

142-864A-1M-1

UNIT 1: APHYRIC BASALT

Pieces 0–10 cm

PHENOCRYSTS:

Plagioclase - <1%; <1 mm; euhedral, some in glomerocrysts composed solely of plagioclase.

GROUNDMASS: Microcrystalline.

VESICLES: 2%; <1 mm; round; dispersed.

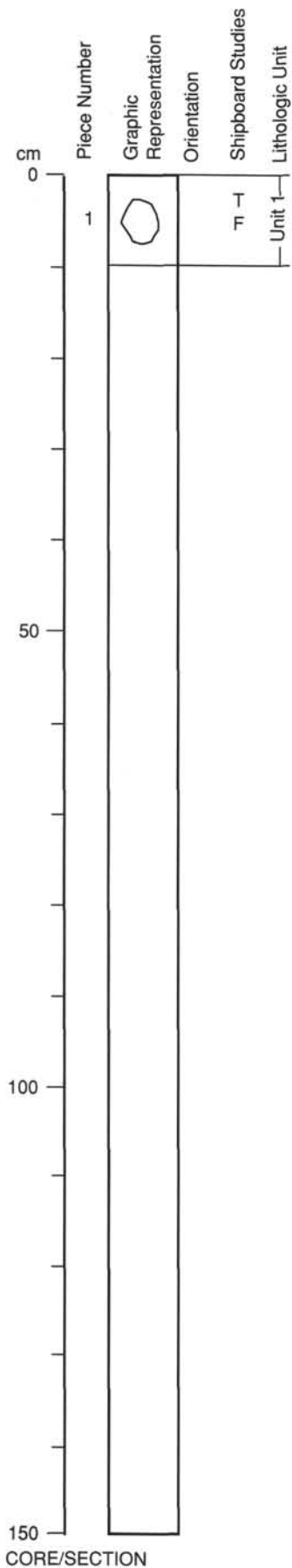
COLOR: Dark gray.

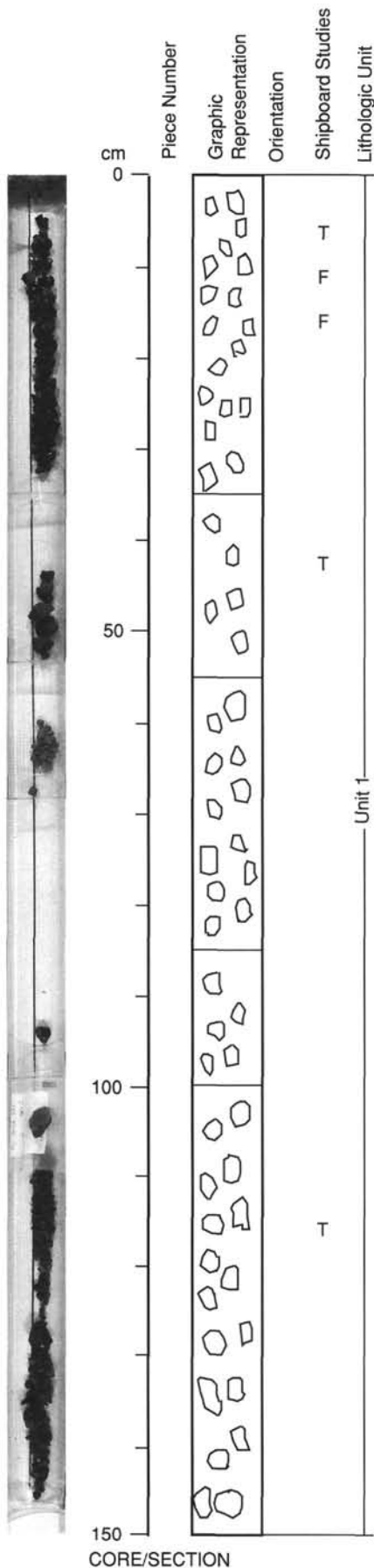
STRUCTURE: Massive.

ALTERATION: Small brown stains representing altered primary sulfides? Traces of secondary pyrite.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Rock is fresh.





UNIT 1: APHYRIC BASALT

Pieces 0–35 cm

PHENOCRYSTS:
 Plagioclase - <1%; <0.3 mm; euhedral. Occasional glomerocrysts.
GROUNDMASS: Glassy to microcrystalline.
VESICLES: <1%; <0.05 mm; round; dispersed.
COLOR: Black.
STRUCTURE: Massive.
ALTERATION: None.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Fragments are rounded by drilling. Fragments are less than 2 cm with an average of 1 cm. Rock is very fresh. Groundmass is sparsely spherulitic.

UNIT 1: APHYRIC BASALT

Pieces 35–55 cm

PHENOCRYSTS:
 Plagioclase - <1%; <1 mm; euhedral. Occasional glomerocrysts.
GROUNDMASS: Glassy to microlitic, spherulitic.
VESICLES: <1%; <0.05 mm; round; dispersed.
COLOR: Dark gray.
STRUCTURE: Glassy, massive.
ALTERATION: None.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Samples show glassy chilled margins and more crystalline fine-grained microlitic interiors. Rounded and angular fragments of less than 2 cm in diameter, rounded by drilling. Rock is very fresh.

UNIT 1: APHYRIC BASALT

Pieces 55–85 cm

PHENOCRYSTS:
 Plagioclase - <1%; <1 mm; euhedral.
GROUNDMASS: Microcrystalline.
VESICLES: <1%; <1 mm; round; dispersed.
COLOR: Light gray.
STRUCTURE: Massive.
ALTERATION: None.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Fragments rounded by drilling. Very fresh rock.

UNIT 1: APHYRIC BASALT

Pieces 85–100 cm

PHENOCRYSTS:
 Plagioclase - <1%; <1 mm; euhedral.
GROUNDMASS: Glassy or microcrystalline.
VESICLES: None.
COLOR: Black to gray.
STRUCTURE: Massive.
ALTERATION: Milky white and rusty hydrothermal staining.
VEINS/FRACTURES: None.
ADDITIONAL COMMENTS: Fragments rounded by drilling. Samples selected on the basis of hydrothermal alteration along fracture. Otherwise rock is very fresh.

142-864A-1M-2

UNIT 1: APHYRIC BASALT**Pieces 100–150 cm****PHENOCRYSTS:**

Plagioclase - <1%; <1.4 mm; euhedral. Occasional glomerocrysts.

GROUNDMASS: Microcrystalline.

VESICLES: <1%; <0.05 mm; round; dispersed.

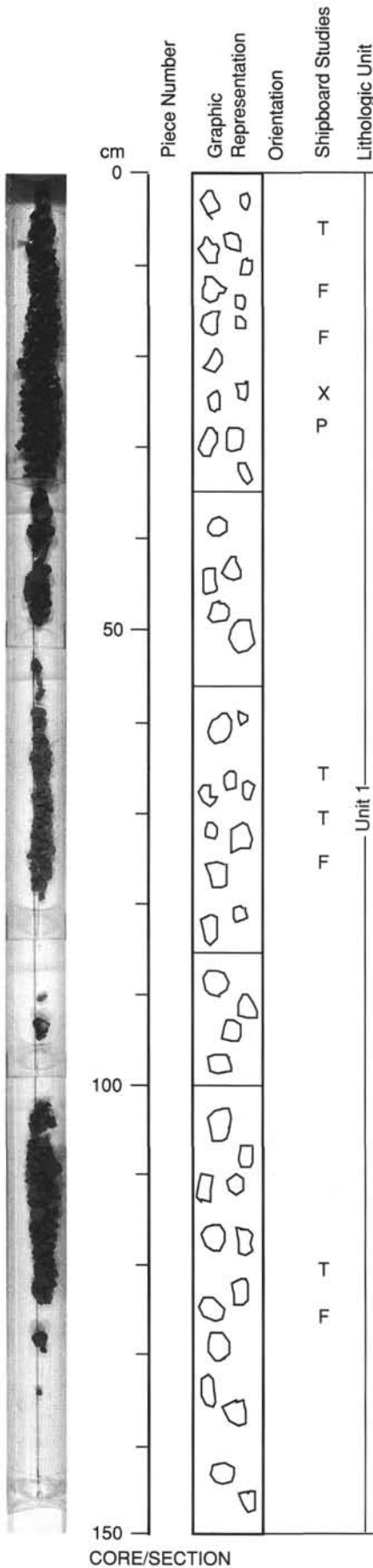
COLOR: Gray.

STRUCTURE: Massive.

ALTERATION: None.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Rounded and angular fragments, <2 cm in diameter. Rounded by drilling. Spherulitic. Rock is very fresh.



UNIT 1: APHYRIC BASALT

Pieces 0–35 cm

PHENOCRYSTS:

Plagioclase - <1%; <0.6 mm; euhedral.

GROUNDMASS: Glassy.

VESICLES: <1%; <0.04 mm; round; dispersed.

COLOR: Black.

STRUCTURE: Massive with zones of spherulites. Flow-banded.

ADDITIONAL COMMENTS: Angular to rounded fragments <1 cm, rounded by drilling. Rock is fresh.

UNIT 1: APHYRIC BASALT

Pieces 35–55 cm

PHENOCRYSTS:

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

GROUNDMASS: Glassy margin to microcrystalline in the interior.

VESICLES: None.

COLOR: Gray.

STRUCTURE: Massive.

ALTERATION: None.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Samples display glassy margins grading into microcrystalline interiors.

Rounded to angular fragments, generally <2 cm in diameter, one piece is 4x2x2 cm. Rounded by drilling. Rock is fresh.

UNIT 1: APHYRIC BASALT

Pieces 55–85 cm

PHENOCRYSTS:

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

GROUNDMASS: Microcrystalline (microlitic).

VESICLES: 0-10%; <1.4 mm; irregular to round; localized in linear zones.

COLOR: Light gray.

STRUCTURE: Massive.

ALTERATION: None.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Fragments rounded by drilling. Rock is fresh.

UNIT 1: APHYRIC BASALT

Pieces 85–100 cm

PHENOCRYSTS:

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

GROUNDMASS: Glassy to microcrystalline (microlitic).

VESICLES: None.

COLOR: Black or light gray.

STRUCTURE: Massive.

ALTERATION: Milky white and rusty hydrothermal staining.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Samples selected on the basis of hydrothermal alteration along fractures.

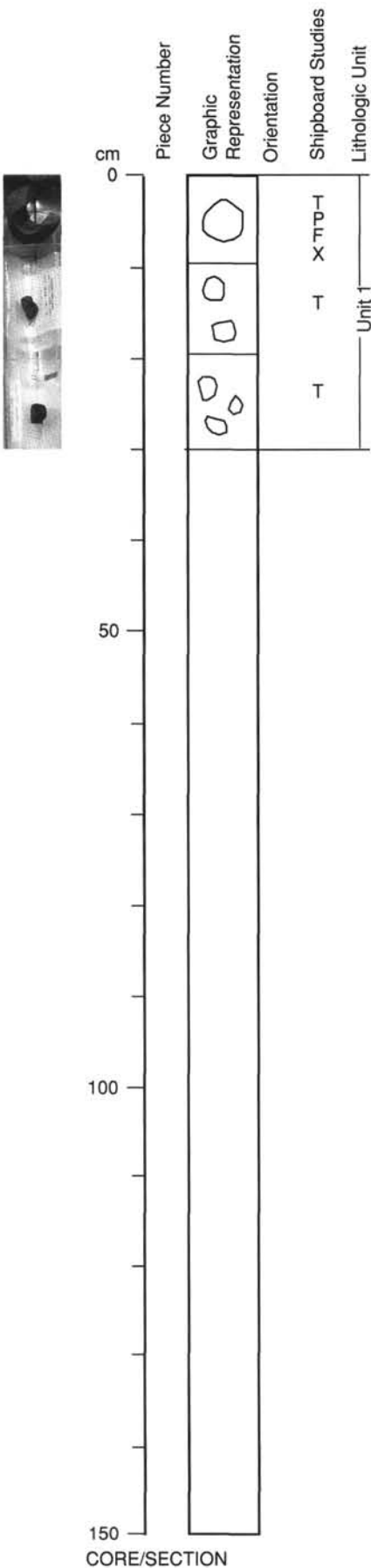
Otherwise rock is fresh. Angular to rounded fragments, rounded by drilling.

142-864A-1M-3

UNIT 1: APHYRIC BASALT**Pieces 100–150 cm****PHENOCRYSTS:**

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

GROUNDMASS: Fine-grained crystalline.**VESICLES:** 1%–2%; <1 mm; round; dispersed.**COLOR:** Gray.**STRUCTURE:** Massive.**ALTERATION:** Traces of iron staining.**VEINS/FRACTURES:** None.**ADDITIONAL COMMENTS:** Rounded and angular fragments <2 cm in diameter, rounded by drilling. Rock is fresh.



UNIT 1: APHYRIC BASALT

Pieces 0–9 cm

PHENOCRYSTS:
Plagioclase - <1%; <1 mm; euhedral.
GROUNDMASS: Microcrystalline.
VESICLES: <5%; <2 mm; irregular; dispersed.
COLOR: Gray.
STRUCTURE: Massive.
ALTERATION: None.
ADDITIONAL COMMENTS: 5X6.5 cm roller, rounded by drilling. Rock is fresh.

UNIT 1: APHYRIC BASALT

Pieces 9–20 cm

PHENOCRYSTS:
Plagioclase - <1%; <1 mm; euhedral.
GROUNDMASS: Glassy to microcrystalline (microlitic).
VESICLES: <1%; <0.1 mm; Irregular to round; dispersed.
COLOR: Dark gray.
STRUCTURE: Massive.
ALTERATION: None.
ADDITIONAL COMMENTS: Two irregularly shaped pieces, 1 to 4 cm in diameter. Rock is fresh.

UNIT 1: APHYRIC BASALT

Pieces 20–30 cm

PHENOCRYSTS:
Plagioclase - <1%; <1 mm; euhedral.
GROUNDMASS: Glassy.
VESICLES: None
COLOR: Dark gray.
STRUCTURE: Massive.
ALTERATION: None.
VEINS/FRACTURES: None
ADDITIONAL COMMENTS: Glassy margin. Rock is fresh.

142-864A-1M-5

UNIT 1: APHYRIC BASALT

Pieces 0-100 cm

PHENOCRYSTS:

Plagioclase - <1%; <0.8 mm; euhedral, sometimes in glomerocrysts.

GROUNDMASS: Glassy to microcrystalline.

VESICLES: 1%; <1.5 mm; rounded to irregular; dispersed.

COLOR: Dark gray to black.

STRUCTURE: Massive.

ALTERATION: Fresh to slightly altered. 3%-4% of the fragments exhibit secondary mineral precipitation on fracture surfaces and in microcracks, including: a) white, amorphous, layered coatings (opal or Al-Si gel) +/- Fe-oxyhydroxide minerals; b) greenish coatings (cryptocrystalline smectite?); and c) greenish-beige amorphous coatings.

VEINS/FRACTURES: <2 mm; dispersed.

ADDITIONAL COMMENTS: Pure glass dominated fragments, varying from <5 to 25 mm in diameter. Some fragments are coated with orange-brown sediment. More secondary minerals are observed in Section 142-864A-1M-5 than in other of Core 142-864-1M sections. Subsamples of secondary minerals (a-c) sequestered in a sample bag for post-cruise SEM/EDS analysis.

UNIT 1: APHYRIC BASALT

Pieces 100-135 cm

PHENOCRYSTS:

Plagioclase - <1%; <1 mm; euhedral and glomerophyric.

GROUNDMASS: Fine-grained, composed of plagioclase microlites.

VESICLES: <2%; <1 mm; irregular in shape; irregular distribution.

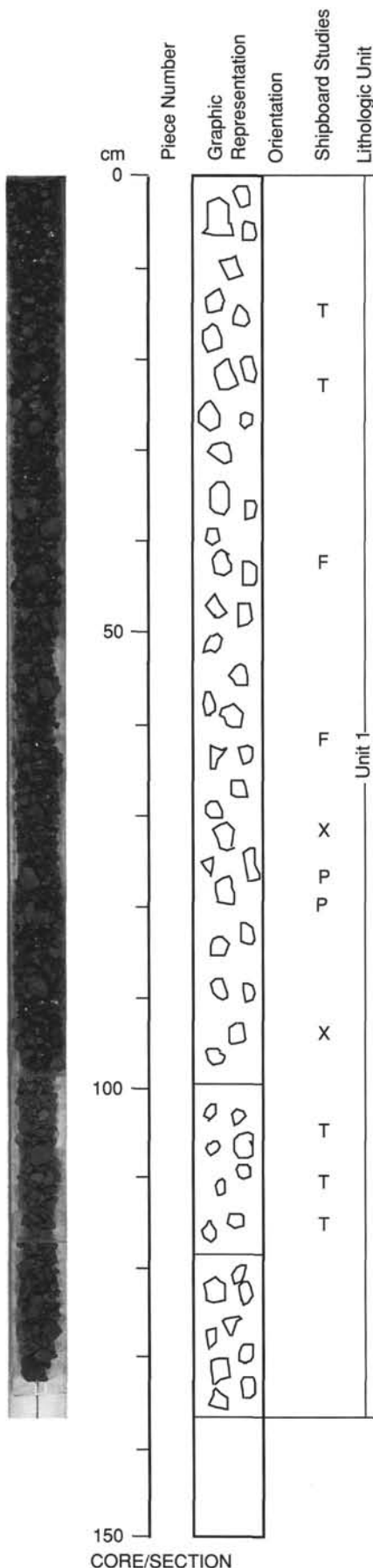
COLOR: Gray to dark gray.

STRUCTURE: Massive.

ALTERATION: Fresh to slightly altered. 3%-4% of the fragments exhibit secondary mineral precipitation on fracture surfaces and in microcracks, including: a) whitish opaline silica or clay(?) Mineral coatings with patchy oxyhydroxide mineral; b) white cryptocrystalline quartz; c) blue-green microcrystalline Cu-sulfate(?) mineral, in patches <1.5 mm; d) fine-grained Cu-rich(?) sulfide minerals, in patches <1.5 mm; e) Fe-oxyhydroxide minerals, in patches <1.5 mm.

VEINS/FRACTURES: Diameter <2 mm; random orientation.

ADDITIONAL COMMENTS: Non-glassy, fine-grained fragments, varying from 5 to 30 mm in diameter. Some fragments are stained by orange-brown sediment. More secondary minerals are seen in Section 142-864A-1M-5 than in other sections of Core 142-864A-1M.



CORE/SECTION

UNIT 1: APHYRIC BASALT

Pieces 0–75 cm

PHENOCRYSTS:

Plagioclase - <1%; <2 mm; euhedral.

GROUNDMASS: Glassy to very fine-grained.

VESICLES: 1%; <2 mm; Circular to irregular in shape; irregular distribution.

COLOR: Dark gray to black.

STRUCTURE: Massive.

ALTERATION: Fresh. 2%–3% of the fragments exhibit secondary mineral precipitation or alteration on fracture surfaces and in microcracks, including: a) white, amorphous, layered coatings (opaline silica or Al-Si gel) +/- Fe-oxyhydroxide minerals; b) greenish to brownish cryptocrystalline coatings (clay or sulfide minerals? oxidizes to Fe-oxyhydroxide minerals) overgrowth on (a); c) greenish cryptocrystalline clay (smectite?); d) pyrite crystals oxidizing to Fe-oxyhydroxide minerals along cracks and surfaces.

VEINS/FRACTURES: Diameter <2 mm; random orientation.

ADDITIONAL COMMENTS: Hand-picked glass pieces with or without crystalline portions. Very few but large circular vesicles up to 6 mm. Some fragments are coated with orange-brown sediment. Abundance of secondary minerals is less in Section 142-864A-1M-6 than in Section 142-864A-1M-5.

UNIT 1: APHYRIC BASALT

Pieces 75–150 cm

PHENOCRYSTS: Plagioclase - <2%; <1 mm; euhedral.

GROUNDMASS: Glassy to fine-grained.

VESICLES: 1%; <2 mm; irregular in shape; irregular distribution.

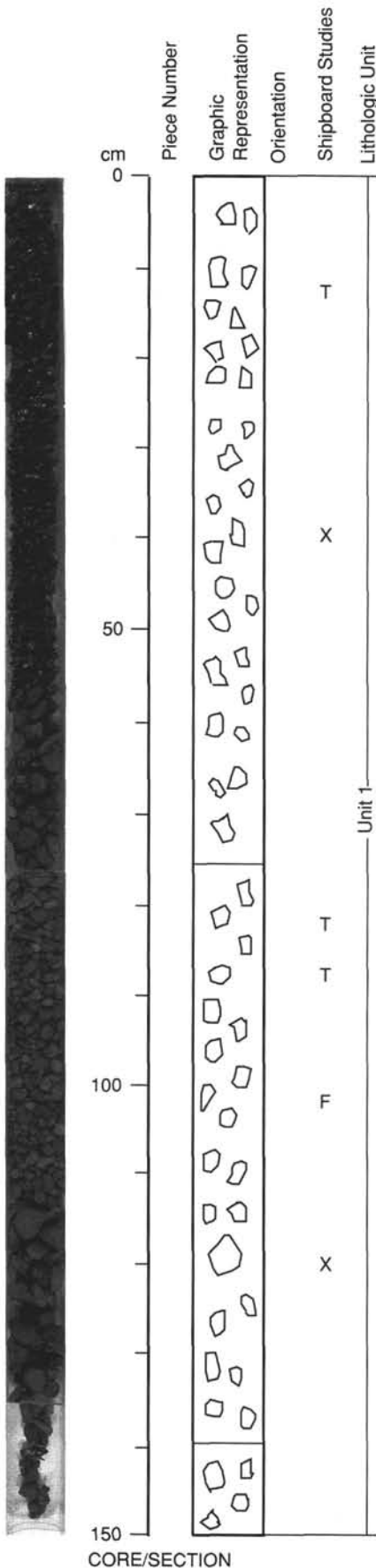
COLOR: Gray to dark gray.

STRUCTURE: Massive.

ALTERATION: Fresh. 2%–3% of the fragments exhibit secondary mineral precipitation or alteration on fracture surfaces and in microcracks, including: a) white microcrystalline quartz occurring as coatings and may also replace groundmass; b) Fe-oxyhydroxide minerals occurring as pervasive staining of fracture surfaces and in patches which may be due to oxidation of mafic phenocrysts.

VEINS/FRACTURES: Diameter <2 mm; Random orientation.

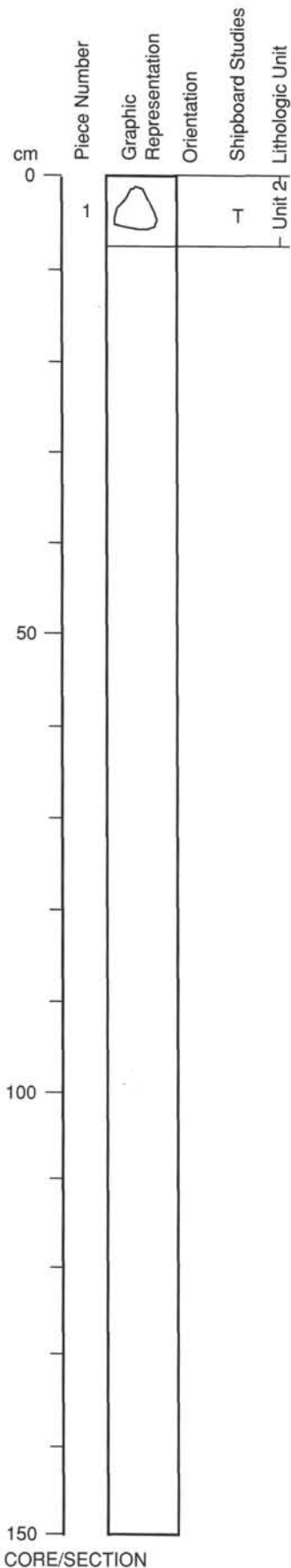
ADDITIONAL COMMENTS: Some pieces are very vesicular, with up to 8% vesicles. Some fragments are coated with orange-brown sediment. Abundances of secondary minerals is less than in Section 142-864A-1M-5.



142-864A-3Z-1

UNIT 2: APHYRIC BASALT

Piece 1



CONTACTS: None.

PHENOCRYSTS: Plagioclase phenocrysts are sparsely distributed.

Plagioclase - <1%; <1 mm; euhedral, some as glomerocrysts.

GROUNDMASS: Fine-grained plagioclase laths of variable size are visible.

VESICLES: <0.1%; <0.1 mm; rounded to irregular; near the rock margins.

Miroles: None.

COLOR: Dark gray.

STRUCTURE: Massive; fine-grained crystalline basalt.

ALTERATION: Fresh.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Only one piece (3x4x5 cm), angular to rounded edges due to drilling. The observed phenocrysts are mainly plagioclase, which is sparsely distributed as individual grains or as "clusters" (glomerocryst or aggregates). One crystalline clot about 5 mm in size, composed entirely of plagioclase and clinopyroxene (dark green). The rock is fresh. No glass in the rock.

UNIT 2: APHYRIC BASALT

Pieces 1-3

PHENOCRYSTS:

Plagioclase - <1%; <3 mm; euhedral. Elongated to stubby prismatic crystals.

GROUNDMASS: Fine-grained crystalline.

VESICLES: 1%-3%; <0.5 mm; round; abundant and disseminated; rare pipe vesicles to 4 mm long.

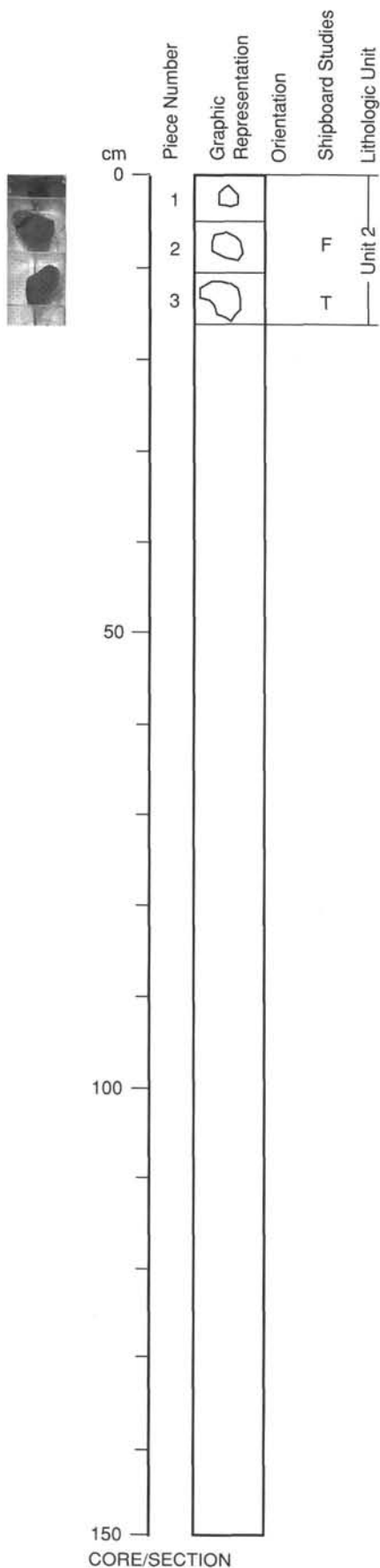
COLOR: Dark gray.

STRUCTURE: Massive. Sides of Piece 3 appear to define a 6-sided polygon (columnar or radial joint surfaces?).

ALTERATION: Light-brown Fe-staining and light cream colored clay minerals along the outer surfaces of Pieces 1 and 3. Fe-staining and reddish-brown precipitates occur within a few tube vesicles.

VEINS/FRACTURES: <<1%; to 30x1 mm; no orientation; single vein filled with light colored mineral (plagioclase?).

ADDITIONAL COMMENTS: Single, large (1 cm diameter), medium-grained, crystal clot consisting of green clinopyroxene and plagioclase in Piece 3.



142-864A-5Z-1

UNIT 2: APHYRIC BASALT

Pieces 1-7

CONTACTS: None.

PHENOCRYSTS:

Plagioclase - 1%; 1-3 mm; euhedral, stubby to elongated prismatic crystals. Some glomerocrysts.

GROUNDMASS: Medium-grained, crystalline. Prismatic plagioclase and pyroxene, no glass.

VESICLES: 1%-3%; 0.05-2.0 mm; round to irregular shape; dispersed; two sizes of vesicles. Small ones (<0.05 mm diameter) are evenly dispersed. Larger ones (1.0-2.0 mm diameter) are concentrated in patchy zones. Some vesicles partially filled with reddish-brown precipitate.

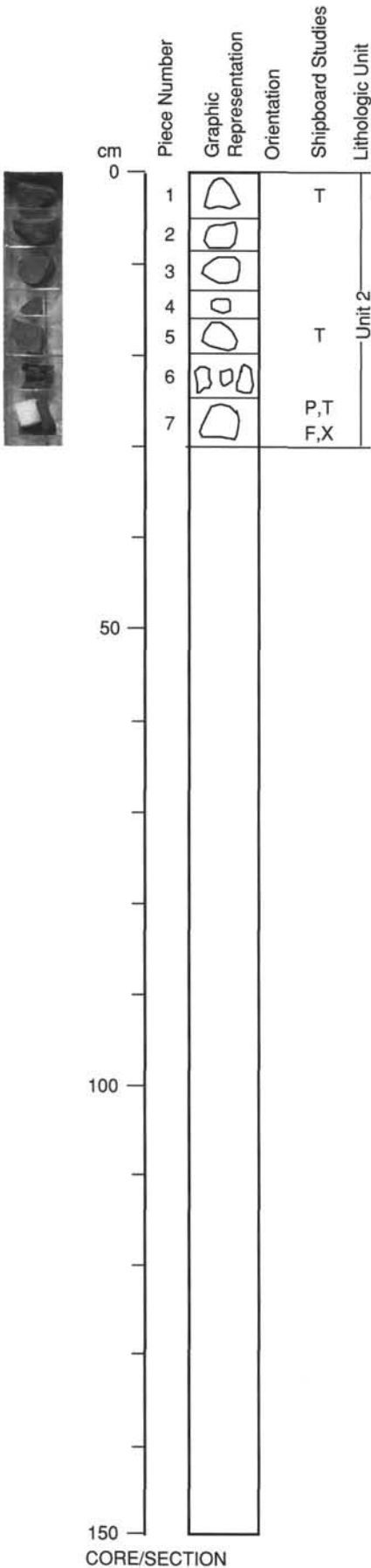
COLOR: Dark gray.

STRUCTURE: Massive.

ALTERATION: Reddish-brown and milky-white alteration products on outer surfaces of Pieces 1, 2, 3, and 7.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: All pieces show evidence of rounding and abrasion. All pieces have metallic scratches (bit marks).



UNIT 1: APHYRIC BASALT

Pieces 1, 2, and 3

PHENOCRYSTS:

Plagioclase - <1%; <2.0 mm; euhedral, tabular, lath-like.

GROUNDMASS: Medium-grained crystalline. Elongated needles of plagioclase with intergranular clinopyroxene.

VESICLES: 1%-2%; <2 mm in size; irregular shape; random to patchy distribution; small vesicles (<0.05 mm) are randomly distributed. Large vesicles (1-2 mm) are concentrated in patchy zones.

COLOR: Light gray.

STRUCTURE: Massive.

ALTERATION: None.

VEINS/FRACTURES: None.

ADDITIONAL COMMENTS: Cored sample broken into 3 pieces. Sample looks uniform. No glass noticed. Crystal growths may be present in cavities.

