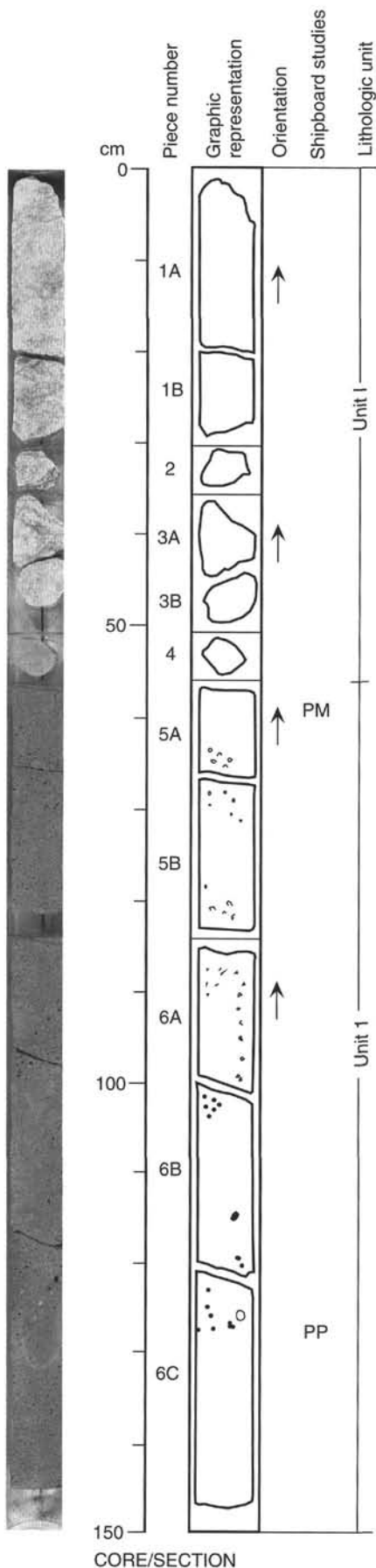


163-989A-1R-1



UNIT I: BOULDERS IN TILL

Pieces 1A-4

CONTACTS: None.

PHENOCRYSTS:

VESICLES:

ADDITIONAL COMMENTS: Pieces 1A to 3B come from a large boulder of banded orthogneiss. Piece 4 is a cobble of fine-grained biotite-muscovite schist.

UNIT 1: APHYRIC BASALT

Pieces 5A-6C

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

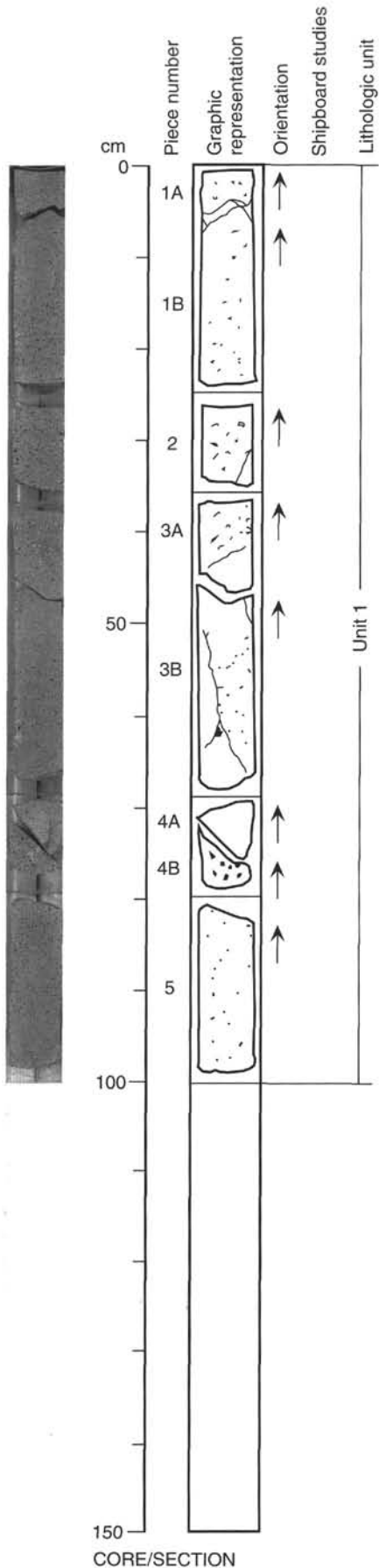
GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 5 mm; subspherical to irregular; patchy distribution; lined with dark greenish-gray clay; some filled with platy zeolite, especially adjacent to veins (Pieces 6A-6C).

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; 0.2 mm; subhorizontal to subvertical; filled with green clay, some intervals with interior fillings of zeolite. Some veins have 1-2 cm halos in which vesicles are completely filled with clay and zeolite.



UNIT 1: APHYRIC BASALT

Pieces 1A-5

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 5 mm; subspherical to irregular; patchy distribution; lined with dark greenish-gray clay, some filled with platy zeolite in Piece 3A.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; 0.2 mm; subvertical; filled with clay.

163-989A-1R-3

UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

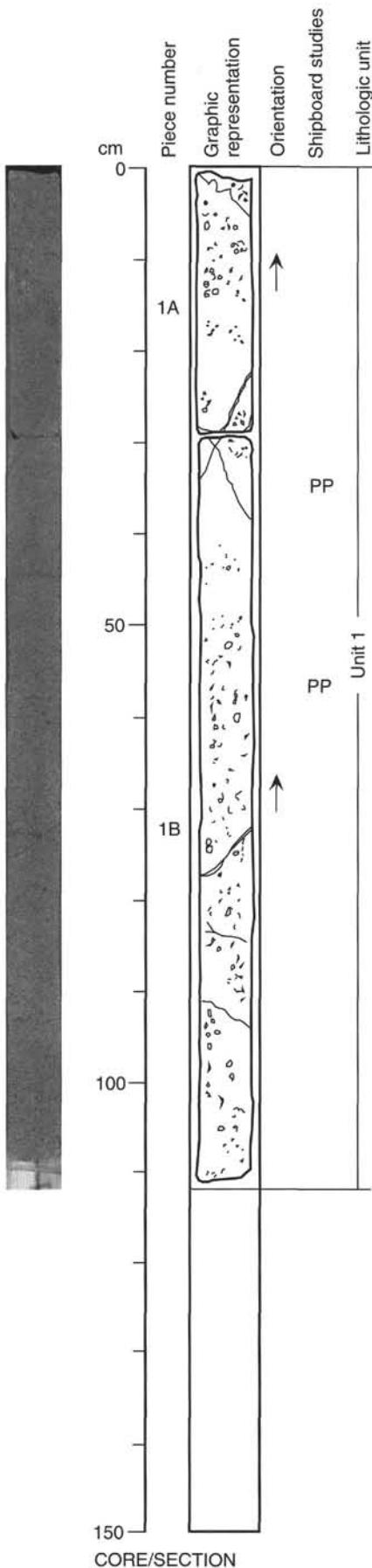
GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

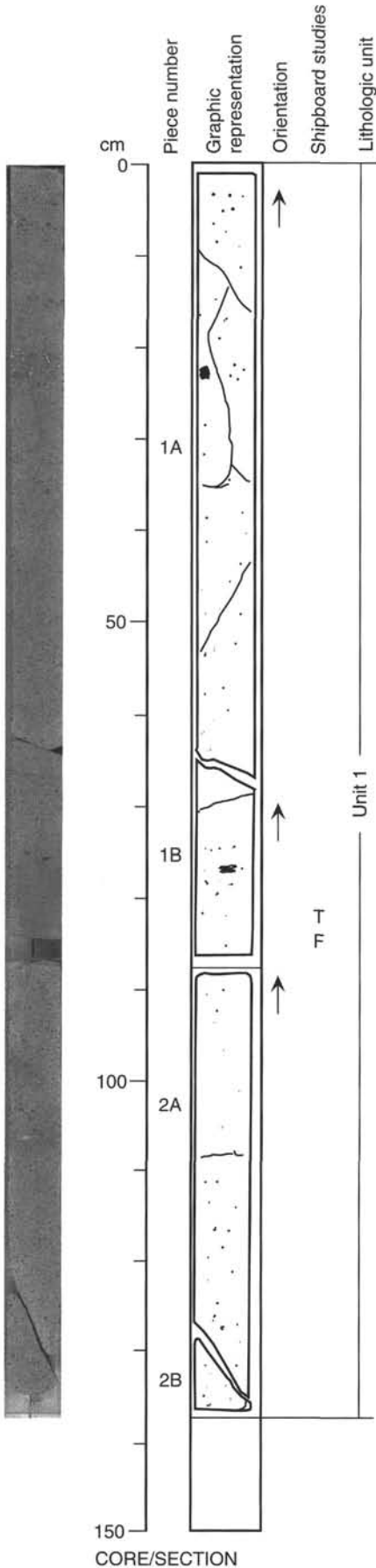
VESICLES: 1-15%; up to 5 mm; subspherical to irregular; patchy distribution; lined with dark greenish-gray clay, some filled with platy zeolite in Piece 1A.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; Up to 1 mm; inclined up to 70 degrees; two generations: 1 mm veins filled with calcite, cut by 0.5 mm veins filled with clay.





UNIT 1: APHYRIC BASALT

Pieces 1A-2B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 10 mm; subspherical to irregular; patchy distribution; lined with dark greenish-gray clay, some filled with platy zeolite at 22 cm; increasing concentration towards base of section.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; Up to 1 mm; horizontal to subvertical; most are filled with dark greenish gray clay; horizontal vein at 107 cm filled with zeolite.

163-989A-1R-5

UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

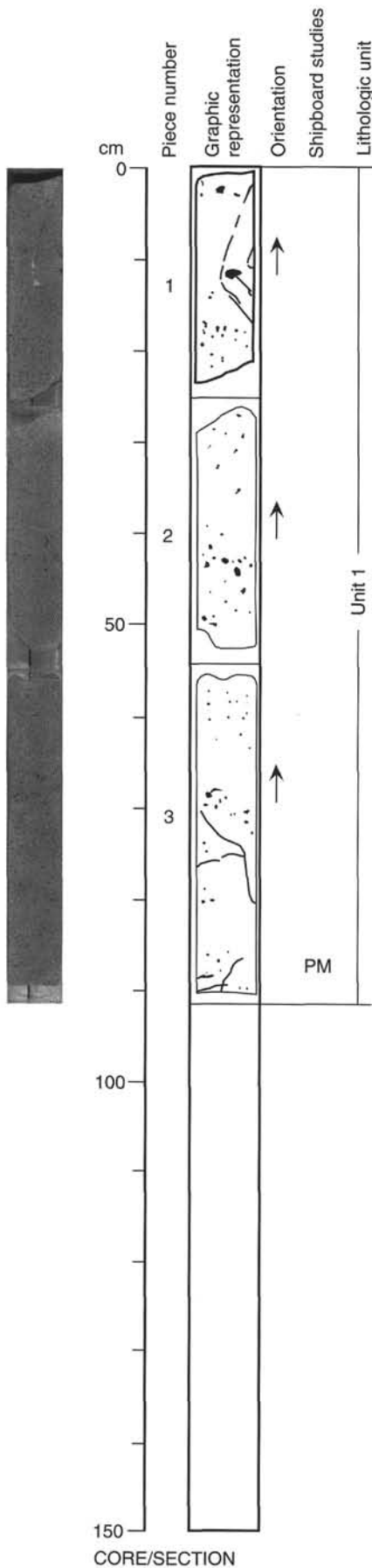
GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 5 mm; subspherical to irregular; lined with dark greenish-gray clay, filled with platy zeolite at 10-15 cm, 72-76 cm and 80-85 cm.

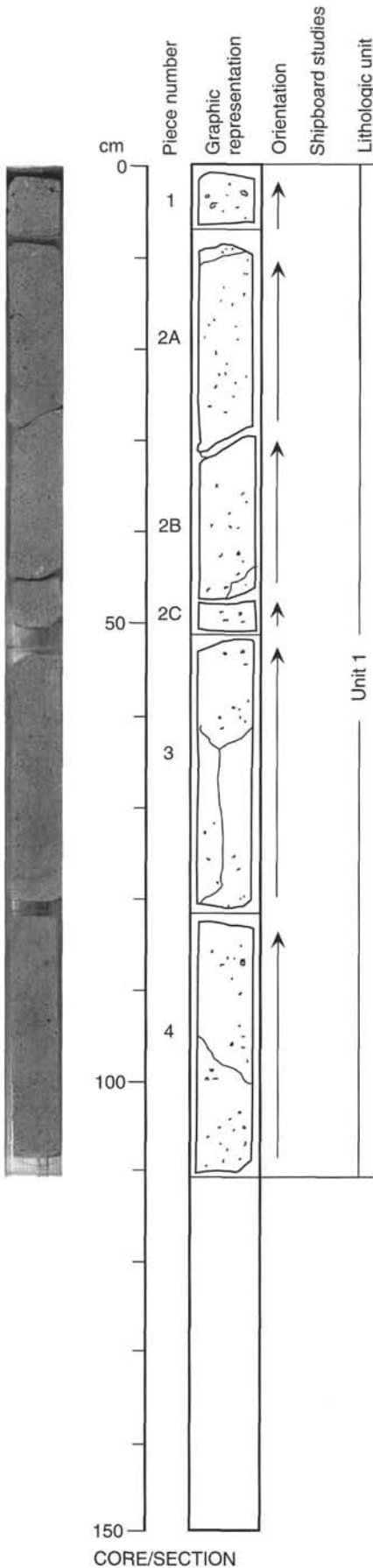
COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; Up to 1 mm; subvertical; lined with green clay, filled with carbonate and zeolite.



CORE/SECTION



UNIT 1: APHYRIC BASALT

Pieces 1-4

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 8 mm; subspherical to irregular; lined with dark greenish-gray clay, filled with platy zeolite at 1 and 28 cm.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; up to 1 mm; subhorizontal to vertical at 65-97 cm; lined with clay, filled with carbonate and zeolite.

163-989A-2R-2

UNIT 1: APHYRIC BASALT

Pieces 1-2B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

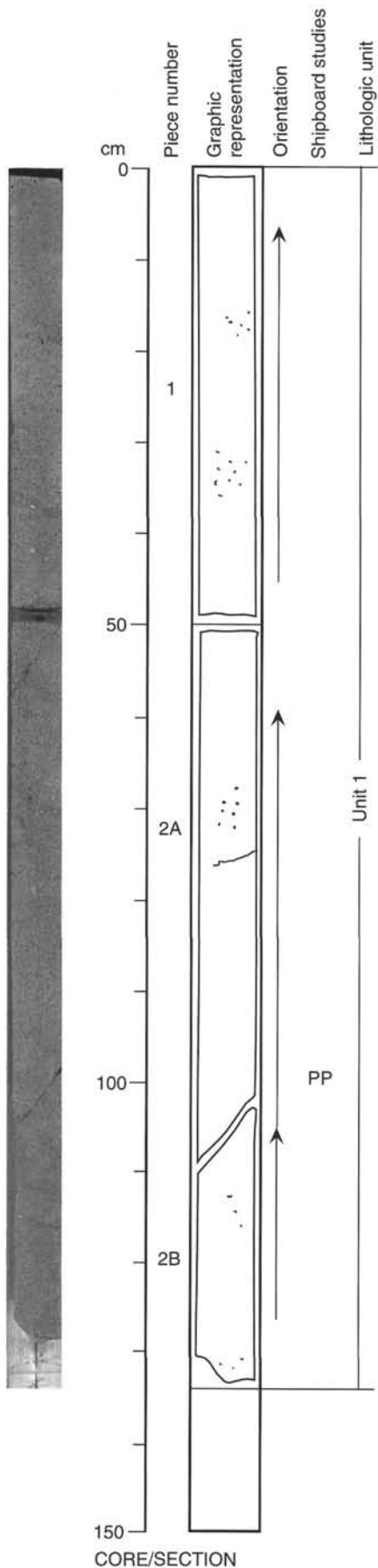
GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 5 mm; subspherical to irregular; patchy distribution; lined with dark greenish-gray clay, filled with platy zeolite at 36, 43, 56, 71, and 115 cm.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; up to 1 mm wide; subhorizontal to subvertical; lined with clay, filled with carbonate and zeolite at 73 cm.



UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

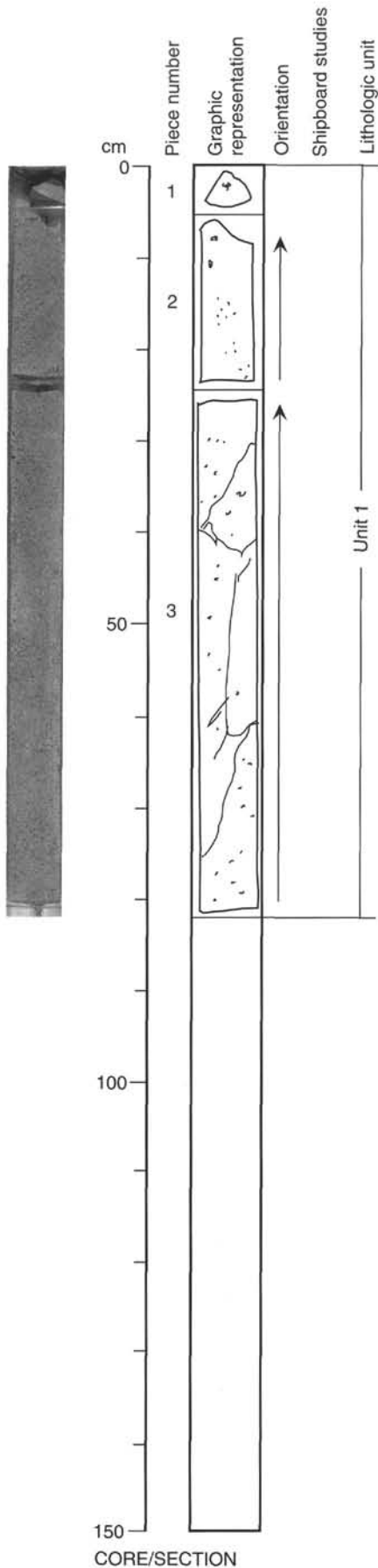
GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 3 mm; subspherical to irregular; patchy distribution; lined with dark greenish-gray clay, filled with platy zeolite around 60 cm.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; up to 1 mm wide; horizontal to vertical orientation; lined with dark greenish gray clay, some filled with carbonate and zeolite.



163-989A-2R-4

UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

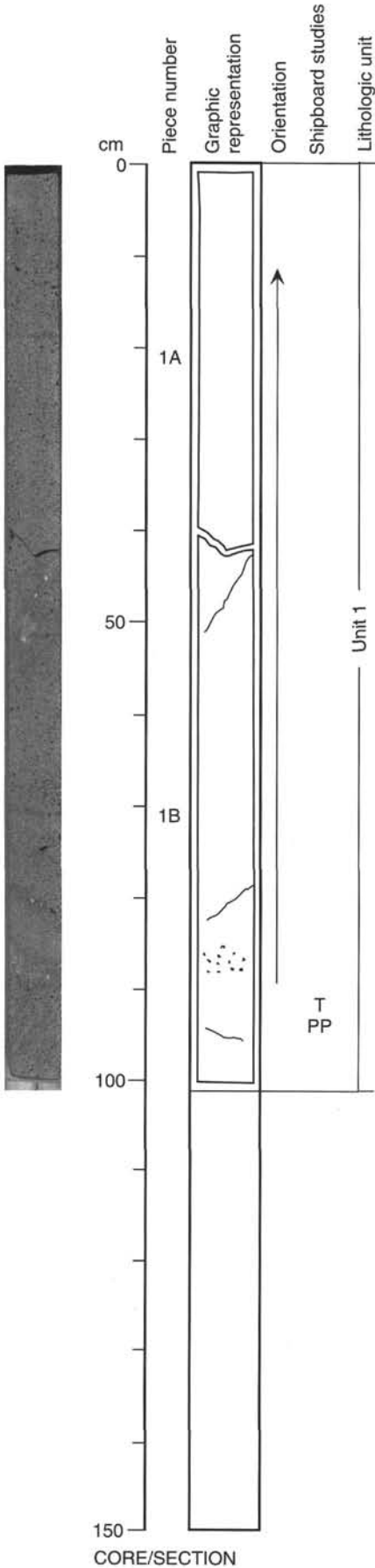
GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 5-15%; up to 10 mm; subspherical to irregular; even distribution; lined with dark greenish-gray clay, filled with platy zeolite at 80-93 cm.

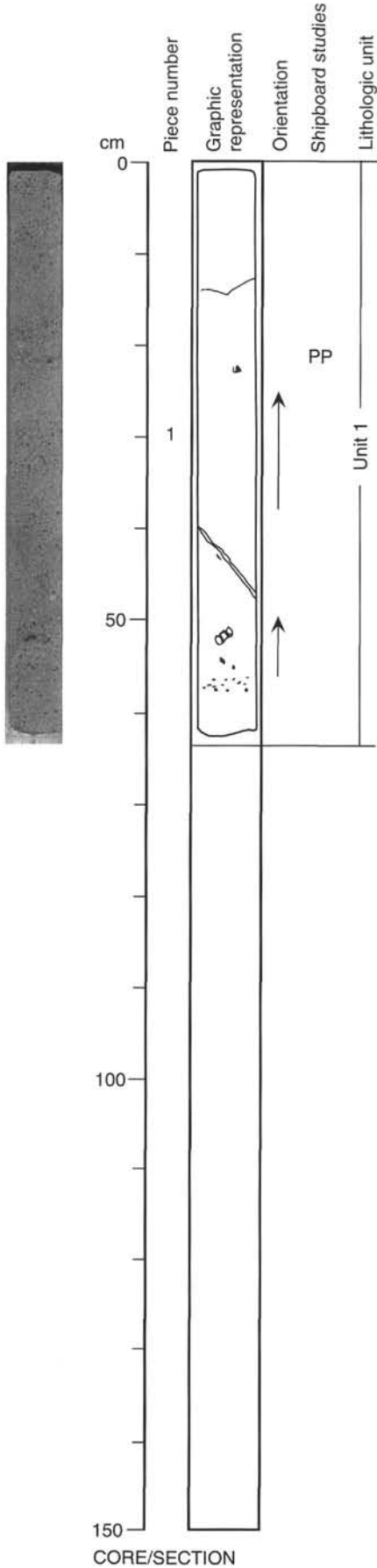
COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; up to 1 mm wide; inclined at 45 degrees at 42-53 cm; horizontal at 96 cm; lined with clay, vein at 42-53 cm filled with zeolite.



CORE/SECTION



UNIT 1: APHYRIC BASALT

Piece 1

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

GROUNDMASS: Fine- to medium-grained, intergranular with prominent plagioclase laths.

VESICLES: 1-15%; up to 15 mm; subspherical to irregular; even distribution; lined with dark greenish-gray clay, filled with platy zeolite at 45-59 cm.

COLOR: Dark gray.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; 0.1 mm wide; inclined 45 degrees at 40-48 cm; lined with clay, vesicles filled with zeolite near veins.

163-989A-3R-1

UNIT 1: APHYRIC BASALT

Pieces 1A-1C

CONTACTS: None
PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular, with prominent plagioclase laths.

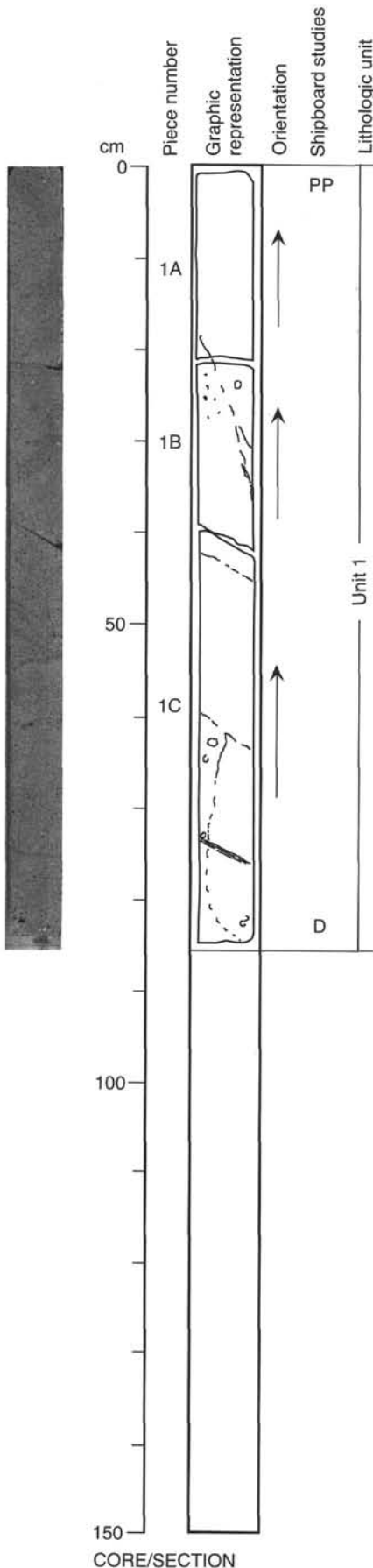
VESICLES: 5-15%; 0.5-5 mm; rounded to irregular shape; uneven distribution; a zone of vesicle-poor basalt occurs at 54-56 cm. Vesicles are filled with zeolite near veins at 75-84 cm, but otherwise lined or filled with dark greenish-gray clay. Many have open centers.

COLOR: Dark gray.

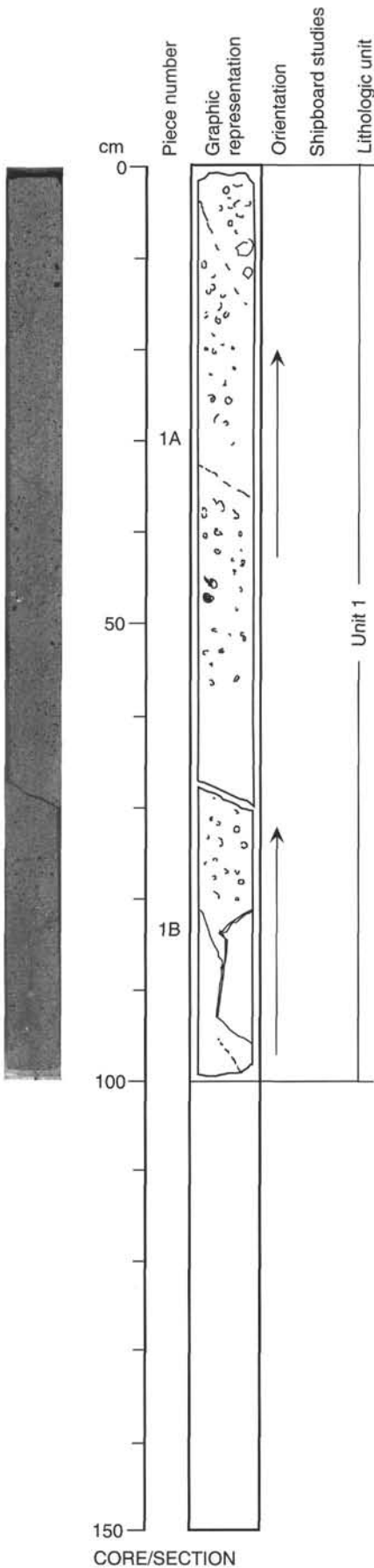
STRUCTURE: Massive, vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subvertical to subhorizontal; lined with dark greenish-gray clay.



CORE/SECTION



UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1–3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular, with prominent plagioclase laths.

VESICLES: 2–15%; 0.5–7 mm; subspherical to irregular shape; uneven distribution. Vesicles are filled with zeolite at 45 cm, and near veins at 5 cm and 80–94 cm, but otherwise are lined or filled with dark greenish-gray clay. Many have open centers.

COLOR: Dark gray.

STRUCTURE: Massive, vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subvertical to subhorizontal; lined with dark greenish-gray clay.

163-989A-3R-3

UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-7 mm; subspherical to irregular shape; uneven distribution; band of vesicle-poor basalt at 15-17 cm. Vesicles are filled with zeolite when close to veins, but otherwise empty or lined or filled with clay.

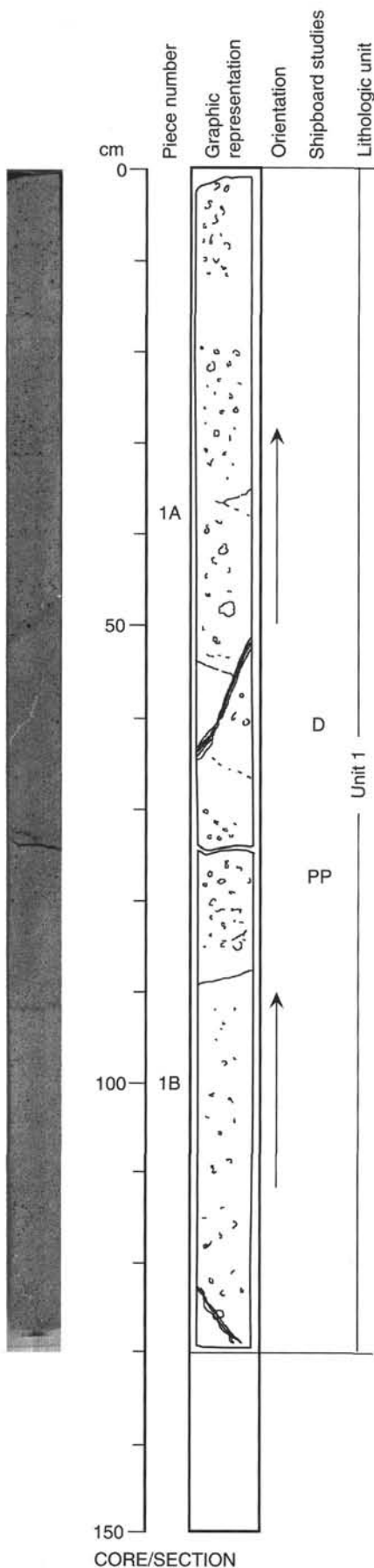
COLOR: Dark gray.

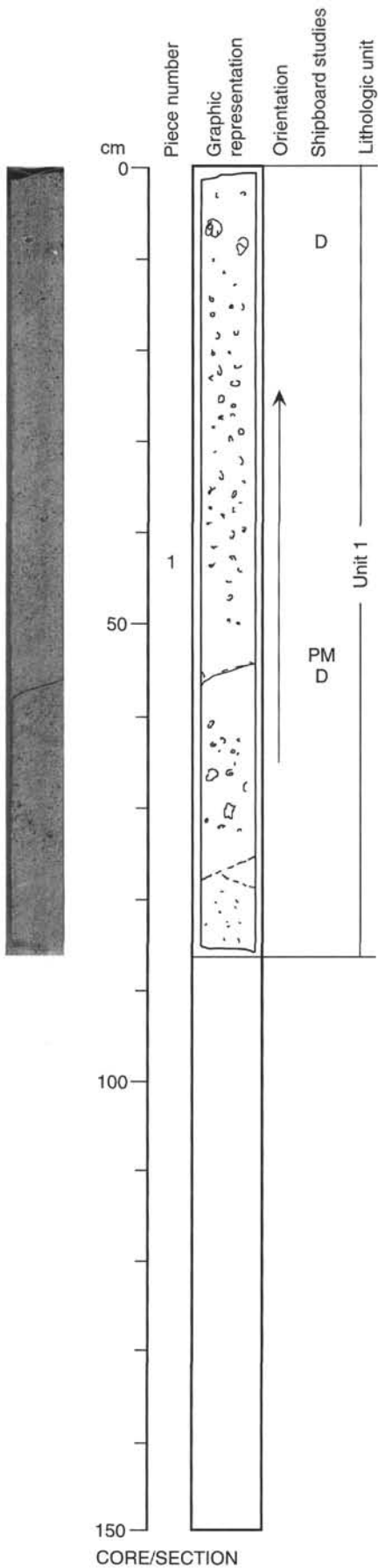
STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subhorizontal; one prominent vein at 50-63 cm is 1-2 mm thick and filled with carbonate. Other veins are clay-filled.

ADDITIONAL COMMENTS: Vesicle-poor zone at 15-17 cm may represent an internal contact zone. Piece 1B is continuous with Piece 1 of Section 163-989A-3R-4.





UNIT 1: APHYRIC BASALT

Piece 1

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-15 mm; subspherical to irregular shape; uneven distribution; vesicles are filled with zeolite when close to veins, but otherwise empty or lined or filled with clay.

COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subhorizontal.

163-989A-3R-5

UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-8 mm; subspherical to irregular shape; uneven distribution; vesicles are filled with zeolite when close to veins, but otherwise empty or lined or filled with clay.

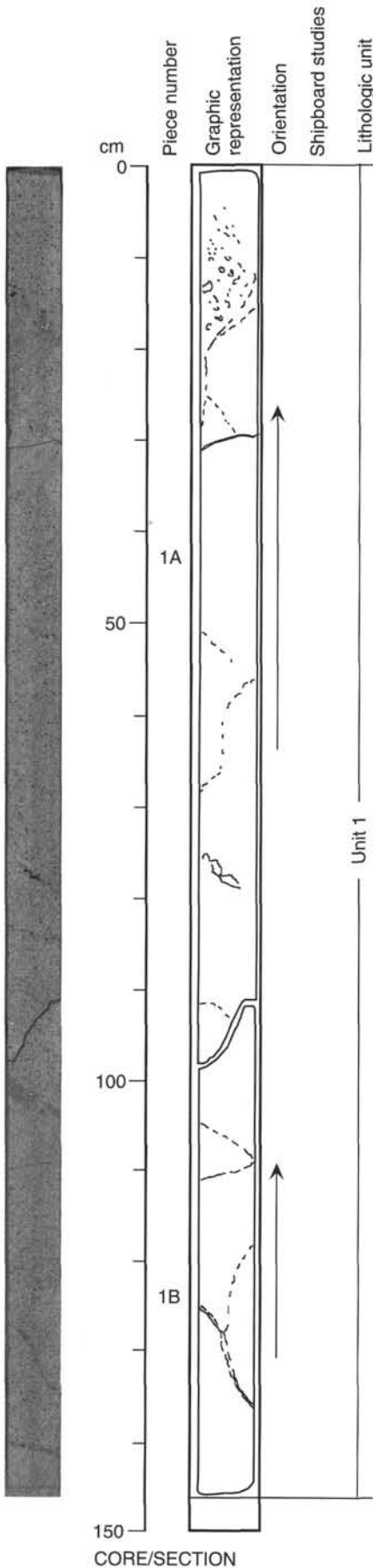
COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subhorizontal; lined with dark greenish-gray clay.

ADDITIONAL COMMENTS: Vesicle-poor basalt occurs at intervals 102-104 cm and 141-143 cm. These may represent internal contacts.



UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

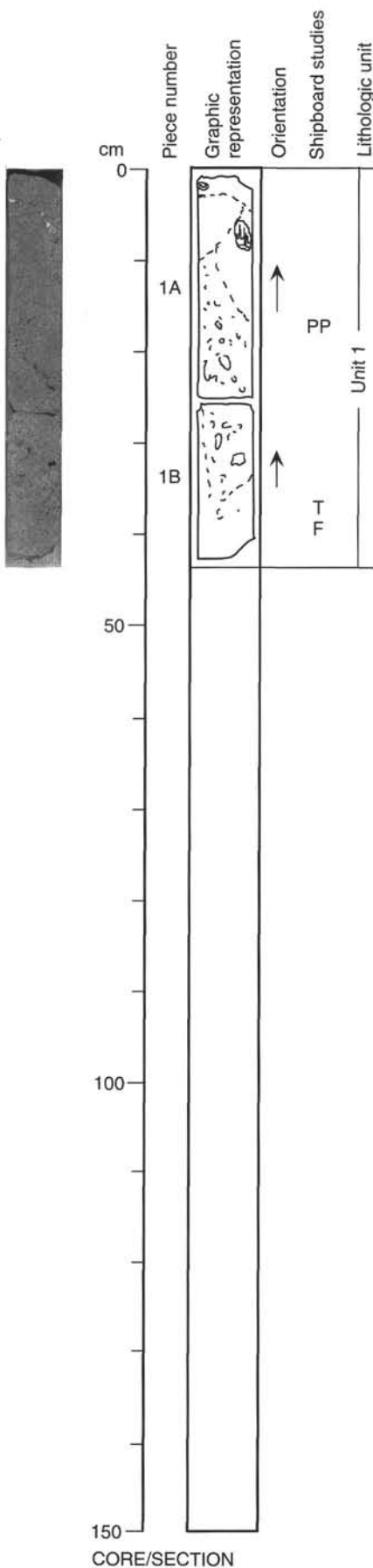
VESICLES: 1-12%; 0.5-13 mm; subspherical to irregular shape; uneven distribution; vesicles are filled with zeolite or carbonate when close to veins, but otherwise empty or lined or filled with clay.

COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subhorizontal; lined with dark greenish-gray clay.



163-989B-1R-1

UNIT I: ROCK FRAGMENTS FROM TILL

Pieces 1-3

PHENOCRYSTS:

VESICLES:

ADDITIONAL COMMENTS: Pieces 1 to 3 are aphyric metabasalt. A small fragment of quartzite and a small fragment of dolerite occur with Piece 3.

UNIT 1: APHYRIC BASALT

Pieces 4-13B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 2-3 mm; tabular.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

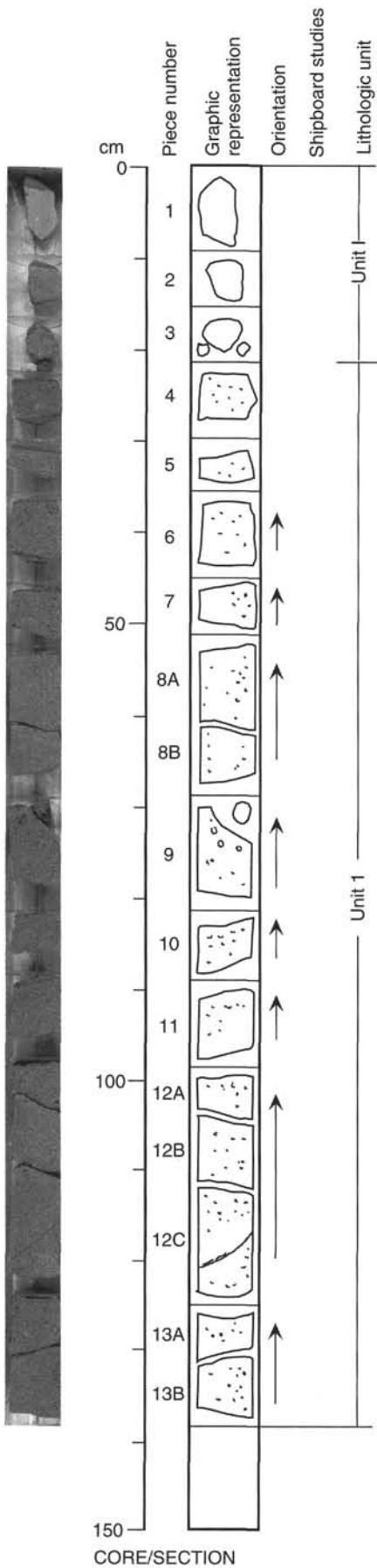
VESICLES: 1-15%; up to 5 mm; sub-spherical to irregular; patchy distribution; lined with dark greenish-gray clay; some filled with dark greenish-gray clay; rare examples filled with white zeolite.

COLOR: Dark gray.

STRUCTURE: Massive.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; <1 mm; subvertical to subhorizontal; filled with green clay; rare zeolite in center.



UNIT 1: APHYRIC BASALT

Pieces 1A-8

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

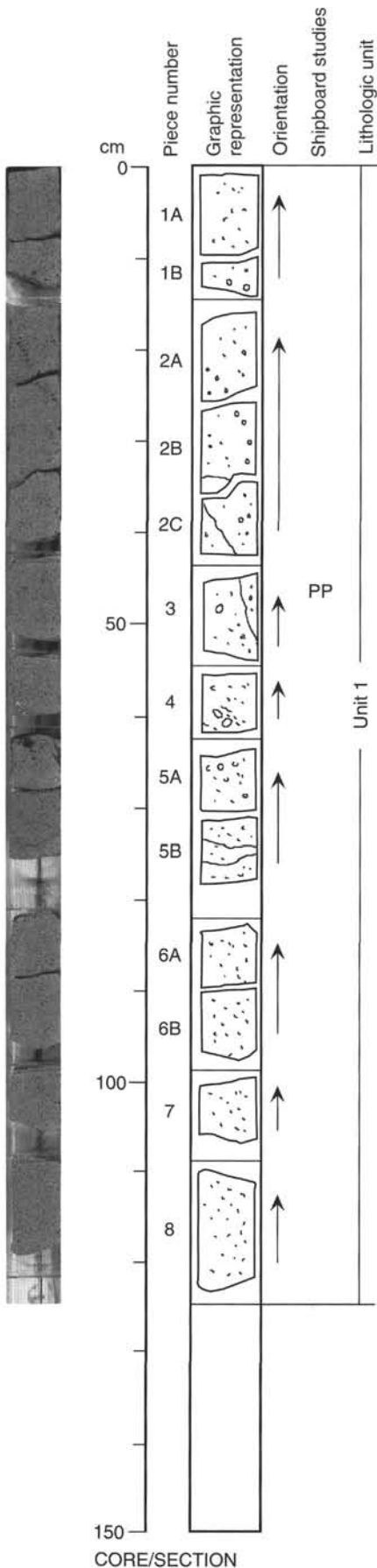
VESICLES: 1-15%; up to 5 mm; sub-spherical to irregular; patchy distribution; slightly more vesicular than section 1; vesicles are lined with dark greenish-gray clay; some filled with dark greenish-gray clay; zeolite-filled vesicles are patchily distributed, notably in Piece 4.

COLOR: Dark gray.

STRUCTURE: Massive.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; <1 mm; subvertical to subhorizontal; filled with green clay; rare zeolite in center.

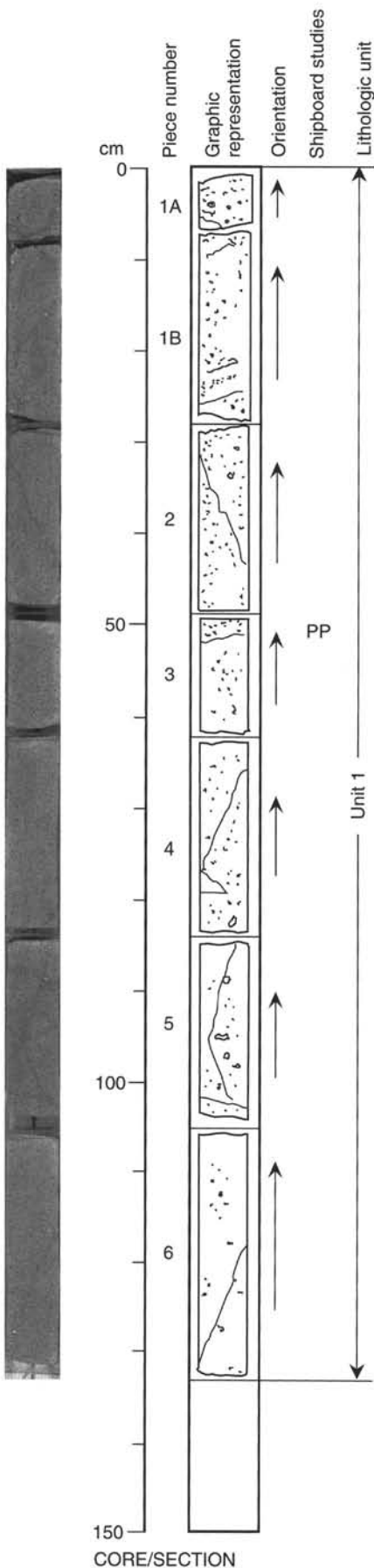


163-989B-1R-3

UNIT 1: APHYRIC BASALT

Pieces 1A-6

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.
VESICLES: 1-7%; up to 6 mm; sub-spherical to irregular; patchy distribution; lined with dark greenish-gray clay; some filled with zeolite or less commonly with dark green clay.
COLOR: Dark gray.
STRUCTURE: Massive.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; 2 mm; subvertical to horizontal; filled with green clay; many contain zeolite cores up to 2 mm thick.



UNIT 1: APHYRIC BASALT

Pieces 1-9

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

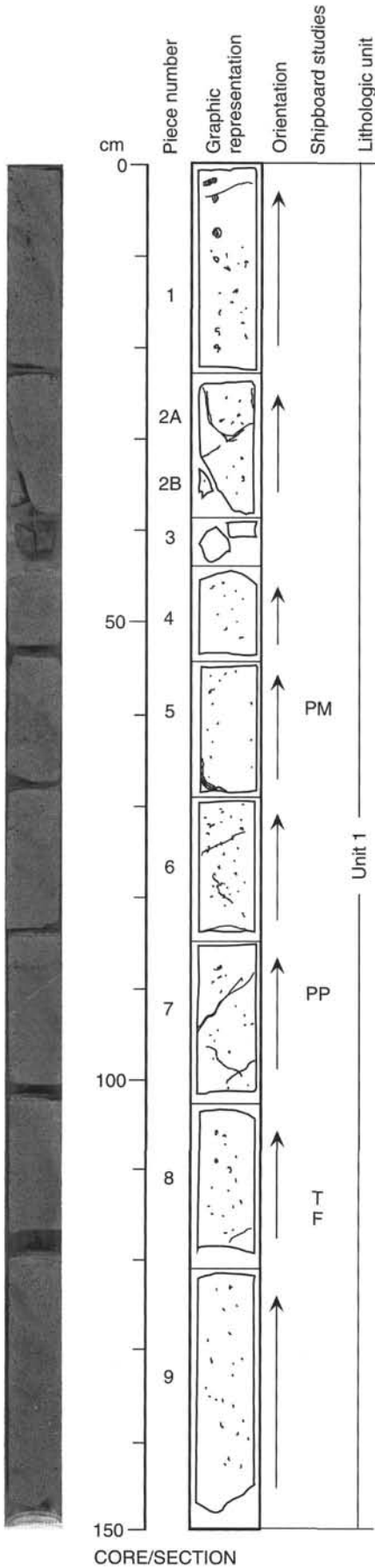
VESICLES: 5-20%; up to 5 mm; sub-spherical to irregular; patchy distribution; lined with dark greenish-gray clay; zeolite-filled vesicles more abundant in Pieces 2A and 9.

COLOR: Dark gray.

STRUCTURE: Massive.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; 1 mm; subvertical to subhorizontal; most filled with green clay; a prominent vein in Piece 7 is filled with white zeolite and lined with clay.



CORE/SECTION

163-989B-2R-1

UNIT 1: APHYRIC BASALT

Pieces 2-5

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine to medium grained; intergranular with prominent plagioclase laths.

VESICLES: 5-10%; <6 mm; spherical to irregular shape; uneven distribution; vesicles are open, or lined or filled with dark greenish-gray clay. Near to veins the vesicles are filled with zeolite and/or carbonate.

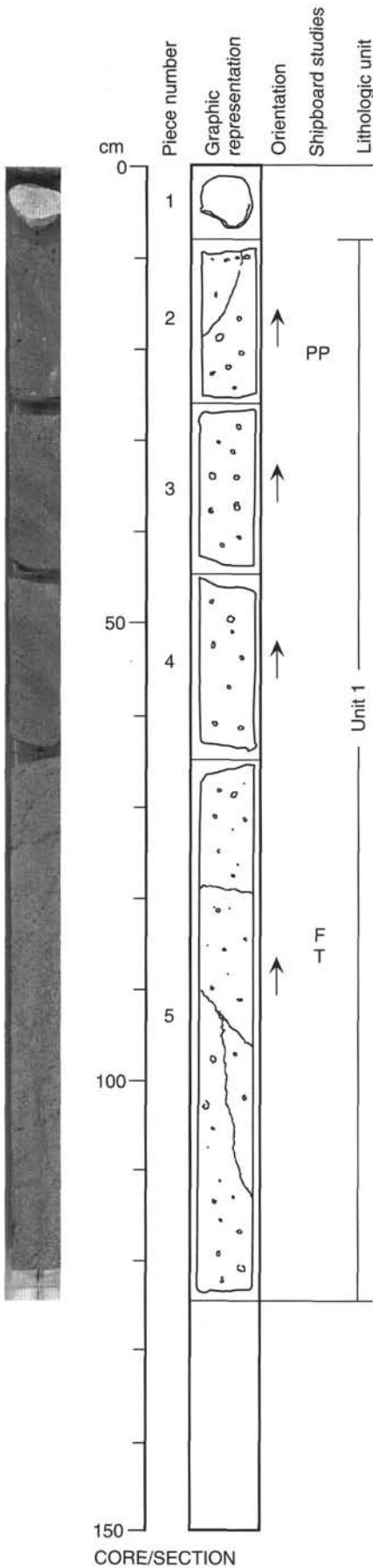
COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

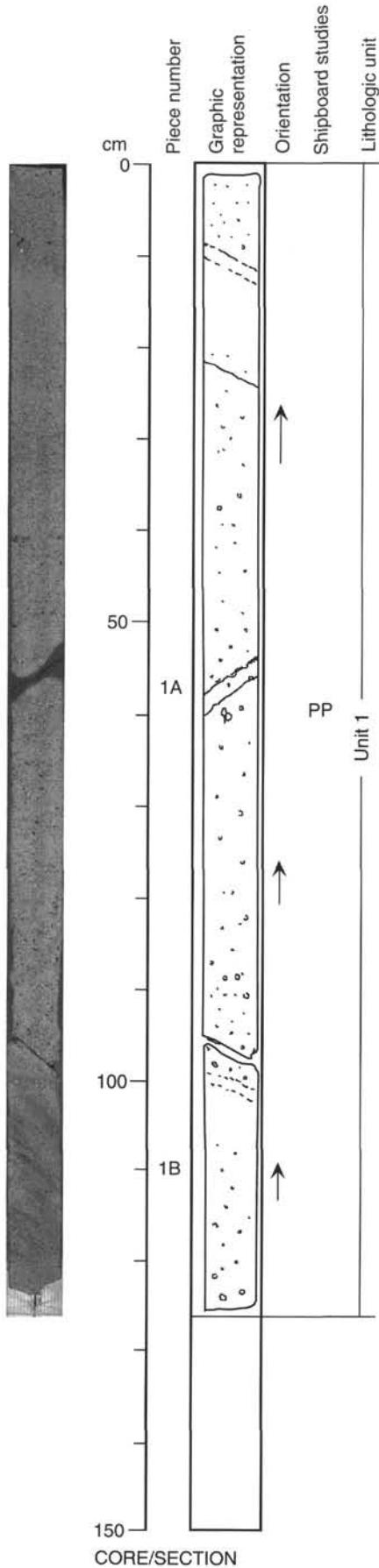
ALTERATION: Moderate.

VEINS/FRACTURES: <1%; 0.5-1.5 mm; 5 degrees (Piece 5); 55-80 degrees (Pieces 2 and 5); the veins are filled with zeolite and/or dark greenish-gray clay. Where found, zeolite occurs in the center of the veins. None of the veins is open.

ADDITIONAL COMMENTS: Piece 1 is a quartzo-feldspathic leuco-gneiss pebble (drilling rubble/dropstone).



CORE/SECTION



UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; <3 mm; tabular laths.

GROUNDMASS: Fine to medium grained; intergranular with prominent plagioclase laths.

VESICLES: <15%; <8 mm; spherical to irregular shape; uneven distribution vesicle-rich zones; vesicle-poor zones occur at intervals 12–22 cm and 105–115 cm. Some vesicles are open, but most are lined or filled with dark greenish-gray clay. Vesicles are filled with zeolite and/or carbonate near veins.

COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1.0 mm; 20 degrees (Piece 1A); 30 degrees (Piece 1B); the veins are filled with zeolite and/or dark greenish-gray clay. Where found, zeolite occurs in the center of the veins. None of the veins is open.

ADDITIONAL COMMENTS: Vesicle-poor zones at 12–22 cm and 105–155 cm appear to represent locations of internal flow contacts.

163-989B-2R-3

UNIT 1: APHYRIC BASALT

Piece 1

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; <3 mm; tabular laths.

GROUNDMASS: Fine to medium grained; intergranular with prominent plagioclase laths.

VESICLES: <15%; <5 mm; spherical to irregular shape; uneven distribution; a vesicle-poor zone occurs at interval 1–22 cm. Some vesicles are open, but most are lined or filled with dark greenish-gray clay. Near to veins the vesicles are filled with zeolite and/or carbonate.

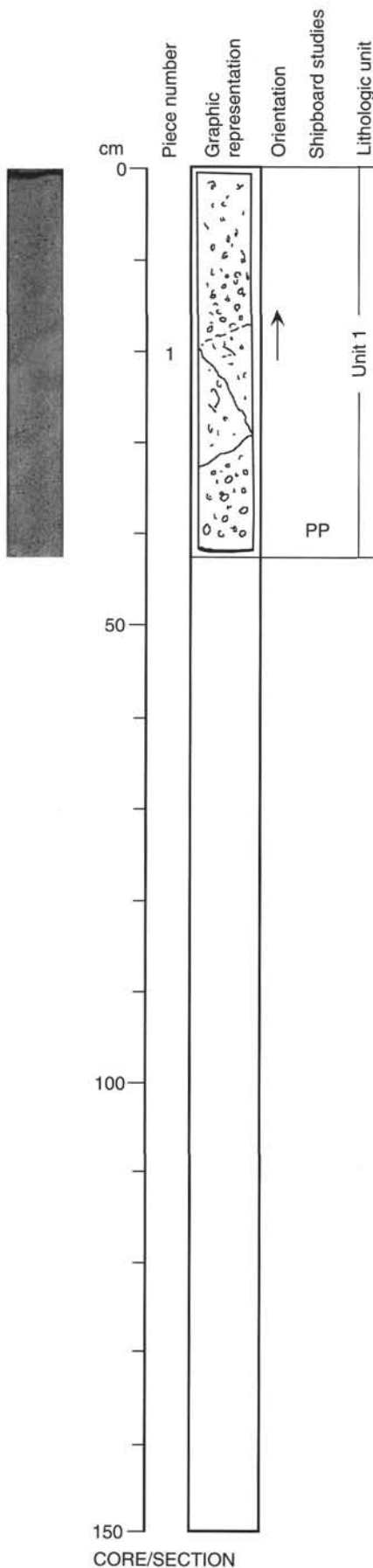
COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

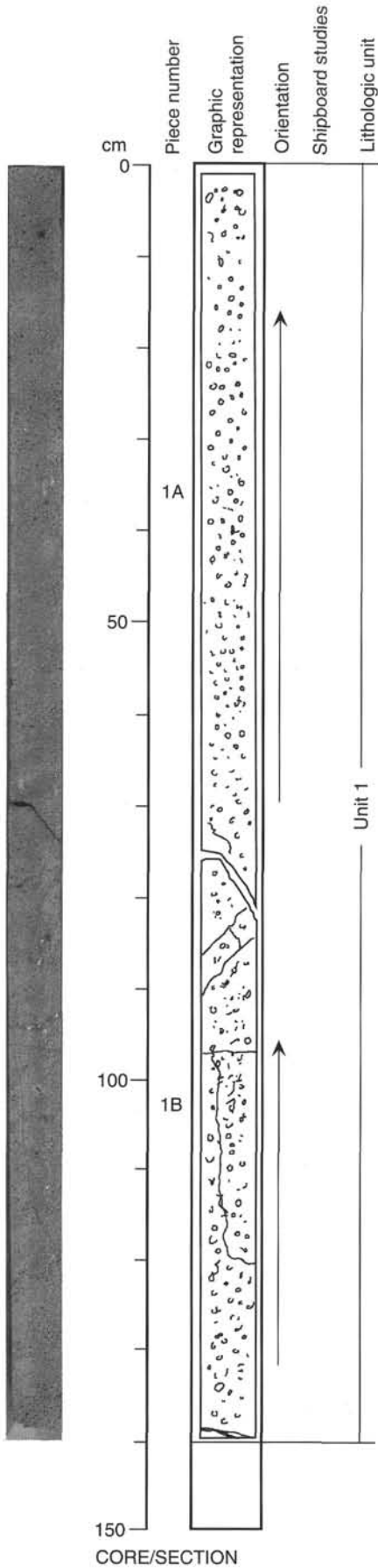
ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1.0 mm; inclined approx. 45 degrees; the veins are filled or lined with dark greenish-gray clay, and occasionally zeolite and carbonate. Where found, zeolite and carbonate occur in the center of the veins. None of the veins are open.

ADDITIONAL COMMENTS: Vesicle-poor zone at 19–29 cm appears to represent location of internal flow contact.



CORE/SECTION



UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; <3 mm; tabular laths.

GROUNDMASS: Fine to medium grained; intergranular with prominent plagioclase laths.

VESICLES: <15%; <8 mm; spherical to irregular shape; uneven distribution; a vesicle-poor zone occurs at interval 67–69 cm. Some vesicles are open, but most are lined or filled with dark greenish-gray clay. Vesicles are filled with zeolite and/or carbonate near veins.

COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1.0 mm; 45 degrees (Piece 1A) to vertical (Piece 1B); the veins are filled or lined with dark greenish-gray clay, and occasionally zeolite. Where found, zeolite and carbonates occur in the center of the veins. None of the veins is open.

163-989B-3R-1

UNIT 1: APHYRIC BASALT

Pieces 4A-4F

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained; intergranular with prominent plagioclase laths.

VESICLES: 2-15%; 0.5-8 mm; subspherical to irregular shape; uneven distribution; some vesicles are filled with a platy zeolite; but most are open with a lining of dark greenish-gray clay. Some are filled with dark greenish-gray clay.

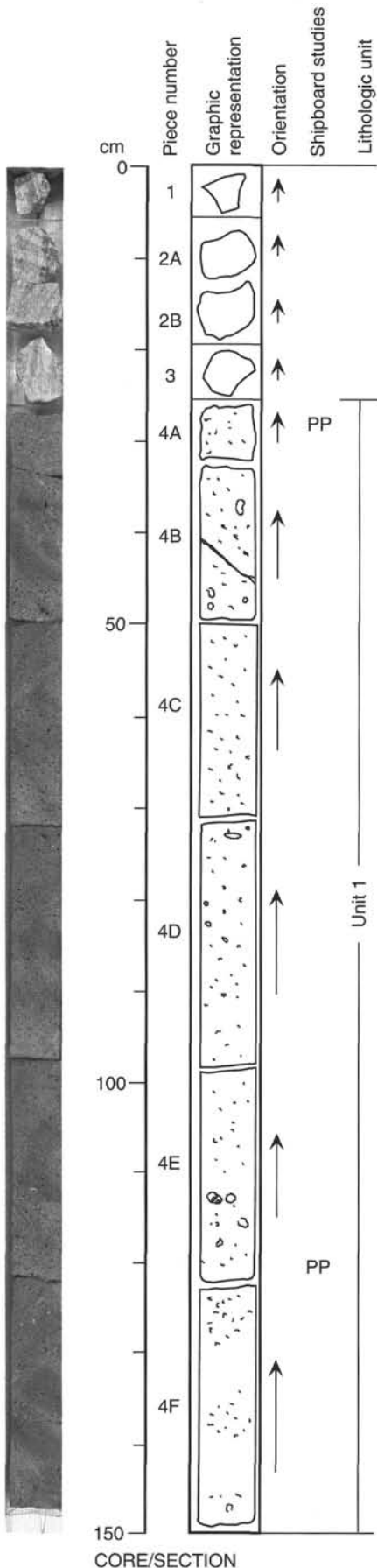
COLOR: Gray.

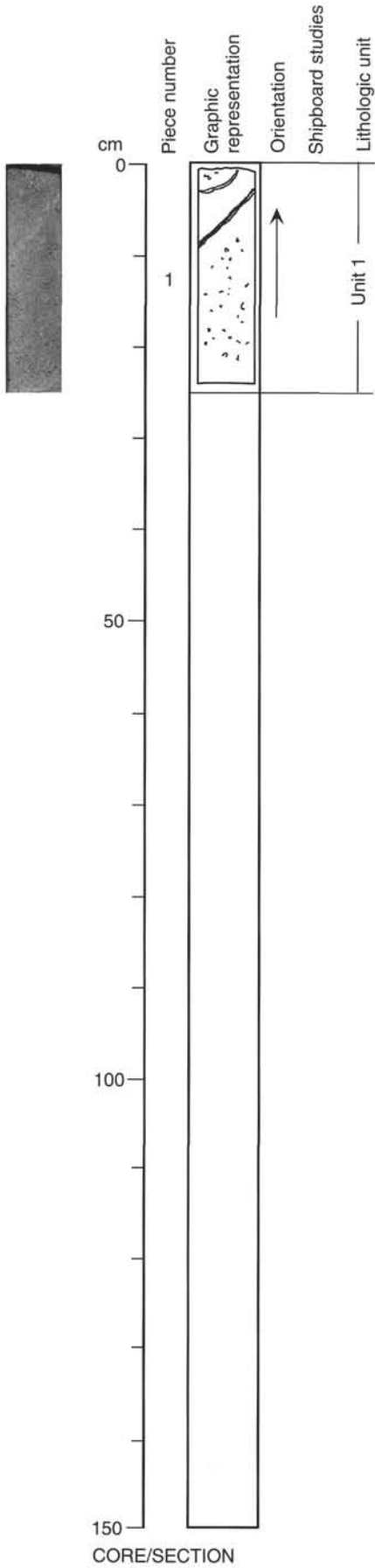
STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; < 1 mm; inclined ca. 45 degrees; veins are filled with dark greenish-gray clay. None is open.

ADDITIONAL COMMENTS: Pieces 1-3 are fragments of banded quartzo- feldspathic gneiss which probably have fallen down the hole during core barrel retrieval. Piece 4F is continuous with Piece 1 of Section 163-989B-3R-2.





UNIT 1: APHYRIC BASALT

Piece 1

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; <1 mm; tabular laths.

GROUNDMASS: Fine- to medium-grained, with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-6 mm; subspherical to irregular shape; uneven distribution; some vesicles are filled with zeolite, but most are open with a lining of dark greenish-gray clay.

COLOR: Gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <2 mm; inclined ca. 45 degrees; filled with zeolite and carbonate, and dark greenish-gray clay.

163-989B-4R-1

UNIT 1: APHYRIC BASALT

Pieces 2-3H

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm.

GROUNDMASS: Fine- to medium-grained. Intergranular with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-7 mm; subspherical to irregular shape; uneven distribution; most are open and lined with dark greenish-gray clay; some are completely filled with clay and a very few with zeolite and carbonate.

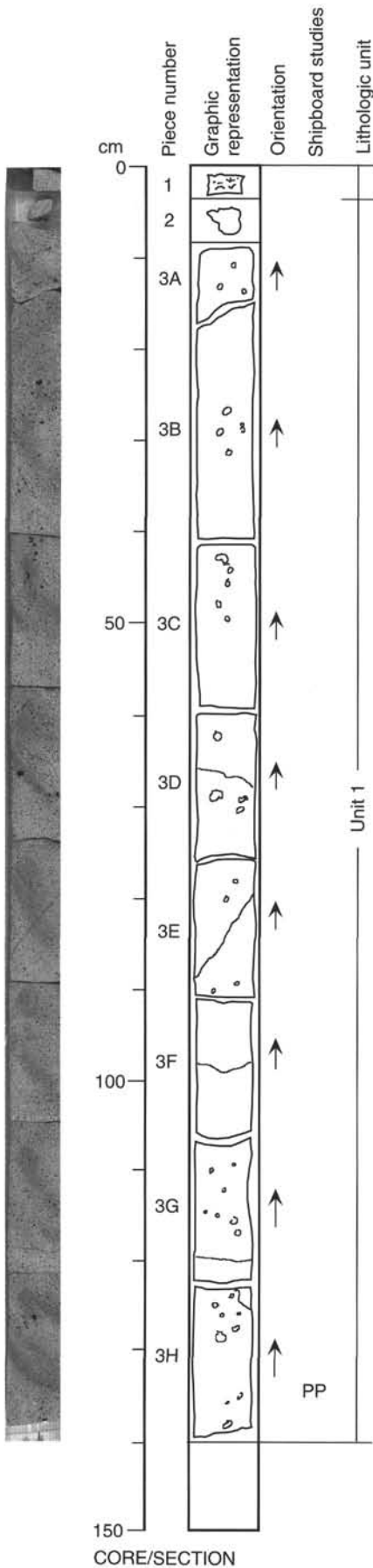
COLOR: Dark gray.

STRUCTURE: Massive vesicular basalt.

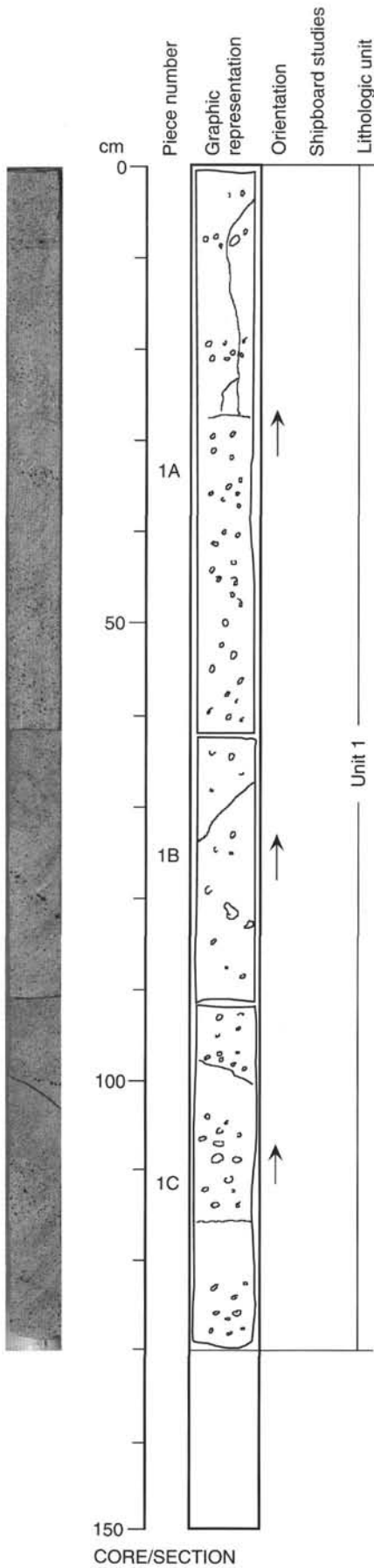
ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <3 mm; subhorizontal to 45 degrees; most veins are lined with dark greenish-gray clay, one (at 95 cm) is lined with zeolite and carbonate. None of the veins are open.

ADDITIONAL COMMENTS: Piece 1 is a fragment of amphibolite, probably drilling debris. Piece 3H is continuous with Piece 1A of Section 163-989B-4R-2.



CORE/SECTION



UNIT 1: APHYRIC BASALT

Pieces 1A-1C

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm.

GROUNDMASS: Fine- to medium-grained. Intergranular with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-9 mm; subspherical to irregular shape; uneven distribution; most are open and lined with dark greenish-gray clay; some are completely filled with clay and a very few (<1%), near veins, are filled with zeolite.

COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subhorizontal to 45 degrees to subvertical; most veins are lined with dark greenish-gray clay, one (at 69-72 cm) filled with zeolite and carbonate. None of the veins are open.

163-989B-4R-3

UNIT 1: APHYRIC BASALT

Pieces 1A-1D

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm.

GROUNDMASS: Fine- to medium-grained. Intergranular with prominent plagioclase laths.

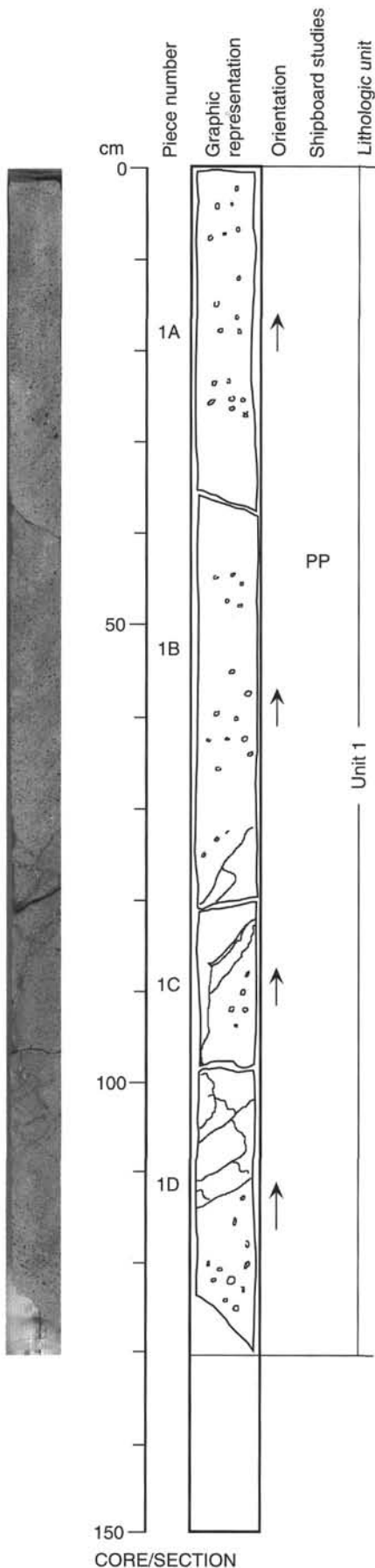
VESICLES: 1-15%; 0.5-9 mm; subspherical to irregular shape; uneven distribution; most are open and lined with dark greenish-gray clay; some are completely filled with clay and a very few (<1%), near veins, are filled with zeolite.

COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <8 mm; subhorizontal to 45 degrees to subvertical; most veins are filled with dark greenish-gray clay or zeolite; one (at 86 cm) contains a patch of pyrite. None of the veins are open.



UNIT 1: APHYRIC BASALT.

Pieces 1A-1C

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - <1%; 1-3 mm.

GROUNDMASS: Fine- to medium-grained. Intergranular with prominent plagioclase laths.

VESICLES: 1-15%; 0.5-6 mm; subspherical to irregular shape; uneven distribution; most are open and lined with dark greenish-gray clay; some are completely filled with clay and a very few (<1%), near veins, are filled with zeolite.

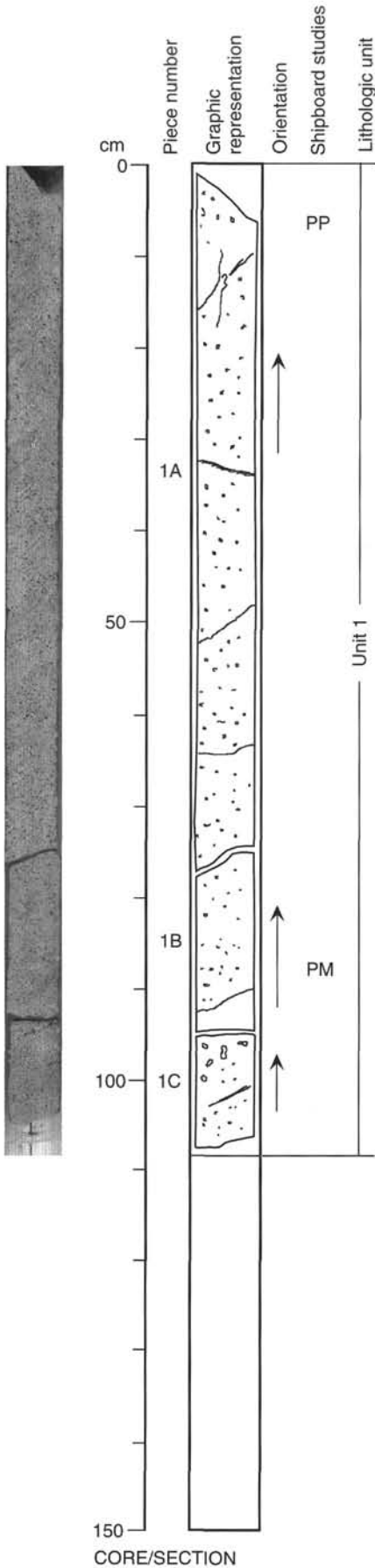
COLOR: Dark gray.

STRUCTURE: Massive vesicular flow.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; subhorizontal to vertical; most veins are filled with dark greenish-gray clay or zeolite and carbonate. *None of the veins are open.*

ADDITIONAL COMMENTS: Piece 1A is a continuation of Section 163-989B-4R-3, Piece 1D.

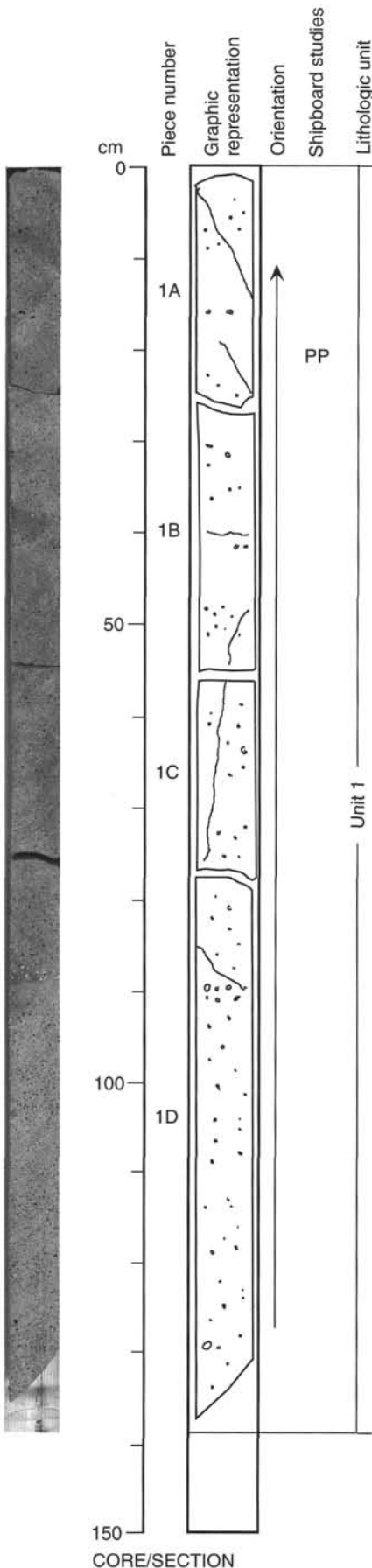


163-989B-5R-1

UNIT 1: APHYRIC BASALT

Pieces 1A-1D

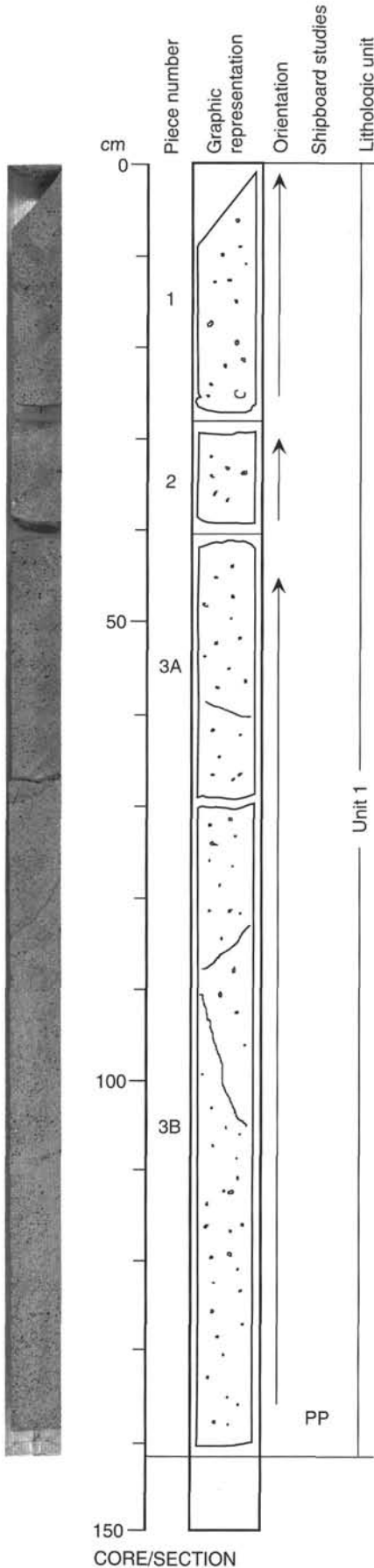
CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal, with prominent plagioclase laths.
VESICLES: 5–15%; 0.5–5 mm; sub-spherical to irregular shape; disseminated; most vesicles are open and lined with dark greenish-gray clay. Zeolite and calcite fillings occur at 40–44 cm, along vein at 50–70 cm, and in a fine-grained patch at 90–92 cm.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; <1 mm; subhorizontal to steeply inclined; lined with dark greenish-gray clay, with minor zeolite and pyrite.
ADDITIONAL COMMENTS: Vesicle train at 90 cm is underlain by a 2–3 cm wide vesicle-poor band. The band is inclined at about 25 degrees and may indicate flow orientation. Piece 1D continues with Piece 1 of Section 163-989B-5R-2.



UNIT 1: APHYRIC BASALT

Pieces 1-3B

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal, with prominent plagioclase laths.
VESICLES: 5-15%; 0.5-7 mm; sub-spherical to irregular shape; disseminated; most vesicles are open and lined with dark greenish-gray clay. A few scattered vesicles have zeolite fillings.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; <1 mm; moderately to steeply inclined; lined with dark greenish-gray clay.
ADDITIONAL COMMENTS: Vesicle train at 110 cm underlain by 1-cm-wide vesicle-poor band is inclined at 25 degrees and may give flow orientation.

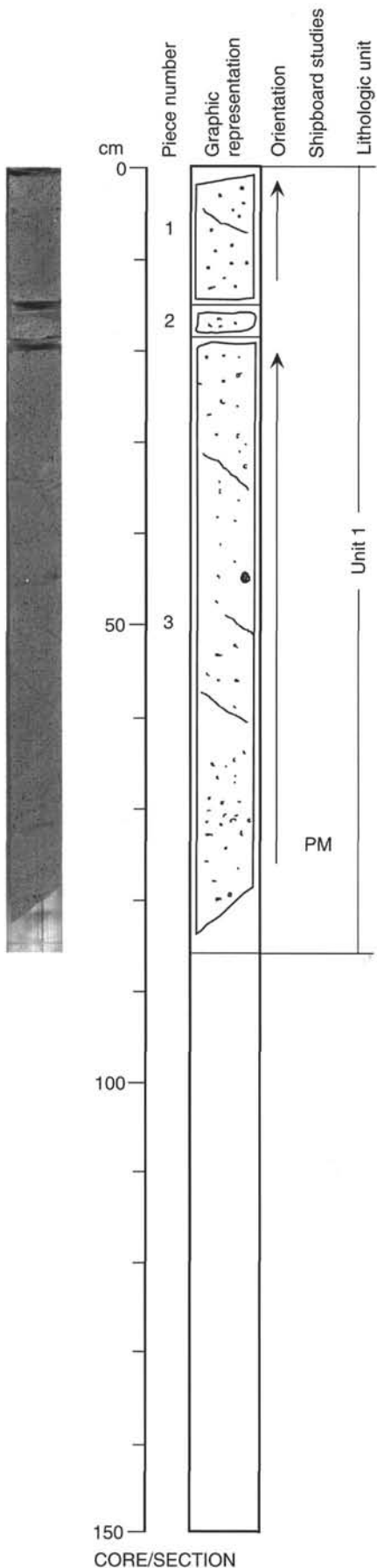


163-989B-5R-3

UNIT 1: APHYRIC BASALT

Pieces 1-3

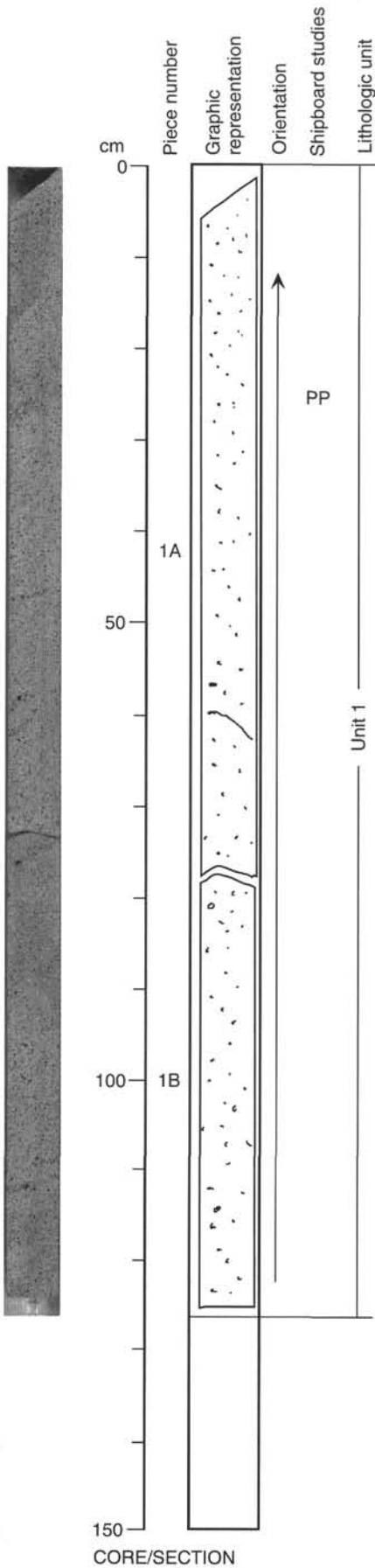
CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal, with prominent plagioclase laths.
VESICLES: 5-15%; 0.5-7 mm; sub-spherical to irregular shape; disseminated; most vesicles are open and lined with dark greenish-gray clay. A few scattered vesicles have zeolite fillings.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; <1 mm; moderately to steeply inclined; lined with dark greenish-gray clay.
ADDITIONAL COMMENTS: Piece 3 is continuous with Piece 1A of Section 163-989B-5R-4.



UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal, with prominent plagioclase laths.
VESICLES: 5–15%; 0.5–7 mm; sub-spherical to irregular shape; disseminated; most vesicles are open and lined with dark greenish-gray clay. A few scattered vesicles have zeolite fillings.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; <1 mm; moderately inclined; lined with dark greenish-gray clay.
ADDITIONAL COMMENTS: Vesicle trains at 27 cm and 48 cm are inclined at 25 degrees and may give flow orientation.

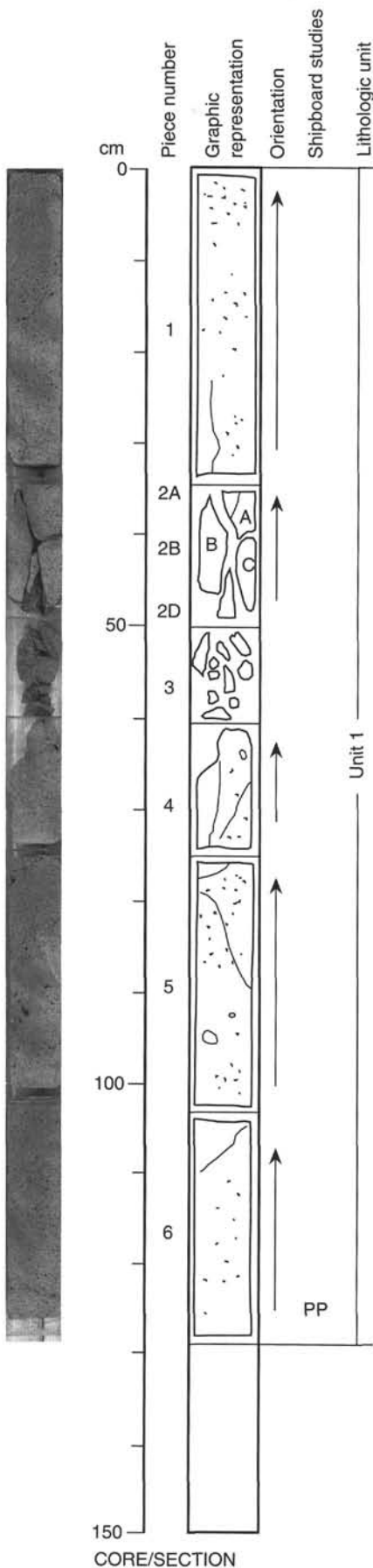


163-989B-6R-1

UNIT 1: APHYRIC BASALT

Pieces 1-6

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: 5–15%; <0.5–12 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, very few are filled with zeolite (e.g., at 92 cm).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; <0.2–1 mm; steeply inclined (50–90 degrees); several generations, some filled with dark green clay, others with zeolite; no consistent cross-cutting relationships.



UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

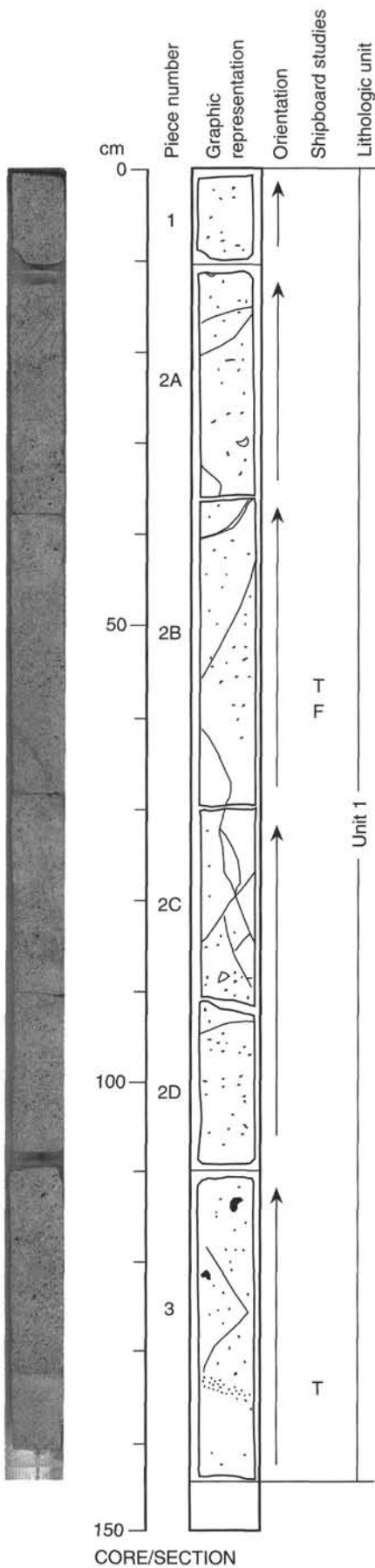
VESICLES: 3–35%; <0.5–7 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, those filled with zeolite are rare and sporadically distributed; patches 2–3 cm across with up to 35% vesicles; bands 1–5 cm thick with contrasting vesicle abundances (135–144 cm).

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: 1%; <0.2–1 mm; steeply inclined (50–90 degrees); several orientations, some filled with dark green clay, others also with zeolite, with or without pyrite; no consistent cross-cutting relationships.



163-989B-6R-3

UNIT 1: APHYRIC BASALT

Pieces 1-4

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

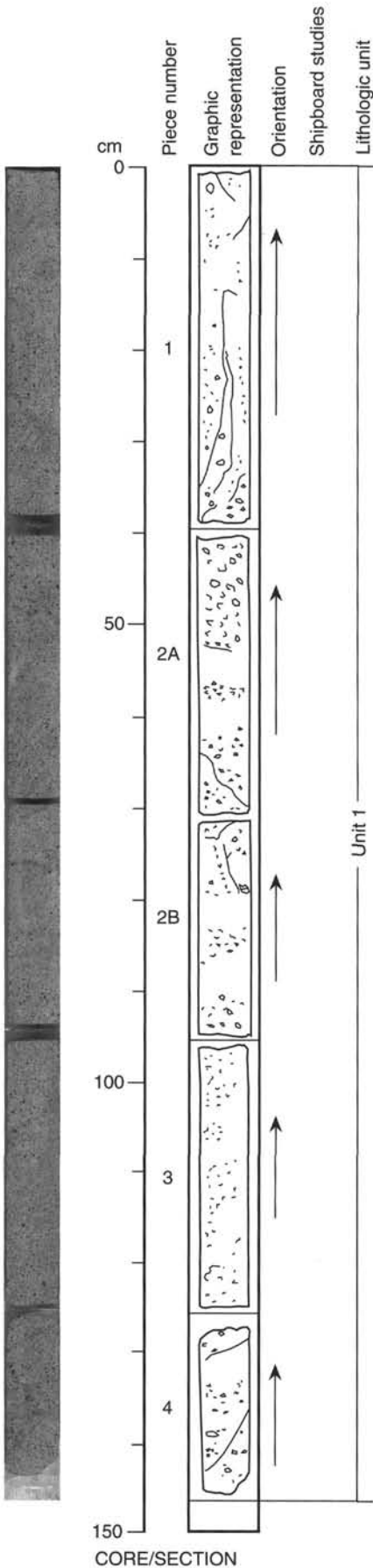
VESICLES: 1-30%; <0.5-7 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, those filled with zeolite are very rare; irregular patches and elongate zones with abundant very small (<0.3-1 mm) vesicles.

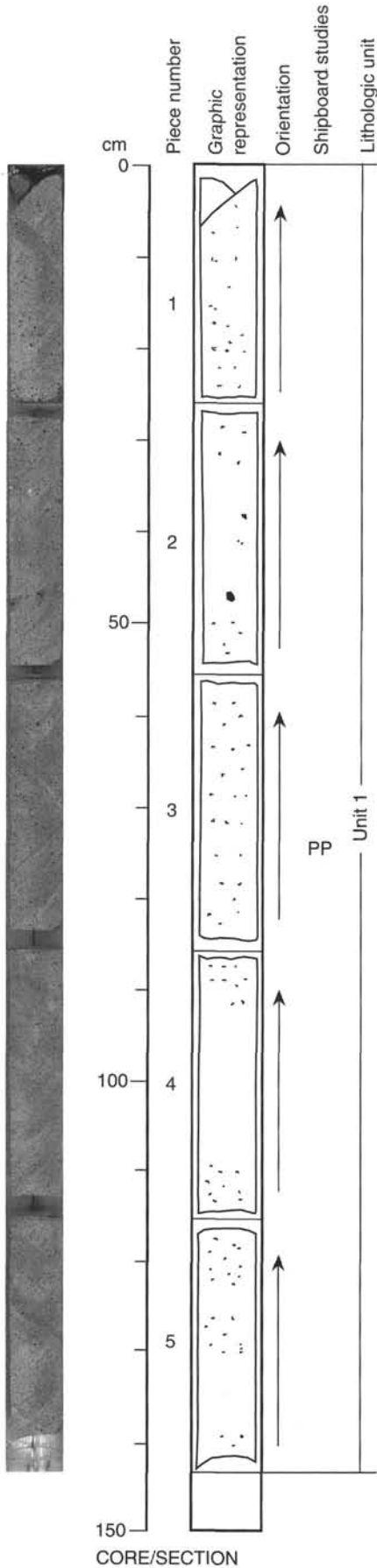
COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; 0.2 mm; subhorizontal to subvertical; all filled with dark green clay; none with zeolites.





UNIT 1: APHYRIC BASALT

Pieces 1-5

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

VESICLES: 1–20%; <0.5–7 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, except around 45 cm where some are filled with green clay and at 35–48, 91, and 138 cm where they are filled with zeolite and/or carbonate.

COLOR: Gray.

STRUCTURE: Massive, vesicular, faint banding defined by variation in zeolite abundance.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; 0.2 mm; subhorizontal to about 50 degrees; all filled with dark green clay.

163-989B-6R-5

UNIT 1: APHYRIC BASALT

Pieces 1A-1C

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

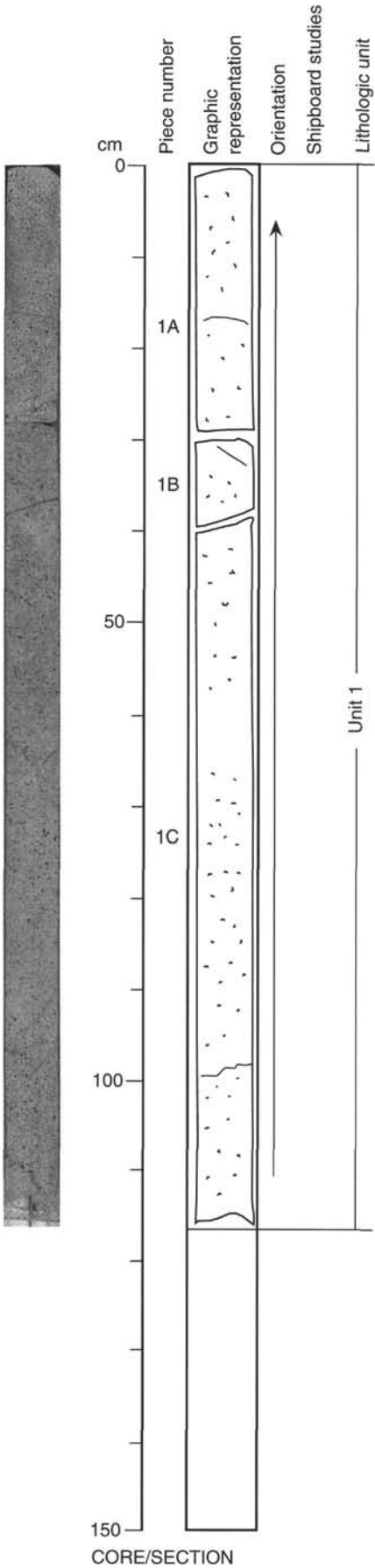
VESICLES: 5-15%; <0.5-10 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, some filled with green clay or zeolite.

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; 0.2 mm; subhorizontal to about 45 degrees; very few veins, all filled with dark green clay.

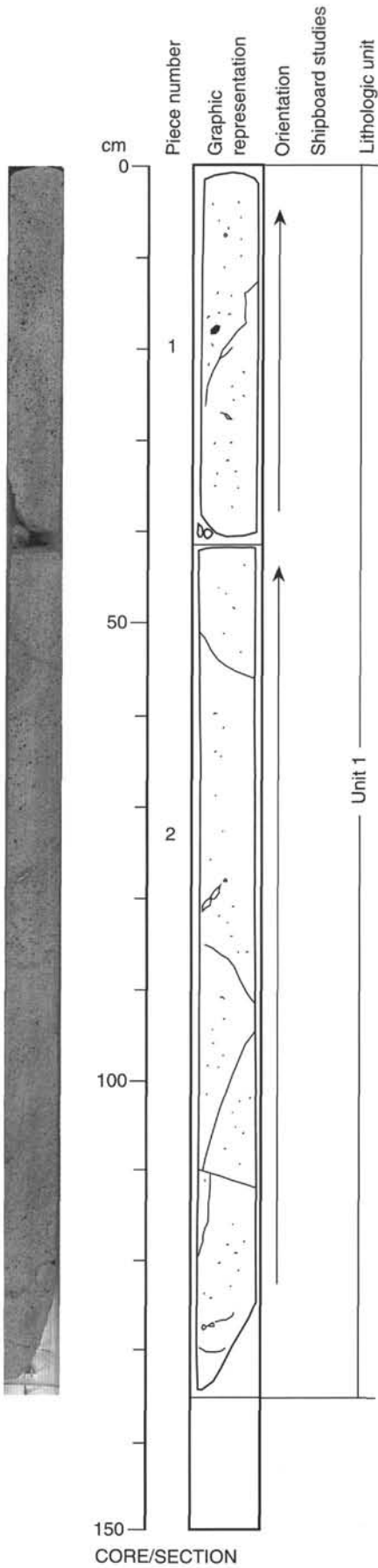


CORE/SECTION

UNIT 1: APHYRIC BASALT

Pieces 1-2

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: 5–15%; <0.5–8 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, some filled with green clay or with zeolite around veins.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; 0.2 mm; subhorizontal to about 80 degrees; very few veins, all filled with dark green clay.



CORE/SECTION

163-989B-6R-7

UNIT 1: APHYRIC BASALT

Pieces 1A-4

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

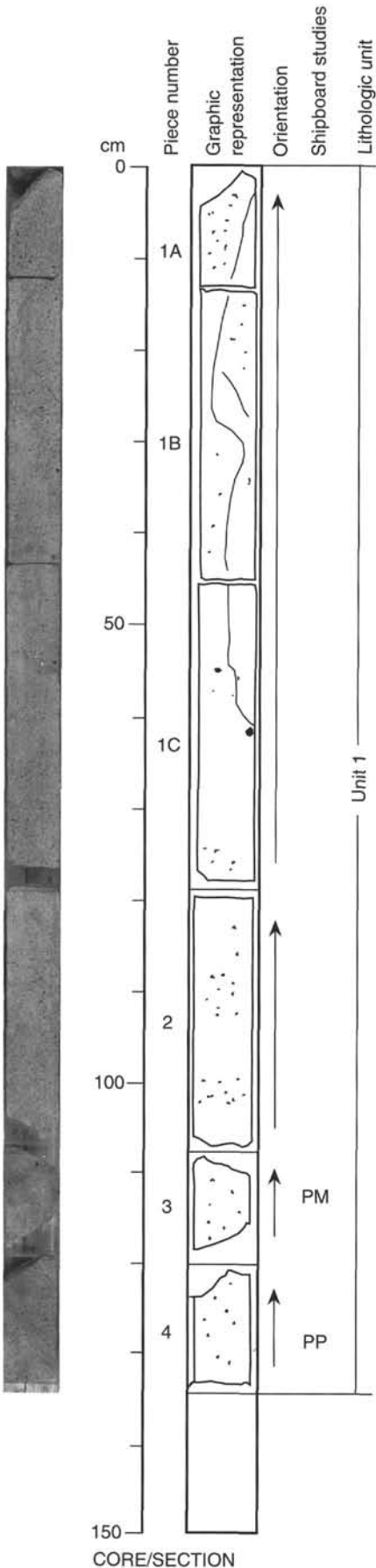
VESICLES: 5-15%; <0.5-5 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; most are open, some filled with green clay or with zeolite around veins.

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

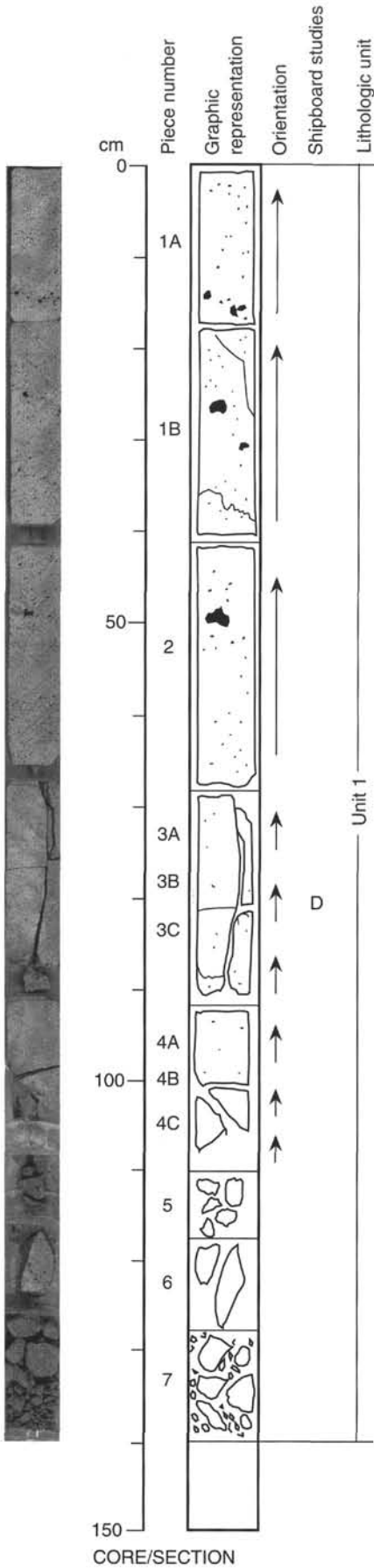
VEINS/FRACTURES: <1%; up to 1 mm; subhorizontal to subvertical; veins filled with dark green clay and/or zeolite and carbonate.



UNIT 1: APHYRIC BASALT

Pieces 1A-7

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: 5–15%; <0.5–10 mm; sub-spherical to irregular; patchy distribution; lined with dark green-gray clay; some open, others filled with green clay.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; up to 1 mm; subhorizontal to subvertical; veins filled with dark green clay and/or zeolite and carbonate.
ADDITIONAL COMMENTS: Pieces 4A-7 are fragments from the core catcher.

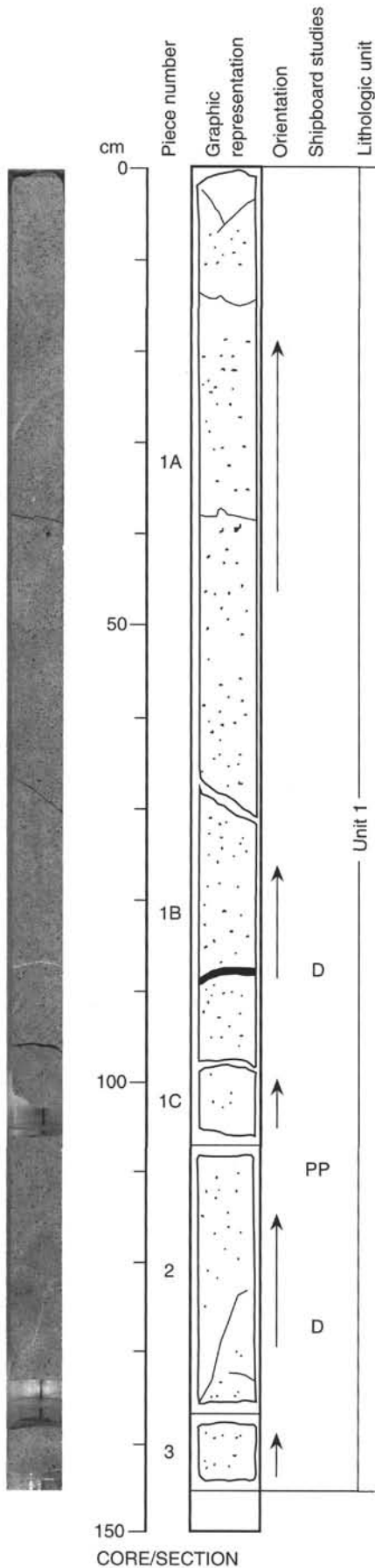


163-989B-7R-1

UNIT 1: APHYRIC BASALT

Pieces 1A-3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: 1-15%; <8 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites are rare.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; up to 2.5 mm; subhorizontal to subvertical; veins are filled with greenish clay and/or zeolite and carbonate.



CORE/SECTION

UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal and variolitic with prominent plagioclase laths.

VESICLES: 1-15%; <9 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites are rare.

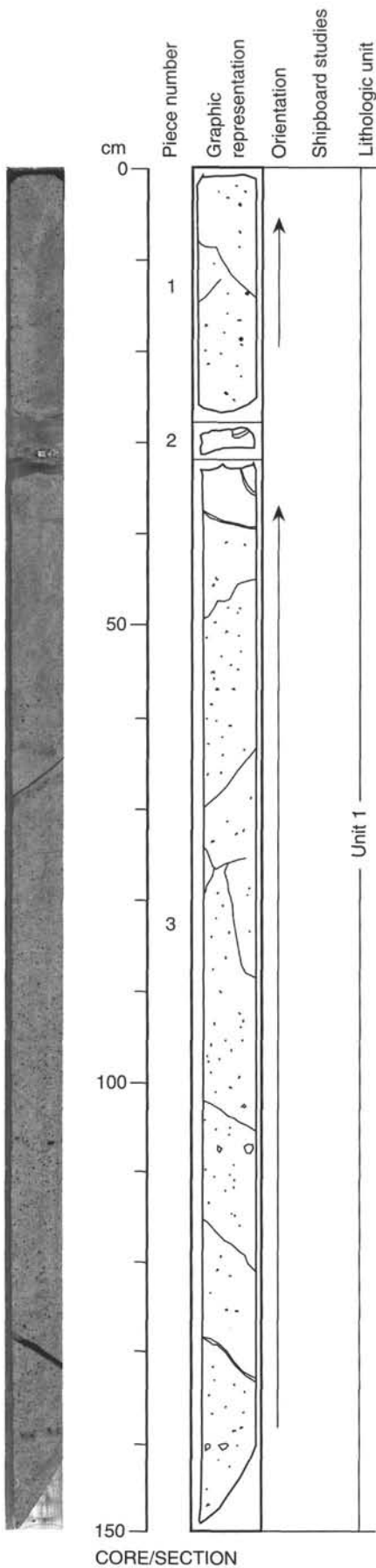
COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <0.1%; up to 1.5 mm; subhorizontal to subvertical; veins are filled with greenish clay and/or zeolite and carbonate.

ADDITIONAL COMMENTS: Piece 3 is continuous with Piece 1A of Section 163-989B-7R-3, but the archive and working halves were switched during splitting.



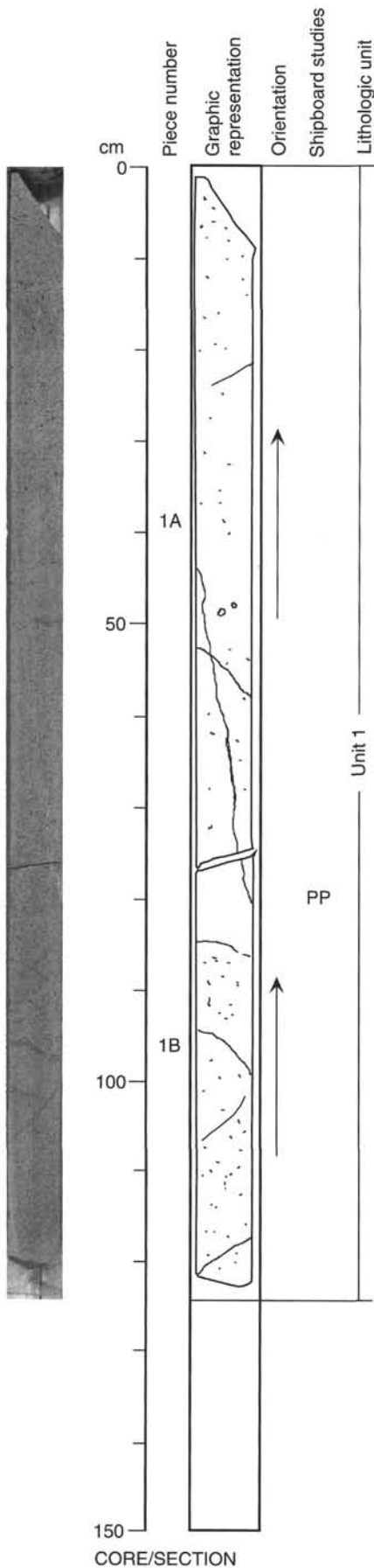
CORE/SECTION

163-989B-7R-3

UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: 5–15%; <4 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites are rare. Some vesicle-poor zones exist (e.g., 100–110 cm).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <0.1%; up to 2 mm; subhorizontal to subvertical; veins are filled with greenish clay and/or zeolite and carbonate. At 42 to 82 cm, there is a long vein filled with carbonate.
ADDITIONAL COMMENTS: Piece 1B is continuous with Piece 1A of Section 163-989B-7R-4.

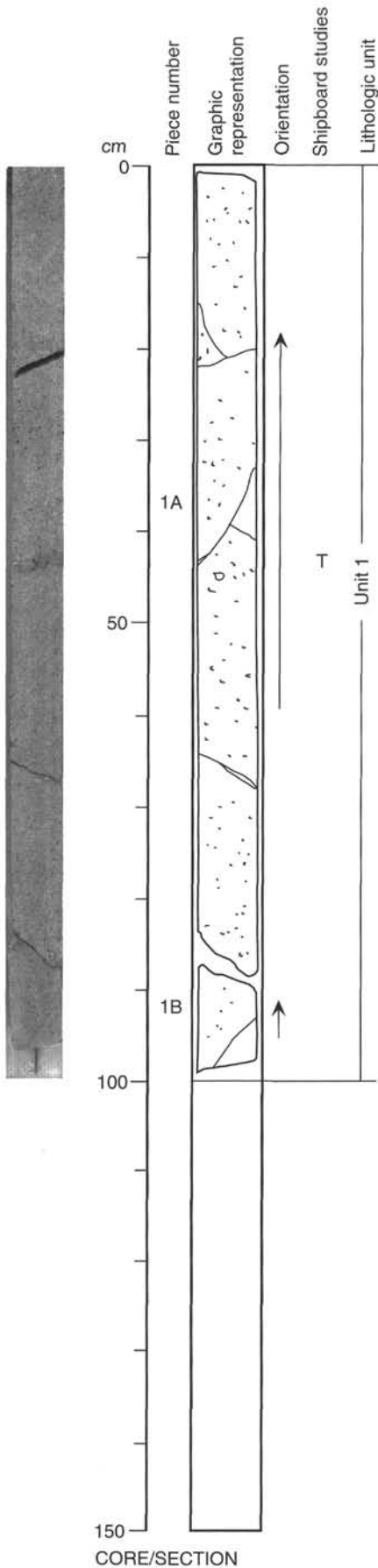


CORE/SECTION

UNIT 1: APHYRIC BASALT

Pieces 1A-1B

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: <15%; <9 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites are rare. Some vesicle-poor zones exist (e.g., 16–18 cm and 47–62 cm), some define a sharp textural change to highly vesicular zones (large vesicles).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <0.1%; up to 1.5 mm; subhorizontal to subvertical; veins are filled with greenish clay and/or zeolite and carbonate.

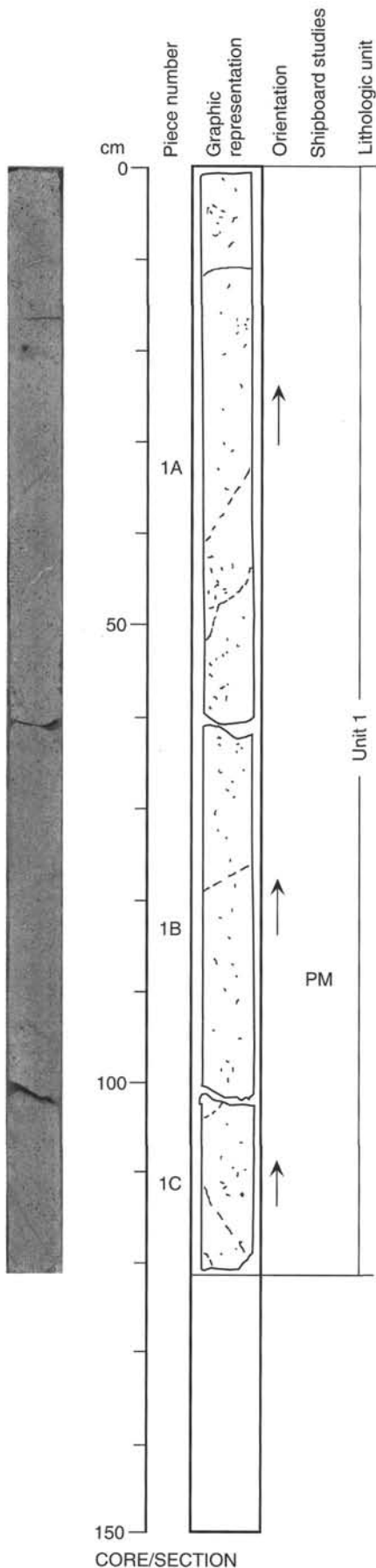


163-989B-7R-5

UNIT 1: APHYRIC BASALT

Pieces 1A-1C

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: <10%; <5 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites are rare. Some vesicle-poor zones exist (e.g., 21–27 cm and 86–94 cm).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <0.5%; up to 1.5 mm; subhorizontal; veins are filled with greenish clay (thin ones at 77–80 cm). Thicker veins (11–12 cm, 32–38 cm, and 42–53 cm) are filled with zeolite and locally carbonate.



UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

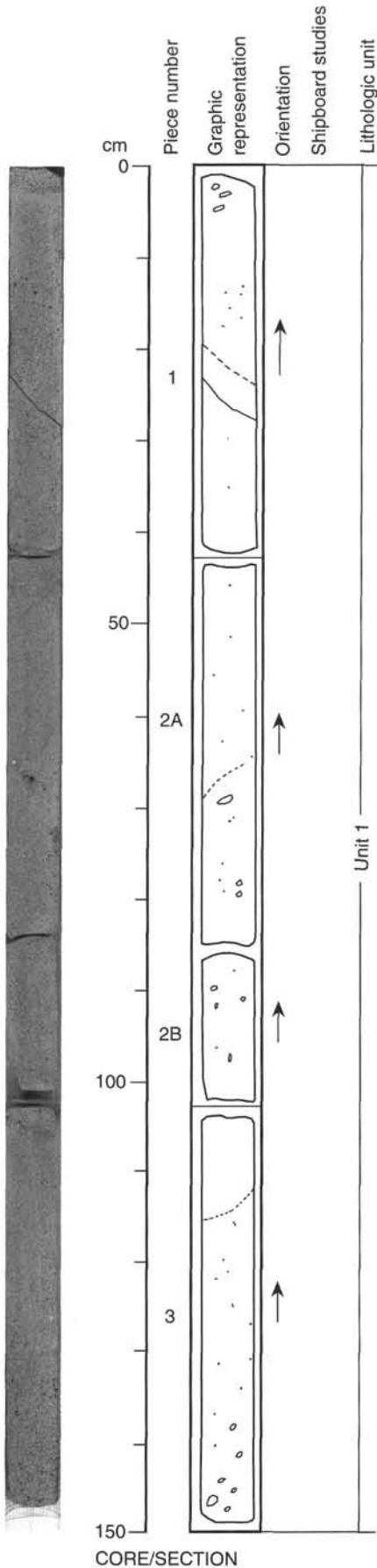
VESICLES: <10%; <10 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites are rare and mainly occur near veinlets. Some vesicle-poor zones exist (no sharp contacts).

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <0.1%; up to 2 mm; subhorizontal (curved); veins are filled with greenish clay and/or zeolite and very minor carbonate.



CORE/SECTION

163-989B-7R-7

UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.

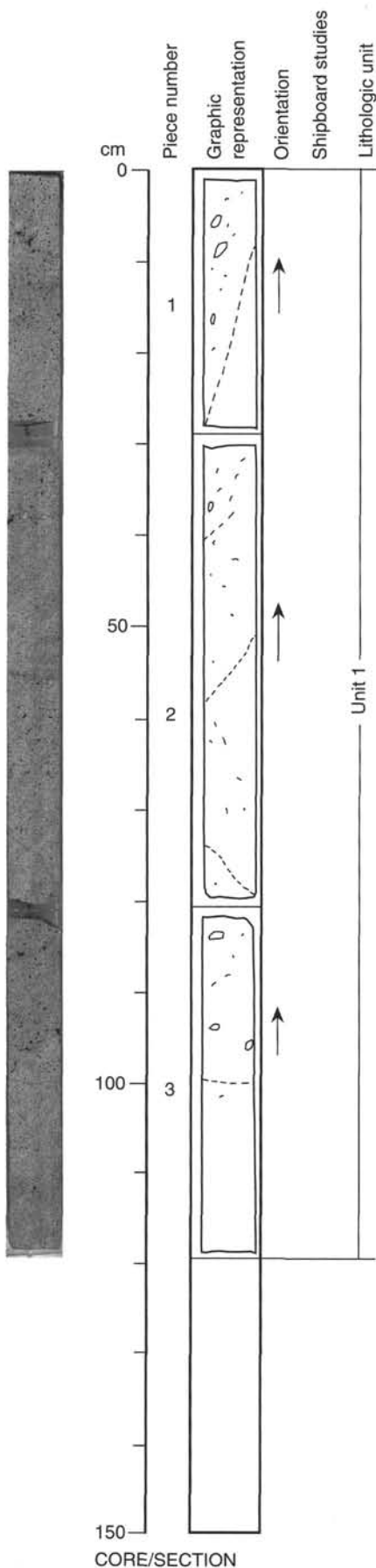
VESICLES: <15%; <9 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites mainly occur near zeolite-filled veinlets. Some vesicle-poor zones (no sharp contacts) exist (e.g., 40–45 cm).

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <0.1%; up to 2 mm; subhorizontal to subvertical (curved); veins are filled with greenish clay (mainly thin veins) and/or zeolite (thicker veins) and very minor carbonate.

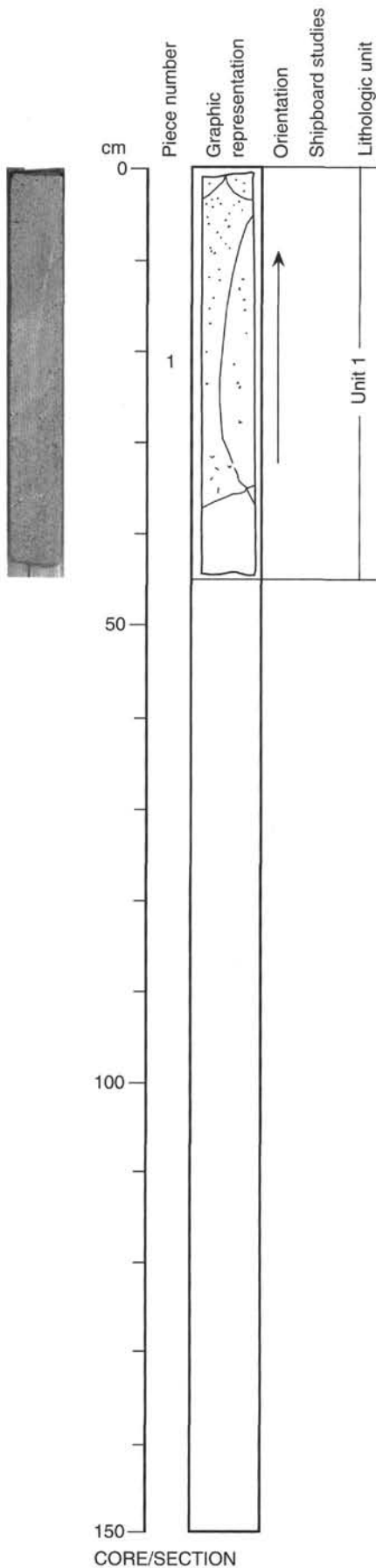


CORE/SECTION

UNIT 1: APHYRIC BASALT

Piece 1

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal with prominent plagioclase laths.
VESICLES: <10%; <5 mm; sub-spherical to irregular shape; uneven to disseminated distribution; most vesicles are open, but many are lined or filled with greenish-gray clay. Zeolites mainly occur near zeolite-filled veinlets. Some vesicle-poor zones (no sharp contacts) exist (e.g., 40–45 cm).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <0.1%; up to 2 mm; subhorizontal to subvertical (curved); veins are filled with greenish clay (mainly thin veins) and/or zeolite (thicker veins) and very minor carbonate.

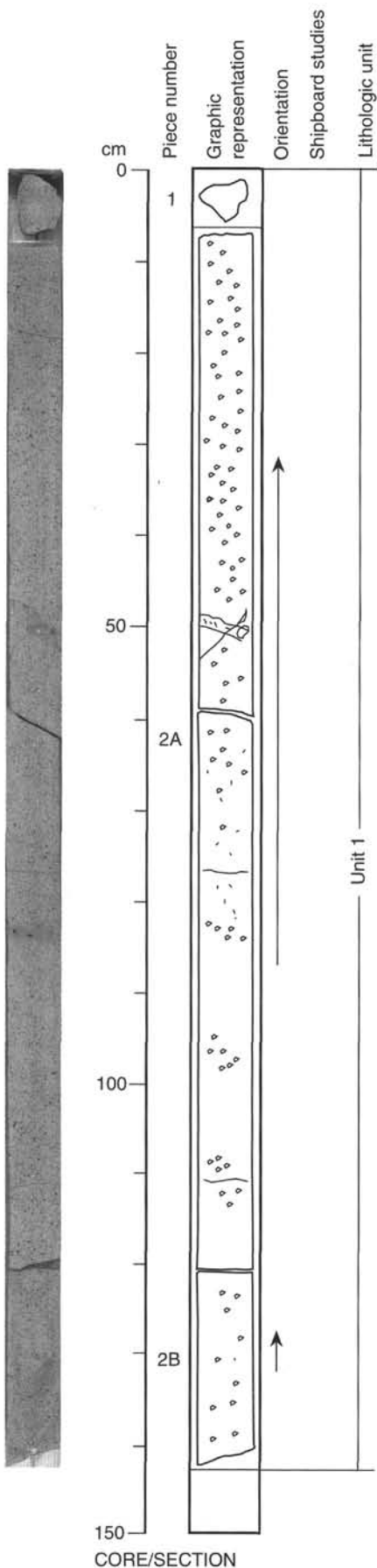


163-989B-8R-1

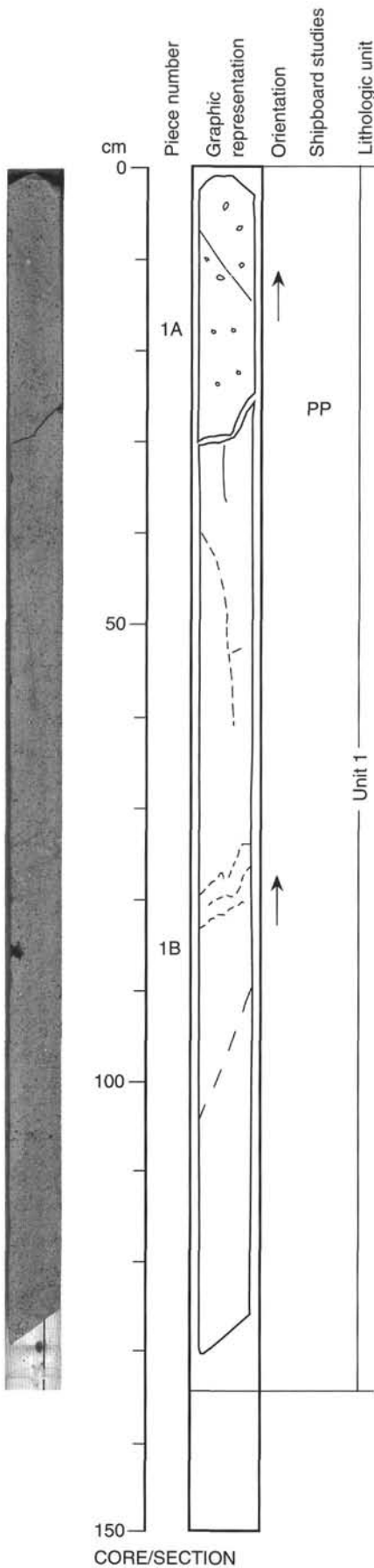
UNIT 1: APHYRIC BASALT.

Pieces 1-2B

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.
VESICLES: 5–10%; <9 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but many are lined or filled with dark greenish-gray clay. Some vesicles adjacent to veins contain zeolite (for example, in inclined patches at 49–52 cm and 142–143 cm).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; <1 mm; subhorizontal to inclined to 45 degrees; filled with dark greenish-gray clay.
ADDITIONAL COMMENTS: Piece 2A broke during cutting and is continuous.



CORE/SECTION



UNIT 1: APHYRIC BASALT.

Pieces 1A-1B

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.

VESICLES: 5–10%; <6 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but many are lined or filled with dark greenish-gray clay. Some vesicles adjacent to veins contain zeolite (for example, at 8–13 cm, 90–93 cm, 97–100 cm).

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; inclination highly variable; filled with dark greenish-gray clay and zeolite. Veins are very fine and irregular.

ADDITIONAL COMMENTS: Section 163-989B-8R-2, Piece 1B continues to Section 163-989B-8R-3, Piece 1A.

163-989B-8R-3

UNIT 1: APHYRIC BASALT.

Pieces 1A-1D

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.

VESICLES: 5-10%; <4 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but many are lined or filled with dark greenish-gray clay. One 4 mm vesicle at 47 cm is lined with zeolite and has an empty center.

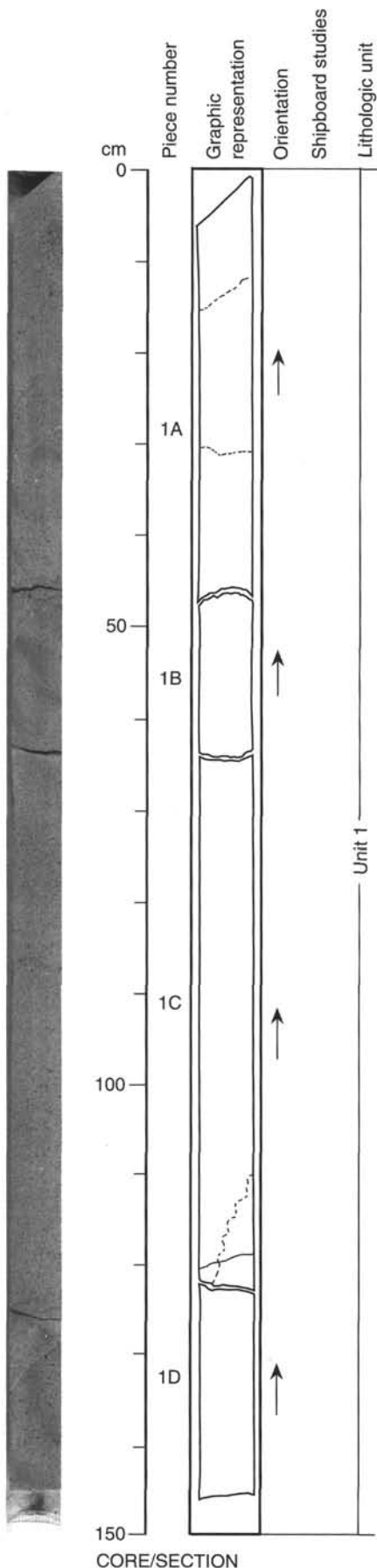
COLOR: Gray.

STRUCTURE: Massive, vesicular.

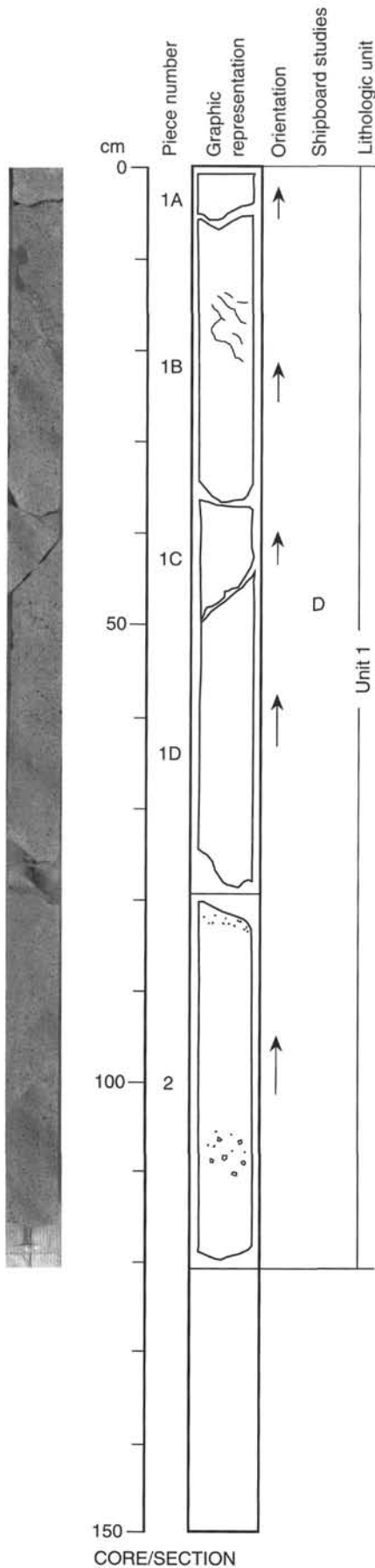
ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <1 mm; inclined at 0, 45 and 75 degrees; filled with dark greenish-gray clay and zeolite. Veins are very fine and irregular.

ADDITIONAL COMMENTS: Section 163-989B-8R-3, Piece 1D continues to Section 163-989B-8R-4, Piece 1A (sawed).



CORE/SECTION



UNIT 1: APHYRIC BASALT.

Pieces 1A-2

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.

VESICLES: 2–10%; <4 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but many are lined or filled with dark greenish-gray clay. At 13 to 23 cm there is a dark band, inclined at 75 degrees, with zeolite-filled vesicles. A diffuse zone at 105–110 cm contains larger vesicles.

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

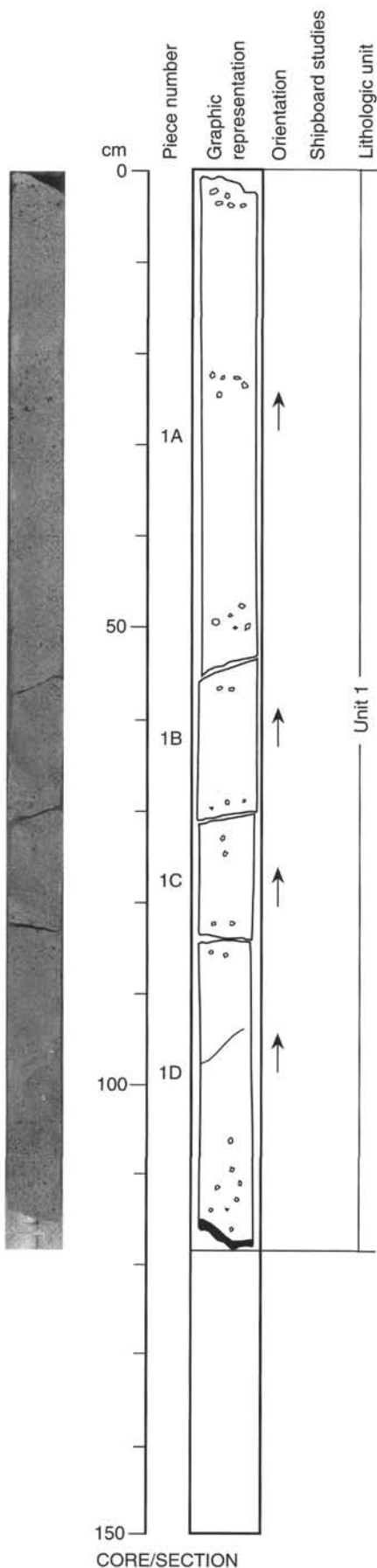
VEINS/FRACTURES: <1%; <1 mm; inclined at approximately 45 degrees; filled with dark greenish-gray clay and zeolite. Veins are very fine and irregular.

163-989B-8R-5

UNIT 1: APHYRIC BASALT

Pieces 1A-1D

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.
VESICLES: 2–10%; <6 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but many are lined or filled with dark greenish-gray clay.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; <1 mm; inclined at 20–45 degrees; filled with dark greenish-gray clay and zeolite. Veins are very fine and irregular.



CORE/SECTION

UNIT 1: APHYRIC BASALT.

Pieces 1A-1G

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.

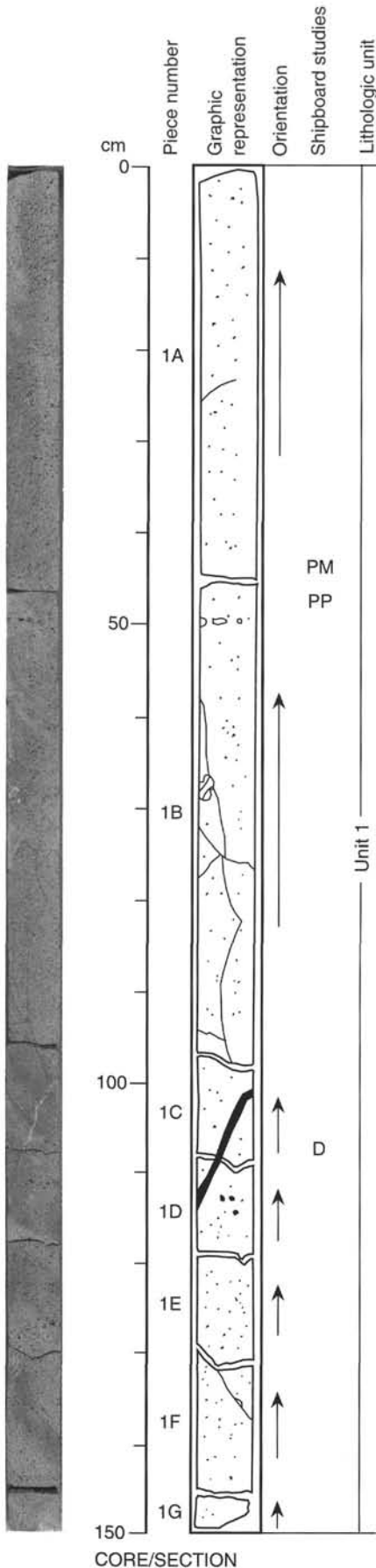
VESICLES: 2-10%; <4 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but many are lined or filled with dark greenish-gray clay. One large (1 cm) vesicle at 69 cm is filled with brownish calcite.

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <2 mm; irregular, steep; one irregular system of curved veins each with the average thickness of about 70 microns at 60-100 cm, filled with dark greenish-gray clay and zeolites. At 100-115 cm, a 1-2 mm wide, curved vein is filled with zeolite and calcite.



163-989B-8R-7

UNIT 1: APHYRIC BASALT

Pieces 1A-3B

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with prominent plagioclase laths.

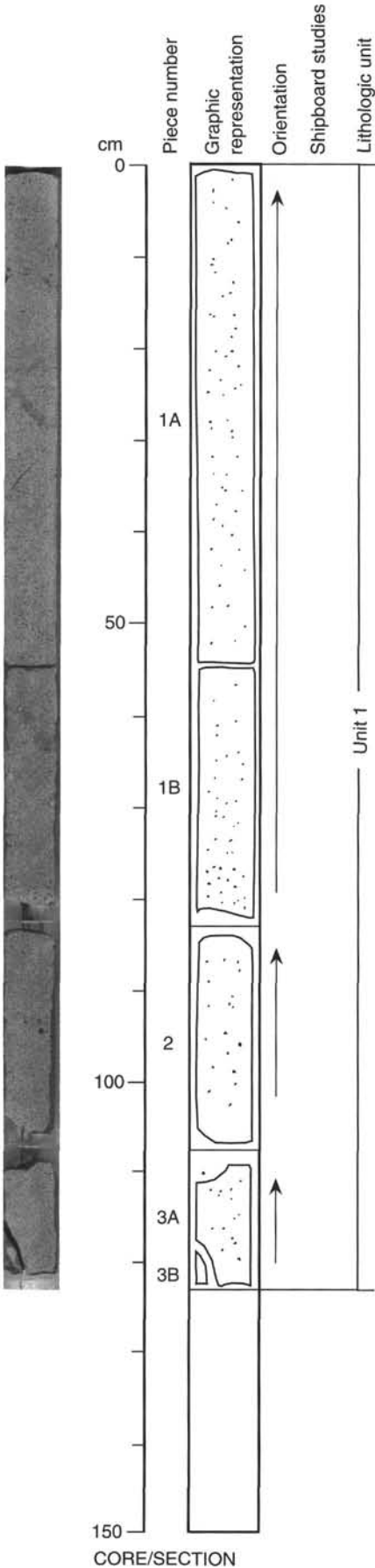
VESICLES: 2–10%; generally <4 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are open but lined with dark greenish-gray clay. At 20–55 cm many vesicles are filled with clay. At 60–62 cm, some vesicles are filled with zeolite.

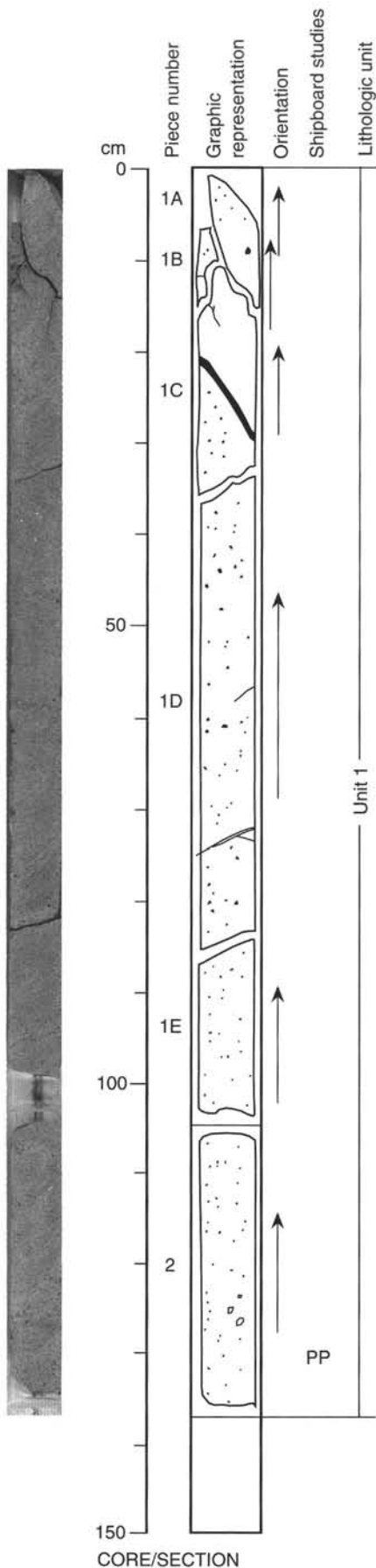
COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <1%; <<1 mm; irregular; filled with dark greenish-gray clay and zeolites.





UNIT 1: APHYRIC BASALT.

Pieces 1A-2

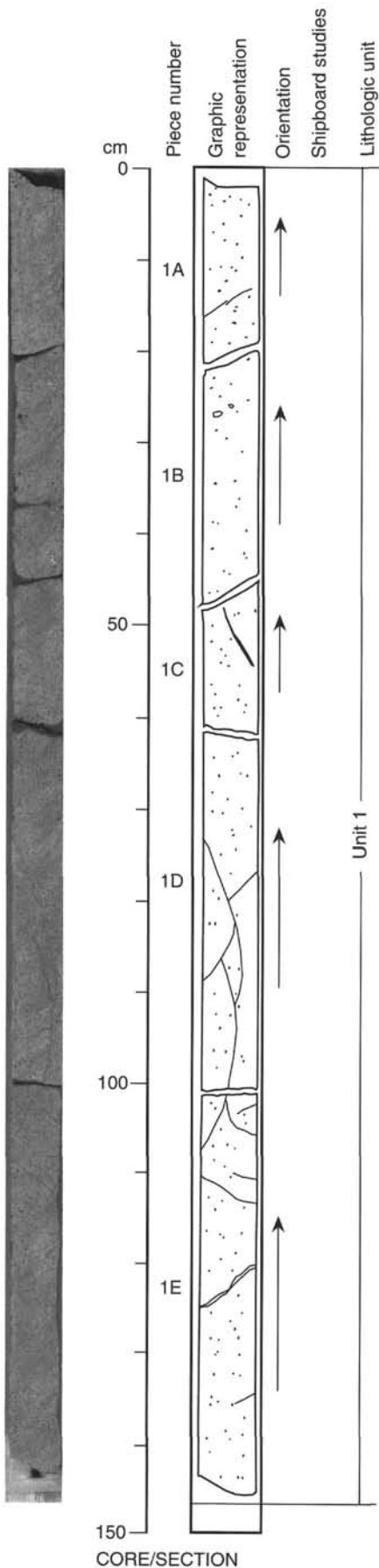
CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.
VESICLES: 2-12%; <5 mm; subspherical to irregular shape; uneven to disseminated distribution; some vesicles are open but most are filled with dark greenish-gray clay. Scattered vesicles are filled with zeolite.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; <1 mm; subhorizontal to 60 degrees; filled with dark greenish-gray clay (thin veins) and zeolites (thicker veins).
ADDITIONAL COMMENTS: Piece 2 is continuous with Piece 1 of Section 163-989B-9R-2.

163-989B-9R-2

UNIT 1: APHYRIC BASALT

Pieces 1A-1E

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.
VESICLES: 2-10%; <5 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are filled with dark greenish-gray clay, rarely with zeolite. Scattered open vesicles.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <1%; <1.5 mm; random and curved; filled with dark greenish-gray clay (thin veins) and zeolites (thicker veins).
ADDITIONAL COMMENTS: Piece 1E is continuous with Piece 1A of Section 163-989B-9R-3.

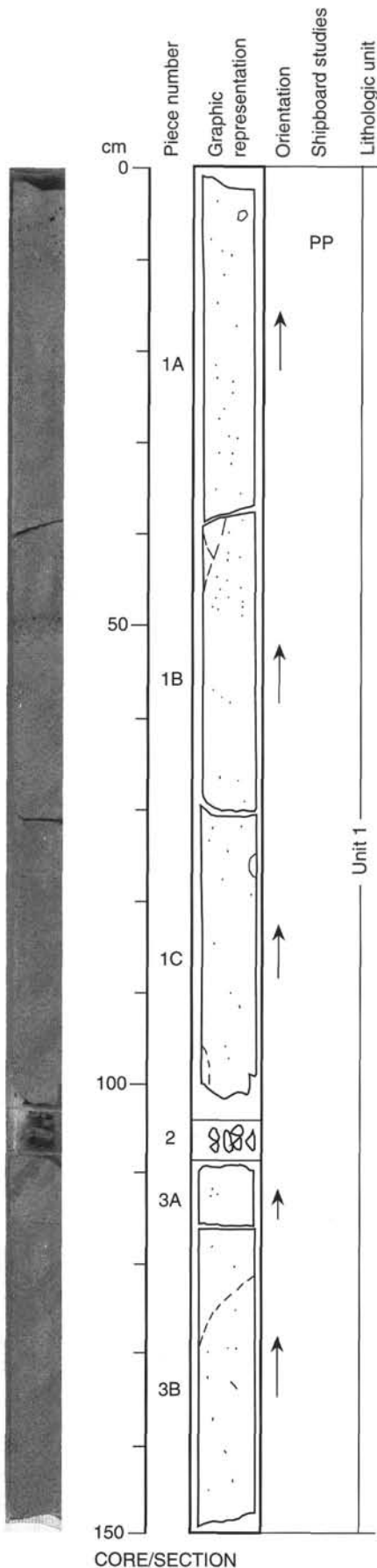


CORE/SECTION

UNIT 1: APHYRIC BASALT.

Pieces 1A-3B

- CONTACTS:** None.
- PHENOCRYSTS:** None.
- GROUNDMASS:** Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.
- VESICLES:** 1-8%; <5 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are filled with dark greenish-gray clay, rarely with zeolite. Scattered open vesicles. The proportion of open vesicles declines markedly in this section; they are absent in the lower part of Piece 3B.
- COLOR:** Gray.
- STRUCTURE:** Massive, vesicular.
- ALTERATION:** Moderate.
- VEINS/FRACTURES:** <1%; <1 mm; subvertical; filled with dark greenish-gray clay (thin veins) and zeolites (thicker veins).
- ADDITIONAL COMMENTS:** Piece 3B is continuous with Piece 1 of Section 163-989B-9R-4.



163-989B-9R-4

UNIT 1: APHYRIC BASALT

Pieces 1-2C

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.

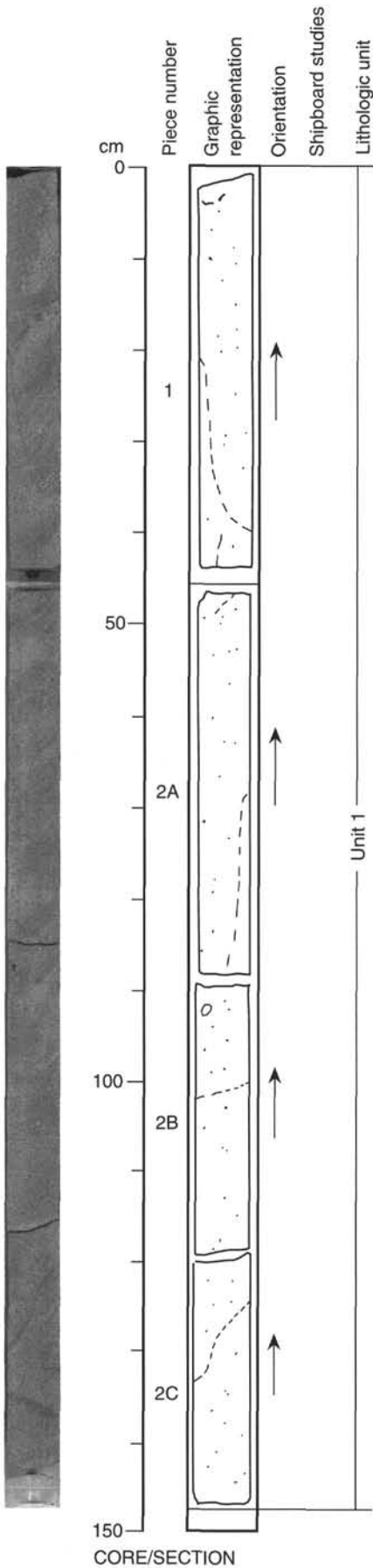
VESICLES: 1-8%; <3 mm; subspherical to irregular shape; uneven to disseminated distribution; most vesicles are filled with dark greenish-gray clay, rarely with zeolite. Rare isolated open vesicles (up to 4 mm) in Piece 1; disseminated small open vesicles (<2 mm) in Pieces 2A and 2B.

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

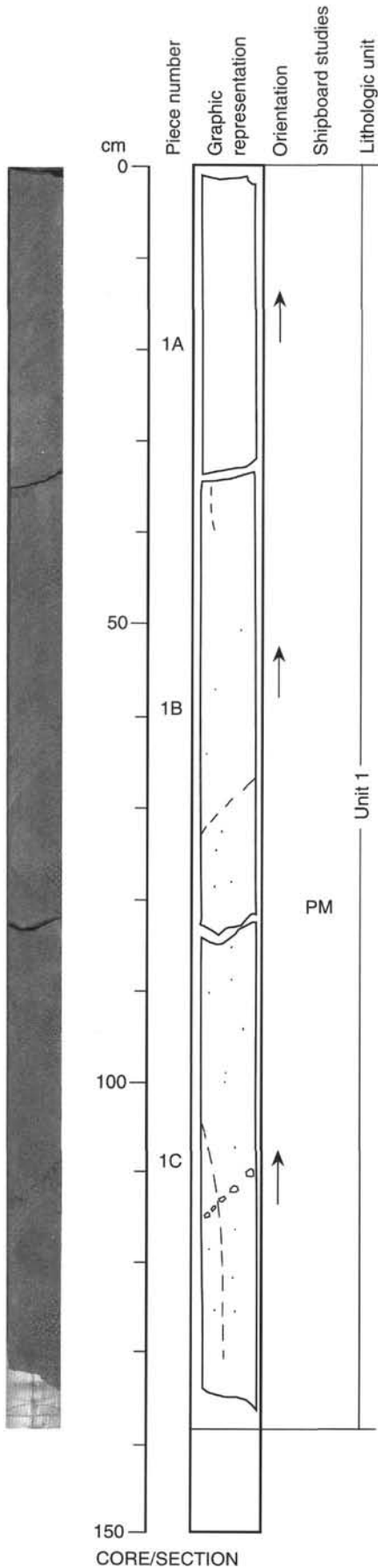
VEINS/FRACTURES: <1%; <1 mm; random and curved; filled with dark greenish-gray clay (thin veins) and zeolites (thicker veins).



UNIT 1: APHYRIC BASALT

Pieces 1A-1C

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.
VESICLES: <8%; <3 mm; subspherical to irregular shape; uneven to disseminated distribution; all vesicles are filled, most with dark greenish-gray clay, very few with zeolite. At 111-115 cm, a train of medium-sized (1-3 mm), clay-filled, irregular vesicles is inclined at about 35 degrees.
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <0.1%; <0.5 mm; random orientation; filled with dark greenish-gray clay (thin veins).
ADDITIONAL COMMENTS: Piece 1C is continuous with Piece 1A of Section 163-989B-9R-6.



163-989B-9R-6

UNIT 1: APHYRIC BASALT

Pieces 1A-1E

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.

VESICLES: <5%; <3 mm; subspherical to irregular shape; disseminated; all vesicles are filled with dark greenish-gray clay (very rarely with zeolite). One exception occurs at 42-49 cm where there is a curved layer (<5 mm thick) with small open vesicles.

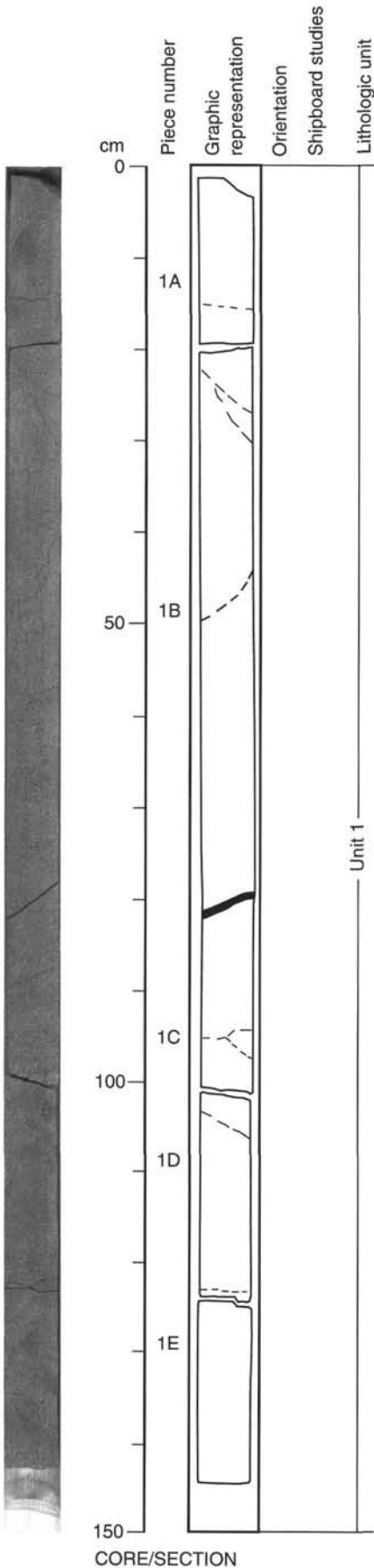
COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <0.1%; <0.5 mm; random orientation; filled with dark greenish-gray clay, and, in rare cases, with zeolite.

ADDITIONAL COMMENTS: Piece 1E is continuous with Piece 1A of Section 163-989B-9R-7.



CORE/SECTION

UNIT 1: APHYRIC BASALT

Pieces 1A-3

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.

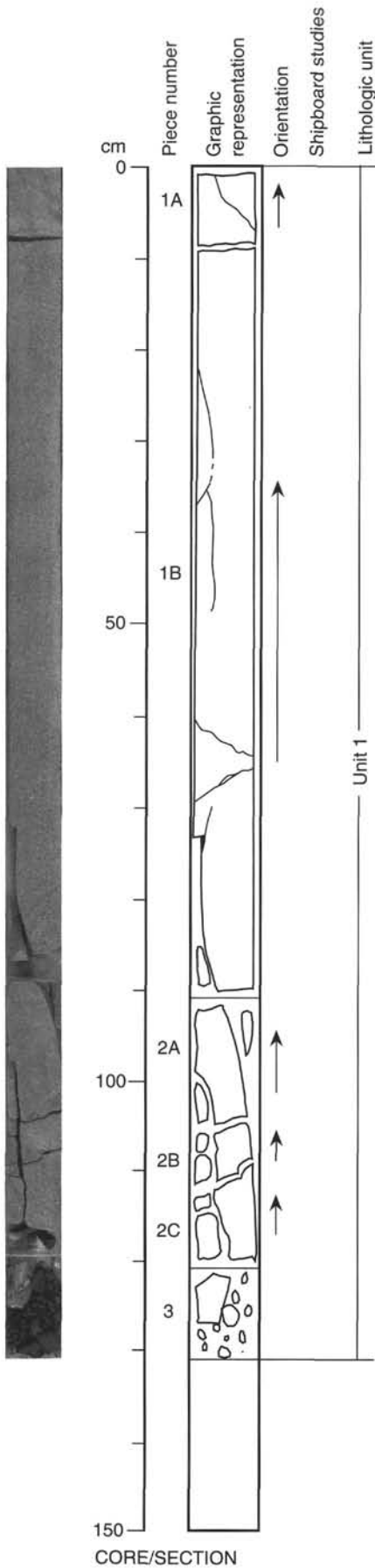
VESICLES: <5%; <2 mm; subspherical to irregular shape; disseminated; all vesicles are filled with dark greenish-gray clay (very rarely with zeolite).

COLOR: Gray.

STRUCTURE: Massive, vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <0.1%; <0.5 mm; random orientation; filled with dark greenish-gray clay, and, in rare cases, with zeolite.



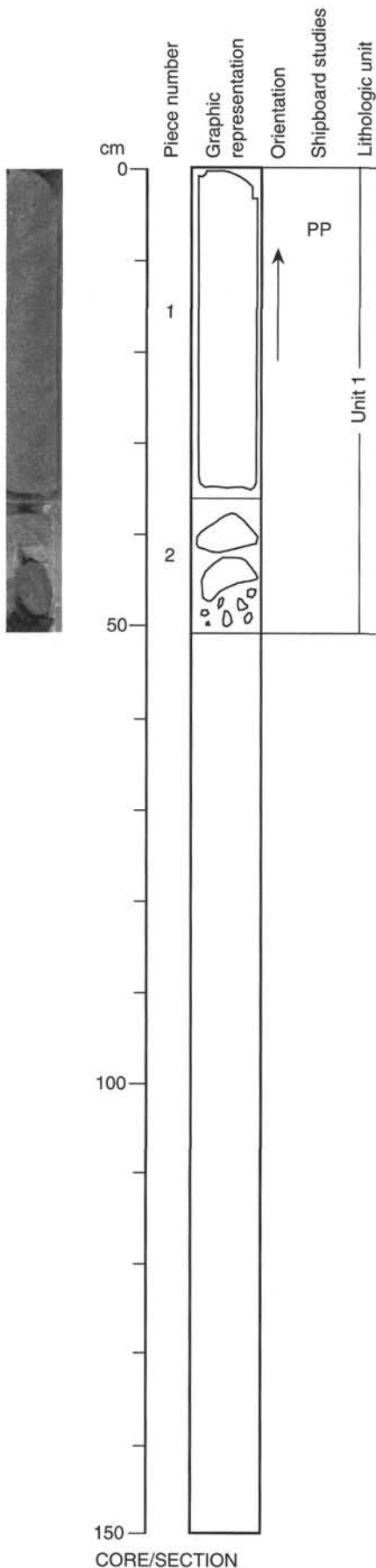
CORE/SECTION

163-989B-9R-8

UNIT 1: APHYRIC BASALT

Pieces 1-2

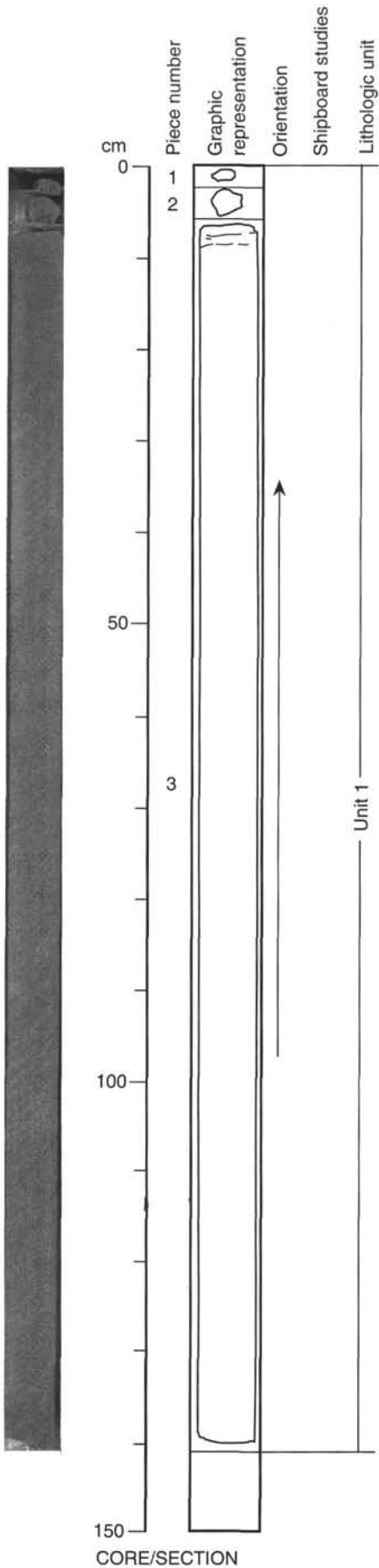
CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained, intergranular to intersertal texture with plagioclase laths.
VESICLES: <5%; <2 mm; subspherical to irregular shape; disseminated; all vesicles are filled with dark greenish-gray clay (very rarely with zeolite).
COLOR: Gray.
STRUCTURE: Massive, vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; <0.1 mm; subhorizontal; a single vein in Piece 2.



UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to medium-grained; intergranular to intersertal texture with plagioclase laths.
VESICLES: 3%; 0.5–3 mm; irregular shape; evenly distributed; all vesicles are filled with dark greenish-gray clay.
COLOR: Gray.
STRUCTURE: Massive basalt.
ALTERATION: Moderate.
ADDITIONAL COMMENTS: Pieces 1 and 2 may be drilling rubble, but they closely resemble Piece 3. Grain size decreases slowly and regularly along the entire core from medium to fine in Section 1 and to very fine at the base of Section 7. Piece 3 is continuous with Piece 1 of Section 163-989B-10R-2.

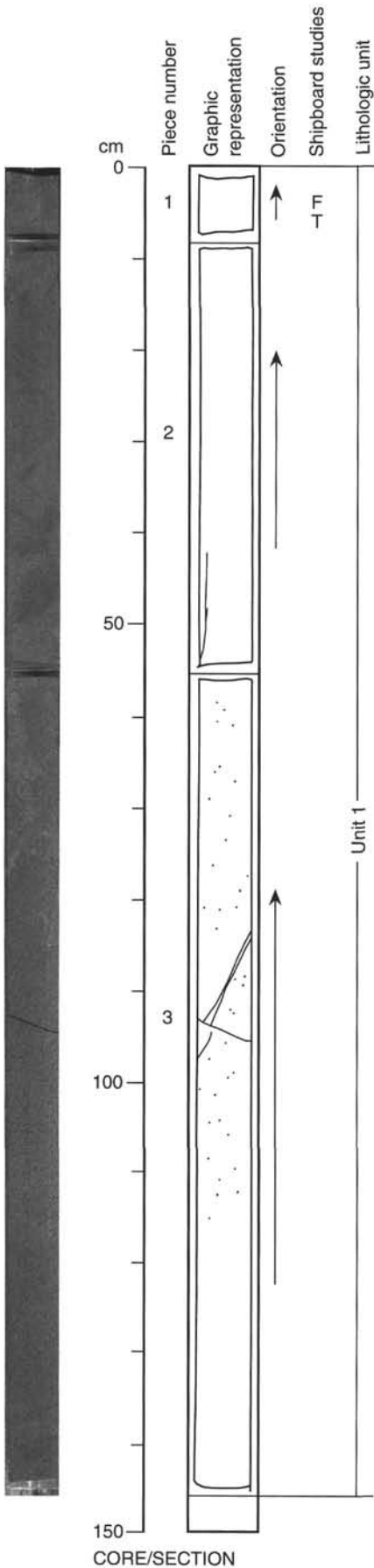


163-989B-10R-2

UNIT 1: APHYRIC BASALT

Pieces 1-3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained; intergranular to intersertal texture.
VESICLES: 3-5%; 0.5-2 mm; irregular shape; evenly distributed; all vesicles are filled with dark greenish-gray clay, except for a small cluster at about 140 cm which are filled with zeolite. There are no open vesicles in this section.
COLOR: Gray.
STRUCTURE: Massive basalt.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; 0.5 mm; subvertical; irregular fractures in Pieces 2 and 3.

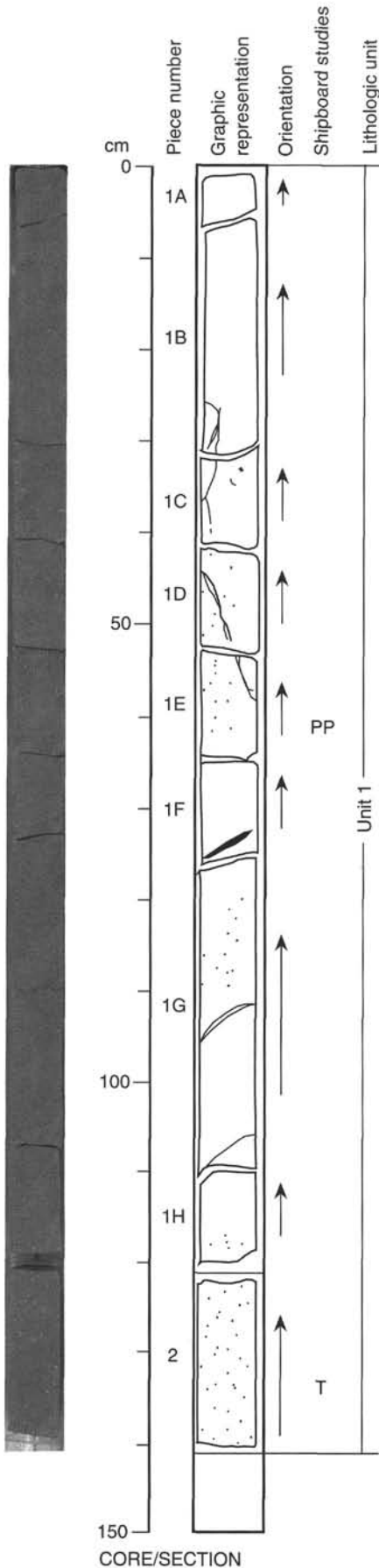


CORE/SECTION

UNIT 1: APHYRIC BASALT

Pieces 1A-2

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained; intergranular to intersertal texture.
VESICLES: 3-5%; 0.5-2 mm; irregular shape; evenly distributed; all vesicles are filled with dark greenish-gray clay, except for a small cluster around a vein at 44-63 cm, and those in Piece 2, which are filled mainly with zeolite. There are no open vesicles in this section.
COLOR: Gray.
STRUCTURE: Massive basalt.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; 1-2 mm; subhorizontal to subvertical; there is a prominent, subvertical, irregular and zeolite-filled vein between 44 and 63 cm, and a horizontal, clay-filled vein between 92 and 93 cm.



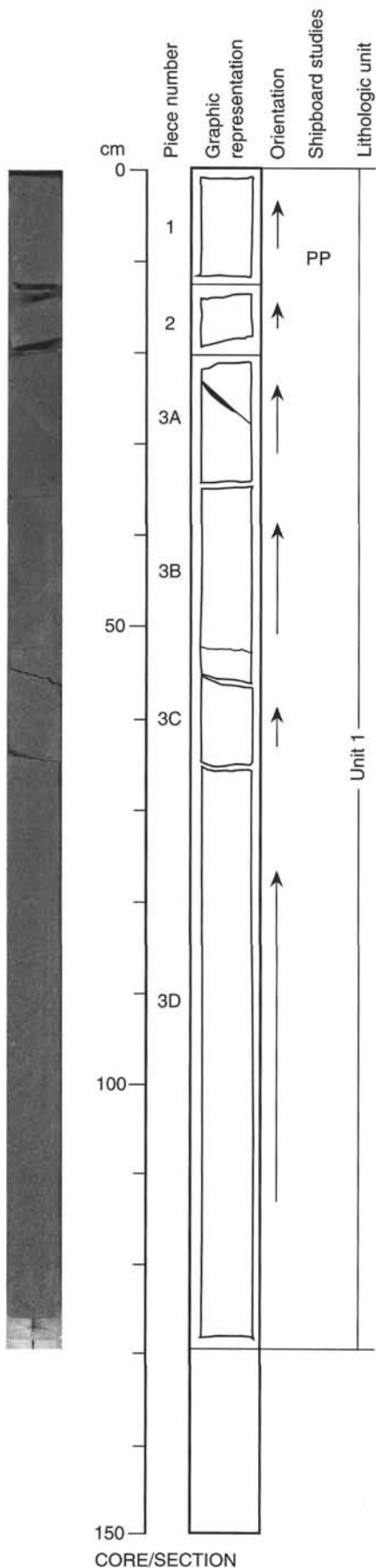
CORE/SECTION

163-989B-10R-4

UNIT 1: APHYRIC BASALT

Pieces 1-3D

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine-grained; intergranular to intersertal texture.
VESICLES: <5%; 0.5–1 mm; irregular shape; evenly distributed; all vesicles are lined with dark greenish-gray clay and filled with a light gray-green clay, except for a few in Piece 1 that are filled mainly with zeolite.
COLOR: Gray.
STRUCTURE: Massive basalt.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; 1–2 mm; subhorizontal to 45 degrees; there is a prominent zeolite-filled vein, inclined at 45 degrees, at 22–28 cm.



UNIT 1: APHYRIC BASALT

Pieces 1A-2B

CONTACTS: None.

PHENOCRYSTS: None.

GROUNDMASS: Fine-grained; intergranular to intersertal texture.

VESICLES: <5%; 0.5–1 mm; irregular shape; evenly distributed; all vesicles are lined with dark greenish-gray clay and filled with a light gray-green clay.

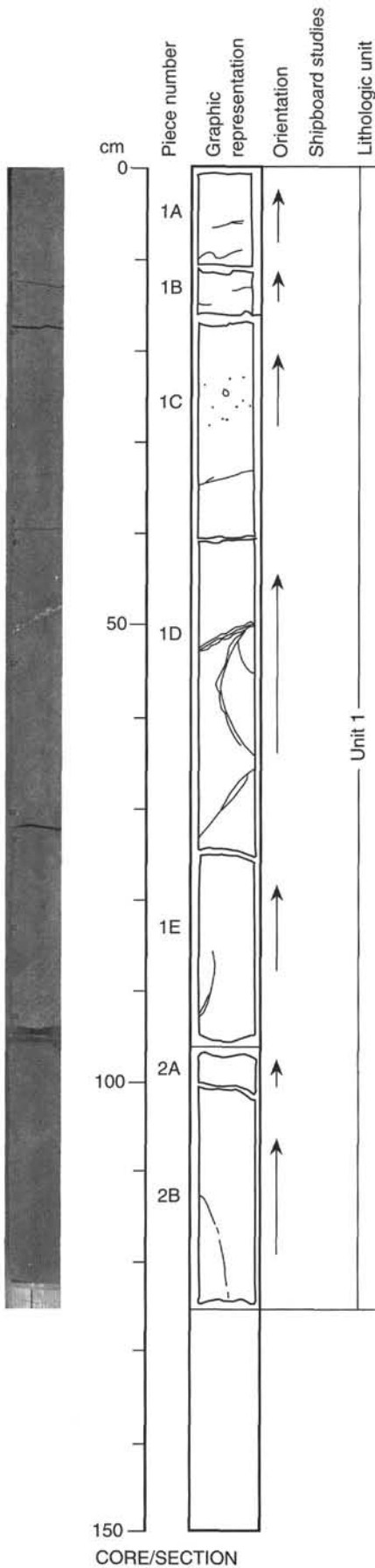
COLOR: Gray.

STRUCTURE: Massive basalt.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; 1–8 mm; subhorizontal to 45 degrees; there is a prominent, irregular, zeolite-filled vein complex between 46 and 48 cm.

ADDITIONAL COMMENTS: Piece 2B is continuous with Piece 1A of Section 163-989B-10R-6.

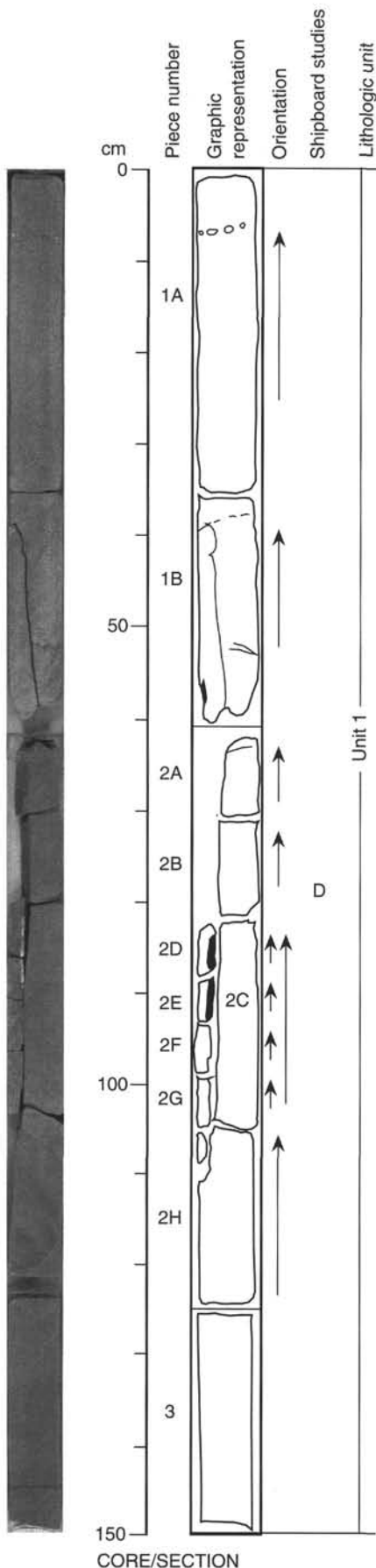


163-989B-10R-6

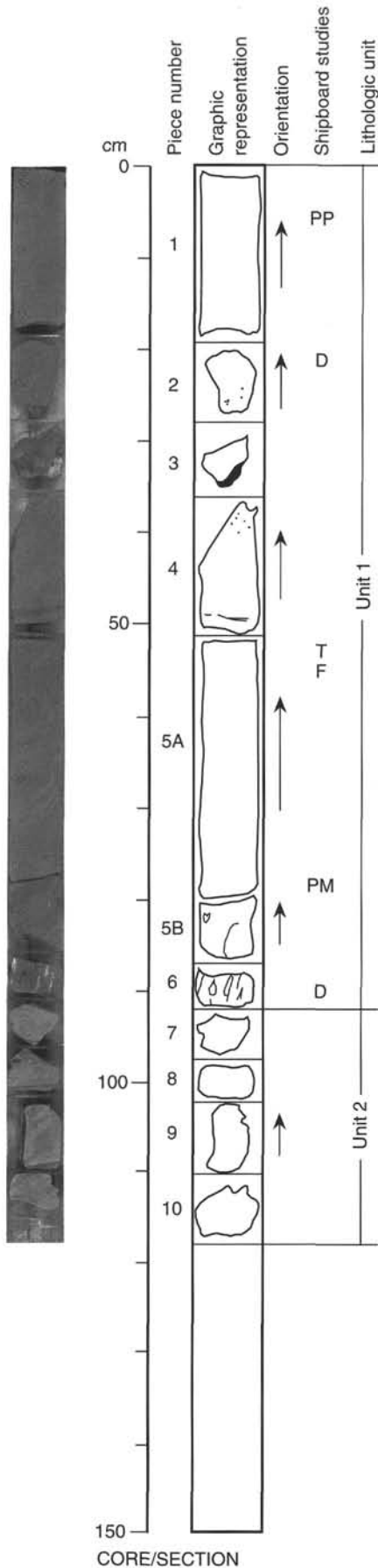
UNIT 1: APHYRIC BASALT

Pieces 1A-3

CONTACTS: None.
PHENOCRYSTS: None.
GROUNDMASS: Fine- to very fine-grained (the grain size decreases markedly downward in the section); intergranular to intersertal texture.
VESICLES: <5%; 0.5-2 mm; irregular shape; evenly distributed; all vesicles are lined with dark greenish-gray clay and filled with a light gray-green clay, except for a horizontal train of 2-3 mm open vesicles at 7 cm.
COLOR: Gray.
STRUCTURE: Massive basalt.
ALTERATION: Moderate.
VEINS/FRACTURES: <<1%; 1-3 mm; subhorizontal to 45 degrees; there is a prominent, vertical fracture, 3 mm wide, between 39 and 108 cm, that is lined with dark greenish-gray clay and filled with calcite (columnar jointing?).
ADDITIONAL COMMENTS: Piece 2H is continuous with Piece 1 of Section 163-989B-10R-7.



CORE/SECTION



UNIT 1: APHYRIC BASALT

Pieces 1-6

CONTACTS: The lower contact is between Piece 6 (with pipe vesicles) and Piece 7.

PHENOCRYSTS: None.

GROUNDMASS: Fine-grained, decreasing in grain size to very fine-grained in Piece 6; intergranular to intersertal texture.

VESICLES: 2-5%; 0.5-2 mm; spherical, and pipe-like; evenly distributed; many vesicles are lined with dark greenish-gray clay. There are very few vesicles in the lower part of the section, apart from 50-51 cm, where there is dark, very fine-grained band with zeolite-filled vesicles, and Piece 6 (88-92 cm) which has many, well-developed pipe vesicles 1-2 mm across, and at least as long as the length of the piece (4 cm). Some are empty except for a lining of clay, and others are filled with calcite.

COLOR: Gray.

STRUCTURE: Massive basalt.

ALTERATION: Moderate.

VEINS/FRACTURES: 1-3 mm.

UNIT 2: SLIGHTLY PLAGIOCLASE-OLIVINE PHYRIC BASALT

Pieces 7-10

CONTACTS: None preserved.

PHENOCRYSTS:

Plagioclase - 1%; up to 3 mm; subhedral to euhedral; glomerocrysts.

Olivine - 1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained to aphanitic.

VESICLES: None.

COLOR: Gray.

STRUCTURE: Massive; one 3 cm segregation patch in Piece 10.

ALTERATION: Slight.

VEINS/FRACTURES: None.

163-989B-11R-1

UNIT 2: SLIGHTLY PLAGIOCLASE-OLIVINE PHYRIC BASALT

Pieces 1-15

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - 1%; up to 4 mm; subhedral to euhedral; as glomerocrysts.

Olivine - 1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.

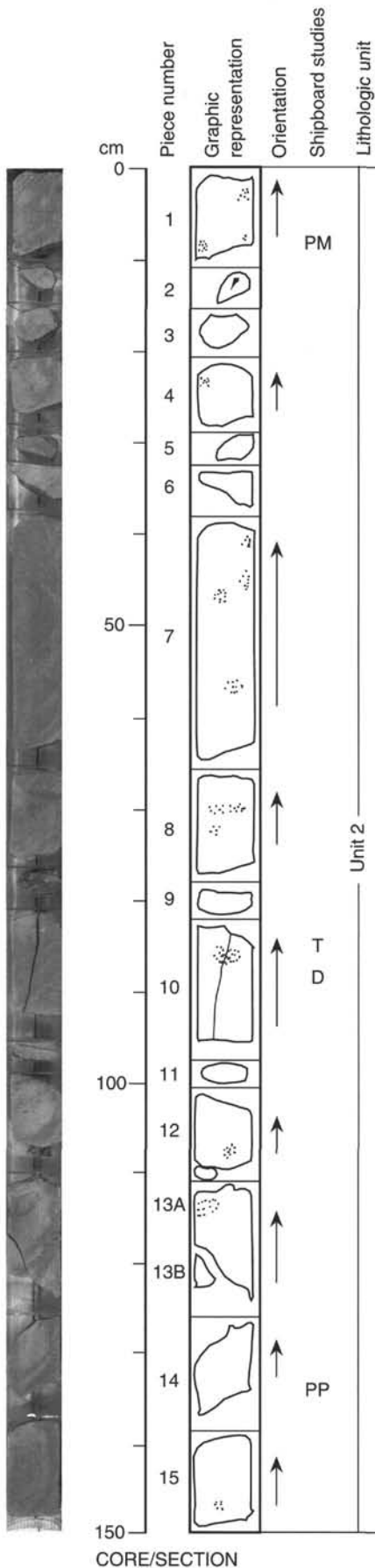
VESICLES: 0-10%; up to 1 mm; irregular shape; in segregation patches; vesicles are filled with clay.

COLOR: Gray.

STRUCTURE: Massive, with 2-5%, 1-5 cm rounded, often elongate, vesicle-rich patches.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; <1 mm; steeply inclined.



UNIT 2: SLIGHTLY PLAGIOCLASE-OLIVINE PHYRIC BASALT

Pieces 1A-14B

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - 1%; up to 4 mm; subhedral to euhedral; as glomerocrysts.

Olivine - 1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.

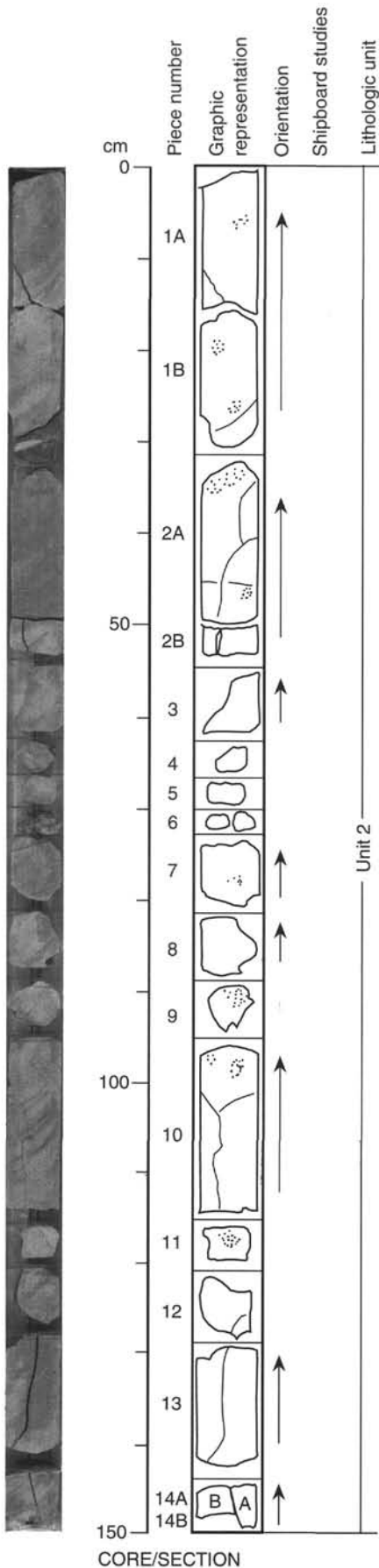
VESICLES: 0-10%; up to 1 mm; irregular shape; in patches; filled with clay.

COLOR: Gray.

STRUCTURE: Massive, with 2-5% of 1-5 cm, rounded, often elongate, vesicle-rich patches.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; Up to 1 mm; steeply inclined; some are filled with clay.



163-989B-12R-1

UNIT 2: MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE PHYRIC BASALT

Pieces 1-13

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - 3%; up to 4 mm; subhedral to euhedral; as glomerocrysts.

Clinopyroxene - 2%; up to 1 mm; euhedral.

Olivine - <1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.

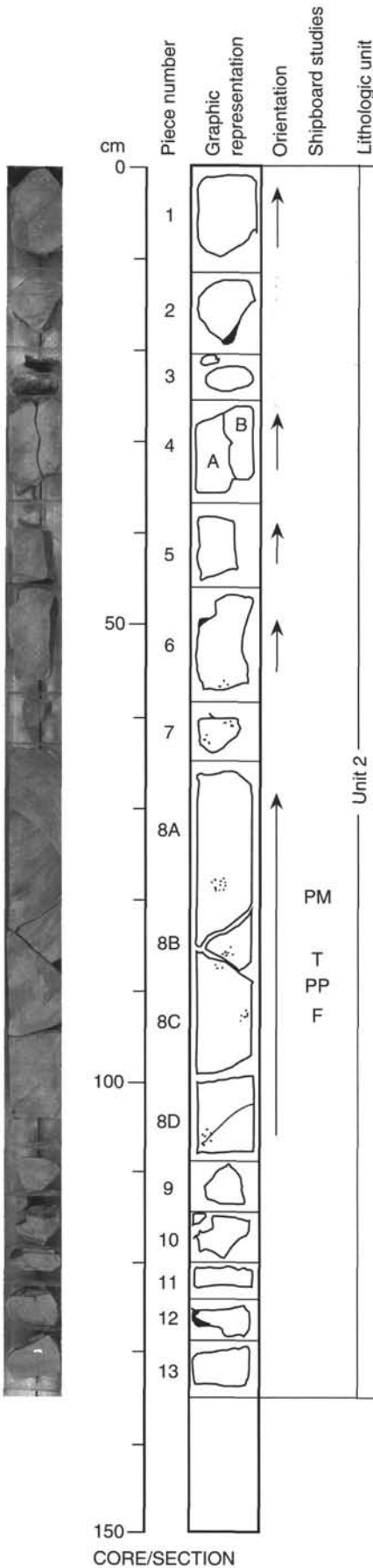
VESICLES: 0-10%; up to 1 mm; irregular shape; in patches; filled with clay.

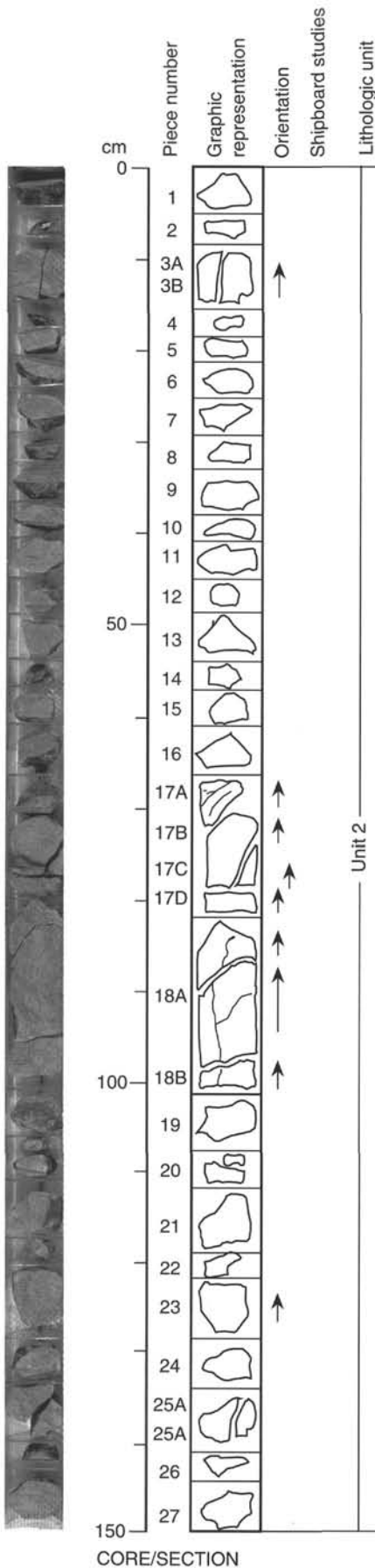
COLOR: Gray.

STRUCTURE: Massive, with 2-5%, 1-2 cm, rounded, vesicle-rich patches.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; <<1 mm; subhorizontal to steeply inclined; some are filled with clay.





UNIT 2: MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE-PHYRIC BASALT

Pieces 1-27

CONTACTS: None.

PHENOCRYSTS: Several of the plagioclase phenocrysts are intergrown with clinopyroxene.

Plagioclase - 2%; up to 4 mm; subhedral to euhedral; as glomerocrysts.

Clinopyroxene - 1%; <1 mm; anhedral (with plagioclase).

Olivine - <1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.

VESICLES: <3%; up to 1 mm; irregular shape; in patches; filled with clay.

COLOR: Gray.

STRUCTURE: Massive, with 2-5%, 1-2 cm, rounded, vesicle-rich patches.

ALTERATION: Moderate.

VEINS/FRACTURES: 1%; up to 2 mm; subhorizontal to vertical; there are several clay- or chlorite-lined fractures in Pieces 3, 17, 18, 21 and 25. The vein system in Piece 18 is particularly well developed, with a 1-2 mm wide fracture lined with dark greenish-gray clay with an inner layer of light gray-green clay.

163-989B-13R-2

UNIT 2: MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE PHYRIC BASALT

Pieces 1-17C

CONTACTS: None.

PHENOCRYSTS: Several of the plagioclase phenocrysts are intergrown with clinopyroxene.

Plagioclase - 1%; up to 4 mm; subhedral to euhedral; as glomerocrysts.

Clinopyroxene - 1%; <1 mm; anhedral (with plagioclase)

Olivine - <1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.

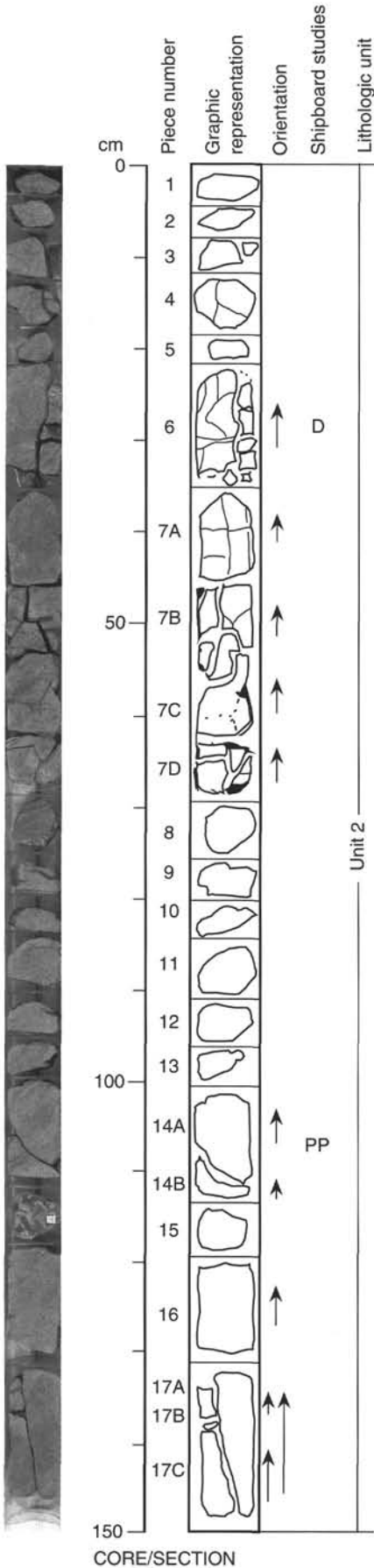
VESICLES: <3%; up to 1 mm; irregular shape; in patches; filled with greenish-gray clay. There are fewer vesicular patches than in previous sections.

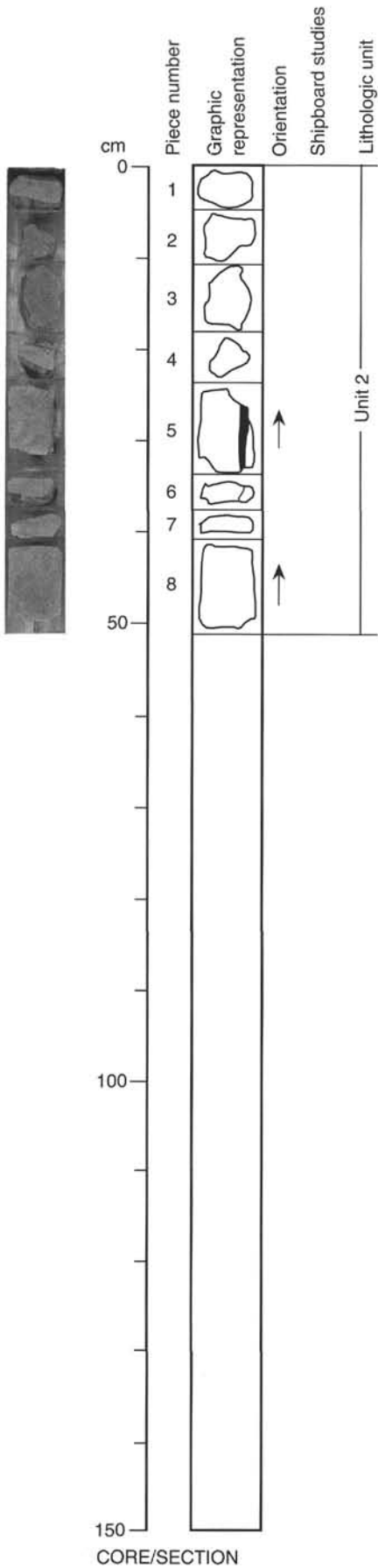
COLOR: Gray.

STRUCTURE: Massive, fractured basalt.

ALTERATION: Moderate.

VEINS/FRACTURES: 1%; up to 2 mm; subhorizontal to vertical; Pieces 6, 7, and 17 are moderately fractured. The fractures are lined with dark greenish-gray clay, with a core of pale greenish-gray clay.





UNIT 2: MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE PHYRIC BASALT

Pieces 1-8

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - 1%; up to 3 mm; subhedral to euhedral, as glomerocrysts

Clinopyroxene - 1%; <1 mm; anhedral.

Olivine - <1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.

VESICLES: None.

COLOR: Gray.

STRUCTURE: Massive, non-vesicular.

ALTERATION: Moderate.

VEINS/FRACTURES: <<1%; 1 mm; vertical; one vertical fracture filled with light green clay in Piece 5.

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UNIT 2: MODERATELY PLAGIOCLASE-CLINOPYROXENE-OLIVINE PHYRIC BASALT

Pieces 1-3

CONTACTS: None.
PHENOCRYSTS: Several of the plagioclase phenocrysts are intergrown with clinopyroxene.
 Plagioclase - 1%; up to 2 mm; subhedral to euhedral; glomerocrysts.
 Clinopyroxene - 1%; <1 mm; anhedral (with plagioclase)
 Olivine - <1%; <1 mm; euhedral.

GROUNDMASS: Very fine-grained.
VESICLES: None.
COLOR: Gray.
STRUCTURE: Massive, non-vesicular.
ALTERATION: Moderate.
VEINS/FRACTURES: None.

