhere in this volume, and gross mineralogy of the section.

[d] Porosity is calculated: $\phi = \frac{\rho_g - \rho_B}{\rho_g - \rho_f}$; ρ_B is from GRAPE, average per section ρ_g is from column 5; $\rho_f = 1.024$; units in per cent of total volume.

TABLE 2 – *Continued*

Grainsize[i]					Carbon/Calcium Carbonate			Interstitial Water				
Interval cm	Sand Per Cent	Silt Per Cent	Clay Per Cent	Classification	Interval cm	Calcium Carbonate Per Cent	Organic Carbon Per Cent	Interval cm	pH	Eh (mu)	Temp °C	Salinity %
2.0	7.8	38.0	54.2	Silty Clay	20.0	0.0	0.1					
9.0	14.3	38.6	47.0	Silty Clay	25.0 102.0	0.0 8.4	0.3	139-150	7.65	-185	21.5	34.7
4.0	14.5	42.7	42.8	Silty Clay	45.0	0.0	0.2					
20.0	16.4	40.9	42.7	Silty Clay	51.0 63.0	0.0 0.7	0.2					
4.0	23.9	38.3	37.8	Sand-Silt-Clay	35.0	1.2	0.0					
3.0	21.7	39.9	38.4	Sand-Silt-Clay	71.0	0.0	0.3					
12.0	20.1	40.3	39.6	Sand-Silt-Clay								
17.0	29.9	35.6	34.4	Sand-Silt-Clay				139-150	7.53	-300	21.6	34.7
3.0	26.6	39.5	33.9	Sand-Silt-Clay	87.0	0.0	0.1					
6.0	0.0	11.8	88.2	Clay	43.0	0.2	0.2					
2.0	0.0	8.5	91.5	Clay	20.0	0.1	0.2	66-150				
2.0	0.0	7.4	92.6	Clay	20.0	0.2	0.2	150	7.79	+194	23	34.4
2.0	0.0	25.7	74.3	Silty Clay	20.0	0.0	0.2					
30.0	0.0	12.3	87.7	Clay	40.0	0.2	0.2					
2.0	0.0	12.5	87.5	Clay	20.0	0.1	0.2					
2.0	0.0	12.8	87.2	Clay	20.0	0.0	0.2	139-150			24.1	
2.0	0.0	11.9	88.1	Clay	20.0	0.0	0.2	65-150				
9.0	0.0	9.1	90.9	Clay	64.0	0.0	0.3					
10.0	0.0	42.9	57.1	Silty Clay	33.0	0.0	0.2					
3.0	0.0	9.8	90.2	Clay	30.0	0.0	0.2					
12.0	0.0	11.6	88.4	Clay	55.0	0.0	0.2					
23.0	0.0	9.1	90.9	Clay	52.0	0.0	0.3					

[e] Porosity is by drying (shipboard measurements) and is corrected for salt.

[f] Only the minimum penetrometer measurement per section is given.

[g] Sonic velocity measurements were made aboard ship and are corrected to 23°C. Maximum of three measurements per section is shown.

[h] Natural gamma radiation: Average of middle 16 of 20 counts/3 inch/1.25 minutes minus 1350 background.

[i] Grainsize: Sand per cent of total weight greater than .062 millimeter; clay per cent of total weight less than .0039 millimeter; silt remainder of total weight.

TABLE 2 – *Continued*

Identification	Lithology	Physical Properties								
		Saturated Bulk Density (Sect. Wt.)[a] gm/cm^3	Saturated Bulk Density (GRAPE)[b] gm/cm^3	Mean Grain Density[c] gm/cm^3	Porosity (Calculated)[d] Per Cent	Porosity (Drying, Ship)[e]		Penetrometer[f] cm	Sonic Velocity[g] m/sec.	Natural Gamma Radiation[h]
						Interval cm	Per Cent			
Hole 66.0 – *Continued*										
Core 9-1	Volcanic Mud		1.447	2.88	76.2	112.0	79.9		1400	1056
9-2	Volcanic Mud									
9-3	Volcanic Mud		1.438	2.88	77.7					948
Core 10-1	Basalt									
Core 11-1	Basalt									
Hole 66.1										
Core 1-1	Radiolarian Ooze									
1-2	Radiolarian Ooze									
1-3	Radiolarian Ooze									
1-4	Radiolarian Ooze									
Core 2-1	Radiolarian Ooze	1.144	1.183	2.58	91.4	54.0	90.9		1465	387
2-2	Radiolarian Ooze	1.140	1.177	2.58	90.1				1484	341
2-3	Radiolarian Ooze	1.132	1.165	2.58	90.9				1437	349
2-4	Radiolarian Ooze	1.122	1.174	2.58	90.3			2.91		321
2-5	Radiolarian Ooze		1.172	2.58	90.5			2.39	1475	241
2-6	Radiolarian Ooze		1.161	2.58	91.2			2.04	1462	281
Core 3-1	Radiolarian Ooze		1.127	2.22	93.4					233
3-2	Radiolarian Ooze		1.173	2.22	87.5			2.78		268
3-3	Radiolarian Ooze		1.187	2.22	86.4			2.24	1521	287
3-4	Radiolarian Ooze		1.203	2.22	85.0					296
3-5	Radiolarian Ooze		1.184	2.22	86.6					266
3-6	Radiolarian Ooze		1.186	2.22	86.5					251
Core 4-1	Radiolarian Ooze		1.191	2.30	86.0			1.46		227
4-2	Radiolarian Ooze		1.176	2.30	88.1				1503	248
4-3	Radiolarian Ooze		1.176	2.30	88.1				1499	237
4-4	Radiolarian Ooze		1.160	2.30	89.3					278
4-5	Radiolarian Ooze		1.150	2.30	90.2					238
4-6	Radiolarian Ooze		1.161	2.30	89.3					150
Core 5-1	Radiolarian Ooze		1.198	2.32	86.4					281
5-2	Radiolarian Ooze		1.187	2.32	87.4					284
5-3	Radiolarian Ooze		1.171	2.32	88.7					291
5-4	Radiolarian Ooze		1.190	2.32	87.2					284
5-5	Radiolarian Ooze		1.190	2.32	87.2	27.0	88.6			285
5-6	Radiolarian Ooze		1.175	2.32	88.3					248
Core 6-1	Radiolarian Ooze		1.153	2.37	90.0					222
6-2	Radiolarian Ooze	1.135	1.174	2.37	88.9			1.15	1480	258
6-3	Radiolarian Ooze	1.137	1.188	2.37	87.8			1.27	1449	293
6-4	Radiolarian Ooze	1.151	1.203	2.37	86.7			1.15	1488	313
6-5	Radiolarian Ooze	1.151	1.195	2.37	87.3			1.17	1468	294
6-6	Radiolarian Ooze	1.134	1.200	2.37	86.9	75.0	88.0		1487	253

TABLE 2 – *Continued*

	Grainsize[i]					Carbon/Calcium Carbonate			Interstitial Water				
	Interval cm	Sand Per Cent	Silt Per Cent	Clay Per Cent	Classification	Interval cm	Calcium Carbonate Per Cent	Organic Carbon Per Cent	Interval cm	pH	Eh (mu)	Temp°C	Salinity %
	117.0	0.0	27.7	72.3	Silty Clay	112.0	0.0	0.2					
						140.0	0.2	0.2		7.66	-282	22	34.7
	8.0	0.6	33.2	66.2	Silty Clay								
	49.0	0.8	20.4	78.8	Clay	46.0	0.6	0.3					
	6.0	1.3	28.4	70.3	Silty Clay	28.0	0.0	0.3					
	12.0	1.7	30.8	67.5	Silty Clay	20.0	0.0	0.3		7.58	-380	22.2	34.4
	2.0	1.5	34.1	64.4	Silty Clay	20.0	0.5	0.2					
	2.0	1.1	31.5	67.4	Silty Clay	20.0	0.9	0.3					
	33.0	5.3	31.0	63.7	Silty Clay								
	2.0	11.4	30.6	57.9	Silty Clay	20.0	0.2	0.3					
	2.0	11.6	27.6	60.8	Silty Clay	20.0	0.0	0.3					
	2.0	7.7	35.6	56.8	Silty Clay	20.0	0.0	0.3					
	2.0	4.8	34.6	60.6	Silty Clay	20.0	0.0	0.3					
	2.0	5.5	30.3	64.2	Silty Clay	18.0	0.0	0.3					
	101.0	3.5	30.8	65.7	Silty Clay	122.0	0.0	0.4					
	2.0	3.8	26.7	69.5	Silty Clay	55.0	0.0	0.3					
	30.0	5.2	21.1	73.7	Silty Clay	50.0	0.0	0.3					
	5.0	15.7	35.3	49.0	Silty Clay	13.0	0.0	0.2					
	27.0	9.9	35.4	54.7	Silty Clay	33.0	0.0	0.3					
	50.0	10.8	40.5	48.7	Silty Clay	46.0	0.0	0.3					
	3.0	16.0	34.6	49.4	Silty Clay	30.0	0.0	0.3					
	3.0	8.7	40.2	51.1	Silty Clay	75.0	0.0	0.3					
	18.0	7.5	39.9	52.6	Silty Clay	22.0	1.2	0.0					
	11.0	11.0	36.1	52.9	Silty Clay	24.0	0.0	0.3					
	19.0	18.9	36.0	45.1	Silty Clay	93.0	0.0	0.2					
	20.0	11.6	36.1	52.3	Silty Clay	75.0	0.0	0.2					
	12.0	7.8	27.4	64.8	Silty Clay	21.0	0.0	0.1					
	23.0	8.1	30.2	61.6	Silty Clay	36.0	0.0	0.2					
	32.0	10.5	35.0	54.5	Silty Clay	47.0	0.0	0.2					
	18.0	15.4	37.0	47.6	Silty Clay	27.0	0.0	0.2	0-10	7.59	-279	23.2	35.2
	16.0	15.2	33.7	51.1	Silty Clay	75.0	0.0	0.2					

TABLE 2 – *Continued*

Identification	Lithology	Physical Properties								
		Saturated Bulk Density (Sect. Wt.)[a] gm/cm^3	Saturated Bulk Density (GRAPE)[b] gm/cm^3	Mean Grain Density[c] gm/cm^3	Porosity (Calculated)[d] Per Cent	Porosity (Drying, Ship)[e]		Penetrometer[f] cm	Sonic Velocity[g] m/sec.	Natural Gamma Radiation[h]
						Interval cm	Per Cent			
Hole 66.1 – *Continued*										
Core 7-1	Radiolarian Ooze		1.154	2.30	90.3				1480	312
7-2	Radiolarian Ooze		1.169	2.30	88.6				1484	302
7-3	Radiolarian Ooze		1.204	2.30	85.9				1485	279
7-4	Radiolarian Ooze	1.150	1.191	2.30	86.9				1477	299
7-5	Radiolarian Ooze		1.215	2.30	85.0				1475	276
7-6	Radiolarian Ooze		1.168	2.30	88.7				1471	288
Core 8-1	Radiolarian Ooze		1.192	2.30	86.8	62.0	86.0	0.68	1495	286
8-2	Radiolarian Ooze	1.145	1.203	2.30	85.9	130.0	88.4		1502	308
8-3	Radiolarian Ooze	1.145	1.184	2.30	87.4				1485	309
8-4	Radiolarian Ooze									
8-5	Radiolarian Ooze									
8-6	Radiolarian Ooze		1.196	2.30	86.5				1480	298

The groundmass or matrix consists of a spongy mass of ~ 1 micron cristobalite particles, forming an anastomosing network. Scattered through this are clay flakes (< 1 per cent) and 2 to 20 micron grains and patches of iron or ferromanganese oxides.

As far as can be determined optically, the porcelanite differs from the mudstone (or claystone) only in its higher concentration of silica (and resultant lower porosity and permeability and more abundant iron (? oxide) blebs. Electron micrographs show that the mudstone is very porous, with 1-micron platy grains in "house of cards" arrangement, whereas the porcelanite consists of a uniform mass of cristobalite largely filling the original space between plates.

The boundary between the porcelanite and unlithified sediment is diffuse (500 to rarely 4000 microns thick) and its outer edge is marked by a 30 to 50-micron band unusually rich in ? iron oxides. Silification appears to start as irregular 10-micron patches which become larger as the mudstone grades to porcelanite.

Leg 7, Site 66, Hole 0, Core 5, Core Catcher

Macro: The rock is a moderate yellowish-brown and grayish-orange pink (10YR 5/4 and 5 YR 7/2) porcelanite showing striking lensoid banding or lamination 0.5 to 5 millimeters in thickness. Most bands show pinch and swell features. Several layers are cut by a colorless, clear 0.3-millimeter vein, and boundaries on either side of the vein are misaligned. The vein terminates by splitting and pinching out. Its total length is about 15 millimeters.

Micro: The rock consists of chalcedonic blebs and masses up to 500 microns in diameter (but usually about 60 microns) in a matrix of fine cristobalitic silica.

The chalcedonic masses form about 20 per cent of the rock. About half appear to be infilled and pseudomorphed Radiolaria dominated by spherical forms. Preservation of ornamentation or internal structure is rare. The remaining clear chalcedony masses are irregular in shape, and while some may represent alteration of fragments of large radiolarians, most is clearly epigenetic, and has replaced (rather than displaced) preexisting portions of the rock. This appears to be a classic example of fine-grained, less stable cristobalite inverting to coarser-grained, more stable chalcedony. At several locations in the section, ? shrinkage cracks have been infilled with clear silica. In one case, laminae are misaligned across the vein.

The largest vein is 300 microns across. The margins are marked by a 20-micron chalcedony layer, with fibers aligned normal to the vein walls. Inside this is a 2 to 5-micron film of cristobalite. This in turn gives way to the main vein which is dominantly sheaves of chalcedony up to 100-microns long, more or less normal to the vein walls, and meeting at a fairly sharply defined central line with subordinate cristobalite, again showing the central line. The cristobalite-chalcedony contact is saw-toothed and probably marks a frozen inversion boundary. This vein apparently formed during two shrinkage episodes, followed by slow inversion of the original cristobalite core.

TABLE 2 – *Continued*

	Grainsize^i					Carbon/Calcium Carbonate			Interstitial Water				
	Interval cm	Sand Per Cent	Silt Per Cent	Clay Per Cent	Classification	Interval cm	Calcium Carbonate Per Cent	Organic Carbon Per Cent	Interval cm	pH	Eh (mu)	Temp°C	Salinity %
	11.0	10.1	40.0	49.9	Silty Clay	20.0	0.0	0.2					
	20.0	14.3	41.4	44.3	Silty Clay	27.0	0.0	0.3					
	102.0	13.0	38.1	48.9	Silty Clay	110.0	1.1	0.0	0-70				
	3.0	10.0	40.9	49.1	Silty Clay	40.0	0.0	0.2					
	14.0	9.1	40.2	50.7	Silty Clay	30.0	0.0	0.4					
	7.0	9.9	41.1	49.0	Silty Clay	30.0	0.0	0.2					
	2.0	8.5	38.2	53.2	Silty Clay	62.0	0.0	0.2					
	11.0	10.3	40.1	49.6	Silty Clay	130.0	0.1	0.2					
	11.0	13.7	39.9	46.3	Silty Clay	30.0	0.0	0.2					
	13.0	14.0	41.6	44.4	Silty Clay	76.0	0.0	0.2					
	13.0	14.0	41.6	44.4	Silty Clay	76.0	0.0	0.2					

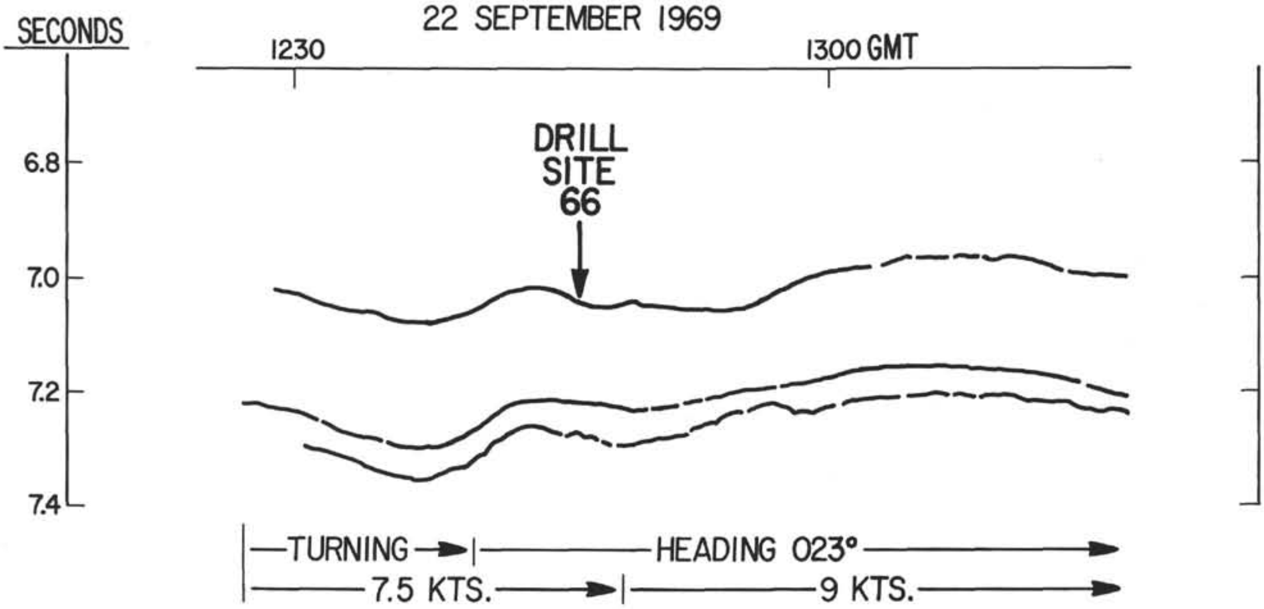


Figure 5. *Interpretation of reflection profile (Reflection Record No. 110 in chapter on Reflection Seismology) taken upon departure of D/V* Glomar Challenger *from Site 66. See Plate 1 for location.*

Within the ordinary chalcedony masses, the individual bunches of crystallites which combine to form the characteristic mosaic are generally about 20-microns in diameter.

Other coarse components of the rock are rare fish debris and scattered ferromanganese micronodules.

The matrix of the chert is a spongy network of 1 to 2 micron cristobalite grains and shard-like fragments. Clay minerals are very rare. Partial replacement of cristobalite by coarser chalcedony is ubiquitous.

Fabric: The layering in the rock is a complex combination of sedimentary and diagenetic phenomena. The

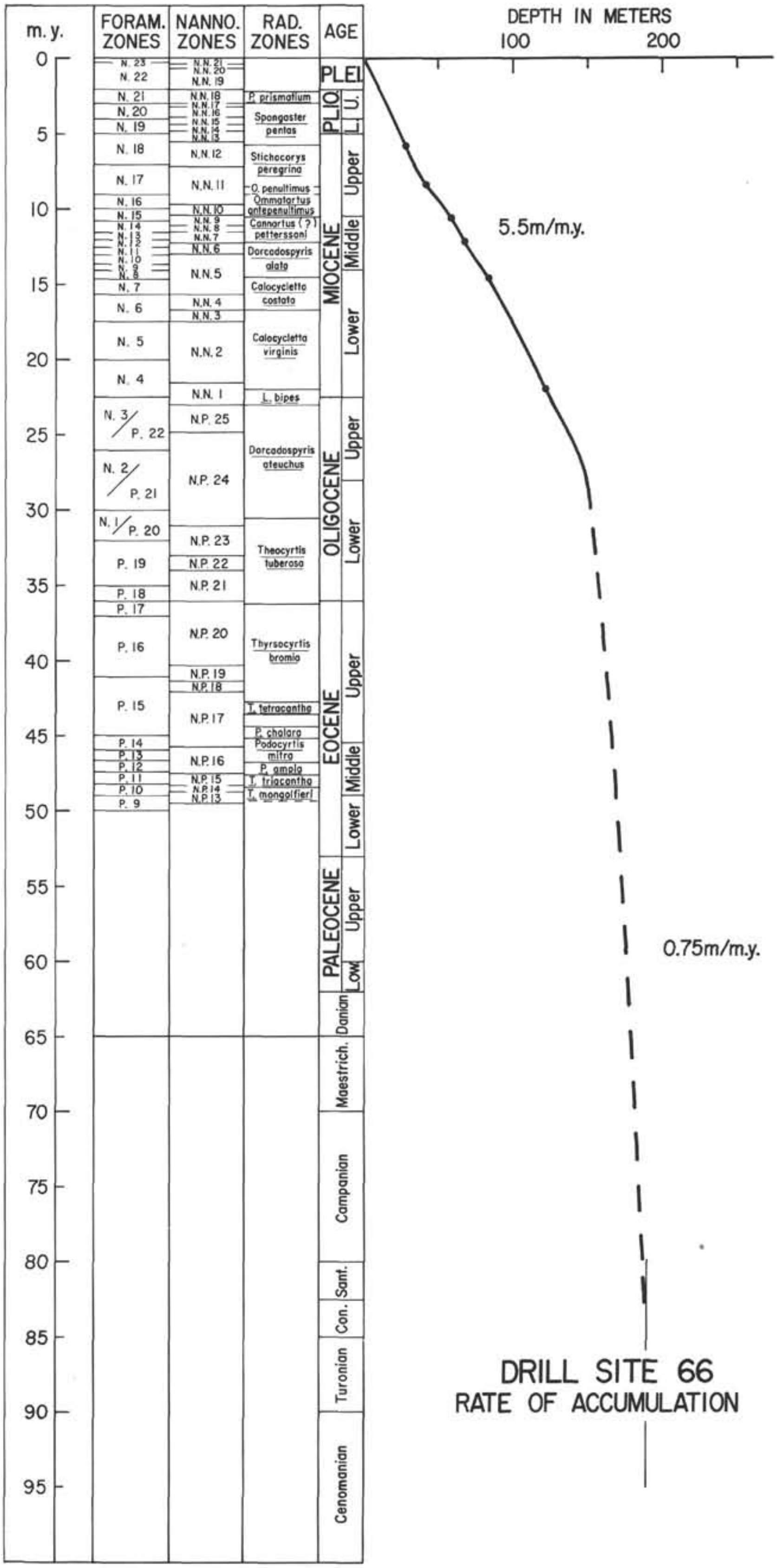


Figure 4. *Rate of sediment accumulation at Site 66.*

presence of angular intraformation grains (up to 1500 microns in diameter, and more resistant to conversion to chalcedony than the rest of the rock) as well as radiolarian-rich and -poor layers (some strongly graded and cutting underlying beds) points to the importance of current erosion and winnowing of detritus at the time of deposition. Superimposed on this is a secondary banding due to variable conversion of cristobalite to chalcedony. This banding is influenced but not controlled by the sedimentary bedding (coarser parts of graded beds show the most intensive chalcedony development).

Leg 7, Site 66, Hole 0, Core 9, Section 1, 96 to 97 centimeters

Macro: The rock is a moderate reddish-brown (10 R 4/4-moist), rather structureless ? bentonite. It shows small (~ 1 millimeter grayish-orange mottles). It is well indurated, but soft, and breaks into roughly cubic blocks (~ 1 centimeter edges). Contraction cracks develop as fragments dry out.

Micro: The rock appears to be an altered hyaloclastite, consisting of 20 to 40 per cent sand and coarse silt-sized fragments in a very fine-grained montmorillonite matrix. Although the fragments display a diversity of angular form, internal structure, and color (red browns, yellow browns and greenish yellow), virtually, all appear to consist of intimately intergrown iron oxides and very finely crystalline (<2 microns) montmorillonite. Mostly the montmorillonite is in the form of equidimensional aggregates of fine crystallines, but in many of the greenish yellow fragments (probably infilled voids and larger areas of devitrified glass in the original rock), the montmorillonite forms masses of acicular crystals up to 15 microns thick.

Many of the fragments contain pseudomorphed feldspar microlites, but preserved in the section.

A number of fragments include 50 to 100-micron spherules of radiating montmorillonite acicules, probably representing infilled vesicules in the original rock (compare the descriptions of thin sections of basalt from this hole).

The matrix consists of vermiform bands and irregular masses and mosaics of extremely fine (< 2 and mostly < 1 micron) acicular montmorillonite. The matrix is extensively cracked, probably due to dehydration prior to impregnation with Caedex. Iron oxides are present in the matrix, but are much less abundant than in the fragments.

Leg 7, Site 66, Hole 0, Core 9, Section 3, 50 centimeters

Macro: The rock is a moderate yellowish-brown (10YR 5/4-wet), fine-grained basalt. Fragments (up to 5 centimeters in-diameter) are coated with white alteration products and ferromanganese oxides. The interiors of fragments are yellow brown, and are surrounded by a 3 to 5 millimeter rind of grayer material, with a sharp, pale yellow-brown inner boundary. The rock is shot through with three dimensional dendrites of ferromanganese oxides.

Micro: The rock consists of a meshwork of randomly oriented 50 to 250 micron acicular plagioclase microlites separated by 10 to 30 micron clots of pale green or brownish-green montmorillonite and ferromanganese and iron oxides, either diffuse patches or stubby prisms or acicular needles 10 to 30 microns long. The needles occur in interpenetrating sets in altered pyroxene grains. Most of the montmorillonite and iron oxides have formed from original glass. The parent rock was about 40 per cent plagioclase, 10 to 20 per cent pyroxene, and 40 to 50 per cent glass.

Scattered through the rock are rare euhedral plagioclase phenocrysts, up to 700 microns in length. These grains are usually rimmed by a 10 to 30 micron zone of more calcic composition. Slight replacement of grain margins and clevage planes by montmorillonite has taken place.

Small (50 to 150 microns) infilled vesicules are common throughout the rock. The filling is almost invariably montmorillonite, usually as a mosaic of small aggregates of spherules (10 to 20 microns in diameter) of very fine acicular crystals, but also as larger radiating acicular crystals of vermiform masses of acicules. Combinations of mosaics grading inwards to acicules occur near the edges of the rock. In heavily stained areas, vesicules lined with radiating montmorillonite and infilled with red-brown iron oxides or iron-stained montmorillonite are common.

The boundary between the darker rind and lighter core of the sectioned fragment is marked by a 250-micron band of feldspar microlites and montmorillonite, with a much lower than average content of metal oxides. The rind is distinguished by abundant iron (and ? manganese) oxides, brown or greenish-brown montmorillonite and large patches (up to 300 microns across) of microlite-free devitrified glass–now very finely crystalline (~ 2 microns) mosaics of greenish-brown montmorillonite.

Within 500 microns of the edge of the rock, the feldspar microlites (largely replaced by brown, iron-stained montmorillonite) are oriented parallel to the surface. The white material on exposed faces, mentioned in the macro description, appears to be almost colorless, finely acicular ? montmorillonite, with ~ 20 per cent 2 to 5-micron iron or ferromanganese particles. No zeolites could be identified. The presence of feldspar microlites in the white material suggests that it is leached basalt, rather than a secondary coating.

Leg 7, Site 66, Hole 0, Core 10, Core Catcher

Macro: The rock is a dense, fine-grained altered basalt. Cores of fragments are yellowish brown (10 YR 6/4) and are surrounded by 5 to 10 millimeter rims of medium light fray (N6). The rock is fragmented into < 5-centimeter blocks, some of which have manganese-stained surfaces. Three dimensional dendrites of ferromanganese oxides extend at least 1 centimeter into the rock.

Micro: The rock is basically a meshwork of 50 to 150 micron acicular plagioclase laths (30 to 40 per cent of rock) enclosing blebs of iron oxides and finely acicular montmorillonite up to 50 microns diameter. Some of the montmorillonite is after clinopyroxene (rare crystallites survive), but most is an alteration product of glass, as is the iron oxide component. No chlorite is apparent in the section.

Scattered through the groundmass are rare plagioclase phenocrysts up to 350 microns in diameter. These are subhedral to euhedral, twinned, and usually partly altered to montmorillonite along the edges and clevage planes. The cores of the grains are > An 55 (Michel-Levy), but too few observations could be made to yield an accurate composition. Most of the phenocrysts have corroded edges or rims of more calcic composition (~ 20 microns thick).

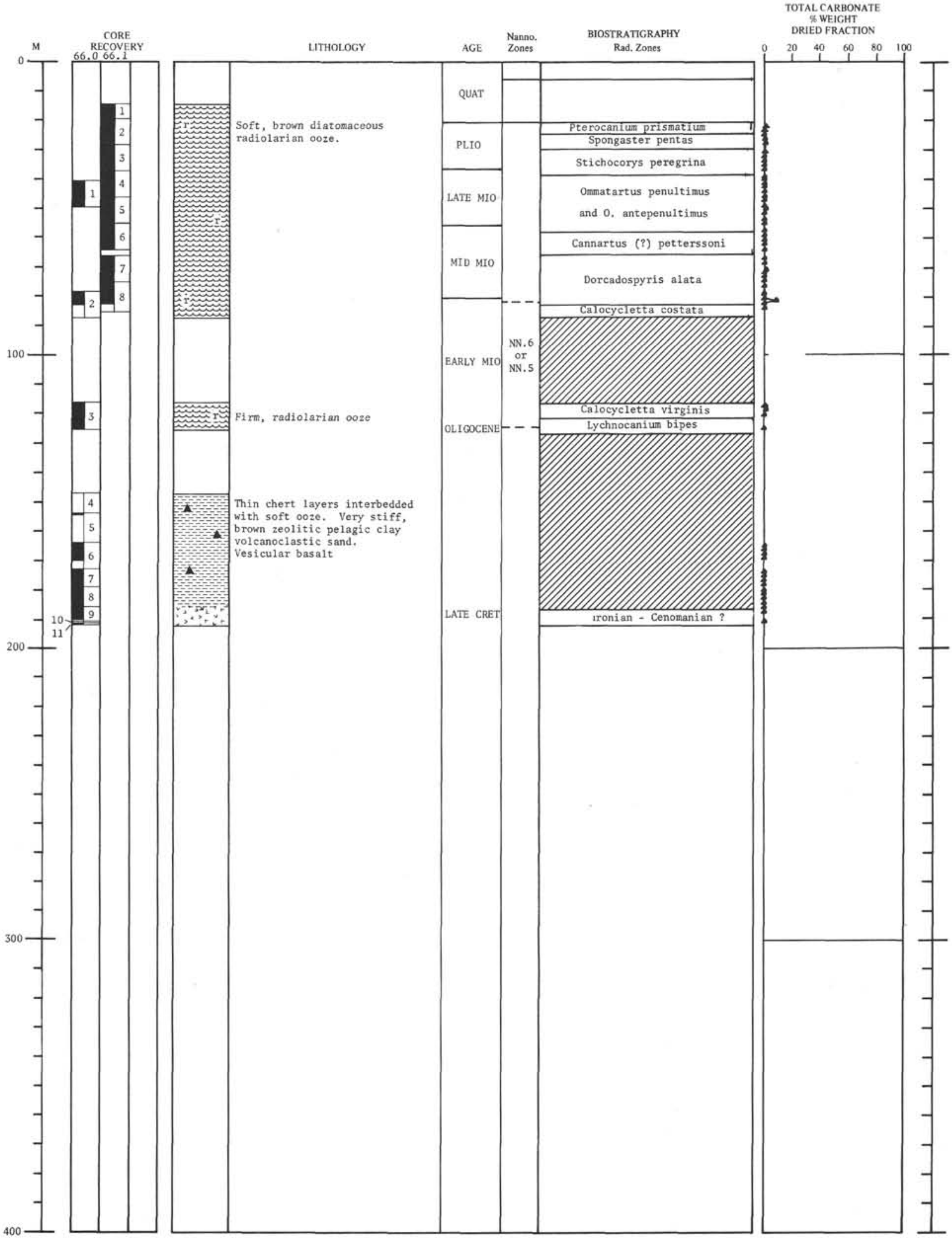
One 250-micron euhedral pyroxene is also present in the thin section. This grain is almost colorless.

The rock contains numerous 50 to 150 micron spherical masses of radiating acicular pale green montmorillonite, which probably mark fine vesicules in the original rock.

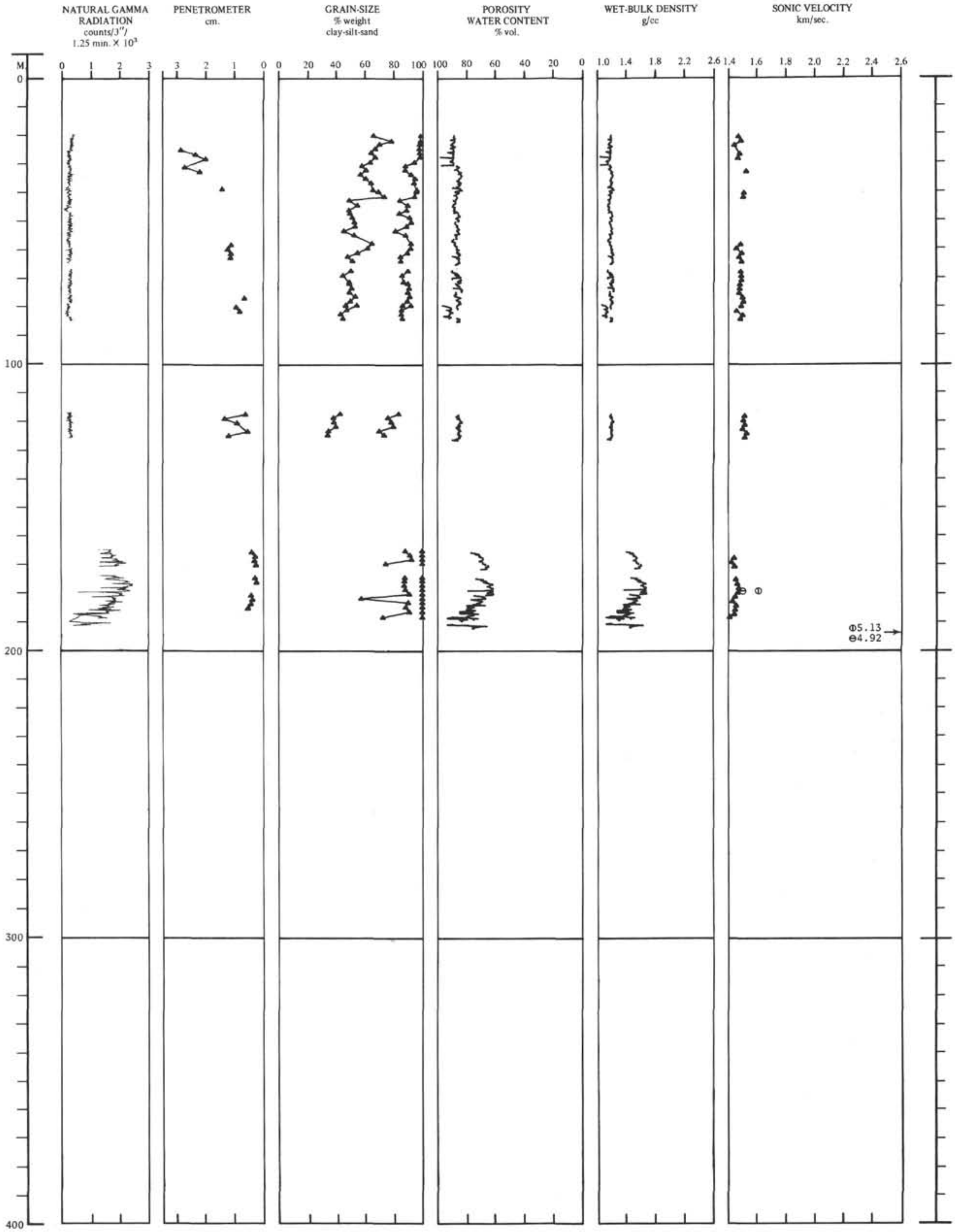
The only difference between the rim and core areas of the rock apparent in thin section is the concentration of ferromanganese oxides (these are black and opaque in contrast to the red-brown translucent iron oxides of the altered groundmass). The rim areas contain 20 per cent of 5 to 10 micron blebs (locally obliterating all but the plagioclase laths in the dentrites mentioned above) as well as stained (brown) montmorillonite. Also present in the rim areas, but not the cores are irregular patches of yellow-brown, microlite-free devitrified glass, up to 250 microns across. These are now mosaics of finely crystalline montmorillonite, and rarely include 5-micron grains of iron oxides. The core areas rarely contain more than 10 per cent of ferromanganese oxides, but are usually richer in brown iron oxides than the rim areas.

Fabric: In places, the microlites of plagioclase form swirls and eddys, generally about 2 millimeters across. Several 0 to 5 millimeter bands of aligned crystals, presumably marking the terminal stages of viscous shear, are also present. In general, however, the microlites are randomly arranged, with flow banding a minor feature.

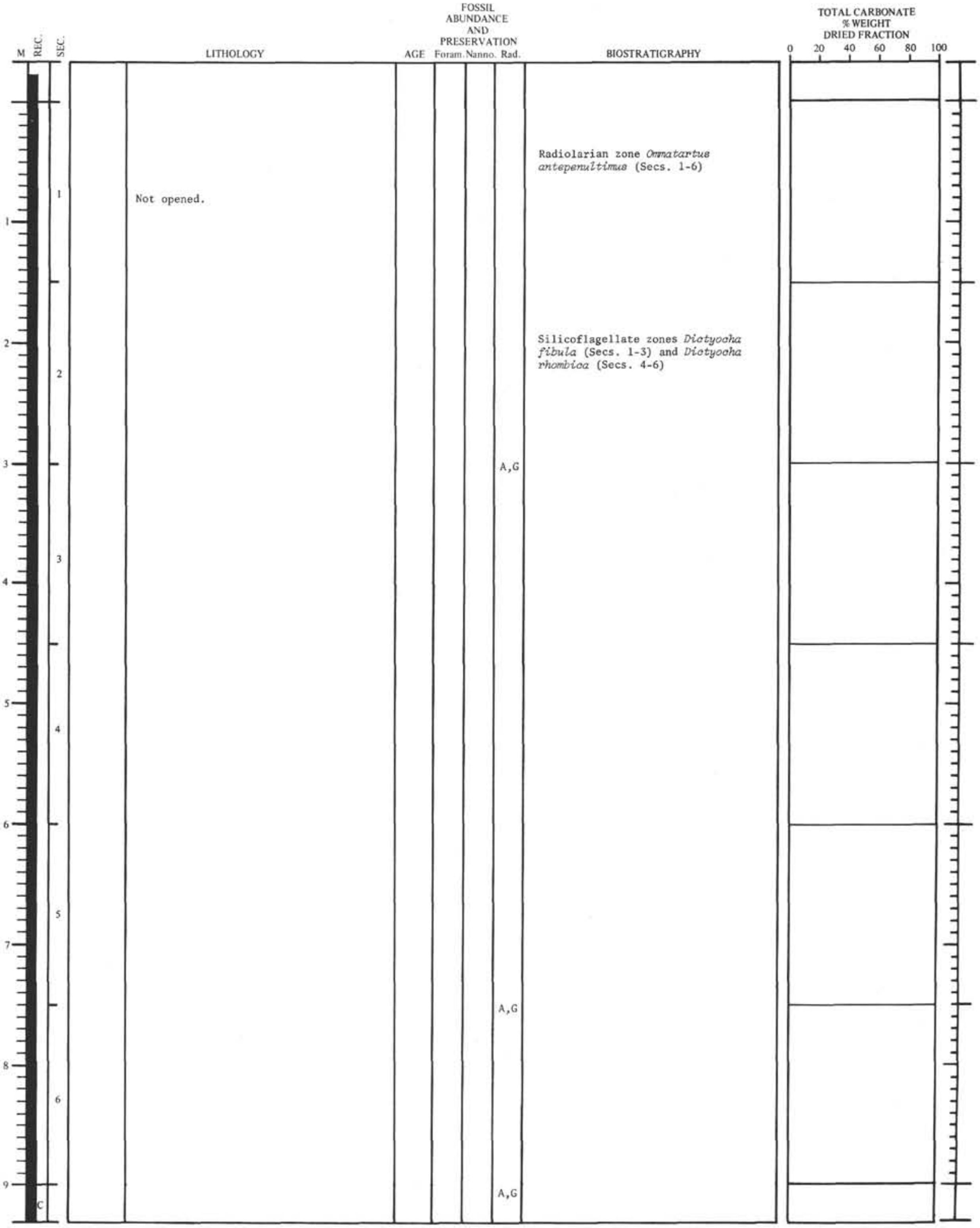
This rock is indistinguishable from the basalt found as pebbles at 50 centimeters in Section 3 of Core 9 of Hole 66.0.



Lithology and biostratigraphy of Site 66.



Physical properties of Site 66.

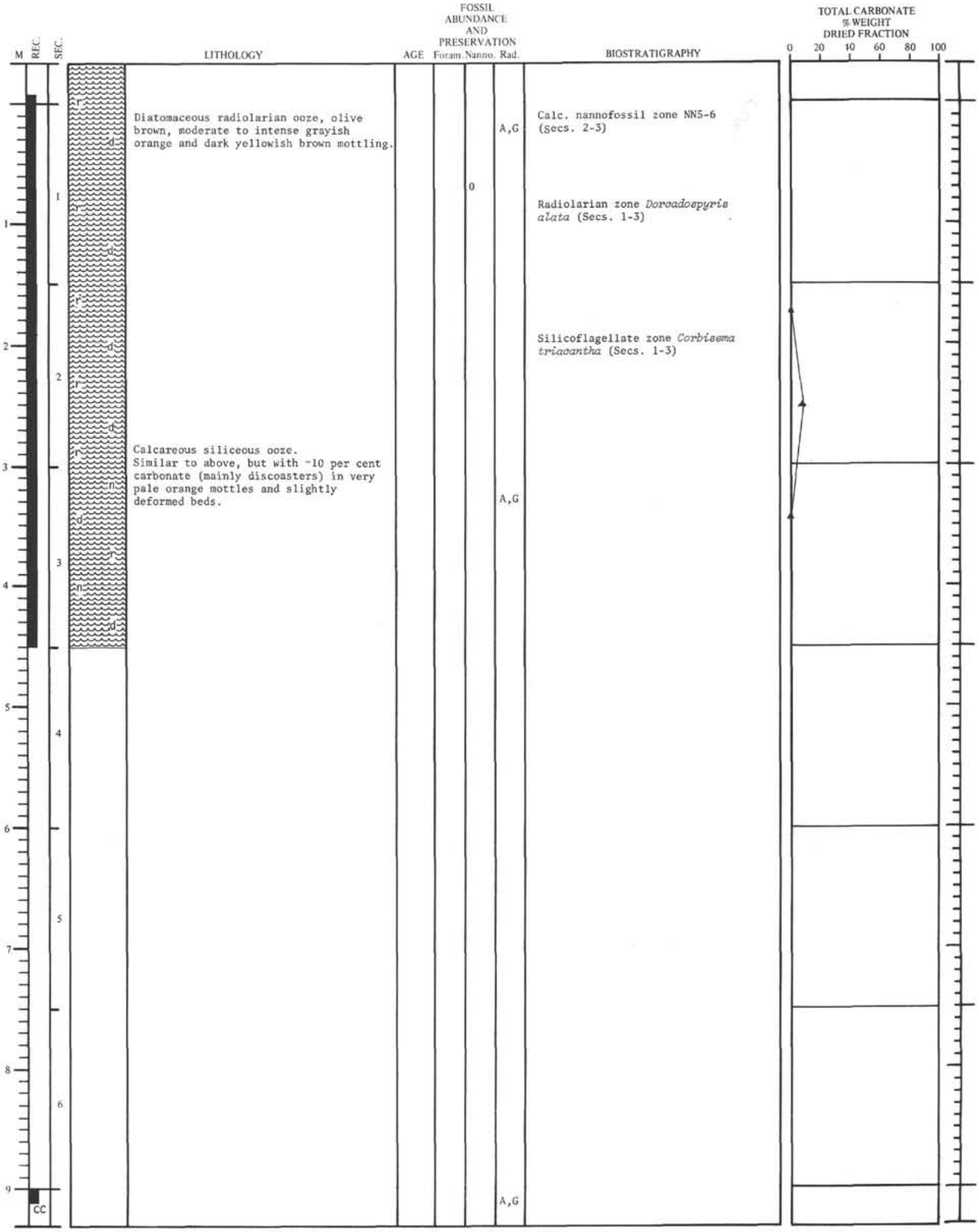


Not opened.

Radiolarian zone *Ommatartus antepenultimus* (Secs. 1-6)

Silicoflagellate zones *Dictyocha fibula* (Secs. 1-3) and *Dictyocha rhombica* (Secs. 4-6)

Lithology and biostratigraphy of Core 1, Site 66.0.



Diatomaceous radiolarian ooze, olive brown, moderate to intense grayish orange and dark yellowish brown mottling.

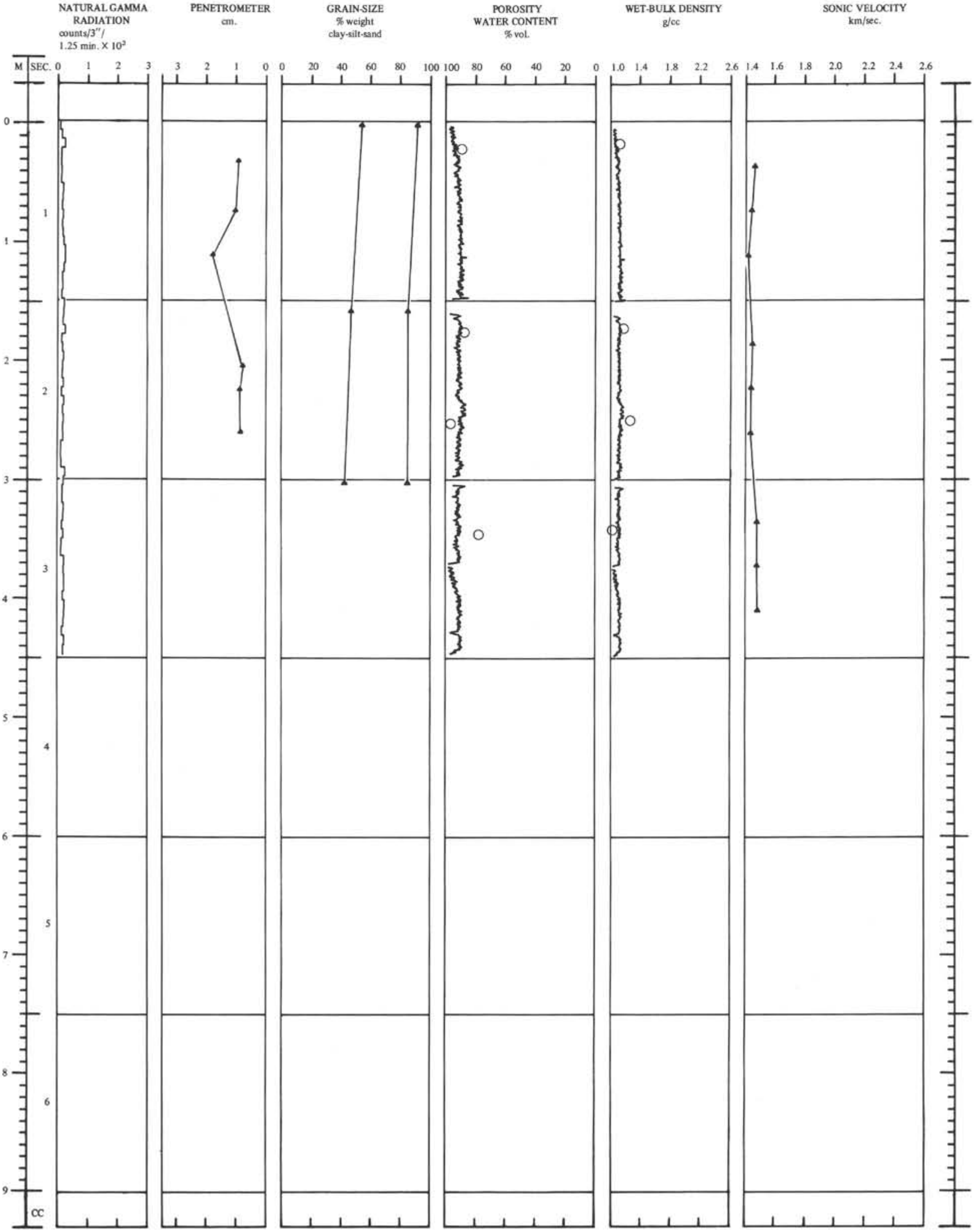
Calcareous siliceous ooze.
Similar to above, but with ~10 per cent carbonate (mainly discoasters) in very pale orange mottles and slightly deformed beds.

Calc. nannofossil zone NN5-6 (Secs. 2-3)

Radiolarian zone *Dorcadospyris alata* (Secs. 1-3)

Silicoflagellate zone *Corbisema triacantha* (Secs. 1-3)

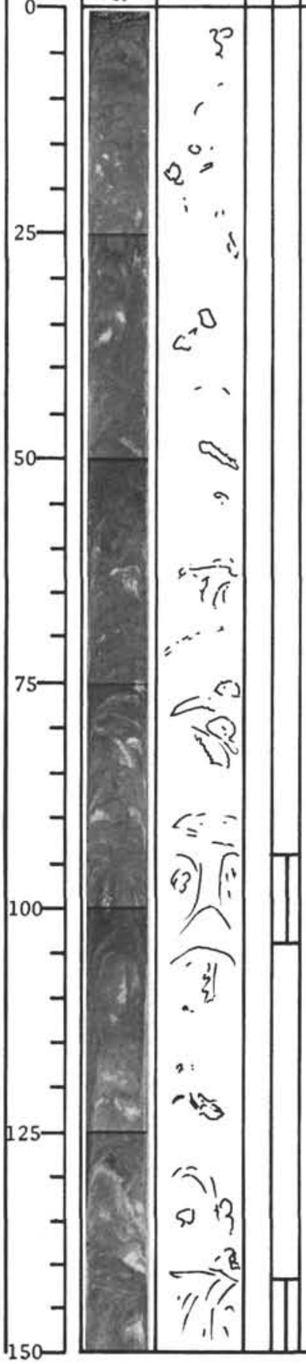
Lithology and biostratigraphy of Core 2, Hole 66.0.



Physical properties of Core 2, Hole 66.0.

Hole 66.0 Core 2
Section 1

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



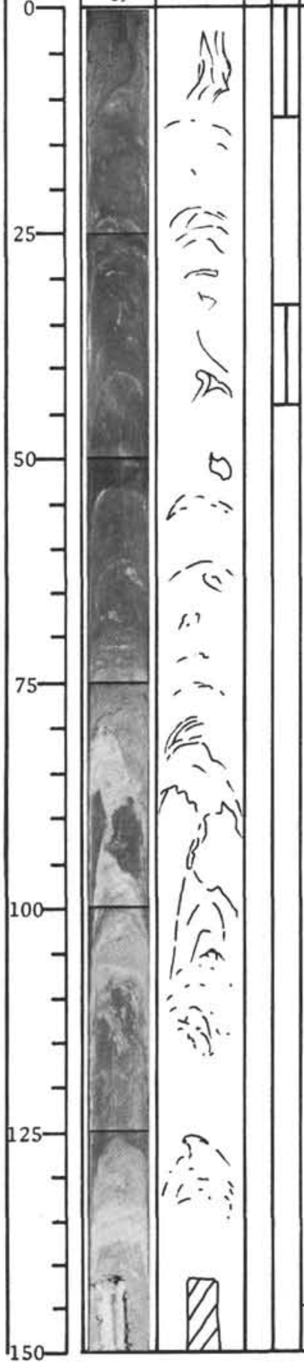
RADIOLARIAN OOZE

Olive brown (2.5Y4/4) is general background color, moderately to heavily mottled with grayish orange (2.5Y 7/4), with dark yellowish brown (10YR3/4), and with colors adjacent to these.

Some deformation where marked. No beds or contacts.

Hole 66.0 Core 2
Section 2

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description

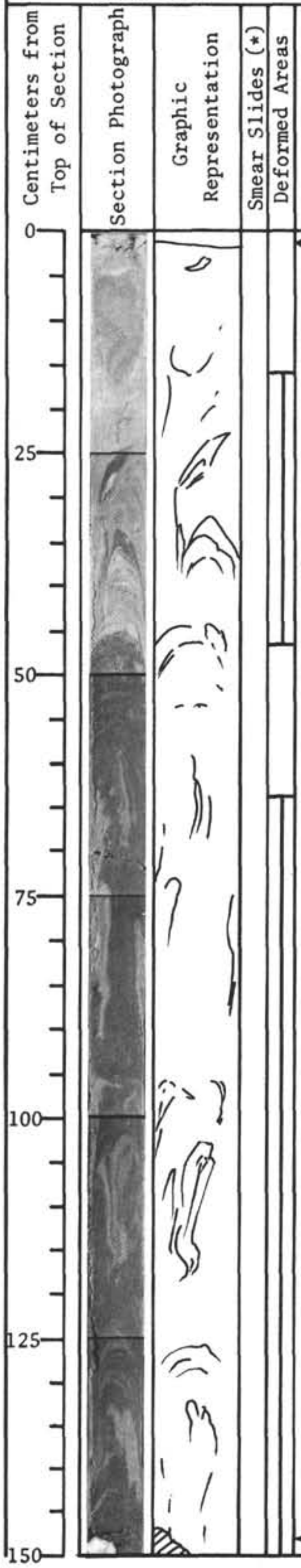


RADIOLARIAN OOZE

As Section 1, above, except also has some very pale orange (10YR8/2) mottles and slightly deformed beds (which are calcareous) e.g. 133-137cm.

←1 Interstitial water sample.

Hole 66.0 Core 2
Section 3

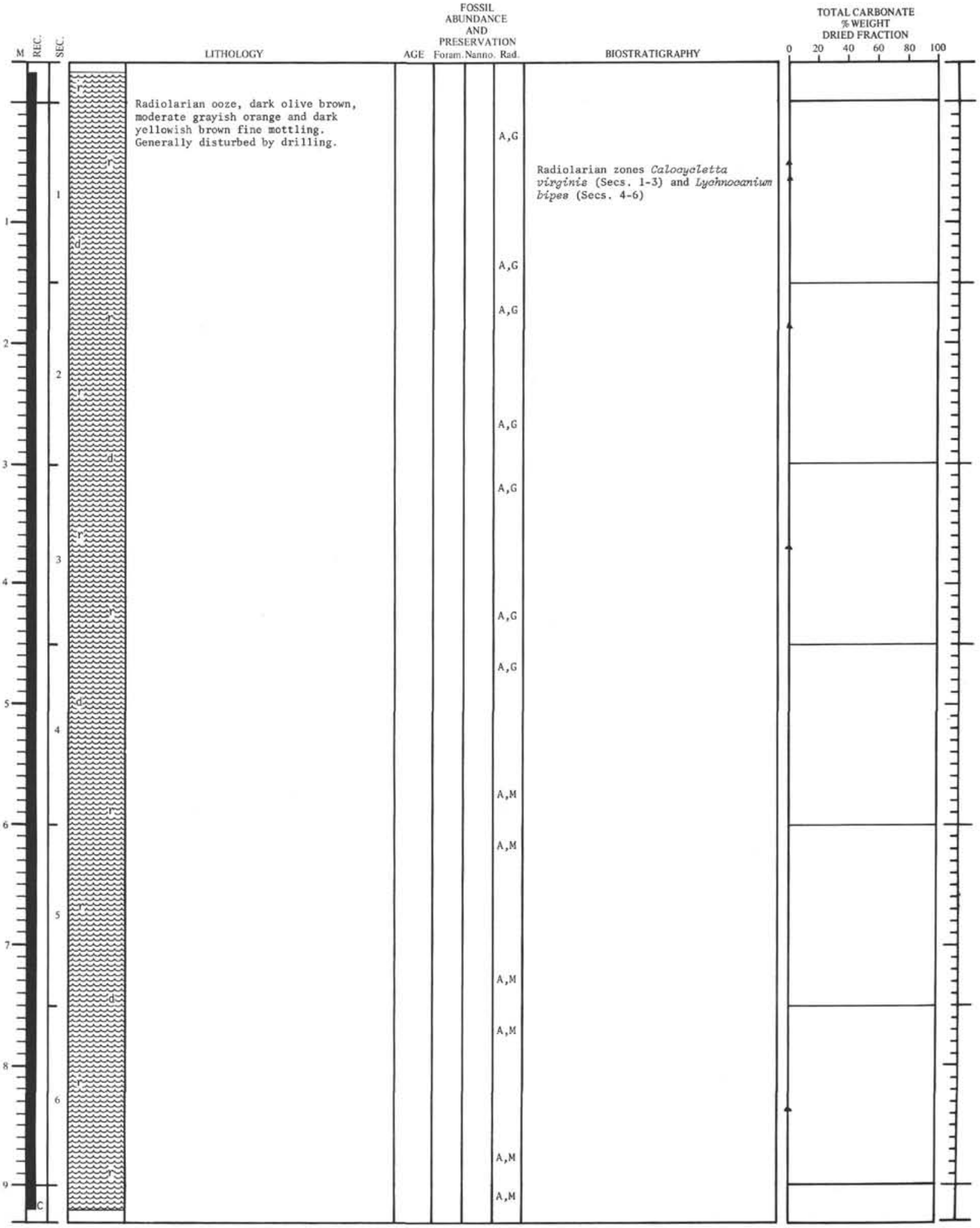


Description

RADIOLARIAN OOZE AND CALCAREOUS RADIOLARIAN OOZE

As Core 2 Section 2 above, except more strongly deformed, and considerable light yellowish brown (2.5Y 6/4) in with the olive brown (2.5Y4/4).

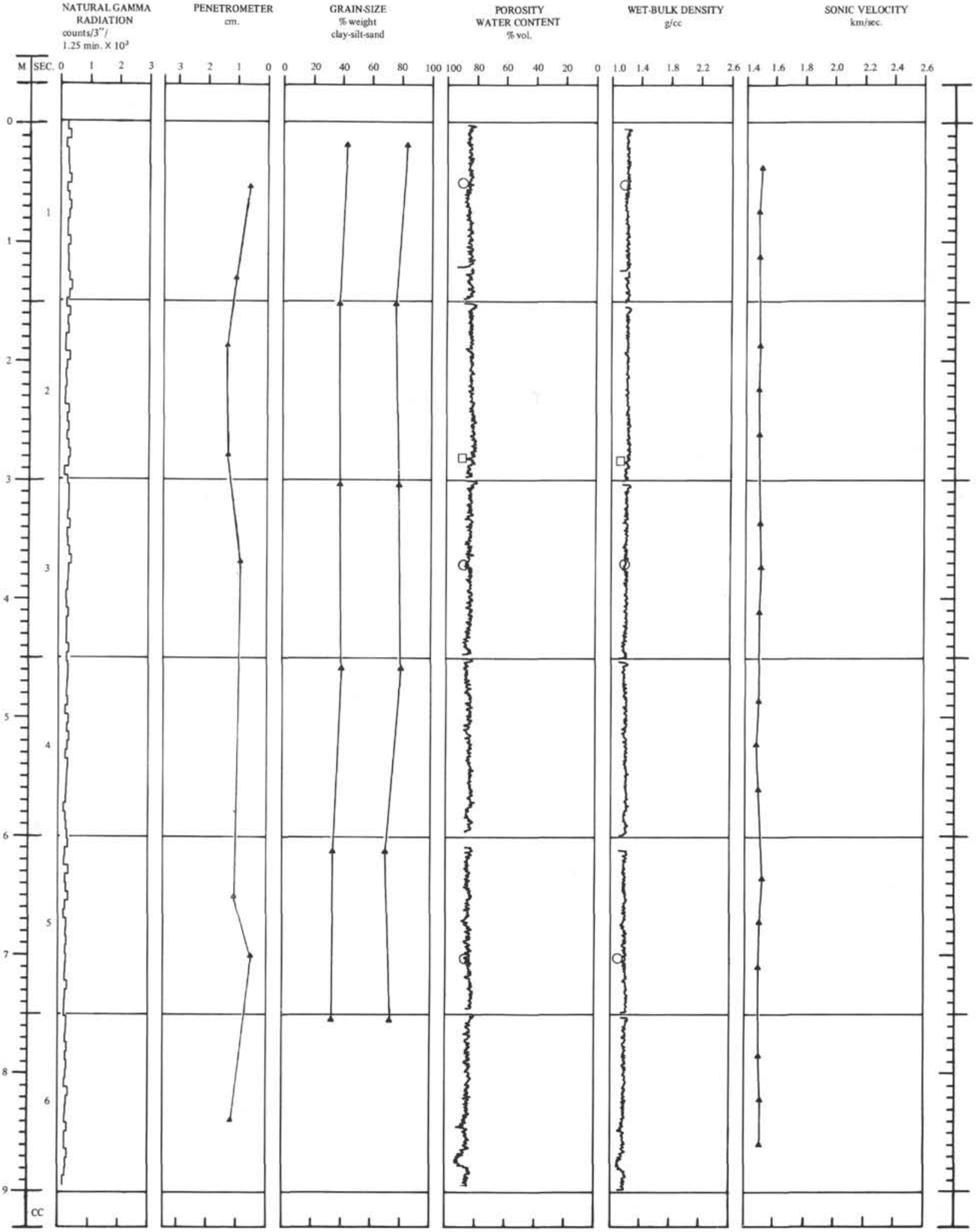
(1) Void



Radiolarian ooze, dark olive brown, moderate grayish orange and dark yellowish brown fine mottling. Generally disturbed by drilling.

Radiolarian zones *Calocycletta virginis* (Secs. 1-3) and *Lychnocanium bipes* (Secs. 4-6)

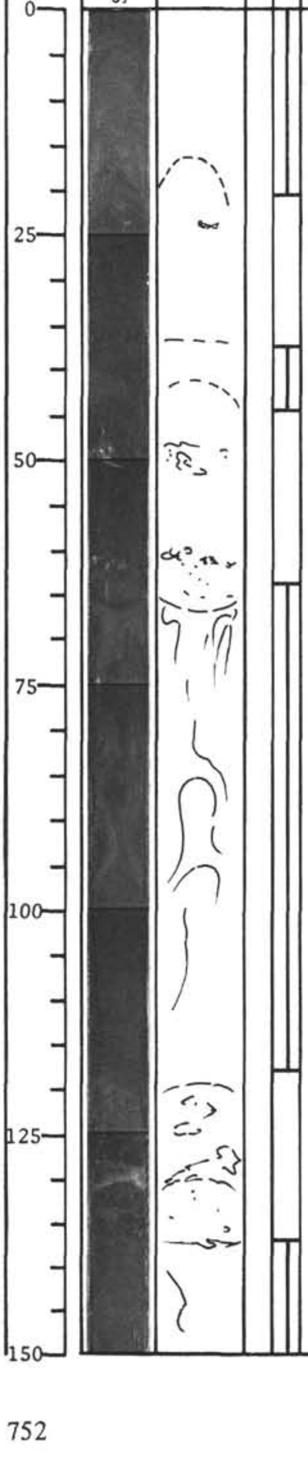
Lithology and biostratigraphy of Core 3, Hole 66.0.



Physical properties of Core 3, Hole 66.0.

Hole 66.0 Core 3
Section 1

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description

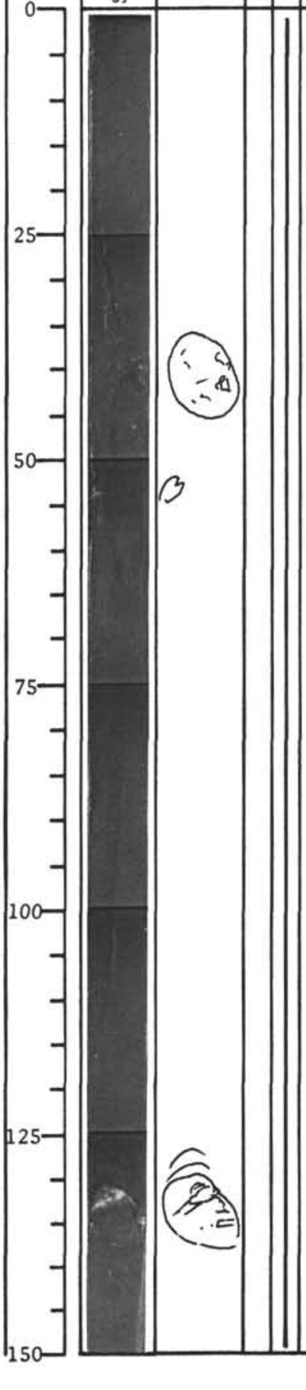


RADIOLARIAN OOZE

Overall color is olive brown (2.5Y4/4). Undeformed portions are moderately mottled with grayish orange (10YR7/4) and dark yellowish brown (10YR 3/2); deformed areas have brown vertical streaks and flow folds.

Hole 66.0 Core 3
Section 2

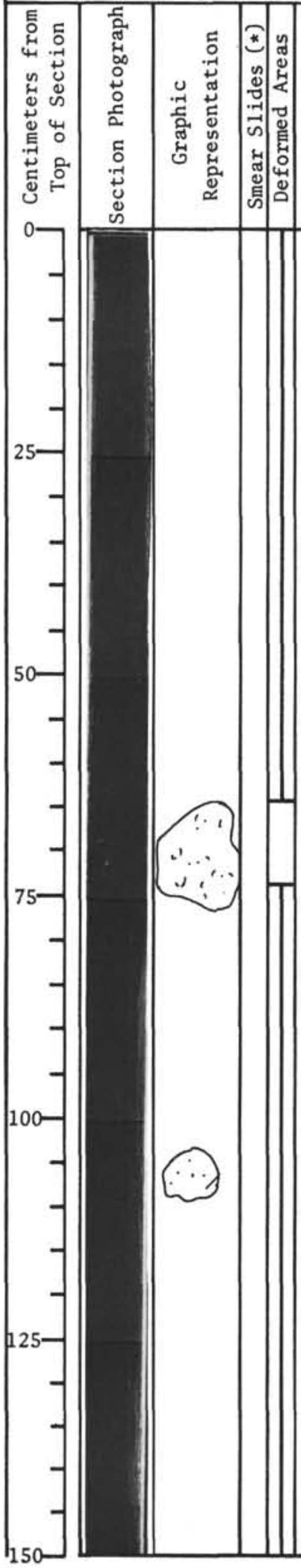
Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



RADIOLARIAN OOZE

Dark olive brown (2.5Y 4/4), mainly homogenized during drilling. Two small areas little disturbed; full of mottles of grayish orange (10YR7/2) and dark yellowish brown (10YR3/2).

Hole 66.0 Core 3
Section 3

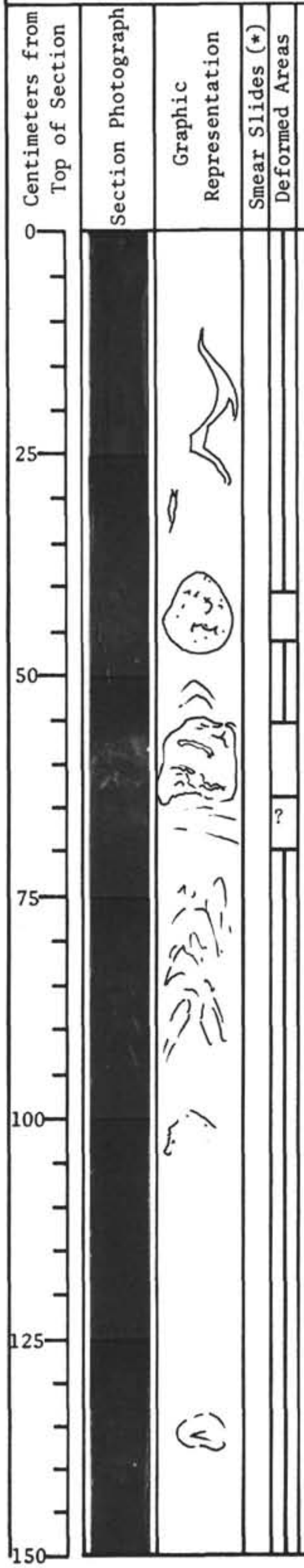


Description

RADIOLARIAN OOZE

Dark olive brown (2.5Y 4/4), mainly homogenized during drilling. Two small areas little disturbed; full of tiny mottles of grayish orange (10YR7/2) and dark yellowish brown (10YR3/2).

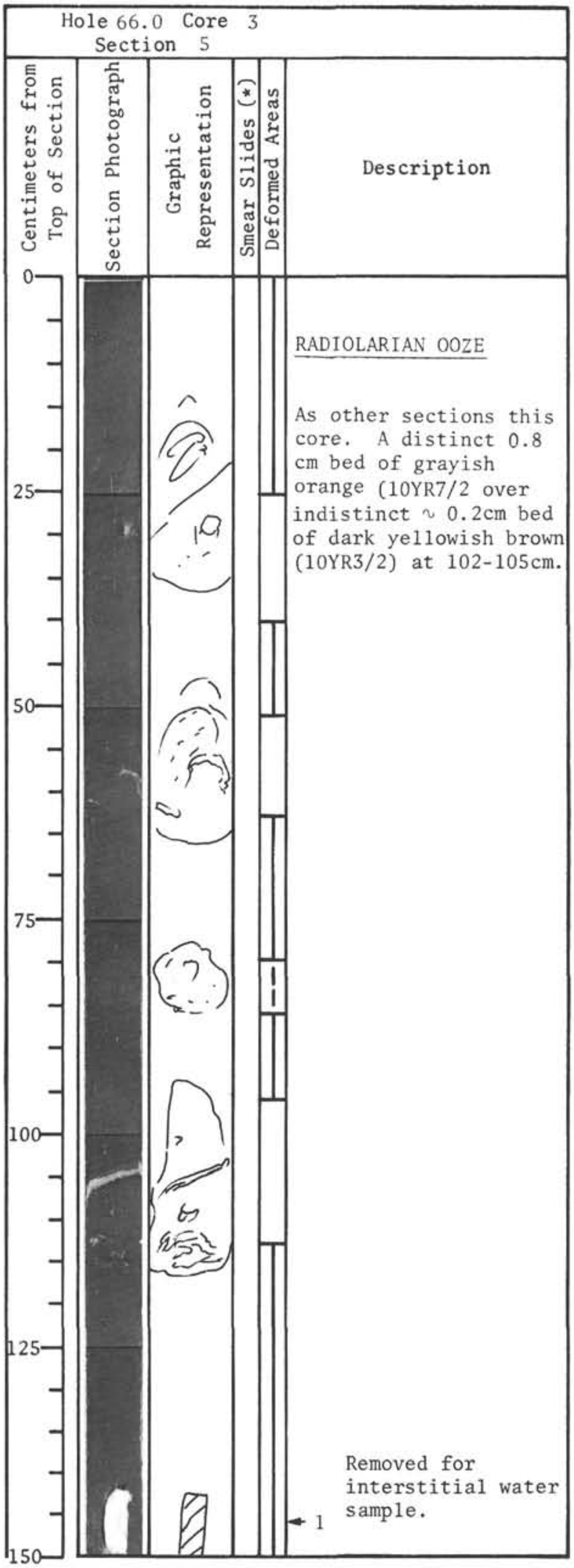
Hole 66.0 Core 3
Section 4



Description

RADIOLARIAN OOZE

Dark olive brown (2.5Y4/4) mainly homogenized during drilling. The whole pieces are mottled grayish orange (10YR7/2) and dark yellowish brown (10YR3/2).

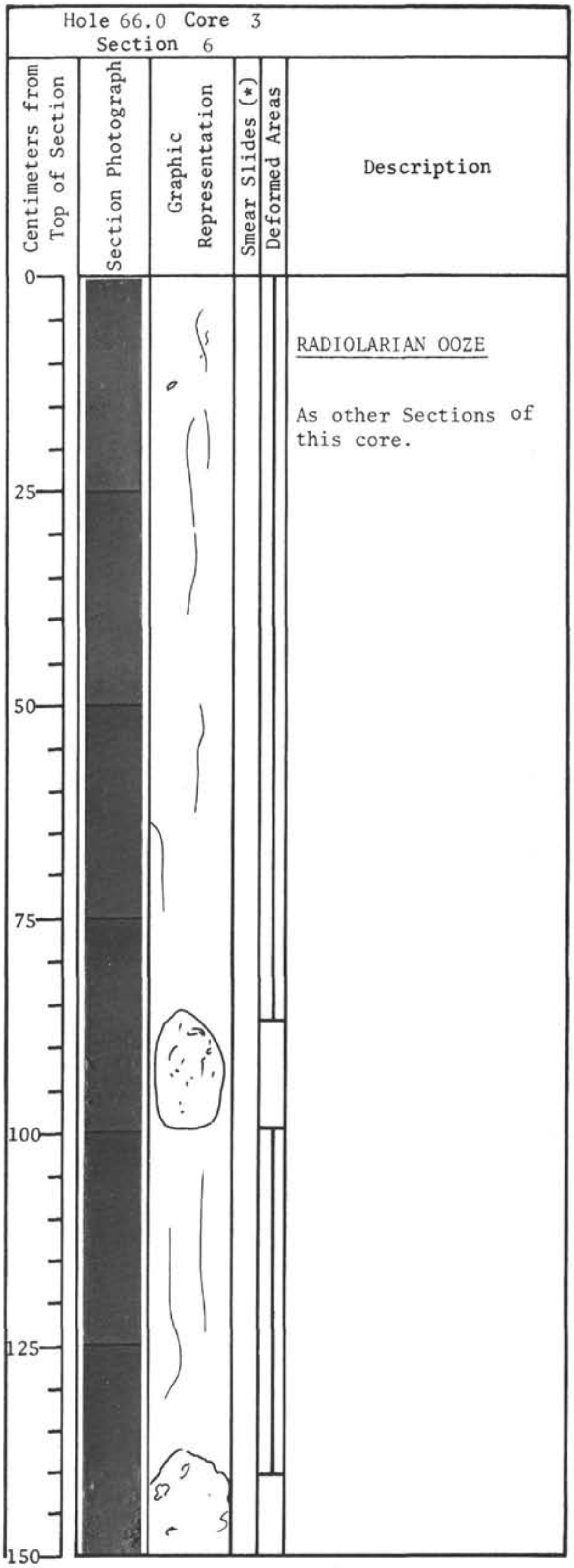


Hole 66.0 Core 3
Section 5

RADIOLARIAN OOZE

As other sections this core. A distinct 0.8 cm bed of grayish orange (10YR7/2 over indistinct ∿ 0.2cm bed of dark yellowish brown (10YR3/2) at 102-105cm.

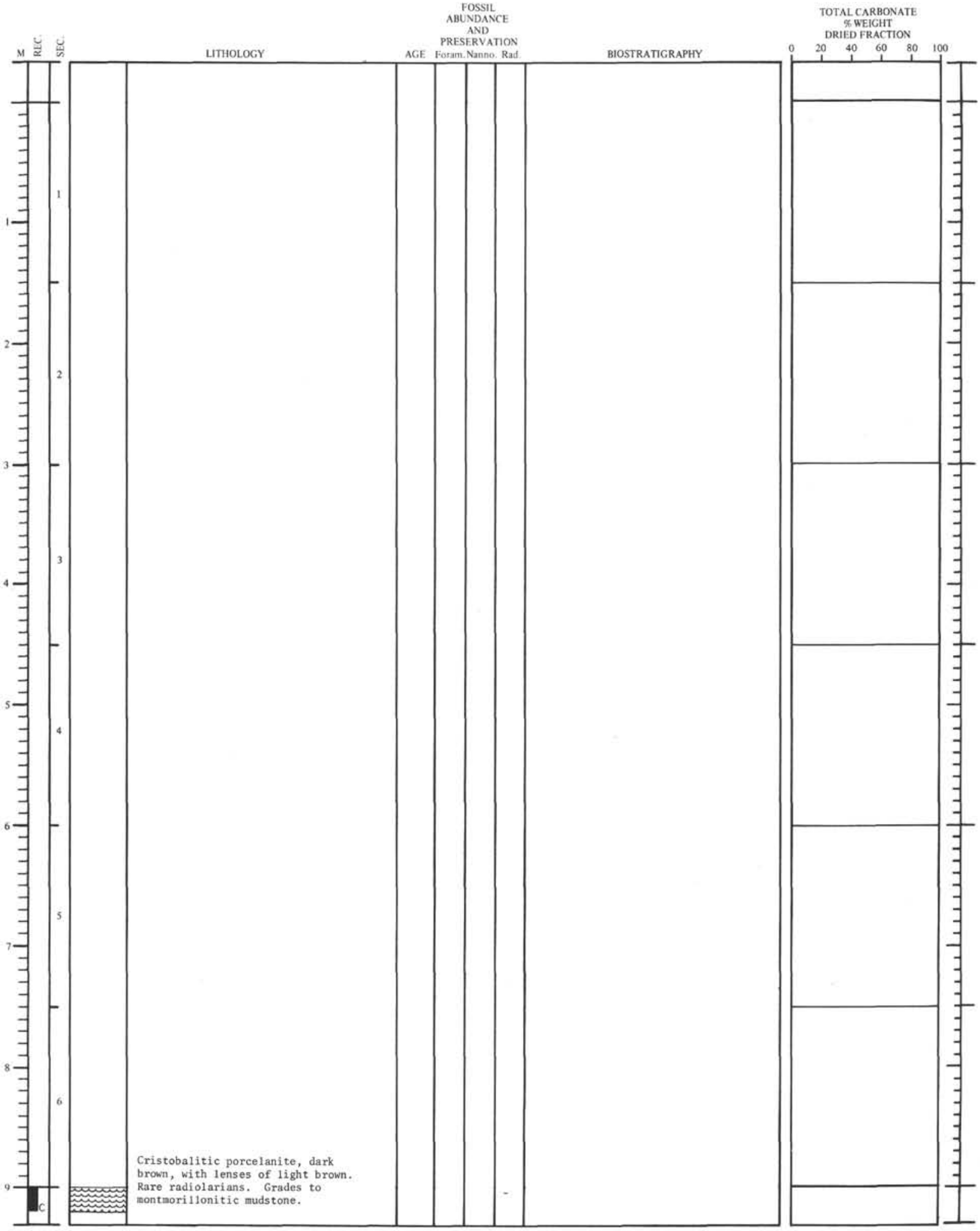
Removed for interstitial water sample.



Hole 66.0 Core 3
Section 6

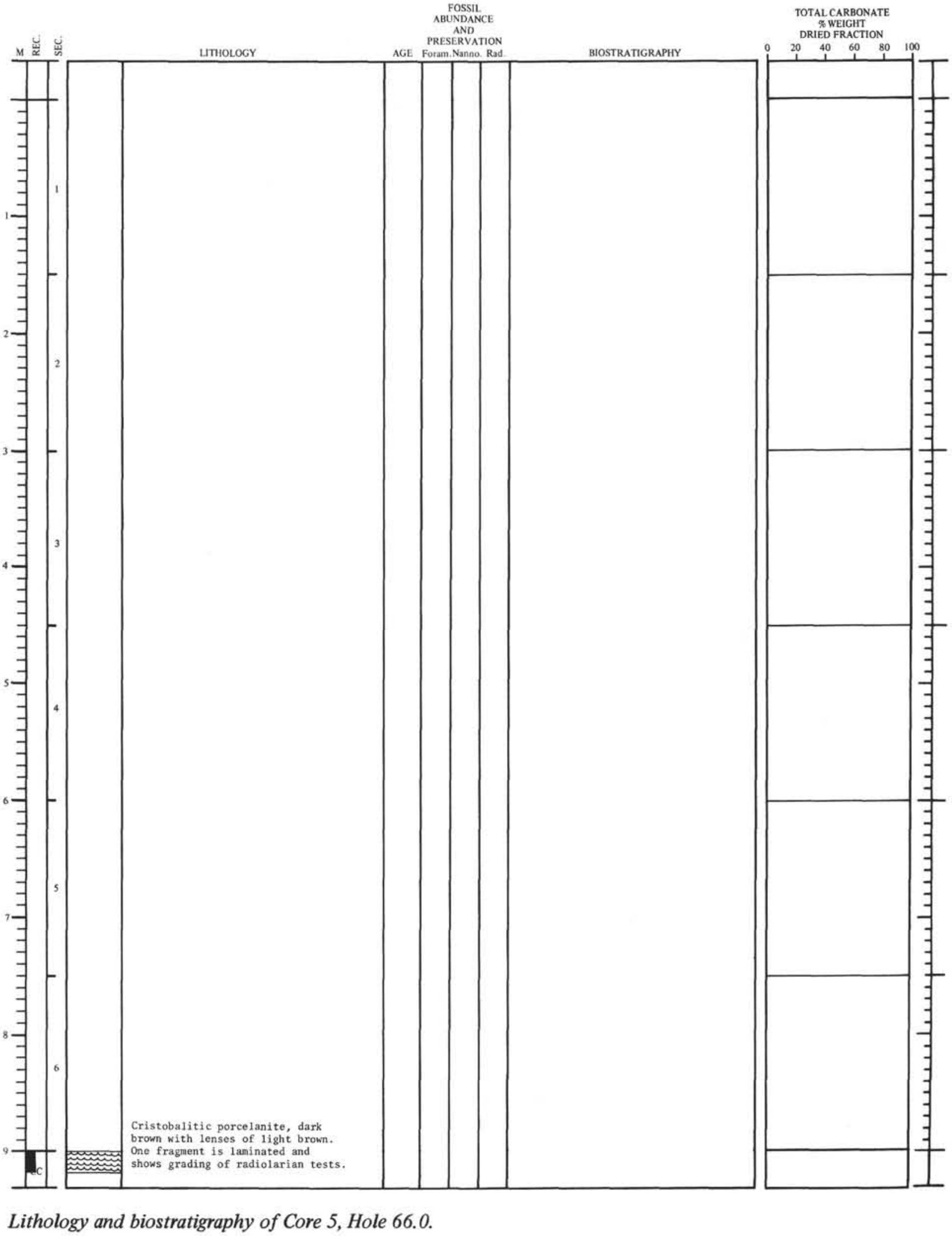
RADIOLARIAN OOZE

As other Sections of this core.



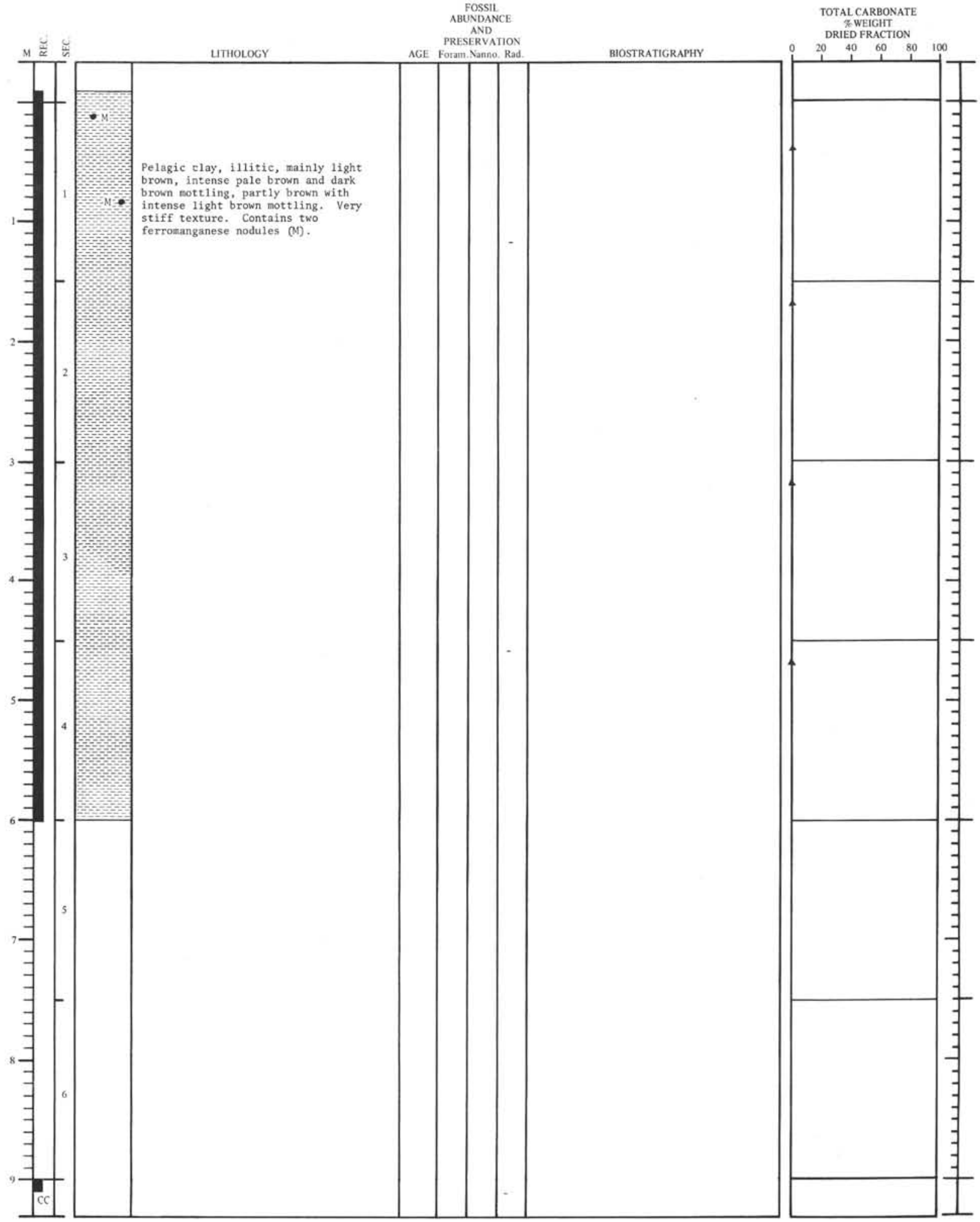
Cristobalitic porcelanite, dark brown, with lenses of light brown. Rare radiolarians. Grades to montmorillonitic mudstone.

Lithology and biostratigraphy of Core 4, Hole 66.0.



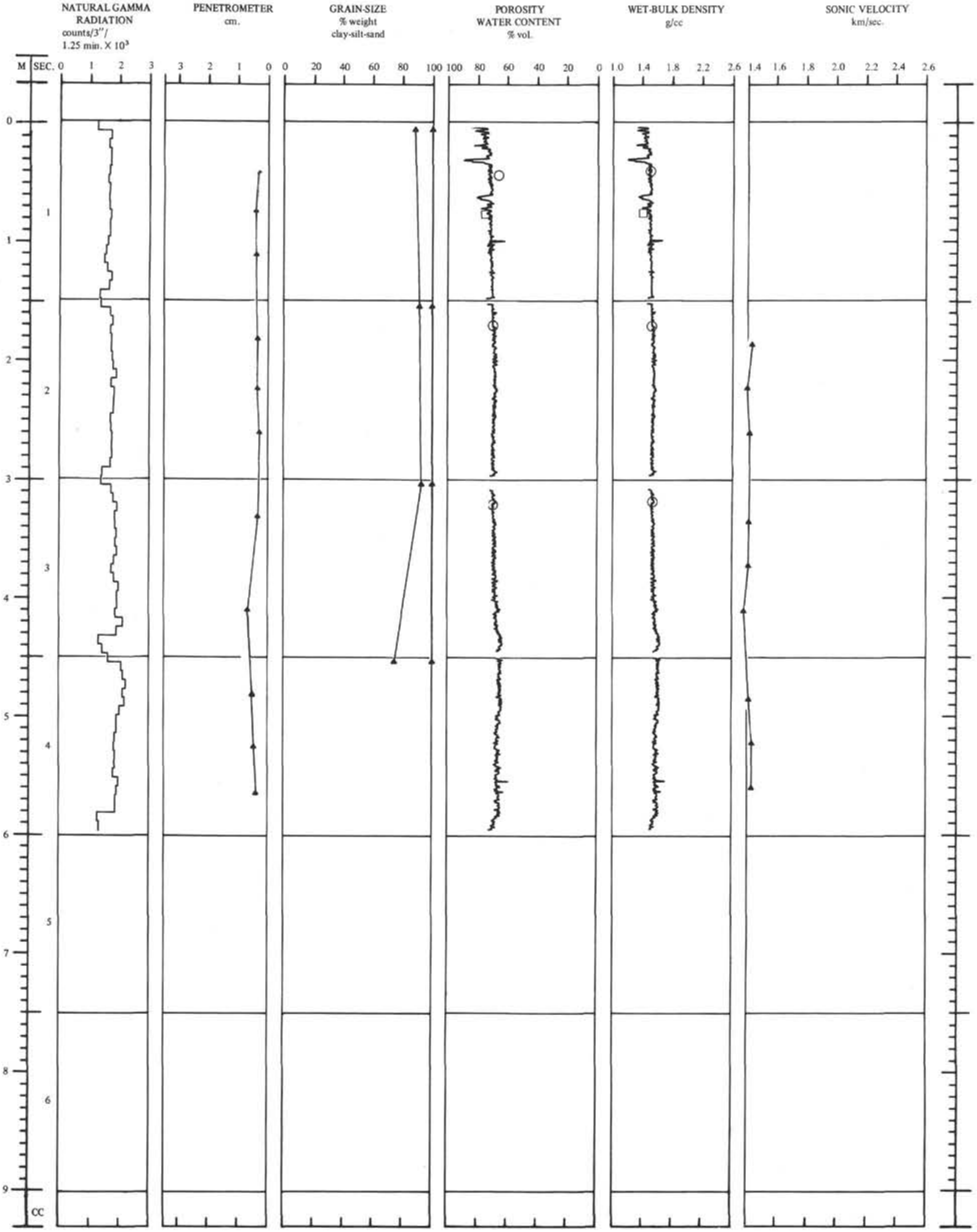
Cristobalitic porcelanite, dark brown with lenses of light brown. One fragment is laminated and shows grading of radiolarian tests.

Lithology and biostratigraphy of Core 5, Hole 66.0.



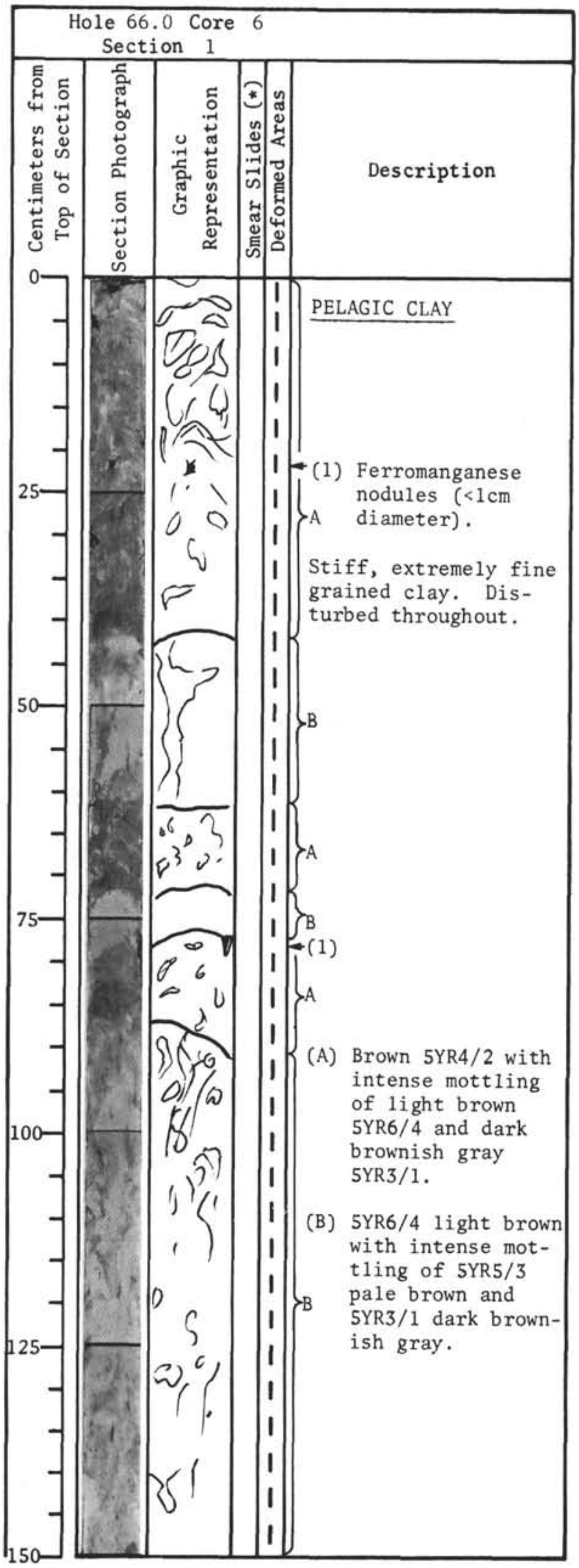
Pelagic clay, illitic, mainly light brown, intense pale brown and dark brown mottling, partly brown with intense light brown mottling. Very stiff texture. Contains two ferromanganese nodules (M).

Lithology and biostratigraphy of Core 6, Hole 66.0.



Physical properties of Core 6, Hole 66.0.

Hole 66.0 Core 6
Section 1



PELAGIC CLAY

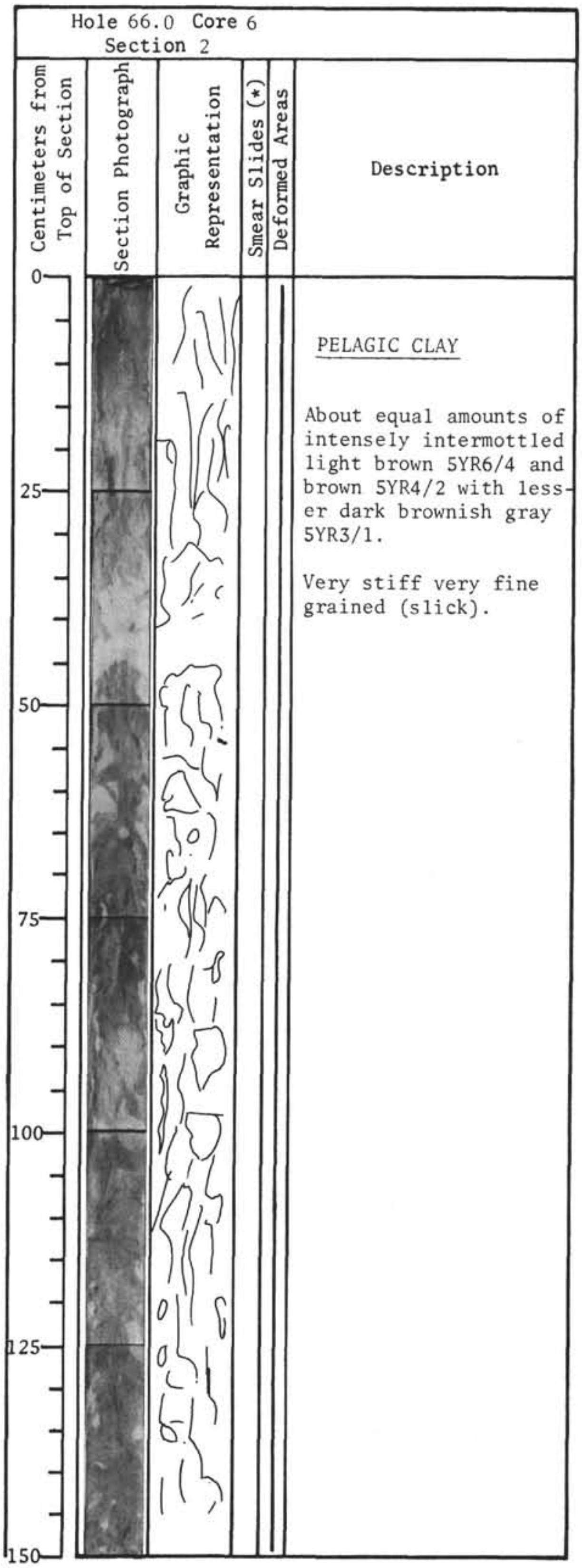
(1) Ferromanganese nodules (<1cm diameter).

Stiff, extremely fine grained clay. Disturbed throughout.

(A) Brown 5YR4/2 with intense mottling of light brown 5YR6/4 and dark brownish gray 5YR3/1.

(B) 5YR6/4 light brown with intense mottling of 5YR5/3 pale brown and 5YR3/1 dark brownish gray.

Hole 66.0 Core 6
Section 2



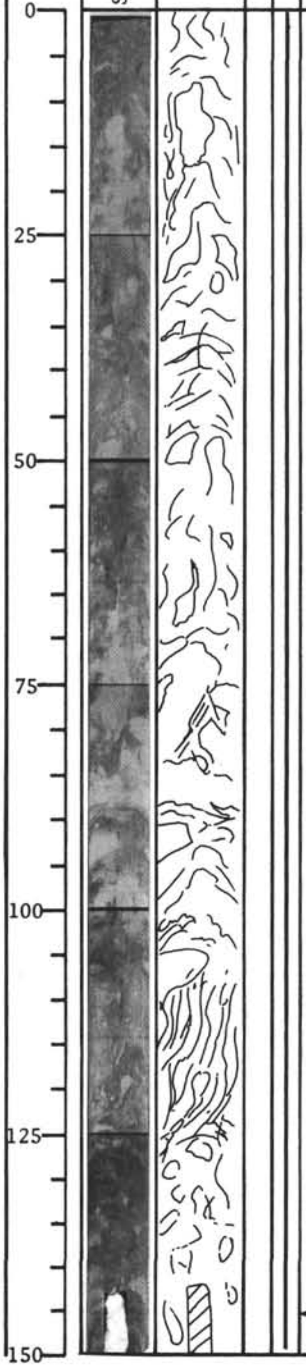
PELAGIC CLAY

About equal amounts of intensely intermottled light brown 5YR6/4 and brown 5YR4/2 with lesser dark brownish gray 5YR3/1.

Very stiff very fine grained (slick).

Hole 66.0 Core 6
Section 3

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



PELAGIC CLAY

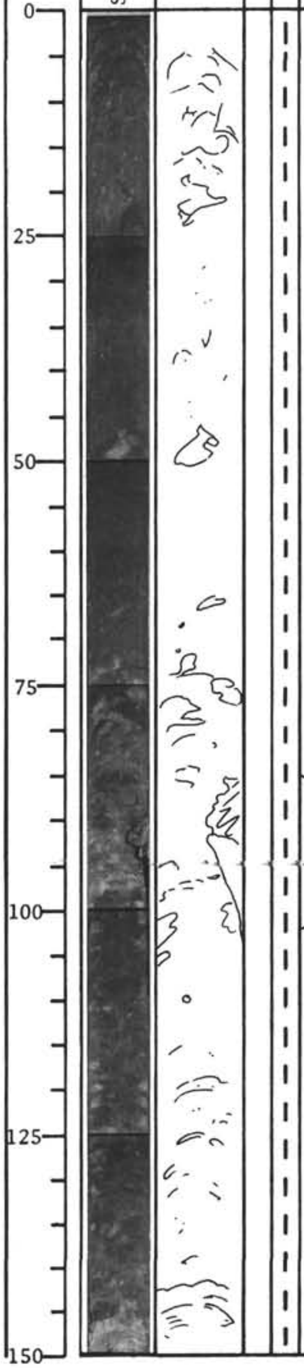
Light brown 5YR6/4 intensely mottled with 5YR3/1 dark gray brown and 5YR2/1 brownish black (similar to Section 2).

Vert stiff and fine grained (slick).

1 Channel due to removal of interstitial water sample.

Hole 66.0 Core 6
Section 4

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description

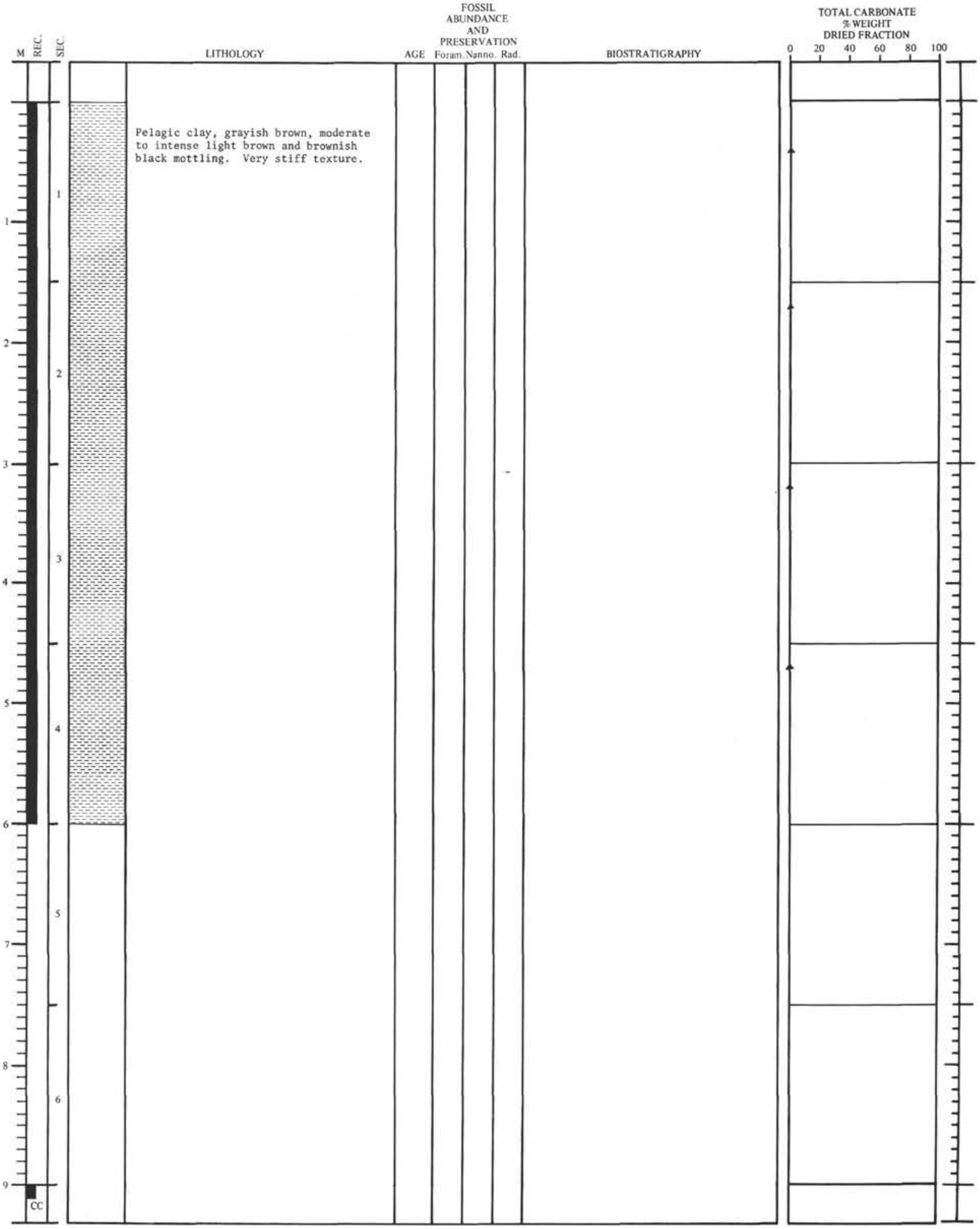


PELAGIC CLAY

Mainly reddish to grayish brown (2.5 to 5YR4/2), greatly mottled with light brown (5YR6/4) and dark gray brown (5YR3/1) to brownish black (5YR 2/1).

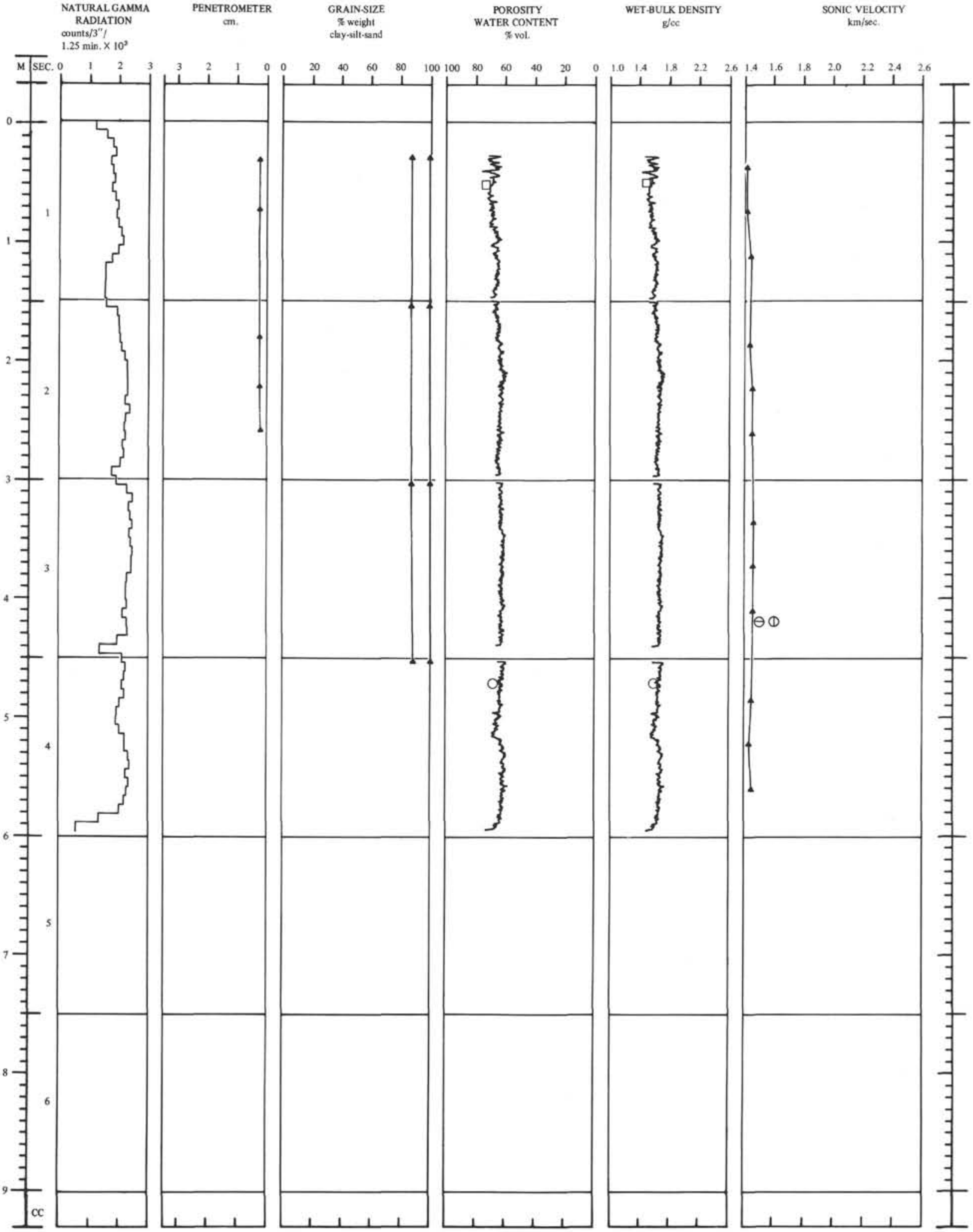
In portion between 72 and 98cm and below 145 cm, the light brown (5YR6/4) predominates. Very stiff clay. All mildly deformed by drilling.

1 Disturbed while removing plastic "sock".



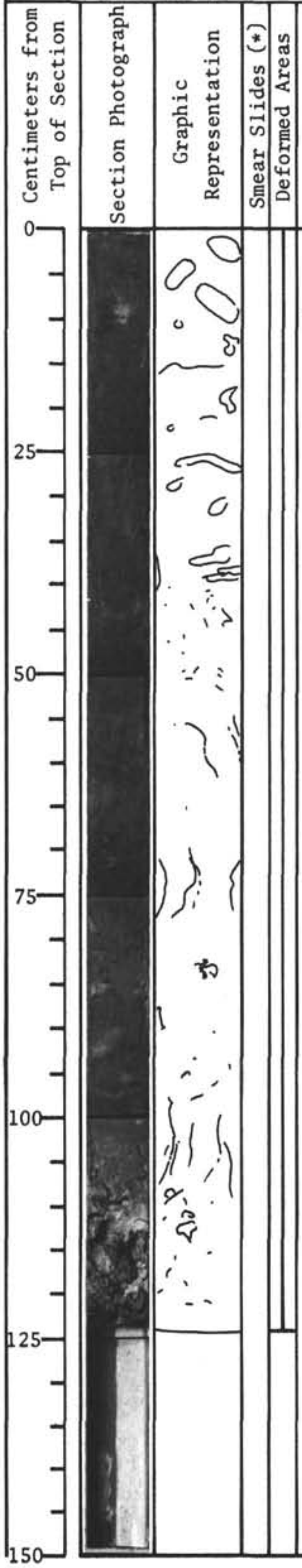
Pelagic clay, grayish brown, moderate to intense light brown and brownish black mottling. Very stiff texture.

Lithology and biostratigraphy of Core 7, Hole 66.0.



Physical properties of Core 7, Hole 66.0.

Hole 66.0 Core 7
Section 1



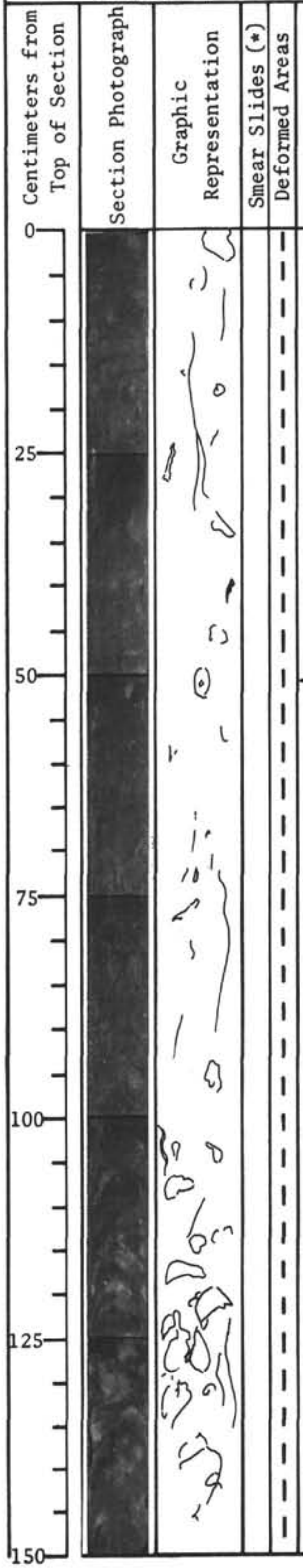
Description

PELAGIC CLAY

Pebbles (cavings)

Cavings - pieces of chert within deformed clay. Basic color grayish brown (5YR4/2), moderately to greatly mottled with light brown (5YR6/4) and brownish black (5YR3/1) some cavings within the flow folded (during coring) clay. Very stiff, very fine grained.

Hole 66.0 Core 7
Section 2



Description

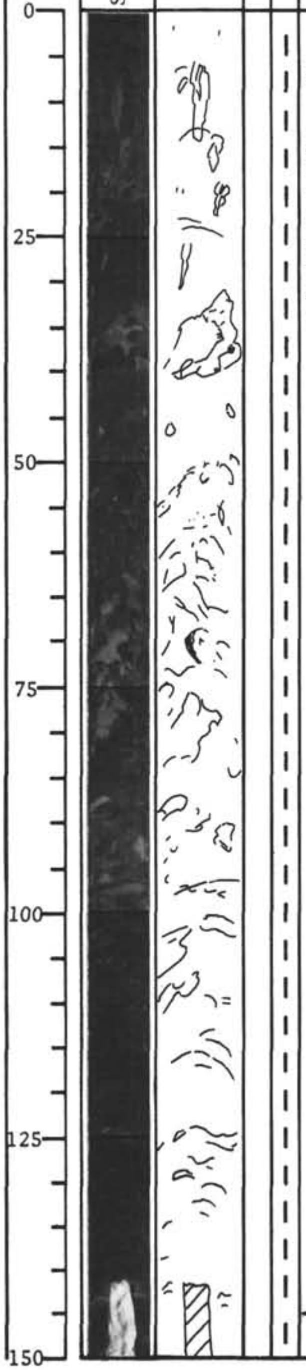
PELAGIC CLAY

As Core 7, Section 1; grayish brown (5YR4/2) very stiff clay, greatly to moderately mottled with light brown (5YR6/4) and brownish black (5YR3/1).

←1 Inside a light brown mottle at 52.5cm are some moderate greenish yellow (10Y7/2) specks.

Hole 66.0 Core 7
Section 3

Centimeters from Top of Section
Section Photograph
Graphic Representation
Smear Slides (*)
Deformed Areas
Description



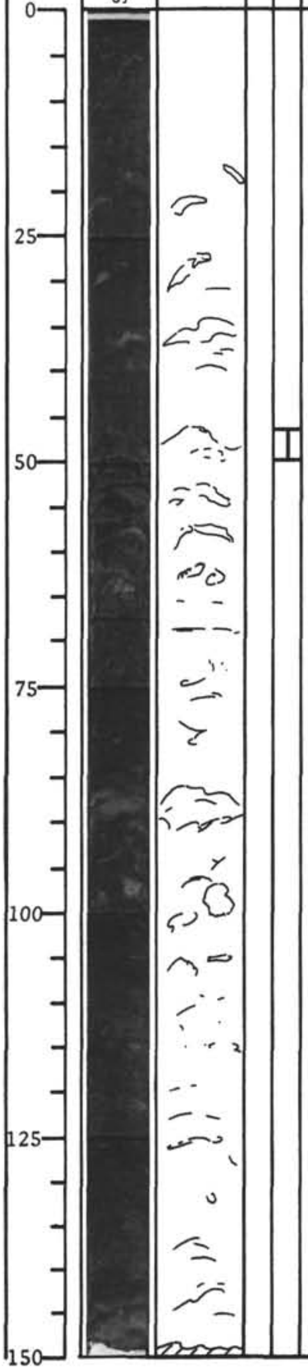
PELAGIC CLAY

As Core 7, Section 1 and 2. Grayish brown (5YR4/2) very stiff clay, greatly to moderately mottled with light brown (5YR6/4) and brownish black (5YR3/1).

Removed for interstitial water analysis.

Hole 66.0 Core 7
Section 4

Centimeters from Top of Section
Section Photograph
Graphic Representation
Smear Slides (*)
Deformed Areas
Description

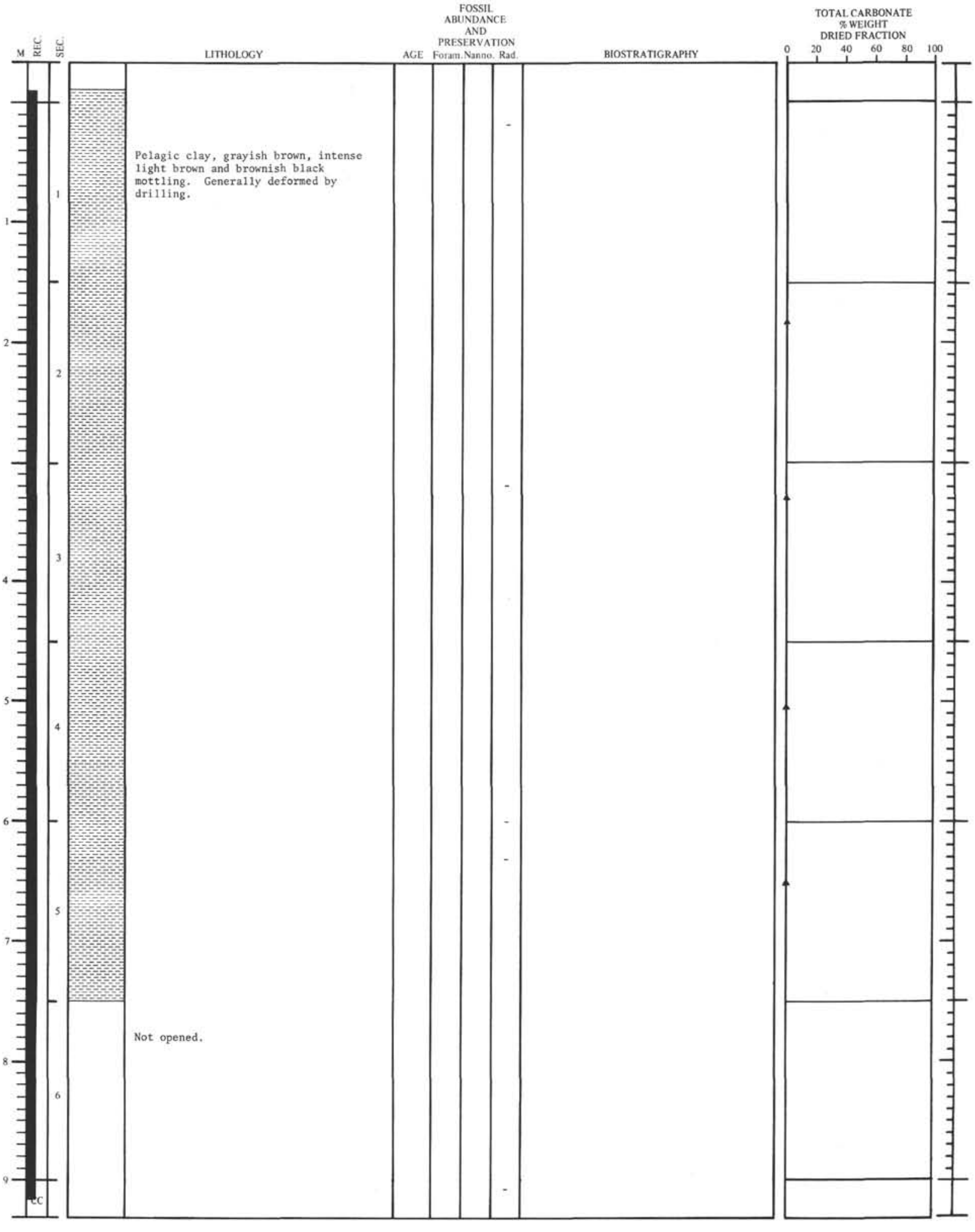


PELAGIC CLAY

As Core 7, Sections 1, 2, and 3. Grayish brown (5YR4/2) very stiff clay, greatly to moderately mottled with light brown (5YR 6/4) and brownish black (5YR3/1).

148-150cm: Void

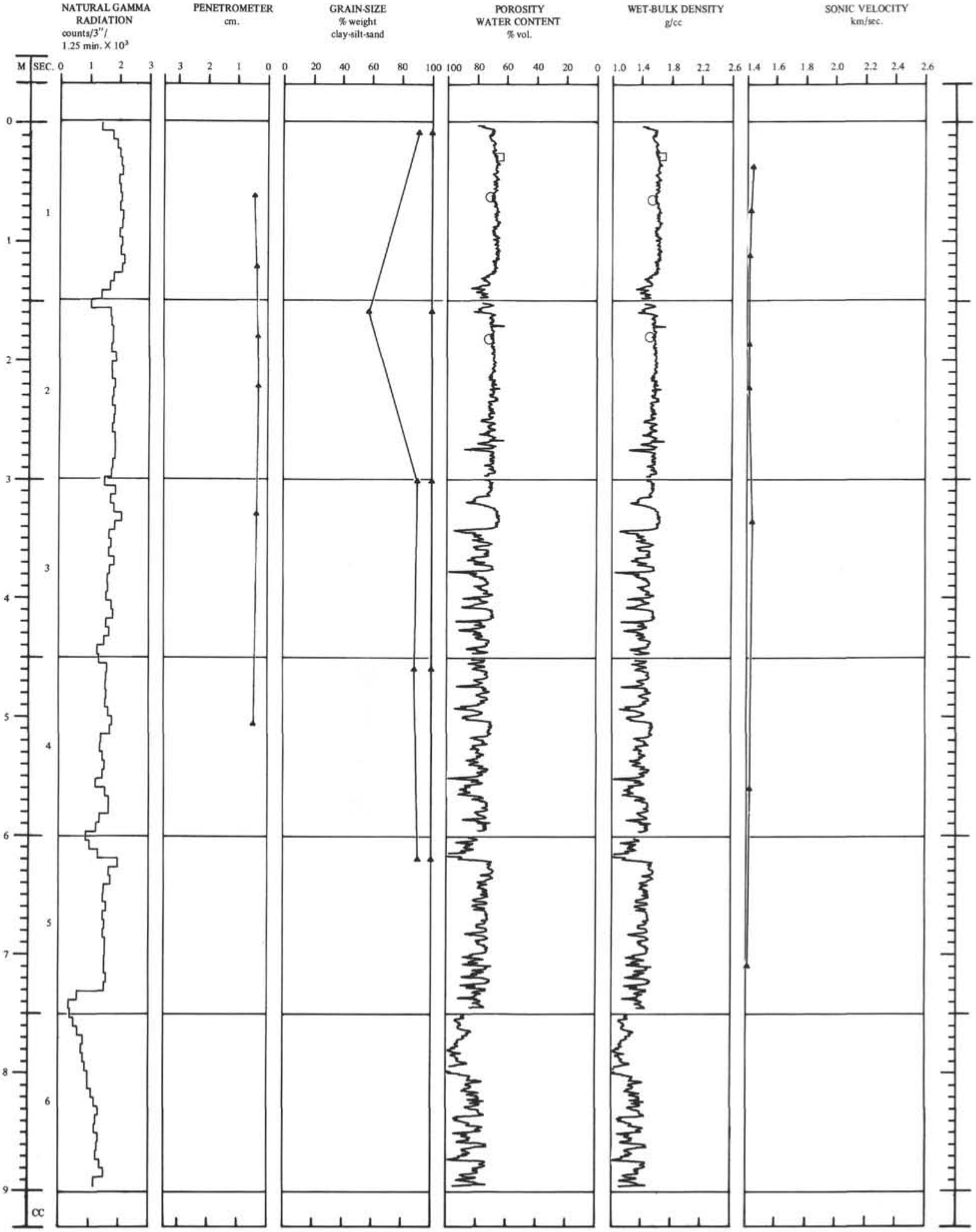
Void



Pelagic clay, grayish brown, intense light brown and brownish black mottling. Generally deformed by drilling.

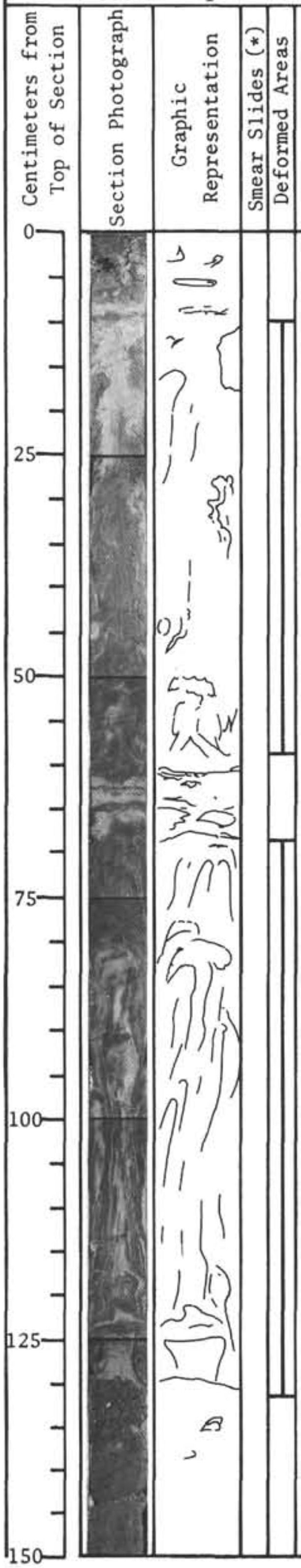
Not opened.

Lithology and biostratigraphy of Core 8, Hole 66.0.



Physical properties of Core 8, Hole 66.0.

Hole 66.0 Core 8
Section 1

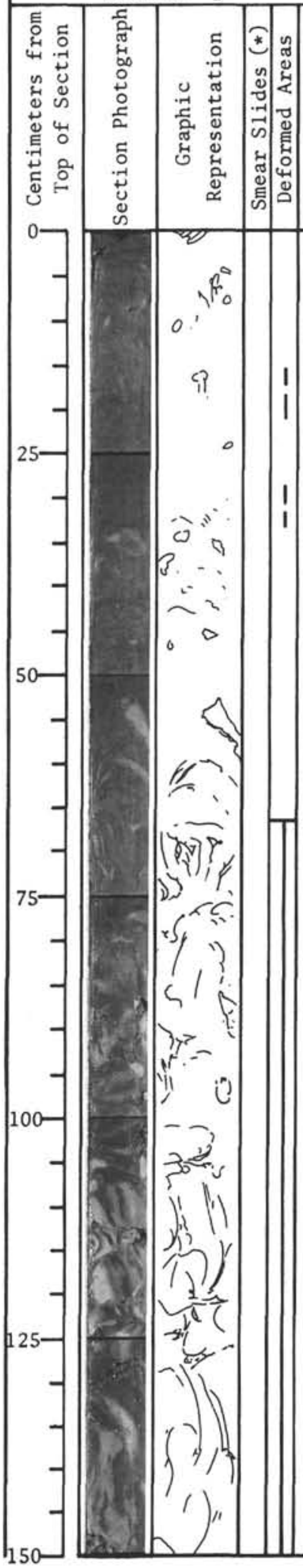


Description

PELAGIC CLAY

Grayish brown (5YR4/2) stiff clay, heavily mottled (where not deformed by coring) or strongly folded and striped with light brown (5YR6/4) and brownish black (5YR3/1)

Hole 66.0 Core 8
Section 2



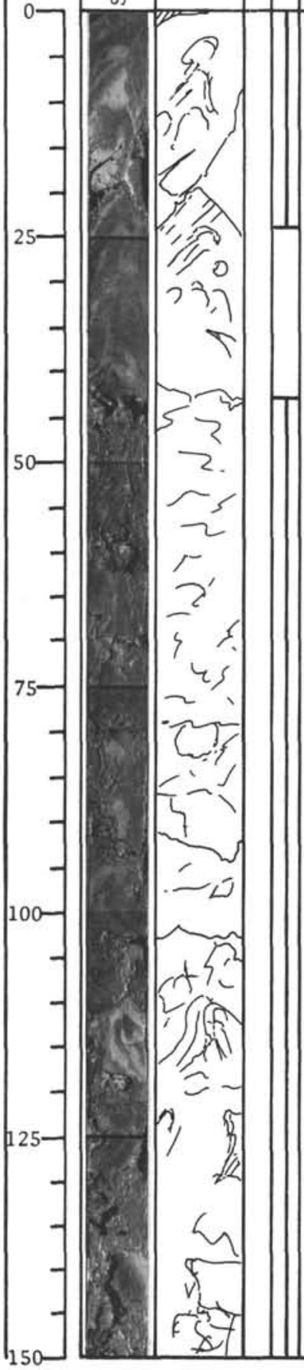
Description

PELAGIC CLAY

As in Core 8, Section 1 above.

Hole 66.0 Core 8
Section 3

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description

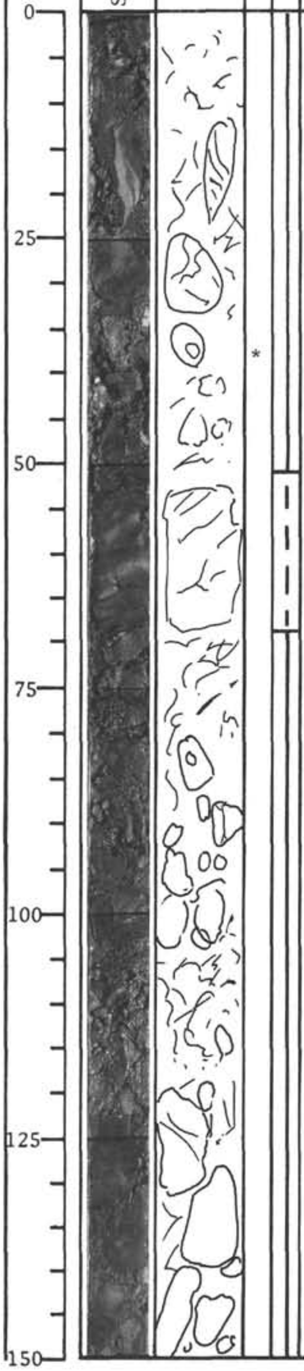


PELAGIC CLAY

Section badly deformed by coring. Very stiff, very sticky clay. Grayish brown (5YR4/2) mottled light brown (5YR6/4) and brownish black (5YR3/1).

Hole 66.0 Core 8
Section 4

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



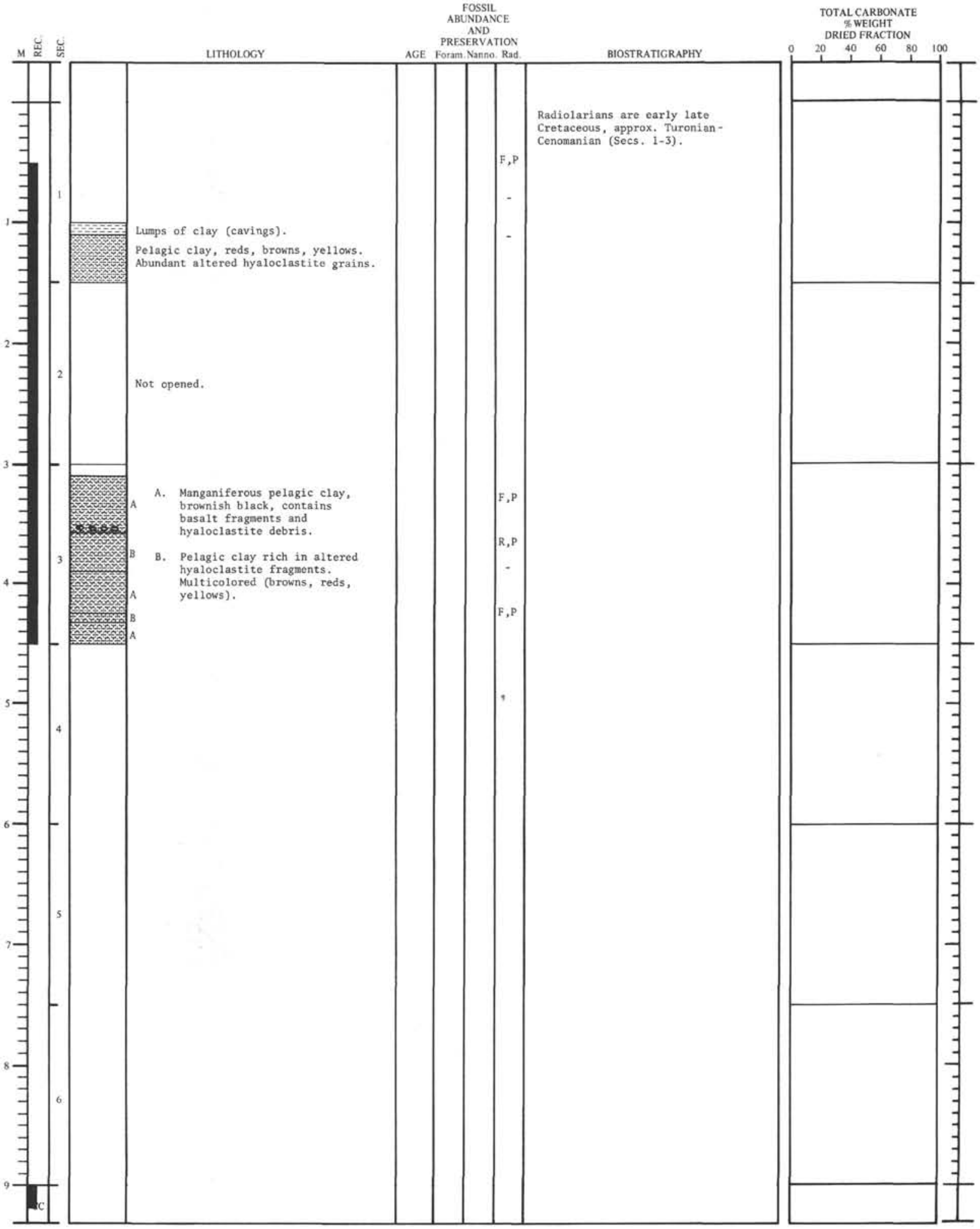
PELAGIC CLAY

Badly deformed pieces, stripes, and clumps of stiff, sticky clay, as 8-3 above. Grayish brown (5YR4/2), mottled light brown (5YR6/4) and brownish black (5YR3/1).

At 38cm and at 83cm, spots of moderate reddish brown (10R4/6) (the one at 83cm with a yellowish center).

Hole 66.0 Core 8
Section 5

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
0 25 50 75 100 125 150					PELAGIC CLAY As Sections 4 and 3 above. Pieces of badly deformed, stiff, sticky clay grayish brown (5YR4/2) mottled light brown (5YR6/4) and brownish black (5YR3/1).



Radiolarians are early late Cretaceous, approx. Turonian-Cenomanian (Secs. 1-3).

Lumps of clay (cavings).

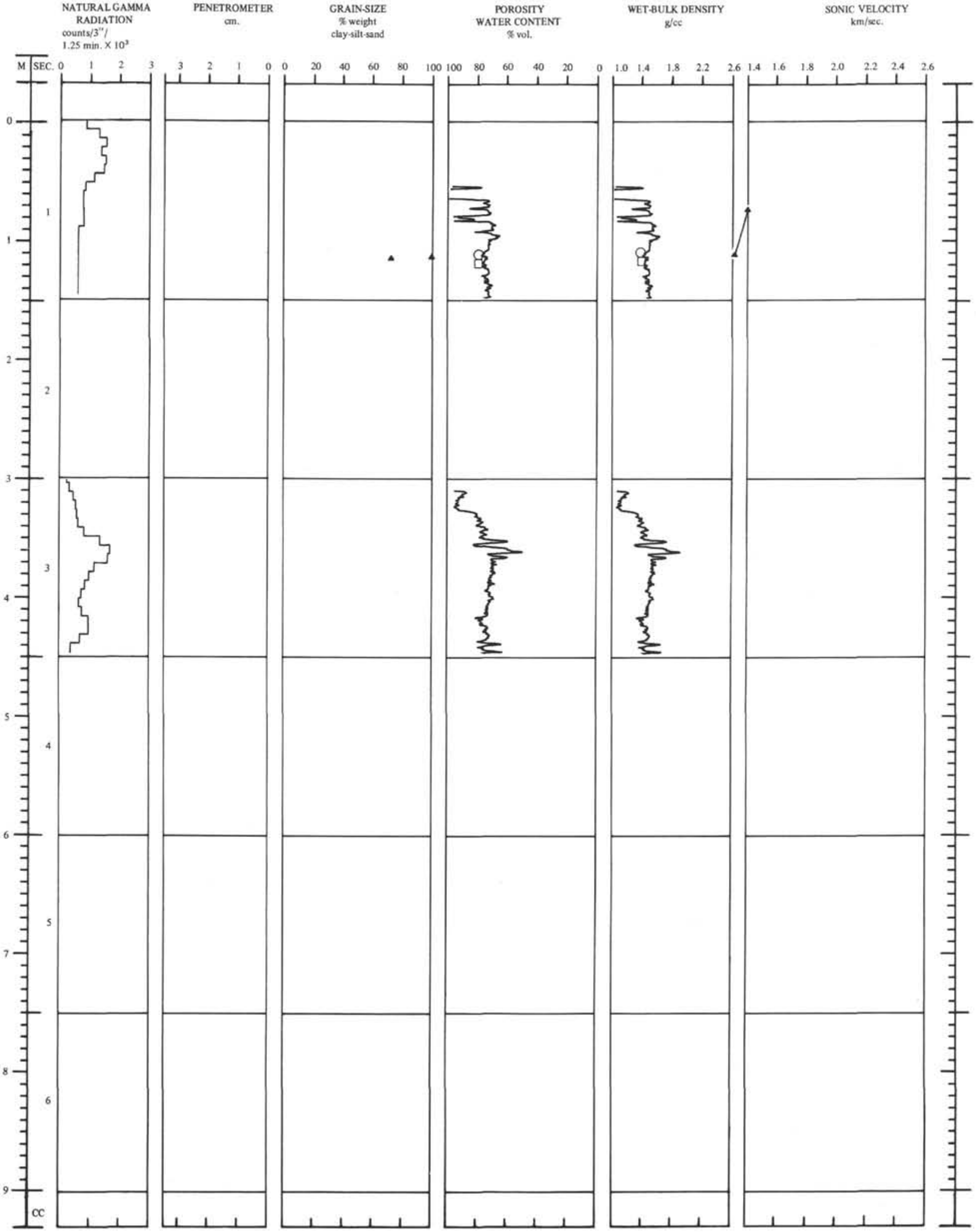
Pelagic clay, reds, browns, yellows. Abundant altered hyaloclastite grains.

Not opened.

A. Manganiferous pelagic clay, brownish black, contains basalt fragments and hyaloclastite debris.

B. Pelagic clay rich in altered hyaloclastite fragments. Multicolored (browns, reds, yellows).

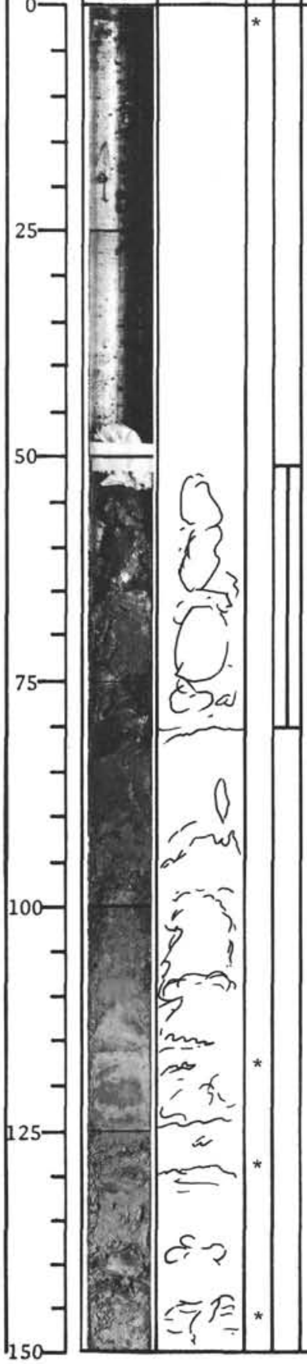
Lithology and biostratigraphy of Core 9, Hole 66.0.



Physical properties of Core 9, Hole 66.0.

Hole 66.0 Core 9
Section 1

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



VOLCANIC MUD

(Probably altered hyaloclastite)

0-53cm: Void

53-97cm:
Pelagic clay, respectively (mainly grayish brown 5YR4/2), a few light brown mottles (5YR6/4).

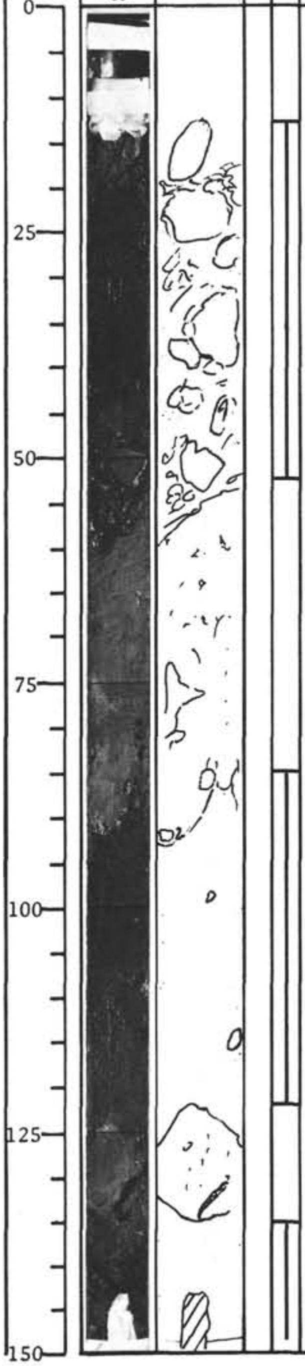
97-109cm:
Mainly moderate reddish orange (10R6/6) and adjacent colors, crumbled and mottled, clay.

109-125cm & 131-145cm:
Mottled red and light brown clay (reds are mainly moderate reddish brown (10R4/6) but range to moderate red (5R4/6); browns are light yellowish brown (10YR6/4) and adjacent colors.

125-131cm & 145-151cm:
"Grainy" clay, light yellowish brown (10YR 6/4).

Hole 66.0 Core 9
Section 3

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



VOLCANIC MUD

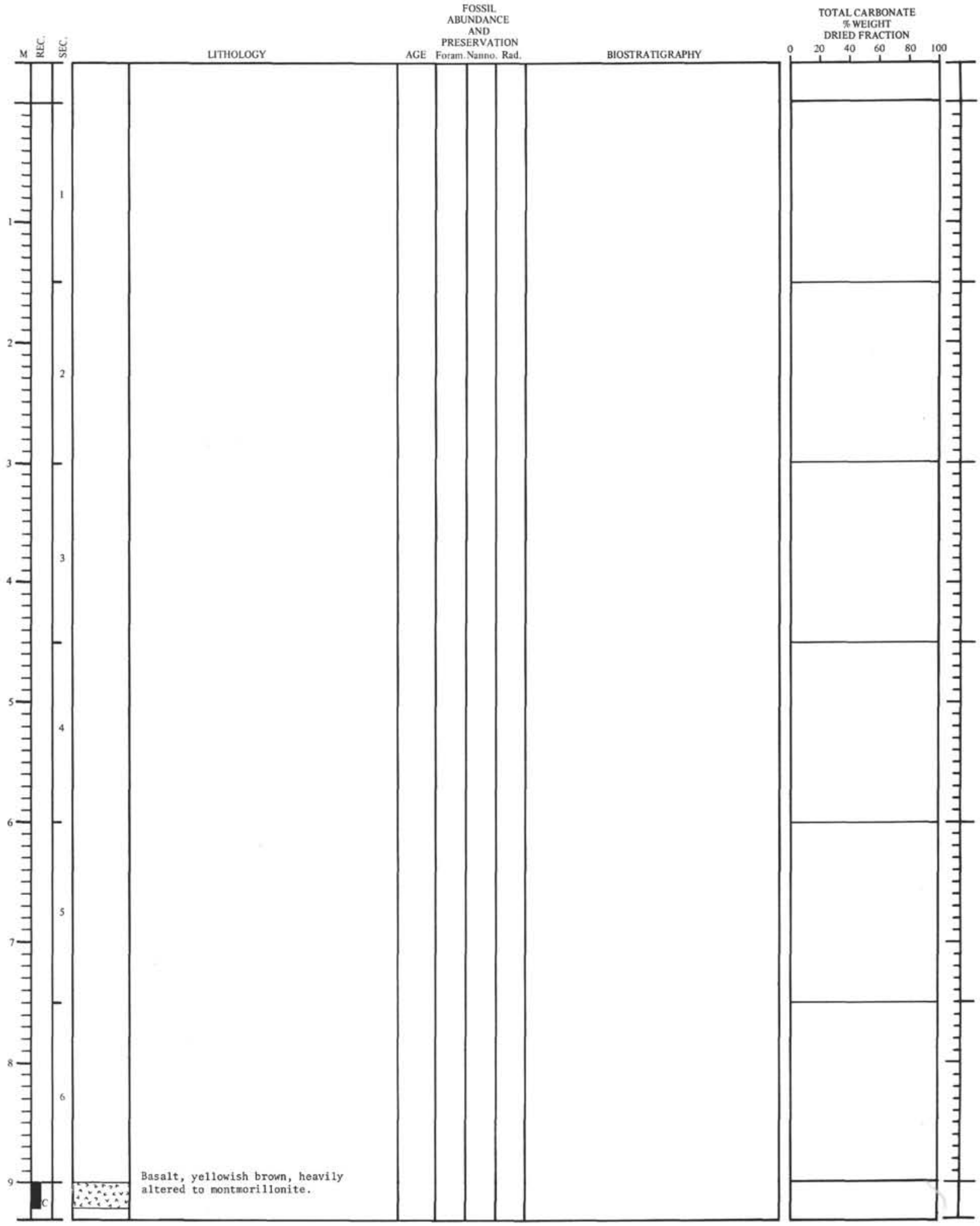
(Probably altered Hyaloclastite)

0-10cm: Void

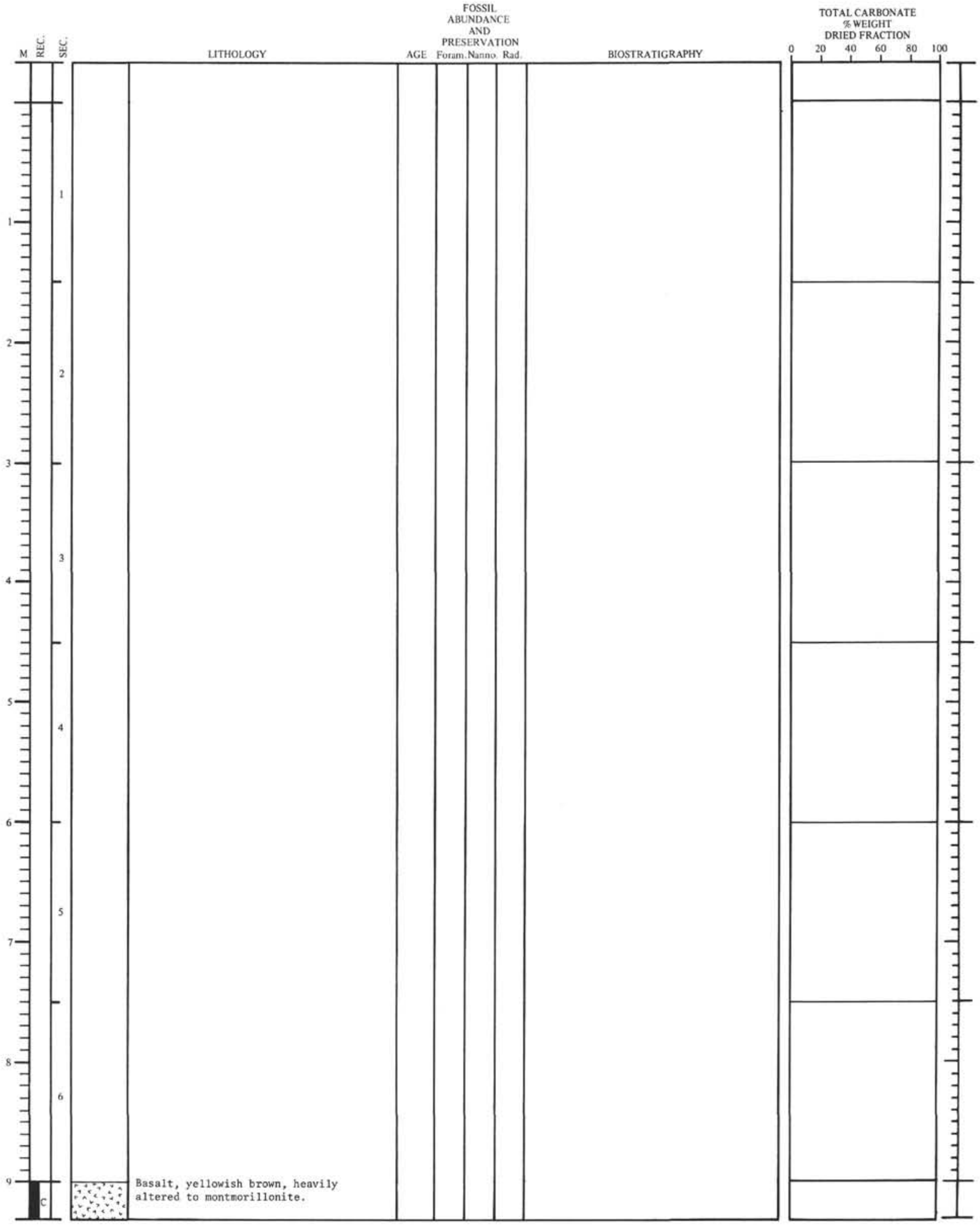
10-55, 90-123, & 132-150cm:
Mainly brownish black (10YR2/1) clay. Soils the fingers readily. Mn rich (?). Considerably broken up by coring. At 50cm some pieces of basalt; largest piece sawn in two. Some of harder pieces of next lithology as inclusions.

55-90, & 123-132cm:
Mottled and specked browns, yellows, and reds (5YR4/4, 10YR6/6, 5YR5/3, 5YR5/6, 10R6/6, 5Y7/4) more or less in order of abundance.

Interstitial water sample.

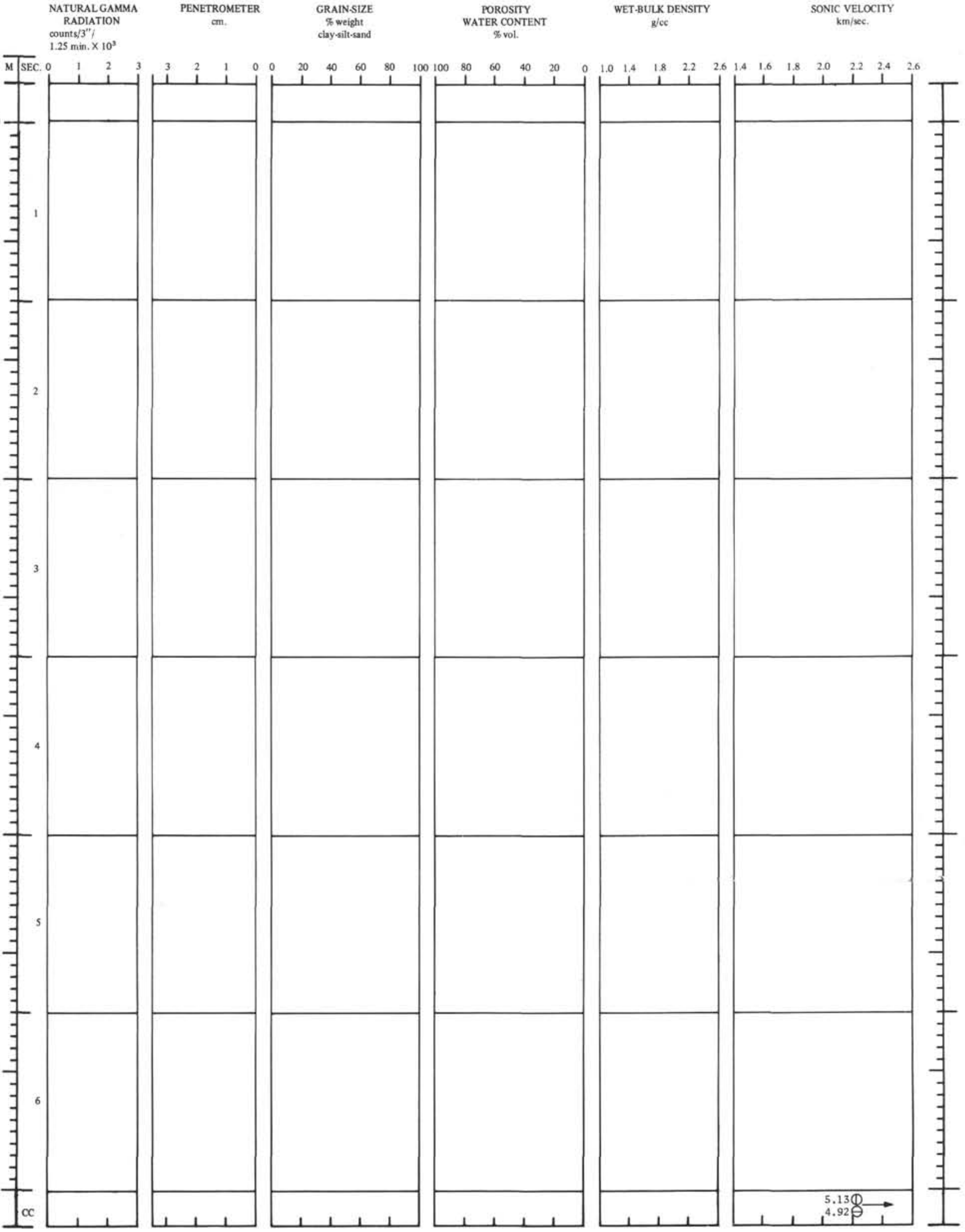


Lithology and biostratigraphy of Core 10, Hole 66.0.

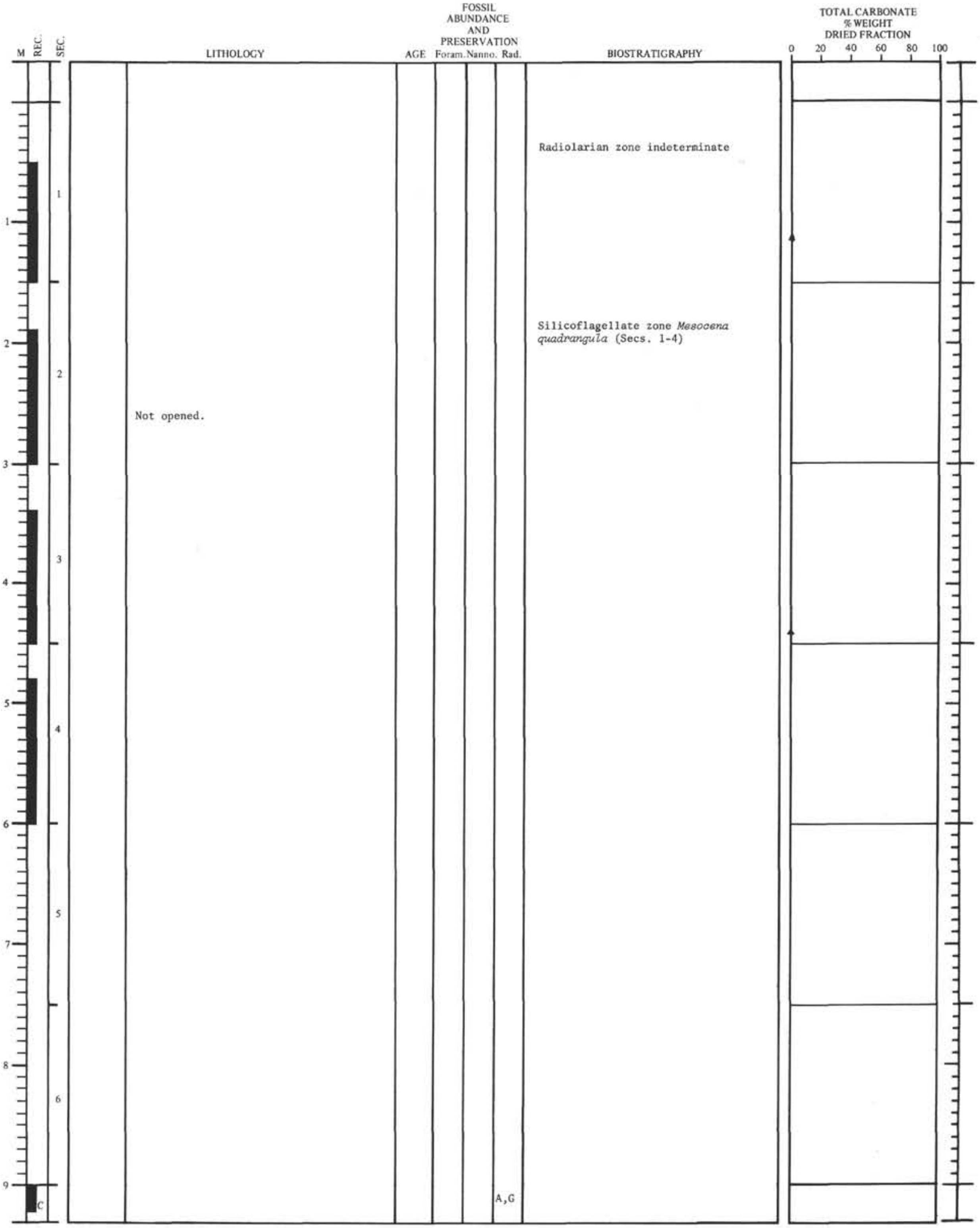


Basalt, yellowish brown, heavily altered to montmorillonite.

Lithology and biostratigraphy of Core 11, Hole 66.0.



Physical properties of Core 11, Hole 66.0.

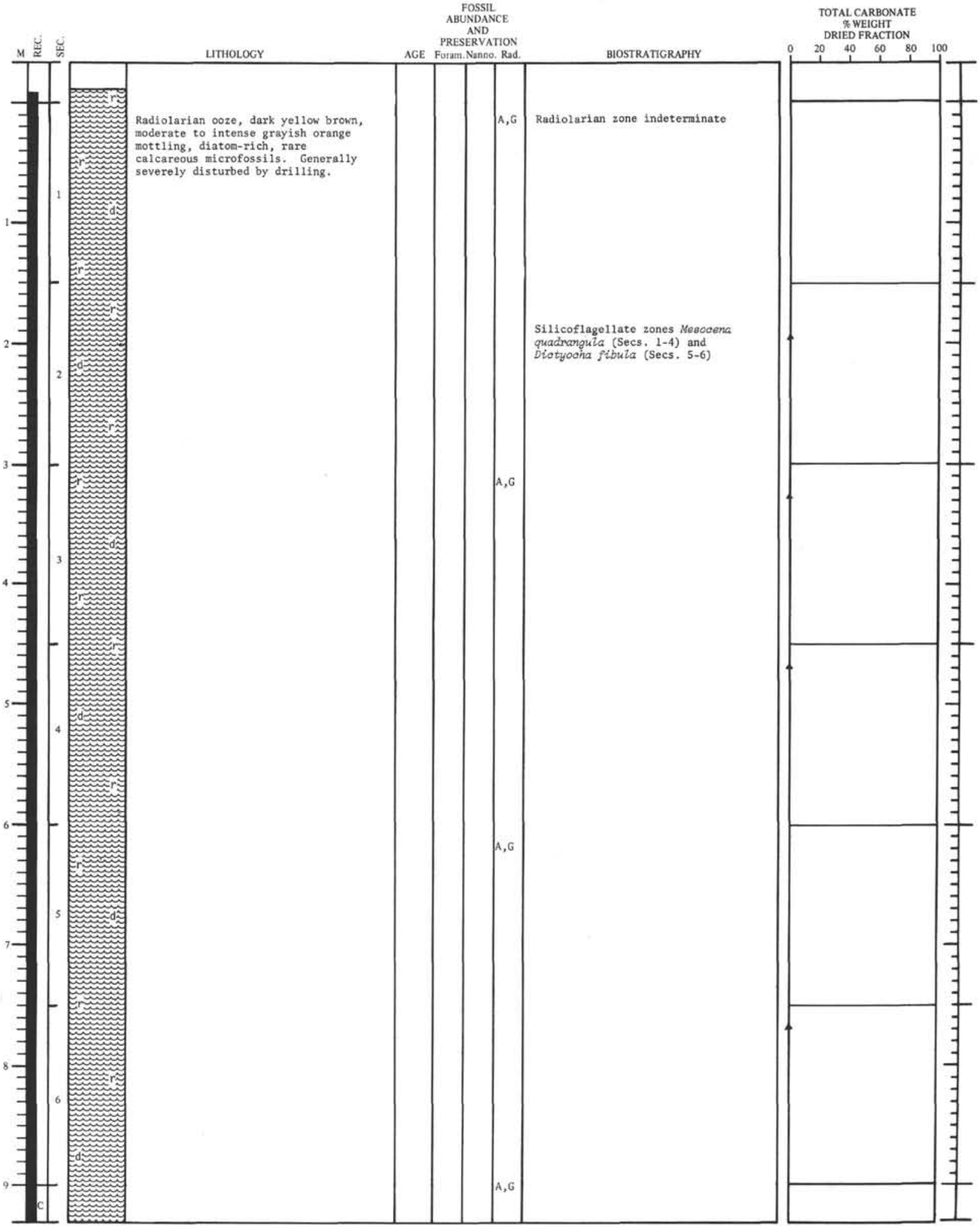


Radiolarian zone indeterminate

Silicoflagellate zone *Mesocena quadrangula* (Secs. 1-4)

Not opened.

Lithology and biostratigraphy of Core 1, Hole 66.1.

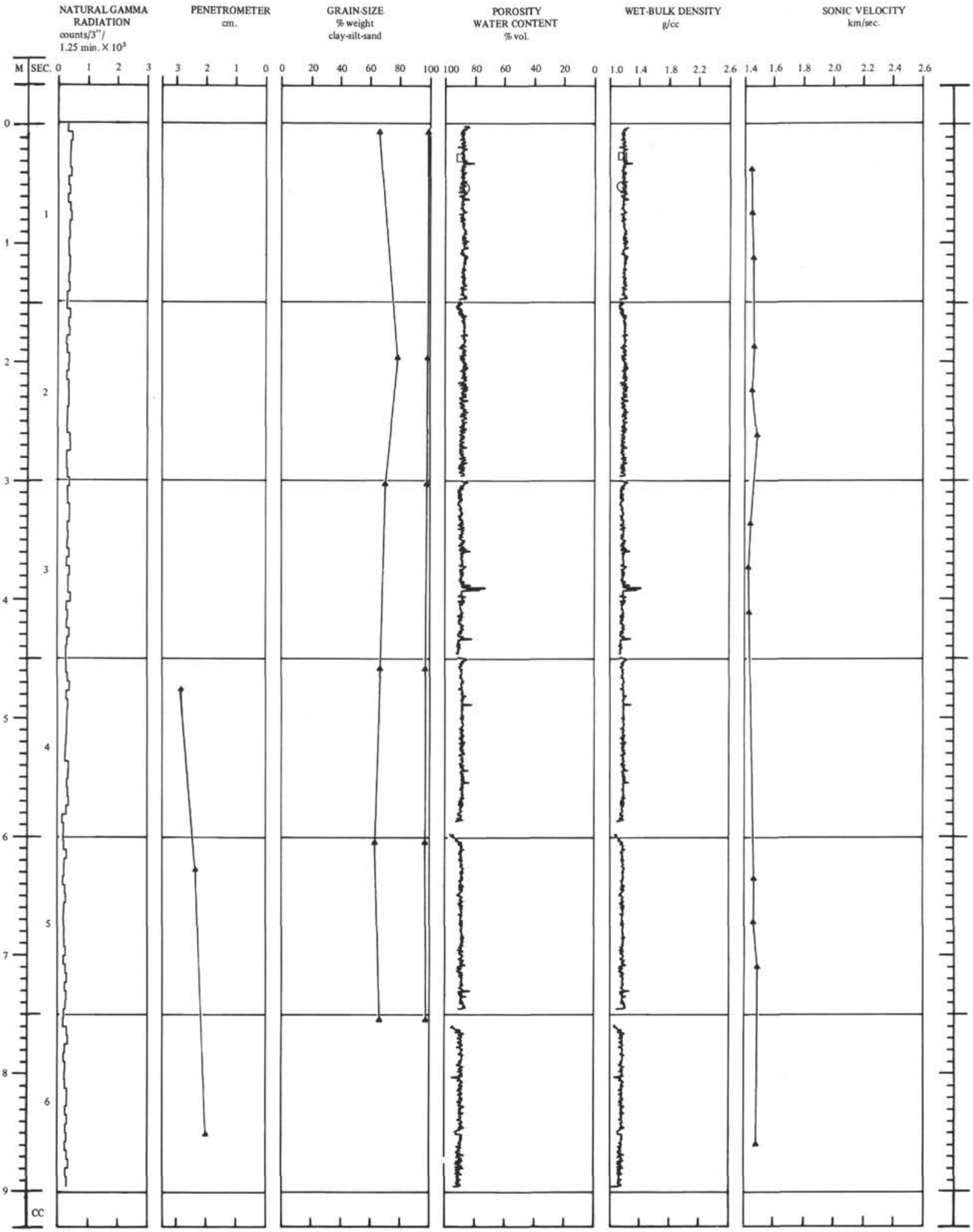


Radiolarian ooze, dark yellow brown, moderate to intense grayish orange mottling, diatom-rich, rare calcareous microfossils. Generally severely disturbed by drilling.

Radiolarian zone indeterminate

Silicoflagellate zones *Mesocena quadrangula* (Secs. 1-4) and *Dictyocha fibula* (Secs. 5-6)

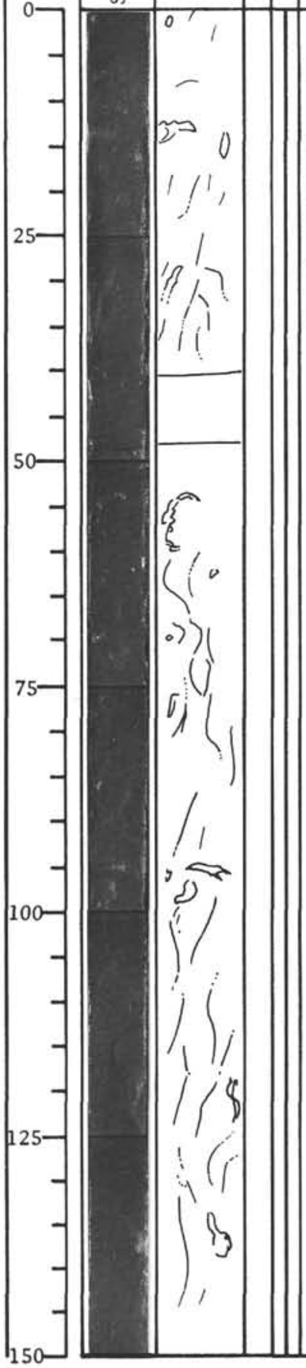
Lithology and biostratigraphy of Core 2, Hole 66.1.



Physical properties of Core 2, Hole 66.1.

Hole 66.1 Core 2
Section 1

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



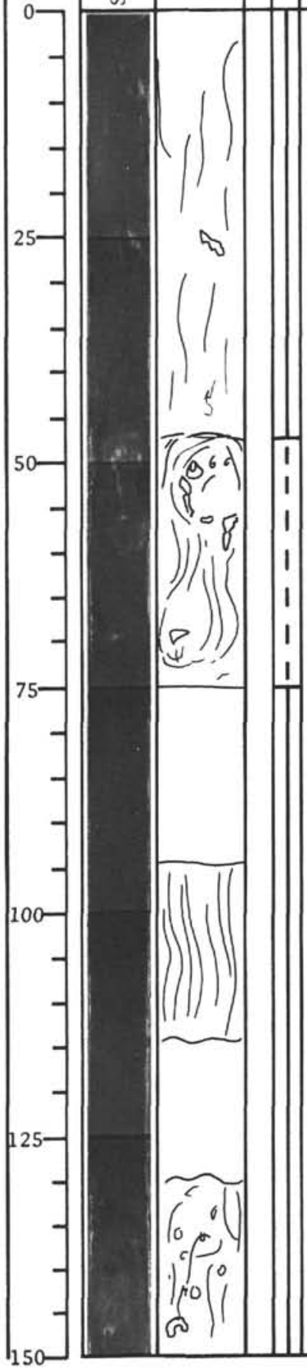
RADIOLARIAN OOZE

Soft 10YR3/3 dark yellow brown with moderate mottling of grayish orange 10YR7/4.

No bedding visible, very watery from 41-49cm.

Hole 66.1 Core 2
Section 2

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



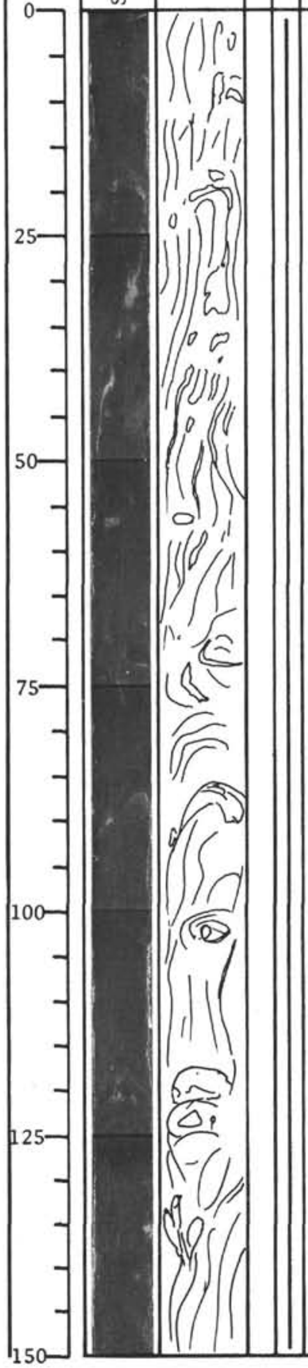
RADIOLARIAN OOZE

As Section 1.

Very watery from 75-95, and 115-130cm.

Hole 66.1 Core 2
Section 3

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description

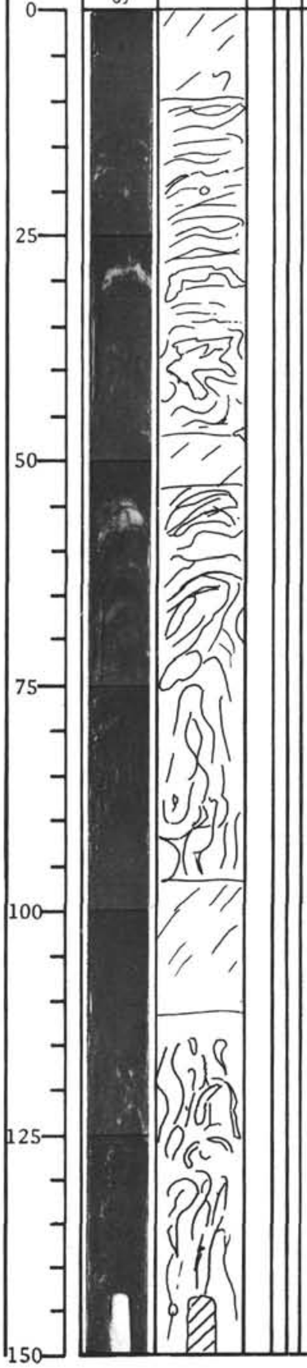


RADIOLARIAN OOZE

As Section 1.

Hole 66.1 Core 2
Section 4

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



RADIOLARIAN OOZE

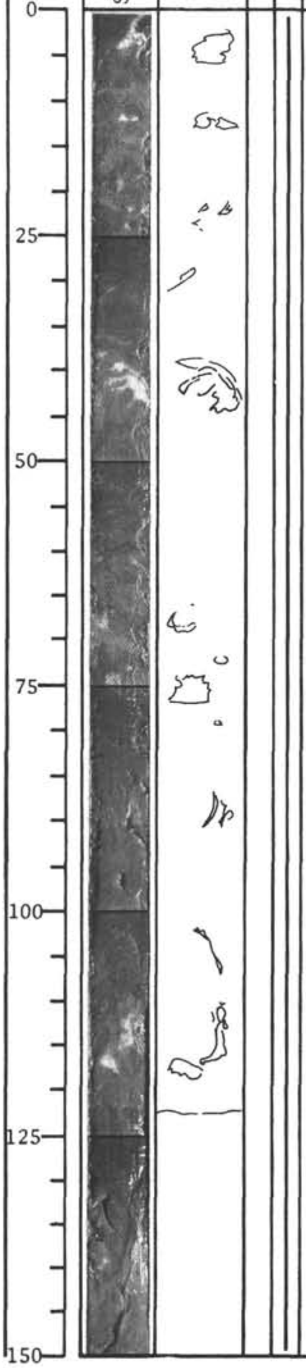
As Section 1.

Very watery from 0-10, 45-54, 96-110cm.

Channel from 143-150cm due to removal of interstitial water sample.

Hole 66.1 Core 2
Section 5

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



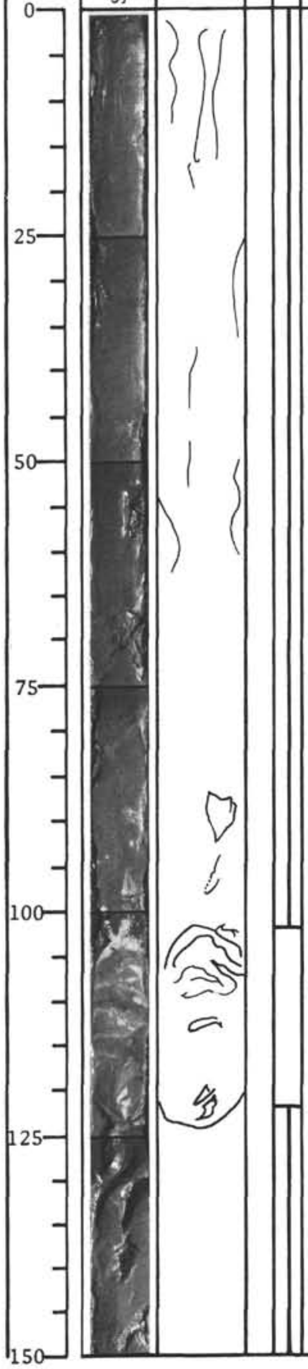
RADIOLARIAN OOZE

Soft, dark yellow brown (10YR3/3) ooze, moderately mottled with grayish orange (10YR7/4), and a few darker mottles (dusky yellow brown, 10YR7/2).

Very watery between 123 and 150cm.

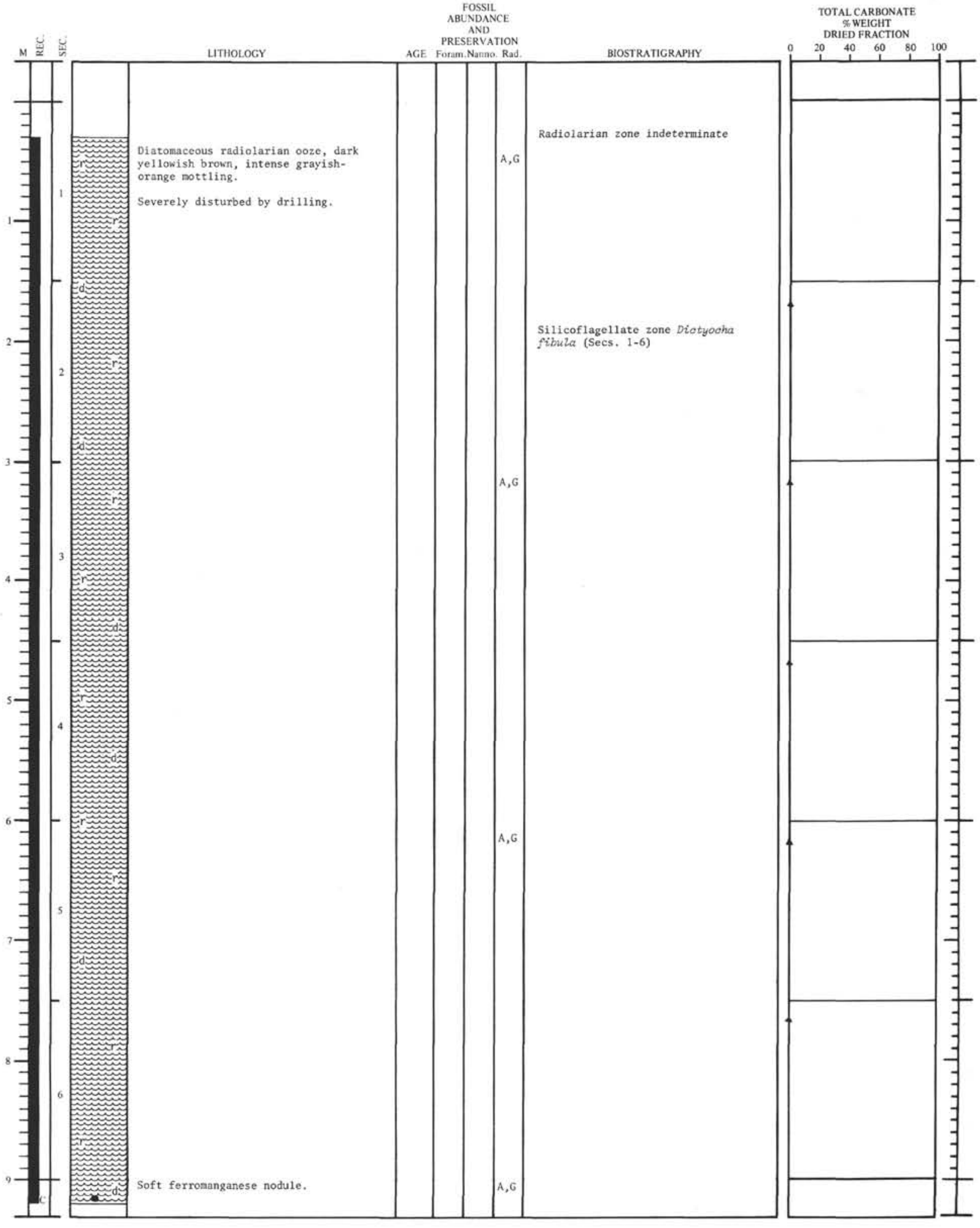
Hole 66.1 Core 2
Section 6

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



RADIOLARIAN OOZE

Badly deformed, soft dark yellowish brown (10YR3/3) ooze, greatly mottled grayish orange (10YR7/4) where fairly undisturbed, between 98-117cm. Elsewhere very watery.



Diatomaceous radiolarian ooze, dark yellowish brown, intense grayish-orange mottling.

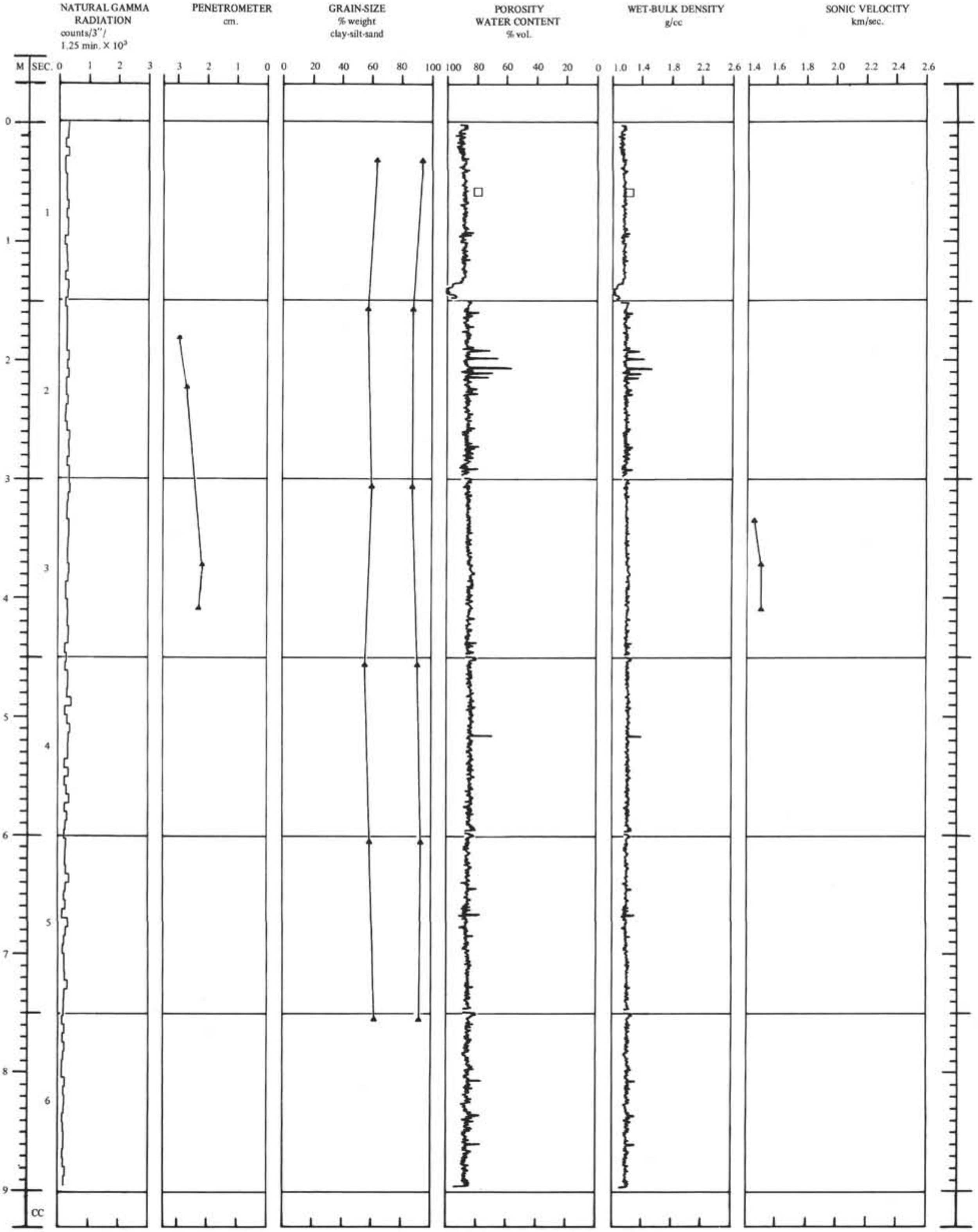
Severely disturbed by drilling.

Soft ferromanganese nodule.

Radiolarian zone indeterminate

Silicoflagellate zone *Dictyocha fibula* (Secs. 1-6)

Lithology and biostratigraphy of Core 3, Hole 66.1.

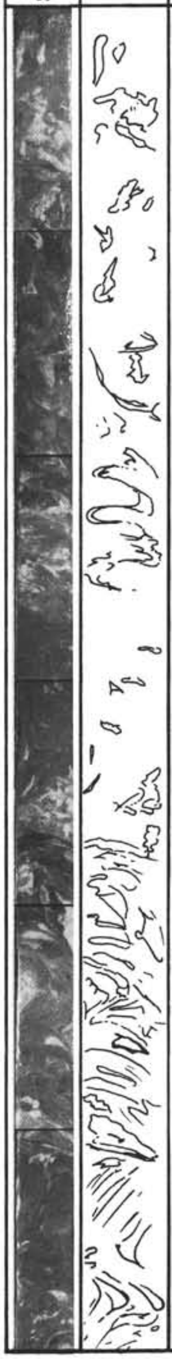


Physical properties of Core 3, Hole 66.1.

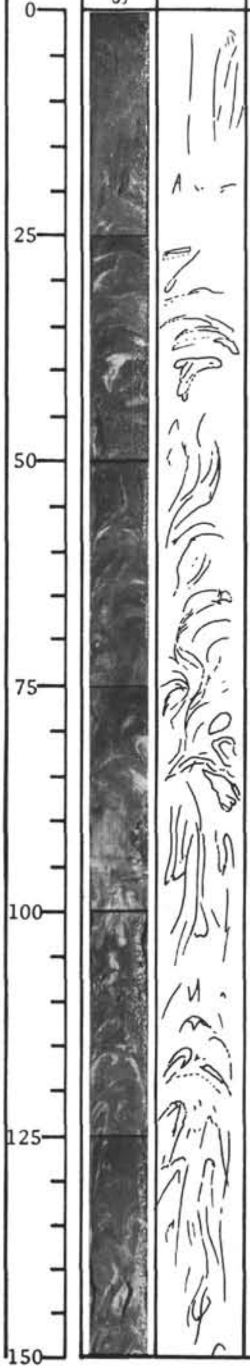
Hole 66.1 Core 3
Section 1

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
0 25 50 75 100 125 150					RADIOLARIAN OOZE Completely deformed and very watery, more or less colored grayish orange (10YR7/4) dark yellowish brown (10YR4/2). Near 30cm, as dark as dusky yellow brown (10YR2/2).

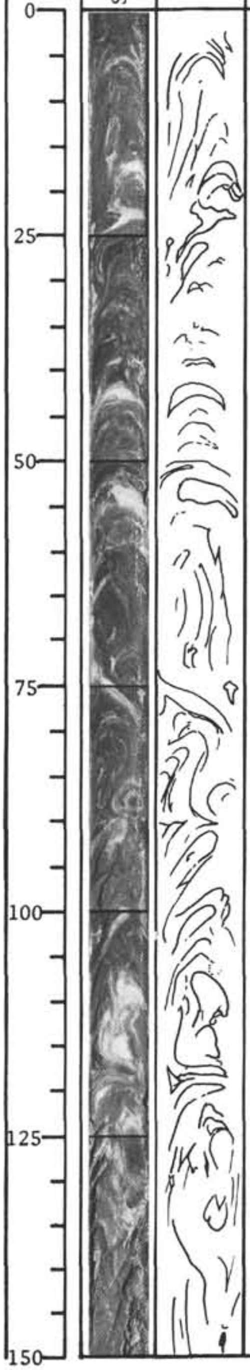
Hole 66.1 Core 3
Section 2

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
0 25 50 75 100 125 150					RADIOLARIAN OOZE Soft, mottled moderately to strongly, mainly 10YR shades, as moderate yellowish brown (10YR5/3), dark yellowish brown (10YR 3/3), grayish orange (10YR7/4), and some dusky yellowish brown (10YR2/2).

Hole 66.1 Core 3
Section 3

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
					RADIOLARIAN OOZE As Core 3, Section 2, above.

Hole 66.1 Core 3
Section 4

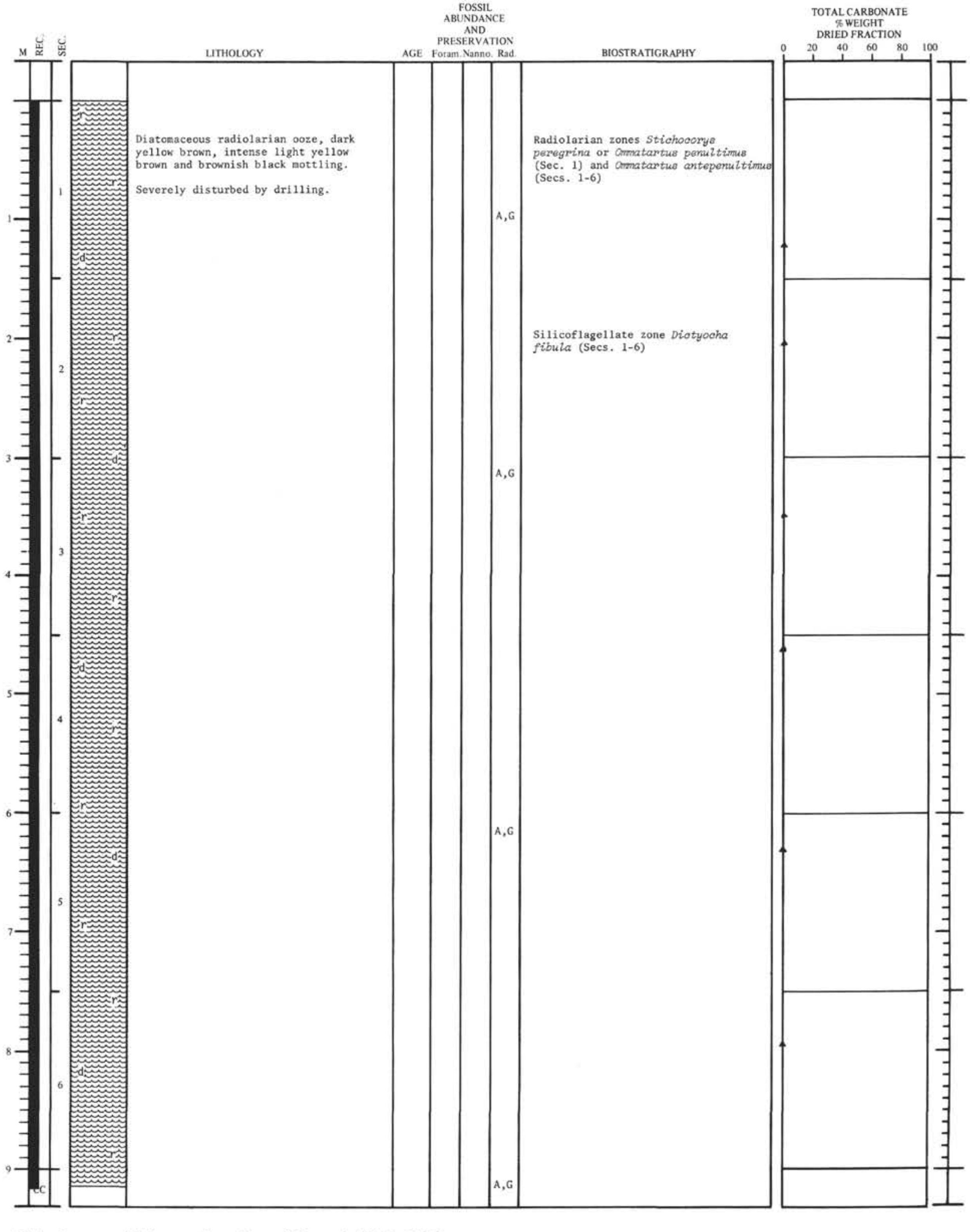
Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
					RADIOLARIAN OOZE As Section 3-2 and 3-3 above.

Hole 66.1 Core 3
Section 5

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
0 25 50 75 100 125 150					RADIOLARIAN OOZE As Sections 3-2, 3-3, and 3-4 above.

Hole 66.1 Core 3
Section 6

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description
0 25 50 75 100 125 150					RADIOLARIAN OOZE As Sections 3-2, 3-3, 3-4 and 3-5 above.



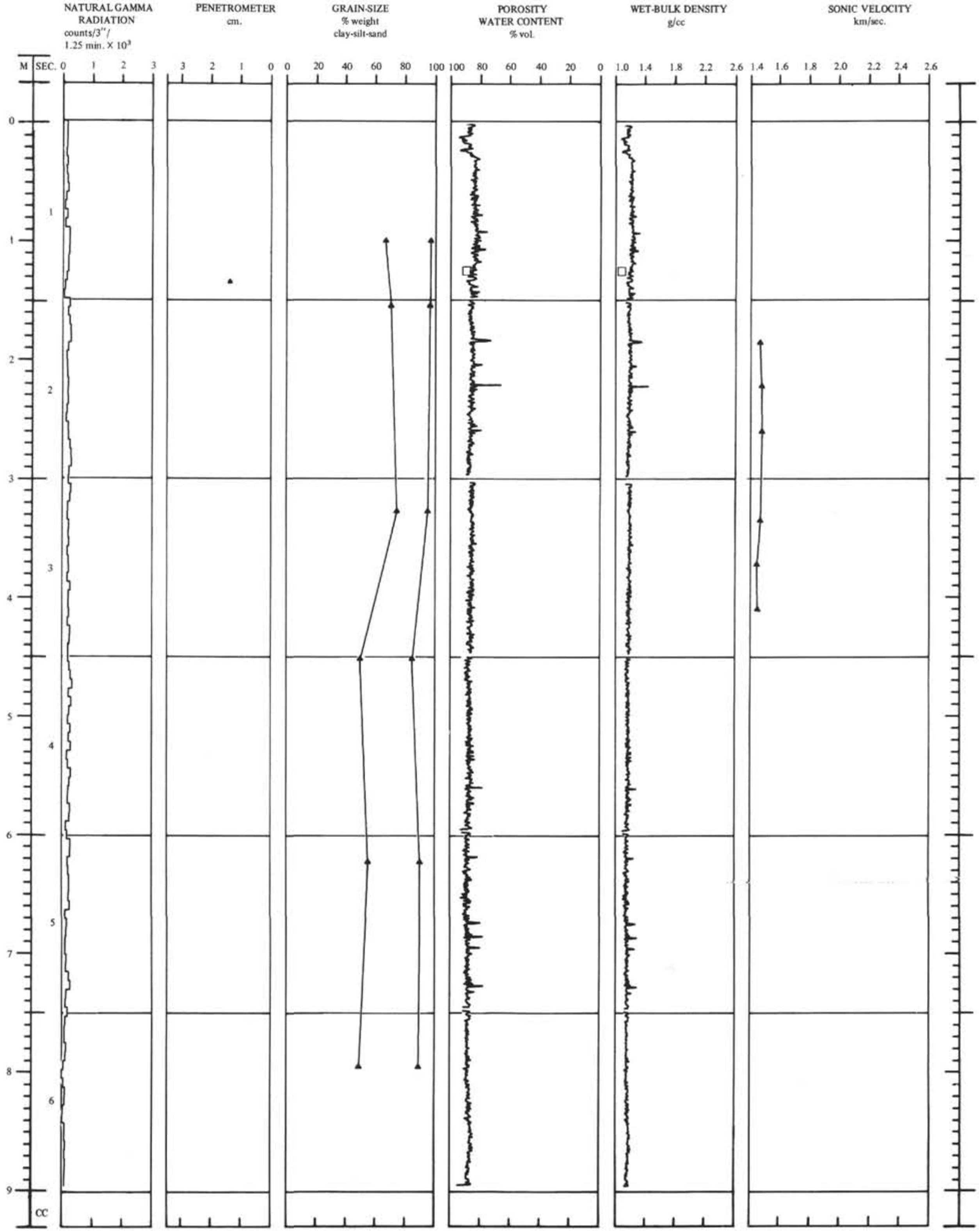
Diatomaceous radiolarian ooze, dark yellow brown, intense light yellow brown and brownish black mottling.

Severely disturbed by drilling.

Radiolarian zones *Stichocorys peregrina* or *Ommatartus penultimus* (Sec. 1) and *Ommatartus antepenultimus* (Secs. 1-6)

Silicoflagellate zone *Dictyocha fibula* (Secs. 1-6)

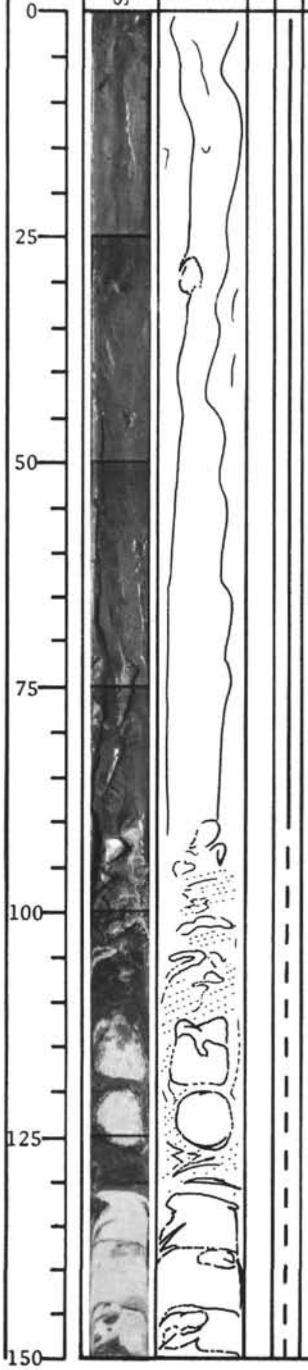
Lithology and biostratigraphy of Core 4, Hole 66.1.



Physical properties of Core 4, Hole 66.1.

Hole 66.1 Core 4
Section 1

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



RADIOLARIAN OOZE

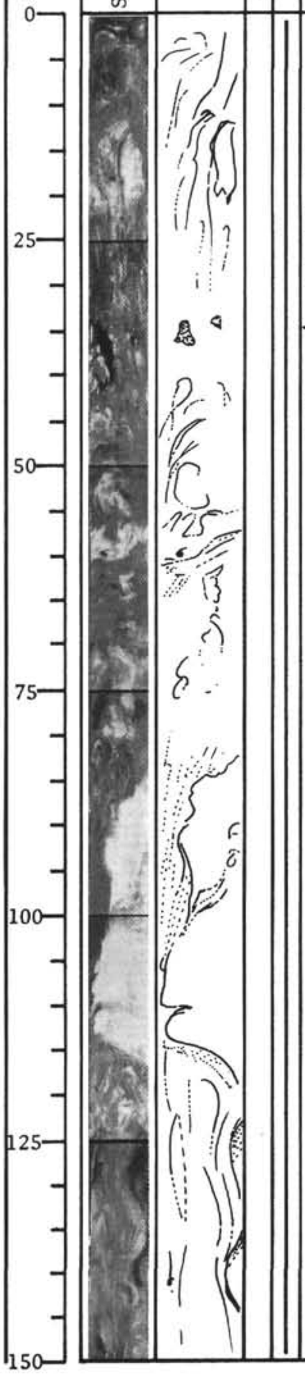
Mainly dark yellowish brown (2.5Y4/2); above about 90cm as very watery mud, below as firmer mud showing original structure.

Large masses of light yellowish brown (2.5Y 6/4) below 114cm, and as mottles above there. Perhaps the large masses are pieces of beds.

A few small mottles of brownish dark (10YR 2/1).

Hole 66.1 Core 4
Section 2

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



RADIOLARIAN OOZE

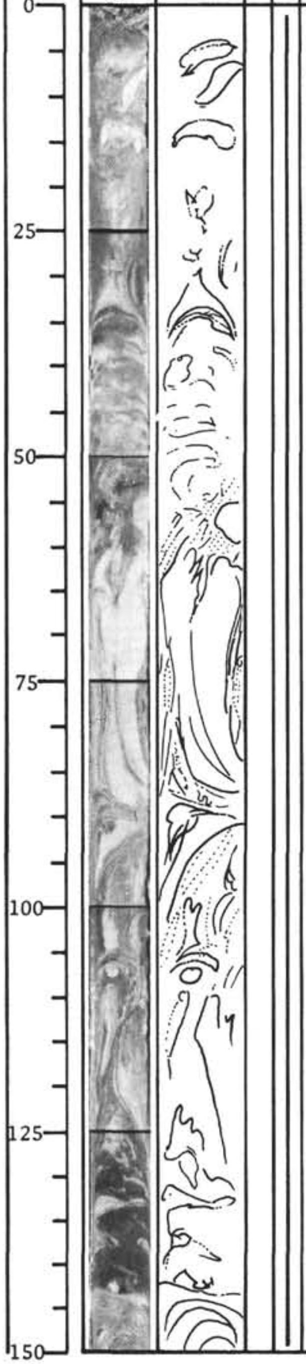
As lower part of Core 4, Section 1 above.

Dark yellow brown (2.5Y4/2) with large blobs and mottles of light yellow brown
←1 Manganese

(2.5Y6/4) and small mottles of brownish black (10YR2/1).

Hole 66.1 Core 4
Section 3

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



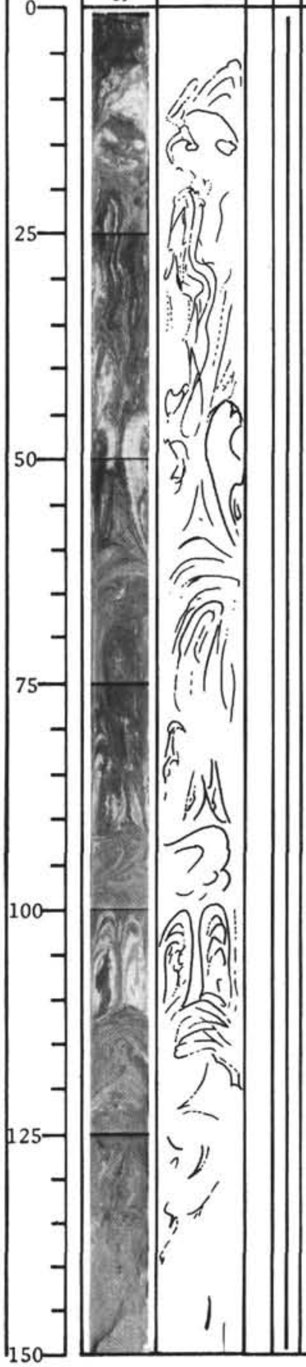
RADIOLARIAN OOZE

As Core 4, Section 2 above.

Soft, dark yellow brown (2.5Y4/2) with large blobs and mottles of light yellow brown (2.5Y6/4) and small mottles of brownish black (10YR2/1).

Hole 66.1 Core 4
Section 4

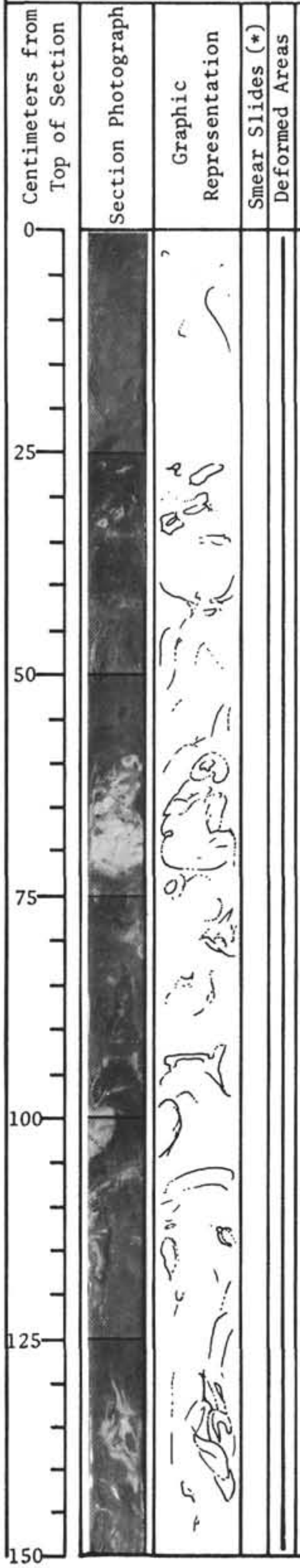
Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



RADIOLARIAN OOZE

As Core 4, Sections 2 and 3 above; soft, deformed dark yellowish brown (2.5Y4/2) with large areas and mottles of light yellow brown (2.5Y6/4); Some deformed mottles of brownish black (10 YR2/1).

Hole 66.1 Core 4
Section 5

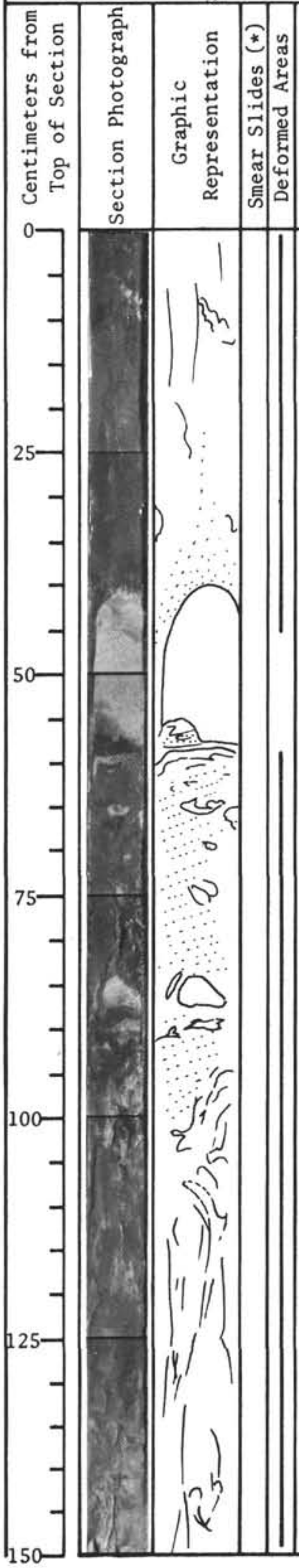


Description

RADIOLARIAN OOZE

As Core 4, Sections 2, 3 and 4 above; soft, deformed, dark yellowish brown (2.5Y4/2) with large and small mottles of light yellow brown (2.5Y6/4) and small mottles of brownish black (10YR2/1).

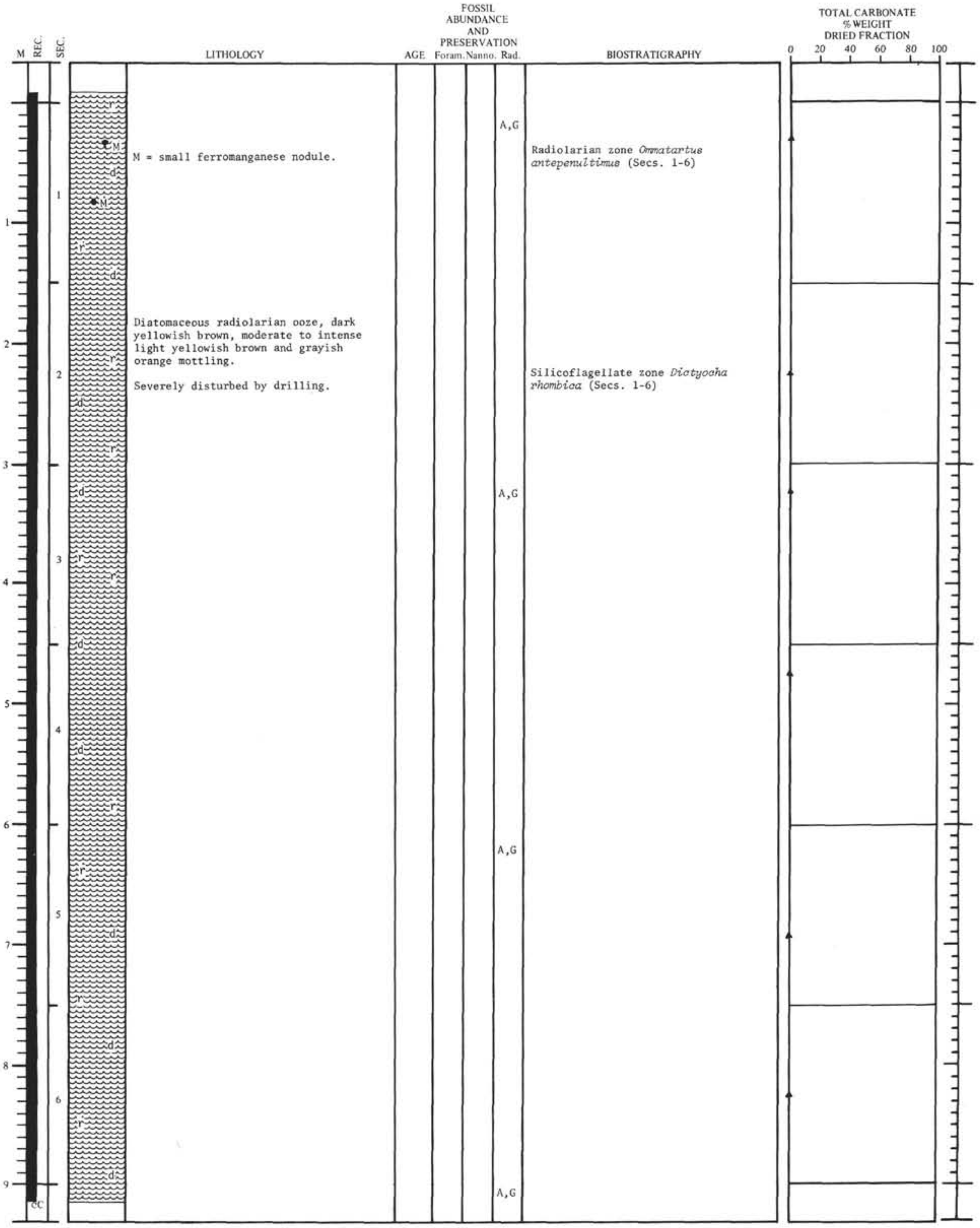
Hole 66.1 Core 4
Section 6



Description

RADIOLARIAN OOZE

As Core 4, Sections 2, 3, 4 and 5 above. Soft, deformed, dark yellowish brown (2.5Y 4/2) with mottles of light yellow brown (2.5Y6/4) and brownish black (10YR2/1).



M = small ferromanganese nodule.

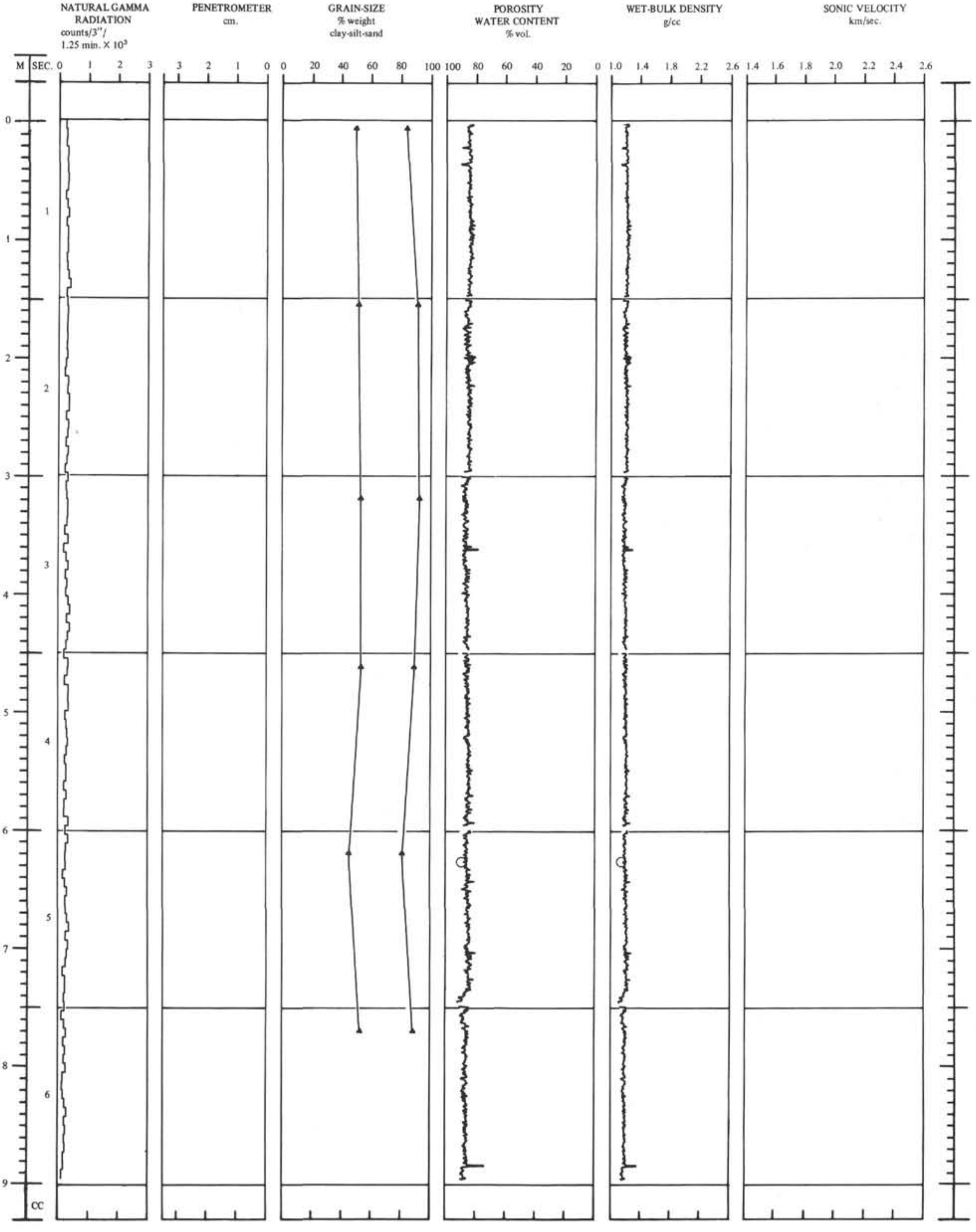
Diatomaceous radiolarian ooze, dark yellowish brown, moderate to intense light yellowish brown and grayish orange mottling.

Severely disturbed by drilling.

Radiolarian zone *Ommatartus antepenultimus* (Secs. 1-6)

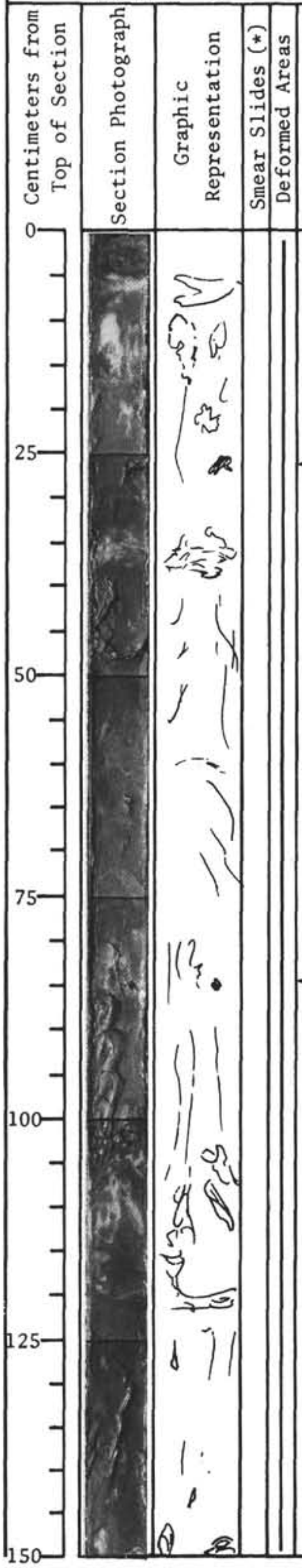
Silicoflagellate zone *Dictyocha rhombica* (Secs. 1-6)

Lithology and biostratigraphy of Core 5, Hole 66.1.



Physical properties of Core 5, Hole 66.1.

Hole 66.1 Core 5
Section 1



Description

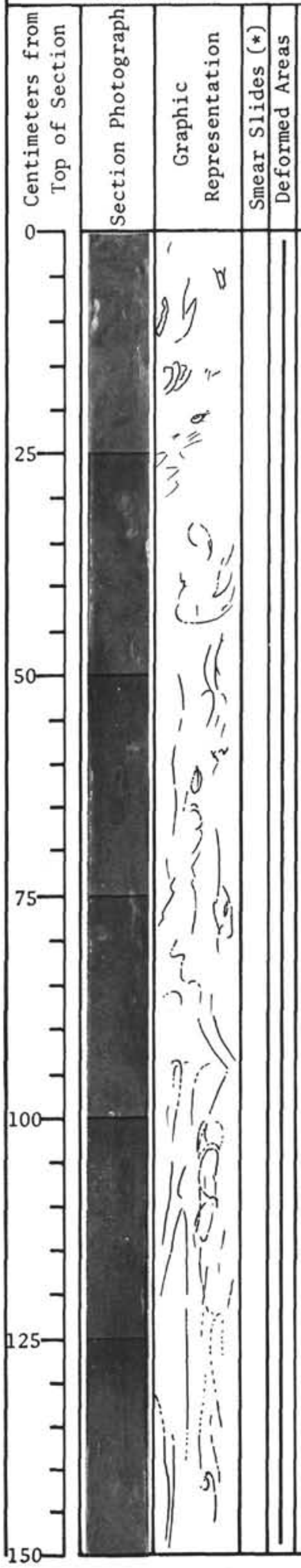
RADIOLARIAN OOZE

← 1 Irregular Mn nodule.

Mainly dark yellowish brown (2.5Y4/3), moderately mottled and streaked of grayish orange (2.5Y7/4) (and some of brownish black 10YR2/1).

← 2 Spherical Mn nodule 0.4cm in diameter.

Hole 66.1 Core 5
Section 2



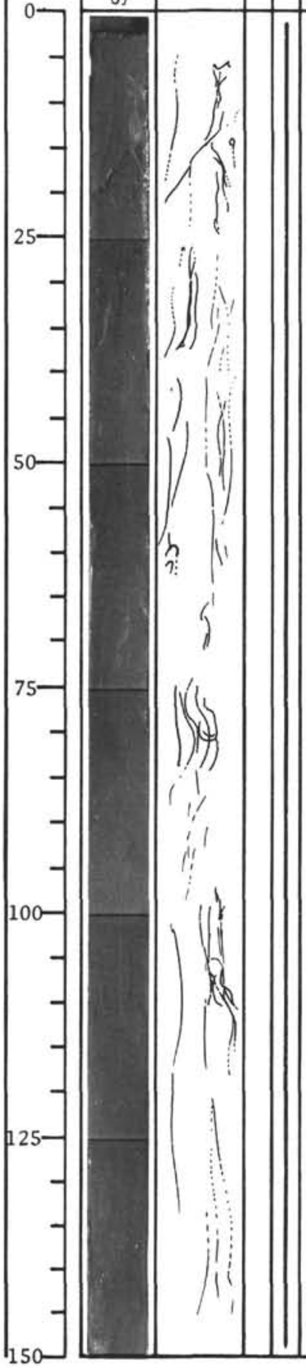
Description

RADIOLARIAN OOZE

Vertical streaks and flow folds, mainly of light yellowish brown (2.5Y4/4); some of grayish orange (2.5Y 7/4).

Hole 66.1 Core 5
Section 3

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description

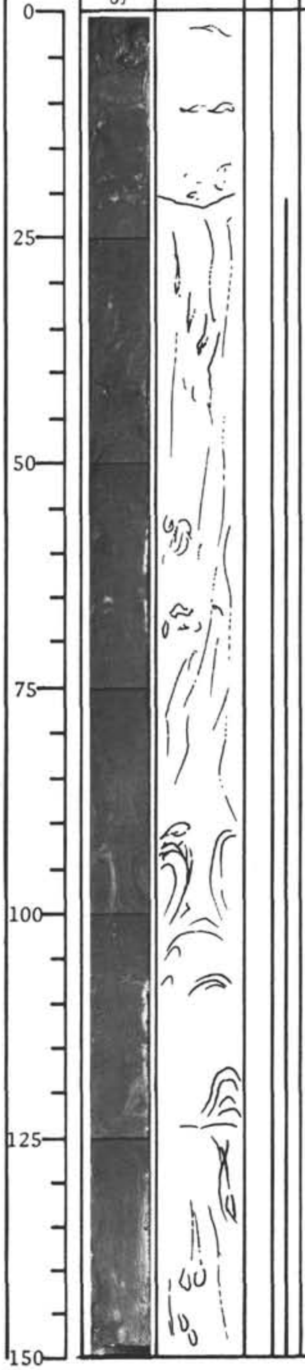


RADIOLARIAN OOZE

As Core 5, Section 2 above; streaked light yellowish brown (2.5Y 4/3) and adjacent colors.

Hole 66.1 Core 5
Section 4

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description

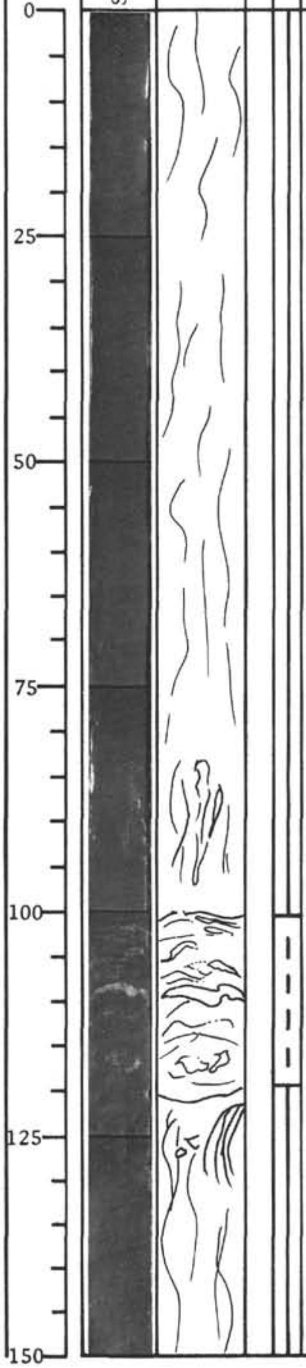


RADIOLARIAN OOZE

As Core 5, Sections 2 and 3 above; streaked light yellowish brown (2.5Y4/3), grayish orange (2.5Y7/4), and adjacent colors.

Hole 66.1 Core 5
Section 5

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description

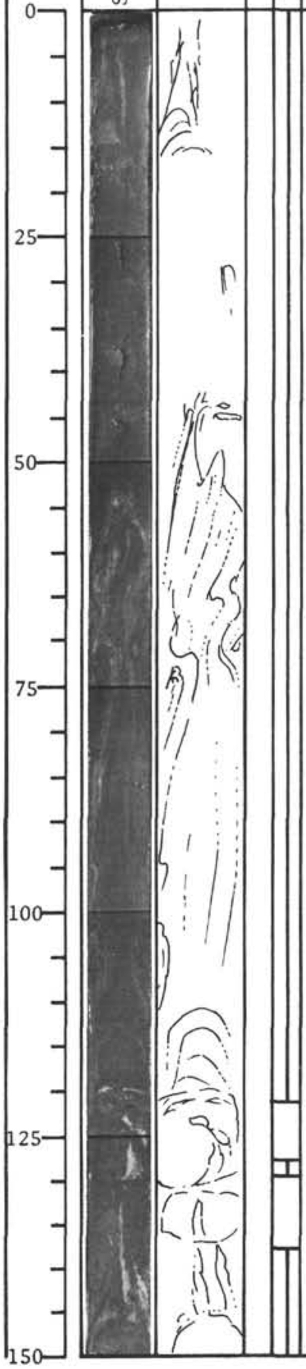


RADIOLARIAN OOZE

As Sections 2 and 3.

Hole 66.1 Core 5
Section 6

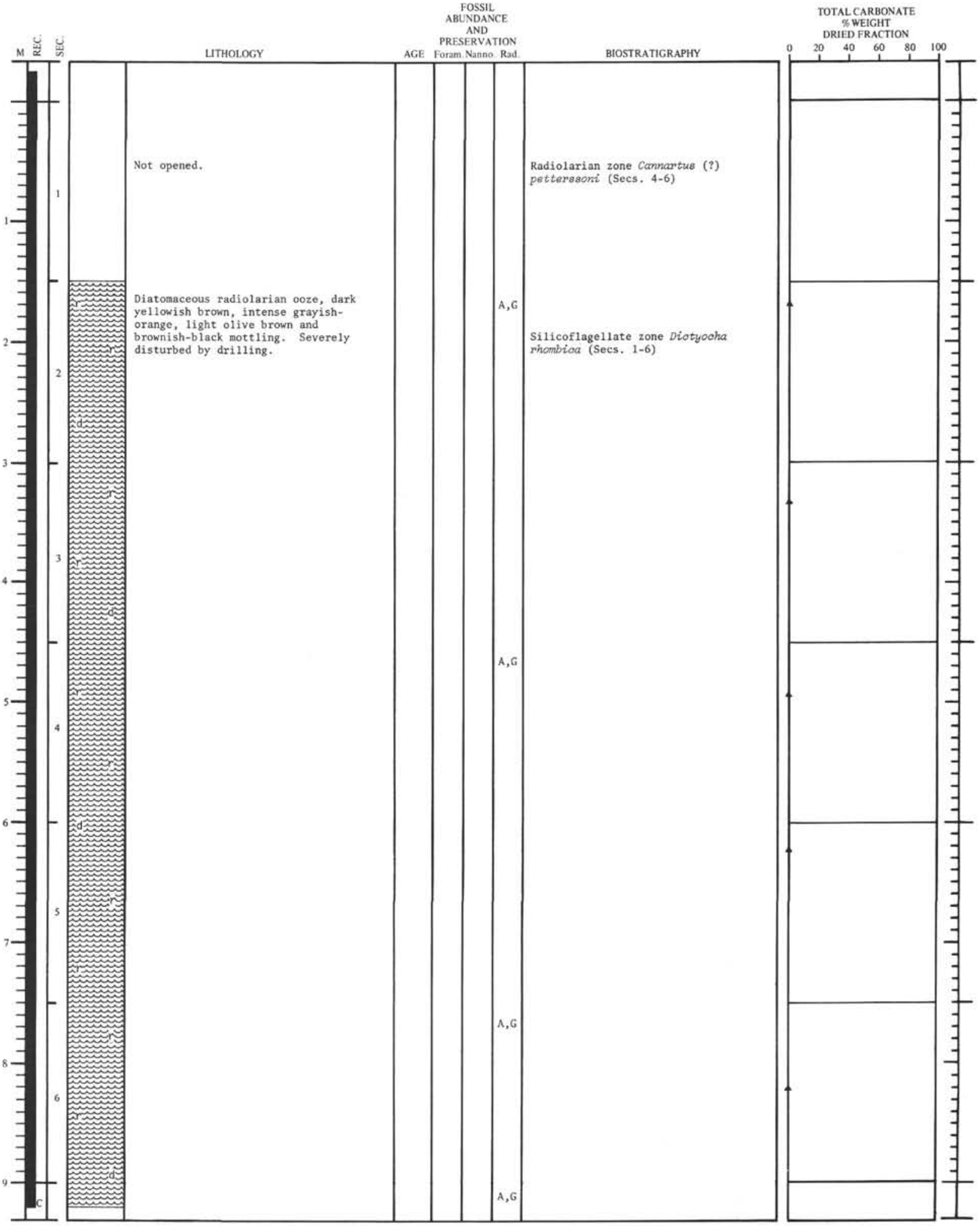
Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



RADIOLARIAN OOZE

As Core 5, Sections 2, 3, 4 and 5 above.

Somewhat firmer and not badly disturbed 117-127cm; mottles show clearly. (Otherwise, streaked out).



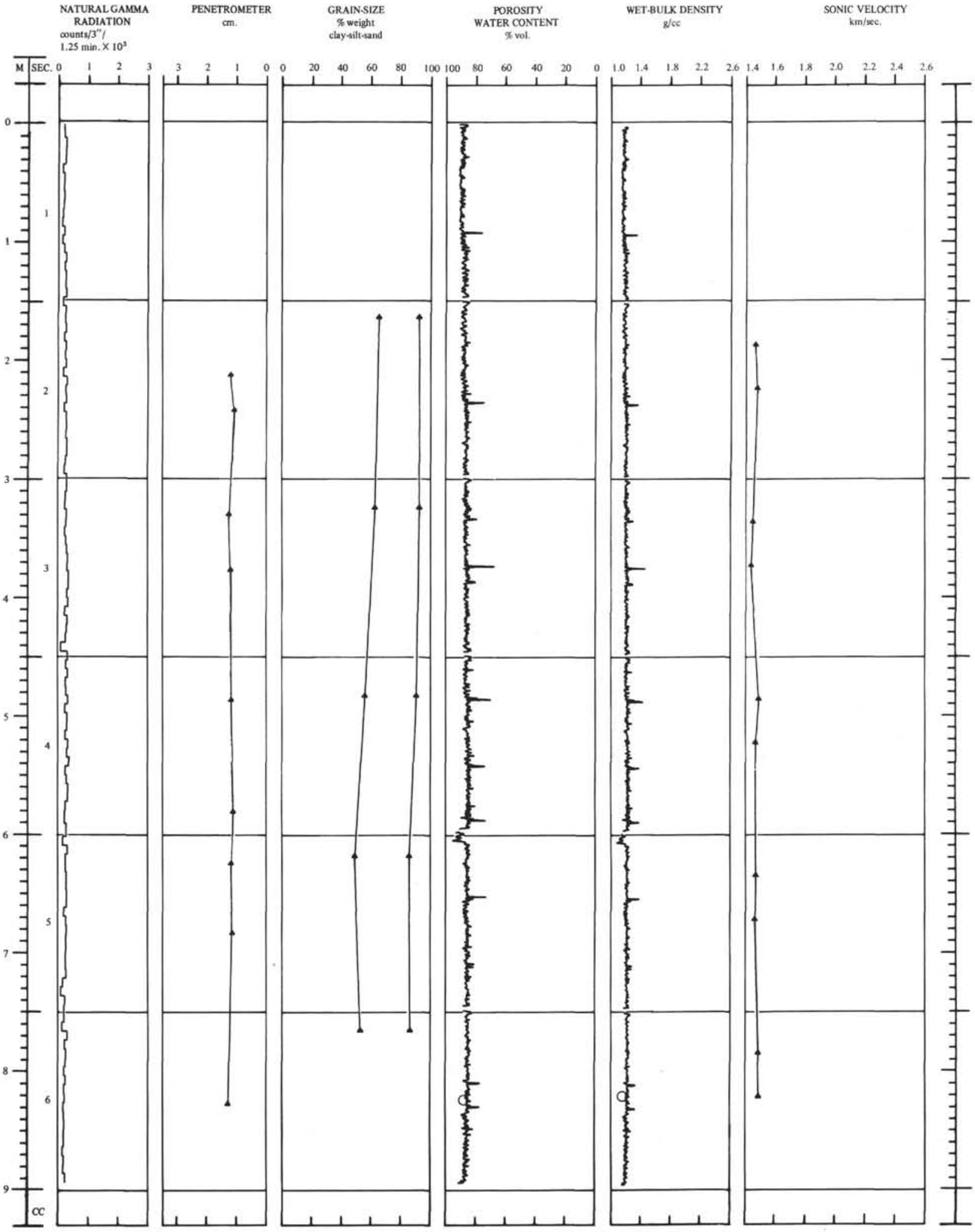
Not opened.

Diatomaceous radiolarian ooze, dark yellowish brown, intense grayish-orange, light olive brown and brownish-black mottling. Severely disturbed by drilling.

Radiolarian zone *Cannartus* (?) *petterssoni* (Secs. 4-6)

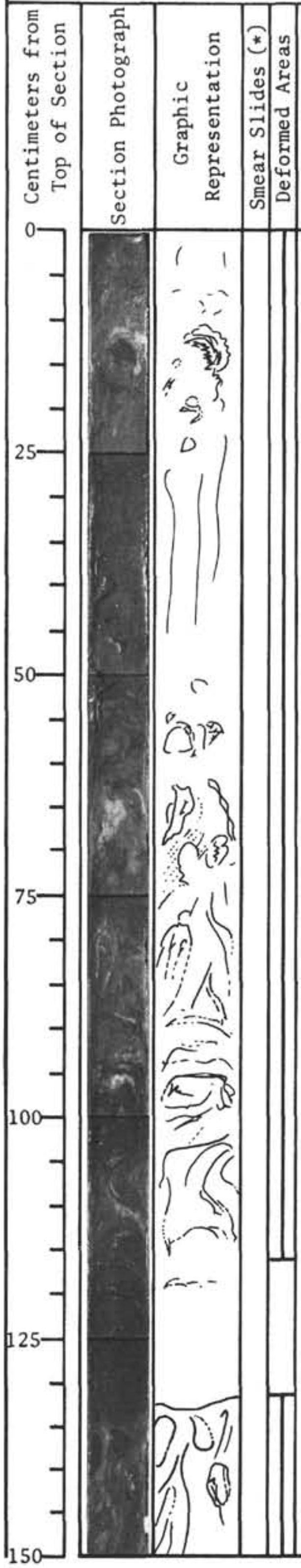
Silicoflagellate zone *Dictyocha rhombica* (Secs. 1-6)

Lithology and biostratigraphy of Core 6, Hole 66.1.



Physical properties of Core 6, Hole 66.1.

Hole 66.1 Core 6
Section 2



Description

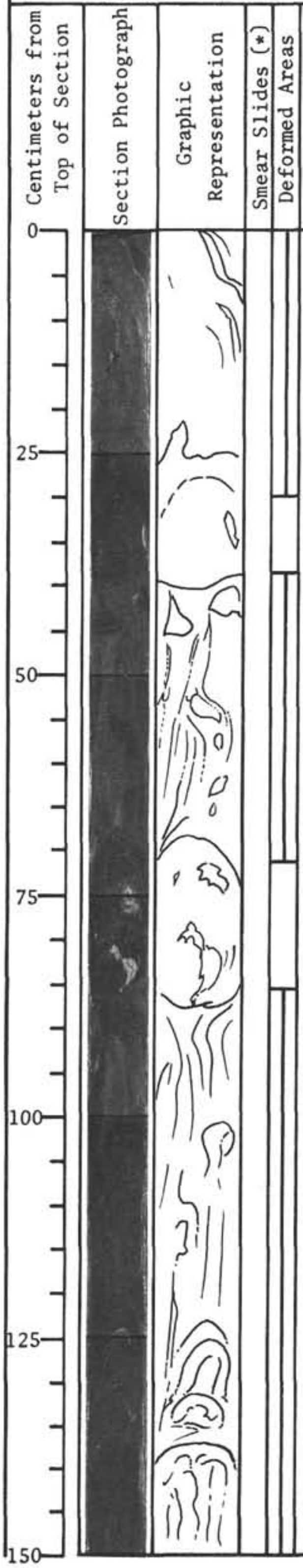
RADIOLARIAN OOZE

Mainly dark yellowish brown (2.5Y4/2), greatly mottled (where less disturbed and mottles can be seen) with grayish orange (2.5Y7/4), light olive brown (5Y5/4), and brownish black (10YR2/1).

Very watery from 25-50cm.

Firm from 115-132cm.

Hole 66.1 Core 6
Section 3

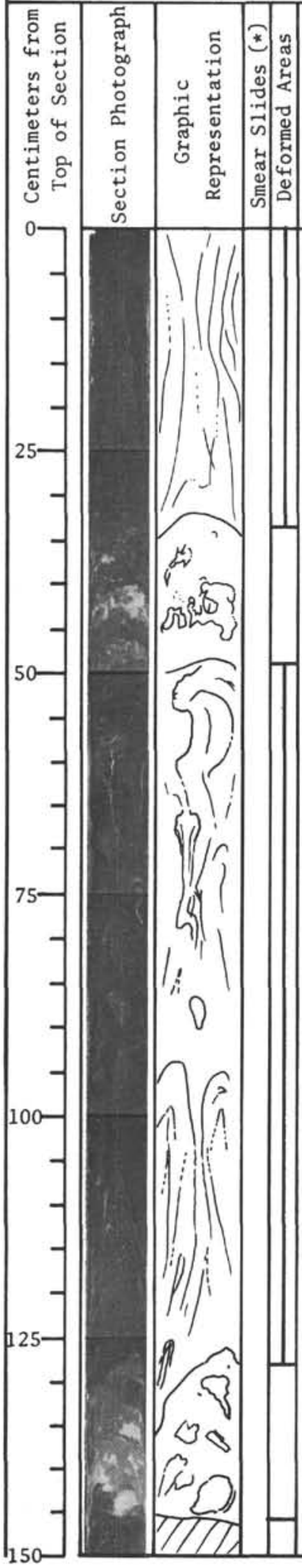


Description

RADIOLARIAN OOZE

As Core 6, Section 2 above.

Hole 66.1 Core 6
Section 4

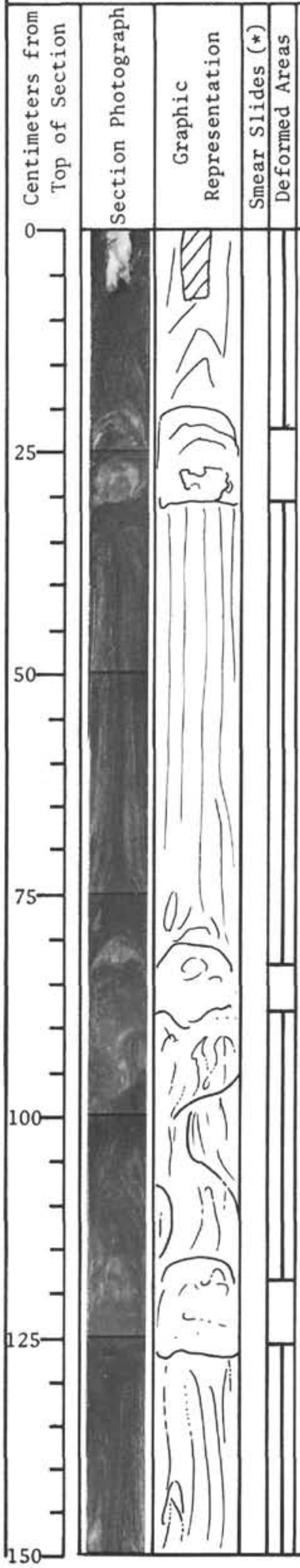


Description

RADIOLARIAN OOZE

As Sections 6-2 and 6-3 above.

Hole 66.1 Core 6
Section 5



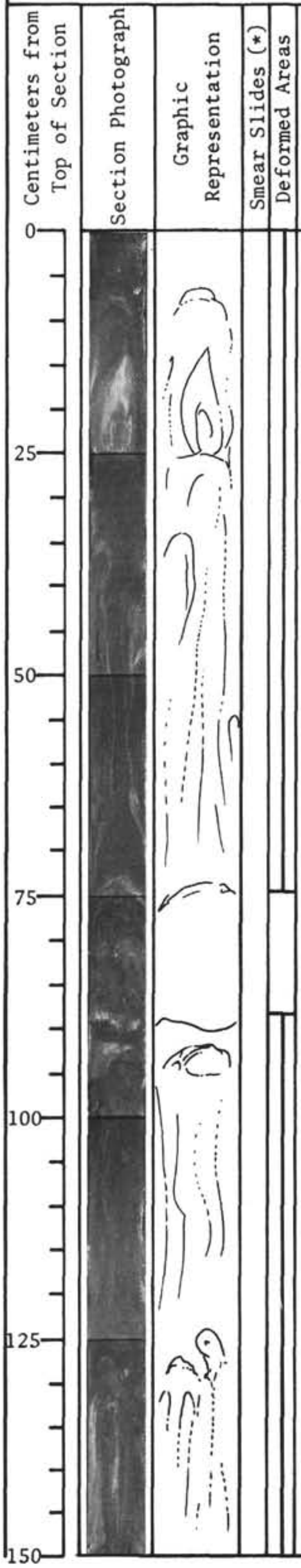
Description

RADIOLARIAN OOZE

As Core 6, Sections 2, 3, and 4 above. Less olive, more dark yellow brown.

Plug of material between 0 and 7cm removed for interstitial water analysis.

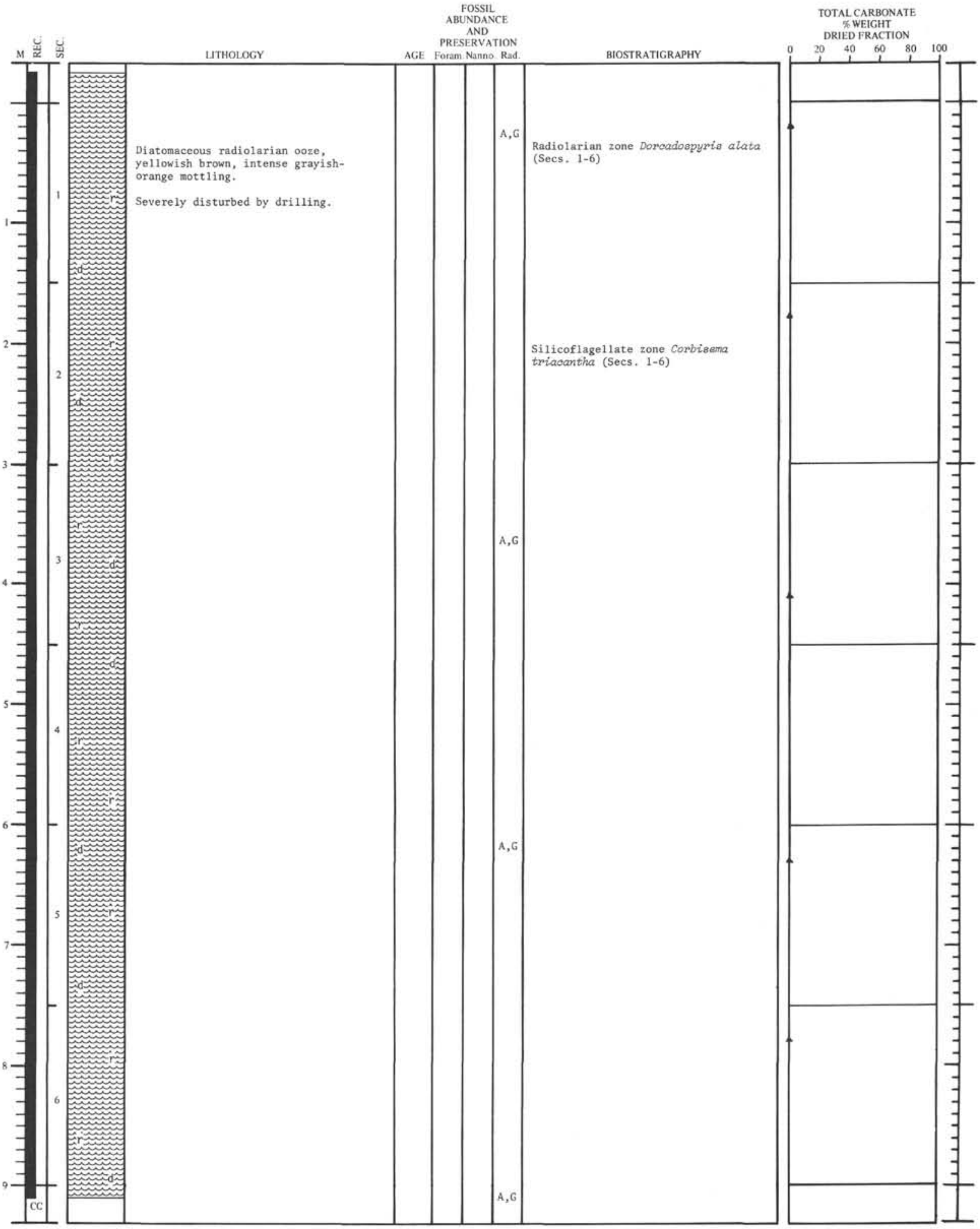
Hole 66.1 Core 6
Section 6



Description

RADIOLARIAN OOZE

As Core 6, Sections 2, 3, 4 and 5 above.



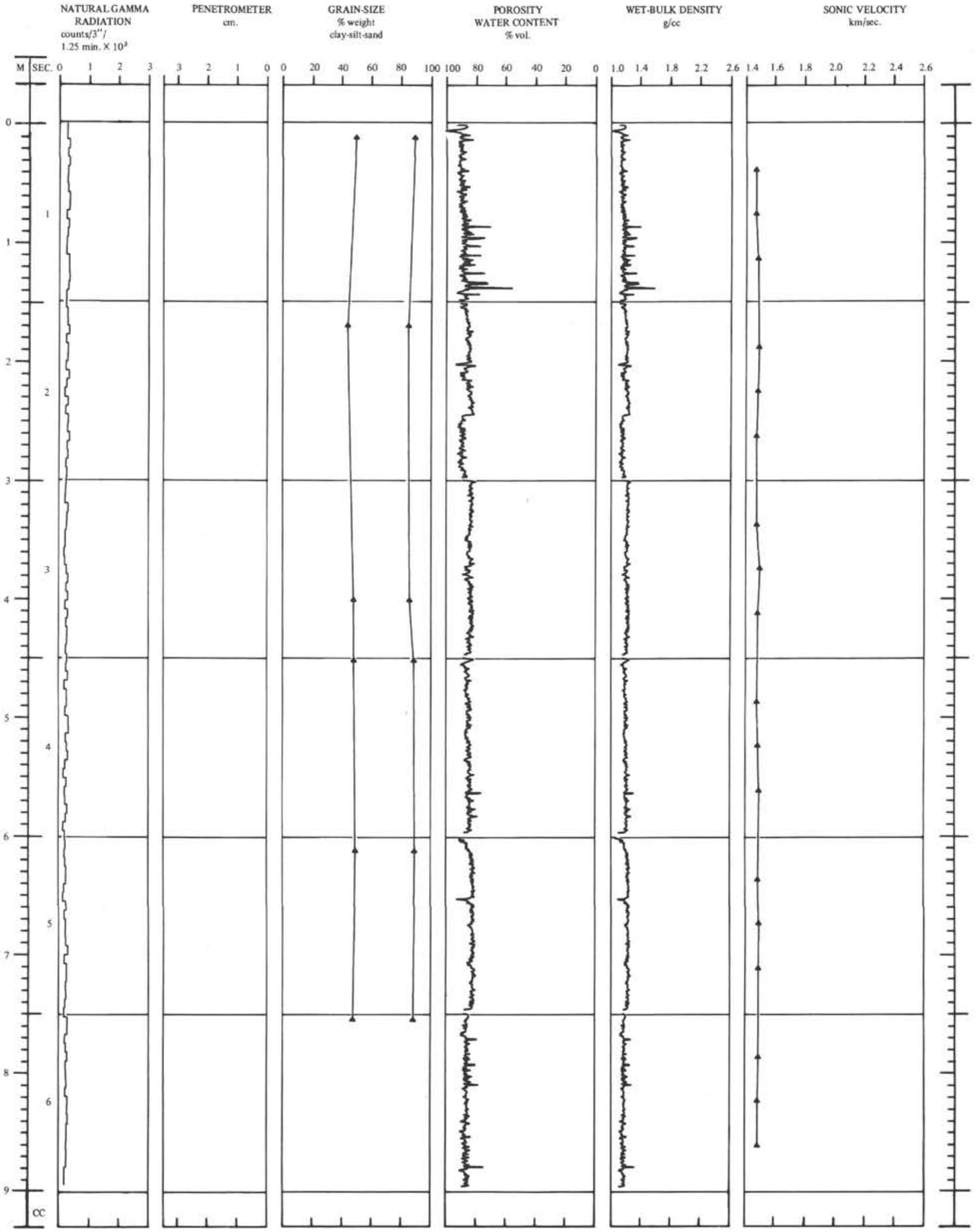
Diatomaceous radiolarian ooze, yellowish brown, intense grayish-orange mottling.

Severely disturbed by drilling.

Radiolarian zone *Dorcadospyris alata* (Secs. 1-6)

Silicoflagellate zone *Corbisema triacantha* (Secs. 1-6)

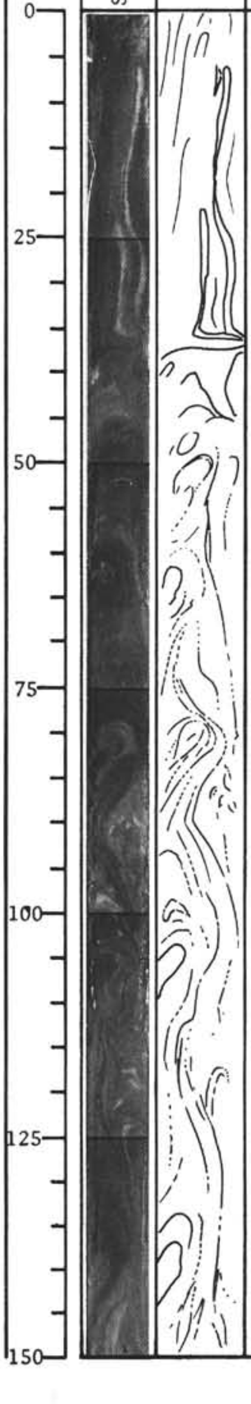
Lithology and biostratigraphy of Core 7, Hole 66.1.



Physical properties of Core 7, Hole 66.1.

Hole 66.1 Core 7
Section 1

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description

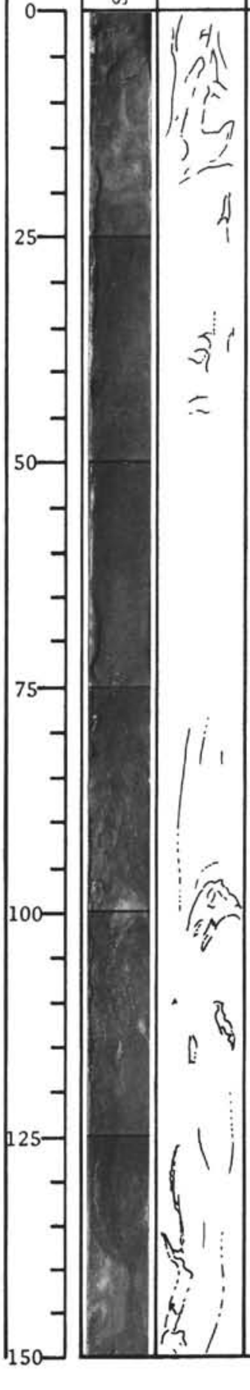


RADIOLARIAN OOZE

Soft, vertically striped and flow-folded from coring. Basic color in shades of moderate yellowish brown (2.5Y6/4, 5/4, 4/4 and 10YR5/4), with deformed strips and mottles of grayish orange (10YR7/4 to 2.5Y7/2).

Hole 66.1 Core 7
Section 2

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



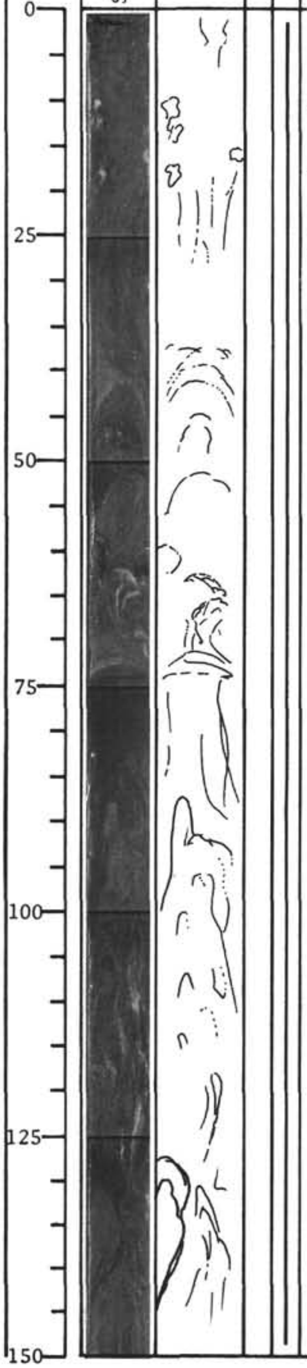
RADIOLARIAN OOZE

Yellowish brown deformed ooze like Core 7, Section 1 above.

Middle part very watery and badly homogenized by coring process.

Hole 66.1 Core 7
Section 3

Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description

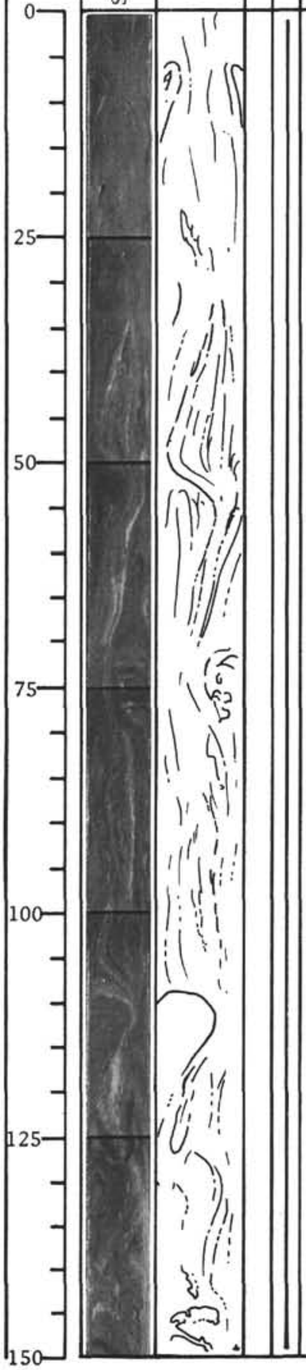


RADIOLARIAN OOZE

Yellowish brown deformed ooze, like Core 7, Section 1 above. Not too badly deformed (or water injected) above 74cm.

Hole 66.1 Core 7
Section 4

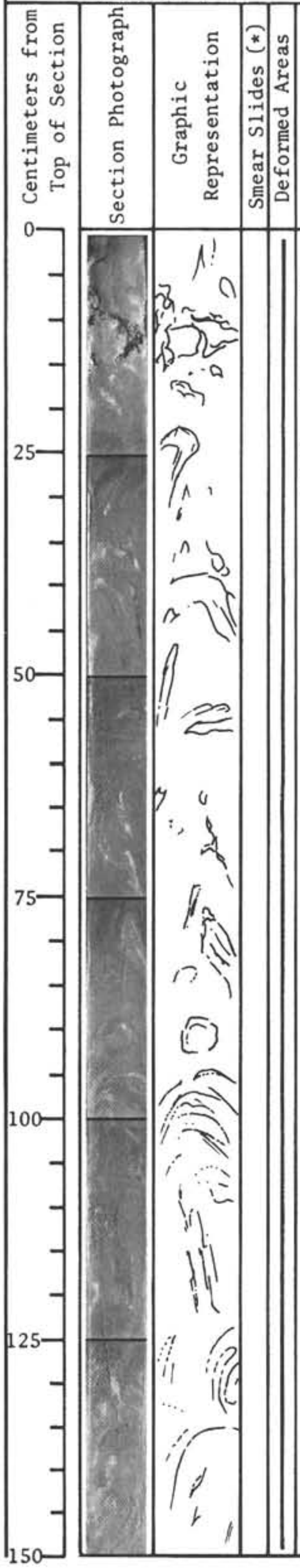
Centimeters from Top of Section	Section Photograph	Graphic Representation	Smear Slides (*)	Deformed Areas	Description



RADIOLARIAN OOZE

Yellowish brown deformed ooze like Core 7, Section 1 above.

Hole 66.1 Core 7
Section 5



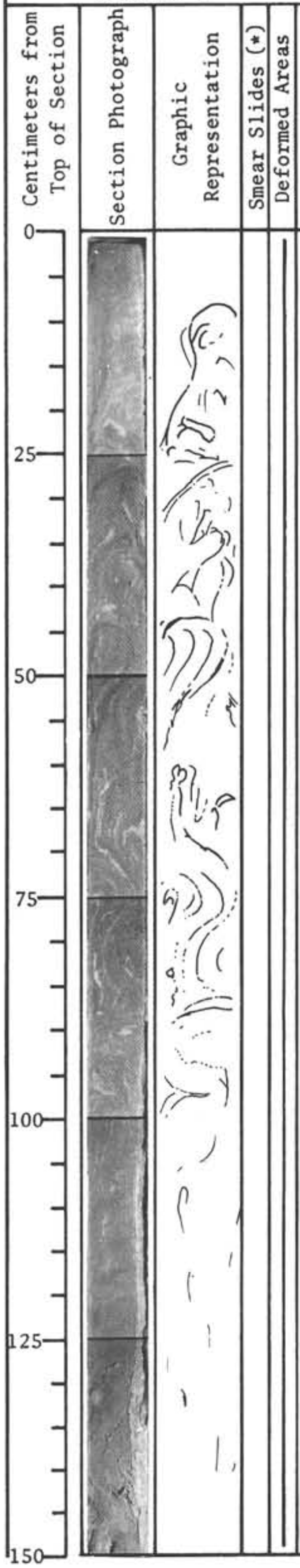
Description

RADIOLARIAN OOZE

Yellowish brown deformed ooze, like Core 7, Section 1 above.

Interval from 7-15cm disturbed when splitting soft core.

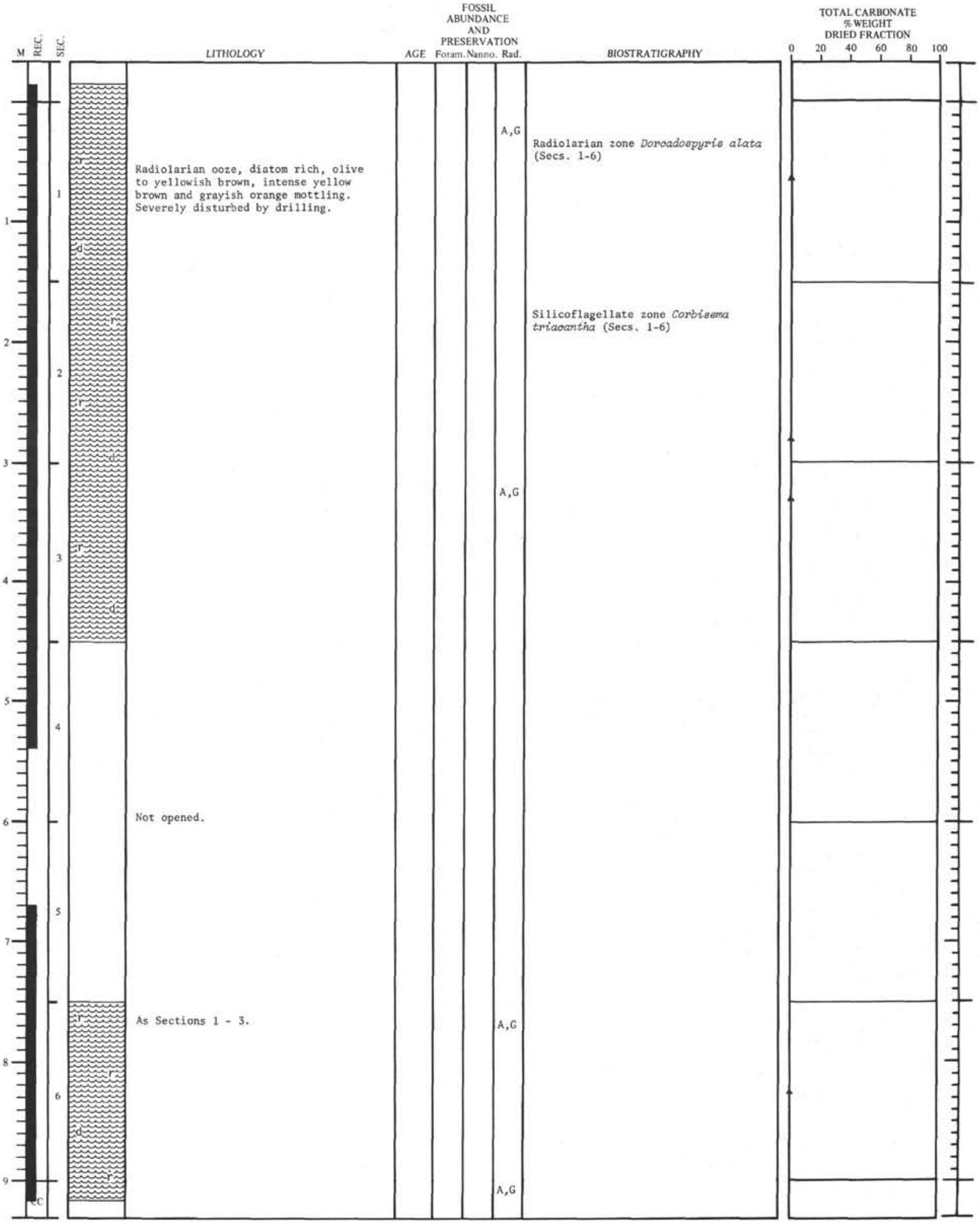
Hole 66.1 Core 7
Section 6



Description

RADIOLARIAN OOZE

Soft, deformed yellowish brown ooze like Core 7, Section 1 above.



Radiolarian ooze, diatom rich, olive to yellowish brown, intense yellow brown and grayish orange mottling. Severely disturbed by drilling.

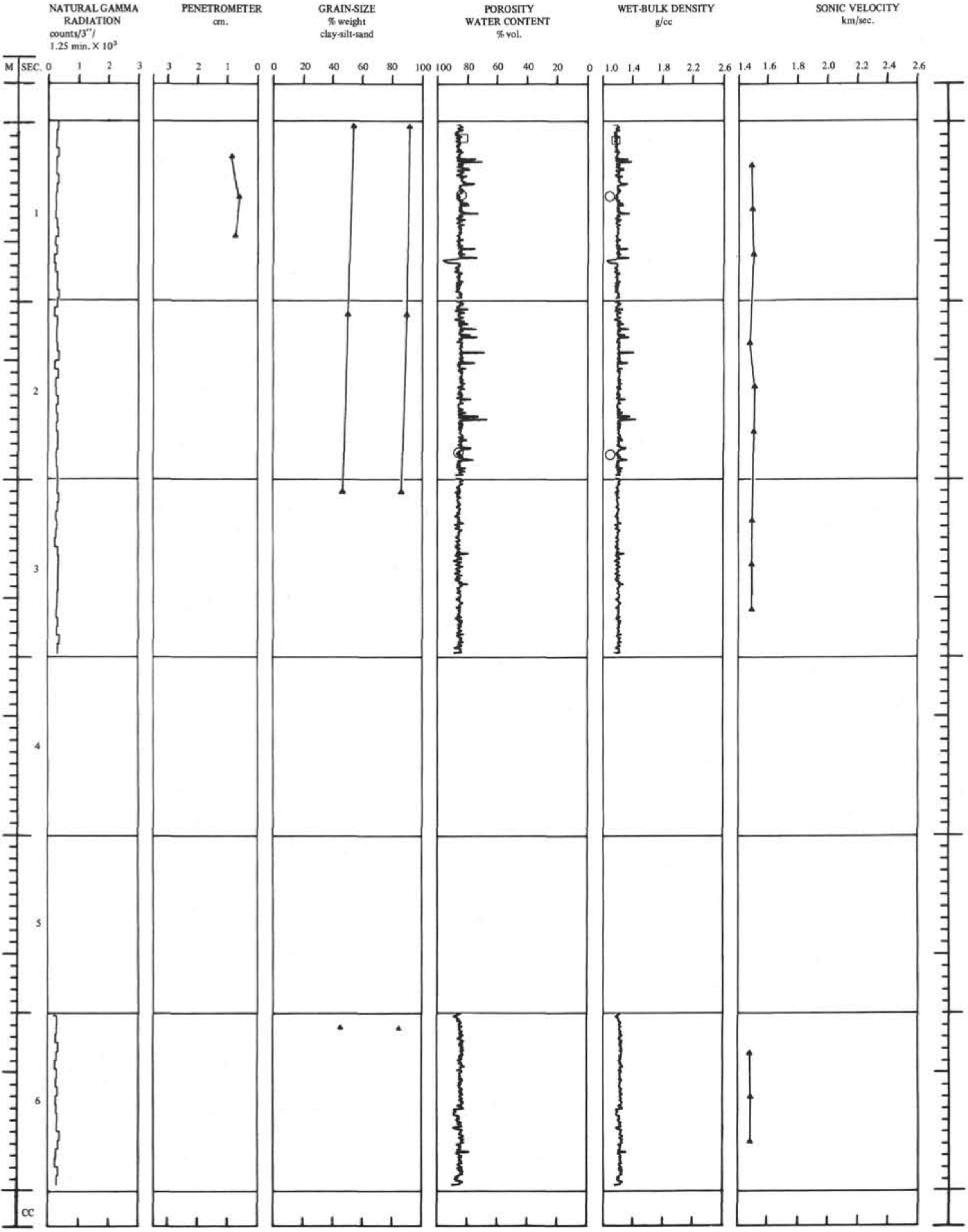
Not opened.

As Sections 1 - 3.

Radiolarian zone *Dorcadospyris alata* (Secs. 1-6)

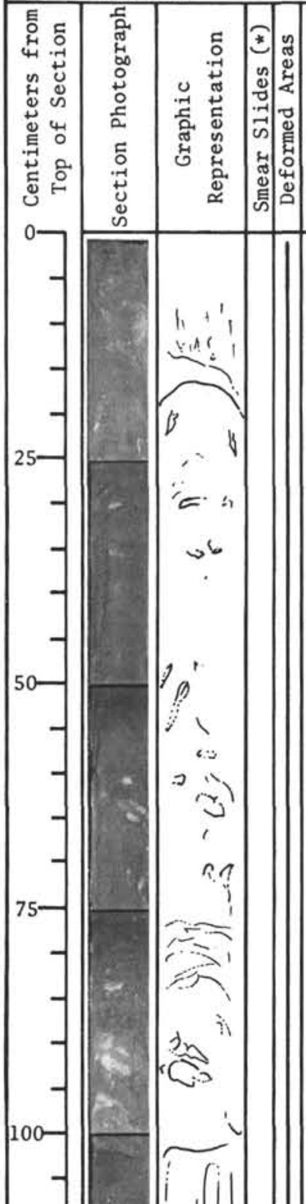
Silicoflagellate zone *Corbisema triacantha* (Secs. 1-6)

Lithology and biostratigraphy of Core 8, Hole 66.1.



Physical properties of Core 8, Hole 66.1.

Hole 66.1 Core 8
Section 1

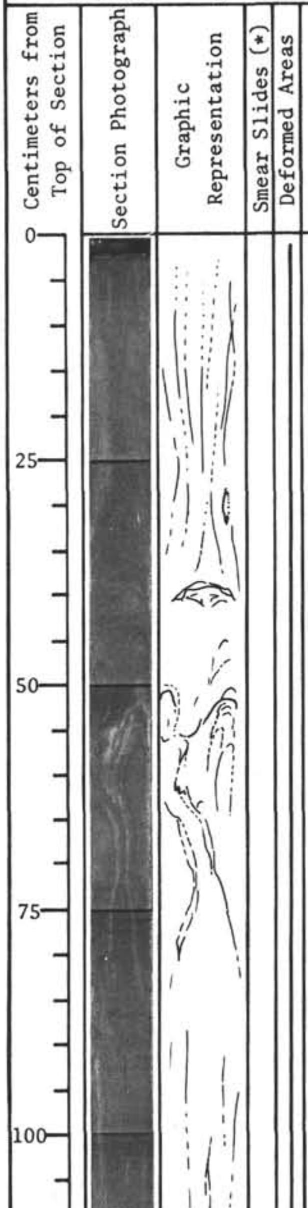


Description

RADIOLARIAN OOZE

Soft, vertically striped and flow folded from coring. Basic color is moderate olive brown (5Y4/4) to moderate yellowish brown (2.5Y4/4); with stripes and mottles of adjacent yellowish brown colors and of grayish orange (10YR 7/4 to 2.5Y7/2).

Hole 66.1 Core 8
Section 2



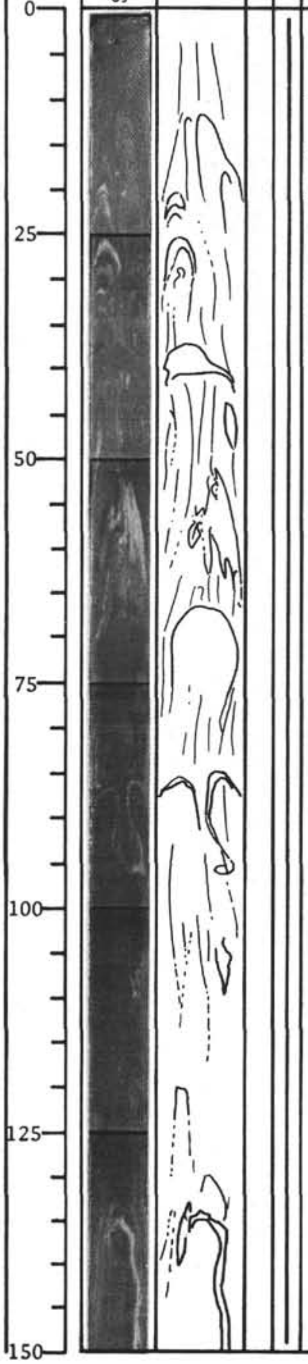
Description

RADIOLARIAN OOZE

Soft, deformed, moderate olive to yellowish brown, ooze, like Core 8, Section 1 above.

Hole 66.1 Core 8
Section 3

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



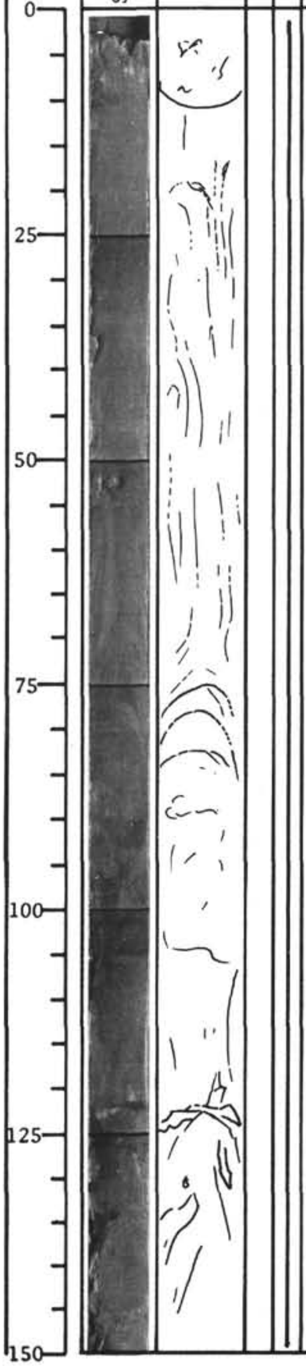
RADIOLARIAN OOZE

Soft, deformed, moderate olive to yellowish brown, ooze, like Core 8, Section 1 above.

Some rust chips (from inside drill pipe) in top 20cm and below 93cm.

Hole 66.1 Core 8
Section 6

Centimeters from Top of Section | Section Photograph | Graphic Representation | Smear Slides (*) | Deformed Areas | Description



RADIOLARIAN OOZE

Soft, deformed, moderate olive brown to moderate yellowish brown ooze like Core 8, Section 1 above.