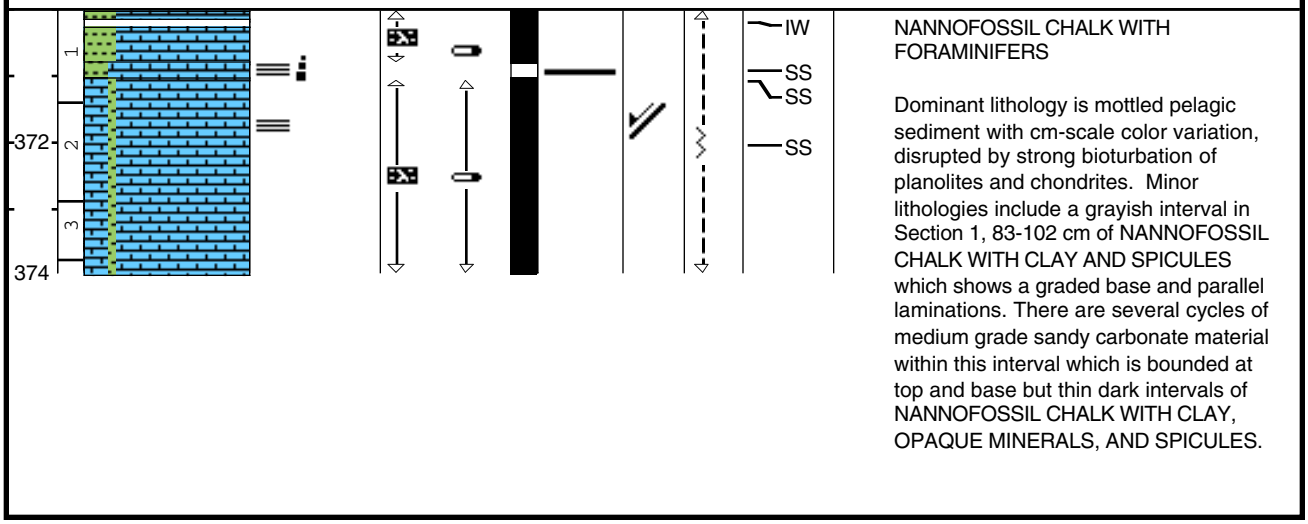
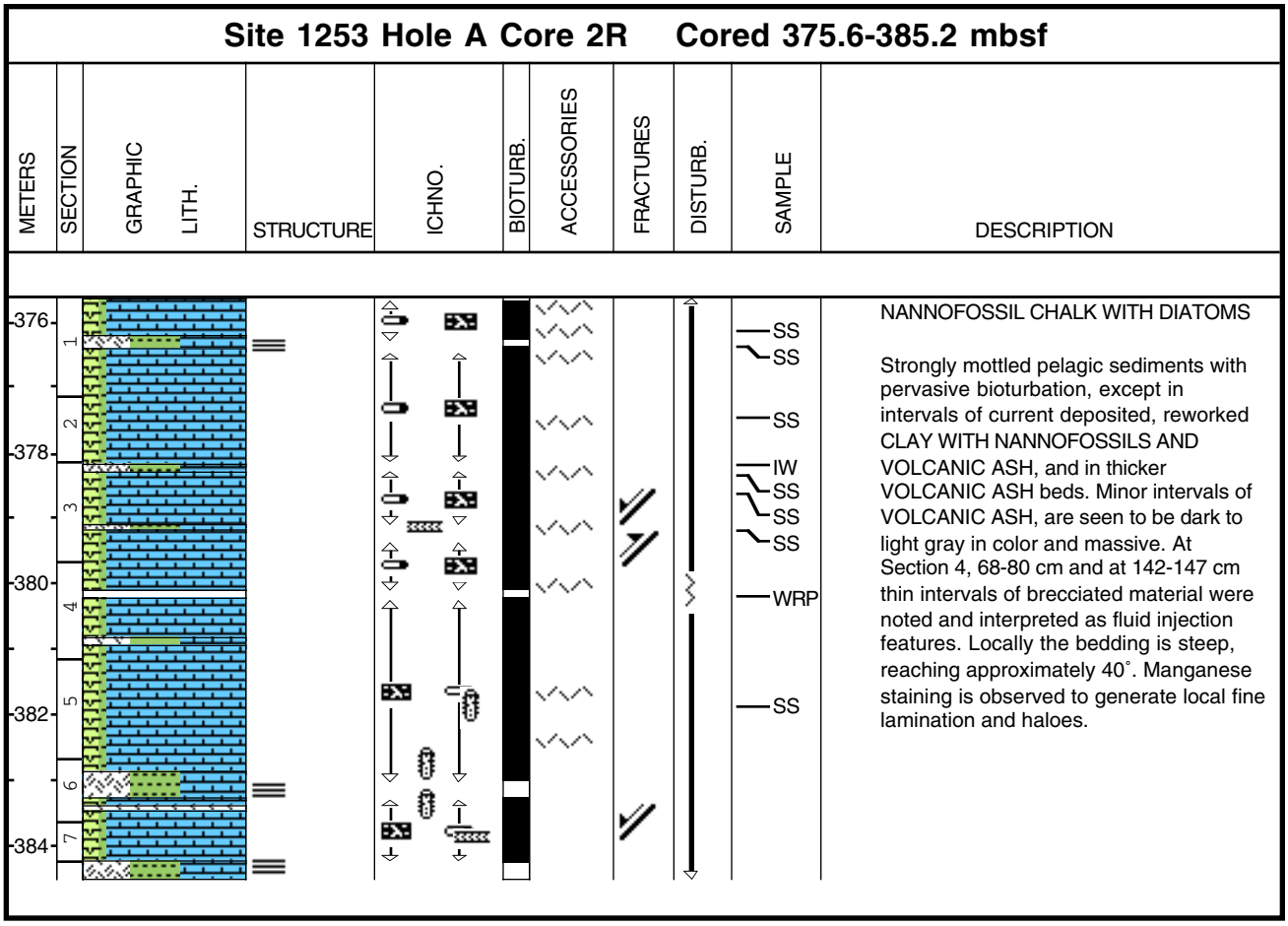
Core Photo

Site 1253 Hole A Core 1R Cored 370.0-375.6 mbsf

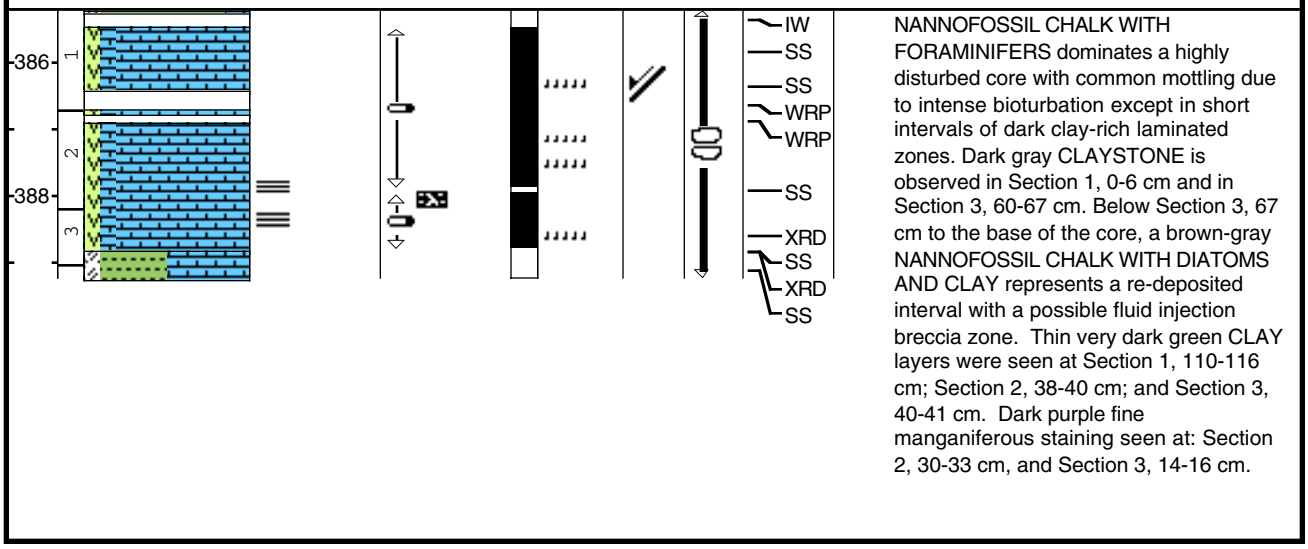


Core Photo


Site 1253 Hole A Core 2R Cored 375.6-385.2 mbsf
METERS
SECTION
GRAPHIC LITH.
STRUCTURE
ICHNO.
BIOTURB.
ACCESSORIES
FRACTURES
DISTURB.
SAMPLE
DESCRIPTION
376
378
380
382
384
1
2
3
4
5
6
7
SS
SS
SS
IW
SS
SS
SS
WRP
SS
NANNOFOSSIL CHALK WITH DIATOMS
Strongly mottled pelagic sediments with pervasive bioturbation, except in intervals of current deposited, reworked CLAY WITH NANNOFOSSILS AND VOLCANIC ASH, and in thicker VOLCANIC ASH beds. Minor intervals of VOLCANIC ASH, are seen to be dark to light gray in color and massive. At Section 4, 68-80 cm and at 142-147 cm thin intervals of brecciated material were noted and interpreted as fluid injection features. Locally the bedding is steep, reaching approximately 40˚. Manganese staining is observed to generate local fine lamination and haloes.

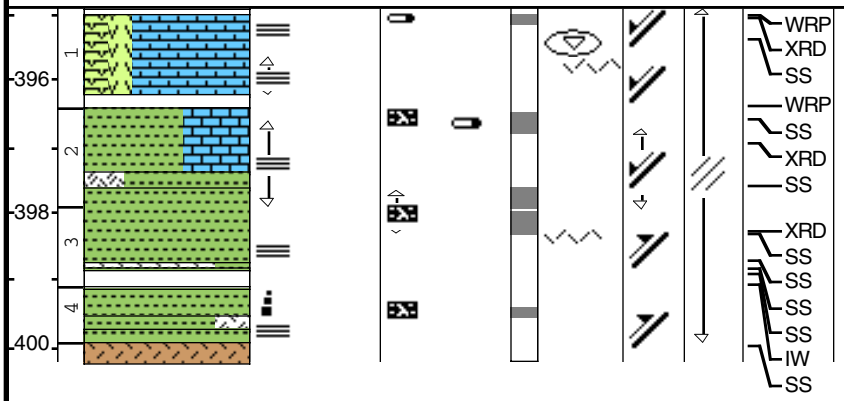
Core Photo

Site 1253 Hole A Core 3R Cored 385.2-394.9 mbsf



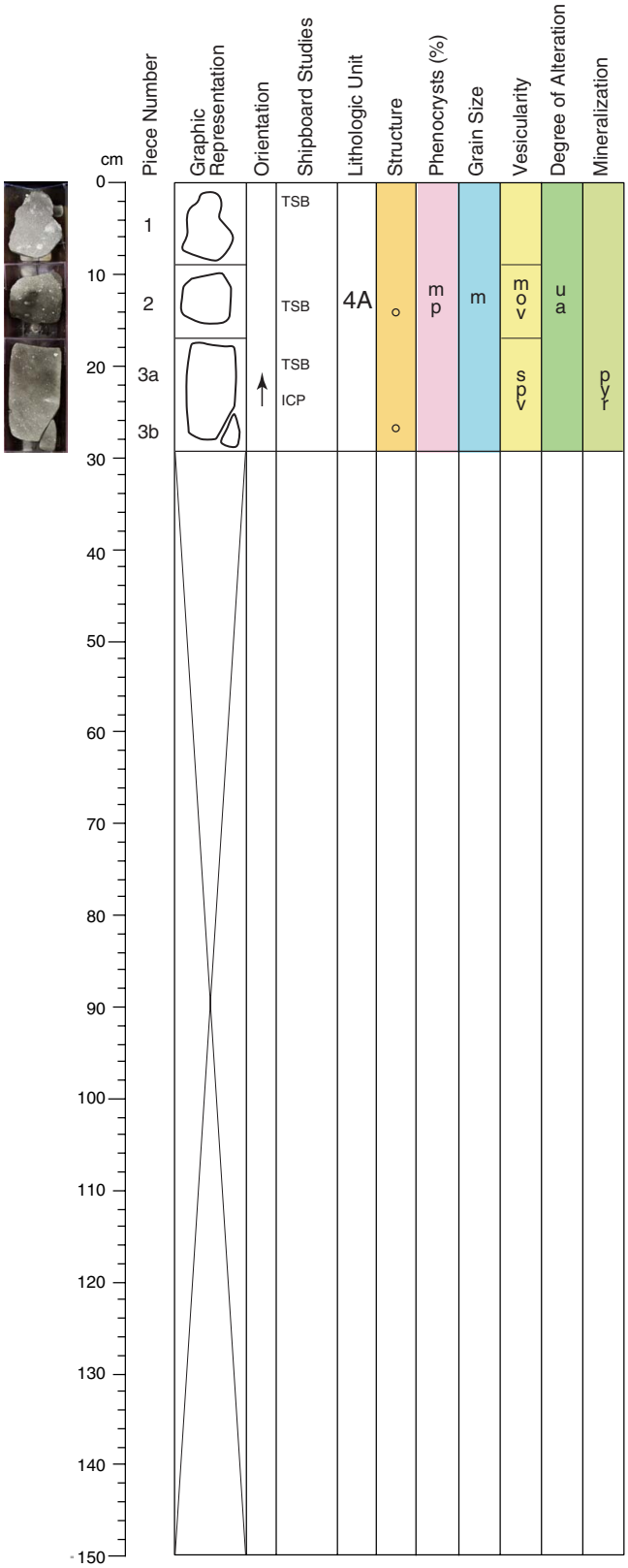
Core Photo

Site 1253 Hole A Core 4R Cored 394.9-400.5 mbsf



This core is well lithified compared to the overlying cores. The top of the recovered section comprises NANNOFOSSIL CHALK WITH SPICULES AND DIATOMS. Going down-section the proportion of calcite falls so that in Section 2, CALCITE-RICH CLAYSTONE dominates and in Section 3 CLAYSTONE WITH ZEOLITES is the major rock type. The base of the recovered core comprises GABBRO (see Hard Rock VCD for description). A number of VOLCANIC ASH layers were identified, but were typically heavily altered to clays and zeolites. Bright white alteration marks the more siliceous ashes, while the mafic ashes are altered to a dark gray-green. In Section 1, 53-61 cm the rock is very cherty, with concoidal fractures due to silica diagenesis. The dip of the bedding is steep, approximately 40˚ where the core is well laminated and normal faulting is common. Redeposited layers of parallel laminated claystone with zeolites are noted in Section 2, 99-121 cm, while in Section 4, 65-47 cm, there is a sharp based unit with clear grading up into the overlying background sediment.

Core Photo



205-1253A-4R-CC (Section top: 399.95 mbsf)

UNIT 4A: GABBRO

Pieces: 1-3

Color: Gray

PRIMARY MINERALOGY:

Plagioclase Mode: 8%.
- Crystal size: 1 to 4 mm as aggregates or laths.
- Crystal shape: Euhedral to subhedral.
- Crystal orientation: Random.

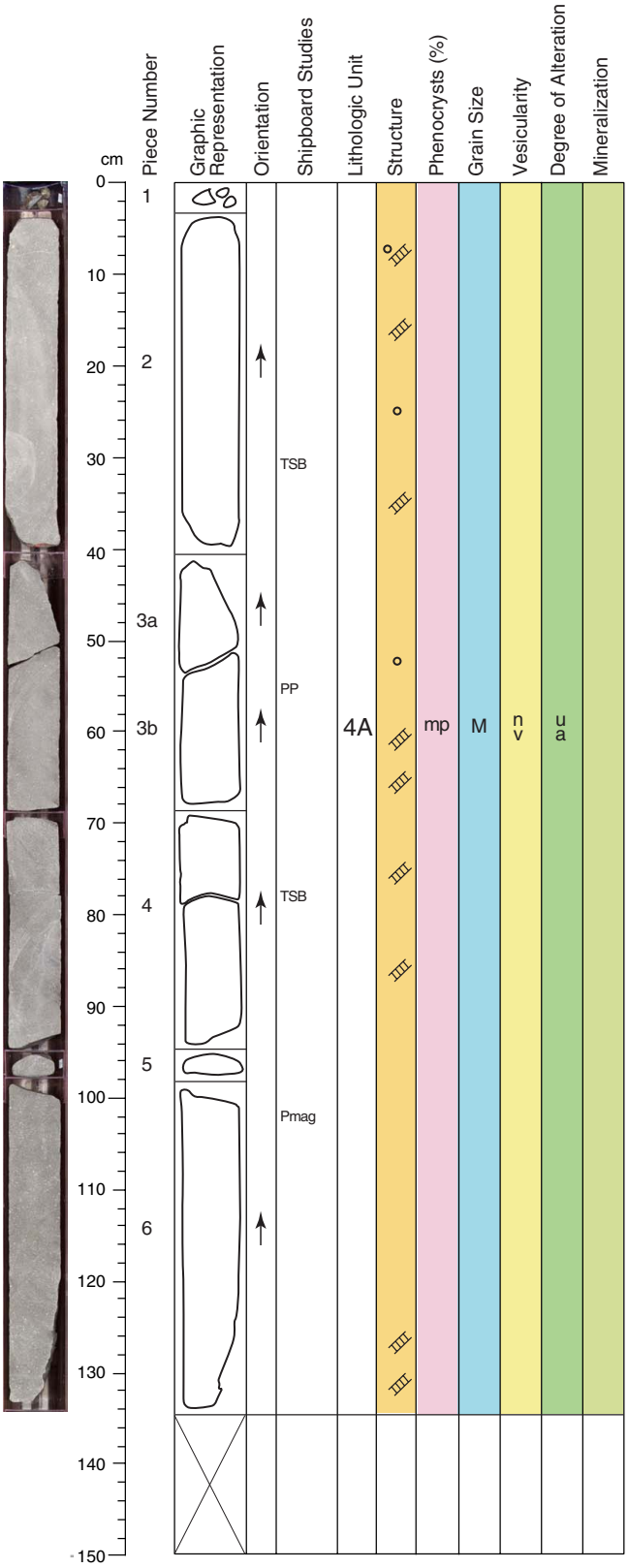
Pyroxene Mode: 2%.
- Crystal size: <1 mm.
- Crystal shape: Subhedral to anhedral.
- Crystal orientation: Random.
- Comments: Partly associated with plagioclase aggregates.

Pyrite Mode: 1%.
- Crystal size: <0.5 mm.
- Crystal shape: Anhedral.
- Crystal orientation: Random.
- Comments: Larger abundance within voids.

SECONDARY MINERALOGY:

Veins: Voids sparsely to moderately vesicular, rounded to elongated, randomly distributed. Voids are either lined with zeolites/clays or plagioclase with minor amounts of pyroxene and pyrite (Piece 3).

Core Photo



205-1253A-5R-1 (Section top: 400.5 mbsf)

UNIT 4A: GABBRO

Pieces: 1-6

Color: Gray

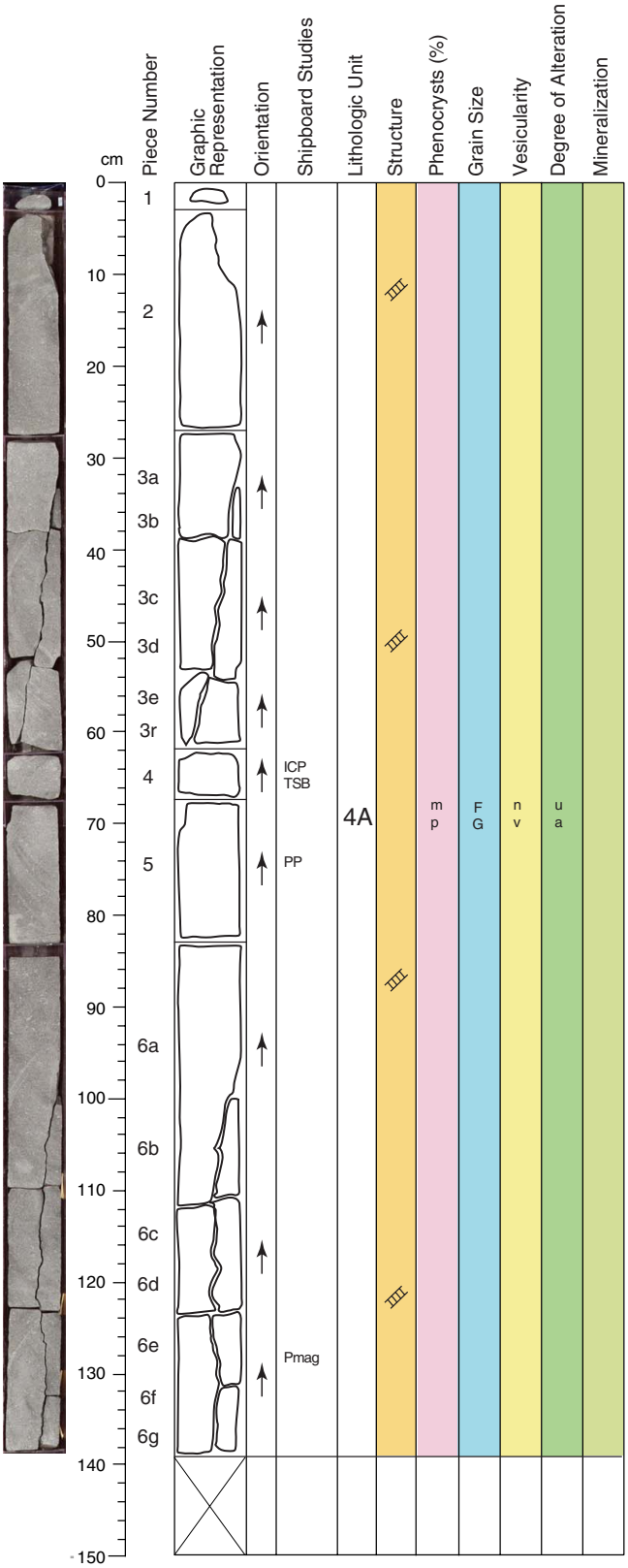
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 4 mm as aggregates or laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 2%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Veins: Non-vesicular, much below 1%. In Pieces 1, 2, and 3, voids are rounded, randomly distributed and are filled with zeolites and clays. Voids are observed at the top of the section whereas veins are more common at the bottom of the section. Veins are filled with clay (celadonite?). Vein within Piece 4 starts at 81 cm and develops an anastomosing structure.

ADDITIONAL COMMENTS:
Alteration restricted to the veins.
Piece 1: Thin layer of sediments intercalated within the gabbro. It is homogeneous and unstructured claystone with calcite (reaction with HCl). The sediment is hard to break and could be baked sediment.

Core Photo



205-1253A-5R-2 (Section top: 401.85 mbsf)

UNIT 4A: GABBRO

Pieces: 1-6

Color: Gray

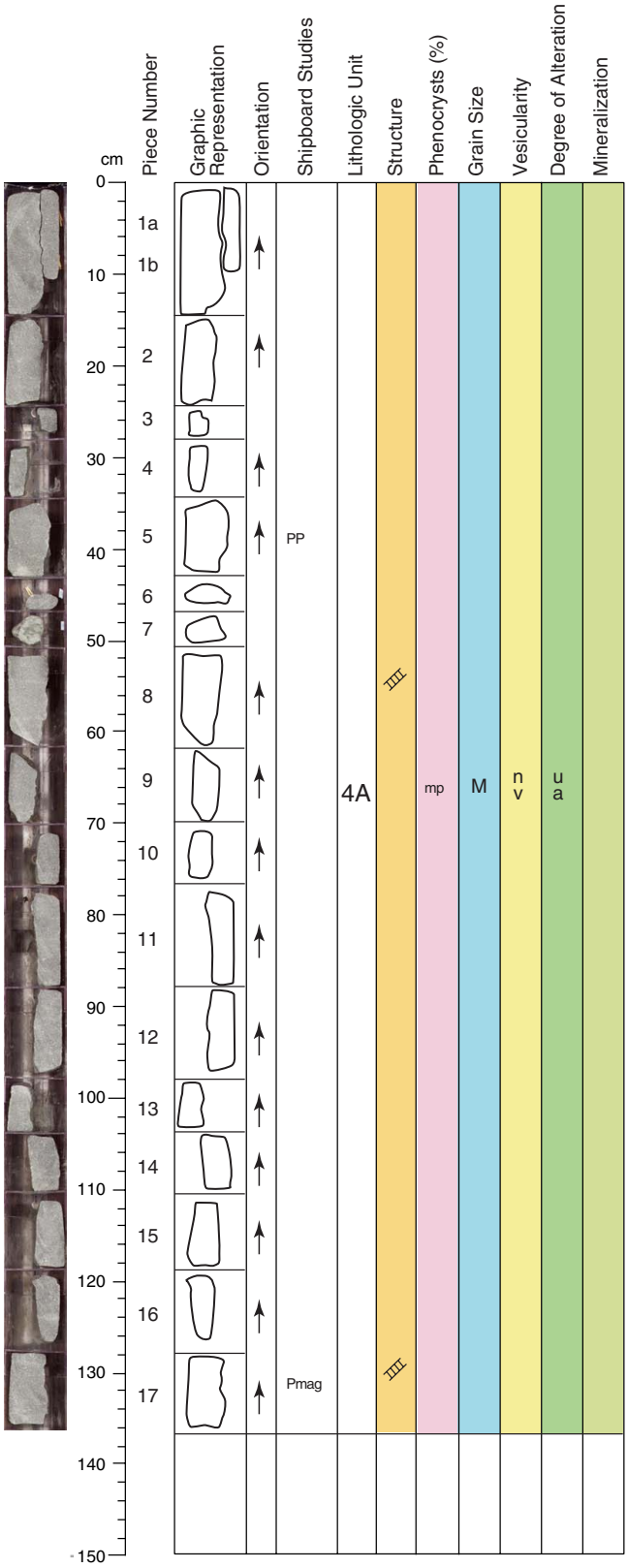
PRIMARY MINERALOGY:
Plagioclase Mode: 8.5%.
Crystal size: Up to 5 mm as aggregates or laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 1.5%.
Crystal size: Up to 1 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Veins: A few veins can be observed within the core, randomly distributed and probably filled with clay.

ADDITIONAL COMMENTS:
Alteration restricted to the veins.

Core Photo



205-1253A-5R-3 (Section top: 403.24 mbsf)

UNIT 4A: GABBRO

Pieces: 1-17

Color: Gray

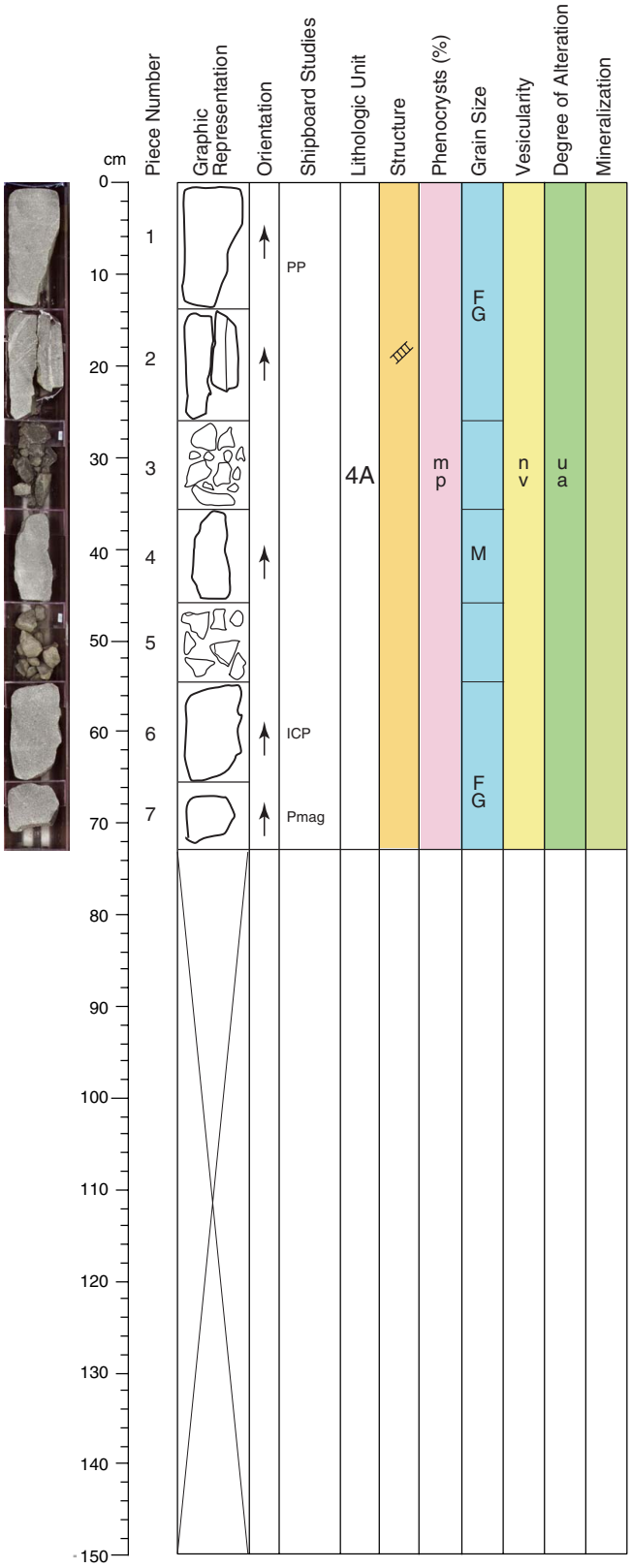
PRIMARY MINERALOGY:
Plagioclase Mode: 9%.
Crystal size: Up to 3 mm, mainly laths, a few aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 1%.
Crystal size: Up to 0.5 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Mostly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Veins: A couple of veins (< 1 mm wide) can be observed within the core, randomly distributed and probably filled with clay.

ADDITIONAL COMMENTS:
Alteration restricted to the veins.

Core Photo



205-1253A-5R-4 (Section top: 404.61 mbsf)

UNIT 4A: GABBRO

Pieces: 1-7

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 3 mm; more laths than aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

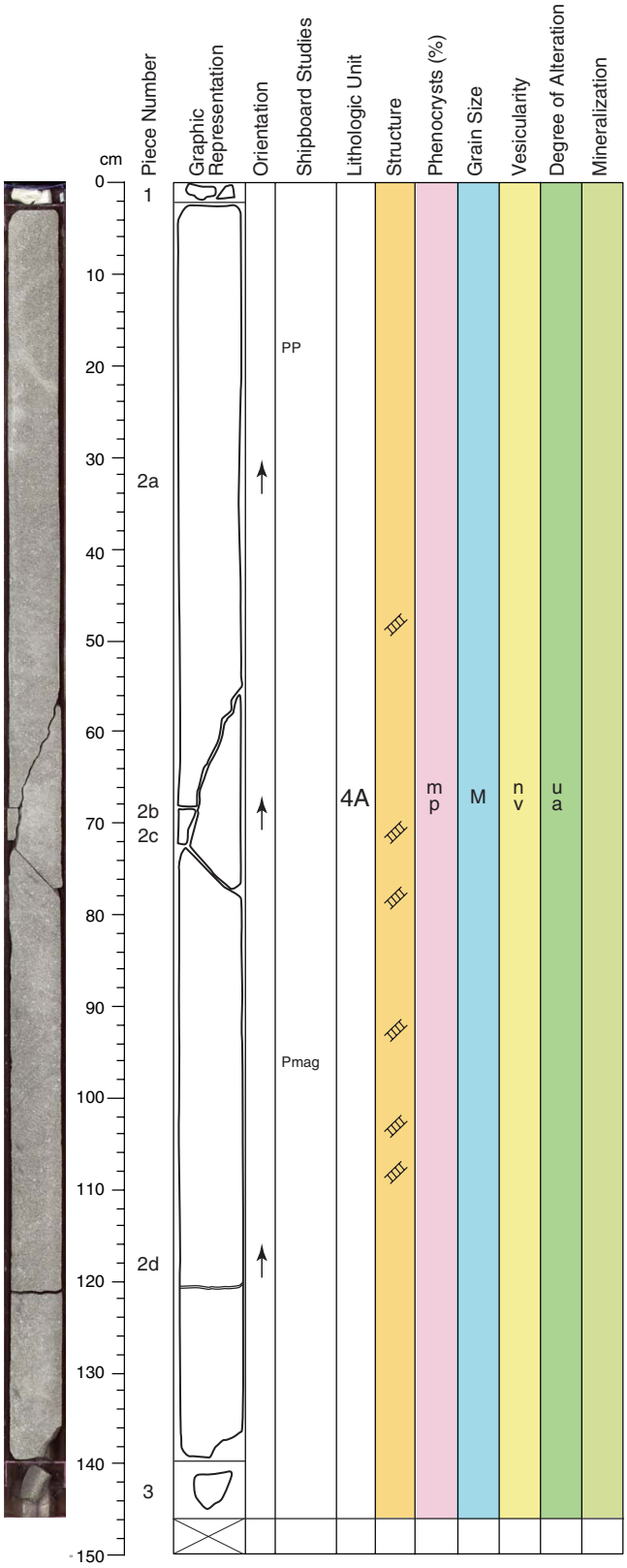
Pyroxene Mode: 2%.
Crystal size: Up to 1 mm.
Up to 2.5 mm within piece 2, 6 and 7.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: More single grain than association with plagioclase aggregates.

SECONDARY MINERALOGY:

Veins: A vein of 1.5 mm wide is running longitudinally through Piece 2 and is composed of zeolites and clays.

ADDITIONAL COMMENTS:
Alteration restricted to the veins.
It is unclear why we observe an intercalation of microcrystalline gabbro within a fine-grained gabbro. No contact is identified.

Core Photo



205-1253A-6R-1 (Section top: 404.5 mbsf)

UNIT 4A: GABBRO

Pieces: 2-3

Color: Gray

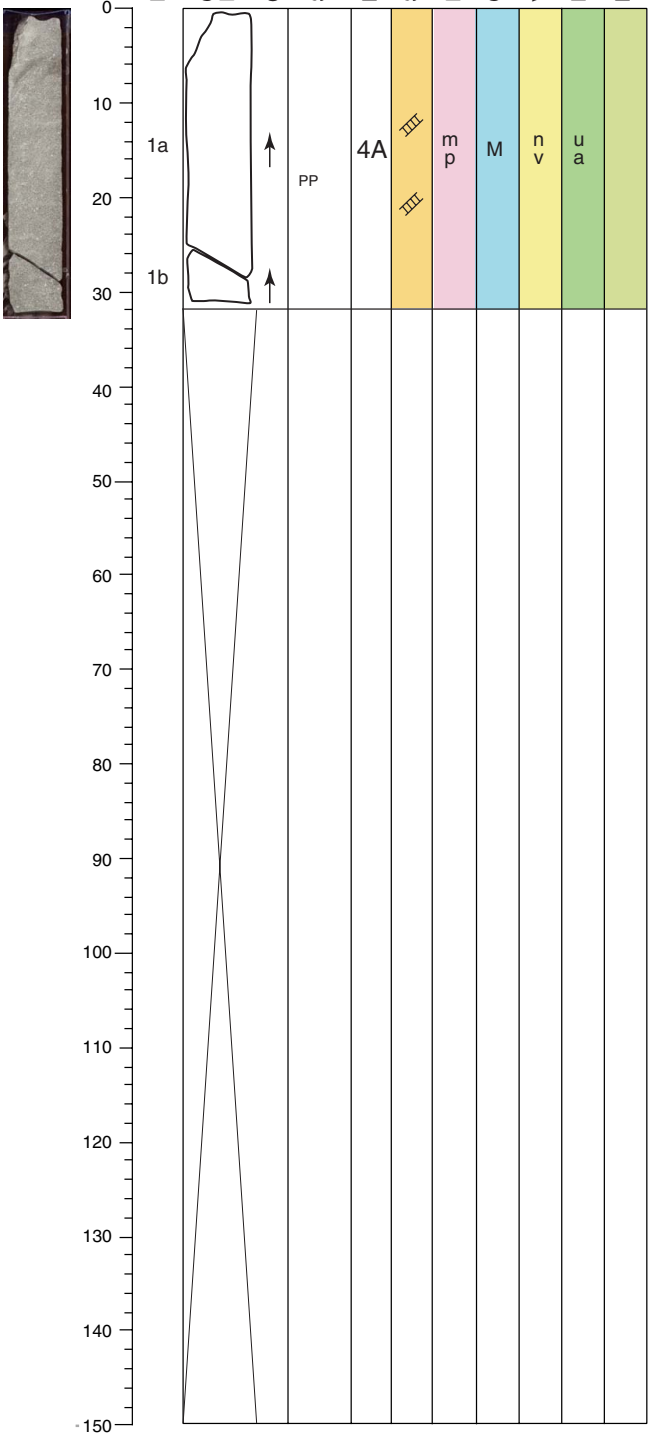
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 4 mm; more laths than aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: A few plagioclase are altered to green clay(?)

Pyroxene Mode: 2%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Association with plagioclase aggregates.

SECONDARY MINERALOGY:
Veins: Veins up to 1 mm wide are filled with green clay (celadonite?).
Veins are randomly distributed.

ADDITIONAL COMMENTS:
Piece 1: homogeneous unstructured claystone with slightly altered volcanic glass.
Alteration restricted to the veins.

Core Photo



205-1253A-6R-2 (Section top: 405.93 mbsf)

UNIT 4A: GABBRO

Pieces: 1

Color: Gray

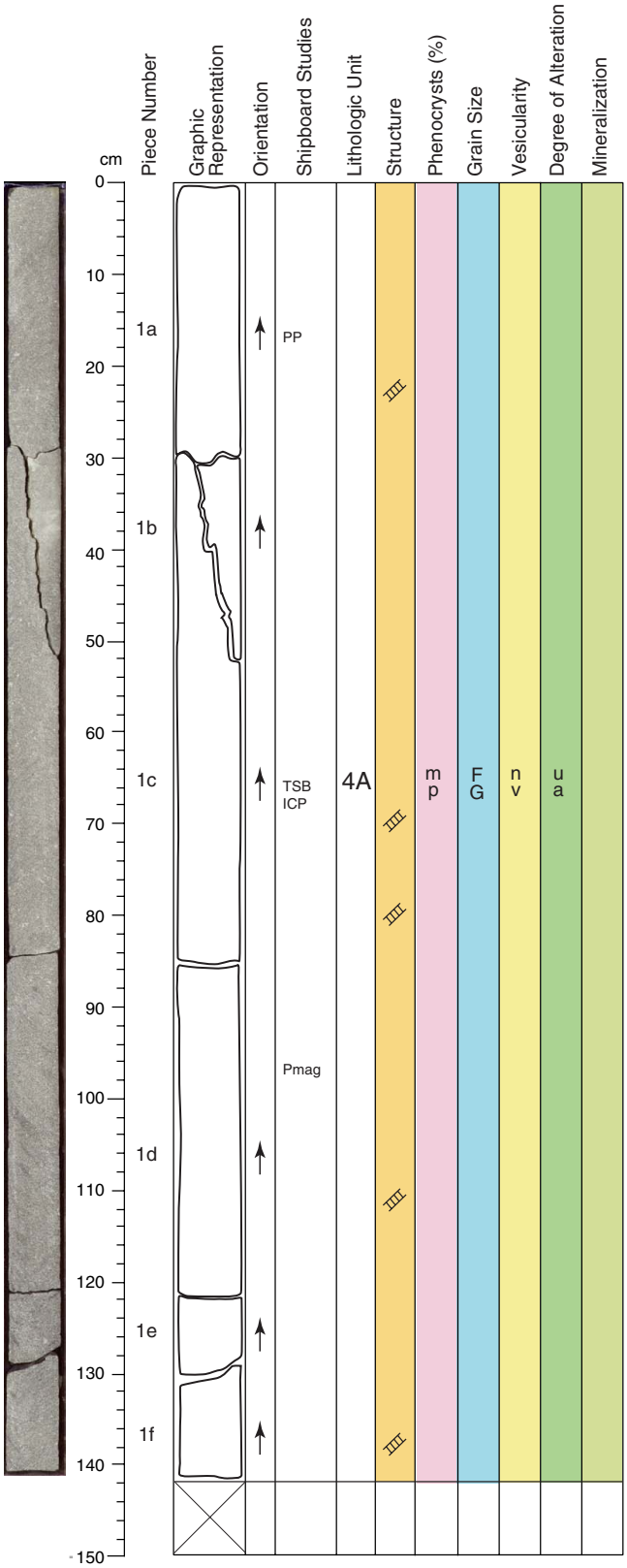
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 4 mm as laths or aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: A few plagioclases altered to green clay(?)

Pyroxene Mode: 2%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Association with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Two very small tiny veins. The identification of their filling is not possible.

ADDITIONAL COMMENTS:
Alteration restricted to the veins.

Core Photo



205-1253A-6R-3 (Section top: 406.26 mbsf)

UNIT 4A: GABBRO

Pieces: 1

Color: Gray

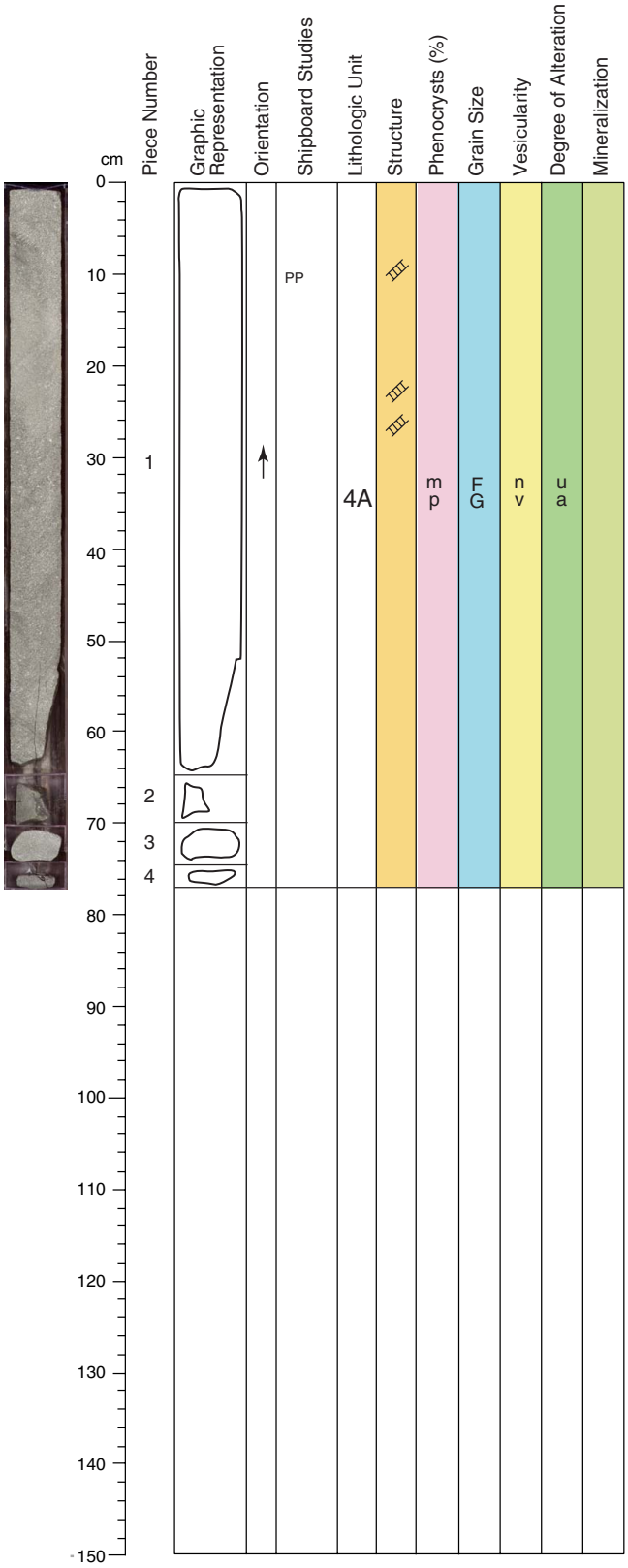
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 7 mm as laths or aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: A few plagioclases altered to green clay.

Pyroxene Mode: 2%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Sometimes associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins up to 1.5 mm wide are filled with green clay (celadonite?)

ADDITIONAL COMMENTS:
Alteration restricted to the veins and a few plagioclase aggregates.

Core Photo



205-1253A-6R-4 (Section top: 407.68 mbsf)

UNIT 4A: GABBRO

Pieces: 1-4

Color: Gray

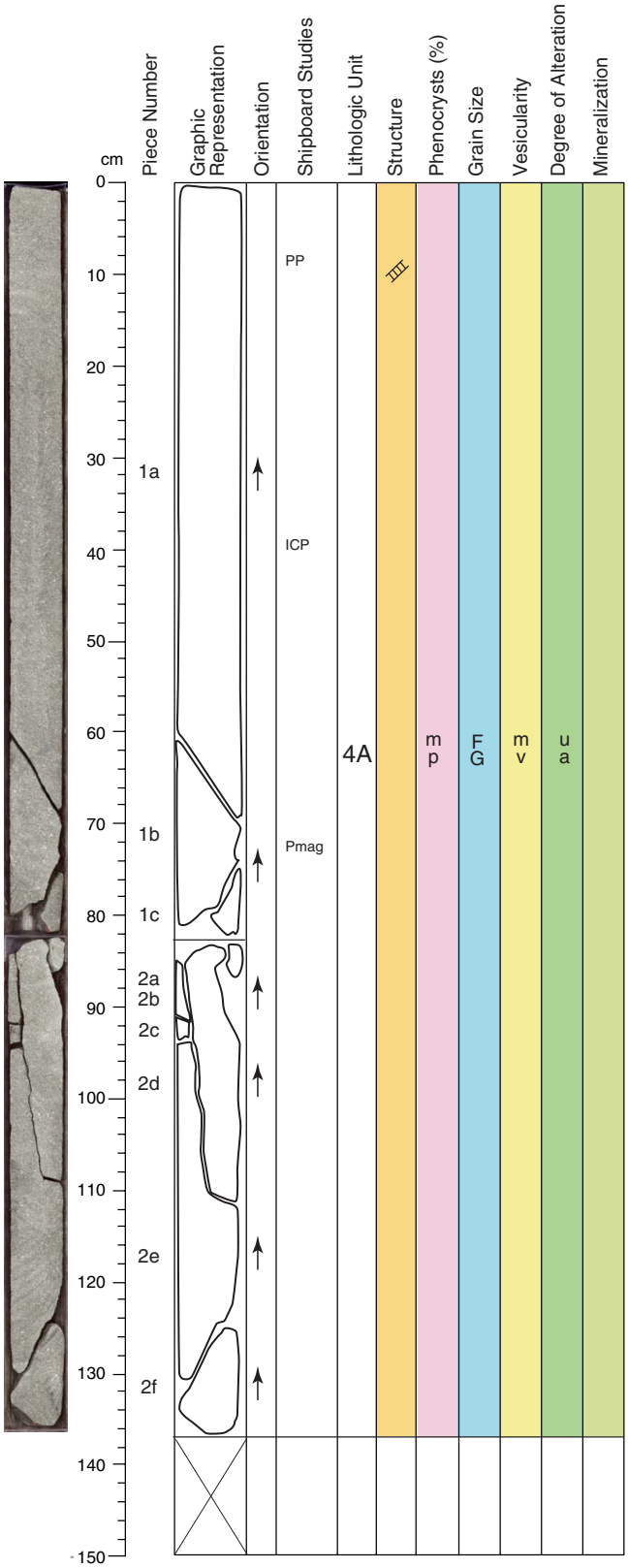
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 5 mm as laths or aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: A few plagioclases altered to green clay.

Pyroxene Mode: 2%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins up to 1 mm wide are filled with green clay (celadonite?)

ADDITIONAL COMMENTS:
Alteration restricted to the veins and a few plagioclase aggregates.
Pieces 2 to 4 contain less plagioclase aggregates, which could be due to its smaller size.

Core Photo



205-1253A-6R-5 (Section top: 408.46 mbsf)

UNIT 4A: GABBRO

Pieces: 1-2

Color: Gray

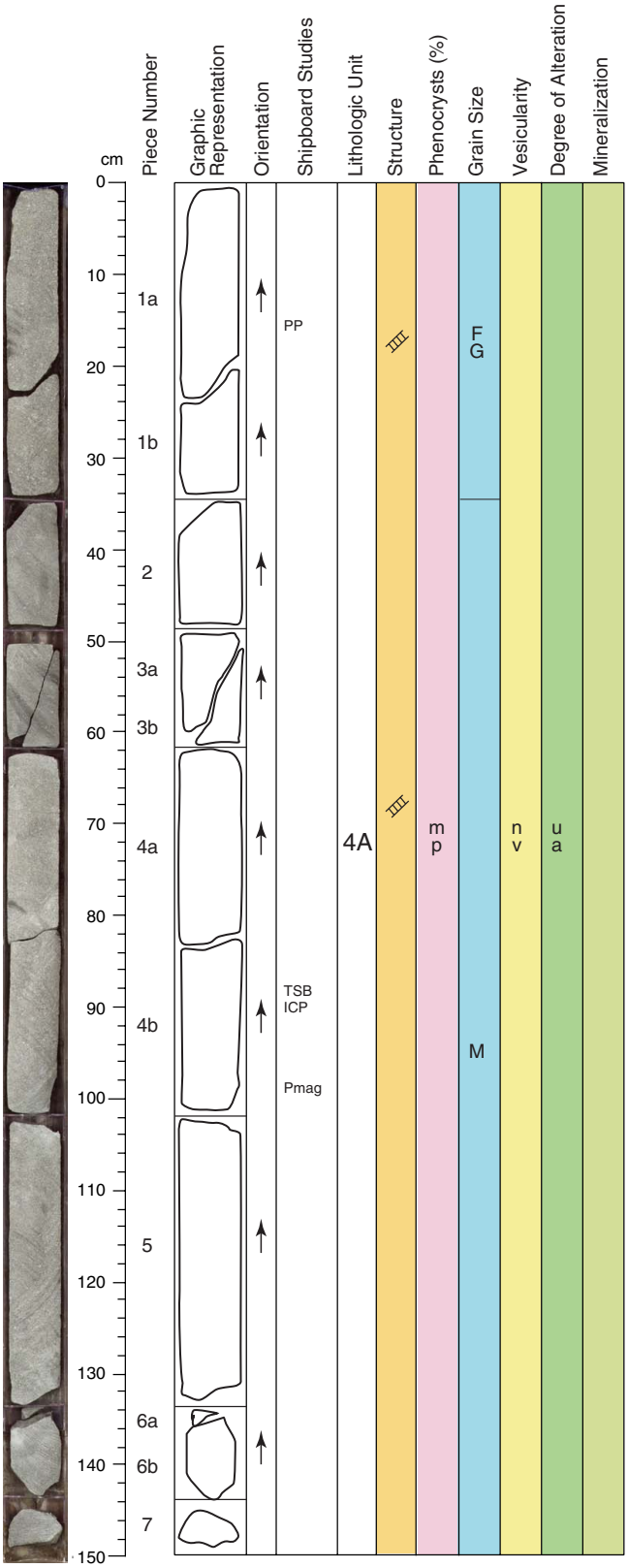
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 4 mm as laths or aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%
Comments: Some plagioclases are altered to green clay.

Pyroxene Mode: 2%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Only one vein of 0.5 mm wide, at the top of Piece 1a, is filled with green clay (celadonite?).

ADDITIONAL COMMENTS:
Alteration restricted to the veins and a few plagioclase aggregates.

Core Photo



205-1253A-6R-6 (Section top: 409.84 mbsf)

UNIT 4A: GABBRO

Pieces: 1-7

Color: Gray

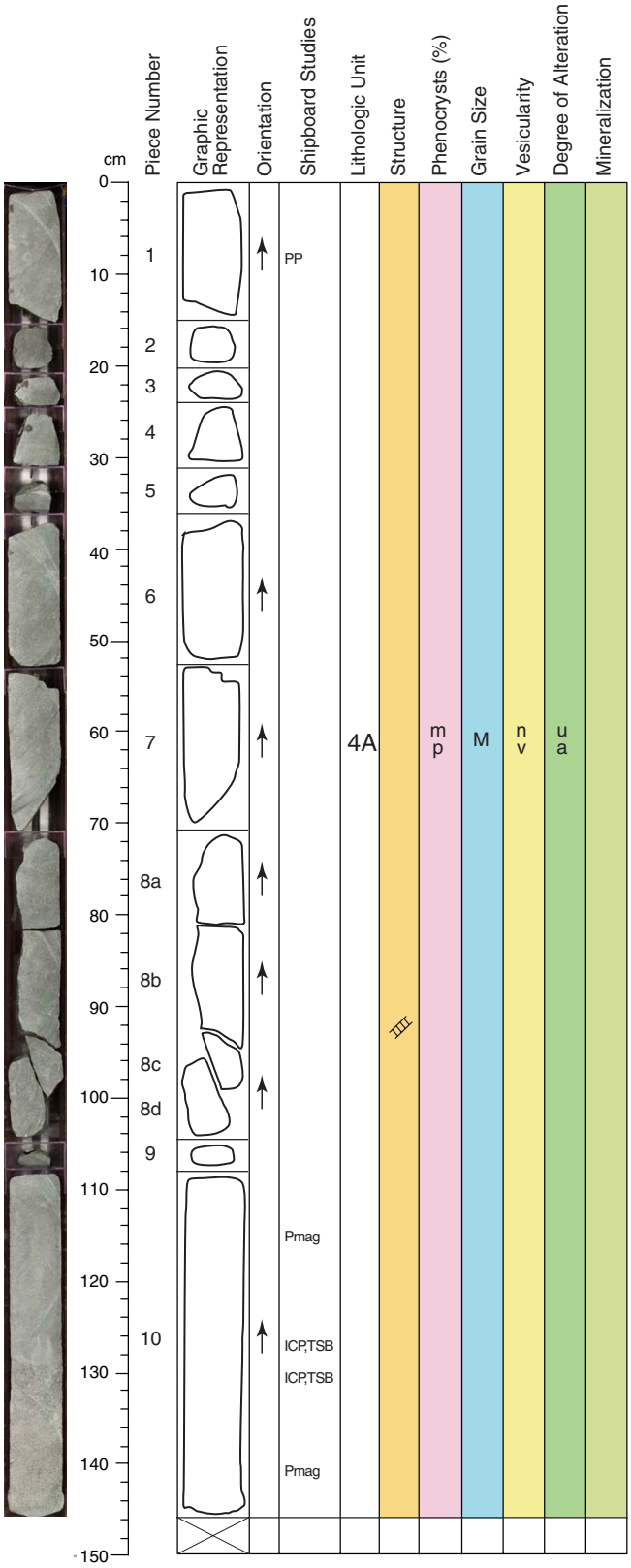
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 6 mm as laths or aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: In a few cases, plagioclase aggregates are altered to green clay.

Pyroxene Mode: 2%.
Crystal size: Up to 1.5 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: 2 veins, within Pieces 1a and 4a of 1 mm wide at the top of Piece 1a, are filled with green clay (celadonite?).

ADDITIONAL COMMENTS:
Alteration restricted to the veins and a few plagioclase aggregates.
Upper section is slightly more altered.
Change in grain size (from fine-grained to microcrystalline) towards the bottom from Piece 2.

Core Photo



205-1253A-7R-1 (Section top: 413.3 mbsf)

UNIT 4A: GABBRO

Pieces: 1-10

Color: Gray

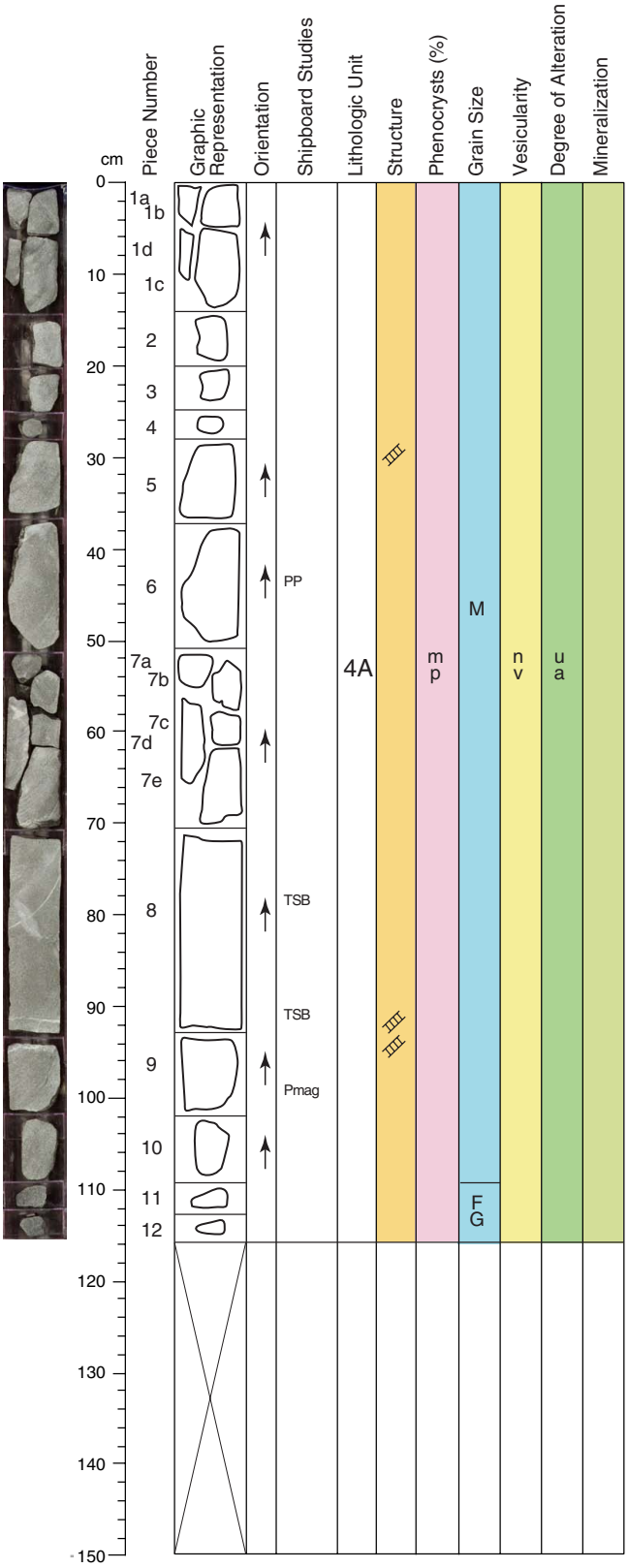
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 5 mm as laths or aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: In a few cases, plagioclase aggregates are altered to light-gray brownish clay.

Pyroxene Mode: 2%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Some are associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Only one vein is observed within this section. Due to its small size, filling identification is impossible.

ADDITIONAL COMMENTS:
Very rare alteration restricted to plagioclase laths and aggregates.
Change in the groundmass of Piece 10 (129-146 cm):
1. Cumulate from 129-139 cm, variation in color from light gray to brownish-gray, and in grain size (microcrystalline to cryptocrystalline);
2. Light microcrystalline groundmass from 134 to 137 cm;
3. Gray-light brown fine-grained gabbro from 137-140 cm, 10% pyroxene (1-mm-size, euhedral); 4. Microcrystalline to fine-grained gabbro from 140-144 cm, light gray-brownish.

Core Photo



205-1253A-7R-2 (Section top: 414.77 mbsf)

UNIT 4A: GABBRO

Pieces: 1-12

Color: Gray

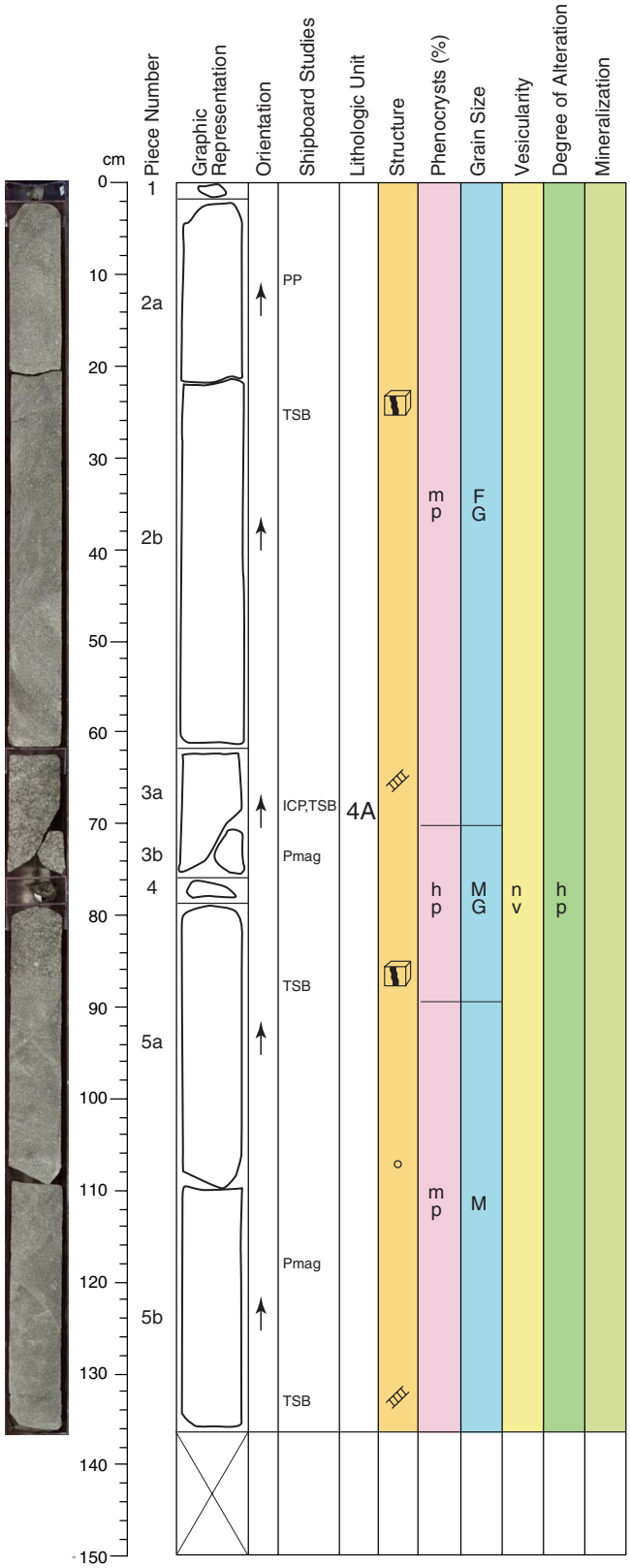
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as laths or aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.:

Pyroxene Mode: 3%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Higher proportion of pyroxene within Piece 11 (10%).

SECONDARY MINERALOGY:
Veins: Vein in Piece 5 is 1 mm wide, filled with green clay. Second vein in Piece 8 is up to 3 mm wide with connection to another vein in Piece 9, forming a vein network. This vein is filled with gray-white microcrystalline groundmass.

ADDITIONAL COMMENTS:
Occurrence of microcrystalline gabbro as a pocket within “coarser” microcrystalline gabbro. Contact is sharp.

Core Photo



205-1253A-8R-1 (Section top: 416.0 mbsf)

UNIT 4A: GABBRO

Pieces: 1-5

Color: Gray

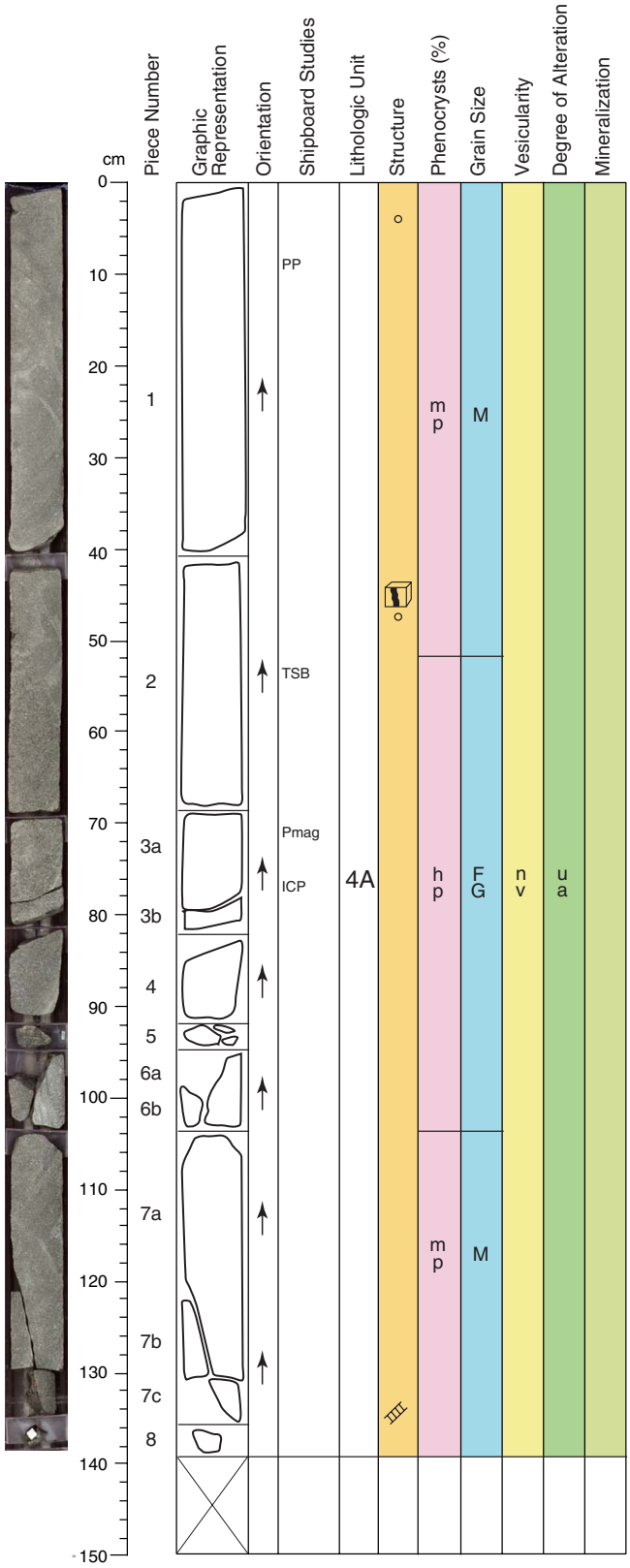
PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Pieces 1 and 2.
5% in Pieces 3, 4, and upper part of 5a.
3% in lower part of 5a and Piece 5b.
Crystal size: Up to 3 mm mainly as laths but also as aggregates in Pieces 1 and 2.
Up to 4 mm mainly as laths but also as aggregates in Pieces 3, 4, and upper part of 5a.
Up to 2 mm in lower part of 5a and 5b.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 5% in Pieces 1 and 2.
8% in Pieces 3, 4, and 5.
1% in lower part of Piece 5a and Piece 5b.
Crystal size: Up to 1 mm in Pieces 1 and 2.
Up to 3 mm in Pieces 3, 4, and upper part of 5a.
Up to 0.5 mm in lower part of 5a and 5b.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Comments: Preferentially oriented along the contact in Pieces 1 and 2
Cumulate in Pieces 3, 4, and upper part of 5.

SECONDARY MINERALOGY:
Veins: In Piece 3 within highly phyric gabbro: small vein of microcrystalline gabbro with 2 mm-size pyroxene.

ADDITIONAL COMMENTS:
Magmatic contact within Pieces 2a and 5, probably defining a limit of subunit. No plagioclase phenocrysts are found close to the magmatic contact. We observed a progressive decrease of mineral size from bottom to top. Small microcrystalline veins are found within the cumulate gabbro.

Core Photo



205-1253A-8R-2 (Section top: 417.38 mbsf)

UNIT 4A: GABBRO

Pieces: 1-8

Color: Gray

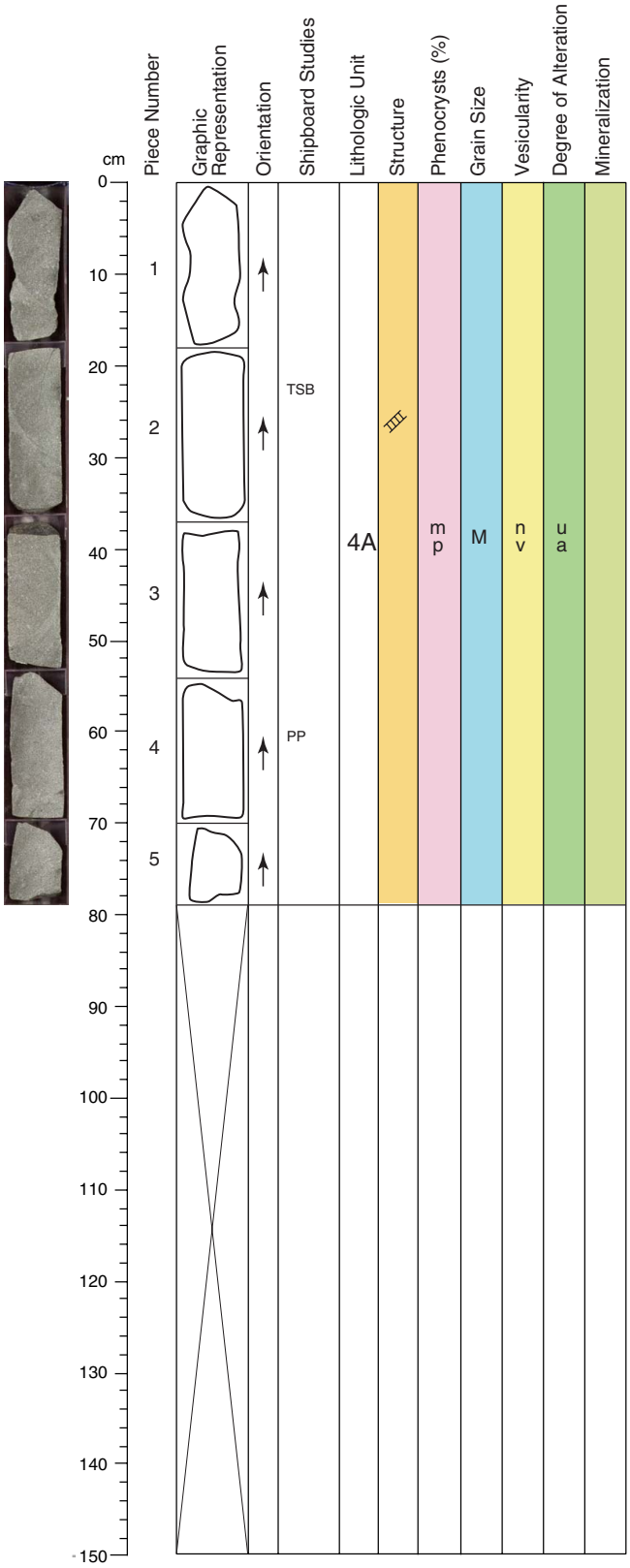
PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Pieces 1, 7, and 8; 8% in Pieces 2, 3, 5, and 6.
Crystal size: Up to 3 mm as aggregates, low amount of laths in Pieces 1, 7, and 8.
Up to 3 mm; mainly as laths in Pieces 2, 3, 5, and 6.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 2% in Pieces 1, 7, and 8; 5% in Pieces 2, 3, 5, and 6.
Crystal size: Up to 1 mm in Pieces 1, 7, and 8.
Up to 2 mm in Pieces 2, 3, 5, and 6.
Crystal shape: Subhedral in Pieces 1, 7, and 8.
Euhedral to subhedral in Pieces 2, 3, 5, and 6.
Crystal orientation: Random.
Comments: Preferentially oriented along the contact in Piece 2.

SECONDARY MINERALOGY:
Veins: Alteration localized to vein or small voids.

ADDITIONAL COMMENTS:
Magmatic contact within Piece 2 from a medium-grained highly phyric gabbro to a fine-grained moderately phyric gabbro.

Core Photo



205-1253A-8R-3 (Section top: 418.77 mbsf)

UNIT 4A: GABBRO

Pieces: 1-5

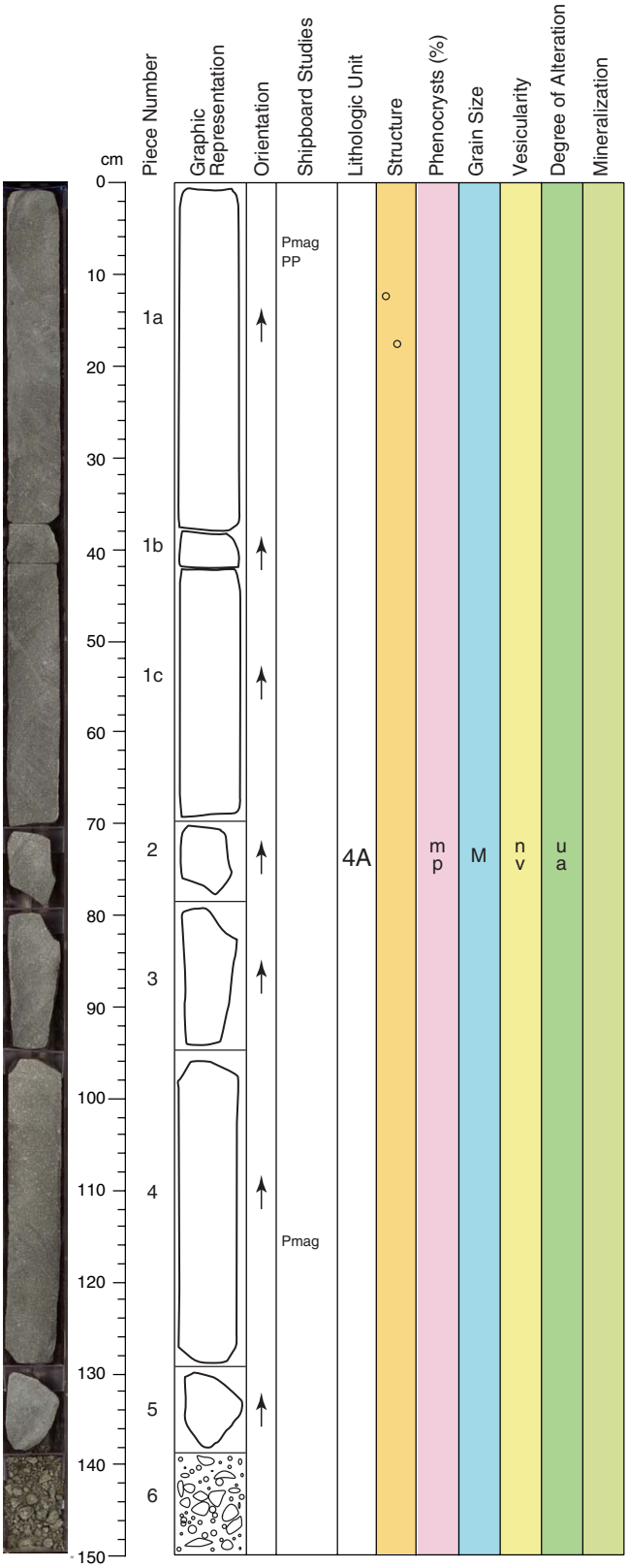
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm; mainly as aggregates, low amount of laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 1%.
Crystal size: <1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.:
Comments: Pyroxene more abundant than in Section 2.

SECONDARY MINERALOGY:
Veins: Only one vein is identified within Piece 2, going from 18-31 cm, <1 mm wide, possibly glassy.

Core Photo



205-1253A-8R-4 (Section top: 419.57 mbsf)

UNIT 4A: GABBRO

Pieces: 1-6

Color: Gray

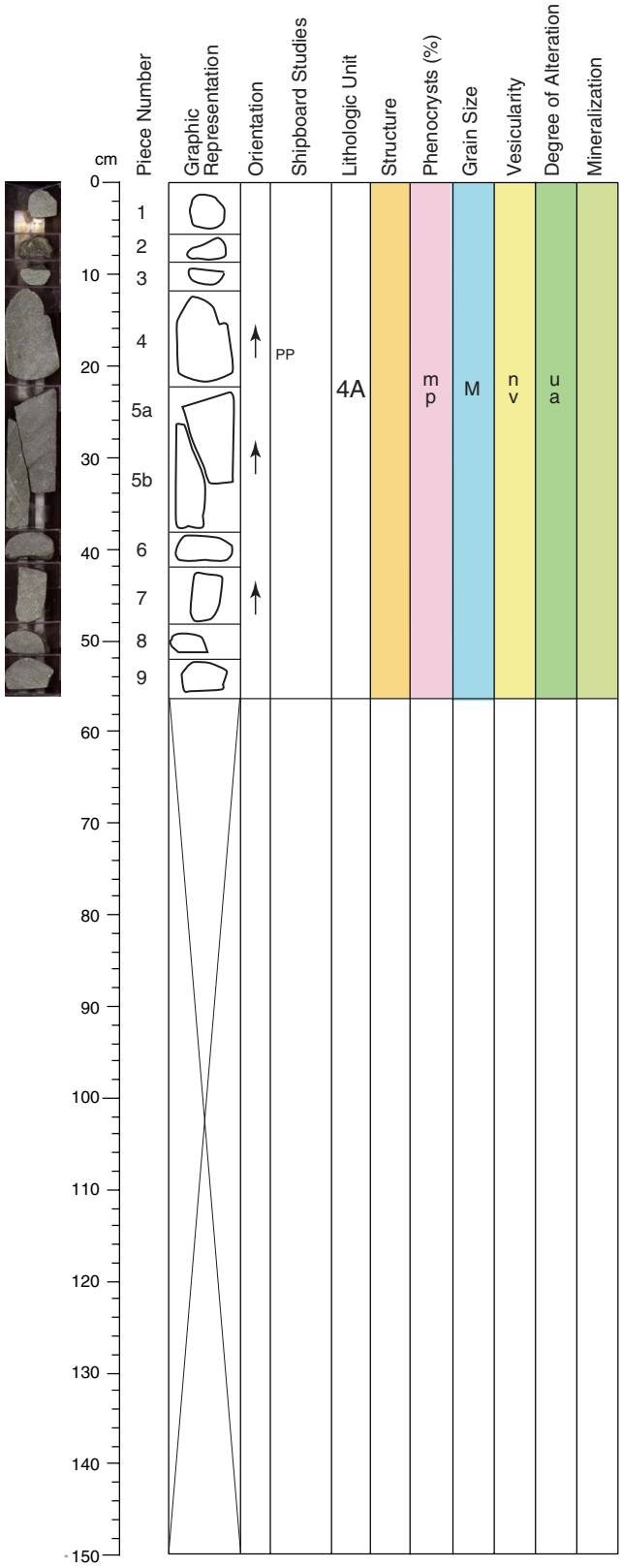
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 3 mm as aggregates and laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: More plagioclase aggregates than laths at the bottom of the section (Pieces 3 and 4).

Pyroxene Mode: 2%.
Crystal size: <1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.:

SECONDARY MINERALOGY:
Veins: Voids filled with zeolites and clays, 4 mm in diameter in Piece 1.

ADDITIONAL COMMENTS:
Piece 6: only gravel

Core Photo



205-1253A-9R-1 (Section top: 423.3 mbsf)

UNIT 4A: GABBRO

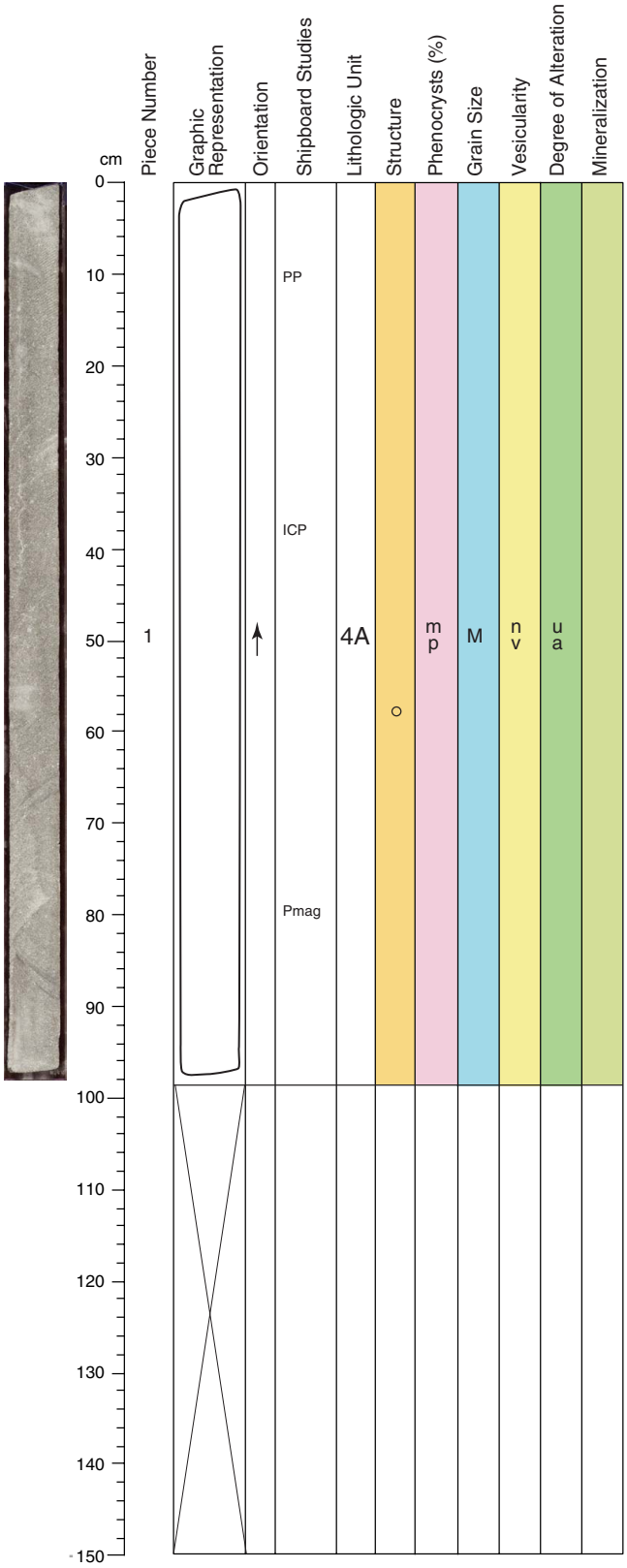
Pieces: 1-9

Color: Gray

PRIMARY MINERALOGY:
- Plagioclase Mode: 5%.
  - Crystal size: Up to 4 mm as aggregates and laths.
  - Crystal shape: Subhedral.
  - Crystal orientation: Random.
  - Percent replacement: <1%.
  - Comments: Very rare replacement of plagioclase aggregates by gray-brownish clay.
- Pyroxene Mode: 2%.
  - Crystal size: ~1 mm.
  - Crystal shape: Subhedral to anhedral.
  - Crystal orientation: Random.

SECONDARY MINERALOGY:
- Total%: <1%.
- Veins: Very rare low alteration is restricted to some plagioclase aggregates, which exhibit a light gray-brownish color, probably clay or a mixture of partly altered plagioclase and clay.

Core Photo



205-1253A-9R-2 (Section top: 423.86 mbsf)

UNIT 4A: GABBRO

Pieces: 1

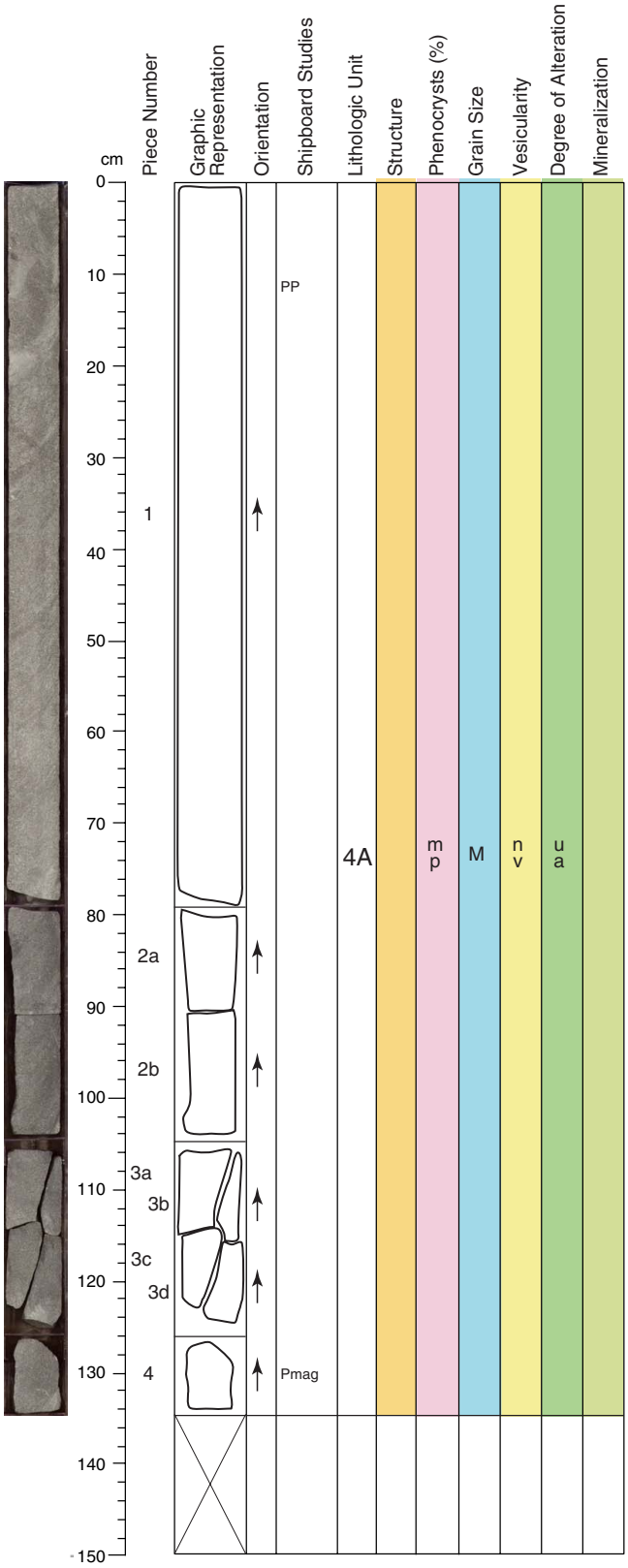
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 6 mm as aggregates and laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: At 13 cm downwards, higher abundance of plagioclase aggregates.

Pyroxene Mode: 2%.
Crystal size: ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Total%: <1%.

Core Photo



205-1253A-9R-3 (Section top: 424.85 mbsf)

UNIT 4A: GABBRO

Pieces: 1-4

Color: Gray

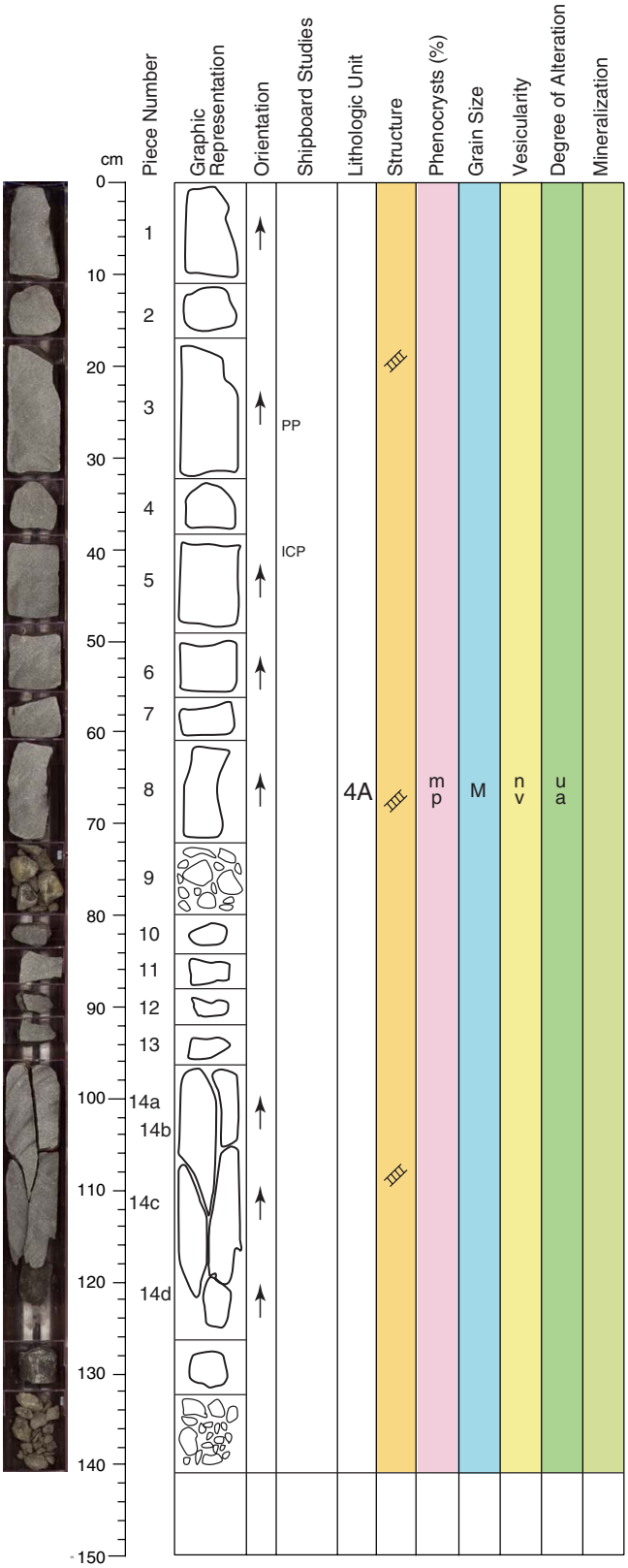
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 4 mm as aggregates and laths.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: A few aggregates are replaced by light gray clay or greenish gray clay.

Pyroxene Mode: 2%.
Crystal size: ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Often associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.

ADDITIONAL COMMENTS:
Some plagioclase aggregates are replaced by light gray or greenish gray clays.

Core Photo



205-1253A-9R-4 (Section top: 426.21 mbsf)

UNIT 4A: GABBRO

Pieces: 1-16

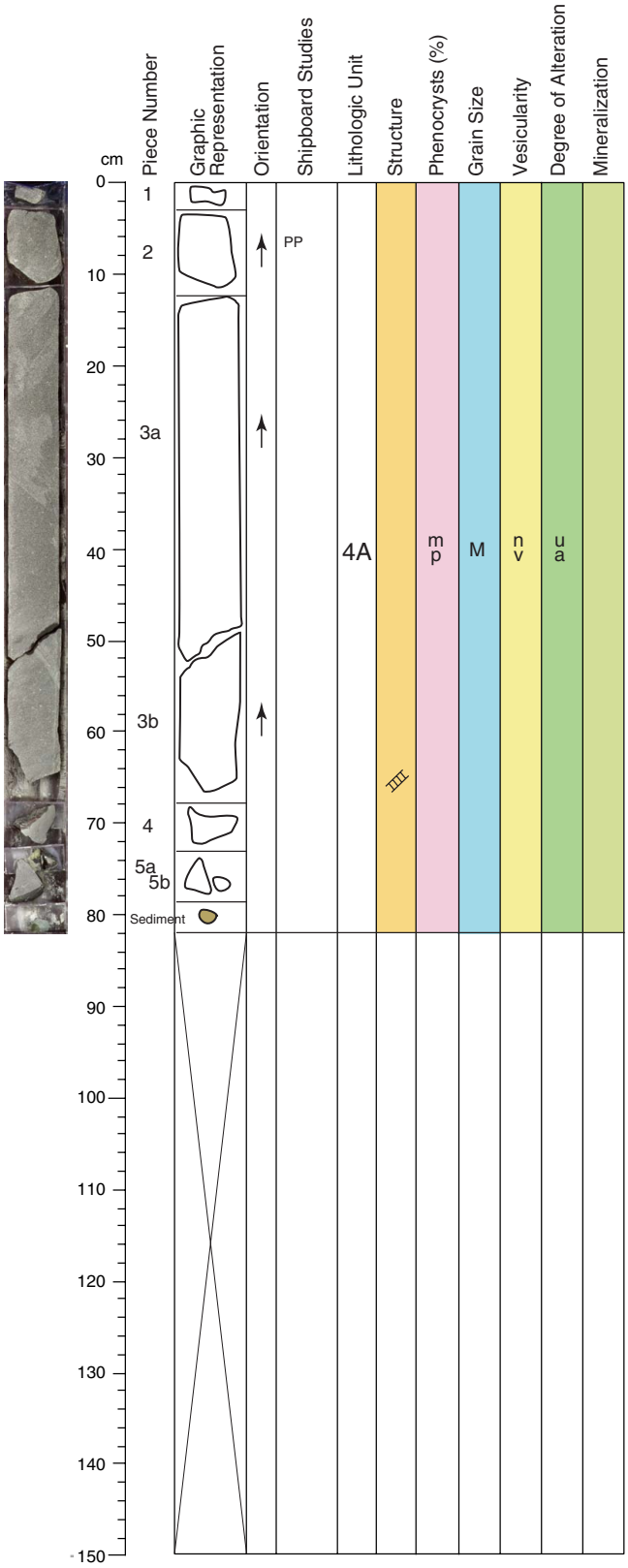
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 4 mm as aggregates and laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some aggregates are partly replaced by light gray clay or greenish gray clay.

Pyroxene Mode: 2%.
Crystal size: ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Some pyroxenes are associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Only 3 small veins are observed in this section, which are probably filled with zeolite. Some plagioclase aggregates are replaced by light gray or greenish gray clays. Zeolite occurs probably in veins.

Core Photo



205-1253A-10R-1 (Section top: 429.9 mbsf)

UNIT 4A: GABBRO

Pieces: 1-5

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as aggregates and laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: More aggregates at the top of the section.

Pyroxene Mode: 5%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Finer microcrystalline groundmass within Pieces 4 and 5.
Piece 6 is sediment. Baked sediment in contact of gabbro.

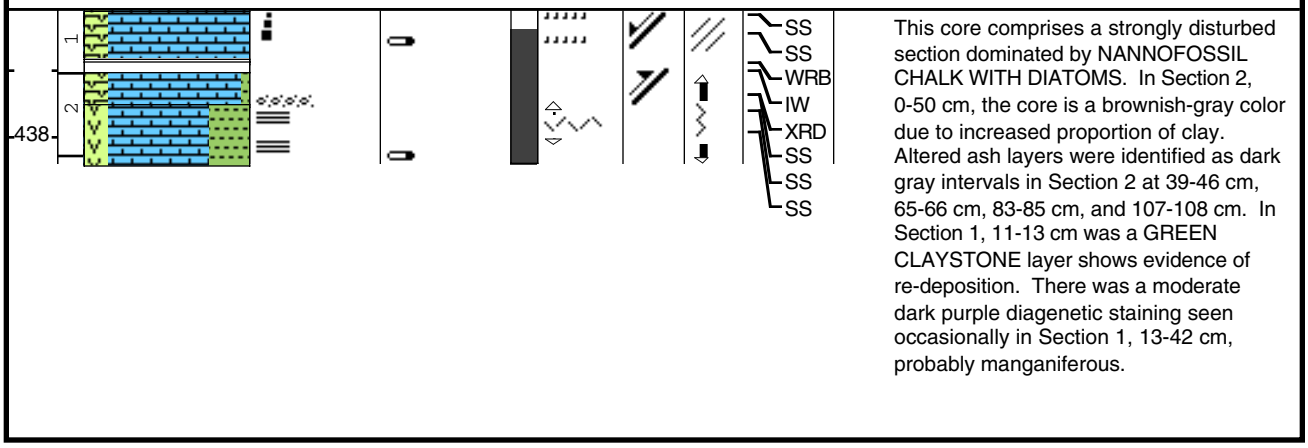
Core Photo

Site 1253 Hole A Core 10R Cored 429.9-436.1 mbsf

METERS	SECTION	GRAPHIC LITH.	STRUCTURE	ICHNO.	BIOTURB.	ACCESSORIES	FRACTURES	DISTURB.	SAMPLE	DESCRIPTION
432	1								HS SS XRD IW WRB SS SS	Core comprises fine grained GABBRO (see Hard Rock VCD for Description) in Section 1, underlain by a heavily disturbed section of fine grained, clayey redeposited carbonates, with greenish PACKSTONE WITH CLAY forming the upper 40 cm, and underlain by a light grayish CALCITE-RICH NANNOFOSSIL CHALK. Section 2 is also marked by a black layer of altered VOLCANIC ASH NANNOFOSSIL AND CLAY MIXED SEDIMENT, originally an ash bed at 85-88 cm. Section 2, 106-111 cm comprises a biscuit of dark green claystone, apparently a drilling anomaly, not part of the original stratigraphy. The sediment shows a irregular lamination, partly as a result of bioturbation. The bedding shows a steep dip, cut by a sub-horizontal truncating, erosion surface at Section 2, 79 cm.

Core Photo

Site 1253 Hole A Core 11R Cored 436.1-442.0 mbsf



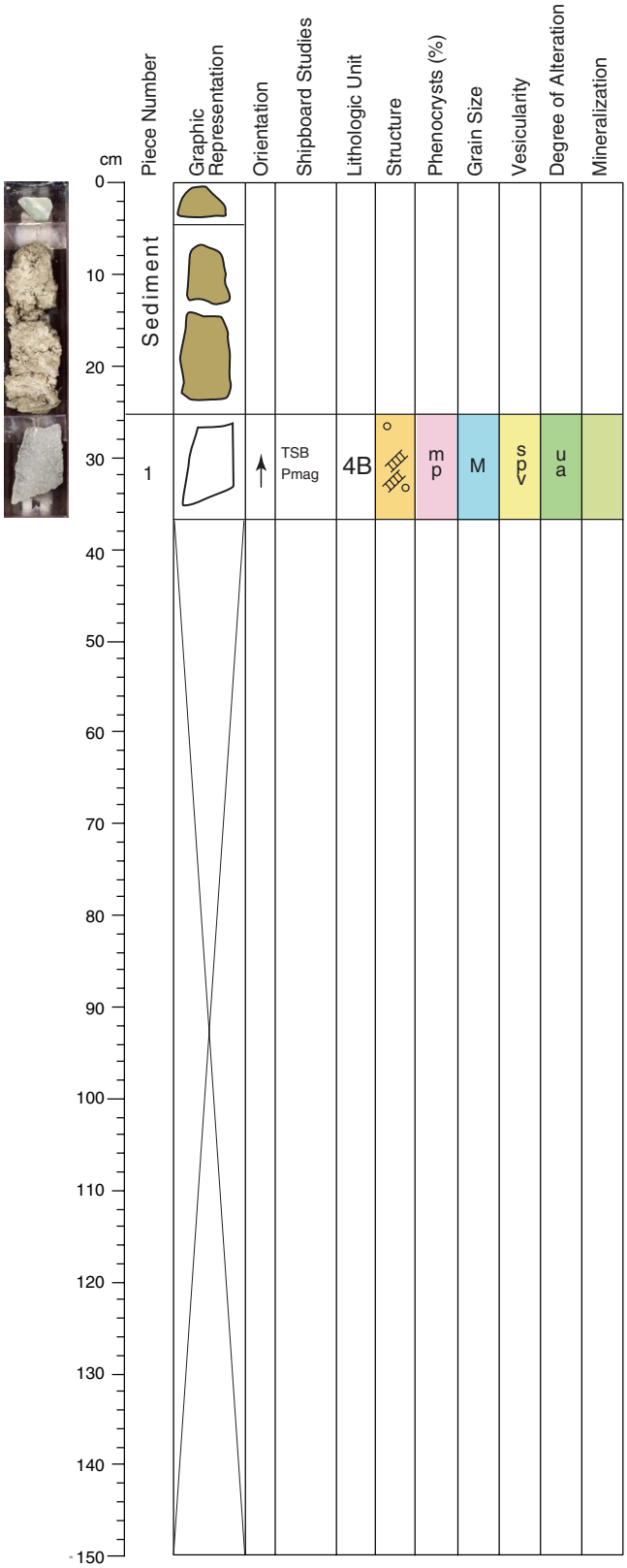
This core comprises a strongly disturbed section dominated by NANNOFOSSIL CHALK WITH DIATOMS. In Section 2, 0-50 cm, the core is a brownish-gray color due to increased proportion of clay. Altered ash layers were identified as dark gray intervals in Section 2 at 39-46 cm, 65-66 cm, 83-85 cm, and 107-108 cm. In Section 1, 11-13 cm was a GREEN CLAYSTONE layer shows evidence of re-deposition. There was a moderate dark purple diagenetic staining seen occasionally in Section 1, 13-42 cm, probably manganiferous.

Core Photo

Site 1253 Hole A Core 12R Cored 442.0-450.6 mbsf

METERS	SECTION	GRAPHIC LITH.	STRUCTURE	ICHNO.	BIOTURB.	ACCESSORIES	FRACTURES	DISTURB.	SAMPLE	DESCRIPTION
	1								SS	Section 1, 0-6 cm comprises a well lithified light green CLAYSTONE, underlain at 6-26 cm by NANNOFOSSIL CHALK WITH FORAMINIFERS. This sediment is massive and light grayish brown, with fragments of gabbro around the edge along its length, probably emplaced during drilling. It is strongly disturbed during recovery, with no structures or bioturbations visible. The base of core, below 26 cm comprises massive fine-grained GABBRO (see Hard Rock VCD for Description).

Core Photo



205-1253A-12R-1 (Section top: 442.0 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 7%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some aggregates are altered to clay.

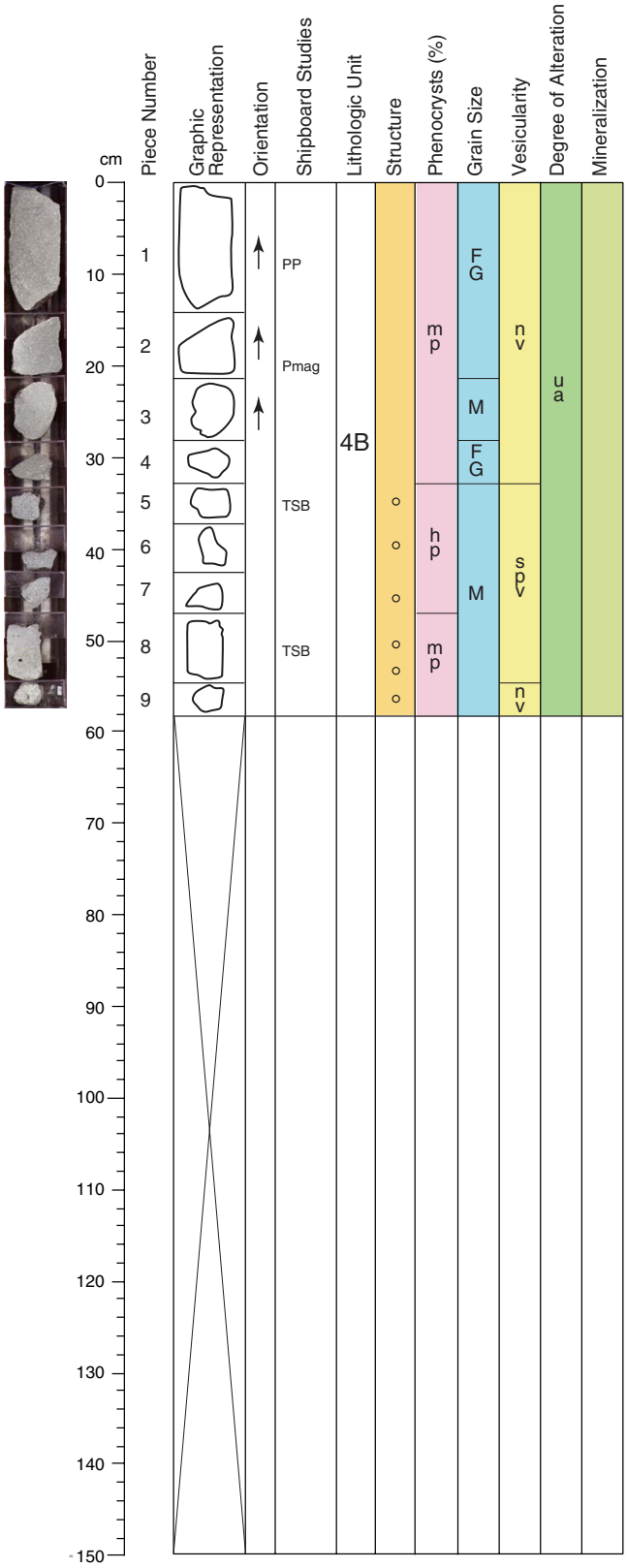
Pyroxene Mode: 2%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

Olivine Mode: <1%.
Crystal size: <0.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement:
Comments: Very small amount of olivine.

SECONDARY MINERALOGY:
Total%: <1%
Veins: Two veins, both are filled with very fine dark material, probably cryptocrystalline groundmass and altered glass.
Comments: Alteration restricted to plagioclase aggregates.

ADDITIONAL COMMENTS:
Contact of gabbro and sediment. In Piece 1 sediment is baked at the top of the gabbro. Two big voids: 0.5 mm and 0.3 mm in diameter. The smaller void contains sediment; the big one remains open. Smaller voids are filled with sediment or clay or remain open.

Core Photo



205-1253A-13R-1 (Section top: 450.6 mbsf)

UNIT 4B: GABBRO

Pieces: 1-9

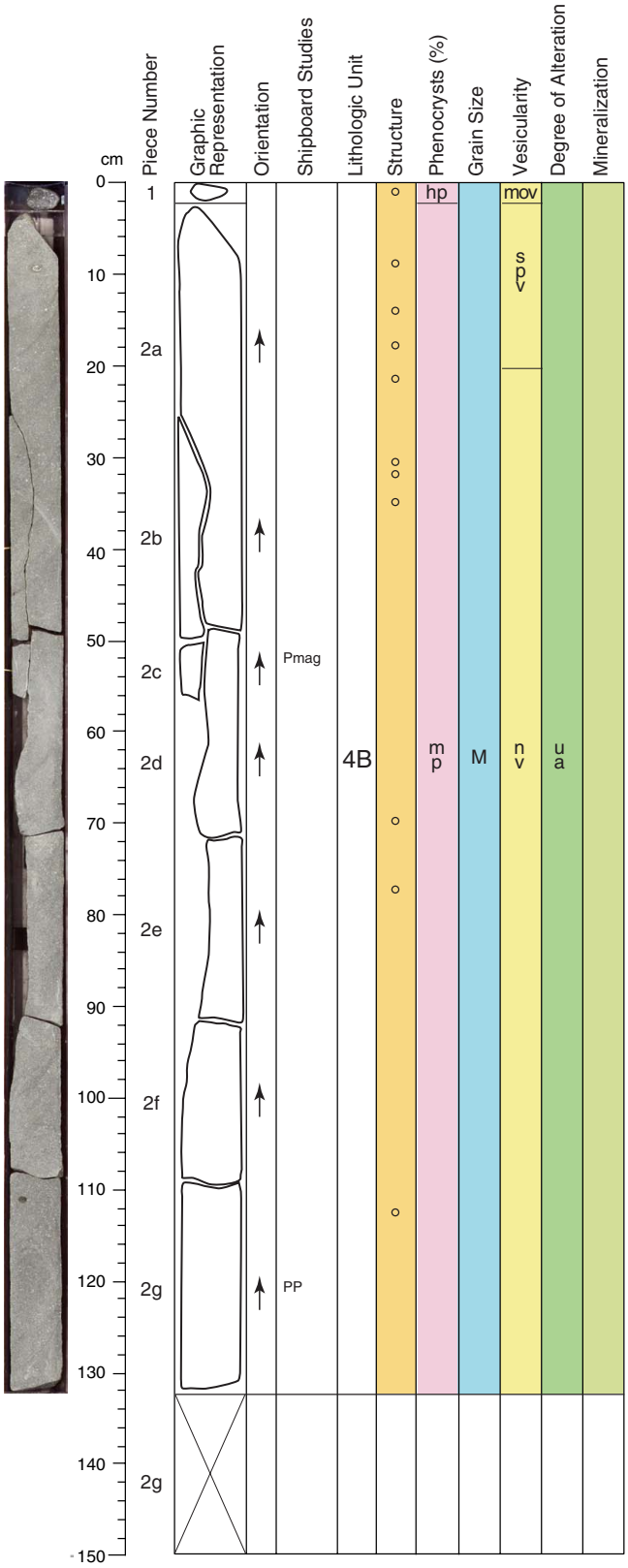
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 4% in Pieces 1 to 4, 8, and 9; 5% in Pieces 5 to 7.
Crystal size: 3 mm in pieces 1 to 4, 8, and 9.
Up to 4 mm in Pieces 5 to 7.
Crystal shape: Euhedral to subhedral in Pieces 1 to 4, 8, and 9.
Euhedral in% in Pieces 5 to 7.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Aggregates with a large proportion of pyroxene in Pieces 1 to 4, 8, and 9. In Pieces 5 to 7 plagioclase is only abundant as aggregates.

Pyroxene Mode: 6% in Pieces 1 to 4, 8 and 9; 7% in Pieces 5 to 7.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Mainly associated with plagioclase aggregates in Pieces 1 to 4, 8, and 9. In Pieces 5 to 7 partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Comments: Alteration limited to voids. Accumulation of voids with the highly phyric gabbro, either rounded or elongated, up to 1 cm, filled with clays.

Core Photo



205-1253A-14R-1 (Section top: 460.2 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

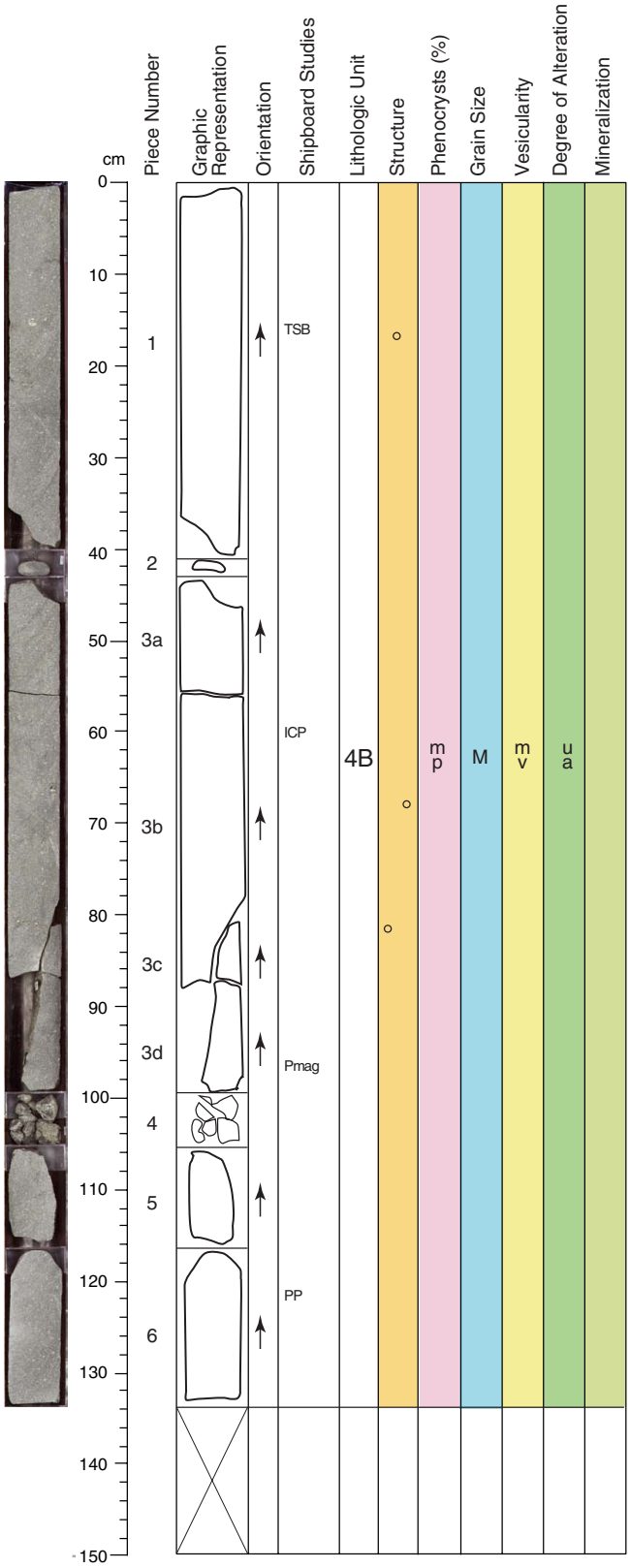
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 10% in Piece 1; approximately 7% in Piece 2.
Crystal size: 4 mm in Piece 1.
Up to 3 mm in Piece 2.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Aggregates in Piece 1. Less plagioclase aggregates towards the bottom in Piece 2, but still more plagioclase than pyroxene.

Pyroxene Mode: 5% in Piece 1.
About 1% at the top of Piece 2, increasing to 2% towards the bottom.
Crystal size: 1.5 mm in Piece 1.
Up to 1 mm in Piece 2.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: In Piece 2 pyroxenes are more and more associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Comments: Occurrence of many randomly distributed rounded voids (from 2 mm up to 1 cm), filled with zeolites and other secondary minerals

Core Photo



205-1253A-14R-2 (Section top: 461.53 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

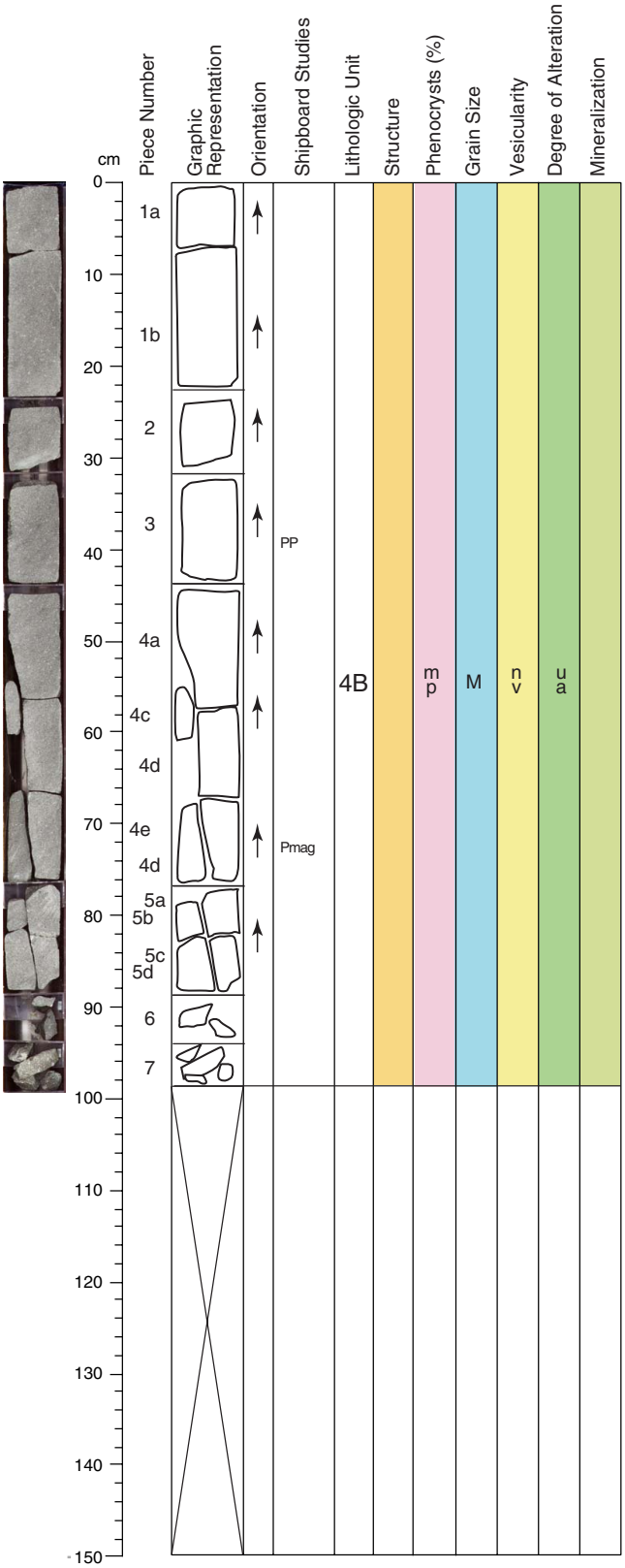
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 7%.
Crystal size: Up to 4 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: High abundance of aggregates associated with pyroxene.

Pyroxene Mode: 3%.
Crystal size: 3 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Mostly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Comments: Small amount of rounded voids filled with zeolites and clay, similar to previous section but much smaller (<2 mm diameter).

Core Photo



205-1253A-14R-3 (Section top: 462.88 mbsf)

UNIT 4B: GABBRO

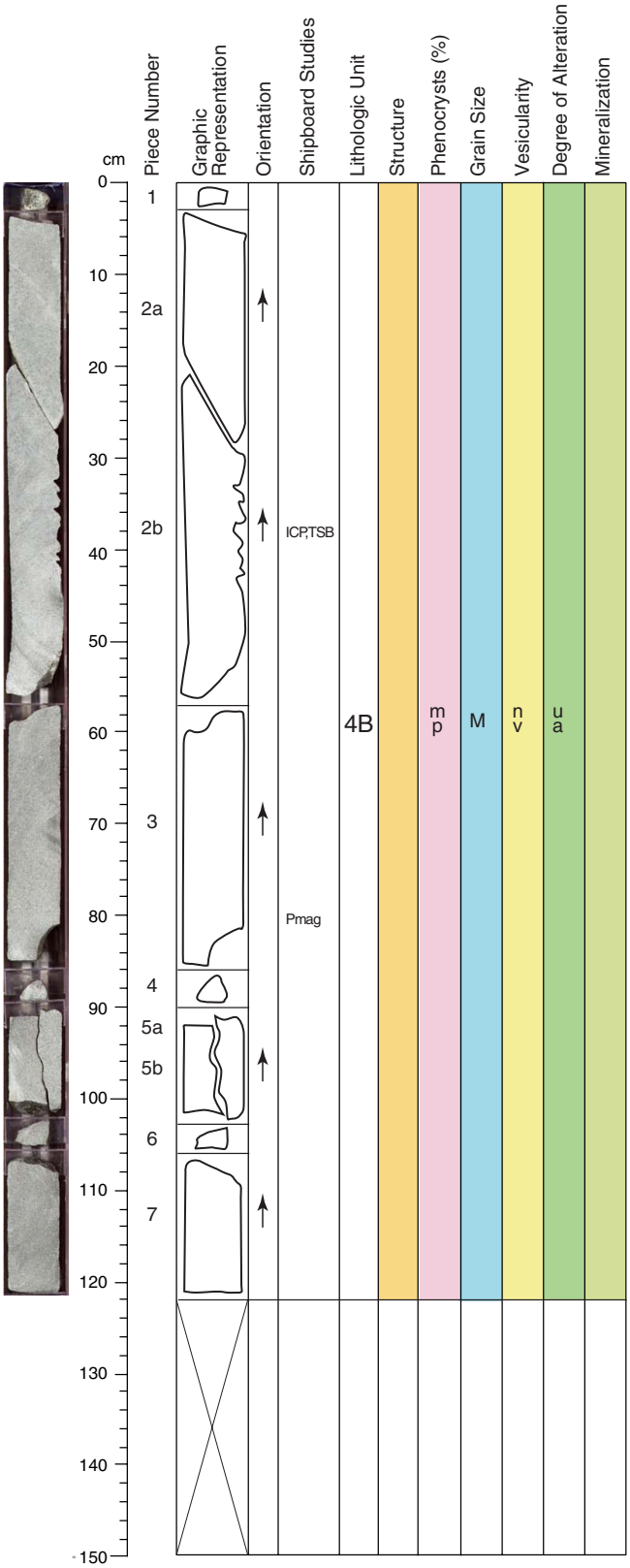
Pieces: 1-7

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Occurrence of aggregates; decreases towards the bottom.

Pyroxene Mode: 3%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Both as single grain and with plagioclase aggregates.

Core Photo



205-1253A-15R-1 (Section top: 464.2 mbsf)

UNIT 4B: GABBRO

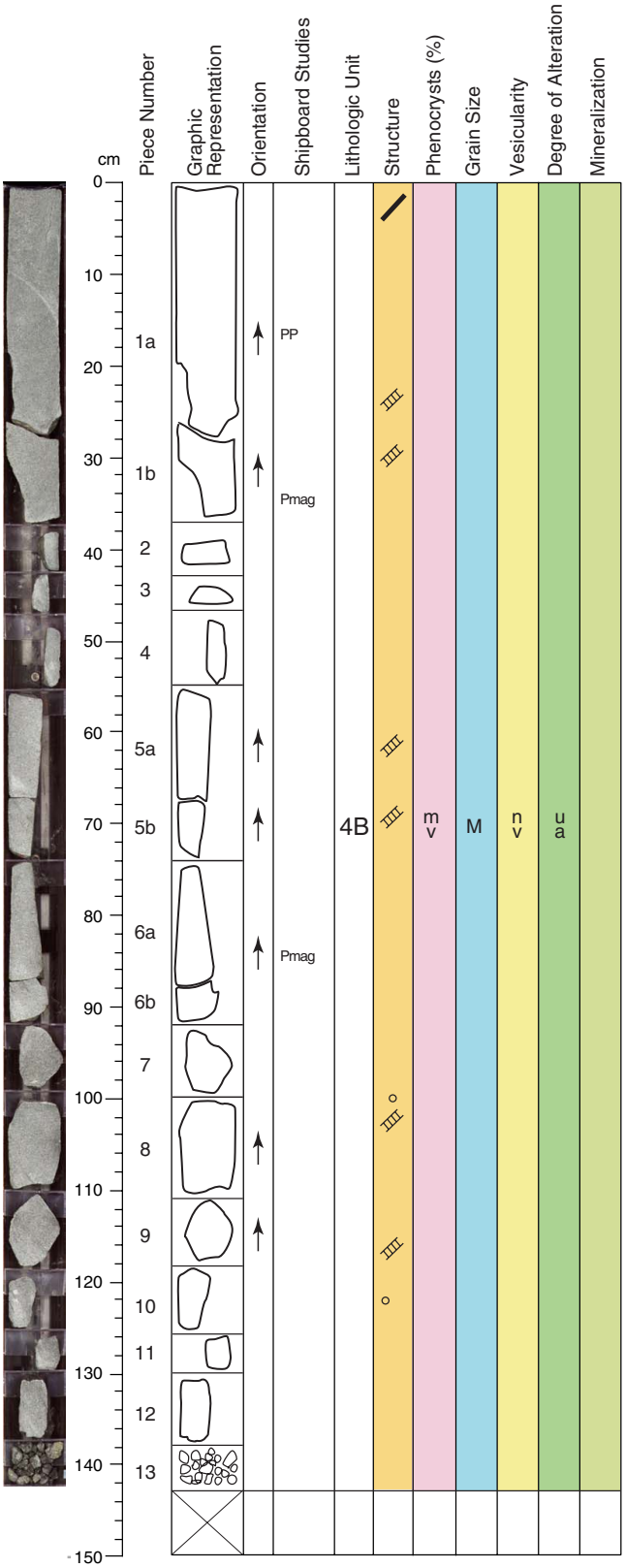
Pieces: 1-7

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2%.
Crystal size: Up to 1.5 mm.
Crystal shape: Euhedral.
Crystal orientation: Random.
Comments: Mainly as laths, almost no aggregates.

Pyroxene Mode: 8%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

Core Photo



205-1253A-15R-2 (Section top: 465.42 mbsf)

UNIT 4B: GABBRO

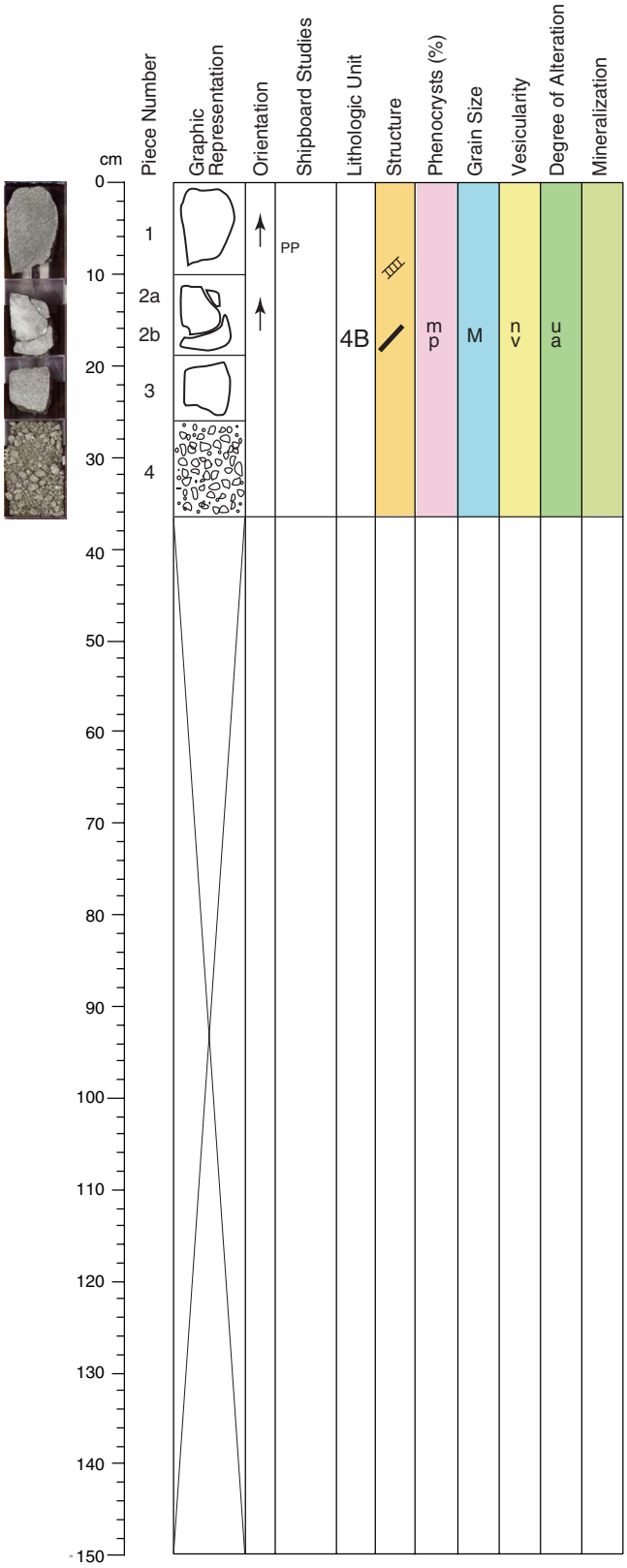
Pieces: 1-13

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 1%-2%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Mainly as laths, almost no aggregates.

Pyroxene Mode: 8%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Core Photo



205-1253A-15R-3 (Section top: 466.85 mbsf)

UNIT 4B: GABBRO

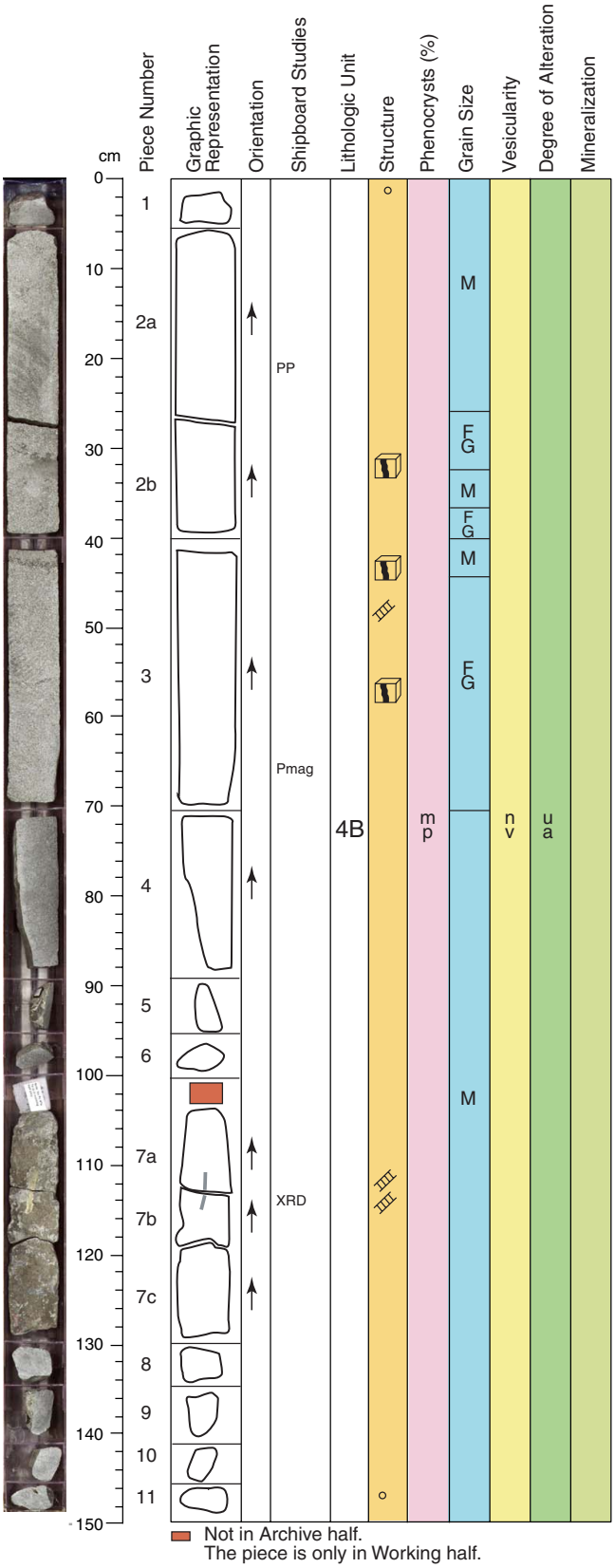
Pieces: 1-4

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 1%-2%.
Crystal size: Up to 0.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: As laths.

Pyroxene Mode: 5%.
Crystal size: 1 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random

Core Photo



205-1253A-16R-1 (Section top: 470.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-11

Color: Gray

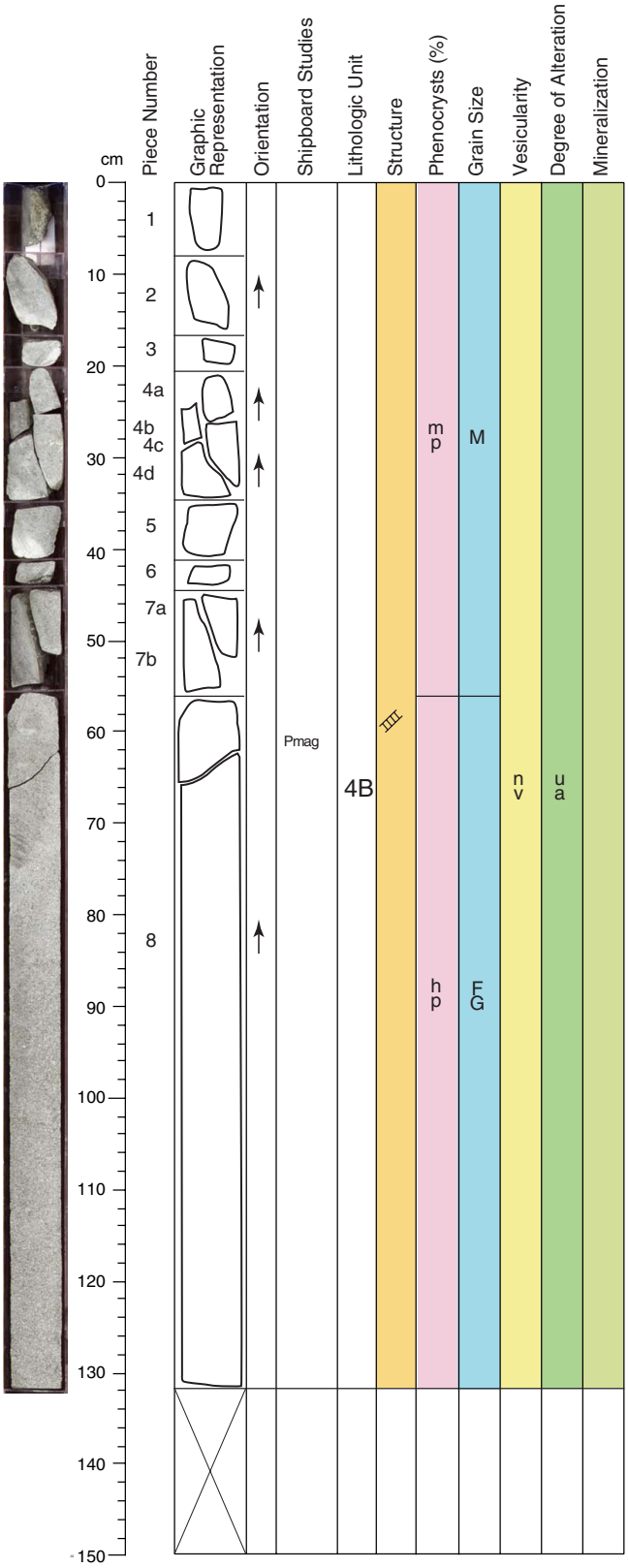
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some aggregates are altered to light gray brownish clay.

Pyroxene Mode: 5%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates. Greater abundance of pyroxene at magmatic contacts.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: A 6-cm-long vein (0.7 mm diameter) in Piece 7 is filled with light gray brownish clay or sediment. Smaller veins are probably filled with cryptocrystalline groundmass and altered glass.
Comments: Alteration is restricted to plagioclase aggregates and vein filling.

ADDITIONAL COMMENTS:
Magmatic contacts in Pieces 2b and 3. Greater abundance of pyroxene at the contacts. The grain size inside the cummulate is microcrystalline

Core Photo



205-1253A-16R-2 (Section top: 472.4 mbsf)

UNIT 4B: GABBRO

Pieces: 1-8

Color: Gray

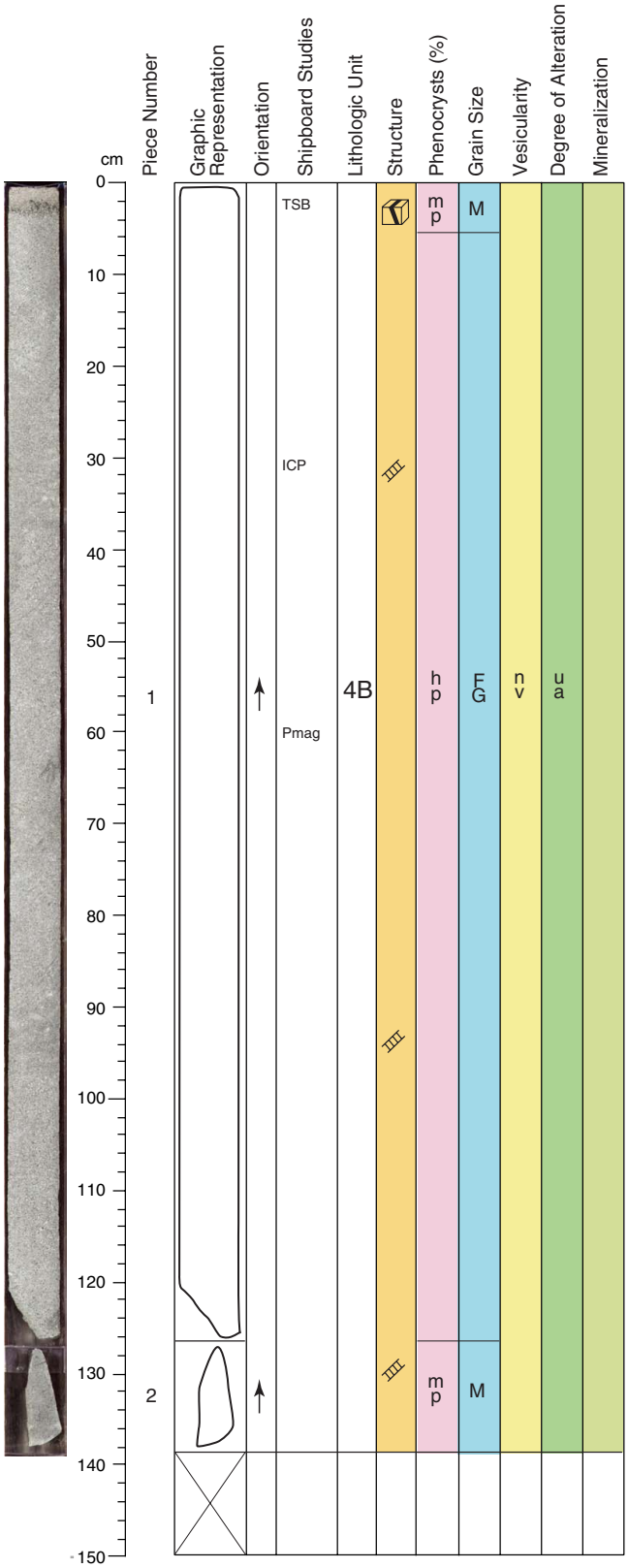
PRIMARY MINERALOGY:
Plagioclase Mode: 2% in Pieces 1 to 7; 8% in Piece 8.
Crystal size: Up to 2 mm in Pieces 1 to 7.
Up to 3 mm in Piece 8.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare aggregates in Pieces 1 to 7, higher abundance in Piece 8.

Pyroxene Mode: 3% in Pieces 1 to 7.
5% in Piece 8.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Only 1 vein filled with cryptocrystalline groundmass, altered glass, or clay.
Comments: Some plagioclase aggregates are altered to clay.

ADDITIONAL COMMENTS:
Change in grain size in Piece 7 (microcrystalline to fine grained) and higher abundance of phenocrysts (moderately to highly phyric). No magmatic contacts identified.

Core Photo



205-1253A-16R-3 (Section top: 473.73 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

Color: Gray

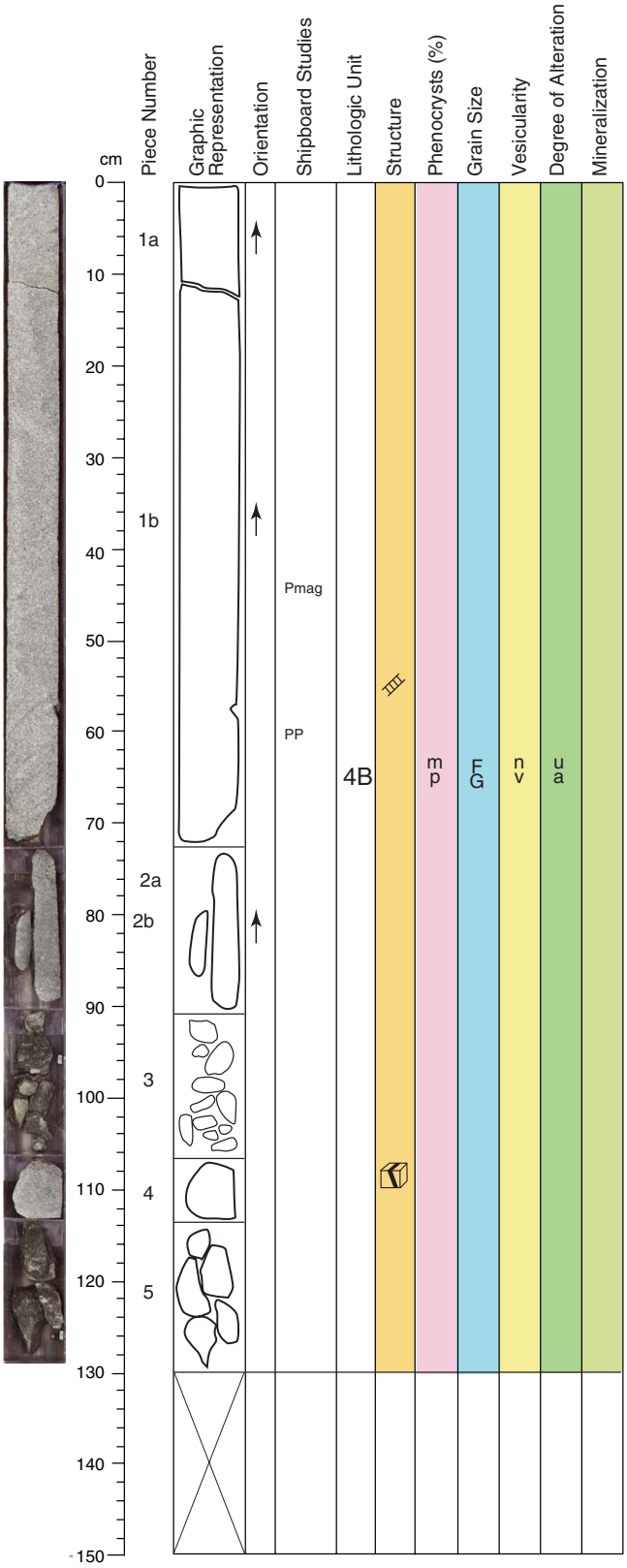
PRIMARY MINERALOGY:
Plagioclase Mode: 8%.
Crystal size: Up to 4 mm as laths and aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: <<1%.
Comments: Very rare replacement of plagioclase aggregates to clay.

Pyroxene Mode: 5% in Piece 1.
3% in Piece 2.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Higher abundance of pyroxene towards the bottom of Piece 1. Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Probably filled with a mixture of cryptocrystalline groundmass, altered glass, and clay.
Comments: Very rare abundance of clay altered from plagioclase aggregates.

ADDITIONAL COMMENTS:
Magmatic contact at the top of Piece 1. Change in color from light brownish-gray to gray towards the bottom of Piece 1. Higher abundance of pyroxene at the contact.

Core Photo



205-1253A-16R-4 (Section top: 475.12 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

Color: Gray

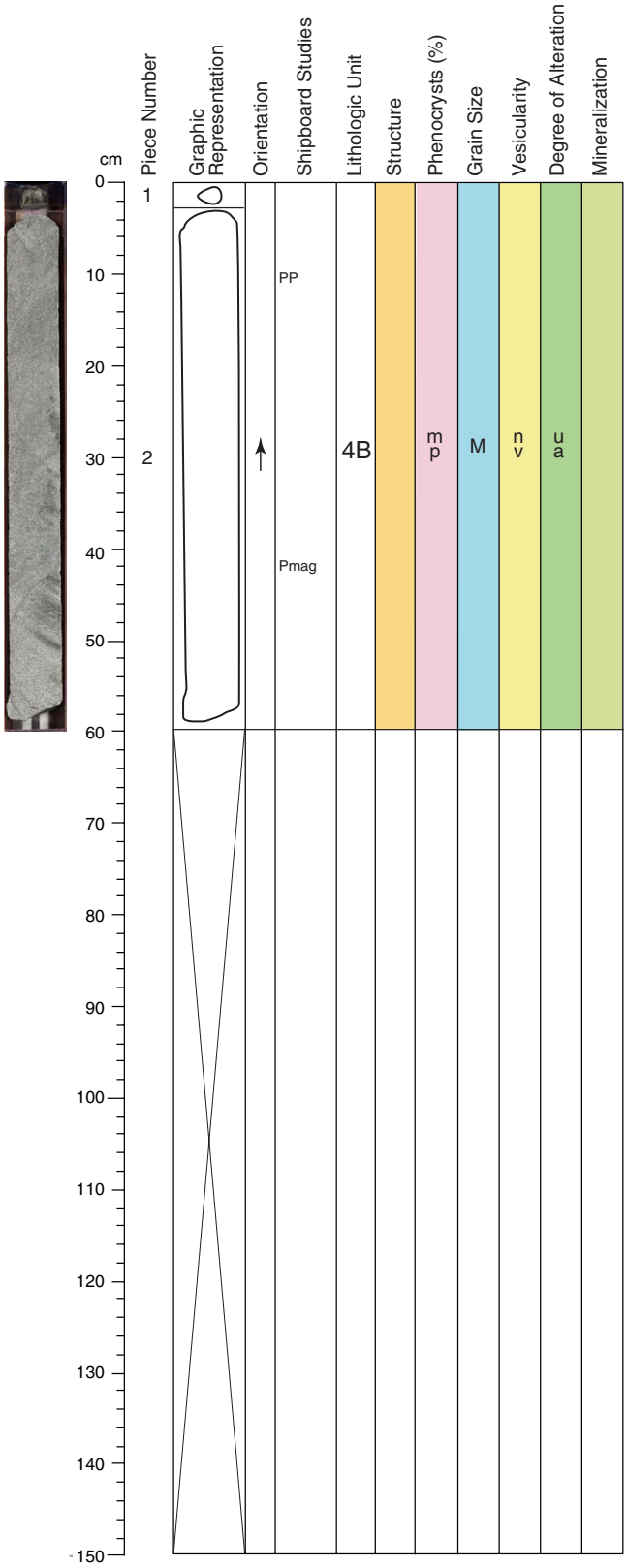
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 2%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Veins: Too small to identify vein fillings.

ADDITIONAL COMMENTS:
Magmatic contact at Piece 4. Higher abundance of pyroxene at the contact.

Core Photo



205-1253A-17R-1 (Section top: 476.5 mbsf)

UNIT 4B: GABBRO

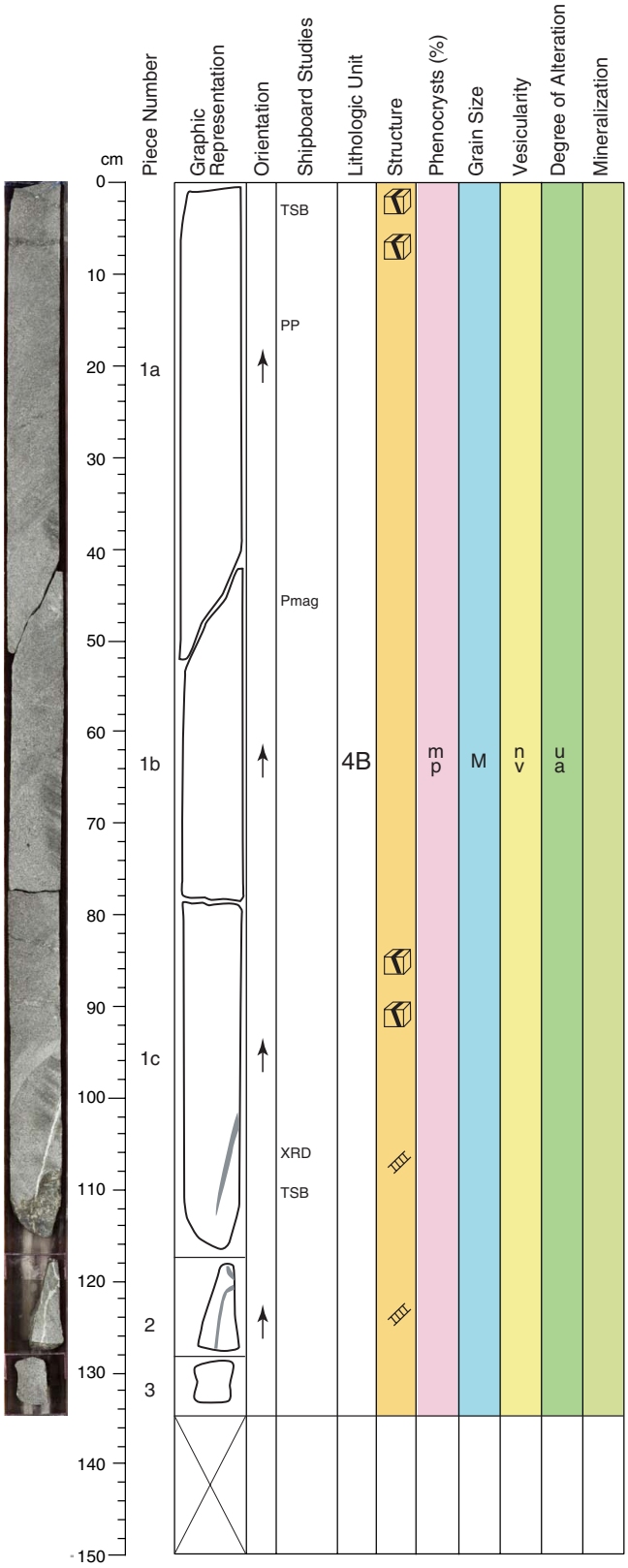
Pieces: 1-2

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Rare aggregates.

Pyroxene Mode: 1%.
Crystal size: 1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

Core Photo



205-1253A-17R-2 (Section top: 477.1 mbsf)

UNIT 4B: GABBRO

Pieces: 1-3

Color: Gray

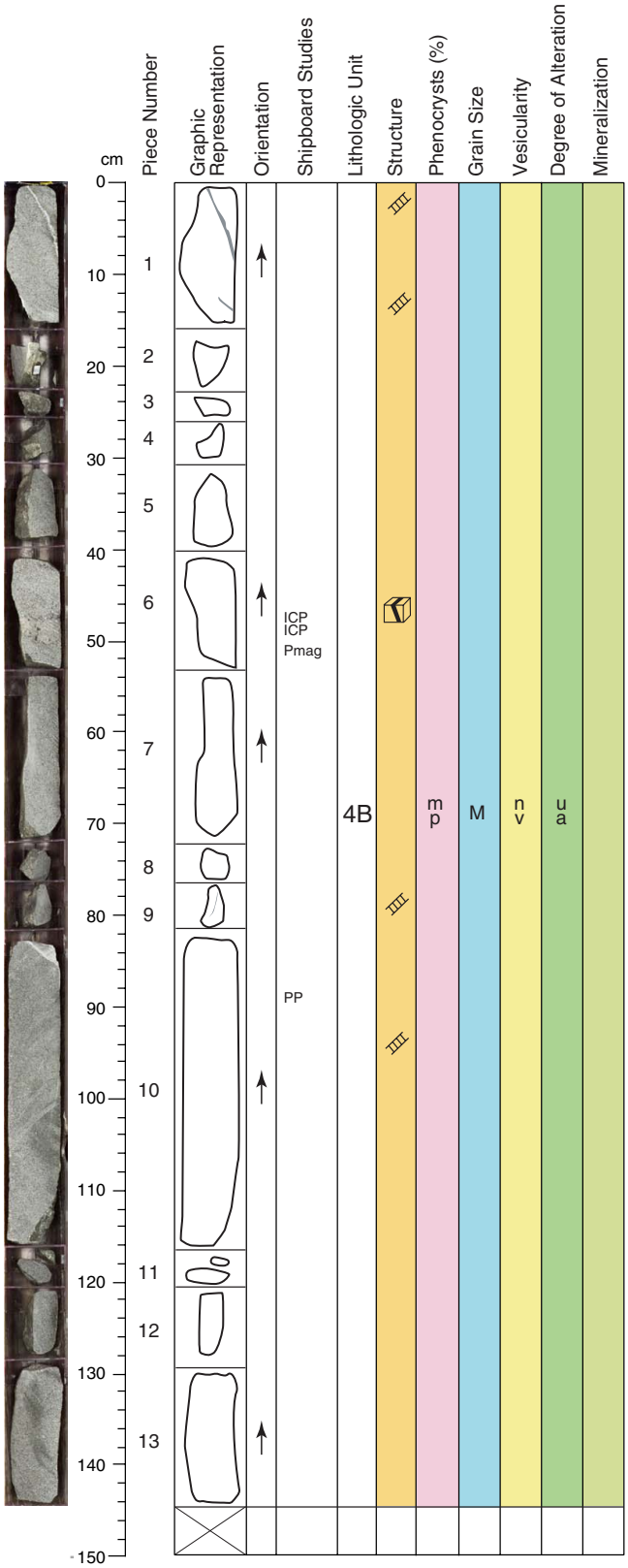
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Rare aggregates.

Pyroxene Mode: 1% in Piece 1a.
3% in identified 1b to 3.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Higher abundance towards the bottom of the section.

SECONDARY MINERALOGY:
Total%: <1%
Veins: 4 mm wide vein in Piece 1c filled with zeolite in the interior and cryptocrystalline groundmass or altered glass at the rim.
Comments: Some primary minerals are altered to clay.

ADDITIONAL COMMENTS:
Small magmatic contacts within Piece 1 with higher abundance of pyroxene.

Core Photo



205-1253A-17R-3 (Section top: 478.46 mbsf)

UNIT 4B: GABBRO

Pieces: 1-13

Color: Gray

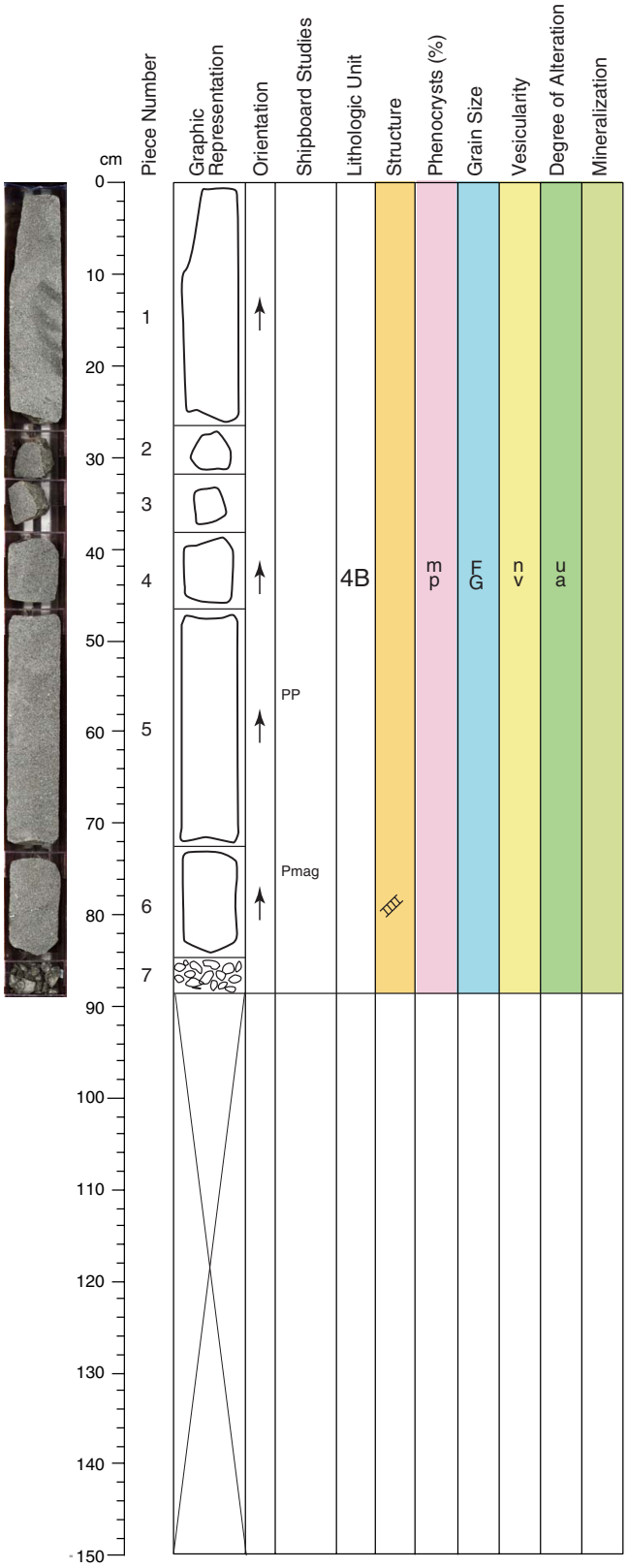
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Very rare aggregates.

Pyroxene Mode: 4%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Total%: <1%
Veins: Up to 4 mm wide vein in Piece 1 filled with zeolite and a cryptocrystalline/altered glass contact to the groundmass (see also 205-1253A-17R-2, Pieces1c and 2).
Comments: Alteration is restricted to veins.

ADDITIONAL COMMENTS:
Magmatic contact in Piece 6. Higher abundance of pyroxene between the two contacts with a finer groundmass in between.

Core Photo



205-1253A-17R-4 (Section top: 479.91 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

Color: Gray

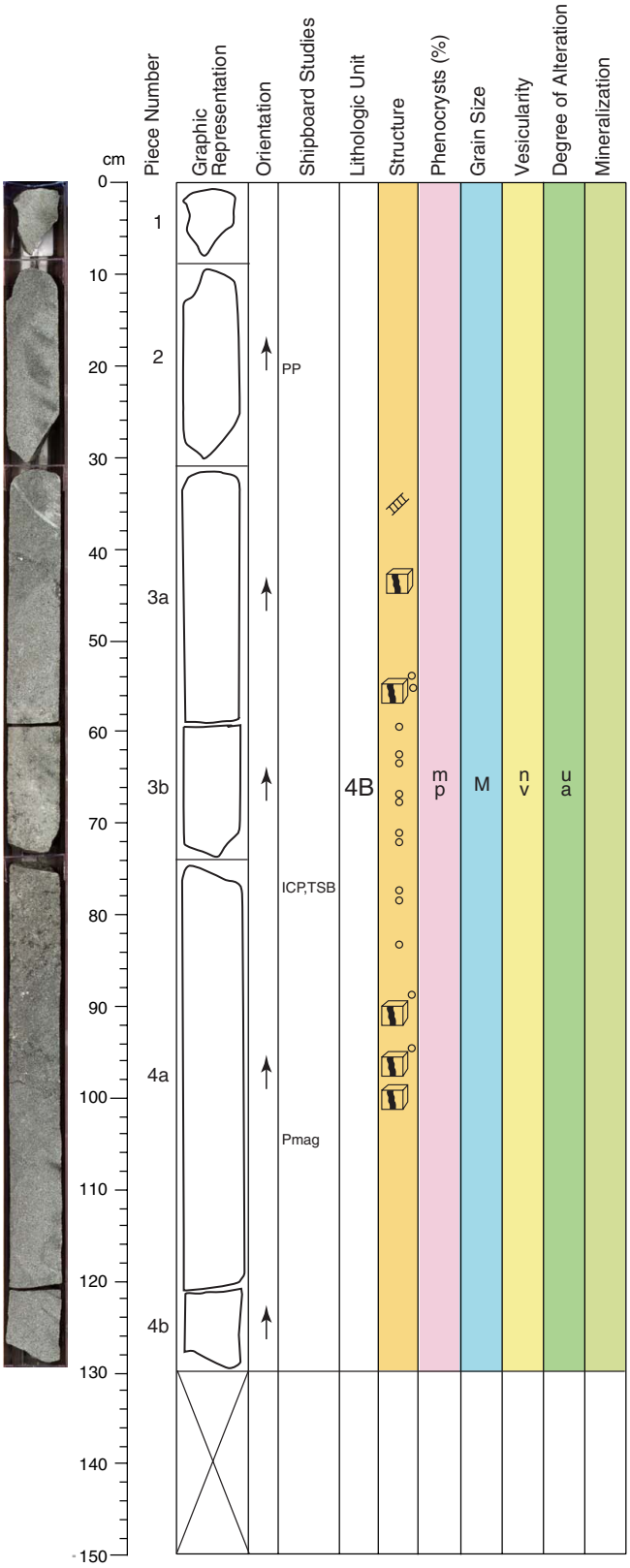
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.

Pyroxene Mode: 5%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated within plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%
Comments: Vein in Piece 6 filled with zeolite and clay.

ADDITIONAL COMMENTS:
No magmatic contacts identified.

Core Photo



205-1253A-18R-1 (Section top: 480.5 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

Color: Gray

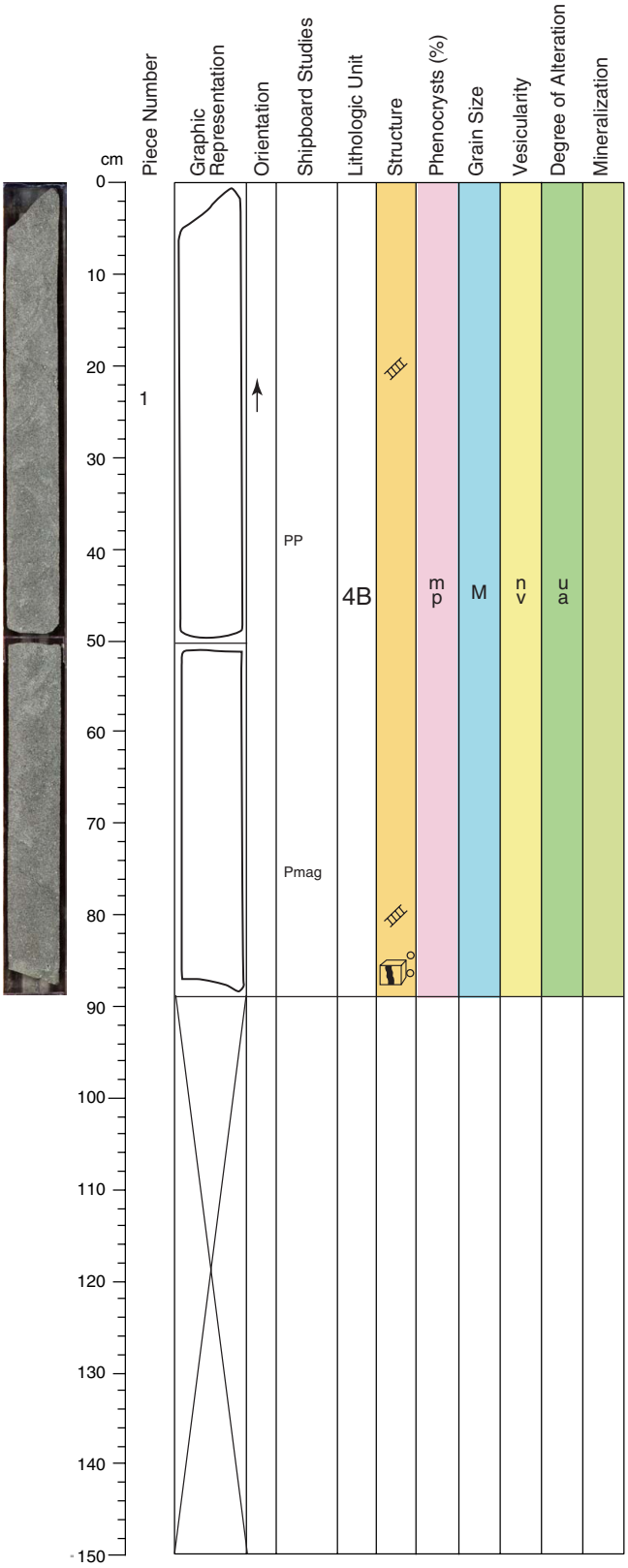
PRIMARY MINERALOGY:
Plagioclase Mode: 6% in Pieces 3a (bottom), 3b, and 4a (upper part). 3% in Pieces 1 to 3a (top), 4a (bottom), and 4b.
Crystal size: 3 mm in Pieces 3a (bottom), 3b, and 4a (upper part). 1.5 mm in Pieces 1 to 3a (top), 4a (bottom), and 4b.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Mainly as aggregates in Pieces 3a (bottom), 3b, and 4a (upper part); laths in Pieces 1 to 3a (top), 4a (bottom), and 4b.

Pyroxene Mode: 9% in Pieces 3a (bottom), 3b, and 4a (upper part). 7% in Pieces 1 to 3a (top), 4a (bottom), and 4b.
Crystal size: Up to 4 mm in Pieces 3a (bottom), 3b, and 4a (upper part). Up to 1 mm in Pieces 1 to 3a (top), 4a (bottom), and 4b.
Crystal shape: Euhedral in Pieces 3a (bottom), 3b, and 4a (upper part). Subhedral in Pieces 1 to 3a (top), 4a (bottom), and 4b.
Crystal orientation: Random.
Comments: Higher abundance along the magmatic contacts.

SECONDARY MINERALOGY:
Comments: Higher vesicularity (>20%) in Pieces 3a (bottom), 3b, and 4a (upper part) ; voids of different sizes, rounded (up to 5 mm in diameter).

ADDITIONAL COMMENTS:
Magmatic contact at different level within the section. The contact is very fine-grained and includes voids. Voids are filled with zeolite, clays or cryptocrystalline groundmass/altered glass.

Core Photo



205-1253A-18R-2 (Section top: 481.8 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

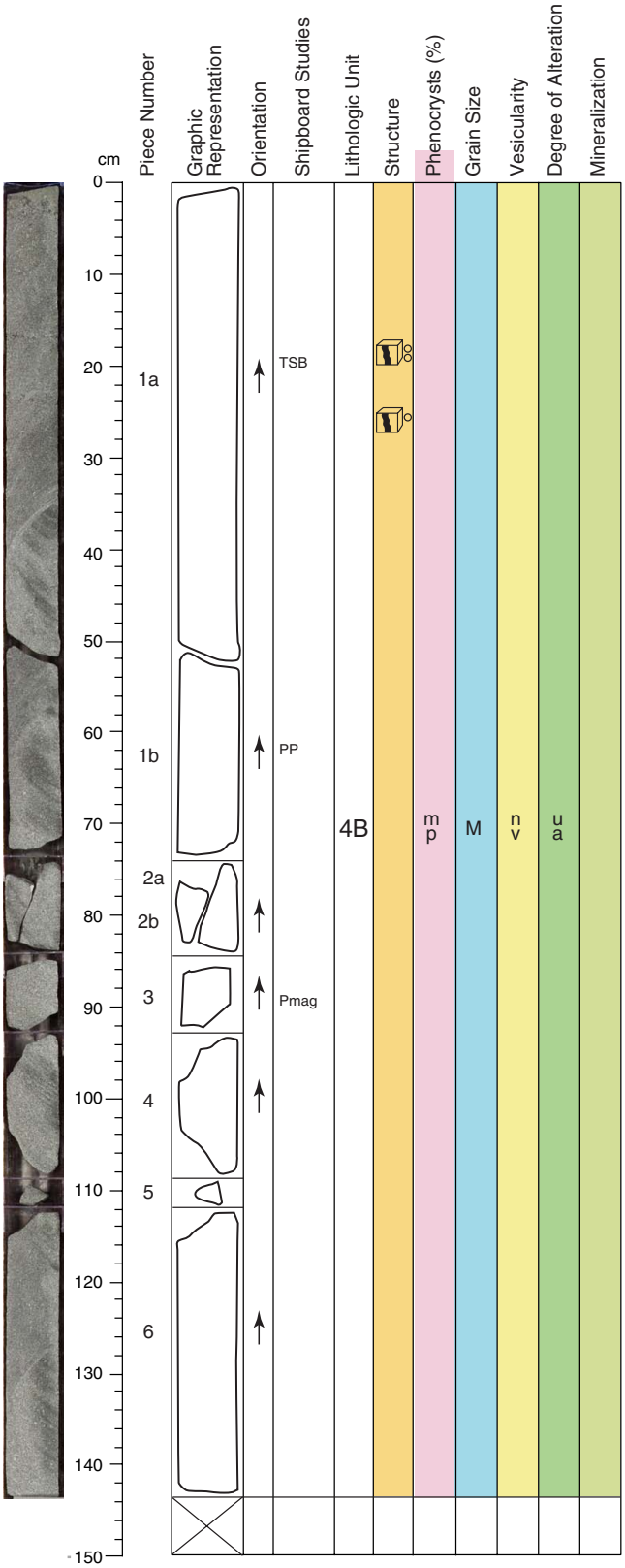
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 4%.
Crystal size: Up to 3 mm mainly as laths.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.

Pyroxene Mode: 5%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Magmatic contact at the bottom of Piece 2. Sharp contact from microcrystalline gabbro to very microcrystalline gabbro with voids filled with either cryptocrystalline gabbro or clay. Other contacts are ± veins, very dark, thin (~ 1 mm wide), including some voids filled with clay and zeolite.

Core Photo



205-1253A-18R-3 (Section top: 482.69 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

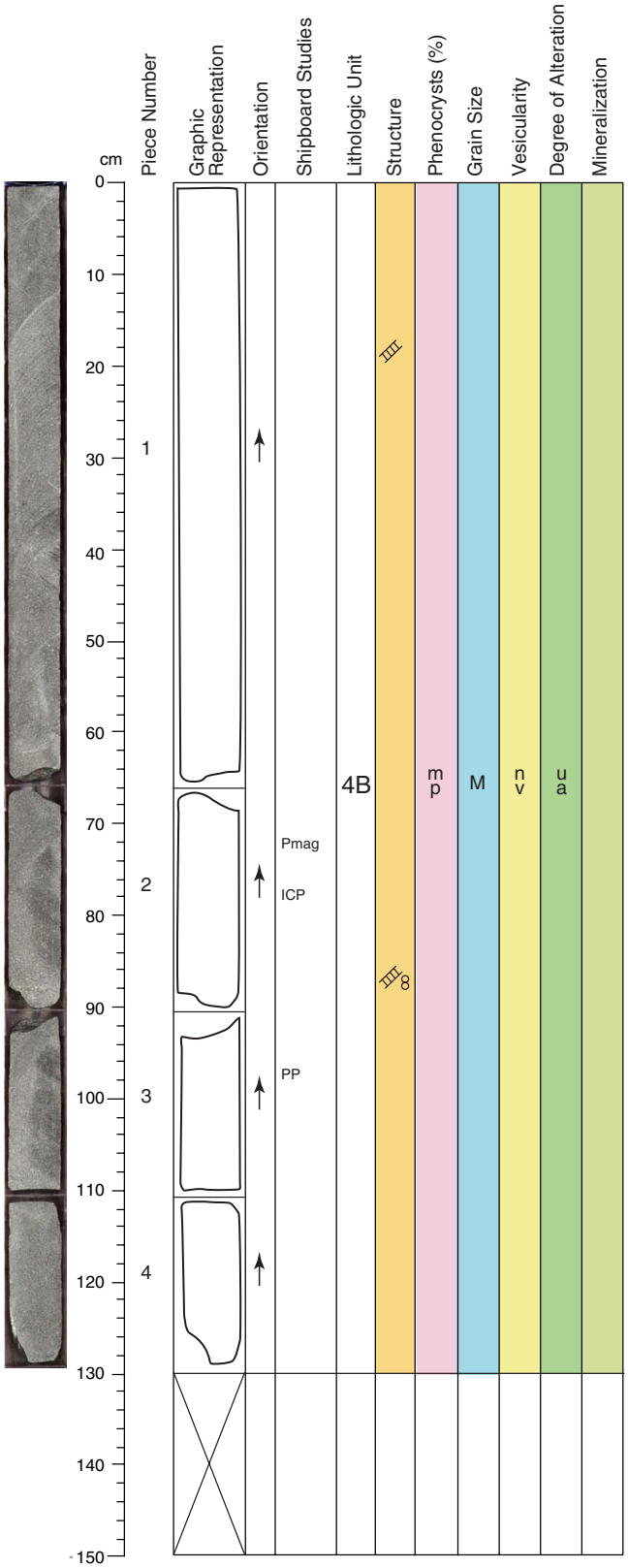
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 2-3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Aggregates and laths.

Pyroxene Mode: 5%.
Crystal size: 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
A few magmatic contacts, dark layers, very fine grained, probably cryptocrystalline groundmass.

Core Photo



205-1253A-18R-4 (Section top: 484.13 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

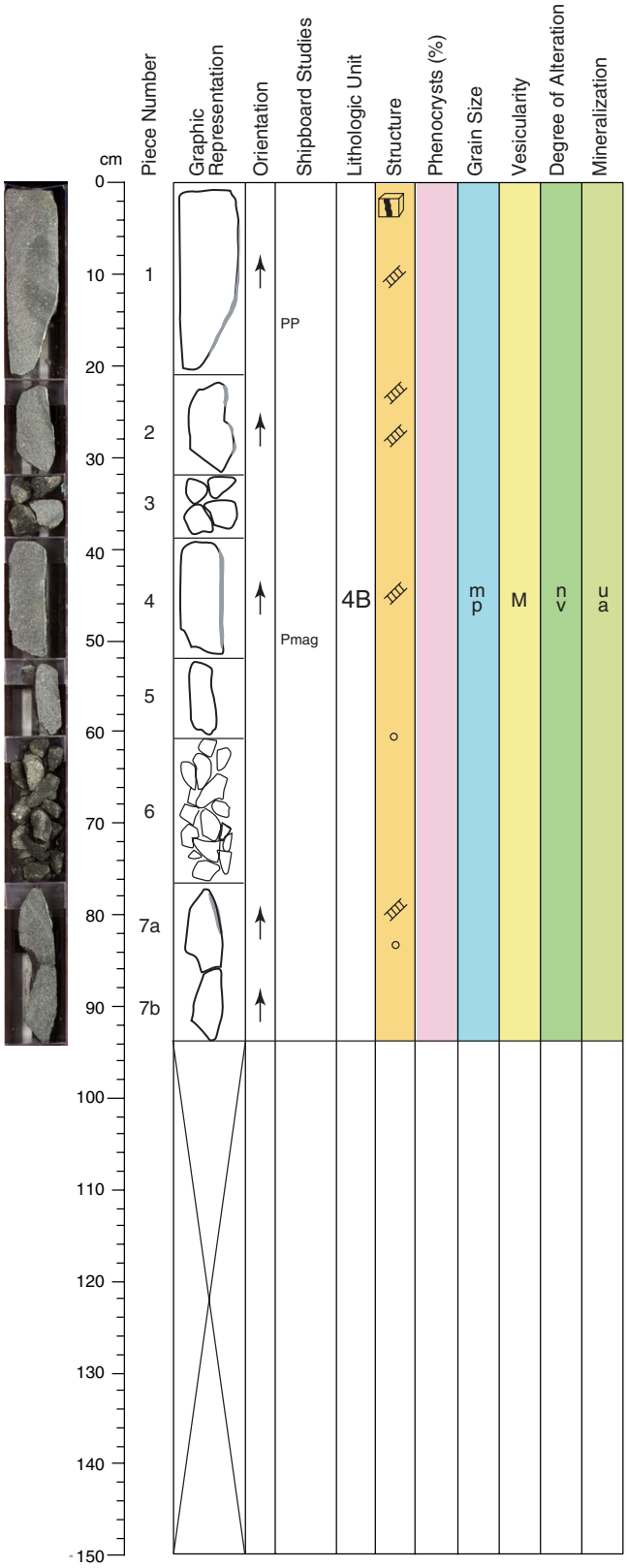
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: More aggregates than laths.

Pyroxene Mode: 5%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: A couple of veins: Piece 1: ~1 mm wide perpendicular to core length, dark color, probably filled with cryptocrystalline groundmass. Piece 2: Veins of 5 mm wide, perpendicular to the core length containing elongated voids of 3-5 mm in diameter filled with clays.

Core Photo



205-1253A-18R-5 (Section top: 485.43 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

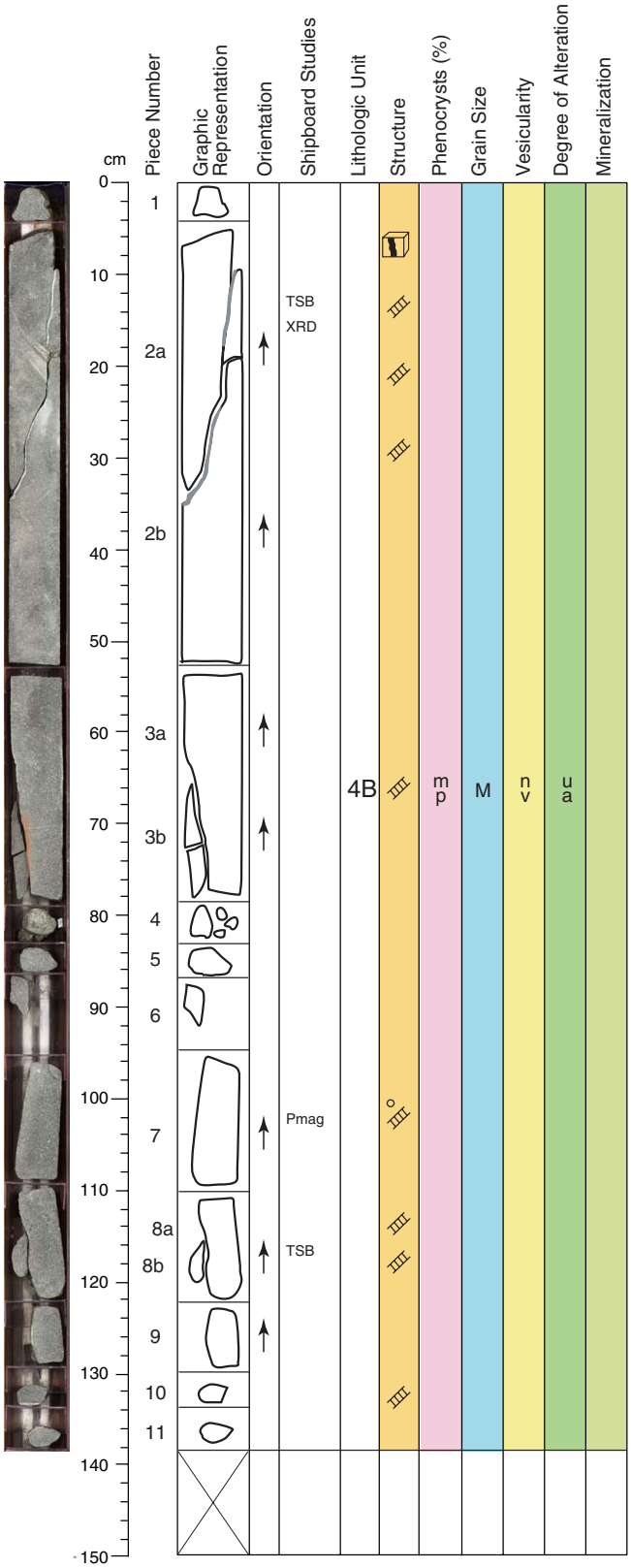
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Aggregates or laths.

Pyroxene Mode: 6%.
Crystal size: <1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: Veins passing along the edge of Pieces 1, 2, and 4, small amount of microcrystalline gabbro surrounded by white mineral (zeolite)

Core Photo



205-1253A-19R-1 (Section top: 485.1 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

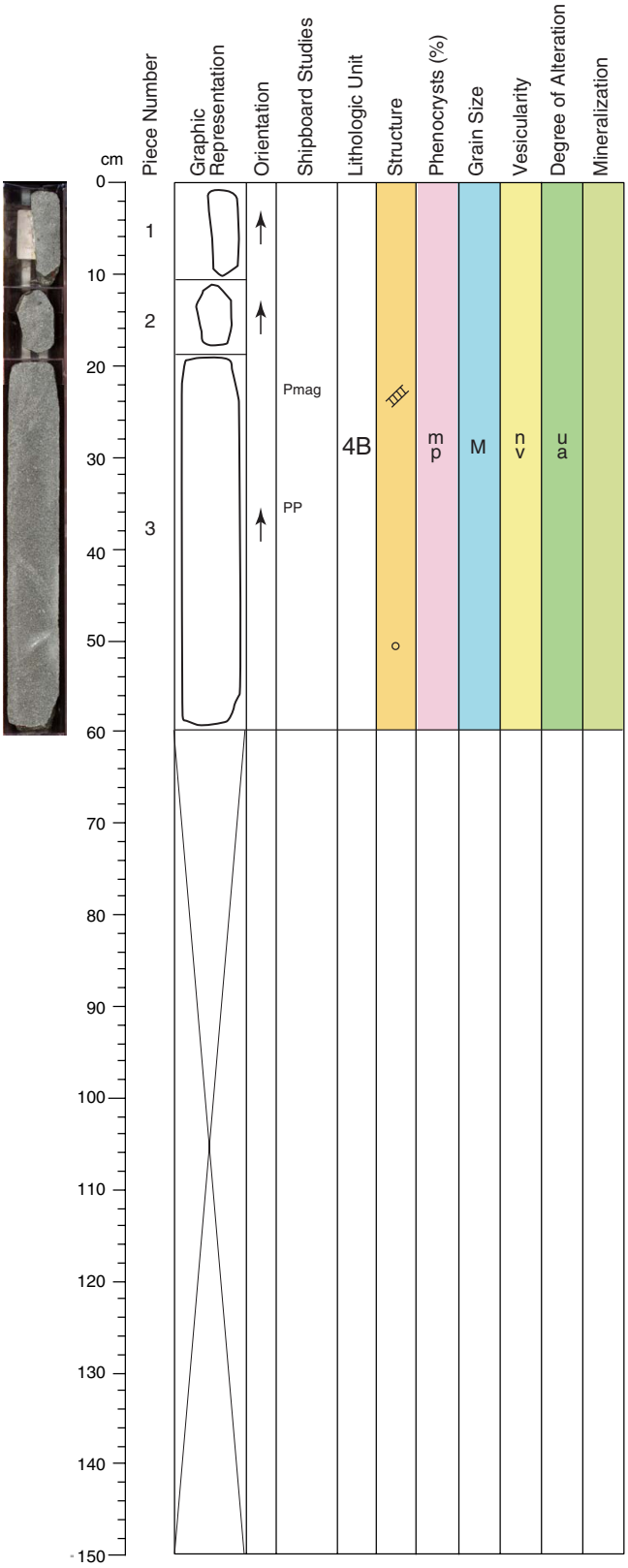
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: More aggregates than laths.

Pyroxene Mode: 1%-2% (towards the bottom).
Crystal size: 0.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.:

SECONDARY MINERALOGY:
Veins: Big vein within piece 2, longitudinal through Piece 2, probably filled with cryptocrystalline groundmass, altered glass or clay or perhaps zeolite.

Core Photo



205-1253A-19R-2 (Section top: 486.49 mbsf)

UNIT 4B: GABBRO

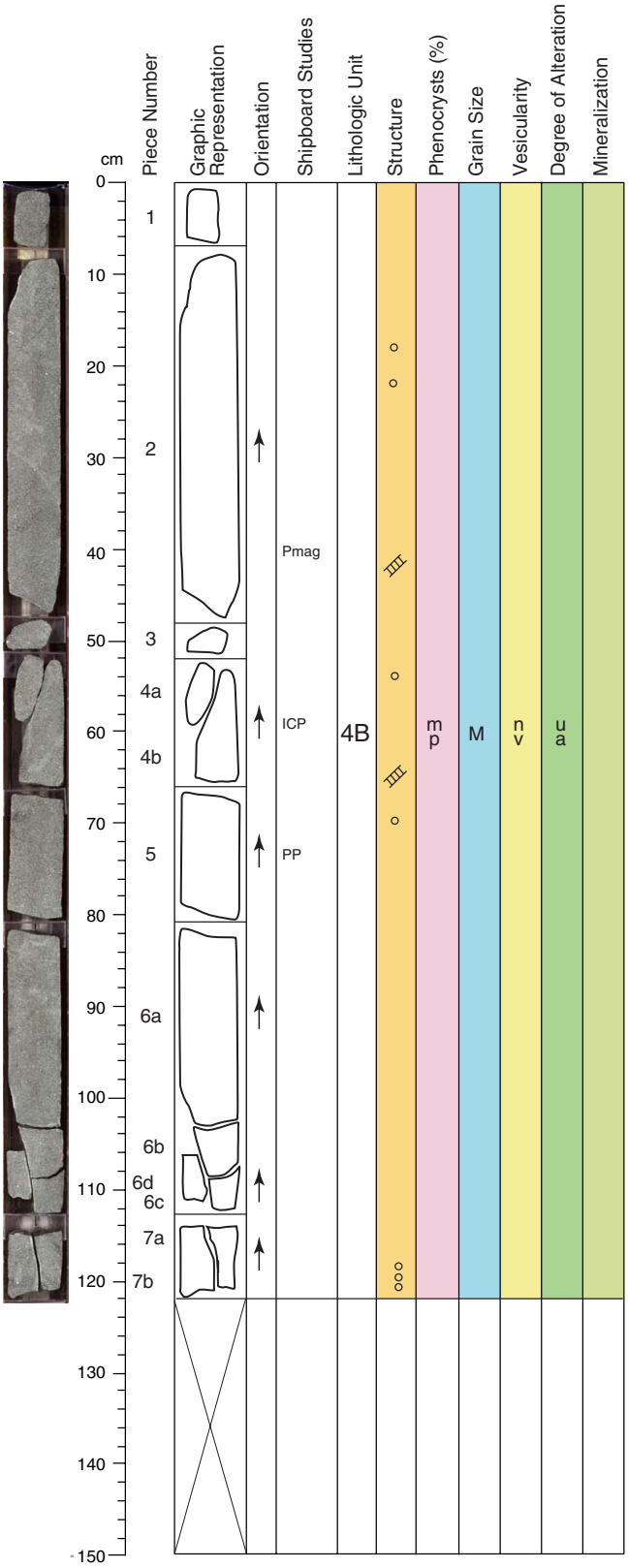
Pieces: 1-3

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: More laths than aggregates.

Pyroxene Mode: 7%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Core Photo



205-1253A-20R-1 (Section top: 490.1 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

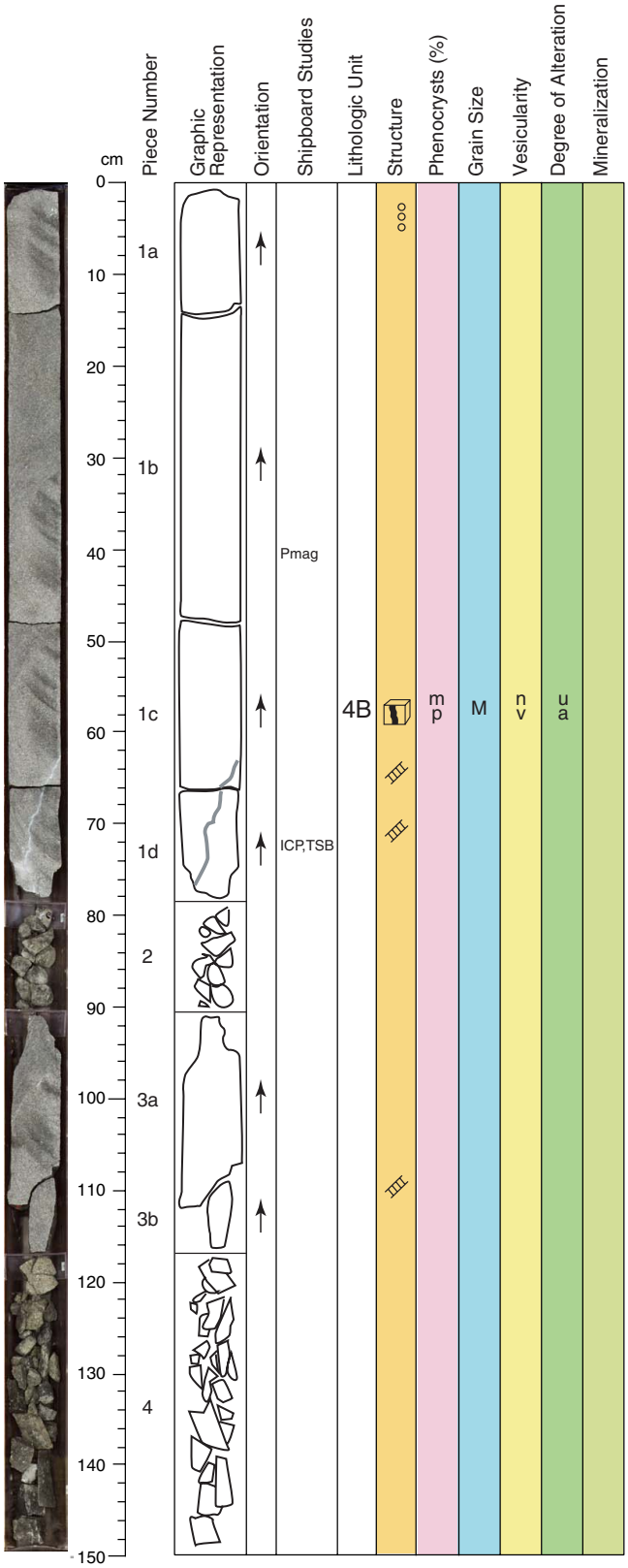
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Small aggregates and larger laths.

Pyroxene Mode: 7%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Veins: Very thin veins (<1 mm) perpendicular to the core length, filled with cryptocrystalline groundmass/altered glass or clay.

Core Photo



205-1253A-20R-2 (Section top: 491.33 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

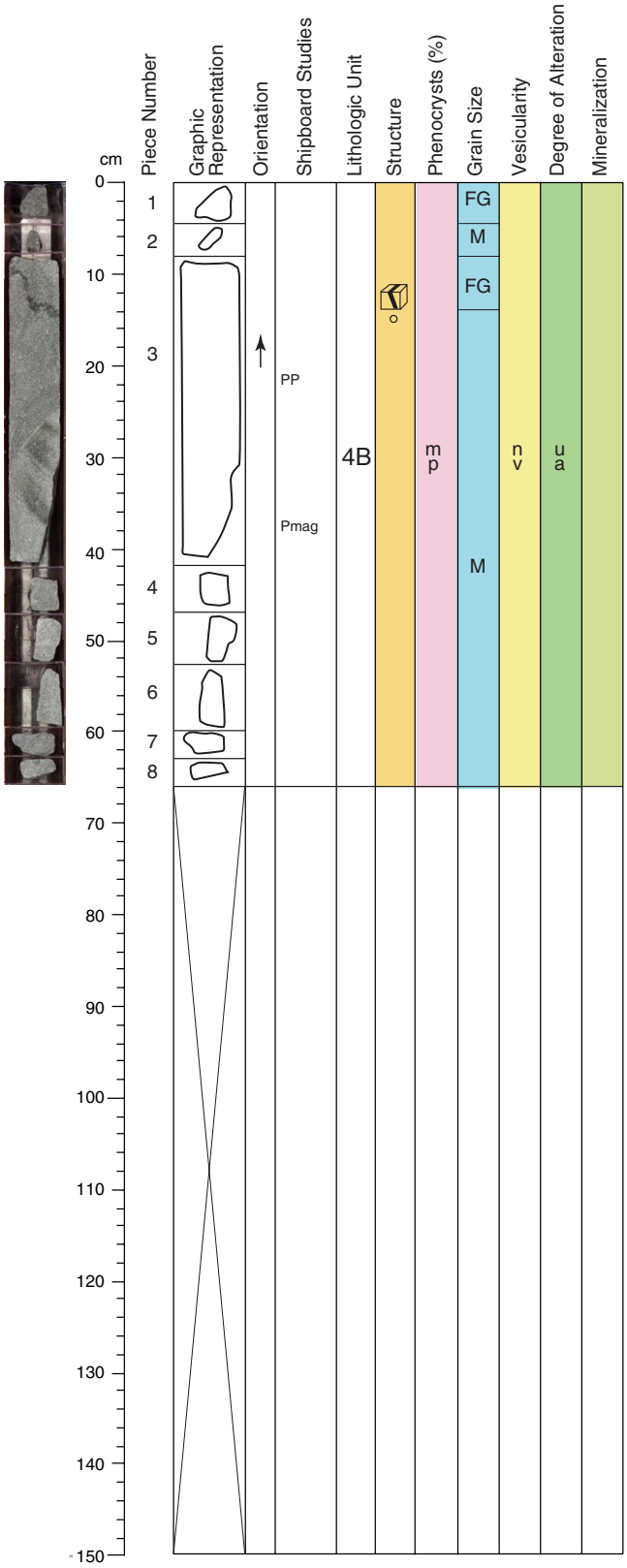
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 1 mm
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Only few aggregates, mainly laths.

Pyroxene Mode: 5%.
Crystal size: Up to 0.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: Big vein (at least 14 cm long, 2-3 mm wide in Pieces 1c to 1d), anastomosing, filled with zeolite. Another vein is crossing the core diagonally (Piece 3a, <1 mm wide).
Comments: Voids and veins are probably filled with clay and zeolites.

Core Photo



205-1253A-21R-1 (Section top: 492.8 mbsf)

UNIT 4B: GABBRO

Pieces: 1-8

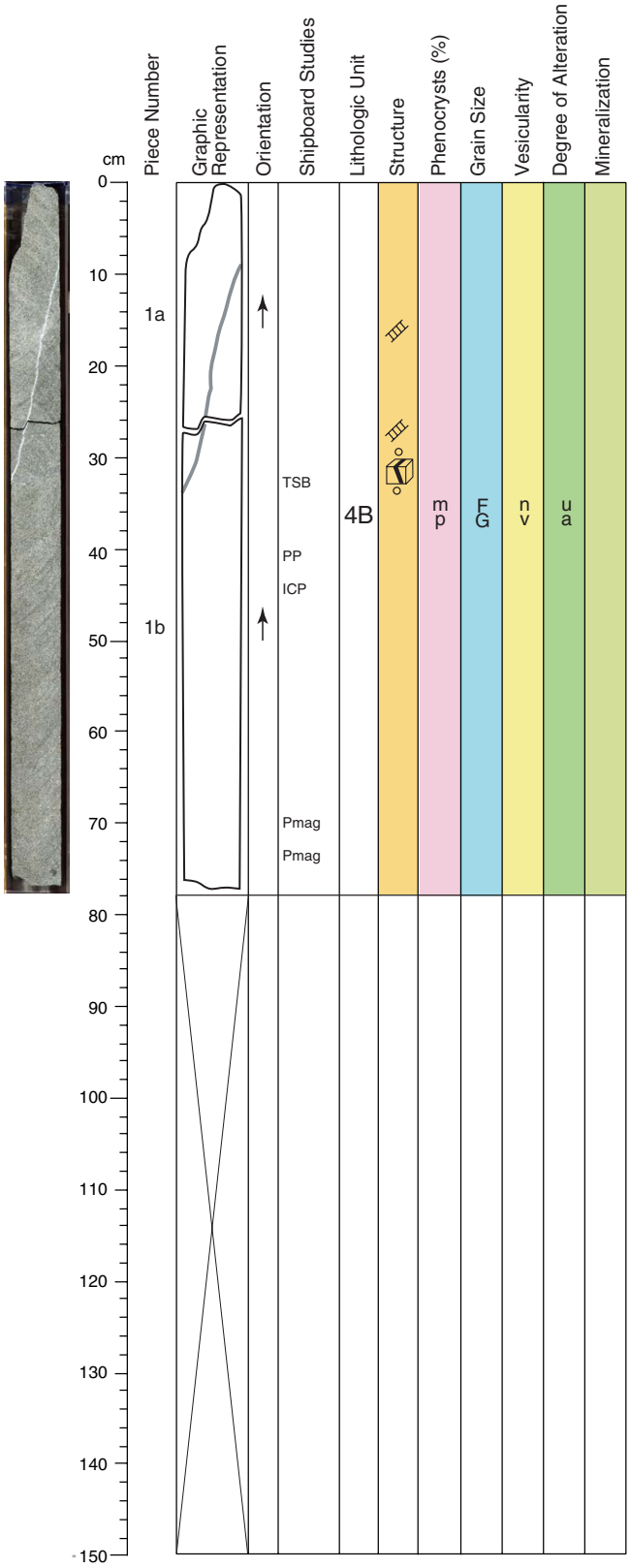
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2%.
Crystal size: 2 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.

Pyroxene Mode: 2%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

ADDITIONAL COMMENTS:
Magmatic contact at the top of Piece 3 including filled voids (zeolite and clay). Very fine microcrystalline groundmass with higher abundance of pyroxene.

Core Photo



205-1253A-22R-1 (Section top: 493.3 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

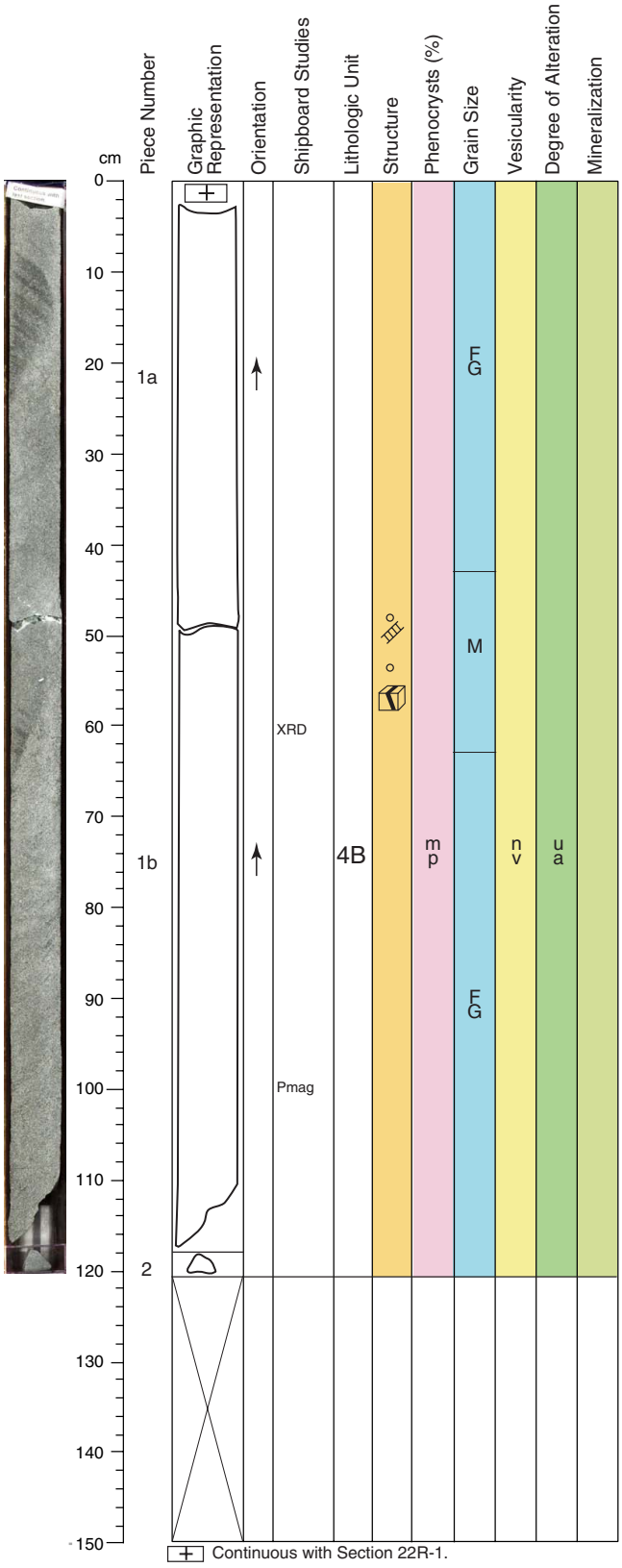
PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: 2 mm
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Rare aggregates.

Pyroxene Mode: 2%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%
Veins: 25 cm long and 1.5 mm wide vein filled with zeolite (white color, probably phillipsite).
Comments: Alteration restricted to veins.

ADDITIONAL COMMENTS:
Magmatic contact at Piece 1b (32 cm), 0.5 cm wide microcrystalline groundmass (very fine) with sparse vesicularity (Voids are filled with zeolite (phillipsite?).

Core Photo



205-1253A-22R-2 (Section top: 494.08 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

Color: Gray

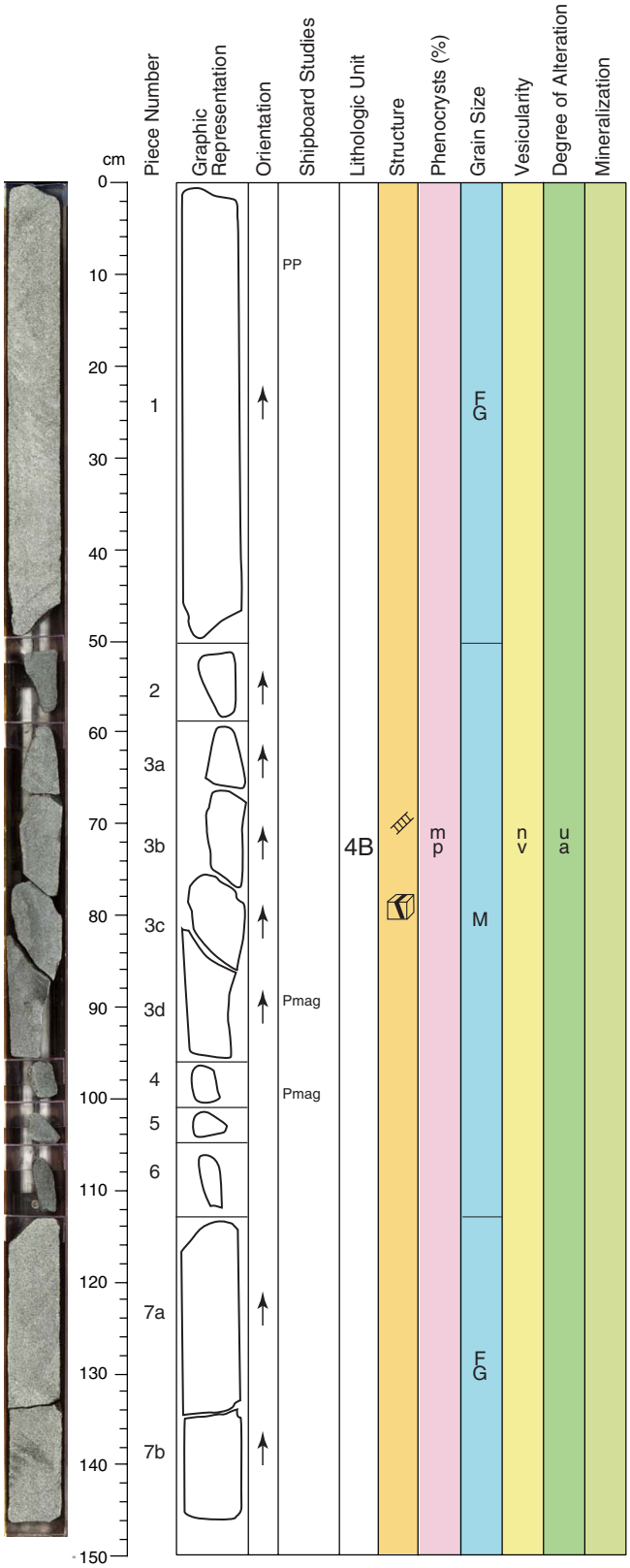
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: 2 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.:

Pyroxene Mode: 2%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%
Veins: Vein between Pieces 1a and 1b filled with zeolite (phillipsite?).
Comments: Some voids around the vein are also filled with zeolite (phillipsite?). Voids and veins are white in color.

ADDITIONAL COMMENTS:
Magmatic contact at the top of Piece 1b with microcrystalline groundmass.

Core Photo



205-1253A-22R-3 (Section top: 495.29 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

Color: Gray

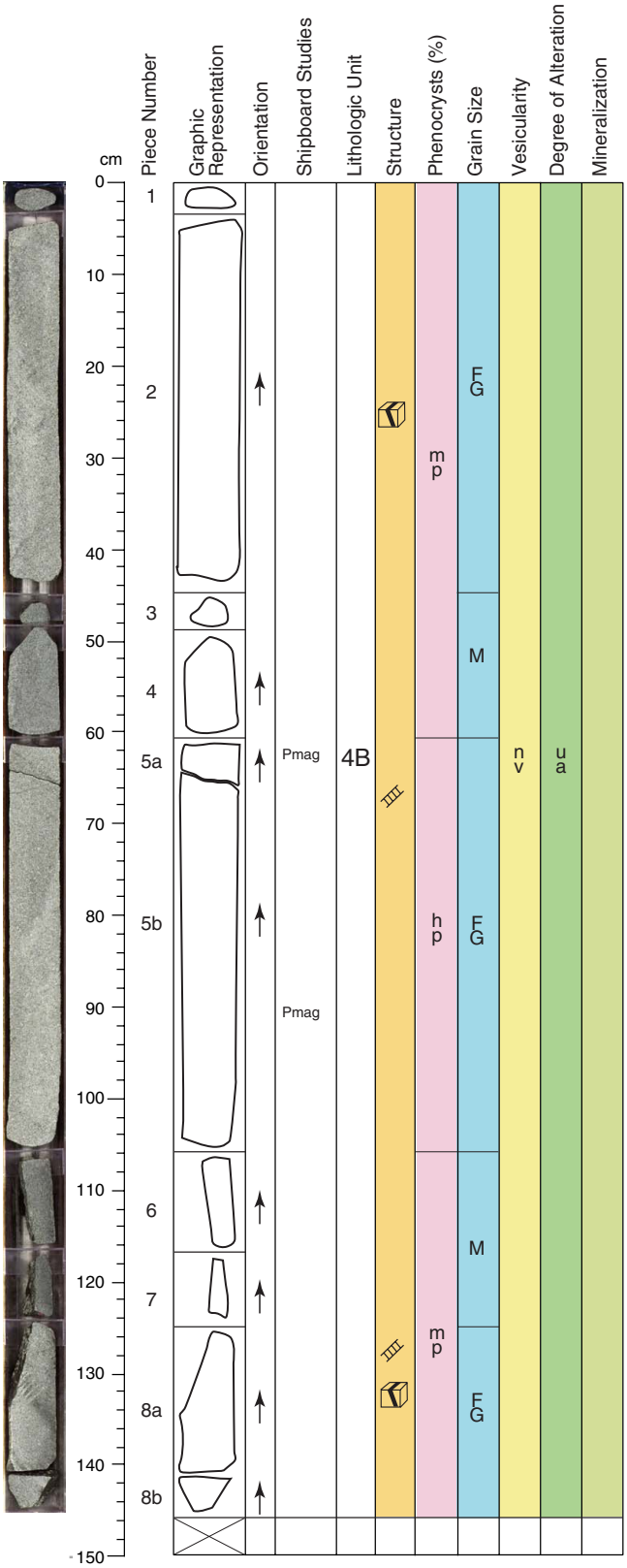
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: 1%
Comments: Very rare replacement of plagioclase aggregates to clay. Less abundance in the microcrystalline groundmass.

Pyroxene Mode: 3%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated within plagioclase aggregates. Less abundant in microcrystalline groundmass.

SECONDARY MINERALOGY:
Total%: <1%
Veins: Remain open or lined with cryptocrystalline groundmass/altered glass.
Comments: Rare replacement of plagioclase aggregates.

ADDITIONAL COMMENTS:
Weak magmatic contact in Pieces 3b to 3d with change of grain size in the groundmass.

Core Photo



205-1253A-22R-4 (Section top: 496.79 mbsf)

UNIT 4B: GABBRO

Pieces: 1-8

Color: Gray

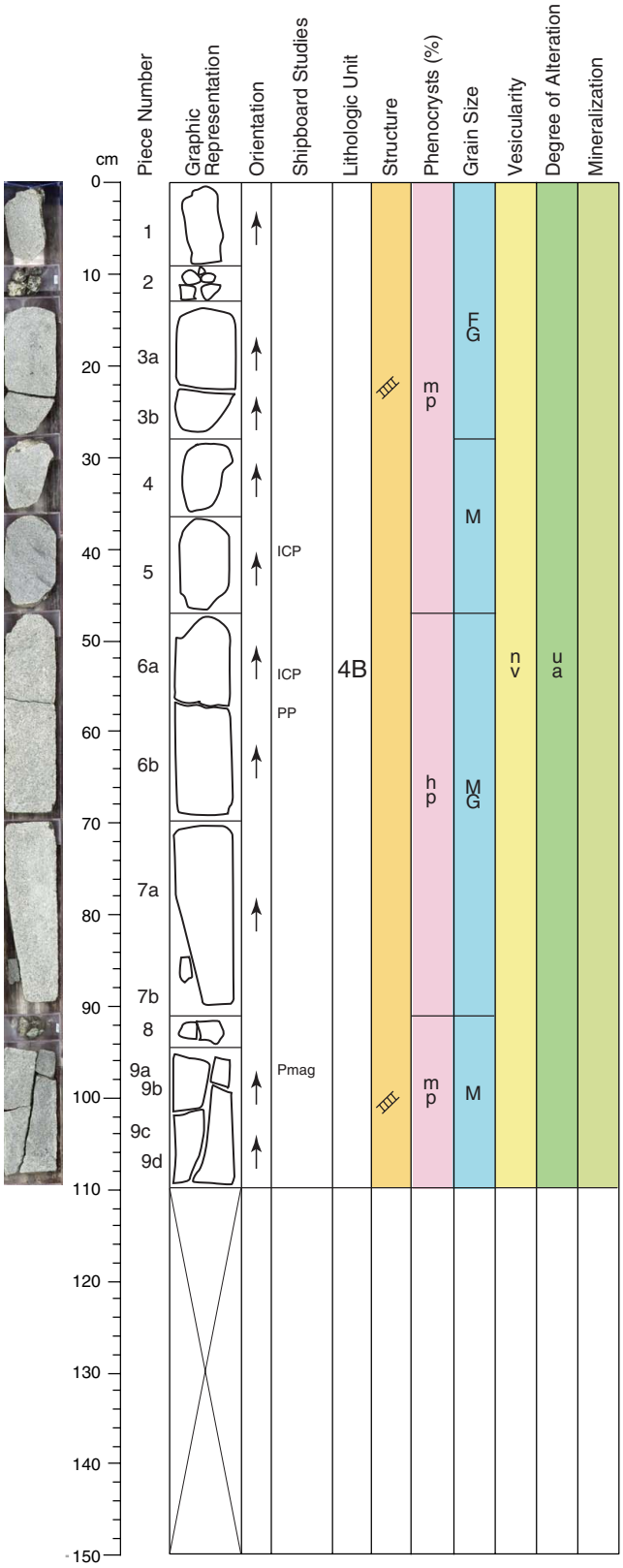
PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Pieces 1 to 4 and 6 to 8
10% in Piece 5.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Higher abundance of plagioclase aggregates in Piece 5.

Pyroxene Mode: 2%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%
Veins: Filled with cryptocrystalline groundmass or altered glass.
Comments: Very rare low alteration of plagioclase aggregates to light gray-brownish clay.

ADDITIONAL COMMENTS:
Two weak magmatic contacts.

Core Photo



205-1253A-22R-5 (Section top: 498.25 mbsf)

UNIT 4B: GABBRO

Pieces: 1-9

Color: Gray

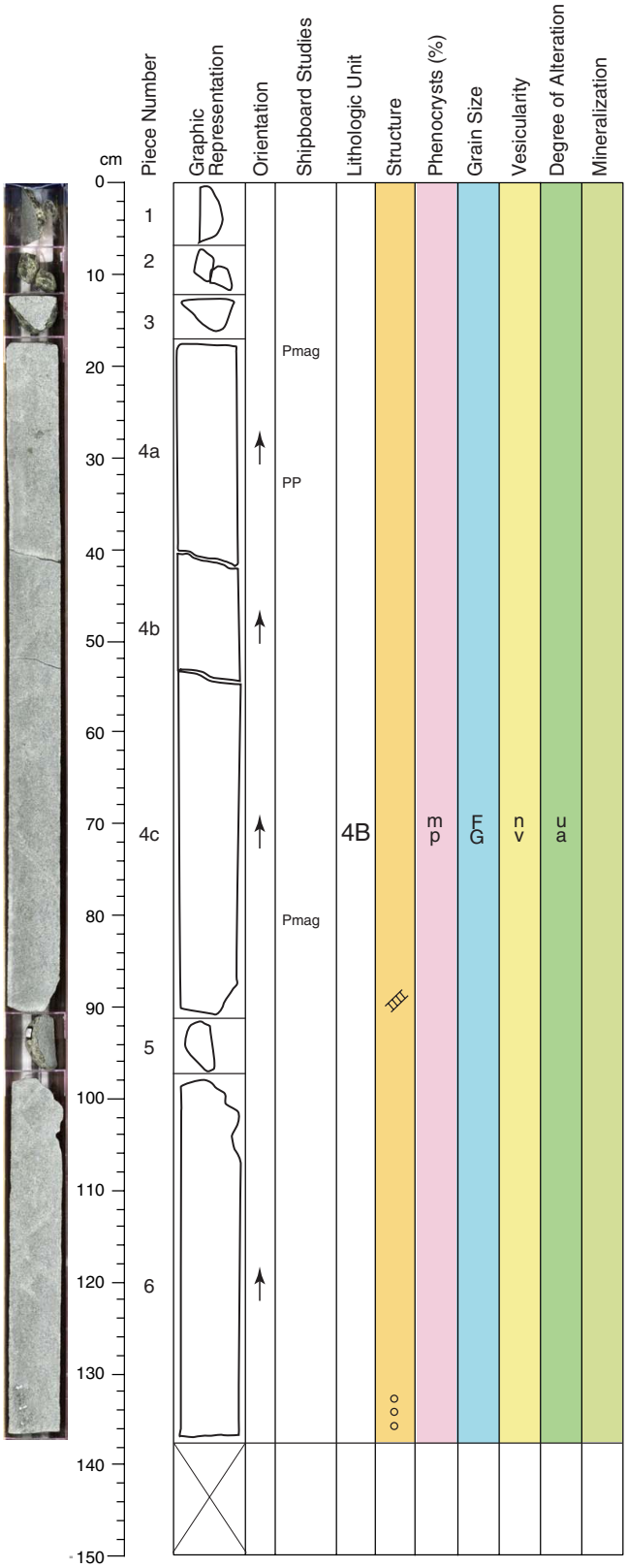
PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Pieces 1 to 5 and 8 to 9.
10% in Pieces 6 to 7.
Crystal size: 2 mm in Pieces 1 to 5 and 8 to 9
3 mm in Pieces 6 to 7.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: More plagioclase aggregates within Pieces 6 and 7.

Pyroxene Mode: 2% in Pieces 1 to 5 and 8 to 9.
4% in Pieces 6 to 7.
Crystal size: 1 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Partly associated within plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%
Veins: Filled with greenish-white clay or zeolite.

ADDITIONAL COMMENTS:
Change in grain size and the amount of phenocrysts in Pieces 6 and 7.

Core Photo



205-1253A-23R-1 (Section top: 499.8 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

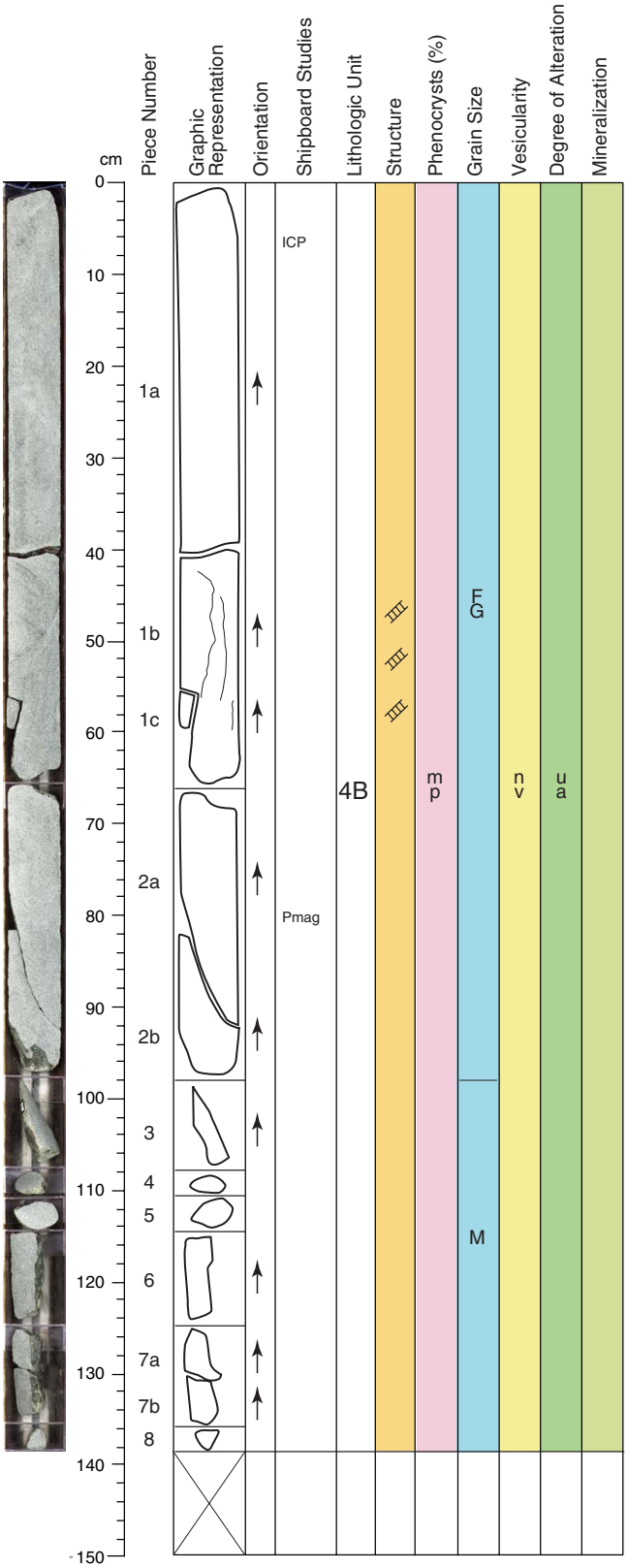
PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Only a few aggregates, mainly as laths.

Pyroxene Mode: 4%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: Very thin vein (<1 mm), perpendicular to the core length filled with clay or zeolite.
Comments: Voids are rounded or elongated (up to 4 mm) and filled with clay or zeolite (randomly distributed at the bottom of Piece 6).

ADDITIONAL COMMENTS:
No magmatic contacts are identified.

Core Photo



205-1253A-23R-2 (Section top: 501.18 mbsf)

UNIT 4B: GABBRO

Pieces: 1-8

Color: Gray

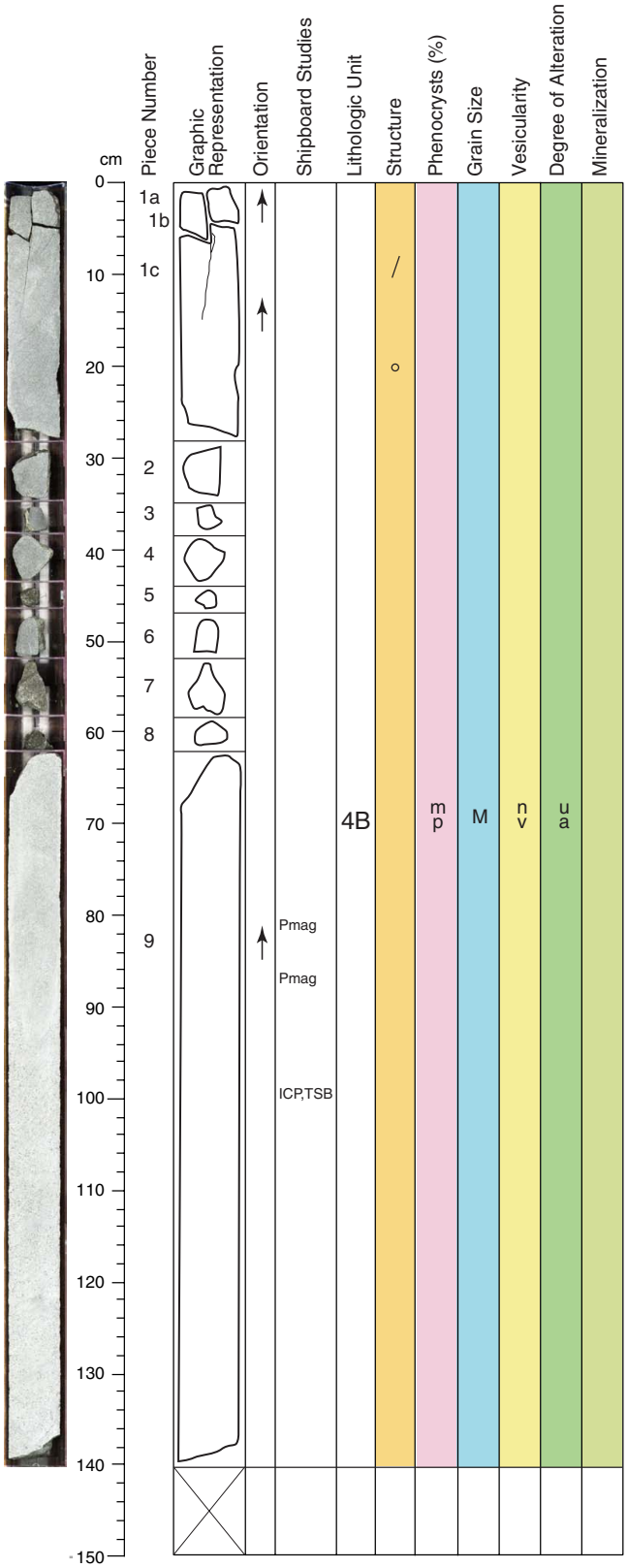
PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Only a few aggregates, mainly as laths.

Pyroxene Mode: 2%.
Crystal size: ~1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Comments: Partly associated within plagioclase aggregates.

SECONDARY MINERALOGY:
Comments: Very thin veins (<<1 mm wide) filled with cryptocrystalline groundmass/altered glass, longitudinal to the core.

ADDITIONAL COMMENTS:
No magmatic contacts are identified.

Core Photo



205-1253A-23R-3 (Section top: 502.57 mbsf)

UNIT 4B: GABBRO

Pieces: 1-9

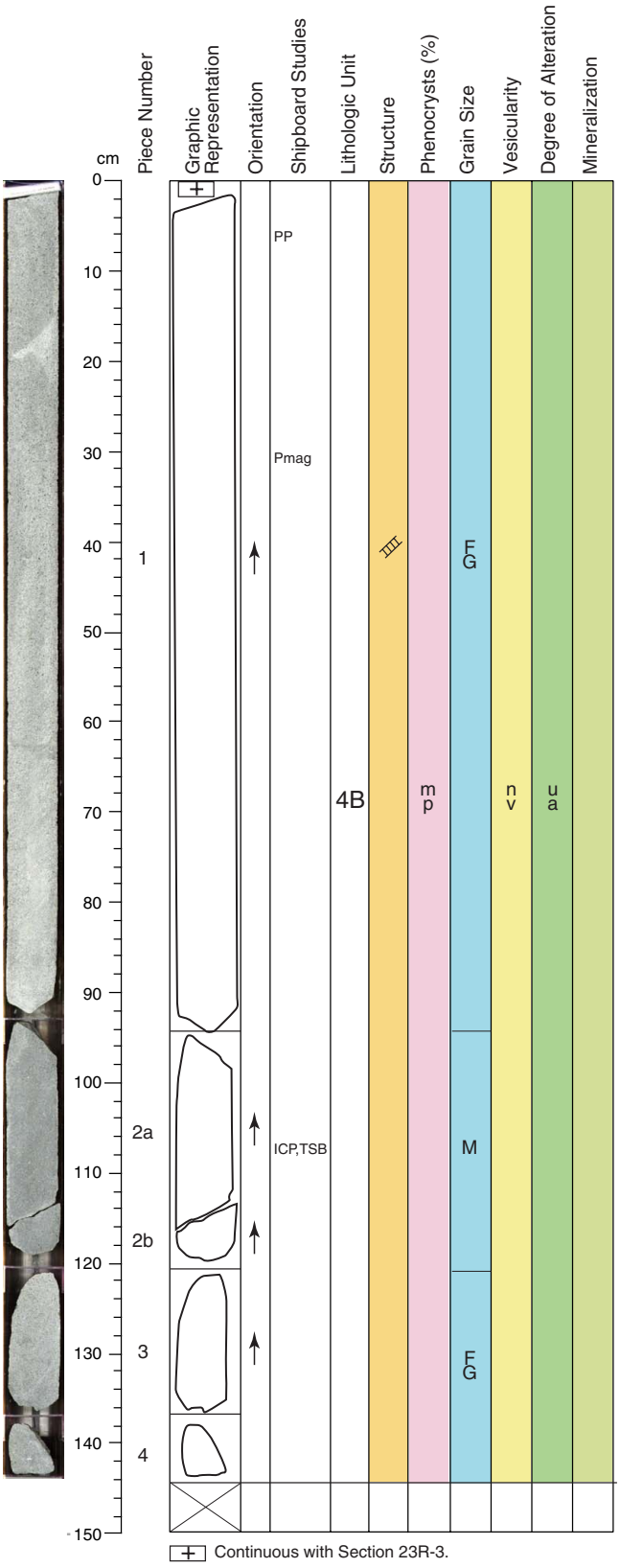
Color: Gray to light gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3% until Piece 8; 2% in Piece 9.
Crystal size: Up to 1 mm until Piece 8.
Up to 2 mm in Piece 9.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyroxene Mode: 4% until Piece 8; 6% in Piece 9.
Crystal size: Up to 0.5 mm until Piece 8.
Up to 3 mm in Piece 9.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Light gray to very light gray in Piece 9.

ADDITIONAL COMMENTS:
No sharp contact between Pieces 1-8, which are composed of 50%-50% plagioclase-pyroxene, and Piece 9, which is more pyroxene rich.

Core Photo



205-1253A-23R-4 (Section top: 503.98 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

Color: Gray to light gray

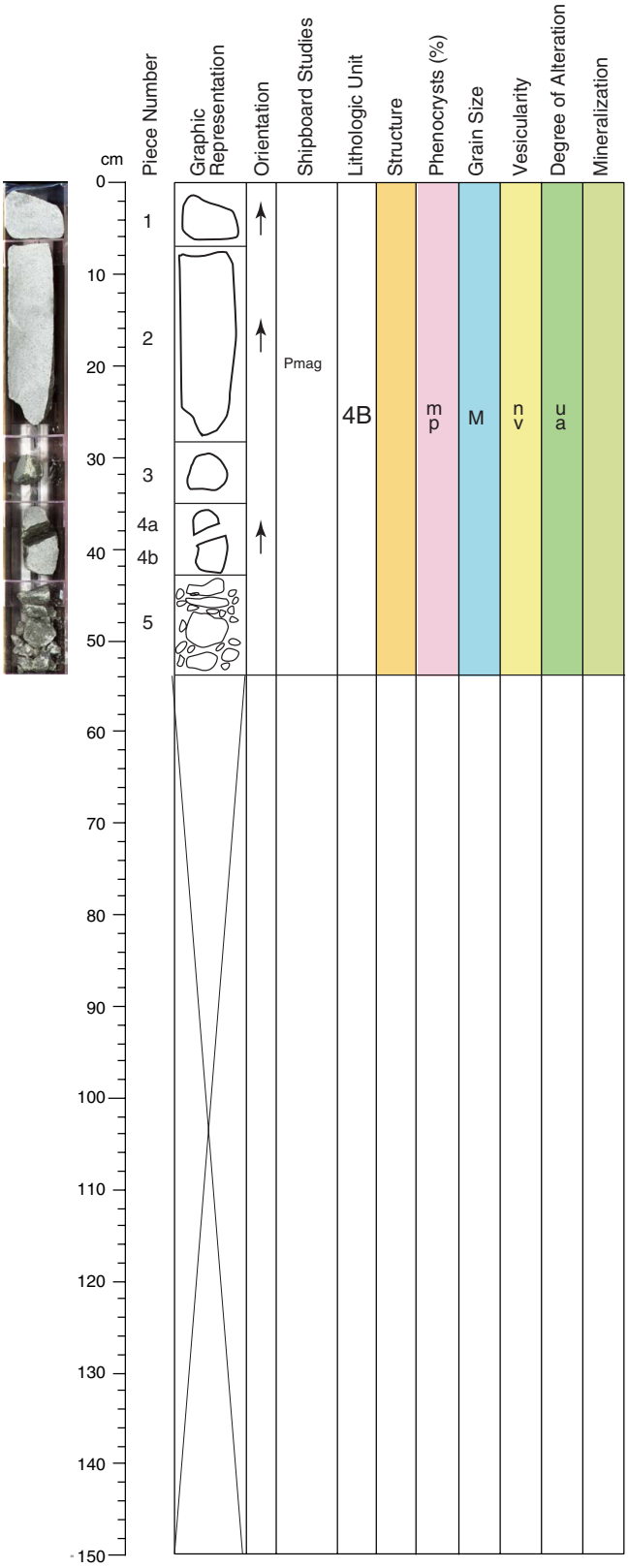
PRIMARY MINERALOGY:
Plagioclase Mode: 2%.
Crystal size: Up to 1 mm in Pieces 1, 3, and 4.
~0.5 mm in Piece 2.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Mainly as laths in Pieces 1, 3, and 4; laths and aggregates in Piece 2.

Pyroxene Mode: 8% in Pieces 1, 3, and 4.
2% in Piece 2.
Crystal size: 1 mm in Pieces 1, 3, and 4.
<1 mm in Piece 2.
Crystal shape: Euhedral to subhedral in Pieces 1, 3, and 4.
Subhedral in Piece 2.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Comments: Very fresh gabbro, no alteration.

ADDITIONAL COMMENTS:
More pyroxene phenocrysts than plagioclase in a light gray microcrystalline to fine-grained groundmass in Pieces 1, 3, and 4. Piece 2 exhibits a very microcrystalline groundmass.

Core Photo



205-1253A-23R-5 (Section top: 505.42 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

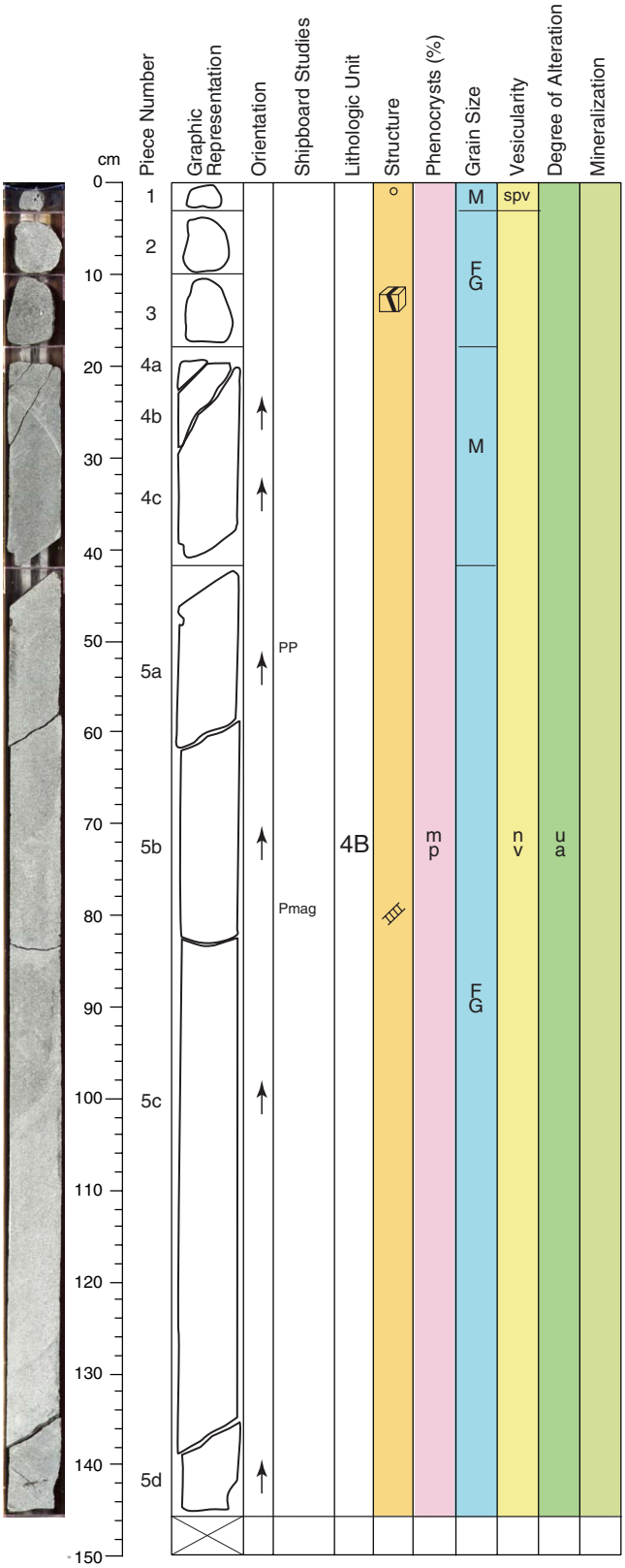
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2%.
Crystal size: <1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: A few small aggregates, and laths.

Pyroxene Mode: 4%.
Crystal size: 2-3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
No magmatic contacts are identified.

Core Photo



205-1253A-24R-1 (Section top: 507.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

Color: Gray

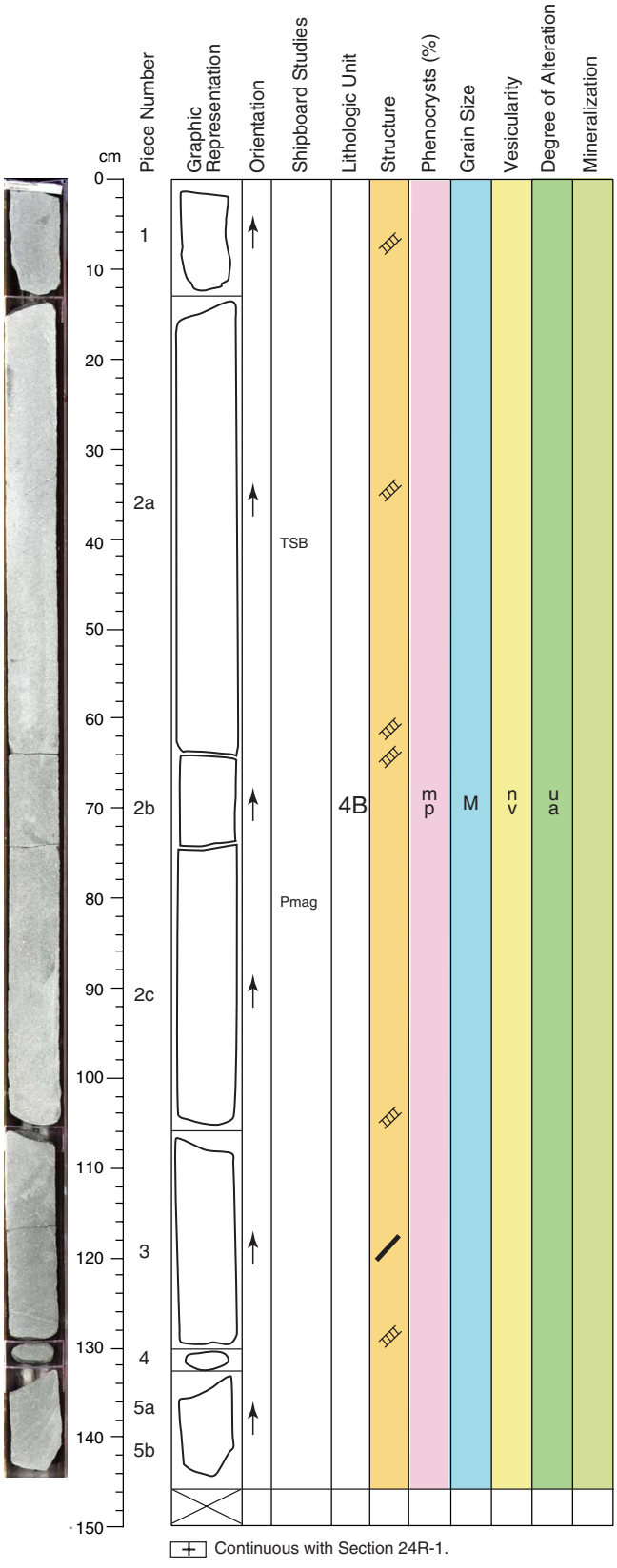
PRIMARY MINERALOGY:
Plagioclase Mode: 3% in Pieces 1 to 4; 5% in Piece 5.
Crystal size: 2 mm in Pieces 1 to 4; 3 mm in Piece 5.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Rare aggregates in Pieces 1 to 4, higher abundance of aggregates in Piece 5.

Pyroxene Mode: 2%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare replacement of pyroxene in Piece 3 to a greenish clay.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Remain open or lined with greenish clay.

ADDITIONAL COMMENTS:
Weak magmatic contact in Piece 3 with higher abundance of pyroxene.
Voids remain open.

Core Photo



205-1253A-24R-2 (Section top: 509.36 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

Color: Gray to light gray

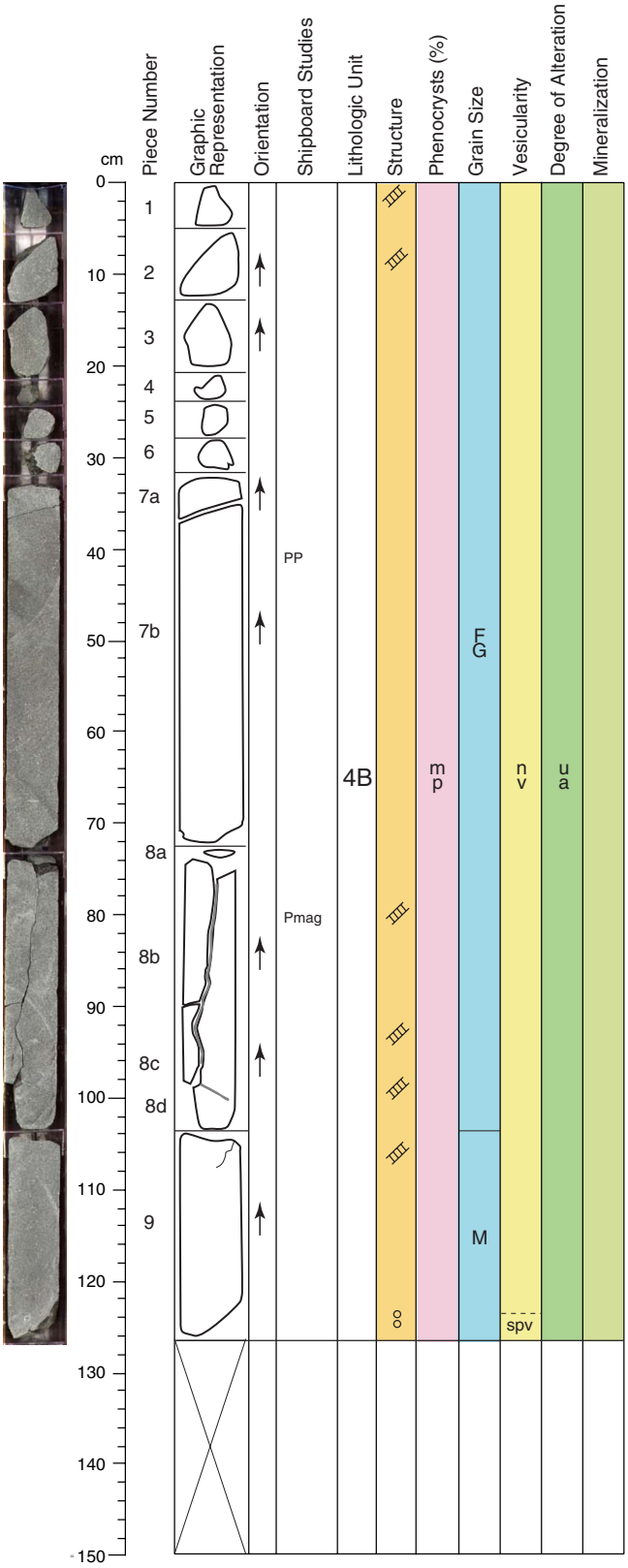
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 2 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Mostly aggregates within the upper part of the section, more laths at the bottom.

Pyroxene Mode: 5%.
Crystal size: Up to 2.5 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Mostly associated with plagioclase aggregates within the upper part of the section.

SECONDARY MINERALOGY:
Veins: <1-mm-thick veins perpendicular or diagonal to the core length, probably filled with zeolite (phillipsite?).

ADDITIONAL COMMENTS:
We observed a decrease of the pyroxene association with plagioclase aggregates from top to bottom.

Core Photo



205-1253A-24R-3 (Section top: 510.82 mbsf)

UNIT 4B: GABBRO

Pieces: 1-9

Color: Gray

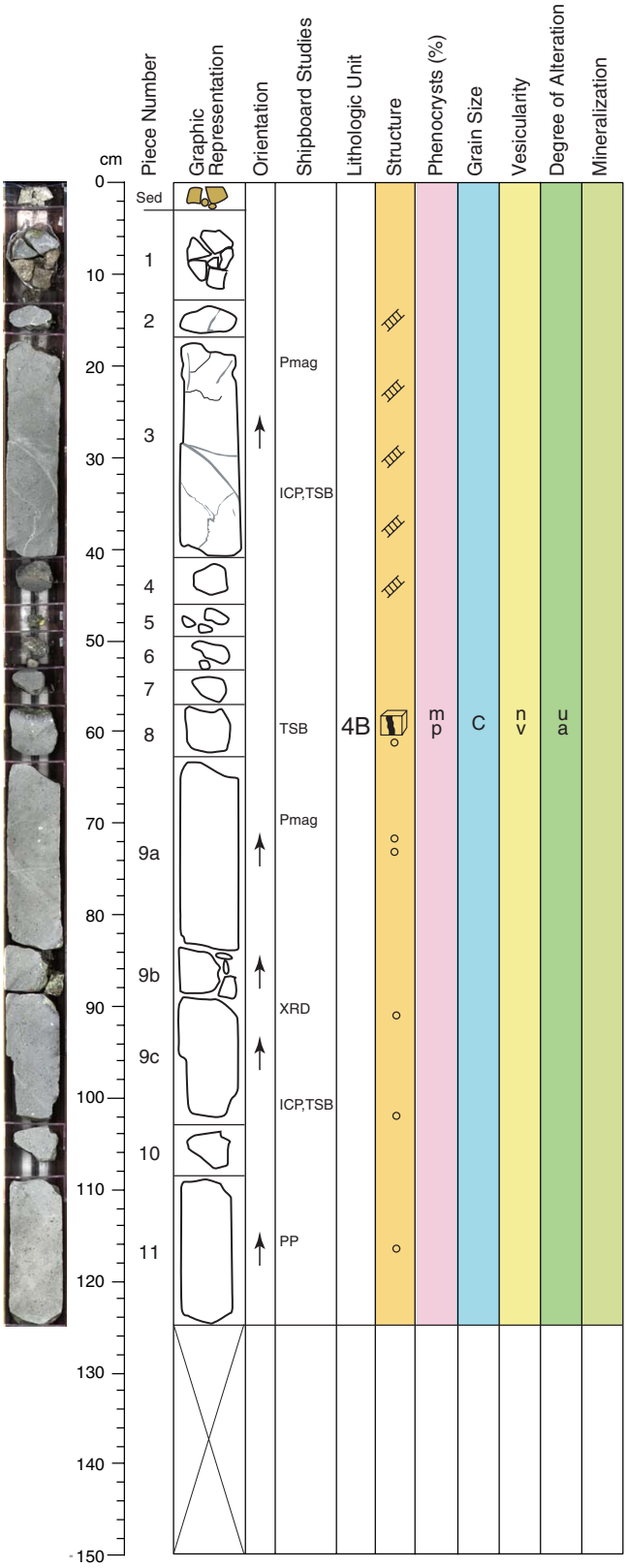
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare replacement of aggregates. Higher abundance of aggregates.

Pyroxene Mode: 3%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Rare replacement of pyroxene.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Filled with zeolite or remain open.
Comments: Partly rare alteration of aggregates to a gray-green clay.

ADDITIONAL COMMENTS:
Grain size is becoming finer towards the bottom of the section. Voids on the bottom of Piece 9, which are lined with light gray clay (sparsely vesicular).

Core Photo



205-1253A-25R-1 (Section top: 513.0 mbsf)

UNIT 4B: GABBRO

Pieces: 1-11

Color: Light Gray

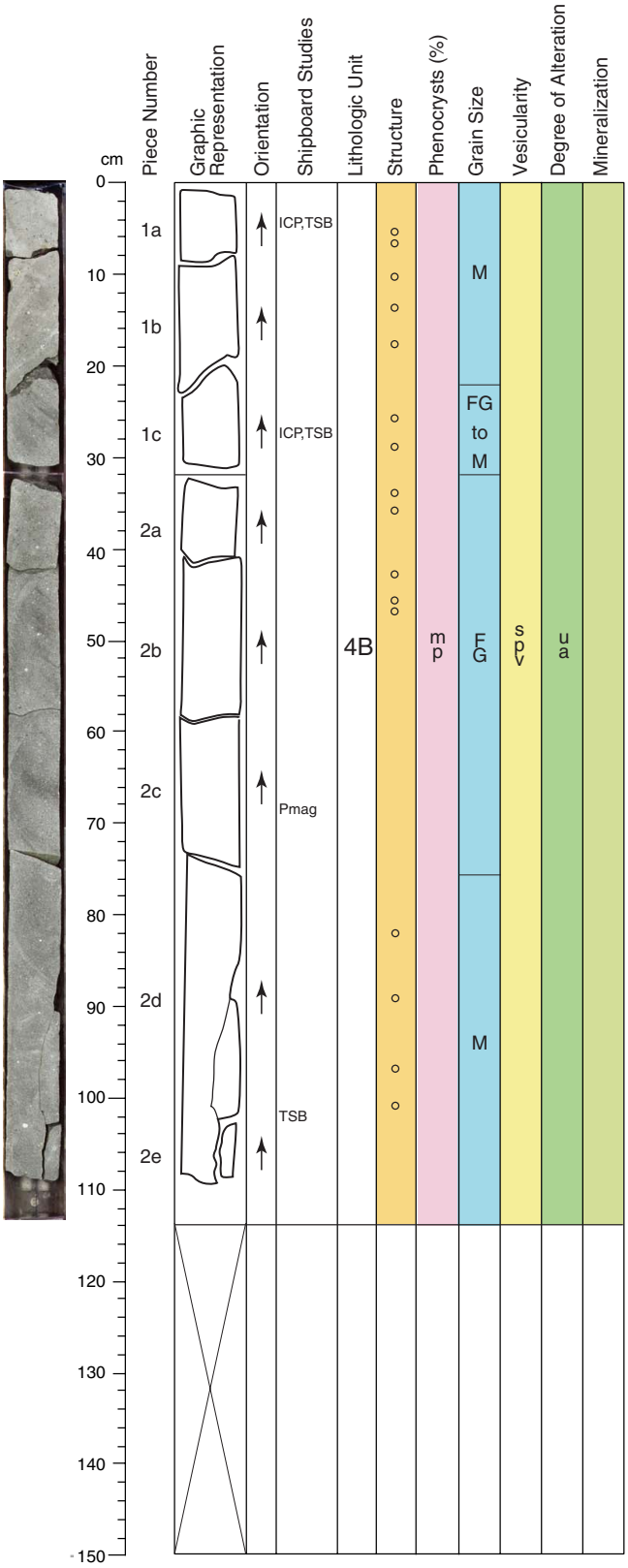
PRIMARY MINERALOGY:
Plagioclase Mode: 1%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyroxene Mode: 2%.
Crystal size: 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: < 1 mm longitudinal to the core length, filled with zeolite.
Comments: Voids filled with a green alteration product (clay).

ADDITIONAL COMMENTS:
A few rounded voids (3 mm in diameter) located at various places within the section. Cryptocrystalline rock (first occurrence of a more basaltic texture). Evidence of chilled margin in Piece 8, composed of very fine cryptocrystalline groundmass/altered glass including voids (filled with clays).

Core Photo



205-1253A-25R-2 (Section top: 514.25 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

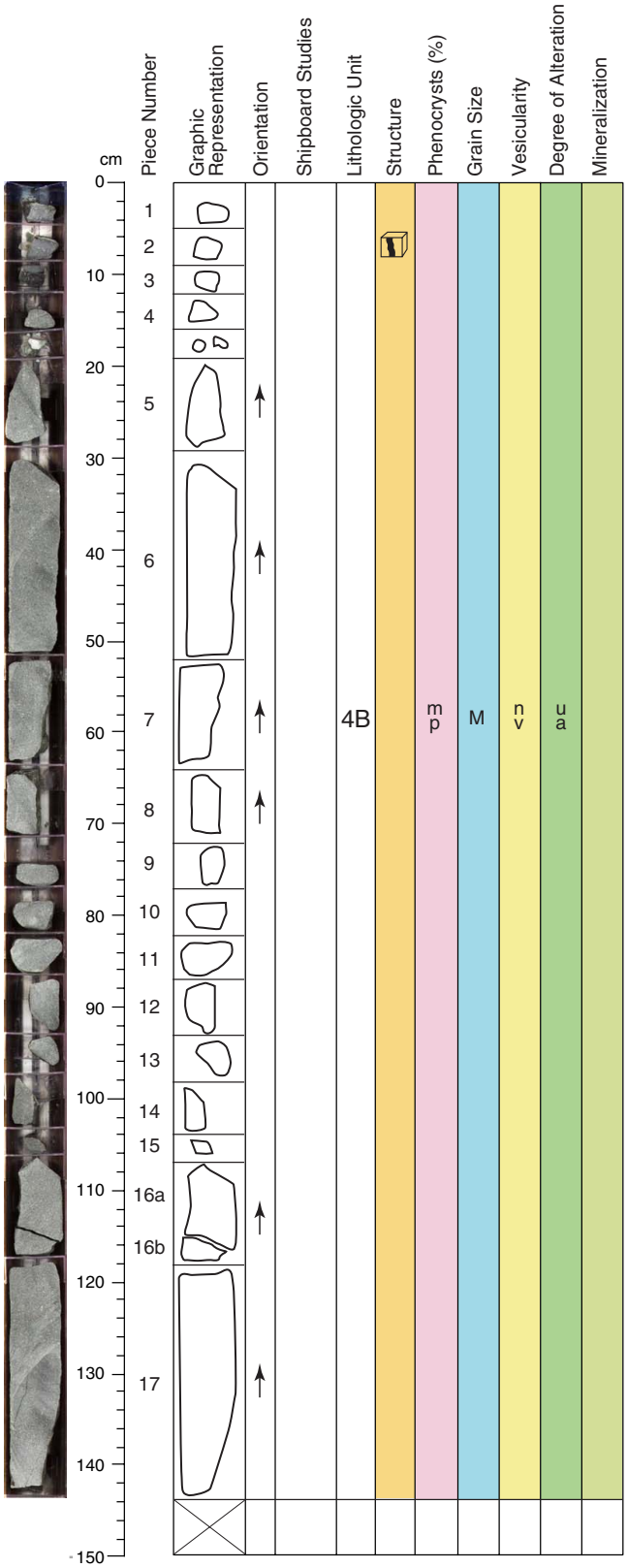
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 1%.
Crystal size: Up to 2 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%
Comments: Rare low alteration of aggregates to clay.

Pyroxene Mode: 3%.
Crystal size: 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
No sharp contact between the very microcrystalline gabbro and the fine-grained gabbro. It is a progressive grain size increase. Piece 1: sediment, re-crystallized nannofossils, chalk, and clays.

Core Photo



205-1253A-26R-1 (Section top: 516.0 mbsf)

UNIT 4B: GABBRO

Pieces: 1-17

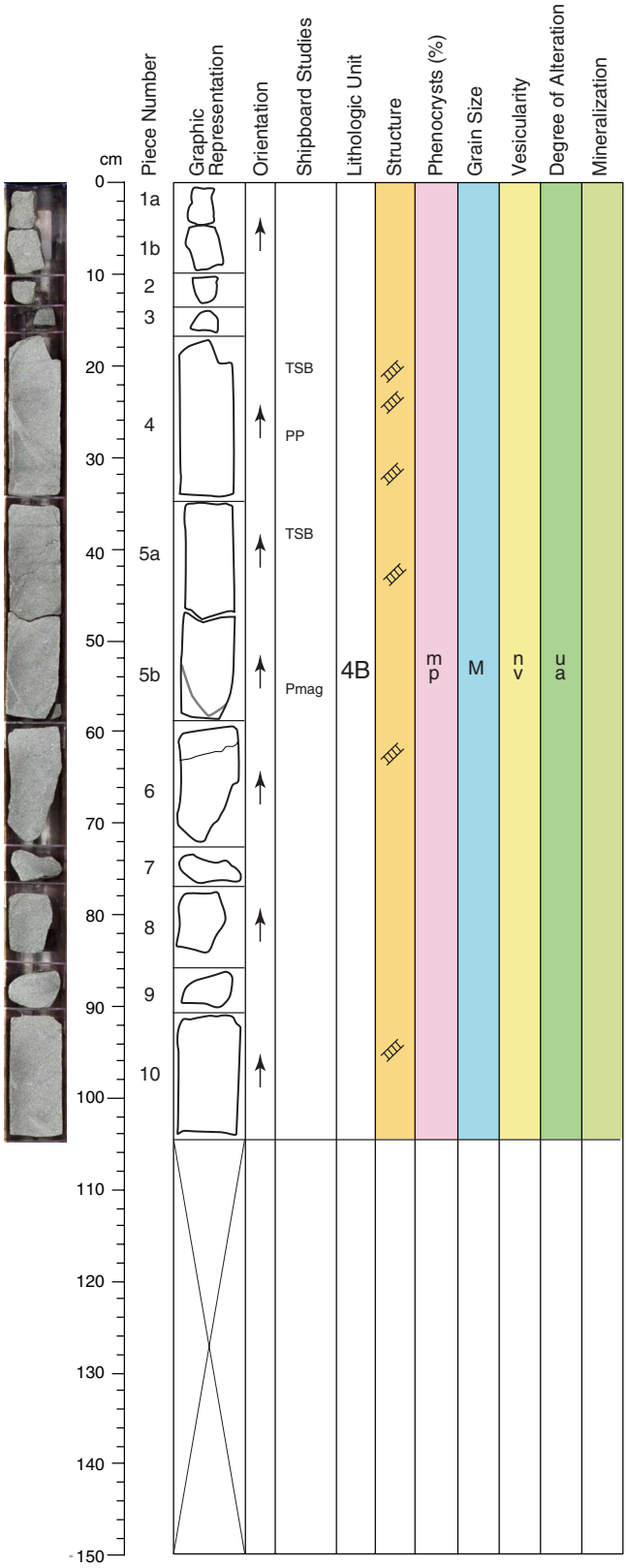
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3% - 5% (at the top).
Crystal size: Up to 1-2 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Partial alteration.

Pyroxene Mode: 1% - 3% (at the top).
Crystal size: 1-2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Total%: <1%
Comments: Very low degree of alteration, some plagioclase are partially altered. Pyroxene and groundmass might be altered as well?

Core Photo



205-1253A-26R-2 (Section top: 517.44 mbsf)

UNIT 4B: GABBRO

Pieces: 1-10

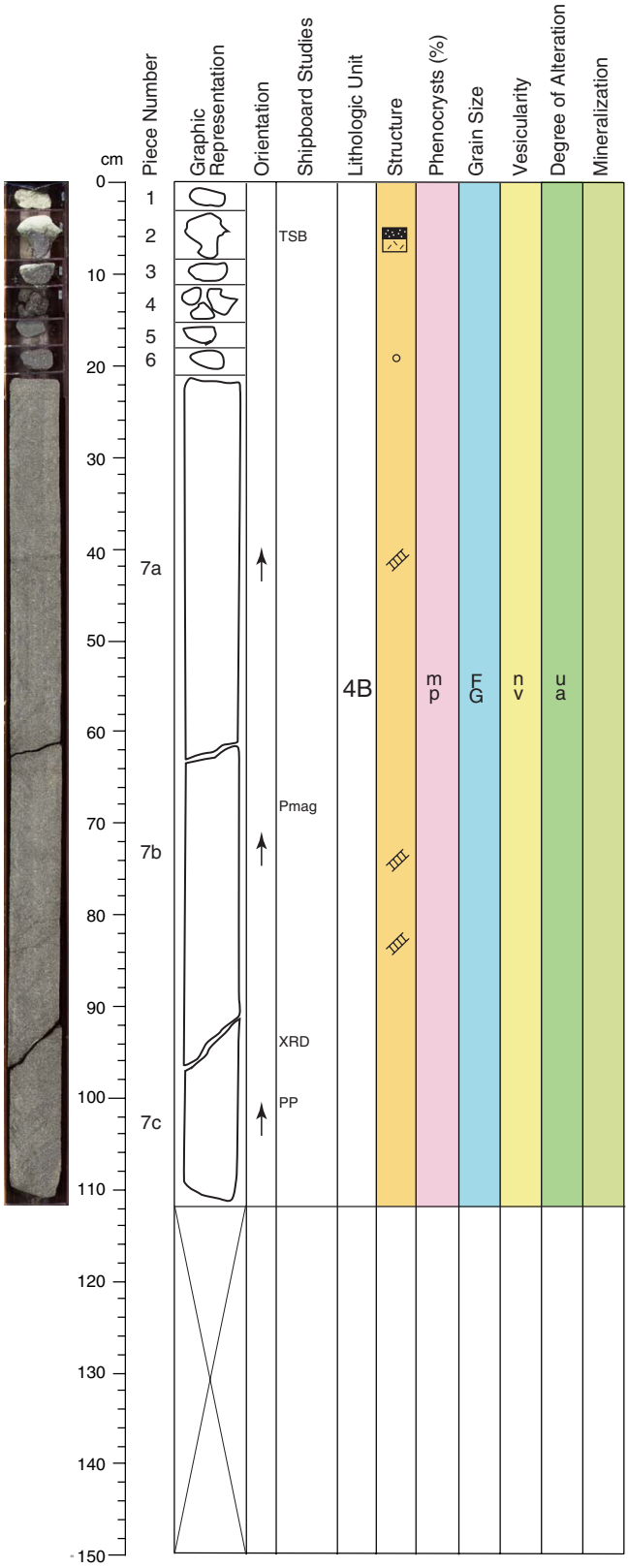
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: 2-3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Mainly as laths, rare aggregates. Some plagioclases are altered to clay.

Pyroxene Mode: 2%.
Crystal size: <1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: A few very thin veins (<1 mm thick), perpendicular to the core length, filled with cryptocrystalline groundmass and clay.

Core Photo



205-1253A-27R-1 (Section top: 519.20 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

Color: Gray

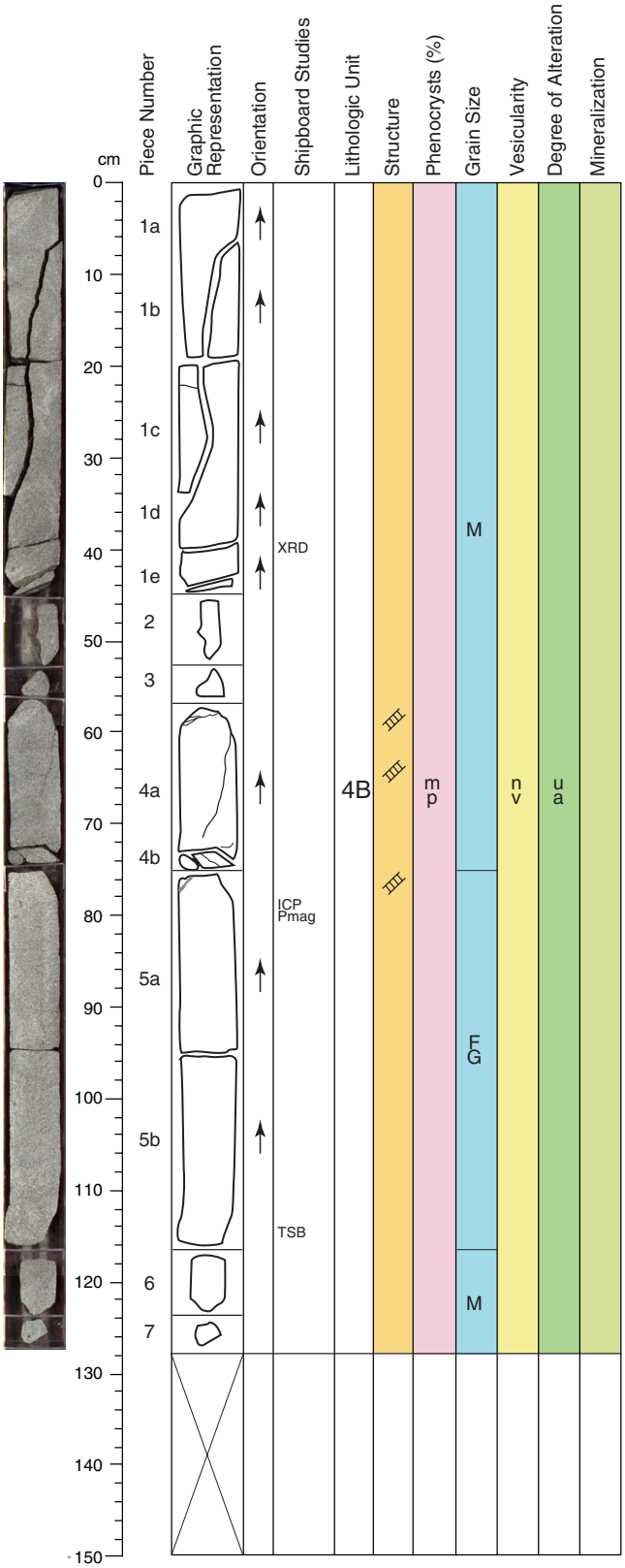
PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 3 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Partly altered to clay, small amount of aggregates, mainly as laths.

Pyroxene Mode: 3%.
Crystal size: 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: A few very tiny veins almost perpendicular to the core length.:

ADDITIONAL COMMENTS:
Piece 1: Sediment. Piece 2 and 3: Contact between gabbro and sediment (mainly clays), a few voids filled with clay or zeolite.

Core Photo



205-1253A-27R-2 (Section top: 520.32 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

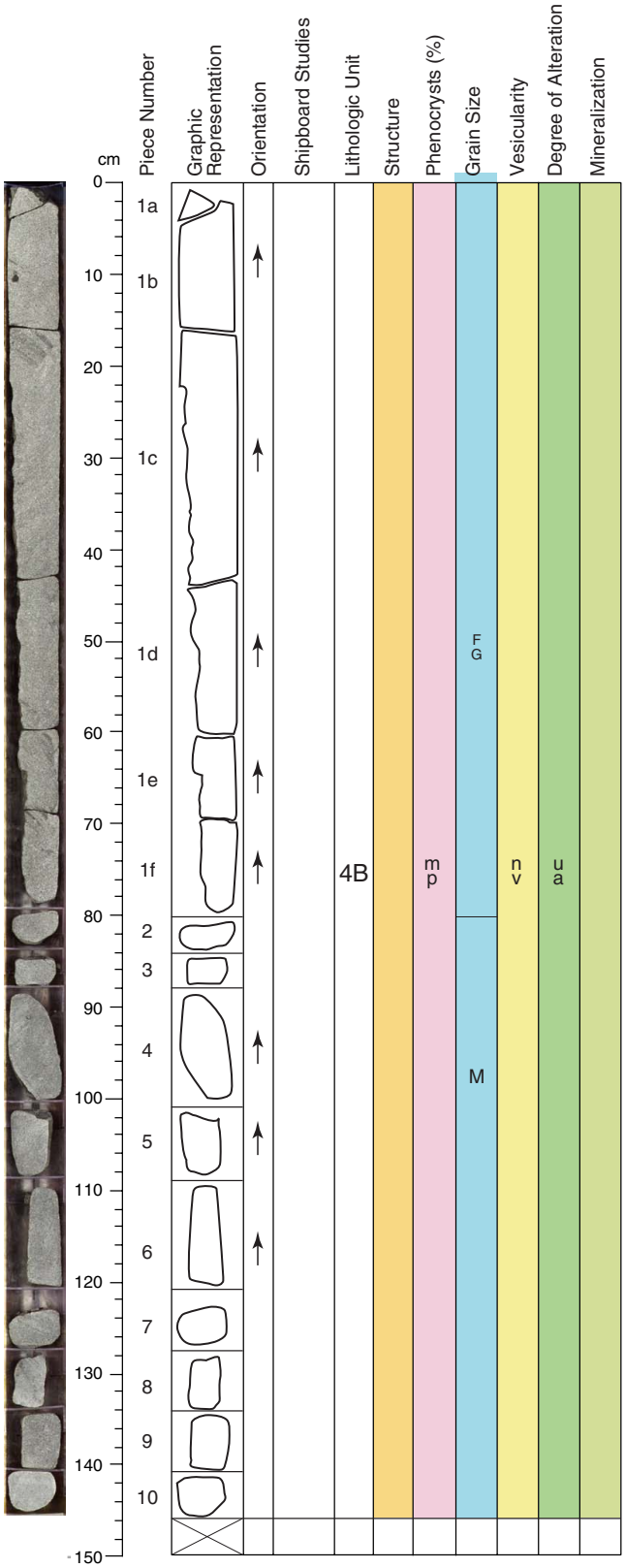
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 4 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Comments: Aggregate amount increases downwards..

Pyroxene Mode: 4%.
Crystal size: 1-1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: A few vein going through the section, very thin (<1 mm) filled with cryptocrystalline groundmass/altered glass(?) Some veins are vertical, others are horizontal.:

Core Photo



205-1253A-27R-3 (Section top: 521.6 mbsf)

UNIT 4B: GABBRO

Pieces: 1-10

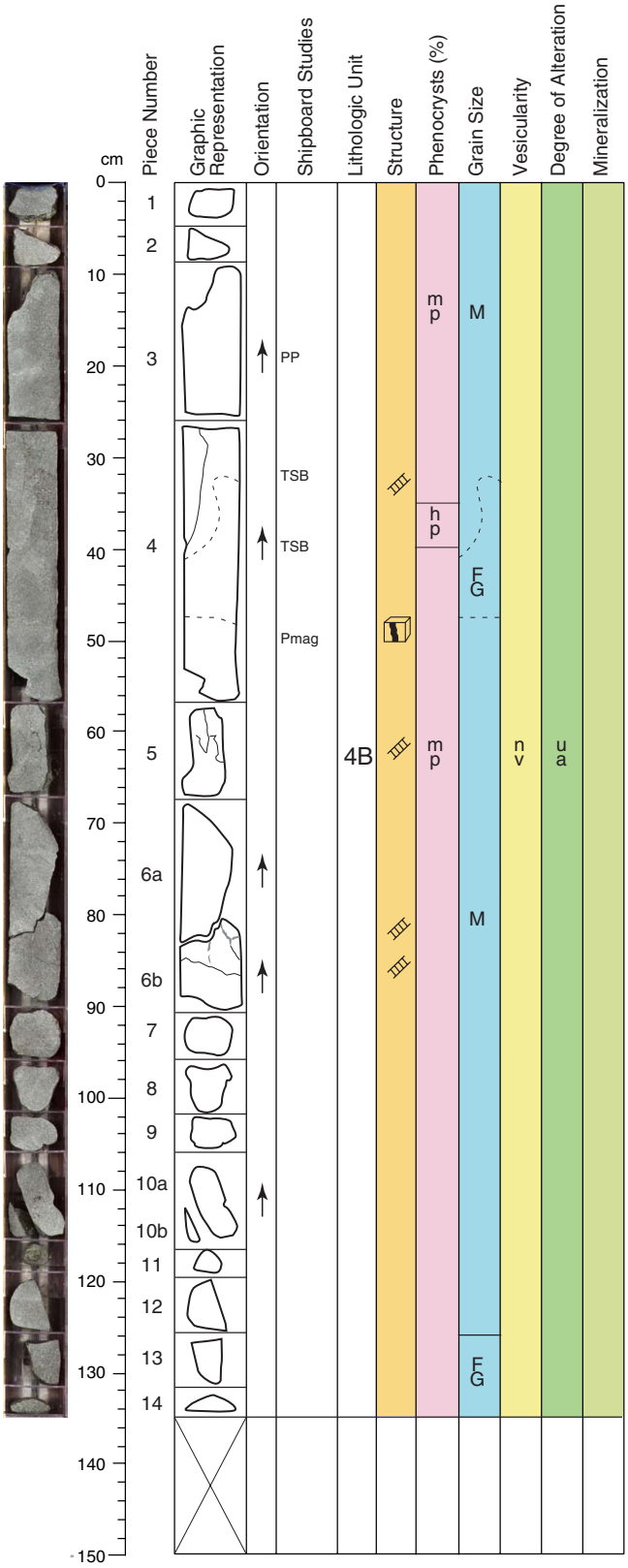
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.

Pyroxene Mode: 4%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Coarser grain size at the top of the section. Very homogeneous gabbro.

Core Photo



205-1253A-28R-1 (Section top: 523.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-14

Color: Gray

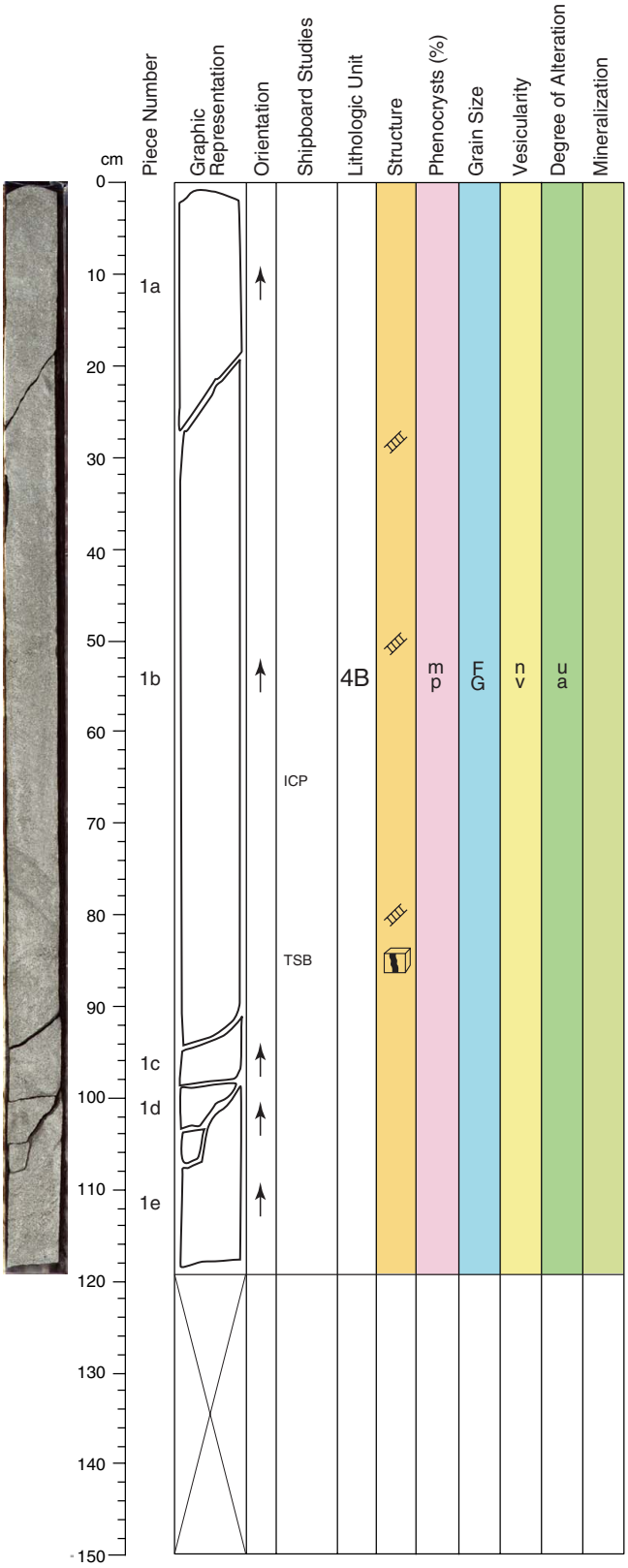
PRIMARY MINERALOGY:
Plagioclase Mode: ~4%.
Crystal size: <1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare aggregates, mainly laths, rare alteration to clays.

Pyroxene Mode: ~4%.
Crystal size: <1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Percent replacement: 1%
Comments: Partly replaced by a pale-green clay.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: A few veins (<1 mm wide), longitudinal to the core length.

ADDITIONAL COMMENTS:
Magmatic contact within Piece 4.

Core Photo



205-1253A-28R-2 (Section top: 525.25 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

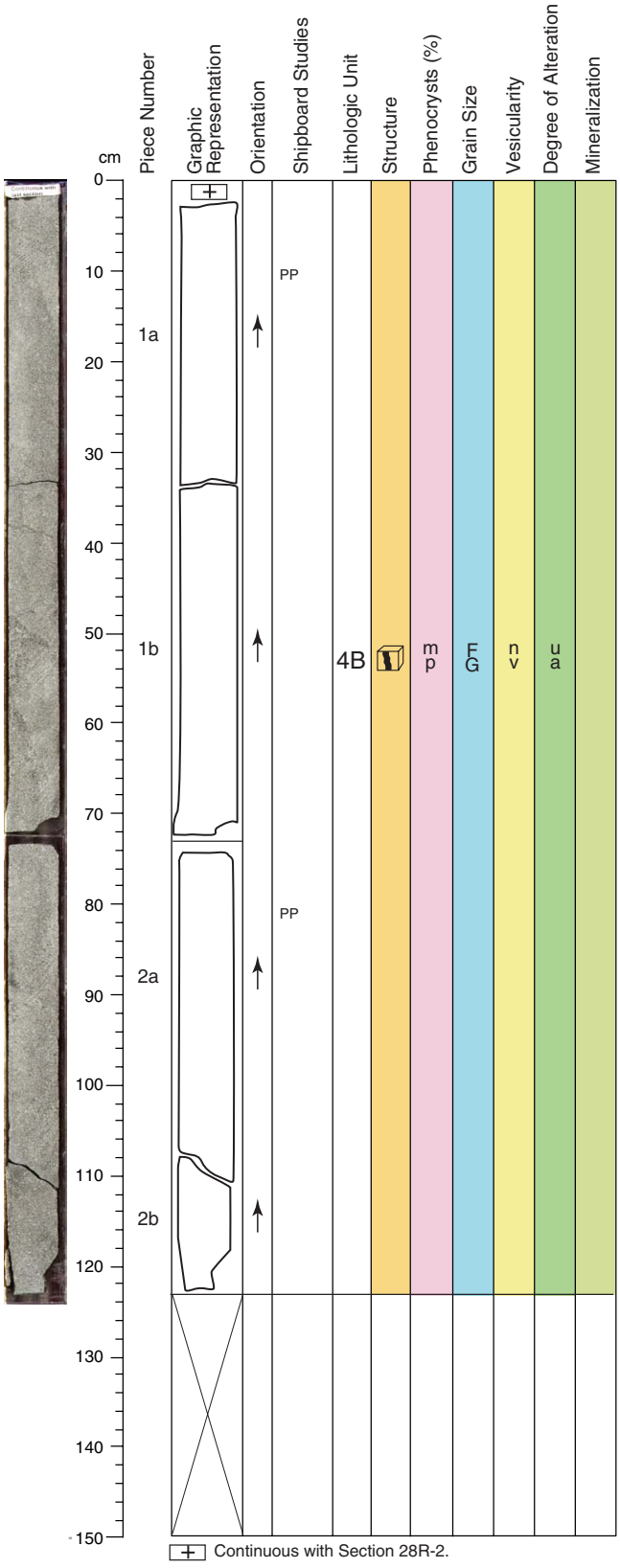
PRIMARY MINERALOGY:
Plagioclase Mode: 4%.
Crystal size: ~2 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: More laths than aggregates, partly altered to clay.

Pyroxene Mode: 5%.
Crystal size: ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Total%: <1%.
Comments: Plagioclase in the groundmass is partly altered to clay.

ADDITIONAL COMMENTS:
Higher phenocryst abundance at 86 cm with more pyroxene towards the bottom.

Core Photo



205-1253A-28R-3 (Section top: 526.45 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

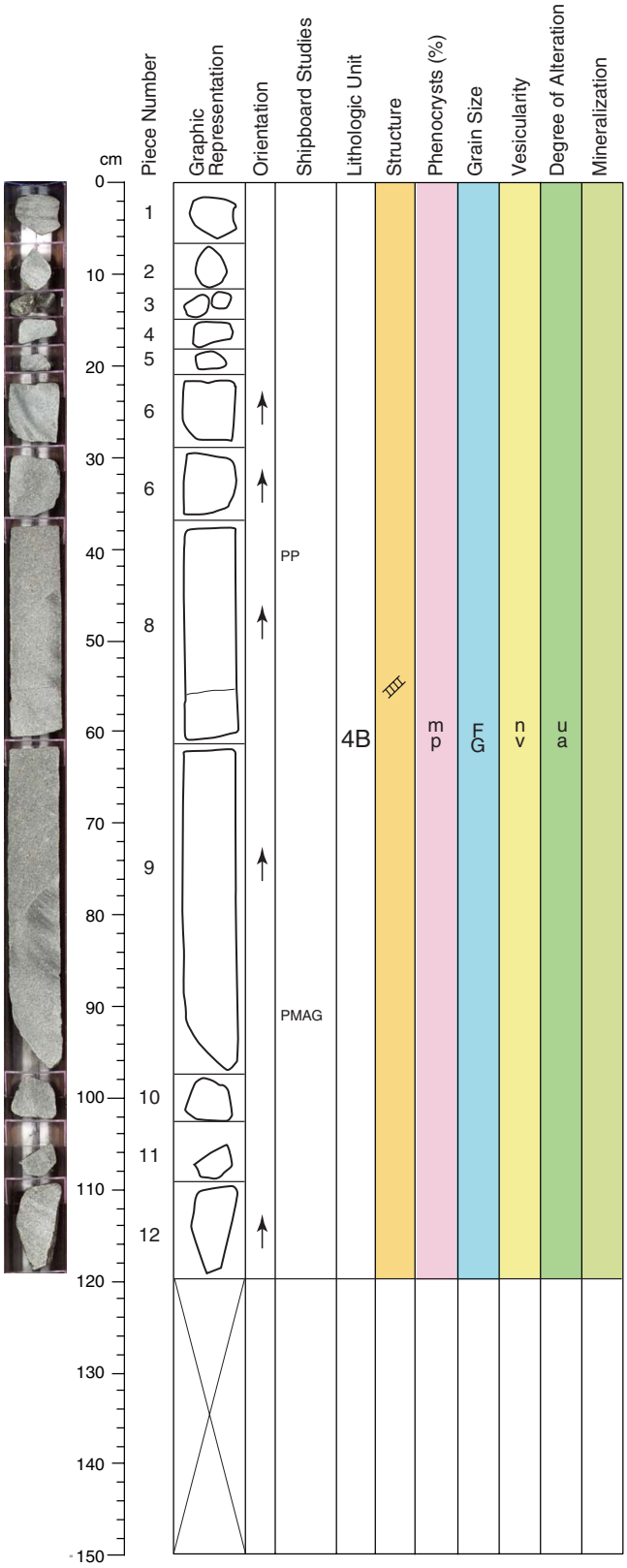
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: 3 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Very rare aggregates.

Pyroxene Mode: 3%.
Crystal size: 1.5 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Magmatic contact in Piece 1b (at 52 cm), with a coarser grain size plagioclase and pyroxene. Contact is curved. It is difficult to estimate the extent of coarse grained gabbro as there is no sharp contact. It is a progressive grain size decrease from top to bottom.

Core Photo



205-1253A-29R-1 (Section top: 528.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-12

Color: Gray

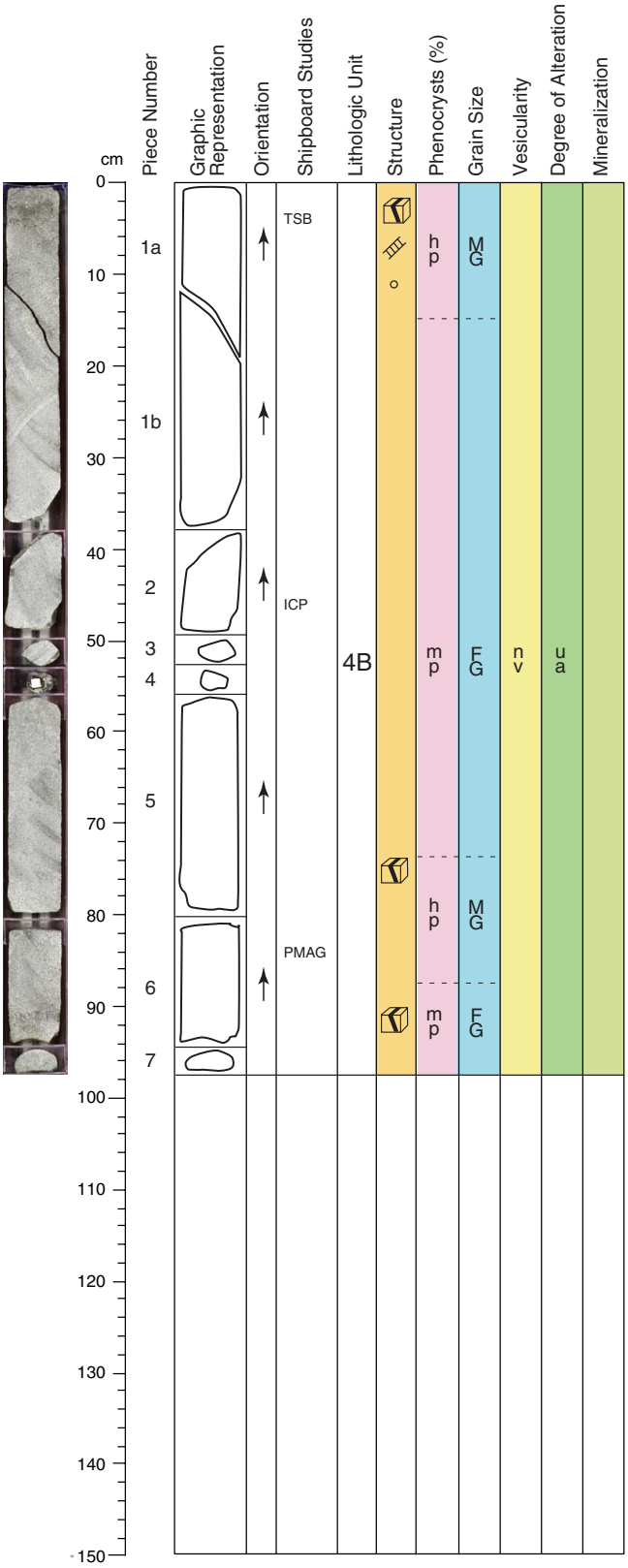
PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths and rare aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare partial replacement of aggregates to light-gray-brownish clay.

Pyroxene Mode: 5%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: < 1%.
Comments: Very rare replacement to a light green clay. Pyroxenes are associated with the rare plagioclase aggregates. Higher abundance of pyroxene towards the bottom of the section.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Remain open.

ADDITIONAL COMMENTS:
No magmatic contacts are identified.

Core Photo



205-1253A-29R-2 (Section top: 530.1 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

Color: Gray

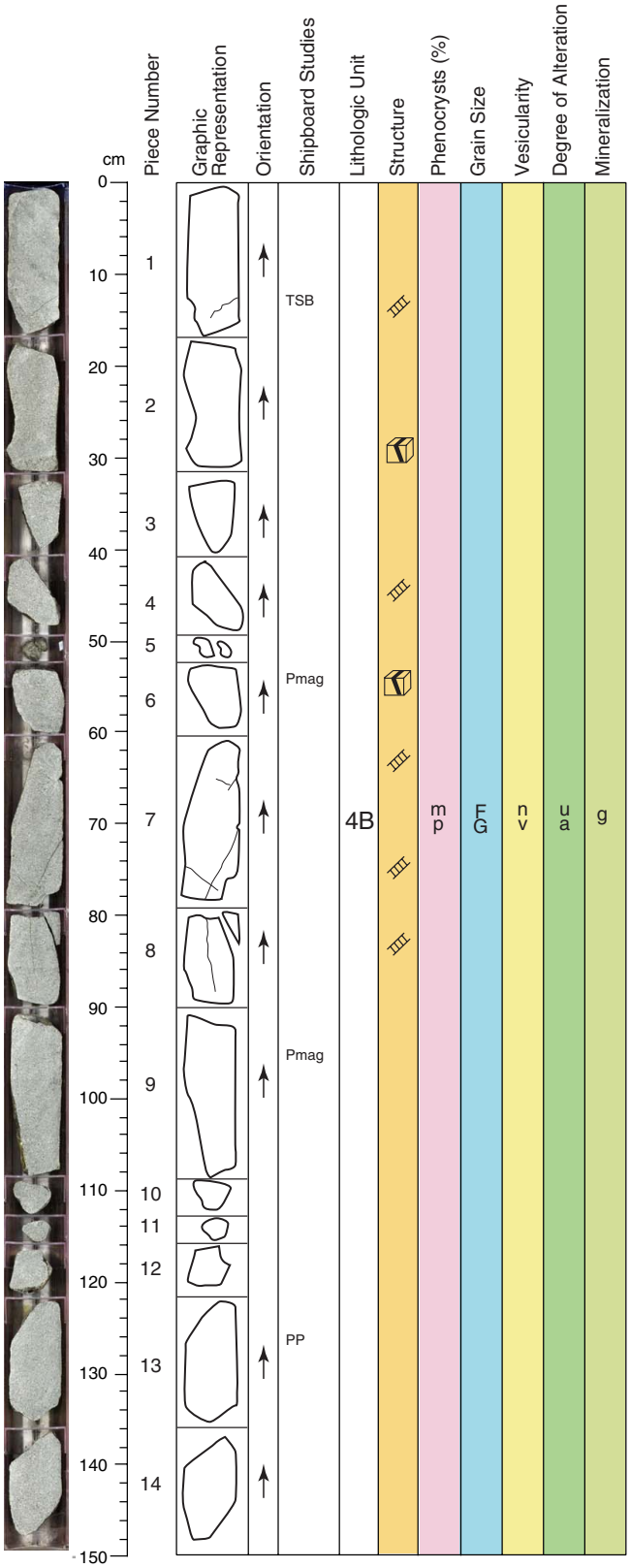
PRIMARY MINERALOGY:
Plagioclase Mode: 4%.
Crystal size: 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare replacement of aggregates to a light gray-brownish clay.

Pyroxene Mode: 8% in highly phyric rocks; 5% in moderately phyric rocks.
Crystal size: 2 mm, at magmatic contacts up to 3 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Higher abundance and greater size at magmatic contacts. Partly associated with plagioclase aggregates.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Filled with mixture of clay and zeolites (light gray-white color).
Comments: Very rare low alteration of phenocrysts to a light gray-brownish clay.

ADDITIONAL COMMENTS:
Three magmatic contacts: Piece 1a exhibit at the top a darker gray color. High abundance of pyroxene (up to 3 mm in size) at the contact. Weak magmatic contact at 77 cm, identified by the higher abundance of pyroxene phenocrysts with a gradation of the groundmass from microcrystalline (at 77 cm) to fine-grained (at 88 cm). Third magmatic contact at 92-94 cm is characterized by a abundance of pyroxene phenocrysts and a microcrystalline groundmass in between.

Core Photo



205-1253A-30R-1 (Section top: 534.5 mbsf)

UNIT 4B: GABBRO

Pieces: 1-14

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: 2 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some aggregates are altered to a light gray-brownish clay.

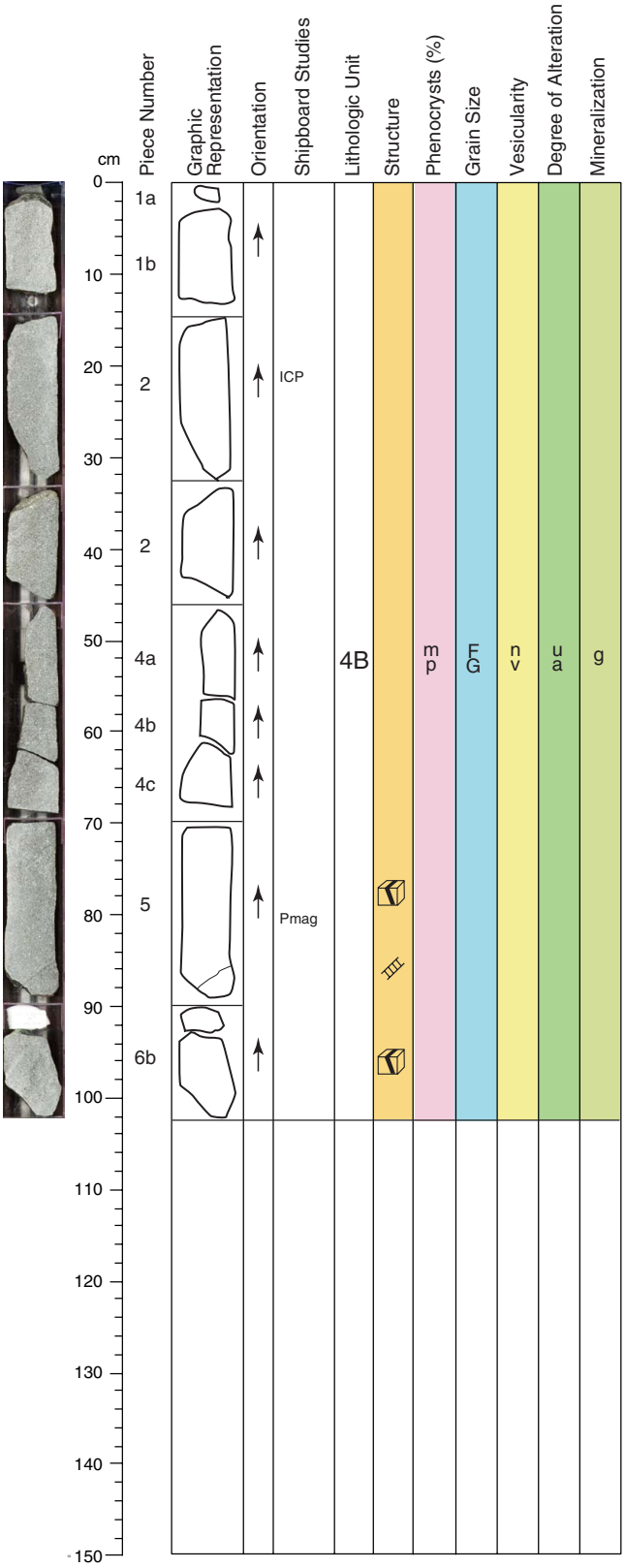
Pyroxene Mode: 6%.
Crystal size: 2 mm.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some pyroxene are partly altered to pale green clay.

Pyrite Mode: 1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: < 1%.
Veins: Remain open or lined with cryptocrystalline groundmass/altered glass.

ADDITIONAL COMMENTS:
Magmatic contact at the bottom of Piece 2 and the top of Piece 3. At the top cryptocrystalline groundmass (0.1-0.5 cm wide), than medium grained (3 cm wide) with high abundance of pyroxene (~20%). 5% of the pyroxene is altered to green clay, which seems to be different from the alteration product of pyroxene in the rest of the section. No identifiable contact towards the bottom. The second magmatic contact is only weak and could also possibly reflect the bottom of the first contact.

Core Photo



205-1253A-30R-2 (Section top: 536.0 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare low alteration of aggregates to a light gray-brownish clay.

Pyroxene Mode: 6%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare low alteration of pyroxene to pale green or green-gray clay.

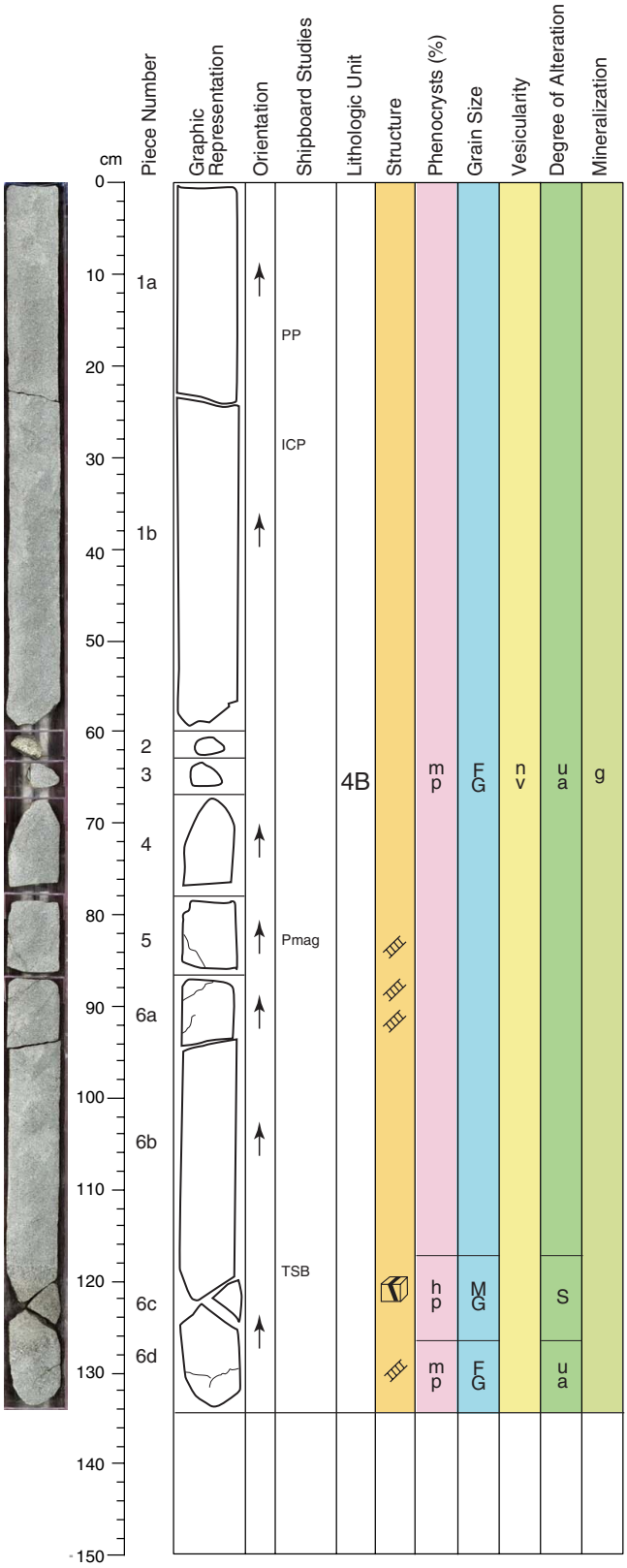
Pyrite Mode: 1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Probably filled with cryptocrystalline groundmass/altered glass.

ADDITIONAL COMMENTS:
Weak magmatic contacts in Pieces 5 and 6, identified by the higher abundance of pyroxene and plagioclase aggregates in the groundmass.
Piece 6:

No subpiece 6a in archive half.

Core Photo



205-1253A-30R-3 (Section top: 537.03 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Rare low alteration of aggregates to a light gray-brownish clay.

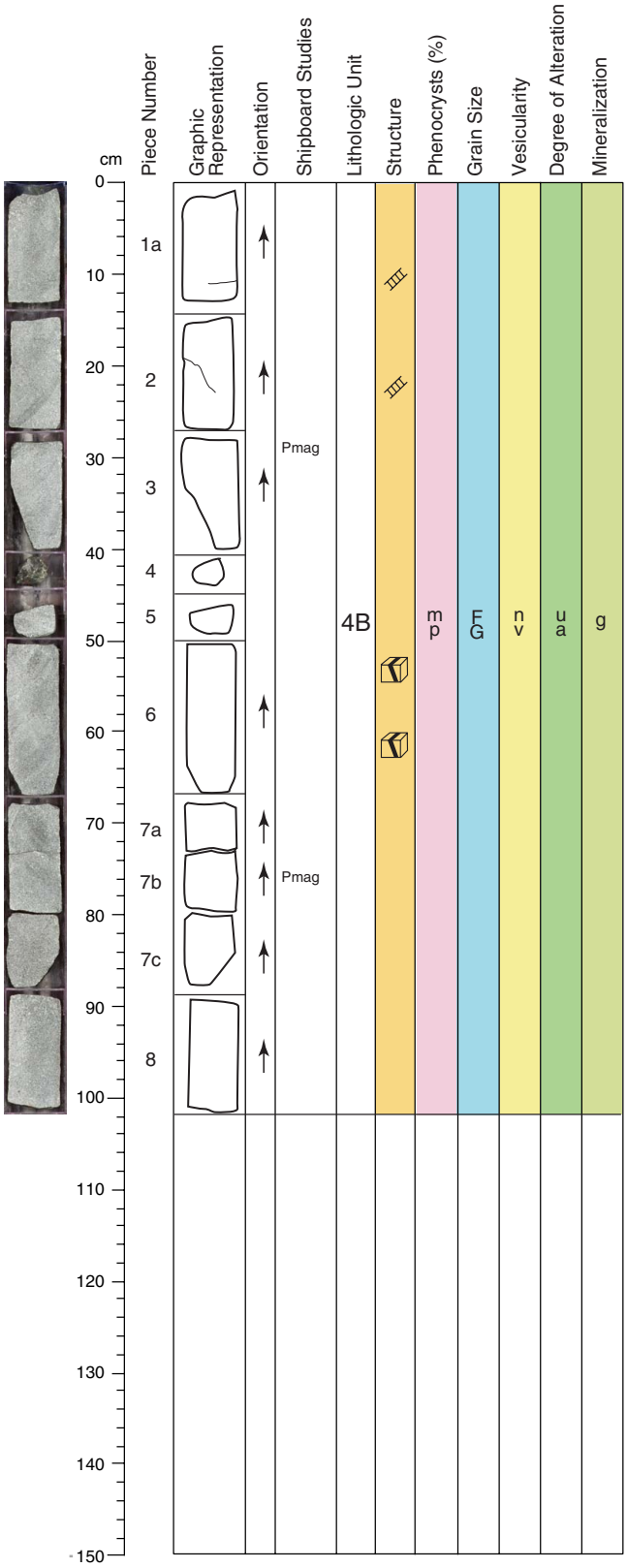
Pyroxene Mode: 5%.
Crystal size: Up to 2 mm, rare phenocrysts up to 3 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Partly associated with plagioclase aggregates. Very few pyroxenes are partly altered to green-gray clay.

Pyrite Mode: 1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: < 1%.
Veins: Filled with a mixture of cryptocrystalline groundmass/altered glass and a greenish gray clay.

ADDITIONAL COMMENTS:
Magmatic contact in Piece 6 (at 119-129 cm) with slight alteration of pyroxene which is more common in this part of the section (~30%).

Core Photo



205-1253A-30R-4 (Section top: 538.37 mbsf)

UNIT 4B: GABBRO

Pieces: 1-8

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare low alteration of aggregates to a light gray-brownish clay.

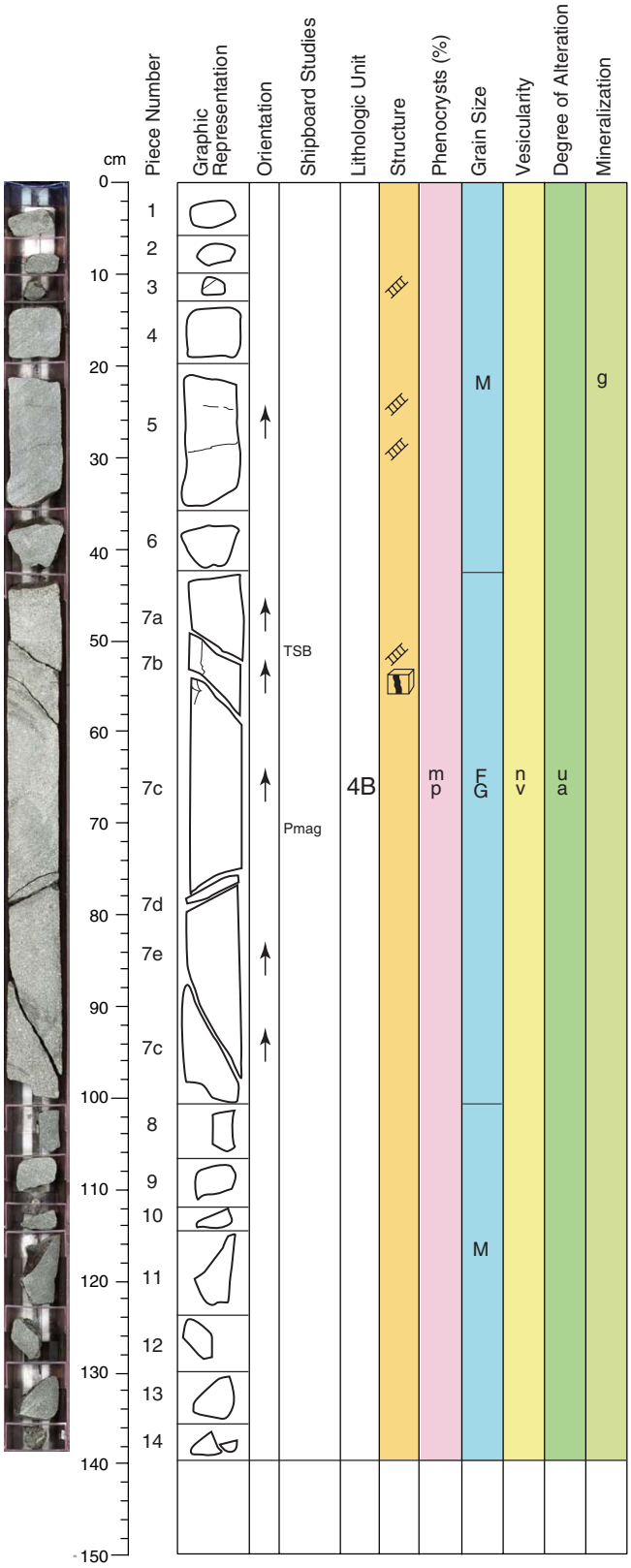
Pyroxene Mode: 3%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Rare low alteration of pyroxene to green-gray clay.

Pyrite Mode: 1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Filled with cryptocrystalline groundmass/altered glass and clay.

ADDITIONAL COMMENTS:
Weak magmatic contacts/cumulates in Piece 6 with higher abundance of pyroxene, only small pockets.

Core Photo



205-1253A-31R-1 (Section top: 538.5 mbsf)

UNIT 4B: GABBRO

Pieces: 1-14

Color: Gray

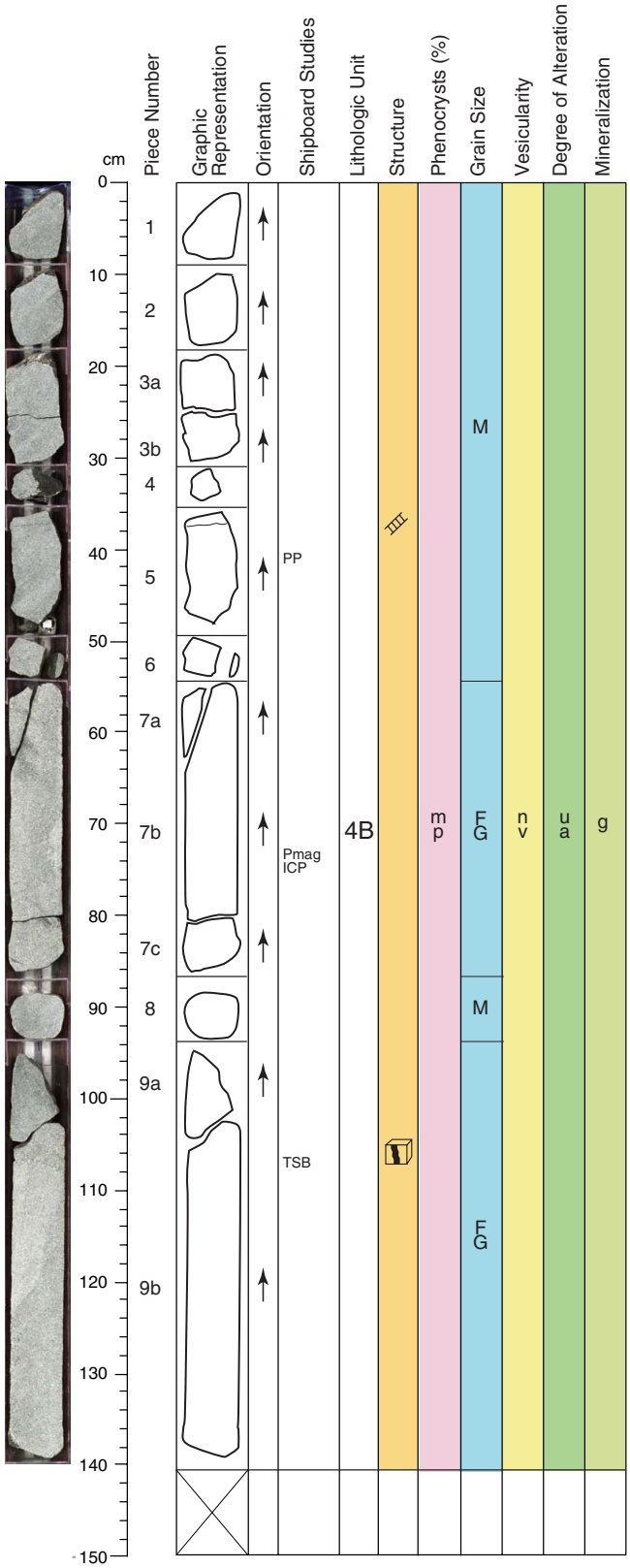
PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Piece 7; 4% for the rest of the section.
Crystal size: Up to 3 mm in Piece 7.
Up to 2 mm at the rest of the section.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: In Piece 7 mainly aggregates, small amount of laths.
Rare aggregates and mainly laths at the rest of the section.

Pyroxene Mode: 4% in Piece 7; 2% for the rest of the section.
Crystal size: Up to 1.5 mm in Piece 7
Up to 1 mm for the rest of the section..
Crystal shape: Subhedral to anhedral in Piece 7.
Subhedral for the rest of the section.
Crystal orientation: Random.
Percent replacement: 1%.

Pyrite Mode: <<1%.
Crystal size: <0.1 mm.

ADDITIONAL COMMENTS:
The bottom and upper part of the section exhibit a finer grain size than the rest of the section (microcrystalline to fine-grained). No sharp contact, grain size changes gradually. More plagioclase aggregates in the fine-grained section (Piece 7).

Core Photo



205-1253A-31R-2 (Section top: 539.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-9

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Pieces 7 and 9; 3% for the rest of the section.
Crystal size: Up to 3 mm in Pieces 7 and 9
Up to 2 mm at the rest of the section.
Crystal shape: Euhedral to subhedral in Pieces 7 and 9.
Subhedral for the rest of the section.
Crystal orientation: Random.
Percent replacement: <1% in Pieces 7 and 9.
Comments: Mainly aggregates in Pieces 7 and 9 which are partly altered to light gray-brownish clay. In the rest of the section plagioclase occurs as laths and aggregates.

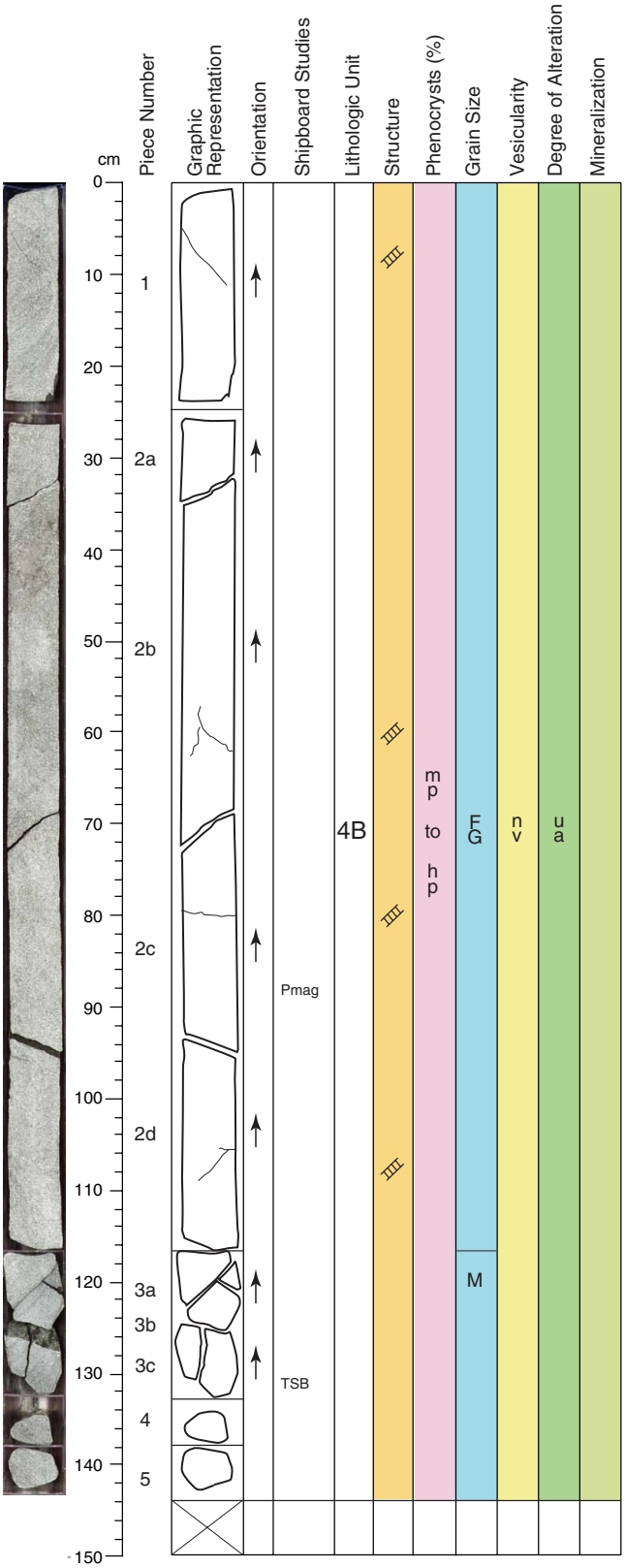
Pyroxene Mode: 5% in Pieces 7 and 9; 2% for the rest of the section.
Crystal size: Up to 1.5 mm in Pieces 7 and 9.
Up to 1 mm at the rest of the section
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Partly associated with plagioclase aggregates.

Pyrite Mode: <<1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Within Piece 9b (at 108 cm), probably a magmatic contact between a microcrystalline gabbro at the top and the fine-grained gabbro at the bottom.

ADDITIONAL COMMENTS:
Change in the groundmass color in Pieces 7 and 9 to light gray, due to the higher abundance of plagioclase in the groundmass.

Core Photo



205-1253A-31R-3 (Section top: 541.3 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

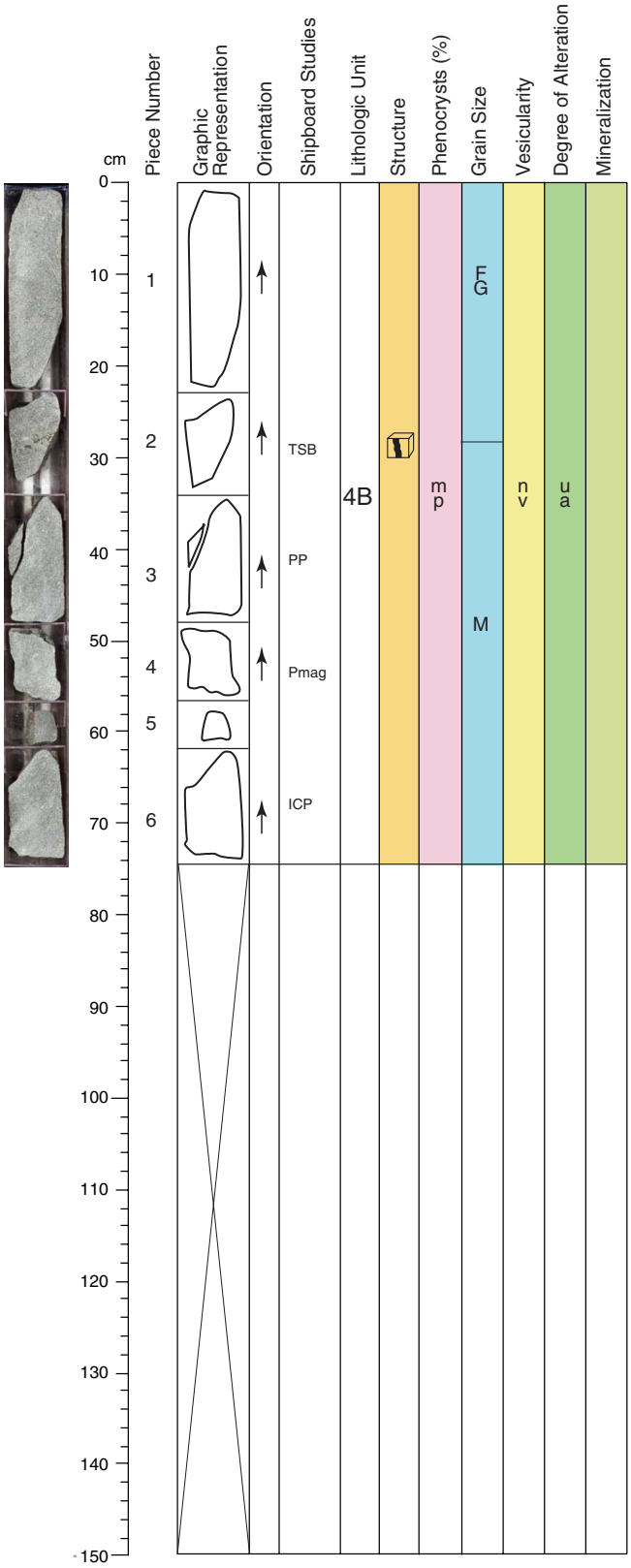
Color: Light gray to gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5% as laths and aggregates in Pieces 1 and 2.
2%-3% mostly as laths in Pieces 3 to5.
Crystal size: 3-4 mm in Pieces 1 and 2.
1.5 mm in Pieces 3 to 5.
Crystal shape: Euhedral to subhedral in Pieces 1 and 2.
Euhedral in Pieces 3 to 5.
Crystal orientation: Random.
Percent replacement: << 1%.
Comments: Partly altered to clay.

Pyroxene Mode: 5%.
Crystal size: 2-3 mm in Pieces 1 and 2.
Up to 2.5mm in Pieces 3 to 5.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: < 1%.
Comments: Replaced by pale green clay.

Pyrite Mode: < 1% within the groundmass.

Core Photo



205-1253A-31R-4 (Section top: 542.74 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5% in Pieces 1 and 2 until the contact.
3% in Pieces 3 to 6.
Crystal size: 3 mm in Pieces 1 and 2 until the contact.
Up to 2 mm in Pieces 3 to 6.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: < 1%.
Comments: Pieces 1 and 2 until the contact: More aggregates than laths, partly altered to clays. Pieces 3 to 6: More laths, only a few aggregates.

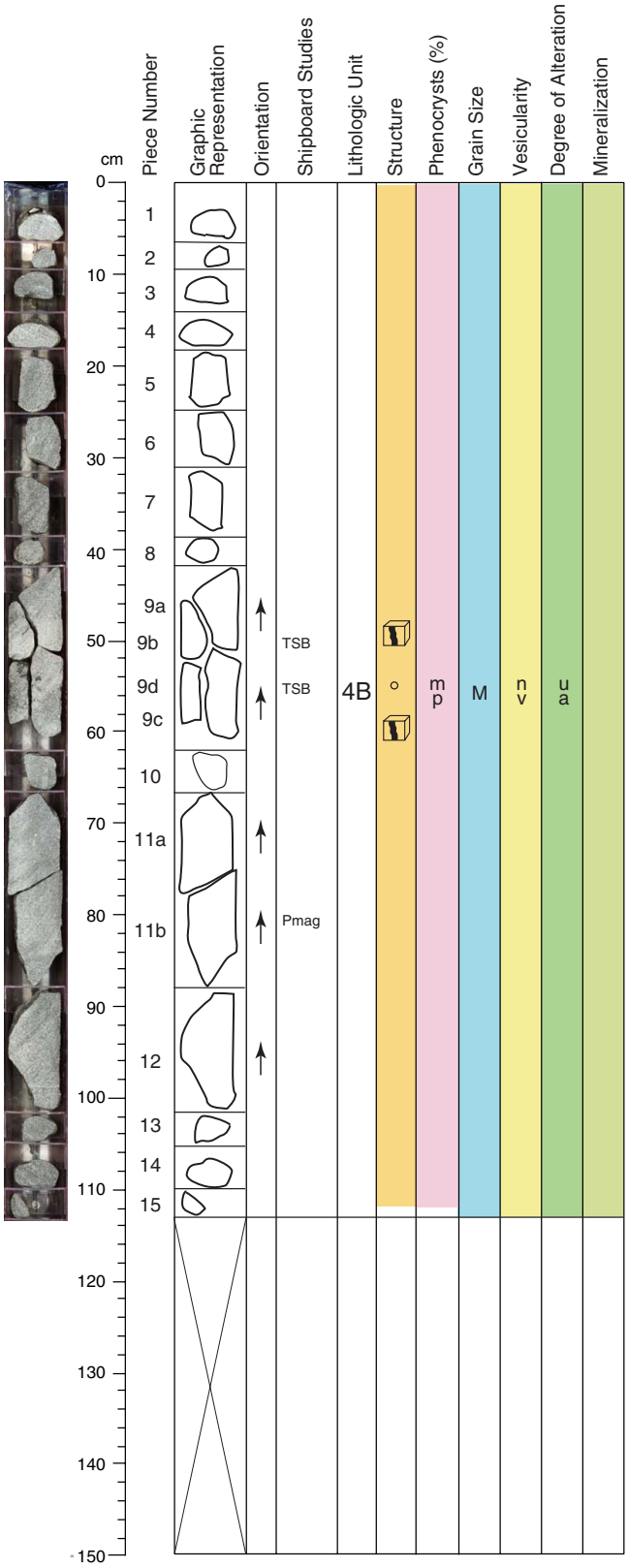
Pyroxene Mode: 5% in Pieces 1 and 2 until the contact.
4% in Pieces 3 to 6.
Crystal size: 1.5 mm in Pieces 1 and 2 until the contact.
Up to 3 mm in Pieces 3 to 6.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyrite Mode: < 1% within the groundmass.

SECONDARY MINERALOGY:
Comments: Alteration of glass.

ADDITIONAL COMMENTS:
Perhaps a magmatic contact in Piece 2 (at 28 cm), fine-grained to microcrystalline. The boundary is about 1.5 cm wide but not sharp.

Core Photo



205-1253A-32R-1 (Section top: 543.2 mbsf)

UNIT 4B: GABBRO

Pieces: 1-15

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: < 1%.
Comments: Partly altered to clays.

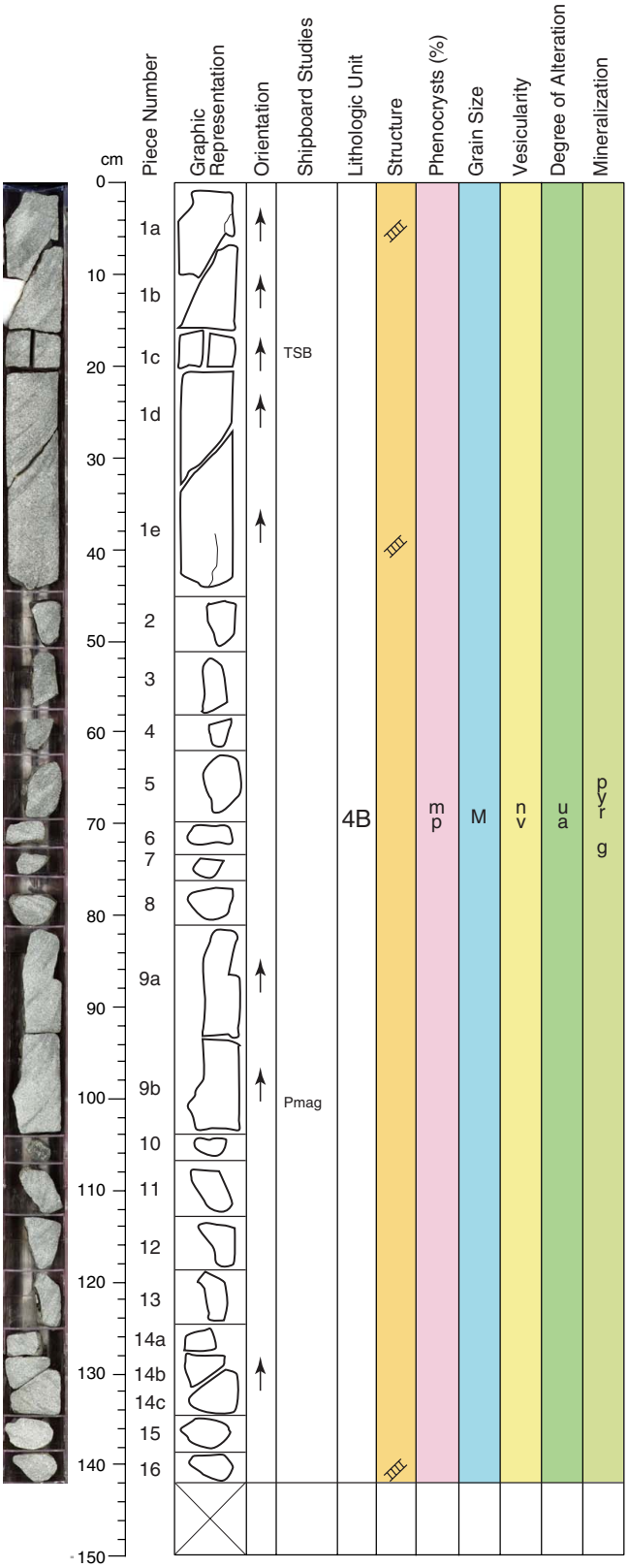
Pyroxene Mode: 5%.
Crystal size: ~1 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: Not evident.
Comments: More pyroxene towards the bottom of Section 1.

Pyrite Mode: < 1% within the groundmass but less than Cores 30R and 31R.

SECONDARY MINERALOGY:
Comments: Small pockets of cryptocrystalline groundmass/glass up to 1 mm wide, very irregular in shape, probably altered to clay and zeolite.

ADDITIONAL COMMENTS:
The piece in between the magmatic contact is very fine-grained with plagioclase and pyroxene. The rest of the section is a very homogeneous gabbro where the proportions of plagioclase and pyroxene vary between 60:40 and 40:60.

Core Photo



205-1253A-32R-2 (Section top: 544.33 mbsf)

UNIT 4B: GABBRO

Pieces: 1-16

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 3 mm as laths and rare aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: < 1%

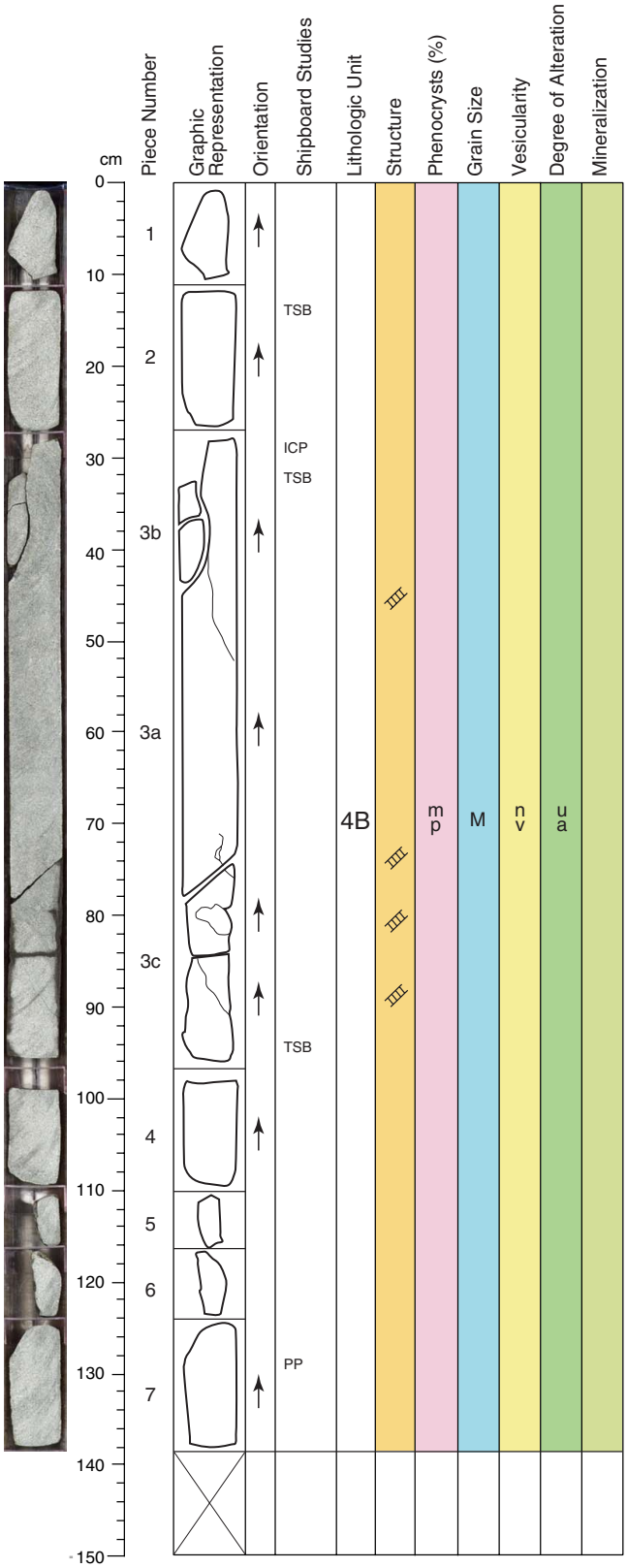
Pyroxene Mode: 3%.
Crystal size: Up to 2 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyrite Mode: < 1% within the groundmass.

SECONDARY MINERALOGY:
Veins: Small veins probably filled with clays, 1 mm wide perpendicular to the core length.

ADDITIONAL COMMENTS:
Very homogeneous microcrystalline groundmass. Amount of phenocrysts does not vary within the length of the section.

Core Photo



205-1253A-32R-3 (Section top: 545.75 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

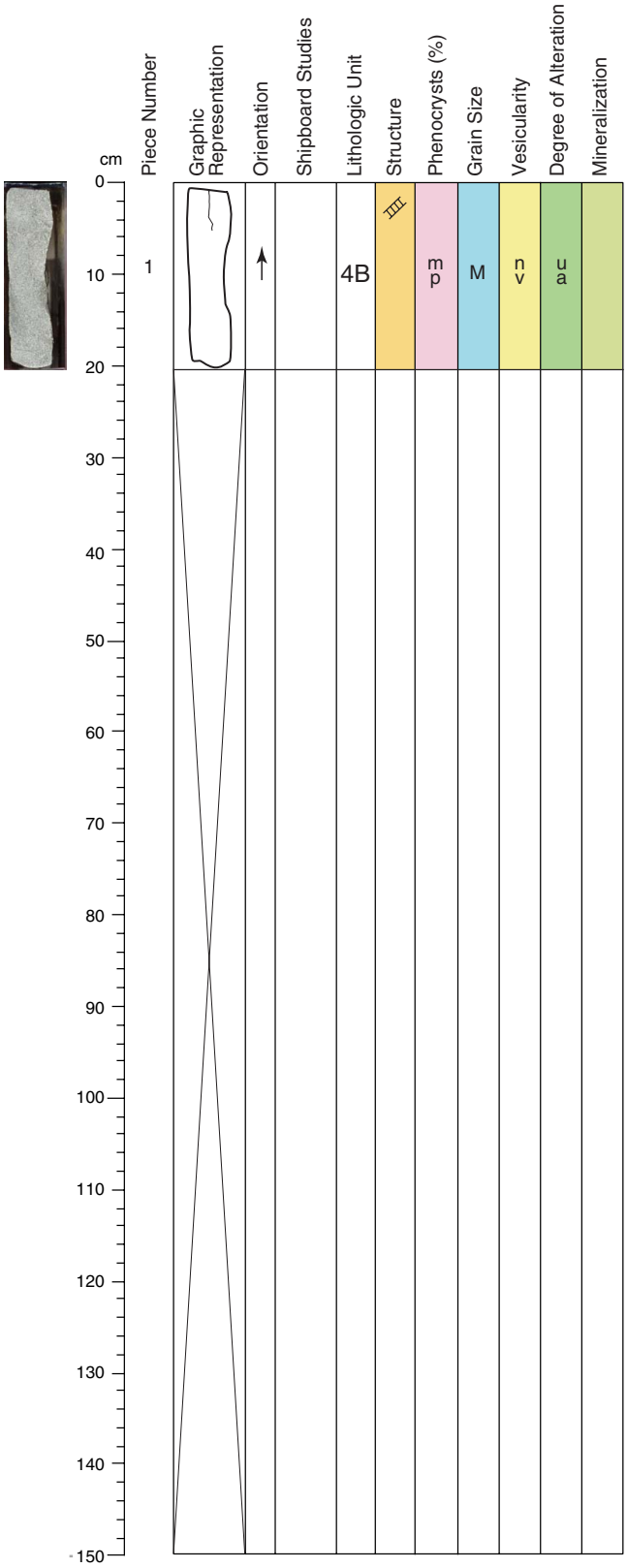
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 4 mm as laths and aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: < 1%.
Comments: Mainly aggregates at the top, less and less towards the bottom. Trace of very rare alteration.

Pyroxene Mode: 3%-4%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Very homogeneous section, nothing special.

Core Photo



205-1253A-32R-4 (Section top: 547.14 mbsf)

UNIT 4B: GABBRO

Pieces: 1

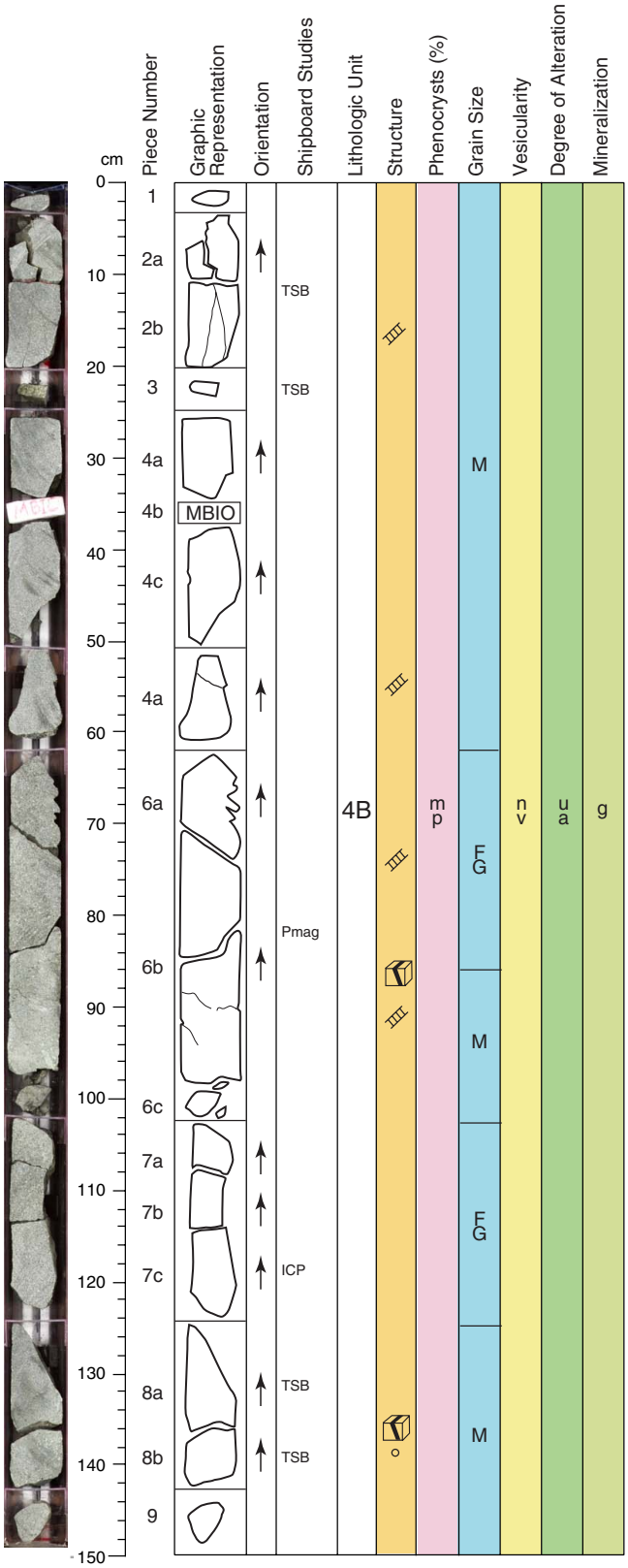
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 1.5 mm as laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 5%.
Crystal size: ~1 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Very similar to Section 32R-3. Homogeneous section.

Core Photo



205-1253A-33R-1 (Section top: 549.2 mbsf)

UNIT 4B: GABBRO

Pieces: 1-9

Color: Gray

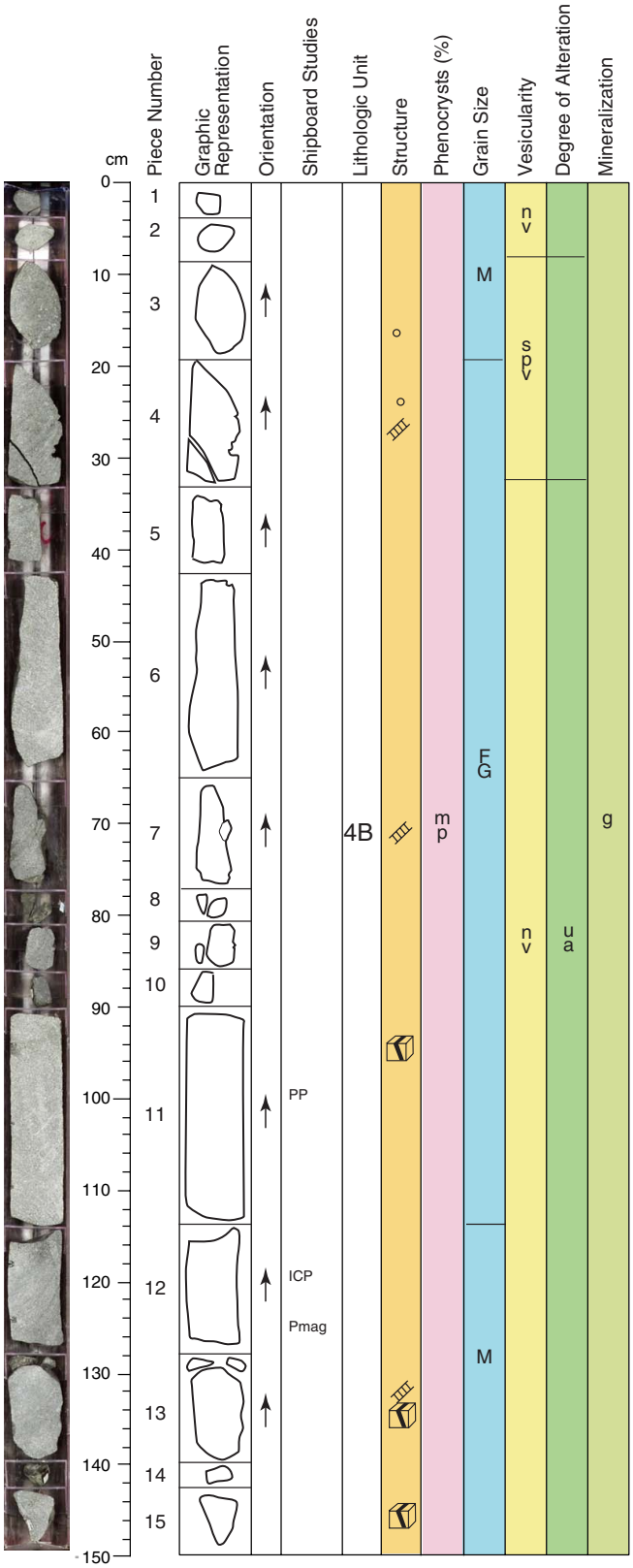
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: ~2 mm as laths and rare aggregates.
Crystal shape: Euhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Slightly altered to clay.

Pyroxene Mode: 5%.
Crystal size: Up to ~1.5 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyrite Mode: < 1% within the groundmass.

SECONDARY MINERALOGY:
Comments: In the microcrystalline pieces, we observed more voids filled with altered glass, clay, or zeolite.

Core Photo



205-1253A-33R-2 (Section top: 550.7 mbsf)

UNIT 4B: GABBRO

Pieces: 1-15

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: ~2.5 mm as laths and aggregates. Bottom of Piece 3 up to 4 mm as aggregates
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Some aggregates are replaced by light-gray brownish clay.

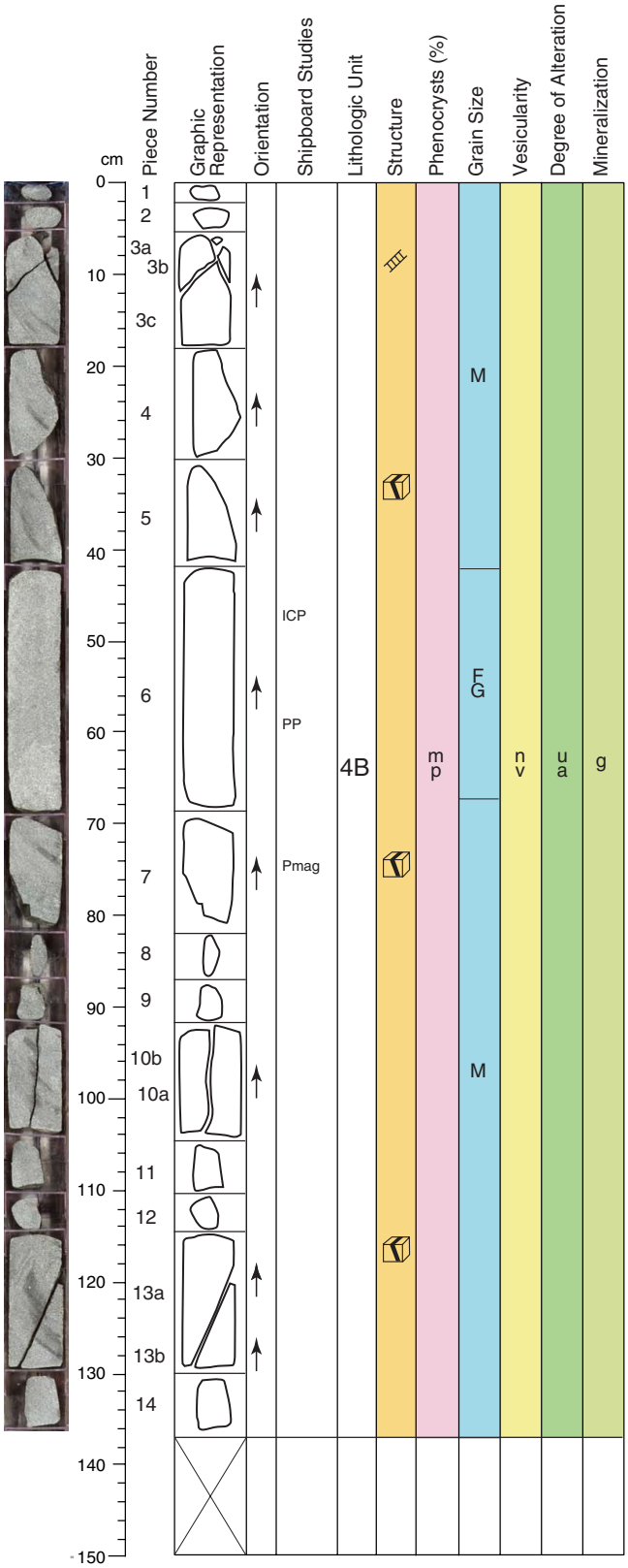
Pyroxene Mode: 3%.
Crystal size: Up to ~1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Partly replaced by pale-green clay.

Pyrite Mode: < 1% within the groundmass.
Crystal size: < 0.1 mm.

SECONDARY MINERALOGY:
Total%: 1%
Veins: Veins are filled with a mixture of altered glass, green clay and small amount of pyrite.
Comments: Open voids show an irregular shape and we believe that they represent voids of altered primary minerals. Some voids are partly filled with alteration products, which may represent altered pyroxene. Pieces 2 and 3 are slightly altered.

ADDITIONAL COMMENTS:
Magmatic contacts are weak and they can be identified according to changes of the color in groundmass, i.e., from gray to light brownish gray and to higher abundance of pyroxene at the contact. No sharp contact is observed.

Core Photo



205-1253A-33R-3 (Section top: 552.2 mbsf)

UNIT 4B: GABBRO

Pieces: 1-14

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: up to 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare partial replacement of plagioclase aggregates by light-gray-brownish clay. Higher abundance of plagioclase aggregates within Piece 6.

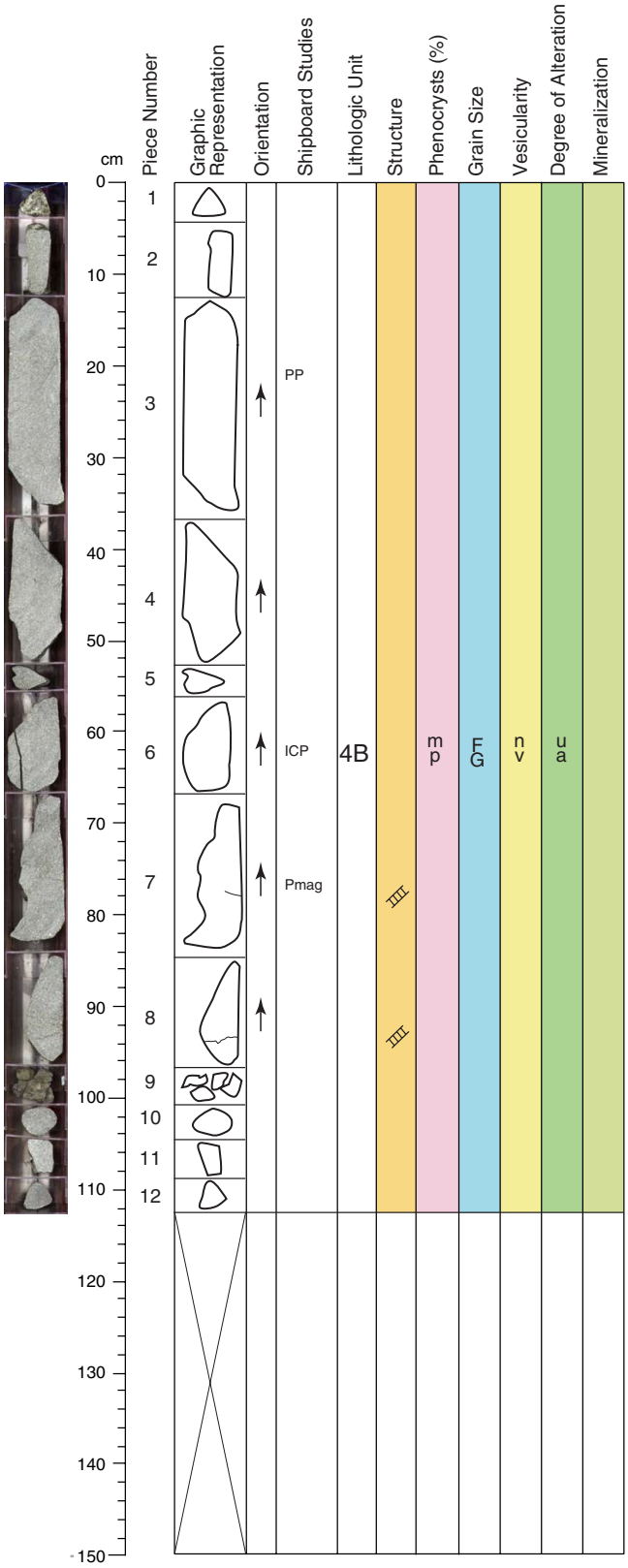
Pyroxene Mode: 2%.
Crystal size: Up to ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare alteration of pyroxene to by pale-green clay.

Pyrite Mode: <1% within the groundmass.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins are too small for identification of their fillings. Fractures are lined with gray-green clay.

ADDITIONAL COMMENTS:
Weak magmatic contacts can be identified by higher pyroxene abundance and a color change of the groundmass (lighter gray-brownish color).

Core Photo



205-1253A-34R-1 (Section top: 552.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-12

Color: Gray

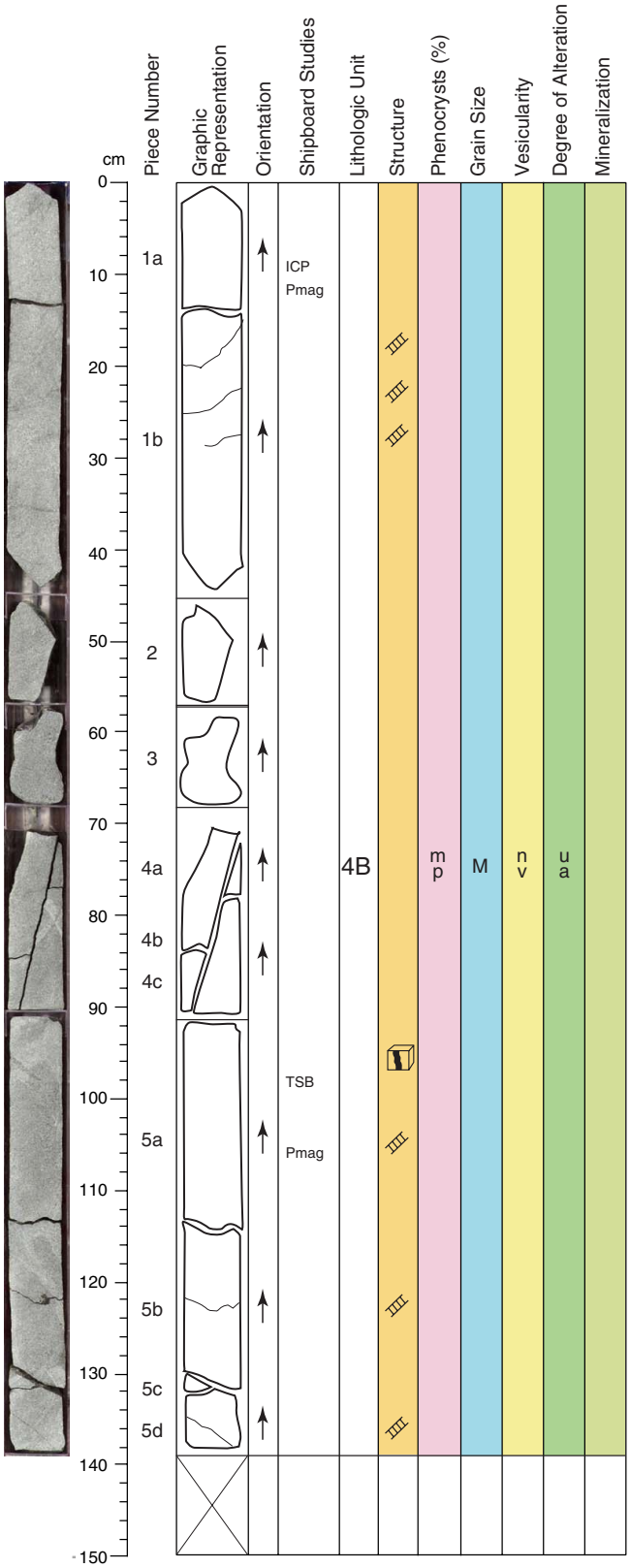
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 2.5 mm as laths and aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.

Pyroxene Mode: 5%.
Crystal size: Up to ~1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Rare alteration of pyroxene to pale-green clay.

SECONDARY MINERALOGY:
Veins: A couple of veins are present within this section. They are very thin and could also be identified as small-scale fracture. Identification of vein filling is difficult almost impossible due to the size. This vein/fracture is sub-perpendicular to the core length.

ADDITIONAL COMMENTS:
At the top of the section, we observed more plagioclase laths than aggregates, whereas we saw more plagioclase aggregates than laths at the bottom of the section.

Core Photo



205-1253A-34R-2 (Section top: 554.03 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

Color: Gray

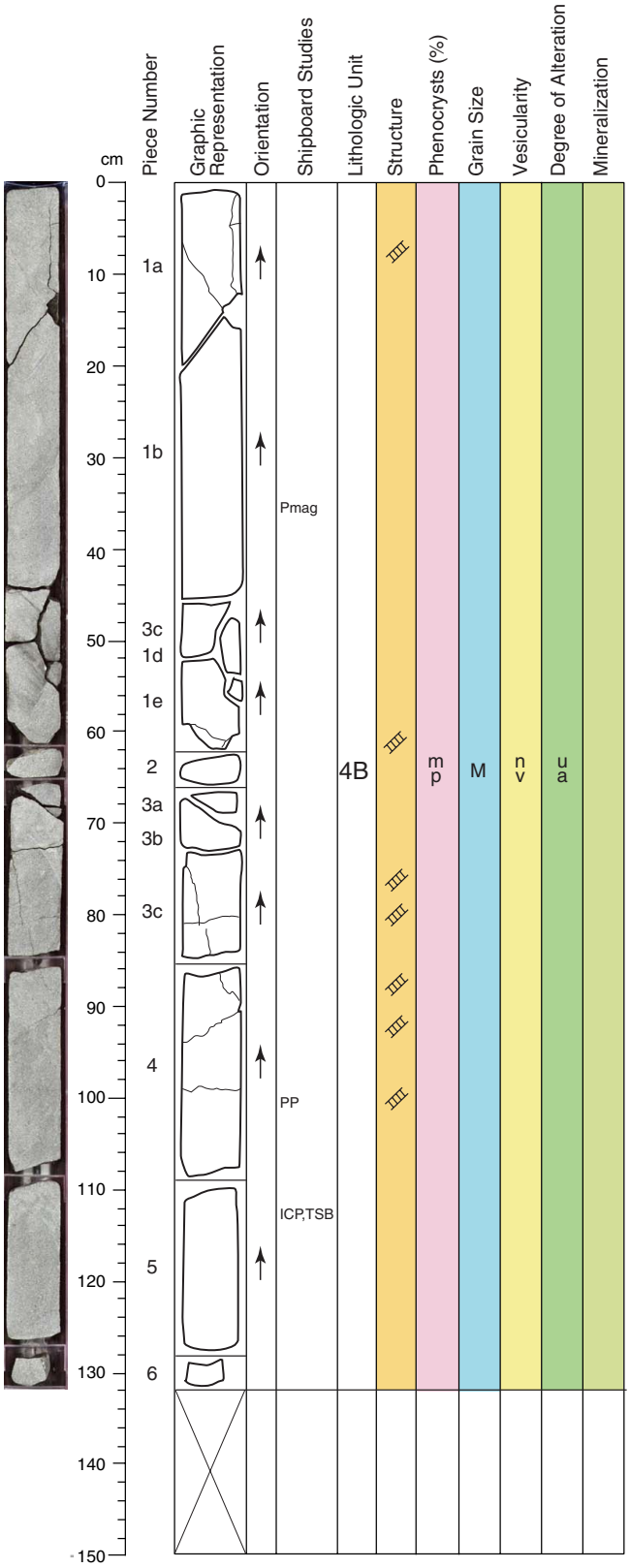
PRIMARY MINERALOGY:
Plagioclase Mode: 6% in Pieces 1, 2, and 3; 3% in Pieces 4 and 5.
Crystal size: Up to 3 mm, mainly as aggregates rather than laths in Pieces 1, 2, and 3.
Up to 1.5 mm, mainly as laths rather than aggregates in Pieces 4 and 5.
Crystal shape: Euhedral to subhedral in Pieces 1, 2, and 3.
Subhedral in Pieces 4 and 5.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Possible alteration of plagioclase to clay.

Pyroxene Mode: 3% in Pieces 1, 2, and 3.
6% in Pieces 4 and 5.
Crystal size: Up to ~1 mm in Pieces 1, 2, and 3.
Up to 2 mm Pieces 4 and 5.
Crystal shape: Euhedral to subhedral in Pieces 1, 2, and 3.
Subhedral in Pieces 4 and 5.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins at 26 and 36 cm are <1 mm wide, perpendicular to core length and filled with zeolite (phillipsite?) and ± altered glass. Vein at 122 cm within Piece 5b is curved, 1.5 mm wide, including a pocket of 1.5 mm diameter filled with altered glass and clays within a microcrystalline gabbroic groundmass.

ADDITIONAL COMMENTS:
Piece 5b shows a magmatic contact, which is curved, 0.5 cm wide, probably composed of glass, pyroxene, and plagioclase. All minerals at the contact are euhedral. This could represent a layer of slightly coarser grained gabbro.

Core Photo



205-1253A-34R-3 (Section top: 555.43 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

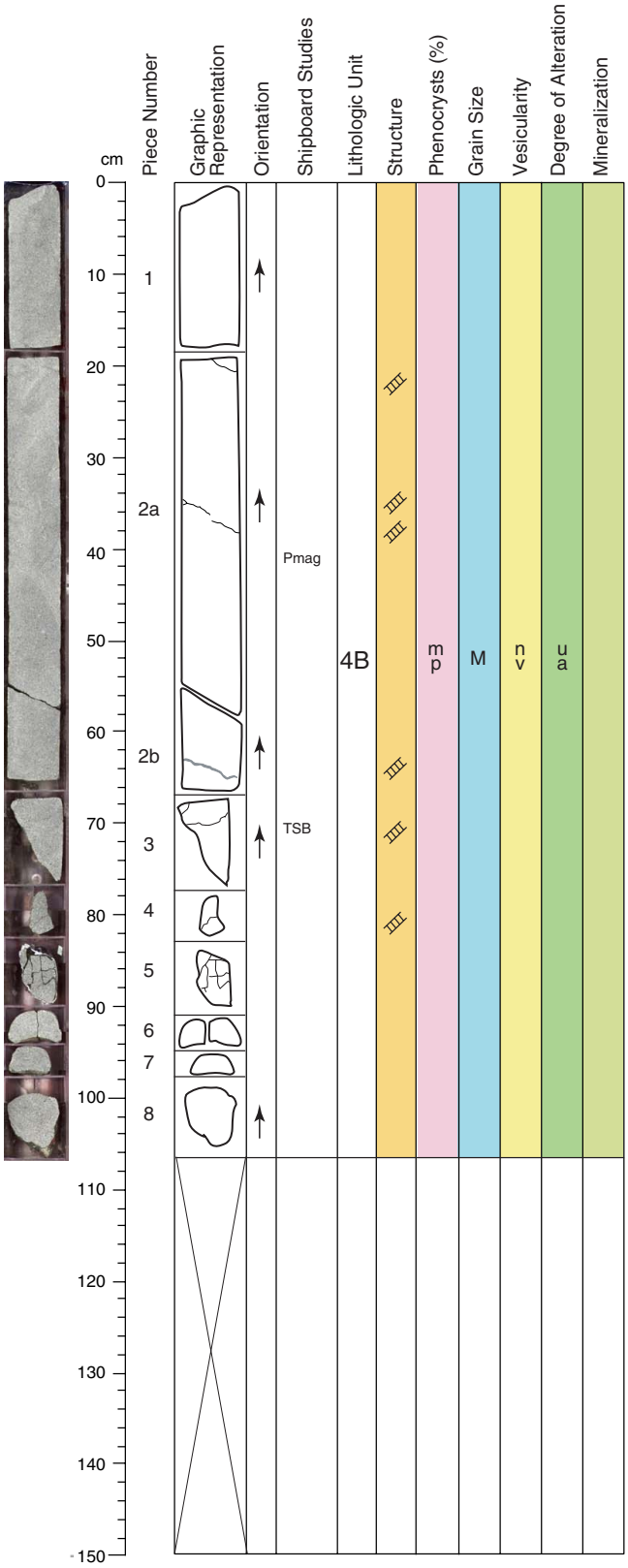
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 2 mm, mainly as laths. Rare aggregates.
Crystal shape: Euhedral.
Crystal orientation: Random.

Pyroxene Mode: 5%.
Crystal size: Up to ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: A few very tiny vein <<1 mm wide running through gabbro without any specific orientation. It forms an anastomosing development within Pieces 3 and 4, suggesting a vein network on a centimeter scale. Veins are probably filled with glass, altered glass and clays.
Comments: Overall, the alteration is restricted to veins.

Core Photo



205-1253A-34R-4 (Section top: 556.75 mbsf)

UNIT 4B: GABBRO

Pieces: 1-8

Color: Gray

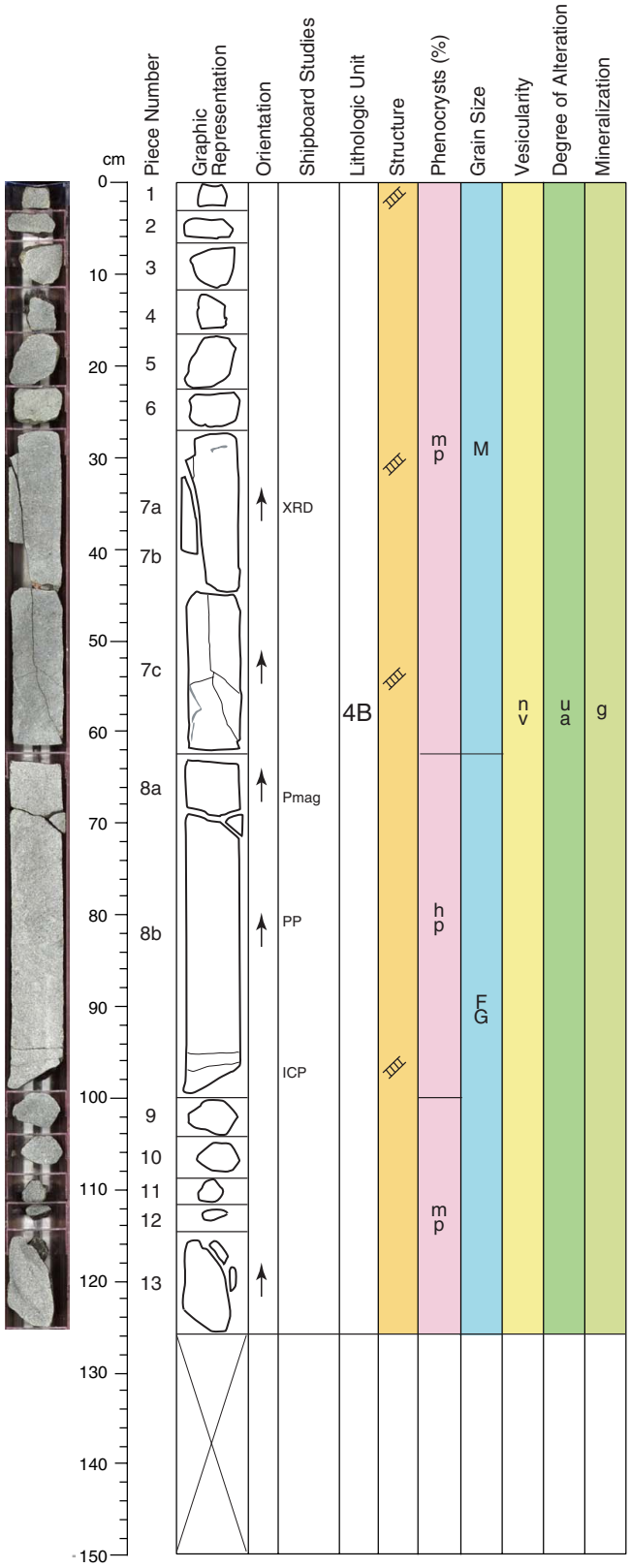
PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm, mainly as laths. Rare aggregates.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Rare alteration to clays.

Pyroxene Mode: 6%.
Crystal size: Up to ~2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: A few very tiny subhorizontal vein, <<1 mm wide, passing through Pieces 2, 3, and 4. Veins are probably filled with glass, altered glass and clays.

ADDITIONAL COMMENTS:
The amount of plagioclase aggregates increases towards the bottom of the section. Otherwise, the section is very homogeneous in terms of phenocryst percentage and grain size.

Core Photo



205-1253A-35R-1 (Section top: 557.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-13

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%; 8% in Piece 8.
Crystal size: Up to 2.5 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare alteration of plagioclase aggregates to light-gray brownish clay. Higher abundance of plagioclase aggregates within Piece 8.

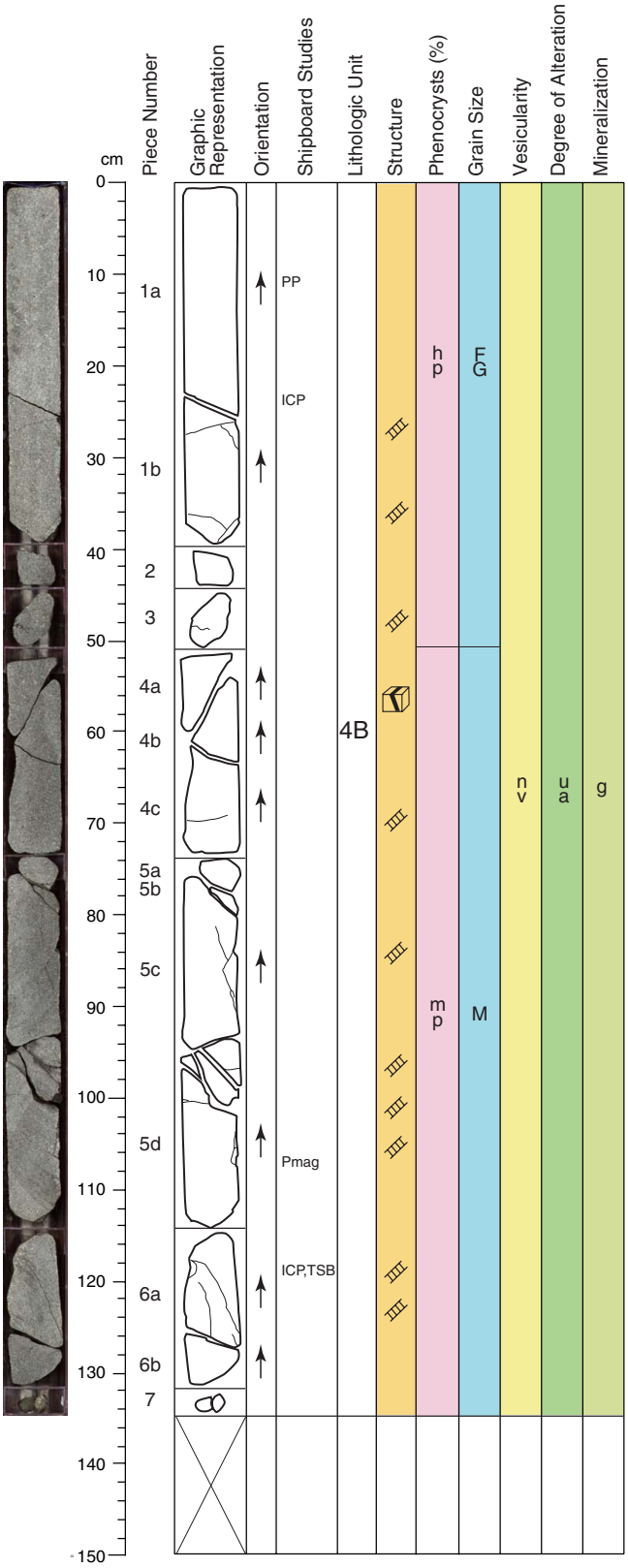
Pyroxene Mode: 3%.
Crystal size: Up to ~1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare low alteration of pyroxene to pale-green clay. Pyroxenes are partly associated with plagioclase aggregates.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins are filled with altered glass and cryptocrystalline groundmass, and gray clays.

ADDITIONAL COMMENTS:
No magmatic contacts are identified..

Core Photo



205-1253A-35R-2 (Section top: 559.16 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 4%; 8% in Pieces 1 to 3.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Rare alteration of plagioclase aggregates to light-gray brownish clay.

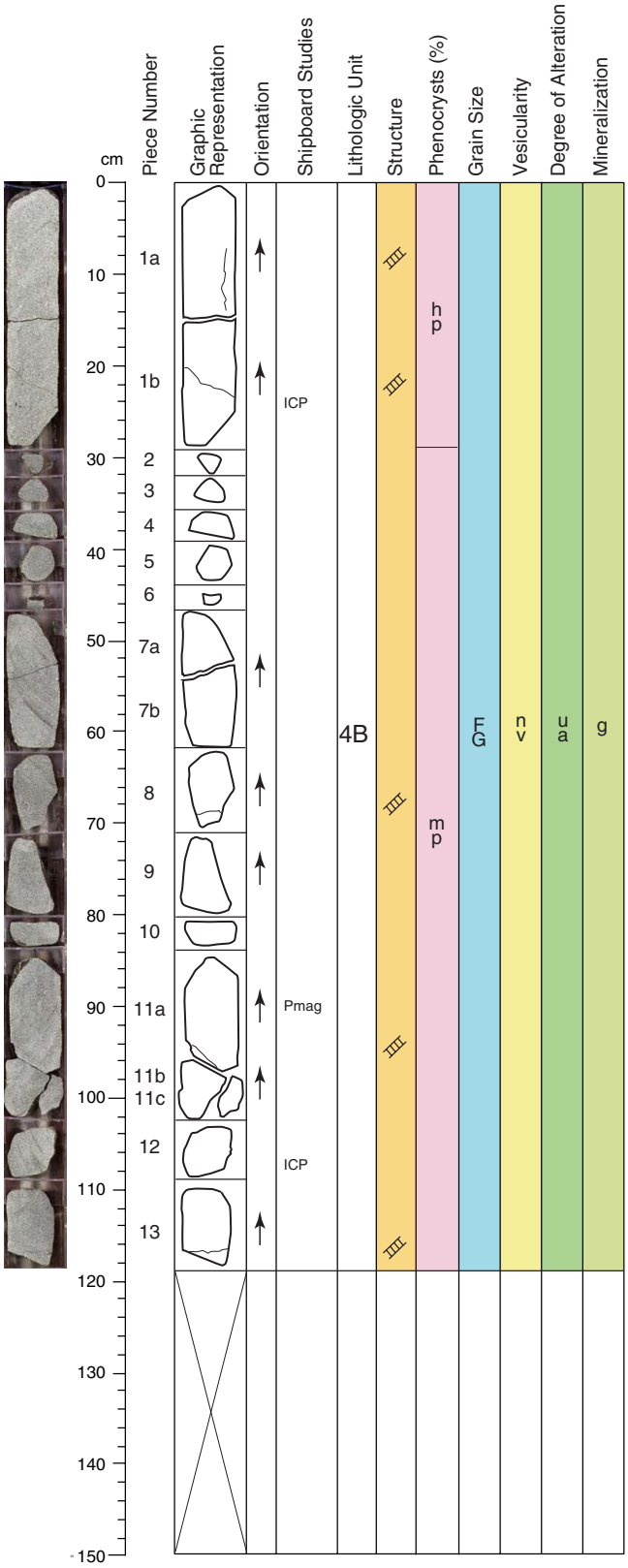
Pyroxene Mode: 3%; 4% in Pieces 1 to 3.
Crystal size: Up to ~1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some pyroxenes are altered to pale-green clay. Pyroxenes are partly associated with plagioclase aggregates.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: < 1%
Veins: Veins are filled with altered glass and cryptocrystalline groundmass, and gray clays.

ADDITIONAL COMMENTS:
A very weak magmatic contact has been identified in Piece 4b based on the change of groundmass (fine-grained to microcrystalline) and the amount of plagioclase aggregates

Core Photo



205-1253A-35R-3 (Section top: 560.52 mbsf)

UNIT 4B: GABBRO

Pieces: 1-13

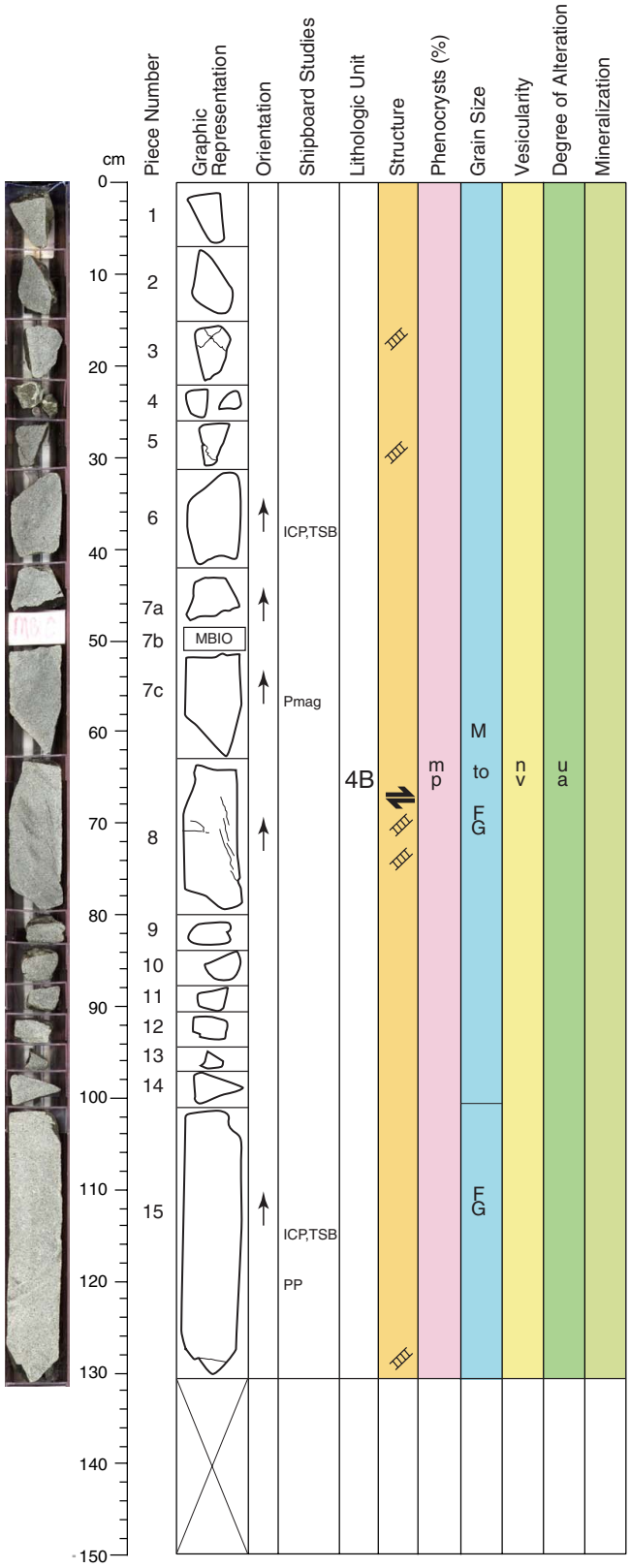
Color: Gray

PRIMARY MINERALOGY:
- Plagioclase Mode: 4%; 8% in Piece 1.
  - Crystal size: Up to 2.5 mm as laths and aggregates.
  - Crystal shape: Subhedral.
  - Crystal orientation: Random.
  - Percent replacement: 1%.
  - Comments: Rare alteration of plagioclase aggregates to light-gray brownish clay.
- Pyroxene Mode: 3%; 5% in Piece 1.
  - Crystal size: Up to ~1.5 mm.
  - Crystal shape: Subhedral.
  - Crystal orientation: Random.
  - Percent replacement: 1%.
  - Comments: Some pyroxenes are altered to pale-green clay. Pyroxenes are partly associated with plagioclase aggregates.
- Pyrite Mode: < 1%.
  - Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
- Total%: < 1%.
- Veins: Veins are filled with altered glass and cryptocrystalline groundmass, and gray clays.

ADDITIONAL COMMENTS:
Lower abundance of phenocrysts towards the bottom of the section. No identification of magmatic contacts.

Core Photo



205-1253A-36R-1 (Section top: 562.5 mbsf)

UNIT 4B: GABBRO

Pieces: 1-15

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 4 mm mainly as laths.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Mainly laths; amount of aggregate increases towards the bottom of the section.

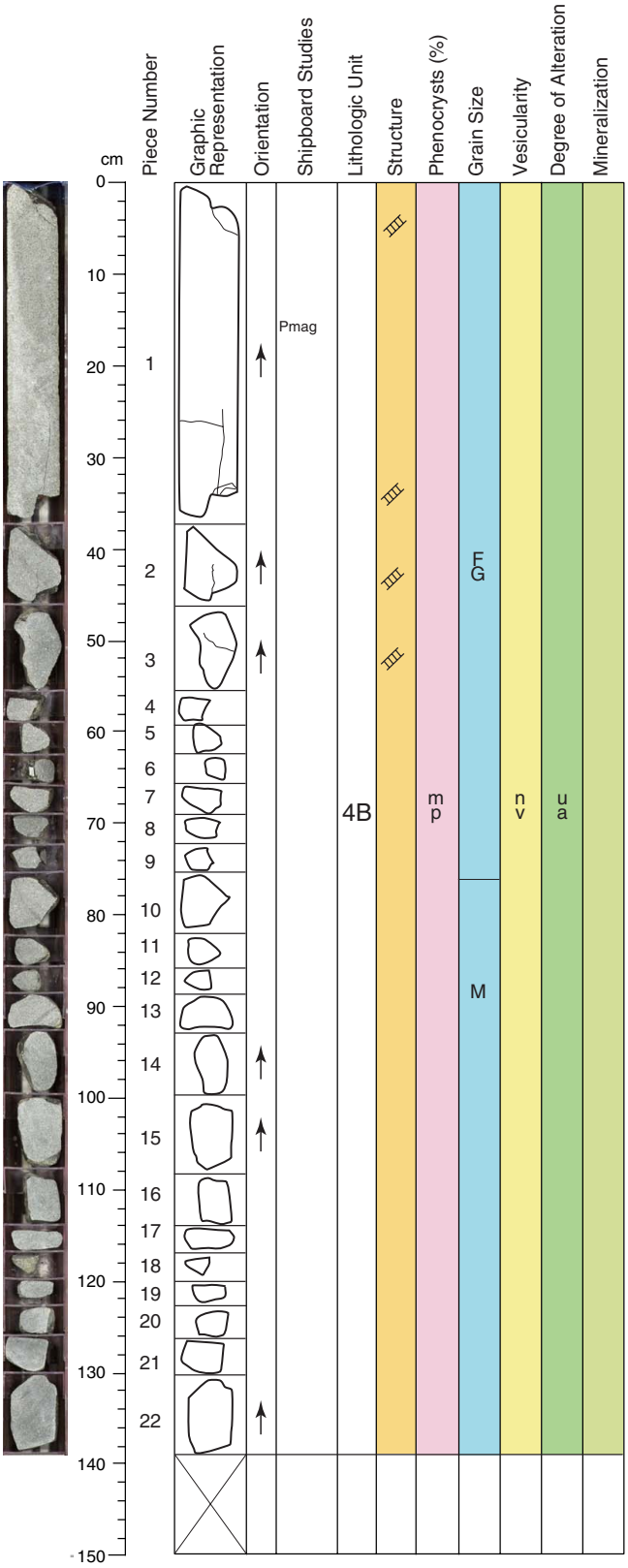
Pyroxene Mode: 3%.
Crystal size: Up to ~1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <<1%.
Comments: A few pyroxenes are altered to pale-green clay.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: < 1%.
Veins: Veining (<<1 mm wide) is observed on centimeter-scale and it is almost difficult to distinguish between vein and fracture. All of them are perpendicular to the core length.

ADDITIONAL COMMENTS:
Increasing amount of plagioclase aggregates towards the bottom of the section.

Core Photo



205-1253A-36R-2 (Section top: 563.82 mbsf)

UNIT 4B: GABBRO

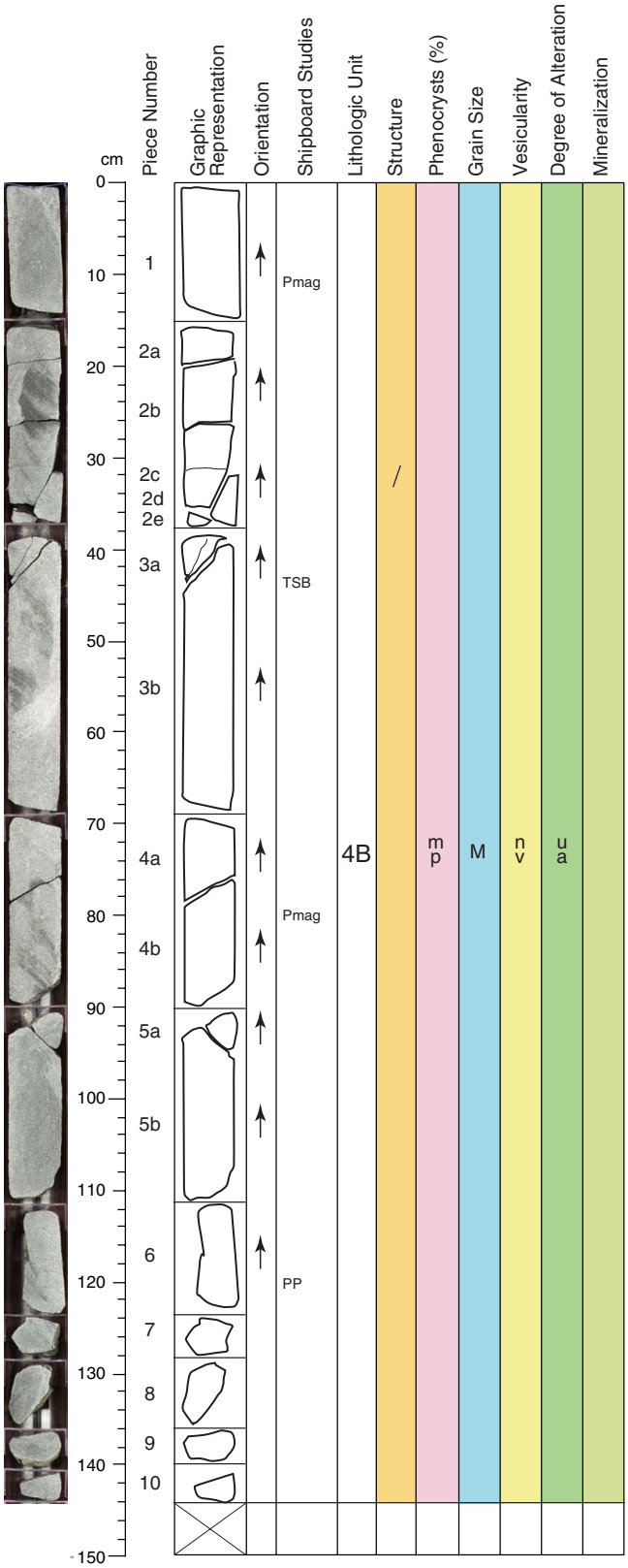
Pieces: 1-22

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3% in Pieces 1 to 9; ~3% in Pieces 10 to 22.
Crystal size: Up to 2 mm mainly as aggregates within Pieces 1 to 9.
Up to 1 mm mainly as laths within Pieces 10 to 22.
Crystal shape: Euhedral to subhedral in Pieces 1 to 9.
Subhedral in Pieces 10 to 22.
Crystal orientation: Random.

Pyroxene Mode: 6% in Pieces 1 to 9; 3% in Pieces 10 to 22.
Crystal size: Up to ~2 mm within Pieces 1 to 9.
Up to ~0.5 mm within Pieces 10 to 22.
Crystal shape: Subhedral.
Crystal orientation: Random.

Core Photo



205-1253A-36R-3 (Section top: 565.22 mbsf)

UNIT 4B: GABBRO

Pieces: 1-10

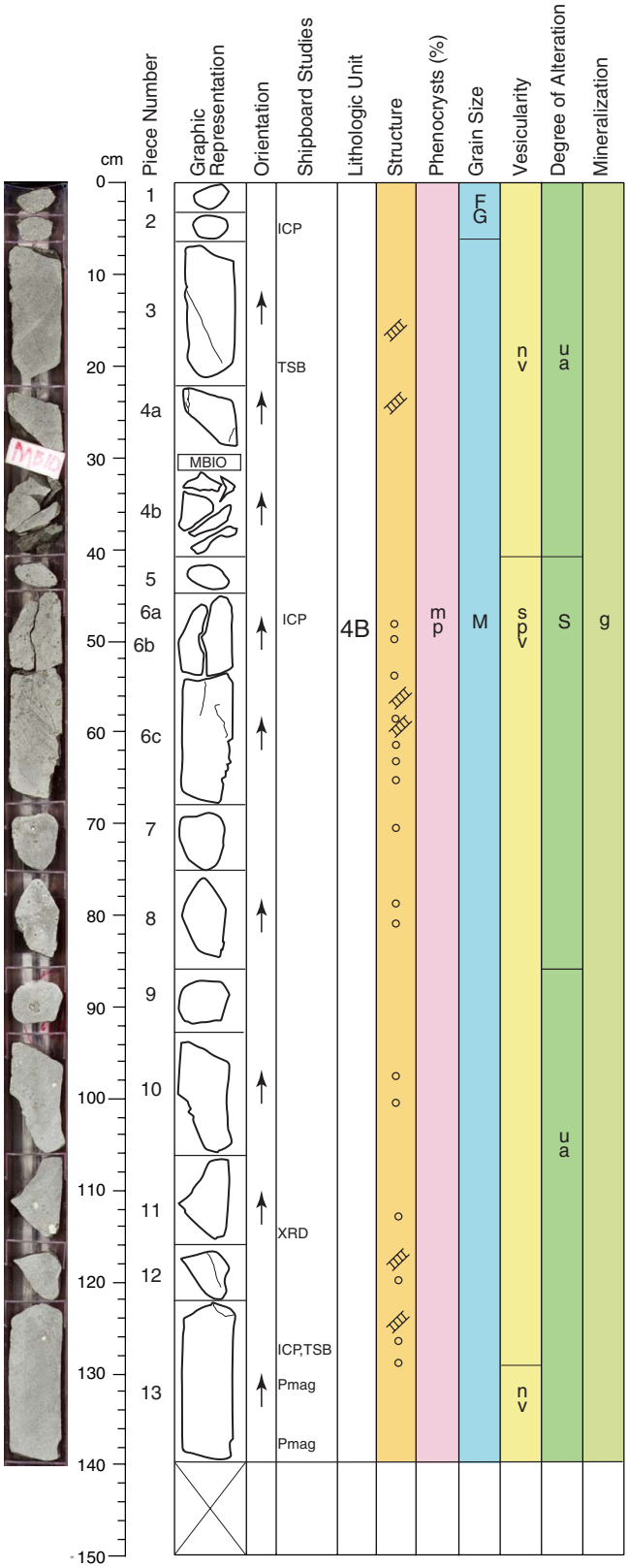
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 4%.
Crystal size: Up to 3 mm mainly as laths. A few aggregate.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%-2%
Comments: Partly altered to clay.

Pyroxene Mode: 2%.
Crystal size: Up to ~1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Very homogeneous formation.

Core Photo



205-1253A-37R-1 (Section top: 566.0 mbsf)

UNIT 4B: GABBRO

Pieces: 1-13

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 1%.
Crystal size: Up to 1.5 mm as laths or aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Higher abundance of plagioclase in Pieces 1 and 2 as laths and Pieces 7 and 8 as aggregates (both 5%).

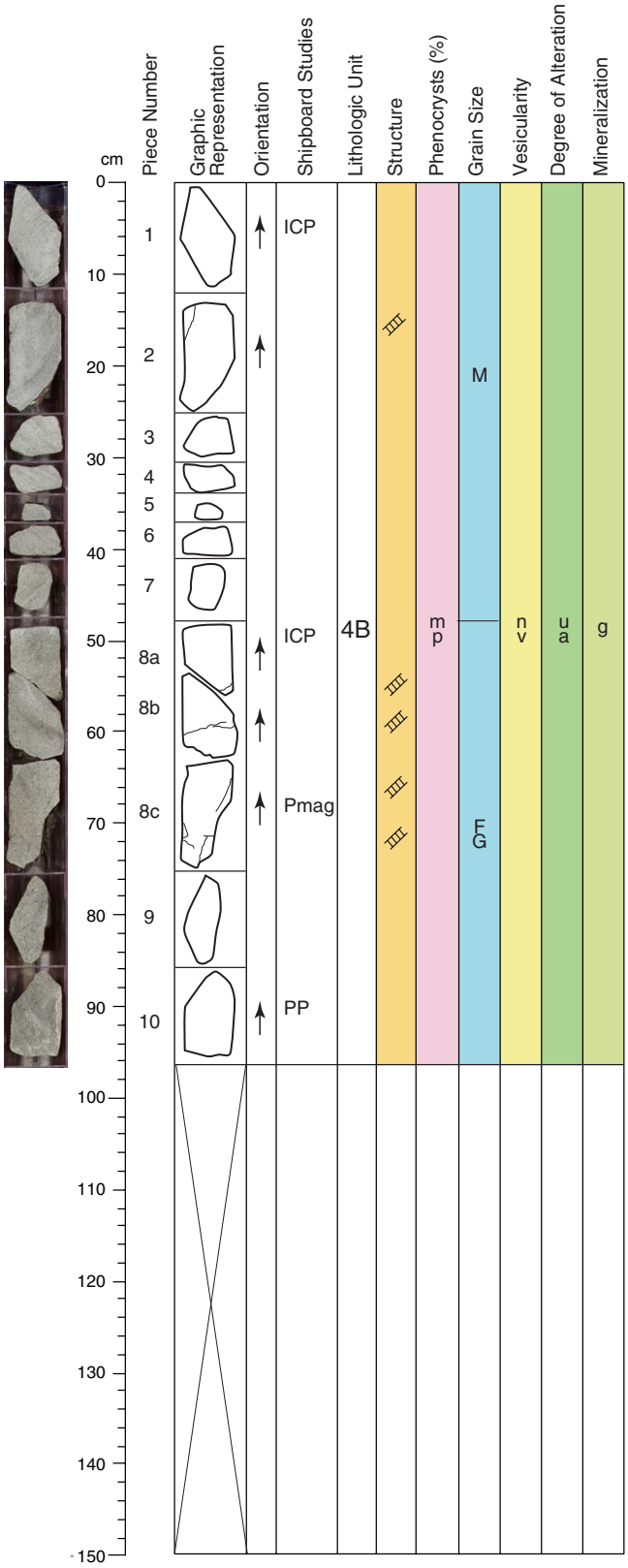
Pyroxene Mode: 2%.
Crystal size: Up to ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Partly replaced by pale-green clay. Higher abundance (~5%) of pyroxene in Pieces 1 and 2.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.
Comments: Lower abundance towards the bottom.

SECONDARY MINERALOGY:
Total%: 5%.
Veins: Veins filled with a mixture of clay, glass, and zeolites.
Comments: Pieces 5 to 8 are slightly altered. Alteration is restricted to voids which could be the remnants (subhedral to anhedral shape) of primary minerals or a vesicle filling. Two different types of void filling are observed:
1. A white-colored zeolite and a green clay which probably incorporates zeolites.
2. In some voids we observed a transition from green (at the rim) to white (interior) filling. The green alteration mineral (clay) takes place at the rim whereas zeolite appears in the interior of the void, indicating an interaction between clay and zeolite and a later origin of zeolite.

ADDITIONAL COMMENTS:
No identified magmatic contacts.

Core Photo



205-1253A-37R-2 (Section top: 567.41 mbsf)

UNIT 4B: GABBRO

Pieces: 1-10

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 1%.
Crystal size: Up to 1 mm as laths and up to 1.5 mm as aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Higher abundance of plagioclase in Piece 8c.

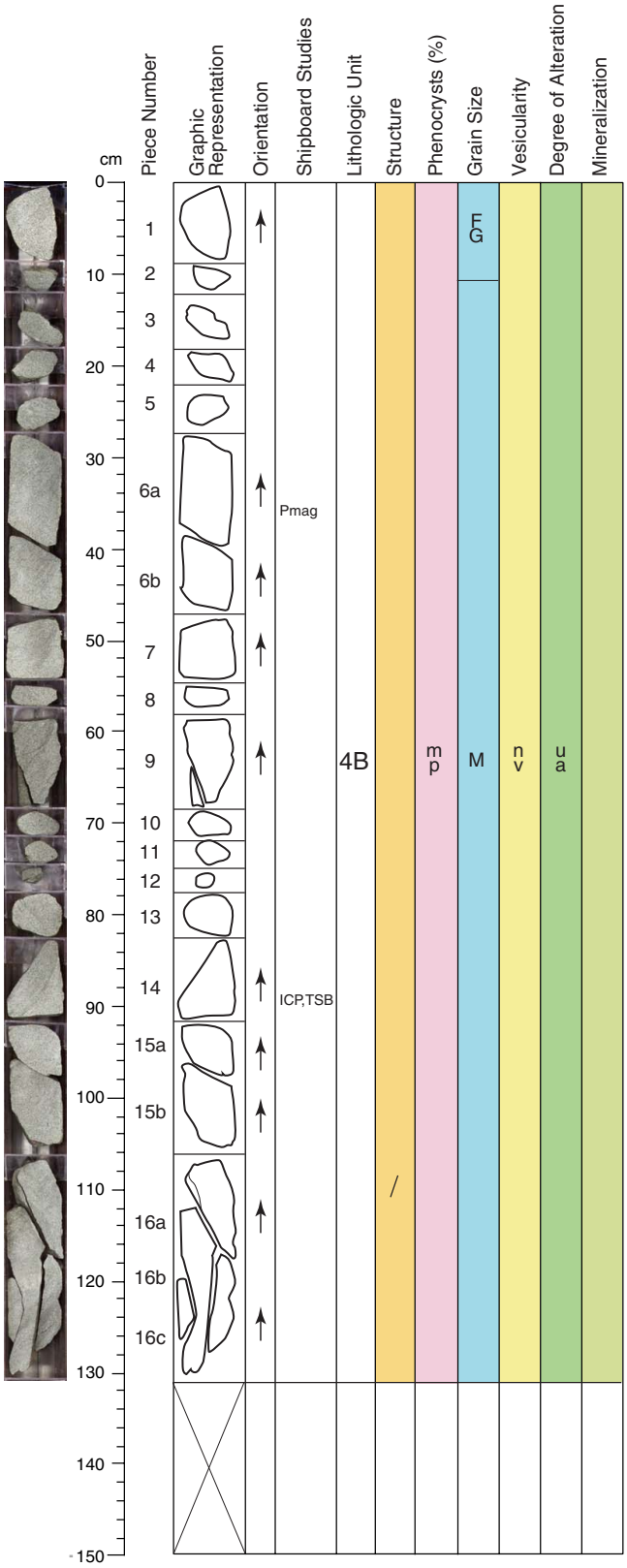
Pyroxene Mode: 2%.
Crystal size: Up to ~1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare alteration of pyroxene to pale-green clay.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.
Comments: Lower abundance towards the bottom.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins filled with a mixture of green clay and cryptocrystalline groundmass.

ADDITIONAL COMMENTS:
No magmatic contacts are identified.

Core Photo



205-1253A-38R-1 (Section top: 572.2 mbsf)

UNIT 4B: GABBRO

Pieces: 1-16

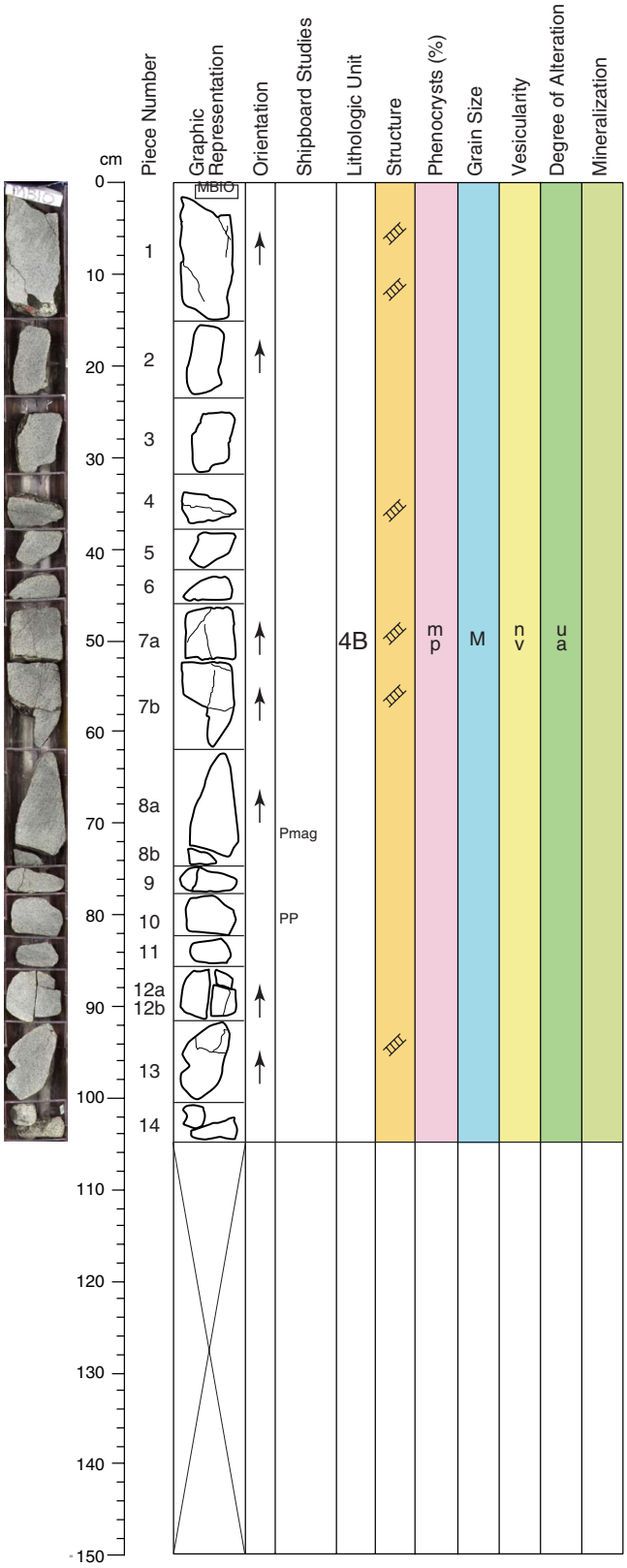
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Aggregates only in Piece 1.

Pyroxene Mode: 2%.
Crystal size: <0.5 mm.
Crystal shape: Anhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
This section is very homogeneous.

Core Photo



205-1253A-38R-2 (Section top: 573.51 mbsf)

UNIT 4B: GABBRO

Pieces: 1-14

Color: Gray

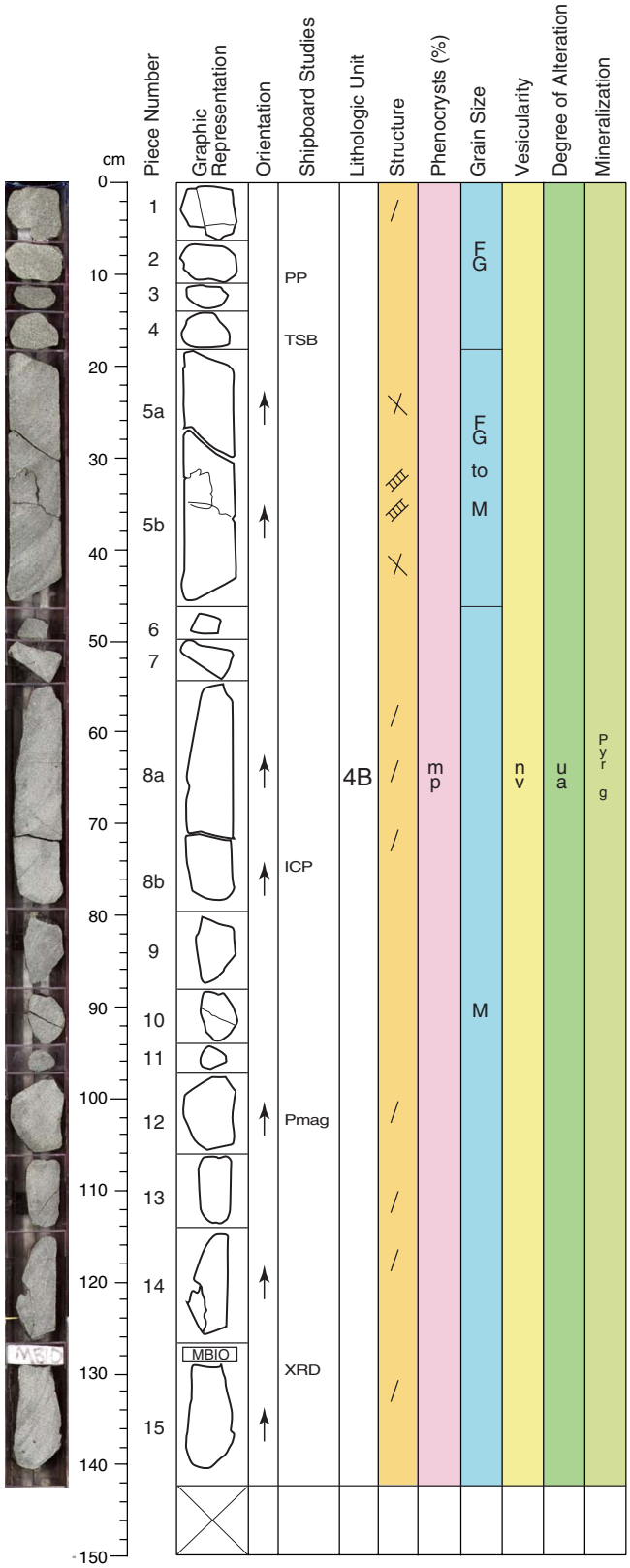
PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 1.5 mm
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Percent replacement: Partly altered to clays (<1%).
Comments: Only laths.

Pyroxene Mode: 4%.
Crystal size: <1 mm.
Crystal shape: Anhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: A few thin veins on centimeter-scale.

ADDITIONAL COMMENTS:
This section is very homogeneous.

Core Photo



205-1253A-39R-1 (Section top: 577.2 mbsf)

UNIT 4B: GABBRO

Pieces: 1-15

Color: Gray

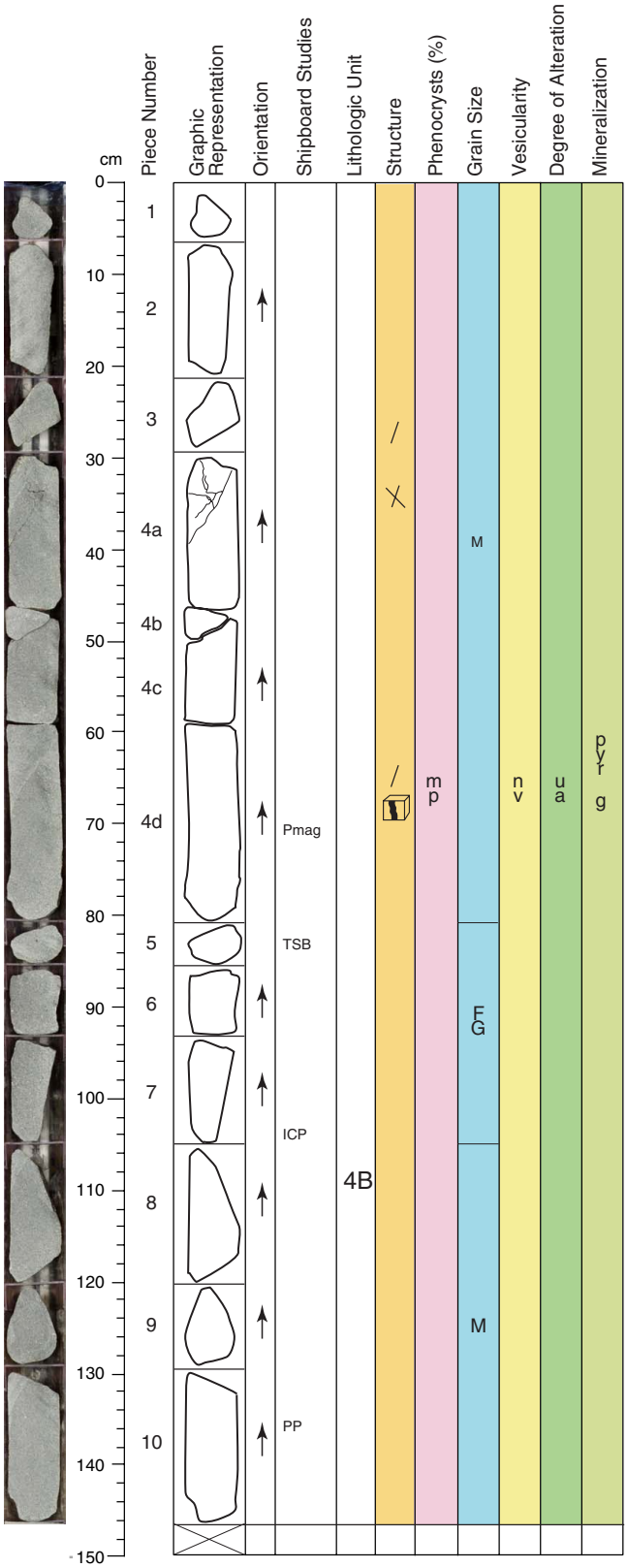
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Partly altered to clays.

Pyroxene Mode: 2%.
Crystal size: <1 mm.
Crystal shape: Subhedral to anhedral.
Crystal orientation: Random.

Pyrite Mode: <1%.:
Comments: In the groundmass.

SECONDARY MINERALOGY:
Total%: <1%.
Veins: On centimeter-scale, we observed some fractures, which could also be tiny veins. It is difficult to distinguish whether these zones are filled or not. A potential filling could be cryptocrystalline groundmass/altered glass.

Core Photo



205-1253A-39R-2 (Section top: 578.64 mbsf)

UNIT 4B: GABBRO

Pieces: 1-10

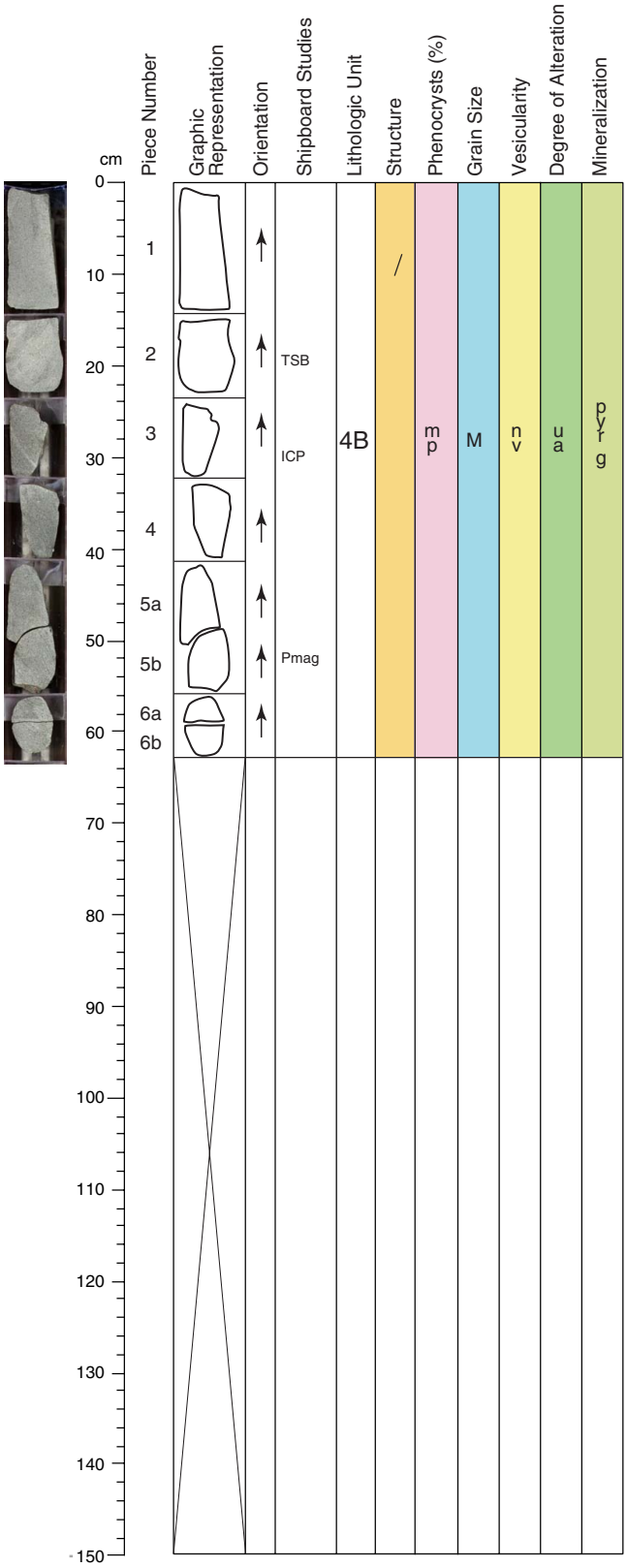
Color: Gray

PRIMARY MINERALOGY:
- Plagioclase Mode: 2-3%.
  - Crystal size: Up to 1.5 mm.
    - Up to 3 mm within Pieces 6 and 7.
  - Crystal shape: Euhedral to subhedral.
  - Crystal orientation: Random.
  - Comments: Mainly plagioclase laths. A few aggregates within Pieces 6 and 7.
- Pyroxene Mode: ~1%.
  - Crystal size: 0.5 mm.
  - Crystal shape: Anhedral.
  - Crystal orientation: Random.
- Pyrite Mode: <<1%.
  - Comments: In the groundmass.

SECONDARY MINERALOGY:
- Veins: On centimeter-scale, we observed some fractures, which could also be tiny veins. It is difficult to distinguish whether these zones are filled or not. A potential filling could be cryptocrystalline groundmass / altered glass

ADDITIONAL COMMENTS:
- Identification of a magmatic contact within Piece 4d at 70 cm.

Core Photo



205-1253A-39R-3 (Section top: 580.11 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

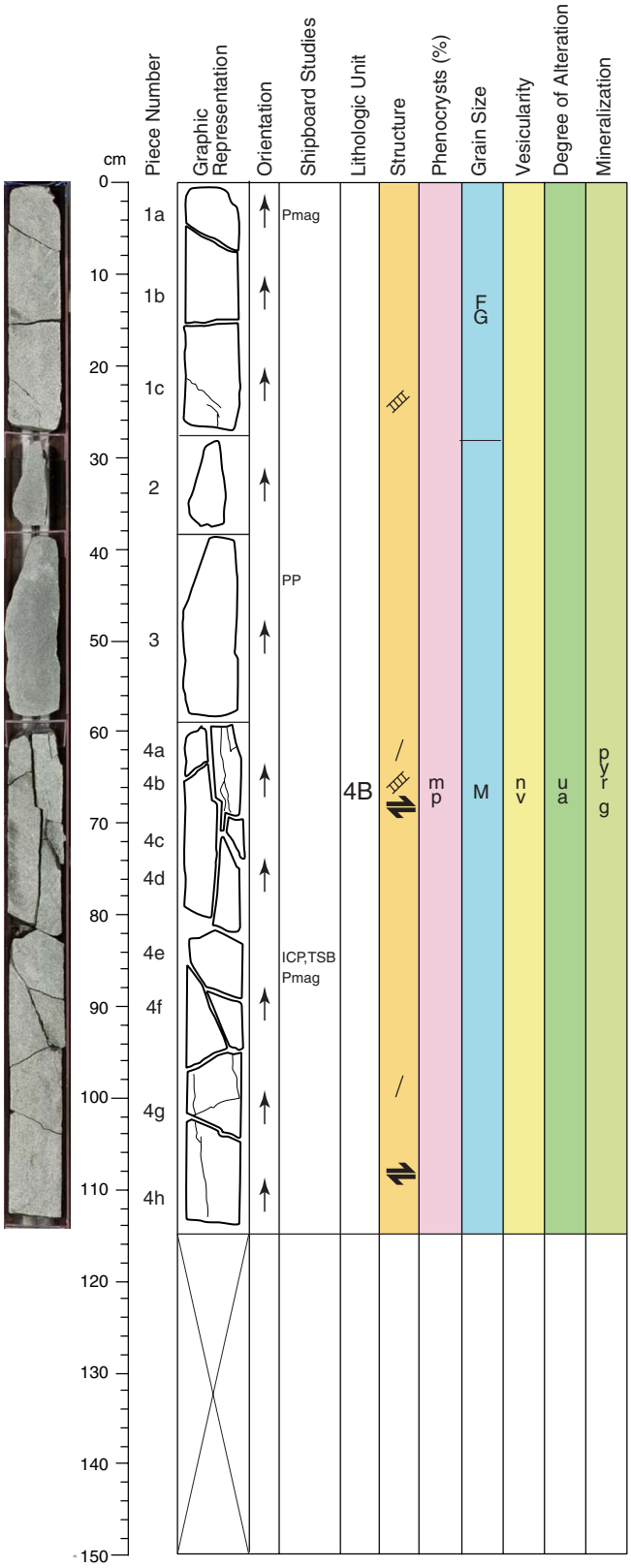
PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 2 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Alteration to clays.

Pyroxene Mode: 4%.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Partly altered to pale-green clay.

Pyrite Mode: <<1%
Comments: In the groundmass.

SECONDARY MINERALOGY:
Total%: <1%.

Core Photo



205-1253A-40R-1 (Section top: 582.8 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 6%.
Crystal size: Up to 3 mm within Piece 1.
Up to 2 mm within other pieces.
Crystal shape: Euhedral to subhedral in Piece 1.
Subhedral within other pieces.
Crystal orientation: Random.
Comments: Mostly as aggregates within Piece 1 otherwise it occurs as laths.

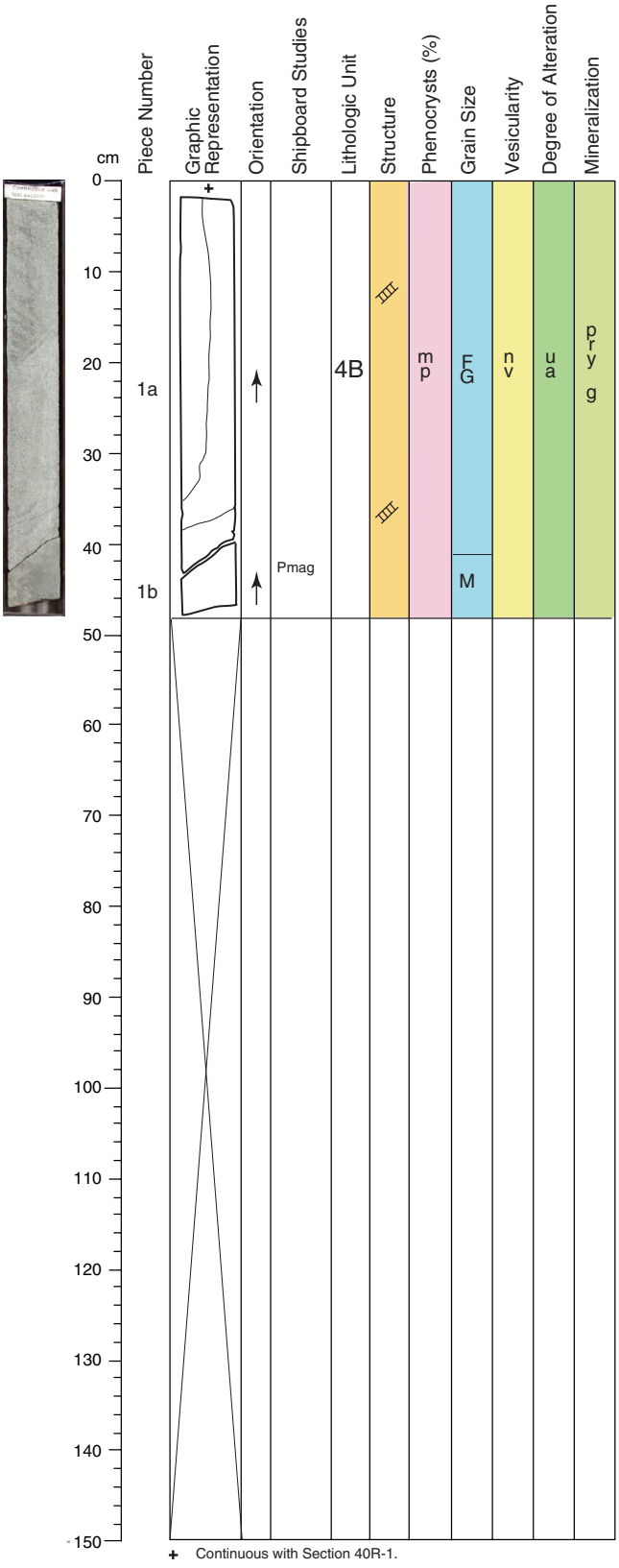
Pyroxene Mode: 4% in Piece 1; 3% in other pieces.
Crystal size: Up to 1.5 mm within Piece 1.
Up to 1 mm within other pieces.
Crystal shape: Anhedral.
Crystal orientation: Random.

Pyrite Mode: <<1%.
Comments: In the groundmass.

SECONDARY MINERALOGY:
Veins: A couple of tiny veins within Piece 1c, <<1 mm wide, probably filled with altered glass. It runs diagonally through Piece 1c.

ADDITIONAL COMMENTS:
Piece 4 is highly broken as due to the occurrence of weak area. These areas could be compared to fractures, which are connected to each other. This is nevertheless acting on a centimeter scale.

Core Photo



205-1253A-40R-2 (Section top: 583.94 mbsf)

UNIT 4B: GABBRO

Pieces: 1

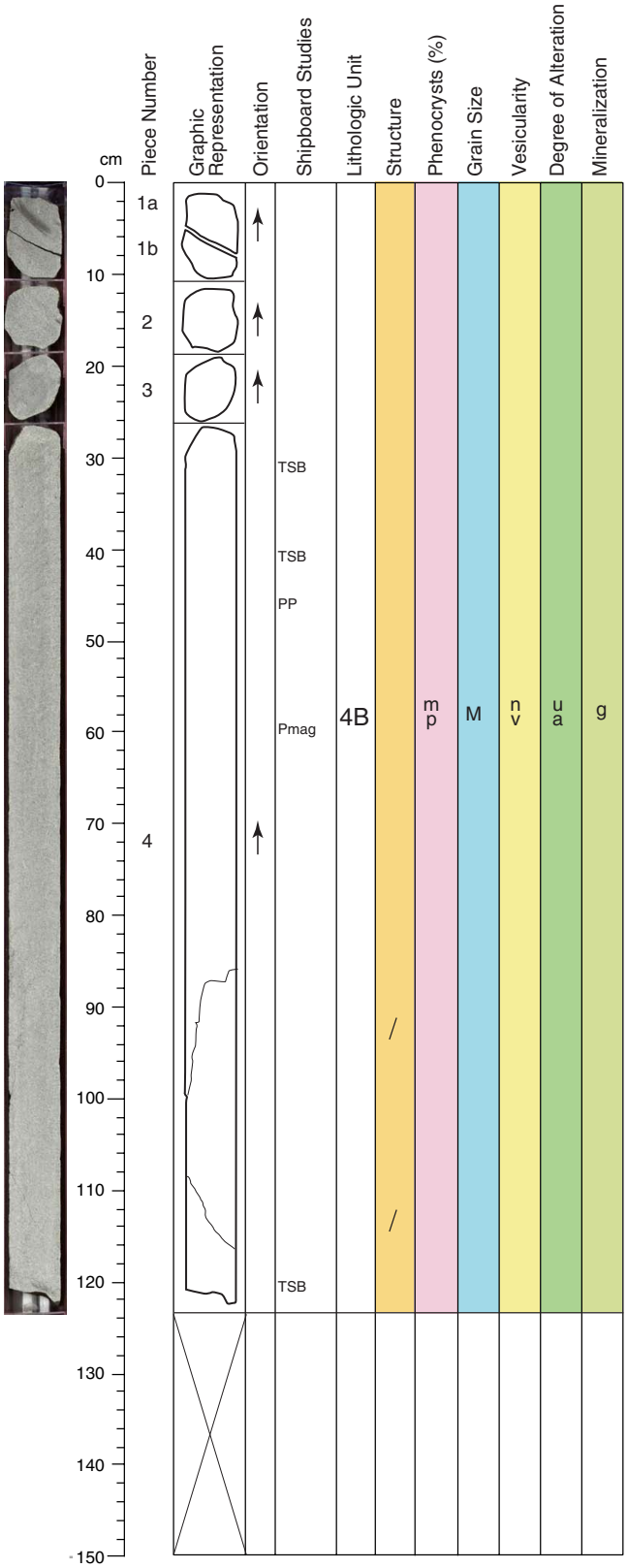
Color: Gray

PRIMARY MINERALOGY:
- Plagioclase Mode: 5% in Piece 1a; 2% in Piece 1b.
  - Crystal size: Up to 2 mm within Piece 1a.
    Up to 1.5 mm within Piece 1b.
  - Crystal shape: Euhedral to subhedral in Piece 1a.
    Subhedral within Piece 1b.
  - Crystal orientation: Random.
  - Percent replacement: 1%.
  - Comments: Partly altered to clays. 50/50 distribution of plagioclase as aggregates or laths.
- Pyroxene Mode: 2% in Piece 1a; 1% in Piece 1b.
  - Crystal size: Up to 1 mm within Piece 1a.
    <0.5 mm within Piece 1b.
  - Crystal shape: Subhedral Piece 1a.
    Anhedral in Piece 1b.
  - Crystal orientation: Random.
- Pyrite Mode: <<1%
  - Comments: In the groundmass in Piece 1b.

SECONDARY MINERALOGY:
- Total%: <1%.
- Veins: Vein at 36 cm in Piece 1a is subhorizontal and is probably filled with altered glass.

ADDITIONAL COMMENTS:
- Very thin fracture cut longitudinally through Piece 1b.

Core Photo



205-1253A-41R-1 (Section top: 585.8 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

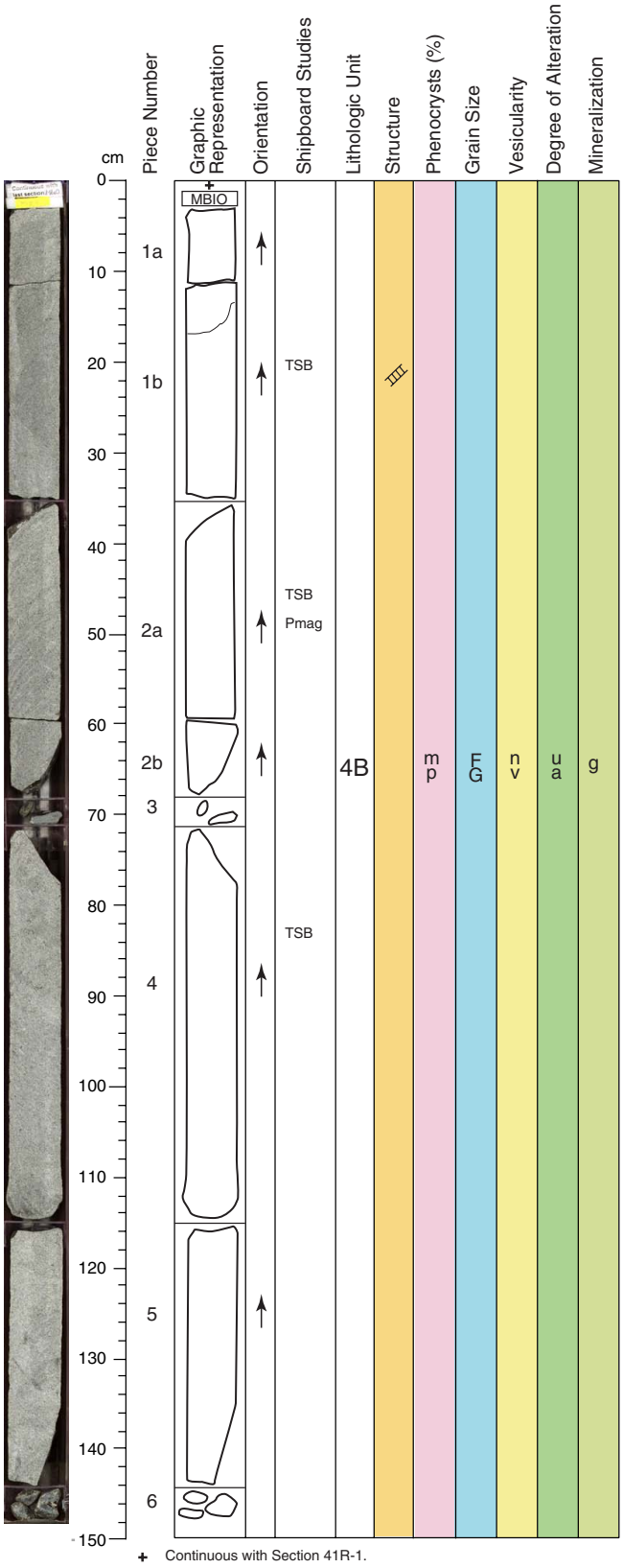
Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 4%.
Crystal size: Up to 3 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: 50/50 distribution of plagioclase as aggregates or laths.

Pyroxene Mode: 5%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

ADDITIONAL COMMENTS:
Very massive section. Only a couple of tiny fractures at the bottom of Piece 4.

Core Photo



+ Continuous with Section 41R-1.

205-1253A-41R-2 (Section top: 587.05 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

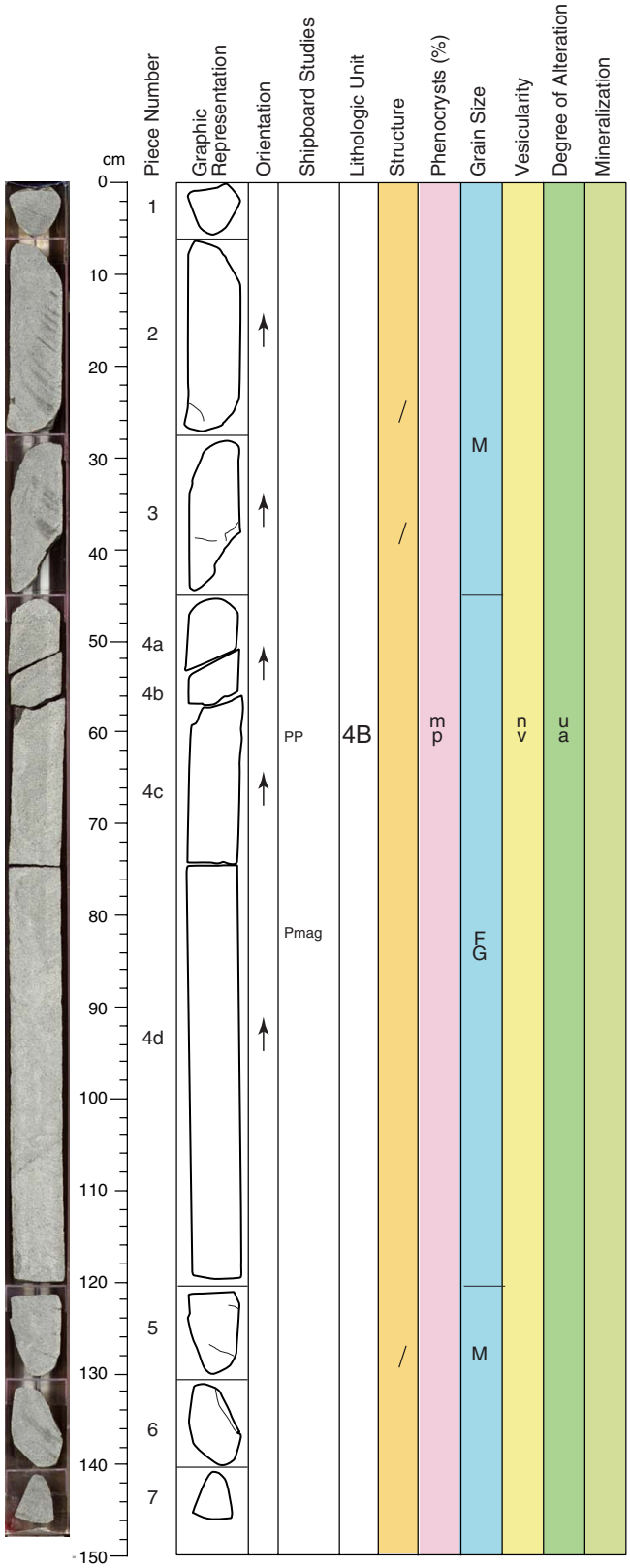
PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths or aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyroxene Mode: 4%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Some pyroxenes are associated within plagioclase aggregates.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Veins: One very tiny vein within Piece 1b, too small for filling identification.

Core Photo



205-1253A-41R-3 (Section top: 588.55 mbsf)

UNIT 4B: GABBRO

Pieces: 1-7

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2% up to 4% within fine-grained groundmass.
Crystal size: Up to 2 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random.
Comments: Both aggregates and laths within fine-grained groundmass; otherwise only laths.

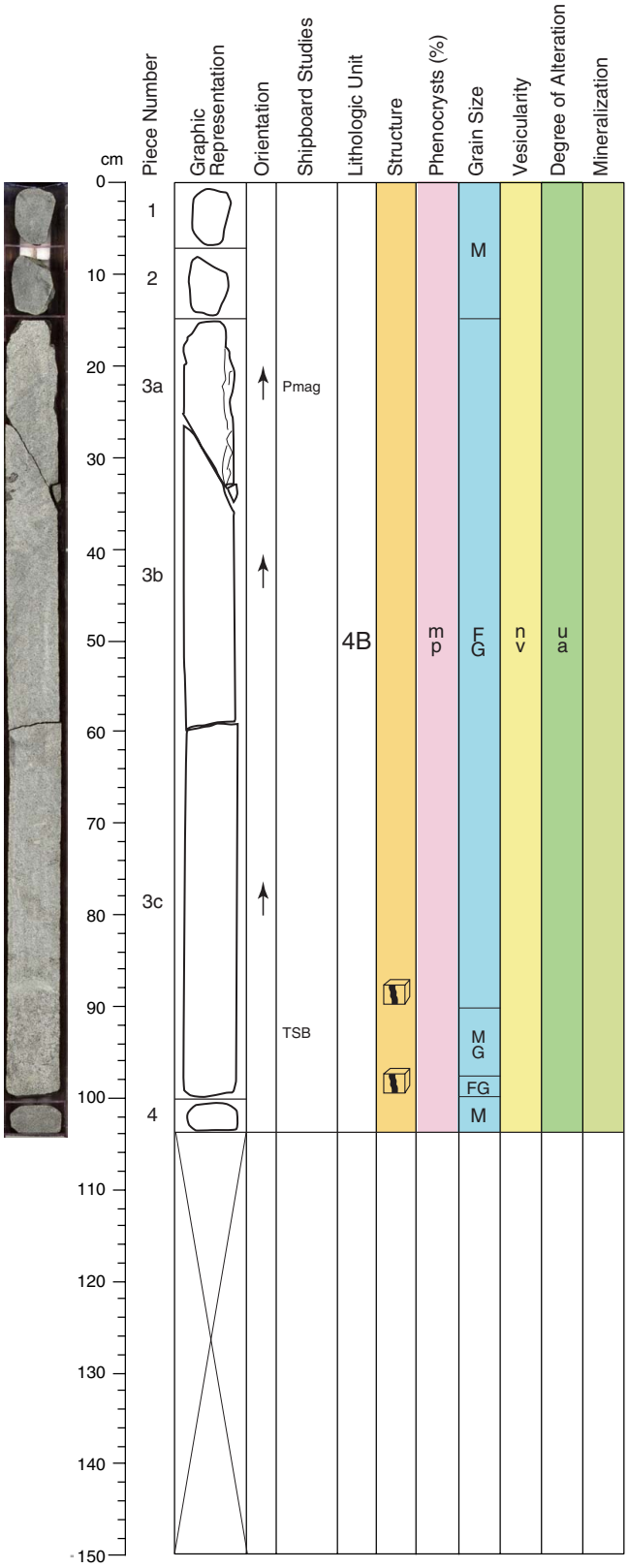
Pyroxene Mode: 6%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Veins: No veins identified.

ADDITIONAL COMMENTS:
Pyroxene is more abundant than plagioclase. A few small-scale fractures. Very massive section similar to Sections 41R-4 and 41R-5.

Core Photo



205-1253A-41R-4 (Section top: 590.05 mbsf)

UNIT 4B: GABBRO

Pieces: 1-4

Color: Gray

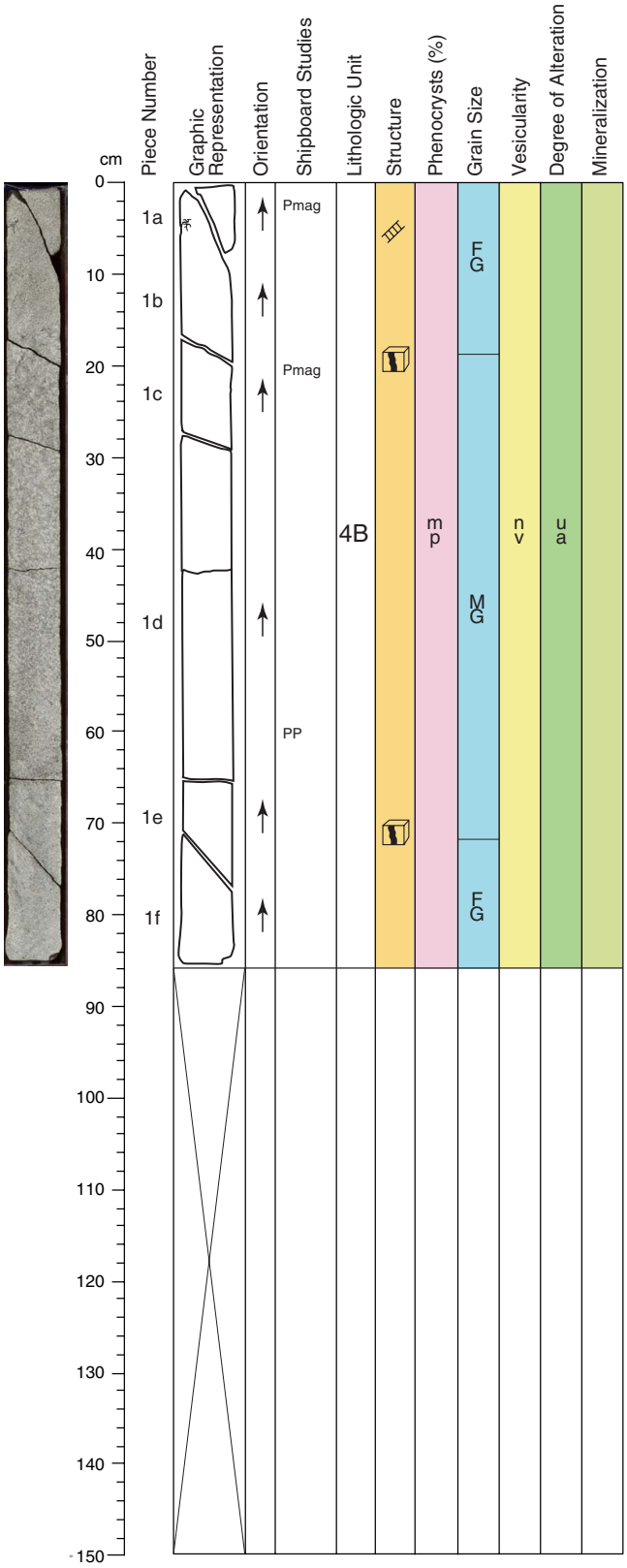
PRIMARY MINERALOGY:
Plagioclase Mode: 3% in Piece 3; 1% in other pieces.
Crystal size: Up to 2.5 mm in Piece 3.
Up to 1 mm other pieces.
Crystal shape: Euhedral to subhedral in Piece 3.
Subhedral in other pieces.
Crystal orientation: Random.
Comments: Mostly laths with a few rare aggregates in Piece 3.
Only laths in other pieces.

Pyroxene Mode: 6% in Piece 3; 4% in other pieces.
Crystal size: Up to 1.5 mm in Piece 3.
<0.5 mm in other pieces.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: No veins identified.:

ADDITIONAL COMMENTS:
Two magmatic contacts can be observed at the bottom of Piece 3. It is similar to Piece 1 in Section 41R-5. Sharp transition of grain size.

Core Photo



205-1253A-41R-5 (Section top: 591.1 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

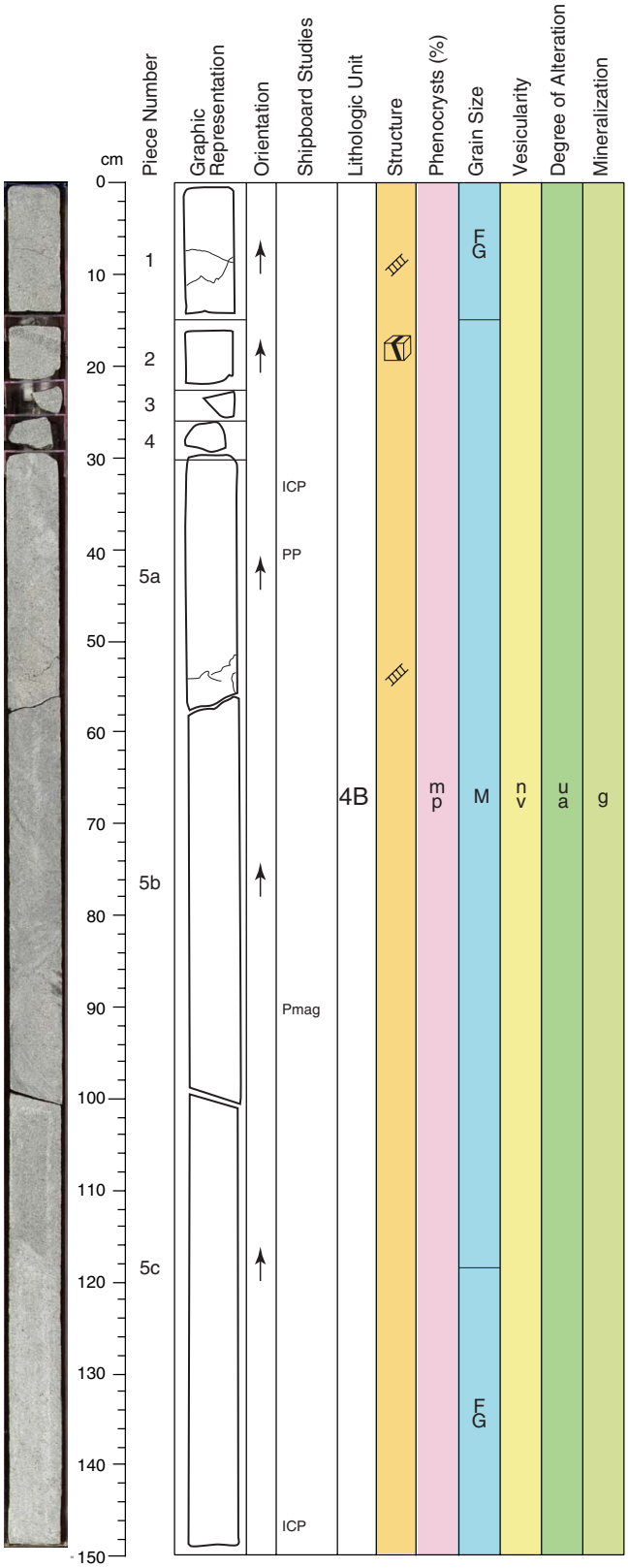
PRIMARY MINERALOGY:
Plagioclase Mode: 5%.
Crystal size: Up to 2.5 mm.
Crystal shape: Euhedral to subhedral.
Crystal orientation: Random or in rosette within the microcrystalline groundmass.
Percent replacement: Potentially altered to clays in fine-grained groundmass.
Comments: Mostly aggregates until microcrystalline groundmass.

Pyroxene Mode: 5%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

SECONDARY MINERALOGY:
Veins: No veins identified.

ADDITIONAL COMMENTS:
Two magmatic contacts can be identified at the edge of the medium-grained gabbro with the fine-grained gabbro.

Core Photo



205-1253A-42R-1 (Section top: 589.9 mbsf)

UNIT 4B: GABBRO

Pieces: 1-5

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare alteration of plagioclase aggregates to light gray brownish clay.

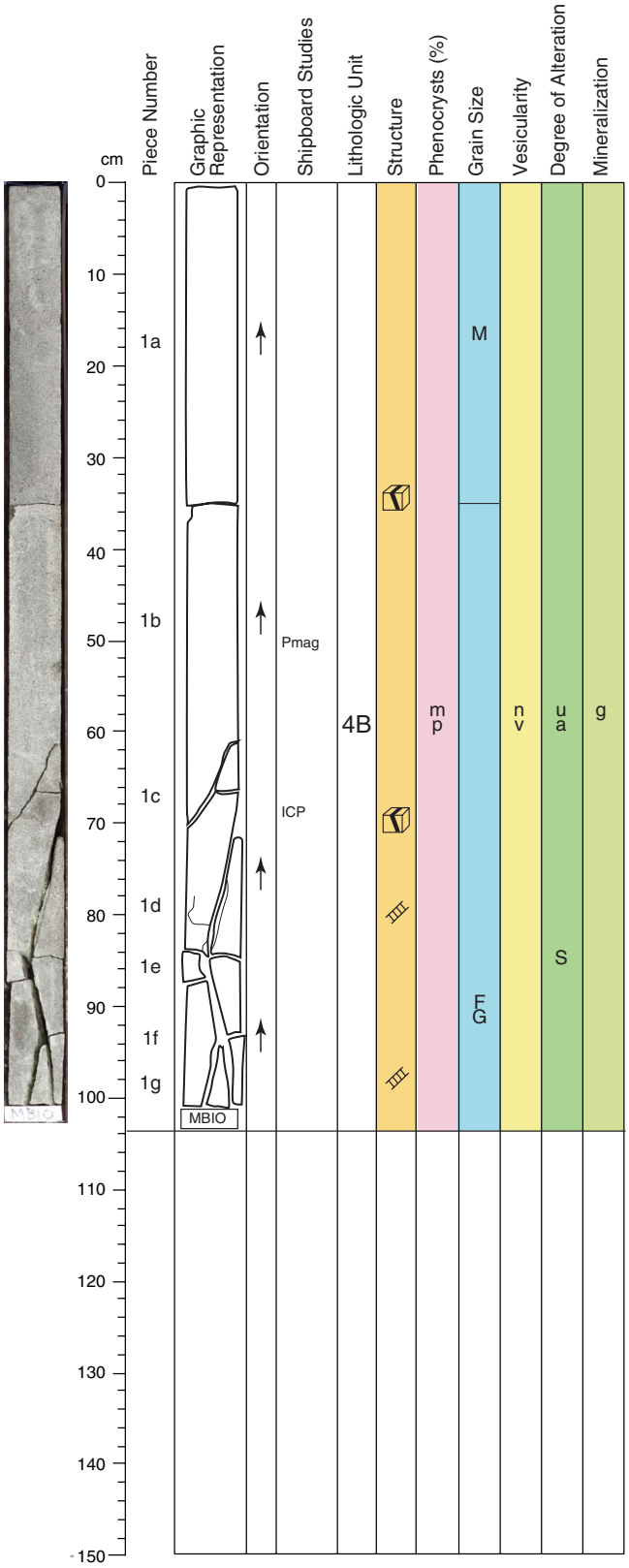
Pyroxene Mode: 4%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Some pyroxenes are partly associated with plagioclase aggregates. Rare alteration of pyroxene to pale-green clay.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.:

SECONDARY MINERALOGY:
Total%: <1%.
Veins: A couple of veins at the top of the section. They are filled with cryptocrystalline groundmass and altered glass.

ADDITIONAL COMMENTS:
Magmatic contact in Piece 2 with higher abundance of pyroxene.

Core Photo



205-1253A-42R-2 (Section top: 591.4 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2% in Piece 1a; 3% in Pieces 1b to 1f.
Crystal size: Up to 2 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare alteration of plagioclase aggregates to light gray brownish clay.

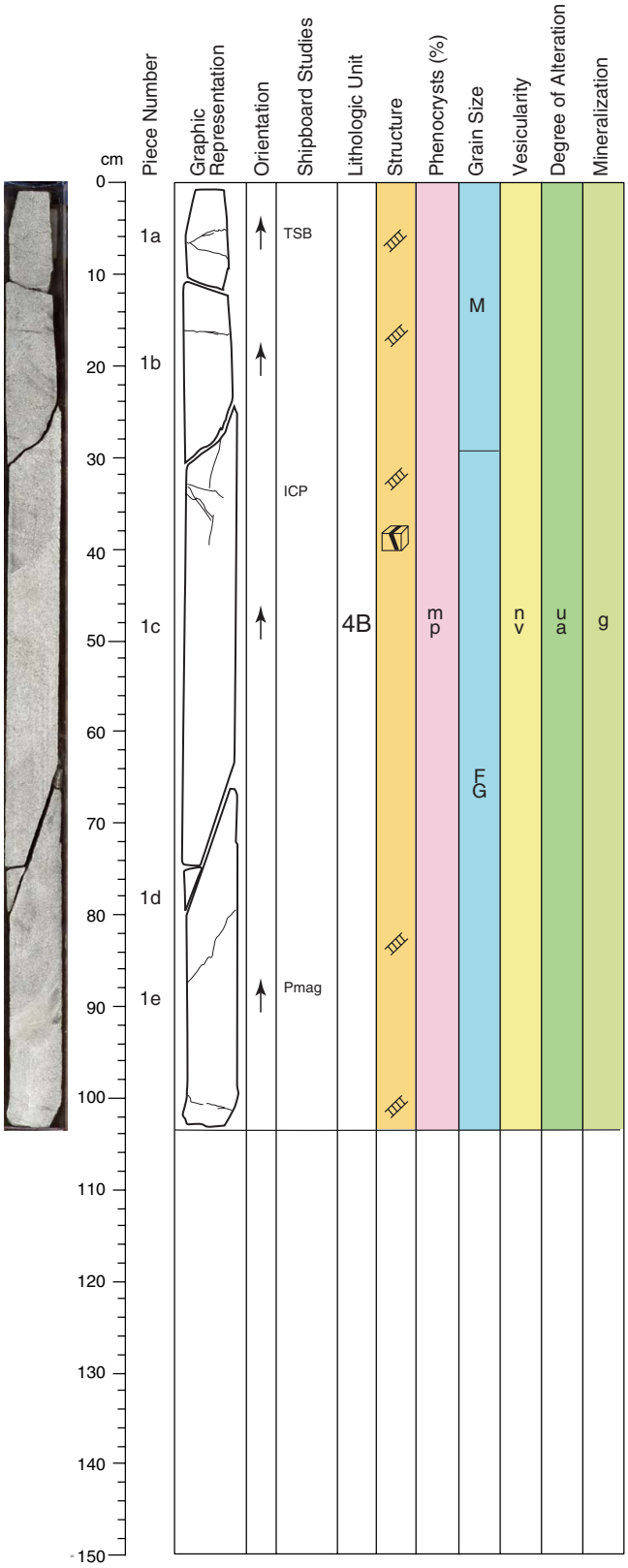
Pyroxene Mode: 2% in Piece 1a; 3% in Pieces 1b to 1f.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: 1%.
Comments: Some pyroxenes are partly associated with plagioclase aggregates. Rare alteration of pyroxene to pale-green clay.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1% in Pieces 1a and 1b, 3% in Pieces 1c to 1f.
Veins: Veins, up to 0.5 cm wide, are filled with pale green clay, which appears darker towards the vein rim. The interior of the vein shows lighter color, which could be incorporation with zeolite mineral, which appears in other veins. The dark rim could be cryptocrystalline groundmass or altered glass with pale-green clay.

ADDITIONAL COMMENTS:
Magmatic contact in Piece 1c with higher abundance of pyroxene.

Core Photo



205-1253A-42R-3 (Section top: 592.44 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2%.
Crystal size: Up to 2 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Very rare alteration of plagioclase aggregates to light gray brownish clay.

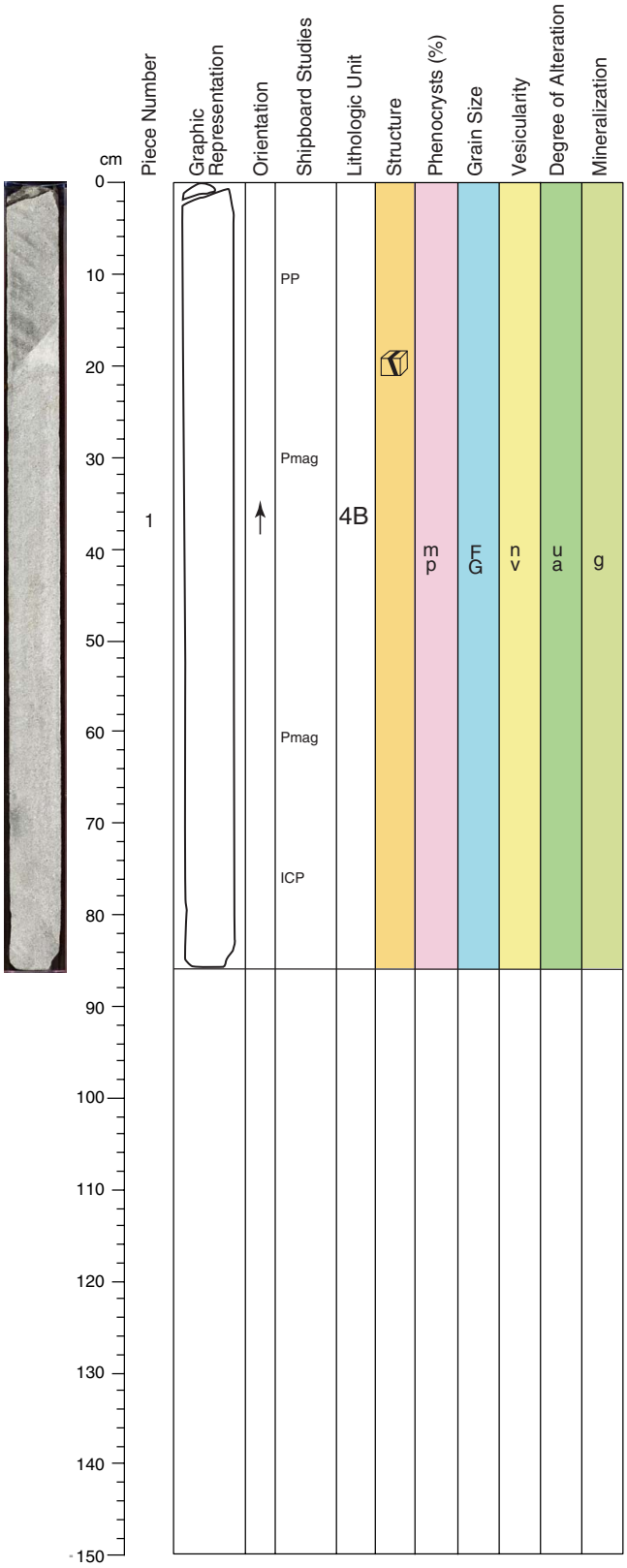
Pyroxene Mode: 2% in Piece 1a.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Some pyroxenes are partly altered to pale-green clay.

Pyrite Mode: <1%.
Crystal size: <0.1 mm:

SECONDARY MINERALOGY:
Total%: <1%.
Veins: Veins are filled with dark green/gray material (clay, altered glass) towards the rim and white material in the interior (zeolite?).

ADDITIONAL COMMENTS:
Weak magmatic contact identified due to higher abundance of pyroxene.

Core Photo



205-1253A-42R-4 (Section top: 593.48 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 3 mm as laths and aggregates.
Crystal shape: Subhedral to euhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Some plagioclase aggregates are partly replaced by light gray brownish clay.

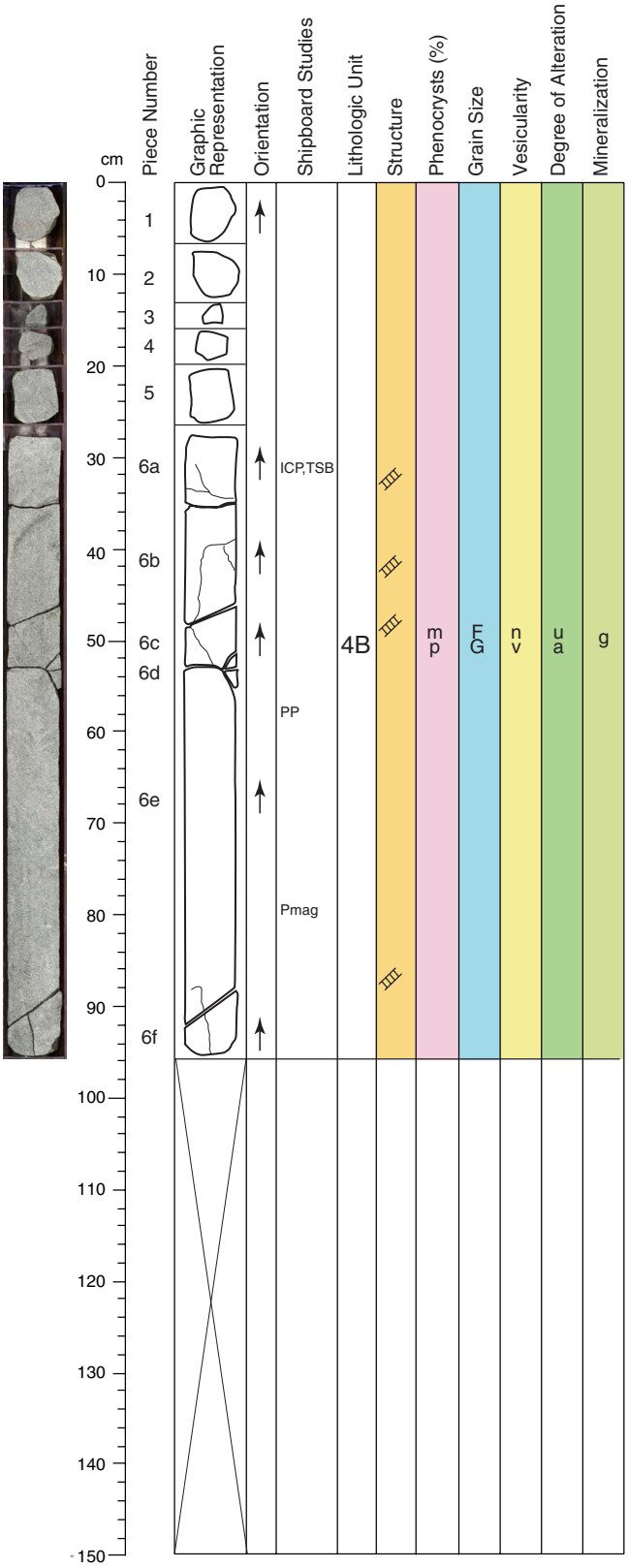
Pyroxene Mode: 3%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.
Percent replacement: <1%.
Comments: Rare replacement of pyroxene to pale-green clay.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Total%: <1%.

ADDITIONAL COMMENTS:
Alteration is restricted to primary minerals.
Weak magmatic contact identified at 20-22 cm due to higher abundance of pyroxene.

Core Photo



205-1253A-43R-1 (Section top: 595.4 mbsf)

UNIT 4B: GABBRO

Pieces: 1-6

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 2.5 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.

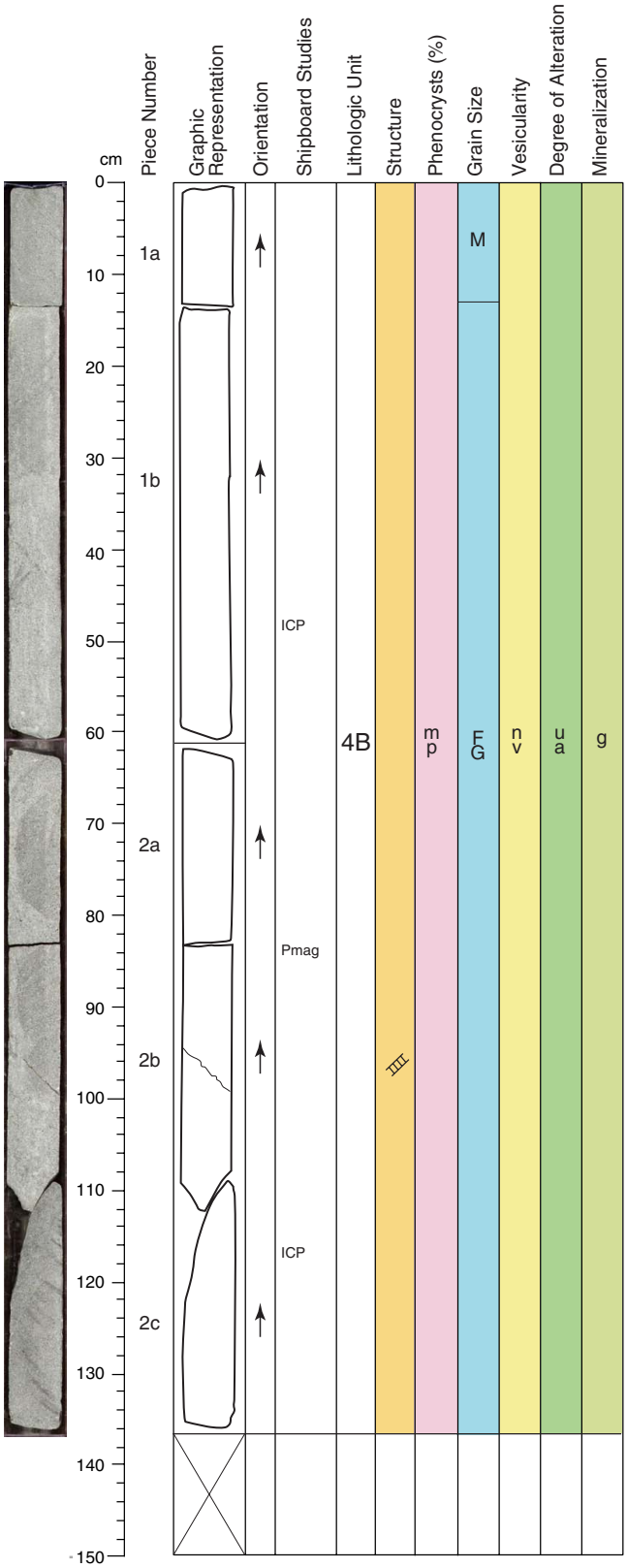
Pyroxene Mode: 3%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Veins: Vein filled with cryptocrystalline groundmass and altered glass.

ADDITIONAL COMMENTS:
Small areas with higher proportion of pyroxene (weak magmatic contact or cumulate?).

Core Photo



205-1253A-43R-2 (Section top: 596.36 mbsf)

UNIT 4B: GABBRO

Pieces: 1-2

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 2.5 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.

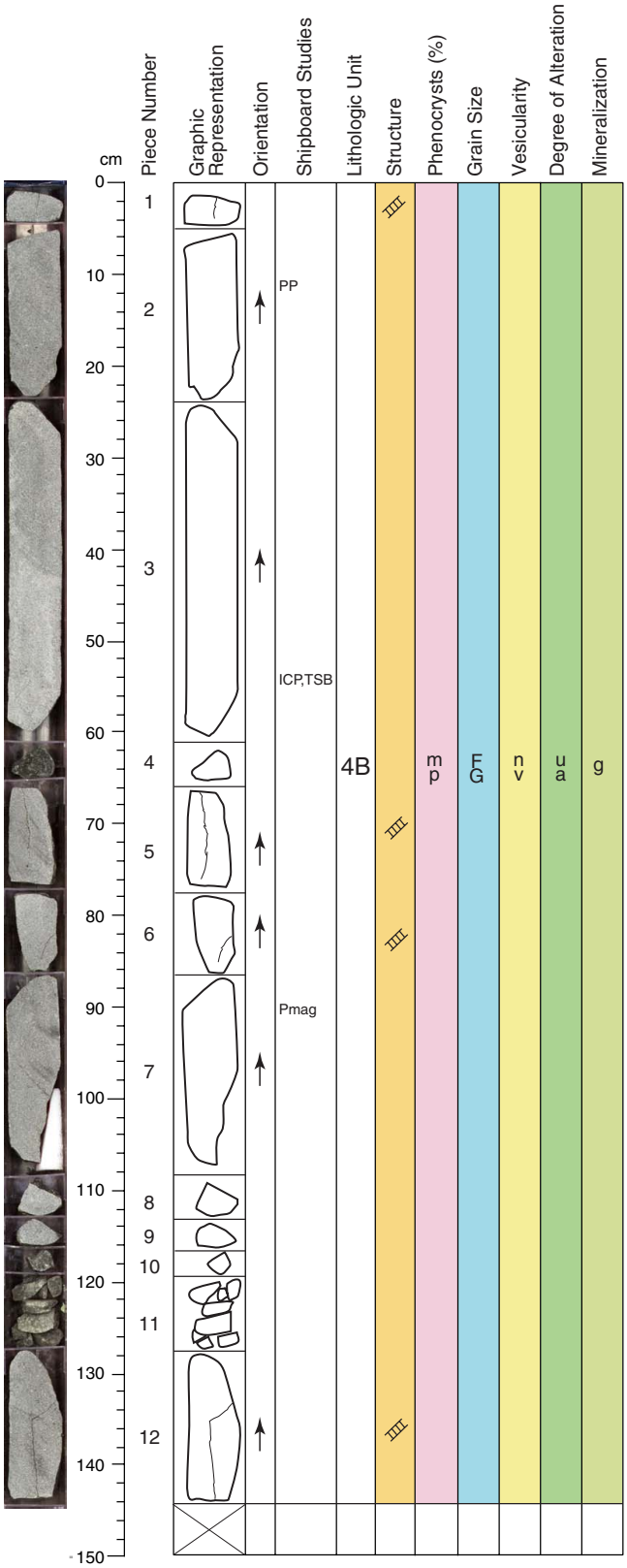
Pyroxene Mode: 3%.
Crystal size: Up to 1.5 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.

SECONDARY MINERALOGY:
Veins: Vein filled with cryptocrystalline groundmass and altered glass.

ADDITIONAL COMMENTS:
Very weak changes in the color of the groundmass => halos?

Core Photo



205-1253A-43R-3 (Section top: 597.73 mbsf)

UNIT 4B: GABBRO

Pieces: 1-12

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 3%.
Crystal size: Up to 2.5 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Rare plagioclase aggregates from Piece 5 towards the bottom of the section.

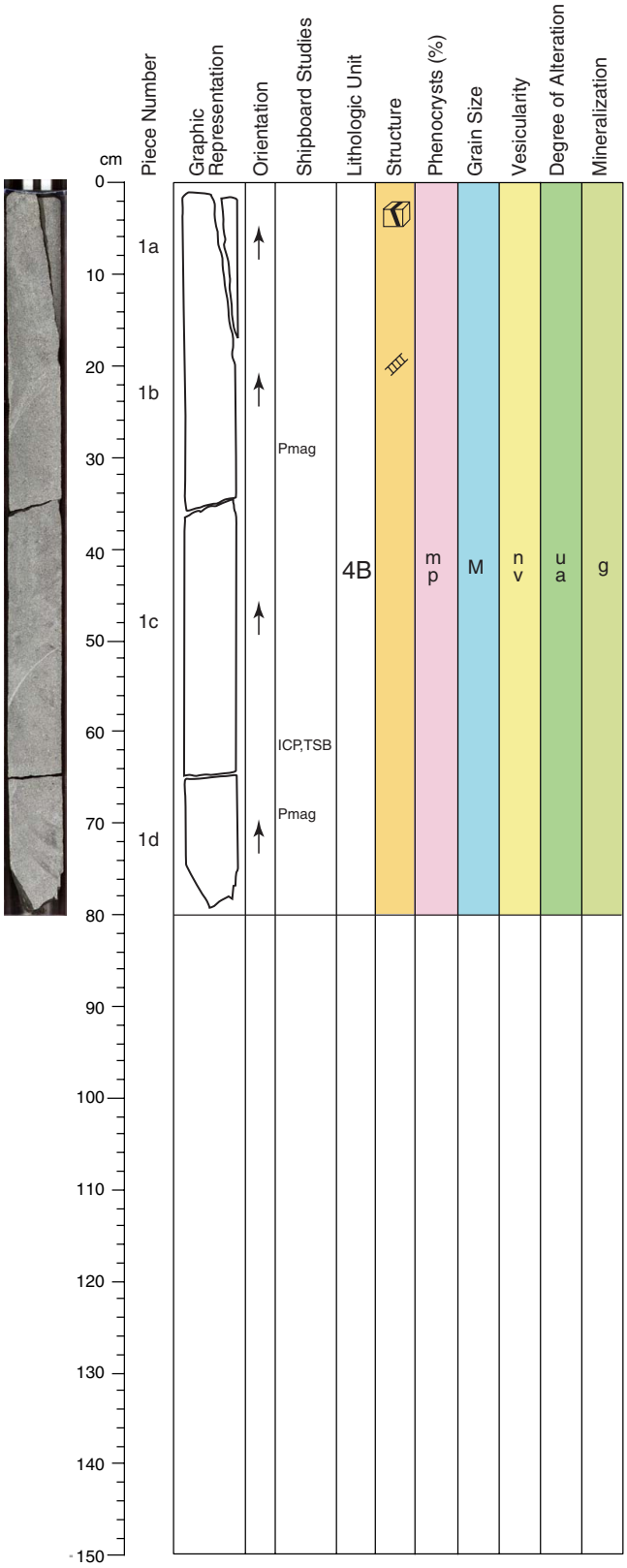
Pyroxene Mode: 3%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyrite Mode: <1%.
Crystal size: <0.1 mm.:

SECONDARY MINERALOGY:
Veins: Vein filled with cryptocrystalline groundmass and altered glass.:

ADDITIONAL COMMENTS:
No magmatic contacts are identified.

Core Photo



205-1253A-43R-4 (Section top: 599.18 mbsf)

UNIT 4B: GABBRO

Pieces: 1

Color: Gray

PRIMARY MINERALOGY:
Plagioclase Mode: 2%.
Crystal size: Up to 2 mm as laths and aggregates.
Crystal shape: Subhedral.
Crystal orientation: Random.
Comments: Rare plagioclase aggregates from Piece 5 towards the bottom of the section.

Pyroxene Mode: 2%.
Crystal size: Up to 1 mm.
Crystal shape: Subhedral.
Crystal orientation: Random.

Pyrite Mode: <1%.

SECONDARY MINERALOGY:
Veins: Open fractures are coated with dark green clay.

ADDITIONAL COMMENTS:
Weak magmatic contact at the top of Piece 1a. Contact identified by the higher proportion of pyroxene.

Sample						Texture			Mineral						Biogenic							Rock	
Core	Core type	Section	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Calcite	Clay Mineral	Feldspar	Opaques	Volcanic Glass Shard	Zeolite	Diatoms	Foraminifers	Nannofossils	Pteropod	Radiolarians	Silicoflagellates	Sponge Spicules	Shell Debris	Comments
Hole A																							
1	R	1	88	370.88	M	0	50	50	0	15	0	2	0	0	5	5	53	0	5	0	15	0	Nannofossil chalk with clay and spicules
1	R	1	102	371.02	M	0	43	57	0	17	0	15	10	0	0	0	40	0	3	0	15	0	Nannofossil chalk with clay with spicules and ash
1	R	2	65	372.01	D	0	40	60	0	5	0	2	0	0	10	15	55	0	3	0	10	0	Nannofossil chalk with foraminifers
2	R	1	49	376.09	M	0	93	7	0	7	5	10	75	0	0	0	0	0	3	0	0	0	Volcanic ash
2	R	1	76	376.36	M	0	40	60	0	30	0	5	25	0	3	0	27	0	5	0	5	0	Clay with nannofossil and ash mixed sediment
2	R	2	36	377.46	D	0	20	80	0	0	0	0	1	0	15	0	70	0	2	0	12	0	Nannofossil chalk with diatoms and spicules
2	R	2	42	377.52	M	0	30	70	0	50	0	5	10	0	2	0	26	0	1	0	5	1	Clay with nannofossils and ash
2	R	3	14	378.28	M	0	60	40	0	15	0	5	55	0	5	0	10	0	5	0	5	0	Volcanic ash wtih clay and nannofossils
2	R	3	42	378.56	D	0	15	85	0	5	0	0	2	0	10	1	74	0	5	0	3	0	Nannofossil chalk with diatoms
2	R	3	102	379.16	M	0	80	20	0	10	0	5	75	0	0	0	10	0	0	0	0	0	Volcanic ash with clay and nannofossils
2	R	5	68	381.82	D	0	10	90	0	5	0	0	0	0	10	2	76	0	2	0	5	0	Nannofossil chalk with diatoms
3	R	1	59	385.79	D	0	5	95	0	3	0	0	2	5	3	10	69	0	0	0	8	0	Nannofossil chalk with forams
3	R	1	113	386.33	M	0	10	90	0	65	0	3	10	2	5	3	10	0	0	0	2	0	Clay with volcanic glass and nannofossils
3	R	2	122	387.92	M	0	10	90	0	45	0	5	2	0	5	1	20	0	0	2	20	0	Claystone with spicules and nannofossils
3	R	3	42	388.62	D	0	10	90	0	5	0	2	2	3	3	2	70	0	0	0	13	0	Nannofossil chalk with spicules
3	R	3	63	388.83	M	0	20	80	0	50	0	2	5	0	5	0	5	0	8	0	25	0	Claystone with spicules
3	R	CC	4	389.10	M	0	10	90	5	20	0	0	5	5	12	0	48	0	4	1	0	0	Nannofossil chalk with diatoms and clay
4	R	1	42	395.32	D	0	35	65	1	1	0	0	0	2	12	2	64	0	3	0	15	0	Nannofossil chalk with diatoms and spicules
4	R	2	15	396.55	D	0	40	60	40	60	0	0	0	0	0	0	0	0	0	0	0	0	Calcit rich claystone
4	R	2	113	397.53	M	0	30	70	5	69	0	2	20	4	0	0	0	0	0	0	0	0	Claystone with volcanic ash
4	R	3	40	398.30	D	0	3	97	0	87	0	3	0	10	0	0	0	0	0	0	0	0	Claystone with zeolites
4	R	3	76	398.66	M	0	10	90	3	70	0	10	0	17	0	0	0	0	0	0	0	0	Claystone with zeolites
4	R	3	90	398.80	M	0	80	20	0	15	0	15	65	0	0	0	0	0	0	0	5	0	Volcanic ash with clay and opaque minerals
4	R	3	97	398.87	M	0	5	95	0	95	0	1	0	0	0	0	0	0	0	0	4	0	Claystone
4	R	4	84	399.94	D	0	0	100	0	97	0	1	0	2	0	0	0	0	0	0	0	0	Claystone
6	R	1	1	404.51	M	0	15	85	0	60	0	5	30	5	0	0	0	0	0	0	0	0	Claystone with volcanic ash
10	R	2	20	430.92	D	15	45	40	75	15	0	5	0	0	0	0	5	0	0	0	0	0	Calcarenite with clay
10	R	2	87	431.59	M	15	40	45	0	20	0	5	30	20	0	0	25	0	0	0	0	0	"Volcanic ash, nannofossil, clay mixed sediment"
10	R	2	101	431.73	D	15	25	60	30	2	0	2	0	1	0	5	60	0	0	0	0	0	Calcite-rich nannofossil chalk
11	R	1	4	436.14	M	0	5	95	0	47	0	0	3	15	10	0	2	0	8	0	15	0	Claystone with zeolite and spicules
11	R	1	32	436.42	D	0	10	90	2	5	0	0	0	8	10	3	65	0	5	0	2	0	Nannofossil chalk with diatoms
11	R	2	26	437.32	D	0	5	95	0	5	0	0	2	5	10	2	65	3	5	0	3	0	Nannofossil chalk with diatoms
11	R	2	54	437.60	D	0	5	95	0	25	0	0	0	3	5	2	45	0	5	0	15	0	Nannofossil chalk with clay and spicules
11	R	2	85	437.91	M	0	25	75	0	5	0	15	10	5	3	2	55	0	2	0	3	0	Nannofossil chalk with opaque minerals and glass
12	R	1	13	442.13	D	0	13	87	3	1	0	3	0	2	1	10	80	0	0	0	0	0	Nannofossil chalk with foraminfers
25	R	1	1	513.01	M	0	0	100	15	85	0	0	0	0	0	0	0	0	0	0	0	0	Claystone with (recrystallized) calcite
25	R	1	10	513.10	M	0	30	70	70	26	0	1	2	1	0	0	0	0	0	0	0	0	(recrystallized) Nannofossil chalk with clay

THIN SECTION: 205-1253A-4R-CC,1-3 cm **Piece No.: 1A** **Unit: 4A** **ODP TS#: 1** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Voids within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	1	0.4	2.2	0.8	Euhedral to subhedral	Laths and aggregates.
Clinopyroxene	2	-	0.1	1	0.2	Subhedral	Rare association with plagioclase aggregates.
Olivine	0.1	-		0.25		Subhedral	Only one observed olivine, others might be too small for identification.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30		0.1	0.2	0.15	Subhedral	
Clinopyroxene	15			0.02	0.02	Subhedral	
opaques	10			0.25	0.25	Subhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	0.1			0.2		Slight alteration of plagioclase and perhaps olivine

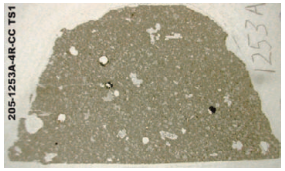
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
	?			0.05		Only 2 small veins, no filling remaining in thin section	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicules	1	?	0.2	2.4	0.5	Open, or in rare case lined with clays.

Very slight alteration of plagioclase to clays. Clays within groundmass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-4R-CC,14-16 cm **Piece No.: 2** **Unit: 4A** **ODP TS#: 2** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Voids within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	2	-	0.15	2	0.8	Subhedral	Laths and aggregates.
Clinopyroxene	0.5	-	0.15	0.25	0.15	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30		0.05	0.2	0.15	Subhedral to anhedral	
Clinopyroxene	10				0.02	Anhedral	
Opaques	5		0.02	0.2	0.05		Probably ilmenite and magnetite.

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

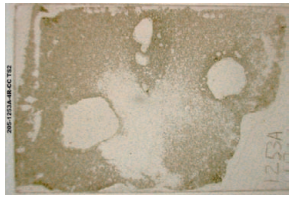
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Clays within groundmass

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-4R-CC, 18-20 cm **Piece No.: 3A** **Unit: 4A** **ODP TS#: 3** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Voids within microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3	1	0.4	2.4	0.6	Euhedral to subhedral	Very slight alteration along cracks.
Clinopyroxene	1	-	0.1	0.3	0.2	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30		0.05	0.3	0.2	Euhedral to subhedral	
Clinopyroxene	15		0.05	0.1	0.05	Subhedral	
Opaques	10		0.05	0.1	0.05		

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicules			6	6.8		Two voids partly filled with clay; most of the alteration products are lost during thin section preparation (material too soft compared to hard groundmass).

Clays within the groundmass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

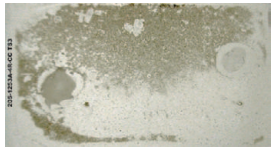


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-5R-1, 30-33 cm **Piece No.: 2** **Unit: 4A** **ODP TS#: 4** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	5	0.4	2	0.7	Subhedral to anhedral	Aggreagtes with clinopyroxene and opaque minerals.
Clinopyroxene	3	5	0.1	0.3	0.2	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30				0.15		
Clinopyroxene	15			0.1	0.05		
Opaques	20		0.1	0.4	0.3		

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	20					Replacing primary minerals, probably celadonite and saponite.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-5R-1, 78-79 cm **Piece No.: 4** **Unit: 4A** **ODP TS#: 5** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3	10	0.6	2.6	1	Subhedral	
Clinopyroxene	1	5	0.3	1	0.4	Subhedral	
Opaques	5						
Orthopyroxene	0.1			0.4		Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40		0.1	0.4	0.2		
Clinopyroxene	10		0.1	0.2	0.15		

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	15					Alteration phase of primary minerals, probably celadonite and saponite.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	Clay	(celadonite or saponite ?)			0.4	From the top to the bottom of the thin section	
2					0.05	remains open and lined with clay	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Voids	1		0.2	2.2	1.2	Voids are elongated and are located near the large vein.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-5R-2, 66-68 cm **Piece No.: 4** **Unit:4A** **ODP TS#: 6** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3	-	0.5	1.5	0.8	Subhedral	Partly fractured.
Clinopyroxene	1	-	0.3	0.6	0.4	Subhedral	
Opaques	10	-	0.1	0.3	0.2		
Orthopyroxene	0.1	-			0.3	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30				0.4	Euhedral to subhedral	
Clinopyroxene	15				0.2	Subhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5					Surrounding opaque minerals and replacing primary minerals.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	-				0.8		

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Voids	<1	-			0.4	Elongated

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-6R-3, 65-66 cm **Piece No.: 1C** **Unit: 4A** **ODP TS#: 7** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro
GRAIN SIZE: Microcrystalline
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	-	0.5	2.8	1	Subhedral	
Clinopyroxene	1	-	0.5	0.5	0.5	Subhedral	
opaques	10		0.05	0.5	0.15		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40				0.4	Euhedral to subhedral	
Clinopyroxene	20				0.15	Subhedral	

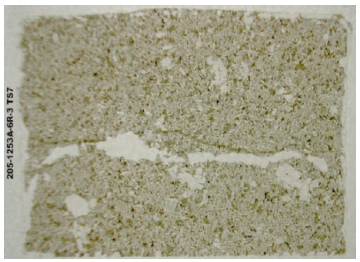
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	10					Partly associated with opaque minerals, replacing primary minerals; clays are probably celadonite and saponite.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1					0.8		
2	clay, opaques				0.1	Tiny vein	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicules	2	-	0.4	2	0.5	Higher abundance close to the vein.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-6R-6, 88-89 cm **Piece No.: 4B** **Unit: 4A** **ODP TS#: 8** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	5	0.6	2.8	1.2	Subhedral	Clay and opaque minerals along cracks.
Clinopyroxene	1	1	0.4	0.5	0.4	Subhedral	
Opaques	10		0.05	0.3	0.1		
Orthopyroxene	1	5	0.4	0.4	0.4	Subhedral	Alteration in cracks.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.1	0.6	0.5	Euhedral to subhedral	
Clinopyroxene	15		0.1	0.3	0.2	Subhedral to anhedral	

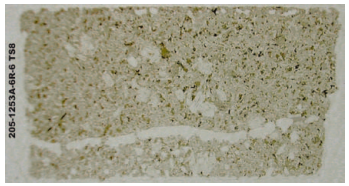
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5					Surrounding clinopyroxene and opaque minerals; replacing primary minerals; probably celadonite and saponite.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1					0.8		

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicules	1		0.2	0.8	0.4	Associated with veins.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-7R-1, 128-130 cm **Piece No.: 10** **Unit: 4A** **ODP TS#: 9** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline-fine-grained gabbro.
GRAIN SIZE: Fine-grained
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3	1	0.8	2.4	1.5	Subhedral	An_{60-65}
Clinopyroxene	1		0.8	1.6	1	Subhedral to anhedral	
Opaques	10		0.1	0.4	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.2	2	1.9	Subhedral to anhedral	
Clinopyroxene	20		0.2	1	0.5	Euhedral to subhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Within groundmass; replacing primary minerals, probably olivine with a dark rim (magnetite?); clays are probably saponite and celadonite.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Recrystallization of plagioclase and clinopyroxene?

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

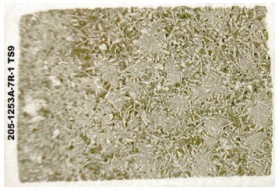


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-7R-1, 130-133 cm **Piece No.: 10** **Unit: 4A** **ODP TS#: 10** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED:
GRAIN SIZE: Microcrystalline/fine-grained gabbro.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3	1	1.5	1.6	1.5	Subhedral	An_{60}
Clinopyroxene	1		0.9	1.2	1	Subhedral	
Opaques	15		0.1	0.3	0.15		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60					Euhedral to subhedral	
Clinopyroxene	10						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Within groundmass; replacing primary minerals, probably olivine. Plagioclase and clinopyroxene in the groundmass are partly altered along cracks. Altered minerals are surrounded by a dark rim (magnetite?). Alteration products are probably celadonite and saponite.

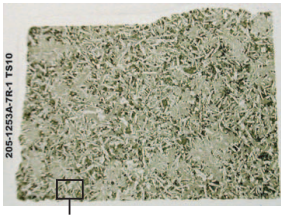
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Possible recrystallization of plagioclase and clinopyroxene?

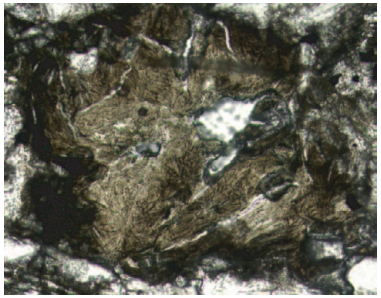
AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



TS10-A, B

TS10-A **CLOSE UP**



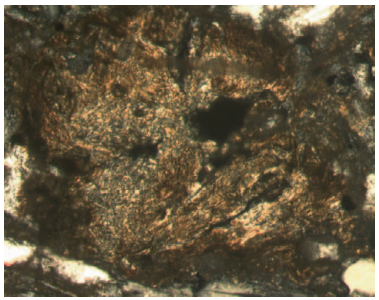


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS10-A	Full replacement of a primary mineral by clay (PPL, 20x, 1.25mm)
TS10-B	Full replacement of a primary mineral by clay (XPL, 20x, 1.25mm)

THIN SECTION: 205-1253A-7R-2, 75-79 cm **Piece No.: 8** **Unit: 4A** **ODP TS#: 11** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	15	0.3	1.8	1	Subhedral	Partly fresh; a few aggregates; altered glass inclusions; alteration along cracks.
Clinopyroxene	3	-	0.2	0.6	0.2	Subhedral	
Opaques	10		0.1	0.4	0.2		
ilmenite	3		0.3	0.6	0.4		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.05	0.6	0.3	Euhedral to subhedral	
Clinopyroxene	20		0.05	0.2	0.1	Subhedral	

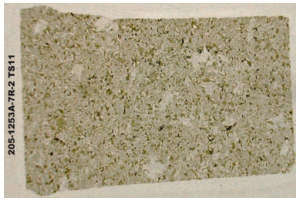
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Within groundmass; surrounding opaques; replacing primary minerals such as olivine?

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-7R-2, 91-93 cm **Piece No.: 8** **Unit: 4A** **ODP TS#: 12** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED:
GRAIN SIZE: Vein within microcrystalline gabbro
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	8	10	0.4	1.6	0.6	Euhedral to subhedral	Few aggregates; alteration along cracks; An_{65}.
Clinopyroxene	4	5	0.3	1.2	0.4	Euhedral to subhedral	Associated sometime with plagioclase aggregates.
Opaques	10		0.1	0.3	0.2		
Ilmenite	2		0.2	0.6	0.3		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.05	0.4	0.3	Euhedral to subhedral	
Clinopyroxene	20		0.05	0.3	0.2	Subhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	15					Within groundmass. Replacing primary minerals (olivine?), alteration of plagioclase and clinopyroxene along cracks. Associated with opaque minerals?

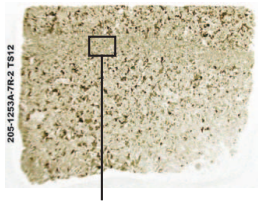
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	Holocrystalline groundmass				1.6	Filled with 90% plagioclase, 10% clays which replaced olivine.	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Higher abundance and size of clays and phenocrysts on one side of the vein.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



TS12-A **CLOSE UP**

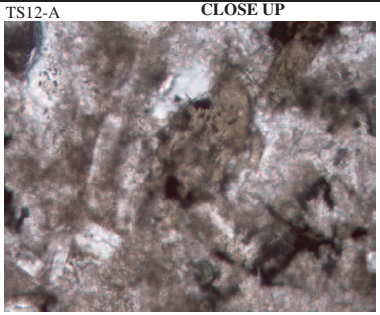


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS12-A	Replacement of olivine within a vein (PPL, 20x, 1.25mm)

THIN SECTION: 205-1253A-8R-1, 24-27 cm **Piece No.: 2B** **Unit: 4A** **ODP TS#: 13** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Fine-grained gabbro.
GRAIN SIZE: Fine-grained.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENT
Plagioclase	10	5	0.6	1.8	0.8	Subhedral	An_{65}; altered along cracks.
Clinopyroxene	3	2	0.4	0.8	0.5	Subhedral	Slightly altered along cracks
Opaques	3		0.1	0.4	0.2		
Ilmenite	3		0.4	1	0.6		
Olivine	<1	80					Only remnants of olivine.
Orthopyroxene	<1	2	0.2	0..4	0.2	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENT
Plagioclase	60		0.1	0.8	0.5	Euhedral to subhedral	
Clinopyroxene	20		0.1	0.3	0.2	Subhedral	
Glass	2						Associated with clay in replacement of olivine.

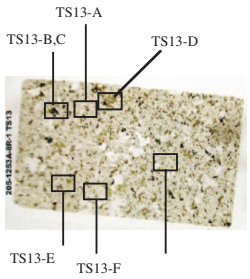
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	13					Within groundmass; replacing glass (palagonite?); replacement of olivine.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

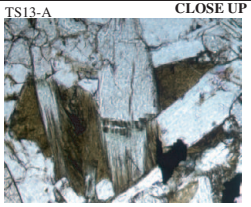
AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

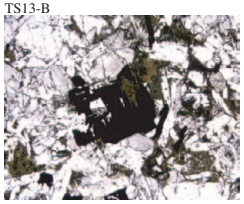


CLOSE UP

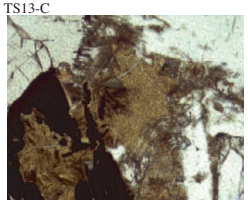
TS13-A



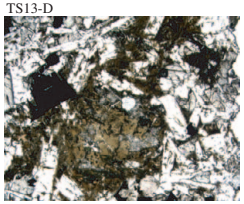
TS13-B



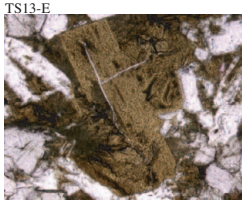
TS13-C



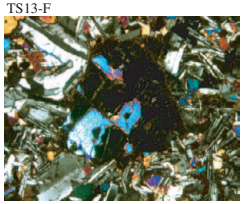
TS13-D



TS13-E



TS13-F



TS13-G

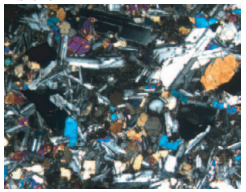


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS13-A	Altered clinopyroxene (PPL, 20x, 1.25mm)
TS13-B	Ilmenite and palagonite clay (PPL, 20x, 1.25mm)
TS13-C	Replaced olivine by clay (PPL, 40x, 0.625mm)
TS13-D	Replaced olivine and ilmenite (PPL, 5x, 5mm)
TS13-E	Replacement of primary mineral (probably plagioclase in this case) by glass and palagonite (PPL, 20x, 1.25mm)
TS13-F	Partly replaced olivine (XPL, 5x, 5mm)
TS13-G	Microcrystalline gabbro (XPL, 5x, 5mm)

THIN SECTION: 205-1253A-8R-1, 67-70 cm **Piece No.: 3A** **Unit: 4A** **ODP TS#: 14** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Contact between fine-grained and medium-grained gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40	20	0.2	4.4	1.6	Euhedral to subhedral	Altered along cracks. Replaced by clays.
Clinopyroxene	30	30	0.2	2.8	1.6	Euhedral to subhedral	Altered along cracks. Replaced by clays.
Opaques	2		0.1	0.1	0.1		
Ilmenite	5		0.4	1.6	0.6		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	23					Groundmass, replacing primary minerals.
Zeolites	<1					Filling voids.

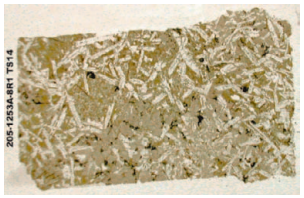
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicules					3.6	Rare occurrence of zeolites, probably mesolite and thomsonite.

Partial recrystallization near the contact. Distinction between groundmass and primary mineralogy is not possible.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-8R-1, 85-88 cm **Piece No.: 5A** **Unit: 4A** **ODP TS#: 15** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED:
GRAIN SIZE: Medium grained
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	<2	0.8	4	2	Euhedral	Melt inclusions. An_{55-50}, slight alteration.
Clinopyroxene	4	-	0.3	1	0.5	Subhedral to anhedral	Little inclusions.
Orthopyroxene	0.5	-		0.3		Anhedral	
Ilmenite	3			0.5		Anhedral	No special location.
Opaques	1						

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			0.8		Euhedral to subhedral	An_{60-55}
Clinopyroxene	35			0.3		Subhedral to anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	2					Replaced primary minerals, perhaps olivine.

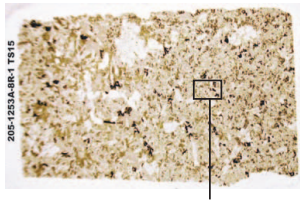
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Very crystalline gabbro, medium- to fine-grained gabbro without sharp boundary.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



TS15-A

TS15-A **CLOSE UP**

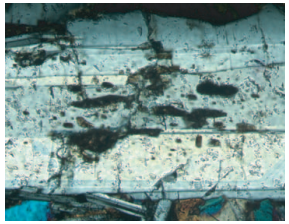


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS15-A	Inclusions of glass and altered flass in plagioclase (XPL, 20x, 1.25mm)

THIN SECTION: 205-1253A-8R-1, 133-136 cm **Piece No.: 5B** **Unit: 4A** **ODP TS#: 16** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	15	0.6	3.6	1	Euhedral to subhedral	Glass inclusions which are partly altered to clay.
Clinopyroxene	2	2	0.3	1	0.3	Subhedral	
Opaques	10		0.1	0.3	0.2		
Ilmenite	5		0.4	0.8	0.6		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.1	0.5	0.3	Euhedral to subhedral	Partly altered to clay.
Clinopyroxene	15		0.1	0.2	0.15	Subhedral	

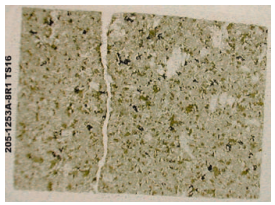
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	15					Within the groundmass and replacing primary minerals, partly surrounded by opaques minerals.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1							

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-8R-2, 52-55 cm **Piece No.: 2** **Unit: 4A** **ODP TS#: 17** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact ?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Magmatic contact between microcrystalline and medium-grained gabbro: 1) Sharp ioncrease in grain size, no curved contact. All minerals are euhedral within microcrystalline gabbro; 2) Higher proportion of ilmenite and opaques (~15%-20%); 3) No evidence of fresh glash but only altered glass; 4) Inter-growing of plagioclase and clinopyroxene within the medium-grained gabbro arguing against mineral segregation during crystallization; 5) Ondulose extinction and growth zoning within plagioclase indicating both deformation and melt differentiation during plagioclase crystallization; 6) Melt inclusions within plagioclase and clinopyroxene.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

TS17-A **CLOSE UP**

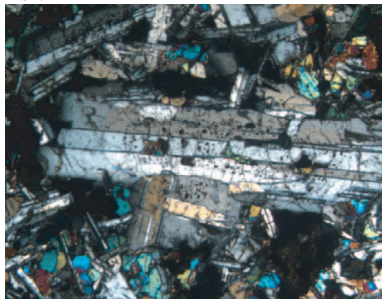


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS17-A	Inclusions of glass and altered glass in plagioclase (XPL, 20x, 1.25mm)

THIN SECTION: 205-1253A-8R-3, 21-23 cm **Piece No.: 2** **Unit: 4A** **ODP TS#: 18** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Vein
GRAIN SIZE: Microcrystalline gabbro.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	5	0.6	2	1	Subhedral	An_{65-70}, glass inclusions which are plartly altered to clays.
Clinopyroxene	2		0.3	0.4	0.3	Subhedral	
Opaques	7		0.1	0.4	0.3		
Ilmenite	3		0.2	0.6	0.4		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.1	0.6	0.4	Euhedral to subhedral	
Clinopyroxene	30		0.1	0.3	0.2	Subhedral	

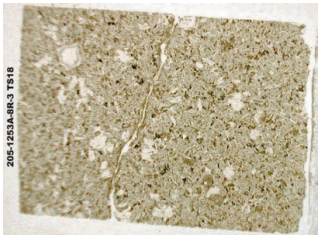
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	10					Replacing primary minerals; close to opaques. Replacing groundmass minerals.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	open				0.2	Partly filled with clays.	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-15R-1, 39-41 cm **Piece No.: 2B** **Unit: 4B** **ODP TS#: 19** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	10		0.2	2	0.6	Subhedral	
Clinopyroxene	3		0.1	1.2	0.4	Subhedral	
Olivine	1	20	0.1	0.4	0.3	Subhedral	
Opaque minerals	3		0.1	0.2	0.1		
Orthopyroxene	1		0.1	0.7	0.4	Subhedral	
Ilmenite	3		0.1	0.5	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.05	0.2	0.15	Subhedral - euhedral	
Clinopyroxene	35		0.05	0.1	0.07	Subhedral	
Clay	15						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	15					Replacing primary minerals (olivine).
Chlorite ?	<1					

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Irregular	2					Empty alteromorphs of primary minerals(?)

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

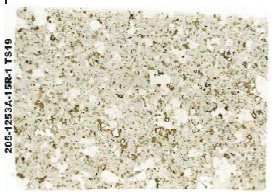


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-14R-2, 15-17 cm **Piece No.: 1** **Unit: 4B** **ODP TS#: 20** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Voids within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE: Voids.

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7		0.2	2	1	Euhedral - subhedral	An_{70}, few aggregates.
Clinopyroxene	2		0.2	1.2	0.3	Euhedral - subhedral	
opaque minerals	10		0.1	0.2	0.1		
Orthopyroxene	<1		0.2	0.6	0.4	Euhedral - subhedral	
Olivine	<1		0.2	0.4	0.3	Subhedral - anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.05	0.1	0.07	Euhedral - subhedral	
Clinopyroxene	40		0.02	0.05	0.03	Subhedral	
Clay	10						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Replacing primary minerals (olivine), surrounded along opaque minerals.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	Clay	Palagonite			0.02	Connected to the void.	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicular	1	Clay, palagonite.	0.8	9.2		Most of the alteration material is lost during preparation.
Irregular	1	Clay, palagonite.	0.6	5		Most of the alteration material is lost during preparation.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

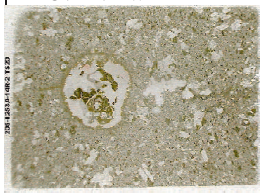


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-13R-1, 35-37 cm **Piece No.: 5** **Unit: 4B** **ODP TS#: 21** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Cryptocrystalline gabbro/basalt.
GRAIN SIZE: Cryptocrystalline
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	8			4	2	Subhedral as aggregates and laths.	An_{50-55}. Ondulare extinction.
Clinopyroxene	2		0.4	2.2		Euhedral - subhedral.	Either fresh or altered.
Olivine	0.5		0.15	0.4		Subhedral.	
Orthopyroxene	0.5		0.2	1.3		Subhedral - anhedral.	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50			0.05		Subhedral - anhedral.	Broken.
Clinopyroxene	30			0.04		Anhedral.	
	15						
Opaques	5			0.02		Anhedral.	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay (saponite ?)	5					Total replacement of olivine

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
	15					Distributed within the thin section without any specific orientation.

Cryptocrystalline to very microcrystalline.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

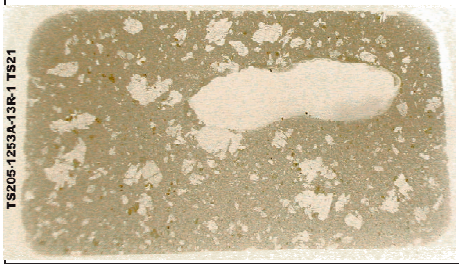


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-13R-1, 51 cm **Piece No.: 8** **Unit: 4B** **ODP TS#: 22** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Filling in void.
GRAIN SIZE: Hypocrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3		0.1	0.6	0.4	Euhedral.	
Clinopyroxene	2		0.05	0.2	0.1	Euhedral.	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	15			0.02			
Clinopyroxene	10			0.02			

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Probably magnetite (opaque minerals) within the groundmass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

205-1253A-13R-1 TS22

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-13R-1, 50-52 cm **Piece No.: 8** **Unit: 4B** **ODP TS#: 23** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Cryptocrystalline gabbro/basalt.
GRAIN SIZE: Cryptocrystalline-hypocrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5		0.2	2.5	1	Euhedral - subhedral	Few aggregates.
Clinopyroxene	2		0.1	0.7	0.3	Euhedral - subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	25			0.2	0.1		
Clinopyroxene	10			0.1	0.05		

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5					Replacing olivine.

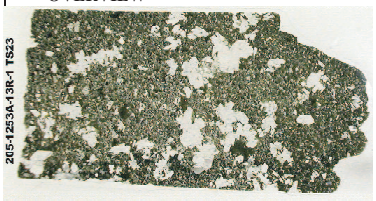
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Probably magnetite (opaque minerals) within the groundmass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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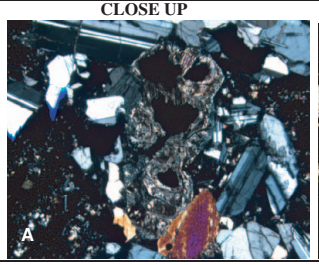
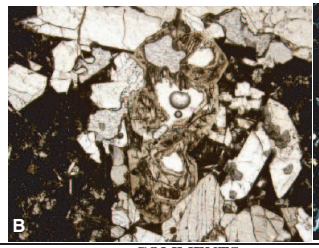




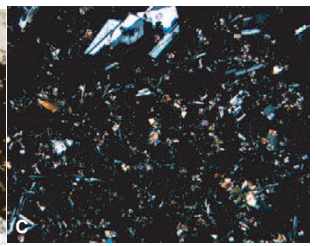


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS23-A	Completely replaced primary mineral (olivine ?), XP
TS23-B	Completely replaced primary mineral (olivine ?), PPL
TS23-C	Cryptocrystalline groundmass.

THIN SECTION: 205-1253A-12R-1, 28-31 cm **Piece No.: 2** **Unit: 4B** **ODP TS#: 24** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Contact between sediment and gabbro.
GRAIN SIZE: Hypocrystalline - holocrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	4	1	0.05	1.4	0.6	Subhedral	An_{70-75}
Clinopyroxene	2		0.05	0.5	0.4	Euhedral - Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
						Hypocrystalline - holocrystalline	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5					Replacing primary minerals (olivine and pyroxene), altered glass (palagonite).
Zeolites	<1					Only trace occurrence in cavaties close to altered glass, probably mesolite or thomsonite.

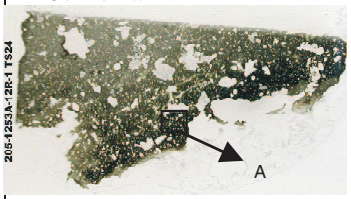
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicular-irregular	3		0.2	1.5	0.5	Mainly all filling material is lost during preparation, filling was probably zeolites and clay.

Fresh glass at the sediment/gabbro contact, which grades into holo- and hypocrystalline groundmass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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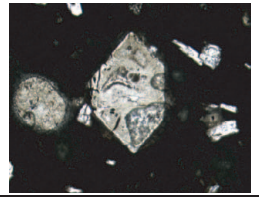


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS24-A	Olivine, completely replaced by clay.

THIN SECTION:	205-1253A-16R-3, 1-4 cm	**Piece No.: 1**	**Unit: 4B**	**ODP TS#: 25**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Magmatic contact?				
GRAIN SIZE:					
TEXTURE:					

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase							
Clinopyroxene							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase							
Clinopyroxene							

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						

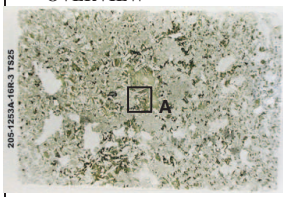
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Very sharp boundary between microcrystalline and medium-grained gabbro. This is the magmatic contact. Phenocrysts of mm size and anhedral for the medium-grained gabbro (no distinction between phenocryst and groundmass), whereas minerals are euhedral on the microcrystalline side. Plagioclase and clinopyroxene are growing within each other on the medium-grained side. Higher amount of ilmenite and magnetite at the contact as well as glass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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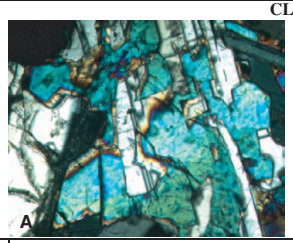


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS25-A	Intergrowing of plagioclase and clinopyroxene near a magmatic contact.

THIN SECTION:	205-1253A-17R-2, 2-4 cm	**Piece No.: 1A**	**Unit: 4B**	**ODP TS#: 26**	**OBSERVER: BS**, VC, JM
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Vein within microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:	Hypocrystalline vein.				

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	15		0.2	3.8	0.6	Euhedral - subhedral	Alteration inside the vein.
Clinopyroxene	5		0.2	1	0.3	Euhedral - subhedral	
Ilmenite	3		0.4	1.2	0.6		
Orthopyroxene	1		0.2	0.4	0.2	Euhedral - subhedral	
Opaque minerals	3		0.1	0.3	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40		0.05	0.2	0.15	Subhedral	
Clinopyroxene	40		0.05	0.2	0.1	Subhedral	
Glass	5						
Clay	15						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	15					Replacing glass (palagonite) and primary minerals.

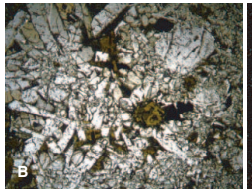
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS
	Crypto-hypocrystalline groundmass					Groundmass with 15% plagioclase and palagonite at the center of the vein. Larger phenocrysts of ilmenite inside the vein and larger plagioclase and clinopyroxene at the vein-gabbro contact.

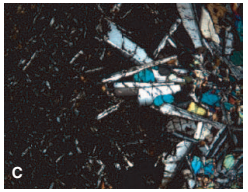
VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

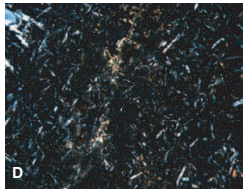
AVAILABLE PHOTOMICROGRAPHS

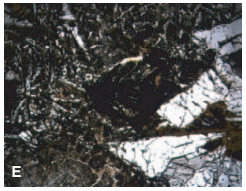
OVERVIEW

CLOSE UP









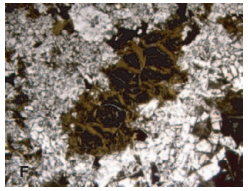


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS26-A	Gabbro groundmass near a basaltic vein
TS26-B	Gabbro groundmass near a basaltic vein
TS26-C	Basaltic vein in contact with gabbro
TS26-D	Basaltic vein
TS26-E	Ilmenite
TS26-F	Glass filling the shape of an altered mineral (olivine?)

THIN SECTION: 205-1253A-17R-2, 108-111 cm **Piece No.: 1C** **Unit: 4B** **ODP TS#: 27** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE: Vein.

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	8	10	0.5	2.4	0.7	Euhedral - subhedral	An_{62-68}, clay alteration along fissures.
Clinopyroxene	5	5	0.5	0.8	0.6	Subhedral	Trace clay alteration along fissures.
Opaque Minerals	5-10		0.1	0.2	0.15		Variation in the abundance.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.1	0.4	0.25		
Clinopyroxene	20		0.05	0.4	0.15		
Clay	20						Replacing primary minerals.

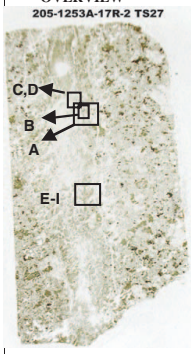
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	20					In the groundmass and incorporated with the zeolites in the vein. Replacing primary minerals.
Zeolites						Vein filling, probably mesolitye or thomsonite ?

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS
Without sharp contact	Zeolites	Clay				No sharp contacts, most of the vein filling material is lost during thin section preparation.

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Irregular, vesicular	5			1.2	0.3	

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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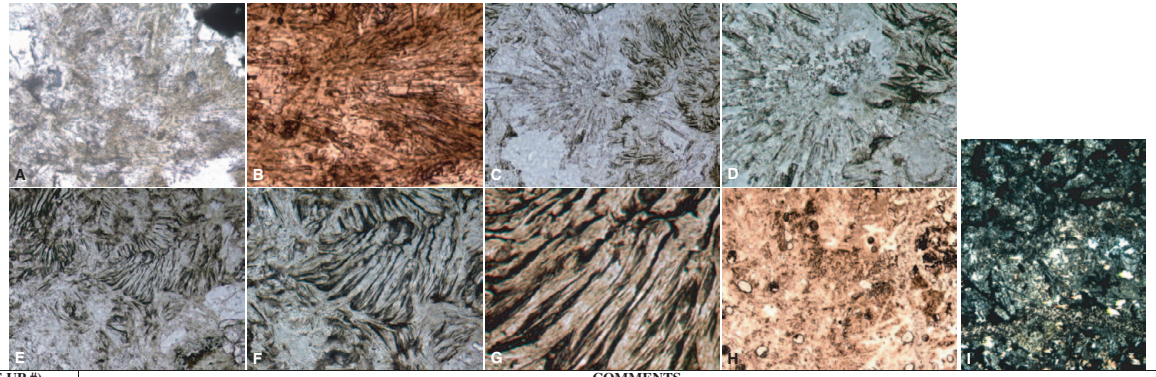


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS27-A	Zeolites, probably mesolite or thomsonite
TS27-B	Zeolites, probably mesolite or thomsonite
TS27-C	Zeolites, probably mesolite or thomsonite
TS27-D	Zeolites, probably mesolite or thomsonite
TS27-E	Zeolites, probably thomsonite?
TS27-F	Zeolites, probably thomsonite?
TS27-G	Zeolites, probably thomsonite?
TS27-H	Zeolites
TS27-I	Zeolites

THIN SECTION: 205-1253A-18R-3, 18-20 cm **Piece No.: 1A** **Unit: 4B** **ODP TS#: 28** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	4%	10%	0.3	2		Subhedral	Aggregate and lath. An_{70}
Clinopyroxene	4%		0.15	0.6		Anhedral	Undulare extinction.
Orthopyroxene	1%		0.1	0.3		Anhedral	
Ilmenite	2%						
Magnetite	0.5%						

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	70%		0.05	0.2		Euhedral to subhedral	An_{55-50}
Clinopyroxene	20%			<0.15		Subhedral	Partly alteration.

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	1%					

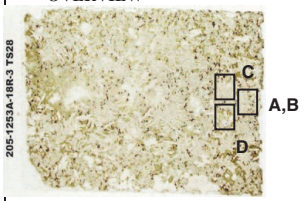
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Zone with recrystallization. Zone of lateration both of plagioclase and clinopyroxene. Microcrystalline to fine-grained gabbro. Sharp transition with no apparent contact.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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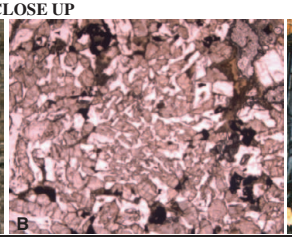

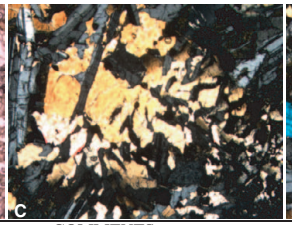

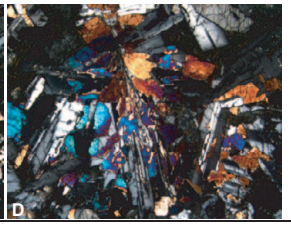

IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS28-A	Ilmenite and clinopyroxene in altered groundmass (clays ?)
TS28-B	Intergrowing of plagioclase and clinopyroxene, recrystallization ?
TS28-C	Intergrowing of plagioclase and clinopyroxene, recrystallization
TS28-D	Intergrowing of plagioclase and clinopyroxene, recrystallization

THIN SECTION: 205-1253A-18R-1, 76-78 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 29** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline to fine-grained gabbro.
GRAIN SIZE: Microcrystalline to fine-grained.
TEXTURE: Magmatic contact.

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	35	5	0.2	1.5	1	Euhedral - subhedral	Altered along fissures.
Clinopyroxene	30	5	0.1	1.2	0.6	Subhedral	Altered along fissures.
Glass	10						
Clay	10						Palagonite or saponite?
Opaque Minerals	10		0.05	0.15	0.2		Low abundance in the fine-grained, and higher abundance in the microcrystalline groundmass
Ilmenite	5		0.2	0.5	0.3		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Palagonite or saponite?

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Irregular, elongated	1		0.2	1.4	0.5	

Magmatic contact.

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OVERVIEW **CLOSE UP**

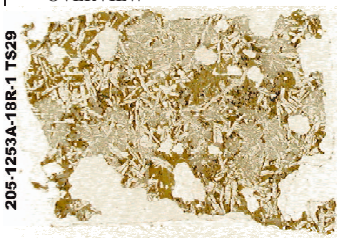


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-19R-1, 12-14 cm **Piece No.: 2B** **Unit: 4B** **ODP TS#: 30** **OBSERVER:** BS, VC, JM
ROCK NAME: SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase							
Clinopyroxene							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase							
Clinopyroxene							

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-19R-1 115-117 cm **Piece No.: 8A** **Unit: 4B** **ODP TS#: 31** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7%		0.5	2.2		Subhedral	Melt inclusions.
Clinopyroxene	3%		0.1	0.6		Anhedral	Melt inclusions.
Olivine	<0.5%	85%				Anhedral	Almost totally altered.
Ilmenite/opaques	5%						
Glass	6%						

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55%		0.1	0.5	0.35	Euhedral to subhedral	
Clinopyroxene	30%		0.05	0.2	0.1	Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	15%					Essentially alteration of groundmass and glass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-20R-1, 71-74 cm	**Piece No.: 1D**	**Unit: 4B**	**ODP TS#: 32**	**OBSERVER: BS**, VC, JM
ROCK NAME:	Gabbro		SHIPBOARD STUDIES		
WHERE SAMPLED:	Vein within microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:	Vein.				

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY		COMMENTS
Plagioclase	5	15	0.4	2.4	1	Euhedral to subhedral	P	artly altered to clay.
Clinopyroxene	3	5	0.3	0.8	0.4	Subhedral	P	artly altered to clay.
Opaque Minerals	3		0.05	0.2	0.1			
Ilmenite	1		0.1	0.3	0.2			

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY		COMMENTS
Plagioclase	50		0.05	0.2	0.1	Subhedral	P	artly altered to clay.
Clinopyroxene	30		0.02	0.15	0.05	Subhedral	P	artly altered to clay.
Clay	20							

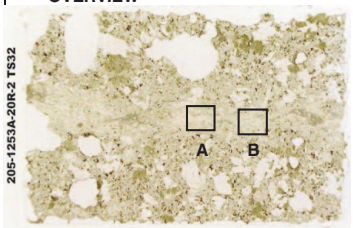
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Zeolites	15				0.02	Vein filling (most material lost during preparation).
Clay	20					Alteration product of primary minerals and the groundmass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	Zeolites	Clay			2.8	Slightly filled (most material lost during preparation).	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicular	5		0.7	4	2	All alteration minerals lost during preparation (probably filled with zeolites).

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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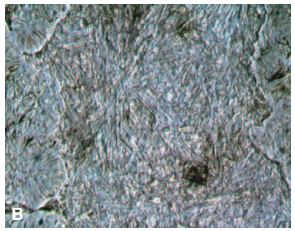


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS32-A	Zeolites
TS32-B	Zeolites

THIN SECTION: 205-1253A-22R-1, 31-34 cm **Piece No.: 1B** **Unit: 4B** **ODP TS#: 33** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein and magmatic contact within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline-hypocrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6	30	0.2	2.2	0.8	Subhedral - euhedral	Melt inclusions, altered along fissures and inclusions to yellow-brown clay.
Clinopyroxene	3	20	0.2	0.6	0.4	Subhedral	Altered along fissures to yellow-brown clay.
Orthopyroxene	0.1	10	0.3	0.3	0.3	Subhedral	Altered along fissures to yellow-brown clay.
Opaque minerals	3		0.05	0.2	0.1		Ilmenite and magnetite.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50				0.05	Subhedral	
Clinopyroxene	40				0.03	Subhedral - anhedral	
Clay	10						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	25					Alteration of the groundmass and replacing primary minerals. Many completely replaced alteromorphs show the shape of olivine (alteration to saponite?). Also as vein filling together with zeolite.
Zeolites	5		0.05	0.4	0.2	Probably mesolite or thomsonite? Vein filling together with clay.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS
	Zeolites	Clay			1	Clays are incorporated with zeolites, vein is white colored.

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Irregular.	5	Empty	0.8	6	1.8	Filling material lost during preparation. Filling was probably an incorporation of zeolites and clay. Voids appear close to the vein.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

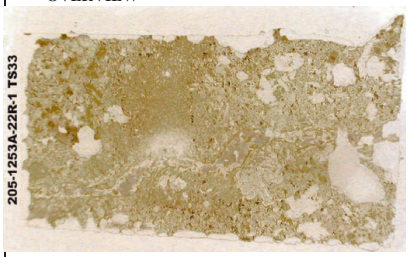


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-23R-3, 98-101 cm **Piece No.: 9** **Unit: 4B** **ODP TS#: 34** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	2		2.2		Subhedral.	An50, partly altered.
Clinopyroxene	1		0.1	1.4	0.4	Anhedral.	
Olivine	0.5		0.15	0.3	0.2	Anhedral.	
Ilmenite	2		0.1	0.4		Anhedral.	
Magnetite	1			0.3			Association with alteration product of olivine (saponite ?).

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60			<.0.15		Subhedral - anhedral.	Mainly as laths.
Clinopyroxene	30			<0.08			
Olivine	3						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Saponite ?	10					Alteration of olivine. Keeping the subhedral-anhedral shape of the olivine. Asscoaition with ilmenite. Variable size and shape.
Chlorite	1					

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-23R-4, 107-109 cm **Piece No.: 2A** **Unit: 4B** **ODP TS#: 35** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7		0.3	2.4	1.5	Euhedral - subhedral.	An_{62}, inclusions, zoning.
Clinopyroxene	2		0.2	1.1	0.6		Melt inclusions.
Orthopyroxene	1						Melt inclusions.
Olivine	<0.5						
Ilmenite	3		0.2	0.7	0.5	Anhedral.	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	45			<0.1		Subhedral.	
Clinopyroxene	30			<0.05		Anhedral.	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Within pockets. Also replacement of the groundmass.
Chlorite ?	1					

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Very similar to TS34 205-1253A-23R3

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-25R-1, 33-35 cm **Piece No.: 3** **Unit: 4B** **ODP TS#: 36** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro? Basalt? SHIPBOARD STUDIES
WHERE SAMPLED: Cryptocrystalline gabbro/basalt.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5%	10%	0.4	2		Anhedral	
Clinopyroxene	3%	2%	0.3	1.2		Anhedral	
Olivine	<1%	100%				Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase						Indetermined, altered.	
Clinopyroxene						Indetermined, altered.	

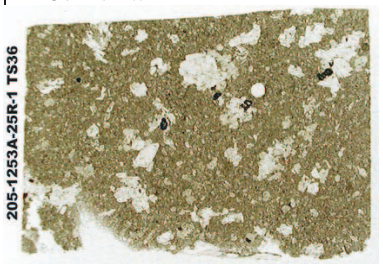
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	70%					Peplacing groundmass and partly phenocrysts.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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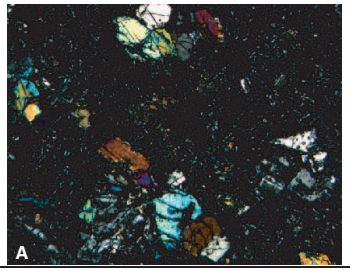


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS36-A	Cryptocrystalline gabbro/basalt.

THIN SECTION: 205-1253A-25R-1, 59-62 cm **Piece No.: 8** **Unit: 4B** **ODP TS#: 37** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro ? Basalt ? SHIPBOARD STUDIES
WHERE SAMPLED: Cryptocrystalline gabbro/basalt.
GRAIN SIZE: Cryptocrystalline
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	5	0.1	1.8	0.4	Subhedral to euhedral	Laths and aggregates.
Clinopyroxene	2	1	0.1	1	0.2	Subhedral to euhedral	
Orthopyroxene	0.1		0.2	0.2	0.2	Subhedral to euhedral	
Olivine	0.1	50	0.1	0.15	0.1	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	20			0.04	0.03	Subhedral	
Clinopyroxene	10				0.02		

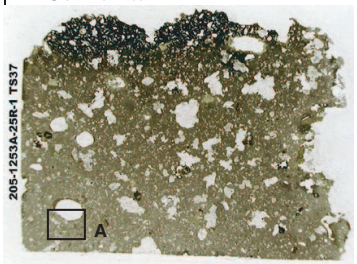
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3		0.05	0.15	0.05	Replacing olivine, filling fissures in plagioclase.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicular	<0.1	clay		0.5		Filled with light brown clay which also appears in the groundmass. Most material was lost during preparation.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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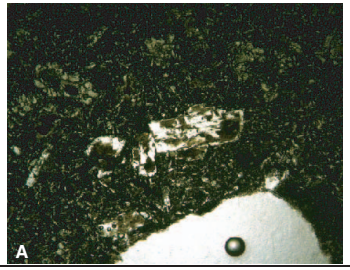


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS37-A	Partly altered plagioclase.

THIN SECTION: 205-1253A-25R-1, 100-102 cm **Piece No.: 9C** **Unit: 4B** **ODP TS#: 38** **OBSERVER:** BS, VC, JM
ROCK NAME: basalt SHIPBOARD STUDIES
WHERE SAMPLED: Cryptocrystalline basalt
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	3%	~10%	0.3	2		Anhedral to subhedral	
Clinopyroxene	2%	<5%	0.2	0.8		Anhedral	
Olivine	1%	100%	0.2	0.7			

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	10%					altered	
Clinopyroxene	5%					altered	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	80%					

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

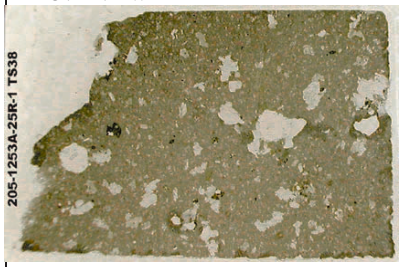


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-25R-2, 3-5 cm **Piece No.: 1A** **Unit: 4B** **ODP TS#: 39** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro ? Basalt ? SHIPBOARD STUDIES
WHERE SAMPLED:
GRAIN SIZE: Cryptocrystalline to microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5	<2	0.5	1.5	0.7	Euehdral to subhedral	An_{55-63}.
Clinopyroxene	2	<2	0.1	0.5	0.3	Euehdral to subhedral	Inclusions, broken.
Glass	2	100					Altered.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	90				<0.1	Anhedral	
Clinopyroxene					<0.05	Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	10					Replacement of the groundmass.

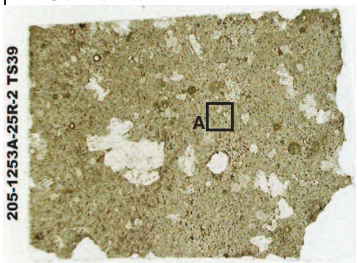
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Cryptocrystalline basalt ?

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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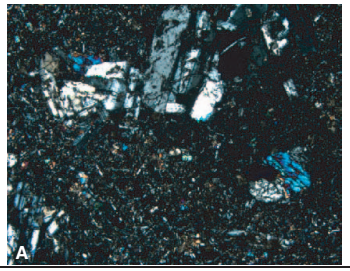

IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS39-A	Cryptocrystalline basalt / gabbro ?

THIN SECTION: 205-1253A-25R-2, 26-28 cm **Piece No.: 1C** **Unit: 4B** **ODP TS#: 40** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5%		0.3	1.8	1	Subhedral to anhedral	
Clinopyroxene	2%		0.2	0.8	0.5	Anhedral	
Ilmenite	20			<0.2			
Opaques							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	65%				0.2	Subhedral to anhedral	
Clinopyroxene	20%				0.1		

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	15%					Alteration of groundmass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

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OVERVIEW **CLOSE UP**

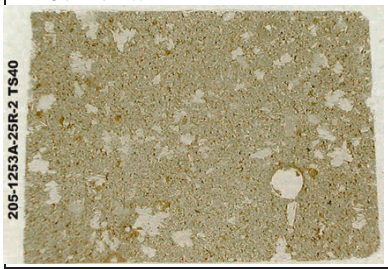

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-24R-2, 39-41 cm **Piece No.: 2A** **Unit: 4B** **ODP TS#: 41** **OBSERVER:** BS, VC, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6	<2	0.6	1.8		Subhedral	Mainly as aggregates, rare laths. An_{55-62}.
Clinopyroxene	4	<5	0.2	1.4		Subhedral to anhedral	
Olivine	2	95	0.3	1.4	0.6	Euhedral to anhedral	Partly altered.
Ilmenite			0.1	0.6	0.3	Anhedral	Nearly completely replaced.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	45			<0.4	0.15	Subhedral	
Clinopyroxene	45			<0.08	0.04	Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Saponite?	2					
Clay	10			<0.05		Alteration product of the groundmass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

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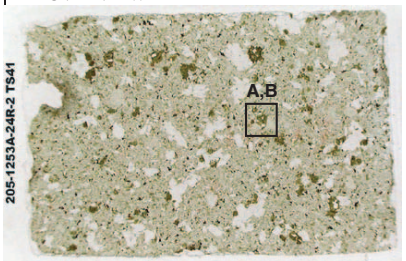
OVERVIEW



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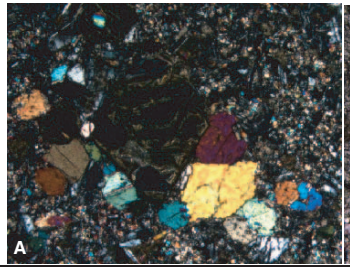


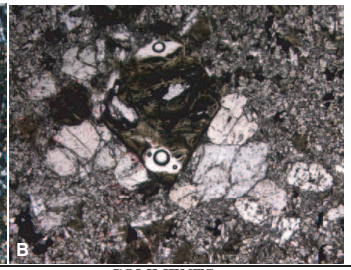


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS41-A	Clinopyroxene and full olivine replacement by saponite
TS41-B	Clinopyroxene and full olivine replacement by saponite

THIN SECTION: 205-1253A-25R-2, 101-103 cm **Piece No.: 2D** **Unit: 4B** **ODP TS#: 42** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6%		0.5	2.5	1.4	Euhedral to subhedral	
Clinopyroxene	1%		0.2	0.7	0.4	Subhedral to anhedral	
Olivine	<0.5%	100%				Undetermined	
Glass	5%	95%					Altered.
Ilmenite/opaques	7%						

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55%		0.1	0.5		Subhedral	
Clinopyroxene	25%			<0.2	0.05	Anhedral	

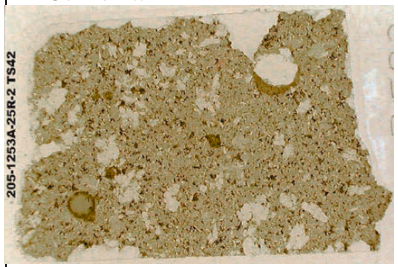
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	10%					Alteration of the groundmass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-26R-2, 20-22 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 43** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7		0.5	2	1.2	Euhedral	Melt inclusion. Ondulare extinction. An_{63}
Clinopyroxene	3		0.2	0.8		Subhedral	Melt inclusion.
Olivine	2	50		<0.4		Anhedral	Altered.
Ilmenite	3			0.2		Anhedral	
Opaque minerals							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50			<0.5		Euhedral - subhedral	
Clinopyroxene	40			<0.2			

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	1					Replacement of olivine.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Microcrystalline.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-26R-2, 37-39 cm **Piece No.: 5A** **Unit: 4B** **ODP TS#: 44** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	8		0.4	2.5		Euhedral to subhedral	Inclusions. Mainly as aggregates. An_{50-65}.
Clinopyroxene	4		0.1	0.7	0.4	Anhedral	Inclusions.
Olivine	1	40	0.3	1.2	0.5	Subhedral	Inclusions.
Ilmenite	4			<0.5		Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50			<0.4		Euhedral to subhedral	
Clinopyroxene	35			<0.1			
Glass	7	80					

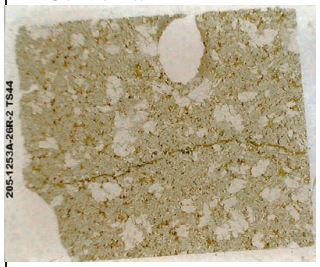
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	Palagonite				0.2	Completely altered glass?	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-27R-1, 5-7 cm **Piece No.: 2** **Unit: 4B** **ODP TS#: 45** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Contact between cryptocrystalline basalt with baked sediment.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	2	15	0.2	2.5		euhedral to subhedral	
Clinopyroxene	1		0.1	0.8		anhedral	
Olivine	1	40 to 100%		0.5		anhedral to subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Glass	100%					Filling the groundmass	Alteration in palagonite (up to 40% in some area)

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays	17%					Mainly groundmass alteration of glass as well as primary mineral such as olivine

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Voids	20%	empty				various shape and size. No special orientation.

Contact with the sediment is sharp and curved. Sediments are baked--only clays. Lots of voids but they are empty. Filling lost during thin section preparation. It is a chilled margin as a glass which is altered up to 40%

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-27R-2, 114-116 cm **Piece No.: 5B** **Unit: 4B** **ODP TS#: 46** **OBSERVER:** BS, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fine-grained gabbro.
GRAIN SIZE: Fine-grained.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.4	2	1.2	Euhedral to subhedral	Aggregates and laths. Undulare extinction. An_{55-62}.
Clinopyroxene	3		0.3	0.8	0.6	Anhedral	Single grains or with plagioclase aggregates. Inclusions.
Orthopyroxene	0.3			0.6		Anhedral	
Glass	2	15		<0.2		Anhedral	Brownish.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.1	0.4		Subhedral to euhedral	
Clinopyroxene	40		0.05	0.2		Anhedral	
Opaques minerals	1.5			0.2			
Ilmenite	3		0.1	0.6		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Very fine-grained crystalline gabbro. Augite titanoferrous with extinction angle of 32 degree, slight pleochroism.

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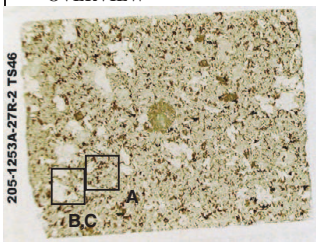
OVERVIEW



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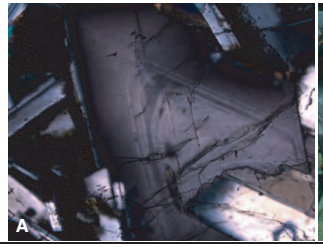

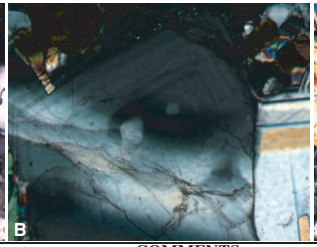

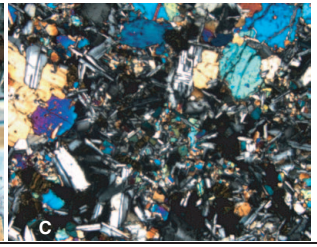

IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS46-A	Growth zoning within plagioclase.
TS46-B	Growth zoning within plagioclase.
TS46-C	Fine grained gabbro.

THIN SECTION: 205-1253A-28R-1, 39-41 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 47** **OBSERVER:** BS, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE: Similar to magmatic contact, but weaker!

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	

Evidence of magmatic contact between microcrystalline and fine-grained gabbro:
- Sharp increase in grain size.
- Higher appearance of opaque minerals and ilmenite.
- More glass pockets (altered to palagonite).
- Recrystallization texture observed at the magmatic contact.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-28R-1, 32-34 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 48** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fine-grained gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.4	2	1.2	Euhedral to subhedral	Aggregates and laths. Undulare extinction. An_{55-62}.
Clinopyroxene	3		0.3	0.8	0.6	Anhedral	Single grains or with plagioclase aggregates. Inclusions.
Orthopyroxene	0.3			0.6		Anhedral	
Glass	2	15		<0.2		Anhedral	Brownish.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.1	0.4		Subhedral to euhedral	
Clinopyroxene	40		0.05	0.2		Anhedral	
Opaques minerals	1.5			0.2			
Ilmenite	3		0.1	0.6		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

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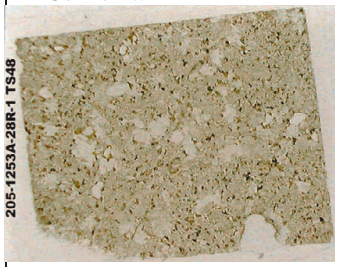

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-28R-2, 84-86 cm **Piece No.: 1B** **Unit: 4B** **ODP TS#: 49** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Evidence of magmatic contact between microcrystalline and fine-grained gabbro: - Sharp increase in grain size. - Higher appearance of opaque minerals and ilmenite. - More glass pockets (altered to palagonite). - Recrystallization texture observed at the magmatic contact.							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

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OVERVIEW **CLOSE UP**

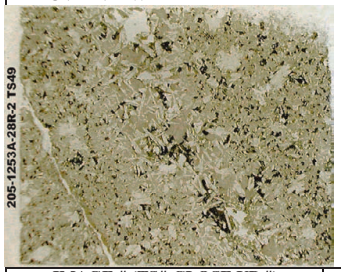


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-29R-2, 2-5 cm **Piece No.: 1A** **Unit: 4B** **ODP TS#: 50** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Evidence of magmatic contact between microcrystalline and fine-grained gabbro: - Sharp increase in grain size. - Higher appearance of opaque minerals and ilmenite. - More glass pockets (altered to palagonite). - Recrystallization texture observed at the magmatic contact.							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

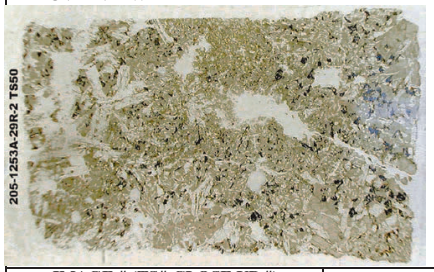


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-39R-1, 16-19 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 51** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fine-grained gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5		1	1.6		Euhedral to subhedralto	As aggregates. Undulate extinction, broken, small fractures.
Clinopyroxene	1				0.5	Subhedral to anhedralto	Partly associated with plagioclase aggregates.
Olivine	<0.1				0.8	Subhedralto	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	65		0.1	0.6		Euhedralto	Laths.
Clinopyroxene	30		0.05	0.3	0.15	Anhedralto	Rounded grains.
Orthopyroxene	1		0.1	0.8		Subhedralto	A few rare cracks.
Magnetite	2-3				0.3	Subhedral to anhedralto	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						Replacement of glass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Alteration restricted to glass.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-39R-2, 82-84 cm **Piece No.: 5** **Unit: 4B** **ODP TS#: 52** **OBSERVER:** BS, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	2		0.3	2		Euhedral to subhedralto	Melt inclusions and growth zoning. Aggregates and laths. An_{60}.
Clinopyroxene	1		0.15	0.6		Subhedral to anhedralto	Single grains or within plagioclase aggregates. Augite.
Olivine	1.5	10		1.2	0.4	Anhedral (larger crsytals are subhedral)	Replacement at the rim and along fissures to saponite. Some melt inclusions, probably altered glass.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	56		0.4	0.4	0.2	Mainly as euhedral lathsto	No special orientation.
Clinopyroxene	40		0.05	0.3	0.15	Anhedralto	
Olivine	2	5		0.2		Anhedralto	Replacement at the rim to saponite.
Ilmenite	1			0.2		Anhedralto	
Magnetite	1			0.2		Anhedralto	

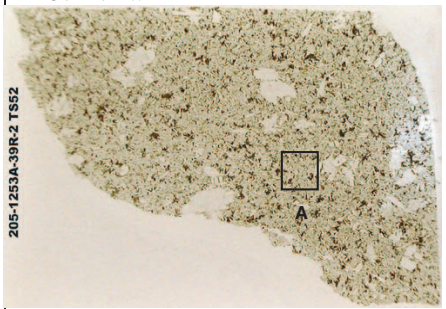
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay, saponite	5					Partial replacement of olivine along the rim and at the fissures.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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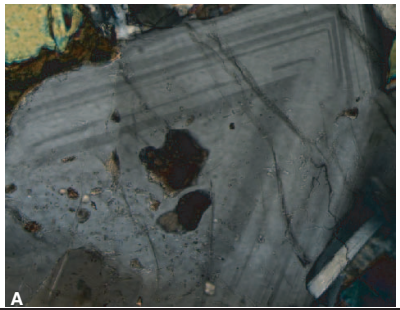


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS52-A	Growth zoning and melt inclusions in plagioclase.

THIN SECTION: 205-1253A-39R-3, 17-19 cm **Piece No.: 2** **Unit: 4B** **ODP TS#: 53** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fine-grained gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	2		0.3	2		Euhedral to subhedral	Melt inclusions and growth zoning. Aggregates and laths. An_{60}.
Clinopyroxene	1		0.15	0.6		Subhedral to anhedral	Single grains or within plagioclase aggregates. Augite.
Olivine	1.5	10		1.2	0.4	Anhedral (larger crsytals are subhedral)	Replacement at the rim and along fissures to saponite. Some melt inclusions, probably altered glass.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	56		0.4	0.4	0.2	Mainly as euhedral laths	No specific orientation.
Clinopyroxene	40		0.05	0.3	0.15	Anhedral	
Olivine	2	5		0.2		Anhedral	Replacement at the rim to saponite.
Ilmenite	1			0.2		Anhedral	
Magnetite	1			0.2		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay, saponite	5					Partial replacement of olivine along the rim and at the fissures.

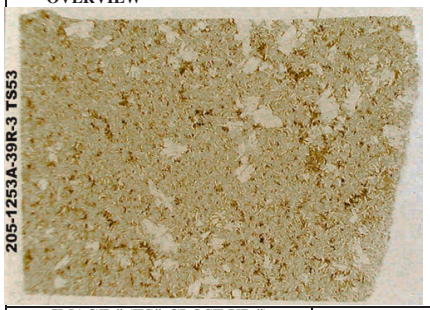
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

similar to TS#54

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-41R-1, 39-41 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 54** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fine-grained gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	2		0.3	2		Euhedral to subhedral	Melt inclusions and growth zoning. Aggregates and laths. An_{60}.
Clinopyroxene	1		0.15	0.6		Subhedral to anhedral	Single grains or within plagioclase aggregates. Augite.
Olivine	1.5	10		1.2	0.4	Anhedral (larger crsytals are subhedral)	Replacement at the rim and along fissures to saponite. Some melt inclusions, probably altered glass.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	56		0.4	0.4	0.2	Mainly as euhedral laths	No specific orientation.
Clinopyroxene	40		0.05	0.3	0.15	Anhedral	
Olivine	2	5		0.2		Anhedral	Replacement at the rim to saponite.
Ilmenite	1			0.2		Anhedral	
Magnetite	1			0.2		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay, saponite	5					Partial replacement of olivine along the rim and at the fissures.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

similar to TS#53

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

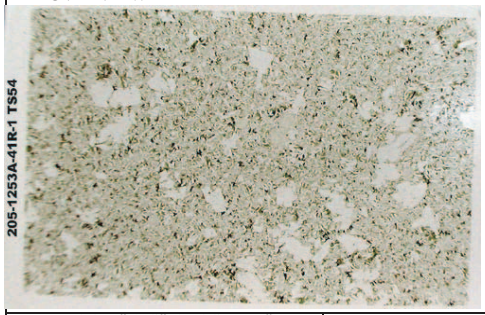


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-41R-1, 30-32 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 55** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fine grained gabbro.
GRAIN SIZE: Microcrystalline - fine grained gabbro.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	8		0.3	3.2		Euhedral to subhedral	An_{52-57}.
Olivine	2	50	0.2	0.8	0.4	Anhedral	Partly replaced along fractures and along the rim.
Clinopyroxene	3		0.1	0.5	0.2	Subhedral to anhedral	
Opaque minerals	2		0.1	0.5	0.3	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50			0.3		Euhedral to subhedral	
Olivine	5	A				nhedral	Partly replaced.
Clinopyroxene	35			0.1			

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	7					Alteration of olivine.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Very crystalline, no glass, microcrystalline to fine-grained gabbro.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

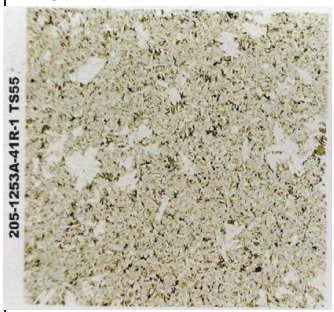


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-33R-1, 138-140 cm **Piece No.: 8B** **Unit: 4B** **ODP TS#: 56** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	15	40	0.2	2.6	1	Subhedral	Partly altered to clay.
Clinopyroxene	8	20	0.2	1.6	0.5	Subhedral to euhedral	Partly altered to clay.
Opaque minerals	3		0.1	0.4	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30		0.05	0.15	0.1	Subhedral	Partly altered to clay.
Clinopyroxene	20		0.05	0.15	0.1	Subhedral	Partly altered to clay.
Clay	50						

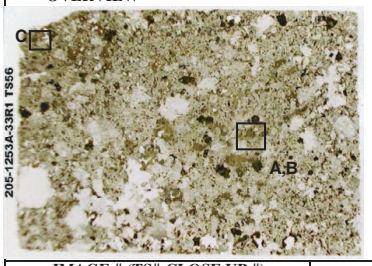
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	50					Replacing primary minerals and within the groundmass. Brown colored clay 3with small amounts of green colored clay (90:10).

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Vesicular, irregular	2		0.5	2	1	Cavities and voids.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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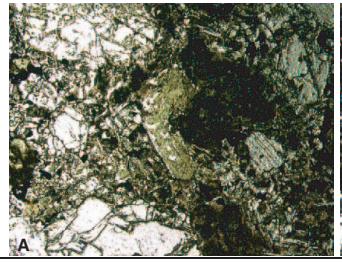
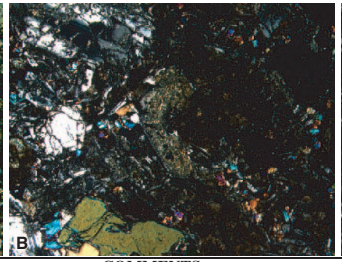




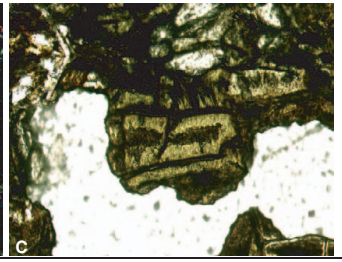


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS56-A	Plagioclase, mostly altered to green clay.
TS56-B	Plagioclase, mostly altered to green clay.
TS56-C	Green & brown clay replacing primary minerals.

THIN SECTION: 205-1253A-33R-1 132-134 cm **Piece No.: 8A** **Unit: 4B** **ODP TS#: 57** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	10	40	0.2	2.8	1.4	Subhedral to euhedral	Partly altered to clay.
Clinopyroxene	5	30	0.2	2.6	0.7	Subhedral to euhedral	Partly altered to clay.
Opaque minerals	7		0.1	0.2	0.15		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40		0.05	0.2	0.1	Subhedral	
Clinopyroxene	20		0.02	0.15	0.05	Subhedral	
Clay	40						

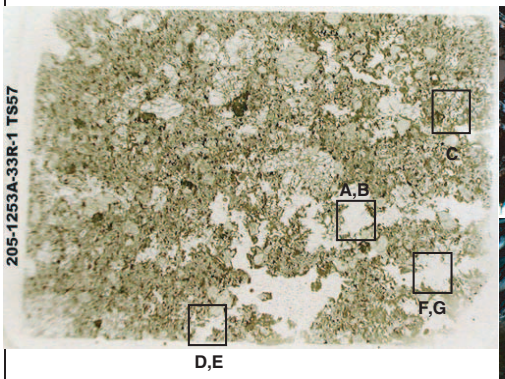
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	40					Replacing primary minerals.
Stilbite	5		0.1	2.4	1	Occurrence in voids and cavities.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS
Irregular		Stilbite				Filled with stilbite or empty.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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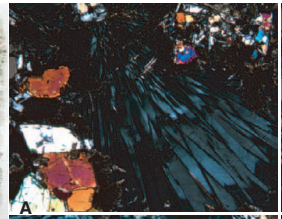
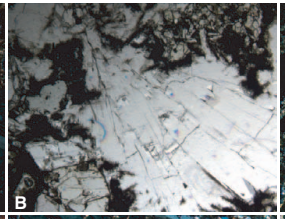
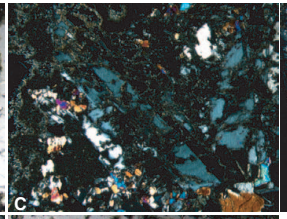
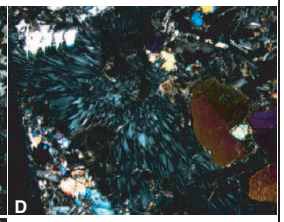
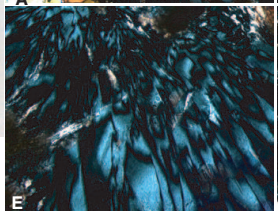
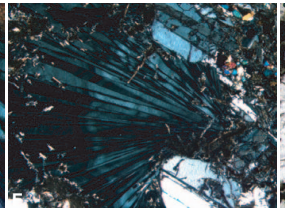












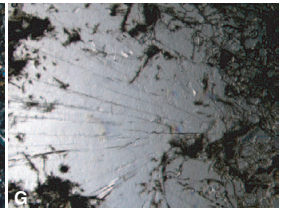


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS57-A	Stilbite.
TS57-B	Stilbite.
TS57-C	Altered plagioclase.
TS57-D	Stilbite.
TS57-E	Stilbite.
TS57-F	Stilbite.
TS57-G	Stilbite.

THIN SECTION: 205-1253A-41R-4, 92-94 cm **Piece No.: 3B** **Unit: 4B** **ODP TS#: 58** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Fin- grained gabbro.
GRAIN SIZE: Fine-grained.
TEXTURE: Recrystallization.

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.2	4.2	1.2	Euhedral to subhedral	
Clinopyroxene	30		0.1	0.8	0.6	Euhedral to subhedral	
Glass	7	30					Partly altered to palagonite.
Clay	3						
Ilmenite	2		0.3	0.7	0.3		
Opaque minerals	3		0.2	0.4	0.3		
Olivine	5	50				Unregular altered shape	Replaced by clay and altered glass?

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3					Altered glass (palagonite) and replacing olivine.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Recrystallization of plagioclase and clinopyroxene (smaller pieces of plagioclase and clinopyroxene).

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

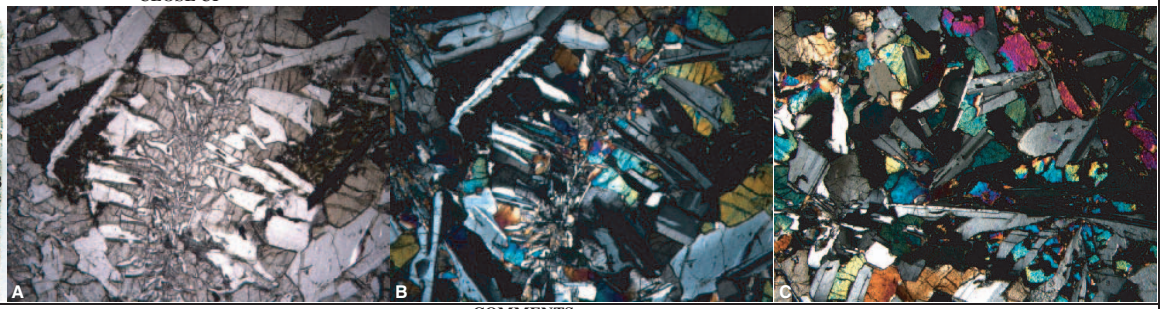


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS58-A	Recrystallization, intergrowing of clinopyroxene and plagioclase.
TS58-B	Recrystallization, intergrowing of clinopyroxene and plagioclase.
TS58-C	Fine grained gabbro.

THIN SECTION: 205-1253A-41R-2, 82-84 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 59** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5		0.4	1.8	1	Subhedral	Aggregates partly associated with clinopyroxene. An_{60-65}.
Clinopyroxene	2		0.15	0.4	0.2	Subhedral	
Olivine	<1	10	0.15	0.3	0.2	Subhedral	Fissures filled with glass and clay/palagonite.
Opaque minerals	5		0.05	0.2	0.1		
Ilmenite	1		0.2	0.2	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.05	0.3	0.2	Subhedral to euhedral	
Clinopyroxene	20		0.05	0.15	0.1	Subhedral	
Glass	10		0.05	0.5	0.25		Glass fragments.
Clay	2						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	2					Palagonite at the glass fragments.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Similar to TS#60, 62

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

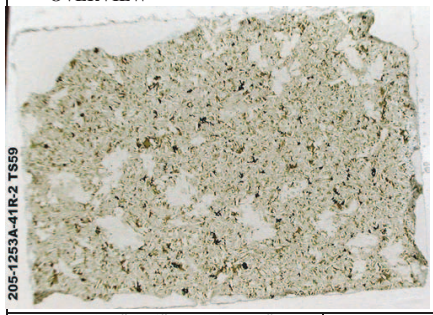


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-41R-2, 44-46 cm	**Piece No.: 2A**	**Unit: 4B** **ODP TS#: 60**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES	
WHERE SAMPLED:	Microcrystalline gabbro.			
GRAIN SIZE:	Microcrystalline.			
TEXTURE:				

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5		0.4	1.8	1	Subhedral	Aggregates partly associated with clinopyroxene. An_{60-65}.
Clinopyroxene	2		0.15	0.4	0.2	Subhedral	
Olivine	<1	10	0.15	0.3	0.2	Subhedral	Fissures filled with glass and clay/palagonite.
Opaque minerals	5		0.05	0.2	0.1		
Ilmenite	1		0.2	0.2	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.05	0.3	0.2	Subhedral to euhedral	
Clinopyroxene	20		0.05	0.15	0.1	Subhedral	
Glass	10		0.05	0.5	0.25		Glass fragments.
Clay	2						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	2					Palagonite at the glass fragments.

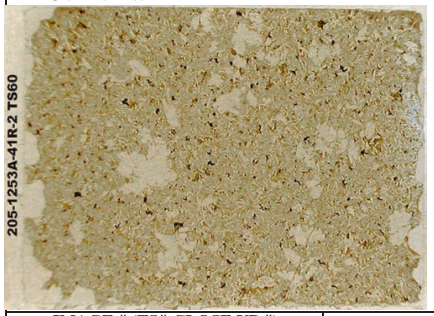
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

similar to TS#60, 59

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-41R-2, 20-22 cm **Piece No.: 1B** **Unit: 4B** **ODP TS#: 61** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	4		0.5	2.2		Euhedral to subhedral	An_{50-65}.
Clinopyroxene	3		0.2	0.7		Anhedralto subhedral	Either with plagioclase aggregates or as single grains.
Olivine	0.5	50	0.1	0.5		Anhedral	
Ilmenite	1			0.5		Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40			<0.5		Euhedral to subhedral	
Clinopyroxene	40			<0.3		Anhedral	
Glass	2	A				nhedral	Partly altered to palagonite / clay.

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3					Alteration of olivine and glass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

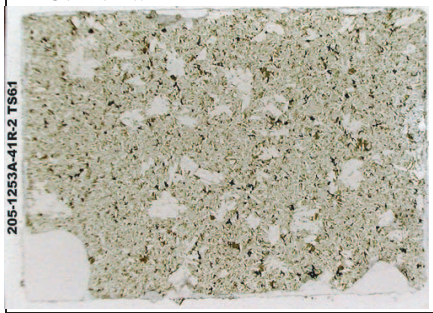


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-41R-1, 119-121 cm **Piece No.: 4** **Unit: 4B** **ODP TS#: 62** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	5		0.4	1.8	1	Subhedral	Aggregates partly associated with clinopyroxene. An_{60-65}.
Clinopyroxene	2		0.15	0.4	0.2	Subhedral	
Olivine	<1	10	0.15	0.3	0.2	Subhedral	Fissures filled with glass and clay/palagonite.
Opaque minerals	5		0.05	0.2	0.1		
Ilmenite	1		0.2	0.2	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.05	0.3	0.2	Subhedral to euhedral	
Clinopyroxene	20		0.05	0.15	0.1	Subhedral	
Glass	10		0.05	0.5	0.25		Glass fragments.
Clay	2						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	2					Palagonite at the glass fragments.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

similar to TS#60, 59

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

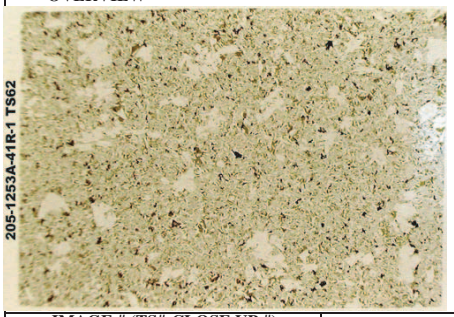


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-33R-1, 21-23 cm **Piece No.: 3** **Unit: 4B** **ODP TS#: 63** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	15	40	0.2	2.6	1	Subhedral	Partly altered to clay.
Clinopyroxene	8	20	0.2	1.6	0.5	Subhedral to euhedral	Partly altered to clay.
Opaque minerals	3		0.1	0.4	0.2		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	30		0.05	0.15	0.1	Subhedral	Partly altered to clay.
Clinopyroxene	20		0.05	0.15	0.1	Subhedral	Partly altered to clay.
Clay	50						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	50					Replacing primary minerals and within in the groundmass. Brown colored with small amounts of green colored clay (90:10).

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-30R-1, 12-14 cm **Piece No.: 1** **Unit: 4B** **ODP TS#: 64** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7	<1	0.5	2.4		Subhedral	Inclusions. An_{53-56}. Undulose extinction.
Orthopyroxene	<0.2			<0.6		Anhedral	
Clinopyroxene	3		0.2	1.2		Subhedral to anhedral	Melt inclusions.
Olivine	<0.1	40		<0.4		Subhedral to anhedral	Partly replaced by clay (saponite?)
Glass	7	50	0.1	0.6		Anhedral	Altered to palagonite.
Ilmenite	2		0.2	0.7		Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50					Euhedral	
Orthopyroxene	35			<0.2	0.1	Anhedral	

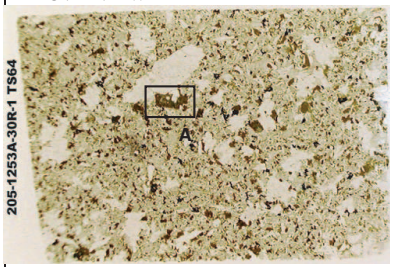
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5					Replacement of olivine (saponite ?).

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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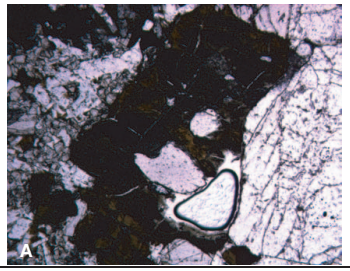


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS64-A	Replacement of olivine by glass, clay and opaques

THIN SECTION: 205-1253A-30R-3, 117-120 cm **Piece No.: 6B** **Unit: 4B** **ODP TS#: 65** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Magmatic contact is defined by a sharp increase in grain size from microcrystalline to medium grained. All minerals within the medium grained size are mm wide; more pockets of glass altered to clay / palagonite. Melt inclusions within medium grained gabbro. Intergrowing of plagioclase and clinopyroxene. Medium grained: Plagioclase subhedral, An60, growth zoning, inclusions, no alteration. Clinopyroxene anhedral, inclusions, no alteration.							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

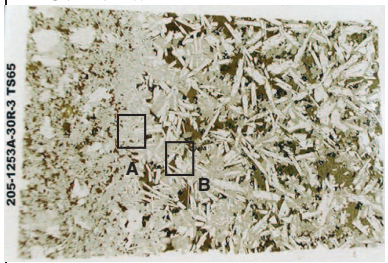
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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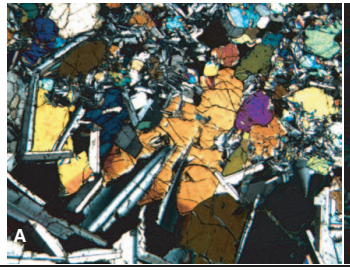


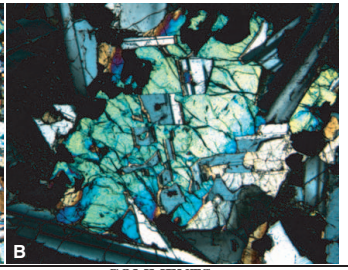


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS65-A	Magmatic contact between medium grained and microcrystalline gabbro
TS65-B	Intergrowing of plagioclase and clinopyroxene, recrystallization? Near magmatic contact?

THIN SECTION: 205-1253A-31R-1, 50-52 cm **Piece No.: 7A** **Unit: 4B** **ODP TS#: 66** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Magmatic contact: Very sharp increase in grain size. At the contact of there is an increasing number of glass pockets which are devitrified, altered to clay and with more or less plagioclase. It is possible that these pockets are indicative of a contact. However, it is not like a 0.5mm wide chilled margin as usually observed for basalt flow. The principal differences are related to grain size and higher abundance of glass as well as opaque minerals (ilmenite and magnetite ?). Near the contact clinopyroxene and plagioclase are growing within each other. Forming special texture as shown in the close up picture (TS66-B). Nevertheless, grain size and shape of mineral of microcrystalline gabbro are still original, meaning that it was high temperature to induce recrystallization of the groundmass. Contact is sharp and not curved at all !							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

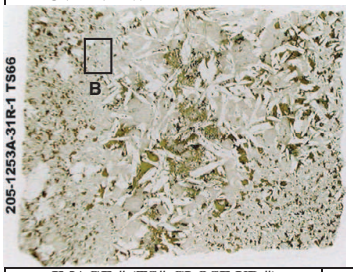
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

1. Very warm, hot ==> recrystallization nearby the contact ==> all minerals are idiomorphic. 2. Mineral separation (segregation due to the intergrowing of clinopyroxene and plagioclase in situ.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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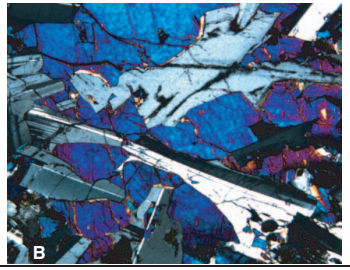


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS66-B	Magmatic contact.

THIN SECTION: 205-1253A-31R-2, 106-108 cm **Piece No.: 9B** **Unit: 4B** **ODP TS#: 67** **OBSERVER:** BS, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Evidence of a magmatic contact: Increase in graine size. Idiomorphic mainly on the microcrystalline part. Intergrowing of plagioclase and clinopyroxene (very curved interface). Higher proportion of opaque minerals (magnetite?) and ilmenite. Increase of glass content in the medium grained size part. Glass occurs fresh and devitrified.							

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

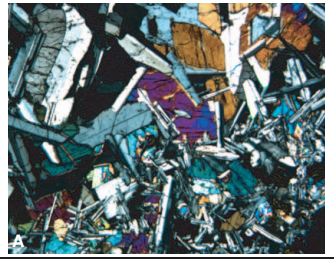


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS67-A	Magmatic contact.

THIN SECTION: 205-1253A-31R-3, 130-132 cm **Piece No.: 3C** **Unit: 4B** **ODP TS#: 68** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7	<1	0.5	2.4		Subhedral	Inclusions. An_{53-56}. Undulose extinction.
Clinopyroxene	3		0.2	1.2		Subhedral - anhedral	Melt inclusions.
Olivine	<0.1	40		<0.4		Subhedral - anhedral	Partly replaced by clay (saponite?)
Glass	6	40	0.1	0.6		Anhedral	Altered to palagonite.
Ilmenite	2		0.2	0.7		Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50					Euhedral	
Orthopyroxene	35			<0.2	0.1	Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5					Replacement of olivine (saponite?).

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-31R-4, 28-30 cm **Piece No.: 2** **Unit: 4** **ODP TS#: 69** **OBSERVER:** BS, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Magmatic contact?
GRAIN SIZE: Medium grained-microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	20			2.3		Subhedral	
Orthopyroxene	2			0.4		Anhedral	
Clinopyroxene	30			4		Anhedral - subhedral either as single grain or big laths	Some accumulation of clinopyroxene.
Ilmenite	6			0.8			
Glass	7	80%				altered	
Opaque minerals	3						

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase and clay				<0.1		Subhedral	Very difficult to distinguish the mineralogy of the groundmass. Probably plagioclase and alteration products (clay?), but also some opaque minerals (magnetite?).

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

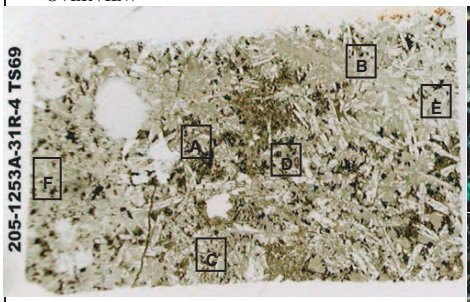
VEINS	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Magmatic contact: Intergrowing of clinopyroxene and plagioclase ==> very curved and intermixing of both minerals. Minerals are very coarse grained. No evidence of fracture, deformation, no ondualose extinction.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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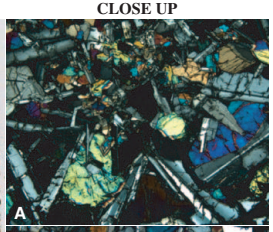
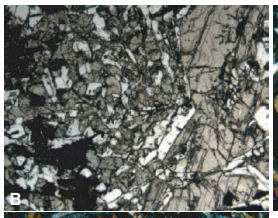
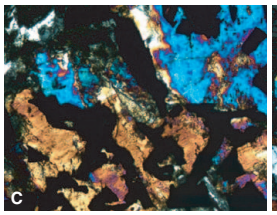
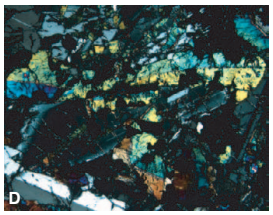
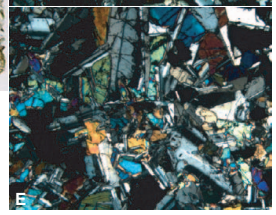










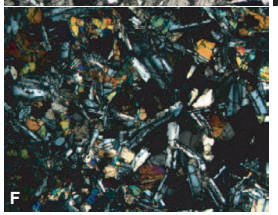


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS69-A	Magmatic contact Medium grained to mycrocrystalline gabbro.
TS69-B	Magmatic contact with inter growing clinopyroxene and plagioclase, recrystallisation.
TS69-C	Opaques (Magnetite?) and clinopyroxene.
TS69-D	Fine grained gabbro.
TS69-E	Medium to fine-grained gabbro.
TS69-F	Microcrystalline gabbro.

THIN SECTION: 205-1253A-32R-1, 49-52 cm **Piece No.: 9A** **Unit: 4B** **ODP TS#: 70** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7	2	0.5	2.8	0.8	Subhedral to euhedral	Glass inclusions are partly altered.
Clinopyroxene	3		0.2	0.9	0.3	Subhedral	
Opaque minerals	1		0.1	0.2	0.15		
Ilmenite	4		0.2	1.4	0.4		
Orthopyroxene	1		0.2	0.7	0.3	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	70		0.05	0.4	0.3	Subhedral	Partly altered to clay.
Clinopyroxene	25		0.05	0.2	0.15	Subhedral	Partly altered to clay.
Clay	5						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-32R-1, 55-57 cm	**Piece No.: 9C**	**Unit: 4B**	**ODP TS#: 71**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Microcrystalline to fine-grained gabbro.				
GRAIN SIZE:					
TEXTURE:					

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7	2	0.5	2.8	0.8	Subhedral to euhedral	Glass inclusions are partly altered.
Clinopyroxene	3		0.2	0.9	0.3	Subhedral	
Opaque minerals	1		0.1	0.2	0.15		
Ilmenite	4		0.2	1.4	0.4		
Orthopyroxene	1		0.2	0.7	0.3	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	70		0.05	0.4	0.3	Subhedral	Partly altered to clay.
Clinopyroxene	25		0.05	0.2	0.15	Subhedral	Partly altered to clay.
Clay	5						

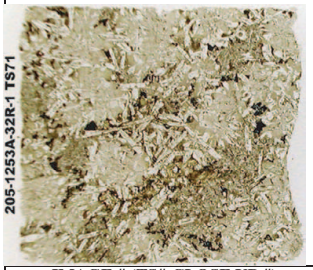
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-32R-2, 18-20 cm **Piece No.: 1C** **Unit: 4B** **ODP TS#: 72** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7	2	0.5	2.8	0.8	Subhedral euhedral	Glass inclusions are partly altered.
Clinopyroxene	3		0.2	0.9	0.3	Subhedral	
Opaque minerals	1		0.1	0.2	0.15		
Ilmenite	4		0.2	1.4	0.4		
Orthopyroxene	1		0.2	0.7	0.3	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	70		0.05	0.4	0.3	Subhedral	Partly altered to clay.
Clinopyroxene	25		0.05	0.2	0.15	Subhedral	Partly altered to clay.
Clay	5						

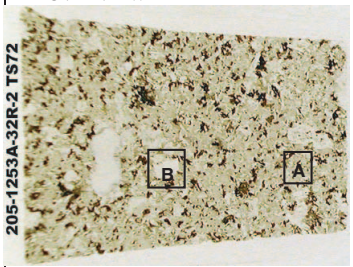
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay						

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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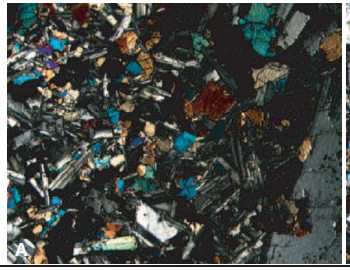


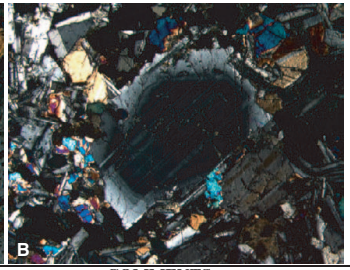


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS72-A	Microcrystalline groundmass.
TS72-B	Plagioclase zonation.

THIN SECTION: 205-1253A-32R-3, 32-34 cm **Piece No.: 3A** **Unit: 4B** **ODP TS#: 73** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7		0.3	2.2	0.8	Subhedral to euhedral	Rare glass inclusions.
Clinopyroxene	6		0.2	1	0.4	Subhedral	
Olivine	<1	80	1.4	1.4	1.4	Subhedral to euhedral	Mostly replaced by clay (saponite ?).
Opaque minerals	5		0.1	0.4	0.2		
Ilmenite	2		0.2	0.6	0.3		

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	50		0.1	0.2	0.15	Subhedral to euhedral	
Clinopyroxene	35		0.05	0.2	0.1	Subhedral	
Clay	15						

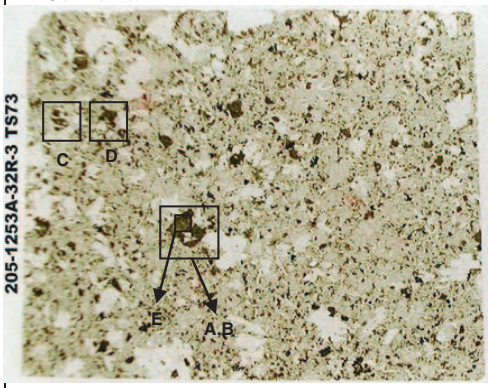
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	15					Replacing primary minerals (olivine).

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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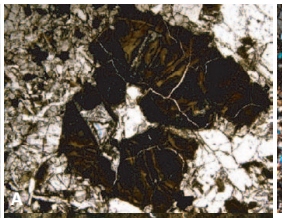
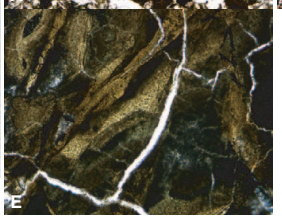
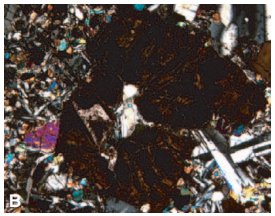
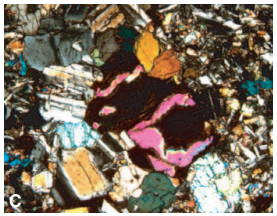








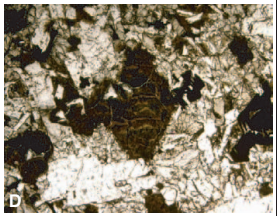


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS73-A	Clay replacing a primary mineral and conserving the morphology (olivine ?).
TS73-B	Clay replacing a primary mineral and conserving the morphology (olivine ?).
TS73-C	Partly replaced primary mineral (olivine ?).
TS73-D	Replaced olivine.
TS73-E	Altered primary mineral replaced by clay.

THIN SECTION: 205-1253A-34R-2, 97-99 cm **Piece No.: 5A** **Unit: 4B** **ODP TS#: 74** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	10		0.4	2.6	1	Subhedral to euhedral	Few aggregates, partly weak zonation. An_{65}.
Clinopyroxene	5		0.2	1.2	0.5	Subhedral	Larger phenocrysts inside the vein.
Olivine	2	20	0.2	3.2	0.4	Subhedral	Larger phenocrysts inside the vein.
Opaque minerals	7		0.1	0.6	0.2		Larger phenocrysts inside the vein.
Ilmenite	3		0.1	0.8	0.4		Larger phenocrysts inside the vein.
Orthopyroxene	<1		0.3	0.3	0.3	Subhedral	Larger phenocrysts along the vein.

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.05	0.3	0.2	Subhedral to euhedral	
Clinopyroxene	15		0.05	0.2	0.1	Subhedral	
Glass	10		0.05	0.4	0.15		
Clay	5-10						

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	5-10					Replacing primary minerals and altered glass (palagonite).

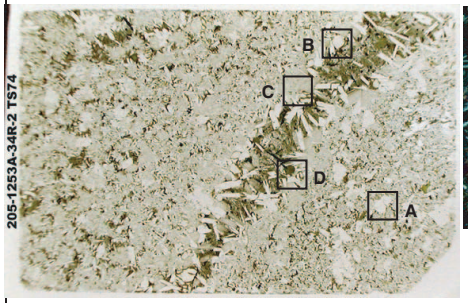
VEINS	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS
1	Hypocrystalline groundmass	2.2	3.2	2.6	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Recrystallization of plagioclase and clinopyroxene, higher abundance inside the vein.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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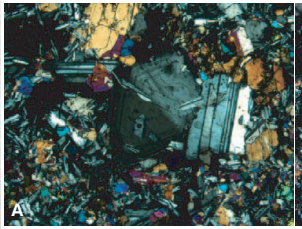
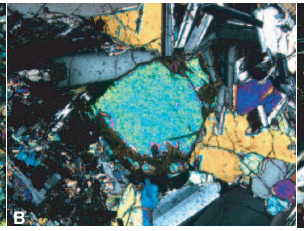
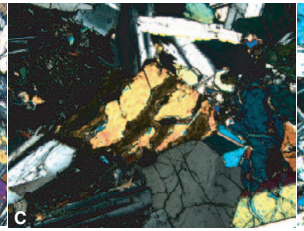






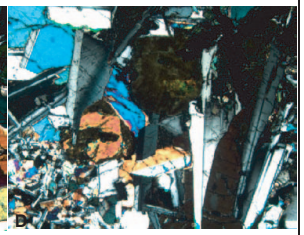


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS74-A	Growth zoning of plagioclase.
TS74-B	Slightly altered olivine.
TS74-C	Altered olivine.
TS74-D	Completely altered olivine.

THIN SECTION: 205-1253A-34R-4, 70-72 cm **Piece No.: 3** **Unit: 4B** **ODP TS#: 75** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7		0.6	3		Subhedral to euhedral	Some inclusions An_{60-65}.
Clinopyroxene	3		0.2	1		Subhedral to anhedral	Some fractures.
Olivine	1	50		<0.7		Anhedral	
Ilmenite	2		0.1	0.8		Anhedral	Partly replaced by clay from the rim to the center.
Opaque minerals	1		0.1	0.3			

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60			<0.4		Subhedral to euhedral	
Clinopyroxene	25			<0.2		Anhedral	
Glass	2-3			<0.2		Anhedral	Partly altered

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay (saponite ?)	3					Replacing olivine.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS

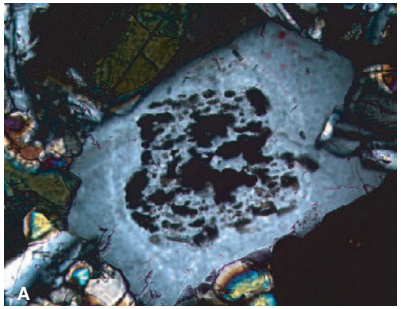
VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Large plagioclase aggregates.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP



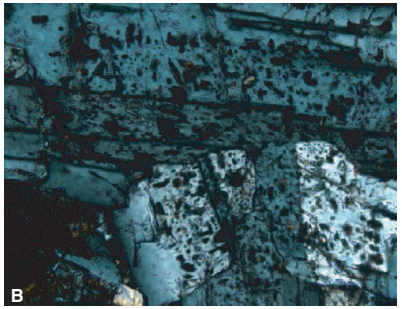


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS75-A	Melt inclusion within plagioclase, only at the center.
TS75-B	Melt inclusions.

THIN SECTION: 205-1253A-34R-4, 97-99 cm **Piece No.: 5** **Unit: 4B** **ODP TS#: 76** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7	<1	0.4	3.2		Euhedral to subhedral	Undulare extinction. An63. Growth zoning. Rare inclusions in the center.
Clinopyroxene	3		0.2	1.5		Anhedral	
Olivine	2	50	0.3	1.2		Anhedral	Alteration to clay (saponite ?).
Ilmenite	1		0.1	1.4		Anhedral	
Opaque minerals	1				0.15	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60			<0.4		Euhedral to subhedral, rarely anhedral	
Clinopyroxene	23			<0.2			
Glass	2	50					
				<0.5		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3					

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

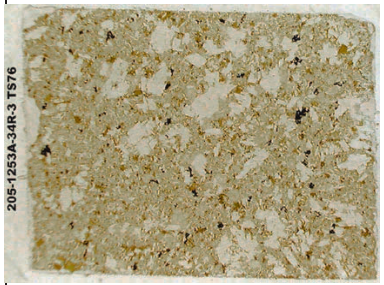


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-33R-1, 11-14 cm **Piece No.: 2B** **Unit: 4B** **ODP TS#: 77** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Vein filling has been lost during thin section preparation. No description is possible.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

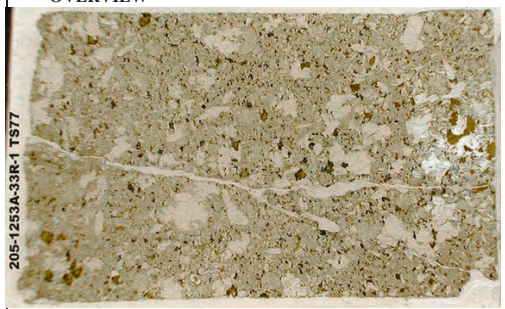


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-37R-1, 19-21 cm **Piece No.: 3** **Unit: 4B** **ODP TS#: 78** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.3	2.5	1.2	Subhedral to anhedral	Melt inclusions, growth zoning. An_{55}.
Clinopyroxene	3		0.2	0.8	0.5	Subhedral to anhedral	Melt inclusions.
Olivine	<0.1			<0.2		Anhedral	Only a few grains observed.
Ilmenite	5					Anhedral	
Magnetite	1				0.4	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			<0.2		Subhedral	
Clinopyroxene	35			<0.1		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays and Chlorite	35					Distribution within the thin section: Difficult to determine whether it is the alteration product of plagioclase or clinopyroxene.

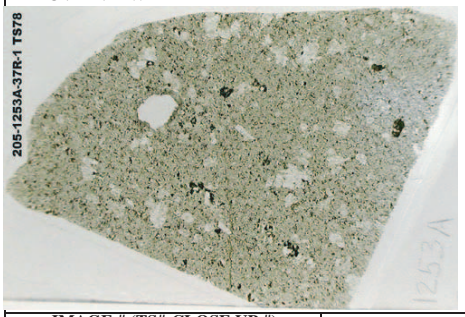
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Same as TS82 and 83 (10% alteration), 84 (20% alteration), 79 (35% alteration) and 85 (25% alteration).

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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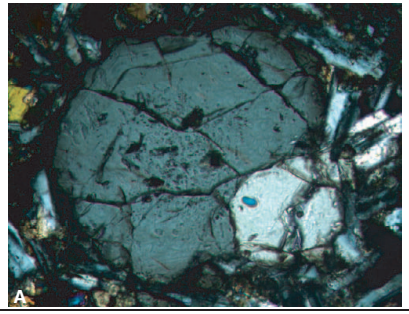


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS78-A	Melt inclusions in pyroxene.

THIN SECTION:	205-1253A-37R-1, 127-130 cm	**Piece No.: 13**	**Unit: 4B**	**ODP TS#: 79**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:					

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.3	2.5	1.2	Subhedral to anhedral	Melt inclusions, growth zoning. An_{55}.
Clinopyroxene	3		0.2	0.8	0.5	Subhedral to anhedral	Melt inclusions.
Olivine	<0.1			<0.2		Anhedral	Only a few grains observed.
Ilmenite	5					Anhedral	
Magnetite	1				0.4	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			<0.2		Subhedral	
Clinopyroxene	35			<0.1		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays and Chlorite	35					Distribution within the thin section: Difficult to determine whether it is the alteration product of plagioclase or clinopyroxene.

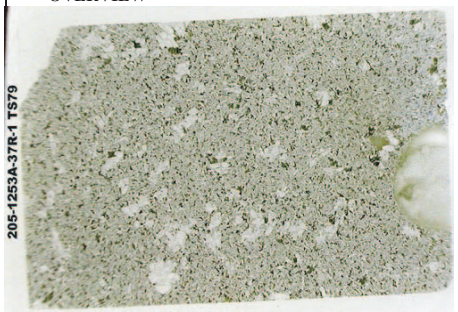
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Same as TS82 and 83 (10% alteration), 84 (20% alteration), 78 (35% alteration), and 85 (25% alteration)

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-38R-1, 89-92 cm	**Piece No.: 14**	**Unit: 4B**	**ODP TS#: 80**	**OBSERVER:** BS, **VC**, JM
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:	Holocrystalline.				

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	7			2		Euhedral to subhedral	Elongated fluid inclusions, no special shape. An_{60}.
Clinopyroxene	3		0.1	0.4		Subhedral	Some unidentified inclusions.
Olivine	0.2		0.1	0.5		Anhedral	Melt inclusions? Tiny and elongated ~10µm

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60			0.3		Euhedral	
Clinopyroxene	35			0.2		Subhedral to anhedral	
Ilmenite	1		0.1	0.35		Anhedral	
Magnetite	1			0.1			

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Chlorite	2					Alteration of groundmass, closely related to ilmenite and magnetite.

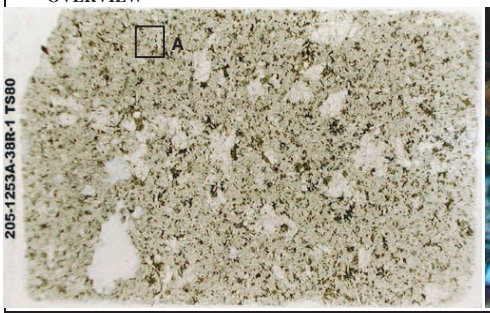
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Fluids and/or melt inclusions within clinopyroxene and olivine. Some are also observed with plagioclase.

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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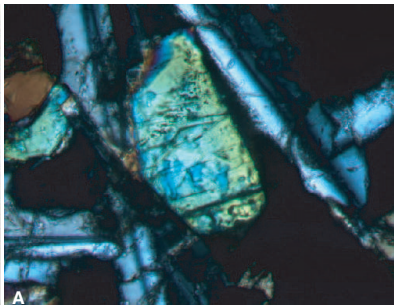


IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS80-A	Fluid/melt inclusion within clinopyroxene.

THIN SECTION: 205-1253A-35R-2, 118-120 cm **Piece No.: 6A** **Unit: 4B** **ODP TS#: 81** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	8	<2	0.5	3		Subhedral	Mainly as aggregates. An_{63}.
Clinopyroxene	3		0.3	1.8		Subhedral to anhedral	Some inclusions
Olivine	<0.5			<0.4		Anhedral	
Ilmenite	2		0.2	0.8		Anhedral	
Glass	5	80	0.1	1		Anhedral to no special shape	80% devitrified.
Magnetite				<0.5			

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40			<0.5		Anhedral to subhedral	
Clinopyroxene	40		0.05	<0.3			

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
1	Empty					Could be a fracture.	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW **CLOSE UP**

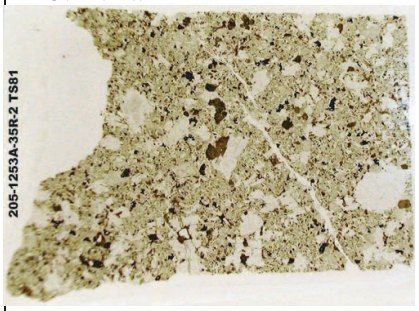


IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-36R-1, 36-39 cm	**Piece No.: 6**	**Unit: 4B**	**ODP TS#: 82**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:					

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.3	2.5	1.2	Subhedral to anhedral	Melt inclusions, growth zoning. An_{55}.
Clinopyroxene	3		0.2	0.8	0.5	Subhedral to anhedral	Melt inclusions.
Olivine	<0.1			<0.2		Anhedral	Only a few grains observed.
Ilmenite	5					Anhedral	
Magnetite	1				0.4	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			<0.2		Subhedral	
Clinopyroxene	35			<0.1		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays and Chlorite	10					Distribution within the thin section: Difficult to determine whether it is the alteration product of plagioclase or clinopyroxene.

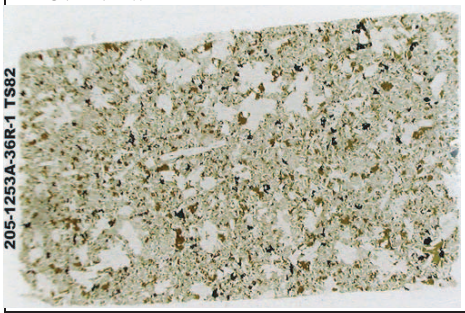
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Same as TS83, 84 (20% alteration), 78 and 79 (35% alteration), and 85 (25% alteration).

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-36R-1, 112-115 cm **Piece No.: 15** **Unit: 4B** **ODP TS#: 83** **OBSERVER:** BS, **VC**, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.3	2.5	1.2	Subhedral to anhedral	Melt inclusions, growth zoning. An_{55}.
Clinopyroxene	3		0.2	0.8	0.5	Subhedral to anhedral	Melt inclusions.
Olivine	<0.1			<0.2		Anhedral	Only a few grains observed.
Ilmenite	5					Anhedral	
Magnetite	1				0.4	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			<0.2		Subhedral	
Clinopyroxene	35			<0.1		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays and Chlorite	10					Distribution within the thin section: Difficult to determine whether it is the alteration product of plagioclase or clinopyroxene.

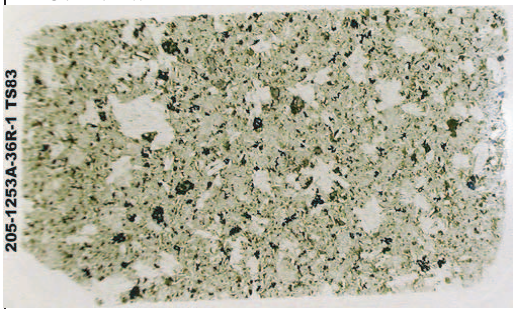
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Same as TS82 and 83, 84 (20% alteration), 78 and 79 (35% alteration), and 85 (25% alteration).

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-36R-3, 42-45 cm	**Piece No.: 3B**	**Unit: 4B** **ODP TS#: 84**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES	
WHERE SAMPLED:	Microcrystalline gabbro.			
GRAIN SIZE:	Microcrystalline.			
TEXTURE:				

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.3	2.5	1.2	Subhedral to anhedral	Melt inclusions, growth zoning. An_{85}.
Clinopyroxene	3		0.2	0.8	0.5	Subhedral to anhedral	Melt inclusions.
Olivine	<0.1			<0.2		Anhedral	Only a few grains observed.
Ilmenite	5					Anhedral	
Magnetite	1				0.4	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			<0.2		Subhedral	
Clinopyroxene	35			<0.1		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays and Chlorite	20					Distribution within the thin section: Difficult to determine whether it is the alteration product of plagioclase or clinopyroxene.

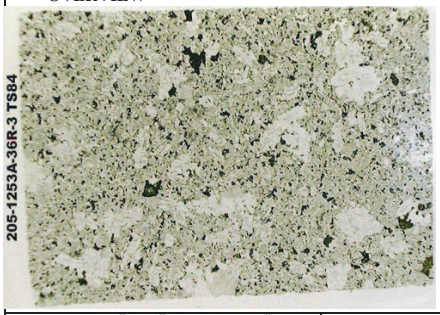
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Same as TS82 and 83 (10% alteration), 78 and 79 (35% alteration), and 85 (25% alteration)

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-40R-1, 85-87 cm	**Piece No.: 4E**	**Unit: 4B** **ODP TS#: 85**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES	
WHERE SAMPLED:	Microcrystalline gabbro.			
GRAIN SIZE:				
TEXTURE:				

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	6		0.3	2.5	1.2	Subhedral to anhedral	Melt inclusions, growth zoning. An_{85}.
Clinopyroxene	3		0.2	0.8	0.5	Subhedral to anhedral	Melt inclusions.
Olivine	<0.1			<0.2		Anhedral	Only a few grains observed.
Ilmenite	5					Anhedral	
Magnetite	1				0.4	Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	55			<0.2		Subhedral	
Clinopyroxene	35			<0.1		Anhedral	

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clays and Chlorite	10					Distribution within the thin section: Difficult to determine whether it is the alteration product of plagioclase or clinopyroxene.

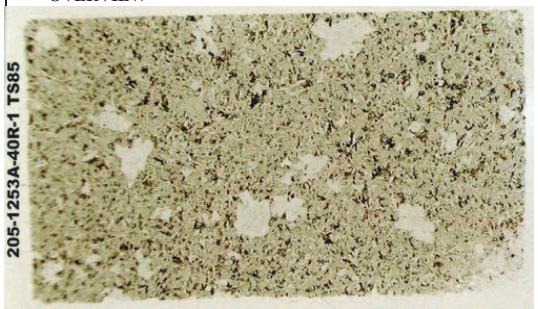
VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

Same as TS82 and 83(20% alteration), 78 and 79 (35% alteration), and 84 (20% alteration).

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-43R-1, 30-32 cm	**Piece No.: 6A**	**Unit: 4B**	**ODP TS#: 86**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:					

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	4		0.5	2.2		Euhedral to subhedral	An_{50-65}.
Clinopyroxene	3		0.2	0.7		Anhedralto subhedral	Either with plagioclase aggregates or as single grains.
Olivine	0.5	50	0.1	0.5		Anhedral	
Ilmenite	1			0.5		Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40			<0.5		Euhedral to subhedral	
Clinopyroxene	40			<0.3		Anhedral	
Glass	2					Anhedral	Partly altered to palagonite / clay.

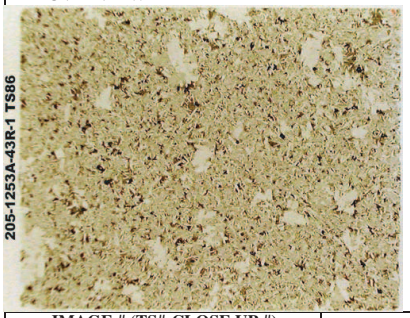
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3					Alteration of olivine and glass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-43R-3, 53-55 cm **Piece No.: 3** **Unit: 4B** **ODP TS#: 87** **OBSERVER: BS, VC, JM**
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE:

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	4		0.5	2.2		Euhedral to subhedral	An_{50-65}.
Clinopyroxene	3		0.2	0.7		Anhedralto subhedral	Either with plagioclase aggregates or as single grains.
Olivine	0.5	50	0.1	0.5		Anhedral	
Ilmenite	1			0.5		Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40			<0.5		Euhedral to subhedral	
Clinopyroxene	40			<0.3		Anhedral	
Glass	2					Anhedral	Partly altered to palagonite / clay.

SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3					Alteration of olivine and glass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW

CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION:	205-1253A-43R-4, 60-62 cm	**Piece No.: 1C**	**Unit: 4B**	**ODP TS#: 88**	**OBSERVER: BS, VC, JM**
ROCK NAME:	Gabbro.		SHIPBOARD STUDIES		
WHERE SAMPLED:	Microcrystalline gabbro.				
GRAIN SIZE:	Microcrystalline.				
TEXTURE:					

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	4		0.5	2.2		Euhedral to subhedral	An_{50-65}.
Clinopyroxene	3		0.2	0.7		Anhedralto subhedral	Either with plagioclase aggregates or as single grains.
Olivine	0.5	50	0.1	0.5		Anhedral	
Ilmenite	1			0.5		Anhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	40			<0.5		Euhedral to subhedral	
Clinopyroxene	40			<0.3		Anhedral	
Glass	2					Anhedral	Partly altered to palagonite / clay.

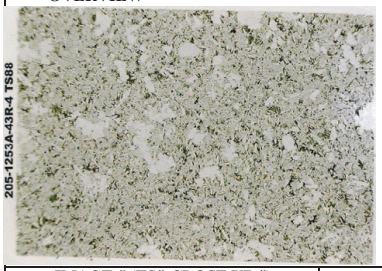
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	3					Alteration of olivine and glass.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



CLOSE UP

IMAGE # (TS#-CLOSE UP #)	COMMENTS

THIN SECTION: 205-1253A-42R-3, 4-6 cm **Piece No.: 1A** **Unit: 4B** **ODP TS#: 89** **OBSERVER: BS**, VC, JM
ROCK NAME: Gabbro. SHIPBOARD STUDIES
WHERE SAMPLED: Vein within microcrystalline gabbro.
GRAIN SIZE: Microcrystalline.
TEXTURE: Vein.

PRIMARY MINERALOGY	% OBSERVED	% ALTERED	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	10		0.4	2	0.8	Subhedral	An_{65}. Few aggregates.
Clinopyroxene	3		0.2	0.4	0.3	Subhedral	
Opaque mineral	5		0.1	0.4	0.2		
Olivine	<1		0.2	0.4	0.3	Subhedral	

GROUNDMASS	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	MORPHOLOGY	COMMENTS
Plagioclase	60		0.05	0.4	0.2	Subhedral to euhedral	
Clinopyroxene	20		0.05	0.3	0.1	Subhedral	
Glass	5	20	0.1	1	0.4		Filling replaced olivine?
Clay	1						Palagonite.

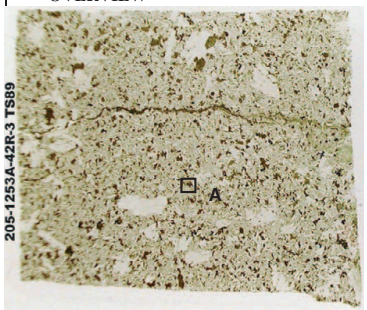
SECONDARY MINERALOGY	% OBSERVED		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING / COMMENTS
Clay	1					Palagonite.
Chlorite	<0.1					Occurrence at replaced olivine.

VEINS	FILLING		SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	COMMENTS	
	Clay				0.1	Partly filled with clay, partly open.	

VOIDS	% OBSERVED	FILLING	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	LOCATION / MORPHOLOGY / COMMENTS

AVAILABLE PHOTOMICROGRAPHS

OVERVIEW



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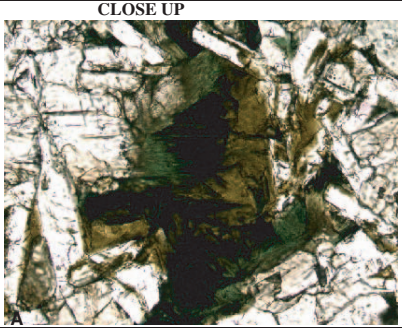

IMAGE # (TS#-CLOSE UP #)	COMMENTS
TS89-A	Replacement of olivine by glass, clay and chlorite.