148-896A-1R-1 (Piece 3, 7-14 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 1

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Cryptocrystalline to microcrystalline. TEXTURE: Glomerophyric; radiate-variolitic.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	0.8	0.2 - 0.45		Euhedral, equant.	
Plagioclase	3.8	3.8	0.2-1.6		Euhedral-anhedral, equant to lath shaped.	
Spinel GROUNDMASS	Tr	Tr	0.01-0.04		Euhedral, equant.	
Unspecified	95.4	95.4				Variolitic, defined by spherulitic growth, round swallowtail plagioclase, quench crystals. The spherulitic texture in the variolitic zone grades into plumose texture.
SECONDARY		REPLACING	4			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clay	0.8	Olivine.				Light-green to colorless, in subvariolitic pillow rim and a 0.02-mm vein.
Fe(OH) minerals.	Tr	Opaque mine				yuwa.
VESICLES/			SIZE		***************************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Vein is 0.02-mm wide and composed of green nontronite. Groundmass is partly altered to brown clay (palagonite?). Black opaque mineral microcrysts have developed along spherulite margins.

148-896A-1R-1 (Piece 4, 14-21 cm)

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Seriate porphyritic; intergranular.

OBSERVER: IMS

WHERE SAMPLED: Unit 2

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.8	0.2 - 1.1		Equant.	
Plagioclase	5.8	5.8	0.2-2.5		Euhedral-anhedral, equant to plates or laths.	
Spinel	Tr	Tr	0.03-0.15		Euhedral-subhedral, equant.	
GROUNDMASS					vquann	
Unspecified	92.4	92.4				Quench plagioclase (swallowtail) common, varying in length from 0.05-1.2 mm. Olivine and clinopyroxene are other groundmass phases. Sheaf-spherical and branching textures are common.
SECONDARY		REPLACING	/			* Process and the second of the second of the process of the second of t
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2	Olivine and	interstitial mater	ial.		Green or brown color. With calcite after olivine. With iddingsite in brown oxidized alteration band,
Carbonate	Tr	Olivine.				Partially filling pseudomorph after olivine. Has an outer rim of smectite.
Fe(OH) minerals.	Tr	Groundmass				Disseminated in brown oxidized band.
VESICLES/			SIZE		***************************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles			1970(1911)			None.

COMMENTS: Two 1-1.5-mm-wide brown oxidized bands cut across the section and a lighter brown zone cuts one edge of the section. "Iddingsite" is concentrated in the three brown zones but is also present in lesser amounts throughout the section.

148-896A-1R-1 (Piece 11, 47-55 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 3

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Cryptocrystalline to microcrystalline.

Ordini Oik	as erjproerjou	mie to interoc	a journie.
TEXTURE:	Glomerophyric	to porphyritic:	radiate-intersertal.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	0.6	0.1 - 0.35		Euhedral, equant.	
Plagioclase	5.6	5.6	0.34-2.6		Euhderal-anhedral,	
					equant to laths.	
Spinel	Tr	Tr	0.02 - 0.17		Euhedral-anhedral,	
					equant.	
GROUNDMASS						
Unspecified	93.6	93.6				Fan-shaped quench crystals common. Comb texture defined by
						plagioclase and clinopyroxene intergrowth is also common.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	0.6	Olivine and	plagioclase.			Pale brown (saponite?) that partly replaces plagioclase where cut by
						veinlets.
Carbonate	Tr	Vein.				Blocky crystals.
Fe(OH) minerals	Tr					
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section is cut by three 1- to 3-mm-wide veins with 2- to 3-mm-wide oxidation halos. Veins are composed of an outer zone of smectite and an inner zone of calcite (mostly plucked out). The section is also cut by several 0.08-mm-wide pale brown (saponite?) veinlets. Fibers in these veins are perpendicular to the vein walls. Brown Feoxyhydroxide staining and replacement of plumose clinopyroxene was recorded.

148-896A-2R-1 (Piece 2, 5-12 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 4

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.4	0.1 - 0.4		Euhedral, equant.	
Plagioclase	5	5	0.3-2.4		Euhedral-subhedral, equant.	
Spinel	Tr	Tr	0.02-0.1		Euhedral-subhedral, equant.	
GROUNDMASS					25	
Unspecified	93.6	93.6				Branching quench crystals of plagioclase and olivine fill intersticies between larger, 0.04-1 mm plagioclase crystals. Comb texture is common.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	1.4	Olivine and	interstitial materia	d.		With iddingsite after olivine. Variously colored, colorless to green to yellow to brown, and colloform when after interstitial material, or space. Minor replacement of plagioclase on cracks.
VESICLES/	DED CENTER		SIZE		011470	COLOGRATION
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Brown Fe-oxyhydroxide staining, or replacement of plumose clinopyroxene. Very rare olivine cores still present.

WHERE SAMPLED: Unit 7

148-896A-2R-1 (Piece 10, 41-50 cm) ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Cryptocrystalline to glassy. TEXTURE: Glomerophyric-porphyritic; radiate (variolitic).

PRIMARY	50000 NO 000 NO 000 NO	PERCENT	SIZE	COMPO-			
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS	
Olivine	0	1.6	0.05 - 1.0		Euhedral, equant. Euhedral-subhedral, laths and needles.		
Plagioclase	4	4	0.2-3.5				
Spinel	Tr	Tr	0.02-0.08		Euhedral-subhedral, equant.		
GROUNDMAS Unspecified 94.4							
		94.4				Gradational change from pure glass to variolitic zone, and further into a honeycomb texture. Plagioclase typically shows a swallow- tail morphology.	
SECONDARY		REPLACING	1				
MINERALOGY	PERCENT	FILLING				COMMENTS	
Clays	1.6	Olivine.				Pale brown saponite(?) completely replaces olivine.	
Palagonite	Tr	Glass.				Pale green or yellowish green.	
VESICLES/			SIZE				
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS	
Vesicles						None.	

OBSERVER: IMS

WHERE SAMPLED: Unit 7

148-896A-2R-1 (Piece 19, 82–90 cm) ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Porphyritic to glomerophyric; radiate, intersertal.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	1.8		0.1-1.2		Euhedral, equant.	
Plagioclase	3.2		1.28-0.2		Euhedral to subhedral.	
Spinel	Tr	Tr	0.4-0.8		Equant, euhedral to subhedral.	
GROUNDMASS						
Plagioclase	34.8					
Olivine	21.7					Olivine and clinopyroxene show skeletal, feathery, and branching granular textures. Comb textures are also common, and are defined by intergrowths of plagioclase, olivine, and clinopyroxene.
Clinopyroxene	34.2					
Magnetite SECONDARY	1.3	? REPLACING	3/			
MINERALOGY	PERCENT	FILLING	25.0			COMMENTS
Clays	2	Olivine, int	erstitial.			Colorless smectite and "iddingsite." In glass or voids, colloform green, yellow at center, or zoned orange to reddish brown.
Iron hydroxide	Tr	Vein.				Dark brown to orange, 0.02 mm wide.
VESICLES/		**************	SIZE			***************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The entire section is oxidized, but the intensity varies across the slide. Fine-grained magnetite is associated with red FeOOH around pores and phenocrysts that are filled with green clay (0.8 mm).

148-896A-2R-1 (Piece 21, 94-101 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 7

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Cryptocrystalline to fine-grained. TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.6	0.2-0.8		Euhedral, equant.	
Plagioclase	6.8	6.8	0.2-3.1		Euhedral to subhedral, equant to plates.	
Spinel	Tr	Tr	0.03-0.12		Euhedral to subhedral, equant.	
GROUNDMASS					2 Yes (2 Yes 7 2 2 2 2	
Unspecified	90.6	90.6				Plagioclase needles range in size from 0.05–1.5 mm. Plagioclase, olivine, and clinopyroxene fan and spherical quench structures have nucleated on these plagioclase needles. Comb texture is common.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2.6	Olivine and	interstitial material			Colorless to brown when replacing olivine. Colloform, beige to green or colorless to tan when replacing interstitial material (glass or voids?). Also rarely light green clay in plagioclase.
Carbonate	Tr	Interstitial m	naterial and vugs.			, , , , , , , , , , , , , , , , , , , ,
Palagonite	Tr	Glass.				Replacement of glass inclusions in plagioclase phenocrysts.
VESICLES/	*************		SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

148-896A-3R-1 (Piece 7, 41-44 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 8

ROCK NAME: Moderately phyric plagioclase basalt. GRAIN SIZE: Cryptocrystalline-microcrystalline. TEXTURE: Glomerophyric-porphyritic; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	0.2	0.2 - 0.5		Euhedral, equant.	
Plagioclase	2.2	2.2	0.1-1.5		Euhedral, equant to lath shaped.	
Spinel	Tr	Tr	0.02-0.09		Euhedral to anhedral, equant.	
GROUNDMASS						
Unspecified	97.6	97.6				Swallowtail plagioclase, 0.05–1.0 mm with quench plagioclase olivine, and clinopyroxene forming branching and spherulitic textures. Titanomagnetite, 0.001–0.005 mm diameter are also present.
SECONDARY		REPLACING				
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	Tr	Olivine and	groundmass.			Green-brown when after groundmass; tan to yellowish-tan fibers after clay.
Fe(OH) minerals	Tr	Groundmass				In brown alteration halos adjacent to veins.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section is cut by a 0.3-mm-wide vein composed of early nontronite (green) with later saponite (pale yellow to bright yellow) + phillipsite + saponite (green) + aragonite. Saponite veins approximately (0.1 mm wide) were also recorded.

148-896A-3R-1 (Piece 9A, 83-86 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 9

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; radiate-intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS Olivine	0	1.0	0.2-0.8		Euhedral, equant.	
Plagioclase	4.2	4.2	0.2-2.0		Euhedral to subhedral, equant to plate shaped.	
Spinel	Tr	Tr	0.03-0.15		Euhedral to subhedral, equant.	
GROUNDMASS						
Unspecified	94.8	94.8				Plagioclase ranges in size from 0.01-1.0 mm. Sheaf, branch, and comb textures defined by plagioclase, olivine, and clinopyroxene intergrowth.
SECONDARY		REPLACING				
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	1.0	Olivine and	interstitial material	•		Olivine replaced by colorless saponite at core and saponite + aragonite + Fe-oxyhydroxide minerals at the rim.
Carbonate	Tr	Olivine.				Aragonite.
Fe(OH) minerals	Tr	Olivine, inte	erstitial material.			Rims of olivine. Staining "plumose" clinopyroxene in groundmass.
Iddingsite	Tr	Olivine.				
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Majority of thin section is of a brown oxidized alteration zone. Section is cut by a 0.15-mm-wide Fe-oxyhydroxide mineral vein, with minor local aragonite at its core, which is cut and locally reopened by a 0.25-mm-wide aragonite vein. Several thin, <0.02-mm-wide, Fe-oxyhydroxide mineral veins were also recorded.

148-896A-3R-1 (Piece 17, 143-146 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 9.

ROCK NAME: Moderately phyric olivine-plagicclase basalt.
GRAIN SIZE: Cryptocrystalline to fine-grained.
TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	СОМРО-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	1	1.6	0.2-1.0		Euhedral to subhedral, equant.	
Plagioclase	2.4	2.4	0.2-2.0		Euhedral to anhedral, equant to tabular.	Fresh glass inclusions in some grains.
Spinel	Tr	Tr	0.04-0.1		Euhedral-subhedral, equant.	
GROUNDMASS						
Unspecified	94.6	94.6				Sheaf-spherical, branching, plumose, and comb textures defined by intergrown plagioclase, olivine, and clinopyroxene. Plagioclase crystals range from 0.02-1.0 mm long.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2	Olivine and	plagioclase.			Tan saponite after olivine. Saponite in cracks in plagioclase.
Smectite	Tr	Interstitial r	naterial.			Voids or glass? Green to yellowish brown color.
Carbonate	Tr	Olivine.				
Iddingsite	Tr	Olivine and	groundmass.			In cracks and rims of olivine. In red oxidized band.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section is cut by 0.1- to 0.8-mm-wide veins composed of iddingsite, followed by smectite and aragonite. Minor pyrite occurs both in aragonite and clay. Red oxidized band cuts across a relict olivine in a glomerophyric aggregate. Oxidized zone is defined by iddingsite staining and replacement of interstitial material.

WHERE SAMPLED: Unit 9

148-896A-4R-1 (Piece 1, 5-8 cm) ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.2	0.1-0.5		Euhedral, equant.	
Plagioclase	5.6		0.15 - 1.2		Euhedral, equant-laths	
Spinel GROUNDMASS	Tr	Tr	0.03-0.14		Euhedral-anhedral, equ	uant.
Magnetite					Equant.	
Unspecified	92.2				. 1004.40.0700000	Swallowtail plagioclase (0.02-1.1 mm). Intergrown plagioclase and olivine defines sheaf-spherical and branching quench textures.
SECONDARY		REPLACING	1			/6
MINERALOGY	PERCENT	FILLING			(1/47)	COMMENTS
Clays	2.2	Olivine, Inte	erstitial voids.			Pale brown smectite replaces olivine and fills in void spaces. Glass inclusions in plagioclase also replaced. Partial replacement of plagioclase.
Aragonite		Veins.				Fibrous, prismatic.
Iddingsite	Tr		terstitial material.			
VESICLES/		***************************************	SIZE	*************		
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	

COMMENTS: The section is crosscut by vein filled by saponite at margins and fibrous prismatic aragonite at core and contains 0.002-mm-wide brown iddingsite + green clay vein. Subtle alignment of groundmass plagioclase grains that have partially altered to pale buff colored clays into 1-mm-wide trails is observed.

148-896A-4R-1 (Piece 9C, 75-80 cm)

WHERE SAMPLED: Unit 9

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Glassy to cryptocrystalline. TEXTURE: Porphyritic, variolitic.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0.3	0.8	0.2 - 1.0		Euhedral, equant.	
Plagioclase	2.2		0.5-2.0		Euhedral to anhedral, equant to tabular.	
Spinel	Tr	Tr	0.02-0.06 mm		Euhedral to anhedral, equant.	
GROUNDMASS						
Unspecified	97					Typical variolitic development from the dendritic overgrowth on plagioclase crystals in the glass zone to spherical bodies that coalesce and further develop into a honeycomb texture.
SECONDARY		REPLACING/				
MINERALOGY	PERCENT	FILLING				COMMENTS
Saponite	0.5	Olivine.				Olivine partially replaced in the variolitic area and completely replaced on the glassy rim.
Smectite		Veins, glass.				Yellow-green. In veins and replacing glass on margins of veins.
Zeolite	Tr	Vein				Associated with clay minerals.
VESICLES/			SIZE			
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	

COMMENTS: Pillow rim contains fresh glass. Vein (<0.03 mm wide) is filled by fibrous light green to tan clays. Yellow clay rims varioles and phenocrysts in the glass. 1-mmvein, mostly plucked, contains clay and zeolite (phillipsite?).

WHERE SAMPLED: Unit 10

148-896A-5R-1 (Piece 9A, 49–52 cm) ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Cryptocrystalline-fine-grained. TEXTURE: Porphyritic-glomerophyric/radiate.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS	0	0.6	0.1.00		2210 10 0	
Olivine Plagioclase	5.2	0.6 5.2	0.1-0.2 1-2		Euhedral, equant. Euhedral to anhedral,	
Spinel	Tr	Tr	0.05-0.1		equant to tabular. Euhedral to subhedral, equant.	
GROUNDMASS					equant.	
Unspecified	94.2					Plagioclase needles range in size from 0.05-1.5 mm. Spherulitic textures.
SECONDARY		REPLACING	4		9	
MINERALOGY	PERCENT	FILLING	51			COMMENTS
Clays (green)	0.6	Olivine, gla	ss.			
Clays (tan) Clays (tan-brown)		Spherules, c Dessication	ement.			Pale brown and colorless clays in spherules replace glass.
Zeolite		Glass.				Phillipsite (?), chabazite (?).
VESICLES/	DEDCE	LOCATION	SIZE	PR 1 11 10	(017.170	
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS None.
148-896A-5R-2 (Pie ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer	derately phyrocrystalline t	ric plagioclase o fine-grained	•	OBSERVER: IM	S WHERE SAM	APLED: Unit 10
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomer	derately phyrocrystalline to pophyric to po	ric plagioclase o fine-grained	•	OBSERVER: IM	S WHERE SAM	
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY	derately phyrocrystalline to pophyric to p	ric plagioclase o fine-grained orphyritic, rad	iate.		S WHERE SAN	APLED: Unit 10 COMMENTS
ROCK NAME: Mograin Size; Micro GRAIN SIZE; Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS	derately phyrocrystalline to pophyric to p	ric plagioclase o fine-grained orphyritic, rad PERCENT	iate.	COMPO-		
ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer 	derately phyrical prophyrical to prophyrical present p	ric plagioclase o fine-grained orphyritic, rad PERCENT	SIZE (mm)	COMPO-	MORPHOLOGY	
ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel	derately phyrical properties of the proper	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL	SIZE (mm)	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral,	
ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS	derately phyric corystalline to pophyric to pophyric to pophyric to proper PERCENT PRESENT 0 8.8	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL 8.8	SIZE (mm) 0.1-0.5 0.2-2.5	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf-
ROCK NAME: Mod GRAIN SIZE; Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified	derately phyrocrystalline to pophyric to pophyric to pophyric to property of the present of the	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL 8.8	SIZE (mm) 0.1–0.5 0.2–2.5 0.03–0.06	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf-spherical and branching textures, defined by plagioclase and oliving
ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified	derately phyrocrystalline to pophyric to pophyric to pophyric to property of the present of the	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL 8.8 Tr	SIZE (mm) 0.1–0.5 0.2–2.5 0.03–0.06	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf-spherical and branching textures, defined by plagioclase and oliving
ROCK NAME: Mod GRAIN SIZE: Micro GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	derately phyrocrystalline tophyric to percent PRESENT 0 8.8 Tr 90.0	ric plagioclase o fine-grained orphyritic, rad	SIZE (mm) 0.1–0.5 0.2–2.5 0.03–0.06	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf-spherical and branching textures, defined by plagioclase and olivin intergrowths.
ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Aragonite	derately phyrocrystalline tophyric to percent PRESENT 0 8.8 Tr 90.0 PERCENT 1	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL 8.8 Tr REPLACING FILLING Olivine, pla Vein.	SIZE (mm) 0.1-0.5 0.2-2.5 0.03-0.06	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf- spherical and branching textures, defined by plagioclase and olivin intergrowths. COMMENTS Tan smectite partially replaces olivine. Plagioclase in the groundmass and phenocrysts are partially replaced along the vein margins.
ROCK NAME: Mod GRAIN SIZE; Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	derately phyrocrystalline to ophyric to percent PRESENT 0 8.8 Tr 90.0 PERCENT 1	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL 8.8 Tr REPLACING FILLING Olivine, pla	SIZE (mm) 0.1-0.5 0.2-2.5 0.03-0.06	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf- spherical and branching textures, defined by plagioclase and olivir intergrowths. COMMENTS Tan smectite partially replaces olivine. Plagioclase in the groundmass and phenocrysts are partially replaced along the vein
ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Aragonite	derately phyrocrystalline tophyric to percent PRESENT 0 8.8 Tr 90.0 PERCENT 1 Tr Tr	ric plagioclase o fine-grained orphyritic, rad	SIZE (mm) 0.1-0.5 0.2-2.5 0.03-0.06	COMPO- SITION	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular. Euhedral, equant.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf-spherical and branching textures, defined by plagioclase and olivir intergrowths. COMMENTS Tan smectite partially replaces olivine. Plagioclase in the groundmass and phenocrysts are partially replaced along the vein margins. Phillipsite (?). Euhedral colorless crystals.
ROCK NAME: Mod GRAIN SIZE: Micro GRAIN SIZE: Micro FEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Aragonite Zeolite	derately phyrocrystalline tophyric to percent PRESENT 0 8.8 Tr 90.0 PERCENT 1 Tr Tr	ric plagioclase o fine-grained orphyritic, rad PERCENT ORIGINAL 8.8 Tr REPLACING FILLING Olivine, pla Vein.	SIZE (mm) 0.1-0.5 0.2-2.5 0.03-0.06	COMPO-	MORPHOLOGY Euhedral, equant. Euhedral to subhedral, equant to tabular.	COMMENTS Plagioclase needle-like quench crystals (0.05–1 mm) sheaf-spherical and branching textures, defined by plagioclase and olivinintergrowths. COMMENTS Tan smectite partially replaces olivine. Plagioclase in the groundmass and phenocrysts are partially replaced along the vein margins.

COMMENTS: 1-cm-wide vein of clay and aragonite: clay selvage with blocky aragonite fill, or columnar aragonite with clay fill (columns perpendicular to vein walls). A 0.25-mm vein of tan saponite and phillipsite reopened by larger (1-cm) clay + aragonite vein.

148-896A-5R-2 (Piece 1D, 35-37 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 10

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Glassy to fine-grained. TEXTURE: Glomerophyric, variolitic.

PRIMARY		PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0.2	1.0	0.2-2		Euhedral, equant.	
Plagioclase	6.8	6.8	0.5 - 2.0		Euhedral,	
Spinel	Tr	Tr	0.02-0.08		equant to laths. Euhedral to anhedral, equant.	
GROUNDMASS					annearan, equanti	
Unspecified	92.2					Variolitic zone defined by dendritic growth on plagioclase crystallites in glass zone, to typical spherical varioles into coalesced varioles, and eventually into honeycombed to plumose texture.
SECONDARY	DED GELW	REPLACING	/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays (Pale brown)	1	Olivine				Olivine is completely altered to pale brown saponite with or without other phases. Alteration incomplete in the glassy rims.
Clays (green)		Veinlets.				In glass.
Clays (yellow-green)		Glass				Palagonite (?)
Pyrite	Tr	Glass				<1-2 um grains in altered glass.
VESICLES/		***************	SIZE	**********************	***************************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Pillow rim contains fresh glass. A 2-3-mm band of slightly more intense alteration occurs along boundary between glass and varioles. Numerous 0.02-0.05 mm veinlets of green clay in the glass with local replacement of glass by green-green clay (palagonite). Two 0.05-mm veinlets, with very thin green selvages and pale brown clay (saponite) are in the center. Lamellae parallel to vein margins suggest a crack-seal mechanism of formation. Glass inclusions in plagioclase phenocrysts are altered to pale green clays.

148-896A-5R-3 (Piece 1A, 1-5 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 10

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Cryptocrystalline to fine-grained.

TEXTURE: Glomerophyric radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.2	0.1-1.2		Euhedral, equant.	
Plagioclase	4	4	0.3-2.0		Euhedral, equant to laths.	Commonly the largest grains occur as single crystals. Some phenocrysts include spinel.
Spinel	Tr	Tr	0.03-0.1		Euhedral to subhedral, equant.	
GROUNDMASS						
Unspecified	94.6					Plumose texture in a honeycomb arrangement and comb textures, defined by plagioclase and olivine intergrowths.
SECONDARY		REPLACING	1			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays (Greenish tan) Clays (Pale brown)	1.2	Glass. Olivine.				Palagonite. Replaces interstitial glass in between varioles. Saponite(?).
Aragonite	Tr	Vein.				Blocky and fibrous habits.
Zeolite	Tr	Vein.				Associated with clay in selvage of aragonite-bearing vein.
VESICLES/			SIZE	***************************************	***************************************	
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	

COMMENTS: The section contains numerous veins. 0.7-mm-wide tan smectite (+ phillipsite prisms) with aragonite at its core and associated brown oxidation halo in the wall rock; 0.02-mm-wide tan smectite vein; 0.02-mm-wide green smectite vein. Clay margins of coarse carbonate vein comprise multiple lamellae of fibrous smectite oriented perpendicular to the vein margins.

148-896A-5R-3 (Piece 8, 63-67 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 11

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Porphyritic to glomerophyric, intersertal-intergranular-subophitic.

VESICLES/ CAVITIES Vesicles	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS None.
Magnetite	Tr	Chrome-spi	nel			Partial replacement.
Fe-oxyhydroxides	Tr	- N. J. S.	e, interstitial	material.		In alteration halo adjacent to vein.
Zeolite	Tr	Voids				With clay.
Aragonite	Tr		erstitial materi	al.		With saponite after olivine and voids (?).
Clay (Pale brown)	1.2	Olivine, inte	erstitial materi	al.		Olivine replaced by clays and aragonite. Very abundant replacement of "miarolitic voids" by clay (saponite?).
MINERALOGY	PERCENT	FILLING				COMMENTS
SECONDARY		REPLACING	3/			
Unspecified	91.8					Altered glass between plagioclase laths. Clinopyroxene is fresh whereas olivine is altered.
GROUNDMASS						
Spinel	Tr	Tr	0.1-0.2 mm		to laths. Euhedral.	contain abundant altered glass inclusions. Partially resorbed. Commonly as inclusions in plagioclase.
Plagioclase	7.0	7.0	0.2-2.0 mm		Euhedral, equant	Biggest grains occur as individual phenocrysts and commonly
PHENOCRYSTS Olivine	0	1.2	0.2-0.5 mm		Euhedral, equant.	
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PRIMARY	PERCENT		SIZE	COMPO-		

COMMENTS: A 0.01-mm bifurcating vein is composed of iron oxyhydroxides and selvage and minor discontinuous dark green clay at the vein center. Segments of vein are devoid of Fe-oxyhydroxides. The vein is rimmed by a 0.15-mm-wide alteration halo, but where the vein is composed of green clay only, no halo is present. Several large (1-mm) miarolitic voids are filled with either clay, zeolite, or aragonite. Glass inclusions in plagioclase phenocrysts are altered to pale brown clay.

OBSERVER: IMS

WHERE SAMPLED: Unit 12

148-896A-6R-1 (Piece 5C, 52-54 cm) ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE	COMPO-	MODBIOLOGY	COLORETATE
PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.4	0.2-1.2		Equant, euhedral.	Some grains contain spinel. Often associated with plagioclase glomerocrysts.
Plagioclase	7.8	7.8	0.2-4.0		Equant to laths, euhedral.	
Spinel	Tr	Tr	0.02-0.12		Euhedral to anhedral, equant to laths.	(*)
GROUNDMASS						
Unspecified	89.8					Plagioclase as swallowtail and hourglass shaped crystals. Plagioclase and olivine intergrowth define sheaf-spherical, branching, and plumose quench features.
SECONDARY		REPLACING	4			oraniomis, and pramote question resistation
MINERALOGY	PERCENT	FILLING				COMMENTS
Pale brown saponite	2.4	Olivine, vei	nlets.			
Green clay	Tr	Interstitial n	naterial.			
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The section contains one 0.01-mm-wide, pale brown saponite veinlet.

WHERE SAMPLED: Unit 12

148-896A-6R-2 (Piece 10A, 89–91 cm)
ROCK NAME: Highly phyric plagioclase-olivine basalt.
GRAIN SIZE: Microcrystalline to fine-grained.
TEXTURE: Glomerophyric/radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.4	0.1-0.6		Equant, euhedral.	
Plagioclase	9.0	9.0	0.2-2.0		Equant, laths, euhedral.	Some crystals contain inclusions of devitrified glass.
Spinel	Tr	Tr	0.05-0.15		Euhedral to anhedral.	Occurs often with olivine or adjacent to plagioclase.
GROUNDMASS						
Magnetite		0.001-0.005				
Unspecified	89.6					Plagioclase as swallowtails (0.05–0.8 mm) and skeletal forms. Intergrown plagioclase and olivine define sheaf-spherical, branching, and plumose quench textures.
SECONDARY		REPLACING/	1			
MINERALOGY	PERCENT	FILLING				COMMENTS
Pale brown saponite	1.4	Olivine, inte	rstitial.			
VESICLES/			SIZE	****************		
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.
148-896A-6R-2 (Pie ROCK NAME: Mod GRAIN SIZE: Micro TEXTURE: Glomero	derately physocrystalline t	ric plagioclase to fine-grained		OBSERVER: I	IMS WHERE S	AMPLED: Unit 12
ROCK NAME: Mod GRAIN SIZE: Micro	derately physocrystalline to pophyric to p	ric plagioclase to fine-grained			IMS WHERE S	AMPLED: Unit 12
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY	derately physic porystalline to ophyric to poperate per PERCENT	ric plagioclase to fine-grained orphyritic, rad	iate.	COMPO- SITION	MORPHOLOGY	AMPLED: Unit 12 COMMENTS
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS	derately physicity stalline to ophyric to pophyric to pophyric to pophyric to pophyric PERCENT PRESENT	ric plagioclase to fine-grained orphyritic, radio PERCENT ORIGINAL	SIZE (mm)	COMPO-	MORPHOLOGY	
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero PRIMARY MINERALOGY	derately physic porystalline to ophyric to poperate per PERCENT	ric plagioclase to fine-grained orphyritic, radi	iate. SIZE	COMPO-		
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase	derately physicity of physicity to pophyric to pophyri	ric plagioclase to fine-grained orphyritic, radiocomply PERCENT ORIGINAL	SIZE (mm)	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths,	COMMENTS The largest crystals occur as single individuals.
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS	perately physicopystalline to pophyric to perately percent present 0 7.2	ric plagioclase to fine-grained to rine-grained to prophyritic, radiocraft PERCENT ORIGINAL 1.6 7.2	SIZE (mm) 0.3-0.4 0.5-2.5	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral.	COMMENTS The largest crystals occur as single individuals.
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite	perately physicopystalline to pophyric to perately percent present 0 7.2	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr	SIZE (mm) 0.3-0.4 0.5-2.5	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified	derately physicity states to physicity ophyric to perform the present of the pres	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified SECONDARY	derately physicity states to physicity ophyric to perform the present of the pres	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001-0.01 REPLACING	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified SECONDARY MINERALOGY	derately physicity stalling to ophyric to p PERCENT PRESENT 0 7.2 Tr 91.2	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001-0.01 REPLACING	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine intergrowth in sheaf-spherical, and branching quench textures.
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified SECONDARY MINERALOGY Clays, tan	PERCENT 0 7.2 Tr 91.2	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001-0.01 REPLACING, FILLING	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine intergrowth in sheaf-spherical, and branching quench textures. COMMENTS
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified SECONDARY MINERALOGY Clays, tan Clays, tan	PERCENT 91.2 PERCENT 1.6	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001–0.01 REPLACING, FILLING Plagioclase.	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine intergrowth in sheaf-spherical, and branching quench textures. COMMENTS Partly altered to saponite along vein.
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero	PERCENT 91.2 PERCENT 1.6 Tr	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001-0.01 REPLACING FILLING Plagioclase. Olivine.	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine intergrowth in sheaf-spherical, and branching quench textures. COMMENTS Partly altered to saponite along vein. Saponite.
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified SECONDARY MINERALOGY Clays, tan Clays, tan Clays, green	PERCENT 0 7.2 Tr 91.2 PERCENT 1.6 Tr Tr	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001-0.01 REPLACING, FILLING Plagioclase. Olivine. Interstitial.	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine intergrowth in sheaf-spherical, and branching quench textures. COMMENTS Partly altered to saponite along vein. Saponite. Tan or green smectite.
ROCK NAME: Moc GRAIN SIZE: Micro TEXTURE: Glomero PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Magnetite Unspecified SECONDARY MINERALOGY Clays, tan Clays, tan Clays, green Fe-oxides	PERCENT 0 7.2 Tr 91.2 PERCENT 1.6 Tr Tr	ric plagioclase to fine-grained orphyritic, radi PERCENT ORIGINAL 1.6 7.2 Tr 0.001-0.01 REPLACING, FILLING Plagioclase. Olivine. Interstitial.	SIZE (mm) 0.3-0.4 0.5-2.5 0.02-0.07	COMPO-	MORPHOLOGY Equant, euhedral. Equant, laths, euhedral. Euhedral to	COMMENTS The largest crystals occur as single individuals. Occurs sometimes in plagioclase and anhedral olivine phenocrys Swallowtail plagioclase (0.02–1.5 mm). Plagioclase and olivine intergrowth in sheaf-spherical, and branching quench textures. COMMENTS Partly altered to saponite along vein. Saponite. Tan or green smectite.

COMMENTS: One 1.5-mm-wide tan smectite vein which is carbonate-bearing, as seen in hand specimen, is completely plucked out here. One 0.05-mm green smectite (nontronite?) vein is observed. Glass inclusions in plagioclase are altered to pale brown clay (palagonite?).

WHERE SAMPLED: Unit 12

148-896A-6R-3 (Piece 1, 6–9 cm)
ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS			0015			
Olivine	0	1.8	0.2-1.5		Equant, euhedral.	
Plagioclase	6.8	6.8	0.5-4.0		Equant, laths, euhedral.	
Spinel	Tr	Tr	0.02-0.10		Euhedral to subhedral, equant.	
GROUNDMASS					A STATE OF THE STA	
Magnetite			0.001-0.005		Equant.	
Unspecified						Plagioclase as swallowtail needles (0.05-1 mm). Plagioclase and olivine intergrowths define sheaf-spherical and branching quench textures.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	1.8	Olivine, pla	gioclase.			Olivine is completely replaced by saponite. Plagioclase is slightly altered to saponite along vein.
Aragonite	Tr	Vein.				
VESICLES/			SIZE	***************************************		***************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles			-25-0000020			None.

COMMENTS: One 1.5-mm-wide saponite vein intersects a 7-mm-wide vein of saponite at edges and blocky aragonite at center. The section also contains numerous 0.4-mm-wide saponite veins and one vein of green clay (0.03 mm).

148-896A-7R-1 (Piece 10, 52-55 cm)
ROCK NAME: Moderately phyric plagioclase-olivine basalt.

OBSERVER: IMS

WHERE SAMPLED: Unit 13

GRAIN SIZE: Glassy to microcrystalline.

TEXTURE: Porphyritic to glomerophyric, variolitic.

CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS None.
VESICLES/			SIZE			
Pyrite	Tr	Glass.				Small 0.001-0.005 mm grains in altered glass.
Zeolites	Tr	Glass, veins.				Phillipsite + chabasite(?), see comments below.
Aragonite	Tr	Vein.				
Clay, green	Tr	Glass.				Often colloform palagonite.
Pale brown saponite	0.6	Olivine, vein				Olivine grains are partly or completely replaced.
MINERALOGY	PERCENT	FILLING				COMMENTS
SECONDARY		REPLACING/	ö			of a pillow.
Unspecified	94.6					Individual to coalesced spherulites in the outer part of variolitic part
GROUNDMASS					CONTRACTOR OF STREET	
Spiner	11	11	0.02-0.19		anhedral, equant.	
Spinel	Tr	Tr	0.02-0.19		euhedral. Euhedral to	
Plagioclase	4.6	4.6	0.2 - 0.6		Equant, laths,	
Olivine	0.2	0.8	0.2 - 0.3		Equant, euhedral.	
PHENOCRYSTS	11000011	Ordon trus	(iiiii)	orrio.	MORETIOECOT	COMMISSION
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		

COMMENTS: The section contains brecciated altered glass (hyaloclastite, and green clay veins in glass. Veins cementing the breccia are composed of (1) minor green clay (2) euhedral, drusy phillipsite (3) later aragonite and (4) later minor pale brown spherulitic smectite. Clays commonly fill angular voids(?) concentricly. They are coarser grained and more irregular at core.

148-896A-7R-1 (Piece 13, 80-83 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 14

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY PERCENT PERCENT SIZE СОМРО-MINERALOGY PRESENT ORIGINAL MORPHOLOGY COMMENTS SITION (mm) PHENOCRYSTS Fresh olivine in plagioclase glomerocrysts. Olivine 0.3 1.6 0.2 - 0.5Equant, euhedral. 0.5 - 2.0Plagioclase 5.2 5.2 Equant, laths, euhedral. Spinel Tr Tr 0.015-0.075 Euhedral to anhedral, equant. GROUNDMASS Magnetite 0.001-0.005 Equant. Unspecified Intergrown plagioclase, olivine, and clinopyroxene make sheaf-93.2 spherical, branch, and plumose textures. The latter forms a honeycomb-like pattern. SECONDARY REPLACING/ MINERALOGY PERCENT FILLING COMMENTS Pale brown saponite 1.3 Olivine, interstitial. Fe-hydroxides Disseminated. Tr VESICLES/ SIZE CAVITIES COMMENTS FILLING SHAPE PERCENT LOCATION (mm) Vesicles None. 148-896A-7R-1 (Piece 22, 135-139 cm) OBSERVER: IMS WHERE SAMPLED: Unit 14 ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline - fine-grained.
TEXTURE: Glomerophyric/radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.4	0.5 - 1.2		Equant, euhedral.	
Plagioclase	5.8	5.8	0.5-2.5		Equant, laths, euhedral.	
Spinel	Tr	Tr	0.03-0.18		Euhedral to anhedral, equant.	
GROUNDMASS						
Magnetite			0.001 - 0.005		Equant.	
Unspecified						Swallowtail quench plagioclase up to 1 mm long. Intergrown plagioclase and olivine define sheaf-spherical, branch, and plumos quench textures.
SECONDARY		REPLACING	/			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
MINERALOGY	PERCENT	FILLING				COMMENTS
Pale brown saponite	1.4	Olivine, pla	gioclase.			Complete replacement of olivine. Plagioclase is slightly altered to saponite along vein.
Aragonite	Tr	Vein.				Forms structural fibres, oblique to crystal axes, up to 0.5 mm long and 0.03 mm wide.
VESICLES/		***************************************	SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: One 0.7-mm-wide smectite vein with aragonite at center. A 0.04-mm smectite vein crossing plagioclase crystal which is altered along vein. Several smectite veins (<0.01 mm wide) merging into one 0.5-mm-wide smectite vein.

WHERE SAMPLED: Unit 14

148-896A-8R-1 (Piece 7, 29-32 cm) ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY MINERALOGY PHENOCRYSTS		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
	0	4.0	0.2-1.5		Equant, euhedral.	
Plagioclase	6.6	6.6	0.5-2.5		adami, amanan	
Spinel	Tr	Tr	0.03-0.06		Euhedral to	
- Pinter			0.00		anhedral, equant.	
GROUNDMASS					ameura, equan.	
Magnetite	0		0.001-0.01		Equant, skeletal.	
Unspecified	89.4				***************************************	Swallowtail plagioclase laths (0.05–1.0 mm). Intergrown plagioclase and olivine define sheaf-spherical, branch, and plumquench textures.
SECONDARY		REPLACING	1			
MINERALOGY	PERCENT	FILLING				COMMENTS
Pale brown clays	4.0	Olivine.				Saponite, not abundant.
Yellow clays		Interstitial.				Not abundant.
Fe oxides/hydroxides		Tr	Interstitial.			Local, minor.
VESICLES/	WCW/1011-00/2017		SIZE		**************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles	A SHITCHER 1 A	20011101	(11111)	TALLET TO	OH II D	None.
148-896A-8R-1 (Piec ROCK NAME: Mode	erately phyr	ic plagioclase		OBSERVER: II	MS WHERE S	AMPLED: Unit 14.
ROCK NAME: Mode GRAIN SIZE: Crypto	erately phyrocrystalline	ic plagioclase to microcrysta		OBSERVER: II	MS WHERE S	AMPLED: Unit 14.
ROCK NAME: Mode GRAIN SIZE: Crypto TEXTURE: Porphyri	erately phyrocrystalline tic, varioliti	ic plagioclase to microcrysta		OBSERVER: II	MS WHERE S	AMPLED: Unit 14.
ROCK NAME: Mode GRAIN SIZE: Crypto TEXTURE: Porphyri PRIMARY MINERALOGY	erately phyricocrystalline tic, varioliti	ic plagioclase to microcrystatic.	alline.		MS WHERE S	AMPLED: Unit 14. COMMENTS
ROCK NAME: Mode GRAIN SIZE: Crypto FEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS	erately phyricocrystalline tic, varioliti	ic plagioclase to microcrystric.	alline. SIZE	COMPO-		
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine	erately phyricocrystalline tic, varioliti PERCENT PRESENT	ic plagioclase to microcrysta ic. PERCENT ORIGINAL	alline. SIZE	COMPO-		
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine	erately phyricocrystalline tic, variolitic PERCENT PRESENT	ic plagioclase to microcrystr ic. PERCENT ORIGINAL Tr	SIZE (mm)	COMPO-	MORPHOLOGY	
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel	erately phyricocrystalline tic, variolitic PERCENT PRESENT	ic plagioclase to microcrystr ic. PERCENT ORIGINAL Tr	SIZE (mm)	COMPO-	MORPHOLOGY Equant, laths,	
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS	perately phyricorystalline tic, variolitic PERCENT PRESENT 0 4.8	to microcrystric. PERCENT ORIGINAL Tr 4.8	SIZE (mm)	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS	PERCENT PRESENT 0 4.8	to microcrystric. PERCENT ORIGINAL Tr 4.8	SIZE (mm)	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified	perately phyricorystalline tic, variolitic PERCENT PRESENT 0 4.8	percent or desired to microcrystric. PERCENT ORIGINAL Tr 4.8	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY	PERCENT O 4.8 Tr 95.2	ic plagioclase to microcrystic. PERCENT ORIGINAL Tr 4.8 Tr	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind.
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	PERCENT 0 4.8 Tr 95.2	ic plagioclase to microcrysti ic. PERCENT ORIGINAL Tr 4.8 Tr REPLACING/ FILLING	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Pale brown saponite	PERCENT O 4.8 Tr 95.2 PERCENT Tr	ic plagioclase to microcrystic. PERCENT ORIGINAL Tr 4.8 Tr	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS Olivine is completely replaced in the basalt clast; plagioclase is partly replaced.
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Pale brown saponite Carbonate	PERCENT Tr Tr	ic plagioclase to microcrysti ic. PERCENT ORIGINAL Tr 4.8 Tr REPLACING/ FILLING	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS Olivine is completely replaced in the basalt clast; plagioclase is partly replaced. Cementing breccia.
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Pale brown saponite Carbonate Zeolites	PERCENT O 4.8 Tr 95.2 PERCENT Tr	ic plagioclase to microcrysti ic. PERCENT ORIGINAL Tr 4.8 Tr REPLACING/ FILLING Olivine, plag	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS Olivine is completely replaced in the basalt clast; plagioclase is partly replaced. Cementing breccia. Associated with smectite.
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Pale brown saponite Carbonate	PERCENT Tr Tr	ic plagioclase to microcrysti ic. PERCENT ORIGINAL Tr 4.8 Tr REPLACING/ FILLING	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS Olivine is completely replaced in the basalt clast; plagioclase is partly replaced. Cementing breccia.
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Pale brown saponite Carbonate Zeolites	PERCENT Tr Tr	ic plagioclase to microcrysti ic. PERCENT ORIGINAL Tr 4.8 Tr REPLACING/ FILLING Olivine, plag	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS Olivine is completely replaced in the basalt clast; plagioclase is partly replaced. Cementing breccia. Associated with smectite.
ROCK NAME: Mode GRAIN SIZE: Crypte TEXTURE: Porphyri PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Pale brown saponite Carbonate Zeolites Pillow glass VESICLES/	PERCENT O 4.8 Tr 95.2 PERCENT Tr Tr	ic plagioclase to microcrysti ic. PERCENT ORIGINAL Tr 4.8 Tr REPLACING/ FILLING Olivine, plag	SIZE (mm) 0.4–2 0 0.02–0.06	COMPO-	MORPHOLOGY Equant, laths, euhedral.	COMMENTS Individual to coalesced spherulitic quench textures define the outer part of a variolitic zone in a pillow rind. COMMENTS Olivine is completely replaced in the basalt clast; plagioclase is partly replaced. Cementing breccia. Associated with smectite.

COMMENTS: One brecciated area is a single calcite crystal (8x5 mm) that is fractured and recemented by angular, anhedral crystals of calcite or aragonite of various sizes. The pillow breccia has smectite selvages. Large crystals are cemented by tan smectite and small crystals of aragonite.

WHERE SAMPLED: Unit 14

148-896A-9R-1 (Piece 25, 138-141 cm)
ROCK NAME: Highly phyric plagioclase-olivine basalt.
GRAIN SIZE: Microcrystalline to fine-grained.
TEXTURE: Glomerophyric; radiate.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS		2.4	0000			O Edward Links
Olivine Plagioclase	0 10	2.4	0.2-0.3 0.5-3.0		Euhedral, equant. Euhedral, equant	Some olivines host spinel inclusions. Some phenocrysts host altered glass inclusions.
ragiociase	10	10	0.5-5.0		to laths.	Some phenodysta nost unered guas metastons.
Spinel	Tr	Tr	0.02-0.1		Euhedral to	
					anhedral, equant.	
GROUNDMASS						
Unspecified	87.4	87.4				Intergrown plagioclase, olivine, and clinopyroxene define sheaf
SECONDARY		REPLACING	ý.			spherical, branch, and comb quench textures.
MINERALOGY	PERCENT		*/			COMMENTS
Clays	2.4		interstitial mater	ial.		"Iddingsite" and tan smectite (saponite) after olivine. Interstitial
C.II.y.s	***	On the und	micronium mater			glass or voids replaced by colloform material zoned from light tar or colorless, to brownish green, to green. Very minor in cracks in plagioclase phenocrysts.
Iddingsite	Tr	Plagioclase	and interstitial m	aterial.		In cracks in plagioclase. On clinopyroxene "combs".
VESICLES/	*************	************	SIZE		***************************************	
CAVITIES	nen ora m				1 Table 20 To Garage	Control of the Control
	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome	Piece 4B, 36- ghly phyric p rocrystalline t	lagioclase-oli o fine-grained	l.	OBSERVER:		None. AMPLED: Unit 14
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p	-39 cm) lagioclase-oli to fine-grained orphyritic; rad	vine basalt. I. liate. SIZE	OBSERVER:	IMS WHERE S	None. AMPLED: Unit 14
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p	-39 cm) lagioclase-oli to fine-grained orphyritic; rad	vine basalt. I. liate.	OBSERVER:		None.
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p	-39 cm) lagioclase-oli to fine-grained orphyritic; rad	vine basalt. I. liate. SIZE	OBSERVER:	IMS WHERE S	None. AMPLED: Unit 14
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine	Piece 4B, 36-ghly phyric p rocrystalline t rrophyric to p PERCENT PRESENT	-39 cm) lagioclase-oli to fine-grained orphyritic; rad PERCENT ORIGINAL	vine basalt. I. liate. SIZE (mm)	OBSERVER:	IMS WHERE S MORPHOLOGY Euhedral, equant. Euhedral, equant	None. AMPLED: Unit 14
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p PERCENT PRESENT 0	-39 cm) lagioclase-olivo fine-grained orphyritic; rad PERCENT ORIGINAL 2.2	vine basalt. I. liate. SIZE (mm) 0.15–1.2	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. AMPLED: Unit 14 COMMENTS
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p PERCENT PRESENT 0 9.2	-39 cm) llagioclase-olivo fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2	vine basalt. L. liate. SIZE (mm) 0.15-1.2 0.13-1.2	OBSERVER:	MORPHOLOGY Euhedral, equant, Euhedral, equant	None. AMPLED: Unit 14 COMMENTS
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p PERCENT PRESENT 0 9.2	-39 cm) llagioclase-olivo fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2	vine basalt. L. liate. SIZE (mm) 0.15-1.2 0.13-1.2	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. AMPLED: Unit 14 COMMENTS Largest phenocrysts are single crystals.
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Unspecified	Piece 4B, 36-ghly phyric procrystalline terophyric to p PERCENT PRESENT 0 9.2 Tr	-39 cm) lagioclase-olivo fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2	vine basalt. L. Liate. SIZE (mm) 0.15-1.2 0.13-1.2 0.03-0.15	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. AMPLED: Unit 14 COMMENTS Largest phenocrysts are single crystals. Swallowtail plagioclase, from 0.05–0.8 mm in length. Intergrow olivine, plagioclase, and clinopyroxene produce branching and
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel	Piece 4B, 36-ghly phyric procrystalline terophyric to p PERCENT PRESENT 0 9.2 Tr	-39 cm) lagioclase-olivo fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2 Tr 88.6	vine basalt. L. Liate. SIZE (mm) 0.15-1.2 0.13-1.2 0.03-0.15	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. COMMENTS Largest phenocrysts are single crystals. Swallowtail plagioclase, from 0.05–0.8 mm in length. Intergrow olivine, plagioclase, and clinopyroxene produce branching and sheaf-spherical quench textures. COMMENTS
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS DIIvine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	Piece 4B, 36-ghly phyric procrystalline terophyric to percent PRESENT 0 9.2 Tr 88.6	-39 cm) lagioclase-olivo fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2 Tr 88.6	vine basalt. I. liate. SIZE (mm) 0.15-1.2 0.13-1.2 0.03-0.15	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. AMPLED: Unit 14 COMMENTS Largest phenocrysts are single crystals. Swallowtail plagioclase, from 0.05–0.8 mm in length. Intergrow olivine, plagioclase, and clinopyroxene produce branching and sheaf-spherical quench textures.
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p PERCENT PRESENT 0 9.2 Tr 88.6	-39 cm) lagioclase-olivito fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2 Tr 88.6 REPLACING	vine basalt. L. Litate. SIZE (mm) 0.15-1.2 0.13-1.2 0.03-0.15	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. COMMENTS Largest phenocrysts are single crystals. Swallowtail plagioclase, from 0.05–0.8 mm in length. Intergrow olivine, plagioclase, and clinopyroxene produce branching and sheaf-spherical quench textures. COMMENTS Olivine completely replaced by tan smectite. Plagioclase partly
Vesicles 148-896A-10R-1 (ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS DIIvine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	Piece 4B, 36- ghly phyric p rocrystalline terophyric to p PERCENT 0 9.2 Tr 88.6 PERCENT 2.2	-39 cm) lagioclase-olivito fine-grained orphyritic; rad PERCENT ORIGINAL 2.2 9.2 Tr 88.6 REPLACING	vine basalt. I. liate. SIZE (mm) 0.15-1.2 0.13-1.2 0.03-0.15	OBSERVER:	MORPHOLOGY Euhedral, equant. Euhedral, equant laths. Euhedral to	None. COMMENTS Largest phenocrysts are single crystals. Swallowtail plagioclase, from 0.05–0.8 mm in length. Intergrow olivine, plagioclase, and clinopyroxene produce branching and sheaf-spherical quench textures. COMMENTS Olivine completely replaced by tan smectite. Plagioclase partly

COMMENTS: Thin section is cut by up to 0.8-mm-wide vermicular saponite veins. These have been reopened and filled with aragonite, described as granular or sugary in hand specimen. "Fibrous" saponite veins were also recorded.

148-896A-10R-1 (Piece 9C, 116-118 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 14

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Cryptocrystalline to fine-grained. TEXTURE: Glomerophyric; radiate-intersertal.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-				
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS		
Olivine	0	1.0	0.2-0.5		Euhedral, equant.			
Plagioclase	5.0	5.0	0.5-2.0		Euhedral, equant laths.			
Spinel	Tr	Tr	0.02-0.06		Subhedral to anhedral, equant.			
GROUNDMASS								
Unspecified	94.0	94.0				Intergrown plagioclase, olivine, and cli spherical and branching quench textures completely altered. Equant magnetite gr mm in diameter.	. Interstitial glass (?)	
SECONDARY		REPLACING	i/					
MINERALOGY	PERCENT	FILLING				COMMENTS		
Clays	1.0	Olivine and	interstitial material			Saponite (tan smectite) after olivine. Saponite and local nontroni (or celadonite) after interstitial material.		
Fe(OH) minerals	Tr	Interstitial n	naterial.			Locally developed in association with	nontronite.	
VESICLES/			SIZE					
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS		
Vesicles						None.		

148-896A-10R-1 (Piece 11, 129-134 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 14

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0.8	0.8	0.1-1.0		Euhedral, equant.	Olivine is mostly fresh.
Plagioclase	9.6	9.6	0.1-2.0		Euhedral, equant laths.	Some crystals host abundant small inclusions of cryptocrystalline material, or more rarely, glass.
Spinel	Tr	Tr	0.02-0.08		Euhedral to anhedral, equant.	
GROUNDMASS					201101-00101-0010-00-00-00-00-00-00-00-00	
Unspecified	89.6	89.6				Swallowtail plagioclase, 0.03-0.7 mm length, set in a groundmass of intergrown plagioclase, olivine, and clinopyroxene with sheaf-spherical, comb, and branch quench morphologies.
SECONDARY		REPLACING/	ti.			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	Tr	Olivine.				Saponite, associated with Fe-oxyhydroxide minerals in the red oxidized portion of the sample.
Pyrite	Tr	?				Disseminated in dark-gray unoxidized portion of sample.
Fe(OH) minerals	Tr	?				Disseminated in oxidized part of sample.
VESICLES/	***************************************		SIZE		************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles			TO STATE OF THE ST			None.

COMMENTS: Thin section is cut by a 0.03-0.1-mm-wide vein composed of Fe-oxyhydroxide and green clay that grades into saponite at the center of the vein. This vein has a red oxidation halo and is cut by a later fibrous carbonate vein. Fine, <0.01-mm-wide Fe-oxyhydroxide veins occur in the alteration halo of the wider vein. Plagioclase phenocrysts are altered along cracks when cut by these veins. Glass inclusions in plagioclase phenocrysts are altered to palagonite(?).

148-896A-11R-1 (Piece 7, 64-71 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 14.

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.6	0.2 - 0.6		Euhedral, equant.	
Plagioclase	5.0	5.0	0.2 - 1.8		Euhedral, equant laths.	
Spinel GROUNDMASS	Tr	Tr	0.02-0.1		Euhedral-anhedral, equ	ant.
Unspecified	93.4					Swallowtail plagioclase 0.03-1.1 mm in length. Intergrown plagioclase, olivine, and clinopyroxene define sheaf-spherical branching and comb quench textures.
SECONDARY		REPLACING	/			Control segment (** The Str. Conference (** Conference of the Conf
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	1.6	Olivine and	Plagioclase.			Pale brown saponite.
Fe(OH) minerals	Tr	?				Staining plumose groundmass clinopyroxene.
VESICLES/	************	*************	SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Thin section cut by a 3-7-mm-wide vein, largely plucked from slide, composed of pale brown saponite on selvages and blocky aragonite in its core. This vein cuts two 1-mm-wide veins with only some brown saponite, perpendicular to vein walls, remaining. The wide vein also crosscuts several 0.05-0.-mm-wide pale brown saponite veins.

148-896A-11R-2 (Piece 3, 30-39 cm) ROCK NAME: Hyaloclastite.

GRAIN SIZE: Glass.

Zeolites

TEXTURE: Glass, cryptocrystalline.

Tr

Glass.

OBSERVER: IMS

WHERE SAMPLED: Unit 14.

Phillipsite(?) Replaces and cements glass fragments.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	?					
Plagioclase	?					
SECONDARY		REPLACING	/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	Tr	Glass				Replaces and cements glass, partially replaces plagioclase clasts.

VESICLES/ SIZE CAVITIES PERCENT LOCATION COMMENTS FILLING SHAPE (mm) Vesicles None.

COMMENTS: This section was not point counted. It consists of an altered glassy breccia (hyaloclastite). Glass shards are coated with colorless smectite (0.01 mm), tan fibrous birefringent smectite (0.05 mm), and phillipsite. Glass shards are also replaced by green birefringent smectite, tan to brown, less birefringent smectite. Some clasts of plagioclase phenocrysts are partly replaced by tan saponite.

WHERE SAMPLED: Unit 15

148-896A-11R-3 (Piece 3, 12–17 cm) ROCK NAME: Sparsely phyric plagioclase basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT		SIZE	COMPO-			
IINERALOGY HENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY		COMMENTS
livine	0	0.2	0.1-0.3		Euhedral, equant.		
agioclase	0.8	0.8	0.1-1.0		Euhedral, equant laths.		
pinel	Tr	Tr	0.02-0.07		Euhedral to subhedral, equant.		
ROUNDMASS					suonearin, equini.	#1-0000 C TOUR OF #000 #100	
nspecified	99	99				Intergrown plagioclas spherical and branchi	se, olivine, and clinopyroxene define sheat ng quench textures.
ECONDARY	DEDCENE	REPLACING/				3.5	COMMENTS
IINERALOGY lays	PERCENT 0.2		nterstiial material.			Pale brown sanonite	after olivine. Minor replacement of
			mersurar material.			plagioclase.	
e(OH) minerals	Tr	?				Disseminated iron st	aining.
ESICLES/ AVITIES	DEDCENT	LOCATION	SIZE	EII I INC	CHADE		COMMENTS
esicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	None.	COMMENTS
OMMENTS: Secti	on cut by a (02-mm-wide	green and light tan	smectite with very	fine-grained sulfide (py	rite or chalconvrite) v	vein
Similar viol deci	on cut by a c	.oz mii wide	green and right tan	ameetic, with very	Tine-granica sarride (py	ine or enaccopyrno,	
48-896A-11R-3 (I			ina basalt	OBSERVER: IMS	WHERE SAM	MPLED: Unit 16	
ROCK NAME: Hig GRAIN SIZE: Mici							
EXTURE: Glome							
RIMARY	PERCENT	PERCENT	SIZE	COMPO-	*************		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY		COMMENTS
HENOCRYSTS Dlivine	2.2	2.2	0.2-0.6		Euhadral assent		
Plagioclase	10.0	10.0	0.2-0.6		Euhedral, equant. Euhedral, laths, equant		
pinel	Tr	Tr	0.02-0.14		Euhedral, laths, equant Euhedral to anhedral, e		
ROUNDMASS	955	75	58 5.17		Daniella to annoulai, c	7	
Inspecified	87.8	87.8				Plagioclase as swalle	owtail quenched crystals, 0.05-1.0 mm.
						Intergrown plagiocla	se, olivine, and clinopyroxene define
							nd comb quench textures. Magnetite presen
SECONDARY		REPLACING/	r.			0.001-0.005 mm equ	uant-skeletal grains. Trace sulfides.
MINERALOGY	PERCENT						COMMENTS
Clays	Tr		nterstitial material.			Pale brown saponite	partly replaces olivine.
/ESICLES/			SIZE		*******************************		
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE		COMMENTS
						None.	
vesicles							
Vesicles	iana OC 60	71 cm\		OBSEDVED: IME	WHEDE CAN	IPLED: Unit 16	
48-896A-12R-1 (F			ine basalt.	OBSERVER: IMS	WHERE SAN	IPLED: Unit 16	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	thly phyric pi	lagioclase-oliv		OBSERVER: IMS	WHERE SAM	IPLED: Unit 16	
48-896A-12R-1 (F	thly phyric pl ocrystalline to	lagioclase-olivi o fine-grained,		OBSERVER: IMS	WHERE SAM	IPLED: Unit 16	
48-896A-12R-1 (F COCK NAME: Hig FRAIN SIZE: Micr EXTURE: Glomer	thly phyric plocrystalline to ophyric; radia PERCENT	lagioclase-olivion fine-grained. ate. PERCENT		OBSERVER: IMS		IPLED: Unit 16	
48-896A-12R-1 (F OCK NAME: Hig BRAIN SIZE: Micr 'EXTURE: Glomer RIMARY MINERALOGY	thly phyric plocrystalline to ophyric; radia PERCENT	lagioclase-olive o fine-grained, ate.			WHERE SAN	IPLED: Unit 16	COMMENTS
48-896A-12R-1 (F OCK NAME: Hig GRAIN SIZE: Micr 'EXTURE: Glomer RIMARY MINERALOGY 'HENOCRYSTS	thly phyric plocrystalline to ophyric; radia PERCENT PRESENT	lagioclase-olivio fine-grained. ate. PERCENT ORIGINAL	SIZE (mm)	СОМРО-	MORPHOLOGY	IPLED: Unit 16	COMMENTS
48-896A-12R-1 (F OCK NAME: Hig IRAIN SIZE: Micr EXTURE: Glomer RIMARY IMERALOGY HENOCRYSTS Divine	thly phyric pi ocrystalline to ophyric; radia PERCENT PRESENT	lagioclase-olivio fine-grained. ate. PERCENT ORIGINAL 3.6	SIZE (mm) 0.2–1.2	СОМРО-	MORPHOLOGY Euhedral, equant.		COMMENTS
48-896A-12R-1 (FOCK NAME: Hig RAIN SIZE: Micr EXTURE: Glomer EXTURE: Glomer RIMARY INFERALOGY HENOCRYSTS livine lagioclase	phly phyric ploorystalline to ophyric; radia PERCENT PRESENT 0 7.8	agioclase-olivio fine-grained. ate. PERCENT ORIGINAL 3.6 7.8	SIZE (mm) 0.2-1.2 0.5-3.0	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths		COMMENTS
48-896A-12R-1 (F COCK NAME: Hig BRAIN SIZE: Micr EXTURE: Glomer RIMARY MINERALOGY PHENOCRYSTS Divine	thly phyric pi ocrystalline to ophyric; radia PERCENT PRESENT	lagioclase-olivio fine-grained. ate. PERCENT ORIGINAL 3.6	SIZE (mm) 0.2–1.2	СОМРО-	MORPHOLOGY Euhedral, equant.		COMMENTS
48-896A-12R-1 (F OCK NAME: Hig BRAIN SIZE: Micr EXTURE: Glomer EXTURE: Glomer RIMARY MINERALOGY HENOCRYSTS Divine Plagioclase ipinel BROUNDMASS	phly phyric plocrystalline to ophyric; radis- PERCENT PRESENT 0 7.8 Tr	lagioclase-olivion fine-grained, atte. PERCENT ORIGINAL 3.6 7.8 Tr	SIZE (mm) 0.2-1.2 0.5-3.0	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to		
48-896A-12R-1 (FOCK NAME: Hig RAIN SIZE: Micr EXTURE: Glomer RIMARY IINERALOGY HENOCRYSTS Olivine lagioclase pinel	phly phyric ploorystalline to ophyric; radia PERCENT PRESENT 0 7.8	agioclase-olivio fine-grained. ate. PERCENT ORIGINAL 3.6 7.8	SIZE (mm) 0.2-1.2 0.5-3.0	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta	il plagioclase, 0.05-1.0 mm. Intergrown
48-896A-12R-1 (F OCK NAME: Hig BRAIN SIZE: Micr EXTURE: Glomer RIMARY MINERALOGY HENOCRYSTS Divine Plagioclase pinel	phly phyric plocrystalline to ophyric; radis- PERCENT PRESENT 0 7.8 Tr	lagioclase-olivio fine-grained, atte. PERCENT ORIGINAL 3.6 7.8 Tr	SIZE (mm) 0.2-1.2 0.5-3.0	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine, quench textures. Ma	il plagioclase, 0.05-1.0 mm. Intergrown and clinopyroxene define branching and c
48-896A-12R-1 (F OCK NAME: Hig BRAIN SIZE: Micr EXTURE: Glomer EXTURE: Glomer RIMARY MINERALOGY HENOCRYSTS Divine lagioclase pinel BROUNDMASS Juspecfified	phly phyric plocrystalline to ophyric; radis- PERCENT PRESENT 0 7.8 Tr	agioclase-olivio fine-grained. ate. PERCENT ORIGINAL 3.6 7.8 Tr 88.6	SIZE (mm) 0.2–1.2 0.5–3.0 0.04–0.13	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine,	il plagioclase, 0.05-1.0 mm. Intergrown and clinopyroxene define branching and c
48-896A-12R-1 (FOCK NAME: Higher All SIZE: Micro EXTURE: Glomer EXTURE: Glomer RIMARY MINERALOGY HENOCRYSTS Dilvine Plagioclase pinel RIMARS Inspecified	phly phyric plocrystalline to ophyric; radis PERCENT PRESENT 0 7.8 Tr 88.6	agioclase-olivio fine-grained, atte. PERCENT ORIGINAL 3.6 7.8 Tr 88.6	SIZE (mm) 0.2–1.2 0.5–3.0 0.04–0.13	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine, quench textures. Ma	il plagioclase, 0.05-1.0 mm. Intergrown and clinopyroxene define branching and c
48-896A-12R-1 (FROCK NAME: Higher Street Microscope Street Microsc	phly phyric plocrystalline to ophyric; radis PERCENT PRESENT 0 7.8 Tr 88.6	agioclase-olivio fine-grained. PERCENT ORIGINAL 3.6 7.8 Tr 88.6 REPLACING/FILLING	SIZE (mm) 0.2–1.2 0.5–3.0 0.04–0.13	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine, quench textures. Ma mm.	il plagioclase, 0.05–1.0 mm. Intergrown and clinopyroxene define branching and c gnetite equant-skeletal grains 0.001–0.005
48-896A-12R-1 (FROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer TRIMARY MINERALOGY THENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Juspecfified	phly phyric plocrystalline to ophyric; radis PERCENT PRESENT 0 7.8 Tr 88.6	agioclase-olivio fine-grained, atte. PERCENT ORIGINAL 3.6 7.8 Tr 88.6	SIZE (mm) 0.2–1.2 0.5–3.0 0.04–0.13	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine, quench textures. Ma mm.	il plagioclase, 0.05–1.0 mm. Intergrown and clinopyroxene define branching and c gnetite equant-skeletal grains 0.001–0.005
48-896A-12R-1 (F ROCK NAME: Hig GRAIN SIZE: Micr	phly phyric plocrystalline to ophyric; radia PERCENT PRESENT 0 7.8 Tr 88.6	lagioclase-olivio fine-grained. atte. PERCENT ORIGINAL 3.6 7.8 Tr 88.6 REPLACING/ FILLING Olivine.	SIZE (mm) 0.2–1.2 0.5–3.0 0.04–0.13	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine, quench textures. Ma mm.	il plagioclase, 0.05–1.0 mm. Intergrown and clinopyroxene define branching and c gnetite equant-skeletal grains 0.001–0.005 COMMENTS xyhydroxide minerals.
48-896A-12R-1 (F COCK NAME: Hig BRAIN SIZE: MICE EXTURE: Glomer EXTURE: Glomer RIMARY MENOCRYSTS Divine lagioclase spinel GROUNDMASS Juspecfified	phly phyric plocrystalline to ophyric; radis PERCENT PRESENT 0 7.8 Tr 88.6 PERCENT 3.6 Tr	lagioclase-olivio fine-grained. atte. PERCENT ORIGINAL 3.6 7.8 Tr 88.6 REPLACING/ FILLING Olivine.	SIZE (mm) 0.2–1.2 0.5–3.0 0.04–0.13	СОМРО-	MORPHOLOGY Euhedral, equant. Euhedral, equant, laths Euhedral to	Quenched swallowta plagioclase, olivine, quench textures. Ma mm.	il plagioclase, 0.05–1.0 mm. Intergrown and clinopyroxene define branching and c gnetite equant-skeletal grains 0.001–0.005 COMMENTS xyhydroxide minerals.

WHERE SAMPLED: Unit 16

148-896A-12R-1 (Piece 10B, 78-81 cm) OBSERVE ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; radiate.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	5.6	0.2-1.0		Euhedral, equant.	
Plagioclase	9.8	9.8	0.5-2.0		Euhedral, equant laths.	
pinel	Tr	Tr	0.02-0.12		Euhedral to anhedral, equant.	
GROUNDMASS						
Unspecified	84.6	84.6				Swallowtail plagioclase, 0.05-1.0 mm in length. Intergrown plagioclase, olivine, and clinopyroxene define sheaf-spherical, branching, plumose, and comb quench textures. Equant to skeleta magnetite and trace disseminated sulfides are also present.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	5.6	Olivine and	interstitial material.			Saponite associated with Fe-oxyhydroxide after olivine. Nontronite/celadonite (green to yellowish orange clays) after interstitial material.
Fe(OH) minerals	Tr	Olivine and	interstitial material.			Also disseminated on microfractures.
VESICLES/			SIZE	***********		
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
/esicles						None.
148-896A-12R-2 (F ROCK NAME: Hi	erstitial spaces Piece 1C, 9-1 ghly phyric p	are filled by 2 cm) lagioclase-oliv	vine basalt.		ls in one half of the thii	n section. APLED: Unit 17
48-896A-12R-2 (I	Piece 1C, 9-1 ghly phyric pirocrystalline t	are filled by 2 cm) lagioclase-oliv o fine-grained	green clays or Fe-ox	tyhydroxide minera		
48-896A-12R-2 (FOCK NAME: Hig GRAIN SIZE: Mic EXTURE: Glome	Piece 1C, 9–1 ghly phyric pl rocrystalline trophyric; radia	are filled by 2 cm) lagioclase-oliv o fine-grained	green clays or Fe-ox rine basalt.	observer: IMS		
48-896A-12R-2 (FOCK NAME: Higher Microsoft Name: Higher Nam	Piece 1C, 9–1 ghly phyric pl rocrystalline trophyric; radia PERCENT	2 cm) lagioclase-oliv o fine-grained ate.	green clays or Fe-ox	tyhydroxide minera		
48-896A-12R-2 (I OCK NAME: High IRAIN SIZE: Mice EXTURE: Glomes RIMARY IINERALOGY HENOCRYSTS	Piece 1C, 9–1 ghly phyric pl rocrystalline trophyric; radia PERCENT	2 cm) lagioclase-oliv o fine-grained ate.	green clays or Fe-ox rine basalt.	OBSERVER: IMS	WHERE SAM	IPLED: Unit 17
48-896A-12R-2 (I OCK NAME: Higher Size: Micro EXTURE: Glomer EXTURE: Glomer MIMARY MINERALOGY HENOCRYSTS	Piece 1C, 9–1 ghly phyric procrystalline to rophyric; radia PERCENT PRESENT	2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL	green clays or Fe-ox vine basalt.	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant.	APLED: Unit 17 COMMENTS
48-896A-12R-2 (I OCK NAME: Higher Street Microscope Street Microsc	rstitial spaces Piece 1C, 9–1 ghly phyric pi rocrystalline te rophyric; radia PERCENT PRESENT 0	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0	green clays or Fe-ox vine basalt. SIZE (mm) 0.1-0 6	OBSERVER: IMS	WHERE SAM	APLED: Unit 17 COMMENTS
48-896A-12R-2 (IROCK NAME: Higher Size: Micrexture: Glome: Texture: Glome:	Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 0 11.4 Tr	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr	green clays or Fe-ox vine basalt. SIZE (mm) 0.1–0 6 0.5–2.0	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	MPLED: Unit 17 COMMENTS
48-896A-12R-2 (I OCK NAME: Higher Street Str	Piece 1C, 9–1 ghly phyric pl rocrystalline te rophyric; radia PERCENT PRESENT 0 11.4	2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4	green clays or Fe-ox vine basalt. SIZE (mm) 0.1–0 6 0.5–2.0	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	APLED: Unit 17 COMMENTS
48-896A-12R-2 (I OCK NAME: Higher and the second se	Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 0 11.4 Tr	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr	green clays or Fe-ox vine basalt. 	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal
48-896A-12R-2 (I OCK NAME: Higher and the second of the se	Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 0 11.4 Tr	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr 85.6	green clays or Fe-ox vine basalt. 	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal
48-896A-12R-2 (I COCK NAME: Higher of the control o	Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 0 11.4 Tr 85.6	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr 85.6	green clays or Fe-ox vine basalt. 	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	COMMENTS COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal magnetite, 0.001–0.025 mm.
48-896A-12R-2 (IOCK NAME: Higher III (IOCK I	rstitial spaces Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radis PERCENT 0 11.4 Tr 85.6	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr 85.6 REPLACING FILLING Olivine	green clays or Fe-ox vine basalt. 	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal magnetite, 0.001–0.025 mm. COMMENTS
48-896A-12R-2 (F ROCK NAME: Hig GRAIN SIZE: Micr	Piece IC, 9–1 ghly phyric pl rocrystalline te rophyric; radia PERCENT PRESENT 0 11.4 Tr 85.6 PERCENT 3.0	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr 85.6 REPLACING FILLING Olivine	green clays or Fe-ox vine basalt. 	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal magnetite, 0.001–0.025 mm. COMMENTS Saponite associated with iron oxyhydroxide.
48-896A-12R-2 (I COCK NAME: Higher the control of t	Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 0 11.4 Tr 85.6 PERCENT 3.0 Interstitial Tr	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr 85.6 REPLACING FILLING Olivine ?	green clays or Fe-ox rine basalt. SIZE (mm) 0.1–0 6 0.5–2.0 0.02–0.11	OBSERVER: IMS COMPOSITION	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral, equant.	COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal magnetite, 0.001–0.025 mm. COMMENTS Saponite associated with iron oxyhydroxide. Red-orange iddingsite the most frequent form. Disseminated along microfractures, staining plagioclase.
48-896A-12R-2 (I COCK NAME: Higher and the second s	Piece 1C, 9–1 ghly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 0 11.4 Tr 85.6 PERCENT 3.0 Interstitial Tr	are filled by 2 cm) lagioclase-oliv o fine-grained ate. PERCENT ORIGINAL 3.0 11.4 Tr 85.6 REPLACING FILLING Olivine	green clays or Fe-ox vine basalt. 	OBSERVER: IMS	WHERE SAM MORPHOLOGY Euhedral, equant. Euhedral, equant, laths. Euhedral, anhedral,	COMMENTS Swallowtail quenched plagioclase, 0.05–1.0-mm. Intergrown plagioclase, olivine, clinopyroxene defining sheaf-spherical, plumose, and comb quench textures. Trace equant-skeletal magnetite, 0.001–0.025 mm. COMMENTS Saponite associated with iron oxyhydroxide. Red-orange iddingsite the most frequent form.

148-896A-12R-2 (Piece 3, 31-37 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 17

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained.
TEXTURE: Glomerophyric to porphyritic, radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.4	0.1-0 3		Equant, euhedral.	Commonly associated with plagioclase clusters.
Plagioclase	5.8	5.8	0.2 - 2.0		Equant, laths, euhed	ral. The largest are individuals in the groundmass.
Spinel	Tr	Tr	0.03-0.08		Euhedral to anhedral, equant.	
GROUNDMASS					N &	
Unspecified	91.8					Swallowtail plagioclase, 0.05 to 1 mm; intergrown plagioclase, olivine, and clinopyroxene define sheaf-spherical, branching, and comb quench textures.
SECONDARY		REPLACING	3/			\$150 m \$2.00 m \$1.00 m \$2.00 m \$2.00 m
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2.4	Olivine, pla	gioclase, pore	space.		Smectite(?) with first-order birefringence, well-crystallized, replaces olivine and plagioclase. Green clay (nontronite?) fills pores or mm-sized vugs.
Carbonate	Tr	Vugs.				Fibroradial and blocky with clays in vugs.
Chlorite(?)	Tr	Pore space?				Identification of chlorite is tentative: the mineral exhibits weak bluish green pleochroism and low birefringence.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The green "vugs" are 5-mm-diameter patches of vermicular clays, pale green in hand specimen, that are well crystallized and exhibit first-order interference. Several vugs contain carbonate (calcite or aragonite undetermined). The vein is 0.2 mm wide and is filled with colorless fibrous clay with a 0.01-mm-wide green clay selvage. Locally, the selvage is brown-orange (stained with Fe-oxyhydroxides).

148-896A-14R-1 (Piece 2B, 38-41 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 18

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS0	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine		1.2	0.2 - 0.6		Equant, euhedral.	
Plagioclase	10.8	10.8	0.5-3.0		Equant laths, euhedral.	
Spinel	Tr	Tr	0.03-0.11		Euhedral to anhedral, equant.	
GROUNDMASS						
Magnetite			0.001-0.005		Skeletal, equant.	
Unspecified	88.0				number that the sent and up of \$\ddot\ \text{0.25 of 3.55}	Swallowtail plagioclase, 0.005-1 mm long. Intergrown plagioclase, olivine, clinopyroxene define radiating sheaf, branching, and comb quench textures.
SECONDARY		REPLACING/				
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	1.2	STATE OF STA	space, plagioc	lase.		Pale brown saponite.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Olivine is completely replaced by saponite, and plagioclase is incipiently replaced by saponite. The section contains two veinlets of colorless saponite, one 0.2 mm wide and the other 0.4 mm wide.

WHERE SAMPLED: Unit 19

148-896A-14R-2 (Piece 3, 28-31 cm) ROCK NAME: Highly phyric plagioclase-olivine basalt, GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate-intersertal.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		***************************************
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.8	0.1-0.5		Equant, euhedral.	
Plagioclase	14.4	14.4	0.5-2.5		Equant, laths, euhedral	♣:
Spinel	Tr	Tr	0.015-0.10		Euhedral to subhedral, equant.	
GROUNDMASS					5 2	
Unspecified	83.8					Swallowtail plagioclase, 0.04 to 0.9 mm; intergrown plagioclas and olivine define sheaf-spherical and branching quench textures Glass in groundmass is completely altered.
SECONDARY		REPLACING	v			Glass in groundinass is completely affered.
MINERALOGY	PERCENT	FILLING	1/			COMMENTS
Clays	1.8	200000000	gioclase, and veir	ıs.		Olivine completely replaced by saponite; plagioclase is heavily replaced by clay within 0.5 mm of the large vein.
Aragonite	Tr	Vein.				
VESICLES/		***************************************	SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The clay + aragonite vein is >1 cm wide, with light green and tan clay at the margins (up to 7 mm wide) and aragonite (up to 9 mm across) in the center. In addition, there are four or five clay veins, 0.15 to 0.7 mm wide, comprised of tan, typically fibrous clays oriented perpendicular to the vein walls. Plagioclase crystals are brittlely fractured where they are cut by the clay veins.

OBSERVER: IMS

WHERE SAMPLED: Unit 20

148-896A-14R-2 (Piece 7, 58-61 cm) ROCK NAME: Sparsely phyric olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate-intersertal.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-				
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS		
Olivine	0	1.4	0.1-0 4		Equant, euhedral.			
Plagioclase	0.2	0.2	0.2 - 0.4		Equant, laths, euhedral.			
Spinel	Tr	Tr	0.05 - 0.08		Euhedral to subhedral, equant.			
GROUNDMASS								
Unspecified	98.4					Swallowtail plagioclase, 0.05 to 1 mm. Plagioclase and olivine intergrown define sheaf-spherical, branching, and comb quench texture. Original interstitial glass is completely altered.		
SECONDARY		REPLACING	3/			COMMENTS		
MINERALOGY	PERCENT	FILLING						
Clays	1.4	Olivine, pla	gioclase, inter	stitial.	Also forms along vein selvage. Completely replaces olivine some plagioclase cores (rims remain fresh).			
Aragonite	Tr	Vein.				Blocky crystals in vein with clay selvage.		
Fe-oxyhydroxide	Tr	Interstitial.				Locally disseminated, very fine-grained.		
VESICLES/			SIZE					
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS		
Vesicles						None.		

148-896A-14R-2 (Piece 16A, 113-115 cm) OBSERVER: IMS

ROCK NAME: Highly phyric plagioclase-olivine basalt.
GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate-intersertal.

WHERE SAMPLED: Unit 21

VESICLES/ CAVITIES Vesicles	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS None.
Fe-oxyhydroxide	Tr	Olivine, gro			***************************************	Replaces olivine locally along rims, and is irregularly distributed i the groundmass staining plumose clinopyroxene.
Zeolites	Tr	Vein.	01124-000000			Associated with clay in a vein, forming cubic and prismatic crystal (see comments below).
Clays	3.6	Olivine, plag	gioclase, interstiti	al, void.		Pale brown smectite replaces olivine completely, plagioclase partially, and forms interstitially. Green clay replaces interstitian glass and forms in miarolitic voids.
SECONDARY MINERALOGY	PERCENT	REPLACING FILLING				COMMENTS
Unspecified	84.8					Swallowtail plagioclase, 0.04 to 1 mm; plagioclase and olivine intergrowths define comb and branching quench textures. Interstitial glass is completely altered.
GROUNDMASS					4.5	2 10 00 00 0 0 00 0 0 0 000 0
Spinel	Tr	Tr	0.02-0.13		Euhedral to subhedral, equant.	
Plagioclase	11.6	11.6	0.5-2.0		Equant, laths, euhedral.	
Olivine	0	3.6	0.2-1.0		Equant, euhedral.	
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PRIMARY	PERCENT		SIZE	COMPO-		

COMMENTS: One vein is 0.1 to 0.3 mm wide, has a bifurcating pattern, and is comprised of pale brown saponite. The center of the vein is plucked out. Another vein is 0.04 to 0.2 mm wide, and has cubic and prismatic zeolite crystals in the center and pale brown saponite at the selvage.

148-896A-14R-2 (Piece 19, 135-137 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 21

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, prophyritic-radiate.

PRIMARY MINERALOGY PHENOCRYSTS	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
Olivine	0	1.0	0.2-0.4		Equant, anhedral.	
Plagioclase	9.4	1.0	0.5-3.0		Equant, laths, euhedral.	The largest phenocrysts occur as single crystals.
Spinel	Tr	Tr	0.02-0.18		Euhedral to anhedral, equant.	
GROUNDMASS						
Magnetite	Tr	Tr	0.001 - 0.025		Equant, skeletal.	
Unspecified	89.6					Swallowtail plagioclase, 0.05 to 1 mm; intergrown plagioclase, olivine, and clinopyroxene define sheaf-spherical, branching, and comb quench textures.
SECONDARY		REPLACING	3/			F1.07074 (Add 1960) 70.07 F0.0720.0609
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	1.0	Olivine.				Saponite with pyrite replaces olivine in the gray part of the sample whereas saponite plus Fe-oxyhydroxide replaces olivine in the red- brown zone (see comments).
Pyrite	Tr	Olivine, inte	erstitial.			Size varies from 5 to 20 micrometers in the gray zone of the rock.
Fe-oxyhydroxide	Tr	Disseminate	d.			Occurs along microfractures in the red zone, and staining plumose clinopyroxene in the groundmass.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None

COMMENTS: A cm-sized red-brown zone of oxidation, has a sinuous contact with the dark gray host rock. The veinlets are 0.01 mm wide, and contain dark brown to orangebrown material.

148-896A-15R-1 (Piece 4, 23-29 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 22

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate, subophitic.

PRIMARY	PERCENT		SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine		2.4	0.1-0.5		Equant, euhedral.	
Plagioclase	10.2	10.2	0.2 - 1.9		Equant, laths, euhedral	i e
Spinel	Tr	Tr	0.02 - 0.16		Euhedral to	
					anhedral, equant.	
GROUNDMASS						
Magnetite	Tr	Tr	< 0.001-0.001		Equant.	
Unspecified	87.4					Swallowtail plagioclase, 0.05 to 1 mm; intergrowth of plagioclase,
olivine, and clinop	vroxene defin	ne branching a	nd comb			quench texture. Beginning stage of subophitic
development.						
SECONDARY		REPLACING	/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2.4	Olivine, pla	gioclase.			Olivine is completely replaced by tan saponite, and plagioclase is
-		No. of the second second	9			partially replaced by tan saponite.
Fe-oxyhydroxide	Tr	Groundmass.				Minor staining of groundmass.
Chalcopyrite	Tr	Vein.				Associated with colorless smectite in a vein.
						Associated with coloriess sincetic in a vein.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The vein is 0.01 mm wide, and contains colorless smectite with accessory grains of chalcopyrite.

148-896A-15R-1 (Piece 15, 101-106 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 23

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Glomerophyric, porphyritic, radiate-intersertal.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS	825	9543	65 M 15 M		82K 10 18W1	
Olivine	0	3.2	0.1-0.5		Equant, euhedral to subhedral.	
Plagioclase	9.8	9.8	0.5-2.5		Equant, laths, euhedral.	The largest crystals occur as single phenocrysts.
Spinel	Tr	Tr	0.01-0.20		Euhedral to anhedral, equant.	
GROUNDMASS					dimental vijedini	
Unspecified	87.0					Swallowtail plagioclase, 0.03 to 1.1 mm. Plagioclase-olivine intergrowths define comb and sheaf-spherical quench textures. Interstitial glass is completely altered.
SECONDARY		REPLACING	3/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	3.2	Olivine, into	erstitial, vein.			Olivine is completely altered to yellow to colorless or pale brown saponite.
Aragonite	Tr	Vein.				Fibers oriented perpendicular to vein edge.
Fe-oxyhydroxide	Tr	Interstitial,	vein selvage.			Very minor.
Sulfide	Tr	Interstitial.				The poor polish prohibits mineral identification.
VESICLES/	***************************************		SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: One vein, 1 mm wide, comprising a discontinuous outer layer of Fe-oxyhydroxide, with colorless to tan saponite within the vein, and fibrous aragonite in the center.

WHERE SAMPLED: Unit 24

148-896A-16R-1 (Piece 3B, 31-34 cm)
ROCK NAME: Moderately phyric plagioclase-olivine basalt.
GRAIN SIZE: Microcrystalline, fine-grained.
TEXTURE: Glomerophyric, porphyritic, radiate.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS			(3,1014110110001	
Dlivine	0	2.6	0.2-0.5		Equant, euhedral.	Mostly altered.
Plagioclase	5.8	5.8	0.1-1.7		Equant, laths, euhedral.	Glomerocrysts smaller than single phenocrysts.
Spinel GROUNDMASS	Tr	Tr	0.01-0.10		Euhedral, equant.	
Magnetite	Tr	Tr	0.001-0.010		Equant, skeletal.	
Unspecified	91.6					Swallowtail plagioclase is 0.03 to 0.9 mm. Intergrown plagioclass
olivine, and clinopy	yroxene defin	ne sheaf-spheri	ical,			plumose, and comb quench textures.
SECONDARY		REPLACING				
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2.6	Olivine, inte	rstitial.			Tan clay replaces olivine, associated with Fe-oxyhydroxide. Green clay fills voids(?) in the groundmass.
Fe-oxyhydroxide	Tr	Olivine, grou	ındmass.			Forms along microcracks with clays and within replaced olivine.
VESICLES/			SIZE		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS None.
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glome	rocrystalline,	fine-grained.				
PRIMARY		PERCENT	SIZE	СОМРО-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
MINERALOGY PHENOCRYSTS Olivine	PRESENT 0	ORIGINAL 3.8	(mm) 0.2-0.8		Equant, euhedral.	COMMENTS
PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase	PRESENT	ORIGINAL	(mm)		Equant, euhedral. Equant, laths, euhedral to	COMMENTS
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel	PRESENT 0	ORIGINAL 3.8	(mm) 0.2-0.8		Equant, euhedral. Equant, laths,	COMMENTS
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified	PRESENT 0 9.4	ORIGINAL 3.8 9.4 Tr	(mm) 0.2-0.8 0.1-1.8 0.7		Equant, euhedral. Equant, laths, euhedral to subhedral.	
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified	PRESENT 0 9.4 Tr 86.8	ORIGINAL 3.8 9.4 Tr	(mm) 0.2-0.8 0.1-1.8 0.7		Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb an branching types occurs. Plagioclase and clinopyroxene form an intergranular texture.
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	PRESENT 0 9.4 Tr 86.8 PERCENT	ORIGINAL 3.8 9.4 Tr REPLACING	(mm) 0.2-0.8 0.1-1.8	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb an branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	PRESENT 0 9.4 Tr 86.8	ORIGINAL 3.8 9.4 Tr REPLACING	(mm) 0.2-0.8 0.1-1.8 0.7	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb and branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS Olivine replaced by pale green to tan smectite with dark brown goethite rims. Plagioclase replaced partially in the core by light green to tan smectite. Interstitial areas about 1.5 mm across are
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	PRESENT 0 9.4 Tr 86.8 PERCENT 3.8	ORIGINAL 3.8 9.4 Tr REPLACING FILLING Olivine, plag	(mm) 0.2-0.8 0.1-1.8	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb an branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS Olivine replaced by pale green to tan smectite with dark brown goethite rims. Plagioclase replaced partially in the core by light green to tan smectite. Interstitial areas about 1.5 mm across are replaced by light green to bright green fibrous clays.
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	PRESENT 0 9.4 Tr 86.8 PERCENT 3.8	ORIGINAL 3.8 9.4 Tr REPLACING, FILLING Olivine, plag	(mm) 0.2-0.8 0.1-1.8	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb an branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS Olivine replaced by pale green to tan smectite with dark brown goethite rims. Plagioclase replaced partially in the core by light green to tan smectite. Interstitial areas about 1.5 mm across are replaced by light green to bright green fibrous clays. A single crystal.
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Pyrite Goethite	PRESENT 0 9.4 Tr 86.8 PERCENT 3.8	ORIGINAL 3.8 9.4 Tr REPLACING FILLING Olivine, plag	(mm) 0.2-0.8 0.1-1.8 0.7	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb and branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS Olivine replaced by pale green to tan smectite with dark brown goethite rims. Plagioclase replaced partially in the core by light green to tan smectite. Interstitial areas about 1.5 mm across are replaced by light green to bright green fibrous clays. A single crystal. Forms rims around olivine crystals that are completely replaced by clay.
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Pyrite Goethite	PRESENT 0 9.4 Tr 86.8 PERCENT 3.8	ORIGINAL 3.8 9.4 Tr REPLACING, FILLING Olivine, plag	(mm) 0.2-0.8 0.1-1.8 0.7	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb an branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS Olivine replaced by pale green to tan smectite with dark brown goethite rims. Plagioclase replaced partially in the core by light green to tan smectite. Interstitial areas about 1.5 mm across are replaced by light green to bright green fibrous clays. A single crystal. Forms rims around olivine crystals that are completely replaced by clay.
MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	PRESENT 0 9.4 Tr 86.8 PERCENT 3.8 Tr Tr Tr	ORIGINAL 3.8 9.4 Tr REPLACING FILLING Olivine, plag	(mm) 0.2-0.8 0.1-1.8 0.7	SITION	Equant, euhedral. Equant, laths, euhedral to subhedral.	Interstitial glass altered completely. Radiate texture with comb and branching types occurs. Plagioclase and clinopyroxene form an intergranular texture. COMMENTS Olivine replaced by pale green to tan smectite with dark brown goethite rims. Plagioclase replaced partially in the core by light green to tan smectite. Interstitial areas about 1.5 mm across are replaced by light green to bright green fibrous clays. A single crystal. Forms rims around olivine crystals that are completely replaced by clay. Minor phase associated with the margins of clay veins, this miner.

COMMENTS: There are two veins with tan smectite. One is 0.2 to 0.4 mm wide, and the other is 0.02 mm wide.

148-896A-16R-3 (Piece 4B, 88-91 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 24

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Glomerophyric to porphyritic; intergranular, subophitic.

PRIMARY		PERCENT	SIZE	COMPO-	***************************************	
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	8.0	0.2-1.5		Equant, euhedral.	
Plagioclase	8.2	8.2	0.12 - 2.1		Part Art II version announce reson	The largest crystals are solitary phenocrysts.
Spinel	Tr	Tr	0.04-0.10		Euhedral to subhedral, equant.	Partly replaced by magnetite.
GROUNDMASS					8.3	
Plagioclase	48.6					
Clinopyroxene	26.6					
Olivine	5.0	5.0				
Magnetite	1.4					
Glass	2.0	2.0				Completely altered to clays.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	8.0	Olivine, int	erstitial.			Olivine is replaced by saponite, Fe-oxyhydroxide, and carbonate
Interstitial						glass is replaced by smectite and minor carbonate.
Clays	5	Glass.				
Aragonite	Tr	Olivine, int	erstitial.			
Fe-oxyhydroxide	Tr	Interstitial,				Staining, disseminated along minor fractures.
VESICLES/	***************		SIZE		***************************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: This is a brownish rock. Many plagioclases exhibit an unusual alteration feature: along tiny microcracks through plagioclase, one observes high-order interference colors in cross-polarized light. The cracks are lightly iron-stained in plane-polarized light. It is hypothesized that the cracks are filled with iron-stained carbonate, which is consistent with the carbonate replacement of olivine as well in the thin section.

148-896A-17R-1 (Piece 1A, 1-3 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 25.

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Glomerophyric, radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	2.8		0.1-0.3		Equant, euhedral.	
Plagioclase GROUNDMASS	9.8		0.4-2.0		Equant, laths, euhedral.	
Unspecified	87.4					Swallowtail plagioclase, 0.05 to 0.9 mm. Intergrown plagioclase and olivine define branching and comb quench textures.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays	2.8	Olivine, int	erstitial.			Olivine replaced by tan smectite with iddingsite and, frequently, carbonate.
Carbonate	Tr	Olivine, int	erstitial.			Disseminated in interstitial voids, and part of the olivine replacement assemblage.
Fe-oxyhydroxide	Tr	Olivine.				Associated with clay and carbonate.
VESICLES/			SIZE		***************************************	***************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Void fillings(?) consist either of green clay, or a green clay rim followed by tan smectite at the center, or a yellowish green clay followed by orange Feoxyhydroxide, and a tan smectite center.

148-896A-17R-1 (Piece 10B, 82-84 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 26.

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Porphyritic, glomerophyric, radiate, subophitic.

intergrowths define sheaf-spherical and plumose quench textur SECONDARY MINERALOGY PERCENT FILLING Comments Green clay with tan fibrous clay at center replaces olivine, and fibrous tan clay replaces interstitial material. VESICLES/ CAVITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS None. COMMENTS None. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16-19 cm) GROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPO- MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS Equant, euhedral. Plagioclase 9.8 0.5-1.5 Equant, euhedral. Equant, laths, euhdral.	PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
Plagioclase 4.0 0.1–2.0 Equant, laths, euhedral. GROUNDMASS Swallowtail plagioclase, 0.04 to 0.9 mm. Plagioclase plus oli intergrowths define sheaf-spherical and plumose quench texture specified plumose. PERCENT FILLING Clays 2.4 Olivine, interstitial. Fe-oxyhydroxide Tr Olivine, interstitial. VESICLES/ CAVITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COMMENTS: One half of the chin section has Fe-oxyhydroxide. COM		PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Unspecified 93.6 Unspecified 93.6 Swallowtail plagioclase, 0.04 to 0.9 mm. Plagioclase plus oli intergrowths define sheaf-spherical and plumose quench texture of the company of the com	Olivine	2.4		0.1 - 0.2		Equant, euhedral.	
SECONDARY MINERALOGY M		4.0		0.1-2.0		Equant, laths, euhedral	
MINERALOGY PERCENT FILLING Clays 2.4 Olivine, interstitial. Fe-oxyhydroxide Tr Olivine, interstitial. VESICLES/ CANTITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS None. COMMENTS COMENTS COMMENTS COM	Jnspecified	93.6					Swallowtail plagioclase, 0.04 to 0.9 mm. Plagioclase plus olivin intergrowths define sheaf-spherical and plumose quench textures.
Clays 2.4 Olivine, interstitial. Green clay with tan fibrous clay at center replaces olivine, and fibrous tan clay replaces interstitial material. VESICLES/ CAVITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS Vesicles COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. COMMENTS: ONE AMPLED: Unit 27 OBSERVER: IMS WHERE SAMPLED: Unit 27 OBSERVER: IMS OBSERVER	SECONDARY		REPLACING	4			
Fe-oxyhydroxide Tr Olivine, interstitial. VESICLES/ CAVITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS Vesicles None. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16-19 cm) OBSERVER: IMS WHERE SAMPLED: Unit 27 ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPOMINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Dilvine 1.8 0.2-0.5 Equant, euhedral. Plagioclase 9.8 0.5-1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07-0.10 Subhedral to	MINERALOGY	PERCENT	FILLING				
VESICLES/ CAVITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS Vesicles None. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16–19 cm) OBSERVER: IMS WHERE SAMPLED: Unit 27 ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPO-MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Olivine 1.8 0.2–0.5 Equant, euhedral. Plagioclase 9.8 0.5–1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07–0.10 Subhedral to	Clays	2.4	Olivine, inte	erstitial.			Green clay with tan fibrous clay at center replaces olivine, and fibrous tan clay replaces interstitial material.
CAVITIES PERCENT LOCATION (mm) FILLING SHAPE COMMENTS Vesicles None. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16–19 cm) OBSERVER: IMS WHERE SAMPLED: Unit 27 ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPO-MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Olivine 1.8 0.2–0.5 Equant, euhedral. Plagioclase 9.8 0.5–1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07–0.10 Subhedral to	Fe-oxyhydroxide	Tr	Olivine, int	erstitial.			
Vesicles None. COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16–19 cm) ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPOMINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Olivine 1.8 0.2–0.5 Equant, euhedral. Plagioclase 9.8 0.5–1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07–0.10 Subhedral to	VESICLES/			SIZE		***************************************	
COMMENTS: One half of the thin section has Fe-oxyhydroxide accompanying the replacement of olivine and groundmass, whereas the other half does not have Fe-oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16–19 cm) OBSERVER: IMS WHERE SAMPLED: Unit 27 ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPO- MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Divine 1.8 0.2–0.5 Equant, euhedral. Plagioclase 9.8 0.5–1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07–0.10 Subhedral to	CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
oxyhydroxide. 148-896A-17R-2 (Piece 3A, 16–19 cm) OBSERVER: IMS WHERE SAMPLED: Unit 27 ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPO- MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Olivine 1.8 0.2–0.5 Equant, euhedral. Plagioclase 9.8 0.5–1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07–0.10 Subhedral to	Vesicles						None.
ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline, fine-grained. TEXTURE: Glomerophyric, radiate. PRIMARY PERCENT PERCENT SIZE COMPO- MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Olivine 1.8 0.2-0.5 Equant, euhedral. Plagioclase 9.8 0.5-1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07-0.10 Subhedral to		half of the ti	hin section has	Fe-oxyhydroxi	de accompanying the re	placement of olivine an	d groundmass, whereas the other half does not have Fe-
MINERALOGY PRESENT ORIGINAL (mm) SITION MORPHOLOGY COMMENTS PHENOCRYSTS Olivine 1.8 0.2-0.5 Equant, euhedral. Plagioclase 9.8 0.5-1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07-0.10 Subhedral to	ROCK NAME: Hig GRAIN SIZE: Micr	hly phyric p ocrystalline,	lagioclase-oliv fine-grained.	vine basalt.	OBSERVER: IMS	WHERE SAM	MPLED: Unit 27
PHENOCRYSTS Olivine 1.8 0.2–0.5 Equant, euhedral. Plagioclase 9.8 0.5–1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07–0.10 Subhedral to	PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
Plagioclase 9.8 0.5-1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07-0.10 Subhedral to		PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Plagioclase 9.8 0.5-1.5 Equant, laths, euhdral. Spinel Tr Tr 0.07-0.10 Subhedral to	Olivine	1.8		0.2 - 0.5		Equant, euhedral.	
And the state of t	Plagioclase	9.8		0.5-1.5			
anhedral, equant.	Spinel	Tr	Tr	0.07 - 0.10		Subhedral to	
GROUNDMASS						anhedral, equant.	

GROUNDMASS

SECONDARY

Unspecified 88.4

REPLACING/

MINERALOGY PERCENT FILLING Clays 1.8

Tr

Olivine, plagioclase, vein, interstitial.

Phillipsite Tr Vein.

Fe-oxyhydroxide Olivine, interstitial, in veinlets. VESICLES/ SIZE

CAVITIES PERCENT LOCATION (mm) Vesicles

FILLING SHAPE COMMENTS

COMMENTS

Swallowtail plagioclase, 0.03-0.9 mm. Sheaf-spherical, plumose,

Olivine replaced by tan smectite with or without Fe-oxyhydroxide rim. Green clays replace interstitial space near the veins. Veins

and some branching quench textures.

described below.

None.

COMMENTS: One vein, 0.08 to 0.12 mm wide, has tan saponite, is associated with several thinner, irregular veinlets of fibrous tan saponite, and has local euhedral phillipsite prisms. Another vein, 0.01 mm wide, is comprised of Fe-oxyhydroxide and tan saponite in one area, by Fe-oxyhydroxide alone in another area, and by green celadonite or nontronite alone in a third area.

148-896A-17R-3 (Piece 8, 89-93 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 28

ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Cryptocrystalline to fine-grained.

TEXTURE: Porphyritic to glomerophyric, radiate.

PRIMARY MINERALOGY PHENOCRYSTS		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
Olivine	0	4.2	0.1-0.6		Equant, euhedral.	
Plagioclase	11.2	11.2	0.2-1.5		Equant laths, euhedral.	
Spinel	Tr	Tr	0.05		Anhedral to equant.	
GROUNDMASS			10-100 K		1. and 1.	
Unspecified	84.6					Swallowtail plagioclase (0.05 to 1.1 mm). Intergrown plagioclass
p						and olivine define sheaf, spherical, and occasionally plumose quench textures.
SECONDARY		REPLACING	/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Tan clays	4.2	Olivine.				Olivine is completely altered. With iddingsite rims.
Green clays		Interstitial.				Green to orange-brown. Does not occur in one part of vein.
Plagioclase						Red stains along aqueous plagioclase cracks. (?)
Iron hydroxide	Tr					
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.
COMMENTS: Vei 148-896A-17R-4 (I ROCK NAME: Mo	Piece 7, 80–8 oderately phys	4 cm) ric plagioclase	~	OBSERVER: IM	S WHERE SAM	MPLED: Unit 28.
148-896A-17R-4 (I ROCK NAME: Mo GRAIN SIZE: Fine TEXTURE: Porphy	Piece 7, 80–8 oderately phys- grained to in- rritic, radiate	4 cm) ric plagioclase tergranular.	-olivine basalt.		S WHERE SAM	MPLED: Unit 28.
148-896A-17R-4 (I ROCK NAME: Mo GRAIN SIZE: Fine TEXTURE: Porphy	Piece 7, 80–8 oderately physical properties of the properties of t	4 cm) ric plagioclase tergranular.	-olivine basalt.		S WHERE SAN	APLED: Unit 28.
148-896A-17R-4 (I ROCK NAME: Mo GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY	Piece 7, 80–8 oderately physic-grained to in vitic, radiate s	4 cm) ric plagioclase tergranular. to intergranula	-olivine basalt.	0	S WHERE SAM	APLED: Unit 28. COMMENTS
148-896A-17R-4 () ROCK NAME: Mo GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY	Piece 7, 80–8 oderately physic-grained to in vitic, radiate s	4 cm) ric plagioclase- tergranular. to intergranular PERCENT	-olivine basalt.	COMPO-		
148-896A-17R-4 (I ROCK NAME: Mc GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine	Piece 7, 80–8 Oderately physical price of the price of t	4 cm) ric plagioclase- tergranular, to intergranular PERCENT ORIGINAL 1.4	olivine basalt. r. SIZE (mm) 0.1–0.2	COMPO-	MORPHOLOGY Equant, euhedral.	
148-896A-17R-4 (I ROCK NAME: Mc GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase	Piece 7, 80–8 oderately physical principle of the princip	4 cm) ric plagioclase- tergranular, to intergranular PERCENT ORIGINAL	-olivine basalt. r. SIZE (mm)	COMPO-	MORPHOLOGY	
148-896A-17R-4 (IROCK NAME: MCGRAIN SIZE: Fine IEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8	4 cm) ric plagioclase- tergranular, to intergranular PERCENT ORIGINAL 1.4	olivine basalt. r. SIZE (mm) 0.1–0.2	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS
148-896A-17R-4 (I ROCK NAME: Mo GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS	Piece 7, 80–8 Oderately physical price of the price of t	4 cm) ric plagioclase- tergranular, to intergranular PERCENT ORIGINAL 1.4	olivine basalt. r. SIZE (mm) 0.1–0.2	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm).
148-896A-17R-4 (IROCK NAME: MCGRAIN SIZE: Fine IEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8	4 cm) ric plagioclase- tergranular, to intergranular PERCENT ORIGINAL 1.4	olivine basalt. r. SIZE (mm) 0.1–0.2	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between
148-896A-17R-4 () ROCK NAME: Mc GRAIN SIZE: Fine FEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and
148-896A-17R-4 (IROCK NAME: MGRAIN SIZE: Fine FEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8 95.8	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite.
148-896A-17R-4 () ROCK NAME: Mc GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY	Piece 7, 80–8 oderately physical physic	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS
148-896A-17R-4 () ROCK NAME: Mc GRAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8 95.8	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine.
148-896A-17R-4 (IROCK NAME: MCGRAIN SIZE: Fine TEXTURE: Porphy	Piece 7, 80–8 oderately physical physic	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining.
148-896A-17R-4 (IROCK NAME: MCGRAIN SIZE: Fine FEXTURE: Porphy MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clays	Piece 7, 80–8 oderately physical physic	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial. Veins.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining. Tan clay with green clay selvages.
148-896A-17R-4 (IROCK NAME: McGRAIN SIZE: Fine FEXTURE: Porphy- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clays Clay	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8 95.8 PERCENT 1.4	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining. Tan clay with green clay selvages. Up to 0.6 across along veins.
148-896A-17R-4 () ROCK NAME: Mc ROCK NAME: Mc RAIN SIZE: Fine TEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clay Clay Clay Chlorite?	Piece 7, 80–8 oderately physical physic	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial. Veins. Plagioclase.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining. Tan clay with green clay selvages. Up to 0.6 across along veins. With yellow clays as interstitial void(?) fillings.
148-896A-17R-4 (IROCK NAME: McGRAIN SIZE: Fine TEXTURE: Porphy- PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clays Clay Clay	Piece 7, 80–8 oderately phys- grained to in rritic, radiate PERCENT PRESENT 0 2.8 95.8 PERCENT 1.4	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial. Veins.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining. Tan clay with green clay selvages. Up to 0.6 across along veins.
148-896A-17R-4 (IROCK NAME: MCGRAIN SIZE: Fine FEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clay Clay Chlorite? Iron hydroxide	Piece 7, 80–8 oderately physical physic	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial. Veins. Plagioclase.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining. Tan clay with green clay selvages. Up to 0.6 across along veins. With yellow clays as interstitial void(?) fillings. Disseminated. Very abundant and dark brown in brown halos
148-896A-17R-4 () ROCK NAME: Mc ROCK NAME: Mc RAIN SIZE: Fine FEXTURE: Porphy PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clays Clay Clay Clay Chlorite?	Piece 7, 80–8 oderately physical physic	4 cm) ric plagioclase- tergranular. to intergranular PERCENT ORIGINAL 1.4 2.8 REPLACING/ FILLING Olivine. Interstitial. Veins. Plagioclase.	olivine basalt. r. SIZE (mm) 0.1–0.2 0.1–1.0	COMPO-	MORPHOLOGY Equant, euhedral.	COMMENTS Swallowtail plagioclase (0.05–1.2 mm). Plagioclase and olivine intergrowths define sheaf-spherical and plumose quench textures. The intergranular minerals between plagioclase laths are clinopyroxene and magnetite. COMMENTS Tan clay occurs with iddingsite, completely replacing olivine. Green clay, varies to red clay with iron staining. Tan clay with green clay selvages. Up to 0.6 across along veins. With yellow clays as interstitial void(?) fillings. Disseminated. Very abundant and dark brown in brown halos

COMMENTS: A vein (<4 mm wide) contains tan vermicular clay with up to 0.2 mm green clay selvages locally and on only one side. The green clay layer that crosses the vein from one selvage to the other was lost during thin section preparation. The green clay vein, subparallel to selvage in the first vein, has a discontinuous tan clay center. A 0.8-mm-wide tan "fibrous" clay vein has a thin discontinuous green selvage.

148-896A-17R-4 (Piece 9, 99-102 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 28

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric to porphyritic, intergranular.

PRIMARY MINERALOGY PHENOCRYSTS		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.6	0.2-0.5		Equant, euhedral.	
Plagioclase	4.0	2.0	0.3-2.5		Equant laths, euhedral.	The largest grains occur as phenocrysts.
GROUNDMASS						
Unspecified	93.4					Plagioclase, clinopyroxene, and magnetite intergranular texture.
SECONDARY		REPLACING	G/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Green clay	2.6	Interstitial.				Voids(?)
Tan clay		Interstitial a	nd olivine.			Sometimes associated with iron hydroxides.
Carbonate		Plagioclase,	partially.			CONTROL OF THE SECOND CONTROL
Iron hydroxides	Tr		*			
VESICLES/	***********	***************************************	SIZE			***************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles			6.000000000000000000000000000000000000			None.

COMMENTS: In a band along one edge of the section, olivine is replaced by iron oxyhydroxides and pale-brown saponite and voids are filled by green "nontronite/celadonite".

Outside this zone, olivine is replaced by, and voids are filled with, pale-brown saponite. Glass inclusions in plagicalse phenocrysts are altered to pale-brown clay (palagonite?).

148-896A-17R-4 (Piece 12, 118-123 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 28.

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline, fine-grained.

TEXTURE: Glomerophyric, porphyritic, radiate, intersertal.

PRIMARY		PERCENT	SIZE	COMPO-	LODBINOLOGIC	COLORENTES
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	4.0		0.3-0.5		Equant, euhedral.	Commonly associated with glomerophyric plagioclase.
Plagioclase	12.2		0.5-3 0		Equant, laths, euhedral.	Largest crystals occur as single phenocrysts.
Spinel GROUNDMASS	Tr	Tr	0.13		Anhedral.	
Plagioclase	29.2					
Clinopyroxene	33.0					Mostly fresh.
Olivine	19.4					Difficult to distinguish between altered olivine and altered glass.
Magnetite	2.0					
SECONDARY		REPLACING	3/			
MINERALOGY	PERCENT	FILLING	7.0			COMMENTS
Clays	4.0	Olivine, int	erstitial.			Tan clay replaces olivine in the gray portion of the rock; green cla replaces olivine, with Fe-oxyhydroxide, in the red portion of the rock.
Pyrite	Tr	Olivine.				Associated with tan clay replacement of olivine in the gray portion of the rock.
Fe-oxyhydroxide	Tr	Olivine.				Associated with green clay in the red portion of the rock.
VESICLES/	*************		SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The thin section contains a gray portion where olivine is replaced by tan clay and some pyrite. This abuts, with a sharp contact, a reddish zone where olivine is replaced by green clay and iddingsite (Fe-oxyhydroxide). Here, accessory opaque minerals are oxide minerals rather than pyrite. The habit of one oxide segregation within an olivine pseudomorph is identical to the habit of some pyrite in the gray part of the rock. Beyond the reddish part, the rock gradually becomes brownish, characterized by the presence of lesser amounts of Fe-oxyhydroxide.

148-896A-18R-1 (Piece 6B, 72-75 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 29

ROCK NAME: Moderately phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Porphyritic, radiate.

PRIMARY	PERCENT		SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.8	0.1-1.0		Equant, euhedral.	
Plagioclase	6.2	6.2	0.2-2.0		Equant laths,	
lagiociase	0.2	0.2	0.2-2.0		euhderal.	
Clinopyroxene	Tr	Tr	0.03-0.30		Subhedral to	
annopyroxene	**	***	0.03-0.50		euhedral, equant.	
Spinel	Tr	Tr	0.09		Anhedral, equant.	
GROUNDMASS	370		0.00		rimearan, equanic	
Unspecified.	91.0					Swallowtail plagioclase (0.05-0.9 mm). Intergrown plagioclas olivine define sheaf-spherical quench texture.
SECONDARY		REPLACING	1			950
MINERALOGY	PERCENT		7.			COMMENTS
MINERALOGY PERCENT FILLING Pale-brown saponite 2.8 Olivine, interstitial, plagiocla			ase.		Olivine is completely replaced and saponite plagioclase is only partly and rarely replaced.	
VESICLES/			SIZE			
	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
			(mm)			None.
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi OCK NAME: High GRAIN SIZE: Micro	irregular veii iece 8, 83–86 hly phyric pl ocrystalline to	n was plucked 6 cm) agioclase-oliv o fine-grained.	out during thin se		ne 0.01-mm-wide clay	None.
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi COCK NAME: High GRAIN SIZE: Micro EXTURE: Glomero	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia	n was plucked 5 cm) agioclase-oliv. o fine-grained.	out during thin se	ection preparation. O	ne 0.01-mm-wide clay	None. veinlet parallels a larger one containing tan clay.
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi OCK NAME: High RAIN SIZE: Micro EXTURE: Glomero RIMARY	irregular veir iece 8, 83–86 hly phyric pl perystalline to ophyric, radia	n was plucked o cm) agioclase-oliv. o fine-grained. tte. PERCENT	out during thin se	OBSERVER: IMS	ne 0.01-mm-wide clay WHERE SA	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi OCK NAME: Higi RAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia	n was plucked o cm) agioclase-oliv. o fine-grained. tte. PERCENT	out during thin se	ection preparation. O	ne 0.01-mm-wide clay	None. veinlet parallels a larger one containing tan clay.
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi COCK NAME: High GRAIN SIZE: Micro EXTURE: Glomero RIMARY INFRALOGY HENOCRYSTS	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT	n was plucked 5 cm) agioclase-oliv o fine-grained. tte. PERCENT ORIGINAL	out during thin se ine basalt.	OBSERVER: IMS	WHERE SA	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi OCK NAME: High RAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY HENOCRYSTS Divine	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT 2.0	n was plucked 6 cm) agioclase-oliv o fine-grained. tte. PERCENT ORIGINAL	out during thin so ine basalt. SIZE (mm) 0.2-0.8	OBSERVER: IMS	WHERE SA MORPHOLOGY Equant, euhedral.	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi OCK NAME: High RAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY HENOCRYSTS Divine	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT	n was plucked 6 cm) agioclase-oliv o fine-grained. tte. PERCENT ORIGINAL	out during thin se ine basalt.	OBSERVER: IMS	WHERE SA WHERE SA MORPHOLOGY Equant, euhedral. Equant laths,	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi COCK NAME: High RAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY HENOCRYSTS Divine Plagioclase	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT 2.0	n was plucked 6 cm) agioclase-oliv o fine-grained. tte. PERCENT ORIGINAL	out during thin so ine basalt. SIZE (mm) 0.2-0.8	OBSERVER: IMS	WHERE SA MORPHOLOGY Equant, euhedral.	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi OCK NAME: High GRAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY HENOCRYSTS Divine Plagioclase GROUNDMASS Unspecified	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT 2.0 9.0	n was plucked 5 cm) agioclase-oliv 5 fine-grained. tte. PERCENT ORIGINAL	out during thin so ine basalt. SIZE (mm) 0.2–0.8 0.3–2.0	OBSERVER: IMS	WHERE SA WHERE SA MORPHOLOGY Equant, euhedral. Equant laths,	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi COCK NAME: High RAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY HENOCRYSTS Dilvine Plagioclase RROUNDMASS Inspecified	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT 2.0 9.0	n was plucked 6 cm) agioclase-oliv. o fine-grained. tte. PERCENT ORIGINAL	out during thin so ine basalt. SIZE (mm) 0.2–0.8 0.3–2.0	OBSERVER: IMS	WHERE SA WHERE SA MORPHOLOGY Equant, euhedral. Equant laths,	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29 COMMENTS Swallowtail plagiocalse (0.05–0.4 mm). Sheaf-spherical and plumose quench textures defined by plagioclase and olivine intergrowths.
CAVITIES Vesicles COMMENTS: One 48-896A-18R-1 (Pi COCK NAME: High BRAIN SIZE: Micro EXTURE: Glomero RIMARY MINERALOGY HENOCRYSTS Divine Plagioclase GROUNDMASS	irregular veir iece 8, 83–86 hly phyric pl ocrystalline to ophyric, radia PERCENT PRESENT 2.0 9.0	n was plucked 6 cm) agioclase-oliv. o fine-grained. tte. PERCENT ORIGINAL	out during thin so ine basalt. SIZE (mm) 0.2–0.8 0.3–2.0	OBSERVER: IMS	WHERE SA WHERE SA MORPHOLOGY Equant, euhedral. Equant laths,	None. veinlet parallels a larger one containing tan clay. MPLED: Unit 29 COMMENTS Swallowtail plagiocalse (0.05–0.4 mm). Sheaf-spherical and plumose quench textures defined by plagioclase and olivine

COMMENTS: Several irregular veins cut and locally brecciate the rock. The veins are 0.04 to <0.01 mm wide and contain tan fibrous smectite when in groundmass and plagioclase crystals (smectite does not replace the plagioclase crystals, however).

SHAPE

148-896A-18R-2 (Piece 10, 60-68 cm)

VESICLES/

CAVITIES

Vesicles

OBSERVER: IMS

FILLING

WHERE SAMPLED: Unit 30

None.

COMMENTS

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric to porphyritic, radiate to variolitic.

PERCENT LOCATION

SIZE

(mm)

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	3.8	0.3 - 2.0		Equant, euhedral.	Contain inclusions of groundmass.
Plagioclase GROUNDMASS	10.6	10.6	0.5-3.0		60. 1	
Unspecified	85.6					Swallowtail plagioclase (0.05-1 mm). Intergrowths of plagioclase and olivine define sheaf-spherical to plumose texture at the inner part of the variolitic zone.
SECONDARY		REPLACING	V			
MINERALOGY	PERCENT	FILLING				COMMENTS
Pale-brown saponite	3.8	Olivine.				Replacement is partial in the glassy area and complete elsewhere.
Greenish clay		Glass.			Minor.	Between varioles.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The section contains several green clay veins, 0.01 mm wide. The clay is green in the variolitic zone and light tan elsewhere.

148-896A-19R-1 (Piece 5, 23-25 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 30

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric; radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-			
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY		COMMENTS
Olivine	0	3.2	0.1-1.6		Equant, euhedral to subhedral.		
Plagioclase	9.2	9.2	0.2-2.0		Equant laths, euhedral to subhedral		
Clinopyroxene	1.0	1.0	0.5 - 2.0		Subhedral.	Usually corroded.	
Spinel GROUNDMASS	Tr	Tr	0.04		Euhedral.		
Unspecified	86.6					Swallowtail plagiocla texture common.	se 0.05 to 0.6 mm. Sheaf-spherical quench
SECONDARY		REPLACING	7				
MINERALOGY	PERCENT	FILLING					COMMENTS
Clays, green		Olivine, int	erstitial.			Olivine is completely	altered.
Clays, tan		Olivine, int				One.	
VESICLES/			SIZE				
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE		COMMENTS
Vesicles						None.	

COMMENTS: Structure: Incipient formation of pull-aparts is observed in the (damaged) vein. Moderate microcracking is present in of the plagioclase phenocrysts. A vein, with 0.025-mm-wide green clay selvages had a tan clay mineral in the center; it bifurcates into two veins, one 0.008 mm and the other >0.025 mm wide, which disappear into the rock. An irregular veinlet, 0.005 mm wide, contains green clay minerals, and locally, tan and yellow clay minerals. One vein zone is about 0.10 mm wide, and has very irregular and diffuse selvages of fibrous light tan clay minerals.

148-896A-19R-1 (Piece 22, 140-144 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 30

ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; radiate, intergranular.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	2.4	0.1-1.2		Equant, euhedral	
					to subhedral.	
Plagioclase	8.8	8.8	0.2-2.0		Equant laths,	
					euhedral to	
					subhedral.	
Clinopyroxene	Tr	Tr			Subhedral.	Corroded.
Spinel	Tr	Tr	0.03 - 0.15		Equant, subhedral	
					to anhedral.	
GROUNDMASS						
Unspecified	88.8					Swallowtail plagioclase 0.05–0.8 mm. Branching quench textures common. Clinopyroxene present as intergranular crystals between plagioclase laths.
SECONDARY		REPLACING	2/			pragrociase ratiis.
MINERALOGY	PERCENT		w			COMMENTS
Clays, tan	2.4	Olivine.				With iddingsite,
Clays, green	0.8	Interstitial.				Zoned around light tan core. Tan clays also in interstitial voids and as partial replacement of plagioclase.
Pyrite		Oxidized int	o goethite.			Large (0.1 mm) inclusion in plagioclase phenocryst.
VESICLES/			SIZE		***************************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: The section contains a 0.2-mm-wide, green clay vein on selvages (0.01 mm wider). Selvages contain localized patches of iddingsite with fibrous tan centers. The vein ends up as a series of thin (0.01 mm wide) bifurcating veinlets. Fibrous tan clay mineral replaces plagioclase phenocrysts along cracks. There is no evidence of offset along the vein, but moderate cracking of plagioclase is seen.

WHERE SAMPLED: Unit 30

148-896A-19R-2 (Piece 6, 28-34 cm) ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE:	Glomeroph	yric; int	ergranular	to radiate.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS	TREALANT	ORIGINAL	(mm)	SITION	MORTHOLOGI	COMMENTS
Olivine	0	3.2	0.15-1.0		Equant, euhedral to subhedral	Some include spinel.
Plagioclase	9.2	9.2	0.2-1.5		Equant laths, euhedral to subhedral.	Some large individual phenocrysts.
Clinopyroxene Spinel	Tr Tr	Tr Tr	0.15-3.0 0.03-0.15		Equant, subhedral. Equant, subhedral to anhedral.	Commonly corroded.
GROUNDMASS Unspecified	87.6					Swallowtail plagioclase 0.2–1.5 mm. Clinopyroxene and olivine present as intergranular grains between plagioclase. Sheaf-spheri and branching quench textures common.
SECONDARY		REPLACING	i/			
MINERALOGY Clays, tan	PERCENT Olivine.	FILLING				COMMENTS Fibrous.
Clays, tan Clays, green	Olivine.					With tan smectite.
VESICLES/	************	**************	SIZE	***************************************	*************************	
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS None.
148-896A-20R-1 (Pic ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr	hly phyric p ocrystalline t	lagioclase-oliv to fine-grained		OBSERVER:	IMS WHERE SAMPL	.ED: Unit 30
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr	nly phyric p ocrystalline t itic to glome	lagioclase-oliv to fine-grained erophyric; inte	l. ergranular to radi	iate.	IMS WHERE SAMPL	.ED: Unit 30
ROCK NAME: High GRAIN SIZE: Micro	nly phyric p ocrystalline t itic to glome PERCENT	lagioclase-oliv to fine-grained			IMS WHERE SAMPL MORPHOLOGY	.ED: Unit 30 COMMENTS
ROCK NAME: High GRAIN SIZE: Micro FEXTURE: Porphyr PRIMARY MINERALOGY	nly phyric p ocrystalline t itic to glome PERCENT	lagioclase-oliv to fine-grained erophyric; inte	size SIZE	iate.	MORPHOLOGY Equant, euhedral	
ROCK NAME: High GRAIN SIZE: Micro FEXTURE: Porphyr PRIMARY MINERALOGY PHENOCRYSTS Dlivine	nly phyric p perystalline t itic to glome PERCENT PRESENT	plagioclase-olivato fine-grained erophyric; interpretation of the plant of the plan	SIZE (mm)	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	
ROCK NAME: High GRAIN SIZE: Micro FEXTURE: Porphyr PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Clinopyroxene Dpaque minerals Dpaque minerals	perystalline to ditic to glome PERCENT PRESENT	plagioclase-olivato fine-grained to fine-grained terophyric; inter- PERCENT ORIGINAL	SIZE (mm) 0.3-1.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths,	
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr TEXTURE: Micro TEX	PERCENT PERSENT 0 9.8	olagioclase-olivito fine-grained erophyric; interpreter interpreter or	SIZE (mm) 0.3-1.7 0.12-2.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal.
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr PRIMARY MINERALOGY PHENOCRYSTS Dilivine Plagioclase Clinopyroxene Dpaque minerals Dpaque minerals GROUNDMASS Jnspecified	PERCENT PRESENT 0 9.8 0.2	alagioclase-olivito fine-grained erophyric; interpreter or original value of the control of the	SIZE (mm) 0.3-1.7 0.12-2.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal. Almost always in interstitial position. Swallowtail plagioclase (0.05–0.3 mm). Clinopyroxene-olivine matrix between plagioclase laths. Sheaf-spherical and combined quench textures.
ROCK NAME: High GRAIN SIZE: Micro FEXTURE: Porphyr PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Clinopyroxene Dpaque minerals Dpaque minerals GROUNDMASS Juspecified SECONDARY MINERALOGY	phly phyric pocrystalline to ditic to glome. PERCENT PRESENT 0 9.8 0.2	alagioclase-olivito fine-grained erophyric; interpreter or original of the second of t	SIZE (mm) 0.3-1.7 0.12-2.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal. Almost always in interstitial position. Swallowtail plagioclase (0.05–0.3 mm). Clinopyroxene-olivine matrix between plagioclase laths. Sheaf-spherical and combined quench textures. COMMENTS
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr TRIMARY MINERALOGY HENOCRYSTS Divine Clagioclase Clinopyroxene Deaque minerals Deaque miner	PERCENT PRESENT 0 9.8 0.2	alagioclase-olivito fine-grained erophyric; interpreter or original value of the control of the	SIZE (mm) 0.3-1.7 0.12-2.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal. Almost always in interstitial position. Swallowtail plagioclase (0.05–0.3 mm). Clinopyroxene-olivine matrix between plagioclase laths. Sheaf-spherical and combined quench textures. COMMENTS Completely replaced. Green smectite
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr TRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Clinopyroxene Dpaque minerals Dpaque minerals SROUNDMASS Juspecified MECONDARY MINERALOGY Clays, tan to brown	PERCENT PRESENT 0 9.8 0.2	alagioclase-olivito fine-grained erophyric; interpreter or original of the second of t	SIZE (mm) 0.3-1.7 0.12-2.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal. Almost always in interstitial position. Swallowtail plagioclase (0.05–0.3 mm). Clinopyroxene-olivine matrix between plagioclase laths. Sheaf-spherical and combined quench textures. COMMENTS
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr PRIMARY MINERALOGY PHENOCRYSTS Dilivine Plagioclase Clinopyroxene Dpaque minerals Dpaque minerals Jpaque minerals GROUNDMASS Jnspecified SECONDARY MINERALOGY Clays, tan to brown Clays, green VESICLES/	PERCENT 9.8 0.2 85.6	PERCENT ORIGINAL 4.4 9.8 0.2 REPLACING FILLING Olivine.	SIZE (mm) 0.3-1.7 0.12-2.7	COMPO- SITION	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal. Almost always in interstitial position. Swallowtail plagioclase (0.05–0.3 mm). Clinopyroxene-olivine matrix between plagioclase laths. Sheaf-spherical and combined quench textures. COMMENTS Completely replaced. Green smectite occurs as fissure fillings in olivine replaced by tan smectite.
ROCK NAME: High GRAIN SIZE: Micro TEXTURE: Porphyr PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Clinopyroxene Dpaque minerals Dpaque minerals SPOUNDMASS Jnspecified SECONDARY MINERALOGY Clays, tan to brown Clays, green	PERCENT 9.8 0.2 85.6	alagioclase-olivito fine-grained erophyric; interpreter or original of the second of t	SIZE (mm) 0.3–1.7 0.12–2.7	iate.	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Equant, subhedral. Titanium oxide.	COMMENTS Partly resorbed. Encloses plagioclase microphenocryst. Skeletal. Almost always in interstitial position. Swallowtail plagioclase (0.05–0.3 mm). Clinopyroxene-olivine matrix between plagioclase laths. Sheaf-spherical and combined quench textures. COMMENTS Completely replaced. Green smectite occurs as fissure fillings in olivine replaced by tan smectite.

COMMENTS: The section contains radiating minerals (possibly prehnite).

148-896A-20R-1 (Piece 16, 73-77 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 31

ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained.
TEXTURE: Glomerophyric; radiate to intergranular.

TEXTURE: Glomes						
PRIMARY MINERALOGY PHENOCRYSTS		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
Olivine	2.4	2.4	0.15-1.2		Equant, euhedral to subhedral,	
Plagioclase	10.2	10.2	0.2-2.5		Equant laths, euhedral to subhedral.	
Clinopyroxene GROUNDMASS	0.8	0.8	0.4-1.5		Equant, subhedral.	Partly resorbed; encloses plagioclase.
Unspecified	86.6					Swallowtail plagioclase (0.05-0.6 mm). Sheaf-spherical and branching quench textures common, defined by intergrown plagioclase-olivine. Poorly developed comb texture.
SECONDARY		REPLACING	1			
MINERALOGY	PERCENT	953377717 had hiv.				COMMENTS
Clays, tan		Olivine, int				Olivine completely replaced except two crystals (that may be clinopyroxene).
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.
148-896A-20R-1 (I ROCK NAME: Mo GRAIN SIZE: Mic	Piece 18, 83- oderately phy rocrystalline	88 cm) ric plagioclase to fine-grained	erocracking of plagi e-olivine basalt.	ioclase. OBSERVER: IN		AMPLED: Unit 31
148-896A-20R-1 (I ROCK NAME: Mo GRAIN SIZE: Mic TEXTURE: Glome	Piece 18, 83- oderately phy rocrystalline i rophyric; inte	88 cm) ric plagioclase to fine-grained	erocracking of plagi e-olivine basalt.			
148-896A-20R-1 (I ROCK NAME: M GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY	Piece 18, 83- oderately phy rocrystalline a rophyric; inte	88 cm) ric plagioclas to fine-grained rgranular to re	e-olivine basalt. I. adiate.	OBSERVER: IN		
148-896A-20R-1 (I ROCK NAME: M GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS	Piece 18, 83- oderately phy rocrystalline a rophyric; inte	88 cm) ric plagioclas to fine-grained rgranular to re-	e-olivine basalt. diadiate.	OBSERVER: IM	MORPHOLOGY Equant, euhedral	AMPLED: Unit 31
148-896A-20R-1 (1 ROCK NAME: Mc GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine	Piece 18, 83- oderately phy rocrystalline a rophyric; inte	88 cm) ric plagioclass to fine-grained rgranular to re- PERCENT ORIGINAL	e-olivine basalt. i. diate. SIZE (mm)	OBSERVER: IM	MORPHOLOGY	AMPLED: Unit 31
148-896A-20R-1 (I ROCK NAME: Mc GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase GROUNDMASS	Piece 18, 83- oderately phy rocrystalline i rophyric; inte PERCENT PRESENT 0 7.0	88 cm) ric plagioclass to fine-grained rgranular to re- PERCENT ORIGINAL 0.8	e-olivine basalt. I. adiate. SIZE (mm) 0.2-1.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	AMPLED: Unit 31 COMMENTS
148-896A-20R-1 () ROCK NAME: Mc GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS	Piece 18, 83- oderately phy rocrystalline rophyric; inte PERCENT PRESENT 0	88 cm) ric plagioclass to fine-grained rgranular to re- PERCENT ORIGINAL 0.8	e-olivine basalt. I. adiate. SIZE (mm) 0.2-1.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	AMPLED: Unit 31
148-896A-20R-1 (1 ROCK NAME: Mic GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified	Piece 18, 83- oderately phy rocrystalline r rophyric; inte PERCENT PRESENT 0 7.0	88 cm) ric plagioclass to fine-grainer rgranular to re PERCENT ORIGINAL 0.8 7.0	e-olivine basalt. d. adiate. SIZE (mm) 0.2–1.0 0.2–2.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagioclase laths. Branching type radiate quench texture.
148-896A-20R-1 (1 ROCK NAME: Mic GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY	Piece 18, 83- oderately phy rocrystalline i rophyric; inte PERCENT PRESENT 0 7.0	88 cm) ric plagioclass to fine-grainer rgranular to re PERCENT ORIGINAL 0.8 7.0 REPLACING FILLING	e-olivine basalt. d. adiate. SIZE (mm) 0.2-1.0 0.2-2.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagioclase laths. Branching type radiate quench texture. COMMENTS
148-896A-20R-1 (IROCK NAME: MGRAIN SIZE: Mic GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dilivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays, pale buff	Piece 18, 83- oderately phy rocrystalline r rophyric; inte PERCENT PRESENT 0 7.0	88 cm) ric plagioclass to fine-grained rgranular to re- PERCENT ORIGINAL 0.8 7.0 REPLACING FILLING Olivine, into	e-olivine basalt. I. adiate. SIZE (mm) 0.2-1.0 0.2-2.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagicclase laths. Branching type radiate quench texture. COMMENTS With or without FeO-OH.
148-896A-20R-1 (I ROCK NAME: Mo GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays, pale buff	Piece 18, 83- oderately phy rocrystalline r rophyric; inte PERCENT PRESENT 0 7.0	88 cm) ric plagioclass to fine-grainer rgranular to re PERCENT ORIGINAL 0.8 7.0 REPLACING FILLING	e-olivine basalt. I. adiate. SIZE (mm) 0.2-1.0 0.2-2.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagioclase laths. Branching type radiate quench texture. COMMENTS With or without FeO-OH. Olivine rims of FeO-OH and around inclusions in olivine. Replace
148-896A-20R-1 (IROCK NAME; McGRAIN SIZE: MicITEXTURE: Glome	Piece 18, 83- oderately phy rocrystalline r rophyric; inte PERCENT PRESENT 0 7.0	88 cm) ric plagioclass to fine-grained rgranular to re- PERCENT ORIGINAL 0.8 7.0 REPLACING FILLING Olivine, into	e-olivine basalt. d. diate. SIZE (mm) 0.2-1.0 0.2-2.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagicclase laths. Branching type radiate quench texture. COMMENTS With or without FeO-OH.
148-896A-20R-1 () ROCK NAME; Mc GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays, pale buff FeO-OH Pyrite	Piece 18, 83- oderately phy rocrystalline i rophyric; inte PERCENT PRESENT 0 7.0 92.2 PERCENT	88 cm) ric plagioclas to fine-grained rgranular to re PERCENT ORIGINAL 0.8 7.0 REPLACING FILLING Olivine, intel Olivine, intel Breccia class	e-olivine basalt. I. adiate. SIZE (mm) 0.2–1.0 0.2–2.0	OBSERVER: IN COMPO- SITION	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral.	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagioclase laths. Branching type radiate quench texture. COMMENTS With or without FeO-OH. Olivine rims of FeO-OH and around inclusions in olivine. Replace by smectite and iron oxyhydroxides. Vugs abundant in breccia matrix and within groundmass of more altered or oxidized clasts.
COMMENTS: The 148-896A-20R-1 (I ROCK NAME: MG GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase GROUNDMASS Unspecified SECONDARY MINERALOGY Clays, pale buff FeO-OH Pyrite VESICLES/ CAVITIES Vesicles	Piece 18, 83- oderately phy rocrystalline i rophyric; inte PERCENT PRESENT 0 7.0 92.2 PERCENT	88 cm) ric plagioclas to fine-grained rgranular to re PERCENT ORIGINAL 0.8 7.0 REPLACING FILLING Olivine, inte	e-olivine basalt. I. adiate. SIZE (mm) 0.2–1.0 0.2–2.0	OBSERVER: IM	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular crystals between plagioclase laths. Branching type radiate quench texture. COMMENTS With or without FeO-OH. Olivine rims of FeO-OH and around inclusions in olivine. Replace by smectite and iron oxyhydroxides. Vugs abundant in breccia matrix and within groundmass of more

COMMENTS: Sections consists of brecciated basalt with clasts of mixed grain size (from fine to medium). Matrix consists of highly altered basalt and igneous grains with cement of pale, buff-colored smectite and crosscut by smectite grains. Clay minerals replace olivine, plagioclase, and interstitial material in clasts and disaggregated clasts to individual grains. Some cm-sized clasts show boundaries characterized by microbrecciation. There is no evidence of shear (opaque seams, bending of clasts, etc.) or displacement in the breccia.

148-896A-21R-1 (Piece 3, 11-19 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 31

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric to porphyritic; intergranular to radiate.

DUENOCDVOTO		PERCENT ORIGINAL	(mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS Olivine	0	3.2	0.1-0.6		Equant, euhedral	
Plagioclase	15.2	15.2	0.15-1.5		to subhedral. Equant laths, euhedral to subhedral.	
Clinopyroxene	0.4	0.4	0.3-1.0		Equant, subhedral.	Commonly corroded.
Spinel GROUNDMASS	Tr	Tr	0.8		Euhedral.	
Unspecified	81.2					Swallowtail plagioclase (0.04-0.6 mm). Poorly developed sheaf- spherical and branching quench textures.
SECONDARY		REPLACING	3/			9 \$ 500 POLES (2007) 201 (200 0) \$50 B. ROSSON (2008) 000
MINERALOGY	PERCENT					COMMENTS Fibrous, medium birefringence (with or without iddingsite).
Clays, tan to Clays, green brown Pyrite	Tr	Olivine, into	erstitial. I idding site, interst	itial.		Also as olivine replacement (with or without iddingsite).
Chalcopyrite	Tr					Replacement by tan smectite and iddingsite.
VESICLES/		**************	SIZE			***************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.
EXTURE: Porphyr	itic; glomero		20000			
DDDAADA	DEDOESE				***************************************	
MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
MINERALOGY PHENOCRYSTS		PERCENT	SIZE		Equant, euhedral	COMMENTS Often associated with plagioclase glomerocrysts.
MINERALOGY PHENOCRYSTS Olivine	PRESENT	PERCENT ORIGINAL	SIZE (mm)			
MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene	PRESENT 0 11.4 Tr	PERCENT ORIGINAL 3.8 11.4	SIZE (mm) 0.2-1.2 0.2-2.5		Equant, euhedral to subhedral. Equant laths, subhedral.	
MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel	PRESENT 0 11.4	PERCENT ORIGINAL 3.8 11.4	SIZE (mm) 0.2-1.2		Equant, euhedral to subhedral. Equant laths,	
PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Unspecified	PRESENT 0 11.4 Tr Tr	PERCENT ORIGINAL 3.8 11.4	SIZE (mm) 0.2-1.2 0.2-2.5		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts.
MINERALOGY PHENOCRYSTS Divine Plagioclase Clinopyroxene Spinel GROUNDMASS	PRESENT 0 11.4 Tr	PERCENT ORIGINAL 3.8 11.4	SIZE (mm) 0.2-1.2 0.2-2.5		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts.
MINERALOGY PHENOCRYSTS Dlivine Plagioclase Clinopyroxene Spinel GROUNDMASS Unspecified	PRESENT 0 11.4 Tr Tr Tr 84.8	PERCENT ORIGINAL 3.8 11.4 Tr Tr	SIZE (mm) 0.2-1.2 0.2-2.5 0.02-0.16		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts. Swallowtail plagioclase (0.1–1.0 mm). Clinopyroxene and oliving between plagioclase laths give intergranular texture. Branching-type quench texture common. Comb texture occurs occasionally.
MINERALOGY PHENOCRYSTS Dlivine Plagioclase Clinopyroxene Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	PRESENT 0 11.4 Tr Tr	PERCENT ORIGINAL 3.8 11.4 Tr Tr	SIZE (mm) 0.2-1.2 0.2-2.5 0.02-0.16		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts. Swallowtail plagioclase (0.1–1.0 mm). Clinopyroxene and olivin between plagioclase laths give intergranular texture. Branching-type quench texture common. Comb texture occurs occasionally. COMMENTS
MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays, green	PRESENT 0 11.4 Tr Tr Tr 84.8	PERCENT ORIGINAL 3.8 11.4 Tr Tr	SIZE (mm) 0.2-1.2 0.2-2.5 0.02-0.16		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts. Swallowtail plagioclase (0.1–1.0 mm). Clinopyroxene and olivine between plagioclase laths give intergranular texture. Branching-type quench texture common. Comb texture occurs occasionally. COMMENTS With iddingsite and olivine. All the olivines are completely altered With iddingsite, olivine, and carbonate. All the olivines are
MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays, green Clays, tan	PRESENT 0 11.4 Tr Tr Tr 84.8	PERCENT ORIGINAL 3.8 11.4 Tr Tr Tr	SIZE (mm) 0.2-1.2 0.2-2.5 0.02-0.16		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts. Swallowtail plagioclase (0.1–1.0 mm). Clinopyroxene and olivine between plagioclase laths give intergranular texture. Branching-type quench texture common. Comb texture occurs occasionally. COMMENTS With iddingsite and olivine. All the olivines are completely altered
MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel	PRESENT 0 11.4 Tr Tr 84.8 PERCENT	PERCENT ORIGINAL 3.8 11.4 Tr Tr Tr	SIZE (mm) 0.2–1.2 0.2–2.5 0.02–0.16		Equant, euhedral to subhedral. Equant laths, subhedral. Equant, euhedral	Often associated with plagioclase glomerocrysts. Swallowtail plagioclase (0.1–1.0 mm). Clinopyroxene and oliving between plagioclase laths give intergranular texture. Branching-type quench texture common. Comb texture occurs occasionally. COMMENTS With iddingsite and olivine. All the olivines are completely altered with iddingsite, olivine, and carbonate. All the olivines are completely altered.

COMMENTS: Section contains fibrous veins from 0.2 to 0.8 mm wide. Clays in veins show fiber-like shape. They are arranged along the vein walls with their long axes orthogonal to the vein edges. Carbonate is present as fibers and as crystals with a mosaic texture. Clayey, locally displaced, "inclusion bands" occur within the carbonate "stretched" fibers. Slight kinking seen in the carbonate stretched fibers is always orthogonal to the vein edges. Surface coated with orange iddingsite and colorless clay rim (coating 0.05 mm wide). This is seen on the long side of the section.

148-896A-21R-2 (Piece 3B, 27-29 cm)

OBSERVER: IMS

OBSERVER: IMS

WHERE SAMPLED: Unit 31

ROCK NAME: Highly phyric plagioclase-olivine basalt.
GRAIN SIZE: Microcrystalline to fine-grained.

OKAIN SIZ	E. Microcrysu	unne to fine-gra	unea.
TEXTURE:	Porphyritic to	glomerophyric;	radiate.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS	TRESENT	OKIGIIVAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	4.0	0.2-0.8		Equant, euhedral to subhedral.	
Plagioclase	10.6	10.6	0.1-3.0		Equant laths, euhedral.	
Spinel	Tr	Tr	0.02-0.20		Equant, euhedral to subhedral.	
GROUNDMASS						
Magnetite			0.001-0.005		Equant, skeletal.	
Unspecified	85.4					Swallowtail plagioclase (0.1-1.2 mm). Sheaf-spherical and branching quench textures, defined by intergrown plagioclase, olivine, and clinopyroxene.
SECONDARY		REPLACING	1			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays, tan		Olivine, pla	gioclase.			Fibrous; with or without iddingsite.
Clays, green with tan		Olivine, into				Also on olivine replacement (with or without iddingsite) associated clay mineral; fine-grained aggregates.
VESICLES/			SIZE	***************************************	***************************************	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section contains thin vein (0.02 mm wide) of green clay with low birefringence.

148-896A-21R-2 (Piece 9B, 87-89 cm)

ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Glass and microcrystalline to fine-grained.

TEXTURE: Glomerophyric; radiate.

WHERE SAMPLED: Unit 31

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	4.2	0.08-2.0		Equant, euhedral to subhedral.	Some grains are fresh or partly to fresh.
Plagioclase	10.8	10.8	0.12 - 1.2			
Spinel	Tr	Tr	0.05-0.09		Equant, euhedral to subhedral.	In glassy area only.
GROUNDMASS						
Unspecified	85.0					Variolitic to sheaf-spherical and plumose quench textures. (Only the glassy variolitic area considered and point-counted.)
SECONDARY		REPLACING	3/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Smectite, tan		Olivine-plag	ioclase vein w	ith phillipsite.		In glassy margin (A). Breccia (B) cement with phillipsite. Vein in smectite, fibers perpendicular to the selvage. Vein center, very minor, in part C, with tan deposits at selvage.
Phillipsite		Breccia cem	ent veins in part	Α.		
Clay, bluish green		Interstitial v	ein.			In Part C only. (Pleochroic; yellow to bluish green).
Iddingsite		Olivine, pla	gioclase.			With or without tan saponite "staining" in Part C. Very abundant.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section is composed of three parts ("bands"): (A) Glassy pillow margin (with fresh olivine relict); (B) Breccia with clasts consisting of angular or rounded pieces of plagioclase and clinopyroxene, cement consists of tan smectite and phillipsite; C) Medium-grained basalt. When seen in hand specimen, part C is a clast, part A may be a clast, part B cements C and possibly A. The section contains a number of veins. One vein in part A is 0.4 mm wide and contains discontinuous iddingsite at selvage, phillipsite, and tan saponite (fibroradiate). There are two parallel, 0.2-mm-wide veins; phillipsite (1), tan saponite (2) in part A. In part C, there is one 0.2-mm-wide vein (tan saponite fibers with minor iddingsite at selvage) and one 0.1-mm-wide vein with bluish-green clay at selvage, replaced by iddingsite and tan saponite, parallel to contact between B and C. The veins crosscutting A do not crosscut B. In zone B (breccia), there is no evidence of shear or displacement (i.e., preferred orientation).

WHERE SAMPLED: Unit 32

148-896A-21R-3 (Piece 4A, 22-24 cm) ROCK NAME: Highly phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Porphyritic; radiate to intergranular.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS Olivine	0	6.6	0.1-0.3		Equant, euhedral.	
Plagioclase	12.2	12.2	0.1-2.5		Equant, laths, euhedral.	
Clinopyroxene	0.2	0.2	0.2-2.0		Equant laths, euhedral to subhedral.	Most crystals are corroded and contain plagioclase.
Spinel GROUNDMASS	Tr	Tr	0.02-0.10		Equant, anhedral.	
Magnetite Unspecified	81.0		<.001-0.005		Equant.	Swallowtail plagioclase (0.1–0.8 mm). Radiate quench textures are sheaf-spherical, branching, and comb types, defined by intergrown plagioclase and clinopyroxene.
SECONDARY		REPLACING	G/			
MINERALOGY Clays, tan	PERCENT	FILLING Olivine, inte	erstitial.			COMMENTS Fibrous, without iddingsite and fine-grained aggregates without iddingsite.
VESICLES/	-		SIZE			COLUMN
CAVITIES Vesicles	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS None.
148-896A-22R-1 (I ROCK NAME: Hi GRAIN SIZE: Mic	ghly phyric p rocrystalline,	lagioclase-oliv fine-grained.	vine basalt.	OBSERVER: IN	MS WHERE SA	AMPLED: Unit 32
ROCK NAME: Hi	ghly phyric p rocrystalline, rophyric; radi	lagioclase-oliv fine-grained.	vine basalt.	OBSERVER: IN	4S WHERE SA	AMPLED: Unit 32
ROCK NAME: HI GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY	ghly phyric p rocrystalline, rophyric; radi	lagioclase-oliv fine-grained.	SIZE (mm)	OBSERVER: IN COMPO- SITION	MORPHOLOGY	AMPLED: Unit 32 COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY	ghly phyric p rocrystalline, rophyric; radi	lagioclase-oliv fine-grained. ate. PERCENT	SIZE	COMPO-	MORPHOLOGY Equant, euhedral	
ROCK NAME: HI GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS	ghly phyric p rocrystalline, rophyric; radii PERCENT PRESENT	fine-grained. ate. PERCENT ORIGINAL	SIZE (mm)	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine	ghly phyric p crocrystalline, crophyric; radia PERCENT PRESENT	percent original	SIZE (mm) 0.2-2.0	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths,	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase	ghly phyric p procrystalline, rophyric; radii PERCENT PRESENT 0 14.8	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8	SIZE (mm) 0.2-2.0 0.1-4 0	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome	ghly phyric p rrocrystalline, rophyric; radio PERCENT PRESENT 0 14.8	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral.	COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified	ghly phyric p rrocrystalline, rophyric; radi: PERCENT PRESENT 0 14.8 0.4 Tr 79.8	percent Original 14.8 0.4 Tr	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0 0.4 0.001-0.001	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome	ghly phyric p rrocrystalline, rophyric; radi: PERCENT PRESENT 0 14.8 0.4 Tr 79.8	percent Original 14.8 0.4 Tr	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0 0.4 0.001-0.001	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures and defined by clinopyroxene or intergrown
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified typically sheaf-sphe plagioclase and	ghly phyric p rrocrystalline, rophyric; radi: PERCENT PRESENT 0 14.8 0.4 Tr 79.8	percent ORIGINAL 14.8 0.4 Tr	SIZE (mm) 0.2–2.0 0.1–4 0 0.2–2.0 0.4 0.001–0.001 es. The latter are	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures an
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified typically sheaf-sphe plagioclase and SECONDARY	ghly phyric p rrocrystalline, rophyric; radi- PERCENT PRESENT 0 14.8 0.4 Tr 79.8 erical and cur	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8 0.4 Tr	SIZE (mm) 0.2–2.0 0.1–4 0 0.2–2.0 0.4 0.001–0.001 es. The latter are	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures and defined by clinopyroxene or intergrown clinopyroxene.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified typically sheaf-sphe plagioclase and SECONDARY MINERALOGY	ghly phyric p rrocrystalline, rophyric; radi: PERCENT PRESENT 0 14.8 0.4 Tr 79.8	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8 0.4 Tr ved comb type REPLACING FILLING	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0 0.4 0.001-0.001 es. The latter are	COMPO- SITION	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures an defined by clinopyroxene or intergrown clinopyroxene. COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified typically sheaf-sphe plagioclase and SECONDARY	ghly phyric p rrocrystalline, rophyric; radi- PERCENT PRESENT 0 14.8 0.4 Tr 79.8 erical and cur	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8 0.4 Tr ved comb type REPLACING FILLING	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0 0.4 0.001-0.001 es. The latter are	COMPO- SITION	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures are defined by clinopyroxene or intergrown clinopyroxene.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified typically sheaf-sphe plagioclase and SECONDARY MINERALOGY Clays, tan Fe oxyhydroxide	ghly phyric p rrocrystalline, rophyric; radi- PERCENT PRESENT 0 14.8 0.4 Tr 79.8 erical and cur	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8 0.4 Tr ved comb type REPLACING FILLING Olivine and	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0 0.4 0.001-0.001 es. The latter are plagioclase, interd.	COMPO- SITION	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures are defined by clinopyroxene or intergrown clinopyroxene. COMMENTS Fibrous, without iddingsite and interstitial fine-grained aggregates.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Clinopyroxene Spinel GROUNDMASS Magnetite Unspecified typically sheaf-spheplagioclase and SECONDARY MINERALOGY Clays, tan	ghly phyric p rrocrystalline, rophyric; radi PERCENT PERSENT 0 14.8 0.4 Tr 79.8 erical and cur	lagioclase-oliv fine-grained. ate. PERCENT ORIGINAL 5 14.8 0.4 Tr ved comb type REPLACING FILLING Olivine and	SIZE (mm) 0.2-2.0 0.1-4 0 0.2-2.0 0.4 0.001-0.001 es. The latter are	COMPO- SITION	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Anhedral.	COMMENTS Encloses plagioclase grains. Swallowtail plagioclase (0.05–0.4 mm). Radiate quench textures are defined by clinopyroxene or intergrown clinopyroxene. COMMENTS Fibrous, without iddingsite and interstitial fine-grained aggregates.

COMMENTS: Section contains 0.4-mm vein of saponite and phillipsite. Some brecciation is associated with the veins.

148-896A-22R-2 (Piece 18B, 133-134 cm) OBSERVER: IMS

ROCK NAME: Highly phyric plagioclase olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric; radiate.

WHERE SAMPLED: Unit 33

PRIMARY			SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	3.2	0.15-0.8		Equant, euhedral to subhedral.	
Plagioclase	16.2	16.2	0.2-4.0		Equant laths, euhedral to subhedral.	
Clinopyroxene	2.0	2.0	0.2-1.6		Equant, euhedral to subhedral.	
GROUNDMASS						
Magnetite			<.001005		Equant.	
Unspecified	78.4				gente de Conferma	Swallowtail plagioclase, 0.02-0.8 mm. Quench textures defined by sheaf-spherical grading into plumose, branching and comb types.
SECONDARY		REPLACING	1			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays, tan		Olivine, inte	erstitial.			Fibrous, groundmass olivine with or without iddingsite. Interstitiz aggregates of tan or green fine-grained clay.
Chlorite		Olivine				Bluish-green, traces present.
Pyrite						Scattered in interstitial material.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

148-896A-22R-4 (Piece 4, 26–29 cm) OBSERVER: IMS WHERE SAMPLED: Unit 33 ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained.
TEXTURE: Porphyritic to glomerophyric; radiate.

PRIMARY MINERALOGY PHENOCRYSTS	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
Olivine.	0	1.8	0.1-1.2		Equant, euhedral to subhedral.	
Plagioclase	10.6	10.6	0.1-2.0		Equant laths, euhedral to subhedral.	
Clinopyroxene	Tr	Tr	0.1-0.8		Euhedral to subhedral.	
Spinel GROUNDMASS	Tr	Tr	0.06		Equant, subhedral.	
Unspecified sheaf-spherical.	87.6					Swallowtail plagioclase (0.01-0.6 mm), Growth texture is typically
SECONDARY		REPLACING	/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays, tan		Olivine.				Fibrous or prismatic, with or without iddingsite.
Clays, green		Interstitial.				Partly tan color.
Pyrite		Glass.				Size 10-20 microns; porous aggregates.
Chalcopyrite		Disseminated	d.			In wall rock of saponite vein; size <1-2 micron grains.
Fe oxyhydroxides		Olivine.				With saponite.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles			8 0			None.

COMMENTS: Section contains two veins. One is composed of colorless clay selvages. The other vein has a tan fibrous clay aggregate in the center and green clay selvages (margins). Plagioclase near this vein is altered to pale green clay with low birefringence. Section also contains chilled margins with fresh olivine. Within the vein(s), clays have a fiber like shape and are always oriented at a high angle to the vein edges. There is evidence of some sliding along the fiber boundaries, suggesting that these are extensional veins.

WHERE SAMPLED: Unit 34

148-896A-22R-4 (Piece 6, 43-49 cm) ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Fine-grained.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY		ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS		Old Old II II	(mm)	DITION	mora nobodi	
Olivine	0	3.6	0.3-1.0		Equant, euhedral	
			19.19.0.344		to subhedral.	
Plagioclase	6.0	6.0	0.4-2.0		Equant laths,	
					subhedral.	
Spinel	Tr	Tr	0.02-0.05		Equant, anhedral	
					to subhedral.	
GROUNDMASS	161100					
Magnetite	4.2		0.005-0.150		Equant, skeletal.	
Plagioclase	59.0					
Clinopyroxene	16.0					
Olivine	3					
Others	7	Ten manual (17 minus or manual)				Altered interstitial glass and olivine.
SECONDARY	DED (2011	REPLACING	1/			GOLD #777770
MINERALOGY	PERCENT	State Control of Contr				COMMENTS
Clays			gioclase, clinopy	roxene.		
Fe oxyhydroxide		Olivine, dis	seminated.			
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION		FILLING	SHAPE	COMMENTS
Vesicles				(7,700)(100)	(Charletonia)	None.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome	ghly phyric p rocrystalline to rophyric; inter	lagioclase-olivo radiate.		OBSERVER: II	MS WHERE SA	AMPLED: Unit 35
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY	ghly phyric p rocrystalline te crophyric; inte	lagioclase-olivo radiate. rgranular to ra PERCENT	diate.	COMPO-		
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY	ghly phyric p rocrystalline te crophyric; inte	lagioclase-olivo radiate.	diate.		MS WHERE SA	AMPLED: Unit 35 COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS	ghly phyric p rocrystalline to rophyric; inter PERCENT PRESENT	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL	SIZE (mm)	COMPO-	MORPHOLOGY	
148-896A-23R-2 (I GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine	ghly phyric p rocrystalline te crophyric; inte	lagioclase-olivo radiate. rgranular to ra PERCENT	diate.	COMPO-	MORPHOLOGY Equant, euhedral	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Olivine	ghly phyric p rocrystalline to crophyric; inte PERCENT PRESENT	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8	SIZE (mm) 0.5-1.6	COMPO-	MORPHOLOGY Equant, euhedral to subhedral.	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine	ghly phyric p rocrystalline to rophyric; inter PERCENT PRESENT	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL	SIZE (mm)	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths,	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine	ghly phyric p rocrystalline to crophyric; inte PERCENT PRESENT	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8	SIZE (mm) 0.5-1.6	COMPO-	MORPHOLOGY Equant, euhedral to subhedral.	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase	ghly phyric p rocrystalline to crophyric; inte PERCENT PRESENT	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8	SIZE (mm) 0.5-1.6	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to	
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Diivine Plagioclase	ghly phyric procrystalline terophyric; interpreted interpreted interpreted interpreted into the process of the	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6	SIZE (mm) 0.5-1.6 0.3-2.0	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral.	
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Spinel GROUNDMASS	ghly phyric procrystalline terophyric; interpresent PERCENT PRESENT 0 7.6	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6	SIZE (mm) 0.5-1.6 0.3-2.0	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Spinel GROUNDMASS	ghly phyric procrystalline terophyric; interpreted interpreted interpreted interpreted into the process of the	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6	SIZE (mm) 0.5-1.6 0.3-2.0	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Diivine Plagioclase Spinel GROUNDMASS Juspecified	ghly phyric procrystalline terophyric; interpresent PERCENT PRESENT 0 7.6	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6 Tr	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	ghly phyric procrystalline terophyric; interpresent PERCENT PRESENT 0 7.6	lagioclase-olivo radiate. rgranular to ra- rgranular to r	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic GEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine.	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS Saponite with Fe-oxyhydroxide and carbonate.
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to ra PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine. Interstitial.	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Diivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Carbonate	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to radiate. PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine. Interstitial. Olivine.	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS Saponite with Fe-oxyhydroxide and carbonate. Blue-green (chlorite?).
ROCK NAME: Hi GRAIN SIZE: Mic	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to radiate. PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine. Interstitial. Olivine, dis.	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS Saponite with Fe-oxyhydroxide and carbonate.
ROCK NAME: Hi GRAIN SIZE: Mic TEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Clays Clays Clarbonate Pyrite Chalcopyrite	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to radiate. PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine. Interstitial. Olivine.	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS Saponite with Fe-oxyhydroxide and carbonate. Blue-green (chlorite?).
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Clays Carbonate Pyrite Chalcopyrite	ghly phyric procrystalline terophyric; interpreter percent PRESENT 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to radiate. PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine. Interstitial. Olivine, dis.	SIZE (mm) 0.5-1.6 0.3-2.0 0.03-0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to subhedral, equant.	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture, COMMENTS Saponite with Fe-oxyhydroxide and carbonate. Blue-green (chlorite?). In dark gray host rock.
ROCK NAME: Hi GRAIN SIZE: Mic FEXTURE: Glome PRIMARY MINERALOGY PHENOCRYSTS	ghly phyric procrystalline terophyric; interpresent 0 7.6 Tr 85.6	lagioclase-olivo radiate. rgranular to radiate. PERCENT ORIGINAL 6.8 7.6 Tr REPLACING FILLING Olivine. Interstitial. Olivine, dis.	SIZE (mm) 0.5–1.6 0.3–2.0 0.03–0.12	COMPO-	MORPHOLOGY Equant, euhedral to subhedral. Equant laths, euhedral to subhedral. Euhedral to	COMMENTS Clinopyroxene and magnetite as intergranular grains between plagioclase laths. Branching quench texture. COMMENTS Saponite with Fe-oxyhydroxide and carbonate. Blue-green (chlorite?).

COMMENTS: The section is composed of massive basalt with red-brown oxidation halo and gray host rock.

148-896A-23R-3 (Piece 3, 10-20 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 36

ROCK NAME: Highly phyric olivine-plagioclase basalt. GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; intergranular to radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	14.2	0.2-2.8		Equant, euhedral to subhedral.	
Plagioclase	10.2	10.2	0.2-2.0		Equant laths, euhedral to subhedral.	Partially altered.
Spinel GROUNDMASS	Tr	Tr	0.03-0.06		Equant, euhedral.	
Unspecified	75.6					Clinopyroxene, olivine, and magnetite as intergranular grains between plagioclase laths. Branching-type quench texture.
SECONDARY		REPLACING	<i>i</i> /			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays, tan		Olivine.				Olivine completely replaced with iddingsite.
Clays, green		Olivine, into				Strongly pleochroic; light yellowish tan to green.
VESICLES/	***************************************	***************************************	SIZE	***************************************	***************************************	***************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles			35030351			None.

COMMENTS: The section is composed of medium-grained olivine-plagioclase phyric basalt "clasts," cemented by a brecciated basalt. The clasts are angular plagioclase, olivine and clinopyroxene crystals; the cement is a tan clay mineral and iddingsite. The boundary between the basalt "clasts" and "brecciated basalt cement" is either sharp or diffuse. Fresh olivine is relict in the "brecciated basalt cement." Opaque minerals are concentrated in one clast. In the matrix of the breccia, there is a thin zone with reduced grain size that is associated with open fractures.

148-896A-24R-1 (Piece 1, 24-26 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 36

ROCK NAME: Moderately phyric plagioclase basalt.

GRAIN SIZE: Fine-grained.

TEXTURE: Glomerophyric; intergranular to subophitic.

PRIMARY MINERALOGY	PERCENT PRESENT		SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS	7.0		0.5.2.2			
Plagioclase	7.8 Tr	Tr	0.5-3.2		Equant laths.	
Spinel	ır	ir	0.02-0.08		Equant, euhedral to subhedral.	
GROUNDMASS					to submoduli.	
Plagioclase	49.8					
Clinopyroxene	16.6					
Olivine	11.6	22.0				
Magnetite	2.4					
Other	1.4					Majority probably altered interstitial glass.
SECONDARY		REPLACING	,			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays		Olivine.				Partially altered; pale green to brown along rim or crosscutting veinlets. (Some brown clays have second-order birefringence.)
Clays		Interstitial.				Pale green to brown smectite.
Pyrite		Groundmass.				Abundant disseminated pyrite with subsidiary chalcopyrite.
Chalcopyrite		Groundmass.				Subsidiary, associated with pyrite (see above).
VESICLES/		***************************************	SIZE		**********************	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAP	COMMENTS
Vesicles			The state of the s			None.

COMMENTS: The sample looks very fresh and contains fresh plagioclase and ophitic clinopyroxene. Olivine is fresh or partially altered. Section contains 0.4-mm subrounded patch of brown clays and fine-grained opaque minerals.

148-896A-24R-5 (Piece 14, 145-148 cm)

OBSERVER: IMS

WHERE SAMPLED: Unit 36

ROCK NAME: Highly phyric plagioclase-olivine basalt.

GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; intergranular to radiate.

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	3.4	10.8	0.15-4.5		Equant, euhedral to subhedral.	
Plagioclase	22.6	22.6	0.4-4.0		Equant laths, euhedral to subhedral.	
Spinel GROUNDMASS	Tr	Tr	0.01-0.10		Equant, euhedral.	
Unspecified plagioclase. texture between the SECONDARY	66.6	REPLACING	.,			Branching quench textures defined by intergrown clinopyroxene and Clinopyroxene, olivine, and magnetite define the intergranular plagioclase laths.
MINERALOGY	PERCENT	FILLING	<i>V</i>			COMMENTS
Clays, colorless/tan		Olivine.				Olivine is partly altered with some fresh olivine relicts. Associated with very minor carbonate. Well-crystallized with moderate birefringence.
Carbonate		Olivine.				
Epidote		Olivine, colo	orless to tan.			Moderate birefringence; well-crystallized.
Fe (OH)n		Iddingsite.				Red stainings along cracks in plagioclase.
VESICLES/			SIZE		******	
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section contains 0.04-0.0-mm-wide vein of pleochroic (green to yellow to dark brown) iddingsite. Section also contains several dark brown to black veinlets <0.04 mm wide. There is a red halo around a gray inner zone that contains the vein and veinlets.

148-896A-25R-2 (Piece 22, 123-124 cm) OBSERVER: IMS

ROCK NAME: Moderately phyric plagioclase-olivine basalt. GRAIN SIZE: Microcrystalline to fine-grained.

TEXTURE: Glomerophyric; radiate.

WHERE SAMPLED: Unit 37.

PRIMARY MINERALOGY	PERCENT	PERCENT ORIGINAL	SIZE	COMPO-	MODBILOLOGY	COMMENTS
PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0	2.4	0.1-1.0		Equant, euhedral to subhedral.	
Plagioclase	6.4	6.4	0.1-2.0		Equant laths, euhedral to subhedral.	
Spinel GROUNDMASS	Tr	Tr	0.01-0.05		Equant, euhedral.	
Unspecified	91.2					Swallowtail plagioclase (0.04-0.6 mm). Branching quench texture common.
SECONDARY		REPLACING	i/			
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays		Olivine.				Saponite.
Clays		Plagioclase.				Slightly altered to saponite.
Pyrite		Disseminate	d.			Locally abundant; replacing silicates.
Fe oxyhydroxides		Disseminate	d.			Locally staining groundmass.
VESICLES/			SIZE		***************************	**************************************
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
						N= 470 m / 1

None.

Vesicles

WHERE SAMPLED: Unit 43

148-896A-27R-1 (Piece 8, 69-71 cm)
ROCK NAME: Highly phyric plagioclase olivine basalt.
GRAIN SIZE: Fine-grained.
TEXTURE: Porphyritic to glomerophyric; intergranular.

ss to microcrystrophyric; radia					
Piece 13, 109	ric plagioclase	OBSERVER: In- colivine basalt.	MS	WHERE SAMPLED	: Unit 44
sulfides or Fe-	-oxyhydroxide	es.			
Tr	Throughout	0.2-0.3	Clay.	Round.	Variably filled by tan or green clay; concentric filling.
	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Tr	Olivine.				Trace mineral with clays replacing large olivine phenocrysts.
		sicles, interstitia	J.		
PERCENT	REPLACING FILLING	3/			COMMENTS
85.2		Ev-			Clinopyroxene and magnetite as intergranular crystals between plagioclase laths. Interstitial texture where plagioclase is completely altered to clays.
05.0					27 7 7 7 2 2
		0.02-0.13		to anhedral.	
Tr Tr	Tr Tr	0.02-0.15		Equant, euhedral	
8.4	8.4	0.08 - 1.6			Largest crystals as single phenocrysts.
0	6.4	0.06-3.5		Equant, euhedral to subhedral.	
PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
		SIZE	COMPO-		Variation and a second a second and a second a second and
PRESE		ES - 54	NT ORIGINAL (mm)	NT ORIGINAL (mm) SITION	NT ORIGINAL (mm) SITION MORPHOLOGY 6.4 0.06–3.5 Equant, euhedral

PRIMARY	PERCENT	PERCENT	SIZE	COMPO-		
MINERALOGY PHENOCRYSTS	PRESENT	ORIGINAL	(mm)	SITION	MORPHOLOGY	COMMENTS
Olivine	0.6	1.4	0.08-0.8		Equant, euhedral.	
Plagioclase	7.0	7.0	0.15-4.5		Equant laths, euhedral.	Largest grains occur as phenocrysts.
Spinel GROUNDMASS	Tr	Tr	0.05-0.06		Equant, anhedral.	
Unspecified	91.6					Variolitic texture grading inward into plumose and sheaf-spherical quench textures.
SECONDARY		REPLACING/				
MINERALOGY	PERCENT	FILLING				COMMENTS
Clays, green, and tan		Glass, olivine	, plagioclase.			Both olivine and plagioclase are partially replaced by green and tan clays in the variolitic zone. Glass is partially replaced by green tan, and yellow clay in the margin.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.

COMMENTS: Section contains a 0.01-mm-wide veinlet that cuts the variolitic zone perpendicular to the glassy margin. The veinlet is filled with green clay.

WHERE SAMPLED: Unit 47

148-896A-28R-1 (Piece 9, 54–58 cm)
ROCK NAME: Highly phyric plagioclase-olivine basalt.
GRAIN SIZE: Microcrystalline to fine-grained. TEXTURE: Glomerophyric; radiate to intergranular.

PRIMARY MINERALOGY		PERCENT ORIGINAL	SIZE (mm)	COMPO- SITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS			-X			
Olivine	0	5.2	0.15 - 0.8		Equant, euhedral	
Plagioclase	7.2	7.2	0.25-2.5		to subhedral.	
riagiociase	1.2	1.2	0.23-2.3		Equant laths, euhedral to	
					subhedral.	
Spinel	Tr	Tr	0.02		Equant, euhedral.	
GROUNDMASS			2.000		1	
Unspecified	87.6					Swallowtail plagioclase (0.1-1.2 mm).
						Quench texture defined by sheaf-spherical and comb types. Clinopyroxene and magnetite present as intergranular grains between laths.
SECONDARY		REPLACING	3/			
MINERALOGY	PERCENT					COMMENTS
Clays			igioclase, inters	titial.		Tan to green. Olivine completely replaced; plagioclase partially
Albite	Tr	Plagioclase				replaced. Partial replacement of plagioclase phenocryst/megacry
Fe-oxyhydroxide	Tr					Staining clays, groundmass and edges of olivine grains.
VESICLES/			SIZE			
CAVITIES	PERCENT	LOCATION	(mm)	FILLING	SHAPE	COMMENTS
Vesicles						None.
ROCK NAME: Hig GRAIN SIZE: Micr	ghly phyric pl rocrystalline t	agioclase bass o fine-grained		MS	WHERE SAMPLED:	Unit 51
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer	ghly phyric pl rocrystalline t	agioclase base o fine-grained ate.	alt.	MS COMPO-	WHERE SAMPLED:	Unit 51
ROCK NAME: Hig GRAIN SIZE: Micr FEXTURE: Glomer PRIMARY MINERALOGY	ghly phyric pl rocrystalline t rophyric; radia PERCENT	agioclase base o fine-grained ate.	alt, I.		WHERE SAMPLED:	COMMENTS
ROCK NAME: Hig GRAIN SIZE: Micr FEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS	ghly phyric pl rocrystalline t rophyric; radia PERCENT	agioclase base o fine-grained ate. PERCENT	alt. I. SIZE	СОМРО-	MORPHOLOGY Equant, subhedral	
ROCK NAME: Hig GRAIN SIZE: Micr FEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine	phly phyric place of the process of	agioclase bass o fine-grained ate. PERCENT ORIGINAL	alt, i. SIZE (mm)	СОМРО-	MORPHOLOGY	COMMENTS
ROCK NAME: Hig GRAIN SIZE: Micr FEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine	phly phyric place place procrystalline to phyric; radio percent present present 3.0	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8	SIZE (mm) 0.1–2.0	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral.	COMMENTS
ROCK NAME: Hig GRAIN SIZE: Micr FEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine	phly phyric place place procrystalline to phyric; radio percent present present 3.0	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8	SIZE (mm) 0.1–2.0	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths,	COMMENTS
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase	phly phyric place place procrystalline to phyric; radio percent present present 3.0	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8	SIZE (mm) 0.1–2.0	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to	COMMENTS
ROCK NAME: Hig GRAIN SIZE: Micr FEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS	phly phyric pl rocrystalline t rophyric; radio PERCENT PRESENT 3.0 9.2	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8 9.2	SIZE (mm) 0.1-2.0 0.12-4.0	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase.
148-896A-30R-1 (F ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified	phly phyric pl rocrystalline t rophyric; radia PERCENT PRESENT 3.0 9.2	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8 9.2	SIZE (mm) 0.1-2.0 0.12-4.0	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY	phly phyric plrocrystalline trophyric; radia PERCENT PRESENT 3.0 9.2 Tr 84.0	agioclase basso fine-grained atte. PERCENT ORIGINAL 6.8 9.2 Tr	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common.
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	phly phyric pl rocrystalline t rophyric; radio PERCENT PRESENT 3.0 9.2	agioclase basso fine-grained atte. PERCENT ORIGINAL 6.8 9.2 Tr	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common. COMMENTS
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Dlivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY	phly phyric plrocrystalline trophyric; radia PERCENT PRESENT 3.0 9.2 Tr 84.0	agioclase basso fine-grained atte. PERCENT ORIGINAL 6.8 9.2 Tr	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common.
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Juspecified SECONDARY MINERALOGY Clays Fe-oxyhydroxide	phly phyric plrocrystalline tophyric; radio PERCENT PRESENT 3.0 9.2 Tr 84.0 PERCENT Tr	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8 9.2 Tr REPLACING FILLING Olivine, into Interstitial.	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common. COMMENTS Primarily brilliant green clay, with some tan clay. Many olivine pseudomorphs composed entirely of clay. Red staining.
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Olivine Plagioclase Spinel GROUNDMASS Unspecified SECONDARY MINERALOGY Clays Fe-oxyhydroxide Opaque oxide	phly phyric plrocrystalline tophyric; radio PERCENT PRESENT 3.0 9.2 Tr 84.0 PERCENT	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8 9.2 Tr REPLACING FILLING Olivine, into	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common. COMMENTS Primarily brilliant green clay, with some tan clay. Many olivine pseudomorphs composed entirely of clay. Red staining. In one area of the section, olivine is
ROCK NAME: Hig GRAIN SIZE: Micr TEXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel GROUNDMASS Juspecified SECONDARY MINERALOGY Clays Fe-oxyhydroxide	phly phyric plrocrystalline tophyric; radio PERCENT PRESENT 3.0 9.2 Tr 84.0 PERCENT Tr	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8 9.2 Tr REPLACING FILLING Olivine, into Interstitial.	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common. COMMENTS Primarily brilliant green clay, with some tan clay. Many olivine pseudomorphs composed entirely of clay. Red staining. In one area of the section, olivine is partially to completely replaced by opaque oxide minerals. Veinlee
ROCK NAME: Hig BRAIN SIZE: Micr EXTURE: Glomer PRIMARY MINERALOGY PHENOCRYSTS Divine Plagioclase Spinel BROUNDMASS Unspecified ECONDARY MINERALOGY Clays	phly phyric plrocrystalline tophyric; radio PERCENT PRESENT 3.0 9.2 Tr 84.0 PERCENT Tr	agioclase basso fine-grained ate. PERCENT ORIGINAL 6.8 9.2 Tr REPLACING FILLING Olivine, into Interstitial.	SIZE (mm) 0.1-2.0 0.12-4.0 0.04-0.08	СОМРО-	MORPHOLOGY Equant, subhedral to euhedral. Equant laths, euhedral to subhedral. Equant, euhedral	COMMENTS Fresh olivine occurs with glomerophitic plagioclase. Swallowtail plagioclase (0.08–1.2) sheaf-spherical and branching quench texture common. COMMENTS Primarily brilliant green clay, with some tan clay. Many olivine pseudomorphs composed entirely of clay. Red staining. In one area of the section, olivine is partially to completely replaced by opaque oxide minerals. Veinle extend into groundmass. (Mineral is red and transluscent where this

COMMENTS: The section contains numerous tiny veinlets in one area 0.5 mm long and 2 to 3 micrometers wide. These veinlets are filled with a red, reflective, transluscent mineral (hematite?).

SHAPE

None.

COMMENTS

FILLING

PERCENT LOCATION (mm)

CAVITIES

Vesicles