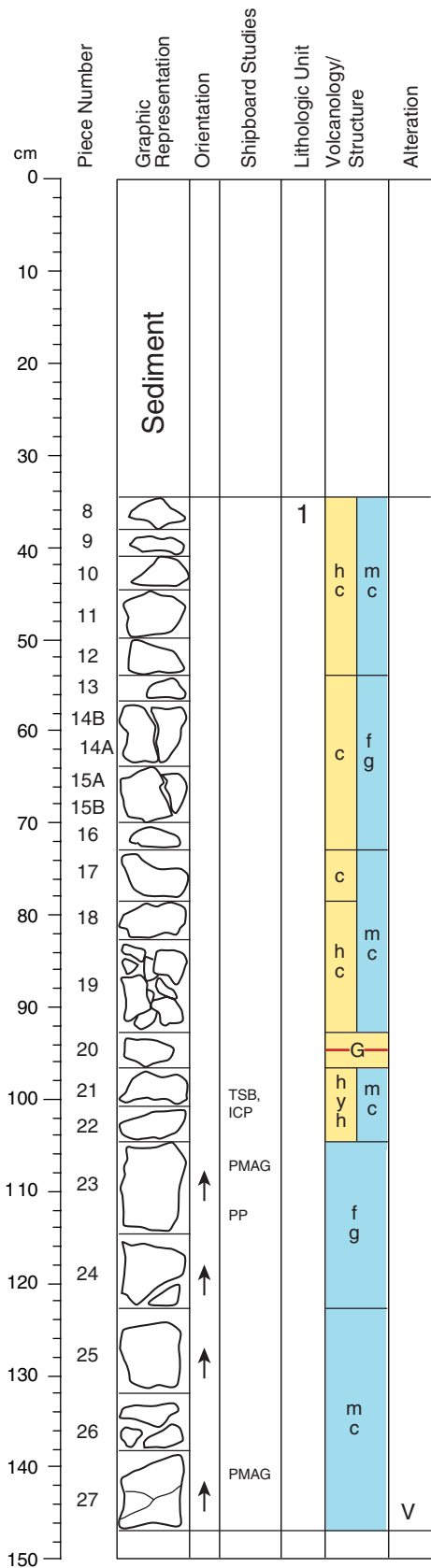


Core Photo



196-1173B-1R-1 (Section top: 737.1 mbsf)

UNIT 1: SPARSELY TO MODERATELY PLAGIOCLASE-PHYRIC BASALT

Pieces: 8–27

CONTACTS: None observed.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	3–7	5	0.5	1	Subhedral
Olivine:	≤2%	2	0.3	≤1	Subhedral to euhedral

GROUNDMASS: Microcrystalline to fine grained. Intergranular to variolitic texture with plagioclase needles and interstitial feathery pyroxene.

VESICLES: Nonvesicular. Rare subround vesicles filled with dark clays (0.1 mm).

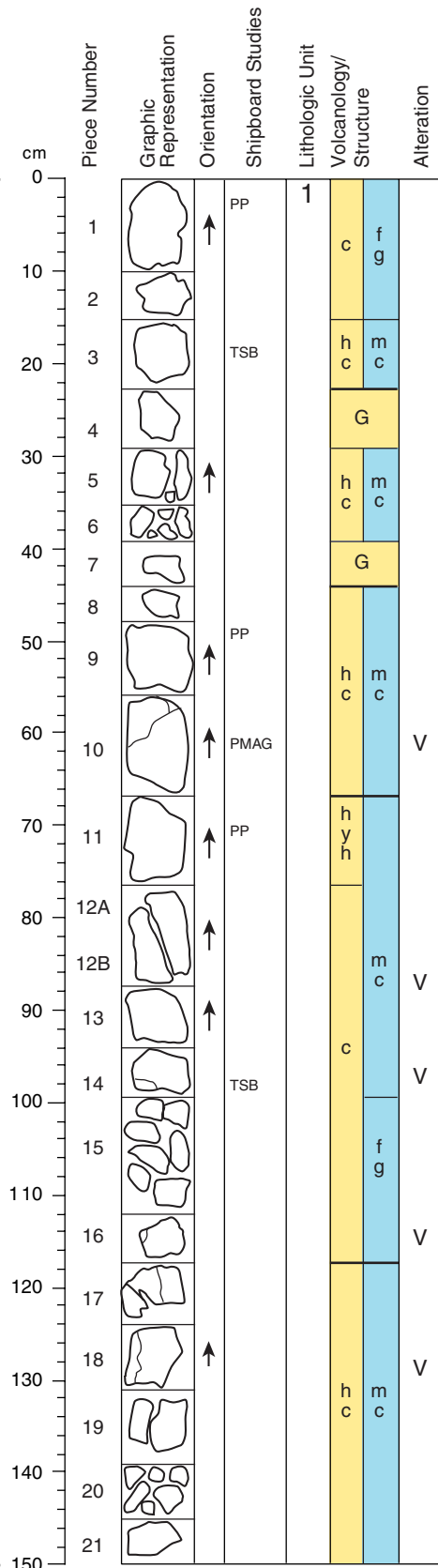
COLOR: Medium gray to light gray (N6).

STRUCTURE: Massive.

ALTERATION: Slight. Iron oxides alteration (moderate reddish brown 10R 4/6) on most pieces lining veins or concentric in individual pieces. Secondary sulfides in the groundmass or lining veins.

VEINS/FRACTURES: One vein in Piece 27 filled with white carbonates and sulfides. 1 mm width.

Core Photo



196-1173B-1R-2 (Section top: 738.581 mbsf)

UNIT 1: MODERATELY PLAGIOCLASE-OLIVINE-PHYRIC BASALT

Pieces: 1–21

CONTACTS: None observed.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	5–7	4	≤3	1.0	Subhedral to euhedral
Olivine:	2	2.5	0.3	≤1.0	Anhedral to subhedral

GROUNDMASS: Microcrystalline to fine grained. Intergranular to variolitic texture with plagioclase needles and interstitial feathery pyroxene.

VESICLES: Nonvesicular. <1%, <1 mm diameter, filled with calcite.

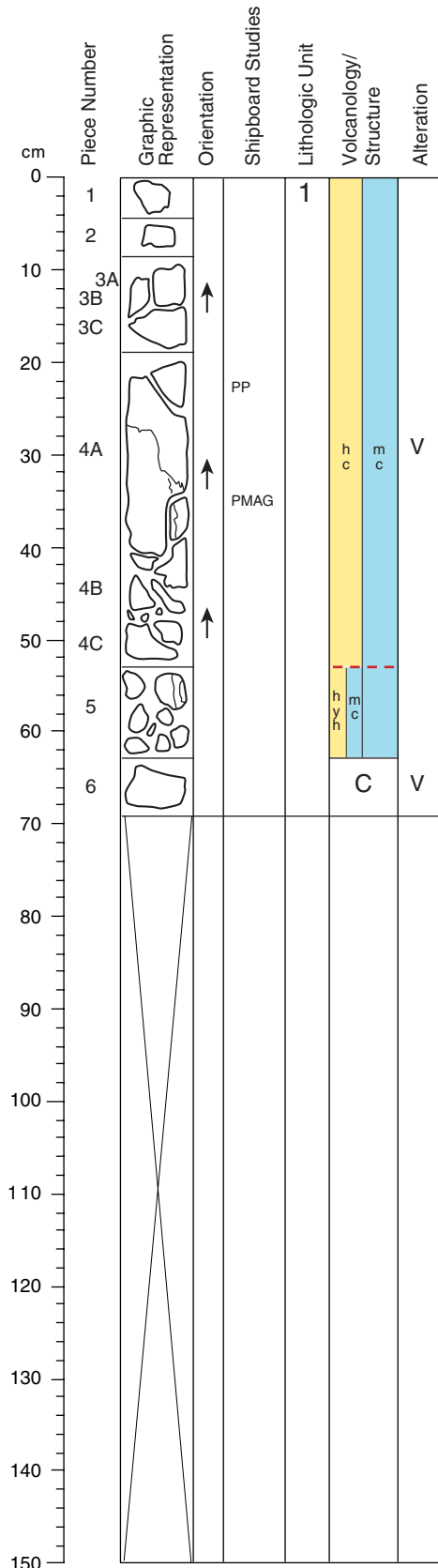
COLOR: Medium gray (N5).

STRUCTURE: Massive.

ALTERATION: Moderate. Moderate reddish-brown (10R 4/6) alteration halos throughout section. Olivine phenocrysts are highly to completely altered.

VEINS/FRACTURES: <2 mm wide, random orientation. Veins are filled with white and green material, includes calcite.

Core Photo



196-1173B-2R-1 (Section top: 746.8 mbsf)

UNIT 1: SPARSELY TO MODERATELY PLAGIOCLASE-PHYRIC BASALT

Pieces: 1–6

CONTACTS: None observed.

	%	Grain Size (mm):			Shape/Habit
		Mode	Max	Min	
Plagioclase:	3	4	0.3	1	Subhedral

GROUNDMASS: Microcrystalline to fine grained. Intergranular to variolitic texture with plagioclase needles and interstitial feathery pyroxene.

VESICLES: Nonvesicular. A few may be present but are completely filled with dark green clay.

COLOR: Dark gray (N3).

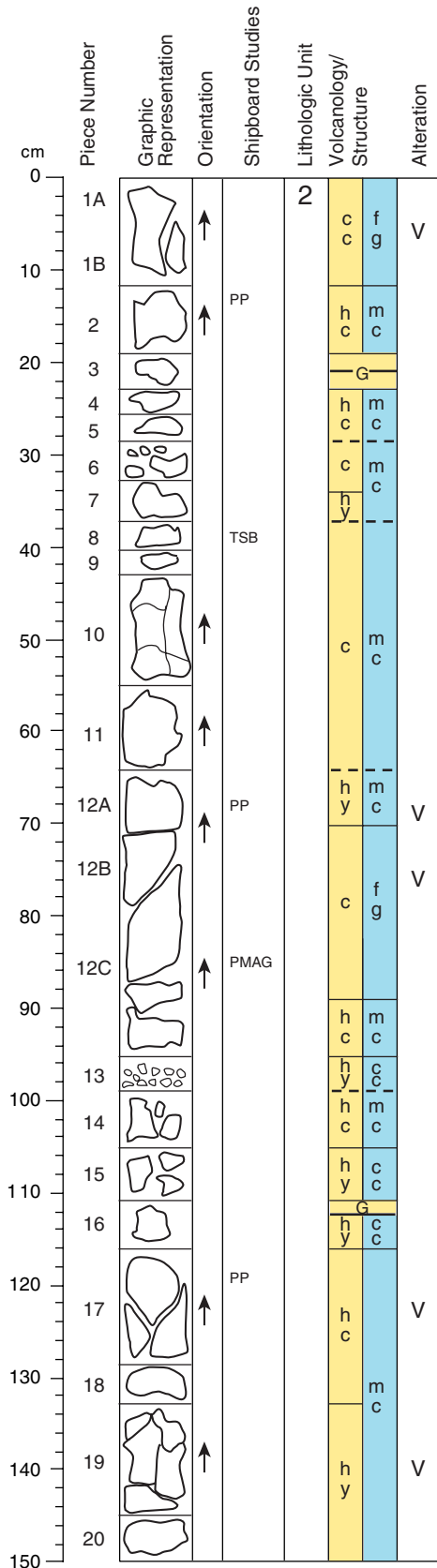
STRUCTURE: Massive.

ALTERATION: Slight to moderate. Fractures and veins have a concentric moderate reddish brown (10R 4/6) halo 3–5 mm away and 1–2 mm wide. A single 1 mm sulfide grain is present near the bottom of Piece 3C.

VEINS/FRACTURES: A few veins are present in Pieces 4–6, and are ≤3 mm wide and filled with white, black, and moderate reddish-brown (10R 4/6) minerals.

COMMENTS: Small plagioclase phenocrysts and groundmass are acicular and subhedral, the larger ones are subhedral and more equidimensional.

Core Photo



196-1173B-3R-1 (Section top: 751.7 mbsf)

UNIT 2: MODERATELY PLAGIOCLASE-OLIVINE-PHYRIC BASALT

Pieces: 1–20

CONTACTS: None observed.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	10	5	0.3	2	Subhedral to euhedral
Olivine:	2-3	2	0.2	1.5	Anhedral to subhedral

GROUNDMASS: Microcrystalline to fine grained. Intergranular to variolitic texture with plagioclase needles and interstitial feathery pyroxene. Variolitic texture particularly well defined in Piece 14.

VESICLES: Nonvesicular. Generally <1% and filled with dark clays; more abundant 1%–2% in Pieces 10 and 11.

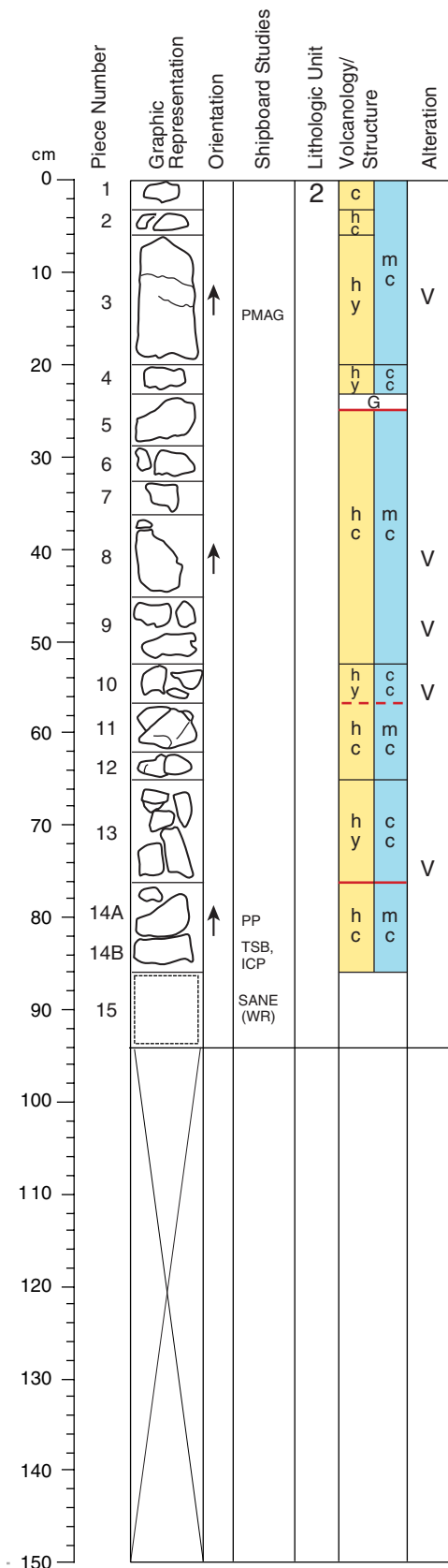
COLOR: Medium gray (N5).

STRUCTURE: Massive.

ALTERATION: Slight. Reddish-brown (10R4/6) alteration halos throughout section. Olivine phenocrysts are completely altered. Secondary sulfides in groundmass.

VEINS/FRACTURES: Less than 1 mm wide carbonate veins; a 12 cm long vein separates pieces 12A and 12B.

Core Photo



196-1173B-3R-2 (Section top: 753.2 mbsf)

UNIT 2: MODERATELY PLAGIOCLASE-OLIVINE-PHYRIC BASALT

Pieces: 1–14

CONTACTS: None observed.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	10	5	<0.3	1.5	Euhedral laths
Olivine:	2-4	2	<0.2	<1	Equant euhedral to subhedral

GROUNDMASS: Microcrystalline to fine grained. Intergranular to variolitic texture with plagioclase needles and interstitial feathery pyroxene

VESICLES: Nonvesicular. Vesicles present throughout. Generally <1%, 1%–2% in Piece 14). Small (~1 mm), spherical, and completely filled with grayish black (N2) or white or moderate brown (5yr 5/4) minerals.

COLOR: Medium dark gray (N4).

STRUCTURE: Massive. Variation in grain size and vesicle abundance suggests pillows.

ALTERATION: Moderate. Occurs along grains and fractures. Olivine is often partially to completely pseudomorphed by clays and reddish brown (10R 4/6) minerals but still shows characteristic fracture patterns. An olivine phenocryst in Piece 3 has an unaltered center. Some variolitic patches appear to be silicified (e.g., Pieces 3 and 11a).

VEINS/FRACTURES: Fractures and veins are infilled with moderate brown (5 YR 5/4) or white minerals. Some larger veins are lined with moderate yellowish brown (10YR 5/4) on the fracture walls and subsequently infilled with coarse white crystalline material. Pyrite is also present in some veins. Fractures are randomly oriented and <2 mm wide.

Leg	Site	Hole	Core	Sct.	Top	Bot	Pc	Ship Code	Unit	Req. by	Box Pos.	Desc.	Purpose	Photomicrograph #
					Curated									
196	1173	B	1R	1	99	101	21	1	1		1	YES	General flow sample	1173B-5 (see also Chapter 3, Figure F39), 1173B-6
196	1173	B	1R	2	18	20	3	2	1		2	YES	Alteration	
196	1173	B	1R	2	97	100	14	3	1		3	YES	Alteration + vein	1173B-1 (see also Chapter 3, Figure F37), 1173B-3 , 1173B-4 1173B-2 (see also Chapter 3, Figure F38)
196	1173	B	3R	1	38	40	8	4	1		4	YES	Alteration	
196	1173	B	3R	2	83	85	14B	5	1		5	YES	General flow sample	

196-1173B-1R-1, 99-101 cm		Piece No.: 21	Unit: 1	OBSERVER:	CRN, SR, TT, PT.			
ROCK NAME:	Moderately Plagioclase-Phyric Basalt							
WHERE SAMPLED:	General flow sample.							
GRAIN SIZE:	Fine grained, microcrystalline.							
TEXTURE:	Porphyritic, (subophitic to intergranular), Variolitic.							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
PHENOCRYSTS								
Plagioclase	2	2	2	2.5	2.2		Subhedral. Blocky, columnar.	Slight resorption along margins.
GROUNDMASS								
Plagioclase	45	45	0.2	1.3	0.8		Subhedral laths.	Often skeletal and fork-like.
Clinopyroxene	40	45	0.05	0.2	0.1		Subhedral to anhedral.	Feathery masses between plagioclase laths.
Titanomagnetite	3	3	0.01	0.1	0.05		Sub to euhedral, equant.	Skeletal octahedra. Interstitial to plagioclase and intergrown with clinopyroxene.
Glass	0	5					Interstitial.	Replaced by brown and green clay.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Brown clay	8						Glass, clinopyroxene/vesicles.	
Green clay	2						Glass/vesicles.	
Calcite	<1						Vesicles.	
VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)			FILLING / MORPHOLOGY	COMMENTS	
			min.	max.	av.			
Vesicles	<1				0.8		Green and brown clay, calcite. Round.	
COMMENTS :	Feathery clinopyroxene and fork-like plagioclase in groundmass are indicative of high cooling rates. Clinopyroxene in groundmass partly replaced by very fine-grained amorphous material.							

196-1173B-1R-2, 18-20 cm		Piece No.:3	Unit:1	OBSERVER:	PT SR CN, TT.			
ROCK NAME:	Moderately Plagioclase-Phyric Basalt.							
WHERE SAMPLED:	Adjacent to vein.							
GRAIN SIZE:	Aphanitic, fine-grained, crypto-crystalline.							
TEXTURE:	Variolitic, porphyritic.							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
PHENOCRYSTS								
Plagioclase	8	8	<0.1	3			Subhedral/euhedral, equant.	
GROUNDMASS								
Plagioclase	25	40	<0.1				Elongate and spiky.	
Pyroxene	<5	45	<0.1	<1			Acicular, aggregates in radiating fans.	Now pseudomorphed by brown amorphous material-imperfect smectite?
Glass	0	7?						
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
Brown/orange amorphous clays	58	0					Replacing pyroxene and glass.	Amorphous.
Calcite	1	0					Fills veins.	White and fibrous.
Orange /red material	1	0					Fills veins.	
Opaque minerals	1	1					Occasionally lines veins.	
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
Vesicles	<1				<1		Spherical, filled with clays and calcite.	
Veins	<1				<1		Calcite and dark brown amorphous material (smectite?)	
COMMENTS :	A large (5 mm diameter), rounded plagioclase showing undulose extinction and ragged edges (suggesting resorption) is present in the middle of the slide. Xenocrystic? Photomicrograph 1173B-6: Suspected plagioclase xenolith displaying ragged edges and undulose extinction. A ~1mm vein is present 1 cm below section label. Infilled with calcite. Well developed variolitic texture indicative of high cooling rates- sample near edge of lobe?							

196-1173B-1R-2, 97-100 cm		Piece No.:14	Unit:1	OBSERVER:	MR, RCN, JG, SR, TT.			
ROCK NAME:	Moderately Plagioclase-Phyric Basalt.							
WHERE SAMPLED:	Altered portion including vein.							
GRAIN SIZE:	Fine grained, microcrystalline.							
TEXTURE:	Porphyritic, intergranular.							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
PHENOCRYSTS								
Plagioclase	3	3	0.8	2.5	1		Subhedral, prismatic.	Some resorption along margins. Sericite fills fractures.
GROUNDMASS								
Plagioclase	45	45	0.05	0.8	0.2		Subhedral laths.	Random orientation.
Clinopyroxene	40	40	0.1	0.5	0.2		Subhedral, acicular.	Radiating fans of needle-like crystals.
Titanomagnetite	7	7			0.01		Subhedral to euhedral, equant.	Usually occurs with clinopyroxene.
Glass	0	4					Interstitial.	Completely altered to red-brown clay.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
Calcite							Veins and vesicles.	
Zeolite? Silica?							Veins.	
Red-brown clay	4						Filling veins, replacing glass.	
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
Vesicles	<1				0.6		Calcite, brown clay. Round.	
COMMENTS :	Sample contains 1.6 mm-wide vein, which has been concentrically filled with calcite (50%), red brown clay (20%) and a zeolite mineral (30%) in several stages. Alteration of primary igneous mineralogy is most intense within 1 cm of this vein.							

196-1173B-3R-2, 83-85 cm		Piece No.: 14B		Unit: 1	OBSERVER:	CRN, SR, JG.		
ROCK NAME:	Moderately Plagioclase-Olivine-Phyric Basalt.							
WHERE SAMPLED:	General flow sample.							
GRAIN SIZE:	Fine grained, microcrystalline.							
TEXTURE:	Porphyritic, subophitic to intergranular with subvolcanic patches.							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
PHENOCRYSTS								
Plagioclase	3	3	0.8	1.5	1		Subhedral, blocky.	Often display concentric zonation. Sometimes skeletal. Occasional glomerocrysts are present.
Olivine	0	1	0.2	0.4	0.3		Euhedral to subhedral, equant.	Defined by crystal shape, completely altered and replaced by green-brown clay.
GROUNDMASS								
Plagioclase	45	45	0.05	0.4	0.2		Subhedral to anhedral.	Laths, sometimes skeletal.
Clinopyroxene	38	40	0.01	0.3	0.15		Anhedral.	Equant prisms and feathery masses.
Titanomagnetite	2	2	0.01	0.07	0.04		Euhedral, equant.	Octahedra, often skeletal.
Sulfide	<1	<1			0.01		Anhedral.	Blebs.
Glass	0	9					Interstitial.	Completely altered to green-brown clay.
SECONDARY MINERALOGY	PERCENT	LOCATION	SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Green-brown clay	11						Olivine, glass, clinopyroxene/vesicles.	
Zeolite	<1						Vesicles.	
VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)			FILLING / MORPHOLOGY	COMMENTS	
			min.	max.	av.			
Vesicles	<1				0.8		Green-brown clay, zeolite(?). Round.	
COMMENTS :								

196-1173B-3R-1, 38-40 cm		Piece No.:8	Unit: 1	OBSERVER:	PT, SR, CRN, JG, TT.			
ROCK NAME:	Moderately Plagioclase-Olivine-Phyric Basalt.							
WHERE SAMPLED:								
GRAIN SIZE:	Fine grained, microcrystalline.							
TEXTURE:	Trachytic in parts, relic variolitic texture?							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			APPROX. COMP.	MORPHOLOGY	COMMENTS
			min.	max.	av.			
PHENOCRYSTS								
Plagioclase	10	10		3	<1		Euhedral-subhedral. Equant-elongate.	Fractured- some clay and sericite development on margins and along cracks.
Olivine	0	<1		1.5	1.25		Equant, displays characteristic fracture patterns.	Pseudomorph- replaced by serpentine and talc.
GROUNDMASS								
Plagioclase	40	42	0.15					Often grains are skeletal- quenching?
Opaque minerals	1-2	1-2	<0.15	0.2			Sub to euhedral, cubic.	
clinopyroxene	2	44	<1				Subhedral.	Partly replaced by clays (and maghemite?)
SECONDARY MINERALOGY	PERCENT		SIZE (mm)				REPLACING / FILLING	COMMENTS
			min.	max.	av.			
Brown/orange amorphous clays	45	0					Sometimes replacing Olivine, Pyroxene.	Amorphous material. Few crystal outlines.
Talc	<1	0					Sometimes replacing Olivine.	Mg-rich olivine?
Serpentine	<1						Sometimes replacing Olivine.	
VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)				FILLING / MORPHOLOGY	COMMENTS
			min.	max.	av.			
Vesicles	<1			<1			Filled with clays, round.	
COMMENTS :	Note: With plagioclase, SIZE refers to crystal length. Glass may have originally been present, but no evidence for it. Photomicrograph 1173 B-1: Olivine phenocryst pseudomorphed by talc. Photomicrograph 1173 B-3: Plagioclase showing quench textures. Photomicrograph 1173 B-4: Glomerocrystic plagioclase surrounded by groundmass. Note trachytic domain on right.							