2. SITE 486[1]

Shipboard Scientific Party[2]

HOLE 486

Date occupied: 22 March 1979

Date departed: 23 March 1979

Time on hole: 26.2 hours

Position: 15°55.37'N; 99°08.10'W

Water depth (sea level; corrected m, echo-sounding): 5142

Water depth (rig floor; corrected m, echo-sounding): 5152

Bottom felt (m, drill pipe): 5157.0

Penetration (m): 38.0

Number of cores: 5

Total length of cored section (m): 38.0

Total core recovered (m): 12.5

Core recovery (%): 33

Oldest sediment cored:
Depth sub-bottom (m):38
Nature: Sand
Age: Quaternary

Basement:
Depth sub-bottom (m): Not penetrated

Principal results: See Hole 486A.

HOLE 486A

Date occupied: 23 March 1979

Date departed: 24 March 1979

Time on hole: 19.3 hours

Position: 15°54.83'N; 99°08.28'W

Water depth (sea level; corrected m, echo-sounding): 5138

Water depth (rig floor; corrected m, echo-sounding): 5148

Bottom felt (m, drill pipe): 5152

Penetration (m): 22

Number of cores: 3

Total length of cored section (m): 22

Total core recovered (m): 3.5

Core recovery (%): 16.0

Oldest sediment cored:
Depth sub-bottom (m): 22
Nature: Sand
Age: Quaternary

Basement:
Depth sub-bottom (m): Not penetrated

Principal results: Site 486 is located in the Middle America Trench 120 km southeast of Acapulco, Mexico. The stratigraphic section cored in Hole 486 consists of 38 meters of predominantly fine to medium clayey sand and in Hole 486A of 22 meters of fine to medium clayey sand and very coarse sand (Table 1). All cores are of Quaternary age and contain redeposited faunal elements of nearshore or shelf environments. The abundant sand that caused abandonment of the site is the coarsest material yet recovered by drilling on a trench floor.

BACKGROUND AND OBJECTIVES

The Middle America Trench bordering southern Mexico is the boundary between the North American and Cocos plates, with the Cocos Plate being subducted at a rate of 6 to 8 cm/y. (Minster and Jordan, 1978). A shallow-dipping and poorly defined Benioff Zone dips to the north-northeast beneath the continental margin of Mexico (Molnar and Sykes, 1969). The Trans-Mexican Volcanic Belt, north-northeast of Site 486, is structurally divergent, being less than 150 km from the trench at its northwestern terminus but more than 300 km from it at its southwestern end. The oceanic crust subducted in the Middle American Trench off southern

Table 1. Coring summary, Holes 486 and 486A.

Core	Cored Interval below Bottom (m)	Cored (m)	Recovered (m)	Recovered (%)	Remarks
Hole 486					
1	0.0–0.0	0.0	tr	—	
2	0.0–9.5	9.5	tr	—	
3	9.5–19.0	9.5	9.2	97	
4	19.0–28.5	9.5	0.1	1	
5	28.5–38.0	9.5	3.2	34	
6X	—	—	5.0	—	Core barrel filled with sand during efforts to free drill bit.
Hole 486A					
1	0.0–5.0	5.0	2.5	50	
2	5.0–14.5	9.5	0.24	3	
3	14.5–22.0	7.5	0.77	10	

[1] *Initial Reports of the Deep Sea Drilling Project*, Volume 66.

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Mexico is as old as Miocene and increases in age to the southeast (Lynn and Lewis, 1976).

A basement complex of intrusive and metamorphic rocks, ranging back to Precambrian, crops out adjacent to the trench off southern Mexico. This basement is covered by Paleozoic, Mesozoic, and Cenozoic sedimentary rocks (Mejorda, 1976). Cenozoic volcanic and volcaniclastic rocks crop out near the northern terminus of the trench where the Trans-Mexican Volcanic Belt approaches the coastline. In the absence of a substantial fore-arc basin, detritus derived from the coastal exposures has ready access to the trench across a narrow shelf and through submarine canyons. The trench floor ranges from about 4 to slightly more than 5 km in depth and is subdivided into a series of small, isolated sediment ponds up to about 30 km in length (Fig. 1).

Site 486 lies in a trench sediment pond at least 15 km in length, up to 10 km wide, and with a maximum sediment thickness of 750 meters (Fig. 2). A large submarine canyon 25 km to the southeast supplies the pond with sediment (Fig. 1). A piston core from the trench adjacent to the canyon recovered very coarse-grained sand, whereas near the drilling sites it recovered medium-grained sand and mud (McMillen and Haines, this volume). A seismic reflection profile through Holes 486 and 486A reveals a highly reflective sediment wedge that overlies and pinches out against a variably reflective conformable sedimentary unit which in turn overlies oceanic basement. The highly reflective wedge probably represents turbidites accumulated in the trench, whereas the conformable unit represents pelagic to hemipelagic deposits originally accumulated on the seafloor seaward of the trench.

The general goal of drilling at Site 486 was complete penetration of the trench fill. A more specific objective was to obtain a reference section through the trench turbidites and subjacent hemipelagic and pelagic sediments for comparison with deposits cored from the inner slope of the trench. Reference data would include lithology, physical properties, and paleontological characteristics of trench and hemipelagic to pelagic deposits. Comparison of physical properties of sediments sampled from the trench and inner slope would define the effects of tectonic consolidation occurring during accretion.

OPERATIONS

Hole 486

After the malfunction of two beacons, we spudded Hole 486 in 5157 meters of water. The first core recovered a trace of sediments. When we encountered very firm sediment immediately after cutting the second core, we were concerned for the bottomhole assembly. It took 30 minutes to cut the core. The core barrel was recovered nearly full of fine muddy sand and with a collapsed and jammed plastic liner. Subsequently cores exhibited reduced recovery and looser, coarser sand. The core bit plugged briefly following recovery of Core 486-1. When Core 5 was recovered and a new inner barrel dropped, the bit again plugged and the drill string stuck, both vertically and rotationally. The pipe was freed after about 45 minutes and the hole abandoned because of poor drilling conditions. After clearing the seafloor the inner barrel was pulled. The core, designated 6X, contained about 5 meters of sand, though the bit had not been lowered to total depth.

Hole 486A

In the hope that the sand deposit was a localized occurrence, we repositioned the vessel 970 meters to the southwest by offsetting from the beacon. Although the offset determined by comparison of satellite fix locations is slightly greater (Fig. 2), it is utilized for the relative location of the sites because its navigational reference frame is reproducible. The PDR reading was 4 meters shallower, and spudding encountered hard bottom at 5152 meters. Drilling conditions and sediment lithology were virtually unchanged from the previous hole. Because the bit plugged and the inner barrel stuck temporarily after 3 cores and a penetration of only 22 meters, we abandoned operations at Site 486. Drill string was recovered completely at 1040 hours, 24 March.

LITHOLOGIC SUMMARY

The unindurated Quaternary sand and muddy sand encountered at Site 486 are the coarsest trench deposits yet drilled by DSDP. Drilling in sand resulted in poor recovery and early termination of the holes.

In recognition of the extremely high sand content of the majority of the sediment, we depart from DSDP terminology in our lithologic descriptions. By DSDP convention, sand-silt-clay admixtures with more than 10% clay cannot be termed sand. We use a modified version of the standard DSDP lithological description for terrigenous sediments (both on the barrel sheets and in this account) and designate as sand any sediment mixture containing 50% or more sand.

Fine- to medium- and coarse-grained sand (Fig. 3) and muddy sand, olive gray to dark gray to olive black in color, were recovered intermittently to a depth of 38 meters in Hole 486 and 22 meters in Hole 486A. Minor amounts of sticky olive gray and dark gray clay and mud occur at the base of Hole 486 (Sample 486-5-3, 20–30 cm) and in the top 2 meters of Hole 486A. Microfossils show that the sediments are mid-Pleistocene or younger.

Fragments of shallow marine microfossils and locally abundant plant remains show the sand to be redeposited shelf sediments. Where bulk recovery was best (Core 486-3) the sand appeared to be thoroughly massive. A crudely graded unit 3 meters thick (Sections 486-5-1 and 486-5-2) may represent a single bed deposited by a single turbidity current. Otherwise, destruction of bedding and internal structures during recovery of the unindurated sediments precluded observation of the scale, duration, and mechanism of mass-flow emplacement events. The textural similarity between the sand recovered at Site 486 and that piston-cored elsewhere in the trench (McMillen and Haines, this volume) suggests that the drilling process did not preferentially remove fine-grained matrix.

The sand and muddy sand are relatively quartz-rich (more than 75% average, about 95% maximum). Preliminary petrographic analysis suggests that the sand

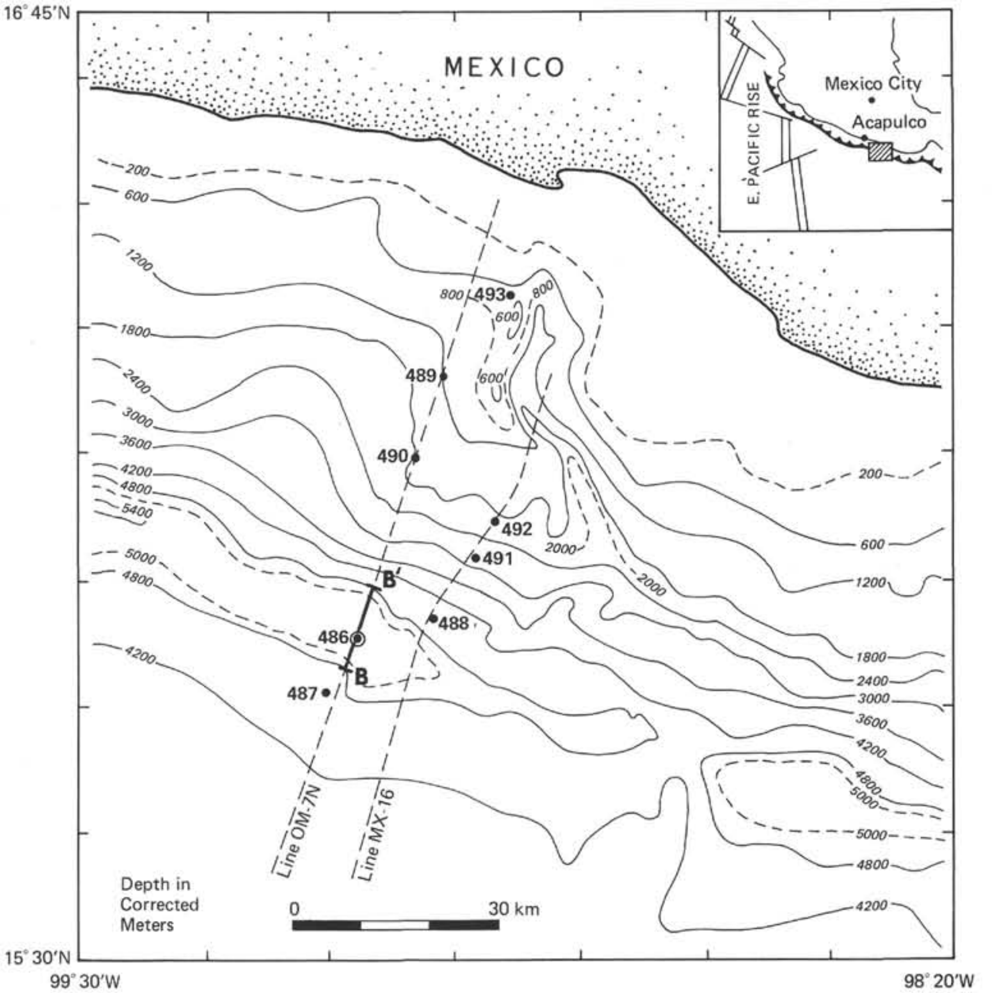

Figure 1. Bathymetric and location map, Site 486, Holes 486 and 486A. Dashed Lines OM-7N and MX-16 indicate location of multichannel seismic reflection profiles (Shipley, this volume). Segment B-B′ of Line-OM-7N is reproduced in Figure 2.

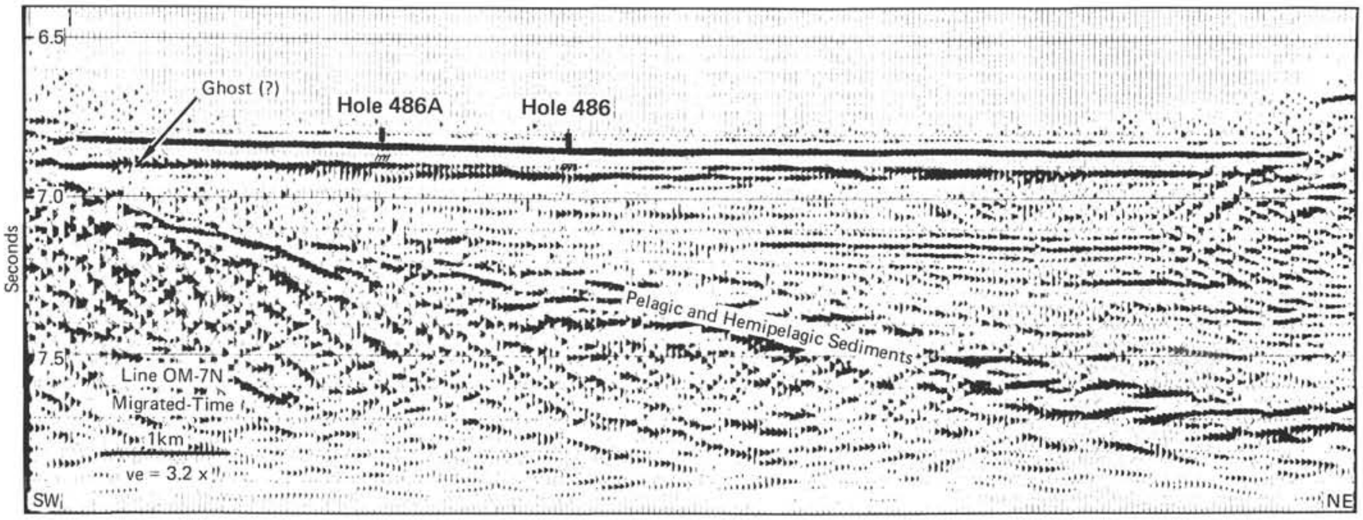

Figure 2. Multichannel seismic reflection profile through Site 486. The first sub-bottom reflection at the site was not reached before drilling terminated. The pelagic and hemipelagic sediments underlying the stratified fill were sampled at Hole 487.

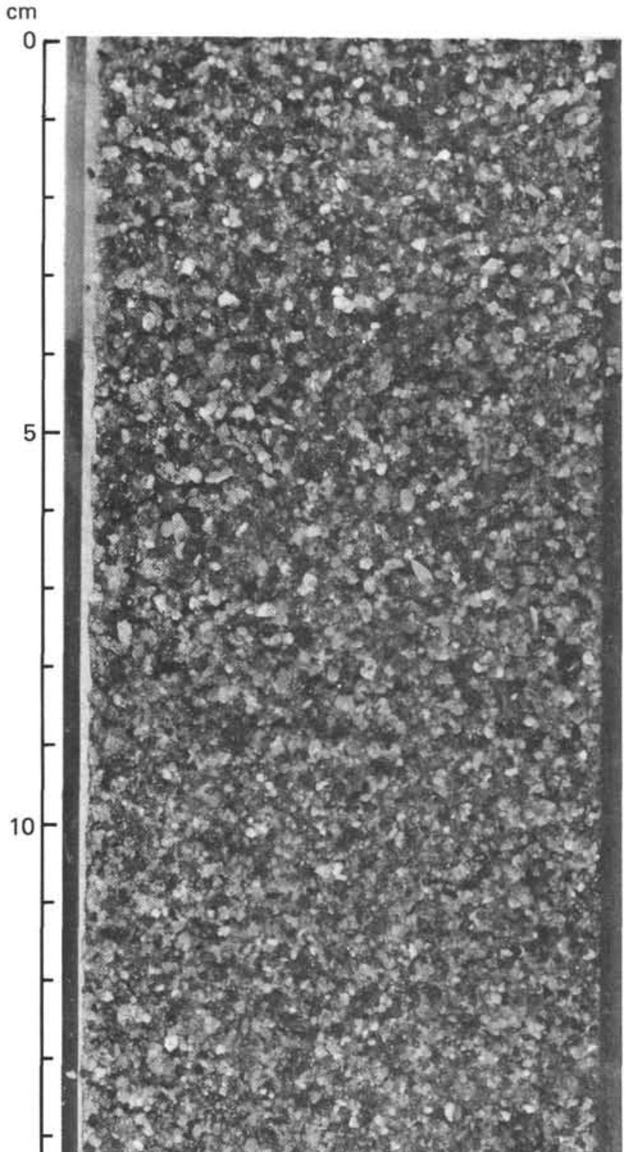

Figure 3. Very coarse-grained sand from 486A-2,CC, 0–19 cm. Similar coarse-grained sands drilled at Sites 488, 491, and 492 are interpreted as uplifted trench sediments.

composition predominantly reflects a crystalline basement source along southern Mexico rather than input from the volcanic arc. In particular, feldspar contents are low (20% maximum), and quartz grains frequently contain irregularly arranged vacuoles, suggesting metamorphic sources. Muscovite and biotite may also derive from erosion of gneissic rocks in the source area. Lithic fragments are very uncommon; quartz grains are predominantly monocrystalline. The petrographic characteristics of these and other sands recovered during Leg 66 are described in detail by Bachman and Leggett, and Enkeboll (this volume).

BIOSTRATIGRAPHY

Abundant coarse terrigenous sand recovered from the trench fill at Site 486 dilutes planktonic microfossils and hinders dating. Preserved planktonic and benthonic foraminifers and small gastropods indicate a nearshore or shelf environment as the sediment source. Almost all cores contain nannofossils, diatoms, and radiolarians, but muddy intervals contain an abundant Quaternary fauna. Coccoliths indicate deposition in the NN20 or NN21 Zone (middle to late Pleistocene).

Core 486-3 contains reworked middle and upper Miocene sediment. The core catcher contains middle Miocene planktonic foraminifers, and the 3 to 5 cm interval of Section 486-3-2 contains a mudclast with late Miocene radiolarians.

Foraminifers

Core catcher samples from Cores 486-2 through 486-5 and 486A-1 through 486A-3 contain rare to very rare foraminifers. They are moderately to poorly preserved and do not yield any diagnostic species for age determination. However, the following assemblage, as well as the calcareous nannoplankton, suggests the Quaternary for the recovered sediment. The planktonic species include *Globigerina bulloides, G. falconensis, Globigerinita glutinata, Globigerinoides triloba, G.* aff. *ruber, G. sacculifer*, and a few specimens of *Globorotalia menardii*. Some reworked Miocene species, such as *G. mayeri* and *Globigerinoides* cf. *primodius*, may also be added to the faunal assemblage.

Relatively abundant benthic foraminifers in the washed residue include *Quinqueloculina, Eggerella, Bolivina* (common), *Bulimina, Anomalina, Gavelinella, Nonion, Hoeglundina, Cassidulina*, and *Uvigerina*. Other microfossils in the washed residue include ostracodes, gastropodes, pelecypodes, echinoid spines, fish teeth, and plant fragments.

Depositional Environment

The trench sediment at Site 486 consists mainly of terrigenous sand. Planktonic and benthic foraminifers indicate a nearshore shelf environment, although there are some shelf edge or slope species such as (*Hoeglundina, Uvigerina peregrina*, and *U. proboscidea*). Turbidity currents probably transported the terrigenous sand into the trench basin via submarine canyons cut into the inner slope.

Radiolarians

Radiolarian preservation is excellent in Hole 486, but abundances are sparse because of extreme dilution by terrigenous sediment. Muddier intervals in Cores 4 and

5 (recovered in the core catchers) contain more radiolarians. Quaternary fauna in 4,CC includes *Ommatartus tetrathalamus, Pterocanium trilobum, Rhophalastrum profundum*, and *Pterocorys zancleus* and in 5,CC include *O. tetrathalamus, P. zancleus, Tetrapyle octacantha*, and *Euchitonia furcata*. Although sparseness and lack of indicator species prevent application of Nigrini's (1971) zonation, the assemblage resembles those of modern East Pacific radiolarians (Molina-Cruz 1977).

A 5-cm reworked mudstone clast in coarse sand at 3 to 5 cm in Core 486-3 contains a well-preserved diatom–radiolarian assemblage. Identified species, including *O. hughesi, Cannartus laticonus, Stichocorys delmontensis*, and *O. antepenultimus*, place the sample in the upper Miocene *O. antepenultimus* zone (Dinkelman, 1973).

Hole 486A also contains a well-preserved radiolarian fauna. Sample 486A-2-2, 21–22 cm contains more radiolarians than any other sample from Site 486. The tropical and subtropical fauna includes *Tetrapyle octacantha, Acanthodesmia veniculata, Choenicosphaera* (= *Polysolenia*) *murrayana*, and *Anthocrytidium cineraria*, indicating a Quaternary age. Despite the relatively abundant fauna in this sample, we found none of the indicator species of Nigrini's (1971) zonation.

Calcareous Nannoplankton and Siliceous Phytoplankton

In Hole 486, Samples 486-1,CC and 486-2,CC contain no coccoliths. In samples from Cores 3 to 5, *Gephyrocapsa oceanica* and *G. omega* indicate a middle to late Quaternary age (NN20 Zone). *Helicosphaera carteri* (= *Helicopontosphaera kamptneri*) is also common. Only autochthonous Quaternary coccoliths are found, and no reworking of Mesozoic or Tertiary nannofossils can be proven.

In Samples 486-1,CC and 486-2,CC siliceous sponge spicules and fragments of radiolarians occur in the fine fraction. Cors 3 to 5 and core catchers from Cores 1 and 3 of Hole 486A contain diatoms, silicoflagellates, ebridians, phytolitharians (dumbbell-shaped forms), some loricas, dinoflagellates, pollen, and remains of organic cell walls. Silicoflagellates include *Dictyocha stapedia stapedia, D. stapedia aspinosa, D. perlaevis, D. fibula*, and *Actiniscus pentasterias*. The siliceous phytoplankton fits well into the age determination by means of nannoplankton.

A single piece of allochthonous mudstone recovered from Hole 486, Core 3, Section 2, 3–5 cm with Miocene radiolarians contains no nannoplankton. Among numerous diatom fragments we found rare *D. crux* and *A. pentasterias.*

CORRELATION OF SEISMIC REFLECTION AND DRILLING RESULTS

Site 486 is located less than 300 meters from a seismic reflection profile collected by the University of Texas Marine Science Institute (UTMSI). Figure 2 is a reproduction of a portion of this line extending from Site 486 toward the outer rise. The 24-channel seismic reflection profile has been stacked, deconvolved (spike), filtered (8–35 Hz), scaled (250-ms window), and migrated (wave equation technique). Three low pressure (450-psi), high volume (4500 cu. in. ea.) air guns with bubble pulse suppressors that produce a frequency of about 9 Hz served as the source. With the exception of the receiver ghost effect, the seismic processing successfully reduced the pulse to a single wavelet. Within the trench axis sediment pond, the water bottom reflection doublet is related in part to geology.

Separation between the bottom and first sub-bottom reflection in the vicinity of the site is about 70 ms at Hole 486 and 60 ms at Hole 486A (Fig. 2). The decrease in separation between reflections is probably due to interference between the ghost and a shallow bedding surface as their separation decreases below the resolution of the data in a seaward direction. Thus, the change in depth to the first reflection may be related to thinning of bedding or to bedding termination. Drilling did not penetrate the first sub-bottom reflection, which lies at depths estimated to be 75 and 100 meters, respectively (assuming a velocity of 1650 m/s).

SUMMARY AND CONCLUSIONS

Site 486 is in a small sediment pond representative of the discontinuous turbidite fill of the Middle America Trench off southern Mexico. The seismic reflection profile (Fig. 2) indicates a sediment thickness of about 425 meters at Site 486 composed of approximately equal amounts of turbidites and subjacent hemipelagic to pelagic deposits. The stratigraphic section cored in Hole 486 consists of 38 meters of fine to medium muddy sand and in Hole 486A of 22 meters of fine to medium muddy sand and very coarse sand. All cores recovered are of Quaternary age and contain redeposited faunal elements of nearshore or shelf environments. Flow of sand into both holes and bit sticking caused abandonment of drilling at Site 486. The sands at Site 486 constitute the coarsest material ever recovered by drilling on a trench floor.

The coarse turbidite sands at Site 486 were undoubtedly derived from the landmass to the northeast. Their occurrence along the seaward margin of a nonchannelized landward-tilted trench floor (Fig. 2) cannot be explained by available examples of modern trench sedimentation alone. For example, the movement of the oceanic plate from an area of fine-grained turbidite deposition at the outer edge of the trench floor to a region of concentrated, possibly channelized turbidite flow adjacent to the inner trench slope causes the coarsening upward sequence of the Eastern Aleutian Trench and Nankai Trough (Piper et al., 1973; von Huene, 1974; Moore and Karig, 1976). The seismic reflection profiles through Site 486 suggest continuity of reflectors and, presumably, extension of the cored sand across the trench floor. Thus, even though the sands at Site 486 may cap a coarsening upward sequence, it is distinctly different from that presumed to be continuously forming in the Eastern Aleutian Trench of Nankai Trough. An axial channel located in the center of the floor of the Peru–Chile Trench has been traced for more than a thousand kilometers (von Huene, 1974; Schweller and

Kulm, 1978). This axial channel probably localizes sand deposition, which with lateral migration leads to a complex interbedding of channel, levee, and overbank deposits. However, in the absence of a modern or recently active channel near the drilling site, this depositional system cannot account for the sands at Site 486.

Bathymetry (Shipley, this volume) indicates a gradual increase in depth toward Site 486 from the mouth of a prominent submarine canyon located 25 km to the southeast. One reflection profile (Line MX-15, Shipley, this volume) close to the canyon mouth shows an axial channel bordering a fault scarp at the inner margin of a narrow trench floor. Conversely, the planar geometry of reflectors suggests the accumulation of tabular sand bodies, probably sheet sands or lobes of low relief near Site 486 (Fig. 2). This depositional regime resembles submarine fans in which part of the upper reach is channelized and the more distal portion consists of tabular sand bodies. The gradient between the canyon mouth to Site 486 is 1/125. Although it is possible that this gradient has been structurally modified, it is near the upper limit of presently known submarine fans (Nelson et al., 1978) and approximately one order of magnitude steeper than the gradient of the axial channels in the eastern Aleutian and Peru-Chile trenches (von Huene, 1974; Schweller and Kulm, 1978).

The coarse sediment at Site 486 reflects both a source terrain capable of producing sand-sized detritus and a short transport path across a narrow continental shelf. Multiple lines of evidence suggest that coarse sand is presently moving through submarine canyons to the trench and bypassing the shelf. At the mouth of the prominent submarine canyon 25 km southeast of Site 486, a piston core (McMillen and Haines, this volume) recovered only coarse sand, indicating modern deposition of this sediment type. Moreover, one of the canyons farther to the southeast (Shipley, this volume) has been surveyed to within 1 km of the shoreline and is probably collecting coarse sediment stirred by waves and nearshore currents. Although we believe coarse sediment is accumulating actively in the trench, higher sedimentation rates may have prevailed during periods of glacially lowered sea level.

In summary, Middle America Trench sediments near Site 486 constitute a localized wedge of coarse turbidite detritus derived from nearby shallow-water sources. The depositional system is unlike continuous turbidite wedges cored and drilled in other trenches but resembles submarine fans with respect to gradient and transition from channelized to nonchannelized flow. A moderately high convergence rate of 7 cm/y. at Site 486 (Minster and Jordan, 1978) probably results in rapid accretion of trench deposits and inhibits the development of the continuous turbidite wedge observed in other trenches.

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SITE 486 HOLE CORE 1 CORED INTERVAL —

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
QUATERNARY	NN 20			RP			1, 2	0.5, 1.0	VOID (Smears on core liner)			*

LITHOLOGIC DESCRIPTION

Recovery limited to smears on core liner: MUDDY SAND, dark gray (N3), coarse-grained.

SMEAR SLIDES

	Muddy sand Core liner (D)
TEXTURE:	
Sand	60
Silt	20
Clay	20
COMPOSITION:	
Quartz	77
Feldspar	2
Mica	1
Clay	20
Radiolarians	TR
Sponge spicules	TR

SITE 486 HOLE CORE 2 CORED INTERVAL 0.0–9.5 m

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
QUATERNARY	NN 20	RM		RP	RP		1, 2	0.5, 1.0	VOID (Smears on core liner)			*

LITHOLOGIC DESCRIPTION

Recovery limited to smears on core liner: MUDDY SAND, fine-grained, olive black (5Y 2/1).

SMEAR SLIDES

	Muddy sand Core liner (D)
TEXTURE:	
Sand	60
Silt	20
Clay	20
COMPOSITION:	
Quartz	75
Feldspar	2
Mica	1
Clay	20
Radiolarians	TR
Sponge spicules	TR

SITE 486 HOLE CORE 3 CORED INTERVAL 9.5–19.0 m

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
QUATERNARY	NN 20	RM	FM	RM	FM	FM	1, 2, 3, 4, 5, 6, CC	0.5, 1.0				* GZ, *, *

LITHOLOGIC DESCRIPTION

MUDDY SAND, olive black (5Y 2/1), fine- to medium-grained, locally coarse-grained, structureless, soupy.

Indurated, crudely oval mudstone clast of late Miocene age, 3 cm x 1 cm, same color as matrix sediment.

4 mm granite clast

SMEAR SLIDES

	Muddy sand 1-3 (D)	Muddy sand 6-33 (D)	Muddy sand CC (D)
TEXTURE:			
Sand	70	70	70
Silt	20	30	20
Clay	10		10
COMPOSITION:			
Quartz	80	60	85
Feldspar	2	2	2
Mica	3	–	2
Heavy minerals	TR	5	–
Clay	10	30	10
Plant fragments	5	3	–

GRAIN SIZE

	1-3
Sand	91.3
Silt	5.9
Clay	2.7

Information on core description sheets, for ALL sites, represents field notes taken aboard ship under time pressure. Some of this information has been refined in accord with post-cruise findings, but production schedules prohibit definitive correlation of these sheets with subsequent findings. Thus the reader should be alerted to the occasional ambiguity or discrepancy.

SITE 486 HOLE CORE 4 CORED INTERVAL 19.0–28.5 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS
QUATERNARY	NN 20	RM	FM	RG	FM	FM	CC, 1, 2, 3	0.5, 1.0

LITHOLOGIC DESCRIPTION

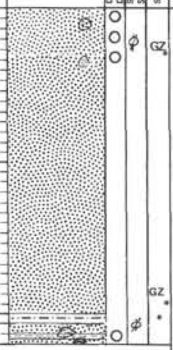
Total recovery 10 cm in Core-Catcher only. Lump of MUDDY SAND (massive) AND MUD, brownish-black (5YR 2/1).

SMEAR SLIDES

	Muddy sand CC-1 (D)	Mud CC-4 (M)	Muddy sand CC-7 (D)
TEXTURE:			
Sand	10	TR	85
Silt	40	40	–
Clay	50	60	15
COMPOSITION:			
Quartz	30	35	75
Feldspar	5	2	7
Mica	–	1	–
Heavy minerals	5	2	–
Clay	50	60	15
Foraminifers	TR	TR	–
Nannofossils	TR	TR	–
Radiolarians	TR	TR	–
Diatoms	–	TR	–
Sponge spicules	TR	TR	–
Shell fragments	–	5	–

SITE 486 HOLE CORE 5 CORED INTERVAL 28.5–38.0 m

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS
QUATERNARY	NN 20	RM	FP	RG	FP	FP	1, 2, 3, CC	0.5, 1.0



LITHOLOGIC DESCRIPTION

Fine to medium MICACEOUS SAND, olive gray (5Y 3/2) grading to MEDIUM to COARSE SAND, medium dark gray (N4) through Sections 1 and 2. Minor SANDY MUD, grayish black (N2) in Section 3.

Core-Catcher:
0–10 cm: medium-coarse, medium dark gray (N4) sand mixed with dark gray (N3) CLAY and plant fragments. Very deformed by drilling.
10–15 cm: dark gray clay (N3), massive.
15–20 cm: medium sand (N4) mixed with clay (N3) very deformed by drilling.

SMEAR SLIDES

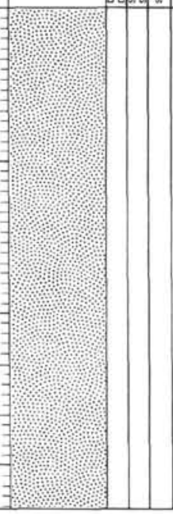
	Sand 1-41 (D)	Sand 2-132 (D)	Mud 3-2 (D)
TEXTURE:			
Sand	98	97	20
Silt	2	2	40
Clay	TR	1	40
COMPOSITION:			
Quartz	80	73	35
Feldspar	10	10	3
Mica	5	5	1
Heavy minerals	5	2	1
Clay	TR	–	40
Foraminifers	TR	–	TR
Radiolarians	–	–	TR
Diatoms	–	–	TR
Sponge spicules	–	–	TR
Plant fragments	–	–	20

GRAIN SIZE

	1-40	2-132
Sand	96.7	98.8
Silt	1.2	0.1
Clay	2.1	1.2

SITE 486 HOLE CORE 6X CORED INTERVAL 38.0 m (Washed)

TIME – ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SILICOFLAGELLATES	SECTION	METERS
QUATERNARY	NN 20						1, 2, 3, 4	0.5, 1.0

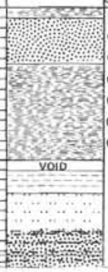


LITHOLOGIC DESCRIPTION

MEDIUM SAND, olive-gray (5Y 3/2).

SITE 486 HOLE A CORE 1 CORED INTERVAL 0.0–5.0 m

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
UPPER–MIDDLE PLEISTOCENE	NN 20	RP	FM	FG	FM	1	0.5, 1.0				
						2		VOID			GZ
						CC					



LITHOLOGIC DESCRIPTION

MUD, olive gray (5Y 3/2); FINE SAND, dusky yellow brown (10YR 2/2); CLAY, olive gray (5Y 3/2); massive, micaceous SILT, grayish olive (10Y 4/2); grading into fine to medium micaceous MUDDY SAND.

SMEAR SLIDES

	Mud 1-62 (D)	Mud 2-20 (D)	Muddy sand CC (D)
TEXTURE:			
Sand	10	20	60
Silt	40	75	30
Clay	50	5	10
COMPOSITION:			
Quartz	44	75	66
Feldspar	2	10	20
Mica	1	2	3
Heavy minerals	30	3	1
Clay	48	5	10
Foraminifers	–	TR	TR
Nannofossils	TR	TR	–
Diatoms	–	TR	–
Sponge spicules	TR	–	TR
Plant fragments	TR	5	TR

GRAIN SIZE

	2-92
Sand	70.8
Silt	20.7
Clay	8.5

SITE 486 HOLE A CORE 2 CORED INTERVAL 5.0–14.5 m

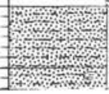
TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
						CC					

LITHOLOGIC DESCRIPTION

Core-Catcher only: very coarse-grained SAND, medium dark gray (N4). Megafossil fragments.

SITE 486 HOLE A CORE 3 CORED INTERVAL 14.5–22.0 m

TIME-ROCK UNIT	BIOSTRATIGRAPHIC ZONE	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURBANCE	SEDIMENTARY STRUCTURES	SAMPLES
						1	0.5				
						CC					



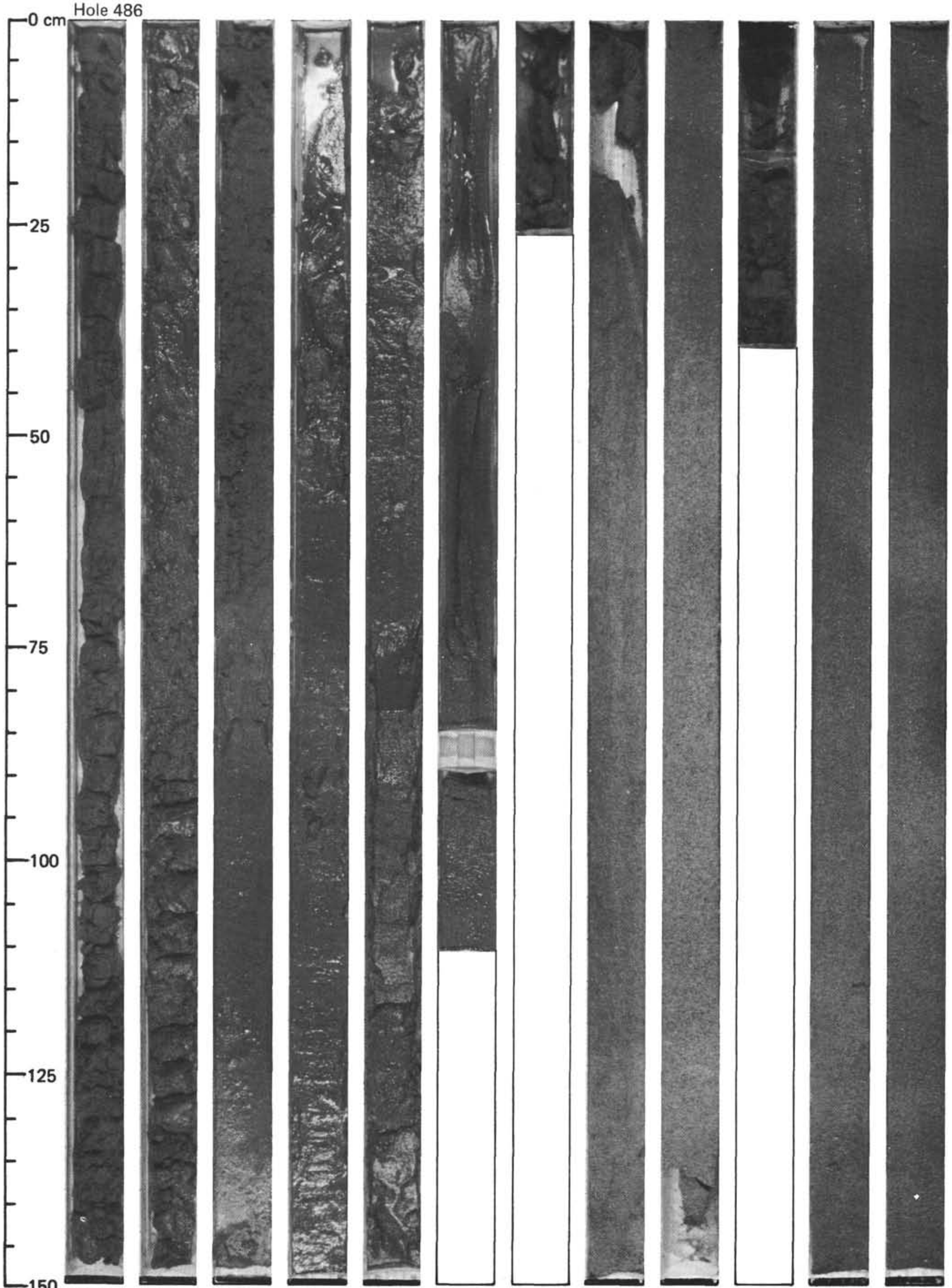
LITHOLOGIC DESCRIPTION

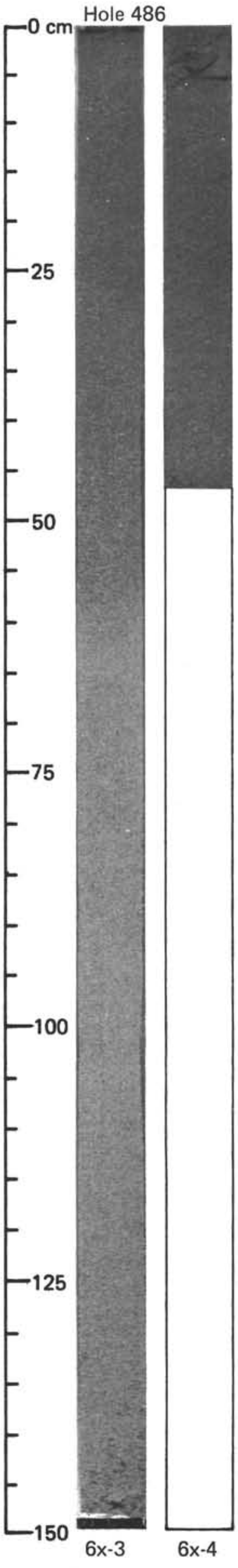
Fine to medium MUDDY SAND, olive gray (5Y 3/2), micaceous.

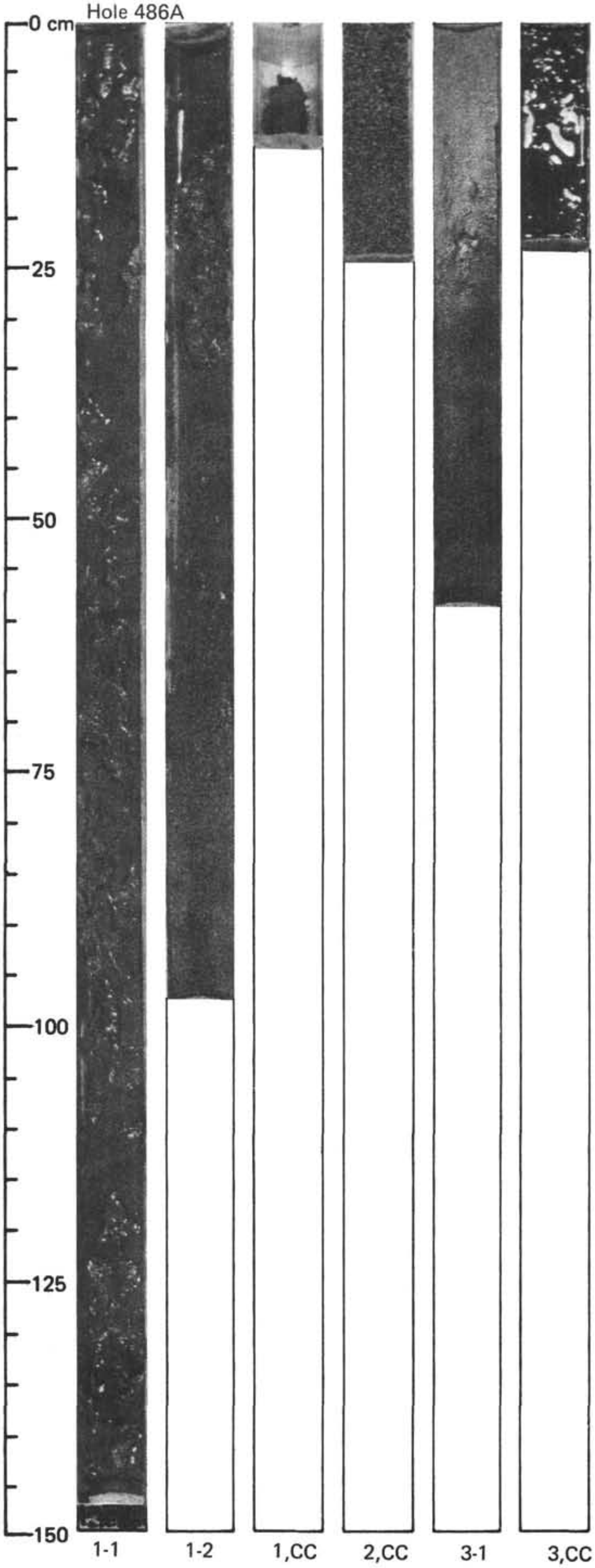
Core-Catcher: MUDDY SAND with lump of olive gray (5Y 3/2) sticky CLAY.

SMEAR SLIDES

	Muddy sand CC (D)
TEXTURE:	
Sand	30
Silt	25
Clay	45
COMPOSITION:	
Quartz	42
Feldspar	1
Mica	2
Heavy minerals	3
Clay	45
Sponge spicules	TR
Plant fragments	2
Carb. unspec.	5


Hole 486
0 cm
25
50
75
100
125
150
3-1
3-2
3-3
3-4
3-5
3-6
3,CC
4,CC
5-1
5-2
5-3
5,CC
6x-1
6x-2


0 cm
Hole 486
25
50
75
100
125
150
6x-3
6x-4


Hole 486A
0 cm
25
50
75
100
125
150
1-1
1-2
1,CC
2,CC
3-1
3,CC