7. SITE 72

Shipboard Scientific Party[1]

SITE DATA

Occupied: November 12-15.

Position: Latitude 00° 26.49'N.
Longitude 138° 52.02'W.

Water Depth: 4326 meters.

Hole Depth: 345 meters, ending in Eocene cherty limestone.

Holes Drilled: Three holes, including heat flow hole.

Cores Taken: Seventeen cores, continuous 0 to 69 meters and 312 to 345 meters; spot cores at 106, 150, 211 and 226 meters.

RESULTS

Intermittent coring resulted in the recovery of a complete section from Quaternary at the sea floor down into the upper Miocene, an incomplete section through the Miocene and the Oligocene, and a continuous section of the lower portion of the hole ranging from Oligocene into the upper Eocene. The hole was drilled on a flank of a buried hill over which the sediments are compressed particularly towards the base of the column (as shown by reflection profiles). Thicknesses and sediment accumulation rates in Oligocene sediments are probably not representative for the area.

BACKGROUND

Site 72 is one of the sites along the N-S line drilled during Leg 8 to investigate the east-west trending accumulation of sediments centered about 2°N near 140°W. It lies about 260 miles south of Site 71 and 170 miles north of Site 73. Site 72, along with 73 to the south, was added to the N-S line of sites proposed by the JOIDES Pacific Advisory Panel in order to obtain better stratigraphic correlation across the Equator.

There was no SCAN survey for this site and all site information is derived from observations made on the *Challenger*. The sea floor in the vicinity of the site has a gentle rolling character and dips to the northeast, about 100 meters in 10 miles, across the survey area. Irregularities in the acoustic basement are reflected in the overlying sediments and sea floor with decreasing amplitude upward. Acoustic reflectors in the vicinity are typically near 0.03, 0.16, 0.30 and 0.46 seconds depth; the 0.03 second reflection is not strong on the *Challenger* records; and the 0.46 second acoustic basement reflector commonly fluctuates in depth by 0.10 second or more (Figure 1 and Figure 12, Chapter 2). An occasional seamount penetrates through the sediments.

Site 72 was selected over a basement high where it was expected that the lower portion of the sediment section would be foreshortened. Prominent reflectors at Site 72 occur at 0.035, 0.160, and 0.345 seconds. The acoustic basement (0.345 second), in addition to adjacent deep reflectors, is steeply dipping near the site. It is correlated with the indurated sediments of the Upper Eocene found near the bottom of the drilled section. However, the correlation is poor. At this site the *Challenger* did not pass directly over the acoustic location beacon upon leaving the site, but about 300 meters to the southwest. Combined with the steep dips, this error might explain the poor correlation. The upper reflector (0.035 second) might correlate with the bottom of a cyclic unit, similar to that at Site 71, occurring at 35 meters. The lower portion of the section is inadequately sampled for correlation between physical properties and intermediate reflectors.

Geothermal heat flow measurements attempted at Site 72 indicate a value somewhat greater than 1.0 HFU (10^{-6} cal cm^{-2} sec^{-1}) and are discussed in detail in Chapter 18.

A topographic map of the vicinity of Site 71, airgun records, and further site information are given in Chapter 25.

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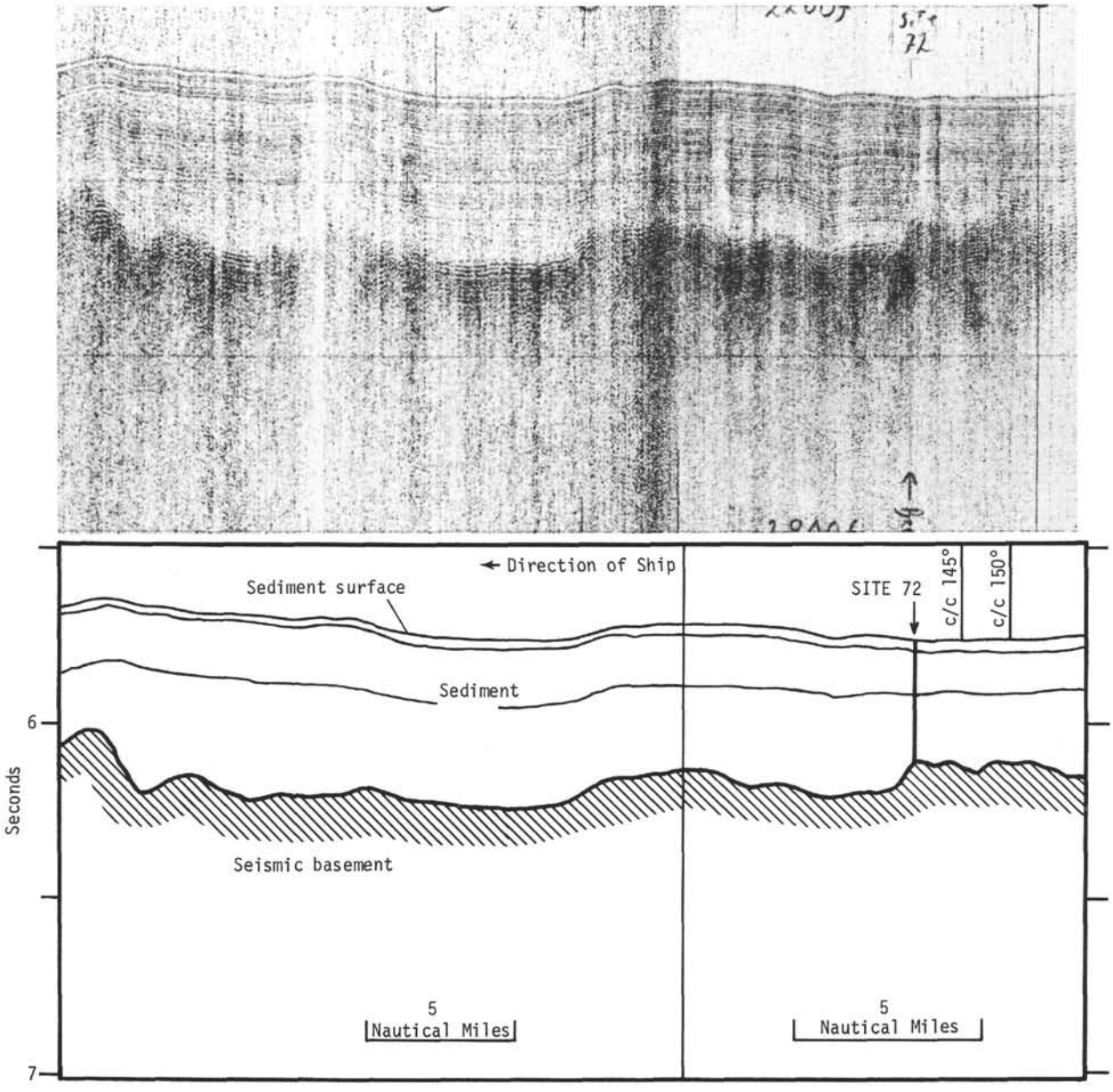


Figure 1. *Airgun record across Site 72 and interpretation.*

OPERATIONS

Three holes were drilled at the site. An exploratory hole (Hole 72) was cored at intervals of 30 to 50 meters, and was cored continuously from 311 to 345 meters, below the lowest acoustic reflector. Eleven cores were taken, the last requiring 7 hours coring time to penetrate about 3 meters of sediment of which one meter was recovered.

Hole 72A was drilled to recover a continuous section of the Pliocene into upper Miocene sediments. Six cores were taken to a depth of 63 meters.

Hole 72B was drilled for making heat flow measurements: the results are discussed by Von Herzen and others in Part III of this volume.

LITHOLOGY AND STRATIGRAPHY

Three sedimentary formations are present at Site 72: the Clipperton Oceanic Formation (0 to 180 meters estimated) consisting of a cyclic unit (0 to 34.5 meters) of alternating white and brown calcareous oozes and a varicolored unit (34.5 to 180 meters) of calcareous oozes; the Marquesas Oceanic Formation (180 to 399

TABLE 1
Summary of Coring at Site 72

	Core No.	Interval Below Seafloor (meters)	Cored (m)	Recovered (m)	Comments
Hole 72	1	0-9	9.1	9.1	
		9-60			Drilled
	2	60-69	9.1	8.2	
		69-106			Drilled
	3	106-115	9.1	9.1	H_2S smell in core
		115-150			Drilled
	4	150-159	9.1	9.1	
		159-211			Drilled
	5	211-220	9.1	9.1	
		220-266			Stiff clay; center bit needed for drilling
	6	266-275	9.1	9.1	
		275-312			Drilled; hard at 312 m
	7	312-321	9.1	9.1	Chert, 6 cm, over 9 m with nannofossil chalk ooze
	8	321-330	9.1	9.1	
	9	330-339	9.1	9.1	
	10	339-342	3.1	3.1	Core barrel set down to determine depth to hard layer; 30 feet recovered, mostly cave
	11	342-345	2.7	1.2	Chert and siliceous ooze in core catcher; 1 m plus in Section 1
Total	11	345	88.1	85.7	99% recovery
Hole 72A	1	9-18	9.1	5.0	
	2	18-27	9.1	9.1	
	3	27-36	9.1	7.6	
	4	36-45	9.1	9.1	
	5	45-54	9.1	8.5	
	6	54-63	9.1	9.1	
Total	6	54	54.9	48.5	89% recovery
Site Total	17	345	143.0	134.2	93% recovery

meters) of grayish calcareous ooze; and the Line Islands Oceanic Formation (339 to 345 meters) of nannofossil-radiolarian ooze, interbedded silicified limestone and nannofossil ooze, and chert.

Clipperton Oceanic Formation

The Clipperton Oceanic Formation is composed of two units at Site 72. The upper cyclic unit consists of white calcareous oozes alternating with light brown calcareous oozes from the sea floor to a depth of 34.5 meters. The contacts between the two types of beds are sharp. The compositional alternations in this cyclic unit at Site 72 are not as marked as they are at Sites 69, 70 and 71. The unit is all radiolarian-nannofossil ooze, however, the light brown beds are slightly less calcareous (70 to 80 per cent) than the white beds (80 to 90 per cent). The average composition of the cyclic unit is predominantly calcareous nannoplankton (80 per cent) with Radiolaria (15 per cent) and rare diatoms, sponge spicules, sea urchin spines, fish remains, and silicoflagellates. The unit is Quaternary and Pliocene in age. The contact of the cyclic unit with the underlying varicolored unit is sharp and is placed at the top of the uppermost pastel-hued bed.

The varicolored unit of the Clipperton Oceanic Formation (34.5 to 180 meters) is distinguished mainly by its pastel colors. Compositionally it is mostly radiolarian-nannofossil ooze as are the beds of the overlying cyclic unit and the underlying Marquesas Oceanic Formation. The varicolored unit is composed predominantly of calcareous nannoplankton (75 to 85 per cent) with Radiolaria (15 to 25 per cent) and rare foraminifera, diatoms, sea urchin spines, and fish debris. The characterizing colors are pastel hues of bluish and greenish white and purple, generally in sharp contact where the bedding is undisturbed by coring. No compositional differences were noted among the various colored beds making up the unit. The varicolored unit is Pliocene and Miocene in age. The contact with the underlying Marquesas Oceanic Formation falls in the uncored interval between 159 and 211 meters and is tentatively placed at 180 meters. It is probably transitional near the base of the middle Miocene.

Marquesas Oceanic Formation

The Marquesas Oceanic Formation at Site 72 from 180 to 339 meters is a relatively homogeneous highly calcareous (mostly 85 to 95 per cent) nannoplankton ooze, grading in some horizons to foraminiferal-nannofossil ooze. The oozes of the Marquesas Oceanic Formation are white to light gray and display no bedding except for alternating plastic and somewhat firmer horizons. The average composition of the formation is predominantly calcareous nannoplankton (85 to 95 per cent) with Radiolaria (1 to 10 per cent) and rare foraminifera, diatoms, and fish debris. At 328 and 333 meters the oozes are richer in foraminifera (20 to 30 per cent). At 312 meters, two thin layers of chert, 6 and 7 centimeters in thickness, are interbedded with upper Oligocene nannofossil ooze.

The base of the formation (335.6 to 339 meters) consists of slightly darker, brownish-white ooze compositionally similar to the white oozes but of slightly lower calcium carbonate ($CaCO_3$) content. The contact at 335.6 meters is sharp and corresponds to a hiatus in the lower Oligocene.

The Marquesas Oceanic Formation is early Miocene and Oligocene in age. The basal contact with the underlying Line Islands Oceanic Formation is sharp and is a disconformity corresponding to the Oligocene-Eocene boundary.

Line Islands Oceanic Formation

The upper portion (339 to 344 meters) of the Line Islands Oceanic Formation at Site 72 consists of homogeneous, stiff, yellowish-brown nannofossil-radiolarian ooze. The sediment is composed predominantly of Radiolaria (50 to 70 per cent) with calcareous nannoplankton (30 to 45 per cent) and diatoms (1 to 10 per cent).

The lower portion (344 to 345 meters) is mainly silicified limestone interbedded with nannofossil ooze. The dark, yellowish-brown silicified limestone layers are thin (5 to 9 centimeters) and become more siliceous toward the bottom of the hole with pods of opaline silica replacing areas of carbonate. The lowermost indurated layer is 5 centimeters of black chert containing much iron oxide. Drilling terminated in this layer. The interbedded nannofossil oozes (80 to 90 per cent $CaCO_3$) are semi-indurated, light gray to very dark grayish brown, and are bedded having a somewhat shaly aspect. They contain small amounts of Radiolaria.

The Line Islands Formation at Site 72 is late and possibly middle Eocene in age.

Figure 6 is a plot of age versus depth, based on the biostratigraphic zonations of the foraminifera, nannoplankton, and Radiolaria, with the time scale, in millions of years, based on that of Berggren (1969).

PHYSICAL PROPERTIES

Porosities range from less than 40 to about 75 per cent, and velocities range between about 1.45 and 1.59 km/sec. The calcium carbonate ($CaCO_3$) content is high and most of the velocity-porosity data lie near the theoretical curve for a grain-matrix density of 2.65 g/cm^3 (Figure 2). The sediment showing very low

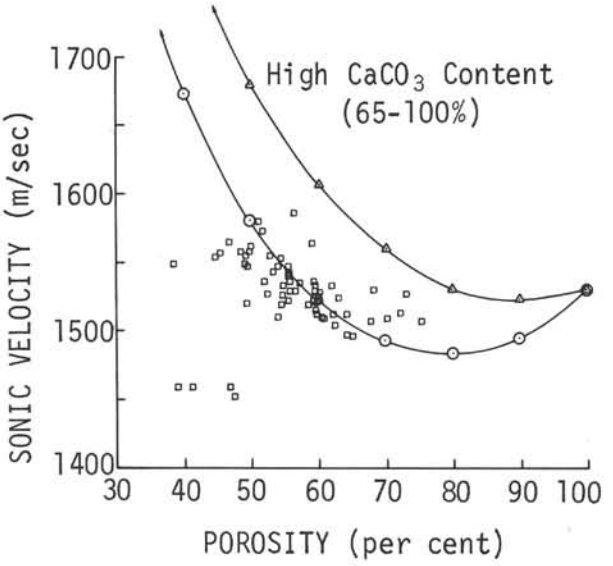


Figure 2. *Sonic velocity versus porosity of unlithified sediments for Site 72. No measured sediments contained less than 63 per cent calcium carbonate. Theoretical curves are based on the equation of Wood (1941). Upper curve, grain-matrix density 2.2 g/cm^3, appropriate for siliceous ooze. Lower curve, grain-matrix density 2.65 g/cm^3, appropriate for calcareous ooze.*

velocities (about 1.45 km/sec) near 40 to 50 per cent porosity probably contained some gas (or air). Sonic velocities are near that for sea water at a depth of 200 meters, and less at shallower depth (Figure 7, Chapter 2).

Velocities and densities were determined for several pieces of chert (Chapter 2). The highest velocity measured for this site, 5.04 km/sec, was for a sample with density 2.53 g/cm^3.

Thermal conductivities measured for this site are given in Chapter 18.

Results of grain-size and carbon-carbonate analyses are tabulated in Appendices II and III, respectively.

PALEONTOLOGY

Foraminifera

In Hole 72, six spot cores were taken while drilling down to 312 meters. Continuous coring was then carried out from the Oligocene into the Eocene (Cores 7 to 11). Hole 72A was subsequently drilled and six continuous cores taken in order to get a complete record of the Quaternary and Pliocene. This location had been chosen in an area where the thickest subsea sediments had been indicated by preliminary reflection profiling. This was confirmed by the drilling, at least for the younger part of the Neogene: the thickness of the Upper Miocene, Pliocene and Quaternary combined is at Site 72 a maximum for all Leg 8 drilling locations (see Figure 1, Chapter 11). The Oligocene, on the other hand, is abnormally thin because of an unconformity which cuts out the entire *Globigerina ampliapertura* Zone (P. 20).

The percentages of calcareous microfossils in the samples are generally rather high. Predominantly siliceous faunas are restricted to parts of the Upper Miocene (Core 72-3) and the top of the Eocene (Cores 72-9, lower part, and 72-10).

The Quaternary faunas can be dated by *Globorotalia truncatulinoides* and *Pulleniatina finalis* and are found down to 72A-1-4, 15 centimeters (0 to 17 meters). *Pulleniatina* spp. are abundant throughout the Quaternary, and the coiling change from random to dextral is found at the top of Section 72A-1-2. A little higher, at the very bottom of Core 72-1, there is a sudden downward increase in the frequency of *Sphaeroidinella dehiscens*, similar to the one recorded by Hays *et al.* (1969).

The Pliocene extends from the core catcher sample of 72A-1 down to 72A-5-5 (17 to 52 meters). The stratigraphic sequence of the planktonic foraminifera is normal and follows the pattern outlined by Parker (1967), Blow (1969) and Hays *et al.* (1969). The depths of the important boundaries are as follows:

Base N. 21 (earliest *Globorotalia tosaensis*) at 72A-3-6 (35 meters).

Base N. 20 (earliest *Globorotalia pseudopima*) at 72A-4-5 (43 meters).

Base N. 19 (earliest *Sphaeroidinella dehiscens*) at 72A-5-5 (52 meters).

There is a short overlap of the ranges of *Globoquadrina altispira altispira* and *Globorotalia tosaensis* at 72A-3-6. The highest *Sphaeroidinellopsis* was found in the core catcher sample of 72A-4. *Globorotalia margaritae*, an important zonal marker of Bolli and Bermudez (1965), was seen only in one sample in Section 72A-5-2.

The highest Miocene zone (N. 18) was entered at 72A-5-6 (52 meters). The earliest *Globorotalia tumida* was seen at 72-2-4 (66 meters), shortly before continuous coring was interrupted. The lowest part of Core 72-2 may therefore be in the next lower unit N. 16-17. The remainder of the Miocene and the top part of the Oligocene were tested only with spot cores. The essential data are shown on Table 6.

Continuous cores are again available from 312 meters to total depth at 345 meters. Cores 72-7 and 72-8

include a fauna of the *Globorotalia opima opima* Zone (P. 21). The top of Core 72-9 contains already the highest *Pseudohastigerina barbadoensis*, indicating the lowest Oligocene unit P. 18-19. Between Cores 8 and 9 of Hole 72, the entire *Globigerina ampliapertura* Zone (P. 20) and probably parts of the overlying and underlying zones are therefore missing. The cause of this irregularity is a matter of speculation; it might be faulting or, more likely, an unconformity.

The base of the Oligocene is provisionally placed just above the core catcher sample of Core 72-9 (339 meters). This sample contains the highest *Spiroplectammina trinitatensis* and *Alabamina dissonata*, benthonic species which are usually recorded from the Eocene. The samples of the Eocene (339 to 345 meters) are badly contaminated with younger material. Only Core 72-11 contains reasonably good calcareous faunas. The concurrence of *Nuttallides truempyi* and *Catapsydrax dissimilis* indicates an interval P. 13 to P. 17 (upper Middle or Upper Eocene). The presence of *Anomalina dorri aragonensis* in Core 72-11 makes it probable that the top of the Middle Eocene was reached.

Calcareous Nannoplankton and Silicoflagellates

Calcareous nannoplankton occur in all sampled intervals at Site 72. Generally the floras are well preserved, but in the upper 65 meters there is much reworking. Forty-five species of nannoplankton and two species of silicoflagellates were found (Table 2, Figure 4). These permit the recognition of 15 zones ranging from Eocene to Recent in age.

Hole 72

Core 1-1 to 1-CC:	*Gephyrocapsa oceanica* and *Pseudoemiliania lacunosa* Zones
Core 2-1 to 2-3:	*Ceratolithus rugosus* Zone
Core 2-4 to 2-CC:	*Ceratolithus tricorniculatus* Zone
Core 3-1 to 3-CC:	*Discoaster calcaris* Zone
Core 4-1:	*Discoaster kugleri* Zone
Core 4-2 to 4-CC:	*Discoaster exilis* Zone
Core 5-1 to 5-CC:	*Sphenolithus heteromorphus* Zone
Core 6-1 to 6-CC:	*Triquetrorhabdulus carinatus* Zone
Core 7-1 to 8-2:	*Sphenolithus distentus* Zone?
Core 9-1 to 9-CC:	*Discoaster tani ornatus* Zone
Core 10-1 to 11-CC:	Middle Eocene

Hole 72A

Core 1-1 to 2-2:	*Gephyrocapsa oceanica* and *Pseudoemiliania lacunosa* Zones
Core 2-3 to 3-3:	*Discoaster brouweri* Zone
Core 3-4 to 4-5:	*Reticulofenestra umbilica* and *Discoaster surculus* Zones
Core 4-6 to 5-CC:	*Discoaster asymmetricus* Zone
Core 6-1 to 6-5:	*Ceratolithus rugosus* Zone
Core 6-6 to 6-CC:	*Ceratolithus tricorniculatus* Zone

Radiolaria

The top and bottom parts of the Site 72 section were cored continuously. Spot coring was carried out in the middle part of the section where cores were taken in the lower part of the Upper Miocene (*Ommatartus antepenultimus* Zone), the Middle Miocene (*Dorcadospyris alata* Zone), the upper part of the Lower Miocene (*Calocycletta costata* Zone), the lowermost Miocene (*Lychnocanium bipes* Zone) and Upper Oligocene (*Theocyrtis annosa* Zone).

The top part of the section contains sediments from the Quaternary through the uppermost Miocene (*Stichocorys peregrina* Zone). Radiolaria are numerous and moderately well preserved. All the zones proposed by Riedel and Sanfilippo (1970) for this interval were identified; however, most of the cores were disturbed in drilling and the exact location of stratigraphic boundaries is uncertain. In addition, reworked material from the lower part of the Upper Miocene is found in the cores from the uppermost Miocene (72A-5 and 72A-6).

The bottom part of the section contains sediments from the Upper Oligocene, Lower Oligocene and Upper Eocene. A large portion of the Upper-Lower Oligocene section is apparently missing between Cores 72-8 and 72-9. The Oligocene-Eocene boundary probably lies at the base of Core 72-9 or in 72-10. Unfortunately Core 72-10 was badly disturbed during coring. Cores 72-10 and 72-11 contain Radiolaria from the Upper Eocene.

Radiolarian tests show signs of corrosion in the Middle Miocene part of the section. The degree of preservation decreases down into the Upper Oligocene (Cores 72-7, -8) where the fauna is very poorly preserved. In the Lower Oligocene and uppermost Eocene the Radiolaria are again moderately well preserved. However, between and beneath the chert layers of Core 72-11, radiolarian tests are almost totally dissolved.

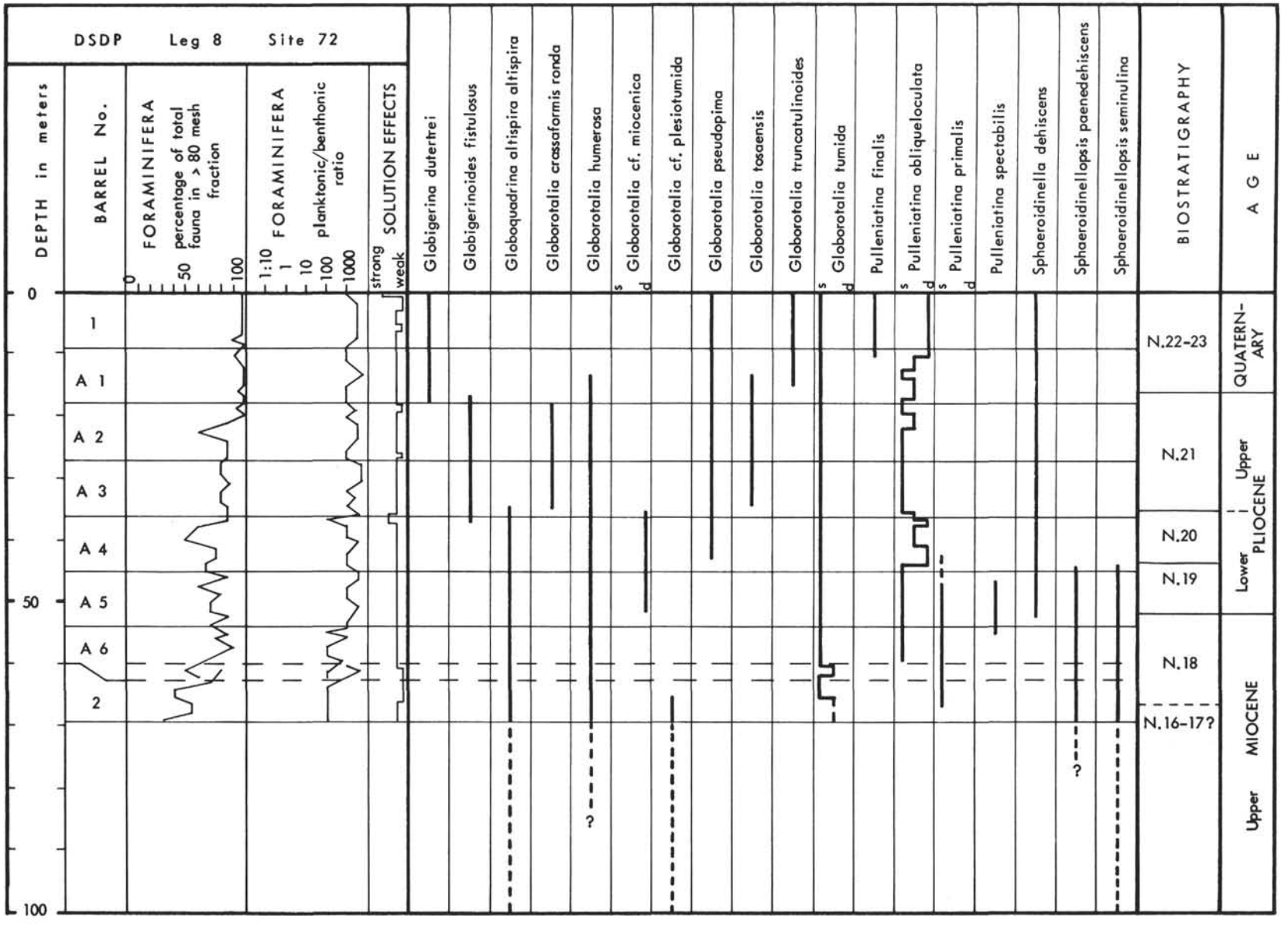
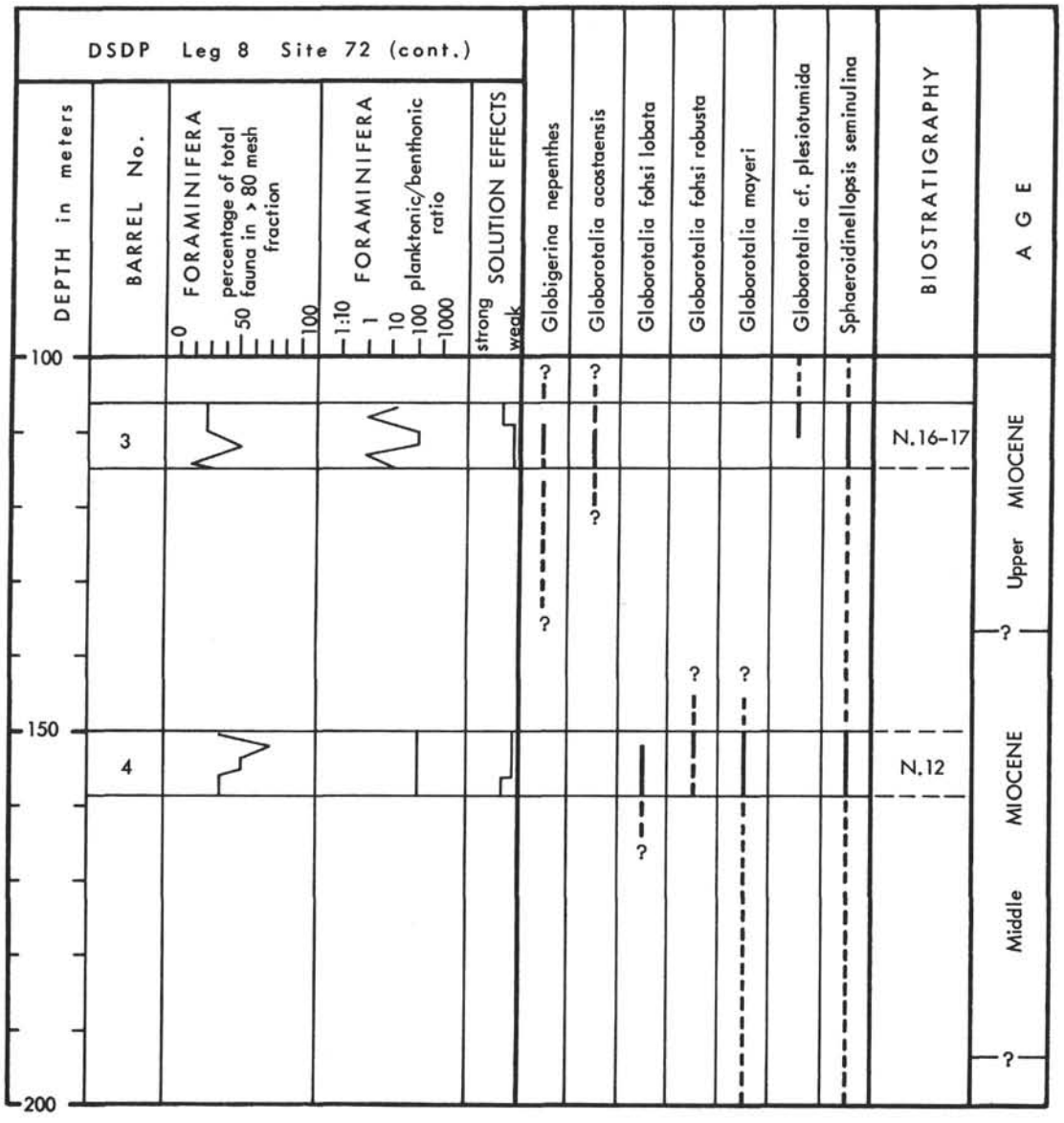


Figure 3. *Foraminifera of Site 72. Frequency distribution, ranges of important species and biostratigraphy.*



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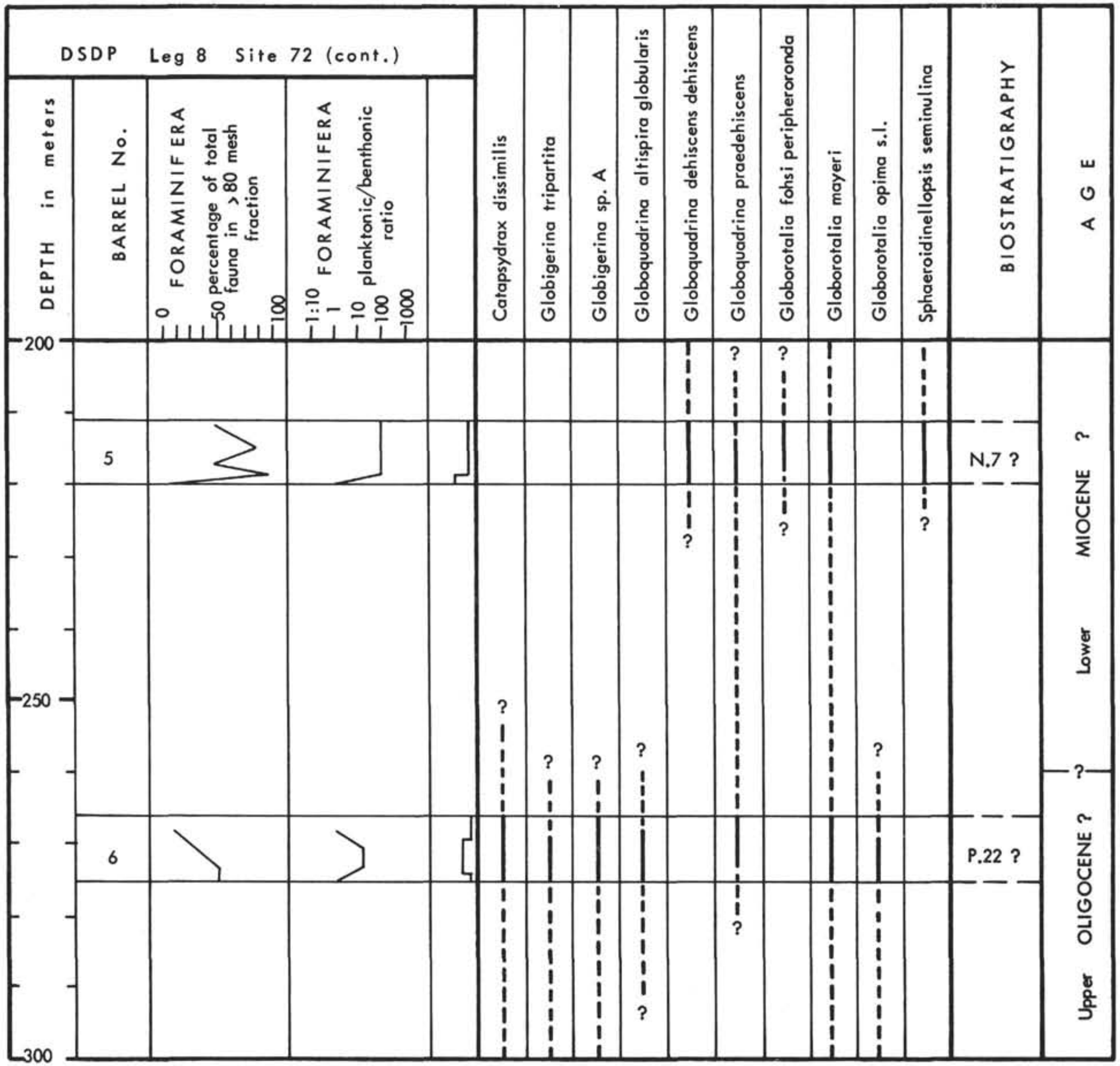

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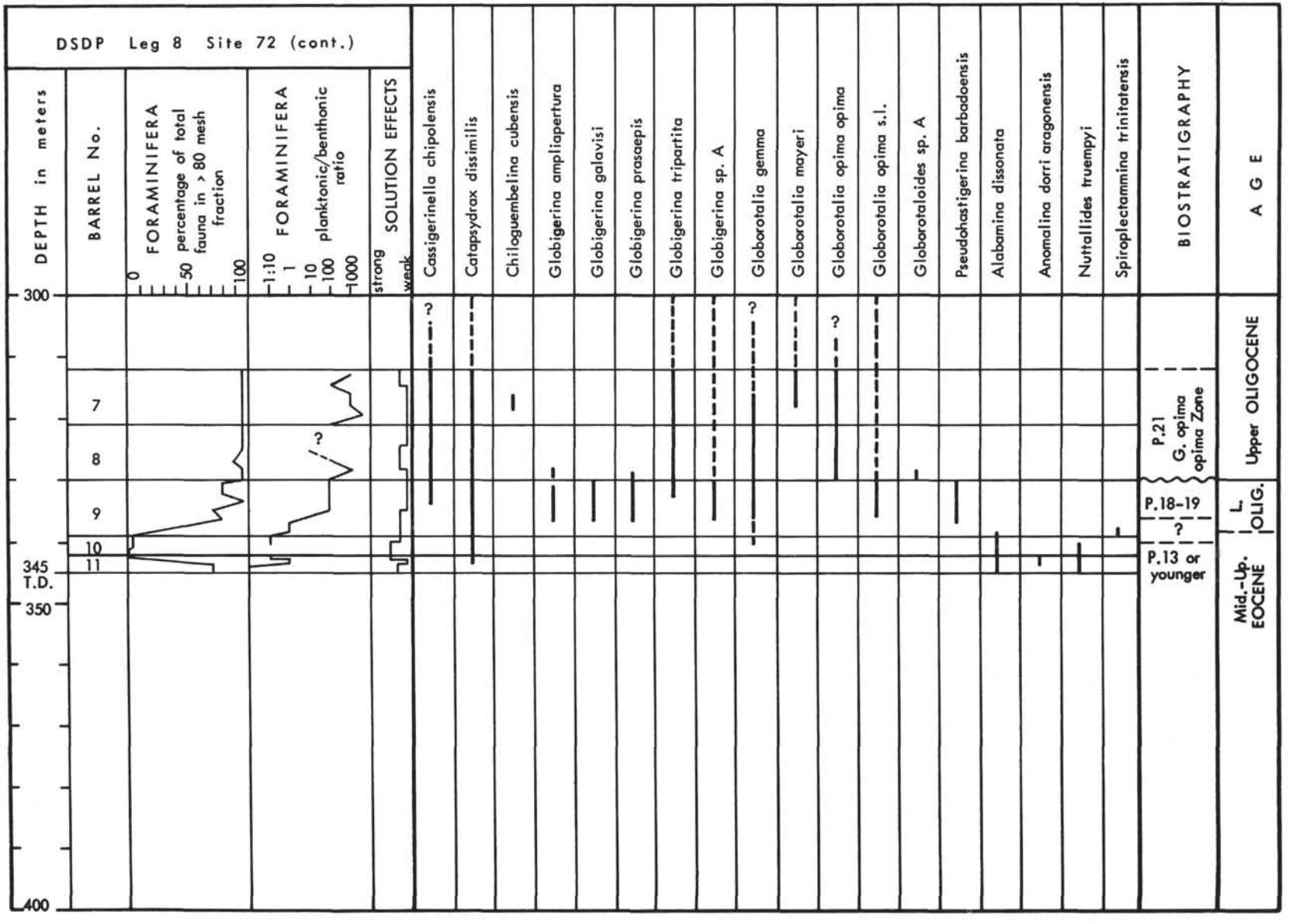

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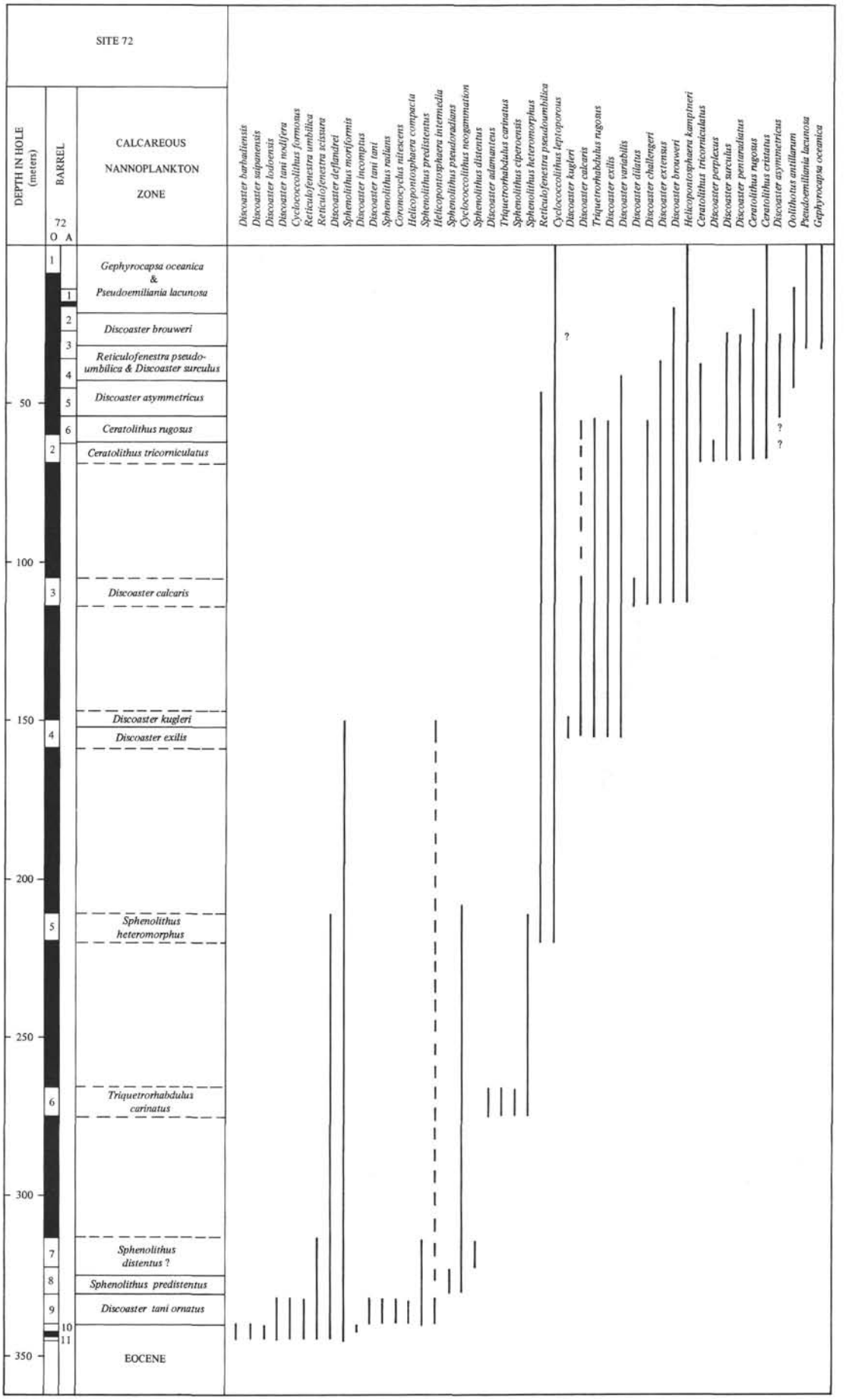


Figure 4. *Calcareous nannoplankton of Site 72. Distribution and biostratigraphy.*

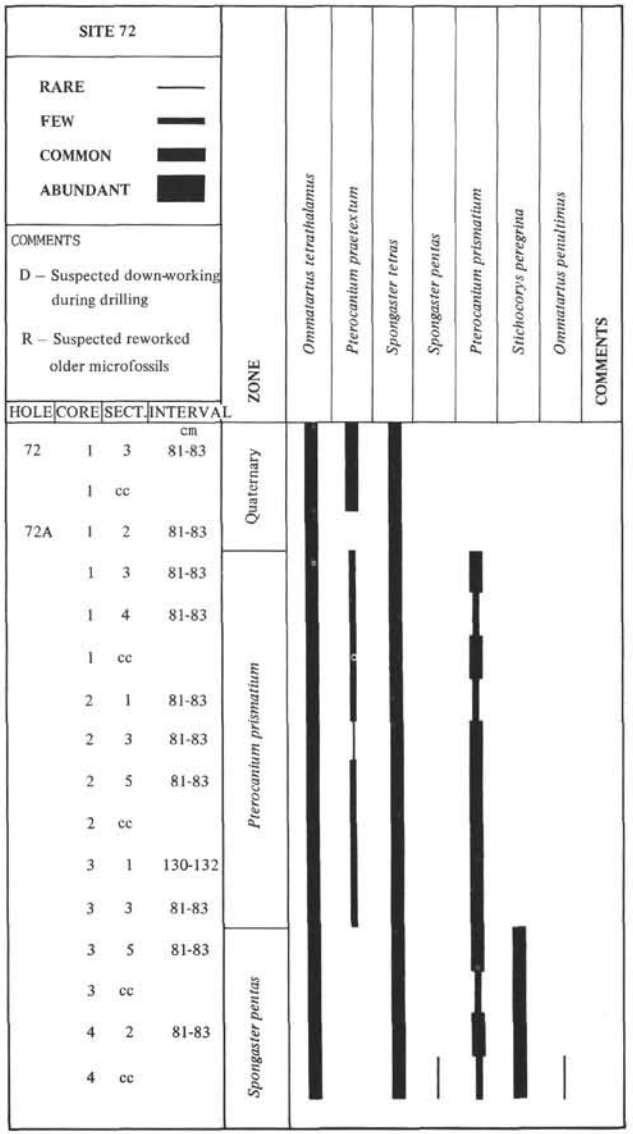
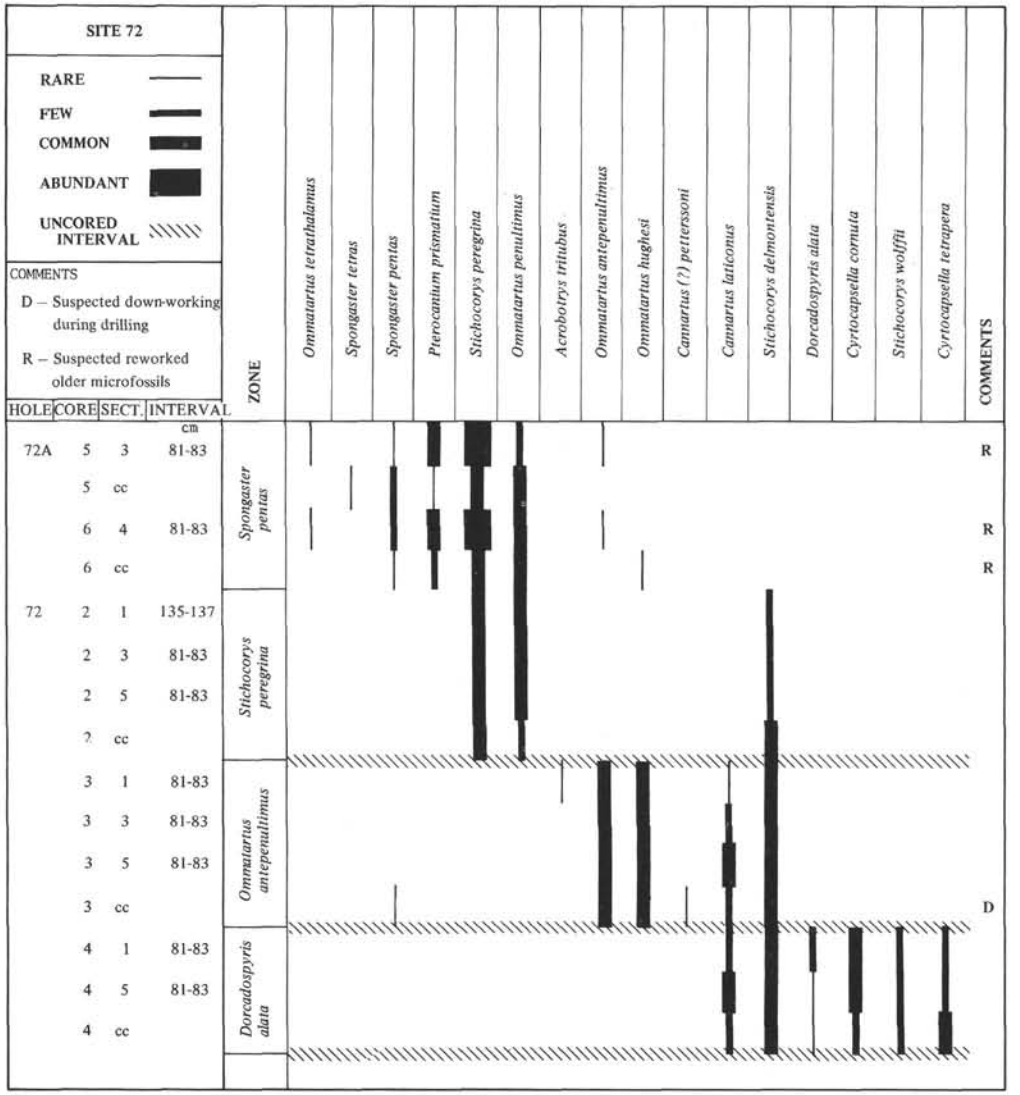


Figure 5. *Radiolaria at Site 72. Frequency, distribution and biostratigraphy.*



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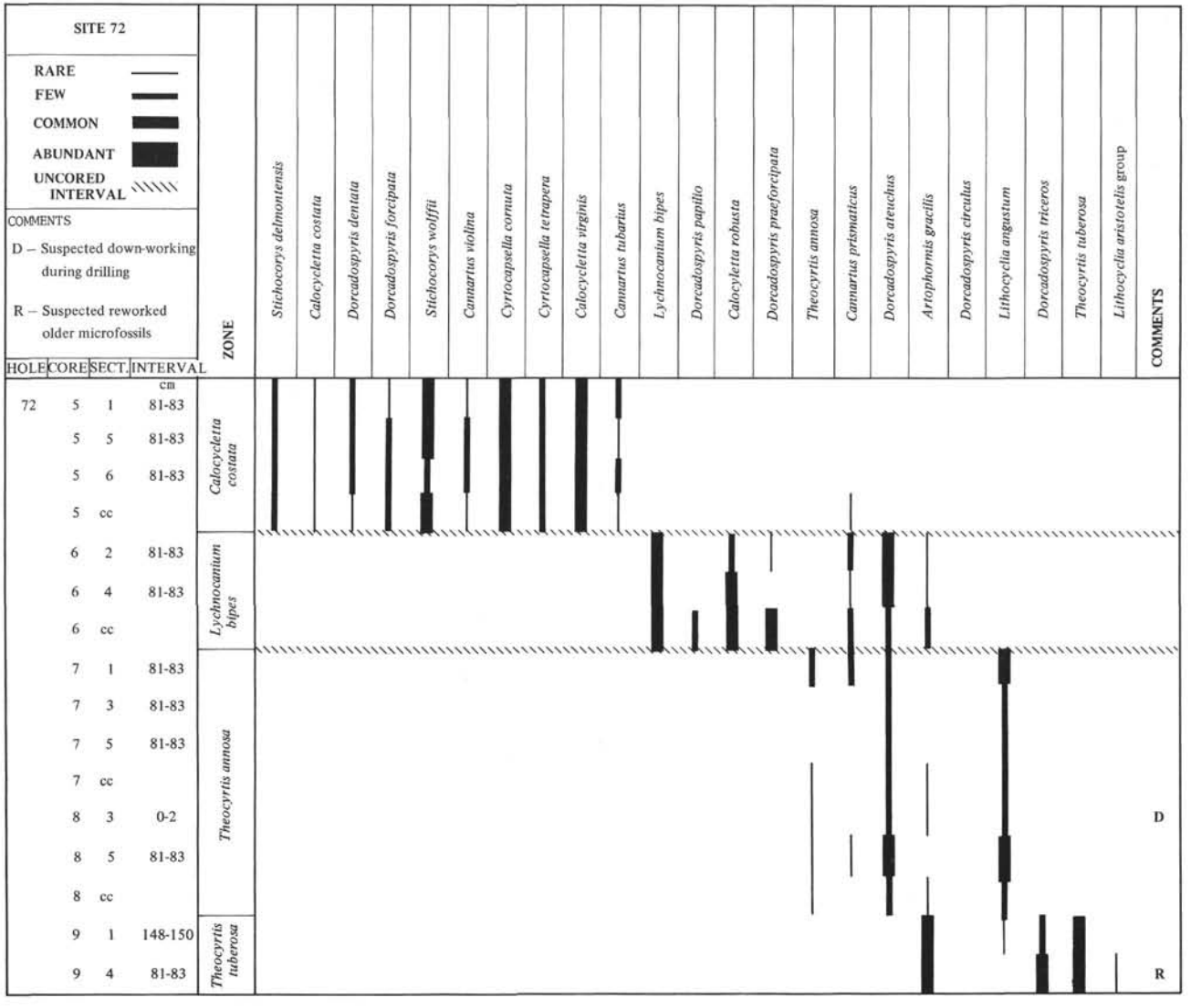

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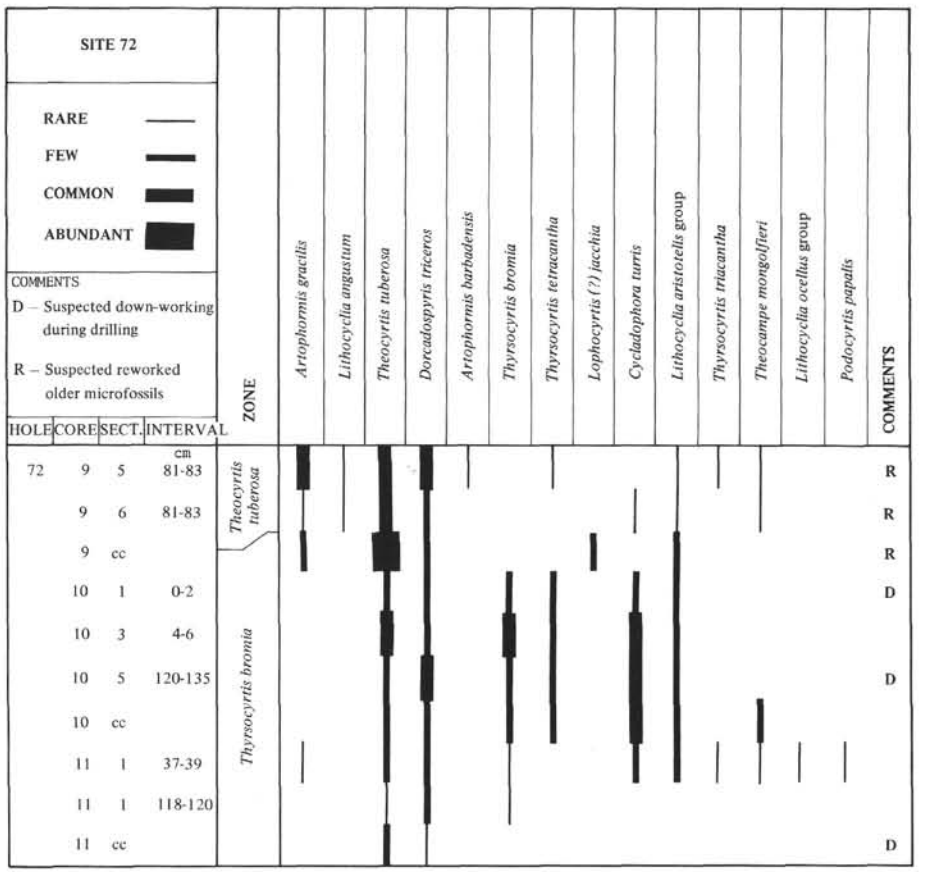

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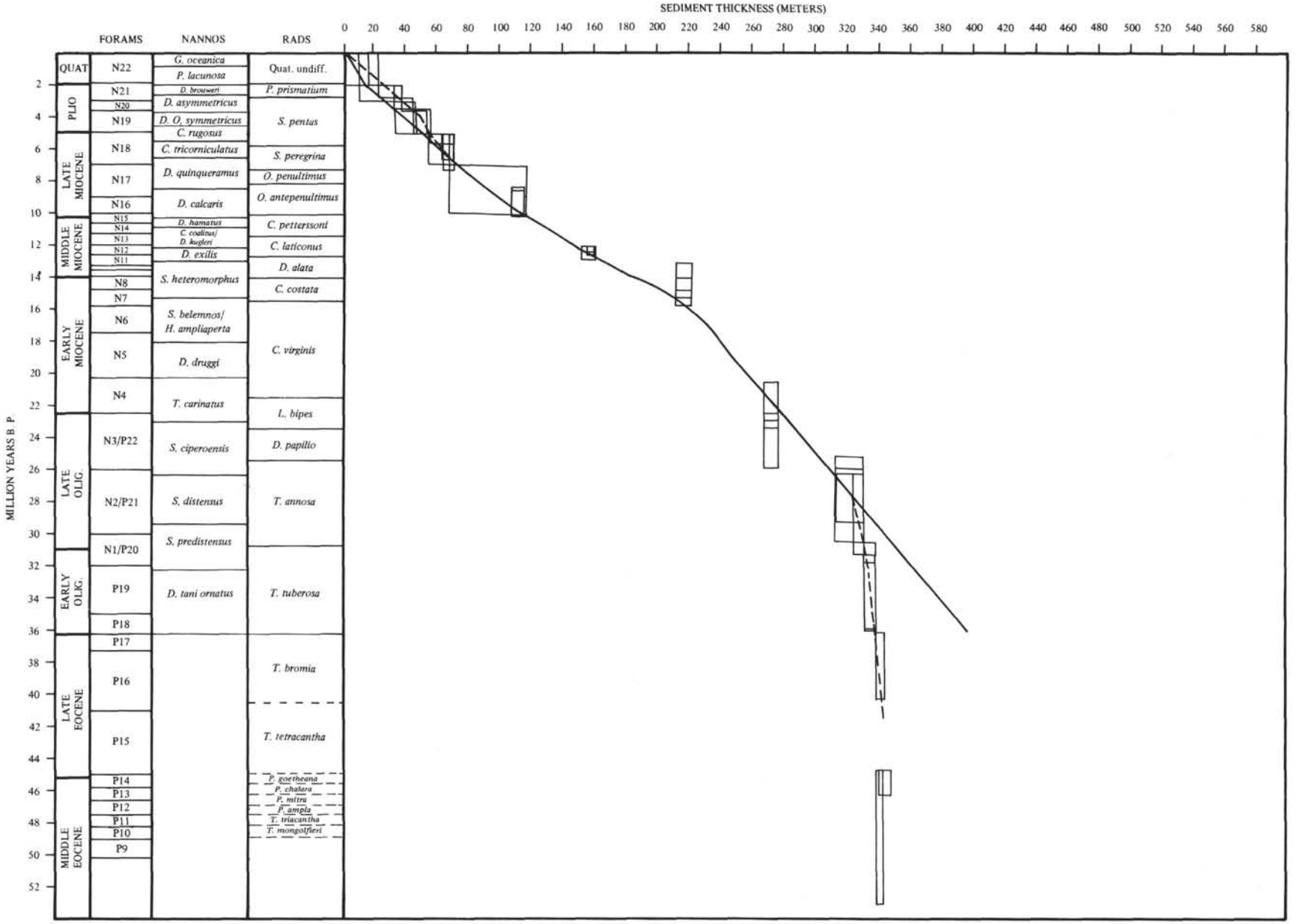

Figure 6. *Age versus depth at Site 72, based on the biostratigraphic zonations of the foraminifera, calcareous nannoplankton and Radiolaria. Ages based on the time scale of Berggren (1969).*

TABLE 2
Calcareous Nannoplankton and Silicoflagellate Occurrences at Site 72

Species	Occurrences (Hole/Core Nos.)
Calcareous Nannoplankton	
Ceratolithus cristatus Kamptner	72/1, 2; 72A/1-6
C. rugosus Bukry and Bramlette	72/2; 72A/2, 4-6
C. tricorniculatus Gartner	72/2; 72A/4, 5
Coccolithus bisectus (Hay, Mohler and Wade) as figured by Bramlette and Wilcoxon	72/7-11
Coronocyclus nitescens (Kamptner) Bramlette and Wilcoxon	72/6
Cyclococcolithus formosus Kamptner	72/9-11
C. leptoporus (Murray and Blackman) Kamptner	72/1-5; 72A/1-6
C. neogammation Bramlette and Wilcoxon	72/5-8
Discoaster adamanteus Bramlette and Wilcoxon	72/6
D. asymmetricus Gartner	72/2?; 72A/3-5, 6?
D. barbadiensis Tan Sin Hok	72/10, 11
D. brouweri Tan Sin Hok	72/2, 3; 72A/2-6
D. calcaris Gartner	72/3, 4; 72A/6
D. challengeri Bramlette and Riedel	72/3; 72A/6
D. deflandrei Bramlette and Riedel	72/5-11
D. dilatus Hay	72/3
D. exilis Martini and Bramlette	72/2-4; 72A/3
D. extensus Hay	72/3; 72A/4-6
D. incomptus Hay	72/10
D. kugleri Martini and Bramlette	72/4; 72A/3
D. ledoensis Bramlette and Riedel	72/10, 11
D. pentaradiatus Tan Sin Hok	72/2; 72A/3, 5, 6
D. perplexus Bramlette and Riedel	72/2
D. saipanensis Bramlette and Riedel	72/10, 11
D. surculus Martini and Bramlette	72/2; 72A/3-6
D. tani nodifer Bramlette and Riedel	72/9, 11
D. tani tani Bramlette and Riedel	72/9
D. variabilis Martini and Bramlette	72/2-4; 72A/4-6
Gephyrocapsa oceanica Kamptner	72/1; 72A/1-3
Helicopontosphaera compacta (Bramlette and Wilcoxon)	72/9
H. intermedia (Martini) Hay and Mohler	72/4, 9
H. kamptneri Hay and Mohler	72/1, 3; 72A/1-6
Oolithotus antillarum (Cohen) Cohen and Reinhardt	72A/1, 3, 4
Pseudoemiliania lacunosa (Kamptner) Gartner	72/1; 72A/1, 3
Reticulofenestra pseudoumbilica Gartner	72/2-5; 72A/5, 6
R. umbilica (Levin) Martini and Ritzkowski	72/9-11

TABLE 2 – *Continued*

Species	Occurrences (Hole/Core Nos.)
Sphenolithus ciperoensis Bramlette and Wilcoxon	72/6
S. distentus (Martini) Bramlette and Wilcoxon	72/7
S. heteromorphus Deflandre	72/5, 6
S. moriformis (Bronnimann and Stradner) Bramlette and Wilcoxon	72/4-11
S. predistentus Bramlette and Wilcoxon	72/7-9
S. pseudoradians Bramlette and Wilcoxon	72/8
S. radians Deflandre	72/8
Triquetrorhabdulus carinatus Martini	72/6
T. rugosus Bramlette and Wilcoxon	72/2-4; 72A/6
Silicoflagellates	
Dictyocha fibula Ehrenberg	72/3; 72A/5
Distephanus speculum (Ehrenberg) Haeckel	72A/5

Diatoms are frequently found in the Quaternary, Pliocene and uppermost Miocene parts of the section. They are common to abundant in the Lower Oligocene (72-9).

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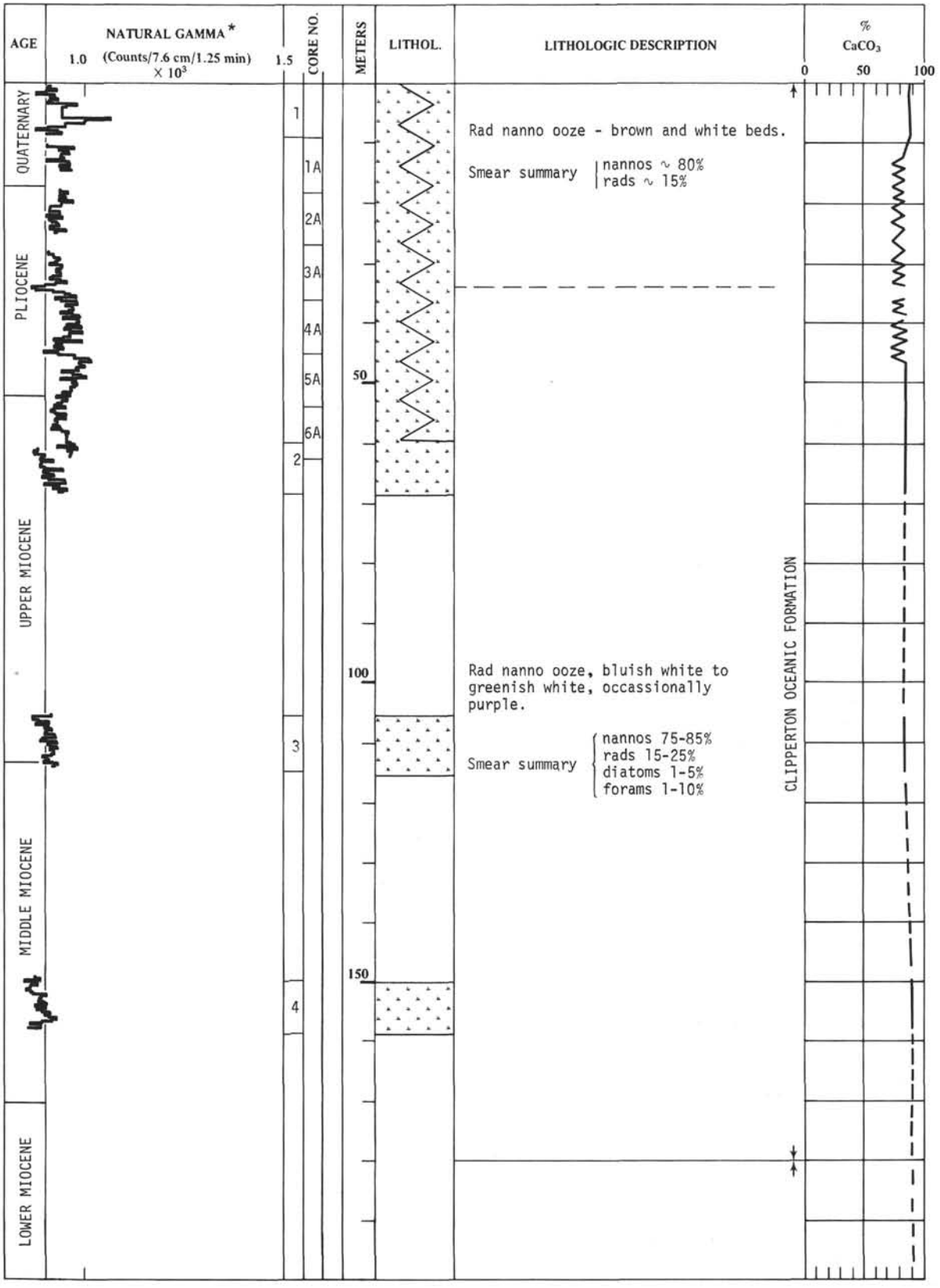
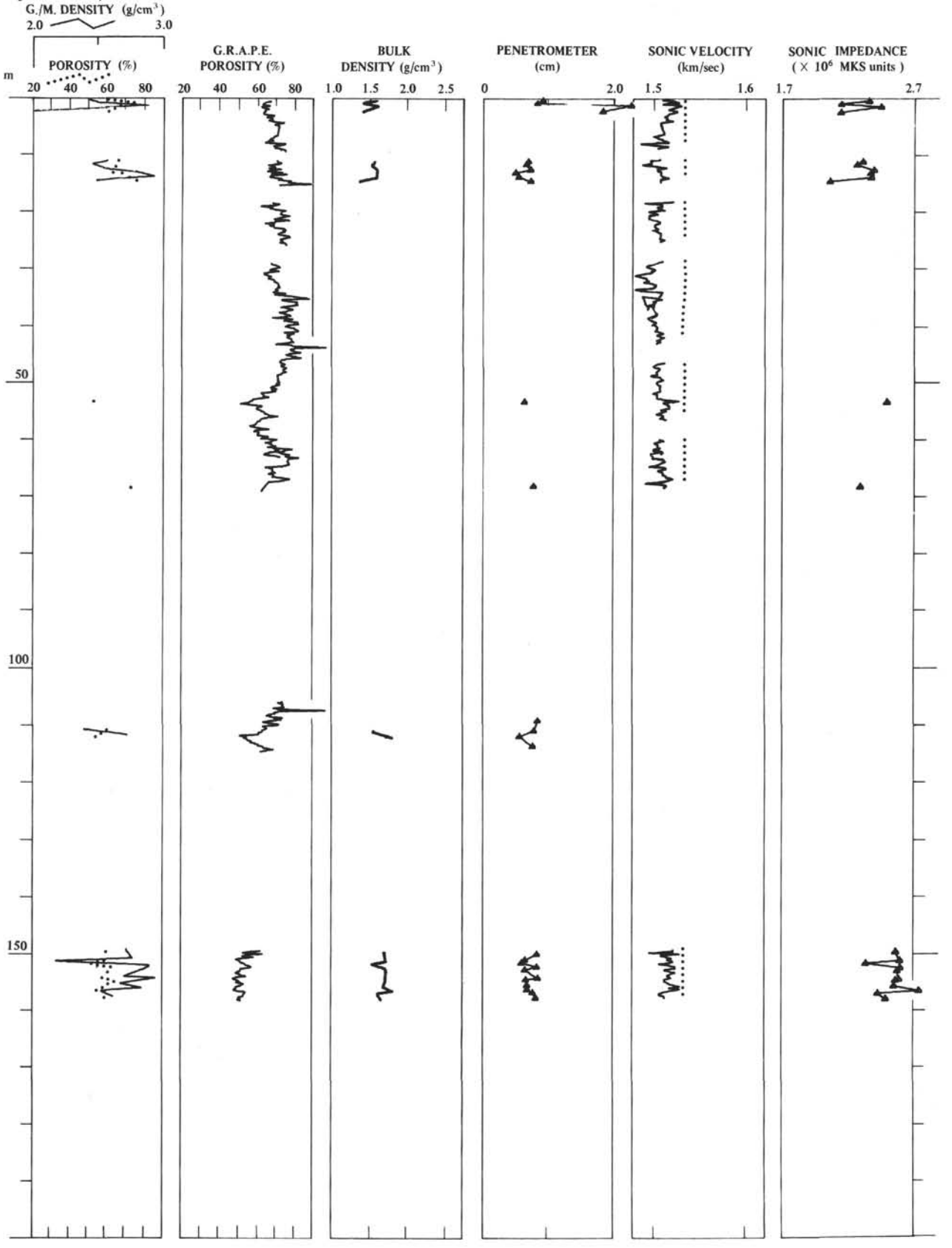
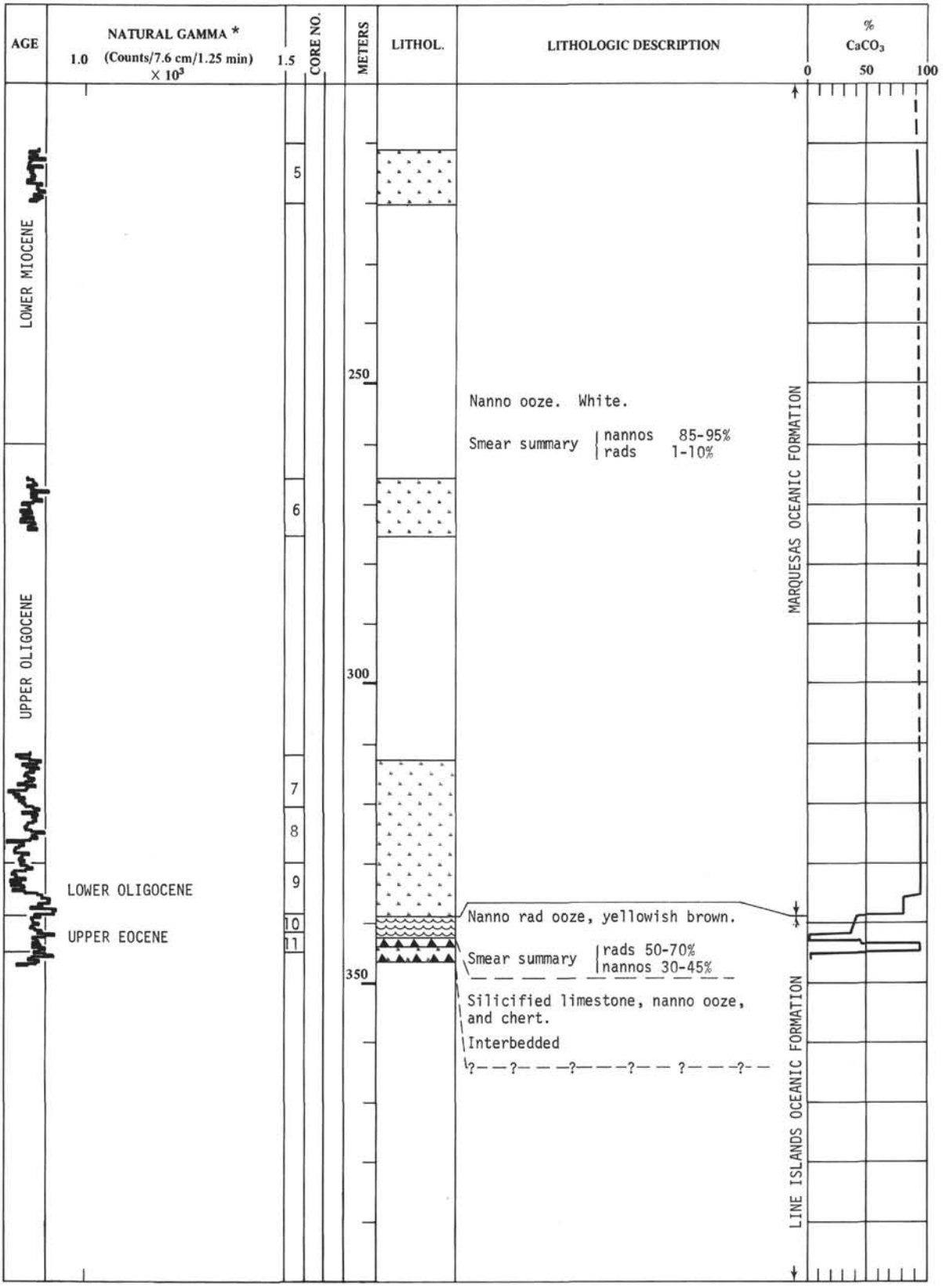
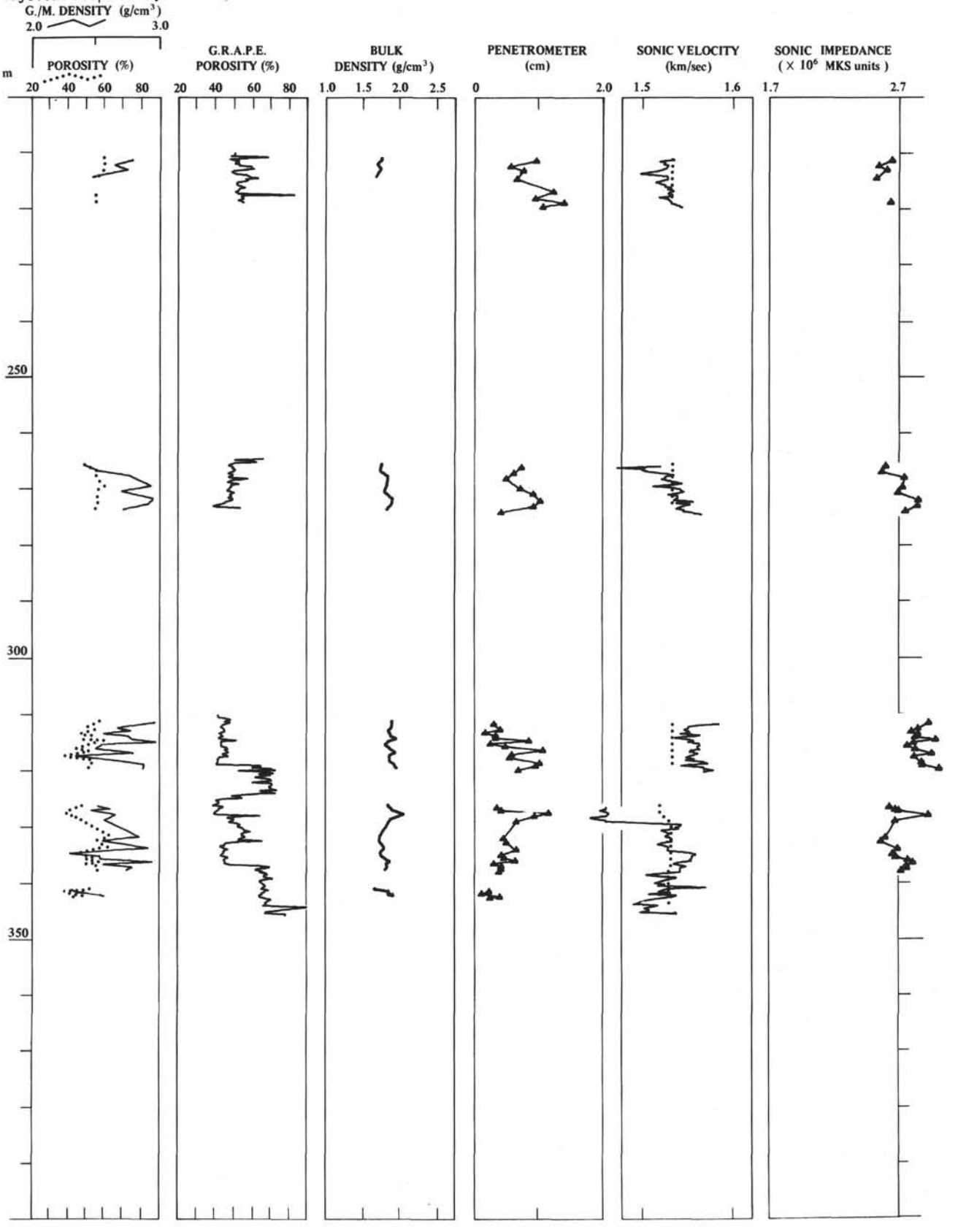

AGE
NATURAL GAMMA *
1.0 (Counts/7.6 cm/1.25 min) 1.5
× 10³
CORE NO.
METERS
LITHOL.
LITHOLOGIC DESCRIPTION
% CaCO₃
0 50 100
QUATERNARY
PLIOCENE
UPPER MIOCENE
MIDDLE MIOCENE
LOWER MIOCENE
1
1A
2A
3A
4A
5A
6A
2
3
4
50
100
150
Rad nanno ooze - brown and white beds.
Smear summary
nannos ~ 80%
rads ~ 15%
Rad nanno ooze, bluish white to greenish white, occassionally purple.
Smear summary
nannos 75-85%
rads 15-25%
diatoms 1-5%
forams 1-10%
CLIPPERTON OCEANIC FORMATION

Physical Properties, Site 72, 0-200 Meters

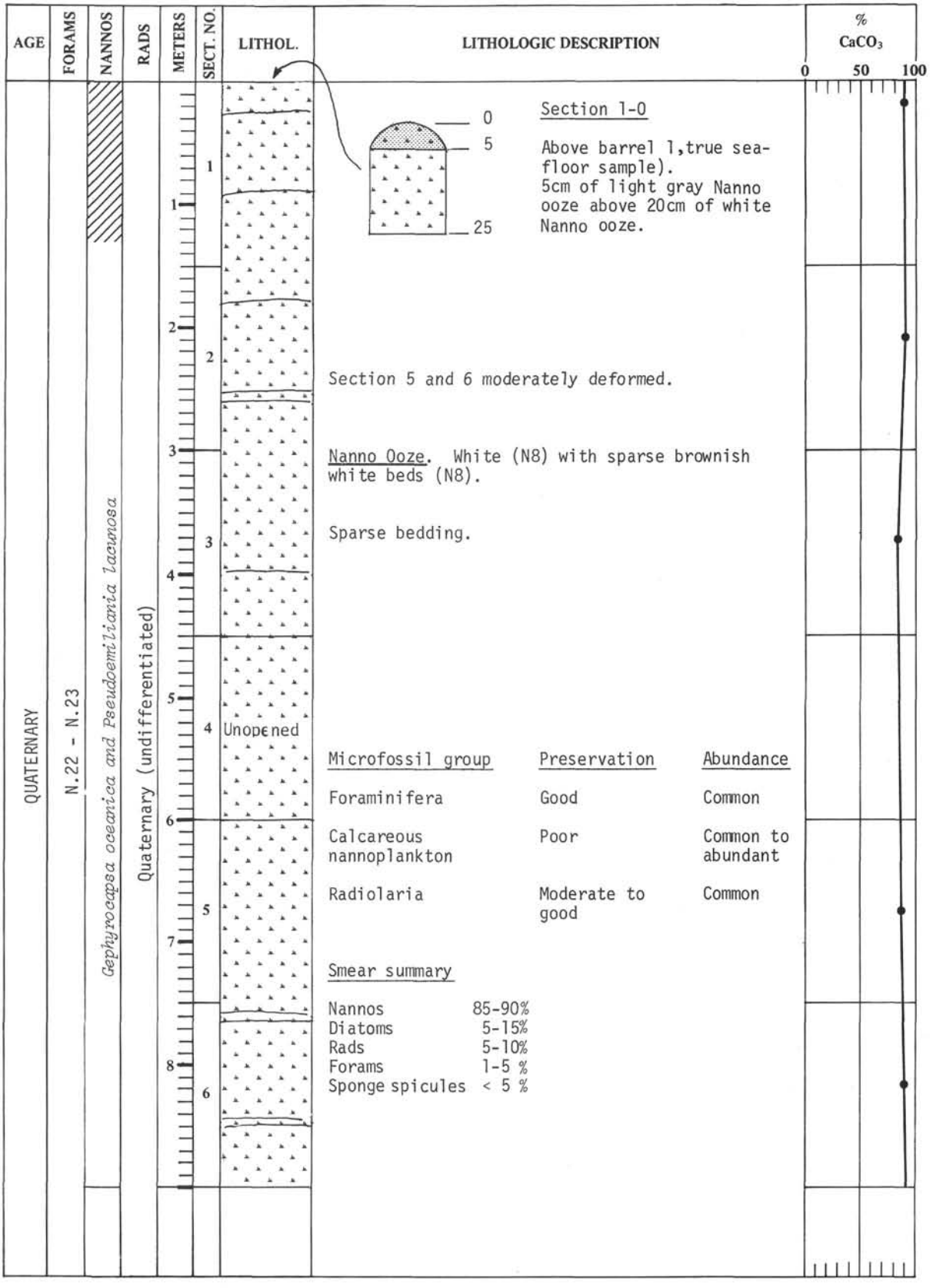



AGE
NATURAL GAMMA *
1.0 (Counts/7.6 cm/1.25 min) 1.5
× 10³
CORE NO.
METERS
LITHOL.
LITHOLOGIC DESCRIPTION
% CaCO₃
0 50 100
LOWER MIOCENE
UPPER OLIGOCENE
LOWER OLIGOCENE
UPPER EOCENE
5
6
7
8
9
10
11
250
300
350
Nanno ooze. White.
Smear summary | nannos 85-95%
| rads 1-10%
Nanno rad ooze, yellowish brown.
Smear summary | rads 50-70%
| nannos 30-45%
Silicified limestone, nanno ooze, and chert.
Interbedded
?--?---?---?--?---?--
MARQUESAS OCEANIC FORMATION
LINE ISLANDS OCEANIC FORMATION

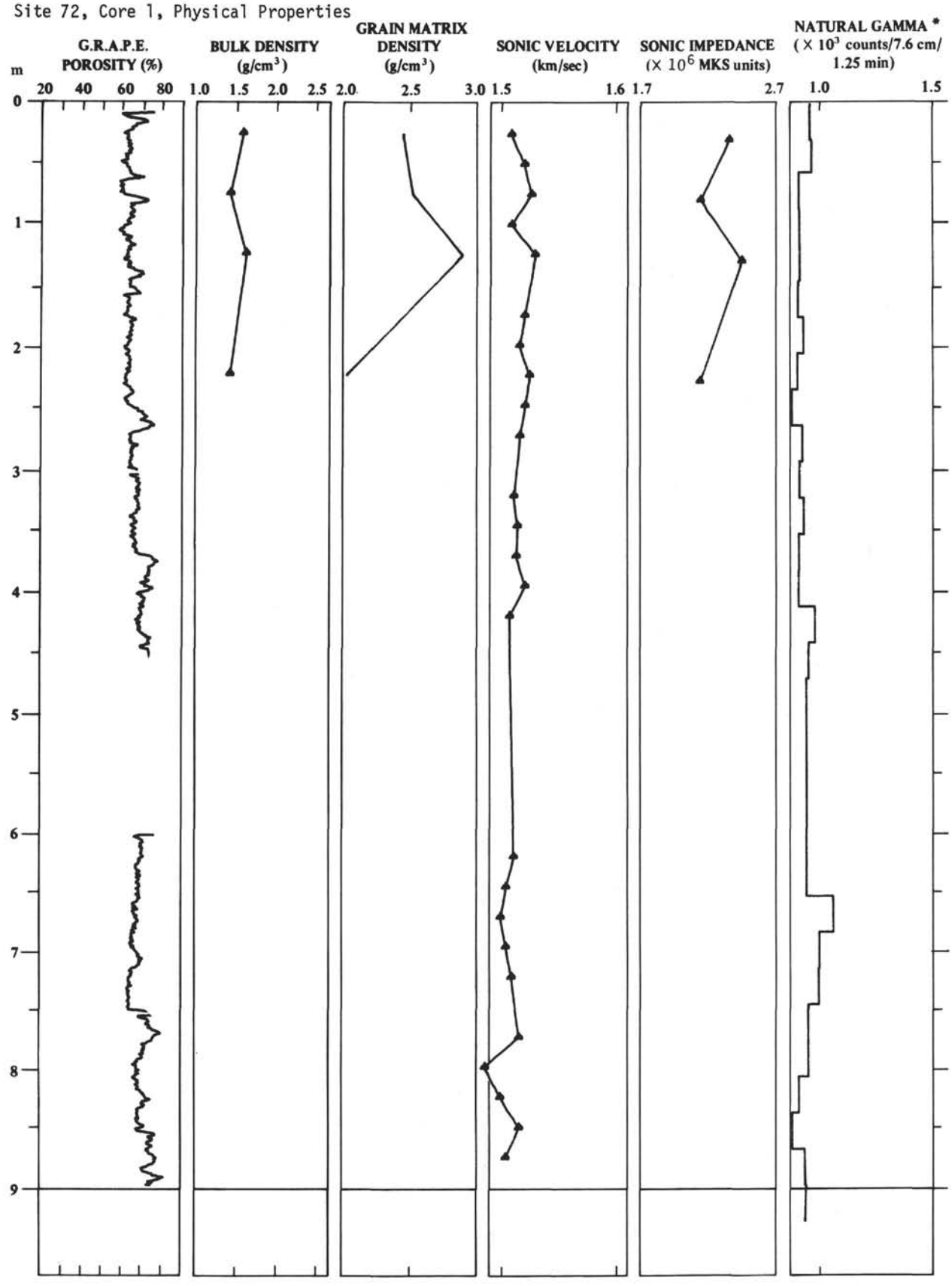
Physical Properties, Site 72, 200-400 Meters



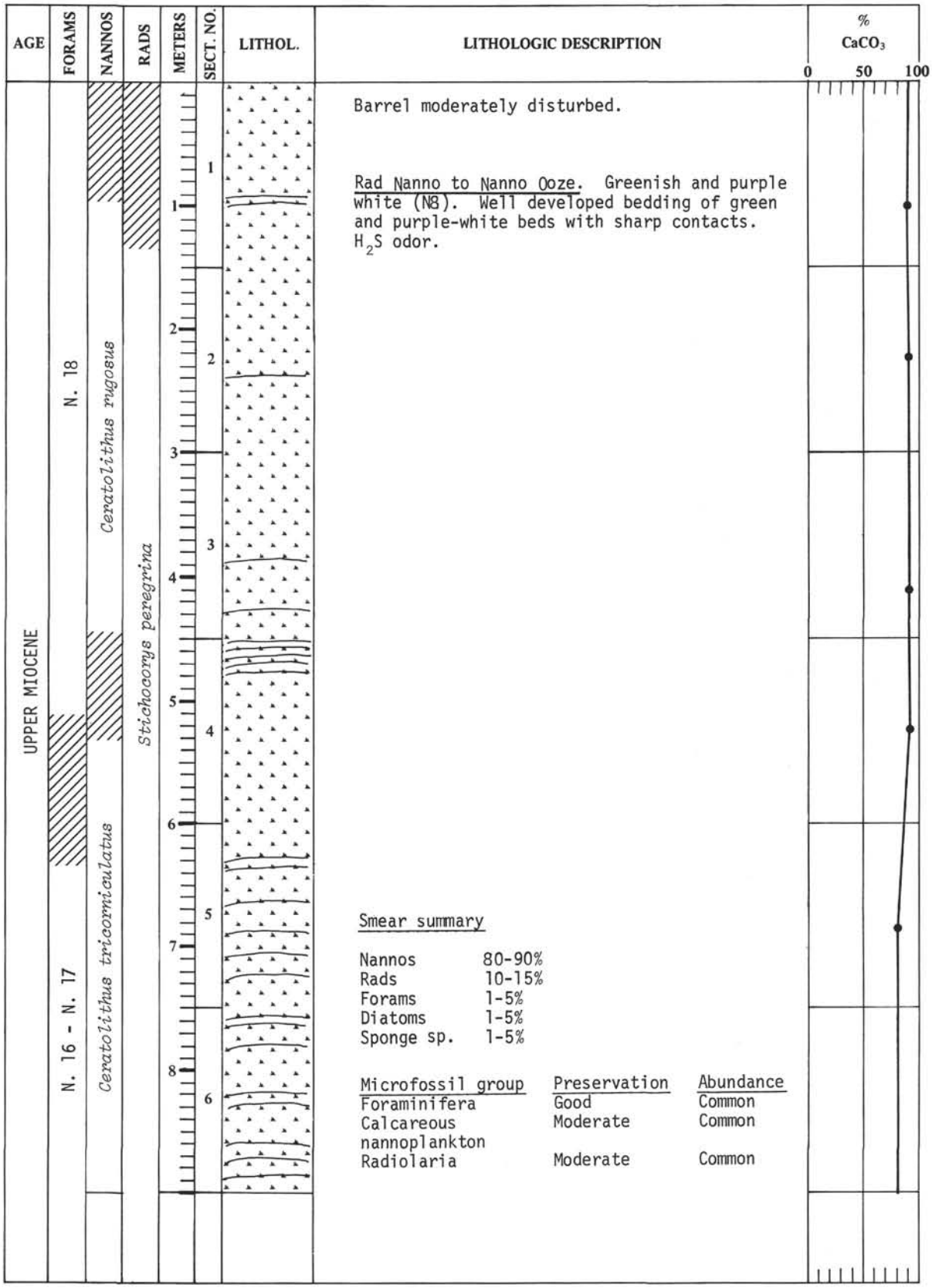
SITE 72 Core 1 Cored interval: 0-9 m



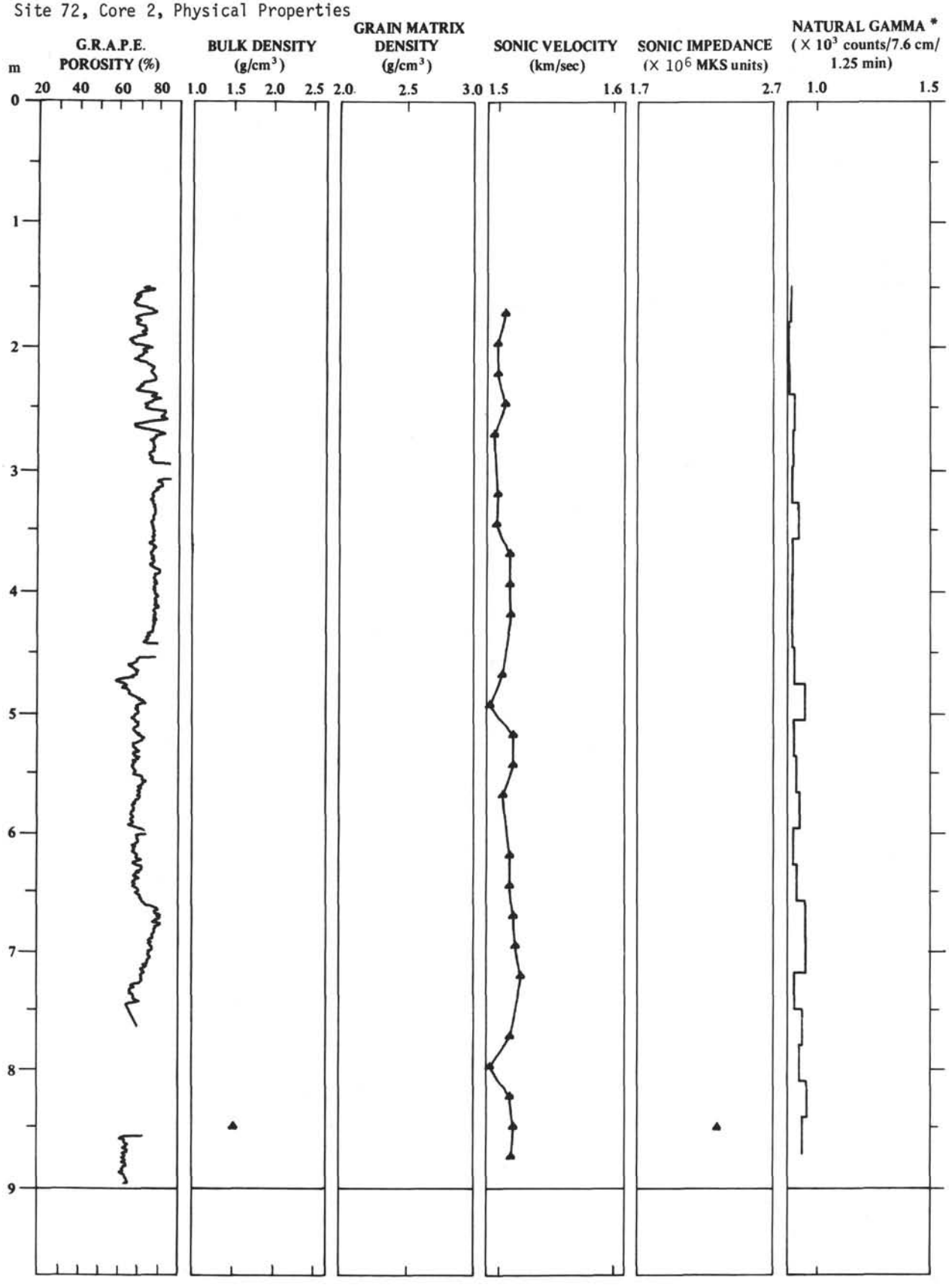
Site 72, Core 1, Physical Properties



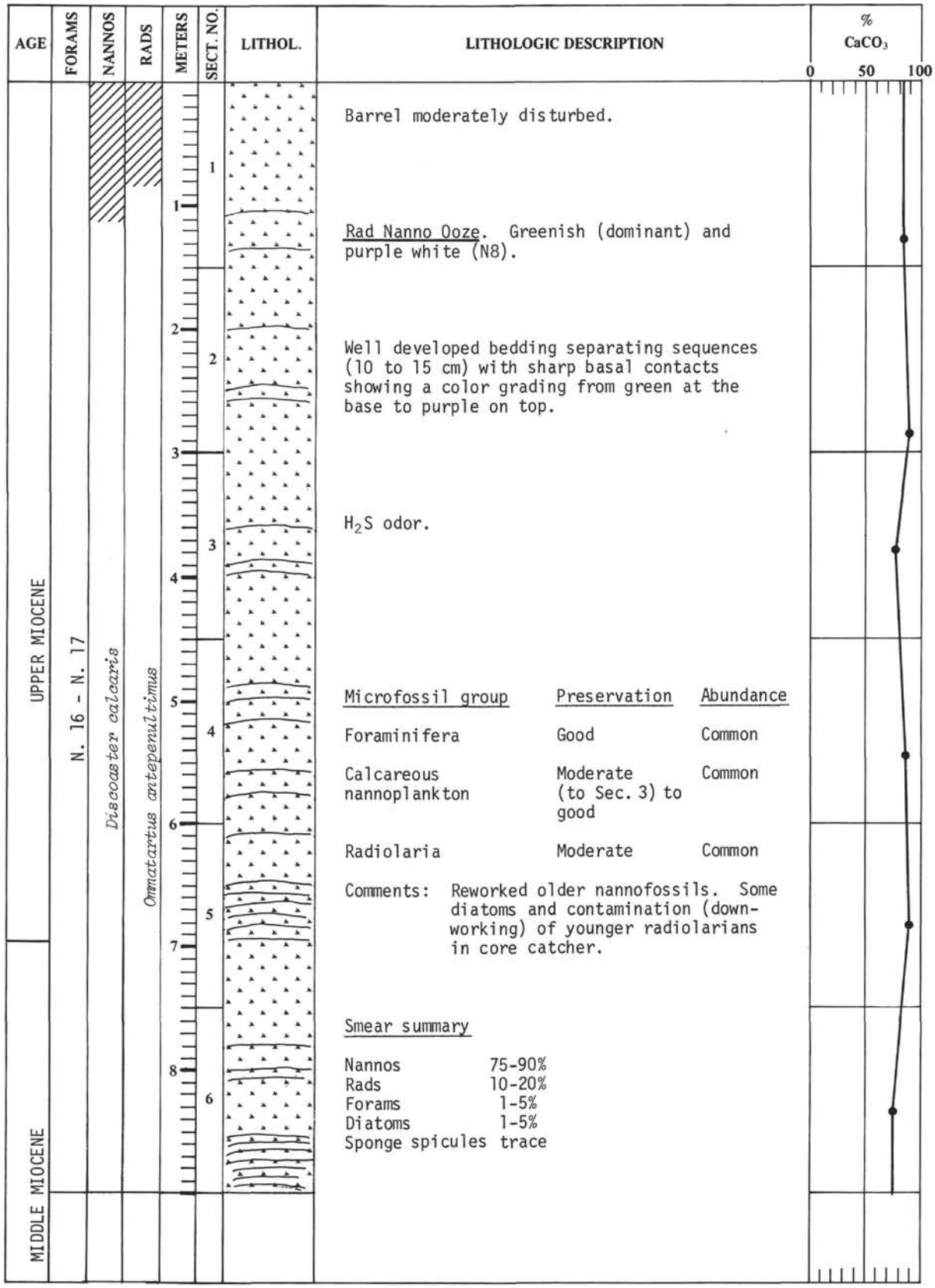
SITE 72 Core 2 Cored interval: 60-69 m



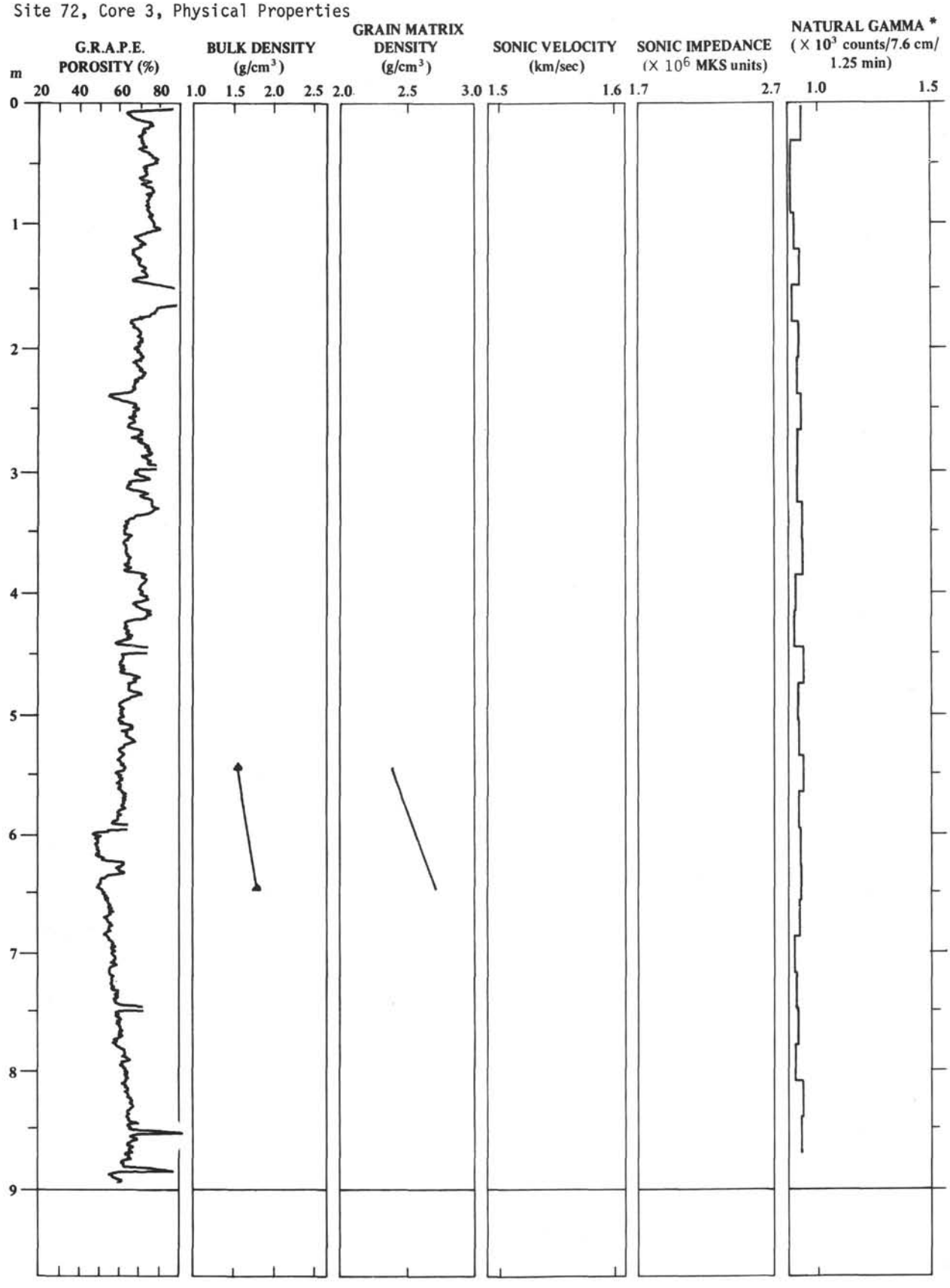
Site 72, Core 2, Physical Properties



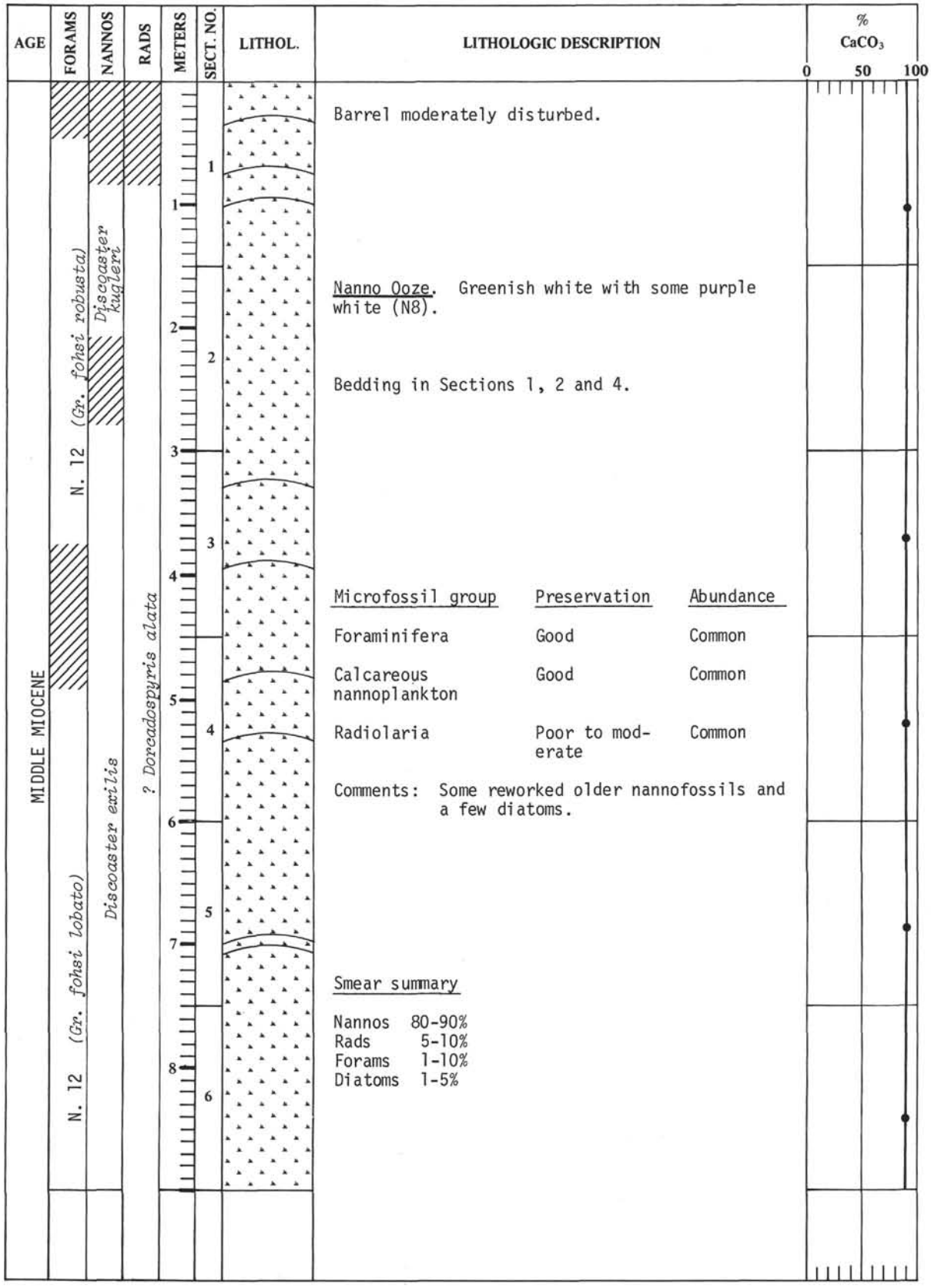
SITE 72 Core 3 Cored interval: 106-115 m



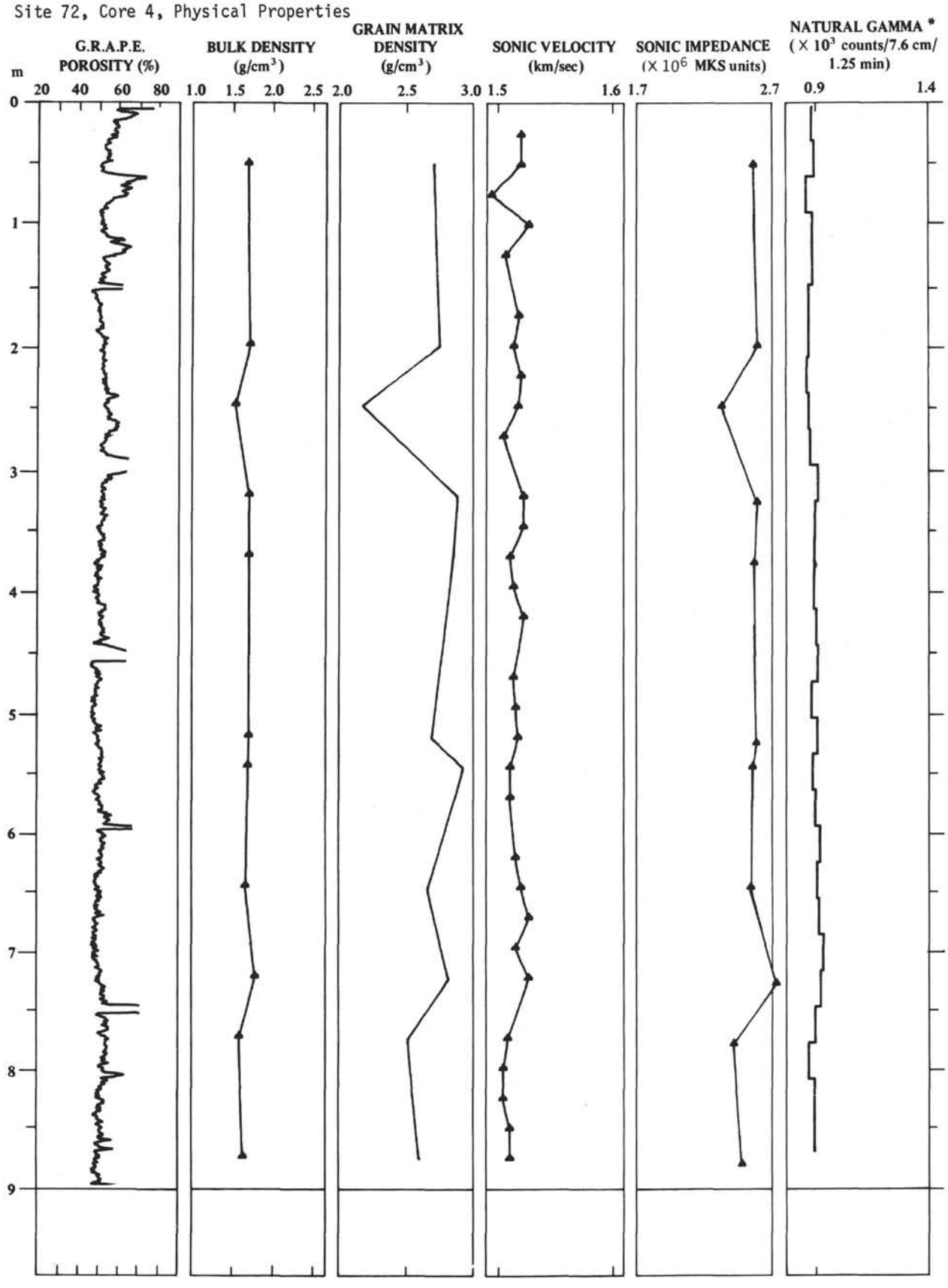
Site 72, Core 3, Physical Properties



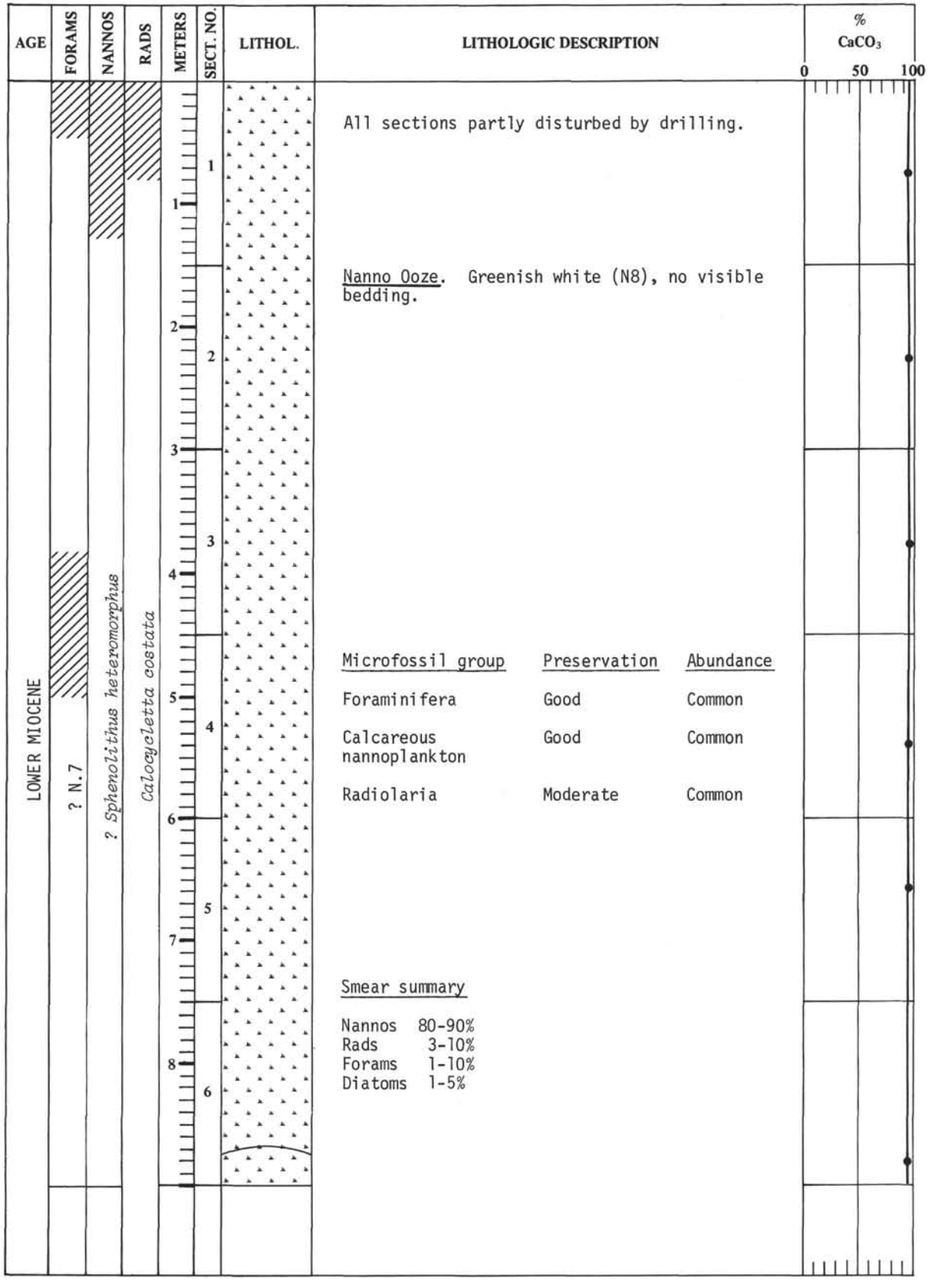
SITE 72 Core 4 Cored interval: 150-159 m



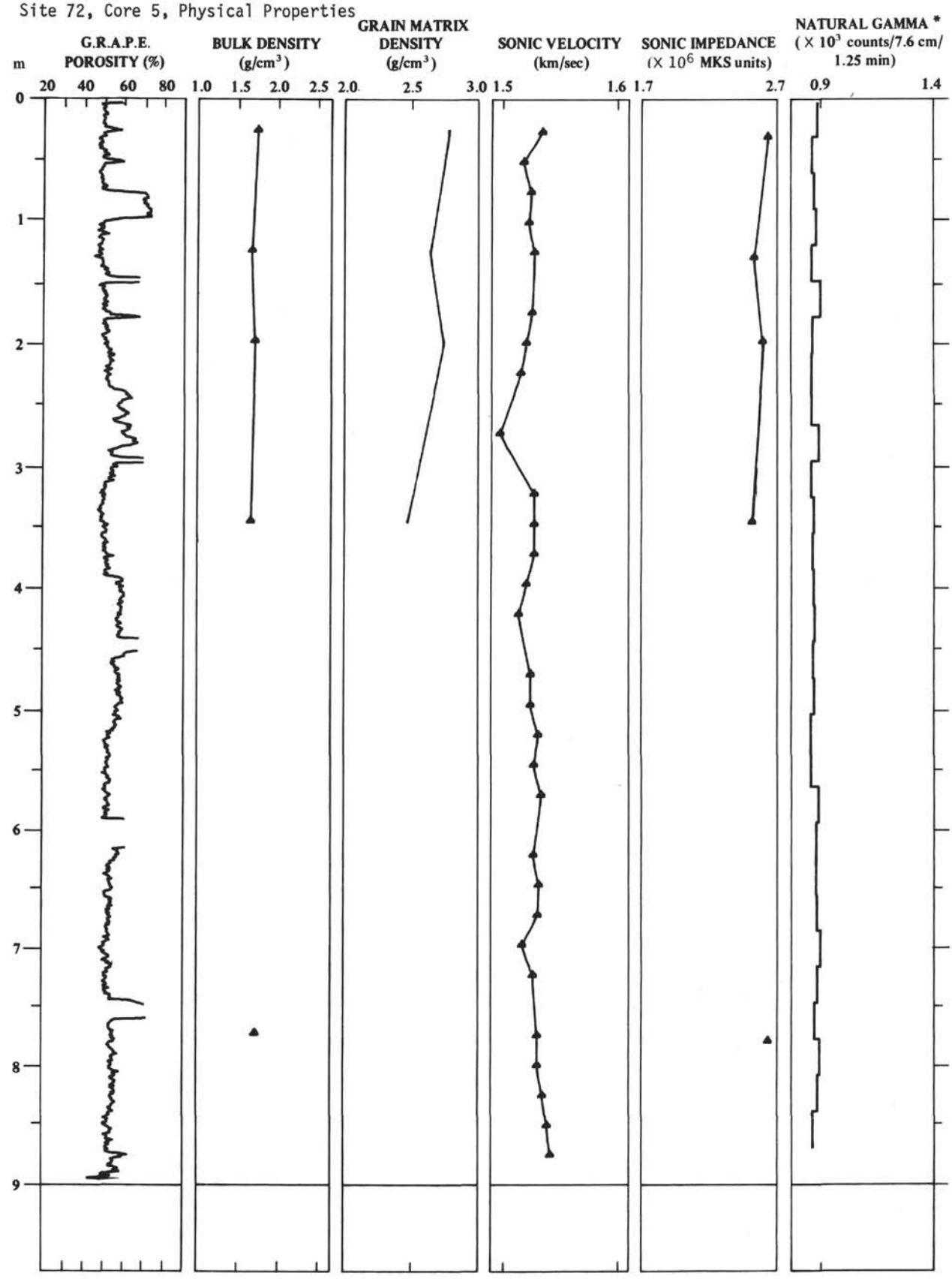
Site 72, Core 4, Physical Properties



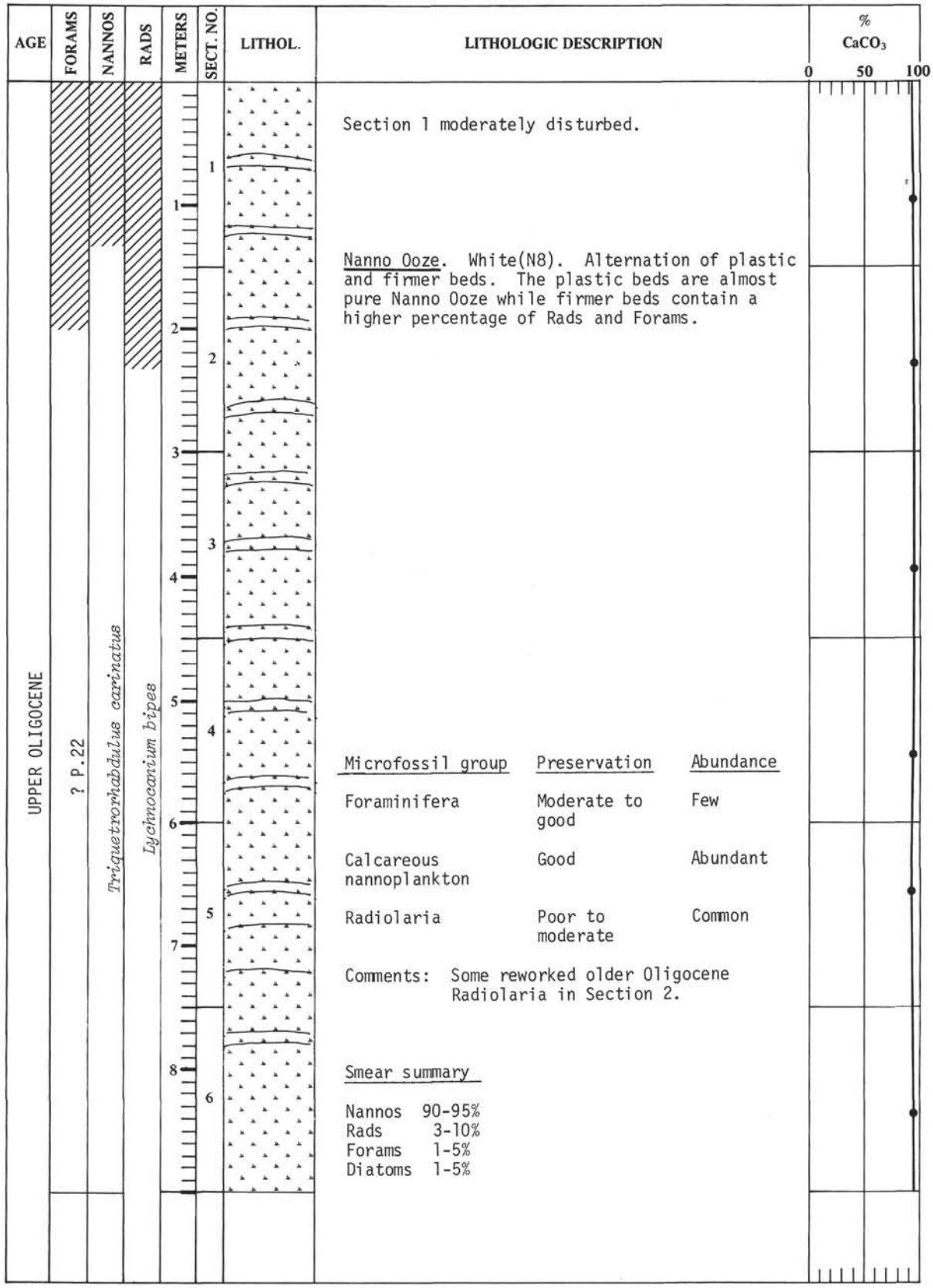
SITE 72 Core 5 Cored interval: 211-220 m



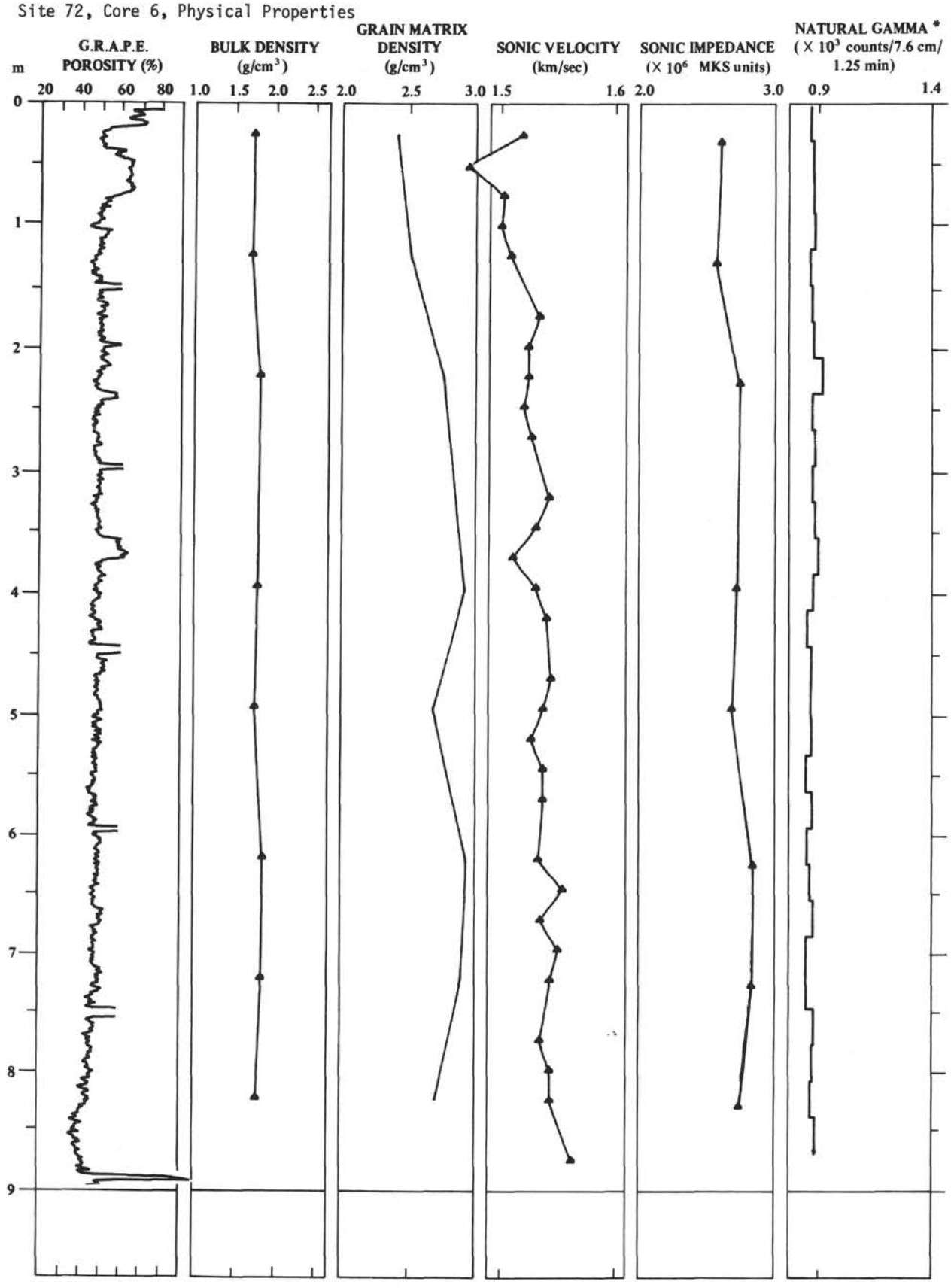
Site 72, Core 5, Physical Properties



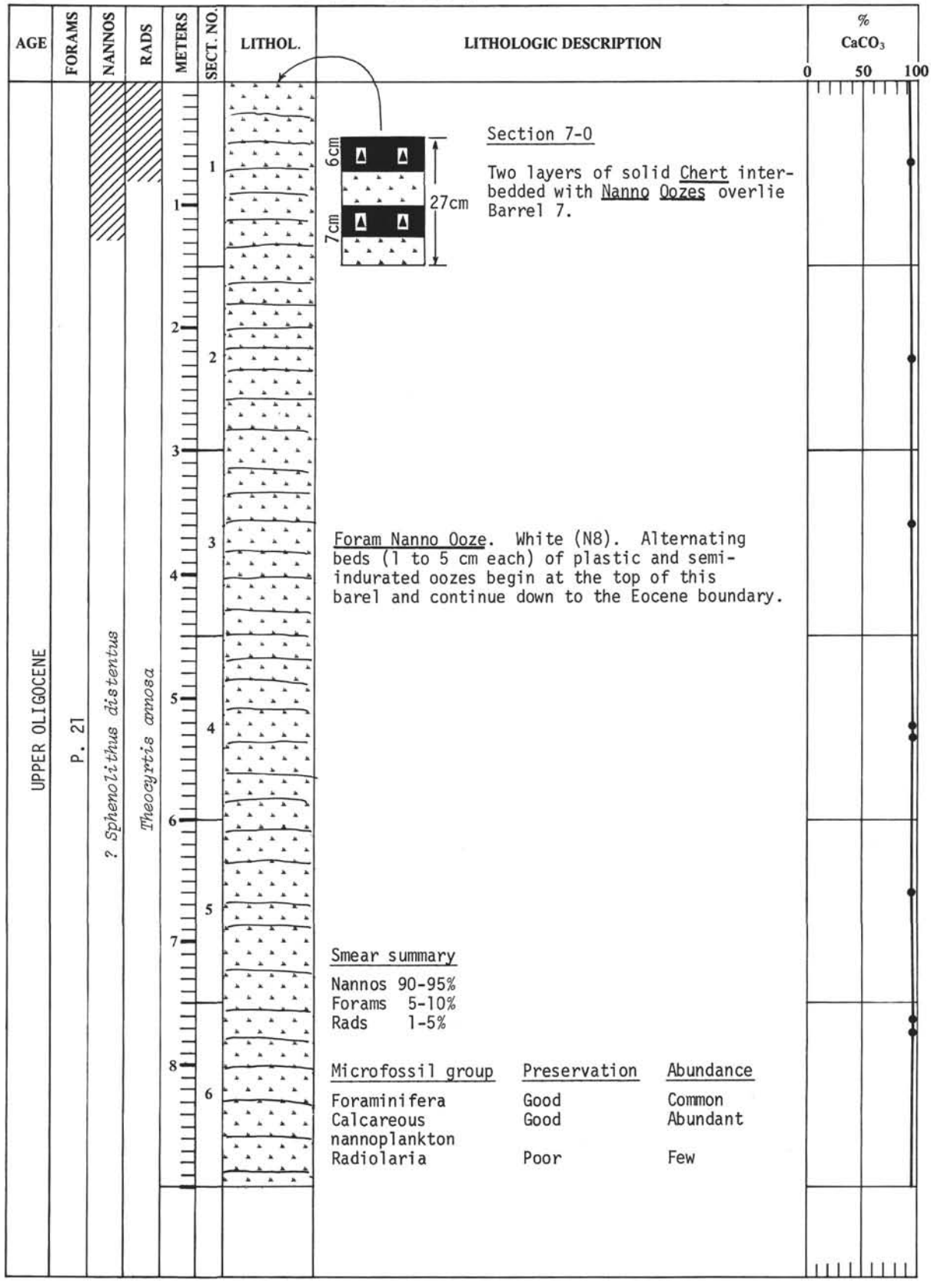
SITE 72 Core 6 Cored interval: 266-275 m



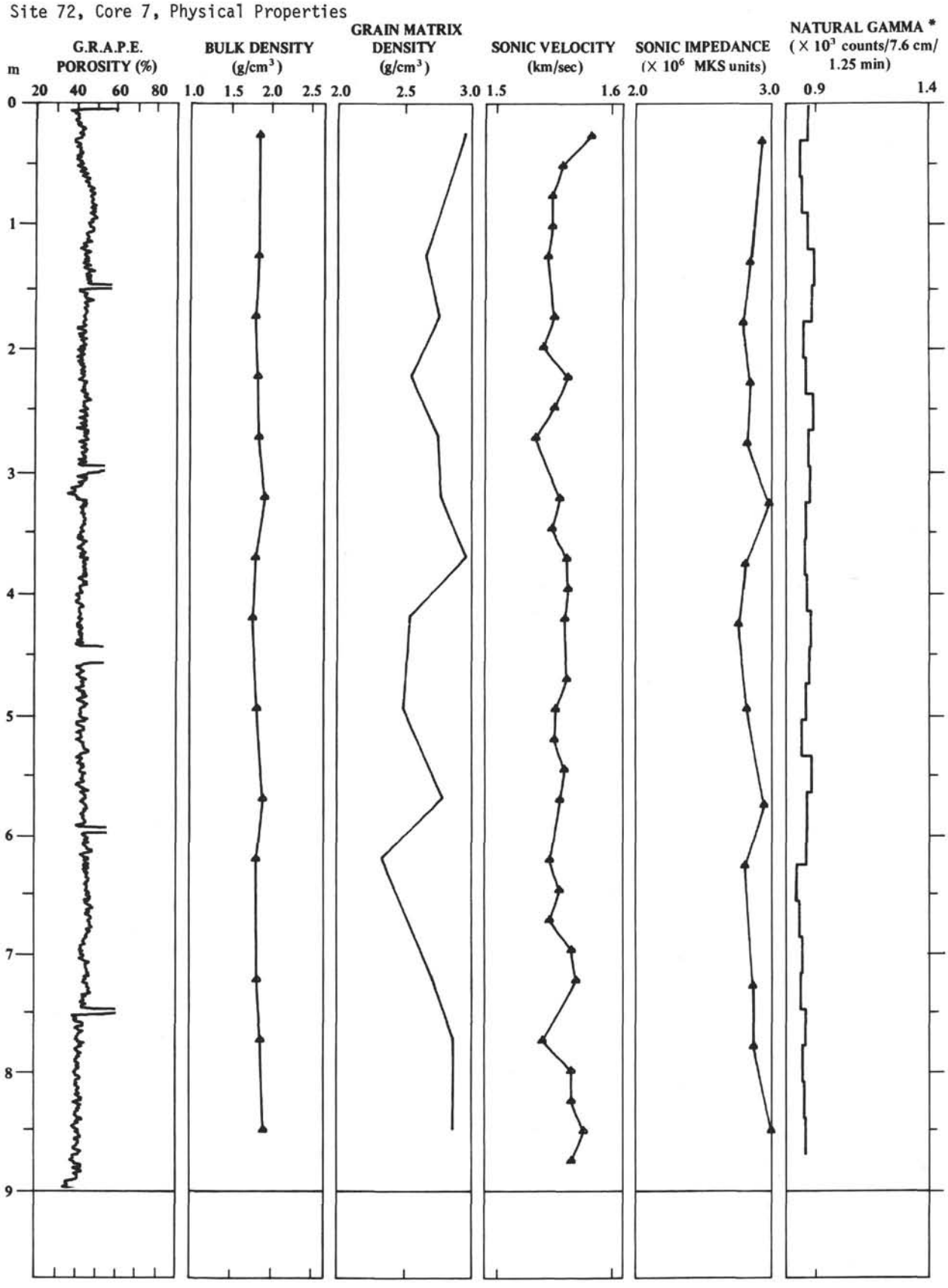
Site 72, Core 6, Physical Properties



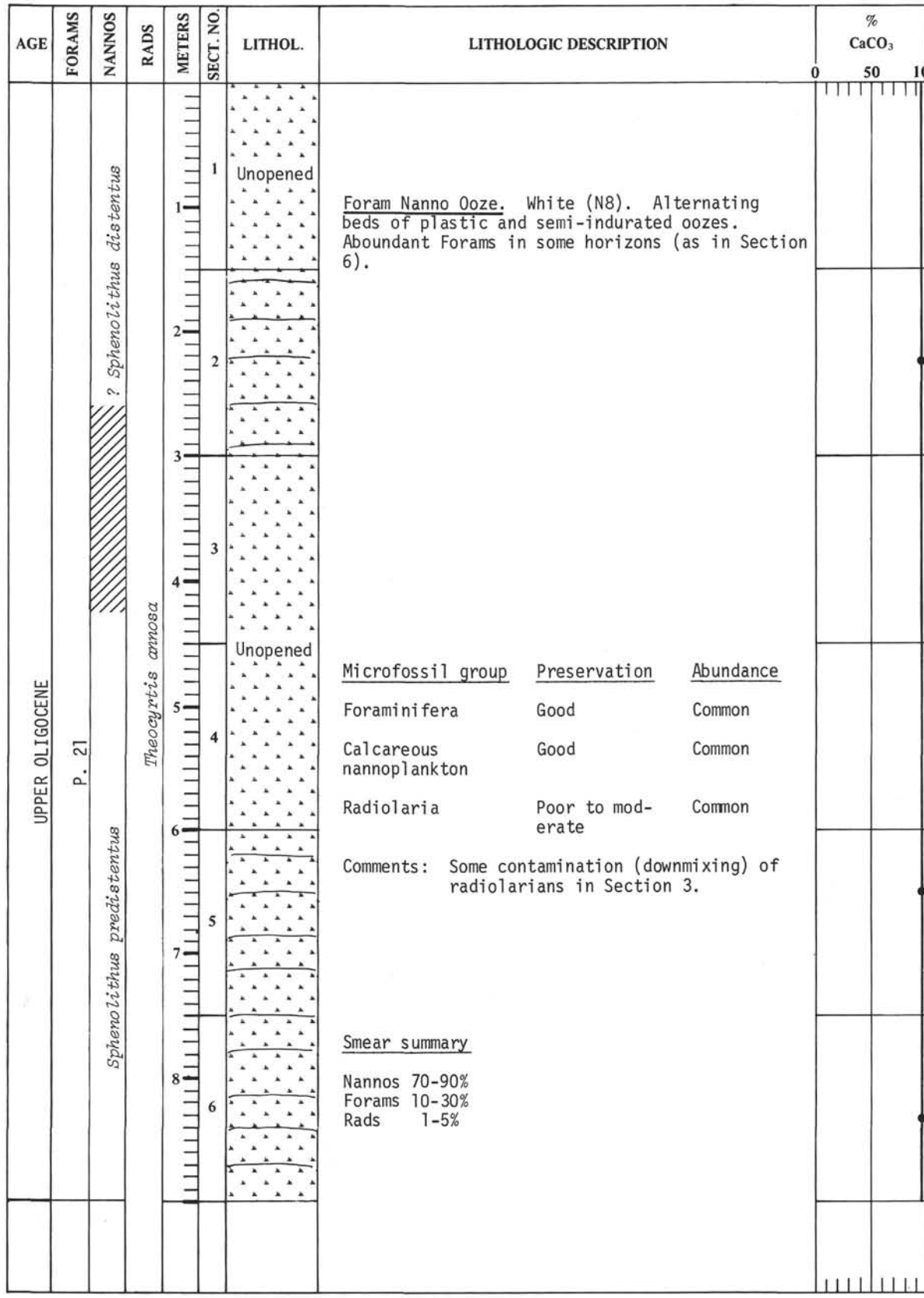
SITE 72 Core 7 Cored interval: 312-321 m



Site 72, Core 7, Physical Properties



SITE 72 Core 8 Cored interval: 321-330 m



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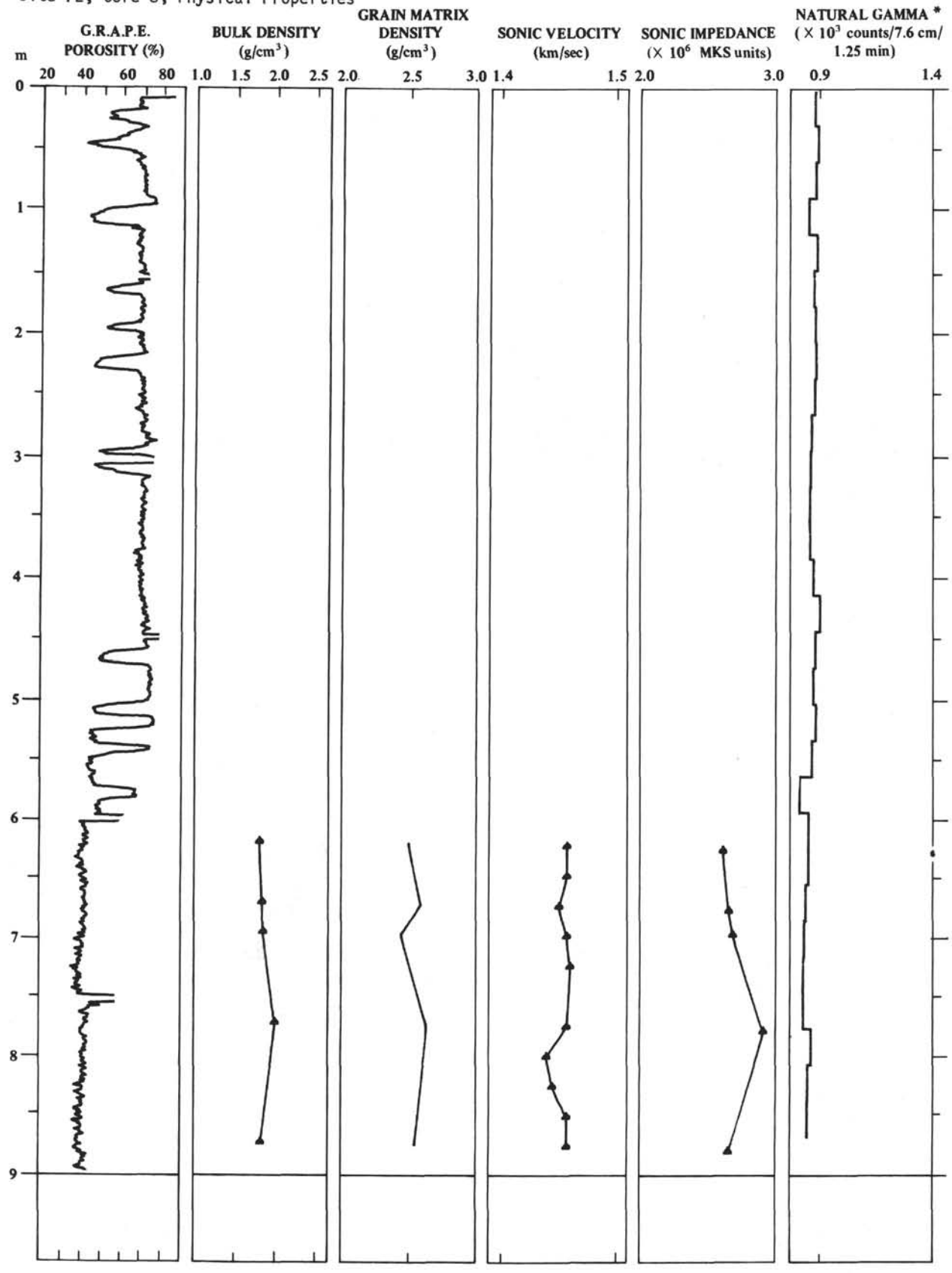
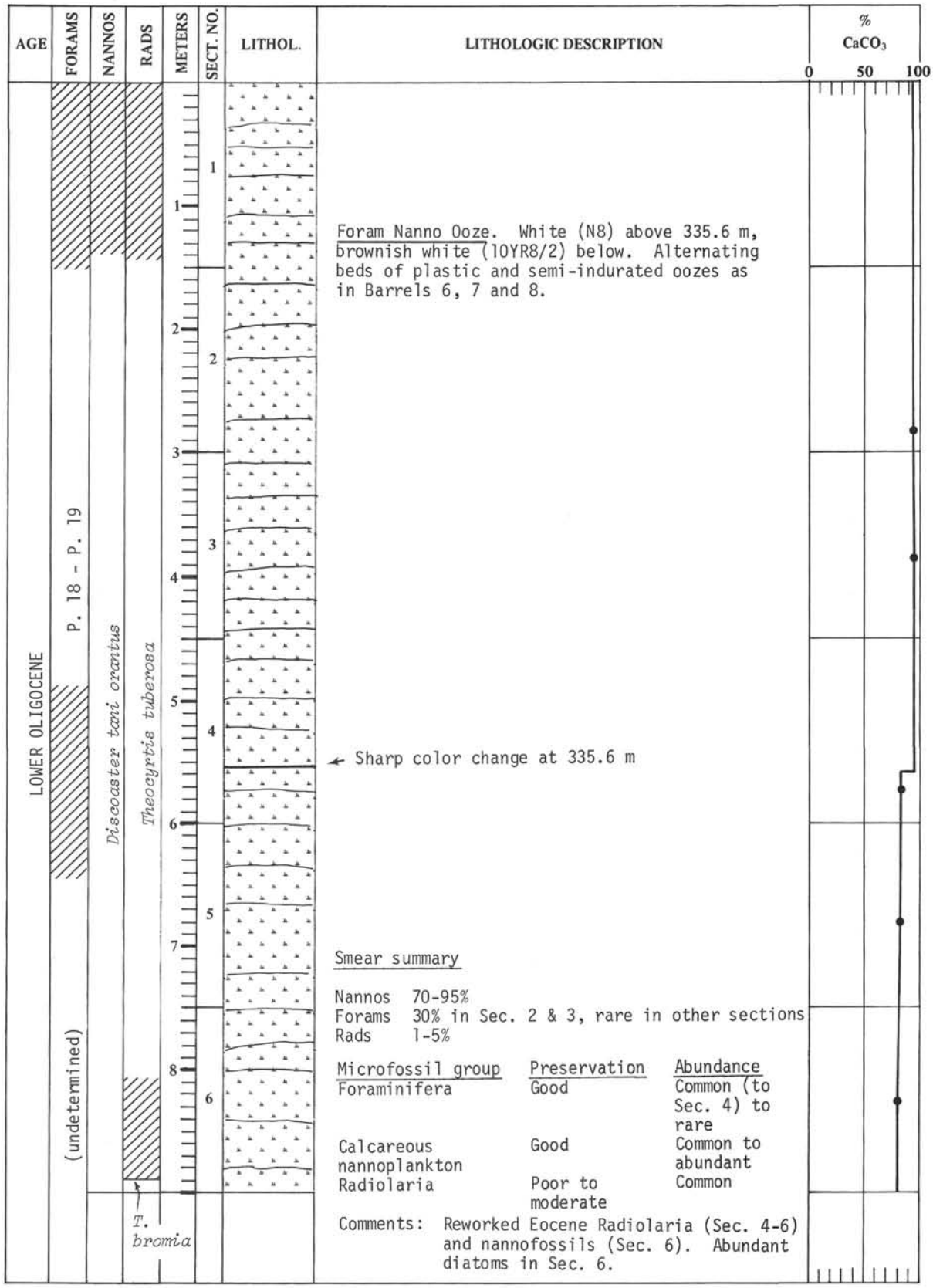
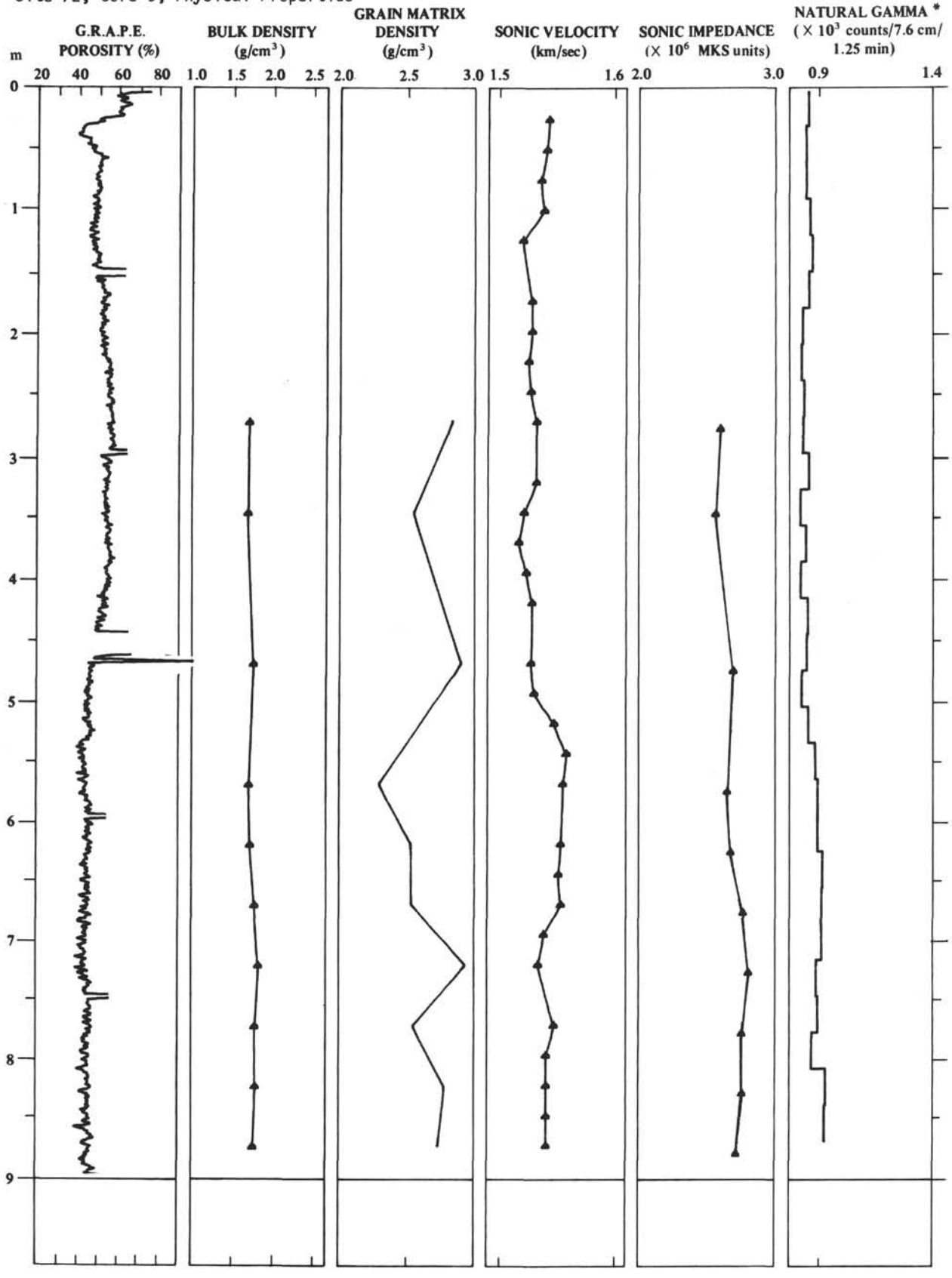


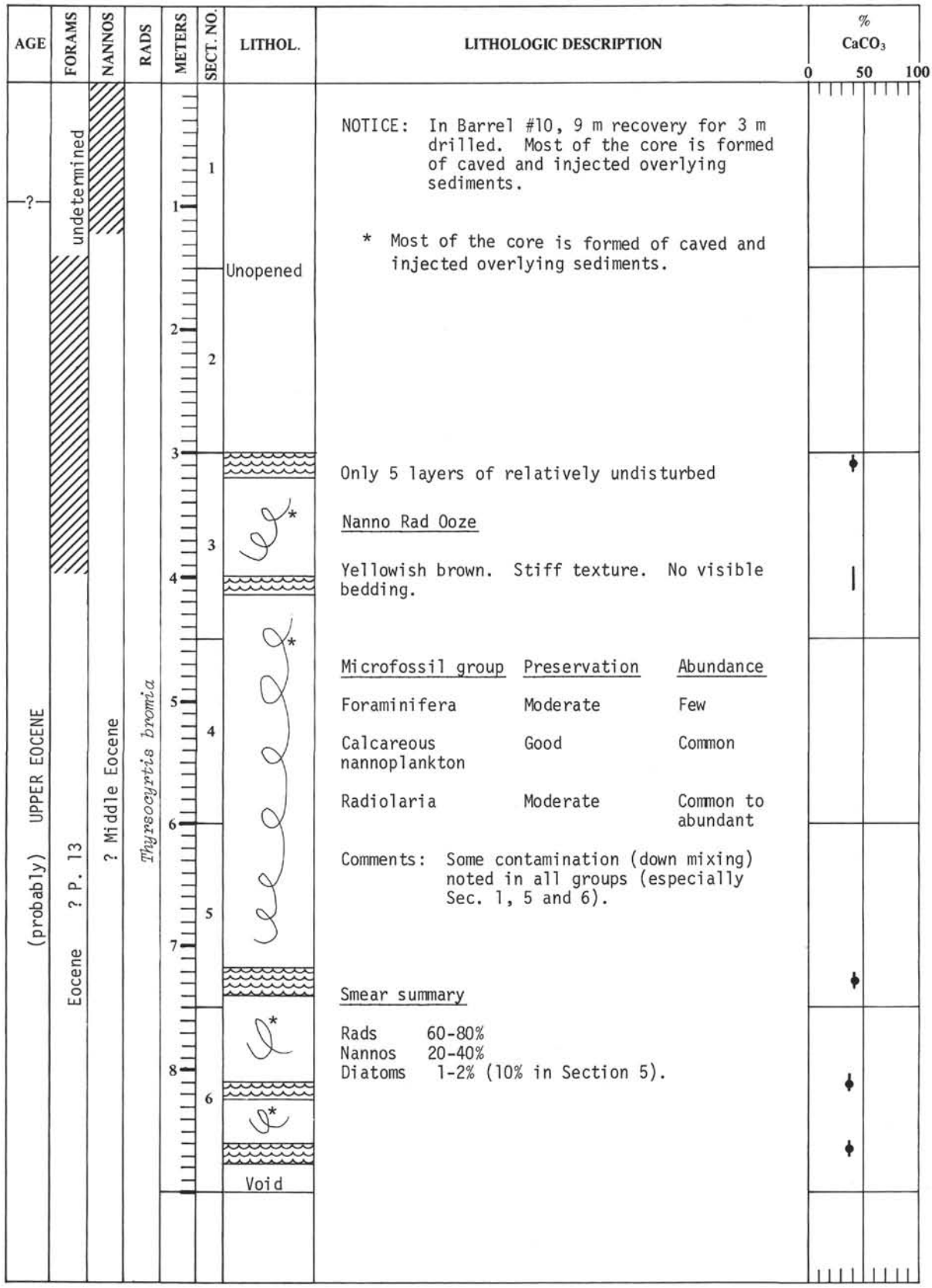
SITE 72 Core 9 Cored interval: 330-339 m



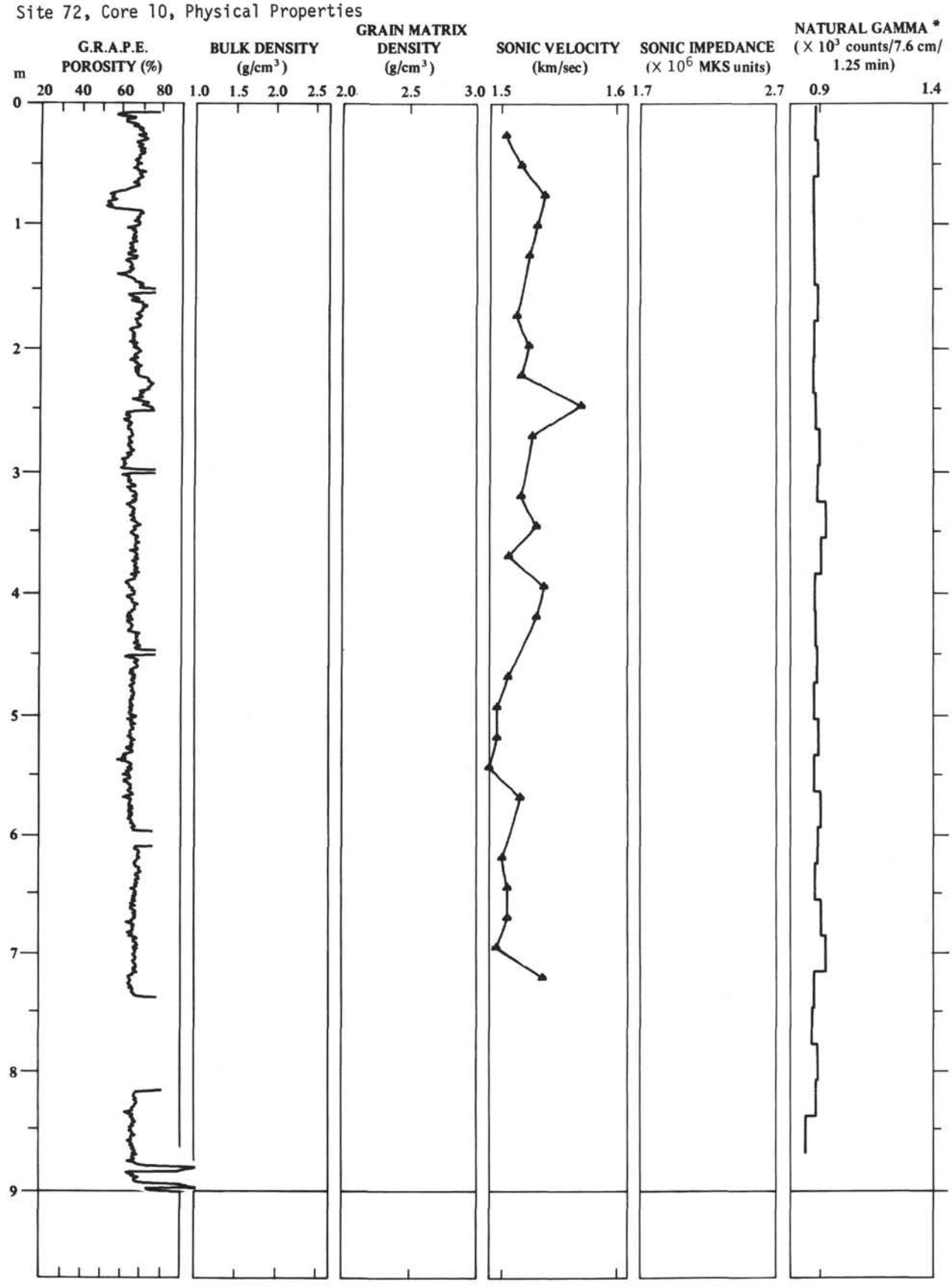
Site 72, Core 9, Physical Properties



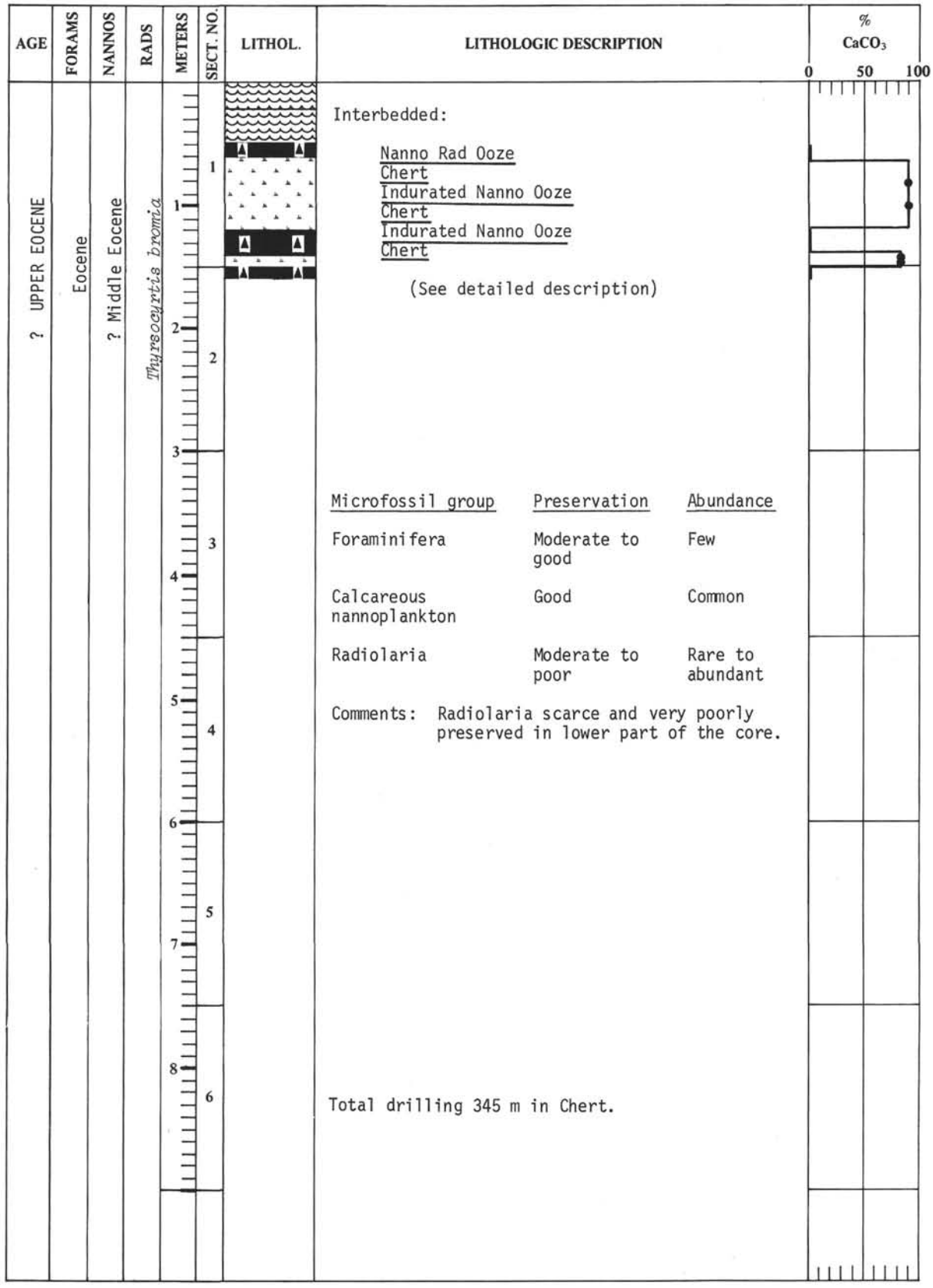
SITE 72 Core 10 Cored interval: 339-342 m



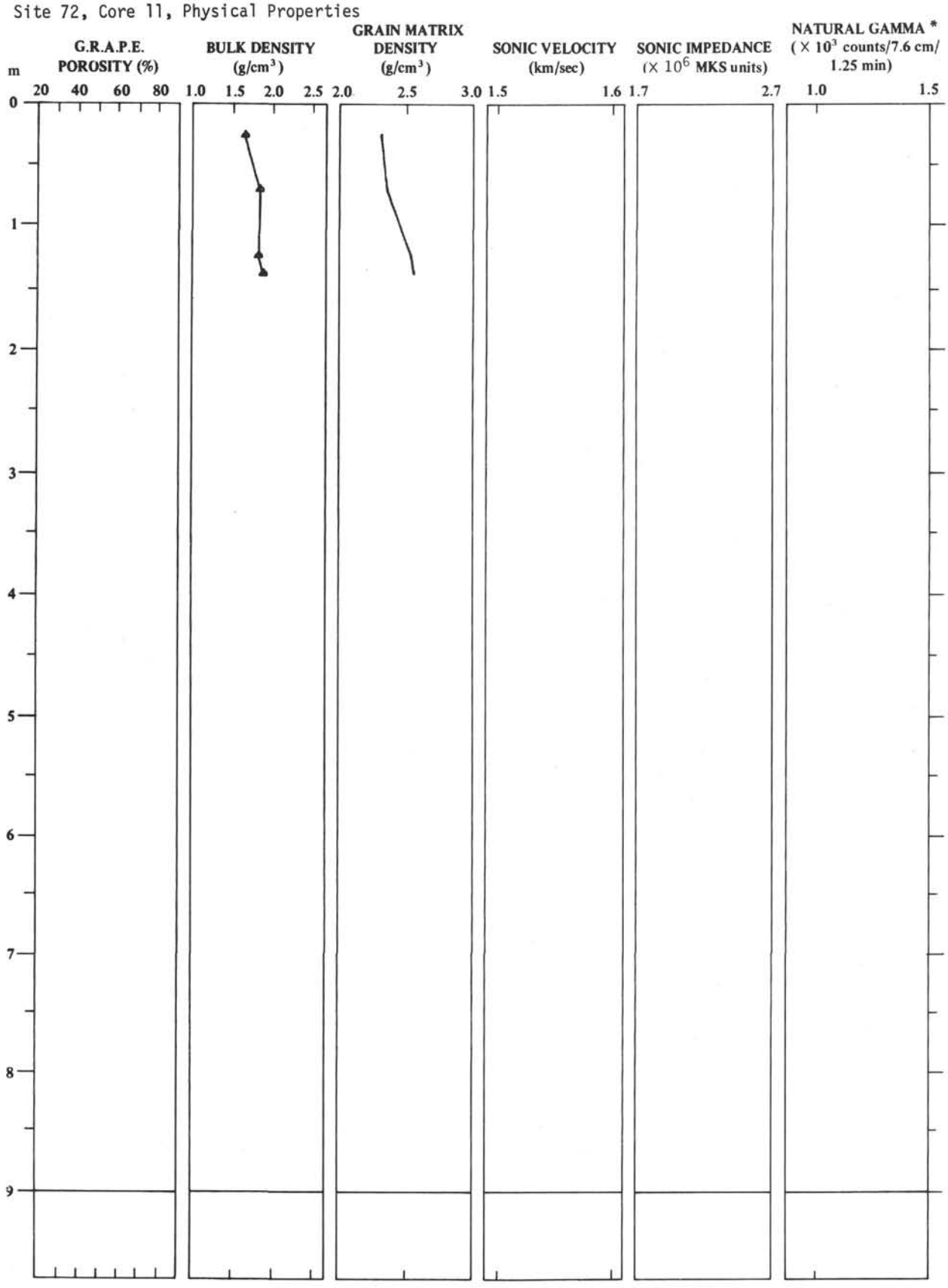
Site 72, Core 10, Physical Properties



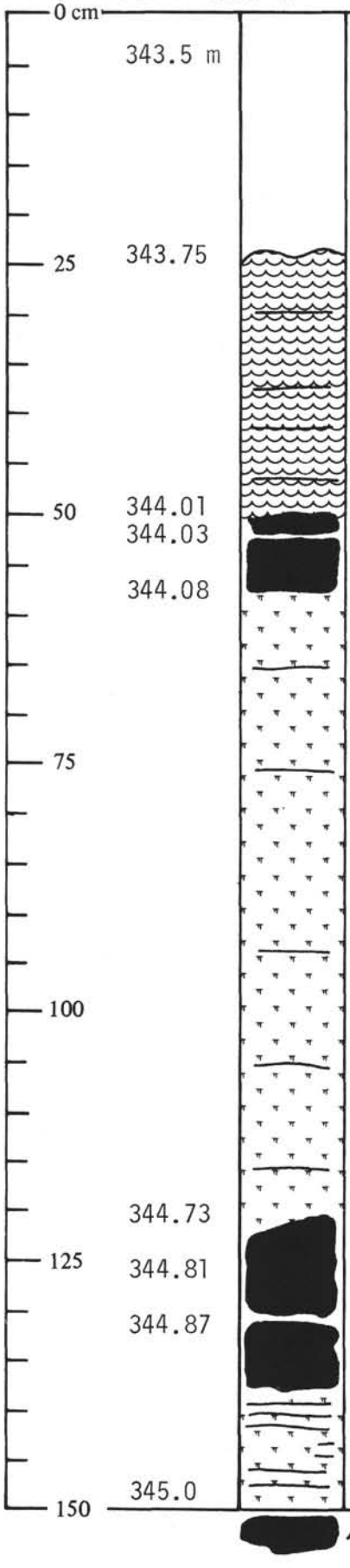
SITE 72 Core 11 Cored interval: 393.5-345 m



Site 72, Core 11, Physical Properties



SITE 72 Core 11 Detailed description Section 1 (343.5-395 m)



343.50 - 343.75 m: Very watery. May be caved.

343.75 - 344.01: Nanno Rad Ooze. 40% $CaCO_3$. Brown (10YR 5/3). Bedded. Plastic and indurated layers.

344.01 - 344.08: Chert - dark yellowish brown (10YR4/2).

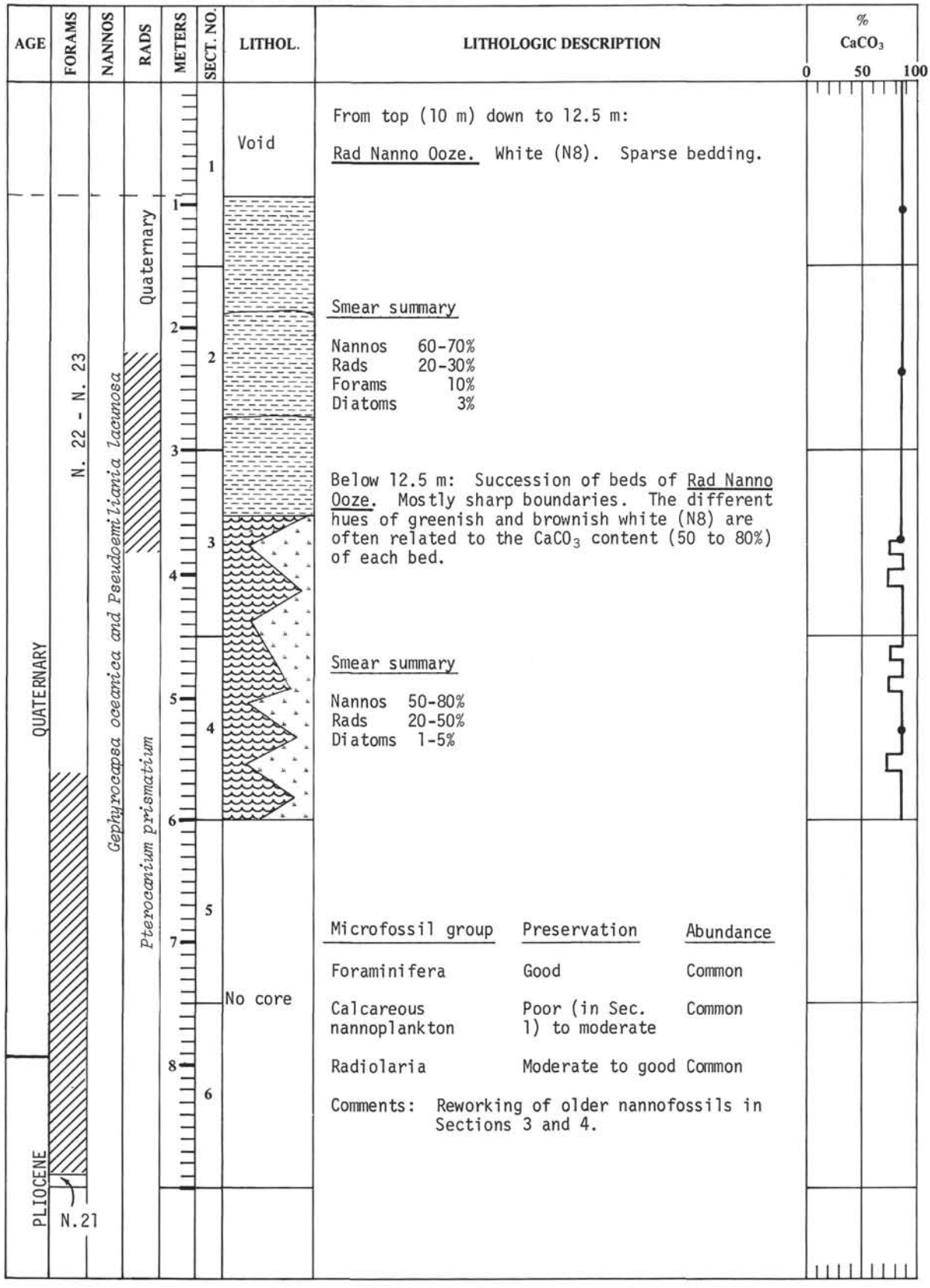
344.08 - 344.73: Indurated Nanno Ooze. $CaCO_3$ 90%. Light gray (10YR7/2) to light brownish gray (2.5Y6/2). Bedding: plastic and indurated layers.

344.73 - 344.87: Chert (2 pieces) dark yellowish brown (10YR4/2).

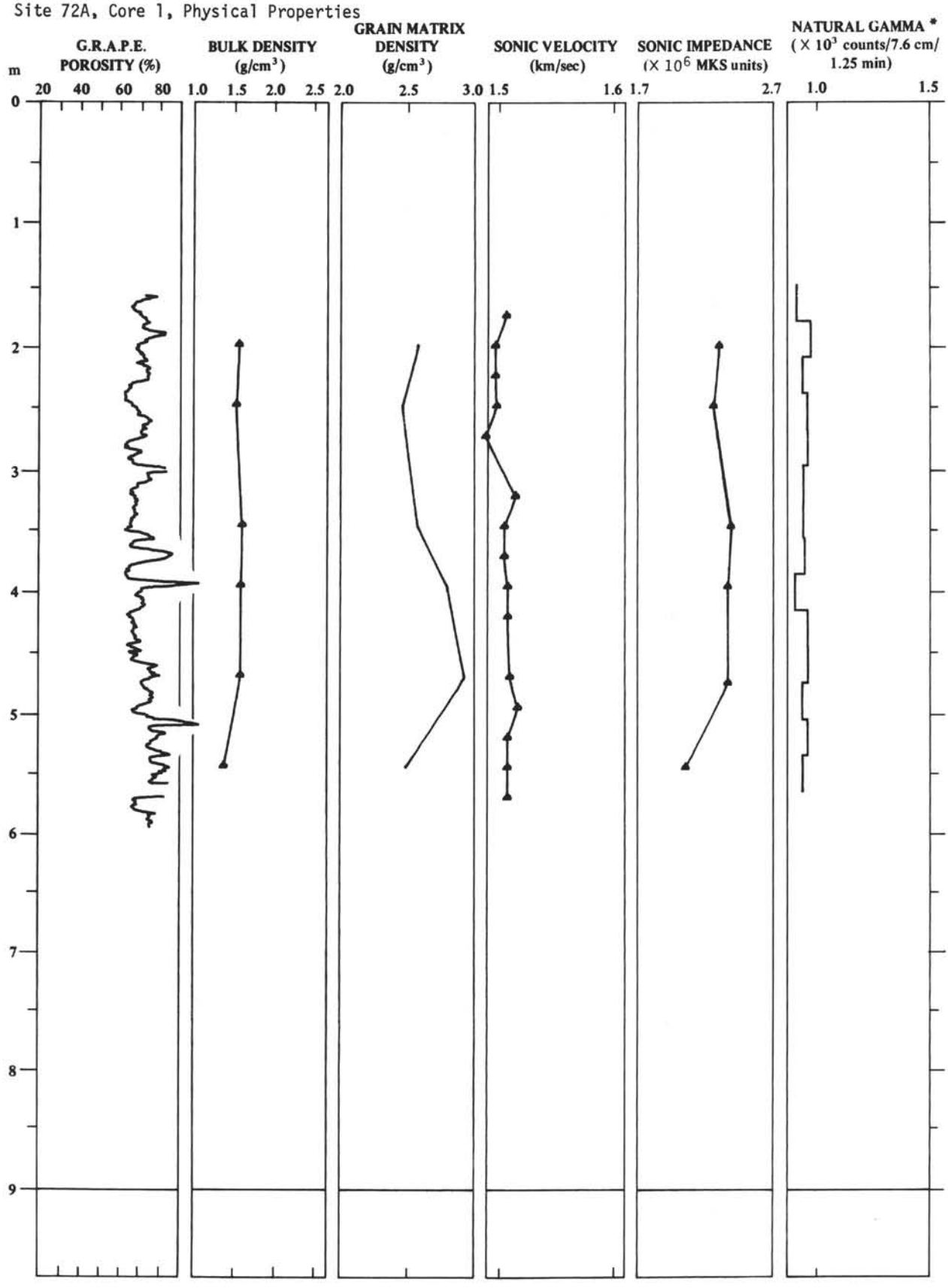
344.87 - 345.00: Indurated Nanno Ooze. $CaCO_3$ 80%. Very dark grayish brown (10YR3/2). Fine laminations (shally), plastic and indurated layers.

345.00 - 345.06: Chert. Black.

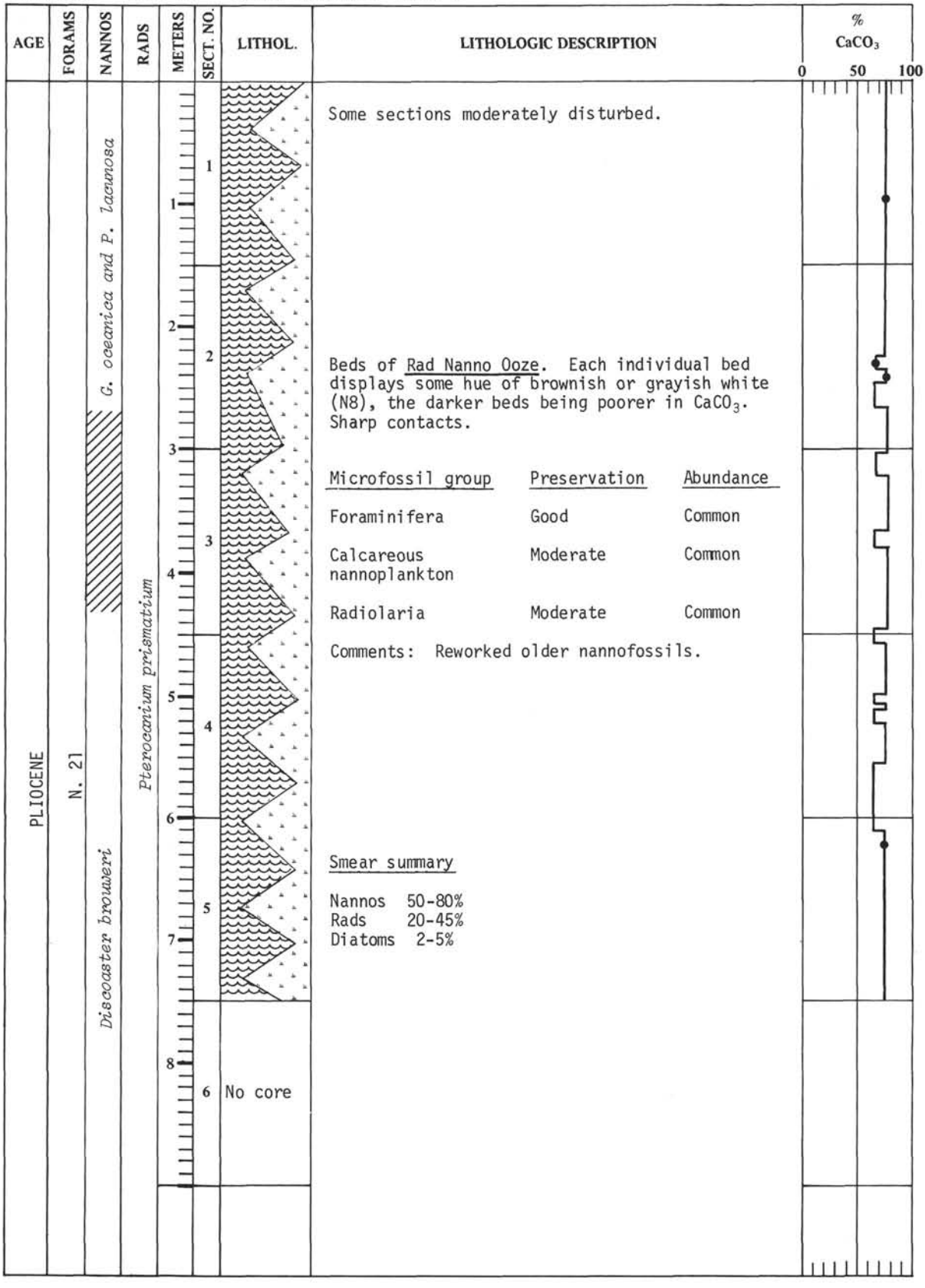
SITE 72A Core 1A Cored interval: 9-18 m



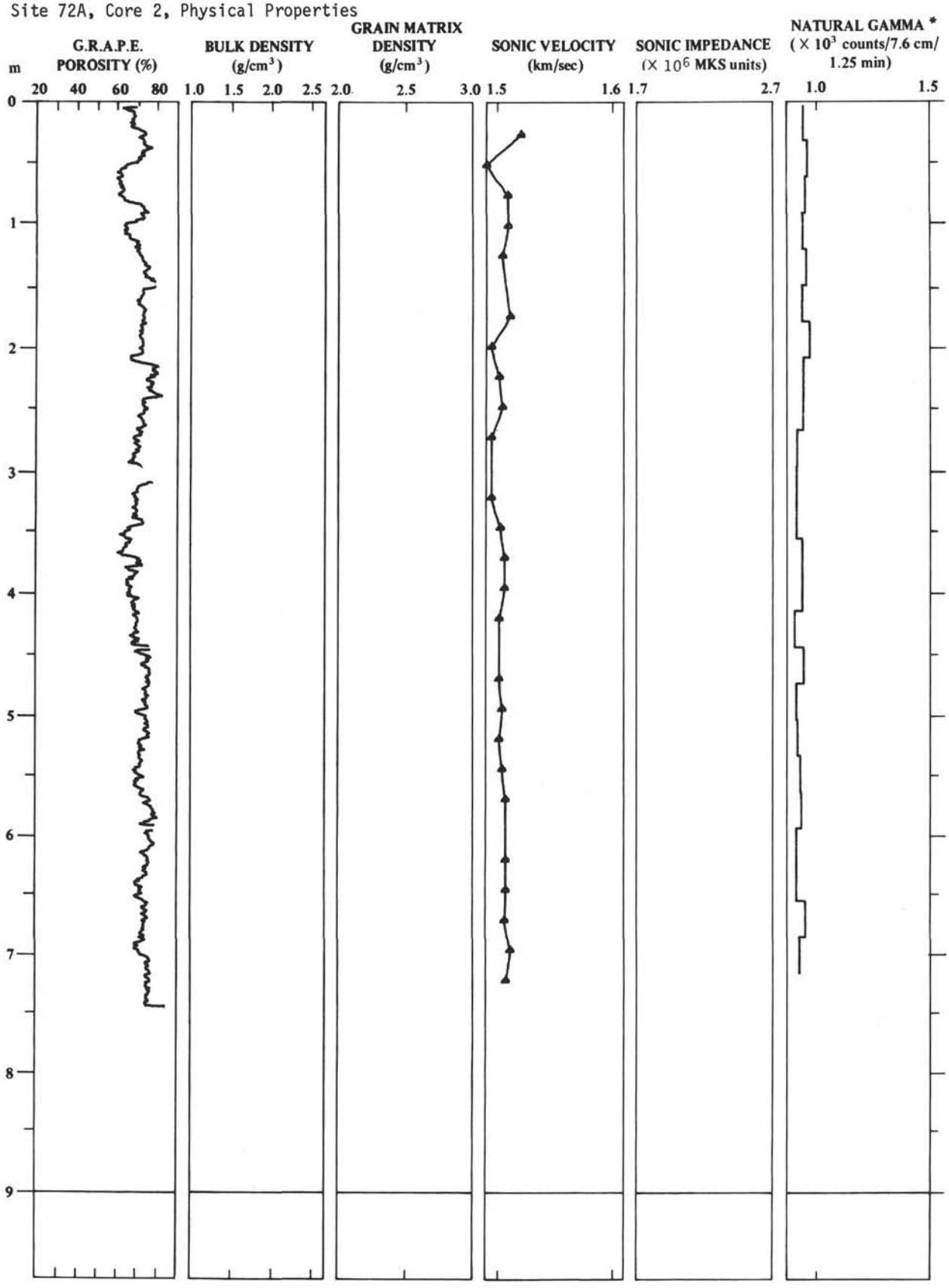
Site 72A, Core 1, Physical Properties



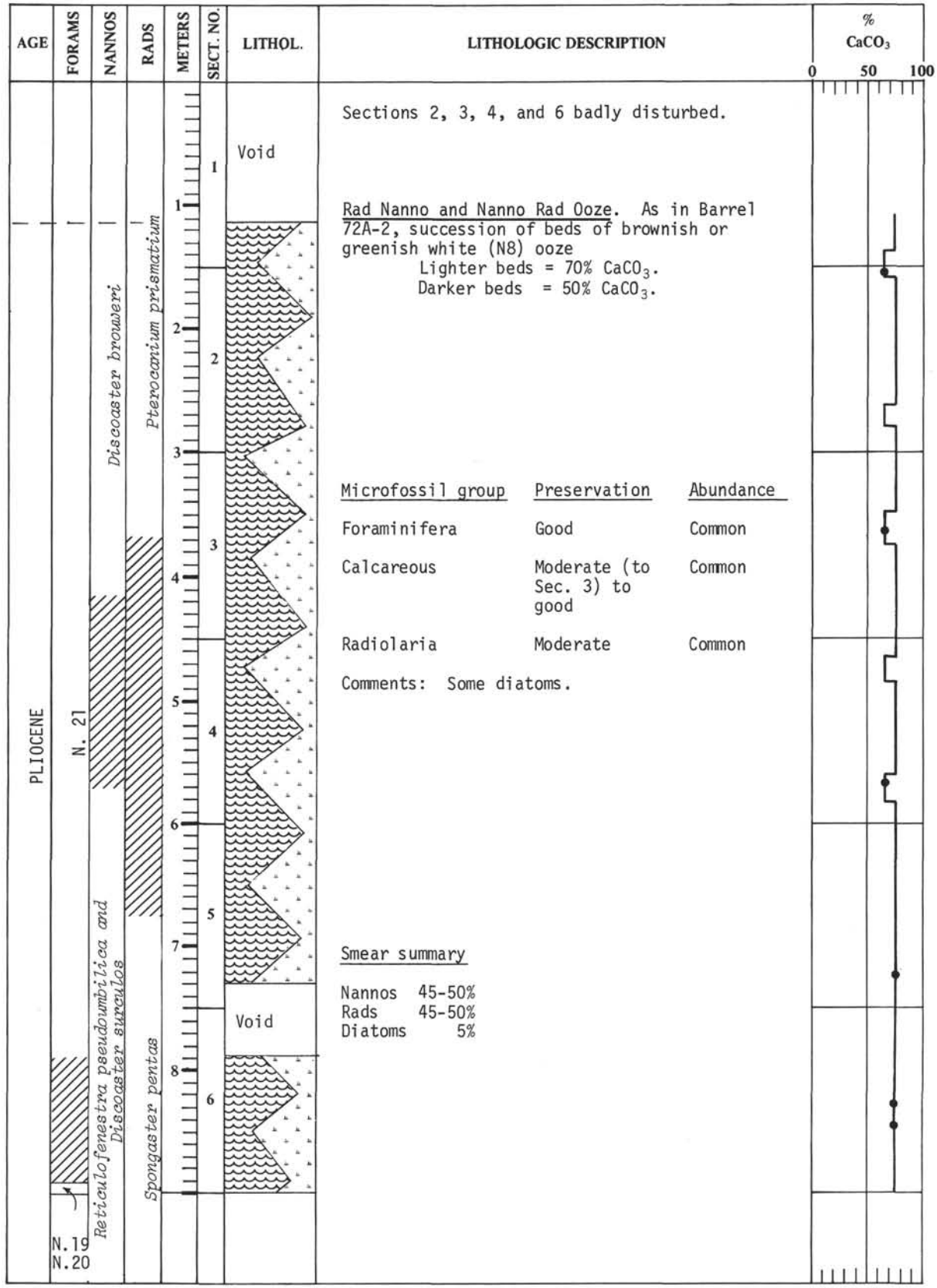
SITE 72A Core 2A Cored interval: 18-27 m

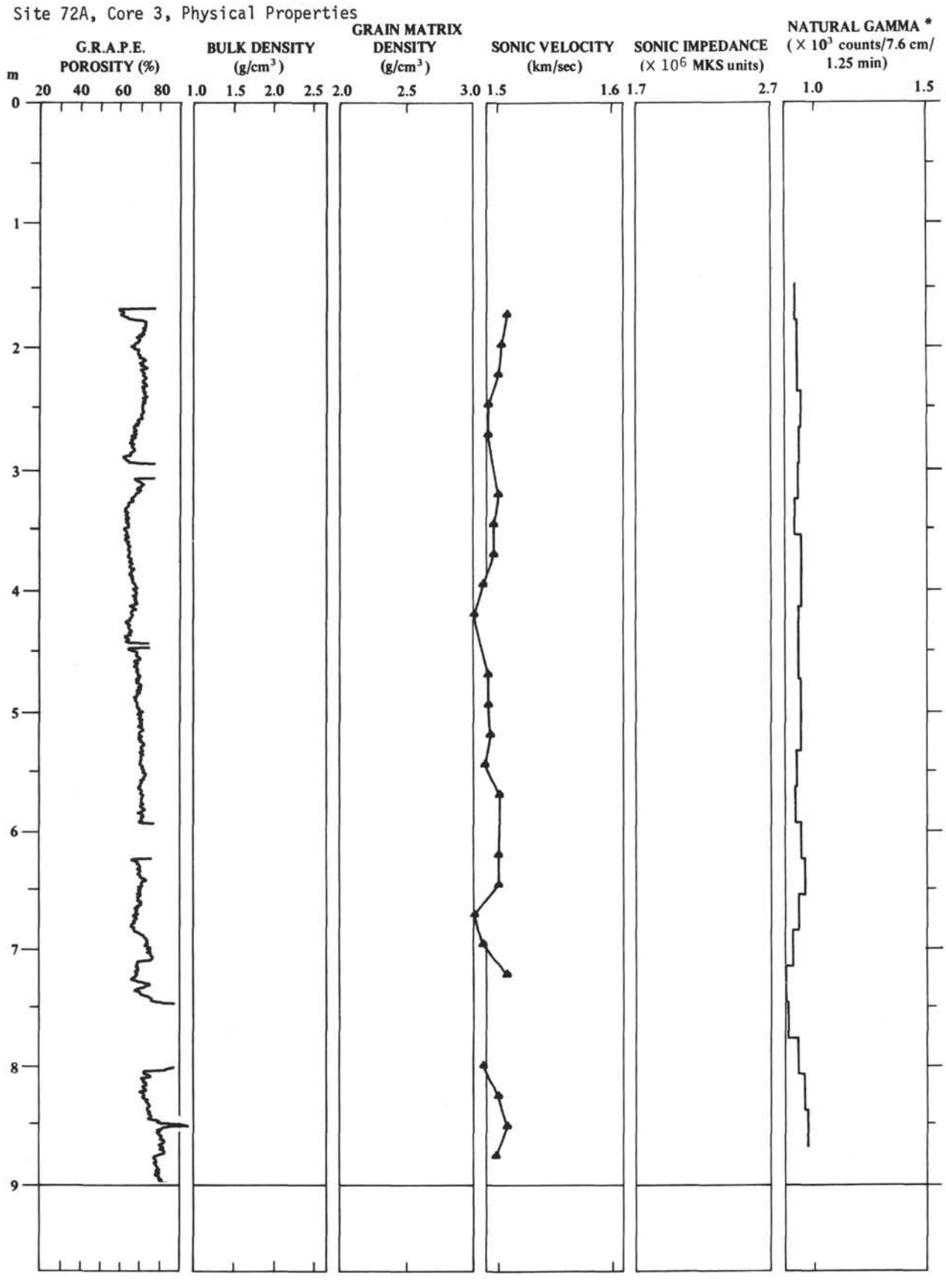


Site 72A, Core 2, Physical Properties

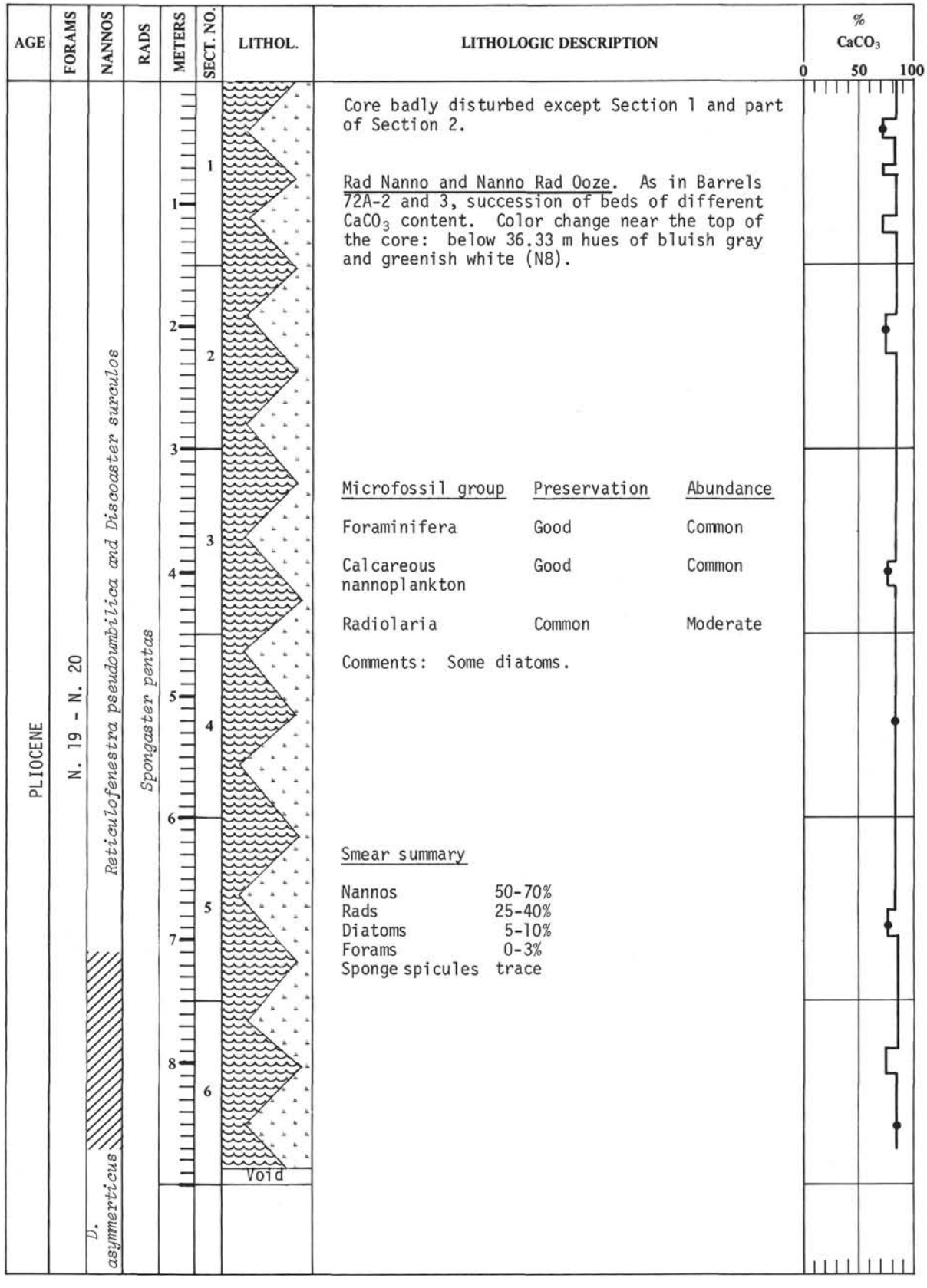


SITE 72A Core 3A Cored interval: 27-36 m




Site 72A, Core 3, Physical Properties
G.R.A.P.E. POROSITY (%)
BULK DENSITY (g/cm³)
GRAIN MATRIX DENSITY (g/cm³)
SONIC VELOCITY (km/sec)
SONIC IMPEDANCE (× 10⁶ MKS units)
NATURAL GAMMA * (× 10³ counts/7.6 cm/ 1.25 min)
m
20 40 60 80
1.0 1.5 2.0 2.5
2.0 2.5 3.0
1.5 1.6
1.7 2.7
1.0 1.5
0
1
2
3
4
5
6
7
8
9

SITE 72A Core 4A Cored interval: 36-45 m



Core badly disturbed except Section 1 and part of Section 2.

Rad Nanno and Nanno Rad Ooze. As in Barrels 72A-2 and 3, succession of beds of different $CaCO_3$ content. Color change near the top of the core: below 36.33 m hues of bluish gray and greenish white (N8).

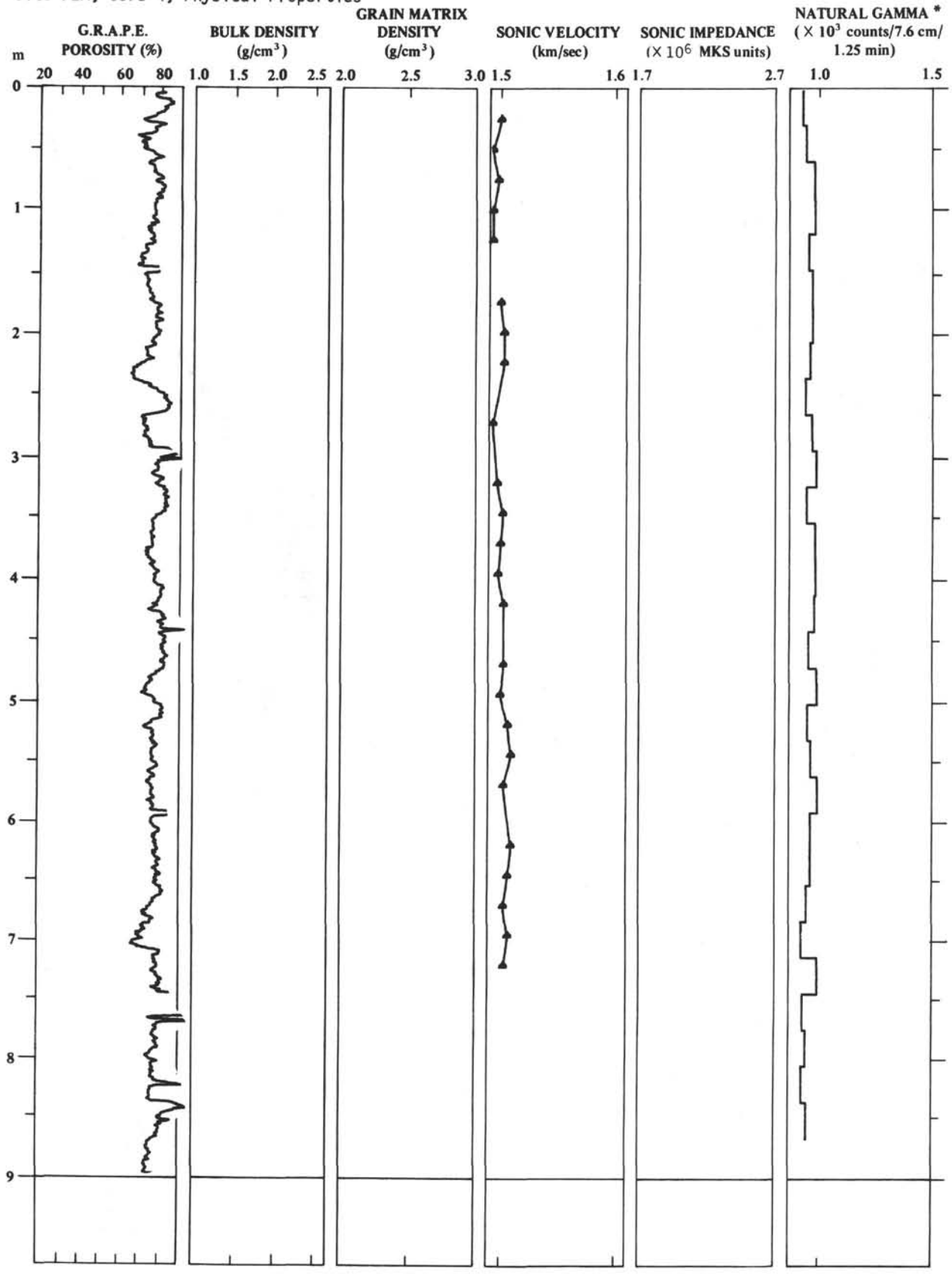
Microfossil group	Preservation	Abundance
Foraminifera	Good	Common
Calcareous nannoplankton	Good	Common
Radiolaria	Common	Moderate

Comments: Some diatoms.

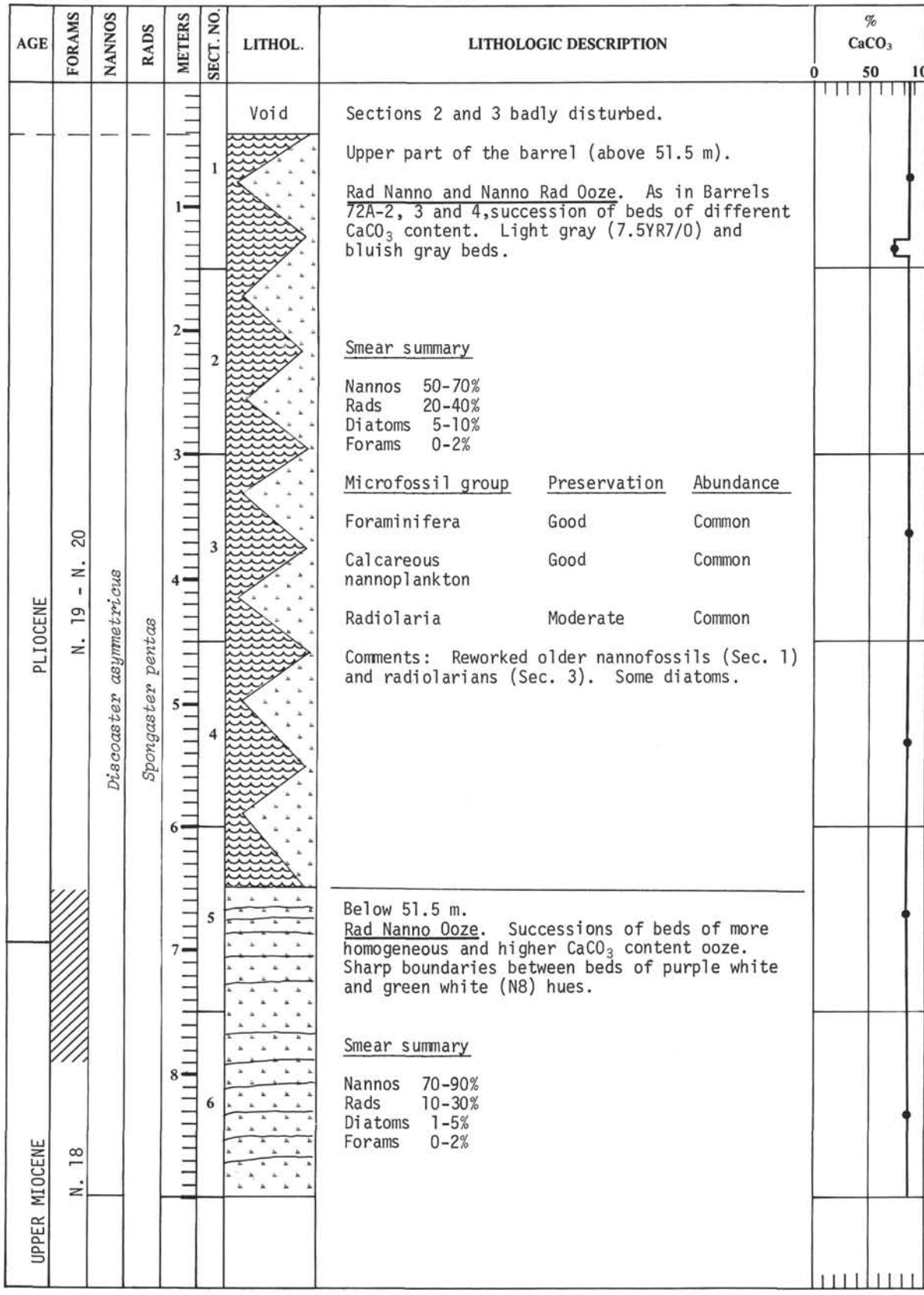
Smear summary

Nannos	50-70%
Rads	25-40%
Diatoms	5-10%
Forams	0-3%
Sponge spicules	trace

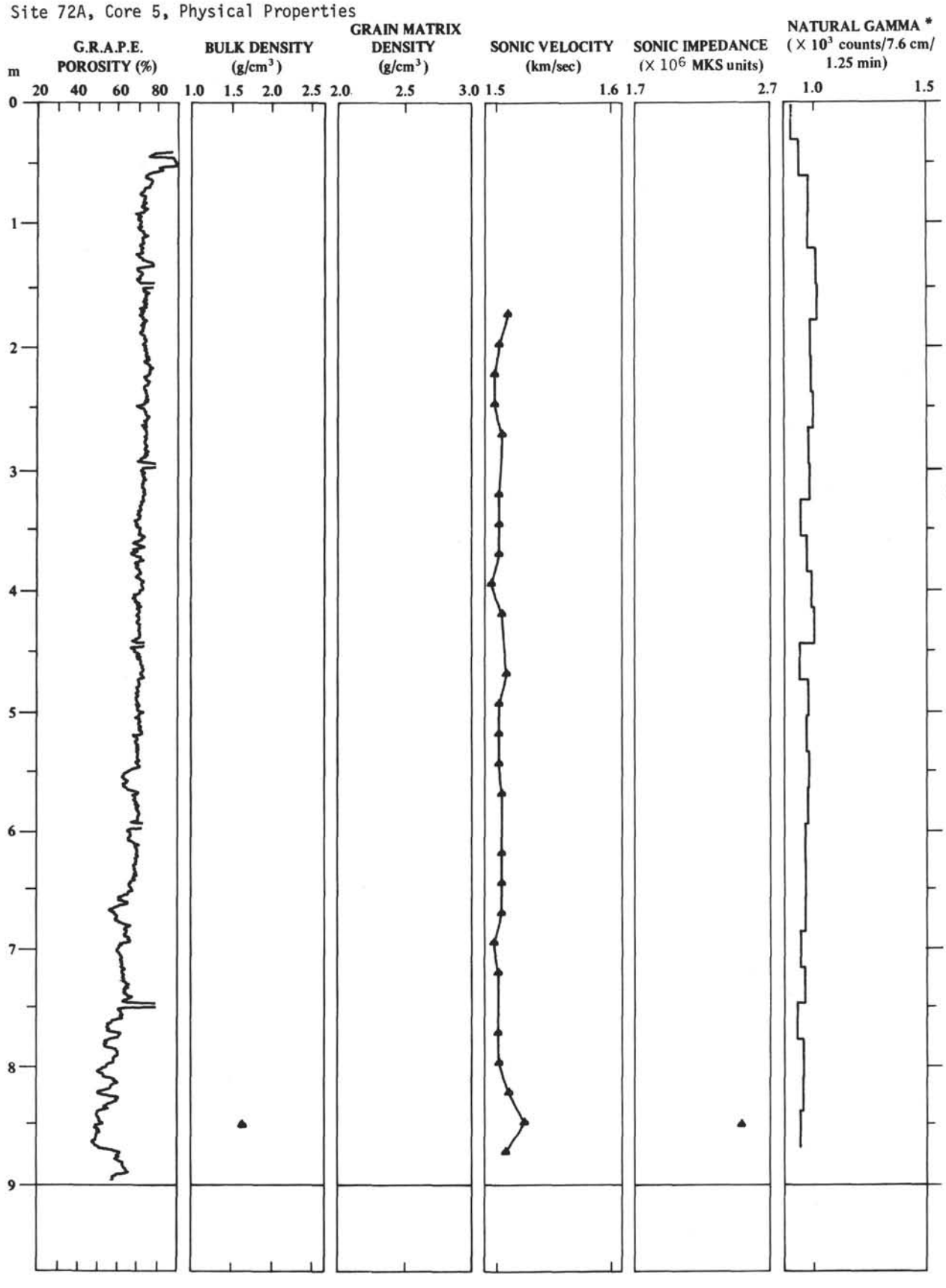
Site 72A, Core 4, Physical Properties



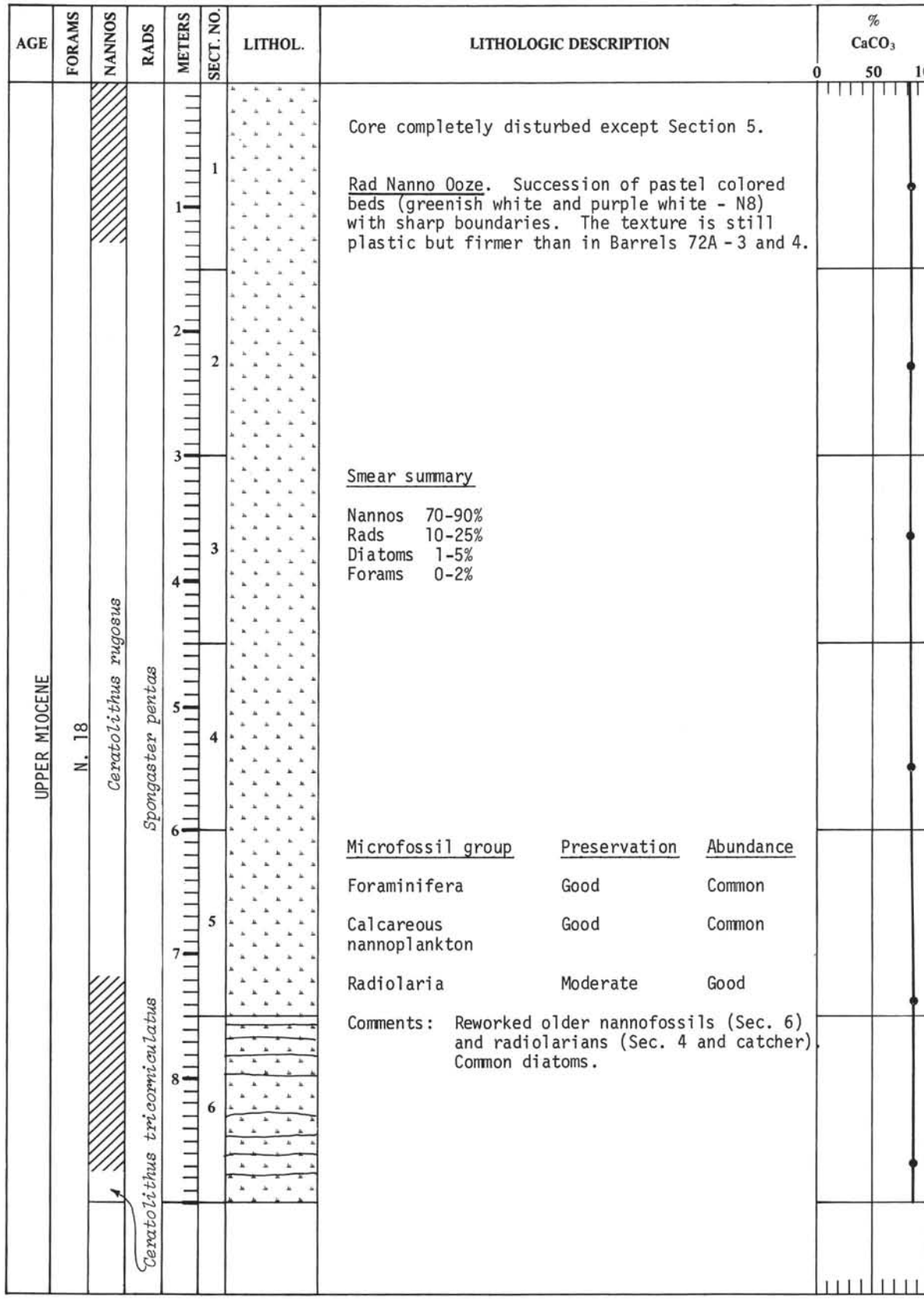
SITE 72A Core 5A Cored interval: 45-54 m



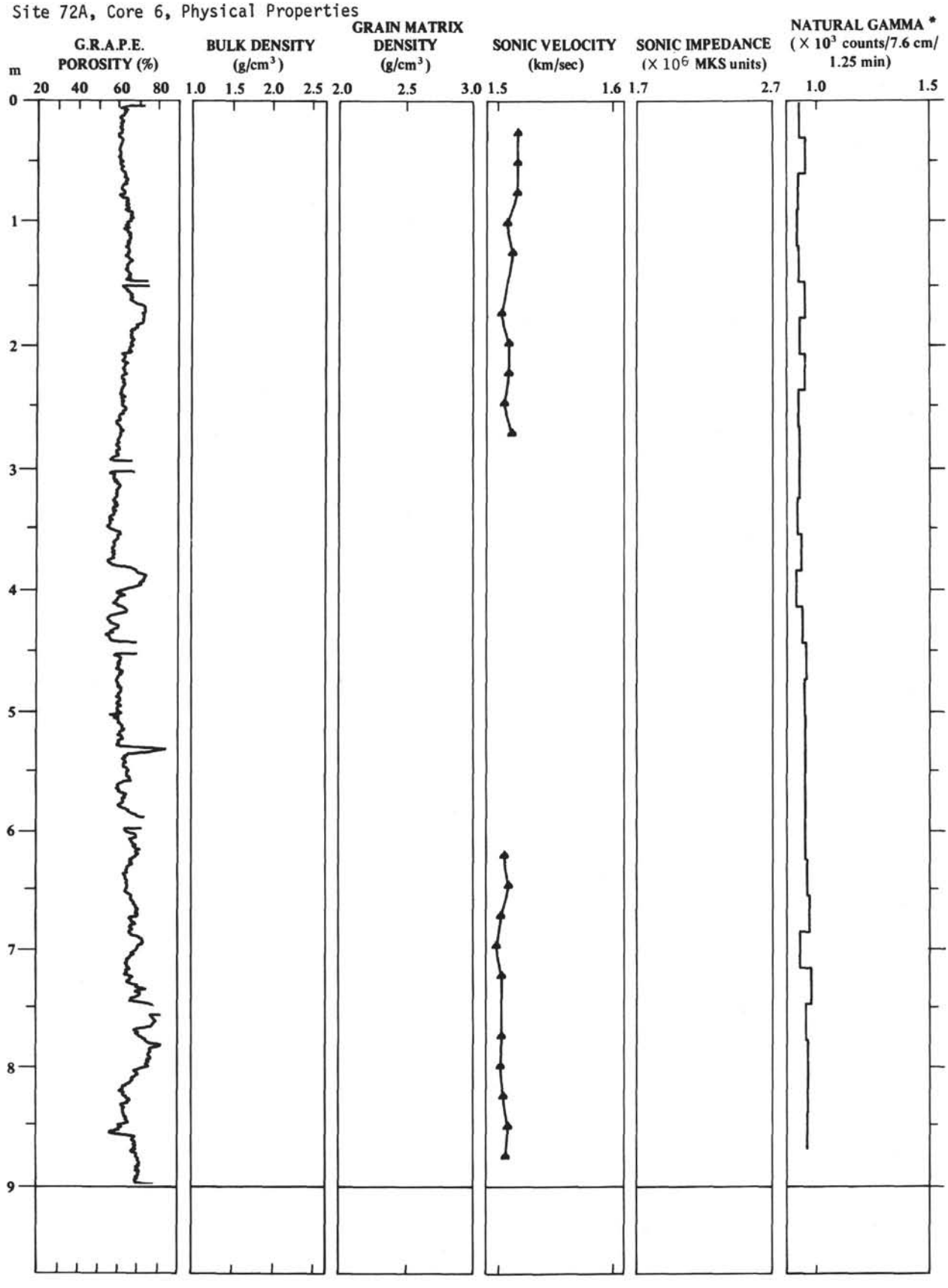
Site 72A, Core 5, Physical Properties

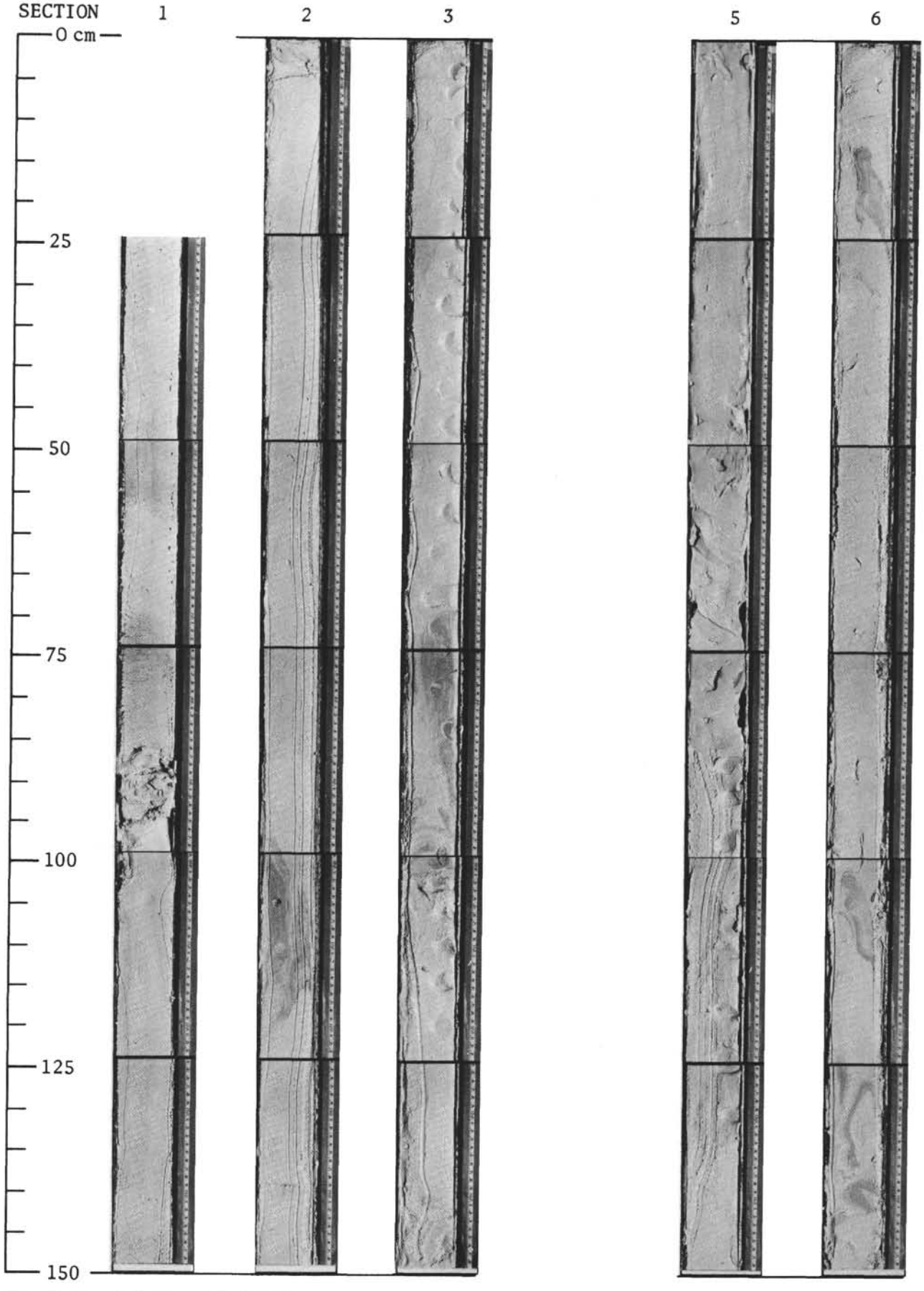


SITE 72A Core 6A Cored interval: 59-63 m

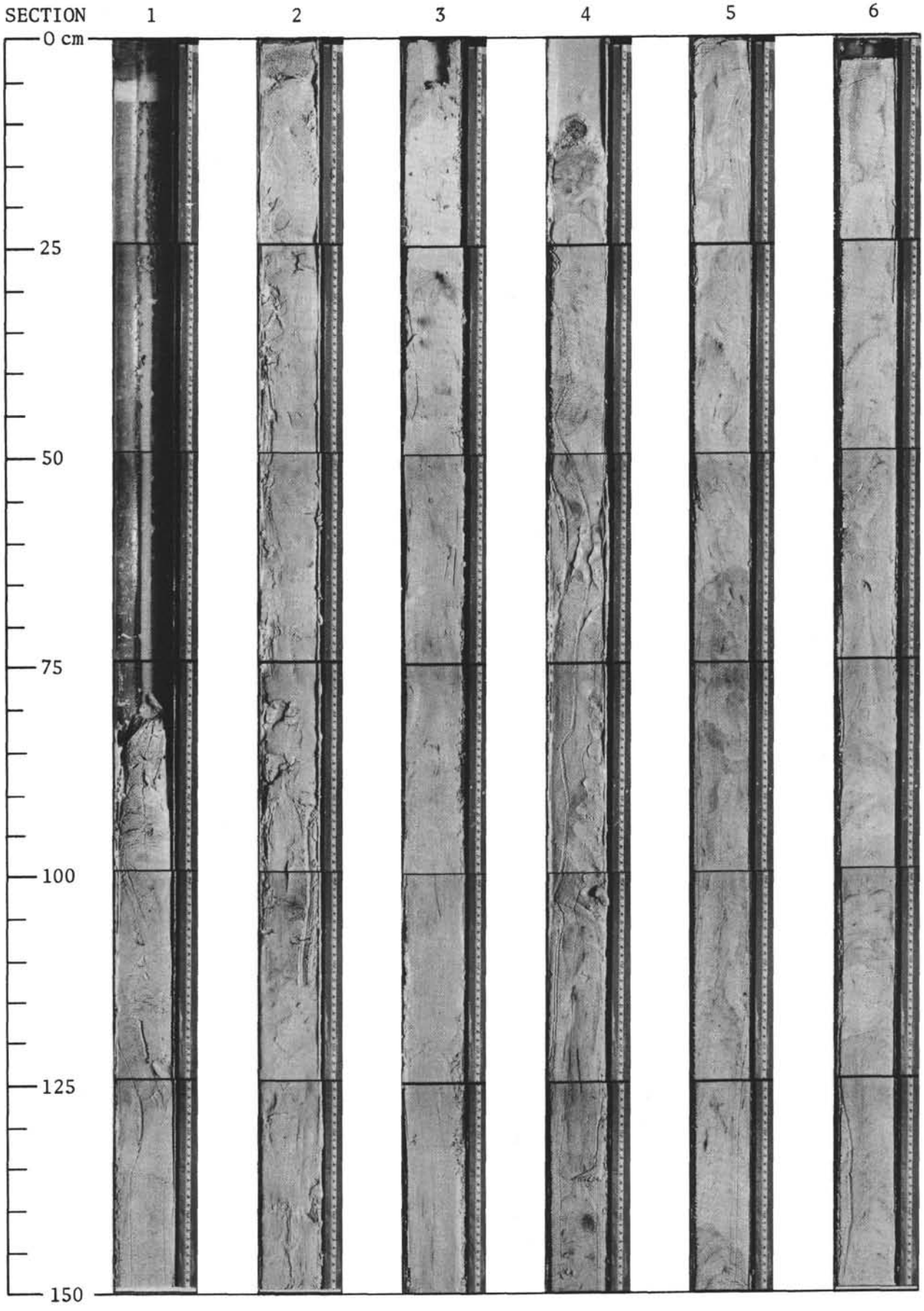


Site 72A, Core 6, Physical Properties

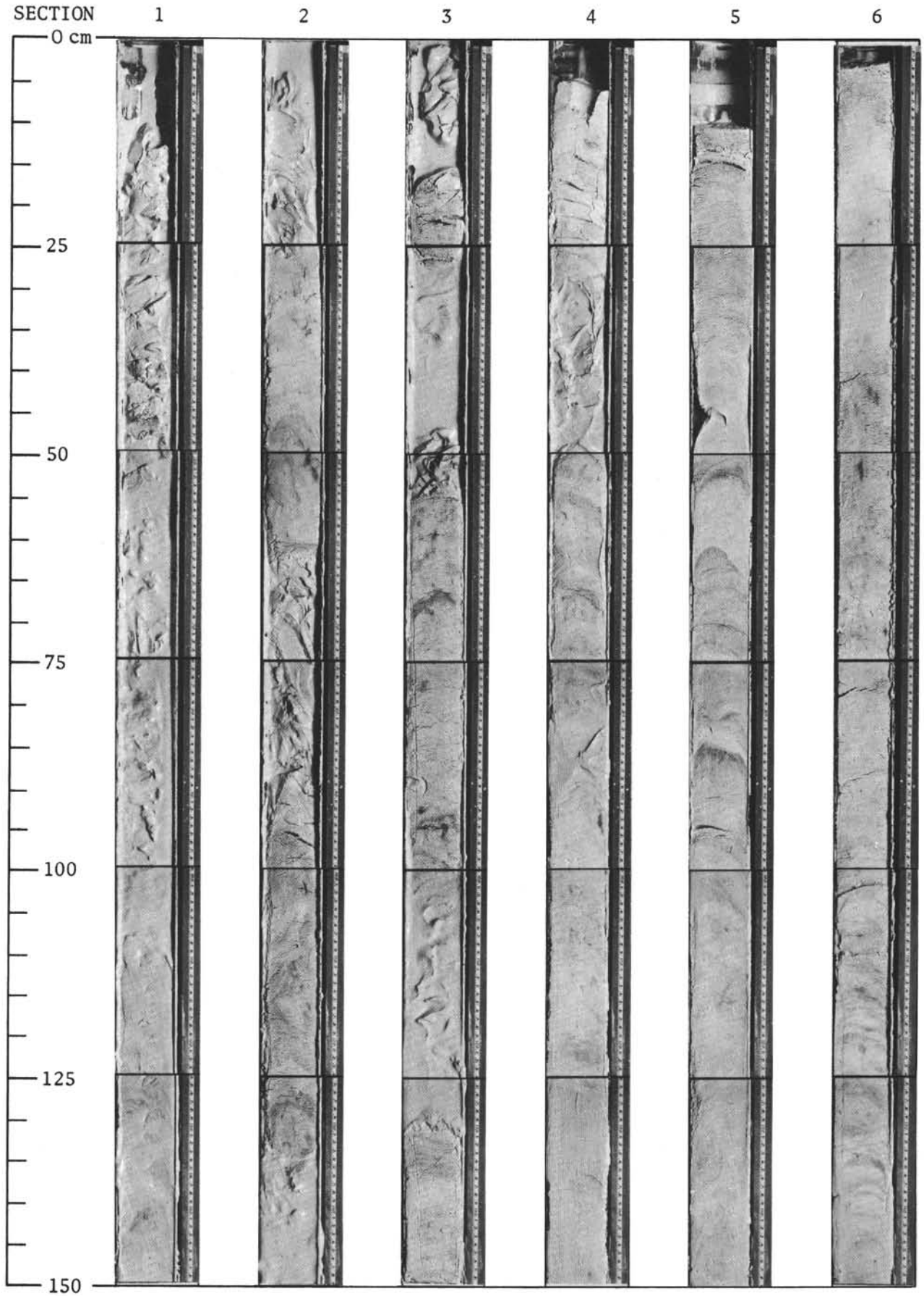




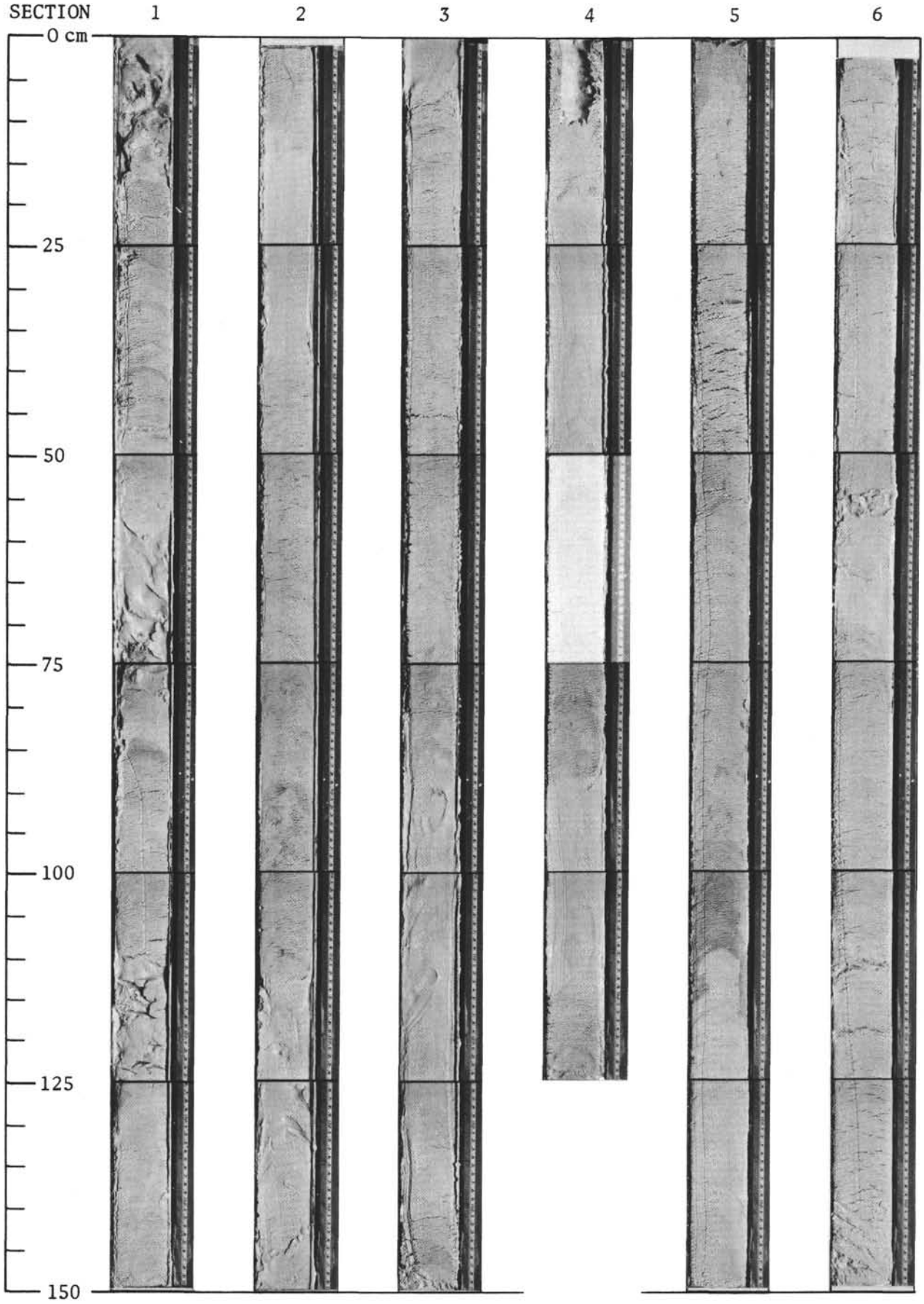
Site 72, Core 1, Sections 1, 2, 3, 5, 6.



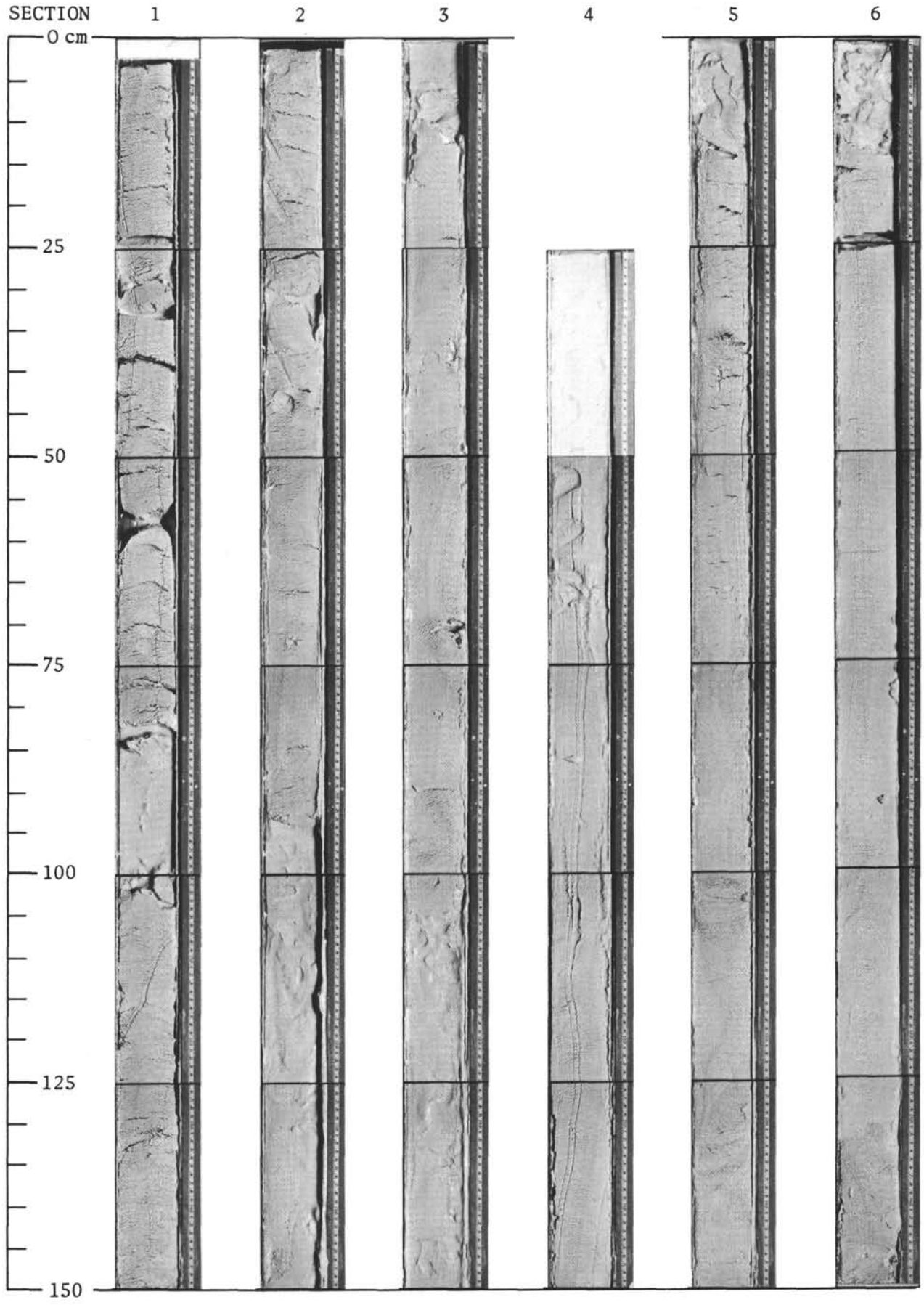
Site 72, Core 2, Sections 1-6.



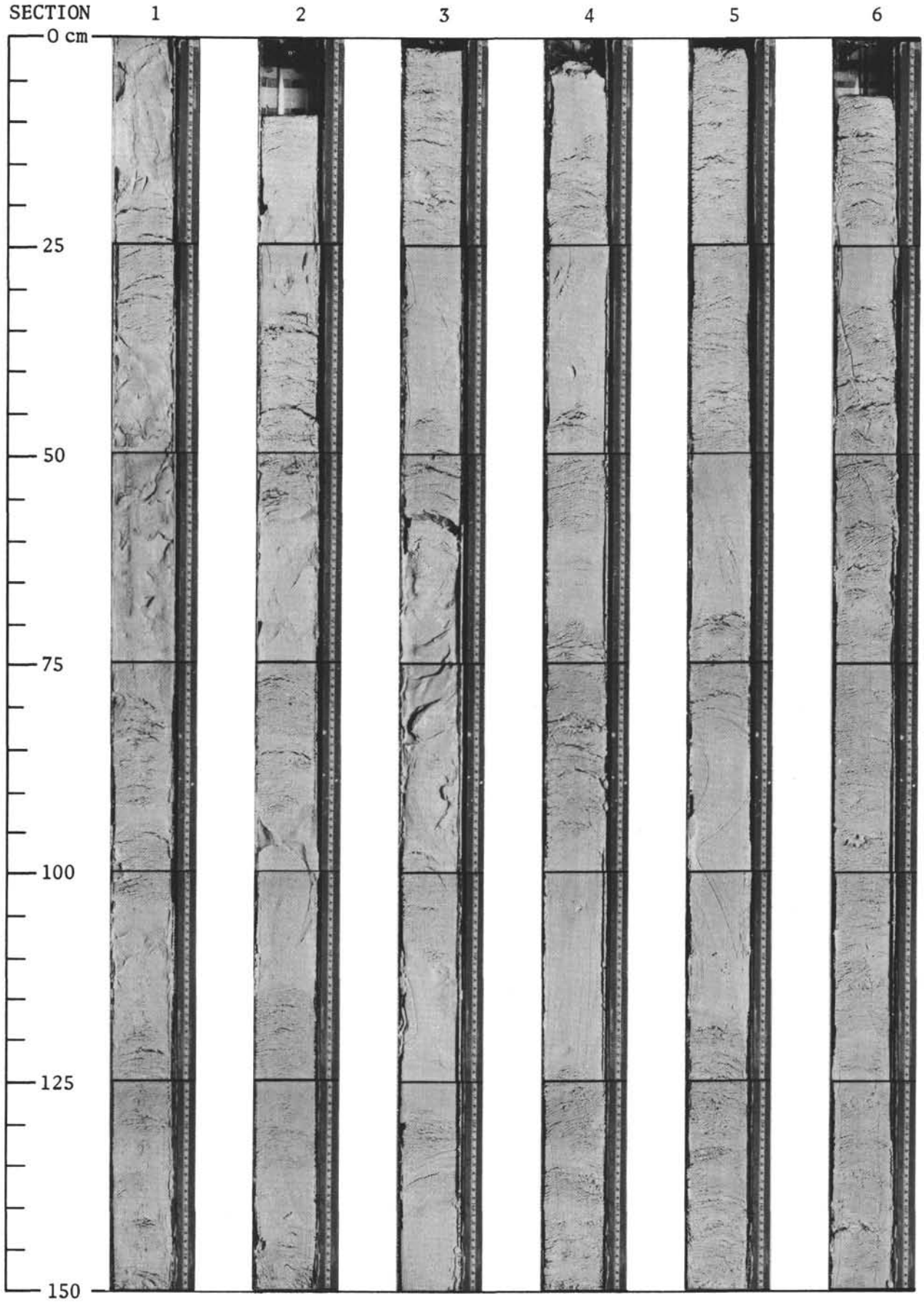
Site 72, Core 3, Sections 1-6.



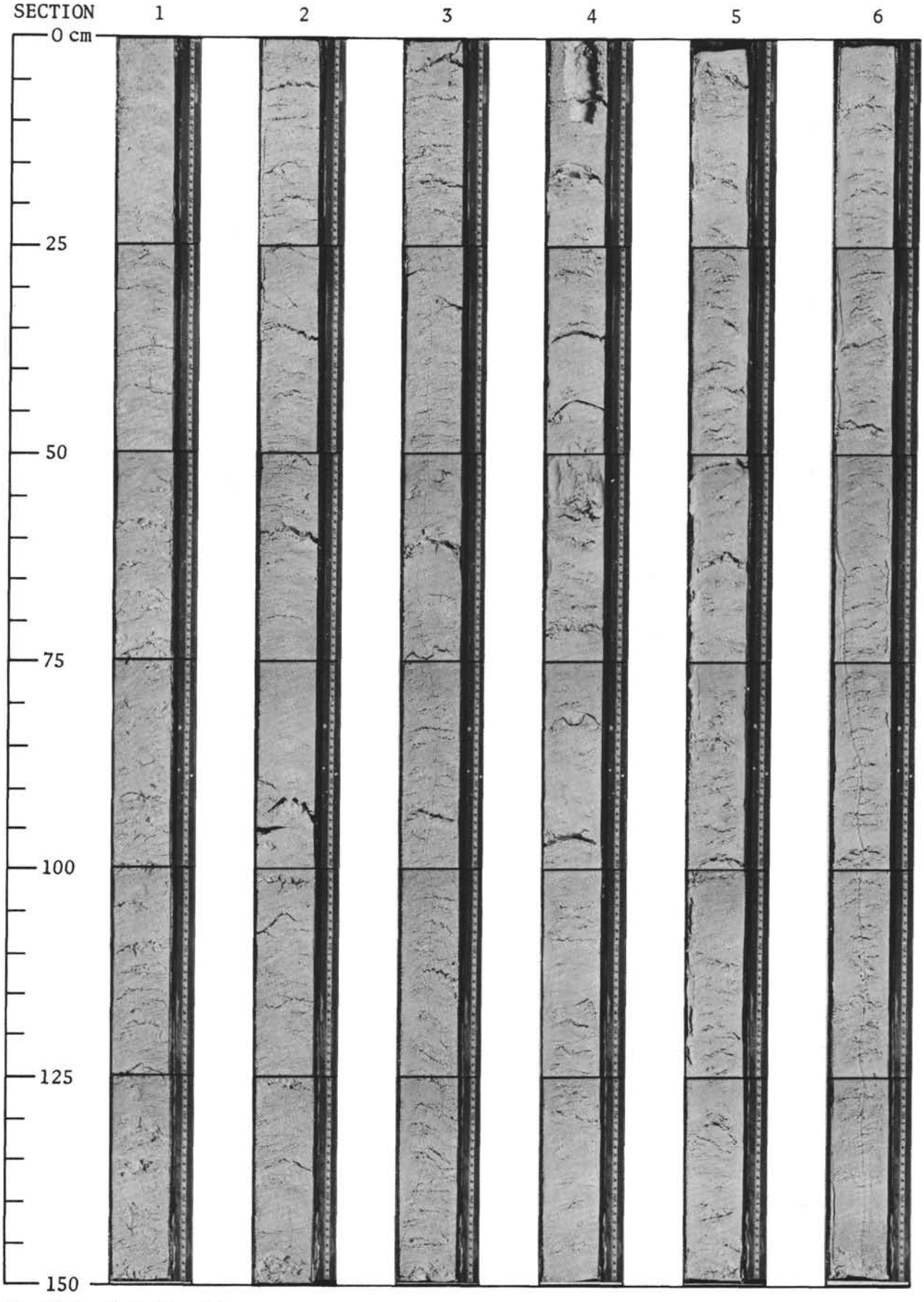
Site 72, Core 4, Sections 1-6.



Site 72, Core 5, Sections 1-6.

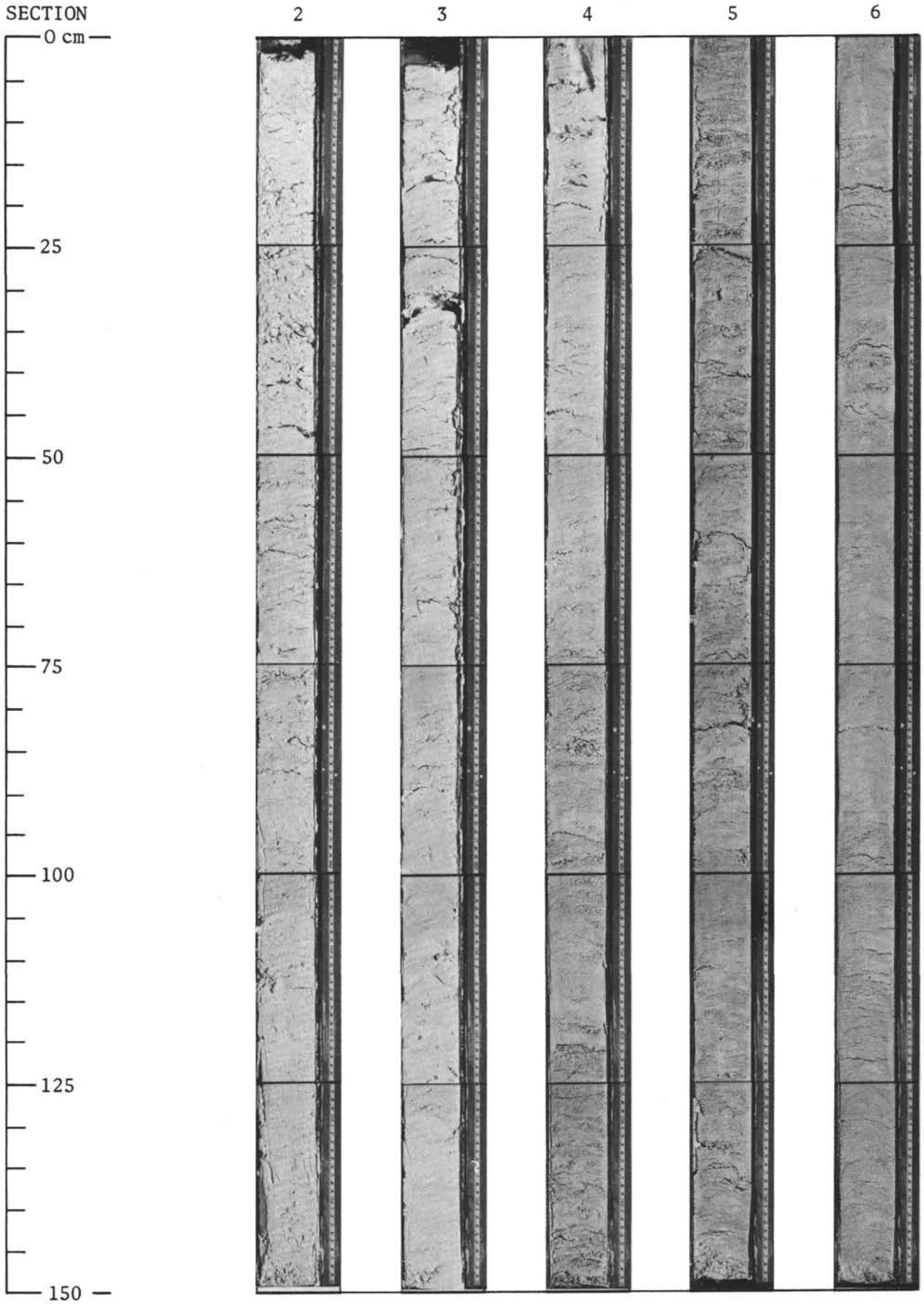


Site 72, Core 6, Sections 1-6.

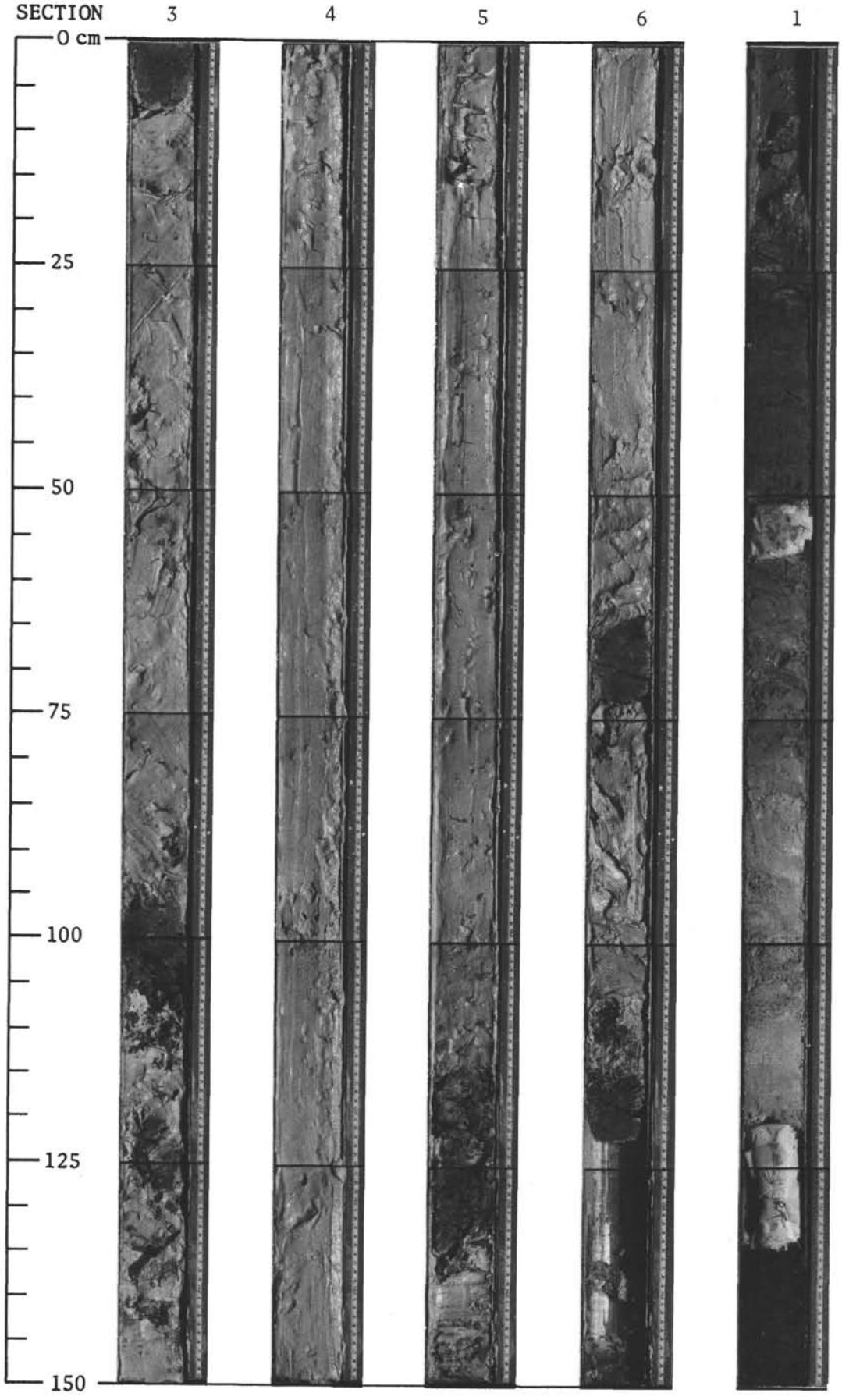


Site 72, Core 7, Sections 1-6.

Site 72, Core 8, Sections 2, 5, 6.

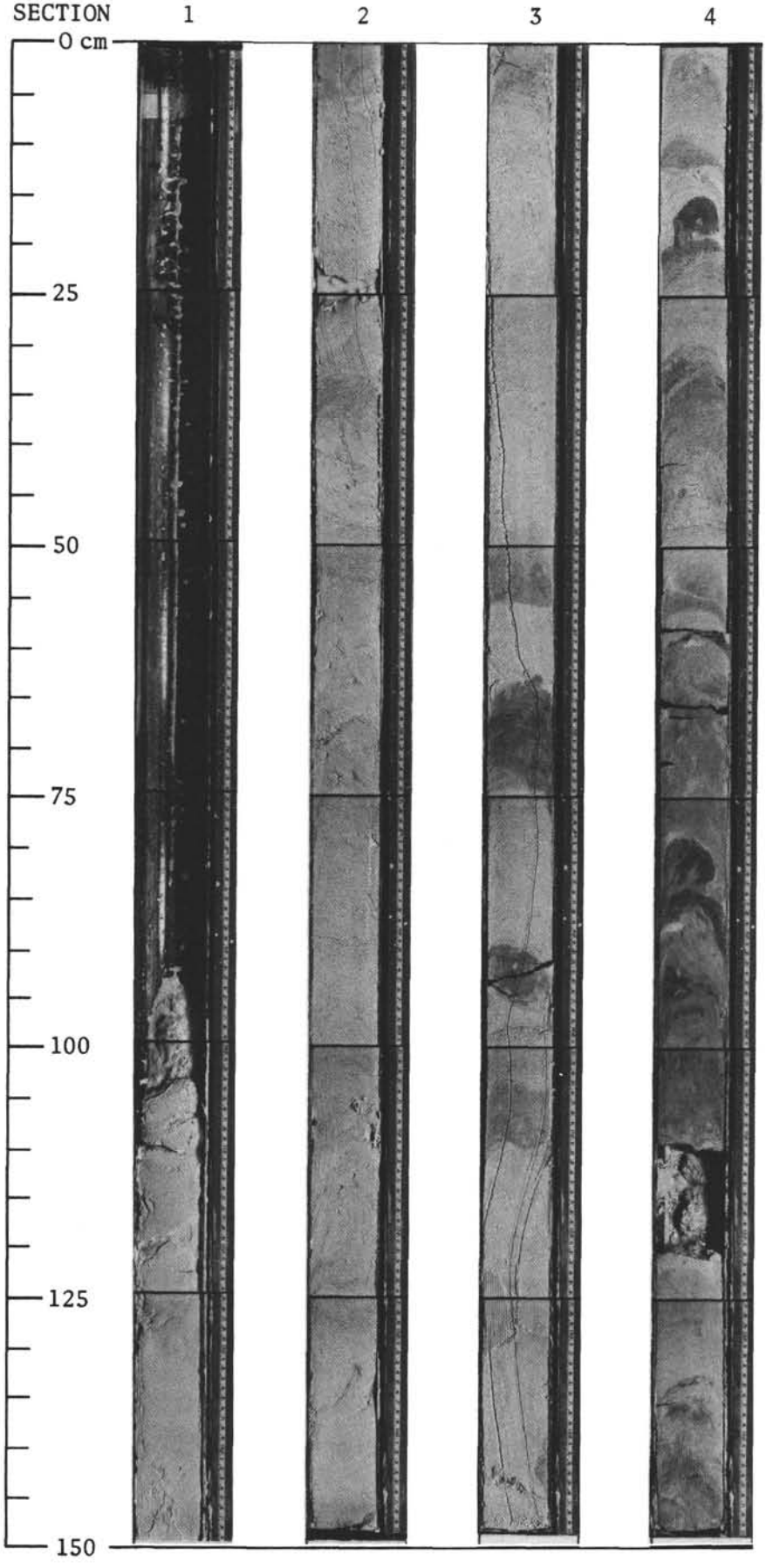


Site 72, Core 9, Sections 2-6.

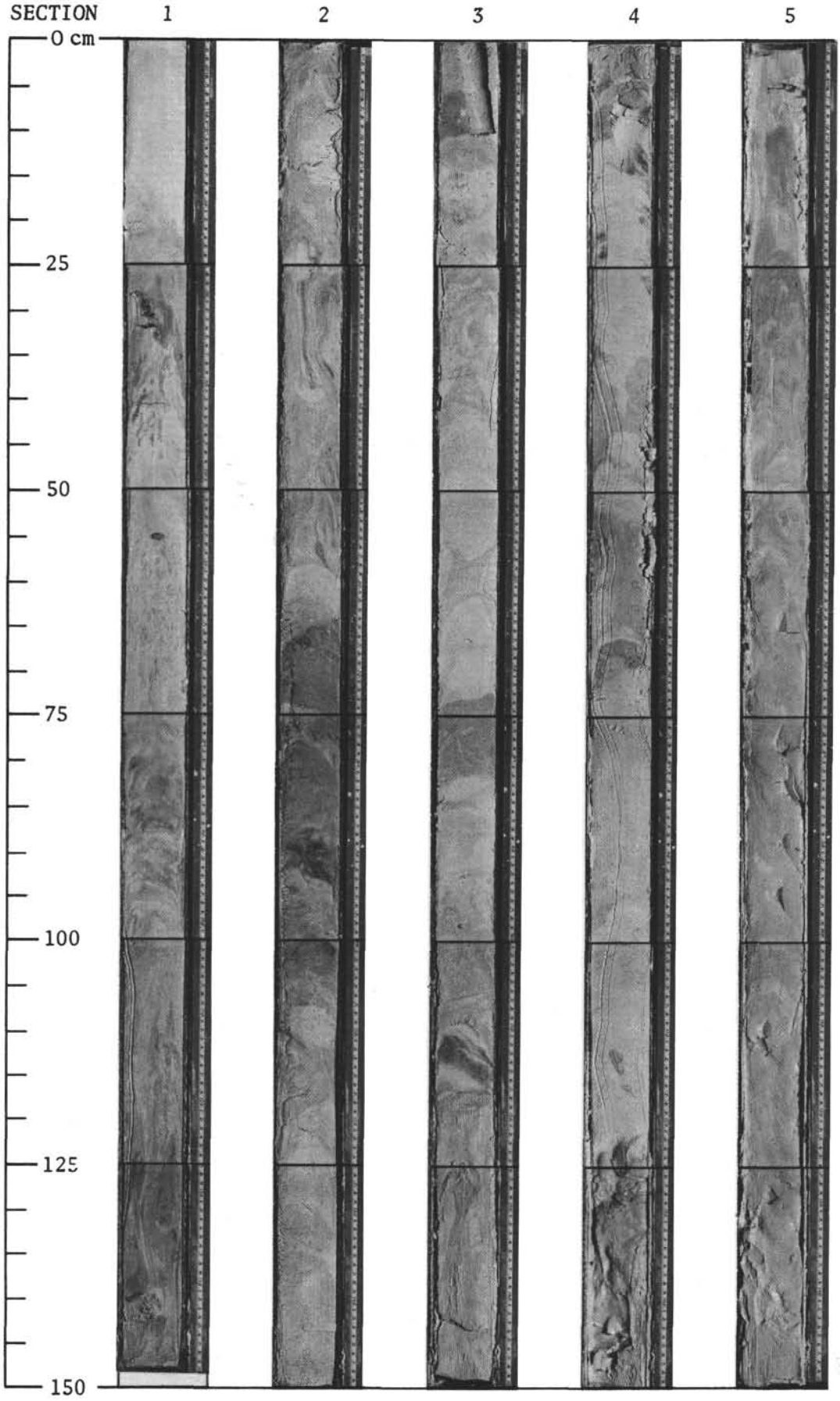


Site 72, Core 10, Sections 3-6.

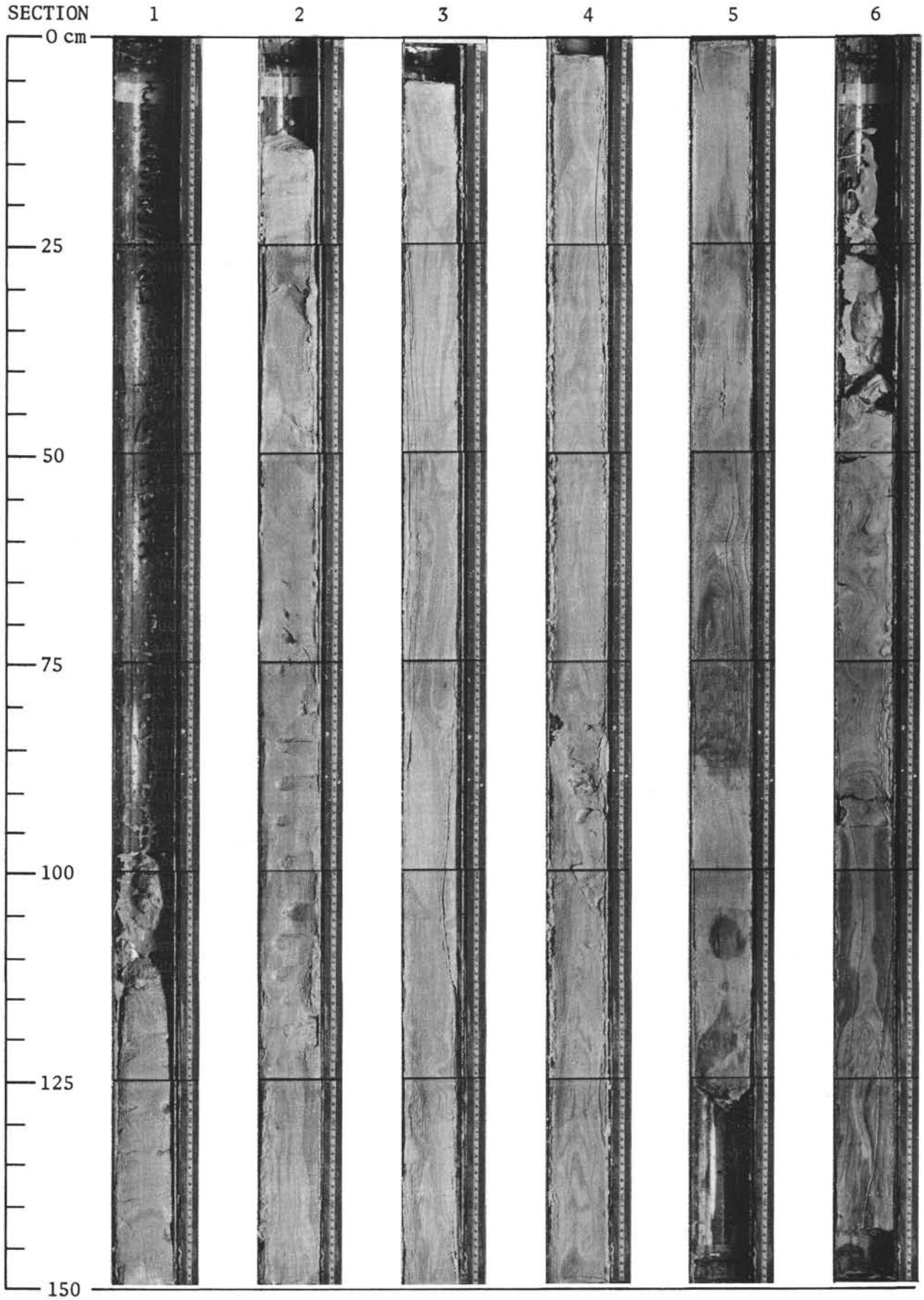
Site 72, Core 11, Section 1.



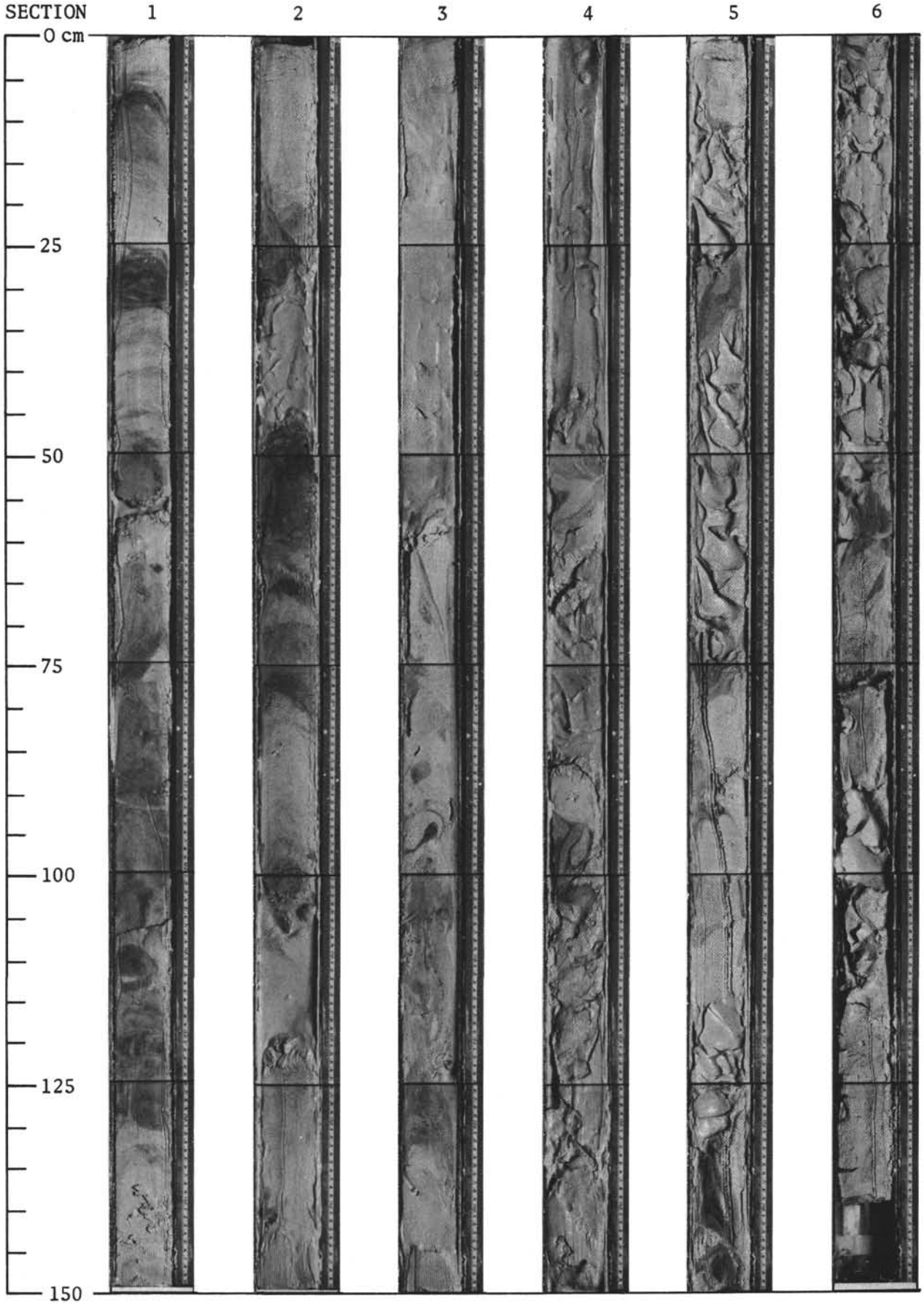
Site 72A, Core 1, Sections 1-4.



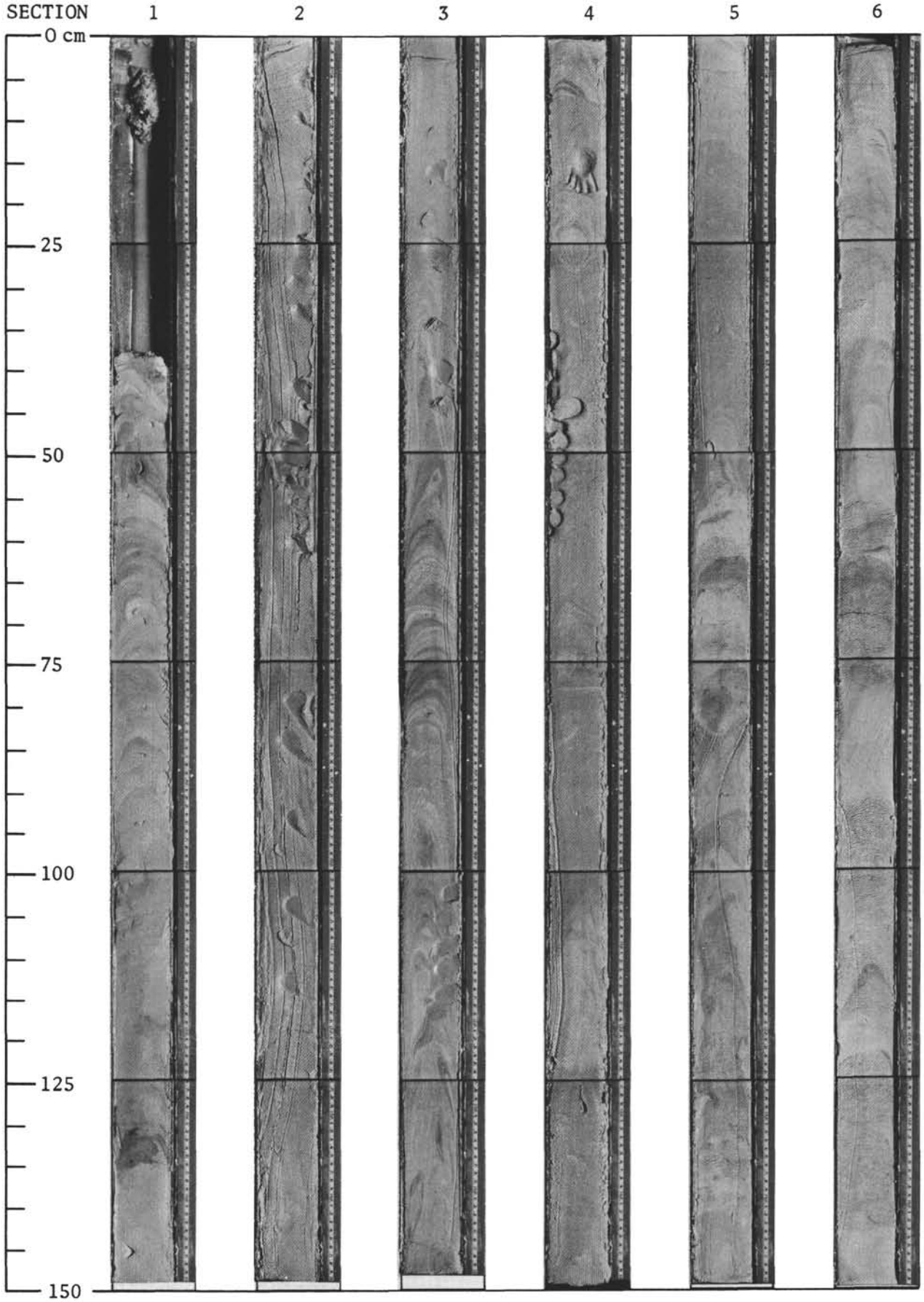
Site 72A, Core 2, Sections 1-5.



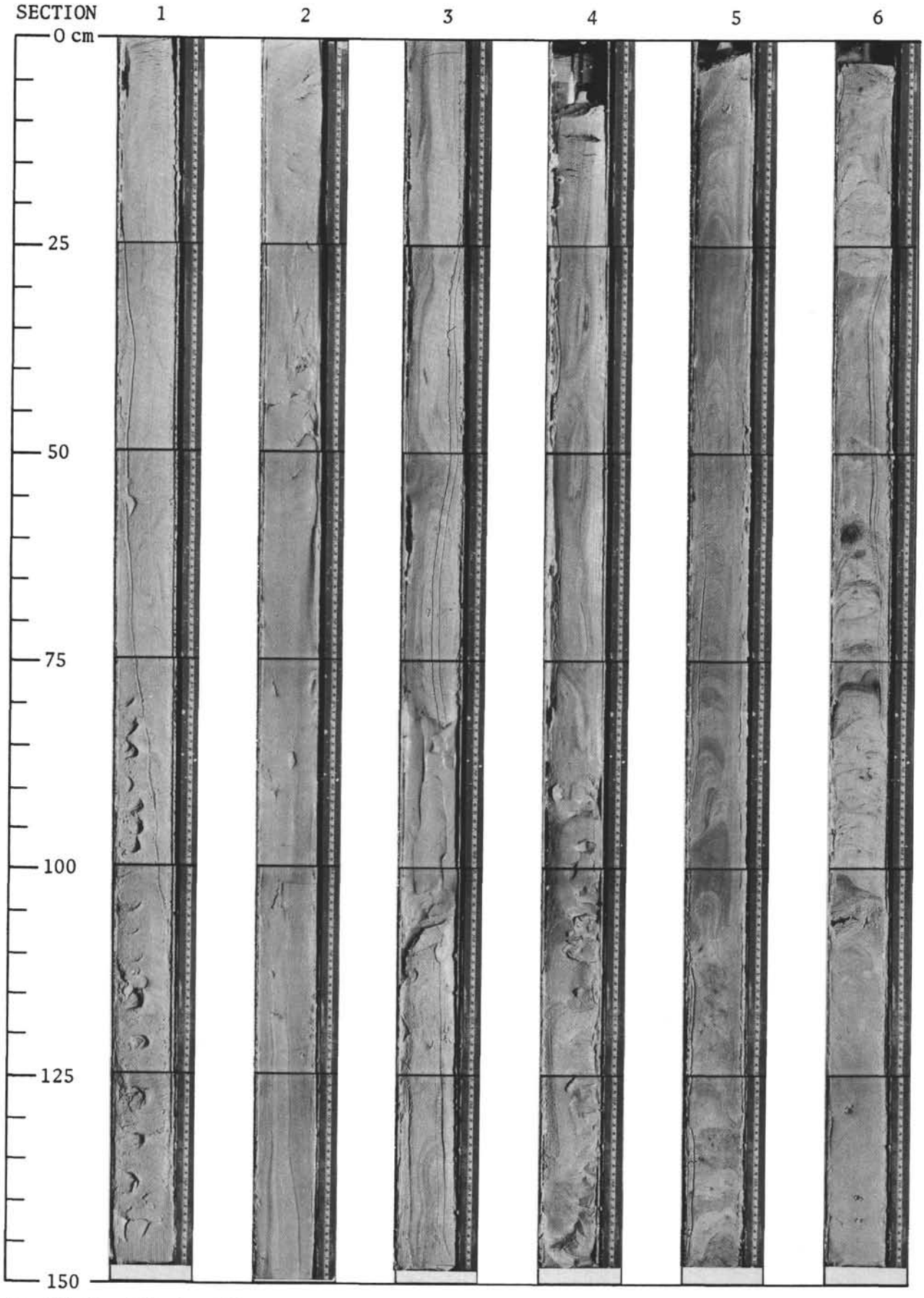
Site 72A, Core 3, Sections 1-6.



Site 72A, Core 4, Sections 1-6.



Site 72A, Core 5, Sections 1-6.



Site 72A, Core 6, Sections 1-6.