

THIN SECTION LABEL ID: **393-U1583C-13X-2-W 53/57-TSB-TS 149**

Thin section no.: 149

Observer: MJ, EA

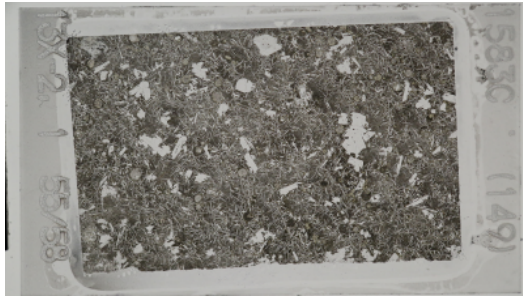
Piece no.: 1

Total number of domains: 1

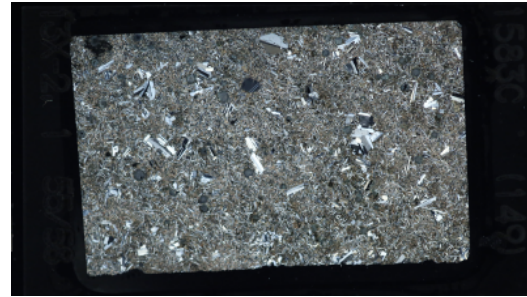
Unit/subunit:

Thin section summary: Plagioclase phyric basalt massive lava flow, variolitic, under the microscope the rock is altered to brown clay + FeOH with no fresh olivines preserved. Ol completely replaced by micaceous clay. The plagioclase in groundmass form glomerocrysts and exhibit sub-ophitic textures along with intergranular textures. Alteration intensity is moderate but variable, with mica(?) + brown clay + FeOH as alteration products. Ol replaced by mica(?).

Plane-polarized: 63718271



Cross-polarized: 63718291



No. of photomicrographs in database: 7

Igneous Petrology

Lithology: plagioclase phyric basalt massive lava flow **Style of emplacement:** massive lava flow

Domain number (if >1): 1

Igneous domain type: flow interior **Domain relative abundance (%):** 100

Major groundmass texture: variolitic **Groundmass grain size (avg):** microcrystalline

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.1	0.2	anhedral	subequant	Anhedral grains (approx. 1.2 mm) olivines completely altered to mica?
Plagioclase	6	0.4	euhedral	elongate	Plagioclase laths (max 4mm) long set in a finer groundmass of plagioclase and olivine grains showing intergranular texture. Glomerocrysts of the plagioclase are observed in places

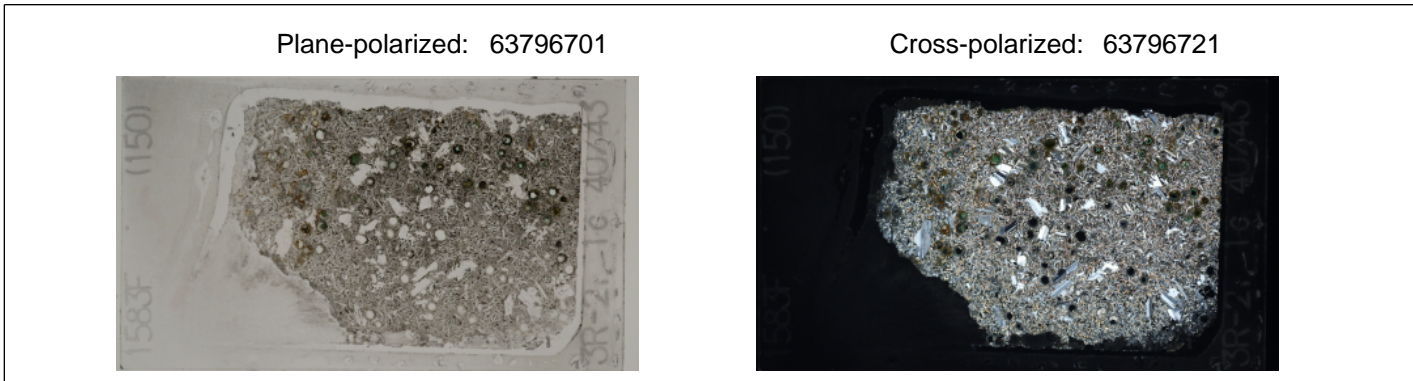
Groundmass	Original (%)	Comment
Groundmass	93.8	Under the microscope the rock is altered to brown clay + FeOH with no fresh olivines preserved. Ol completely replaced by micaceous clay. The plagioclase in groundmass form glomerocrysts and exhibit sub-ophitic textures along with intergranular textures.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.1	0.1	round	Vesicles are lined with clay.

Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	21										

THIN SECTION LABEL ID: **393-U1583F-3R-2-W 40/43-TSB-TS 150** Thin section no.: 150
 Observer: MJ, EA Piece no.: 1
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase phyric basalt massive lava flow fine grained intergranular groundmass with plagioclase laths (upto 0.3mm) enclosing olivine, Alteration intensity is moderate with brown clay + FeOH (background) and orange-brown and minor green clay + FeOH (in halo) as alteration products.



No. of photomicrographs in database: 4

Igneous Petrology

Lithology:	plagioclase phyric basalt massive lava flow	Style of emplacement:	massive lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intergranular	Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	4	0.5	euhedral	equant	Fresh plagioclase laths (upto 4mm) long occurring as glomerocrysts

Groundmass	Original (%)	Comment
Groundmass	95.7	Groundmass is fine grained intergranular with plagioclase laths (upto 0.3mm) enclosing olivine

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.3	0.1	round	Vesicles lined with a mixture of fillings - green celadonite and carbonate.

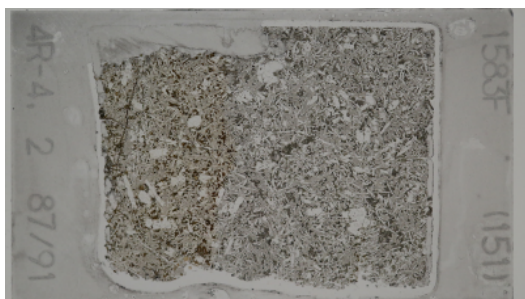
Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	15							15	(light) brown clay + FeOH		

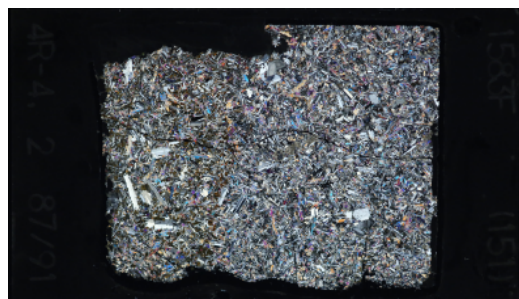
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-brown	24							25	brown/orange-brown clay + FeOH, minor green clay		

THIN SECTION LABEL ID: **393-U1583F-4R-4-W 87/91-TSB-TS 151** Thin section no.: 151
 Observer: MJ, EA Piece no.: 2
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow with intergranular groundmass with seriate laths of plagioclase partially enclosing olivine grains exhibiting sub-ophitic texture., Alteration intensity is moderate with yellow-brown clay (mica?) + FeOH (background) and brown clay + FeOH (halo) alteration products. Ol replaced by mica(?) in background. Vein composed of brown + minor green clay.

Plane-polarized: 63746011



Cross-polarized: 63746031



No. of photomicrographs in database: 7

Igneous Petrology

Lithology:	plagioclase-olivine phyric basalt pillow lava flow		Style of emplacement:	pillow lava flow	
Domain number (if >1):	1				
Igneous domain type:	flow interior		Domain relative abundance (%):	100	
Major groundmass texture:	intergranular		Groundmass grain size (avg):	medium-grained	

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	1	0.2	subhedral	subequant	Olivine phenocrysts (upto 1.2 mm)
Plagioclase	1	1	euhedral	equant	Fresh laths of plagioclase upto 2.2mm size often forming glomerocrysts.

Groundmass	Original (%)	Comment
Groundmass	98	Groundmass texture is intergranular with seriate laths of plagioclase partially enclosing olivine grains exhibiting sub-ophitic texture.

Alteration

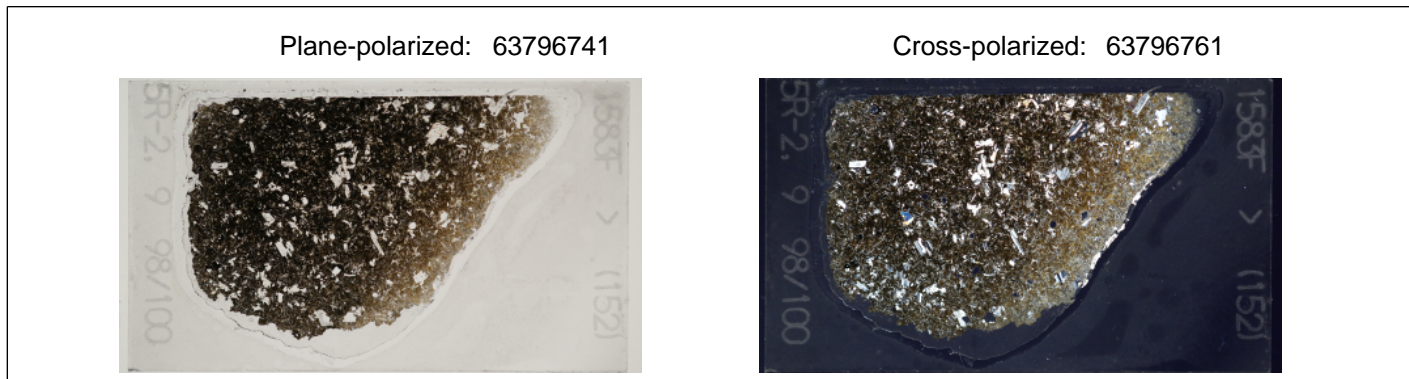
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	24										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-grey	15	100	mica?								

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.06			

THIN SECTION LABEL ID: **393-U1583F-5R-2-W 98/100-TSB-TS 152** Thin section no.: 152
 Observer: MJ, EA Piece no.:
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow with fine-grained, intergranular groundmass with seriate laths of plagioclase associated with olivine grains. Alteration intensity is high with brown and yellow (in halo) clay + FeOH. OI replaced by orange-brown clay in halo. Crack-seal vein at TS rim composed of carbonate.



No. of photomicrographs in database: 4

Igneous Petrology

Lithology:	plagioclase-olivine phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intergranular	Groundmass grain size (avg):	medium-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	1	0.1	euhedral	equant	Fresh OI phenocrysts (1.2mm), slightly altered along cracks.
Plagioclase	2	1	euhedral	equant	Plagioclase crystals (upto 3mm) often form glomerocrysts and are associated with olivine.

Groundmass	Original (%)	Comment
Groundmass	96.99	Groundmass texture is fine-grained, intergranular with seriate laths of plagioclase associated with olivine grains.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.01	0.1	irregular	0.1mm sized vesicles lined with carbonate

Alteration

Domain type	Alteration %	% OI repl.	OI repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	43	20	brown clay + FeOH					80	brown clay + FeOH		

Domain type	Alteration %	% OI repl.	OI repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-brown	54	100	yellow-brown clay + FeOH	2	brown clay			40	brown/yellow clay + FeOH		

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.3		at rim of TS	

THIN SECTION LABEL ID: **393-U1583F-5R-3-W 81/84-TSB-TS 153**

Thin section no.: 153

Observer: MJ, EA

Piece no.:

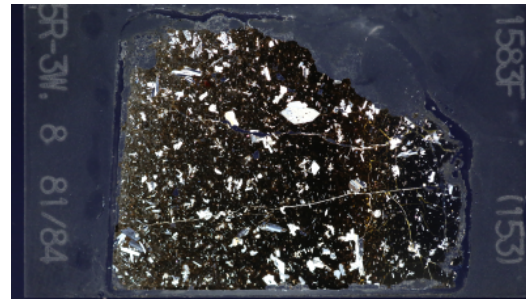
Total number of domains: 1

Unit/subunit:

Thin section summary: The thin section is of plagioclase-olivine phyric basalt pillow lava flow representing three domains viz. Glassy zone consists of pale yellow isotropic glass followed by variolitic transition and glassy margin of pillow lava with Flow interior in pillow lava flow in contact with upper variolitic zone., Glass slightly-moderately altered to yellow and brown clay + FeOH, chilled margin moderately altered to brown clay + FeOH.

Plane-polarized: 63796781

Cross-polarized: 63796801



No. of photomicrographs in database: 7

Igneous Petrology

Lithology: glassy basalt pillow lava flow **Style of emplacement:** pillow lava flow

Domain number (if >1): 1

Igneous domain type: glassy margin

Domain relative abundance (%): 25

Major groundmass texture: glass

Groundmass grain size (avg): glass

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.1	euhedral	equant	Fresh ol microphenocrysts upto (0.5mm)
Plagioclase	0.5	1	euhedral	equant	Sparse fresh plagioclase (0.4mm) phenocrysts in isotropic glass

Groundmass	Original (%)	Comment
Groundmass	99	Pale yellow isotropic glass with scattered olivine microlites and plagioclase microlaths

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	100		100	Fresh pale yellow glass

Lithology: plagioclase-olivine phyric basalt pillow lava flow **Style of emplacement:** pillow lava flow

Domain number (if >1): 2

Igneous domain type: chilled margin

Domain relative abundance (%): 10

Major groundmass texture: variolitic

Groundmass grain size (avg): cryptocrystalline

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.1	euhedral	equant	Fresh ol microlites upto (0.2mm), some altered along grain boundaries.
Plagioclase	1	1	euhedral	equant	Plagioclase crystals (upto 3mm) often form glomerocrysts and are associated with olivine.

Groundmass	Original (%)	Comment		
Groundmass	98.45	Scattered ovoid brown varioles isolated in glassy groundmass with thin rim of fibrous anisotropic minerals.		
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.05	0.1	round	0.6mm sized vesicles, at times filled with carbonate.

Lithology: plagioclase-olivine phyric basalt pillow lava flow **Style of emplacement:** pillow lava flow

Domain number (if >1): 3

Igneous domain type: flow interior **Domain relative abundance (%):** 65

Major groundmass texture: intersertal **Groundmass grain size (avg):**

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	5	0.15			Plagioclase phenocrysts (upto 4mm) often forming glomerocrysts.

Groundmass	Original (%)	Comment		
Groundmass	94.99	Groundmass texture changes from glomeroporphyritic to intersertal and intergranular as we move away from the variolitic chilled margin.		

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.01	0.2		0.22mm sized unfilled vesicles.

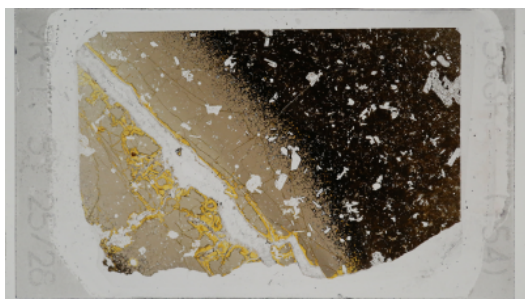
Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	15	5	brown clay							10	yellow-brown clay + FeOH

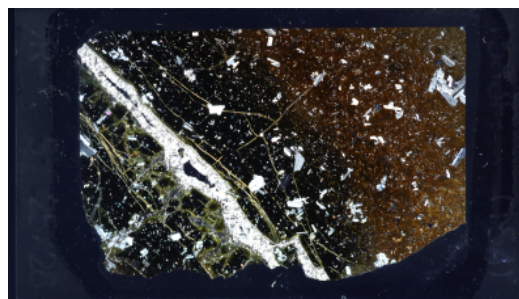
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	25										

THIN SECTION LABEL ID: **393-U1583F-9R-1-W 25/28-TSB-TS 154** Thin section no.: 154
 Observer: MJ, EA Piece no.: 5
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow with fine-grained, intergranular groundmass with seriate laths of plagioclase associated with olivine grains. Glass moderately altered to mostly yellow clay + FeOH, chilled margin moderately altered to brown clay + FeOH. Ol replaced by brown clay + FeOH. Crack-seal vein with zeolite lining and carbonate in center.

Plane-polarized: 63804141



Cross-polarized: 63804161



No. of photomicrographs in database: 0

Igneous Petrology

Lithology:	glassy basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	glassy margin	Domain relative abundance (%):	50
Major groundmass texture:	glass	Groundmass grain size (avg):	glass

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.1	0.1	euhedral	equant	Fresh ol microphenocrysts upto (0.5mm)
Plagioclase	0.5	0.2	euhedral	equant	Sparse fresh plagioclase (0.4mm) phenocrysts in isotropic glass

Groundmass	Original (%)	Comment
Groundmass	99.35	Pale yellow isotropic glass with scattered olivine microlites and plagioclase microlaths

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.05	0.1	round	0.5mm sized vesicles lined with yellow glass

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	100		100	Fresh pale yellow altered glass at places

Lithology:	plagioclase-olivine phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	2		
Igneous domain type:	chilled margin	Domain relative abundance (%):	50
Major groundmass texture:	variolitic	Groundmass grain size (avg):	cryptocrystalline

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	1	1	euhedral	equant	Plagioclase crystals (upto 3mm) often form glomerocrysts and are associated with olivine.
Groundmass	Original (%)		Comment		
Groundmass	98.99		Scattered ovoid brown varioles isolated in glassy groundmass with thin rim of fibrous anisotropic minerals. Groundmass texture changes from glomeroporphyritic to intersertal and intergranular as we move away from the variolitic chilled margin.		
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	0.01	0.1	irregular	0.1mm sized vesicles	

Alteration

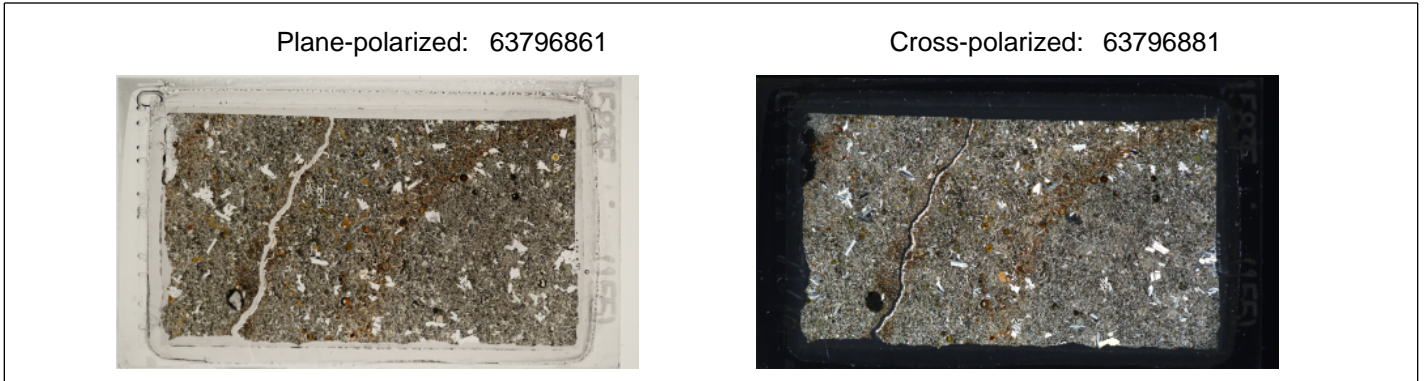
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	19										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	27										

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
2	zeolite - carbonate	zeolites as lining	

THIN SECTION LABEL ID: **393-U1583F-10R-1-W 71/74-TSB-TS 155** Thin section no.: 155
 Observer: MJ, EA Piece no.: 9
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric pillow lava flow with finegrained groundmass with seriate laths of plagioclase with olivine exhibiting sub-ophitic relationship with patches of altered yellow clay. At places Oxyhydroxide is observed at places., Alteration intensity is high but can be variable (in halo) with brown clay + FeOH + mica(?) as alteration products. Ol replaced by mica(?). Vein with clay as lining, overgrown by zeolite; carbonate in vein center.



No. of photomicrographs in database: 11

Igneous Petrology

Lithology:	plagioclase-olivine phyric pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1	Domain relative abundance (%):	100
Igneous domain type:	flow interior	Major groundmass texture:	intergranular
		Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.1	0.2	euhedral	equant	Mostly Fresh ol microphenocrysts upto (1mm), feebly altered along cracks
Plagioclase	0.2	0.2	euhedral	equant	Plag laths (0.6mm) often form glomerocrysts and are associated with olivine.

Groundmass	Original (%)	Comment
Groundmass	99.6	Finegrained groundmass with seriate laths of plagioclase with olivine exhibiting sub-ophitic relationship with patches of altered yellow clay. At places Oxyhydroxide is observed at places.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.1	0.3	round	completely filled with yellow-orange-brown clay; one vesicle with a large euhedral carbonate grain

Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	55										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-brown	57										

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.4	brown clay - zeolite - carbonate	minute euhedral zeolite crystals as lining on brown clay	

THIN SECTION LABEL ID: **393-U1583F-11R-1-W 43/46-TSB-TS 156** Thin section no.: 156
 Observer: MJ, EA Piece no.: 8
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Aphyric basalt sheet lava flow with fine-grained groundmass with seriate laths of plagioclase with patches of altered yellow clay are observed. Alteration texture is patchy, alteration intensity is high, with brown clay + FeOH (background) and brown, yellow and green clay + FeOH (in halo) as alteration products. Crack-seal vein with clay lining and carbonate (partly with cross fiber texture) in center.

Plane-polarized: 63796821



Cross-polarized: 63796841



No. of photomicrographs in database: 5

Igneous Petrology

Lithology:	aphyric basalt sheet lava flow	Style of emplacement:	sheet lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intersertal	Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	0.01	0.4	euhedral	equant	Sparse fresh plagioclase phenocrysts

Groundmass	Original (%)	Comment
Groundmass	99.89	Finegrained groundmass with seriate laths of plagioclase with patches of altered yellow clay are observed.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.1	0.2	round	0.21mm sized vesicles lined with yellow-green clay and at places carbonate

Alteration

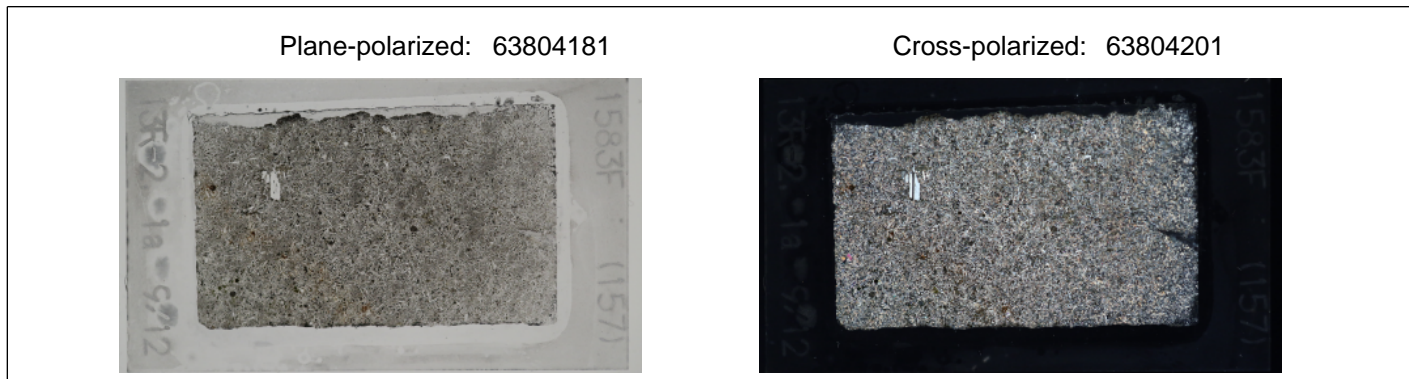
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	55										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-brown	71										

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.25	brown clay - carbonate - brown clay + metamorphosed sediment(?)	crack-seal vein, partly with cross fiber carbonate; center filled with brown clay and microcrystalline material, probably recrystallized sediment	

THIN SECTION LABEL ID: **393-U1583F-13R-2-W 9/12-TSB-TS 157** Thin section no.: 157
 Observer: MJ, EA Piece no.: 1
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Aphyric basalt sheet lava flow with intergranular groundmass texture with seriate plagioclase laths enclosing olivine grains. Alteration intensity is moderate, with brown clay + mica(?) + FeOH (background) and brown and green clay + FeOH (in two halo types) as alteration products. Ol replaced by mica(?) and/or green clay.



No. of photomicrographs in database: 6

Igneous Petrology

Lithology:	aphyric basalt sheet lava flow	Style of emplacement:	sheet lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intergranular	Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.1	subhedral	subequant	Ol phenocrysts upto (0.5mm) mostly altered to brown clay.
Plagioclase	0.5	0.2	euhedral	elongate	Sparse fresh plagioclase phenocrysts

Groundmass	Original (%)	Comment
Groundmass	98.8	Groundmass texture is overall intergranular with seriate plagioclase laths enclosing olivine grains.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.2	0.2	round	0.2mm sized vesicles lined with brown clay and Fe-OH oxide at times.

Alteration

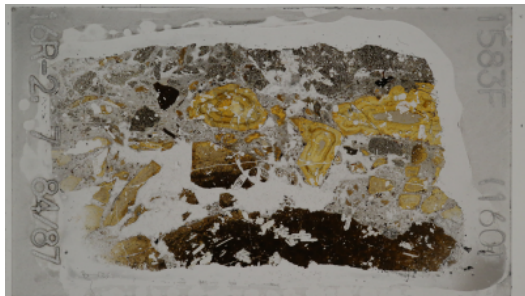
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	22										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-orange	25										

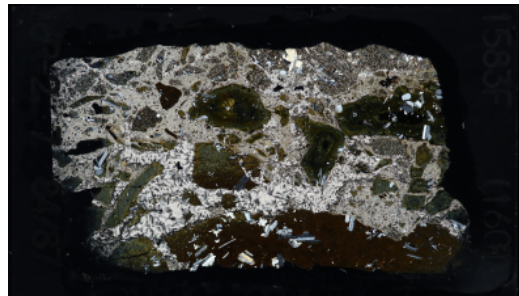
Domain type	Alteration %	% OI repl.	OI repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-green	18										

THIN SECTION LABEL ID: **393-U1583F-16R-2-W 84/86-TSB-TS 160** Thin section no.: 160
 Observer: MJ, EA Piece no.: 7
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Pillow lava basalt lava flow exhibiting transition from glassy margin to variolitic zone with glass shards in altered breccia matrix consisting of plag microlaths with minor ol microcrysts with carbonate. Glassy margin moderately altered to brown clay + FeOH + minor carbonate. Chilled margin breccia clasts highly altered to brown clay + FeOH, with concentric alteration in case of glassy clasts; clasts commonly with brown clay + FeOH lining towards breccia matrix. Basaltic breccia clasts moderately altered to mostly brown clay + FeOH.

Plane-polarized: 63804301



Cross-polarized: 63804321



No. of photomicrographs in database: 3

Igneous Petrology

Lithology:	glassy basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	glassy margin	Domain relative abundance (%):	20
Major groundmass texture:	variolitic	Groundmass grain size (avg):	glass

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	1	0.1	euhedral	equant	
Plagioclase	2	0.5	euhedral	elongate	
Clinopyroxene	1	0.3	euhedral	equant	Fresh cpx floating in glass

Groundmass	Original (%)	Comment
Groundmass	96	Variolitic transition to glassy groundmass

Lithology:	hyaloclastite	Style of emplacement:	
Domain number (if >1):	2		
Igneous domain type:	breccia matrix	Domain relative abundance (%):	80
Major groundmass texture:		Groundmass grain size (avg):	

Alteration

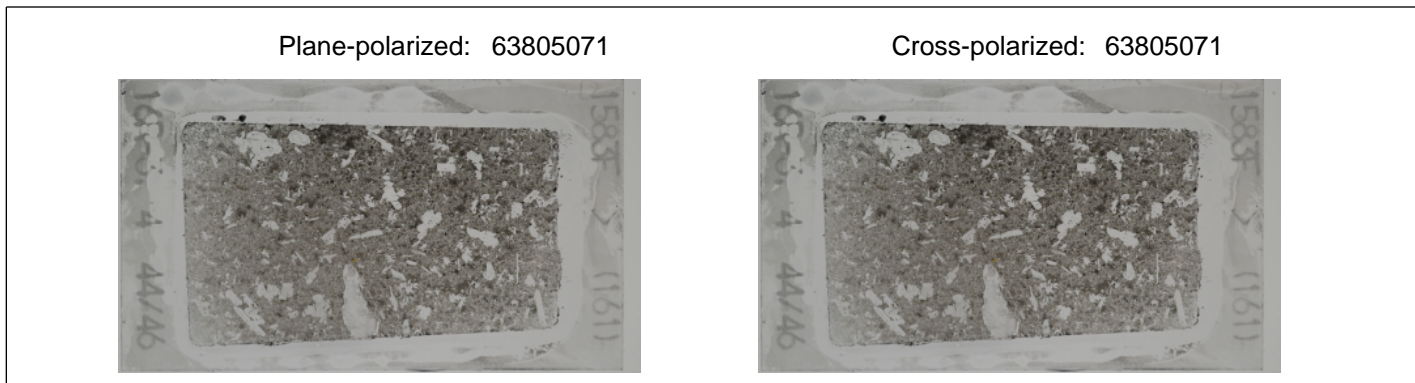
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	59										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	39										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	75										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	100										

THIN SECTION LABEL ID: **393-U1583F-16R-3-W 44/46-TSB-TS 161** Thin section no.: 161
 Observer: MJ, EA Piece no.: 4
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase phyric basalt pillow lava flow with fine-grained, intergranular groundmass with seriate laths of plagioclase associated with olivine grains. Alteration intensity is slight, with brown clay + FeOH + minor light brown clay as alteration products.



No. of photomicrographs in database: 2

Igneous Petrology

Lithology:	plagioclase phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intergranular	Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	5	0.2	euhedral	equant	Fresh plagioclase laths (upto 2.5mm) long occurring as glomerocrysts. Some phenocrysts cores show sieve textures.

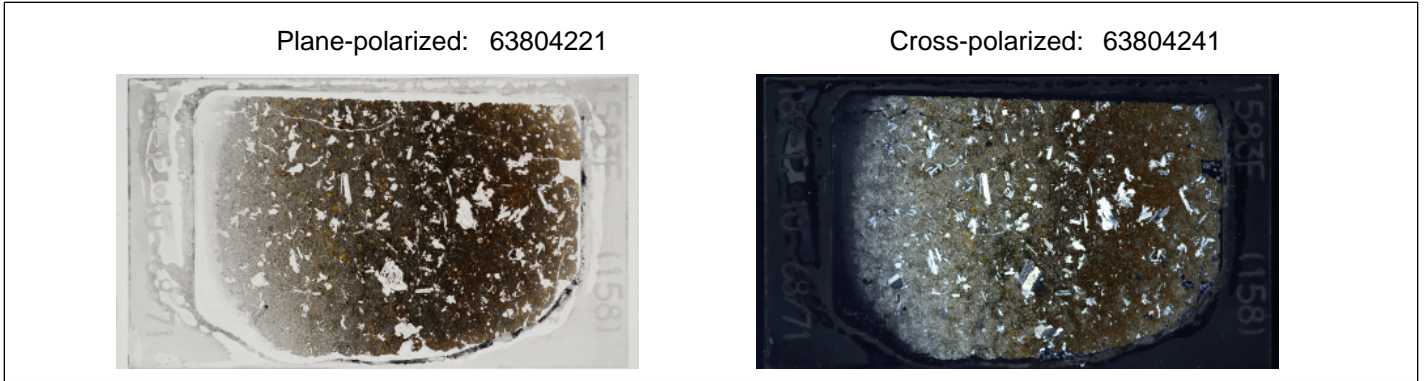
Groundmass	Original (%)	Comment
Groundmass	94.9	Groundmass texture is fine-grained, intergranular with seriate laths of plagioclase associated with olivine grains.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.1	0.2	round	0.1mm sized vesicles filled with carbonate

Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	11	100	light brown clay			1	brown clay + FeOH	10	brown clay + FeOH		

THIN SECTION LABEL ID: **393-U1583F-18R-1-W 68/71-TSB-TS 158** Thin section no.: 158
 Observer: MJ, EA Piece no.: 10
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow with fine-grained, intergranular groundmass with seriate laths of plagioclase associated with olivine grains with yellow clay lining vesicles. Alteration intensity is high within two halo types, with brown and yellow clay + FeOH as alteration products. Alteration locally more intense in one halo, with altered PI microphenocrysts and altered OI.



No. of photomicrographs in database: 3

Igneous Petrology

Lithology:	plagioclase-olivine phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intergranular	Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.2	euhedral	equant	Fresh Large olivine phenocrysts (1.3mm) with minor alteration along cracks.
Plagioclase	5	0.5	euhedral	elongate	Fresh plagioclase laths (upto 2.5mm) long occurring as glomerocrysts. Some phenocrysts cores show sieve textures.

Groundmass	Original (%)	Comment
Groundmass	94.4	Groundmass texture is fine-grained, intergranular with seriate laths of plagioclase associated with olivine grains.

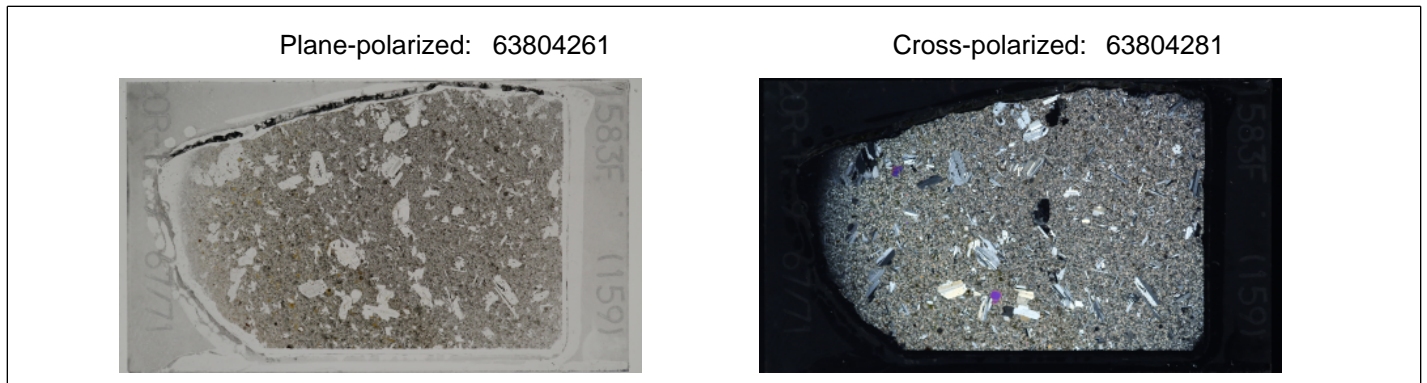
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.1	0.01	round	0.2mm sized vesicles filled with yellow clay

Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-dark grey	63										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-brown	55										

THIN SECTION LABEL ID: **393-U1583F-20R-1-W 67/71-TSB-TS 159** Thin section no.: 159
 Observer: MJ, EA Piece no.: 9
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow, fine-grained, intergranular groundmass with seriate laths of plagioclase associated with olivine grains. Alteration intensity is moderate, with brown and yellow (in halo) clay + FeOH as alteration products. Ol replaced by unknown phyllosilicate (background) or brown and yellow clay (halo). Narrow vein fill composed of clay.



No. of photomicrographs in database: 8

Igneous Petrology

Lithology:	plagioclase-olivine phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	flow interior	Domain relative abundance (%):	100
Major groundmass texture:	intergranular	Groundmass grain size (avg):	fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	1	0.2	euhedral	equant	Fresh Large olivine phenocrysts (1.3mm) with minor alteration along cracks.
Plagioclase	5	1	euhedral	equant	Fresh plagioclase laths (upto 2.5mm) long occurring as glomerocrysts. Some phenocrysts cores show sieve textures.

Groundmass	Original (%)	Comment
Groundmass	93.8	Groundmass texture is fine-grained, intergranular with seriate laths of plagioclase associated with olivine grains.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.2	0.01	round	0.2mm sized vesicles filled with yellow clay

Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	16										

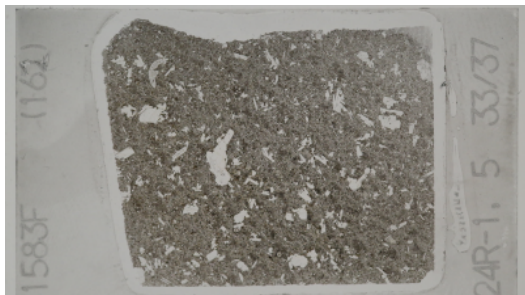
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-grey	17										

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.04			

THIN SECTION LABEL ID: **393-U1583F-24R-1-W 33/37-TSB-TS 162** Thin section no.: 162
 Observer: MJ, EA Piece no.: 5
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase phyric basalt pillow lava flow with fine-grained, intergranular groundmass with seriate laths of plagioclase associated with olivine grains. Moderate alteration intensity, with brown clay + FeOH as alteration products. Ol replaced by unknown phyllosilicate.

Plane-polarized: 63805111



Cross-polarized: 63805131



No. of photomicrographs in database: 5

Igneous Petrology

Lithology: plagioclase phyric basalt pillow lava flow **Style of emplacement:** pillow lava flow
Domain number (if >1): 1
Igneous domain type: flow interior **Domain relative abundance (%):** 100
Major groundmass texture: intergranular **Groundmass grain size (avg):** fine-grained

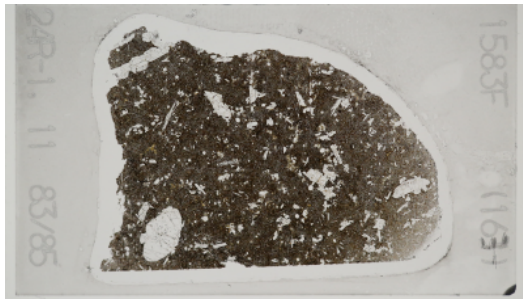
Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	7	0.14	euhedral	equant	Fresh plagioclase laths (upto 3.4mm) long occurring as glomerocrysts. Some phenocrysts cores show sieve textures.
Groundmass	Original (%)	Comment			
Groundmass	92.9	Groundmass texture is fine-grained, intergranular with seriate laths of plagioclase associated with olivine grains.			
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	0.1	0.2	round	0.2mm vesicles filled with carbonate	

Alteration

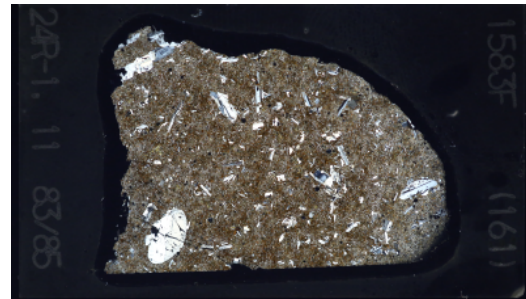
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	16	100	light brown clay					15	brown clay + FeOH		

THIN SECTION LABEL ID: **393-U1583F-24R-1-W 83/85-TSB-TS 163** Thin section no.: 163
 Observer: MJ, EA Piece no.: 11
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow with intergranular groundmass texture with seriate plagioclase laths enclosing olivine grains. Alteration intensity is high, with brown and minor yellow clay + FeOH as alteration products. Ol replaced by orange-brown clay + FeOH, Pl microphenocrysts locally altered to brown clay. Narrow vein fill composed of clay.

Plane-polarized: 63805151



Cross-polarized: 63805171



No. of photomicrographs in database: 0

Igneous Petrology

Lithology: plagioclase-olivine phyric basalt pillow lava flow **Style of emplacement:** pillow lava flow
Domain number (if >1): 1
Igneous domain type: flow interior **Domain relative abundance (%):** 100
Major groundmass texture: intergranular **Groundmass grain size (avg):** fine-grained

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.1	0.2	subhedral	subequant	Completely altered Ol phenocrysts upto 0.4 mm in size
Plagioclase	5	0.3	subhedral	equant	Large plag phenocrysts (upto 6mm) are observed

Groundmass	Original (%)	Comment
Groundmass	94.8	Groundmass texture is fine grained intergranular with plagioclase and olivine exhibiting sub-ophitic relationship.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.1	0.05	round	0.5mm sized, mostly unfilled

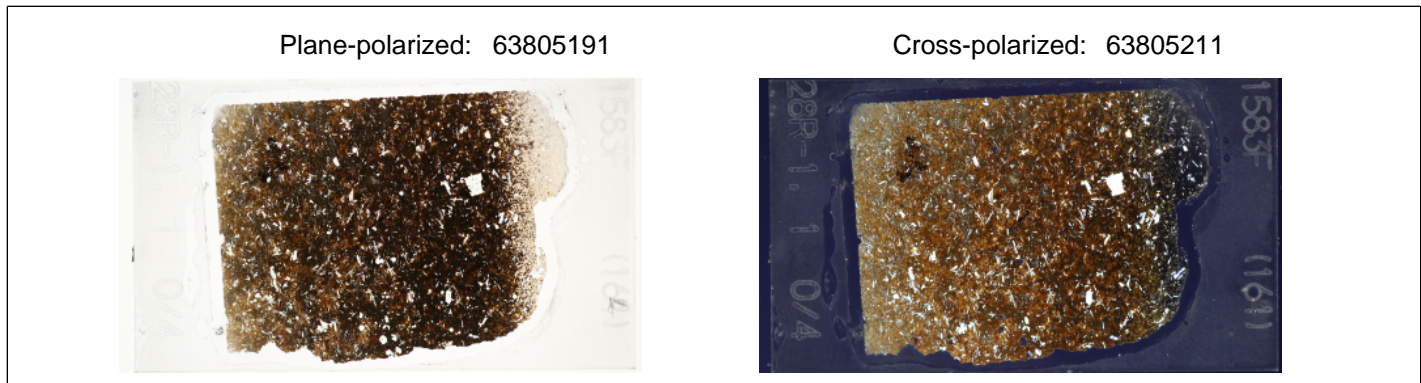
Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-brown	59										

Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.05		crack with partial brown clay filling	

THIN SECTION LABEL ID: **393-U1583F-28R-1-W 0/4-TSB-TS 164** Thin section no.: 164
 Observer: MJ, EA Piece no.: 1
 Total number of domains: 1 Unit/subunit:
 Thin section summary: Plagioclase-olivine phyric basalt pillow lava flow representing three domains viz. Glassy zone consisting of pale yellow isotropic glass followed by variolitic transition and glassy margin of pillow lava with flow interior in pillow lava flow in contact with upper variolitic zone., Glass moderately altered to yellow clay + minor FeOH; chilled margin moderately altered to brown clay + FeOH. Ol replaced by orange-brown clay + FeOH.



No. of photomicrographs in database: 4

Igneous Petrology

Lithology:	glassy basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	1		
Igneous domain type:	glassy margin	Domain relative abundance (%):	10
Major groundmass texture:	glass	Groundmass grain size (avg):	glass

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.1	0.2	euhedral	equant	Fresh olivine microphenocrysts in glassy groundmass.
Plagioclase	1	0.2	euhedral	elongate	Fresh Lath floating in glass

Groundmass	Original (%)	Comment
Groundmass	98.9	Pale yellow isotropic glass with scattered olivine microlites and plagioclase microlaths with rare plag and Ol phenocrysts.

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	100		100	Fresh pale yellow glass

Lithology:	plagioclase-olivine phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	2		
Igneous domain type:	chilled margin	Domain relative abundance (%):	20
Major groundmass texture:	variolitic	Groundmass grain size (avg):	cryptocrystalline

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.1	euhedral	equant	Fresh olivines in variolitic zone are fresh with few crystals completely replaced by clay?
Plagioclase	1	0.2	euhedral	elongate	Plagioclase crystals (upto 2mm) often form glomerocrysts and are associated with olivine.
Groundmass	Original (%)	Comment			
Groundmass	98.5	Scattered ovoid brown varioles isolated in fresh glassy groundmass with thin rim of fibrous anisotropic minerals.			

Lithology:	plagioclase-olivine phyric basalt pillow lava flow	Style of emplacement:	pillow lava flow
Domain number (if >1):	3	Domain relative abundance (%):	70
Igneous domain type:	flow interior	Groundmass grain size (avg):	cryptocrystalline
Major groundmass texture:	intergranular		

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.2	subhedral	subequant	Olivine phenocrysts are sparse and completely altered along cracks to Fe-OH hydroxide.
Plagioclase	5	0.3	euhedral	elongate	Plagioclase phenocrysts (upto 0.6mm) often forming glomerocrysts.
Groundmass	Original (%)	Comment			
Groundmass	94.4	Groundmass texture changes from glomeroporphyritic to intersertal and intergranular as we move away from the variolitic chilled margin.			
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	0.1	0.02	round	0.6mm sized vesicles, mostly unfilled.	
Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment	
Glass	10		10		

Alteration

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
	25										

Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	43										