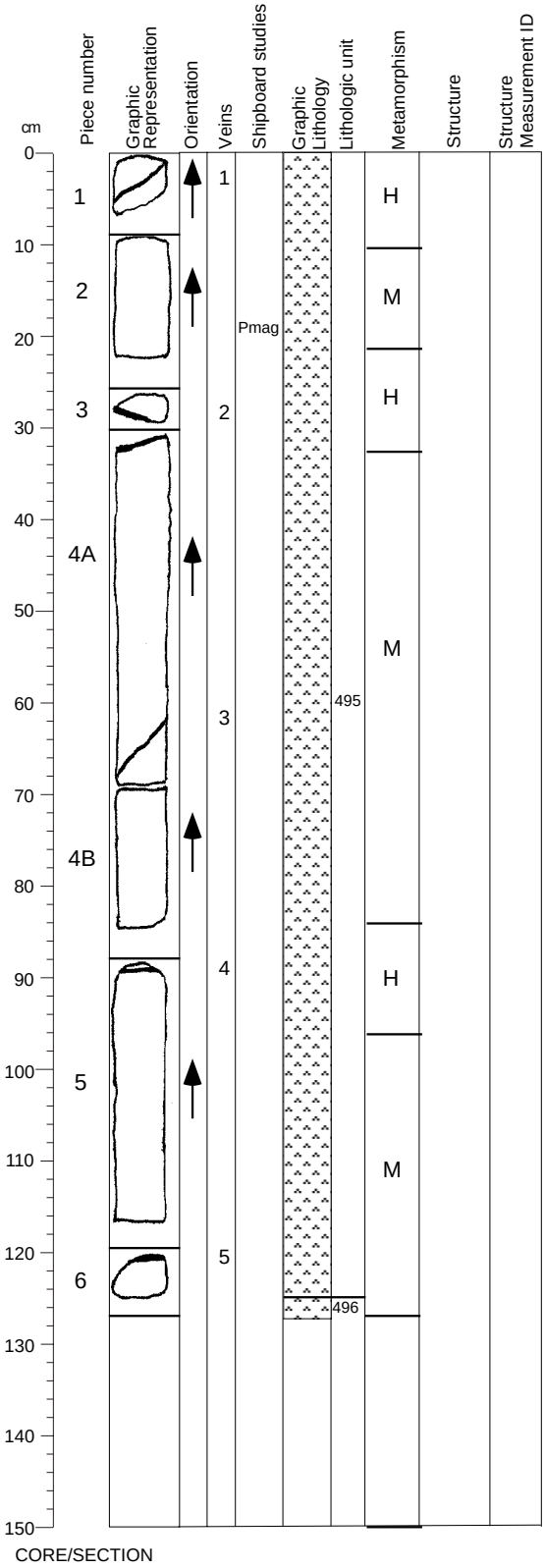
Core Image



176-735B-89R-1

Interval 495: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	88	1	4	1	500.04
Lower contact:	89	1	125	6	506.05
Thickness:	6.01 m				

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	60	10	3	coarse	tabular / subhedral
Clinopyroxene	35	100	2	coarse	equant/ oikocrystic anhedral
Olivine	10	25	3	coarse	amoeboidal/ anhedral
Opaques	0.5				
Total	105.5*				

*Major phases estimated to ± 5%

Grain Size: Medium

	Type	Distribution
Structure:	intergranular	evenly distributed
Fabric	N/A	N/A

Comments: Olivine heavily altered in zones next to fractures. Some clinopyroxene elongated. Clinopyroxene mode variable (5-40%). Locally granular. Pegmatitic clinopyroxene from 32-40 cm. Poikilitic clinopyroxene from 72-76 cm.

Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, secondary plagioclase.
Secondary plagioclase:
Total Percent: <20
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides and (chlorite):
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network and around crystals (green amphinbole and dark blue chlorite).
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

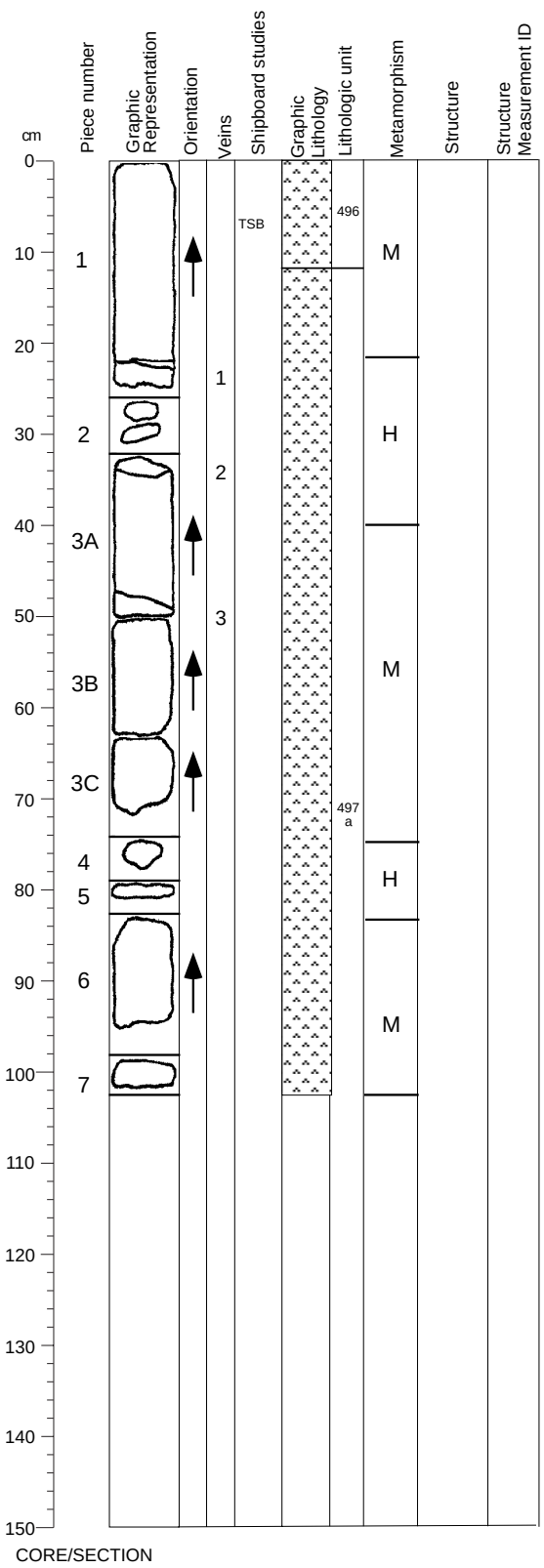
Background Alteration:
Degree of alteration: moderate (30-40%). Olivine is largely replaced by amphibole, talc, and oxides (ca. 80%). Clinopyroxene is rimmed by amphibole (ca. 5%). Plagioclase is partly recrystallized (5%). Superimposed to this high-temperature alteration is weathering of olivine relicts along cracks and carbonate veins.

Vein/Fracture Filling:
Amphibole veins in Pieces 1 and 4A are 7 cm in length, 0.5-0.6 mm wide. Carbonate veins in Pieces 3,4A, 5, and 6 are 4-6 cm in length, 0.5-1.0 mm wide and are associated with pervasive oxidation of olivine.

Structures:
Mf>V; Mf>J
This section does not contain plastic deformation. Igneous texture can be observed along the complete section. Magmatic fabric is null or weak (0,1). One narrow cataclastic zone (<1cm) overprints the magmatic texture at the top of the section (Piece 1). A few veins and joints. Arrays of subvertical cracks or microveins are often visible in big plagioclases and pyroxenes.

Interval 496: See next section

Core Image



176-735B-89R-2

Interval 496: LEUCOCRATIC OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	89	1	125	6	506.05
Lower contact:	89	2	12	1A	506.19

Thickness: 0.14 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	73	8	3	medium	tabular/ subhedral
Clinopyroxene	25	10	0.5	medium	equant/ anhedral
Olivine	5	4	1	medium	tabular/ subhedral
Opaques	0.5				
Total	103.5*				

*Major phases estimated to ± 5%
Modal name (calculated): Gabbro
Grain Size: Medium

	Type	Distribution
Structure:	intergranular	evenly distributed
Fabric	N/A	N/A

Comments: Igneous lamination (plagioclase-rich) superimposed with microfractures filled with felsic materials.

Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <20
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides and (chlorite):
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network and around crystals (green amphibole and dark blue chlorite).
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages.
Carbonates:
Total Percent: <2
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

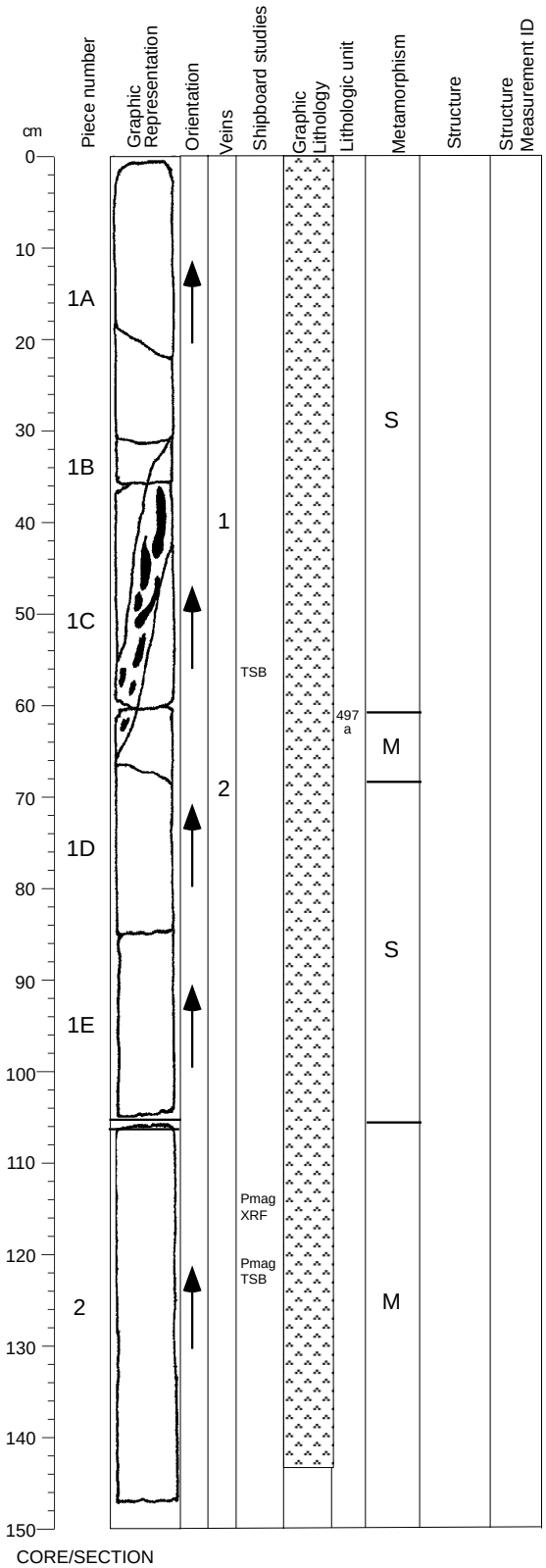
Background Alteration:
Degree of alteration: moderate (30-40%). Olivine is largely replaced by amphibole, talc, and oxides (ca. 80%). Clinopyroxene is rimmed by amphibole (ca. 5%). Plagioclase is partly recrystallized (5%). Superimposed to this high-temperature alteration is weathering of olivine relicts along cracks and carbonate veins.

Vein/Fracture Filling:
Carbonate veins in Pieces 1 and 3A are 6 cm in length, 0.3-1.0 mm wide and are associated with pervasive oxidation of olivine.

Structures:
Mf>V
The top of the section (Piece 1A) displays a nice magmatic fabric, which consists of a relatively strong (2) preferred orientation of pyroxenes and euhedral plagioclases (subdiabasic texture). The rest of the section downwards is similar to the previous section (176-735B-89R-1), with a coarse-grained magmatic texture, locally overprinted by a few veins. Arrays of subvertical cracks or microveins are visible in big plagioclases and pyroxenes (see for example Pieces 3A and 3B).

Interval 497a: See next section

Core Image



176-735B-90R-1

Interval 497a: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	89	2	12	1A	506.19
Lower contact:	90	4	110	4B	513.09

Thickness: 6.90 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	20	4	medium	tabular/ subhedral
Clinopyroxene	40	100	2	coarse	chadacrystic equant/ oikocrystic
Olivine	10	10	2	medium	amoeboidal/ anhedral fractured
Opaque	0.5				
Total	105.5*				

*Major phases estimated to ± 5%

Grain Size: Coarse

	Type	Distribution
Structure:	granular	N/A
Fabric:	N/A	N/A

Comments: Olivine gabbro at 0 cm in 90R-1, 15 and 56-62 cm in 90R-2, and 83 cm 90R-2 to 110 cm in 90R-4. Cr-augite present. Olivine altered on surfaces and along fractures. Oxide 1% at 100-101 cm in 90R-2, 5% at 44-45 cm in 90R-3. Locally intergranular and subophitic. Poikilitic at 95-101 cm in 90R-1; 6 cm and 108 cm in 90R-2.

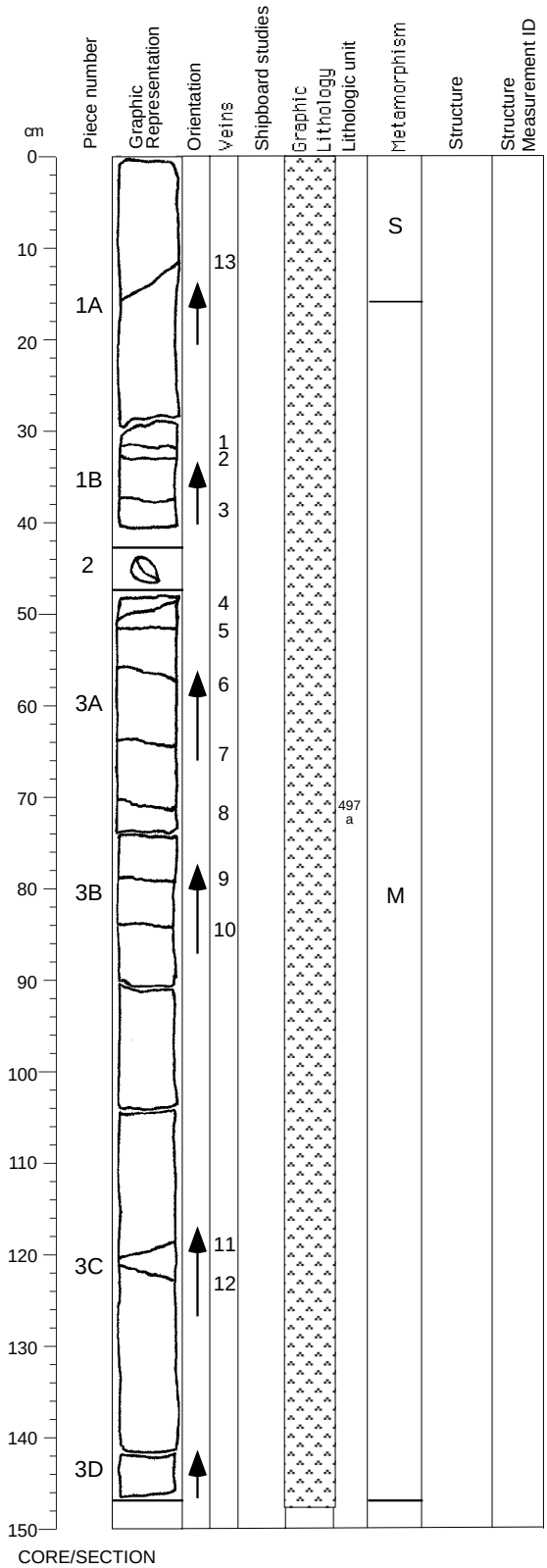
Alteration:
Green amphibole:
Total Percent: <20
Mode of occurrence: Mainly after Clinopyroxene, partly after olivine.
Comments: As alteration rims, particularly developed near a felsic-like vein.
Secondary plagioclase:
Total Percent: <25
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides and (chlorite):
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network and around crystals (green amphibole and dark blue chlorite).
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages mainly distributed at the periphery of the olivine ghost.
Carbonates:
Total Percent: <2
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (4-40%). Olivine is partly replaced by amphibole, talc, and oxides (10-50%). Clinopyroxene weakly altered and occasionally rimmed by amphibole (<5%). In Piece 2, clinopyroxene is highly altered (50%) to amphibole and chlorite(?) in patches of increased alteration. A reaction zone between plagioclase and olivine is developed where alteration is increased which gives the rock a finer grained appearance. Plagioclase is partly recrystallized (4-10%); degree of plagioclase recrystallization increased in vein halos. Brown amphibole is replacing olivine in vein halos. Weathering of olivine relicts is rare and concentrated along cracks in Pieces 1A to 1C.

Vein/Fracture Filling:
Compound felsic vein in Pieces 1B to 1D, 32 cm in length, 3 cm in width with an amphibole-rich core (10%), rimmed by plagioclase (60%) clinopyroxene (20%), and quartz (10%). In Piece 1D there is a carbonate vein 6 cm in length and 0.3 mm wide.

Structures:
Mf>V
The texture is igneous in the complete section, with a magmatic fabric absent or weak (0,1), and subhorizontal. Pieces 1B to 1D contain a vein (4 to 5 cm thick).

Core Image



176-735B-90R-2

Interval 497a: OLIVINE GABBRO
(see previous section)

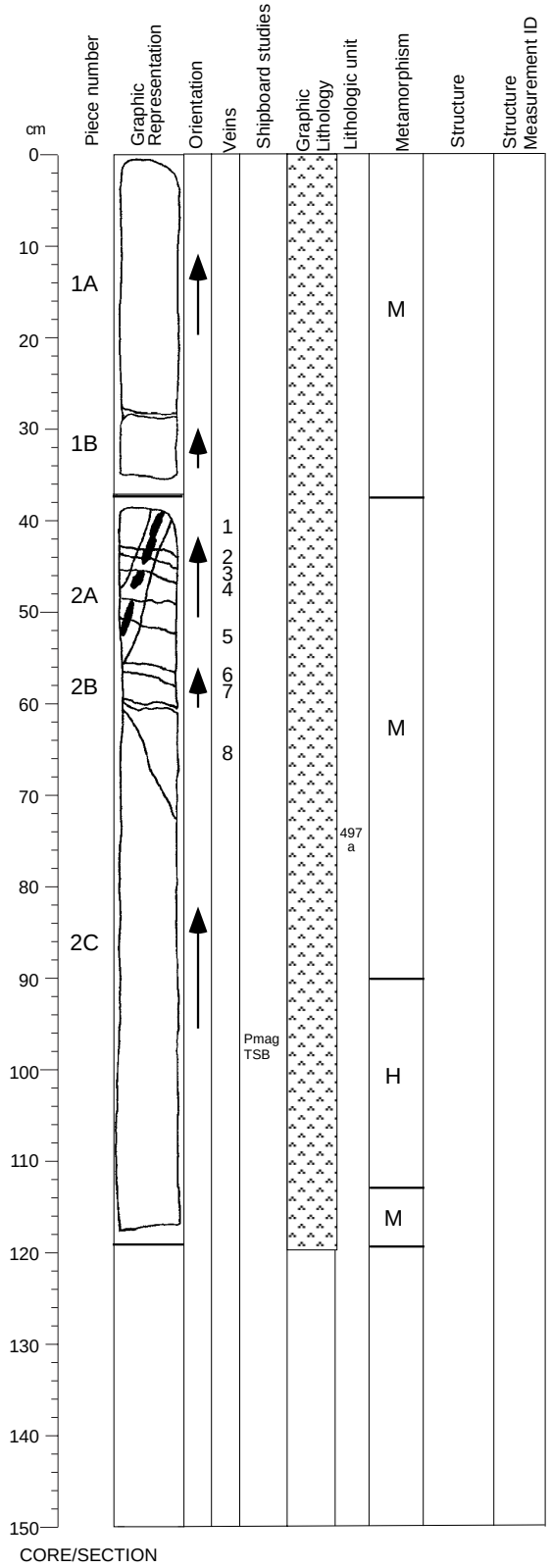
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly rimming clinopyroxene and olivine.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Heterogeneously replacing primary plagioclase.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine and after some clinopyroxenes.
Comments: Replacement of pyroxene by chlorite and amphibole is related to localized patchy alteration.

Background Alteration:
Degree of alteration: slight to moderate (4-20%). Olivine is partly replaced by amphibole, talc, and oxides (10-50%). Clinopyroxene altered to amphibole along rims (<5%) in the upper 14 cm of Piece 1. In the rest of the section clinopyroxene is moderately altered (35%) to amphibole and possibly chlorite in patches of increased alteration. Where alteration is increased, a reaction zone between plagioclase and olivine is developed which gives the rock a finer grained appearance. Plagioclase is partly recrystallized (4-15%).

Vein/Fracture Filling:
Carbonate veins are in Pieces 1B and 3A to 3C, 6 cm in length and 0.2-0.3 mm wide. Amphibole veins are present in Pieces 3A and 3C, 0.2-1.0 mm wide.

Structures:
Mf
The texture is igneous in the complete section, with a magmatic fabric absent or weak (0,1), and subhorizontal.

Core Image



176-735B-90R-3

Interval 497a: OLIVINE GABBRO
(see Section 176-735B-90R-1)

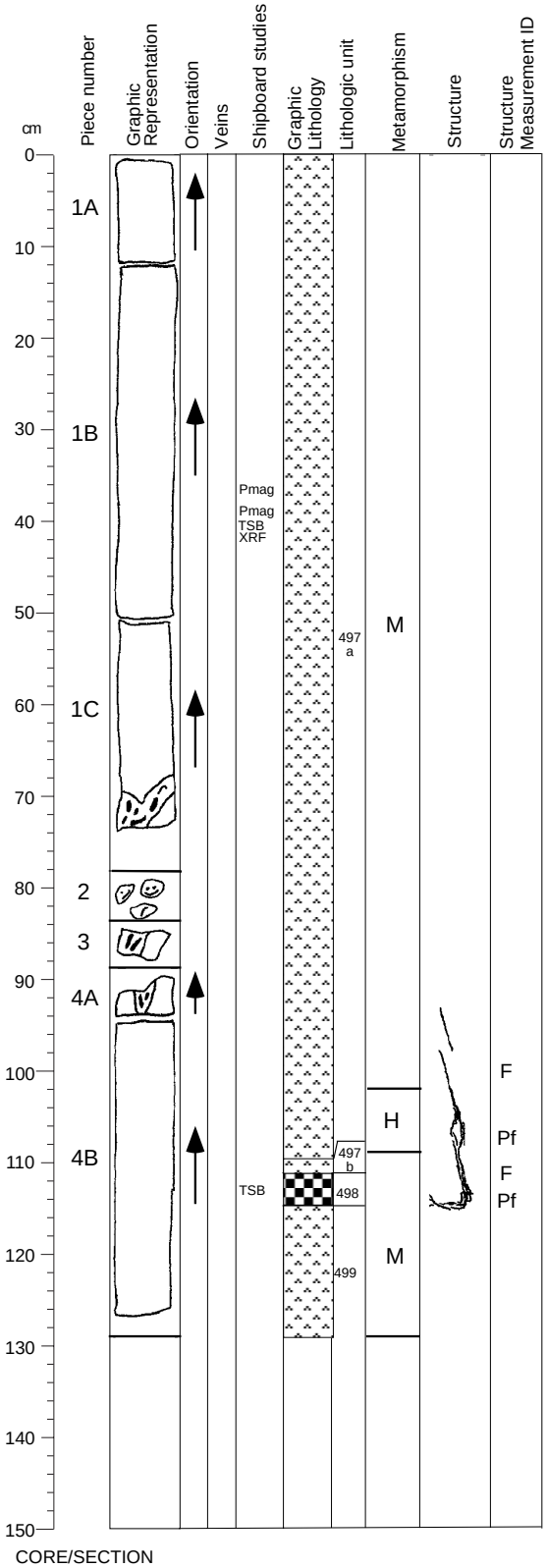
Alteration:
Green amphibole:
Total Percent: <25
Mode of occurrence: Mainly rimming clinopyroxene and olivine.
Secondary plagioclase:
Total Percent: <20
Mode of occurrence: Replacing primary plagioclase mainly in centimetric alteration patches.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <5
Mode of occurrence: Replacing olivine, after clinopyroxenes and some plagioclase.
Comments: Replacement of pyroxene by chlorite and amphibole is related to patchy alteration.

Background Alteration:
Degree of alteration: moderate to high (20-70%), in places pervasive. Olivine is partly replaced by amphibole, talc, and oxides (20-70%). Clinopyroxene is moderately to highly altered (35-70%) to amphibole and chlorite in the whole section. Plagioclase is variably altered to secondary plagioclase (10-60%). Brown amphibole is replacing olivine in vein halos. A pervasively altered (100%) 6-7 cm wide region is developed in Piece 2B (111-119 cm).

Vein/Fracture Filling:
Pieces 2A and 2B are cut by a compound felsic vein, 16 cm in length, 2.4 cm wide that contains quartz (60%), amphibole (15%), plagioclase (20%), clinopyroxene (3%), and phlogopite(?) (2%). Carbonate veins are present in Pieces 2A and 2C, 6 cm in length and 0.1 mm wide. Pieces 2A and 2C contain amphibole veins, 6-10 cm in length, and 0.1-0.2 wide.

Structures:
Mf>V
The texture is igneous in the complete section, with a magmatic fabric absent or weak (0,1), and subhorizontal. It is overprinted by a 3 cm thick vein in Pieces 2A and 2B. Arrays of subvertical cracks or microveins, which seem to be related to the horizontal joints systematically encountered in all cores. These features may be drilling-induced.

Core Image



176-735B-90R-4

Interval 497a: OLIVINE GABBRO
(see section 176-735B-90R-1)

Interval 497b: TROCTOLITIC GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	4	110	4B	513.09
Lower contact:	90	4	112	4B	513.09

Thickness: 0 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	60	10	3	medium	tabular/ subhedral
Clinopyroxene	10	20	1	medium	equant anhedral
Olivine	30	15	1	coarse	amoeboidal/ anhedral
Opaque	0.5				
Total	100.5*				

*Major phases estimated to ± 5%

Interval 498: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	4	110	4B	513.11
Lower contact:	90	4	115	4B	513.14

Thickness: 0.03 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	40	20	20	N/A	N/A/ anhedral deformed
Clinopyroxene	5	15	5	coarse	equant/ anhedral
Olivine	1	N/A	N/A	N/A	
Opaque	25				
Total	71*				

*Major phases estimated to ± 5%
Comments: Oxide rich band in a highly sheared (mylonitic/gneissic) zone.

Alteration:Dark green amphibole:
Total Percent: <20
Mode of occurrence: Mainly rimming clinopyroxene and olivine.
Comments: As alteration rims and more pervasive near a felsic-like impregnation.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After olivine.
Comments: Close to felsic material.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Irregularly replacing primary plagioclase and mainly around the felsic-like patches.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <5
Mode of occurrence: Replacing olivine, after clinopyroxenes and some plagioclase.
Comments: more abundant near felsic impregnations.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts.
Comments: Mixure of orange-red clays and carbonates with early metamorphic assemblages which are mainly distributed at the periphery of the olivine ghost.
Carbonates:
Total Percent: <2
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Continued next page

Interval 499: See next section

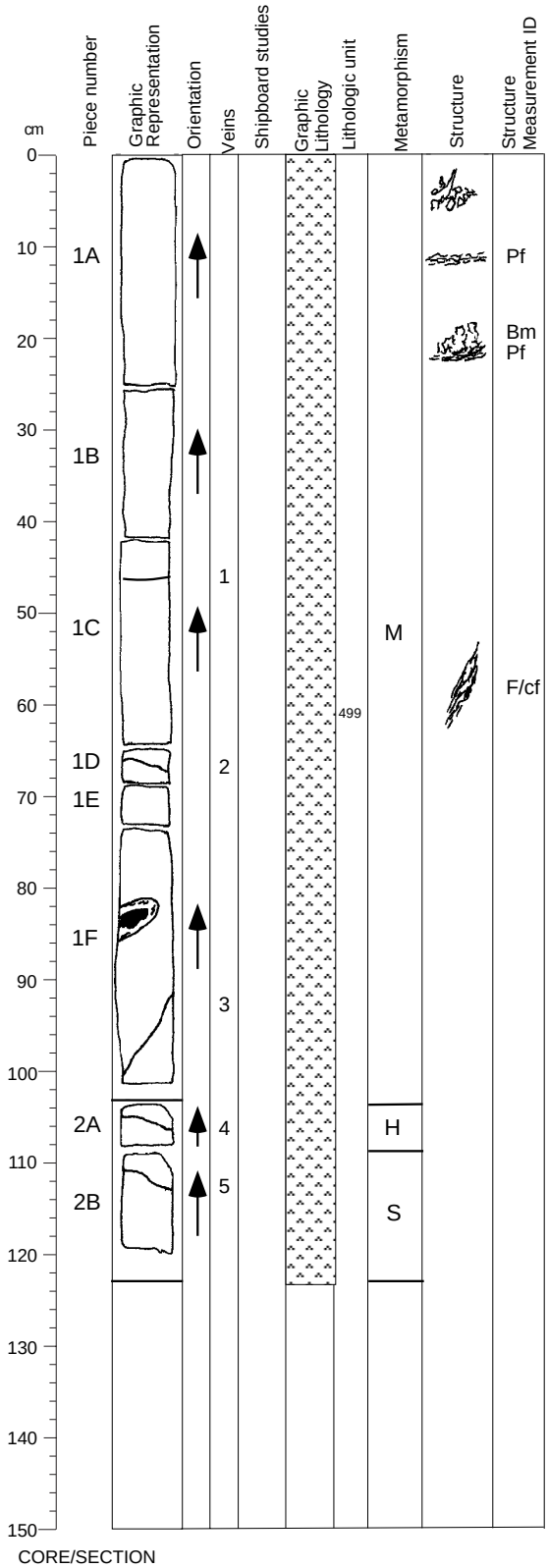
Core Image

176-735B-90R-4 (cont'd)

Background Alteration:
Degree of alteration: moderate to high (18-60%). Olivine is partly replaced by amphibole, talc, and oxides (10-50%). Olivine relicts are altered to smectite and hematite along a crack in Piece 2. Clinopyroxene is moderately altered (30-40%) to amphibole and chlorite(?). Plagioclase is significantly recrystallized (10-50%); degree of plagioclase recrystallization increased in vein halos. Brown amphibole is replacing olivine near the bottom of Piece 4, where felsic material impregnates the rock.

Structures:
Mf>V>Pf/F; Mf>Bm
This section is dominantly igneous with a few overprinting veins. The magmatic fabric is absent or weak. Pieces 4A to 4C contain a semi-brittle shear zone (crystal plastic deformation and faulting). The bottom of the section displays a narrow brecciated zone (magmatic breccia).

Core Image



176-735B-90R-5

Interval 499: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	4	115	4B	513.14
Lower contact:	90	6	4	2	514.55

Thickness: 1.41 m

		Grain Size (mm):			
	Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	15	5	coarse	tabular/ subhedral
Clinopyroxene	35	50	1	pegmatitic	equant/ oikocrystic
Olivine	20	30	2	coarse	tabular / subhedral anhedral
Opaques	0.5				
Total	110.5*				

*Major phases estimated to ± 5%

	Type	Distribution
Grain Size:	Coarse	
Structure:	variable texture	evenly distributed
Fabric	N/A	N/A

Comments: Alternating troctolite/gabbro. Olivine amoeboidal upwards, tabular downwards. Clinopyroxene poikilitic at 116-129 in Section 90R-4, 3-6 cm and 28-30 cm in 90R-R5 and pegmatitic at 123 cm in 90R-4 to 123 cm in 90R-5. Granular, intergranular, and subophitic. Felsic vein at 80-84 cm in 90R-5. Alteration fractures filled with felsic material.

Green amphibole:
Total Percent: <20
Mode of occurrence: Mainly after olivine.
Comments: As alteration rims, particularly developed near a felsic vein.

Secondary plagioclase:
Total Percent: <25
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.

Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine, after clinopyroxenes and some plagioclase.
Comments: more abundant near the felsic vein.

Oxyhydroxides and smectites:
Total Percent: <5
Mode of occurrence: Replacing olivine.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages mainly distributed at the periphery of olivine.

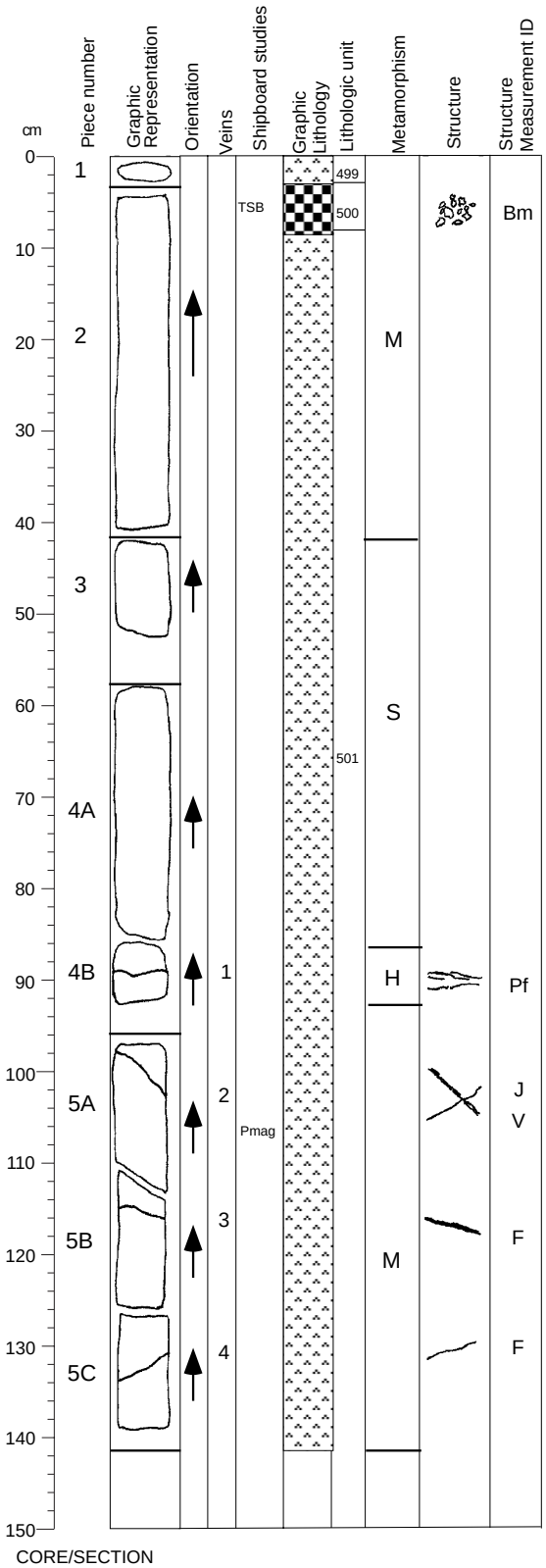
Carbonates:
Total Percent: <3
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to high (10-45%). Olivine is partly replaced by amphibole, talc, and oxides (10-50%). Olivine relicts are altered to smectite and hematite along cracks in Pieces 1B to 2B; iddingsite increases downward in this section of the core. Locally olivine is almost completely replaced (90%). Clinopyroxene is slightly altered (5-10%) to amphibole, mostly along grain boundaries and fractures in the grains. Plagioclase is significantly recrystallized (10-50%); the degree of plagioclase recrystallization is increased in vein halos.

Vein/Fracture Filling:
Carbonate veins are present in Pieces 1C and 2A, 6 cm in length, and 0.2-0.3 mm wide. Pieces 1D, 1E, and 2B contain amphibole veins 6-9 cm in length, 0.2-0.8 mm wide.

Structures:
Mf>Pf; Mf>Bm>Pf>F; Mf>V
This section displays dominantly igneous textures with large grain-size variations, locally overprinted by high-temperature crystal-plastic deformation, metamorphic veins, magmatic breccias, crystal-plastic or semi-brittle deformation, and a few faults. In Piece 1A (20-24 cm), the semi-brittle deformation overprints the magmatic breccia.

Core Image



176-735B-90R-6

Interval 500: DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	6	4	2	514.55
Lower contact:	90	6	8	2	514.59

Thickness: 0.04 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	15	8	coarse	anhedral/ deformed
Clinopyroxene	50	15	2	coarse	equant/ anhedral rounded
Olivine	2	3	1	medium	elongate/ anhedral deformed

Opaques	1
Total	108*

*Major phases estimated to ± 5%
Grain Size: Medium

	Type	Distribution
Structure:	granular	N/A
Fabric	N/A	N/A

Comments: Coarse-grained gabbro associated with a fault zone (brecciated). Fractures filled with felsic material.

Interval 501: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	6	8	2	514.59
Lower contact:	90	8	10	1A	516.96

Thickness: 2.37 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	60	12	4	coarse	tabular/ subhedral
Clinopyroxene	25	50	1	pegmatitic	equant/ oikocrystic
Olivine	20	30	1	coarse	amoeboidal/ anhedral fractured

Orthopyroxene	
Opaque	0.5
Total	105.5*

*Major phases estimated to ± 5%
Grain Size: Coarse

	Type	Distribution
Structure:	variable texture	N/A
Fabric	N/A	N/A

Comments: Oxide 1% at 98-99 cm in Section 176-735B-90R-6. Sulfide abundant at 71-77 cm in the same section. Grain size and mode variable. Granular, intergranular, subophitic. Poikilitic at 43-47 cm, 126-128 cm, 132-136 cm in 176-735B-90R-6; 23-27 cm, 32-37 cm in 176-735B-90R-7, 83 cm in 176-735B-90R-7 to 5 cm in 176-735B-90R-8. Microfractures filled with felsic material in places.

Continued next page

Core Image

176-735B-90R-6 (Cont'd)

Alteration:
Dark green amphibole:
- Total Percent: <20
- Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
- Comments: As alteration rims.

Secondary plagioclase:
- Total Percent: <10
- Mode of occurrence: Replacing primary plagioclase, as white rims at contact with olivine.
- Comments: Irregularly distributed.

Talc, oxides:
- Total Percent: <2
- Mode of occurrence: Replacing olivine.
- Comments: As mixtures in the crystal crack network.

Green chlorite:
- Total Percent: <2
- Mode of occurrence: Replacing olivine, after clinopyroxenes and some plagioclase.

Oxyhydroxides and smectites:
- Total Percent: <3
- Mode of occurrence: Replacing olivine.
- Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.

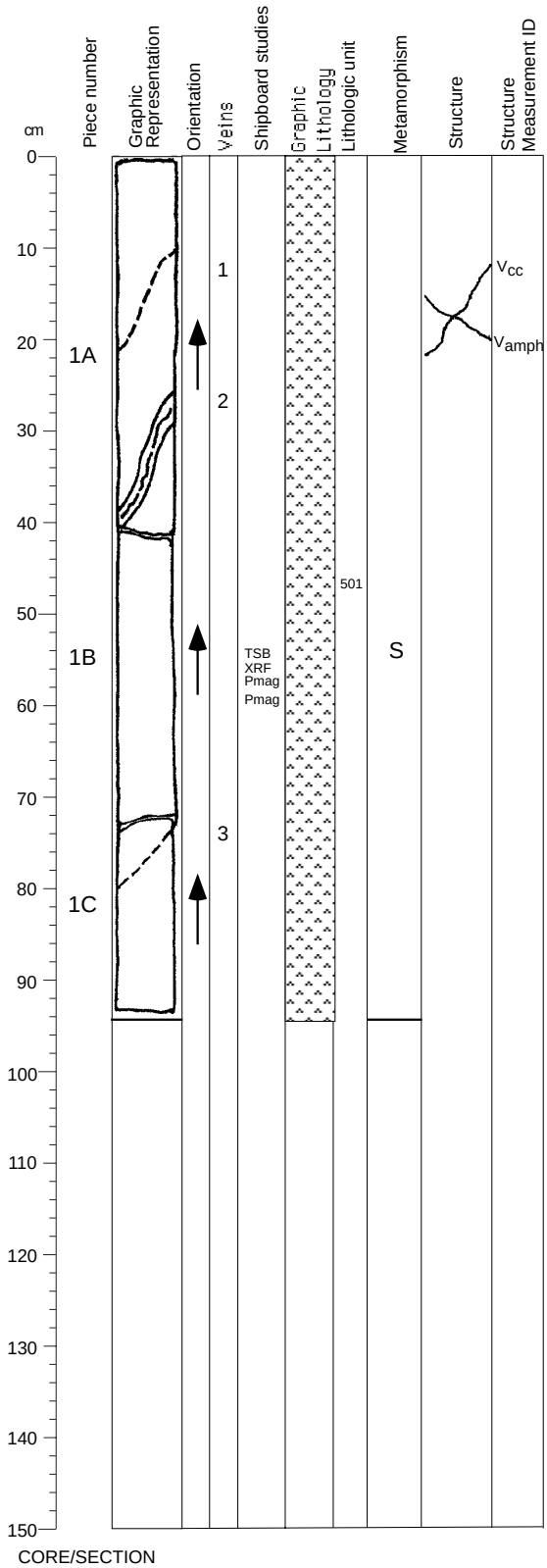
Carbonates:
- Total Percent: <2
- Mode of occurrence: In veins and replacing olivine.
- Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: moderate to high (12-45%). Olivine is partly replaced by amphibole, talc, and oxides (10-50%). Olivine relicts are altered to smectite and hematite along cracks in Pieces 2-5. Locally (Piece 4) olivine is almost completely replaced (90%). Clinopyroxene is slightly altered (10%) to amphibole, commonly along grain boundaries and fractures in the grains. In Piece 1 and the upper part of Piece 2, clinopyroxene is highly altered (50%) to amphibole and chlorite. Plagioclase is partly recrystallized (15-20%).

Vein/Fracture Filling:
Piece 4B contains a carbonate vein, 6 cm in length, and 0.6 mm wide. Amphibole veins are present in Pieces 5A to 5C, 6-7 cm in length, and 0.4-0.8 mm wide.

Structures:
Mf>Bm, Mf>Pf, Mf>F>J
This section displays dominantly igneous textures, with no significant magmatic fabric. The top of the section is overprinted by a magmatic breccia. A narrow zone with crystal-plastic foliation (2 cm thick) overprints the magmatic texture in Piece 4B. A few faults and joints are present.

Core Image



176-735B-90R-7

Interval 501: OLIVINE GABBRO
(see previous section)

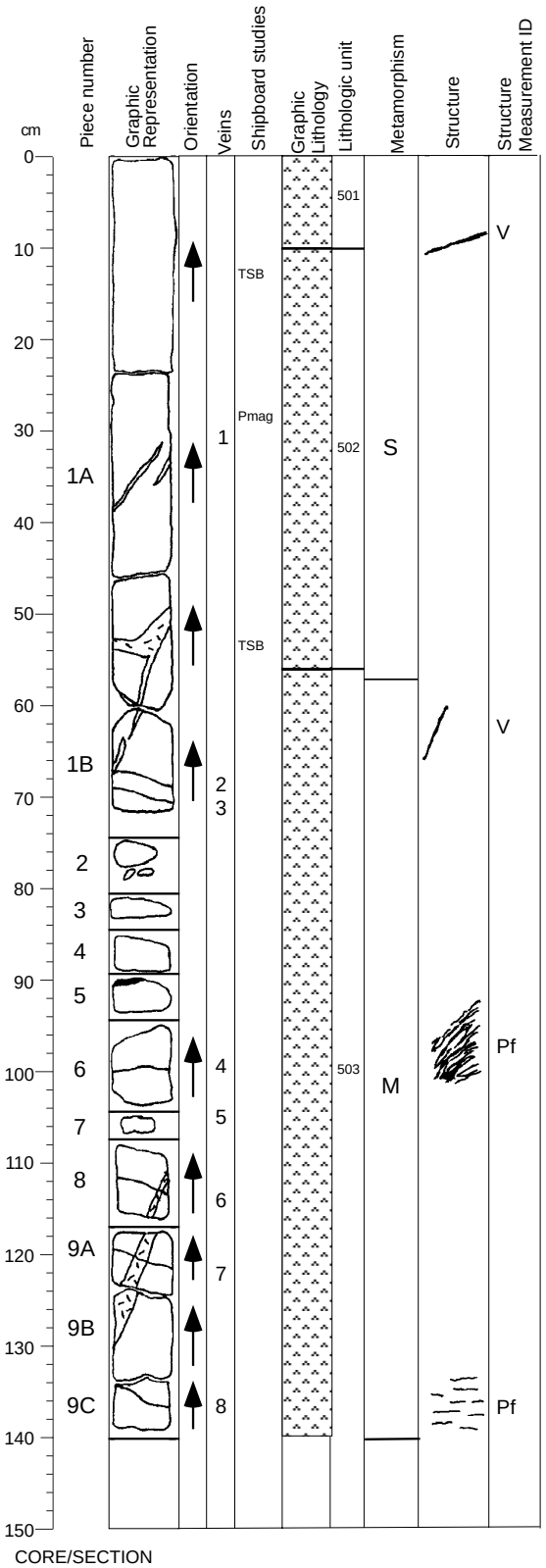
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, and more abundant near felsic veins and as small patches.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine, after clinopyroxenes.
Comments: In green diffuse altered patches.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration
Degree of alteration: slight (8%). Olivine is slightly to moderately altered to amphibole, talc, and oxides (ca. 10%). Olivine relicts are altered to smectite and hematite along cracks and carbonate veins. Clinopyroxene is slightly altered (5%) to amphibole, commonly along grain boundaries and fractures in the grains. In Piece 1 large clinopyroxene crystals, which are cut by a compound felsic vein, are completely altered to amphibole and chlorite. Plagioclase is partly recrystallized (5%), except for increased recrystallization near the vein.

Vein/Fracture Filling:
Piece 1A contains a carbonate vein 11 cm in length and 0.5 mm wide and a compound felsic vein, 13 cm in length and 8.0 mm wide. The compound felsic vein contains an amphibole-rich core (30%), rimmed by plagioclase (60%), and quartz (10%). There is an associated alteration halo 2 cm in width in which the bounding host rock is altered up to 50% with clinopyroxene altered to amphibole and plagioclase to secondary plagioclase. Piece 1C contains an amphibole vein 8 cm in length and 0.2 mm wide.

Structures:
Mf>V
This section displays igneous textures, with no or a weak magmatic fabric. Crystal-plastic deformation is absent. This section contains four veins. An amphibole-bearing vein is cross-cut by a calcite-bearing vein.

Core Image



176-735B-90R-8

Interval 501: OLIVINE GABBRO
(see Section 176-735B-90R-6)

Interval 502: LEUCOCRATIC TROCTOLITIC GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	8	10	1A	516.96
Lower contact:	90	8	56	1A	517.42
Thickness: 1.46	m				

		Grain Size (mm):			
	Mode	Max	Min	Size	Shape/Habit
Plagioclase	70	5	2	medium	tabular / subhedral
Clinopyroxene	15	30	0.5	medium	equant/ anhedral subhedral
Olivine	20	2	1	fine	accicular / anhedral
Opaques	0.5				
Total	105.5*				

*Major phases estimated to ± 5%
Grain Size: Fine

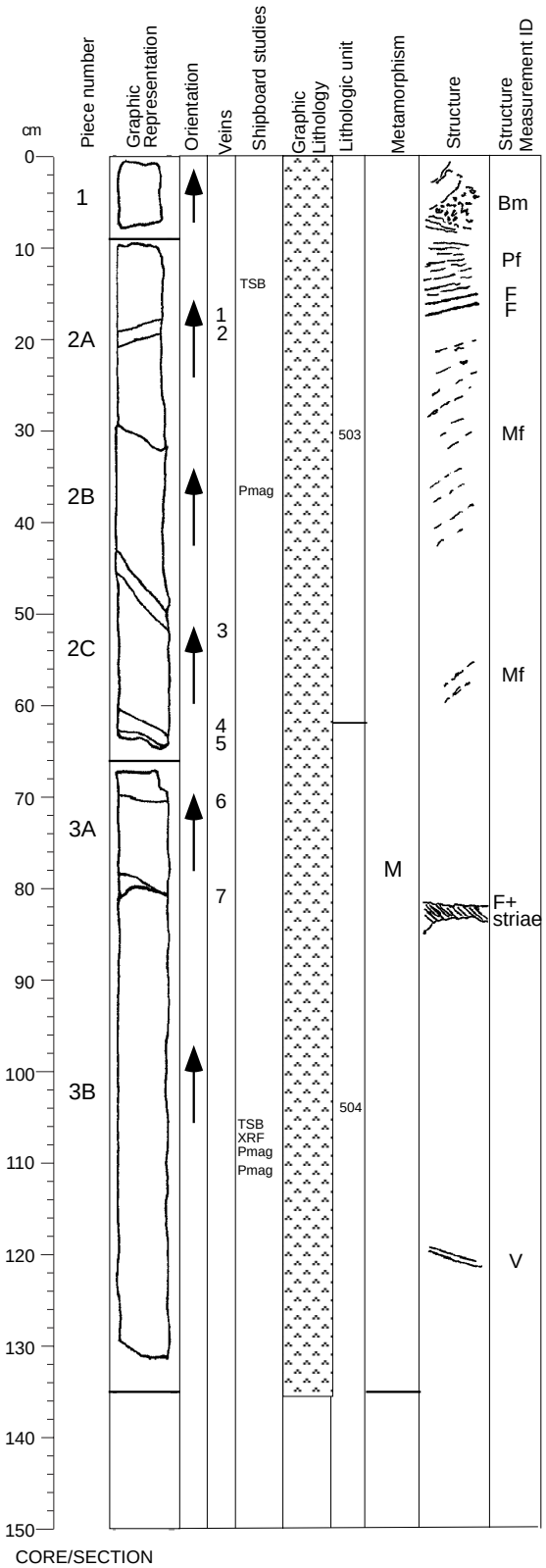
	Type	Distribution
Structure:	granular	evenly distributed
Fabric:	N/A	N/A

Comments: Locally intergranular/subophitic. Felsic vein at 49-56 cm.
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches, near felsic veins and in foliated areas.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine and after clinopyroxenes.
Comments: As rims around olivine and clinopyroxene, in altered patches, near felsic veins and in foliated areas.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.
Prehnite (?):
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: As white reaction rims of olivine at contact with plagioclase.
Background Alteration:
Degree of alteration: slight to moderate (7-30%). Olivine is slightly to moderately altered to amphibole, talc, and oxides (ca. 10%). Olivine is altered to smectite and hematite along cracks (up to 30%) in Pieces 1C to 1G. Rare clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Plagioclase is partly recrystallized (5-10%).
Vein/Fracture Filling:
Piece 1A contains a plagioclase vein, 10 cm in length, 1.0 mm wide. Pieces 1A, and 8 to 9B are cut by compound felsic veins that contain plagioclase (75-80%), quartz (10-20%), and amphibole (5-10%). They range in length from 5 to16 cm and are 3-17 mm wide. Carbonate veinlets are present in Pieces 1B, 6, 7, 8, 9A, and 9C that are 6-7 cm in length, 0.2 -1.0 cm wide.

Structures:
Mf>V; Mf>Pf
The top part of the section displays igneous texture with no or weak magmatic foliation (Pieces 1A to 1B) and contains two veins. Downwards (Pieces 2 to 6), the magmatic texture is totally overprinted by intense crystal-plastic deformation (mylonite with anastomosing foliation). The bottom part of the section (Pieces 7 to 8c) displays igneous texture with no or a weak magmatic fabric, locally overprinted by a weak high-temperature crystal-plastic deformation at the bottom.

Interval 503: See Section 176-735B-91R-1

Core Image



176-735B-91R-1

Interval 503: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	90	8	56	1A	517.42
Lower contact:	91	1	62	2C	518.02

Thickness: .60 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	60	8	2	medium subhedral	tabular/
Clinopyroxene	25	40	2	coarse oikocrystic	equant/
Olivine	20	5	1	medium subhedral anhedral	elongate /
Opaque	0.6				
Total	105.6*				

*Major phases estimated to ± 5%
Grain Size: Medium

	Type	Distribution
Structure:	granular	randomly distributed
Fabric	N/A	N/A

Comments: Equigranular at 9-62.5 cm in 91R-1. Coarser at top with oxidized olivine and some clinopyroxene. Sheared zone at 75-104 cm in 90R-8. Felsic vein/dike (~2.5 cm) at 114-126 cm in 90R-8.

Interval 504: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	91	1	62	2C	518.02
Lower contact:	91	2	45	1B	519.20

Thickness: 1.18 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	50	5	2	medium	tabular / subhedral
Clinopyroxene	25	5	0.5	medium	equant/ anhedral
Olivine	30	1	1	medium	platy / anhedral chadacrystic
Opaque	0.5				
Total	105.5*				

*Major phases estimated to ± 5%
Modal name (calculated): Olivine Gabbro
Grain Size: Fine

	Type	Distribution
Structure:	equigranular	evenly distributed
Fabric:	N/A	N/A

Comments: Locally intergranular. Subophitic at the base. Sheared zone at 32-38 cm in 91R-2 with porphyroclastic clinopyroxene. An irregularly shaped vein is at 38-44 cm in 91R-2 with felsic minerals, amphibole, and void space.

Continued next page

Core Image

176-735B-91R-1(cont'd)

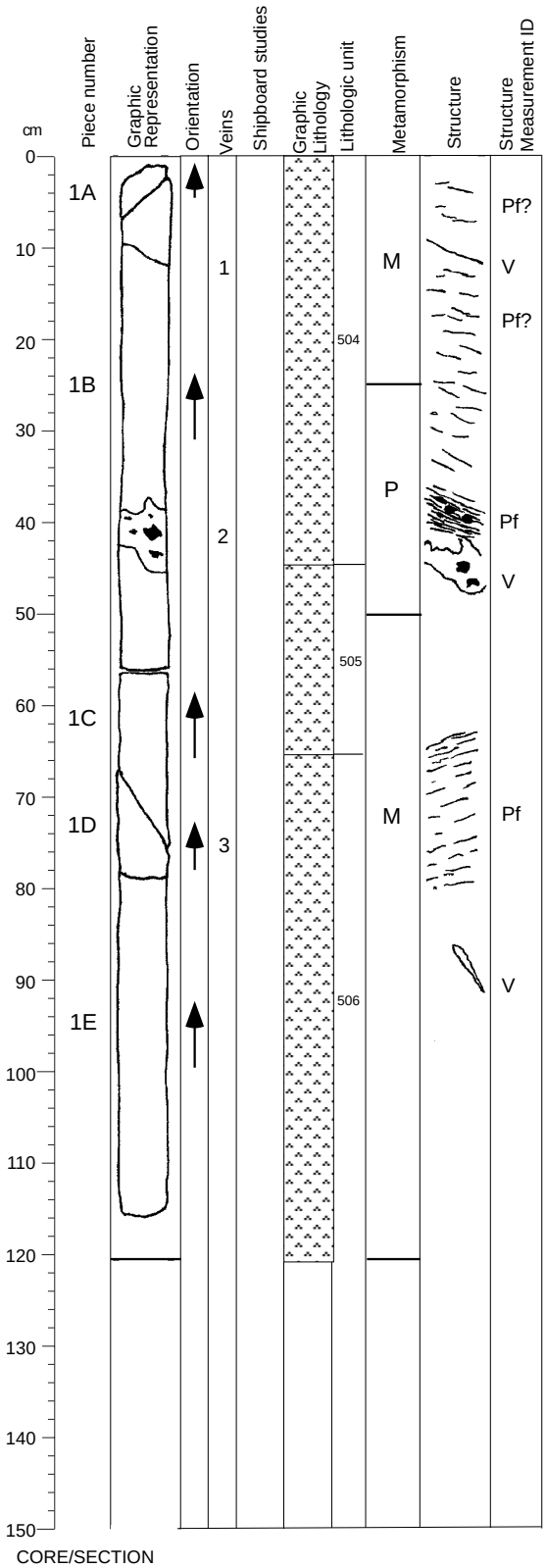
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches, near felsic veins and in foliated areas.
Green amphibole:
Total Percent: <10
Mode of occurrence: After clinopyroxene, olivine and (plagioclase).
Comments: In alteration patches and near felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine and after clinopyroxenes.
Comments: As rims around olivine and clinopyroxene, in altered patches, near felsic veins and in foliated areas.
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.
Prehnite (?):
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: As white reaction rims of olivine at contact with plagioclase.

Background Alteration:
Degree of alteration: moderate (15-28%). Olivine is slightly to moderately altered to amphibole, talc, and oxides (ca. 10%). Olivine is altered to smectite and hematite along cracks (up to 50%) in Pieces 1 and 2. Rare clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Plagioclase is partially recrystallized (5-20%).

Vein/Fracture Filling:
Amphibole veinlets are present in Pieces 2A and 2C, 6-8 cm in length, 0.3-0.5 mm wide. Carbonate veinlets are present in Pieces 2C, 3A, and 3B, 6-7 cm in length, 0.2-0.5 mm wide.

Structures:
Mf>Bm; Mf>Pf>F; Mf>V
Adjacent to a magmatic breccia in the first 7 cm of the section, high-temperature crystal-plastic deformation is present (Piece 2A), but there is no clear cross-cutting relationship between these features. 20 cm from the top, the zone with crystal-plastic deformation is seperated from a zone with magmatic foliation by two small faults. The magmatic foliation is clearly visible (some discontinuous thins layers). The second half of the section (Pieces 3A and 3B) displays an igneous texture with no significant magmatic foliation and no plastic deformation, overprinted by a vein and a fault.

Core Image



176-735B-91R-2

Interval 504: OLIVINE GABBRO
(see previous section)

Interval 505: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	91	2	45	1B	519.20
Lower contact:	91	2	65	1C	519.40

Thickness: 0.20 m

		Grain Size (mm):			
	Mode	Max	Min	Size	Shape/Habit
Plagioclase	60	13	5	coarse	tabular / subhedral
Clinopyroxene	35	40	2	coarse	equant/ oikocrystic anhedral
Olivine	8	10	1	medium	amoeboidal/ anhedral
Opaque	0.5				
Total	103.5*				

*Major phases estimated to ± 5%
Grain Size: Coarse

	Type	Distribution
Structure:	granular	randomly distributed
Fabric:	N/A	N/A

Comments: Locally intergranular, subophitic/ophitic. Pegmatitic clinopyroxene at 45-47 cm.

Interval 506: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	91	2	65	1C	519.40
Lower contact:	91	5	20	2A	522.80

Thickness: 3.40 m

		Grain Size (mm):			
	Mode	Max	Min	Size	Shape/Habit
Plagioclase	60	15	3	coarse	tabular / subhedral chadacrystic
Clinopyroxene	20	1	2	medium	equant/ anhedral
Olivine	15	10	1	medium	amoeboidal/ anhedral chadacrystic
Opaque	0.5				
Total	95.5*				

*Major phases estimated to ± 5%
Grain Size: Medium

	Type	Distribution
Structure:	granular	evenly distributed
Fabric:	N/A	N/A

Comments: Oxide 2% at 84-85 cm in 91R-2 and 68-69 cm in 91R-4, 5% at 101-102 cm in 91R-4. Pegmatitic/oikocrystic clinopyroxene enclosing chadacrystic olivine at 80 cm in 92R-4. Locally intergranular/subophitic/ophitic. Microfractures in places, some filled with felsic material.

Continued next page

Core Image

176-735B-91R-2(cont'd)

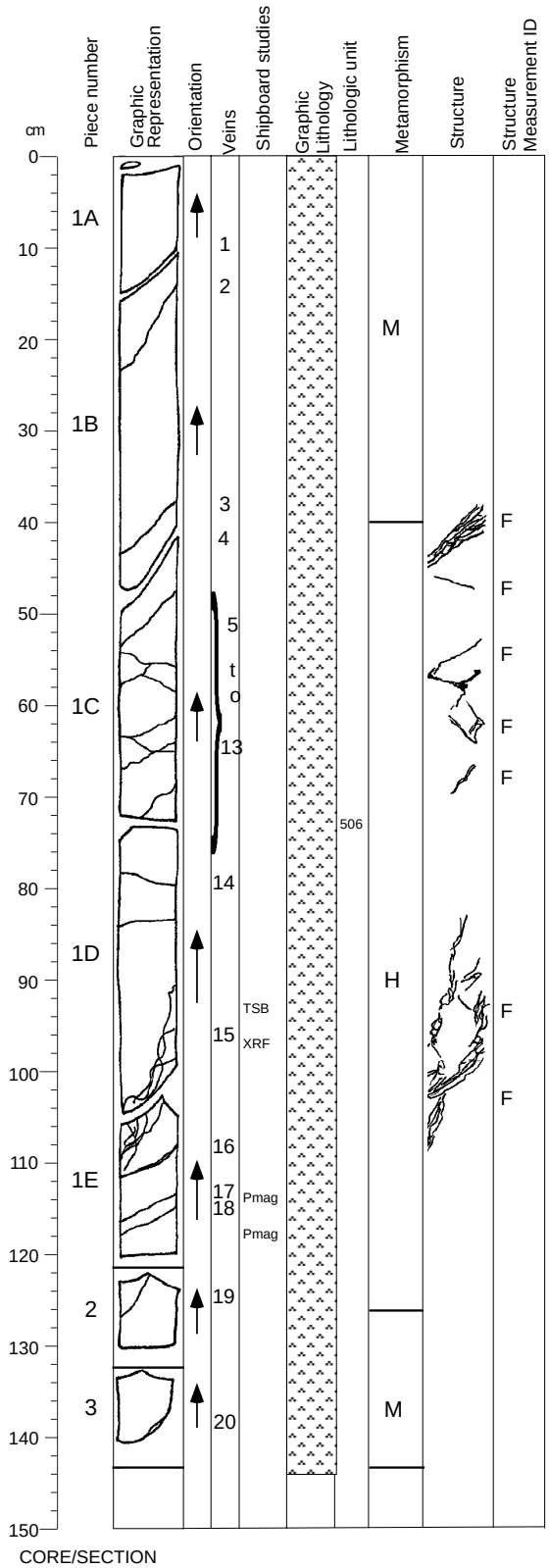
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches.
Green amphibole:
Total Percent: <5
Mode of occurrence: After clinopyroxene, olivine and (plagioclase).
Comments: In alteration patches and in foliated areas.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine and after clinopyroxenes.
Comments: As rims around olivine and clinopyroxene, in altered patches, near felsic veins and in foliated areas.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.
Prehnite (?):
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: As white reaction rims of olivine at contact with plagioclase.

Background Alteration:
Degree of alteration: moderate to pervasive (28-90%). Olivine is slightly to moderately altered to amphibole, talc, and oxides (ca. 10-20%). Olivine is completely replaced adjacent to a large compound vein in Piece 2B; both clinopyroxene and plagioclase are highly to pervasively altered in the vein halos (ca. 80%). Large crystals of brown amphibole in vein halos. In the lower half of the section, olivine is weakly altered to iddingsite. Rare clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Plagioclase is partly recrystallized (5-10%).

Vein/Fracture Filling:
Piece 1B is cut by an amphibole veinlet, 16 cm long and 0.4 mm in width and a compound felsic vein that contains plagioclase (60%), quartz (10%), clinopyroxene (8%), amphibole (20%), and epidote (2%). Piece 1C contains a carbonate vein, 10 cm in length, 0.5 mm wide.

Structures:
Pf?>V; Mf>Pf>V; Mf>Pf; Mf>V
The foliation present in the first 35 cm of the section is probably high-temperature crystal-plastic, or possibly magmatic. It is overprinted by a subparallel vein, and by a narrow zone of intense crystal-plastic deformation (35-40cm). Adjacent to this shear zone is a vein which seems to be younger (undeformed). Below the vein (to the bottom) the texture is dominantly magmatic, overprinted by weak plastic deformation (67-86cm) and a vein.

Core Image



176-735B-91R-3

Interval 506: OLIVINE GABBRO
(see previous section)

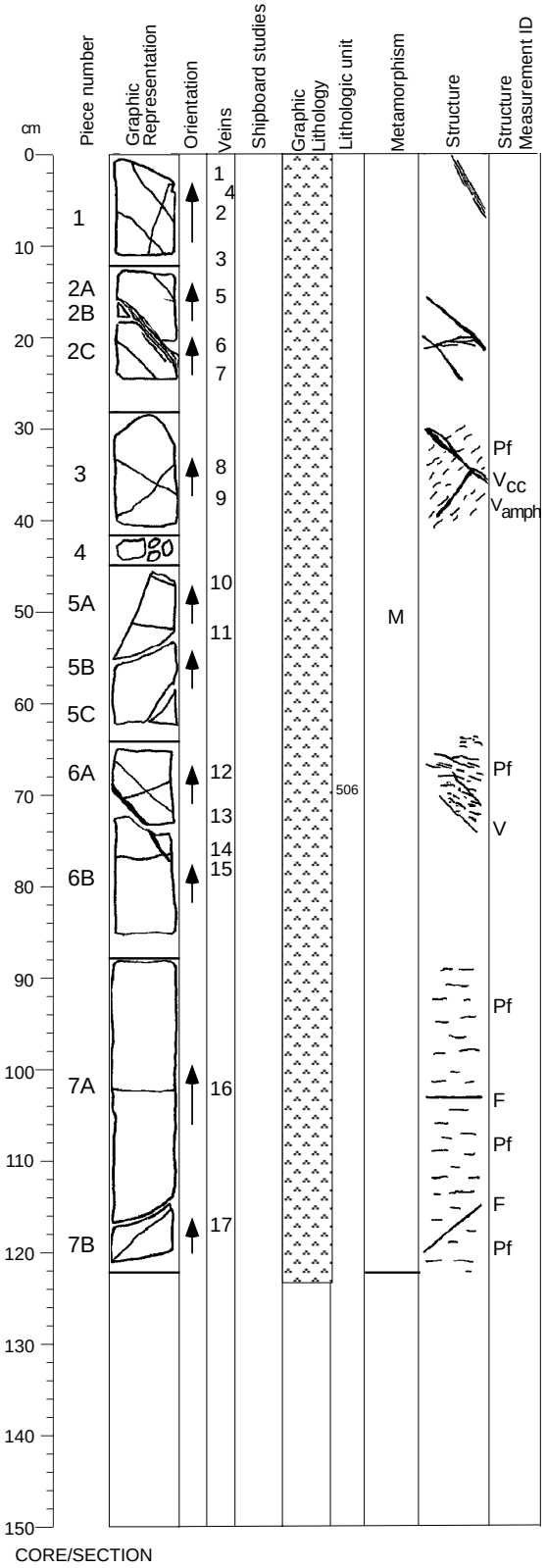
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <15
Mode of occurrence: Replacing olivine relicts and clinopyroxene..
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins, and penetrating in cracks of plagioclase.
Carbonates:
Total Percent: <5
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine and clinopyroxene is related to carbonate vein formation.

Background Alteration:
Degree of alteration: moderate to high (20-45%). Olivine is moderately altered to amphibole, talc, and oxides (15-25%). In addition, olivine is partly replaced by smectite and hematite (20-50%); total degree of olivine alteration is 30 to 75%. Clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Magmatic plagioclase is partly recrystallized to sodic plagioclase (10-20%).

Vein/Fracture Filling:
Carbonate veinlets containing varying amounts of oxyhydroxides are present in Pieces 1A to 1E. The veins range from 6-10 cm in length, and 0.2-0.5 mm in width. Pieces 1C to 1E contain a vein network of carbonate veins. An amphibole veinlet is present in Piece 1E, 7 cm in legth, and 0.5 mm wide.

Structures:
Mf>Cf
This section display some igneous texture, with no or a weak magmatic foliation, overprinted by a network of cataclastic veins.

Core Image



176-735B-91R-4

Interval 506: OLIVINE GABBRO
(see Section 176-735B-91R-2)

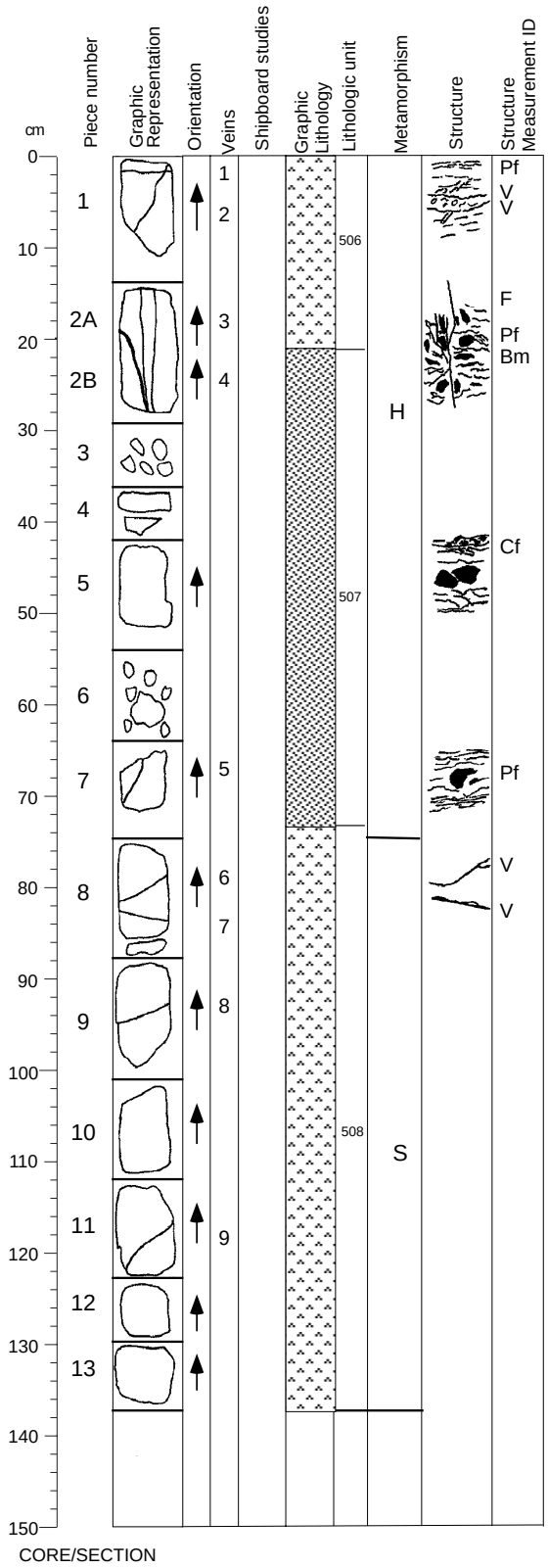
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: After olivine and some clinopyroxene.
Comments: As alteration rims, in alteration patches.
Brown amphibole:
Total Percent: trace
Mode of occurrence: After clinopyroxene and olivine.
Comments: In alteration patches.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing clinopyroxenes.
Comments: In altered patches.
Oxyhydroxides and smectites:
Total Percent: <5
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <2
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: moderate (20-35%). Olivine is moderately to highly altered to amphibole, talc, and oxides (30-50%). At the bottom of Piece 7, olivine relicts are partly altered to smectite and hematite (20%). Clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Magmatic plagioclase is partly recrystallized to sodic plagioclase (10-15%).

Vein/Fracture Filling:
Carbonate veinlets are present in Pieces 1, 2A to 2C, 3, 5A, and 6A to 6B that are 6-9 cm in length, 0.4-1.0 mm wide. Pieces 1, 3, and 6A are also cut by amphibole veins, 6-8 cm in length, 0.5 mm wide.

Structures:
Mf>Pf; Mf>F>V; Pf>Vamph>Vcc
The first piece of the section is cut by a thin semi-brittle retrograde shear zone, which overprints the magmatic texture (no or a weak magmatic foliation). In Piece 2C, a fault is cut by a late calcite vein. The same kind of vein cuts an amphibole-bearing vein in Piece 3; this piece also displays a strong crystal-plastic foliation. A similar situation (plastic foliation and late veins) is observed for Piece 6A. The rest of the section displays a weak crystal-plastic foliation (difficult to measure) overprinted by faults.

Core Image



176-735B-91R-5

Interval 506: OLIVINE GABBRO
(see Section 176-735B-91R-2)

Interval 507: OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	91	5	20	2A	522.80
Lower contact:	91	5	73	7	523.33

Thickness: 0.53 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	8	N/A	coarse	N/A/ anhedral deformed
Clinopyroxene	30	45	2	coarse	elongate / deformed fractured
Olivine	7	15	2	medium	tabular / subhedral deformed
Opaque	2				
Total	94*				

*Major phases estimated to ± 5%

Grain Size: Coarse

	Type	Distribution
Structure:	granular	randomly distributed
Fabric:	brecciated	N/A

Comments: A highly brecciated zone. Oxide 1% at 19-42 cm, 51-64 cm, and 67-72 cm; 3% at 64-67 cm. Locally clinopyroxene is porphyroclastic. Olivine and clinopyroxene oxidized at top of interval.

Interval 508: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	91	5	73	7	523.33
Lower contact:	92	1	9	3A	527.09

Thickness: 3.76 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	65	15	4	coarse	tabular / subhedral
Clinopyroxene	35	50	3	coarse	equant/ anhedral
Olivine	5	10	2	medium	amoeboidal/ anhedral
Opaque	0.5				
Total	105.5*				

*Major phases estimated to ± 5%
Grain Size: Medium

	Type	Distribution
Structure:	granular	uniform
Fabric:	N/A	N/A

Comments: Olivine and some clionopyroxene oxidized at top. Locally intergranular/subophitic.

Continued next page

Core Image

176-735B-91R-5 (cont'd)

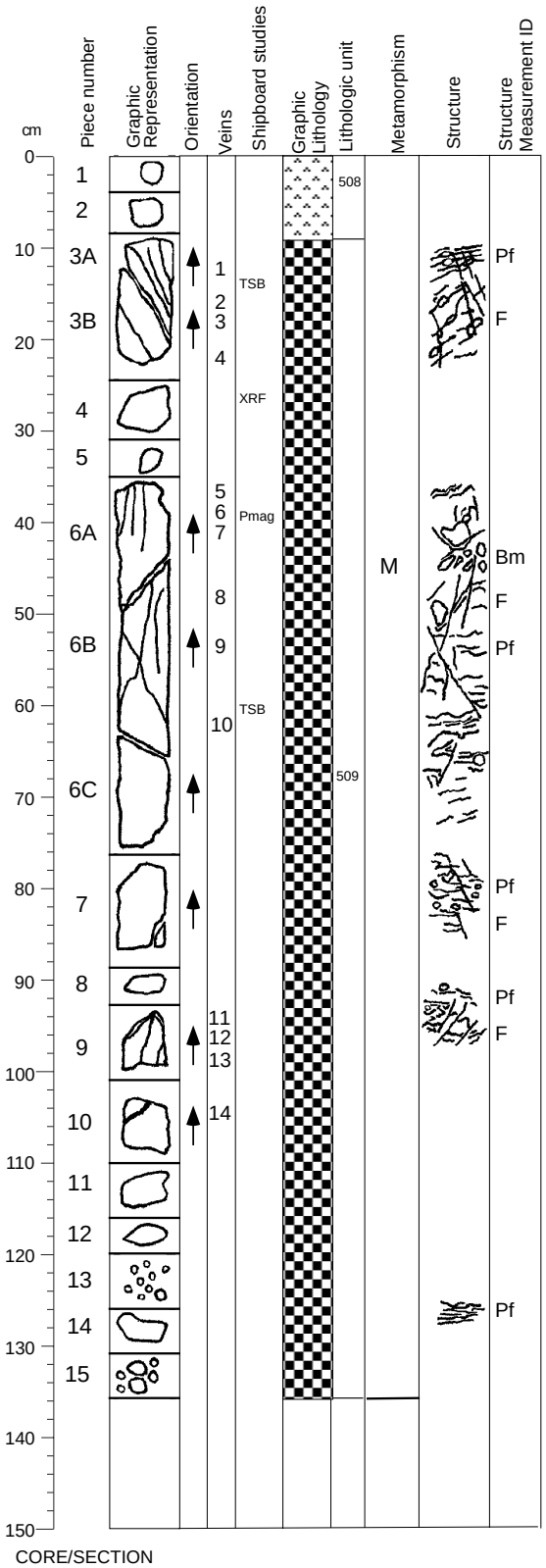
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near a piece of ferro-gabbro.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine and after clinopyroxenes.
Comments: As rims around olivine and clinopyroxene, in altered patches, near felsic veins and in foliated areas.
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins,
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (8-50%). Olivine is moderately to highly altered to amphibole, talc, and oxides (30-50%). At the bottom of Piece 7, olivine relicts are partly altered to smectite and hematite (20%). Clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Magmatic plagioclase is partly recrystallized to sodic plagioclase (up to 20%). Lower part of the section Pieces 9 to 13 is only slightly altered and free of oxidation, except for slight oxidation in Piece 9.

Vein/Fracture Filling:
Carbonate veins are present in Pieces 1, 2A to 2B, and 8 that are 6-12 cm in length, 0.2-0.4 mm wide. Amphibole veins cut Pieces 5, 9, and 11, 6-7 cm in length, 0.4-10. cm wide. Piece 2 is cut by an amphibole (80%)+ plagioclase (20%) vein, 9 cm in length, 0.4 mm wide.

Structures:
Mf>Pf>V; Bm>Pf>F; Pf>Cf; Mf>V
On top of the section, weak retrograde plastic deformation overprints magmatic texture with a possible weak magmatic foliation. Two veins cross-cut the foliation. After Piece 1, the plastic foliation becomes stronger (down to bottom of Piece 7). In Pieces 2A to 2B, it overprints a magmatic breccia, and is cross-cut by late faults. The top of Piece 5 displays a narrow (2 cm thick) cataclastic zone overprinting the crystal-plastic deformation. From Piece 8, the rest of the section is magmatic, isotropic, cross cut by a few veins.

Core Image



176-735B-92R-1

Interval 508: OLIVINE GABBRO
(see previous section)

Interval 509: DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	92	1	9	3A	527.09
Lower contact:	92	1	137	15	528.37

Thickness: 1.28 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	50	20	N/A	coarse	N/A/ anhedral deformed
Clinopyroxene	50	30	1	coarse	elongate / fractured rounded
Olivine	2	4	1	medium	elongate / anhedral deformed
Opaque	1				
Total	103*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro
Grain Size: Coarse

	Type	Distribution
Structure:	N/A	N/A
Fabric:	brecciated	evenly distributed

Comments: A brecciated zone. Oxide 5% at 98-99 cm and 104-105 cm. Mylonitic/gneissic texture. Porphyroclastic clinopyroxene (orthopyroxene?) apparent. Olivine completely altered with reddish core and pale rims.

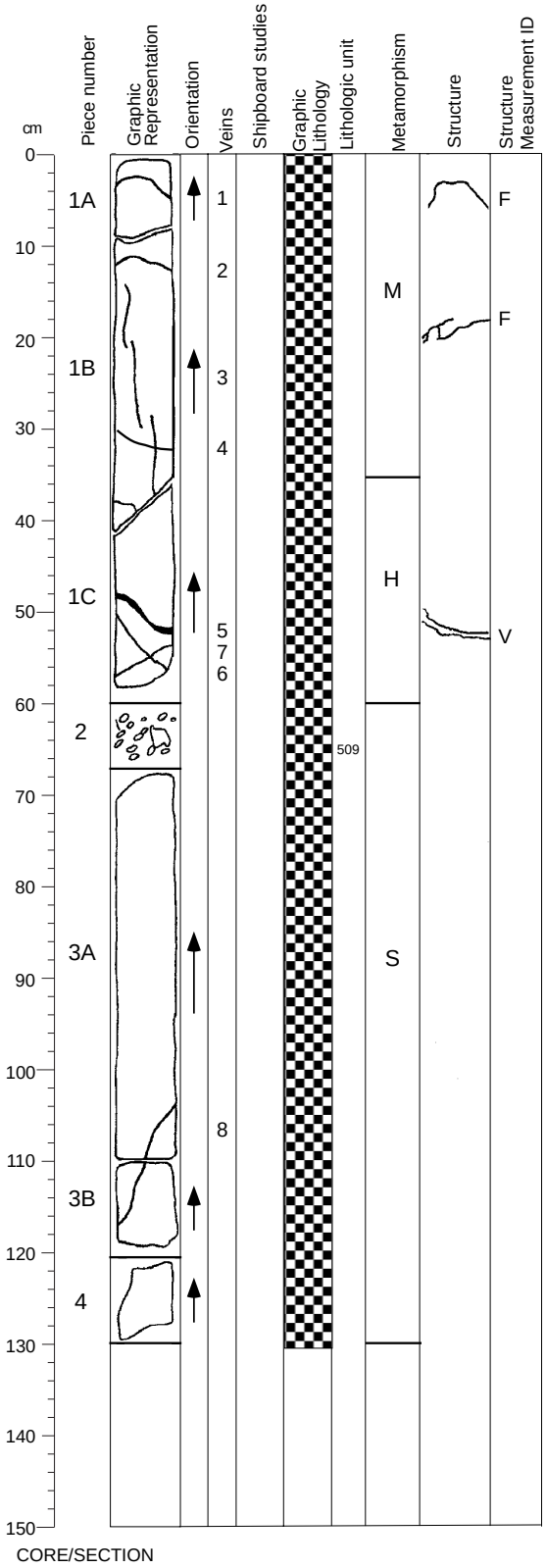
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in foliated pieces.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more abundant in foliated areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <5
Mode of occurrence: Replacing olivine relicts.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <2
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.
Prehnite (?):
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: As white reaction rims of olivine at contact with plagioclase.

Background Alteration:
Degree of alteration: moderate to high (ca. 40%). About 50% of the olivines are replaced by high-temperature (talc, amphibole) and low-temperature (smetite, hematite) mineral assemblages throughout the section. In Piece 6, large deformed olivine crystals embedded in plagioclase are oxidized in the core and rimmed by a layer of a white mineral (prehnite?) which is surrounded by dark amphibole. Clinopyroxene is negligibly to slightly altered (ca. 2%) to amphibole along grain boundaries. Plagioclase is partly recrystallized (20%).

Vein/Fracture Filling:
Pieces 1A to 1B, 6A to 6B, 9, and 10 are cut by amphibole veinlets, 4-14 cm in length, and 0.3-1.0 mm wide. Piece 9 is also cut by a carbonate vein, 6 cm in length, 0.5 mm wide.

Structures:
Bm>Pf>F
The complete section displays crystal-plastic deformation (stronger in Pieces 3A and 14, weak in the central part of Piece 6). It overprints magmatic breccia in Piece 6 and is cross-cut by late faults over the entire section.

Core Image



176-735B-92R-2

Interval 509: DISSEMINATED OXIDE GABBRO
(see previous section)

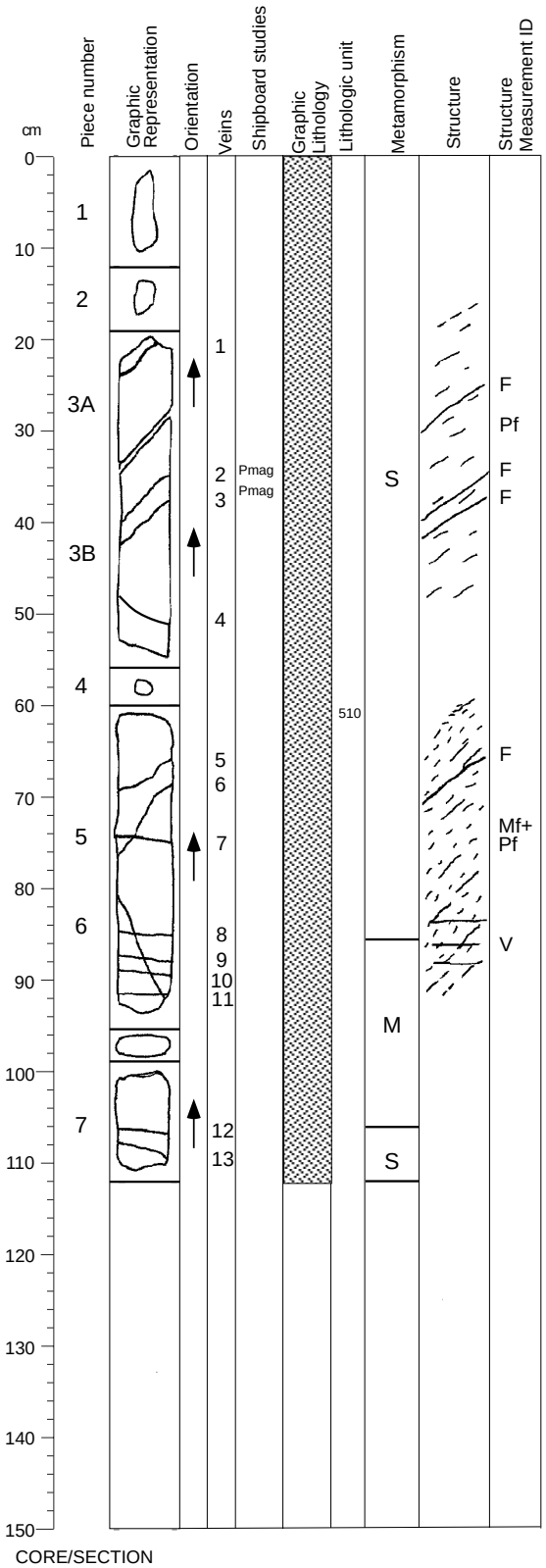
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches.
Green amphibole:
Total Percent: <2
Mode of occurrence: After clinopyroxene, olivine and (plagioclase).
Comments: Near the felsic vein.
Brown amphibole:
Total Percent: trace
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic areas.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine and after clinopyroxenes, and in plagioclase(?).
Comments: As rims around olivine and clinopyroxene and near felsic veins.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.
Prehnite(?):
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: As white reaction rims of olivine at contact with plagioclase.

Background Alteration
Degree of alteration: slight to high (10-45%). Between 20 and 60% of the olivine are replaced by talc and amphibole and weathered to iddingsite. Weathering is most pronounced in Piece 1C where approximately half of the clinopyroxene is replaced by smectite and Fe-oxyhydroxides. Replacement of olivine by talc and amphibole and recrystallization of plagioclase increases (40-50%) near a network of felsic veins developed in Piece 1C. Except for the weathering in Piece 1C, clinopyroxene is slightly altered (5-10%) to amphibole along grain boundaries and cracks. Plagioclase is variably recrystallized to sodic plagioclase (3-40%). Lower part of section (Pieces 2-4) is only slightly altered and not oxidized, except for some oxidation at the top of Piece 3.

Vein/Fracture Filling
Amphibole veins are present in Pieces 1A to 1C, 3A, and 3B that are 6-26 cm in length, 0.3-0.5 mm wide. Piece 1C is also cut by a compound felsic vein that contains amphibole (50%), plagioclase (25%), clinopyroxene (20%), quartz (2%), oxide minerals (3%) and trace apatite.

Structures:
Mf>F; Mf>V
The complete section displays magmatic texture with no or a weak magmatic foliation that is locally overprinted by a few veins and faults.

Core Image



176-735B-93R-1

Interval 510: DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	92	1	137	15	528.37
Lower contact:	93	5	16	2	537.20

Thickness: 8.83 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	50	15	7	coarse	tabular / subhedral
Clinopyroxene	35	20	2	coarse	equant/ subhedral anhedral
Olivine	15	15	5	medium	platy / anhedral
Opaque	1				
Total	101*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Olivine Gabbro
Grain Size: Medium

	Type	Distribution
Structure:	granular	evenly distributed
Fabric:	N/A	N/A

Comments: Oxide abundance increases downwards, 4% at 53-54 cm in 92R-4 and 7-8 cm in 92R-5. Sulfide at 21 cm in 92R-3. Size and mode variable. Medium size at 0-129 cm in 92R-1. Coarser from 0 cm in 92R-2. Olivine and clinopyroxene altered in places. Locally granular/equigranular. Joints filled with felsic material.

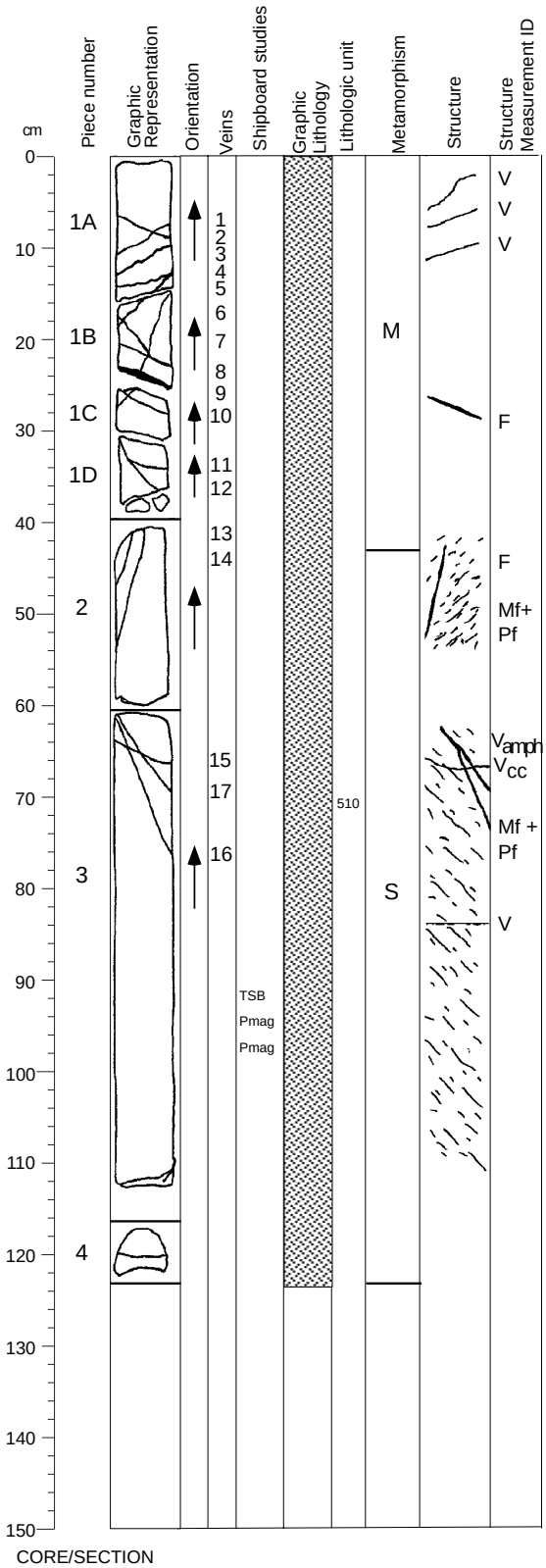
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: In alteration patches.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (10-40%). Between 20 and 60% of the olivine is replaced by talc and amphibole and weathered to iddingsite. Weathering is most pronounced in Pieces 5 to 7 where clinopyroxene is also partly replaced (40%) by smectite and Fe-oxyhydroxides. Elsewhere in the section clinopyroxene is slightly altered (5%) to amphibole along grain boundaries and cracks. The degree of plagioclase recrystallization varies from 3% to 20%.

Vein/Fracture Filling:
Pieces 3A, 3B, 5, and 7 are cut by amphibole veinlets 6-11 cm in length, and 0.5-1.0 mm wide. Carbonate veinlets are present in Pieces 3B, 5, and 7, 6 cm in length, 0.3-0.5 mm wide.

Structures:
Mf>Pf
Magmatic fabric is present over the entire section, weak (1), or moderate (2) in Piece 5. The magmatic fabric is overprinted by weak crystal-plastic deformation over the entire section, except on Pieces 6 and 7, and by later faults.

Core Image



176-735B-93R-2

Interval 510: DISSEMINATED OXIDE OLIVINE GABBRO
(see previous section)

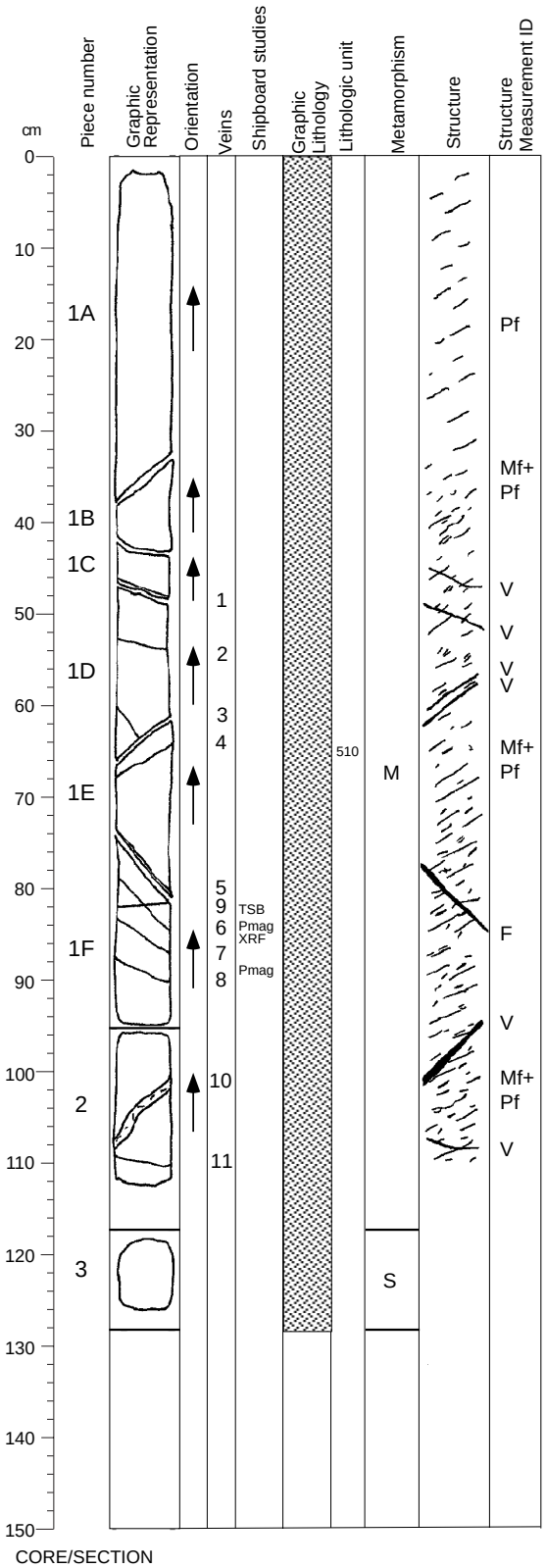
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, in alteration patches.
Green amphibole:
Total Percent: <5
Mode of occurrence: After clinopyroxene, olivine (and plagioclase).
Comments: In patchy altered areas.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Green chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine and after clinopyroxenes, and in plagioclase (?).
Comments: mainly replacing olivine and clinopyroxene near veinlets.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration
Degree of alteration: slight to moderate (10-25%). Between 15 and 40% of the olivine is replaced by talc and amphibole and weathered to iddingsite. In the upper 44 cm of the section, iddingsite alteration of olivine is increased (25%) and clinopyroxene is also partly (25%) weathered to smectite and Fe-oxyhydroxides. Oxidation is rare in the lower part of the section. Clinopyroxene is slightly altered (5%) to amphibole along grain boundaries and cracks. About 5 to 10% of the plagioclase is secondary.

Vein/Fracture Filling:
Amphibole veins are present in Pieces 1A to 1D, 2, 3, and 4. The veins are 6-15 cm in length, and are 0.5-1.0 mm wide. Carbonate veins are present in Pieces 1A to 1B, and 3, 6-15 cm in length, 0.2-0.5 mm wide.

Structures:
Mf>Pf>Vamph>Vcc; Mf>Pf>F
The first part of the section (0-39 cm) displays a weak or no magmatic foliation, overprinted by a few veins and faults. From 39 cm to the bottom, the magmatic fabric is stronger, overprinted by weak crystal-plastic fabric (from 44 cm), and later by amphibole and calcite-bearing veins.

Core Image



176-735B-93R-3

Interval 510: DISSEMINATED OXIDE OLIVINE GABBRO (see Section 176-735B-93R-1)

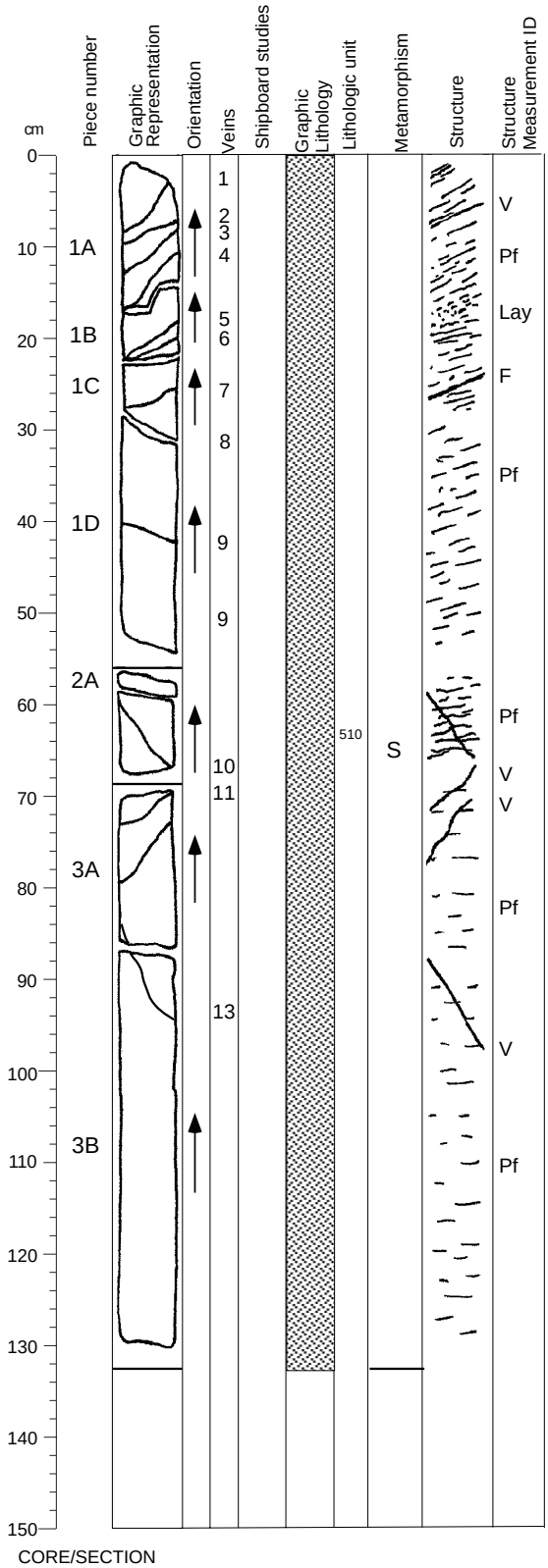
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, more abundant near felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration
Degree of alteration: slight to moderate (10-15%). Olivine is partly replaced (10%) by talc and amphibole. Iddingsitization of olivine occurs throughout the section but is generally low (5-10%). Clinopyroxene is not weathered but slightly altered (5%) to amphibole along grain boundaries and cracks. About 5 to 8% of the plagioclase is secondary.

Vein/Fracture Filling
Carbonate veins are present in Pieces 1C to 1F, and 2, 3-8 cm in length, 0.3-0.5 mm wide. Amphibole veins are present in Pieces 1D and 1F, 6-7 cm in length, 0.2-0.5 mm wide. Piece 2 is also cut by a plagioclase (60%) and amphibole (40%) vein.

Structures:
Mf>Pf>V; Mf>Pf>F
Magmatic foliation is weak at the top of the core and becomes moderate (2) from 35 cm to the bottom. It is overprinted by a weak to moderate crystal-plastic deformation over the entire section, and later cross-cut by veins and faults. This section is continuous with the two previous ones, weak to moderate crystal-plastic deformation overprints the magmatic fabric (both fabrics have the same orientation over the 3 sections).

Core Image



176-735B-93R-4

Interval 510: DISSEMINATED OXIDE OLIVINE GABBRO (see Section 176-735B-93R-1)

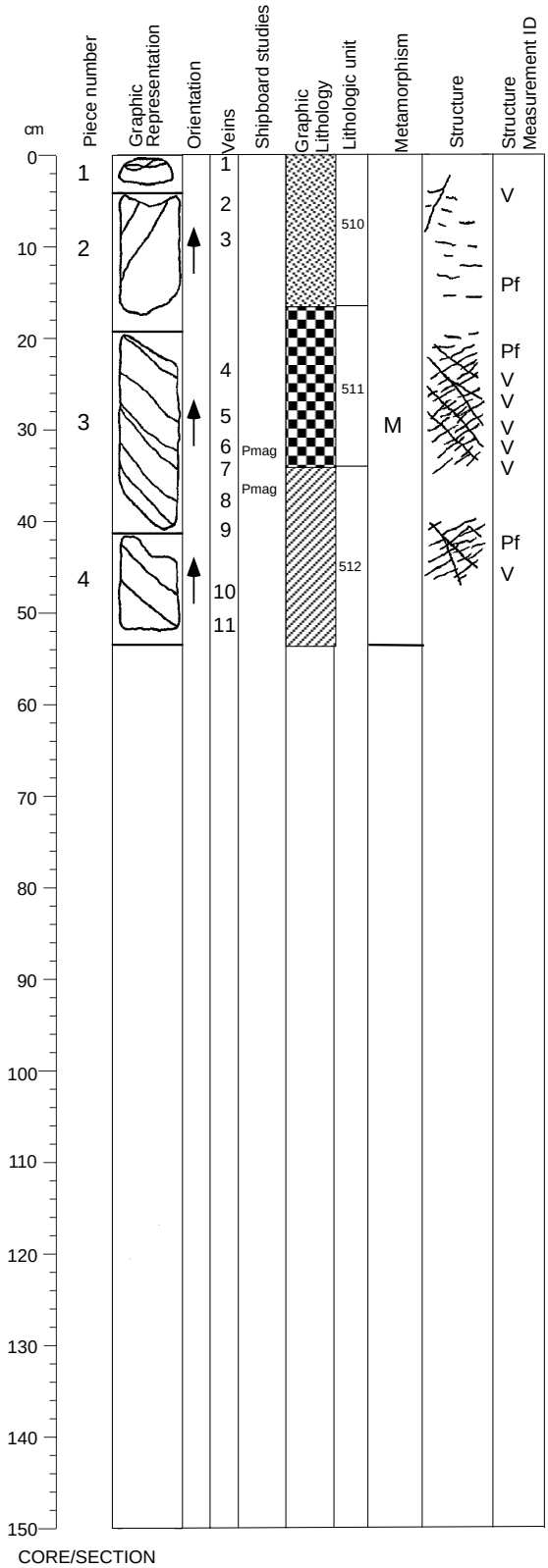
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, more abundant near felsic veins.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near felsic areas.
Talc, oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (ca. 10%). Olivine is partly replaced (10%) by talc and amphibole. Iddingsitization of olivine increases down section but is never higher than 15%. Clinopyroxene is slightly altered (5%) to amphibole along grain boundaries and cracks. About 5% of the plagioclase is recrystallized to secondary plagioclase.

Vein/Fracture Filling:
Piece 1A is cut by a plagioclase (90%) + amphibole (10%) vein, 6 cm in length, 0.2 mm wide. Amphibole veins are present in Pieces 1A to 1D, 3A and 3B, 6-9 cm in length, 0.2-0.8 mm wide. Carbonate veins are present in Pieces 2B and 3A, 7-8 cm in length, 0.2-1.0 mm wide.

Structures:
Mf=Lay (?)>Pf; Mf>Pf>V; Mf>Pf>F
The section displays crystal-plastic deformation (strongly foliated from 0 to 66 cm, weak from 66 cm to bottom). Pre-existing magmatic foliation is not visible, or very weak at the bottom of the section. In Piece 1A, there is a 3-4 cm thick fine grained layer (probably magmatic) with no compositional variation. A few faults and veins cross-cut previous fabrics.

Core Image



176-735B-93R-5

Interval 510: OXIDE OLIVINE GABBRO
(see Section 176-735B-93R-1)

Interval 511: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	93	5	16	2	537.20
Lower contact:	93	5	33	3	537.37

Thickness: 0.17 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	13	3	coarse	tabular / subhedral
Clinopyroxene	35	20	2	coarse	equant/ subhedral anhedral
Olivine	2	4	1	medium	tabular / anhedral
Opaque	5				
Total	97*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Medium

	Type	Distribution
Structure:	granular	evenly distributed
Fabric:	N/A	N/A

Comments: Foliated. Oxide 6% at 17-22 cm; 10% at 30-31 cm, 3% elsewhere. Olivine (possibly orthopyroxene?) entirely and some clinopyroxene oxidized. Joints filled with alteration material.

Interval 512: OPX-BEARING DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	93	5	33	3	?
Lower contact:	94	1	16	1B	536.76

Thickness:: ?

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	60	10	4	coarse	tabular / subhedral
Clinopyroxene	30	15	1	coarse	tabular / subhedral
Olivine	4	6	2	medium	amoeboidal/ anhedral
Opaques	1				
Total	95*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro.

Grain Size: Medium

	Type	Distributed
Structure:	granular	N/A
Fabric:	N/A	N/A

Comments: Joints/fractures abundant, some filled with carbonate. Olivine and clinopyroxene altered in places.

Continued next page

Core Image

176-735B-93R-5 (cont'd)

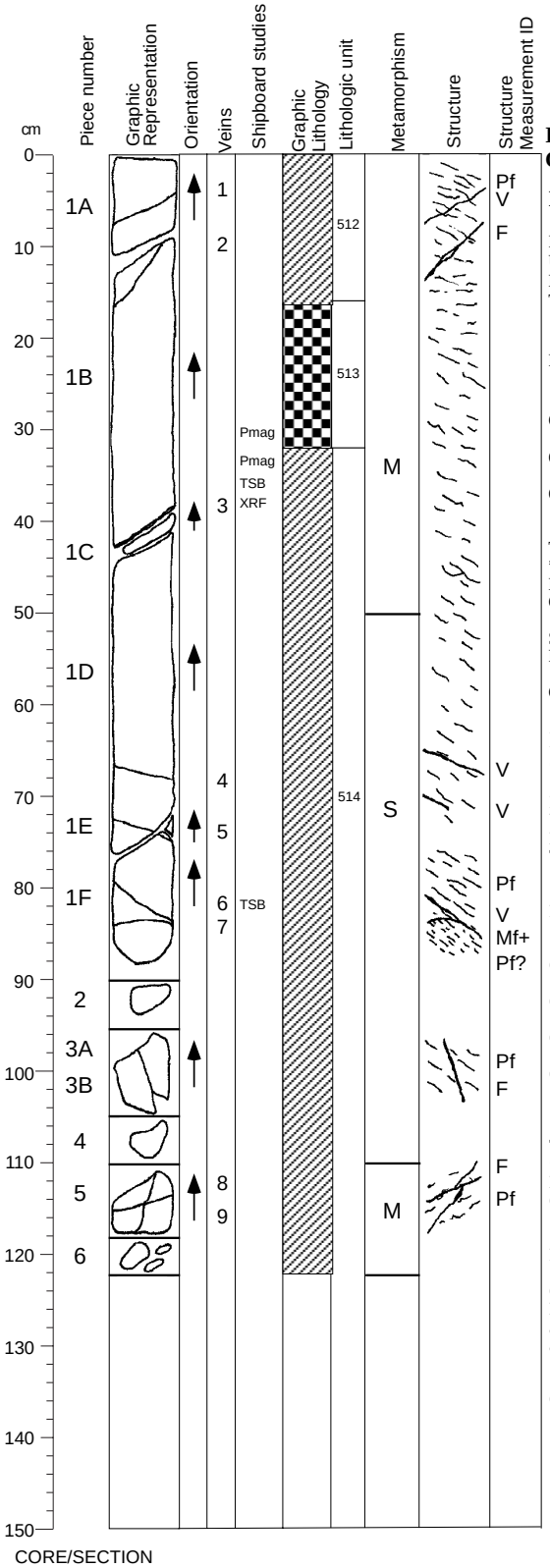
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <2
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near foliated areas.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc, oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <10
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic
assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <2
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: moderate (ca. 30%). Olivine is partly replaced by talc and amphibole. Replacement of olivine by iddingsite is high (60%) along carbonate veins. Clinopyroxene is slightly altered (5%) to amphibole along grain boundaries and cracks. Along carbonate veins clinopyroxene is weathered to smectite and Fe-oxyhydroxides (10%). About 5% of the plagioclase is recrystallized to secondary plagioclase.

Vein/Fracture Filling:
Carbonate veinlets are present in Pieces 1, 2, 3, and 4, 2-9 cm in length, 0.2-1.5 mm wide.

Structures:
Mf>Pf>V
Crystal-plastic deformation is seen over the entire section (weak from 0 to 27; porphyroclastic from 27 to the bottom). Pre-existing magmatic foliation is absent or weak.
Several veins cross-cut the previous fabrics.

Core Image



176-735B-94R-1

Interval 512: OPX-BEARING DISSEMINATED OXIDE GABBRO (see previous section)

Interval 513: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	94	1	16	1B	536.76
Lower contact:	94	1	32	1B	536.92

Thickness: 0.16 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	65	18	5	coarse	tabular / subhedral anhedral
Clinopyroxene	40	20	1	coarse	tabular / subhedral
Olivine	3	10	1	medium	amoeboidal/ anhedral
Opaques	2				interstitial lenses/ disseminated
Total	110*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Medium

	Type	Distribution
Structure:	granular	variable
Fabric:	N/A	N/A

Comments: Oxide 5% at 21-26 cm, 1% elsewhere. Oxide and olivine altered.

Interval 514: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	94	1	32	1B	536.92
Lower contact:	94	3	35	3	539.54

Thickness: 2.62 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	60	20	3	coarse	tabular / subhedral anhedral
Clinopyroxene	35	15	1	coarse	tabular / subhedral
Olivine	5	7	1	medium	amoeboidal/ anhedral
Orthopyroxene	3	4	1	medium	elongate/ anhedral
Opaque	1				interstitial lenses/ disseminated
Total	104*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro.
Grain Size: Medium

	Type	Distribution
Structure:	granular	uniform
Fabric:	N/A	N/A

Comments: Locally equigranular/subophitic/ophitic. Locally highly fractured. Mode and grain size variable. Oxide 0.5% at 26-29 cm in 94R-2, 1% at 20-24 cm and 111 in 94R-2 and 2-7 in 94R-3, 2% at 33-122 cm in 94R-1. Olivine, oxide, and some clinopyroxene altered.

Continued next page

Core Image

176-735B-94R-1 (cont'd)

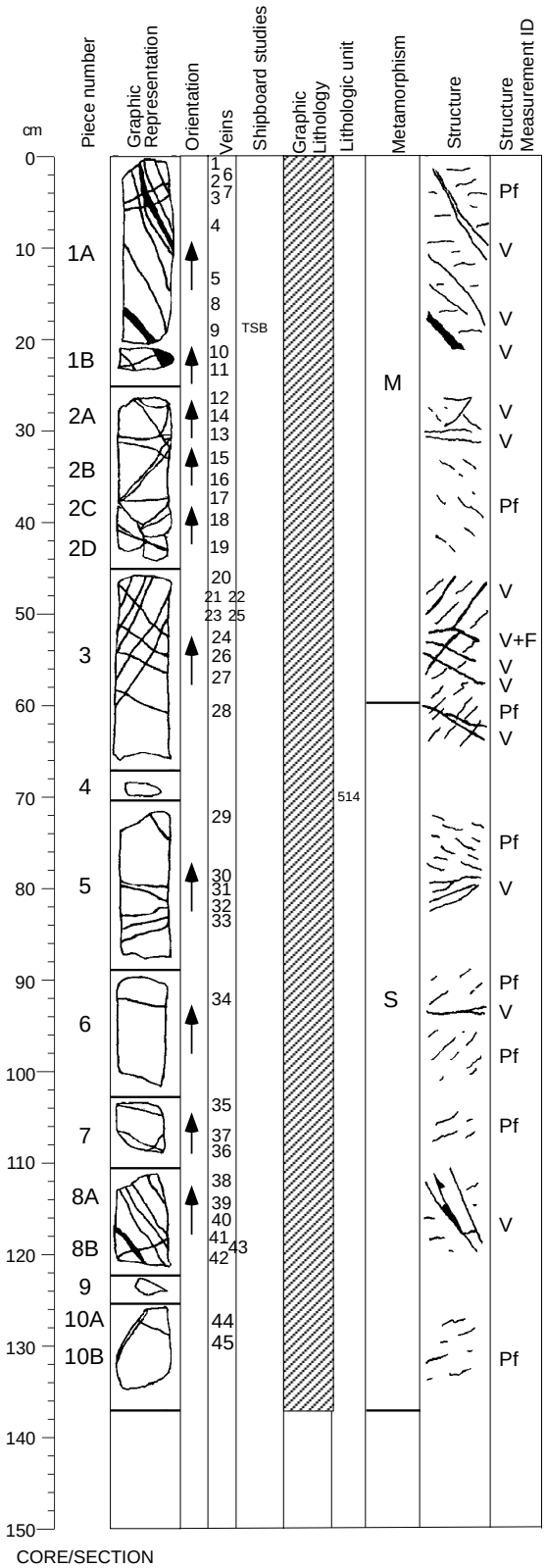
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, more abundant near felsic veins.
Brown amphibole:
Total Percent: tr.
Mode of occurrence: After olivine?
Comments: Isolated crystals associated with olivine.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (10-25%). Olivine is partly replaced by talc and amphibole (25-30%). Olivine is partly iddingsitized (30%) along carbonate veins in Piece 1B. Clinopyroxene is slightly to moderately altered (5-15%) to amphibole along grain boundaries and cracks. Along carbonate veins clinopyroxene is weathered to smectite and Fe-oxyhydroxides (10%). About 5% of the plagioclase is recrystallized to secondary plagioclase.

Vein/Fracture Filling:
Calcite veins are present in Pieces 1A, 1B, 1D, 1F, and 5 that are 6-7 cm in length, 0.2-1.0 mm wide. Piece 1C contains a smectite (90%)+ calcite (10%) vein, 6 cm in length and 0.6 mm wide. Piece 5 is cut by an amphibole vein 7 cm long, and 0.5 mm wide.

Structures:
Mf?//Ic>Pf>V; Pf>F
The complete section displays weak to moderate crystal-plastic foliation, except for the bottom of Piece 1F (84-88 cm), which consists of a zone of fine-grained material. The igneous contact separating this zone from the upper part of the section is parallel to the crystal-plastic foliation. The fine-grained gabbro displays a well-defined foliation which may be either magmatic or plastic, or both. From Piece 2 to the bottom of the section, crystal-plastic foliation is present. All early fabrics are cross-cut by several veins and faults.

Core Image



176-735B-94R-2

Interval 514: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO

Alteration: **(see previous section)**

Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, more abundant near veins.

Green amphibole:
Total Percent: <1
Mode of occurrence: After olivine.
Comments: Near veins.

Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, more abundant near veins.

Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts and clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.

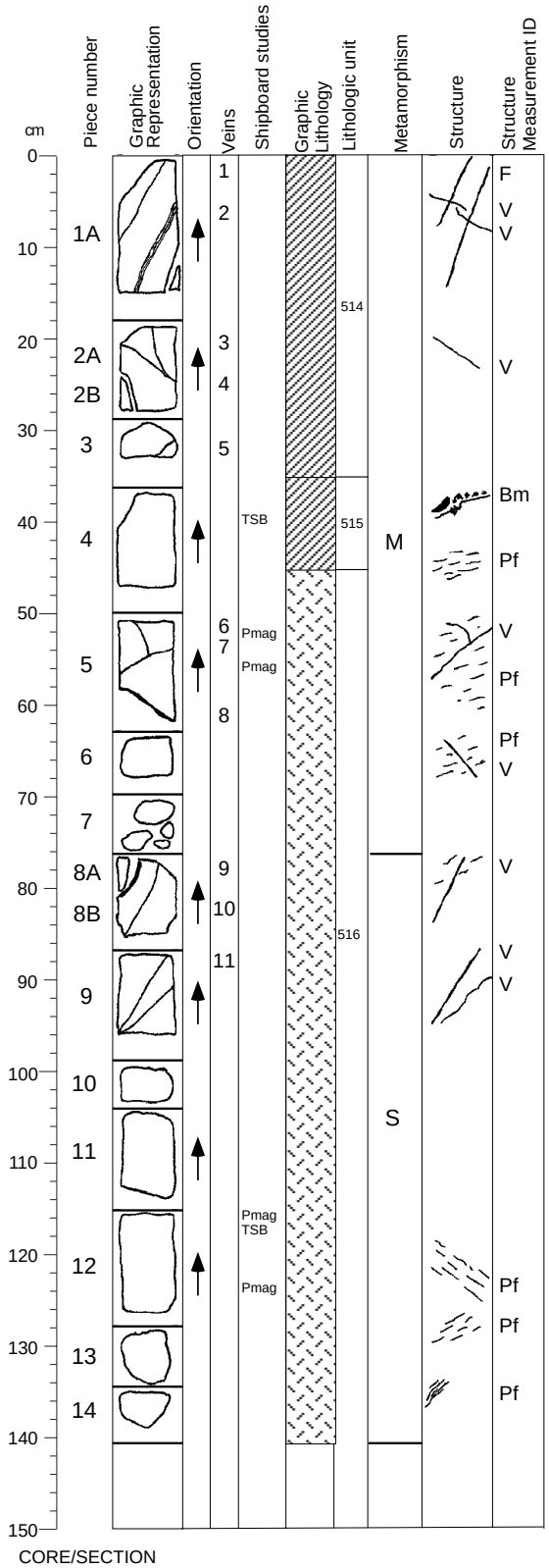
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (10-15%). Olivine is partly replaced by talc and amphibole (ca. 15%). In Pieces 1-3 olivine is partly iddingsitized (15%) along cracks in the core. Some olivine grains are iddingsitized in the core but show a rim of dark amphibole. Clinopyroxene is also slightly weathered to smectite and Fe-oxyhydroxides (ca. 10%). Away from the oxidized areas, clinopyroxene shows slight alteration (5-10%) to amphibole along grain boundaries and cracks. Along carbonate veins clinopyroxene is weathered to smectite and Fe-oxyhydroxides (10%). Secondary plagioclase makes up approximately 5 to 10% of the plagioclase.

Vein/Fracture Filling:
Amphibole veins are present in Pieces 1A, 1B, 2A, 2B, 2C, 2D, 3, 5,7, 8A, 10A, and 10B. The veins are 3-14 cm in length and 0.3-1.5 mm in width. Pieces 1A and 1B are cut by clinopyroxene (50%) + amphibole (50%) veinlets, 10-11 cm in length, and 0.5-1.0 mm wide. Carbonate veins are present in Pieces 1A, 1B, 2A, 2B, 2C, 3, 5, 6, 7, 8A, 8B, 10A, and 10B, 4-7 cm in length, 0.2-1.0 mm wide. Clinopyroxene veins are present in Piece 8A, 8-9 cm in length, 1.0 mm wide.

Structures:
Pf>V>F; Pf>F; Pf>V
The complete section displays weak to moderate crystal-plastic foliation, overprinted by numerous veins and a few faults.

Core Image



176-735B-94R-3

Interval 514: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO (see Section 176-735B-94R-1)

Interval 515: MELANOCRATIC OPX-BEARING DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	94	3	35	3	539.54
Lower contact:	94	3	45	4	539.64

Thickness: 0.10 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	30	50	6	pegmatitic	tabular/ subhedral anhedral
Clinopyroxene	60	50	5	pegmatitic	tabular/ subhedral
Olivine	1	N/A	N/A	N/A	N/A
Orthopyroxene	1	4	1	medium	elongate/ anhedral
Opaques	1				angular aggregates/ subhedral
Total	93*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro.

Grain Size: Pegmatitic

	Type	Distribution
Structure:	granular	N/A
Fabric	N/A	N/A

Comments: Pegmatitic clinopyroxene with interstitial plagioclase.

Interval 516: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	94	3	45	4	539.64
Lower contact:	95	1	15	3	544.75

Thickness: 5.11 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	10	3	medium	tabular/ anhedral subhedral
Clinopyroxene	35	30	1	medium	tabular/ subhedral
Olivine	4	2	1	fine	amoeboidal/ anhedral
Opaque	0.5				angular aggregates/ disseminated
Total	94.5*				

*Major phases estimated to ± 5%
Modal name (calculated): Gabbro.
Grain Size: Medium

	Type	Distribution
Structure:	granular	variable
Fabric:	N/A	N/A

Comments: Locally subophitic/ophitic. Olivine and some clinopyroxene altered in lower half of interval. Oxide 1% at 108-112 cm in 94R-3. Sulfide abundant at 111 and 117 cm in 94R-3.

Continued next page

Core Image

176-735B-94R-3 (cont'd)

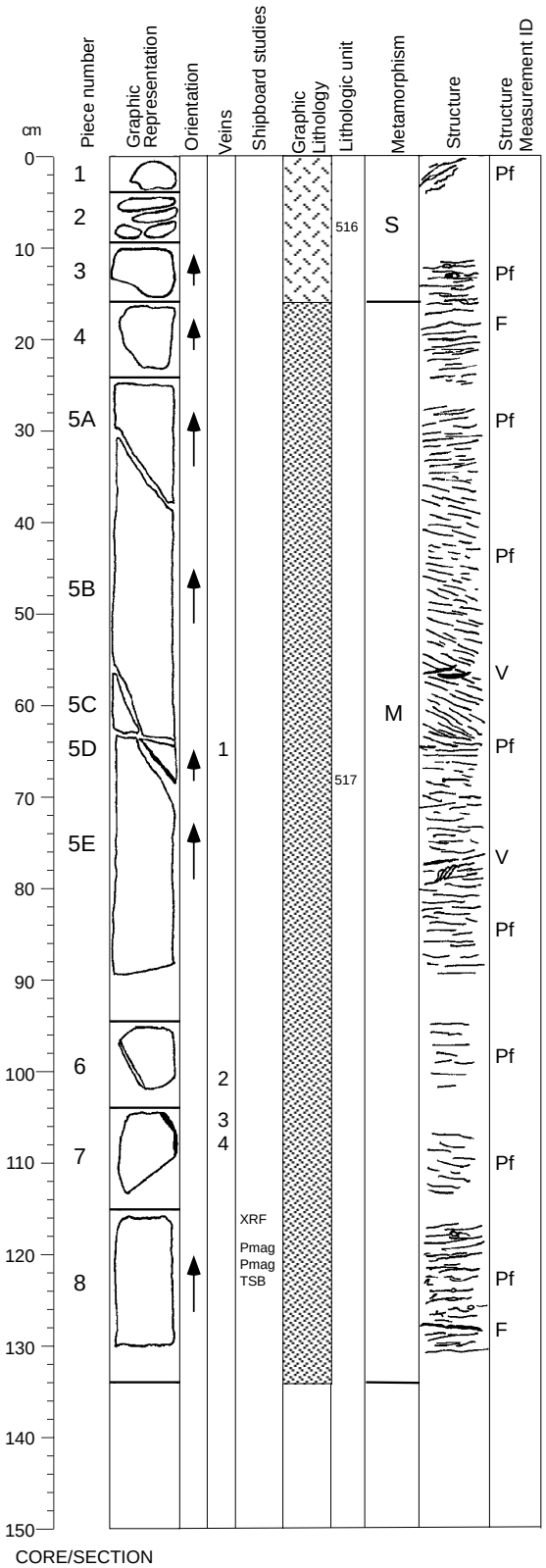
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After olivine.
Comments: Disseminated in the rock.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: In amphiboles rims around olivine.
Oxyhydroxides and smectites:
Total Percent: <3
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (10-20%). Olivine is partly replaced by talc and amphibole (15%). Olivine is partly weathered (20%) along cracks in Piece 5 to 7; here clinopyroxene is also slightly weathered (up to 10%). Clinopyroxene is replaced by amphibole along grain boundaries (10%). Plagioclase is replaced by secondary plagioclase (5-10%).

Vein/Fracture Filling:
Amphibole veinlets are present in Pieces 1, 3, and 8 that are 2.0-10 cm in length, and 0.5-1.0 mm wide. Piece 1 is cut by a clinopyroxene vein that is 12 cm in length and 1.0 mm wide. Carbonate veins are present in Pieces 2, 5, 6, 7, 8, and 94-7 cm in length and 0.2-0.5 mm wide.

Structures:
Mf>F; Mf>V, Mf>Bm; Mf>Pf>V
The uppermost part of the section has a magmatic texture (magmatic foliation absent or weak), from 0 to 44 cm. A zone of fine-grained material is present in Pieces 1 and 2 (from 8 to 22 cm), delimited by smooth contacts, subparallel to a possible weak magmatic foliation (transition from magmatic to crystal-plastic deformation?). The top of Piece 8 (37-40 cm) displays a narrow zone of magmatic breccia. From 44 cm (Piece 4) to 82 cm (Piece 8B), the magmatic texture is overprinted by a weak crystal-plastic foliation. A similar plastic foliation is observed at the bottom of the section (Pieces 12, 13 and 14). The previous fabrics are cut by a few veins and faults.

Core Image



176-735B-95R-1

Interval 516: GABBRO (see previous section)

Interval 517: DISSEMINATED OXIDE OLIVINE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	95	1	15	3	544.75
Lower contact:	95	2	30	1A	546.24

Thickness: 1.49 m

		Grain Size (mm):			
	Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	20	N/A	coarse	tabular/ deformed anhedral
Clinopyroxene	30	20	3	coarse	tabular/ subhedral
Olivine	5	3	1	medium	amoeboidal/ anhedral deformed interstitial lenses/ concordant seams
Opaques	1				
Total	91*				

*Major phases estimated to ± 5%

Modal name (calculated): Disseminated FeTi Oxide Olivine Gabbro

Grain Size: Coarse

	Type	Distribution
Texture:	granular	variable
Fabric:	layering	uniform

Comments: Foliated clinopyroxene-rich interval. Clinopyroxene grain size and mode variable, localy porphyroclastic. Oxide 2% at 42-55 cm,109-112 cm, and 129-130 cm in 95R-1.

Alteration:

Dark green amphibole:
- Total Percent: <10
- Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
- Comments: As alteration rims and elongated along foliation.

Secondary plagioclase:
- Total Percent: <5
- Mode of occurrence: Replacing primary plagioclase.
- Comments: Irregularly distributed and in the foliation.

Talc and oxides:
- Total Percent: <1
- Mode of occurrence: Replacing olivine.
- Comments: As mixtures in the crystal crack network and as pseudomorphs.

Chlorite:
- Total Percent: <1
- Mode of occurrence: Replacing olivine.
- Comments: In amphiboles rims around olivine.

Oxyhydroxides and smectites:
- Total Percent: <2
- Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
- Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins and foliation.

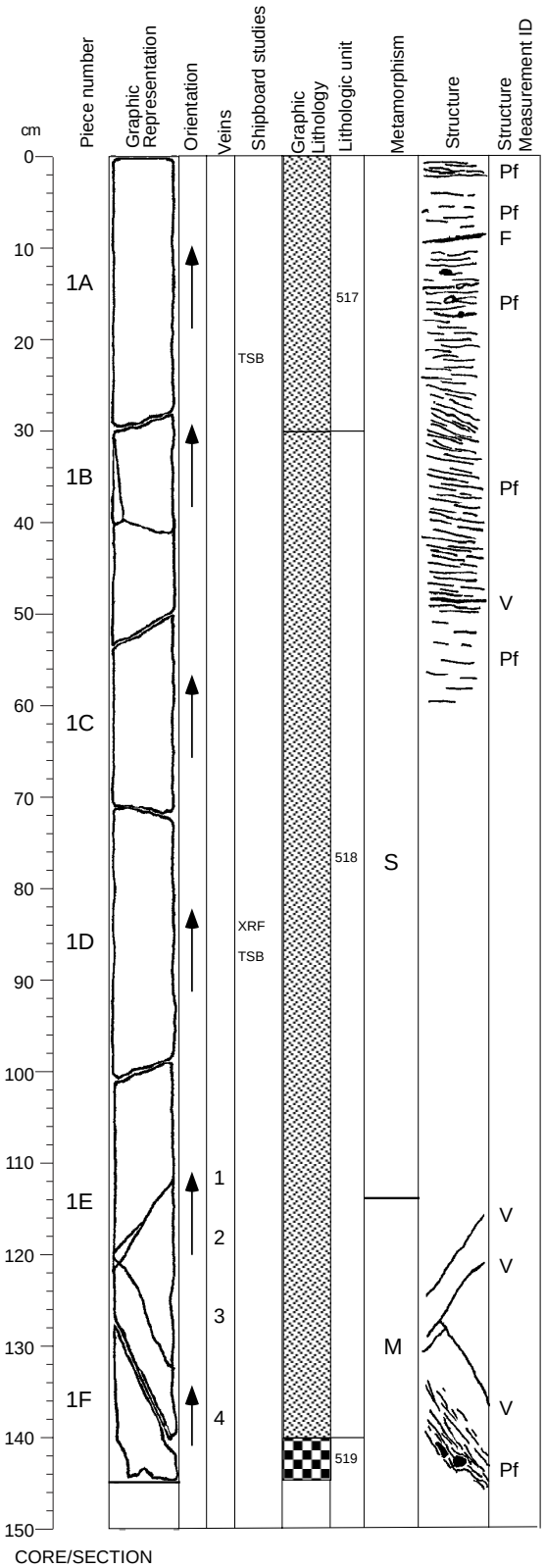
Carbonates:
- Total Percent: <1
- Mode of occurrence: In veins and replacing olivine.
- Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (5-15%). Pieces 1 to 3 are slightly altered, with olivine partly replaced by talc and amphibole (5%). Rare amphibole replacing clinopyroxene (2%). About 5% of the plagioclase is secondary. Pieces 4 to 8 are more altered (15%). Olivine and clinopyroxene is partly weathered (up to 20%) along cracks. Deformed olivine is rimmed by dark amphibole and weathered in the center. Plagioclase is replaced by secondary plagioclase (10%).

Vein/Fracture Filling:
Pieces 5D, 6, and 7 are cut by carbonate veins 4-6 cm in length and 0.3-0.5 mm in width. Piece 7 is also cut by a smectite vein 2 cm in length and 1.5 mm wide.

Structures:
Pf>V; Pf>F
A strong, high temperature, porphyroclastic to mylonitic foliation is present over the entire section. Where present, shear criteria are ambiguous. A possible explanation for this is that the lineation (if any) is nearly perpendicular to the face of the working half of the core (porphyroclast systems are more abundant on the sides, although still ambiguous). It is more likely that the fabric is dominantly an S-tectonite. The mylonite is cut by a few veins and faults.

Core Image



176-735B-95R-2

Interval 517: DISSEMINATED OXIDE OLIVINE GABBRO (see previous section)

Interval 518: OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	95	2	30	1A	546.24
Lower contact:	95	2	140	1E	547.34

Thickness: 1.10 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	10	1	medium	tabular/ subhedral anhedral
Clinopyroxene	40	10	0.5	medium	equant/ subhedral
Olivine	5	2	1	medium	equant/ anhedral
Opaques	2				interstitial lenses/ concordant seams

Total 102*
*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Fine

	Type	Distribution
Texture:	granular	uniform
Fabric:	N/A	N/A

Comments: Locally intergranular/equigranular. Olivine coarser grained at base. Sulfide abundant at 69 cm in 95R-2. Patchy metamorphic greenish assemblages in upper half of interval. Veins/fractures present in much of the interval.

Interval 519: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	95	2	140	1E	547.34
Lower contact:	95	3	7	1B	547.46

Thickness: 0.12 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	N/A	N/A	N/A	tabular deformed anhedral
Clinopyroxene	35	8	N/A	medium	equant/ anhedral deformed
Olivine	1	2	1	fine	amoeboidal/ anhedral deformed
Opaques	5				interstitial lenses/ concordant seams

Total 96*
*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Coarse

	Type	Distribution
Structure:	granular	N/A
Fabric:	brecciated	N/A

Comments: Sheared/brecciated zone filled with felsic veinlets. Pegmatitic clinopyroxene present at 143 cm in 95R-2. Oxide 3% at 142-143 cm in 95R-2, 0-5 cm in 95R-3, and 10% at 140-142 cm in 95R-2.

Continued next page

Core Image

176-735B-95R-2 (cont'd)

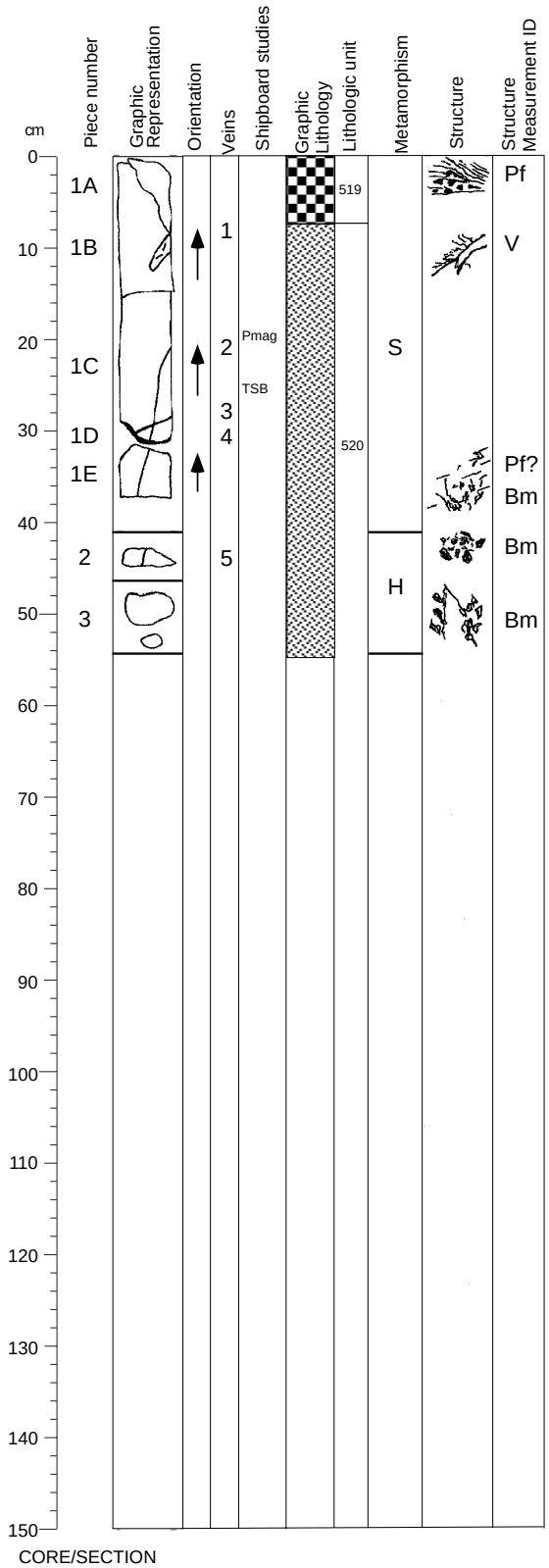
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: In amphiboles rims around olivine.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (5-30%). Olivine is replaced by talc and amphibole to a variable extent and weathered to clay and oxide minerals (10-80%). Amphibole replacing clinopyroxene (5-20%). Plagioclase is recrystallized (2-20%). Oxidation is highest in the upper 3 cm of the section, which is similar to the lowermost part of the previous section. In Pieces 1E to 1G, subvertical dark stripes are developed in which replacement of olivine and clinopyroxene is increased.

Vein/Fracture Filling:
Piece 1E is cut by 4 carbonate veins that are 3-16 cm in length and 0.2-0.5 mm wide.

Structures:
Pf>F; Pf>V; Mf>V; Mf>Pf
This section contains the continuation of the mylonitic zone seen in the previous section, from the top to 50 cm. Downward, the crystal-plastic foliation rapidly decreases in intensity and disappears at 60 cm (Piece 1C). From there, the section displays an igneous texture, with no or a weak magmatic foliation, except for Piece 1F, at the bottom, where the magmatic texture is overprinted by a mylonitic crystal-plastic foliation. A few veins and faults cross-cut the previous fabrics.

Core Image



176-735B-95R-3

Interval 519: OXIDE GABBRO
(see previous section)

Interval 520: DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	95	3	7	1B	547.46
Lower contact:	96	1	8	2	548.38

Thickness: 0.92 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	60	10	2	medium	tabular/ subhedral anhedral
Clinopyroxene	35	15	2	coarse	tabular/ subhedral
Olivine	6	7	2	medium	amoeboidal/ anhedral
Opaques	1				amoeboidal aggregates/ disseminated
Total	98*				

*Major phases estimated to ± 5%

Modal name (calculated): Disseminated FeTi Oxide Olivine Gabbro.

Grain Size: Medium

	Type	Distribution
Texture:	granular	evenly distributed
Fabric	N/A	N/A

Comments: Locally deformed. Orthopyroxene present in Piece 1C (95R-3), heavily altered. Networking veinlets at 34-50 cm in 95R-3. Some olivine oxidized. A pocket of veins at 11 cm in 95R-3.

Alteration:

Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in the matrix of cataclastic areas related to felsic impregnations.

Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and in the matrix of cataclastic areas related to felsic impregnations.

Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: In amphiboles rims around olivine and in the matrix of cataclastic areas related to felsic impregnations.

Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.

Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Continued next page

Core Image

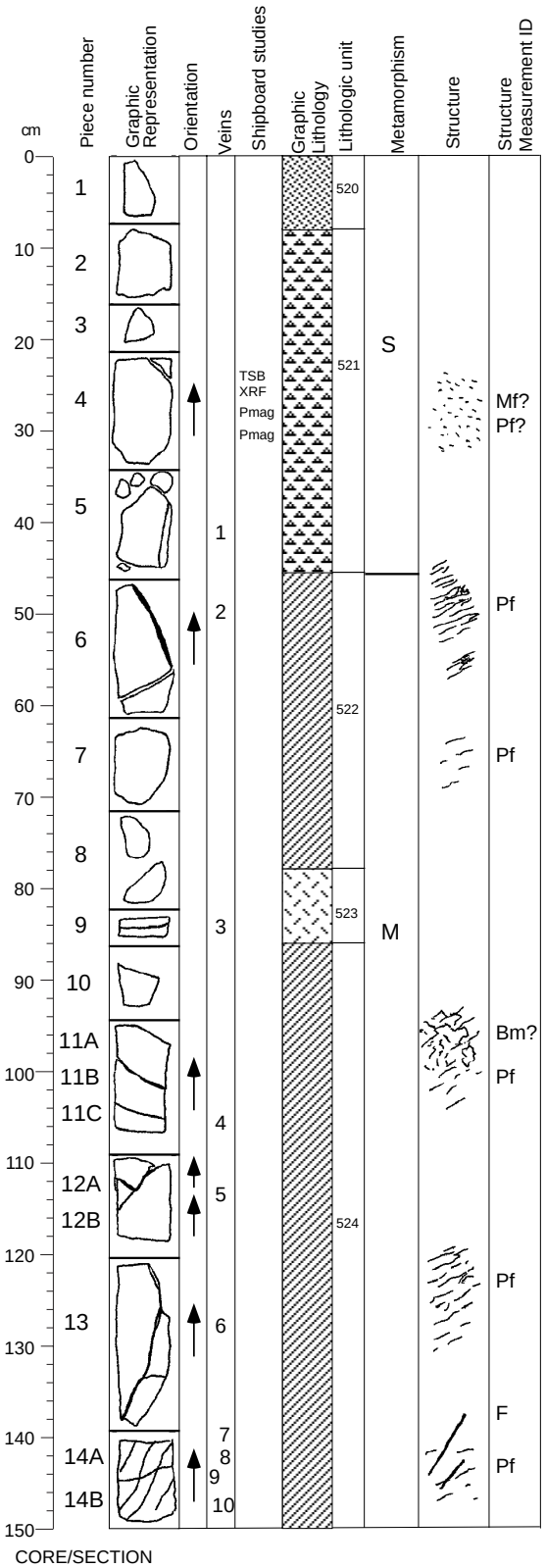
176-735B-95R-3b (cont'd)

Background Alteration:
Degree of alteration: slight to high (10-50%). Piece 1 is slightly altered (10%). Olivine is partly replaced by talc and amphibole and slightly oxidized (30%). Rare amphibole replaces clinopyroxene (5%). About 10% of the plagioclase is secondary. Pieces 2 and 3 are highly altered (50%). Olivine is completely replaced by talc and amphibole and possibly chlorite. Plagioclase is replaced by secondary plagioclase (30%), particularly near a network of felsic material.

Vein/Fracture Filling:
Piece 1B is cut by a compound felsic vein 3 cm in length and 10 mm wide that contains plagioclase (80%), amphibole (5%), and quartz (15%). The vein becomes progressively sheared. Amphibole veins are present in Pieces 1C, 1D and 2 that are 3-15 cm in length and 0.3-0.5 mm wide. Piece 1D also contains a carbonate vein 6 cm in length and 0.5 mm wide.

Structures:
Mf>Bm≥Pf; Mf>V>Bm?
The section begins with a narrow zone (4-5 cm, Pieces 1A and B) with a porphyroclastic foliation overprinting a magmatic breccia. Downward, the section displays a magmatic texture, probably overprinted by a weak crystal-plastic foliation in Piece 1E. Piece 1B contains a vein, from which liquid appears to have infiltrated the host rock (series of thin veinlets, about 2 cm long, perpendicular to the vein contact). This may be interpreted as incipient brecciation. Three small brecciated zones overprint the magmatic texture in Pieces 1E, 2 and 3.

Core Image



176-735B-96R-1

Interval 520: DISSEMINATED OXIDE OLIVINE GABBRO (see previous section)

Interval 521: LEUCOCRATIC MICROGABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	96	1	8	2	548.38
Lower contact:	96	1	45	5	548.75

Thickness: 0.37 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	70	1	0.3	fine	tabular/ anhedral subhedral
Clinopyroxene	35	1	N/A	fine	N/A
Olivine	1	N/A	N/A	N/A	N/A
Opaque	0.5				amoeboidal aggregates/ disseminated
Total	106.5*				

*Major phases estimated to ± 5%
Modal name (calculated): Gabbro.
Grain Size: Fine

	Type	Distribution
Texture:	equigranular	uniform
Fabric:	N/A	N/A

Comments: Fine-grained microgabbro.

Interval 522: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	96	1	45	5	548.75
Lower contact:	96	1	77	8	549.07

Thickness: 0.32 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	10	3	medium	tabular/ anhedral subhedral
Clinopyroxene	35	10	1	coarse	tabular/ subhedral
Olivine	2	3	1	medium	amoeboidal/ anhedral
Orthopyroxene	3	4	1	medium	elongate/ anhedral
Opaque	2				interstitial lenses/ disseminated
Total	97*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Medium

	Type	Distribution
Texture:	granular	variable
Fabric	N/A	N/A

Comments: Locally foliated/deformed with clinopyroxene porphyroclasts (at top). Olivine and orthopyroxene altered.

Continued next page

Core Image

176-735B-96R-1 (cont'd)

Interval 523: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	96	1	77	8	549.07
Lower contact:	96	1	85	9	549.15

Thickness: 0.08 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase		65	1	0.3	fine tabular / anhedral subhedral
Clinopyroxene	35	1	N/A	fine	N/A
Olivine	2	0.5	0.5	fine	N/A
Opaque	0.5				amoeboidal aggregates/ disseminated
Total	102.5*				

*Major phases estimated to ± 5%
Modal name (calculated): Gabbro.
Grain Size: Fine

	Type	Distribution
Texture:	equigranular	uniform
Fabric	N/A	N/A

Comments: Several small pieces exactly like Interval 521.

Interval 524: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	96	1	85	9	549.15
Lower contact:	96	2	96	7	550.76

Thickness: 1.61 m

	Mode	Grain Size: Max	Min	Size	Shape/Habit
Plagioclase	55	4	1	medium	tabular/ anhedral subhedral
Clinopyroxene	40	10	1	medium	equant/ subhedral anhedral
Olivine	2	2	0.5	fine	amoeboidal/ anhedral
Orthopyroxene	2	4	1	medium	elongate/ anhedral subhedral
Opaque	3				amoeboidal aggregates/ disseminated
Total	102*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro
Grain Size: Medium

	Type	Distribution
Texture:	granular	uniform
Fabric	N/A	N/A

Comments: Locally equigranular/subophitic. Variable grain size. Finer grained toward base at 73-92 cm in 96R-2. Oxide stringer in Piece 7 (96R-2). Olivine and orthopyroxene oxidized/altered.

Continued next page

Core Image

176-735B-96R-1 (cont'd)

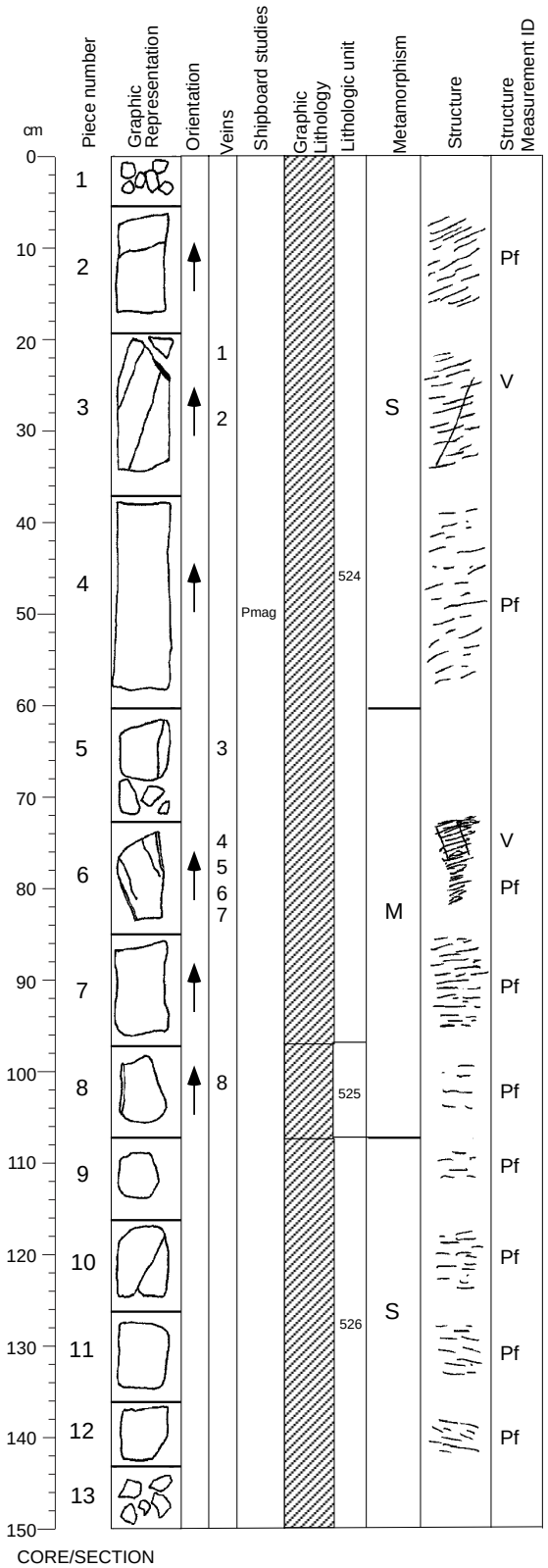
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in foliated areas related to felsic impregnations.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and in foliated areas related to felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: In amphiboles rims around olivine and in foliated areas related to felsic impregnations.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (5-20%). Alteration is slight in Pieces 1 to 5, where 10% of the olivine is replaced by amphibole and talc, and plagioclase and clinopyroxene show minor replacement by sodic plagioclase and amphibole. In Pieces 6 to 14 olivine is partly altered to talc and amphibole and is weathered to variable extents (on average 50% of olivine alteration). Around 15 % of clinopyroxene is replaced by amphibole, and about the same amount of plagioclase is secondary.

Vein/Fracture Filling:
Carbonate veins are present in Pieces 5, 12, and 13 that are 4-17 cm in length, and 0.4-0.6 mm wide. Pieces 6, 9, 11b, 14A, and 14B contain amphibole veins that are 4-9 cm in length and 0.2-0.5 mm wide.

Structures:
Mf>Pf; Bm?>Pf; Pf>F
The stratigraphy and orientation of the pieces of Core 96R are uncertain. The description is done for distinct intervals. Piece 4 displays a fine-grained foliated gabbro; the foliation is likely to be magmatic, overprinted by some crystal-plastic deformation. Piece 6 displays a moderate to strong crystal-plastic shear zone. Piece 7 displays a moderate high-temperature crystal-plastic foliation. Pieces 11A and B display a weak crystal-plastic fabric, probably overprinting a magmatic breccia. Pieces 13 and 14 display a moderate crystal-plastic foliation, overprinted by a few faults.

Core Image



176-735B-96R-2

Interval 524: OPX-BEARING OXIDE GABBRO
(see previous section)

Interval 525: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	96	2	96	7	550.76
Lower contact:	96	2	106	8	550.86

Thickness: 0.10 m

	Grain Size (mm): Mode	Max	Min	Size	Shap/Habit
Plagioclase	50	15	5	coarse	tabular/ anhedral subhedral
Clinopyroxene	40	25	3	coarse	tabular/ subhedral
Olivine	1	3	1	medium	amoeboidal anhedral
Orthopyroxene	1	2	1	medium	equant/ anhedral
Opaques	6				interstitial lenses/ matrix
Total	98*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro
Grain Size: Coarse

	Type	Distribution
Texture:	granular	N/A
Fabric	N/A	N/A

Comments: Locally subophitic. Variable grain size. Olivine slightly oxidized.

Interval 526: OPX-BEARING DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	96	2	106	8	550.86
Lower contact:	97	3	94	2E	559.76

Thickness: 8.90 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	15	5	coarse	tabular/ subhedral euhedral
Clinopyroxene	35	15	3	coarse	tabular/ subhedral
Olivine	1	1	0.5	fine	amoeboidal/ anhedral
Orthopyroxene	2	3	1	medium	equant/ anhedral
Opaques	1				amoeboidal aggregates/ disseminated
Total	94*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro
Grain Size: Coarse

	Type	Distribution
Texture:	granular	uniform
Fabric	N/A	N/A

Comments: Locally subophitic/ophitic. Very coarse near top, at 110 cm in 97R-1 and 27 cm in 97R-2. Locally foliated/mylonitic at 1-6 cm in 97R-1, 48 cm and 115 cm in 97R2, and 72 cm in in 97R-3. Zone of equigranular microgabbro at 50-58 cm in in 97R-2. Olivine and orthopyroxene altered (hematitic rims?).

Continued next page

Core Image

176-735B-96R-2 (cont'd)

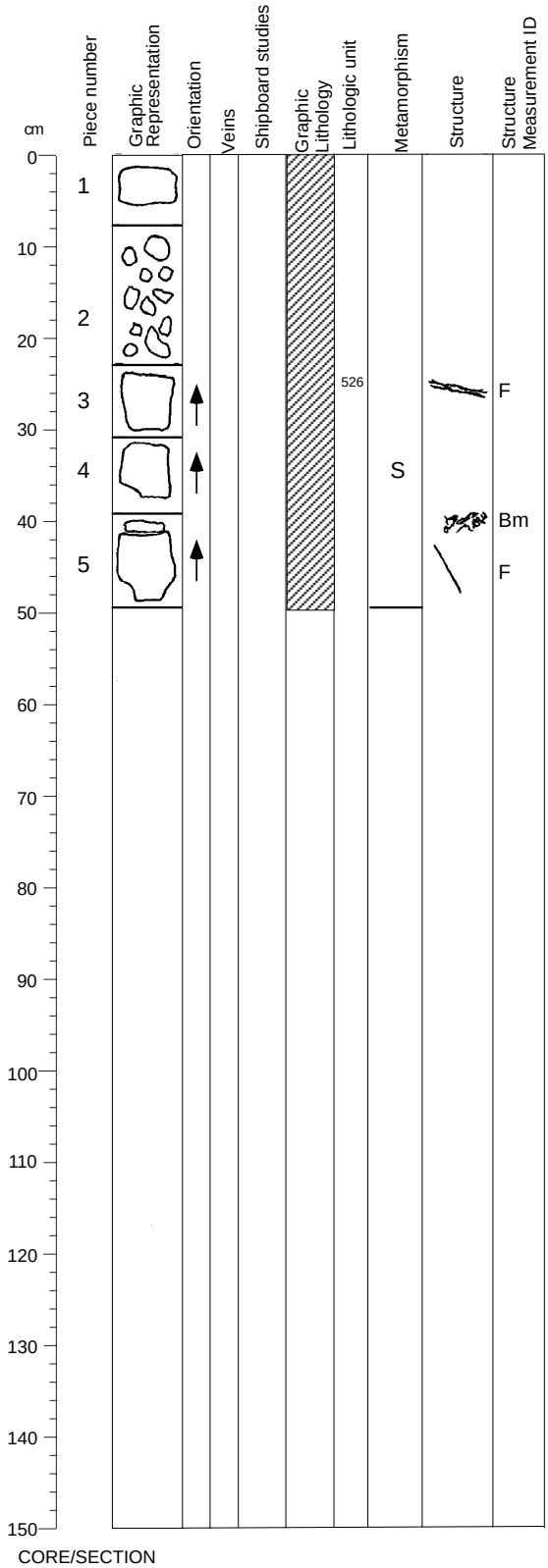
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in foliated areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and in foliated areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: In amphiboles rims around olivine and in foliated areas.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (5-15%). Between 15 and 20% of the olivine is replaced by amphibole and talc. Slight oxidation of olivine along cracks in the core. Around 5% of plagioclase and clinopyroxene are altered. Alteration of these phases is higher (up to 30%), where the rock is strongly deformed (Pieces 5 to 8).

Vein/Fracture Filling:
Amphibole veins are present in Pieces 3 and 6, 64 cm in length and 0.2-1.0 mm wide. Carbonate veins are present in Pieces 3, 5, 6, and 8 that are 5-10 cm in length and 0.2-0.6 mm wide.

Structures:
Pf>V
The stratigraphy and orientation of the pieces in Core 96R are uncertain. The description is done for distinct intervals. Most of the pieces display a weak crystal-plastic foliation. The foliation is stronger in Piece 6; it is overprinted by veins in Pieces 2, 3 and 6.

Core Image



176-735B-96R-3

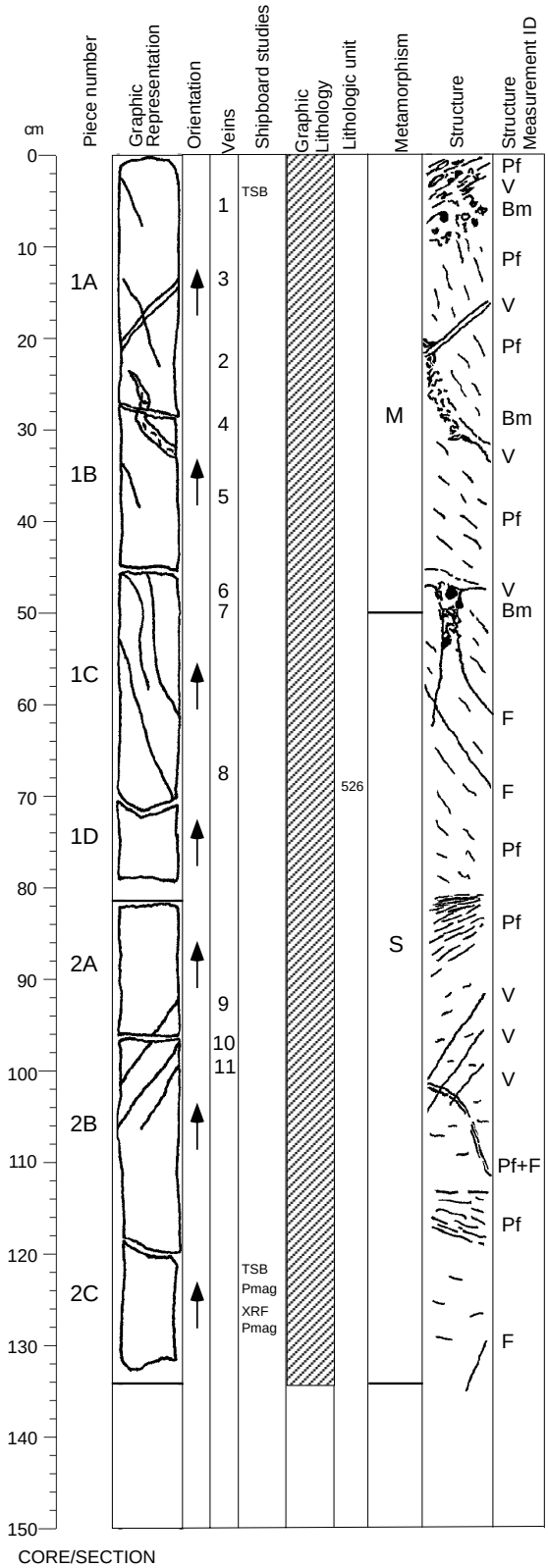
Interval 526: OPX-BEARING DISSEMINATED OXIDE GABBRO (see previous section)

Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in foliated areas related to felsic impregnations.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After olivine.
Comments: dispersed in the rock.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: In amphibole rims.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates with early metamorphic assemblages, concentrated in the vicinity of carbonate veins.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight (5%). About 15% of the olivine is replaced by amphibole and talc. Slight oxidation of olivine in Piece 5. Clinopyroxene is partly replaced by amphibole (5%), and 5% of the plagioclase is secondary.

Structures:
Mf>F; Mf>Bm
The stratigraphy and orientation of the pieces of Core 96R are uncertain. The description is done for distinct intervals. This section displays magmatic textures, overprinted by faults (Pieces 3 and 5) and magmatic breccia (Piece 5).

Core Image



176-735B-97R-1

Interval 526: OPX-BEARING DISSEMINATED OXIDE GABBRO

(See Section 176-735B-96R-2)

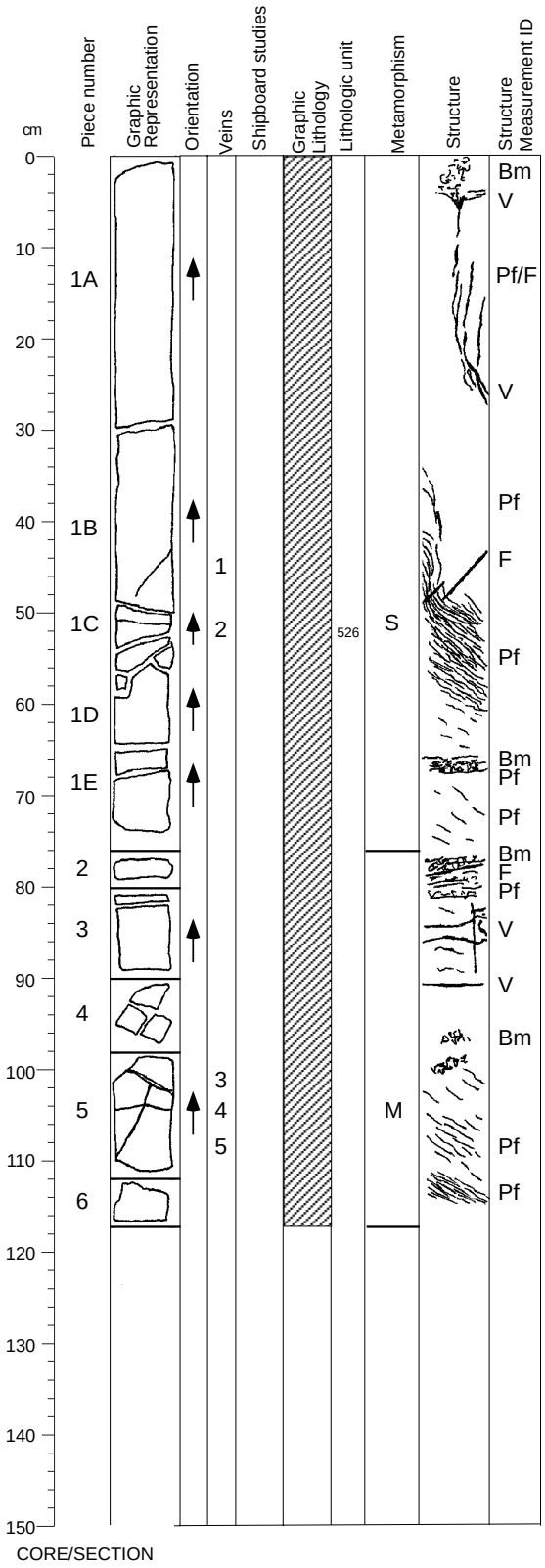
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After olivine.
Comments: dispersed in the rock in patchy alteration.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: In amphibole rims.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates. More abundant
near quartz-feldspar veins.

Background Alteration:
Degree of alteration: slight to moderate (8-15%). Between 10 and 15% of the olivine is replaced by amphibole and talc and weathered to smectite and hematite in the cores. Clinopyroxene is partly replaced by amphibole (5-8%). Replacement of plagioclase by secondary plagioclase varies from 5-15% and is highest around a network of felsic veins in Piece 1.

Vein/Fracture Filling:
Plagioclase veinlets are present in Pieces 1A and 1B that are 8-9 cm in length and 4.0-6.0 mm wide. Amphibole veins are present in Pieces 1A, 1B, 1C, 2A, and 2B that are 5-17 cm in length and 0.2-0.4 mm wide.

Structures:
Pf>Bm>Pf; Pf>V>Bm>V; Pf>V>Pf/F
Crystal-plastic fabric is present over the entire section. At the top (Piece 1A), it is overprinted by a magmatic breccia and a strong plastic shear zone, which has a normal shear sense. Several veins overprint the plastic fabric. Two of them are brecciated; the one in Piece 1C tapers downward into faults. In Piece 2B, another vein tapers into a thin semi-brittle shear zone. The deformation intensity increases significantly at the top of Piece 2A (narrow mylonitic zone).

Core Image



176-735B-97R-2

Interval 526: OPX-BEARING DISSEMINATED OXIDE GABBRO

Alteration: **(See Section 176-735B-96R-2)**

Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared areas.

Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant close to veins.

Talc and oxides:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine some clinopyroxene.
Comments: In amphibole rims and close to veins.

Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates and more concentrated in the vicinity of carbonate veins.

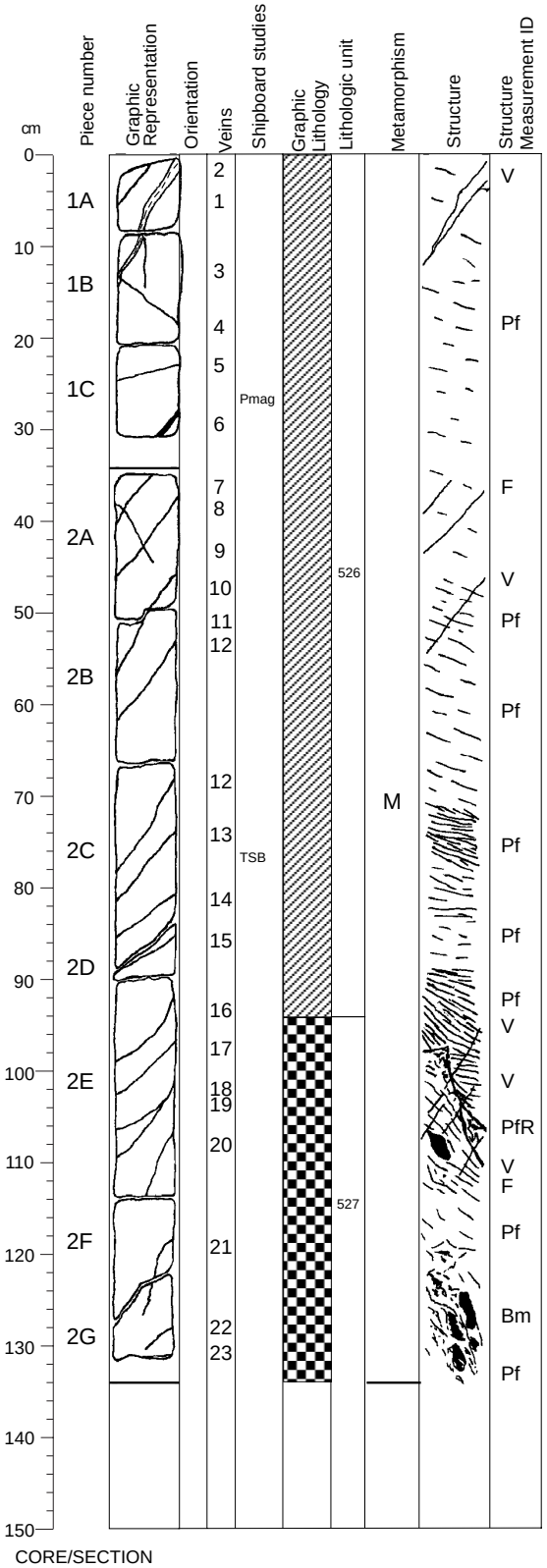
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.
Comments: Weathering of olivine is related to carbonate vein formation.

Background Alteration:
Degree of alteration: slight to moderate (8-15%). Between 10 and 15% of the olivine is replaced by amph and talc and weathered to smectite and hematite in the cores. Clinopyroxene is partly replaced by amphibole (5-8%). 5 to 10% of the plagioclase is secondary.

Vein/Fracture Filling:
Pieces 1B and 1C are cut by amphibole veins 5-6 cm in length and 0.2-0.3 mm wide. Piece 5 is cut by three carbonate veins 6-8 cm in length and 0.3 mm wide.

Structures:
Mf>V>Bm>Pf; Mf>Pf>F; Pf>Bm>Pf/F
The first part of the section (from top to 40 cm) displays an igneous texture with no or a weak magmatic foliation. In Piece 1A, a brecciated vein at the top tapers downward into a network of anastomosing semi-brittle, thin shear zones, which are connected to another vein (24-27 cm). From 40 cm to the bottom of the section, crystal-plastic foliation is the dominant fabric. Pieces 1B, C and D display a curved mylonitic zone, overprinted by faults. Beneath this zone, the intensity of the plastic fabric is much weaker, and eventually increases again at the bottom of the section (narrow mylonitic zone in Piece 6). Pieces 1E and 2 display two narrow shear zones which seem to be associated with brecciated veins.

Core Image



176-735B-97R-3

Interval 526: OPX-BEARING DISSEMINATED OXIDE GABBRO (see Section 176-735B-96R-2)

Interval 527: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	97	3	94	2E	559.76
Lower contact:	97	4	0	1	560.16

Thickness: 0.40 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	50	15	n/a	coarse	tabular/ subhedral anhedral
Clinopyroxene	40	30	0.3	coarse	equant/ subhedral anhedral
Olivine	N/A	N/A	N/A	N/A	N/A
Opaque	2				interstitial lenses/ interstitial network
Total	92*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Coarse

	Type	Distribution
Texture:	granular	N/A
Fabric	:N/A	N/A

Comments: Highly deformed zone. Broken pegmatitic/porphyroclastic clinopyroxene filled with felsic deformational segregates. Variable grain size. Networking veinlets at 122-133 cm in 97R-3.

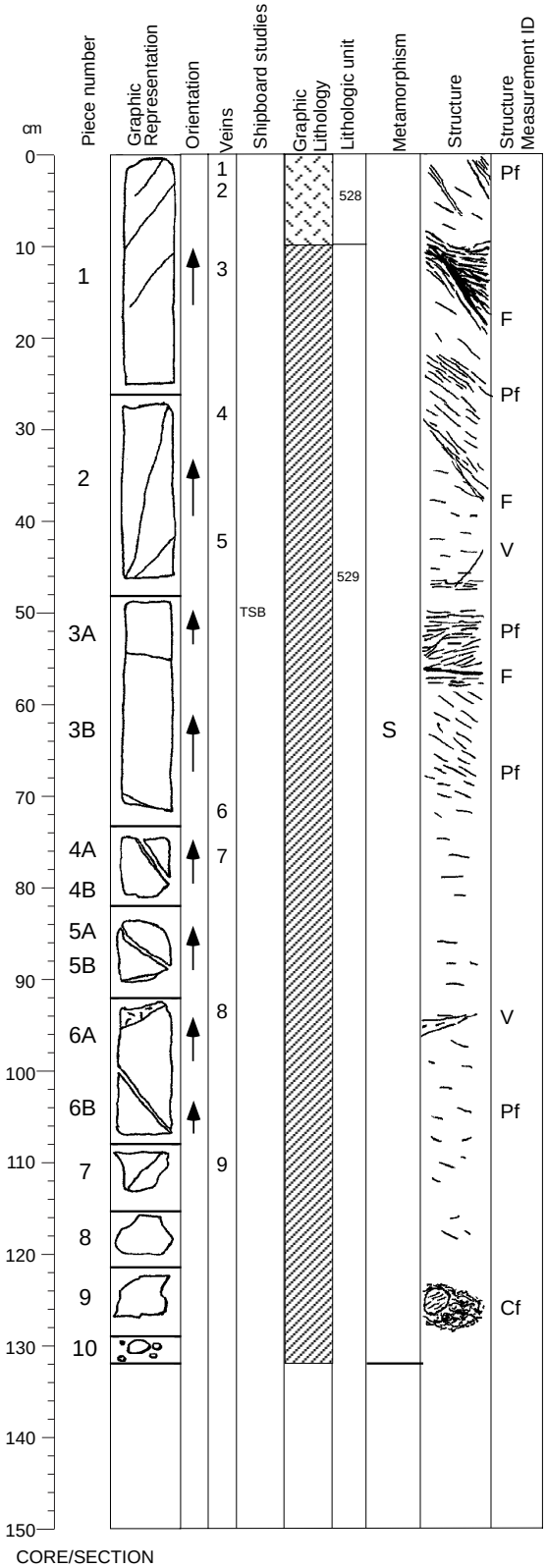
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in shear zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims close to veins and associated with chlorite.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near veins.
Talc and oxides:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Chlorite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: In amphibole rims and associated with green amphiboles near veins.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays and carbonates.
Carbonates:
Total Percent: tr.
Mode of occurrence: In altered olivine.

Background Alteration:
Degree of alteration: moderate (15%). 20% of the olivine is replaced by amphibole and talc. Weathering of olivine is weak. Clinopyroxene is partly replaced by amphibole along grain boundaries (12%). Replacement of plagioclase by secondary plagioclase (on average 15%) is increased around a network of felsic veins in Piece 1.

Vein/Fracture Filling:
0.2-0.4 amphibole veins in Pieces 1A-B,2A, 2C-2G; 5 mm diopside and plagioclase vein in Piece 1A to 1B; 0.3-2 mm diopside veins in Piece 1C, 2A to 2B; 0.3 calcite vein in Piece 1C and 2G; 0.4 amphibole + plagioclase vein in Piece 2E.

Structures:
Mf>V; Mf>Pf>F; Pf>V; Pf>Bm≥Pf>F>V
The complete section displays crystal-plastic deformation. The plastic foliation is weak to moderate from the top to 71 cm, mylonitic from 71 to 78 cm (Piece 2C), weak from 78 to 89 cm, and mylonitic from 89 to 97 cm; it is cut by a few faults and veins. The bottom part of the section, from 97 cm, is more complicated: the high-temperature plastic foliation is overprinted by magmatic breccia, which is itself overprinted by crystal-plastic deformation, faults and veins successively.

Core Image



176-735B-97R-4

Interval 528: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	97	4	0	1	560.16
Lower contact:	97	4	10	1	560.26

Thickness: 0.10 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	60	1	0.3	fine	tabular/ anhedral subhedral
Clinopyroxene	40	1	N/A	fine	tabular/ subhedral
Olivine	N/A	N/A	N/A	N/A	N/A
Opaques	0.5				interstitial lenses/ disseminated

Total 100.5*
*Major phases estimated to ± 5%
Modal name (calculated): Gabbro.
Grain Size: Fine

	Type	Distribution
Texture:	equigranular	N/A
Fabric:	N/A	N/A

Comments: Microgabbroic intrusive, foliated at base (intrusive contact?). Oxide present?

Interval 529: OPX-BEARING DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	97	4	10	1	560.26
Lower contact:	98	1	10	2	561.10

Thickness: 0.84 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	20	3	medium	tabular/ subhedral euhedral
Clinopyroxene	35	35	1	coarse	equant/ subhedral anhedral
Olivine	1	3	1	fine	amoeboidal/ anhedral
Orthopyroxene	1	2	1	medium	equant/ anhedral
Opaques	1				interstitial lenses interstitial network

Total 93*
*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro.
Grain Size: Medium

	Type	Distribution
Texture:	granular	variable
Fabric	N/A	N/A

Comments: Locally subophitic/ophitic. Mode and size variable. Highly brecciated/ deformed at 122-127 cm in 97R-4. Sheared at 49-53 cm in 97R-4. Felsic vein at 92 cm in 97R-4. Olivine and orthopyroxene altered.

Continued next page

Core Image

176-735B-97R-4 (cont'd)

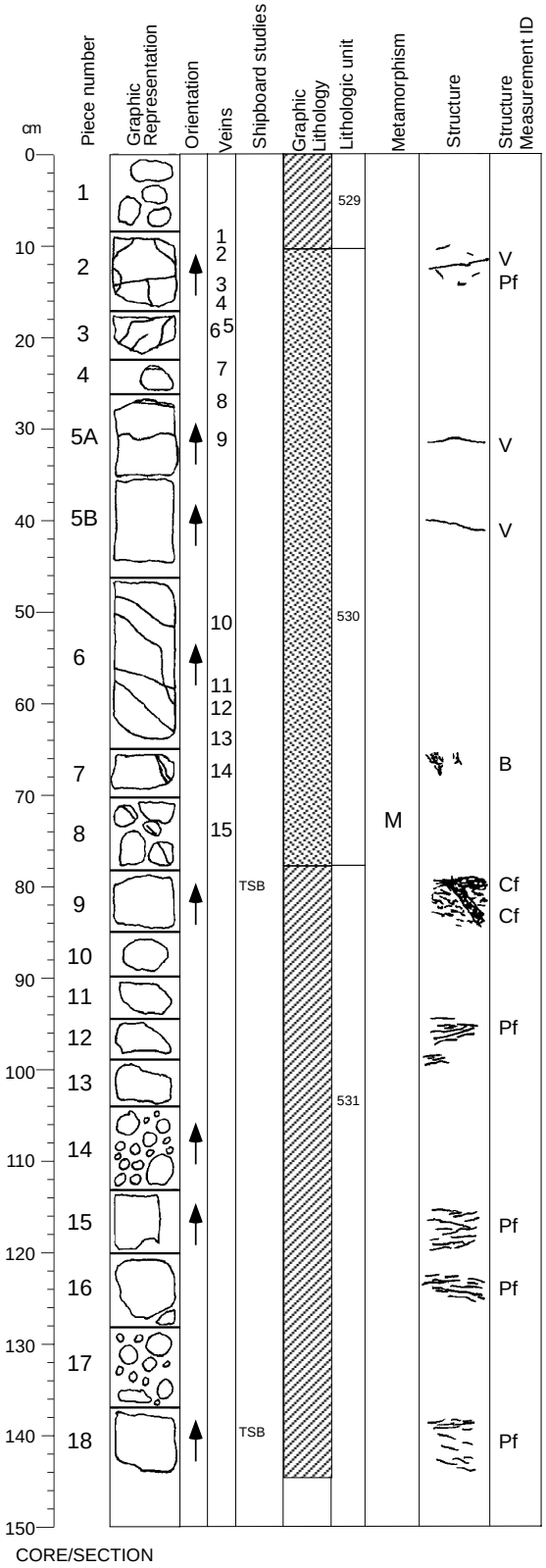
Alteration:
Dark green amphibole:
Total Percent: <8
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared areas.
Green amphibole:
Total Percent: <1
Mode of occurrence: In the matrix of cataclastic areas with chlorite.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant in the matrix of cataclastic areas.
Talc and oxides:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence:
Comments: In amphibole rims and in the matrix of cataclastic areas with green amphibole.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.
Epidote?:
Total Percent: tr.
Mode of occurrence: In or near altered plagioclase.

Background Alteration:
Degree of alteration: slight to high (8-75%). In Pieces 1 to 8, alteration is weak, with 10% olivine replaced by amphibole and talc, 5% clinopyroxene replaced by amphibole, and 5% secondary plagioclase. Pieces 9 and 10 are highly altered cataclasites, consisting of clasts of sheared gabbro in a fine-grained completely altered matrix (chlorite and amphibole?).

Vein/Fracture Filling:
0.2-0.5 mm amphibole veins in Pieces 1,2,3B, 7; 1 mm felsic vein in Piece 5-6; 0.3 mm calcite vein in Piece 4B.

Structures:
Pf>Pf; Pf>F; Pf>V; Pf>Cf
A strong and localized crystal-plastic deformation overprints the high-temperature crystal-plastic foliation in the top 2 cm of the section (Piece 1). The rest of the section displays high-temperature crystal-plastic deformation, heterogeneous in intensity as in the previous section. Porphyroclastic and mylonitic zones are found in Pieces 1 (9-15 cm, 20-3), 2 (30-33 cm), 2 and 3 (44-55 cm). The small Piece 8 also displays mylonitic foliation. These highly deformed zones are overprinted, generally at their bottom, by faults. A few veins cut the high-temperature plastic foliation.

Core Image



176-735B-98R-1

Interval 529: OPX-BEARING DISSEMINATED OXIDE GABBRO (see previous section)

Interval 530: DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	98	1	10	2	561.10
Lower contact:	98	1	77	8	561.77

Thickness: 0.67 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	15	4	coarse	tabular/ subhedral euhedral
Clinopyroxene	30	10	1	coarse	equant/ subhedral anhedral
Olivine	8	15	1	coarse	amoeboidal/ anhedral subhedral
Opaques	1				interstitial lenses/ disseminated
Total	94*				

*Major phases estimated to ± 5%
Modal name (calculated):Disseminated FeTi Oxide Olivine Gabbro.
Grain Size: Medium

	Type	Distribution
Texture:	subophitic	variable
Fabric	N/A	N/A

Comments: Locally ophitic/granular. Mode and size variable. Finer at top, coarser at base. Olivine and some clinopyroxene oxidized. Olivine-orthopyroxene reaction product present(?).

Interval 531: OPX-BEARING DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	98	1	77	8	561.77
Lower contact:	98	2	107	7	563.53

Thickness: 1.76 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	10	4	coarse	tabular/ subhedral euhedral
Clinopyroxene	35	10	1	coarse	equant/ subhedral anhedral
Olivine	4	4	1	medium	amoeboidal/ anhedral
Orthopyroxene	1	2	1	medium	elongate/ anhedral
Opaques	1.5				interstitial lenses/ disseminated
Total	95.5*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide Gabbro.
Grain Size: Medium

	Type	Distribution
Texture:	granular	variable
Fabric	N/A	N/A

Comments: Locally subophitic/equigranular at 16-21 cm in 98R-2. Locally foliated at 109-120 cm and 125-129 in 98R-1, and brecciated at 80-85 cm in 98R-1. Oxide rich at top, poor at base. Olivine, orthopyroxene, and some clinopyroxene altered.

Continued next page

Core Image

176-735B-98R-1 (cont'd)

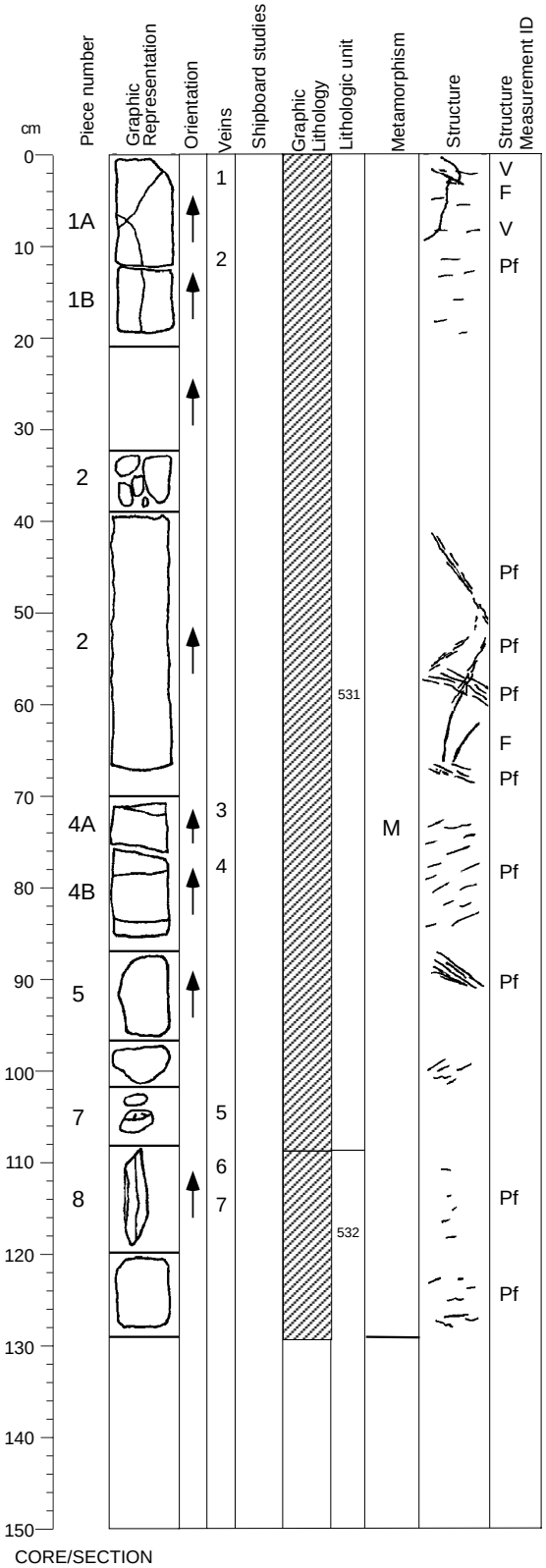
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In plagioclase.
Comments: with secondary plagioclase.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red or yellow-green clays.
Carbonates:
Total Percent: tr.
Mode of occurrence: In rare veins and replacing olivine.
Epidote?:
Total Percent: tr.
Mode of occurrence: In or near altered plagioclase.

Background Alteration:
Degree of alteration: moderate (12-35%). Olivine is 25% altered; most of the replacement is due to weathering. In Pieces 1 to 6, clinopyroxene is partly replaced by amphibole (10%) and slightly weathered. Plagioclase recrystallization is around 5%. In Pieces 7 to 18 alteration of clinopyroxene and plagioclase is higher (around 40%). Plagioclase is possibly altered to epidote in addition to secondary plagioclase. Some Pieces in the lower part of the section are impregnated by oxides and cataclastically deformed. The oxides are associated with high abundances of apatite and zircon.

Vein/Fracture Filling:
0.1-1 mm calcite veins in Pieces 2 to 8.

Structures:
Pf>V; Mf>Bm; Cf>Cf; Pf>Pf?
Most of the Pieces in this section are disconnected; there is no obvious continuous structure. From 0 to 105 cm, the texture is dominantly igneous, with no or a weak magmatic fabric, and some weak crystal-plastic fabric in Pieces 2, 12 and 13. Piece 7 contains a small zone of magmatic breccia. A few veins cut the magmatic or weak plastic fabric. The second part of the core displays strong crystal-plastic deformation (Pieces 14 to 16), probably overprinting a high-temperature crystal-plastic foliation (Pieces 17, 18).

Core Image



176-735B-98R-2

Interval 531: OPX-BEARING DISSEMINATED OXIDE GABBRO (see previous section)

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	98	2	107	7	563.53
Lower contact:	99	6	57	5	573.31

Thickness: 9.78 m

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	20	5	coarse	tabular/ euhedral subhedral
Clinopyroxene	35	20	2	coarse	equant/ anhedral
Olivine	6	7	1	coarse	amoeboidal/ anhedral subhedral
Orthopyroxene	2	2	1	medium	tabular/ subhedral anhedral
Opaques	1				angular aggregates/ disseminated
Total	99*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide OlivineGabbro.
Grain Size: Coarse

	Type	Distribution
Texture:	subophitic	variable
Fabric	N/A	N/A

Comments: Locally ophitic/granular. Locally troctolitic at Piece 5 in 99R-5. Mode and size variable. Olivine altered in upper portion. Mostly fresh at 110 cm and downward from 99R-2 with a few exceptions.

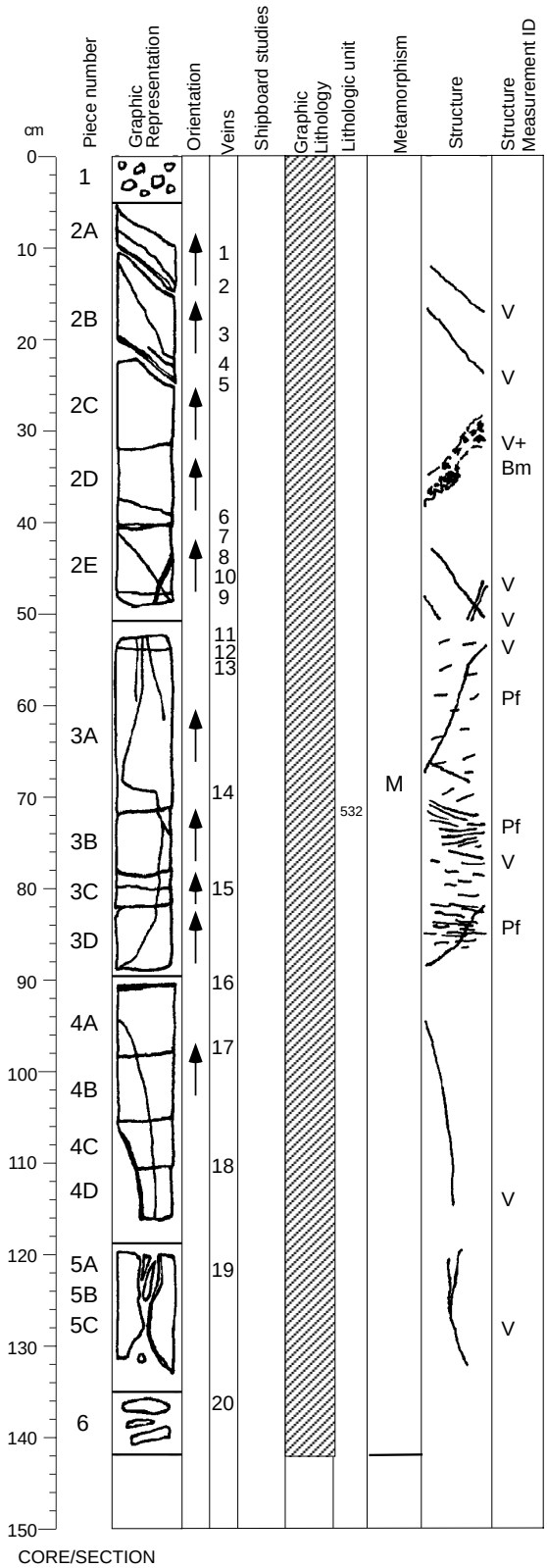
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In plagioclase.
Comments: with secondary plagioclase.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red or yellow-green clays.
Carbonates:
Total Percent: trace
Mode of occurrence: In rare veins and replacing olivine.
Epidote?:
Total Percent: trace
Mode of occurrence: In or near altered plagioclase.

Background Alteration:
Degree of alteration: moderate (15%). About 20% of olivine and clinopyroxene are altered. Most of the alteration is weathering. Plagioclase recrystallization is around 8%.

Vein/Fracture Filling:
0.3 mm amphibole veins in Pieces 1A to 1B; 5 mm felsic vein in Piece 7; 0.2-0.5 mm calcite veins in Pieces 4A and 8.

Structures:
Pf>V>F; Mf>Pf>PfR>F
Beneath Pieces 1A and 1B, this section has no stratigraphic orientation and no up direction (core material fell on the rig floor and was reconstructed). Pieces 1A and 1B display a weak crystal-plastic fabric, cross-cut by a few veins and a fault, successively. Piece 3 has a complicated pattern of narrow crystal-plastic shear zones, overprinting the igneous texture (no magmatic fabric), and locally a high temperature shear zone. One of these narrow shear zones tapers downwards to a subvertical fault. The rest of the section displays weak crystal-plastic foliation.

Core Image



176-735B-99R-1

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO

(see previous section)

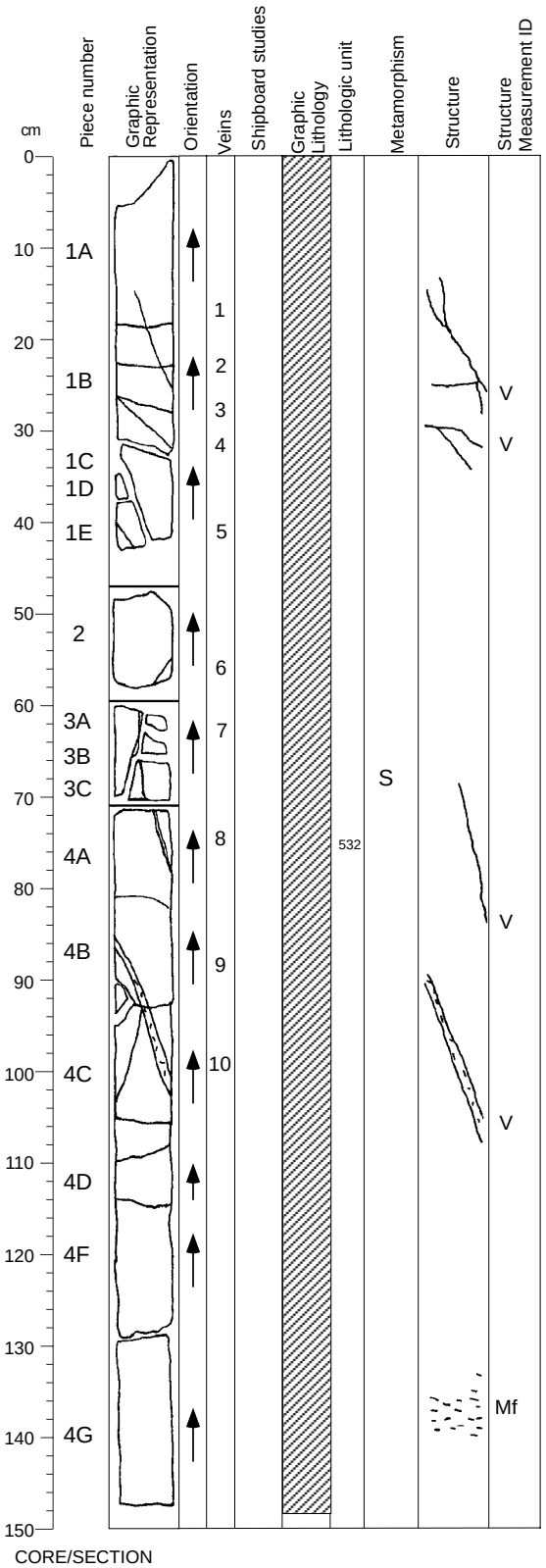
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared zones and felsic impregnations.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, and near sheared zones and felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: more abundant near sheared zones.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (15%). About 20% of olivine and clinopyroxene are altered. Most of the alteration is weathering. Plagioclase recrystallization is around 8%.

Vein/Fracture Filling:
0.5 mm amphibole veins in Pieces 3A; 0.5-2 mm amphibole + plagioclase vein in Pieces 2E and 3A; 1 mm plagioclase vein in Piece 2B; 0.2-0.5 mm calcite veins in Piece 2A to 2B, 2D to 2E, 3A, 3C, 4A to 4D, 5A to 5C, and 6.

Structures:
Mf>V; Mf>V≥Bm; Mf>Pf>V
The top (Pieces 1, 2A to 2E) and the bottom (Pieces 4A to 4D, 5A to 5C, 6) of the section display igneous texture, with no or a weak magmatic fabric, overprinted by a few veins. The central part (Piece 3A to 3D) is crystal-plastically deformed, with a dominant weak foliation and two narrow strongly foliated to mylonitic zones (Pieces 3B and 3D). The plastic fabric is cut by veins.

Core Image



176-735B-99R-2

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO
(see Section 176-735B-98R-2)

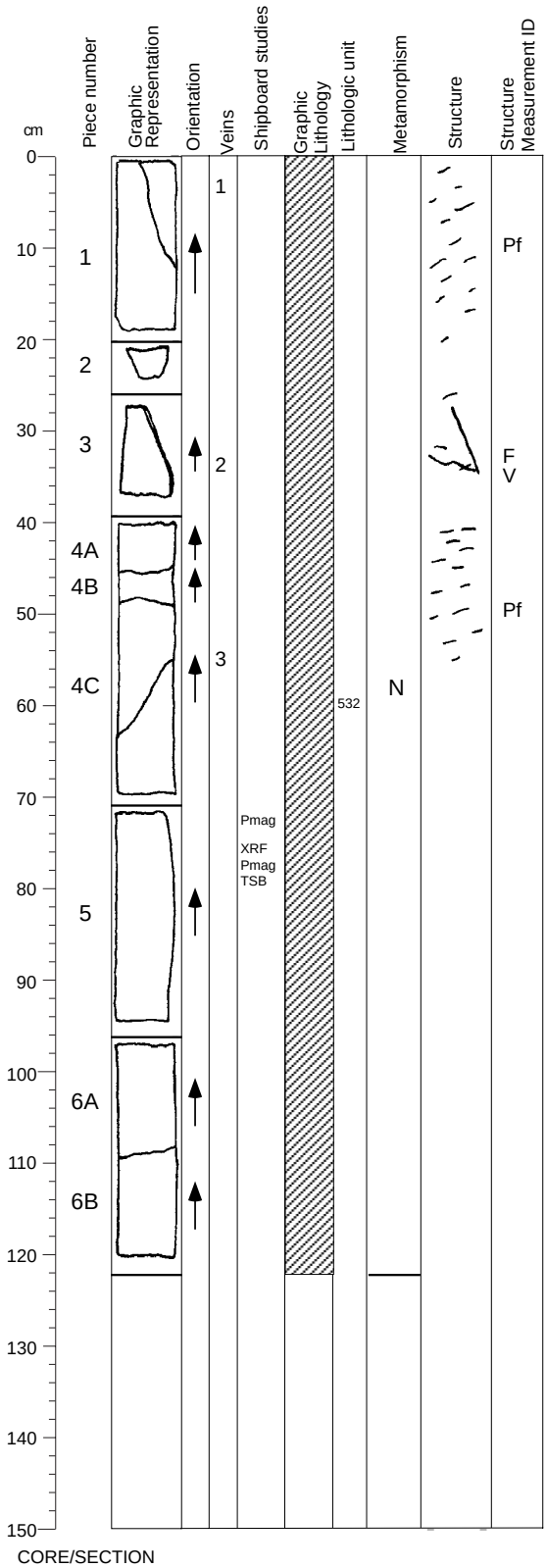
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic impregnations.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, and near felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: slight (5%). About 5% of olivine and clinopyroxene are altered. Most of the alteration is weathering. Plagioclase recrystallization is negligible (around 2%).

Vein/Fracture Filling:
0.5 mm amphibole veins in Pieces 1B, 3 to 4A; 1.5-5 mm plagioclase+amphibole vein in Pieces 2, 4B to 4C; 0.2-0.5 mm calcite veins in Pieces 1E, 3A, and 4C.

Structures:
Mf>V
The complete section displays coarse-grained igneous texture, with no or a weak magmatic foliation, except for the last Piece (4G), which is finer grained and probably has a moderate magmatic foliation. A few veins cut the magmatic texture.

Core Image



176-735B-99R-3

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO
(see Section 176-735B-98R-2)

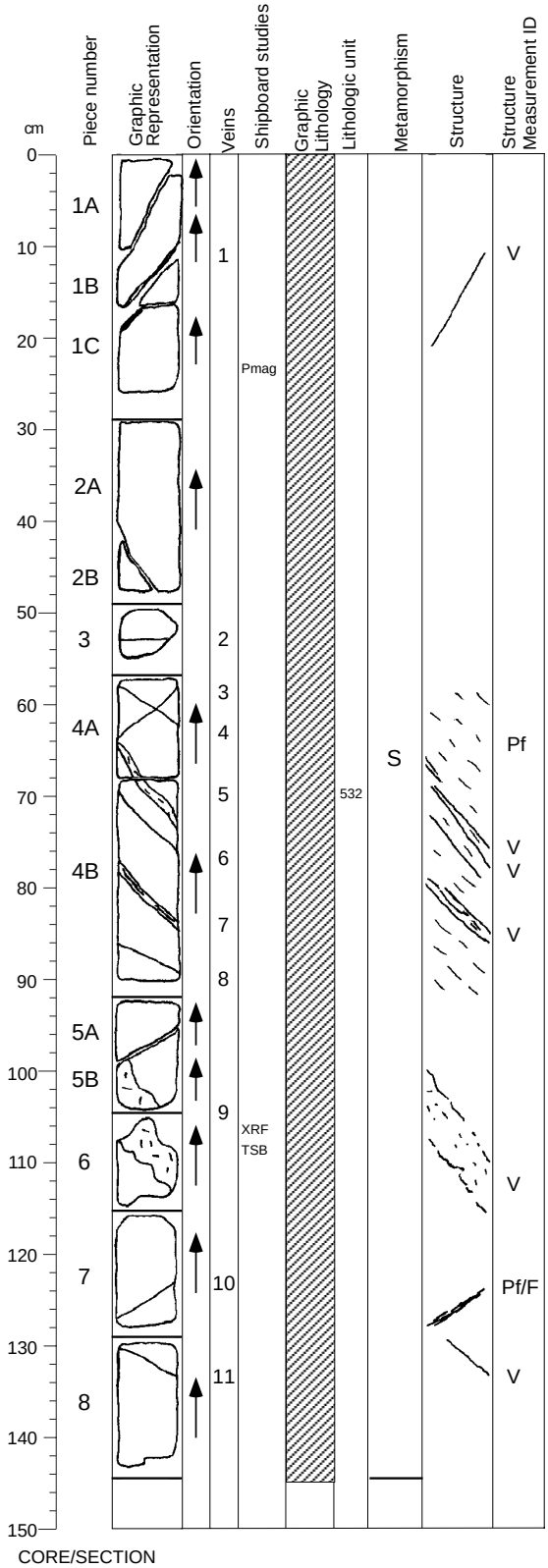
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and more abundant near dark amphibole veins.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near dark amphibole veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: tr.
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: negligible (<2%). Rock is fresh, except for minor replacement of olivine and clinopyroxene by amphibole.

Vein/Fracture Filling:
0.4 mm amphibole veins in Pieces 1 and 4C; 0.5 mm plagioclase + epidote vein in Piece 3.

Structures:
Pf>F; Pf>V; Mf>Pf
The upper half of the section (0-58) displays a weak crystal-plastic foliation, overprinted in Piece 3 by a vein and a strike-slip fault. From 58 cm to the bottom, the texture is igneous, with no or a weak magmatic foliation.

Core Image



176-735B-99R-4

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO
(see Section 176-735B-98R-2)

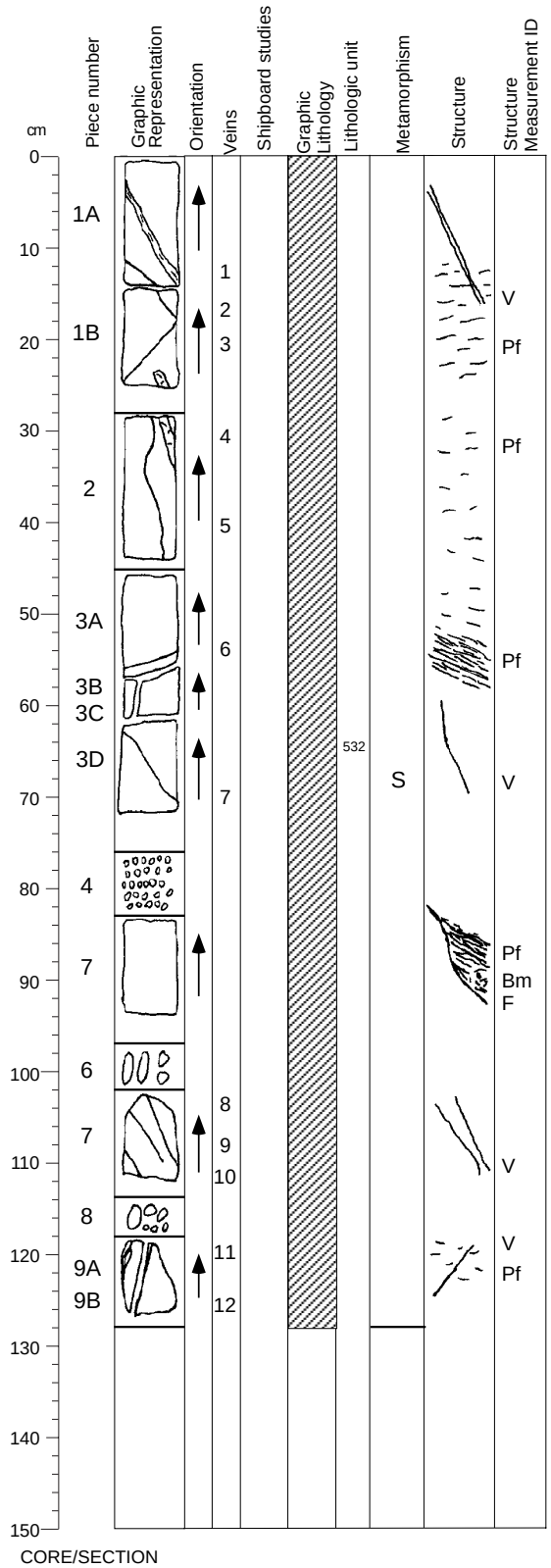
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and more abundant near felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near felsic veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: slight (10%). Olivine is weathered to clay and hematite (30%). Clinopyroxene is slightly replaced by amphibole and occasionally weathered along cracks and carbonate veins in the core. Plagioclase is negligibly replaced by secondary plagioclase.

Vein/Fracture Filling:
Amphibole veins in Pieces 3, 4B, and 7; 4-40 mm felsic vein in Pieces 4A to 4B, and 5 to 6; 0.5 mm plagioclase+amphibole veins in Piece 4A.

Structures:
Mf>Pf≥?V; Mf>Pf/F
From 0 to 60 cm (Pieces 1A to 3), the section only displays igneous texture, with no or a weak magmatic fabric, and a few cross-cutting veins. Pieces 4A and 4B (60-90 cm) display a weak magmatic fabric, possibly overprinted by subparallel veins. From 90 cm to the bottom of the section, the texture is magmatic (no magmatic foliation), cross-cut by veins and a narrow semi-brittle shear zone (Piece 7).

Core Image



176-735B-99R-5

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO
(see Section 176-735B-98R-2)

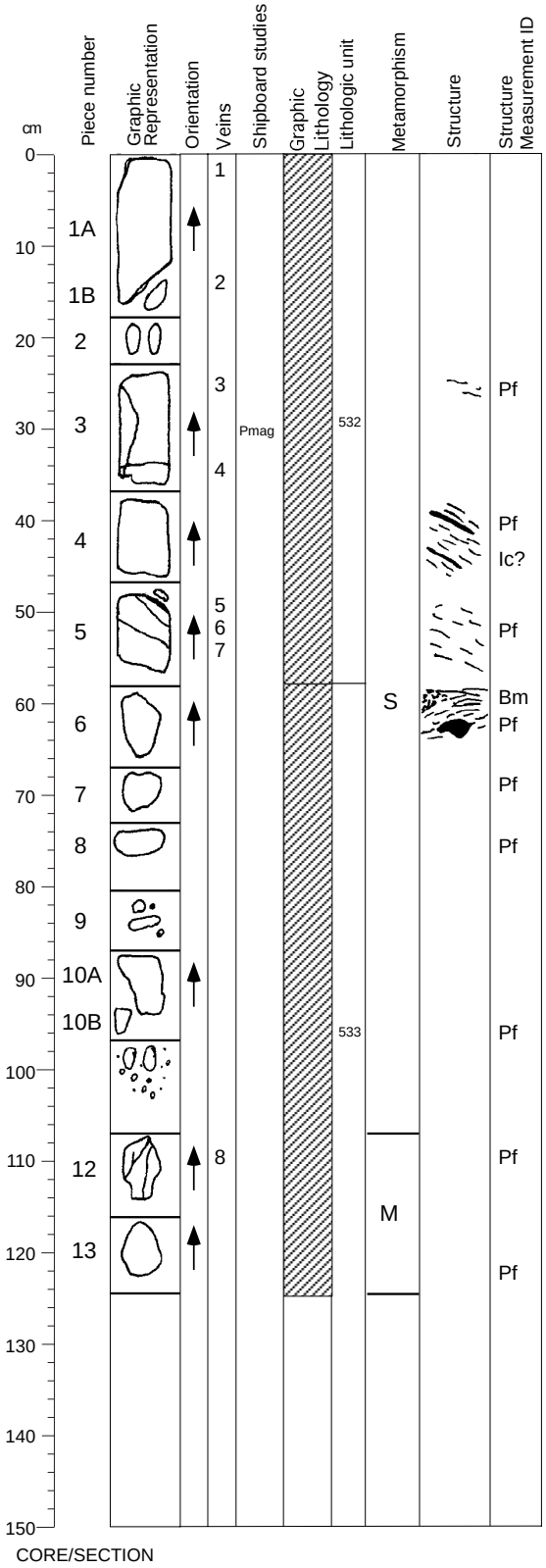
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and more abundant near felsic veins with green amphibole.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near felsic veins and sheared areas.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: More abundant near felsic veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: slight (10%). Olivine is weathered to clay and hematite (30%). Clinopyroxene is slightly replaced by amphibole and rarely weathered along cracks and carbonate veins. Plagioclase is negligibly replaced by secondary plagioclase.

Vein/Fracture Filling:
Amphibole veins in Pieces 1A to 1B, 2, 3A, and 3D; 0.5-5 mm plagioclase+amphibole vein in Pieces 1B, and 2A; calcite veins in Pieces 7, 9A to 9B.

Structures:
Mf>Pf>V; Bm>Pf>F
The first half of the core displays increasing crystal-plastic deformation; the upper part of the section (Piece 1A) has an igneous texture, overprinted downward by a weak plastic foliation (12-50 cm) and eventually by a strong porphyroclastic foliation (50-57 cm, Pieces 3A and 3B). Beneath this highly deformed zone, the texture is igneous, with no or a weak magmatic foliation, except for Piece 5 (magmatic breccia overprinted by a plastic shear zone and a fault, successively) and Pieces 9A and 9B (weak plastic foliation, cut by a vein).

Core Image



176-735B-99R-6

Interval 532: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO (see Section 176-735B-98R-2)

Interval 533: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	99	6	57	5	573.31
Lower contact:	100	1	118	10A	576.68

Thickness: 3.37 m

	Mode	Grain Size (mm): Max	Min	Size	Shape/Habit
Plagioclase	55	10	4	coarse	tabular/ subhedral euhedral
Clinopyroxene	40	20	1	coarse	equant/ anhedral
Olivine	2	4	1	medium	amoeboidal/ anhedral subhedral
Orthopyroxene	1	3	1	medium	equant/ anhedral
Opaque	4				interstitial lenses/ interstitial network
Total	102*				

*Major phases estimated to ± 5%
Modal name (calculated): FeTi Oxide Gabbro.
Grain Size: Coarse

	Type	Distribution
Texture:	granular	variable
Fabric:	N/A	N/A

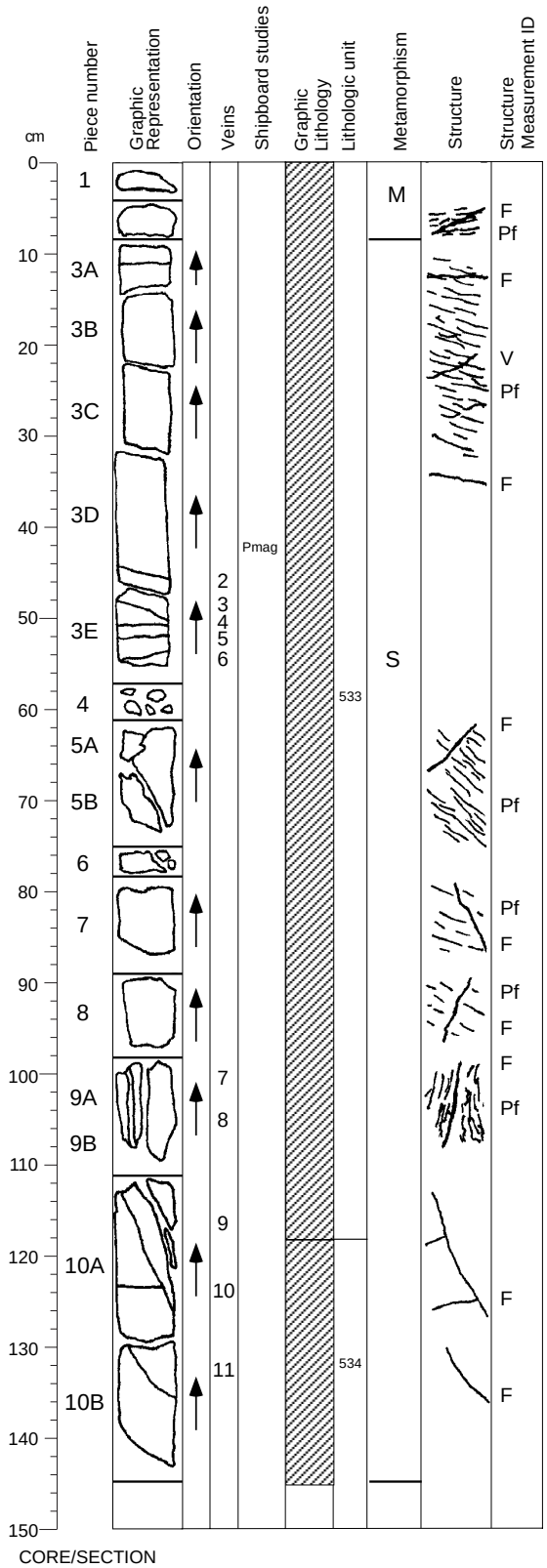
Comments: Locally subophitic. Locally foliated. Some microfractures filled with felsic material. Net-veined at base. Olivine altered (with orthopyroxene reaction rims?).
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and more abundant near felsic veins with green amphibole.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near felsic veins and sheared areas.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: More abundant near felsic veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: slight (10%). Alteration same as in 99R-5, except for Piece 12, which is a moderately altered oxide gabbro, in which around 30% of the plagioclase and clinopyroxene are altered to sodic plagioclase and clinopyroxene, respectively.

Vein/Fracture Filling:
Calcite veins in Pieces 1, 3, 5, and 12; calcite+smectite in Piece 5; smectite vein in Piece 12.

Structures:
Mf>Pf; IBm>Pf
The first half of the section (Pieces 1 to 5) displays igneous texture, with no or a weak magmatic foliation, overprinted by a weak crystal-plastic foliation. In Piece 4, the contact between a fine-grained (3 cm thick zone) layer and the surrounding coarse-grained material is relatively sharp (layer or intrusive contact ?); it is parallel to subsequent plastic deformation. From Piece 6 downward, the pieces are moderately to strongly foliated during crystal-plastic deformation (associated to a small brecciated zone in Piece 6).

Core Image



176-735B-100R-1

Interval 533: OPX-BEARING OXIDE GABBRO (see previous section)

Interval 534: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	100	1	118	10A	576.68
Lower contact:	100	3	24	4	578.69
Thickness: 2.01 m					

	Grain Size (mm): Mode	Max	Min	Size	Shape/Habit
Plagioclase	55	10	4	coarse	tabular/ subhedral euhedral
Clinopyroxene	40	15	1	fine	equant/ anhedral
Olivine	8	15	1	coarse	amoeboida/l anhedral
Orthopyroxene	2	3	1	medium	equant/ anhedral
Opaques	1				interstitial lenses/ interstitial network
Total	106*				

*Major phases estimated to ± 5%
Modal name (calculated): Disseminated FeTi Oxide OlivineGabbro.
Grain Size: Medium

	Type	Distribution
Texture:	granular	variable
Fabric	N/A	N/A

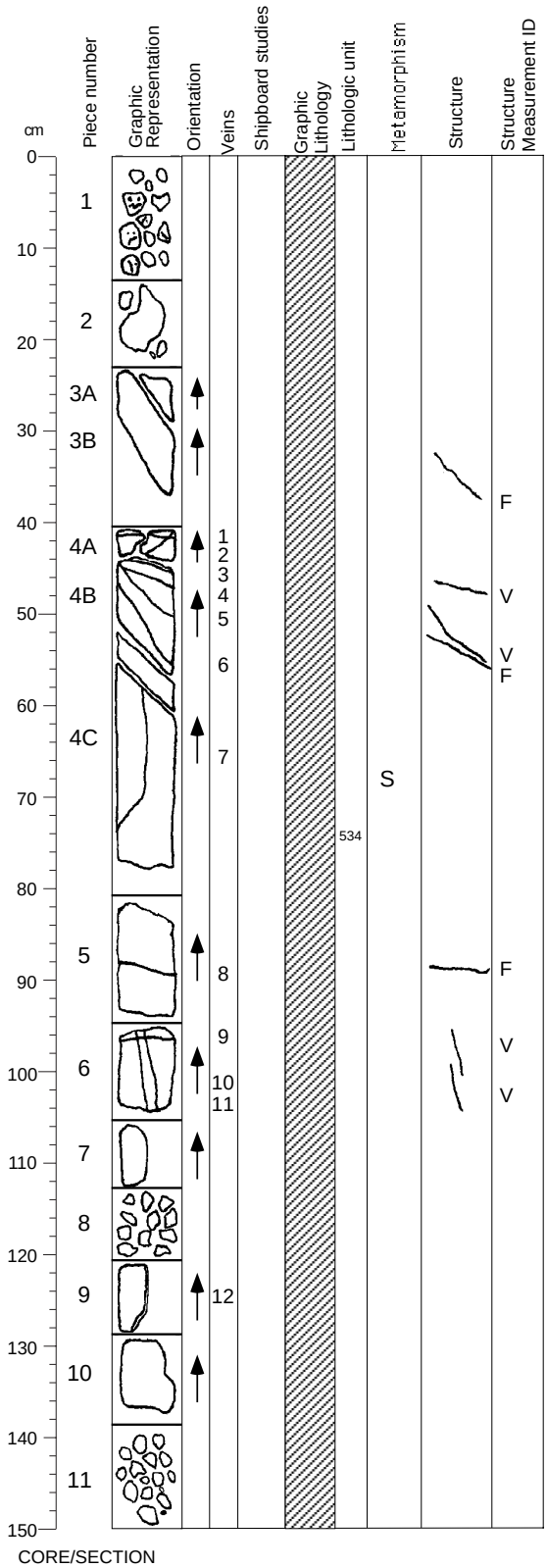
Comments: Olivine gabbro fragments. Locally subophitic. Clinopyroxene grain size variable. Olivine heavily altered near fractures.
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and more abundant near felsic veins with green amphibole.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near veins.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: More abundant near felsic veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (10%). In Pieces 1 and 2, 40% of the plagioclase is altered to sodic plagioclase and possibly epidote. Clinopyroxene is altered to dark amphibole (40%). About 25% of the olivine is altered/weathered. In Pieces 3 to 10, olivine is 25% altered/weathered; plagioclase and clinopyroxene are slightly altered (5%).

Vein/Fracture Filling:
0.2 mm amphibole veins in Pieces 3D and 9A; 0.2-1.5 mm calcite veins in Piece 3E; smectite veins in Pieces 10A to 10B.

Structures:
Mf>Pf>V; Pf>F; Mf>F
The uppermost part of the section (0-35 cm) displays moderate to strong crystal-plastic foliation (the intensity decreases downward). Pieces 3D and 3E are not plastically deformed and display magmatic texture with no magmatic fabric. Beneath this undeformed zone is another zone with crystal-plastic foliation (porphyroclastic in Piece 5, weak in Pieces 6 and 7). Piece 9 displays a subvertical and slightly curved, crystal-plastic shear zone. The rest of the core is undeformed (igneous texture). A few faults and veins cut the previous fabrics.

Core Image



176-735B-100R-2

Interval 534: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO

(see previous section)

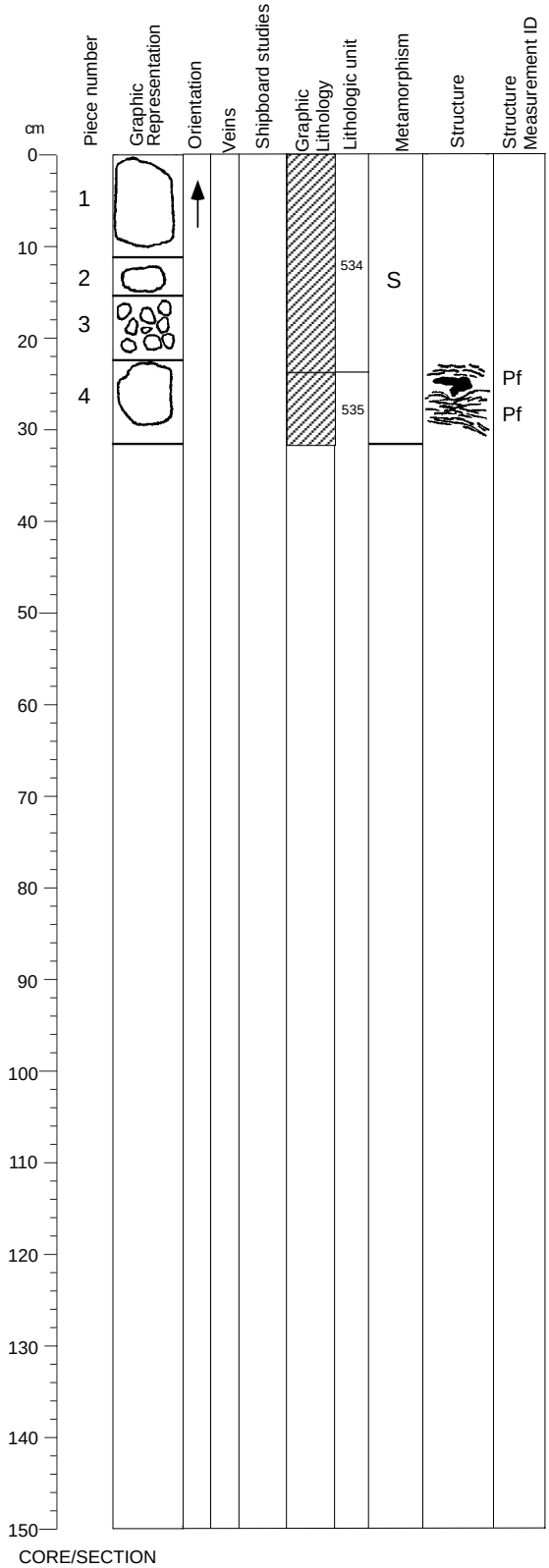
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and more abundant near veins.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and more abundant near veins.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: more abundant near veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (10%). Olivine is 30% altered/weathered. Clinopyroxene is 5% altered to dark amphibole. Plagioclase is fresh.

Vein/Fracture Filling:
0.3-0.4 mm calcite veins in Pieces 4A to 4B and 5; smectite+calcite veins in Pieces 4A to 4B, and 9.

Structures:
Mf>F; Mf>V
Igneous texture is present over the entire section, with no or a weak magmatic foliation, cut by a few faults and veins.

Core Image



176-735B-100R-3

Interval 534: OPX-BEARING DISSEMINATED OXIDE OLIVINE GABBRO
(see Section 176-735B-100R-1)

Interval 535: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	100	3	24	4	578.69
Lower contact:	101	3	18	3	587.80

Thickness (m): 9.11

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	10	1	medium	tabular/ subhedral anhedral
Clinopyroxene	30	12	2	coarse	equant/ subhedral
Olivine	1	2	1	medium	amoeboidal/ anhedral deformed
Orthopyroxene	1	2	1	medium	amoeboidal/ anhedral
Opaques	2				interstitial lenses/ disseminated
Total	89*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated): Not Calculated

	Type	Distribution
Texture:	granular	variable
Fabric:	N/A	N/A

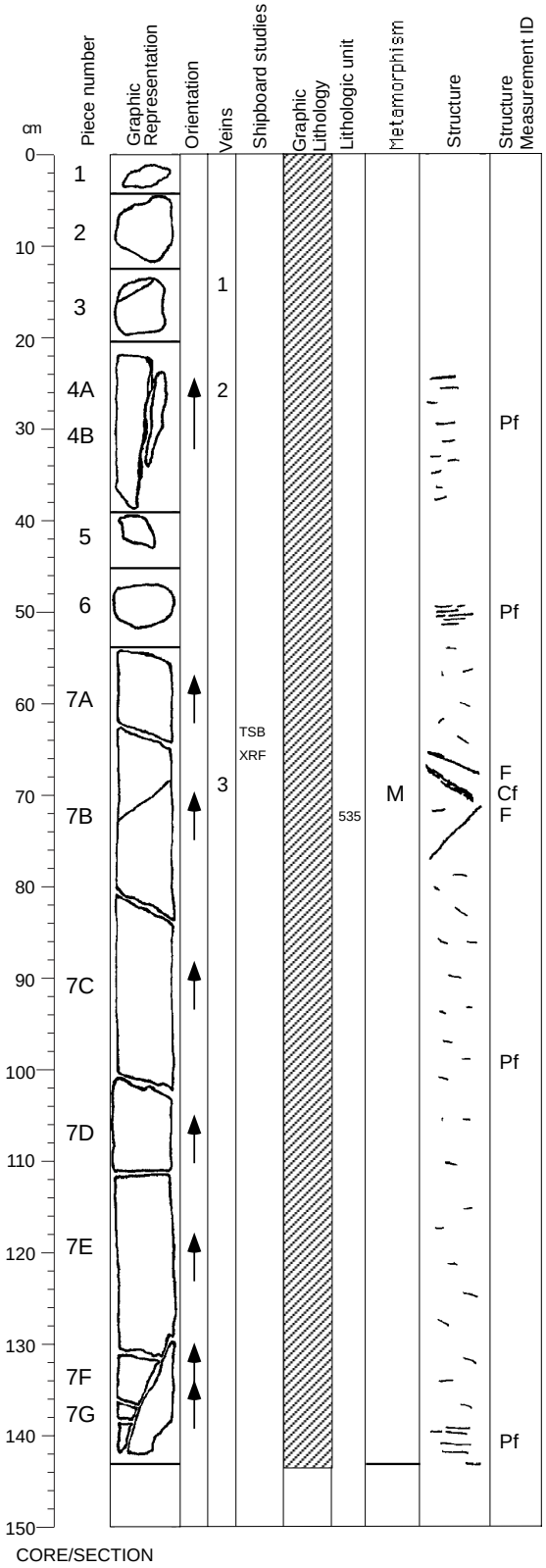
Comments: Oxide-rich interval. Deformed. Oxide-rich at base, 10% at 24-25 cm (101R-3), poor at top. Clinopyroxene varying from early to late generations. Size and mode variable. Olivine and orthopyroxene altered.

Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight to moderate (5-10%). In Pieces 1 to 8, olivine is 20% altered to amphibole and talc, no weathering. Clinopyroxene and plagioclase are fresh. Clinopyroxene is altered to amphibole (5%) and weathered (10%) in Piece 9.

Structures:
Mf>Pf
This short core displays undeformed igneous texture on top (Pieces 1 to 3), and strong crystal-plastic foliations in Piece 4.

Core Image



176-735B-101R-1

Interval 535: OPX-BEARING OXIDE GABBRO
(see previous section)

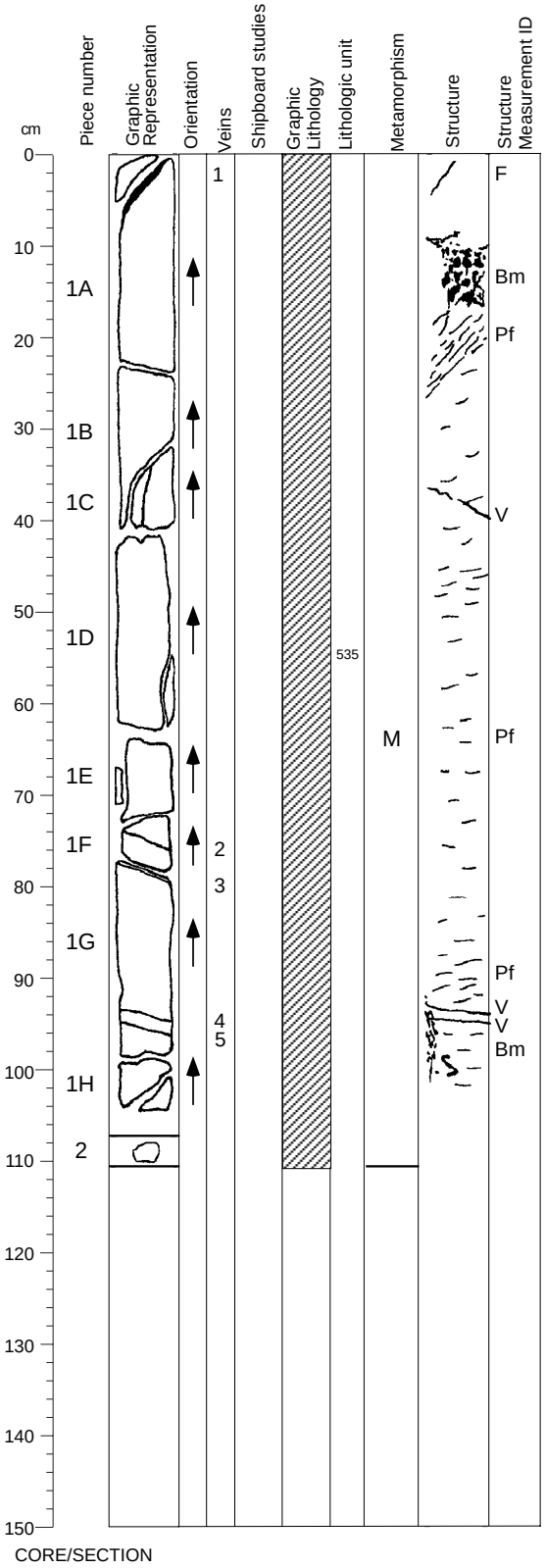
Alteration:
Dark green amphibole:
Total Percent: <8
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and patchy alteration areas.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After olivine.
Comments: In patchy alteration areas.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: moderate (12%). 20% of the olivine is altered to amphibole and talc. 8% of the clinopyroxene is replaced by dark amphibole. 5% of the plagioclase is secondary. Slight oxidation of olivine in Piece 7.

Vein/Fracture Filling:
0.2-0.3 mm smectite veins in Pieces 3 and 4; 0.3 mm amphibole vein in Piece 7B.

Structures:
Mf>Pf; Pf>V; Pf>F; Pf>Cf
The top of this section displays an undeformed igneous texture (Pieces 1 to 3). The rest of the section, except for Piece 5, displays a weak crystal-plastic foliation, locally stronger (Pieces 6 and 7F to 7G). In Piece 3B, the plastic fabric is overprinted by a vein, a fault and a narrow cataclastic zone.

Core Image



176-735B-101R-2

Interval 535: OPX-BEARING OXIDE GABBRO
(see Section 176-735B-100R-3)

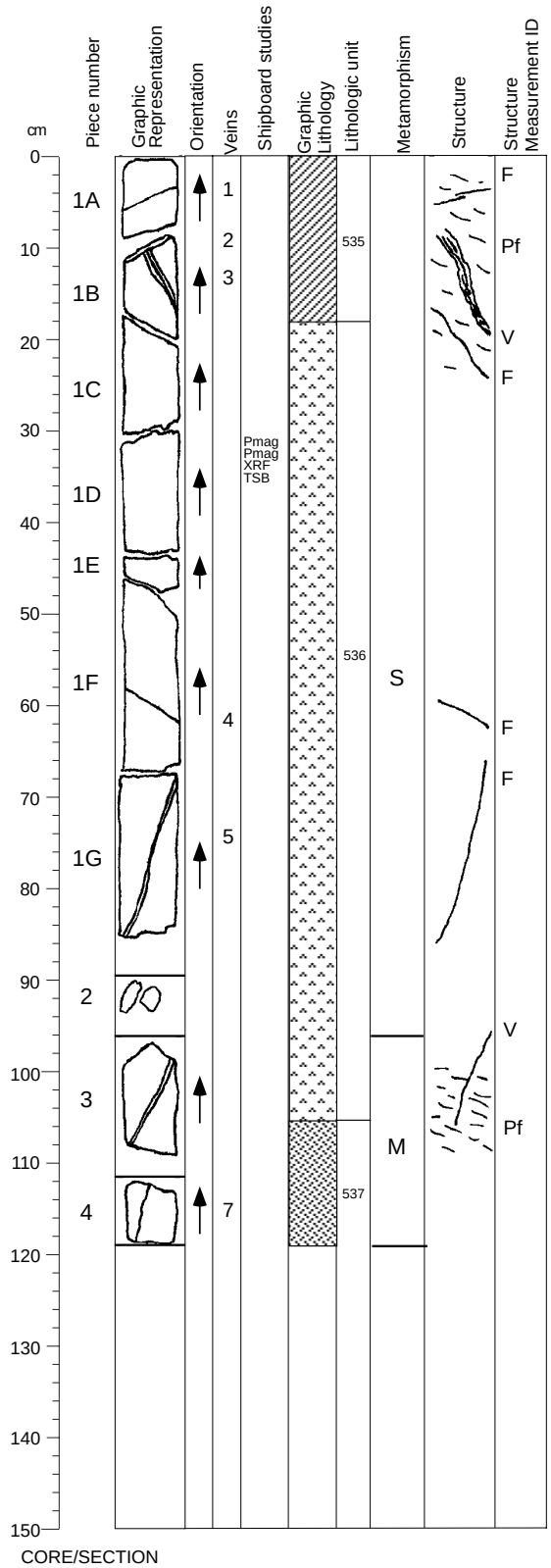
Alteration:
Dark green amphibole:
Total Percent: <8
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: After olivine and clinopyroxene.
Comments: In patchy alteration areas near felsic zones.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more developed near felsic areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite
Total Percent: <1
Mode of occurrence: After olivine and clinopyroxene.
Comments: As rims in patchy alteration areas near felsic zones.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (15%). 20% of the olivine is altered to amphibole and talc, and some olivine is weathered. 12% of the clinopyroxene is replaced by dark amphibole. 15% of the plagioclase is secondary. Plagioclase recrystallization increases around a network of felsic veins in Piece 1.

Vein/Fracture Filling:
0.5-3 mm smectite+calcite veins in Pieces 1A and 1F to 1G.

Structures:
Mf>Bf>Pf; Mf>F; Pf>V; Pf>?Bm>V
Most of this section displays a weak crystal-plastic deformation (except the top of Piece 1A which has an undeformed igneous texture). The foliation is stronger and steeper along a 4-5 cm thick zone in Piece 1A to 1B, beneath a zone of magmatic breccia (Piece 1A). Another small brecciated zone is present in Pieces 1G and 1H. The relationships between these brecciated zones and the high-temperature crystal-plastic deformation are unclear. Deformation probably occurs before the brecciation, as the breccias are almost undeformed. A few veins and faults cut the previous fabrics. In Piece 1H, a large recrystallized olivine crystal appears as an apparent fold.

Core Image



176-735B-101R-3

Interval 535: OPX-BEARING OXIDE GABBRO (see Section 176-735B-100R-3)

Interval 536: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	101	3	18	3	587.80
Lower contact:	101	3	105	3	588.67

Thickness (m): 0.87

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	5	coarse	tabular/ euhedral subhedral
Clinopyroxene	35	30	3	coarse	elongate / subhedral oikocrystic
Olivine	8	10	1	coarse	equant/ anhedral subhedral
Opaques	0.5				angular aggregates/ disseminated
Total	103.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Olivine Gabbro.

	Type	Distribution
Texture:	granular	variable
Fabric:	N/A	N/A

Comments: Locally subophitic. Size and mode variable. Olivine altered. Some microfractures filled with felsic and/or greenish materials.

Interval 537: OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	101	3	105	3	588.67
Lower contact:	102	1	113	5A	591.03

Thickness (m): 2.36

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	2	coarse	tabular/ anhedral deformed
Clinopyroxene	35	30	2	coarse	elongate / subhedral fractured
Olivine	6	10	2	coarse	equant/ anhedral subhedral
Opaques	5				interstitial lenses/ interstitial network
Total	106*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated):FeTi Oxide Olivine Gabbro.

	Type	Distribution
Texture:	granular	variable
Fabric:	N/A	N/A

Comments: Oxide-rich interval, 10% at 86-104 cm (102R-1). Size and mode variable. Foliated at base, 107-113 cm (102R-1). Pegmatitic clinopyroxene at 13 and 23 cm (102R-1). Equigranular fine-grained bands at 47-52 cm (102R-1) and 104-111 cm (102R-2). Alteration patches of olivine and orthopyroxene throughout.

Core Image

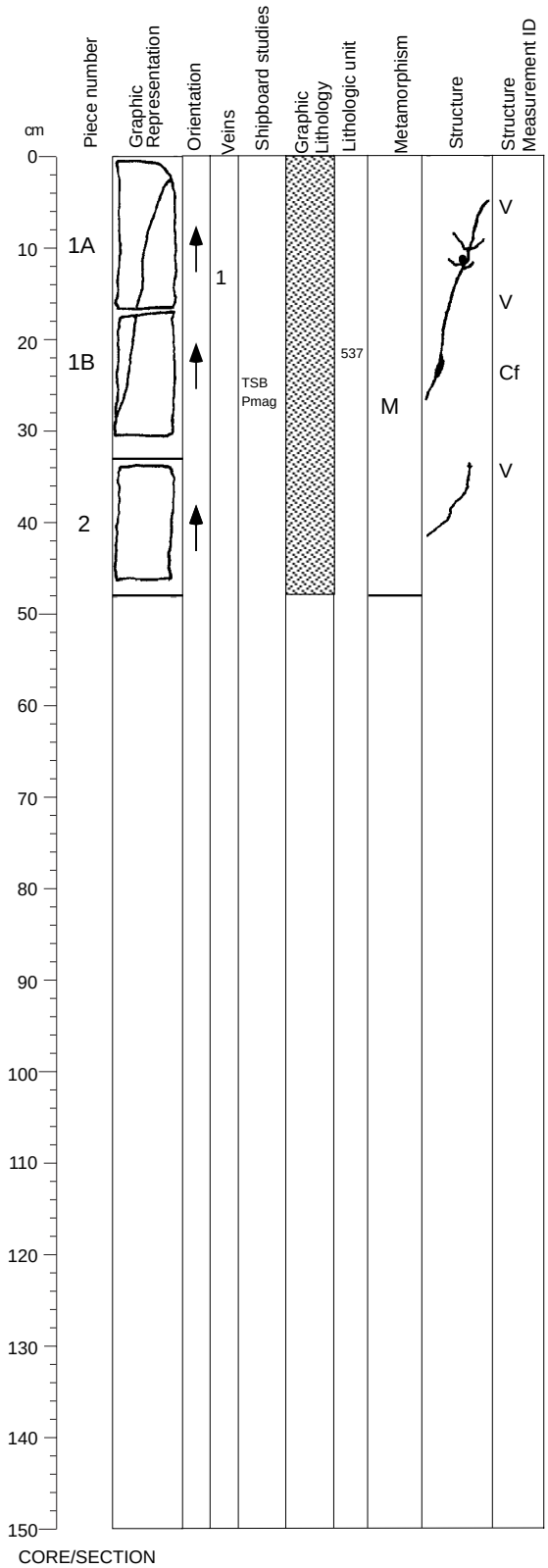
176-735B-101R-3 (cont'd)

Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays with carbonates.

Background Alteration:
Degree of alteration: slight to moderate (8-25%). Olivine is altered/weathered (20-40%). Clinopyroxene is replaced by amphibole (5%) and weathered (10%) in Pieces 3 and 4. Around 5% of the plagioclase is secondary.
Vein/Fracture Filling:
Smectite+calcite veins in Pieces 1A to 1B, 3, and 4; amphibole veins in Pieces 1F to 1G; Smectite+amphibole+prehnite vein in Piece 1B.

Structures:
Pf>F; Pf>V; Mf>F; Mf>Pf>V
Most of this section is undeformed, with an isotropic igneous texture, except in Pieces 1A-1B and 3. A few faults and veins cut the magmatic and plastic fabrics.

Core Image



176-735B-101R-4

Interval 537: OXIDE OLIVINE GABBRO
(see previous section)

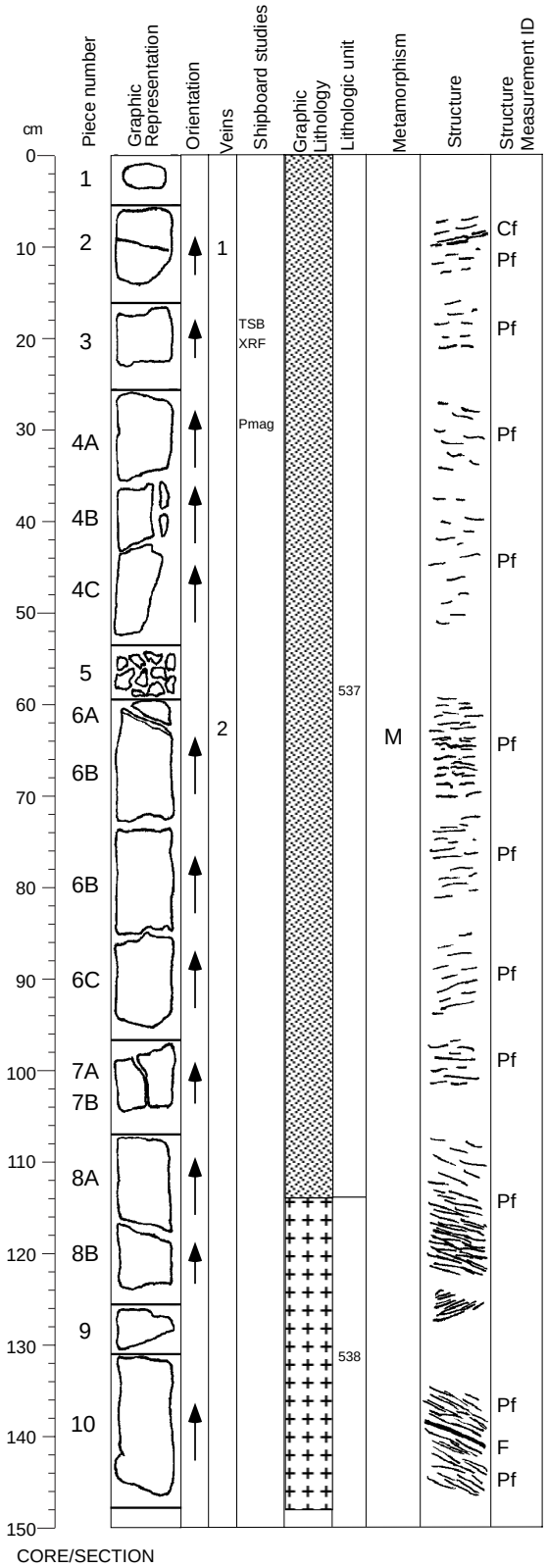
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays with carbonates.

Background Alteration:
Degree of alteration: moderate (25%). Olivine is altered/weathered (40%). Clinopyroxene is altered/weathered (15%). Around 5% of the plagioclase is secondary.

Vein/Fracture Filling:
1 mm amphibole+calcite vein in Piece 1.

Structures:
Mf>V>Cf
This short section displays an igneous texture, with no or a weak magmatic foliation, cut by two veins. A small cataclastic zone overprints the longer vein in Piece 1B.

Core Image



176-735B-102R-1

Interval 537: OXIDE OLIVINE GABBRO
(see Section 176-735B-101R-3)

Interval 538: OPX-BEARING OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	102	1	113	5A	591.03
Lower contact:	102	3	110	12	593.88

Thickness (m): 2.85

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	15	5	coarse	tabular/ subhedral euhedral
Clinopyroxene	40	35	3	coarse	tabular/ subhedral oikocrystic
Olivine	6	5	1	medium	equant/ anhedral
Orthopyroxene	3	8	1	medium	amoeboidal/ euhedral anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	104.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Olivine Gabbro.

	Type	Distribution
Texture:	textural variation	variable
Fabric:	textural gradation	N/A

Comments: Granular at top, grading to subophitic at 93 cm (102R-2), then back to granular. Fine-grain band at 103-109 cm in 102R-2. Oxide veinlets at 40 and 51 cm in 102R-2. Orthopyroxene shape variable. Locally gabbronorite at 52-80 cm, 94-102 cm in 102R-2 and 5-15 cm in 102R-3. Olivine and orthopyroxene altered.

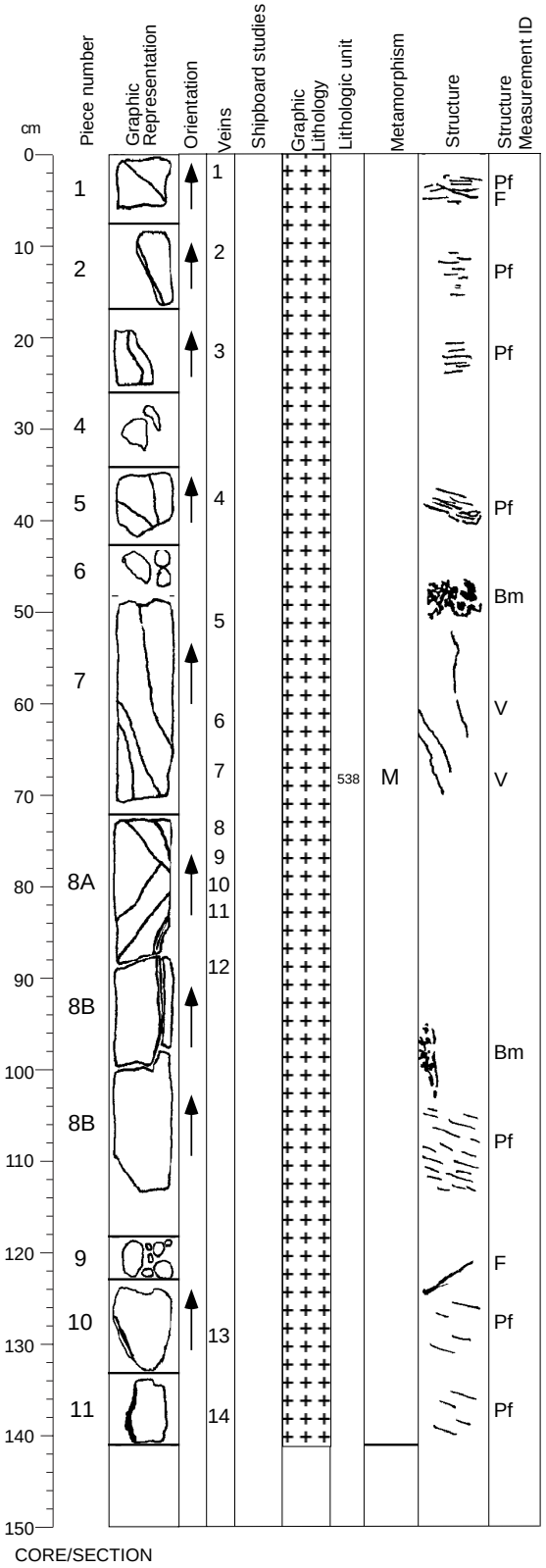
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near shear zones.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more developed near shear areas.
Talc and oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite
Total Percent: <1
Mode of occurrence: After olivine and clinopyroxene
Comments: As rims in patchy alteration areas near shear zones.
Oxyhydroxides and smectites:
Total Percent: <2
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (35%). Olivine is strongly weathered (80%). Clinopyroxene is altered/weathered (15%). 30% of the plagioclase is recrystallized. Plagioclase recrystallization increases where the rock is deformed.

Vein/Fracture Filling:
0.2-0.5 mm smectite veins in Pieces 2 and 6A.

Structures:
Pf>Cf; Pf>F
Crystal-plastic foliation is seen over the entire section, and increases in intensity with depth. From the top to 60 cm, the foliation is weak to moderate, overprinted in Piece 2 by a narrow, parallel, cataclastic zone. From 60 cm to 112 cm, the foliation is strong to porphyroclastic. From 112 to the bottom, the foliation is mylonitic, overprinted in Piece 10 by a parallel fault.

Core Image



176-735B-102R-2

Interval 538: OPX-BEARING OLIVINE GABBRO
(see previous section)

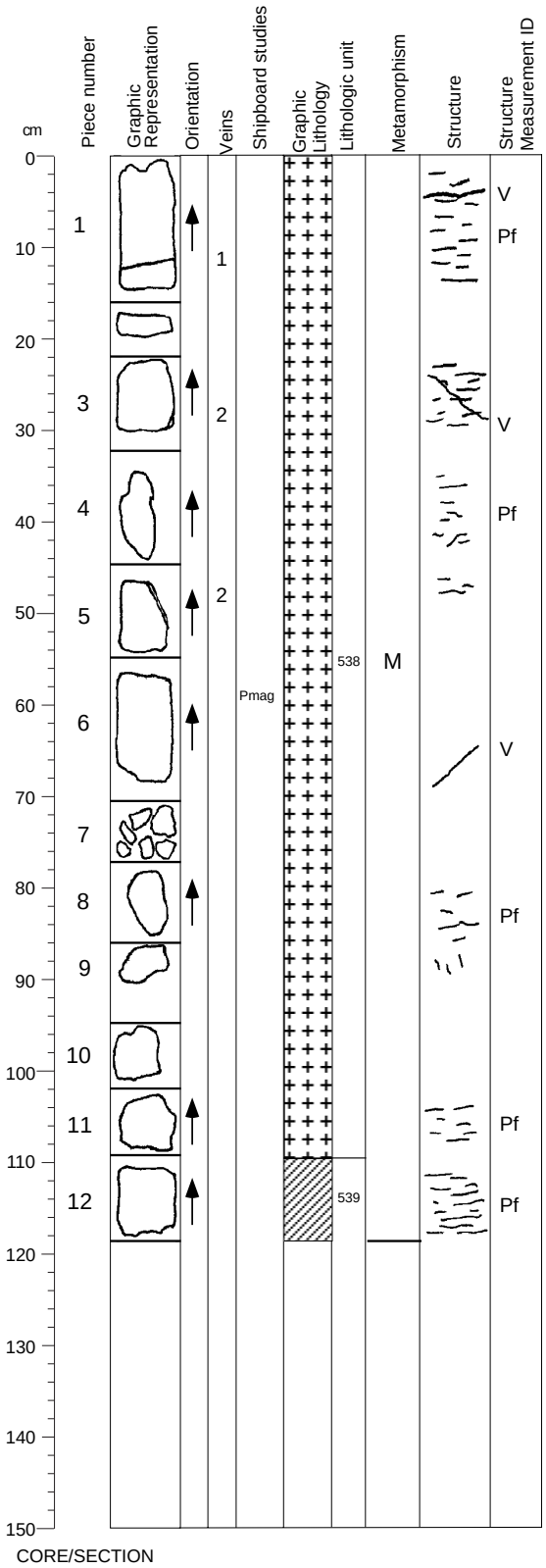
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near shear zones.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more developed near shear areas.
Talc and oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite
Total Percent: <1
Mode of occurrence: After olivine and clinopyroxene.
Comments: As rims in patchy alteration areas near shear zones.
Oxyhydroxides and smectites:
Total Percent: <5
Mode of occurrence: Replacing olivine and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (30%). 60% of the olivine is weathered. 10% of the clinopyroxene/orthopyroxene(?) is either oxidized or altered to a soft colorless to tan phyllosilicate (talc?). Plagioclase is partly replaced by secondary plagioclase (15%).

Vein/Fracture Filling:
Amphibole vein in Piece 1; calcite veins in Pieces 2, 3, 5, 7, 8A-8B, 10, and 11.

Structures:
Pf>F; Mf>Bm; Mf>V; Mf>Pf
This section is made of two distinct segments. The small pieces of the top segment display a strong crystal-plastic foliation, cut in Piece 1 by a fault. The second segment, more continuous, displays an undeformed igneous texture in Pieces 7, 8A and 8B, cut by a few subvertical veins. A small brecciated zone is present over Pieces 8B and 8C. The bottom of the section (Pieces 8C, 9?, 10 and 11) displays a weak crystal-plastic fabric.

Core Image



176-735B-102R-3

Interval 538: OPX-BEARING OLIVINE GABBRO (see Section 176-735B-102R-1)

Interval 539: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	102	3	110	12	593.88
Lower contact:	103	1	10	2A	594.90

Thickness (m): 1.02

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	10	2	coarse	tabular/ subhedral deformed
Clinopyroxene	30	13	2	coarse	tabular/ subhedral
Olivine	4	2	1	fine	amoeboidal/ anhedral
Orthopyroxene	1	1	1	fine	amoeboidal/ anhedral
Opaques	3				interstitial lenses/ concordant seams
Total	103*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated): Gabbro.

	Type	Distribution
Texture:	granular	variable
Fabric:	N/A	N/A

Comments: Oxide-rich interval. Oxide 20% at 19-11 cm in 103R-1, 10% at 115 to 116 cm in 102R-3, 2% at 110-117 cm in 102R-R3, 1% at 0-10 cm in 103R-1R. Olivine-rich in Piece 12, 102R-3, and Piece 1 in 103R-1. Orthopyroxene associated with clinopyroxene as rims. Olivine and orthopyroxene altered.

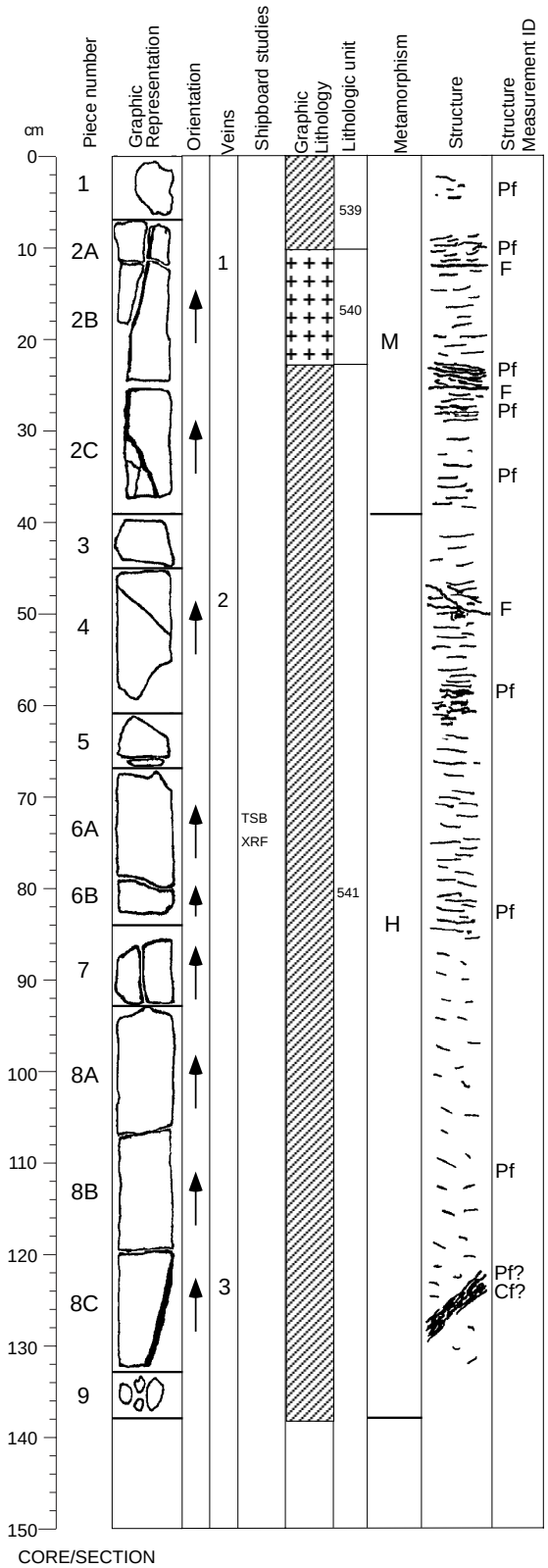
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near shear zones.
Brown amphibole
Total Percent: <1
Mode of occurrence: After altered olivine.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more developed near shear areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <5
Mode of occurrence: Replacing olivine and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate (15-40%). In Pieces 1 to 4, clinopyroxene and olivine are heavily weathered along an open calcite-coated fissure. 60% of the olivine is weathered. 10% of the clinopyroxene/orthopyroxene(?) is either oxidized or altered to a soft colorless to tan phyllosilicate (talc?). Pieces 5 to 12 weathering is slight. Plagioclase is partly replaced by secondary plagioclase (15%).

Vein/Fracture Filling:
0.2-0.3 mm calcite veins in Pieces 1 and 5.

Structures:
Pf>V; Mf>Pf, Mf>V
A weak to moderate crystal-plastic deformation is present over the entire section, except for the bottom of Piece 5 and Piece 6 (7?), which display igneous texture with no magmatic foliation. The plastic fabric is cut by a few veins.

Core Image



176-735B-103R-1

Interval 539: OPX-BEARING OXIDE GABBRO
(see previous section)

Interval 540: OPX-BEARING OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	1	10	2A	594.90
Lower contact:	103	1	23	2B	595.03

Thickness (m): 0.13

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	10	4	medium	tabular/ anhedral chadacrystic
Clinopyroxene	35	22	2	medium	equant/ subhedral
Olivine	5	8	1	medium	amoeboidal/ anhedral
Orthopyroxene	1	5	1	medium	prismatic/ euhedral anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	106.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated): Olivine Gabbro.

	Type	Distribution
Texture:	granular	uniform
Fabric:	N/A	N/A

Comments: Minor oxide and orthopyroxene. Olivine and orthopyroxene altered.

Interval 541: OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	1	23	2B	595.03
Lower contact:	103	2	18	3A	596.37

Thickness (m): 1.34

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	5	coarse	tabular/ subhedral anhedral
Clinopyroxene	30	20	2	coarse	equant/ anhedral subhedral
Olivine	0.5	N/A	N/A	fine	N/A
Orthopyroxene	5	8	1	medium	elongate / euhedral anhedral
Opaques	6				interstitial lenses/ interstitial network
Total	101.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Gabbronorite.

	Type	Distribution
Texture:	granular	variable
Fabric:	N/A	N/A

Comments: Oxide-rich interval. Foliated oxide-rich band at 126-129 cm in 103R-1. Oxide 7% at 22-97 cm in 103R-1, 121 cm in 103R-1 to 30 cm in 103R-2, 1% at 98-121 cm in 103R-1. Orthopyroxene horizons at 33, 55, and 76-80 cm in 103R-3. Alteration apparent on olivine, orthopyroxene, clinopyroxene and some oxide surfaces.

Continued next page

Core Image

176-735B-103R-1 (cont'd)

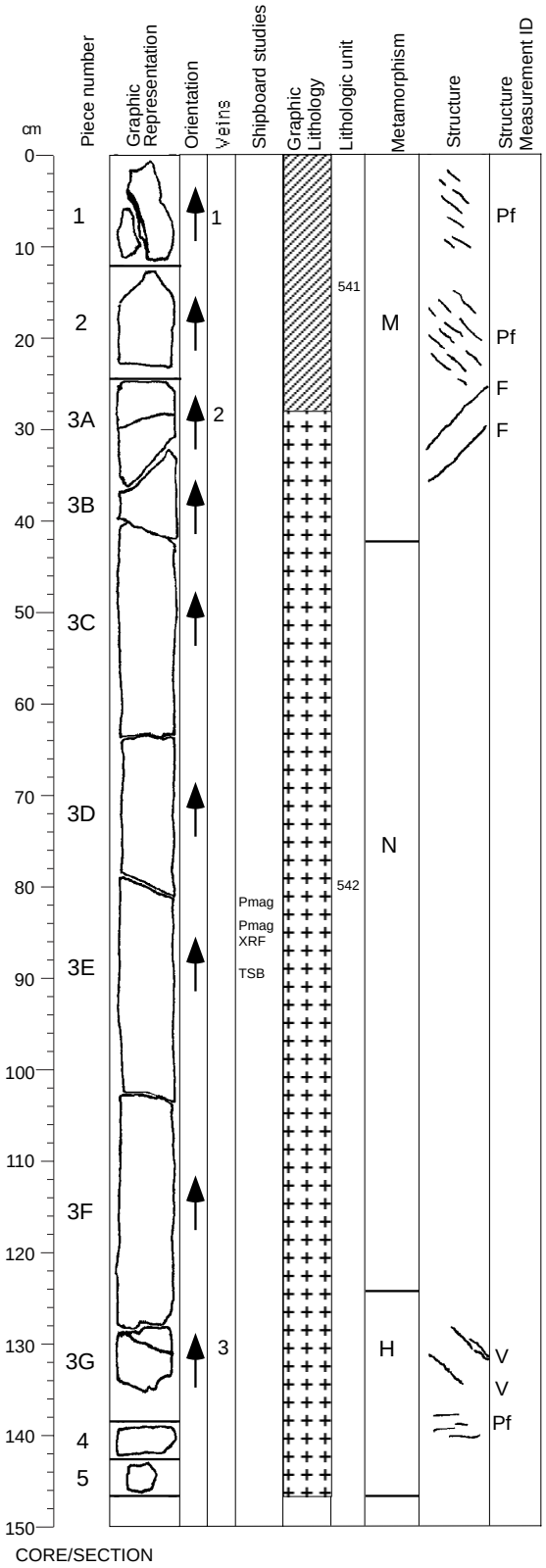
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near shear zones.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more developed near shear areas.
Talc and oxides:
Total Percent: <3
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine and some clinopyroxene.
Comments: Mixture of orange-red clays.
Carbonates:
Total Percent: <1
Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate to high (15-55%). In Pieces 1 to 2 and 6 to 9, olivine and clinopyroxene are moderately altered and very weakly weathered (10-30%). Plagioclase is partly replaced by secondary plagioclase (15%). In Pieces 3 to 5, high-temperature alteration is stronger (55%), with complete replacement of olivine by amphibole and talc (in addition to some clay and hematite). Clinopyroxene is altered to amphibole (40%) and plagioclase is partly replaced by secondary plagioclase (60%).

Vein/Fracture Filling:
0.2-3 mm smectite veins in Pieces 2A to 2C and 8C; 0.3 mm amphibole vein in Piece 4.

Structures:
Pf>F; Pf>Cf?
The complete section is plastically deformed at high temperature. The intensity of the foliation is variable, ranging from weak (Pieces 1, 3, 7, 8A, and 8B) to mylonitic (Piece 2B to 2C). Piece 8C displays a narrow zone which may be either ultramylonitic or ultracataclastic (too fine-grained to be seen for sure on the sample). A few faults cross-cut the plastic fabric.

Core Image



176-735B-103R-2

Interval 541: OXIDE GABBRONORITE
(see previous section)

Interval 542: OPX-BEARING GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	2	18	3A	596.37
Lower contact:	103	3	41	3C-D	598.06

Thickness (m): 1.69

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	5	coarse	tabular/ subhedral euhedral
Clinopyroxene	40	20	4	coarse	tabular/ subhedral anhedral
Olivine	3	4	1	medium	amoeboidal/ anhedral
Orthopyroxene	1	30	10	pegmatitic	prismatic/ euhedral anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	104.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Gabbro.

	Type	Distribution
Texture:	subophitic	uniform
Fabric:	N/A	N/A

Comments: Locally granular. Pegmatitic/poikilitic at 15-24 cm in 103R-3. Orthopyroxene present at 33-38 cm in 103R-3. Sulfide blebs present locally. Mostly fresh except for the lower half where fragmented pieces are altered on surfaces.

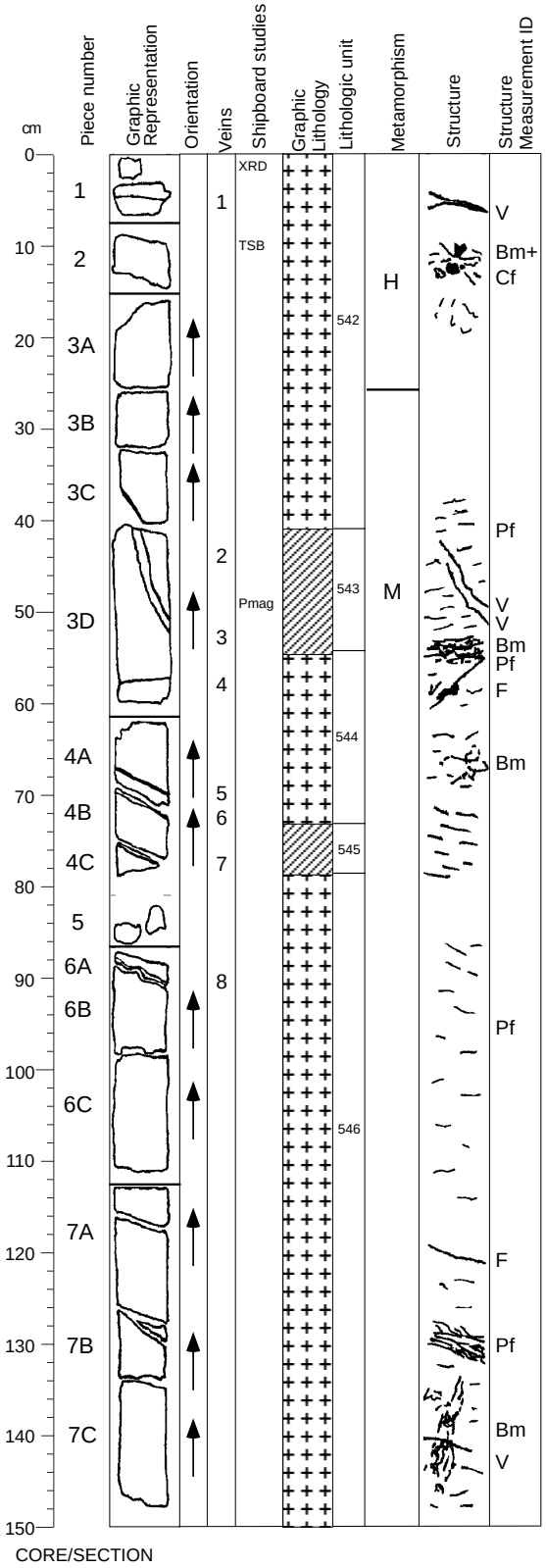
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole
Total Percent: tr.
Mode of occurrence: After altered olivine.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: negligible to high (1-50%). Alteration in Pieces 1 to 3C is the same as in Pieces 6 to 9 in the previous section. Pieces 3C to 3F are fresh. Pieces 3F to 5 are highly weathered, with 90% of the olivine and 40% of the clinopyroxene replaced by clays and oxides.

Vein/Fracture Filling:
0.2-1 mm smectite veins in Pieces 1A, 3A, and 3G.

Structures:
Mf>Pf; Mf>F; Mf>V
Crystal-plastic deformation is nearly absent from this section, except for a weak foliation at the top (Pieces 1A to 1B and 2) and at the bottom (Pieces 3G, 4, and 5). The rest of the section displays an undeformed igneous texture, very fresh in Pieces 3C to 3F, cut by a few faults and veins in Pieces 3A, 3B, and 3G.

Core Image



176-735B-103R-3

Interval 542: OPX-BEARING GABBRO
(see previous section)

Interval 543: OPX-BEARING OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	3	41	3C-D	598.06
Lower contact:	103	3	54	3D	598.19

Thickness (m): 0.13

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	15	5	coarse	tabular/ subhedral rounded
Clinopyroxene	40	10	3	medium	equant/ subhedral
Olivine	5	4	1	medium	amoeboidal/ anhedral chadacrystic
Orthopyroxene	1	3	1	medium	prismatic subhedral
Opaques	5				interstitial lenses/ interstitial network

Total 111* (see explanatory notes)
*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated): Not Calculated

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Fine-grained oxide-rich interval. Poikilitic olivine. Olivine and orthopyroxene altered.

Interval 544: OLIVINE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	3	54	3D	598.19
Lower contact:	103	3	73	4B	598.38

Thickness (m): 0.19

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	50	20	pegmatitic	tabular/ anhedral
Clinopyroxene	35	30	20	coarse	prismatic/ subhedral
Olivine	5	30	20	pegmatitic	tabular/ subhedral
Orthopyroxene	5	30	20	pegmatitic	tabular/ subhedral
Opaques	0.5				angular aggregates/ subhedral

Total 110.5* (see explanatory notes)
*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal name (calculated): Not Calculated

	Type	Distribution
Texture:	N/A	N/A
Fabric:	N/A	N/A

Comments: Interval of "pegmatitic clinopyroxene" in fine-grained matrix.

Continued next page

Core Image

176-735B-103R-3 (cont'd)

Interval 545: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	3	73	4B	598.38
Lower contact:	103	3	78	4C	598.43

Thickness (m): 0.05

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	20	4	coarse	tabular / anhedral deformed
Clinopyroxene	45	45	2	coarse	elongate / anhedral fractured
Olivine	N/A	N/A	N/A	N/A	
Orthopyroxene	1	2	1	medium	prismatic/ subhedral
Opaques	8				interstitial lenses/ interstitial network
Total	104*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Coarse-grained oxide-rich interval. Sulfide abundant at 76 cm in 103R-3.

Interval 546: OPX-BEARING GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	3	78	4C	598.43
Lower contact:	103	5	14	3	600.76

Thickness (m): 2.33

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	20	5	coarse	tabular/ euhedral subhedral
Clinopyroxene	40	20	3	coarse	tabular/ subhedral anhedral
Olivine	3	4	1	medium	equant/ subhedral anhedral
Orthopyroxene	1	4	1	medium	elongate / subhedral anhedral
Opaques	0.7				angular aggregates subhedral
	Total 99.7*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Gabbro

	Type	Distribution
Texture:	subophitic	variable
Fabric:	N/A	N/A

Comments: Finer/more granular toward base. Size and mode variable. Clinopyroxene locally pegmatitic. Oxide 4% at 128-130 cm in 103R-3. Sulfide abundant at 139 cm in 103R-3 and 97 cm in 103R-4.

Continued next page

Core Image

176-735B-103R-3 (cont'd)

Alteration:
Dark green amphibole:
- Total Percent: <10
- Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
- Comments: As alteration rims.

Secondary plagioclase:
- Total Percent: <25
- Mode of occurrence: Replacing primary plagioclase.
- Comments: Irregularly distributed.

Talc and oxides:
- Total Percent: <2
- Mode of occurrence: Replacing olivine.
- Comments: As mixtures in the crystal crack network.

Oxyhydroxides and smectites:
- Total Percent: <3
- Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
- Comments: Mixture of orange-red clays.

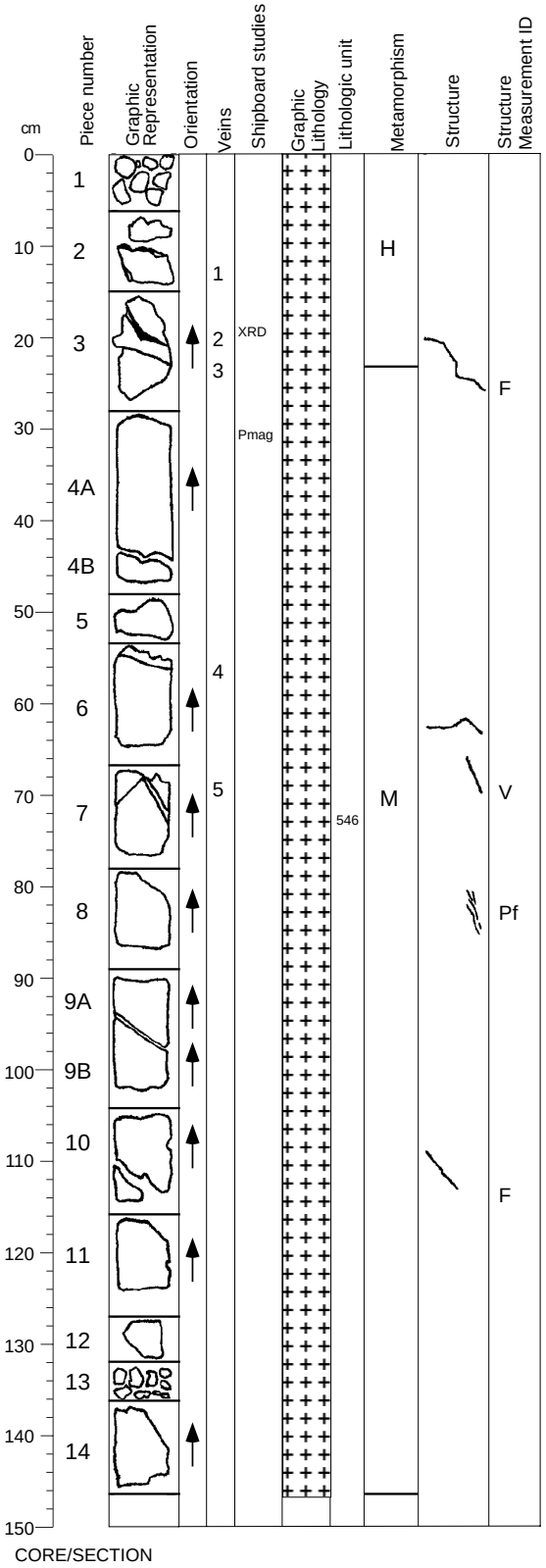
Carbonates:
- Total Percent: <1
- Mode of occurrence: In veins and replacing olivine.

Background Alteration:
Degree of alteration: moderate to high (30-70%). Most of the alteration is weathering of olivine and clinopyroxene. Replacement of olivine decreases from 100% to 40% down section. That of clinopyroxene decreases from 60 to 20% down section. The amount of secondary plagioclase varies between 10 and 30%.

Vein/Fracture Filling:
Smectite veins in Pieces 3D and 4A-4C; calcite veins in Piece 3C-3D.

Structures:
Mf>V; Mf>Bf>F/Cf; Pf>Bm>V; Pf>F
The structure of this section is very heterogeneous. The first 35 cm display magmatic texture, with no magmatic foliation, overprinted by a veins, brecciated veins, and faults. From 35 cm to the bottom, a weak crystal-plastic deformation is present. The foliation is porphyroclastic along a narrow zone in Piece 7A (126-127 cm). In Piece 3D, the plastic foliation is overprinted by a magmatic breccia and some veins. A small normal fault offsets a large pyroxene. The same brecciation occurs in Piece 4A.

Core Image



176-735B-103R-4

Interval 546: OPX-BEARING GABBRO
(see previous section)

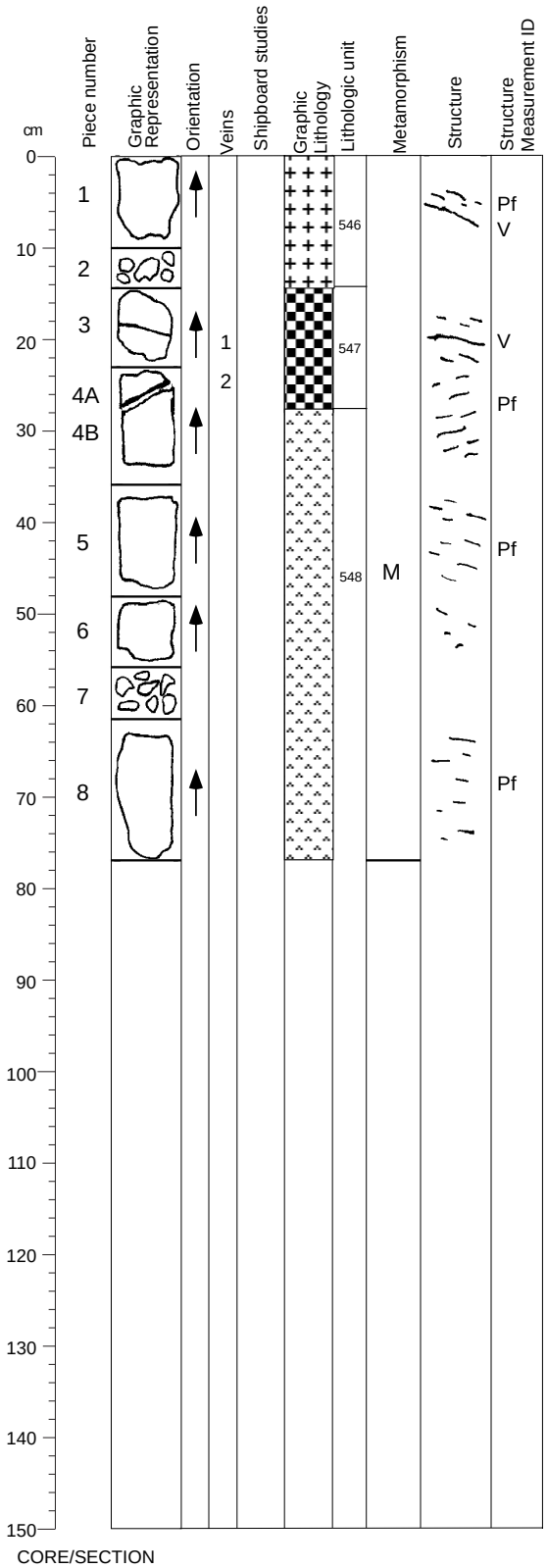
Alteration:
Dark green amphibole:
Total Percent: <20
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <3
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: moderate to high (15-60%). Pieces 1 to 9 are weathered (olivine 50 to 80%, clinopyroxene 20 to 50%). Pieces 10 to 14 are only slightly weathered (10-30%). Plagioclase recrystallization is around 10%.

Vein/Fracture Filling:
0.2-1 mm smectite veins in Pieces 2, 3, and 6; Calcite vein in Piece 7.

Structures:
Mf>F; Mf>V; Mf>Pf
The complete section displays an igneous texture, with no or a weak magmatic foliation. It is overprinted in Piece 8 by a very weak crystal-plastic foliation and cut by a few faults.

Core Image



176-735B-103R-5

Interval 546: OPX-BEARING GABBRO
(see Section 176-735B-103R-3)

Interval 547: ALTERED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	5	14	3	600.76
Lower contact:	103	5	28	4B	600.90

Thickness (m): 0.14

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	10	0.5	medium	tabular / anhedral deformed
Clinopyroxene	10	10	n/a	fine	equant/ anhedral
Olivine	1	2	1	medium	amoeboidal/ anhedral
Opaques	6				interstitial lenses/ interstitial network
Total	82*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated): Not Calculated.

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Oxide-rich interval. Olivine oxidized/serpentinized.

Interval 548: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	103	5	28	3B	600.90
Lower contact:	104	3	12	1A	607.06

Thickness (m): 6.16

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	10	3	medium	tabular / subhedral euhedral
Clinopyroxene	35	15	1	medium	equant/ subhedral anhedral
Olivine	6	3	1	medium	amoeboidal/ anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	96.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated): Olivine Gabbro.

	Type	Distribution
Texture:	granular	N/A
Fabric:	textural gradation	N/A

Comments: Fine- to medium-grained olivine gabbro. Gradational decrease in grain size to 104R-2 at 60 cm. Olivine abundance variable. Clinopyroxene grain size variable.

Core Image

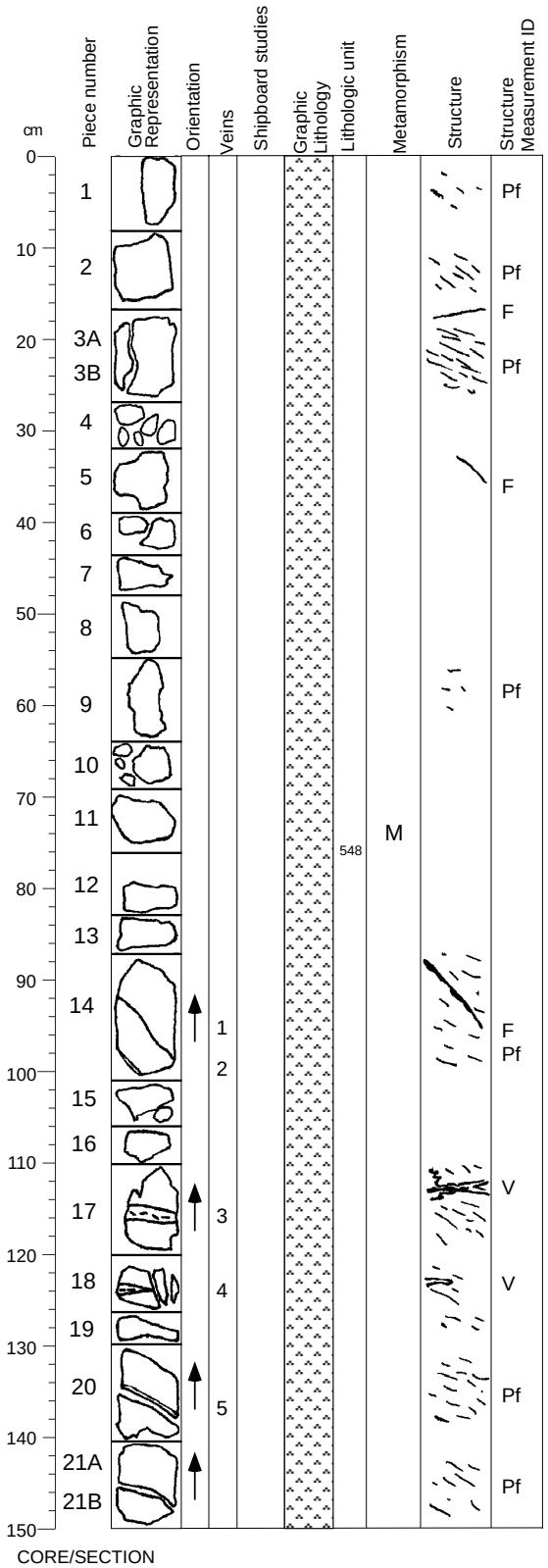
176-735B-103R-5 (cont'd)

Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, but more developed near shear areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Oxyhydroxides and smectites:
Total Percent: trace
Mode of occurrence: Replacing olivine relicts and some clinopyroxene.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: moderate (15%). Same as Pieces 10 to 14 in previous section. From here on weathering is generally very weak or absent.
Vein/Fracture Filling:
0.3-0.5 mm smectite veins in Pieces 3 and 5.

Structures:
Mf>Pf>V
Most of the section has a weak crystal-plastic fabric. Magmatic texture is still visible in part of Piece 1. A vein overprints the plastic foliation in Piece 3.

Core Image



176-735B-104R-1

Interval 548: OLIVINE GABBRO
(see previous section)

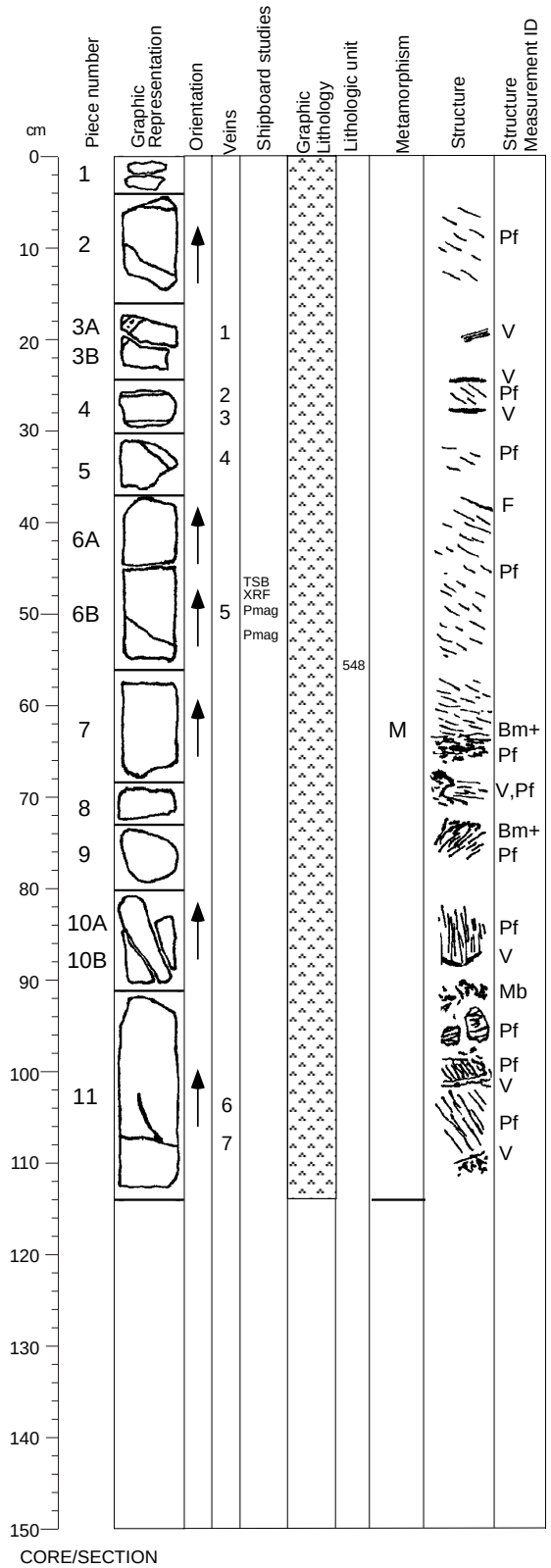
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic impregnations.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: More abundant near felsic veins

Background Alteration:
Degree of alteration: moderate (12%). Olivine is replaced by amphibole and talc (40%). 10% of the clinopyroxene is replaced by dark amphibole. 10% of the plagioclase is secondary.

Vein/Fracture Filling:
2.5-8 mm diopside+ plagioclase veins in Pieces 14, 17, and 18; calcite vein in Piece 20; smectite vein in Piece 14.

Structures:
Pf>F; Mf>F; Pf>V
The complete section displays crystal-plastic foliation, weak to moderate, locally overprinted by faults or veins.

Core Image



176-735B-104R-2

Interval 548: OLIVINE GABBRO
(see Section 176-735B-103R-5)

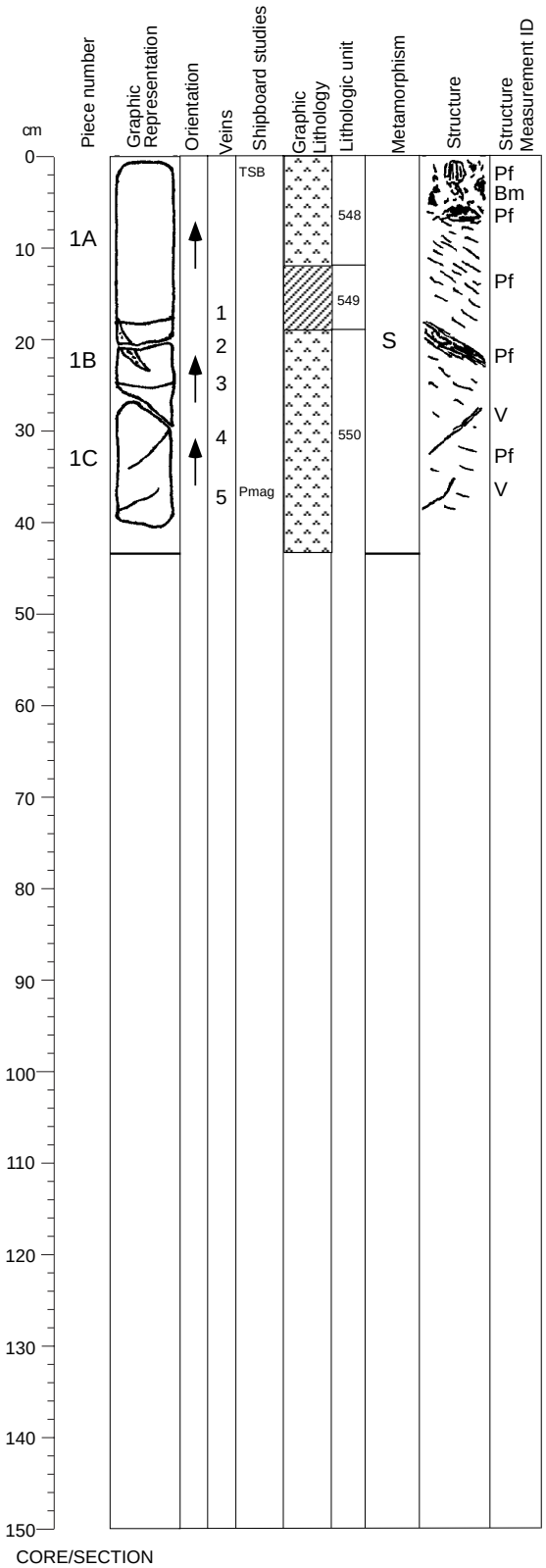
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic impregnations.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic impregnations.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: More abundant near felsic veins.

Background Alteration:
Degree of alteration: moderate (12%). Same as previous section.

Vein/Fracture Filling:
2-4 mm plagioclase+amphibole vein in Piece 3; 0.2-0.3 mm smectite veins in Pieces 5 and 6B; 5-8 mm diopside + plagioclase veins in Piece 11.

Structures:
Pf>Mb>Pf; Pf>V>Bm
High-temperature crystal-plastic foliation is found over the entire section. In the upper half, it is cut by a few veins and faults. The bottom half shows beautifully the processes of brecciation and its timing with respect to high-temperature plastic deformation and overprinting plastic deformation. The large brecciated zone in Piece 11 contains clasts with the high temperature foliation at variable orientation. Pieces 4 and 10 are clasts; they are bounded by veins, and Piece 10 has a vertical high-temperature mylonitic foliation. The brecciated vein in Piece 7 is overprinted by crystal-plastic deformation.

Core Image



176-735B-104R-3

Interval 548: OLIVINE GABBRO
(see Section 176-735B-103R-5)
Interval 549: LEUCOCRATIC OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	104	3	12	1A	607.06
Lower contact:	104	3	19	1A	607.13

Thickness (m): 0.07

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	67	15	3	medium	tabular / subhedral deformed
Clinopyroxene	35	30	20	coarse	equant/ anhedral
Olivine	2	4	1	medium	prismatic/ subhedral
Orthopyroxene	1	3	1	medium	elongate / subhedral interstitial lenses/ interstitial network
Opaque	4				
Total	109*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated):FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Oxide-rich interval. Deformed. Sulfide abundant at 28-74 cm in 103R-5. Olivine serpentinized.

Interval 550: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	104	3	19	1A	607.13
Lower contact:	107	1	66	3A	620.16

Thickness (m): 13.03

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	20	3	coarse	tabular / subhedral chadacrystic
Clinopyroxene	40	35	2	coarse	elongate / oikocrystic anhedral
Olivine	10	5	1	medium	amoeboidal/ anhedral
Opaque	0.5				angular aggregates/ disseminated
Total	100.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Medium
Modal name (calculated):Olivine Gabbro.

	Type	Distribution
Texture:	textural variation	N/A
Fabric:	textural gradation	N/A

Comments: Upper half more granular, lower half more subophitic/ophitic. Poikilitic at 115-127 cm in 104R-3. Oxide-rich at 24 cm in 104R-3, 2% at 88-89 cm in 104R-2, and 38-40 cm in 104R-4. Sulfide abundant at 15 and 102 cm in 107R-1, 90 and 111 cm in 107-R2, and 96 cm in 107R-3; more abundant in lower part of the interval. Locally sheared, microfractures filled with felsic/greenish material. Olivine abundance variable, white reaction rims observed.

Continued next page

Core Image

176-735B-104R-3 (cont'd)

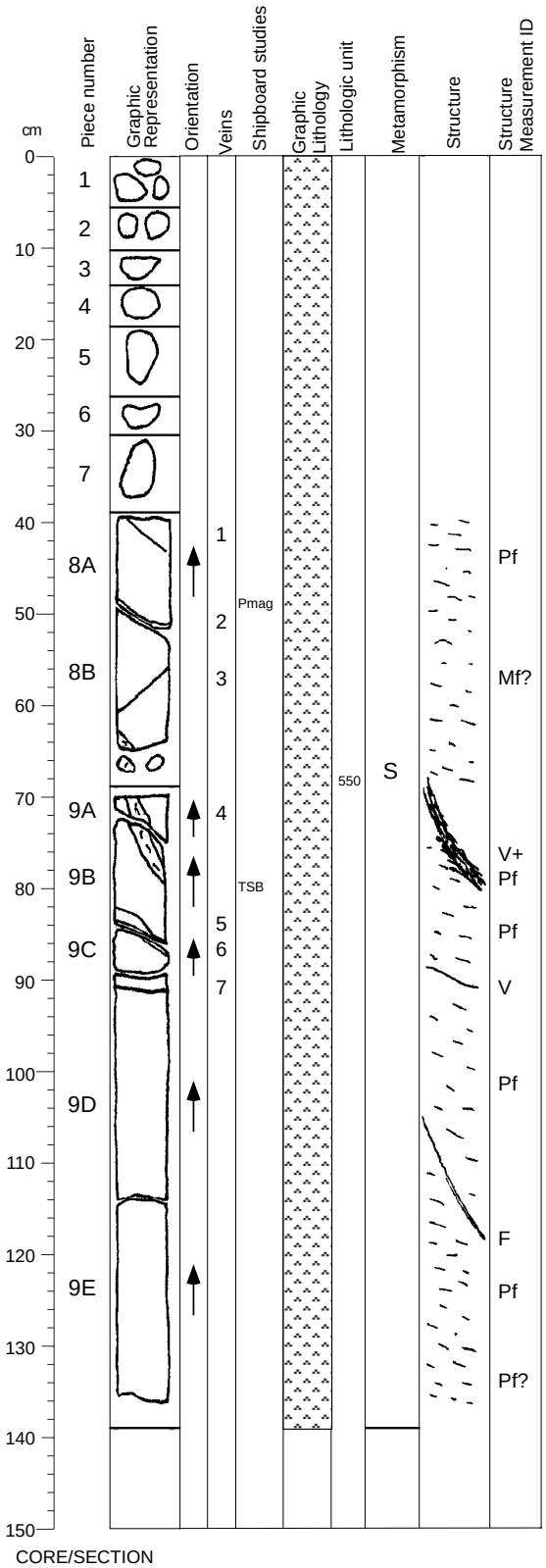
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic impregnations.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: More abundant near felsic veins.
Oxyhydroxides and smectites:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Comments: Mixture of orange-red clays.

Background Alteration:
Degree of alteration: slight (8%). Olivine is replaced by amphibole and talc (30%). 8% of the clinopyroxene is replaced by dark amphibole. 5% of the plagioclase is secondary.

Vein/Fracture Filling:
1-5 mm diopside veins in Pieces 1A-1C; calcite vein in Piece 1A; smectite vein in Piece 1B.

Structures:
Pf>Bm>Pf; Pf>V>Pf
This section is continuous with the previous one (104R-2) and displays, at the top of Piece 1A, the bottom of the brecciated zone described in the previous section, with another clast, plastically deformed and rotated in the breccia. This zone is bounded at 8 cm by a narrow shear zone. The rest of the core displays a weak to moderate high-temperature crystal-plastic foliation, overprinted by a vein and an ultramylonite, successively, in Pieces 1A and 1B (20 cm). Two late veins cut the plastic fabric in Piece 1C.

Core Image



176-735B-105R-1

Interval 550: OLIVINE GABBRO
(see previous section)

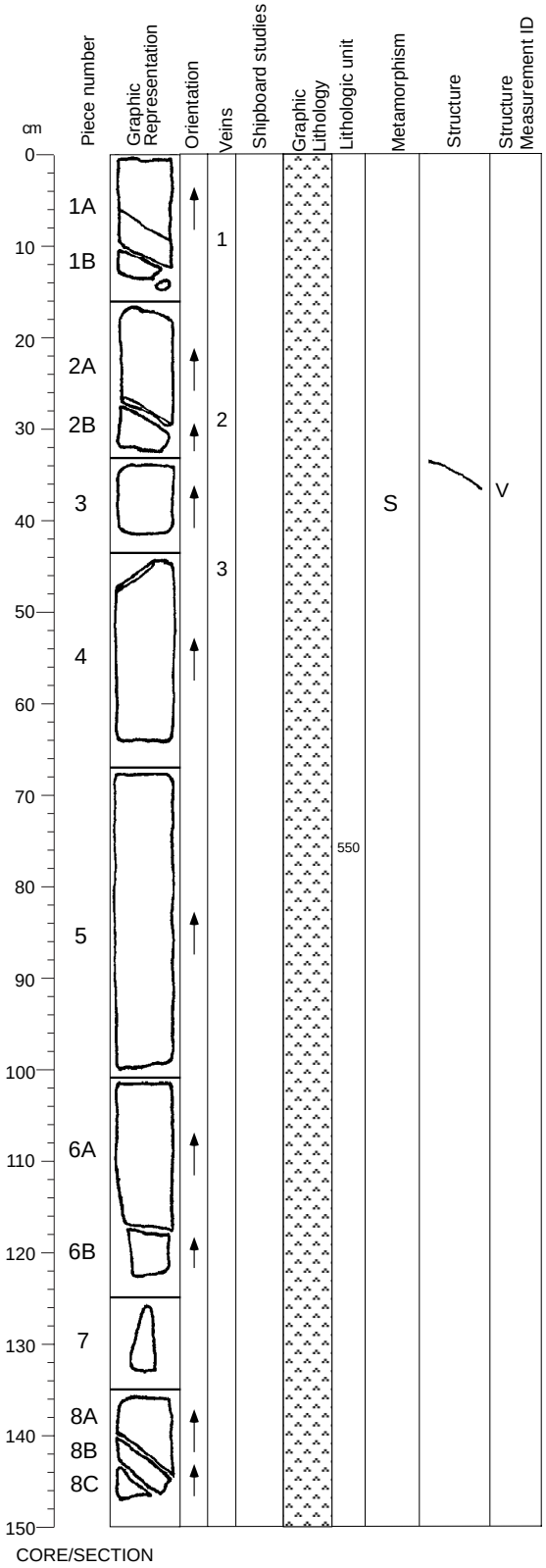
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic impregnations.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic impregnations.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic impregnations.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Near felsic veins.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
0.2-0.3 mm amphibole veins in Pieces 8A to 8B; 0.8-7 mm plagioclase+ amphibole+diopside veins in Pieces 8B-9B; smectite vein in Piece 9D.

Structures:
Pf>Mf?; Pf>V>Pf; Pf>F
A weak crystal-plastic foliation is present over the entire section. It may overprint a magmatic foliation, considering the good alignment of the minerals in the fine-grained facies (Pieces 8A, 8B, 9B and 9E. See thin section from Piece 9B). The plastic fabric is locally overprinted (Pieces 8B, 9A and 9B) by a vein, itself overprinted by a moderate plastic foliation. A few faults cut the plastic foliation.

Core Image



176-735B-105R-2

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

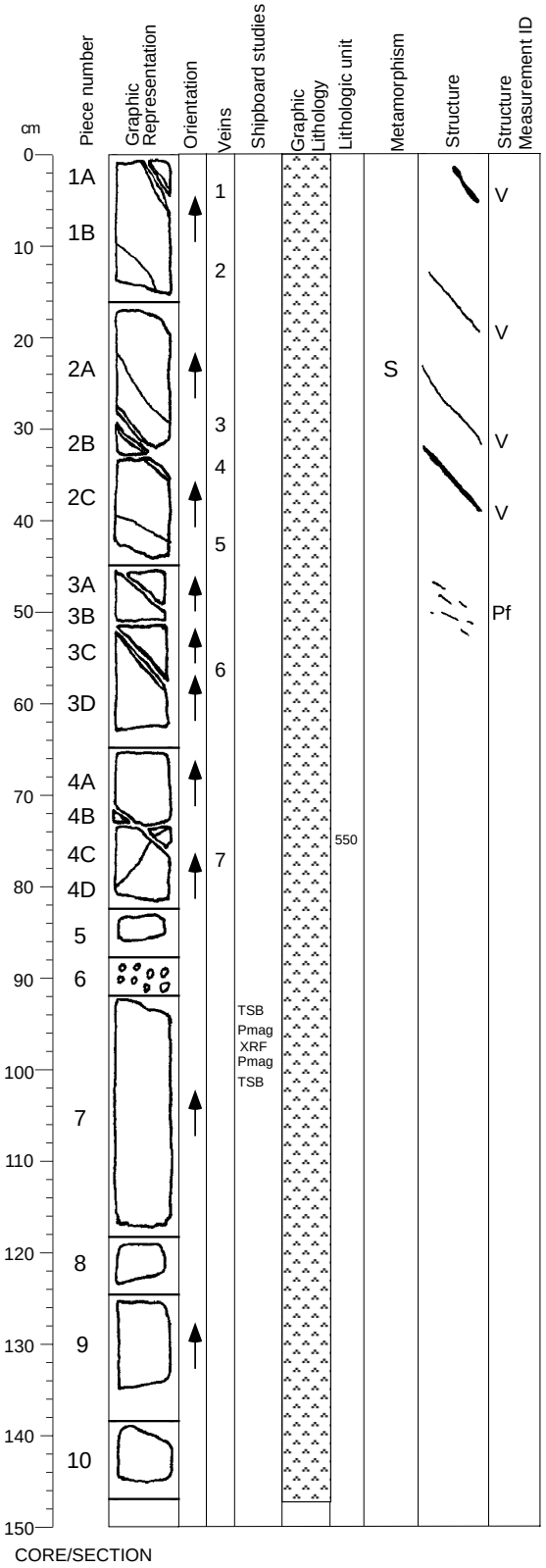
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Near veins.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
0.2-0.3 mm smectite veins in Pieces 1A, 2A, and 4.

Structures:
Mf>V
The entire section displays an igneous texture, with no magmatic foliation, cut in Piece 3 by a vein.

Core Image



176-735B-105R-3

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

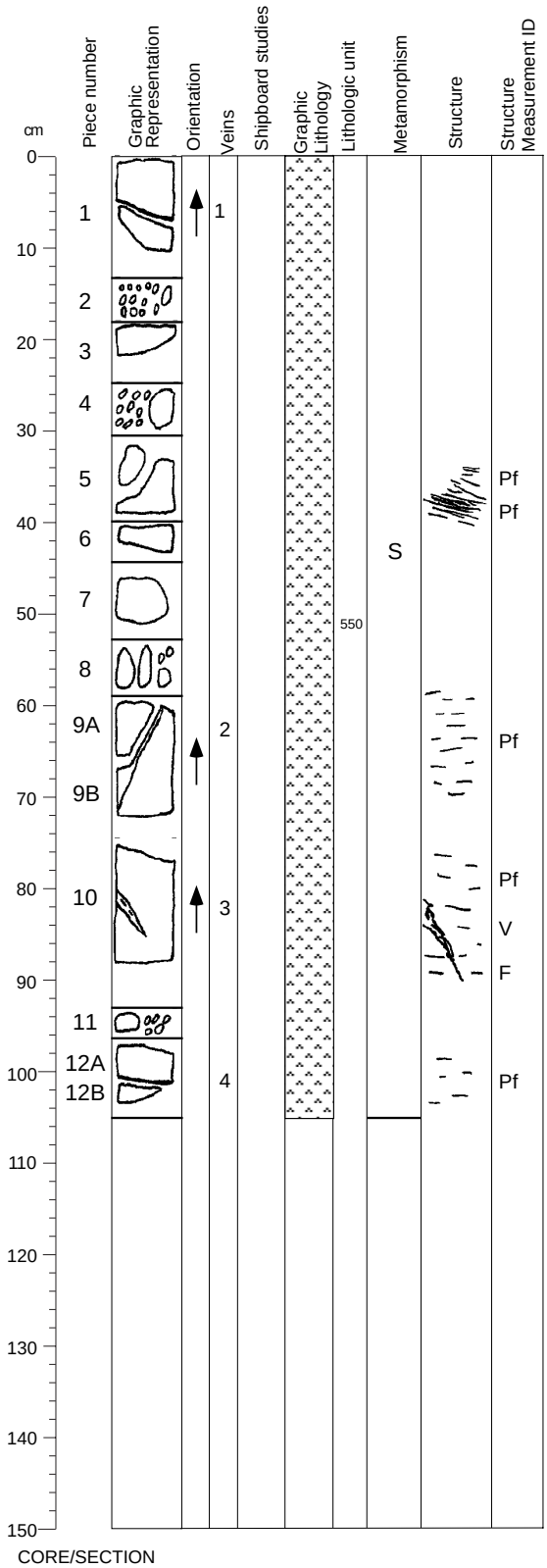
Alteration:
Dark green amphibole:
Total Percent: <3
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic veins.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Near veins.

Background Alteration:
Degree of alteration: slight (5%). Olivine is replaced by amphibole and talc (20%). 5% of the clinopyroxene is replaced by dark amphibole. 5% of the plagioclase is secondary.

Vein/Fracture Filling:
Plagioclase + diopside veins in Pieces 1A to 1B and 2A to 2C; amphibole+ plagioclase veins in Pieces 1B and 2C; smectite vein sin Pieces 3C to 3D and 4C to 4D.

Structures:
Mf>Pf?; Mf>V
The complete section displays an igneous texture, with no or a weak magmatic foliation, overprinted by a set of parallel veins in Pieces 1A to 2C. Some weak crystal-plastic deformation may be present in Pieces 3B and 3C (47-53 cm).

Core Image



176-735B-105R-4

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

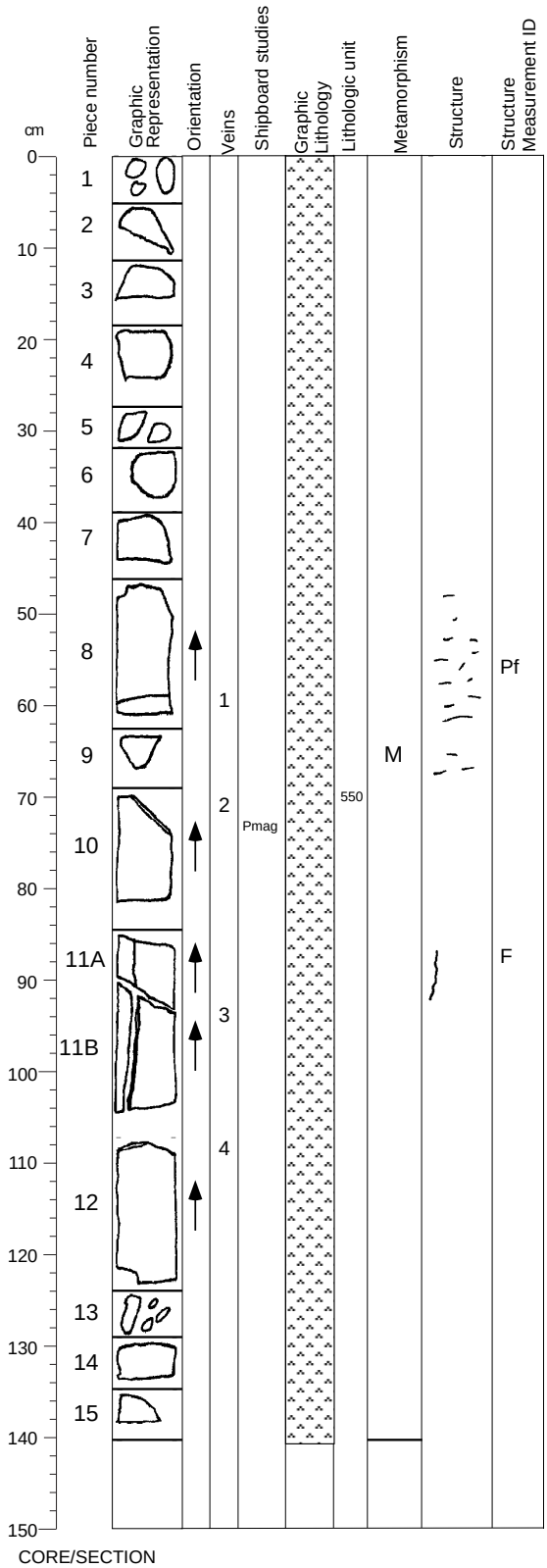
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (10%). Olivine is replaced by amphibole and talc (40%). 10% of the clinopyroxene is replaced by dark amphibole. 8% of the plagioclase is secondary.

Vein/Fracture Filling:
0.2-0.3 mm smectite veins in Pieces 1 and 12; amphibole vein in Piece 9; diopside vein in Piece 10.

Structures:
Pf>Pf; Pf>V>F
The first piece displays an igneous texture, with a possible weak magmatic fabric. From 13 to 40 cm, the section is made of non-oriented small pieces. They display alternatively an igneous texture, or a weak crystal-plastic foliation. Piece 5 contains an ultramylonite. From 40 cm to the bottom of the section, a weak crystal-plastic foliation is present; it is overprinted in Piece 10 by a vein which tapers downward into a fault.

Core Image



176-735B-106R-1

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

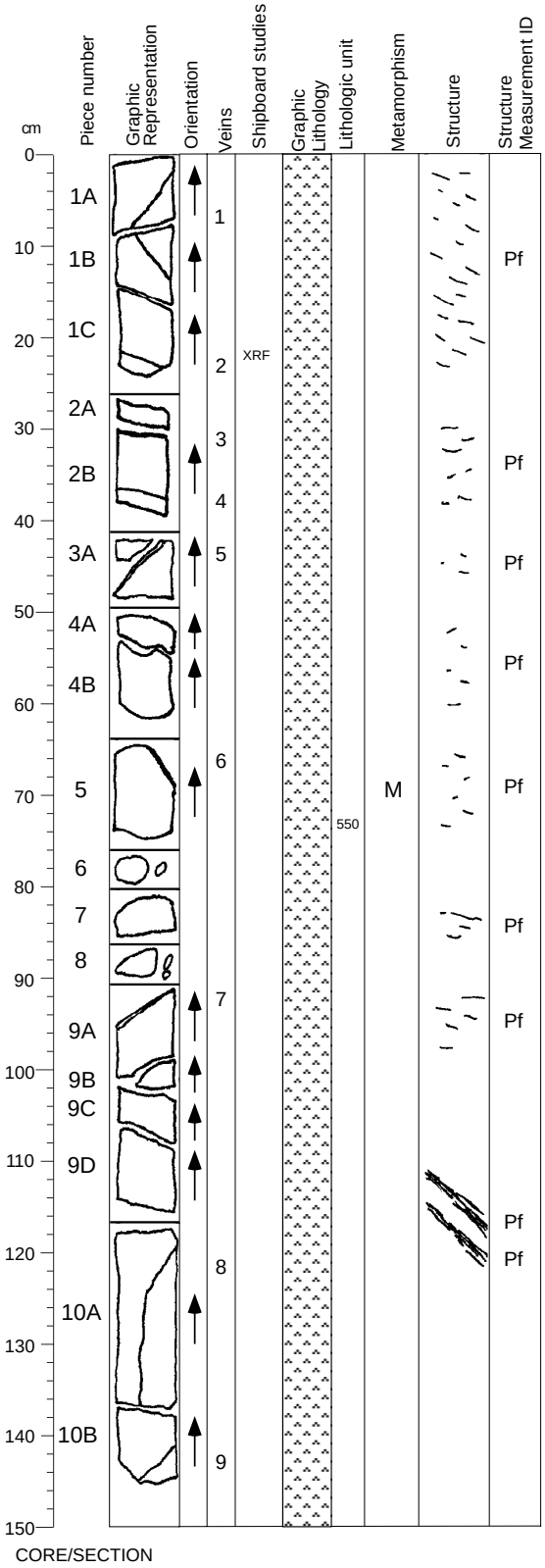
Alteration:
Dark green amphibole:
Total Percent: <12
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <8
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As Mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: moderate (20%). Olivine is replaced by amphibole and talc (40%). 20% of the clinopyroxene is replaced by dark amphibole. 15% of the plagioclase is secondary.

Vein/Fracture Filling:
Smectite veins in Pieces 8, 10, 11A to 11C, and 12.

Structures:
Mf>Pf; Mf>F
This section displays an igneous texture, with no or a weak magmatic foliation, except for Pieces 8 and 9, and a few non-oriented pieces in the 40 first cm of the section, which has a weak crystal-plastic foliation.

Core Image



176-735B-106R-2

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

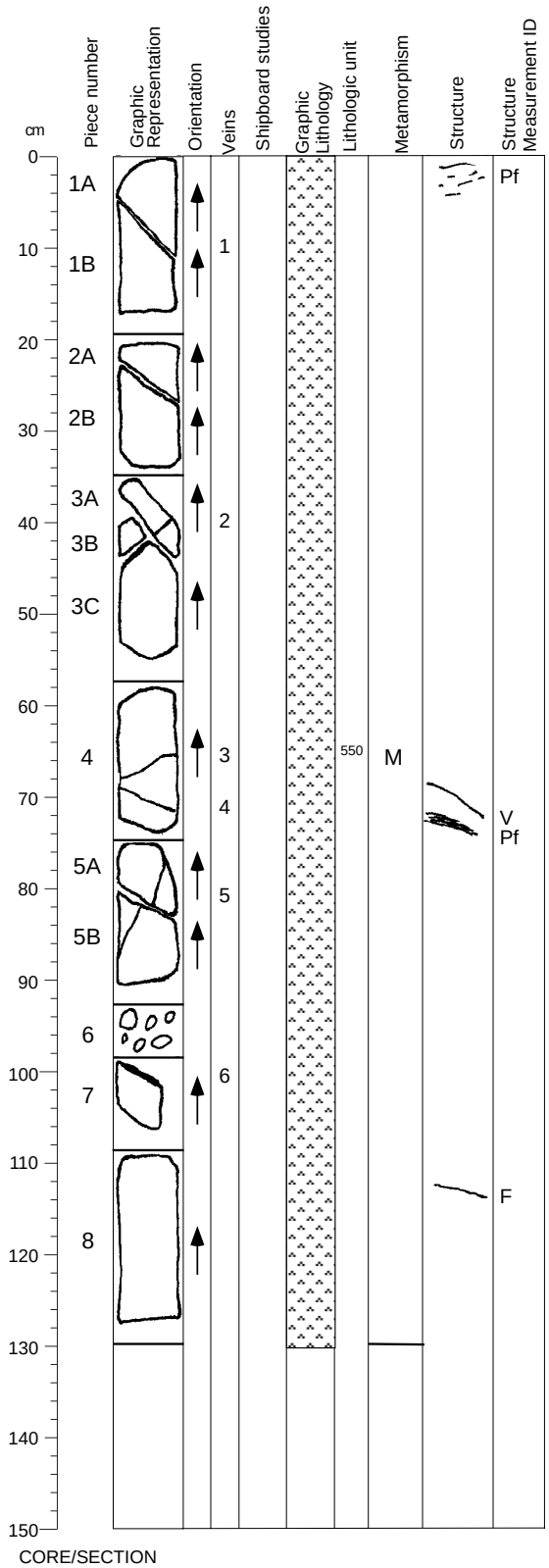
Alteration:
Dark green amphibole:
Total Percent: <12
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <8
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: moderate (20%). Same as previous section.

Vein/Fracture Filling:
Smectite veins in Pieces 1A to 1C, 2B, 9A, and 10A; amphibole vein in Piece 3, calcite vein in Piece 5; smectite filled fracture in Piece 10B.

Structures:
Mf>Pf
From 0 to 102 cm (Pieces 1A to 9A), the section displays a weak crystal-plastic fabric. From 102 cm to the bottom of the section, the texture is igneous, overprinted in Pieces 9D and 10A by two narrow ultramylonitic shear zones.

Core Image



176-735B-106R-3

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

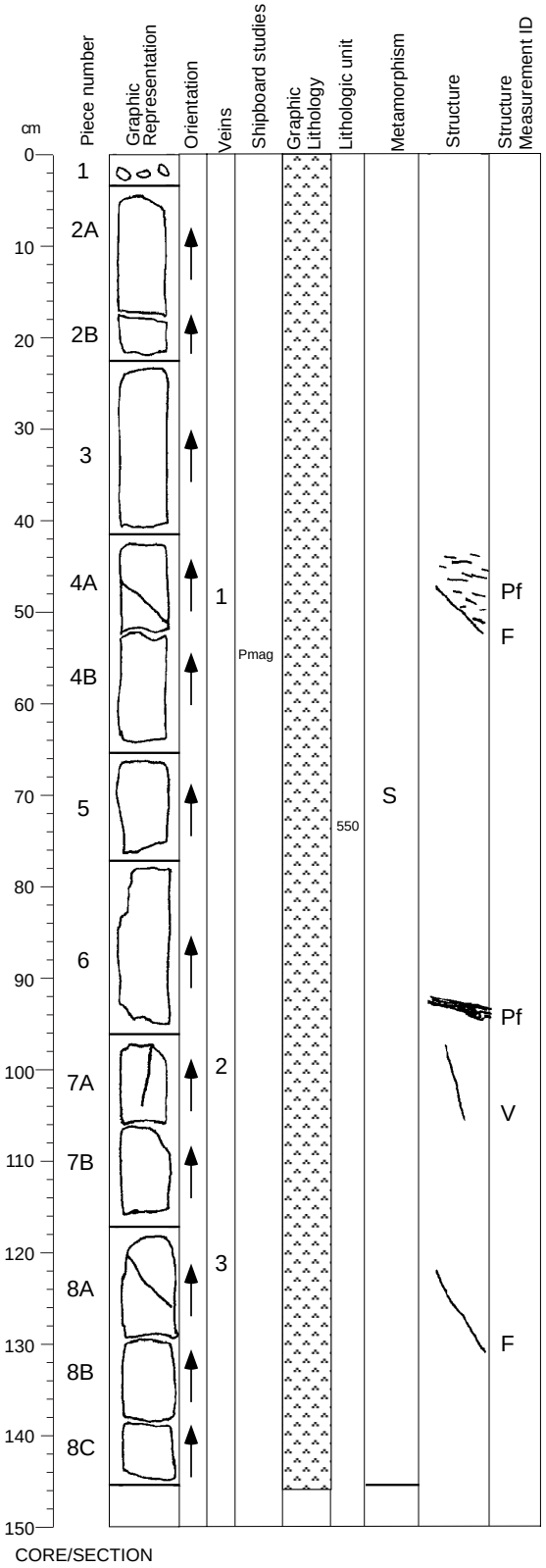
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <8
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <2
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: moderate (20%). Same as previous section.

Vein/Fracture Filling:
0.5-1.5 mm diopside veins in Pieces 1 and 4; plagioclase veins I Pieces 3A to 3C and 4; smectite+carbonate veins in Piece 5A to 5B and 7.

Structures:
Mf>Pf; Mf>V; Mf>F
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted by a weak crystal-plastic deformation on top of Piece 1A, a vein and a narrow mylonitic zone in Piece 4, and a fault in Piece 8. Piece 8 contains a giant poikilitic pyroxene (about 8 cm in diameter).

Core Image



176-735B-106R-4

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)

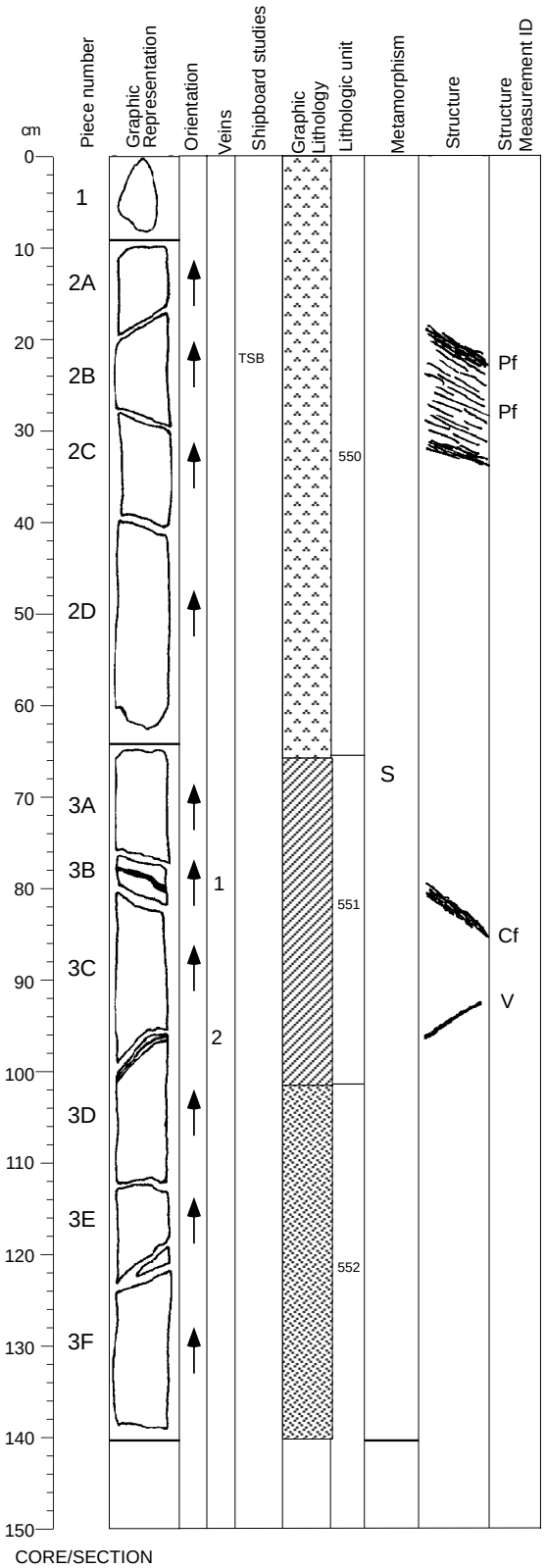
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: Slight (10%). Olivine is replaced by amphibole and talc (30%). 8% of the clinopyroxene is replaced by dark amphibole. 8% of the plagioclase is secondary.

Vein/Fracture Filling:
0.5-1 mm diopside+plagioclase veins in Pieces 7A and 8A; 0.5 mm amphibole vein in Piece 4A.

Structures:
Mf>Pf>F; Mf>V; Mf>F
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation (one can hardly see any magmatic fabric because of the coarse grain size), overprinted by a narrow plastic shear zone (Piece 6) and a few veins and faults. Piece 4A is split by a small fault, the upper part is weakly plastically deformed.

Core Image



176-735B-107R-1

Interval 550: OLIVINE GABBRO
(see Section 176-735B-104R-3)
Interval 551: OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	107	1	66	3A	620.16
Lower contact:	107	1	102	3D	620.52

Thickness (m): 0.36

	Grain Size (mm): Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	45	30	8	coarse	tabular / subhedral
Clinopyroxene	45	70	10	pegmatitic	prismatic/ subhedral
Olivine	3	8	2	coarse	prismatic/ subhedral
Orthopyroxene	5	25	5	coarse	prismatic/ euhedral subhedral
Opaques	2				angular aggregates/ disseminated
Total	100*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal name (calculated): FeTi Oxide Gabbronorite.

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Pegmatitic (3-8 cm) clinopyroxene interval, also poikilitic.
Olivine serpentinized with white reaction rims.

Interval 552: DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	107	1	102	3D	620.52
Lower contact:	107	2	28	1C	621.20

Thickness (m): 0.68

	Grain Size (mm): Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	40	10	coarse	tabular / subhedral
Clinopyroxene	35	40	4	coarse	chadacrystic equant/ anhedral subhedral
Olivine	6	15	2	coarse	elongate / subhedral anhedral
Opaques	1				amoeboidal aggregates/ disseminated
Total	92*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Disseminated FeTi Oxide Olivine Gabbro.

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Coarse-grained gabbro. Locally subophitic/ophitic. Olivine rich at base, with white reaction rims.

Continued next page

Core Image

176-735B-107R-1 (cont'd)

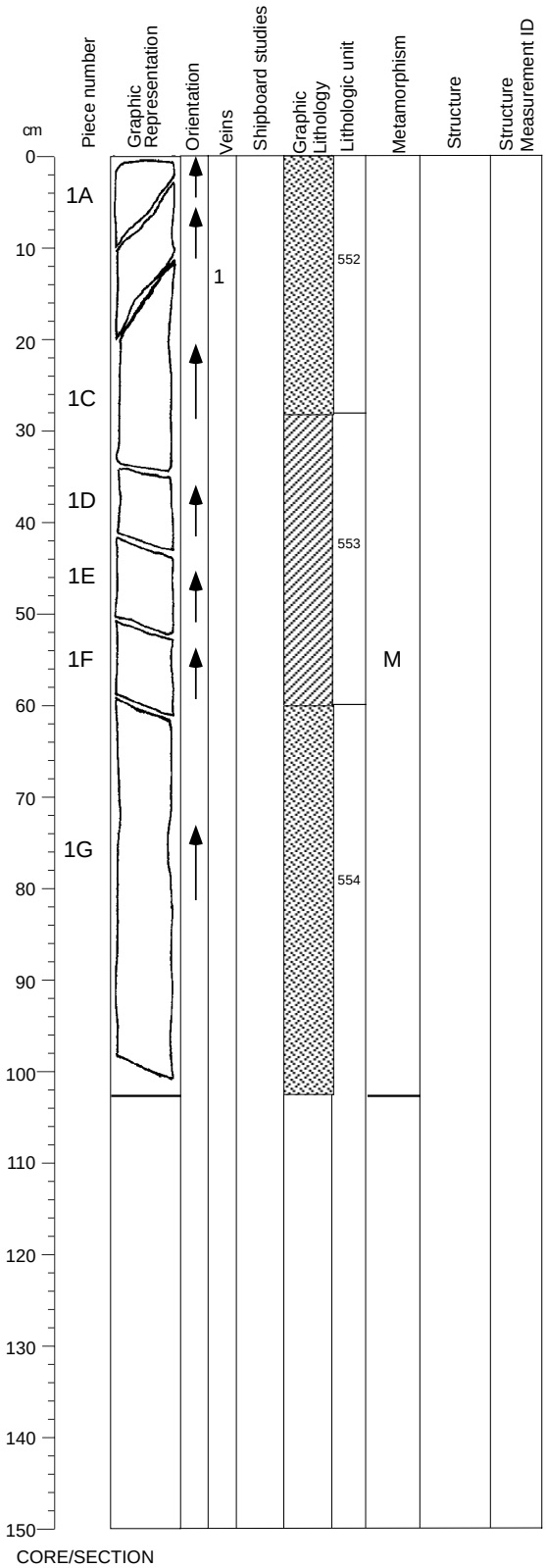
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared areas.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near sheared areas.

Background Alteration:
Degree of alteration: slight (10%). Same as previous section.

Vein/Fracture Filling:
Smectite+calcite veins in Pieces 3B and 3D.

Structures:
Mf>Pf; Mf>Cf; Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted in Pieces 2B and 2C by a 9 cm thick crystal-plastic shear zone. The shear zone is bounded on both sides by ultramylonites (about 1 cm thick). Downward, the magmatic texture is cut by a cataclastic zone (Piece 3B) and a vein (Piece 3D).

Core Image



176-735B-107R-2

Interval 552: DISSEMINATED OXIDE OLIVINE GABBRO
(see previous section)

Interval 553: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	107	2	28	1C	621.20
Lower contact:	107	2	60	1F	621.52

Thickness (m): 0.32

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	40	10	coarse	tabular / subhedral anhedral
Clinopyroxene	40	75	10	pegmatitic	elongate / subhedral
Olivine	2	8	1	medium	amoeboidal/ anhedral
Orthopyroxene	1	3	1	medium	tabular / subhedral
Opaques	2				chadacrystic amoeboidal aggregates/ disseminated
Total	100*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal name (calculated): FeTi Oxide Gabbro.

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Pegmatitic (up to 8 cm) clinopyroxene interval. Sulfide present. Olivine (with white reaction rims) surrounded by clinopyroxene and then by oxide "matrix".

Interval 554: DISSEMINATED OXIDE OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	107	2	60	1F	621.52
Lower contact:	107	3	3	1A	621.97

Thickness (m): 0.45

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	30	10	coarse	tabular / subhedral anhedral
Clinopyroxene	40	70	5	coarse	equant/ anhedral subhedral
Olivine	5	3	1	medium	tabular / subhedral
Opaques	1				amoeboidal aggregates/ disseminated
Total	101*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal name (calculated): Disseminated FeTi Oxide Olivine Gabbro.

	Type	Distribution
Texture:	granular	N/A
Fabric:	N/A	N/A

Comments: Locally ophitic/subophitic. Olivine with white reaction rims.

Continued next page

Core Image

176-735B-107R-2 (cont'd)

Alteration:
Dark green amphibole:
- Total Percent: <5
- Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
- Comments: As alteration rims.

Green amphibole:
- Total Percent: <1
- Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
- Comments: As alteration rims and near sheared areas.

Secondary plagioclase:
- Total Percent: <5
- Mode of occurrence: Replacing primary plagioclase.
- Comments: Irregularly distributed.

Talc and oxides:
- Total Percent: <1
- Mode of occurrence: Replacing olivine.
- Comments: As mixtures in the crystal crack network.

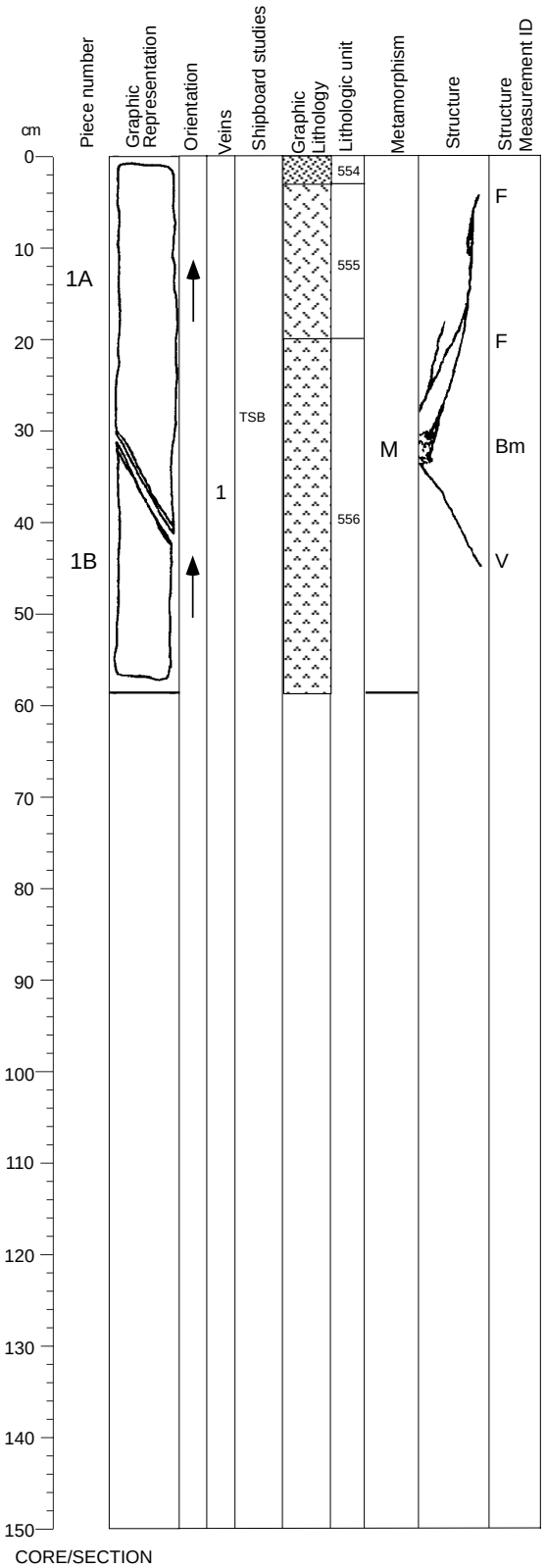
Chlorite:
- Total Percent: <1
- Mode of occurrence: In olivine rims and some clinopyroxene.
- Comments: Replacing minerals particularly near sheared areas.

Background Alteration:
Degree of alteration: moderate (12%). Olivine is replaced by amphibole and talc (30%). 10% of the clinopyroxene is replaced by dark amphibole. 10% of the plagioclase is secondary.

Vein/Fracture Filling:
0.3 mm smectite+calcite vein in Pieces 1A to 1B.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation (It is hard to see any magmatic fabric because of the coarse grain size).

Core Image



176-735B-107R-3

Interval 554: DISSEMINATED OXIDE OLIVINE GABBRO
(see previous section)

Interval 555: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	107	3	3	1A	621.97
Lower contact:	107	3	20	1A	622.14

Thickness (m): 0.17

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	30	10	coarse	tabular / subhedral anhedral
Clinopyroxene	40	55	10	pegmatitic	equant/ anhedral
Olivine	4	4	1	medium	equant/ subhedral fractured
Opaques	0.5				angular aggregates/ disseminated
Total	99.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal name (calculated): Gabbro.
Comments: Olivine altered.

Interval 556: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	107	3	20	1A	622.14
Lower contact:	109	2	15	1	630.35

Thickness (m): 8.21

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	20	5	coarse	tabular/ subhedral euhedral
Clinopyroxene	35	35	2	coarse	equant/ oikocrystic anhedral
Olivine	8	3	1	medium	tabular / anhedral subhedral
Opaques	0.8				angular aggregates/ disseminated
Total	98.8*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro.

	Type	Distribution
Texture:	textural variation	N/A
Fabric:	N/A	N/A

Comments: Subophitic/ophitic at top. Locally granular, more so from 0 to 50 cm in 109R-1. Coarse-grained oxide-rich horizon at 24 cm in 108R-2. Oxide 1% at 30-31 cm in 107R-3, 2% at 24-25 cm in 108R-2. Olivine altered/fractured with white reaction rims present.

Continued next page

Core Image

176-735B-107R-3 (cont'd)

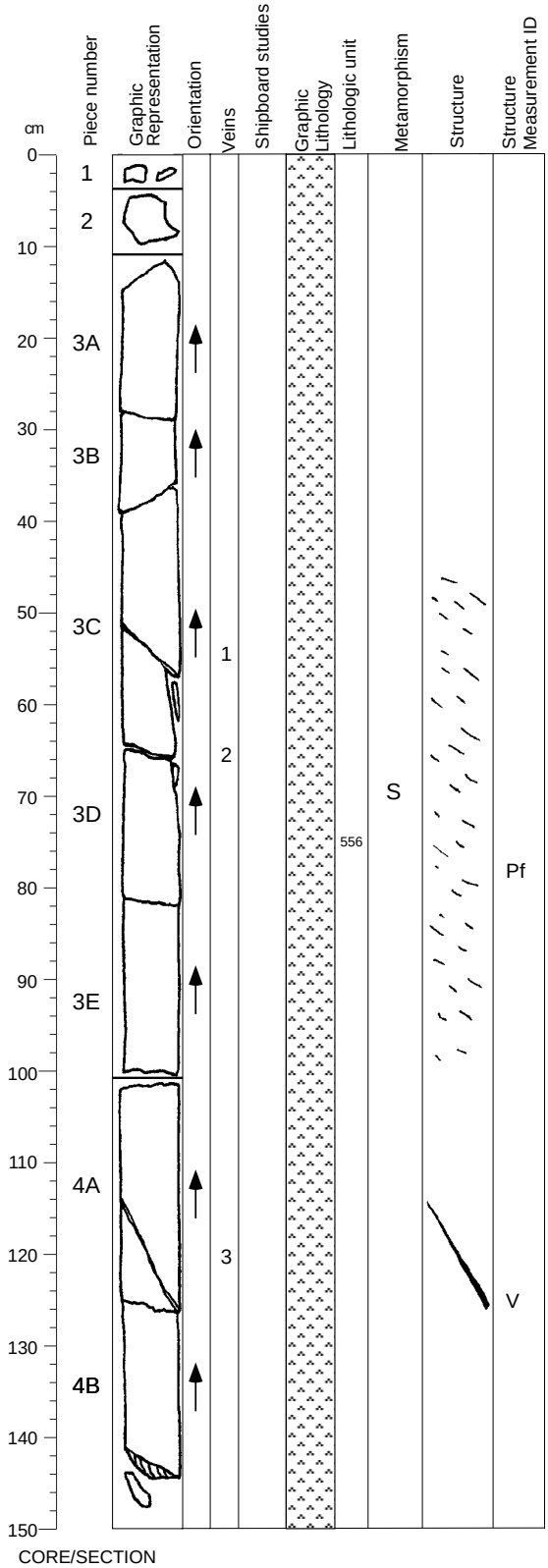
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared areas.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near sheared areas.

Background Alteration:
Degree of alteration: moderate (12%). Same as previous section.

Vein/Fracture Filling:
Diopside + plagioclase + amphibole vein in Piece 1A to 1B.

Structures:
Mf>Mb>F; Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation (It is hard to see any magmatic fabric because of the coarse grain size), cut in Piece 1A by a set of anastomosing faults, branching out of a brecciated zone. A vein cuts the magmatic texture at the bottom of the same piece.

Core Image



176-735B-108R-1

Interval 556: OLIVINE GABBRO
(see previous saction)

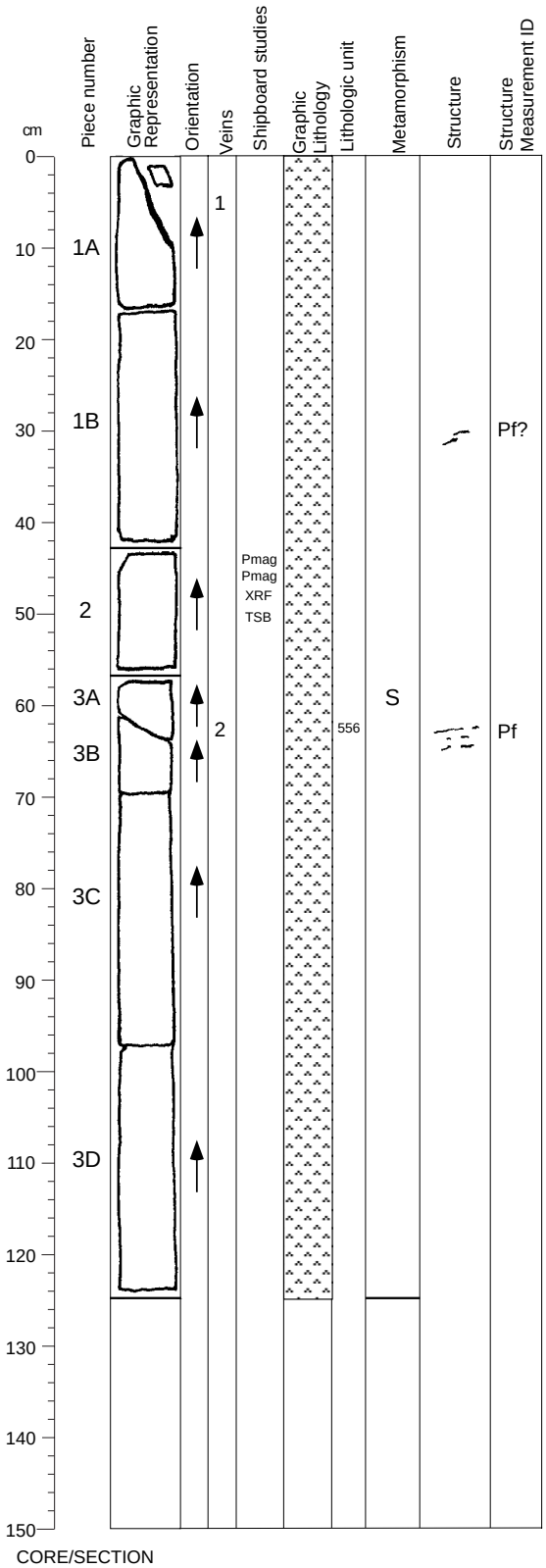
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near sheared areas.

Background Alteration:
Degree of alteration: slight (4%). Olivine is replaced by amphibole and talc (15%). 3% of the clinopyroxene is replaced by dark amphibole. 3% of the plagioclase is secondary.

Vein/Fracture Filling:
Smectite+calcite vein in Piece 3C; diopside+plagioclase vein in Piece 4A.

Structures:
Mf>Pf>; Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted in its central part (45 to 101 cm) by a weak crystal-plastic deformation. A vein cuts the magmatic texture in Piece 4A.

Core Image



176-735B-108R-2

Interval 556: OLIVINE GABBRO
(see Section 176-735B-107R-3)

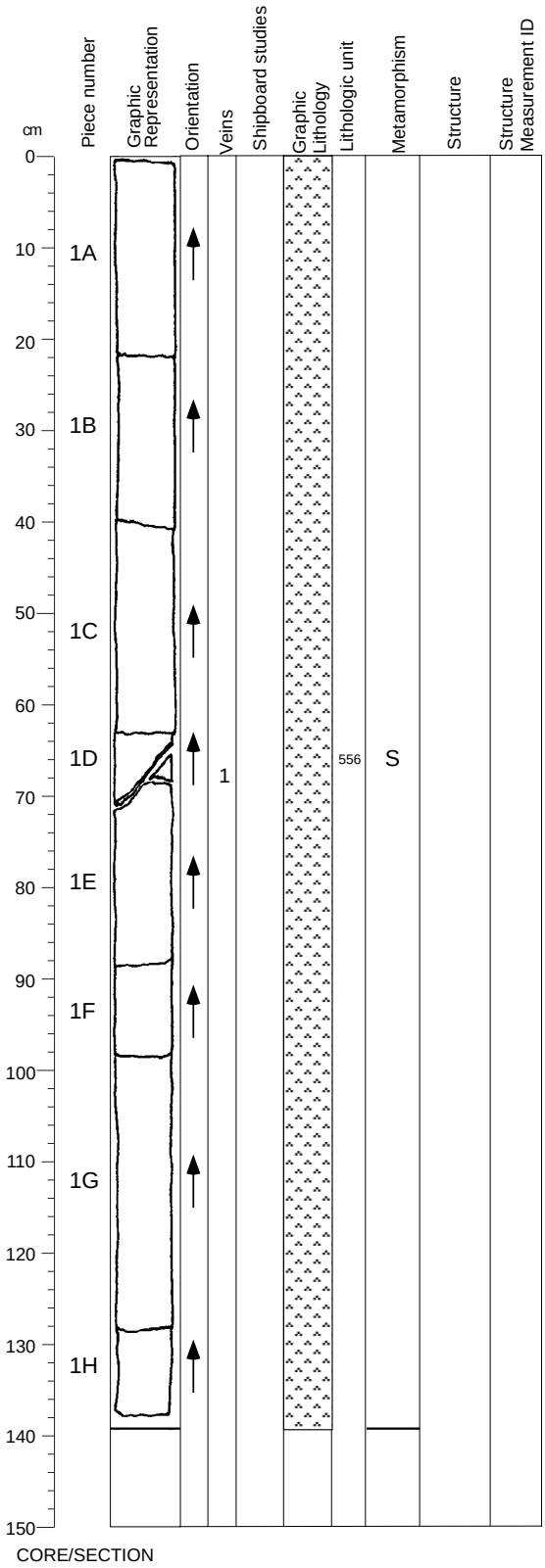
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near sheared areas.

Background Alteration:
Degree of alteration: slight (4%). Same as previous section.

Vein/Fracture Filling:
Smectite veins in Pieces 1A and 3A to 3B.

Structures:
Mf>Pf
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted in small zones of Pieces 1B and 3A to 3B by a weak crystal-plastic deformation.

Core Image



176-735B-108R-3

Interval 556: OLIVINE GABBRO
(see Section 176-735B-107R-3)

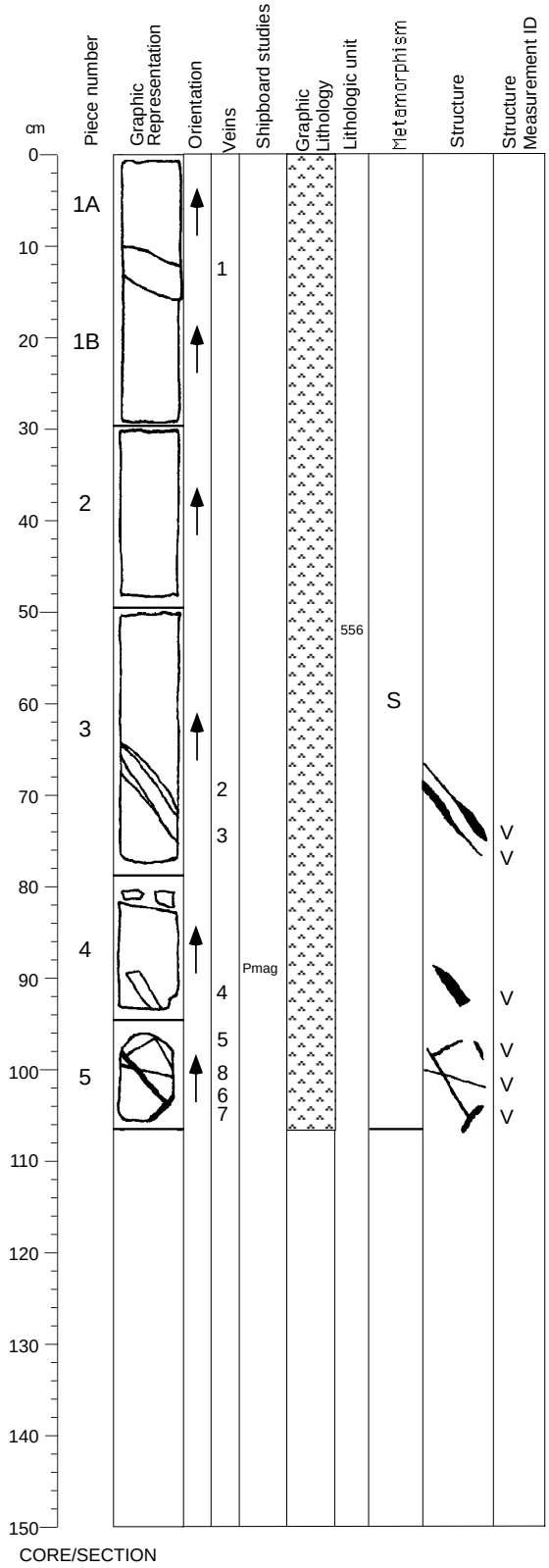
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Common; particularly near sheared areas.

Background Alteration:
Degree of alteration: slight (4%). Same as previous section.

Vein/Fracture Filling:
Amphibole vein in Piece 1.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation, and locally overprinted by a weak crystal-plastic deformation.

Core Image



176-735B-108R-4

Interval 556: OLIVINE GABBRO
(see Section 176-735B-107R-3)

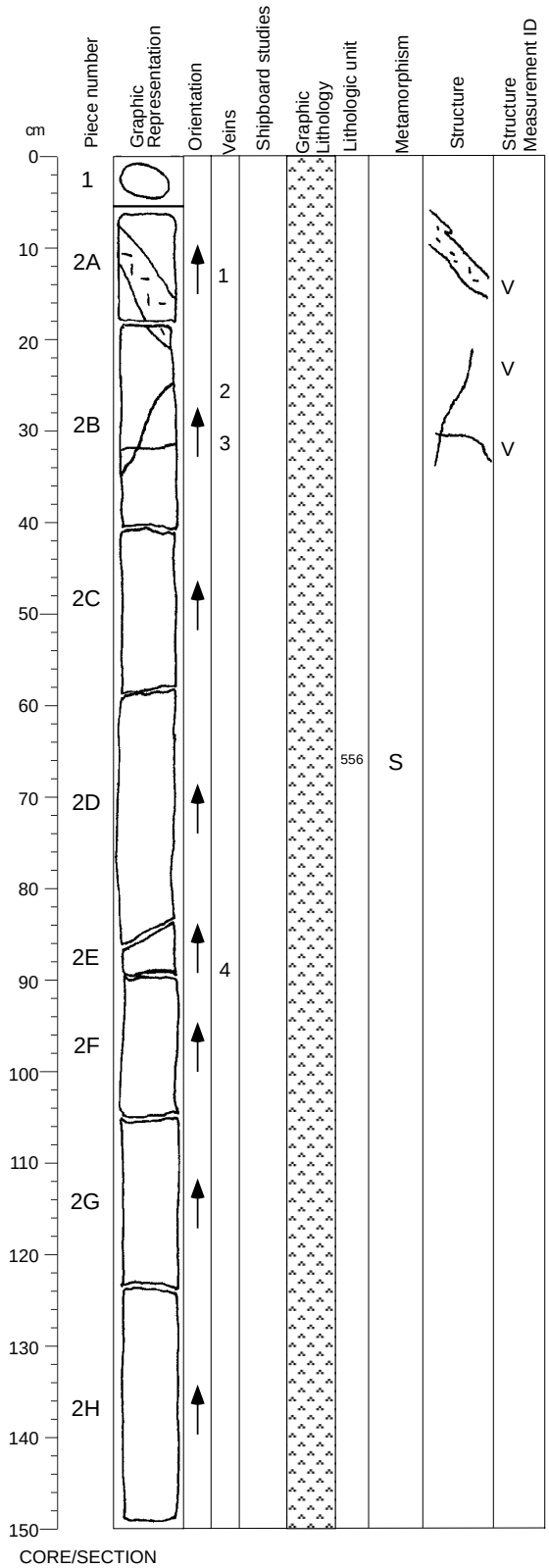
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near sheared areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near sheared areas.

Background Alteration:
Degree of alteration: slight (4%). Same as previous section.

Vein/Fracture Filling:
Amphibole vein in Piece 1A; clinopyroxene+plagioclase vein in Piece 3 to 5; Calcite + smectite vein in Piece 5.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted in the bottom part (Pieces 3, 4 and 5) by a series of veins. The magmatic texture is locally overprinted by a weak crystal-plastic deformation.

Core Image



176-735B-109R-1

Interval 556: OLIVINE GABBRO
(see Section 176-735B-107R-3)

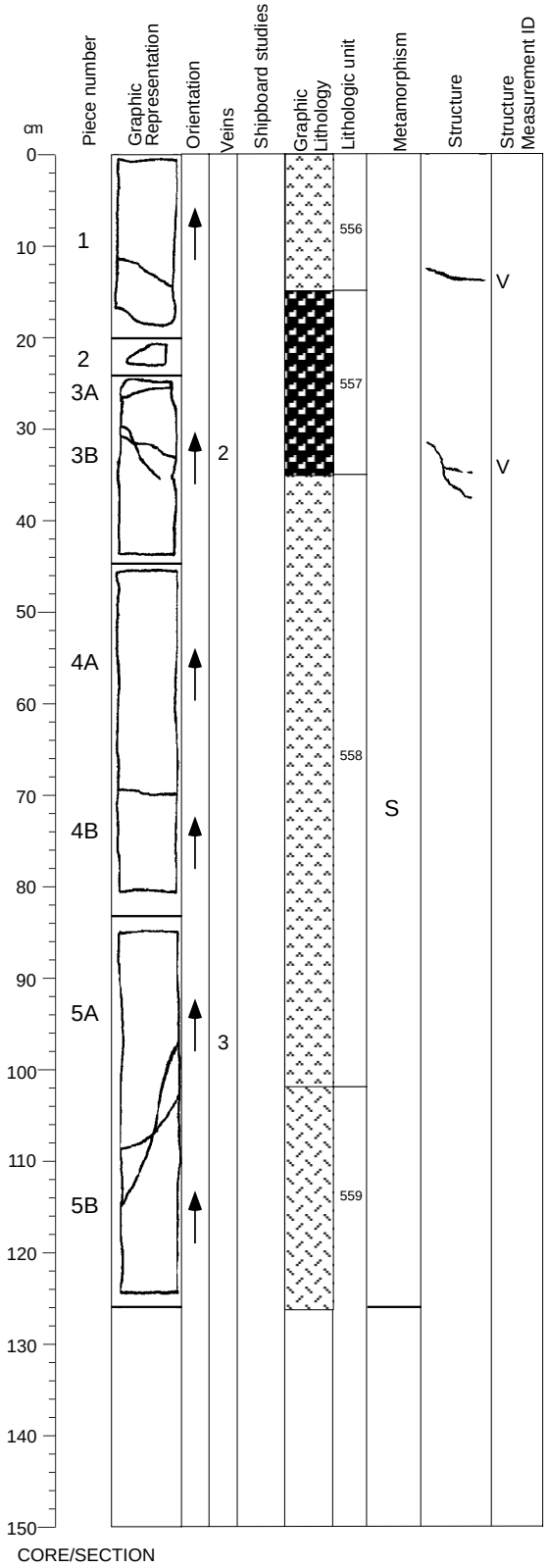
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: slight (3%). 10% of the olivine is replaced by talc and amphibole. Clinopyroxene is very weakly altered to amphibole (2%). Around 2% of the plagioclase is secondary.

Vein/Fracture Filling:
20 mm felsic vein in Piece 2B to 2C; plagioclase+diopside veins in Piece 2B; smectite+calcite vein in Piece 2E.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted in Pieces 2A and 2B by veins.

Core Image



176-735B-109R-2

Interval 556: OLIVINE GABBRO
(see Section 176-735B-107R-3)
Interval 557: ANORTHOSITIC TROCTOLITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	109	2	15	1	630.35
Lower contact:	109	2	35	3B	630.55

Thickness (m): 0.20

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	85	6	n/a	pegmatitic	tabular/ anhedral subhedral
Clinopyroxene	3	35	10	pegmatitic	tabular/ anhedral
Olivine	5	8	1	coarse	amoeboidal/ anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	93.5*	(see explanatory notes)			

*Major phases estimated to ± 5%
Grain Size:Pegmatitic
Modal IUGS Name (calculated): Not Calculated.

	Type	Distribution
Texture:	granular	variable

Comments: Subophitic at top. Fine grained downward with patchy altered olivine at base. Large (> 6 cm) plagioclase crystal present. Olivine altered.

Interval 558: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	109	2	35	3B	630.55
Lower contact:	109	2	102	5A	631.22

Thickness (m): 0.67

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	15	3	medium	tabular/ subhedral euhedral
Clinopyroxene	40	30	2	coarse	equant/ oikocrystic
Olivine	8	4	1	medium	amoeboidal/ anhedral
Opaques	0.8				angular aggregates/ disseminated
Total	103.8*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro.

	Type	Distribution
Texture:	granular	uniform

Comments: Locally subophitic. Medium grained, coarser at top.

Continued next page

Core Image

176-735B-109R-2 (cont'd)

Interval 559: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	109	2	102	5A	631.22
Lower contact:	109	3	15	1A	631.63

Thickness (m): 0.41

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase		55	60	10	pegmatitic tabular / anhedral subhedral
Clinopyroxene	35	60	5	pegmatitic	elongate / subhedral
Olivine	1	2	1	medium	prismatic/ subhedral chadacrystic
Opaques	0.5				angular aggregates/ disseminated
Total	91.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal IUGS Name (calculated): Gabbro.

	Type	Distribution
Texture:	granular	N/A

Comments: Pegmatitic (up to 10 cm) clinopyroxene interval. Locally subophitic. Olivine, oxide and sulfide present as 'inclusions' in pegmatitic clinopyroxene. Olivine serpentinized, included with sulfide in orthopyroxene.

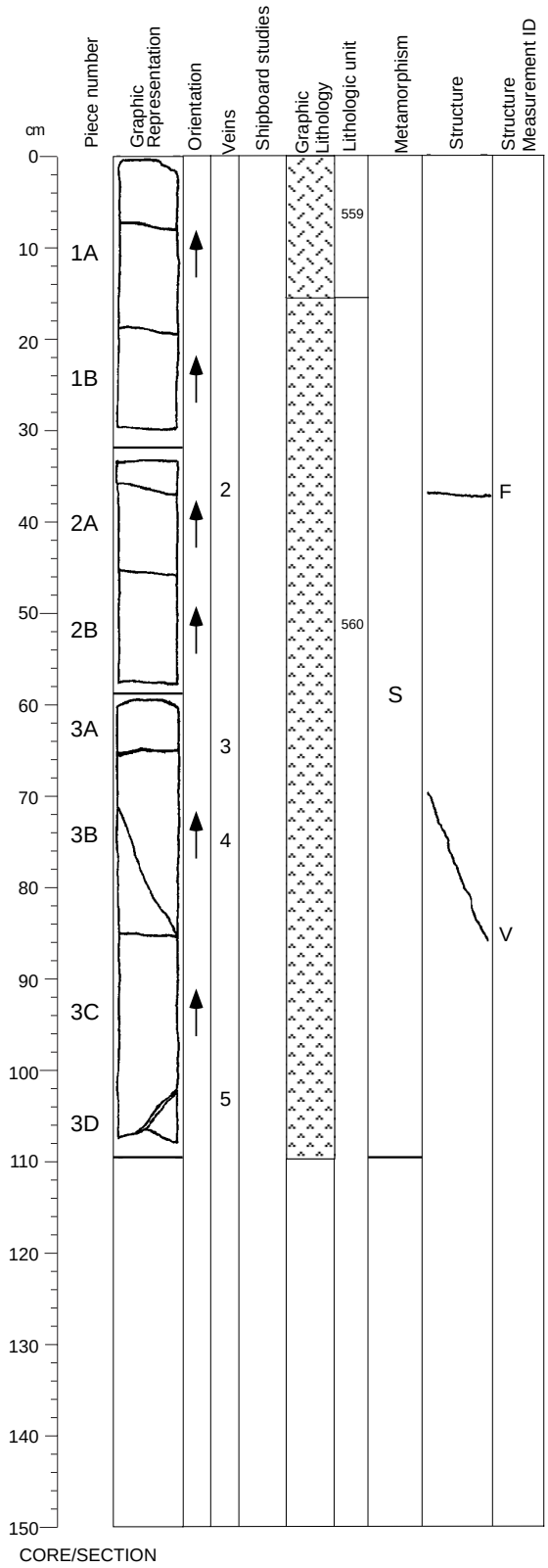
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Veins/Fracture Filling:
Diopside+plagioclase vein in Piece 1. 1.0 mm amphibole vein in Piece 3; 0.2 mm smectite vein in Piece 5.

Structures:
Mf>F; Mf>V
This section displays an igneous texture, with no or a weak magmatic foliation. The grain size is bimodal; it is coarse from 0 to 42 cm (with a 7 cm zone of anorthite from 28 to 35 cm), finer from 42 to 106 (a few millimeters; the weak magmatic foliation may be seen in this zone), and very coarse in Piece 5B (1 to 5 cm). The magmatic texture is cut by a fault in Piece 1, and by a few veins in Piece 3.

Core Image



176-735B-109R-3

Interval 559: GABBRO
(see previous section)
Interval 560: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	109	3	15	1A	631.63
Lower contact:	114	1	23	3	652.63

Thickness (m): 21.00

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	40	5	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	45	25	2	coarse	equant/ anhedral
Olivine	10	10	2	medium	prismatic/ subhedral anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	110.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Not Calculated.

	Type	Distribution
Texture:	textural variation	N/A

Comments: Mostly subophitic/ophitic, granular and poikilitic. Pegmatitic clinopyroxene at 28-33 cm in 109R-4, 23-30 cm and 80-86 cm in 110R-1, 125 cm in 110R-2, and 89 cm in 110R-4. Oxide 2% at 102-104 cm in 112R-1. Sulfide abundant at 0 cm in 111R-3 to 147 cm in 113R-2 and 16 cm in 109R-3 to 130 cm in 110R-1.

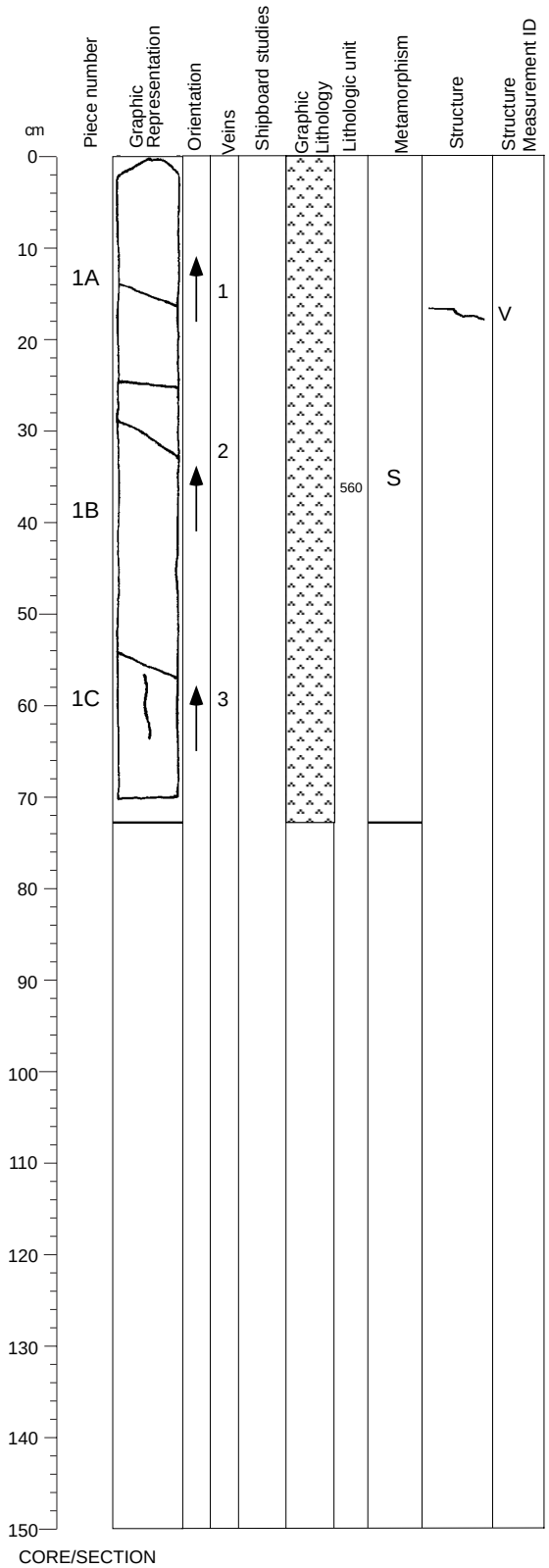
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Vein/Fracture Filling:
0.1 mm carbonate vein in Piece 1A. 1.0 mm amphibole vein in Piece 2A. 0.3-1.0 mm smectite vein in Pieces 3A and 3C. 1.0 mm amphibole+plagioclase vein in Piece 3B.

Structures:
Mf>F; Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted by a fault in Piece 2A and a vein in Piece 3B. The grain size is variable, finer in part of Pieces 1A to 1B and in Pieces 2A to 2B.

Core Image



176-735B-109R-4

Interval 560: OLIVINE GABBRO
(see previous section)

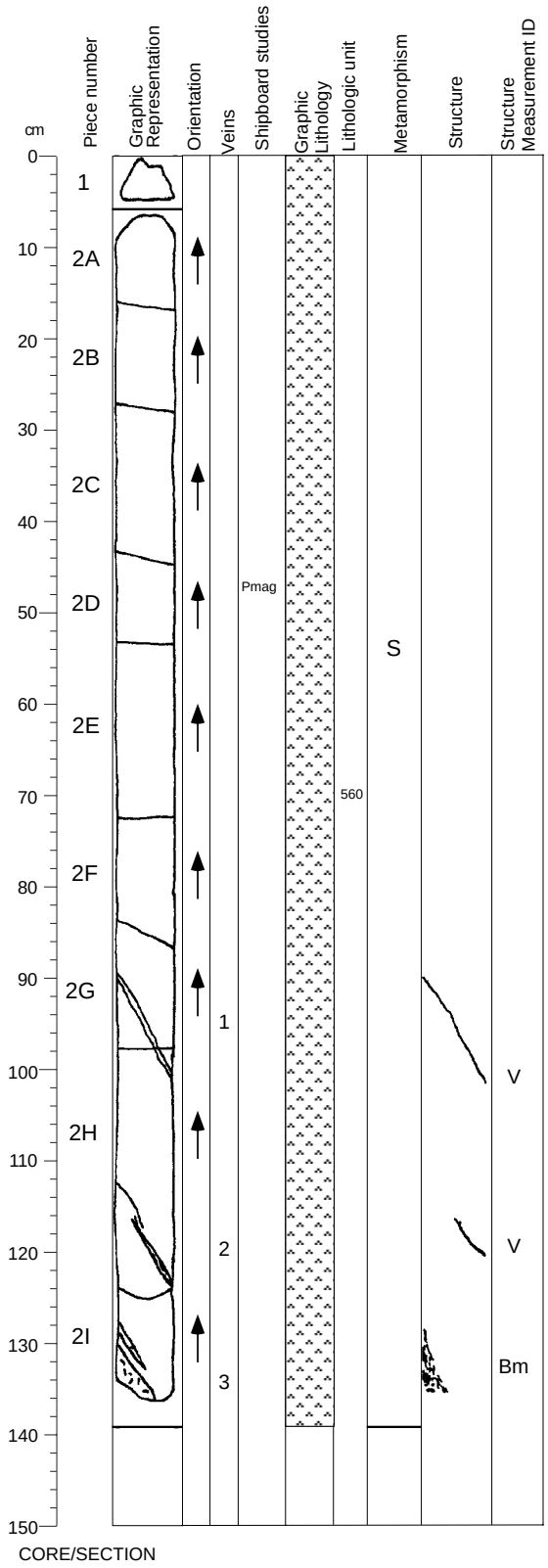
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Vein/Fracture Filling:
0.2-0.5 mm amphibole veins in Pieces 1A to 1C.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted by a vein in Piece 1A.

Core Image



176-735B-110R-1

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

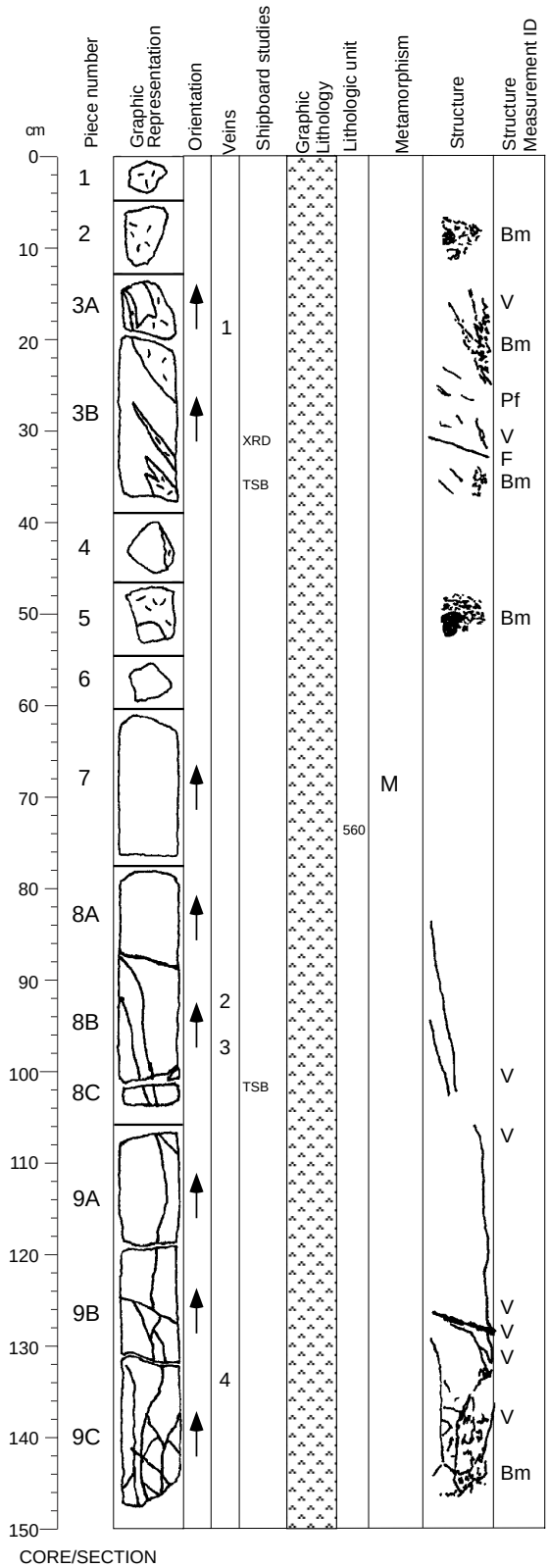
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine ghosts.
Comments: In the vicinity of felsic areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: slight to moderate (3-30%). Pieces 1 to 2I are same as previous section. The lower part of Piece 2I is moderately altered. Most significantly, orthopyroxene is partly replaced by cummingtonite and talc (50%). Olivine is altered to amphibole and talc (20%). Clinopyroxene is replaced by amphibole (20%). Plagioclase is partly recrystallized (10%).

Vein/Fracture Filling:
2-10 mm felsic veins in Pieces 2A to 2I.

Structures:
Mf>V; Mf>Bm
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by veins in Pieces 2G and 2H, and by a brecciated vein in Piece 2I.

Core Image



176-735B-110R-2

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

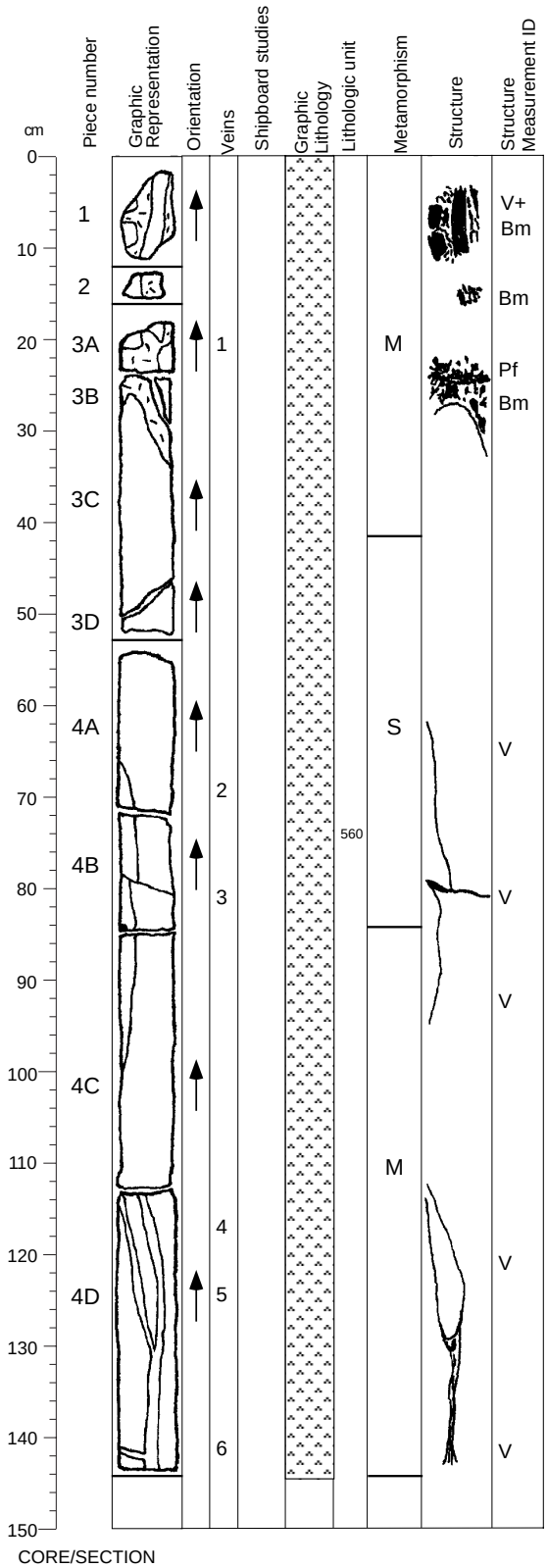
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.
Cummingtonite(?): After orthopyroxene(?).

Background Alteration:
Degree of alteration: moderate (20-30%). Orthopyroxene is partly replaced by cummingtonite and talc (50%). Olivine is altered to amphibole and talc (20%). Clinopyroxene is replaced by amphibole (20%). Plagioclase is partly recrystallized (10%). The high alteration of orthopyroxene is confined to a network of felsic veins in Pieces 1 to 7. The lower part of the section (Pieces 8 and 9) is slightly less altered (20%). The alteration is similar to the upper section, but no altered orthopyroxene was detected.

Vein/Fracture Filling:
Pieces 1 to 5 contain a 15 mm felsic vein. Pieces 8 and 9 contain 2-3 mm wide plagioclase+diopside veins. Piece 9 contains a felsic vein network.

Structures:
Mf>Bm=V; Mf>Pf>Bm=V>F
This section displays a coarse-grained igneous texture, with no magmatic foliation. The igneous texture is overprinted in several places by veins and magmatic breccias. In Piece 9A to 9C, a network of anastomosing veins is present, rooting from a small brecciated zone at the bottom of Piece 9B. This breccia is continuous with the breccia in the first piece of the next section (110R-3), which appears to be a vein including clasts of the host rock. Some weak crystal-plastic deformation overprints the magmatic texture in Piece 3B.

Core Image



176-735B-110R-3

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

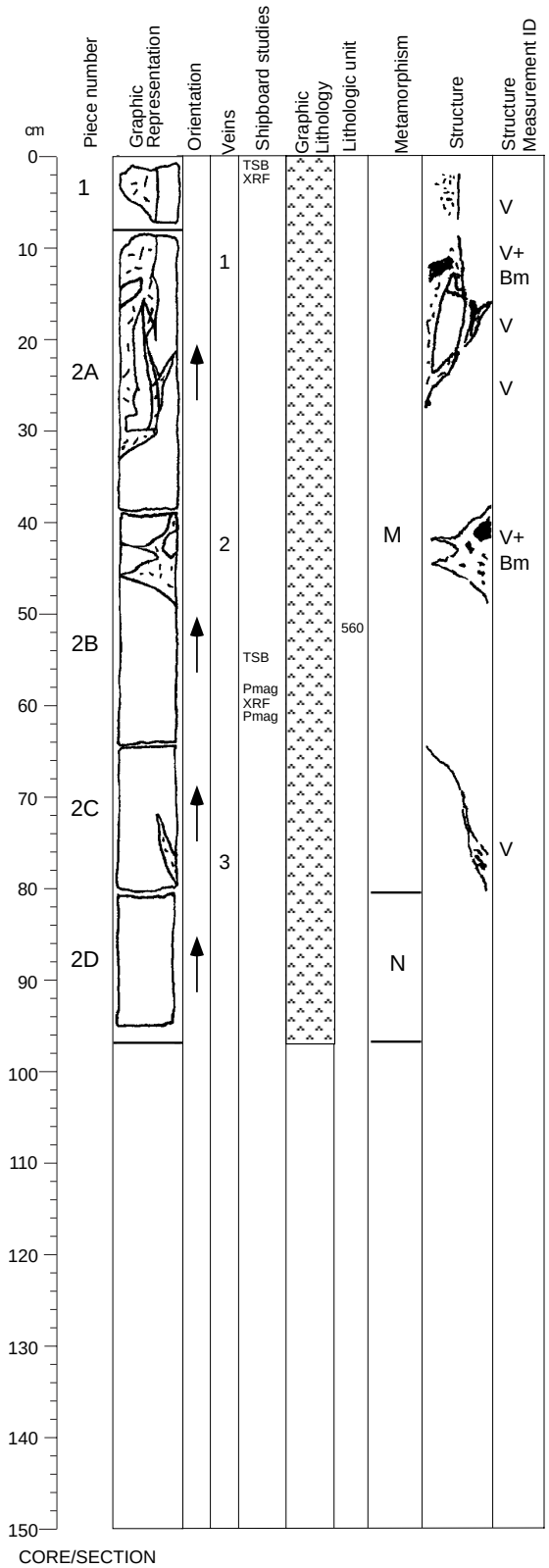
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: slight to moderate (5-20%). Most of the section is moderately altered with olivine replaced by amphibole and talc (20-50%), clinopyroxene altered to amphibole (20%) and plagioclase altered to secondary plagioclase (5-20%). Pieces 3B to 4B are much less altered (5%) and show small to negligible amounts of secondary plagioclase and amphibole after clinopyroxene.

Vein/Fracture Filling:
Pieces 1 to 3 contain a dioritic vein. Piece 4 contains a 1.5 mm diopside+ plagioclase vein. Piece 4D is cut by 2-5 mm compound felsic veins.

Structures:
Mf>V=Bm>Pf
This section displays a coarse-grained igneous texture, with no magmatic foliation; it is continuous with the previous one (110R-2). Piece 1 displays a vein including clasts of the host rock, which feeds the magmatic breccias and veins in Pieces 9A to 9C and 8A to 8C of section 110R-2. In Piece 3B, the brecciated vein is locally overprinted by crystal-plastic deformation. The magmatic texture in Pieces 4A to 4D is also overprinted by anastomosing veins, which are connected to a bigger one in top of the next section (110R-4).

Core Image



176-735B-110R-4

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

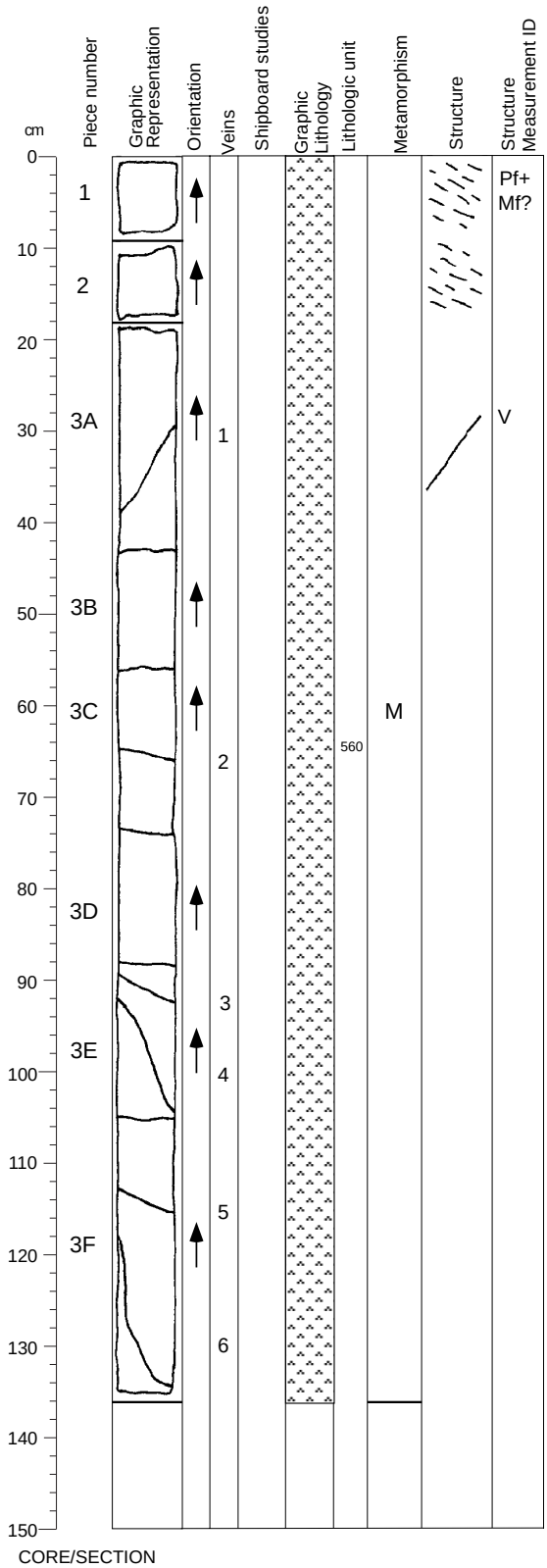
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: Negligible to moderate (2-20%). Piece 2D is fresh, except for very minor alteration of olivine (10%), plagioclase (2%), and clinopyroxene (2%). The upper part of the section is similar to the moderately altered rocks in the previous section.

Vein/Fracture Filling:
Pieces 1 and 2 are cut by a felsic vein network.

Structures:
Mf>V=Bm
This section displays the same features as the two previous ones (110R-2 and 110R-3). The coarse-grained igneous texture (no magmatic foliation) is overprinted by a series of narrow veins and thicker brecciated veins. The section is continuous with the previous one (110R-3); the big vein in Pieces 1 and 2A feeds the long veins at the bottom of Section 110R-3.

Core Image



176-735B-111R1

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

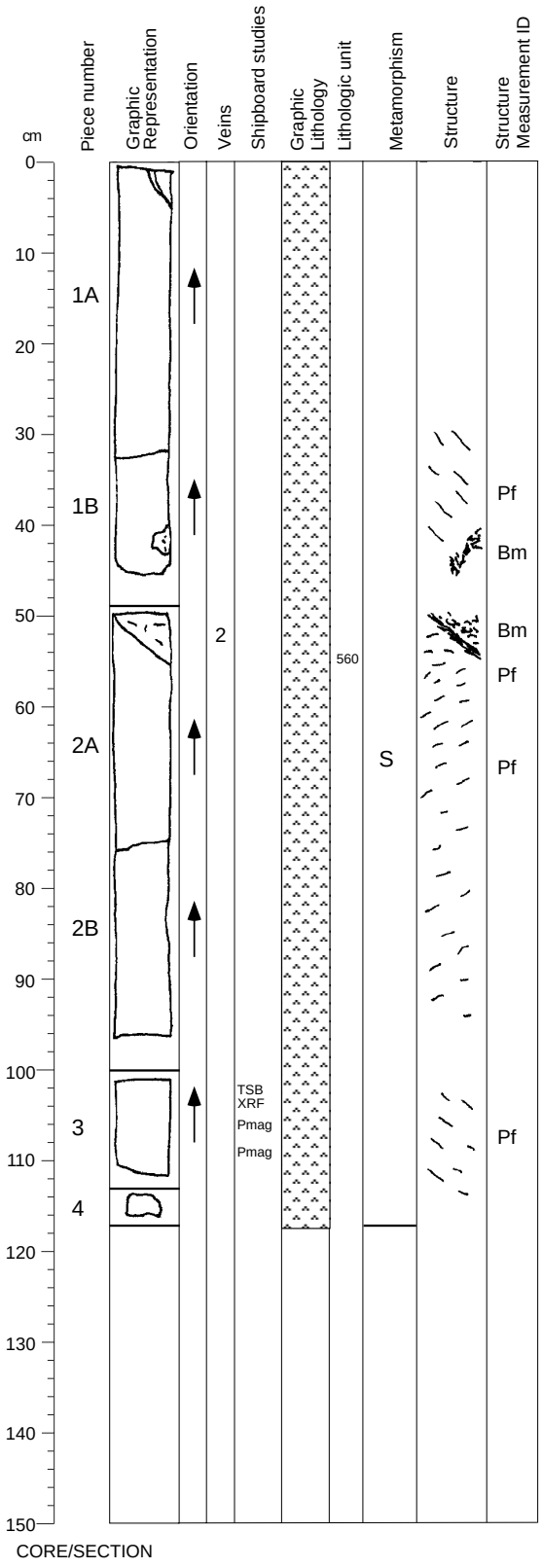
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: moderate (12%). Around 30% of the olivine is altered to talc and amphibole. 10% of the clinopyroxene is replaced by amphibole. 8% of the plagioclase is secondary.

Vein/Fracture Filling:
0.5-1 mm amphibole+plagioclase veins in Pieces 3A, 3C, and 3F; 0.3 mm smectite veins in Pieces 3E to 3F.

Structures:
Mf>Pf; Mf>V
Most of the section displays a coarse-grained igneous texture, with no magmatic foliation, except for Pieces 1 and 2, in which the grain size is smaller, and have a weak foliation (possibly both magmatic and crystal-plastic deformation).

Core Image



176-735B-111R-2

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

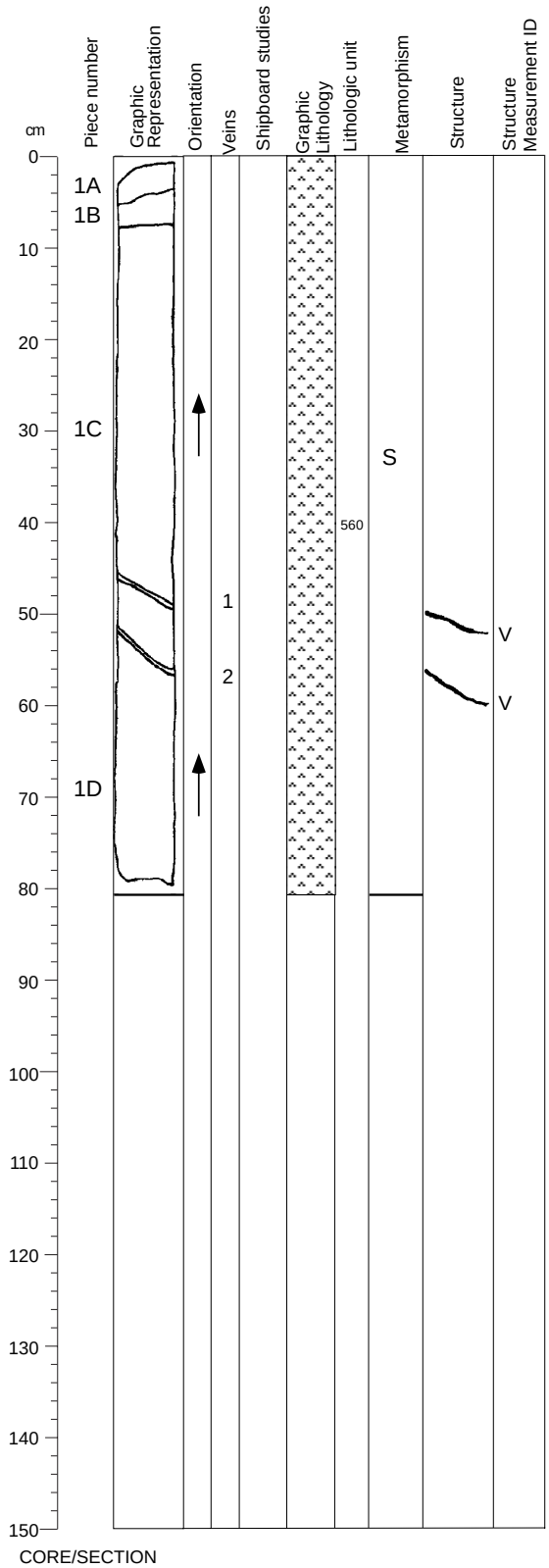
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: slight (5%). Around 20% of the olivine is altered to talc and amphibole. 2% of the clinopyroxene is replaced by amphibole. 2% of the plagioclase is secondary.

Vein/Fracture Filling:
0.4 mm smectite vein in Piece 1A; 20 mm compound felsic vein in Piece 2A.

Structures:
Mf>Pf>Bm>Pf
Most of the section displays a weak crystal-plastic foliation, except for Piece 1A in which the igneous texture is preserved (no or a weak magmatic foliation). The crystal-plastic foliation is locally overprinted by some brecciated veins and crystal-plastic deformation, successively (Pieces 1B and 2A).

Core Image



176-735B-111R-3

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

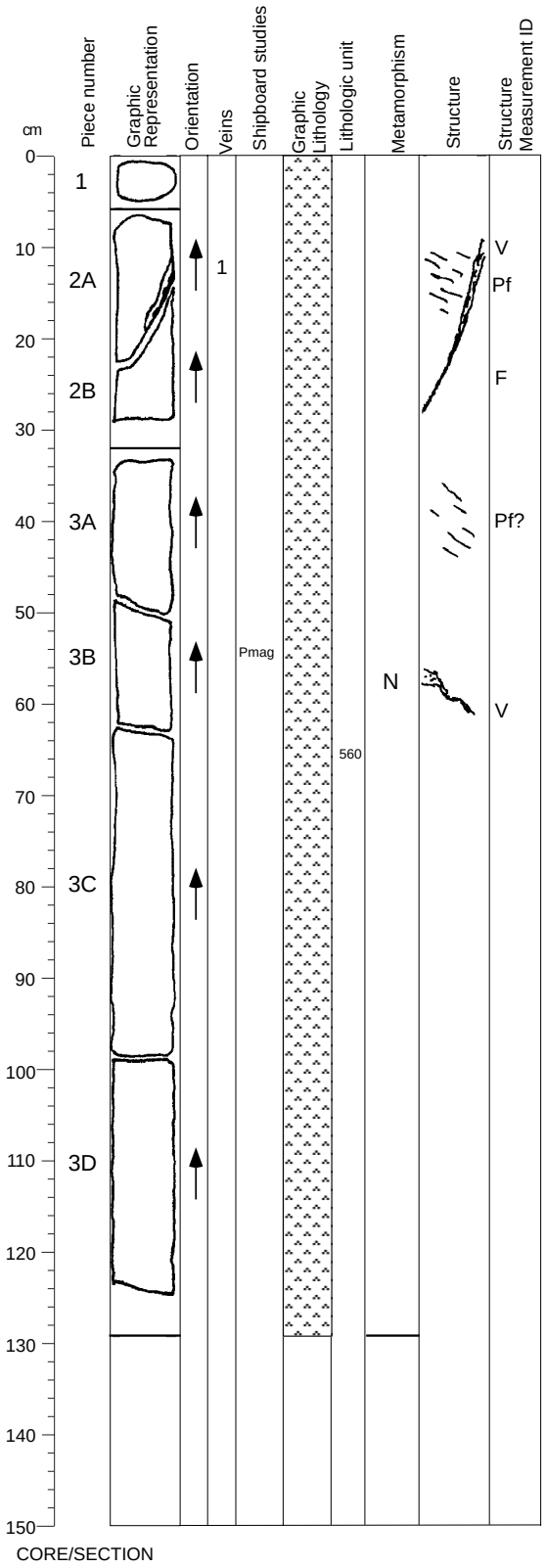
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: slight (5%). Same as previous section.

Vein/Fracture Filling:
Plagioclase+amphibole+clinopyroxene veins in Pieces 1C to 1D.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by veins in Piece 1C.

Core Image



176-735B-112R-1

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

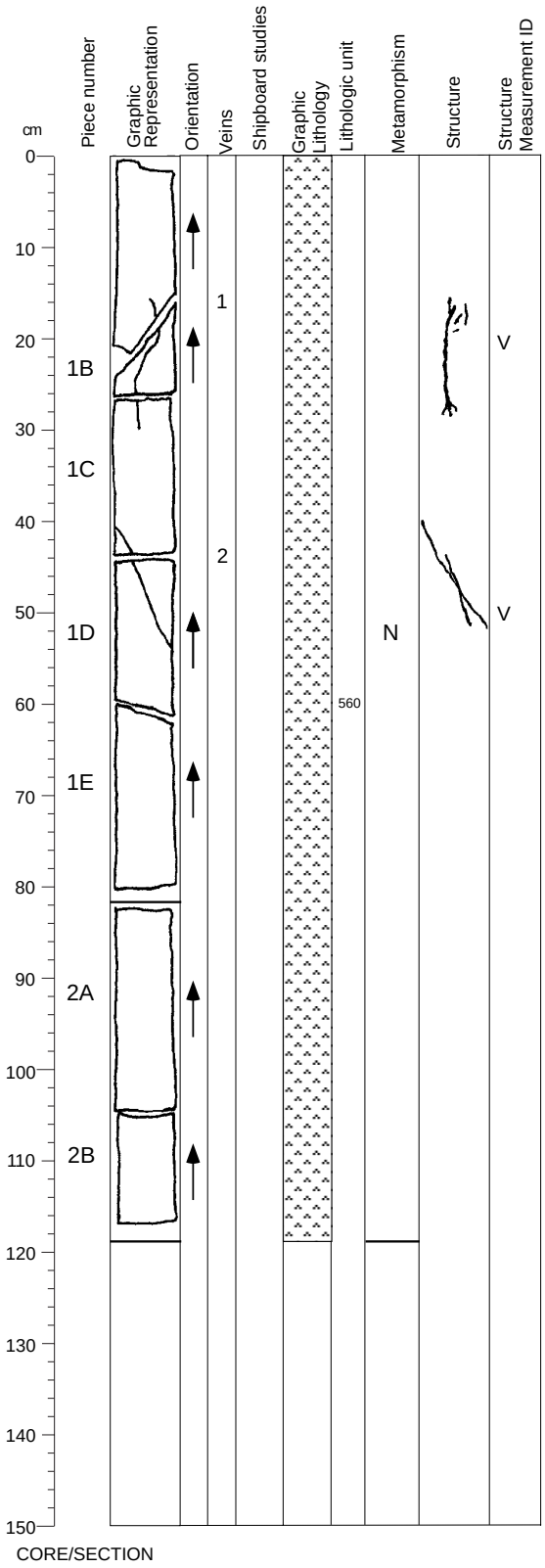
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: negligible (1%).

Vein/Fracture Filling:
5 mm plagioclase +clinopyroxene veins in Piece 2A.

Structures:
Mf>Pf>V; Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by a weak crystal-plastic deformation in Pieces 2A and 3A, and by veins in Pieces 2A, 2B, and 3B, successively.

Core Image



176-735B-112R-2

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

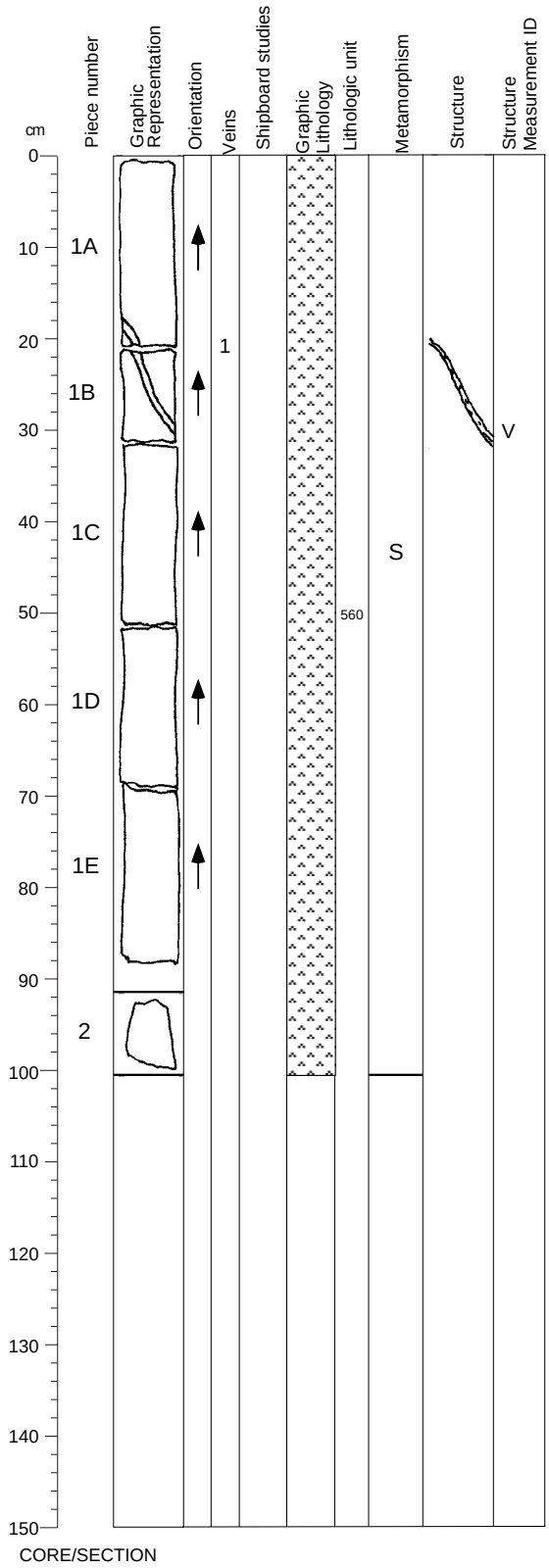
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of felsic areas and along felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near felsic areas.

Background Alteration:
Degree of alteration: negligible (1%).

Vein/Fracture Filling:
1-1.5 mm amphibole veins in Piece 1A to 1D.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a few veins.

Core Image



176-735B.112R-3

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

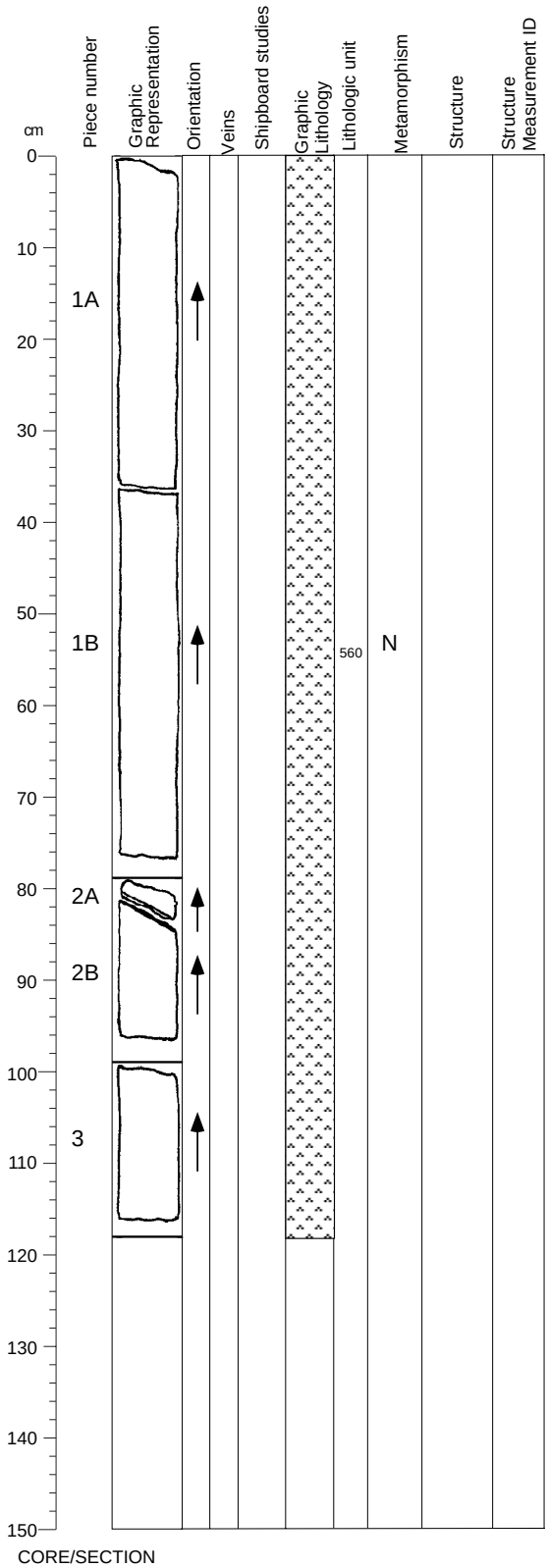
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, and along and beside veins.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Comments: In the vicinity of and along veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals particularly near and inside veins.

Background Alteration:
Degree of alteration: slight (3%). Around 10% of the olivine is altered to talc and amphibole. 2% of the clinopyroxene is replaced by amphibole. 1% of the plagioclase is secondary.

Vein/Fracture Filling:
4 mm plagioclase+amphibole+clinopyroxene vein in Piece 1A to 1B.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a vein (Pieces 1A and 1B).

Core Image



176-735B-112R-4

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

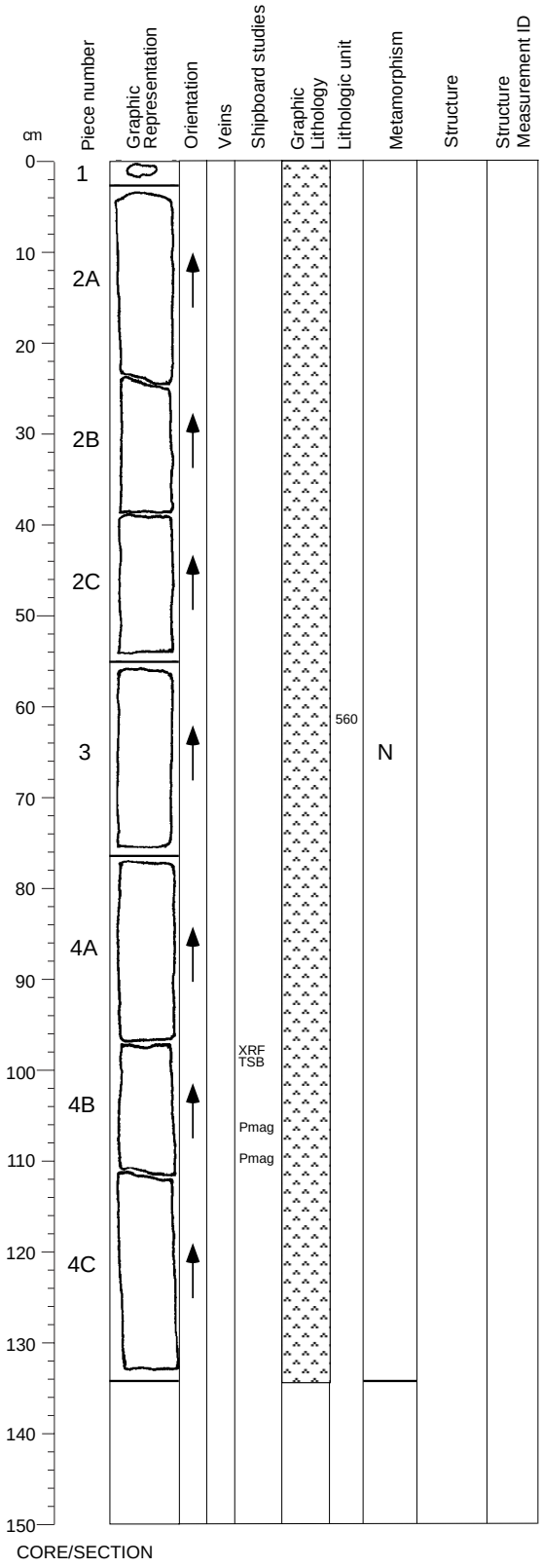
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals.

Background Alteration:
Degree of alteration: negligible (1%).

Vein/Fracture Filling:
0.3 mm smectite vein in Piece 2.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation.

Core Image



176-735B-113R-1

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

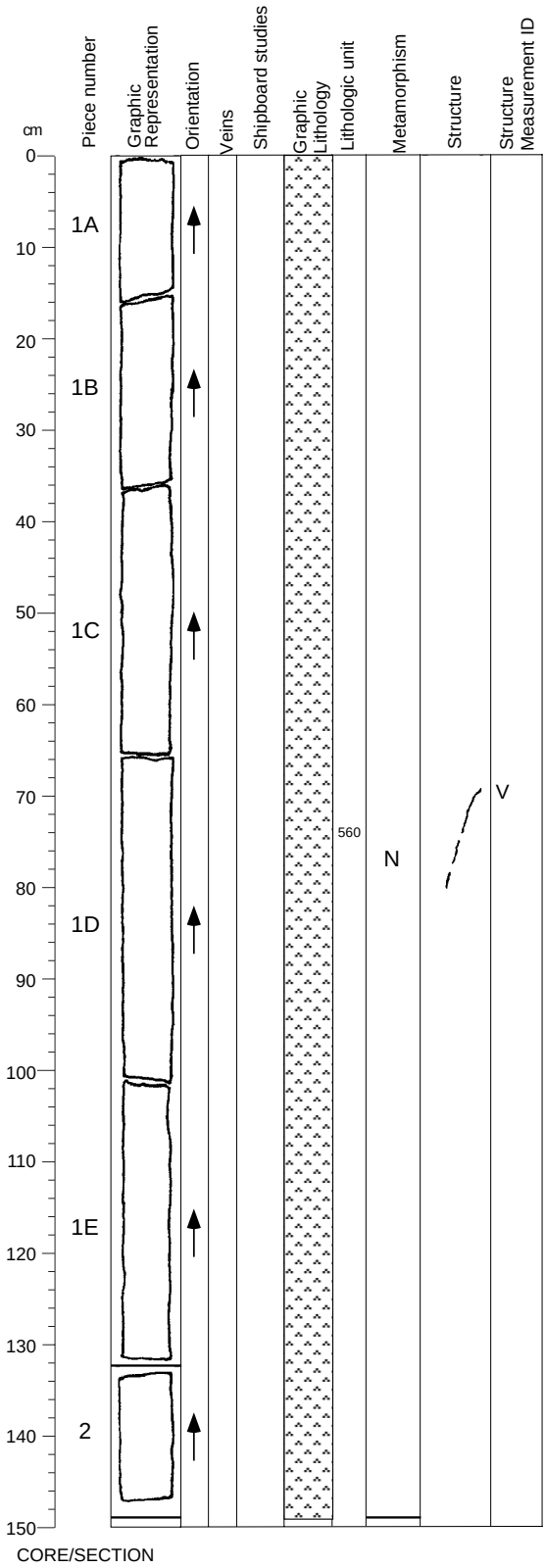
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals.

Background Alteration:
Degree of alteration: negligible (1%).

Vein/Fracture Filling:
No veins.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation.

Core Image



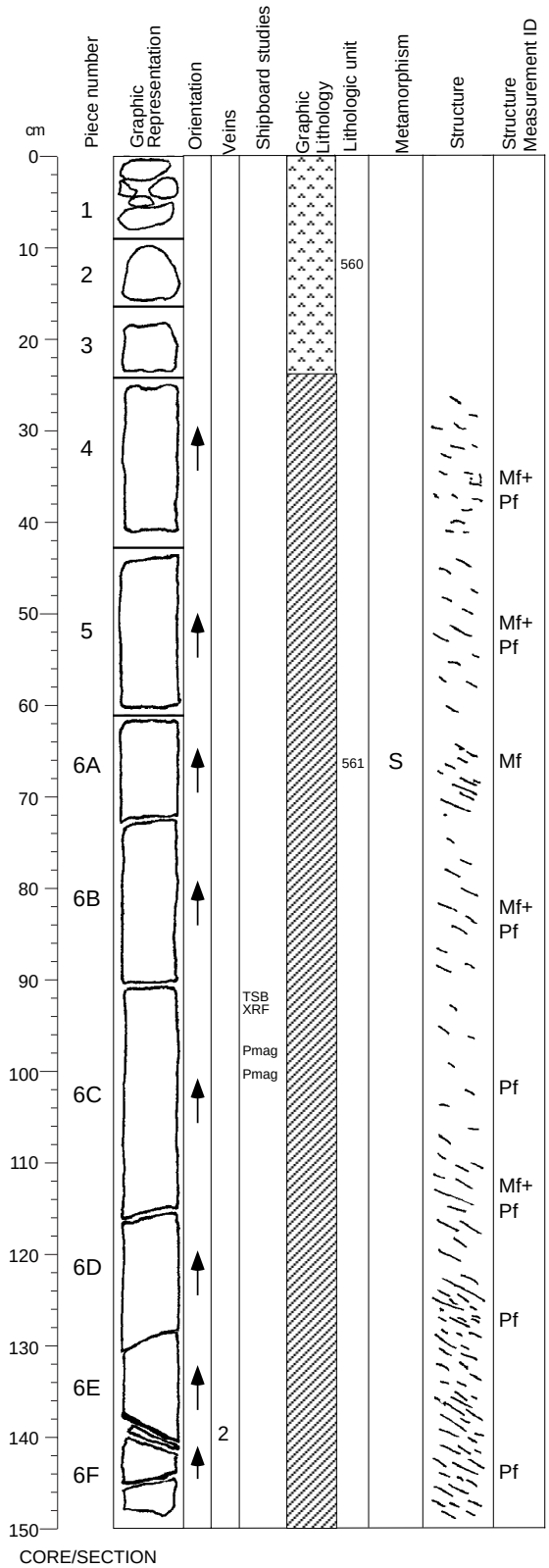
176-735B-113R-2

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)

Alteration:
Negligible.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation. Some intervals (35-45 cm, 67-90 cm) possibly have a magmatic foliation, but the grain size is too large to be sure. The igneous texture is cut by a vein in Piece 1D.

Core Image



176-735B-114R-1

Interval 560: OLIVINE GABBRO
(see Section 176-735B-109R-3)
Interval 561: OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	114	1	23	3	652.63
Lower contact:	114	2	13	1	654.03

Thickness (m): 1.40

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	30	5	coarse	tabular/ anhedral
Clinopyroxene	30	30	2	coarse	elongate / anhedral fractured
Olivine	1	N/A	N/A	N/A	N/A
Orthopyroxene	6	25	3	coarse	amoeboidal/ subhedral
Opaques	8				interstitial lenses/ interstitial network
Total	95 *				(see explanatory notes)

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbronorite.

	Type	Distribution
Texture:	granular	N/A
Fabric:	gradational grain-size	N/A

Comments: Locally subophitic. Coarser at top, finer at base. Pegmatitic clinopyroxene present at 41 cm, 60 cm, and 94 cm in 114R-1. Olivine present as serpentinized grains(?). Large equant/euhedral orthopyroxene present. Oxide 10% at 24-121 cm in 114R-1; 5% at 121 cm in 114R-1) to 14 cm in 114R-2.

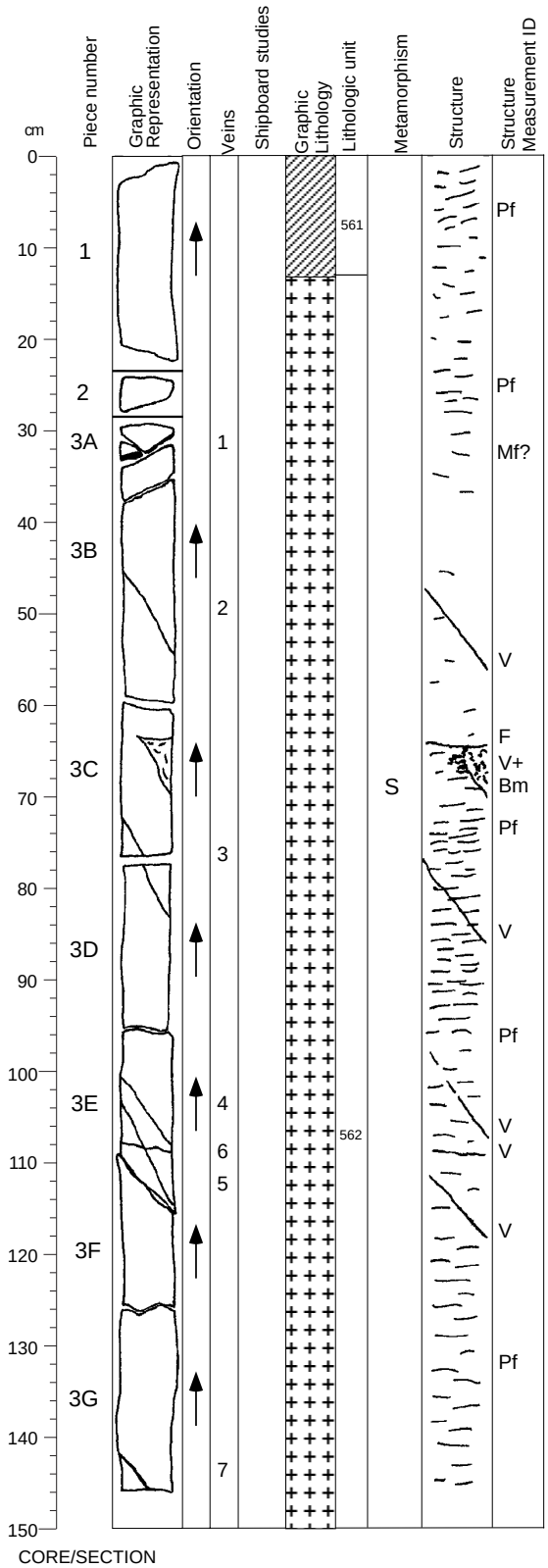
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (8%). Around 30% of the olivine is altered to a fine-grained black material, probably of chlorite/smectite and amphibole. This type of alteration differs from the olivine alteration observed shallower in the section. 5% of the clinopyroxene is replaced by amphibole. 3% of the plagioclase is secondary.

Vein/Fracture Filling:
0.5 mm calcite vein in Piece 6E; smectite vein in Piece 6F.

Structures:
Mf>Pf
The top of the section (Pieces 1, 2 and 3) displays a coarse-grained igneous texture. In Pieces 4 to 6B, a moderate magmatic fabric is present, visible despite the large grain-size; it is overprinted by a weak crystal-plastic deformation, except for Piece 6A. From Piece 6B downward, the crystal-plastic deformation becomes progressively stronger; the foliation is stronger in Pieces 6D and 6E, where the grain size is smaller (1 to 5 mm on average, one order of magnitude smaller than in coarse-grained facies).

Core Image



176-735B-114R-2

Interval 561: OXIDE GABBRONORITE
(see previous section)
Interval 562: GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	114	2	13	1	654.03
Lower contact:	114	3	117	3C	656.57

Thickness (m): 2.54

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	20	3	medium	tabular/ subhedral
Clinopyroxene	30	15	2	coarse	chadacrystic equant/ anhedral
Olivine	1	N/A	N/A	N/A	N/A
Orthopyroxene	10	10	2	medium	equant/ subhedral anhedral
Opaques	0.8				amoeboidal aggregates/ disseminated

Total 96.8* (see explanatory notes)
*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Gabbronorites

	Type	Distribution
Texture:	granular	uniform
Fabric:	N/A	N/A

Comments: Locally subophitic. Coarse (> 2 cm) clinopyroxene in places. Veins at 52 cm and 65 cm in 114R-2, 92 cm and 106 cm in 114R-3. Coarser at top, finer at base. Pegmatitic clinopyroxene present at 41 cm, 60 cm, and 94 cm in 114R-1. Olivine present as serpentinized grains at base(?). Sulfide abundant at 106 cm in 114R-2.

Alteration:
Dark green amphibole:
Total Percent: <8
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, and dispersed in patchy alteration zones and near felsic material.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine and in veins with chlorite and sulfide minerals.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals in patchy alteration zones and fill in veins with sulfide minerals.

Background Alteration:
Degree of alteration: slight (10%). Around 30% of the olivine is altered to fine-grained chlorite/smectite and amphibole(?). Secondary sulfides (probably pyrite) are also common. Sulfides replace olivine and occur in a network of smectite veins in Piece 3E. 5% of the clinopyroxene is replaced by amphibole. Orthopyroxene is partly altered to amphibole and chlorite? (30%). 3% of the plagioclase is secondary.

Vein/Fracture Filling:
0.5 mm smectite+calcite vein in Piece 3A; 0.3 mm amphibole veins in Pieces 3B to 3E; 2 mm plagioclase+amphibole vein in Piece 3G.

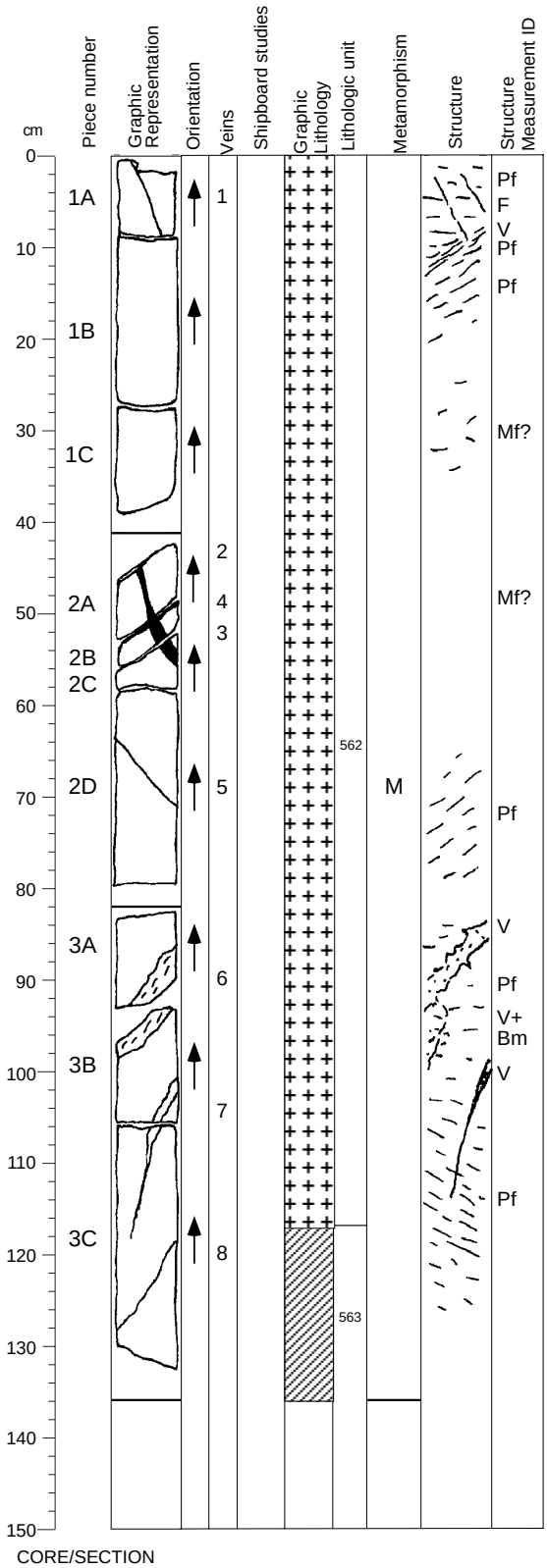
Continued next page

Core Image

176-735B-114R-2 (cont'd)

Structures:
Mf?>Pf; Pf>V=Mb>F; Pf>V
The top part of the section, from 0 to 62 cm, displays a progressive decrease of the intensity of crystal-plastic foliation; it is visible in the top of Piece 1 and disappears in Piece 3B, which possibly has a weak magmatic foliation, cut by a vein. In Piece 3C, a brecciated vein overprints a weak crystal-plastic foliation. A set of veinlets, 1 to 2 cm long, splays off the main vein and infiltrates the host rock; the veinlets are parallel to the crystal-plastic foliation. This zone is bounded on top by a small fault. Crystal-plastic foliation is seen over the rest of the core, cut by a few veins in Pieces 3E and 3F.

Core Image



176-735B-114R-3

Interval 562: GABBRONORITE
(see previous section)
Interval 563: OXIDE GABBRONORITE

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	114	3	117	3C	656.57
Lower contact:	114	6	77	2	660.48

Thickness (m): 3.91

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	30	3	medium	tabular/ anhedral deformed
Clinopyroxene	30	35	1	coarse	tabular/ anhedral subhedral
Orthopyroxene	10	25	2	coarse	elongate / subhedral anhedral
Opaques	5				interstitial lenses/ interstitial network
Total	100*				(see explanatory notes)

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbronorite.

	Type	Distribution
Texture:	granular	N/A

Comments: Oxide-rich interval. Mode and size variable. Nicely foliated from 10 cm in 114R-5 downward. Green amphiboles (igneous?) of ~1 cm in places. Orthopyroxene abundance variable from 15-20% in upper half to 0-5% in lower half. Oxide 3% at 119-131 cm in 114R-3 and 66-78 cm in 115R-3; 10% at 0-144 cm in 114R-4 and 3-24 cm in 114R-5; 5% at 23-65 cm in 114R-5) and 122-126 cm in 114R5; 1% at 144 cm 114R-4 to 3 cm in 114R-5 and 120 cm in 114R-5 to 66 cm in 114R-6; 2% at 65-122 cm in 114R-5.

Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims, and dispersed in patchy alteration zones and near felsic material.
Green amphibole:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals in patchy alteration zones and associated with chlorite rimming a vein of epidote.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Near or in olivine and in felsic veins.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals in patchy alteration zones and associated with amphibole rimming a vein of epidote.

Continued next page

Core Image

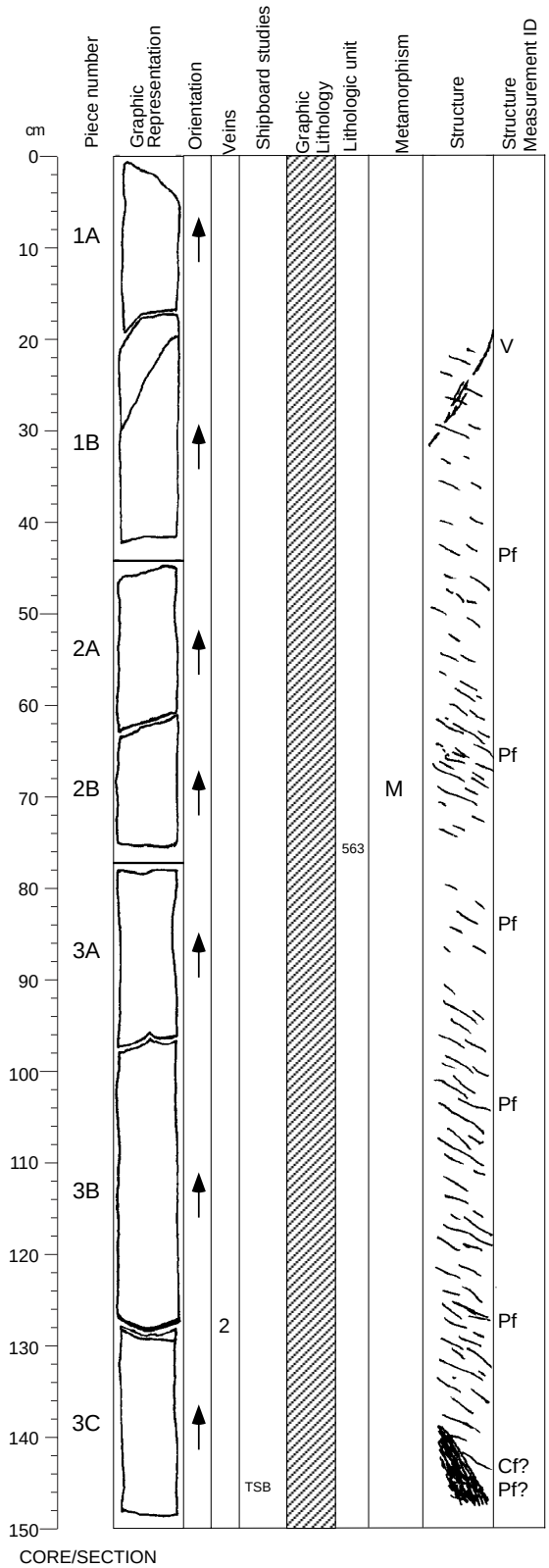
176-735B-114R-3 (cont'd)

Background Alteration:
Degree of alteration: moderate (15%). 50% of the rare olivine is altered to a fine-grained black mixture, probably chlorite/smectite, amphibole and pyrite. 10% of the clinopyroxene is replaced by amphibole. Orthopyroxene is partly altered to amphibole and chlorite? (5%). 5% of the plagioclase is secondary.

Vein/Fracture Filling:
0.3 mm smectite vein in Piece 2A; 0.5-0.8 mm amphibole veins in Pieces 2D, 3A, and 3B; 3 mm plagioclase+amphibole+clinopyroxene vein in Piece 2A to 2C; 15 mm epidote+amphibole vein in Pieces 3B to 3C.

Structures:
Pf>V; Pf>F; Pf>Pf; Mf>Pf; Pf>V
At the top of the section, Pieces 1A and 1B display a weak crystal-plastic foliation from 0 to 15 cm, locally stronger and steeper (1 cm thick shear zone with porphyroclastic foliation at 12 cm). From 15 to 67 cm, the texture is igneous, with no or a weak magmatic foliation. The rest of the section displays a crystal-plastic foliation, except for the last 6 cm of Piece 3C. The plastic foliation is overprinted in Pieces 3A, 3B, and 3C by veins and magmatic breccia.

Core Image



176-735B-114R-4

Interval 563: OXIDE GABBRONORITE
(see previous section)

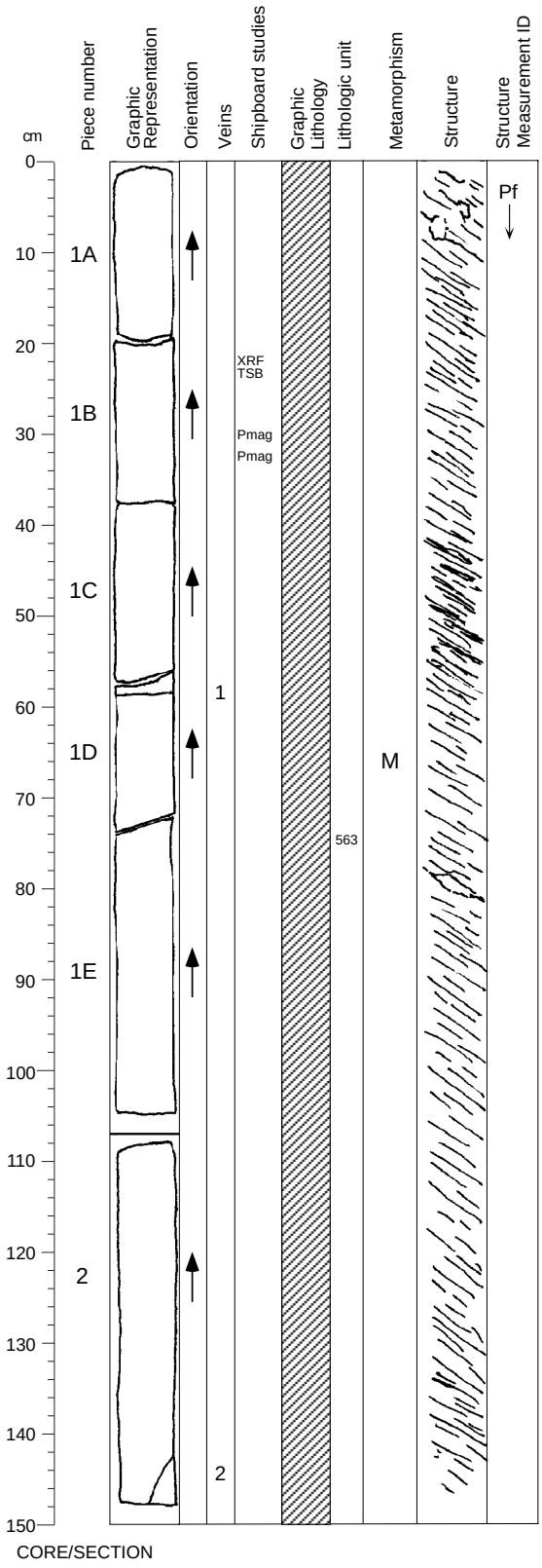
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: moderate (15%). Same as previous section.

Vein/Fracture Filling:
Amphibole vein in Piece 1B; smectite vein in Piece 3C.

Structures:
Mf>Pf>V; Pf>Cf?
Except for the first 20 cm, this section displays a crystal-plastic foliation, regularly dipping around 30°. The plastic foliation intensity varies from weak (21 to 60 cm, 75 to 83 cm) to strong (60 to 75 cm, 83 to 144 cm), and is cut by a vein in Piece 1B. The section ends with a zone of highly deformed rock (ultramylonite or ultracataclasite, very fine grain size), continuing on the back side at the top of the next section (114R-5).

Core Image



176-735B-114R-5

Interval 563: OXIDE GABBRONORITE
(see Section 176-735B-114R-3)

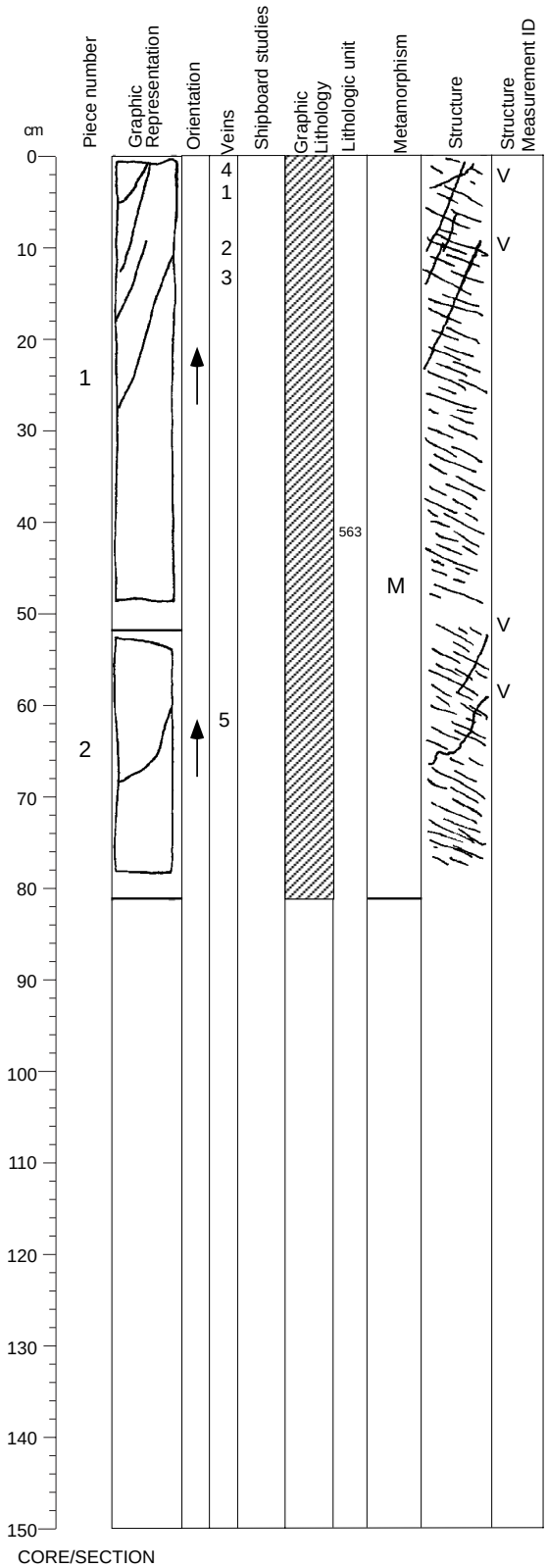
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals in vein with chlorite.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Replacing minerals a vein.

Background Alteration:
Degree of alteration: moderate (25%). 25% of the clinopyroxene is replaced by amphibole. Orthopyroxene is partly altered to amphibole and chlorite? (10%). 25% of the plagioclase is secondary.

Vein/Fracture Filling:
0.3 mm smectite vein in Piece 1C; 0.5 mm amphibole vein in Piece 1C.

Structures:
Pf
The entire section displays a strong shear zone, dipping 30 to 40˚, with a porphyroclastic (0 to 53 cm, 60 to 80 cm, 88 to 147 cm) to mylonitic (53 to 60 cm, 80 to 88 cm, and locally in the last porphyroclastic interval) foliation. The mylonite in Piece 1C displays spectacular ribbons of plagioclase and pyroxene. This shear zone continues in the next section (114R-6).

Core Image



176-735B-114R-6

Interval 563: OXIDE GABBRONORITE
(see Section 176-735B-114R-3)

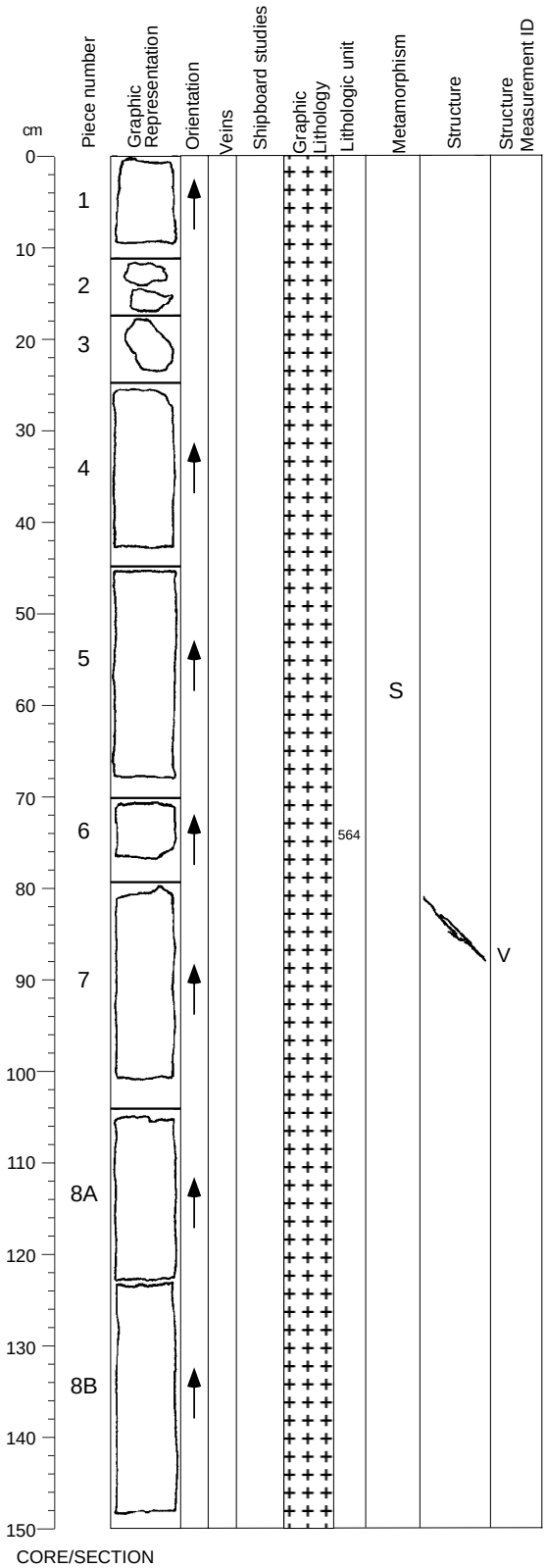
Alteration:
Dark green amphibole:
Total Percent: <20
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.

Background Alteration:
Degree of alteration: moderate (25%). Same as previous section.

Vein/Fracture Filling:
0.3 mm smectite veins in Pieces 1,2; 0.8 mm smectite+calcite vein in Piece 1.

Structures:
Pf>V
The entire section displays a strong crystal-plastic foliation, cut by a few veins; it represents the lower part of a thick intense shear zone (see previous Section 176-735B-114R-5).

Core Image



176-735B-115R-1

Interval 564: GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	114	6	77	2	660.48
Lower contact:	115	4	28	2	666.60

Thickness (m): 6.12

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	5	medium	tabular/ subhedral chadacrystic
Clinopyroxene	35	25	2	coarse	equant/ anhedral
Olivine	1	1	1	fine	elongate/ anhedral deformed
Orthopyroxene	5	4	1	medium	equant/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	101.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro.

	Type	Distribution
Texture:	textural variation	N/A

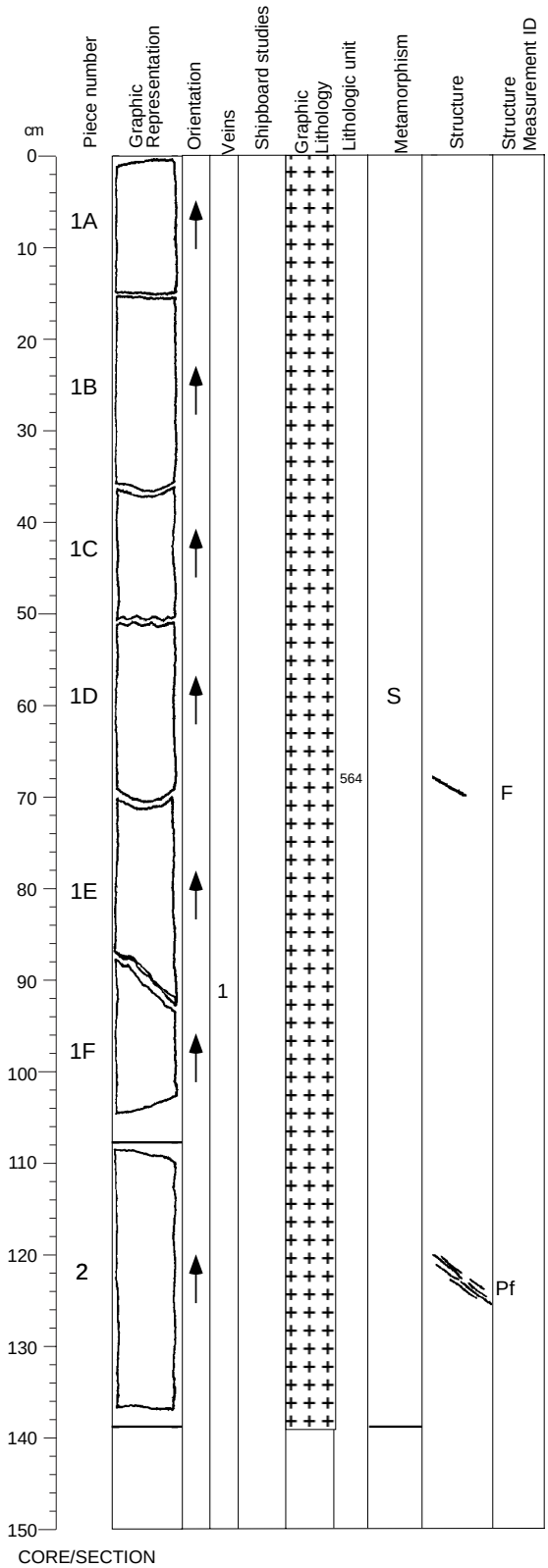
Comments: Granular from top to 101 cm in 115R-1 and 108 cm in 115R-2 to base; subophitic/ophitic from 105 cm in 115R-1 to 105 cm in 115R-2. Clinopyroxene mode variable.

Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crack network.

Background Alteration:
Degree of alteration: slight (8%). 20% of the olivine is altered to amphibole, chlorite/smectite, and pyrite. 5% of the clinopyroxene is altered to amphibole and 8% of the plagioclase is recrystallized.

Structures:
Mf>V
The entire section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cross-cut by a vein in Piece 7.

Core Image



176-735B-115R-2

Interval 564: GABBRONORITE
(see previous section)

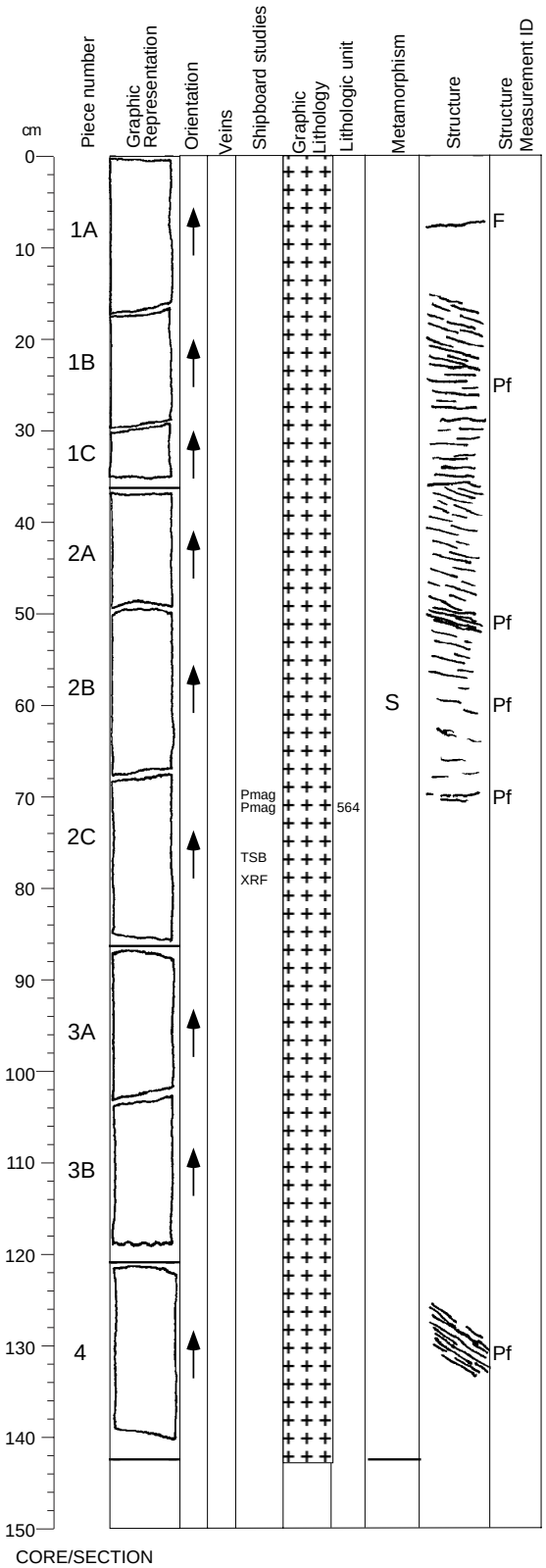
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In olivine and along the cleavage of clinopyroxenes.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
0.2 mm smectite vein in Piece 1E.

Structures:
Mf>F; Mf>Pf
The entire section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cross-cut by a fault in Piece 1D, and overprinted by a narrow zone (2cm thick) with a strong crystal-plastic foliation in Piece 2.

Core Image



176-735B-115R-3

Interval 564: GABBRONORITE
(see Section 176-735B-115R-1)

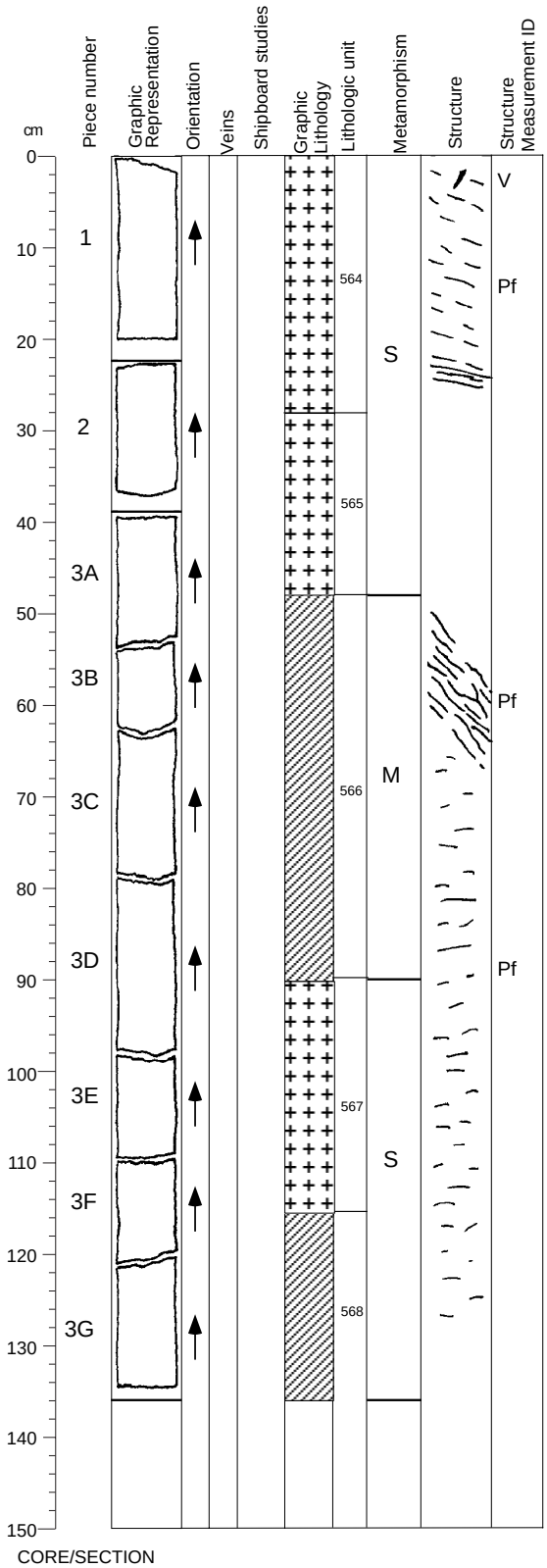
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In olivine and along the cleavage of clinopyroxene.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling: No veins.

Structures:
Mf>F; Mf>Pf
This section displays two zones of crystal-plastic deformation, with a weak to porphyroclastic foliation, overprinting the igneous texture (no or a weak magmatic foliation). The first zone is 55 cm thick (from the bottom of Piece 1A to the top of Piece 2C) and contains a narrow porphyroclastic zone at the boundary between Pieces 2A and 2B). The second zone is thinner (5 cm) and has a porphyroclastic foliation (Piece 4). The igneous texture is cut by a fault in Piece 1A.

Core Image



176-735B-115R-4

Interval 564: GABBRONORITE
(see Section 176-735B-115R-1)

Interval 565: GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	115	4	28	2	666.60
Lower contact:	115	4	48	3A	666.80

Thickness (m): 0.20

	Grain Size (mm): Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	40	40	10	pegmatitic	tabular/ anhedral deformed
Clinopyroxene	45	60	5	pegmatitic	elongate/ subhedral
Olivine	3	10	1	coarse	elongate/ subhedral anhedral
Orthopyroxene	7	15	2	coarse	equant/ subhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	95.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal IUGS Name (calculated): Gabbronorite.

	Type	Distribution
Texture:	granular	N/A

Comments: Pegmatitic clinopyroxene (up to 6 cm) interval. Locally intergranular/subophitic. Pigeonite probably present. Sulfide present at 44 cm in 115R-3.

Interval 566: OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	115	4	48	3A	666.80
Lower contact:	115	4	90	3D	667.22

Thickness (m): 0.42

	Grain Size (mm): Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	15	3	medium	tabular/ anhedral deformed
Clinopyroxene	35	15	3	coarse	equant/ anhedral
Olivine	2	4	1	medium	equant/ subhedral anhedral
Orthopyroxene	6	10	2	coarse	elongate/ subhedral anhedral
Opaques	5				interstitial lenses/ interstitial network
Total	98*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbronorite.

	Type	Distribution
Texture:	granular	N/A

Comments: Oxide-rich interval. Pigeonite probably present. Isolated serpentinized olivine grains. Oxide 5% at 28-61 cm and 63-90 cm in 115R-3; 20% at 61-63 cm in 115R-3.

Continued next page

Core Image

176-735B-115R-4 (cont'd)

Interval 567: GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	115	4	90	3D	667.22
Lower contact:	115	4	115	6	667.47

Thickness (m): 0.25

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	15	5	coarse	tabular/ subhedral anhedral
Clinopyroxene	40	20	2	coarse	equant/ anhedral subhedral
Olivine	1	2	1	medium	amoeboidal/ anhedral
Orthopyroxene	5	8	2	medium	equant/ subhedral
Opaque	0.5				amoeboidal aggregates/ disseminated
Total	96.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Gabbronorite

	Type	Distribution
Texture:	granular	N/A

Comments: Coarser grained at 13 cm in 115R-5 to 132 cm in 115R-5; finer at top and downward. Very coarse-grained band at base, 36-46 cm in 115R-6. Olivine altered.

Interval 568: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	115	4	115	6	667.47
Lower contact:	115	6	81	5	669.84

Thickness (m): 2.37

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	30	5	pegmatitic	tabular/ anhedral deformed
Clinopyroxene	35	35	2	pegmatitic	tabular/ subhedral
Olivine	1	N/A	N/A	N/A	N/A
Orthopyroxene	2	4	1	medium	equant/ subhedral anhedral
Opaque	5				interstitial lenses/ interstitial network
Total	98*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	variable

Comments: Pegmatitic clinopyroxene interval. Oxide 1% at 46-63 cm in 115R-6; 6% at 63-73 cm in 115R-6; 15% at 73-80 cm in 115R-6.

Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.

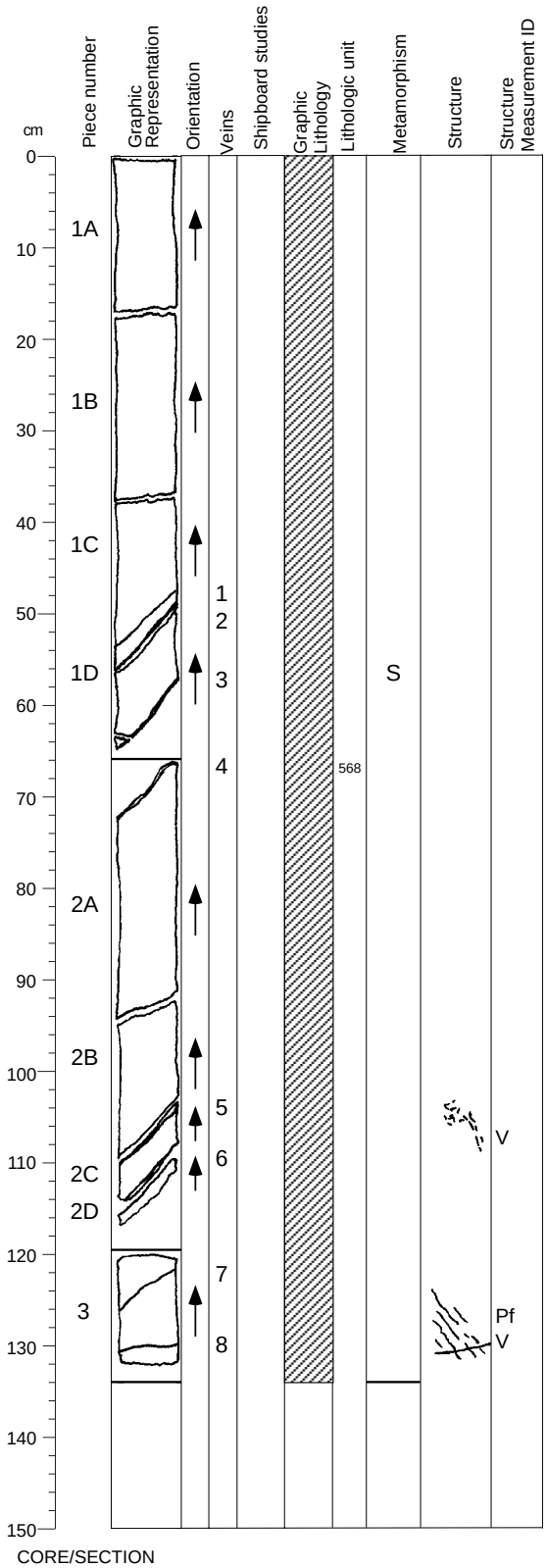
Core Image

176-735B-115R-4 (cont'd)

Background Alteration:
Degree of alteration: moderate (20%). Olivine is highly altered to black smectite/chlorite and amphibole (80%). 10% of the clinopyroxene is altered, and 20% of the plagioclase is secondary.

Structures:
Pf>V; Mf>Pf
The top of the section (From 0 to 29 cm) displays a weak to moderate crystal-plastic foliation, cut at the top of Piece 1 by a small vein. The texture is igneous from 29 to 48 cm. The crystal-plastic deformation may be present but the foliation could not be seen at the scale of the core, because the grain size in this interval is very large (a few cm on average). On Pieces 3A and B (48 to 64 cm), a strong, porphyroclastic, crystal-plastic foliation is present, dipping 50°; a weak crystal-plastic foliation continues downward until the end of the section.

Core Image



176-735B-115R-5

Interval 568: OPX-BEARING OXIDE GABBRO
(see previous section)

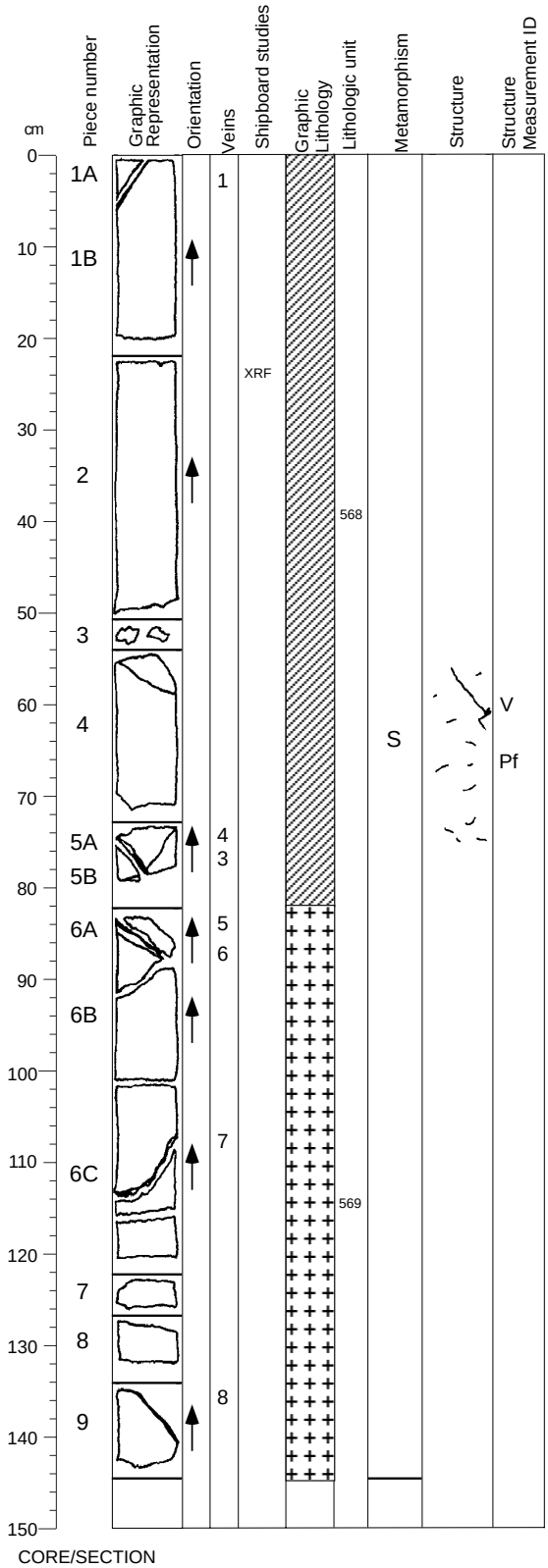
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: In patchy halos.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene and in patchy halos.
Smectite:
Total Percent: <1
Mode of occurrence: In olivine and some clinopyroxene.
Comments: Filling cracks near dark-colored smectite veins.

Background Alteration:
Degree of alteration: slight (8%). 20% of the olivine is altered to amphibole, chlorite/smectite, and pyrite. 5% of the clinopyroxene is altered to amphibole and 8% of the plagioclase is recrystallized.

Vein/Fracture Filling:
0.3 mm smectite veins in Pieces 1C, 1D, 2C, and 3.

Structures:
Mf>V; Mf>Pf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by an incipient vein in Pieces 2B and C. The igneous texture is overprinted by a small zone of strong crystal-plastic foliation at the bottom of the section (Piece 3), itself cut by a vein.

Core Image



176-735B-115R-6

Interval 568: OPX-BEARING OXIDE GABBRO
(see Section 176-735B-115R-4)
Interval 569: GABBRONORITE

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	115	6	81	5	669.84
Lower contact:	115	7	139	7	671.87

Thickness (m): 2.03

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	20	5	coarse	tabular/ subhedral anhedral
Clinopyroxene	30	20	1	coarse	equant/ anhedral
Olivine	2	1	1	medium	elongate/ subhedral anhedral
Orthopyroxene	5	4	1	medium	equant/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	92.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbronorite.

	Type	Distribution
Texture:	subophitic	uniform

Comments: Locally granular. Size and mode variable. Igneous lamination at 36-85 cm in 115R-7. Pigeonite probably present.

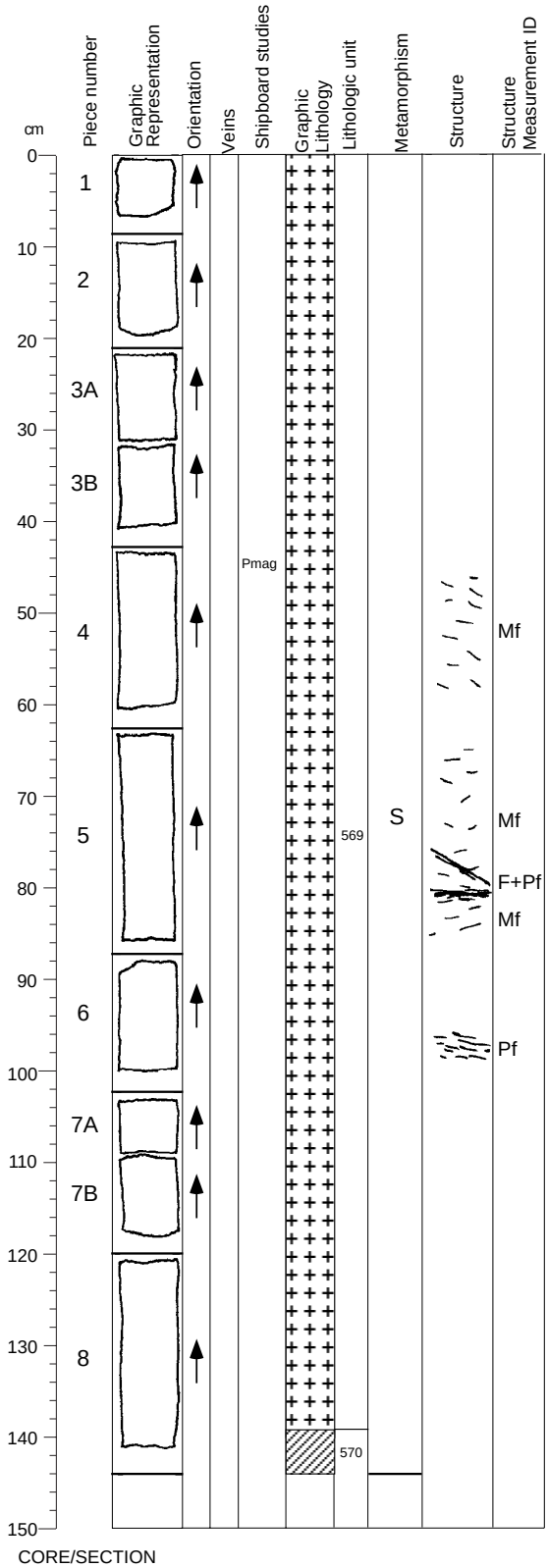
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In cleavages of clinopyroxene and partly after olivine.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectite:
Total Percent: <1
Mode of occurrence: In olivine and some clinopyroxene.
Comments: In cracks of near dark-colored smectite veins.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
0.1-0.4 mm smectite veins in Pieces 1,4,5,6, and 9.

Structures:
Mf>Pf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation. Pieces 4 and 5A are coarser grained and display a weak crystal-plastic foliation, cut by a vein at the top of Piece 4.

Core Image



176-735B-115R-7

Interval 569: GABBRONORITE
(see previous section)
Interval 570: OPX-BEARING DISSEMINATED OXIDE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	115	7	139	7	?
Lower contact:	116	1	10		671.70
Thickness (m): ?					

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	25	5	coarse	tabular/ anhedral deformed
Clinopyroxene	35	30	2	coarse	tabular/ anhedral rounded
Orthopyroxene	2	7	1	medium	elongate anhedral
Opaques	1.5				interstitial lenses/ interstitial network
Total	103.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Disseminated FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	variable

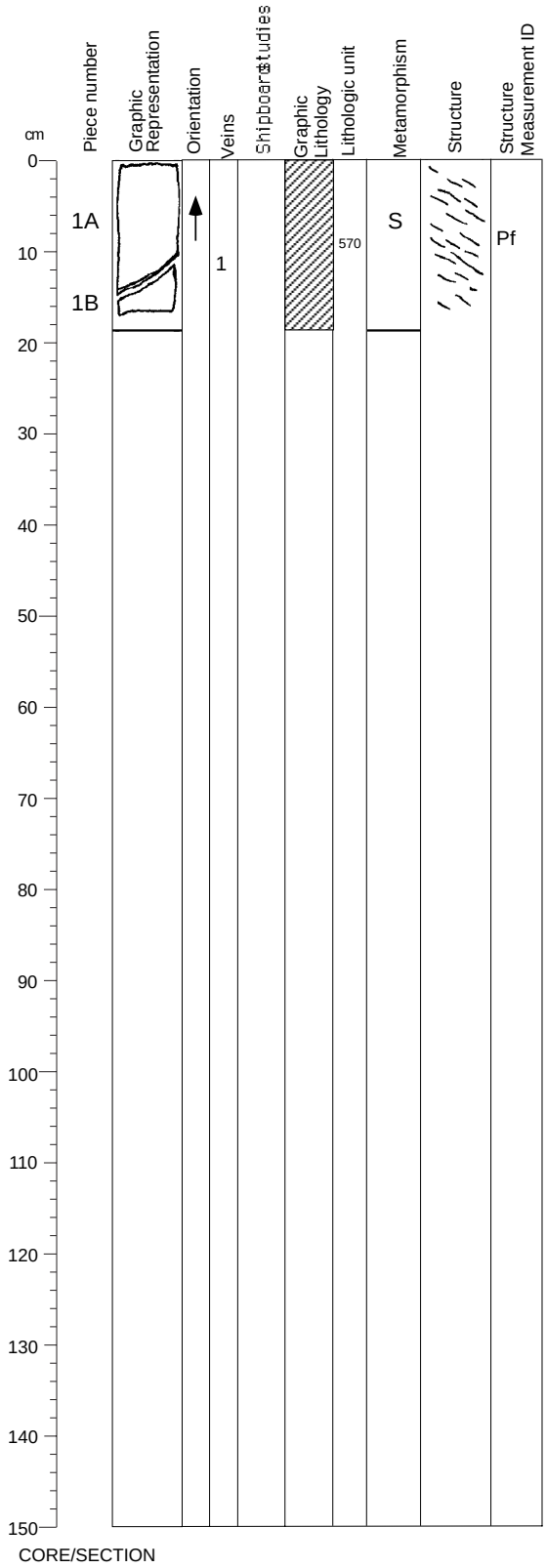
Comments: Oxide-rich interval. Mode/size variable. Coarse at base, finer at top. Pegmatitic clinopyroxene at 16 cm in 115R-8. Oxide 1% at 139-140 cm in 115R-7, 0-13 cm in 115R-8, and 0-9 cm in 116R-1; 5% at 13-17 cm in 115R-8.

Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In cleavages of clinopyroxene and partly after olivine.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section. No veins.

Structures:
Mf>F/Pf; Mf>Pf
Most of this section displays a coarse-grained igneous texture. Pieces 4 and 5 have a visible moderate magmatic foliation, mainly defined by coarse, long plagioclase grains. This foliation is cut in Piece 5 by two thin semi-brittle faults. A narrow (3 cm thick) zone of crystal-plastic foliation overprints the igneous texture in Piece 6.

Core Image



176-735B-115R-8

Interval 570: OPX-BEARING DISSEMINATED OXIDE GABBRO (see previous section)

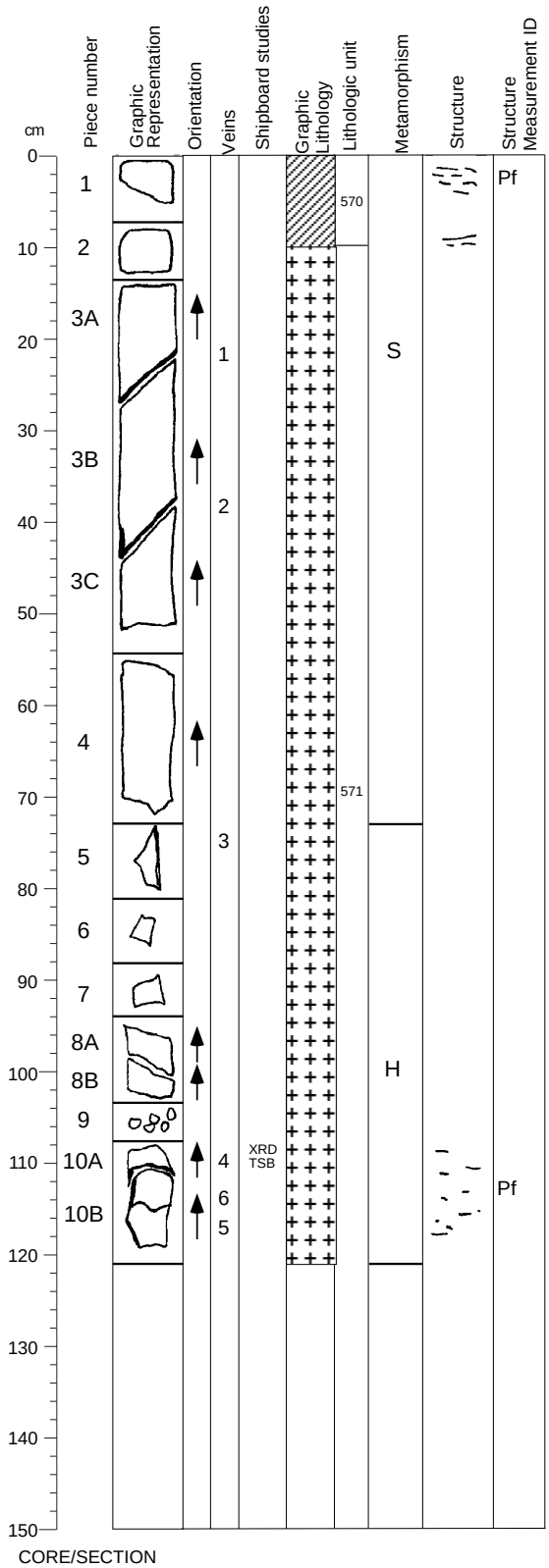
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In cleavages of clinopyroxene and partly after olivine.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
0.2 mm smectite vein in Piece 1A.

Structures:
Pf
This piece displays a strong crystal-plastic foliation.

Core Image



176-735B-116R-1

Interval 570: OPX-BEARING DISSEMINATED OXIDE GABBRO (see Section 176-735B-115R-7)
Interval 571: OPX-BEARING GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	116	1	10		671.70
Lower contact:	116	3	46	3	674.73

Thickness (m): 3.03

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	25	3	coarse	tabular/ subhedral
Clinopyroxene	35	15	2	coarse	equant/ anhedral
Olivine	2	2	1	medium	prismatic/ subhedral
Orthopyroxene	4	4	1	medium	prismatic/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	91.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	textural variation	N/A

Comments: Mostly subophitic, locally granular. Clinopyroxene locally oikocrystic. Olivine with white reaction rims. Coarse (up to 1 cm) dark-green amphibole in places, some apparently associated with microfractures. Parts of the interval fragmented at 81-120 cm in 116R-1, and 90-105 cm in 116R-2.

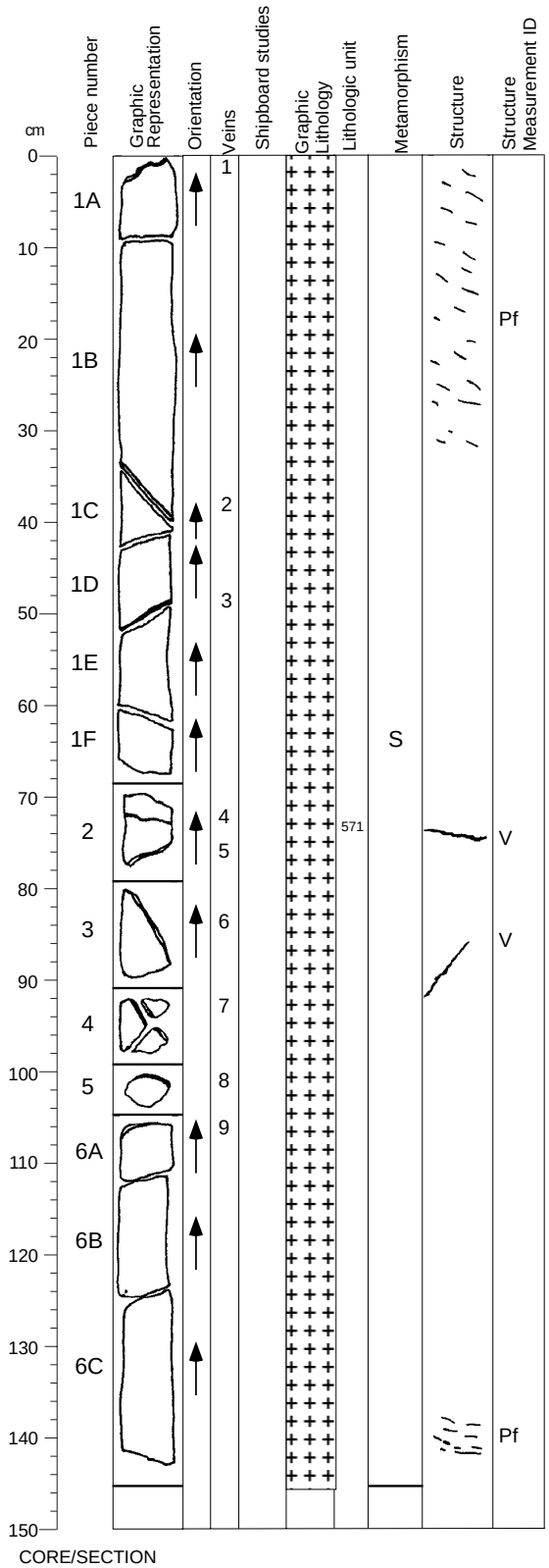
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Dark smectite:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Filling cracks near dark-colored smectite veins.
Sulfide and quartz (?):
Total Percent: tr.
Mode of occurrence: In altered olivine.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
0.2-1 mm smectite veins in Pieces 3,5, and 10.

Structures:
Mf>Pf
Most of this section displays a coarse-grained igneous texture, with no or a weak magmatic foliation. The igneous texture is overprinted by a weak crystal-plastic foliation in Pieces 1 and 2 (0-10 cm), and in Pieces 10A and 10B.

Core Image



176-735B-116R-2

Interval 571: OPX-BEARING GABBRO
(see previous section)

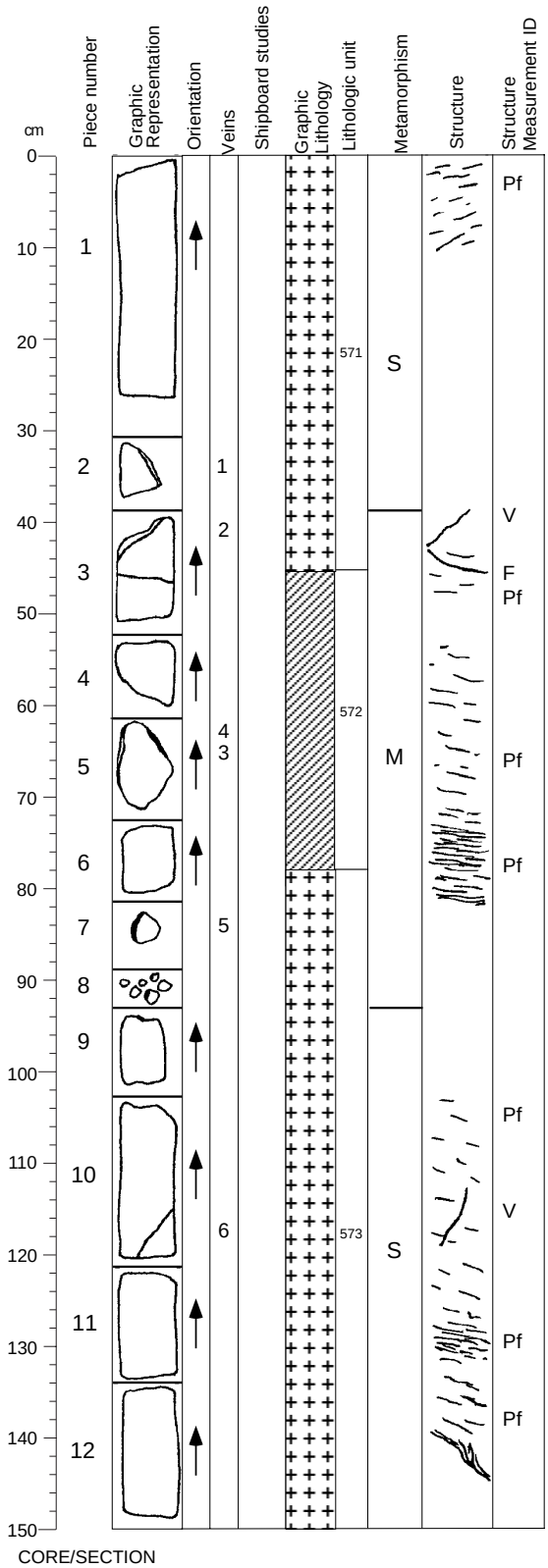
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectites:
Total Percent: <3
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Dark green smectites filling cracks near dark-colored smectite veins. Traces of orange colored smectites.
Sulfide:
Total Percent: tr.
Mode of occurrence: In altered olivine.

Background Alteration:
Degree of alteration: slight to high (8-50%). Pieces 1 to 4: same as previous section. Pieces 5 to 10 are highly altered and contain abundant sulfide. Sulfides and smectite replace olivine (90%). In one example, plagioclase is also replaced by sulfide and secondary plagioclase. Sulfides in clinopyroxene occur along cleavage planes. 5% of the clinopyroxene is altered to amphibole. 50% of the orthopyroxene is altered to amphibole and chlorite(?). 10% of the plagioclase is recrystallized.

Vein/Fracture Filling:
0.3-0.8 mm smectite + calcite veins in Pieces 1B, 1D, 2, 3, 4, and 5; calcite veins in Pieces 1B and 6A.

Structures:
Mf>Pf; Mf>V
Most of this section displays a coarse-grained igneous texture, cut by a few veins (Pieces 2 and 3). It has no or a weak magmatic foliation, except for Piece 6B where a moderate alignment of plagioclase laths (1-2 cm long) is observed on the cut face of the core. A weak crystal-plastic foliation overprints the magmatic texture in Pieces 1A and 1B (0-34 cm) and in Piece 6C (137-143 cm).

Core Image



176-735B-116R-3

Interval 571: OPX-BEARING GABBRO
(see Section 176-735B-116R-1)

Interval 572: OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	116	3	46	3	674.73
Lower contact:	116	3	78	6	675.05

Thickness (m): 0.32

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	50	8	coarse	tabular/ anhedral deformed
Clinopyroxene	40	35	5	coarse	tabular/ subhedral
Olivine	1	N/A	N/A	fine	N/A
Orthopyroxene	5	15	1	coarse	amoeboidal/ anhedral deformed
Opaques	3				interstitial lenses/ interstitial network
Total	104*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Oxide-rich interval, slightly sheared together with greenish alteration material. Oxide aggregates in shear zone as "interstitial" matrix; 5% at 46-58 cm in 116R-3; 1% at 62-76 cm in 116R-3. Orthopyroxene altered.

Interval 573: OPX-BEARING GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	116	3	78	6	675.05
Lower contact:	116	4	136	7	677.13

Thickness (m): 2.08

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	25	10	coarse	tabular/ anhedral subhedral
Clinopyroxene	35	25	3	coarse	tabular/ subhedral anhedral
Olivine	3	2	1	medium	prismatic/ subhedral anhedral
Orthopyroxene	3	3	1	medium	equant/ subhedral
Opaques	0.7				amoeboidal aggregates disseminated
Total	91.7*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	N/A
Fabric:	gradational mode - N	N/A

Comments: Locally intergranular; weakly foliated towards base. Felsic veins with coarse dark-green amphibole at 12-26 cm in 116R-3, 32-45 cm in 116R-4, and 54-60 cm in 116R-4.

Continued next page

Core Image

176-735B-116R-3 (cont'd)

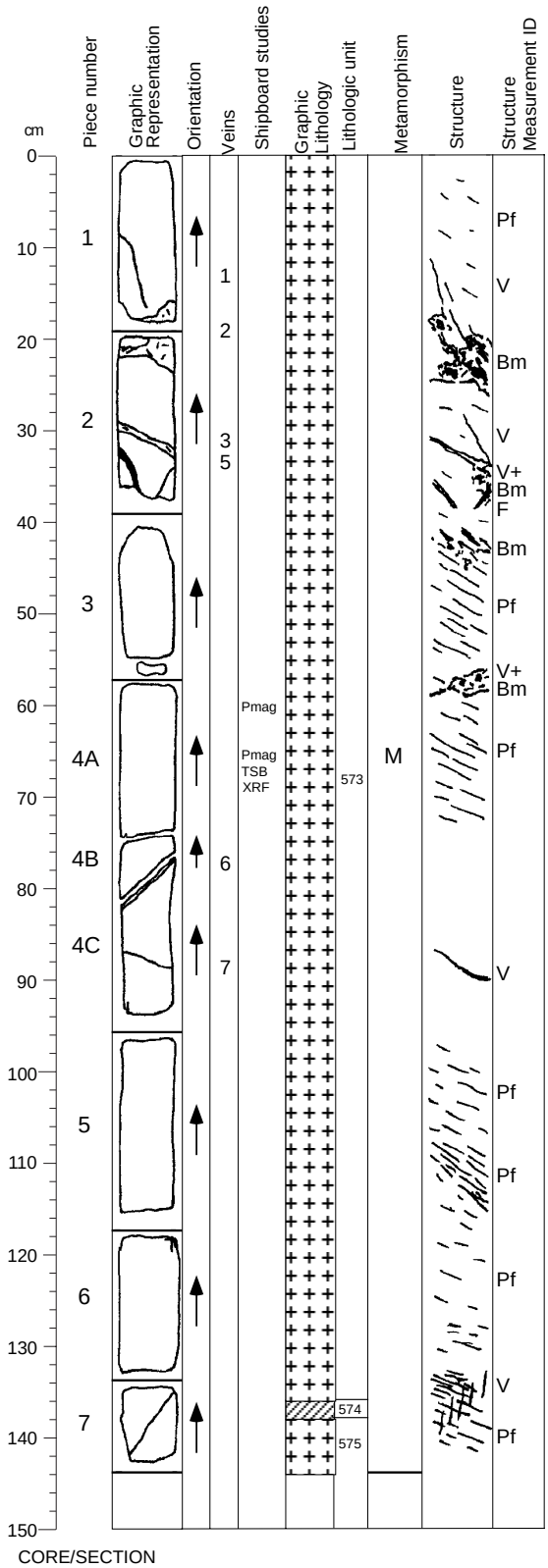
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectites:
Total Percent: <3
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Dark green smectites fill mineral cracks near dark green smectite veins. Traces of yellow-orange smectite.
Sulfide:
Total Percent: tr.
Mode of occurrence: In altered olivine.

Background Alteration:
Degree of alteration: slight (10%). In Pieces 3 to 8, 30% of the olivine is altered, with the most extensive alteration along smectite veins. Clinopyroxene and orthopyroxene are slightly altered (3-5%). Plagioclase is slightly recrystallized (8%). In Pieces 1 to 2 and 9 to 12, alteration is slight (8%). 20% of the olivine is altered to amphibole, chlorite/smectite, and pyrite. 5% of the clinopyroxene is altered to amphibole and 8% of the plagioclase is recrystallized.

Vein/Fracture Filling:
0.8-1 mm calcite veins in Pieces 2,3, and 5; 0.4 mm smectite vein in Piece 5; amphibole veins in Piece 3; plagioclase + amphibole vein in Piece 10.

Structures:
Mf>Pf>V, Pf>F; Mf>Pf
From 0 to 50 cm (Pieces 1, 2 and 3), the section displays mostly a coarse-grained igneous texture, locally overprinted by a weak crystal-plastic foliation in Pieces 1 and 3, and cut by a vein and a fault in Piece 3. From 50 to 80 cm (Pieces 4, 5 and 6), the section displays a moderate to strong crystal-plastic foliation. The texture is igneous from 80 cm to 100 cm. From 102 cm to the bottom of the core, crystal-plastic foliation is present, locally strong in Pieces 11 and 12, and cut by a vein in Piece 10.

Core Image



176-735B-116R-4

Interval 573: OPX-BEARING GABBRO
(see previous section)

Interval 574: OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	116	4	136	7	677.13
Lower contact:	116	4	138	7	677.15

Thickness (m): 0.02

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	8	3	medium	tabular/ subhedral
Clinopyroxene	35	10	2	medium	equant/ anhedral
Orthopyroxene	5	3	1	medium	equant/ subhedral anhedral
Opaques	5				interstitial lenses/ interstitial network
Total	100*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): FeTi Oxide Gabbronorite

	Type	Distribution
Texture:	granular	N/A

Comments: Oxide-rich interval. Locally intergranular.

Interval 575: GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	116	4	138	7	677.15
Lower contact:	117	1	79	4a	681.99

Thickness (m): 4.84

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	30	10	coarse	tabular/ subhedral anhedral
Clinopyroxene	35	15	3	coarse	tabular/ subhedral
Olivine	1	2	1	medium	prismatic/ subhedral anhedral
Orthopyroxene	7	10	2	medium	equant/ subhedral anhedral
Opaques	0.8				interstitial lenses/ disseminated
Total	98.8*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Gabbronorite

	Type	Distribution
Texture:	granular	N/A

Comments: Granular: 138 cm in 116R-4 to 125 cm in 116R-5 medium-grained; 126 cm in 116R5 to 100 cm in 116R-6 coarse-grained; granular/subophitic: 100 cm in 116R-8 to base. Mode/size variable. Fine-grained band at 25-48 cm in 117R-1 with slightly sheared lower boundary at 48 cm in 117R-1 (intrusive?). Olivine locally concentrated (> 5%). Large orthopyroxene grains amoeboidal and altered with white reaction rims. Oxide 3% at 101-102 cm in 116R-5; 2% at 30-36 cm in 116R-6, 11-12 cm in 116R-7; 1% at 5-77 cm in 117R-1.

Continued next page

Core Image

176-735B-116R-4 (cont'd)

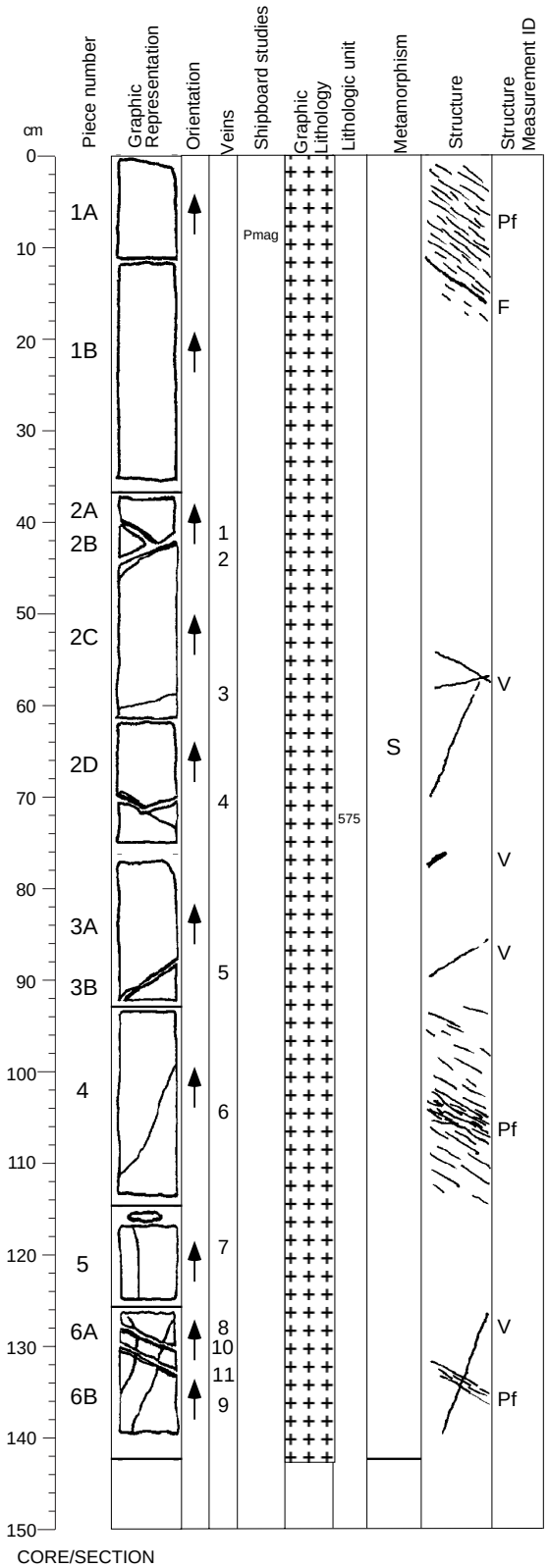
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near sheared felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: In clinopyroxene cleavages or around felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones around felsic material.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic veins.
Smectites:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Dark green smectite filling cracks near dark smectite veins.

Background Alteration:
Degree of alteration: moderate (18%). 30% of the olivine is altered to amphibole and chlorite/smectite. 10% of the clinopyroxene is altered to amphibole and 20% of the plagioclase is recrystallized. Plagioclase is increased along a network of felsic veins.

Vein/Fracture Filling:
0.5-5 mm smectite veins in Pieces 1, 2, and 4B, some with early amphibole; 0.5-20 mm amphibole + plagioclase veins in Pieces 1,2, and 4B; smectite vein in Piece 4B.

Structures:
Pf>V=Bm; Mf>Pf>V=Bm
Most of this section displays a crystal-plastic foliation, weak (0-37 cm, 58-74 cm, 96-106 cm, 110-138 cm) to strong (41-54 cm) or porphyroclastic (106-110 cm). Pieces 4B and 4C display an igneous texture with no magmatic foliation, cut by veins. On the upper half of the section, the crystal-plastic foliation is overprinted in several places by veins and magmatic breccias. In Piece 7, at the bottom of the section, an array of subvertical veinlets cut the crystal-plastic foliation; the bottom of this piece displays igneous texture, with no magmatic foliation.

Core Image



176-735B-116R-5

Interval 575: GABBRONORITE
(see previous section)

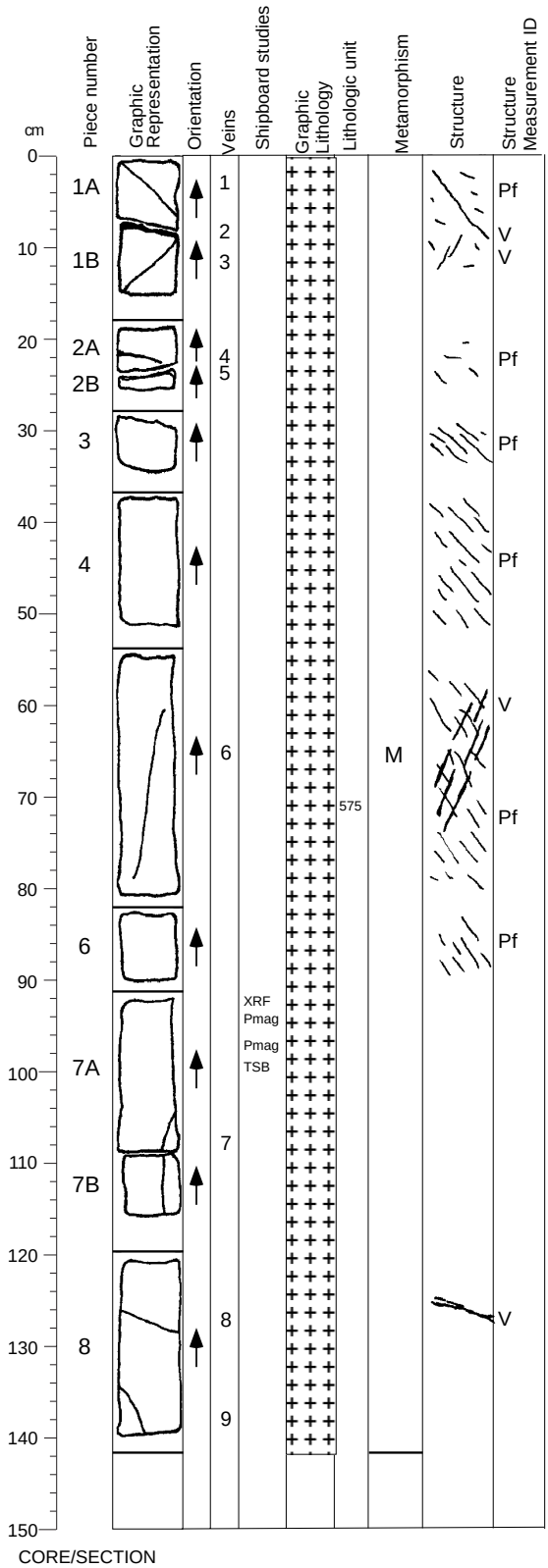
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near sheared felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: In clinopyroxene cleavages or around felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones around felsic material.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic veins.

Background Alteration:
Degree of alteration: slight (10%). 30% of the olivine is altered to amphibole and chlorite/smectite. 6% of the clinopyroxene is altered to amphibole and 10% of the plagioclase is recrystallized.

Vein/Fracture Filling:
0.1-0.5 mm amphibole veins in Pieces 2, 3A, 4, 5, and 6; smectite veins in Pieces 2C, 2D, 6A , and 6B; 4 mm plagioclase+amphibole vein in Piece 3A.

Structures:
Mf>Pf>F; Mf>V, Mf>Pf>V
From 0 to 10 cm, the top of the section displays a strong crystal-plastic foliation, dipping 40°. From 10 to 90 cm, the texture is igneous, with no or a weak magmatic foliation, cut by a few veins. From 90 to 115 cm, the section is plastically deformed, with a weak foliation dipping 40°, locally strong with a shallower dip (25°). The rest of the section displays an igneous texture, except for a narrow zone (3 cm thick) of strong crystal-plastic foliation, cut by a vein.

Core Image



176-735B-116R-6

Interval 575: GABBRONORITE
(see Section 176-735B-116R-4)

Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.

Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near sheared felsic zones.

Brown amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: In clinopyroxene cleavages or around felsic veins.

Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones around felsic material.

Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

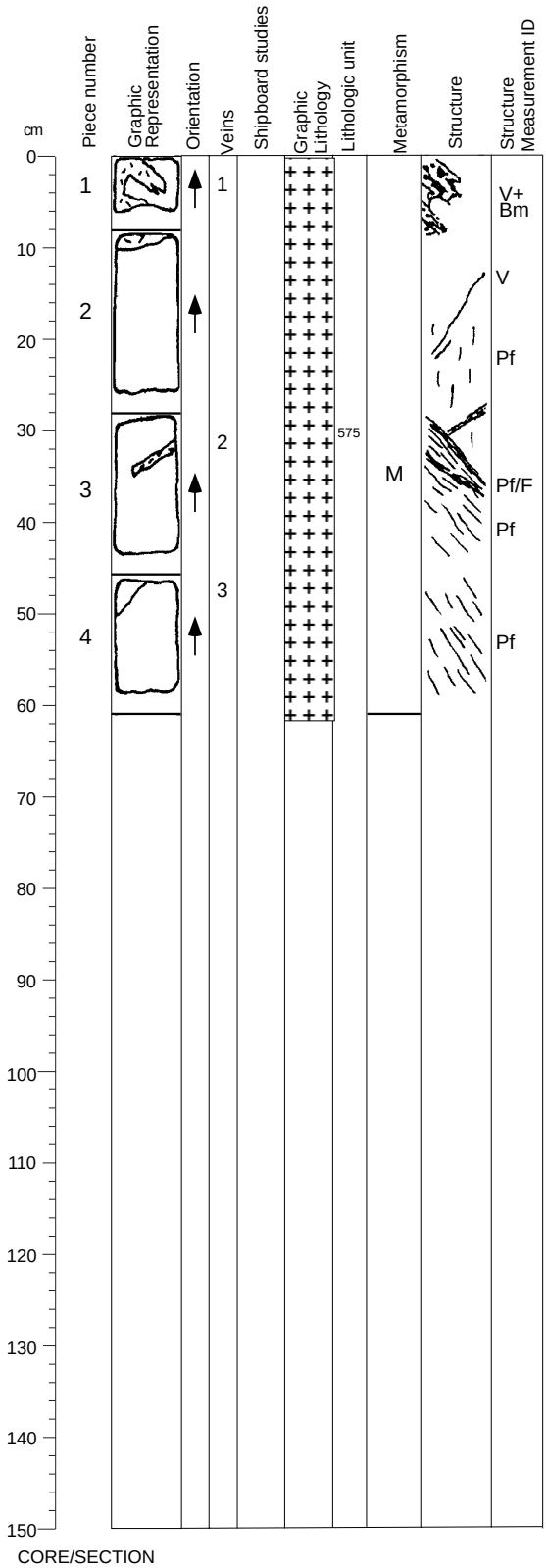
Chlorite:
Total Percent: <2
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic veins.

Background Alteration:
Degree of alteration: moderate (15%). 50% of the olivine are altered to amphibole, chlorite/smectite, and pyrite. 5% of the clinopyroxene are altered to amphibole and 20% of the plagioclase is recrystallized.

Vein/Fracture Filling:
0.2-0.6 mm amphibole veins in Pieces 1, 2A, 2B, 5, 7A, 7B, and 8; plagioclase+ amphibole vein in Piece 8.

Structures:
Pf>V, Mf>V
The first 90 cm of this section displays a weak crystal-plastic foliation, locally cut by a few veins (Pieces 1A, 1B, and 5). From 90 cm to the bottom, the texture is coarse-grained igneous, with no or a weak magmatic foliation; it is cut by a vein in Piece 8.

Core Image



176-735B-116R-7

Interval 575: GABBRONORITE
(see Section 176-735B-116R-4)

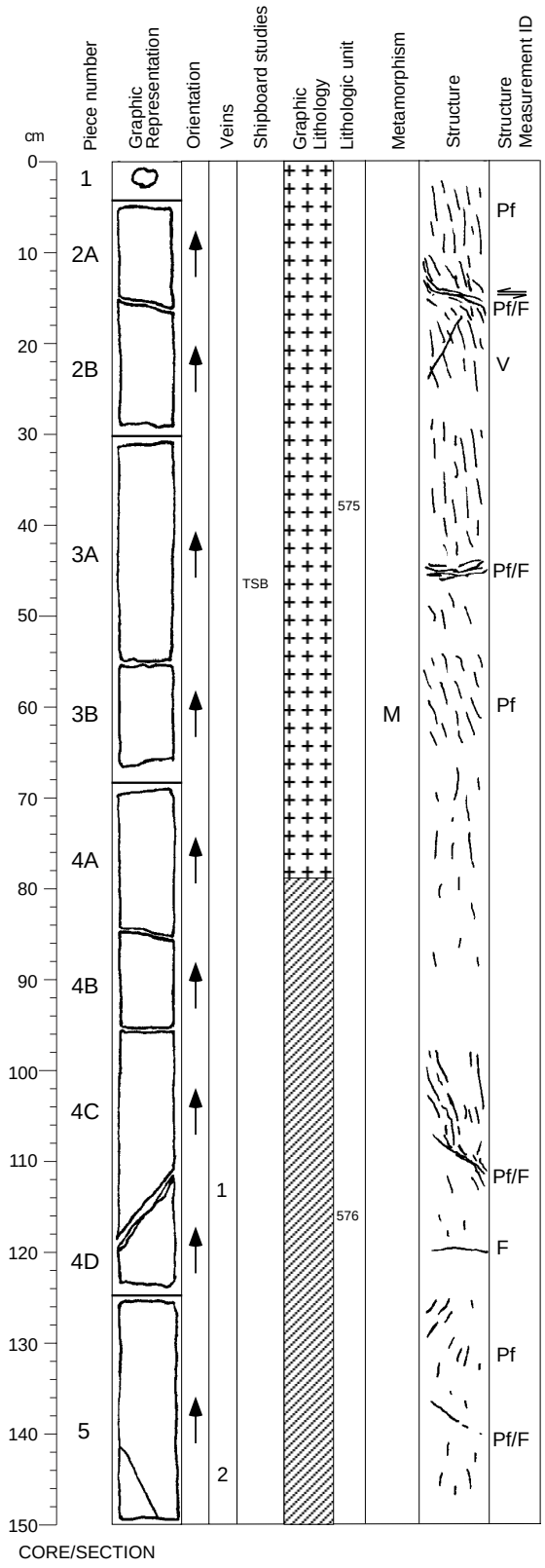
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near sheared felsic zones.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: In clinopyroxene cleavages or around felsic veins.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or in sheared zones around felsic material.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine rims and some clinopyroxene.
Comments: Rimming minerals and near felsic veins.

Background Alteration:
Degree of alteration: moderate (15%). Same as previous section.

Vein/Fracture Filling:
2.5-15 mm plagioclase+amphibole veins in Pieces 1, 2, and 3; 0.2 mm amphibole vein in Piece 4.

Structures:
Mf>V=Bm; Mf>Pf>V; Pf>V>Pf/F
The first 19 cm of this section displays a coarse-grained igneous texture with no magmatic foliation, overprinted by veins and a magmatic breccia. From 19 cm to 37 cm, a weak, vertical, crystal-plastic foliation is present, cut by a vein. From this interval starts a thick zone (several core sections downward) of vertical crystal-plastic foliation, regularly overprinted by shallow, semi-brittle, reverse shear zones or faults. The vertical plastic foliation and the vein are cut at 37 cm by a strong crystal-plastic foliation, dipping 50˚, locally grading into semi-brittle faults. The rest of the section (41 to 59 cm) displays a weak crystal-plastic foliation.

Core Image



176-735B-117R-1

Interval 575: GABBRONORITE
(see Section 176-735B-116R-4)

Interval 576: DISSEMINATED OXIDE GABBRONORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	117	1	79	4a	681.99
Lower contact:	117	1	148	5	682.68

Thickness (m): 0.69

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	30	5	coarse	tabular/ anhedral
Clinopyroxene	25	30	3	coarse	tabular/ anhedral subhedral
Olivine	1	N/A	N/A	N/A	N/A
Orthopyroxene	6	8	2	medium	equant/ subhedral anhedral
Opaques	1.5				interstitial lenses/ interstitial network
Total	93.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Disseminated FeTi Oxide Gabbronorite

	Type	Distribution
Texture:	textural variation	N/A

Comments: Oxide-rich interval. Mostly granular/intergranular. Fine-grained band at 98-108 cm in 117R-1.

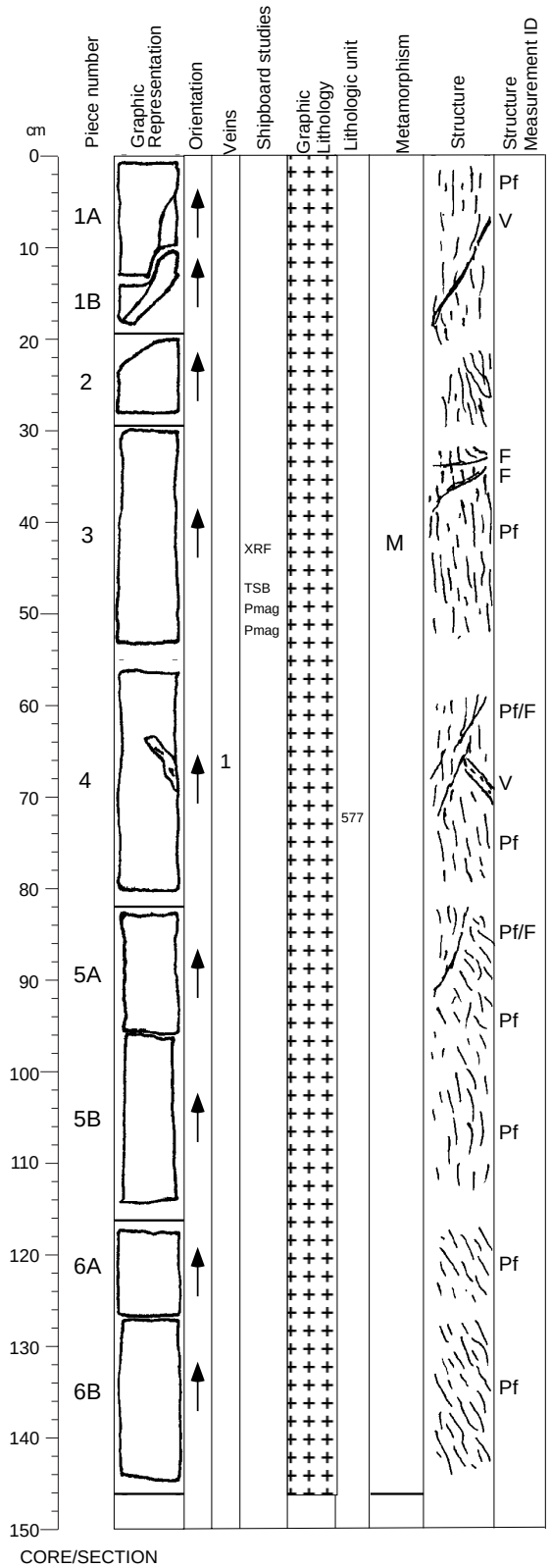
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.
Secondary plagioclase:
Total Percent: <10
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming primary minerals.

Background Alteration:
Degree of alteration: moderate (15%). Same as previous section.

Vein/Fracture Filling:
Smectite vein in Piece 4D; amphibole vein in Piece 5.

Structures:
Pf>Pf/F; Pf>V
The entire section displays a subvertical crystal-plastic foliation, overprinted in several places (Pieces 2A, 3A, 4C, and 5) by narrow, mostly reverse, semi-brittle shear zones (dipping from 25 to 50˚). The vertical plastic foliation is strong from 0 to 66 cm and weak downward, cut by a vein in Piece 2B.

Core Image



176-735B-117R-2

Interval 577: OLIVINE GABBRONORITE

	Core	Section	Depth in Section	Piece	Depth mbsf
Interval Location:					
Upper contact:	117	1	148	5	682.68
Lower contact:	117	5	93	8	687.85
Thickness (m): 5.17					

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	30	8	coarse	tabular/ anhedral subhedral
Clinopyroxene	30	5	3	coarse	tabular/ subhedral anhedral
Olivine	5	7	1	medium	amoeboidal/ anhedral
Orthopyroxene	6	7	1	medium	equant/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	101.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbronorite

	Type	Distribution
Texture:	textural variation	N/A

Comments: Mostly granular. Top to 54 cm in 117R-2 intergranular. Slightly foliated (vertically) in fine-grained portions from 138 cm in 117R-2 to 35 cm in 117R-3. A single pegmatitic clinopyroxene is present. Olivine abundance variable in zones of 0-5% to 5-10%. Orthopyroxene abundance variable (3-10%). Oxide 2% at 100-101 cm and 128-129 cm in 117R-4; 1% at 117-118 cm and 128-129 cm in 117R-3. Zone of altered fragments at 37-54 cm in 117R-5.

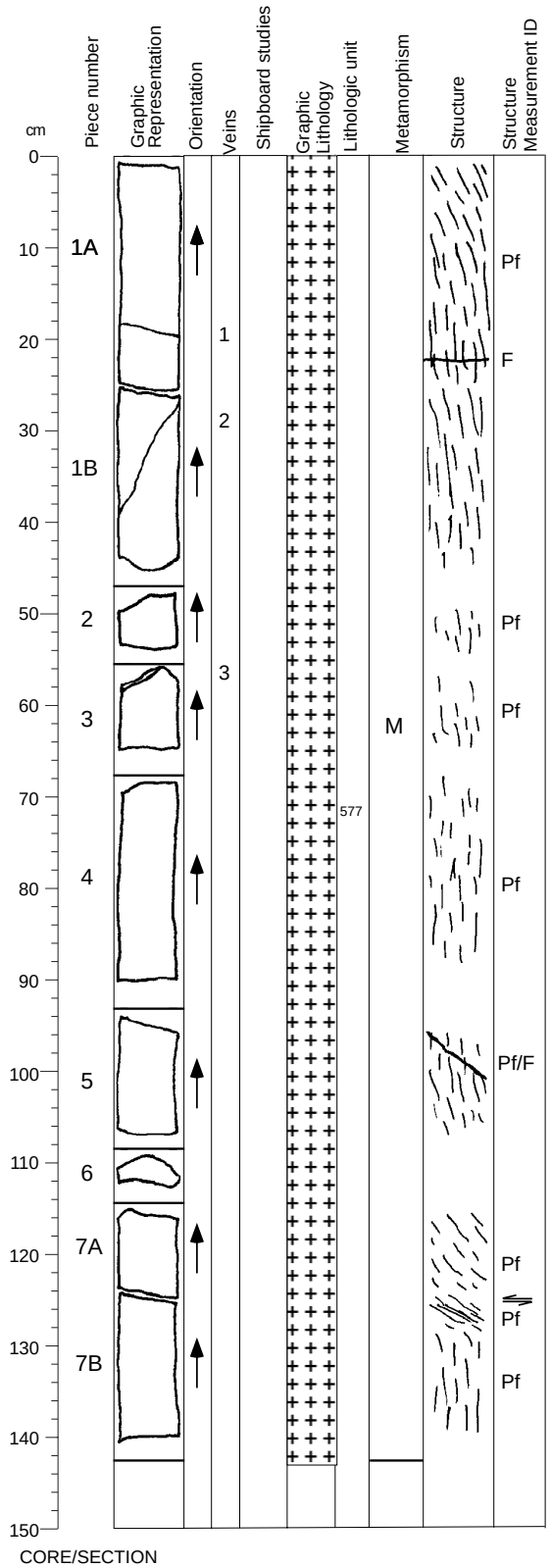
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near sheared felsic zones.
Secondary plagioclase:
Total Percent: <25
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones around felsic material.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic patches.

Background Alteration:
Degree of alteration: moderate (30%). 80% of the olivine is altered to amphibole and chlorite/smectite and pyrite. 10% of the clinopyroxene is altered to amphibole and 50% of the plagioclase is recrystallized. Plagioclase recrystallization increases where a strong steep foliation is developed in the rock.

Vein/Fracture Filling:
Amphibole vein in Piece 1; plagioclase vein in Piece 4.

Structures:
Pf>V; Pf>F; Pf>Pf/F; Pf>V>Pf/F
The entire section displays a strong to porphyroclastic, subvertical, crystal-plastic foliation, overprinted in several places (Pieces 3, 4 and 5) by narrow, semi-brittle shear zones (dipping from 50 to 65°). These shear zones are reverse.

Core Image



176-735B-117R-3

Interval 577: OLIVINE GABBRONORITE
(see previous section)

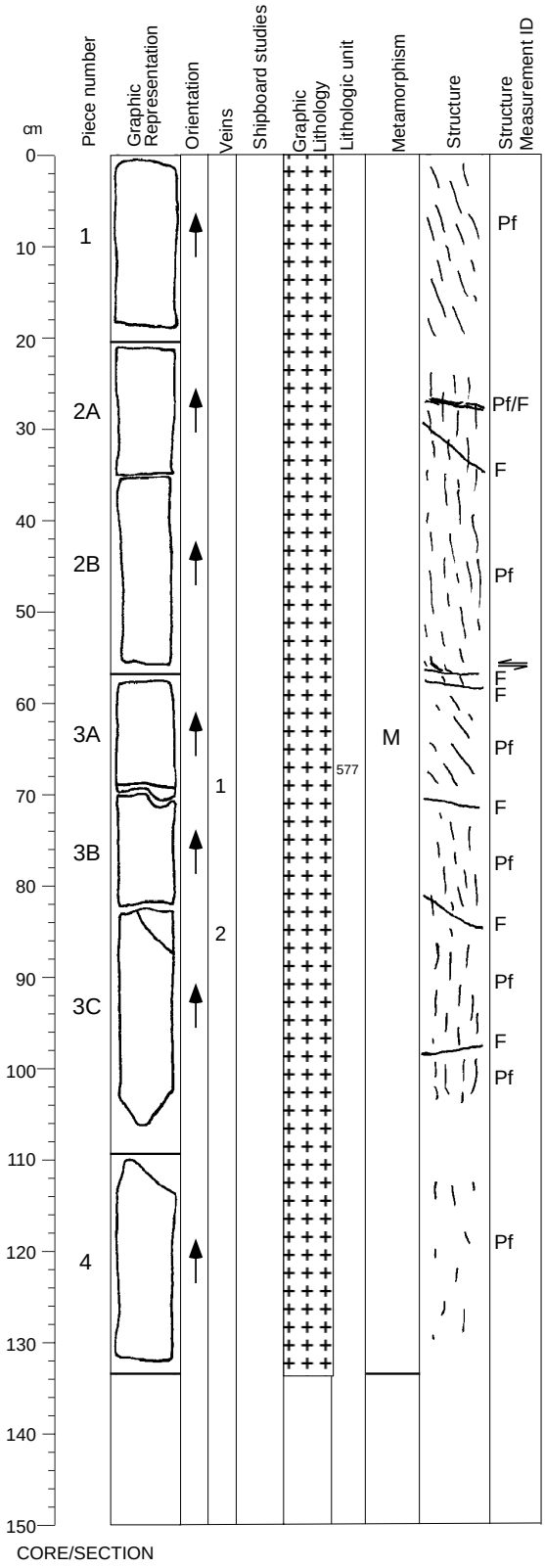
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in sheared zones.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near sheared felsic zones.
Secondary plagioclase:
Total Percent: <25
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones around felsic material.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic patches.

Background Alteration:
Degree of alteration: moderate (30%). Same as previous section.

Vein/Fracture Filling:
Amphibole veins in Piece 1; smectite vein in Piece 3.

Structures:
Pf>F; Pf>Pf/F
Most of this section displays a strong to porphyroclastic, subvertical, crystal-plastic foliation, overprinted in two places (Pieces 5 and 7A) by narrow, semi-brittle shear zones (dipping from 30 to 35˚). These shear zones are reverse. The vertical plastic foliation is weaker from 108 to 140 cm. A horizontal, late fault cuts the vertical foliation in Piece 1A.

Core Image



176-735B-117R-4

Interval 577: OLIVINE GABBRONORITE
(see Section 176-735B-117R-2)

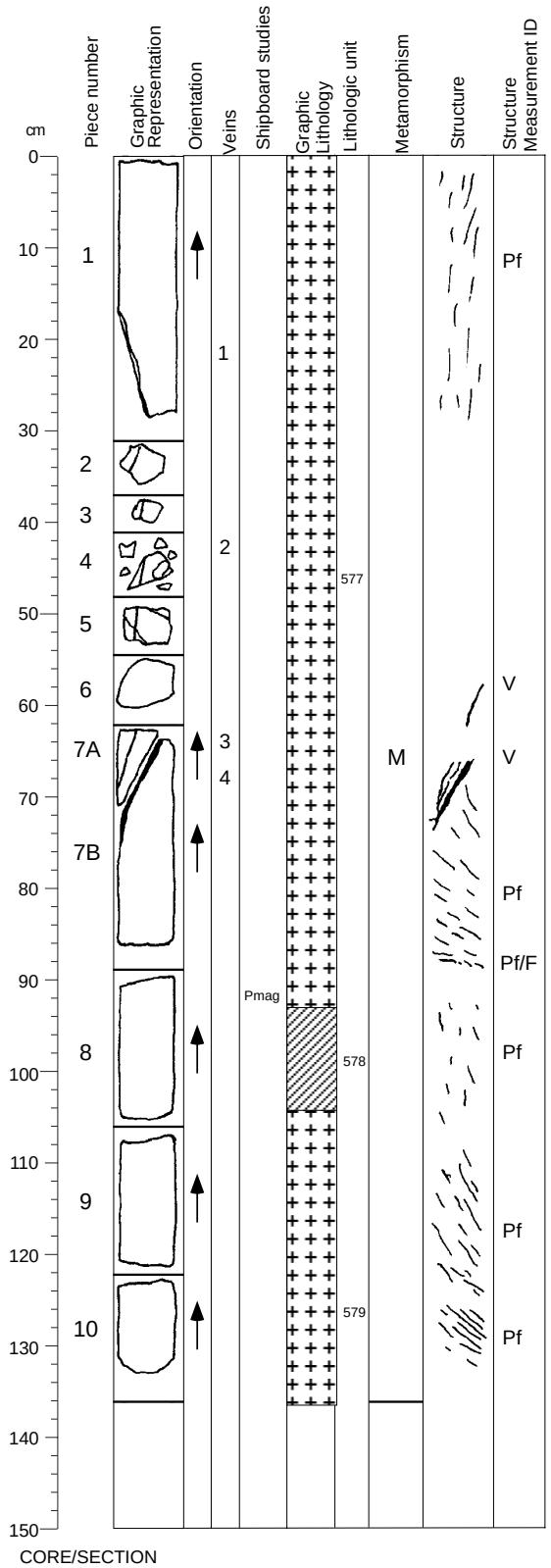
Alteration:
Dark green amphibole:
Total Percent: <5
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <12
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: moderate (18%). 80% of the olivine is altered to amphibole and chlorite/smectite and pyrite. 10% of the clinopyroxene is altered to amphibole and 25% of the plagioclase is recrystallized.

Vein/Fracture Filling:
Plagioclase veins in Pieces 3A and 3C.

Structures:
Pf>Pf/F; Pf>F
The entire section displays a weak, subvertical, crystal-plastic foliation, overprinted in two places (Pieces 2A and 3A) by narrow, semi-brittle shear zones or faults (dipping from 7 to 16°). The shear zone in Piece 3A is reverse. A few late faults cut the vertical foliation.

Core Image



176-735B-117R-5

Interval 577: OLIVINE GABBRONORITE
(see Section 176-735B-117R-2)

Interval 578: DISSEMINATED OXIDE GABBRONORITE

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	117	5	93	8	687.85
Lower contact:	117	5	104	8	687.96
Thickness (m): 0.11					

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	25	7	coarse	tabular/ subhedral anhedral
Clinopyroxene	25	20	2	coarse	tabular/ subhedral anhedral
Olivine	2	3	1	medium	amoeboidal/ anhedral
Orthopyroxene	7	10	1	coarse	prismatic/ subhedral anhedral
Opaques	1				interstitial lenses/ disseminated
Total	100*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Disseminated FeTi Oxide Gabbronorite

	Type	Distribution
Texture:	granular	N/A

Comments: Locally intergranular/subophitic. Coarse-grained. Olivine altered.

Interval 579: GABBRONORITE

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	117	5	104	8	687.96
Lower contact:	118	1	95	7a	691.75
Thickness (m): 3.79					

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	5	coarse	tabular/ subhedral anhedral
Clinopyroxene	30	25	2	coarse	tabular/ subhedral anhedral
Olivine	1	2	1	medium	amoeboidal/ anhedral
Orthopyroxene	5	15	2	coarse	prismatic/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	101.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	variable

Comments: Locally subophitic; locally foliated, fragmented, and veined. Orthopyroxene locally present(?).

Continued next page

Core Image

176-735B-117R-5 (cont'd)

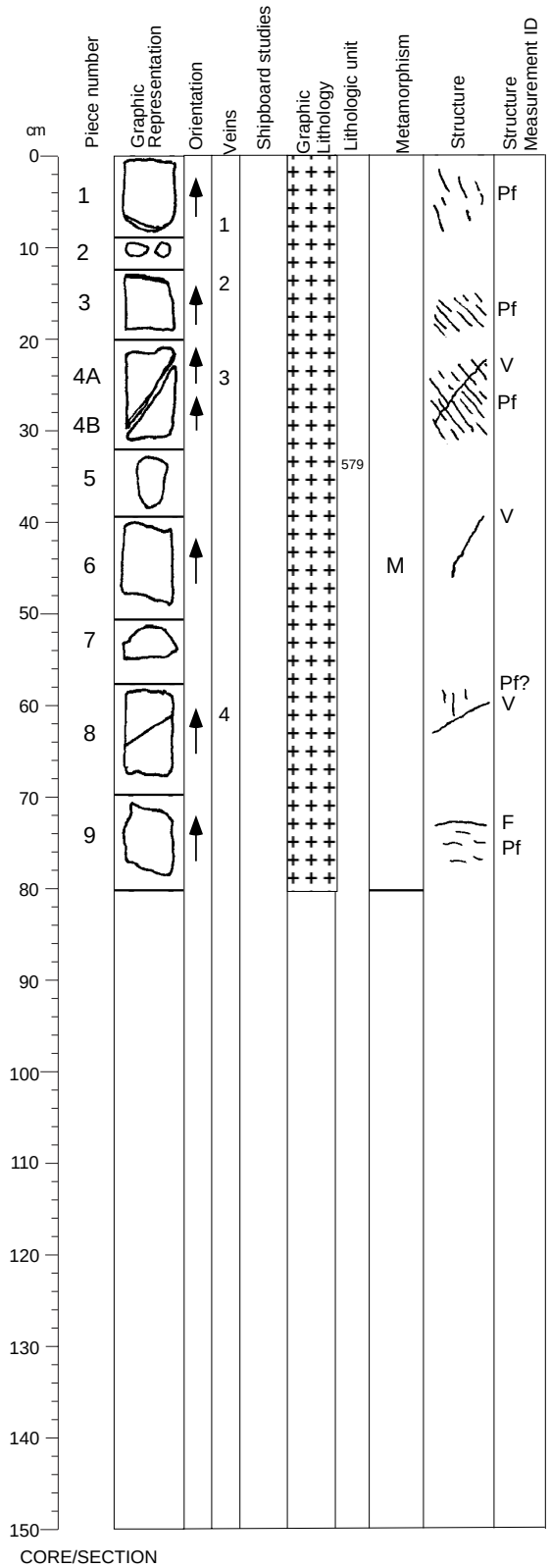
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Smectites:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Dark green smectite in cracks of minerals near dark smectite veins.
Sulfides:
Total Percent: tr.
Mode of occurrence: In olivine.
Comments: Associated with dark green smectite.

Background Alteration:
Degree of alteration: moderate (25%). 80% of the olivine is altered to amphibole and chlorite/smectite and pyrite. 15% of the clinopyroxene is altered to amphibole and 35% of the plagioclase is recrystallized.

Vein/Fracture Filling:
Smectite veins in Pieces 1-7.

Structures:
Pf>V; Pf>Pf/F
The entire section displays a weak, crystal-plastic foliation, mostly subvertical except for Pieces 7B, 9 and 10 where it is shallower, although not always well defined. The vertical foliation is cut by a few veins in Pieces 6 and 7A to 7B, and overprinted by a narrow, semi-brittle shear zones at the bottom of Piece 7B.

Core Image



176-735B-117R-6

Interval 579: GABBRONORITE
(see previous section)

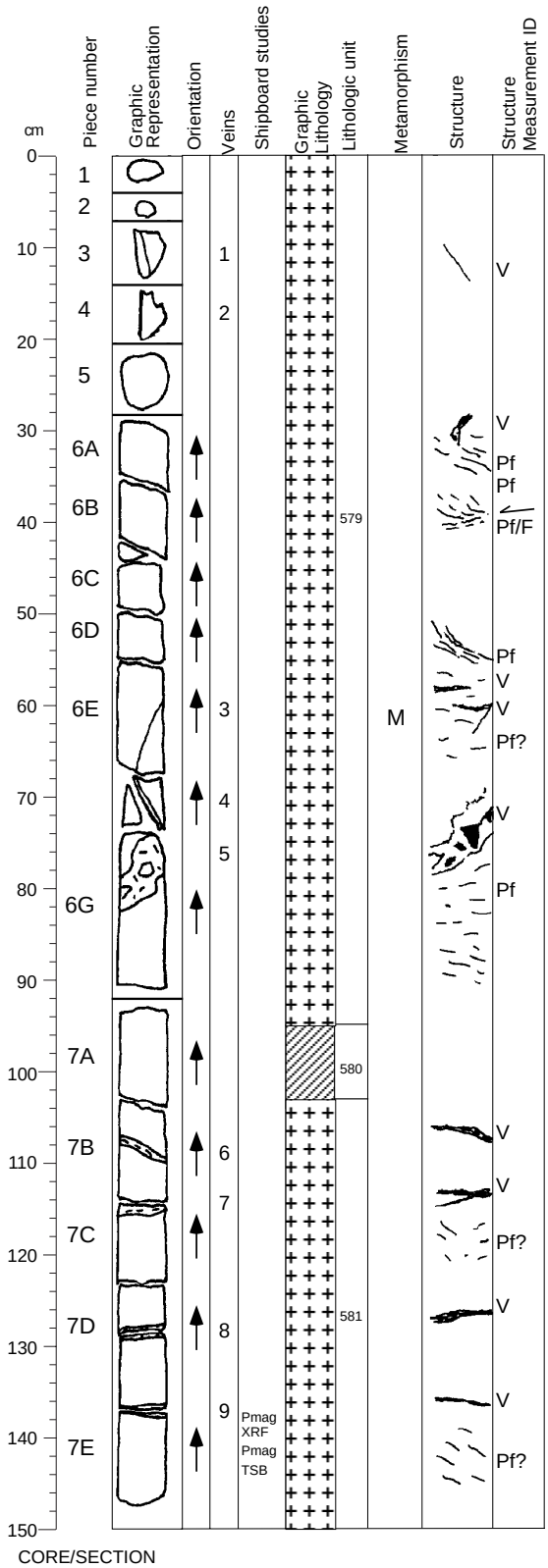
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Around minerals.
Smectites:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Dark green smectite in cracks of minerals.
Sulfides:
Total Percent: tr.
Mode of occurrence: In olivine.
Comments: Associated with dark green smectite.

Background Alteration:
Degree of alteration: moderate (25%). 80% of the olivine is altered to amphibole and chlorite/smectite and pyrite. 15% of the clinopyroxene is altered to amphibole and 35% of the plagioclase is recrystallized.

Vein/Fracture Filling:
Smectite veins in Pieces 1,3,and 4; plagioclase + amphibole vein in Piece 8.

Structures:
Pf>V; Mf>Pf?>V
From 0 to 30 cm, the section displays a subvertical to steeply dipping crystal-plastic foliation, cut by a vein in Piece 4AB. From 40 to 68 cm, the texture is igneous, with no magmatic foliation, cut by a vein in Piece 8. A weak crystal-plastic foliation may be present in Piece 8. Piece 9 displays a weak crystal-plastic foliation bounded at the top by a fault.

Core Image



176-735B-118R-1

Interval 579: GABBRONORITE
(see previous section)

Interval 580: OPX-BEARING OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	1	95	7A	691.75
Lower contact:	118	1	103	7A	691.83

Thickness (m): 0.08

	Grain Size (mm): Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	15	5	coarse	tabular/ anhedral subhedral
Clinopyroxene	30	15	2	coarse	tabular/ anhedral subhedral
Olivine	2	2	1	medium	equant/ subhedral anhedral
Orthopyroxene	4	8	2	coarse	prismatic/ subhedral anhedral
Opaques	3				interstitial lenses/ interstitial network
Total	99*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	uniform

Comments: Oxide-rich interval. Olivine altered with dark rims. Oxide 1% at 93-97 cm in 118R-1; 5% at 97-103 cm in 118R-1.

Interval 581: OPX-BEARING GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	1	103	7a	691.83
Lower contact:	118	5	65	5b	697.37

Thickness (m): 5.54

	Grain Size (mm): Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	5	coarse	tabular/ anhedral subhedral
Clinopyroxene	30	15	2	coarse	tabular/ subhedral anhedral
Olivine	4	8	1	medium	amoeboidal/ anhedral
Orthopyroxene	2	7	1	medium	prismatic/ subhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	101.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	uniform

Comments: Locally intergranular. Much of the interval fragmented (jointed). Coarse-grained clinopyroxene at 37 and 59 cm in 118R-2. Olivine serpentinized. Oxide 1% at 19-20 cm in 118R-4. Locally pervasively veined.

Continued next page

Core Image

176-735B-118R-1 (cont'd)

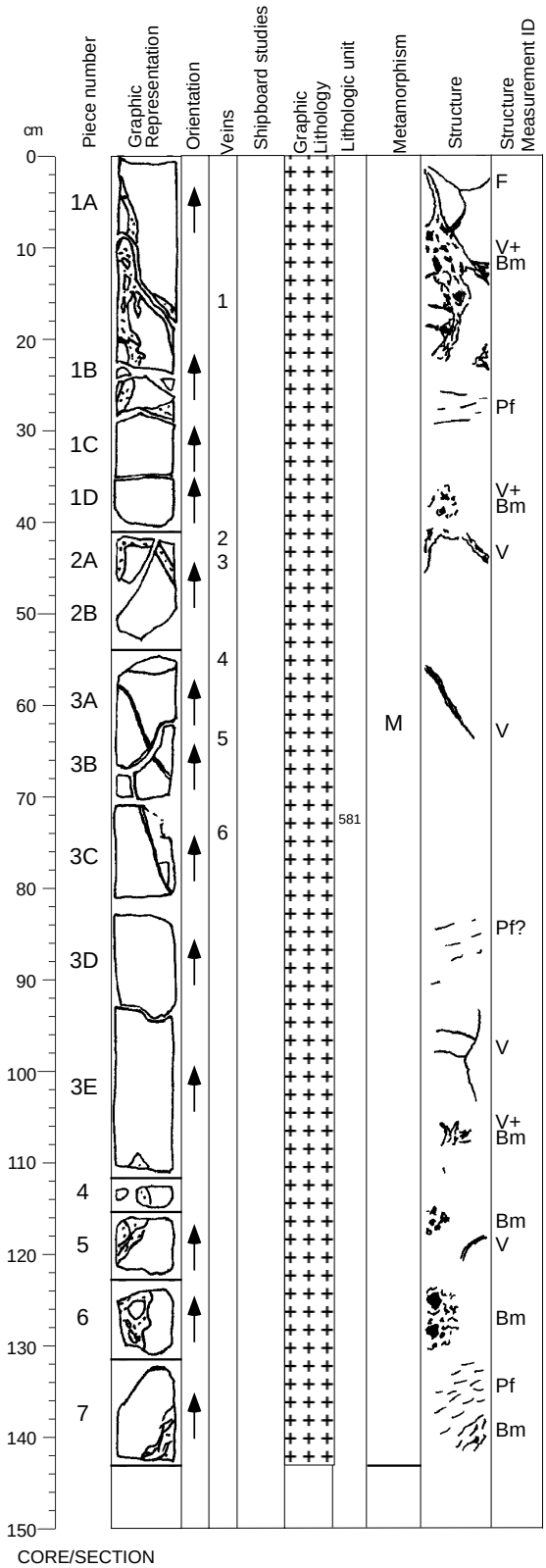
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic zones.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed or located in sheared zones around felsic material.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine rims and some clinopyroxene.
Comments: Rimming minerals, near veins and felsic zones.
Smectites:
Total Percent: <1
Mode of occurrence: Replacing olivine and some clinopyroxene.
Comments: Dark green smectite in cracks of minerals with a yellowish variety outside.

Background Alteration:
Degree of alteration: moderate (15-25%). Pieces 1 to 6B: same as previous section. Pieces 6G to 7E are moderately altered (15%). 60% of the olivine is altered to amphibole and chlorite. 10% of the clinopyroxene is replaced by amphibole. 20% of the plagioclase is recrystallized.

Vein/Fracture Filling:
Smectite veins in Pieces 3, 4, and 6; amphibole + plagioclase veins in Pieces 6 and 7.

Structures:
Pf>V; Pf>Pf/F
The first five pieces are unoriented, they display a strong crystal-plastic fabric. Pieces 6A and 6B display a relatively shallow crystal-plastic foliation, overprinted at 40 cm by a normal semi-brittle shear zone (dipping 25˚). Another semi-brittle shear zone, reverse, is present at 53 cm (Piece 6D). From 54 cm to the bottom, the crystal-plastic foliation is weak, sometimes poorly defined and with a changing orientation; it is cut by a series of veins.

Core Image



176-735B-118R-2

Interval 581: OPX-BEARING GABBRO
(See previous section)

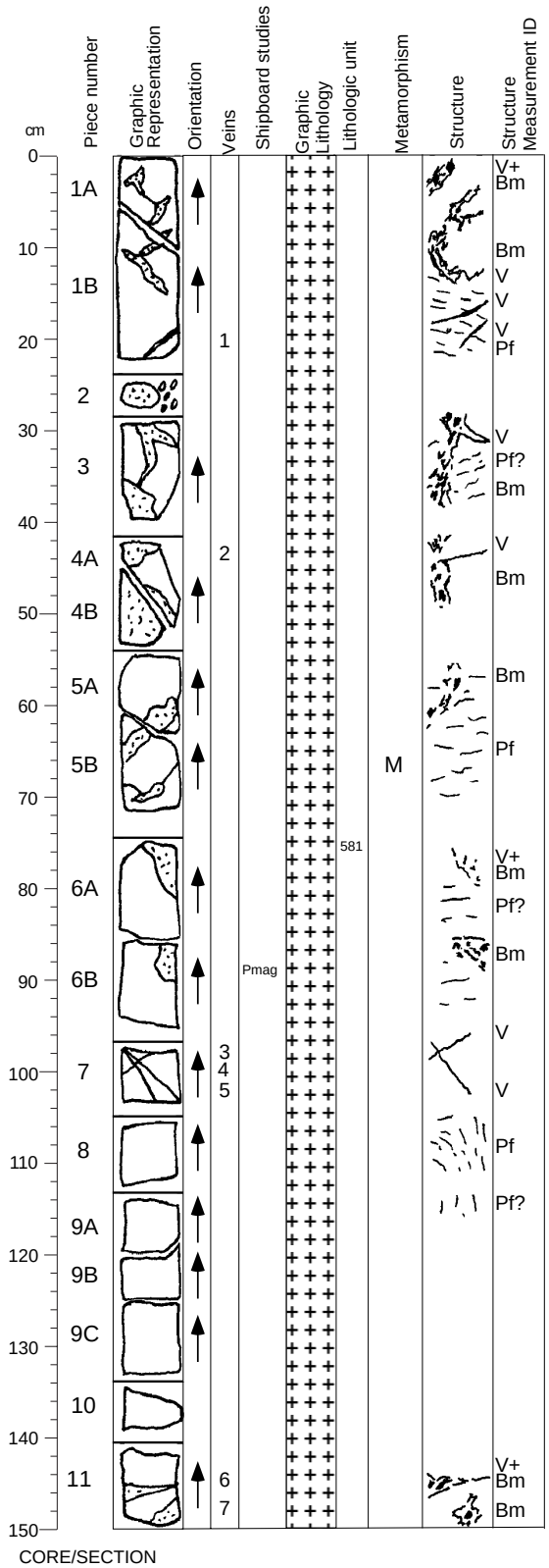
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and partly olivine.
Comments: As alteration rims near veins.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near veins.
Talc and oxides:
Total Percent: <2
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming primary minerals and near veins.

Background Alteration:
Degree of alteration: moderate (30%). 80% of the olivine is altered to amphibole and chlorite. 15% of the clinopyroxene is replaced by amphibole. Orthopyroxene is partly altered to amphibole and chlorite? (15%). 35% of the plagioclase is recrystallized.

Vein/Fracture Filling:
Plagioclase + amphibole veins in Pieces 1, vein net in Piece 3C; amphibole vein in Piece 3A.

Structures:
Pf>V=Bm
The entire section is weakly to moderately plastically deformed, but the foliation is often poorly defined. In several places (Pieces 1A-1B, 2A, 3E, 4, 5, 6 and 7), the plastic fabric is overprinted by large magmatic veins, brecciating the host rock.

Core Image



176-735B-118R-3

Interval 581: OPX-BEARING GABBRO
(See Section 176-735B-118R-1)

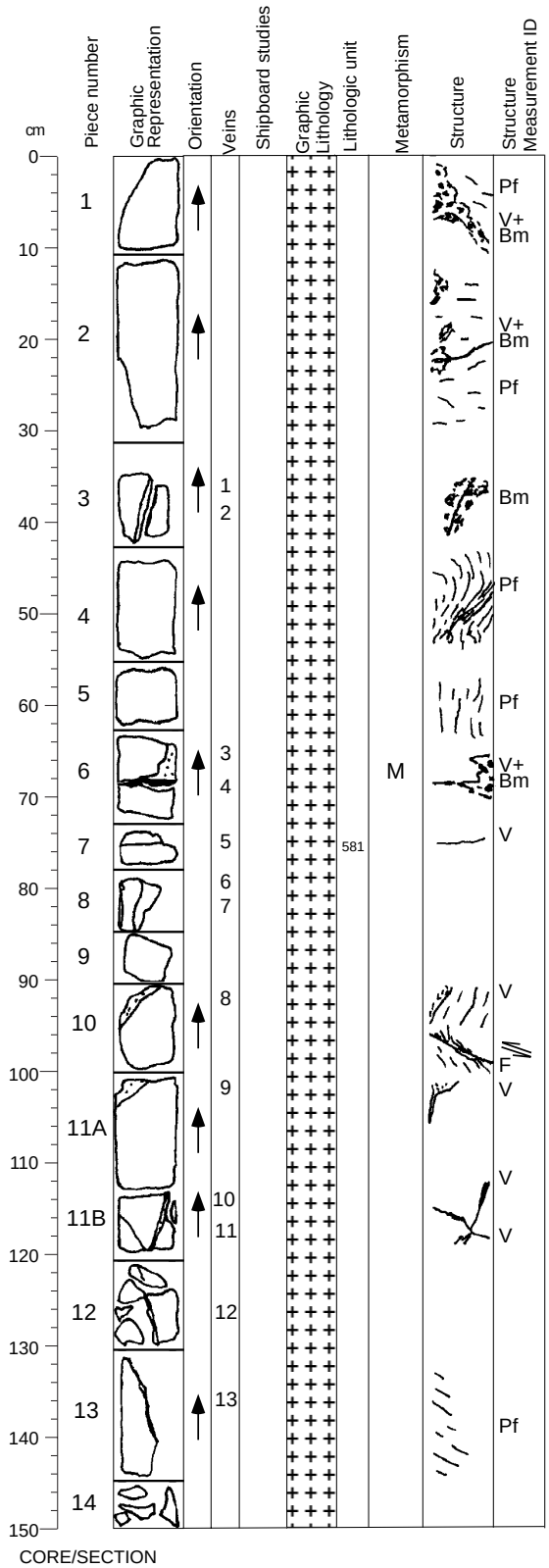
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and partly olivine.
Comments: As alteration rims near veins.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins.

Background Alteration:
Degree of alteration: moderate (25%). 80% of the olivine is altered to amphibole and chlorite. 10% of the clinopyroxene is replaced by amphibole. Orthopyroxene is partly altered to amphibole and chlorite? (10%). 30% of the plagioclase is recrystallized.

Vein/Fracture Filling:
0.2-1 mm smectite veins in Pieces 1 and 7; 2-3 mm plagioclase veins in Piece 11, plagioclase vein net in Pieces 1-6.

Structures:
Pf>V; Pf>V=Bm
The entire section displays a weak crystal-plastic foliation, with changing orientation, occasionally poorly defined. The plastic foliation is regularly overprinted by veins and associated brecciated zones.

Core Image



176-735B-118R-4

Interval 581: OPX-BEARING GABBRO
(See Section 176-735B-118R-1)

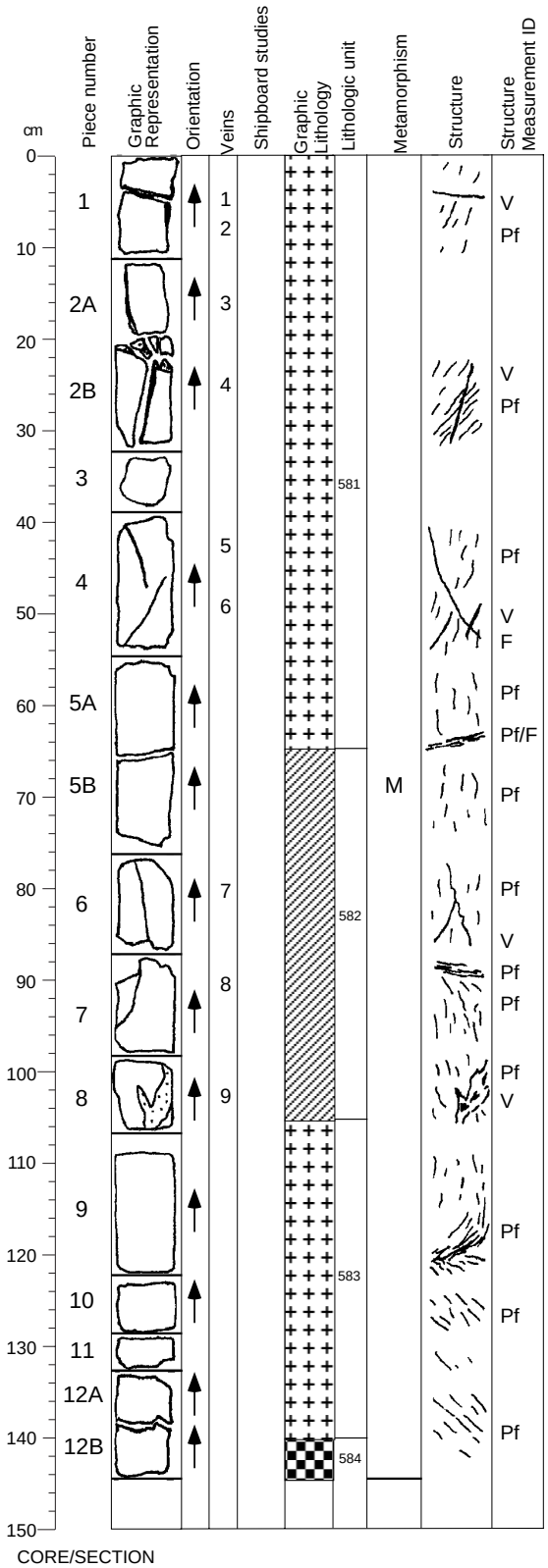
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and partly olivine.
Comments: As alteration rims near felsic veins.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic veins.

Background Alteration:
Degree of alteration: moderate (25%). Same as previous section.

Vein/Fracture Filling:
0.3-0.6 mm smectite veins in Pieces 3,6, 12, and 13; 4-5 mm plagioclase veins in Pieces 6, 10, and 11; 0.5 mm amphibole veins in Piece 7; plagioclase+amphibole veins in Piece 11.

Structures:
Pf>V=Bm; Pf>F
The entire section displays a weak crystal-plastic foliation, with changing orientation, occasionally poorly defined. In Piece 4, the foliation is locally mylonitic (2 cm thick), folding the foliation above. The plastic foliation is regularly overprinted by veins and associated brecciated zones, and cut in Piece 10 by a reverse fault.

Core Image



176-735B-118R-5

Interval 581: OPX-BEARING GABBRO
(See Section 176-735B-118R-1)

Interval 582: OPX-BEARING DISSEMINATED OXIDE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	118	5	65	5B	697.37
Lower contact:	118	5	105	8	697.77

Thickness (m): 0.40

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	5	coarse	tabular/ subhedral deformed
Clinopyroxene	35	15	3	coarse	tabular/ subhedral anhedral
Olivine	3	12	2	medium	elongate/ anhedral
Orthopyroxene	1	4	1	medium	prismatic/ subhedral
Opaques	1.5				interstitial lenses/ interstitial network
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%)
Grain Size: Coarse
Modal IUGS Name (calculated): Disseminated FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Oxide-rich interval. Coarse at top, finer downwards. Coarse clinopyroxene (up to 3 cm) at 68 cm in 118R-5. Olivine serpentinized. Locally sheared at 90 cm in 118R-5.

Interval 583: OPX-BEARING OLIVINE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	118	5	105	8	697.77
Lower contact:	118	5	140	12B	698.12

Thickness (m): 0.35

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	2	coarse	tabular/ subhedral deformed
Clinopyroxene	30	10	2	coarse	tabular/ subhedral anhedral
Olivine	5	4	1	medium	amoeboidal/ anhedral
Orthopyroxene	1	3	1	medium	prismatic/ subhedral
Opaques	0.7				amoeboidal aggregates/ disseminated
Total	101.7*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Locally intergranular. Olivine serpentinized.

Continued next page

Core Image

176-735B-118R-5 (cont'd)

Interval 584: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	5	140	12B	698.12
Lower contact:	118	6	10	1B	698.26

Thickness (m): 0.14

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	30	5	coarse	tabular/ subhedral deformed
Clinopyroxene	30	20	2	coarse	tabular/ subhedral anhedral
Opaques	8				interstitial lenses/ interstitial network
Total	93*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Oxide-rich interval. Oxide 3% at 141-144 cm in 118R-5; 10% at 0-10 cm in 118R-6.

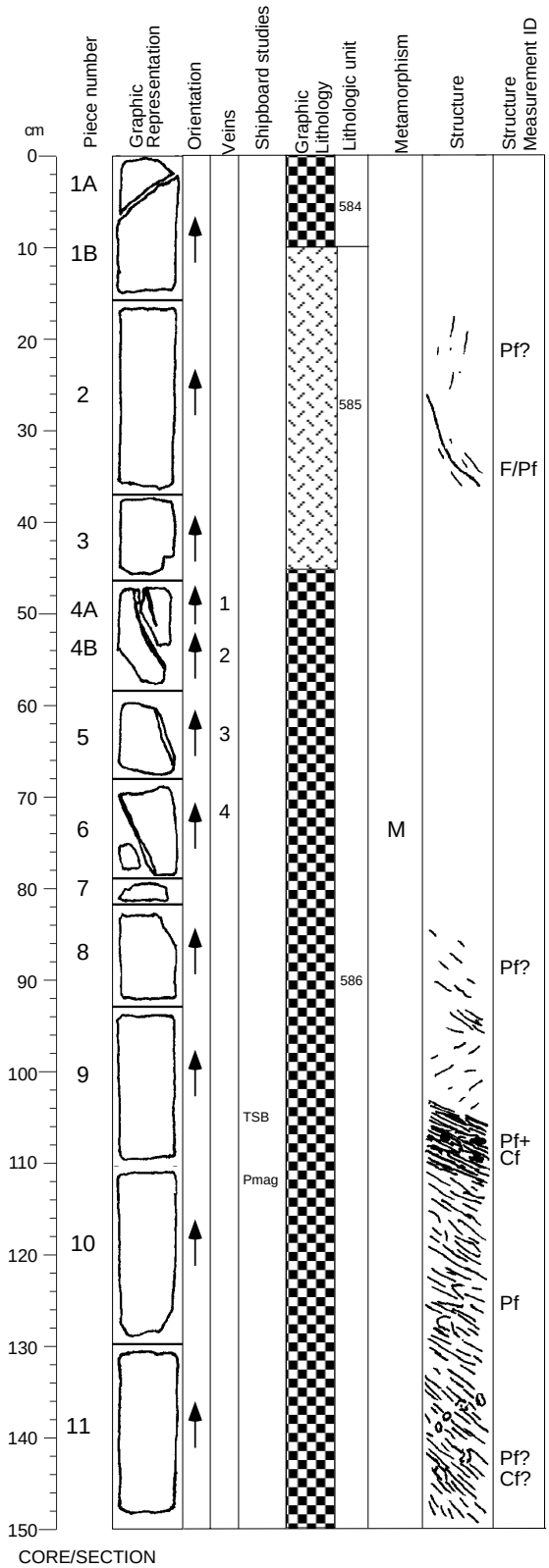
Alteration:
Dark green amphibole:
Total Percent: <10
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and partly olivine.
Comments: As alteration rims near felsic veins.
Secondary plagioclase:
Total Percent: <15
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine rims and some clinopyroxene.
Comments: Rimming minerals and near felsic veins.

Background Alteration:
Degree of alteration: moderate (25%). Same as previous section.

Vein/Fracture Filling:
1-10 mm plagioclase + amphibole veins in Pieces 1, 2, and 8; 0.2 mm smectite veins in Pieces 1, 2, 4, and 5; 0.2-0.3 mm amphibole veins in Pieces 4 and 7.

Structures:
Pf>V; Pf>F; Pf>Pf/F
The entire section displays a weak to moderate crystal-plastic foliation, generally steep, with local changing orientations. (Piece 9 for example). It is cut by several veins, and overprinted in Pieces 5A and 7 by two semi-brittle narrow shear zones.

Core Image



176-735B-118R-6

Interval 584: OXIDE GABBRO
(see previous section)

Interval 585: LEUCOCRATIC GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	6	10	1B	698.26
Lower contact:	118	6	45	3	698.61

Thickness (m): 0.35

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	70	15	3	coarse	tabular/ subhedral deformed
Clinopyroxene	30	20	3	coarse	equant/ subhedral
Olivine	4	2	1	medium	elongate/ anhedral
Opaques	0.6				amoeboidal aggregates/ disseminated
Total	104.6*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size:Coarse
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Locally intergranular, rarely subophitic. Olivine serpentinized.

Interval 586: LEUCOCRATIC OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	6	45	3	698.61
Lower contact:	118	7	13	1	699.77

Thickness (m): 1.16

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	70	20	1	coarse	tabular/ subhedral deformed
Clinopyroxene	30	25	3	coarse	tabular/ subhedral anhedral
Olivine	2	8	1	medium	elongate / anhedral
Opaques	4				interstitial lenses/ interstitial network
Total	106*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	textural variation	N/A

Comments: Mostly granular, locally intergranular, porphyroclastic with coarse clinopyroxene, plagioclase etc. in fine-grained matrix. Fine-grained dikelet (~5 cm) with porphyroclasts at 107 cm in 118R-6 with a 6 cm sheared zone as lower contact. Olivine with black alteration rims. Oxide in Section 118R-6: 10% at 47-54 cm, 2% at 54-87 cm, 5% at 87-101 cm, 8% at 101-119 cm, and 1% at 119-148 cm; in Section 118R-7: 1% at 0-11 cm and 10% at 11-13 cm.

Continued next page

Core Image

176-735B-118R-6 (cont'd)

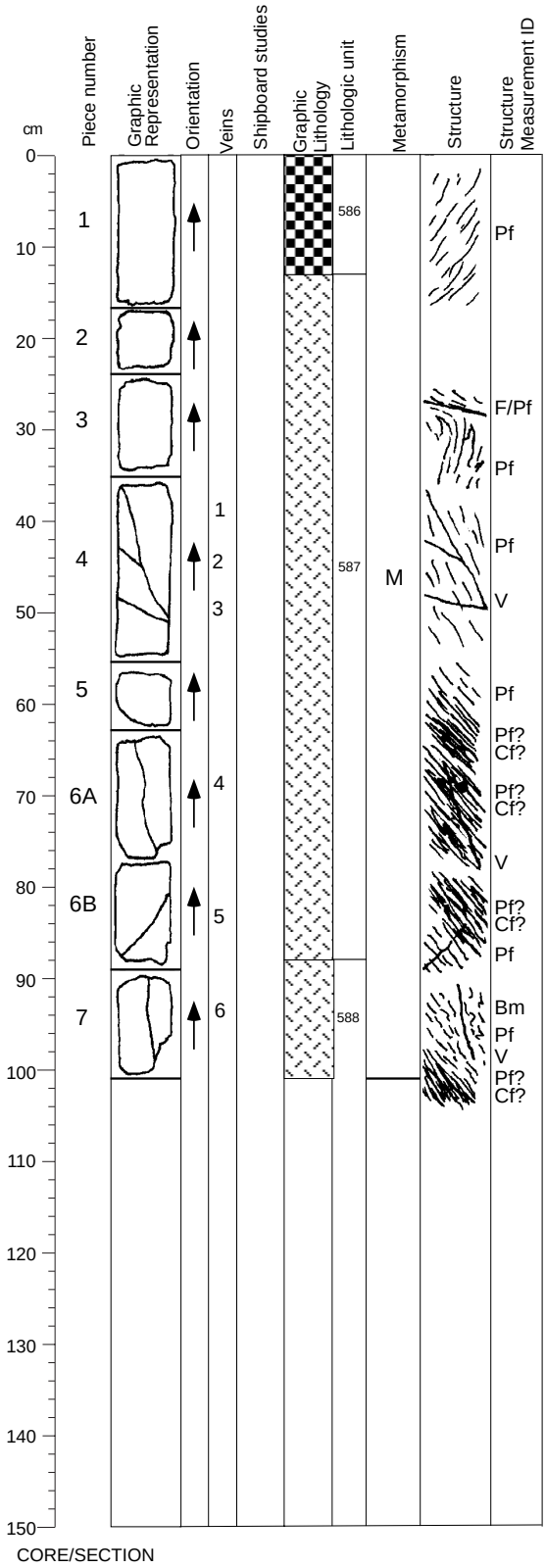
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <20
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming primary minerals.

Background Alteration:
Degree of alteration: moderate (35%). Olivine is completely altered to amphibole and chlorite. 15% of the clinopyroxene is replaced by amphibole. Around 50% of the plagioclase is recrystallized to secondary plagioclase.

Vein/Fracture Filling:
0.3-1 smectite veins in Pieces 3, 5, and 6.

Structures:
Pf>F/Pf; Pf>Cf?
From 0 to 106, the section displays a weak to moderate crystal-plastic foliation, generally poorly defined, cut in Piece 2 by a semi-brittle steep shear zone. Piece 9 displays a highly deformed zone (106-111 cm) with very fine-grained material embedding rounded clasts. It is impossible to distinguish macroscopically between an ultramylonite or an ultracataclasite. From 111 cm to the bottom, the crystal-plastic foliation is very strong, porphyroclastic, possibly overprinted by an intense cataclastic deformation from 132 cm.

Core Image



176-735B-118R-7

Interval 586: LEUCOCRATIC OXIDE GABBRO
(see previous section)

Interval 587: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	7	13	1	699.77
Lower contact:	118	7	88	6B	700.52
Thickness (m): 0.75					

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	30	N/A	coarse	tabular/ subhedral deformed
Clinopyroxene	30	40	3	coarse	tabular / subhedral anhedral
Olivine	4	4	1	medium	prismatic/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	99.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	textural variation	N/A
Fabric:	layering	uniform

Comments: Shear/mylonitized zone of variable foliation patterns and textural variation. Mostly coarser-grained porphyroclasts (clinopyroxene and plagioclase) in foliated fine-grained matrix. Pegmatitic clinopyroxene (>4 cm) at 30 cm in 118R-7. Olivine with black alteration rims. Gneissic and mylonitic at 60 cm in 118R-7, Piece 5, and porphyroclastic at 70 cm in 118R-7, Piece 6.

Interval 588: ALTERED GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	118	7	88	6B	700.52
Lower contact:	119	1	115	10B	701.55
Thickness (m): 1.03					

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	10	N/A	coarse	tabular/ subhedral deformed
Opaques	0.9				amoeboidal aggregates/ disseminated
Total	60.9*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Not Calculated

	Type	Distribution
Texture:	textural variation	N/A

Comments: Highly foliated and brecciated zone. From porphyroclastic to granular, and to intergranular. Felsic veins/veinlets of deformational segregations. Clinopyroxene grains rounded. Oxide 5% at 81-82 cm in 119R-1.

Continued next page

Core Image

176-735B-118R-7 (cont'd)

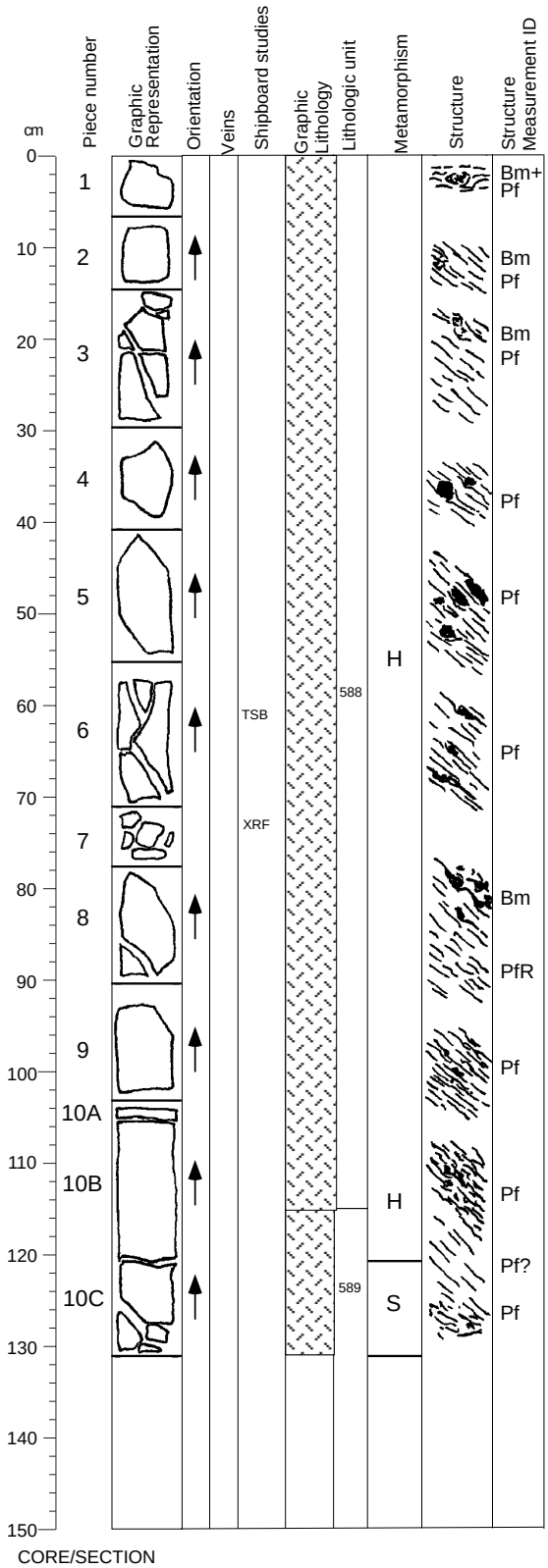
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in near felsic veins.
Secondary plagioclase:
Total Percent: <20
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins, associated with sulfides.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, orthopyroxene cleavage and some clinopyroxene.
Comments: Dark-colored smectite rimming minerals and near veins, associated with sulfides.

Background Alteration:
Degree of alteration: moderate (35%). Same as previous section.

Vein/Fracture Filling:
0.2-0.6 mm amphibole + plagioclase veins in Pieces 4, and 6; 0.4 mm smectite veins in Pieces 6 and 7.

Structures:
Pf>F/Pf; Pf>V; Bm>Pf?; Pf>Cf?
From 0 to 54 cm, most of the section displays a strong crystal-plastic foliation, cut by a reverse semi-brittle fault at the top of Piece 3 (large pyroxene folded beneath the fault) and by a set of veins in Piece 4. From 54 cm to the bottom, the texture is fine-grained, with a mylonitic foliation, possibly overprinted by cataclastic deformation; it is cut by a few veins. In Piece 7, the magmatic breccia appears to be plastically deformed.

Core Image



176-735B-119R-1

Interval 588: ALTERED GABBRO
(see previous section)

Interval 589: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	119	1	115	10B	701.55
Lower contact:	119	3	107	9A	704.11

Thickness (m): 2.56

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	20	5	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	35	15	3	coarse	subhedral anhedral
Olivine	3	4	1	medium	elongate/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	93.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro

Texture:	Type	Distribution
	granular	N/A

Comments: Locally intergranular/subophitic. Slightly sheared at top. Olivine serpentinized.

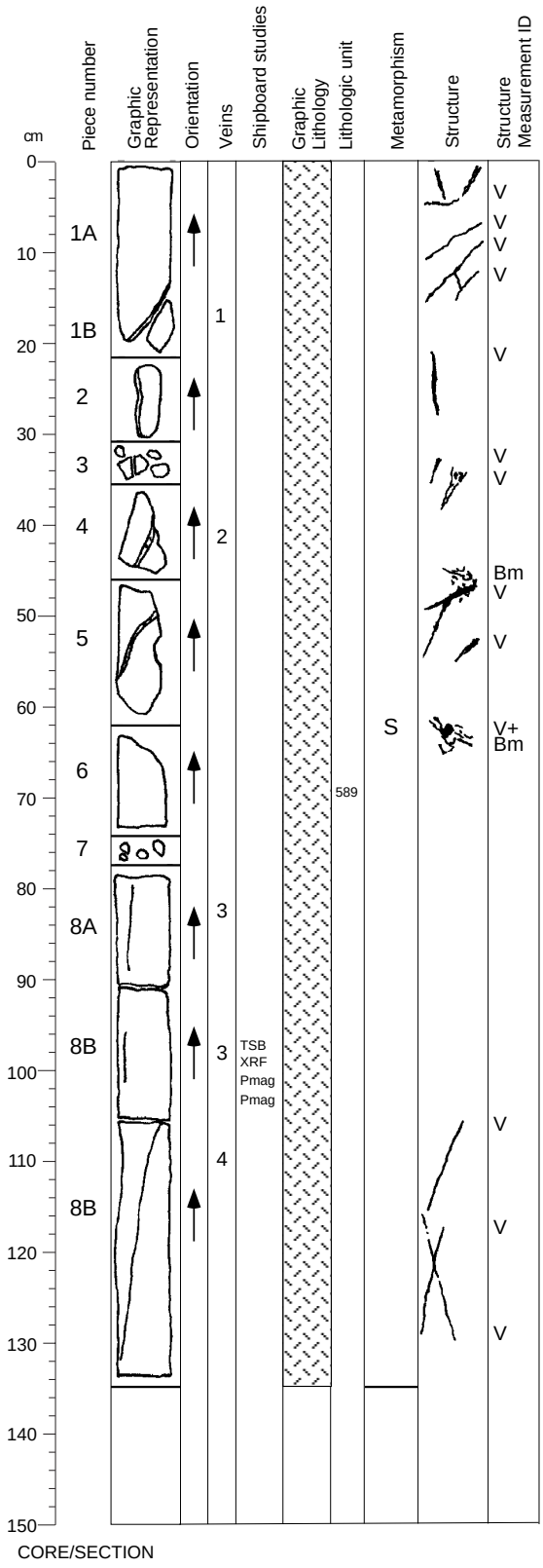
Alteration:
Dark green amphibole:
Total Percent: <15
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in near felsic areas.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in alteration patches.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic sheared zones.
Secondary plagioclase:
Total Percent: <40
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic areas.
Talc and oxides:
Total Percent: <3
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <2
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near felsic areas, associated with green amphibole.

Background Alteration:
Degree of alteration: slight to high (9 to 60%). Pieces 1 to 10B are highly altered (60%). Olivine is completely altered to amphibole, talc, oxide, and rare smectite. 30% of the clinopyroxene is altered to amphibole. A high percentage of the plagioclase is recrystallized (80%). Pieces 10B and 10C are slightly altered (9%). 30% of the olivine is replaced by amphibole, talc and some smectite. Clinopyroxene is weakly altered (3%). Around 10% of the plagioclase is secondary.

Vein/Fracture Filling:
No veins.

Structures:
Bm>Pf
The entire section displays a strong, mylonitic, crystal-plastic foliation which overprints magmatic breccias. In several pieces, the clasts in the mylonite appear clearly brecciated. This shear zone regularly dips 55˚ and has a normal shear sense.

Core Image



176-735B-119R-2

Interval 589: GABBRO
(see previous section)

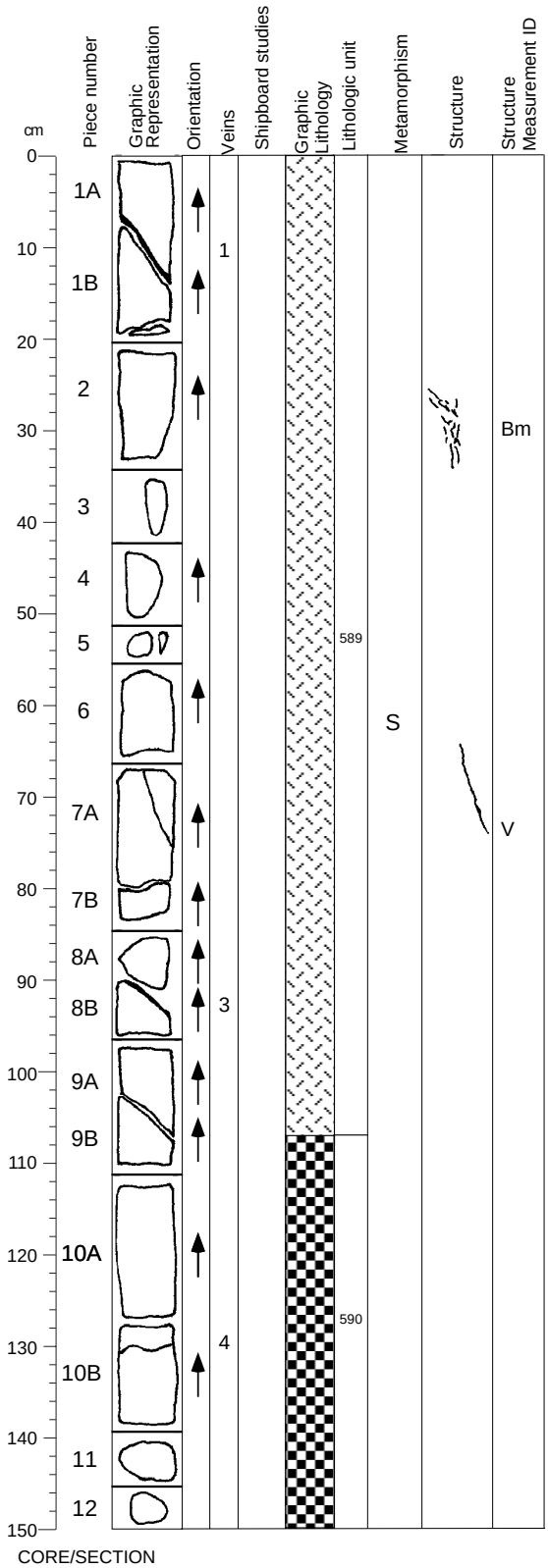
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in near felsic areas.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in veins and near felsic material.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins and felsic areas, associated with green amphibole.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark smectite occurs near cracks.

Background Alteration:
Degree of alteration: slight (9%). Same as Pieces 10B and 10C of previous section.

Vein/Fracture Filling:
0.3 mm smectite vein in Piece 1A; 0.2 mm amphibole veins in Piece 8; 3 mm plagioclase + clinopyroxene vein in Pieces 2-5.

Structures:
Mf>V; Mf>V=Bm
The entire section displays a coarse-grained igneous texture, with no magmatic foliation, cut by several veins and some associated breccias.

Core Image



176-735B-119R-3

Interval 589: GABBRO
(see Section 176-735B-119R-1)
Interval 590: OXIDE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	119	3	107	9A	704.11
Lower contact:	119	5	25	2A	706.19

Thickness (m): 2.08

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	30	5	coarse	tabular/ subhedral anhedral
Clinopyroxene	35	10	3	coarse	tabular/ anhedral subhedral
Opaques	6				interstitial lenses/ interstitial network
Total	106*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	intergranular	variable

Comments: Oxide-rich interval. Locally granular; sheared/foliated. Oxide as "interstitial" matrix; in 119R-3: 6% at 107-128 cm, 10% at 128-143 cm, and 20% at 145-150 cm; in 119R-4: 10% at 0-21 cm, 1% at 33-50 cm, 5% at 50-88 cm, and 2% at 88-139 cm; in 119R-5: 5% at 0- 27 cm. A single pegmatitic clinopyroxene (not reflected in mode) present at 69 cm 119R-4.

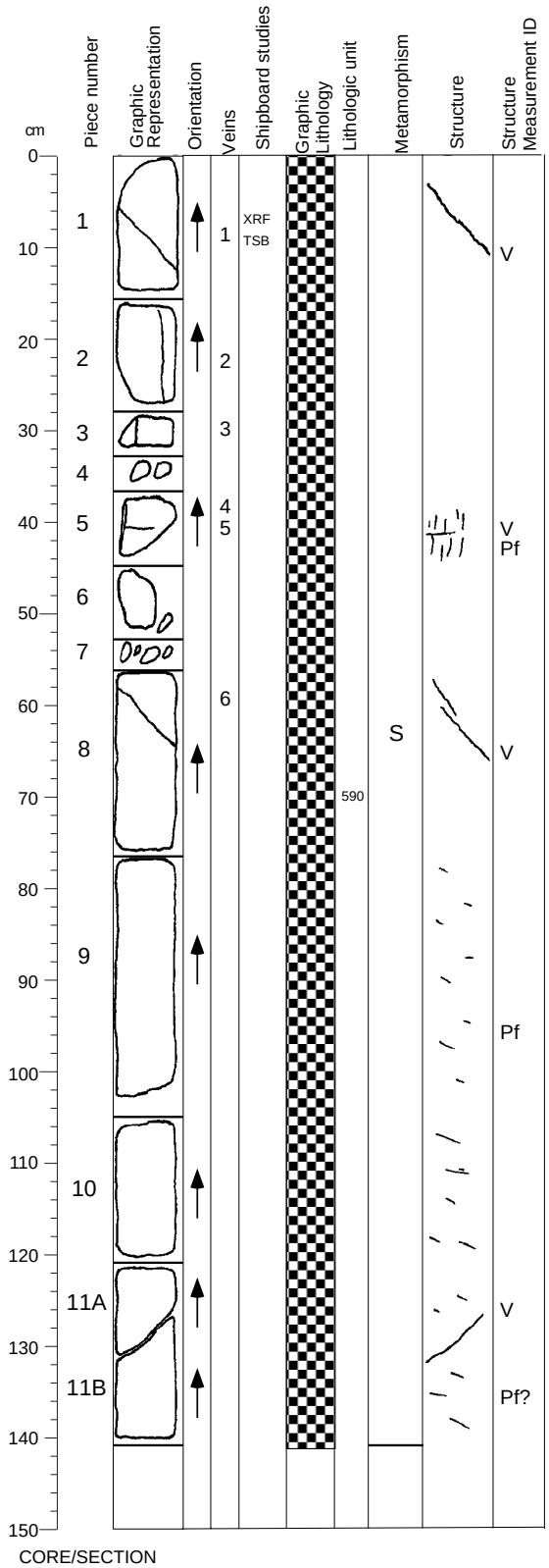
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite fills cracks.

Background Alteration:
Degree of alteration: slight (6%). 30% of the olivine is replaced by amphibole, talc and rare smectite. Clinopyroxene is weakly altered (3%). 5% of the plagioclase is secondary.

Vein/Fracture Filling:
0.2-0.3 mm smectite veins in Pieces 1A, 8, and 10B; 0.4 mm amphibole vein in Piece 7A.

Structures:
Mf>Bm; Mf>V
The entire section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted by a magmatic breccia in Piece 2 and a vein in Piece 7.

Core Image



176-735B-119R-4

Interval 590: OXIDE GABBRO
(see previous section)

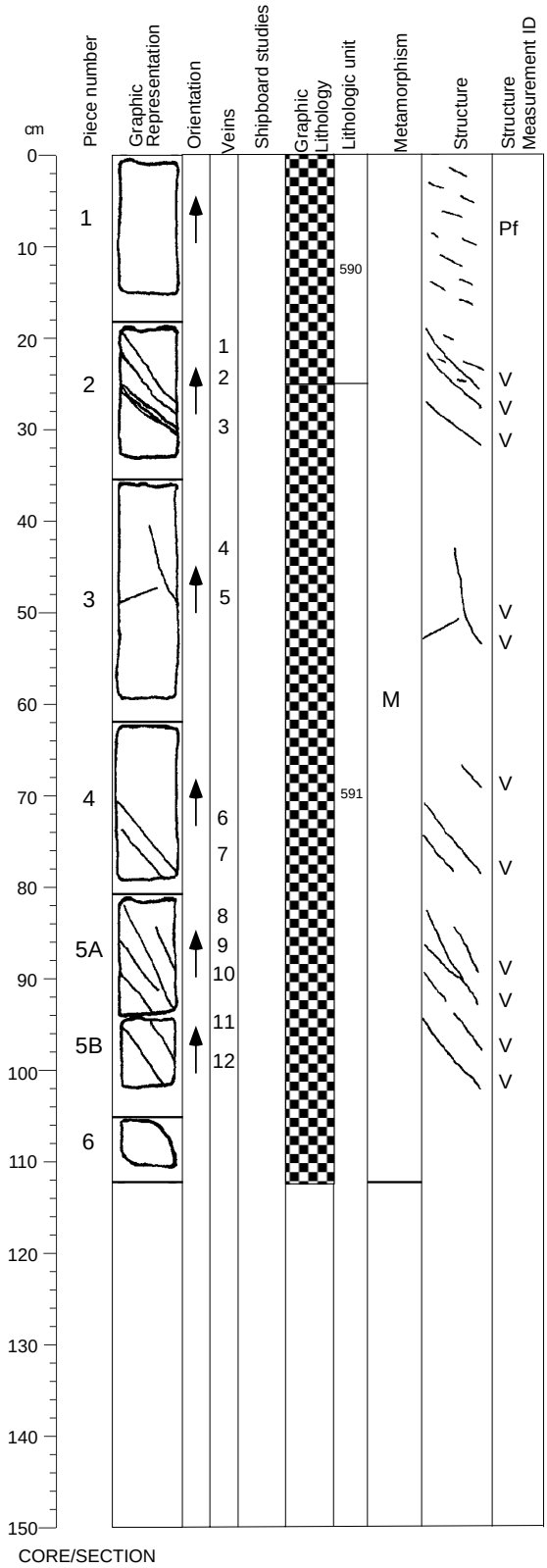
Alteration:
Dark green amphibole:
Total Percent: <3
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite fills cracks.

Background Alteration:
Degree of alteration: slight (8%). 50% of the olivine is replaced by amphibole and talc. Clinopyroxene is partly altered to amphibole (5%). 8% of the plagioclase is secondary.

Vein/Fracture Filling:
0.2-0.5 mm smectite veins in Pieces 1-3, 5, and 8.

Structures:
Mf>V; Pf>V
From 0 to 32 cm, the texture is coarse-grained igneous, with no magmatic foliation. From 33 to 55 cm, a series of non-oriented pieces display a weak crystal-plastic foliation, cut by a vein. From 56 cm to the bottom of the section, the texture is mostly coarse-grained igneous, with no or a weak magmatic foliation, possibly overprinted by a weak crystal-plastic fabric from 77 cm. The igneous texture is cut by a few veins over the entire section.

Core Image



176-735B-119R-5

Interval 590: OXIDE GABBRO
(see Section 176-735B-119R-3)
Interval 591: DISSEMINATED OXIDE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	119	5	25	2A	706.19
Lower contact:	120	1	11	2A	710.11

Thickness (m): 3.92

	Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	50	5	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	35	15	5	coarse	tabular/ subhedral anhedral
Olivine	3	3	1	medium	amoeboidal/ anhedral
Opaques	1.3				amoeboidal aggregates/ disseminated
Total	104.3*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Disseminated FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	variable

Comments: Mostly coarse-grained, locally fine- and medium-grained at 35-47 cm in 119R-5 and 104 cm in 119R-5 to 10 cm in 120R-1. Olivine abundance variable, locally ~5% at top of the interval. Local alterations associated with joints/fractures at 64-103 cm in 119R-5. Oxide in 119R-5: 0.05% at 27-67 cm, 2% at 67-139 cm, and 1% at 139-147 cm; in 120R-1: 0.05% at 0-12 cm.

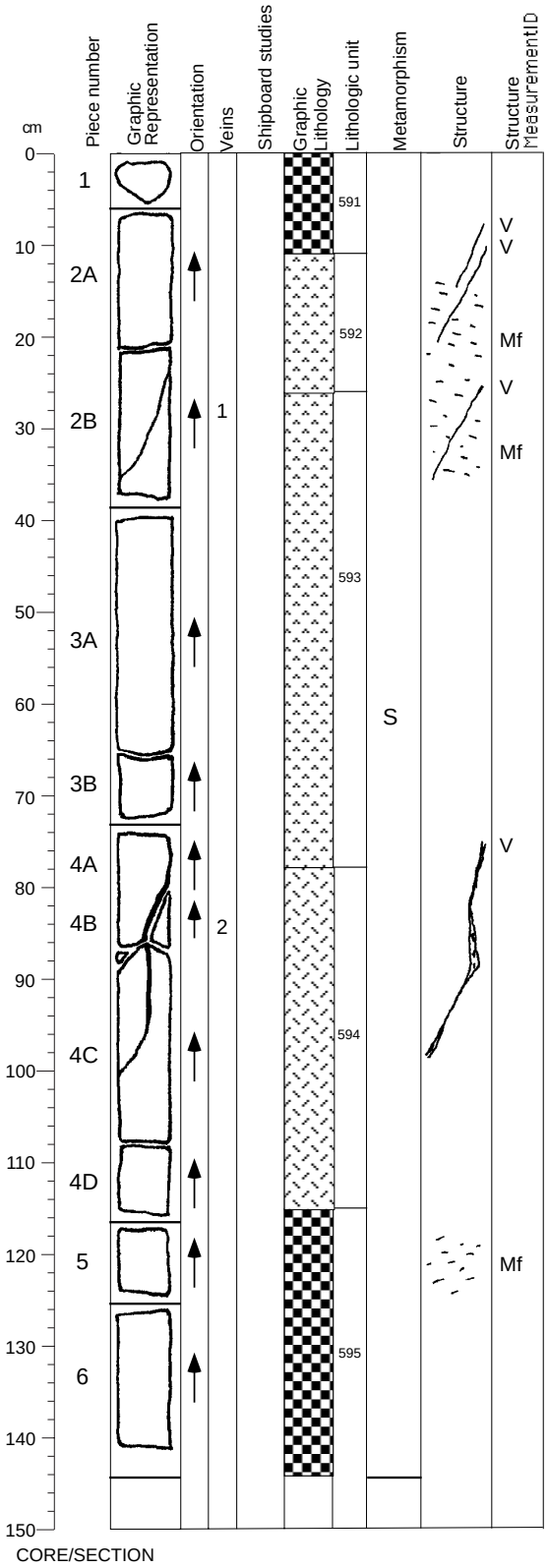
Alteration:
Dark green amphibole:
Total Percent: <8
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and in near felsic areas.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in veins.
Secondary plagioclase:
Total Percent: <5
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins.
Smectite:
Total Percent: <2
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite fills cracks associated with sulfides.
Sulfides:
Total Percent: tr.
Mode of occurrence: After olivine.
Comments: Associated with smectite veins and pseudomorphs.

Background Alteration:
Degree of alteration: moderate (15%). 60% of the olivine is replaced by amphibole, talc, and pyrite. Clinopyroxene is partly altered to amphibole (15%). 10% of the plagioclase is secondary.

Vein/Fracture Filling:
0.5-1 mm smectite veins in Pieces 2-5; 0.3-1 mm amphibole veins in Piece 3.

Structures:
Mf>Pf>V; Mf>V
From 0 to 26 cm, the section displays a weak crystal-plastic fabric. From 26 cm to the bottom of the section, there is a coarse-grained igneous texture with no magmatic foliation. A series of veins cut the previous fabrics in Pieces 2A to 5B.

Core Image



176-735B-120R-1

Interval 591: DISSEMINATED OXIDE GABBRO
(see previous section)

Interval 592: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	1	11	2A	710.11
Lower contact:	120	1	26	2B	710.26

Thickness (m): 0.15

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	2	0.5	fine	tabular/ subhedral anhedral
Clinopyroxene	20	3	0.5	medium	tabular/ subhedral
Olivine	25	1	1	fine	equant/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	equigranular	uniform

Comments: Clinopyroxene mode gradational.

Interval 593: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	1	26	2B	710.26
Lower contact:	120	1	77	4A	710.77

Thickness (m): 0.51

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	3	medium	tabular/ subhedral chadacrystic
Clinopyroxene	30	25	5	coarse	equant/ subhedral anhedral
Olivine	10	10	2	medium	elongate/ subhedral anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	uniform
Fabric:	gradational grain-size - N	N/A

Comments: Locally intergranular, rarely subophitic.

Continued next page

Core Image

176-735B-120R-1 (cont'd)

Interval 594: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	1	77	4A	710.77
Lower contact:	120	1	115	4D	711.15

Thickness (m): 0.38

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	30	5	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	35	12	2	coarse	elongate/ subhedral
Olivine	1	N/A	N/A	fine	N/A
Opaques	0.9				amoeboidal aggregates/ disseminated
Total	101.9*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	N/A
Fabric:	gradational grain-size - N	N/A

Comments: Oxide-rich interval. Locally intergranular.

Interval 595: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	1	115	4D	711.15
Lower contact:	120	2	1	1	711.44

Thickness (m): 0.29

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	3	medium	tabular/ subhedral chadacrystic
Clinopyroxene	40	15	1	coarse	tabular/ subhedral
Olivine	2	1	1	fine	equant/ subhedral
Opaques	6				amoeboidal aggregates/ disseminated
Total	108*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): FeTi Oxide Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Grain size variable. Microgabbro from top to 131 cm in 120R-2, then coarse-grained olivine gabbro. Clinopyroxene mode variable.

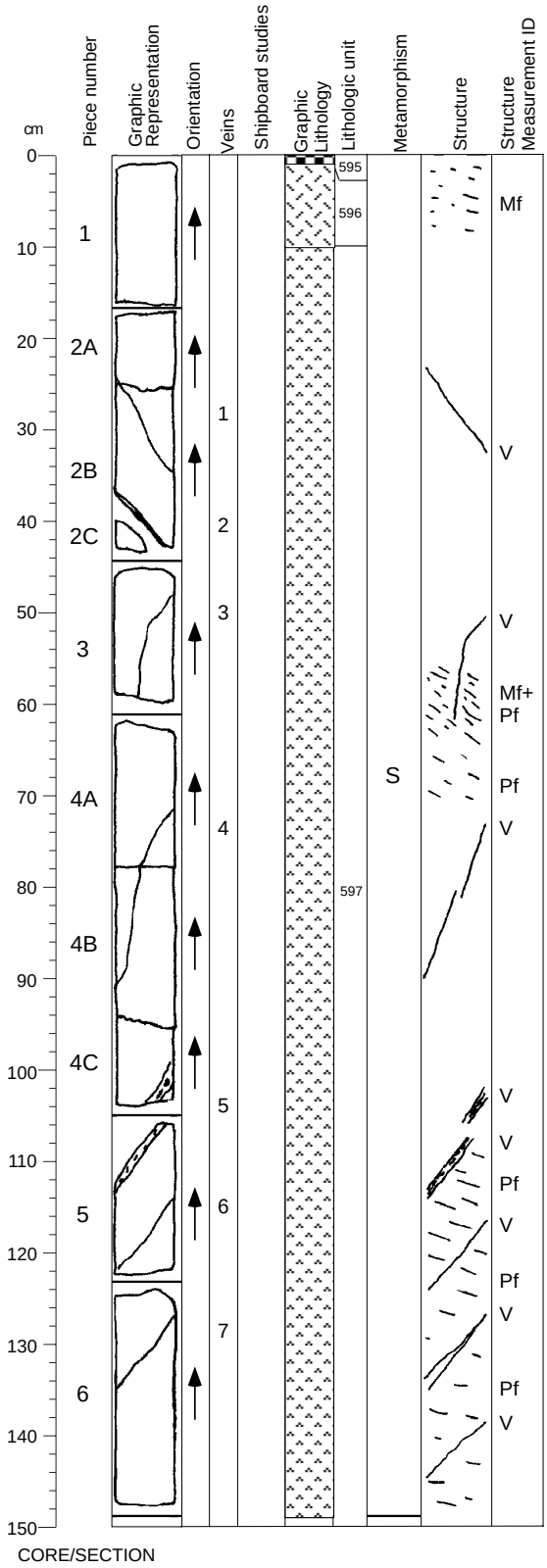
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic areas.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in veins containing felsic rocks.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic areas.
Talc and oxides:
Total Percent: tr.
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and associated with green amphibole near veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite is associated with cracks.

Background Alteration:
Degree of alteration: slight (5%). 50% of the olivine is replaced by amphibole and talc. Clinopyroxene is partly altered to amphibole (3%). 5% of the plagioclase is secondary.

Vein/Fracture Filling:
0.2-0.3 mm amphibole veins in Piece 2B and 4.

Structures:
Mf>V
The entire section displays an igneous texture, mostly coarse-grained, except for Pieces 2A and 2B which have a finer grained layer (from 12 to 26 cm). There is no or a weak magmatic foliation, except for the zone of the fine-grained layer (12-37 cm) which displays a strong, shallow magmatic foliation (dipping approximately 10°), and for Piece 5 which displays a moderate magmatic foliation. The igneous texture is cut by a series of veins in Pieces 2A to 2B and 4A to 4C.

Core Image



176-735B-120R-2

Interval 595: OXIDE GABBRO
(see previous section)
Interval 596: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	2	1	1	711.44
Lower contact:	120	2	10	1	711.53

Thickness (m): 0.09

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	10	3	coarse	tabular/ subhedral anhedral
Clinopyroxene	35	8	2	medium	tabular/ subhedral anhedral
Olivine	2	2	1	medium	equant/ subhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	102.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Gabbro

Texture:	Type	Distribution
	equigranular	uniform

Interval 597: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	2	10	1	711.53
Lower contact:	120	3	1	1	712.94

Thickness (m): 1.41

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	5	coarse	tabular/ anhedral chadacrystic
Clinopyroxene	30	25	3	coarse	equant/ anhedral
Olivine	5	3	1	medium	elongate/ anhedral
Opaques	0.6				angular aggregates/ disseminated
Total	100.6*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro

Texture:	Type	Distribution
	granular	N/A

Comments: Locally intergranular (coarse), equigranular (fine), and subophitic at 29 cm in 120R-2. Olivine more abundant towards base.

Continued next page

Core Image

176-735B-120R-2 (cont'd)

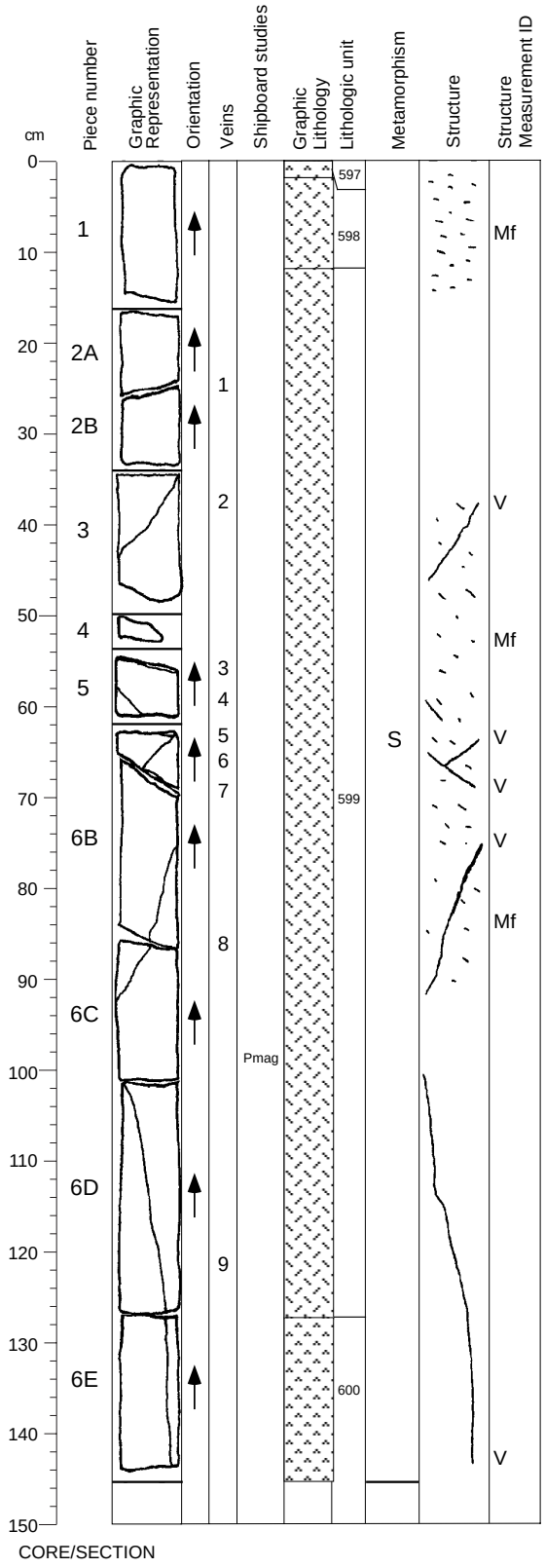
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic areas.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in veins and in felsic rocks.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed and near felsic areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Around minerals and near veins and felsic areas.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite fills cracks.

Background Alteration:
Degree of alteration: slight (5%). Same as previous section.

Vein/Fracture Filling:
0.5-1 mm smectite veins in Piece 2; 0.2-0.4 mm amphibole veins in Pieces 3, 4A, 4B, 5, and 6; plagioclase + clinopyroxene vein in Pieces 4C-5.

Structures:
Mf>V; Mf>Pf>V
The texture of this section is dominantly igneous, with a moderate to strong magmatic foliation in Pieces 1 and 3. The rest of the section displays no or a weak magmatic foliation. The igneous texture is overprinted locally by a weak crystal-plastic foliation, in Pieces 3, 4A, 5 and 6. A series of veins cut the previous fabrics.

Core Image



176-735B-120R-3

Interval 597: OLIVINE GABBRO
(see previous section)

Interval 598: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	3	1	1	712.94
Lower contact:	120	3	12	1	713.05

Thickness (m): 0.11

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	5	0.5	medium	tabular/ subhedral
Clinopyroxene	35	3	0.3	fine	equant/ anhedral subhedral
Olivine	2	1	1	fine	equant/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	102.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Gabbro
Texture: granular Type; N/A Distribution
Comments: Microgabbro with a coarse-clinopyroxene "vein/layer".

Interval 599: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	3	12	1	713.05
Lower contact:	120	3	127	6E	714.20

Thickness (m): 1.15

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	5	coarse	tabular/ anhedral chadacrystic
Clinopyroxene	25	10	2	coarse	tabular/ anhedral subhedral
Olivine	3	6	1	medium	elongate/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	93.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Gabbro
Texture: granular Type; N/A Distribution
Comments: Locally subophitic at 107-117 cm in 120R-3.

Continued next page

Core Image

176-735B-120R-3 (cont'd)

Interval 600: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	3	127	6E	714.20
Lower contact:	120	3	142	6E	714.35

Thickness (m): 0.15

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase		65	3	0.5	medium tabular/ subhedral anhedral
Clinopyroxene	20	4	0.2	medium	equant/ anhedral
Olivine	12	2	1	medium	equant/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	97.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	intergranular	N/A

Comments: Fine-grained. Size and mode variable.

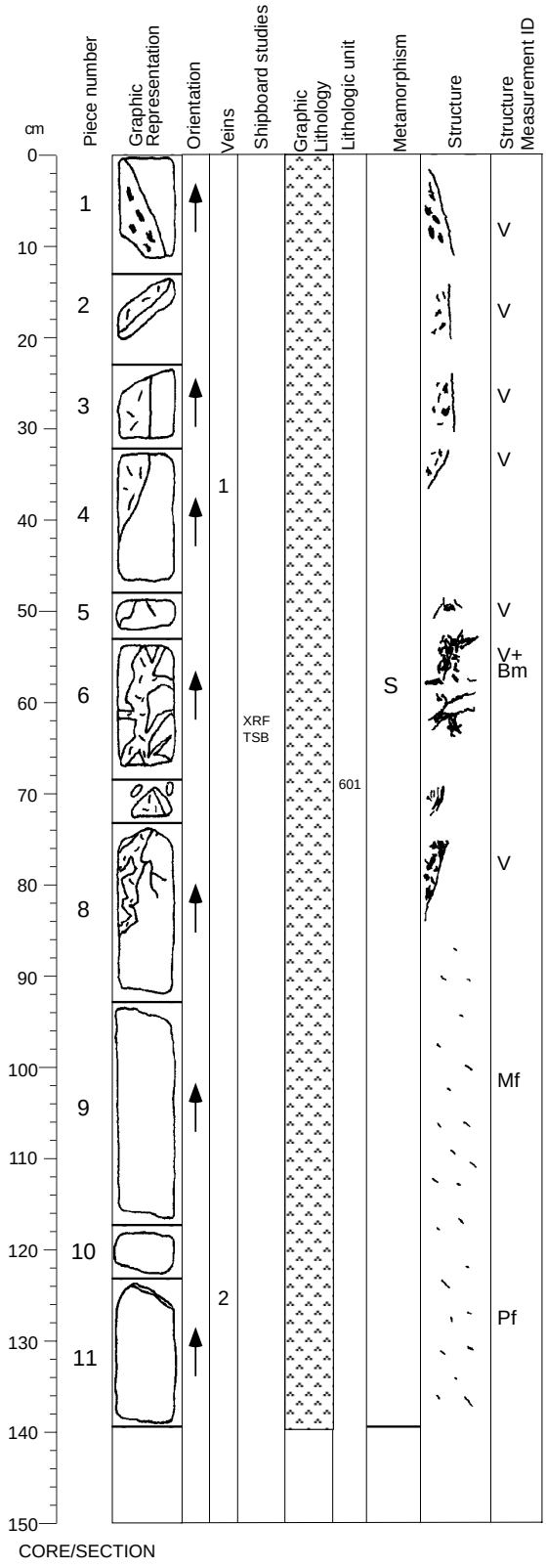
Alteration:
Dark green amphibole:
Total Percent: <3
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in veins.
Secondary plagioclase:
Total Percent: <4
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and some clinopyroxene.
Comments: Rimming minerals and near veins.
Smectite:
Total Percent: <1
Mode of occurrence: In olivine, orthopyroxene cleavage and some clinopyroxene.
Comments: Dark-colored smectite fills cracks.

Background Alteration:
Degree of alteration: slight (8%). Olivine is partly replaced by amphibole, talc and some smectite along cracks. Clinopyroxene is slightly altered to amphibole (3%). Plagioclase is partly replaced by milky secondary plagioclase (10%).

Vein/Fracture Filling:
0.2-0.8 mm smectite veins in Pieces 2 and 5; 0.2 mm amphibole vein in Piece 3; clinopyroxene + plagioclase veins in Pieces 6B-6D.

Structures:
Mf>V
The entire section displays an igneous texture, with a strong magmatic foliation From 0 to 13 cm (Piece 1), and a moderate one from 35 to 110 cm. The igneous texture is cut by a series of veins.

Core Image



176-735B-120R-4

Interval 601: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	120	3	142	6E	714.35
Lower contact:	121	1	2	1	719.72

Thickness (m): 5.37

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	4	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	35	15	2	coarse	tabular/ subhedral anhedral
Olivine	5	3	1	medium	equant/ anhedral
Opaques aggregates/	0.5				amoeboidal disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Locally intergranular. Rarely subophitic. Mostly coarse-grained. Clinopyroxene locally pegmatitic (>3.5 cm). Oxide 3% at 114-118 cm in 120R-6; 1% at 1-84 cm in 120R-4 associated with a trondhjemitic vein.

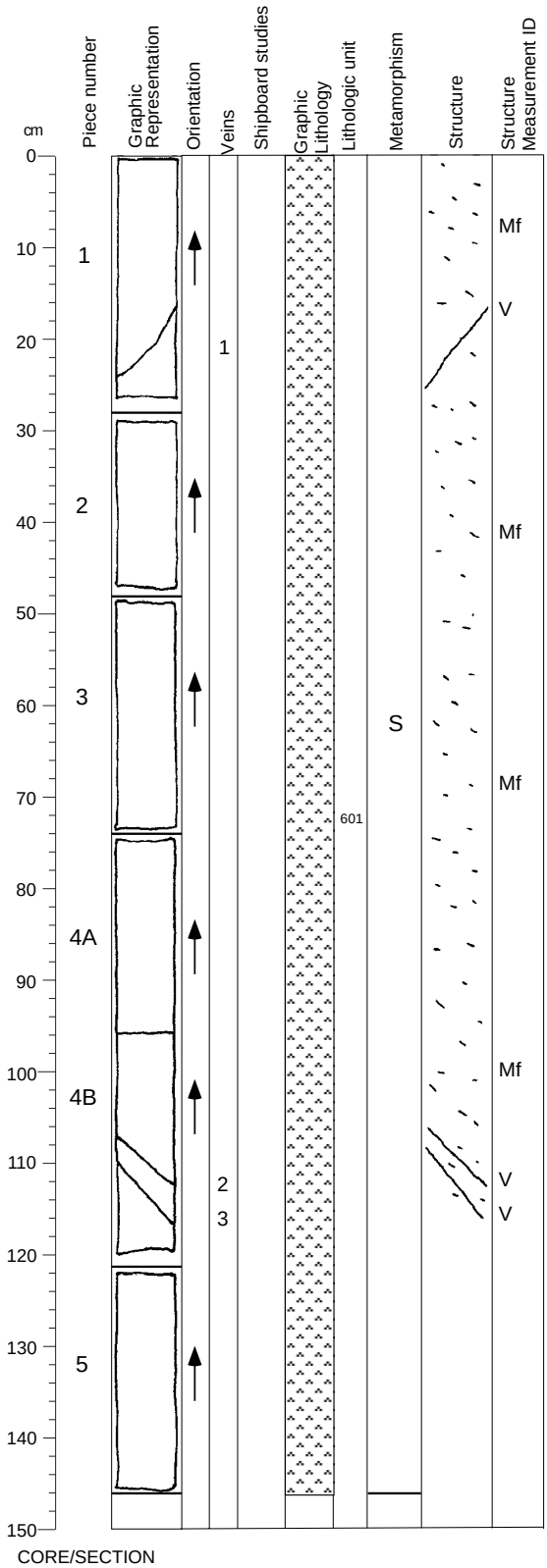
Dark green amphibole:
Total Percent: <3
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite in veins and near felsic rocks.
Secondary plagioclase:
Total Percent: <4
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed near felsic zones.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins and felsic zones.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite around cracks and near felsic veins.

Background Alteration:
Degree of alteration: slight (8%). Same as previous section.

Vein/Fracture Filling:
Compound felsic net vein in Pieces 1 to 8; smectite+calcite vein in Piece 11.

Structures:
Mf>V=Bm
From 0 to 85 cm, the section displays a coarse-grained igneous texture, overprinted by a series of veins, locally associated with a breccia (Piece 6), likely magmatic later altered by hydrothermalism (epidotes). The rest of the section is finer grained (1 mm to 1 cm) and displays a moderate magmatic foliation, dipping 40°.

Core Image



176-735B-120R-5

Interval 601: OLIVINE GABBRO
(see previous section)

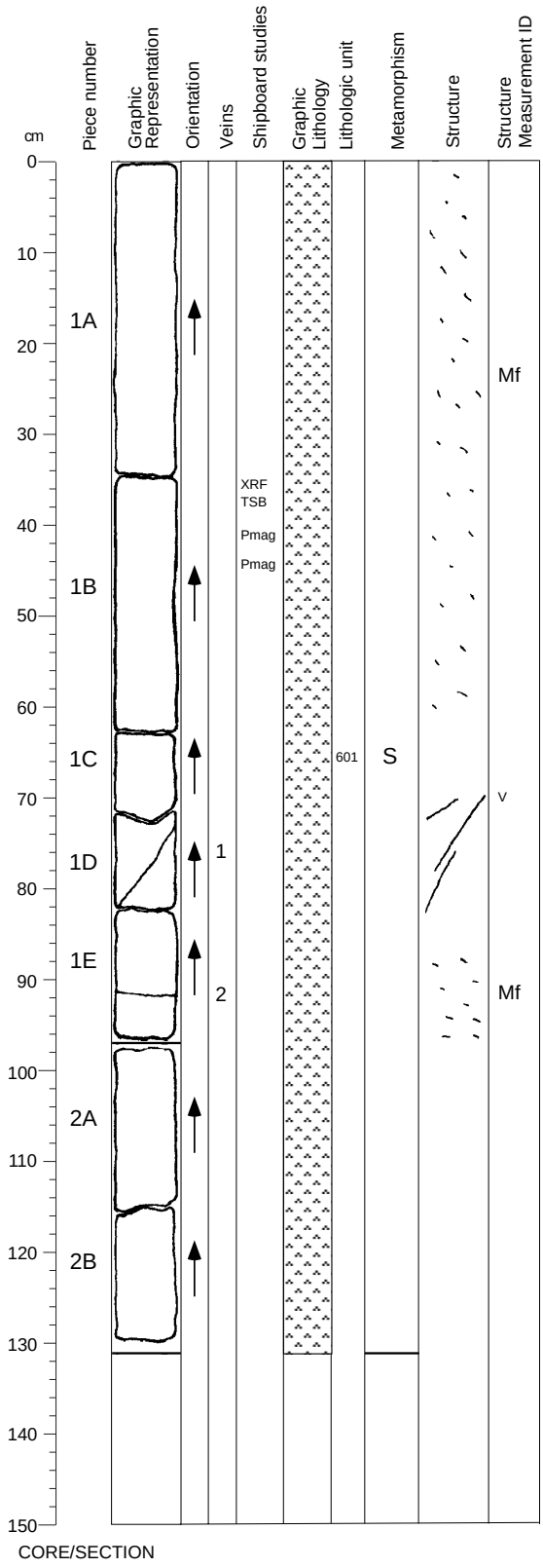
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark to pale-green smectite around cracks and near felsic veins.

Background Alteration:
Degree of alteration: slight (5%). Olivine is partly replaced by amphibole, talc and rare smectite along cracks (30%). Clinopyroxene is slightly altered to amphibole (3%). Plagioclase is partly replaced by milky secondary plagioclase (5%).

Vein/Fracture Filling:
Smectite veins in Piece 4C to 4D; 0.6 mm amphibole vein in Piece 1.

Structures:
Mf>V
Most of this section displays a coarse-grained igneous texture, with a moderate magmatic fabric, cut by a few veins. From 110 cm to the bottom of the section, the texture is coarser grained; either the magmatic foliation is weaker or cannot be seen because of the large grain size.

Core Image



176-735B-120R-6

Interval 601: OLIVINE GABBRO
(see Section 176-735B-120R-4)

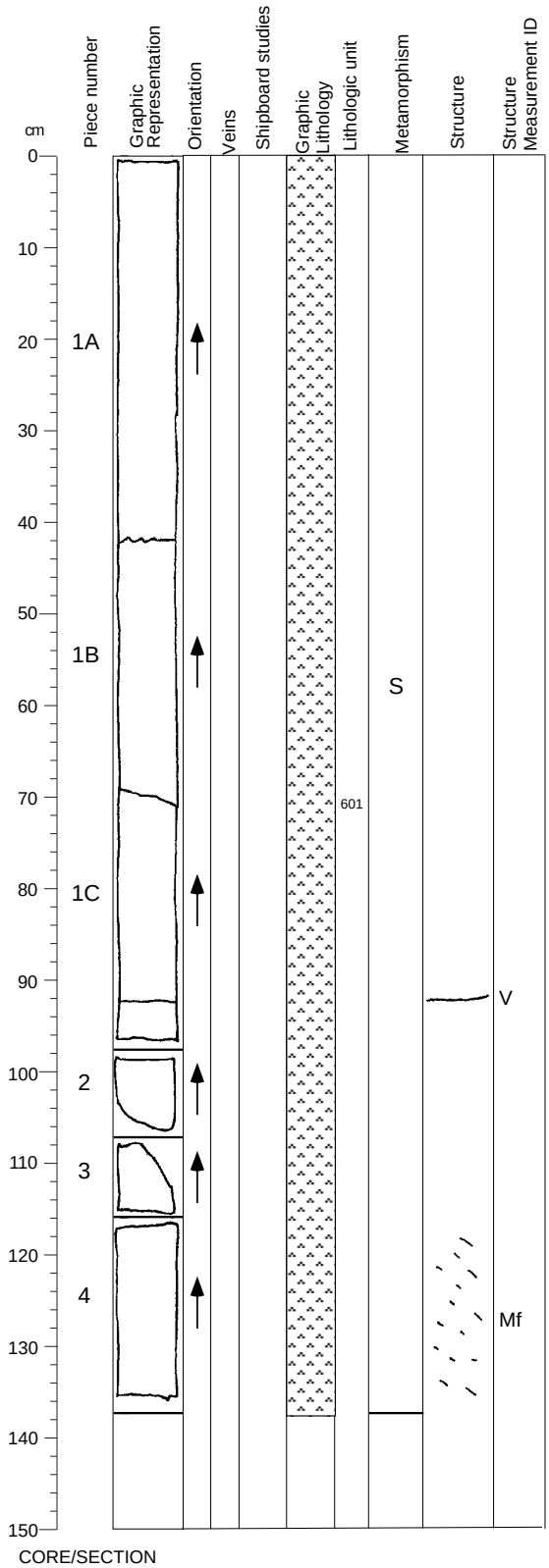
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near a vein.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine, pyroxene and plagioclase.
Comments: Associated with amphibole near veins.

Background Alteration:
Degree of alteration: slight (5%). Same as previous section.

Vein/Fracture Filling:
0.6 mm amphibole vein in Piece 1D.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with a weak to moderate magmatic foliation in Pieces 1A, 1B, and 1E, cut by three veins in Pieces 1C and 1D.

Core Image



176-735B-120R-7

Interval 601: OLIVINE GABBRO
(see Section 176-735B-120R-4)

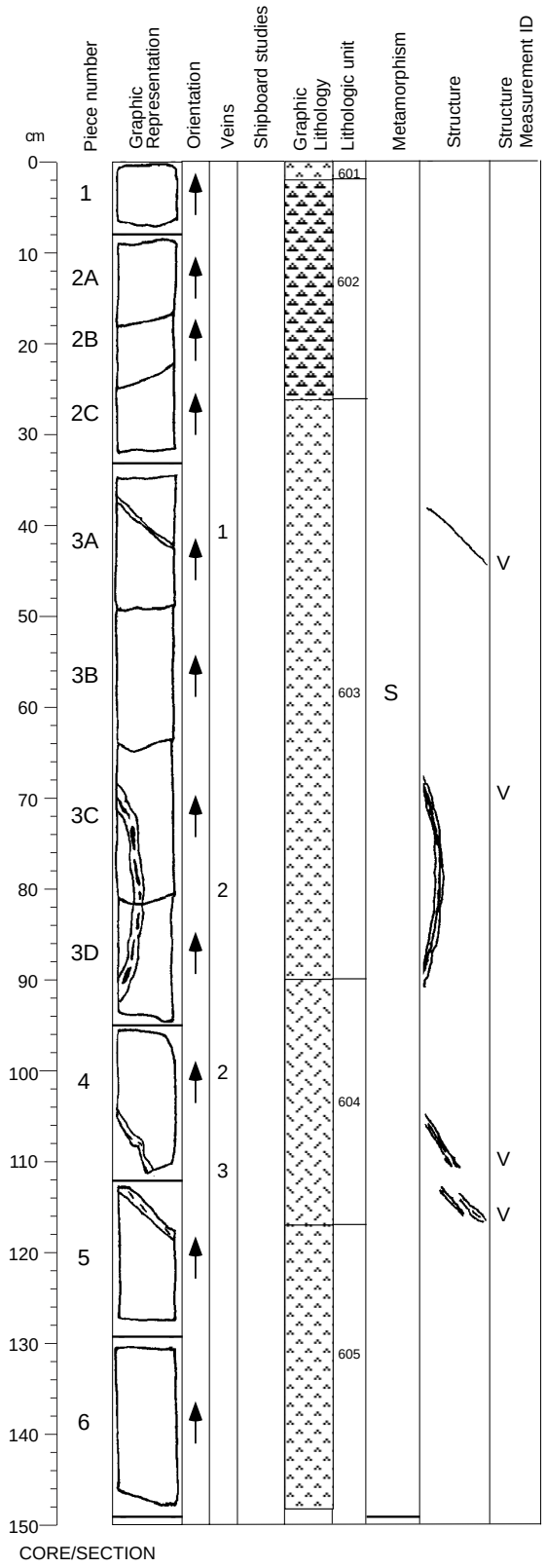
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (5%). Same as previous section.

Vein/Fracture Filling:
0.2 mm smectite vein in Piece 1C.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no visible magmatic foliation except for Piece 4, which displays a strong magmatic foliation dipping 30°. The igneous texture is cut by a vein in Piece 1C.

Core Image



176-735B-121R-1

Interval 601: OLIVINE GABBRO
(see Section 176-735B-120R-4)
Interval 602: OLIVINE MICROGABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	1	2	1	719.72
Lower contact:	121	1	26	2C	719.96

Thickness (m): 0.24

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	5	0.2	fine	tabular/ subhedral anhedral
Clinopyroxene	35	3	0.1	fine	equant/ anhedral subhedral
Olivine	5	1	1	fine	equant/ anhedral
Opaque	0.5				amoeboidal aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Microgabbro. Coarse clinopyroxene as "phenocrysts".

Interval 603: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	1	26	2C	719.96
Lower contact:	121	1	90	3D	720.60

Thickness (m): 0.64

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	5	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	30	15	3	coarse	tabular/ subhedral anhedral
Olivine	5	4	1	medium	amoeboidal/ anhedral
Opaques	0.7				angular aggregates/ disseminated
Total	100.7*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Coarse-grained. Locally intergranular, rarely subophitic. Coarse clinopyroxene at 26 cm in 121R-1 and 50 cm in 121R-1.

Interval 604: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	1	90	3D	720.60
Lower contact:	121	1	117	5	720.87

Thickness (m): 0.27

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	45	5	coarse	tabular/ subhedral
Clinopyroxene	35	65	8	pegmatitic	tabular subhedral anhedral
Olivine	4	6	1	medium	elongate/ anhedral
Opaques	0.7				angular aggregates/ disseminated
Total	99.7*		(see explanatory notes)		

Continued next page

Core Image

176-735B-121R-1 (cont'd)

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	variable

Comments: Pegmatitic interval. Clinopyroxene 10 cm, plagioclase 6 cm. Olivine showing black reaction rims.

Interval 605: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	1	117	5	720.87
Lower contact:	121	2	20	2	721.38

Thickness (m): 0.51

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	3	medium	tabular/ subhedral anhedral
Clinopyroxene	30	12	1	coarse	tabular/ anhedral subhedral
Olivine	7	4	1	medium	equant/ anhedral subhedral
Opaques	0.6				angular aggregates/ disseminated
Total	102.6*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	uniform
Fabric:	gradational grain-size - R	N/A

Comments: Locally intergranular. Coarse at top, finer for the rest. Locally plagioclase rich at 134-142 cm in 121R-1. Olivine showing black reaction rims.

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In pyroxene cleavage and near olivine.
Comments: Alteration of minerals near veins.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark to pale-green smectite around cracks and near felsic veins.

Continued next page

Core Image

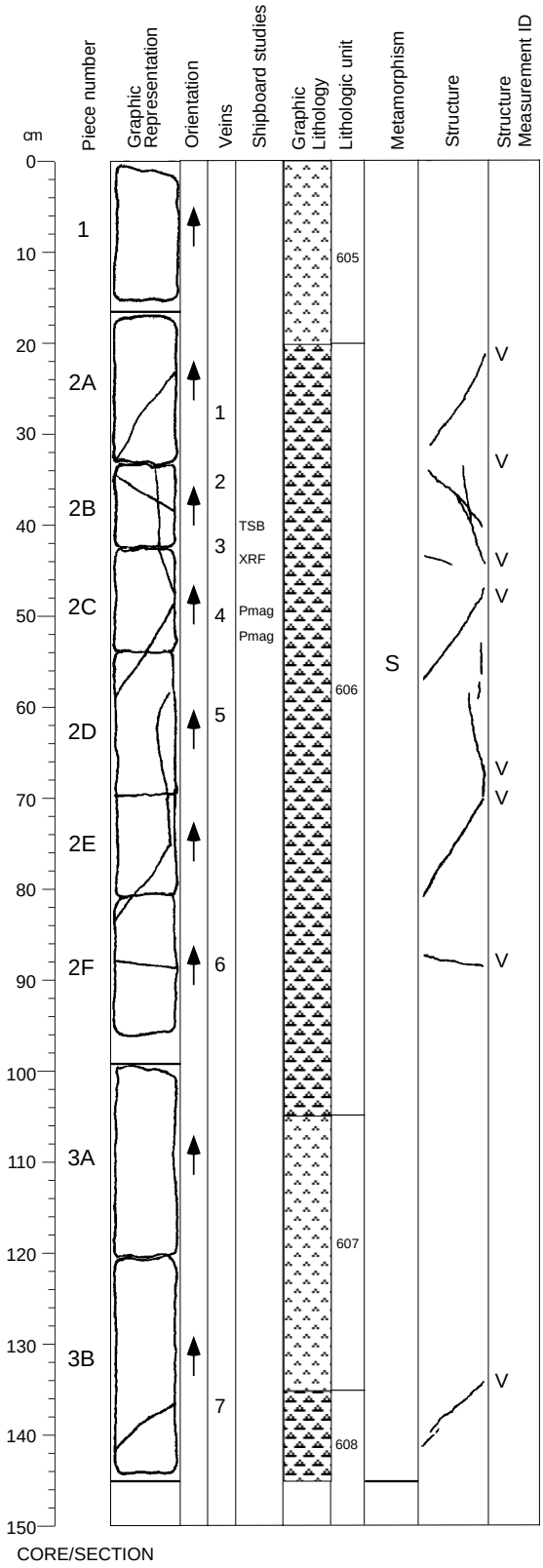
176-735B-121R-1 (cont'd)

Background Alteration:
Degree of alteration: slight (5%). 30% of the olivine is replaced by amphibole, talc, and smectite. Clinopyroxene is partly altered to amphibole (3%). 5% of the plagioclase is secondary.

Vein/Fracture Filling:
2-10 mm clinopyroxene veins in Pieces 3, 4, and 5.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a few veins.

Core Image



176-735B-121R-2

Interval 605: OLIVINE GABBRO
(see previous section)

Interval 606: OLIVINE MICROGABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	2	20	2	721.38
Lower contact:	121	2	105	3A	722.23

Thickness (m): 0.85

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	3	0.2	fine	tabular/ subhedral anhedral
Clinopyroxene	25	2	0.1	fine	equant/ anhedral
Olivine	15	3	1	fine	equant/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	100.5*		(see explanatory notes)		

*Major phases estimated to ± 5%)
Grain Size: Fine
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	equigranular	uniform

Comments: Microgabbro. Locally plagioclase-rich.

Interval 607: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	2	105	3A	722.23
Lower contact:	121	2	135	3B	722.53

Thickness (m): 0.30

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	2	medium	tabular/ subhedral anhedral
Clinopyroxene	35	12	1	coarse	equant/ anhedral
Olivine	5	4	1	medium	elongate/ anhedral subhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	uniform

Interval 608: OLIVINE MICROGABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	2	135	3B	722.53
Lower contact:	121	3	10	1A	722.72

Thickness (m): 0.19

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	0.5	N/A	fine	tabular/ subhedral euhedral
Clinopyroxene	30	2	N/A	fine	equant/ anhedral
Olivine	10	3	1	medium	equant/ anhedral
Opaque	0.5				amoeboidal aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

Continued next page

Core Image

176-735B-121R-2 (cont'd)

*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	equigranular	uniform

Comments: Microgabbro, gradational to medium-grained gabbro.

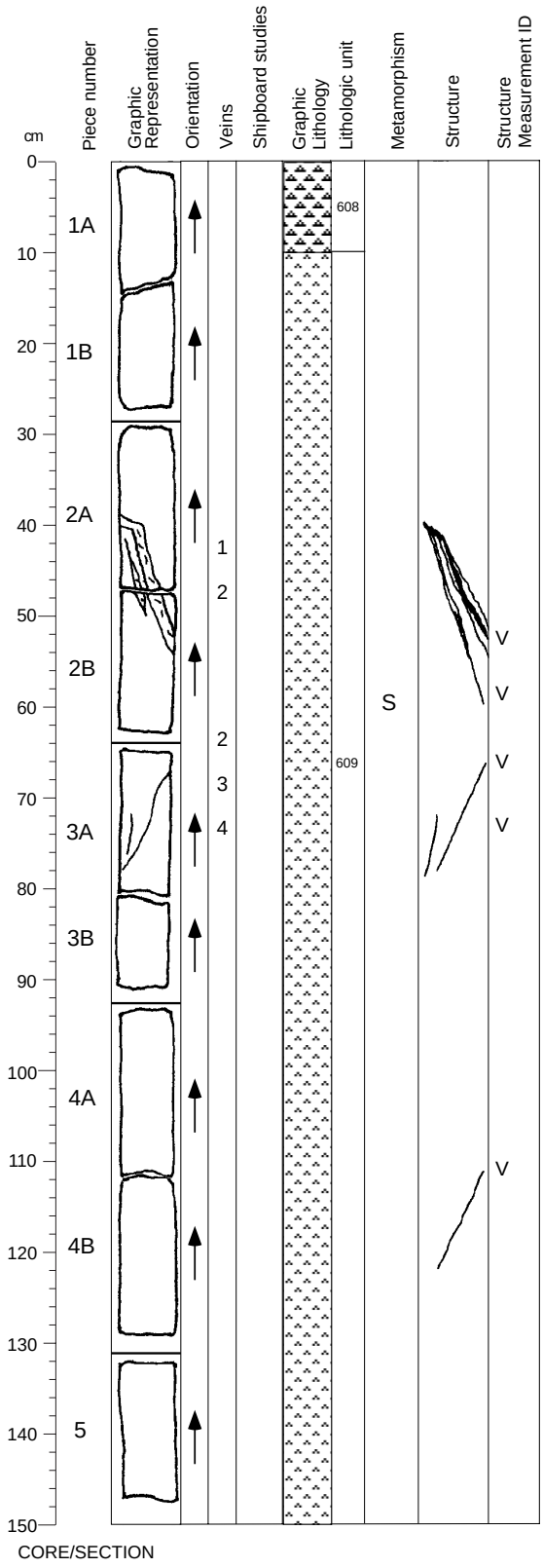
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: In halos of chlorite veins.

Background Alteration:
Degree of alteration: slight (8%). Olivine is partly replaced by amphibole, talc, chlorite, and smectite along cracks. Clinopyroxene is negligibly altered (2%). Plagioclase is altered to secondary plagioclase and chlorite (8%). Replacement of plagioclase by chlorite is high in alteration halos.

Vein/Fracture Filling:
0.1-1 mm chlorite veins in Pieces 2A to 2F; 0.5 mm smectite vein in Piece 3B.

Structures:
Mf>V
This section displays an igneous texture, with no or a weak magmatic foliation, cut by a series of veins. From 25 to 105 cm, the grain size is very fine (less than 1 mm).

Core Image



176-735B-121R-3

Interval 608: OLIVINE MICROGABBRO
(see previous section)
Interval 609: OLIVINE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	121	3	10	1A	722.72
Lower contact:	121	4	128	4B	725.40

Thickness (m): 2.68

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	15	5	medium	tabular/ subhedral anhedral
Clinopyroxene	35	15	2	coarse	tabular/ subhedral anhedral
Olivine	5	7	1	medium	amoeboidal/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	100.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size:Medium
Modal IUGS Name (calculated): Olivine Gabbro
Type Distribution
Texture: Variable texture N/A

Comments: Mostly granular/intergranular, locally subophitic at 29-40 cm, 67 cm, and 115-140 cm in 121R-3.

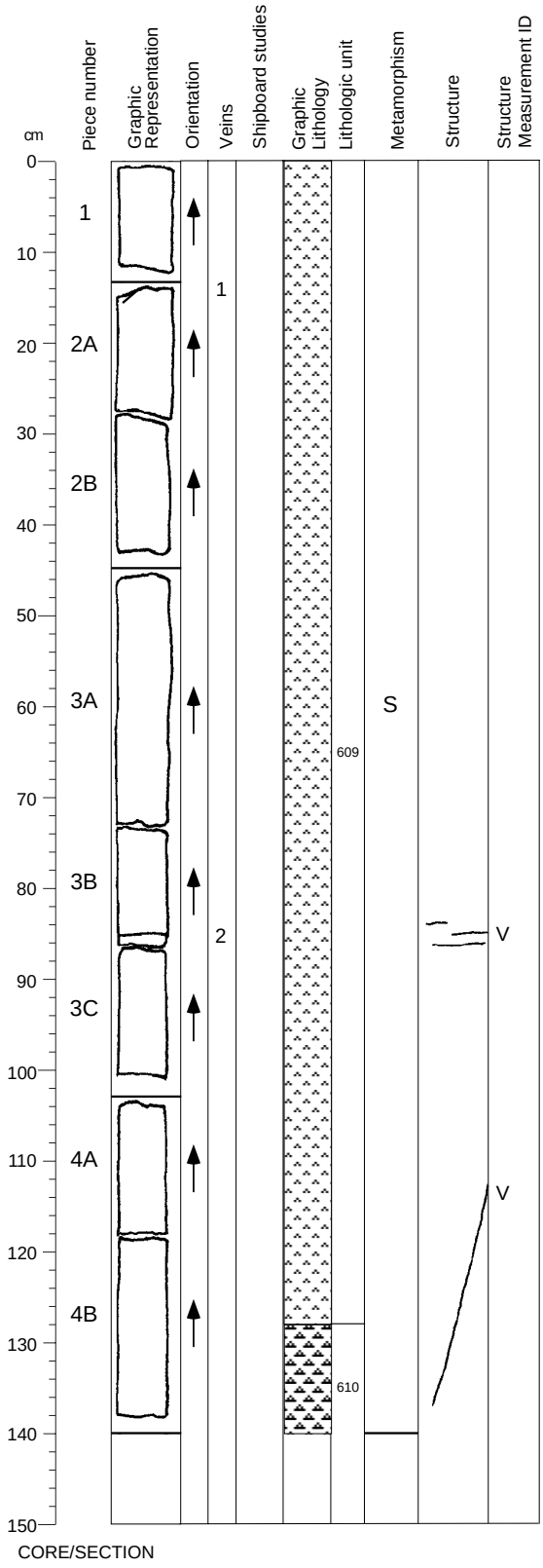
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near veins and felsic areas, associated with chlorite.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, near felsic areas.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.

Background Alteration:
Degree of alteration: slight (3%). 20% of the olivine is replaced by talc and amphibole. Clinopyroxene is negligibly altered to amphibole. Plagioclase is weakly altered to secondary plagioclase (3%).

Vein/Fracture Filling:
0.4 mm amphibole vein in Piece 3A; 0.3-10 mm clinopyroxene+plagioclase veins in Pieces 2A, 2B, and 3A.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a few veins.

Core Image



176-735B-121R-4

Interval 609: OLIVINE GABBRO
(see previous section)
Interval 610: OLIVINE MICROGABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	4	128	4B	725.40
Lower contact:	121	5	21	1	725.73

Thickness (m): 0.33

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	2	N/A	fine	tabular/ subhedral
Clinopyroxene	30	1	0.1	fine	equant/ anhedral
Olivine	8	3	1	medium	equant/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	98.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Olivine Gabbro
Texture: Type: equigranular; Distribution: uniform

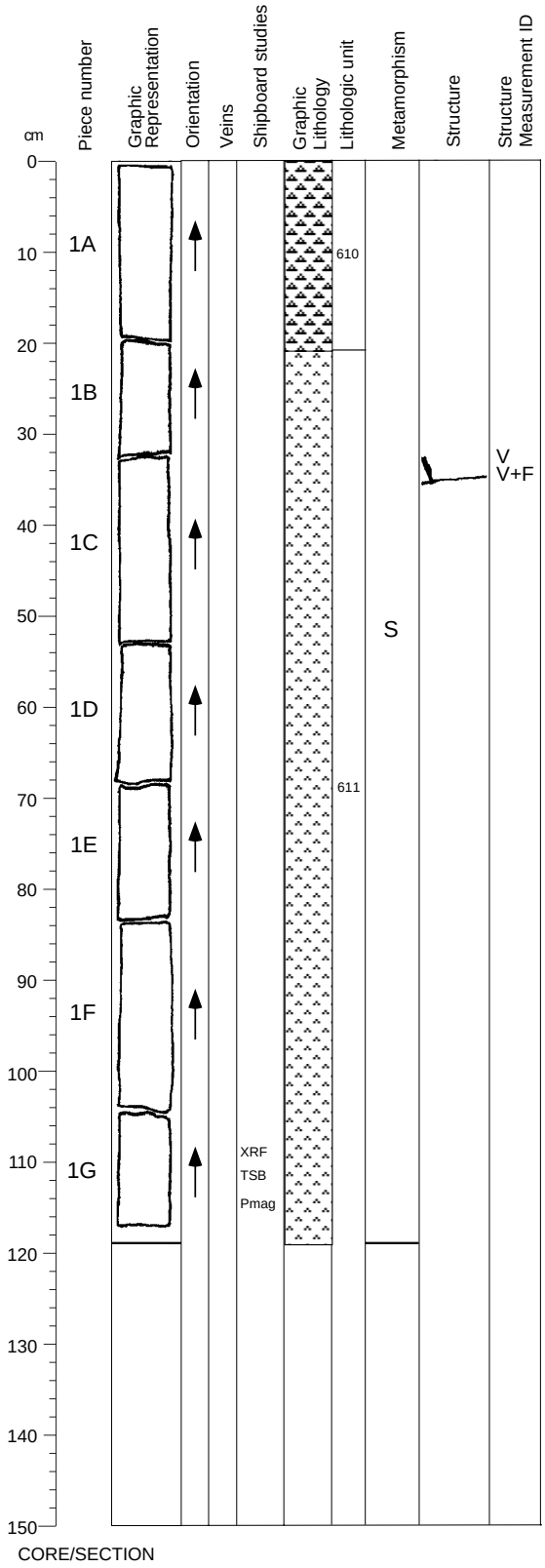
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In pyroxene cleavage and near olivine.
Comments: Alteration of minerals near felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine, along orthopyroxene cleavages and some clinopyroxene.
Comments: Dark-colored smectite around cracks and near felsic veins.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Vein/Fracture Filling:
0.5-1 mm smectite veins in Pieces 2A and 3A.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a few veins.

Core Image



176-735B-121R-5

Interval 610: OLIVINE MICROGABBRO
(see previous section)
Interval 611: OLIVINE GABBRO

			Depth in		Depth
Interval Location:	Core	Section	Section	Piece	mbsf
Upper contact:	121	5	21	1	725.73
Lower contact:	121	6	10	1A	726.81

Thickness (m): 1.08

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	15	3	coarse	tabular/ subhedral
Clinopyroxene	35	20	2	coarse	equant/ anhedral
Olivine	5	4	1	medium	subhedral equant/ anhedral
Opaques	0.7				amoeboidal aggregates/ disseminated
Total	95.7*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

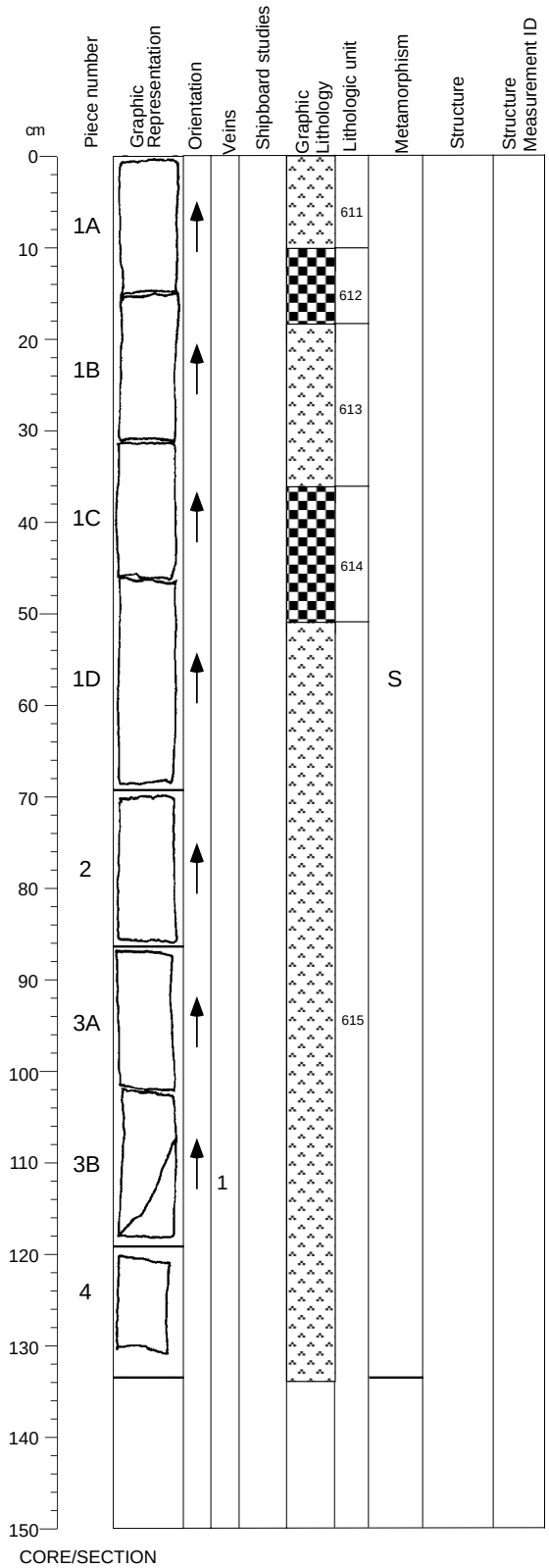
	Type	Distribution
Texture:	granular	uniform

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic areas, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In pyroxene cleavage and near olivine.
Comments: Alteration of minerals near felsic areas.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic areas.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Structures:
Mf>V>F
This section displays mostly a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by two veins in Piece 1C. The subhorizontal vein grades into a fault. Piece 1A displays a fine-grained texture, similar to the one seen in section 121R-2 (possibly intrusive in the coarse grained material?), with a weak magmatic foliation (and a lineation probably subperpendicular to the cut face).

Core Image



176-735B-121R-6

Interval 611: OLIVINE GABBRO
(see previous section)

Interval 612: OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	6	10	1A	726.81
Lower contact:	121	6	18	1B	726.89

Thickness (m): 0.08

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	53	15	3	coarse	tabular/ subhedral
Clinopyroxene	40	20	6	coarse	equant/ subhedral anhedral
Opaques	5				amoeboidal aggregates/ disseminated
Total	98*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated):
Type: Oxide Gabbro
Distribution:
Texture: granular
N/A
Comments: Oxide-rich interval. Locally subophitic. Oxide as rounded patches.

Interval 613: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	6	18	1B	726.89
Lower contact:	121	6	36	1C	727.07

Thickness (m): 0.18

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	10	3	medium	tabular/ subhedral
Clinopyroxene	35	10	1	coarse	equant/ anhedral
Olivine	6	4	1	medium	elongate/ anhedral subhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	91.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated):
Type: Olivine Gabbro
Distribution:
Texture: granular
N/A
Comments: Locally intergranular/subophitic.

Interval 614: DISSEMINATED OXIDE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	6	36	1C	727.07
Lower contact:	121	6	51	1D	727.22

Thickness (m): 0.15

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	10	4	coarse	tabular/ subhedral anhedral
Clinopyroxene	35	20	5	coarse	equant/ oikocrystic anhedral
Olivine	1	2	1	medium	elongate/ anhedral
Opaques	1				interstitial lenses/ disseminated
Total	92*		(see explanatory notes)		

Continued next page

Core Image

176-735B-121R-6 (cont'd)

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Disseminated Oxide Gabbro

	Type	Distribution
Texture:	granular	uniform

Comments: Oxide- sulfide-rich interval. Rarely subophitic. Mostly medium grained, locally coarse grained. Oxide 20% at 30-40 cm in 121R-6. Sulfide abundant at 39 cm in 121R-6.

Interval 615: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	121	6	51	1D	727.22
Lower contact:	122	2	5	1A	730.75

Thickness (m): 3.53

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	0.5	coarse	tabular/ subhedral chadacrystic
Clinopyroxene	35	30	2	coarse	equant/ anhedral
Olivine	5	7	1	medium	elongate/ anhedral
Opaques	0.6				amoeboidal aggregates/ disseminated
Total	105.6*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	Variable texture	N/A

Comments: Mostly granular to equigranular: 51 cm in 121R-6 to 4 cm in 121R-7, 50-63 cm in 121R-7; subophitic/ophitic: 4-50 cm and 63 cm in 121R-7 to base; locally poikilitic: 29 cm, 69-74 cm, and 86-120 cm in 121R-7). Mode and grain size variable. Olivine showing white reaction rims.

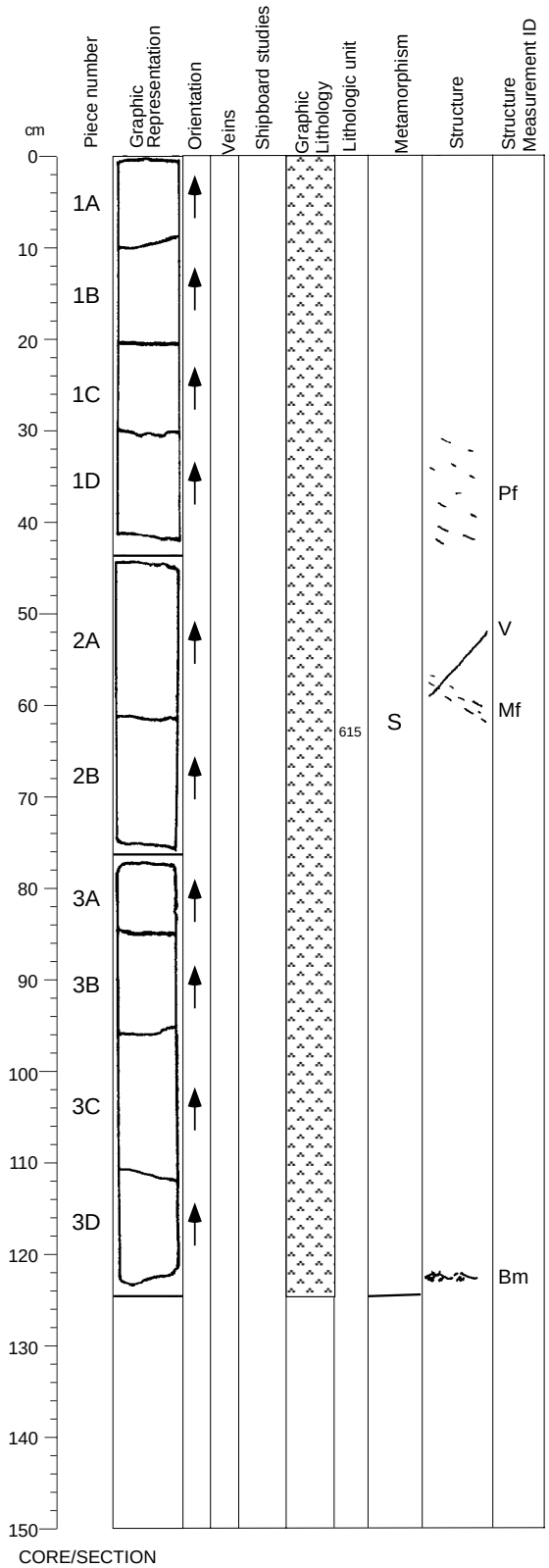
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite near veins.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and some clinopyroxene.
Comments: Rimming minerals and near veins.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Vein/Fracture Filling:
0.3 mm amphibole vein in Piece 3.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation.

Core Image



176-735B-121R-7

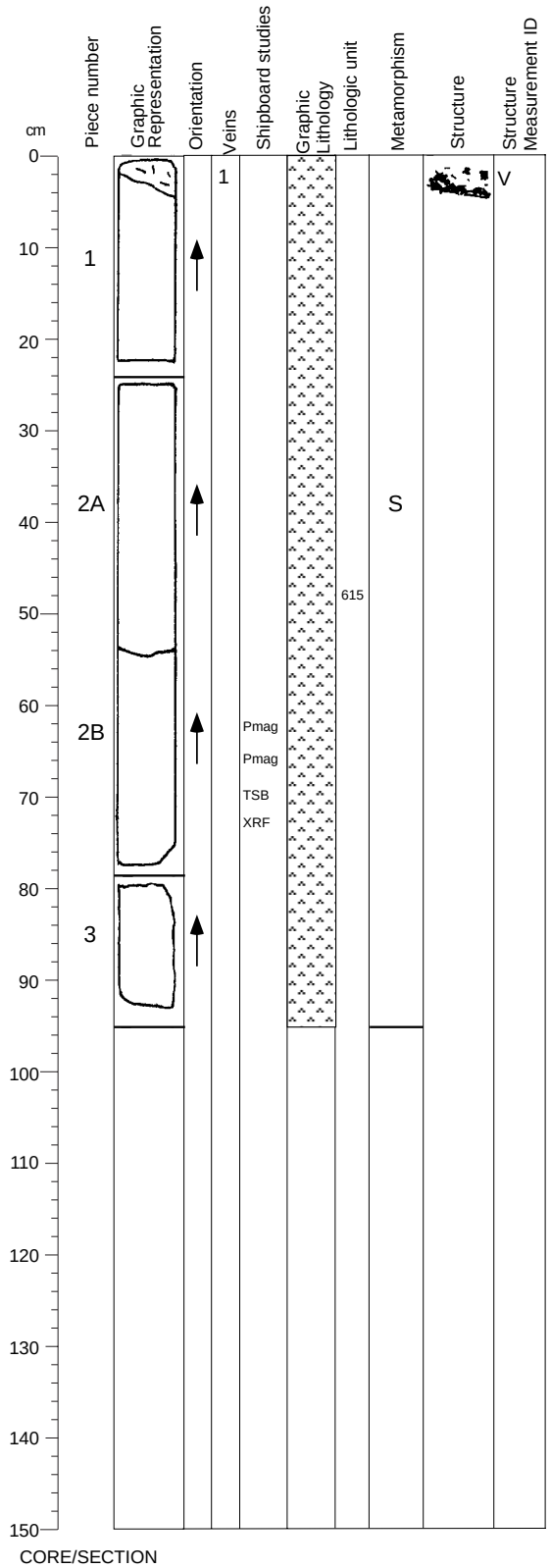
Interval 615: OLIVINE GABBRO
(see previous section)

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Structures:
Mf>Pf>V; Mf>Bm
This section displays a coarse-grained igneous texture, with a moderate magmatic foliation from 30 to 42 cm and from 57 and 59 cm (this last narrow zone corresponds to a layer of finer grained material). The igneous texture is cut by a vein in Piece 2A and overprinted by a magmatic breccia at the bottom of Piece 3D.

Core Image



176-735B-121R-8

Interval 615: OLIVINE GABBRO
(see Section 176-735B-121R-6)

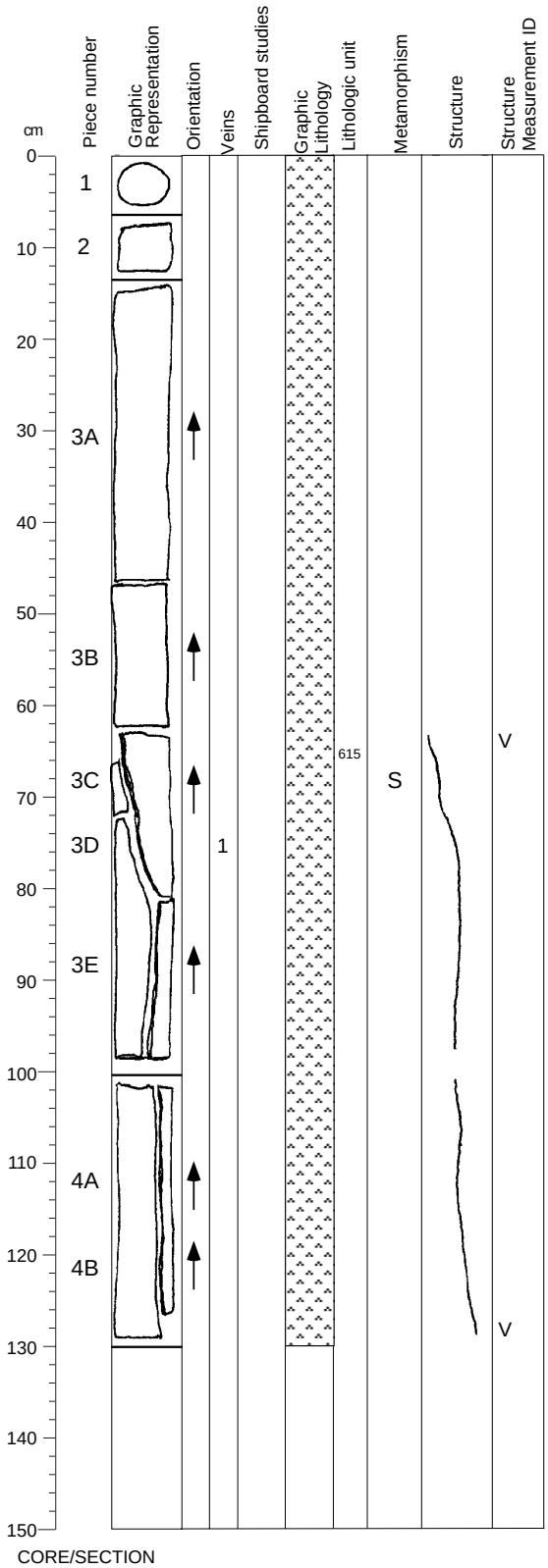
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Associated with chlorite near felsic vein.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed near felsic vein.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: In olivine rims and some clinopyroxene.
Comments: Around minerals and near felsic veins.

Background Alteration:
Degree of alteration: slight (3%). Same as previous section.

Vein/Fracture Filling:
15 mm clinopyroxene + plagioclase vein in Piece 1.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by a thick vein at the top of Piece 1.

Core Image



176-735B-122R-1

Interval 615: OLIVINE GABBRO
(see Section 176-735B-121R-6)

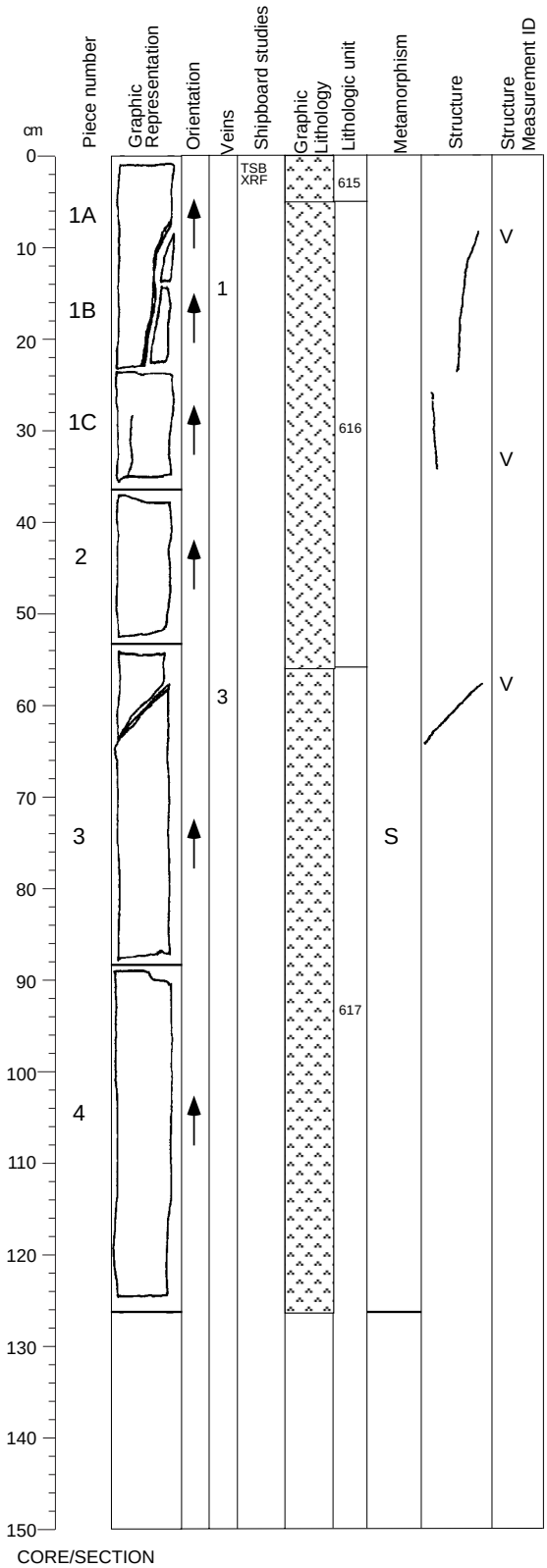
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectite:
Total Percent: <1
Mode of occurrence: In olivine, orthopyroxene cleavage, and some clinopyroxene.
Comments: Dark green smectite fills cracks.

Background Alteration:
Degree of alteration: slight (3%). 30% of the olivine is replaced by talc, amphibole, and smectite. Clinopyroxene is negligibly altered to amphibole (1%). Plagioclase is negligibly altered to secondary plagioclase (2%).

Vein/Fracture Filling:
0.4 mm smectite vein in Pieces 3-4.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a few late veins (Pieces 3C-34E and 4A to 4B).

Core Image



176-735B-122R-2

Interval 615: OLIVINE GABBRO
(see Section 176-735B-121R-6)
Interval 616: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	122	2	5	1A	730.75
Lower contact:	122	2	56	3	731.26

Thickness (m): 0.51

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	55	2	0.5	fine	tabular/ subhedral
Clinopyroxene	35	20	1	medium	equant/ oikocrystic anhedral
Olivine	2	1	1	fine	amoeboidal/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	92.5*		(see explanatory notes)		

*Major phases estimated to ± 5%)
Grain Size: Medium
Modal IUGS Name (calculated): Gabbro
Type: Variable texture
Distribution: N/A
Comments: Composite interval of alternating microgabbro and coarse-grained gabbro. Mostly granular (coarse) and equigranular (fine). Locally oxide-rich near a trondhjemite vein at 1 cm in 121R-8.

Interval 617: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	122	2	56	3	731.26
Lower contact:	123	3	64	1C	742.52

Thickness (m): 11.26

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	20	5	coarse	tabular/ subhedral euhedral
Clinopyroxene	35	25	5	coarse	equant/ anhedral
Olivine	8	7	2	medium	amoeboidal/ anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	108.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro
Type: subophitic
Distribution: uniform
Comments: Locally granular/intergranular. Mode and size variable. Many large clinopyroxene grains oikocrystic. Oxide 1% at 54-92 cm in 122R-2. Sulfide as globules abundant.

Continued next page

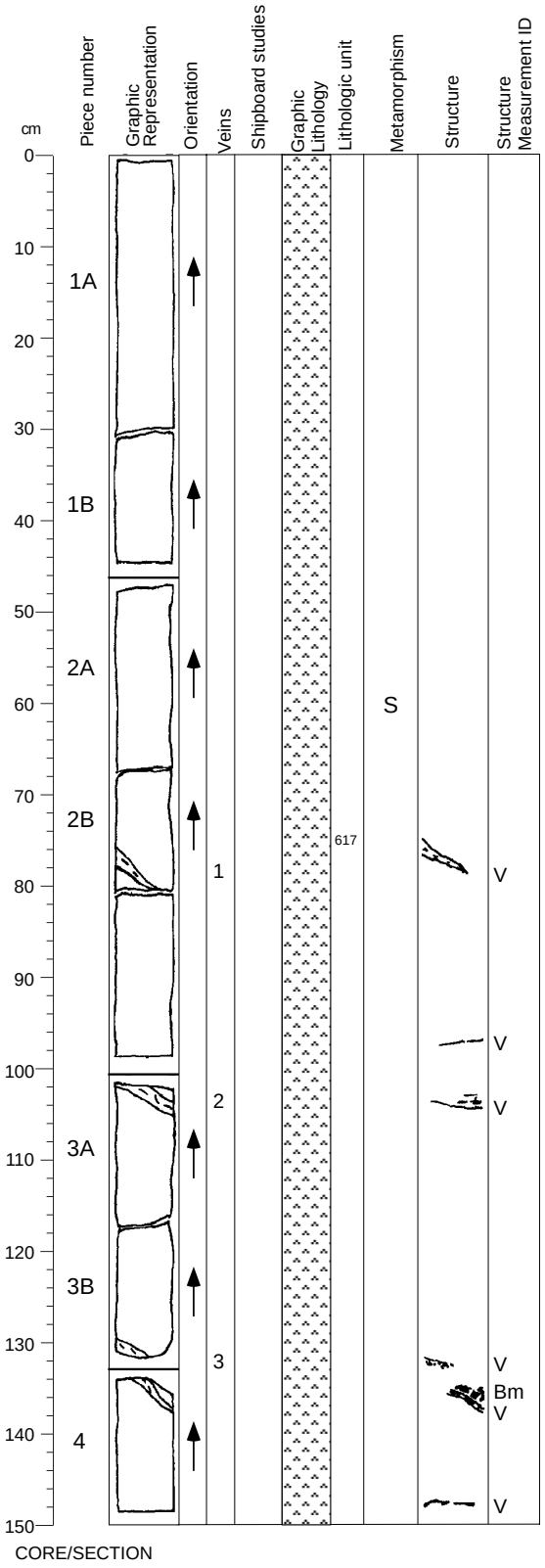
Core Image

176-735B-122R-2 (cont'd)

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectite:
Total Percent: <1
Mode of occurrence: In olivine.
Comments: Dark green smectite adjacent to cracks.
Background Alteration:
Degree of alteration: negligible.
Vein/Fracture Filling:
0.2-0.3 mm smectite veins in Pieces 1 and 3.

Structures:
Mf>V
This section displays mostly a coarse-grained igneous texture, with no or a weak magmatic foliation. In Pieces 1A-1C, 2, and 3, zones of fine-grained material are present; they may be intrusive in the coarse-grained gabbro, with local very weak magmatic foliations following the contact. The igneous texture is cut by a few late veins.

Core Image



176-735B-122R-3

Interval 617: OLIVINE GABBRO
(see previous section)

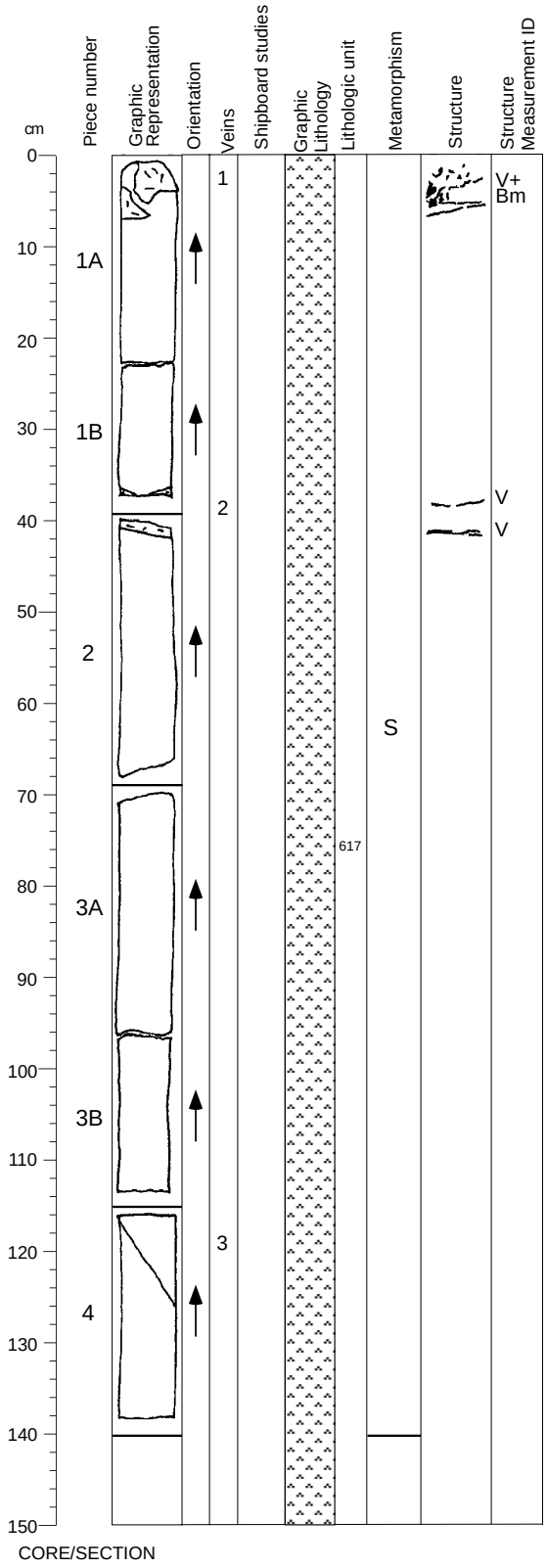
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In pyroxene cleavage and near olivine.
Comments: Replacing minerals near felsic veins.
Secondary plagioclase:
Total Percent: <3
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: Rimming olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Dark green, blue smectites around cracks and near felsic veins.

Degree of alteration: slight (3%). 20% of the olivine is replaced by talc, amphibole, and smectite. Clinopyroxene is negligibly altered to amphibole (1%). Plagioclase is slightly altered to secondary plagioclase (4%).

Vein/Fracture Filling:
4 mm plagioclase vein in Piece 3B; 5-7 mm plagioclase+amphibole veins in Pieces 3A, 3B, and 4.

Structures:
Mf>V=Bm
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by a few veins and associated magmatic breccia in Pieces 2B to 4.

Core Image



176-735B-122R-4

Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)

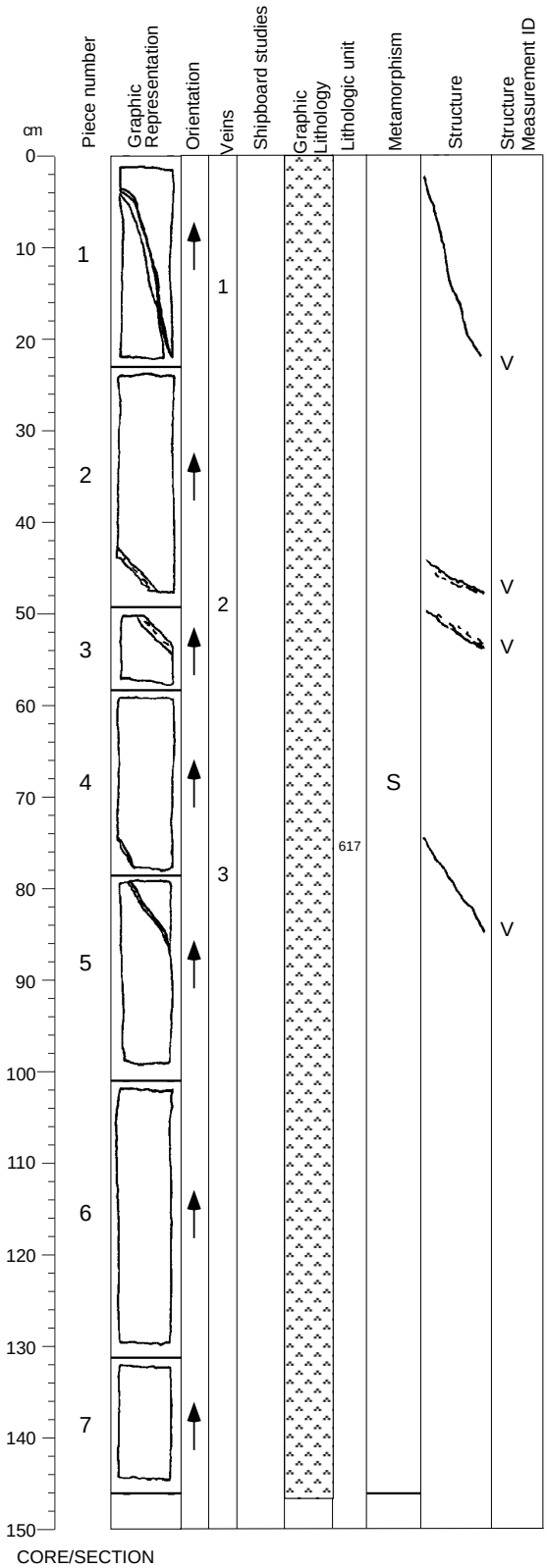
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims and near felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
5-10 mm plagioclase+amphibole veins in Pieces 1 and 2; 0.3 mm amphibole vein in Piece 4.

Structures:
Mf>V=Bm
This section displays a coarse-grained igneous texture, with no magmatic foliation, overprinted by veins and associated magmatic breccia in Pieces 1A to 1B and 2.

Core Image



176-735B-122R-5

Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)

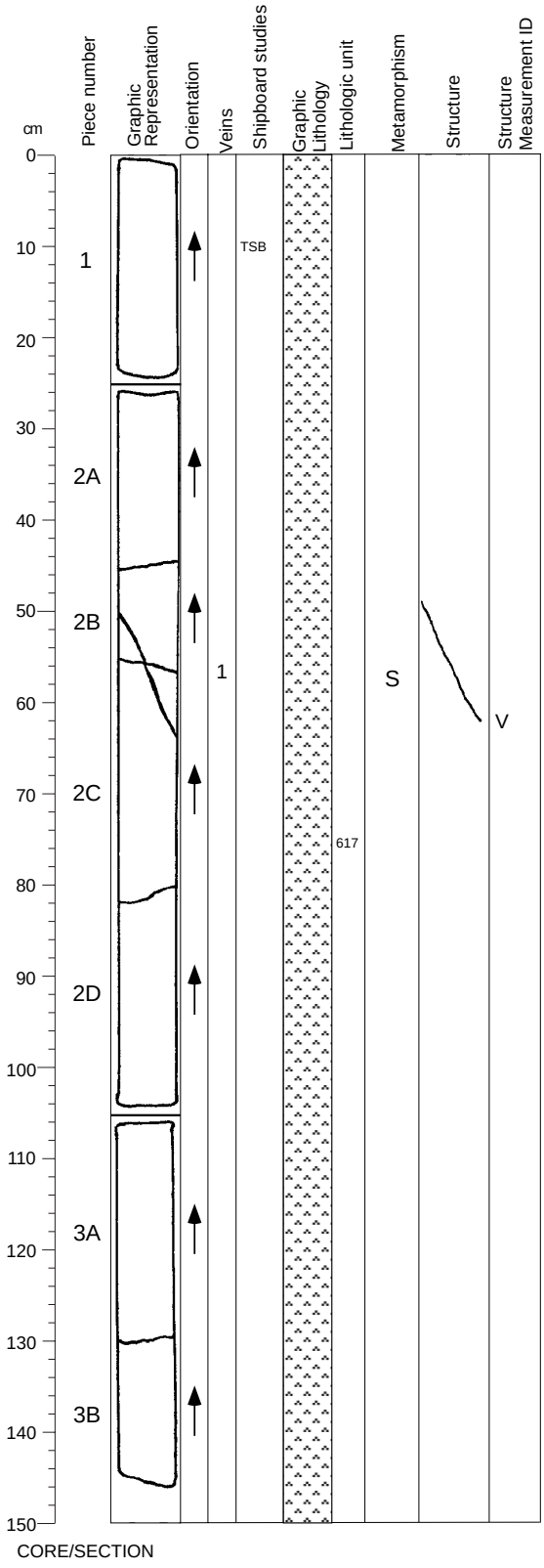
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Dark green smectite along cracks and near felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
0.3-0.5 mm smectite veins in Pieces 1,4, and 5; 5 mm plagioclase+amphibole veins in Pieces 2 and 3.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by a few veins in Pieces 1 to 4.

Core Image



176-735B-122R-6

Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)

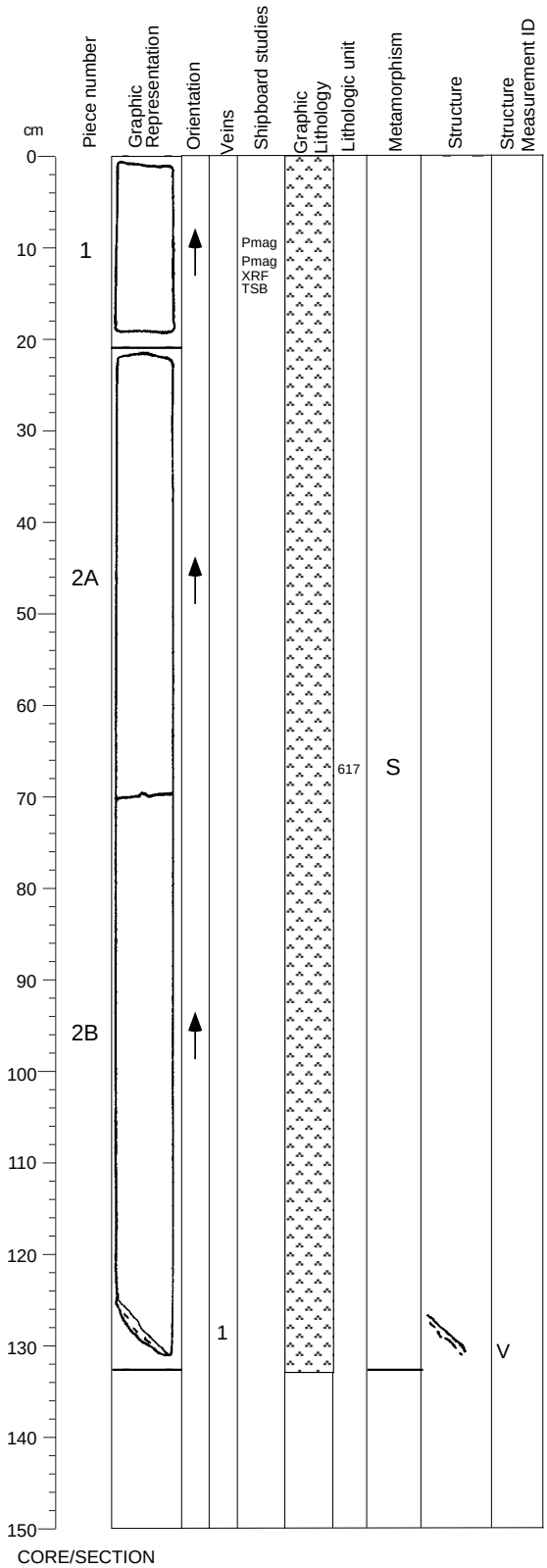
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near veins, associated with chlorite.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Dark green smectite near cracks and felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
1.5 mm plagioclase + amphibole veins in Piece 2B and 2C.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by a vein in Pieces 2B to 2C.

Core Image



176-735B-122R-7

Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)

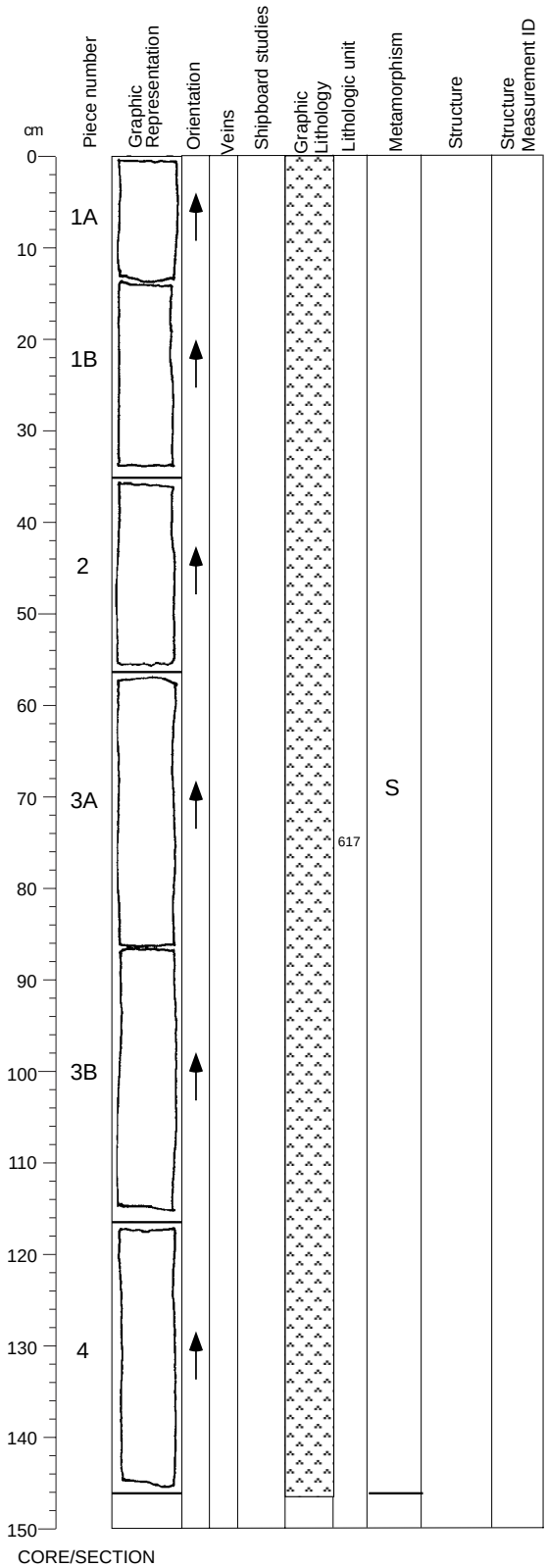
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In pyroxene.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
5 mm plagioclase + clinopyroxene vein in Piece 2B.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, overprinted by a vein at the bottom of Piece 2B.

Core Image



176-735B-123R-1

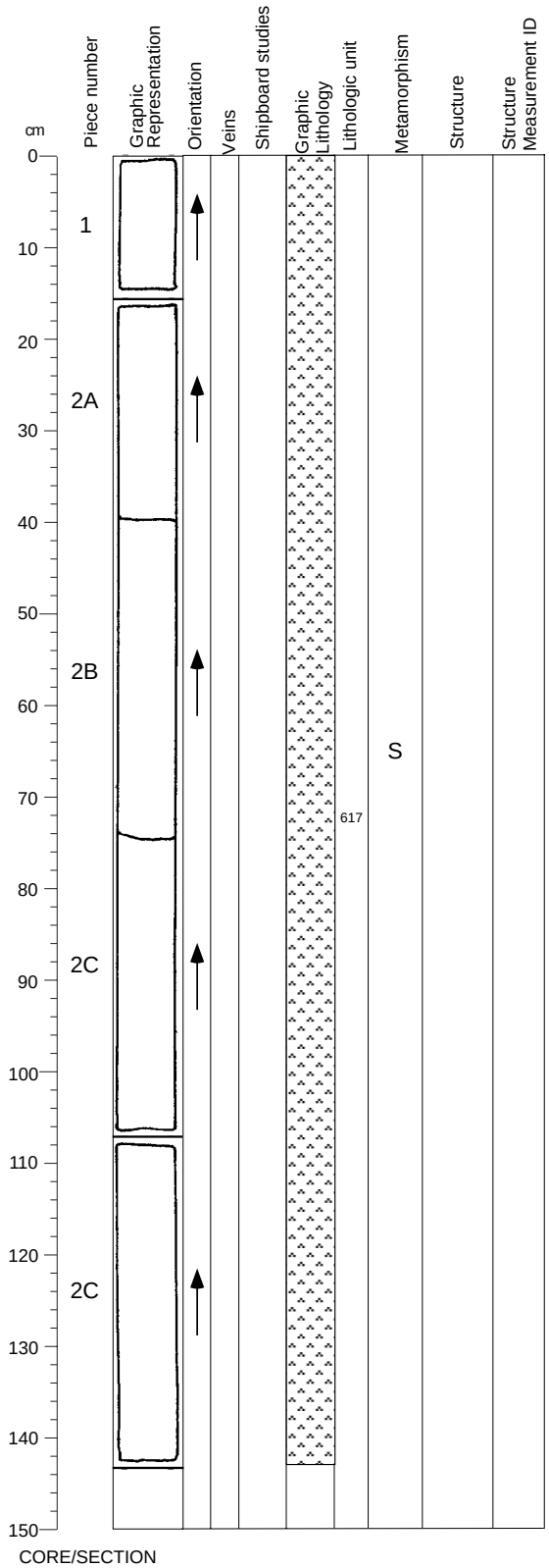
Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)

Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: negligible.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation.

Core Image



176-735B-123R-2

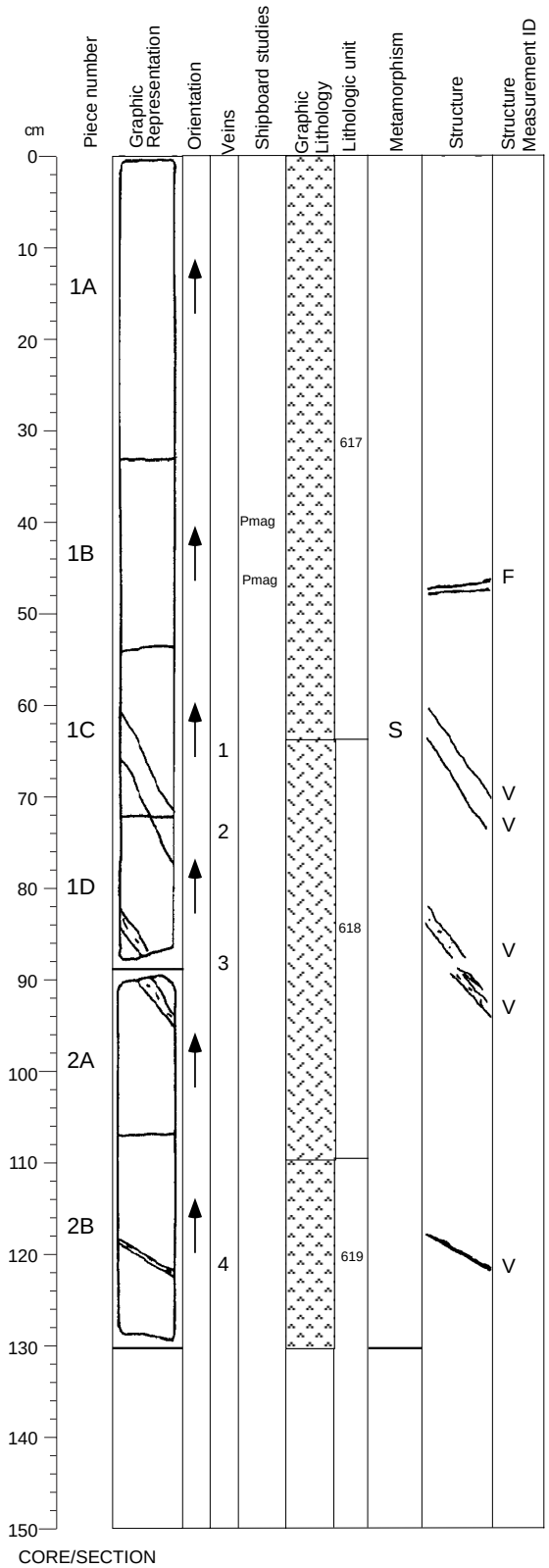
Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)

Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: negligible.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation.

Core Image



176-735B-123R-3

Interval 617: OLIVINE GABBRO
(see Section 176-735B-122R-2)
Interval 618: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	123	3	64	1C	742.52
Lower contact:	123	3	110	2B	742.98

Thickness (m): 0.46

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	8	0.5	medium	tabular/ subhedral anhedral
Clinopyroxene	35	5	0.5	medium	equant/ anhedral
Olivine	2	2	1	medium	equant/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated

Total 102.5* (see explanatory notes)
*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Gabbro
Type Distribution
Texture: granular uniform
Comments: Microgabbro with patches of medium- to coarse-grained olivine gabbro. Locally equigranular.

Interval 619: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	123	3	110	2B	742.98
Lower contact:	123	4	70	2B	743.88

Thickness (m): 0.90

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	3	coarse	tabular/ subhedral euhedral
Clinopyroxene	35	15	2	coarse	equant/ anhedral
Olivine	8	4	1	medium	equant/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated

Total 108.5* (see explanatory notes)
*Major phases estimated to ± 5%)
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro
Type Distribution
Texture: equigranular uniform
Comments: Microgabbro/troctolitic gabbro. Locally granular to intergranular.

Continued next page

Core Image

176-735B-123R-3 (cont'd)

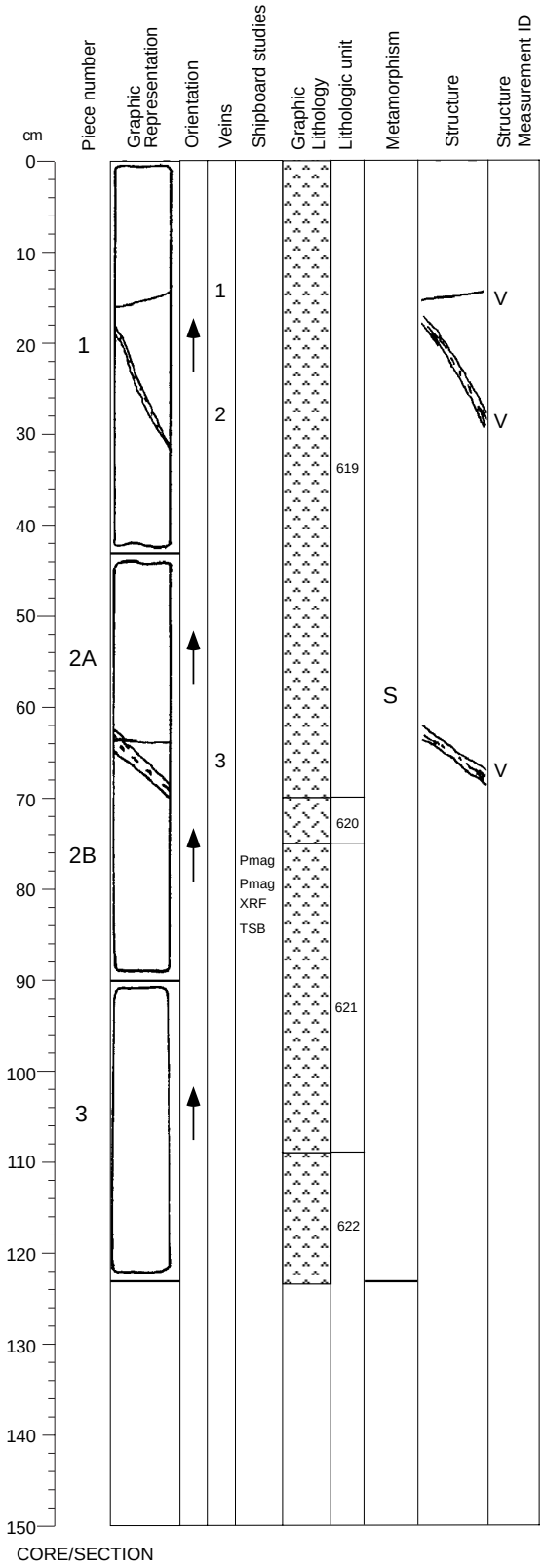
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins and in halo of chlorite veins.
Smectite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Dark green smectite along cracks and near felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
1-8 mm plagioclase+amphibole veins in Pieces 1C to 1D; 0.3 mm amphibole vein in Piece 1C.

Structures:
Mf>F; Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by two small faults in Piece 1B and by a few veins in Pieces 1C to 1D and 2A to 2B.

Core Image



176-735B-123R-4

Interval 619: OLIVINE GABBRO
(see previous section)

Interval 620: GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	123	4	70	2B	743.88
Lower contact:	123	4	75	2B	743.93

Thickness (m): 0.05

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	25	5	coarse	tabular/ subhedral
Clinopyroxene	45	35	10	pegmatitic	tabular/ anhedral subhedral
Olivine	1	2	1	medium	amoeboidal/ anhedral
Opaque	0.6				angular aggregates/ disseminated
Total	96.6*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal IUGS Name (calculated): Gabbro

	Type	Distribution
Texture:	granular	N/A

Comments: Pegmatitic interval. Pegmatitic/oikocrystic clinopyroxene 3 cm, plagioclase 2 cm. Minor oxide present.

Interval 621: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	123	4	75	2B	743.93
Lower contact:	123	4	108	3	744.26

Thickness (m): 0.33

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	2	0.5	fine	tabular/ subhedral anhedral
Clinopyroxene	30	1	0.1	fine	equant/ anhedral
Olivine	15	2	1	fine	equant/ anhedral subhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Fine
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	equigranular	uniform

Comments: Fine-grained microgabbro intrusive to pegmatitic lithology.

Continued next page

Core Image

176-735B-123R-4 (cont'd)

Interval 622: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	123	4	108	3	744.26
Lower contact:	126	4	73	2B	760.23

Thickness (m): 15.97

		Grain Size (mm):			
	Mode	Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	2	coarse	tabular/ subhedral
Clinopyroxene	35	40	2	coarse	chadacrystic equant/ anhedral
Olivine	7	10	2	coarse	oikocrystic amoeboidal/ anhedral
Opaques	0.5				subhedral amoeboidal aggregates/ disseminated
Total	107.5*		(see explanatory notes)		

*Major phases estimated to ± 5%)
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	Variable texture	N/A

Comments: A long interval of olivine gabbro with variable grain size and texture. Both granular and subophitic/ophitic common, but exclusive in places. Locally equigranular (fine-grained microgabbro) and intergranular. Sulfide as globules abundant.

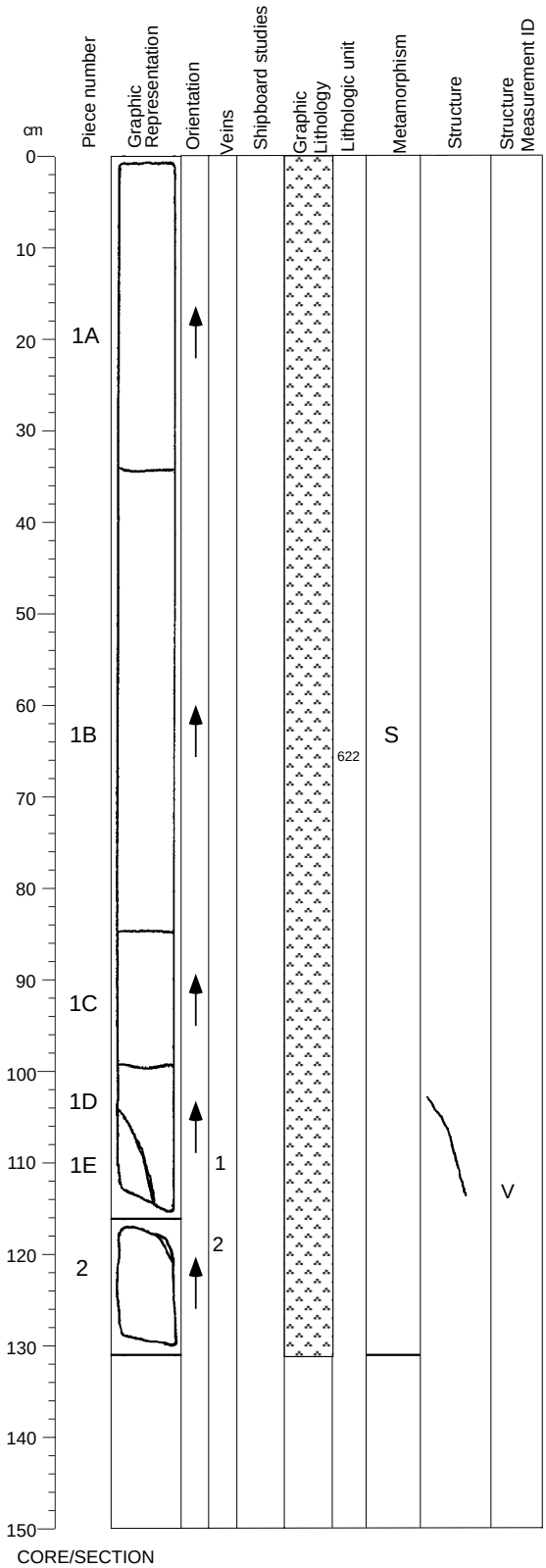
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After pyroxene cleavage and near olivine.
Comments: Alteration of minerals near felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
Smectite vein in Piece 1; 5-7 mm plagioclase + clinopyroxene veins in Pieces 1, 2A, and 2B.

Structures:
Mf>V
This section displays an igneous texture, with no magmatic foliation. A 30 cm thick layer of fine-grained material is present from 74 to 104 cm, possibly intrusive. The coarse-grained igneous texture is cut by a few veins in Pieces 1, 2A, and 2B.

Core Image



176-735B-123R-5

Interval 622: OLIVINE GABBRO
(see previous section)

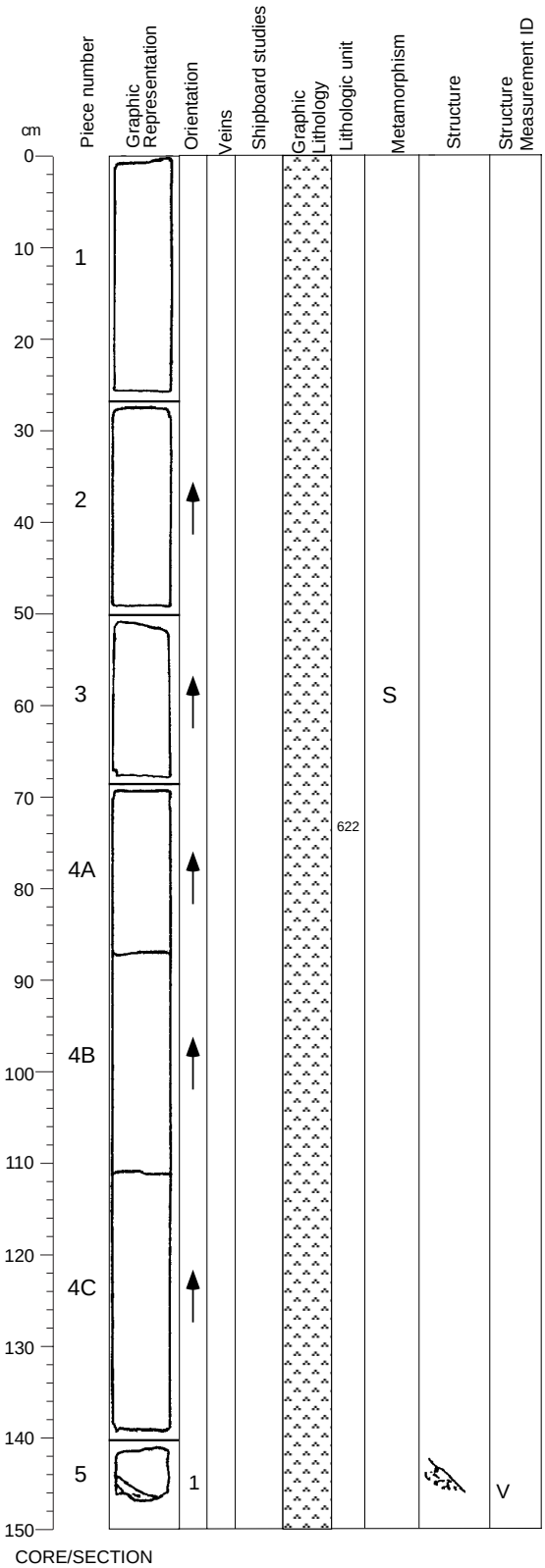
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Smectite:
Total Percent: trace
Mode of occurrence: After olivine.
Comments: Orange smectite around cracks.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
0.2-0.3 mm smectite veins in Pieces 1E and 2.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a vein in Pieces 1E and 2.

Core Image



176-735B-123R-6

Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

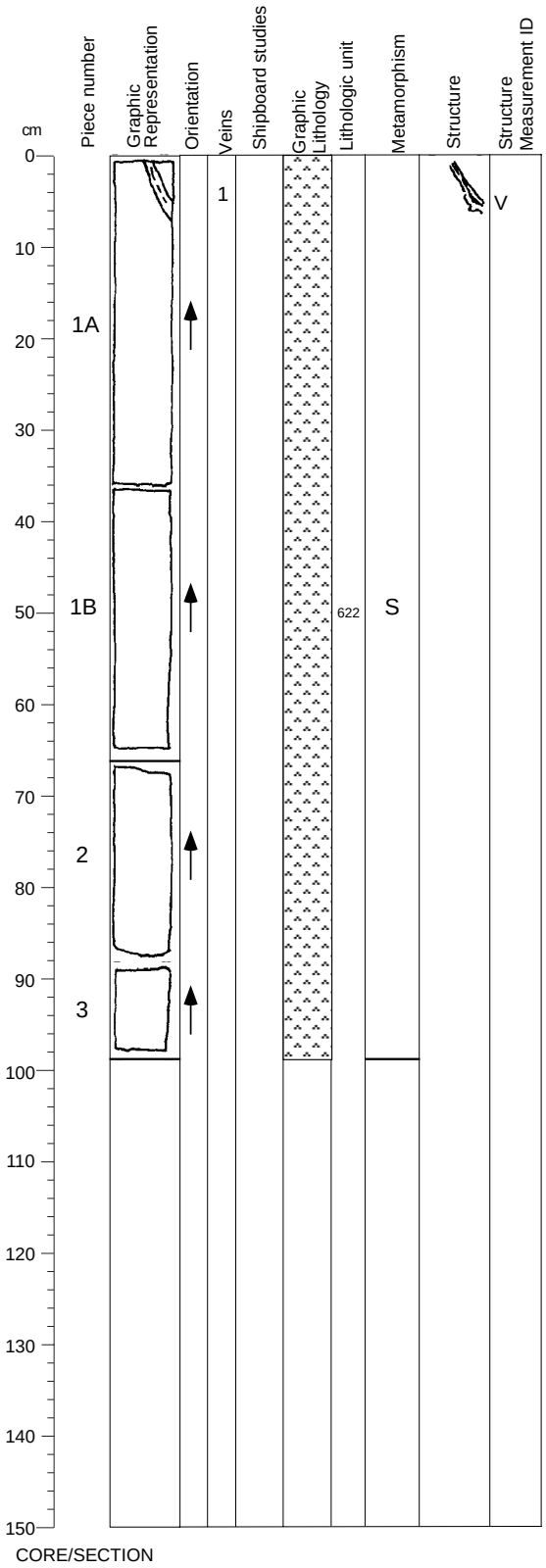
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: In pyroxene cleavages and near olivine.
Comments: Alteration of minerals near felsic veins.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
10 mm plagioclase+amphibole vein in Piece 5.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a vein at the bottom of Piece 5.

Core Image



176-735B-123R-7

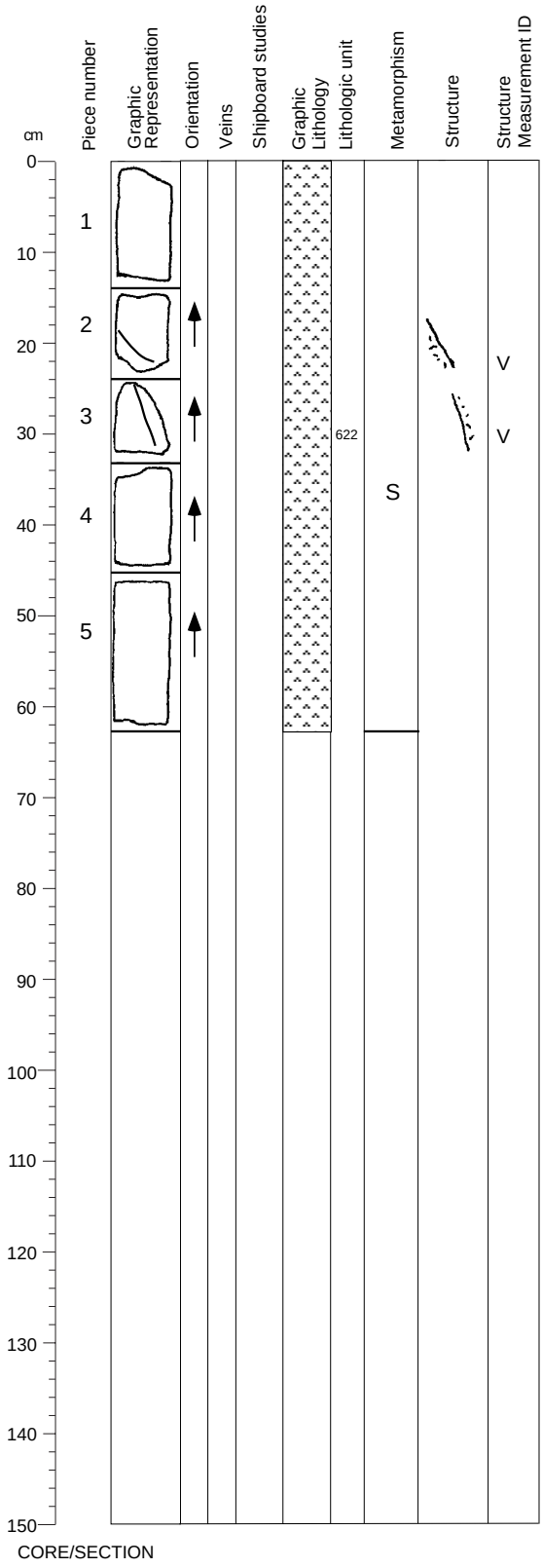
Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

Alteration:
Negligible.

Vein/Fracture Filling:
11 mm plagioclase+amphibole vein in Piece 1.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a vein at the top of Piece 1A. A zone of fine-grained material is present from 7 to 18 cm.

Core Image



176-735B-123R-8

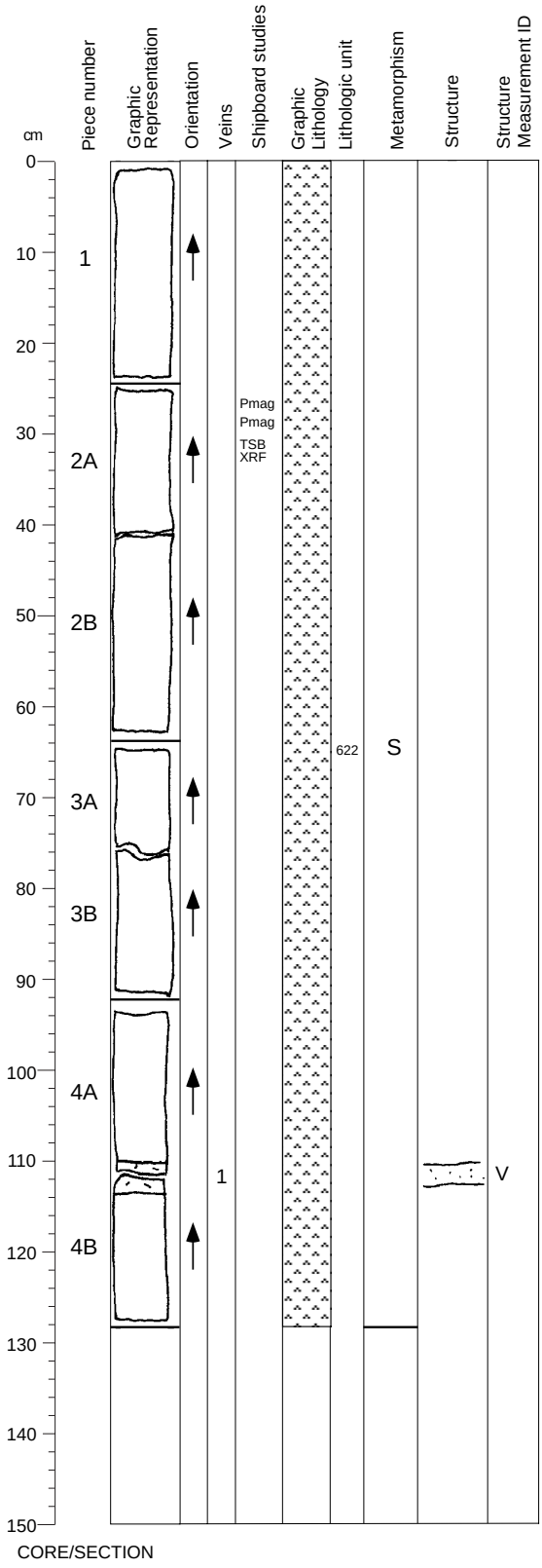
Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

Alteration:
Negligible

Vein/Fracture Filling:
11 mm plagioclase+ampibole vein in Pieces 2 and 3.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a vein in Pieces 2 and 3.

Core Image



176-735B-124R-1

Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

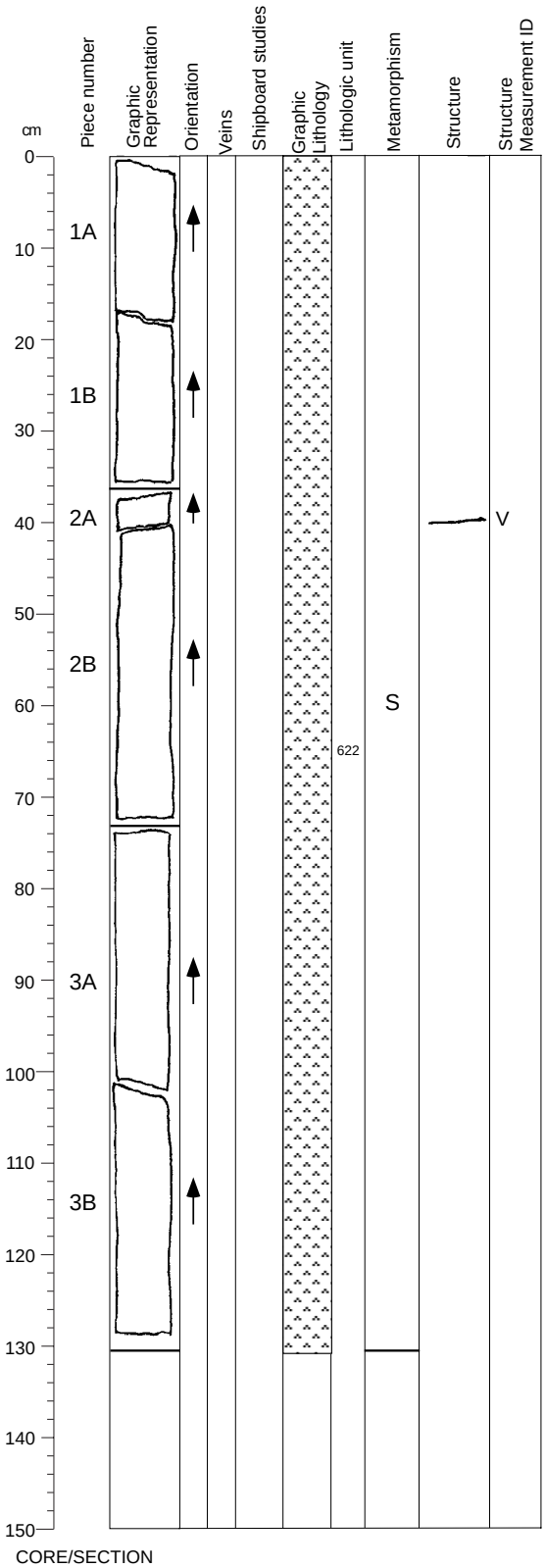
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Green amphibole:
Total Percent: <1
Mode of occurrence: After clinopyroxene and olivine.
Comments: Near felsic veins, associated with chlorite.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Along pyroxene cleavage and near olivine.
Comments: Alteration of minerals near felsic veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Chlorite:
Total Percent: <1
Mode of occurrence: After olivine and pyroxene.
Comments: Associated with amphibole near felsic veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
30 mm plagioclase vein in Piece 4A and 4B.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a 3 cm thick, subhorizontal vein in Pieces 4A and 4B.

Core Image



176-735B-124R-2

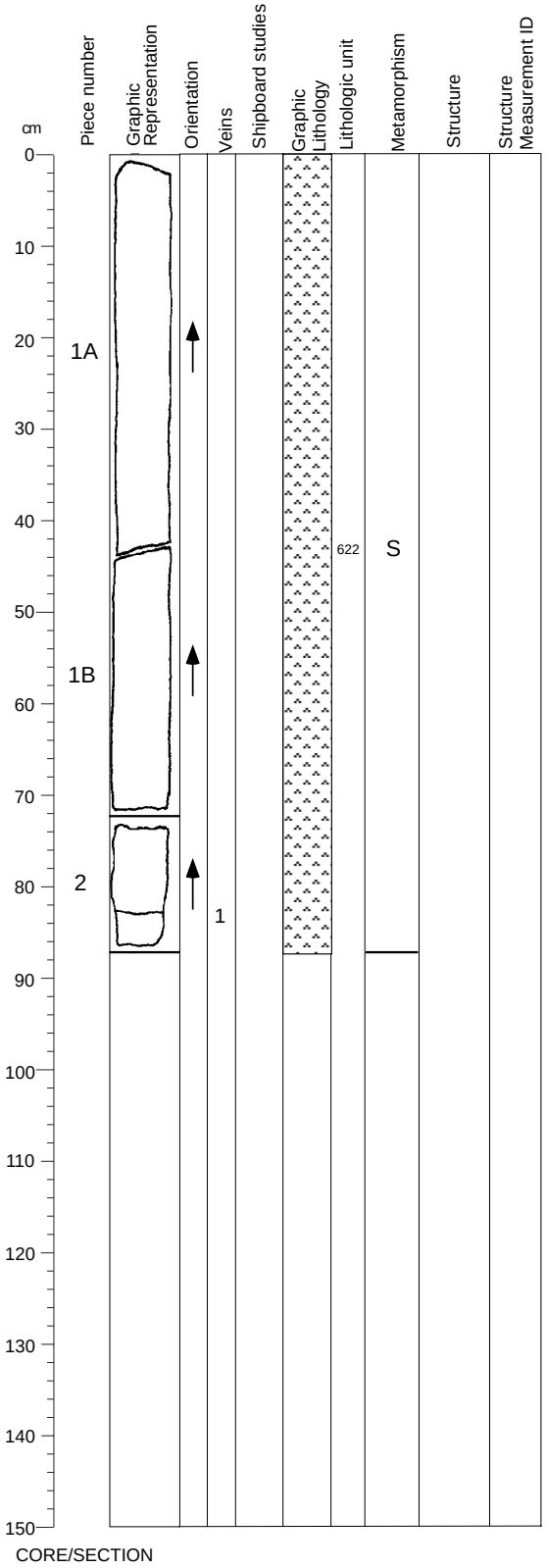
Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: negligible.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a thin, subhorizontal vein, which separates Piece 2A from Piece 2B.

Core Image



176-735B-124R-3

Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

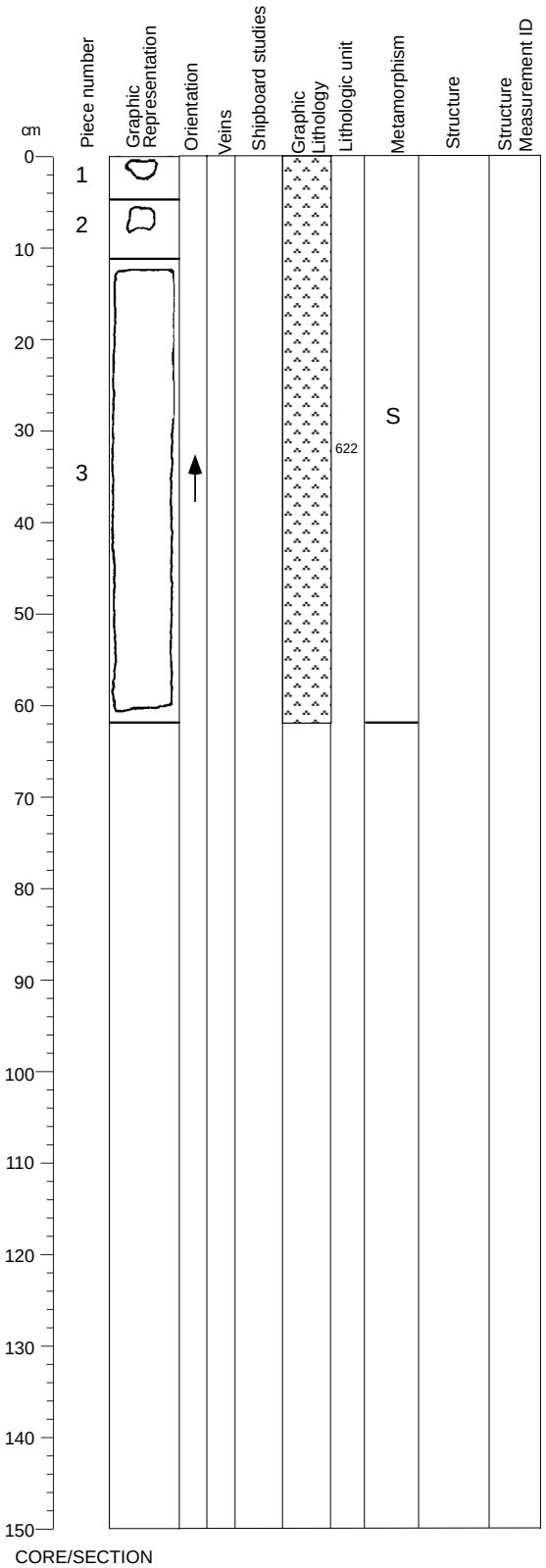
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: Mainly after clinopyroxene, partly after olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Negligible.

Vein/Fracture Filling:
0.2 mm amphibole vein in Piece 2.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation.

Core Image



176-735B-125R-1

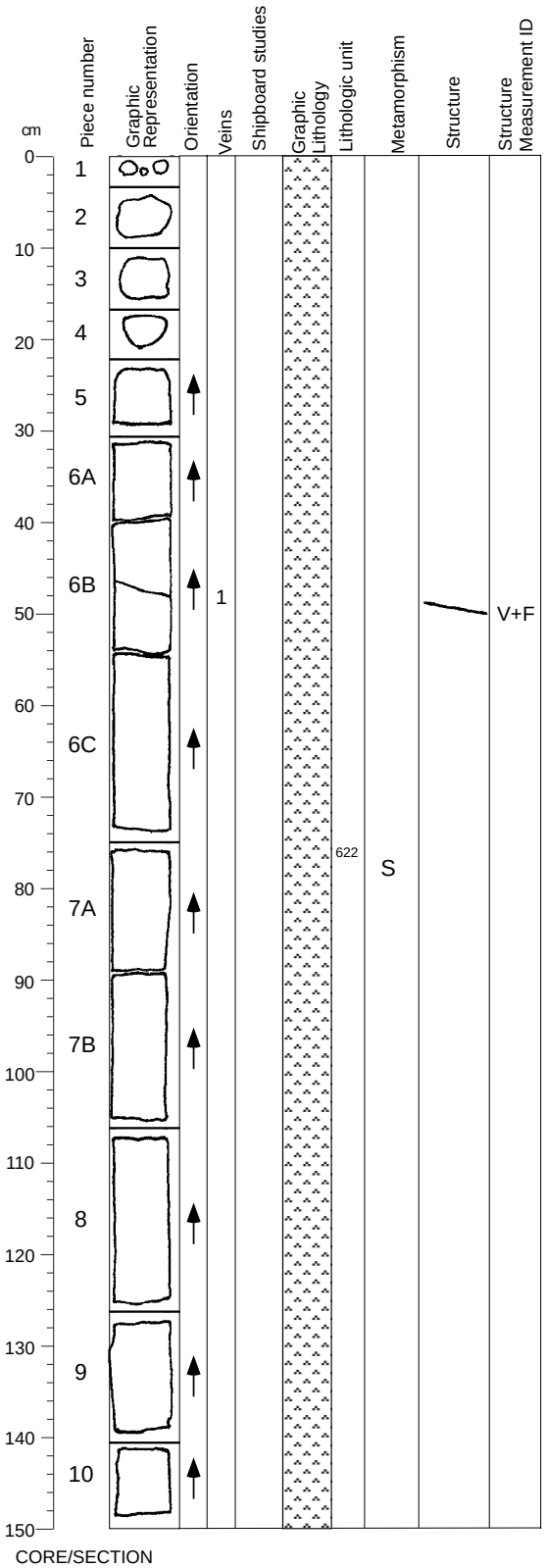
Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: trace
Mode of occurrence: Along pyroxene cleavages.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides, and dark green smectite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (3%). 15% of the olivine is replaced by amphibole, talc, and smectite. Alteration of plagioclase and clinopyroxene is negligible.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation.

Core Image



176-735B-126R-1

Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

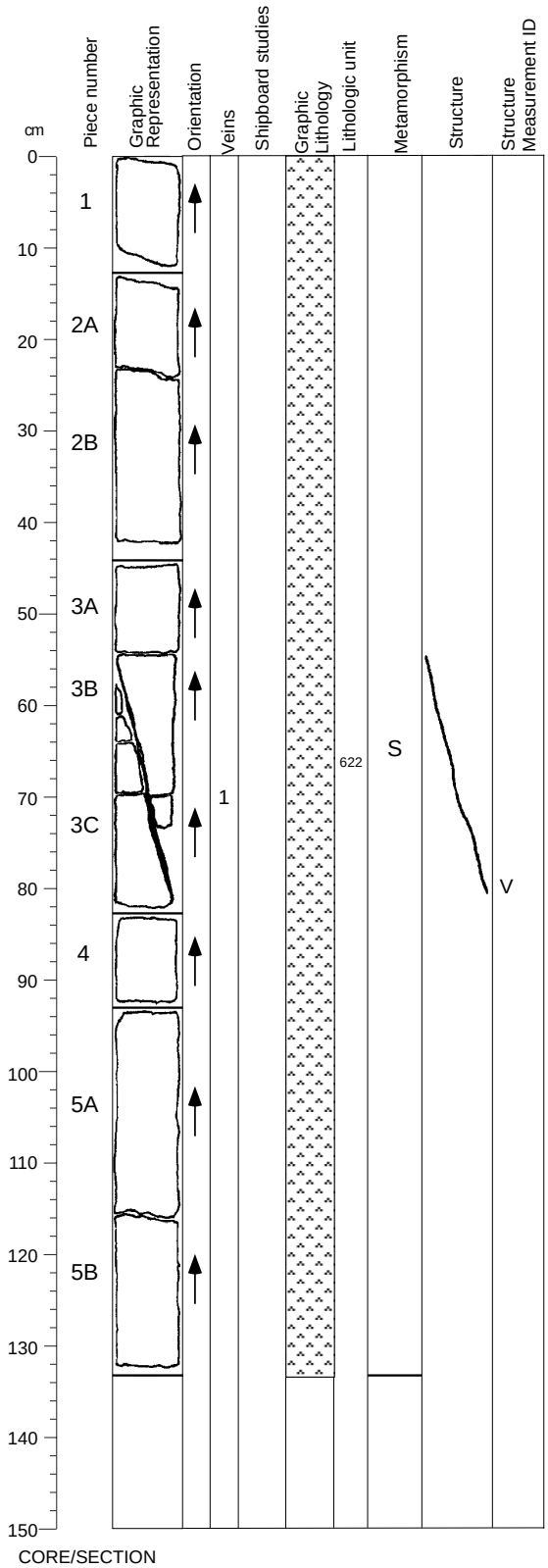
Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: trace
Mode of occurrence: Along pyroxene cleavages.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides, and dark green smectite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (3%). 20% of the olivine is replaced by amphibole, talc, and smectite. Alteration of plagioclase and clinopyroxene is negligible.

Vein/Fracture Filling:
1 mm plagioclase + amphibole vein in Piece 6B.

Structures:
Mf>V>F
This section displays a coarse-grained igneous texture, with no or a weak magmatic foliation, cut by a vein in Piece 6B (grading into a fault).

Core Image



176-735B-126R-2

Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

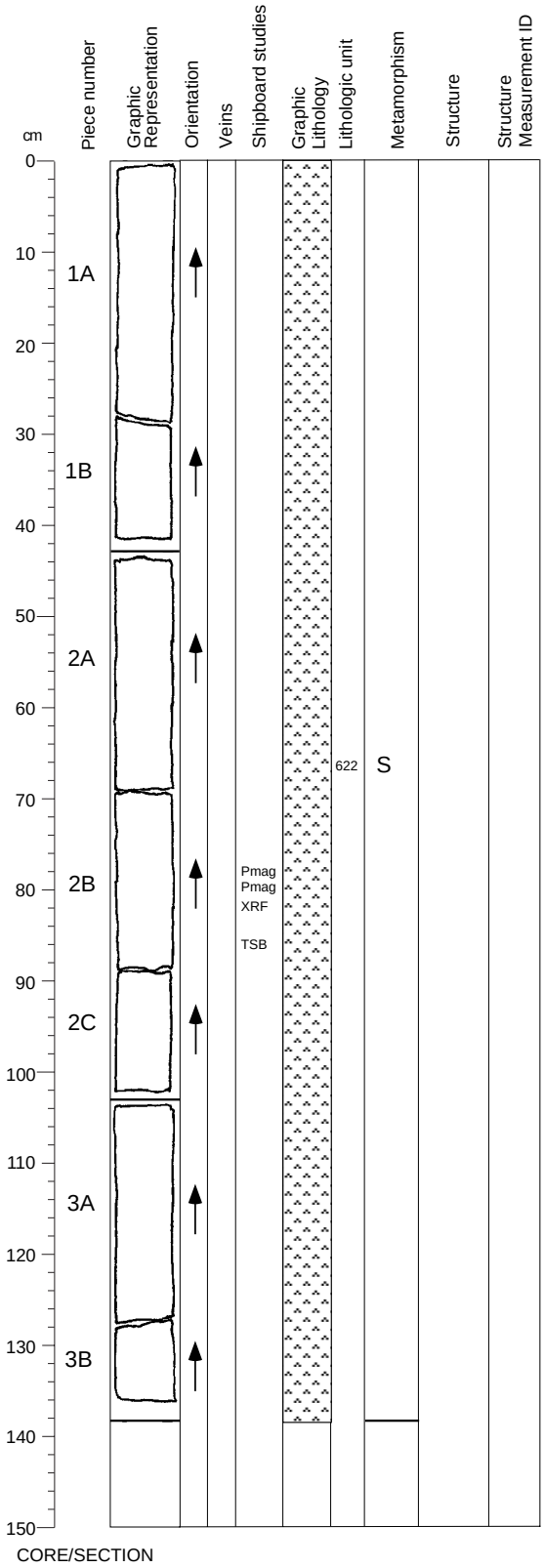
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides, and dark green smectite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network and near veins.

Background Alteration:
Degree of alteration: negligible.

Vein/Fracture Filling:
0.3 mm smectite vein in Piece 3.

Structures:
Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a vein in Pieces 3B and 3C.

Core Image



176-735B-126R-3

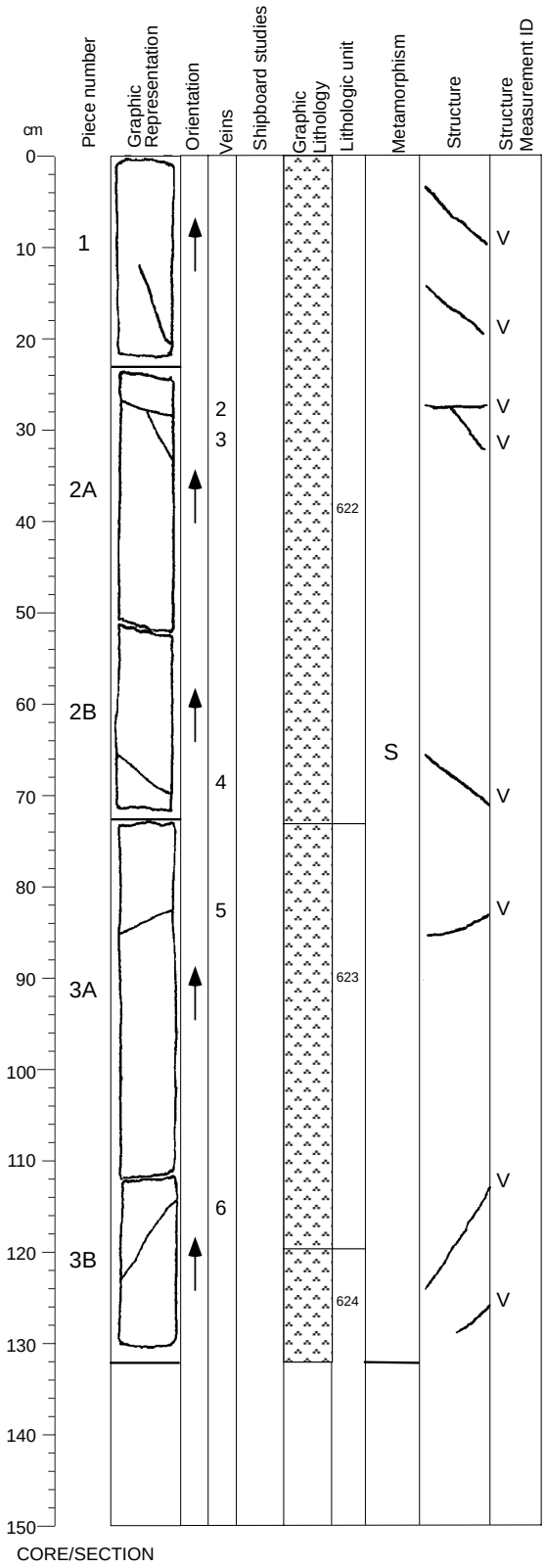
Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: tr.
Mode of occurrence: Along pyroxene cleavages.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed.
Talc and oxides, and dark green smectite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.

Background Alteration:
Degree of alteration: slight (3%). 15% of the olivine is replaced by amphibole, talc, and smectite. Alteration of plagioclase and clinopyroxene is negligible.

Structures:
Mf
This section displays a coarse-grained igneous texture, with no magmatic foliation.

Core Image



176-735B-126R-4

Interval 622: OLIVINE GABBRO
(see Section 176-735B-123R-4)
Interval 623: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	126	4	73	2B	760.23
Lower contact:	126	4	119	3B	760.69

Thickness (m): 0.46

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	60	20	8	coarse	tabular/ subhedral
Clinopyroxene	40	50	4	pegmatitic	tabular/ subhedral
Olivine	5	4	1	medium	equant/ anhedral
Opaques	0.5				angular aggregates/ disseminated
Total	105.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Pegmatitic
Modal IUGS Name (calculated): Olivine Gabbro
Type Distribution
Texture: granular N/A

Comments: Pegmatitic clinopyroxene up to 7 cm. Minor oxide.

Interval 624: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	126	4	119	3B	760.69
Lower contact:	126	5	84	2A	761.66

Thickness (m): 0.97

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	65	15	5	coarse	tabular/ subhedral euhedral
Clinopyroxene	35	20	2	coarse	equant/ anhedral
Olivine	6	6	1	medium	amoeboidal/ anhedral
Opaques	0.6				amoeboidal aggregates/ disseminated
Total	106.6*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Coarse
Modal IUGS Name (calculated): Olivine Gabbro
Type Distribution
Texture: granular uniform

Comments: Coarser-grained olivine gabbro. Grain size variable downward from pegmatitic (20-30 cm in 126R-5) to medium (40 cm in 126R-5), and to very coarse (85 cm in 126R-5).

Continued next page

Core Image

176-735B-126R-4 (cont'd)

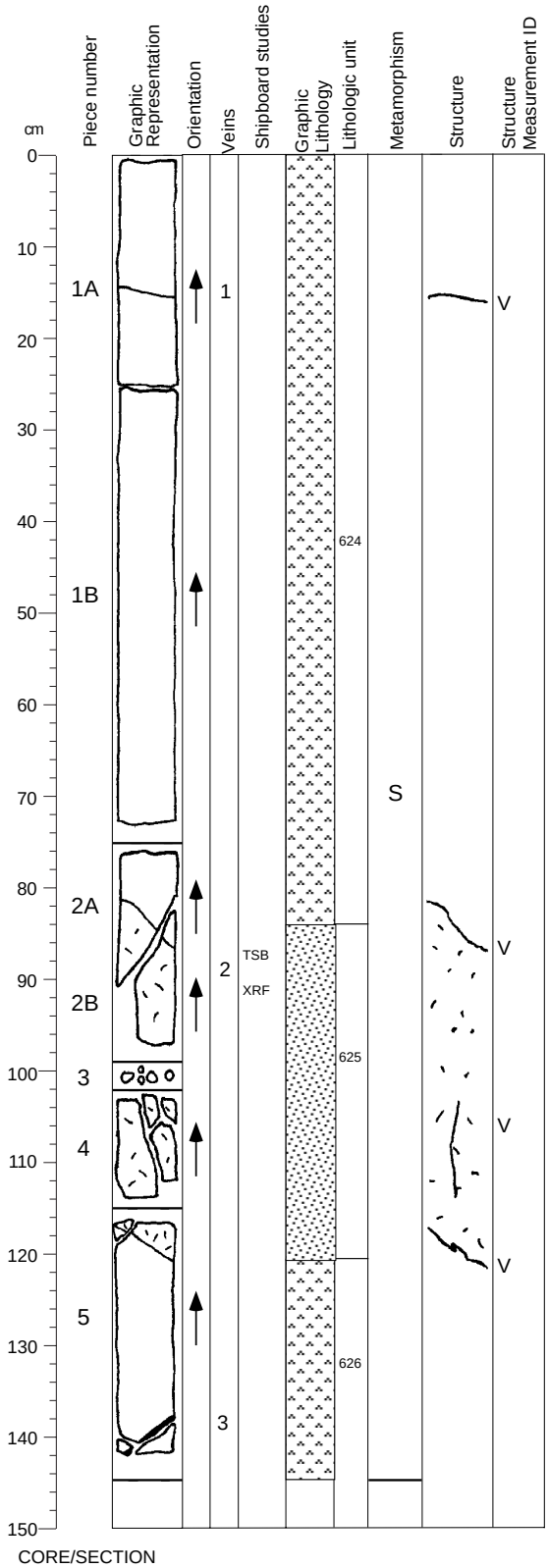
Alteration:
Dark green amphibole:
Total Percent: <3
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: trace
Mode of occurrence: Along pyroxene cleavage.
Green amphibole:
Total Percent: trace
Mode of occurrence: In alteration patches and near veins.
Secondary plagioclase:
Total Percent: <2
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, mainly near the veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Dark green smectite:
Total Percent: trace
Mode of occurrence: Replacing olivine.
Comments: Near veins.
Chlorite:
Total Percent: trace
Mode of occurrence: Near veins, associated with green amphibole.

Background Alteration:
Degree of alteration: slight (3 to 6%). Pieces 1 and 2: 15% of the olivine is replaced by amphibole, talc, and smectite. Alteration of plagioclase and clinopyroxene is negligible. Piece 3: 25% of the olivine is altered to amphibole, talc, and smectite. Alteration of clinopyroxene is negligible. 3% of the plagioclase is secondary.

Vein/Fracture Filling:
0.3-1 mm amphibole veins in Pieces 1 to 3B; 0.5 mm plagioclase+amphibole vein in Piece 2.

Mf>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a series of veins over the entire section.

Core Image



176-735B-126R-5

Interval 624: OLIVINE GABBRO
(see previous section)
Interval 625: DIORITE

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	126	5	84	2A	761.66
Lower contact:	126	5	121	5	762.03

Thickness (m): 0.37

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	85	10	4	coarse	tabular/ subhedral anhedral
Opaques	0.3				angular aggregates/ disseminated
Total	85.3*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Not Calculated
Comments: Interval of a large felsic/granodiorite/tonalite dike with coarse-grained dark amphibole crystals (~10%).

Interval 626: OLIVINE GABBRO

Interval Location:	Core	Section	Depth in Section	Piece	Depth mbsf
Upper contact:	126	5	121	5	762.03
Lower contact:	127	1	21	4	765.11

Thickness (m): 3.08

	Mode	Grain Size (mm): Max	Min	Avg. Size	Shape/Habit
Plagioclase	50	15	2	coarse	tabular/ subhedral
Clinopyroxene	35	25	2	coarse	equant/ anhedral
Olivine	7	7	1	medium	amoeboidal/ anhedral
Opaques	0.5				amoeboidal aggregates/ disseminated
Total	92.5*		(see explanatory notes)		

*Major phases estimated to ± 5%
Grain Size: Medium
Modal IUGS Name (calculated): Olivine Gabbro

	Type	Distribution
Texture:	granular	uniform

Comments: Oxide-bearing interval.Locally altered along fractures and on fragment surfaces (greenish amphiboles?). Clinopyroxene size variable (fine to medium).

Continued next page

Core Image

176-735B-126R-5 (cont'd)

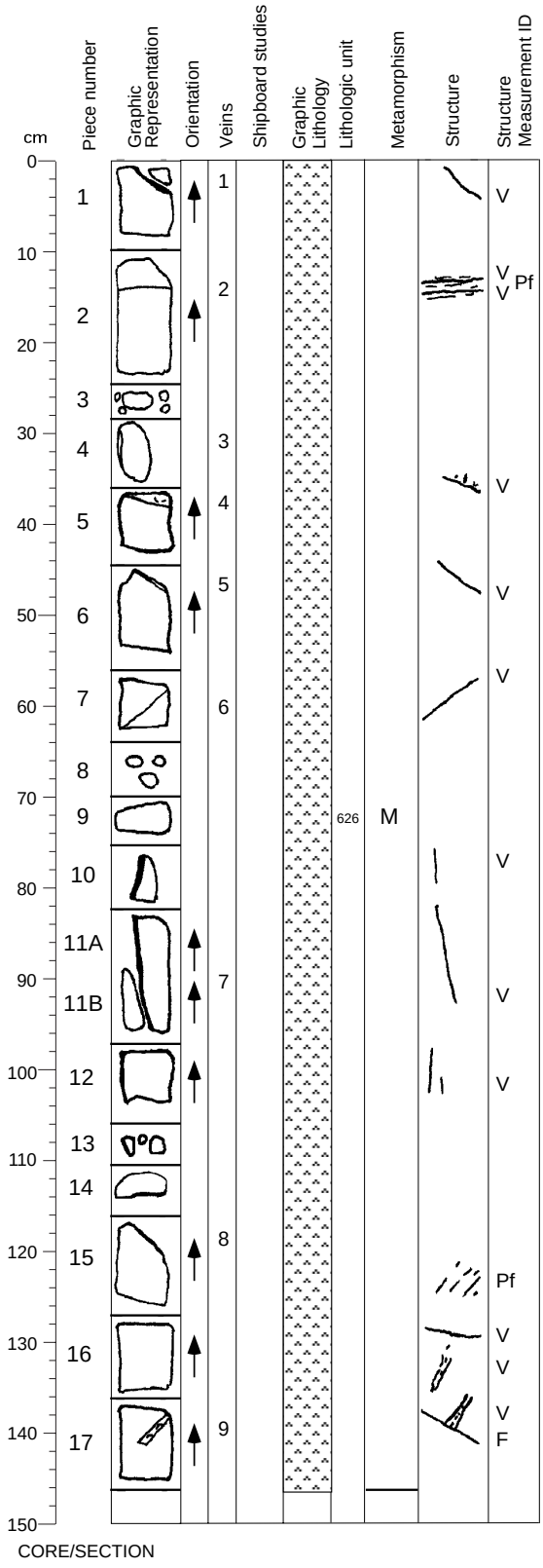
Alteration:
Dark green amphibole:
Total Percent: <1
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: Along pyroxene cleavage and as rims.
Comments: Near a diorite vein.
Green amphibole:
Total Percent: <1
Mode of occurrence: After brown amphibole in and near the felsic vein.
Secondary plagioclase:
Total Percent: <1
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, mainly near the felsic vein.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Dark green smectite:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: Near veins and cracks.
Chlorite:
Total Percent: trace
Mode of occurrence: Near veins, associated with green amphibole.

Background Alteration:
Degree of alteration: slight (3 to 10%). Pieces 1 to 2A: same as Piece 3 of previous section. Pieces 2A to 5 are a dioritic unit where an undetermined yellowish-green mineral (4% of the rock volume) is probably secondary after plagioclase and amphibole. The mineral could be clinozoisite. Piece 5: Olivine is highly altered (60%) to amphibole, talc, and abundant smectite. Clinopyroxene is weakly altered to amphibole and rare smectite. Around 1% of the plagioclase is secondary.

Vein/Fracture Filling:
1 mm plagioclase+amphibole vein in Piece 1; compound felsic vein (diorite) in Pieces 2 to 5; smectite vein in Piece 5.

Structures:
Mf>V>V
This section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a 30 cm thick magmatic vein in Pieces 2A to 5. Both the igneous host rock and the magmatic vein are cut by late veins

Core Image



176-735B-126R-6

Interval 626: OLIVINE GABBRO
(see previous section)

Alteration:
Dark green amphibole:
Total Percent: <2
Mode of occurrence: After pyroxene and olivine.
Comments: As alteration rims.
Brown amphibole:
Total Percent: <1
Mode of occurrence: After olivine, along pyroxene cleavages and as rims.
Comments: Near felsic veins.
Green amphibole:
Total Percent: <1
Mode of occurrence: After brown amphibole in and near felsic veins.
Secondary plagioclase:
Total Percent: <4
Mode of occurrence: Replacing primary plagioclase.
Comments: Irregularly distributed, mainly near felsic veins.
Talc and oxides:
Total Percent: <1
Mode of occurrence: Replacing olivine.
Comments: As mixtures in the crystal crack network.
Dark green smectite:
Total Percent: <5
Mode of occurrence: Replacing olivine.
Comments: Near veins and cracks.
Chlorite:
Total Percent: tr.
Mode of occurrence: Near veins, associated with green amphibole.

Background Alteration:
Degree of alteration: moderate (15%). Olivine is highly altered (80%) to amphibole, talc, and abundant smectite. Clinopyroxene is weakly altered to amphibole and smectite (5%). Around 8% of the plagioclase is secondary.

Vein/Fracture Filling:
0.2 mm amphibole veins in Pieces 2 and 4; 0.2-2 mm smectite veins in Pieces 1, 6, 10-13, and 15; 6 mm plagioclase + amphibole vein in Piece 17.

Structures:
Mf>V≥Of?; Mf>V; Mf>Of; Mf>V>F
Most of the section displays a coarse-grained igneous texture, with no magmatic foliation, cut by a series of veins over the entire section. A narrow, 2 cm thick zone of crystal-plastic foliation is associated with two veins in Piece 2. Piece 8 displays locally a weak crystal-plastic foliation. In Piece 17, a vein is cut by a fault.