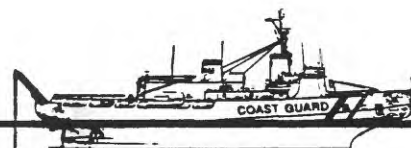


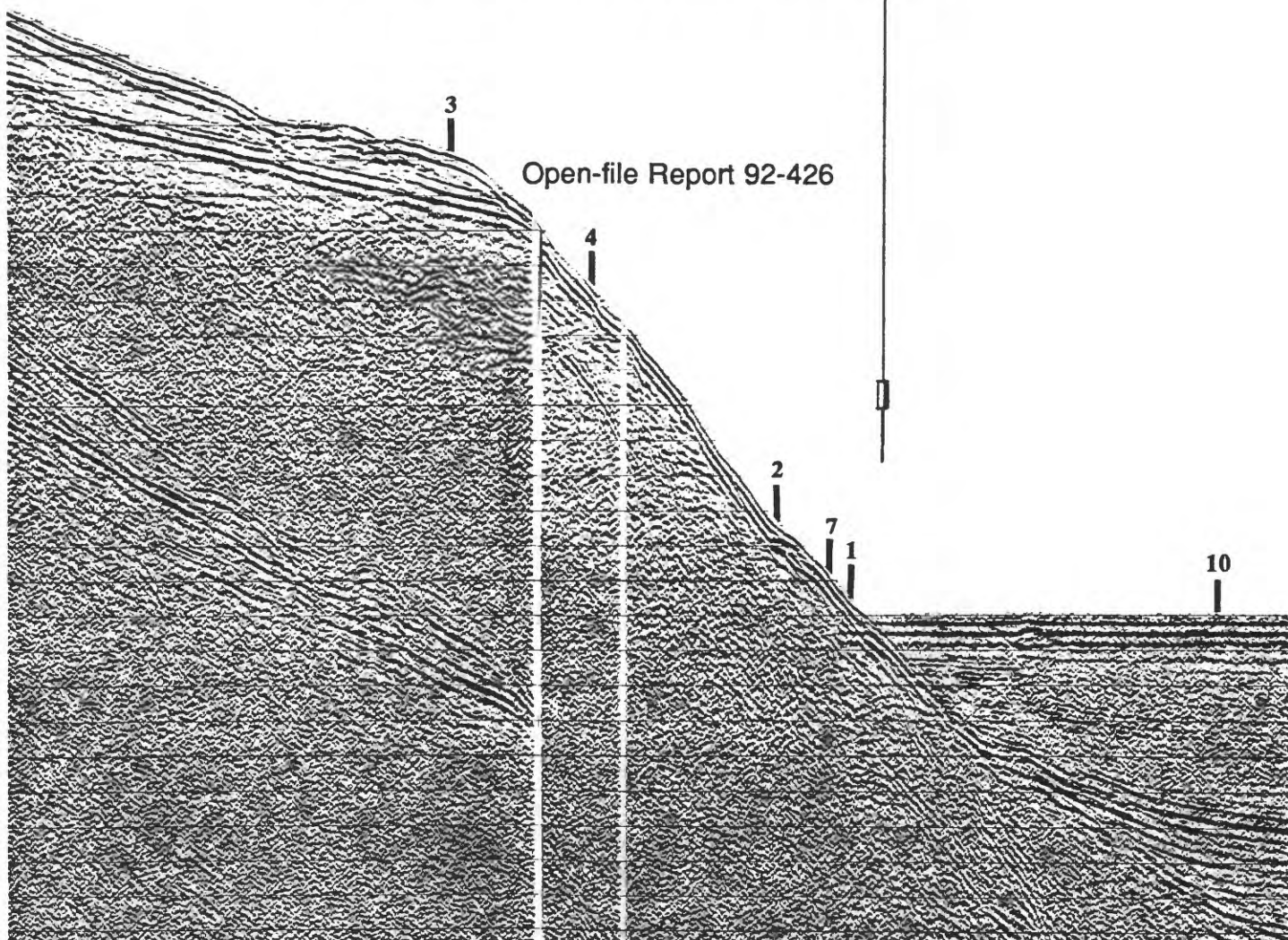
U. S. DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

**SUMMARY OF LITHOSTRATIGRAPHY AND STRATIGRAPHIC
CORRELATIONS IN PISTON CORES FROM NORTHWIND
RIDGE, ARCTIC OCEAN, FROM USCGC
POLAR STAR, 1988**

by



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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic Code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

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The cores on the cover have been projected along the isobaths from their original positions.

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INTRODUCTION

Nine piston cores were obtained from the crest and east flank of the southern part of Northwind Ridge, Arctic Ocean, by the U.S. Coast Guard Cutter *POLAR STAR* in September, 1988. These cores were obtained to determine the Quaternary depositional and environmental history of the Arctic Basin north of Alaska and the character and age of bedrock in Northwind Ridge. Eight piston cores, ranging in length from 197 to 626 cm were obtained from Northwind Ridge itself; and one core, 847 cm in length, was obtained nearby from the deepest part of the Canada abyssal plain east of Northwind Ridge (Figure 1, Table 1). This report presents the lithostratigraphy, the initial results of textural investigations, microfauna observations, and stratigraphic correlations of the cores in four sheets of correlated stratigraphic columns and as text descriptions and tables.

TABLE 1

Core number	Number of core sections	Water depth (meters)	Core length(cm)	Core location
1	2	3636	220	74° 38.77', 157° 18.40'
2	2	3223	197	74° 38.84', 157° 25.63'
3	4	1909	581	74° 35.60', 157° 39.59'
4	3	2430	419	74° 40.91', 157° 23.97'
5	5	1089	476	74° 37.35', 157° 53.04'
6	4	1159	550	74° 39.91', 158° 03.49'
7	4	3513	536	74° 37.76', 157° 23.17'
9	5	945	626	75° 01.38', 158° 14.23'
10	6	3899	847	74° 43.51', 156° 08.46'

METHODS

The cores were initially split into an archive and a working half. The core strata was visually described, for color, sedimentary structures, and major lithologic units (Phillips and others, 1990). The archived half of the each core section was then prepared with an osmotic knife and photographed with continuous strip 35 mm color film. The color strip photographs are being prepared for publication. X-ray radiographs were obtained to identify sedimentary structures and pebble-rich ice-rafted stratigraphic units, and to record the inclination of the slope strata. The results of the X-ray radiograph studies are included in the present report.

Cores 1, 2, 5, 7, and 9 were sampled for magnetostratigraphy (Rieck and others, 1992). Sieve analysis was performed on select sand-size samples to identify possible current winnowed sediment (unimodal distribution) from ice rafted sediment (polymodal distribution).

Initially, a total of 880 sediment samples (10 cc) were obtained at 5 to 10 cm intervals along each core as well as on both sides of all distinct lithologic boundaries. The samples were washed by distilled water through 62 μ and a 2000 μ sieves to separate gravel (>2000 μ), sand (62 μ –2000 μ), and a combined silt and clay (< 62 μ)

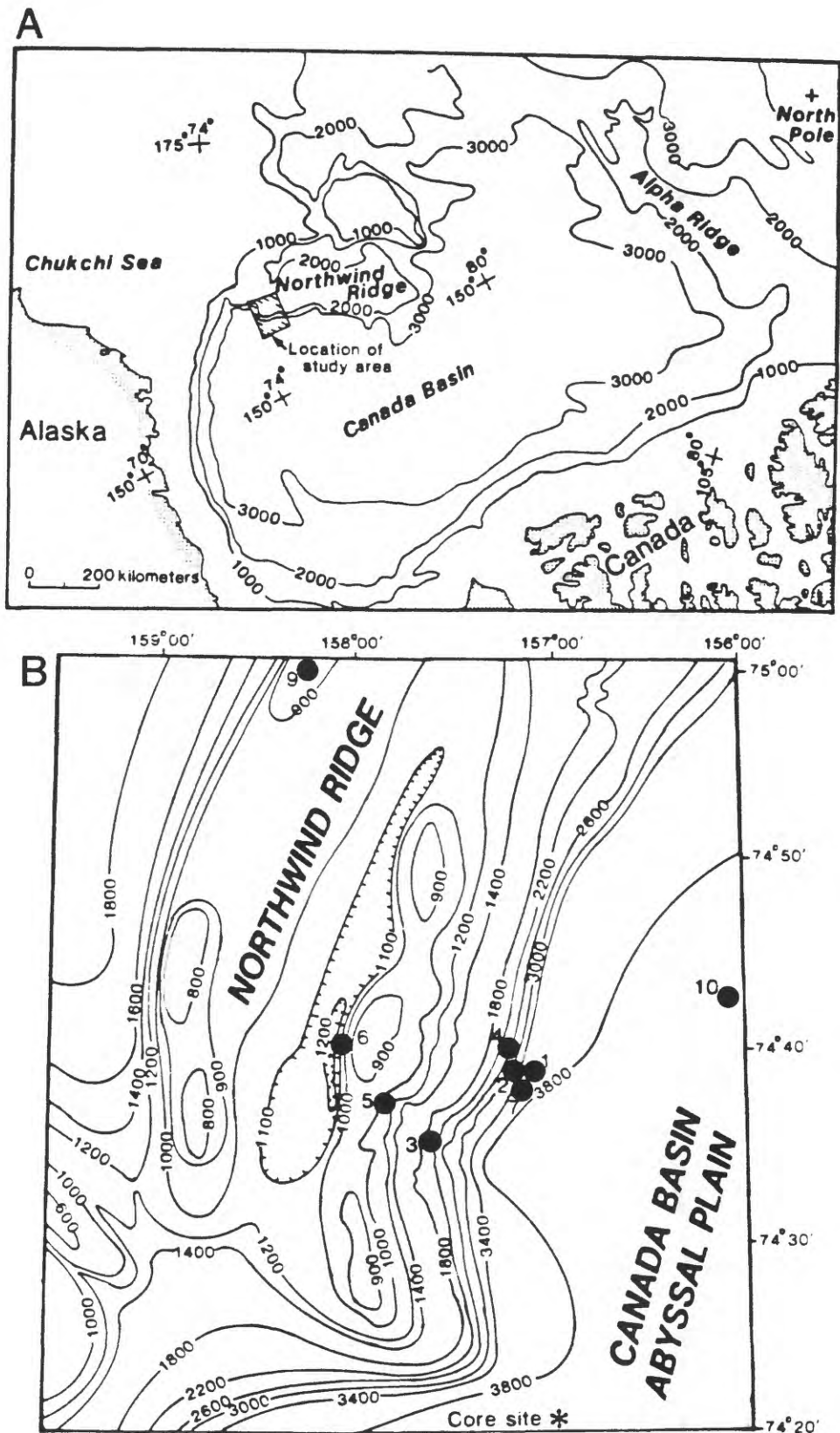


Figure 1. A. Location of study area. B. Bathymetry in meters and core sites of study area located on southeastern Northwind Ridge, modified from Mullen and others, 1991.

fraction. The sand and gravel fractions were air dried and the silt and clay fractions were dried with the aid of heat lamps. The sediment was weighed and the weight percent determined for the size classes (Sheet 1, Appendix 1). The number of clasts were also counted in the $>2000\ \mu$ fraction and the maximum pebble size measured in each sedimentary unit. A maximum pebble size was determined (Sheet 1) by comparing the washed samples, the clasts exposed in the split core sections, and clasts observed in the X-ray radiographs.

The sand-size fractions were examined by binocular microscope to determine the composition of the clastic and bioclastic components. The sand-size clastic component varies in composition but generally contains fine- to coarse-grained quartz, micaceous siltstone, quartzite, fine-grained sandstone, tan to cream limestone and dolomite, brown to black FeMn micro-nodules, hematite, mica, and metamorphic and igneous grains. The major biogenic components were identified qualitatively. The fauna varies in abundance and when present consists of planktic foraminifers, arenaceous and calcareous benthic foraminifers, ostracodes, sponge spicules, echinoid spines, and very rare radiolaria. Pteropods and diatoms are found in the upper 50 cm of the ridge top cores. Planktic foraminifers, when present, greatly exceed by number and volume all remaining biogenic components. Arenaceous foraminifers may only be present in some stratigraphic intervals. Abundance peaks of total foraminifer population (both benthic and planktic) were determined within the 62 to 2000 μ size fraction on a scale from rare (less than 10/cc), common (10-100/cc), abundant (100-1000/cc) and very abundant (greater than 1,000/cc) (Sheet 2, Table 3). Foraminifer identification and counts are being conducted with the initial data for core 5 presented in Foley and Poore (1991).

STRATIGRAPHY

Correlation of the lithostratigraphy between cores was based on a combination of distinct bedding features including color, sediment composition, sand-size texture and vertical distribution, the presence of or lack of ice-rafted clasts, the occurrence or lack of fossils, and the presence or lack of Mn micronodules. Distinctive beds such as the light colored carbonate- and clastic-rich strata (may equal PW2 of Clark, 1980) can be correlated on the ridge crest and slope providing very useful stratigraphic horizons (Figure 2).

The age of the Quaternary strata was initially determined based on magnetostratigraphy (Rieck and others, 1992; Poore and others, 1992) and correlated with the cyclic glacial-interglacial sediment sequences. The age of the Cretaceous strata was determined by identification of the foraminiferal fauna (Figure 3).

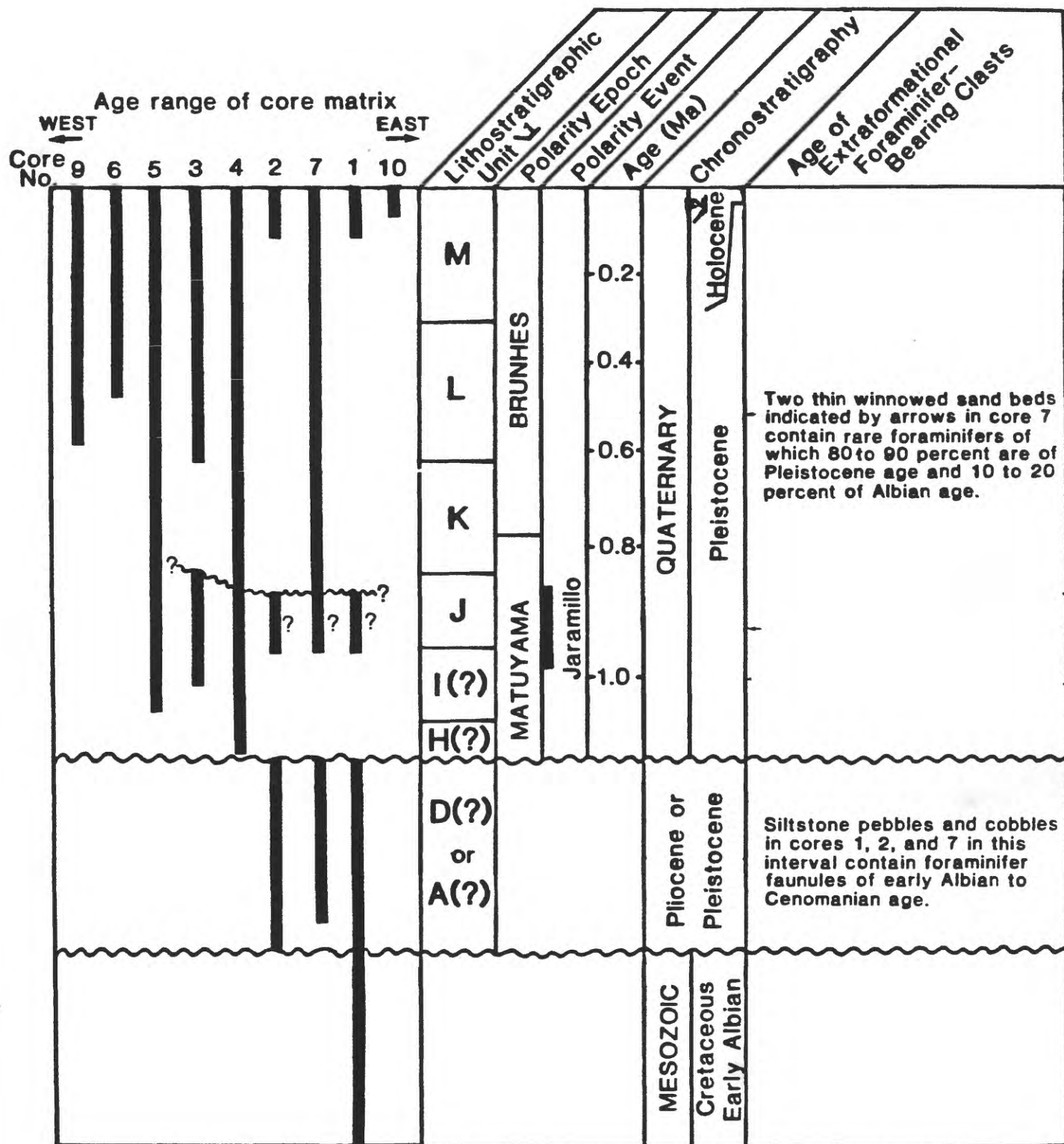
The cores on Northwind Ridge consist of soft to consolidated muddy beds of interbedded silt and clay, sandy mud, to gravelly sandy mud. The strata are flat lying on the crest of Northwind Ridge (cores 5, 6, and 9), but contain inclined beds with 3° to 18° dip on the eastern slope. Erosion has removed some distinctive stratigraphic units from all of the slope cores (cores 1, 2, 3, 4, and 7, Sheet 3).

The Quaternary section on the crest and east flank of Northwind Ridge contains dark brown muddy beds that alternate with gray, olive gray, or tan strata.

9 6 5 3 4 7



Figure 2. Correlative clastic-rich strata (two light colored beds which may equal PW2) near the base of unit "M" of Clark (1980) on the crest and flank of Northwind Ridge. The lowest light colored bed starts at a depth of 224 cm in core 9, 170 cm in core 6, 108 cm in core 5, 289 cm in core 3, 98 cm in core 4, and 163 cm in core 7. A bioturbated dark brown bed overlies the clastic-rich strata.



1 After Clark and others, 1980.

2 Base of Holocene not determined paleontologically

Figure 3. Age range of matrix and extraformational clasts in piston cores from Northwind Ridge, Arctic Ocean, collected by U.S. Geological Survey from U.S. Coast Guard Cutter Polar Star in September, 1988. Lithostratigraphic units after Clark and others (1980). Base of Holocene not determined paleontologically.

and the coarse-grained ice-rafted clastic component usually marks the end of the interglacial stage.

Bioturbation, currents, and possibly slumping are processes that alter the glacial and interglacial depositional sequences. Bioturbation is common and in some beds it is intense. In general, the amount of bioturbation increases with the depth on the slope. Both horizontal and vertical burrows are present and they range from 1 to 20 mm in diameter and from a few mm to more than 230 mm in length. Bioturbation mixed the sediments and faunas of both interglacial and glacial beds, and resulted in beds with gradational to diffused bedding contacts. Evidence of current erosion or reworking of the sea bed is found in alternating mud-sand laminae (sand content to 65 percent with a unimodal distribution, see histogram in Appendix 1) in core 9; in winnowed gravel beds in the two basal Quaternary gravel beds in cores 1, 2, and 7 where the clasts are concentrated and in contact; and possibly in some stratigraphic sequences that are missing within the slope cores (see Sheet 1). Currents, slumping, or a combination of both processes has removed and thinned the Quaternary sections in cores 1 and 2 which are located near the base of the slope. The sedimentary breccia in cores 1 and 2 may represent slump deposits derived from up-slope bedrock exposures.

Muddy turbidite deposition containing possibly as many as 5 events are recognized based on fining upward texture in core 10 from the abyssal plain of the Canada Basin (Sheet 1, Appendix 1). The entire section in the core, which represents high sedimentation rates, is of Holocene age.

ACKNOWLEDGEMENTS

We thank Captain Richard Taylor and the crew of the U.S. COAST GUARD CUTTER *POLAR STAR* for their dedication and hard work that enabled us to achieve a highly successful cruise. Alan Gagnon and Glen Jones of the Woods Hole Oceanographic Institute aided in all coring operations for which we are extremely grateful for their considerable help. We also thank Dave Clark for his time and effort spent in discussion and in reviewing the cores and core stratigraphy.

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Clark, D. L., Whitman, R. R., Morgan, K. A., and Mackey, S. D., 1980, Stratigraphy and glacial-marine sediments of the Amerasian Basin, central Arctic Ocean: Geological Society of America Special Paper 181, 57 p.

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The brown beds usually contain common to abundant ice-rafted pebbles and cobbles, a sand-size fraction that ranges up to 34 percent, abundant foraminifers (in the upper 10 dark brown beds), and common to intense bioturbation (Sheets 1 and 2, also see core photographs). The intercalated gray or tan beds may either completely lack ice-rafted sand or gravel or rarely may contain a very small ice-rafted (sand and pebbles) sediment component. Foraminifers in these beds, if present, usually consist of arenaceous forms (<5/cc).

Pliocene and Pleistocene sediment in the basal section of core 7 (core section 4, Sheet 1 and 2) consists of 1.5 m of bioturbated and laminated fine-grained sandy mud containing a few siltstone clasts (slump deposit) which contain Cretaceous (Albian) benthic foraminifers. The matrix contains both Pliocene and Pleistocene benthic and very rare (<1/cc) planktic foraminifers. This unit lacks ice-rafted clasts.

A breccia deposit composed of overconsolidated gray siltstone clasts, up to 8 cm in length, containing Cretaceous foraminifers (Grantz and others, 1991) set in tan, olive gray, or orange mud matrix occurs in the lower parts of cores 1 and 2 (Sheet 1 and 2). Orange iron oxide concretions and Mn micronodules are also found within the matrix. At the base of core 1 is a monolithologic rubble of overconsolidated black silty shale clasts that is interpreted to represent bedrock or only slightly transported regolith resting on bedrock.

Lithostratigraphy in the upper parts of the cores (Sheet 4) were subsequently identified and correlated to the standard Arctic stratigraphic sequences by David L. Clark (University of Wisconsin) with his Arctic lithostratigraphic units M to possibly H (Clark and others, 1980). An apparent paleomagnetic reversal (Rieck and others, 1992) and a lack of ice-rafted sediment suggest that the basal part of core 7 (section 4, Sheet 4) may represent either unit "D" or "A" of Clark and others (1980).

QUATERNARY SEDIMENT PROCESSES

Cyclic glacial and interglacial sedimentary environments produced the characteristic stratigraphy of the Northwind Ridge cores. At least 10 major glacial-interglacial sedimentary cycles are identified in cores from the ridge top. Thin to thick beds of silt and clay containing Fe-Mn micronodules and rare arenaceous foraminifers were deposited during glaciations when thick sea ice covered the western Arctic Ocean limiting ice-rafting of sediment. These beds are in turn overlain by strata that are rich in coarse clastics and contain rare foraminifers that we inferred represent the initiation of interglacial conditions. During the initial stages of deglaciation, the thick sea ice thins and is broken up into drifting ice floes which allowed icebergs from the surrounding continental glaciers to reach the Northwind Ridge area. Melting of these sediment laden icebergs brought a rain of clastic sediment to the sea floor. A generally decreasing clastic sediment content (but with some clastic sediment pulses) and an increasing biogenic component characterize the overlying main body of interglacial sediment. The biogenic component consists of calcareous and arenaceous benthic foraminifers and abundant planktic foraminifers. The increase in the biogenic component is also accompanied by a change in color in the sediment from tan to dark brown. The more or less concurrent termination of the brown beds, the planktic foraminifers,

APPENDIX 1

In the appendix we present data for each core starting with the shallowest core on the ridge top, core 9, and proceed east across the ridge and down the east flank with increasing depth to the Canada Basin core. The data set includes: the core photograph, stratigraphic interval descriptions, a plot of the sand-size textural data, sediment size analysis if performed, on any samples in the core, a plot of the number of clasts found within a 10 cc sample, a table of the textural data, and a table of qualitative foraminifer observations.

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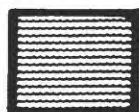
Grantz, A., Phillips, R. L., Mullen, M. W., Poore, R. Z., and Rieck, H. J., 1991, Climatic and paleo-oceanographic history of the Canada Basin, Arctic Ocean: U.S. Geological Survey Global Change Research Forum, Herndon, V. A., U.S. Geological Survey Circular (in press).

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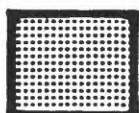
EXPLANATION OF CORE LOGS



Dark brown mud



**Tan or olive gray mud in cores
1 to 9. Dark gray mud in core 10.**



Pink or white clastic-rich strata.



Laminated interval.



Siltstone clasts in cores 1, 2, and 7.



Bioturbation



Flow-in

Northwind Ridge crest
Core 9
945 m
75° 01.38', 158° 14.23'

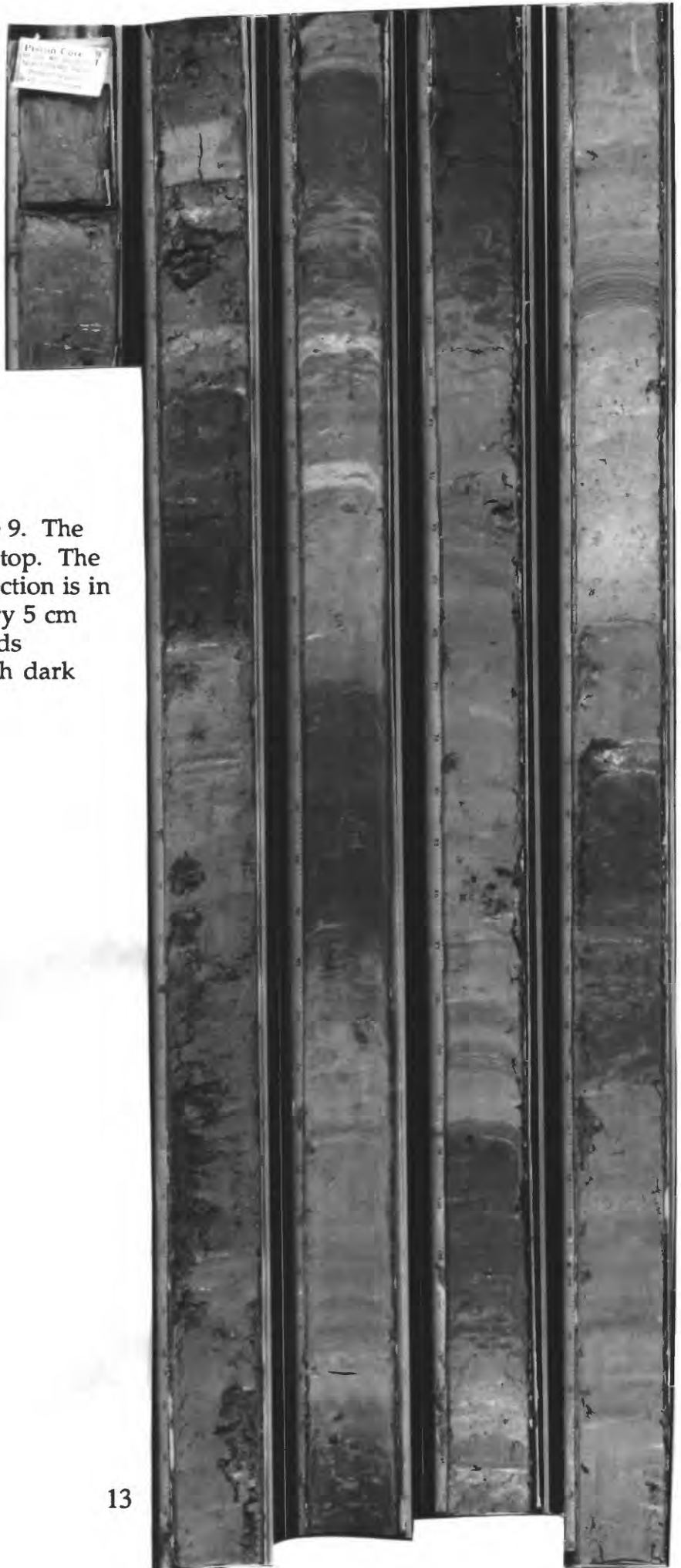


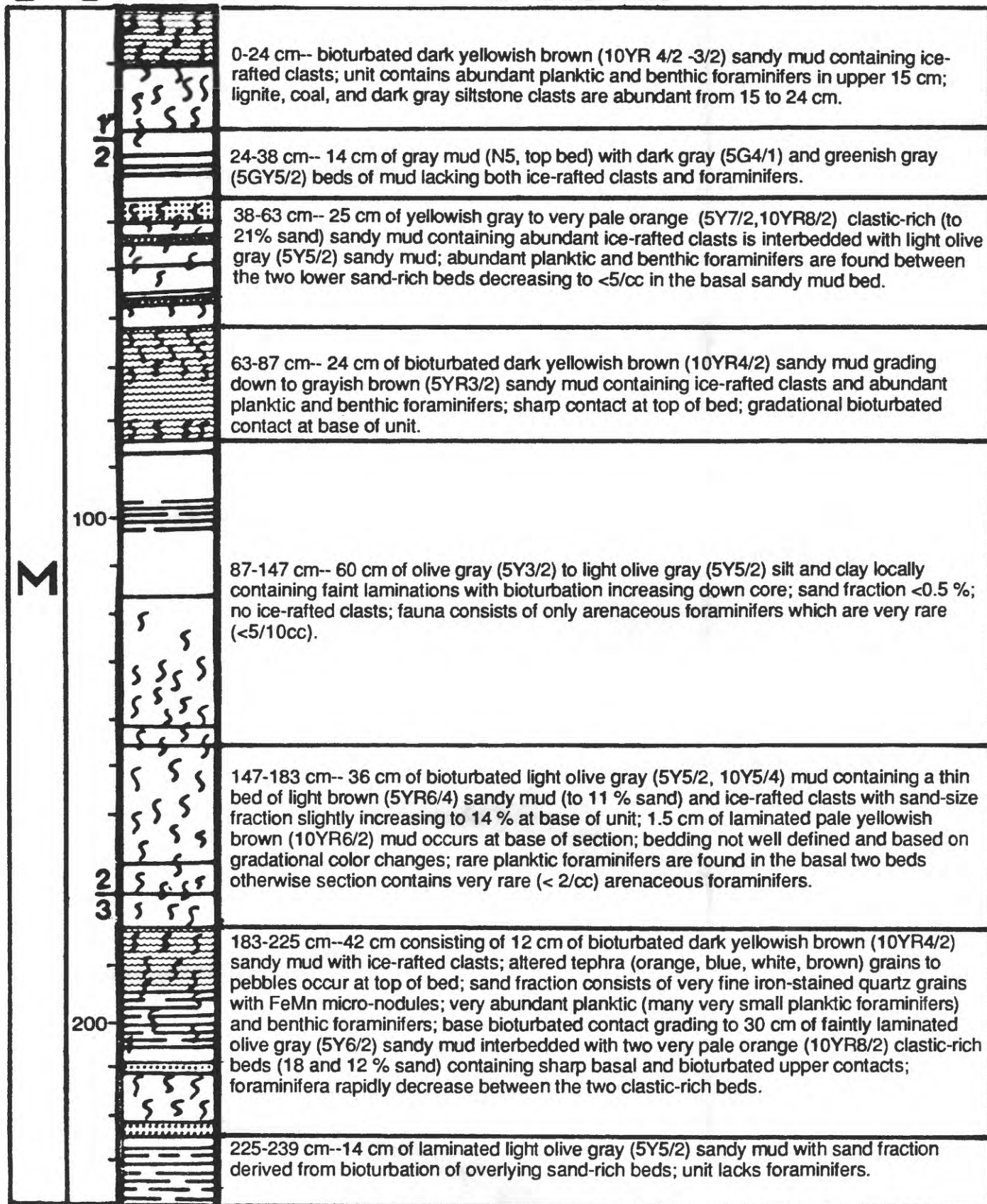
Figure 4. Photograph of core 9. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata.

UNIT

Σ

Core 9
945 m

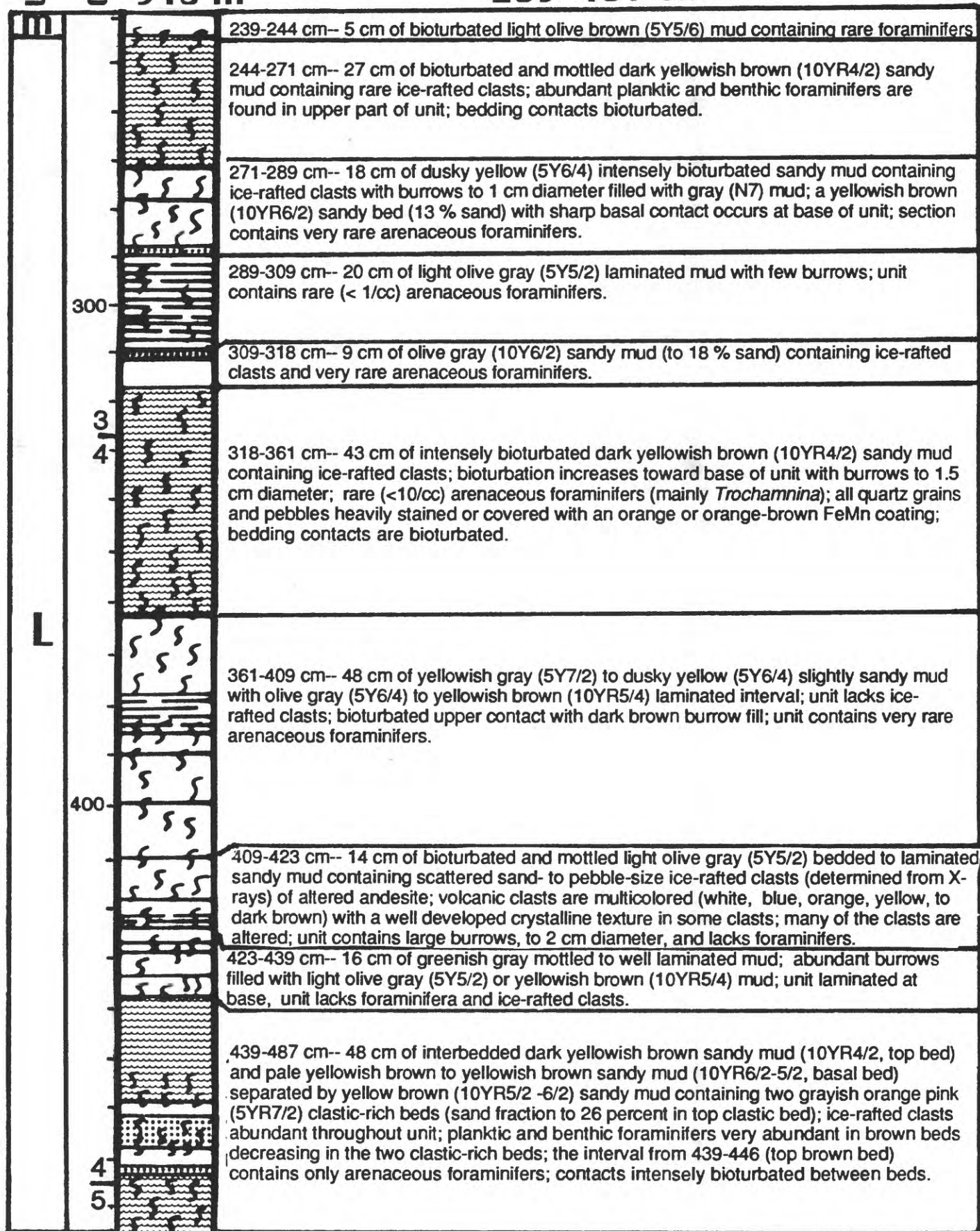
0-239 cm

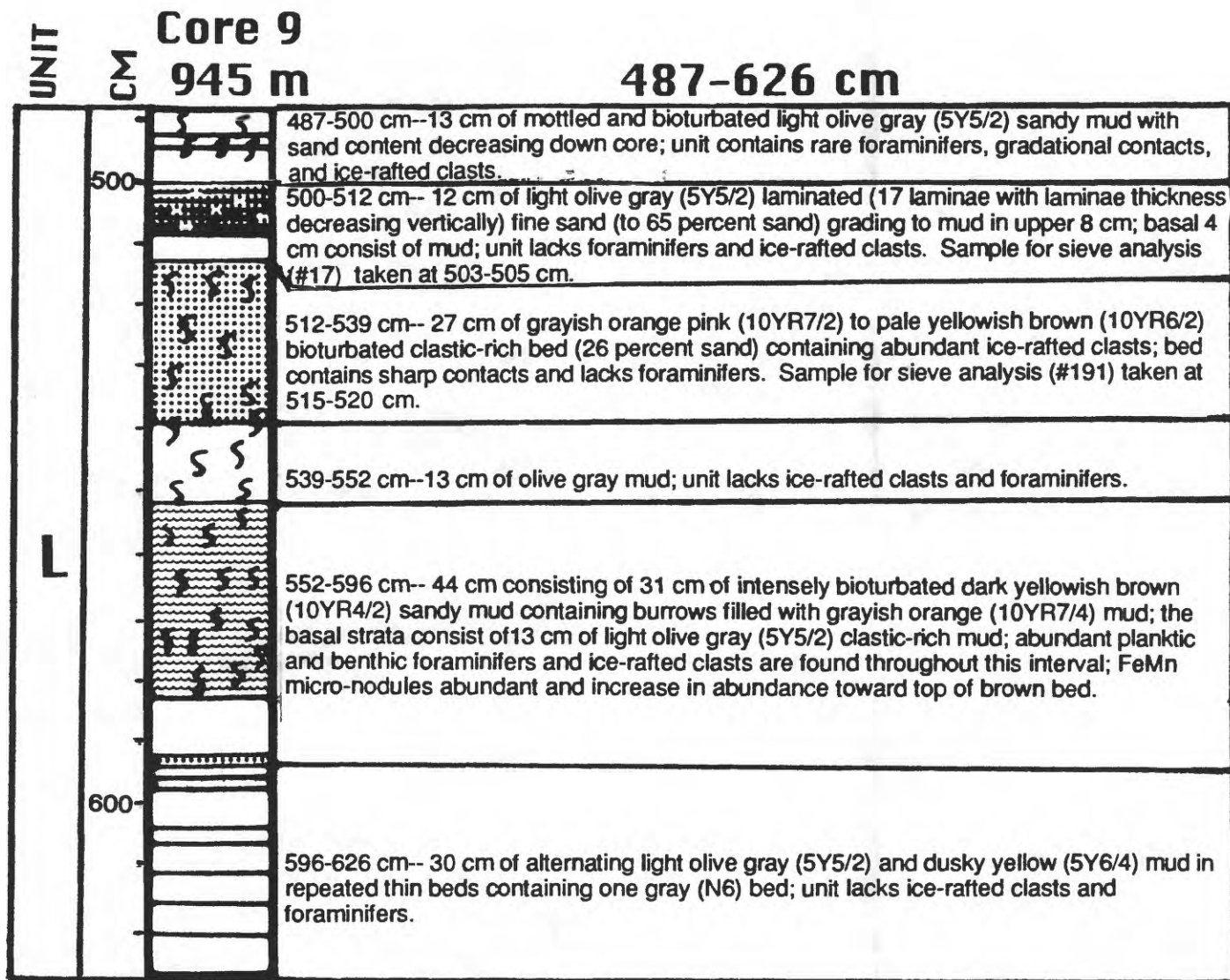


UNIT

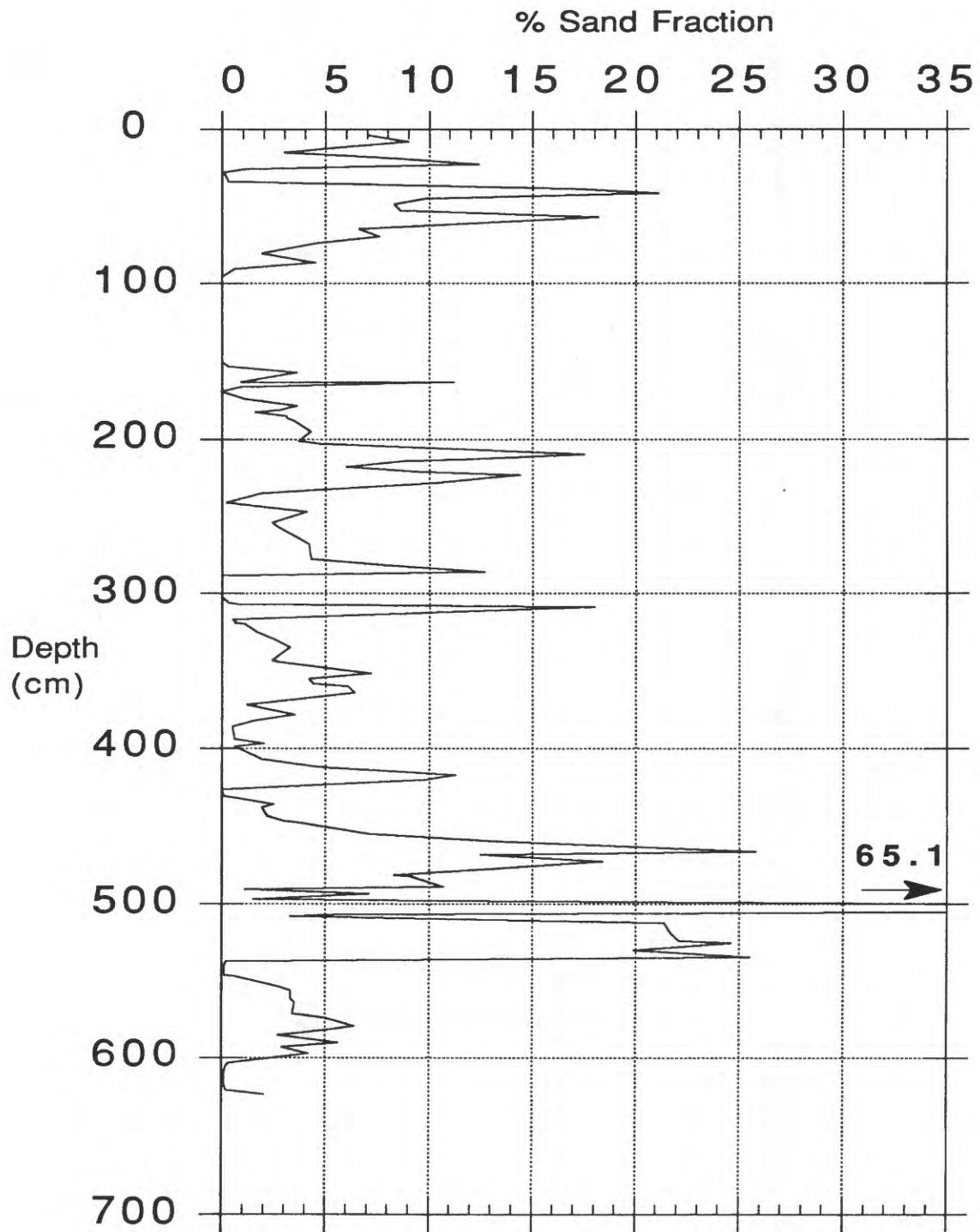
Core 9
Σ 945 m

239-487 cm

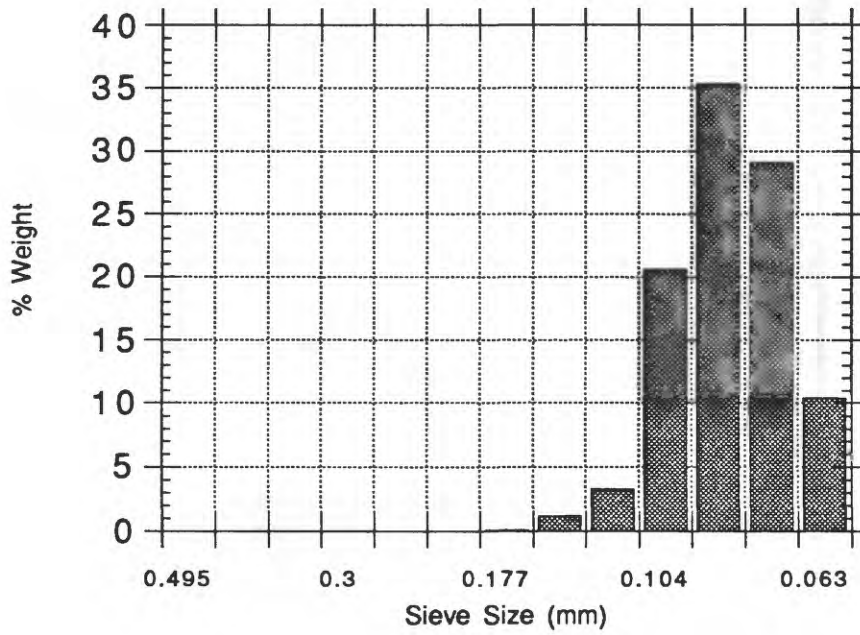




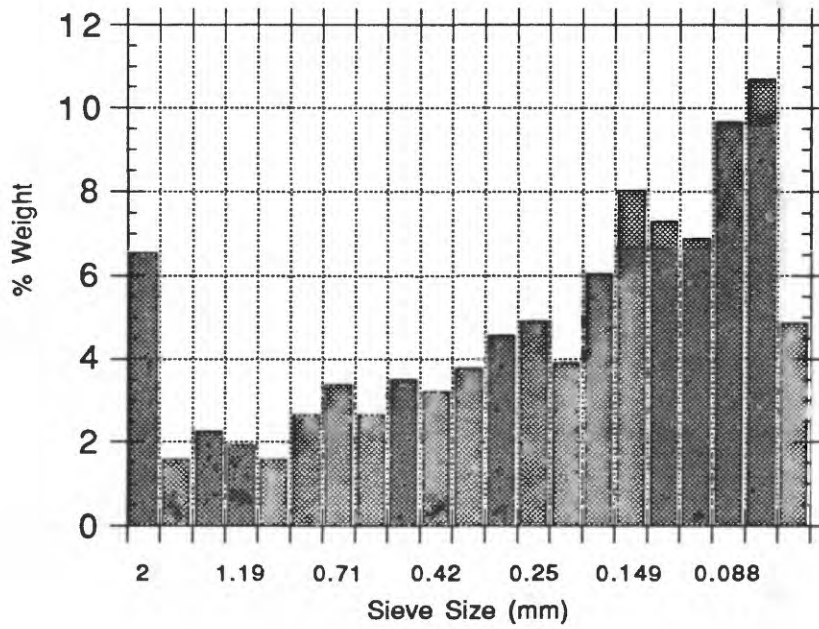
PI88AR Core 9



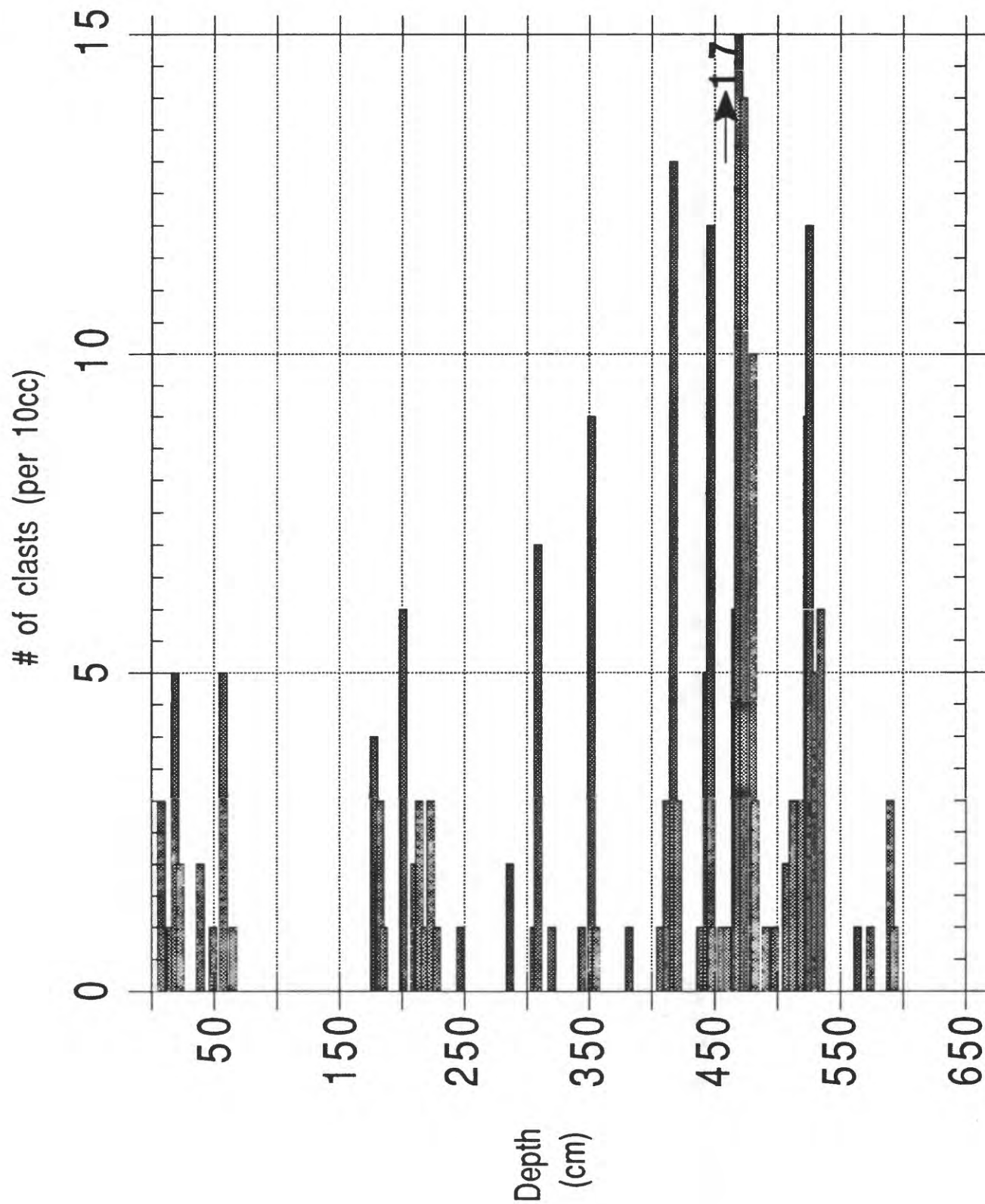
Core 9 #17



Core 9 #191



PI88AR Core 9



PI88AR Core 9

Depth: 945 m

Location: 75°01.38', 158°14.23'

Sample = 10 cc unless noted

(Note: Samples #87-118 were unknown quantity...used for paleomag)

Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	623.9-625.9	10.55	98.0	0.21	2.0	
2	617.5-619.5	9.66	99.9	0.01	0.1	
3	610.0-612.0	13.40	99.9	0.01	0.1	
4	603.3-605.5	10.02	99.7	0.03	0.3	
5	597.0-599.0	9.67	95.8	0.42	4.2	
6	590.0-592.0	13.06	94.4	0.77	5.6	0.13 (3)
7	579.3-581.3	11.55	93.6	0.79	6.4	
8	571.1-573.1	11.64	96.6	0.41	3.4	
9	561.1-563.1	10.63	96.7	0.35	3.3	
10	553.7-555.7	9.69	97.3	0.26	2.7	
11	546.1-548.1	10.24	99.9	0.01	0.1	
12	540.5-542.5	8.77	99.9	0.01	0.1	
13	534.7-536.7	9.66	74.5	3.30	25.5	0.34 (6)
14	523.9-525.9	12.75	77.9	3.61	22.1	0.36 (9)
15	512.5-514.5	13.90	78.6	3.79	21.4	0.06 (3)
16	508.3-510.3	12.36	96.7	0.42	3.3	
17	503.1-505.1	4.82	34.9	9.00	65.1	
18	497.3-499.3	11.55	98.5	0.17	1.5	
19	489.1-491.1	11.09	89.3	1.33	10.7	
20	480.5-482.5	11.19	90.1	1.23	9.9	0.46 (10)
21	473.3-475.3	13.77	81.6	3.11	18.4	3.03 (14)
22	466.6-468.6	10.93	74.2	3.80	25.8	0.11 (6)
23	455.6-457.6	7.51	92.9	0.57	7.1	7.06 (1)
24	444.0-446.0	9.16	97.8	0.21	2.2	0.34 (5)
25	436.0-438.0	10.52	97.5	0.26	2.5	
26	426.3-428.3	9.78	99.5	0.05	0.5	
27	417.0-419.0	9.36	88.7	1.19	11.3	0.40 (13)
28	407.0-409.0	9.85	98.1	0.19	1.9	0.04 (1)
29	396.8-398.8	12.53	98.0	0.25	2.0	
30	386.0-388.0	11.40	99.5	0.06	0.5	
31	372.0-374.0	9.12	98.8	0.11	1.2	
32	360.0-362.0	9.30	93.9	0.60	6.1	
33	351.6-353.6	9.14	92.8	0.71	7.2	0.31 (9)
34	334.6-336.6	8.19	96.7	0.28	3.3	
35	325.0-327.0	7.09	98.3	0.12	1.7	
36	317.0-319.0	8.14	99.5	0.04	0.5	
37	309.0-311.0	8.73	82.0	1.91	18.0	0.13 (7)
38	303.0-305.0	8.83	100.0	0.00	0.0	
39	295.0-297.0	7.81	100.0	0.00	0.0	
40	286.5-288.5	10.23	87.3	1.49	12.7	0.05 (2)
41	278.0-280.0	10.35	95.6	0.47	4.3	
42	268.0-270.0	8.87	95.8	0.39	4.2	
43	257.0-259.0	8.71	97.3	0.24	2.7	
44	247.0-249.0	8.67	95.9	0.37	4.1	0.02 (1)
45	241.0-243.0	11.87	99.8	0.02	0.2	
46	235.0-237.0	9.21	98.0	0.18	1.9	
47	228.0-230.0	6.10	89.6	0.71	10.4	0.01 (1)
48	223.0-225.0	11.93	85.6	2.00	14.4	0.72 (3)
49	218.0-220.0	7.31	94.0	0.47	6.0	0.04 (1)
50	213.0-215.0	8.83	88.2	1.18	11.8	0.05 (1)
51	210.0-212.0	10.59	82.5	2.25	17.5	0.15 (2)
52	203.0-205.0	9.67	95.3	0.48	4.7	
53	195.0-197.0	7.21	95.7	0.32	4.3	
54	185.0-187.0	8.35	96.9	0.27	3.1	0.32 (1)
55	181.0-183.0	7.25	97.2	0.21	2.8	0.03 (2)
56	174.0-176.0	7.93	98.9	0.09	1.1	
57	169.3-171.3	8.02	100.0	0.00	0.0	
58	163.0-165.0	7.60	88.8	1.30	11.2	
59	157.0-159.0	9.38	96.4	0.34	3.6	
60	150.2-152.2	8.15	100.0	0.00	0.0	0.08 (1)

61	143.0-145.0	9.30	100.0	0.00	0.0	
62	137.0-139.0	7.45	100.0	0.00	0.0	
63	128.0-130.0	8.70	100.0	0.00	0.0	
64	119.2-121.3 (5cc)	5.04	100.0	0.00	0.0	
65	109.0-111.0	8.27	100.0	0.00	0.0	
66	99.0-101.0	9.19	100.0	0.00	0.0	
67	87.0-89.0	6.17	95.5	0.29	4.5	
68	81.0-83.0	7.35	98.1	0.14	1.9	
69	74.3-76.3	6.83	95.4	0.33	4.6	
70	70.0-72.0	9.01	92.4	0.74	7.6	
71	65.0-67.0	8.48	93.4	0.60	6.6	0.10 (1)
72	57.3-59.3	8.73	81.8	1.94	18.2	0.28 (5)
73	53.0-55.0	8.55	91.4	0.80	8.6	
74	49.0-51.0	7.94	91.7	0.16	8.3	0.01 (1)
75	45.3-47.3	10.35	90.2	1.12	9.8	
76	42.0-45.0	12.96	78.9	3.47	21.1	
77	39.0-41.0	12.62	82.9	2.61	17.1	0.09 (2)
78	34.0-36.0	8.94	99.7	0.03	0.3	
79	28.0-30.0	9.51	99.9	0.01	0.1	
80	26.0-28.0	9.03	98.9	0.10	1.1	
81	23.0-25.0	10.80	87.6	1.53	12.4	0.04 (2)
82	19.2-21.2	9.70	91.5	0.90	8.5	0.22 (5)
83	15.3-17.3	7.78	97.0	0.24	3.0	0.03 (1)
84	8.0-10.0	9.93	91.0	0.92	9.0	0.05 (3)
85	4.0- 6.0	8.84	93.0	0.66	7.0	
86	2.0- 0.0	9.34	93.0	0.70	7.0	
87	188.0-190.0	14.42	96.5	0.53	3.5	
88	214.0-216.0	17.73	91.2	1.71	8.8	0.10 (3)
89	254.0-256.0	14.60	97.6	0.36	2.4	
90	282.0-284.0	22.00	92.2	1.86	7.8	
91	298.0-300.0	19.09	100.0	0.00	0.0	
92	320.0-322.0	13.54	98.9	0.15	1.1	0.09 (1)
93	330.0-332.0	17.76	97.4	0.47	2.6	
94	344.0-346.0	14.16	80.2	0.49	2.8	0.03 (1)
95	355.0-357.0	17.10	95.8	0.75	4.2	0.05 (2)
96	382.0-384.0	20.20	98.4	0.33	1.6	0.04 (1)
97	399.0-401.0	19.75	99.4	0.11	0.6	
98	431.0-433.0	14.91	99.9	0.01	0.1	
99	448.0-450.0	18.55	96.3	0.71	3.7	0.05 (2)
100	460.0-462.0	19.41	87.1	2.87	12.9	0.19 (3)
101	469.0-471.0	19.62	87.5	2.79	12.5	1.01 (17)
102	482.0-484.0	15.26	91.7	1.39	8.3	
103	491.0-493.0	14.03	88.9	1.75	1.1	0.08 (1)
104	494.0-496.0	21.70	92.9	1.65	7.1	
105	498.0-500.0	16.64	91.5	1.55	8.5	0.02 (1)
106	507.0-509.0	19.80	94.6	1.13	5.4	0.45 (4)
107	519.0-521.0	23.71	78.3	6.57	21.7	0.50 (9)
108	530.0-532.0	22.00	80.1	5.46	19.9	0.93 (15)
109	542.0-544.0	13.80	99.9	0.02	0.1	
110	547.0-549.0	10.20	99.4	0.06	0.6	
111	556.0-558.0	13.26	96.7	0.45	3.3	
112	564.0-566.0	16.88	96.5	0.61	3.5	0.02 (1)
113	574.0-576.0	13.22	95.0	0.69	5.0	0.02 (1)
114	582.0-584.0	15.13	95.1	0.78	4.9	
115	585.0-587.0	21.97	97.3	0.61	2.7	
116	593.0-595.0	16.65	97.1	0.50	2.9	0.16 (1)
117	605.0-607.0	19.09	99.8	0.03	0.2	
118	614.0-616.0	16.06	100.0	0.00	0.0	
119	621.0-623.0 (2 w/5cc ea.)	11.27	99.8	0.02	0.2	
152	91.0-93.0	9.01	99.4	0.05	0.6	
153	96.0-98.0	8.91	100.0	0.00	0.0	
154	153.3-155.3	9.87	99.7	0.03	0.3	
155	166.5-168.5 (9cc)	8.81	99.1	0.08	0.9	
156	178.0-179.0	10.16	96.4	0.38	3.6	0.07 (4)
157	182.5-185.5 (15cc)	16.59	98.4	0.27	1.6	0.11 (5)
158	291.0-293.0	9.65	100.0	0.00	0.0	

159	306.0-308.0	9.15	99.7	0.03	0.3	0.02 (1)
160	319.0-321.0	9.02	99.3	0.06	0.7	
161	364.0-366.0 (12cc)	9.39	93.6	0.64	6.4	
162	412.0-414.0 (12cc)	14.47	95.4	0.70	4.6	0.21 (3)
163	412.5-414.5	13.44	94.8	0.73	5.2	0.02 (1)
164	420.5-422.5	12.38	90.2	1.35	9.8	0.11 (3)
165	438.5-440.5	11.09	98.1	0.21	1.9	0.31 (1)
166	537.5-538.5 (7cc)	8.83	99.8	0.02	0.2	
173	101.0-103.0 (3cc)	3.38	100.0	0.00	0.0	
174	131.0-133.0 (3cc)	3.00	100.0	0.00	0.0	
175	163.0-165.0 (3cc)	3.47	99.1	0.03	0.9	
176	186.0-188.0 (3cc)	3.39	96.9	0.11	3.1	
177	201.0-203.0 (3cc)	3.14	96.3	0.12	3.7	0.06 (2)
178	221.0-223.0 (3cc)	3.41	90.5	0.36	9.5	
179	289.0-291.0 (3cc)	3.25	100.0	0.00	0.0	
180	300.0-302.0 (3cc)	3.03	100.0	0.00	0.0	
181	307.0-309.0 (3cc)	3.02	99.3	0.02	0.7	
182	319.0-321.0 (3cc)	3.16	99.4	0.02	0.6	
183	343.0-345.0 (3cc)	3.62	97.6	0.09	2.4	
184	358.0-360.0 (3cc)	3.90	95.6	0.18	4.4	
185	378.0-380.0 (3cc)	3.34	96.5	0.12	3.5	
186	394.0-396.0 (3cc)	3.32	99.4	0.02	0.6	
187	427.0-429.0 (3cc)	3.25	100.0	0.00	0.0	
188	447.0-449.0 (3cc)	3.23	97.0	0.10	3.0	0.16 (4)
189	482.5-484.5 (3cc)	3.78	90.9	0.38	9.1	0.07 (1)
190	525.5-527.5 (3cc)	6.34	75.4	2.07	24.6	0.12 (4)

60	150.2-152.2				
61	143.0-145.0				
62	137.0-139.0				
63	128.0-130.0				
64	119.2-121.3 (5cc)				
65	109.0-111.0				
66	99.0-101.0				
67	87.0-89.0				
68	81.0-83.0	A/p/a/b			
69	74.3-76.3	VA/p/a/b			
70	70.0-72.0	VA/p/a/b			
71	65.0-67.0	VA/p/a/b			
72	57.3-59.3				
73	53.0-55.0	VA/p/a/b			
74	49.0-51.0	R/p/b			
75	45.3-47.3				
76	42.0-45.0				
77	39.0-41.0				
78	34.0-36.0	R/p			
79	28.0-30.0				
80	26.0-28.0				
81	23.0-25.0				
82	19.2-21.2				
83	15.3-17.3	R/p/a/b			
84	8.0-10.0	R/a			
85	4.0- 6.0	A/p/a/b			
86	2.0- 0.0	VA/p/a/b			
87	188.0-190.0	VA/p/a/b			
88	214.0-216.0	A/p/a/b			
89	254.0-256.0	V A/p/a/b			
90	282.0-284.0				
91	298.0-300.0				
92	320.0-322.0	R/a			
93	330.0-332.0	R/a			
94	344.0-346.0	R/a			
95	355.0-357.0	R/a			
96	382.0-384.0				
97	399.0-401.0				
98	431.0-433.0				
99	448.0-450.0	VA/p/a/b			
100	460.0-462.0	VA/p/b			
101	469.0-471.0	A/p/b			
102	482.0-484.0	VA/p/b			
103	491.0-493.0	C/p/b			
104	494.0-496.0	R/p/b			
105	498.0-500.0				
106	507.0-509.0				
107	519.0-521.0				
108	530.0-532.0				
109	542.0-544.0				
110	547.0-549.0	C/p/a/b			
111	556.0-558.0	VA/p/a/b			
112	564.0-566.0	VA/p/a/b			
113	574.0-576.0	VA/p/a/b			
114	582.0-584.0	VA/p/a/b			
115	585.0-587.0	VA/p/a			
116	593.0-595.0				
117	605.0-607.0				
118	614.0-616.0				
119	621.0-623.0 (2 w/5cc ea.)	R/p			
152	91.0-93.0	R/a			
153	96.0-98.0	R/p			
154	153.3-155.3	R/a			
155	166.5-168.5 (9cc)				
156	178.0-179.0	R/p/b			
157	182.5-185.5 (15cc)	VA/p/a/b			

PI88AR Core 9

Sample = 10 cc unless noted

Depth: 945 m

Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)

Location: 75°01.38', 158°14.23'

Planktic (p), Arenaceous (a), Benthic calcareous (b)

(Note: Samples #87-118 were unknown quantity...used for paleomag)

Sample Number	Interval Sampled	Foraminifers				
1	623.9-625.9	R/p/a/b				
2	617.5-619.5					
3	610.0-612.0					
4	603.3-605.5					
5	597.0-599.0					
6	590.0-592.0	R/p/a/b				
7	579.3-581.3	VA/p/a				
8	571.1-573.1	VA/p/a				
9	561.1-563.1	VA/p/a				
10	553.7-555.7	VA/p/a				
11	546.1-548.1	R/p				
12	540.5-542.5					
13	534.7-536.7					
14	523.9-525.9					
15	512.5-514.5					
16	508.3-510.3					
17	503.1-505.1					
18	497.3-499.3	R/p				
19	489.1-491.1	A/p/a/b				
20	480.5-482.5	VA/p/b				
21	473.3-475.3	C/p/b				
22	466.6-468.6	R/p				
23	455.6-457.6	A/p/b				
24	444.0-446.0	R/b				
25	436.0-438.0					
26	426.3-428.3					
27	417.0-419.0					
28	407.0-409.0					
29	396.8-398.8					
30	386.0-388.0					
31	372.0-374.0					
32	360.0-362.0					
33	351.6-353.6					
34	334.6-336.6	R/a				
35	325.0-327.0	R/a				
36	317.0-319.0	R/a				
37	309.0-311.0	R/a				
38	303.0-305.0	R/a				
39	295.0-297.0					
40	286.5-288.5					
41	278.0-280.0					
42	268.0-270.0					
43	257.0-259.0	R/b				
44	247.0-249.0	VA/p/a/b				
45	241.0-243.0	R/p/b				
46	235.0-237.0					
47	228.0-230.0					
48	223.0-225.0	R/b				
49	218.0-220.0	C/p/b				
50	213.0-215.0	A/p/b				
51	210.0-212.0	A/p/b				
52	203.0-205.0	VA/p/b				
53	195.0-197.0	VA/p/b				
54	185.0-187.0	VA/p/b				
55	181.0-183.0	R/p				
56	174.0-176.0	R/p/b				
57	169.3-171.3					
58	163.0-165.0					
59	157.0-159.0					

Northwind Ridge crest

Core 6

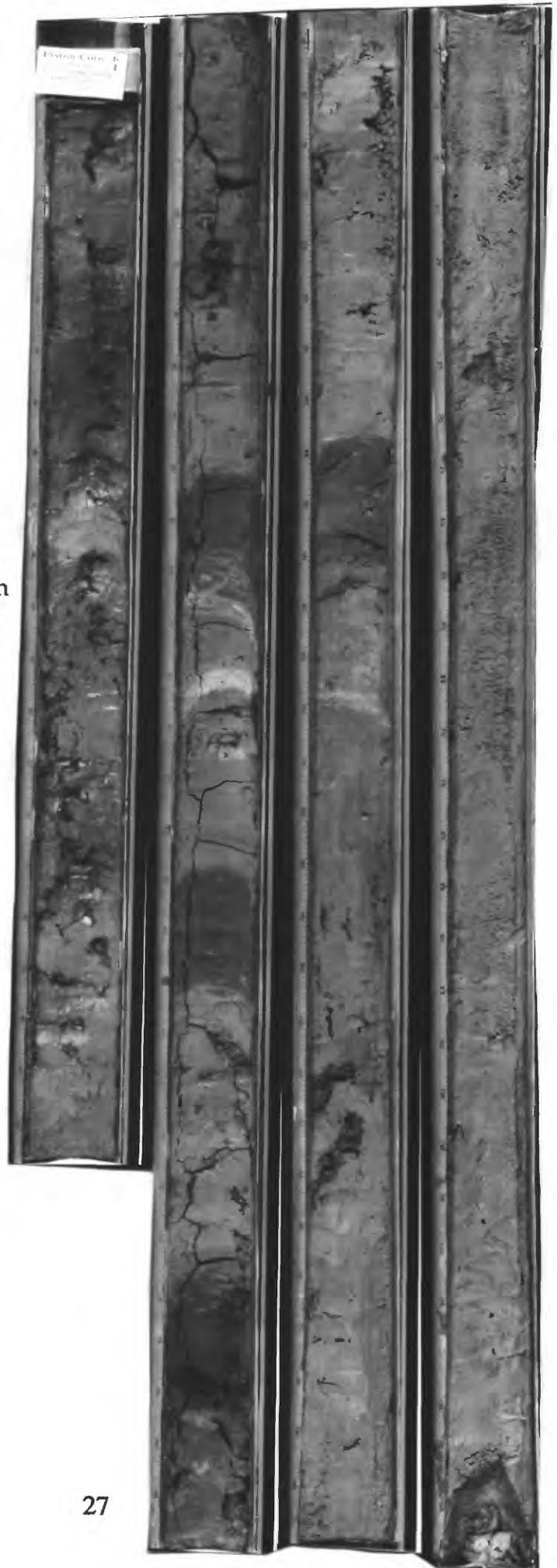
1159 m

74° 39.91', 158° 03.49'

PI88AR Core 9 forams

158	291.0-293.0					
159	306.0-308.0					
160	319.0-321.0					
161	364.0-366.0 (12cc)	R/a				
162	412.0-414.0 (12cc)	R/p				
163	412.5-414.5					
164	420.5-422.5					
165	438.5-440.5					
166	537.5-538.5 (7cc)					
173	101.0-103.0 (3cc)					
174	131.0-133.0 (3cc)					
175	163.0-165.0 (3cc)					
176	186.0-188.0 (3cc)	VA/p/a/b				
177	201.0-203.0 (3cc)	A/p/b				
178	221.0-223.0 (3cc)	R/p/b				
179	289.0-291.0 (3cc)					
180	300.0-302.0 (3cc)					
181	307.0-309.0 (3cc)					
182	319.0-321.0 (3cc)	R/a				
183	343.0-345.0 (3cc)	R/a				
184	358.0-360.0 (3cc)	R/a				
185	378.0-380.0 (3cc)	R/a				
186	394.0-396.0 (3cc)					
187	427.0-429.0 (3cc)					
188	447.0-449.0 (3cc)	R/p/b				
189	482.5-484.5 (3cc)	VA/p/a/b				
190	525.5-527.5 (3cc)					

Figure 5. Photograph of core 6. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata. The core section to the right contains flow-in sediment.



UNIT		Core 6		0-219 cm	
Σ		1159 m			
M			0-27 cm-- bioturbated moderate brown (5YR3/4-4/4) sandy mud containing ice-rafted clasts; abundant planktic and benthic foraminifers are found in upper 8 cm; basal 17 cm contain abundant siltstone, lignite, and coal in sand fraction but lack foraminifers.		
			27-38 cm--11 cm of dark gray (N4) top bed to dark greenish gray (5GY3/2) mud containing a few ice-rafted clasts; unit lacks foraminifers.		
			38-61 c m-- 23 cm of bioturbated yellowish gray (5Y7/2-8/1) clastic-rich mud (top beds) interbedded with faintly laminated light olive gray (5Y5/2, 5GY3/2) sandy mud containing ice-rafted clasts and abundant planktic and benthic foraminifers below lowest clastic-rich bed.		
			61-74 cm--13 cm of bioturbated moderate brown (5YR3/4) sandy mud containing bioturbated contacts and ice-rafted clasts; unit contains very abundant planktic and benthic foraminifers.		
	1 100 2		74-131 cm-- 57 cm of dusky yellow (top 25 cm) grading down to light olive gray (5Y3/2-5/2) faintly laminated to bioturbated mud lacking ice-rafted clasts; bioturbation increases down core; arenaceous foraminifers are very rare (< 2/cc); contacts bioturbated .		
			131-147 cm--16 cm of faintly laminated yellowish gray (5Y7/2) to dusky yellow (5Y6/4) mud containing an upper unit of silt and clay lacking foraminifers with the basal 7 cm containing rare foraminifers, ice-rafted clasts, and sandy mud.		
			147-170 cm--23 cm consisting of 12 cm of bioturbated moderate brown (5YR4/4) sandy mud containing ice-rafted clasts and very abundant planktic (many very small planktic foraminifers) and benthic foraminifers decrease to less than 10/cc in basal bed; base of brown bed bioturbated grading to 11 cm of light olive gray (5Y5/2) sandy mud interbedded with two yellowish gray (5Y7/2) clastic-rich beds (20 and 15 % sand fraction) with upper clastic bed intensely bioturbated and lower clastic bed containing a sharp basal contact and bioturbated upper contact; unit contains abundant ice-rafted clasts.		
			170-186-- 16 cm of bioturbated light olive gray (5Y5/2) mud grading to grayish orange (10YR7/4) faintly laminated sandy mud; upper bed lacks foraminifers, lower bed contains rare to common planktic and benthic foraminifers.		
			186-198 cm-- 12 cm of bioturbated moderate brown (5YR3/4) to dark yellowish brown (10YR4/2) sandy mud containing ice-rafted clasts; unit contains very abundant planktic and benthic foraminifers; base of bed intensely bioturbated.		
	200		198-219-- 21 cm of faintly laminated light olive gray (5Y6/2) to dusky yellow (5Y6/4) mud lacking ice-rafted clasts and foraminifers.		
L					

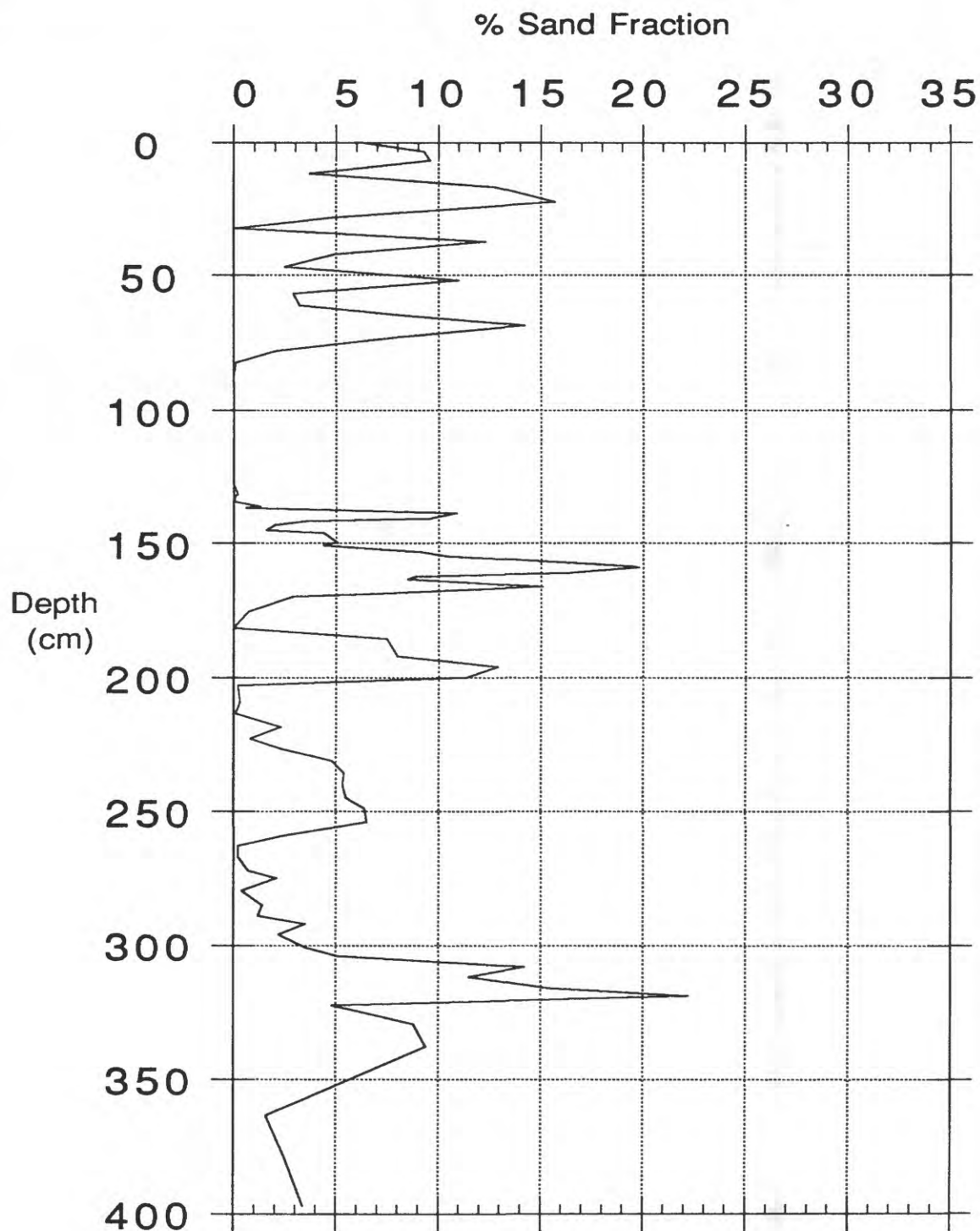
UNIT

Core 6
Σ 1159 m

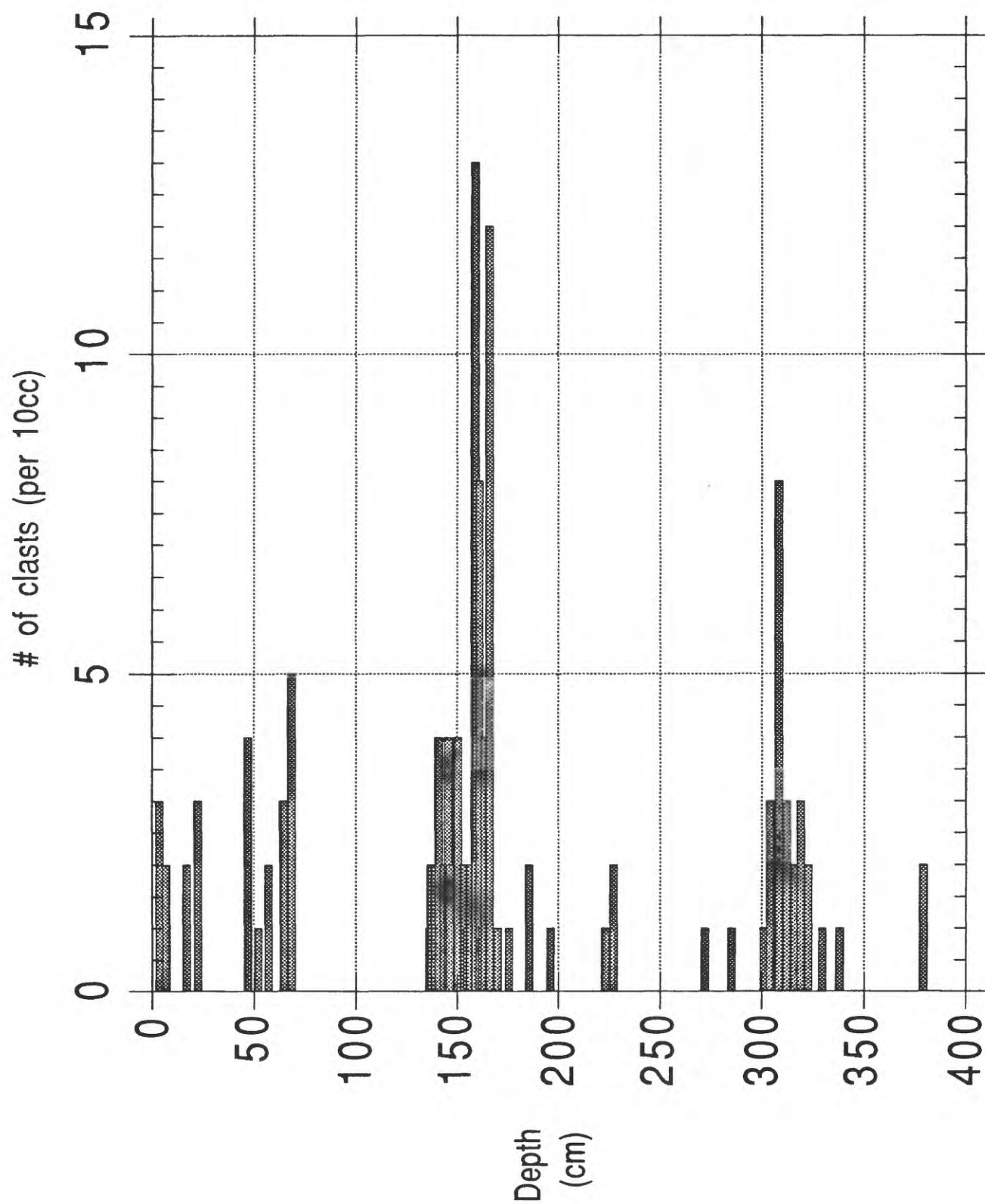
219-325 cm

L		219-225 cm-- 6 cm of faintly laminated yellowish gray (5Y7/2) sandy mud containing ice-rafted clasts and rare arenaceous foraminifers.
		225-250-- 25 cm of bioturbated sandy mud consisting of an upper 16 cm of moderate brown (5YR3/4) sandy mud grading to laminated pale brown (10YR5/2) sandy mud; both beds contain rare to common arenaceous foraminifers and ice-rafted clasts; top of unit is intensely bioturbated with large burrows.
		250-276 cm-- 26 cm of laminated to thin bedded light brown (10YR6/4) to olive gray (5Y4/2) mud containing small burrows; unit lacks ice-rafted clasts and contains rare arenaceous foraminifers.
		276-294 cm--18 cm of bioturbated light brown (10YR6/4) to greenish gray (5GY6/1) laminated to bedded sandy mud containing ice-rafted clasts; unit lacks foraminifers.
	300	294-309 cm--15 cm of bioturbated dark yellowish brown (10YR4/2) sandy mud containing ice-rafted clasts with planktic and benthic foraminifers increasing from rare at top of unit to very abundant at bottom of unit.
		309-321--12 cm of intensely bioturbated yellowish brown (10YR4/2) sandy mud (22 % sand) containing ice-rafted clasts and very abundant foraminifers in upper half of bed with foraminifers decreasing in abundance toward base of bed; base of unit contains a light grayish orange (10YR7/4) 2 cm thick bed.
		321-325 cm-- 4 cm of light olive gray (5Y5/2) sandy mud containing rare arenaceous foraminifers; Mn micro-nodules abundant.
Remaining section of core contains flow-in structure.		

PI88AR Core 6



PI88AR Core 6



PI88AR Core 6						
Depth: 1159 m						
Location: 74°39.91', 158°03.49'						
Sample = 10 cc unless noted						
Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	0.0-2.0	6.74	93.7	0.45	6.2	
2	3.5-5.5	8.28	90.7	0.85	9.3	0.29 (3)
3	7.0-9.0	9.53	90.4	1.01	9.6	0.03 (2)
4	12.0-14.0	7.25	96.3	0.28	3.7	
5	17.0-19.0	9.38	87.2	1.38	12.8	0.07 (2)
6	22.5-24.5	8.64	86.2	1.56	15.7	0.09 (3)
7	28.5-30.5	8.31	95.2	0.42	4.8	
8	32.7-34.7	7.29	99.9	0.01	0.1	
9	37.7-39.7	10.29	87.7	1.44	12.3	
10	42.5-44.5	9.40	95.1	0.48	4.9	
11	47.0-49.0	8.07	97.5	0.21	2.5	0.08 (4)
12	52.0-54.0	8.67	89.0	1.07	11.0	0.01 (1)
13	57.0-59.0	9.78	97.1	0.29	2.9	0.09 (2)
14	61.0-63.0	7.96	96.8	0.28	3.2	
15	64.5-66.5	8.55	92.3	0.71	7.7	0.12 (3)
16	68.5-70.5	6.95	85.8	1.15	14.2	0.19 (5)
17	73.0-75.0	7.68	92.0	0.67	8.0	
18	78.0-80.0	6.64	97.9	0.14	2.1	
19	82.5-84.5	7.84	99.9	0.01	0.1	
20	87.5-89.5	7.31	100.0	0.00	0.0	
21	91.5-93.5	8.53	100.0	0.00	0.0	
22	96.0-98.0	7.39	100.0	0.00	0.0	
23	100.0-102.0	5.98	100.0	0.00	0.0	
24	104.0-106.0 (9cc)	8.97	100.0	0.00	0.0	
25	108.6-110.6 (9cc)	8.65	100.0	0.00	0.0	
26	113.5-115.5 (9cc)	8.17	100.0	0.00	0.0	
27	118.0-120.0 (9cc)	8.30	100.0	0.00	0.0	
28	123.0-125.0 (9cc)	7.90	100.0	0.00	0.0	
29	128.0-130.0 (9cc)	8.65	100.0	0.00	0.0	
30	132.4-134.4 (9cc)	9.21	99.9	0.01	0.1	
31	136.4-138.4 (9cc)	9.97	98.7	0.13	1.3	0.06 (1)
32	142.0-144.0	11.30	96.5	0.41	3.5	
33	146.5-148.5	8.21	95.6	0.38	4.4	0.05 (2)
34	150.0-152.5	8.24	94.9	0.44	5.1	0.07 (4)
35	155.0-157.0	9.67	89.5	1.13	10.5	0.02 (1)
36	158.7-160.7	11.17	80.5	2.71	19.5	0.59 (12)
37	162.5-164.5	9.82	91.1	0.96	8.9	0.02 (1)
38	166.0-168.0	13.04	84.9	2.31	15.1	0.50 (10)
39	170.0-172.0	9.48	97.1	0.28	2.9	0.93 (1)
40	175.5-177.5	9.44	99.3	0.07	0.7	0.02 (1)
41	181.5-183.5	15.36	100.0	0.00	0.0	
42	185.5-187.5	10.28	92.5	0.83	7.5	0.10 (2)
43	192.0-194.0	9.77	92.0	0.85	8.0	
44	196.0-198.0	10.36	87.1	1.54	12.9	0.01 (1)
45	203.0-205.0	9.66	99.8	0.02	0.2	
46	209.0-211.0	7.82	99.7	0.02	0.3	
47	213.5-215.5	8.68	99.9	0.01	0.1	
48	218.5-220.5	10.34	97.7	0.24	2.3	
49	223.0-225.0	10.62	99.2	0.09	0.8	0.03 (1)
50	227.0-229.0	9.02	97.6	0.22	2.4	0.09 (2)
51	231.5-233.5	8.59	95.2	0.43	4.8	
52	236.0-238.0	10.33	94.6	0.59	5.4	
53	240.4-242.4	8.82	94.7	0.49	5.3	
54	245.0-247.0	9.59	94.5	0.56	5.5	
55	249.0-251.0	11.39	93.6	0.78	6.4	
56	254.0-256.0 (6cc)	8.92	93.5	0.62	6.5	
57	259.0-261.0	11.15	97.6	0.28	2.5	
58	263.0-265.0	9.14	99.8	0.02	0.2	
59	267.0-269.0	11.51	99.8	0.02	0.2	
60	272.0-274.0	10.40	99.2	0.08	0.7	0.05 (1)

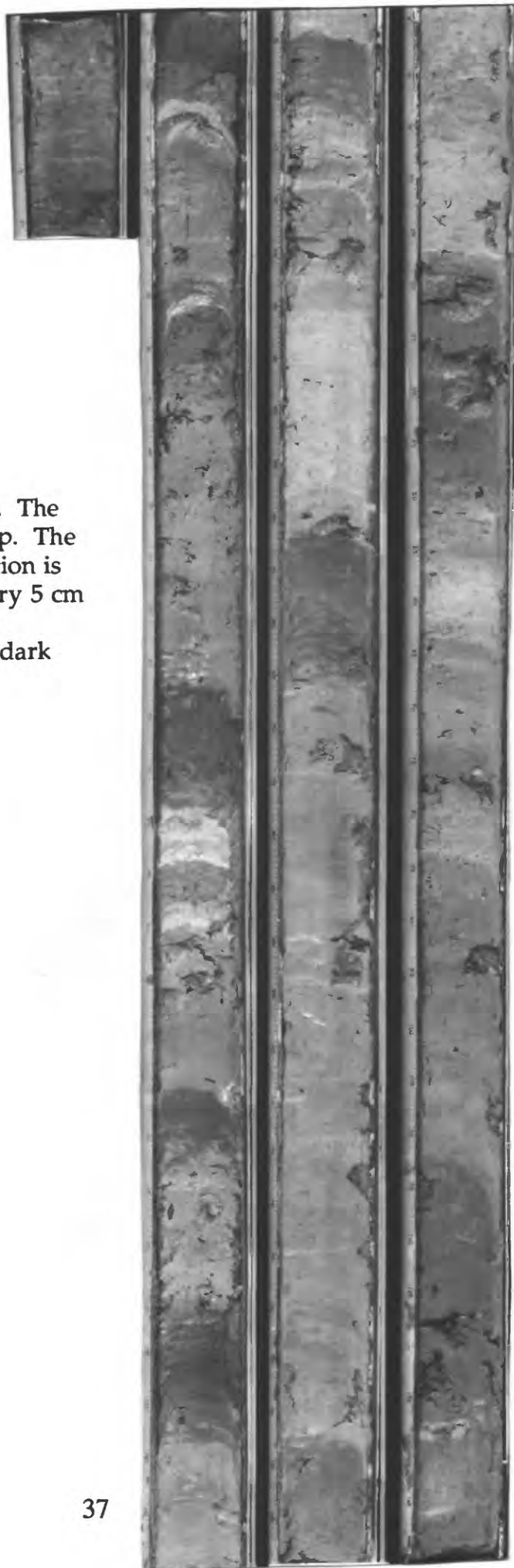
61	275.0-277.0	10.55	97.9	0.23	2.1
62	279.5-281.5	10.18	99.6	0.04	0.4
63	285.0-287.0	10.05	98.6	0.14	1.4 0.02 (1)
64	289.0-291.0	8.95	98.8	0.11	1.2
65	292.0-294.0	9.99	96.5	0.36	3.5
66	296.0-298.0	9.84	97.8	0.22	2.2
67	301.0-303.0	8.93	96.4	0.33	3.6 0.03 (1)
68	304.0-306.0	7.61	94.9	0.41	5.1 0.08 (3)
69	308.2-310.2	10.73	85.8	1.77	14.2 0.32 (8)
70	312.0-314.0	10.05	88.5	1.31	11.5 0.06 (3)
71	316.0-318.0	11.50	84.5	2.11	15.5 0.05 (2)
72	319.0-321.0	11.28	77.8	3.21	22.2 0.15 (3)
73	322.5-324.5	9.28	95.2	0.47	4.8 0.55 (2)
74	329.5-331.5	9.53	91.2	0.92	8.8 0.02 (1)
75	338.0-340.0	10.15	90.6	1.05	9.4 0.13 (1)
76	363.5-365.5	10.17	98.4	0.17	1.6
77	379.0-381.0	10.12	97.5	0.26	2.5 0.05 (2)
78	397.0-399.0	10.68	96.6	0.38	3.4
101	200.0-202.0	10.23	88.6	1.31	11.4
102	169.0-171.0 (5cc)	4.73	93.3	0.34	6.7
103	166.0-168.0 (5cc)	6.53	85.1	1.14	14.9 0.83 (6)
104	163.5-165.5 (5cc)	5.63	91.5	0.52	8.5 0.05 (2)
105	161.0-163.0 (5cc)	5.18	83.5	1.02	16.5 0.08 (4)
106	159.0-161.0 (5cc)	5.54	80.2	1.37	19.8 1.00 (13)
107	156.5-158.5 (5cc)	5.07	85.6	0.85	14.4 0.02 (1)
108	153.5-155.5 (5cc)	5.53	90.8	0.56	9.2 0.09 (1)
109	151.0-153.0 (5cc)	4.55	95.6	0.21	4.4
110	150.5-152.5 (5cc)	4.14	95.6	0.19	4.4 0.05 (2)
111	145.5-147.5 (5cc)	5.46	98.4	0.09	1.6 0.07 (2)
112	143.5-145.5 (5cc)	4.49	98.0	0.09	2.0 0.02 (1)
113	141.0-143.0 (5cc)	6.69	90.4	0.71	9.6 0.12 (2)
114	139.0-141.0 (5cc)	4.82	89.1	0.59	10.9 0.01 (1)
115	137.0-139.0 (5cc)	6.49	99.4	0.04	0.6 0.02 (1)
116	134.5-136.5 (5cc)	6.03	100.0	0.00	0.0
117	132.0-134.0 (5cc)	5.43	99.8	0.01	0.2

PI88AR Core 6		Sample = 10 cc unless noted				
Depth: 1159 m		Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)				
Location: 74°39.91', 158°03.49'		Planktic (p), Arenaceous (a), Benthic calcareous (b)				
Sample Number	Interval Sampled	Foraminifers				
1	0.0-2.0	VA/p/a/b				
2	3.5-5.5	VA/p/a/b				
3	7.0-9.0	R/a				
4	12.0-14.0					
5	17.0-19.0					
6	22.5-24.5					
7	28.5-30.5					
8	32.7-34.7					
9	37.7-39.7					
10	42.5-44.5	R/p				
11	47.0-49.0	R/p/b				
12	52.0-54.0	A/p/b				
13	57.0-59.0	C/p/b				
14	61.0-63.0	R/p/b				
15	64.5-66.5	VA/p/a/b				
16	68.5-70.5	VA/p/a/b				
17	73.0-75.0	A/p/b				
18	78.0-80.0	R/a				
19	82.5-84.5					
20	87.5-89.5					
21	91.5-93.5					
22	96.0-98.0					
23	100.0-102.0					
24	104.0-106.0 (9cc)					
25	108.6-110.6 (9cc)					
26	113.5-115.5 (9cc)					
27	118.0-120.0 (9cc)					
28	123.0-125.0 (9cc)					
29	128.0-130.0 (9cc)	R/p/b				
30	132.4-134.4 (9cc)	R/p				
31	136.4-138.4 (9cc)					
32	142.0-144.0	R/p/b				
33	146.5-148.5	VA/p/a/b				
34	150.0-152.5	VA/p/a/b				
35	155.0-157.0	VA/p/a/b				
36	158.7-160.7	VA/p/a/b				
37	162.5-164.5	A/p/b				
38	166.0-168.0	R/p/b				
39	170.0-172.0					
40	175.5-177.5					
41	181.5-183.5	R/b				
42	185.5-187.5	VA/p/a/b				
43	192.0-194.0	C/p/a/b				
44	196.0-198.0					
45	203.0-205.0					
46	209.0-211.0					
47	213.5-215.5					
48	218.5-220.5					
49	223.0-225.0	R/a				
50	227.0-229.0	R/a				
51	231.5-233.5	R/a				
52	236.0-238.0	C/a				
53	240.4-242.4	C/a				
54	245.0-247.0	C/a				
55	249.0-251.0	R/p/a/b				
56	254.0-256.0 (6cc)	R/p/a				
57	259.0-261.0					
58	263.0-265.0					
59	267.0-269.0					
60	272.0-274.0					

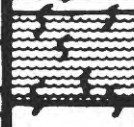
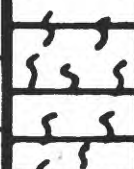
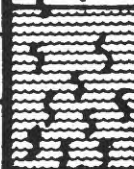
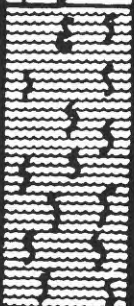
61	275.0-277.0					
62	279.5-281.5					
63	285.0-287.0					
64	289.0-291.0					
65	292.0-294.0					
66	296.0-298.0	R/b				
67	301.0-303.0					
68	304.0-306.0					
69	308.2-310.2	VA/p/a/b				
70	312.0-314.0	A/p/a/b				
71	316.0-318.0	R/a				
72	319.0-321.0	R/a				
73	322.5-324.5	R/a				
74	329.5-331.5	R/a				
75	338.0-340.0	R/a				
76	363.5-365.5	R/a				
77	379.0-381.0					
78	397.0-399.0					
101	200.0-202.0	R/p/a/b				
102	169.0-171.0 (5cc)	R/p/b				
103	166.0-168.0 (5cc)	R/b				
104	163.5-165.5 (5cc)	R/p/b				
105	161.0-163.0 (5cc)	C/p/b				
106	159.0-161.0 (5cc)	A/p/b				
107	156.5-158.5 (5cc)	VA/p/a/b				
108	153.5-155.5 (5cc)	VA/p/a/b				
109	151.0-153.0 (5cc)	VA/p/a/b				
110	150.5-152.5 (5cc)	VA/p/a/b				
111	145.5-147.5 (5cc)	A/p/a/b				
112	143.5-145.5 (5cc)	R/p				
113	141.0-143.0 (5cc)	R/p				
114	139.0-141.0 (5cc)					
115	137.0-139.0 (5cc)	R/p				
116	134.5-136.5 (5cc)	R/a				
117	132.0-134.0 (5cc)	R/a				

Northwind Ridge crest
Core 5
1089 m
74° 37.35', 157° 53.04'

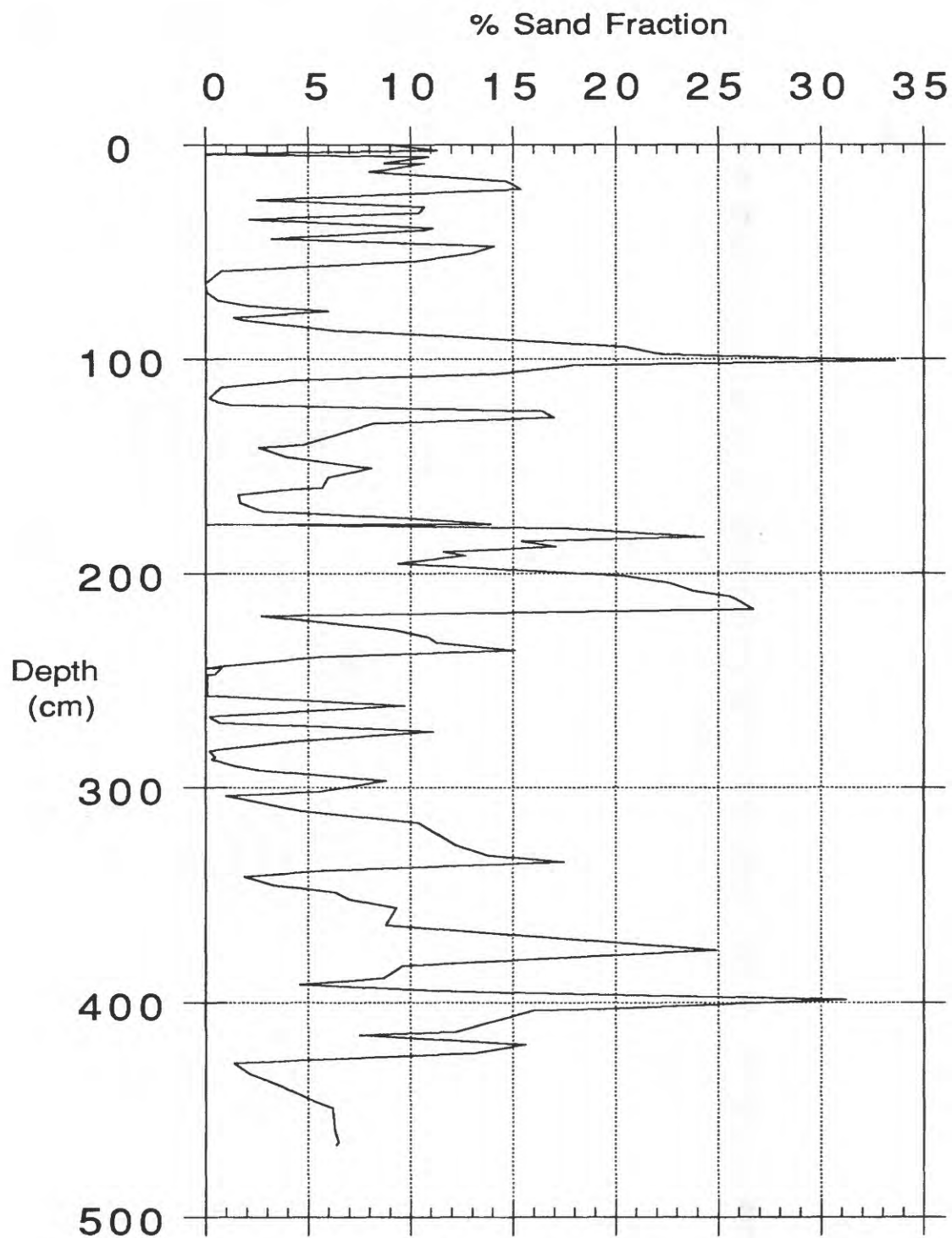
Figure 6. Photograph of core 5. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata.



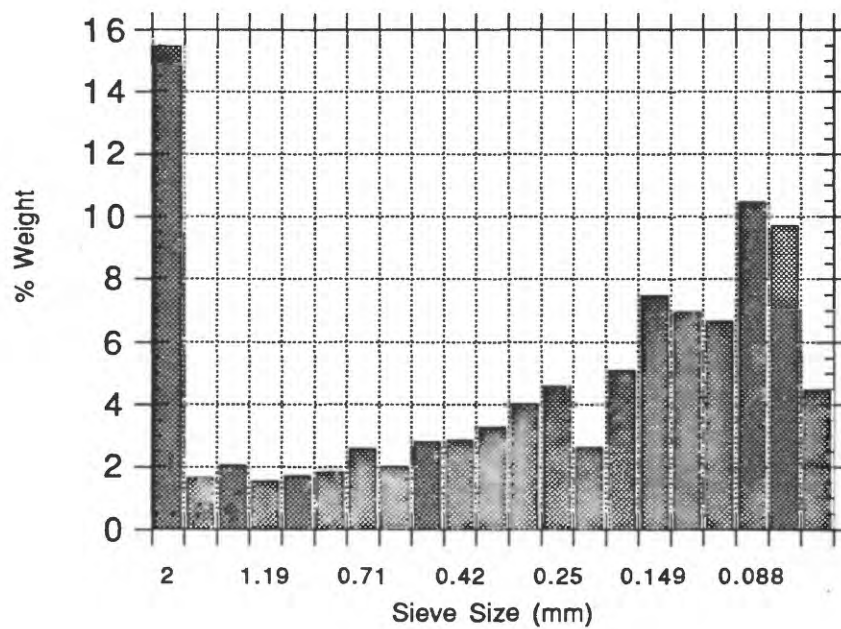
Core 5		0-235 cm	
Σ 1089 m			
M	1 2		0-26 cm-- laminated and bioturbated dark brown to dark yellowish brown (10YR4/2-2/2) sandy mud containing ice-rafted clasts; abundant planktic and benthic foraminifers are found in upper 6 cm, remaining section contains very rare foraminifers; lignite, coal, and dark siltstone clasts found between 6 and 20 cm.
			26-47 cm-- 21 cm of bioturbated medium gray (N5), olive gray (5Y5/2-4/1) sandy mud with two beds of light yellowish gray (5Y7/2) and one of yellowish brown (10YR5/4) sandy mud; unit contains very abundant planktic and benthic foraminifers below upper two clastic beds and ice-rafted clasts.
			47-56 cm-- 9 cm of bioturbated dark yellowish brown (10YR4/2) sandy mud containing a light yellowish gray (10Y7/2) clastic-rich bed; planktic and benthic foraminifers very abundant as well as ice-rafted clasts; top contact sharp, basal contact bioturbated.
			56-86 cm-- 30 cm of light olive gray (5Y5/2) mud (upper 20 cm) and yellowish orange (10YR6/4) sandy mud (lower 10 cm) containing interval with ice-rafted clasts; upper section contains very rare arenaceous foraminifers; lower section contains common to abundant planktic and benthic foraminifers.
	100		86-108 cm-- 22 cm of bioturbated dark yellowish brown (10YR4/2) sandy mud interbedded with two light yellowish gray (5Y7/2) clastic-rich beds (to 33 % sand) containing abundant ice-rafted clasts and very abundant planktic and benthic foraminifers; upper and lower contacts intensely bioturbated.
			108-124 cm-- 16 cm of grayish olive (10Y4/2) mud grading down to laminated moderate yellowish brown (10YR5/4) sandy mud; a 2 cm bed of dark yellowish orange (10YR6/6) mud occurs at 119-121 cm; a thin pale orange (10YR8/2) clastic-rich bed (17 % sand) occurs at base of section; unit contains rare to common foraminifers.
			124-130 cm-- 6 cm consisting of bioturbated dark yellowish brown (10YR4/2) sandy mud; unit contains ice-rafted clasts and very abundant planktic and benthic foraminifers.
			130-140 cm-- 10 cm of olive gray (5Y5/2) mud lacking foraminifers and ice-rafted clasts.
			140-157-- 17 cm consisting of a upper 3 cm bed of bioturbated pale olive gray (5Y5/2) sand mud containing ice-rafted clasts and rare foraminifers; lower 14 cm consist of bioturbated dark yellowish brown (10YR4/2) sandy mud containing ice-rafted clasts and rare to common arenaceous foraminifers.
	2 3		157-175 cm-- 18 cm of bioturbated to laminated dusky yellow (5Y6/4) mud containing a well laminated medium gray (N5) bed (second bed from top); sequence contains rare foraminifers and rare ice-rafted clasts.
	L	200	
			221-235 cm-- 14 cm consisting of 2 cm of light olive gray (5Y5/2) mud overlying 15 cm of intensely bioturbated dark yellowish brown (10YR4/2) sandy mud containing ice-rafted clasts and very abundant planktic and benthic foraminifers; Mn micro-nodules abundant.

UNIT		Core 5	
Σ		1089 m	235-476 cm
L			235-274 cm-- 39 cm of laminated and bioturbated greenish gray (5GY6/1) to light olive gray (5Y5/2) mud to sandy mud in thin to thick beds; a thin dark yellow orange (10YR6/6) sandy mud (to 10 % sand) bed grades to olive gray (5Y6/2) mud; sequence lacks ice-rafted clasts and contains very rare (<2/cc) planktic and benthic foraminifers.
	300		274-307-- 33 cm of bioturbated to mottled yellowish brown (10YR6/2-6/4) sandy mud (sand 11 %) grading to greenish gray (5GY6/1) sandy mud in thin beds with diffused bioturbated contacts to 2 cm of yellow gray (5Y7/2) mud; sequence contains ice-rafted clasts and rare arenaceous foraminifers; Mn micro-nodules common to abundant.
K	3		307-336--29 cm consisting of 13 cm of intensely bioturbated yellowish brown (10YR5/4) sandy mud grading to 16 cm of intensely bioturbated and mottled light to dark brown (10YR6/4-4/2) sandy mud; sand content increases down section to 18 %; very abundant planktic and benthic foraminifers as well as ice-rafted clasts found in sequence; Mn micro-nodules abundant.
	4		336-347-- 11 cm of mottled and bioturbated yellow brown (10YR5/4) to dark yellow orange (10YR6/6) sandy mud grading down to pale olive (10Y6/2) sandy mud; Mn micro-nodules abundant; common to abundant planktic and benthic foraminifers.
			347-370 cm-- 23 cm of intensely bioturbated moderate brown (5Y3/4) sandy mud; contacts diffused by bioturbation; sequence contains very abundant planktic and benthic foraminifers; Mn micro-nodules abundant.
J			370-407 cm-- 37 cm of interbedded dusky yellow (5Y6/4), light brown (5Y6/2), pale olive (10Y6/2), grayish orange (10YR7/4), sandy mud with two light brown to grayish orange pink (10YR7/4) clastic rich (top bed 25 % and basal bed 31 % sand) beds containing abundant ice-rafted clasts; sequence contains rare calcareous benthic and arenaceous foraminifers.
I	400		407-428 cm-- 21 cm of bioturbated pale yellowish brown (10YR6/2) to dark yellowish brown (10YR4/2) sandy mud containing abundant ice-rafted clasts; sequence contains rare calcareous and arenaceous benthic foraminifers.
			428-433 cm-- 5 cm of bioturbated dusky yellow (5Y6/4) sandy mud containing rare arenaceous foraminifers.
	?		433-476 cm-- 43 cm of bioturbated dark yellowish brown (10YR4/2) to yellow brown (10YR5/4) sandy mud containing very rare calcareous to common arenaceous benthic foraminifers; ice-rafted clasts found near base of unit.

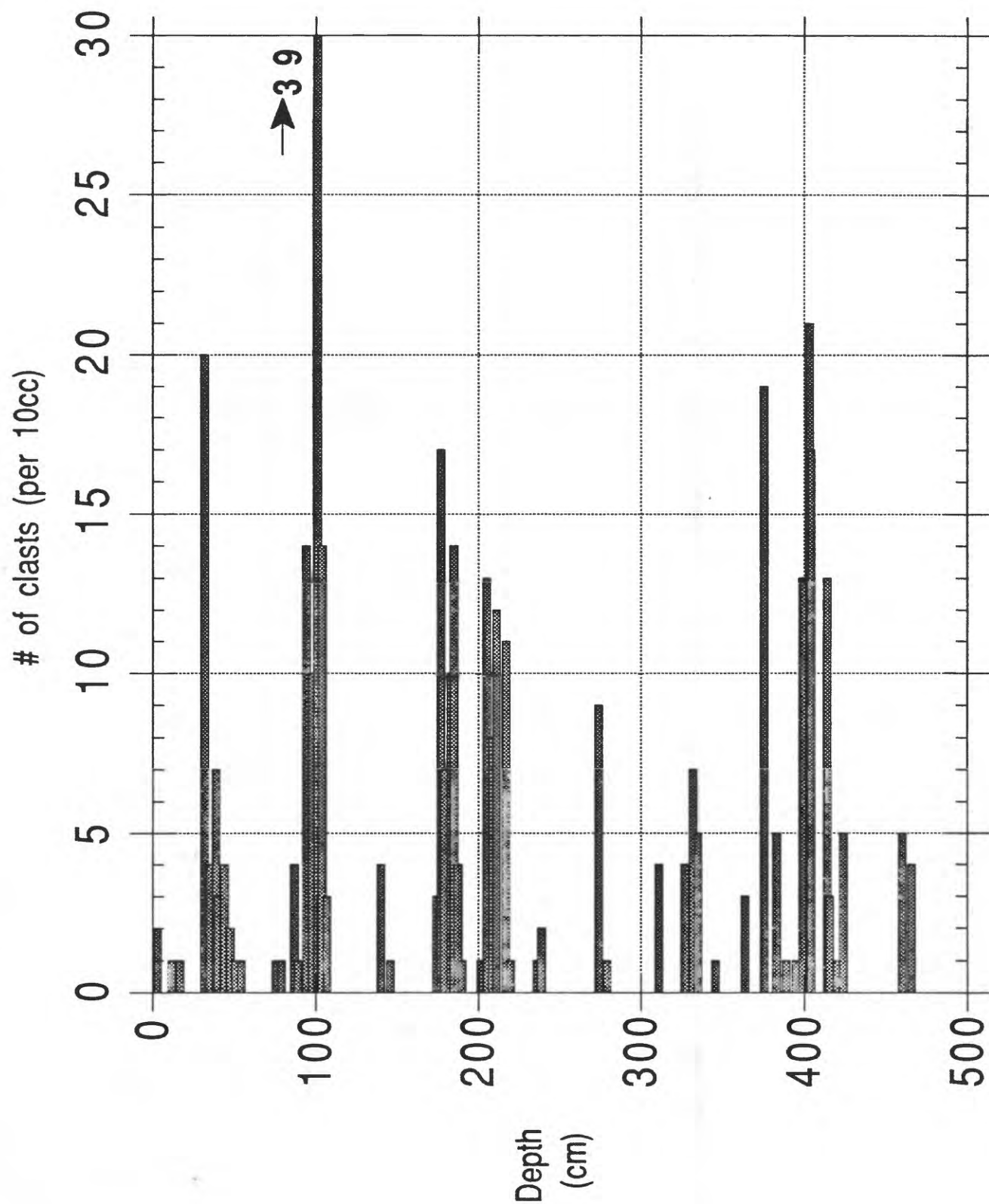
PI88AR Core 5



Core 5 #174



PI88AR Core 5



PI88AR Core 5

Sample = 10 cc unless noted

Depth: 1089 m

Location: 74°37.35', 157°53.04'

Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	465.7-467.7	12.19	93.5	0.85	6.5	0.07 (4)
2	449.8-451.8	9.42	93.8	0.62	6.2	
3	439.6-441.6	10.32	96.6	0.40	3.7	
4	428.8-430.8	12.92	98.6	0.18	1.4	
5	424.0-426.0	13.25	86.8	2.01	13.2	0.37 (5)
6	415.4-417.4	12.67	92.5	1.03	7.5	
7	403.2-405.2	13.57	80.5	3.28	19.5	1.41 (21)
8	399.0-401.0	10.15	68.8	4.61	31.2	0.77 (13)
9	392.0-394.0	11.30	95.4	0.55	4.6	
10	383.0-385.0	12.45	90.4	1.33	9.6	0.32 (5)
11	375.5-377.8	11.22	75.1	3.63	24.4	3.39 (19)
12	364.0-366.0	10.55	91.2	1.02	8.8	0.21 (3)
13	348.8-350.8	10.46	93.7	0.70	6.3	
14	341.6-342.6	12.16	98.1	0.23	1.9	
15	335.0-337.0	13.43	82.5	2.85	17.5	0.19 (2)
16	327.0-329.0	12.63	87.8	1.75	12.2	2.02 (4)
17	317.0-319.0	6.36	89.6	0.74	10.4	
18	308.0-310.0	7.38	96.9	0.24	3.2	
19	304.0-306.0	8.67	99.0	0.09	1.0	
20	302.0-304.0	9.19	94.4	0.55	5.6	
21	297.0-299.0	8.07	91.2	0.78	8.8	
22	290.0-292.0	10.10	98.6	0.14	1.4	
23	283.0-285.0	11.17	99.8	0.02	0.2	
24	279.0-281.0	7.75	96.3	0.30	3.7	
25	274.0-276.0	9.51	88.9	0.88	11.1	0.31 (9)
26	267.0-269.0	8.89	99.8	0.02	0.2	
27	262.0-264.0	9.46	90.4	1.01	9.7	
28	255.0-257.0	10.80	99.9	0.01	0.1	
29	247.3-249.3	9.42	99.9	0.01	0.1	
30	244.0-246.0	9.74	99.9	0.01	0.1	
31	239.0-241.0	8.80	94.4	0.52	5.6	0.06 (2)
32	232.5-234.5	9.99	88.7	1.27	11.3	
33	226.4-228.4	9.15	90.8	0.93	9.2	
35	217.0-219.0	10.21	73.3	3.71	26.7	0.29 (11)
36	208.5-210.5	13.74	76.2	4.29	23.8	0.26 (8)
37	201.5-203.5	13.32	79.5	3.44	20.5	0.07 (1)
38	195.5-197.5	9.74	90.6	1.01	9.4	
39	190.0-192.0	8.67	88.4	1.14	11.6	0.07 (1)
40	187.5-189.5	5.80	82.9	1.20	17.1	0.26 (4)
42	185.0-187.0	9.31	84.6	1.69	15.4	1.15 (14)
43	183.0-185.0	12.20	75.7	3.92	24.3	0.31 (10)
44	179.0-181.0	8.79	82.2	1.91	17.8	1.33 (7)
45	174.4-176.4	9.20	90.1	1.01	9.9	0.21 (3)
46	171.0-173.0	10.90	97.2	0.31	2.8	
47	167.0-169.0	11.13	98.3	0.19	1.7	
48	163.2-165.2	11.34	98.5	0.18	1.5	
49	160.0-162.0	9.67	94.3	0.58	5.7	
50	155.3-157.3	8.64	94.0	0.55	6.0	
51	151.0-153.0	8.87	92.0	0.78	8.1	
52	146.0-148.0	9.43	95.9	0.39	4.1	0.02 (1)
53	141.2-143.2	9.24	97.4	0.25	2.6	
54	136.0-138.0	9.75	100.0	0.00		
55	130.2-132.2	9.71	91.8	0.87	8.2	
56	127.2-129.2	9.76	83.0	2.00	17.0	
57	124.0-126.0	8.32	85.3	1.43	14.7	
58	121.4-123.4	10.66	98.8	0.13	1.2	
59	118.0-120.0	13.77	99.9	0.02	0.2	
60	113.4-115.4	10.09	99.2	0.08	0.8	
61	110.0-112.0	7.90	95.9	0.34	4.1	
62	107.0-109.0	10.06	85.8	1.66	14.2	0.09 (3)

63	104.0-106.0	10.51	88.8	2.19	17.2 0.62 (14)
64	101.0-103.0	10.57	66.4	5.34	33.6 1.19 (39)
65	98.0-100.0	11.39	77.7	3.26	22.3 0.40 (10)
66	94.4-96.4	8.74	79.5	2.26	20.5 0.37 (14)
67	87.0-89.0	8.36	93.7	0.56	6.3 0.75 (4)
68	81.0-83.0	10.76	98.6	0.15	1.4
69	75.4-77.4	11.02	97.9	0.24	2.1 0.06 (1)
70	69.0-71.0	8.51	99.9	0.01	0.1
71	59.0-61.0	8.68	99.2	0.07	0.8
72	54.5-56.4	8.99	89.7	1.04	10.3 0.04 (1)
73	50.8-52.8	8.94	87.0	1.34	13.0 0.02 (1)
74	47.6-49.6	9.17	85.9	1.50	14.1 0.04 (2)
75	44.0-46.0	8.75	96.8	0.29	3.2 0.08 (4)
76	40.0-42.0	8.60	89.3	0.92	10.7 0.13 (3)
77	35.0-37.0	11.04	97.9	0.24	2.1 0.19 (4)
78	32.0-34.0	10.37	89.6	1.21	10.4 1.26 (20+)
79	29.2-31.2	10.31	89.3	1.24	10.7
80	26.0-28.0	8.48	97.5	0.22	2.5
81	21.0-23.0	7.03	84.6	1.28	15.4
82	17.1-19.1	7.71	85.3	1.33	14.7 0.59 (1)
83	13.0-15.0	8.77	92.0	0.76	8.0
84	9.0-11.0	9.64	91.3	0.92	8.7
86	6.0-8.0	9.52	89.1	1.17	10.9
87	3.0-5.0	8.13	88.7	1.04	11.3 0.14 (2)
88	0.0-2.0	8.37	91.0	0.82	8.9
89	79.0-81.0	19.08	95.6	0.87	4.4 0.01 (1)
90	89.0-91.0	18.36	89.2	2.23	10.8 0.07 (1)
91	120.0-122.0	21.81	99.4	0.13	0.6
92	161.0-163.0	20.09	96.3	0.78	3.7
93	177.0-179.0	12.66	86.1	2.04	13.9 0.57 (17)
93	177.0-179.0	11.20	99.9	0.01	0.1
94	211.0-213.0	25.96	74.4	8.91	25.6 1.19 (12)
95	230.0-232.0	8.13	89.1	0.99	10.9
96	236.0-238.0	17.83	84.9	3.16	15.1 0.16 (1)
97	286.0-288.0	12.35	99.5	0.06	0.5
98	292.0-294.0	12.05	97.4	0.32	2.6
99	311.0-313.0	12.93	95.4	0.63	4.6 0.07 (4)
100	332.0-334.0	19.02	86.2	3.05	13.8 1.55 (7)
101	356.0-358.0	14.10	90.7	1.44	9.3
102	272.0-274.0	17.02	93.6	1.17	6.4
103	395.0-397.0	22.07	88.0	3.02	12.0 0.02 (1)
104	420.0-422.0	17.52	84.4	3.25	15.6 0.02 (1)
105	434.0-436.0	15.90	97.8	0.36	2.2
106	460.0-462.0	18.63	93.7	1.25	6.3 0.16 (5)
107	9.0-11.0	9.25	89.3	1.11	10.7
108	12.0-14.0	12.92	91.2	1.24	8.8 0.05 (1)
109	39.0-41.0	19.25	88.9	2.40	11.1 1.59 (7)
110	65.0-67.0	20.28	100.0	0.01	0.0
111	73.0-75.0	13.39	99.4	0.08	0.6
112	78.0-80.0	13.16	94.0	0.84	6.0
113	82.0-84.0	11.73	98.2	0.21	1.8
114	103.0-105.0	6.97	82.1	1.52	17.9 0.05 (3)
115	124.0-126.0	4.48	83.6	0.88	16.4
116	140.0-142.0	10.24	95.2	0.52	4.8 0.11 (4)
117	192.0-194.0	11.27	87.3	1.64	12.7
118	205.0-207.0	18.30	77.3	5.38	22.7 1.52 (13)
119	244.0-246.0	21.21	99.2	0.17	0.8
120	247.0-249.0	15.05	99.5	0.08	0.5
121	251.0-253.0	11.58	99.9	0.01	0.1
122	253.0-255.0	13.47	99.9	0.02	0.1
123	257.0-259.0	13.39	99.9	0.01	0.1
124	270.0-272.0	14.21	99.3	0.10	0.7
125	287.0-289.0	14.60	99.7	0.04	0.3
126	339.0-341.0	16.00	94.3	0.96	5.7
127	352.0-354.0	15.22	93.0	1.14	7.0
128	389.0-391.0	13.32	91.3	1.27	8.7 0.10 (1)

PI88AR Core 5

129	404.0-406.0	14.42	84.0	2.75	16.0	3.26 (17)
130	414.0-416.0	11.34	87.8	1.58	12.2	0.93 (13)
131	447.0-449.0	17.35	94.6	0.99	5.4	
132	467.0-469.0	8.16	93.6	0.56	6.4	
159	220.0-222.0 (8cc)	8.07	97.3	0.22	2.7	0.02 (1)
173	345.5-347.5	8.24	96.7	0.28	3.3	0.02 (1)

PI88AR Core 5 Sample = 10 cc unless noted
 Depth: 1089 m Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)
 Location: 74°37.35', 157°53.04' Planktic (p), Arenaceous (a), Benthic calcareous (b)
 (Note: Samples #89-131 were unknown quantity ...used for paleomag)

Sample Number	Interval Sampled	Foraminifers			
1	465.7-467.7	C/p/a			
2	449.8-451.8	C/a			
3	439.6-441.6	A/p/a/b			
4	428.8-430.8	R/p/b			
5	424.0-426.0	R/a/b			
6	415.4-417.4	R/a			
7	403.2-405.2	R/a			
8	399.0-401.0	R/a			
9	392.0-394.0				
10	383.0-385.0				
11	375.5-377.8	R/a			
12	364.0-366.0	A/p/a			
13	348.8-350.8	VA/p/a/b			
14	341.6-342.6	VA/p/b			
15	335.0-337.0	C/p			
16	327.0-329.0	VA/p/a			
17	317.0-319.0	VA/p/a/b			
18	308.0-310.0	R/p/a			
19	304.0-306.0				
20	302.0-304.0				
21	297.0-299.0				
22	290.0-292.0				
23	283.0-285.0				
24	279.0-281.0				
25	274.0-276.0				
26	267.0-269.0				
27	262.0-264.0				
28	255.0-257.0				
29	247.3-249.3				
30	244.0-246.0				
31	239.0-241.0	C/p/b			
32	232.5-234.5	VA/p/a/b			
33	226.4-228.4	VA/p/a/b			
35	217.0-219.0				
36	208.5-210.5				
37	201.5-203.5				
38	195.5-197.5	VA/p/a/b			
39	190.0-192.0	VA/p/a/b			
40	187.5-189.5	A/p/a/b			
42	185.0-187.0	A/p			
43	183.0-185.0	A/p			
44	179.0-181.0	VA/p/b			
45	174.4-176.4	VA/p/b			
46	171.0-173.0	R/p			
47	167.0-169.0	R/p			
48	163.2-165.2				
49	160.0-162.0				
50	155.3-157.3				
51	151.0-153.0	C/a			
52	146.0-148.0	R/a			
53	141.2-143.2				
54	136.0-138.0				
55	130.2-132.2	R/p			
56	127.2-129.2	VA/p/a/b			
57	124.0-126.0	VA/p/a/b			
58	121.4-123.4	C/p/b			
59	118.0-120.0				
60	113.4-115.4	R/b			
61	110.0-112.0				

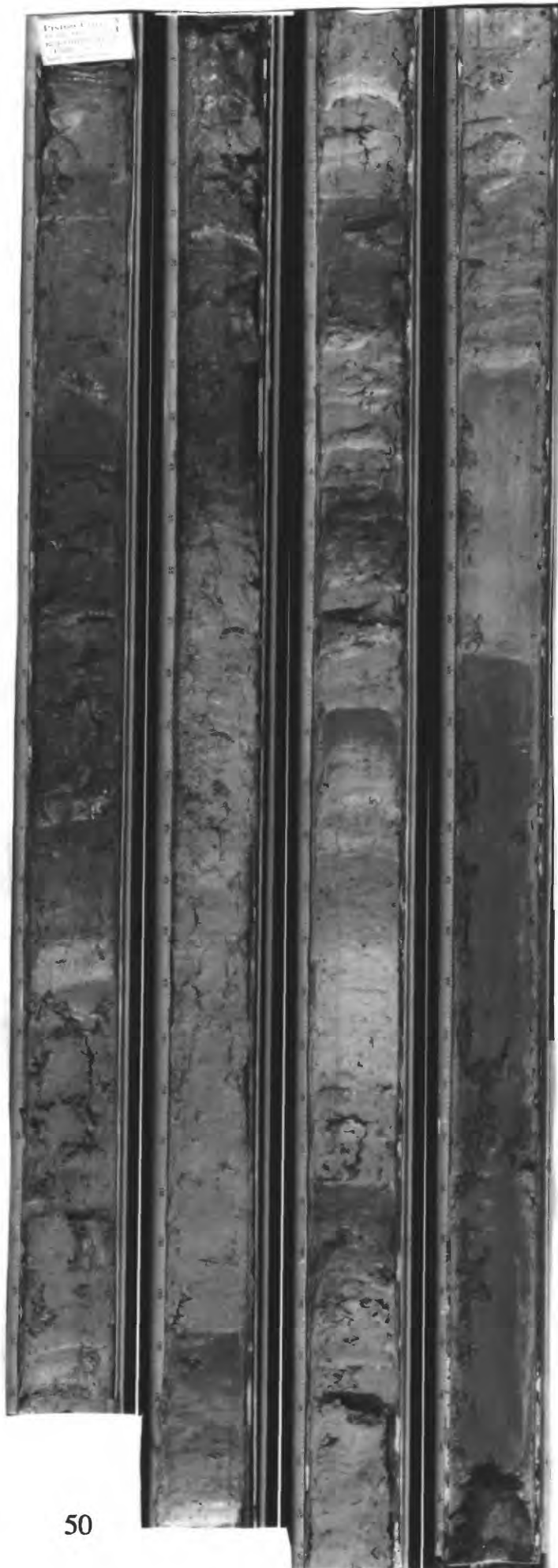
62	107.0-109.0				
63	104.0-106.0	R/p			
64	101.0-103.0	C/p			
65	98.0-100.0	A/p/b			
66	94.4-96.4	VA/p/a/b			
67	87.0-89.0	VA/p/a/b			
68	81.0-83.0	C/p/b			
69	75.4-77.4	R/p			
70	69.0-71.0				
71	59.0-61.0				
72	54.5-56.4	VA/p/a/b			
73	50.8-52.8	VA/p/a/b			
74	47.6-49.6	VA/p/a/b			
75	44.0-46.0	C/p/a/b			
76	40.0-42.0	VA/p/a/b			
77	35.0-37.0	C/b			
78	32.0-34.0				
79	29.2-31.2	R/b			
80	26.0-28.0				
81	21.0-23.0				
82	17.1-19.1				
83	13.0-15.0				
84	9.0-11.0				
86	6.0-8.0	A/p/a/b			
87	3.0-5.0	VA/p/a/b			
88	0.0-2.0	VA/p/a/b			
89	79.0-81.0	C/p/b			
90	89.0-91.0	VA/p			
91	120.0-122.0	R/p/b			
92	161.0-163.0				
93A	177.0-179.0	R/p/b			
93B	177.0-179.0				
94	211.0-213.0				
95	230.0-232.0	VA/p/a/b			
96	236.0-238.0	VA/p/a/b			
97	286.0-288.0				
98	292.0-294.0				
99	311.0-313.0	VA/p/a/b			
100	332.0-334.0	VA/p/a/b			
101	356.0-358.0				
102	272.0-274.0	A/p/b			
103	395.0-397.0	R/p			
104	420.0-422.0	R/a/b			
105	434.0-436.0	R/a/b			
106	460.0-462.0	C/a/b			
107	9.0-11.0	A/p			
108	12.0-14.0				
109	39.0-41.0	A/p/b			
110	65.0-67.0	R/p			
111	73.0-75.0	R/p			
112	78.0-80.0	A/p/b			
113	82.0-84.0	A/p/b			
114	103.0-105.0	C/p/a			
115	124.0-126.0	VA/p/a/b			
116	140.0-142.0				
117	192.0-194.0	VA/p/b			
118	205.0-207.0				
119	244.0-246.0	C/p/b			
120	247.0-249.0	C/p/b			
121	251.0-253.0				
122	253.0-255.0	R/p/b			
123	257.0-259.0	R/p			
124	270.0-272.0	R/p/a			
125	287.0-289.0	R/a			
126	339.0-341.0	A/p/a/b			
127	352.0-354.0	VA/p/a/b			

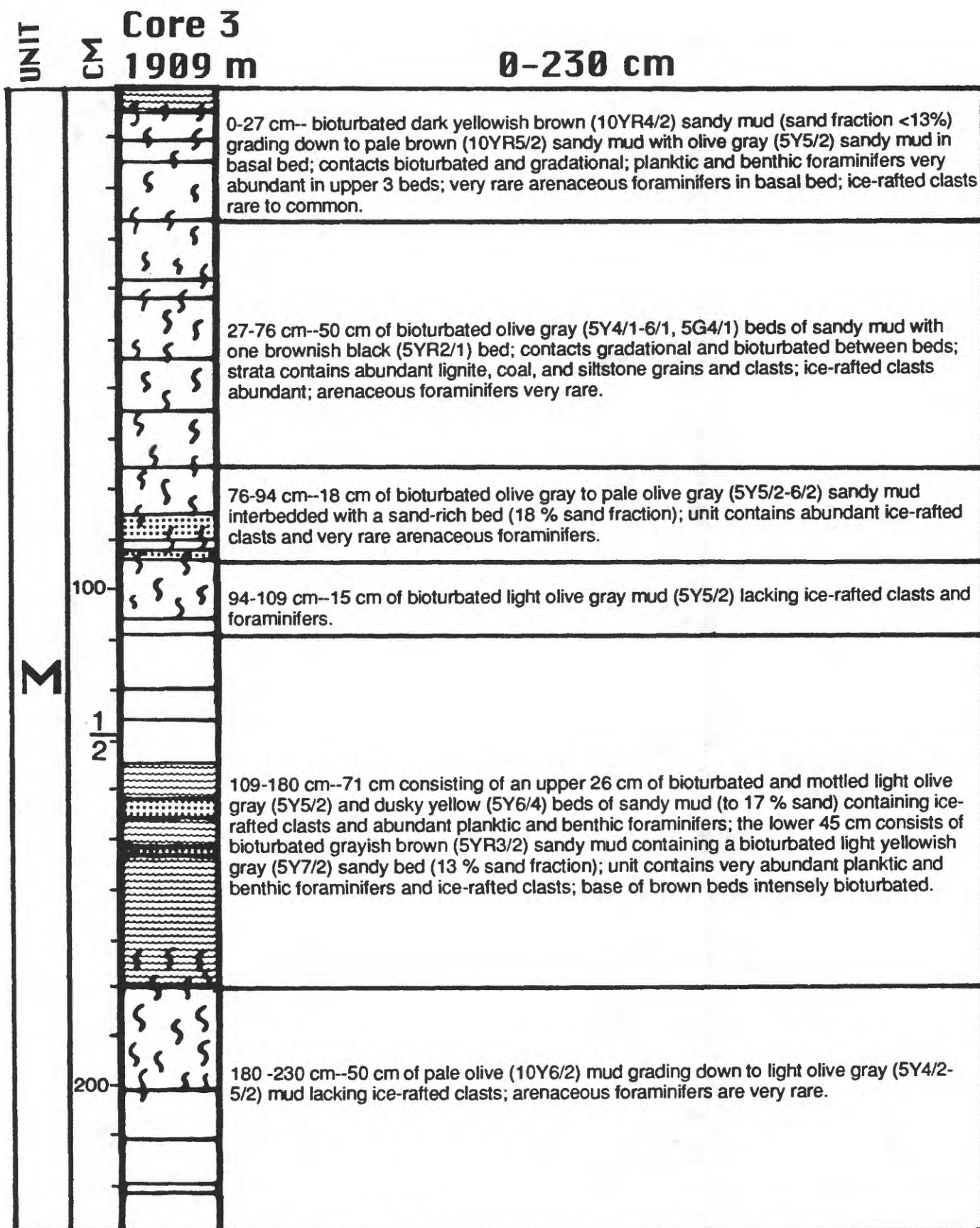
PI88AR Core 5 forams

128	389.0-391.0					
129	404.0-406.0					
130	414.0-416.0	R/a				
131	447.0-449.0	A/b/a				
132	467.0-469.0	C/p/a/b				
159	220.0-222.0 (8cc)	R/p/a				
173	345.5-347.5	VA/p/a/b				

Northwind Ridge flank
Core 3
1909 m
74° 35.60', 157° 39.59'

Figure 7. Photograph of core 3. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata.

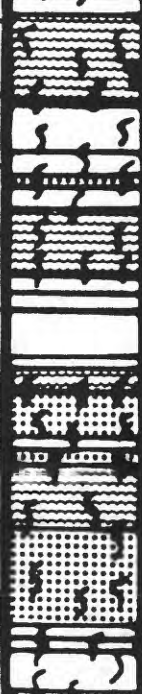




IN

Σ Core 3
1909 m

230-466 cm

M	2 3		230-250 cm--30 cm consisting of 20 cm of pale yellowish brown to grayish orange (10YR6/2-7/4) mud lacking ice-rafted clasts and foraminifers above 240 cm grading down to 10 cm of light olive gray (5Y5/2) sandy mud; unit contains ice-rafted clasts between 241-247 cm and abundant planktic and benthic foraminifers below 241 cm.
			250-289 cm--39 cm of intensely bioturbated dark yellowish brown (10YR4/2) sandy mud interbedded with mottled grayish orange and pale yellowish orange (10YR7/4-5/2) sandy mud; unit contains two light grayish orange pink (5Y8/2) clastic-rich beds (to 17 % sand), ice-rafted clasts, and very abundant planktic and benthic foraminifers.
			289-299--10 cm of bioturbated light olive gray (5Y5/2) sandy mud containing ice-rafted clasts and very rare foraminifers.
L	300		299-322--23 cm of bioturbated grayish brown (5YR4/2) sandy mud overlying bioturbated light olive gray (5Y5/2) laminated sandy mud; upper bed contains very abundant planktic and benthic foraminifers and rare ice-rafted clasts; lower beds contain rare foraminifers and ice-rafted clasts.
			322-340--18 cm bioturbated grayish brown (5YR3/2) sandy mud interbedded with laminated to well bedded light olive gray, grayish yellow (5Y5/2-7/2), to grayish orange (10YR7/4) sandy mud; unit contains ice-rafted clasts and rare arenaceous foraminifers.
			340-347--7 cm of light olive gray to dusky yellow (5Y5/2-6/4) laminated and mottled slightly sandy mud; unit contains rare arenaceous foraminifers.
			347-385 cm--38 cm of bioturbated dark yellowish brown (10YR4/2) sandy mud containing two dusky yellow (5YR6/4) to orangish pink (5YR7/4) clastic-rich beds with the upper bed containing 25 % sand and lower clastic bed containing 22 % sand; unit contains abundant ice-rafted clasts and very abundant planktic and benthic foraminifers in brown beds with foraminifers decreasing in the sand-rich beds; Mn micro-nodules are abundant in lower brown bed.
			385-394--9 cm of dusky yellow brown (10GY62/) mud lacking foraminifers and ice-rafted clasts.
			394-412 cm--18 cm of intensely bioturbated dark brown (10YR4/2) sandy mud containing very abundant planktic and benthic foraminifers and a few ice-rafted clasts overlying a dusky yellow (5Y6/4) slightly sandy mud lacking ice-rafted clasts; lower bed contains very rare foraminifers; Mn micro-nodules abundant in brown bed.
J	3 4		412-441 cm--29 cm of yellowish gray (5Y6/2), dark yellowish orange (10YR6/6), orangish pink (10YR6/2), and light olive gray (5Y5/2) laminated to mottled sandy mud beds containing very rare arenaceous foraminifers and ice-rafted clasts.
			441-466--25 cm of thin bedded light olive gray (5Y5/2) to grayish green (5GY5/2) sandy mud overlying well laminated pale yellow brown to grayish orange (10YR6/2-7/4) sandy mud containing ice-rafted clasts; laminated interval from 448-454 cm is inclined (slumped?) with laminations truncated on upper surface; a light brown (5Y6/4) clastic-rich bed (24 % sand) lies at the base of sequence; unit contains very rare arenaceous foraminifers.

IN

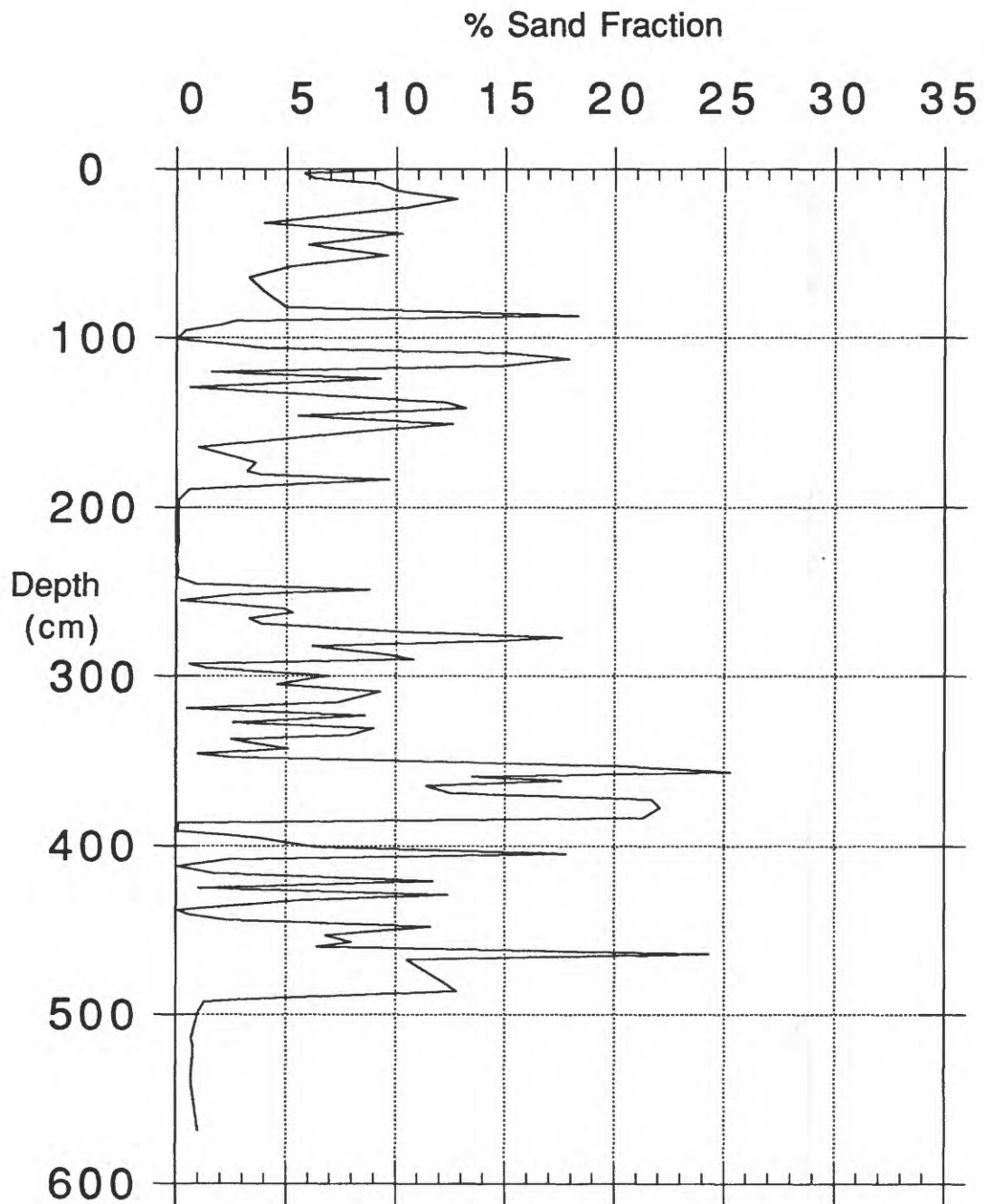
Σ

Core 3
1909 m

466-581 cm

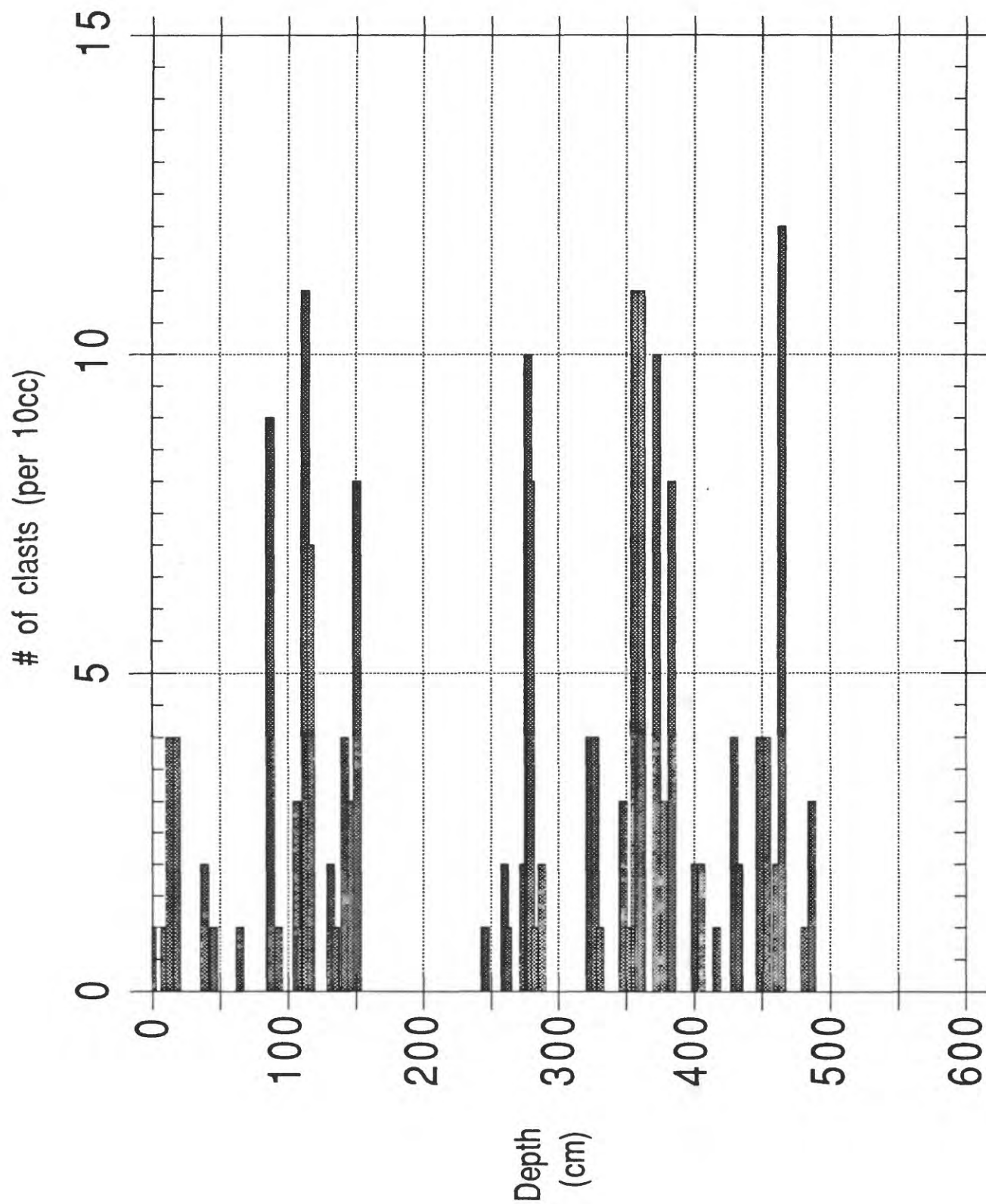
J			466-474--8 cm of bioturbated and mottled moderate yellowish brown (10YR5/4) slightly sandy mud; unit lacks foraminifers and ice-rafted clasts.
			474-492--flow-in
I	500		492-500--upper 2 cm dusky yellow (5Y6/4) mud overlying bioturbated dark brown mud (10YR4/2); sequence lacks foraminifers and ice-rafted clasts.
?			500-581--flow-in

PI88AR Core 3



PI88AR Core 3		Sample= 10 cc unless noted				
Depth: 1909 m						
Location: 74°35.60', 157°39.59'						
Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	568.5-570.5	9.22	99.0	0.09	1.0	
2	540.5-542.5	9.41	99.3	0.07	0.7	
3	514.5-516.5	8.41	99.3	0.06	0.7	
4	492.8-494.8	9.98	98.7	0.13	1.3	
5	491.5-492.5	11.05	96.8	0.36	3.2	
6	481.5-482.5	11.06	87.8	1.53	12.2	0.02 (1)
7	468.0-470.0	10.44	89.5	1.23	10.5	
8	464.5-466.5	10.55	75.7	3.39	24.3	1.51 (12)
9	460.5-462.5	10.16	93.6	0.69	6.4	0.05 (2)
10	453.5-455.5	10.33	93.2	0.75	6.8	0.15 (4)
11	448.5-450.5	10.36	88.4	1.36	11.6	0.06 (4)
12	444.5-446.5	9.81	97.8	0.22	2.2	
13	438.5-440.5	10.10	99.9	0.01	0.1	
14	433.0-435.0	8.50	94.4	0.50	5.6	0.04 (2)
15	369.0-371.0	9.55	87.5	1.37	12.5	
16	364.5-366.5	9.78	88.6	1.26	11.4	
17	361.3-363.3	11.63	82.4	2.49	17.6	0.40 (11)
18	359.0-361.0	10.55	86.5	1.64	13.5	0.23 (5)
19	356.3-358.3	10.24	74.7	3.46	25.3	0.37 (11)
20	352.5-353.5	9.54	79.8	2.41	20.2	0.04 (1)
21	429.5-431.5	11.51	87.6	1.63	12.4	0.19 (4)
22	421.5-423.5	10.60	88.3	1.41	11.7	
23	412.5-414.5	10.55	99.9	0.01	0.1	
24	405.0-407.0	9.16	82.2	1.99	17.8	0.03 (2)
25	400.7-402.7	9.81	93.7	0.66	6.3	0.03 (2)
26	395.5-397.5	8.90	96.2	0.35	3.8	
27	391.5-393.5	9.47	99.9	0.01	0.1	
28	386.5-388.5	9.29	99.9	0.01	0.1	
29	383.5-385.5	13.80	78.7	3.73	21.3	0.30 (8)
30	377.5-379.5	16.26	77.5	4.63	22.1	0.22 (3)
31	372.5-374.5	15.91	78.3	4.42	21.7	0.38 (10)
32	349.0-351.0	8.46	92.1	0.73	7.9	
33	345.5-347.5	8.01	99.0	0.08	1.0	
34	340.0-342.0	9.89	99.6	0.04	4.0	
35	334.5-335.5	8.70	93.1	0.64	7.9	
36	330.5-332.5	8.60	91.0	0.85	9.0	0.02 (1)
37	327.0-329.0	8.20	97.4	0.22	2.6	0.11 (4)
38	323.0-325.0	9.46	91.4	0.89	8.6	0.09 (4)
39	319.0-321.0	8.70	99.5	0.04	0.5	
40	315.0-317.0	9.73	92.6	0.78	7.4	
41	309.0-311.0	9.42	90.7	0.97	9.3	
42	305.0-307.0	7.70	95.4	0.37	4.6	
43	300.0-302.0	8.52	93.0	0.64	6.9	
44	295.5-297.5	8.59	98.6	0.12	1.4	
45	290.5-292.5	8.38	89.2	1.01	10.8	
46	287.5-289.5	9.37	90.4	0.99	9.6	0.19 (2)
47	282.5-284.5	7.07	93.8	0.47	6.2	0.14 (1)
48	279.5-281.5	7.28	85.3	1.25	14.7	0.70 (8)
49	277.5-279.5	9.87	82.4	2.11	17.6	0.61 (10)
50	274.0-276.0	7.52	90.0	0.84	10.0	0.15 (2)
51	266.0-268.0	9.25	96.7	0.32	3.3	
52	260.0-262.0	8.26	95.1	0.43	4.9	0.18 (2)
53	252.0-254.0	9.80	97.4	0.26	2.6	
54	245.5-247.5	11.94	99.1	0.11	0.9	0.43 (1)
55	237.5-239.5	8.98	99.9	0.01	0.1	
56	230.5-232.5	7.77	0.1	0.01	0.0	
57	222.0-224.0	9.90	99.9	0.01	0.1	
58	215.5-217.5	8.31	99.9	0.01	0.1	
59	208.5-210.5	7.87	99.9	0.01	0.1	
60	201.5-203.5	9.60	99.9	0.01	0.1	

PI88AR Core 3



PI88AR Core 3		Sample= 10 cc unless noted			
Depth: 1909 m		Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)			
Location: 74°35.60', 157°39.59'		Planktic (p), Arenaceous (a), Benthic calcareous (b)			
Sample Number	Interval Sampled	Foraminifers			
1	568.5-570.5	R/a			
2	540.5-542.5	R/a			
3	514.5-516.5	R/a			
4	492.8-494.8	R/a			
5	491.5-492.5				
6	481.5-482.5	R/a			
7	468.0-470.0	R/a			
8	464.5-466.5				
9	460.5-462.5				
10	453.5-455.5				
11	448.5-450.5				
12	444.5-446.5				
13	438.5-440.5	R/a			
14	433.0-435.0	B/p/a			
15	369.0-371.0	A/p, C/a			
16	364.5-366.5	VA/p, C/a			
17	361.3-363.3	C/p/a			
18	359.0-361.0	R/p/a			
19	356.3-358.3	R/p/a			
20	352.5-353.5	VA/p/a/b			
21	429.5-431.5				
22	421.5-423.5				
23	412.5-414.5				
24	405.0-407.0	R/p/a			
25	400.7-402.7	A/p/b			
26	395.5-397.5	VA/p/b			
27	391.5-393.5				
28	386.5-388.5				
29	383.5-385.5				
30	377.5-379.5				
31	372.5-374.5				
32	349.0-351.0	VA/p/a/b			
33	345.5-347.5 (7cc)	R/p			
34	340.0-342.0 (7cc)	R/a			
35	334.5-335.5 (7cc)	R/p			
36	330.5-332.5 (8cc)	R/P			
37	327.0-329.0	A/p/a/b			
38	323.0-325.0				
39	319.0-321.0	R/a			
40	315.0-317.0	R/p/b			
41	309.0-311.0	C/p/a/b			
42	305.0-307.0	VA/p/a/b			
43	300.0-302.0	VA/p/a/b			
44	295.5-297.5	R/p			
45	290.5-292.5	R/p			
46	287.5-289.5	R/p			
47	282.5-284.5	R/p			
48	279.5-281.5	R/p			
49	277.5-279.5	C/p/b			
50	274.0-276.0	A/p/a/b			
51	266.0-268.0	VA/p/a/b			
52	260.0-262.0	VA/p/a/b			
53	252.0-254.0	A/p/a/b			
54	245.5-247.5	R/p			
55	237.5-239.5	R/p			
56	230.5-232.5				
57	222.0-224.0				
58	215.5-217.5				
59	208.5-210.5				
60	201.5-203.5				

61	195.5-197.5	10.48	99.9	0.01	0.1	
62	189.5-191.5	10.10	99.4	0.06	0.6	
63	183.5-185.5	9.49	92.4	0.78	9.7	
64	178.5-180.5	9.32	96.8	0.31	3.2	
65	173.5-175.5	8.91	96.4	0.33	3.6	
66	164.5-166.5	8.97	99.0	0.09	1.0	
67	155.5-157.5	8.04	91.6	0.74	8.4	
68	151.0-153.0	11.15	87.4	1.61	12.6	0.64 (8)
69	146.5-148.5	8.00	94.5	0.47	5.5	0.30 (3)
70	142.0-144.0	11.14	86.8	1.70	13.2	0.12 (4)
71	138.5-140.5	9.42	87.8	1.32	12.3	
72	135.0-137.0	8.02	92.2	0.68	7.8	0.06 (1)
73	131.5-133.5	4.98	97.3	0.14	2.7	0.18 (2)
74	129.5-131.5	8.23	99.4	0.05	0.6	
75	124.5-126.5	10.67	90.7	1.09	9.3	
76	117.0-119.0	8.35	85.1	1.46	14.9	0.16 (7)
77	113.0-115.0	8.86	82.1	1.93	17.9	0.67 (11)
78	106.5-108.5	8.87	95.9	0.38	4.1	0.05 (3)
79	101.0-103.0	10.06	100.0	0.00	0.0	
80	96.0-98.0	9.96	99.6	0.04	0.4	
81	92.5-94.5	6.23	98.0	0.13	2.0	0.09 (1)
82	90.0-92.0	6.04	97.3	0.17	2.7	
83	87.0-89.0	8.95	81.7	2.00	18.3	0.27 (9)
84	82.0-84.0	8.42	95.0	0.42	5.0	
85	72.5-74.5	7.85	96.0	0.33	4.0	
86	64.5-66.5	7.96	96.7	0.27	3.3	0.05 (1)
87	58.0-60.0	7.34	94.8	0.40	5.2	
88	51.5-53.5	7.37	90.4	0.78	9.6	
89	45.0-47.0	9.53	94.0	0.61	6.0	0.02 (1)
90	38.5-40.5	8.23	89.7	0.94	10.3	0.04 (2)
91	32.0-34.0	8.35	95.9	0.35	4.0	
92	23.0-25.0	9.00	89.5	1.06	10.5	
93	18.0-20.0	8.48	87.2	1.25	12.8	1.85 (4)
94	13.0-15.0	8.98	90.0	1.00	10.0	0.16 (4)
95	9.0-11.0	8.94	90.8	0.91	9.2	0.03 (1)
96	6.0-8.0	8.66	93.7	0.58	6.3	
97	3.0-5.0	8.23	94.2	0.51	5.8	
98	0.0-2.0	5.78	89.6	0.67	10.4	0.02 (1)
105	109.5-111.5	9.83	84.8	1.76	15.2	
106	120.5-122.5	10.58	98.4	0.17	1.6	
107	180.5-182.5	9.81	96.2	0.39	3.8	
108	241.5-243.5	10.80	100.0	0.00	0.0	
109	249.0-251.0	10.37	91.2	1.00	8.8	
110	255.5-257.5	10.76	99.8	0.02	0.2	
111	262.5-264.5	9.60	94.7	0.54	5.3	0.01 (1)
112	269.5-271.5	9.78	96.1	0.40	3.9	
113	293.0-295.0	8.08	99.4	0.05	0.6	
114	337.0-339.0 (9cc)	9.90	97.5	0.25	2.5	
115	342.5-344.5	11.82	94.9	0.64	5.1	
116	347.5-349.5	10.22	97.6	0.25	2.4	0.25 (3)
117	408.5-410.5	10.10	97.6	0.25	2.4	
118	416.5-418.5	10.14	98.3	0.18	1.7	0.01(1)
119	425.5-427.5	10.04	99.0	0.10	1.0	
120	441.5-443.5	10.75	99.4	0.06	0.6	
121	457.5-459.5	11.37	92.0	0.99	8.0	
122	486.5-488.5	11.53	87.2	1.69	12.8	0.50 (3)
123	499.5-501.5	9.32	99.0	0.09	1.0	
124	519.0-524.0	38.51	99.2	0.32	0.8	

61	195.5-197.5					
62	189.5-191.5					
63	183.5-185.5					
64	178.5-180.5	C/p/b				
65	173.5-175.5	A/p/b				
66	164.5-166.5	VA/p/a/b				
67	155.5-157.5	VA/p/a/b				
68	151.0-153.0	C/p/b				
69	146.5-148.5	A/p/a/b				
70	142.0-144.0	C/p/a/b				
71	138.5-140.5	VA/p/a/b				
72	135.0-137.0	VA/p/a/b				
73	131.5-133.5	A/p/a/b				
74	129.5-131.5	R/a/b				
75	124.5-126.5	R/a				
76	117.0-119.0	VA/p/a/b				
77	113.0-115.0	VA/p/a/b				
78	106.5-108.5	R/a/b				
79	101.0-103.0	R/a				
80	96.0-98.0					
81	92.5-94.5					
82	90.0-92.0					
83	87.0-89.0					
84	82.0-84.0					
85	72.5-74.5					
86	64.5-66.5					
87	58.0-60.0					
88	51.5-53.5					
89	45.0-47.0					
90	38.5-40.5					
91	32.0-34.0					
92	23.0-25.0					
93	18.0-20.0					
94	13.0-15.0	A/p/a/b				
95	9.0-11.0	A/p/a/b				
96	6.0-8.0	A/p/a/b				
97	3.0-5.0	R/p/a/b				
98	0.0-2.0	VA/p/a/b				
105	109.5-111.5	R/p/b				
106	120.5-122.5	A/p/b				
107	180.5-182.5	R/p				
108	241.5-243.5					
109	249.0-251.0	A/p/b				
110	255.5-257.5	R/p/b				
111	262.5-264.5	VA/p/b				
112	269.5-271.5	A/p/a				
113	293.0-295.0					
114	337.0-339.0 (9cc)					
115	342.5-344.5	R/p				
116	347.5-349.5	A/p/b				
117	408.5-410.5					
118	416.5-418.5	R/p				
119	425.5-427.5					
120	441.5-443.5	R/p				
121	457.5-459.5					
122	486.5-488.5	R/a				
123	499.5-501.5	R/a				
124	519.0-524.0 (40cc)	R/a				

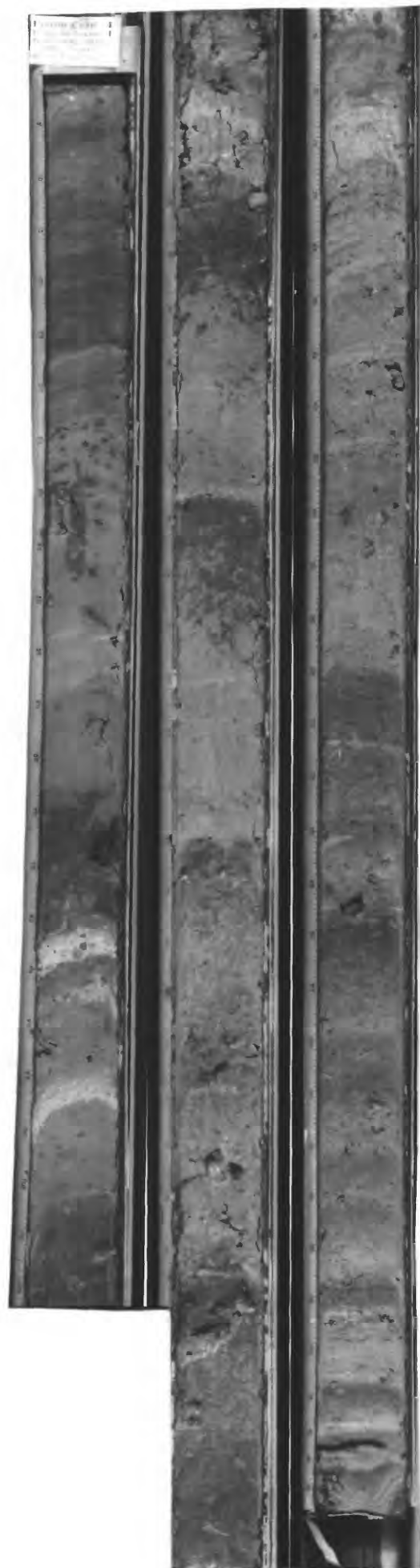
Northwind Ridge flank

Core 4

2430 m

74° 35.60', 157° 39.59'

Figure 8. Photograph of core 4. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata.

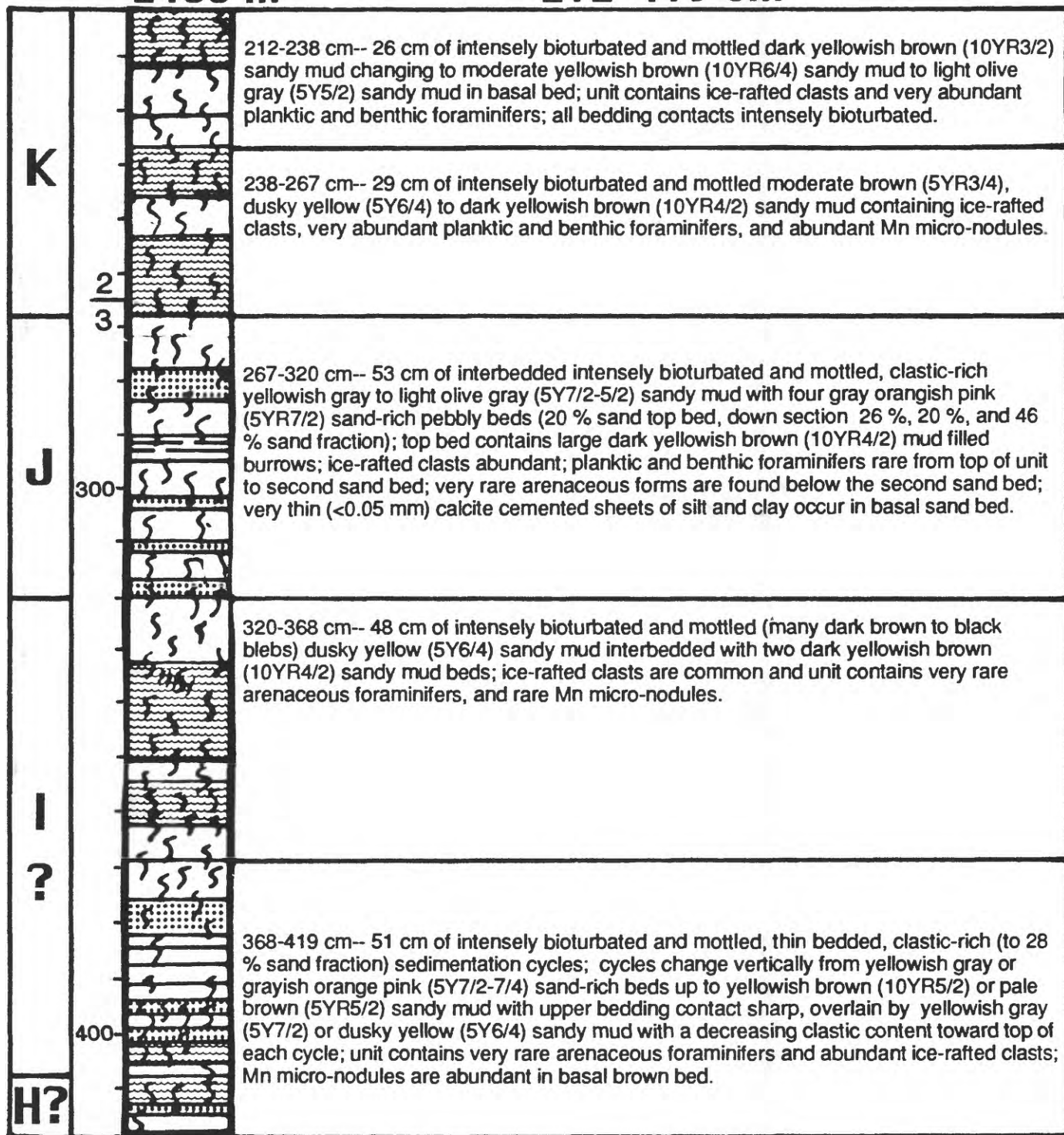


UNIT **Σ** **Core 4**
2430 m **0-212 cm**

M			0-33 cm-- Intensely bioturbated and mottled beds of moderate olive gray, olive gray, pale yellow gray, (5Y4/2-5/2-6/2) and brownish black (5YR3/1) sandy mud containing abundant lignite, coal, and ice-rafted clasts in upper 27 cm, changing to light olive gray (5Y5/2) in two basal beds; planktic and benthic foraminifers abundant in upper 3 beds, very rare in rest of section.
			33 cm--EROSIONAL SURFACE
			33-68 cm-- 35 cm of intensely bioturbated faintly laminated pale olive gray (5Y6/2) to grayish orange (10YR7/4) sandy mud containing large burrows to 2 cm diameter filled with dark yellowish brown (10YR4/2) mud; very abundant planktic and benthic foraminifers are found in burrow-fill with rare foraminifers found in matrix; the basal bed consists of intensely bioturbated moderate yellowish brown (10YR5/4) sandy mud containing ice-rafted clasts.
L	100		68-98 cm-- 30 cm of bioturbated grayish brown (5YR3/2) to dark yellowish brown (10YR4/2) sandy mud with the lower section pale yellow brown (5YR6/2); two light yellowish gray (5Y7/2) bioturbated clastic-rich beds (20 and 15 % sand) are interbedded with the brown mud; planktic and benthic foraminifers are very abundant in upper section rapidly decreasing in abundance between the clastic beds; unit contains abundant ice-rafted clasts.
			98-108 cm-- 10 cm of pale olive gray (5Y6/2) to pale yellowish brown (5YR6/4) slightly sandy mud containing rare ice-rafted clasts and arenaceous foraminifers.
	1 2		108-129 cm -- 21 cm of bioturbated dark yellowish brown (10YR4/2) sandy mud containing ice-rafted clasts and very abundant planktic and benthic foraminifers overlying bioturbated light olive gray (5Y5/2) mud; rare foraminifers in lower bed.
			129-155 cm -- 26 cm of bioturbated yellowish gray (5Y7/2) to pale brown (5Y6/2) sandy mud overlying moderate brown (5YR3/4) sandy mud changing to pale olive gray (5Y6/2) sandy mud; very abundant planktic and benthic foraminifers in brown bed decreasing to rare in underlying bed; ice-rafted clasts common in brown bed.
			155-165 cm-- 10 cm of bioturbated faintly laminated pale olive gray (5Y6/2) mud lacking ice-rafted clasts and containing rare foraminifers.
K			165-197-- 32 cm of intensely bioturbated moderate brown (5YR3/4) sandy mud containing large burrows with a basal bioturbated contact with light yellowish brown (10YR6/4) to pale green (10G7/2) mottled sandy mud; unit contains ice-rafted clasts and very abundant planktic and benthic foraminifers and Mn micro-nodules in brown bed; foraminifers are rare in lower bed.
	200		197-212-- 15 cm of intensely bioturbated dark yellowish brown (10YR4/2-5/2) sandy mud to moderate yellowish brown (10YR5/4) sandy mud; brown bed contains ice-rafted clasts, very abundant planktic and benthic foraminifers, and abundant Mn micro-nodules.

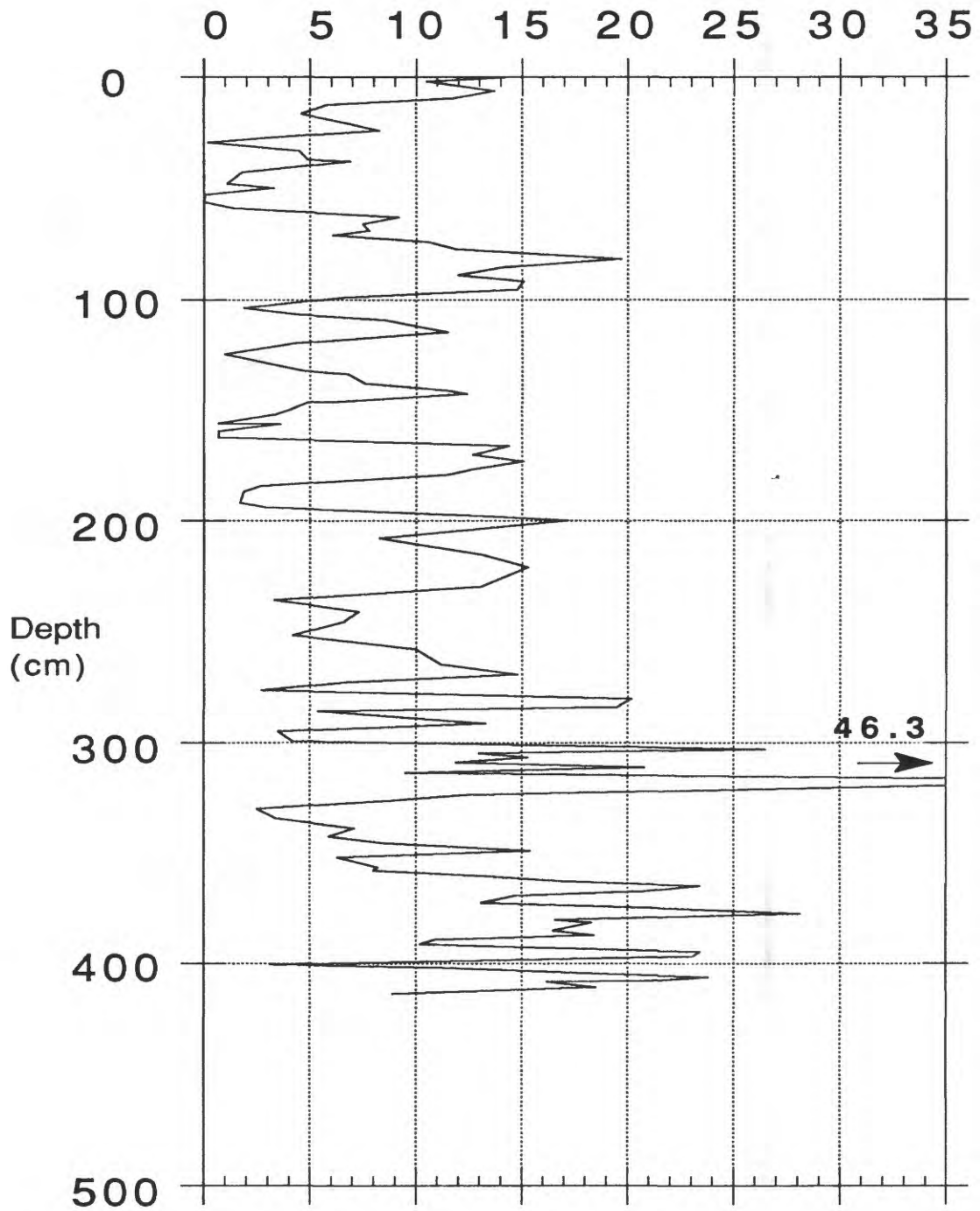
Core 4
2430 m

212-419 cm

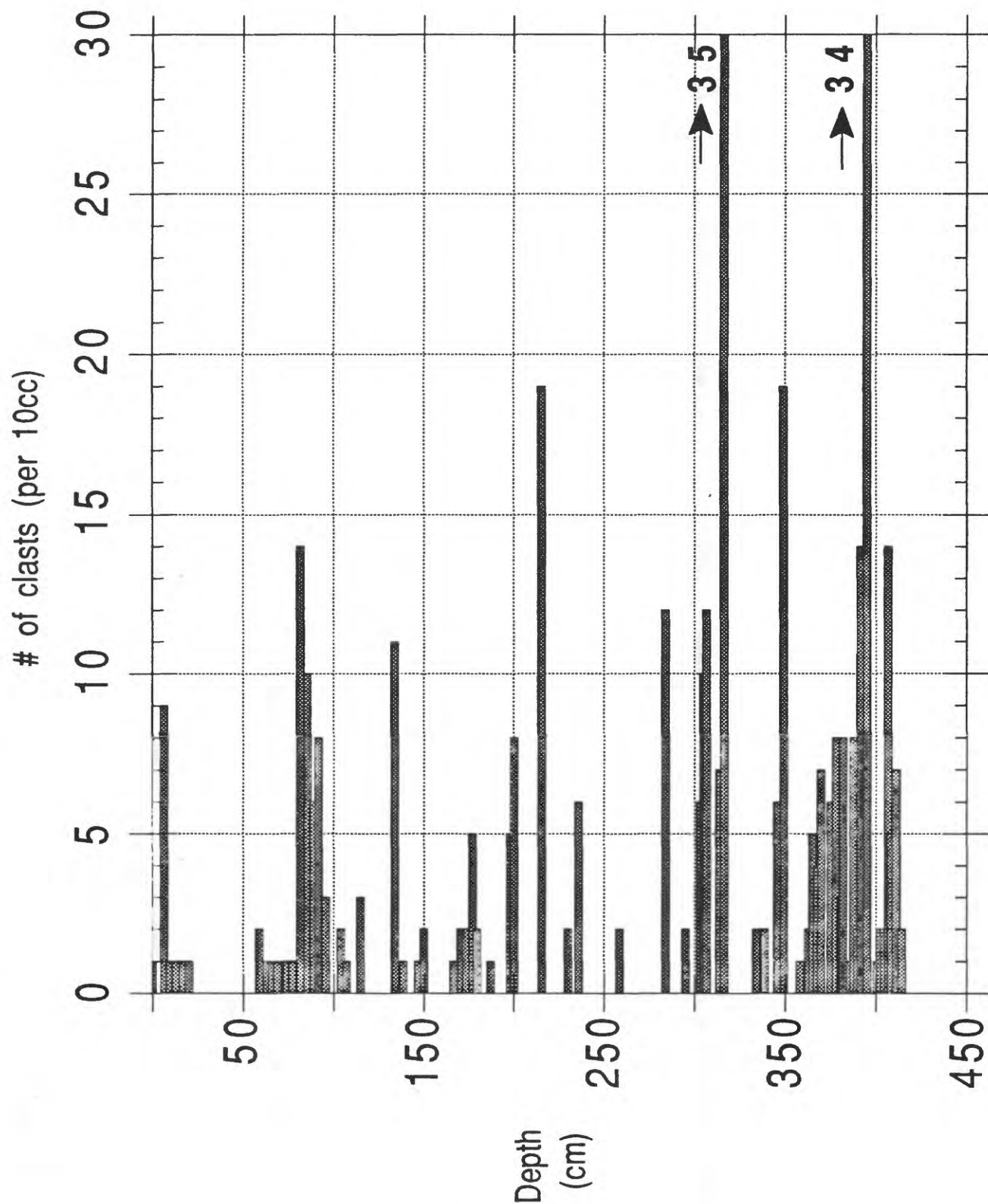


PI88AR Core 4

% Sand Fraction



PI88AR Core 4



PI88AR Core 4
 Depth: 2430 m
 Location: 74°40.91', 157°23.97'

Sample = 10 cc unless noted

Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0(#clasts)
1	407.9-409.9	10.57	78.8	2.84	21.2	1.66 (5)
2	402.3-404.3	13.33	88.7	1.69	11.3	0.09 (2)
3	395.1-397.1	10.85	76.6	3.32	23.4	2.87 (34)
4	385.5-387.5	10.94	83.5	2.16	16.5	0.51 (1)
5	380.5-382.5	10.85	83.4	2.16	16.6	0.05 (3)
6	369.5-371.5	10.25	85.3	1.77	14.7	0.31 (7)
7	358.0-360.0	10.31	92.0	0.90	8.0	0.02 (1)
8	351.9-353.9	11.22	93.7	0.76	6.3	
9	345.5-347.5	11.73	91.5	1.09	8.5	0.51 (6)
10	335.7-337.7	10.06	95.4	0.49	4.6	
11	329.8-331.8	11.46	97.5	0.29	2.5	
12	323.7-325.7	13.38	87.6	1.90	12.4	
13	317.1-319.1	5.08	53.7	4.38	46.3	
14	308.7-310.7	11.15	88.1	1.51	11.9	
15	299.3-301.3	12.19	95.8	0.54	4.2	
16	291.5-293.5	10.54	86.7	1.62	13.3	
17	280.5-282.5	13.41	79.8	3.39	20.2	
18	273.1-275.1	10.20	93.3	0.73	6.7	
19	265.0-267.0	9.31	88.8	1.17	11.2	
20	258.4-260.4	8.95	90.0	0.99	10.0	0.5 (2)
21	252.0-254.0	9.68	95.8	0.42	4.2	
22	246.0-248.0	9.76	93.4	0.69	6.6	
23	241.2-243.2	8.67	92.7	0.68	7.3	
24	236.0-238.0	11.01	96.7	0.38	3.3	0.29 (6)
25	230.0-232.0	6.45	86.9	0.97	13.1	0.14 (2)
26	221.0-223.0	8.53	84.7	1.54	15.3	
27	215.4-217.4	7.32	86.9	1.10	13.1	2.46 (19)
28	208.0-210.0	11.24	91.7	1.02	8.3	
29	200.0-202.0	9.44	82.8	1.96	17.2	0.31 (8)
30	194.0-196.0	11.82	97.1	0.35	2.9	
31	187.0-189.0	11.66	98.1	0.23	1.9	0.13 (1)
32	179.4-181.4	8.58	88.5	1.12	11.5	0.04 (2)
33	173.4-175.4	7.42	84.9	1.32	15.1	0.08 (2)
34	166.4-168.4	7.61	85.6	1.28	14.4	0.02 (1)
35	162.6-164.6	8.16	99.3	0.06	0.7	
36	156.4-158.4	8.86	99.3	0.06	0.7	
37	147.0-149.0	11.50	95.1	0.59	4.9	0.02 (1)
38	143.0-145.0	8.83	87.6	1.25	12.4	
39	138.4-140.4	10.02	92.4	0.83	7.6	0.35 (1)
40	134.0-136.0	9.97	93.2	0.73	6.8	1.37 (11)
41	129.6-131.6	8.41	96.8	0.28	3.2	
42	125.0-127.0	9.01	99.0	0.09	1.0	
43	120.0-122.0	7.95	95.7	0.36	4.3	
44	109.5-111.5	6.45	91.4	0.61	8.6	
44	104.0-106.0	9.11	98.1	0.18	1.9	0.04 (2)
45	99.0-101.0	7.60	93.4	0.54	6.6	
46	95.6-97.6	9.47	85.2	1.65	14.8	0.15 (3)
47	91.8-93.8	8.35	84.9	1.49	15.1	0.97 (8)
48	85.6-87.6	11.54	85.9	1.90	14.1	1.10 (10)
49	81.8-83.8	12.61	80.3	3.09	19.7	0.61 (14)
50	77.2-79.2	10.32	88.1	1.40	11.9	0.25 (1)
51	71.0-73.0	8.89	93.9	0.58	6.1	
52	66.0-68.0	10.92	92.5	0.89	7.5	0.10 (1)
53	59.0-61.0	12.08	98.6	0.17	1.4	0.74 (2)
54	53.0-55.0	11.68	99.9	0.01	0.1	
55	43.0-45.0	9.41	98.2	0.17	1.8	
56	38.0-47.0	10.32	93.1	0.76	6.9	
57	33.4-35.4	9.10	95.5	0.43	4.5	
58	29.5-31.5	11.04	99.8	0.02	0.2	
59	24.2-26.2	11.59	91.7	1.05	8.3	

60	16.8-18.8	12.06	95.4	0.58	4.6	0.02 (1)
61	12.8-14.8	12.69	94.2	0.78	5.8	0.04 (1)
62	9.8-11.8	11.82	88.2	1.58	11.8	0.18 (1)
63	6.5-8.5	9.73	86.3	1.55	13.7	1.58 (9)
64	2.4-4.4	10.30	89.5	1.21	10.5	
65	0.0-2.0	7.75	85.3	1.34	14.7	0.04 (1)
78	414.0-416.0 (6cc)	6.46	91.1	0.63	8.9	0.03 (1)
79	411.0-413.0 (7cc)	7.43	81.5	1.69	18.5	0.15 (5)
80	400.5-402.5 (7cc)	7.57	96.9	0.24	3.1	0.02 (1)
81	391.5-393.5 (7cc)	8.62	89.8	0.98	10.2	0.28 (10)
82	375.0-377.0 (9cc)	8.85	78.9	2.36	21.1	0.67 (6)
83	365.0-367.0 (6cc)	6.65	76.6	2.03	23.4	0.06 (3)
84	313.5-315.5 (7cc)	7.18	90.5	0.75	9.5	0.20 (5)
85	286.0-288.0 (5cc)	5.64	94.6	0.32	5.4	
86	198.0-200.0 (6cc)	6.31	86.8	0.96	13.2	0.11 (3)
87	192.0-194.0 (6cc)	5.86	98.3	0.10	1.7	
88	184.5-186.5 (6cc)	6.20	97.3	0.17	2.7	
89	177.0-179.0 (6cc)	6.19	87.3	0.90	12.7	0.31 (3)
90	170.5-172.5 (6cc)	5.68	87.3	0.83	12.7	0.01 (1)
91	160.0-162.0 (7cc)	8.28	99.3	0.06	0.7	
92	156.5-158.5 (6cc)	7.92	96.4	0.30	3.6	
93	152.5-154.5 (8cc)	8.05	96.6	0.28	3.4	
94	150.0-152.0 (6cc)	7.25	95.9	0.31	4.1	0.14 (1)
95	146.5-148.5 (7cc)	7.24	93.7	0.49	6.3	
96	141.5-143.5 (6cc)	5.32	88.5	0.69	11.5	
97	132.5-134.5 (7cc)	7.94	95.3	0.39	4.7	
98	115.0-117.0 (7cc)	6.85	88.5	0.89	11.5	0.04 (2)
99	107.0-109.0 (7cc)	7.15	95.5	0.34	4.5	0.12 (1)
100	89.0-91.0 (7cc)	8.85	88.0	1.21	12.0	0.15 (4)
101	74.0-76.0 (8cc)	7.02	89.4	0.83	10.6	0.02 (1)
102	69.0-71.0 (7cc)	7.56	92.2	0.64	7.8	0.01 (1)
103	63.0-65.0 (7cc)	7.00	90.8	0.71	9.2	4.71 (1)
104	56.0-58.0 (6cc)	7.59	100.0	0.00	0.0	
105	50.0-52.0 (6cc)	7.36	96.7	0.25	3.3	
106	48.0-50.0 (7cc)	7.96	98.9	0.09	1.1	
107	37.0-39.0 (7cc)	8.66	95.1	0.45	4.9	
108	27.0-29.0 (6cc)	7.50	96.5	0.27	3.5	
109	20.0-22.0 (7cc)	8.29	93.7	0.56	6.3	0.07 (1)
110	408.3-409.3 (5cc)	4.87	83.8	0.94	16.2	0.02 (1)
111	406.5-408.0 (5cc)	5.78	76.2	1.81	23.8	0.56 (7)
112	404.5-406.5 (5cc)	5.42	81.7	1.21	18.3	0.03 (1)
113	397.2-399.3 (5cc)	5.96	76.9	1.79	23.1	
114	392.7-394.2 (5cc)	4.77	86.3	0.76	13.7	
115	389.6-391.3 (5cc)	4.97	89.1	0.61	10.9	0.01 (1)
116	387.6-389.6 (5cc)	5.45	81.6	1.23	18.4	4.01 (4)
117	381.7-384.6 (5cc)	5.45	81.7	1.22	18.3	0.52 (4)
118	377.7-379.4 (5cc)	5.22	71.9	2.04	28.1	0.42 (4)
119	372.8-375.0 (5cc)	4.46	86.9	0.67	13.1	
120	367.5-369.0 (5cc)	4.87	79.2	1.28	20.8	0.31 (2)
121	362.8-364.8 (5cc)	4.62	83.1	0.94	16.9	0.02 (1)
122	360.4-362.2 (5cc)	4.19	86.7	0.64	13.3	
123	356.5-358.0 (5cc)	3.80	91.8	0.34	8.2	
124	349.0-352.3	8.50	84.6	1.55	15.4	1.53 (19)
125	342.3-344.6 (5cc)	4.48	94.1	0.28	5.9	
126	338.5-340.8 (5cc)	3.77	92.9	0.29	7.1	0.05 (1)
127	334.0-336.2 (5cc)	3.64	96.6	0.13	3.4	0.04 (1)
128	326.0-327.7 (5cc)	5.03	91.1	0.49	8.9	
129	316.3-319.5 (5cc)	7.09	62.7	4.22	37.3	0.28 (15)
130	311.0-313.0 (5cc)	5.60	79.2	1.47	20.8	4.40 (35)
131	306.5-308.5 (5cc)	5.63	84.7	1.02	15.3	0.26 (6)
132	304.8-306.5 (5cc)	4.40	87.0	0.66	13.0	0.41 (5)
133	303.0-304.8 (5cc)	6.26	73.5	2.26	26.5	0.11 (3)
134	295.0-296.9 (5cc)	5.23	96.5	0.19	3.5	0.27 (1)
135	284.0-286.2 (5cc)	5.72	80.5	1.39	19.5	0.25 (6)
136	276.5-279.3 (5cc)	6.07	97.3	0.17	2.7	
137	269.5-271.2 (5cc)	6.44	85.2	1.12	14.8	

PI88AR Core 4		Sample = 10 cc unless noted				
Depth: 2430 m		Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)				
Location: 74° 40.91', 157° 23.97'		Planktic (p), Arenaceous (a), Benthic calcareous (b)				
Sample Number	Interval Sampled	Foraminifers				
1	407.9-409.9					
2	402.3-404.3					
3	395.1-397.1					
4	385.5-387.5					
5	380.5-382.5					
6	369.5-371.5					
7	358.0-360.0					
8	351.9-353.9					
9	345.5-347.5					
10	335.7-337.7	C/p/b				
11	329.8-331.8	R/p/b				
12	323.7-325.7	R/p/b				
13	317.1-319.1					
14	308.7-310.7					
15	299.3-301.3	R/p/b				
16	291.5-293.5	R/p/b				
17	280.5-282.5	R/p/b				
18	273.1-275.1	A/p/b				
19	265.0-267.0	VA/p/a/b				
20	258.4-260.4	VA/p/a/b				
21	252.0-254.0	VA/p/b				
22	246.0-248.0	VA/p/b				
23	241.2-243.2	VA/p/b				
24	236.0-238.0	C/p/b				
25	230.0-232.0	C/p/b				
26	221.0-223.0	VA/p/b				
27	215.4-217.4	C/p/b				
28	208.0-210.0	VA/p/a/b				
29	200.0-202.0	VA/p/a/b				
30	194.0-196.0	R/p/a				
31	187.0-189.0	C/p/b				
32	179.4-181.4	A/p/b				
33	173.4-175.4	VA/p/b				
34	166.4-168.4	VA/p/b				
35	162.6-164.6	R/p				
36	156.4-158.4	R/a				
37	147.0-149.0	C/p/a				
38	143.0-145.0	VA/p/b				
39	138.4-140.4	VA/p/b				
40	134.0-136.0	C/p/b				
41	129.6-131.6	R/p				
42	125.0-127.0	C/p				
43	120.0-122.0	VA/p/b				
44	109.5-111.5	VA/p/b				
44	104.0-106.0	C/p/b				
45	99.0-101.0					
46	95.6-97.6					
47	91.8-93.8					
48	85.6-87.6	A/p/b				
49	81.8-83.8	R/p				
50	77.2-79.2	A/p/b				
51	71.0-73.0	VA/p/b				
52	66.0-68.0	VA/p/b				
53	59.0-61.0	R/p				
54	53.0-55.0	R/p				
55	43.0-45.0	A/p/b				
56	38.0-47.0	VA/p/b				
57	33.4-35.4	VA/p/b				
58	29.5-31.5					
59	24.2-26.2					

60	16.8-18.8	R/p				
61	12.8-14.8	R/a				
62	9.8-11.8	R/a				
63	6.5-8.5	A/p/b				
64	2.4-4.4	VA/p/b				
65	0.0-2.0	A/p/b				
78	414.0-416.0 (6cc)					
79	411.0-413.0 (7cc)					
80	400.5-402.5 (7cc)					
81	391.5-393.5 (7cc)					
82	375.0-377.0 (9cc)					
83	365.0-367.0 (6cc)					
84	313.5-315.5 (7cc)	R/p				
85	286.0-288.0 (5cc)	R/p				
86	198.0-200.0 (6cc)	R/p				
87	192.0-194.0 (6cc)	R/p				
88	184.5-186.5 (6cc)	C/p				
89	177.0-179.0 (6cc)	A/p				
90	170.5-172.5 (6cc)	VA/p				
91	160.0-162.0 (7cc)	R/p				
92	156.5-158.5 (6cc)	R/p				
93	152.5-154.5 (8cc)	R/p				
94	150.0-152.0 (6cc)	C/p				
95	146.5-148.5 (7cc)	A/p/b				
96	141.5-143.5 (6cc)	VA/p/b				
97	132.5-134.5 (7cc)	C/p/a				
98	115.0-117.0 (7cc)	VA/p/b				
99	107.0-109.0 (7cc)	VA/p/b				
100	89.0-91.0 (7cc)	R/p				
101	74.0-76.0 (8cc)	A/p/b				
102	69.0-71.0 (7cc)	VA/p/b				
103	63.0-65.0 (7cc)	A/p/b				
104	56.0-58.0 (6cc)	A/p				
105	50.0-52.0 (6cc)	VA/p/b				
106	48.0-50.0 (7cc)	VA/p/b				
107	37.0-39.0 (7cc)	VA/p/b				
108	27.0-29.0 (6cc)	R/a				
109	20.0-22.0 (7cc)	R/p/a				
110	408.3-409.3 (5cc)					
111	406.5-408.0 (5cc)					
112	404.5-406.5 (5cc)					
113	397.2-399.3 (5cc)					
114	392.7-394.2 (5cc)					
115	389.6-391.3 (5cc)					
116	387.6-389.6 (5cc)					
117	381.7-384.6 (5cc)					
118	377.7-379.4 (5cc)	R/a				
119	372.8-375.0 (5cc)					
120	367.5-369.0 (5cc)	R/a				
121	362.8-364.8 (5cc)	R/p				
122	360.4-362.2 (5cc)					
123	356.5-358.0 (5cc)					
124	349.0-352.3	R/p				
125	342.3-344.6 (5cc)	R/p/b				
126	338.5-340.8 (5cc)	R/p				
127	334.0-336.2 (5cc)	R/p/a/b				
128	326.0-327.7 (5cc)	R/p/a				
129	316.3-319.5 (5cc)	R/p				
130	311.0-313.0 (5cc)					
131	306.5-308.5 (5cc)	R/b				
132	304.8-306.5 (5cc)					
133	303.0-304.8 (5cc)					
134	295.0-296.9 (5cc)	R/p/a				
135	284.0-286.2 (5cc)	R/p/a/b				
136	276.5-279.3 (5cc)	C/p/b				
137	269.5-271.2 (5cc)	VA/p/b				

Northwind Ridge flank

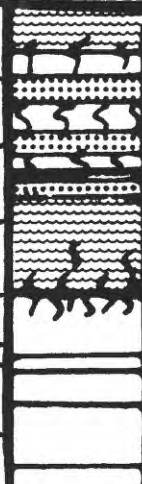
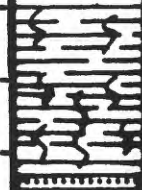
Core 2

3223 m

74° 38.84', 157° 25.63'

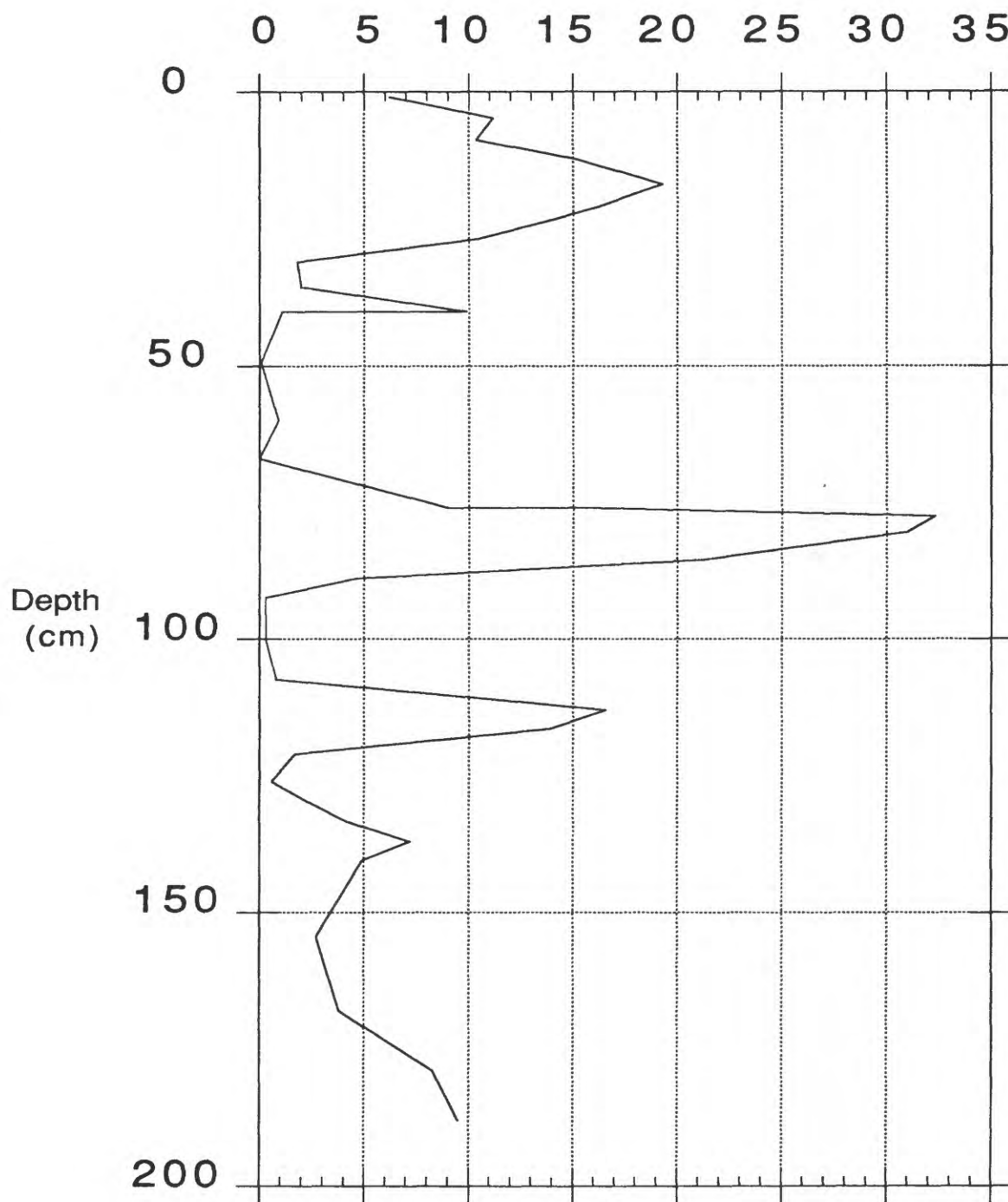
Figure 9. Photograph of core 2. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata. The lower 59 cm (right section) contains a siltstone breccia set in a mud matrix.



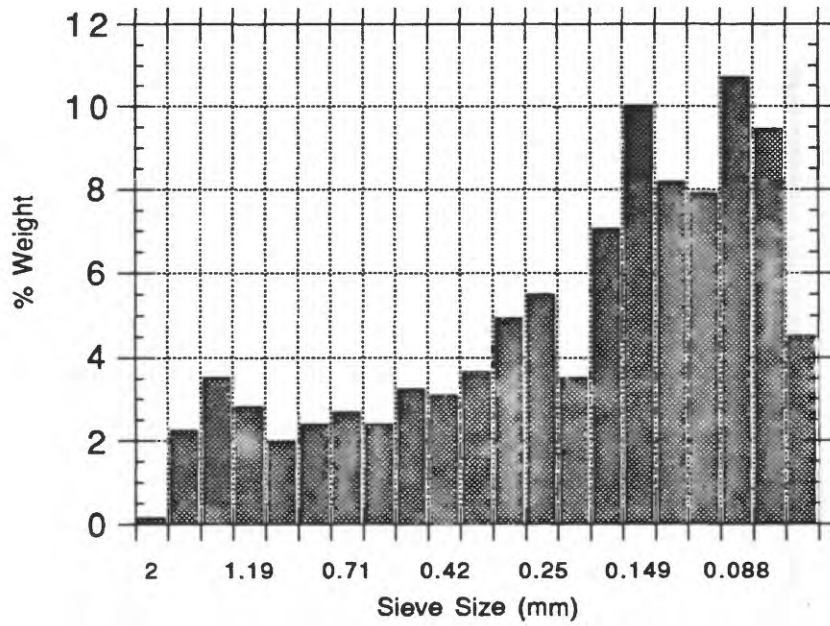
Core 2		0-197 cm	
UNIT	Σ 3223 m		
M			0-14 cm-- bioturbated to laminated grayish brown (5YR3/2) sandy mud overlying light olive gray (5Y5/2) to greenish gray (5G6/1) sandy mud (to 15 % sand) containing ice-rafted clasts including coal, lignite, and siltstone; planktic and benthic foraminifers very abundant.
			14-23 cm-- 7 cm of interbedded light olive gray (5Y5/2) sandy mud containing a yellowish gray (5Y7/2) clastic-rich (to 19 % sand) bed; foraminifers very rare.
			23-40 cm-- 17 cm of bioturbated grayish brown to dusky brown (5YR3/2-2/2) sandy mud containing a yellowish gray (5Y7/2) bed near top of unit; ice-rafted clasts are abundant; planktic and benthic foraminifers are very abundant.
	1 2		40-69 cm-- 29 cm of faintly laminated light yellowish brown (10YR6/4) mud lacking ice-rafted clasts; unit contains only very rare arenaceous foraminifers
J			69-90 cm-- 21 cm of pale olive gray (5Y6/2) sandy mud with a thin bed of moderate brown (5YR3/4) clastic-rich (to 32 % sand) gravelly sandy mud containing abundant clasts (clasts in contact); unit contains very rare arenaceous foraminifers. Sample for sieve analysis of sand fraction (#82) taken at 79-87 cm.
	100		90-113 cm-- 23 cm of laminated pale olive gray (5Y6/2) mud lacking ice-rafted clasts and containing only very rare arenaceous foraminifers; Mn micro-nodules abundant.
			113-118 cm-- 5 cm pale olive gray (5Y6/2) sandy mud with a grayish orange pink (5YR7/2) and very pale orange (10YR8/2) clastic-rich beds (sand to 17 %) of gravelly sandy mud; unit contains very rare arenaceous foraminifers. Sample for sieve analysis of sand fraction (#81) taken at 111-116 cm.
I ?			118-138 cm-- 20 cm of faintly laminated light yellowish brown (10YR6/4) to light brownish gray (5Y6/1) sandy mud; unit contains very rare arenaceous foraminifers; Mn micro-nodules are very abundant.
?			EROSIONAL SURFACE Beds above erosional surface contain ice-rafted clasts of limestone and dolomite; strata below this surface lack ice-rafted clasts.
			138-197 cm-- 59 cm of breccia set in a dark yellowish orange to grayish orange (10YR6/6-7/4) mud matrix containing orange iron oxide concretions ranging from 0.5 to 11 cm (most 1 cm), FeMn micro-nodules, and siltstone clasts ranging from 2 mm to 8 cm; the siltstone clasts increase in abundance toward the base of the core; the matrix contains both very rare Pliocene and Pleistocene benthic and planktic foraminifers and early and mid-Cretaceous (Albian and Cenomanian) benthic foraminifers; the siltstone clasts contain early and mid-Cretaceous (Albian and Cenomanian) benthic foraminifers. Sample for sieve analysis of sand fraction (#85) taken at 178-188 cm.

PI88AR Core 2

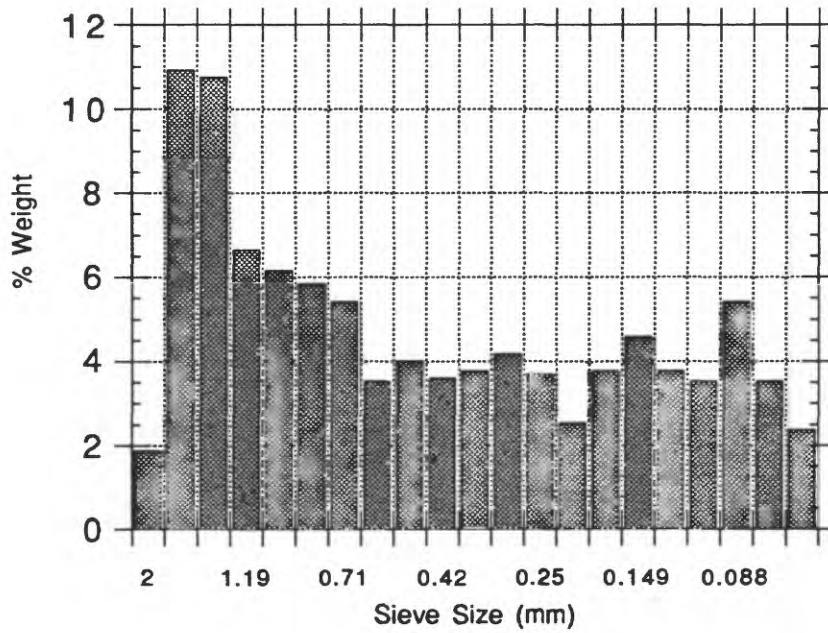
% Sand Fraction



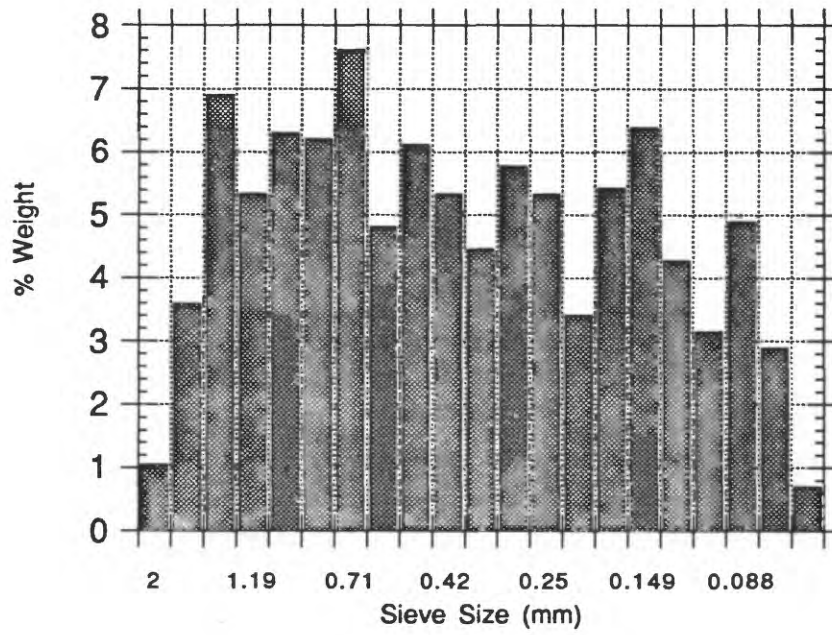
Core 2 #81



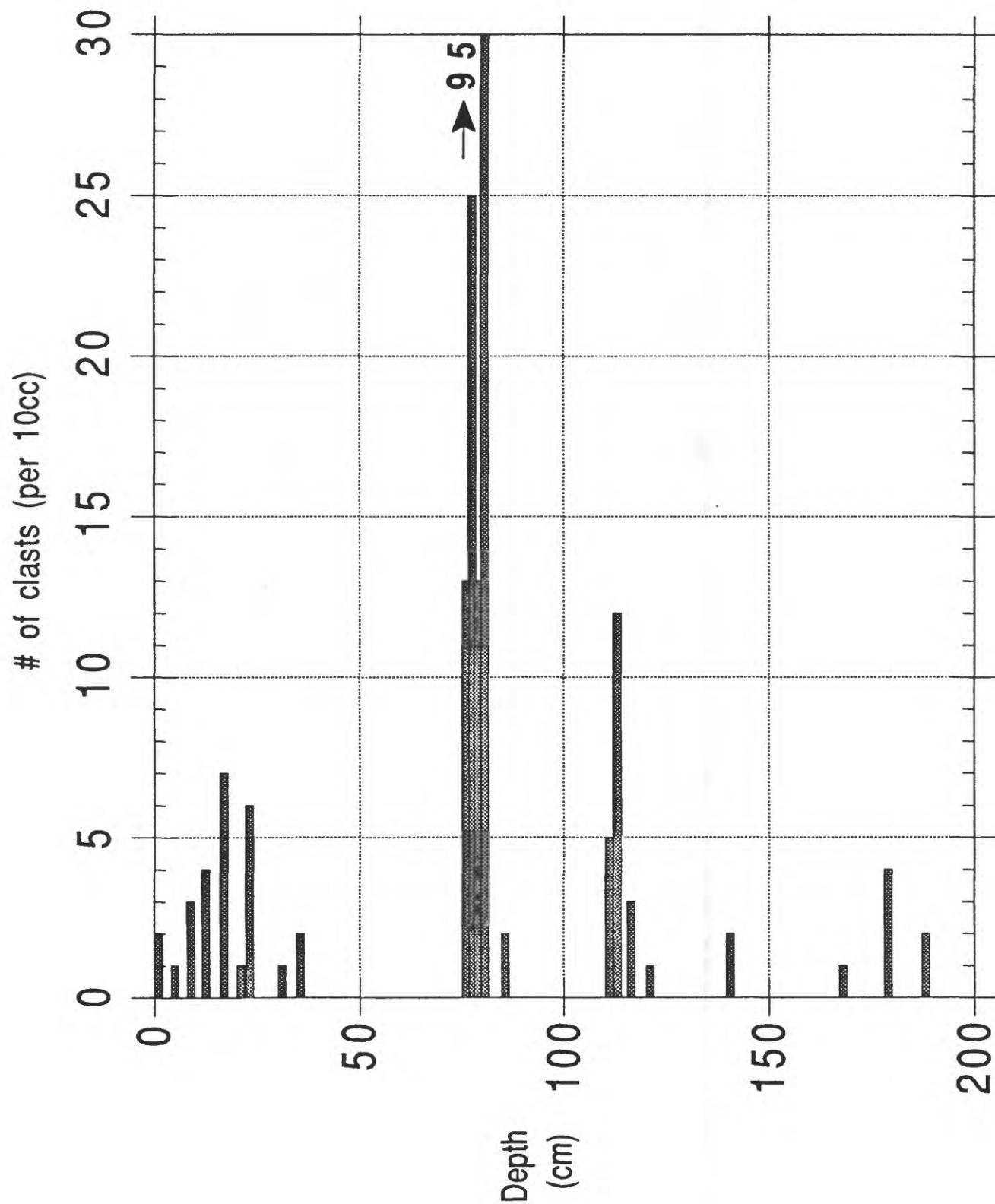
Core 2 #82



Core 2 #85



PI88AR Core 2



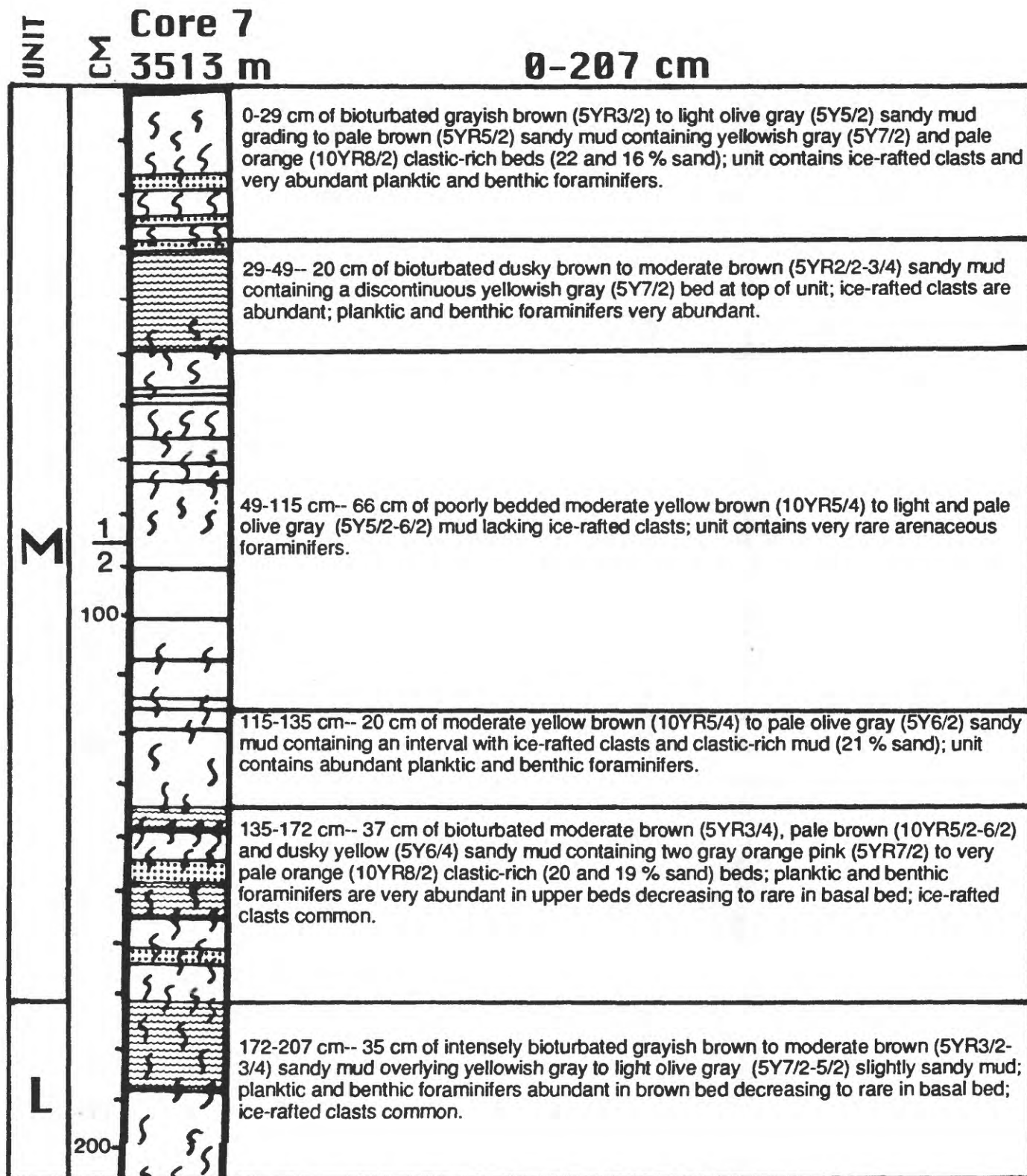
PI88AR Core 2						
Depth: 3223 m						
Location: 74°38.84', 157°25.63'						
Sample = 10 cc unless noted						
Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	1.0-3.0	7.86	93.8	0.52	6.2	0.33 (2)
2	5.0-7.0	7.63	88.8	0.96	11.2	0.02 (1)
3	9.0-11.0	8.40	89.6	0.97	10.4	0.07 (3)
4	12.5-15.0	8.51	84.8	1.52	15.2	0.12 (4)
5	17.0-19.0	9.68	80.7	2.32	19.3	0.26 (7)
6	21.0-23.0	9.11	83.7	1.77	16.3	0.04 (1)
7	23.2-25.2	8.21	85.8	1.36	14.2	0.22 (6)
8	26.8-28.8	7.85	89.5	0.92	10.5	
9	31.0-33.0	7.54	98.2	0.14	1.8	0.02 (1)
10	35.6-37.6	7.28	98.0	0.15	2.0	0.08 (2)
11	40.0-42.0	7.35	90.1	0.81	9.9	
12	40.0-46.0	9.51	98.9	0.11	1.1	
13	49.4-51.4	8.56	99.9	0.01	0.1	
14	60.0-62.0	7.83	99.1	0.07	0.9	
15	72.0-74.0	8.85	91.0	0.87	9.0	0.76 (1)
16	76.0-78.0	8.86	84.7	1.60	15.3	0.69 (13)
17	77.6-79.6	6.97	67.7	3.33	32.3	1.23 (25)
18	80.6-82.6	7.83	68.9	3.52	31.0	11.83 (95)
19	85.6-87.6	9.21	78.7	2.49	21.3	0.03 (2)
20	92.5-94.5	8.81	99.7	0.03	0.3	
21	107.5-109.5	9.18	99.2	0.07	0.8	
22	113.0-115.0	9.77	83.4	1.95	16.6	0.76 (12)
23	116.4-118.4	8.58	86.1	1.38	13.9	0.25 (3)
24	130.0-132.0	9.93	97.5	0.25	2.5	
25	133.4-135.4	9.23	95.8	0.40	4.2	
26	137.0-139.0	10.33	92.8	0.80	7.2	
27	67.0-69.0	16.05	100.0	0.01	0.0	
28	100.0-102.0	17.88	99.7	0.05	0.3	
29	121.0-123.0	13.04	98.3	0.23	1.7	0.08 (1)
30	126.0-128.0	10.90	99.4	0.07	0.6	
73	89.0-91.0	8.72	95.4	0.42	4.6	
74	140.5-142.5	9.09	95.1	0.47	4.9	0.18 (2)
75	154.5-156.5	10.17	97.3	0.28	2.7	
76	168.0-170.0 (9cc)	9.22	96.2	0.36	3.8	0.95 (1)
77	179.0-181.0	10.67	91.7	0.97	8.3	0.11 (4)
78	188.0-190.0 (9cc)	8.66	90.5	0.91	9.5	0.02 (2)

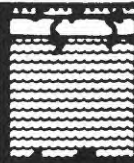
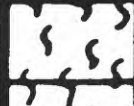
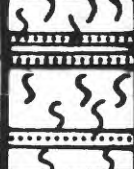
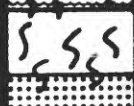
PI88AR Core 2		Sample = 10 cc unless noted				
Depth: 3223 m		Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)				
Location: 74° 38.84', 157° 25.63'		Planktic (p), Arenaceous (a), Benthic calcareous (b)				
Sample Number	Interval Sampled	Foraminifers				
1	1.0-3.0	A/p/a/b				
2	5.0-7.0	A/p/a/b				
3	9.0-11.0	A/p/a/b				
4	12.5-15.0	R/p/a/b				
5	17.0-19.0					
6	21.0-23.0	VA/p/b				
7	23.2-25.2	A/p/b				
8	26.8-28.8	VA/p/a/b				
9	31.0-33.0	VA/p/a/b				
10	35.6-37.6	C/p/a/b				
11	40.0-42.0	R/p/a				
12	40.0-46.0	R/p/a				
13	49.4-51.4	R/p				
14	60.0-62.0	R/p				
15	72.0-74.0					
16	76.0-78.0					
17	77.6-79.6					
18	80.6-82.6					
19	85.6-87.6					
20	92.5-94.5	R/p				
21	107.5-109.5	R/p				
22	113.0-115.0					
23	116.4-118.4	R/a				
24	130.0-132.0					
25	133.4-135.4					
26	137.0-139.0					
27	67.0-69.0	R/a				
28	100.0-102.0	R/a				
29	121.0-123.0	R/a				
30	126.0-128.0	R/a				
73	89.0-91.0	R/a				
74	140.5-142.5	R/a				
75	154.5-156.5	R/a				
76	168.0-170.0 (9cc)	R/a				
77	179.0-181.0	R/a				
78	188.0-190.0 (9cc)	R/a				

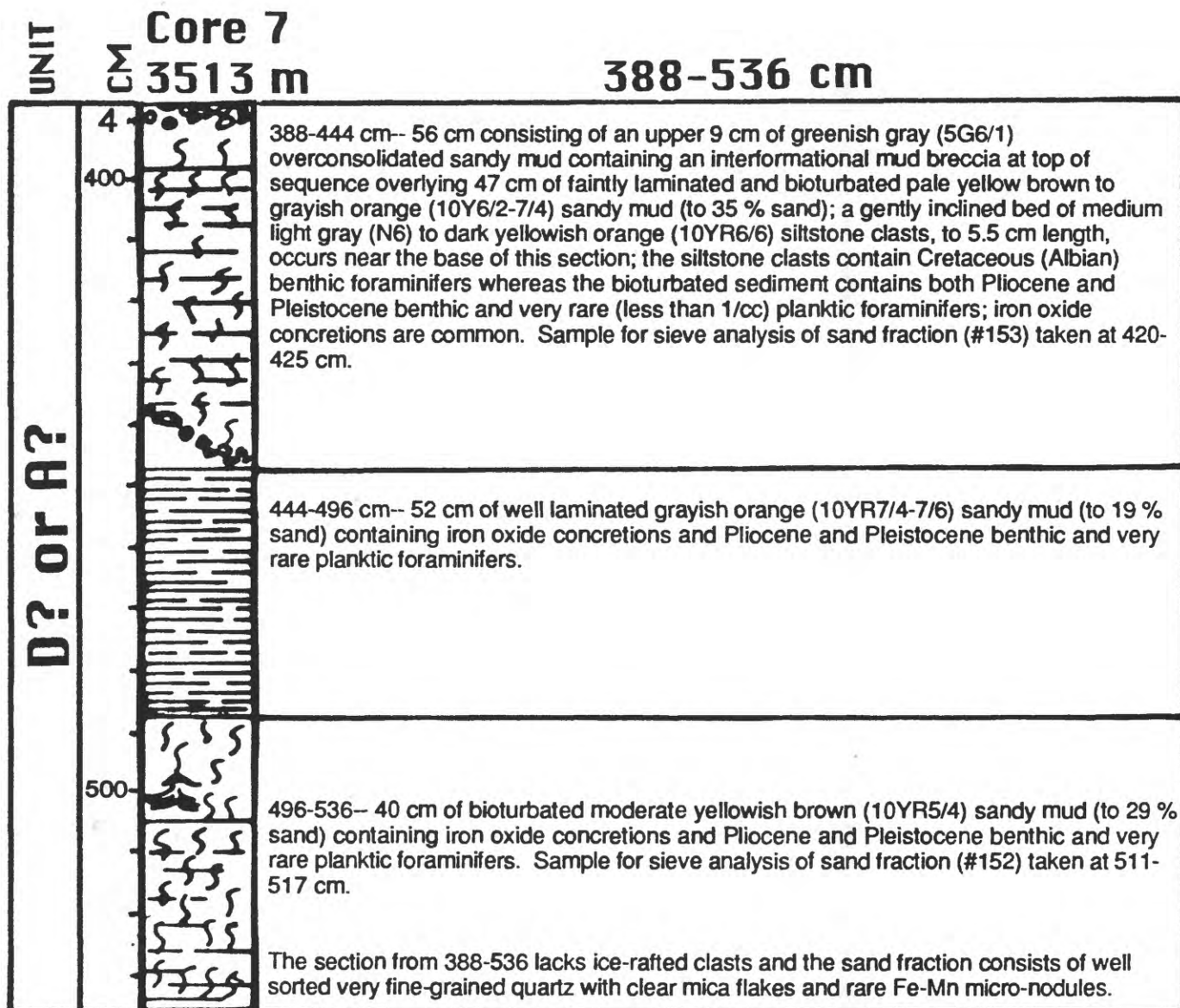
Northwind Ridge flank
Core 7
3513 m
74° 37.76', 157° 23.17'

Figure 10. Photograph of core 7. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata. The right section consists of laminated to bioturbated silty mud lacking ice-rafted clasts.

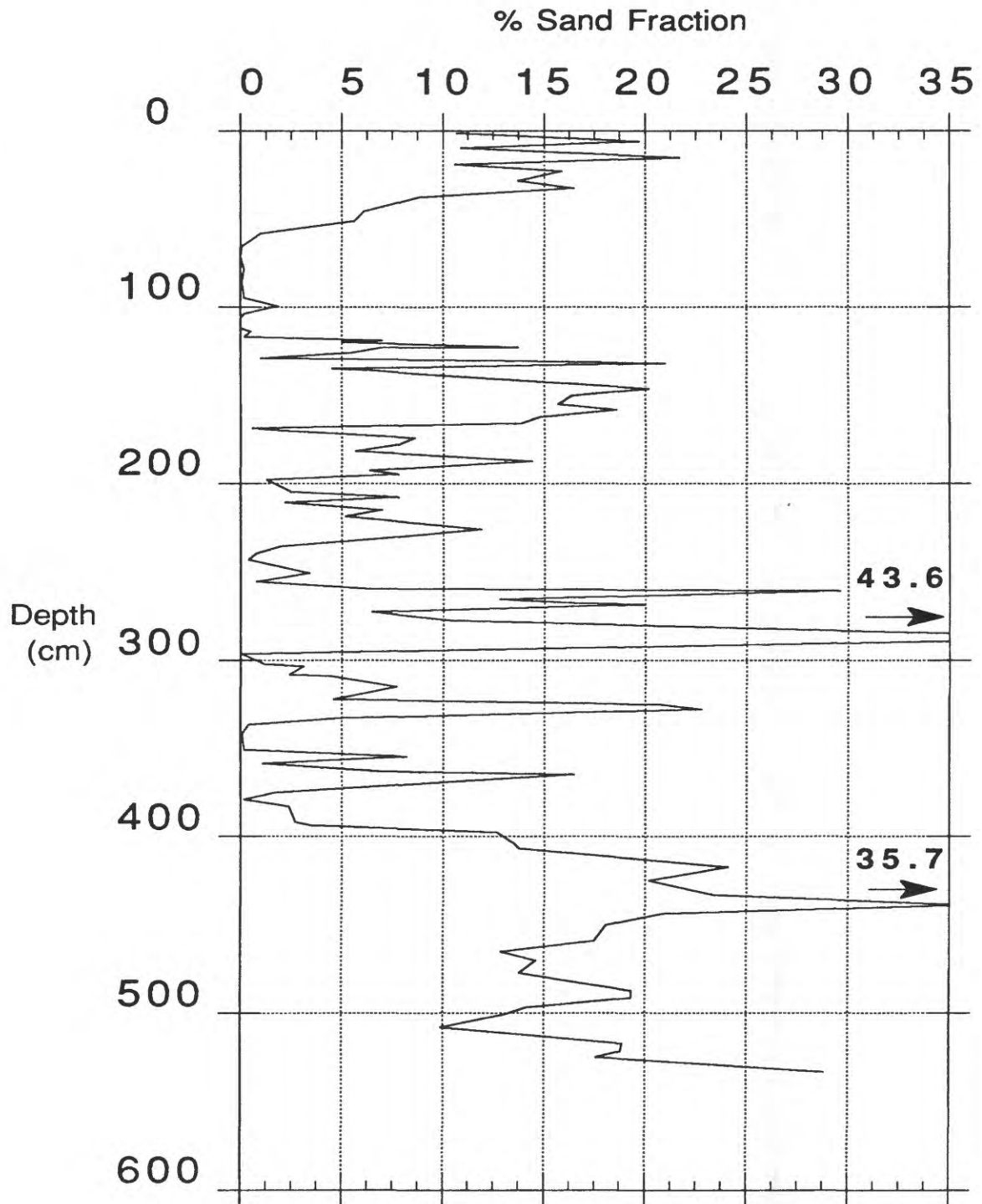




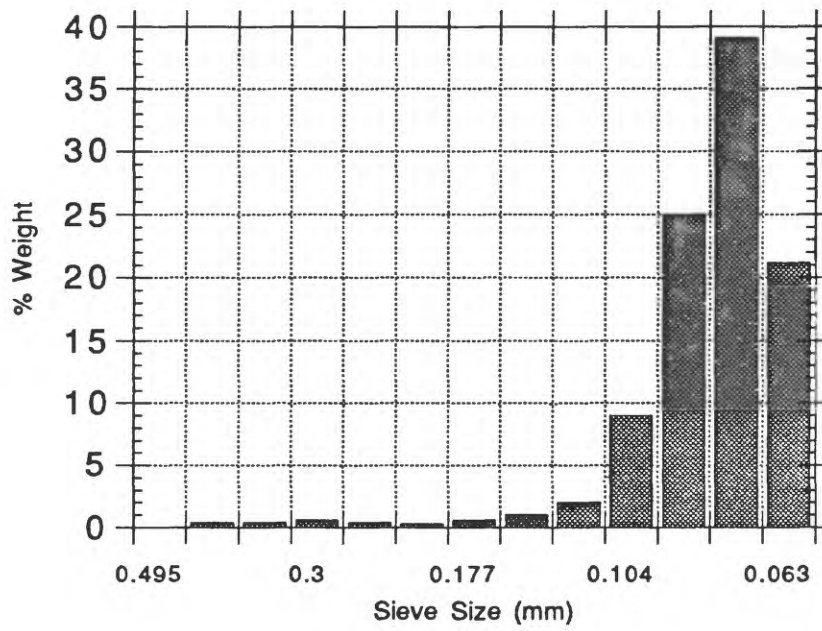
UNIT		Core 7	207-388 cm
Σ		3513 m	
L	2		207-239 cm-- 32 cm of intensely bioturbated dusky brown to grayish brown (5YR2/2-3/2) sandy mud containing ice-rafted clasts and rare planktic and benthic foraminifers interbedded with yellowish gray (5Y7/2) sandy mud with the basal bed lacking foraminifers.
	3		239-260 cm-- 21 cm of mottled and bioturbated olive gray (5Y3/2) mud overlying two beds of light to pale brown (5Y5/5-6/4) mud lacking ice-rafted clasts; unit contains very rare arenaceous foraminifers.
			EROSIONAL SURFACE
			260-290 cm-- 30 cm of mottled and bioturbated yellowish brown (10YR6/2) sandy mud interbedded with five grayish orange pink (5YR6/2-7/2) clastic-rich (to 44 % sand) bioturbated beds; unit contains abundant ice-rafted clasts and very rare arenaceous foraminifers. Sample (#166) for sieve analysis of sand fraction taken at 262-265 cm.
K	300		290-298 cm-- 8 cm of mottled pale olive (10Y6/2) slightly sandy mud containing very rare arenaceous foraminifers.
			298-319 cm-- 21 cm of intensely bioturbated dark yellowish brown (10YR4/2) sandy mud with a bioturbated bed of yellowish gray (5Y7/2) sandy mud between the brown beds; unit contains rare ice-rafted clasts and very rare arenaceous foraminifers; Mn micro-nodules are abundant.
J			319-330-- 11 cm of intensely bioturbated yellowish gray (5Y6/2-7/2) sandy mud with basal bed containing 23 % sand; unit contains ice-rafted clasts and very rare arenaceous foraminifers. Sample (#164) for sieve analysis of sand fraction taken at 326-369 cm.
			330-356 cm-- 26 cm of well laminated and mottled dusky yellow to light olive gray (5Y5/2-6/2) mud lacking ice-rafted clasts and containing very rare arenaceous foraminifers.
			356-373 cm-- 17 cm of bioturbated dusky yellow (5Y6/4) sandy mud containing grayish orange pink (5YR7/2) clastic-rich bed (17 % sand) and abundant ice-rafted clasts; unit contains very rare arenaceous foraminifers. Sample (#160) for sieve analysis of sand fraction taken at 365-369 cm.
I?	3		373-388 cm-- 15 cm of bioturbated and mottled dusky yellow (5Y6/4) to pale olive (10Y6/2) mud lacking ice-rafted clasts and foraminifers.
		EROSIONAL SURFACE	



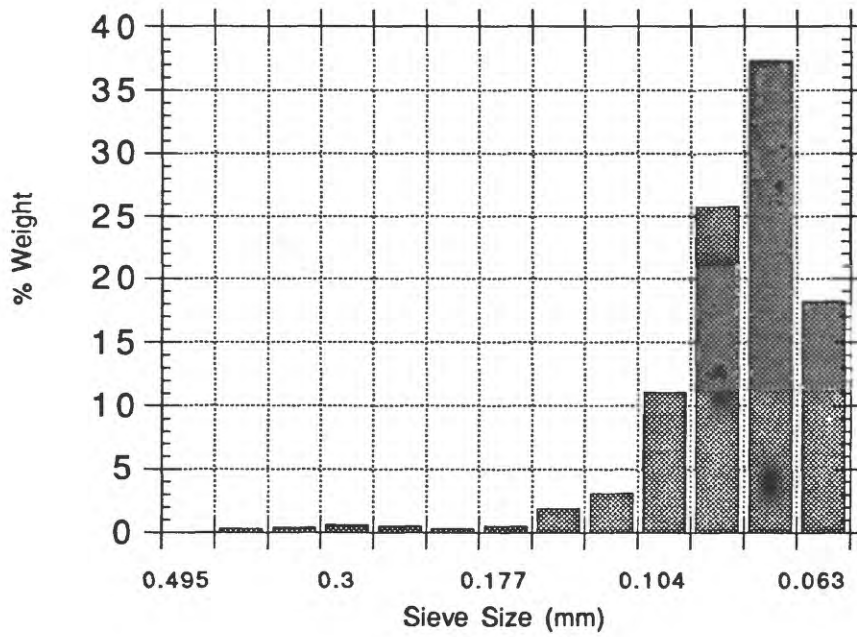
PI88AR Core 7



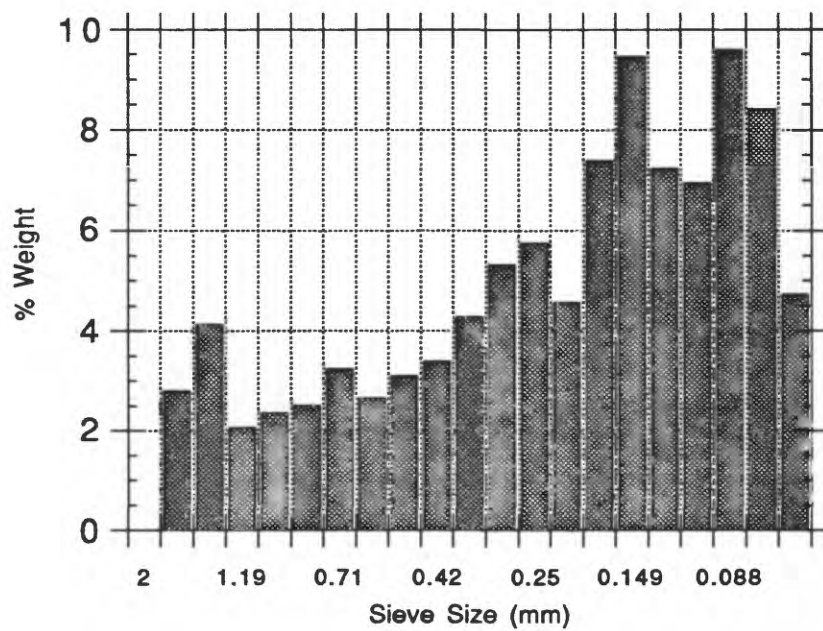
Core 7 #152



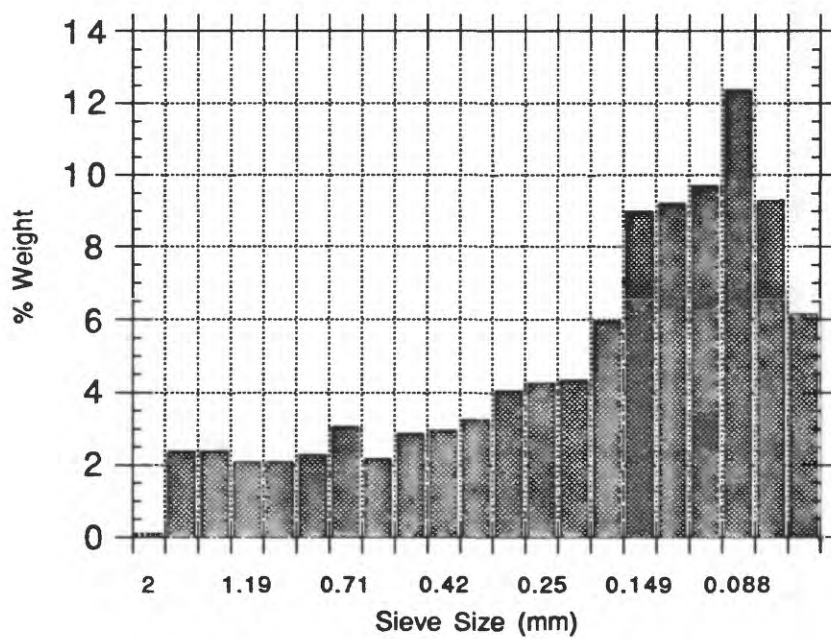
Core 7 #153



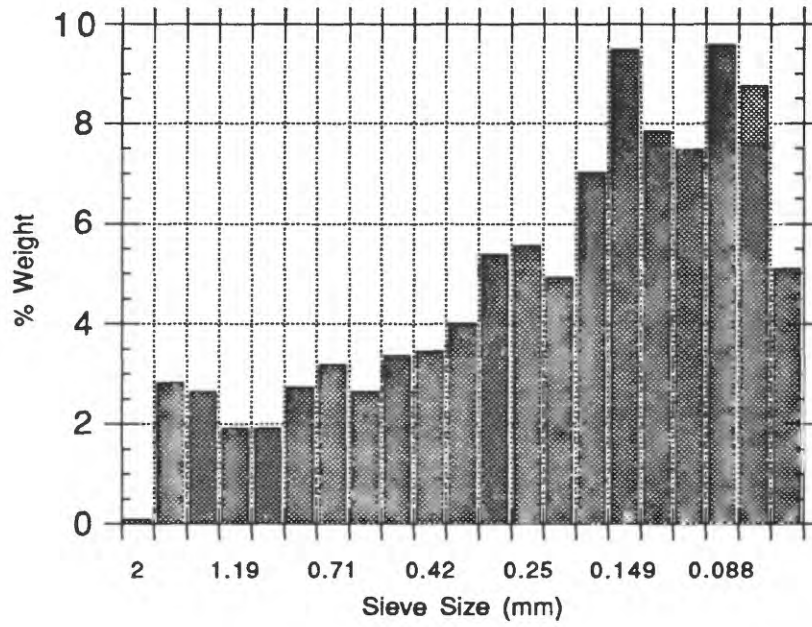
Core 7 #160



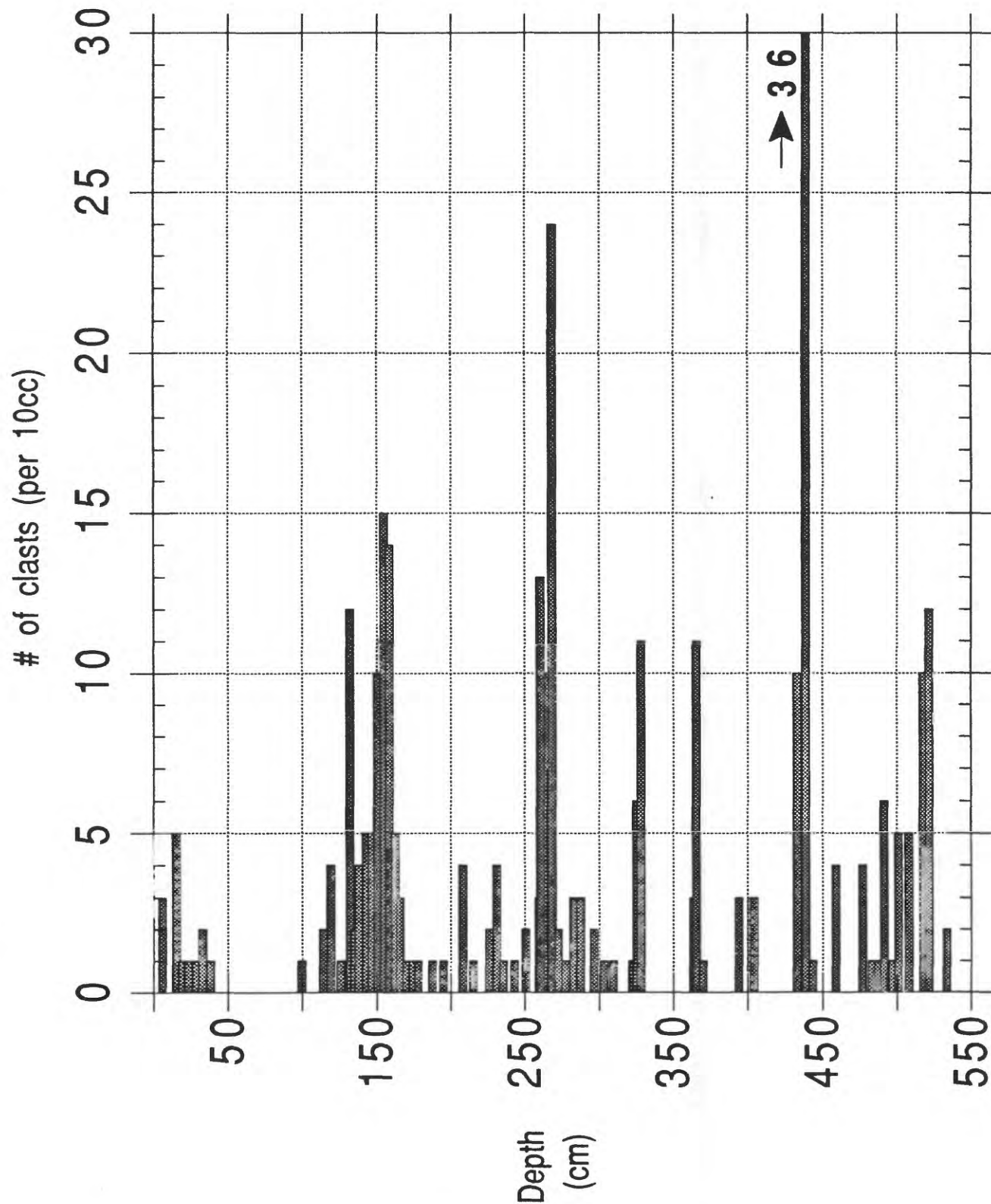
Core 7 #164



Core 7 #166



PI88AR Core 7



PI88AR Core 7
Depth: 3513 m
Location: 74° 37.76', 157° 23.17'

Sample = 10 cc unless noted
(Note: Samples #55-74 were unknown quantity...used for paleomag)

Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	383.5-385.5	9.42	97.6	0.23	2.4	
2	375.5-377.5	13.44	98.3	0.23	1.7	
3	365.5-367.5	8.67	83.5	1.71	16.5	0.60 (11)
4	355.5-357.5	13.14	91.8	1.34	8.2	
5	337.5-339.5	9.52	99.6	0.04	0.4	
6	325.5-327.5	6.68	79.2	1.75	20.8	0.42 (6)
7	309.5-311.5	8.30	95.5	0.39	4.5	0.08 (1)
8	308.5-310.5	7.97	97.6	0.20	2.4	
9	302.5-304.5	8.74	98.8	0.11	1.2	
10	296.5-298.5	11.24	99.9	0.10	0.1	0.17 (2)
11	287.5-289.5	9.32	56.4	7.20	43.6	0.16 (3)
12	277.5-279.5	10.83	89.6	1.26	10.4	0.01 (1)
13	268.5-270.5	14.89	80.0	3.72	20.0	1.49 (24)
14	260.5-262.5	10.75	70.4	4.52	29.6	5.28 (13)
15	255.5-257.5	12.08	99.2	0.10	0.8	
16	239.5-241.5	12.83	99.2	0.10	0.8	
17	231.0-233.0	11.60	93.0	1.78	7.0	0.91 (4)
18	218.6-220.6	8.67	94.8	0.48	5.2	
19	211.0-213.0	8.77	97.8	0.20	2.2	
20	204.8-206.8	10.23	97.5	0.26	2.5	
21	198.0-200.0	11.82	98.7	0.16	1.3	
22	192.8-194.8	11.18	93.6	0.76	6.4	
23	181.8-183.8	6.79	94.3	0.41	5.7	
24	174.2-176.2	11.46	91.4	1.10	8.6	0.02 (1)
25	168.6-170.6	12.61	99.4	0.07	0.6	
26	162.4-164.4	13.46	85.2	2.47	14.8	0.14 (5)
27	158.4-160.4	10.41	81.4	4.76	18.6	2.38 (14)
28	150.4-152.4	9.40	83.6	1.84	16.4	0.71 (10)
29	146.4-148.4	13.70	79.8	3.46	20.2	0.07 (5)
30	136.0-138.0	9.88	93.5	0.69	6.5	
31	130.4-132.4	8.42	86.9	1.26	13.1	
32	123.4-125.4	8.56	93.1	0.63	6.9	
33	119.0-121.0	8.62	93.0	0.65	7.0	1.45 (4)
34	110.6-112.6	9.85	100.0	0.00	0.0	
35	106.0-108.0	7.77	100.0	0.00	0.0	
36	99.6-101.6	8.96	98.1	0.17	1.9	0.03 (1)
37	95.0-97.0	8.82	99.8	0.02	0.2	
38	86.0-88.0	9.72	99.9	0.01	0.1	
39	79.0-81.0	8.38	99.8	0.02	0.2	
40	72.0-74.0	9.19	100.0	0.00	0.0	
41	66.0-68.0	9.16	99.9	0.01	0.1	
42	59.0-61.0	8.57	99.0	0.09	1.0	
43	52.0-54.0	8.22	94.4	0.49	5.6	
44	46.6-48.6	6.97	93.9	0.45	6.1	
45	38.4-40.4	7.88	91.2	0.76	8.8	0.05 (1)
46	33.0-35.0	8.70	83.5	1.72	16.5	0.13 (2)
48	28.6-30.6	8.91	86.3	1.42	13.7	0.01 (1)
49	23.4-25.4	10.96	84.1	2.07	15.9	0.02 (1)
50	19.4-21.4	8.77	89.4	1.04	10.6	0.03 (1)
51	15.4-17.4	11.37	78.3	3.15	21.7	9.25 (5)
52	10.0-12.0	10.98	89.1	1.35	10.9	
53	6.0-8.0	8.07	80.3	1.98	19.7	1.05 (3)
54	1.4-3.4	8.28	89.3	0.99	10.7	
55	114.0-116.0	11.08	99.5	0.06	0.5	1.19 (2)
56	138.0-140.0	15.51	91.2	1.49	8.8	0.59 (7)
57	166.0-168.0	22.80	86.1	3.69	13.9	0.32 (9)
58	178.0-180.0	16.37	92.2	1.39	7.8	0.37 (1)
59	195.0-197.0	11.66	92.2	0.98	7.8	0.03 (1)
60	208.0-210.0	6.65	92.2	0.56	7.8	0.46 (3)
61	226.0-228.0	18.79	88.1	2.54	11.9	1.28 (5)

62	250.5-252.5	14.71	96.7	0.50	3.4	0.35 (3)
63	259.5-261.5	14.38	93.8	0.95	6.2	0.57 (5)
64	267.5-269.5	17.36	83.5	3.44	16.5	3.65 (15)
65	272.5-274.5	9.42	93.5	0.65	6.5	0.11 (2)
66	308.5-310.5	11.39	97.3	0.32	2.7	
67	333.5-335.5	15.71	95.0	0.82	5.0	
68	342.5-344.5	12.02	99.9	0.01	0.1	
69	379.5-381.5	18.85	99.8	0.04	0.2	
70	392.0-394.0	6.60	97.3	0.18	2.7	
71	407.0-409.0	15.27	86.2	2.45	13.8	
72	450.0-452.0	12.70	81.9	2.80	18.1	
73	470.0-472.0	16.49	85.4	2.82	14.6	
74	525.0-527.0	15.24	82.4	3.26	17.6	
113	394.0-396.0 (9cc)	9.50	96.5	0.34	3.5	0.08 (3)
114	370.0-372.0	10.68	91.2	1.16	9.8	0.02 (1)
115	363.5-365.5	10.28	93.2	0.75	6.8	0.08 (3)
116	328.5-330.5	10.74	77.2	3.09	22.8	0.26 (11)
117	322.5-324.5	9.20	95.4	0.45	4.6	0.06 (1)
118	303.5-305.5	7.59	96.9	0.24	3.1	0.03 (1)
119	282.5-284.5	7.73	72.5	2.93	27.5	0.11 (3)
120	265.5-267.5	9.43	87.2	1.39	12.8	0.34 (10)
121	243.0-245.0	12.21	99.6	0.06	0.4	0.13 (1)
128	533.5-535.5 (9cc)	9.46	71.2	3.82	28.8	0.04 (2)
129	521.5-523.5 (9cc)	9.67	81.2	2.24	18.8	0.29 (12)
130	517.5-519.5 (9cc)	11.47	81.1	2.67	18.9	0.13 (10)
131	508.0-510.0	12.06	90.1	1.33	9.9	0.09 (5)
132	501.0-503.0	10.50	87.0	1.57	13.0	0.05 (5)
133	497.0-499.0 (8cc)	8.60	85.9	1.41	14.1	0.02 (1)
134	491.5-493.5	9.98	80.7	2.39	19.3	0.11 (6)
135	487.5-489.5	10.54	80.7	2.52	19.3	0.02 (1)
136	483.5-485.5	11.19	82.9	2.30	17.1	0.01 (1)
137	477.0-479.0 (9cc)	9.96	86.2	1.60	13.8	0.06 (4)
138	465.0-467.0	10.20	87.1	1.51	12.9	
139	459.0-461.0	9.51	82.5	2.02	17.5	0.14 (4)
140	443.5-445.5	7.91	79.1	2.09	20.9	0.01 (1)
141	439.0-441.0 (9cc)	5.25	64.3	2.92	35.7	2.56 (36)
142	433.0-435.0	8.97	76.6	2.74	23.4	0.24 (10)
143	425.0-427.0	9.66	79.8	2.44	20.2	
144	417.5-419.5 (9cc)	8.29	75.9	2.63	24.1	
145	404.0-406.0 (9cc)	8.63	86.5	1.35	13.5	0.12 (3)
146	398.0-400.0	9.61	87.3	1.40	12.7	
161	359.5-361.5	10.37	98.9	0.12	1.1	
162	351.5-353.5	10.87	99.8	0.02	0.2	
163	315.5-317.5	8.34	92.3	0.70	7.7	
167	235.5-237.5 (9cc)	10.62	98.0	0.22	2.0	0.12 (1)
168	215.0-217.0 (9cc)	7.78	93.0	0.59	7.0	0.07 (1)
169	187.5-189.5	9.61	85.6	1.62	14.4	0.01 (1)
170	170.0-172.0	9.23	98.1	0.18	1.9	0.07 (1)
171	155.0-157.0 (9cc)	8.55	84.3	1.59	15.7	0.63 (14)
172	143.0-145.0	9.73	84.1	1.84	15.9	0.16 (5)
173	135.0-137.0 (5cc)	3.83	95.5	0.18	4.5	0.43 (1)
174	132.0-133.0 (5cc)	3.98	79.0	1.06	21.0	0.20 (6)
175	129.0-131.0 (5cc)	4.15	99.0	0.04	1.0	
176	126.0-128.5 (10+cc)	8.10	94.5	0.47	5.5	10.43 (1)
177	123.0-125.0 (5cc)	3.97	86.3	0.63	13.7	
178	120.0-122.0 (5cc)	3.80	95.0	0.20	5.0	
179	117.0-119.0 (5cc)	5.31	99.8	0.01	0.2	
180	112.0-114.0 (5cc)	4.30	100.0	0.00	0.0	
181	109.0-111.0 (5cc)	4.27	100.0	0.00	0.0	
182	104.0-106.0 (5cc)	4.82	99.8	0.01	0.2	
183	100.0-102.0 (5cc)	5.19	98.3	0.09	1.7	

PI88AR Core 7
 Depth: 3513 m
 Location: 74° 37.7', 157° 23.17'
 (Note: Samples #55-74 were unknown quantity...used for paleomag)

Sample = 10 cc unless noted

Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)

Planktic (p), Arenaceous (a), Benthic calcareous (b)

Sample Number	Interval Sampled	Foraminifers			
1	383.5-385.5				
2	375.5-377.5	R/p			
3	365.5-367.5				
4	355.5-357.5				
5	337.5-339.5				
6	325.5-327.5				
7	309.5-311.5				
8	308.5-310.5				
9	302.5-304.5				
10	296.5-298.5	R/p			
11	287.5-289.5				
12	277.5-279.5				
13	268.5-270.5	R/p			
14	260.5-262.5				
15	255.5-257.5				
16	239.5-241.5	R/p/a			
17	231.0-233.0	R/p			
18	218.6-220.6	R/p			
19	211.0-213.0	R/p			
20	204.8-206.8	R/p			
21	198.0-200.0	C/p/b			
22	192.8-194.8	C/p/b			
23	181.8-183.8	A/p/b			
24	174.2-176.2	VA/p/b			
25	168.6-170.6	R/p			
26	162.4-164.4	R/p			
27	158.4-160.4	C/p			
28	150.4-152.4	C/p			
29	146.4-148.4	VA/p			
30	136.0-138.0	VA/p			
31	130.4-132.4	VA/p			
32	123.4-125.4	VA/p			
33	119.0-121.0	A/p			
34	110.6-112.6				
35	106.0-108.0				
36	99.6-101.6	R/p			
37	95.0-97.0	R/p			
38	86.0-88.0				
39	79.0-81.0	R/p			
40	72.0-74.0				
41	66.0-68.0	R/p			
42	59.0-61.0	A/p			
43	52.0-54.0	A/p/a/b			
44	46.6-48.6	A/p/a/b			
45	38.4-40.4	VA/p/a/b			
46	33.0-35.0	VA/p/a/b			
48	28.6-30.6	C/p/b			
49	23.4-25.4	R/p			
50	19.4-21.4	VA/p/b			
51	15.4-17.4	R/p			
52	10.0-12.0	A/p/a/b			
53	6.0-8.0	VA/p/a/b			
54	1.4-3.4	VA/p/a/b			
55	114.0-116.0	R/p/a/b			
56	138.0-140.0	VA/p/b			
57	166.0-168.0	R/p			
58	178.0-180.0	A/p/b			
59	195.0-197.0	C/p/b			
60	208.0-210.0	R/p/b			

61	226.0-228.0	R/p			
62	250.5-252.5				
63	259.5-261.5				
64	267.5-269.5				
65	272.5-274.5				
66	308.5-310.5				
67	333.5-335.5				
68	342.5-344.5				
69	379.5-381.5				
70	392.0-394.0				
71	407.0-409.0				
72	450.0-452.0	R/a			
73	470.0-472.0	C/a			
74	525.0-527.0	R/a			
113	394.0-396.0 (9cc)				
114	370.0-372.0				
115	363.5-365.5	R/a			
116	328.5-330.5				
117	322.5-324.5	R/a			
118	303.5-305.5	R/a			
119	282.5-284.5	R/a			
120	265.5-267.5				
121	243.0-245.0	R/a			
128	533.5-535.5 (9cc)	R/a			
129	521.5-523.5 (9cc)	R/a			
130	517.5-519.5 (9cc)	R/a			
131	508.0-510.0	R/a			
132	501.0-503.0	R/a			
133	497.0-499.0 (8cc)	C/a			
134	491.5-493.5	C/a			
135	487.5-489.5	R/a			
136	483.5-485.5	C/a			
137	477.0-479.0 (9cc)	C/a			
138	465.0-467.0	R/a			
139	459.0-461.0	R/a			
140	443.5-445.5	A/a			
141	439.0-441.0 (9cc)	A/a			
142	433.0-435.0	R/a			
143	425.0-427.0				
144	417.5-419.5 (9cc)				
145	404.0-406.0 (9cc)				
146	398.0-400.0				
160	365.5-369.0	R/p			
161	359.5-361.5				
162	351.5-353.5				
163	315.5-317.5				
164	326.0-330.5	R/p/a			
165	271.0-273.0	R/p			
166	262.5-266.0	R/p			
167	235.5-237.5 (9cc)	R/p			
168	215.0-217.0 (9cc)	R/p/a			
169	187.5-189.5	R/p			
170	170.0-172.0	VA/p			
171	155.0-157.0 (9cc)	R/p			
172	143.0-145.0	VA/p			
173	135.0-137.0 (5cc)	VA/p			
174	132.0-133.0 (5cc)	VA/p			
175	129.0-131.0 (5cc)	C/p/a			
176	126.0-128.5 (10+cc)	C/p/a/b			
177	123.0-125.0 (5cc)	C/p			
178	120.0-122.0 (5cc)	C/p			
179	117.0-119.0 (5cc)				
180	112.0-114.0 (5cc)	R/p			
181	109.0-111.0 (5cc)				
182	104.0-106.0 (5cc)	R/p			
183	100.0-102.0 (5cc)	R/p/a/b			

**Northwind Ridge flank
Core 1
3636 m
74° 38.77', 157° 18.40'**

Figure 11. Photograph of core 1. The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled. The dark colored beds represent the foraminifer-rich dark yellowish brown strata. The lower 106 cm (right section) consists of a siltstone breccia set in a mud matrix.



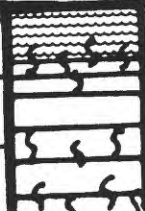
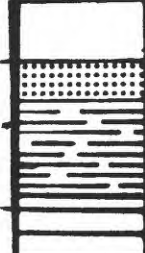
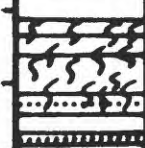
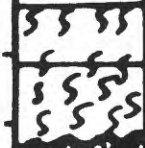
UNIT

Σ

Core 1

3636 m

0-220 cm

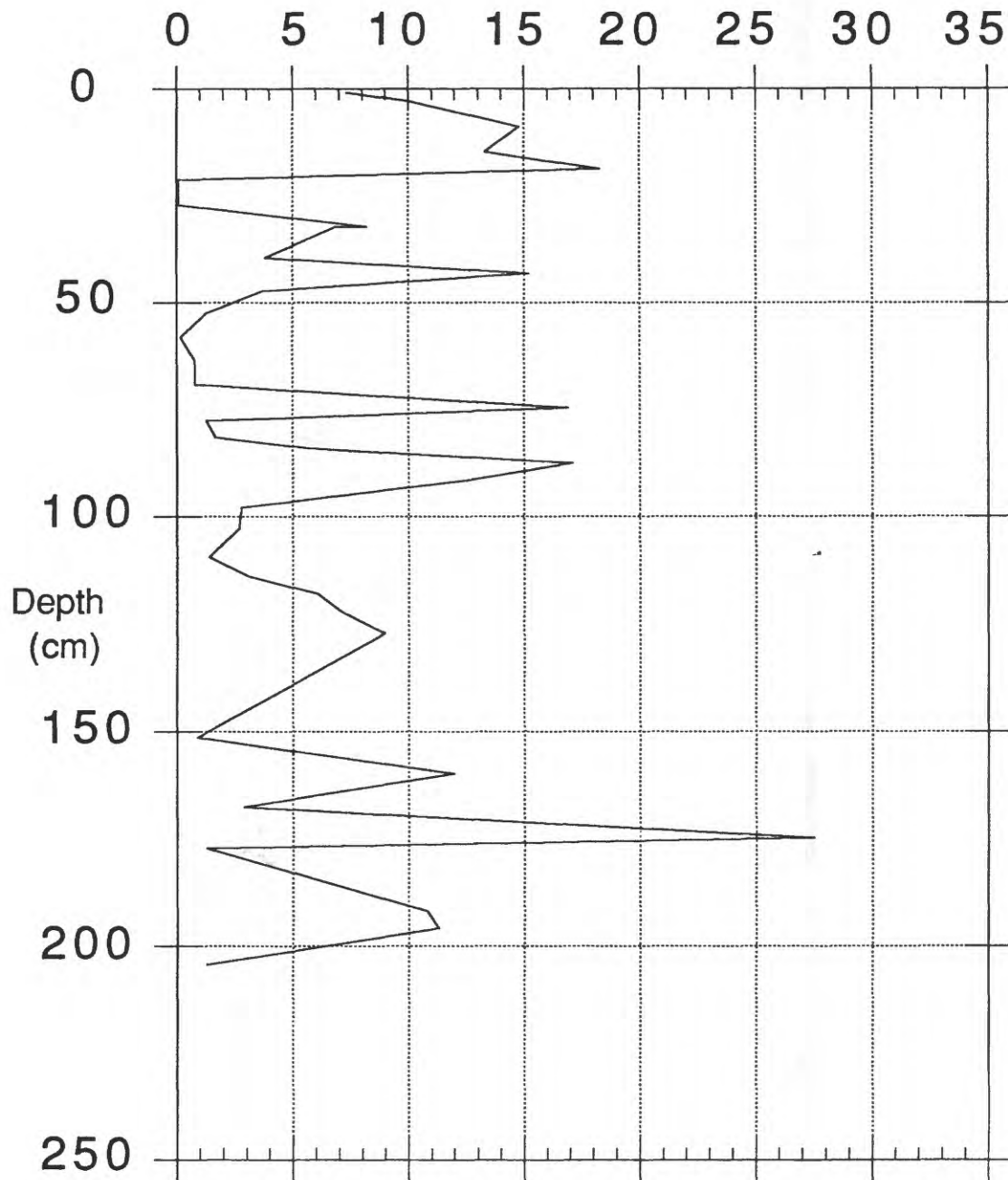
M		0-21 cm-- bioturbated to laminated grayish brown (5YR3/2) sandy mud overlying moderate yellow brown (10YR5/2) and dark olive gray (5Y3/1) sandy mud containing ice-rafted clasts and very abundant planktic and benthic foraminifers; olive gray bed contains abundant lignite and coal.
		21-31-- 10 cm of light olive gray (5Y5/2) mud lacking ice-rafted clasts and foraminifers; Mn micro-nodules are abundant.
J		31-49-- 18 cm of faintly laminated light olive gray (5Y5/2) sandy mud (sand to 15 %) containing ice-rafted clasts; unit contains very rare arenaceous foraminifers; Mn micro-nodules are abundant. Sample (#80) for sieve analysis of sand fraction taken at 38-43 cm.
		49-67 cm-- 18 cm of laminated dusky yellow (5Y6/4) to light olive gray (5Y5/2) mud lacking ice-rafted clasts; unit contains very rare arenaceous foraminifers; Mn micro-nodules are abundant.
		67-91 cm-- 24 cm of mottled to faintly laminated light olive gray (5Y5/2) sandy mud containing a grayish orange pink (5YR6/2) and a pale olive (10Y6/2) clastic-rich bed (both 17 % sand); unit contains ice-rafted clasts and very rare arenaceous foraminifers; Mn micro-nodules are abundant. Sample (#79) for sieve analysis of sand fraction taken at 84-92 cm.
?		91-114 cm-- 23 cm of mottled pale olive (10Y6/2) to dusky yellow (5Y6/4) slightly sandy mud; unit lacks ice-rafted clasts and contains rare arenaceous foraminifers; Mn micro-nodules are abundant.
?		EROSIONAL SURFACE--beds above contain ice-rafted limestone and dolomite, strata below this surface lack ice-rafted limestone and dolomite.
		114-130 cm-- top of unit consists of 16 cm of laminated pale olive (10Y6/2) mudstone clast breccia (top 4 cm) overlying Mn laminae and a greenish gray (5G6/1) mud (118-130 cm); from 130 to 211 cm the unit consists of a breccia containing a dark yellowish orange to grayish orange (10YR6/6-7/4) mud matrix with grayish orange (10YR7/4) to olive black (5Y2/1) siltstone clast up to 4.5 cm; the siltstone clasts increase in abundance toward the base of the section; the basal 9 cm consists of brownish black (5YR2/1) siltstone clasts containing abundant pyrite; the matrix contains both Pliocene and Pleistocene benthic and planktic foraminifers and early and mid-Cretaceous (Albian and Cenomanian) benthic foraminifers; the siltstone clasts contain early and mid-Cretaceous (Albian and Cenomanian) benthic foraminifers; the basal bed contains early Cretaceous (early Albian) benthic foraminifers; iron oxide concretions common throughout section. Sample (#90) for sieve analysis of sand fraction taken at 182-190 cm.

100

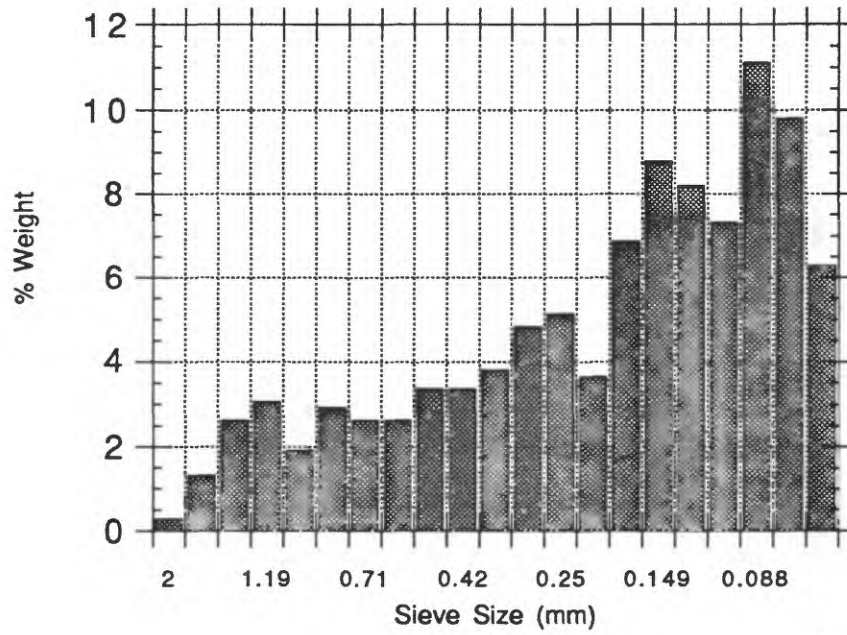
200

PI88AR Core 1

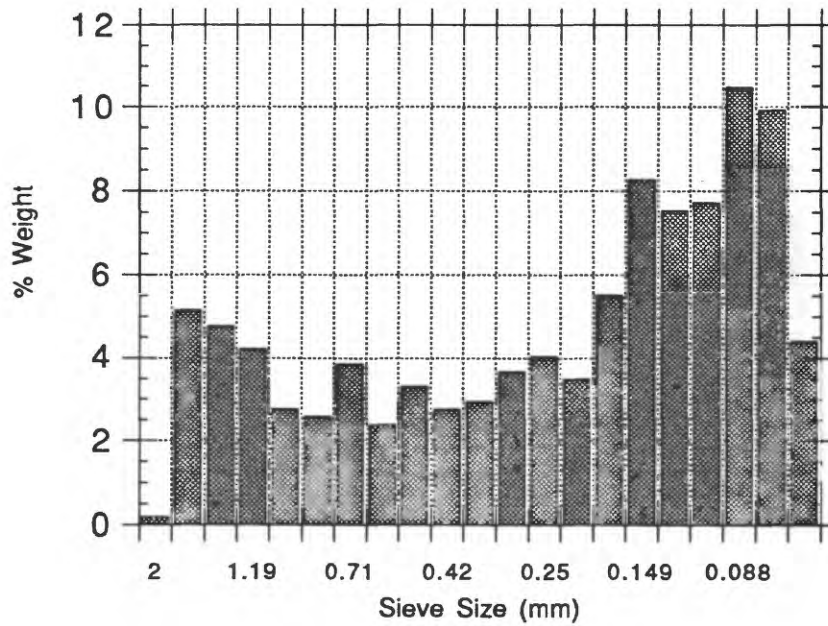
% Sand Fraction



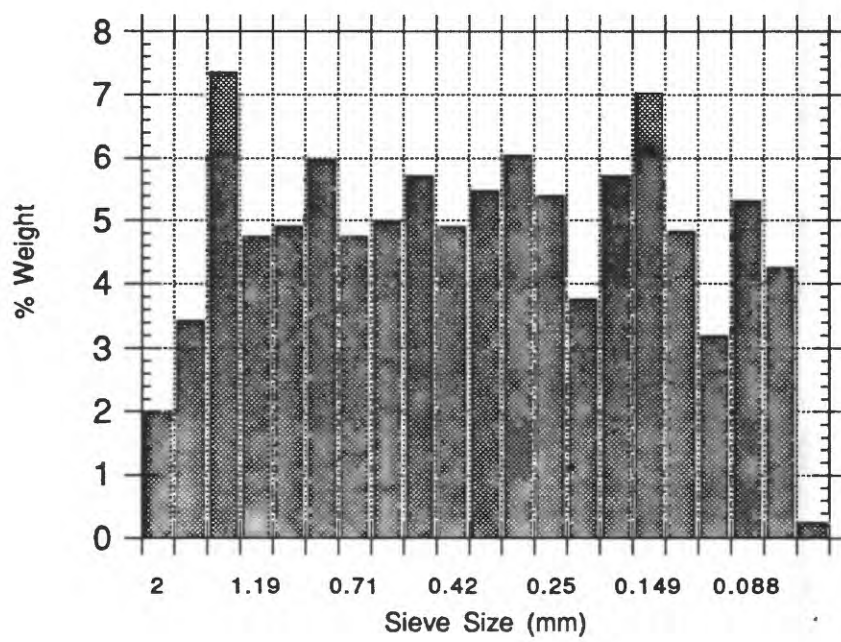
Core 1 #79



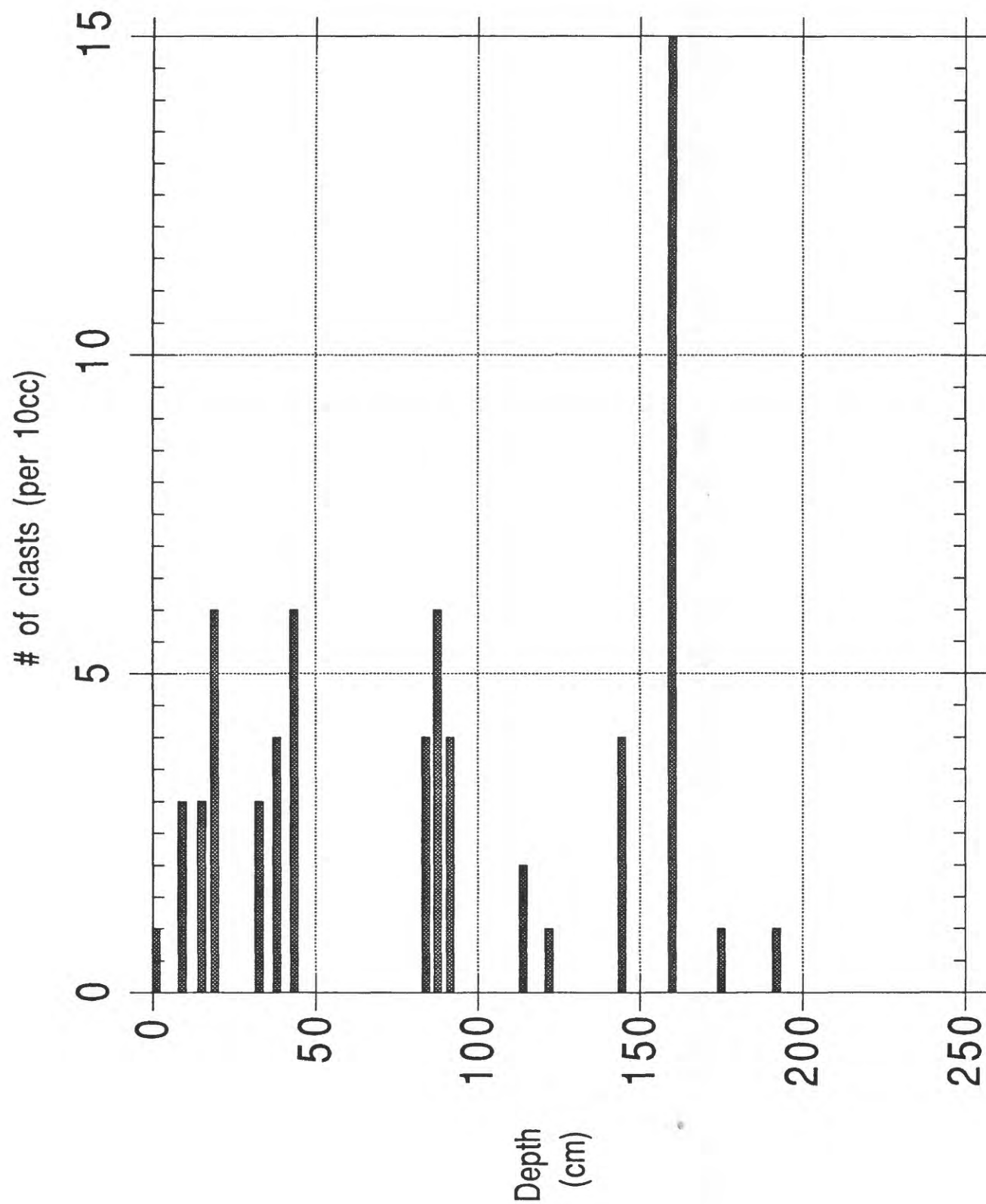
Core 1 #80



Core 1 #90



PI88AR Core 1

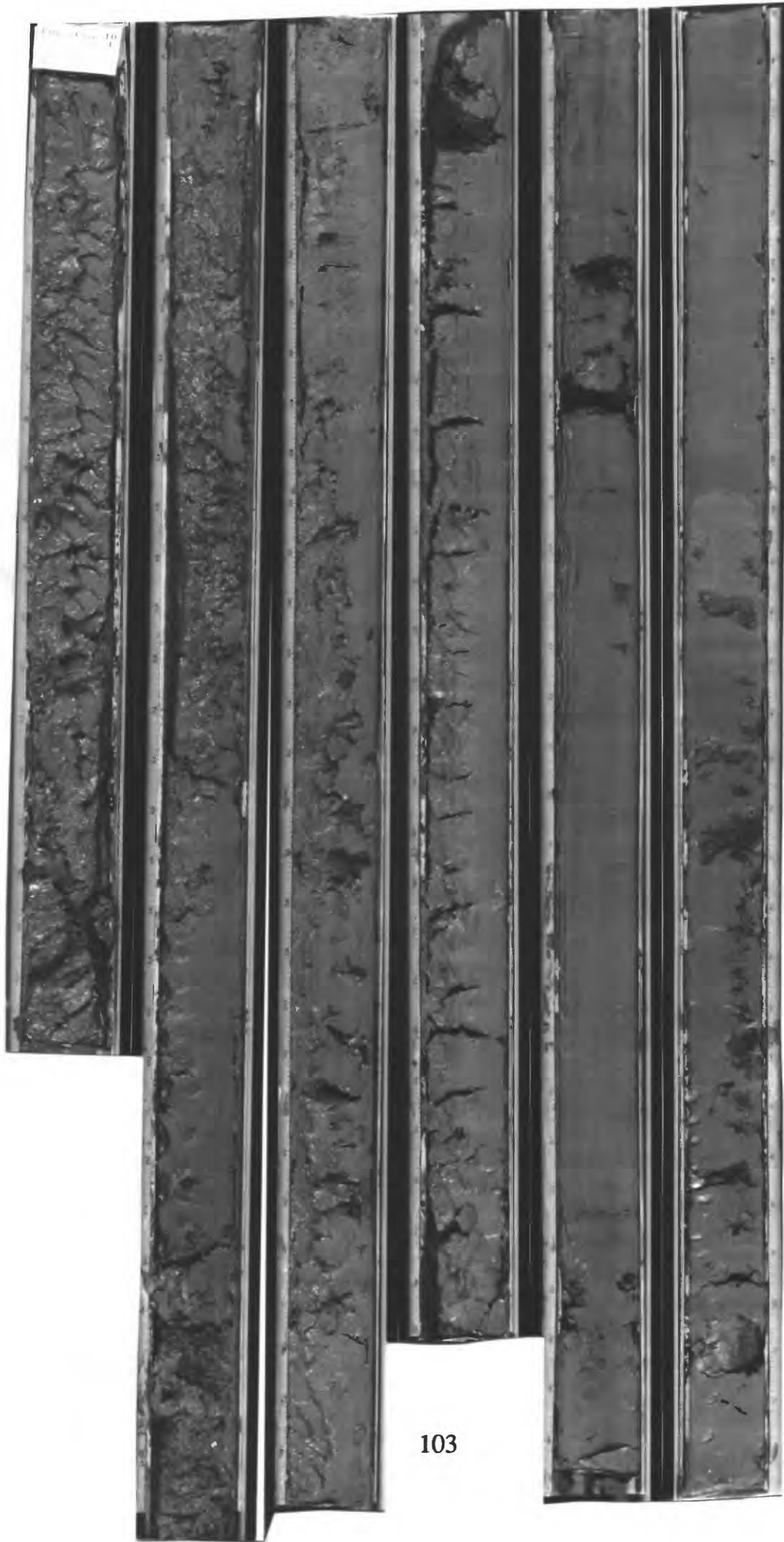


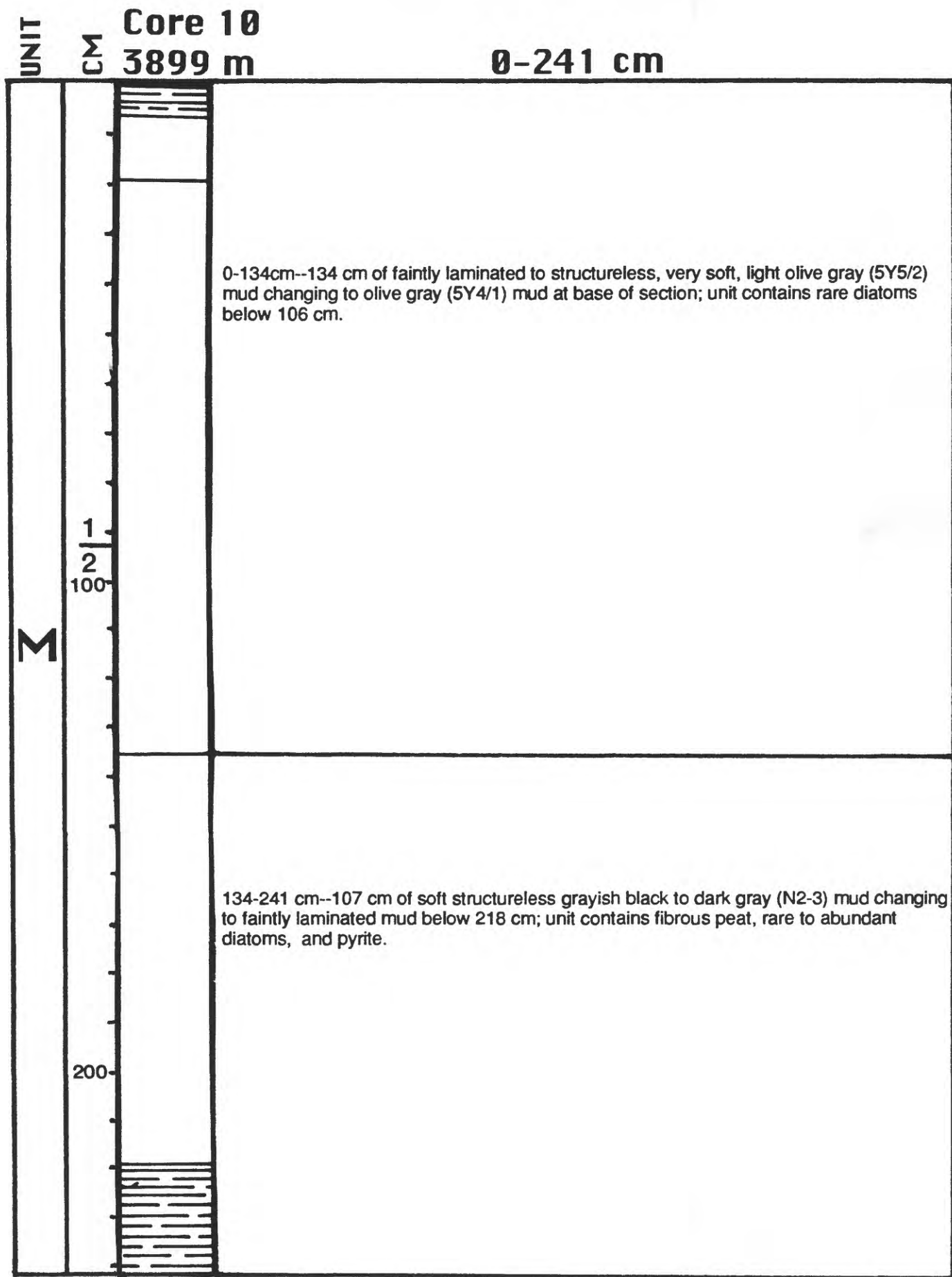
PI88AR Core 1		Sample = 10 cc unless noted (?)- unknown volume				
Depth: 3636 m						
Location: 74°38.77', 157°18.40'						
Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	127.2-129.2	11.02	90.9	1.09	9.0	
2	118.0-120.0	11.20	93.9	0.73	6.1	
3	109.5-111.5	9.16	98.6	0.13	1.4	
4	103.0-105.0	10.96	97.3	0.30	2.7	
5	91.5-93.5	9.97	87.2	1.46	12.8	0.28 (4)
6	87.6-89.6	10.73	82.9	2.21	17.1	0.31 (6)
7	81.5-83.5	9.69	98.3	0.17	1.7	
8	77.6-79.6	10.60	98.7	0.14	1.3	
9	74.5-76.5	9.22	83.1	1.87	16.9	
10	69.0-71.0	10.62	99.2	0.09	0.8	
11	63.3-65.3	9.00	99.2	0.07	0.8	
12	58.0-60.0	8.68	99.8	0.02	0.2	
13	52.5-53.5 (5cc)	6.26	98.7	0.08	1.3	
14	47.4-49.4 (5cc)	8.26	96.2	0.32	3.7	
15	43.4-45.4 (9cc)	9.63	84.8	1.73	15.2	0.32 (6)
16	39.8-41.8 (5cc)	5.53	96.2	0.22	3.8	
17	32.6-34.6	10.66	93.1	0.79	6.9	0.06 (3)
18	27.4-29.4	10.44	99.9	0.01	0.1	
19	21.5-23.5	9.31	99.9	0.01	0.1	
20	19.0-21.0	9.32	81.7	2.09	18.3	0.26 (6)
21	15.0-17.0	9.61	86.7	1.48	13.3	0.06 (3)
22	9.0-11.0	9.02	85.2	1.57	14.8	0.07 (3)
23	3.0-5.0	7.80	89.9	0.87	10.0	
24	1.0-3.0	7.45	92.7	0.59	7.3	0.03 (1)
25	98.0-100.0 (?)	13.39	97.2	0.39	2.8	
26	114.0-116.0 (?)	10.41	96.9	0.33	3.1	0.05 (2)
27	122.0-124.0 (?)	24.06	92.9	1.84	7.1	0.09 (2)
28	160.0-162.0 (?)	30.18	88.0	4.13	12.0	0.78 (15)
29	175.0-177.0 (?)	20.46	72.5	7.76	27.5	0.05 (2)
30	192.0-194.0 (?)	28.88	89.2	3.51	10.8	0.40 (2)
31	196.0-198.0 (?)	23.32	88.7	2.97	11.3	
78	84.0-86.0	9.91	94.3	0.60	5.7	0.11 (4)
81	32.5-34.5	8.84	91.8	0.79	8.2	0.03 (2)
92	204.5-206.5 (8cc)	9.52	98.7	0.13	1.3	
93	177.5-179.5 (9cc)	8.90	98.7	0.12	1.3	
94	168.0-170.0 (9cc)	9.77	97.1	0.29	2.9	
95	151.5-153.5 (8cc)	8.99	99.1	0.08	0.9	
96	144.5-146.5	8.81	96.8	0.29	3.2	0.09 (4)

PI88AR Core 1		Sample = 10 cc unless noted (?) - unknown volume					
Depth: 3636 m		Foraminifers: Rare (R), Common (C), Abundant (A), Very abundant (VA)					
Location: 74°38.77' N, 157°18.40' W		Planktic (p), Arenaceous (a), Benthic calcareous (b)					
Sample Number	Interval Sampled	Foraminifers					
1	127.2-129.2						
2	118.0-120.0						
3	109.5-111.5						
4	103.0-105.0	R/p					
5	91.5-93.5						
6	87.6-89.6	R/p					
7	81.5-83.5	R/a					
8	77.6-79.6	R/a					
9	74.5-76.5						
10	69.0-71.0						
11	63.3-65.3	R/p					
12	58.0-60.0	R/p					
13	52.5-53.5 (5cc)	R/p					
14	47.4-49.4 (5cc)	R/p					
15	43.4-45.4 (9cc)						
16	39.8-41.8 (5cc)	R/p					
17	32.6-34.6						
18	27.4-29.4	R/p/a					
19	21.5-23.5	R/a					
20	19.0-21.0						
21	15.0-17.0	VA/p, A/b					
22	9.0-11.0	VA/p, A/b					
23	3.0-5.0	VA/p, A/b					
24	1.0-3.0	VA/p, A/b					
25	98.0-100.0 (?)	R/a					
26	114.0-116.0 (?)						
27	122.0-124.0 (?)						
28	160.0-162.0 (?)	R/a					
29	175.0-177.0 (?)	R/a					
30	192.0-194.0 (?)	R/a					
31	196.0-198.0 (?)	R/a					
78	84.0-86.0						
81	32.5-34.5						
92	204.5-206.5 (8cc)	C/a					
93	177.5-179.5 (9cc)	C/a					
94	168.0-170.0 (9cc)	C/a					
95	151.5-153.5 (8cc)	R/a					
96	144.5-146.5	R/a					

**Canada abyssal plain
Core 10
3899 m
74° 43.51', 156° 08.46'**

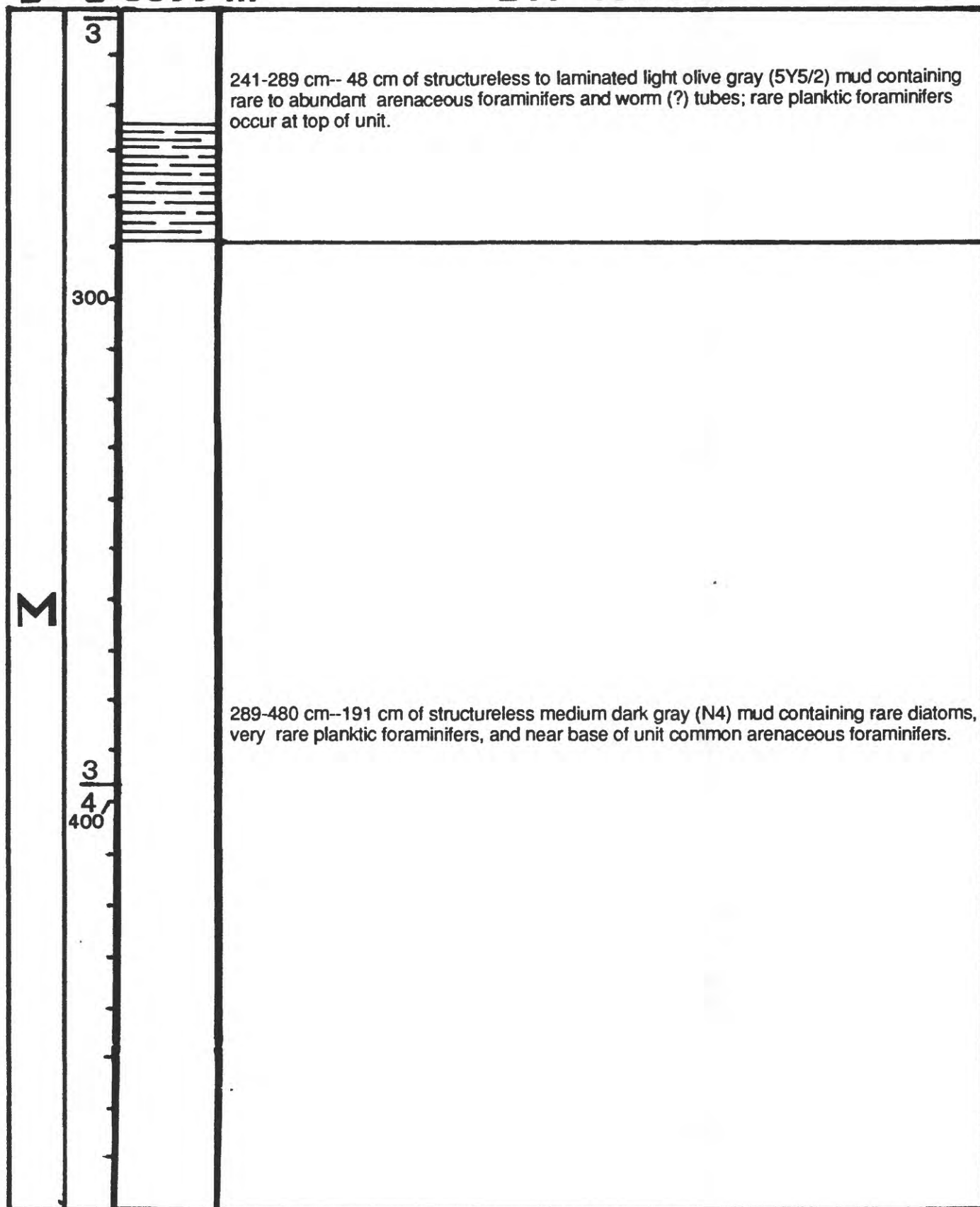
Figure 12. Photograph of core 10 (next page). The upper left section is the core top. The scale to the left of the core section is in 1/2 cm increments with every 5 cm labeled.





UNIT **Core 10**
Σ **3899 m**

241-480 cm



UNIT

Σ

Core 10

3899 m

480-697 cm

M

500-

4

5

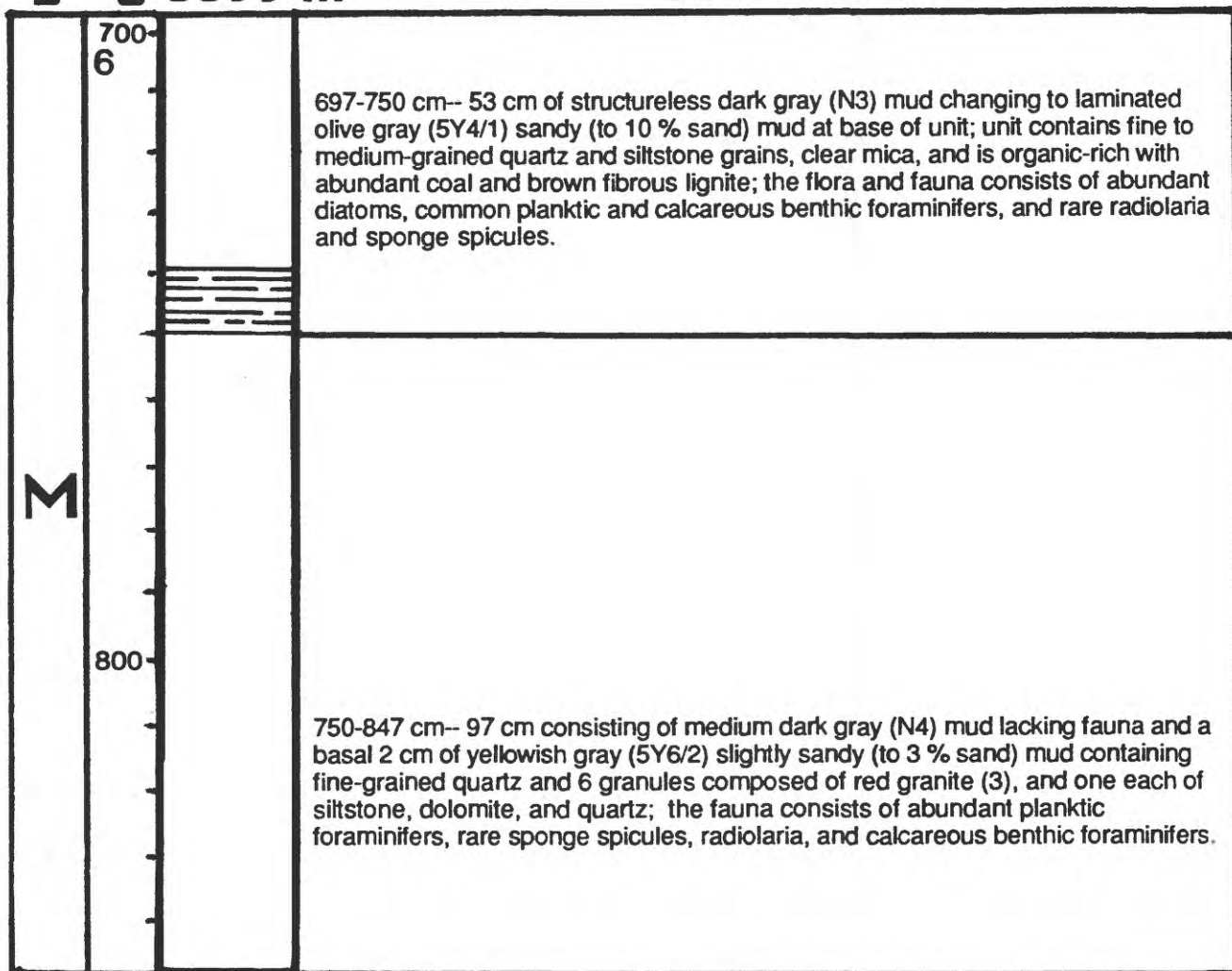
600-

480-697 cm-- 217 cm of structureless medium dark gray to dark gray (N4-3) mud containing less than 0.5 % sand fraction; unit contains fine-grained quartz, siltstone grains, glauconite, coal, and brown fibrous lignite; the flora and fauna is composed of rare to abundant diatoms and sponge spicules, rare to common arenaceous foraminifers, rare calcareous benthic foraminifers, and rare radiolaria and planktic foraminifers.

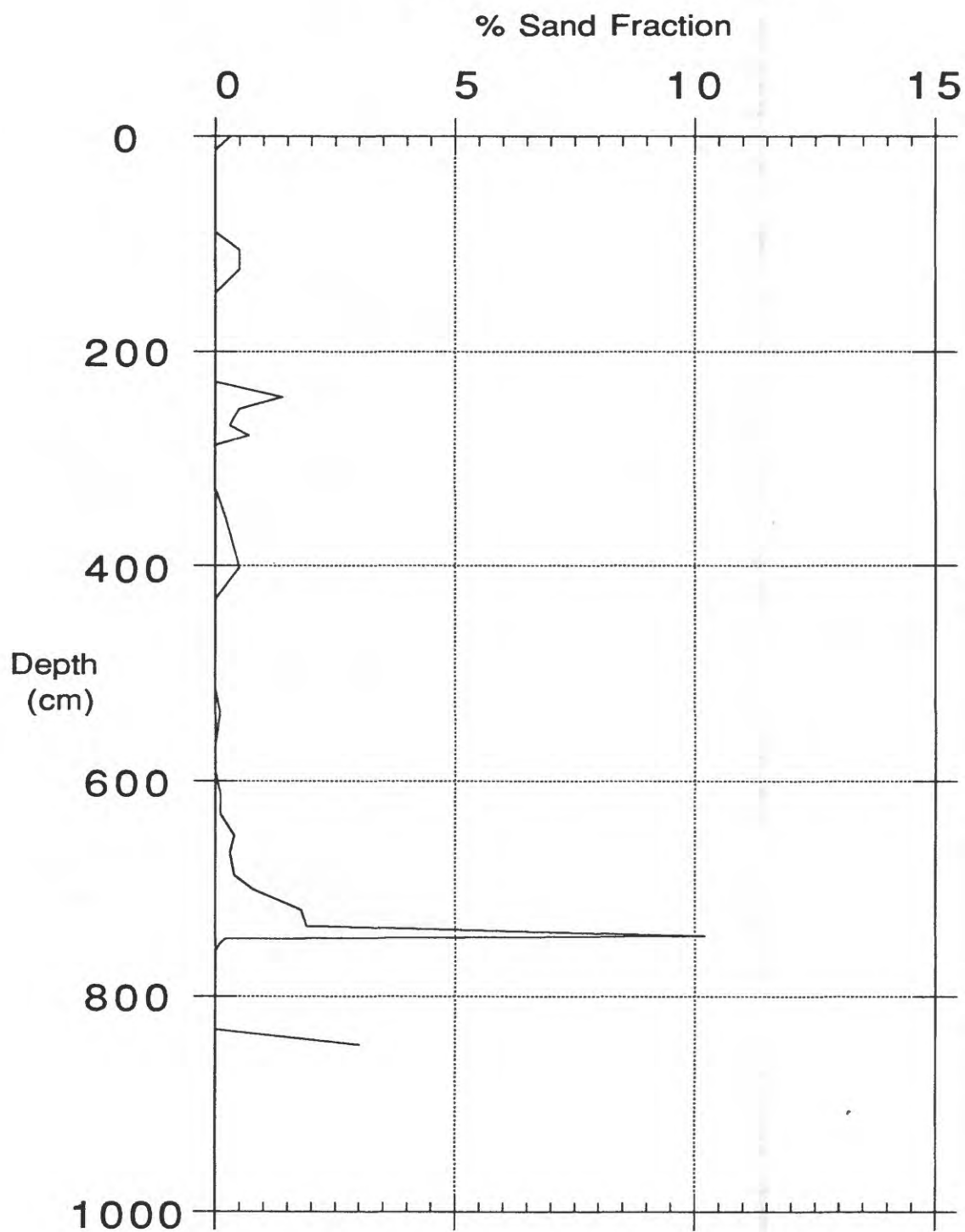
UNIT

Core 10
Σ 3899 m

697-847 cm



PI88AR Core 10



PI88AR Core 10

Sample = 10 cc unless noted

Depth: 3899 m

Location: 74° 43.51', 156° 08.46'

Sample Number	Interval Sampled	Weight < 0.062	Percent < 0.062	Weight 0.062-2.0	Percent 0.062-2.0	Weight > 2.0 (#clasts)
1	846.0-847.0	12.95	97.0	0.40	3.0	0.09 (5)
2	831.0-833.0	10.89	100.0	0.00	0.0	
3	811.0-813.0	7.83	100.0	0.00	0.0	
4	791.0-793.0	8.87	100.0	0.00	0.0	
5	775.5-777.5	7.78	100.0	0.00	0.0	
6	758.0-760.0	7.97	100.0	0.00	0.0	
7	751.0-753.0	7.43	99.9	0.01	0.1	
8	747.0-749.0	12.15	99.8	0.02	0.2	
9	744.0-746.0	9.47	89.8	1.08	10.2	
10	735.0-737.0	9.38	98.1	0.18	1.9	
11	720.0-722.0	9.45	98.2	0.17	1.8	
12	701.0-703.0	8.24	99.2	0.07	0.8	
13	688.0-690.0	11.13	99.6	0.04	0.4	
14	667.0-669.0	9.96	99.7	0.03	0.3	
15	651.0-653.0	10.56	99.6	0.04	0.4	
16	630.5-632.5	9.60	99.9	0.01	0.1	
17	611.0-613.0	10.06	99.9	0.01	0.1	
18	591.5-593.5	9.18	100.0	0.00	0.0	
19	566.0-568.0	8.51	100.0	0.00	0.0	
20	535.5-537.5	7.71	99.9	0.01	0.1	
21	515.0-517.0	6.29	100.0	0.00	0.0	
22	493.0-497.0	6.12	100.0	0.00	0.0	
23	474.0-476.0	6.39	100.0	0.00	0.0	
24	450.0-452.0	6.06	100.0	0.00	0.0	
25	432.0-434.0 (9cc)	6.39	100.0	0.00	0.0	
26	402.0-404.0 (5-6cc)	5.81	99.5	0.03	0.5	
27	354.0-356.0 (9cc)	5.84	99.8	0.01	0.2	
28	328.0-330.0 (9cc)	6.60	100.0	0.00	0.0	
29	297.0-299.0	7.10	100.0	0.00	0.0	
30	287.5-289.5 (9cc)	6.32	100.0	0.00	0.0	
31	278.0-280.0 (8cc)	5.46	99.3	0.04	0.7	
32	268.5-270.5 (9cc)	7.42	99.7	0.02	0.3	
33	261.0-263.0 (9cc)	7.33	99.6	0.03	0.4	
34	253.5-255.5 (9cc)	6.08	99.5	0.03	0.5	
35	242.5-244.5 (9cc)	6.85	98.6	0.10	1.4	
36	228.0-230.0 (9cc)	7.61	100.0	0.00	0.0	
37	202.0-204.0 (9cc)	5.92	100.0	0.00	0.0	
38	182.0-184.0 (8cc)	4.60	100.0	0.00	0.0	
39	165.0-167.0	5.94	100.0	0.00	0.0	
40	146.5-148.5 (6cc)	3.94	100.0	0.00	0.0	
41	124.5-126.5 (8cc)	4.19	99.5	0.02	0.5	
42	106.0-108.0	7.28	99.5	0.04	0.5	
43	89.5-91.5	7.16	100.0	0.00	0.0	
44	71.5-73.5	6.52	100.0	0.00	0.0	
45	52.5-54.5 (8cc)	5.75	100.0	0.00	0.0	
46	32.0-34.0 (6cc)	4.38	100.0	0.00	0.0	
47	13.0-15.0 (5cc)	4.93	100.0	0.00	0.0	
48	1.0-3.0 (4cc)	3.66	99.7	0.01	0.3	

PI88AR Core 10		Sample = 10 cc unless noted				
Depth: 3899 m		Foraminifers: Rare (R), Common (C), Abundant (A), Very Abundant (VA)				
Location: 74°43.51', 156°08.46'		Planktic (p), Arenaceous (a), Benthic calcareous (b), Diatoms (d), Radiolaria (R)				
Sample Number	Interval Sampled	Foraminifers				
1	846.0-847.0	A/p/a/b				
2	831.0-833.0					
3	811.0-813.0					
4	791.0-793.0					
5	775.5-777.5					
6	758.0-760.0					
7	751.0-753.0					
8	747.0-749.0	R/p/b				
9	744.0-746.0	C/p/a/b/d				
10	735.0-737.0	C/p/a/b/d				
11	720.0-722.0	C/p/d/r				
12	701.0-703.0	R/p/b/d				
13	688.0-690.0	R/p/a/b/d/r				
14	667.0-669.0	R/p/a/b/d/r				
15	651.0-653.0	R/p/a/b/d/r				
16	630.5-632.5	R/a/b/d/r				
17	611.0-613.0	d				
18	591.5-593.5	R/p/d/r				
19	566.0-568.0	R/p/d/r				
20	535.5-537.5	R/d				
21	515.0-517.0					
22	493.0-497.0					
23	474.0-476.0					
24	450.0-452.0	R/d				
25	432.0-434.0 (9cc)	R/d				
26	402.0-404.0 (5-6cc)	R/p/a				
27	354.0-356.0 (9cc)	R/p/d				
28	328.0-330.0 (9cc)	R/d				
29	297.0-299.0	R/d				
30	287.5-289.5 (9cc)					
31	278.0-280.0 (8cc)	R/a				
32	268.5-270.5 (9cc)	A/a				
33	261.0-263.0 (9cc)	A/a				
34	253.5-255.5 (9cc)	A/a				
35	242.5-244.5 (9cc)	R/p				
36	228.0-230.0 (9cc)	R/a/d				
37	202.0-204.0 (9cc)	A/d				
38	182.0-184.0 (8cc)	A/d				
39	165.0-167.0	A/d				
40	146.5-148.5 (6cc)	A/d				
41	124.5-126.5 (8cc)	R/d				
42	106.0-108.0	R/d				
43	89.5-91.5					
44	71.5-73.5					
45	52.5-54.5 (8cc)					
46	32.0-34.0 (6cc)					
47	13.0-15.0 (5cc)					
48	1.0-3.0 (4cc)					