



THIN SECTION: 330-U1376A-5R-2-W 123_125-BILLET246-SLIDE 246 Piece No: Unit:II OBSERVER:THIN SECTION:SLIDE 246
 ROCK NAME: sparsely olivine-phyric[EXP330] basalt
 WHERE SAMPLED: CLAST TYPE 1 in sedimentary UNIT II
 GRAINSIZE: fine grained
 TEXTURE: sparsely phyric & intergranular

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS									
olivine	1	100		3.2	1.2	subhedral			altered by carbonate and minor green clay
plagioclase	0.3	0		1.2	1	laths[330]			
MICROPHENOCRYST									
olivine	0.5	100		0.8	0.5	subhedral			altered by carbonate and minor green clay
augite	0.2	0		0.9	0.3	anhedral			
GROUNDMASS									
augite	8	0		0.3	0.2	anhedral			
glass	26	100							green clay
opaque minerals	4			0.1	0.05	subhedral			clots
plagioclase	50	0		0.5	0.2	laths[330]			elongate

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING	COMMENTS
	min.	max.	mode.		
STRUCTURE	Moderate-strong trachytic texture & green clay in groundmass. (NB: clast)				
COMMENTS					

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-5R-4-W 59_61-BILLET247-SLIDE 247 Piece No: Unit:1 OBSERVER:THIN SECTION:SLIDE 247
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: sampled to examine shiny glass-like material; hyaloclastite breccia (angular fragments of basalt)
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	13								
olivine	10	100		1	4.4	subhedral to anhedral[330]			
augite	3	20		2.6	1.6	euhedral to subhedral[330]		Rich in Ti, sometimes centered zoning appears	
MICROPHENOCRYST VESICLES	1		0.2	0.5	0.4		moderate[330]	100	filled by green clay and zeolite
GROUNDMASS	86								
glass	86	100							

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
green clay	min.	max.	mode.		
green clay					also filled with zeolite
STRUCTURE COMMENTS	No structure in groundmass				

SUMMARY DESCRIPTION Stepped straight vein (0.16 mm); the clasts are cemented by green clay (smectite) & zeolite (picrite!); carbonate vein exists.



THIN SECTION: 330-U1376A-5R-6-W 97_99-BILLET248-SLIDE 248 Piece No: Unit:2 OBSERVER:THIN SECTION:SLIDE 248
 ROCK NAME: highly olivine-phyric[EXP330] basalt
 WHERE SAMPLED: representative of UNIT 2; vesicular basalt.
 GRAINSIZE: fine grained
 TEXTURE: highly phyric & subophitic and intersertal[330] & sometimes glomeroporphyritic

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	13.5								
olivine	10	100		6	2	euhedral to subhedral[330]		replaced by brown clay and carbonate	
augite	0.5	0		1.6	1.1	euhedral to anhedral[330]		Rich in Ti	
MICROPHENOCRYST									
augite	1	0		0.8	0.5	subhedral to anhedral[330]		Rich in Ti	
olivine	2	100		0.9	0.5	euhedral to subhedral[330]		replaced by brown clay and carbonate	
VESICLES	7		0.5	3	1		high[330]	90	filled by smectite (saponite); botryoidal clay infilling.
GROUNDMASS	79.5								
glass	10	100							
opaque minerals	4			0.2	0.1	needle			
plagioclase	55	30		0.4	0.2	laths[330]		intergranular	
augite	10.5	10		0.2	0.08	anhedral		Rich in Ti	

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
smectite group (dioctahedral sn)	min.	max.	mode.		
smectite group (dioctahedral sn)					smectite rim (saponite), botryoidal clay infilling

STRUCTURE No structure in groundmass
 COMMENTS

SUMMARY DESCRIPTION Titanaugite!! Smectite in voids, goethite.



THIN SECTION: 330-U1376A-6R-1-W 70_74-BILLET249-SLIDE 249
 ROCK NAME: moderately olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: Basalt breccia altered clast
 GRAINSIZE: fine grained
 TEXTURE: moderately phyric & augite glomerocrysts

Piece No: Unit:4

OBSERVER:THIN SECTION:SLIDE 249

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	7.1								
olivine	3	100		5.6	1.2	euhedral to subhedral[330]		altered by brown clay	
MICROPHENOCRYST									
olivine	3	100		0.9	0.5	euhedral to subhedral[330]		altered by brown clay	
plagioclase	0.1	0		0.9	0.2	anhedral			
augite	1	0		0.8	0.8	subhedral to anhedral[330]		augite is altered into clay	
VESICLES	10		0.1	4	2		low[330]	100 filled with carbonate and clay	
GROUNDMASS	82.9								
plagioclase	30	100		0.2	0.1	laths[330]			
glass	23.9	100							
opaque minerals	10					needle			
augite	15	20		0.07	0.05	anhedral			

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
	min.	max.	mode.		
carbonate					filled with carbonate and clay

STRUCTURE COMMENTS No structure in groundmass

SUMMARY DESCRIPTION groundmass is nearly completely altered to smectite (saponite); voids are filled with carbonate; carbonate vein (straight, 3 mm wide).



THIN SECTION: 330-U1376A-6R-2-W 42_46-BILLET250-SLIDE 250
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: basalt breccia
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

Piece No: Unit:4

OBSERVER:THIN SECTION:SLIDE 250

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	15								
olivine	12	100		4	2.5	euhedral		altered to brown clay	
augite	1	0		2.8	1.1	euhedral to subhedral[330]		glomerocrysts with olivine, rich in Ti-Augite	
MICROPHENOCRYST									
plagioclase	0.2	30		0.9	0.4	laths[330]		clots (sericite)	
augite	0.5	0		0.8	0.2	euhedral to subhedral[330]		glomerocrysts with olivine, rich in Ti-Augite.	
olivine	1.3	100		0.9	0.4	euhedral		altered to brown clay	
VESICLES	2		0.4	1.2	1		high[330]	100 Saponite in the rim, green and brown clay in inside (carbonate). Intergranular groundmass.	
GROUNDMASS	83								
augite	20	0		0.1	0.05	anhedral		titanaugite	
plagioclase	35	70		0.2	0.1	laths[330]		intersertal	
glass	23	100						clay	
opaque minerals	5							magnetite	

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
	min.	max.	mode.		
clay					saponite along walls, green and brown clays and calcite interiors

STRUCTURE COMMENTS: No structure in groundmass. Several irregular veins (0.04 mm wide)

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-6R-3-W 103_106-BILLET251-SLIDE 251 Piece No: Unit:5 OBSERVER:THIN SECTION:SLIDE 251
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: basalt breccia
 GRAINSIZE: fine grained
 TEXTURE: highly phyric & glomeroporphyritic

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	20.2								
augite	2	0		2	1.6	euhedral to subhedral[330]		glomerocrysts	
olivine	13	95		4.5	2	euhedral to subhedral[330]		green clay, carbonate	
MICROPHENOCRYST									
olivine	3	95		0.9	0.4	euhedral to subhedral[330]		green clay, carbonate	
plagioclase	0.8	0		0.9	0.4	laths[330]		clots	
augite	1.2	0		0.8	0.5	euhedral to subhedral[330]		glomerocrysts	
VESICLES	1		0.3	3.6	0.5		high to moderate[330]	90 carbonate filling and smectite rim.	
GROUNDMASS	78.8								
augite	10	0		0.2	0.01	anhedral			
glass	53.8	100						green clay	
plagioclase	15	20		0.4	0.2	laths[330]			

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
carbonate	min.	max.	mode.		
carbonate					smectite along margins with carbonate interiors

STRUCTURE COMMENTS: No structure in groundmass. No veins.

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-6R-4-W 119_122-BILLET252-SLIDE 252 Piece No: Unit:8 OBSERVER:THIN SECTION:SLIDE 252
 ROCK NAME: highly olivine-phyric[EXP330] basalt
 WHERE SAMPLED: basalt
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	15.5								
olivine	13	100		7	2	euhedral to subhedral[330]		iddingsite in the rims, glomerocrysts; green clay	
MICROPHENOCRYST									
augite	0.3	0		0.9	0.5	subhedral to anhedral[330]			
plagioclase	0.2	0		0.8	0.6	anhedral			
olivine	2	100		0.9	0.5	euhedral to subhedral[330]		iddingsite in the rims and green clay in interior, glomerocrysts	
VESICLES	0.5		0.3	4.4	0.6		low to	100	
GROUNDMASS	84							filled with green and brown clay	
augite	25	0		0.02	0.01	anhedral			
glass	15	100							
opaque minerals	9			0.6	0.3	euhedral to anhedral[330]		magnetite	
plagioclase	35	0		0.3	0.1	subhedral to anhedral[330]			

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
carbonate	min.	max.	mode.		
carbonate					green clay along walls, carbonate interiors

STRUCTURE COMMENTS no structure in groundmass

SUMMARY DESCRIPTION conjugate veins (0.6 mm wide), irregular; crosscutting, At least 3 veins filled with carbonate and aragonite? 2 veins crossing another vein (acicular);



THIN SECTION: 330-U1376A-6R-6-W 128_131-BILLET253-SLIDE 253 Piece No: Unit:12 OBSERVER:THIN SECTION:SLIDE 253
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: Representative of UNIT 12
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	10								
olivine	7	75		7	2	subhedral		Pervasively altered. Green clay.	
augite	3	0		1.7	1	subhedral		Purple edges (indicates titanaugite). Sector zoning.	
MICROPHENOCRYST									
VESICLES	0.1		0.1	0.3	0.2		high and rounded[330]	100 green clay	
GROUNDMASS	89.9								
glass	45	75							
Fe-Ti oxide	3	0		0.3	0.05	euohedral			
titanaugite	4.9	0		0.09	0.05	subhedral		Purple	
plagioclase	30	0		0.5	0.1	laths[330]			
olivine	7	75		0.25	0.05	subhedral			

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.		
STRUCTURE	no structure in groundmass; vein, stepped (0.4 mm wide)		
COMMENTS			

SUMMARY DESCRIPTION Highly olivine-augite-phyric basalt.



THIN SECTION: 330-U1376A-7R-4-W 119_122-BILLET254-SLIDE 254 Piece No: Unit:14 OBSERVER:THIN SECTION:SLIDE 254
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: representative of UNIT 14
 GRAINSIZE: fine grained
 TEXTURE: highly phyric & porphyritic

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	15.1								
augite	4	0		1.6	1.3	subhedral		zoned	
olivine	7	100		3	2.2	subhedral to euhedral[330]		altered to carbonates and green clay	
MICROPHENOCRYST									
opaque minerals	0.1	0		0.7	0.7	anhedral			
plagioclase	1	0		0.9	0.6	laths[330]		glomerocrysts with augite microphenocrysts	
augite	1	0		0.9	0.7	subhedral			
olivine	2	100		0.9	0.7	anhedral		altered to carbonates and green clay	
VESICLES	0.1		0.1	0.2	0.2		moderate[330]	100	filled by carbonate and clay
GROUNDMASS	84.8								
augite	5	0		0.1	0.1	anhedral			
plagioclase	45	0		0.3	0.1	laths[330]			
glass	24.4	100							
olivine	10.3	100		0.4	0.1			altered to green clays	
opaque minerals	0.1	0		0.1	0.05	anhedral			

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.		

STRUCTURE no structure in groundmass; vein, irregular (0.8 mm)
 COMMENTS

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-8R-6-W 136_140-BILLET255-SLIDE 255 Piece No: Unit:15 OBSERVER:THIN SECTION:SLIDE 255
 ROCK NAME: highly olivine-pyroxene-phyric[EXP330] basalt
 WHERE SAMPLED: representative of UNIT 15
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	13								
clinopyroxene	3	0		1.8	1.5	subhedral		oscillatory zonation in some crystals	
olivine	10	2		4	2	subhedral		undulose extinction in some crystals	
MICROPHENOCRYST									
VESICLES	1		0.1	0.5	0.3		high[330]	100 clay	
GROUNDMASS	86								
plagioclase	40	0		0.3	0.1	subhedral		lath	
clinopyroxene	30	0		0.2	0.07	subhedral			
olivine	4	0		0.2	0.05	subhedral			
glass	1	100						altered to carbonate?	
Fe-Ti oxide	5	0		0.25	0.05	subhedral to anhedral[330]		needle	

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.		
STRUCTURE	no structure in groundmass		
COMMENTS			

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-10R-3-W 121_124-BILLET256-SLIDE 256 Piece No: Unit:15 OBSERVER:THIN SECTION:SLIDE 256
 ROCK NAME: highly olivine-pyroxene-phyric[EXP330] basalt
 WHERE SAMPLED: representative of UNIT 15
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	13								
olivine	10	5		4.8	1.2	subhedral		green clay and carbonate	
clinopyroxene	3	0		3.2	1	subhedral			
MICROPHENOCRYST									
VESICLES	0.5		0.1	1	0.2		low[330]	100 filled with carbonate	
GROUNDMASS	87								
clinopyroxene	30	0		0.4	0.1	subhedral		some lath	
olivine	10	0		0.15	0.1	subhedral			
Fe-Ti oxide	7	0		0.15	0.07	needle		some subhedral	
plagioclase	40	0		0.5	0.2	lath			

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
carbonate	min. max. mode.	vesicle	
STRUCTURE	no structure in groundmass		
COMMENTS			

SUMMARY DESCRIPTION

THIN SECTION: 330-U1376A-13R-4-W 3_5-BILLET-SLIDE 257
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: massive lava flow
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

Piece No: Unit:15

OBSERVER:THIN SECTION:SLIDE 257

PRIMARY MINERALOGY PHENOCRYSTS	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
augite	4	0		2	1.3	subhedral			titanaugite-rich
olivine	11	5		4	2	euhedral to subhedral[330]			altered to green clay
MICROPHENOCRYST VESICLES	1		0.1	0.3	0.2		high and rounded[330]	100	clay
GROUNDMASS olivine	84			0.4	0.05	subhedral to anhedral[330]			Clay
plagioclase	45	25		0.9	0.3	laths[330]			glomerocrysts with augite
opaque minerals	6			1	0.15	subhedral			Mainly needle
augite	30	0		0.3	0.1	subhedral to anhedral[330]			titanaugite-rich

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING vesicle	COMMENTS
	min.	max.	mode.
clay			

STRUCTURE COMMENTS no structure in groundmass

SUMMARY DESCRIPTION





THIN SECTION: 330-U1376A-14R-3-W 84_86-BILLET-SLIDE 258 Piece No: Unit:17 OBSERVER:THIN SECTION:SLIDE 258
 ROCK NAME: highly olivine-augite-phyric[EXP330] basalt
 WHERE SAMPLED: lava flow
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS									
augite	2	0		2.4	1	subhedral			
olivine	10	5		3.2	1	euhedral to subhedral[330]			altered to green clay.
MICROPHENOCRYST									
plagioclase	0.5	0		0.8	0.5	laths[330]			clots
GROUNDMASS									
opaque minerals	9			0.1	0.08	needle			
augite	30	0		0.4	0.05	subhedral to anhedral[330]			titanaugite-rich
plagioclase	45	0		0.2	0.15	laths[330]			
olivine	4	5		0.3	0.1	subhedral to anhedral[330]			green clay

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.		
STRUCTURE	weak trachytic texture, sub-horizontal		
COMMENTS			

SUMMARY DESCRIPTION 3 carbonate veins; cross fibre (0.5 m wide); straight.



THIN SECTION: 330-U1376A-15R-2-W 37_39-BILLET-SLIDE 259 Piece No: Unit:20 OBSERVER:THIN SECTION:SLIDE 259
 ROCK NAME: aphyric basalt
 WHERE SAMPLED: intrusive sheet
 GRAINSIZE: fine grained
 TEXTURE: aphyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	0.2								
MICROPHENOCRYST									
augite	0.1	0		0.7		euohedral			
plagioclase	0.1	0		0.5		tabular			
VESICLES	25		0.05	1	0.3		low to elongated[EXP330]	100	smectite; goethite, brown and green clay
GROUNDMASS	74.8								
plagioclase	20	60		0.1	0.08	laths[330]			sericitization
glass	54.8	100							brown and green clay, smectite and goethite

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.	vesicle	
smectite group (dioctahedral sn			low to elongate, it is also filled with goethite/hematite

STRUCTURE alteration bands, no structure in groundmass; veins are mostly straight; few irregular ones; veins (0.5 - 0.1 mm in size) filled with green clay.
 COMMENTS

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-15R-3-W 41_44-BILLET-SLIDE 260 Piece No: Unit:21 OBSERVER:THIN SECTION:SLIDE 260
 ROCK NAME: moderately olivine-phyric[EXP330] basalt
 WHERE SAMPLED: hyaloclastite breccia clast (glassy)
 GRAINSIZE: fine grained
 TEXTURE: moderately phyrlic

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	4								
olivine	4	100		1.4	1.2	euhedral to subhedral[330]		replaced by smectite and brown clay	
MICROPHENOCRYST									
GROUNDMASS	96								
glass	78.8	80						partly fresh	
augite	0.1	0		0.1	0.05	euhedral to subhedral[330]		sometimes glomerocrysts with plagioclase	
plagioclase	7	0		0.45	0.1	laths[330]		sometimes glomerocrysts with augite	
olivine	10	90		0.4	0.1	euhedral to subhedral[330]		replaced by smectite and brown clay	

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING	COMMENTS
	min.	max.	mode.		
STRUCTURE	no structure in groundmass				
COMMENTS					

SUMMARY DESCRIPTION Only CLAST description of the upper half part of the thin section. Irregular veins (0.04 mm).



THIN SECTION: 330-U1376A-16R-2-W 7_10-BILLET-SLIDE 261 Piece No: Unit:21 OBSERVER:THIN SECTION:SLIDE 261
 ROCK NAME: moderately olivine-phyric[EXP330] basalt
 WHERE SAMPLED: hyaloclastite breccia clast
 GRAINSIZE: fine grained
 TEXTURE: moderately phyrlic

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	2								
olivine	2	60		4.6	1.2	subhedral		replaced by brown clay and carbonate	
MICROPHENOCRYST									
VESICLES	1		0.1	0.3	0.2		low[330]	100 filled by brown, green clay and carbonate	
GROUNDMASS	97								
plagioclase	30	30		0.3	0.1	laths[330]		sericitization	
olivine	4	60		0.3	0.1	euohedral to subhedral[330]		clay	
glass	63								

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING vesicle	COMMENTS
carbonate	min. max. mode.		
			also filled with brown and green clay

STRUCTURE No structure in groundmass
 COMMENTS

SUMMARY DESCRIPTION green clay replacing groundmass.



THIN SECTION: 330-U1376A-17R-1-W 140_143-BILLET-SLIDE 262 Piece No: Unit:21 OBSERVER:THIN SECTION:SLIDE 262
 ROCK NAME: aphyric basalt glass
 WHERE SAMPLED: Hyaloclastite breccia (fresh glass)
 GRAINSIZE: glassy
 TEXTURE: glassy matrix[330]

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	1.5								
MICROPHENOCRYST									
plagioclase	0.5	0		0.1	0.08	laths[330]			
olivine	1	20		0.4	0.05	subhedral		contains glassy inclusions, altering to brown clay	
VESICLES	1		0.3	0.5	0.4		moderate, rounded[330]	0	
GROUNDMASS	97.5								
glass	97.5	5							

SECONDARY MINERALOGY SIZE(mm) min. max. mode. REPLACING/FILLING COMMENTS

STRUCTURE no structure in groundmass
 COMMENTS

SUMMARY DESCRIPTION fresh glass shards cemented by a small amount of clay. (Photos of...) Inclusions in olivine; textures on margins of glass fragments.



THIN SECTION: 330-U1376A-17R-3-W 125_128-BILLET263-SLIDE263 Piece No: Unit:24 OBSERVER:THIN SECTION:SLIDE263
 ROCK NAME: aphyric basalt
 WHERE SAMPLED: representative of UNIT 24 (vesicular basalt, lava lobe of lava fragment)
 GRAINSIZE: fine grained
 TEXTURE: aphyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	0.5								
MICROPHENOCRYST plagioclase	0.5	0		0.8	0.5	euhedral to subhedral[330]			
VESICLES	10		0.2	4.8	1.8		low[330]	5 brown or green clay rims and carbonate.	
GROUNDMASS	89.5								
plagioclase	40	0		0.4	0.15	lath			
glass	12	100						glass? olivine? vesicle?	
clinopyroxene	30	0		0.15	0.05	subhedral			
Fe-Ti oxide	7	0		0.2	0.05	subhedral to anhedral[330]		some needle	
olivine	0.5	0		0.09	0.03	subhedral			

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.	vesicle	
smectite group (dioctahedral sm)			brown and green clay rims and carbonate

STRUCTURE No structure in groundmass
 COMMENTS

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-19R-1-W 93_95-BILLET-SLIDE 264
 ROCK NAME: sparsely olivine-phyric[EXP330] Basalt
 WHERE SAMPLED: lava fragment
 GRAINSIZE: fine grained
 TEXTURE: sparsely phyric

Piece No: Unit:29

OBSERVER:THIN SECTION:SLIDE 264

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	1								
olivine	1	100		1.6	1.1	subhedral		altered by green and brown clay	
MICROPHENOCRYST									
VESICLES	2		0.1	0.8	0.4		low[330]	100 filled with green clay	
GROUNDMASS	97								
augite	35	0		0.2	0.1	subhedral to anhedral[330]			
olivine	2	100		0.4	0.2	subhedral to anhedral[330]		altered to green clay	
plagioclase	45	0		0.5	0.1	laths[330]			
opaque minerals	13			0.5	0.2	needle			

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING vesicle	COMMENTS
green clay	min.	max.	mode.		
green clay					

STRUCTURE no structure in groundmass
 COMMENTS

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-20R-3-W 47_50-BILLET-SLIDE 265 Piece No: Unit:30 OBSERVER:THIN SECTION:SLIDE 265
 ROCK NAME: aphyric basalt
 WHERE SAMPLED: CLAST TYPE 2 in heterolithic basalt breccia
 GRAINSIZE: fine grained
 TEXTURE: aphyric & plagioclase-augite glomerocrysts in groundmass[330]

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	0.2								
MICROPHENOCRYST olivine	0.2	100		0.9	0.5	subhedral		replaced by green clay	
VESICLES	0.8		0.2	0.4	0.3		high[330]	filled by carbonate (botryoidal)	
GROUNDMASS opaque minerals	99								
glass	4			0.2	0.1	needle			
plagioclase	20	100						green clay	
augite	40	0		0.7	0.15	laths[330]			
	35	0		0.2	0.03	subhedral to anhedral[330]			

SECONDARY MINERALOGY	SIZE(mm)	REPLACING/FILLING	COMMENTS
	min. max. mode.	vesicle	
carbonate			sometimes filled with botryoidal crystals

STRUCTURE No structure in groundmass
 COMMENTS

SUMMARY DESCRIPTION vein, carbonate, cross fibre (0.1 mm wide)



THIN SECTION: 330-U1376A-21R-1-W 41_44-BILLET-SLIDE 266 Piece No: Unit: OBSERVER:THIN SECTION:SLIDE 266
 ROCK NAME: highly olivine-phyric[EXP330] basalt clast in hyaloclastite matrix
 WHERE SAMPLED: representative of olivine-phyric clast in heterolithic breccia
 GRAINSIZE: glassy
 TEXTURE: highly phyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	20								
olivine	20	100		4	3	subhedral		altered to carbonate and green clays	
MICROPHENOCRYST VESICLES	1		0.1	0.3	0.2		moderate, rounded[330]	filled by carbonate	
GROUNDMASS	78.9								
glass	77.9	70						alteration and tachylite zones	
augite	1	0		0.25	0.25	prismatic[330]			

SECONDARY MINERALOGY SIZE(mm) min. max. mode. REPLACING/FILLING COMMENTS

STRUCTURE No structure in groundmass.
 COMMENTS

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-21R-4-W 84_87-BILLET-SLIDE 267
 ROCK NAME: highly olivine-phyric[EXP330] basalt
 WHERE SAMPLED: representative of UNIT 33 (lava lobe of fragment)
 GRAINSIZE: fine grained
 TEXTURE: highly phyric

Piece No: Unit:33

OBSERVER:THIN SECTION:SLIDE 267

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	15								
olivine	15	50		5.4	1.8	euhedral		altered to green clay.	
MICROPHENOCRYST									
VESICLES	10		0.2	3.2	1.4		elongate	100	Carbonate (botryoidal) + clay
GROUNDMASS	75								
Fe-Ti oxide	5	0		0.5	0.05	needle			
olivine	1	0		0.1	0.05	subhedral			
plagioclase	39	0		0.5	0.2	lath			
clinopyroxene	30	0		0.2	0.1	subhedral			

SECONDARY MINERALOGY	STRUCTURE	COMMENTS
	No structure in groundmass.	

SUMMARY DESCRIPTION



THIN SECTION: 330-U1376A-23R-1-W 98_102-BILLET-SLIDE 268 Piece No: Unit:41 OBSERVER:THIN SECTION:SLIDE 268
 ROCK NAME: aphyric basalt
 WHERE SAMPLED: representative of UNIT 41
 GRAINSIZE:
 TEXTURE: aphyric

PRIMARY MINERALOGY	PERCENT ORIGINAL	REL. VOL. REPLACED	SIZE(mm)			MORPHOLOGY	VESICLE SPHERICITY	VESICLE Infilling [%]	COMMENTS
			min.	max.	mode.				
PHENOCRYSTS	0								
MICROPHENOCRYST VESICLES	0.5		0.1	0.3	0.2		moderate, subrounded[330]	100 filled by carbonate	
GROUNDMASS glass	99.5	100							
opaque minerals	20								
plagioclase	1			0.2	0.1	acicular			
augite	58.5			0.3	0.1	laths[330]			
	20			0.2	0.05	anhedral			

SECONDARY MINERALOGY	SIZE(mm)			REPLACING/FILLING	COMMENTS
	min.	max.	mode.		
STRUCTURE COMMENTS	Non-oriented thin section. Possible weak trachytic texture.				

SUMMARY DESCRIPTION vein, stepped; filled with dark clay.