THIN SECTION:	327-U1362A-2R-1-W, 55-60 cm	Piece No: 8	Unit: 1A	OBSERVER: JR, THIN SECTION 5
ROCK NAME:	sparsely plagioclase clinopyroxene phyric cryptocrystalline basalt			
WHERE SAMPLED:	pillow interior (alteration halo)			
GRAINSIZE:	cryptocrystalline			
TEXTURE:				

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT VOL REPLACED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
clinopyroxene		26	0.1	0.3	0.3	round	Generally present on polymineralic glomeroporphyritic clots with plagioclase. Partially replaced by brown saponite. Moderate preservation.
plagioclase		40	0.2	1.4	1	euhedral	Mostly acicular. Occurs singly and occasionally in polymineralic glomeroporhyritic clots with anhedral subrounded clinopyroxenes. Partially replaced by brown saponite and oxides. Moderate preservation.
GROUNDMASS							
pyroxene			<0.1	0.12	0.1	subhedral	99% replaced by saponite
plagioclase			<0.1	0.4	<0.1	acicular	98% replaced by saponite
mesostasis	2						100% replaced by saponite

SECONDARY MINERALOGY	
oxides	1
saponite	70
iron oxides	20

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides		80	0.1	0.72	0.36	moderately spherical	Celadonite lining saponite-iron oxyhydroxides mix, layered celadonite - saponite - celadonite - saponite-iron oxyhydroxides mix, layered celadonite - fibrous saponite - saponite-iron oxyhydroxides mix, saponite-celadonite mix lining - celadonite-iron oxyhydroxides mix core, celadonite lining - iron oxyhydroxides core.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite, iron oxides	mixed	<0.1	irregular	Mixed iron oxyhydroxides and saponite vein fill. Composition alters along vein between iron oxyhydroxides only, saponite only and iron oxyhydroxides lining saponite.

SUMMARY DESCRIPTION: Groundmass almost entirely replaced by saponite and iron oxyhydroxides mix, which forms a spherulitic texture. 3 mm halo is defined by an increase in the proportion of dark red/brown iron oxyhydroxides to light brown saponite and is directly related to iron oxyhydroxides-saponite vein.

THIN SECTION:	327-U1362A-2R-1-W, 121-126 cm	Piece No:	Unit: 1A	OBSERVER: JR, THIN SECTION 6	
ROCK NAME:	sparsely plagioclase clinopyroxene phyric microcrystalline basalt				
WHERE SAMPLED:	chilled pillow margin				
GRAINSIZE:	microcrystalline				
TEXTURE:					

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT VOL REPLACED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase		5	0.2	1.1	0.8	euhedral	Occurs as laths and acicular needles, but often as glomeroporphyritic clots with pyroxene. Present throughout glassy chilled margin. High preservation.
pyroxene		2	0.1	1.2	0.3	subhedral	Occurs in glomeroporphyritic clots with plagioclase. High preservation.
GROUNDMASS							
glass	25						Fresh amber glass forming outer chilled margin
pyroxene	<1		<0.1	0.8	0.1	anhedral	
plagioclase	2		<0.1	0.1	0.1	acicular	Microlaths
mesostasis	72						Dark altered glass with abundant fibrous spherulites

SECONDARY MINERALOGY	
saponite	70
celadonite	2

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite		50	<0.1	0.5	0.4	moderately spherical	Saponite lining saponite

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite		1.6	cross-cut	Multigeneration saponite veins both perpendicular and sub-parallel with glassy chilled margin. These have complex generation relationships and variable shapes within a branching network.

SUMMARY DESCRIPTION All but one veins are associated with radial cooling cracks of chilled margin.

THIN SECTION: 327-U1362A-2R-2-W, 73-76 cm Piece No: 8 Unit: 1A OBSERVER: JR, THIN SECTION 7
ROCK NAME: cryptocrystalline basalt
WHERE SAMPLED: pillow interior/sub-margin (orange alteration halo)
GRAINSIZE: cryptocrystalline
TEXTURE:

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT VOL REPLACED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase		10	0.4	1.7	1.1	euhedral	Occurs singly (acicular) and laths as polymineralic glomeroporphyritic clots with pyroxene. Moderate preservation.
pyroxene		10	0.1	0.18	0.18	anhedral	Rounded. Normally in glomeroporphyritic clots with plagioclase
GROUNDMASS							
opaque minerals	2						Microlites associated with saponite
plagioclase	3		<0.1	0.24	0.1	acicular	Microlaths. fewer towards glassy chilled margin
mesostasis	68						Abundant red-brown fibrous saponite spherulites
glass	3						0.8 mm fresh amber glass on chilled pillow margin

SECONDARY MINERALOGY	
celadonite	3
oxides	2
iron oxides	2
saponite	70

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides		75	0.1	0.7	0.5	slightly spherical	Often very irregular in shape as many vesicules have coalesced into vugs. Alteration halo vesicle fill: iron oxyhydroxides, saponite-iron oxyhydroxides mix lining with iron oxyhydroxides core, celadonite lining with saponite core, celadonite lining with iron oxyhydroxides core. Non-alteration halo vesicle fill: saponite lining, saponite.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite		<0.1	irregular	Perpendicular to chilled margin.
saponite		<0.1	irregular	Subparallel with chilled margin - saponite fills radial cooling crack

SUMMARY DESCRIPTION iron oxyhydroxides and celadonite occur as vesicle fill associated with orange alteration halo only. Saponite occurs throughout.

THIN SECTION:	327-U1362A-3R-1-W, 141-146 cm		Piece No: 17		Unit: 1A		OBSERVER: JR, THIN SECTION 8
ROCK NAME:	basalt						
WHERE SAMPLED:	pillow interior, dark grey halo and patchy background alteration						
GRAINSIZE:	cryptocrystalline						
TEXTURE:	sub-ophitic, intersertal, glomeroporphyritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	min.	SIZE(mm) max.	mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
							Laths in mono- and polymineralic glomeroporphyritic clots with pyroxene.
Plagioclase	7.2	8	0.2	1.5	0.7	euhedral	Occurs singly as elongate needles.
Pyroxene	1.4	1.6	<0.1	0.5	0.4	anhedral	Rounded pyroxenes, normally in glomeroporphyritic clots with plagioclase
GROUNDMASS							
plagioclase	15	43	0.1	0.8	0.8	acicular	Microlaths and needles
mesostasis	3	10					Mostly altered to saponite
pyroxene	4	26	<0.1	<0.1	<0.1	anhedral	Microlites. Occurs attached to or intergrown with plagioclase
Opaque Minerals	2			<0.1			
SECONDARY MINERALOGY							
celadonite	12						Vesicle fill, replacing groundmass and mesostasis in extent of alteration halo
saponite	51						Vesicle fill, replacing groundmass, plag+px pheonocrysts and mesostasis
iron oxides	2						Vesicle fill, present in extent of alteration halo
carbonate	trace						Vesicle fill
VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	min.	SIZE(mm) max.	mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides, carbonate	2	60	0.2	0.62	0.6	highly spherical	Vesicle fill (dark grey alteration halo): saponite lining, celadonite lining celadonite lining with iron oxyhydroxides core, iron oxyhydroxides, celadonite lining with saponite core, layered celadonite - iron oxyhydroxides - saponite. Vesicle fill (background alteration): saponite lining, saponite saponite lining with carbonate core.
VEINS		FILLING		THICKNESS(mm)		SHAPE	COMMENTS
N/A							
SUMMARY DESCRIPTION	Alteration halo defined by celadonite and iron oxyhydroxides vesicle fill and replacement of mesostasis and groundmass.						

THIN SECTION:	327-U1362A-3R-2-W, 79-81 cm		Piece No: 12		Unit: 1A	OBSERVER: JR, THIN SECTION 9	
ROCK NAME:	basalt						
WHERE SAMPLED:	pillow interior (multilayer alteration halo)						
GRAINSIZE:	cryptocrystalline						
TEXTURE:	subophitic, vesicular, intersertal						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	2	2.2	0.2	1.28	0.3		
plagioclase	4.8	5	0.4	1.52	1	euhedral	Occurs singly and as mono- and polymineralic glomeroporphyritic clots with pyroxene
olivine	trace	1	0.7	0.8		anhedral	Rounded. Entirely pseudomorphed by celadonite and saponite
GROUNDMASS							
plagioclase	12	20	<0.1	1.2	0.4	acicular	Pseudomorphed by saponite and celadonite
pyroxene	10	18	<0.1	0.2	0.1	anhedral	Pseudomorphed by saponite and celadonite
mesostasis	6	52					Almost entirely replaced by saponite

SECONDARY MINERALOGY		
saponite	49	Saponite filling vesicles, replacing groundmass, phenocrysts and mesostasis
iron oxides	2	iron oxyhydroxides filling vesicles associated with alteration halo
oxides	1	Oxides replacing mesostasis
celadonite	9	Celadonite filling vesicles, replacing mesostasis and olivine, all associated with alteration halo

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
cladonite, saponite, iron oxides	5.2	35	<0.1	0.6	0.5	moderately spherical	Vesicle fill (alteration halo): celadonite lining with iron oxyhydroxides core, celadonite, saponite lining with iron oxyhydroxides core, layered mixed saponite + celadonite, celadonite, saponite, celadonite, iron oxyhydroxides. Vesicle fill (background alteration): saponite lining, empty.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Multilayered green and dark grey halo contains iron oxyhydroxides and celadonite which fill vesicles and replace mesostasis.

THIN SECTION: 327-U1362A-4R-1-W, 71-76 cm Piece No: 11 Unit: 1A OBSERVER: JR, THIN SECTION:10
ROCK NAME: basalt
WHERE SAMPLED: pillow interior
GRAINSIZE:
TEXTURE:

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	max.	mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	0	4	0.3	0.7	0.3	subhedral	Completely replaced by saponite
pyroxene	1.5	2	<0.2	0.4	0.3	subhedral	Occurs as glomeroporphyritic clots with plagioclase
plagioclase	8	8.5	0.7	1.6	1.4	euhedral	Predominantly occurs singly but occasionally as glomeroporphyritic clots
GROUNDMASS							
plagioclase	20	35			0.2	euhedral	Needles and laths
pyroxene	7	21		<0.1	<0.1	subhedral	Occurs attached to or intergrown with plagioclase
olivine	0	4			<0.2	euhedral	Entirely pseudomorphed by light brown saponite
mesostasis	0	18			0.2	euhedral	Mesostasis is uniformly altered

SECONDARY MINERALOGY		
saponite	48	Saponite replacing groundmass, mesostasis and olivine, and filling vesicles
iron oxides	2	iron oxyhydroxides filling vesicles, replacing mesostasis
oxides	3	Oxides filling vesicles, replacing mesostasis

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	max.	mode	SHAPE	COMMENTS
	9.8	5	<0.1	1.2	0.4	slightly spherical	Vesicle fill: saponite lining, iron oxyhydroxides/opaque oxide lining

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Patchy background alteration defined by more intense replacement of mesostasis and groundmass by saponite.

THIN SECTION:	327-U1362A-5R-1-W, 112-114 cm		Piece No: 20		Unit: 1B	OBSERVER: JR, THIN SECTION 11	
ROCK NAME:	sparsely plagioclase clinopyroxene phyric microcrystalline basalt						
WHERE SAMPLED:	pillow interior (green alteration halo)						
GRAINSIZE:	microcrystalline						
TEXTURE:	intersertal, glomeroporphyritic, pilotaxitic						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	<1	<1	<0.1	0.6	0.2	subhedral	Occurs in glomeroporphyritic clot with plagioclase
plagioclase	5	7	0.6	2	1.2	euhedral	Occurs singly and as mono- and poly mineralic glomeroporphyritic clots with pyroxene.
GROUNDMASS							
pyroxene	35	37	<0.1	0.2	0.1	anhedral	Partially replaced by brown saponite
plagioclase	27	29	0.1	0.9	<0.3		
opaque minerals	4	4		<0.1			
mesostasis	0	15					

SECONDARY MINERALOGY							
iron oxides	1						iron oxyhydroxides filling vesicles
saponite	20						Saponite replacing mesostasis
celadonite	5						Celadonite replacing mesostasis and filling vesicles

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
celadonite, saponite, iron oxides	3	25	0.1	0.6	0.4	slightly spherical	Vesicle fill (alteration halo): celadonite. celadonite lining with iron oxyhydroxides core, celadonite+saponite mix with iron oxyhydroxides core. Vesicle fill (background): saponite lining, empty, saponite.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
		0.3	irregular	Vein fill lost

SUMMARY DESCRIPTION Alteration halo defined by celadonite filling vesicles.

THIN SECTION:	327-U1362A-5R-2-W, 20-23 cm	Piece No: 3	Unit: 1B	OBSERVER: JR, THIN SECTION 12	
ROCK NAME:	moderately olivine clinopyroxene plagioclase phyric crypto to microcrystalline basalt				
WHERE SAMPLED:	unit boundary				
GRAINSIZE:	crypto to microcrystalline				
TEXTURE:	subophitic to intersertal, glomeroporphyritic, vesicular, pilotaxitic				

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	1.1	1.1	0.1	0.5	0.3	subhedral	Occurs mostly in glomeroporphyritic clots with plagioclase
plagioclase	8.5	8.5	0.9	1.3	1.1	euhedral	Most frequently occurs singly but also in glomeroporphyritic clots, sometimes with pyroxene
Olivine	0	1			0.2		Compeltely pseudomorphed by saponite
GROUNDMASS							
pyroxene	10	24	<0.1	0.2	0.18	anhedral	Altered to saponite, occurs singly or attached to/intergrown with plagioclase.
olivine	0	<1	<0.1	0.2	<0.1	subhedral	Entirely pseudomorphed by saponite
plagioclase	28	16	<0.1	0.9	0.2	acicular	
mesostasis	2	30					

SECONDARY MINERALOGY		
iron oxides	2	Iron oxyhydroxides replacing olivine and groundmass
saponite	49	Saponite replacing groundmass and filling vesicles
oxides	3	Oxides replacing groundmass

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite	5.5	5	<0.1	0.8	0.4	spherical	Vesicle fill: saponite, saponite lining

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Grain size change across the thin section from crypto to microcrystalline.

THIN SECTION:	327-U1362A-6R-1-W, 39-41 cm		Piece No: 10		Unit: 1B		OBSERVER: JR, THIN SECTION 13
ROCK NAME:							
WHERE SAMPLED:	pillow interior (alteration halo)						
GRAINSIZE:							
TEXTURE:	hyalophytic, intersertal, glomeroporphyritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	min.	SIZE(mm) max.	mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	0	2	0.1	0.9	0.7	anhedral	Completely pseudomorphed by saponite
plagioclase	9	11	1	2.9	1.6	euhedral	Occurs singly and often as glomeroporphyritic clots with pyroxene
pyroxene	3	3	<0.1	0.5	0.1	subhedral	Occurs as glomeroporphyritic clots with plagioclase.
GROUNDMASS							
pyroxene	22	24	<0.1	0.1	0.1	subhedral	Partially replaced by light brown saponite and olive green celdaonite. Attached to/intergrown with plagioclase needles.
plagioclase	30	30	<0.1	0.7	<0.3	acicular	Laths and needles
mesostasis	0	19					Entirely replaced by saponite
olivine	0	3	<0.1	0.2	<0.2	anhedral	Microlites completely psuedomorphed by saponite
SECONDARY MINERALOGY							
celadonite	6						Celadonite replaces mesostasis and fill vesicles within alteration halo
oxides	1						
iron oxides	2						iron oxyhydroxides replace mesostasis and fill vesicles within alteration halo
saponite	20						Saponite replaces mesostasis and olivine, and fills vesicles
VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	min.	SIZE(mm) max.	mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	7.2	70	<0.1	0.9	0.7	slightly spherical	Vesicle fill (alteration halo): multilayered: saponite - celadonite - saponite - celadonite - pale - pure celadonite (imaged); celadonite lining with saponite core; celadonite lining with iron oxyhydroxides - saponite core. Vesicle fill (non alteration halo): empty, saponite lining.
VEINS		FILLING		THICKNESS(mm)		SHAPE	COMMENTS
N/A							

SUMMARY DESCRIPTION Alteration halo defined by presence of celadonite and iron oxyhydroxides replacing groundmass and filling vesicles.

THIN SECTION:	327-U1362A-6R-2-W, 74-77 cm		Piece No: 14		Unit: 1B		OBSERVER: JR, THIN SECTION 17
ROCK NAME:	moderately olivine plagioclase clinopyroxene phyric microcrystalline basalt						
WHERE SAMPLED:	pillow interior						
GRAINSIZE:	microcrystalline						
TEXTURE:	intersertal to intergranular, glomeroporphyritic						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	0	1	0.2	0.3	0.3		Occurs singly or in monomineralic clots. Completely replaced by saponite
plagioclase	3.5	3.5	0.7	4.8	1.1	euhedral	Occurs singly as needles or in monomineralic glomeroporphyritic clots
pyroxene	<0.1	<0.1	0.3	0.4	0.4	anhedral	
GROUNDMASS							
olivine	0	4			<0.3		Completely pseudomorphed by light brown saponite
mesostasis	3	15			<0.2	euhedral	
pyroxene	30	27			<0.2		
opaque minerals	trace				<0.3	euhedral	
plagioclase	43	38			<0.3	euhedral	Laths and needles

SECONDARY MINERALOGY		
saponite	13	Saponite replaces olivine and mesostasis.
celadonite	2	Celadonite replaces groundmass and fills vesicles associated with green alteration halo
iron oxides	trace	Iron oxyhydroxides replace groundmass and fill vesicles associated with green alteration halo
oxides	1	

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	3.2	3	<0.1	2.5	0.4	slightly spherical	Vesicles have coalesced in several places to form irregular shaped vugs. Vesicle fill: saponite lining. Vesicle fill of those associated with small alteration halo: celadonite, celadonite with iron oxyhydroxides core.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION: Many vesicles have coalesced to form unfilled irregular vugs. Small alteration halo at one end of thin section, defined by presence of celadonite and iron oxyhydroxides filling vesicles.

THIN SECTION:	327-U1362A-7R-1-W, 29-31 cm		Piece No: 5		Unit: 1B		OBSERVER:JR, THIN SECTION 14
ROCK NAME:	sparsely olivine plagioclase clinopyroxene cryptocrystalline basalt						
WHERE SAMPLED:	large alteration halo						
GRAINSIZE:	cryptocrystalline						
TEXTURE:	variolitic, glomeroporphyritic						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	1	1.2	0.2	0.3	0.3	subhedral	Associated with plagioclase laths. Slightly altered by light brown saponite.
plagioclase	2.7	3	0.6	1.6	1.1	euhedral	Striped staining by iron oxyhydroxides within alteration halo
GROUNDMASS							Mostly occur singly, occasionally as glomeroporphyritic clots with pyroxene
pyroxene	3	20	<0.1	<0.1	<0.1	anhedral	Groundmass is highly altered to brown saponite
plagioclase	8	15	0.1	0.5	<0.4	euhedral	Groundmass is highly altered to brown saponite
mesostasis	trace	60					Mesostasis and groundmass highly altered to dark brown saponite
opaque minerals	1				<0.1		

SECONDARY MINERALOGY		
saponite	66	Saponite replaces groundmass, olivine, mesostasis and fills vesicles throughout
iron oxides	7	Iron oxyhydroxides replaces mesostasis and fills vesicles in area of alteration halo
oxides	2	
celadonite	10	Celadonite replaces mesostasis and fills vesicles in area of alteration halo

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	1	80	0.1	0.4	0.1	highly spherical	Vesicle fill (alteration halo): iron oxyhydroxides, celadonite - saponite mix, celadonite lining with saponite core, celadonite lining with iron oxyhydroxides core, bright red-orange fill - pure iron oxyhydroxides?, layered golden - bright orange - dark red - bright orange iron oxyhydroxides (imaged), saponite. Vesicle fill (non halo): saponite lining.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite 10%, iron oxyhydroxides 90%	mixed	<0.1	anastomosing	Composition alters along vein. Iron oxyhydroxides composition associated with more heavily iron oxyhydroxides stained groundmass.

SUMMARY DESCRIPTION Microvein cuts through crystals and seems associated with halo as both can be traced around two sides of the thin section.

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THIN SECTION:	327-U1362A-8R-1-W, 122-124 cm	Piece No: 18	Unit: 2	OBSERVER: JR, THIN SECTION 15	
ROCK NAME:	moderately olivine clinopyroxene phyric microcrystalline to fine-grained basalt				
WHERE SAMPLED:	basalt flow interior (alteration halo)				
GRAINSIZE:	microcrystalline to fine grained				
TEXTURE:	subophitic to intersertal				

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	8	8	0.3	1	0.8		Occurs singly
plagioclase	1	1	1	1	1.6	subhedral	Semi-rounded lath.
olivine	trace	1	<0.3	0.5	0.4	subhedral	Occurs singly, completely replaced by saponite
GROUNDMASS							
plagioclase	23	27	0.2	1.2	0.8	euhedral	
mesostasis	14	28			0.8	euhedral	Includes opaque minerals
pyroxene	30	31	<0.1	0.6	<0.5	euhedral to subhedral	
olivine	0	4	<0.1	0.2	<0.2		

SECONDARY MINERALOGY		
iron oxides	0.5	iron oxyhydroxides filling vesicles within alteration halo
oxides	2	Oxides filling vesicles within alteration halo
saponite	15	Saponite replacing mesostasis and olivine, and filling vesicles throughout
celadonite	5.5	Celadonite replacing groundmass and mesostasis, and filling vesicles within alteration halo

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron/opaque oxides	1	75	0.1	0.9	0.6	moderately spherical	Vesicle fill (alteration halo): multilayered: celadonite + saponite mix - celadonite - saponite; iron oxyhydroxides/opaque oxide lining - celadonite - saponite; saponite lining with celadonite core; celadonite; celadonite lining with iron oxyhydroxides core. Vesicle fill (background alteration): saponite, saponite lining.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite with glass inclusions	mixed	0.25	straight	Vein crosscuts and sometimes encloses crystals. Associated olivines are entirely pseudomorphed by saponite.

SUMMARY DESCRIPTION Alteration halo and vein are not associated. Saponite vein is perpendicular to halo boundary.

THIN SECTION:	327-U1362A-9R-1-W, 125-128 cm	Piece No: 20	Unit: 4A	OBSERVER: JR, THIN SECTION 16
ROCK NAME:	sparsely clinopyroxene plagioclase microcrystalline basalt			
WHERE SAMPLED:	pillow lava interior			
GRAINSIZE:	microcrystalline			
TEXTURE:	subophitic to intersertal, glomeroporphyritic, pilotaxitic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	0	trace	0.6	0.7	0.6	subhedral	Completely pseudomorphed by brown saponite
plagioclase	4.1	4.1	1.4	2.2	1.6	euhedral	Occurs singly and as monomineralic glomeroporphyritic clots
GROUNDMASS							
pyroxene	27	28	<0.1	<0.3	0.2		
plagioclase	35	35	0.1	<0.4	0.2	euhedral	
opaque minerals	3	3		<0.1			
mesostasis	trace	22					

SECONDARY MINERALOGY		
saponite	10	Saponite filling vesicles and replacing mesostasis
celadonite	8	Celadonite filling vesicles

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite	8	100	<0.1	0.6	0.6	moderately spherical	Vesicle fill: celadonite lining with saponite core, bright green celadonite

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Celadonite restricted to vesicle fill.

THIN SECTION:	327-U1362A-9R-2-W, 74-75 cm		Piece No: 10		Unit: 4A		OBSERVER: JR, THIN SECTION 18
ROCK NAME:	sparsely (olivine) clinopyroxene plagioclase phyric microcrystalline basalt						
WHERE SAMPLED:	cataclastic zone (sheet flow)						
GRAINSIZE:	microcrystalline						
TEXTURE:	m/gm: spherulitic, intersertal; phen: seriate						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	0.5	1	0.3	0.7	0.4	subhedral	
olivine	trace	2	0.4	0.7	0.5	subhedral to euhedral	Entirely pseudomorphed to iron oxyhydroxides or saponite
plagioclase	3.4	3.6	1	1.6	1.4	euhedral	Occurs singly
GROUNDMASS							
plagioclase	31	33			<0.2	euhedral	Skeletal laths and needles
olivine	trace	3			0.1	subhedral	Pseudomorphed to saponite, iron oxyhydroxides or celadonite
mesostasis	0	25.3			0.1	euhedral	
pyroxene	27	28			0.2	subhedral	Occurs attached to/intergrown with plagioclase

SECONDARY MINERALOGY		
saponite	26	Saponite replaces mesostasis and olivine
iron oxides	6	iron oxyhydroxides replaces olivine and fills vesicles
celadonite	2	Celadonite replaces olivine and fills vesicles

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
celadonite, iron oxides	4	100			<0.4	highly spherical	Vesicle fill: iron oxyhydroxides, celadonite

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
			straight	Sub-parallel to cataclastic zone.

SUMMARY DESCRIPTION Description based on lithology adjacent to cataclastic zone. Characterized by matrix of ground up host basalt.

THIN SECTION:	327-U1362A-11R-1-W, 37-40 cm		Piece No: 6		Unit: 4C	OBSERVER: JR, THIN SECTION 19	
ROCK NAME:	aphyric fine-grained basalt						
WHERE SAMPLED:	multilayered alteration halo (sheet flow interior)						
GRAINSIZE:	fine grained						
TEXTURE:	intersertal to intergranular, subophitic, vesicular						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	<2	<2	0.9	1.6	0.9	subhedral	Stubby laths partially altered to saponite + celadonite mix
GROUNDMASS							
plagioclase	33	36	0.1	0.9	0.8	euhedral	Laths, partially altered by oxides and saponite
mesostasis	2	10					Variably replaced by saponite, iron oxyhydroxides or celadonite depending on presence of alteration halo
olivine	trace	8	<0.1	0.2	0.2		Completely altered to saponite + iron oxyhydroxides mix
pyroxene	21	26	<0.1	0.3	0.3	anhedral to euhedral	Attached to/intergrown with plagioclase

SECONDARY MINERALOGY		
saponite	10	Saponite replacing mesostasis, olivine and filling vesicles thoughout
oxides	1	Oxides replacing mesostasis, olivine and filling vesicles thoughout
iron oxides	2	Celadonite and iron oxyhydroxides replacing mesostasis, olivine and filling
celadonite	3	vesicles within area of alteration halo (split into iron oxyhydroxides rich and

VESICLES MINERALOGY	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	20	40	0.2	1.8	0.8	moderately spherical	Vesicle fill (green alteration halo band): celadonite - saponite - iron oxyhydroxides, celadonite + saponite mix, celadonite, saponite. Vesicle fill (orange alteration halo band): saponite - iron oxyhydroxides lining, celadonite - iron oxyhydroxides + saponite mix. Vesicle fill (background alteration): saponite lining.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION: Alteration halo is split into bands: orange (predominatly iron oxyhydroxides replacement of vesicles and mesostasis) - green (celadonite + saponite rich) - orange - grey (saponite only).

THIN SECTION:	327-U1362A-12R-1-W, 125-129 cm	Piece No: 10	Unit: 5A	OBSERVER:JR, THIN SECTION 20
ROCK NAME:	moderately plagioclase clinopyroxene phyric microcrystalline basalt			
WHERE SAMPLED:	pillow interior (alteration halo)			
GRAINSIZE:	microcrystalline			
TEXTURE:	intersertal to intergranular, subophitic, seriate			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	trace	0.5	0.7	1.2	0.7	subhedral	Occurs singly, completely altered to saponite and celadonite
plagioclase	1	1	1	1.7	1.2	euhedral	Skeletal crystals and laths, occasionally in glomeroporphyritic clots
GROUNDMASS							
plagioclase	40	41	0.1	0.8	0.8	euhedral	Laths and needles
olivine	trace	12	<0.1	0.2	<0.2	subhedral	
pyroxene	37	38	<0.1	0.7	0.5		
mesostasis	1	19					Includes opaques

SECONDARY MINERALOGY		
iron oxides	<0.1	Saponite and oxides filling vein and replacing mesostasis throughout.
saponite	12	Saponite, iron oxyhydroxides and celadonite filling vesicles.
oxides	2	Celadonite fills microvein.
celadonite	<0.1	

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	0.1	100			0.8	moderately spherical	Two vesicles. Vesicle fill: iron oxyhydroxides lining with saponite + celadonite mix core, saponite

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
celadonite, saponite, oxides	mixed	0.1	irregular	One main saponite and oxide filled vein that steps around and rarely cuts across crystals. A discontinuous microvein (<0.1 mm thick) runs parallel to the larger vein for part of the thin section. This crosscuts crystals and is composed of celadonite + saponite mix.

SUMMARY DESCRIPTION: Multilayer halo of orange, green and grey bands. Green and orange bands defined by celadonite and saponite iron oxyhydroxides mix replacing mesostasis, respectively. Vein runs parallel with the alteration halo boundary, implying some association.

THIN SECTION:	327-U1362A-13R-1-W, 41-43 cm	Piece No: 7	Unit: 5A	OBSERVER:JR, THIN SECTION 21
ROCK NAME:	moderately clinopyroxene plagioclase phyric cryptocrystalline basalt			
WHERE SAMPLED:	pillow interior (vugs)			
GRAINSIZE:	cryptocrystalline			
TEXTURE:	spherulitic, intersertal, glomeroporphyritic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	6.2	6.3	0.9	2	1.5	euhedral	Laths and skeletal crystals
pyroxene	0.2	0.3	0.4	0.9	0.4	euhedral	Stubby laths
GROUNDMASS							
pyroxene	7	10	<0.1	0.1	<0.1	anhedral	
plagioclase	18	21	<0.1	0.2	0.1	euhedral	Laths and needles
mesostasis	10	60					Mostly replaced by saponite

SECONDARY MINERALOGY		
saponite	51	Saponite replacing mesostasis, groundmass and filling vesicles and vein
celadonite	3	Celadonite replacing groundmass and filling vesicles within area of dark grey-green alteration halo.
iron oxides	2	iron oxyhydroxides filling vesicles within light grey alteration halo and filling vein
oxides	1	Oxides filling vesicles within light grey alteration halo and filling vein

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	1.7	98	0.2	6.5	0.4	slightly spherical	Some vesicles have coalesced into irregular shaped, filled and unfilled vugs. Vesicle and vug fill (light grey alteration halo): bright orange iron oxyhydroxides, brown-red iron oxyhydroxides, iron oxyhydroxides lining with saponite core, saponite + iron oxyhydroxides mix, celadonite lining with iron oxyhydroxides core, textured iron oxyhydroxides + oxide + saponite mix. Vesicle fill (dark grey alteration halo): celadonite + saponite mix, saponite + iron oxyhydroxides mix,

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
5% saponite, 98% iron oxides	mixed	0.1	irregular	Fibrous saponite core where present. Vein anastomoses and doubles back on itself at one end; sidesteps vesicles but crosscuts crystals; roughly divides light and dark grey alteration halos.

SUMMARY DESCRIPTION Patchy background alteration is defined by intense patches of saponite replacement of mesostasis and groundmass.

THIN SECTION:	327-U1362A-14R-1-W, 60-62 cm		Piece No: 8		Unit: 5B		OBSERVER: JR, THIN SECTION 22
ROCK NAME:	highly clinopyroxene plagioclase phyric cryptocrystalline basalt						
WHERE SAMPLED:	pillow interior						
GRAINSIZE:	cryptocrystalline						
TEXTURE:	spherulitic to variolitic, intersertal						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	max.	mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	3	3	0.6	1.8	0.7	euhedral	Laths; occur singly and in unconnected clusters
GROUNDMASS							
plagioclase	10	10	<0.1	0.2	<0.2	euhedral	Needles, often forming nuclei for aggregates of radiating fibrous crystals
olivine	0	5	<0.1	0.1	<0.1	anhedral	Entirely altered to saponite
mesostasis	0	80					Completely altered to saponite/clay

SECONDARY MINERALOGY							
saponite	76						Saponite and iron oxyhydroxides mix replaces mesostasis and fills vesicles
iron oxides	10						Saponite and iron oxyhydroxides mix replaces mesostasis and fills vesicles

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	max.	mode	SHAPE	COMMENTS
saponite	2	90	0.2	1.3	0.5	slightly spherical	Vesicle fill: saponite, saponite lining

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Mesostasis largely altered to saponite, defines patchy background alteration.

THIN SECTION:	327-U1362A-15R-1-W, 45-47 cm	Piece No: 10	Unit: 5B	OBSERVER: JR, THIN SECTION 23
ROCK NAME:	highly clinopyroxene plagioclase phyric cryptocrystalline basalt			
WHERE SAMPLED:	pillow interior			
GRAINSIZE:	cryptocrystalline			
TEXTURE:	intersertal, glomeroporphyritic, subophitic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	2.8	2.8	0.8	1.6	0.8	euhedral	Laths and skeletal crystals. occurs singly and as glomeroporphyritic clots with pyroxene and olivine
pyroxene	0.5	0.5	0.3	0.7	0.4	euhedral	Occurs as glomeroporphyritic clots with plagioclase and olivine
olivine	0	2	0.4	1	0.4		
GROUNDMASS							
plagioclase	21	21	0.1	0.8	0.3	euhedral	Needles and laths. Form spherulitic splays in patches of mesostasis
pyroxene	16	16	<0.1	0.2	<0.1	anhedral	
mesostasis	5	50			0.3	anhedral	Mostly altered to saponite. patchy distribution
olivine	trace	8	0.1	0.3	0.3	anhedral	Rounded, entirely altered to saponite

SECONDARY MINERALOGY							
oxides	<1						
saponite	55						Saponite replacing mesostasis and olivine

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
N/A							

VEINS		FILLING		THICKNESS(mm)		SHAPE	COMMENTS
N/A							

SUMMARY DESCRIPTION Patchy background alteration defined by larger areas of mesostasis that are entirely altered to saponite.

THIN SECTION:	327-U1362A-16R-3-W, 89-91 cm	Piece No: 5	Unit: 6A	OBSERVER: JR, THIN SECTION 24	
ROCK NAME:	sparsely clinopyroxene plagioclase phyric microcrystalline basalt				
WHERE SAMPLED:	sheet flow interior (green alteration halo)				
GRAINSIZE:	microcrystalline				
TEXTURE:					

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
pyroxene	1.6	2	2.2	5.5	5.5	anhedral to subhedral	Present as glomeroporphyritic clots associated with plagioclase laths. High preservation.
plagioclase	3.9	7	1.4	4.1	3.6	subhedral	occurs singly and occasionally in monomineralic glomeroporhyritic clots. Moderate preservation.
GROUNDMASS							
plagioclase	35		0.1	3.2	1.3	euhedral	Laths and needles
pyroxene	23		0.1	3.2	1.8	euhedral to anhedral	Occurs attached to/intergrown with plagioclase
mesostasis	21						Completely replaced by saponite, oxides and celadonite

SECONDARY MINERALOGY	
saponite	5
celadonite	5
iron oxides	2
oxides	3
carbonates	trace

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides, carbonate	15	30	1.1	3.4	3	moderately spherical	Vesicle fill: 13 filled, 22 partially filled. Filled vesicles: iron oxyhydroxides + saponite mix with iron oxyhydroxides lining and saponite core, later saponite alteration of entire vesicle has resulted in broken concentric 'worm' like separation of fill (imaged); iron oxyhydroxides with pale brown saponite core; layered celadonite (olive green) - iron oxyhydroxides - saponite; celadonite lining with iron oxyhydroxides core; celadonite (partially overprinted by saponite); celadonite - iron oxyhydroxides nodular overgrowths into vesicle core - fibrous saponite - carbonate (imaged). Unfilled vesicles: celadonite (olive green) - iron

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION: Saponite, celadonite and opaques uniformly present in groundmass. Secondary mineral phases in the vesicles are celadonite + saponite + iron oxyhydroxides + opaque (hematite or geothite).

THIN SECTION:	327-U1362A-18R-2-W, 100-102 cm		Piece No: 3		Unit: 6B		OBSERVER: JR, THIN SECTION 25
ROCK NAME:	sparsely clinopyroxene phyric microcrystalline basalt						
WHERE SAMPLED:	sheet flow interior (vein)						
GRAINSIZE:	microcrystalline						
TEXTURE:	subophitic, intergranular to intersertal						

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	3	3	1.1	1.7	1.3	euhedral	Laths occuring singly and in monomineralic glomeroporphyritic clots
pyroxene	3	3	0.3	0.6	0.5	euhedral	Occurs as solitary crystals
olivine	0	1	0.3	0.5	0.3	anhedral	Occurs as solitary crystals. completely pseudomorphed by saponite
GROUNDMASS							
plagioclase	29	34	0.1	0.9	<0.6	euhedral	Laths and skeletal crystals. Partially repaced by saponite within area of alteration halo and alteration patches.
pyroxene	24	28	<0.1	0.4	<0.4	subhedral to euhedral	Occurs attached to/intergrown with plagioclase. Partially repaced by saponite within alteration halo and alteration patches.
opaque minerals	3	3			0.2	euhedral	
olivine	0	2	<0.1	0.2	<0.2	anhedral	Completely replaced by saponite/oxides
mesostasis	8	21					Partially replaced by saponite, more intense alteration in isolated patches and within area of alteration vein.

SECONDARY MINERALOGY		
saponite	25	Replacing mesostasis, groundmass and olivine and filling vesicles
oxides	3	Filling vesicles
carbonate	<0.1	
anhydrite	0.5	0.5 anhydrite

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, oxides	1.5	100	<0.2	1	0.9	moderately spherical	Vesicle fill: saponite, saponite - saponite + oxide mix

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
anhydrite		0.2	irregular	Fibrous material displaying bright, and in places, uniform 4th+ order birefringence, unlike the irridescent nature of carbonate.

SUMMARY DESCRIPTION Pale alteration halo defined by replacement of groundmass and mesostasis by saponite.

THIN SECTION:	327-U1362A-18R-5-W, 78-80 cm	Piece No: 4	Unit: 6B	OBSERVER: JR, THIN SECTION 26	
ROCK NAME:	sparsely clinopyroxene phyric microcrystalline basalt				
WHERE SAMPLED:	sheet flow interior (orange alteration halo)				
GRAINSIZE:	microcrystalline				
TEXTURE:	m/gm: intersertal to hyalophitic, phen: glomerophorphyritic				

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	trace	3.1	0.7	0.8	0.7	anhedral	Occurs singly. entirely pseudomorphed by saponite
plagioclase	8.5	8.5	0.6	1.6	0.9	euhedral	Occurs singly and in monomineralic glomeroporphyritic clots
pyroxene	1.5	1.8	0.2	0.7	0.3	subhedral	Occurs singly.
GROUNDMASS							
plagioclase	40	41	<0.1	0.7	<0.5	euhedral	Laths
olivine	trace	2	<0.1	0.1	<0.1	subhedral	Entirely pseudomorphed by saponite
pyroxene	24	25	<0.1	0.2	<0.2	subhedral	Occurs singly or attached to/intergrown with plagioclase
mesostasis	9	15					

SECONDARY MINERALOGY			
saponite	7		Saponite replaces mesostasis and fills vesicles
oxides	1		
iron oxides	6		iron oxyhydroxides replace groundmass and fill vesicles within alteration halo
celadonite	2		Celadonite replaces groundmass and fills vesicles within alteration halo.

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	6.3	70	<0.2	0.9	0.8	highly spherical	Vesicle fill (alteration halo): iron oxyhydroxides, iron oxyhydroxides and celadonite mix, iron oxyhydroxides and saponite mix. Vesicle fill (background alteration): saponite lining, saponite, saponite altered mesostasis.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Alteration halo defined by iron oxyhydroxides replacement of mesostasis and fills vesicles.

THIN SECTION:	327-U1362A-19R-1-W, 13-16 cm	Piece No: 3	Unit: 7A	OBSERVER: JR, THIN SECTION 27
ROCK NAME:	sparsely plagioclase phyric microcrystalline basalt			
WHERE SAMPLED:	basalt flow (patchy background alteration)			
GRAINSIZE:	microcrystalline			
TEXTURE:	hyalophitic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	2.3	2.5	0.5	2.2	1	euhedral	Occurs singly and in glomeroporphyritic clots and olivine
olivine	trace	0.5	0.2	0.3	0.2	anhedral	Pseudomorphed by saponite
GROUNDMASS							
plagioclase	13	21	<0.1	0.9	<0.3	euhedral	Skeletal laths and needles
mesostasis	7	75.4					

SECONDARY MINERALOGY		
celadonite	3	Celadonite replaces mesostasis and fills vesicles within alteration halo only
carbonate	1	Carbonate fills two vesicles outside of alteration halo
saponite	72	Saponite replaces mesostasis and fills vesicles
oxides	1	

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, carbonate	0.6	70	<0.1	1.3	<0.1	moderately spherical	Vesicle fill (alteration halo): celadonite. Vesicle fill (background alteration): saponite, carbonate, saponite lining with carbonate core.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Carbonate fills vesicles outside of alteration halo. Halo defined by celadonite filled vesicles.

THIN SECTION:	327-U1362A-19R-2-W, 31-34 cm	Piece No: 7	Unit: 7B	OBSERVER: JR, THIN SECTION 28
ROCK NAME:	highly clinopyroxene plagioclase phyric cryptocrystalline basalt			
WHERE SAMPLED:	basalt flow			
GRAINSIZE:	cryptocrystalline			
TEXTURE:	m/gm: variolitic to hyalophitic, phen: glomeroporphyritic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	13	14.6	0.4	1.2	0.4	euhedral	Occurs singly and in glomeroporphyritic clots with clinopyroxene
pyroxene			0.1	0.2	<0.2	subhedral	Occurs singly and in glomeroporphyritic clots with plagioclase
GROUNDMASS							
mesostasis	4	64					
plagioclase	1.5	3			<0.2	euhedral	Laths and needles
pyroxene	2.5	3			0.1	subhedral	To altered to define.

SECONDARY MINERALOGY
N/A

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	15	95	0.1	0.7	0.5	moderately spherical	Vesicle fill: celadonite lining, iron oxyhydroxides, saponite; celadonite lining with saponite core; saponite lining; saponite; celadonite lining with iron oxyhydroxides core.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Alteration halo defined by replacement of mesostasis (saponite, celadonite, and iron oxyhydroxides) and filling of vesicles.

THIN SECTION:	327-U1362A-20R-2-W, 70-72 cm	Piece No: 11	Unit: 7B	OBSERVER: JR, THIN SECTION 29
ROCK NAME:	highly clinopyroxene plagioclase phyric cryptocrystalline basalt			
WHERE SAMPLED:	basalt flow interior (alteration halo)			
GRAINSIZE:	cryptocrystalline			
TEXTURE:	m/gm: hyalophitic, variolitic to intersertal, phen: glomeroporphyritic to subophitic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	trace	0	0.2	0.7	0.3	subhedral	Compeltely pseudomorphed by saponite. Occurs singly and occasionally in glomeroporphyritic clots with plagioclase
plagioclase	24	20.6	0.4	4	1.2	euhedral	Occurs singly and as glomeroporphyritic clots with clinopyroxene and/or olivine
pyroxene	8	9	0.3	0.6	0.4	euhedral	Occurs singly and occasionally in glomeroporphyritic clots with plagioclase
GROUNDMASS							
pyroxene	8	9	<0.1	0.1	<0.1	subhedral	Occurs single or attached to/intergrown with plagioclase
plagioclase	14	15	<0.1	0.5	<0.3	euhedral	Laths and needles
mesostasis	4	26					

SECONDARY MINERALOGY		
celadonite	5	Celadonite fills vesicles and replaces mesostasis within area of alteration halo
saponite	24	Saponite replaces mesostasis, groundmass and fills vesicles
oxides	1	

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, mesostasis	16	65	0.2	5	0.7	highly spherical	Vesicle fill (alteration halo association): celadonite lining with saponite core, mesostasis lining with celadonite core, saponite-celadonite mix, saponite. Vesicle fill (background alteration): saponite lining, mesostasis, saponite.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
N/A				

SUMMARY DESCRIPTION Alteration halo is defined by replacement of mesostasis and filling of vesicles. No associated vein present

THIN SECTION:	327-U1362A-21R-1-W, 104-106 cm	Piece No: 16	Unit: 8	OBSERVER: JR, THIN SECTION 30
ROCK NAME:	sparsely plagioclase clinopyroxene phyric microcrystalline basalt			
WHERE SAMPLED:	basalt flow			
GRAINSIZE:	microcrystalline			
TEXTURE:	m/gm: hyalophitic, variolitic, phen: glomeroporphyritic			

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
olivine	trace	2.6	<0.4	0.6	0.5	subhedral	Pseudomorphed by saponite
plagioclase	25	27.3	0.4	3	1.2	euhedral	Occurs singly and in glomerporphyritic clots with clinopyroxene. Iron oxyhydroxides replace plagioclase along cleavage planes and fractures.
pyroxene	4	4.1	0.2	1.1	0.3	subeuhedral	Occurs in glomerporphyritic clots with plagioclase.
GROUNDMASS							
plagioclase	5	5			<0.4	euhedral	Occurs as skeletal laths or needles
mesostasis	0	61					

SECONDARY MINERALOGY			
iron oxides	25		Iron oxyhydroxides replace mesostasis and fills vesicle and vein
oxides	2		
saponite	42		Saponite replaces mesostasis and fills vesicles and vein

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, iron oxides	4.1	30	<0.2	0.8	0.8	moderately	Vesicle fill: saponite lining, iron oxyhydroxides lining with saponite core, saponite

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite, iron oxides	mixed	0.1	branched	Three subparallel and interconnected irregular veins. Composition varies along vein from saponite to iron oxyhydroxides to iron oxyhydroxides lining with saponite core. Vein crosscuts phenocryst and groundmass crystals. Associated vesicles are iron oxyhydroxides filled.

SUMMARY DESCRIPTION A branched vein and microvein network filled with iron oxyhydroxides and saponite.

THIN SECTION:	327-U1362A-21R-2-W, 71-73 cm	Piece No: 8	Unit: 8	OBSERVER: JR, THIN SECTION 31	
ROCK NAME:	sparsely plagioclase clinopyroxene phyric microcrystalline basalt				
WHERE SAMPLED:	sheet flow (red background alteration)				
GRAINSIZE:					
TEXTURE:	m/gm: hyalophitic, phen: subophitic				

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	MORPHOLOGY	COMMENTS
PHENOCRYSTS							
plagioclase	4.5	5.3	1	2.4	1.2	euhedral	Occurs singly and in glomeroporphyritic clots
GROUNDMASS							
plagioclase	48	48	<0.1	0.6	<0.4	euhedral	Laths
pyroxene	18	18	<0.1	0.2	<0.1	subhedral	Occurs attached to/intergrown with plagioclase
mesostasis	3	23					

SECONDARY MINERALOGY		
saponite	19	Saponite replaces mesostasis, fills vesicles and vein
celadonite	4	Celadonite replaces mesostasis and fills vesicles in area of alteration halo and fills vein.
iron oxides	3	Iron oxyhydroxides fill vesicles in area of alteration halo and fils vein
oxides	2	

VESICLES	PERCENT MODAL ABUNDANCE	PERCENT FILLED	SIZE(mm) min.	SIZE(mm) max.	SIZE(mm) mode	SHAPE	COMMENTS
saponite, celadonite, iron oxides	5.9	95	0.2	0.8	0.7	highly spherical	Vesicle fill (green alteration halo): celadonite lining, saponite lining with iron oxyhydroxides core, celadonite lining with iron oxyhydroxides - saponite core, celadonite lining with iron oxyhydroxides core, celadonite and iron oxyhydroxides mix. Vesicle fill (background alteration): saponite.

VEINS	FILLING	THICKNESS(mm)	SHAPE	COMMENTS
saponite, celadonite, iron oxides, plagioclase	mixed	<0.1	irregular	Composition changes along vein from pink saponite-iron oxyhydroxides mix to celadonite vein crosscuts groundmass plagioclase crystals
saponite, celadonite, iron oxides	mixed	0.1	irregular	Composition changes along vein from orange saponite-iron oxyhydroxides mix to iron oxyhydroxides to celadonite lining, iron oxyhydroxides core to celadonite. Some associated groundmass crystals are entirely replaced by celadonite and celadonite-iron oxyhydroxides mix. Vein crosscuts groundmass crystals.

SUMMARY DESCRIPTION: Two veins filled with celadonite, saponite and iron oxyhydroxides. Alteration halo is defined by celadonite and ron oxyhydroxides filled vesicles. Groundmass outside of alteration halo area is stained pink by iron oxyhydroxides and saponite replacement.