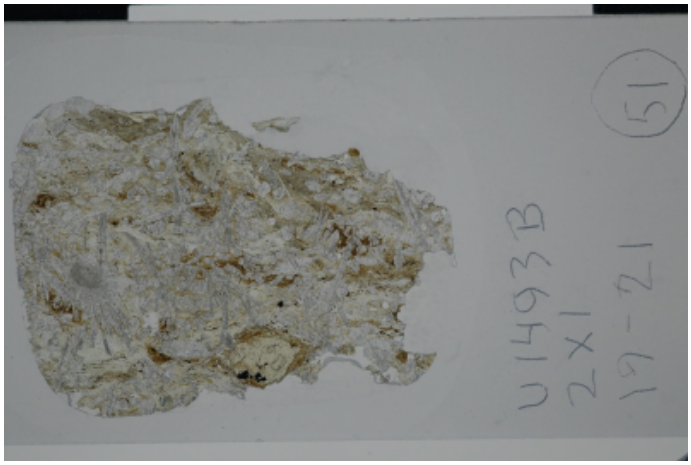
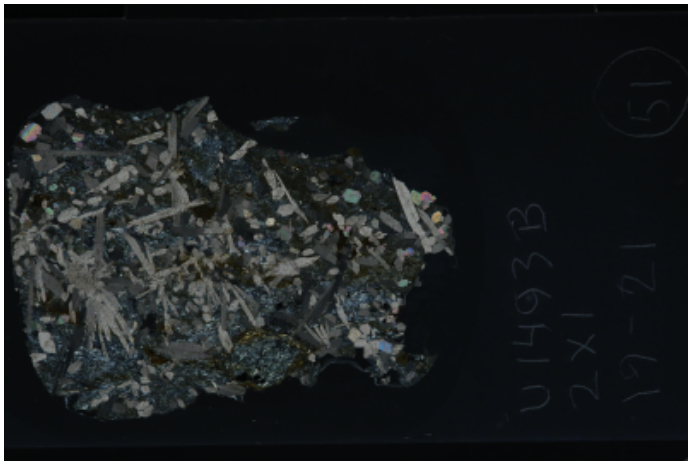
THIN SECTION LABEL ID: **366-U1493B-2X-1-W 19/21-TSB-TS_51** TS no.: 51

Thin Section Summary Description Observer(s): BD/YI/KJ

Carbonated ultramafic clast. Chromian spinel is observed as relict mineral. All of the carbonate is aragonite (biaxial -ve). The aragonite occurs as euhedral acicular elongate prisms with steep pyramidal terminations several millimeters long and six-sided tablets. The serpentine has an interpenetrating texture and is orientated. Some brown alteration is also observed.



LIMS image no.: 39730311 Plane-polarized. Slide width 27mm



LIMS image no.: 39730331 Cross-polarized. Slide width 27mm

Intrusive Mantle

Interval domain no: **2** Domain rel. abundance (%): 40 Domain name: ultramafic clast

Lithology: **serpentinite** Observer: BD/YI

Texture: nonpseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	99.5	NA	NA			interpenetrating	
Spinel	0.5			0.3	NA	amoeboid-irregular		NA

Alteration

Interval domain no: 1 Domain rel. abundance (%): 70 Domain name: matrix

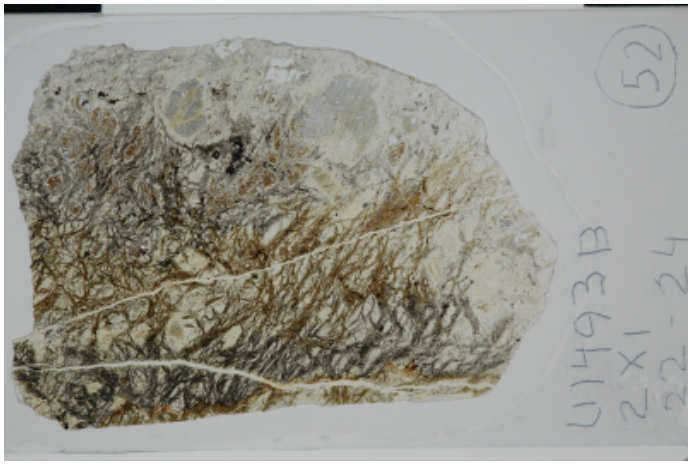
Total rock alteration estimate (%): Observer(s): BD/KJ

Mineral	Alteration comment
Groundmass	aragonite crystallizing as elongate blades several millimeters in length and tabular six-sided crystals

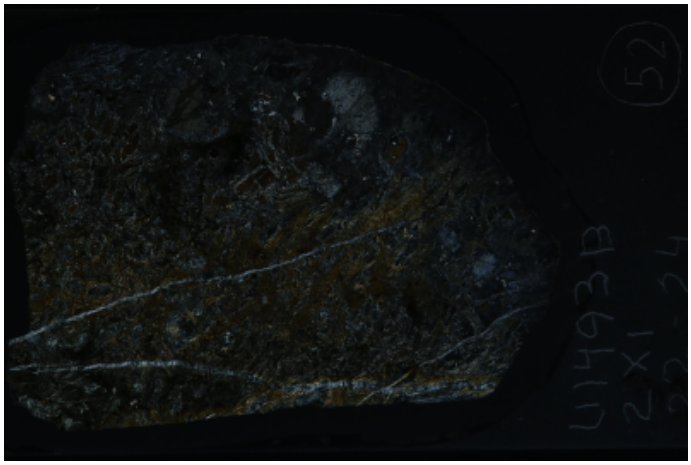
THIN SECTION LABEL ID: **366-U1493B-2X-1-W 22/24-TSB-TS_52** TS no.: 52

Thin Section Summary Description Observer(s): BD/JP/YI/JS

Massive serpentinized harzburgite (about 99% serpentinization). The rock displays pseudomorphic mesh and bastite textures affected by a brownish alteration. Traces of primary cpx, opx and Cr-sp grains are preserved. Serpentinized harzburgite (about 95% of serpentinization) displaying pseudomorphic mesh, hourglass and bastite textures. The mesh rims display a brownish alteration color. Rare relicts of olivine are preserved in the center of brownish alteration aggregates. Minor amounts (~2%) of clinopyroxene are preserved, typically as small interstitial grains molded to adjacent grain boundaries (possibly a melt residue?).



LIMS image no.: 39726521 Plane-polarized. Slide width 27mm



LIMS image no.: 39726541 Cross-polarized. Slide width 27mm

Intrusive Mantle

Lithology: **serpentinized harzburgite** Observer: BD/JP/YI

Texture: pseudomorphic

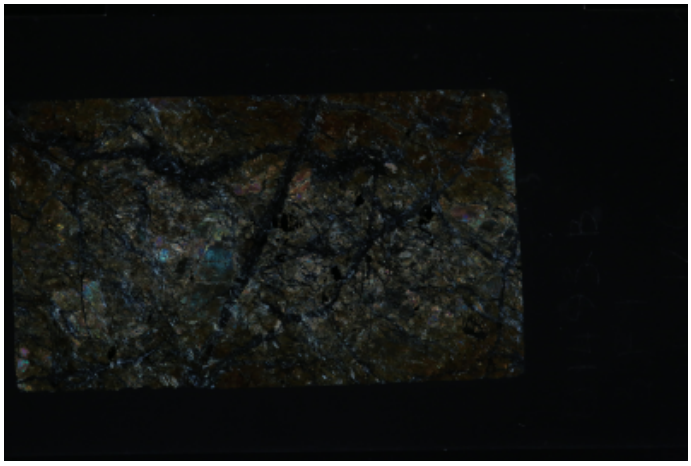
Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	90	3	97			mesh		
Serpentine	NA	98	NA	NA			pseudomorphic	
Clinopyroxene	1				NA	NA		
Orthopyroxene	8				NA		bastite	
Spinel	1				NA		vermicular	NA

THIN SECTION LABEL ID: **366-U1493B-3F-1-MBIO2(106-126)-SED-TSB-TS_53** TS no.: 53

Thin Section Summary Description Observer(s): JP/YI/KJ/JS

Serpentinized dunite (about 60% serpentinization) made of olivine grains crosscut by serpentine veins with interpenetrating textures. The olivine is altered and displays thinly recrystallized brownish rims. Olivine displays a wide range in grain sizes and can be up to 5 mm long; the average size is about 2 mm. Kink banding is common and clearly visible in the larger grains. Extensive deformation is evidenced by olivine recrystallization, forming fine-grained neoblasts of strain-free olivine about 50 ÃÂµm width. Spinel ranges up to 3 mm in size, although the average size is less than 1 mm. The extensive deformation and wide range in grain sizes suggest that the primary texture was porphyroclastic. Serpentinized dunite? (about 60 % serpentinization). Rare bastite. Olivine shows undulatory extinction and has average grain size of about 2 mm. Olivine is so-called "cleavable olivine" and is partly replaced by fine-grained dusty olivine. Trace amount of amphibole occurs. JS: Tabular foliate texture. Vermicular spinel. Primary olivine up to 4 x 2.4 mm in size, probably larger.

LIMS image no.: 39778181 Plane-polarized. Slide width 27mm



LIMS image no.: 39778201 Cross-polarized. Slide width 27mm

Intrusive Mantle

Domain/Rock Comment: Spinels generally amoeboid, even though no pyroxene. Texture could be modestly deformed protogranular but most dunites have equant spinels from melt extraction. High serpentinization makes primary mode difficult. One grain next to large spinel may be altered cpx - small relict grain, may have inclined cleavage.

Lithology: **serpentinized dunite** Observer: JP/JS/KJ/YI

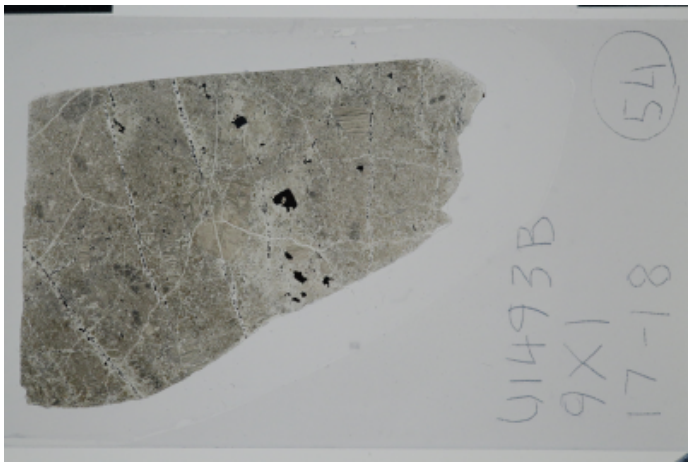
Texture: anhedral granular coarse grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	98	40	60	2	elongate			Tabular foliate texture. Olivine up 5 x 2.4 mm in size.
Serpentine	NA	60	NA	NA				
Spinel	3			0.8	NA	amoeboid-irregular		NA
Amphibole	0.5				NA		NA	

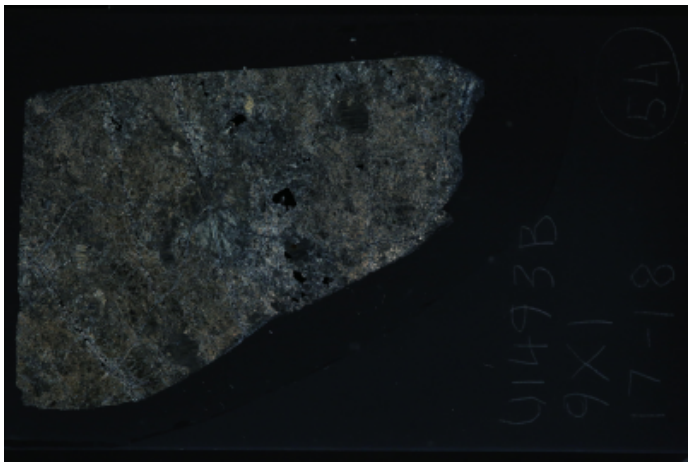
THIN SECTION LABEL ID: **366-U1493B-9X-1-W 17/18-TSB-TS_54** TS no.: 54

Thin Section Summary Description Observer(s): YI/JS

Massive serpentinized harzburgite (100% serpentinization) with serpentinite veins (srp + br + mt). Cr-sp is present as relict mineral. Abundant brucite crystals are also present as olivine pseudomorph.



LIMS image no.: 39730351 Plane-polarized. Slide width 27mm



LIMS image no.: 39730371 Cross-polarized. Slide width 27mm

Intrusive Mantle

Interval domain no: **2** Domain rel. abundance (%): 10 Domain name: vein

Lithology: serpentinite vein Observer: YI

Texture: fine grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	40	NA	NA	fibrous	fibrous aggregates		

Interval domain no: **1** Domain rel. abundance (%): 90 Domain name: ultramafic clast

Lithology: serpentinized harzburgite Observer: YI/JS

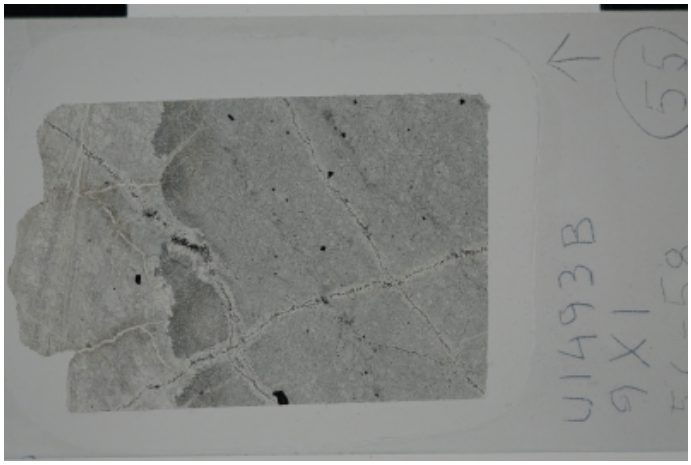
Texture:

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	83	0	100					
Serpentine	NA	68	NA	NA				
Orthopyroxene	20			2	NA		bastite	Blocky porphyroclasts
Spinel	2			0.1	NA			NA

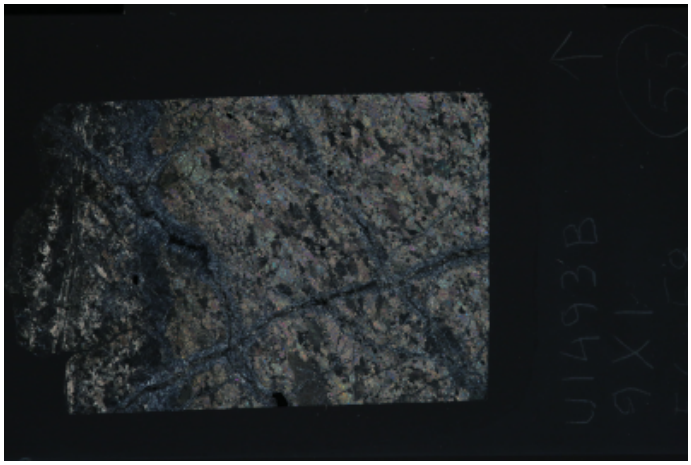
THIN SECTION LABEL ID: **366-U1493B-9X-1-W 56/58-TSB-TS_55** TS no.: 55

Thin Section Summary Description Observer(s): BD/JP/YI/KJ

Serpentinized dunite (about 20% serpentinization) crosscut by large veins composed of serpentine with interpenetrating textures and brucite. Olivines are elongated. It is made of olivine grains of various sizes, from about 50 um to 6 mm in length, with an average grain size of ~3 mm. The larger grains are highly elongated, with kink bands parallel foliation. The primary texture was probably porphyroclastic. Olivine is crosscut by thin serpentine veins of about 100 um width with pseudomorphic textures. Large veins of serpentine of about 1 cm width crosscut the sample. They are made of fibrous serpentine associated with chlorite (and/or brucite?) in the center and serpentine with interpenetrating textures at vein's rims.



LIMS image no.: 39726601 Plane-polarized. Slide width 27mm



LIMS image no.: 39726621 Cross-polarized. Slide width 27mm

Intrusive Mantle

Interval domain no: **2** Domain rel. abundance (%): 80 Domain name: ultramafic clast

Domain/Rock Comment: JS: Strong foliation: olivine elongated 3:1 to 5:1, Large domains with same extinction, or related by kink bands, that are not contiguous. Almost poikolitic, Texture resembles porphyroclastic but no Opx, & Spinels are euhedral, equant, not flattened. Very odd.

Lithology: serpentinized dunite Observer: BD/JP/JS/KJ/YI

Texture: aligned coarse grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	98	80	20	3	elongate		oriented	
Serpentine	NA	20	NA	NA			pseudomorphic	
Orthopyroxene	1			3	NA			
Spinel	1			0.2	NA	isometric		NA

Interval domain no: **1** Domain rel. abundance (%): 20 Domain name: vein

Lithology: serpentinite Observer: BD/JP/YI

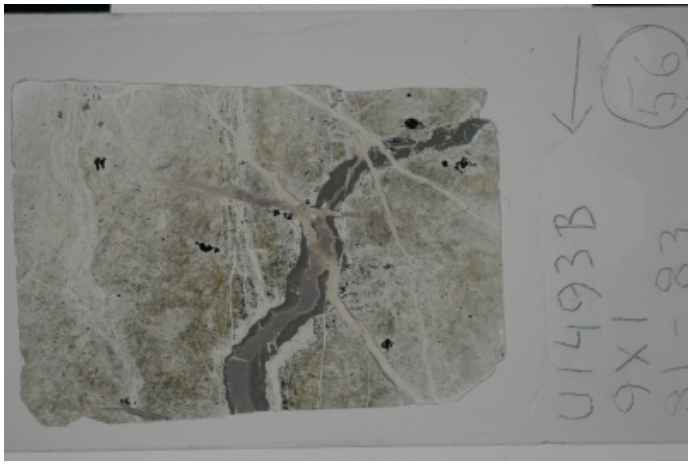
Texture: nonpseudomorphic

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Serpentine	NA	50	NA	NA			interpenetrating	

THIN SECTION LABEL ID: **366-U1493B-9X-1-W 81/83-TSB-TS_56** TS no.: 56

Thin Section Summary Description Observer(s): JP

Serpentinite crosscut by multiple generations of fibrous serpentine veins



LIMS image no.: 39726691 Plane-polarized. Slide width 27mm

LIMS image no.: 39726711 Cross-polarized. Slide width 27mm

Intrusive Mantle

Lithology: **serpentinite** Observer: JP

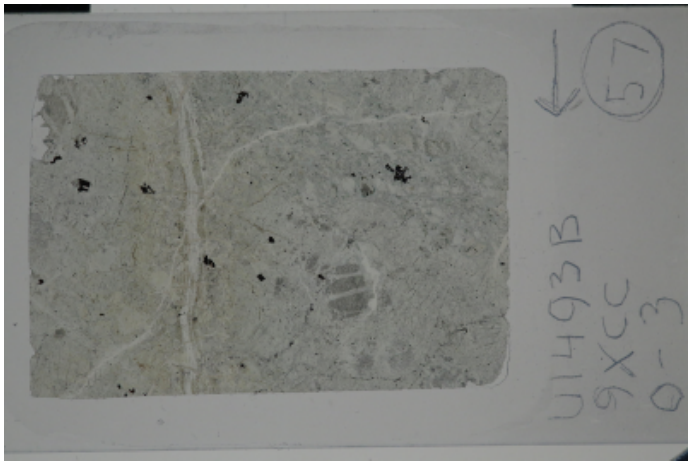
Texture: nonpseudomorphic

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

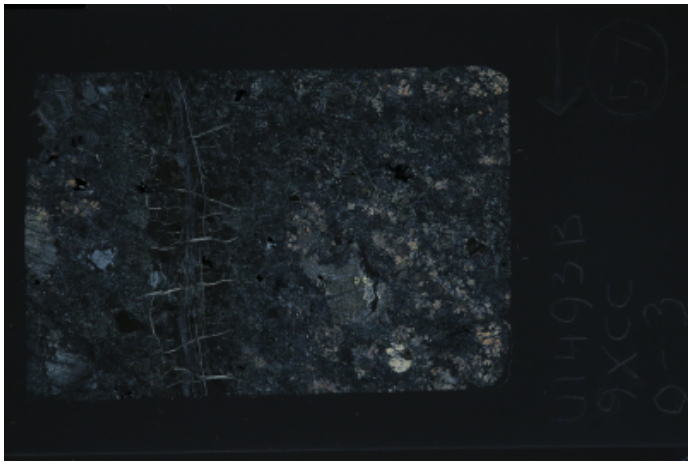
THIN SECTION LABEL ID: **366-U1493B-9X-CC-W 0/3-TSB-TS_57** TS no.: 57

Thin Section Summary Description Observer(s): BD/JP/YI/KJ/JS

Serpentinized harzburgite (about 70% serpentinization) crosscut by large serpentine veins The host rock preserved round grains of olivine, pyroxene and euhedral spinel embedded within pseudomorphic serpentine. The primary mode is estimated at 75–80% olivine, 15–20% orthopyroxene and about 1% chrome spinel; small grains of clinopyroxene are associated with some of the spinels. Olivine and pyroxenes are subequant and tabular, with olivine up to 3 mm and orthopyroxene up to 6 mm in size, and aspect ratios of about 2:1. Spinel forms irregular amoeboid grains that are typically associated with pyroxene, include trace amounts of clinopyroxene, and more equant grains associated with olivine. The orthopyroxene and its bastite pseudomorphs are modestly deformed (minor kink bands), and both display fine exsolution lamellae of clinopyroxene or its alteration products. The discrete clinopyroxene grains are interpreted to be granule exsolution from the orthopyroxene. The lack of strong foliation, the association of spinel with clusters of pyroxene as well as the amoeboid shape of pyroxene-associated spinel suggest a primary protogranular texture. The serpentine display mesh and bastite pseudomorphic textures partly or fully recrystallized into serpentine lamellae with interpenetrating textures. The rock is crosscut by several generations of fibrous serpentine veins. Few ameoboid spinels have been observed. The relic orthopyroxene and bastite domains of these thin sections are surrounded by talc. Brucite + magnetite veins are common.



LIMS image no.: 39726731 Plane-polarized. Slide width 27mm



LIMS image no.: 39726751 Cross-polarized. Slide width 27mm

Intrusive Mantle

Interval domain no: **2** Domain rel. abundance (%): 10 Domain name: vein

Lithology: **serpentinite vein** Observer: BD, JS

Texture: fibrous microcrystalline [366]

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

Interval domain no: **1** Domain rel. abundance (%): 90 Domain name: ultramafic clast

Domain/Rock Comment: Protogranular harzburgite or lherzolite. Large undeformed Opx, Spinel commonly associated with pyroxene, amoeboid or euhedral equant (with olivine). Large areas with fresh olivine in mesh centers, some Opx well preserved also.

Lithology: **serpentinized harzburgite** Observer: BD, JS, KJ, YI

Texture: protogranular [MN-BJ80] coarse grained [366]

Mineral	Estimated Original (%)	Present (%)	Altered (%)	Size Avg. (mm)	Shape	Habit	Texture	Comments/Special Features
Olivine	75	15	60	2	subequant	isometric		
Serpentine	NA	80	NA	NA	fibrous	mesh	pseudomorphic	
Clinopyroxene	1				NA	NA		Small Cpx granule exsolution from Opx (high Bf granules on margins of Opx).
Orthopyroxene	25			4	NA		bastite	BD: The bastite is finely recrystallized into thin serpentine lamellae. JS: Large bastites with exsolution lamellae of Cpx (altered?). Many (most?) bastites have rims on cleavage terminations of higher Bf mineral - probably anthophyllite. Anthophyllite flakes also seen randomly inside bastite. JS: Much fresh Opx. Blocky grains, 2:1 aspect ratio, not significantly deformed or kinked. Consistently larger than olivine. Small Cpx granule exsolution from Opx (high Bf granules on margins of Opx).
Spinel	2			0.5	NA	amoeboid-irregular		NA