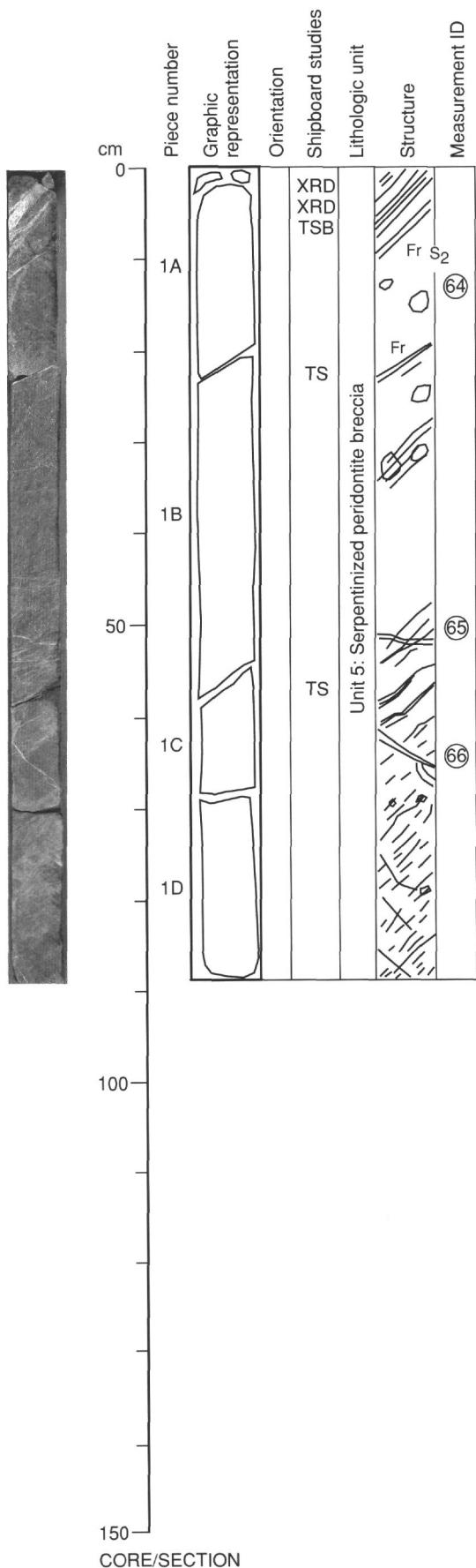


149-897D-17R-6

UNIT 5: SERPENTINIZED PERIDOTITE BRECCIA

Pieces 1A and 1D



COLOR: Dusky yellowish green (10GY 3/2 and 5GY 5/2).

LAYERING: No obvious primary igneous layering.

DEFORMATION: Cold shear deformation which completely brecciated the rock and developed a clear foliation in this breccia. Late brittle deformation which developed fractures filled with calcite and/or serpentine which make up about 5% of the rock. Rock has marked schistosity between 50 and 70 cm.

PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.

Olivine - Mode: 70%–80%.

Pyroxene - Mode: 20%–30%.

Spinel - Mode: 1%.

SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.

Total percent: 98%.

Texture: Mesh serpentinite.

Vein material: Veining extensive and the rock brecciated. Vein cutting Piece 1A contains brucite? and an unknown purple mineral.

ADDITIONAL COMMENTS: Unit continues from Section 149-897D-17R-1 and continues into Section 149-897D-18R-1.

UNIT 5: SERPENTINIZED PERIDOTITE BRECCIA

Part of Piece 1 (0–25 cm)

COLOR: Dusky yellowish green (10GY 3/2 and 5GY 5/2).

LAYERING: None.

DEFORMATION: Late brittle deformation developed dipping parallel fractures filled with calcite.

PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.

Olivine - Mode: 70%–80%.

Pyroxene - Mode: 20%–30%.

Spinel - Mode: 1%.

SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.

Total percent: 98%.

Texture: Mesh serpentinite.

ADDITIONAL COMMENTS: Unit continues from Section 149-897D-17R-1.

UNIT 6: SERPENTINIZED PERIDOTITE

Pieces 1 (25–30 cm), 2A to 2H

COLOR: Yellowish green (10YR 2/2) and dark greenish gray (5GY 4/1).

LAYERING: No obvious primary igneous layering.

DEFORMATION: No obvious ductile deformation. Cold shear deformation which locally brecciated the rock in limited shear zones with C-S fabric. Some late brittle deformation developing fractures filled with calcite and/or serpentine.

PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.

Olivine - Mode: 70%–80%.

Pyroxene - Mode: 20%–30%.

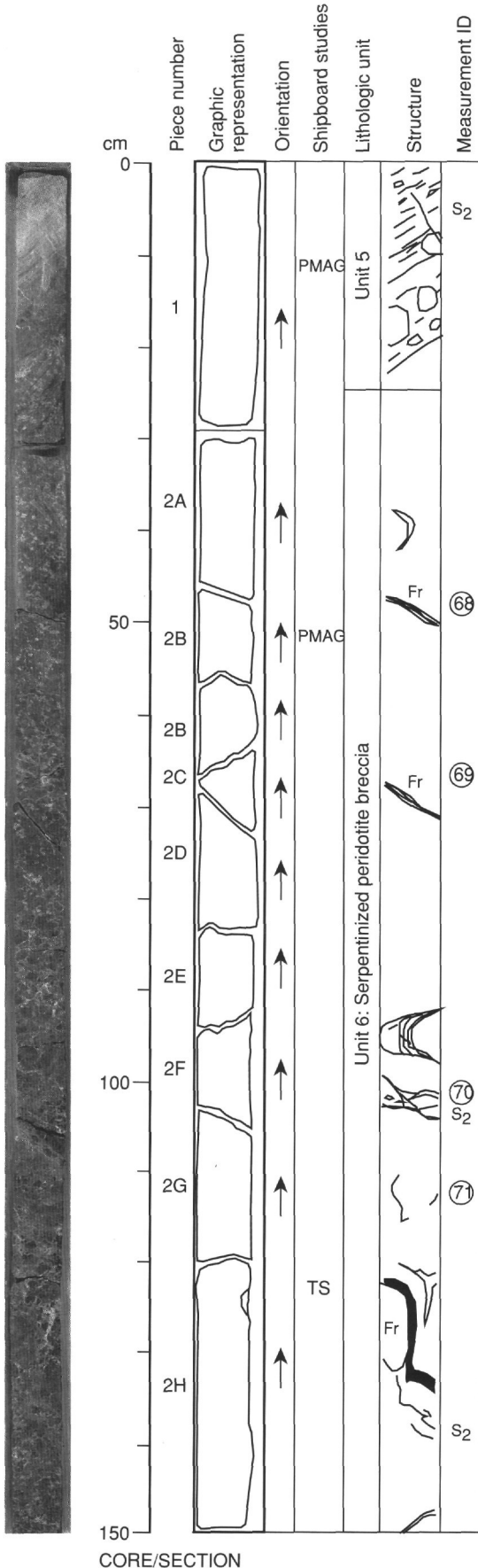
Spinel - Mode: 1%.

SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.

Total percent: 98%.

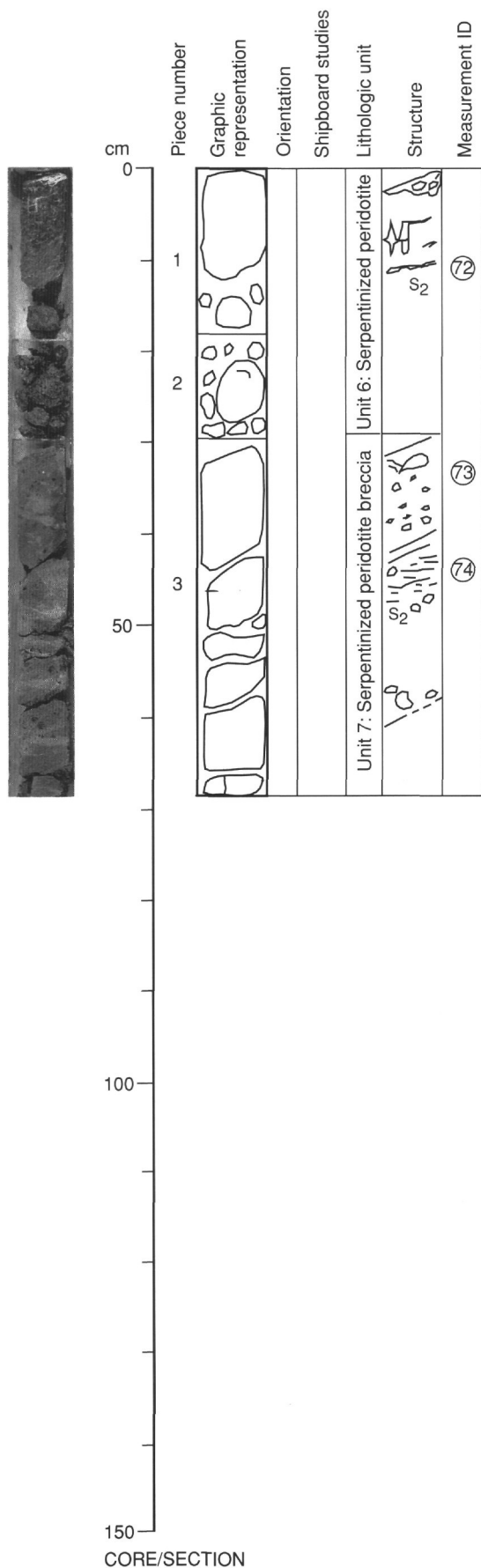
Texture: Mesh serpentinite.

ADDITIONAL COMMENTS: Unit is less brecciated than overlying or underlying units.



CORE/SECTION

149-897D-18R-2



UNIT 6: SERPENTINIZED PERIDOTITE

Pieces 1 and 2

COLOR: Greenish black (5GY 2/1).
LAYERING: No obvious primary igneous layering.
DEFORMATION: No obvious ductile deformation. Cold shear deformation which locally brecciated the rock in limited shear zones having C-S fabric. Some late brittle deformation developing fractures filled with calcite and/or serpentine.
PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.
 Olivine - Mode: 70%–80%.
 Pyroxene - Mode: 20%–30%.
 Spinel - Mode: 1%.
SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.
 Total percent: 98%.
 Texture: Mesh serpentinite.
ADDITIONAL COMMENTS: Unit is less brecciated than overlying or underlying units.

UNIT 7: SERPENTINIZED PERIDOTITE BRECCIA

Piece 3

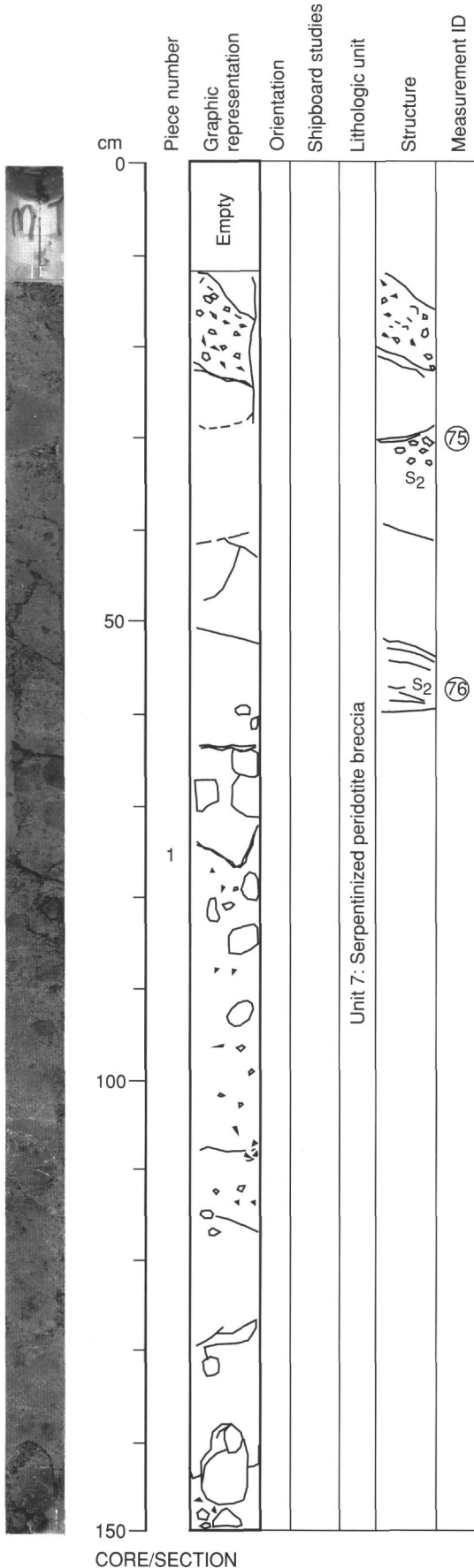
COLOR: Yellowish green (10YR 2/2) and dark greenish gray (5GY 4/1).
LAYERING: None.
DEFORMATION: No obvious high temperature deformation. Late brittle deformation develops breccia which is disrupted by further shearing.
PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.
 Olivine - Mode: 70%–80%.
 Pyroxene - Mode: 20%–30%.
 Spinel - Mode: 1%.
SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.
 Total percent: 98%.
 Texture: Mesh serpentinite.
ADDITIONAL COMMENTS: Unit is less fractured and brecciated than overlying or underlying units.

149-897D-18R-3

UNIT 7: SERPENTINIZED PERIDOTITE BRECCIA

Piece 1 (entire section)

COLOR: Yellowish green (10YR 2/2) and dark greenish gray (5GY 4/1).
LAYERING: No obvious primary igneous layering.
DEFORMATION: No obvious high temperature deformation. Late brittle deformation develops breccia which is disrupted by further shearing.
PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.
 Olivine - Mode: 70%–80%.
 Pyroxene - Mode: 20%–30%.
 Spinel - Mode: 1%.
SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.
 Total percent: 98%.
 Texture: Mesh serpentinite.
ADDITIONAL COMMENTS: Unit has suffered intense brecciation and shearing. Unit 7 continues into the underlying section (Section 149-897D-18R-3).
 Olivine - Mode: 70%–80%.
 Pyroxene - Mode:
 Spinel - Mode: 1%.
SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.
 Total percent: 98%.
 Texture: Mesh serpentinite.
ADDITIONAL COMMENTS: Unit has suffered intense brecciation and shearing. Unit 7 continues into underlying section (Section 149-897D-18R-3). This brecciated unit has been greatly disturbed by drilling.



CORE/SECTION

149-897D-18R-4

UNIT 7: SERPENTINIZED PERIDOTITE BRECCIA

Piece 1

COLOR: Yellowish green (10YR 2/2) and dark greenish gray (5GY 4/1).

LAYERING: No obvious primary igneous layering.

DEFORMATION: No obvious ductile deformation. Late brittle deformation develops breccia which is disrupted by further shearing.

PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.

Olivine - Mode: 70%–80%.

Pyroxene - Mode: 20%–30%.

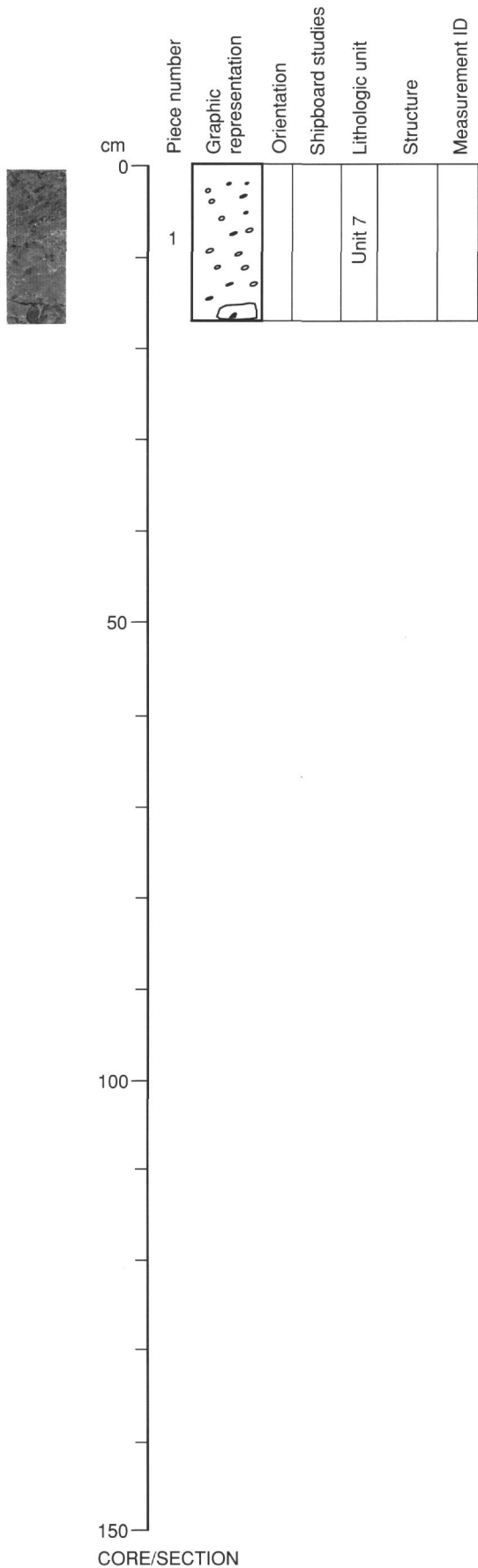
Spinel - Mode: 1%.

SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining and limonite alteration.

Total percent: 98%.

Texture: Mesh serpentinite.

ADDITIONAL COMMENTS: Unit is intensely brecciated and sheared. Unit 7 continues into underlying section (Section 149-897D-18R-CC). This brecciated unit has been greatly disturbed by drilling.



UNIT 7: SERPENTINIZED PERIDOTITE BRECCIA

Pieces 1 to 6

COLOR: Yellowish green (10YR 2/2) and dark greenish gray (5GY 4/1).

LAYERING: None.

DEFORMATION: No obvious high temperature deformation. Late brittle deformation develops breccia which is disrupted by further shearing.

PRIMARY MINERALOGY: No plagioclase was observed, but it may be obscured by serpentinization.

Olivine - Mode: 70%–80%.

Pyroxene - Mode: 20%–30%.

Spinel - Mode: 1%.

SECONDARY MINERALOGY: The primary mineralogy is largely destroyed by serpentinization and later calcite veining.

Total percent: 98%.

Texture: Mesh serpentinite.

ADDITIONAL COMMENTS: Unit is intensely brecciated and sheared. This brecciated unit has been greatly disturbed by drilling.

UNIT 8: SERPENTINIZED PERIDOTITE

Pieces 7 to 11

COLOR: Dark greenish gray (5GY 4/1) to dark gray (N3).

LAYERING: No obvious layering.

DEFORMATION: No obvious high temperature deformation. Cold shear deformation which locally brecciated the rock in limited shear zones having C-S fabric. Late brittle deformation expressed by abundant calcite-filled fractures.

PRIMARY MINERALOGY:

Olivine - Mode: 70%.

Crystal size: ?

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 100%.

Pyroxene(s) - Mode: 29%.

Crystal size: ?

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 100%.

Spinel - Mode: 1%–2%.

Crystal size: ?

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 0%.

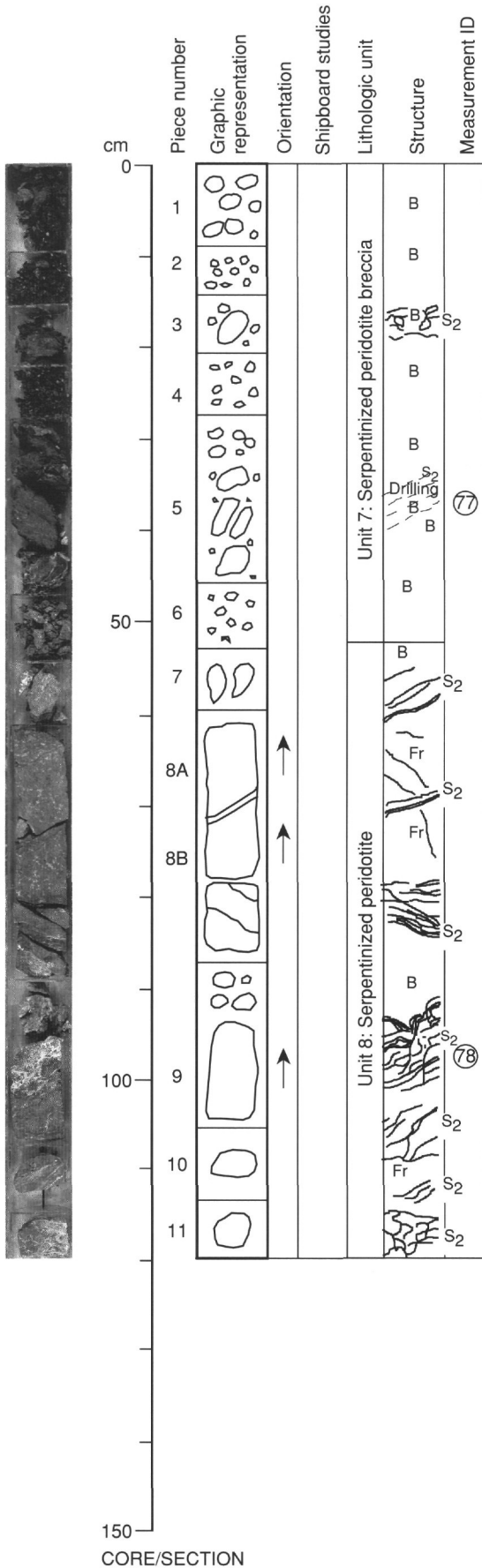
SECONDARY MINERALOGY:

Total percent: 99%.

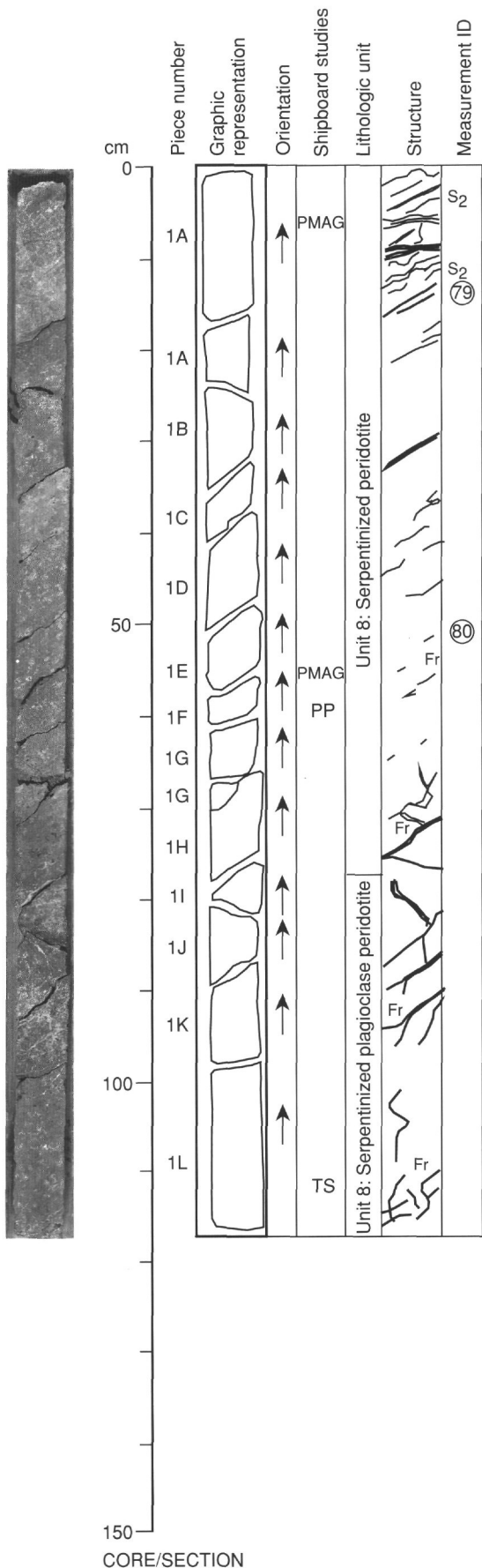
Texture: Mesh serpentinite.

Vein material: Abundant calcite veins in lower Pieces 8B to 11. Abundant sulfides along the veins.

ADDITIONAL COMMENTS: Unit continues into Section 149-897D-19R-2.



149-897D-19R-2



UNIT 8: SERPENTINIZED PERIDOTITE

Pieces 1A to 1H

COLOR: Medium dark gray (N4) to dark greenish gray (5G 4/1).

LAYERING: No obvious layering.

DEFORMATION: No obvious high temperature deformation. Cold shear deformation which locally brecciated the rock in limited shear zones having C-S fabric. Late brittle deformation expressed by calcite filled fractures.

PRIMARY MINERALOGY:

- Olivine - Mode: 79%.
Crystal size: ?
Crystal shape: ?
Crystal orientation: None.
Percent replacement: 100%.
- Pyroxene(s) - Mode: 20%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: 100%.
- Spinel - Mode: 1%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: ?.

SECONDARY MINERALOGY:

- Total percent: 99%.
- Texture: Mesh serpentinite.

ADDITIONAL COMMENTS: Unit continues from Section 149-897D-19R-1.

UNIT 9: SERPENTINIZED PLAGIOCLASE PERIDOTITE

Pieces 1I to 1L

COLOR: Medium dark gray (N6) to dark greenish gray (5G 4/1).

LAYERING: No obvious layering.

DEFORMATION: No obvious ductile deformation. Late brittle deformation expressed by serpentine filled fractures.

PRIMARY MINERALOGY:

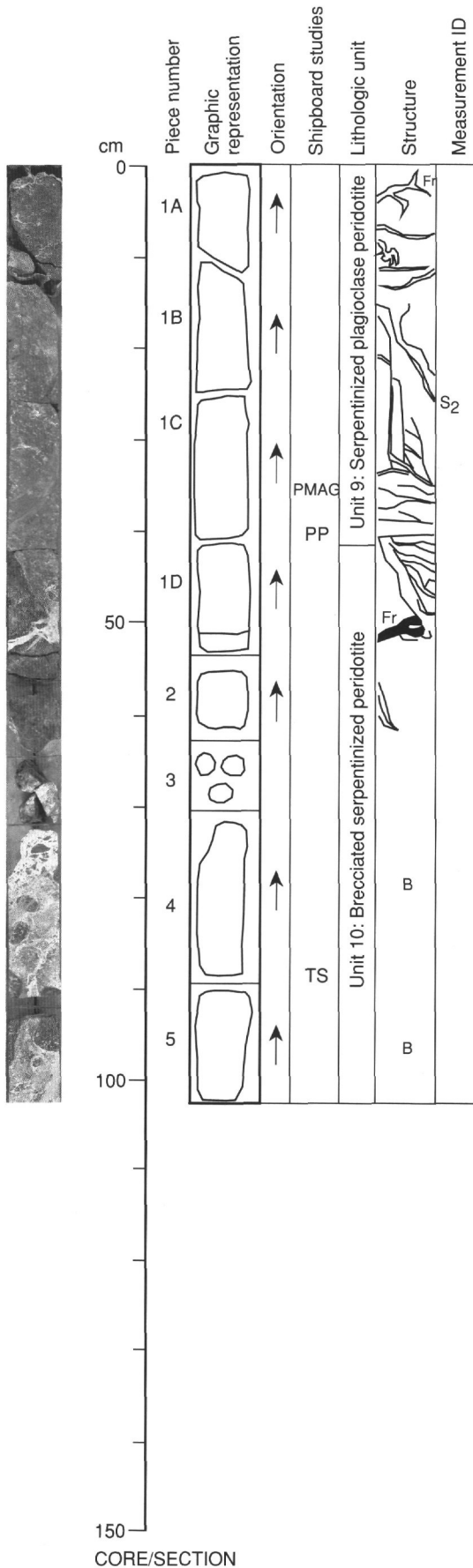
- Olivine - Mode: 60%.
Crystal size: ?
Crystal shape: ?
Crystal orientation: ?
Percent replacement: 100%.
- Pyroxene(s) - Mode: 30%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: 100%.
- Spinel - Mode: 4%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: ?.
- Plagioclase - Mode: 6%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: ?.

SECONDARY MINERALOGY:

- Total percent: 90%.
- Texture: Mesh serpentinite.
- Vein material: Serpentine veins with some enrichment in pyroxene.

ADDITIONAL COMMENTS: Unit continues to Section 149-897D-19R-3.

149-897D-19R-3



UNIT 9: SERPENTINIZED PLAGIOCLASE PERIDOTITE

Pieces 1A to 1C

COLOR: Grayish green (10GY 5/2) to greenish black (5G 2/1).

LAYERING: No obvious layering.

DEFORMATION: No obvious ductile deformation. Late brittle deformation expressed by serpentine filled fractures.

ADDITIONAL COMMENTS: Unit continues from Section 149-897D-19R-2. Refer to description of that section for details of primary and secondary mineralogy.

UNIT 10: BRECCIATED SERPENTINIZED PERIDOTITE

Pieces 1D to 5

COLOR: Greenish black (5G 2/1) to grayish black (N2).

LAYERING: No obvious layering.

DEFORMATION: No obvious ductile deformation. Late brittle deformation expressed by serpentine filled fractures. Pieces 4 and 5 brecciated.

PRIMARY MINERALOGY:

Olivine - Mode: 60%.

Crystal size: ?

Crystal shape: ?

Crystal orientation: ?

Percent replacement: 100%.

Pyroxene(s) - Mode: 20%–25%.

Crystal size: ?

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 100%.

Spinel - Mode: 3%.

Crystal size: ?

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: ?

Plagioclase - Mode: 12%–15%.

Crystal size: ?

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: ?

SECONDARY MINERALOGY:

Total percent: >95%.

Texture: Mesh serpentinite.

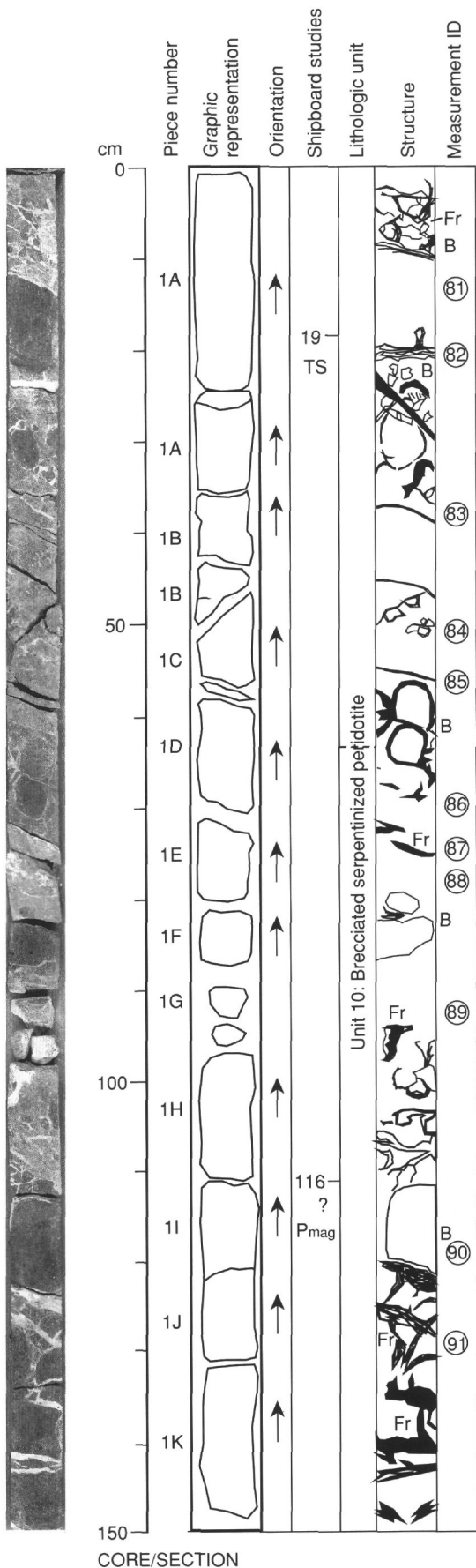
Vein material: Veins of serpentinite, and less commonly plagioclase, cut this unit.

ADDITIONAL COMMENTS: Unit continues into Section 149-897D-19R-4.

149-897D-19R-4

UNIT 10: BRECCIATED-SERPENTINIZED PERIDOTITE

Pieces 1A to 1K



COLOR: Dark gray (N3).
LAYERING: No obvious layering.
DEFORMATION: No obvious ductile deformation. Late brittle deformation expressed by serpentine filled fractures. Brecciation is abundant.
PRIMARY MINERALOGY:
 Olivine - Mode: 70%.
 Crystal size: ?
 Crystal shape: ?
 Crystal orientation: ?
 Percent replacement: 100%.
 Pyroxene(s) - Mode: 20%.
 Crystal size: ?
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: 100%.
 Spinel - Mode: 2%.
 Crystal size: ?
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: 0%.
 Plagioclase - Mode: 8%.
 Crystal size: ?
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: ?
SECONDARY MINERALOGY:
 Total percent: >95%.
 Texture: Mesh serpentinite.
 Vein material: Veins are filled with serpentine.
ADDITIONAL COMMENTS: Unit continued from Section 149-897D-19R-3.

UNIT 11: SERPENTINIZED PLAGIOCLASE PERIDOTITE

Pieces 1A to 4E

COLOR: Dark gray (N3) to dark greenish gray (5G 4/1).

LAYERING: Pyroxene-rich layers.

DEFORMATION: No obvious ductile deformation. Late brittle deformation expressed by serpentine filled fractures.

PRIMARY MINERALOGY:

- Olivine - Mode: 55%.
Crystal size: ?
Crystal shape: ?
Crystal orientation: ?
Percent replacement: 100%.
- Pyroxene(s) - Mode: 40%.
Crystal size: ?
Crystal shape: Poikilitic.
Crystal orientation: None.
Percent replacement: 100%.
- Spinel - Mode: 3%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: 0%.
- Plagioclase - Mode: 2%.
Crystal size: ?
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: ?

SECONDARY MINERALOGY:

- Total percent: >95%.
- Texture: Mesh serpentine.
- Vein material: Serpentine veins are present.

