THIN SECTION LABEL ID: 366-U1498A-2R-CC-W 20/22-TSB-TS_115

Thin Section Summary Description

TS no.: 115

Observer(s): JS/BD/YI

Completely serpentinized peridotite; some bastite and mesh pseudomorphs. the serpentine has a blue color in cross-polarized light.



Intrusive Mantle

Domain/Rock Comment: Completely serpentinized peridotite; some bastite pseudomorphs, but olivine textures nonpseudomorphically replace by blue serpentine.

Lithology: serpentinized harzburgite

Observer: JS/BD

Texture: pseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	85	0	100			mesh	pseudomorphic	
Serpentine	NA	100	NA	NA			pseudomorphic	Blue
Orthopyroxene	15			3	NA		bastite	

THIN SECTION LABEL ID: 366-U1498A-3R-2-W 9/12-TSB-TS_116

Thin Section Summary Description

TS no.: 116

Observer(s): JS/BD/KM

Partially serpentinized harzburgite (about 70% serpentinization) crosscut by large highly serpentinized veins. The host serpentinized harzburgite is about 70% serpentinized with pseudomorphic mesh and bastite serpentine textures. Relic unaltered olivine, Opx, Cpx have been observed. Olivine grains show undulose extinction and their grain sizes are midium (a few hundred microns) with polygonal shapes, indicating that they were deformed in the lithospheric mantle. But strain is not so large.

LIMS image no.:	Wissinge no.: 39899521 Plane-polarized. Slide width 27mm												
Intrusive Mant	ntrusive Mantle												
Interval doma	Interval domain no: 1 Domain rel. abundance (%): 60 Domain name: ultramafic clast												
Domain/Rock Comment:	Parti abou Cox.	ally serpe It 70-80%	ntinized ł serpentir	narzburg nzed wit	gite. Large h h mesh tex	highly serper ture olivine a	tinized vein fills and bastite pyrox	half the thin section, the rest is ene. Relic unaltered olivine, Opx,					
Litholoav: s	erpentinize	d harzbur	aite				Observer:	JS/BD					
Texture: p	orphyroclas	stic	•					coarse grained [366]					
	Ectimated			Sizo				-					
Mineral	Original (%)	Present (%)	Altered (%)	Avg. (mm)	Shape	Habit	Texture	Comments/Special Features					
Olivine	84	20	70	2.2	elongate		porphyroclastic	Large porphyroclasts and smaller neoblasts.					
Serpentine	NA	65	NA	NA		mesh	pseudomorphic						
Clinopyroxene	0.5			0.5	NA	NA	interstitial [BJ84]	Small interstitial grains associated with Opx. May be exsolution.					
Orthopyroxene	15			4	NA		porphyroclastic	Large highly strained Opx up to 8 mm long, 1.5 to 2 mm wide, undulatory extinction.					
Spinel	1			0.8	NA	interstitial		NA					
Interval domain no: 2 Domain rel. abundance (%): 40 Domain name: vein													
Domain/Rock Comment:	Domain/Rock Comment: Cm wide vein that replaces almost all primary phases.												
Lithology: s	erpentinite	vein					Observer:	JS/BD					
Texture: p	oseudomorp	hic						fine grained [366]					

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	100	NA	NA			pseudomorphic	

THIN SECTION LABEL ID: 366-U1498A-3R-2-W 41/43-TSB-TS_117

Thin Section Summary Description

TS no.: 117

Observer(s): JS/BD/YI

100% serpentinized harzburgite. Bastite and mesh pseudomorphic textures that fully replace primary mantle minerals. Spinel occurs as vermicular intergrowths with pyroxene - primary texture likely protogranular. Fibrous veins of serpentine crosscut the rock. The bastite can display brown or green colors in plane-polarized light.



Intrusive Mantle

Domain/Rock Comment: 100% serpentinized harzburgite. Bastite barely recognizable. Spinel occurs as vermicular intergrowths with pyroxene - primary texture likely protogranular.

Lithology:	serpentinize	d harzbur	gite				Observer:	JS/BD
Texture:	pseudomorp	ohic						medium grained [366]
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	90					mesh	pseudomorphic	
Serpentine	NA	100	NA	NA			pseudomorphic	Blue serpentine, flat looking, not fibrous.
Orthopyroxene	10			2	NA		bastite	totally serpentinized. forms clusters with spinel.
Spinel	1			0.6	NA	amoeboid	vermicular	NA

THIN SECTION LABEL ID: 366-U1498A-3R-2-W 80/82-TSB-TS_118

Thin Section Summary Description

TS no.: 118

Observer(s): JS/JP

Metabasalt - fine grained, aphyric, intergranular texture. Plag, mesostasis altered, most augite is fresh. Outer rim is highly altered with most phases not recognizable. some augite remains in rim.



Extrusive Hypabyssal

Lithology: Texture:	aphyric bas intergranul	a lt clast ar		Ob Ave	server: erage grain si	JS ze modal name: fine grained [366]
Groundmass Mineral	roundmass ineral Original (%) Replaced Size Mode (%) (mm)				Habit	Comment
Plagioclase	50	100	0.3	subhedral		Elongate lathes of plagioclase, 0.3 mm x 0.03 mm in size. Totally altered to low Bf phases.
Clinopyroxene	35	30	0.2	subhedral		Small prismatic crystals interstitial to plagioxlase, or intergrown with plag.
Orthopyroxene		30				
Fe-TI Oxide	2	0	0.02	subhedral	blocky	

THIN SECTION LABEL ID: 366-U1498A-3R-2-W 94/96-TSB-TS_119

Thin Section Summary Description

TS no.: 119

Observer(s): JS/JP

Microbreccia of with clasts of fine-grained metabasalt (olivine-augite microphyric), scoria, and serpentine. Matrix is very fine grained altered material, probably originally glassy detritus (from scoria).



Lithology:	serpentinite clast	Observer:	ZL
Texture:		Average grain size modal name:	medium grained [366]

THIN SECTION LABEL ID: 366-U1498A-3R-2-W 103/105-TSB-TS_120

Thin Section Summary Description

TS no.: 120

Observer(s): WK

Microbreccia of fine-grained metabasalt, serpentinite, volcanic glass clasts and fragmented pyroxene crystals with matrix of very fine-grained detritus derived from the basalt. Matrix supported. Hyaloclastite? Basalt is aphyric or sparsely microphyric, intersertal texture. Glass with tiny, devitrified vesicles filled with zeolite?



THIN SECTION LABEL ID: 366-U1498A-3R-2-W 113/117-TSB-TS_124

Thin Section Summary Description

TS no.: 124

Observer(s): JS/JP

Microbreccia of volcanic rock clasts up to 1 cm diameter, in very fine grained (glassy?) matrix with small (1.2 mm) serpentine clasts. Volcanic same as TS118 or as in microbreccias 119 and 121, Metabasalt - fine grained, aphyric, intergranular texture. Plag, mesostasis altered, most augite is fresh.



THIN SECTION LABEL ID: 366-U1498A-3R-2-W 121/122-TSB-TS_121

Thin Section Summary Description

TS no.: 121

Observer(s): JS/JP

Microbreccia of fine-grained metabasalt clasts with matrix of very fine-grained detritus derived from the basalt. Matrix supported. Hyaloclastite? Basalt is aphyric or sparsely microphyric, intersertal texture. Tiny vesicles filled with zeolite? Pyroxenes associated with fine-rims of chlorite that outline grains.



Extrusive Hypabyssal

Lithology: Texture:	aphyric bas	alt breccia		Ob Ave	server: erage grain siz	ze modal name:	JS glass [366]
Phenocryst Mineral	Present (%)	Size (mm)	Shape	Habit	Comments		
Plagioclase	0.5	0			altered,		
Clinopyroxene	0.5	0.6	euhedral- subhedral	prismatic			
Opaques	2	0.1					
Groundmass Mineral	Original (%)	Replaced (%)	Size Mode (mm)	Shape	Habit	Comment	
Clinopyroxene					prismatic		

THIN SECTION LABEL ID: 366-U1498A-3R-2-W 126/128-TSB-TS_122

Thin Section Summary Description

TS no.: 122

Observer(s): JS/BD

Serpentinite with interpenetrating texture. Some bastite recognizabe, trace spinel, otherwise totally altered non-pseudomorphically.



Intrusive Mantle

 Domain/Rock Comment:
 Serpentinite with interpenetrating texture. Some bastite recognizabe, trace spinel, otherwise totally altered non-pseudomorphically.

 Lithology:
 serpentinite
 Observer:
 JS/BD

 Texture:
 nonpseudomorphic
 Size
 Description

 Minarel
 Estimated Original
 Present
 Altered
 Size
 Description

Mineral	Original (%)	Present (%)	Altered (%)	Avg. (mm)	Shape	Habit	Texture	Comments/Special Features	
Serpentine	NA	100	NA	NA			interpenetrating		

THIN SECTION LABEL ID: 366-U1498A-3R-3-W 10/12-TSB-TS_123

Thin Section Summary Description

TS no.: 123

Observer(s): JS/BD

Serpentinized harzburgite (80%+) with relict spinel, Opx, and Cpx, all associated in spinel-pyroxene clusters (Protogranular). Olivine is partly replaced by pseudomorphic mesh textures. Large brownish veins of serpentine crosscut the rock.



Intrusive Mantle

Domain/Rock Comment: Serpentinized harzburgite (80%+) with relictual spinel, Opx, and Cpx, all associated in spinel-pyroxene clusters (Protogranular). Olivine is partly replaced by pseudomorphic mesh textures. Brownish veins of serpentine crosscut the rock.

Lithology: serpentinized harzburgite

Observer: JS/BD

Texture: protogranular [MN-BJ80]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	80	20	80			mesh	pseudomorphic	
Serpentine	NA	80	NA	NA			pseudomorphic	
Clinopyroxene	0.5			0.2	NA	NA	interstitial [BJ84]	Small Cpx adjacent spinel, Opx. Granule exsolution during decompression.
Orthopyroxene	18			2.2	NA		bastite	Most of Opx serpentinized, some bastite other non-pseudomorphic. Occurs with Cpx and spinel in pyroxene-spinel clusters.
Spinel	1			0.8	NA	amoeboid	vermicular	NA

THIN SECTION LABEL ID: 366-U1498B-3R-1-W 70/72-TSB-TS_125

Thin Section Summary Description

TS no.: 125

Observer(s): BD

Serpentinized harzburgite (100% serpentinization). The serpentine display pseudomorphic mesh and bsatite textures. A large fibrous veins of fibrous serpentine crosscut the sample. The serpentine can be associated with a mineral with a drak blue or brown birefringence (chlorite?).



Lithology:	serpentinize	d harzbur	gite				Observer:	BD						
Texture:	pseudomorp	seudomorphic												
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features						
Olivine	85	0	100			mesh								
Serpentine	NA	100	NA	NA			pseudomorphic							
Orthopyroxene	14				NA		bastite	The bastite is associated with brownish small inclusions.						
Spinel	100				NA	isometric		NA						

THIN SECTION LABEL ID: 366-U1498B-3R-3-W 22/24-TSB-TS_126

Thin Section Summary Description

TS no.: 126

Observer(s): BD/YI

Serpentinized harzburgite (100% serpentinization). The serpentine display pseudomorphic mesh and bastite textures. Large euhedral spinels up to 100 microns width are observed. The mesh display a pronounced blue interference colour and is cross by large veins of serpenitne with a brownish colour. A large firbous vein of about 0.3 mm width crosscut the sample.



Lithology:	serpentinize	pentinized harzburgite Observer: BD													
Texture:	Texture: pseudomorphic														
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features							
Olivine	85	0	100			mesh	pseudomorphic								
Serpentine	NA	100	NA	NA			pseudomorphic								
Orthopyroxene	13				NA		bastite								

THIN SECTION LABEL ID: 366-U1498B-3R-3-W 56/59-TSB-TS_127

Thin Section Summary Description

TS no.: 127

Observer(s): JS/BD/KM

Harzburgite, serpenitnization nearly complete (98%+) but with relict spinel, Opx, and Cpx, all associated in spinelpyroxene clusters (Protogranular). Olivine highly destroyed by pseudomorphic serpentine. Orthopyroxene is preserved in the center of pseudomorphic bastite. Brownish veins of fibrous serpentine with perhaps chlorite crosscut the rock.



Intrusive Mantle

Domain/Rock Comment: Harzburgite, serpenitnization nearly complete (98%+) but with relict spinel, Opx, and Cpx, all associated in spinel-pyroxene clusters (Protogranular). Olivine destroyed by pseudomorphic replacement.

Lithology: serpentinized harzburgite

Observer: JS

Texture: protogranular [MN-BJ80]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	80	5	95			mesh	pseudomorphic	
Clinopyroxene	1			0.2	NA	NA	interstitial [BJ84]	Small interstitial Cpx.
Orthopyroxene	18				NA		bastite	Most of Opx serpentinized, some bastite other non-pseudomorphic. Occurs with Cpx and spinel in pyroxene-spinel clusters. Opx has lobate margins with cusps that point to olivine, ragged outlines. Porous flow melt reaction textures in both fresh and altered areas.
Spinel	1			0.6	NA	amoeboid- irregular	vermicular	NA

THIN SECTION LABEL ID: 366-U1498B-3R-3-W 95/98-TSB-TS_128

Thin Section Summary Description

TS no.: 128

Observer(s): JP/KM/JS

Two domains: 1) moderately serpentinized (~40%) harzburgite crocsscut by serpentine veins and 2) completely serpentinized harzburgite. Domain 1 consists of 75% ol, 24% opx, 1% cpx and trace amount of spinel. It shows protogranular texture with ol and opx grain sizes of 2-4 mm. About 0.3 mm sized cpx is interstitial to opx grain boundaries. Amoeboidal chromian spinel occur in association with opx. Ol and opx are partly altered to mesh and bastite serpentine respectively. Domain 2 appears to have the same protolith to domain 1. JS: Ragged Opx, especially small ones. Lobate, with cusps pointing to olivine. Porous flow melt reaction textures in both fresh and serpentine domains. Good TS to compare texture in fresh and altered.



Intrusive Mantle

Interval domain no: 2 Domain rel. abundance (%): 70 Domain name: Lithology: serpentinized harzburgite Observer: JP Texture: Estimated Size Present Altered Mineral Original Shape Habit Texture Comments/Special Features Avg. (%) (%) (mm)(%) Olivine 75 0 100 patchy Serpentine NA 100 NA NA pseudomorphic Orthopyroxene 24 3 NA bastite blocky Spinel 0.5 0.7 NA amoeboid NA Interval domain no: 1 Domain rel. abundance (%): 30 Domain name: Domain/Rock Very weak undulous extinction. close association between spinel and opx. similar sizes of olivine and opx. Comment: JP/JS Lithology: serpentinized harzburgite Observer: protogranular [MN-BJ80] medium grained [366] Texture:

1

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	75	40	60	1	equant	mesh	pseudomorphic	
Serpentine	NA	40	NA	NA		mesh	pseudomorphic	bastite after opx
Clinopyroxene	0.5			0.3	NA	NA	interstitial [BJ84]	small cpx associated with opx
Orthopyroxene	24			3	NA		bastite	blocky
Spinel	0.5			0.7	NA	amoeboid		NA

THIN SECTION LABEL ID: 366-U1498B-4R-2-W 32/35-TSB-TS_129

Thin Section Summary Description

TS no.: 129

Observer(s): JP/KM

Serpentinized dunite. Two domains: 1) 95% serpentinized dunite with pseudomorphic mesh serpentine and 2) 100% serpentinized dunite with non-pseudomorphic interpenetrating textured serpentine. The domain 1 consists of medium to coarse grained elongate olivine (6 x 2 mm) and equant spinel with about 0.3 mm size. The domain 2 is severely serpentinized and crosscut by 1-2 mm thick fibrous serpentine veins and veins filled with light brown fine grained minerals.

LIMS image no.	3995487	71 F	Plane-polari	zed. Slide	604 52-26 width 27mm	LIMS	image no.: 399	P54891 Cross-polarized. Slide width 27mm		
Intrusive Mantle										
Interval doma	in no: 1	Dor	nain rel. a	abundan	ice (%):	40	Domain name:			
Domain/Rock	mod	erately se	rpentinze	d dunite	e with elon	gated olivine				
Comment:		, , ,				5				
Lithology: s	serpentinize	d dunite					Observer:	, have		
Texture:	1					1	1	coarse grained [366]		
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features		
Olivine	99	5	95	4	elongate	mesh	pseudomorphic			
Serpentine	NA	95	NA	NA		mesh	pseudomorphic			
Spinel	1			0.3	NA	isometric		NA		
Interval domain no: 2 Domain rel. abundance (%): 60 Domain name:										
Lithology: s	erpentinite						Observer:	JP		
Texture: r	nonpseudon	norphic								
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features		
Serpentine	NA	100	NA	NA			interpenetrating			

THIN SECTION LABEL ID: 366-U1498B-4R-2-W 76/79-TSB-TS_130

Thin Section Summary Description

TS no.: 130

Observer(s): JP/KM

Serpentinized harzburgite (99% serpentinization). It consists of 92 % ol, 7% opx, 0.5% cpx, 0.5% spinel. Pseudomorphic mesh serpentine after olivine and bastite after opx. Some relict cpx occurs associated with opx pseudomorphs. It is crosscut by multiple generations of serpentine veins. olivine pseudomorphs have purple tint. Primary texture seems to quite coarse granular.



Intrusive Mantle

Domain/Rock 99% serpentinized harzburgite with relic cpx. Comment: serpentinized harzburgite JP Lithology: Observer: pseudomorphic Texture: Estimated Size Present Altered Mineral Original Avg. Shape Habit Texture Comments/Special Features (%) (%) (%) (mm) 93 0 Olivine 100 pseudomorphic mesh Serpentine NA 99 NA NA mesh pseudomorphic purple tint Clinopyroxene 0.5 0.2 NA NA interstitial [BJ84] Orthopyroxene 7 3 NA bastite 0.5 2 NA NA holly-leaf Spinel

THIN SECTION LABEL ID: 366-U1498B-5R-1-W 11/15-TSB-TS_133

Thin Section Summary Description

TS no.: 133

Observer(s): JP/JS

Serpentinized harzburgite (90% serpentinization). It consists of 90%ol, 9.5% opx and 0.5% spinel. It shows biomodal olivine, consisting of 0.02-0.05 mm olivine neoblasts and 1-2 mm porphyroclasts. Opx ranges from 3 to 5 mm with some being elongated. opx is characterized by subround shape. Reddish brown chromian spinels are blocky and about 0.4 mm in size. Weak undulatory extinction is observed in both olivine and opx.



Lithology:	serpentinize	d harzbur	gite				Observer:	JP				
Texture:	oseudomorphic											
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features				
Olivine	90	10	90	0.03	equant	mesh						
Serpentine	NA	90	NA	NA			mesh					
Orthopyroxene	9.5			4	NA							
Spinel	0.5			0.4	NA			NA				

THIN SECTION LABEL ID: 366-U1498B-5R-1-W 54/57-TSB-TS_131

Thin Section Summary Description

TS no.: 131

Observer(s): JP

Serpentinite crosscut by multiple generations of serpentine veins. It is severely serpentinized, showing nonpseudomorphic texture. It has no distinctive bastite which may have been recrystallized due to latest serpentinization. Dark red spinels are equant and about 0.1-0.2 mm in size, but one large elongate spinel occurs (2 x 0.5 mm).



Interval doma	ain no: 1	Dor	main rel. a	ibundan	ce (%):	80	Domain name:	ultramafic clast			
Lithology:	serpentinite						Observer:	JP			
Texture:	nonpseudon	onpseudomorphic									
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features			
Serpentine	NA	99	NA	NA			interpenetrating				
Spinel	1			0.3	NA			NA			
Interval doma	ain no: 2	Dor	main rel. a	Ibundan	ce (%):	20	Domain name:	vein			
Lithology:	serpentine v	ein					Observer:	JP			
Texture:	fibrous										
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features			
Serpentine	NA	100	NA	NA			fibrous				

THIN SECTION LABEL ID: 366-U1498B-5R-CC-W 9/11-TSB-TS_132TS no.: 132Thin Section Summary DescriptionObserver(s): JPSerpentinized dunite crosscut by multiple generations of fibrous serpentine veins. Non-pseudomorphic texture



Lithology: Texture:	serpentinize nonpseudon	d dunite norphic				Observer:	JP	
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	100	NA	NA				

THIN SECTION LABEL ID: 366-U1498B-6R-1-W 58/60-TSB-TS_137

Thin Section Summary Description

TS no.: 137

Observer(s): JP/JS

Serpentinized harzburgite (100% serpentinization) crosscut by multiple serpentine veins. About 85% ol and 15% opx pseudomorphs. Opx pseudomorphs vary in size from 0.1 to 5 mm. They have lobate and irregular grainboundaries. The small basistes are interstitial. Some bastite are chloritized. Trace amount of spinel occurs associated with bastite. JS: porous flow reactive melt texture.



Lithology:	serpentinize	d harzbur	gite				Observer:	JP				
Texture:	pseudomorphic											
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features				
Olivine	85	0	100									
Serpentine	NA	100	NA	NA		mesh	pseudomorphic					
Orthopyroxene	15			1	NA							

THIN SECTION LABEL ID: 366-U1498B-6R-1-W 90/93-TSB-TS_138

Thin Section Summary Description

TS no.: 138

Observer(s): JP/JS

Serpentinized harzburgite (100% serpentinization). Original mineral assemblage appears to be 80% ol, 19% opx and 1% spinel. Bastite ranges from 0.4 to 3 mm in size and often have lobate and irregular grain boundaries. JS: porous flow reactive melt textures - ragged lobate Opx that wraps around olivine, post-cumulus look to Opx.



Lithology:	serpentinize	d harzbur	gite				Observer:	JP					
Texture:	pseudomorp	seudomorphic											
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features					
Olivine	80	0	100										
Serpentine	NA	100	NA	NA			pseudomorphic	Some non-pseudomorphic serpentine					
Orthopyroxene	19			1	NA	embayed	bastite						
Spinel	1			0.5	NA			NA					

THIN SECTION LABEL ID: 366-U1498B-6R-1-W 124/127-TSB-TS_139

Thin Section Summary Description

TS no.: 139

Observer(s): JS

Serpentinized harzburgite with porous flow melt reaction textures. Olivine very coarse, 1.5:1 to 2.5:1 aspect ratio, grains 4-6 mm in size. Ragged lobate Opx, with cusps point into olivine, small apical angles, poikilitic like crystals: porous flow melt reaction textures, but with fresh olivine and pyroxene. Cpx = small anhedral grains associated with Opx, often as rim on ends of PC. Coarse equigranular texture. 90% serpentine.



Lithology:	serpentinize	d harzbur	gite				Observer:	JS
Texture:	pseudomorp	hic					coarse grained [366]	
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	80	10	90	2	subequant			Coarse equigranular; minor kink bands, not elongate
Serpentine	NA	90	NA	NA				
Orthopyroxene	20			2.4	NA	interstitial	patchy	Ragged lobate Opx, with cusps point into olivine, small apical angles, poikilitic like crystals: porous flow melt reaction textures, but with fresh olviine pyroxene.
Spinel	1			0.4	NA	interstitial		NA

THIN SECTION LABEL ID: 366-U1498B-7R-3-W 87/89-TSB-TS_134

Thin Section Summary Description

TS no.: 134

Observer(s): JP/JS

Serpentinized harzburgite (100% serpentinization). It consists of 80%ol and 20% opx which are now mesh and bastite serpentine respectively. Some parts are recrystalized showing non-pseudomorphic interpenetrating texture. Opx pseudomorphs are generally 2-4 mm in size. Some of them show embayment by olivine (now serpentine).



Intrusive Mantle

Domain/Rock Comment:

Some parts are recrystallized to non-pseudomorphic interpenetrating serpentine

Lithology: serpentinized harzburgite

Observer: JP

Texture: pseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	80	0	100					
Serpentine	NA	100	NA	NA			mesh	some interpenetrating serpentine
Spinel	0.1			0.2	NA			NA

THIN SECTION LABEL ID: 366-U1498B-7R-4-W 13/16-TSB-TS_135

Thin Section Summary Description

TS no.: 135

Observer(s): JP/BD/JS

Serpentinized harzburgite (100% serpentinization) crosscut by fibrous serpentine and clay mineral veins. It is composed of 90% ol and 10% opx pseudomorphs. 1-3 mm sized bastite with irregular grain boundary and embayment by olivine psuedomorphs. Some serpentines are severely altered and shows blue or brown colors and interpenetrating texture. JS: displays porous flow melt reaction textures, ragged lobate Opx etc.



Intrusive Mantle

Domain/Rock Some non-pseudomorphic interpenetrating serpentine Comment: serpentinized harzburgite JP Lithology: Observer: pseudomorphic Texture: Estimated Size Present Altered Mineral Original Avg. Shape Habit Texture Comments/Special Features (%) (%) (%) (mm) Olivine 90 0 100 Serpentine NA 100 NA NA mesh some interpenetrating serpentine

THIN SECTION LABEL ID: 366-U1498B-7R-4-W 120/123-TSB-TS_136

Thin Section Summary Description

TS no.: 136

Observer(s): JP/BD/JS

Serpentinized harzburgite (80% serpentinization). It is comprised of 84% ol, 15% opx, 0.5% cpx and 0.5% spinel. Olivine and opx are about 2 mm in size showing protogranular texture. Opx often have lobate and irregular boundary with olivine suggesting dissolution of opx and replacement by olivine during melt-mantle interaction (porous flow meltinteraction). Some small sized opx are interstitial to olvine grains. Cpx only occurs as a interstitial phase. Reddish brown spinel with about 0.4 mm size often occurs in association with opx and shows holly leaf texture. The serpentine displays pseudomorphic textures and the mesh has a pronounced blue color. Several brownish veins of serpentine crosscut the rock.



Lithology:	serpentinize	d harzbur	gite				Observer:	JP	
Texture:	protogranula	ar [MN-BJ	80]				medium grained [366]		
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features	
Olivine	84	20	80	2	equant	mesh	pseudomorphic		
Serpentine	NA	80	NA	NA			mesh		
Clinopyroxene	0.5			0.2	NA	NA	interstitial [BJ84]		
Orthopyroxene	14			2	NA	embayed	interstitial [BJ84]	Ragged lobate Opx, with cusps point into olivine, small apical angles, poikilitic like crystals: porous flow melt reaction textures, but with fresh olviine pyroxene.	
Spinel	0.5			0.4	NA	holly-leaf		NA	

THIN SECTION LABEL ID: 366-U1498B-8R-1-W 23/25-TSB-TS_140

Thin Section Summary Description

TS no.: 140

Observer(s): JP/KJ/BD

Altered dolerite crosscut by tremolite, pyrophyllite or phengite veins. The dolerite is composed of elongate plagioclase and interstitial clinopyroxene showing intergranular texture.



Extrusive Hypabyssal

Lithology: Texture:	dolerite intergranul	ar		Ob Ave	server: erage grain :	JP size modal name: medium grained [366]
Groundmass Mineral	Original (%)	Replaced (%)	Size Mode (mm)	Shape	Habit	Comment
Plagioclase	70	100	1.5	euhedral		replaced by secondary minerals with low birefringence color
Clinopyroxene	30	0	1	subhedral- anhedral		
Orthopyroxene		0				

THIN SECTION LABEL ID: 366-U1498B-9R-1-W 30/33-TSB-TS_141

Thin Section Summary Description

TS no.: 141

Observer(s): JS/BD

Highly serpentinized harzburgite (100% serpentinization). The mesh is surrounded by serpentine with a brownish color while the mesh center is clear or have sometimes a blue color. The bastite also display a zoning with brown rims and a clear center. The rock is crosscut by several veins of serpentine with intepenetrating or fibrous textures



Intrusive Mantle

Spinel

Domain/Rock Serpentinized harzburgite. Olivine destroyed, Opx marginal. Comment: Lithology: serpentinite Observer: JS/BD Texture: pseudomorphic Estimated Size Present Altered Mineral Original Avg. Shape Habit Texture Comments/Special Features (%) (%) (%) (mm) Olivine 80 0 100 pseudomorphic NA 100 NA NA Serpentine Orthopyroxene 20 2.4 NA bastite Deformed bastite.

NA

0.6

NA

1

THIN SECTION LABEL ID: 366-U1498B-13R-3-W 106/109-TSB-TS_142

Thin Section Summary Description

TS no.: 142

Observer(s): JS/BD

Serpentinized harzburgite (about 50% of serpentinization) with porous flow melt reaction textures. Olivine very coarse, 1.5:1 to 2.5:1 aspect ratio, grains 4-6 mm in size. Ragged lobate Opx, with cusps point into olivine, small apical angles, poikilitic like crystals: porous flow melt reaction textures, but with fresh olivine and pyroxene. Cpx = small anhedral grains associated with Opx, often as rim on ends of PC. Coarse equigranular texture. The serpentine crystallizes as veins with pseudomorphic textures. The Opx is resistant to the serpentinization. The rock is cut by many fibrous veins with a brown birefringence: serpentine + ?? chlorite?.



Intrusive Mantle

Domain/Rock Comment: Serpentinized harzburgite with porous flow melt reaction textures

Lithology: serpentinized harzburgite

Texture: protogranular [MN-BJ80]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	84	50	45	4.5	subequant			Coarse equigranular texture.
Serpentine	NA	50	NA	NA			pseudomorphic	
Clinopyroxene	2			0.2	NA	NA	interstitial [BJ84]	Small anhedral grains associated with Opx, often as rim on ends of PC.
Orthopyroxene	15			2	NA	interstitial	interstitial [BJ84]	Ragged lobate Opx, with cusps point into olivine, small apical angles, poikilitic like crystals: porous flow melt reaction textures, but with fresh olviine pyroxene.
Spinel	1			0.8	NA	interstitial	interstitial [BJ84]	NA

Observer:

JS

coarse grained [366]

THIN SECTION LABEL ID: 366-U1498B-18R-1-W 11/14-TSB-TS_143

Thin Section Summary Description

TS no.: 143

Observer(s): BD/JS

Serpentinized harzburgite (about 70% of serpentinization). The olivine is crosscut by serpentine veins with pseudomorphic textures while the orthopyroxene is relatively resistant to the serpentinization process. The serpentine can locally display a blue or brown color. JS: Porous flow reactive melt texture - lobate interstitial ragged Opx, Good to compare fresh-altered.



Lithology:	serpentinize	d harzbur	gite			Observer:	BD			
Texture:	protogranular [MN-BJ80] coarse grained [366]									
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Texture	Comments/Special Features			
Olivine	85	30	70							
Serpentine	NA	70	NA	NA			pseudomorphic			
Orthopyroxene	14				NA					
Spinel	100				NA	isometric		NA		

THIN SECTION LABEL ID: 366-U1498B-20R-1-W 17/19-TSB-TS_144

Thin Section Summary Description

TS no.: 144

Observer(s): BD/JP/KJ/JS

Serpentinized harzburgite (about 60% of serpentinization). It is composed of 80% ol, 19% opx and 1 % spinel. Olivine and opx are coarse grained and similar in size, showing protogranular texture. Lobate and irregular grain boundaries. Most opx are embayed by olivine. Some olivines are nearly euhedral and intergrown with opx, possibly replacing opx due to melt reaction. Spinels commonly occur associated with opx. The mantle minerals are crosscut by several generation of serpentine veins with mostly pseudomorphic textures (some fibrous serpentine with a brown/blue birefringence are also observed: serpentine? + chlorite?). The orthopyroxene is little affected by the serpentinization. JS: porous flow reaction texture. Many fresh examples. Best to compare fresh-altered.



Intrusive Mantle

Domain/Rock Comment:

The mantle minerals are crosscut by several generation of serpentine veins with pseudomorphic textures.

Observer:

BD

coarse grained [366]

Lithology:	serpentinized harzburgite
Texture:	protogranular [MN-BJ80]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	80	30	70					
Serpentine	NA	70	NA	NA			pseudomorphic	
Orthopyroxene	18				NA			Deformed pyroxene that can display kink band. The orthopyroxene can contain large and interstitial spinels.

THIN SECTION LABEL ID: 366-U1498B-21R-1-W 56/58-TSB-TS_145

Thin Section Summary Description

TS no.: 145

Observer(s): JP

Two domains: 1) microcrystalline aphyric basalt crosscut by 2) tectonic (?) breccia. The domain 1 consist mainly of 50 micrometer sized acicular or elongate plagioclase and clinopyroxene showing interstitial texture. The interstices between plagiocalses are also filled with hypocrystalline minerals. The domain 2 is compoased of brecciated volcanic clasts which appear to be the same as domain 1. The clasts are severely altered and mafic minerals are chloritized, but still preserve some relict clinopyroxenes.

LIMS image no .: Plane-polarized. Slide width 27mm LIMS image no .: Cross-polarized. Slide width 27mm 39969141 39969181 Extrusive Hypabyssal Interval domain no.: 1 Domain rel. abundance (%): 30 Domain name: Aphyric basalt Lithology: aphyric basalt Observer: JP Texture: intergranular Average grain size modal name: microcrystalline [366] Phenocryst Mineral Present (%) Size (mm) Shape Habit Comments 0 Olivine 0 Plagioclase Clinopyroxene 0 Groundmass Replaced Size Mode Original (%) Shape Habit Comment Mineral (%) (mm) 0 Olivine 40 100 0.05 euhedral Plagioclase replaced by secondary alteration minerals subhedral-10 30 0.04 Clinopyroxene anhedral 30 Orthopyroxene Interval domain no.: 2 Domain rel. abundance (%): 70 Domain name: Volcanic breccia Lithology: basalt breccia Observer: JP Texture: Average grain size modal name: cryptocrystalline [366]

THIN SECTION LABEL ID: 366-U1498B-21R-2-W 38/40-TSB-TS_146

Thin Section Summary Description

TS no.: 146

Observer(s): BD/YI/WK

Carbonated chert breccia. The rock is composed of interstitial calcite forming an irregular vein network with blocky calcite, associated with a few amount of muscovite and quartz. The calcite enveloped large and thinly recyrtallized areas up to 0.5 mm width. The chert matrix contains radiolarian fossils completely recrystallized to quartz, and fine-grained carbonate.



THIN SECTION LABEL ID: 366-U1498B-23R-1-W 30/32-TSB-TS_147

Thin Section Summary Description

TS no.: 147

Observer(s): YI



THIN SECTION LABEL ID: 366-U1498B-23R-3-W 5/7-TSB-TS_148

Thin Section Summary Description

Serpentinized harzburgite with two domains: 1) extremely serpentinized domain (95% serpentinized) with mesh texture serpentine and bastite containing pervasive microcrystalline magnetite. Relict opx (1%) and spinel (3-4%) remains (1%); 2) highly serpentinized domain (90% serpentinized) with colorless to greenish mesh-textured serpentine and bastite. Relict opx (6%), spinel (1%) and olivine (3%).





LIMS image no.: 39973421

Cross-polarized. Slide width 27mm



39973481

2 domains. Scale bar 1mm.

ntrusive Mantle								
Interval domain	וס: 1	Domain rel. abundance (%):	75	Domain name:	ultramafic clast			
Domain/Rock microcrystalline magnetite in serpentine veins								
Lithology: ser	oentinite		Observer:	KJ				
Texture: me	sh				coarse grained [366]			

TS no.: 148

Observer(s): KJ

.

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	70	1	99					
Serpentine	NA	85	NA	NA	blocky	mesh	mesh	
Orthopyroxene	2				NA	aggregates	bastite	mm-size aggregates of opx totally altered to bastite. one large relict opx encloses relict rounded olivine grain
Spinel	3				NA	amoeboid- irregular	patchy	NA
Domain/Rock Comment: relict olivine, opx and spinel in heavily serpentinized harzburgite Lithology: serpentinized harzburgite Observer: KJ								
Texture: mesh coarse grained [366]								
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	70	3	97					
Serpentine	NA	85	NA	NA	fibrous	mesh	mesh	
Orthopyroxene	3				NA	aggregates	bastite	spinel enclosed in opx
Spinel	2				NA	embayed	patchy	NA