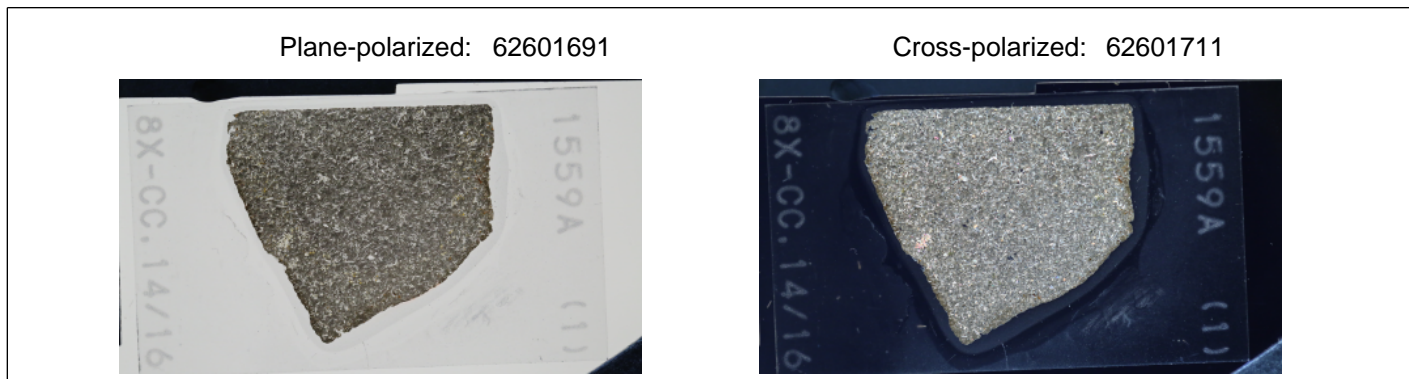


THIN SECTION LABEL ID:	<b>390C-U1559A-8X-CC-W 14/16-TSB-TS1</b>	Thin section no.:	1
Observer:	PDK, EC	Piece no.:	
Thin section thickness:	standard	Unit/subunit:	1
Thin section summary:	aphyric basalt rubble clast		



### Igneous Petrology

<b>Lithology:</b>	<b>Rock texture:</b> holocrystalline
<b>Style of emplacement:</b> rubble	<b>Groundmass grain size (avg.):</b> cryptocrystalline
<b>Major groundmass texture:</b> dendritic or skeletal	<b>Minor groundmass Texture:</b> subophitic
<b>Sample domain name (if&gt;1)</b> 1	<b>Domain relative abundance (%)</b> 100

Groundmass	Original (%)	Comment
Olivine	5	Small, equant crystals, euhedral to anhedral, typically ~0.1 mm in size. Partially replaced by iddingsite in the alteration halo. Occurs in subophitic relationship with plagioclase microlites in some places.
Plagioclase	20	Acicular to tabular microlites, occurs in subophitic relationship with olivine in some cases. Unaltered.
Fe-Ti oxide	2	Occurs as tiny equant crystals lining plumose quench textures in the mesostasis.
Mesostasis	73	Occurs as plumose quench textures in between acicular plagioclase and equant olivine microphenocrysts.

### Alteration

Domain number (if>1)	1	Domain name	basalt background alteration	Domain comment	Centre region of section minor background alteration only
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
smectite	1	groundmass			

### Alteration

Domain number (if>1)	2	Domain name	basalt halo margin	Domain comment	Halo margin (majority of halo) ~5mm half width defined by yellow to brown smectite clay and brown iddingsite (likely a gradational distinction) replacing groundmass, olivine and occasionally plagioclase and rimming some vesicles. Browner and redder colours towards halo interior.
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
Fe oxyhydroxide	1	veins			

## Alteration

<b>Domain number (if &gt;1)</b>	2	<b>Domain name</b>	basalt halo margin	<b>Domain comment</b>	Halo margin (majority of halo) ~5mm half width defined by yellow to brown smectite clay and brown iddingsite (likely a gradational distinction) replacing groundmass, olivine and occasionally plagioclase and rimming some vesicles. Browner and redder colours towards halo interior.
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
iddingsite	5	olivine			

## Alteration

<b>Domain number (if &gt;1)</b>	2	<b>Domain name</b>	basalt halo margin	<b>Domain comment</b>	Halo margin (majority of halo) ~5mm half width defined by yellow to brown smectite clay and brown iddingsite (likely a gradational distinction) replacing groundmass, olivine and occasionally plagioclase and rimming some vesicles. Browner and redder colours towards halo interior.
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
smectite	10	groundmass	olivine	plagioclase	vesicle lining

## Alteration

<b>Domain number (if &gt;1)</b>	3	<b>Domain name</b>	basalt halo interior	<b>Domain comment</b>	Thin 0.2mm halo interior (outermost edge of block) defined by darker dustier appearance of groundmass and greater abundance of red Fe-OH and/or iddingsite after olivine
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
clay minerals	20	groundmass			

## Alteration

<b>Domain number (if &gt;1)</b>	3	<b>Domain name</b>	basalt halo interior	<b>Domain comment</b>	Thin 0.2mm halo interior (outermost edge of block) defined by darker dustier appearance of groundmass and greater abundance of red Fe-OH and/or iddingsite after olivine
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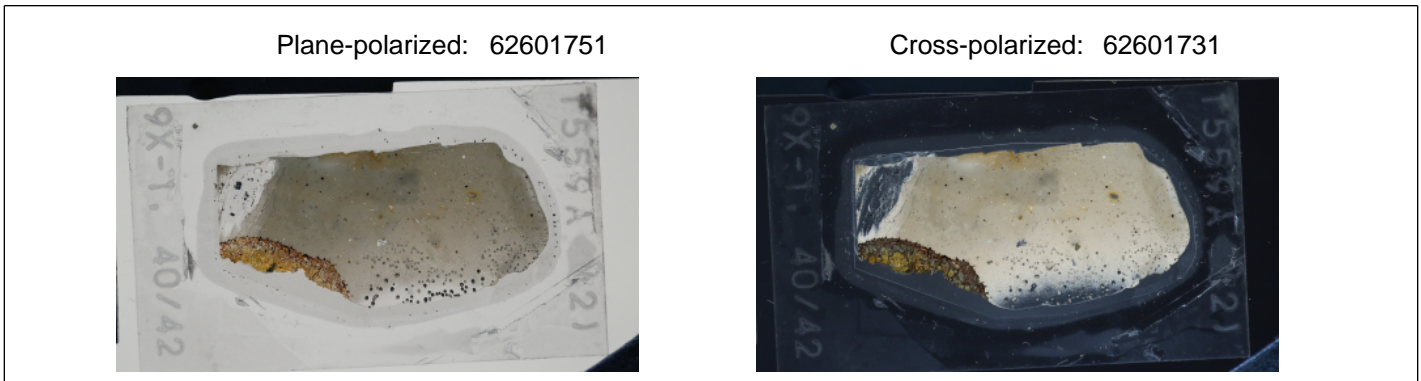
Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
Fe oxyhydroxide	5	groundmass			

## Alteration

<b>Domain number (if &gt;1)</b>	3	<b>Domain name</b>	basalt halo interior	<b>Domain comment</b>	Thin 0.2mm halo interior (outermost edge of block) defined by darker dustier appearance of groundmass and greater abundance of red Fe-OH and/or iddingsite after olivine
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
iddingsite	5	olivine	groundmass		

<b>THIN SECTION LABEL ID:</b>	<b>390C-U1559A-9X-1-W 40/42-TSB-TS2</b>	Thin section no.:	2
Observer:	PDK, EC	Piece no.:	
Thin section thickness:	standard	Unit/subunit:	1
Thin section summary:	contact between palagonite and hydrothermally altered sediment		



### Igneous Petrology

<b>Lithology:</b>	sparsely plagioclase-olivine phyric basalt	<b>Rock texture:</b>	holohyaline
<b>Style of emplacement:</b>	uncertain	<b>Groundmass grain size (avg.):</b>	glass
<b>Major groundmass texture:</b>		<b>Minor groundmass Texture:</b>	
<b>Sample domain name (if &gt;1)</b>	1	<b>Domain relative abundance (%)</b>	8

Phenocrysts	Original (%)	Alteration	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.05	slightly altered	0.1	subhedral	equant	small microphenocrysts (most < 0.1mm), mostly equant, ranging from subhedral to euhedral. Possibly some alteration along cracks and fractures but hard to tell from TS
Plagioclase	3	slightly altered	0.4	subhedral	tabular	acicular to tabular microphenocrysts, ~ 0.4 to 0.8mm long and < 0.05mm wide.

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0	100	96.5	glass palagonitized, probably smectite along cracks. Fe-Mn oxyhydroxides along contact between glass and sediment

#### Alteration

Domain number (if >1)	1	Domain name	glass	Domain comment	Altered glass along edge of core
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
carbonate	10	glass			

#### Alteration

Domain number (if >1)	1	Domain name	glass	Domain comment	Altered glass along edge of core
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
clay minerals	60	glass			

Alteration

<b>Domain number (if &gt;1)</b>	1	<b>Domain name</b>	glass	<b>Domain comment</b>	Altered glass along edge of core
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
Fe oxyhydroxide	30	glass			

Alteration

<b>Domain number (if &gt;1)</b>	2	<b>Domain name</b>	sediment	<b>Domain comment</b>	Carbonate sediment baked and hydrothermally altered by basalt intrusion
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
carbonate	5	groundmass	vugs/porespace		

Alteration

<b>Domain number (if &gt;1)</b>	2	<b>Domain name</b>	sediment	<b>Domain comment</b>	Carbonate sediment baked and hydrothermally altered by basalt intrusion
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Alteration mineral	Mineral abundance (%)	Replacing/filling 1	Replacing/filling 2	Replacing/filling 3	Replacing/filling 4
Fe oxyhydroxide	1	groundmass	disseminated		

THIN SECTION LABEL ID: **393-U1559B-3R-1-W 0/9-TSB-TS 111**

Thin section no.: 111

Observer: A. Shchepetkina

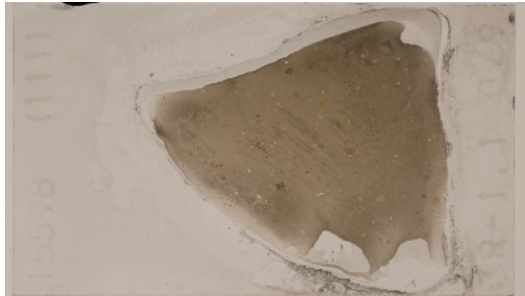
Piece no.: 1

Total number of domains:

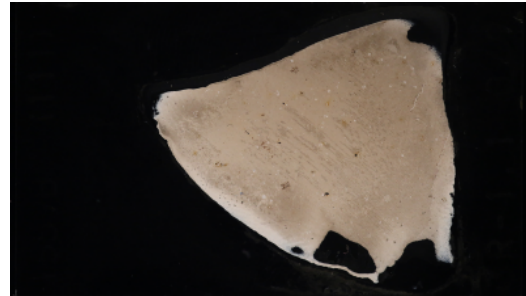
Unit/subunit: Unit 3

Thin section summary: Micritic limestone (chalky micrite) with recrystallized foraminifers (5%-7%). Test walls and more rarely chambers are preserved and consist of microgranular? calcite. Some foraminifera fragments show distinct oxidation along the outer borders. Traces of pteropods in transverse section. Traces of angular silt- and sand-sized feldspar grains (plagioclase, up to 0.38 mm) and rutile/hematite?. Rare, partially pyritized? organic matter is scattered through the section (2%-3%). Pyrite globules may form dendritic structures. Thin (0.01-0.06 mm), healed, discontinuous fractures are observed.

Plane-polarized: 63311681



Cross-polarized: 63311701



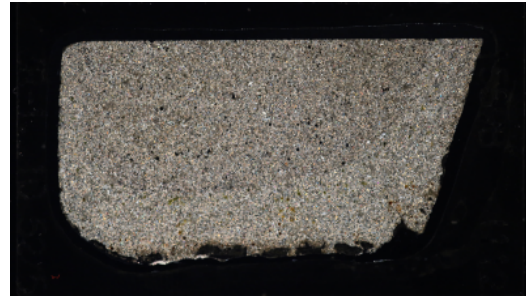
No. of photomicrographs in database: 22

THIN SECTION LABEL ID: **393-U1559B-3R-1-W 52/56-TSB-TS 112** Thin section no.: 112  
 Observer: TB, MJ, EA Piece no.: 10  
 Total number of domains: 2 Unit/subunit: Unit 1  
 Thin section summary: Microcrystalline aphyric basalt, Unit 1. Typical groundmass for Unit 1: seriate plagioclase laths from 1 mm to <0.1 mm length and equant to tabular olivine microphenocrysts modally 0.1 mm in diameter, set in a matrix of interstitial plumose, feathery cpx. Alteration intensity is moderate (background) to slightly more intense (two halo types), with brown and yellow clay + FeOH as dominant alteration products. A carbonate vein is present at side of TS.

Plane-polarized: 63302321



Cross-polarized: 63311541



No. of photomicrographs in database: 16

## 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):** microcrystalline

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.1	euhedral	equant	Fresh euhedral microcrysts of olivine (0.1-0.2 mm) observed. Minor alterations is observed along the cracks.
Plagioclase	4	0.2	euhedral	elongate	Fresh laths of plagioclase phenocrysts (up to 1mm) in size often occur as glomerocrysts. The laths enclose olivine at places partially imparting a sub-ophitic texture. Intersertal is also observed at places.

Groundmass	Original (%)	Comment
Groundmass	93.5	Under the microscope the rock is microcrystalline equigranular with sparse phenocrysts of plagioclase and olivine. The phenocrysts of plagioclase form glomerocrysts and exhibit intersertal as well as sub-ophitic textures. Minute cpx grains > 0.1 mm may be observed at places.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	2	0.1	round	Vesicles are small, round (max size. 0.5 mm) mostly unfilled in the background alteration domain. Irregularly shaped vesicles are sparsely observed. The vesicles in the dark grey halo are filled, mainly lined with yellow clay. Yellow clay lining is followed by red oxyhydroxide at places.

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0			

## 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	17	3	clay + FeOH	2	yellow-brown clay			10	mostly brown clay and FeOH, some yellow clay		

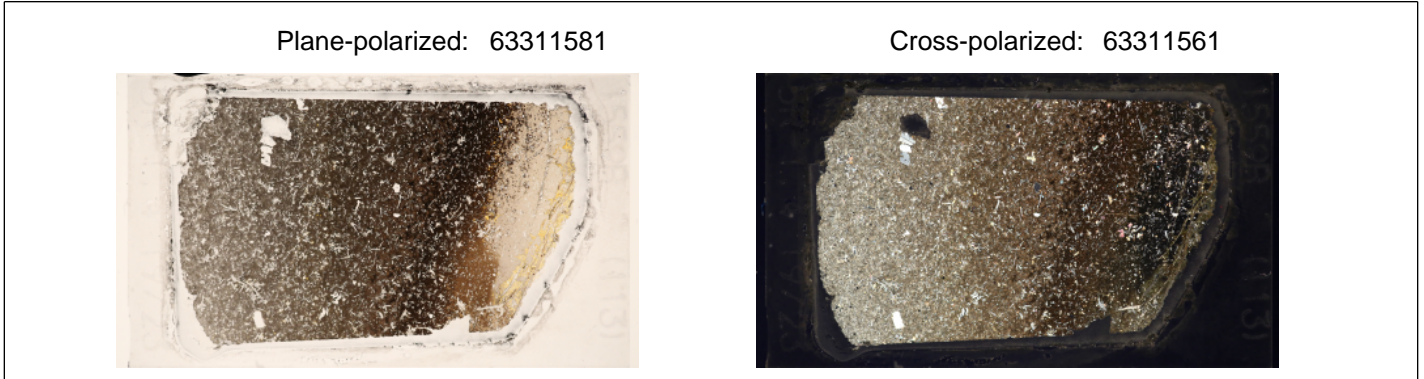
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
vein halo-dark grey	24	40	clay + FeOH	2	yellow-brown clay			15	mostly brown clay and FeOH, some yellow clay		

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	65	85	clay + FeOH	30	brown clay			75	brown clay and FeOH		

## Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
		narrow vein towards rim of TS	2 halos (orange and dark grey), orange halo up to 1 mm wide; dark gray halo of variable width (up to 10 mm)

THIN SECTION LABEL ID: **393-U1559B-5R-1-W 19/23-TSB-TS 113** Thin section no.: 113  
 Observer: TB Piece no.: 4  
 Total number of domains: 3 Unit/subunit: Unit 2A  
 Thin section summary: Complete chilled basalt pillow margin, Unit 2A. Igenous Domain 1 is the glassy selvage of the chilled margin, with plagioclase, cpx, and olivine microlites constituting the groundmass but no discrete phenocrysts. Domain 2 is a holocrystalline transitional zone between the glassy selvage and pillow interior. Glass transitions to plumose cpx abruptly but with a spherulitic textured boundary. The Domain 2 groundmass is made up of plagioclase, cpx, and olivine microlites set in a plumose cpx matrix, that may be somewhat altered. A couple of euhedral, equant plag phenocrysts <0.5 mm. Domain 3 is the interior of the flow, similar to the background for the Unit, and is only subtly different from Domain 2, with smaller, fresher plumose cpx in the groundmass, and several euhedral plag phenocrysts, one 2 mm wide.



No. of photomicrographs in database: 2

### Igneous Petrology

<b>Lithology:</b>	basaltic glass	<b>Style of emplacement:</b>	pillow lava flow
<b>Domain number (if &gt;1):</b>	2		
<b>Igneous domain type:</b>	chilled margin	<b>Domain relative abundance (%):</b>	50
<b>Major groundmass texture:</b>	intersertal	<b>Groundmass grain size (avg):</b>	microcrystalline

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	3	0.15	euhedral	elongate	Sparse plag phenocrysts up to 0.7 mm/ Fresh, twinned.
Clinopyroxene	5	0.1	Euhedral	Tabular	One tabular clinopyroxene phenocryst partly encloses a cluster of plag laths, entire intergrowth is 0.5 mm

Groundmass	Original (%)	Comment
Groundmass	91	Unoriented plag, ol, cpx microlites set sparsley in a plumose cpx matrix

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	1	0.15	round	

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0	0	0	



<b>Lithology:</b>	<b>plagioclase phyric basalt</b>			<b>Style of emplacement:</b>	pillow lava flow
<b>Domain number (if &gt;1):</b>	3				
<b>Igneous domain type:</b>	flow interior			<b>Domain relative abundance (%):</b>	40
<b>Major groundmass texture:</b>				<b>Groundmass grain size (avg):</b>	
<b>Phenocrysts</b>	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	5	0.15	euhedral	glomeroporphyritic	Sparse plag phenocrysts up to 2.5 mm. Fresh, twinned, abundant melt inclusions.
Clinopyroxene	5	0.1	euhedral	tabular	Rare tabular cpx intergrown sub-ophitically with plagioclase
<b>Groundmass</b>	Original (%)	Comment			
Groundmass	89	Interstitial plumose cpx makes up most of the groundmass in the non-glassy domains of this this section. Groundmass less brown, but also small individual plumes in the interior domain.			
<b>Vesicle</b>	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	1	0.15	round		
<b>Glass</b>	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment	
Glass	0	0	0		

<b>Lithology:</b>	<b>plagioclase phyric basalt</b>			<b>Style of emplacement:</b>	pillow lava flow
<b>Domain number (if &gt;1):</b>	1				
<b>Igneous domain type:</b>	glassy margin			<b>Domain relative abundance (%):</b>	10
<b>Major groundmass texture:</b>				<b>Groundmass grain size (avg):</b>	glass
<b>Groundmass</b>	Original (%)	Comment			
Groundmass	99	Hyalophitic, plag microlites floating in a glassy matrix			
<b>Vesicle</b>	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	1	0.1	round	Some are slightly irregularly shaped	
<b>Glass</b>	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment	
Glass	75	15	90		

### 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
	29										

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
	14										

## Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
0.6	FeOH - carbonate/zeolite(?)	composition changes along vein - in parts with carbonate filling, other parts with colorless prismatic crystals with gray interference colors (zeolite?) and FeOH as lining, elsewhere with recrystallized carbonaceous sediment(?) + FeOH	

THIN SECTION LABEL ID: **393-U1559B-5R-1-W 51/54-TSB-TS 114** Thin section no.: 114  
 Observer: TB, EA Piece no.: 10  
 Total number of domains: 1 Unit/subunit: Unit 2B  
 Thin section summary: Fine grained plagioclase-phyric basalt with rare olivine phenocrysts. Flow interior, Unit 2B. Holocrystalline, fine grained, intergranular texture with unoriented plagioclase laths and equant olivine microlites, with interstitial cpx that is locally sub-ophitic in relation to the plag. Several millimetric plagioclase phenocrysts, one appears to have been attached to an equant 2mm olivine that was mostly plucked during preparation. Alteration intensity is moderate (background) to slightly more intense (halo), with brown and yellow (in halo) clay + FeOH as dominant alteration products.

Plane-polarized: 63311601



Cross-polarized: 63311621



No. of photomicrographs in database: 22

### Igneous Petrology

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

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	5	1	euhedral	glomeroporphyritic	Prominent plag phenocrysts, 1-6 mm across. Each cryst made of several grains, twinned, with abundant primary melt inclusions along growth zones.

Groundmass	Original (%)	Comment
Groundmass	94.5	Unoriented plagioclase laths with locally sub-ophitic interstitial cpx. Equant olivine microlites in contact with plag in places.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.5	0.15	round	Some patches of more abundant, irregular vesicles

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0			

### Alteration

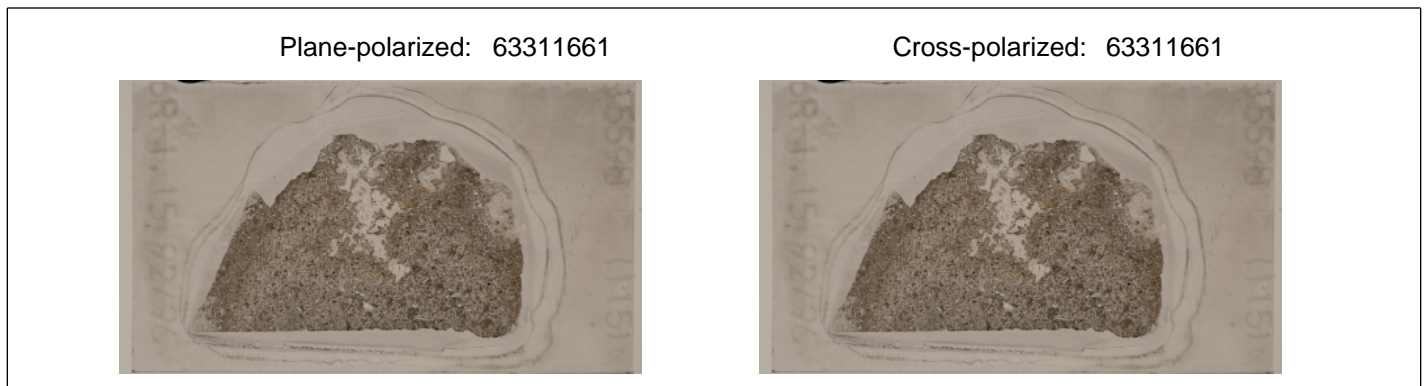
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
background	15	2	clay + FeOH	2	brown clay			15	brown clay and FeOH		

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-dark grey	22	20	clay + FeOH	2	brown clay			15	brown clay and FeOH		

### Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
		carbonate observed towards rim of TS	

THIN SECTION LABEL ID: **393-U1559B-6R-1-W 92/94-TSB-TS 115** Thin section no.: 115  
 Observer: TB, EA Piece no.: 15  
 Total number of domains: 2 Unit/subunit: Unit 2C  
 Thin section summary: Fine grained plagioclase-phyric basalt. Flow interior, Unit 2C. Fine grained groundmass of seriate plagioclase and sparse equant olivine with interstitial cpx and brown mesostasis. Euhedral voids appear to be plucked minerals (ol?). One vuggy vesicular domain. Alteration intensity is slight-moderate (background) to slightly more intense (two halo types), with brown and yellow (in halo) clay + FeOH + minor carbonate as alteration products. Millimetric vugs mostly filled with carbonate.



No. of photomicrographs in database: 9

### Igneous Petrology

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

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	3	0.5	euhedral	equant	Sparse plagioclase phenocrysts 0.5-1.5 mm, fresh

Groundmass	Original (%)	Comment
Groundmass	95	Seriate plag laths from 0.01-0.5 mm long and sparse equant olivine 0.1 mm wide with interstitial, well crystallized clinopyroxene and a dark brown opaque mesostasis (clay alteration?)

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	2	0.25	round	This description is for the flow interior groundmass. There is another domain of this section with vuggy vesicularity >30% and <3 mm across. This vuggy domain is highly altered.

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0			

## 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	10	2	clay + FeOH	2	brown clay			10	brown clay and FeOH		

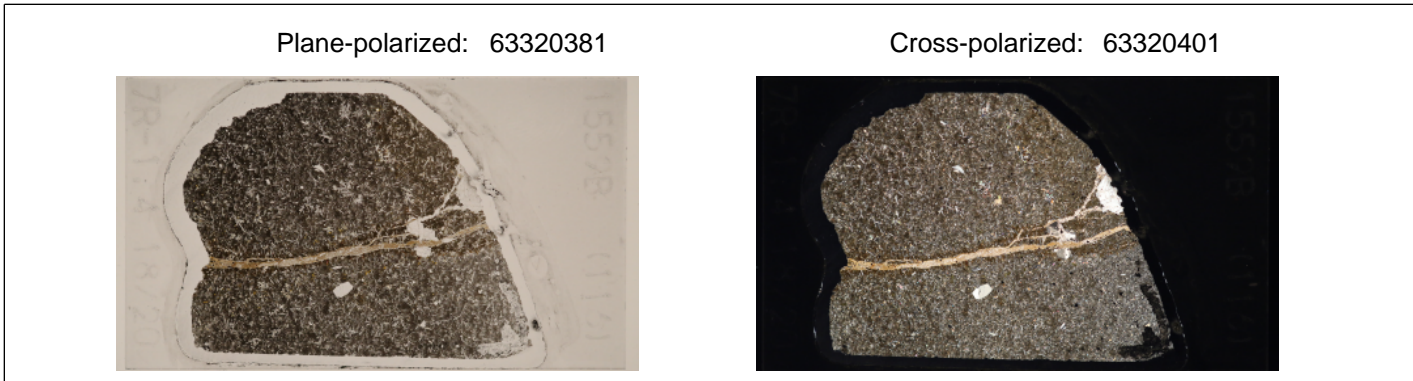
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-dark grey	20	20	clay + FeOH	2	brown clay			15	mostly brown clay and FeOH, some yellow clay		

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-orange	55	95	clay + FeOH	25	brown clay			65	mostly brown clay and FeOH, some yellow clay		

## Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
	clay - FeOH - carbonate	carbonate occurrence variable along vein	

THIN SECTION LABEL ID: **393-U1559B-7R-1-W 18/20-TSB-TS 116** Thin section no.: 116  
 Observer: TB, EA Piece no.: 4  
 Total number of domains: 1 Unit/subunit: Unit 2C  
 Thin section summary: Fine grained plagioclase-olivine phyric basalt, flow interior, Unit 3. Good example of olivine phenocryst. Groundmass dominated by plumose cpx, with 10% plagioclase laths and 3-4% equant olivine microcrysts. Alteration intensity is moderate (background) to more intense (two halo types), with mostly brown and yellow (in halos) clay + FeOH as alteration products. Metamorphosed sediment and carbonate fill the crosscutting vein.



No. of photomicrographs in database: 8

### Igneous Petrology

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

Groundmass	Original (%)	Comment
Groundmass	99.5	Felty plag laths and equant olivine micro phenocrysts set in a matrix of brown, plumose cpx

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.5	0.2	round	

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0			

### 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	13	5	clay + FeOH	2	brown clay			8	brown clay and 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-dark grey	20	60	clay + FeOH	5	brown clay			10	mostly brown clay and FeOH, some yellow-orange clay		

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	40	95	clay + FeOH or euhedral voids	15	brown clay			12	brown clay and FeOH		

## Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
2	clay - sediment + FeOH - carbonate	vein mostly filled with metamorphosed sediment and authigenic Ca carbonate	2 halos (orange and dark grey), orange halo <1 mm wide; dark gray halo with very irregular width (3 to 10 mm)



THIN SECTION LABEL ID: **393-U1559B-7R-1-W 124/126-TSB-TS 117**

Thin section no.: 117

Observer: A. Shchepetkina

Piece no.: 22

Total number of domains:

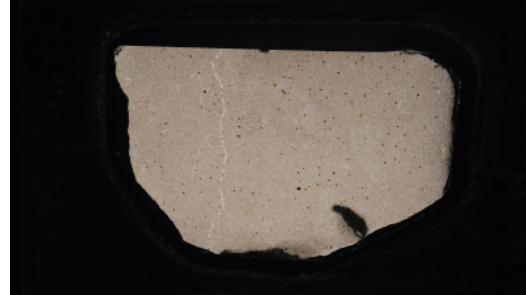
Unit/subunit: Unit 3

Thin section summary: Sediment, Unit 3. Partially recrystallized micritic limestone with rare, partially pyritized organic matter (disseminated and in clumps). Rounded partially recrystallized clay (shale) clasts are seen throughout the thin section. A thick (0.22 mm) fracture healed by spar calcite runs through the section.

Plane-polarized: 63320421



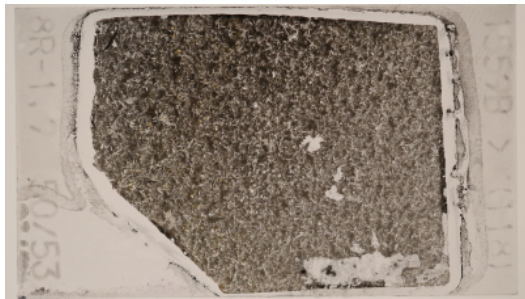
Cross-polarized: 63320441



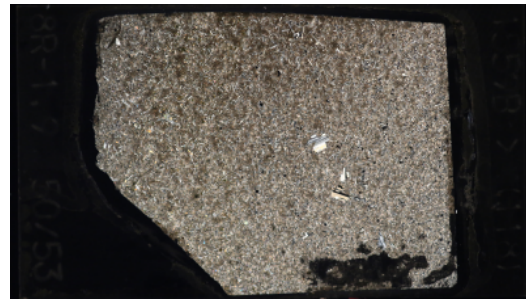
No. of photomicrographs in database: 8

THIN SECTION LABEL ID: **393-U1559B-8R-1-W 50/53-TSB-TS 118** Thin section no.: 118  
 Observer: TB, EA Piece no.: 9  
 Total number of domains: 1 Unit/subunit: Unit 4  
 Thin section summary: Microcrystalline sparsely plagioclase-phyric basalt, flow interior, Unit 4. Millimetric plagioclase phenocrysts with melt inclusions, set in an intergranular groundmass of felty plagioclase laths and sparse equant olivine micro-phenocrysts in a plumose cpx matrix. Alteration intensity is slight-moderate (background) to moderate (halo), with brown and yellow (in halo) clay + FeOH + minor carbonate as alteration products.

Plane-polarized: 63320461



Cross-polarized: 63320481



No. of photomicrographs in database: 15

## Igneous Petrology

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

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	1	1	euhedral	equant	large, very good examples. fresh melt inclusions common
Groundmass	Original (%)	Comment			
Groundmass	98	Felty plag laths and equant olivine micro phenocrysts set in a matrix of brown, plumose cpx			
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	1	0.2	round		
Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment	
Glass	0				

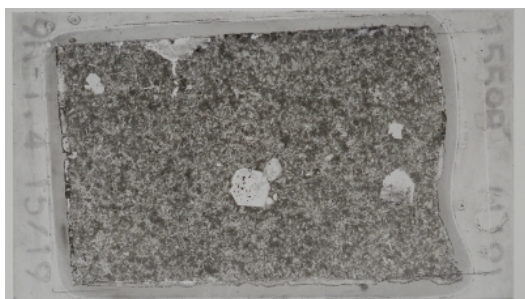
## Alteration

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			2	brown clay			8	brown clay and FeOH		

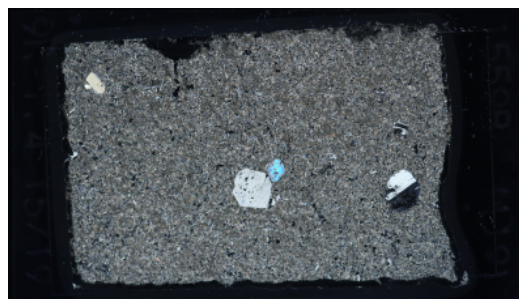
Domain type	Alteration %	% OI repl.	OI repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-dark grey	27	100	clay + FeOH + carbonate	3	brown clay			12	brown clay and FeOH		

THIN SECTION LABEL ID: **393-U1559B-9R-1-W 15/19-TSB-TS 119** Thin section no.: 119  
 Observer: TB, MH Piece no.: 4  
 Total number of domains: 1 Unit/subunit: Unit 4  
 Thin section summary: Microcrystalline sparsely plagioclase-olivine-phyric basalt, flow interior, Unit 4. Millimetric plag phenocrysts with melt inclusions and one good example of a 3 mm olivine phenocryst attached to a plagioclase. Intergranular groundmass of felty plagioclase laths and sparse equant olivine micro-phenocrysts with relatively coarse interstitial plumose cpx. Slightly altered with yellow-brown clay replacing plagioclase and groundmass. Some plagioclase phenocrysts also altered to zeolites.

Plane-polarized: 63332671



Cross-polarized: 63332721



No. of photomicrographs in database: 12

### Igneous Petrology

<b>Lithology:</b>	plagioclase phyric basalt with rare olivine phenocryst			<b>Style of emplacement:</b>	sheet lava flow
<b>Domain number (if &gt;1):</b>					
<b>Igneous domain type:</b>	flow interior			<b>Domain relative abundance (%):</b>	100
<b>Major groundmass texture:</b>	intergranular			<b>Groundmass grain size (avg):</b>	fine-grained
Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	3	euhedral	equant	one 3 mm ol phenocryst attached to a plagioclase
Plagioclase	2	4	euhedral	equant	good example, large melt inclusions
Groundmass	Original (%)	Comment			
Groundmass	97.5	Felty plag laths and equant olivine micro phenocrysts set in a matrix of relatively coarsely crystalline plumose cpx (characteristic cpx interference colors visible atbased of plumes/large crystals).			
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	0				
Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment	
Glass	0				

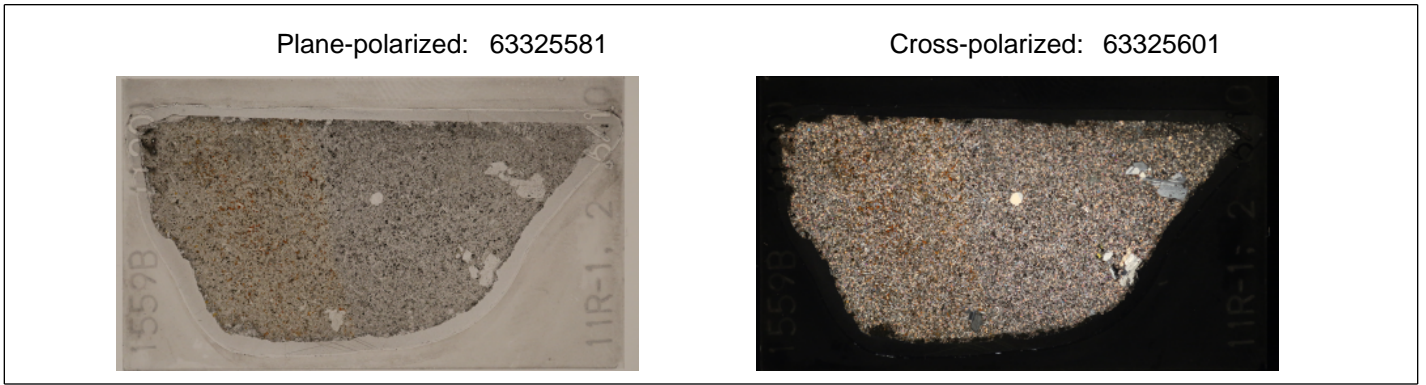
### Alteration

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	10	15	clay +FeOH	5	yellow-brown clay. Possibly zeolite replacing some phenocrysts			8	brown clay and FeOH		

### Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
		No veins	

THIN SECTION LABEL ID: **393-U1559B-11R-1-W 6/10-TSB-TS 120** Thin section no.: 120  
 Observer: TB Piece no.: 2  
 Total number of domains: 1 Unit/subunit: Unit 5A  
 Thin section summary: Fine grained sparsely plagioclase-phyric basalt with rare olivine and cpx phenocrysts, flow interior, Unit 5. Groundmass is notably coarser than other thin sections in U1559B, with well-crystallized cpx interstices giving a sub-ophitic to intergranular texture with 0.5-2 mm plag laths and sparse equant olivines (variably clay + Fe ox altered). One tabular phenocryst attached to a plagioclase is probably cpx, altered by an unknown green mineral (K-mica/talc?). Alteration halo shows strong FeOH overprinting and replacement of olivine and mesostasis by brown clay and FeOH



No. of photomicrographs in database: 15

### Igneous Petrology

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

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Olivine	0.5	0.4	euhedral	equant	some large euhedral equant olivines in vicinity of plag phenocryst cluster. One 1 mm tabular crystal attached to a plag that has medium first order interference colors, cracks altered by a green (ppl) mineral with 30 interference colors. Relief and lack of cleavage suggest this is olivine.
Plagioclase	1	4	Euhedral	equant	
Clinopyroxene	0.1	1.5	euhedral	tabular	one tabular phenocryst attached to a plag lath and altered by an unknown green alteration mineral (possibly talc)

Groundmass	Original (%)	Comment
Groundmass	97.9	intergranular to sub-ophitic groundmass with relatively coarse clinopyroxene crystals interstitial to plag laths.

Vesicle	Original (%)	Size Mode (mm)	Shape	Comments
Vesicle	0.5	0.2	round	also some irregular, all clay filled (smectite group)

Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment
Glass	0			

## 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	26	100	light brown clay + oxides + talc	2	light brown clay			20	brown clay + FeOH		

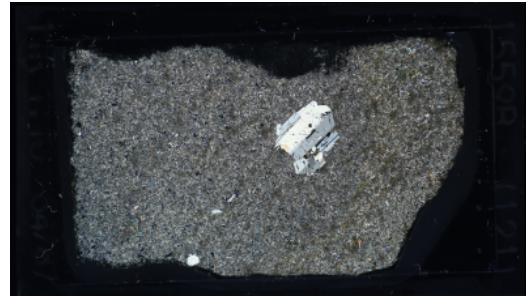
Domain type	Alteration %	% Ol repl.	Ol repl. by	% Plag repl.	Plag repl. by	% CPX repl.	CPX repl. by	% groundmass repl.	Groundmass repl. by	% glass repl.	Glass repl. by
other halo-orange	46	100	light brown clay with orange staining	7	orange staining by FeOH			50	dark brown clay + orange staining FeOH		

THIN SECTION LABEL ID: **393-U1559B-11R-1-W 84/87-TSB-TS 121** Thin section no.: 121  
 Observer: TB, MH Piece no.: 10  
 Total number of domains: 1 Unit/subunit: Unit 5A  
 Thin section summary: Microcrystalline sparsely plagioclase-phyric basalt, flow interior, Unit 5. One 8mm plag phenocryst and groundmass of felty plag laths and equant olivine micro phenocrysts with locally well cryztallized interstitial cpx sparsely set in a cryptocrystalline plumose cpx matrix. Background alteration shows minor replacement by clays+FeOH with clay-carbonate filled vesicles. Dark grey halo shows more extensive replacement to clays+FeOH and vesicles also filled by clay+FeOH.

Plane-polarized: 63332771



Cross-polarized: 63332821



No. of photomicrographs in database: 7

## Igneous Petrology

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

Phenocrysts	Original (%)	Size MODE (mm)	Shape	Habit	Comments
Plagioclase	3	8	euhedral	equant	
Groundmass	Original (%)	Comment			
Groundmass	96.5	felty plagioclase laths in a cryptocrystalline plumose cpx matrix.			
Vesicle	Original (%)	Size Mode (mm)	Shape	Comments	
Vesicle	0.5	0.2			
Glass	Glass present (%)	Glass replaced (%)	Glass original (%)	Glass comment	
Glass	0				

## 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	10	100	carbonate + FeOH	5	light brown clay (patchy)	2	light brown clay (patchy)	5	light brown clay + oxides		



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-dark grey	25	30	FeOH	8	orange-brown clay (patchy)	10	orange-brown clay (patchy)	20	orange-brown clay (patchy)		

## Veins

Vein width (mm)	Vein fill sequence (rim to center)	Vein comments	Halo comments
	no vein		