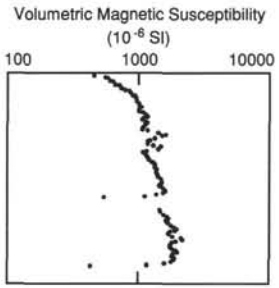
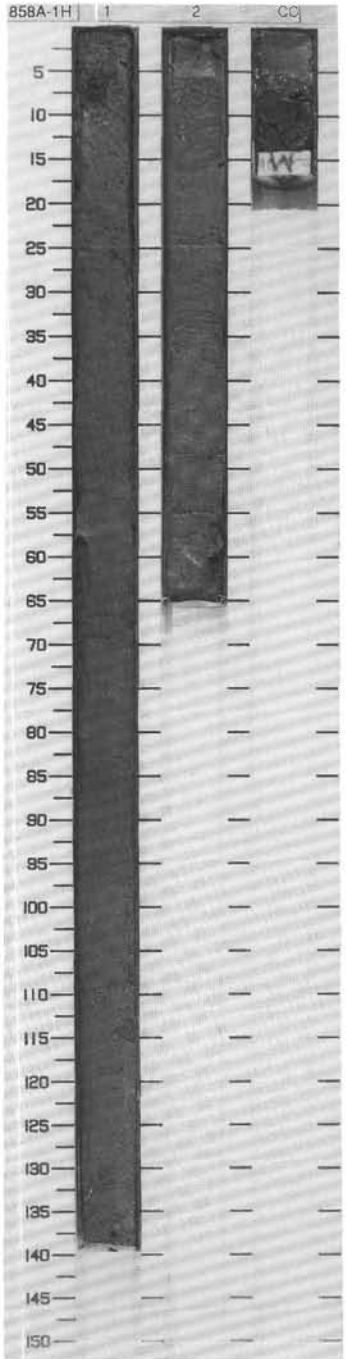


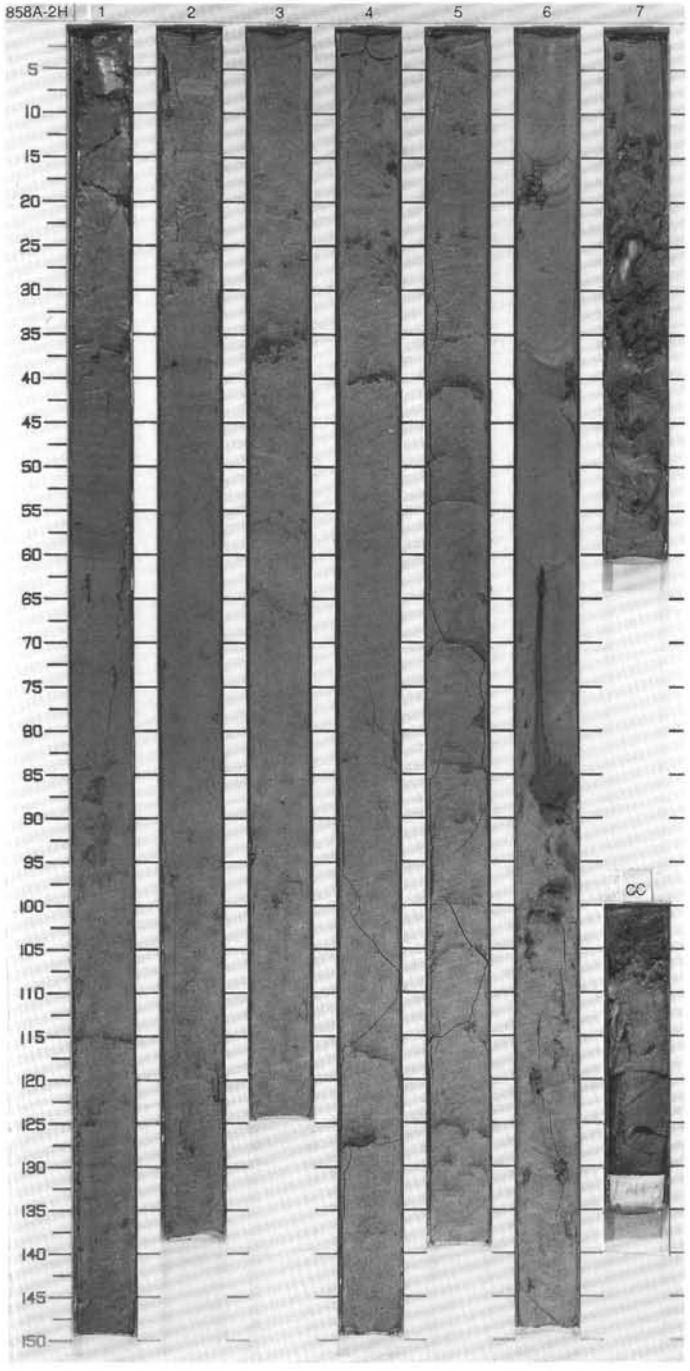
SITE 858 HOLE A CORE 1H CORED 0.0 - 2.4 mbsf

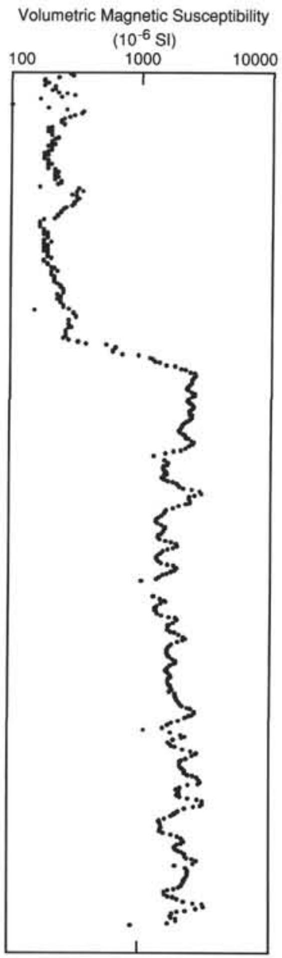
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2		1 2 CC	Holocene ?? uPle	F F F	I I I	W S S M	5GY 5/1 To 2.5Y N 5\ 5G 5/1 To 5GY 4/1	CLAY and SILTY CLAY Major Lithology: Greenish gray (5GY 5/1) to dark greenish gray (5GY 4/1) CLAY and SILTY CLAY. This is interpreted to be a hemipelagic deposit. Minor Lithology: Grayish brown (2.5Y 5/1) SILT. These turbidites generally have sharp bases and either diffuse or sharp tops. General Description: This core has several turbidites, but they are very thin and fine grained, especially compared to other sites. Foraminifers, nannofossils, and diatoms are abundant.



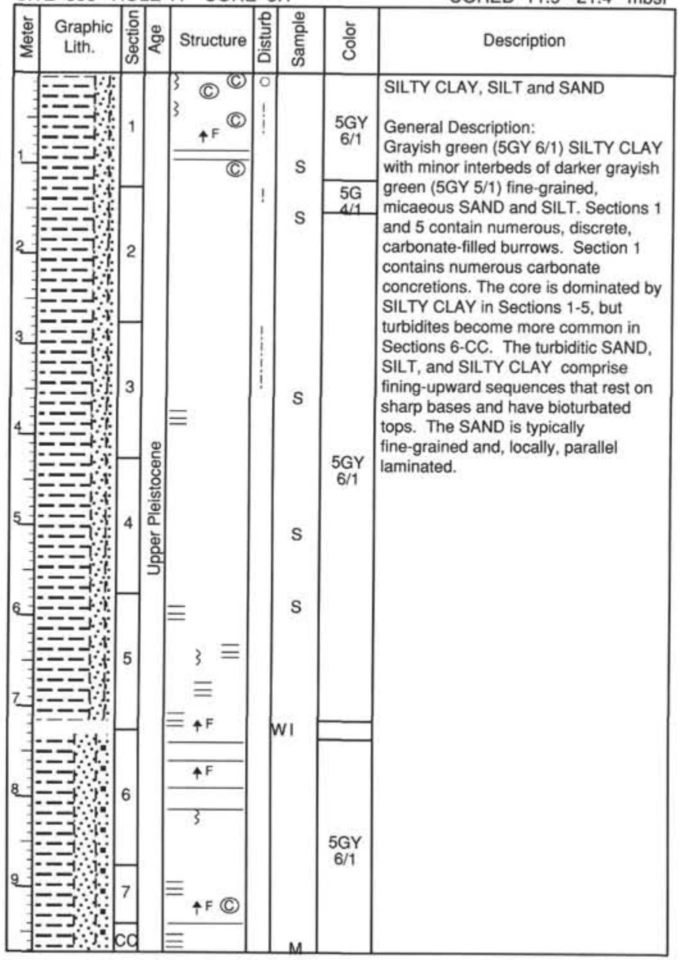
SITE 858 HOLE A CORE 2H CORED 2.4 - 11.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1–9		1–7, CC	Upper Pleistocene	F, ©, ⌀		S, W, I, M	5GY 5/1 To 5G 5/1; N 4/; N 5/; 5G 4/1	SILTY CLAY Major Lithology: Greenish gray (5GY 5/1 to 5G 5/1) SILTY CLAY with gray to black diagenetic sulfides. Minor Lithologies: Greenish gray (5GY 5/1 to 5G 5/1) SILT and SAND turbidites occur mostly in the upper half of the core. They often contain pale bluish green to dark greenish gray (5Gy 4/1) clayey alteration products. This alteration product decreases downcore. The SILT and SAND beds often have sharp bases, diffuse tops, and fine upward. General Description: The lithology changes quite a bit around Section 5. Very few turbidites below Section 4. Pockets of pelecypod shell fragments, white spiculite pockets, bioturbation, and carbonate nodules characterize the lower portion of the core.



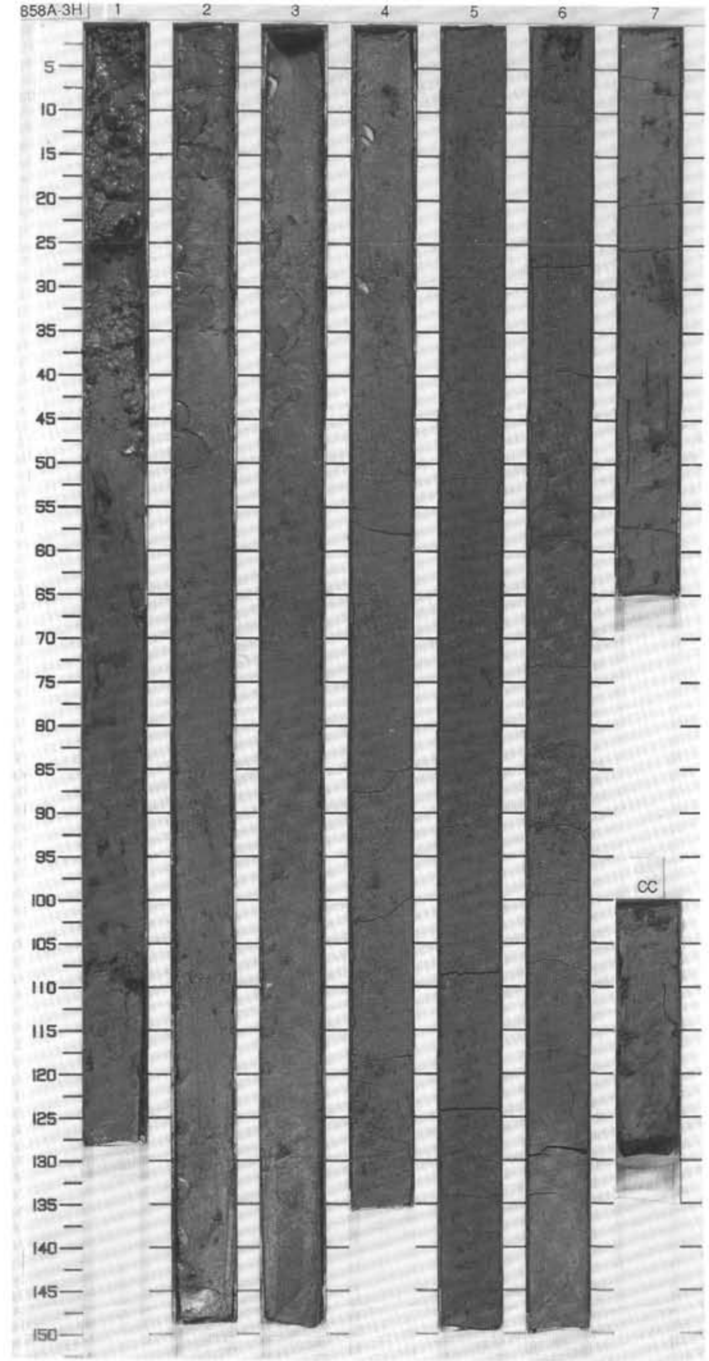


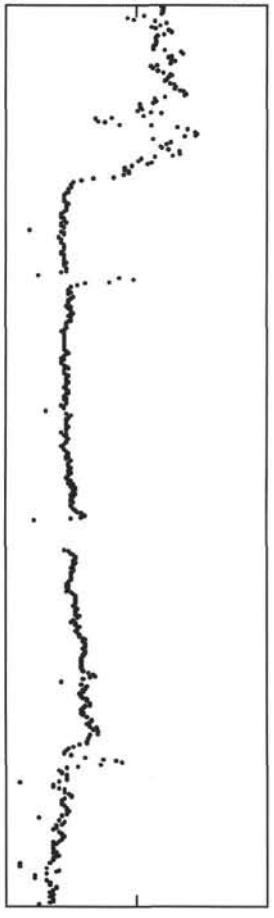
SITE 858 HOLE A CORE 3H CORED 11.9 - 21.4 mbsf



SILTY CLAY, SILT and SAND

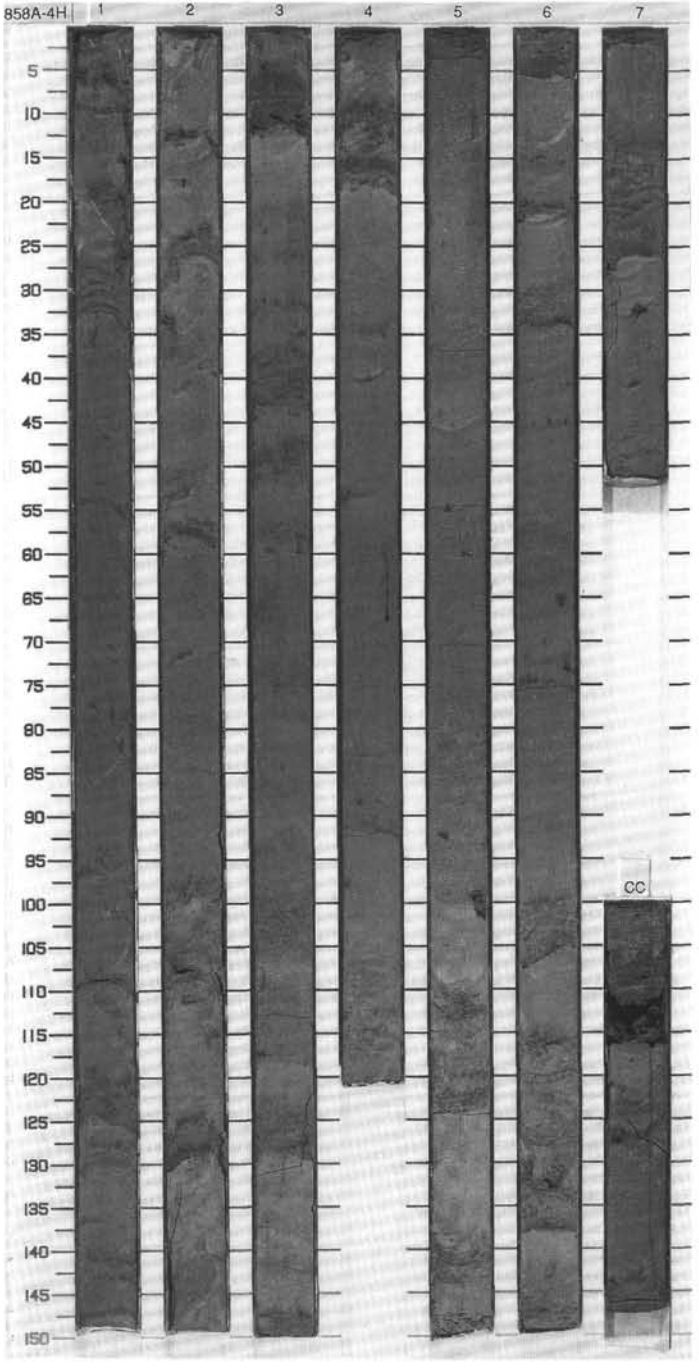
General Description:
Grayish green (5GY 6/1) SILTY CLAY with minor interbeds of darker grayish green (5GY 5/1) fine-grained, micaeous SAND and SILT. Sections 1 and 5 contain numerous, discrete, carbonate-filled burrows. Section 1 contains numerous carbonate concretions. The core is dominated by SILTY CLAY in Sections 1-5, but turbidites become more common in Sections 6-CC. The turbiditic SAND, SILT, and SILTY CLAY comprise fining-upward sequences that rest on sharp bases and have bioturbated tops. The SAND is typically fine-grained and, locally, parallel laminated.

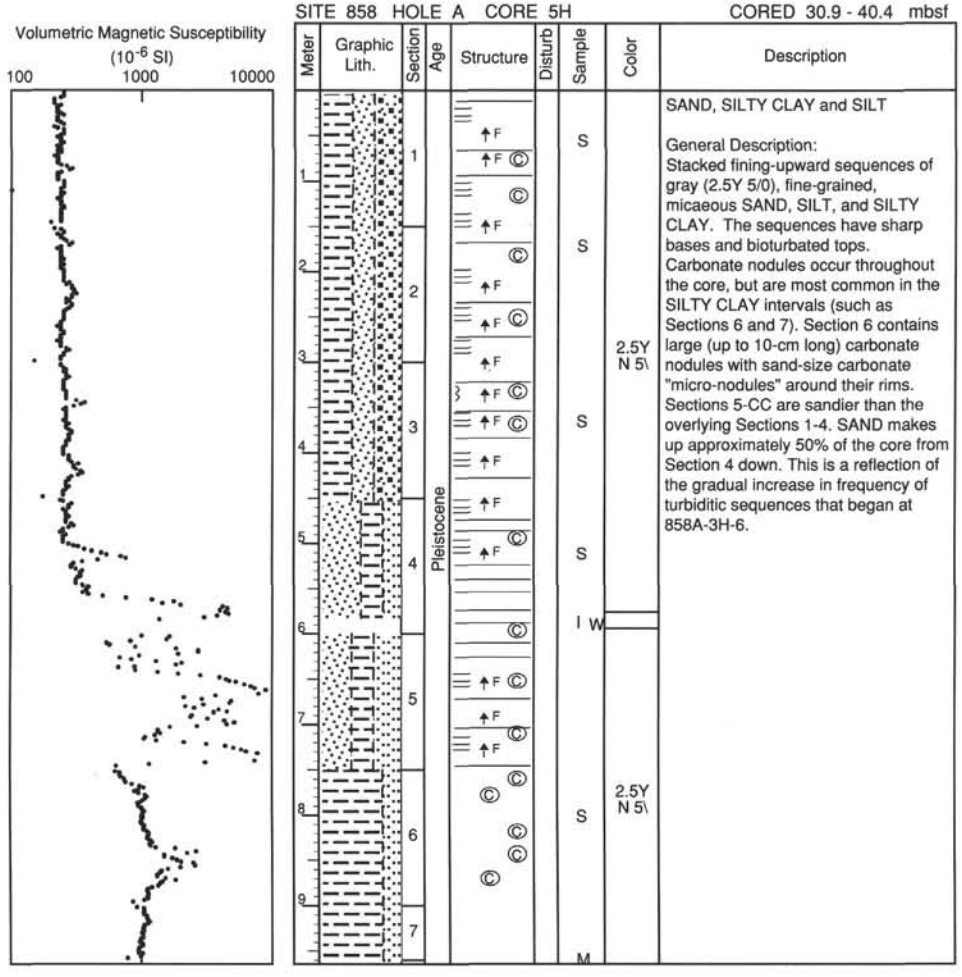


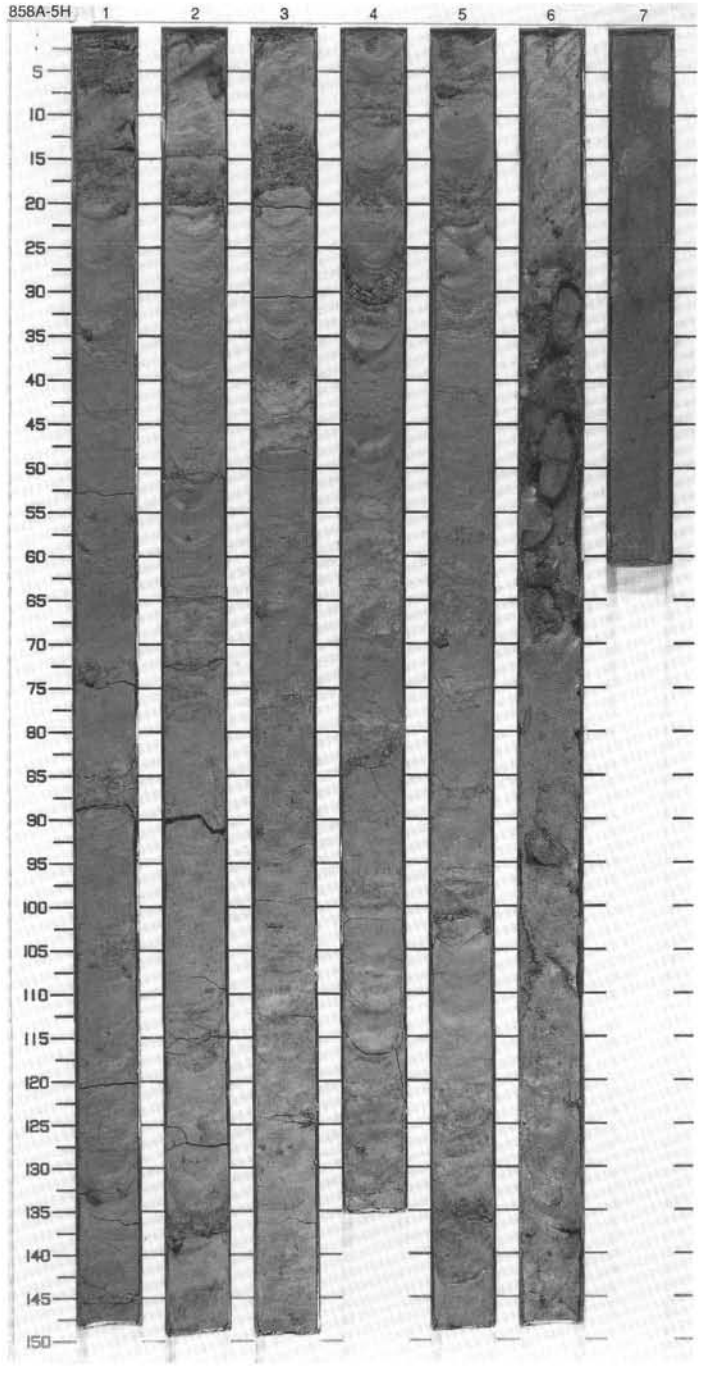


SITE 858 HOLE A CORE 4H CORED 21.4 - 30.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1–9		1–7, CC	Pleistocene			I W, S, S, M	2.5Y N 4\ / 2.5Y N 4\ To 2.5Y N 5\ / 2.5Y N 4\ To 2.5Y N 5\	SILTY CLAY, SILT and SAND General Description: Gray (2.5Y 4/0 to 2.5Y 5/0) SILTY CLAY with minor interbeds of SILT and SAND in distinct, but pervasively bioturbated, fining-upward turbidite sequences. Carbonate nodules are common throughout the core and range in size from a few mm to several cm. Discrete, indentifiable burrows are rare, but mottling is pervasive. The entire core is carbonate-rich; presumably recrystallized calcite. The SAND is locally moderately-well cemented with carbonate. Rare, mm-wide and 2-3 cm long, tubes of siliceous burrowing-filling (?) material are present in Sections 2 and 7 of this core.

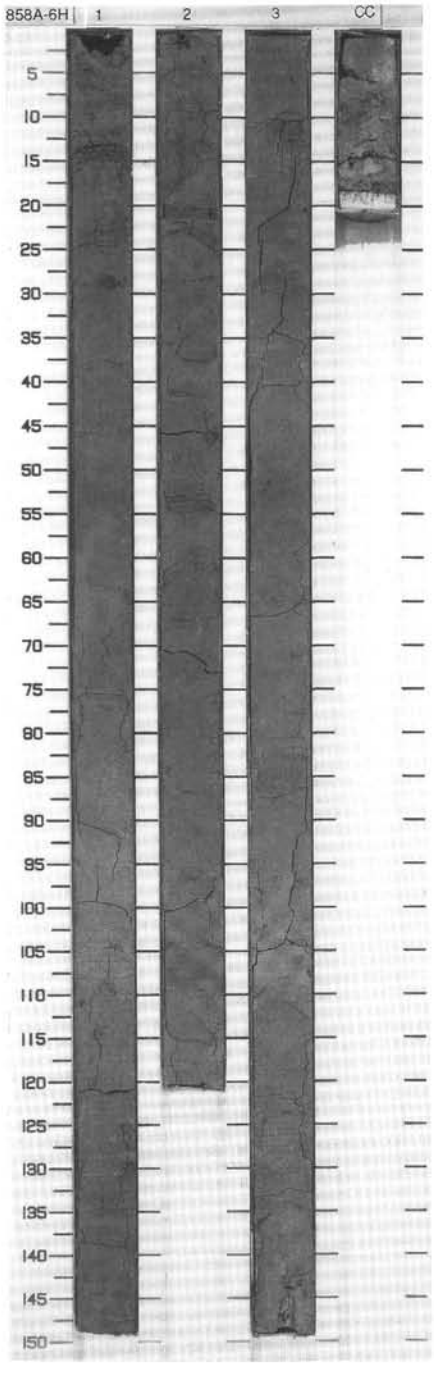


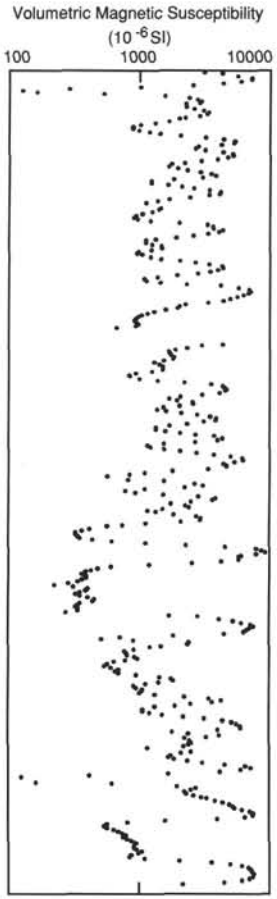

SITE 858 HOLE A CORE 5H
CORED 30.9 - 40.4 mbsf
Volumetric Magnetic Susceptibility
(10-6 SI)
100
1000
10000
Meter
Graphic Lith.
Section
Age
Structure
Disturb
Sample
Color
Description
Pleistocene
SAND, SILTY CLAY and SILT
General Description:
Stacked fining-upward sequences of gray (2.5Y 5/0), fine-grained, micaeous SAND, SILT, and SILTY CLAY. The sequences have sharp bases and bioturbated tops. Carbonate nodules occur throughout the core, but are most common in the SILTY CLAY intervals (such as Sections 6 and 7). Section 6 contains large (up to 10-cm long) carbonate nodules with sand-size carbonate "micro-nodules" around their rims. Sections 5-CC are sandier than the overlying Sections 1-4. SAND makes up approximately 50% of the core from Section 4 down. This is a reflection of the gradual increase in frequency of turbiditic sequences that began at 858A-3H-6.
2.5Y N 5\
2.5Y N 5\


858A-5H
1
2
3
4
5
6
7

SITE 858 HOLE A CORE 6H CORED 40.4 - 49.9 mbsf

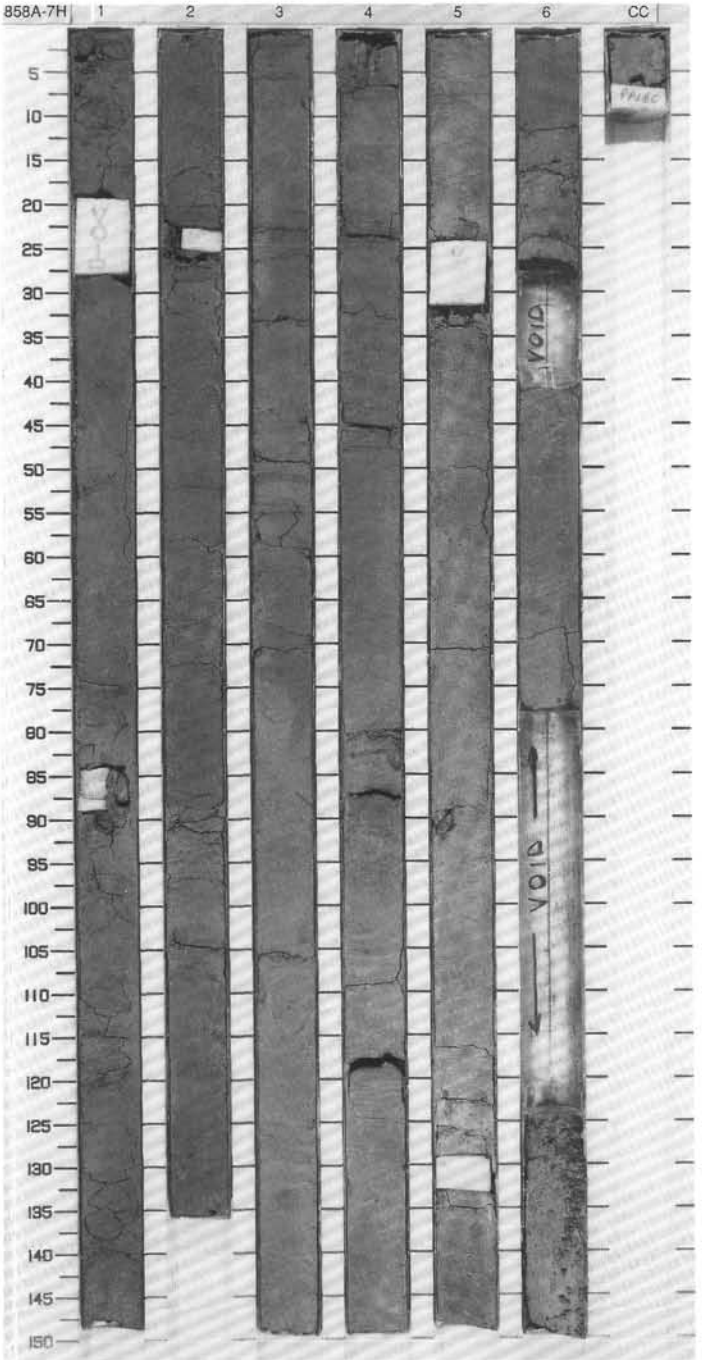
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2 3 4		1 2 3 CC	Pleistocene	© P		I W M	2.5Y N 5\ To 2.5Y N 4\ 2.5Y N 5\ To 2.5Y N 4\	SILTY CLAYSTONE, SANDSTONE and SILTSTONE General Description: This core consists of drilling biscuits of parallel- and micro cross- laminated SILTSTONE and fine-grained SANDSTONE surrounded by structureless SILTY CLAYSTONE. Pyrite is present as micro-nodules, in laminations, and as coarse, disseminated grains. Carbonate micronodules are common. A hydrocarbon (tar) coated burrow(?) or small fracture(?) is present at SEction 3, 137 cm.

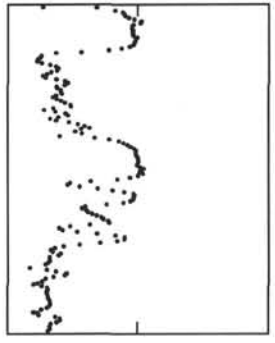




SITE 858 HOLE A CORE 7H CORED 49.9 - 58.9 mbsf

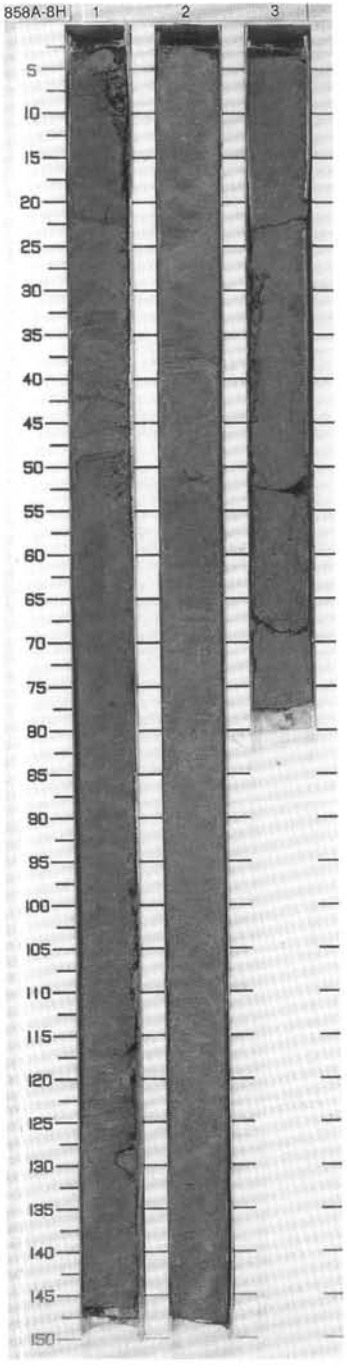
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1–9	Void; Void	1–6	Pleistocene	© P		S; S; I W; M	2.5Y N 5\ To 2.5Y N 4\; 2.5Y N 5\ To 2.5Y N 4\	SILTY CLAYSTONE, SILTSTONE and SANDSTONE Major Lithologies: This entire core is moderately to very disturbed by coring. Drilling biscuits abound. The biscuits consist of well-indurated fine- to medium-grained SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. Individual fining-upward sequences are present, but difficult to interpret because of the drilling disturbance. The sequences contain parallel laminations, wavy laminations, convolute bedding, and ripple laminations. Minor Lithologies: Several of the SILTY CLAYSTONE intervals (Section 1, 30-33 cm; Section 2, 30-50 cm, 85-74 cm; and Section 3, 88-96 cm) contain concentrations (up to 10%) of recrystallized, sand-size, light brown, foraminifers. In some cases the forams are recrystallized enough to look like micro-nodules. They produce a distinctive, bumpy surface texture.

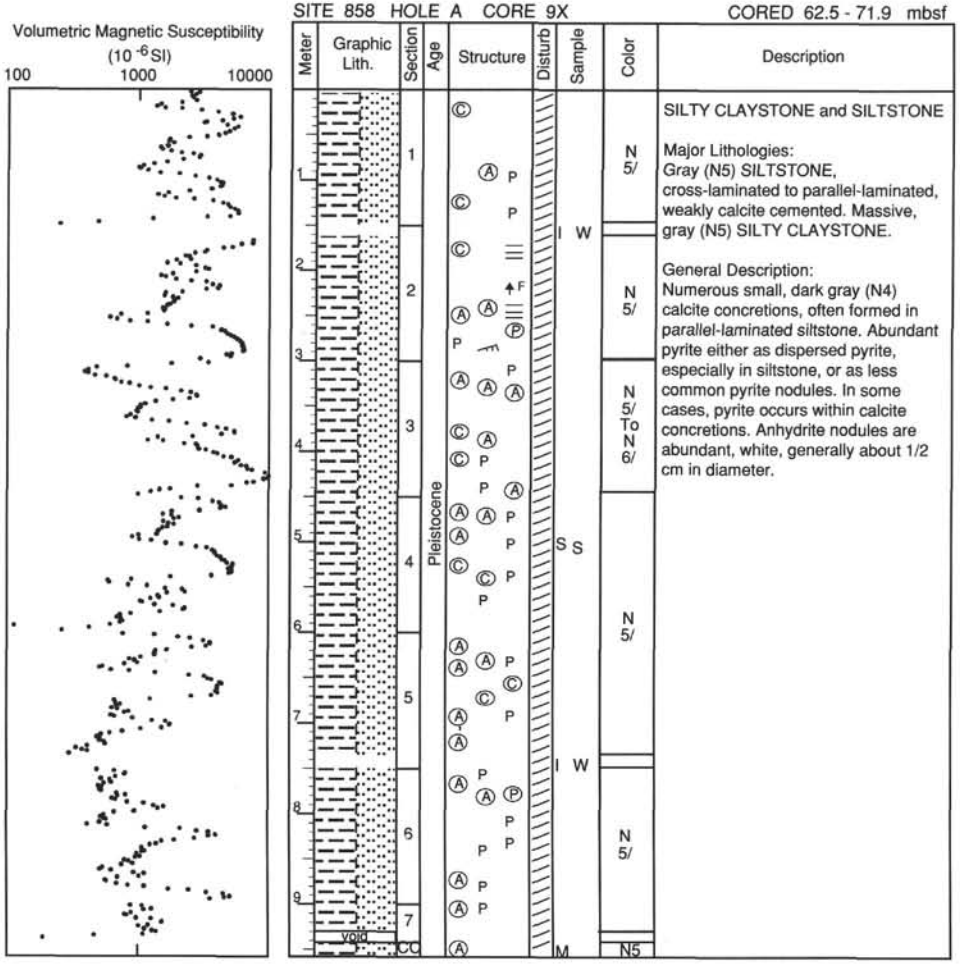


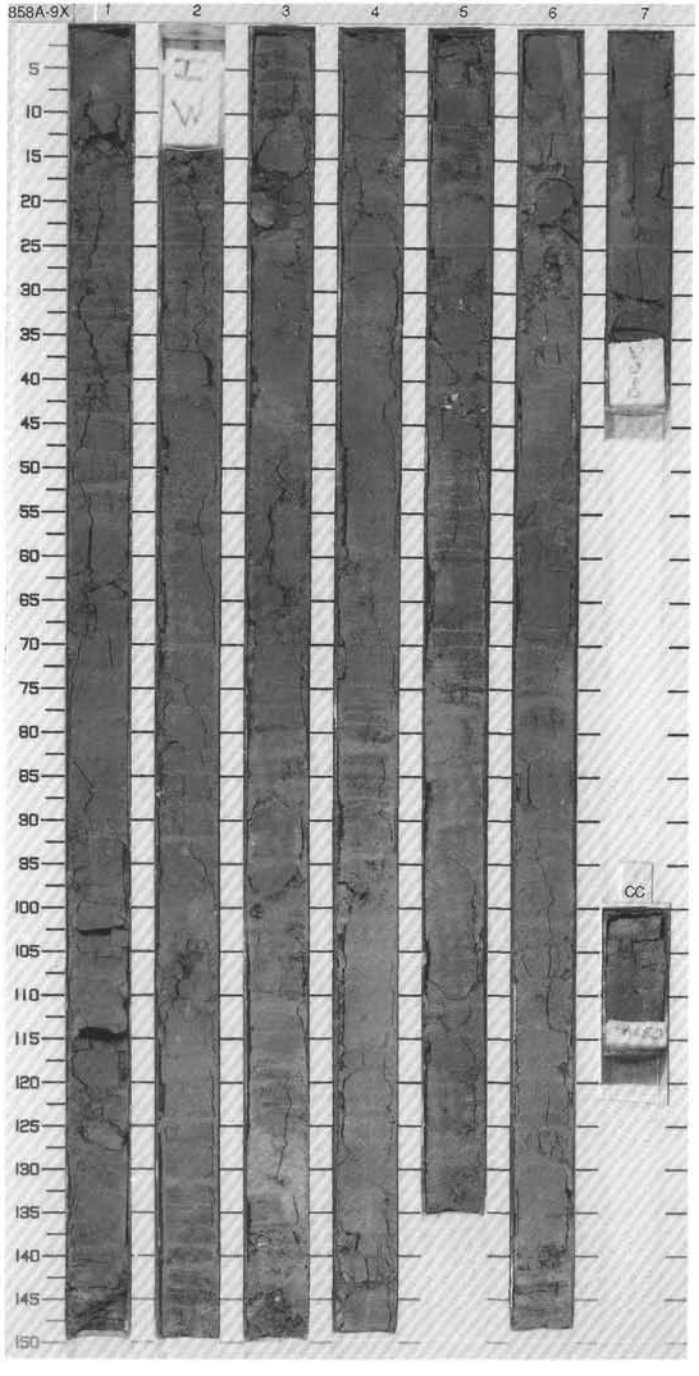


SITE 858 HOLE A CORE 8H CORED 58.9 - 62.5 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2 3		1 2 3	Pleistocene	P P P P ©	wwwww	S S M	2.5Y N 5\ To 2.5Y N 4\	SANDSTONE, SILTSTONE and SILTY CLAYSTONE General Description: Drilling breccia and highly disturbed core consisting of blocks of parallel-, ripple-laminated, and massive medium- to fine-grained SANDSTONE and SILTSTONE surrounded by homogenous masses of foram-rich (locally) SILTY CLAYSTONE. A carbonate nodule is present at Section 3, 28-30 cm. Section 3 also contains foram-rich (light brown recrystallized foraminifers) SILTY CLAYSTONE from 28 cm to the base of the core.




Volumetric Magnetic Susceptibility
(10 -6 SI)
100
1000
10000
SITE 858 HOLE A CORE 9X
CORED 62.5 - 71.9 mbsf
Meter
Graphic Lith.
Section
Age
Structure
Disturb
Sample
Color
Description
Pleistocene
void
CC
SILTY CLAYSTONE and SILTSTONE
Major Lithologies:
Gray (N5) SILTSTONE, cross-laminated to parallel-laminated, weakly calcite cemented. Massive, gray (N5) SILTY CLAYSTONE.
General Description:
Numerous small, dark gray (N4) calcite concretions, often formed in parallel-laminated siltstone. Abundant pyrite either as dispersed pyrite, especially in siltstone, or as less common pyrite nodules. In some cases, pyrite occurs within calcite concretions. Anhydrite nodules are abundant, white, generally about 1/2 cm in diameter.
N 5/
N 5/
N 5/ To N 6/
N 5/
N 5/
N5


858A-9X
1
2
3
4
5
6
7
CC

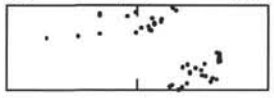
SITE 858 HOLE A CORE 10P CORED 71.9 - 72.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	Ple		WW	S	N 5/	SILTY CLAYSTONE and CLAYEY SILTSTONE

Major Lithologies:
Gray (N5) CLAYEY SILTSTONE and SILTY CLAYSTONE. Very badly disturbed by drilling.

Volumetric Magnetic Susceptibility (10^{-6} SI)

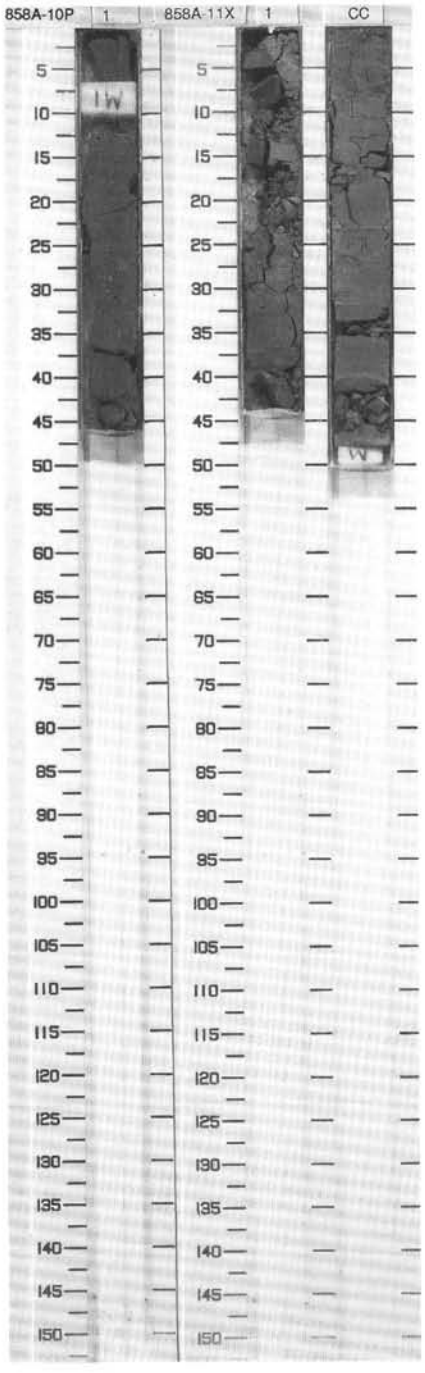
100 1000 10000

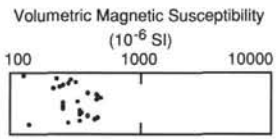


SITE 858 HOLE A CORE 11X CORED 72.9 - 81.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	Ple	P	WWWW	S	N 5/	SILTSTONE, SANDSTONE and SILTY CLAY
				A P		W		
		CC				M	N 5/	

Major Lithology:
Interbedded gray fine grained SANDSTONE, SILTSTONE and SILTY CLAY, cross-laminated in places, intensely deformed by drilling.

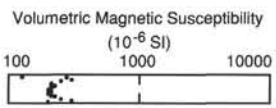




SITE 858 HOLE A CORE 12X — CORED 81.6 - 91.3 mbsf

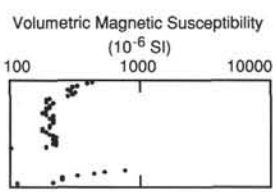
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	Ple	Ca Ca Ca	WWW	M	N 5/	SILTY CLAY, SILTSTONE and SANDSTONE Major Lithology: Gray (N5/) moderately indurated bioturbated SILTY CLAY interbedded with SANDSTONE and SILTSTONE. Large grayish brown (2.5Y 5/2) calcite concretions occur between 0 and 5 cm in Section 1 and between 10 and 15 cm in Section 2.
		CC						

858A 13X NO RECOVERY



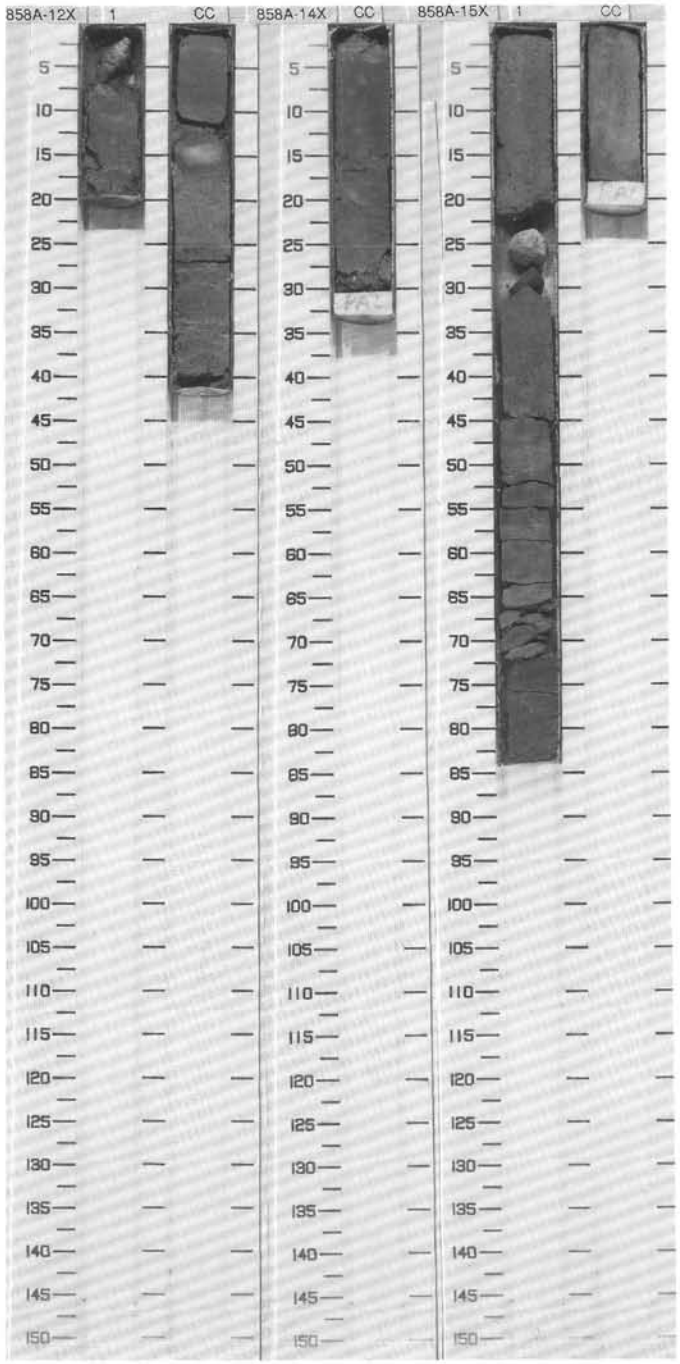
SITE 858 HOLE A CORE 14X — CORED 101.0 - 110.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	Ple	P	W	M		SILTY CLAY, SILTSTONE and SANDSTONE Major Lithology: Gray (N5/) moderately indurated SILTY CLAY interbedded with cross-laminated pale to medium gray fine-grained SANDSTONE and SILTSTONE. Anhydrite and pyrite nodules occur along bedding planes. Calcite cement is common in the silty and sandy units.



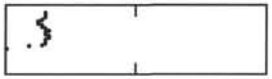
SITE 858 HOLE A CORE 15X — CORED 110.6 - 120.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?	P		I M S	2.5Y N 4\	SILTY CLAYSTONE, SILSTONE and SANDSTONE Major Lithology: Gray (2.5Y 5/0) SILTY CLAYSTONE, moderately bioturbated, interbedded with gray laminated SILTSTONE and fine grained SANDSTONE turbidites with sharp bases and gradational tops. Convolutely deformed between 45 and 50 cm. Pyrite concretions aligned along bedding planes are common at 75-77 cm. Authigenic euhedral tabular clear crystals, 4-8 mm long, of what is probably anhydrite are distributed randomly through SILTY CLAYSTONE.
		CC						



Volumetric Magnetic Susceptibility (10^{-6} SI)

100 1000 10000



SITE 858 HOLE A CORE 16X CORED 120.3 - 129.9 mbsf

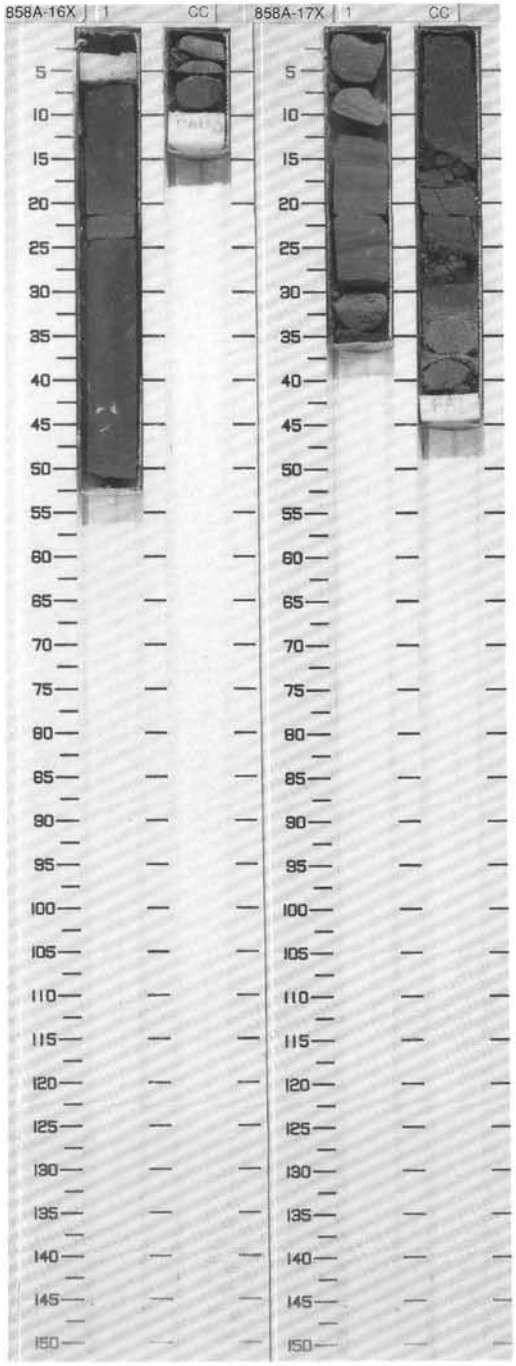
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?	F		M W	N 5/	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Turbiditic medium- to fine-grained SANDSTONE grading to SILTSTONE and SILTY CLAYSTONE. The SILTY CLAYSTONE intervals contain crystals and molds of anhydrite. Parallel laminations are common in the SANDSTONE and SILTSTONE.

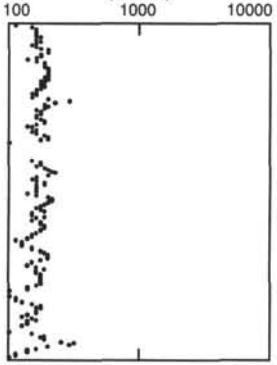
Volumetric Magnetic Susceptibility (10^{-6} SI)

100 1000 10000

SITE 858 HOLE A CORE 17X CORED 129.9 - 139.6 mbsf

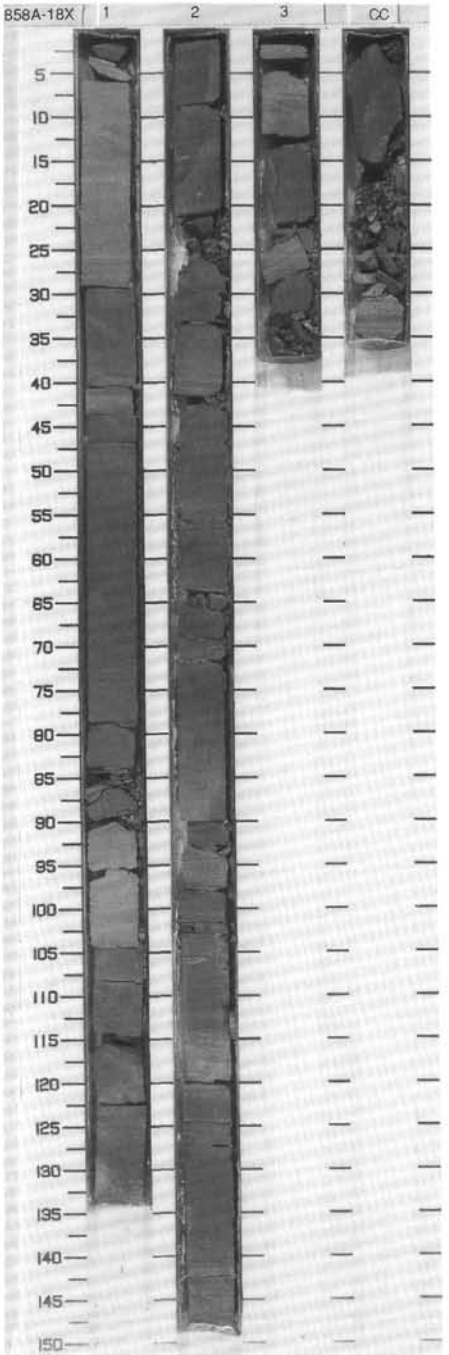
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?	F F		M	7.5YR N 6/0	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Fining-upward sequences of SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. The SANDSTONE is typically parallel laminated and locally cross laminated. The SILTSTONE is typically parallel laminated. The SILTY CLAYSTONE contains anhydrite molds and crystals.



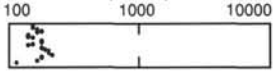


SITE 858 HOLE A CORE 18X CORED 139.6 - 149.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1	?	F, P, F		S	7.5YR N 7/0 To 2.5Y N 3\	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Stacked fining-upward sequences of turbiditic SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. Several of the fining-upward sequences are amalgamated sand-on-sand sequences. The SANDSTONE is light gray (2.5Y 7/0) to gray (2.5Y 6/0), medium- to fine-grained, quartzo-feldspathic, and contains traces of anhydrite. It typically overlies sharp erosional contacts, is commonly massive, planar laminated, or ripple laminated, and locally convolute bedded. The overlying SILTSTONE is texturally and compositionally similar to the SANDSTONE, but most commonly exhibits parallel lamination and is locally bioturbated. The SILTY CLAYSTONE is very dark gray (2.5Y 3/0) to dark gray (2.5Y 4/0), exhibits faint parallel laminations, is pervasively bioturbated, and contains abundant anhydrite crystals and crystal molds. Pyrite is present in trace amounts in some of the SANDSTONE intervals and, rarely, as burrow-filling material. Minor Lithologies: Rhombic, white to translucent ANHYDRITE crystals are common in the SILTY CLAYSTONE. Some intervals contain up to 10% crystals; 3% is common. The crystals display a vague preferred orientation that is parallel to bedding.
2		2		F, F, F		I W		
3		3		P, F, F	W	S	7.5YR N 7/0 To 2.5Y N 3\	
		CC		F		M		



Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

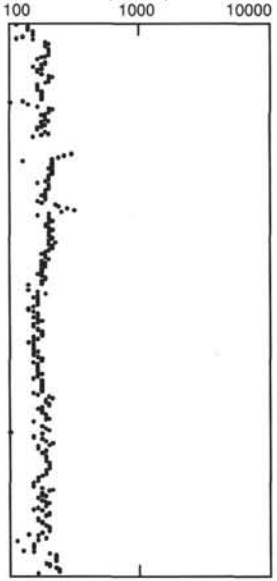


SITE 858 HOLE A CORE 19X CORED 149.3 - 159.0 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?			M	2.5Y N 5\	SILTY CLAYSTONE, SANDSTONE and SILTSTONE

General Description:
Two fining-upward sequences of medium-grained SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. The units exhibit cross laminations, parallel laminations, and bioturbation. Anhydrite crystals are present in the SILTY CLAYSTONE intervals.

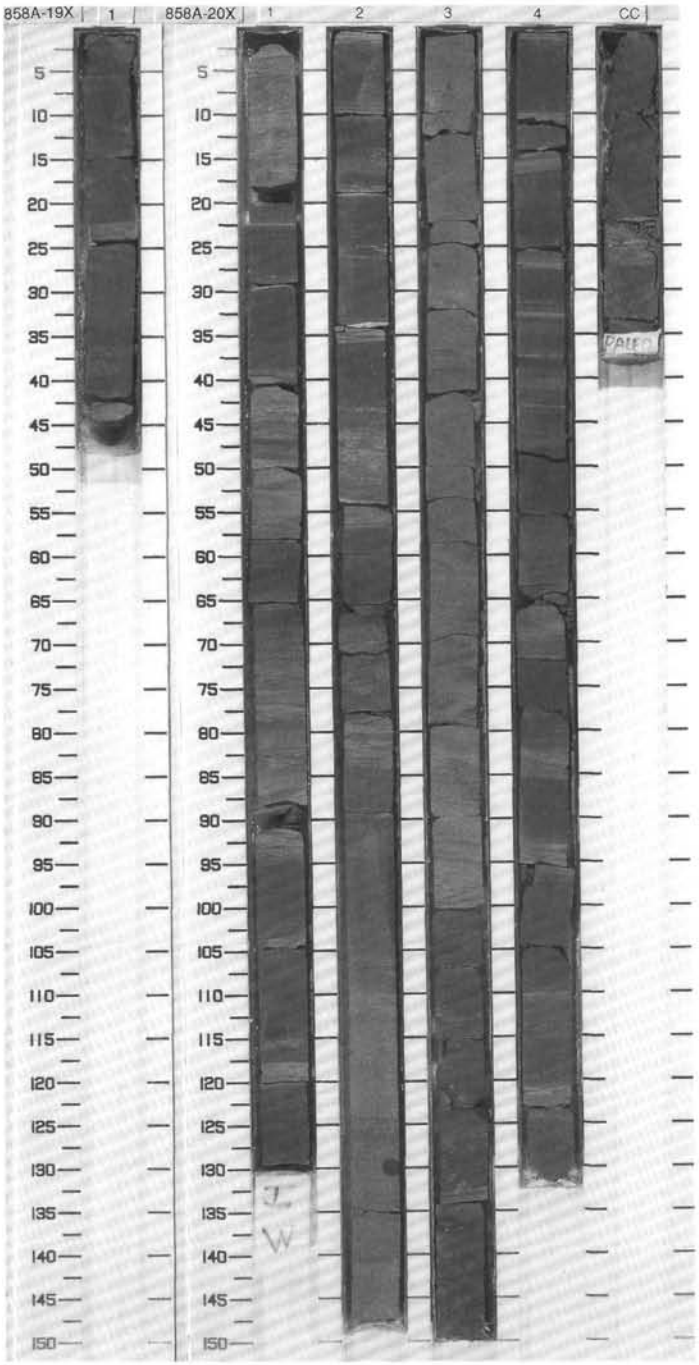
Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

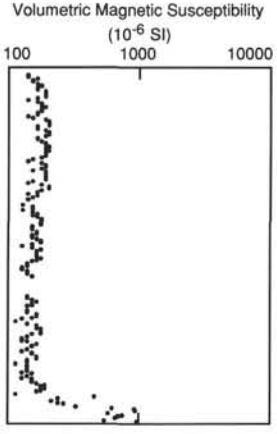


SITE 858 HOLE A CORE 20X CORED 159.0 - 168.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1	?	F F		I	2.5Y N3/0 To 2.5Y N6/0	SANDSTONE, SILTSTONE and SILTY CLAYSTONE
2		2		P P		S		
3		3		A C P P F		S	2.5Y N3/0 To 2.5Y N6/0	
4		4		P A C P F		S		
5		CC		F		M		

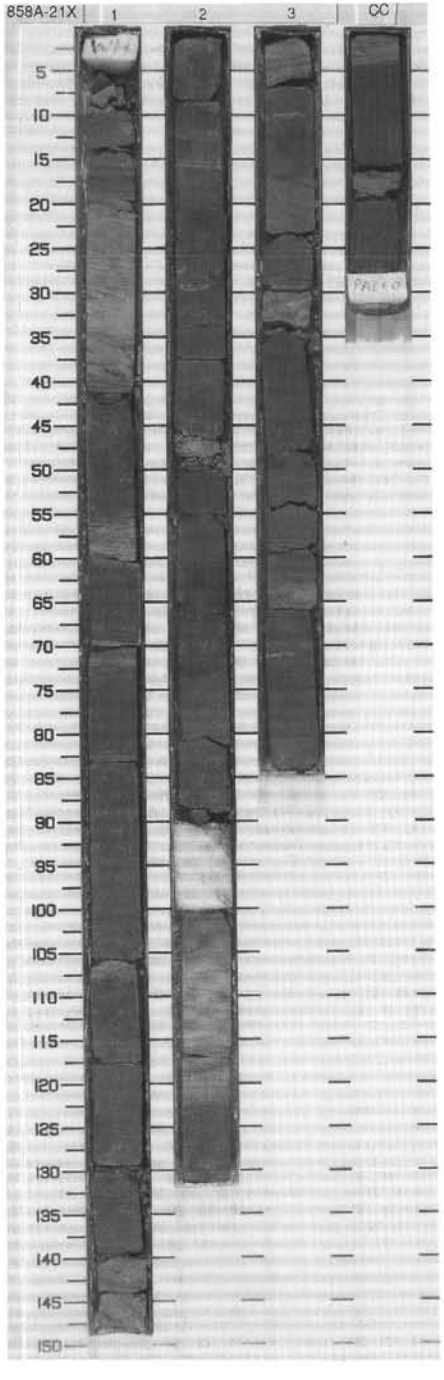
Major Lithologies:
Stacked fining-upward sequences of medium- to fine-grained SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. SANDSTONE is typically gray to light gray (2.5Y 6/0 to 2.5Y 7/0), and the SILTY CLAYSTONE is typically dark to very dark gray (2.5Y 4/0 to 2.5). This core contains the thickest single turbidite sequence cored to date. The sequence from Section 3, 100 cm to Section 2, 84 cm is 166 cm thick and has a 73-cm thick, rippled to planar laminated, medium- to fine-grained SANDSTONE overlying its sharp base. The SANDSTONE fines upward into planar laminated and bioturbated SILTSTONE and then into bioturbated and faintly laminated SILTY CLAYSTONE. Disseminated pyrite is present in the basal sandy interval and in the uppermost clayey interval of this turbidite. Most of the turbidites in this core contain 50% silt and coarser sediment, exhibit ripple- and convolute-bedding near their bases, and contain interspersed lenses and laminations of fine SANDSTONE and SILTSTONE throughout the finer-grained intervals. Carbonate nodules are present at Section 1, 114-115 cm; Section 2, 130 cm; and Section 3, 137-138 cm. The nodules in Sections 2 and 3 have anhydrite rims; the one in Section 3 has a rim of coarsely-crystalline anhydrite.



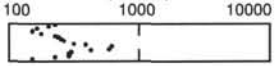


SITE 858 HOLE A CORE 21X CORED 168.6 - 178.2 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2 3		1 2 3 CC	?	F P A P F P F P P		W S S I M	2.5Y N3/0 To 2.5Y N6/0 2.5Y N3/0 To 2.5Y N6/0	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Light gray to gray, medium- to fine-grained SANDSTONE, gray SILTSTONE, and dark to light gray SILTY CLAYSTONE *in stacked*, fining-upward, turbidite sequences. Ripple laminations, planar laminations, and convolute bedding are common in the SANDSTONE. Planar laminations and convolute bedding are common in the SILTSTONE. Bioturbation is pervasive in the SILTY CLAYSTONE. The bioturbation takes several forms. Light gray SILTY CLAYSTONE is typically homogenized by burrowing and contains only local distinct, individual burrows. The dark gray SILTY CLAYSTONE commonly contains discreet large-scale (several cm) horizontal and vertical burrows and has a general mottled texture. The dark gray SILTY CLAYSTONE also commonly contains high concentrations of small-scale individual burrows. General Description: The turbidites in this core occur in the following characteristic sequence: 1) sharp basal contact, 2) graded medium- to fine-grained SANDSTONE with ripples and/or convolute bedding at base and planar laminations at top, 3) interbedded fine-grained SANDSTONE and SILTSTONE, and SILTY CLAYSTONE with common small-scale, individual burrows, 4) interbedded, wavy laminated, convolute bedded, and locally bioturbated SILTSTONE and SILTY CLAYSTONE, 5) dark gray SILTY CLAYSTONE with abundant small-scale individual burrows grading upward to sparesly burrowed, dark gray SILTY CLAYSTONE, 6) dark gray SILTY CLAYSTONE with discreet large-scale horizontal and vertical burrows, 7) mottled light gray SILTY CLAYSTONE.



Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

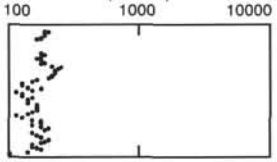


SITE 858 HOLE A CORE 22X CORED 178.2 - 187.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?	P P		M	2.5Y N 4\	SILTSTONE and SILTY CLAYSTONE

Major Lithologies:
Dark gray SILTY CLAYSTONE with disseminated anhydrite crystals and gray SILTSTONE with faint parallel laminations and trace amounts of disseminated pyrite.

Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

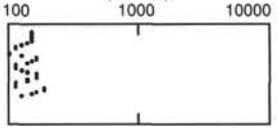


SITE 858 HOLE A CORE 23X CORED 187.9 - 197.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1 CC		P	?	I W S S M	2.5Y N 4\ To 2.5Y N 2\	SANDSTONE, SILTSTONE and SILTY CLAYSTONE

Major Lithologies:
Turbiditic SANDSTONE, *SILTSTONE*, and SILTY CLAYSTONE with parallel laminations, bioturbation, disseminated and nodular pyrite, and disseminated anhydrite crystals.

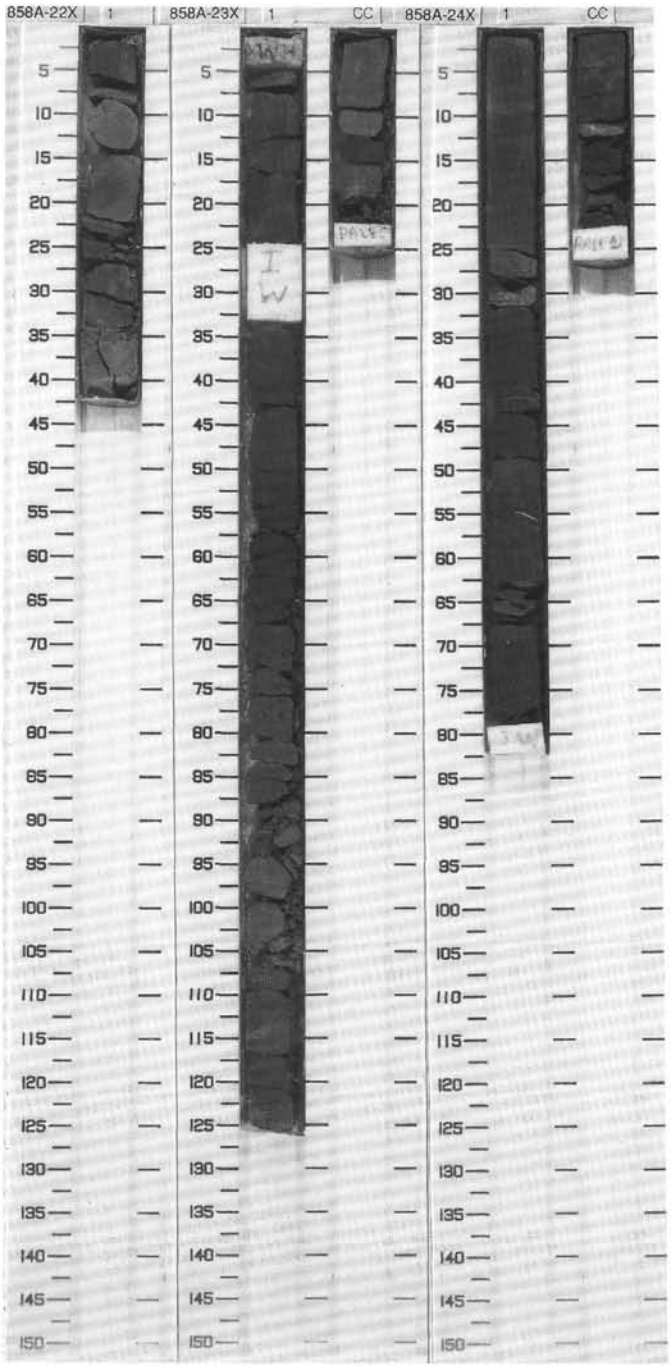
Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000



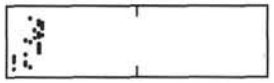
SITE 858 HOLE A CORE 24X CORED 197.6 - 207.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1 CC		P P	?	I M	2.5Y N 4\	SILTSTONE, SILTY CLAYSTONE and SANDSTONE

Major Lithologies:
Fining-upward sequences of SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. Sedimentary structures include parallel laminations, and bioturbation. Mud clasts are *present at the base of the sequences* that begin at Section 1, 9 cm and 25 cm and in the SILTSTONE interval from 54-56 cm in Section 1.



Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000



SITE 858 HOLE A CORE 25X CORED 207.3 - 216.9 mbsf

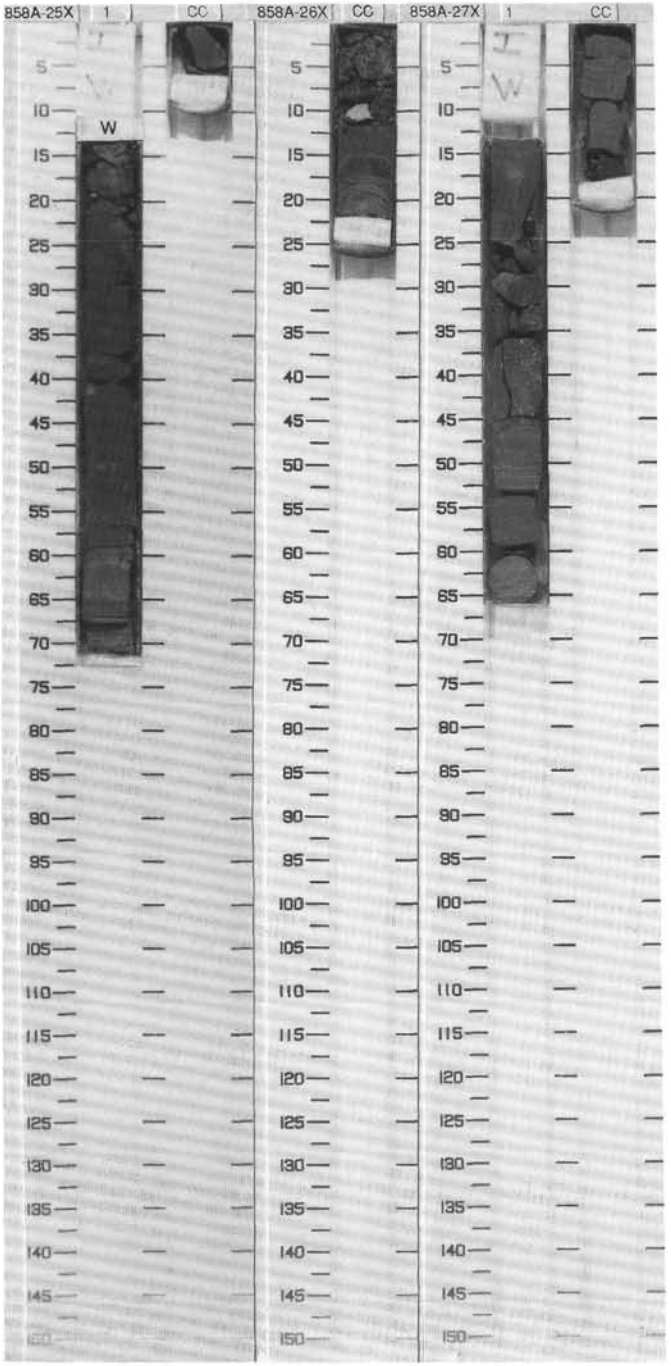
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?			I W M	2.5Y N4/0	SILTSTONE, SANDSTONE and SILTY CLAYSTONE Major Lithologies: Dark gray SILTY CLAYSTONE and gray to light gray SILTSTONE and medium- to fine-grained SANDSTONE. The SANDSTONE and SILTSTONE is planar laminated and cross laminated, locally bioturbated, and contains traces of disseminated pyrite.

SITE 858 HOLE A CORE 26X CORED 216.9 - 226.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	?		X	S M S		SILTY CLAYSTONE, SANDSTONE and SILTSTONE Major Lithologies: Drilling-disturbed gray SILTY CLAYSTONE, SILTSTONE, and SANDSTONE. One fragment of light green SILTSTONE is present in the drilling breccia. It is different from the rests of the clasts in color only. There are also several 1-3 mm pyrite spheroids present.

SITE 858 HOLE A CORE 27X CORED 226.6 - 236.2 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?			I W M	2.5Y N 4\	SILTSTONE and SILTY CLAYSTONE Major Lithologies: Dark gray SILTY CLAYSTONE and SILTSTONE, slightly pyritic and locally laminated. The core is cut by a high angle normal fault with 16 cm of offset (Section 1, 13-56 cm) and contains a flame structure at Section 1, 56 cm. The fault is lined with anhydrite and contains some pyrite.



SITE 858 HOLE A CORE 28X — CORED 236.2 - 245.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	?	P	W	M		SILTSTONE and SANDSTONE

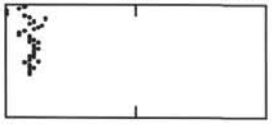
Major Lithologies:
This core consists of drilling fragments of fine-grained SANDSTONE and SILTSTONE, some with up to 5% pyrite. Most of the fragments are laminated.

SITE 858 HOLE A CORE 29X — CORED 245.9 - 255.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?	P P		I M	N6 N6	SANDSTONE

Major Lithology:
Light gray, cross laminated and parallel laminated, medium- to lower coarse-grained SANDSTONE with disseminated pyrite. Possible carbonized wood fragments are present at Section 1, 28-29 cm.

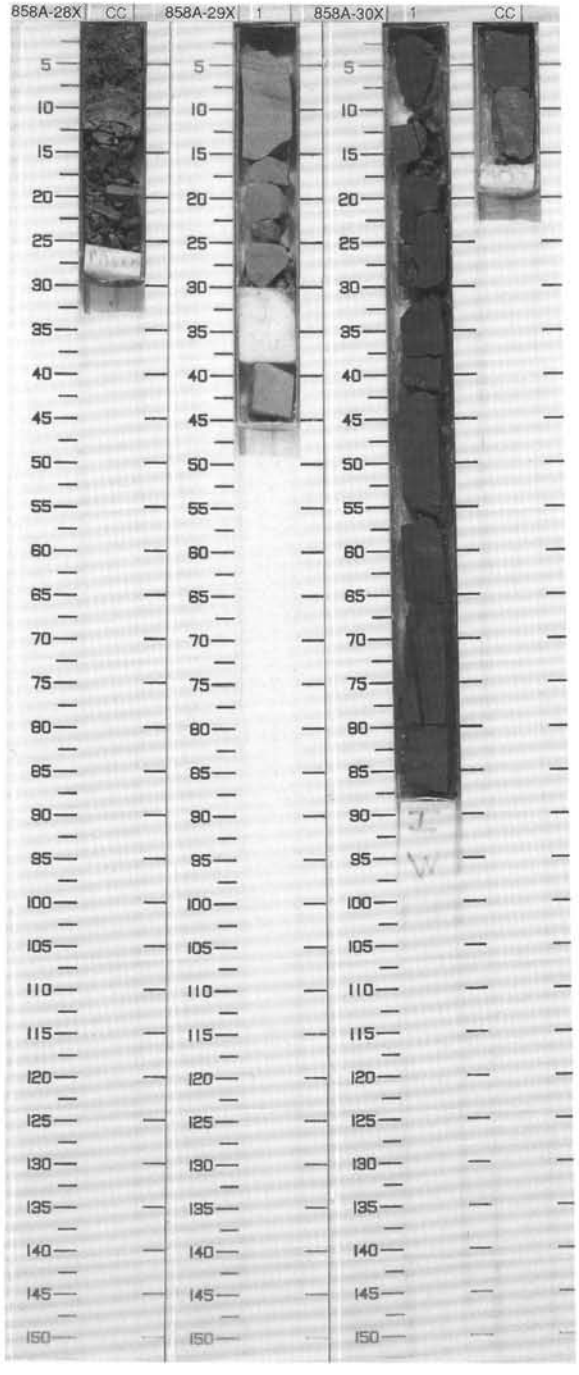
Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

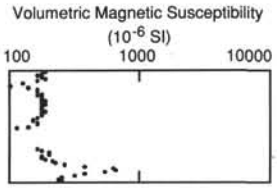


SITE 858 HOLE A CORE 30X — CORED 255.6 - 265.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?	P P P Ⓟ P P P P P		S I M	2.5Y N 2\	SILTY CLAYSTONE

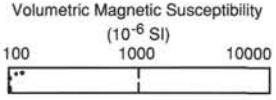
Major Lithology:
Dark gray SILTY CLAYSTONE with rare parallel laminations and disseminated pyrite. Some of the pyrite is coarse-grained and euhedral.





SITE 858 HOLE A CORE 31X CORED 265.3 - 274.5 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1	?	P P P	VV	I M	2.5Y N4/0 2.5Y N4/0	SILTY CLAYSTONE and SILTSTONE Major Lithologies: Blackish gray SILTY CLAYSTONE with faint parallel laminations and disseminated coarse-grained pyrite crystals. Most of the pyrite is filling voids, possibly of former anhydrite, and shows are preferred, bedding parallel orientation. Section CC 38-40 cm is SILTSTONE with a small pyrite nodule.
		CC						



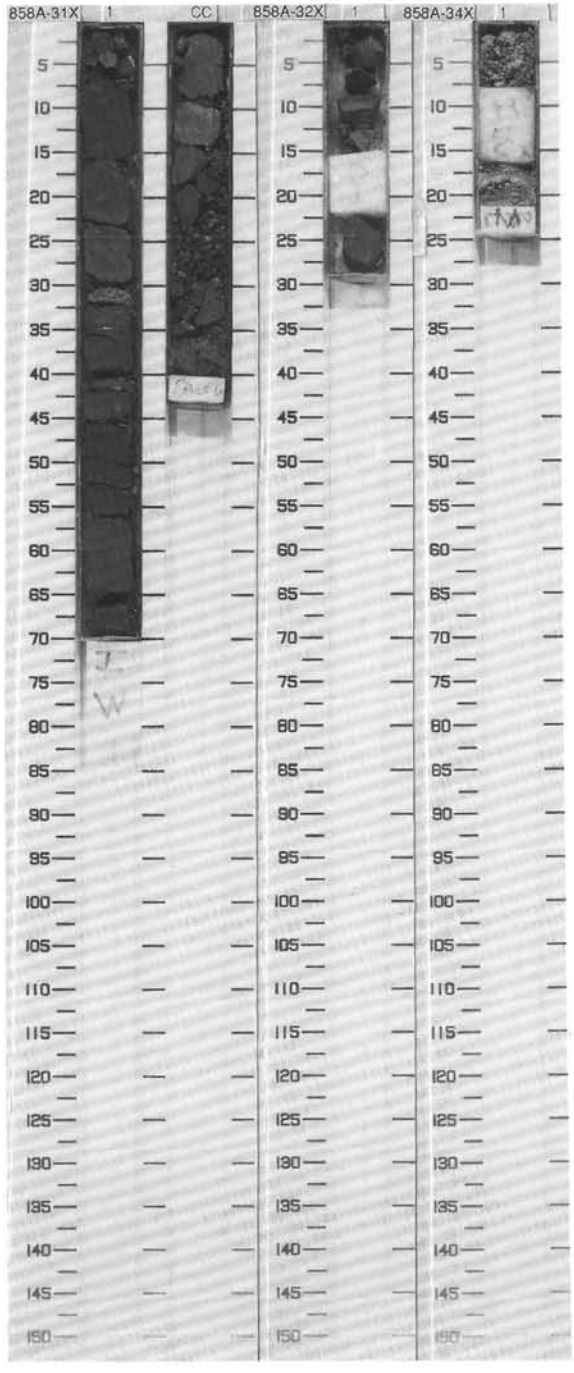
SITE 858 HOLE A CORE 32X CORED 274.5 - 281.7 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?	P P P		I M		SILTY CLAYSTONE Major Lithology: Dark gray, structureless, moderately-well indurated SILTY CLAYSTONE. Stinks of H2S upon breakage. Disseminated coarse-grained euhedral pyrite crystals are common throughout.

858A 33X NO RECOVERY

SITE 858 HOLE A CORE 34X CORED 291.5-301.4 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?			I M	N4 – N7	CLAYSTONE and SANDSTONE General Description: The core consists of drilling fragments of dark-gray (N4/) lithified CLAYSTONE, gray (N6/) to light-gray (N7/) fine-grained and dark-gray (N4/) medium-grained SANDSTONE with abundant disseminated pyrite.



SITE 858 HOLE A CORE 35X — CORED 301.4 - 311.2 mbsf

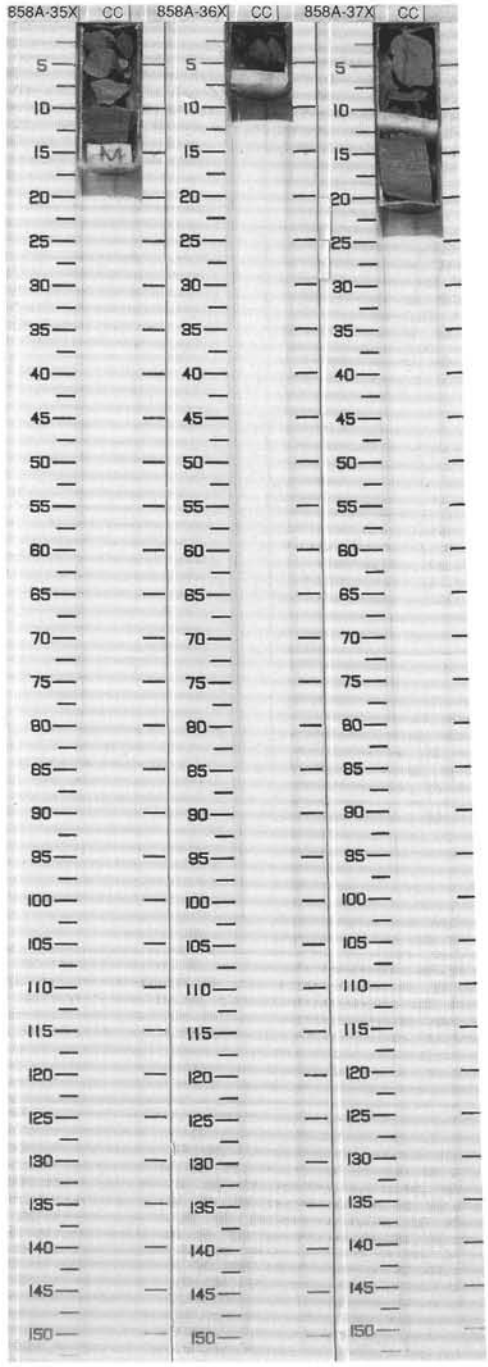
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC	?			M		SANDSTONE Major Lithology: Drilling breccia consisting of pieces of medium-grained, gray (7.5YR 6/0 to 7.5YR 5/0), parallel laminated, and locally cross laminated SANDSTONE.

SITE 858 HOLE A CORE 36X — CORED 311.2 - 315.2 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC	?			M		SILTSTONE, SANDSTONE and SILTY CLAYSTONE Major Lithologies: Drilling breccia with three main lithologies: dark gray (N 4/) SILTY CLAYSTONE; gray (N6/), laminated, fine-grained SANDSTONE; and gray (N 5/) laminated SILTY CLAYSTONE. Smells of H2S when broken.

SITE 858 HOLE A CORE 37X — CORED 315.2 - 322.7 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC	?			M		SANDSTONE and SILTSTONE Major Lithologies: Drilling breccia consisting of medium- to coarse-grained, gray (2.5Y 6/0 to 2.5Y 5/0), parallel- to cross-laminated SANDSTONE cut with quartz veins and containing laminations of disseminated pyrite. The interval at Section CC 7-8 cm contains a piece of SILTSTONE with parallel laminations.

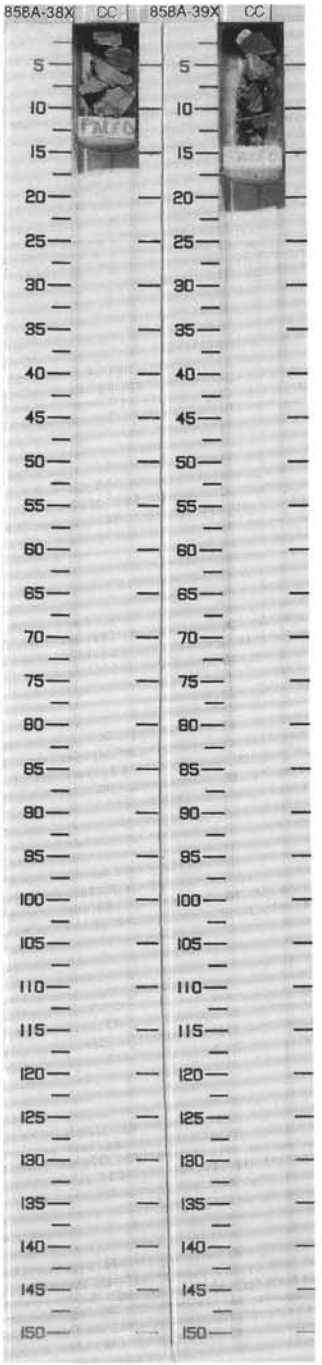


SITE 858 HOLE A CORE 38X CORED 322.7 - 332.4 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC	?			M		SILTY CLAYSTONE and SANDSTONE General Description: The core consists of drilling fragments of dark-gray (N4/) homogeneous SILTY CLAYSTONE and gray (N6/), planar- to cross-laminated thin-grained SANDSTONE with disseminated pyrite and a 1-mm-thick quartz vein.

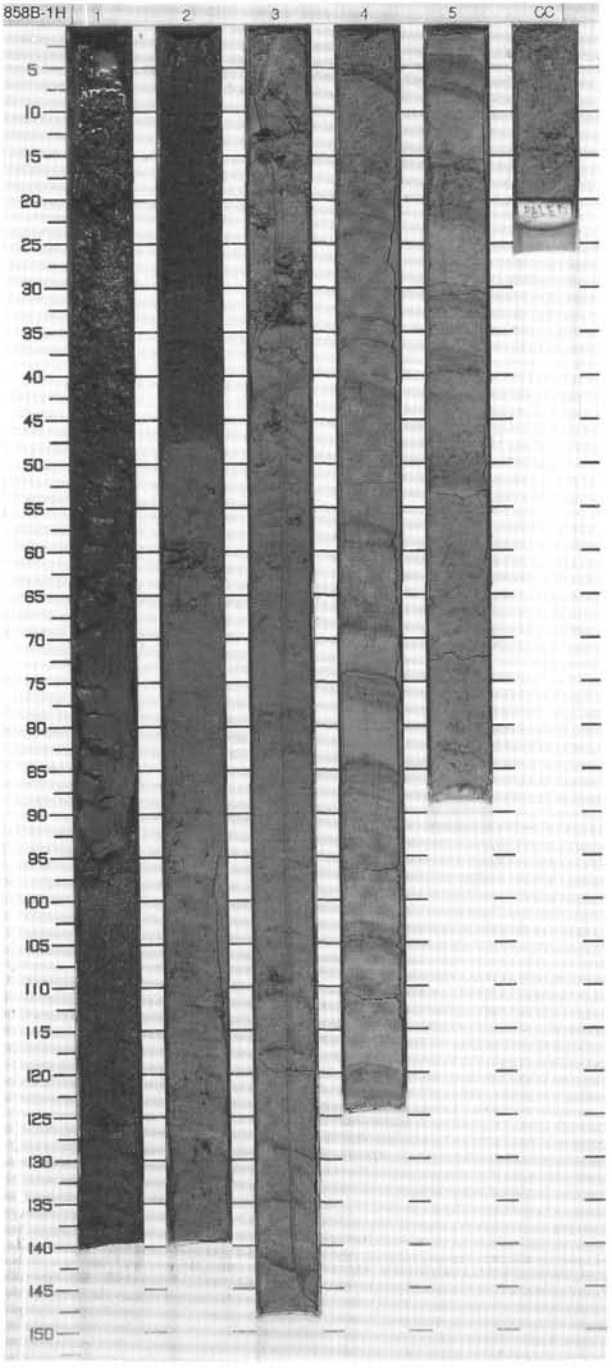
SITE 858 HOLE A CORE 39X CORED 332.4 - 339.1 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC	?			M		CLAYSTONE and SANDSTONE Major Lithologies: Small pieces of gray (N 5/) massive CLAYSTONE with quartz-zeolite veins cutting them in different directions. The veins are 1 cm thick and contain tiny (<1 mm) grains of pyrite and, rarely, sphalerite. In one of the pieces, vague and uneven cross lamination is present as is a single horizontal lamination of fine-grained SANDSTONE with disseminated pyrite. One of the smallest pieces is a quartz-cemented microbreccia containing clasts up to 0.5 cm in diameter of the same CLAYSTONE and SANDSTONE.

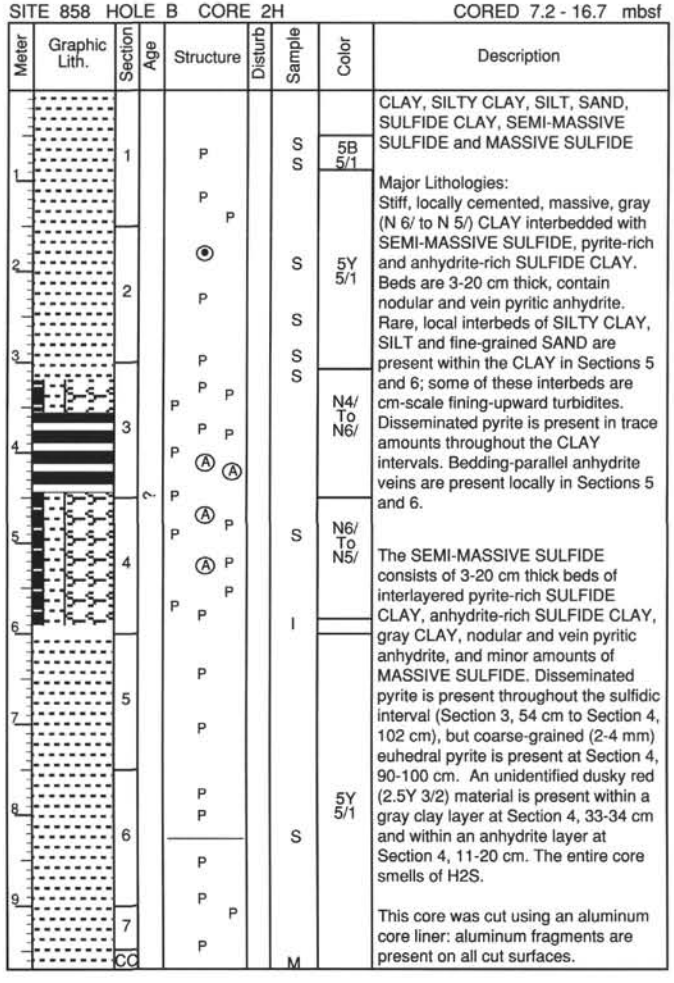


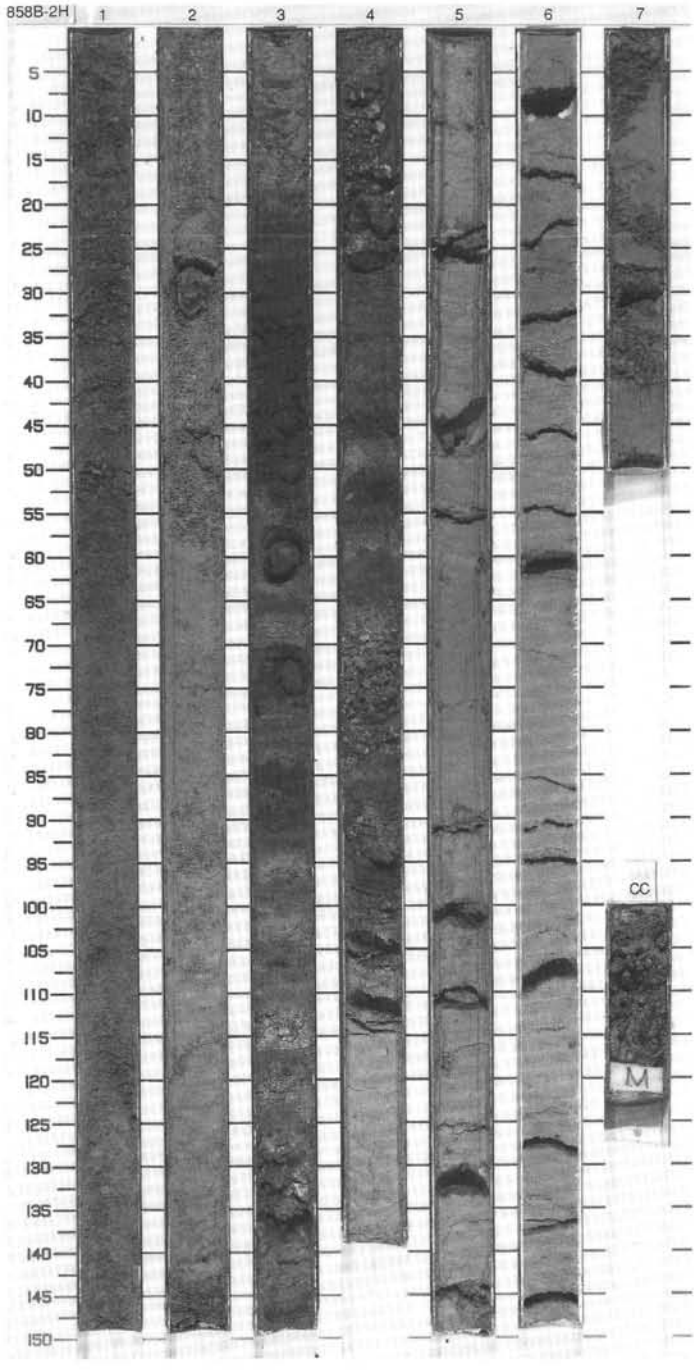
SITE 858 HOLE B CORE 1H CORED 0.0 - 7.2 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1	H			S S	5GY 4/1	CLAY, SILT and SILTY CLAY Major Lithologies: The upper portion of this core (Section 1 and Section 2, 0-47 cm) consists of color-variegated smectitic(?) CLAY and fine-sand-size pyrite grains. Color varies from dark olive green (5GY 3/4) to greenish gray (10G 3/1) to grayish olive green (5GY 3/2) and dark greenish gray (5GY 4/1). Pockets and thin layers of greenish black to dark blue green (N/1) pyritic fine-grained sand are present throughout this upper interval. A brownish yellow surface oxidized zone is present in the upper few centimeters and is mixed by coring throughout the upper 90 cm of Section 1. The contact between this sulfidic upper part and the lower part of "normal" turbiditic sediments is sharp, at Section 2, 47 cm. This lower part consits of stacked, thin, fine-grained fining-upward sequences of dark grayish green (5GY 4/1) to dark gray (5Y 4/1) SILT and SILTY CLAY. Color changes in these turbiditic sediments are abrupt, but do not correspond directly to grain-size changes. Carbonate nodules are present in Section 3 and foraminifers are present locally troughout the turbiditic intervals. The interval of fine-grained turbidites in Section 2 corresponds to a magnetic susceptibility low.
2		2	Upper Pleistocene			S		
						I W		
						S	5GY 4/1 To 5Y 4/1	
						S		
3				Ⓟ		S		
				Ⓒ		I W		
				Ⓒ				
4		3		Ⓒ		S	5GY 4/1 To 5Y 4/1	
						S		
5		4	Pleistocene			S		
						S		
6						I W		
		5				S	5GY 4/1 To 5Y 4/1	
7		CC				M		



SITE 858 HOLE B CORE 2H CORED 7.2 - 16.7 mbsf





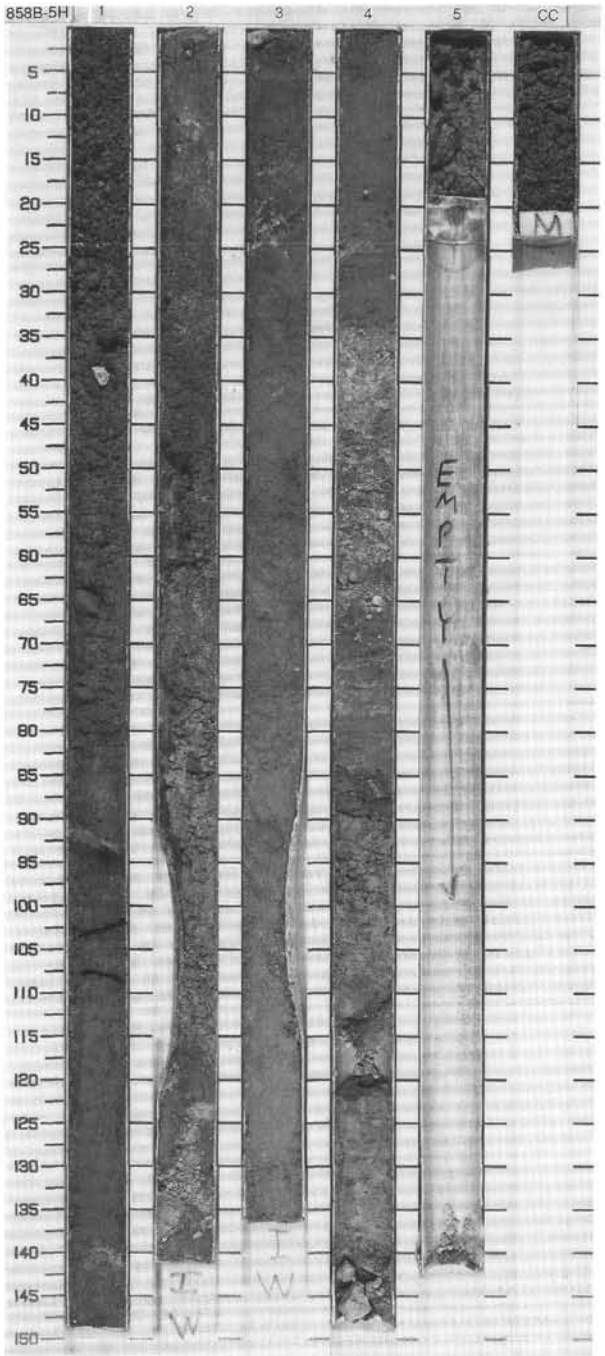
SITE 858 HOLE B CORE 3H CORED 16.7 - 18.4 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?		OOOOOO WWW	I W S M	N 6/ To N 5/	CLAY and SILTY CLAYSTONE Major Lithologies: This core is severely disturbed by coring. The aluminum core barrel has collapsed in some places. The recovered material consists of soupy CLAY and SILTY CLAY and a few pieces (several cm in size) of SILTY CLAYSTONE. The SILTY CLAYSTONE is gray to dark gray, bioturbated, and contains lenses of disseminated pyrite. Several of the drilling fragments exhibit a fine-scale network of fractures with some of them (1-3 mm wide) filled with fine-grained quartz, minor fine-grained pyrite, trace euhedral pyrrhotite, and trace anhedral chalcopyrite.

858B 4X Entire core given to paleontologists.

SITE 858 HOLE B CORE 5H CORED 23.9 - 31.5 mbsf

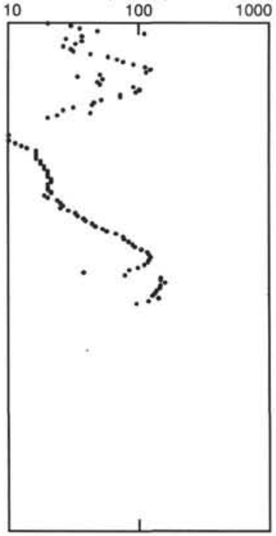
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2 3 4 5 6		1 2 3 4 5 CC	?			S W I W I M	N 5/ To N 6/ N 5/ To N 6/ N 5/ To N 6/ N 5/ To N 6/	CLAYSTONE General Description: The entire core is very highly disturbed by coring. Coring operations inadvertently caused repeated loading of the sediments. This produced a breccia composed of lithified CLAYSTONE, massive anhydrite, talc, euhedral pyrite. The core liner is made of aluminum.



SITE 858 HOLE B CORE 6H CORED 31.5 - 32.5 mbsf

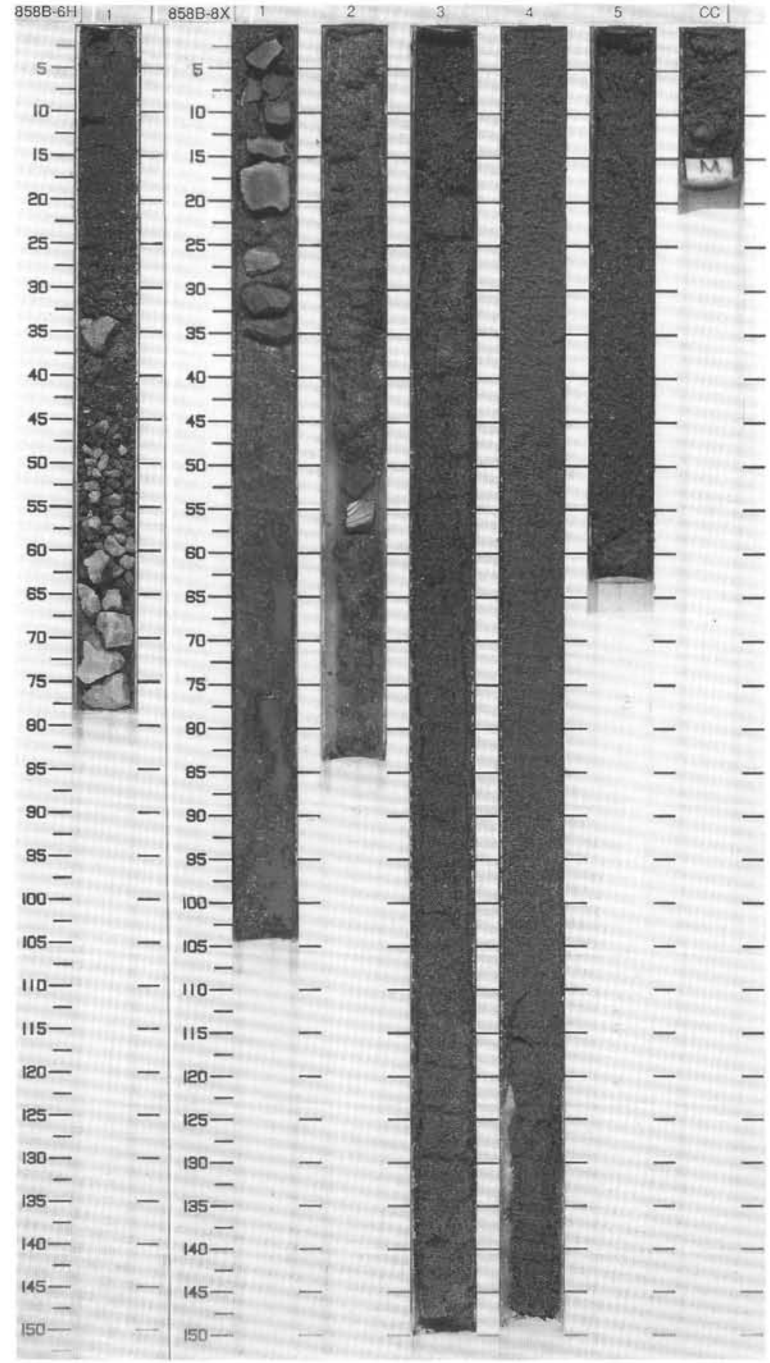
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?		XXX	M	2.5Y N 4\	CLAYSTONE Major Lithology: Gray (2.5YR N4/) CLAYSTONE. Brecciated by coring. Hydrothermally-altered, with chlorite and pyrite. Clasts of indurated (weakly silicified?) sediment have vugs filled with anhydrite.

858B 7X NO RECOVERY



SITE 858 HOLE B CORE 8X CORED 32.7 - 35.1 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2 3 4 5		1 2 3 4 5 CC	?		VVVV	M		CLAYSTONE, SILTSTONE AND SANDSTONE Major Lithology: Pale to medium gray, variably silicified CLAYSTONE interbedded with SILTSTONE and SANDSTONE. Core intensely disturbed by drilling. Some clasts are silicified, cut by veins of anhydrite, clay minerals and quartz and contain vugs partly filled with euhedral anhydrite and clay. Minor Lithologies: Pyrite is finely disseminated throughout core.



SITE 858 HOLE B CORE 9X CORED 35.1 - 38.6 mbsf

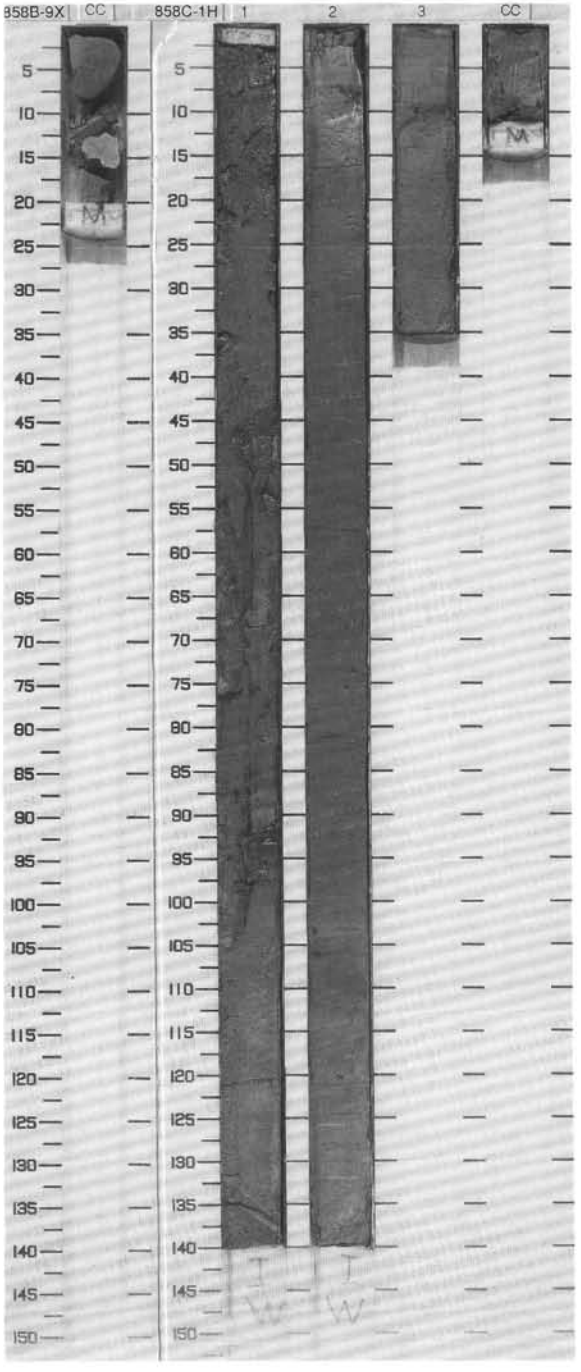
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	?	P P		M		CLAYSTONE

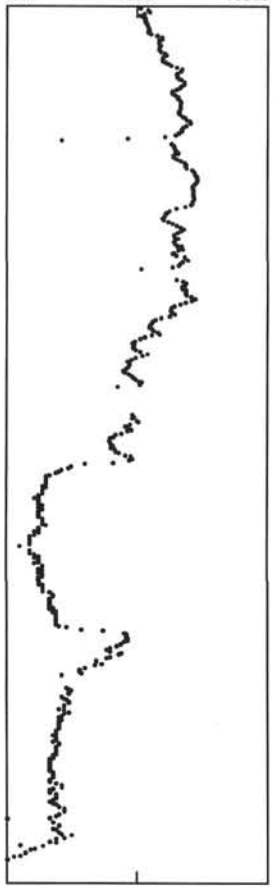
Major Lithology:
Gray hydrothermally altered CLAYSTONE with pervasive spotted texture (0.1 mm). Spots may be a chlorite or clay alteration. Euhedral anhydrite crystals are present in vugs and associated with chlorite/clay spots.

SITE 858 HOLE C CORE 1H CORED 0.0 - 3.5 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1	H Upper Pleistocene	Ca		S	5Y 5/1	SILTY CLAY and SILT
2		2		Ca		I W	5GY 5/1	Major Lithologies: Greenish gray (5Y 5/1) homogeneous weakly bioturbated hemipelagic SILTY CLAY with thin beds of finely laminated SILT. Common foraminiferas are infilled and overgrown by calcite, as are nannofossils. Surface layer, 0-30 cm in Section 1, consists of yellowish oxidized silty clay. Minor worm burrows.
3		3		Ca		S I W	5GY 6/1	
		CC						

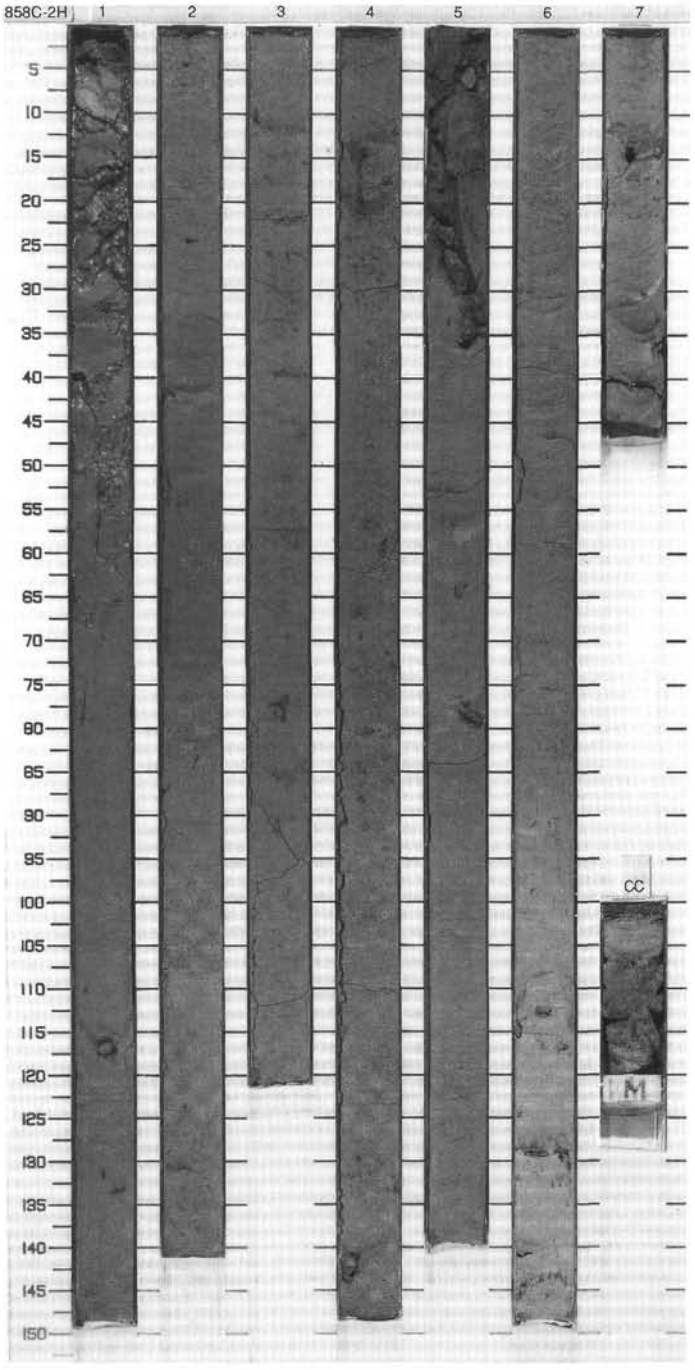
Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

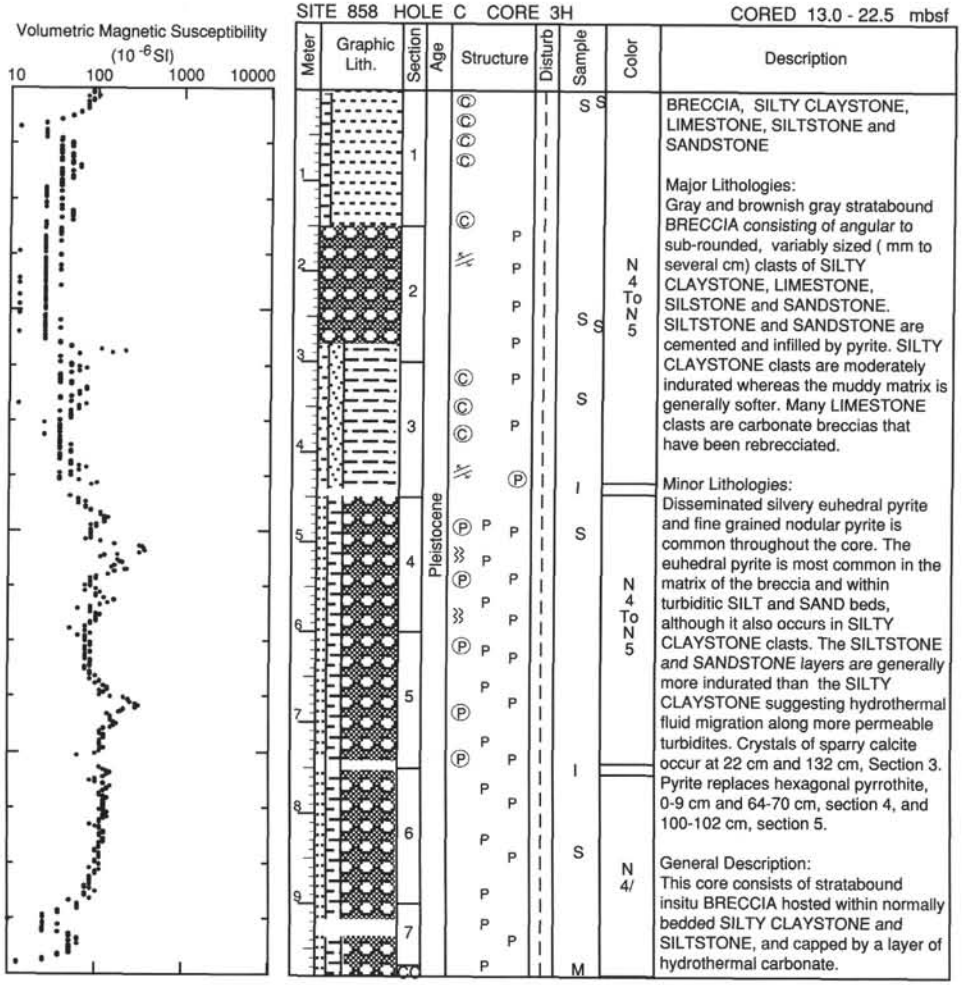




SITE 858 HOLE C CORE 2H CORED 3.5 - 13.0 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1–9		1–7, CC	Upper Pleistocene	©		S; I W; I W; I; S; M	5GY 5/1; 5GY 6/1; 5GY 6/1; 5Y 5/1	SILTY CLAY AND SILT Major Lithology: Greenish gray homogeneous mostly calcareous SILTY CLAY interbedded with thin laminated beds of turbiditic gray (N5\) SILT. Most beds display sharp bases and gradational tops. Some SILT beds are discontinuous. Maroon Zoophycos burrows are common between 30 and 72 cm in Section 2. This lithology has been recognized at similar depths in hole 858A. Minor Lithologies: Carbonate concretions and worm burrows cemented with calcite occur throughout this core.

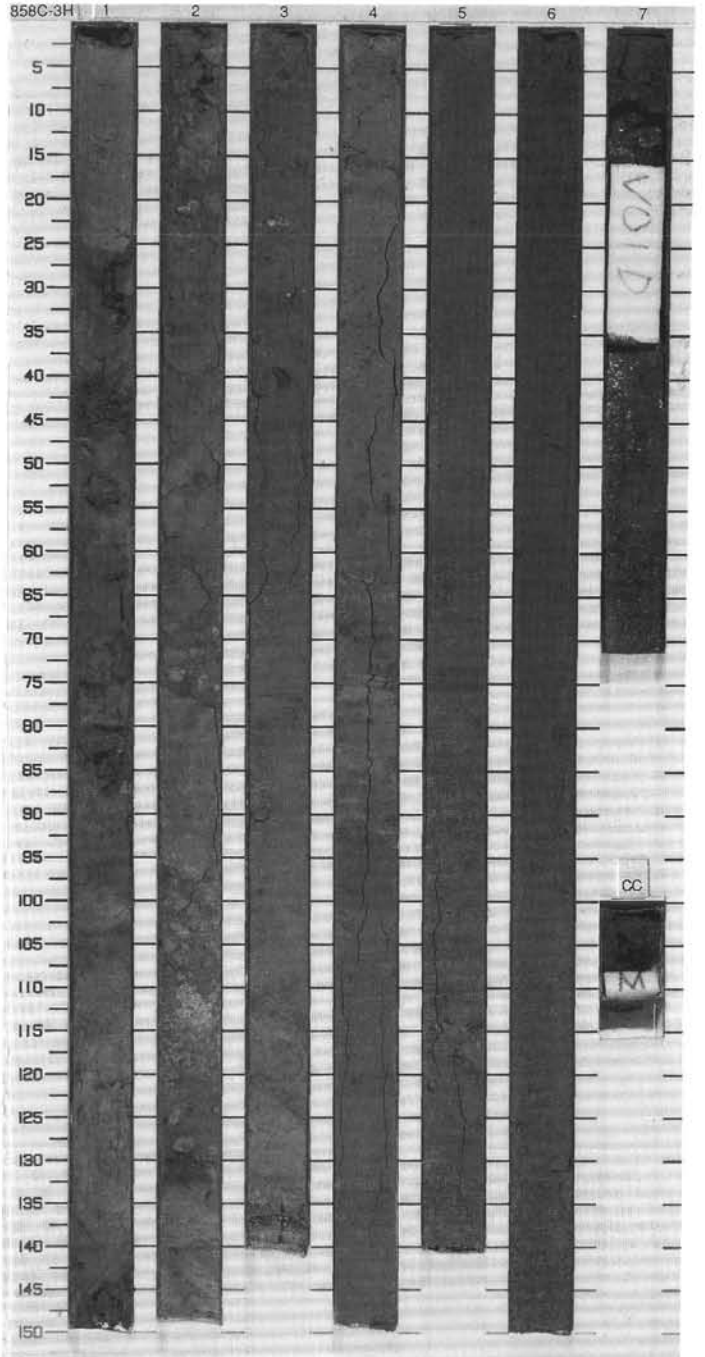


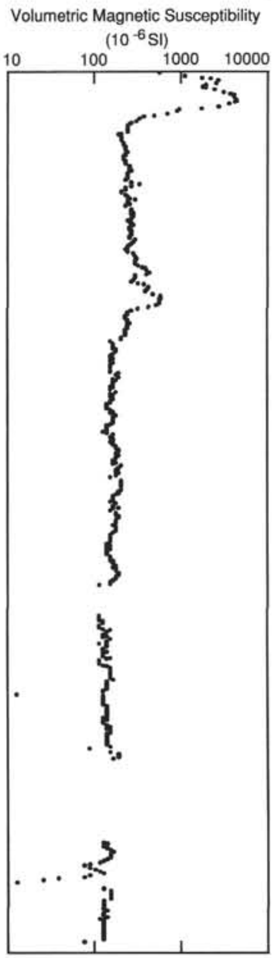


SITE 858 HOLE C CORE 3H CORED 13.0 - 22.5 mbsf

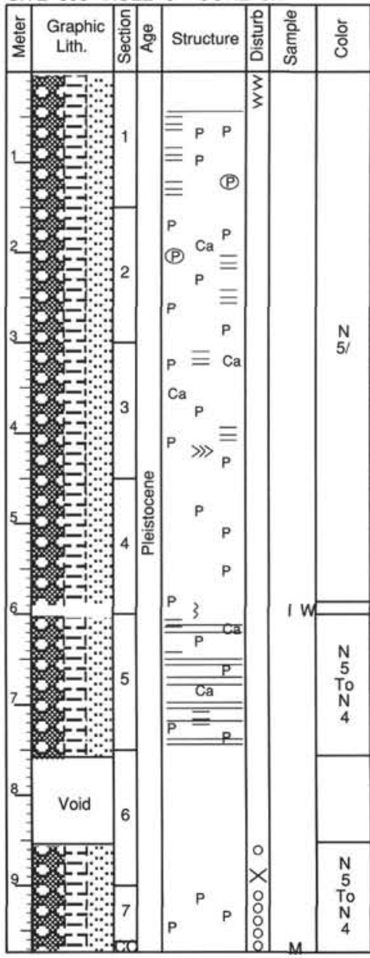
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1–9		1–7	Pleistocene	C, P		S, I, M	N 4 To N 5; N 4/	BRECCIA, SILTY CLAYSTONE, LIMESTONE, SILTSTONE and SANDSTONE Major Lithologies: Gray and brownish gray stratabound BRECCIA consisting of angular to sub-rounded, variably sized (mm to several cm) clasts of SILTY CLAYSTONE, LIMESTONE, SILSTONE and SANDSTONE. SILTSTONE and SANDSTONE are cemented and infilled by pyrite. SILTY CLAYSTONE clasts are moderately indurated whereas the muddy matrix is generally softer. Many LIMESTONE clasts are carbonate breccias that have been rebrecciated. Minor Lithologies: Disseminated silvery euhedral pyrite and fine grained nodular pyrite is common throughout the core. The euhedral pyrite is most common in the matrix of the breccia and within turbiditic SILT and SAND beds, although it also occurs in SILTY CLAYSTONE clasts. The SILTSTONE and SANDSTONE layers are generally more indurated than the SILTY CLAYSTONE suggesting hydrothermal fluid migration along more permeable turbidites. Crystals of sparry calcite occur at 22 cm and 132 cm, Section 3. Pyrite replaces hexagonal pyrrothite, 0-9 cm and 64-70 cm, section 4, and 100-102 cm, section 5. General Description: This core consists of stratabound insitu BRECCIA hosted within normally bedded SILTY CLAYSTONE and SILTSTONE, and capped by a layer of hydrothermal carbonate.

858C 4P NO RECOVERY





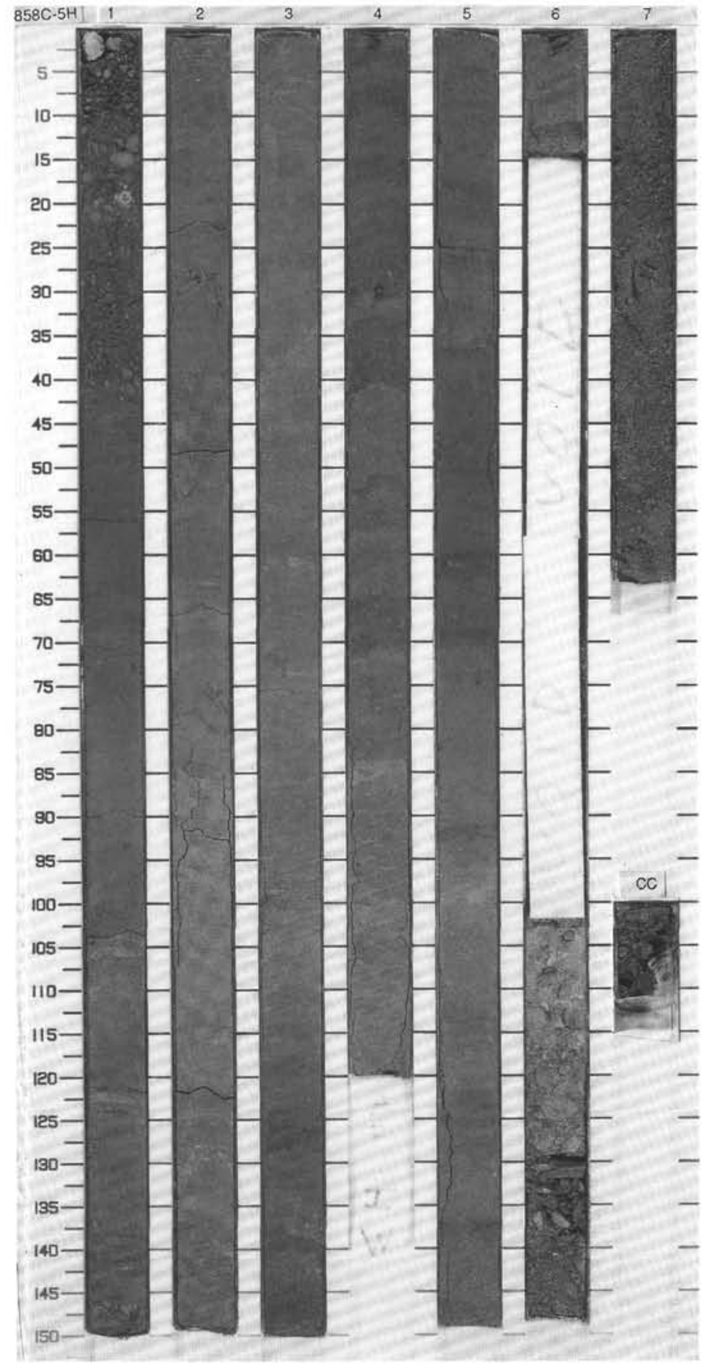
SITE 858 HOLE C CORE 5H CORED 23.5 - 33.0 mbsf



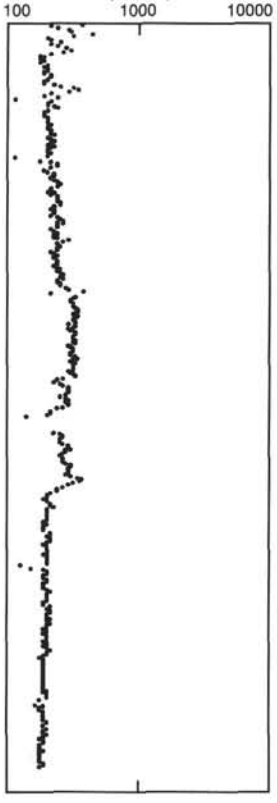
Description

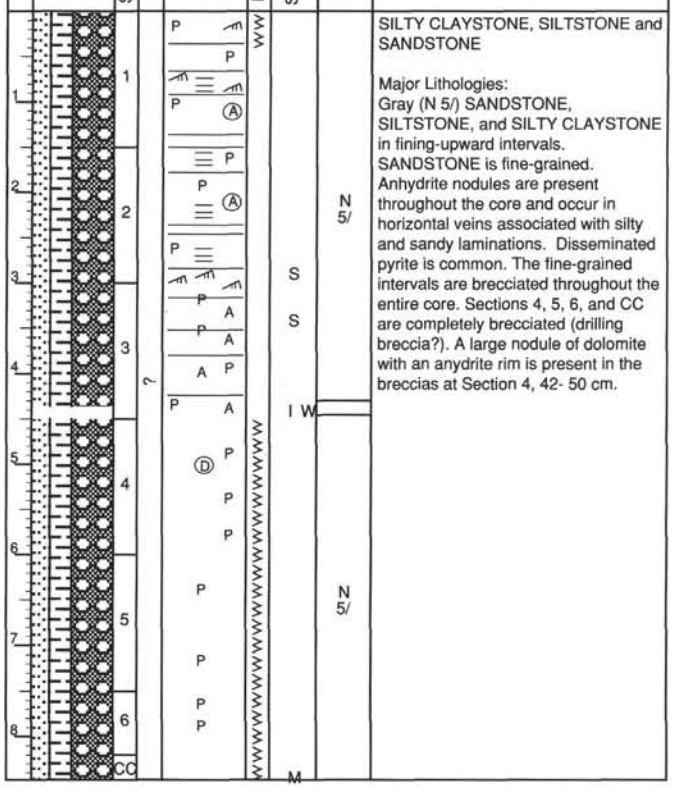
CLAYSTONE, SILTY CLAYSTONE, SILTSTONE and SANDSTONE

Major Lithologies:
Brecciated, gray (N 4/ to N 5/) CLAYSTONE, SILTY CLAYSTONE, and SILTSTONE. Brecciation has produced a granular texture in the CLAYSTONE and SILTY CLAYSTONE, but has simply shattered, and locally rotated, the laminated SILTSTONE. The granular texture in the CLAYSTONE and SILTY CLAYSTONE is produced by subrounded to rounded clasts of gray SILTY CLAYSTONE and CLAYSTONE in a lighter gray clay matrix that contains disseminated pyrite and is locally calcitic. These brecciated zones are common throughout the cored interval, but are most abundant in Sections 1, 2, and 3. Section 4 contains several sequences of brecciated strata overlain by burrowed, nonbrecciated zones. Calcite veins are preserved along silty laminations and locally form 2-3 cm vertical columns. Disseminated calcite occurs locally. Pyrite occurs in 3 morphologies: disseminated euhedral grains, small (mm-scale) nodules, and hexagonal grains replacing euhedral pyrrohtite. Sections 4, 5, 6 contain fairly well-preserved, thin, fine-grained SANDSTONE to SILTY CLAYSTONE, fining-upward turbidites. The coarser intervals are commonly amalgamated and exhibit cross laminations, parallel laminations, and convolute bedding. Brecciation is present, but becomes progressively less pervasive in these lower sections than in Sections 1, 2, and 3.



SITE 858 HOLE C CORE 6H CORED 33.0 - 41.5 mbsf

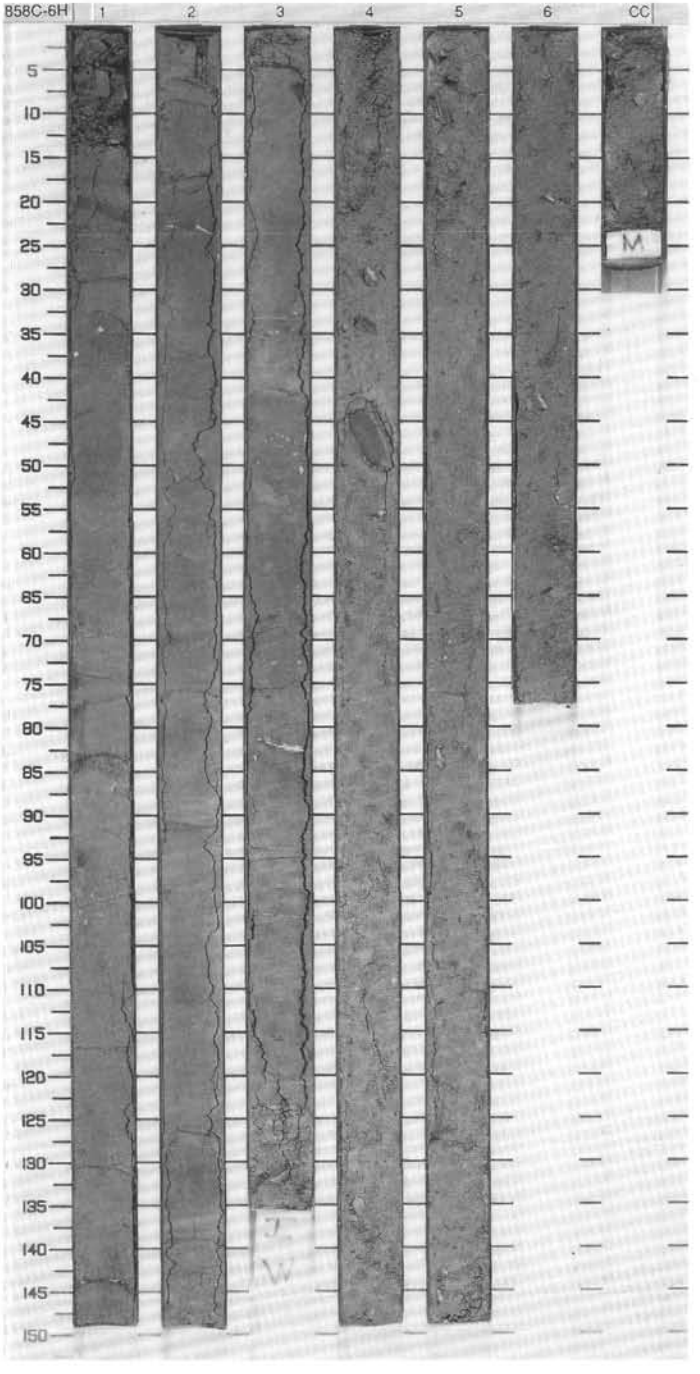




Description

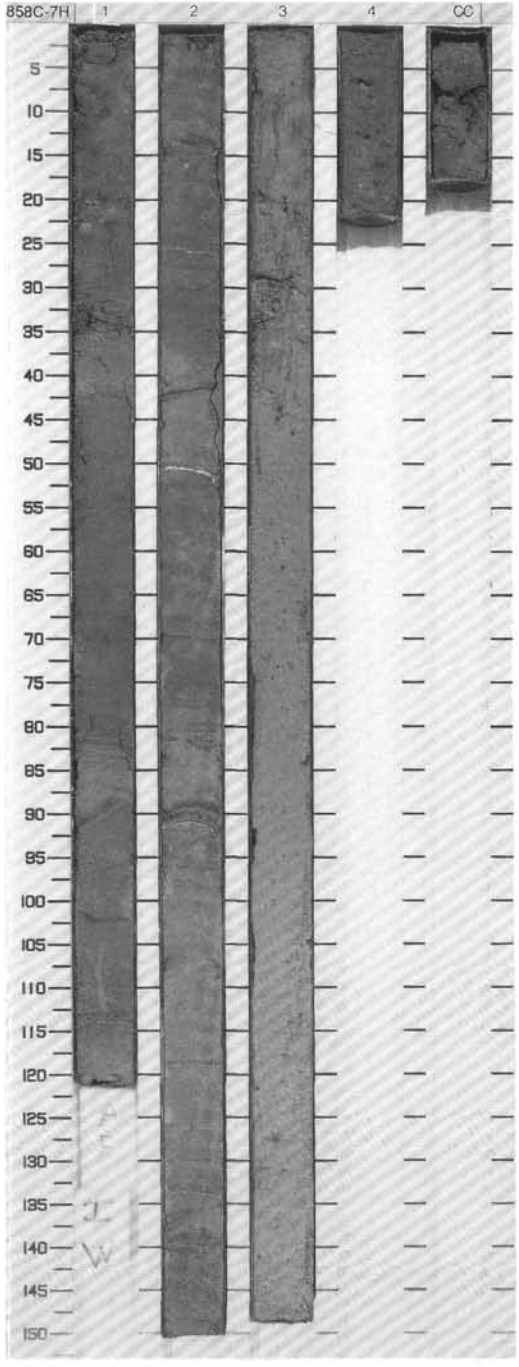
SILTY CLAYSTONE, SILTSTONE and SANDSTONE

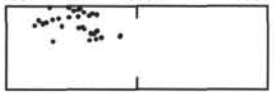
Major Lithologies:
Gray (N 5/) SANDSTONE, SILTSTONE, and SILTY CLAYSTONE in fining-upward intervals. SANDSTONE is fine-grained. Anhydrite nodules are present throughout the core and occur in horizontal veins associated with silty and sandy laminations. Disseminated pyrite is common. The fine-grained intervals are brecciated throughout the entire core. Sections 4, 5, 6, and CC are completely brecciated (drilling breccia?). A large nodule of dolomite with an anydrite rim is present in the breccias at Section 4, 42- 50 cm.



SITE 858 HOLE C CORE 7H CORED 41.5 - 46.5 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1–4		1, 2, 3, 4, CC	?	P	W	I W	N 5/ To N 4/	SILTSTONE, SILTY CLAYSTONE and SANDSTONE Major Lithologies: Gray (N 5/ to N 6/) SILTY CLAYSTONE, SILTSTONE, and SANDSTONE. The SILTSTONE and SANDSTONE intervals are parallel laminated and exhibit local convolute bedding. The SILTY CLAYSTONE intervals are pervasively brecciated. Sections 3, 4, and CC are soupy from coring disturbance and show no original textures. The brecciation in Section 1 and 2 may also be the result of coring disturbance.





SITE 858 HOLE C CORE 8H CORED 46.5 - 47.5 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?	P P Ca	W W W W W	M	N 5/	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Drill cuttings and drilling breccia composed of sand-size to 6 cm pieces of SANDSTONE, SILTSTONE, and SILTY CLAYSTONE plus fragments of anhydrite veins, large euhedral pyrite crystals. Some pieces of the drilling breccia contain calcite crystals. Some of the SANDSTONE and SILTSTONE fragments are bioturbated. Many of the pieces have calcareous cement.

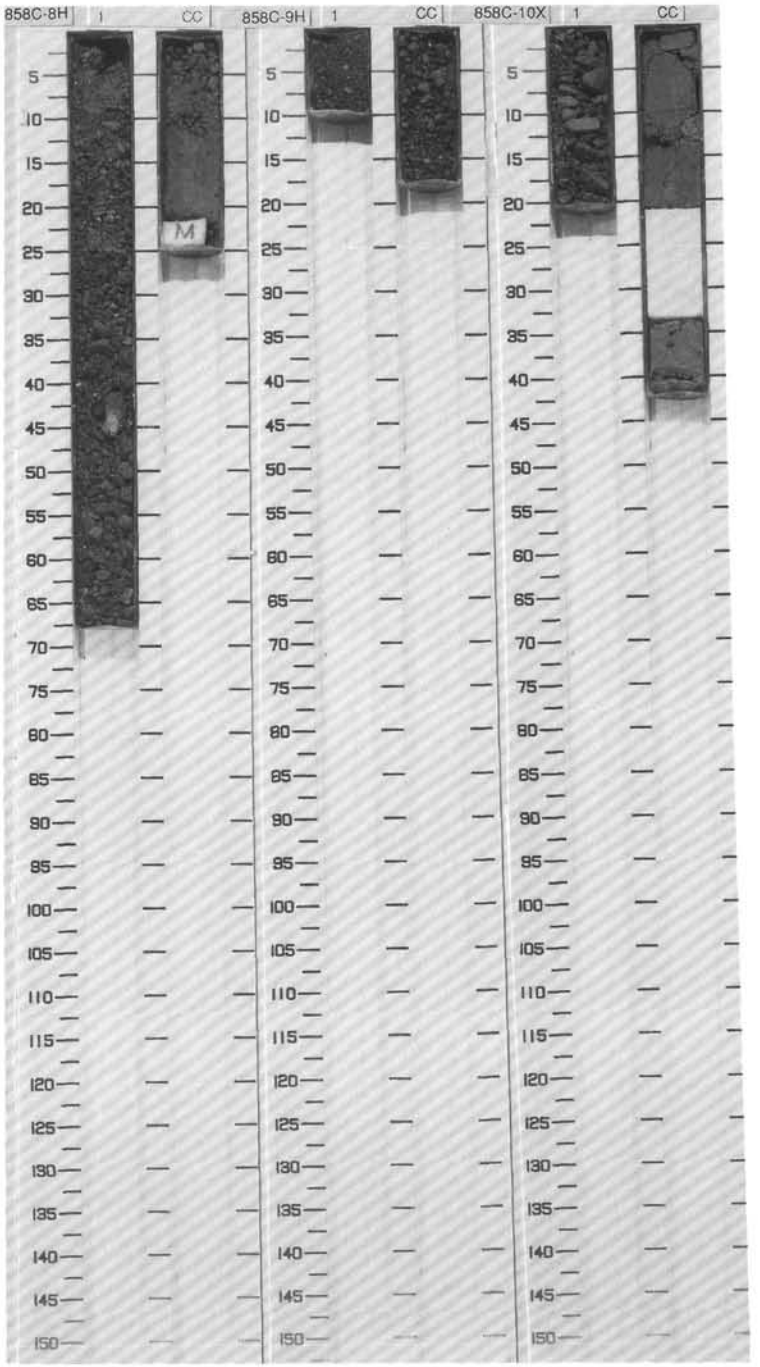
DRILLED 47.5-49.0 mbsf

SITE 858 HOLE C CORE 9H CORED 49.0 - 49.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	?		X			SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Drilling rubble. Pieces are a maximum of 2 cm in length.

SITE 858 HOLE C CORE 10X CORED 49.3 - 54.5 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC	?		W	I M	N 5/	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Section 1 consists of drill cuttings and chips of laminated and cross laminated gray, fine- to medium-grained SANDSTONE with disseminated crystals of pyrite. Section CC contains a fairly undisturbed fining-upward section of massive to faintly laminated SILTY CLAYSTONE with SILTSTONE laminations that grades into a faintly laminated gray medium- to fine-grained SANDSTONE. The base of Section CC is a breccia composed of rounded gray sand-sized mud chips in a light gray clay matrix overlain by fractured fine-grained SANDSTONE.

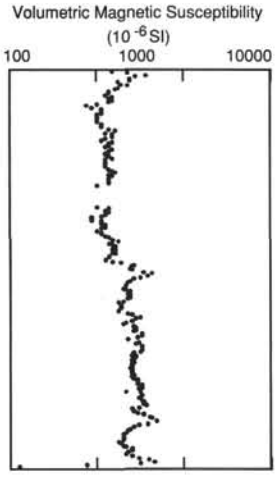


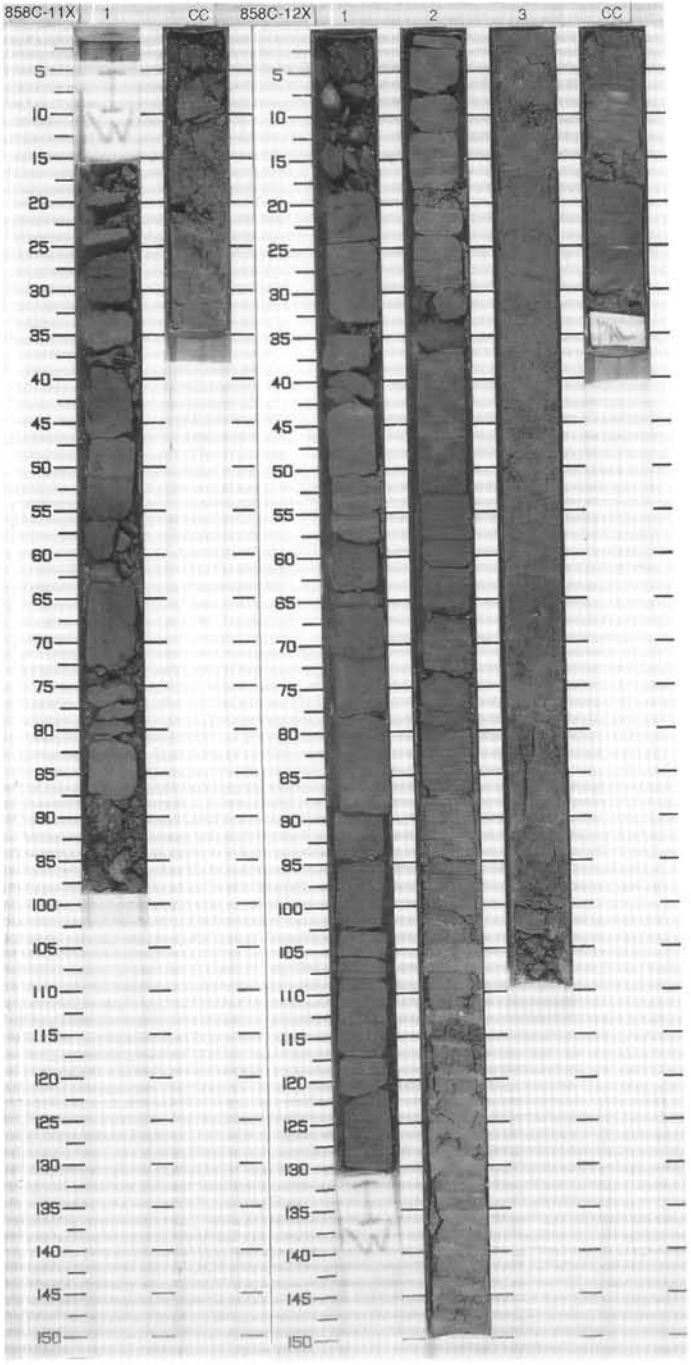
SITE 858 HOLE C CORE 11X — CORED 54.5 - 64.0 mbsf

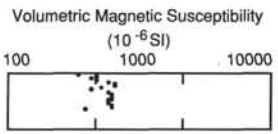
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1 CC	?	P P		I W M	N 5/ To N 4/	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Fining-upward sequences of fine- to medium-grained SANDSTONE overlain by SILTSTONE and SILTY CLAYSTONE. The SANDSTONE is variable parallel laminated, ripple laminated, and convolute bedded. The SILTSTONE is massive to parallel laminated. The SILTY CLAYSTONE is bioturbated and locally faintly laminated. The base of Section 1 and the top of Section CC consist of drilling chips of similar material. Anhydrite molds are present in the fine-grained intervals, but no anhydrite crystals are present.

SITE 858 HOLE C CORE 12X — CORED 64.0 - 73.7 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1 2 3 4		1 2 3 CC	?	P F P F P F P		S I W S S M	N 5/ To N 4/ N 5/ To N 4/	SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Stacked fining-upward sequences of gray (N 5/ to N 6/) SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. SANDSTONE is variable massive, ripple laminated, parallel laminated, and convolute bedded. SILTSTONE is commonly parallel laminated and interbedded with the overlying SILTY CLAYSTONE. SILTY CLAYSTONE is typically bioturbated. Disseminated pyrite is present throughout the core and molds of nodular anhydrite are common in the fine-grained intervals. The base of Section 2 and all of Sections 3 and CC consist of drilling biscuits of lithified sediment surrounded by wet, unlithified mud. In most cases, the biscuits preserve the fining-upward stratigraphy.

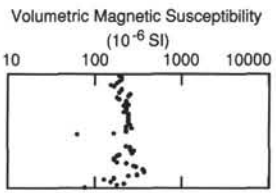






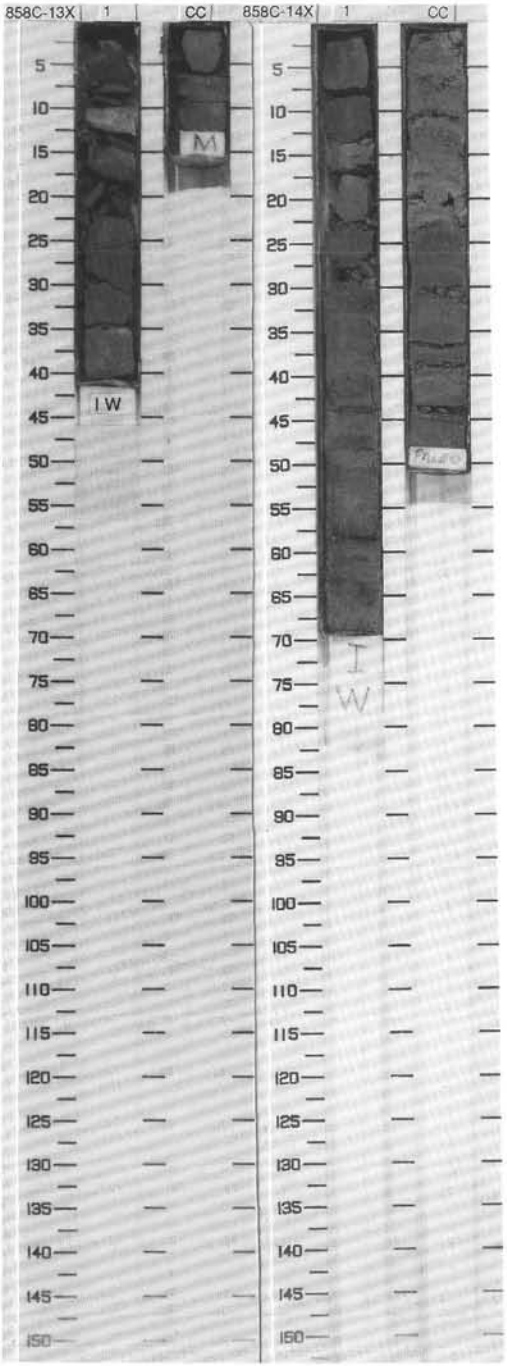
SITE 858 HOLE C CORE 13X CORED 73.7 - 83.4 mbsf

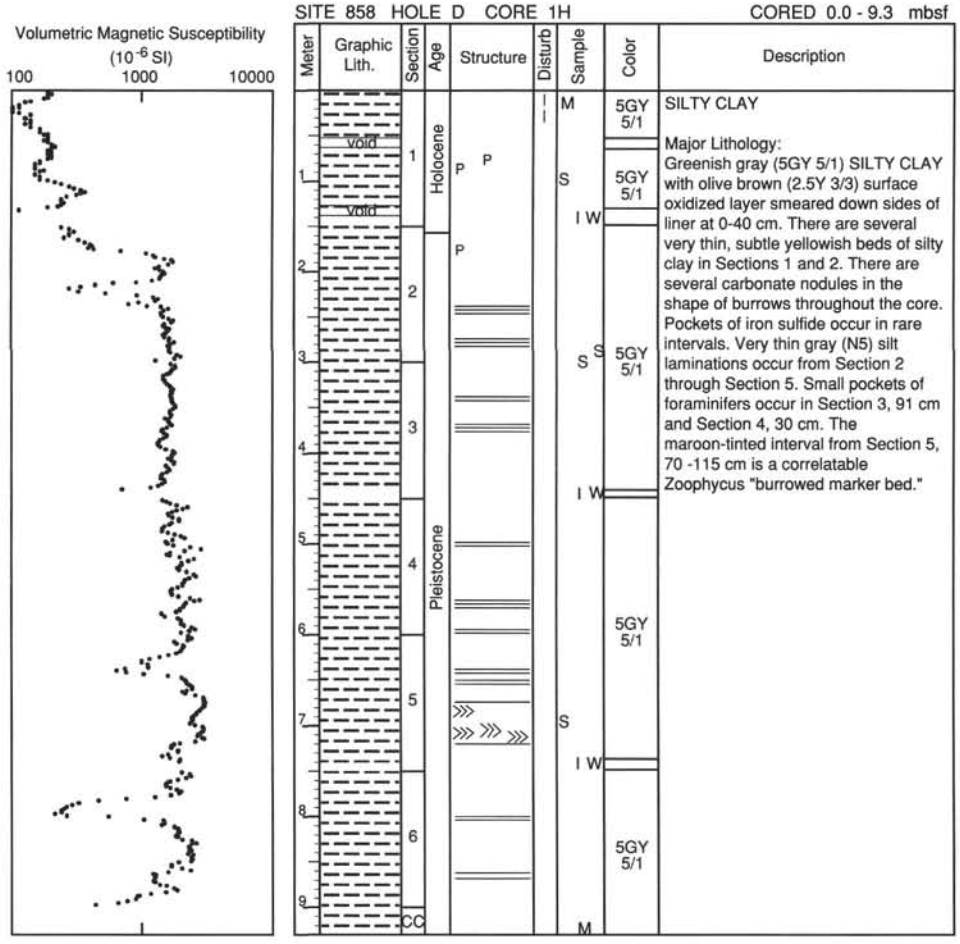
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?	P P P		M I W	N 5/	SANDSTONE TO SILTSTONE Major Lithology: Sandy to silty layers with convolute lamination and scoured contact. Strong drilling disturbance. Pieces with graded bedding and bioturbation. Scattered pyrite crystals.
		CC						



SITE 858 HOLE C CORE 14X CORED 83.4 - 93.1 mbsf

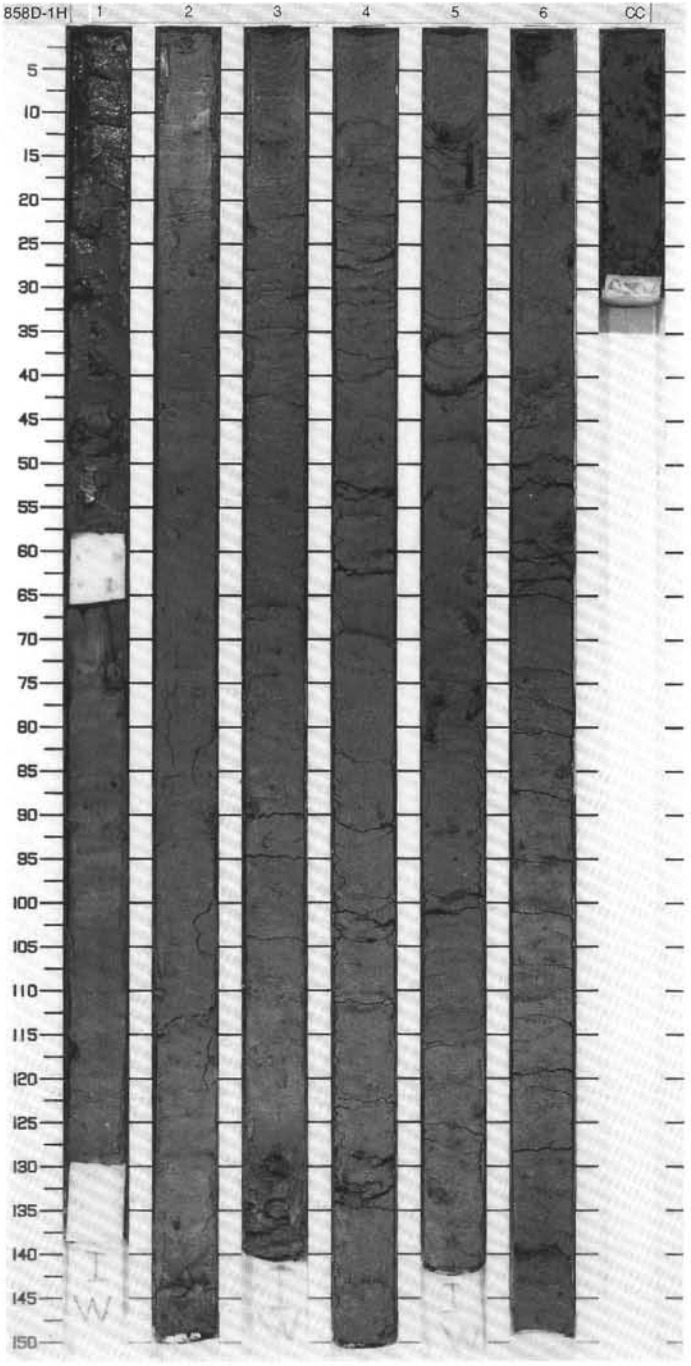
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1	?	F P P P A		M	N 5/	CLAYSTONE, SILTY CLAYSTONE and SANDSTONE Major Lithologies: Fining-upward sequences and separate pieces of CLAYSTONE, SILTY CLAYSTONE and SANDSTONE with parallel and occasional convoluted lamination, traces of bioturbation, pyrite layers, concretions and dissemenated pyrite. Anhydrite nodules present in the core-catcher.
		CC					N 6/	





SITE 858 HOLE D CORE 1H CORED 0.0 - 9.3 mbsf

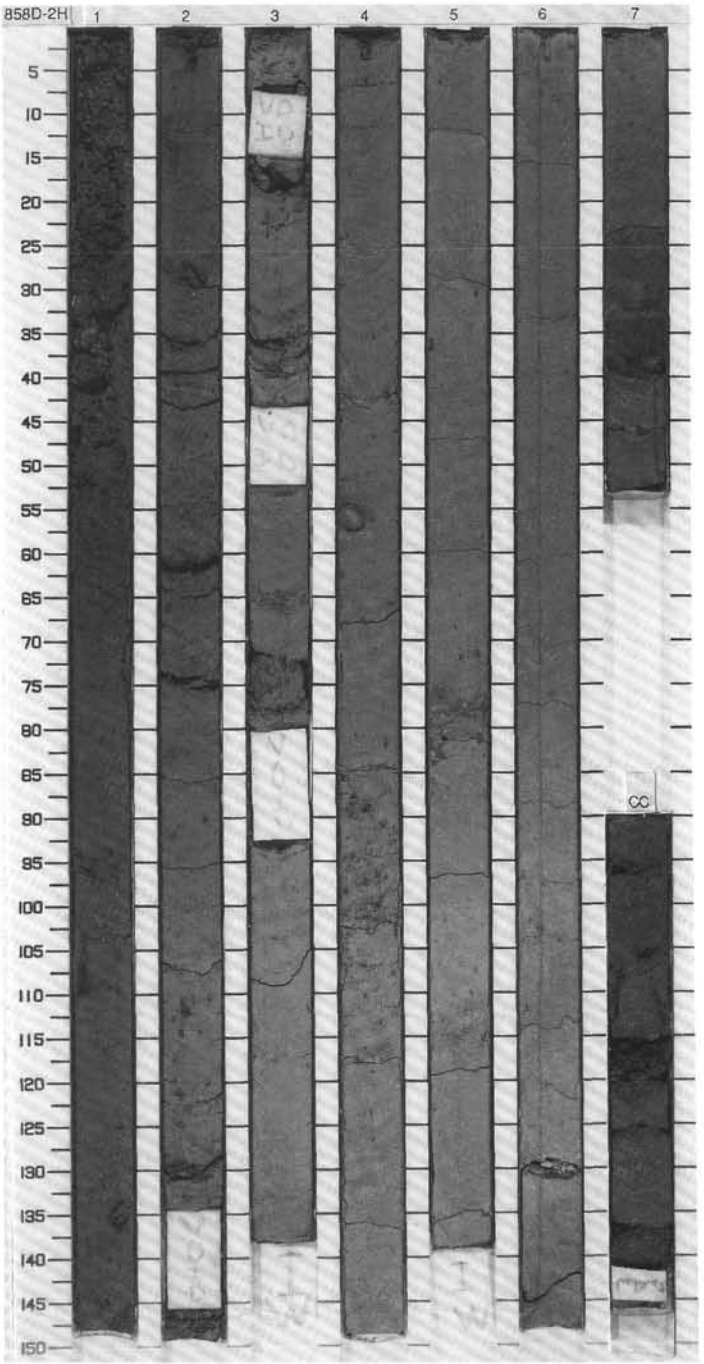
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
0–9	void, void, CC	1–6, CC	Holocene, Pleistocene	P, P, P		M, S, I W, S, S, I W, S, I W, M	5GY 5/1	SILTY CLAY Major Lithology: Greenish gray (5GY 5/1) SILTY CLAY with olive brown (2.5Y 3/3) surface oxidized layer smeared down sides of liner at 0-40 cm. There are several very thin, subtle yellowish beds of silty clay in Sections 1 and 2. There are several carbonate nodules in the shape of burrows throughout the core. Pockets of iron sulfide occur in rare intervals. Very thin gray (N5) silt laminations occur from Section 2 through Section 5. Small pockets of foraminifers occur in Section 3, 91 cm and Section 4, 30 cm. The maroon-tinted interval from Section 5, 70 -115 cm is a correlatable Zoophycus "burrowed marker bed."



Volumetric Magnetic Susceptibility
(10^{-6} SI)
100 1000 10000

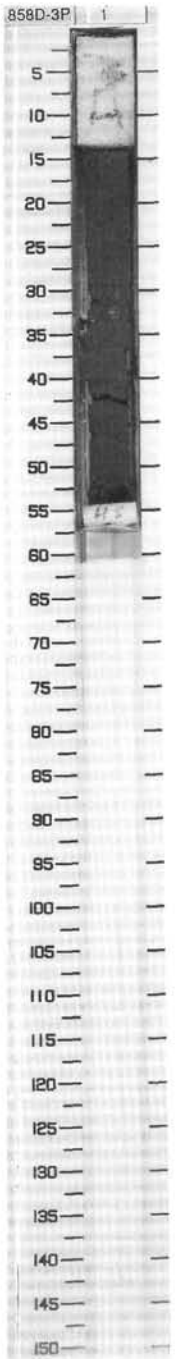
SITE 858 HOLE D CORE 2H CORED 9.3 - 18.8 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1		Ⓒ Ⓒ			5GY 4/1	CALCITIC SILTY CLAY and DOLOMITIC SILTY CLAY
1								Major Lithologies: CALCITIC SILTY CLAY, homogeneous except for scattered, very small carbonate nodules, becomes more carbonate-rich down core. The core smells of H2S. Disseminated pyrite is common throughout as is authigenic calcite. DOLOMITIC SILTY CLAY is present at Section 3, 3 cm to Section 4, 84 cm.
2		2		Ⓒ P P Ⓟ P Ⓒ P			5GY 5/1 To 5GY 4/1	
3		3		Ⓒ Ⓒ Ⓟ P		S	5Y 5/1	Minor Lithologies: Minor calcite-rich SILT laminations are present locally and one layer of fine-grained SAND is present at Section 7, 34-40 cm.
4			?			I W		
5		4		Ⓒ			5Y 5/1	
6		5		Ⓟ			5Y 5/1 To 5GY 4/1	
7						I W		
8		6					5Y 5/1 To 5GY 4/1	
9		7				S		
10		CC				M		

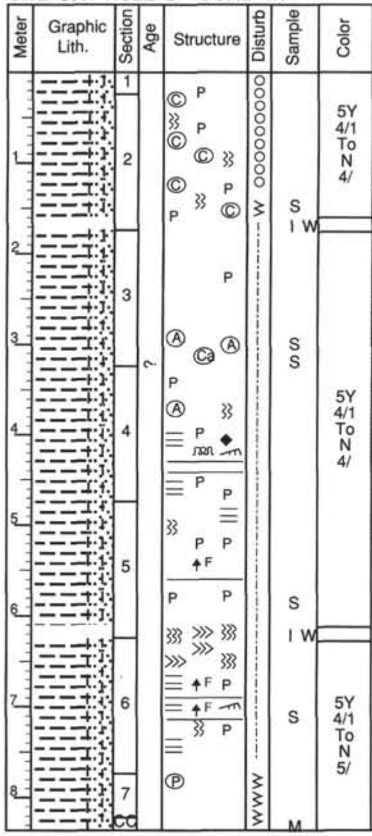


SITE 858 HOLE D CORE 3P CORED 18.8 - 19.8 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1	?	Ⓟ	VVV	I O	5Y 5/1	SILTY CLAYSTONE Major Lithology: Brecciated SILTY CLAYSTONE with minor pyrite toward the base. Brecciation is probably the result of coring.



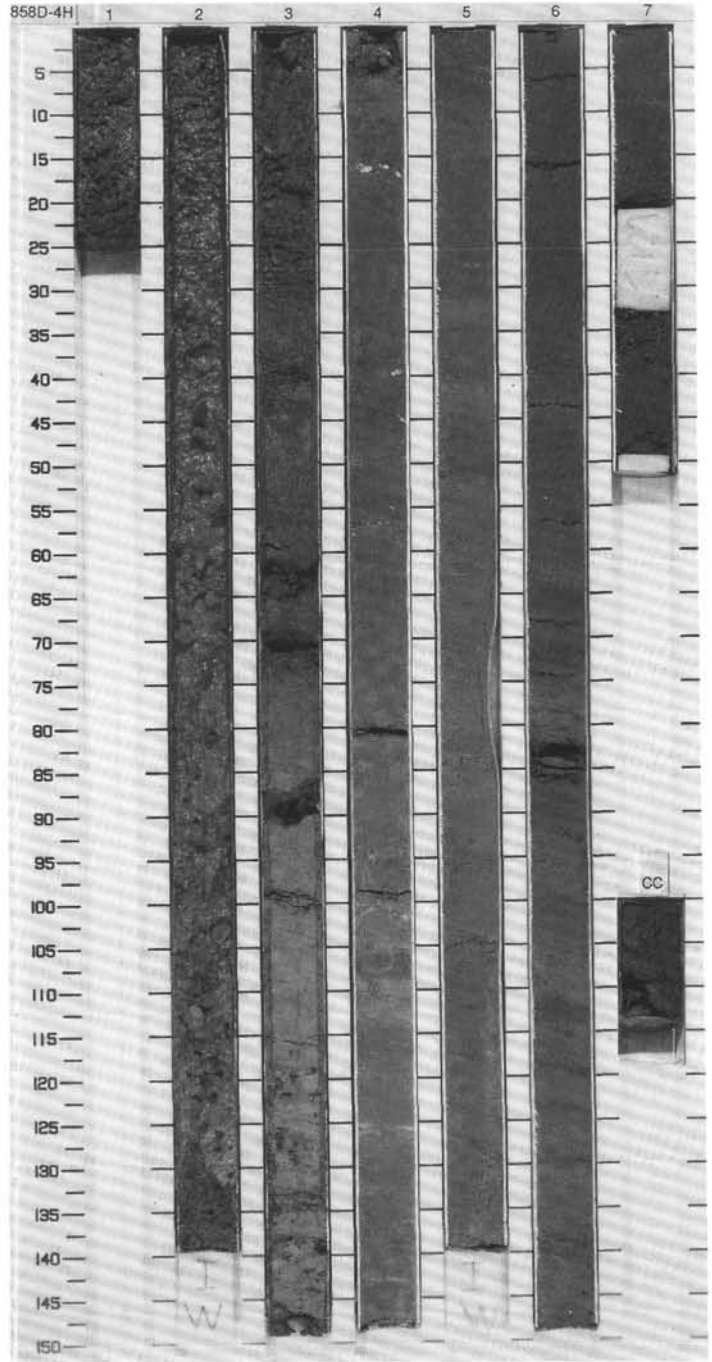
SITE 858 HOLE D CORE 4H CORED 19.8 - 28.3 mbsf



Description

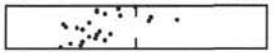
SILTY CLAYSTONE, SILT and SAND

Major Lithologies:
Gray (5Y 4/1 to N 4/) SILTY CLAYSTONE with disseminated pyrite, anhydrite veins and nodules, and local SAND and SILT laminations and fining-upward intervals. The SILTY CLAYSTONE is fractured (drilling disturbance?) throughout the core. Anhydrite occurs as both white (N 7/), fluffy material and as clear to very light gray, coarsely crystalline, radial-fibrous, veins. Fining-upward sequences of fine- to medium-grained SAND to SILT and bioturbated SILTY CLAYSTONE are present in Sections 4, 5, and 6. The basal SAND is typically cross- to parallel-laminated and locally convolute bedded. Disseminated pyrite is present throughout the intervals , but is preferentially concentrated in the convolute bedded zones.



Volumetric Magnetic Susceptibility (10^{-6} SI)

100 1000 10000



SITE 858 HOLE D CORE 5H CORED 28.3 - 28.8 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	?		XX	M	N 5/	SILTSTONE, SILTY CLAYSTONE and SANDSTONE

Major Lithologies:
Drilling chips and cuttings of fine-grained SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. Bottom part of core (Section CC, 20-50 cm) consists of small fragments of gray (N5/) SILTY CLAYSTONE in a matrix of slighter lighter gray SILTY CLAYSTONE.

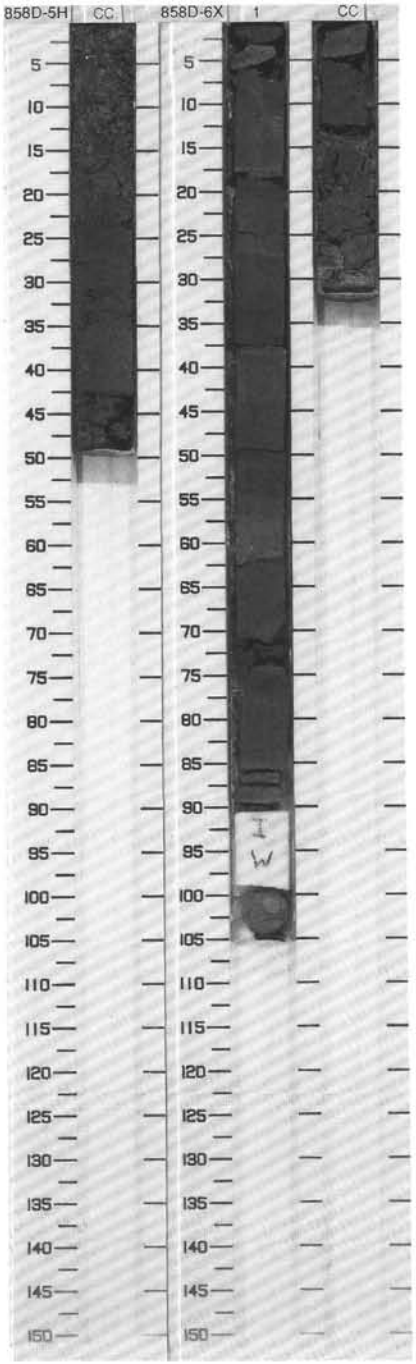
Volumetric Magnetic Susceptibility (10^{-6} SI)

100 1000 10000

SITE 858 HOLE D CORE 6X CORED 28.8 - 37.2 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1 CC	?			S WI M S	N 5 To N 6	SANDSTONE, SILTSTONE and SILTY CLAYSTONE

Major Lithologies:
Fining-upward sequences of gray (N 5/ to N 6/) medium- to fine-grained SANDSTONE, SILTSTONE and SILTY CLAYSTONE. SANDSTONE and SILTSTONE are the dominant rock types present. The SANDSTONE is locally cross laminated and parallel laminated, but most commonly massive. The SILTSTONE and SILTY CLAYSTONE intervals are massive. The massive strata have a "moldy" and "bumpy" surface texture. The molds are probably the result of dissolution. Some are rhombic and may be anhydrite molds (some anhydrite is still present); others are round and seem to be the result of plucked crystals or crystal aggregates (clay or zeolite?). Some of the molds have been partially filled with pyrite. Rare, small, discreet burrows are also filled with pyrite and pyrite replacing pyrrhotite. The bumpy texture seems to be the result of sediment casts surrounding three-dimentional crystal molds. Anhydrite veinlets (<1 mm wide) are present in Section 1. A zeolite vein with sphalerite and trace of chalcopyrit is present in Section CC at 0-5 cm. The bottom 2 cm of Section CC consists of greenish gray, parallel laminated, fine SANDSTONE similar to that at the bottom of HOLE 858B, which was hydrothermally overprinted.



SITE 858 HOLE D CORE 7X CORED 37.2 - 40.7 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC	?			M		SANDSTONE

Major Lithology:
Gray (N 5/ to N 6/) fine-grained SANDSTONE, mostly in drilling chips, but partially preserved as coherent pieces displaying cross lamination at Section CC, 11-19.

858E 1W WASH CORE

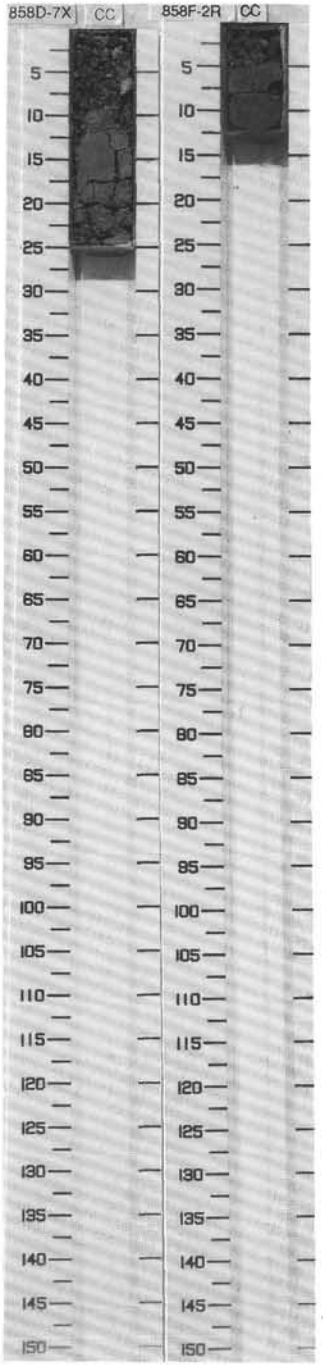
858F 1W WASH CORE

SITE 858 HOLE F CORE 2R CORED 27.8 - 37.0 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				M		SILICIFIED SILTSTONE

Major Lithology:
Gray (N 5/) indurated SILICIFIED SILTSTONE with a spotted microtexture. Core consists of drilling breccia. Pieces of carbonate nodule are present at the top of the core.

858F 3R NO RECOVERY



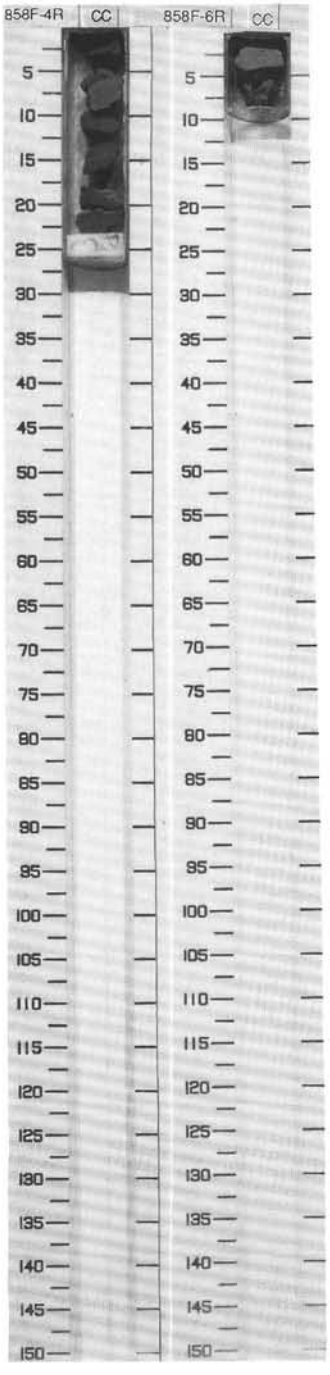
SITE 858 HOLE F CORE 4R CORED 46.5 - 56.0 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				M		SILICIFIED SILTSTONE, SANDSTONE and SILICIFIED CLAYSTONE Major Lithologies: Gray (N 4/ to N 5/) SILICIFIED SILTSTONE with vuggy porosity; locally laminated, bioturbated, and with minor odor of H2S upon cutting. Gray (N 5/) SANDSTONE with a few cross laminations. Dark gray (N 4/) bioturbated SILICIFIED CLAYSTONE.

858F 5R Entire core given to paleontologists.

SITE 858 HOLE F CORE 6R CORED 65.6 - 75.1 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC						SANDSTONE and SILTY CLAYSTONE Major Lithologies: One fragment of fine-grained SANDSTONE. Several fragments of SILTY CLAYSTONE, one with silt laminae. Slight odor of H2S.



SITE 858 HOLE F CORE 7R CORED 75.1 - 84.7 mbsf

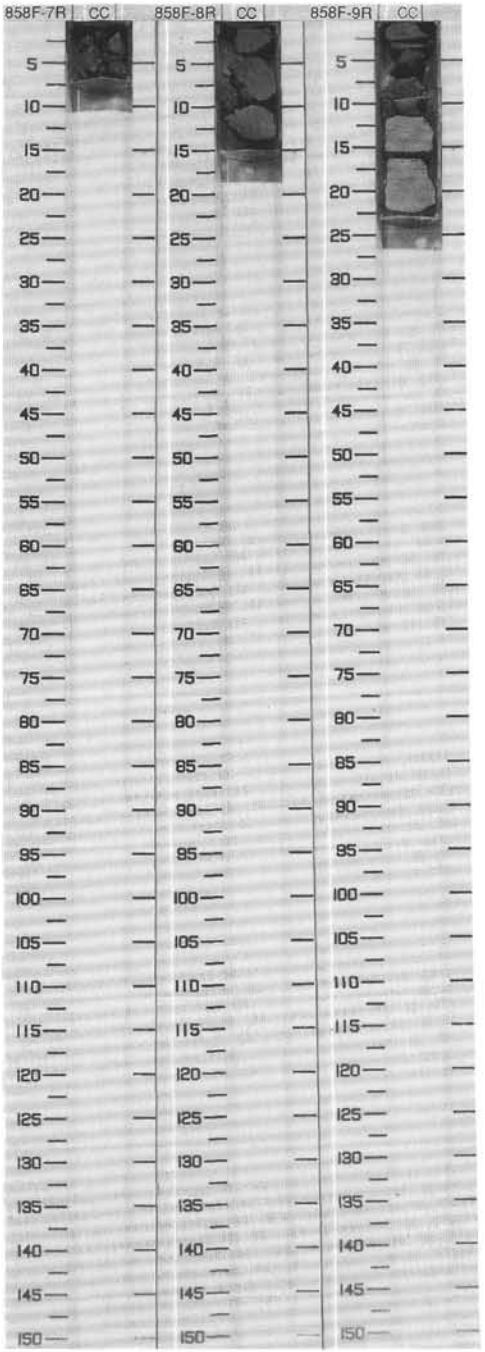
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				M		SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Most larger fragments are cross laminated, fine-grained SANDSTONE. Smaller fragments are fine SANDSTONE, SILTSTONE, and SILTY CLAYSTONE. One SANDSTONE fragment has a fracture surface coated with terminate quartz crystals that grew into open space. Some twinned, equant zeolite crystals are also present.

SITE 858 HOLE F CORE 8R CORED 84.7 - 94.2 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				S		SANDSTONE, SILTSTONE and SILTY CLAYSTONE Major Lithologies: Three large fragments of medium- to fine-grained SANDSTONE, one with convolute bedding. Smaller fragments of SILTSTONE or SILTY CLAYSTONE. Smear slide shows zeolite in SANDSTONE.

SITE 858 HOLE F CORE 9R CORED 94.2 - 103.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				M		SILTSTONE, SILTY CLAYSTONE and SANDSTONE Major Lithologies: Cross- and planar-laminated SILTSTONE with some disseminated pyrite. Medium- to coarse-grained, light gray SANDSTONE (N 6/) with carbonized wood fragments, small euhedral epidote crystals, quartz overgrowths, and zeolite cements. One SANDSTONE fragment contains an unidentified microfossil.

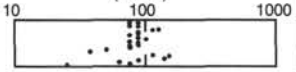


SITE 858 HOLE F CORE 10R CORED 103.9 - 113.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC						SANDSTONE Major Lithology: Cross laminated, fine-grained SANDSTONE with fracture surfaces coated with equant euhedral zeolite, doubly terminated quartz crystals, and euhedral sphalerite.

Volumetric Magnetic Susceptibility (10^{-6}SI)

10 100 1000

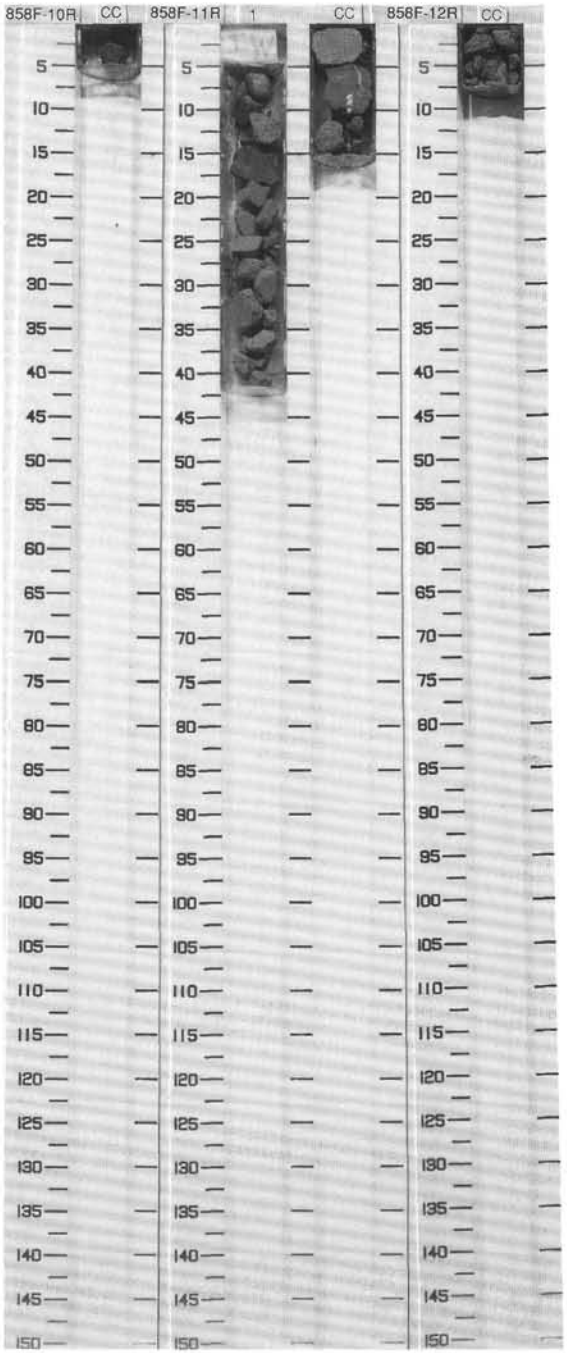


SITE 858 HOLE F CORE 11R CORED 113.6 - 123.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1 CC				I S	N 5	CLAYSTONE, SILTSTONE and SANDSTONE Major Lithologies: Gray (N 4 to N 6) CLAYSTONE, laminated SILTSTONE and medium-grained SANDSTONE. Fragments contain zeolite and quartz crystals growing on fracture surfaces, minor pyrite, and a trace of sphalerite, anhydrite, and chalcopyrite.

SITE 858 HOLE F CORE 12R CORED 123.3 - 132.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				S M		CLAYSTONE and SILTSTONE Major Lithologies: Gray (N 5/) CLAYSTONE cut by two mm anhydrite veinlet. One fragment of parallel laminated SILTSTONE with a spotted texture.



SITE 858 HOLE F CORE 13R CORED 132.9 - 142.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC						SILTY CLAYSTONE, SANDSTONE and SILTSTONE

Major Lithologies:
Semilithified SILTY CLAYSTONE, pyritic. One fragment contains an anhydrite nodule. One large fragment of convolute bedded fine-grained SANDSTONE. Two fragments of SILTSTONE, cross laminated to rippled, very pyritic, heavily invaded by zeolite and quartz.

SITE 858 HOLE F CORE 14R CORED 142.6 - 152.2 mbsf

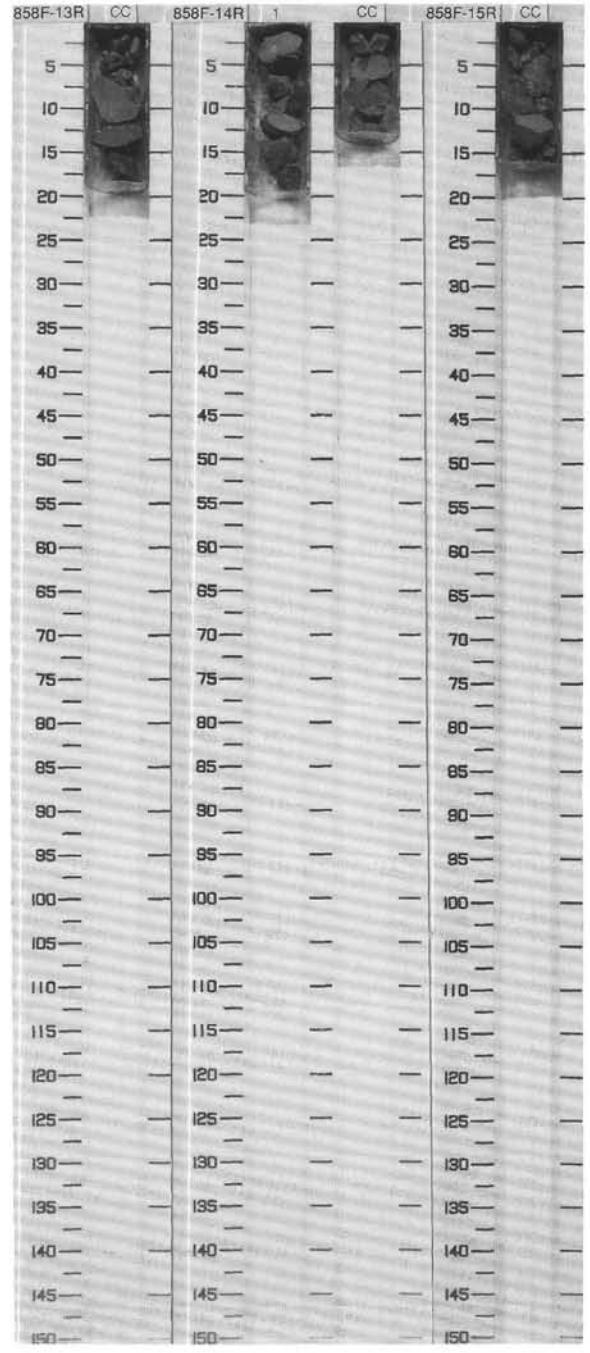
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1 CC				S I		SILTSTONE, CLAYSTONE and SANDSTONE

Major Lithologies:
Leached and very altered, light gray (N 5/ to N /6) SILTSTONE, originally finely laminated, pyrite filling of coarser laminations. Zeolite alteration common. Some of the finer grained rock is very porous. Fine- to medium-grained SANDSTONE, locally laminated and cross laminated with pyrite in some laminae. Anhydrite lines some veins.

SITE 858 HOLE F CORE 15R CORED 152.2 - 161.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC						SILTSTONE and SANDSTONE

Major Lithologies:
Quartz-cemented SILTSTONE with 7 mm thick anhydrite-rimmed quartz vein. One large piece of vuggy coarse grained SANDSTONE with dispersed pyrite.



SITE 858 HOLE F CORE 16R CORED 161.9 - 171.6 mbsf

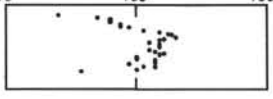
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		CC				S		SANDSTONE and CLAYSTONE Major Lithologies: One fragment of porous gray (N 5/) SANDSTONE. Claystone is totally altered to smectite(?) and containe minor disseminated pyrtie, and small anhydrite molds with possible residual anhydrite lining.

SITE 858 HOLE F CORE 17R CORED 171.6 - 181.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC				M		SANDSTONE and CLAYSTONE Major Lithologies: Planar to convloutely laminate SANDSTONE composed of altered feldspar and quartz. CLAYSTONE is totally altered to smectite (?), contain numerous anhydrite molds, and quartz "micronodules."

Volumetric Magnetic Susceptibility (10^{-6}SI)

10 100 1000

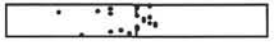


SITE 858 HOLE F CORE 18R CORED 181.3 - 190.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1				W	N 5 To N 6	SILTSTONE and SANDSTONE Major Lithologies: Plane parallel laminated SILTSTONE, three pieces of it have circular brown-stained (oil?) regions of 1 to 2 cm diameter. SANDSTONE has splotchy alteration textures. Splotches are 1 to 5 mm diameter, form mostly along discrete layers, and probably consist of quartz.
		CC				M I		

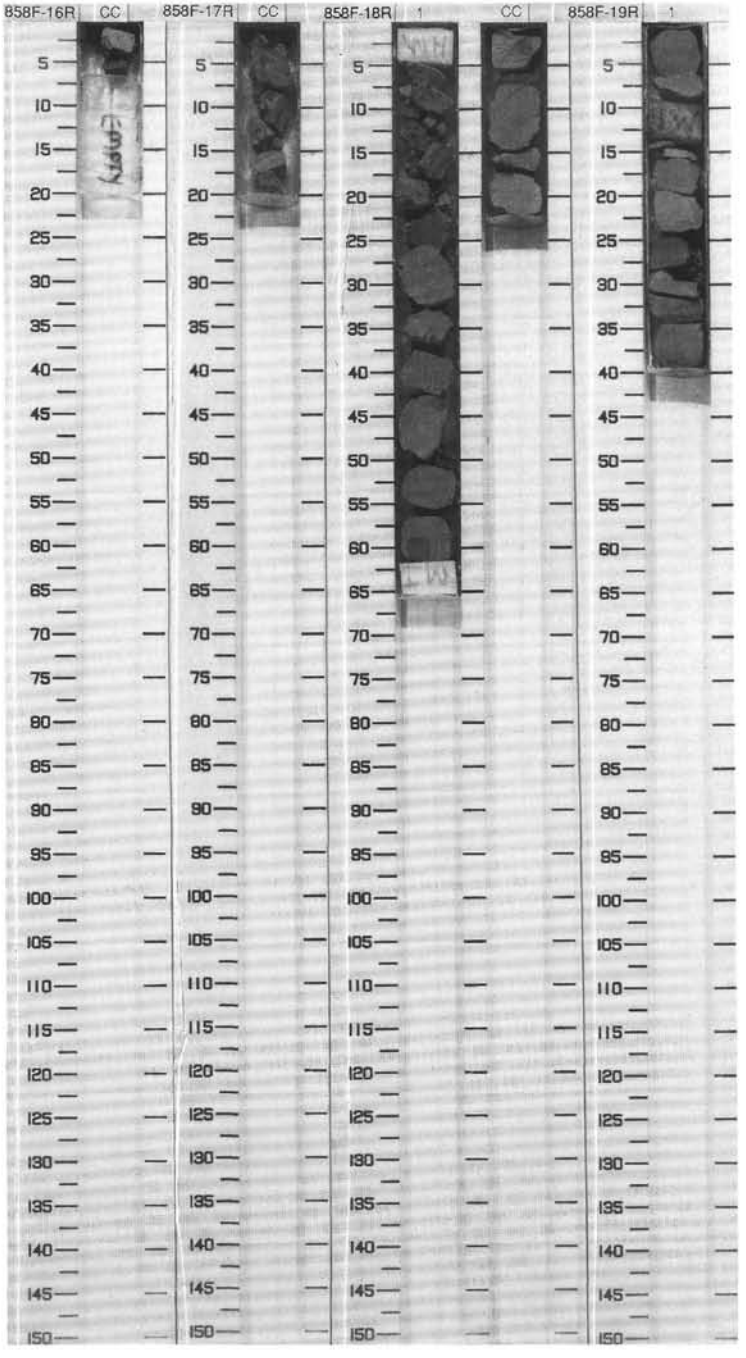
Volumetric Magnetic Susceptibility (10^{-6}SI)

10 100 1000



SITE 858 HOLE F CORE 19R CORED 190.9 - 200.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
		1				I	N 6	SILTSTONE and SANDSTONE Major Lithologies: FInely laminated and plane parallel laminated SILTSTONE to fine SANDSTONE with some bioturbation and splotchy quartz alteration.



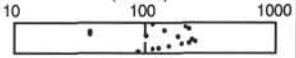
SITE 858 HOLE F CORE 20R CORED 200.6 - 210.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC						SILTSTONE and SANDSTONE

Major Lithologies:
Plane parallel laminated SILTSTONE and fine-grained SANDSTONE. One piece of splotchy-textured, quartz-altered fine SANDSTONE.

Volumetric Magnetic Susceptibility (10^{-6} SI)

10 100 1000



SITE 858 HOLE F CORE 21R CORED 210.3 - 220.0 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1				I M		CLAYSTONE, SILTSTONE and SANDSTONE

Major Lithologies:
Abrupt change from Core 858F-20R to Core 858F-21R. In the several cores above this one, the only claystone were a few very altered ones. In this core and in the ones below, CLAYSTONE appears to be fresher and softer. CLAYSTONE is dark gray (N 4/). Dark gray SILTSTONE is also present as are a few small pieces of fine-grained SANDSTONE. Porous zones of the SILTSTONE and SANDSTONE contain abundant fine, dispersed pyrite.

SITE 858 HOLE F CORE 22R CORED 220.0 - 229.6 mbsf

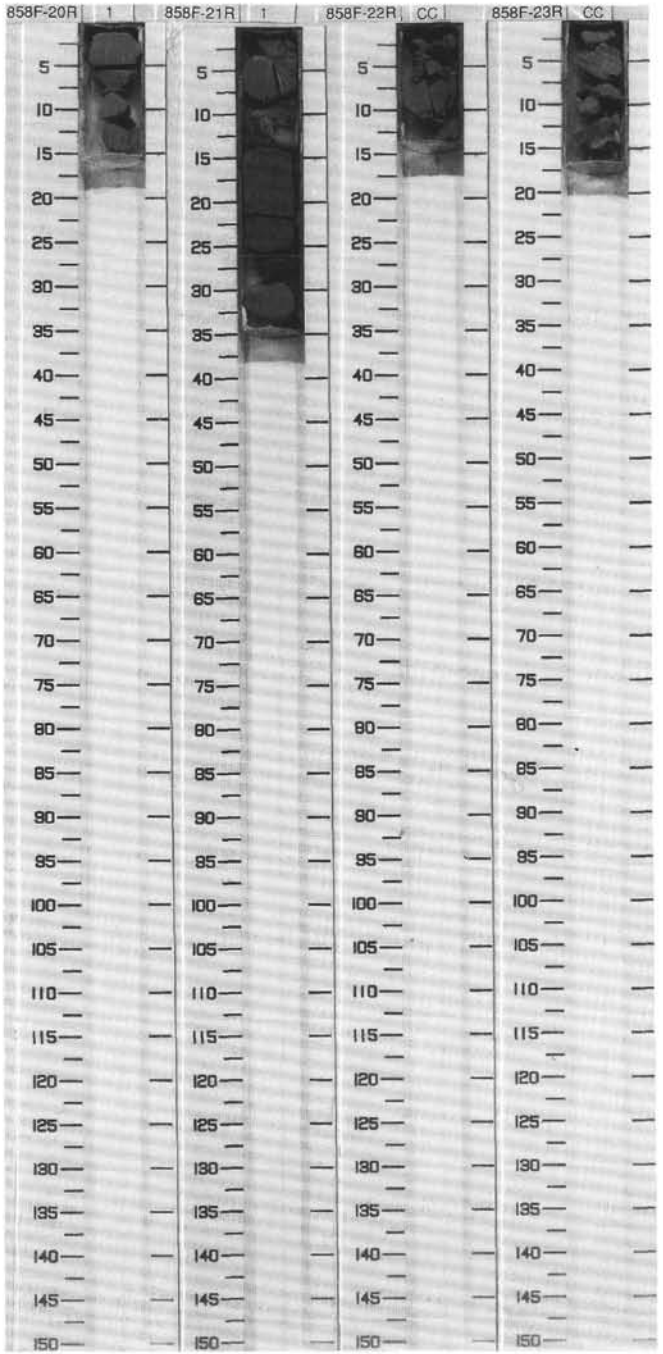
Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC				M		CLAYSTONE, SILTSTONE and SANDSTONE

Major Lithologies:
Many pieces of previously encountered lithologies. Dark gray (N 4/) homogeneous CLAYSTONE, plane parallel laminated SILTSTONE, quartz-splotchy-altered SANDSTONE. There is more quartz in this core than previously encountered. Some fine-grained pyrite and possibly authigenic zeolite is present.

SITE 858 HOLE F CORE 23R CORED 229.6 - 239.3 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC				M		SILTSTONE, CLAYSTONE and SANDSTONE

Major Lithologies:
Plane parallel laminated SILTSTONE, splotchy quartz-replaced cross laminated SANDSTONE, and convolutely interbedded CLAYSTONE and SILTSTONE. Pyrite occurs along silty laminations and with quartz splotches. Dark gray (N 4/) CLAYSTONE fills burrows in SILTSTONE.

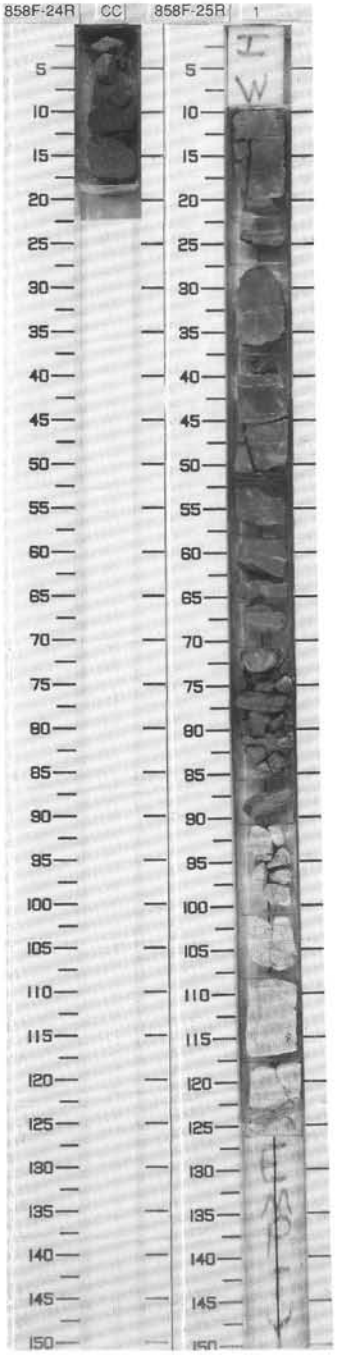


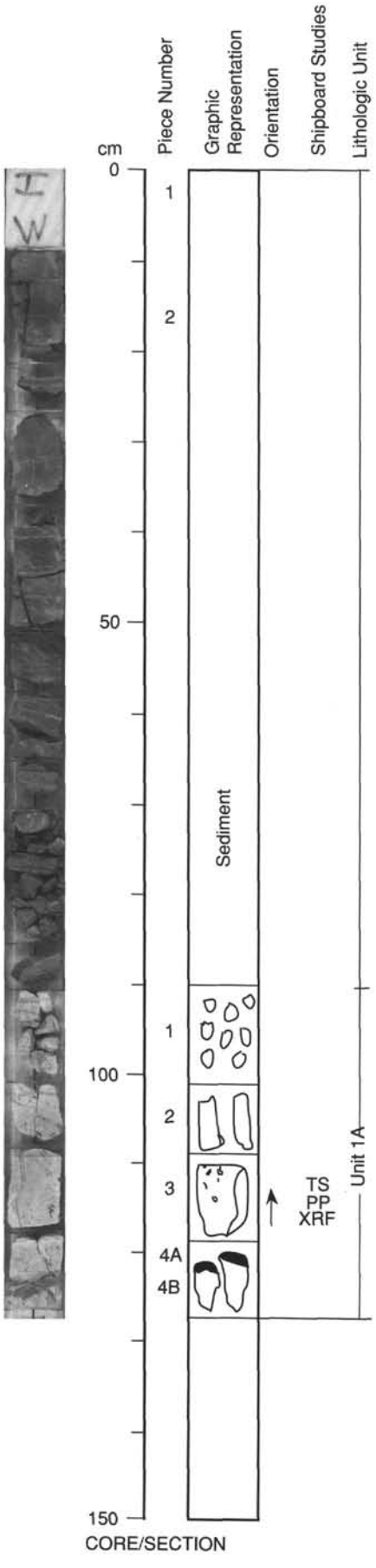
SITE 858 HOLE F CORE 24R CORED 239.3 - 248.9 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		CC				M		SILTSTONE, SANDSTONE, SILTY CLAYSTONE and CLAYEY SILTSTONE Major Lithologies: Parallel laminated greenish medium-grained SANDSTONE. CLAYEY SILTSTONE, SILTY CLAYSTONE, finely laminated, disseminated pyrite, and pyrite lenses. One piece of bioturbated SILTSTONE with disseminated pyrite.

SITE 858 HOLE F CORE 25F CORED 248.9 - 258.6 mbsf

Meter	Graphic Lith.	Section	Age	Structure	Disturb	Sample	Color	Description
1		1				I	N 5	SILTY CLAYSTONE Major Lithology: Gray (N 5/ to N 6/) SILTY CLAYSTONE with local silty laminations and silty burrows. Pyrite is disseminated throughout, most common in the silty interbeds and burrows. Small fracture at 45 to 50 cm has 2 mm offset and pyrite and anhydrite mineralization. Local white lamination are clean SANDSTONE.





139-858F-25R-1

UNIT 1A: FINE-GRAINED BASALT

Piece 1

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Leucocratic, fine-grained to aphanitic, locally variolitic.
VESICLES Small, round.
COLOR: Light gray to gray-green.
STRUCTURE: None.
ALTERATION: Ameoboid white areas 1–3 mm in diameter.
VEINS/FRACTURES: None.

UNIT 1A: FINE-GRAINED BASALT

Piece 2

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Aphanitic.
VESICLES None.
COLOR: Color gradation an effect of alteration. Varies from light gray to green in more altered areas.
STRUCTURE: None.
ALTERATION: Indistinct greenish alteration patches with a slightly "graphic" texture. Also contains 10% pyrite in discrete patches, 1x3 mm in size. Alteration to smectite and altered feldspars are present.
VEINS/FRACTURES: None.

UNIT 1A: FINE-GRAINED BASALT

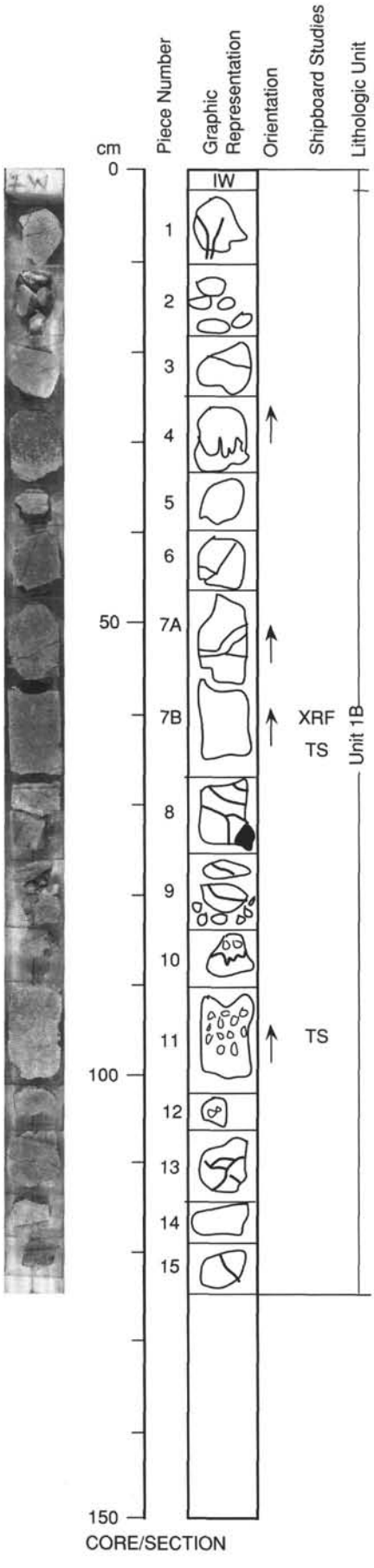
Piece 3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Aphanitic, locally possibly variolitic.
VESICLES Unknown, 0.1–0.2 mm, round to pipe-like. More vesicular at base of sample. Many vesicles are rimmed by a white mineral (quartz?), and infilled by green smectite/talc assemblage. Epidote infills some vesicles.
COLOR: Light gray.
STRUCTURE: None.
ALTERATION: This piece is part of the altered margin of the mafic intrusion, and has irregularly distributed patches of white alteration in the upper part of the sample, and pervasive alteration in the bottom half. Pyrite occurs throughout the sample as massive blebs, disseminations, and possible vesicle infillings.
VEINS/FRACTURES: 5.0 mm, subparallel to the core axis. The vein set contains several distinct zones. The vein walls are coated in a dark green smectite layer (0.1 mm wide). The major vein infilling in the upper part is quartz, which cuts chlorite and smectite veins. Pyrite occurs as irregular patches in the quartz veins, but not in the chlorite-smectite veins. Epidote forms a distinctive zone in the lower half of the vein, where it is cogenetic with the quartz. A small vein near the bottom of the sample contains a white mineral that may be anhydrite.

UNIT 1A: VESICULAR BASALT

Pieces 4A and 4B

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Aphanitic but with a few remnant microlites visible.
VESICLES: None.
COLOR: Very light gray, but variable due to alteration.
STRUCTURE: None.
ALTERATION: Celadonite (light blue) infills variolite zone near top of the sample. Epidote occurs in irregular patches, pyrite fills fractures subparallel to the core axis, and also occurs in distinct patches, 1–2 mm wide. Some possible silicification near the bottom of the sample.
VEINS/FRACTURES: Subparallel to core axis. Infilled with pyrite.



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UNIT 1B: FINE-GRAINED CHILLED MARGIN

Piece 1

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: 75% groundmass composed of varioles, with 10% interstices and 10% vesicles. Interstices to varioles are filled with altered glass (white) which is crosscut by altered (green) plagioclase microlites.
VESICLES: 10%, 0.1 mm, spherical, infilled by two or three minerals, 1) white rim and dark green center, or 2) smectite-epidote green rim and pistachio green crystalline center.
COLOR: Gray.
STRUCTURE: None.
ALTERATION: Sample is highly altered. Pyrite (5%–10%) occurs as ovoid to irregular blebs 2–3 mm wide.
VEINS/FRACTURES: Veins cutting sample have smectite-chlorite outer margin, epidote core, and irregularly distributed pyrite.

UNIT 1B: VARIOLITIC BASALT

Piece 2

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic to microlitic.
VESICLES: None.
COLOR: Light gray-brown
STRUCTURE: None.
ALTERATION: Highly altered.
VEINS/FRACTURES: Vein in one sample contains anhydrite, chlorite-smectite, and pyrite.
ADDITIONAL COMMENTS: Very hard sample, silicified and albitized(?)

UNIT 1B: VARIOLITIC CHILLED BASALT

Piece 3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Micro-variolitic, with possibly 1% olivine microphenocrysts now replaced.
VESICLES: Few, irregular. Infilled with chlorite and smectite.
COLOR: Variable, from white to gray.
STRUCTURE: Chilled margin.
ALTERATION: Alteration most intense at top of sample with white celadonite infilling the variole interstices. This white zone grades down to a green zone and then into a gray zone of coalesced varioles.
VEINS/FRACTURES: None.

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UNIT 1B: FINE-GRAINED, VARIABLY VARIOLITIC, DIABASE

Pieces 4 and 5

CONTACTS: None.
PHENOCRYSTS:
Plagioclase - 1.0–2.0 mm, needles.
GROUNDMASS: Variolitic and plagioclase rich. Moderately altered.
VESICLES: None.
COLOR: Variable.
STRUCTURE: None.
ALTERATION: Patchy, some green areas, possibly altered olivine, and some pyrite (1%).
VEINS/FRACTURES: None.

UNIT 1B: FINE-GRAINED DIABASE

Pieces 6–7B

CONTACTS: None.
PHENOCRYSTS: Ferromagnesians occur as spots within the groundmass.
Pyroxene - 2%–3%, unknown, spotty, probably phenocrysts.
Olivine - 0.5%, unknown, possibly altered olivines, green.
GROUNDMASS: Slightly variolitic with fresh plagioclase microlites. Equigranular mixture of plagioclase and pyroxene.
VESICLES: None.
COLOR: Medium gray to light brown.
STRUCTURE: None.
ALTERATION: Partially altered pyroxenes.
VEINS/FRACTURES: 0.2 mm, subparallel and perpendicular. In Piece 6, subparallel to core axis, infilled with chlorite and smectite (dark green). In piece 7, chlorite, smectite, and minor pyrite vein and also anhydrite, chalcopyrite, and zeolite vein.

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UNIT 1B: FINE-GRAINED DIABASE

Pieces 8 and 9

CONTACTS: Diabase-sediment contacts.
PHENOCRYSTS: None.
GROUNDMASS: Similar to Pieces 6 and 7. Fine-grained equigranular mix of pyroxene and plagioclase.
VESICLES: None.
COLOR: Variable. Medium gray diabase and dark gray sediment.
STRUCTURE: Banded sediment in upper part of sample inclined at ~75° to the core axis. Sediment is very hard cherty material, possibly silicified sediment incorporated into the melt.
ALTERATION: Partially altered.
VEINS/FRACTURES: None.

UNIT 1B: VARIOLITIC DIABASE

Pieces 10 and 11

CONTACTS: None.
PHENOCRYSTS: Some possible altered olivine phenocrysts, hexagonal outline, now composed of talc.
GROUNDMASS: Variably variolitic.
VESICLES: 2%, 1.0 mm, round, even. Filled with ameboid mixture of quartz and chlorite, a few are zoned with a silica outer rim.
COLOR: Varies from dark to light depending on the variolitic nature.
STRUCTURE: None.
ALTERATION: Some alteration of olivines, generally only moderately altered.
VEINS/FRACTURES: None.

UNIT 1B: FINE-GRAINED DIABASE

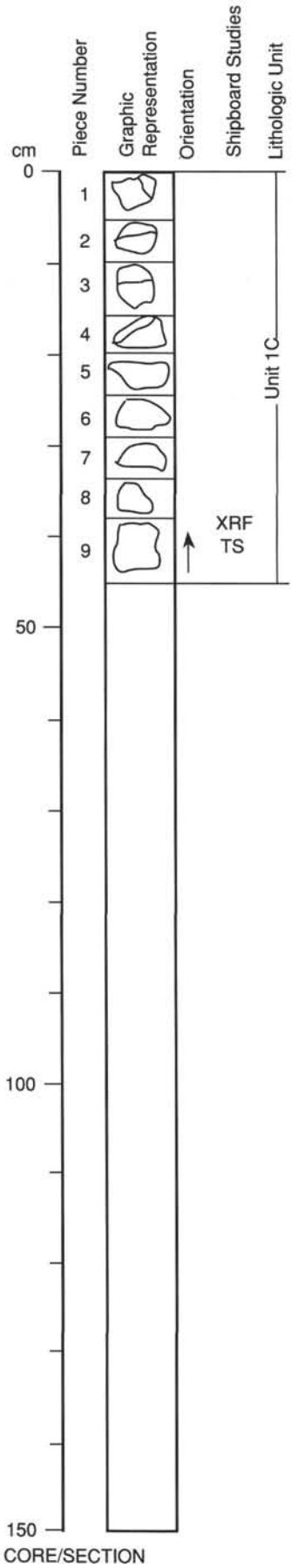
Pieces 12 and 13

CONTACTS: None.
PHENOCRYSTS: Dark medium green "oikocrysts", either ferromagnesian phenocrysts or alteration spots. They are cut by plagioclase microlites.
GROUNDMASS: Microlitic.
VESICLES: 5%.
COLOR: Gray-green.
STRUCTURE: None.
ALTERATION: Mottled pistachio green to yellow-green coating on plagioclase microlites and groundmass material, possibly fine-grained epidote.
VEINS/FRACTURES: Unknown, 0.5–1mm, 8° to core axis. Filled with chlorite, and minor pyrite.

UNIT 1B: VARIOLITIC DIABAS

Pieces 14 and 15

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Coarse plagioclase microlites, 2 mm long which are twinned and transect variolitic boundaries.
VESICLES: 1%, infilled with chlorite and pyrite.
COLOR: Leucocratic-melanocratic.
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: 2.0 mm. Piece 16 cut by chlorite vein.



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UNIT 1C: FINE-GRAINED VARIOLITIC DIABASE

Piece 1

CONTACTS: Chilled zone.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic
VESICLES: <1%, sparse. Infilled with chlorite.
COLOR: Leucocratic to melanocratic.
STRUCTURE: Top part of sample is paler and contains chill which is white-pale green of accumulated leucocratic minerals intergrown with celadonite in a vermicular intergrowth.
ALTERATION: Chloritized ferromagnesian clots, 2 mm in diameter.
VEINS/FRACTURES: None.

UNIT 1C: FINE-GRAINED VARIOLITIC DIABASE

Pieces 2–5

CONTACTS: Chilled zones.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic, with plagioclase microlites that transect both the darker and lighter portions of the groundmass.
VESICLES: 5%, round pipe-like.
COLOR: Variable, leucocratic to melanocratic.
STRUCTURE: Pieces 2, 3, 4, and 5 all have narrow (0.4–0.6 cm) chilled zone of ameoboid white aphanitic melt intergrown with celadonite.
ALTERATION: 10% melanocratic spots.
VEINS/FRACTURES: None.

UNIT 1C: FINE-GRAINED DIABASE

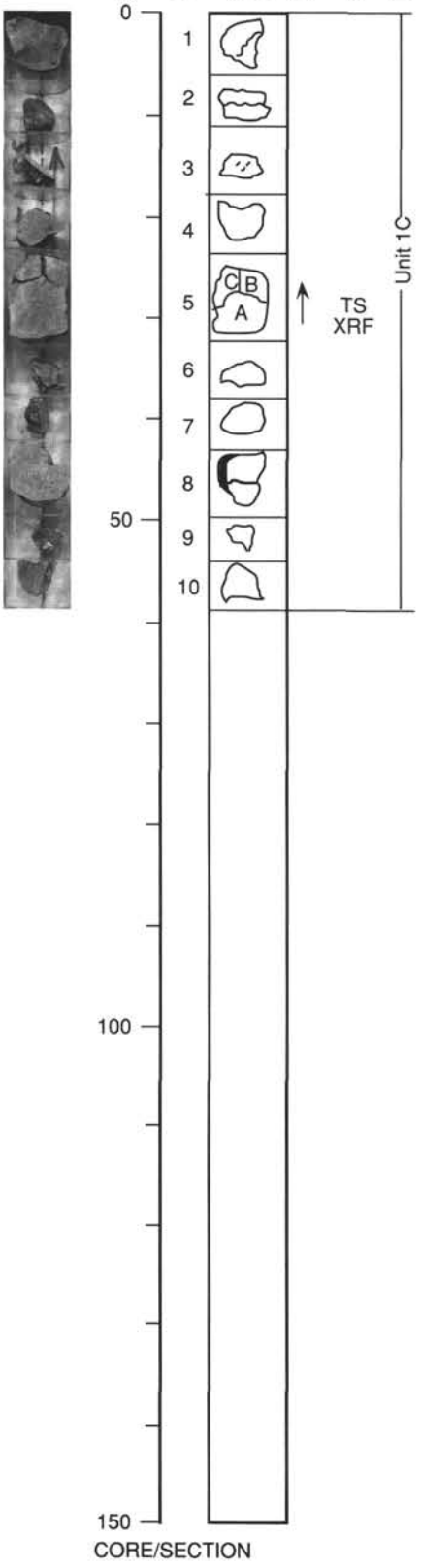
Pieces 6–8

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic.
VESICLES: Unknown, sparse, infilled with chlorite.
COLOR: Melanocratic.
STRUCTURE: None.
ALTERATION: Ferromagnesian clots, chloritic, randomly distributed, ~5% of samples.
VEINS/FRACTURES: None.

UNIT 1C: EQUIGRANULAR MEDIUM-GRAINED DIABASE

Piece 9

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Equigranular, holocrystalline with a few ferromagnesian microphenocrysts and equigranular to tabular clear unaltered plagioclase crystals.
VESICLES: None.
COLOR: Gray.
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: None.



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UNIT 1C: FINE-GRAINED VARIOLITIC BASALT

Piece 1

CONTACTS: None.
PHENOCRYSTS: Mafic phenocrysts altered to chlorite.
Pyroxene - 1%, 1.0–2.0 mm, square crystals now pseudomorphed by chlorite.
Olivine - 1%–2%, 1.0–3.0 mm, ovoid crystals now pseudomorphed by chlorite.
Plagioclase - 1.0–2.0 mm, tabular.
GROUNDMASS: Microcrystalline with plagioclase and clinopyroxene (0.3–1.0 mm). Replacement of up to 20% plagioclase to chlorite, mostly near fracture.
VESICLES: 0.5 mm. Vesicles filled with chlorite.
COLOR: Gray (N/5).
STRUCTURE: N/A.
ALTERATION: Pyrite within the rock as aggregate meshwork, 3% pyrite.
VEINS/FRACTURES: None.

UNIT 1C: VARIOLITIC BASALT

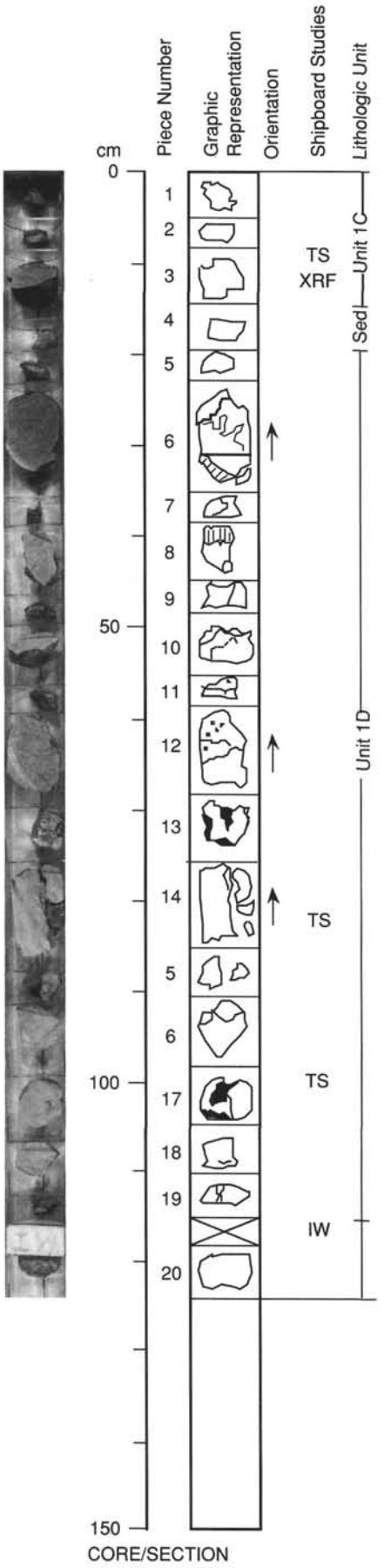
Pieces 2–8

CONTACTS: None.
PHENOCRYSTS: All mafic phenocrysts altered to chlorite.
Plagioclase - 5%–10%, 0.5–2.0 mm, fresh phenocrysts.
Olivine - 2%–3%, 0.5–1.0 mm, ovoid to equant, altered to chlorite.
Clinopyroxene - 1%, 1.0 mm, broken, tabular crystals, altered to chlorite.
GROUNDMASS: >50% of the groundmass is glass with round cryptocrystalline varioles. Some plagioclase microlites.
VESICLES: 0.5–1.5 mm, spherical,. Vesicles filled with chlorite.
COLOR: Mottled color (N/7–N/6).
STRUCTURE: None.
ALTERATION: Pyrite and pyrrhotite aggregates disseminated throughout rock.
VEINS/FRACTURES: 1.0 mm wide, random, veins in Pieces 2, 6, and 8 filled with chlorite.

UNIT 1C: FINE-GRAINED BASALT

Pieces 9 and 10

CONTACTS: None.
PHENOCRYSTS: Mafic phenocrysts altered to chlorite, possibly also some clinopyroxene phenocrysts also.
Plagioclase - 2%, 0.5–1.0 mm, Tabular.
Olivine - 1%, 1.0 mm, ovoid.
GROUNDMASS: Plagioclase, clinopyroxene and glass in groundmass, crystals 0.2–1 0 mm. 5%–10% mesostasis altered to chlorite.
VESICLES: 1%, 0.5 mm, spherical. Vesicles infilled with chlorite.
COLOR: Gray.
STRUCTURE: None.
ALTERATION: 1.0–2.0 mm pyrite aggregates.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Fresher than Pieces 1–8.



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UNIT 1C: FINE-GRAINED BASALT

Pieces 1–3

CONTACTS: None.
PHENOCRYSTS:
Plagioclase - 1%–3%, 1.0–3.0 mm, tabular, twinned microphenocrysts.
GROUNDMASS: 50% glass, 30% feldspar, 20% pyroxene.
VESICLES: 1%, 1.0 mm. Vesicles infilled with chlorite.
COLOR: Mottled.
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: None.

UNIT 1D: VARIOLITIC BASALT WITH WELL DEFINED CHILLS

Pieces 5–13

CONTACTS: Chilled margins.
PHENOCRYSTS:
Plagioclase - 3%–5%, 0.5–1.0 mm, tabular.
Olivine - 1%, 1.0 mm, pseudomorphed by chlorite.
GROUNDMASS: Glassy to cryptocrystalline.
VESICLES: 1%–5%, 0.5–1.5 mm, spherical. Filled with chlorite, in Piece 12 filled with epidote and rimmed by white mineral. Vesicle size diminishes toward center of pieces.
COLOR: Variable from bleached white altered glass to pinkish gray-gray (N/6).
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: 0.5–1.0 mm. In Piece 12 veins infilled with chlorite and pyrite that extends into the rock matrix from the vein.
ADDITIONAL COMMENTS: Distinct chill/variolitic transitions with altered inter-pillow material visible in Pieces 6, 8, 10, 11, and 12.

UNIT 1D: FINE-GRAINED BASALT

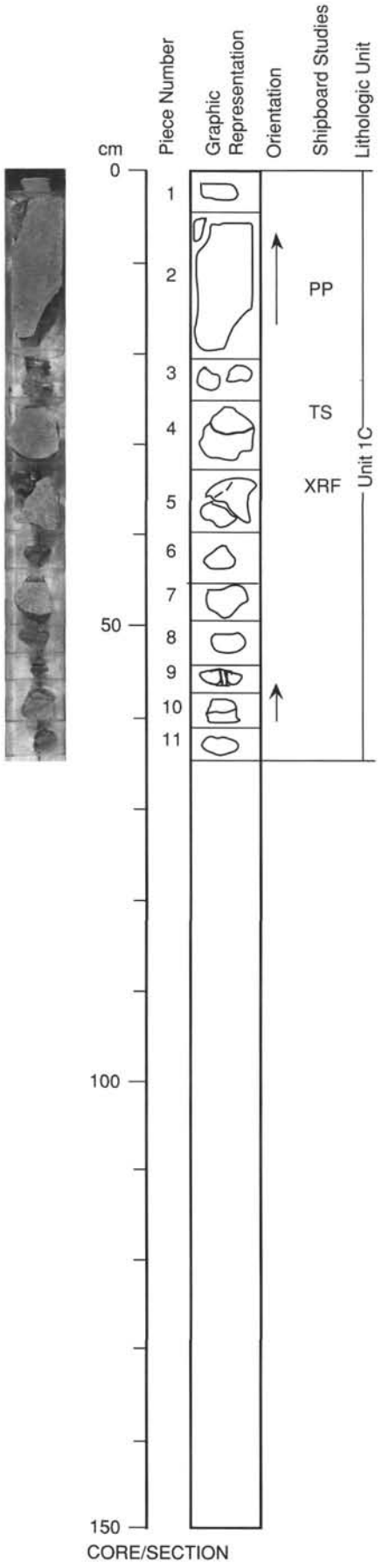
Pieces 14–18

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Aphyric to cryptocrystalline, microcrystalline in Pieces 17–18, with 1 mm plagioclase microlites.
VESICLES: 0.5 mm. In Pieces 17 and 18 vesicles occur infilled with chlorite.
COLOR: Gray.
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: 0.5 –10.0 mm. In Pieces 14–16 chlorite-sulfide veins, in Piece 17 quartz-chlorite veins.

UNIT 1D: VARIOLITIC BASALT

Pieces 19–20

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Microcrystalline-aphyric.
VESICLES: 0.3–1.0 mm, round. Vesicles rimmed by white mineral (talc (?)) and infilled by chlorite or pyrite.
COLOR: Mottled.
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Piece 20 is highly vesicular.



139-858G-1R-1

UNIT IC: VARIOLITIC TO FINE-GRAINED BASALT

Pieces 1–11

CONTACTS: Appears to be the upper contact of a cooling unit. Grain size of the groundmass increases from top to bottom. Varioles increase in quantity from top to bottom and Pieces 10 and 11 are cryptocrystalline.

PHENOCRYSTS: Unit is mostly aphyric. Occasional phenocrysts are replaced by secondary minerals. Identity is inferred by shape and replacement phases.
Plagioclase - <1%, 2.0–4.0 mm. Prehnite(?)-chlorite pseudomorph inferred to be plagioclase in Piece 1 only.
Olivine - <1%, 1.0–2.0 mm, small ovoid chlorite pseudomorphs.

GROUNDMASS: Composed of plagioclase microlites and cryptocrystalline matrix. The size of the microlites increases from top to bottom of core. Bottom two pieces are visibly crystalline.

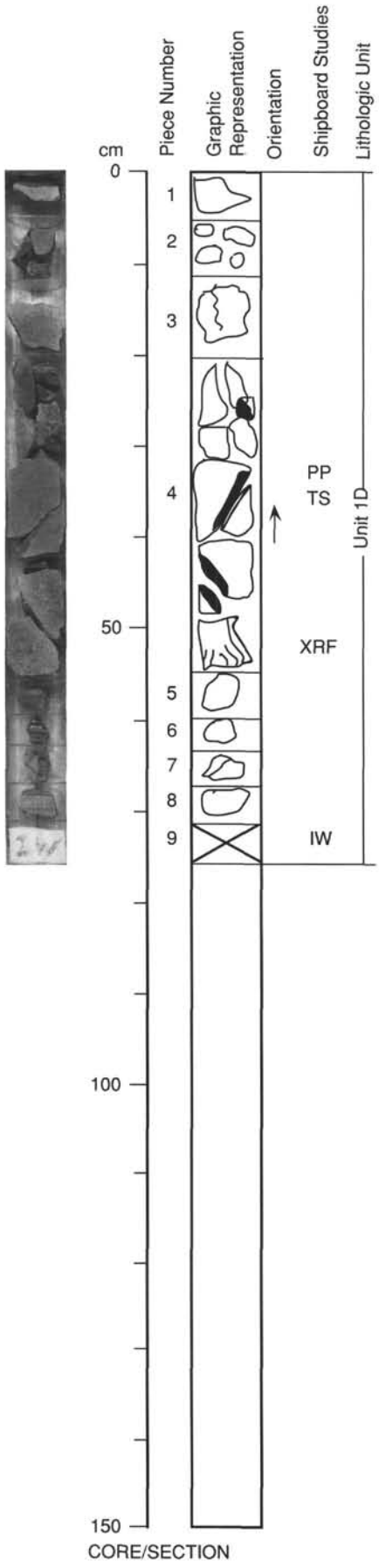
VESICLES: 3%, 0.5–1.0 mm, spherical, concentrated in Pieces 2, 4, and 5. Chlorite-filled vesicles are most abundant in the upper portion of the section.

COLOR: Color varies from medium gray to pale gray varioles.

STRUCTURE: Appears to be upper contact of a cooling unit, based on changes in grain size.

ALTERATION: Phenocrysts are replaced by chlorite (mafic) and prehnite-chlorite (plagioclase). Sparse (1%) pyrite is distributed through matrix as 1–2 mm blebs and possible phenocryst pseudomorphs. Slight (1%–2%) chlorite alteration is observed in the matrix.

VEINS/FRACTURES: 1%, 1.0–2.0 mm. Small fractures in Pieces 2, 4, 8, and 10 contain chlorite and sometimes sulfide. Piece 1 may have sulfide distributed along healed fractures. Rock fracture surfaces are coated with chlorite and pyrite.

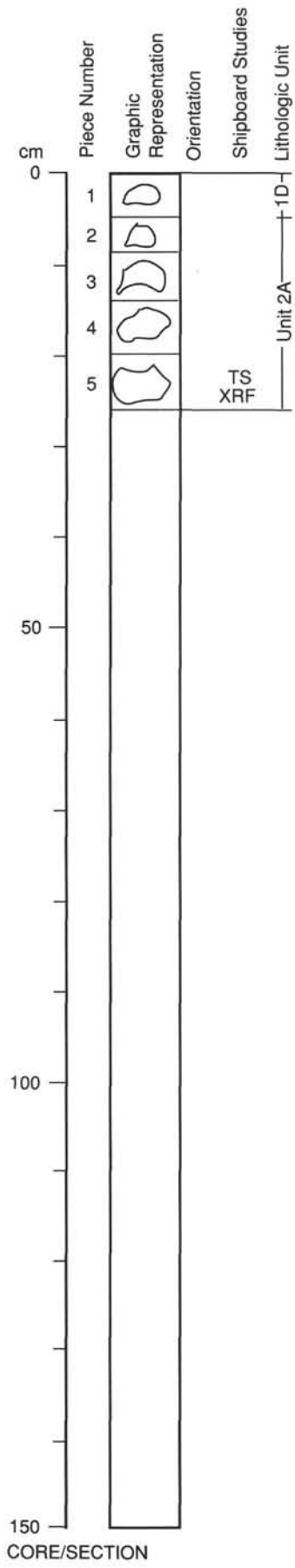


139-858G-2R-1

UNIT ID: SPARSELY PHYRIC TO APHYRIC VARIOLITIC BASALT

Pieces 1–8

CONTACTS: No chilled contacts. Variolitic zones appear in Piece 1, at the bottom of Piece 4 and in Piece 8. The zone between Pieces 4 and 5 especially appears to be a contact between cooling units.
PHENOCRYSTS: No fresh phenocrysts are apparent. Mafic phenocrysts could be pyroxene.
Plagioclase - 2%, 1.0–3.0 mm, blocky chloritized pseudomorphs.
Olivine - 1%, 1.0 mm, equant chloritized pseudomorphs.
GROUNDMASS: Composed of 30% plagioclase microlites in a cryptocrystalline matrix. Pieces not described as variolitic above are equigranular and fine-grained.
VESICLES: 3% 1.0 mm, spherical, Pieces 1–2.
Miaroles: Small linear cavities in Pieces 7–8 are filled with chlorite.
COLOR: Medium to light gray.
STRUCTURE: This core appears to have recovered 1–3 cooling units. No obvious pillow structure.
ALTERATION: Chlorite replaces all phenocrysts and 2% of the groundmass. Chlorite or sulfide fills all vesicles and cavities. 1% sulfide is disseminated in matrix of rock.
VEINS/FRACTURES: 5%, 4.0 mm and 1.0 mm, 30° to core axis. Thick vein in Piece 4 contains chlorite. Thin vein or healed fracture in Pieces 3 and 7 also filled with chlorite. All fracture surfaces coated with chlorite and chalcopyrite.
ADDITIONAL COMMENTS: Very homogeneous variolitic basalt with little obvious alteration within the interior of the pieces.



139-858G-3R-1

UNIT ID: FINE-GRAINED DIABASE

Piece 1

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained, slightly vesicular, equigranular, 20% clinopyroxene, 40%, plagioclase, 30% mesostasis. Grain size 0.2–0.4 mm.
VESICLES: 1%, 0.5–1.0 mm, round, irregular, chlorite filled.
COLOR: Green.
STRUCTURE: None.
ALTERATION: Moderate chlorite in mesostasis, clinopyroxene is light brown, partly altered.
VEINS/FRACTURES: None.

UNIT 2A: VARIOLITIC BASALT

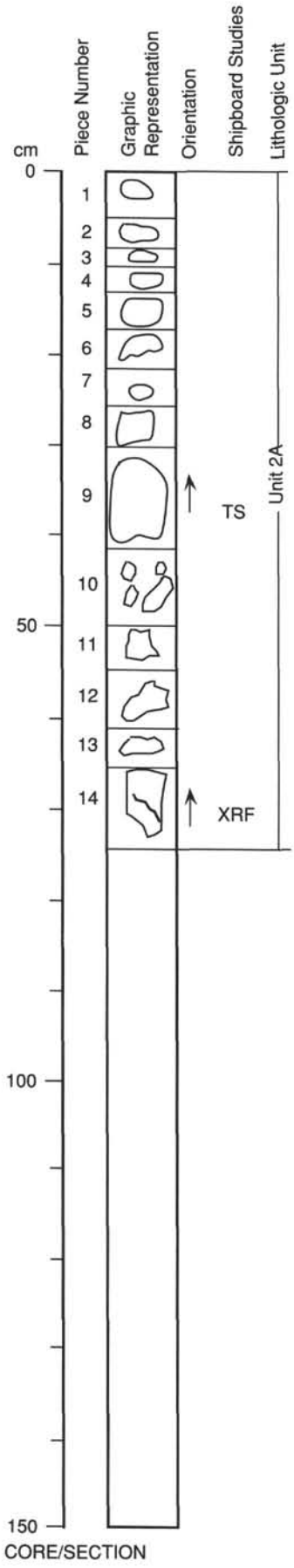
Pieces 2–3

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Moderately variolitic, very fine-grained with plagioclase microlites 1 mm long. 20% dark non-variolitic rock. Variolitic rock, 80%, gray variolites.
VESICLES: 0.5%, 0.5 mm, round, uneven, chloritic.
COLOR: Gray.
STRUCTURE: None.
ALTERATION: Devitrification.
VEINS/FRACTURES: 0.1%, 0.3 mm, 70% pyrite, 30% chlorite.

UNIT 2A: VESICULAR VARIOLITIC BASALT

Pieces 4–5

CONTACTS: Chilled margin.
PHENOCRYSTS:
Plagioclase - 0.1%, 1.0–1.5 mm, tabular.
GROUNDMASS: Fine-grained with plagioclase microlites, 10%, randomly orientated, 50% dark ground mass, 50% light variolite, evenly distributed.
VESICLES: 1% 1.0–1.5 mm, round, uneven, chlorite filled.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: Devitrification, minor chloritization, 0.5% disseminated pyrite in Piece 5.
VEINS/FRACTURES: None.



139-858G-4R-1

UNIT 2A: FINE-GRAINED DIABASE

Piece 1

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Equigranular, fine-grained, 60% plagioclase, including microlites, 40% clinopyroxene plus mesostasis.
VESICLES: None.
COLOR: Gray-green.
STRUCTURE: None.
ALTERATION: Slightly chloritic, 2%–3% pyrite "porphyroblasts" 2 mm in diameter.
VEINS/FRACTURES: None.

UNIT 2A: VARIOLITIC, VESICULAR BASALT

Pieces 2–3

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic, with 10% plagioclase microlites 1.0 mm long. Very fine-grained to aphanitic.
VESICLES: 1%, 1.0 mm, round, irregular. Chlorite filled, some zoned with white (quartz-chlorite) margine and dark green chlorite center.
COLOR: Gray.
STRUCTURE: Variolitic
ALTERATION: Slightly chloritized, possibly silicified.
VEINS/FRACTURES: None.

UNIT 2A: FINE-GRAINED DIABASE

Piece 4

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained 20% equigranular ferromagnesian minerals, 10% plagioclase, 70% mesostasis.
VESICLES: 0.5%, 1.0–1.5 mm, round, irregular. Chlorite filled.
COLOR: Brown.
STRUCTURE: Massive.
ALTERATION: Slight.
VEINS/FRACTURES: None.

UNIT 2A: SLIGHTLY VARIOLITIC VERY FINE-GRAINED BASALT

Pieces 5–6 and 8–14

CONTACTS: None.
PHENOCRYSTS:
Plagioclase - 0.5%, up to 1 mm, tabular microphenocrysts.
GROUNDMASS: Very fine-grained to aphanitic, brown mesostasis, plagioclase microlites approximately 10%, slightly variolitic.
VESICLES: 0.1%, 1.0 mm, round, uneven. Chlorite filled.
COLOR: Gray.
STRUCTURE: Slightly variolitic, approximately 10%. Microlitic.
ALTERATION: Slight.
VEINS/FRACTURES: 0.1%, 1.0 mm. In Piece 8, chlorite filled.

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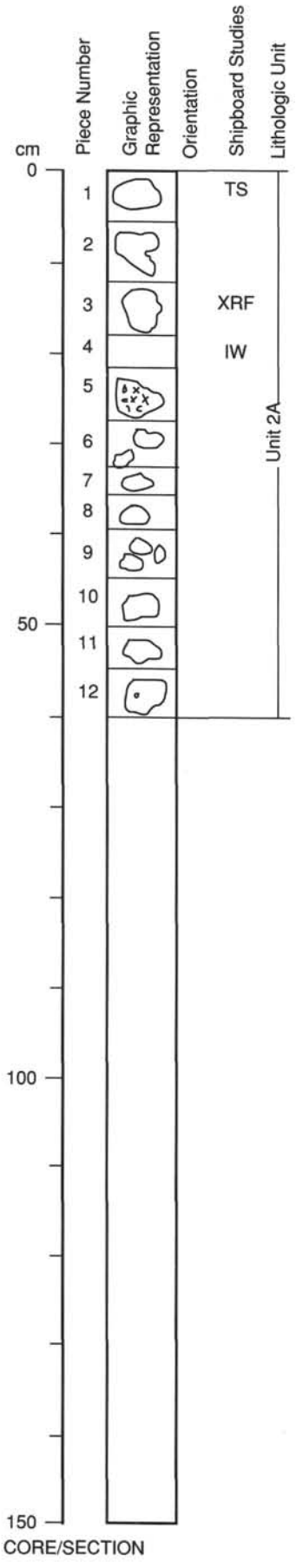
UNIT 2A: ANHYDRITE VEIN

Piece 7

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: None.
VESICLES: None.
COLOR: White.
STRUCTURE: None.
ALTERATION: None.
VEINS/FRACTURES: 100%, 1.5 cm. 95% anhydrite, 5% quartz, trace pyrite. Very fine-grained massive anhydrite with up to 2.0 mm euhedral quartz. Vein margin is silicified, chloritic, or smectite-altered basalt cut by quartz veins. No basalt wall rock.



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UNIT 2A: FINE-GRAINED DIABASE

Pieces 1–3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Ophitic texture, fine-grained 0.1–0.5 mm plagioclase and clinopyroxene. 40% clinopyroxene, 60% plagioclase plus mesostasis.
VESICLES: 1%,1.0–2.0 mm, round, uneven. Some vesicles filled with chlorite, some with pyrite, some with pyrite plus anhydrite.
COLOR: Greenish gray.
STRUCTURE: Massive.
ALTERATION: 5% pyrrhotite plus pyrite, more pyrrhotite than pyrite, 2.0–3.0 mm in diameter, round spots overgrowing the groundmass. Piece 3 surfaces are covered with chlorite with some chlorite microveinlets.
VEINS/FRACTURES: 0.5%, 0.5 mm, veins with dark green chlorite and rare coarse-grained pyrite.

UNIT 2A: VARIOLITIC BASALT

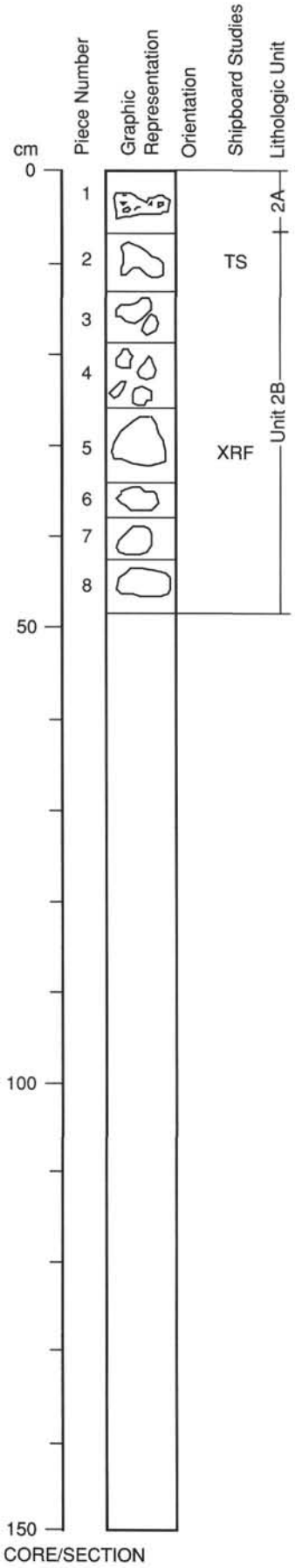
Pieces 5–6

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Very fine-grained to aphanitic, variolitic, 20% plagioclase microlites. 30% white variolitic patches, 70% dark rock. 30% altered mesostasis, altered to chlorite.
VESICLES: 5%, 1.0 mm, round, irregular, chlorite filled.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: 30% chlorite in the groundmass, 5% pyrite-pyrrhotite "porphyroblasts" that overgrow the mesostasis and plagioclase, Piece 6 has 0.5 mm wide chlorite filled microveinlet.
VEINS/FRACTURES: None.

UNIT 2A: FINE-GRAINED DIABASE

Pieces 7–12

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained, vesicular, equigranular, 30% ferromagnesian minerals, 50% plagioclase, 20% mesostasis.
VESICLES: 0.01%, 1.0 mm, round, uneven, chlorite filled.
COLOR: Brown.
STRUCTURE: Massive.
ALTERATION: Mesostasis is chloritized, 5% pyrite-pyrrhotite porphyroblasts overgrow groundmass and plagioclase microlites.
VEINS/FRACTURES: None.



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UNIT 2A: VARIOLITIC BASALT

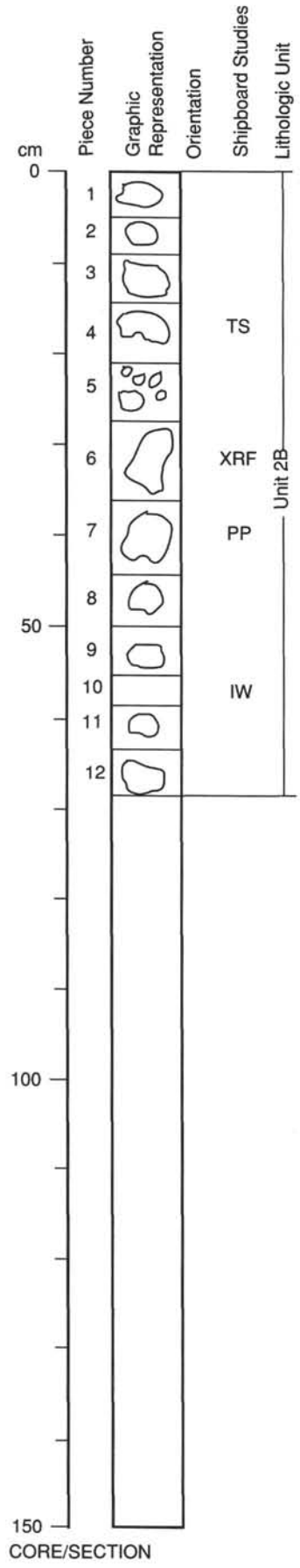
Piece 1

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: 30% white varioles, 70% dark groundmass, 20% plagioclase microlites.
VESICLES: 0.5%, 0.5 mm, round, chlorite filled.
COLOR: Brown.
STRUCTURE: Variolitic.
ALTERATION: Slightly chloritized mesostasis.
VEINS/FRACTURES: None.

UNIT 2B: LEUCOCRATIC FINE-GRAINED BASALT

Pieces 2–8

CONTACTS: Chilled margin.
PHENOCRYSTS:
Plagioclase - 1%, 1.0 mm, in Piece 5.
GROUNDMASS: Light gray, moderately to slightly variolitic, fine-grained to aphanitic with 20% plagioclase microlites.
VESICLES: 1%, 1.0 mm, round, chlorite filled.
COLOR: Light gray.
STRUCTURE: None.
ALTERATION: Rare white fibrous curvilinear aggregates in the groundmass, possibly prehnite.
VEINS/FRACTURES: None.



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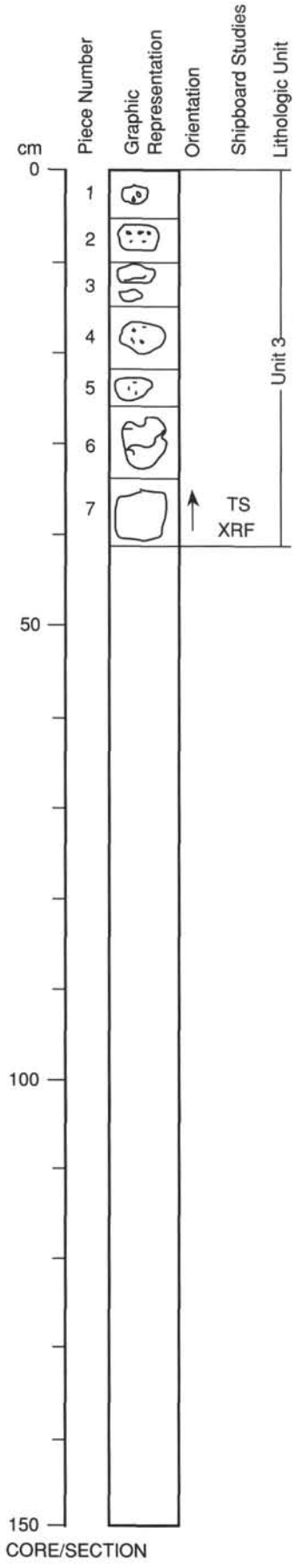
UNIT 2B: FINE-GRAINED VARIOLITIC BASALT

Pieces 1–12

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Very fine-grained to aphanitic chilled margin with ameoboid variolites. 10% plagioclase microlites.
VESICLES: 5%, 0.5 mm, pipe, near chilled margin. Pipe vesicles filled with chlorite, some rimmed with pyrite.
COLOR: Light-gray.
STRUCTURE: Variolitic.
ALTERATION: Celadonitic glass on one surface.
VEINS/FRACTURES: None.



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UNIT 3: APHYRIC BASALT

Pieces 1–7

CONTACTS: Piece 1 is a bleached chilled contact. Pieces 2–6 are variolitic.

PHENOCRYSTS: Core is aphyric to sparsely phyric. All phenocrysts are pseudomorphed, either by chlorite alone, or by chlorite mixed with a soft white mineral, possible a zeolite or prehnite.
Plagioclase - 1%, 2.0–3.0 mm. Blocky minerals pseudomorphed by chlorite and a soft white mineral.

GROUNDMASS: Composed of 40% plagioclase microlites and 60% cryptocrystalline mesostasis. Piece 7 has the most crystalline groundmass.

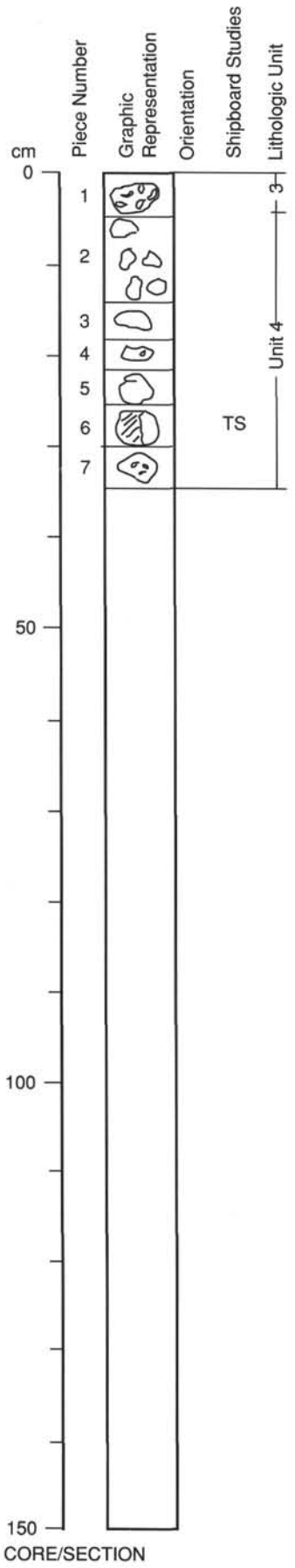
VESICLES: 8%, 2.0 mm, round to ovoid. Concentrated in top of core, Pieces 1, 2, and 4. All vesicles are filled with chlorite alone, or in association with pyrite, a soft white mineral, or quartz. The ovoid vesicles may be chlorite pseudomorphs after rare mafic phenocrysts.
Miaroles: Small (1–4 mm) linear, chlorite-filled cavities.

COLOR: Pale gray.

STRUCTURE: Core appears to be upper portion of a cooler unit.

ALTERATION: All phenocrysts are pseudomorphed and the microlites in Piece 1 are replaced also by chlorite. Groundmass is up to 30% replaced by chlorite.

VEINS/FRACTURES: 2%, 0.05 mm. A single chlorite-filled vein in Piece 6. Fracture surface on Piece 7 is coated with chlorite also.



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UNIT 3: VARIOLITIC BASALT

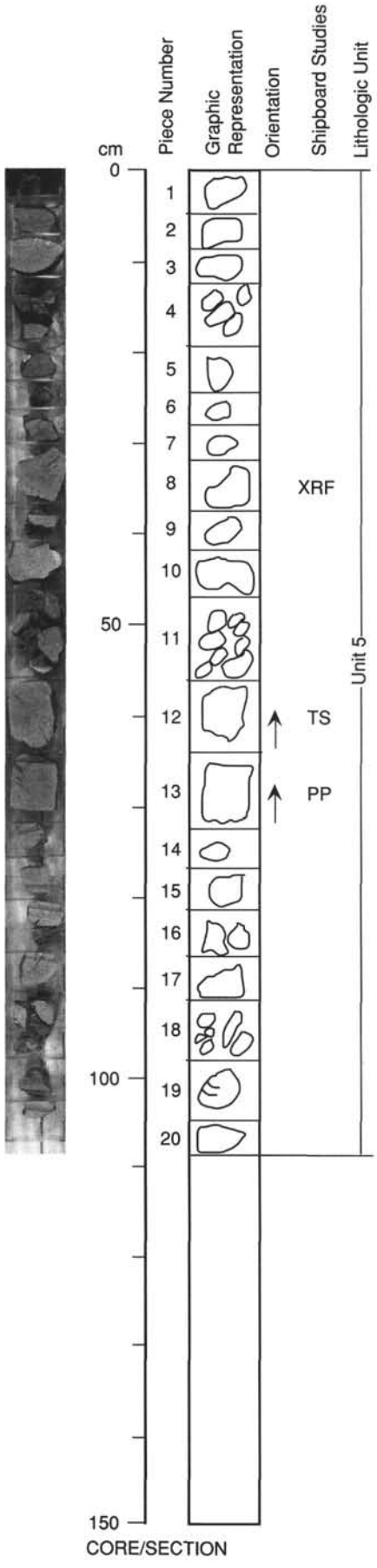
Piece 1

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic, 30% plagioclase microlites, 50% white variolites.
VESICLES: 0.5%, 0.5 mm, round, irregular, chlorite filled.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: Devitrification, local chloritic patches in mesostasis. 0.1% pyrite.
VEINS/FRACTURES: None.

UNIT 4: LEUCOCRATIC MODERATELY VARIOLITIC BASALT

Pieces 2–7

CONTACTS: Chilled margin.
PHENOCRYSTS:
Plagioclase - 5%, 0.5 mm, tabular to anhedral.
GROUNDMASS: Fine-grained microlitic, 60%–90% white variolitic material.
VESICLES: 1%, 1.0 mm, round to irregular, irregular. Some pipe vesicles, chlorite filled, some are interstitial to variolites.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: None.
VEINS/FRACTURES: None.



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UNIT 5: SILICIFIED BASALT

Piece 1

CONTACTS: Chilled margin.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic, 10% plagioclase microlites.
VESICLES: 0.5%, 1.0 mm, irregular; random, filled with green chlorite.
COLOR: White.
STRUCTURE: Variolitic
ALTERATION: Variably silicified with celadonite on one surface.
VEINS/FRACTURES: Chlorite and celadonite with pyrite on one surface.

UNIT 5: LEUCOCRATIC, VESICULAR, VARIOLITIC BASALT

Pieces 2 and 3

CONTACTS: Chilled margin.
PHENOCRYSTS:
Plagioclase - 1%, 1.0 mm, tabular.
GROUNDMASS: Fine-grained to aphanitic, microlite rich, white variolites have coalesced. 5% darker, intervariolite material. 20% plagioclase microlites 0.25 mm long.
VESICLES: 5%, 1.0 mm, round to irregular, even.
COLOR: Light gray.
STRUCTURE: Massive variolitic.
ALTERATION: Trace of chlorite in the mesostasis, possible silicification.
VEINS/FRACTURES: None.

UNIT 5: BANDED VARIOLITIC BASALT

Pieces 4–12

CONTACTS: None.
PHENOCRYSTS:
Plagioclase - Trace, 1.0 mm, in Piece 12, tabular.
GROUNDMASS: Abundant microlites of plagioclase up to 0.5 mm. Very fine-grained groundmass, 20% is altered mesostasis.
VESICLES: Trace, 1.0 mm, round, random, chlorite filled.
COLOR: Light gray.
STRUCTURE: Variolitic, many in bands up to 2 cm across. Veins subparallel to core axis.
ALTERATION: Mesostasis altered to light green silicate. 1% pyrite as 0.5 mm "porphyroblasts."
VEINS/FRACTURES: 0.1%, 0.1–0.5 mm, subparallel to core axis, pyrite and chlorite filled. Piece 12 has a 2 mm thick chlorite vein with 0.8 mm coarse-grained pyrite aggregates.

UNIT 5: VERY FINE-GRAINED DIABASE

Pieces 13–15

CONTACTS: None.
PHENOCRYSTS:
Plagioclase - Trace, 1.0 mm, tabular.
GROUNDMASS: Very fine-grained, subophitic, 25% plagioclase microlites, 10% clinopyroxene, 65% light gray mesostasis.
VESICLES: 0.1%; 0.5; round; random; white quartz-chlorite rim, green chlorite core.
COLOR: Gray
STRUCTURE: Massive.
ALTERATION: 25% of mesostasis altered to light blue-green silicate. 3% pyrite as 2.0 mm. "porphyroblasts."
VEINS/FRACTURES: Piece 13 has a 2 mm thick chlorite vein with 0.8 mm round coarse-grained pyrite aggregates.

139-858G-10R-1

UNIT 5: VESICULAR, VARIOLITIC BASALT

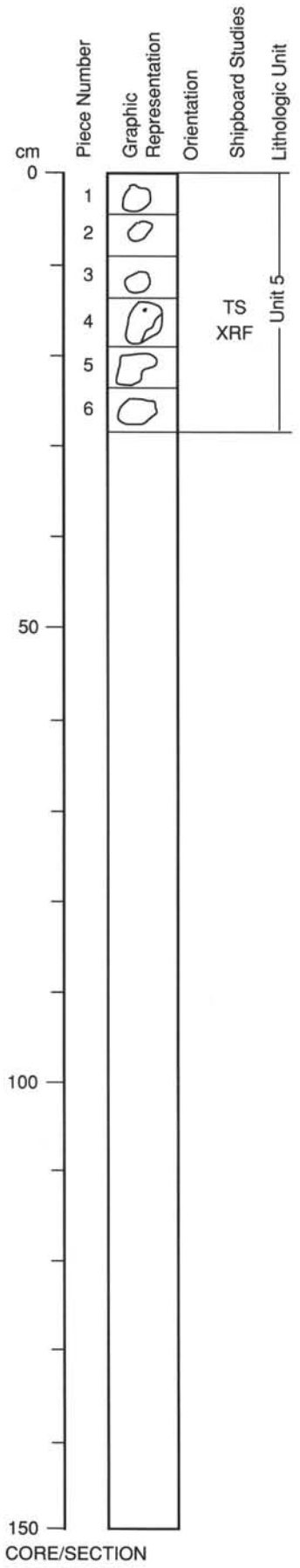
Piece 16

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Very fine-grained, 10% plagioclase microlites, 60% white variolites, remainder dark mesostasis.
VESICLES: 10%, 1.0 mm, round to coalesced, even, chlorite filled.
COLOR: Light gray.
STRUCTURE: Variolitic
ALTERATION: Devitrification.
VEINS/FRACTURES: None.

UNIT 5: FINE-GRAINED VARIOLITIC BASALT

Pieces 17–20

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained, 25% plagioclase microlites up to 0.5 mm long, randomly distributed. Remainder of groundmass consists of equal amounts of light and dark variolitic mesostasis.
VESICLES: Trace, 0.05 mm, round, random, chlorite filled.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: 25% mesostasis altered to light blue-green silicate. 0.5% pyrite in groundmass.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Grain size increases slightly downward.



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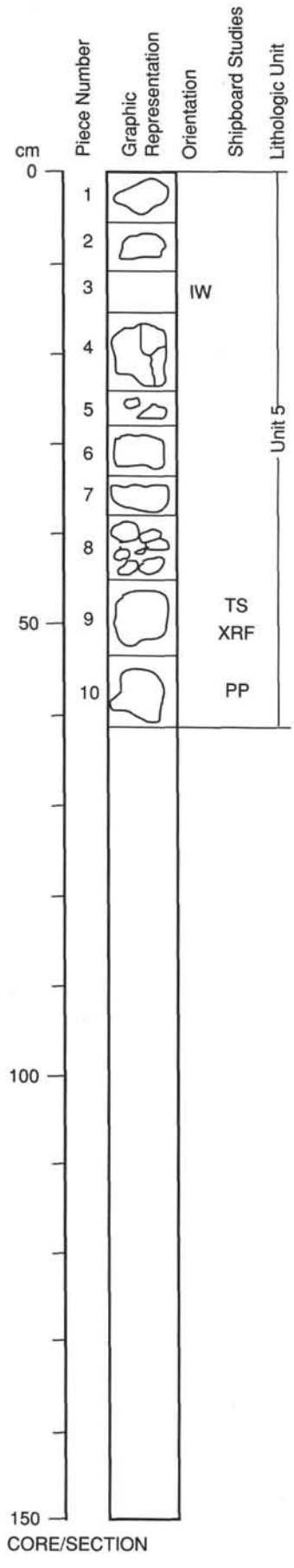
UNIT 5: VARIOLITIC BASALT

Pieces 1–6

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Moderately microlitic, fine-grained to aphanitic, 15% plagioclase microlites, 10% white variolites, remainder dark mesostasis.
VESICLES: 1%, 0.5 mm, round, random, zoned light green rims and dark green chlorite cores.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: Slight alteration of mesostasis to chlorite. 1% pyrite as 2 mm "porphyroblasts."
VEINS/FRACTURES: Piece 4 has chlorite vein 1.5 mm wide, subparallel to core axis.



139-858G-12R-1

UNIT 5: VESICULAR VARIOLITIC BASALT

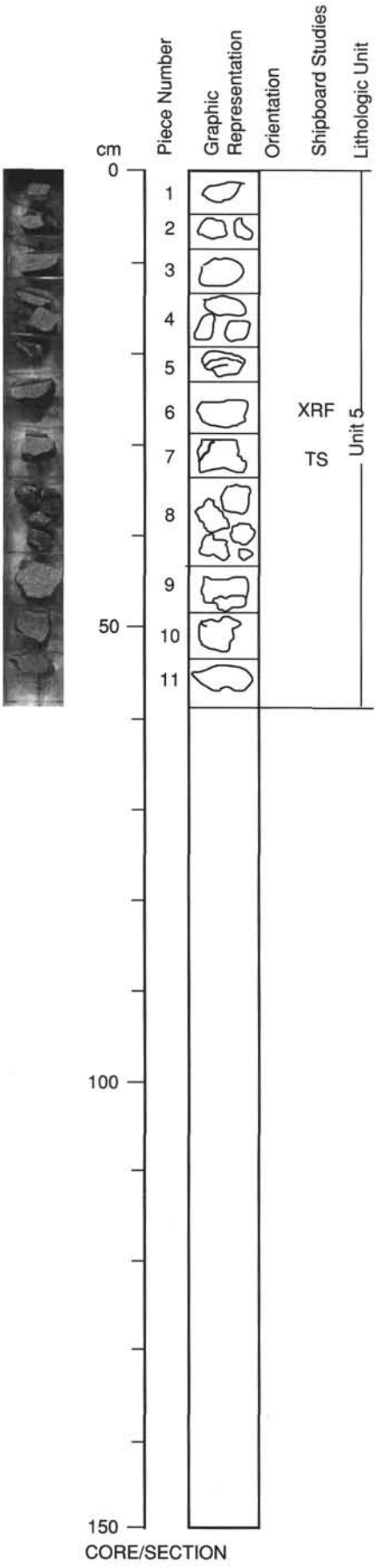
Pieces 1–2

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Leucocratic fine-grained microlitic basalt with 10% plagioclase microlites, 75% of rock is white variolites, remainder is dark mesostasis.
VESICLES: 5%, 1.0 mm, round, random, chlorite filled.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: 25% blue-green silicate in mesostasis. 0.1% pyrite up to 1.0 mm.
VEINS/FRACTURES: None.

UNIT 5: VARIOLITIC BASALT

Pieces 4–10

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Variolitic with 25% plagioclase microlites. 10% white variolites, 90% dark mesostasis. Fine-grained to aphanitic.
VESICLES: 0.5%, 0.5 mm, round, uneven, chlorite filled.
COLOR: Gray.
STRUCTURE: Variolitic.
ALTERATION: 30% blue-green silicate in dark portions of mesostasis.
VEINS/FRACTURES: 0.5%, 1 mm. Piece 4 has 1 mm wide chlorite-pumpellyite(?) vein with local soft gray mineral filling. Small amount of pyrite.
ADDITIONAL COMMENTS: Coarser-grained towards the bottom. Fragment of silicified gray mudstone 1 cm long by 0.5 cm thick in with basalt fragments in Piece 8. Trace fine-grained pyrite, minor mica, and rare acicular plagioclase crystals.



139-858G-13R-1

UNIT 5: VARIOLITIC TO FINE-GRAINED BASALT

Pieces 1–11

CONTACTS: Piece 5 is a highly altered pillow bud with incipient boxwork texture. Pieces 1–2, 9–11, have well-developed variolitic textures.

PHENOCRYSTS: Sparse plagioclase phenocrysts are present in most pieces. These are pseudomorphed by chlorite or pyrite. Plagioclase phenocryst in Piece 5 has quenched "swallow-tail" structure and is replaced by quartz.
Plagioclase - 1%, 1.0–2.0 mm, blocky pseudomorphs.

GROUNDMASS: Microlitic plagioclase in a cryptocrystalline matrix. Completely altered and bleached white in Piece 5.

VESICLES: 1%, 0.5 mm, spherical, few in variolitic pieces. All vesicles are filled with chlorite, occasionally joined by pyrite.
Miaroles: Small vertical cavities filled with quartz and epidote in Piece 5.

COLOR: Pale gray with green patches.

STRUCTURE: Pieces of massive basalt flow with one pillow piece.

ALTERATION: Up to 15% of matrix is replaced by chlorite. Two percent pyrite is disseminated within the matrix. Piece 6 and Piece 11 have 2 mm pyrite or chalcopyrite "porphyroblasts." Piece 5 is 100% altered.

VEINS/FRACTURES: 1%, 0.5 mm. Small chlorite-filled vein in Piece 9 only.

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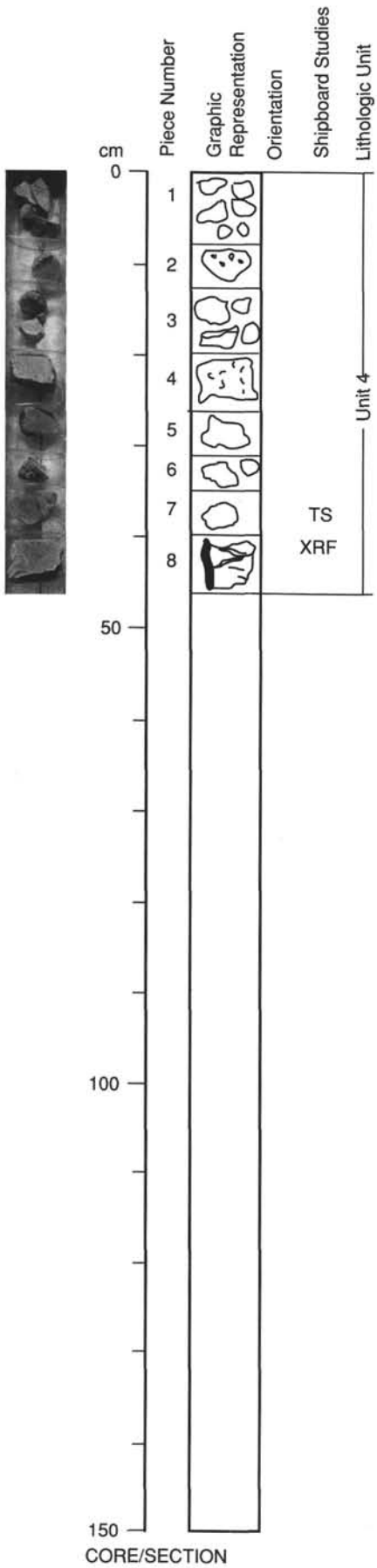
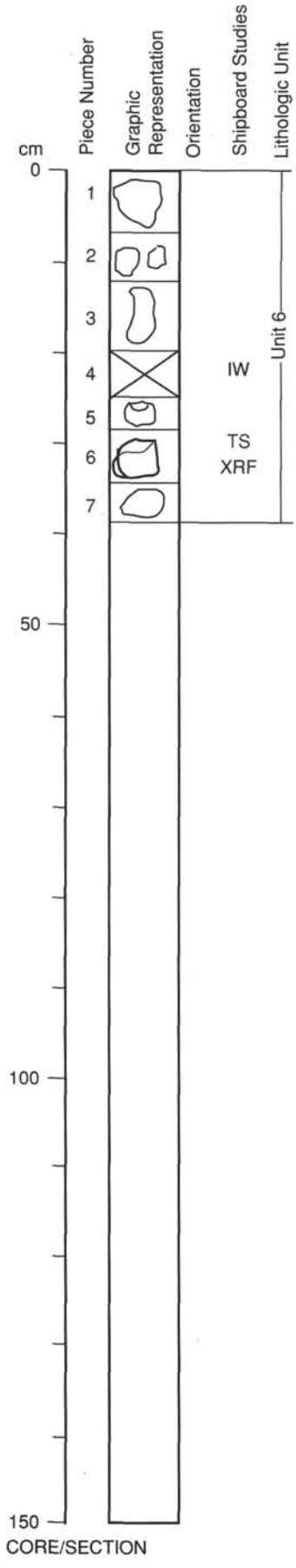


UNIT 6: APHYRIC TO SPARSELY PHYRIC BASALT

Pieces 1–8

CONTACTS: Bleached edges on Pieces 1–3.
PHENOCRYSTS: Sparse plagioclase pseudomorphs are observed in some pieces. Plagioclase - 1%, 0.5–1.0 mm, blocky pseudomorphs.
GROUNDMASS: Equigranular with conspicuous plagioclase microlites.
VESICLES: 3%, 0.5–1.5 mm, spherical, present in Pieces 1–4. Pieces 2 and 4 are highly vesicular. All vesicles are filled with chlorite. Epidote joins chlorite in vesicles in Piece 2.
COLOR: Reddish gray
STRUCTURE: Basalt flow.
ALTERATION: Groundmass is up to 50% replaced by dark green chlorite. Pyrite porphyroblasts, 2–3 mm in diameter, are observed in Pieces 5–7.
VEINS/FRACTURES: 1%; 0.5 mm. Small vein in Piece 8 only filled with chlorite, pyrite, and a soft white mineral that resembles tremolite.
ADDITIONAL COMMENTS: Piece 1 is an assortment of chips, 2 of which may be chert or metasiltstone with quartz veins.



139-858G-15R-1

UNIT 6: APHYRIC TO SPARSELY PHYRIC BASALT

Pieces 1–7

CONTACTS: Pieces 1, 3, and 7 have variolitic texture.

PHENOCRYSTS: Most phenocrysts are pseudomorphed by chlorite. The abundance of chlorite filled vesicles makes mineral determination difficult.
Plagioclase - 1%, 1.0 mm, blocky white minerals, mostly replaced by chlorite and a zeolite. Some fresh plagioclase remains in Piece 6.

GROUNDMASS: Microlitic plagioclase. Pieces 5 and 6 are slighty more crystalline. Remaining pieces are aphanitic.

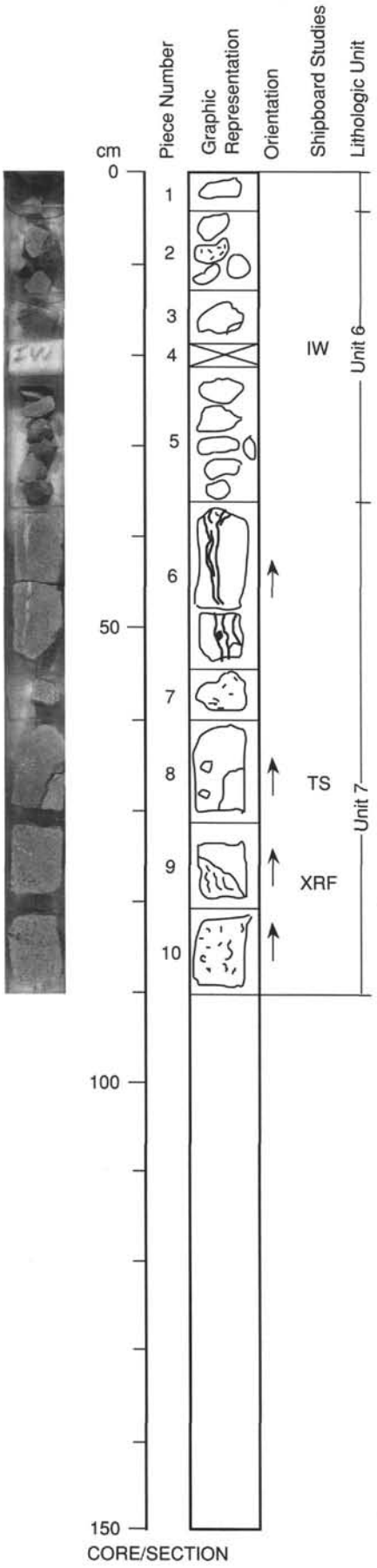
VESICLES: 1%–2%, 0.5–1.0 mm, spherical. Most abundant in Pieces 1–3.

COLOR: Reddish gray.

STRUCTURE: Pieces look blocky. Piece 6 especially has square contacts and chilled margins and could be a dike or sill contact.

ALTERATION: 70% of plagioclase is replaced by chlorite and zeolite. Up to 20% of the mesostasis is similarly replaced by chlorite. Sulfide aggregates are up to 1 mm in diameter and 1%–2% in abundance.

VEINS/FRACTURES: There are no veins. Fracture surface in Piece 6 has epidote and chlorite.



139-858G-16R-1

UNIT 6: APHYRIC TO SPARSELY PHYRIC BASALT

Pieces 1–5

CONTACTS: Variolitic texture in all pieces.
PHENOCRYSTS:
Plagioclase - 1%, 1.0–2.0 mm. Most are psuedomorphed by chlorite.
GROUNDMASS: Most of the phenocrysts are replaced by chlorite. Their blocky appearance suggests they are plagioclase. Some of the chlorite blebs are also ovoid and could be replaced mafic minerals.
VESICLES: 3%, 1.0 mm, spherical. Present in half of the pieces.
COLOR: Reddish gray.
STRUCTURE: Thin flow units.
ALTERATION: Pyrite replaces varioles in Piece 3. 10% of rock is replaced by chlorite.
VEINS/FRACTURES: No veins or fractures in these pieces.

UNIT 7: SPHERULITIC DIABASE

Pieces 6–10

COLOR: Greenish gray.
LAYERING: None.
DEFORMATION: None.
PRIMARY MINERALOGY: Spectacular spherulitic texture.
Plagioclase - Mode: 40%.
Crystal size: 0.5–1.5 mm.
Crystal shape: Euhedral.
Crystal orientation: None.
Percent replacement: 30% by chlorite.
Comments: White tabular crystals, some in radiating clusters.
Clinopyroxene - Mode: 45%.
Crystal size: 0.02–1.0 mm.
Crystal shape: Prismatic.
Crystal orientation: None.
Percent replacement: None apparent.
Comments: Large spherulitic clusters.
Mesostasis - Mode: 15%
Crystal size: N/A.
Crystal shape: N/A.
Crystal orientation: N/A.
Percent replacement: 100% by chlorite and sulfide.
Comments: Chlorite filled cavities originated as altered mesostasis.
SECONDARY MINERALOGY: Rocks contain up to 30% chlorite.
Total percent: 30%
Texture: Network of chlorite replacement permeates rock. Filled with chlorite and euhedral pyrite crystals. Vein material: Veins in Pieces 6–7 are 5 cm and 1 cm wide, respectively. Piece 6 contains euhedral quartz and zeolite crystals also with epidote chlorite and pyrite. Vein in Piece 7 contains quartz, sulfide, and epidote. The vein in Piece 6 has a large vug with euhedral quartz and zeolite clusters.
ADDITIONAL COMMENTS: These are the coarsest grained rocks from this hole.