ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Geological and Geochemical Assessment Report on the Murray Ridge Property, Omenica Mining Division, British Columbia

TOTAL COST: $50,118.20

AUTHOR(S): John Walther, P.Geo.

SIGNATURE(S): John Walther

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YEAR OF WORK: 2012

PROPERTY NAME: Murray Ridge

CLAIM NAME(S) (on which work was done): 740023, 834183-834185, 834188-834189, 843142, 843166-843167, 843170-843172, 843183-843184

Nanton Nickel Corporation
#800-1199 West Hastings
Vancouver, BC, V6E 3T5
COMMODITIES SOUGHT: nickel-iron alloy (awaruite)

MINERAL INVENTORY MINFILE NUMBER(S),IF KNOWN:

MINING DIVISION: Omenica
NTS / BCGS: 93K/8,9,10
LATITUDE: __54________° __32.8________’ __________"
LONGITUDE: __124________° __18.7________’ __________" (at centre of work)
UTM Zone: 10N EASTING: 415100 NORTHING: 6045150

OPERATOR(S) [who paid for the work]: Nanton Nickel Corp.
MAILING ADDRESS:
#800-1199 West Hastings, Vancouver, BC V6E 3T5

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. Permian to Triassic Cache Creek Group clastic and calcareous sedimentary rocks intruded by Trembleur, ultramafic-mafic intrusive and Rubyrock Igneous Complex gabbro-diorite. Overlying Triassic-Jurassic volcano-sedimentary rocks. Cretaceous Endako Batholith tonalite. Complex NW structural fabric including regional Pinchi Lake Fault. Historically know numerous mercury and chromite (low PGE) occurrences. Serpentinized and carbonatized ultramafic intrusive rocks.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: AR#00686, AR#00716, AR#00719, AR#00774, AR#11,213, AR#16,532, AR#26,628, AR#32715

TYPE OF WORK THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED
GEOLOGICAL (scale, area) Ground, mapping/prospecting	1:100,000		12,000
GEOPHYSICAL line-km Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Airborne			
GEOCHEMICAL (number of samples analysed for) all inclusive cost Soil	142		**9,662.07**
Silt			
Rock	56		**13,056.13**
Other			
DRILLING (total metres, number of holes, size, storage location) Core			
Non-core			
RELATED TECHNICAL Sampling / Assaying			
Petrographic			15,400
Mineralographic			
Metallurgic			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
		TOTAL COST	**50,118.20**

Geological and Geochemical

Assessment Report

On

The Murray Ridge Property

British Columbia
Omineca Mining Division

NTS: 93K/8, 9, 10

124°18.7’ W Longitude / 54°32.8’ N Latitude

For

Nanton Nickel Corp.

#800-1199 West Hastings St.
Vancouver, British Columbia
V6E 3T5

John Walther, P.Geo.

March 31, 2013

Summary

The Murray Ridge Property is located approximately 15 to 30 km northwest of Fort St. James and 120 km northwest of Prince George in central British Columbia. The property consists of 42 contiguous mineral claims which are 100% owned by Nanton Nickel Corporation of Vancouver, BC. The claims total 17,789 ha, and are centered in BC's Omineca Mining Division, at approximately 124°18.7' W Longitude and 54°32.8' N Latitude, on NTS map sheets 93K/8,9,10. Accessibility to the property is provided by well-maintained gravel roads from Fort St. James off Highway 27.

Previous exploration in the region identified numerous mercury showings associated with the regional Pinchi Fault structural zone as well as chromite-low platinum-group-element occurrences hosted within ultramafic-mafic intrusions. Nanton Nickel Corp. has undertaken evaluation of this property for nickel-iron alloy mineralization (awaruite) in tectonized and serpentinized ultramafic rocks of Cache Creek Group Trembleur Intrusions. This is the first known attempt to locate awaruite in the area. The geological and structural setting of the MR Property is analogous to the Decar Project (First Point Minerals Ltd.) located approximately 60 km to the northwest.

The Murray Ridge Property is underlain by the Lower Pennsylvanian to Middle Triassic Cache Creek complex; a mixture of calcareous and clastic sedimentary rocks intruded by the Trembleur ultramafic and Rubyrock mafic intrusions. The Triassic to Jurassic Takla Group and Tezzeron Sequence are located along fault bounded contacts with older assemblage. The youngest is tonalite of the Cretaceous Endako Batholith. Northwest striking faults and thrusts, including the known Pinchi Lake Fault system, are characteristic of the strong, structural trend throughout the region.

The 2012 exploration program involved reconnaissance prospecting and geochemical soil sampling. A total of 55 rocks and 142 soil samples were collected from prospective areas throughout the Murray Ridge property. These were analyzed for a multitude of elements by ICP-OES method and for magnetic content by Davis Tube method at AGAT Laboratories in Vancouver. In addition, 54 samples were analyzed by Vancouver Petrographics Ltd. of Langley BC using polished thin section and semi-qualitative energy dispersive spectral (EDS) analyses.

Geochemical sampling has confirmed the presence of trace nickel-iron (awaruite) mineralization from perspective ultramafic-mafic rocks on the property. Rock and soil geochemistry returned anomalous nickel contents with best assays of greater than 2000 ppm Ni in rocks and 1000 ppm Ni in soils, respectively. Further prospecting, rock sampling and geological mapping should be conducted to further assess the potential for awaruite mineralization on the property.

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1 Introduction

The following report was prepared to document work carried out during 2012 by Nanton Nickel Corporation on the Murray Ridge Property. In 2011, a 1055 line kilometer helicopter-borne magnetic survey, and rock, stream and soil analysis identified potential for nickel-iron alloy (awaruite) mineralization. Exploration activity in 2012 was designed to follow up these encouraging results, and to better understand the nature of nickel mineralization within ultramafic-mafic rocks in the area.

The 2012 program involved the collection of 55 rock and 142 soil samples for geochemical and petrographic analysis. Analysis methods were chosen to help identify not only concentrations of nickel mineralization, but the nature in which nickel is present (i.e. awaruite). AGAT Laboratories multi-element ICP-OES analysis was conducted on all samples. In addition, select samples were chosen to be analyzed via the Davis Tube method, which determines the percent concentration of magnetic minerals within a sample. Furthermore, 54 samples were sent to Vancouver Petrographic Ltd. for polished thin section energy dispersive spectral (EDS) qualitative analyses to determine the mineralogical make up of these samples.

2 Property Description and Location

The Murray Ridge Property is located approximately 15 to 30 km north to northwest of Fort St. James and 120 km northwest of Prince George, on NTS map sheets, 93K/8, 9 and 10, within the Omineca Mining Division in the central British Columbia (Figure 1). Geographic coordinates of the approximate centre of the property are 124°18.7' west longitude and 54°32.8' north latitude (NAD 83, UTM Zone 10: coordinates 415100 m East and 6045150 m North).

The property currently consists of 42 contiguous mineral claims with a combined area of 17,789 ha (Figure 2). Claims status was searched on the website of the British Columbia Ministry of Energy and Mines, Mineral Titles Online BC (MTO: www.mtonline.gov.bc.ca). The Table 1 summarizing the mineral tenures of this property was taken directly from the MTO record. Of the 53 results returned, 42 of the claims are indicated to be in good standing until various dates ranging from June 30, 2013 and January 15, 2014. In addition, 11 claims were forfeited on January 15 and 24, 2013 respectively. The claims are listed under Client ID 257590, Nanton Nickel Corporation of Suite #800-1199 West Hastings, Vancouver, BC, V6E 3T5.

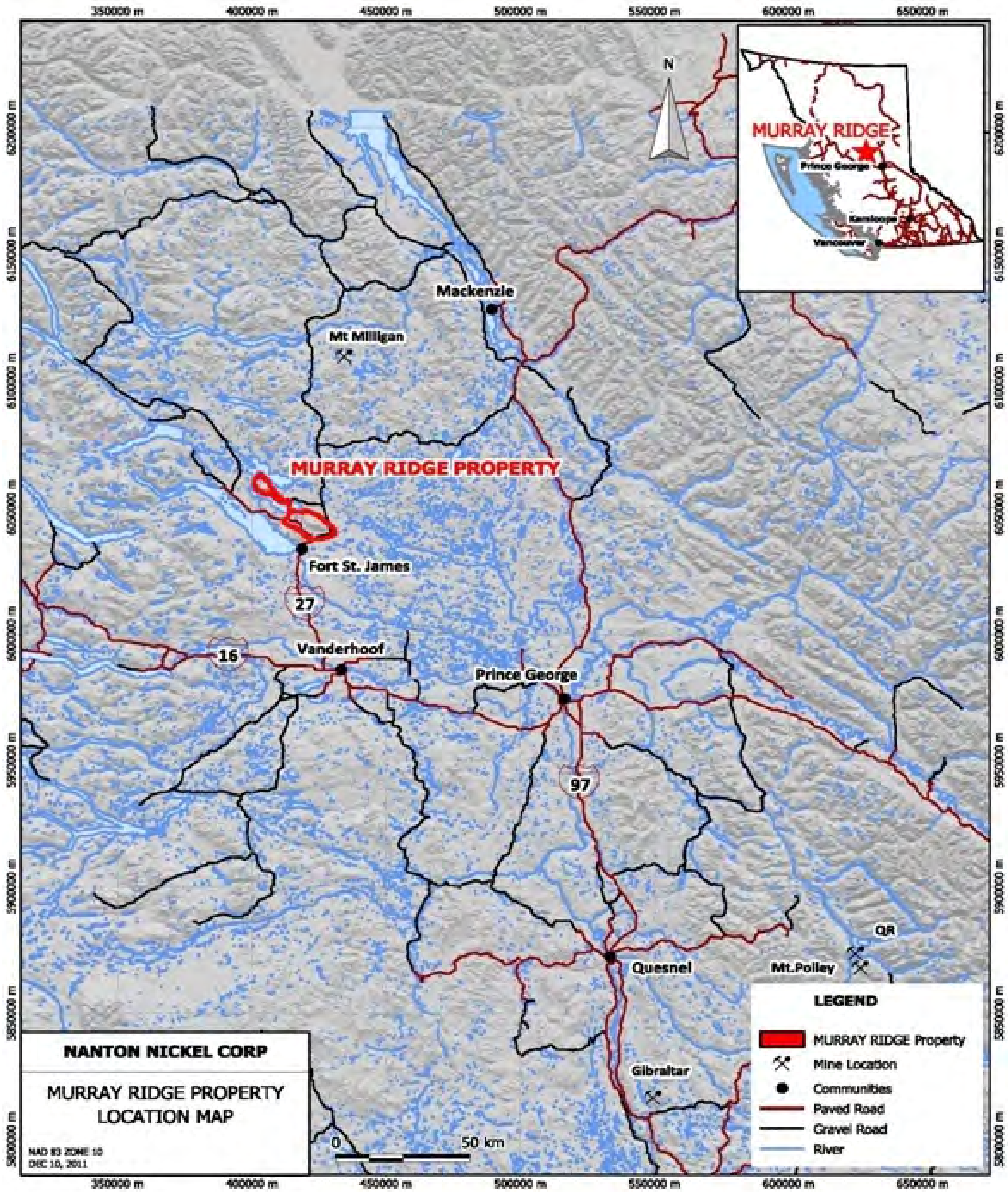

Figure 1. Murray Ridge Property Location.

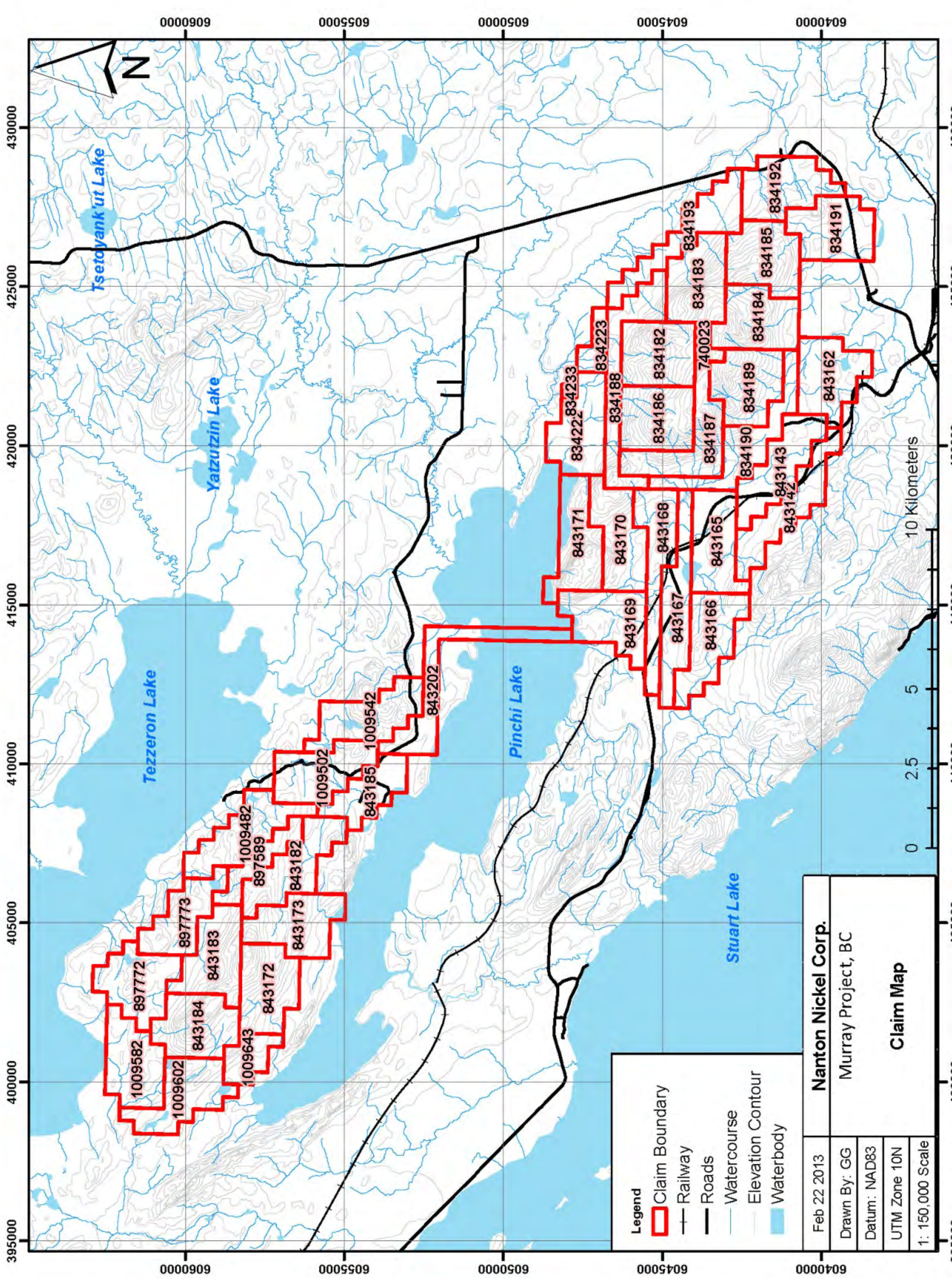

Figure 2. Claim Map.

Table 1. Murray Ridge Property Claims.

Tenure Number	Claim Name	Owner	Tenure Type	Tenure Sub Type	Map Number	Issue Date	Good To Date	Status	Area (ha)
740023	CIRC	257590 (100%)	Mineral	Claim	093K	2010/apr/04	2013/sep/24	GOOD	75.0648
834182	MR	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	468.9967
834183	MR1	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.1196
834184	MR2	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.3166
834185	MR3	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.3296
834186	MR4	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	468.9903
834187	MR5	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.0868
834188	MR6	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	468.8928
834189	MR7	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.2879
834190	MR8	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.2768
834191	MR9	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.5434
834192	MR10	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.3904
834193	MR11	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	469.0813
834222	MR14	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2014/jan/24	GOOD	468.7395
834223	MR14	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2014/jan/24	GOOD	131.2611
834233	MR21	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/sep/24	GOOD	18.7481
843142	MR101	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	469.4097
843143	MR102	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	469.3873
843162	MR103	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	469.5624
843165	MR106	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	469.1674
843166	MR107	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	469.1367
843167	MR107	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	469.0361
843168	MR108	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	468.9743
843169	MR109	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	468.8084
843170	MR110	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	468.8554
843171	MR111	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	468.7154
843172	PL1	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	467.8302
843173	PL2	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	467.9063
843182	PL3	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	467.8901
843183	PL4	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	467.6378
843184	PL4	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	467.6014
843185	PL5	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	337.0523
843202	PL6	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2014/jan/15	GOOD	468.369
897589	PL7	257590 (100%)	Mineral	Claim	093K	2011/sep/15	2013/sep/15	GOOD	224.5326
897772	PL8	257590 (100%)	Mineral	Claim	093K	2011/sep/16	2013/sep/16	GOOD	467.387
897773	PL9	257590 (100%)	Mineral	Claim	093K	2011/sep/16	2013/sep/16	GOOD	392.7148
1009482	PL 17	257590 (100%)	Mineral	Claim	093K	2012/jun/30	2013/jun/30	GOOD	467.7202
1009502	PL 18	257590 (100%)	Mineral	Claim	093K	2012/jun/30	2013/jun/30	GOOD	467.9717
1009542	PL 18	257590 (100%)	Mineral	Claim	093K	2012/jun/30	2013/jun/30	GOOD	468.1184
1009582	PL20	257590 (100%)	Mineral	Claim	093K	2012/jun/30	2013/jun/30	GOOD	467.3907
1009602	PL 21	257590 (100%)	Mineral	Claim	093K	2012/jun/30	2013/jun/30	GOOD	467.5634
1009643	PL22	257590 (100%)	Mineral	Claim	093K	2012/jun/30	2013/jun/30	GOOD	205.8249
843122	MR100	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2013/jan/15	FORF	469.7
843163	MR104	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2013/jan/15	FORF	469.6

843164	MR105	257590 (100%)	Mineral	Claim	093K	2011/jan/15	2013/jan/15	FORF	375.8
834224	MR15	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	469.6
834225	MR16	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	469.4
834227	MR12	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	18.77
834228	MR17	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	18.77
834229	MR18	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	18.76
834230	MR19	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	18.76
834231	MR20	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	18.76
834234	MR22	257590 (100%)	Mineral	Claim	093K	2010/sep/24	2013/jan/24	FORF	56.34

3 Access, Topography, Vegetation and Climate

3.1 Access

Murray Ridge Property is situated approximately 15 to 30 km northwest of the community Fort St. James. The southeastern portion of the claims is accessible by Tache Road, originating approximately 5 km north of the town site and heading northwesterly in between Stuart and Pinchi lakes. A well-maintained Pinchi Lake Forest Service road leads to the northwest part of the property by North Germansen Road, branching off to the west at about 22 km north of FSJ. A network of secondary, drivable and non-drivable gravel roads provide an access to other parts of the property (Figure 2).

The Murray Ridge ski recreation facility occupies the south side of the prominent ridge, referred to as Murray Ridge, and the Ministry of Forests radio repeater station, fire lookout and microwave towers are at its crest. All are accessible by all-weather gravel roads.

3.2 Topography, Vegetation and Climate

The Murray Ridge property lies within the Nechako Plateau of the Interior Plateau System of the Canadian Cordillera. The Nechako Plateau is near the southern limits of the Swannell Range of the Omineca Mountains and the northern boundary of the Southern Plateau with the mountain region of the Cordilleran Interior System. The region is characterized by moderately sloped terrain with Murray Ridge and Pinchi Mountain forming prominent highs at approximately 1400 m asl and 1267 m asl, in southeast and northwest, respectively, with valley bottoms at approximately 750 m asl. The Pleistocene glaciation events affecting the entire area are manifested as a very thin to non-existent glacial till cover on the ridge tops to significant till thicknesses of up to tens of meters on lower hills and in the valleys. Glacial movement has been interpreted as easterly (Armstrong, 1965).

The terrain is covered predominantly by moderately dense stands of white and black spruce, lodge-pole pine, douglas fir and aspen. Willow and ground birch are widespread at lower elevations. Vegetation is sparse on the steep south facing slopes of the Murray Ridge and dense on the north oriented slopes. Bedrocks is abundant on ridge tops and locally in steep drainages, however it is rare to absent at lower elevations.

The climate in the region is characterized by short and cool summers with temperatures ranging from 10 to 25° C, and cold winters of sub-freezing temperatures dropping to -30° C. Recorded annual precipitation at Fort St. James is 40 cm. Snow accumulations of 1 to over 2 meters are normal with snow-free months from May to October.

The Murray Ridge property is located approximately 15 to 30 km northwest of Fort St. James and 65 km northwest of Vanderhoof. These communities are situated on highways, #27 and #16, respectively, and provide basic supplies and services including lodging, restaurants, and hospitals.

4 History

Exploration activity in the region dates back to mid 1860's when placer gold was discovered on lower Fraser and Thompson Rivers. In 1937, a modern exploration followed the discovery of cinnabar (ore of mercury) by J.G. Gray, a geologist with the Geological Survey of Canada, in the Cache Creek limestone on the north shore of the Pinchi Lake. Subsequently numerous other mercury showings were discovered within the Pinchi Lake fault zone in a variety of host rocks including limestone, serpentinized ultramafic and non-calcareous rocks. The property was optioned by the Consolidated Mining and Smelting of Canada Ltd. (CMSC) which developed the occurrence into the well-known Pinchi Lake Mercury Mine in 1940. From 1940-1944 the mine produced 4 million pounds of mercury.

In the 1940's carbonatized and serpentinized float containing cinnabar was also discovered south of the Murray Ridge (Midnight claims) along the extension of the regional Pinchi Lake fault system. Canadian Exploration Ltd. conducted a 10-hole diamond drilling program in 1957, and was subsequently followed by Darbar Exploration Ltd. completing trenching and stripping of some carbonate altered zones in 1965. In 1969, Cominco Ltd. Conducted further exploration in the area for mercury mineralization. The prospect was staked by again in 1982 by M. Morrison. This time it was believed that mercury might represent a halo over a buried epithermal gold system. The results of 35 rock samples confirmed the presence of mercury, elevated Ba, Ni, Cr and As with negligible Au and Ag in association with carbonate altered ultramafic dykes (Morrison, 1983).

In 1986, the MR property covering the Trembleur ultramafic intrusion along the Murray Ridge crest was staked and explored for chromite and associated platinum group elements (PGE) (Morrison, 1987). The initial results of geological mapping and rock-chip sampling were not encouraging. The best values returned from 30 select samples returned Pt, Pa, and Ir values of 38, 13, and 13 ppm, respectively. In 2000, M. Morrison (with joint venture partner Doublestar Resources) conducted a program of geological mapping and sampling on the Murray property, in the lower portions of the ultramafic intrusion (Morrison, 2001). The program results failed to find anomalous PGE's in the ultramafic bodies.

In 2011, Nanton Nickel Corp. engaged New-Sense Geophysics Ltd. of Markham Ont. and conducted a 1055 line-kilometer helicopter-borne high resolution magnetic survey. The objective of the survey was to provide high-resolution total field magnetic maps suitable for anomaly delineation and in turn provide a tool for detailed geological evaluation and identification of structural and lithologic trends. Based off of results from the airborne survey, a follow-up reconnaissance geological mapping, prospecting and geochemical sampling program was designed to better assess the areas potential for awaruite mineralization with a total of 31 rock, 25 stream sediment and 13 soil samples being collected. Initial results were encouraging with values of up to 0.25% Ni in rock samples and 881 ppm in soil samples.

5 Geological Setting

5.1 Regional Geology

The Murray Ridge Property is located in the Cache Creek (CC) Terrane which is part of Intermontane Supperterrane, a low metamorphic grade magmatic arc which was accreted to the ancestral North American continental margin in Jurassic time (Figure 3). To the east, the CC Terrane is in fault contact with the Lower Triassic to Early Jurassic island- arc complexes of the Quesnel Terrane comprising of mafic volcanic and sedimentary rocks and coeval plutons. Towards the west, the CC Terrane is juxtaposed against the Stikine Terrane, which has formed in the volcanic-arc environment, similarly to Quesnel Terrane, from Paleozoic to Mesozoic period.

The Cache Creek Terrane is composed of oceanic and marginal-basin assemblages that contain a complex mixture of Paleozoic to Mesozoic aged volcano-sedimentary rocks and abundant ultramafic, mafic to intermediate intrusives of possible ophiolite affinity. Ultramafic and mafic intrusions, and their associated metallogeny, are of the key importance in this report because of their potential to host nickel-iron alloy mineralization. In British Columbia, many of these ultramafic intrusions are considered to be of Alaskan-type, and are generally interpreted to be coeval with intermediate to mafic pre-accretionary arc volcanism in the western Cordillera Many are deformed and strongly serpentinized bodies of questionable origin (Nixon and Hammack, 1991).

The Alaskan-type complexes are named for a distinctive suite of ultramafic-mafic intrusions with a type area in southeastern Alaska. Their geological and petrographic features are summarized by Taylor (1967). The majority these complexes represent crystal cumulates of mantle derived ultramafic magmas. One of the primary attributes of Alaska-type complexes is a crude zonation of rock types

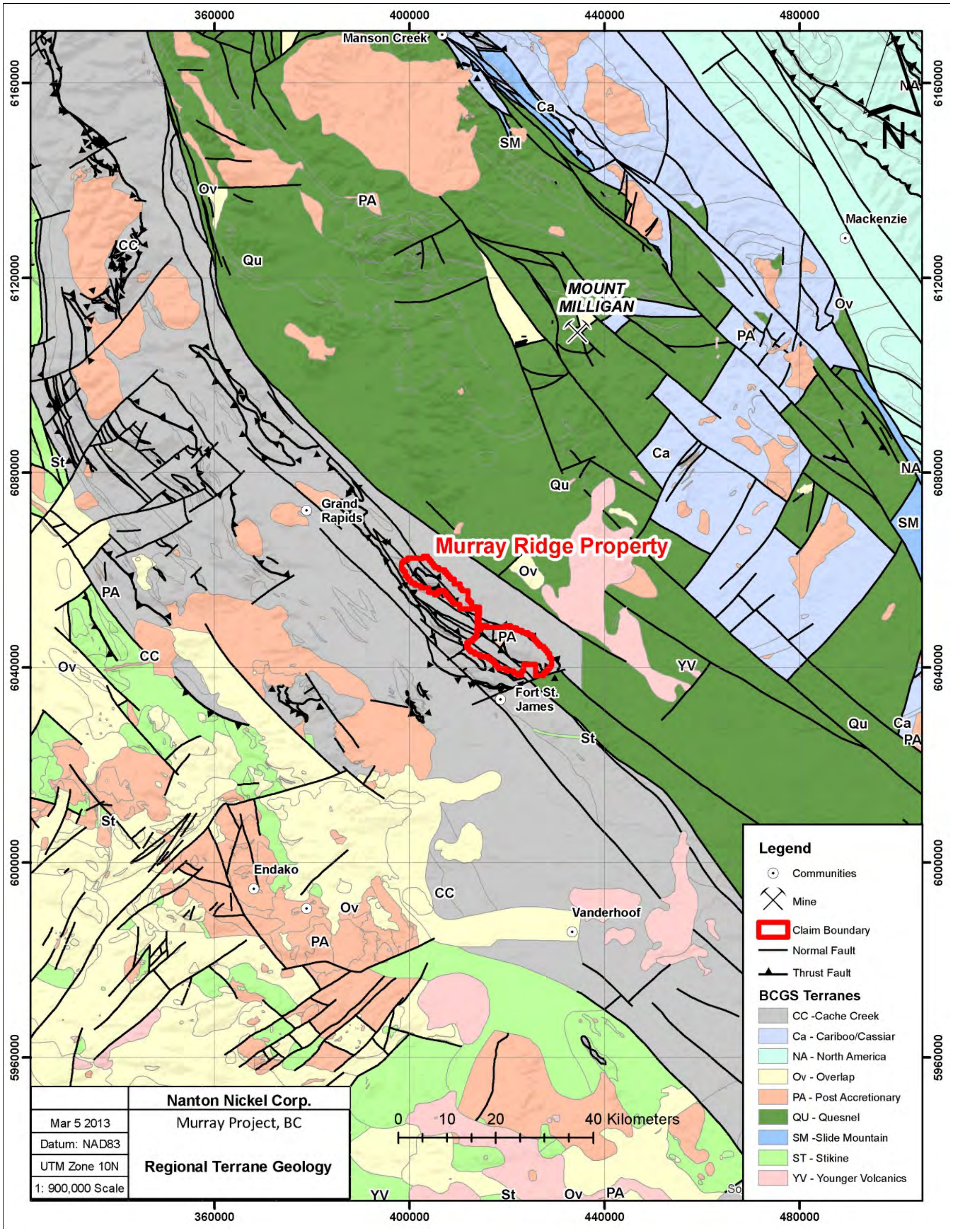

Figure 3. Terrane Geology of Central British Columbia.

ranging from dunite through wehrlite and clinopyroxenite to hornblende pyroxenite and horblendite. In central British Columbia, these ultramafic bodies have commonly gabbro to diorite envelopes that may be comagmatic. Some intrusions also have well developed contact aureoles of lowermost amphibolite grade metamorphism.

5.2 Property Geology and Structure

A geological compilation by the BC Geological survey detailing setting and structure of the Murray Ridge Property is presented in Figure 4 (http://www.empr.gov.bc.ca/Mining/Geoscience/Pages/default.aspx). The stratigraphic units from oldest to youngest are as follows:

The Pope Succession (PnTrCP/PnTrCPma), the oldest unit of the Lower Pennsylvanian to Middle Triassic Cache Creek complex, occurs as a continuous northwest striking sedimentary sequence along the entire length of the property. The lithologies are calcareous sediments and their metamorphic equivalents including limestone and marble. This unit is overlain by clastic sedimentary rocks (PTrCCh) composed of chert, siliceous argillite and other siliceous lithologies.

The supracrustal sequences are invaded by the Trembleur ultramafic intrusions (PTrCTum) covering large, NW trending, fault bounded areas throughout the property. Rocks include pyroxenite, harzburgite, dunite, gabbro and their serpentinized equivalents. These lithologies typically form prominent ridges such as Murray Ridge and Pinchi Mountain, in the southeast and northwest, respectively.

The Ruby Igneous Complex (PTrCRgb) is documented in several localities as a fault bounded unit, both in the southeast and the northwest. Lithologies represented are gabbro to diorite. The spatial and temporal relationship of this unit with ultramafic intrusions suggests a co-magmatic zonation.

The Blueschist unit (PnTrCbs) is rare but can be observed as a structural contact with the ultramafic-mafic intrusions. The dominant lithologies include glacophane schist, chert and metabasalt among others. The blueschist metamorphic lithologies are characterized by high-pressure, low-temperature assemblages considered to form in a subduction zone environment.

The Upper Triassic Takla Group (uTrTca) of calc-alkaline volcanic rocks outcrops towards southeastern margin of the property, at the fault contact with ultramafic-mafic rocks.

The Upper Triassic to Lower Jurassic Tezzeron sequence (uTrJTz/uTrJTzlm) of clastic and calcareous sedimentary rocks is mapped in areas of lower elevations, as northwest striking, fault-bounded basin strata straddling the ultramafic-mafic bodies throughout the region. These units are composed dominantly of argillite, greywacke and conglomerate (uTrJTz), and limestone and marble (uTrJTzlm).

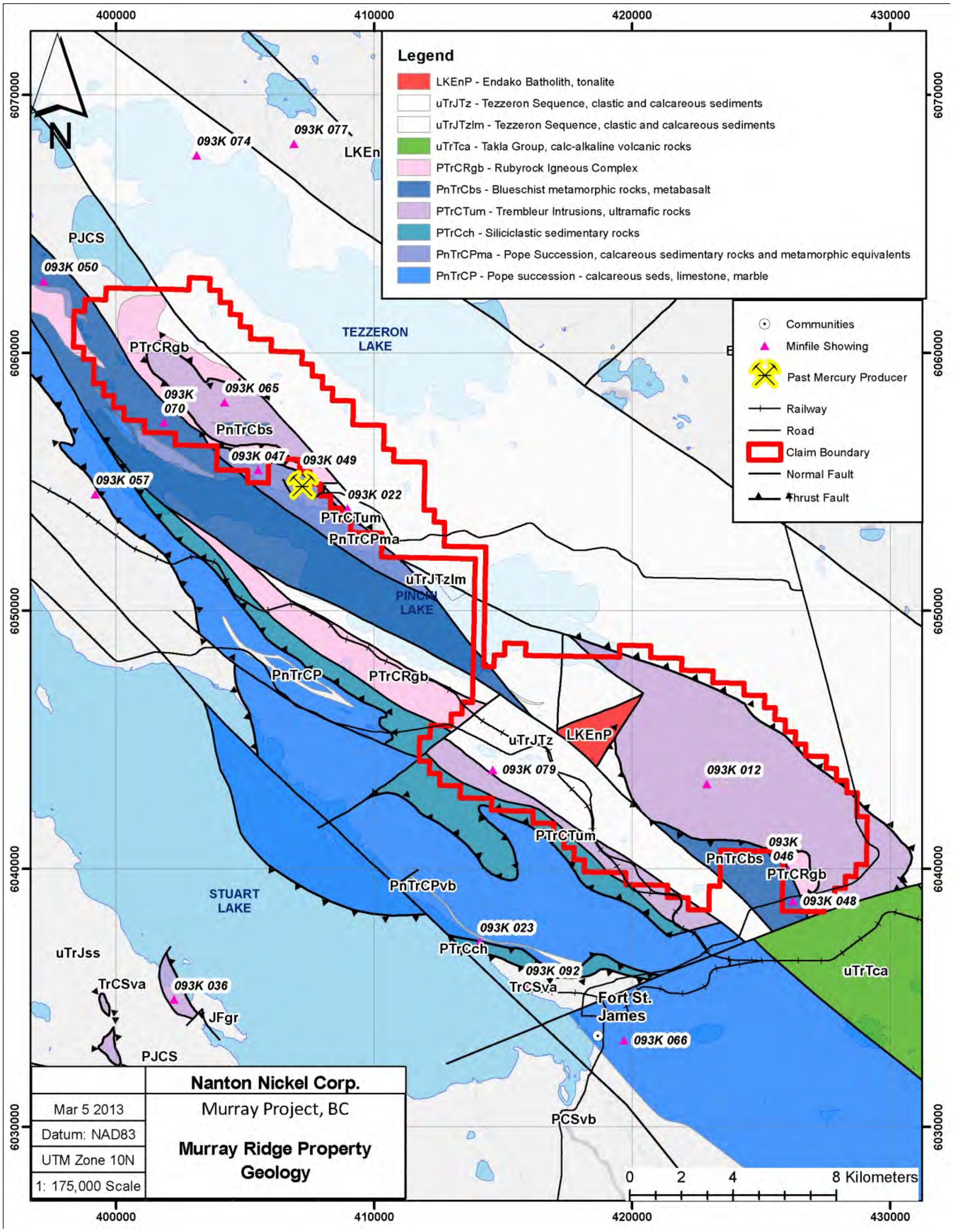

Figure 4. Murray Ridge Property Geology.

Late Cretaceous Endako Batholith (LKEnP) outcrops as a small tonalite plug in the centre of the property.

Quaternary glacial till and gravel cover the entire area with thin veneer on steeper slopes and deeper accumulations in the valley bottoms.

Regional deformation and structural tendency of the Cache Creek Terrane is northwesterly. Within the terrane, the strike of the Cache Creek Group and younger volcano-sedimentary rocks and tectonic fabric and layering of the ultramafic assemblages is northwesterly, which is in conformity with the regional trend. Younger east-northeast cross-faults disrupt the northwest structures with minor strike-slip displacements.

The Pinchi Lake Fault is a regional, northwest striking fault system forming a structural contact between Pennsylvanian-Permian Cache Creek assemblages to the southwest and Upper Triassic-Lower Jurassic Takla group of weakly metamorphosed volcano-sedimentary rocks to the northeast. Many northwesterly striking subsidiary faults with steep dips to west are documented. A number of these structures also mark the contacts between various intrusive units throughout the property (Figure 4).

5.3 Mineralization

The Murray Ridge Property and surrounding areas are historically known for their mercury showings and deposits as documented in BC Minfile and assessment records, as well as non-economic chromite and industrial mineral occurrences (http://www.minfile.gov.bc.ca/Summary.aspx (Figure 4).

Mercury occurrences are as follow: the **Sunshine** (Minfile 93K 046-6039971N, 426051E), the **Calex (**Minfile 93K 048-6038762N, 426229E) and the **Dad** (Minfile 093K 079- 6043850N, 414590E) in the southeast and **Mount Pinchi** (Minfile 93K 070-6057309N 401864E), **CIN** (Minfile 93K 047, 6055470N, 405501E) and **Pinchi Lake Mercury Mine**, in the northwest (Minfile 93K049-6054877N, 407228E). Mercury occurrences are spatially and temporally associated with the Pinchi Fault zone. The host rocks are Cache Creek Group carbonate altered andesite, schist and Trembleur ultramafic intrusives.

Several chromite occurrences are also documented: **MR and MUR showings** (Minfile 93K 012-6043300N, 422887E), in the Murray Ridge area. Chromite showings are found in the northwest striking ultramafic rocks of disrupted ophiolite affinity near the Pinchi Fault system. The dominant hosts are harzburgite and subordinate dunite and orthopyroxene veins.

In addition, several industrial mineral occurrences are recorded in the area, including limestone (**Pinchi Lake Limestone/** 93K 022-6053976N, 408968E) and magnesite (**Pinchi Lake** / 93K 065- 6058094N, 404211E).

5.4 Deposit Types

Nanton Nickel Corp. has undertaken exploration for the nickel-iron alloy mineralization, awaruite, in the ultramafic rocks of the Permian-Triassic Cache Creek complex on the Murray Ridge Property. The properties geological and structural setting is analogous to the Decar Property of First Point Minerals/Cliff Natural Resources, approximately 60 km to the northwest.

Compositionally, awaruite (Ni_2Fe-Ni_3Fe) is comprised of approximately 75% nickel, 25% iron and 0% sulfur, and therefore it is considered “natural steel”. Absence of sulfur allows a concentrate to be shipped directly to steel mills without incurring smelting and refining costs, and minimal environmental problems.

The economics of nickel-iron alloy deposits are potentially very favourable as they avoid the significant cost associated with nickel sulphide deposits required for smelting and environmental mitigation and large amounts of energy and acid required for the processing of laterite nickel deposits.

6 2012 Exploration Program

The 2012 exploration program on the Murray Ridge property consisted of geological prospecting and geochemical sampling of rocks and soils. The objective of the sampling program was to follow up on mapping, prospecting and sampling conducted by Nanton Nickel Corp. in 2011. A total of 55 rock and 142 soils samples were collected from May 5th to 31st and from September 12th to October 12th.

6.1 Summary

In 2011, a reconnaissance geological mapping, prospecting and geochemical sampling program was conducted to assess the areas potential for awaruite mineralization. An aeromagnetic survey had delineated four major and discrete, magnetic-high anomalies (Figures 5&6). In the southeastern surveyed block, the anomalously high magnetic values form several large zones; a broad zone over the Murray Ridge and its surroundings, and a narrow, linear zone to the south. Both have sharp boundaries and northwesterly trends. While low magnetic field values outline narrow, northwest trending zones in between the magnetic-highs. The northwestern block exhibit similar patterns; two strong, narrow, high magnetic intensity anomalies separated by low intensity zones. The transition from high to low magnetics is abrupt. Both, magnetic highs and lows delineate west-northwest to northwest striking zones. A reconnaissance geological mapping and sampling program was conducted with encouraging results.

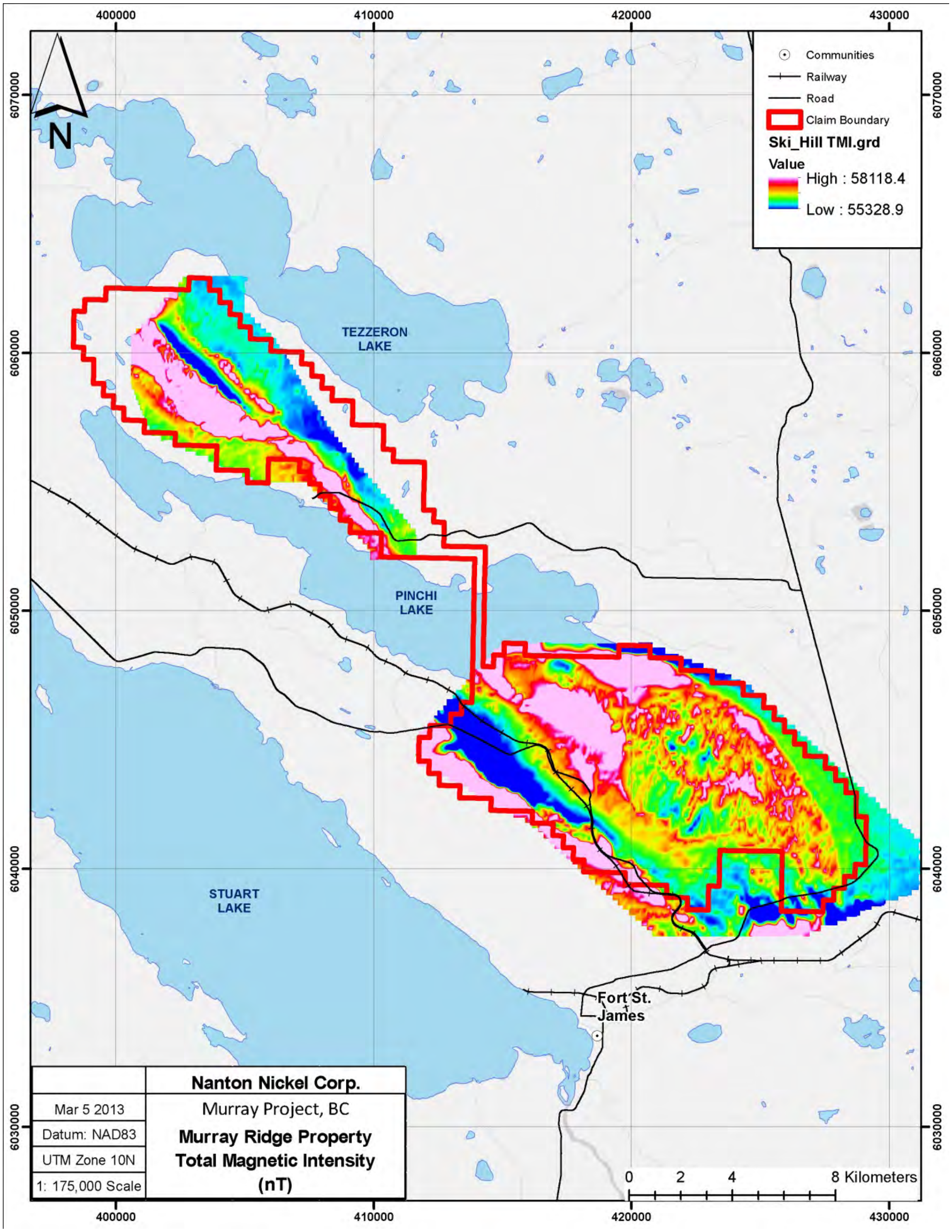

Figure 5. Total Magnetic Intensity Map

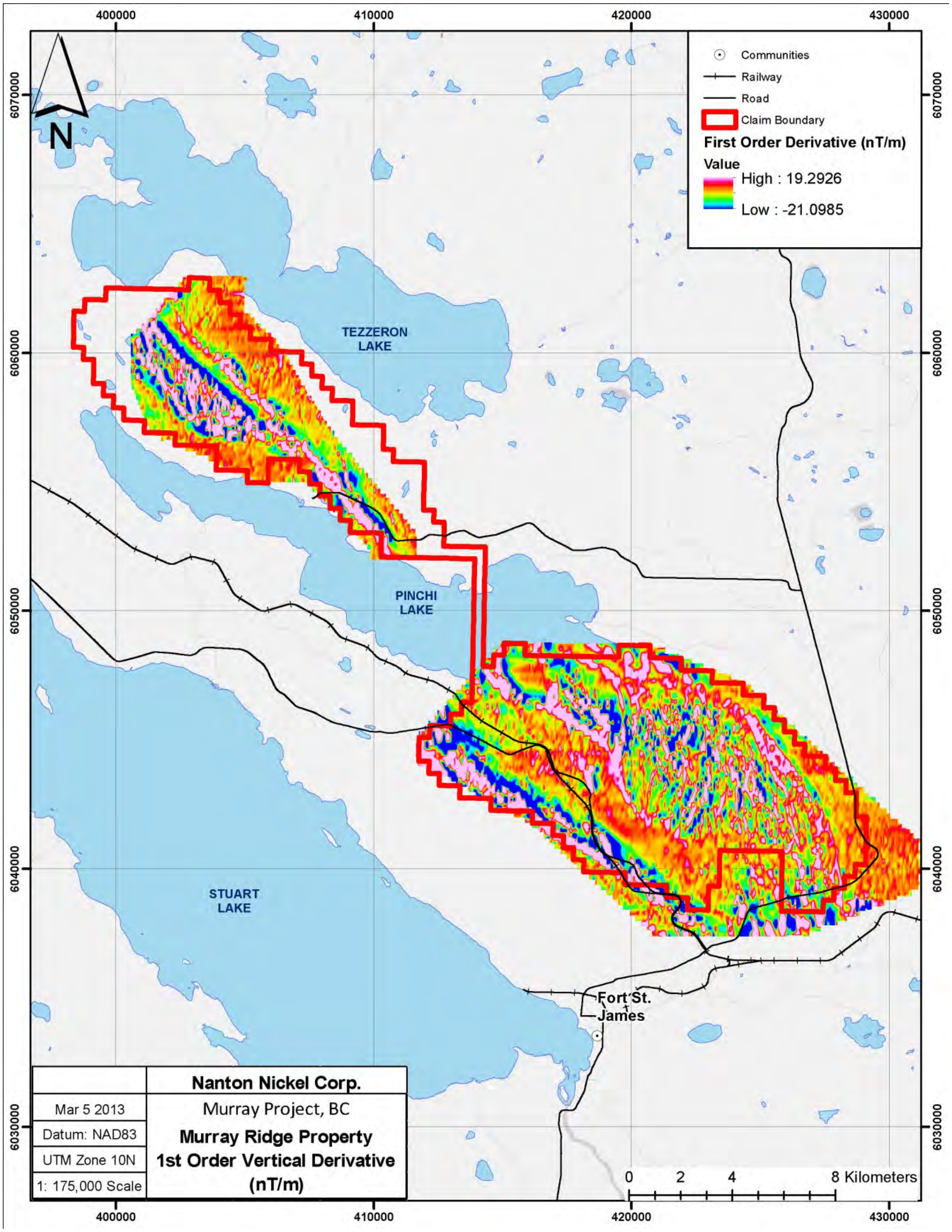

Figure 6. 1st Order Vertical Derivative Map

From May 5th to 31st, and September 12th to October 12th, 2012 follow-up prospecting and geochemical soil sampling of the Murray Property was conducted. Reconnaissance prospecting/rock sampling was carried out in areas with highly anomalous magnetics. Lower elevations areas, especially in the southern part of the property have total absence of bedrock exposure. As such, rock sampling is not representative of all perspective area, but only those with abundant outcrops. A total of 55 rock samples of ultramafic and mafic lithologies were collected.

Soil Sampling was conducted in various portion of the property with a total of 142 samples being collected. Samples were generally collected at approximately 50 meter intervals.

All soil and rock samples were packed into rice bags, sealed and shipped to AGAT Laboratories in Terrace from the Greyhound cargo depot in Fort St James. Rock samples were analyzed for 43 elements using the AGAT's inductively coupled plasma and optical emission spectrometry (ICP-OES) with a strong 4-acid digestion. As well, eight select samples were tested for magnetic using a Davis Tube magnetic separator. Soil samples were analyzed for 45 elements by ICP-OES with a strong 4-acid digestion..

In addition, 54 samples (48 serpentinized ultramafic rocks and six volcanogenic and related sedimentary rocks) were sent for a complete petrographic analysis from transmitted and reflected light microscopy to Vancouver Petrographics Ltd. of Langley BC. Various minerals including awaruite were initially identified on the optical microscope and confirmed via energy dispersive spectral (EDS) qualitative analyses on the scanning electron microscope (SEM). Full results and summary of analytical procedures can be found in Appendix II.

All geochemical sampling results are plotted on property geology map at a scale of 1:175,000 and presented in Figures 7 and 8, (1:10,000 scale maps can be found in Appendix III. Complete assay results for rocks and soils, rock sample descriptions and assay certificates are appended to the end of this report (Appendix I).

6.2 Reconnaissance Prospecting Results

Reconnaissance prospecting and sampling was focused on areas of known prospective geology. The best rock exposures were on the ridge tops and along road cuts. Geological evaluation has confirmed the occurrence of ultramafic-mafic bodies of the Cache Creek Complex Trembleur Intrusions. Ultramafic rocks typically form prominent, rugged, outcrop covered ridges with sparse vegetation. Rocks are dominantly represented by harzburgite (95%) with subordinate dunite layering (5%), and rare orthopyroxenite and gabbro. All ultramafic lithologies are weakly to moderately magnetic and rarely non-magnetic.

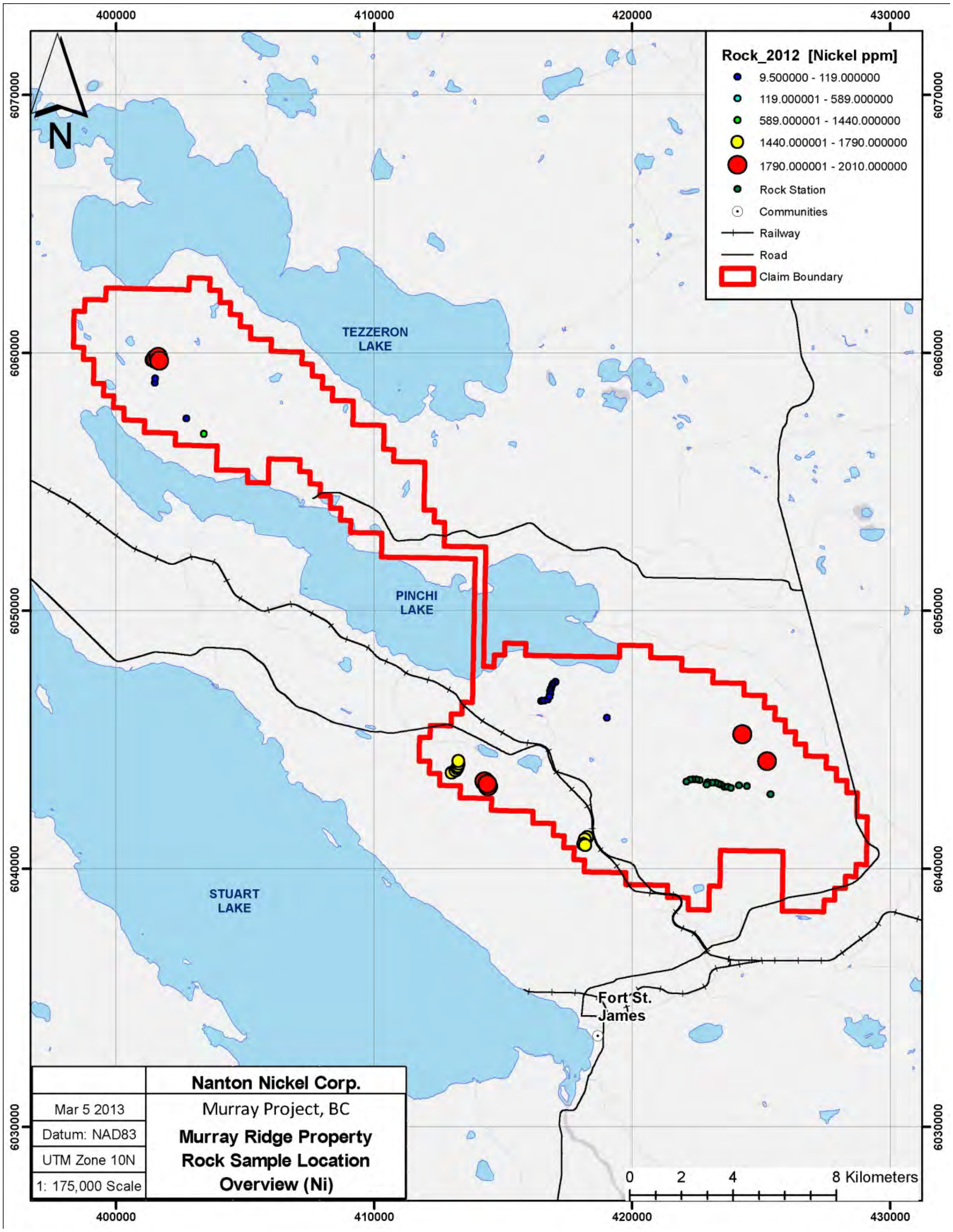

Figure 7. Rock Sample Locations

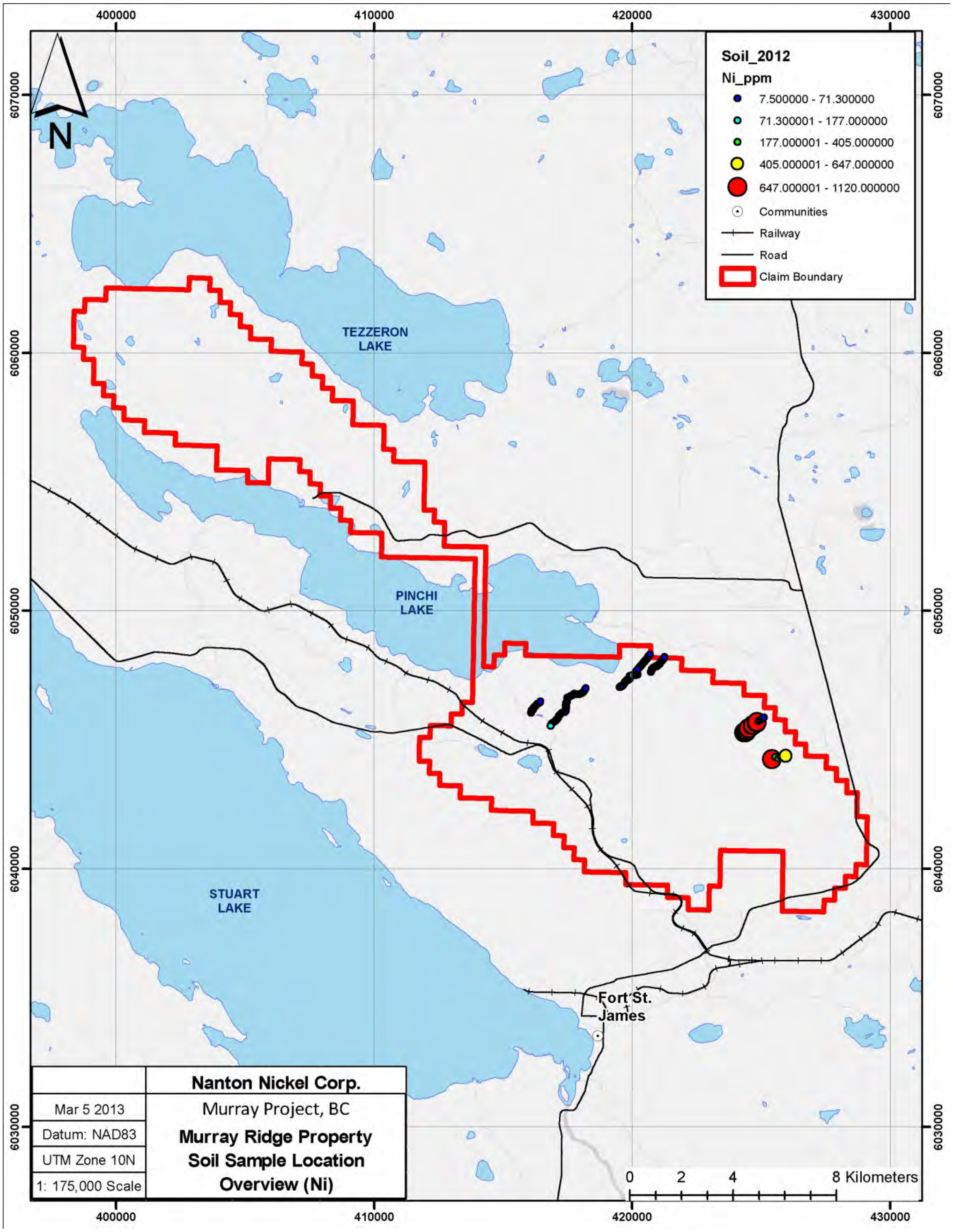

Figure 7: Soil Sample Locations

The ICP-OES results of the 55 rock sample collected returned nickel values ranging from 9.5 to 2110 ppm nickel. Of these, 38 of them have Ni values of greater than 1000 ppm. The eight rocks tested for magnetic content, seven returned values of less than 1% magnetic content. The eighth sample returned a highly anomalous value of 12.4% magnetic content.

Polished thin section and EDS qualitative analyses of samples confirmed the presence of awaruite mineralization at Murray Ridge. In total 38 of the 54 samples analyzed were found to have trace amounts of awaruite mineralization ranging in sizes up to 20 microns. In addition to awaruite; native copper, native iron and native tin have all been confirmed via electron microscopy and qualitative x-ray analyses. Another major ore mineral identified within the suite is chromite. Sulphides such as pentlandite, chalcopyrite, bornite, and pyrite are present at trace levels. Oxides such as magnetite and wustite are common within the all rocks analyzed. Two modes of occurrence for the awaruite were identified with the dominant mode occurring as an alteration product of pentlandite, and this is generally accompanied by native copper. More rarely the awaruite occurs as primary igneous inclusions within either chromite or olivine.

The ICP-OES results from the 142 soil samples return nickel values ranging from 7.5 to 1120 ppm nickel, with the majority of the more anomalous values occurring in samples taken sub-parallel to a creek in the south-eastern portion of the property

7 Conclusions

Nanton Nickel Corp. is the first company to explore the Murray Ridge property for nickel-iron alloy (awaruite) mineralization in the ultramafic rocks of the Permian-Triassic Cache Creek Complex. The analogous suite of ultramafic intrusions are hosts to widely disseminated, coarse grained awaruite mineralization on the Decar property of the First Point Minerals, approximately 60 km northwest.

The region in underlain by a complex mixture of Permian to Cretaceous rocks characterized by Cache Creek Complex clastic and calcareous sedimentary assemblages and Trembleur ultramafic-mafic and Rubyrock gabbro to diorite intrusions. Cache Creek Complex rocks are in structural contacts with younger Jurassic-Triassic clastic and calcareous sediments, and the Cretaceous Endako Batholith. The region has a strong northwest trending structural fabric of faults including Pinchi Lake fault system, historically significant for its associated mercury occurrences.

Several northwest trending, linear magnetic-high (TMI) anomalies have been delineated in both the northwestern and southeastern portions of the property. These anomalies exhibit an excellent correspondence with the previously mapped northwest striking ultramafic intrusions. The sharp transitions from high to low magnetic signatures coincide with the structural contacts of ultramafics-mafics (high magnetic susceptibility) and sediments (low magnetic susceptibility). High resolution aeromagnetic survey proved to be an effective geological mapping tool in defining prospective areas for further exploration.

Geological mapping, prospecting and geochemical soil sampling have confirmed the occurrence of favourable geology and structure on the property, and localized serpentinization associated with ultramafic rocks.

The 2012 field work program resulted in fairly good rock sampling coverage of the lower level ultramafic rocks as supported by magnetics to the southwest of the main Murray Ridge ultramafic body. However substantial areas of the main Murray Ridge ultramafic body with relatively good outcrop abundance remain under sampled and under prospected. The insightful results of the petrographic investigation confirmed the potential for these rocks to generate and host nickel alloy mineralization.

8 Recommendations

Geological mapping, prospecting, and results of rock and soil geochemical sampling of the Murray Ridge property have confirmed the presence of awaruite in ultramafic rocks. However, further prospecting, rock sampling, geological mapping and possibly trenching in areas of relatively thin till cover should be carried out on a grid like basis such that the potential for improved awaruite mineralization within any sub-horizons of the relatively well exposed higher-elevation areas of the main body can be assessed. Continued systematic exploration of the main ultramafic body underlying Murray Ridge proper is recommended. Follow-up petrographic examination and micro-probe analysis of prospective occurrences is also recommended.

9 References

BC Minfile Records: http://minfile.gov.bc.ca/searchbasic.aspx

Digital Geology Map of British Columbia: Tile NN10 Central B.C., B.C. Ministry of Energy and Mine, GeoFile 2005-6, by Massey, N.W.D., MacIntyre, D.G., Desjardins, P.J and Cooney, R.T.
http://www.empr.gov.bc.ca/Mining/Geoscience/Pages/default.aspx

Regional Geochemical Surveys (RGS) of BC Geological Survey:
http://www.em.gov.bc.ca/Mining/Geoscience/Geochemistry/RegionalGeochemistry/Pages/93k.aspx

Allan, M. 2011. First Point, Cliffs rev up Decar nickel-iron project in BC. Northern Miner, October 3-9, 2011, Vol. 97, No.33.

Armstrong, J.E. 1949. Fort St. James Map-Area, Cassiar and Cost Districts, British Columbia, Department of Mines and Technical Surveys, GSC Memoir 252, 210 pp.

Bacon, W.R. 1965. Geochemical Report on the CIN 1, CIN2 and CIN3 Claim Groups, Pinchi Lake area, BC. Assessment Report #00686.

Duba, Daria. 2011. Geological and Geochemical Assessment Report on the Murray Ridge Property. Assessment Report #32715

Heddle, D.W. 1966a. Geochemical Survey Report on the Merc. No.1 and Merc No.2 Claim Groups, Pinchi Lake Area, Omineca Mining Division, British Columbia, Assessment Report #00716.

Heddle, D.W. 1966b. Geochemical Survey Report on the Will Group No.1 Claims, Omineca Mining Division, British Columbia, Assessment Report #00719.

Heddle, D.W. 1966c. Geochemical Survey Report on the Ban No.2 Claim Group, Omineca Mining Division, British Columbia, Assessment Report #00721

Heddle, D.W. 1966d. Geochemical Survey Report on the Pinchi No.1 Claim Group, Pinchi Lake area, Omineca Mining Division, British Columbia, Assessment Report #00774.

Morrison, M.S. 1983. Prospecting Report on the Midnight #1-4 Mineral Claims, Fort St. James Area, Omineca Mining Division, British Columbia, Assessment Report #11,213.

Morrison, M.S. 1987. Preliminary Geology on the MR-1-11 Mineral Claims, Fort St. James Area, Omineca Mining Division, British Columbia, Assessment Report #16,532.

Morrison, M.S. 2001. Geological Assessment Report on the Mur Claim Group, Fort St. James Area, Omineca Mining Division, British Columbia, Assessment Report #26,628.

Nixon, G.T. and Hammack, J.L. 1991. Metallogeny of ultramafic-mafic rocks in British Columbia with emphasis on the platinum-group element; *in* Ore Deposits, Tectonics and Metallogeny in the Canadian Cordillera, MEMPR, British Columbia, Paper 1991-4, pages 125-161.

Taylor, H.P.1967. The Zoned Ultramafic Complexes of Southeastern Alaska; *in* Ultramafic and Related Rocks, Wyllie, P.J., Editor, John Wiley & Sons Inc., pages 97-121.

Whittaker, P.J. and Watkinson, D.H. 1981: Chromite in Some Ultramafic Rocks of the Cache Creek Group, British Columbia, Geological Survey Canada, Paper 01, pages 349-355.

Yakovenko, A.2011. Logistics and Interpretation Report for the High Resolution Helicopter Magnetic Airborne Geophysical Survey, Fort St. James area, New-Sense Geophysics Ltd., Unpublished report for Nanton Nickel Corp (Appendix I).

10 Statement of Expenditures

Exploration Work type	Comment	Days		
Personnel (Name)* / Position	**Field Days (list actual days)**	**Days**	**Rate**	**Subtotal***
B. Muloin - Senior geologist	May 5 - 31	18	$450.00	$8,100.00
G. Muloin - field assistant	May 5 - 31, Sept 12 - 13	20	$200.00	$4,000.00
D. Perreault - Senior field technician	Sept 12, 13 and Oct 10, 11, 12	5	$300.00	$1,500.00
J. Perreault - Senior field technician	Oct 10, 11, 12	3	$300.00	$900.00
R. Haslinger - Senior geologist	May 5, Sept 12, Oct 10	3	$800.00	$2,400.00
				$16,900.00
Office Studies	**List Personnel (note - Office only, do not include field days)**			
Literature search			$0.00	$0.00
Database compilation			$0.00	$0.00
Computer modelling			$0.00	$0.00
Reprocessing of data, GIS graphics	G. Giles	30.0	$85.00	$2,550.00
General research			$0.00	$0.00
Report preparation	J. Walther	8.1	$800.00	$6,500.00
Other (specify)			$0.00	$0.00
				$9,050.00
Ground Exploration Surveys	**Area in Hectares/List Personnel**			
Geological mapping				
Regional		*note: expenditures here*		
Reconnaissance		*should be captured in Personne*		
Prospect		*field expenditures above*		
Underground	Define by length and width			
Trenches	Define by length and width			
				$0.00
Geochemical Surveying	**Number of Samples**	**No.**	**Rate**	**Subtotal**
Drill (cuttings, core, etc.)			$0.00	$0.00
Stream sediment			$0.00	$0.00
Soil	*note: This is for assays or*	142.0	$17.00	$2,414.00
Rock	*laboratory costs*	56.0	$20.00	$1,120.00
Water			$0.00	$0.00
Biogeochemistry			$0.00	$0.00
Whole rock			$0.00	$0.00
Petrology	Polished thin section mineralogy	54.0	$275.00	$14,850.00
Other (specify)			$0.00	$0.00
				$18,384.00
Drilling	**No. of Holes, Size of Core and Metres**	**No.**	**Rate**	**Subtotal**
Diamond			$0.00	$0.00
Reverse circulation (RC)			$0.00	$0.00
Rotary air blast (RAB)			$0.00	$0.00
Other (specify)			$0.00	$0.00
				$0.00
Transportation		**No.**	**Rate**	**Subtotal**
Airfare			$0.00	$0.00
Taxi			$0.00	$0.00
truck rental	4 x 4	5.00	$100.00	$500.00
kilometers	4 x 4	547.00	$0.40	$218.80
ATV		48.00	$100.00	$4,800.00
fuel			$0.00	$0.00
Helicopter (hours)			$0.00	$0.00
Fuel (litres/hour)			$0.00	$0.00
Other			$0.00	$0.00
				$5,518.80
Accommodation & Food	**Rates per day**			
Hotel			$0.00	$0.00
Camp			$0.00	$0.00
Meals	day rate or actual costs-specify		$0.00	$0.00
				$0.00
Miscellaneous				
Telephone			$0.00	$0.00
Other (Specify)			$0.00	$0.00
				$0.00
Equipment Rentals				
Field Gear (Specify)			$0.00	$0.00
Other (Specify)			$0.00	$0.00
				$0.00
Freight, rock samples				
	bus and courier		$0.00	$145.00
			$0.00	$120.40
				$265.40
TOTAL Expenditures				*$50,118.20*

11 Statement of Qualifications

I, John H. Walther, P.Geo, of 302-1066 W. 13th Ave, Vancouver, B.C., V6H1N2, do hereby certify that:

- I am a consulting geologist with Geominex Consultants Inc., with an office at 1205-675 W. Hastings Street, Vancouver, British Columbia.
- I am a graduate of Memorial University of Newfoundland with a Bachelor of Science in Earth Sciences in 2005.
- I am a member of good standing with the Professional Engineers and Geoscientists of Newfoundland and Labrador (PEGNL –Member No.05794).
- I have practiced my profession continuously since my graduation in 2005 and have been involved in projects and evaluations exploring for gold and base metals in Canada, Albania, Colombia, and Fiji.
- I am an author of the Technical Report titled "Geological and Geochemical Assessment Report on the Murray Ridge Property, Omenica Mining Division, British Columbia" dated March 25, 2011.
- As of the date of this report, I have not visited the Murray Ridge Property
- I am a director of Nanton Nickel Corp.
- The information, opinions and recommendations in this report are based on my knowledge of the Murray Ridge Property through review of all available reports and data on the property and exploration work on the property in 2011 and 2012.
- As of the date of this report I am not aware of any changes in fact or circumstances available to me as regards the subject matter of this report which materially affects the content of the report or the conclusions reached.

Dated on March 31, 2013 at Vancouver, BC, Canada.

John Walther

John H. Walther, P.Geo

Appendix I

SAMPLE DESCRIPTIONS

ASSAY CERTIFICATES

Sample Id	Type	Easting	Northing	Description
5523060	ROCK	418266	6041223	Serpentine boulder, magnetic, antigorite
5523061	ROCK	418162	6041132	Large, >2' boulder, serpentine, magnetic, is on top of steep ridge
5523062	ROCK	418118	6041083	Outcrop, serpentine, locally magnetic,
5523063	ROCK	418100	6041006	Outcrop, serpentine, magnetic,
5523064	ROCK	418103	6040955	Outcrop, serpentine, magnetic,
5523065	ROCK	418177	6040908	Outcrop, serpentine, magnetic,
5523066	ROCK	413007	6043717	Out crop, serpentine, magnetic
5523067	ROCK	413157	6043803	Out crop continuous, serpentine, not magnetic to here, weak magnetic
5523068	ROCK	413224	6043890	Serpentine, weak magnetic
5523069	ROCK	413263	6043958	Serpentine, weak magnetic
5523070	ROCK	413292	6044054	Outcrop, serpentine, weak magnetic,
5523071	ROCK	413277	6044177	Outcrop, gabbro medium grained, magnetic,
5523072	ROCK	414274	6043390	Top of ridge, gabbro has thin <3cm garnerite colored veinlets, spotty weak

				magnetic
5523073	ROCK	414413	6043310	Out crop, gabbro, magnetic
5523074	ROCK	414491	6043233	Out crop, gabbro, magnetic
5523075	ROCK	414549	6043186	Out crop, gabbro, magnetic
5523076	ROCK	414517	6043188	Out crop, gabbro, magnetic
5523077	ROCK	414444	6043176	Out crop, gabbro, magnetic
5523078	ROCK	414427	6043184	Out crop, gabbro, magnetic
5523079	ROCK	414444	6043255	Out crop, gabbro, magnetic
5523080	ROCK	414396	6043279	Out crop, gabbro, magnetic
5523081	ROCK	419029	6045848	Road, tonalite boulder, magnetic
5523083	ROCK	416479	6046498	Out crop, grey andesite, not magnetic
5523084	ROCK	416504	6046505	Out crop, grey andesite, not magnetic
5523085	ROCK	416592	6046508	Out crop, grey andesite, not magnetic
5523086	ROCK	416746	6046552	Out crop, grey andesite, not magnetic
5523087	ROCK	417026	6047237	Out crop, grey andesite, not magnetic
5523088	ROCK	416943	6047162	Out crop, grey andesite, not magnetic
5523089	ROCK	416896	6047087	Out crop, grey

				andesite, not magnetic
5523090	ROCK	416863	6046982	Out crop, grey andesite, not magnetic
5523091	ROCK	416830	6046895	Out crop, grey andesite, not magnetic
5523092	ROCK	416833	6046785	Out crop, grey porphyry andesite, not magnetic
5523093	ROCK	416803	6046660	Out crop, grey andesite, not magnetic
5523094	ROCK	424267	6045212	Out crop, pyroxenite, not magnetic
5523095	ROCK	425227	6044166	Out crop, pyroxenite, not magnetic
5523096	ROCK	403419	6056852	Road outcrop, ankerite / ferrodolomite looking rock with green to blue stain on fractures, possible garnerite
5523097	ROCK	402740	6057452	Road outcrop, green andesite
5523098	ROCK	401509	6058823	Road outcrop, green andesite
5523099	ROCK	401522	6058998	Road outcrop, green andesite
5523100	ROCK	401386	6059720	Out crop, andesite
5523101	ROCK	401547	6059757	out crop, andesite, weak magnetic lenses
5523102	ROCK	401639	6059829	Pyroxenite, not magnetic
5523103	ROCK	401690	6059689	Pyroxenite, not magnetic
E5523104	ROCK	403371	6057600	Gabbro, slightly magnetic,

E5523105	ROCK	403379	6057622	Gabbro, not magnetic, apple green fracture filling
E5523106	ROCK	403431	6057731	Gabbro, not magnetic
E5523107	ROCK	403459	6057762	Gabbro, not magnetic
E5523108	ROCK	403453	6057832	Gabbro, slightly magnetic
E5523109	ROCK	403438	6057870	Gabbro, slightly magnetic, apple green fracture filling
E5523110	ROCK	403898	6057553	Gabbro, not magnetic,
E5523111	ROCK	403887	6057628	Gabbro, not magnetic
E5523112	ROCK	403862	6057695	Gabbro, not magnetic
E5523113	ROCK	403809	6057748	Gabbro, not magnetic
E5523114	ROCK	404063	6056830	limestone, marble
E5523115	ROCK	404042	6056806	Serpentine dyke, magnetic
5523310	SOIL	417435	6046164	Road junction, brown mineral soil
5523311	SOIL	417444	6046243	Black soil
5523312	SOIL	417451	6046286	Brown mineral soil
5523313	SOIL	417436	6046353	Black soil
5523314	SOIL	417448	6046423	Red mineral soil
5523315	SOIL	417474	6046471	Black soil
5523316	SOIL	417488	6046537	Brown mineral soil
5523317	SOIL	417495	6046617	Brown clay
5523318	SOIL	417542	6046644	Black soil
5523319	SOIL	417585	6046670	Black soil
5523320	SOIL	417629	6046691	Brown mineral soil
5523321	SOIL	417680	6046711	Mineral soil
5523322	SOIL	417717	6046730	Mineral soil
5523323	SOIL	417761	6046773	Mineral soil
5523324	SOIL	417844	6046756	Mineral soil
5523325	SOIL	417875	6046746	Mineral soil

5523326	SOIL	417948	6046749	Mineral soil
5523327	SOIL	418004	6046773	Mineral soil
5523328	SOIL	418053	6046796	Red mineral soil
5523329	SOIL	418099	6046829	Mineral soil
5523330	SOIL	418131	6046863	Mineral soil
5523331	SOIL	418163	6046909	Mineral soil
5523332	SOIL	418185	6046956	Mineral soil
5523333	SOIL	418212	6046992	Mineral soil
5523334	SOIL	417436	6046120	Mineral soil
5523335	SOIL	417418	6046097	Clay
5523336	SOIL	417382	6046063	Clay
5523337	SOIL	417308	6046047	Clay
5523338	SOIL	417258	6046016	Clay
5523339	SOIL	417218	6045978	Clay
5523340	SOIL	417186	6045938	Clay
5523341	SOIL	417161	6045899	Clay
5523342	SOIL	417143	6045848	Mineral soil
5523343	SOIL	417112	6045806	Clay
5523344	SOIL	417076	6045769	Clay
5523345	SOIL	417039	6045731	Clay
5523346	SOIL	416986	6045692	Clay
5523347	SOIL	416918	6045649	Mineral soil
5523348	SOIL	416890	6045607	Clay
5523349	SOIL	416851	6045572	Clay
5523350	SOIL	416844	6045529	Clay
5523351	SOIL	416099	6046030	Brown mineral soil
5523352	SOIL	416093	6046074	Brown clay
5523353	SOIL	416104	6046129	Brown clay
5523354	SOIL	416153	6046143	Brown clay
5523355	SOIL	416173	6046213	Brown clay
5523356	SOIL	416203	6046247	Brown clay
5523357	SOIL	416220	6046278	Brown clay
5523358	SOIL	416270	6046305	Brown clay
5523359	SOIL	416310	6046352	Brown clay
5523360	SOIL	416345	6046386	Brown clay & mineral soil
5523361	SOIL	416376	6046405	Brown mineral soil with clay
5523362	SOIL	416419	6046438	Brown mineral soil
5523363	SOIL	416460	6046473	Brown mineral soil
5523436	SOIL	425274	6044177	Clay, brown
5523437	SOIL	425329	6044194	Red mineral soil
5523438	SOIL	425366	6044222	Clay, brown

5523439	SOIL	425420	6044253	Clay, brown
5523440	SOIL	425454	6044337	Clay, brown
5523441	SOIL	425503	6044398	Black mineral soil
5523442	SOIL	425556	6044332	Boulder field, brown mineral soil
5523443	SOIL	425629	6044287	Clay, black
5523444	SOIL	425670	6044278	Humus
5523445	SOIL	425725	6044304	Clay, black
5523446	SOIL	425751	6044344	Clay, brown
5523447	SOIL	425803	6044354	Humus
5523448	SOIL	425865	6044346	Clay, brown
5523449	SOIL	425920	6044335	Clay, brown
5523450	SOIL	425954	6044381	Clay, black
5523451	SOIL	425995	6044435	Humus
5523364	SOIL	424311	6045240	Boulder field, brown mineral soil
5523365	SOIL	424341	6045278	Boulder field, brown mineral soil
5523366	SOIL	424383	6045290	Boulder field, brown mineral soil
5523367	SOIL	424422	6045317	Boulder field, brown mineral soil
5523368	SOIL	424456	6045371	Boulder field, brown mineral soil
5523369	SOIL	424489	6045406	Boulder field, brown mineral soil
5523370	SOIL	424516	6045442	Boulder field, brown mineral soil
5523371	SOIL	424568	6045471	Boulder field, brown mineral soil
5523372	SOIL	424604	6045506	Boulder field, brown mineral soil
5523373	SOIL	424653	6045528	Grey clay
5523374	SOIL	424682	6045567	Boulder field, brown mineral soil
5523375	SOIL	424729	6045601	Boulder field,

				brown mineral soil
5523376	SOIL	424779	6045616	Brown mineral soil
5523377	SOIL	424824	6045651	Grey clay
5523378	SOIL	424838	6045686	Grey clay
5523379	SOIL	424895	6045714	Brown mineral soil
5523380	SOIL	424931	6045743	Grey clay
5523381	SOIL	424977	6045759	Grey clay
5523382	SOIL	425024	6045787	Tan clay
5523383	SOIL	425060	6045834	Brown mineral soil
5523384	SOIL	425102	6045855	Tan clay
5523385	SOIL	420722	6047633	Brown mineral soil
5523386	SOIL	420760	6047698	Brown mineral soil
5523387	SOIL	420776	6047749	Brown mineral soil
5523388	SOIL	420809	6047784	Brown mineral soil
5523389	SOIL	420870	6047813	Clay, brown
5523390	SOIL	420916	6047841	Clay, red
5523391	SOIL	420955	6047850	Brown mineral soil
5523392	SOIL	421002	6047893	Clay, brown
5523393	SOIL	421036	6047906	Clay, brown
5523394	SOIL	421084	6047945	Clay, red
5523395	SOIL	421105	6047998	Clay, brown, & mineral soil
5523396	SOIL	421138	6048029	Brown mineral soil
5523397	SOIL	421174	6048071	Clay, brown
5523398	SOIL	421203	6048123	Brown mineral soil
5523399	SOIL	421243	6048172	clay, brown
5523400	SOIL	421264	6048202	Brown mineral soil
5523401	SOIL	420248	6047761	Brown mineral soil
5523402	SOIL	420284	6047803	Clay, brown
5523403	SOIL	420318	6047839	Clay, brown
5523404	SOIL	420342	6047875	Clay, brown
5523405	SOIL	420382	6047915	Clay, brown
5523406	SOIL	420416	6047949	Red mineral soil

5523407	SOIL	420447	6047988	Brown mineral soil
5523408	SOIL	420491	6048030	Clay, brown
5523409	SOIL	420505	6048071	Clay, brown
5523410	SOIL	420545	6048097	Clay, brown
5523411	SOIL	420574	6048139	Brown mineral soil
5523412	SOIL	420611	6048175	Brown mineral soil
5523413	SOIL	420633	6048236	Clay, brown
5523414	SOIL	420664	6048259	Clay, brown
5523415	SOIL	420701	6048303	Clay, brown
5523416	SOIL	419516	6047033	Clay, brown
5523417	SOIL	419560	6047048	Brown mineral soil
5523418	SOIL	419582	6047083	Clay, brown
5523419	SOIL	419645	6047103	Clay, brown
5523420	SOIL	419699	6047192	Clay, brown
5523421	SOIL	419721	6047233	Brown mineral soil
5523422	SOIL	419749	6047276	Clay, brown
5523423	SOIL	419796	6047310	Brown mineral soil
5523424	SOIL	419847	6047317	Brown mineral soil
5523425	SOIL	419903	6047350	Clay, brown
5523426	SOIL	419897	6047400	Brown mineral soil
5523427	SOIL	419914	6047464	Clay, brown
5523428	SOIL	419959	6047490	Clay, brown
5523429	SOIL	420014	6047499	Clay, brown
5523430	SOIL	420124	6047502	Clay, brown
5523431	SOIL	420222	6047526	Brown mineral soil
5523432	SOIL	420158	6047579	Clay, brown
5523433	SOIL	420156	6047644	Brown mineral soil
5523434	SOIL	420188	6047687	Brown mineral soil
5523435	SOIL	420221	6047729	Clay, brown

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ATTENTION TO: ADAM CEGIELSKI

PROJECT NO: Murray

AGAT WORK ORDER: 12D612532

DATE REPORTED: Aug 15, 2012

PAGES (INCLUDING COVER): 20

Should you require any information regarding this analysis please contact your client services representative at (905) 501-9998

*NOTES

All samples are stored at no charge for 90 days. Please contact the lab if you require additional sample storage time.

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Certificate of Analysis

AGAT WORK ORDER: 12D612532
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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

4 Acid Digest - Metals Package, ICP-OES finish (201070)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu	Fe	Ga
	Unit:	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm
Sample Description	RDL:	0.5	0.01	1	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5	0.01	5
E5523061 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523061 Non Mag		<0.5	0.36	3	4	<0.5	<1	0.85	<0.5	<1	89.4	840	25.2	4.44	<5
E5523063 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523063 Non Mag		0.5	0.55	5	2	<0.5	<1	3.42	<0.5	<1	78.9	1570	144	4.75	<5
E5523064 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523064 Non Mag		<0.5	0.57	4	3	<0.5	<1	1.27	<0.5	<1	89.9	1080	47.7	4.91	<5
E5523065 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523065 Non Mag		<0.5	0.37	3	<1	<0.5	<1	0.51	<0.5	<1	88.4	932	11.2	4.66	<5
E5523101 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523101 Non Mag		<0.5	0.21	2	4	<0.5	<1	0.13	<0.5	<1	83.5	587	8.4	4.23	<5
E5523102 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523102 Non Mag		<0.5	0.18	2	1	<0.5	<1	0.24	<0.5	<1	88.7	712	7.3	4.03	<5
E5523103 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523103 Non Mag		<0.5	0.20	2	1	<0.5	<1	0.26	<0.5	<1	86.2	694	9.4	3.91	<5
E5523115 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523115 Non Mag		<0.5	0.15	3	<1	<0.5	<1	0.06	<0.5	<1	80.5	704	6.5	3.10	<5

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AGAT WORK ORDER: 12D612532

PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION

ATTENTION TO: ADAM CEGIELSKI

4 Acid Digest - Metals Package, ICP-OES finish (201070)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb	Rb	S	Sb
	Unit:	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm
Sample Description	RDL:	1	0.01	2	1	0.01	1	0.5	0.01	0.5	10	1	10	0.005	1
E5523061 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523061 Non Mag		1	<0.01	<2	<1	19.4	1040	<0.5	0.03	1830	28	<1	<10	0.021	<1
E5523063 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523063 Non Mag		<1	<0.01	<2	1	18.3	1120	<0.5	0.06	1380	20	<1	<10	0.043	2
E5523064 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523064 Non Mag		<1	<0.01	<2	1	21.1	1160	<0.5	0.05	1790	17	<1	<10	0.023	<1
E5523065 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523065 Non Mag		<1	<0.01	<2	<1	21.5	1050	<0.5	0.03	1830	28	<1	<10	0.016	1
E5523101 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523101 Non Mag		<1	<0.01	<2	<1	18.2	890	<0.5	0.03	2000	44	<1	<10	0.008	<1
E5523102 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523102 Non Mag		<1	<0.01	<2	1	20.2	988	<0.5	0.02	1930	28	<1	<10	0.012	<1
E5523103 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523103 Non Mag		<1	<0.01	<2	<1	18.4	908	<0.5	0.02	1860	12	<1	<10	0.005	<1
E5523115 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523115 Non Mag		<1	<0.01	2	<1	18.3	390	<0.5	0.01	1970	<10	<1	<10	0.012	<1

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AGAT WORK ORDER: 12D612532
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

4 Acid Digest - Metals Package, ICP-OES finish (201070)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

Sample Description	Analyte:	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn
	Unit:	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	RDL:	1	10	5	1	10	10	5	0.01	5	5	0.5	1	1	0.5
E5523061 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523061 Non Mag		10	23	<5	26	<10	<10	5	<0.01	<5	<5	42.8	<1	<1	23.3
E5523063 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523063 Non Mag		23	25	<5	7	<10	<10	<5	0.02	<5	5	78.4	<1	<1	18.4
E5523064 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523064 Non Mag		12	24	<5	22	<10	<10	<5	0.01	6	<5	52.8	<1	<1	21.9
E5523065 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523065 Non Mag		8	21	<5	7	<10	<10	<5	0.01	5	<5	37.5	<1	<1	20.5
E5523101 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523101 Non Mag		6	22	<5	21	<10	<10	6	<0.01	<5	<5	28.7	<1	<1	23.6
E5523102 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523102 Non Mag		6	22	<5	16	<10	<10	<5	<0.01	<5	<5	26.6	<1	<1	23.4
E5523103 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523103 Non Mag		6	21	<5	20	<10	<10	<5	<0.01	<5	<5	26.0	1	<1	22.6
E5523115 Mag		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523115 Non Mag		7	19	<5	10	<10	<10	<5	<0.01	<5	<5	25.5	<1	<1	19.3

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AGAT WORK ORDER: 12D612532
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION
ATTENTION TO: ADAM CEGIELSKI

4 Acid Digest - Metals Package, ICP-OES finish (201070)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Zr
	Unit:	ppm
Sample Description	RDL:	5
E5523061 Mag		NSS
E5523061 Non Mag		7
E5523063 Mag		NSS
E5523063 Non Mag		13
E5523064 Mag		NSS
E5523064 Non Mag		<5
E5523065 Mag		NSS
E5523065 Non Mag		11
E5523101 Mag		NSS
E5523101 Non Mag		<5
E5523102 Mag		NSS
E5523102 Non Mag		15
E5523103 Mag		NSS
E5523103 Non Mag		14
E5523115 Mag		NSS
E5523115 Non Mag		14

Comments: RDL - Reported Detection Limit
3446197-3456498 As, Sb values may be low due to digestion losses.

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PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION

ATTENTION TO: ADAM CEGIELSKI

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description RDL:	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523060	0.42	<0.2	0.31	5	6	12	<0.5	7	0.49	<0.5	<1	89.1	734	125
E5523061	0.58	<0.2	0.15	3	6	6	<0.5	7	0.19	<0.5	<1	87.9	286	17.3
E5523062	0.66	<0.2	0.87	11	12	9	<0.5	6	1.26	<0.5	<1	81.6	393	262
E5523063	0.66	<0.2	0.19	6	7	1	<0.5	3	0.21	<0.5	<1	85.0	488	176
E5523064	0.78	<0.2	0.21	3	7	3	<0.5	6	0.13	<0.5	<1	83.9	292	38.1
E5523065	0.40	<0.2	0.10	2	<5	<1	<0.5	5	0.07	<0.5	<1	81.9	247	4.6
E5523066	0.30	<0.2	0.26	3	6	9	<0.5	5	0.05	<0.5	<1	83.9	612	13.4
E5523067	0.52	<0.2	0.14	4	5	6	<0.5	3	0.05	<0.5	<1	86.6	339	10.8
E5523068	0.48	<0.2	0.19	4	5	4	<0.5	4	0.10	<0.5	<1	80.6	354	17.3
E5523069	0.54	<0.2	0.77	5	6	4	<0.5	5	0.16	<0.5	<1	80.7	631	19.1
E5523070	0.76	<0.2	0.21	2	5	5	<0.5	5	0.11	<0.5	<1	78.9	378	21.5
E5523071	0.92	<0.2	0.23	5	7	2	<0.5	6	0.14	<0.5	<1	86.5	398	14.1
E5523072	0.50	<0.2	0.32	7	10	<1	<0.5	7	0.29	<0.5	<1	100	133	81.8
E5523073	0.66	<0.2	0.22	4	<5	<1	<0.5	2	0.15	<0.5	<1	82.9	417	15.0
E5523074	0.72	<0.2	0.16	2	6	3	<0.5	5	0.07	<0.5	<1	87.0	375	15.8
E5523075	0.42	<0.2	0.12	3	<5	2	<0.5	6	0.07	<0.5	<1	80.2	261	37.8
E5523076	0.38	<0.2	0.09	4	<5	<1	<0.5	5	0.09	<0.5	<1	86.4	170	12.6
E5523077	0.40	<0.2	0.22	5	7	8	<0.5	6	0.14	<0.5	<1	86.3	340	13.2
E5523078	0.46	<0.2	0.28	3	8	6	<0.5	7	0.14	<0.5	<1	96.1	377	17.6
E5523079	0.54	<0.2	0.14	5	<5	3	<0.5	5	0.29	<0.5	<1	66.1	335	263
E5523080	0.52	<0.2	0.16	4	7	6	<0.5	6	0.06	<0.5	<1	90.0	298	14.4
E5523081	0.92	<0.2	0.93	5	<5	221	<0.5	2	0.24	<0.5	2	4.3	38.7	2.3
E5523082	0.08	7.0	0.03	4600	<5	10	<0.5	8	0.35	24.5	<1	19.9	21.2	6.6
E5523083	0.34	<0.2	2.23	18	11	94	<0.5	3	4.78	<0.5	<1	14.5	104	61.1
E5523084	0.62	<0.2	2.08	18	13	155	<0.5	2	4.49	<0.5	<1	10.7	51.0	47.0
E5523085	0.48	<0.2	1.82	19	155	104	0.9	2	3.26	<0.5	2	12.8	87.3	70.6
E5523086	0.90	<0.2	2.41	15	14	202	0.5	2	3.21	<0.5	<1	12.7	86.2	32.2
E5523087	1.52	<0.2	1.62	13	<5	388	<0.5	3	3.58	<0.5	11	10.1	80.1	25.1
E5523088	1.08	<0.2	1.82	12	8	82	1.2	3	2.89	<0.5	6	7.5	59.3	22.7
E5523089	0.94	<0.2	1.76	16	8	266	0.8	4	2.44	<0.5	10	11.9	80.5	48.6
E5523090	0.62	<0.2	1.93	18	9	186	<0.5	2	4.46	<0.5	5	10.9	83.5	35.7

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AGAT WORK ORDER: 12D612532
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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description RDL:	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523091	0.84	<0.2	2.43	16	13	207	1.3	1	2.86	<0.5	6	8.0	72.1	23.2
E5523092	0.86	<0.2	2.22	15	11	59	1.2	3	2.73	<0.5	6	9.1	82.9	27.9
E5523093	2.14	<0.2	1.60	17	9	55	0.7	2	4.44	<0.5	7	6.6	54.3	26.1
E5523094	1.02	<0.2	0.15	5	7	7	<0.5	5	0.09	<0.5	<1	93.7	566	3.9
E5523095	1.10	<0.2	0.20	3	7	2	<0.5	4	0.16	<0.5	<1	91.1	592	<0.5
E5523096	2.56	<0.2	0.10	13	28	141	<0.5	3	1.81	<0.5	<1	71.4	796	12.6
E5523097	2.02	<0.2	4.91	17	27	137	2.7	9	6.98	<0.5	<1	25.6	52.8	38.2
E5523098	1.86	<0.2	2.42	13	12	23	1.4	4	2.01	<0.5	8	20.3	91.6	22.9
E5523099	1.12	<0.2	3.61	<1	<5	42	5.1	<1	5.78	<0.5	34	16.4	14.6	53.1
E5523100	0.54	<0.2	0.09	<1	<5	39	<0.5	<1	0.30	<0.5	<1	75.3	361	5.0
E5523101	0.72	<0.2	0.19	<1	<5	7	<0.5	<1	0.06	<0.5	<1	86.9	608	5.7
E5523102	1.24	<0.2	0.16	<1	<5	3	<0.5	<1	0.14	<0.5	<1	92.3	620	6.4
E5523103	0.82	0.2	0.16	<1	<5	4	<0.5	<1	0.08	<0.5	<1	90.6	529	17.2
E5523104	1.22	<0.2	0.07	<1	<5	2	<0.5	<1	0.07	<0.5	<1	92.2	318	3.6
E5523105	0.90	<0.2	0.07	<1	<5	3	<0.5	<1	0.08	<0.5	<1	93.0	374	3.1
E5523106	0.60	<0.2	0.09	<1	<5	5	<0.5	<1	0.06	<0.5	<1	94.1	414	3.3
E5523107	1.04	<0.2	0.08	<1	<5	3	<0.5	<1	0.07	0.6	<1	93.9	389	3.2
E5523108	1.10	<0.2	0.08	<1	<5	3	<0.5	<1	0.08	<0.5	<1	94.1	358	3.2
E5523109	0.74	<0.2	0.12	<1	<5	6	<0.5	<1	0.04	<0.5	<1	90.8	543	3.5
E5523110	0.74	0.3	0.11	<1	<5	5	<0.5	<1	0.08	<0.5	<1	92.8	448	6.5
E5523111	1.00	<0.2	0.04	<1	<5	2	<0.5	<1	0.07	<0.5	<1	91.1	231	2.5
E5523112	1.16	<0.2	0.12	<1	<5	2	<0.5	<1	0.07	<0.5	<1	91.4	515	3.0
E5523113	1.04	<0.2	0.11	<1	<5	<1	<0.5	<1	0.08	<0.5	<1	93.8	431	4.7
E5523114	0.58	<0.2	<0.01	<1	<5	2	<0.5	<1	0.17	<0.5	<1	1.4	13.2	<0.5
E5523115	0.94	0.7	0.14	<1	17	2	<0.5	<1	0.03	<0.5	<1	96.9	741	3.4

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Certificate of Analysis

AGAT WORK ORDER: 12D612532

PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION

ATTENTION TO: ADAM CEGIELSKI

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
	Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
Sample Description	RDL:	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523060		4.70	<5	<1	4	<0.01	1	1	18.3	919	<0.5	<0.01	1590	29	<0.5
E5523061		4.44	<5	<1	<1	<0.01	<1	<1	19.0	860	<0.5	<0.01	1750	44	<0.5
E5523062		5.19	<5	<1	5	<0.01	<1	<1	11.7	878	1.3	<0.01	589	77	<0.5
E5523063		4.61	<5	<1	<1	<0.01	<1	<1	16.8	865	0.7	<0.01	1440	35	<0.5
E5523064		4.27	<5	<1	<1	<0.01	1	<1	17.7	822	<0.5	<0.01	1630	42	<0.5
E5523065		4.08	<5	<1	<1	<0.01	1	<1	18.4	768	<0.5	<0.01	1670	23	<0.5
E5523066		4.47	<5	1	<1	<0.01	1	<1	19.7	819	<0.5	<0.01	1760	34	<0.5
E5523067		4.72	<5	<1	1	<0.01	1	<1	20.1	876	<0.5	<0.01	1730	29	<0.5
E5523068		4.27	<5	<1	<1	<0.01	<1	<1	18.4	800	<0.5	<0.01	1680	33	<0.5
E5523069		4.57	<5	<1	<1	<0.01	1	3	19.3	871	0.7	0.01	1560	33	<0.5
E5523070		4.37	<5	<1	1	<0.01	1	<1	19.0	794	<0.5	<0.01	1640	68	<0.5
E5523071		4.54	<5	<1	1	<0.01	1	<1	19.5	850	1.2	<0.01	1730	30	<0.5
E5523072		5.55	<5	<1	4	<0.01	1	2	21.6	1050	1.3	<0.01	1840	32	<0.5
E5523073		4.53	<5	<1	3	<0.01	<1	<1	19.8	825	0.9	<0.01	1660	17	<0.5
E5523074		4.48	<5	<1	8	<0.01	1	<1	20.0	851	<0.5	<0.01	1790	35	<0.5
E5523075		4.14	<5	1	<1	<0.01	1	<1	17.6	788	<0.5	<0.01	1630	56	<0.5
E5523076		4.49	<5	<1	<1	<0.01	1	<1	20.2	814	<0.5	<0.01	1710	16	<0.5
E5523077		4.57	<5	<1	<1	<0.01	1	<1	18.1	917	<0.5	<0.01	1560	45	<0.5
E5523078		4.81	<5	<1	<1	<0.01	1	<1	21.1	939	0.9	<0.01	1960	63	<0.5
E5523079		3.48	<5	<1	<1	<0.01	<1	<1	11.3	672	1.1	<0.01	1130	64	<0.5
E5523080		4.52	<5	<1	<1	<0.01	1	<1	19.6	869	<0.5	<0.01	1870	52	<0.5
E5523081		1.52	<5	<1	<1	0.45	2	11	0.70	355	<0.5	0.12	15.6	323	0.9
E5523082		4.87	<5	<1	<1	0.02	<1	<1	0.16	402	1.0	<0.01	39.8	63	2690
E5523083		4.05	10	<1	<1	0.20	5	29	1.62	1360	1.4	0.16	29.7	1050	5.7
E5523084		3.08	7	<1	2	0.23	4	32	2.12	1230	0.5	0.10	13.9	1080	5.5
E5523085		3.34	10	<1	1	0.15	6	29	1.45	772	0.8	0.07	30.5	936	8.6
E5523086		5.32	11	<1	<1	0.14	3	35	2.05	1000	<0.5	0.09	14.2	688	5.8
E5523087		3.52	10	<1	2	0.11	9	25	1.46	742	1.7	0.08	12.1	719	6.1
E5523088		2.94	13	<1	<1	0.12	6	12	1.05	548	1.8	0.12	9.9	738	8.9
E5523089		4.14	11	<1	<1	0.13	11	20	1.33	800	<0.5	0.10	14.3	866	10.4
E5523090		3.88	9	<1	<1	0.32	7	21	0.69	752	2.7	0.09	13.9	723	5.8
E5523091		4.11	16	<1	<1	0.12	8	19	1.19	664	0.9	0.10	10.2	795	8.4

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Certificate of Analysis

AGAT WORK ORDER: 12D612532

PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION

ATTENTION TO: ADAM CEGIELSKI

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
	Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
Sample Description	RDL:	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523092		3.44	12	<1	2	0.15	7	11	1.01	601	<0.5	0.16	11.6	887	9.1
E5523093		2.34	8	<1	4	0.16	6	16	0.74	573	1.8	0.07	9.5	622	6.6
E5523094		4.75	<5	<1	3	<0.01	1	<1	21.2	911	<0.5	<0.01	1900	42	<0.5
E5523095		4.63	<5	<1	1	<0.01	1	1	21.1	908	<0.5	<0.01	1810	30	<0.5
E5523096		3.46	<5	1	5	<0.01	<1	18	14.4	671	1.0	0.03	1400	66	<0.5
E5523097		7.50	23	<1	<1	0.06	3	9	2.95	1100	0.5	0.06	84.0	1480	12.8
E5523098		4.30	13	<1	<1	0.01	6	4	2.87	817	0.6	0.09	119	1260	6.9
E5523099		8.86	22	<1	<1	0.30	14	5	1.62	987	3.1	0.08	42.6	1850	<0.5
E5523100		4.56	8	<1	<1	<0.01	<1	2	13.6	832	<0.5	<0.01	1770	25	<0.5
E5523101		5.23	8	<1	<1	<0.01	<1	<1	21.9	905	1.0	<0.01	2010	53	<0.5
E5523102		5.22	10	<1	<1	<0.01	<1	<1	23.3	894	<0.5	<0.01	2000	14	<0.5
E5523103		5.16	10	<1	<1	<0.01	<1	<1	22.3	881	<0.5	<0.01	2000	15	<0.5
E5523104		5.01	8	<1	<1	<0.01	<1	<1	21.9	855	<0.5	<0.01	2040	24	<0.5
E5523105		5.24	11	<1	<1	<0.01	<1	<1	22.9	884	<0.5	<0.01	1960	35	<0.5
E5523106		4.98	10	<1	<1	<0.01	1	<1	21.7	880	<0.5	<0.01	2100	<10	<0.5
E5523107		5.09	11	<1	<1	<0.01	<1	<1	22.3	887	<0.5	<0.01	2110	13	<0.5
E5523108		5.10	9	<1	<1	<0.01	1	<1	22.2	880	0.7	<0.01	1980	44	<0.5
E5523109		4.99	8	<1	<1	<0.01	<1	<1	21.9	871	0.9	<0.01	1990	19	<0.5
E5523110		5.09	9	<1	<1	<0.01	<1	<1	22.5	890	<0.5	<0.01	2090	27	<0.5
E5523111		4.69	9	<1	<1	<0.01	<1	<1	21.9	838	<0.5	<0.01	2040	<10	<0.5
E5523112		5.06	9	<1	<1	<0.01	<1	<1	22.5	879	<0.5	<0.01	2070	46	<0.5
E5523113		5.11	9	<1	<1	<0.01	<1	<1	22.9	887	<0.5	<0.01	2050	<10	<0.5
E5523114		0.14	<5	<1	<1	<0.01	2	<1	25.6	34	<0.5	<0.01	129	<10	<0.5
E5523115		5.14	8	<1	<1	<0.01	<1	<1	21.6	405	<0.5	<0.01	2080	10	<0.5

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AGAT WORK ORDER: 12D612532

PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION

ATTENTION TO: ADAM CEGIELSKI

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description	RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523060		<10	0.027	<1	9.4	<10	<5	<0.5	<10	<10	<5	<0.01	6	<5	53.2
E5523061		<10	0.008	<1	4.8	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	36.7
E5523062		<10	0.074	<1	7.9	<10	<5	0.9	<10	<10	<5	0.02	11	<5	48.9
E5523063		<10	0.042	<1	8.1	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	42.4
E5523064		<10	0.015	<1	4.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	35.8
E5523065		<10	<0.005	<1	3.3	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	31.9
E5523066		<10	<0.005	<1	8.1	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	49.9
E5523067		<10	<0.005	<1	5.5	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	34.9
E5523068		<10	0.005	<1	4.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	36.5
E5523069		<10	<0.005	<1	7.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	53.1
E5523070		<10	0.006	<1	5.0	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	38.4
E5523071		<10	<0.005	<1	4.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	38.0
E5523072		<10	0.031	<1	4.0	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	29.4
E5523073		<10	0.007	<1	5.2	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	39.4
E5523074		<10	<0.005	<1	5.7	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	39.7
E5523075		<10	0.010	<1	3.6	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	33.0
E5523076		<10	0.006	<1	3.2	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	32.0
E5523077		<10	0.006	<1	5.6	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	39.5
E5523078		<10	0.011	<1	6.3	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	43.4
E5523079		<10	0.048	<1	4.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	31.9
E5523080		<10	<0.005	<1	4.7	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	37.6
E5523081		19	<0.005	<1	2.4	<10	<5	20.0	<10	<10	<5	0.08	<5	<5	37.9
E5523082		<10	4.46	<1	0.8	<10	<5	11.5	<10	<10	<5	<0.01	<5	<5	3.5
E5523083		22	0.102	2	16.2	<10	<5	130	<10	<10	<5	0.30	15	<5	191
E5523084		25	0.060	4	16.6	<10	<5	102	<10	<10	<5	0.24	14	<5	128
E5523085		17	0.079	2	17.7	<10	<5	90.0	<10	<10	<5	0.27	12	<5	144
E5523086		14	0.100	<1	24.6	<10	<5	66.4	<10	<10	<5	0.42	19	<5	243
E5523087		12	0.313	4	10.8	<10	<5	257	<10	<10	<5	0.02	9	<5	146
E5523088		10	0.054	2	11.7	<10	<5	70.5	<10	<10	<5	0.23	12	<5	126
E5523089		13	0.199	<1	16.2	<10	<5	103	<10	<10	<5	0.27	12	<5	163
E5523090		30	0.088	1	12.8	<10	<5	96.7	<10	<10	<5	0.07	11	<5	128
E5523091		13	0.126	<1	12.9	<10	<5	58.7	<10	<10	<5	0.30	14	<5	185

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Certificate of Analysis

AGAT WORK ORDER: 12D612532
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description	RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523092		14	0.051	2	12.0	<10	<5	43.9	<10	<10	<5	0.26	13	<5	153
E5523093		25	0.119	4	12.2	<10	<5	100	<10	<10	<5	0.20	13	<5	81.0
E5523094		<10	<0.005	<1	7.1	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	42.9
E5523095		<10	<0.005	<1	5.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	40.4
E5523096		<10	0.062	1	7.2	<10	<5	138	<10	<10	<5	<0.01	8	<5	41.9
E5523097		21	0.151	<1	20.8	<10	<5	380	<10	<10	<5	1.42	32	<5	253
E5523098		<10	0.020	<1	9.0	<10	<5	105	<10	<10	<5	0.84	21	<5	115
E5523099		30	0.063	<1	8.5	<10	<5	646	<10	<10	<5	1.07	8	<5	156
E5523100		<10	<0.005	2	4.9	<10	<5	10.6	<10	<10	<5	0.01	<5	<5	19.5
E5523101		<10	<0.005	1	7.3	<10	<5	1.9	<10	<10	<5	<0.01	<5	<5	35.3
E5523102		<10	<0.005	1	6.2	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	30.9
E5523103		<10	<0.005	2	5.7	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	30.5
E5523104		<10	0.011	1	4.3	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	24.6
E5523105		<10	0.005	1	5.3	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	25.6
E5523106		<10	<0.005	1	4.6	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	24.3
E5523107		<10	<0.005	1	4.4	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	23.3
E5523108		<10	<0.005	1	4.6	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	24.4
E5523109		<10	<0.005	1	5.8	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	26.5
E5523110		<10	<0.005	2	5.3	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	26.4
E5523111		<10	<0.005	1	4.0	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	21.4
E5523112		<10	0.006	2	5.8	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	28.4
E5523113		<10	<0.005	2	4.8	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	26.8
E5523114		<10	<0.005	<1	<0.5	<10	<5	0.7	<10	<10	<5	<0.01	<5	<5	17.0
E5523115		<10	<0.005	1	7.9	<10	<5	<0.5	<10	<10	<5	<0.01	<5	<5	32.0

Certified By:

Results relate only to the items tested and to all the items tested

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Certificate of Analysis

AGAT WORK ORDER: 12D612532
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
Sample Description	RDL:	1	1	0.5	5
E5523060		<1	1	23.7	<5
E5523061		<1	<1	22.3	<5
E5523062		<1	<1	35.3	<5
E5523063		<1	<1	22.4	<5
E5523064		<1	<1	16.1	<5
E5523065		<1	<1	19.7	<5
E5523066		<1	<1	24.8	<5
E5523067		<1	<1	26.3	<5
E5523068		<1	<1	19.6	<5
E5523069		<1	<1	20.6	<5
E5523070		<1	<1	38.1	<5
E5523071		<1	<1	21.9	<5
E5523072		<1	<1	19.6	<5
E5523073		<1	<1	18.6	<5
E5523074		<1	<1	23.9	<5
E5523075		<1	<1	20.5	<5
E5523076		<1	<1	19.8	<5
E5523077		<1	<1	23.3	<5
E5523078		<1	<1	24.2	<5
E5523079		<1	<1	15.5	<5
E5523080		<1	<1	21.6	<5
E5523081		<1	4	38.4	<5
E5523082		248	1	1760	<5
E5523083		<1	13	69.3	20
E5523084		<1	15	78.4	20
E5523085		<1	14	84.8	28
E5523086		<1	12	86.3	21
E5523087		<1	10	68.1	<5
E5523088		<1	9	58.1	16
E5523089		<1	11	85.6	17
E5523090		<1	10	75.5	<5
E5523091		<1	10	78.4	15

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Certificate of Analysis

AGAT Laboratories

AGAT WORK ORDER: 12D612532
PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
Sample Description	RDL:	1	1	0.5	5
E5523092		<1	10	82.1	17
E5523093		<1	9	41.2	18
E5523094		<1	<1	36.0	<5
E5523095		<1	<1	26.6	<5
E5523096		<1	<1	17.2	<5
E5523097		<1	14	83.8	33
E5523098		<1	11	103	37
E5523099		<1	16	122	34
E5523100		1	<1	26.5	<5
E5523101		<1	<1	31.5	<5
E5523102		<1	<1	31.4	<5
E5523103		<1	<1	31.0	<5
E5523104		<1	<1	31.5	<5
E5523105		<1	<1	34.4	<5
E5523106		<1	<1	29.8	<5
E5523107		<1	<1	30.3	<5
E5523108		<1	<1	32.5	<5
E5523109		<1	<1	31.7	<5
E5523110		<1	<1	31.5	<5
E5523111		<1	<1	29.1	<5
E5523112		<1	<1	35.1	<5
E5523113		<1	<1	30.9	<5
E5523114		<1	<1	1.4	<5
E5523115		<1	<1	33.5	<5

Comments: RDL - Reported Detection Limit

Certified By:

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AGAT WORK ORDER: 12D612532
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Davis Tube (ADTRS) - Magnetic Separation

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 15, 2012** **SAMPLE TYPE: Rock**

	Analyte:	Magnetics
	Unit:	%
Sample Description	RDL:	0.01
E5523061		0.50
E5523063		0.70
E5523064		0.20
E5523065		0.40
E5523101		0.10
E5523102		0.10
E5523103		0.20
E5523115		12.40

Comments: RDL - Reported Detection Limit

Certified By: ____________________

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION

PROJECT NO: Murray

AGAT WORK ORDER: 12D612632

ATTENTION TO: ADAM CEGIELSKI

Solid Analysis

RPT Date: Aug 15, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Ag	1	3446195	< 0.2	< 0.2	0.0%	< 0.2				80%	120%
Al	1	3456491	0.11	0.11	0.0%	< 0.01				80%	120%
As	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
B	1	3456491	< 5	< 5	0.0%	< 5				80%	120%
Ba	1	3456491	5	4	22.2%	< 1				80%	120%
Be	1	3456491	< 0.5	< 0.5	0.0%	< 0.5	0.3	0.4	86%	80%	120%
Bi	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
Ca	1	3456491	0.076	0.073	4.0%	< 0.01				80%	120%
Cd	1	3456491	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Ce	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
Co	1	3456491	92.8	94.2	1.5%	< 0.5				80%	120%
Cr	1	3456491	448	453	1.1%	< 0.5				80%	120%
Cu	1	3456491	6.5	6.3	3.1%	< 0.5	3864	3800	101%	80%	120%
Fe	1	3456491	5.09	4.90	3.8%	< 0.01				80%	120%
Ga	1	3456491	9	10	10.5%	< 5				80%	120%
Hg	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
In	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
K	1	3456491	< 0.01	< 0.01	0.0%	< 0.01				80%	120%
La	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
Li	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
Mg	1	3456491	22.5	21.7	3.6%	< 0.01				80%	120%
Mn	1	3456491	890	897	0.8%	< 1				80%	120%
Mo	1	3456491	< 0.5	< 0.5	0.0%	< 0.5	360	380	94%	80%	120%
Na	1	3456491	< 0.01	< 0.01	0.0%	< 0.01				80%	120%
Ni	1	3456491	2090	2090	0.0%	< 0.5				80%	120%
P	1	3456491	27	24	11.8%	< 10	543	600	91%	80%	120%
Pb	1	3456491	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Rb	1	3456491	< 10	< 10	0.0%	< 10				80%	120%
S	1	3456491	< 0.005	< 0.005	0.0%	< 0.005				80%	120%
Sb	1	3446195	< 1	< 1	0.0%	< 1				80%	120%
Sc	1	3456491	5.3	5.3	0.0%	< 0.5				80%	120%
Se	1	3456491	< 10	< 10	0.0%	< 10				80%	120%
Sn	1	3456491	< 5	< 5	0.0%	< 5				80%	120%
Sr	1	3456491	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Ta	1	3456491	< 10	< 10	0.0%	< 10				80%	120%
Te	1	3456491	< 10	< 10	0.0%	< 10				80%	120%
Th	1	3456491	< 5	< 5	0.0%	< 5				80%	120%
Ti	1	3456491	< 0.01	< 0.01	0.0%	< 0.01				80%	120%
Tl	1	3456491	< 5	< 5	0.0%	< 5				80%	120%
U	1	3456491	< 5	< 5	0.0%	< 5				80%	120%
V	1	3456491	26.4	26.0	1.5%	< 0.5				80%	120%
W	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
Y	1	3456491	< 1	< 1	0.0%	< 1				80%	120%
Zn	1	3456491	31.5	30.3	3.9%	< 0.5				80%	120%

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION | **AGAT WORK ORDER: 12D612632**

PROJECT NO: Murray | **ATTENTION TO: ADAM CEGIELSKI**

Solid Analysis (Continued)

RPT Date: Aug 15, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Zr	1	3456491	< 5	< 5	0.0%	< 5				80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Ag	1	3446228	< 0.2	< 0.2	0.0%	< 0.2				80%	120%
Al	1	3446228	1.82	1.68	8.0%	< 0.01				80%	120%
As	1	3446228	19	20	5.1%	< 1				80%	120%
B	1	3446228	155	142	8.8%	< 5				80%	120%
Ba	1	3446228	104	95	9.0%	< 1				80%	120%
Be	1	3446228	0.9	0.7	25.0%	< 0.5				80%	120%
Bi	1	3446228	2	2	0.0%	< 1				80%	120%
Ca	1	3446228	3.26	3.08	5.7%	< 0.01				80%	120%
Cd	1	3446228	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Ce	1	3446228	2	3		< 1				80%	120%
Co	1	3446228	12.8	12.1	5.6%	< 0.5				80%	120%
Cr	1	3446228	87.3	78.7	10.4%	< 0.5				80%	120%
Cu	1	3446228	70.6	65.5	7.5%	< 0.5	3937	3800	103%	80%	120%
Fe	1	3446228	3.34	3.19	4.6%	< 0.01				80%	120%
Ga	1	3446228	10	9	10.5%	< 5				80%	120%
Hg	1	3446228	< 1	< 1	0.0%	< 1				80%	120%
In	1	3446228	1	< 1		< 1				80%	120%
K	1	3446228	0.15	0.13	14.3%	< 0.01				80%	120%
La	1	3446228	6	5	18.2%	< 1				80%	120%
Li	1	3446228	29	26	10.9%	< 1				80%	120%
Mg	1	3446228	1.45	1.35	7.1%	< 0.01				80%	120%
Mn	1	3446228	772	708	8.6%	< 1				80%	120%
Mo	1	3446228	0.8	2.8		< 0.5				80%	120%
Na	1	3446228	0.074	0.064	14.5%	< 0.01				80%	120%
Ni	1	3446228	30.5	29.0	5.0%	< 0.5				80%	120%
P	1	3446228	936	859	8.6%	< 10	501	600	83%	80%	120%
Pb	1	3446228	8.56	7.74	10.1%	< 0.5				80%	120%
Rb	1	3446228	17	14	19.4%	< 10	13	13	101%	80%	120%
S	1	3446228	0.0786	0.0748	5.0%	< 0.005				80%	120%
Sb	1	3446228	2	2	0.0%	< 1				80%	120%
Sc	1	3446228	17.7	16.4	7.6%	< 0.5				80%	120%
Se	1	3446228	< 10	< 10	0.0%	< 10				80%	120%
Sn	1	3446228	< 5	< 5	0.0%	< 5				80%	120%
Sr	1	3446228	90.0	80.1	11.6%	< 0.5				80%	120%
Ta	1	3446228	< 10	< 10	0.0%	< 10				80%	120%
Te	1	3446228	< 10	< 10	0.0%	< 10				80%	120%
Th	1	3446228	< 5	< 5	0.0%	< 5				80%	120%
Ti	1	3446228	0.27	0.26	3.8%	< 0.01				80%	120%
Tl	1	3446228	12	13	8.0%	< 5				80%	120%
U	1	3446228	< 5	< 5	0.0%	< 5				80%	120%
V	1	3446228	144	134	7.2%	< 0.5				80%	120%
W	1	3446228	< 1	< 1	0.0%	< 1				80%	120%

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION | **AGAT WORK ORDER: 12D612532**

PROJECT NO: Murray | **ATTENTION TO: ADAM CEGIELSKI**

Solid Analysis (Continued)

RPT Date: Aug 15, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Y	1	3446228	14	13	7.4%	< 1				80%	120%
Zn	1	3446228	84.8	79.4	6.6%	< 0.5				80%	120%
Zr	1	3446228	28	27	3.6%	< 5				80%	120%
4 Acid Digest - Metals Package, ICP-OES finish (201070)											
Ag	1		1010	940	7.2%	1.5				80%	120%
Al	1		3.74	4.08	8.7%	< 0.01				80%	120%
As	1		22	19	14.6%	< 1	25.9	28.0	92%	80%	120%
Ba	1		491	468	4.8%	< 1				80%	120%
Be	1		< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Bi	1		< 1	< 1	0.0%	< 1				80%	120%
Ca	1		2.79	2.70	3.3%	< 0.01				80%	120%
Cd	1		22.4	20.6	8.4%	< 0.5				80%	120%
Ce	1		24	22	8.7%	< 1				80%	120%
Co	1		5.0	5.0	0.0%	< 0.5	5.8	5.0	117%	80%	120%
Cr	1		30.6	28.1	8.5%	< 0.5				80%	120%
Cu	1		19300	18300	5.3%	7.3	3526	3800	92%	80%	120%
Fe	1		2.58	2.24	14.1%	< 0.01				80%	120%
Ga	1		11	8		< 5				80%	120%
In	1		4	< 1		2				80%	120%
K	1		1.04	1.24	17.5%	< 0.01				80%	120%
La	1		12	11	8.7%	< 2				80%	120%
Li	1		13	15	14.3%	< 1				80%	120%
Mg	1		0.72	0.61	16.5%	< 0.01				80%	120%
Mn	1		654	649	0.8%	< 1				80%	120%
Mo	1		8.96	7.31	20.3%	< 0.5	296	280	106%	80%	120%
Na	1		1.17	1.30	10.5%	0.01				80%	120%
Ni	1		23.8	21.9	8.3%	< 0.5				80%	120%
P	1		378	345	9.1%	< 10				80%	120%
Pb	1		2130	1790	17.3%	2				80%	120%
Rb	1		55	56	1.8%	< 10				80%	120%
S	1		0.256	0.245	4.4%	< 0.005	0.8	0.80	99%	80%	120%
Sb	1		702	689	1.9%	2				80%	120%
Sc	1		6	5	18.2%	< 1				80%	120%
Se	1		21	18	15.4%	< 10				80%	120%
Sn	1		< 5	< 5	0.0%	< 5	6.1	7.1	86%	80%	120%
Sr	1		249	247	0.8%	10	385	390	99%	80%	120%
Ta	1		< 10	< 10	0.0%	< 10				80%	120%
Te	1		< 10	< 10	0.0%	< 10				80%	120%
Th	1		< 5	< 5	0.0%	< 5				80%	120%
Ti	1		0.141	0.125	12.0%	< 0.01	0.07	0.07	96%	80%	120%
Tl	1		< 5	< 5	0.0%	< 5				80%	120%
U	1		9	9	0.0%	< 5				80%	120%
V	1		60.8	55.2	9.7%	< 0.5				80%	120%
W	1		< 1	< 1	0.0%	< 1				80%	120%

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION
PROJECT NO: Murray

AGAT WORK ORDER: 12D612532
ATTENTION TO: ADAM CEGIELSKI

Solid Analysis (Continued)

RPT Date: Aug 15, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Y	1		11	10	9.5%	< 1				80%	120%
Zn	1		3040	2390	23.9%	1.1				80%	120%
Zr	1		15	13	14.3%	< 5				80%	120%

Certified By: ____________________

AGAT Laboratories

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Method Summary

CLIENT NAME: NANTON NICKEL CORPORATION
AGAT WORK ORDER: 12D612532
PROJECT NO: Murray
ATTENTION TO: ADAM CEGIELSKI

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Solid Analysis			
Ag	MIN-200-12002/12020		ICP/OES
Al	MIN-200-12002/12020		ICP/OES
As	MIN-200-12002/12020		ICP/OES
Ba	MIN-200-12002/12020		ICP/OES
Be	MIN-200-12002/12020		ICP/OES
Bi	MIN-200-12002/12020		ICP/OES
Ca	MIN-200-12002/12020		ICP/OES
Cd	MIN-200-12002/12020		ICP/OES
Ce	MIN-200-12002/12020		ICP/OES
Co	MIN-200-12002/12020		ICP/OES
Cr	MIN-200-12002/12020		ICP/OES
Cu	MIN-200-12002/12020		ICP/OES
Fe	MIN-200-12002/12020		ICP/OES
Ga	MIN-200-12002/12020		ICP/OES
In	MIN-200-12002/12020		ICP/OES
K	MIN-200-12002/12020		ICP/OES
La	MIN-200-12002/12020		ICP/OES
Li	MIN-200-12002/12020		ICP/OES
Mg	MIN-200-12002/12020		ICP/OES
Mn	MIN-200-12002/12020		ICP/OES
Mo	MIN-200-12002/12020		ICP/OES
Na	MIN-200-12002/12020		ICP/OES
Ni	MIN-200-12002/12020		ICP/OES
P	MIN-200-12002/12020		ICP/OES
Pb	MIN-200-12002/12020		ICP/OES
Rb	MIN-200-12002/12020		ICP/OES
S	MIN-200-12002/12020		ICP/OES
Sb	MIN-200-12002/12020		ICP/OES
Sc	MIN-200-12002/12020		ICP/OES
Se	MIN-200-12002/12020		ICP/OES
Sn	MIN-200-12002/12020		ICP/OES
Sr	MIN-200-12002/12020		ICP/OES
Ta	MIN-200-12002/12020		ICP/OES
Te	MIN-200-12002/12020		ICP/OES
Th	MIN-200-12002/12020		ICP/OES
Ti	MIN-200-12002/12020		ICP/OES
Tl	MIN-200-12002/12020		ICP/OES
U	MIN-200-12002/12020		ICP/OES
V	MIN-200-12002/12020		ICP/OES
W	MIN-200-12002/12020		ICP/OES
Y	MIN-200-12002/12020		ICP/OES
Zn	MIN-200-12002/12020		ICP/OES
Zr	MIN-200-12002/12020		ICP/OES
Sample Login Weight	MIN-12009		BALANCE
Ag	MIN-200-12020		ICP/OES
Al	MIN-200-12020		ICP/OES
As	MIN-200-12020		ICP/OES
B	MIN-200-12020		ICP/OES
Ba	MIN-200-12020		ICP/OES

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Method Summary

CLIENT NAME: NANTON NICKEL CORPORATION **AGAT WORK ORDER: 12D612532**
PROJECT NO: Murray **ATTENTION TO: ADAM CEGIELSKI**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Be	MIN-200-12020		ICP/OES
Bi	MIN-200-12020		ICP/OES
Ca	MIN-200-12020		ICP/OES
Cd	MIN-200-12020		ICP/OES
Ce	MIN-200-12020		ICP/OES
Co	MIN-200-12020		ICP/OES
Cr	MIN-200-12020		ICP/OES
Cu	MIN-200-12020		ICP/OES
Fe	MIN-200-12020		ICP/OES
Ga	MIN-200-12020		ICP/OES
Hg	MIN-200-12020		ICP/OES
In	MIN-200-12020		ICP/OES
K	MIN-200-12020		ICP/OES
La	MIN-200-12020		ICP/OES
Li	MIN-200-12020		ICP/OES
Mg	MIN-200-12020		ICP/OES
Mn	MIN-200-12020		ICP/OES
Mo	MIN-200-12020		ICP/OES
Na	MIN-200-12020		ICP/OES
Ni	MIN-200-12020		ICP/OES
P	MIN-200-12020		ICP/OES
Pb	MIN-200-12020		ICP/OES
Rb	MIN-200-12020		ICP/OES
S	MIN-200-12020		ICP/OES
Sb	MIN-200-12020		ICP/OES
Sc	MIN-200-12020		ICP/OES
Se	MIN-200-12020		ICP/OES
Sn	MIN-200-12020		ICP/OES
Sr	MIN-200-12020		ICP/OES
Ta	MIN-200-12020		ICP/OES
Te	MIN-200-12020		ICP/OES
Th	MIN-200-12020		ICP/OES
Ti	MIN-200-12020		ICP/OES
Tl	MIN-200-12020		ICP/OES
U	MIN-200-12020		ICP/OES
V	MIN-200-12020		ICP/OES
W	MIN-200-12020		ICP/OES
Y	MIN-200-12020		ICP/OES
Zn	MIN-200-12020		ICP/OES
Zr	MIN-200-12020		ICP/OES
Magnetics	MIN-200-12041		DAVIS TUBE

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CLIENT NAME:	NANTON NICKEL CORPORATION 800 - 1199 WEST HASTINGS STREET VANCOUVER, BC V6E3T5 (604) 306-0068
ATTENTION TO:	ADAM CEGIELSKI
PROJECT NO:	Murray
AGAT WORK ORDER:	12D612547
SOLID ANALYSIS REVIEWED BY:	Kevin Motomura, ICP Supervisor
DATE REPORTED:	Aug 14, 2012
PAGES (INCLUDING COVER):	27

Should you require any information regarding this analysis please contact your client services representative at (905) 501-9998

NOTES

All samples are stored at no charge for 90 days. Please contact the lab if you require additional sample storage time.

Results relate only to the items tested and to all the items tested

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
	Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description	RDL:	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523310		0.22	<0.2	1.41	13	<5	127	<0.5	2	0.45	<0.5	10	11.8	65.2	35.2
E5523311		0.06	<0.2	0.33	10	13	247	<0.5	<1	1.90	0.7	2	3.9	12.1	20.7
E5523312		0.20	<0.2	1.19	8	<5	161	<0.5	1	0.53	<0.5	7	8.5	50.7	10.8
E5523313		0.12	<0.2	0.94	12	8	147	<0.5	4	0.69	0.6	7	9.7	48.2	13.3
E5523314		0.12	<0.2	0.87	7	<5	285	<0.5	<1	0.72	<0.5	7	6.7	34.6	18.5
E5523315		0.16	<0.2	0.92	7	<5	166	<0.5	<1	0.78	<0.5	8	5.2	35.4	10.7
E5523316		0.16	<0.2	1.13	7	<5	144	<0.5	1	0.50	<0.5	7	8.7	47.3	21.3
E5523317		0.24	<0.2	2.18	13	7	283	0.7	2	0.61	<0.5	10	20.5	108	33.0
E5523318		0.20	<0.2	1.31	13	9	300	<0.5	<1	1.45	0.6	9	9.8	46.4	49.5
E5523319		0.14	<0.2	1.59	13	11	321	0.5	1	1.72	1.0	12	7.6	45.2	61.1
E5523320		0.22	<0.2	1.29	8	5	297	<0.5	<1	0.65	<0.5	11	8.5	58.1	15.0
E5523321		0.26	<0.2	0.91	5	<5	181	<0.5	1	0.40	0.7	9	5.0	38.1	6.4
E5523322		0.30	<0.2	0.98	5	<5	272	<0.5	<1	0.43	<0.5	7	5.3	42.4	8.1
E5523323		0.30	<0.2	0.87	5	<5	204	<0.5	<1	0.38	<0.5	7	5.0	37.0	6.9
E5523324		0.22	<0.2	1.17	10	<5	437	<0.5	<1	0.47	0.7	9	7.1	51.6	17.9
E5523325		0.28	<0.2	2.41	12	7	800	0.5	<1	0.67	<0.5	5	16.8	176	22.3
E5523326		0.16	<0.2	1.12	7	<5	598	<0.5	<1	0.56	0.7	9	6.7	51.0	12.6
E5523327		0.26	<0.2	1.09	6	<5	240	<0.5	<1	0.40	<0.5	8	6.9	49.2	9.2
E5523328		0.26	<0.2	1.61	9	<5	435	<0.5	<1	0.46	<0.5	8	8.4	50.4	19.4
E5523329		0.20	<0.2	1.86	8	<5	292	0.5	<1	0.53	<0.5	15	8.8	53.9	27.8
E5523330		0.38	<0.2	2.61	15	<5	377	0.6	1	0.92	<0.5	5	14.3	72.1	47.7
E5523331		0.28	<0.2	1.35	8	<5	135	<0.5	1	0.46	<0.5	9	8.0	60.5	20.4
E5523332		0.28	<0.2	0.69	5	<5	106	<0.5	<1	0.40	<0.5	9	4.3	35.3	6.5
E5523333		0.26	<0.2	2.59	10	<5	206	<0.5	<1	0.64	<0.5	2	10.4	72.6	24.1
E5523334		0.40	<0.2	1.79	10	<5	273	0.5	<1	0.52	<0.5	14	10.2	59.2	30.0
E5523335		0.32	0.4	2.78	15	13	453	1.1	6	0.77	1.5	23	18.6	111	82.8
E5523336		0.58	<0.2	1.57	16	5	145	0.5	3	0.48	<0.5	5	11.6	53.9	24.3
E5523337		0.44	<0.2	2.43	15	7	354	0.7	2	0.99	0.7	4	11.5	40.9	56.7
E5523338		0.58	<0.2	2.98	18	<5	405	0.9	<1	1.06	<0.5	6	17.2	51.3	61.1
E5523339		0.40	<0.2	4.06	23	<5	481	1.3	<1	0.49	<0.5	8	19.9	58.6	68.2
E5523340		0.32	<0.2	3.11	16	<5	308	1.1	1	0.38	<0.5	5	12.1	47.1	53.8

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description RDL:	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523341	0.56	0.3	3.28	16	<5	357	1.0	4	0.43	0.5	5	13.5	50.3	56.1
E5523342	0.20	<0.2	2.93	15	<5	427	1.0	3	0.67	0.9	2	15.4	47.0	61.2
E5523343	0.42	0.3	2.67	19	<5	366	1.2	9	0.57	0.8	5	20.3	45.3	62.9
E5523344	0.58	<0.2	2.82	17	<5	290	0.8	8	0.29	<0.5	1	21.4	49.5	45.0
E5523345	0.34	0.2	4.05	15	<5	330	1.4	<1	0.29	<0.5	<1	14.8	54.9	58.0
E5523346	0.32	<0.2	3.52	13	<5	320	1.0	<1	0.45	<0.5	6	12.8	44.0	58.4
E5523347	0.24	0.5	3.68	13	5	607	1.2	5	0.91	1.3	5	12.2	55.1	93.4
E5523348	0.44	<0.2	3.56	20	<5	410	1.1	3	0.42	<0.5	2	15.6	59.1	70.3
E5523349	0.46	0.5	3.72	16	<5	755	1.1	2	1.13	0.8	7	13.1	62.2	90.0
E5523350	0.46	<0.2	1.84	12	<5	364	0.6	2	1.06	<0.5	8	9.9	64.7	39.3
E5523351	0.20	<0.2	2.45	12	<5	282	0.6	<1	0.72	<0.5	6	9.0	38.5	37.2
E5523352	0.38	0.2	2.83	18	7	316	0.9	2	0.68	<0.5	4	12.6	54.1	47.2
E5523353	0.22	<0.2	2.40	16	<5	378	0.9	4	0.76	0.6	10	15.1	45.6	47.4
E5523354	0.28	<0.2	3.00	21	5	365	1.0	11	0.48	0.6	5	20.3	53.9	63.6
E5523355	0.32	<0.2	1.74	8	<5	250	<0.5	<1	0.35	<0.5	7	9.3	32.6	13.2
E5523356	0.28	<0.2	3.61	14	<5	485	0.8	<1	0.67	<0.5	6	11.6	54.4	31.1
E5523357	0.38	0.6	2.93	13	<5	426	0.9	<1	0.92	<0.5	13	13.1	46.0	53.9
E5523358	0.32	0.3	3.53	16	<5	522	1.0	2	0.88	<0.5	5	14.5	53.0	66.4
E5523359	0.32	0.2	2.51	14	8	363	0.7	5	0.54	0.6	12	17.4	78.3	39.5
E5523360	0.28	<0.2	1.44	6	<5	202	<0.5	<1	0.38	<0.5	12	7.6	60.4	14.7
E5523361	0.28	<0.2	0.77	5	<5	133	<0.5	<1	0.27	<0.5	5	6.5	48.1	5.2
E5523362	0.12	<0.2	1.08	5	<5	314	<0.5	<1	0.40	<0.5	12	8.8	47.1	16.8
E5523363	0.10	<0.2	0.89	7	5	229	<0.5	<1	1.14	<0.5	6	7.6	27.2	14.4
E5523364	0.18	<0.2	0.65	8	5	122	<0.5	8	0.26	0.6	<1	68.6	342	11.5
E5523365	0.26	<0.2	1.08	6	<5	95	<0.5	<1	0.26	<0.5	<1	77.3	409	8.6
E5523366	0.20	<0.2	0.65	4	<5	125	<0.5	<1	0.26	<0.5	<1	118	384	8.1
E5523367	0.30	<0.2	0.82	3	<5	87	<0.5	2	0.20	<0.5	<1	115	478	10.9
E5523368	0.32	<0.2	0.73	5	<5	101	<0.5	<1	0.24	<0.5	<1	67.0	318	12.9
E5523369	0.26	<0.2	0.52	5	<5	74	<0.5	4	0.24	<0.5	<1	25.3	237	4.2
E5523370	0.18	<0.2	0.97	7	<5	136	<0.5	3	0.42	<0.5	<1	72.1	317	10.6
E5523371	0.30	<0.2	1.00	13	<5	175	<0.5	8	0.30	0.6	<1	77.5	315	10.3

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description RDL:	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523372	0.26	<0.2	1.12	3	<5	198	<0.5	<1	0.49	<0.5	4	15.9	148	1.3
E5523373	0.48	<0.2	1.44	7	<5	170	<0.5	2	0.51	<0.5	<1	55.0	286	5.7
E5523374	0.34	<0.2	1.66	7	<5	182	<0.5	<1	0.47	<0.5	<1	67.5	473	7.5
E5523375	0.20	<0.2	1.10	6	<5	134	<0.5	<1	0.30	<0.5	<1	75.0	346	13.2
E5523376	0.34	<0.2	0.85	5	<5	143	<0.5	<1	0.38	<0.5	<1	53.3	245	9.8
E5523377	0.22	<0.2	0.86	13	9	164	<0.5	5	0.91	1.1	<1	63.2	312	21.6
E5523378	0.34	<0.2	1.52	8	<5	210	<0.5	<1	0.75	<0.5	<1	47.8	251	27.8
E5523379	0.20	0.3	2.14	9	<5	286	0.5	2	0.66	0.7	6	13.4	64.5	26.4
E5523380	0.34	<0.2	1.24	8	<5	189	<0.5	<1	0.67	0.7	3	22.8	181	14.9
E5523381	0.22	<0.2	1.49	6	<5	165	<0.5	<1	0.37	<0.5	11	5.0	36.6	12.5
E5523382	0.30	<0.2	1.15	7	<5	96	<0.5	2	0.29	<0.5	11	5.7	35.0	9.4
E5523383	0.18	<0.2	2.06	10	<5	190	0.5	<1	0.21	<0.5	7	8.8	40.5	28.3
E5523384	0.36	<0.2	1.64	6	<5	158	<0.5	<1	0.33	<0.5	8	5.2	36.5	13.9
E5523385	0.18	<0.2	2.27	8	<5	252	0.8	1	0.24	<0.5	8	11.6	38.4	29.3
E5523386	0.28	<0.2	1.39	7	<5	175	<0.5	<1	0.42	<0.5	11	6.0	55.5	13.2
E5523387	0.36	<0.2	1.38	8	<5	212	<0.5	<1	0.40	<0.5	10	6.1	61.5	10.5
E5523388	0.20	<0.2	1.28	6	<5	199	<0.5	<1	0.40	<0.5	8	8.6	53.9	9.7
E5523389	0.28	<0.2	2.56	12	<5	297	<0.5	<1	0.74	<0.5	13	9.0	90.9	49.3
E5523390	0.28	<0.2	2.39	9	<5	236	0.5	1	0.31	<0.5	5	9.1	39.5	19.7
E5523391	0.64	0.2	5.33	11	<5	543	1.0	<1	0.58	<0.5	7	10.0	48.5	44.6
E5523392	0.44	0.4	3.26	10	<5	296	0.5	<1	0.64	<0.5	7	8.3	37.4	20.3
E5523393	0.22	<0.2	3.56	14	<5	275	0.7	<1	0.27	<0.5	<1	13.9	46.0	38.2
E5523394	0.32	0.3	3.16	14	<5	308	1.0	2	0.37	<0.5	4	15.1	44.7	43.0
E5523395	0.42	<0.2	3.13	12	<5	264	0.8	<1	0.27	<0.5	<1	11.1	42.2	39.2
E5523396	0.18	0.4	3.47	17	<5	385	1.2	8	0.45	0.9	12	15.6	47.6	78.7
E5523397	0.24	0.2	3.37	16	<5	268	1.0	3	0.29	<0.5	1	11.7	48.6	63.6
E5523398	0.32	<0.2	4.52	17	<5	318	1.0	2	0.28	<0.5	<1	12.7	55.0	63.3
E5523399	0.26	<0.2	3.32	15	<5	340	1.1	2	0.35	0.6	6	12.8	47.1	60.3
E5523400	0.32	<0.2	4.27	17	<5	573	1.1	4	0.23	<0.5	<1	10.9	58.5	67.1
E5523401	0.22	<0.2	1.36	7	<5	227	<0.5	<1	0.54	<0.5	10	5.4	56.3	10.0
E5523402	0.56	0.2	1.39	7	<5	192	<0.5	<1	0.41	<0.5	7	6.4	40.9	12.1

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description RDL:	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523403	0.38	0.3	1.91	8	<5	276	0.5	<1	0.37	<0.5	10	9.5	30.9	14.7
E5523404	0.32	0.2	2.76	10	<5	279	0.7	<1	0.31	<0.5	5	10.1	38.8	32.6
E5523405	0.42	<0.2	2.64	10	<5	273	0.7	<1	0.31	<0.5	<1	10.1	35.3	31.1
E5523406	0.30	<0.2	4.66	14	<5	441	1.2	2	0.31	<0.5	3	13.7	51.0	43.4
E5523407	0.28	0.5	3.31	13	<5	483	1.0	1	0.80	0.8	12	10.8	42.5	55.8
E5523408	0.34	<0.2	2.82	13	<5	288	0.8	2	0.42	<0.5	9	13.1	46.6	39.4
E5523409	0.58	<0.2	2.33	12	<5	207	0.6	1	0.25	<0.5	5	11.0	39.0	30.9
E5523410	0.34	<0.2	2.72	12	<5	237	0.7	2	0.33	<0.5	1	12.4	35.5	28.6
E5523411	0.14	<0.2	2.15	13	7	273	0.8	6	0.43	<0.5	10	14.9	51.5	31.1
E5523412	0.28	0.2	3.41	11	<5	284	0.9	<1	0.34	<0.5	6	11.6	44.6	46.1
E5523413	0.50	<0.2	2.95	14	<5	322	0.9	4	0.28	0.6	2	13.6	47.1	43.9
E5523414	0.58	<0.2	3.24	13	<5	215	0.8	2	0.23	<0.5	<1	10.3	43.0	45.5
E5523415	0.24	<0.2	2.80	14	<5	208	0.7	<1	0.28	<0.5	<1	13.1	38.5	40.8
E5523416	0.36	<0.2	2.27	8	8	206	<0.5	2	0.67	<0.5	2	10.4	73.0	16.4
E5523417	0.16	<0.2	1.98	8	6	438	<0.5	<1	1.14	<0.5	4	7.3	57.6	14.9
E5523418	0.36	0.5	2.23	8	<5	379	0.5	<1	0.93	<0.5	7	11.1	69.4	40.6
E5523419	0.34	<0.2	2.42	12	<5	258	0.5	2	0.63	<0.5	9	8.8	42.3	25.3
E5523420	0.32	0.2	2.85	12	5	459	0.6	<1	0.68	0.6	6	11.1	40.7	25.3
E5523421	0.38	<0.2	2.04	9	<5	205	<0.5	1	0.60	<0.5	9	6.5	42.2	17.6
E5523422	0.46	<0.2	1.68	8	<5	116	<0.5	1	0.49	<0.5	8	8.1	44.0	20.6
E5523423	0.32	<0.2	1.52	8	<5	143	<0.5	<1	0.38	<0.5	8	6.7	31.6	15.6
E5523424	0.24	0.3	2.05	13	7	346	0.7	4	0.87	0.9	13	10.1	35.5	38.6
E5523425	0.22	0.2	2.40	9	<5	278	0.6	2	0.36	<0.5	5	10.6	34.5	21.8
E5523426	0.16	<0.2	0.40	3	<5	54	<0.5	<1	0.12	<0.5	2	2.4	9.3	5.9
E5523427	0.20	0.3	3.13	15	9	424	0.8	2	1.35	0.7	11	9.9	51.9	66.6
E5523428	0.26	0.3	2.61	13	17	400	0.7	<1	1.97	0.8	9	6.7	43.3	88.2
E5523429	0.24	1.1	5.41	17	10	628	1.6	6	0.71	1.7	17	9.9	62.6	106
E5523430	0.34	0.3	3.64	14	6	366	0.9	3	0.55	0.5	3	9.9	46.3	56.5
E5523431	0.14	0.4	2.10	13	9	351	0.6	2	0.81	0.6	5	10.2	30.0	35.7
E5523432	0.24	<0.2	3.16	15	<5	313	0.8	2	0.43	<0.5	2	13.4	46.1	47.9
E5523433	0.14	<0.2	1.66	9	<5	209	<0.5	1	0.42	<0.5	7	7.6	34.2	14.0

Certified By:

AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Sample Login Weight	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cu
Unit:	kg	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Sample Description **RDL:**	0.01	0.2	0.01	1	5	1	0.5	1	0.01	0.5	1	0.5	0.5	0.5
E5523434	0.20	<0.2	1.37	6	<5	183	<0.5	1	0.37	<0.5	11	5.3	38.7	8.8
E5523435	0.30	<0.2	2.96	14	<5	315	0.6	3	0.53	<0.5	6	11.7	48.8	28.9
E5523436	0.20	<0.2	2.74	13	<5	297	0.6	2	0.51	<0.5	6	11.2	45.1	26.8
E5523437	0.16	<0.2	1.35	6	9	130	<0.5	1	0.27	<0.5	<1	63.6	330	15.4
E5523438	0.20	<0.2	1.06	5	<5	91	<0.5	1	0.24	<0.5	<1	52.7	253	7.3
E5523439	0.54	<0.2	1.34	4	<5	114	<0.5	1	0.28	<0.5	<1	84.6	416	9.5
E5523440	0.20	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523441	0.28	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523442	0.18	<0.2	1.10	5	<5	88	<0.5	<1	0.23	<0.5	4	26.2	141	5.4
E5523443	0.20	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523444	0.18	<0.2	1.88	7	<5	235	<0.5	2	0.46	<0.5	3	17.9	180	21.7
E5523445	0.18	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523446	0.26	<0.2	1.75	6	<5	176	<0.5	1	0.41	<0.5	2	19.0	164	10.8
E5523447	0.14	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523448	0.26	<0.2	0.96	7	<5	106	<0.5	1	0.34	<0.5	6	7.3	74.5	12.3
E5523449	0.22	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523450	0.26	0.4	2.63	12	15	314	1.0	4	0.82	1.5	6	20.6	121	141
E5523451	0.32	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Sample Description	Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
	Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
	RDL:	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523310		2.63	6	<1	3	0.11	7	11	0.78	716	1.3	<0.01	82.0	541	8.1
E5523311		0.60	<5	<1	<1	0.26	2	3	0.28	1200	5.0	<0.01	13.7	1460	4.7
E5523312		2.35	5	<1	6	0.14	6	9	0.56	635	1.1	<0.01	39.2	566	6.4
E5523313		1.79	<5	<1	<1	0.14	6	9	0.48	641	1.8	<0.01	44.3	609	8.3
E5523314		1.69	<5	<1	<1	0.12	5	5	0.46	855	1.9	<0.01	32.7	700	5.9
E5523315		1.51	<5	<1	<1	0.10	5	9	0.51	437	1.1	<0.01	27.1	560	5.7
E5523316		1.97	<5	<1	<1	0.08	6	10	0.58	592	1.6	<0.01	59.5	467	6.4
E5523317		3.74	7	<1	1	0.15	10	14	1.08	1080	2.1	0.02	177	536	9.3
E5523318		2.13	6	<1	2	0.09	9	9	0.70	2090	2.2	<0.01	94.7	615	6.3
E5523319		2.23	<5	<1	<1	0.11	21	11	0.67	2300	2.2	0.01	127	862	8.0
E5523320		2.20	<5	<1	2	0.12	8	12	0.53	903	1.6	0.01	68.0	713	5.5
E5523321		1.61	<5	<1	3	0.07	6	11	0.33	518	1.5	<0.01	28.6	419	4.9
E5523322		1.89	<5	<1	<1	0.06	5	10	0.41	689	2.0	<0.01	37.8	479	4.7
E5523323		1.66	<5	<1	<1	0.06	5	8	0.35	498	1.1	<0.01	28.0	647	4.5
E5523324		2.12	<5	<1	<1	0.18	6	9	0.46	1070	1.1	<0.01	46.8	2020	5.8
E5523325		3.62	7	<1	<1	0.18	7	30	1.67	1150	0.9	<0.01	244	984	8.4
E5523326		1.87	<5	<1	<1	0.09	6	9	0.43	1600	1.7	0.01	60.8	385	6.2
E5523327		1.99	<5	<1	<1	0.08	7	10	0.50	408	0.9	<0.01	61.5	509	4.8
E5523328		2.66	<5	<1	<1	0.11	6	13	0.62	785	0.9	<0.01	60.9	339	7.6
E5523329		2.85	6	<1	<1	0.11	9	13	0.72	1470	1.4	0.01	71.3	671	8.3
E5523330		3.47	8	<1	4	0.11	7	12	0.86	1280	2.1	<0.01	91.9	903	9.8
E5523331		2.43	<5	<1	4	0.08	8	10	0.70	444	0.9	<0.01	58.6	619	6.7
E5523332		1.31	<5	<1	<1	0.08	6	7	0.21	486	0.8	<0.01	18.5	399	4.4
E5523333		3.26	8	<1	3	0.08	5	16	0.96	434	0.9	0.01	63.6	767	8.7
E5523334		2.64	6	<1	2	0.16	9	13	0.76	900	1.8	0.01	71.0	632	8.1
E5523335		3.33	13	<1	<1	0.26	20	16	0.89	2680	<0.5	0.01	175	1700	11.2
E5523336		3.00	7	<1	<1	0.13	7	14	0.75	673	0.8	0.01	53.2	392	8.7
E5523337		3.25	8	<1	<1	0.21	7	14	0.98	671	1.0	0.01	61.6	1020	12.6
E5523338		4.56	10	<1	1	0.18	9	19	1.21	978	<0.5	0.02	63.2	621	15.4
E5523339		5.99	10	<1	<1	0.27	11	26	1.35	819	1.7	0.02	60.8	377	19.4
E5523340		3.90	9	<1	<1	0.25	8	18	0.82	1040	1.0	0.02	38.6	589	14.5
E5523341		3.84	10	<1	2	0.28	8	18	0.97	1270	1.0	0.02	51.2	721	15.9

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
	Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
Sample Description	**RDL:**	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523342		4.06	10	<1	<1	0.28	7	16	1.01	1430	<0.5	0.02	54.2	840	15.4
E5523343		4.22	11	<1	<1	0.21	9	15	0.96	1450	1.2	0.01	56.0	996	15.8
E5523344		4.52	10	<1	<1	0.16	6	20	1.04	1100	0.7	0.01	46.8	543	18.2
E5523345		5.26	11	<1	<1	0.28	6	22	1.16	1030	1.3	0.03	51.2	468	18.5
E5523346		4.86	8	<1	<1	0.26	9	20	1.10	1100	1.2	0.02	46.7	664	16.8
E5523347		3.78	13	<1	3	0.29	9	17	1.17	1180	<0.5	0.02	76.0	911	12.8
E5523348		4.88	13	<1	6	0.23	10	23	1.34	1050	1.1	0.02	58.8	420	16.2
E5523349		4.45	11	<1	2	0.24	11	19	1.22	1100	0.9	0.02	92.7	620	15.4
E5523350		2.94	7	<1	<1	0.10	10	11	0.92	657	1.4	0.01	79.6	677	8.9
E5523351		3.52	7	<1	<1	0.26	6	17	1.06	717	1.8	0.01	36.8	570	10.8
E5523352		3.93	10	<1	4	0.23	8	16	0.96	1250	2.1	0.01	47.8	668	14.9
E5523353		3.68	10	<1	2	0.21	11	15	0.96	1360	1.7	0.01	45.0	749	14.1
E5523354		4.59	10	<1	<1	0.29	9	19	1.16	1350	2.1	0.02	51.1	797	17.8
E5523355		2.66	6	<1	2	0.14	6	12	0.64	789	0.8	0.01	24.3	607	10.4
E5523356		4.90	<5	<1	<1	0.25	7	22	1.52	874	1.0	0.02	47.2	291	16.1
E5523357		3.72	9	<1	2	0.20	10	16	1.21	1040	1.1	0.02	47.9	368	14.4
E5523358		4.35	10	<1	<1	0.25	10	21	1.46	1230	<0.5	0.02	66.3	342	16.9
E5523359		3.68	8	<1	<1	0.16	11	20	1.07	1050	1.3	0.02	95.9	315	12.1
E5523360		2.43	5	<1	<1	0.10	8	11	0.72	655	0.8	0.01	61.1	355	6.8
E5523361		1.73	<5	<1	<1	0.09	5	7	0.37	431	<0.5	<0.01	56.6	255	4.0
E5523362		1.81	<5	<1	<1	0.10	7	9	0.52	2250	1.7	<0.01	40.6	677	6.4
E5523363		1.60	<5	<1	<1	0.16	4	10	0.32	1220	1.8	<0.01	14.8	797	4.7
E5523364		5.68	6	<1	<1	0.04	4	3	3.16	781	0.7	<0.01	493	1130	5.4
E5523365		6.33	<5	<1	<1	0.04	4	5	5.60	879	1.1	0.01	737	773	1.8
E5523366		7.30	<5	7	<1	0.04	1	3	7.95	1460	1.4	<0.01	868	1330	0.7
E5523367		7.00	7	<1	3	0.04	3	3	7.65	1180	2.2	<0.01	888	921	2.3
E5523368		4.78	<5	<1	<1	0.03	3	4	13.1	837	<0.5	<0.01	1120	309	<0.5
E5523369		2.78	<5	<1	2	0.05	4	2	2.12	345	<0.5	0.01	311	646	3.3
E5523370		4.30	7	<1	4	0.04	4	4	7.48	868	1.1	0.01	754	451	2.9
E5523371		4.74	6	<1	<1	0.03	4	5	5.93	833	1.4	0.01	640	1130	4.4
E5523372		4.11	<5	<1	<1	0.05	4	5	1.31	268	1.8	0.01	118	597	3.8
E5523373		3.49	5	<1	2	0.06	4	6	3.01	699	<0.5	0.02	318	142	4.0

Certified By:

Results relate only to the items tested and to all the items tested

AGAT Laboratories

Certificate of Analysis

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PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Sample Description	Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
	Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
	RDL:	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523374		7.28	<5	<1	<1	0.07	3	8	7.43	586	2.4	0.02	764	349	2.9
E5523375		5.36	5	<1	<1	0.04	3	6	6.44	881	0.7	0.01	647	408	2.5
E5523376		4.49	<5	<1	<1	0.04	3	4	5.83	817	1.5	0.01	497	648	1.4
E5523377		3.43	8	<1	9	0.04	5	4	7.68	1040	<0.5	<0.01	941	530	2.2
E5523378		4.27	6	<1	4	0.08	6	6	7.49	809	1.4	0.02	721	380	4.5
E5523379		3.01	7	<1	2	0.16	6	15	1.13	891	0.6	0.02	74.0	444	10.5
E5523380		2.98	<5	<1	<1	0.10	5	7	3.21	664	1.2	0.02	295	451	5.6
E5523381		2.05	<5	<1	3	0.09	7	10	0.61	227	0.6	0.01	30.8	275	7.6
E5523382		1.55	5	<1	<1	0.06	7	9	0.51	227	1.1	<0.01	28.3	361	6.3
E5523383		2.88	7	<1	<1	0.14	7	14	0.72	544	<0.5	0.01	31.4	496	10.1
E5523384		2.44	<5	<1	<1	0.12	6	12	0.77	313	0.6	0.01	32.2	168	7.6
E5523385		3.16	7	<1	2	0.14	8	13	0.73	1070	1.0	0.01	37.1	353	11.5
E5523386		2.11	<5	<1	2	0.11	9	12	0.65	412	0.9	0.01	49.7	382	5.8
E5523387		2.16	5	<1	1	0.07	7	10	0.66	367	0.9	0.01	42.3	328	6.1
E5523388		1.87	<5	<1	2	0.06	6	8	0.70	651	<0.5	<0.01	64.6	439	5.8
E5523389		3.77	6	<1	<1	0.21	11	17	1.35	642	2.1	0.02	88.6	570	10.2
E5523390		2.85	8	<1	<1	0.15	6	16	0.64	621	1.1	0.01	35.1	1000	11.2
E5523391		5.26	9	<1	<1	0.40	8	29	1.40	726	2.2	0.02	47.0	994	20.2
E5523392		4.37	<5	<1	<1	0.28	6	25	1.14	761	2.5	0.02	34.0	656	14.2
E5523393		4.43	10	<1	1	0.34	5	23	1.08	1030	0.5	0.02	39.0	529	16.6
E5523394		4.03	11	<1	3	0.26	8	17	0.88	1460	0.6	0.01	40.4	701	15.9
E5523395		4.11	10	<1	1	0.27	6	18	0.95	1090	1.2	0.02	33.7	663	14.3
E5523396		3.93	11	<1	<1	0.30	10	18	0.94	1680	1.3	0.02	47.7	1230	13.9
E5523397		4.51	11	<1	<1	0.26	8	22	1.06	930	<0.5	0.02	42.8	535	15.8
E5523398		5.15	13	<1	5	0.36	6	28	1.25	750	1.8	0.02	44.5	321	18.7
E5523399		4.08	11	<1	<1	0.30	10	19	0.99	1280	0.6	0.02	44.4	822	15.7
E5523400		4.63	15	<1	3	0.39	8	26	1.21	688	<0.5	0.03	48.4	382	17.2
E5523401		1.84	<5	<1	1	0.13	7	10	0.62	573	1.7	0.01	34.0	575	6.0
E5523402		2.10	5	<1	1	0.09	6	10	0.68	463	<0.5	<0.01	46.5	416	6.0
E5523403		2.45	7	<1	4	0.15	7	14	0.63	947	0.6	0.01	28.4	660	9.8
E5523404		3.30	8	<1	<1	0.25	7	19	0.86	933	1.1	0.02	35.8	515	12.3
E5523405		3.33	8	<1	3	0.19	6	17	0.80	922	1.0	0.01	33.1	452	12.7

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Certificate of Analysis

AGAT WORK ORDER: 12D612547

PROJECT NO: Murray

5623 McADAM ROAD
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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
Sample Description RDL:	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523406	4.36	13	<1	3	0.43	8	16	0.98	1160	<0.5	0.03	47.3	1180	19.4
E5523407	3.62	11	<1	3	0.33	11	15	0.90	1380	<0.5	0.02	48.0	1540	14.4
E5523408	3.55	10	<1	4	0.25	11	16	0.91	1180	1.7	0.02	52.7	672	14.1
E5523409	3.27	9	<1	1	0.15	6	16	0.86	850	1.5	0.01	38.1	281	12.1
E5523410	3.46	8	<1	<1	0.24	6	19	0.81	1080	1.1	0.01	35.1	474	13.9
E5523411	2.91	8	<1	<1	0.18	9	14	0.72	1040	0.8	0.01	43.4	1080	10.5
E5523412	4.37	10	<1	<1	0.25	8	22	1.04	1360	1.7	0.02	40.2	575	15.5
E5523413	3.58	12	<1	3	0.21	8	17	0.82	1270	<0.5	0.01	45.4	607	14.5
E5523414	4.03	10	<1	<1	0.25	6	21	0.96	760	1.5	0.02	35.7	393	15.5
E5523415	4.08	8	<1	2	0.21	6	20	1.00	1050	1.6	0.01	34.3	438	14.9
E5523416	2.75	8	<1	4	0.06	5	34	0.91	658	1.4	0.03	64.4	253	8.1
E5523417	2.47	6	<1	<1	0.19	5	18	0.73	1210	1.9	0.02	40.3	1060	8.1
E5523418	3.23	7	<1	<1	0.07	10	20	1.07	1780	2.1	0.02	93.9	228	9.6
E5523419	3.21	7	<1	<1	0.20	7	17	0.89	762	1.0	0.02	37.4	432	11.1
E5523420	3.50	9	<1	4	0.36	7	19	0.83	1700	2.4	0.01	36.1	1370	13.8
E5523421	2.70	7	<1	<1	0.16	8	16	0.94	522	0.5	0.02	35.1	616	7.6
E5523422	2.56	6	<1	4	0.10	8	15	0.76	460	0.9	0.01	36.6	592	7.3
E5523423	2.19	5	<1	3	0.11	7	12	0.59	504	0.9	0.01	28.0	511	7.3
E5523424	2.67	7	<1	<1	0.20	10	12	0.65	902	1.9	0.01	42.1	1140	9.5
E5523425	3.18	9	<1	2	0.18	6	17	0.73	1310	1.6	0.01	31.4	903	12.0
E5523426	0.66	<5	<1	<1	0.03	2	3	0.19	207	<0.5	<0.01	7.5	176	2.4
E5523427	3.49	10	<1	3	0.22	11	23	1.05	865	1.1	0.02	59.8	692	12.7
E5523428	2.95	8	<1	1	0.19	12	15	1.13	411	1.7	0.02	57.3	1340	10.6
E5523429	4.25	18	<1	2	0.28	20	22	0.97	362	0.7	0.03	103	2250	17.2
E5523430	3.87	11	<1	2	0.33	8	21	1.09	712	1.5	0.02	46.2	925	14.7
E5523431	2.66	8	<1	3	0.28	6	12	0.70	1150	1.1	0.01	34.8	1080	11.0
E5523432	4.46	9	<1	<1	0.22	7	22	1.14	920	1.1	0.01	45.7	364	15.4
E5523433	2.32	7	<1	2	0.13	7	12	0.61	515	0.8	<0.01	30.6	644	8.0
E5523434	1.81	6	<1	<1	0.08	7	11	0.53	394	<0.5	<0.01	25.2	456	5.7
E5523435	3.76	9	<1	6	0.24	7	22	1.04	954	0.7	0.02	54.5	723	13.1
E5523436	3.55	9	<1	2	0.22	7	21	0.98	910	0.8	0.01	52.0	688	12.6
E5523437	4.26	5	<1	<1	0.07	4	5	7.14	1220	0.8	0.01	591	335	5.1

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Fe	Ga	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Ni	P	Pb
Unit:	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm
Sample Description RDL:	0.01	5	1	1	0.01	1	1	0.01	1	0.5	0.01	0.5	10	0.5
E5523438	3.70	5	<1	5	0.03	6	6	2.31	619	0.6	0.01	405	177	4.0
E5523439	5.56	7	<1	4	0.05	4	5	7.81	1020	<0.5	0.02	752	209	3.8
E5523440	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523441	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523442	2.84	<5	<1	3	0.04	6	8	1.84	321	<0.5	0.01	225	252	4.1
E5523443	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523444	2.81	7	<1	1	0.08	7	9	2.65	483	<0.5	0.02	311	321	6.9
E5523445	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523446	3.09	5	<1	2	0.09	6	10	2.92	407	<0.5	0.02	332	190	5.6
E5523447	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523448	1.98	<5	<1	3	0.06	6	7	0.83	236	0.9	0.01	82.7	226	4.8
E5523449	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523450	3.48	10	<1	2	0.13	15	12	2.87	1350	1.2	0.02	537	647	11.0
E5523451	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS

Certified By:

Results relate only to the items tested and to all the items tested

Certificate of Analysis

AGAT Laboratories

AGAT WORK ORDER: 12D612547

PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523310	17	0.012	<1	5.3	<10	<5	25.2	<10	<10	<5	0.10	6	<5	61.2
E5523311	17	0.153	4	0.9	<10	<5	73.0	<10	<10	<5	0.02	<5	<5	14.3
E5523312	22	0.017	<1	3.9	<10	<5	26.4	<10	<10	<5	0.10	6	<5	57.3
E5523313	18	0.043	2	3.2	10	<5	34.0	<10	<10	<5	0.09	7	<5	47.0
E5523314	18	0.044	<1	2.5	<10	<5	40.4	<10	<10	<5	0.06	5	<5	33.5
E5523315	12	0.034	<1	2.3	<10	<5	37.1	<10	<10	<5	0.10	6	<5	32.2
E5523316	18	0.025	<1	3.3	<10	<5	30.8	<10	<10	<5	0.07	5	<5	44.9
E5523317	30	0.020	<1	9.6	<10	<5	35.2	<10	<10	<5	0.09	6	<5	75.5
E5523318	17	0.061	2	5.3	<10	<5	61.1	<10	<10	<5	0.04	7	6	50.6
E5523319	18	0.063	<1	5.4	<10	<5	74.7	<10	<10	<5	0.06	7	6	50.0
E5523320	22	0.015	<1	4.6	<10	<5	39.2	<10	<10	<5	0.13	8	<5	54.1
E5523321	16	0.010	<1	3.0	<10	<5	22.0	<10	<10	<5	0.11	6	<5	44.0
E5523322	14	0.010	<1	3.0	<10	<5	24.1	<10	<10	<5	0.10	5	<5	43.5
E5523323	12	0.009	<1	3.1	<10	<5	23.4	<10	<10	<5	0.09	<5	<5	42.2
E5523324	19	0.015	<1	4.5	<10	<5	32.0	<10	<10	<5	0.09	6	<5	47.8
E5523325	28	0.014	13	8.3	<10	<5	38.2	<10	<10	<5	0.09	7	<5	82.3
E5523326	17	0.021	<1	3.3	<10	<5	25.2	<10	<10	<5	0.12	7	<5	45.4
E5523327	16	0.007	<1	4.3	<10	<5	22.5	<10	<10	<5	0.12	5	<5	50.4
E5523328	15	0.016	<1	4.2	<10	<5	29.3	<10	<10	<5	0.11	7	<5	55.2
E5523329	35	0.017	<1	5.7	<10	<5	29.4	<10	<10	<5	0.08	6	<5	54.8
E5523330	20	0.035	<1	8.2	<10	<5	42.6	<10	<10	<5	0.07	7	<5	78.8
E5523331	13	0.009	<1	5.0	<10	<5	25.1	<10	<10	<5	0.11	6	<5	61.4
E5523332	20	0.008	1	3.1	<10	<5	20.4	<10	<10	<5	0.10	5	<5	44.2
E5523333	22	0.015	<1	6.1	<10	<5	31.2	<10	<10	<5	0.14	9	<5	98.6
E5523334	35	0.022	<1	5.3	<10	<5	31.6	<10	<10	<5	0.09	6	<5	57.2
E5523335	86	0.037	3	8.8	<10	<5	54.6	<10	<10	<5	0.06	7	5	90.1
E5523336	33	0.018	<1	5.8	<10	<5	26.9	<10	<10	<5	0.07	6	<5	64.8
E5523337	28	0.101	<1	8.6	<10	<5	54.3	<10	<10	<5	0.02	5	<5	64.9
E5523338	24	0.027	<1	11.4	<10	<5	42.8	<10	<10	<5	0.03	6	<5	81.9
E5523339	35	0.022	<1	13.9	<10	<5	42.6	<10	<10	<5	0.03	<5	<5	103
E5523340	37	0.024	<1	7.8	<10	<5	35.3	<10	<10	<5	0.02	6	<5	83.1
E5523341	44	0.044	<1	8.7	<10	<5	40.7	<10	<10	<5	0.02	5	<5	88.6

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AGAT WORK ORDER: 12D612547

PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description	RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523342		46	0.062	<1	8.4	<10	<5	62.6	<10	<10	<5	0.03	6	<5	83.4
E5523343		33	0.057	<1	6.8	<10	<5	54.0	<10	<10	<5	0.01	10	<5	79.8
E5523344		25	0.019	<1	7.8	<10	<5	25.5	<10	<10	<5	0.04	9	<5	93.4
E5523345		38	0.027	<1	10.1	<10	<5	31.6	<10	<10	<5	0.02	<5	<5	91.3
E5523346		38	0.036	<1	7.6	<10	<5	41.7	<10	<10	<5	0.02	<5	<5	78.1
E5523347		59	0.045	<1	12.7	<10	<5	75.9	<10	<10	<5	<0.01	8	<5	80.1
E5523348		34	0.014	<1	13.6	<10	<5	55.5	<10	<10	<5	0.02	6	<5	107
E5523349		43	0.037	<1	12.5	<10	<5	62.3	<10	<10	<5	0.03	8	<5	80.2
E5523350		20	0.030	<1	7.4	<10	<5	48.7	<10	<10	<5	0.05	7	<5	64.1
E5523351		24	0.029	<1	7.8	<10	<5	56.9	<10	<10	<5	0.06	6	<5	62.7
E5523352		45	0.033	<1	9.1	<10	<5	57.5	<10	<10	<5	0.04	6	<5	93.1
E5523353		34	0.027	<1	8.7	<10	<5	57.1	<10	<10	<5	0.04	7	<5	79.4
E5523354		45	0.026	2	9.9	<10	<5	49.7	<10	<10	<5	0.04	7	<5	94.7
E5523355		25	0.011	<1	4.4	<10	<5	28.7	<10	<10	<5	0.06	5	<5	53.6
E5523356		32	0.019	<1	8.2	<10	<5	51.6	<10	<10	<5	0.06	6	<5	74.0
E5523357		39	0.034	<1	9.3	<10	<5	63.5	<10	<10	<5	0.04	6	<5	70.7
E5523358		53	0.030	<1	11.6	<10	<5	61.7	<10	<10	<5	0.03	7	<5	85.8
E5523359		41	0.020	<1	8.6	<10	<5	41.4	<10	<10	<5	0.08	8	<5	77.7
E5523360		16	0.011	<1	4.6	<10	<5	24.4	<10	<10	<5	0.10	6	<5	59.5
E5523361		12	0.006	<1	2.4	<10	<5	14.3	<10	<10	<5	0.08	<5	<5	39.7
E5523362		19	0.012	<1	3.3	<10	<5	25.0	<10	<10	<5	0.08	6	<5	41.9
E5523363		26	0.034	1	2.8	<10	<5	78.6	<10	<10	<5	0.09	8	<5	38.9
E5523364		<10	0.016	<1	2.7	<10	<5	10.0	<10	<10	<5	0.07	<5	<5	60.6
E5523365		11	0.011	<1	5.1	<10	<5	10.0	<10	<10	<5	0.09	<5	<5	59.1
E5523366		<10	0.021	<1	3.7	<10	<5	6.7	<10	<10	<5	0.04	<5	<5	47.7
E5523367		<10	0.013	<1	4.7	<10	<5	7.6	<10	<10	<5	0.06	<5	<5	67.5
E5523368		<10	0.009	<1	6.0	<10	<5	7.2	<10	<10	<5	0.03	<5	<5	45.7
E5523369		11	0.009	<1	3.1	<10	<5	9.4	<10	<10	<5	0.08	<5	<5	52.4
E5523370		12	0.011	<1	5.7	<10	<5	13.1	<10	<10	<5	0.07	6	<5	57.5
E5523371		<10	0.009	<1	4.5	<10	<5	11.4	<10	<10	<5	0.08	7	<5	64.2
E5523372		<10	0.009	<1	2.4	<10	<5	19.3	<10	<10	<5	0.15	9	<5	49.2
E5523373		16	0.014	<1	7.4	<10	<5	21.5	<10	<10	<5	0.10	7	<5	49.1

Certified By:

AGAT Laboratories

Certificate of Analysis

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Sample Description	Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523374		20	0.010	<1	6.3	<10	<5	17.5	<10	<10	<5	0.11	8	<5	78.5
E5523375		13	0.013	<1	4.8	<10	<5	13.1	<10	<10	<5	0.07	<5	<5	57.7
E5523376		11	0.011	<1	3.7	<10	<5	12.1	<10	<10	<5	0.06	<5	<5	43.2
E5523377		13	0.043	<1	7.1	<10	<5	30.2	<10	<10	<5	0.02	<5	<5	55.8
E5523378		19	0.026	<1	7.9	<10	<5	32.3	<10	<10	<5	0.05	6	<5	52.3
E5523379		32	0.020	<1	7.5	<10	<5	38.2	<10	<10	<5	0.06	6	<5	60.2
E5523380		25	0.018	<1	5.3	<10	<5	31.2	<10	<10	<5	0.09	7	<5	51.6
E5523381		13	0.007	<1	4.2	<10	<5	26.6	<10	<10	<5	0.10	6	<5	45.6
E5523382		14	0.005	<1	3.7	<10	<5	20.1	<10	<10	<5	0.08	<5	<5	43.5
E5523383		22	0.009	<1	5.5	<10	<5	23.1	<10	<10	<5	0.04	<5	<5	61.9
E5523384		21	0.007	<1	4.7	<10	<5	25.9	<10	<10	<5	0.09	6	<5	45.3
E5523385		26	0.011	<1	5.8	<10	<5	22.8	<10	<10	<5	0.03	<5	<5	64.8
E5523386		19	0.008	<1	4.7	<10	<5	25.4	<10	<10	<5	0.12	6	<5	53.2
E5523387		20	0.008	<1	3.9	<10	<5	27.0	<10	<10	<5	0.13	7	<5	56.8
E5523388		17	0.009	<1	3.4	<10	<5	22.4	<10	<10	<5	0.05	<5	<5	40.7
E5523389		18	0.014	<1	9.0	<10	<5	52.5	<10	<10	<5	0.13	9	<5	71.0
E5523390		31	0.012	<1	5.4	<10	<5	22.8	<10	<10	<5	0.05	<5	<5	61.1
E5523391		53	0.033	<1	8.6	<10	<5	54.1	<10	<10	<5	0.03	5	<5	83.2
E5523392		42	0.019	<1	6.0	<10	<5	49.1	<10	<10	<5	0.09	7	<5	63.3
E5523393		50	0.022	<1	8.3	<10	<5	34.0	<10	<10	<5	0.03	<5	<5	87.5
E5523394		44	0.018	<1	8.5	<10	<5	32.8	<10	<10	<5	0.02	6	<5	82.8
E5523395		33	0.022	<1	7.4	<10	<5	30.7	<10	<10	<5	0.01	<5	<5	76.7
E5523396		39	0.055	1	10.1	<10	<5	54.7	<10	<10	<5	0.01	8	<5	82.1
E5523397		35	0.022	<1	9.9	<10	<5	33.0	<10	<10	<5	0.02	<5	<5	90.4
E5523398		44	0.019	<1	14.1	<10	<5	33.3	<10	<10	<5	0.02	<5	<5	102
E5523399		45	0.025	<1	9.6	<10	<5	42.5	<10	<10	<5	0.03	6	<5	83.9
E5523400		54	0.026	<1	14.6	<10	<5	47.7	<10	<10	<5	0.03	6	<5	107
E5523401		21	0.014	<1	4.2	<10	<5	35.3	<10	<10	<5	0.13	7	<5	46.8
E5523402		15	0.008	<1	4.0	<10	<5	27.0	<10	<10	<5	0.04	5	<5	41.3
E5523403		41	0.010	<1	5.2	<10	<5	29.1	<10	<10	<5	0.03	5	<5	50.5
E5523404		48	0.017	<1	6.7	<10	<5	32.8	<10	<10	<5	0.04	5	<5	67.9
E5523405		32	0.011	<1	7.4	<10	<5	33.9	<10	<10	<5	<0.01	<5	<5	63.4

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description / RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523406	66	0.023	<1	10.5	<10	<5	43.2	<10	<10	<5	0.03	5	<5	94.5
E5523407	50	0.039	<1	9.6	<10	<5	67.5	<10	<10	<5	0.03	7	<5	69.1
E5523408	47	0.021	<1	8.0	<10	<5	39.8	<10	<10	<5	0.04	6	<5	73.7
E5523409	29	0.011	<1	7.1	<10	<5	26.3	<10	<10	<5	0.03	<5	<5	66.7
E5523410	41	0.020	<1	6.5	<10	<5	35.1	<10	<10	<5	0.04	6	<5	67.3
E5523411	37	0.024	2	5.5	<10	<5	35.6	<10	<10	<5	0.07	9	<5	71.0
E5523412	42	0.024	<1	7.7	<10	<5	35.6	<10	<10	<5	0.03	<5	<5	76.6
E5523413	47	0.014	<1	9.1	<10	<5	33.9	<10	<10	<5	0.02	5	<5	86.7
E5523414	38	0.016	<1	8.3	<10	<5	28.7	<10	<10	<5	0.02	<5	<5	80.4
E5523415	26	0.014	<1	7.6	<10	<5	33.1	<10	<10	<5	<0.01	<5	<5	72.8
E5523416	16	0.015	<1	5.4	<10	<5	40.6	<10	<10	<5	0.13	8	<5	81.4
E5523417	23	0.025	<1	4.8	<10	<5	54.6	<10	<10	<5	0.17	11	<5	66.6
E5523418	18	0.025	<1	9.4	<10	<5	63.2	<10	<10	<5	0.04	7	<5	62.0
E5523419	36	0.017	<1	7.8	<10	<5	45.9	<10	<10	<5	0.10	6	<5	66.0
E5523420	56	0.019	<1	7.4	<10	<5	51.4	<10	<10	<5	0.06	7	<5	66.6
E5523421	25	0.014	<1	5.7	<10	<5	47.1	<10	<10	<5	0.15	9	<5	62.5
E5523422	19	0.009	<1	5.5	<10	<5	33.4	<10	<10	<5	0.10	7	<5	64.3
E5523423	21	0.008	<1	4.6	<10	<5	28.2	<10	<10	<5	0.08	7	<5	47.8
E5523424	31	0.048	2	6.9	<10	<5	57.0	<10	<10	<5	0.03	7	<5	54.7
E5523425	35	0.010	<1	6.3	<10	<5	26.4	<10	<10	<5	0.04	6	<5	60.7
E5523426	<10	<0.005	<1	1.2	<10	<5	9.6	<10	<10	<5	0.01	<5	<5	15.6
E5523427	35	0.049	<1	10.6	<10	<5	92.2	<10	<10	<5	0.07	9	<5	75.1
E5523428	34	0.084	<1	9.6	<10	<5	121	<10	<10	<5	0.05	7	<5	55.8
E5523429	69	0.049	<1	20.4	<10	<5	68.5	<10	<10	<5	0.01	7	<5	94.1
E5523430	49	0.043	<1	8.0	<10	<5	58.8	<10	<10	<5	0.03	7	<5	80.9
E5523431	26	0.075	<1	6.2	<10	<5	57.6	<10	<10	<5	0.03	6	<5	56.2
E5523432	28	0.014	<1	10.4	<10	<5	44.2	<10	<10	<5	0.02	5	<5	79.6
E5523433	27	0.011	<1	4.6	<10	<5	29.3	<10	<10	<5	0.08	5	<5	50.5
E5523434	15	0.007	<1	3.8	<10	<5	24.3	<10	<10	<5	0.11	6	<5	47.9
E5523435	49	0.014	<1	8.5	<10	<5	42.2	<10	<10	<5	0.08	7	<5	75.2
E5523436	44	0.013	<1	7.9	<10	<5	38.6	<10	<10	<5	0.08	7	<5	69.4
E5523437	13	0.029	<1	6.7	<10	<5	13.0	<10	<10	<5	0.04	<5	<5	43.9

Certified By:

Results relate only to the items tested and to all the items tested

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AGAT WORK ORDER: 12D612547

PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	Rb	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Unit:	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
Sample Description	RDL:	10	0.005	1	0.5	10	5	0.5	10	10	5	0.01	5	5	0.5
E5523438		<10	0.013	<1	4.6	<10	<5	14.1	<10	<10	<5	0.07	<5	<5	41.3
E5523439		13	0.016	<1	8.4	<10	<5	14.4	<10	<10	<5	0.07	5	<5	48.4
E5523440		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523441		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523442		12	0.006	<1	3.0	<10	<5	14.8	<10	<10	<5	0.10	<5	<5	47.0
E5523443		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523444		16	0.029	<1	8.4	<10	<5	28.7	<10	<10	<5	0.08	5	<5	47.5
E5523445		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523446		18	0.013	<1	8.2	<10	<5	30.1	<10	<10	<5	0.10	6	<5	48.7
E5523447		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523448		16	0.007	<1	3.2	<10	<5	21.6	<10	<10	<5	0.10	<5	<5	46.5
E5523449		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS
E5523450		39	0.051	<1	10.6	<10	<5	46.0	<10	<10	<5	0.04	6	<5	68.1
E5523451		NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS	NSS

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PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
Sample Description	RDL:	1	1	0.5	5
E5523310		<1	6	72.3	<5
E5523311		<1	1	103	<5
E5523312		<1	3	63.2	<5
E5523313		<1	3	68.9	<5
E5523314		<1	3	112	<5
E5523315		<1	3	84.2	<5
E5523316		<1	4	83.6	<5
E5523317		<1	11	94.7	<5
E5523318		<1	11	90.7	<5
E5523319		<1	27	111	<5
E5523320		<1	4	151	<5
E5523321		<1	3	126	<5
E5523322		<1	3	66.4	<5
E5523323		<1	3	76.8	<5
E5523324		<1	4	126	<5
E5523325		<1	6	142	<5
E5523326		<1	3	117	<5
E5523327		<1	4	106	<5
E5523328		<1	3	82.6	<5
E5523329		<1	8	130	<5
E5523330		<1	7	135	<5
E5523331		<1	5	64.6	<5
E5523332		<1	3	42.8	<5
E5523333		<1	3	89.9	<5
E5523334		<1	8	95.3	<5
E5523335		<1	20	288	<5
E5523336		<1	7	82.4	<5
E5523337		<1	10	123	<5
E5523338		<1	12	116	<5
E5523339		<1	15	132	<5
E5523340		<1	7	136	<5
E5523341		<1	8	167	<5

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AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

Sample Description	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
	RDL:	1	1	0.5	5
E5523342		<1	6	202	<5
E5523343		<1	9	163	<5
E5523344		<1	4	113	<5
E5523345		<1	6	149	<5
E5523346		<1	8	121	<5
E5523347		<1	13	255	<5
E5523348		<1	12	139	<5
E5523349		<1	15	157	<5
E5523350		<1	13	85.0	<5
E5523351		<1	7	112	<5
E5523352		<1	7	147	<5
E5523353		<1	11	155	<5
E5523354		<1	9	132	<5
E5523355		<1	3	113	<5
E5523356		<1	7	115	<5
E5523357		<1	12	131	<5
E5523358		<1	13	159	<5
E5523359		<1	10	110	<5
E5523360		<1	5	53.5	<5
E5523361		<1	2	36.9	<5
E5523362		<1	3	163	<5
E5523363		<1	2	83.6	<5
E5523364		<1	1	69.1	<5
E5523365		<1	2	70.8	<5
E5523366		<1	<1	98.9	<5
E5523367		<1	1	84.1	<5
E5523368		<1	2	44.1	<5
E5523369		<1	2	58.0	<5
E5523370		<1	3	129	<5
E5523371		<1	2	120	<5
E5523372		<1	1	29.9	<5
E5523373		<1	2	29.1	<5

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ATTENTION TO: ADAM CEGIELSKI

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 | DATE RECEIVED: Jun 21, 2012 | DATE REPORTED: Aug 14, 2012 | SAMPLE TYPE: Soil

Sample Description	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
	RDL:	1	1	0.5	5
E5523374		<1	2	44.1	<5
E5523375		<1	2	64.7	<5
E5523376		<1	2	65.5	<5
E5523377		<1	6	53.5	<5
E5523378		<1	6	58.9	<5
E5523379		<1	5	197	<5
E5523380		<1	5	157	<5
E5523381		<1	4	65.4	<5
E5523382		<1	4	69.1	<5
E5523383		<1	4	92.5	<5
E5523384		<1	4	71.9	<5
E5523385		<1	6	86.1	<5
E5523386		<1	6	60.6	<5
E5523387		<1	4	55.8	<5
E5523388		<1	3	79.8	<5
E5523389		<1	13	73.9	<5
E5523390		<1	4	119	<5
E5523391		<1	8	121	<5
E5523392		<1	4	110	<5
E5523393		<1	3	122	<5
E5523394		<1	6	173	<5
E5523395		<1	5	127	<5
E5523396		<1	12	153	<5
E5523397		<1	7	134	<5
E5523398		<1	7	126	<5
E5523399		<1	11	178	<5
E5523400		<1	11	121	<5
E5523401		<1	4	76.7	<5
E5523402		<1	4	88.9	<5
E5523403		<1	5	123	<5
E5523404		<1	5	133	<5
E5523405		<1	4	140	<5

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AGAT WORK ORDER: 12D612547
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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
Sample Description	RDL:	1	1	0.5	5
E5523406		<1	5	208	<5
E5523407		<1	12	199	<5
E5523408		<1	10	113	<5
E5523409		<1	4	63.5	<5
E5523410		<1	3	123	<5
E5523411		<1	6	133	<5
E5523412		<1	6	128	<5
E5523413		<1	5	187	<5
E5523414		<1	4	111	<5
E5523415		<1	5	108	<5
E5523416		<1	3	72.2	<5
E5523417		<1	3	132	<5
E5523418		<1	13	80.0	<5
E5523419		<1	8	90.6	<5
E5523420		<1	5	237	<5
E5523421		<1	6	59.6	<5
E5523422		<1	5	68.5	<5
E5523423		<1	5	96.6	<5
E5523424		<1	11	139	<5
E5523425		<1	5	168	<5
E5523426		<1	1	25.3	<5
E5523427		<1	15	96.1	<5
E5523428		<1	20	103	<5
E5523429		<1	25	207	8
E5523430		<1	8	130	<5
E5523431		<1	7	118	<5
E5523432		<1	7	96.6	<5
E5523433		<1	4	100	<5
E5523434		<1	4	79.9	<5
E5523435		<1	7	110	<5
E5523436		<1	6	104	<5
E5523437		<1	3	56.4	<5

Certified By:

Results relate only to the items tested and to all the items tested

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Certificate of Analysis

AGAT WORK ORDER: 12D612547
PROJECT NO: Murray

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CLIENT NAME: NANTON NICKEL CORPORATION **ATTENTION TO: ADAM CEGIELSKI**

Aqua Regia Digest - Metals Package, ICP-OES finish (201073)

DATE SAMPLED: Jun 21, 2012 **DATE RECEIVED: Jun 21, 2012** **DATE REPORTED: Aug 14, 2012** **SAMPLE TYPE: Soil**

	Analyte:	W	Y	Zn	Zr
	Unit:	ppm	ppm	ppm	ppm
Sample Description	RDL:	1	1	0.5	5
E5523438		<1	3	44.6	<5
E5523439		<1	3	65.7	<5
E5523440		NSS	NSS	NSS	NSS
E5523441		NSS	NSS	NSS	NSS
E5523442		<1	3	50.1	<5
E5523443		NSS	NSS	NSS	NSS
E5523444		<1	7	50.5	<5
E5523445		NSS	NSS	NSS	NSS
E5523446		<1	6	43.7	<5
E5523447		NSS	NSS	NSS	NSS
E5523448		<1	3	50.8	<5
E5523449		NSS	NSS	NSS	NSS
E5523450		<1	26	104	<5
E5523451		NSS	NSS	NSS	NSS

Comments: RDL - Reported Detection Limit

Certified By:

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION

PROJECT NO: Murray

AGAT WORK ORDER: 12D612547

ATTENTION TO: ADAM CEGIELSKI

Solid Analysis

RPT Date: Aug 14, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Ag	1	3446353	< 0.2	< 0.2	0.0%	< 0.2	6.5	6.0	108%	80%	120%
Al	1	3446353	1.41	1.26	11.2%	< 0.01				80%	120%
As	1	3446353	13	11	16.7%	< 1				80%	120%
B	1	3446353	< 5	< 5	0.0%	< 5				80%	120%
Ba	1	3446353	127	126	0.8%	< 1				80%	120%
Be	1	3446353	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Bi	1	3446353	2	2	0.0%	< 1				80%	120%
Ca	1	3446353	0.45	0.41	9.3%	< 0.01				80%	120%
Cd	1	3446353	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Ce	1	3446353	10	8	22.2%	< 1				80%	120%
Co	1	3446353	11.8	10.0	16.5%	< 0.5	5.8	5.0	116%	80%	120%
Cr	1	3446353	65.2	62.4	4.4%	< 0.5				80%	120%
Cu	1	3446353	35.2	34.7	1.4%	< 0.5	3758	3800	98%	80%	120%
Fe	1	3446353	2.63	2.39	9.6%	< 0.01				80%	120%
Ga	1	3446353	6	5	18.2%	< 5				80%	120%
Hg	1	3446353	< 1	< 1	0.0%	< 1				80%	120%
In	1		1	< 1		< 1				80%	120%
K	1	3446353	0.110	0.103	6.6%	< 0.01				80%	120%
La	1	3446353	7	7	0.0%	< 1				80%	120%
Li	1	3446353	11	10	9.5%	< 1				80%	120%
Mg	1	3446353	0.779	0.734	5.9%	< 0.01				80%	120%
Mn	1	3446353	716	620	14.4%	< 1				80%	120%
Mo	1	3446353	1.3	1.3	0.0%	< 0.5	359	380	94%	80%	120%
Na	1	3446353	< 0.01	< 0.01	0.0%	< 0.01				80%	120%
Ni	1	3446353	82.0	77.0	6.3%	< 0.5				80%	120%
P	1	3446353	541	466	14.9%	< 10	520	600	86%	80%	120%
Pb	1	3446353	8.1	7.0	14.6%	< 0.5				80%	120%
Rb	1	3446353	17	17	0.0%	< 10				80%	120%
S	1	3446353	0.012	0.012	0.0%	< 0.005				80%	120%
Sb	1	3446353	< 1	< 1	0.0%	< 1				80%	120%
Sc	1	3446353	5.3	4.9	7.8%	< 0.5				80%	120%
Se	1	3446353	< 10	< 10	0.0%	< 10				80%	120%
Sn	1	3446353	< 5	< 5	0.0%	< 5				80%	120%
Sr	1	3446353	25.2	21.3	16.8%	< 0.5	368	390	94%	80%	120%
Ta	1	3446353	< 10	< 10	0.0%	< 10				80%	120%
Te	1	3446353	< 10	< 10	0.0%	< 10				80%	120%
Th	1	3446353	< 5	< 5	0.0%	< 5				80%	120%
Ti	1	3446353	0.10	0.09	10.5%	< 0.01				80%	120%
Tl	1	3446353	6	5	18.2%	< 5				80%	120%
U	1	3446353	< 5	< 5	0.0%	< 5				80%	120%
V	1	3446353	61.2	57.4	6.4%	< 0.5				80%	120%
W	1	3446353	< 1	< 1	0.0%	< 1				80%	120%
Y	1	3446353	6	6	0.0%	< 1				80%	120%
Zn	1	3446353	72.3	70.5	2.5%	< 0.5				80%	120%

Results relate only to the items tested and to all the items tested.

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION

PROJECT NO: Murray

AGAT WORK ORDER: 12D612547

ATTENTION TO: ADAM CEGIELSKI

Solid Analysis (Continued)

RPT Date: Aug 14, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Zr	1	3446353	< 5	< 5	0.0%	< 5				80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Sample Login Weight	1					< 0.01				100%	100%
Ag	1	3446378	0.37	0.28	27.7%	< 0.2	5.4	6.0	90%	80%	120%
Al	1	3446378	2.78	2.92	4.9%	< 0.01				80%	120%
As	1	3446378	15	11		< 1				80%	120%
B	1	3446378	13	< 5		< 5				80%	120%
Ba	1	3446378	453	499	9.7%	< 1				80%	120%
Be	1	3446378	1.1	0.9	20.0%	< 0.5				80%	120%
Bi	1	3446378	6	< 1		< 1				80%	120%
Ca	1	3446378	0.77	0.87	12.2%	< 0.01				80%	120%
Cd	1	3446378	1.5	0.6		< 0.5				80%	120%
Ce	1	3446378	23	20	14.0%	< 1				80%	120%
Co	1	3446378	18.6	14.9	22.1%	< 0.5				80%	120%
Cr	1	3446378	111	89.2	21.8%	< 0.5				80%	120%
Cu	1	3446378	82.8	69.9	16.9%	< 0.5	3966	3800	104%	80%	120%
Fe	1	3446378	3.33	3.78	12.7%	< 0.01				80%	120%
Ga	1	3446378	13	8		< 5				80%	120%
Hg	1	3446378	< 1	< 1	0.0%	< 1				80%	120%
In	1	3446378	< 1	< 1	0.0%	< 1				80%	120%
K	1	3446378	0.26	0.26	0.0%	< 0.01				80%	120%
La	1	3446378	20	17	16.2%	< 1				80%	120%
Li	1	3446378	16	15	6.5%	< 1				80%	120%
Mg	1	3446378	0.89	0.96	7.6%	< 0.01				80%	120%
Mn	1	3446378	2680	2110	23.8%	< 1				80%	120%
Mo	1	3446378	< 0.5	1.5		< 0.5	366	380	96%	80%	120%
Na	1	3446378	0.01	0.01	0.0%	< 0.01				80%	120%
Ni	1	3446378	175	145	18.8%	< 0.5				80%	120%
P	1	3446378	1700	1430	17.3%	< 10	575	600	95%	80%	120%
Pb	1	3446378	11.2	12.1	7.7%	< 0.5				80%	120%
Rb	1	3446378	86	60		< 10	13	13	104%	80%	120%
S	1	3446378	0.0370	0.0397	7.0%	< 0.005				80%	120%
Sb	1	3446378	3	< 1		< 1				80%	120%
Sc	1	3446378	8.8	7.2	20.0%	< 0.5				80%	120%
Se	1	3446378	< 10	< 10	0.0%	< 10				80%	120%
Sn	1	3446378	< 5	< 5	0.0%	< 5				80%	120%
Sr	1	3446378	54.6	54.8	0.4%	< 0.5				80%	120%
Ta	1	3446378	< 10	< 10	0.0%	< 10				80%	120%
Te	1	3446378	< 10	< 10	0.0%	< 10				80%	120%
Th	1	3446378	< 5	< 5	0.0%	< 5				80%	120%
Ti	1	3446378	0.06	0.06	0.0%	< 0.01				80%	120%
Tl	1	3446378	7	7	0.0%	< 5				80%	120%
U	1	3446378	5	< 5		< 5				80%	120%
V	1	3446378	90.1	71.2	23.4%	< 0.5				80%	120%

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION
PROJECT NO: Murray

AGAT WORK ORDER: 12D612547
ATTENTION TO: ADAM CEGIELSKI

Solid Analysis (Continued)

RPT Date: Aug 14, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
W	1	3446378	< 1	< 1	0.0%	< 1				80%	120%
Y	1	3446378	20	17	16.2%	< 1				80%	120%
Zn	1	3446378	288	228	23.3%	< 0.5				80%	120%
Zr	1	3446378	< 5	< 5	0.0%	< 5				80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Ag	1	3446403	< 0.2	< 0.2	0.0%	< 0.2	5.5	6.0	91%	80%	120%
Al	1	3446403	1.44	1.76	20.0%	< 0.01				80%	120%
As	1	3446403	6	6	0.0%	< 1				80%	120%
B	1	3446403	< 5	< 5	0.0%	< 5				80%	120%
Ba	1	3446403	202	225	10.8%	< 1				80%	120%
Be	1	3446403	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Bi	1	3446403	< 1	< 1	0.0%	< 1				80%	120%
Ca	1	3446403	0.381	0.470	20.9%	< 0.01				80%	120%
Cd	1	3446403	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Ce	1	3446403	12	12	0.0%	< 1				80%	120%
Co	1	3446403	7.6	6.2	20.3%	< 0.5	6	5.0	119%	80%	120%
Cr	1	3446403	60.4	56.3	7.0%	< 0.5				80%	120%
Cu	1	3446403	14.7	13.4	9.3%	< 0.5	4036	3800	106%	80%	120%
Fe	1	3446403	2.43	2.85	15.9%	< 0.01				80%	120%
Ga	1	3446403	5	4	22.2%	< 5				80%	120%
Hg	1	3446403	< 1	< 1	0.0%	< 1				80%	120%
In	1	3446403	< 1	< 1	0.0%	< 1				80%	120%
K	1	3446403	0.10	0.12	18.2%	< 0.01				80%	120%
La	1	3446403	8	8	0.0%	< 1				80%	120%
Li	1	3446403	11	13	16.7%	< 1				80%	120%
Mg	1	3446403	0.72	0.83	14.2%	< 0.01				80%	120%
Mn	1	3446403	655	534	20.4%	< 1				80%	120%
Mo	1	3446403	0.8	2.1		< 0.5				80%	120%
Na	1	3446403	0.013	0.016	20.7%	< 0.01				80%	120%
Ni	1	3446403	61.1	57.0	6.9%	< 0.5				80%	120%
P	1	3446403	355	320	10.4%	< 10	507	600	85%	80%	120%
Pb	1	3446403	6.84	7.34	7.1%	< 0.5				80%	120%
Rb	1	3446403	16	16	0.0%	< 10	13	13	100%	80%	120%
S	1	3446403	0.0109	0.0126	14.5%	< 0.005				80%	120%
Sb	1	3446403	< 1	< 1	0.0%	< 1				80%	120%
Sc	1	3446403	4.6	4.3	6.7%	< 0.5				80%	120%
Se	1	3446403	< 10	< 10	0.0%	< 10				80%	120%
Sn	1	3446403	< 5	< 5	0.0%	< 5				80%	120%
Sr	1	3446403	24.4	32.0	27.0%	< 0.5	368	390	94%	80%	120%
Ta	1	3446403	< 10	< 10	0.0%	< 10				80%	120%
Te	1	3446403	< 10	< 10	0.0%	< 10				80%	120%
Th	1	3446403	< 5	< 5	0.0%	< 5				80%	120%
Ti	1	3446403	0.104	0.132	23.7%	< 0.01				80%	120%
Tl	1	3446403	6	8	28.6%	< 5				80%	120%

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION | **AGAT WORK ORDER: 12D612547**

PROJECT NO: Murray | **ATTENTION TO: ADAM CEGIELSKI**

Solid Analysis (Continued)

RPT Date: Aug 14, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
U	1	3446403	< 5	< 5	0.0%	< 5				80%	120%
V	1	3446403	59.5	55.8	6.4%	< 0.5				80%	120%
W	1	3446403	< 1	< 1	0.0%	< 1				80%	120%
Y	1	3446403	5	5	0.0%	< 1				80%	120%
Zn	1	3446403	53.5	48.0	10.8%	< 0.5				80%	120%
Zr	1	3446403	< 5	< 5	0.0%	< 5				80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Ag	1	3446428	< 0.2	< 0.2	0.0%	< 0.2				80%	120%
Al	1	3446428	2.27	2.61	13.9%	< 0.01				80%	120%
As	1	3446428	8	10	22.2%	< 1				80%	120%
B	1	3446428	< 5	< 5	0.0%	< 5				80%	120%
Ba	1	3446428	252	292	14.7%	< 1				80%	120%
Be	1	3446428	0.8	0.8	0.0%	< 0.5				80%	120%
Bi	1	3446428	1	3		< 1				80%	120%
Ca	1	3446428	0.24	0.28	15.4%	< 0.01				80%	120%
Cd	1	3446428	< 0.5	< 0.5	0.0%	< 0.5				80%	120%
Ce	1	3446428	8	9	11.8%	< 1				80%	120%
Co	1	3446428	11.6	12.2	5.0%	< 0.5	6	5.0	120%	80%	120%
Cr	1	3446428	38.4	42.0	9.0%	< 0.5				80%	120%
Cu	1	3446428	29.3	32.3	9.7%	< 0.5	3802	3800	100%	80%	120%
Fe	1	3446428	3.16	3.40	7.3%	< 0.01				80%	120%
Ga	1	3446428	7	8	13.3%	< 5				80%	120%
Hg	1	3446428	< 1	< 1	0.0%	< 1				80%	120%
In	1	3446428	2	1		< 1				80%	120%
K	1	3446428	0.14	0.18	25.0%	< 0.01				80%	120%
La	1	3446428	8	9	11.8%	< 1				80%	120%
Li	1	3446428	13	16	20.7%	< 1				80%	120%
Mg	1	3446428	0.734	0.832	12.5%	< 0.01				80%	120%
Mn	1	3446428	1070	1090	1.9%	< 1				80%	120%
Mo	1	3446428	1.0	1.0	0.0%	< 0.5				80%	120%
Na	1	3446428	0.01	0.01	0.0%	< 0.01				80%	120%
Ni	1	3446428	37.1	39.6	6.5%	< 0.5				80%	120%
P	1	3446428	353	390	10.0%	< 10	506	600	84%	80%	120%
Pb	1	3446428	11.5	12.8	10.7%	< 0.5				80%	120%
Rb	1	3446428	26	32	20.7%	< 10	12	13	92%	80%	120%
S	1	3446428	0.0109	0.0126	14.5%	< 0.005				80%	120%
Sb	1	3446428	< 1	< 1	0.0%	< 1				80%	120%
Sc	1	3446428	5.8	6.3	8.3%	< 0.5				80%	120%
Se	1	3446428	< 10	< 10	0.0%	< 10				80%	120%
Sn	1	3446428	< 5	< 5	0.0%	< 5				80%	120%
Sr	1	3446428	22.8	27.1	17.2%	< 0.5				80%	120%
Ta	1	3446428	< 10	< 10	0.0%	< 10				80%	120%
Te	1	3446428	< 10	< 10	0.0%	< 10				80%	120%
Th	1	3446428	< 5	< 5	0.0%	< 5				80%	120%

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Quality Assurance

CLIENT NAME: NANTON NICKEL CORPORATION

PROJECT NO: Murray

AGAT WORK ORDER: 12D612547

ATTENTION TO: ADAM CEGIELSKI

Solid Analysis (Continued)

RPT Date: Aug 14, 2012		REPLICATE					REFERENCE MATERIAL				
PARAMETER	Batch	Sample Id	Original	Rep #1	RPD	Method Blank	Result Value	Expect Value	Recovery	Acceptable Limits Lower	Acceptable Limits Upper
Ti	1	3446428	0.03	0.05		< 0.01				80%	120%
Tl	1	3446428	< 5	< 5	0.0%	< 5				80%	120%
U	1	3446428	< 5	< 5	0.0%	< 5				80%	120%
V	1	3446428	64.8	71.5	9.8%	< 0.5				80%	120%
W	1	3446428	< 1	< 1	0.0%	< 1				80%	120%
Y	1	3446428	6	6	0.0%	< 1				80%	120%
Zn	1	3446428	86.1	88.9	3.2%	< 0.5				80%	120%
Zr	1	3446428	< 5	< 5	0.0%	< 5				80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Co	1					< 0.5	5.9	5.0	117%	80%	120%
Cu	1					< 0.5	4035	3800	106%	80%	120%
P	1					< 10	535	600	89%	80%	120%
Rb	1					< 10	14	13	106%	80%	120%
Sr	1					< 0.5	404	390	104%	80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Co	1					< 0.5	5.4	5.0	109%	80%	120%
Cu	1					< 0.5	3444	3800	90%	80%	120%
Hg	1					< 1	1.4	1.3	104%	80%	120%
Mo	1					< 0.5	330	380	86%	80%	120%
P	1					< 10	480	600	80%	80%	120%
Rb	1					< 10	12	13	91%	80%	120%
S	1					< 0.005				80%	120%
Sr	1					< 0.5				80%	120%
Th	1					< 5	1.3	1.4	94%	80%	120%
Aqua Regia Digest - Metals Package, ICP-OES finish (201073)											
Co	1					< 0.5	5.2	5.0	104%	80%	120%
Cu	1					< 0.5	3349	3800	88%	80%	120%
Mo	1					< 0.5	351	380	92%	80%	120%
Rb	1					< 10	13	13	99%	80%	120%
Sr	1					< 0.5	328	390	84%	80%	120%

Certified By:

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Method Summary

CLIENT NAME: NANTON NICKEL CORPORATION **AGAT WORK ORDER: 12D612547**
PROJECT NO: Murray **ATTENTION TO: ADAM CEGIELSKI**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Solid Analysis			
Sample Login Weight	MIN-12009		BALANCE
Ag	MIN-200-12020		ICP/OES
Al	MIN-200-12020		ICP/OES
As	MIN-200-12020		ICP/OES
B	MIN-200-12020		ICP/OES
Ba	MIN-200-12020		ICP/OES
Be	MIN-200-12020		ICP/OES
Bi	MIN-200-12020		ICP/OES
Ca	MIN-200-12020		ICP/OES
Cd	MIN-200-12020		ICP/OES
Ce	MIN-200-12020		ICP/OES
Co	MIN-200-12020		ICP/OES
Cr	MIN-200-12020		ICP/OES
Cu	MIN-200-12020		ICP/OES
Fe	MIN-200-12020		ICP/OES
Ga	MIN-200-12020		ICP/OES
Hg	MIN-200-12020		ICP/OES
In	MIN-200-12020		ICP/OES
K	MIN-200-12020		ICP/OES
La	MIN-200-12020		ICP/OES
Li	MIN-200-12020		ICP/OES
Mg	MIN-200-12020		ICP/OES
Mn	MIN-200-12020		ICP/OES
Mo	MIN-200-12020		ICP/OES
Na	MIN-200-12020		ICP/OES
Ni	MIN-200-12020		ICP/OES
P	MIN-200-12020		ICP/OES
Pb	MIN-200-12020		ICP/OES
Rb	MIN-200-12020		ICP/OES
S	MIN-200-12020		ICP/OES
Sb	MIN-200-12020		ICP/OES
Sc	MIN-200-12020		ICP/OES
Se	MIN-200-12020		ICP/OES
Sn	MIN-200-12020		ICP/OES
Sr	MIN-200-12020		ICP/OES
Ta	MIN-200-12020		ICP/OES
Te	MIN-200-12020		ICP/OES
Th	MIN-200-12020		ICP/OES
Ti	MIN-200-12020		ICP/OES
Tl	MIN-200-12020		ICP/OES
U	MIN-200-12020		ICP/OES
V	MIN-200-12020		ICP/OES
W	MIN-200-12020		ICP/OES
Y	MIN-200-12020		ICP/OES
Zn	MIN-200-12020		ICP/OES
Zr	MIN-200-12020		ICP/OES

Appendix II

Vancouver Petrographics Ltd. Report

VAN PETRO VANCOUVER PETROGRAPHICS LTD
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Nanton Nickel Corp: **Awaruite bearing rocks**

Executive Summary: This suite of polished thin sections comprises forty eight serpentinized ultramafic rocks and six volcanogenic and related sedimentary rocks. The primary objective of this study was to identify the nickel-iron alloy awaruite within the ultramafic rocks. Thirty eight of the specimens within this suite contain the mineral awaruite. It is present at trace levels within these specimens and ranges in size up to 20 microns. In addition to awaruite; native copper, native iron, and native tin have all been confirmed via electron microscopy and qualitative x-ray analyses. The other major ore mineral within the suite is chromite. Sulphides such as pentlandite, chalcopyrite, bornite, and pyrite are present at trace levels. Oxides such as magnetite and wustite are common within the suite. Two modes of occurrence for the awaruite were identified. The dominant mode is as an alteration product of pentlandite, and this is generally accompanied by native copper. More rarely the awaruite occurs as primary igneous inclusions within either chromite or olivine.

Optical and Electron Microscopy Summary: Complete petrographic descriptions from transmitted and reflected light microscopy for the fifty four polished thin section suite are included in this report. The suite is representative of a range of remarkably similar rocks comprised mostly of serpentinized harburgite, serpentinized lherzolite, and serpentinite accompanied by lesser amounts of volcanic related rock. Pre-serpentinized rock types were determined by estimating what portions of the serpentine were derived from olivine, orthopyroxene, clinopyroxene. The ultramafic rocks in the suite share very similar mineralogy with only minor differences in the percentages of olivine, orthopyroxene, clinopyroxene, spinels and sulphides. Likewise the alteration and alteration textures are broadly similar across the ultramafic suite. The ultramafic rocks display one major foliation with subsequent structures of mostly veins and fractures overprinting this dominant foliation and described in the individual section descriptions. Any awaruite, native iron, native copper and native tin present were usually very small and hard to identify, thus most of the petrographic examination was performed at high power magnification in reflected light to enhance the likelihood of identifying awaruite and the native metals. In general the dominant spinel is chromite with minor amounts of magnetite. Semi-quantitative energy dispersive spectral (EDS) analyses of the chromite indicates Cr_2O_3 concentrations on the order of 40% (Fig. 1). The chromite contained entirely within the ultramafic rocks has a primary igneous origin as do the olivine, orthopyroxene, clinopyroxene, pentlandite, pyrrhotite, some awaruite, some native tin, and some chalcopyrite. Melt inclusions in the olivine also confirm it primary igneous origin. The minerals associated with the serpentinization are dominantly serpentine (lizardite and antigorite), talc, magnetite, wustite, tremolite, with lesser amounts of native iron, native tin, awaruite, native copper, iddingsite, ilvaite, bornite, pyrite, chlorite, digenite, quartz, and carbonate. The pyroxenes within the suite are dominantly magnesian endmembers with the orthopyroxene being enstatitic and the clinopyroxene being an Mg-rich pigeonite. Veins of serpentine and of carbonate were identified in a number of thin sections and these are described individually in the petrographic descriptions. However, in general across the suite there appear to be multiple generations of serpentinization and serpentine veins. The latest veining event in the suite is a series of calcite veins, such as those observed in polished thin section 5523095. This late stage carbonate alteration is common in alpine ultramafic suites, but the amount of carbonate alteration in this suite seems minimal compared to alpine peridotites worldwide. The presence of awaruite and native copper and ultramafic rock suite and serpentization in general are very similar to rocks from the Tessin region of Switzerland (de Quervain, 1967).

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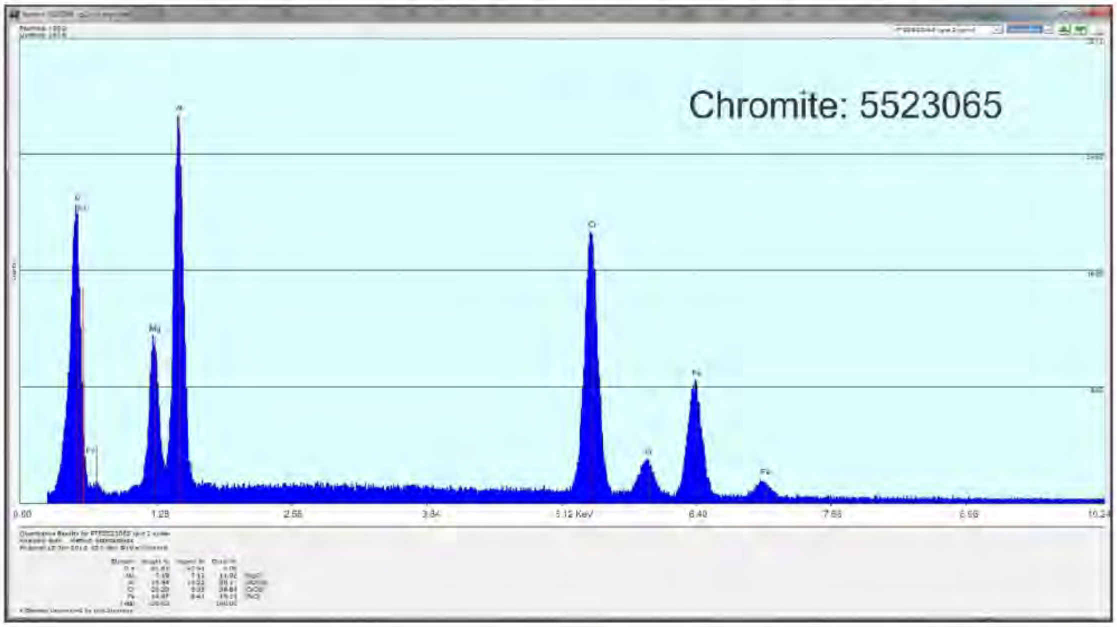

Figure 1. EDS spectrum for chromite (spinel) grain from sample 5523065 showing the characteristic peaks for Cr, Fe, Al, Mg, and O. Semi-quantitative analyses (embedded) indicates that the spinel is magnesian chromite.

Minerals were initially identified on the optical microscope and confirmed via EDS qualitative analyses on the scanning electron microscope (SEM). As awaruite, native tin, native iron, native platinum, and a number of other minerals all have very similar optical properties, a preliminary SEM-EDS study was undertaken to ensure the presence of awaruite within the sample suite. One sample (5523068) was carbon coated and was used to perform semi-quantitative analyses of chromite, awaruite, and native copper. Another 13 samples were examined uncoated using the SEM-EDS. Of these fourteen samples six grains of awaruite, one of native iron, one native tin, and numerous native copper were confirmed by x-ray analyses. Awaruite is naturally occurring nickel and iron alloy with composition varying from Ni_2Fe to Ni_3Fe. The semi quantative analysis of awaruite (Fig. 2) indicates the Nanton awaruite lie closer to the nickel-rich endmember composition. Although time did not permit EDS identification of all grains of awaruite in the suite, it has been confirmed by EDS in 8 of the polished thin sections. Similarly native tin and native iron were identified via EDS in 2 and 1 polished thin sections respectively. The native tin was very pure and showed no detectable impurities above approximately the 0.1 wt% level. The native copper did contain minor iron impurities at the sub percentage level (Fig. 2). Not all occurrences of awaruite, native iron, and native tin could be verified by SEM/EDS, either due to time constraints or grain size. In the cases where these grains were identified optically, the primary characteristics used were the high reflectivity and white colour.

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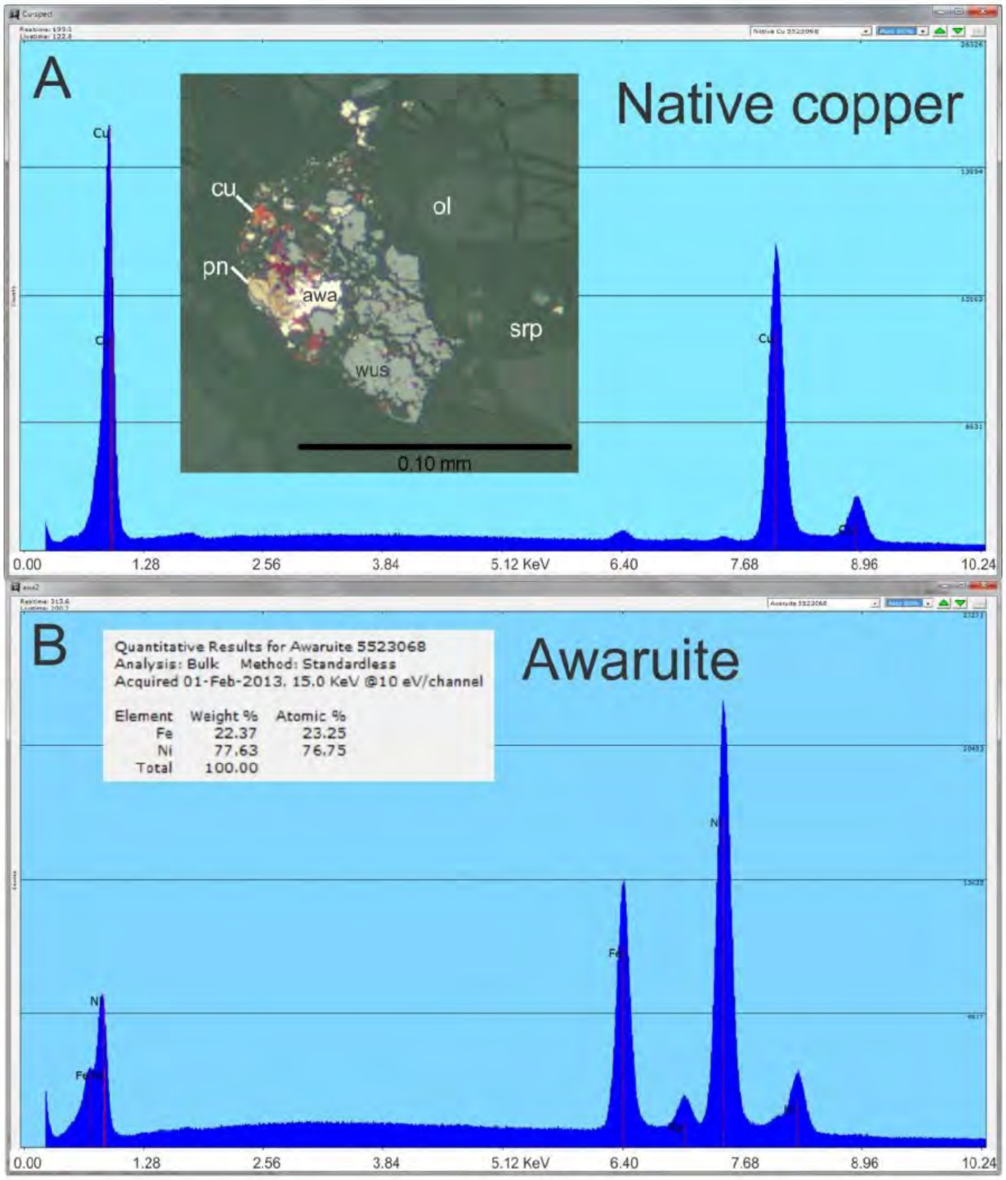

Figure 2. EDS spectrum for native copper (A) and awaruite (B) from sample 5523068. The photomicrograph (inset) shows the native copper and awaruite grains examined. The native copper analysis indicates minor iron impurities and the awaruite analyses indicates that awaruite is very close to the Ni-rich end member (Ni_3Fe).

Oriented features such as veins are described relative to a hypothetical North at the top of the thin section for any sample. Mineral abbreviations for the common rock forming and silicate minerals are from Kretz (1983) and abbreviations for the common rock forming minerals are from Marshall et al (2011).

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References:

de Quervain F. (1967) Das Nickelerzvorkommen Val Boschetto im Centovalli (Tessin). Schweizerische mineralogische und petrographische Mitteilungen. v. 47, 633-641.

Kretz R. (1983). Symbols for rock forming minerals. American Mineralogist. v. 68, 277-279.

Marshall D., Anglin C. and Mumim H. (2011) Ore Mineral Atlas: 2nd Edition, Geological Association of Canada, Mineral Deposits Division ISBN 978-0-86491-318-0, 112 p.

Feb 13, 2013 PROFESSIONAL PROVINCE OF P. S. MUSTARD GEOSCIENTIST	
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Petrographic Report: Polished thin section 5523062

General Rock type: serpentinized lherzolite

This rock is a pervasively altered forsterite-enstatite lherzolite primarily consisting of forsteritic olivine, orthopyroxene (enstatite), lesser clinopyroxene, and secondary serpentine (probably lizardite or antigorite), with trace pyrite, pyrrhotite, magnetite, chromite, bornite, chalcopyrite, and native copper. The offcut is a dark grey-green colour with patches of light grey material and is cut by very thin veinlets of light green serpentine. The thin section has an overall adcumulate texture with a medium-grained, interlocking groundmass of generally coarser-grained enstatitic orthopyroxene than olivine. The thin section is very heavily altered to serpentine and cut by numerous serpentine veinlets which are mostly randomly oriented, though some of the thicker veinlets trend NE-SW across the thin section. Olivine is generally more heavily fractured and more altered than the orthpyroxene, and occurs as rounded, subhedral grains ranging up to 2 mm in size. Orthopyroxene also occurs as rounded, subhedral grains and shows poor cleavage in one direction, occasional twins, low birefringence, high relief, and a 2V angle close to 90°. The orthopyroxene ranges in size up to 2 mm. The olivine displays typical characteristics of poor cleavage, high birefringence, high relief, and like the orthopyroxene is non pleochroic. The lower 2V angle of approximately 90 is consistent with high magnesian (or forsteritic) olivine and this composition has been confirmed by SEM/EDS for some typical grains. Magnesian orthopyroxene is generally non-pleochroic and the high-Mg low-Fe compositions have also been confirmed via SEM/EDS with the compositions ranging close to the Mg-rich orthopyroxene end-member enstatite. Rarely, olivine and orthopyroxene are stained by iron oxidation. The orthopyroxene is in general less altered, and is interpreted as part of the primary igneous assemblage. Olivine is also interpreted as part of the primary igneous assemblage. Orthopyroxene occurs as subhedral grains most commonly occurring between primary olivine grains. Minor amounts of clinopyroxene are present. The clinopyroxene is pleochroic ranging from light green to light brown in colour. The clinopyroxene ranges in size up to 0.6 mm and displays characteristic high birefringence and high relief. Serpentine is a secondary alteration product which follows the abundant fractures within and between olivine and orthopyroxene grains. Serpentine veins and masses host fractured remnants of the olivine and orthopyroxene. Only one generation of serpentine veins is present, and these are up to 2 mm wide. The web-like or mesh-like texture of serpentine indicates that most of the serpentine is lizardite or antigorite, but minor amounts of chrysotile are also present where serpentine appears to have a fibrous texture. In some places, the serpentine appears stained brown by iron oxidation. Trace amounts of serpentine are altered to chlorite. Strings of granular magnetite up to 1 mm long are commonly associated with serpentine veinlets and are concentrated in the centers of the veins. There are some minor concentrations of calcic plagioclase. This is distinguished by its low relief, undulose extinction, and poor cleavage. The plagioclase is typically anhedral and ranges in size up to 0.5 mm. Pyrite is anhedral and irregular in habit and is most commonly associated with other sulphides, magnetite, and native copper in small (less than 0.3 mm) pods with a generally brecciated and cracked texture (Fig. 1). These pods are usually found in serpentine veins or associated with serpentine alteration in olivine, and are generally rounded to subangular or irregular in shape. Pyrite, chalcopyrite, bornite, and native copper replace pyrrhotite in these pods, and wustite (FeO) fills the cracks. The pyrrhotite is also interpreted as part of the primary igneous assemblage. The pyrrhotie displays characteristic anisotropic colours. The chalcopyrite displays textures indicating that it may also have been part of the primary igneous assemblage as well as a later alteration product during the serpentinization. Chromite is generally irregular to subhedral, transparent in high intensity transmitted light, and somewhat fractured. The chromite ranges in size up to 0.2 mm. The chromite generally occurs as inclusions in olivine and is also interpreted as part of the primary igneous assemblage. Fractures in chromite often host vein-like magnetite alteration. Magnetite is also present within the serpentine and the magnetite is interpreted as secondary. Native copper also occurs disseminated throughout the serpentine veins. The native copper is present at trace levels and ranges in size up to approximately 20 microns.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	45	Up to 0.8
- olivine	30	Up to 2
- orthopyroxene	23	Up to 2
- calcic plagioclase	1	Up to 0.5
- clinopyroxene	1	Up to 0.6
- chromite	trace	Up to 0.2
- magnetite	trace	0.01 to 0.1
- pyrrhotite	trace	Up to 0.25
- wustite	trace	
- bornite	trace	0.01 to 0.1
- native copper	trace	Up to 0.02
- chalcopyrite	trace	0.002 to 0.1
- pentlandite	trace	0.05

Fig. 1: Photomicrograph of a brecciated pod associated with serpentine alteration in olivine (ol). Pentlandite (pn), chalcopyrite (cpy), bornite (bn), and native copper replace pyrrhotite (po) and pentlandite (pn), and wustite (wus) fills the cracks. A single grain of chromite (chr) is associated with the sulphides. Photo taken in plane polarized reflected light.

Fig. 2: Photomicrograph of a small pod of mixed and intergrown pentlandite (pn) and wustite (wus) hosted in fractured and serpentinized orthopyroxene (opx). Native copper (Cu) and bornite (bn) are found within an altered orthopyroxene grain. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523063

General Rock type: serpentinized harzburgite

This rock is an altered harzburgite with silicate mineralogy dominated by olivine, othopyroxene, and secondary serpentine (probably lizardite or antigorite), with minor chromite and magnetite, and trace pentlandite and awaruite. The offcut is a very dark green-grey colour and is cut by very thin veinlets of dark green to black serpentine. The thin section has an overall adcumulate texture with a medium-grained, interlocking groundmass of generally coarser orthopyroxene than olivine. The thin section is heavily altered to serpentine and cut by numerous serpentine veinlets. Olivine is generally more heavily fractured and more altered than orthopyroxene and occurs as rounded, subhedral grains. Orthopyroxene also occurs as rounded, subhedral grains and shows poor cleavage in one direction and twinning in places. Serpentine is a secondary alteration product which follows the abundant fractures within and between olivine and the orthopyroxene grains. Veinlets are strongly oriented E-W across the thin section, but some veins cross-cut each other. Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. Strings of granular magnetite up to 1.5 cm long are commonly associated with serpentine veinlets and are concentrated in the centers of the veins. Chromite generally occurs as inclusions in olivine and orthopyroxene and also between these grains, and is likely primary. Where chromite occurs as inclusions it is generally free of alteration. Where chromite occurs in serpentine veinlets it is usually moderately fractured and altered by magnetite, which cuts across chromite grains in fractures parallel and continuous to serpentine veining or as rims around the chromite grains (Fig. 1). Chromite is generally irregular to subhedral and moderately transparent. Rarely, small (less than 0.05 mm) pods of mixed and intergrown pentlandite, awaruite, and wustite (FeO), with a generally brecciated and cracked texture, occur in serpentine veins or associated with serpentine alteration in olivine (Fig. 2). These pods are generally rounded to subangular. Wustite is replacing pentlandite. Rare trace awaruite is also disseminated in serpentine (Fig. 3).

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	64	Up to 1
- olivine	24	0.1 to 2.3
- orthopyroxene	10	0.1 to 2
- chromite	1	0.02 to 0.6
- magnetite	1	0.002 to 0.4
- pentlandite	trace	0.001 to 0.01
- wustite	trace	0.002 to 0.01
- awaruite	Trace	Up to 0.01

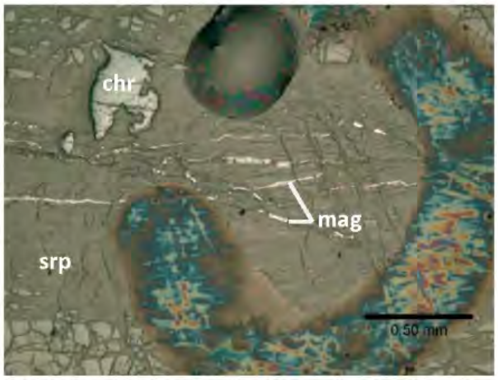


Fig. 1: Photomicrograph of irregular, fractured chromite (chr) entrained in a serpentine veinlet. This grain is altered by magnetite, which cuts across the grain in fractures parallel and continuous to serpentine (srp). Stringy magnetite (mag) occurs in the centre of the serpentine vein. Photo taken in plane polarized reflected light.

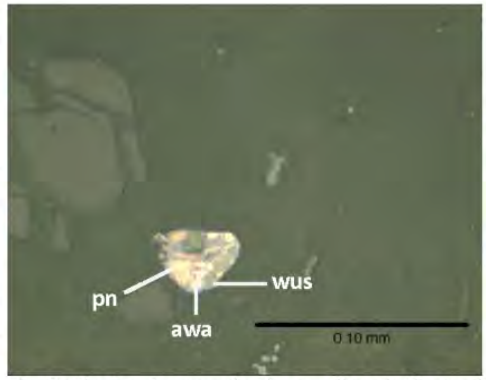


Fig. 2: Photomicrograph of a small pod of mixed and intergrown pentlandite (pn), awaruite (awa), and wustite (wus) with a generally brecciated and cracked texture hosted serpentine. Photo taken in plane polarized reflected light.

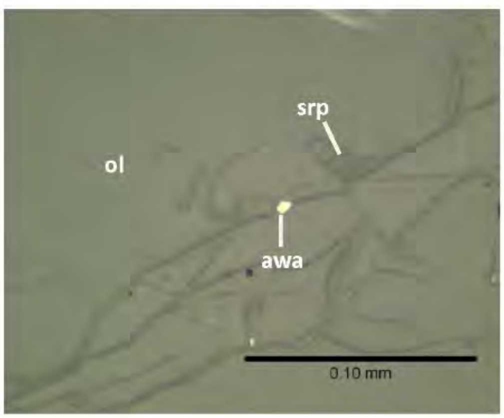


Fig. 3: Photomicrograph of very fine grained awaruite (awa) in serpentine (srp) cutting olivine (ol). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523064

General Rock type: serpentinized harzburgite

This rock is an extremely altered harzburgite, even more so than 5523063. It is comprised primarily of olivine, orthopyroxene, and secondary serpentine, with minor chromite, magnetite and quartz, and trace awaruite, pentlandite, native copper, and digenite. The offcut is a very dark green-grey colour and is cut by thin veinlets of dark green to black and light green-grey serpentine. The thin section has an overall adcumulate texture with a medium-grained, interlocking groundmass of generally coarser orthopyroxene versus olivine. The thin section is heavily altered to serpentine and cut by numerous serpentine veinlets. Olivine is much more heavily fractured and more altered than orthopyroxene and occurs as fractured, rounded, subhedral grains or as very fine grains in masses. Orthpyroxene is rarely fractured and is primary. It occurs as rounded, subhedral grains and shows poor cleavage in one direction and twinning in places. Serpentine is a secondary alteration product which follows the abundant fractures within and between olivine and orthopyroxene grains. A general NE-SW orientation of veinlets across the thin section is observed, but many veins do cross-cut these veins producing an overall web-like texture. Only one generation of serpentine veins is present. The mesh- or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite. In some places, the serpentine is stained rusty brown by iron oxidation. Strings of granular magnetite up to 1 cm long are generally associated with serpentine veinlets and are concentrated in the centers of the veins. Quartz is also present along the centres of the widest veins and is 0.01 to 0.1 mm wide with a fibrous texture. Chromite icommonly occurs as inclusions in olivine and orthopyroxene and also between these grains within the serpentine veinlets, and is likely primary. Where chromite occurs as inclusions it is generally free of alteration. Where chromite occurs in serpentine veinlets it is generally moderately fractured and altered by magnetite, which cuts across chromite grains in fractures parallel and continuous to serpentine veining or as rims around the chromite grains. Chromite is generally irregular to subhedral and moderately transparent brown in colour. Rarely, small (less than 0.05 mm) pods of mixed and intergrown pentlandite, awaruite, and magnetite, ± digenite, with a generally brecciated and cracked texture occur in serpentine veins or associated with serpentine alteration in olivine (Fig. 1). These pods are generally rounded to subangular. Rare trace awaruite is also disseminated in serpentine and associated with magnetite strings (Fig. 2). Very fine grained native copper is disseminated in serpentine veinlets cutting olivine.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	65	Up to 0.6
- olivine	20	0.005 to 1.2
- orthopyroxene	12	0.2 to 4
- chromite	1	0.05 to 0.8
- magnetite	1	0.001 to 0.4
- quartz	1	up to 0.1
- awaruite	trace	Up to 0.02
- pentlandite	trace	Up to 0.01
- native copper	trace	0.002 to 0.004
- digenite	trace	0.005 to 0.01

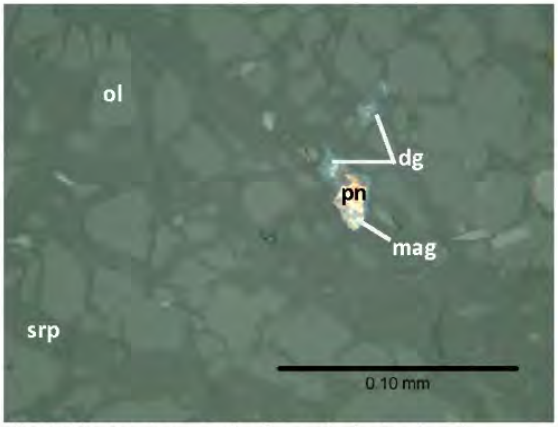


Fig. 1: Photomicrograph of a pod of mixed and intergrown pentlandite (pn), magnetite (mag), and digenite (dg), with a generally brecciated and cracked texture associated with serpentine (srp) alteration in olivine (ol). Digenite rims and is replacing pentlandite. Photo taken in plane polarized reflected light.

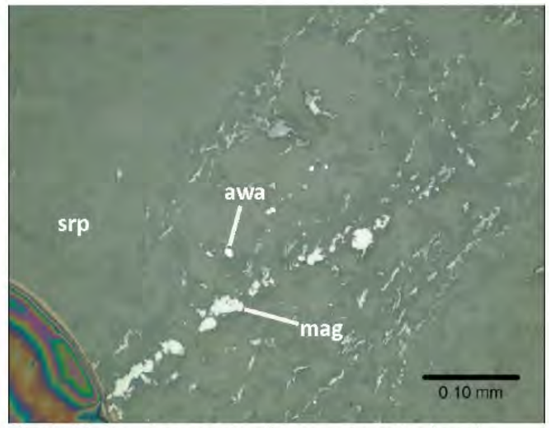


Fig. 2: Photomicrograph of trace awaruite (awa) disseminated in serpentine (srp) and associated with strings of granular magnetite (mag). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523065

General Rock type: serpentinized harzburgite

Very similar to other ultramafic rocks in this suite, this is a strongly altered harzburite primarily consisting of olivine, orthopyroxene, and secondary serpentine (probably lizardite or antigorite), with minor chromite and magnetite, and trace pentlandite, awaruite, and native copper. The offcut is a very dark green colour with patches of yellow-brown material and is cut by very thin veinlets of light green serpentine. The thin section has an overall adcumulate texture with a medium-grained, interlocking groundmass of generally coarser orthopyroxene versus olivine. The thin section is heavily altered to serpentine and cut by serpentine veinlets. Olivine is generally more heavily fractured and more altered than orthopyroxene, and occurs as rounded, subhedral grains. Orthopyroxene is less abundant and slightly finer grained. It also occurs as rounded, subhedral grains and shows poor cleavage in one direction and twinning in places. Serpentine is a secondary alteration product which follows the abundant fractures within and between olivine and orthopyroxene grains. Veinlets are mostly oriented N-S across the thin section, but some veins do cross-cut each other. Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, not chrysotile. In some places, the serpentine appears stained brown by iron oxidation. Strings of granular magnetite up to 1 cm long are generally associated with serpentine veinlets and are concentrated in the centers of the veins. Chromite is commonly, but not always, associated with serpentine alteration and rarely occurs as inclusions in olivine or orthopyroxene, and is probably a primary phase. Chromite is generally irregular to subhedral, transparent, and somewhat fractured. The chromite is slightly darker in transmitted light, indicating it may have more chromium relative to magnesium compared to other samples from this suite. Fractures in chromite commonly host veiny magnetite alteration (Fig. 1), particularly where chromite occurs within a serpentine vein, in which case the magnetite alteration is continuous and parallel with the vein. Thin magnetite rims around chromite grains are rare. Small (less than 0.1 mm) pods of mixed and intergrown pentlandite, awaruite, ± native copper, and ± pyrite(?) with a generally brecciated and cracked texture commonly occur in serpentine veins or associated with serpentine alteration in olivine (Fig. 2). These pods are generally rounded to subangular.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	42	Up to 2
- olivine	38	0.05 to 3
- orthopyroxene	17	0.1 to 2
- chromite	2	0.1 to 0.8
- magnetite	1	Up to 1
- hematite	trace	
- pentlandite	trace	Up to 0.05
- awaruite	trace	Up to 0.01
- native copper	trace	Up to 0.02
- pyrite?	trace	Up to 0.01

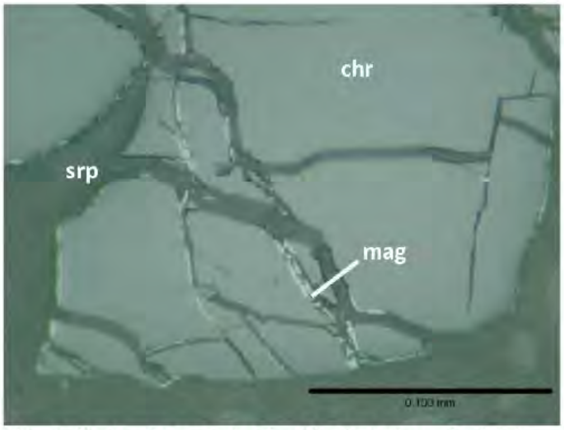


Fig. 1: Photomicrograph of subhedral chromite (chr) with fractures which host veiny magnetite (mag) alteration associated serpentine (srp). Photo taken in plane polarized reflected light.

Fig. 2: Photomicrograph of a small 0.1 mm long pod of mixed and intergrown pentlandite (pn), awaruite (awa), and native copper (Cu) with a generally brecciated and cracked texture hosted in fractured and serpentinized olivine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523066

General Rock type: serpentinite

This rock is an intensely and pervasively altered serpentinite after harzburgite, primarily consisting of serpentine (probably lizardite or antigorite), olivine, and orthopyroxene, with minor iddingsite, chromite, and magnetite, and trace quartz, pentlandite, pyrite, and awaruite. The thin section has an overall web texture of serpentine replacing and altering olivine, and pyroxene, and remnant grains are severely fractured and broken up. Remnant phases are medium-grained, with generally coarser orthopyroxene than olivine. Olivine is very intensely fractured and more altered than orthopyroxene and very little of it remains. Orthopyroxene also occurs as rounded, subhedral grains and shows poor cleavage in one direction and twinning in places, which is commonly replaced by iddingsite. Pyroxene is also heavily altered and it is difficult to determine which pyroxene it is. Serpentine alteration is pervasive and intense, and follows the abundant fractures within and between olivine and orthopyroxene grains and also completely replaces olivine and pyroxene. Veinlets (0.1 to 2 mm wide) are pervasive across the thin section, showing no predominant orientation, and commonly cross-cut each other (Fig. 1). Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. Minor iddingsite is also present in irregular patches within the serpentine. Trace quartz veinlets (0.2 to 4 mm long and 0.01 to 0.08 mm wide) are also present within the cores of wider serpentine veinlets. Strings of granular magnetite up to 1.5 cm long are often observed within the centers of the veins. Magnetite was also observed replacing pyroxene along a cleavage plane. Chromite occurs within the serpentine, and is likely primary. Chromite in serpentine veinlets is often moderately to heavily fractured and altered by magnetite, which cuts across chromite grains in fractures parallel and continuous to serpentine veining or as rims around the chromite grains (Fig. 1). Chromite is generally irregular to subhedral and moderately transparent. Rare, small (less than 0.2 mm) pods of mixed and intergrown pentlandite, awaruite, and magnetite, with a generally brecciated and cracked texture are found in serpentine veins or associated with serpentine alteration in olivine. These pods are generally rounded to subangular. Rare trace anhedral pyrite and awaruite are also disseminated in serpentine (Fig. 3). Trace native iron was disseminated in serpentine and associated with olivine.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	80	Up to 2
- olivine	8	0.01 to 1.5
- pyroxene	7	Up to 3
- chromite	2	0.05 to 1.6
- iddingsite	2	0.01 to 0.3
- magnetite	1	0.005 to 0.1
- quartz	trace	0.01 to 0.08
- pentlandite	trace	0.001 to 0.05
- awaruite	trace	0.001 to 0.05
- pyrite	trace	0.001 to 0.05
- native iron (Fe)	trace	0.002

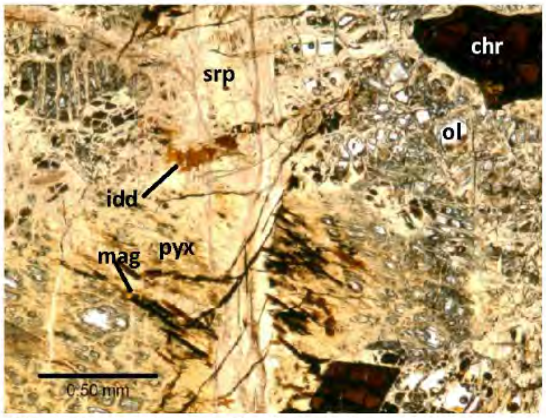


Fig. 1: Photomicrograph of pervasive and intense serpentine (srp) alteration which replaces olivine (ol) and pyroxene (pyx). Veinlets are pervasive across the thin section and cross-cut each other. Minor iddingsite (idd) is present in irregular patches within the serpentine. Irregular and euhedral chromite (chr) are preserved. Photo taken in plane polarized reflected light.

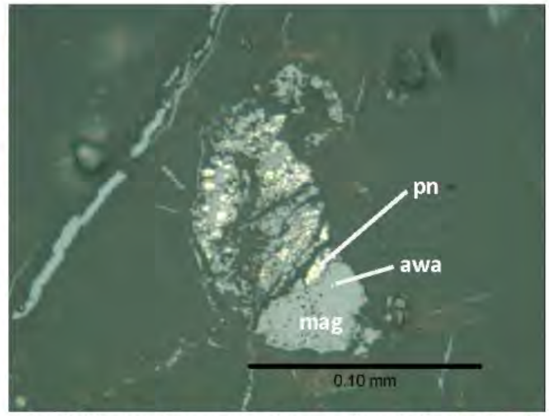


Fig. 2: Photomicrograph of a small pod of mixed and intergrown pentlandite (pn), awaruite (awa), and magnetite (mag) with a generally brecciated and cracked texture hosted serpentine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523067

General Rock type: serpentinized harzburgite

This rock is a strongly altered harzburgite primarily consisting of olivine, orthopyroxene, and secondary serpentine (probably lizardite or antigorite), with minor chromite, magnetite, and iddingsite, and trace pentlandite, awaruite, native copper, violarite, pyrite, and sphene. The thin section has an overall adcumulate texture with a medium-grained, interlocking groundmass of generally coarser orthopyroxene than olivine that is overprinted by pervasive web-like or sieve-textured serpentine alteration. The thin section is heavily altered to serpentine and cut by numerous serpentine veinlets in random orientations. Olivine is generally more heavily fractured and more altered than orthopyroxene, and occurs as rounded, subhedral grains. Orthopyroxene also occurs as rounded, subhedral grains and shows twinning in places that is in some places replaced by magnetite. Serpentine is a secondary alteration product which follows the abundant fractures within and between both olivine and orthopyroxene grains. Veinlets are 0.1 to 2 mm wide, oriented randomly across the thin section, and commonly cross-cut each other. Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, not chrysotile. In some places, the serpentine appears stained brown by iron oxidation, and trace amounts of serpentine are partially altered to chlorite where serpentine cuts or replaces orthopyroxene. Minor iddingsite is also present in irregular patches within the serpentine, particularly where serpentine cuts or replaces orthopyroxene. Strings of granular magnetite up to 2 mm long are associated with serpentine veinlets and are concentrated in the centers of the veins. Trace sphene is sometimes associated with these magnetite strings. Chromite is commonly, but not always, associated with serpentine alteration and rarely as inclusions in olivine or orthopyroxene, and is probably a primary phase. Fractures in chromite commonly host veiny magnetite alteration, particularly where chromite occurs within a serpentine vein, in which case the magnetite alteration is continuous and parallel with the vein. Thin magnetite rims around chromite grains are rare. Small (less than 0.1 mm) pods of intergrown awaruite, violarite, ± pentlandite, ± native copper, with a brecciated texture occur in serpentine veins or associated with serpentine alteration in olivine (Fig. 1). These pods are generally rounded to subangular. Violarite rims the awaruite and fills the fractures between awaruite in the pods, replacing awaruite. Native copper and pyrite occur as very fine disseminated grains in serpentine veinlets (Fig. 2), as does some of the awaruite.

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- serpentine	65	Up to 2.5
- olivine	20	0.1 to 2
- orthopyroxene	10	0.15 to 2.5
- chromite	2	0.05 to 1.5
- magnetite	2	0.01 to 0.3
- iddingsite	1	0.01 to 0.3
- awaruite	trace	0.001 to 0.05
- native copper	trace	0.005 to 0.01
- pentlandite	trace	0.001 to 0.05
- wustite	trace	0.005 to 0.05
- pyrite	trace	Up to 0.01
- violarite	trace	Up to 0.01
- sphene	trace	0.01 to 0.07

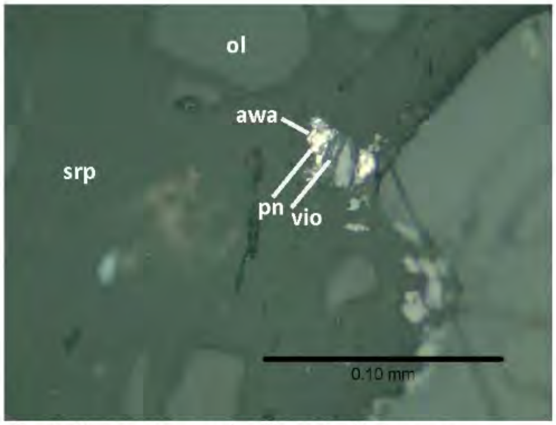


Fig. 1: Photomicrograph of a pod of intergrown awaruite (awa), violarite (vio), and pentlandite (pn) with a brecciated texture in a serpentinevein (srp) cutting olivine (ol). Photo taken in plane polarized reflected light.

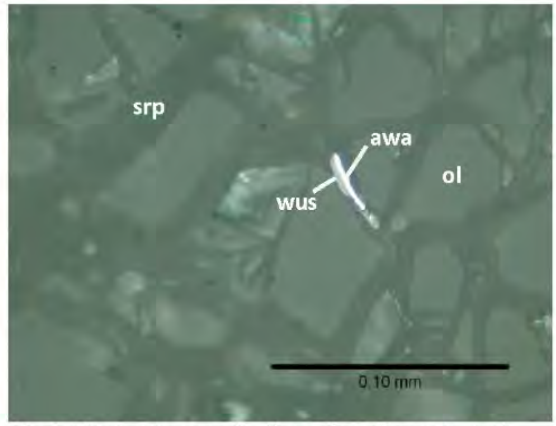


Fig. 2: Photomicrograph of very fine disseminated awaruite (awa) rimmed by wustite (wus) in serpentine veinlets (srp) cutting olivine (ol). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523068

General Rock type: serpentinized harzburgite

This is another heavily and pervasively altered harzburgite primarily consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, chromite, and magnetite, and trace pentlandite, native copper, and awaruite. The thin section has an overall web texture of serpentine cutting and replacing olivine and orthopyroxene, and remnant grains are severely fractured and broken up. Remnant phases are medium-grained and equigranular. Olivine is very intensely fractured and more altered than orthopyroxene. Orthopyroxene also occurs as rounded, subhedral grains and shows poor cleavage in one direction, which is commonly replaced by iddingsite or serpentine. Pyroxene is also heavily altered and fractured. Serpentine alteration is pervasive and follows the abundant fractures within and between olivine and pyroxene grains and also completely replaces olivine and orthopyroxene in places. Serpentine veinlets (0.01 to 1 mm wide) are pervasive across the thin section, randomly oriented, and commonly cross-cut each other, and patches of serpentine occur in masses up to 0.5 by 1 cm wide. Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine in some places indicates it is likely a combination of lizardite and antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. Minor iddingsite is also present in irregular patches within the serpentine. Stringy veinlets of secondary magnetite up to 1 cm long are commonly observed within the centers of the serpentine veins, and are cogenetic with serpentinization. Magnetite in these veinlets is subhedral to irregular and granular in form. Chromite occurs both within the serpentine and as inclusions in olivine and orthopyroxene, and is likely primary (Fig. 1). Chromite in serpentine veinlets is commonly moderately to heavily fractured and altered by magnetite, which cuts across chromite grains in fractures parallel and continuous to serpentine veining and as thin rims around the chromite grains. Chromite is generally irregular to subhedral and moderately transparent. Small (less than 0.5 mm) pods of pentlandite, awaruite, native copper, and magnetite, with a generally brecciated and cracked texture, are found in serpentine veins or associated with serpentine alteration in olivine (Fig. 2). These pods are generally rounded to irregular in form. Either pentlandite or magnetite is the dominant mineral in most of these pods and pentlandite is severely fractured and brecciated. Magnetite infills the fractures within pentlandite grains, or rims and replaces pentlandite along grain boundaries. Anhedral native copper and awaruite occur within the magnetite. Rare trace anhedral awaruite is also disseminated within serpentine veinlets.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	54	Up to 0.25
- olivine	30	0.2 to 2
- pyroxene	11	0.1 to 2
- chromite	2	0.1 to 2
- iddingsite	2	0.01 to 0.2
- magnetite	1	0.01 to 0.1
- pentlandite	trace	0.001 to 0.05
- wustite	trace	0.005 to 0.1
- native copper	trace	0.005 to 0.01
- awaruite	trace	0.001 to 0.01

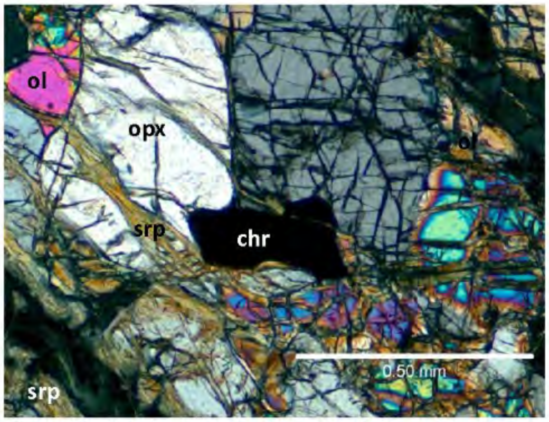


Fig. 1: Photomicrograph of fractured, irregular chromite (chr) with olivine (ol) and orthopyroxene (opx) is likely primary. Serpentine veinlets cross-cut orthopyroxene, olivine, and chromite. Photo taken in plane polarized transmitted light under crossed polars.

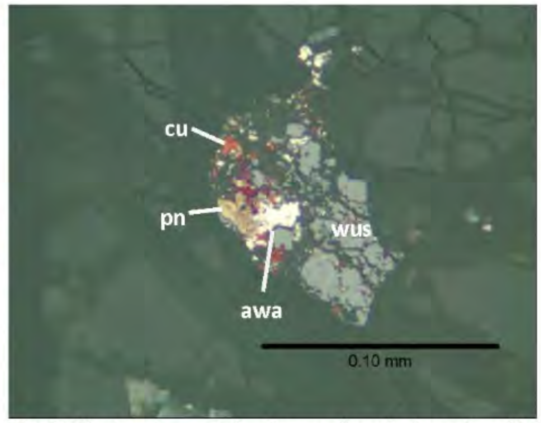


Fig. 2: Photomicrograph of a small pod of pentlandite (pn), awaruite (awa), native copper (cu), and wustite (wus) with a generally brecciated and cracked texture hosted in serpentine cutting olivine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523069

General Rock type: serpentinite

This rock is an intensely and pervasively altered serpentinite after harzburgite, primarily consisting of serpentine, olivine, and orthopyroxene, with minor actinolite, iddingsite, talc, chlorite, chromite, and magnetite, and trace pentlandite, native copper, and awaruite. The thin section has an overall web texture of serpentine replacing and altering olivine, and orthopyroxene, and remnant grains are severely fractured and broken up. Remnant phases are medium-grained and equigranular. Olivine is very intensely fractured and more altered than orthopyroxene and very little of it remains. Orthopyroxene occurs as rounded to irregular, subhedral grains and shows poor cleavage in one direction and twinning in places, which is commonly replaced by iddingsite. Olivine and orthopyroxene are also commonly replaced by plumose to fibrous actinolite, which is sometimes overprinted by serpentine. Pyroxene is also heavily altered and it is difficult to determine which pyroxene it is. Serpentine alteration is pervasive and intense, and follows the abundant fractures within and between olivine and orthopyroxene grains and also completely replaces olivine, and orthopyroxene in places. Veinlets (0.1 to 2 mm wide) are pervasive across the thin section, are randomly oriented, and often cross-cut each other. Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, but minor amounts of chrysotile are also present where serpentine appears to have a fibrous texture. In some places, the serpentine appears stained rusty brown by iron oxidation. Trace amounts of serpentine are altered to chlorite. Minor iddingsite is also present in irregular patches within the serpentine and also affects olivine and pyroxene. Stringy veinlets of secondary magnetite up to 0.8 cm long are often observed within the centers of the serpentine veins, and are cogenetic with serpentinization. Magnetite in these veinlets is subhedral to irregular and granular in form. Chromite occurs both within the serpentine and as inclusions in olivine and orthopyroxene, and is likely primary. Chromite in serpentine veinlets is generally moderately to heavily fractured and altered by magnetite (up to 0.3 mm wide), which cuts across chromite grains in fractures parallel and continuous to serpentine veining (Fig. 1) and as thin rims around the chromite grains. Chromite is generally irregular to subhedral and moderately transparent. Talc with distinct royal blue birefringence occurs as 0.1 mm wide rims around chromite. Rare, small (less than 0.2 mm) pods of

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- Serpentine	70	Up to 0.3
- olivine	11	0.01 to 1.5
- orthopyroxene	6	0.1 to 1
- actinolite	3	0.05 to 0.5
- iddingsite	3	0.1 to 1.2
- chromite	2	0.1 to 2
- magnetite	2	0.01 to 0.1
- chlorite	1	0.05 to 0.2
- talc	2	Up to 0.2
- pentlandite	trace	0.001 to 0.1
- awaruite	trace	Up to 0.03
- native copper	trace	Up to 0.01
- wustite	trace	0.001 to 0.2

pentlandite, awaruite, native copper, and wustite, with a generally brecciated and cracked texture occur in serpentine veins or associated with serpentine alteration in olivine (Fig. 2). These pods are generally rounded to subangular. Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Native copper and awaruite occur as fine grains within the pods. Rare trace anhedral awaruite is also disseminated in serpentine.

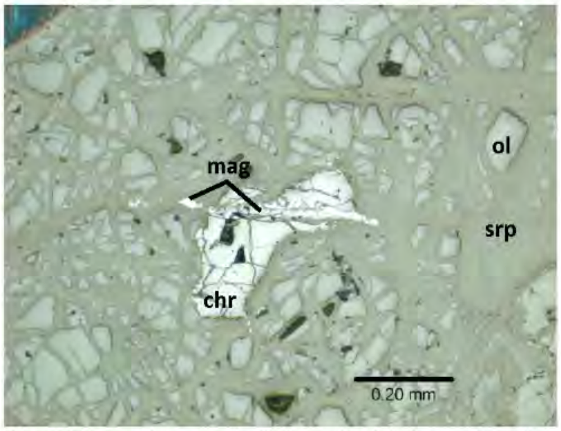


Fig. 1: Photomicrograph of chromite (chr) associated with serpentine (srp) alteration in olivine (ol) which is fractured and altered by magnetite (mag) which cuts across the chromite grain parallel and continuous to serpentine veining. Photo taken in plane polarized ted light.

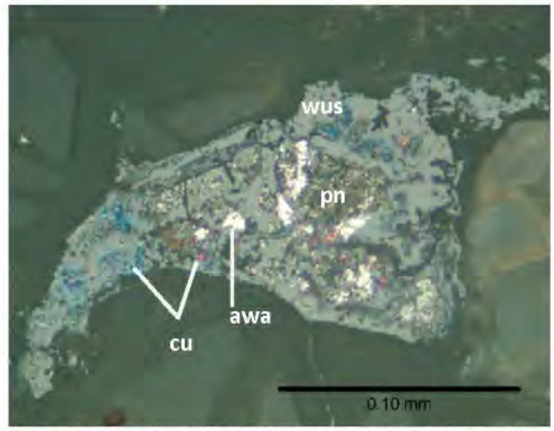


Fig. 2: Photomicrograph of a small pod of pentlandite (pn), native copper (cu), awaruite (awa), and wustite (wus) with a generally brecciated and cracked texture hosted serpentine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523070

General Rock type: serpentinized harzburgite

Like the others in this suite, this rock is a moderately to strongly and pervasively altered harzburgite. Fifty percent of the rock has been altered to serpentine, with the primary rock consisting originally of olivine, and orthopyroxene. Lesser amounts of iddingsite, chromite, and magnetite, and trace pentlandite, native copper, bornite, and wustite comprise the remainder of the rock. The thin section has an overall web texture of serpentine cutting and replacing olivine and pyroxene. The remnant grains are severely fractured. Remnant phases are medium grained and equigranular with an adcumulate texture. Olivine is very intensely fractured and generally more altered than orthopyroxene. The orthopyroxene is heavily altered and fractured and occurs as rounded, subhedral grains. It shows poor cleavage in one direction which is commonly replaced by iddingsite or serpentine. Pyroxene is also heavily altered and fractured. Serpentine alteration is pervasive and follows the abundant fractures within and between olivine and orthopyroxene grains and completely replaces olivine and orthopyroxene grains. Serpentine veinlets (0.01 to 2 mm wide) are pervasive across the thin section, randomly orientated, and generally cross-cut each other. Patches of serpentine occur in masses up to 2 by 4 mm wide, particularly where veinlets are cross-cutting. Only one generation of serpentine veins is present. The mesh-like or net-like texture of serpentine crystals in some places indicates it is likely lizardite or antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. Trace amounts of serpentine are altered to chlorite. Minor iddingsite is also present in irregular patches within the serpentine and as a trace amount of alteration in olivine. Stringy veinlets of secondary magnetite 0.3 to 3 mm long and 0.05 to 0.5 mm wide are often observed within the centers of the serpentine veins, and are cogenetic with serpentinization. Magnetite in these veinlets is subhedral to irregular and granular in form. Chromite occurs both within the serpentine and as inclusions in olivine and orthopyroxene, and is likely primary. Chromite in serpentine veinlets it is commonly moderately to heavily fractured and altered to magnetite. The magnetite cuts across chromite grains in fractures parallel and continuous to serpentine veining and as thin rims edging the chromite grains (Fig. 1). Chromite is generally irregular to subhedral and moderately transparent. Small (less than 0.2 mm) irregular to rounded pods of pentlandite, native copper, wustite, and magnetite, ± bornite, with a generally brecciated and deformed texture, are found in serpentine veins or associated with serpentine alteration in olivine (Fig. 2). These pods are generally rounded to irregular in form. Locally pentlandite or wustite is the dominant mineral in most of these pods and

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	50	Up to 0.5
- olivine	30	0.1 to 2
- pyroxene	14	0.1 to 2.2
- chromite	2	0.02 to 1.5
- iddingsite	2	0.01 to 0.2
- magnetite	2	0.005 to 0.3
- chlorite	trace	Up to 0.02
- pentlandite	trace	0.005 to 0.2
- wustite	trace	0.005 to 0.1
- native copper	trace	0.005 to 0.02
- bornite	trace	Up to 0.005

pentlandite is severely fractured and brecciated. Wustite infills the fractures within pentlandite grains, and/or rims and replaces pentlandite along grain boundaries. Anhedral bornite occurs along pentlandite grain boundaries within wustite. Anhedral native copper occurs within the wustite. Native copper and pentlandite occur disseminated as very fine grains throughout the serpentine.

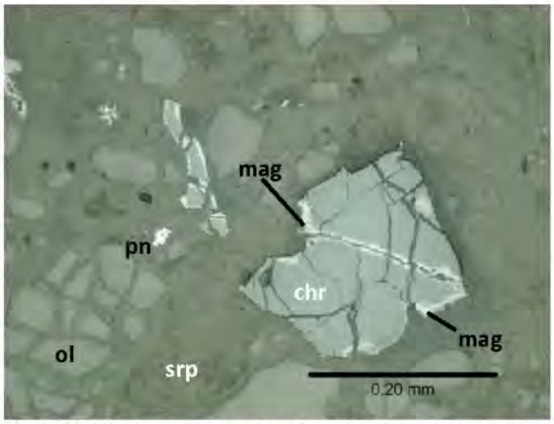


Photo 1: Photomicrograph of two fractured, irregular chromite (chr) grains within a serpentine (srp) veinlet. The chromite grains are heavily fractured and magnetite (mag) replaces chromite at grain boundaries and along fractures. A small grain of primary pentlandite (pn) occurs within the serpentine. Photo taken in plane polarized reflected light.

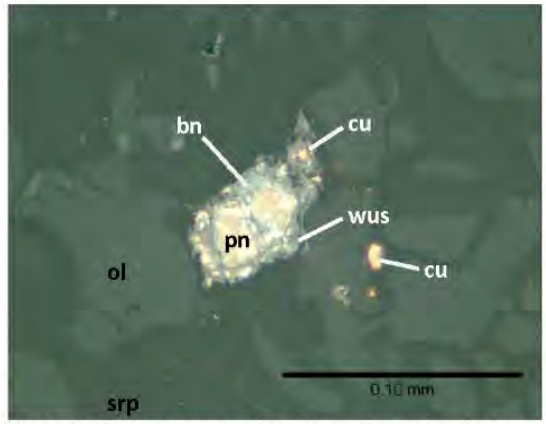


Photo 2: Photomicrograph of a small subrounded pod of cracked pentlandite (pn) rimmed and replaced by wustite (wus), bornite (bn), and native copper (cu) hosted in serpentine (srp). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523071

General Rock type: serpentinized harzburgite

Sample 5523071 is an intensely and pervasively altered harzburgite primarily consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, chromite, and magnetite, and trace pentlandite, native copper, wustite, chalcopyrite, and awaruite. The thin section has an overall mesh texture of serpentine cutting and replacing olivine and orthopyroxene, similar to the thin sections of samples 5523062 to 5523070. Serpentine alteration is pervasive and follows the abundant fractures within olivine and orthopyroxene grains and almost completely replaces olivine and orthopyroxene in places. Serpentine veinlets (0.01 to 2 mm wide) are pervasive across the thin section and randomly oriented. Patches of serpentine occur in masses up to 1 by 1 mm wide. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. Trace amounts of serpentine are weakly altered to chlorite. Minor iddingsite is present within the serpentine and as a trace amount in orthopyroxene. Stringy veinlets of granular, subhedral magnetite 0.1 to 3 mm long and 0.01 to 0.3 mm wide are observed within the centers of these serpentine veins, and are cogenetic. Thin continuous veins of fibrous serpentine (likely chrysotile; 0.03 to 0.1 mm wide) trending N-S and NW-SE overprint or cross-cut serpentine masses, veinlets, and serpentinized orthopyroxene (Fig. 1). These fibrous veins are closely associated with the greatest degrees of serpentinization and likely formed at the same time or immediately following the initial lizardite-antigorite serpentinization. This generation of chrysotile veining is visible in the section offcut as a thin light grey vein. These chrysotile veins are overprinted by thin, discontinuous, wormy veinlets of talc that are 0.02 to 0.08 mm wide and roughly parallel to the chrysotile veins. Chromite occurs within serpentine and as inclusions in olivine and orthopyroxene, and is likely primary. Chromite in serpentine veinlets is often moderately to heavily fractured and altered to magnetite which cuts chromite grains in fractures and as thin rims around grain edges. This magnetite is cogenetic with the granular magnetite stringers. Small (0.02 to 0.2 mm) irregular to rounded pods of pentlandite, wustite, native copper, chalcopyrite, and awaruite, with a generally brecciated and cracked texture, occur disseminated in lizardite-antigorite serpentine (Fig. 2)

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	63	Up to 2.5
- olivine	20	0.1 to 3
- orthopyroxene	13	0.1 to 4
- iddingsite	2	0.01 to 0.3
- chromite	2	0.03 to 1.4
- magnetite	2	0.005 to 0.2
- talc	trace	0.001 to 0.05
- pentlandite	Trace	0.005 to 0.05
- wustite	trace	0.001 to 0.05
- native copper	trace	0.005 to 0.02
- chalcopyrite	trace	0.001 to 0.005
- awaruite	trace	0.001 to 0.005

and are sometimes associated with chromite. Either pentlandite or wustite is the dominant mineral in most of these pods, and pentlandite is severely fractured and brecciated. Wustite infills the fractures and/or replaces pentlandite along grain boundaries. Anhedral native copper occurs within the wustite. Awaruite occurs as granules encircling pentlandite. Native copper and pentlandite occasionally occur on their own as very fine grains disseminated throughout the serpentine. Pentlandite rarely occurs as small, rounded inclusions in orthopyroxene (Fig. 3).

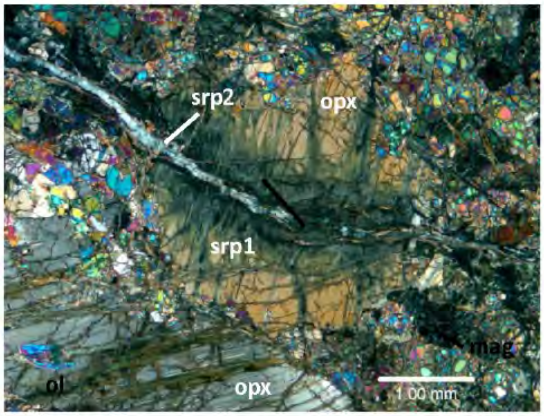


Fig. 1: Photomicrograph of a fractured and serpentinized orthopyroxene (opx and srp1) grain cut by a fibrous serpentine (srp2; possibly chrysotile) vein. Photo taken in cross polarized transmitted light.

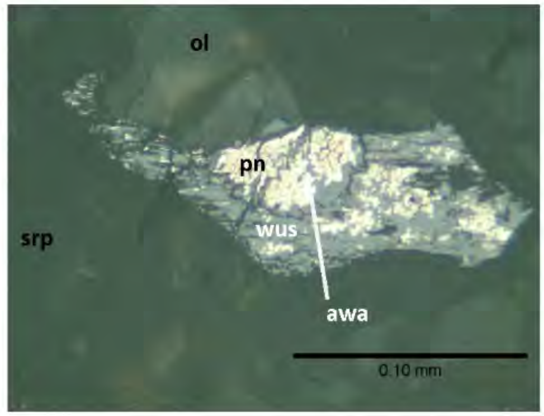


Fig. 2: Photomicrograph of a small subrounded pod of fractured pentlandite (pn) rimmed by awaruite (awa) and replaced by wustite (wus) hosted in serpentine srp). Wustite is the dominant mineral in this pod. Pyrite/awaruite occurs as granules encircling pentlandite. Photo taken in plane polarized reflected light.

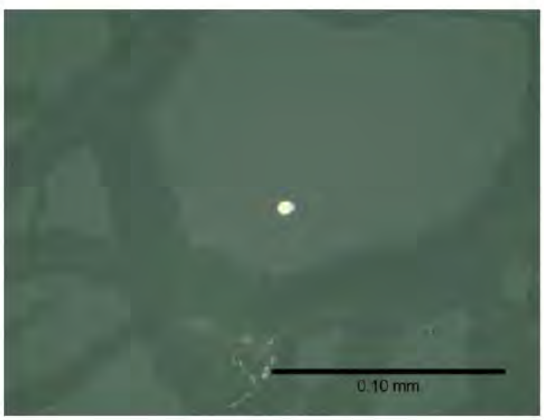


Fig. 3: Photomicrograph of a small, rounded inclusion of pentlandite in orthopyroxene. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523073

General Rock type: serpentinized harzburgite

This rock is an intensely and pervasively altered serpentinized harzburgite consisting of serpentine, olivine and orthopyroxene, with minor chromite, magnetite, iddingsite, clinpyroxene (pigeonite) and talc, and trace pentlandite, wustite, awaruite, chalcopyrite, and bornite. The thin section has an overall web texture of serpentine altering medium-grained and equigranular olivine and orthopyroxene, and remnant grains are severely fractured. Olivine is more altered than the orthopyroxene. The orthopyroxene shows poor cleavage in one direction and twinning in places, and is commonly replaced by serpentine or minor iddingsite. Three generations of serpentine alteration are apparent. The first generation of serpentine (serpentine 1) is pervasive and intense, and follows the abundant fractures within and between olivine and orthopyroxene and completely replaces olivine and orthopyroxene in places. Massive serpentine occurs in patches up to 1 by 2 mm wide. Zoned veins (2 to 6 mm wide; Fig. 1) are oriented NE-SW and NW-SE, and cross-cut each other. These veins are composed of a core of fine, felty textured to massive pale green to colourless serpentine with stringy veinlets of granular magnetite (up to 1 cm long), moving outward into scaly greenish-grey serpentine with minor iddingsite, and outward still into coarser, yellow-green serpentine with minor iddingsite and poorly defined selvages. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. These veins are syngenetic with the pervasive web-textured serpentinization of the host rock. The serpentine 1 generation is overprinted by trace thin (0.05 to 0.1 mm wide) and short (less than 3 mm long) veinlets of fibrous serpentine (probably chrysotile) that run parallel to and within serpentine 1 veins. This generation is serpentine 2 (or chrysotile 1). Serpentine 1 and serpentine 2 are cut orthogonally by short (1 to 4 mm long), thin (0.1 to 0.3 mm wide), brownish-green, fibrous chrysotile veinlets (serpentine 3, or chrysotile 2). Serpentine 3 is cut by discontinuous, wormy talc veinlets 1-5 mm long and up to 0.2 mm wide which are subparallel to serpentine 1 veins and also cut the host rock. Chromite occurs both within the serpentine and as inclusions in olivine and orthopyroxene, and is likely primary. Chromite in serpentine veins is commonly heavily fractured and altered by magnetite (up to 0.1 mm wide), which cuts across chromite grains in fractures parallel and continuous to

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	60	
1 - lizardite-antigorite	90	Up to 0.5
2 - chrysotile 1	3	Up to 0.05
3 - chrysotile 2	7	Up to 0.1
- olivine	24	0.2 to 2
- orthopyroxene	9	0.1 to 2
- magnetite	3	0.01 to 0.5
- chromite	2	0.1 to 1.5
- iddingsite	1	up to 0.2
- talc	1	Up to 0.1
- clinopyroxene	Trace	Up to 0.2
- wustite	Trace	0.05 to 0.1
- pentlandite	Trace	0.005 to 0.1
- awaruite	trace	Up to 0.005
- bornite	trace	0.01 to 0.05
- chalcopyrite	trace	0.001 to 0.005

serpentine veining and as thin rims around grain boundaries. Magnetite rarely replaces orthopyroxene and wustite. Rare, small (0.05 to 0.6 mm) pods of pentlandite, wustite, chalcopyrite, and bornite with a generally brecciated and cracked texture are found in serpentine 1 veins (Fig. 2) or associated with fractured chromite. These pods are generally rounded to subangular. Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Trace awaruite and chalcopyrite occur as fine rounded inclusions in chromite (Fig. 3).

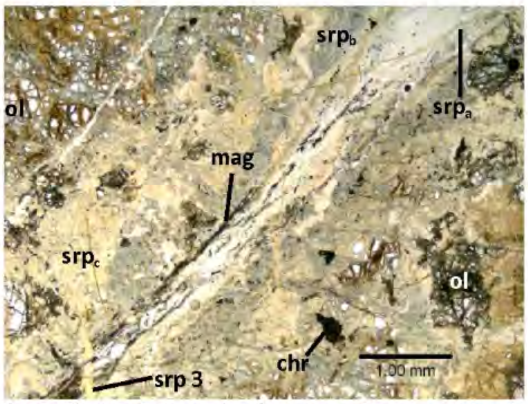


Fig. 1: Photomicrograph of a composite serpentine 1 vein (6 mm wide). The vein is composed of a core of fine, felty to massive pale green serpentine (srp$_a$) with stringy veinlets of magnetite (mag), moving outward into scaly greenish-grey serpentine (srp$_b$) with iddingsite (reddish brown patches), and coarser, yellow-green serpentine (srp$_c$) with poorly defined selvages. A serpentine 3 chrysotile veinlet (srp 3) is present in the lower left corner. Photo taken in plane polarized transmitted light.

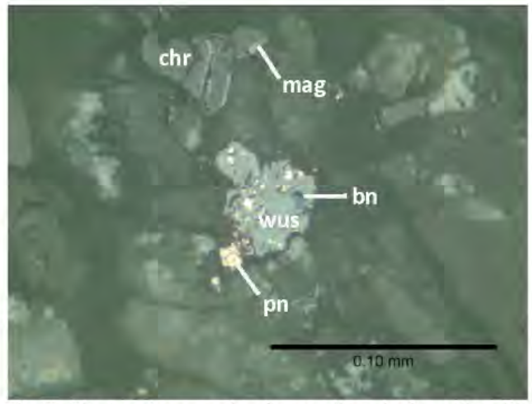


Fig. 2: Photomicrograph of a small pod of pentlandite (pn), wustite (wus), and bornite (bn). Wustite replaces pentlandite. Chromite (chr) with magnetite (mag) rims around grain boundaries appears above. Photo taken in plane polarized reflected light.

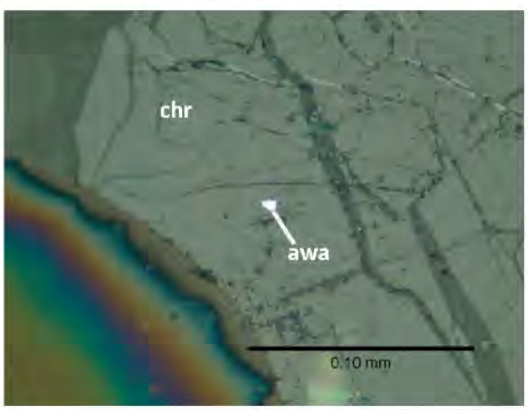


Fig. 3: Photomicrograph of a possible awaruite (awa) inclusion in chromite (chr). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523074

General Rock type: serpentinized harzburgite

This rock is an intensely and pervasively altered serpentinized harzburgite, similar to thin section 5523073, consisting of serpentine, olivine and orthopyroxene, with minor chromite, magnetite, iddingsite, and chlorite, and trace talc, pentlandite, wustite, native copper, awaruite, ilvaite, and chalcopyrite. The thin section indicates an overall web texture of serpentine, altering or nearly completely replacing medium-grained and equigranular olivine and orthopyroxene, with remnant grains severely fractured. Orthopyroxene shows poor cleavage in one direction, which is commonly replaced by minor iddingsite or magnetite. Two (possibly three) generations of serpentine alteration are apparent. The first generation of serpentine (serpentine 1) is pervasive and intense, and follows the abundant fractures within and between olivine and orthopyroxene and completely replaces olivine and orthopyroxene in places. Massive serpentine occurs in patches up to 2 by 3 mm wide. Thin serpentine veins (1 to 2 mm wide) and wider zoned veins (3 to 8 mm wide; Fig. 1) are oriented E-W and WNW-ESE, and cross-cut each other. The zoned veins are composed of a core of fine, felty textured to massive pale green to colourless serpentine with stringy to striped veinlets of granular magnetite (up to 5 mm long) and ilvaite (Fig. 2), moving outward into greenish-grey serpentine with minor iddingsite, and outward still into coarser, yellow-green serpentine with minor chlorite alteration and poorly defined selvages. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite. In some places, the serpentine appears stained rusty brown by iron oxidation. These veins are syngenetic with the pervasive web-textured serpentinization of the host rock. The serpentine 2 (chrysotile 1) vein generation present in 5523073 is either very poorly developed or absent in this section. What appears to be serpentine 2 is represented by thin (0.05 to 0.1 mm wide) and short (less than 0.8 mm long) veinlets of fibrous serpentine (probably chrysotile) that are almost indistinguishable from serpentine 1 veins. Serpentine 1 and 2 are cut orthogonally by short (0.5 to 5 mm long), thin (0.1 to 0.3 mm wide), brownish-green, fibrous chrysotile veinlets (serpentine 3, or chrysotile 2). Serpentine 3 is cut by trace discontinuous, wormy talc veinlets 0.5 to 2 mm long and up to 0.1 mm wide. Primary chromite occurs both within the serpentine and as inclusions in orthopyroxene. Chromite in serpentine veins is commonly fractured and altered by magnetite (up to 0.2 mm wide), which cuts across chromite grains in fractures parallel and continuous to serpentine veining and as thin rims on grain boundaries. Magnetite rarely replaces orthopyroxene along cleavage. Rare, small (0.03 to 0.2 mm) pods of pentlandite, wustite, native copper, and ilvaite with a generally brecciated texture occur in serpentine 1 veins or associated with fractured chromite and olivine. Ilvaite is a calcium-iron-hydroxisilicate. It has been reported as a trace mineral in altered calcium rich serpentinites. The ilvaiate was confirmed by EDS analyses. Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Trace awaruite and chalcopyrite occur as fine rounded inclusions in chromite and orthopyroxene. A single grain of native tin was identifiedas an inclusion in olivine. The tin was also identified by EDS and as it is an inclusion in olivine, we interpret it as a primary igneous mineral precipitating with the host olivine crystal. The native tin is rare, but has been reported in similar suites of rocks for the Tessin Alps in Switzerland. EDS analyses indicate that there are no other trace elements or metals contained within the tin.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	60	
1 - lizardite-antigorite	85	Up to 0.5
2 - chrysotile 1	4	Up to 0.05
3 - chrysotile 2	11	Up to 0.1
- olivine	23	0.2 to 2
- orthopyroxene	12	0.1 to 2
- magnetite	3	0.001 to 0.2
- iddingsite	3	0.05 to 0.4
- chlorite	2	0.05 to 0.5
- chromite	2	0.005 to 1
- talc	trace	Up to 0.01
- wustite	trace	0.02 to 0.15
- pentlandite	trace	0.005 to 0.05
- native copper	trace	0.002 to 0.005
- chalcopyrite	trace	0.001 to 0.05
- awaruite	trace	0.005 to 0.01
- ilvaite	trace	0.01 to 0.02
- spinel	trace	0.02 to 0.1
- native tin	trace	0.008

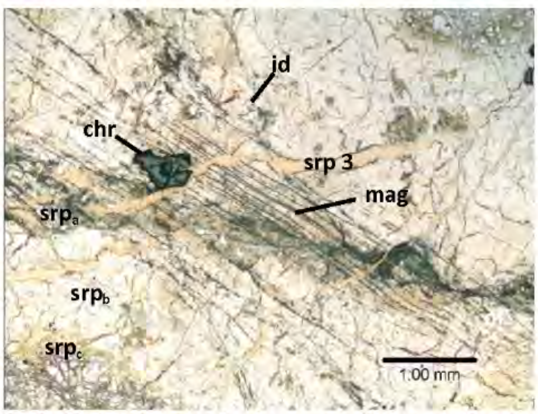


Fig 1: Photomicrograph of a composite serpentine 1 vein (8 mm wide). The vein is composed of a core of felty to massive pale green serpentine (srp_a) with striped veinlets of magnetite (mag), moving outward into scaly greenish-grey serpentine (srp_b) with iddingsite (id), and coarser, yellow-green serpentine (srp_c) with poorly defined selvages. Serpentine 3 (srp 3) chrysotile veinlets cut across the magnetite. Photo taken in plane polarized transmitted light.

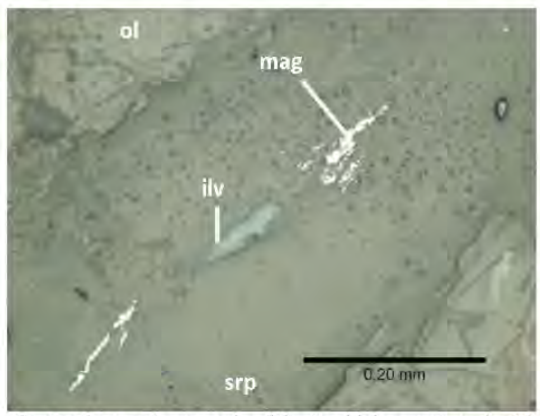


Fig. 2: Photomicrograph of ilvaite (ilv) associated with stringy magnetite (mag) in a serpentine 1 vein (srp). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523075

General Rock type: serpentinized harzburgite

Specimen 5523075 is an intensely and pervasively altered harzburgite primarily consisting of serpentine, olivine, and orthopyroxene, with minor tremolite, iddingsite, chromite, and magnetite, and trace pentlandite, wustite, native copper, and bornite. The thin section has an overall sieve or web texture typical of serpentine in this suite. That texture crosscuts and replaces olivine and orthopyroxene, somewhat like thin sections 5523062 to 5523070. Minor iddingsite is present in a trace amount replacing orthopyroxene. Serpentine alteration is pervasive and follows the abundant fractures within olivine and orthopyroxene grains and almost completely replaces both minerals locally. At least two generations of serpentine are apparent. The first generation of serpentine (serpentine 1) is characterized by a light green to rusty brown colour with iddingsite alteration, and is associated with tremolite alteration around and cutting orthopyroxene and olivine grains. In some places, the serpentine appears stained rusty brown by iron oxidation. The second generation (serpentine 2) overprints serpentine 1 and is characterized by a scaly texture and green-grey colour and magnetite veinlets towards the middle of the serpentine. These magnetite veinlets consist of subhedral granular to massive magnetite in strings 0.1 to 3 mm long and 0.01 to 0.3 mm wide, and are cogenetic with serpentine 2. Both generations of serpentine veinlets (0.1 to 1 mm wide) are pervasive across the thin section and randomly oriented. Veinlets of the serpentine 2 generation have similarities to the zoned veins seen in thin section 5523073. Patches of serpentine occur in masses up to 2 by 2 mm wide. The mesh-like texture of both serpentine 1 and 2 in some places indicates the dominant serpentine mineral is likely lizardite or antigorite. Trace amounts of serpentine 2 are weakly altered to chlorite. Serpentine 1 and 2 are overprinted by thin, short, discontinuous wormy veinlets of talc that are 0.01 to 0.05 mm wide. Chromite occurs within serpentine and as inclusions in olivine and orthopyroxene, and is likely primary. Chromite in serpentine veinlets is commonly moderately to heavily fractured and altered to magnetite which cuts chromite grains in fractures or occurs as thin rims (up to 0.02 mm thick) around grain edges. Small (0.02 to 0.4 mm) irregular to rounded pods of pentlandite, wustite, native copper, and bornite, with a generally brecciated texture, occur disseminated in serpentine, usually in serpentine 1, and are generally associated with orthopyroxene or chromite grain boundaries. Pentlandite or wustite are the

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine - serpentine 1 - serpentine 2	55 60 40	Up to 1
- olivine	20	0.1 to 1.5
- orthopyroxene	9	0.2 to 2
- tremolite	8	0.01 to 0.2
- iddingsite	4	up to 0.3
- talc	1	Up to 0.01
- magnetite	2	0.005 to 0.2
- chromite	1	0.02 to 0.8
- pentlandite	trace	0.001 to 0.07
- wustite	trace	0.05 to 0.1
- native copper	trace	0.002 to 0.01
- bornite	trace	0.01 to 0.03

dominant minerals in these pods, and pentlandite is severely fractured and brecciated. Wustite infills the fractures and/or replaces pentlandite along grain boundaries. Anhedral native copper occurs within the wustite. Bornite also rims and replaces pentlandite. Pentlandite rarely occurs as small, rounded inclusions in orthopyroxene.

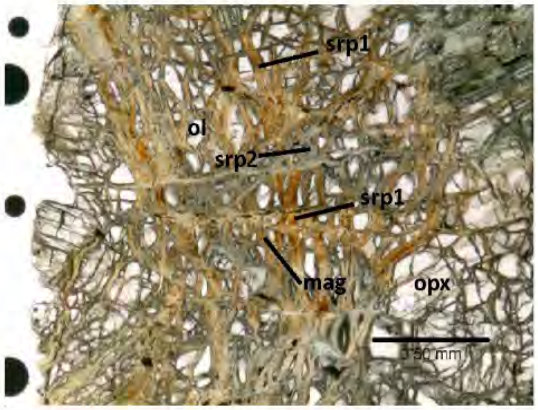


Fig. 1: Photomicrograph of two generations of serpentine. The first generation of serpentine (srp1) is characterized by a light green to rusty brown colour with iddingsite alteration and iron oxide staining, and is associated with tremolite alteration around and cutting orthopyroxene (opx) and olivine grains (ol). The second generation (srp2) overprints serpentine 1 and is characterized by a scaly texture and green-grey colour and magnetite (mag) veinlets towards the middle of the serpentine. Photo taken in plane polarized transmitted light.

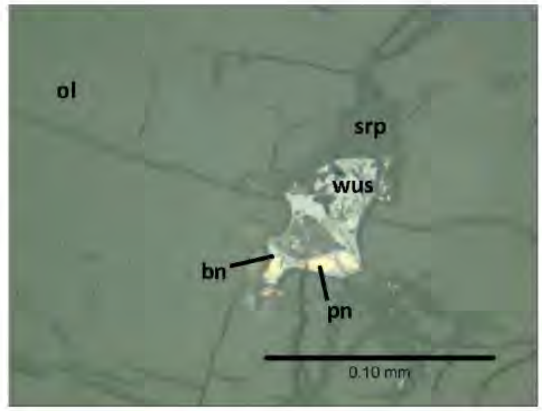


Fig. 2: Photomicrograph of a small subrounded pod of fractured pentlandite (pn) rimmed by bornite (bn) and replaced by later wustite (wus) hosted in serpentine (srp). Wustite is the dominant mineral in this pod. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523076

General Rock type: serpentinized harzburgite

Similar to thin section 5523073, this rock is an intensely and pervasively altered serpentinized harzburgite, consisting of serpentine, olivine and orthopyroxene, with minor clinopyroxene, magnetite, chromite, and iddingsite, and trace pentlandite, wustite, and light blue ilvaite. The thin section has an overall web texture of serpentine altering or replacing medium-grained and equigranular olivine, orthopyroxene, and clinopyroxene. All relict grains of the three major primary silicates are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is generally replaced by minor iddingsite or magnetite. The clinopyroxene show both cleavage directions and is pleochroic. It is also replaced, but to a lesser extent by serpentine. Three generations of serpentine alteration are apparent. The first generation of serpentine (serpentine 1) is pervasive and moderate, and characterized by green to rusty brown serpentine with minor iddingsite and a very finely fibrous texture. It is probably mostly lizardite-antigorite, but more fibrous textures indicate some of the serpentine may be chrysotile. This serpentine follows the abundant fractures within and between olivine and monticellite. Massive serpentine occurs in patches up to 1 by 1 mm wide. The second generation (serpentine 2) is characterized by pale green to grey scaly webby serpentine following fractures within and between olivine and orthopyroxene, and zoned serpentine veins. The webby serpentine commonly partially or completely replaces olivine and monticellite, which in some generates an hourglass texture indicating it is lizardite. Thin serpentine veins (0.1 to 1 mm wide) oriented NE-SW and wider zoned veins (0.3 to 1.5 mm wide oriented NNW-SSE with a conjugate set at WNW-ESE, intersect each other. The zoned veins (Fig. 1) are similar to those in thin sections 5523073 and5523074, and composed of a core of fine, felty textured to massive pale green to colourless serpentine with stringy veinlets of granular magnetite (0.5 to 2 mm long), moving outward into scaly greenish-grey serpentine replacing olivine with trace iddingsite, and outward still into coarser, yellow-green serpentine with an increased amount of iddingsite and poorly defined selvages. Stringy magnetite occasionally produces offshoots into the host rock. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite, though the hourglass texture of lizardite is observable in larger patches of serpentine. These veins are syngenetic with the pervasive web-textured pale green to grey scaly serpentinization. Serpentine 2 zoned veins are cut orthogonally by short (0.5 to 3 mm long), thin (0.02 to 0.05 mm wide), brownish-green, fibrous chrysotile veinlets (serpentine 3), similar to serpentine 3 of thin

Mineral	Modal Percent Abundance	Size Range (mm)
- Serpentine	55	
1 - lizardite-antigorite	35	Up to 0.05
2 – lizardite	55	Up to 0.2
3 - chrysotile	10	Up to 0.05
- olivine	28	0.1 to 2
- orthopyroxene	12	0.2 to 2.2
- clinopyroxene	3	Up to 1
- magnetite	3	0.001 to 0.2
- chromite	2	0.1 to 1.8
- iddingsite	1	0.005 to 0.2
- wustite	trace	0.002 to 0.08
- pentlandite	trace	0.005 to 0.15
- ilvaite	trace	0.001 to 0.01

sections 5523073 and 5523074. Primary chromite occurs both within the serpentine and as inclusions in orthopyroxene. Chromite in serpentine veins is often fractured and altered by magnetite (up to 0.1 mm wide), which cuts across chromite grains in fractures parallel and continuous to serpentine veining and as thin rims on grain boundaries. Magnetite rarely replaces orthopyroxene along cleavage. Rare, small (0.05 to 0.4 mm) pods of pentlandite, wustite, and ilvaite with a generally brecciated texture are mostly associated with serpentine 1 or with fractured chromite and olivine. Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite, which is then overprinted by ilvaite (Fig. 2).

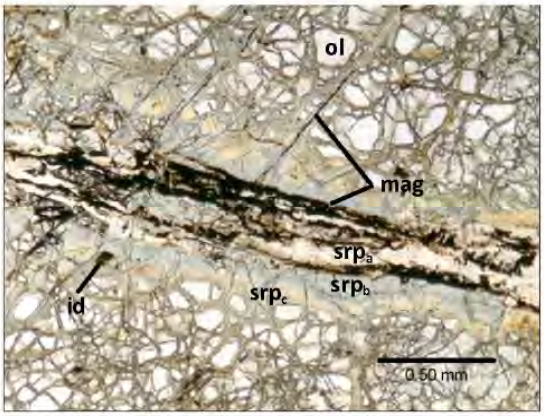


Fig. 1: Photomicrograph of a composite serpentine 2 vein (1 mm wide). The vein is composed of a core of felty to massive colourless serpentine (srp$_a$) with stringer veinlets of magnetite (mag), moving outward into scaly greenish-grey serpentine (srp$_b$), and coarser, yellow-green serpentine (srp$_c$) with iddingsite (id) and poorly defined selvages. Thin magnetite strings shoot off the main magnetite stringers into the host rock. Photo taken in plane polarized transmitted light.

Fig. 2: Photomicrograph of pentlandite (pn), wustite (wus), and ilvaite (ilv) with a generally brecciated texture associated with serpentine 1 (srp) in fractured olivine (ol). Pentlandite is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite, which is then overprinted by ilvaite. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523077

General Rock type: serpentinite after layered ultramafic

This rock is a very intensely and pervasively altered serpentinite after a harzburgite, similar to thin section 5523076, consisting of serpentine, olivine, orthopyroxene, and clinopyroxene, with minor tremolite, talc, magnetite, iddingsite, chromite, and trace pentlandite, wustite, ilvaite, and awaruite. The rock may have had some primary layering and this is evidenced by some concentrations of clinopyroxene. The section has the overall typical web texture of serpentine altering or replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is generally replaced by minor iddingsite or magnetite. Tremolite replaces orthopyroxene and in some places overprints serpentine in masses. Two (possibly three) generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by green to rusty brown serpentine with some iddingsite and a finely fibrous texture. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Massive serpentine occurs in patches up to 2 by 2 mm wide. Pale green to grey scaly serpentine and zoned serpentine veins may represent a second alteration generation corresponding with serpentine 2 of previous thin sections, but it is difficult to distinguish from serpentine 1 here. This serpentine generally partially or completely replaces olivine and orthopyroxene, and in some occurrences displays an hourglass texture indicating it is lizardite. Zoned veins (0.5 to 2 mm wide), oriented N-S and E-W, intersect each other. These veins (Fig. 1) are similar to those in thin sections 5523073 and 5523074. A trace amount of the bireflectant blue mineral ilvaite is present within the core of one of these veins. The ilvaite locally replaces magnetite. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite, although the hourglass texture of lizardite is sometimes observable. These zoned veins are cut orthogonally by short (0.5 to 3 mm long), thin (0.02 to 0.05 mm wide), brownish-green, fibrous chrysotile veinlets similar to serpentine 3 of thin sections 5523073 and 5523074. Thin, wormy talc veinlets up to 2 mm long cut across all serpentine. Primary chromite occurs both within the serpentine and as inclusions in orthopyroxene and probably olivine, although none were observed in this section. Chromite in serpentine

Mineral	Modal Percent Abundance	Size Range (mm)
- Serpentine 1 - lizardite-antigorite 2 – lizardite 3 - chrysotile	49 35 55 10	Up to 0.3
- olivine	20	0.05 to 0.9
- orthopyroxene	7	0.1 to 2
- tremolite	7	0.1 to 1.5
- magnetite	5	0.001 to 0.2
- iddingsite	4	Up to 0.3
- talc	4	0.005 to 0.05
- clinopyroxene	2	
- chromite	1	0.03 to 1
- pentlandite	trace	0.005 to 0.05
- wustite	trace	0.001 to 0.05
- ilvaite	trace	0.005 to 0.2
- awaruite	trace	0.002

veins is often fractured and altered by magnetite (up to 0.05 mm wide) which cuts across chromite in fractures parallel and continuous to serpentine veining and as thin rims on grain boundaries. Rare, small (0.02 to 0.2 mm) pods of pentlandite and wustite with a generally brecciated texture are mostly associated with serpentine 1 or with fractured chromite and olivine. Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Unaltered pentlandite also occurs as inclusions in orthopyroxene. A single grain of awaruite was observed embedded in serpentine (Fig. 2)

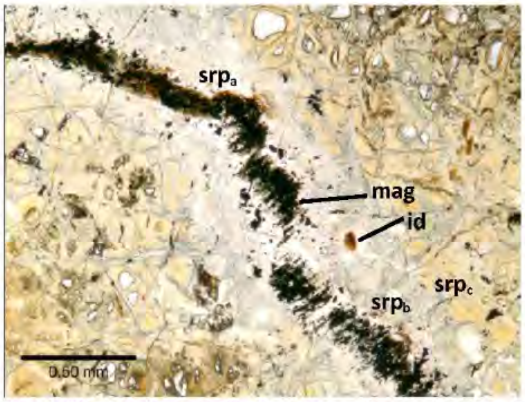


Fig. 1: Photomicrograph of a composite serpentine 2 vein (1 mm wide). The vein is composed of a core of felty to massive colourless serpentine (srp$_a$) with stringer veinlets of magnetite (mag), moving outward into scaly greenish-grey serpentine (srp$_b$), and coarser, yellow-green serpentine (srp$_c$) with iddingsite (id) and poorly defined selvages. Thin magnetite strings shoot off the main magnetite stringers into the host rock. Photo taken in plane polarized transmitted light.

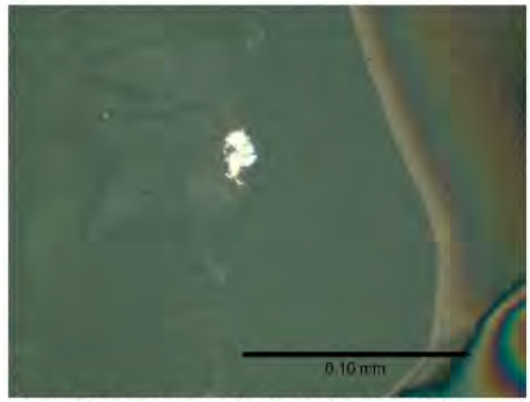


Fig. 2: Photomicrograph of a grain of awaruite embedded in serpentine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523078

General Rock type: serpentinized lherzolite

Sample 5523078 is a very intensely and pervasively altered serpentinite after lherzolite, primarily consisting of serpentine, olivine, orthopyroxene, and clinopyroxene with minor iddingsite, magnetite, talc, and chromite, and trace pentlandite, wustite, native copper, and awaruite. The degree of serpentinization make identification of the primary rock challenging, but this specimen seems to be richer in clinopyroxene, making it a lherzolite in contrast to the more typical harzburgites in this suite. The thin section has an overall web texture of serpentine replacing and altering olivine, clinopyroxene and orthopyroxene and remnant grains are severely fractured, similar to thin section 5523077. Olivine is more altered than pyroxenes and little of it remains. Orthopyroxene occurs as rounded to irregular, subhedral grains and shows poor cleavage in one direction, which is commonly replaced by iddingsite, talc, or serpentine. The clinopyroxene shows two cleavages, incline extinction, and pleochroism. Clinopyroxene alteration ranges, with up to three generations of serpentine alteration present. The first generation (serpentine 1) is pervasive and intense, and is characterized by web-textured grey serpentine that almost completely replaces olivine. Minor amounts of magnetite in poorly formed, thin, stringy veinlets are associated with this generation. The finely fibrous to felty texture of this serpentine indicates it is lizardite or antigorite. A second generation (serpentine 2) is characterised by randomly oriented, cross-cutting rusty brown serpentine with some iddingsite and a finely fibrous texture (Fig. 1). It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. This serpentine generally partially or completely replaces olivine and orthopyroxene. Massive serpentine occurs in patches up to 1 by 2 mm wide. Pale green scaly serpentine and zoned serpentine veins similar to those in sections 5523074 and 5523077 are also associated with this generation. Zoned veins (0.2 to 1 mm wide), oriented NE-SW and E-W, intersect each other. Thin veins consisting of rusty brown serpentine and magnetite in strings are oriented N-S. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite, although the hourglass texture of lizardite is sometimes observable. The zoned veins are cut orthogonally by short (0.5 to 2 mm long), thin (0.02 to 0.15

Mineral	Modal Percent Abundance	Size Range (mm)
- Serpentine 1 – grey lizardite-antigorite 2 – lizardite veins 3 – chrysotile	50 55 40 5	Up to 0.3
- olivine	17	0.05 to 2
- orthopyroxene	10	0.1 to 2.5
- clinopyroxene	10	Up to 2
- magnetite	4	0.001 to 0.2
- iddingsite	4	0.01 to 0.2
- chromite	3	0.1 to 1
- talc	2	Up to 0.04
- wustite	trace	0.001 to 0.1
- pentlandite	trace	0.001 to 0.1
- native copper	trace	0.002 to 0.01
- ilvaite	trace	Up to 0.005
- awaruite	trace	0.001 to 0.06

mm wide), brownish-green, fibrous chrysotile veinlets, similar to serpentine 3 of thin sections 5523073 and 5523074. Thin, wormy talc veinlets up to 3 mm long cut across all serpentine, but are subparallel to the zoned veins. Chromite occurs both within serpentine and as inclusions in olivine and orthopyroxene, and is likely primary. Chromite in serpentine veinlets is generally moderately to heavily fractured and altered by magnetite (up to 0.3 mm wide), which cuts across chromite grains in fractures parallel and continuous to serpentine veining and as thin rims around the grains. Rare, small (0.01 to 0.2 mm) pods of pentlandite, wustite, native copper, and awaruite, with a generally brecciated texture occur disseminated in grey serpentine 1 or associated with olivine or chromite, but was also observed in one zoned serpentine 2 vein. Pentlandite is rimmed and replaced by wustite, and wustite fills fractures between pentlandite. Native copper and awaruite occur as fine grains within wustite. Two grains of anhedral awaruite are disseminated in a zoned serpentine vein (Fig. 2).

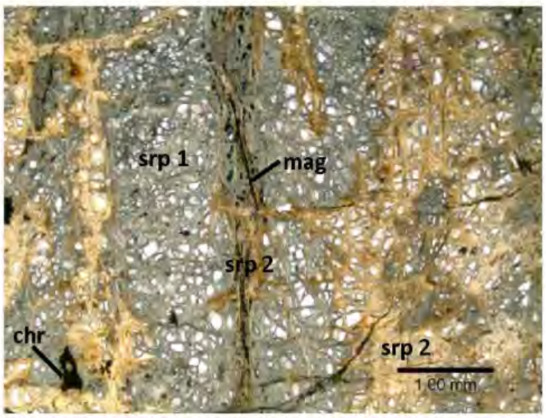


Fig. 1: Photomicrograph of the relationship between serpentine 1 (srp 1) and serpentine 2 (srp 2) alteration. Magnetite (mag) veins are associated with serpentine 2. Chromite (chr) is probably primary. Photo taken in plane polarized light.

Fig. 2: Photomicrograph of anhedral awaruite (awa) associated with stringy magnetite (mag) and wustite (wus)-replacing-pentlandite (pn) in a zoned serpentine vein. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523079

General Rock type: serpentinized wehrlitic lherzolite

This rock is quite different from others in the suite. It is dominated by serpentine, but the dominant primary ultramafic mineral is clinopyroxene. The extent of serpentization makes the original rock difficult to determine, but the original rock was probably a clinopyroxene-rich lherzolite. The rock now consists primarily of clinopyroxene, olivine, orthopyroxene, and abundant secondary serpentine, with minor chromite, magnetite, and iddingsite, and trace pentlandite, wustite, and ilvaite. The thin section has an overall adcumulate texture with a medium-grained, interlocking groundmass of olivine, clinopyroxene, and orthopyroxene. The clinopyroxene is relatively well preserved and displays characteristic pleochroism, cleavage, and inclined extinction. These characteristics indicate the clinopyroxene here and throughout the suite is Mg-rich pigeonite. Olivine is generally more heavily fractured than the pyroxenes, and occurs as rounded, subhedral grains, sometimes with simple twinning. Orthopyroxene also occurs as rounded, subhedral grains and shows poor cleavage in one direction. The thin section is moderately altered to serpentine and cut by serpentine-magnetite veinlets. The top of the thin section hosts a greater than 4 mm wide alteration zone or vein of serpentine, iddingsite, and magnetite (Fig. 1). This zone is characterized by pervasive and complete replacement of olivine and orthopyroxene by a very rusty brown serpentine that is massive to mesh-textured, indicating it is probably lizardite or antigorite. Granular subhedral magnetite occurs in stringy veins parallel to the zone. This zone is cut by thin veins (0.05 to 0.2 mm wide) of fibrous brownish-green serpentine (chrysotile) overprinted by biotite. These veins are associated with the same episode of pervasive serpentinization of the host rock. Serpentine is a secondary alteration product which follows the abundant fractures within and between olivine and orthopyroxene grains. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, although some chrysotile may also be present where the serpentine is more fibrous in texture. In some places, minor iddingsite is present and particularly affects orthopyroxene. Strings of granular magnetite up to 2 cm long and mostly oriented N-S are generally associated with serpentine veinlets and cross cut olivine. Chromite is probably a primary phase. Chromite is generally irregular to subhedral, transparent, and somewhat fractured. Fractures in chromite commonly host veiny magnetite alteration, particularly where chromite occurs within a serpentine vein, in which case the magnetite alteration is continuous and parallel with the vein. Magnetite sometimes replaces chromite around grain boundaries. Small (0.02 to 0.35 mm) pods of pentlandite, wustite, ± ilvaite with a generally brecciated and cracked texture commonly occur in serpentine veins or

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	25	Up to 2
- clinoenstatite	45	0.2 to 2
- orthopyroxene	14	0.1 to 1.8
- olivine	5	Up to 0.75
- magnetite	4	0.005 to 0.2
- iddingsite	4	0.001 to 0.8
- chromite	3	0.05 to 1
- biotite	trace	Up to 0.1
- pentlandite	trace	0.001 to 0.2
- wustite	trace	0.002 to 0.1
- ilvaite	trace	0.001 to 0.01

associated with serpentine alteration of olivine or orthopyroxene (Fig. 2). The amount of wustite in the pods tends to increase where serpentine alteration is more pronounced.

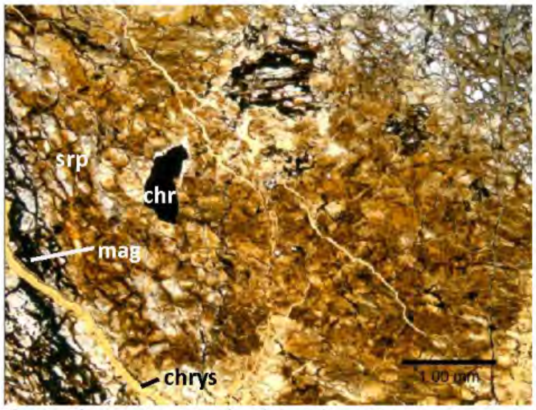


Fig. 1: Photomicrograph of the alteration zone or vein of serpentine, iddingsite, and magnetite characterized by pervasive and complete replacement of olivine and orthopyroxene by a very rusty brown serpentine (srp). Granular subhedral magnetite (mag) occurs in stringy veins parallel to the zone. This zone is cut by a thin vein of fibrous brownish-green serpentine (chrys). These veins are associated with the same episode of pervasive serpentinization of the host rock. The host rock is visible in the top right of the photo. Photo taken in plane polarized transmitted light.

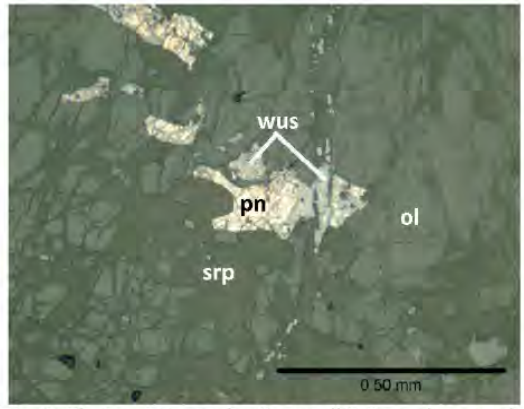


Fig. 2: Photomicrograph of a small 0.2 mm long pod of pentlandite (pn) with a generally brecciated and cracked texture being replaced by wustite (wus) hosted in fractured and serpentinized olivine (ol). The wustite is intimately associated with the serpentine vein cutting the pentlandite. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523080

General Rock type: serpentinized lherzolite

This rock is an intensely and pervasively serpentinized lherzoliteite consisting of serpentine, olivine, and orthopyroxene, with minor clinopyroxene, iddingsite, magnetite, chromite, and talc, and trace pentlandite, wustite, sphene, and awaruite. The section has an overall web-like fabric of serpentine altering or replacing olivine and orthopyroxene. Orthopyroxene shows poor cleavage in one direction. The orthopyroxene is generally replaced by minor iddingsite or magnetite. Three generations of serpentine alteration are apparent (Fig. 1). The first generation (serpentine 1) is pervasive and intense with a rough foliation of the fabric trending N-S, and is characterized by brownish-green to rusty brown serpentine with substantial iddingsite and trace magnetite, and a finely fibrous texture. It is mostly lizardite-antigorite. More massive serpentine occurs in patches up to 0.5 by 0.5 mm wide where it has completely replaced olivine. The second generation (serpentine 2) consists of pale green to grey fine-grained serpentine veins with abundant stringy magnetite in the centers of the veins. These veins are 0.01 to 0.2 mm wide and randomly oriented. The third generation (serpentine 3) is represented by a single vein (1-5 mm wide) of grey to green scaly serpentine trending N-S across the section. This serpentine partially or completely replaces olivine and orthopyroxene, has leached any iron out from the rock, and in some places displays an hourglass texture indicating it is lizardite, although more fibrous patches indicate minor chrysotile is also present. This vein is very weakly zoned, similar to zoned veins in sections 5523074 and 5523077. Thin, discontinuous, wormy talc veinlets up to 1 mm long and 0.03 mm wide cut across all serpentine. Primary chromite occurs both within the serpentine and as inclusions in orthopyroxene. Chromite in serpentine veins is often fractured and altered by magnetite (up to 0.03 mm wide) which cuts across chromite in fractures parallel and continuous to serpentine veining and as thin rims on grain boundaries. Rare, small (0.03 to 0.3 mm) pods of pentlandite and wustite, occasionally with awaruite and sphene, with a generally brecciated texture are mostly associated with serpentine 1 or with fractured chromite and olivine. Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Awaruite in this pods forms as granules encircling or between pentlandite. Subhedral sphene is associated with the outer edges of the pods. Unaltered pentlandite also occurs as inclusions in olivine and orthopyroxene. Minor awaruite also occurs as disseminated grains in serpentine 2.

Mineral	Modal Percent Abundance	Size Range (mm)
- Serpentine 1 2 3	61 82 8 10	Up to 1
- olivine	18	0.02 to 2
- orthopyroxene	8	0.1 to 2.5
- clinopyroxene	4	Up to 1.2
- iddingsite	4	Up to 0.5
- magnetite	2	0.001 to 0.05
- chromite	2	0.02 to 1
- talc	1	Up to 0.01
- pentlandite	trace	0.002 to 0.1
- wustite	trace	0.01 to 0.05
- awaruite	trace	Up to 0.01
- sphene	trace	0.03 to 0.05

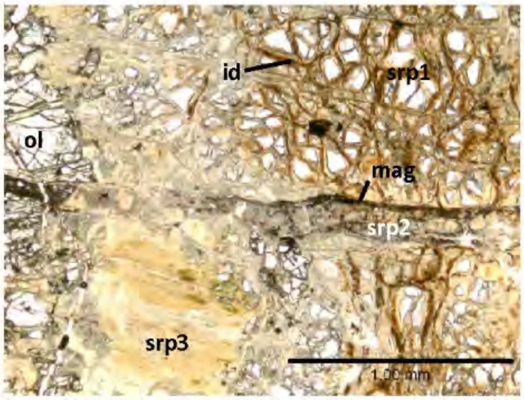


Fig. 1: Photomicrograph of the three generations of serpentine alteration in the thin section. Serpentine 1 (srp1) is characterized by brownish-green to rusty brown serpentine with substantial iddingsite and trace magnetite, and a finely fibrous texture. Serpentine 2 (srp2) consists of pale green to grey fine grained serpentine veins with abundant stringy magnetite in the centers of the veins. Serpentine 3 (srp3) is represented by a single vein on the left side of the photo of grey to green scaly serpentine. This serpentine has leached any iron out from the rock as can be seen by the fading of the serpentine 2 vein that it cuts. Photo taken in plane polarized transmitted light.

Fig. 2: Photomicrograph of a pod of pentlandite (pn), wustite (wus), and awaruite (awa) and sphene, associated with fractured olivine in serpentine 1. Awaruite occurs as an anhedral mass between pentlandite. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523084

General Rock type: carbonate-altered lithic-vitric rhyolitic tuff

This rock is a moderately carbonatized lithic-bearing tuff primarily made up of calcite, orthoclase, devitrified glass, rock fragments, quartz, and albite, minor biotite, chlorite, hematite, muscovite, epidote and limonite, and trace pyrite, chalcopyrite, and apatite. The overall texture is of very fine to fine-grained, equigranular, angular to euhedral crystals with subangular to subrounded rock and glass fragments with no preferred orientation and no layering (Fig. 1). The offcut has been stained to identify the presence of K-feldspar, and the offcut has taken on a pale yellow colour, indicating the presence of a moderate and uniform amount of K-feldspar. The feldspars are usually sub- to euhedral, short, tabular laths and are rarely subround. Weak sericite alteration occurs as very fine spidery veinlets and needle shaped grains in most of the orthoclase and to a less extent in the albite. Rock fragments are generally composed of very fine-grained angular quartz, euhedral K-feldspar, and lath-shaped albite with minor limonite within the matrix or rimming the fragments. Subrounded fragments of tan-brown glass have partially devitrified to radiating fans of clay (mostly smectite). Trace chlorite also occurs within the fragments, and calcite in some places overprints the matrix and rims the fragments. The chlorite has a very distinct emerald green colour pleochroism. The thin section has been moderately carbonate-altered and irregular to rounded patches of calcite overprint the very fine matrix between crystals, overprint some of the feldspars, overprint rock fragments, and rim some of the quartz and orthoclase crystals. Locally albite is altered to fine-grained epidote. Trace cubic and ball-shaped to framboidal pyrite grains are disseminated throughout the thin section, and are commonly associated with calcite and/or chlorite. Irregular patches and ball-shaped hematite grains are disseminated throughout the thin section and the ball-shaped hematite is interpreted as pseudomorphs of the pyrite framboids. Pyrite is generally rimmed by, and partially to completely replaced by, hematite (Fig. 2). Locally the hematite is deep red in transmitted light and non-bireflectant indicating that some hematite has been converted to hydrated iron oxides. Trace irregular chalcopyrite is disseminated through the section and also commonly rimmed by and replaced by hematite. The chalcopyrite not related to the carbonate alteration and the few chalcopyrite grains are part of the lithic fragments or individual grains.

Mineral	Modal Percent Abundance	Size Range (mm)
- calcite	23	0.002 to 0.7
- orthoclase	20	0.05 to 0.4
- devitrified glass	13	0.05 to 0.3
- rock fragments - quartz, feldspar, limonite, ± carbonate	12	0.1 to 0.5
- quartz	13	0.05 to 0.2
- albite	8	0.05 to 0.2
- biotite	3	0.05 to 0.25
- hematite	2	0.005 to 0.2
- chlorite	3	0.05 to 0.2
- epidote	1	Up to 0.005
- muscovite	1	0.05 to 0.2
- limonite	1	0.01 to 0.2
- pyrite	Trace	0.005 to 0.02
- chalcopyrite	Trace	0.005 to 0.3
- apatite	Trace	0.05

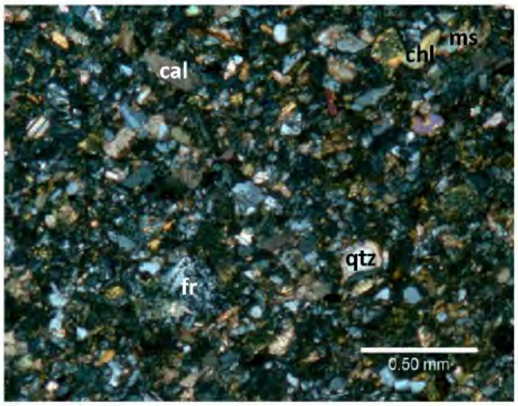


Figure 1: Photomicrograph of the general very fine to fine-grained, equigranular texture of angular to euhedral crystals and common mineral phases in this thin section. Quartz (qtz) is rimmed by calcite. Rock fragments (fr) are composed of very fine-grained feldspar and quartz with minor limonite, calcite, muscovite (ms) and chlorite. Chlorite (chl) in some places produces fan-shaped laths. Calcite (cal) occurs as irregular to rounded patches overprinting the section. Photo taken in cross polarized transmitted light.

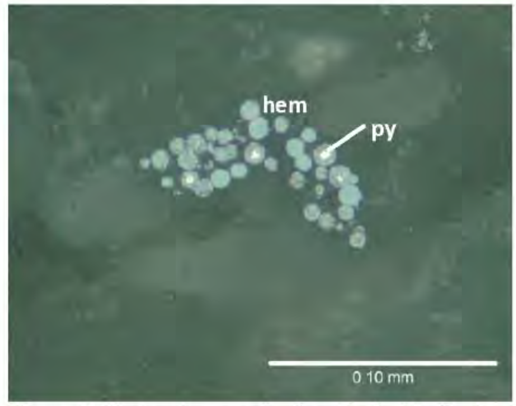


Figure 2: Photomicrograph of pyrite (py) balls rimmed and replaced by hematite (hem). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523087

General Rock type: carbonate-altered lithic-vitric andesitic tuff

This rock is a weakly carbonatized lithic- and glass-bearing andesitic tuff primarily made up of albite, calcite, quartz, rock fragments, biotite, and muscovite, with minor K-feldspar (sanidine), devitrified glass, chlorite, limonite, pyrite, and rutile, and trace chalcopyrite, magnetite, and sphene. The overall texture is of interlocking fine-grained, equigranular, angular to euhedral crystals with subangular to subrounded rock fragments with no preferred orientation and no layering (Fig. 1). The offcut has been stained to identify the presence of K-feldspar, and only a handful of crystals in the offcut have taken on the pale yellow stain, indicating a very minor but uniform amount of K-feldspar throughout the offcut. The feldspars are usually sub- to euhedral, short laths and are rarely subround. Albite locally displays antiperthitic exsolution in the form of coarse vein-like lamellae. Weak sericite alteration occurs as very fine spidery veinlets in most of the albite and sanidine. Rock fragments are generally composed of very fine-grained angular quartz, euhedral K-feldspar, and lath-shaped albite with minor limonite, biotite, calcite, chlorite, and glass within the matrix or limonite rimming the fragments. Calcite sometimes overprints the matrix and rims the fragments. The thin section has been moderately carbonate-altered so that irregular to spheroidal patches of calcite overprint the very fine matrix between crystals, some of the feldspars, and many of the rock fragments. Biotite grains are sometimes kinked. Limonite occurs in clumps up to 0.15 mm wide. Pyrite with a variety of textures is disseminated throughout the section. Cubic and irregular to net-textured pyrite is often associated with calcite, chlorite, and rock fragments, while framboidal to sphere-shaped pyrite (Fig. 2) is associated with the fine-grained matrix between larger feldspar, quartz and mica grains and in rock fragments. This pyrite has considerably less hematite alteration than the pyrite of thin section 5523084. Stringy to irregular rutile often replaces rock fragments and biotite. Trace irregular chalcopyrite is disseminated through the section and commonly occurs in rock fragments, in the fine matrix between larger grains, in calcite (Fig. 3), in chlorite, and rarely with pyrite. Magnetite is subangular and occurs locally with pyrite.

Mineral	Modal Percent Abundance	Size Range (mm)
- albite	37	0.1 to 1.5
- calcite	15	0.1 to 1.5
- quartz	13	0.02 to 0.6
- rock fragments - quartz, feldspar, limonite, ± carbonate	10	0.03 to 1.3
- biotite	6	0.1 to 1.5
- muscovite	5	0.01 to 0.2
- K-feldspar (sanidine)	4	0.1 to 1.6
- devitrified glass	2	0.002 to 0.8
- chlorite	2	0.05 to 0.4
- limonite	2	0.01 to 0.1
- pyrite	2	0.002 to 0.8
- rutile	2	0.005 to 0.1
- chalcopyrite	trace	0.005 to 0.05
- magnetite	trace	0.02 to 0.1
- sphene	trace	0.01 to 0.3

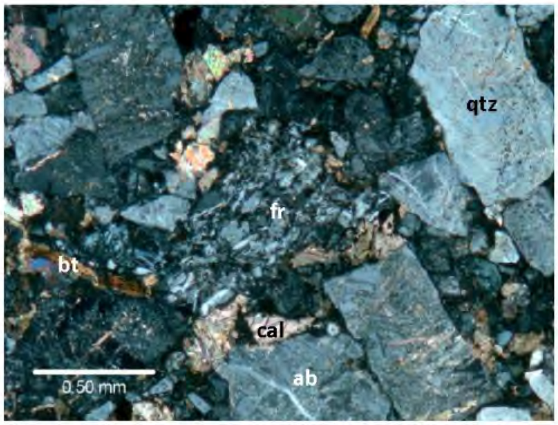


Figure 1: Photomicrograph of the general fine-grained, equigranular texture of angular to euhedral crystals and common mineral phases in this thin section. Albite (ab) laths are partially altered to sericite. Rock fragments (fr) are composd of very fine grained feldspar and quartz with minor limonite, calcite, and chlorite. Biotite (bt) occurs as somewhat kinked laths. Calcite (cal) occurs as irregular patches overprinting the section. Photo taken in cross polarized transmitted light.

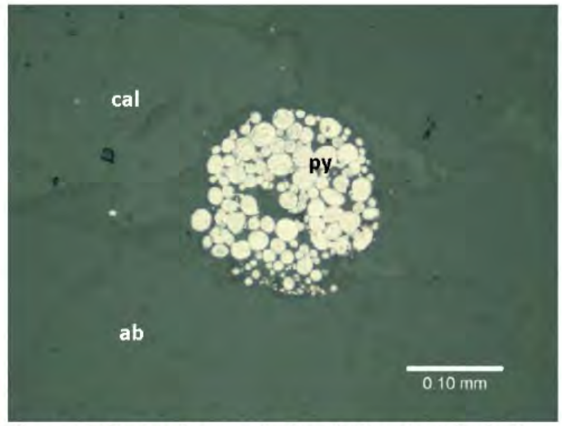


Figure 2: Photomicrograph of a cluster of pyrite balls within the fine-grained matrix between larger crystals and associated with calcite (cal). Photo taken in plane polarized reflected light.

Figure 3: Photomicrograph of chalcopyrite (cpy) hosted in calcite (cal) within the fine-grained matrix between larger crystals. Rutile (rt) is also associated with calcite. Photo taken in cross polarized reflected and transmitted light.

Petrographic Report: Polished thin section 5523090

General Rock type: carbonate-altered lithic-vitric andesitic tuff

This rock is a weakly carbonatized lithic- and glass-bearing andesitic tuff primarily made up of rock fragments, albite, devitrified glass, calcite, quartz, biotite, and K-feldspar (sanidine), with minor chlorite, hematite, muscovite, pyrite, and rutile, and trace chalcopyrite, pyrrhotite, pentlandite, and anatase (?). The overall texture is of fine-grained, equigranular, angular to euhedral crystals with subangular to subrounded rock fragments with no preferred orientation and no layering, and a cryptocrystalline matrix of devitrified glass, clays (mostly smectite), and iron oxides. The offcut has been stained to identify the presence of K-feldspar, and only a handful of crystals in the offcut have taken on the pale yellow stain, indicating a very minor but uniform amount of K-feldspar throughout the offcut. The feldspars are usually sub- to euhedral, short laths and are rarely sub-rounded. Albite rarely demonstrates antiperthitic exsolution in the form of coarse vein-like lamellae. Weak sericite alteration occurs as very fine spidery veinlets in most of the albite and sanidine. Four types of rock fragments are present in the thin section (Fig. 1): 1) composed of very fine-grained to flattened quartz, K-feldspar, secondary carbonate, ± muscovite ± biotite; 2) composed of K-feldspar laths with trachytic texture and minor biotite and limonite; 3) composed mostly of carbonate, sometimes with an oolitic texture, and commonly

Mineral	Modal Percent Abundance	Size Range (mm)
- rock fragments 1 – very fine grained quartz, K-feldspar, carbonate, ± muscovite, ± biotite 2 – K-feldspar laths, biotite, limonite 3 – carbonate, sometimes oolitic 4 – devitrified glass	30	0.1 to 3.5
- albite	20	0.1 to 1.5
- devitrified glass	10	cryptocrystalline
- calcite	10	0.1 to 1
- quartz	10	0.1 to 2
- biotite	5	0.1 to 1.3
- K-feldspar (sanidine)	5	0.1 to 1.5
- chlorite	3	0.1 to 0.5
- hematite	2	0.01 to 0.5
- rutile	1	0.01 to 1.2
- muscovite	1	0.005 to 0.1
- pyrite	1	0.002 to 0.3
- limonite	1	Up to 0.05
- smectite	1	Up to 0.02
- chalcopyrite	trace	0.001 to 0.04
- pyrrhotite	trace	0.01 to 0.5
- pentlandite	trace	0.01 to 0.1
- goethite	trace	0.005 to 0.02
- ankerite	trace	0. 1 to 0.5

including minor limonite and chlorite; 4) composed mostly of devitrified glass, which has mostly reverted to clays (smectite), chlorite, and limonite. Calcite in some places overprints the matrix and rims some of the fragments. The thin section has been moderately carbonate-altered so that irregular patches of calcite overprint the very fine matrix between crystals, some of the feldspars, and many of the rock fragments. Biotite grains are sometimes kinked. Limonite occurs in clumps up to 0.2 mm wide. Pyrite with a variety of textures is disseminated throughout the section. Cubic and irregular to net-textured pyrite is often associated with calcite, chlorite, and rock fragments, and rarely rims clasts. Framboidal to ball-shaped pyrite is associated with the fine-grained matrix between larger feldspar, quartz and mica grains and in rock fragments. Pyrite is sometimes rimmed by goethite. Chalcopyrite is sometimes associated with pyrite (Fig. 2) and sometimes occurs as isolated irregular grains in rock fragment type 1 and in albite. Stringy to irregular rutile often replaces rock fragments and biotite. Trace hematite occurs as irregular grains and balls (presumably after replacement of pyrite) disseminated in the matrix and some of the rock fragments. Trace pyrrhotite occurs as a blobby patch of irregular grains in devitrified matrix and associated with albite. Trace (possible) pentlandite occurs as net-textured disseminations in rock fragment type 1 (Fig. 3). Trace ankerite appears to have iron oxide alteration along cleavages.

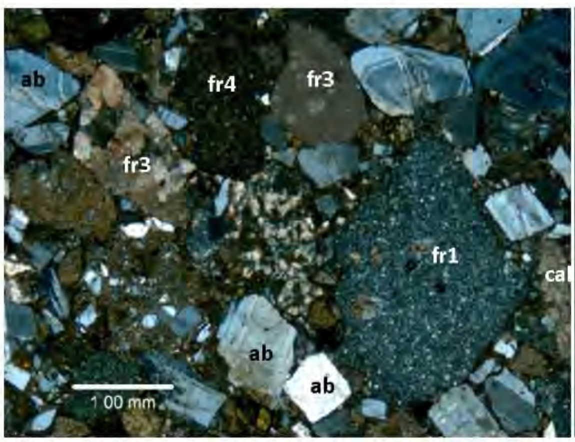


Figure 1: Photomicrograph of the general fine-grained, equigranular texture of angular to euhedral crystals and common rock fragment types (fr1, fr3, fr4). Albite (ab) laths are partially altered to sericite. Calcite (cal) occurs as irregular patches overprinting the section. Photo taken in cross polarized transmitted light.

Figure 2: Photomicrograph of irregular chalcopyrite (cpy) and pyrite (py) rimmed by goethite (gt) replacement. Photo taken in plane polarized reflected light.

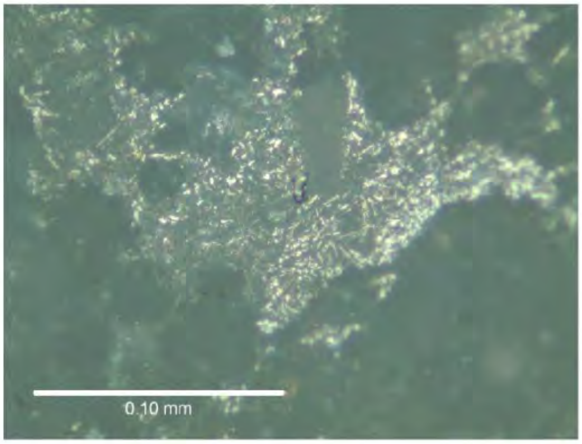


Figure 3: Photomicrograph of fine-grained sulphide as net-textured disseminations in rock fragment type 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523093

General Rock type: carbonate-altered lithic andesitic tuff

This rock is a weakly carbonatized lithic clast-bearing andesitic tuff primarily made up of rock fragments, quartz, calcite, K-feldspar, albite, hornblende, and chlorite, with minor biotite, devitrified glass, lepidocrocite/limonite, pyrite, and rutile, and trace chalcopyrite, pentlandite, apatite, ankerite and epidote. The overall texture is of fine-grained, equigranular, angular to euhedral crystals with subround rock fragments with no preferred orientation and no layering, and a cryptocrystalline matrix of devitrified glass, hornblende, chlorite, biotite, clays (mostly smectite), and iron oxides (lepidocrocite/limonite). Quartz occurs as angular shards and euhedral hexagonal crystals. The offcut has been stained to identify the presence of K-feldspar, and a minor amount of crystals in the offcut have taken on the pale yellow stain, indicating a minor but uniform amount of K-feldspar throughout the offcut. Optical determinations on two K-feldspar grains indicate it is sanidine. Both feldspars are usually sub- to euhedral, short laths and are rarely sub-rounded. Weak to strong sericite alteration occurs as a very fine network of veinlets and patches in most of the K-feldspar and some albite. Sub- to euhedral lath-shaped hornblende is altered to biotite and chlorite locally. Similar to thin section 5523090 four types of rock fragments are present: 1) composed of very fine grained quartz, secondary carbonate, ± K-feldspar ± chlorite

Mineral	Modal Percent Abundance	Size Range (mm)
- rock fragments 1 – fine-grained quartz, carbonate, ± K-feldspar ± chlorite ± muscovite ± biotite ± hornblende 2 – K-feldspar laths, biotite, clay, limonite ± quartz 3 – carbonate (rarely oolitic), chlorite, limonite ± quartz ± hornblende 4 – devitrified glass, limonite, biotite, clay, limonite	20	0.1 to 0.6
- quartz	17	0.02 to 0.5
- calcite	14	0.05 to 0.5
- K-feldspar (sanidine)	12	0.05 to 0.6
- albite	10	0.1 to 0.9
- hornblende	7	0.05 to 0.4
- chlorite	5	0.1 to 0.5
- devitrified glass (mostly to clays)	4	cryptocrystalline
- biotite	4	0.1 to 1.3
- lepidocrocite/limonite	4	0.05 to 0.15
- pyrite	2	0.002 to 0.2
- rutile	1	0.01 to 0.3
- chalcopyrite	trace	0.005 to 0.05
- pentlandite	trace	0.001 to 0.05
- apatite	trace	0.03 to 0.1
- ankerite	trace	0. 1 to 0.5
- epidote	trace	0.01 to 0.02

muscovite ± biotite ± hornblende; 2) composed of K-feldspar laths with trachytic texture and minor biotite and limonite ± quartz; 3) composed mostly of carbonate, some displaying an oolitic texture, and commonly including limonite and mixed chlorite; 4) composed mostly of devitrified glass, which has dominantly altered to clays (smectite), chlorite, and limonite, with minor hornblende and quartz. Calcite locally overprints the matrix and rims some of the fragments. The thin section has been moderately carbonate-altered so that irregular patches of calcite overprint the very fine matrix between crystals, some of the feldspars, and many of the rock fragments. Some biotite grains are kinked. Limonite occurs in clumps up to 0.15 mm wide. Pyrite with a variety of textures is disseminated throughout the section. Cubic and irregular to net-textured pyrite is commonly associated with matrix calcite, chlorite, and rock fragments. Framboidal to ball-shaped pyrite is associated with the fine-grained matrix between larger feldspar, quartz and mica grains and in rock fragments. Chalcopyrite is associated with lepidocrocite and also occurs as isolated irregular grains in rock fragment type 3 and in the matrix (Fig. 1). Trace lepidocrocite occurs as irregular grains and spheroidal (presumably after replacement of pyrite) disseminations in the matrix and some of the rock fragments. Trace pentlandite occurs as net-textured disseminations in the matrix (Fig. 2). Trace ankerite has iron oxide alteration along cleavages.

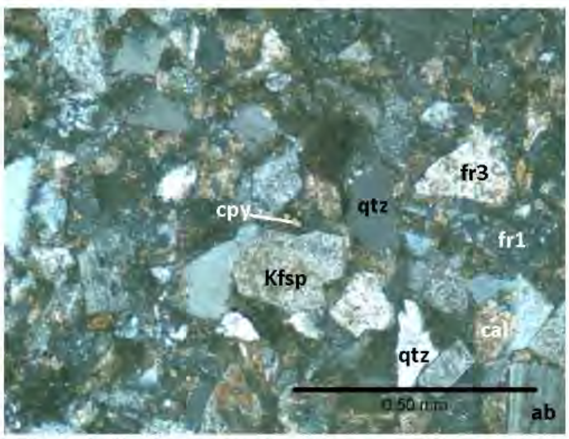


Figure 1: Photomicrograph of the general fine-grained, equigranular texture of angular to euhedral crystals and common rock fragment types (fr1 and fr3). Albite (ab) laths are partially altered to sericite, while K-feldspar laths are more heavily sericitized (Kfsp). Chalcopyrite (cpy) occurs as irregular grains in the matrix. Photo taken in cross polarized transmitted and reflected light.

Figure 2: Photomicrograph of ball- to net-textured pentlandite disseminated in the matrix. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523094

General Rock type: serpentinized harzburgite

This rock is a very intensely and pervasively altered serpentinite after a harzburgite, similar to thin section 5523069, consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, magnetite, chromite, and talc, and trace pentlandite, wustite, and awaruite. The section displays the typical webby to flooded texture of serpentine replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is generally replaced by minor iddingsite. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by webby green to rusty brown serpentine with substantial iddingsite (Fig. 1) and a finely fibrous texture that replaces the rims of olivine and the rims and cores of orthopyroxene. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Massive serpentine occurs in patches up to 1 by 2 mm wide. Thin stringy veinlets of granular magnetite 0.01 to 0.1 mm wide occur with the iddingsite towards the centres of veins. The second generation (serpentine 2) is characterized by grey to pale green scaly serpentine that almost completely replaces olivine and orthopyroxene, much more so than serpentine 1, and contains significantly less iddingsite. This serpentine overprints serpentine 1 (including the iddingsite and magnetite veinlets of serpentine 1; Fig. 1) in patches of varying degrees of intensity, and may correspond with serpentine 2 of previous thin sections. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite, though in some places a more fibrous texture indicates at least minor amounts of chrysotile. Short, discontinuous veins of massive pale green serpentine are probably cogenetic with the rest of the grey to pale green serpentine. A third generation of thin (0.005 to 0.04 mm wide), pale green fibrous serpentine veins in random orientations cut the whole thin section, but are more abundant in the area affected by serpentine 1 alteration. These veins are often overprinted by thin, wormy talc veinlets that are up to 0.05 mm wide and 5 mm long. These veinlets are more pronounced when cutting orthopyroxene grains. Chromite in serpentine veins is generally fractured and altered by magnetite (up to 0.02 mm wide) which cuts across chromite in fractures parallel and continuous to serpentine veining and as thin rims on grain boundaries. This thin section is devoid of the small pods of pentlandite and wustite present in most other thin sections in the 5523xxx suite. Instead, pentlandite is very finely disseminated throughout the

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	65	Up to 0.5
1 - brown lizardite-antigorite	55	
2 - grey lizardite	40	
3 - veins	5	
- olivine	15	0.03 to 2
- orthopyroxene	8	0.1 to 2
- iddingsite	8	Up to 0.5
- magnetite	2	0.001 to 0.03
- chromite	1	0.05 to 0.4
- talc	1	Up to 0.1
- pentlandite	Trace	0.001 to 0.02
- wustite	Trace	0.005 to 0.01
- awaruite	Trace	0.005 to 0.008

serpentine, but is concentrated in serpentine 1. Wustite occasionally rims the largest of the pentlandite grains. Two anhedral grains of awaruite are present disseminated in serpentine (Fig. 2)

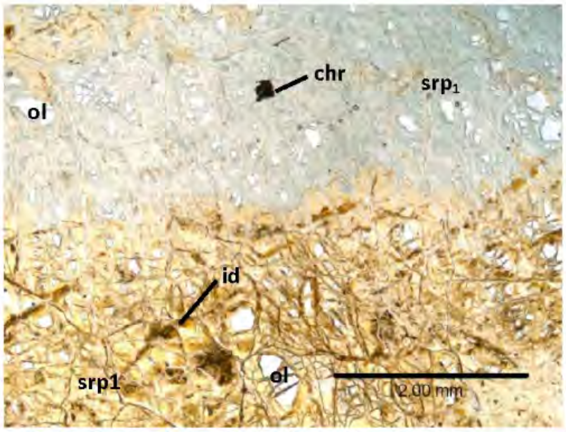


Fig. 1: Photomicrograph of two of the three serpentine alteration types. Serpentine 1 (srp1) is characterized by webby green to rusty brown serpentine with substantial iddingsite (id) that replaces the rims of olivine (ol) and the rims and cores of orthopyroxene. The second generation (serpentine 2, srp2) is characterized by grey to pale green scaly serpentine that almost completely replaces olivine and orthopyroxene, much more so than serpentine 1, and contains significantly less iddingsite. Photo taken in plane polarized transmitted light.

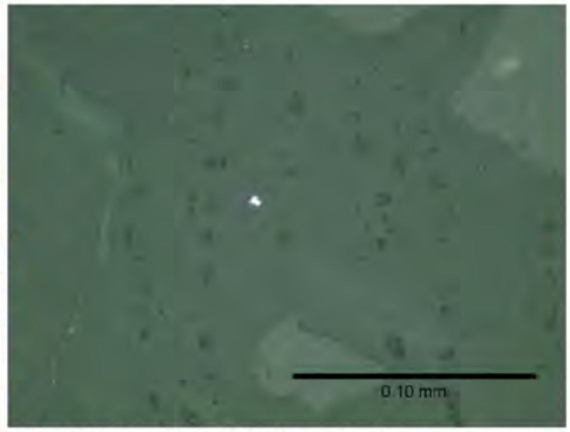


Fig. 2: Photomicrograph of a grain of awaruite embedded in serpentine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523095

General Rock type: serpentinite or serpentinized harzburgite

This rock is a very intensely and pervasively altered serpentinite after a harzburgite, similar to polished thin section 5523094, consisting of serpentine, olivine, orthopyroxene, and tremolite-actinolite, with minor cummingtonite, iddingsite, talc, magnetite, chromite, and calcite, and trace pentlandite, wustite, native copper, and awaruite. The section has an overall patchy and webby texture of serpentine replacing olivine and orthopyroxene. Remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is often replaced by minor iddingsite. Fibrous tremolite-actinolite also replaces orthopyroxene and overprints serpentine in masses, especially where iddingsite is absent. Cummingtonite replaces serpentine in acicular radiating masses, especially around orthopyroxene grains and where iddingsite is absent. Talc occurs as masses along olivine grain boundaries and in very thin wormy veinlets cutting all serpentine. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by green to rusty brown serpentine with some iddingsite and a finely fibrous texture. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Pale green to grey scaly serpentine represents a second alteration generation similar to the serpentine 2 of thin section 5523094, and occurs in irregular patches overprinting serpentine 1. This serpentine often partially or completely replaces olivine and orthopyroxene, more so than serpentine 1, and contains minimal iddingsite. Thin, discontinuous, stringy magnetite veinlets up to 2 mm long occur with this serpentine. Discontinuous veins of massive brownish-green serpentine (up to 0.15 mm wide) are probably cogenetic with the rest of the grey to pale green serpentine. A third generation of serpentine (serpentine 3) is represented by few thin, very pale green to colourless, massive to fibrous serpentine in veins or as disseminated grains replacing the serpentine 1 and 2. These commonly contain minor magnetite. These veins are up to 0.1 mm wide and generally trend N-S. A single anastomosing calcite vein (0.01 to 0.1 mm wide) trends roughly N-S across the thin section, and cuts all serpentine and other minerals indicating that it is probably the latest veining event for this rock. This late stage carbonate alteration is common in alpine ultramafic suites, but the amount of

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite 2 – lizardite 3 – lizardite-antigorite	46 45 50 5	Up to 0.2
- olivine	18	0.05 to 2
- orthopyroxene	8	0.1 to 2
- tremolite-actinolite	10	0.05 to 0.5
- cummingtonite	5	0.05 to 0.3
- iddingsite	4	Up to 0.4
- talc	4	Up to 0.1
- magnetite	3	0.001 to 0.4
- chromite	1	0.05 to 2
- calcite vein	1	0.01 to 0.1
- pentlandite	trace	0.005 to 0.03
- wustite	trace	0.01 to 0.02
- native copper	trace	0.002 to 0.02
- awaruite	trace	0.002 to 0.02

carbonate alteration in this suite seems minimal compared to alpine peridotites worldwide. Primary chromite occurs both within the serpentine and as inclusions in orthopyroxene. Chromite in serpentine veins is commonly fractured and altered by magnetite which cuts across chromite in fractures parallel and continuous to serpentine veining and as thin rims on grain boundaries (up to 0.07 mm wide). Very rare, small (0.02 mm) pods of pentlandite, wustite, which occasionally include native copper, are mostly associated with serpentine 1 (Fig. 1). Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Unaltered pentlandite also occurs as inclusions in orthopyroxene. Trace amounts of fine-grained, isolated awaruite are disseminated within serpentine 1, and associated with serpentine 3 (Fig. 2).

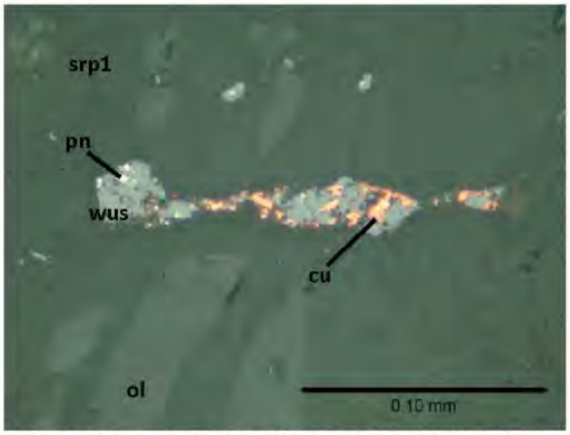


Fig. 1: Photomicrograph of a pod of wustite (wus) replacing pentlandite (pn) and hosting inclusions of native copper (cu). Serpentine 1 (srp1) hosts the pod between fractured grains of olivine (ol). Photo taken in plane polarized reflected light.

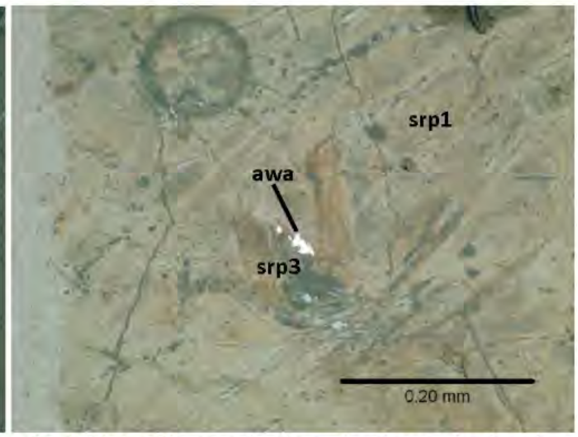


Fig. 2: Photomicrograph of a grain of awaruite (awa) embedded in serpentine 1 (srp1), associated with a brown, acicular serpentine (srp3). Photo taken in simultaneous plane polarized reflected and transmitted light.

Petrographic Report: Polished thin section 5523099

General Rock type: meta-lapilli tuff

This rock is a strongly chloritized and carbonate altered meta-lapilli tuff primarily composed of flattened lapilli, lepidocrocite/limonite, calcite, chlorite, and albite with minor muscovite, and trace chalcopyrite, pyrite and goethite. The lapilli are matrix-supported and in a pervasively altered trachytic matrix of fine-grained lepidocrocite/limonite, devitrified glass fragments, lath-like albite, platey and irregular chlorite, and anhedral calcite. The devitrified glass fragments are a very dark brownish red to opaque mass of very fine-grained material comprising a mixture of glass, lepidocrocite, limonite, and other hydrated iron-oxides. The chlorite forms some of the largest mineral grains in the thin section ranging up to 1 mm in length. The chlorite is pleochroic ranging from light green to medium green. The matrix is dominated by fine-grained lepidocrocite/limonite in a dendritic habit that is pervasive across the thin section or in small clumps. The lapilli are slightly flattened and elongate in the E-W direction, and are composed of a core of very fine-grained calcite with minor limonite and rimmed by chlorite (Fig. 1). The thin section has been moderately carbonate-altered so that irregular patches of calcite overprint the very fine matrix between lapilli. Two thin (0.005 to 0.15 mm wide), parallel calcite veins cut across the thin section side-by-side and are oriented roughly ENE-WSW. Veins comprise roughly 1% of the thin section. The calcite veins are associated with selvages of coarse chlorite and carbonate clasts. Albite is usually in the form of long laths and is often partially replaced by calcite (possibly with some sericite), iron oxides, and rarely chlorite. Muscovite occurs as kinked or wavy plates. Pyrite occurs as cubic to anhedral and irregular grains disseminated through the thin section which are coarser when pyrite occurs within lapilli. Altered pyrite is locally rimmed and replaced by goethite. The altered pyrite has a pock-marked texture, but some pyrite is very fresh and takes a very good polish. Chalcopyrite also occurs as anhedral, irregular grains disseminated throughout the thin section and grains are the largest when occurring within lapilli or associated with pyrite. Chalcopyrite is rarely rimmed by goethite, but is locally associated with small grains of lepidocrocite and other dark reddish-brown hydrated iron oxides.

The overall texture is of flattened lapilli oriented roughly E-W across the thin section. This flattening has resulted in some structure/foliation in the thin section and minor pressure shadows indicating N-S shortening and E-W extension across the thin section. However, not all of the albite laths have been rotated into the foliation, indicating that the amount of deformation in this rock is relatively low.

Mineral	Modal Percent Abundance	Size Range (mm)
- lepidocrocite/limonite/glass	30	0.002 to 0.1
- calcite	20	0.005 to 0.4
- chlorite	15	0.01 to 1
- albite	13	0.1 to 0.8
- flattened lapilli - calcite cores, chlorite, lepidocrocite/limonite	15	0.7 to 2
- muscovite	7	0.05 to 0.5
- chalcopyrite	trace	0.005 to 0.05
- pyrite	trace	0.002 to 0.4
- goethite	trace	0.01 to 0.2

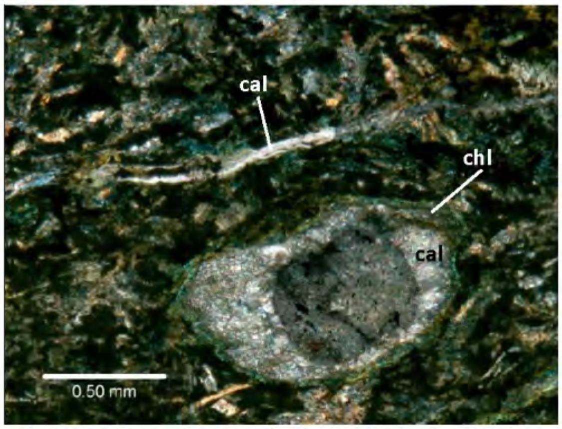


Figure 1: Photomicrograph of a lapilli that is slightly squashed in the E-W direction, and composed of a core of very fine grained calcite (cal) with mixed minor limonite (black material) and rimmed by chlorite (chl). Photo taken in cross polarized transmitted light.

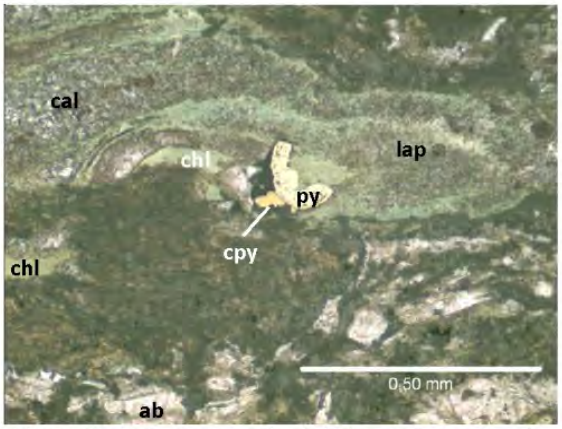


Figure 2: Photomicrograph of chalcopyrite (cpy) and pyrite (py) occurring together within a lapilli (lap). The lapilli are composed of a calcite (cal)-limonite core and chlorite (chl) rim. Photo taken in plane polarized transmitted and reflected light.

Petrographic Report: Polished thin section 5523100

General Rock type: serpentinized lherzolite

This rock is completely altered to a serpentinite, with barely any of the original minerals remaining (but most likely after lherzolite) consisting of serpentine, magnesite, limonite, and talc, with minor magnetite and iddingsite, and trace chromite. Heavily fractured chromite is the only remaining primary mineral, and is commonly rimmed and partially to completely replaced by magnetite (up to 0.05 mm wide). The section has an overall flooded to net-texture of fine-grained serpentine replacing original minerals (probably olivine and pyroxenes) and is overprinted by serpentine veining and pervasive magnesite alteration and veining (Fig. 1). At least three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture, and which hosts minor granular to stringy magnetite veinlets, abundant limonite, and minor iddingsite. This serpentine has partially to completely replaced most of the original minerals. Wood-textured serpentine completely replaces what was probably originally enstatite. Webby parts of this serpentine have been pervasively replaced by magnesite and/or talc, whereas fine-grained serpentine that has replaced original mineral cores has not been altered (Fig. 2). The second generation (serpentine 2) is characterized by colourless to pale yellow-green fibrous serpentine (chrysotile) with minor stringy magnetite and patchy iddingsite. These veins are 0.05 mm wide and have not been appreciably affected by magnesite or talc alteration. The third generation of serpentine (serpentine 3) is characterized by colourless fine-grained serpentine veins with abundant stringers of granular magnetite up to 5 mm long. Wider, root-textured veins (0.01 to 0.2 mm wide) of limonite, cores of stringy magnetite, and minor talc overprint all serpentine generations. The limonite-magnetite veins are overprinted by medium-grained magnesite veins (magnesite 1) that are 0.1 to 0.2 mm wide and trend roughly NW-SE. These veins are cross cut by much thinner (0.01 to 0.05 mm wide), very fine-grained magnesite veinlets (magnesite 2) that trend E-W. Fine, isolated grains of anhedral magnetite are disseminated throughout the thin section, especially where serpentine had been present as net-textured replacement of primary minerals.

Mineral	Modal Percent Abundance	Size Range (mm)
- Magnesite 1 – very fine grained replacement of serpentine 2 - veins	40 67 33	0.005 to 0.4
- serpentine 1 – replacement of original minerals and net-textured serpentine + limonite + iddingsite 2 – yellow-green chrysotile veins 3 – colourless fine-grained serpentine veins + magnetite stringers	25 80 2 18	Up to 1.5
- limonite	13	Up to 0.6
- talc	10	Up to 0.05
- magnetite	9	0.2 to 2
- iddingsite	3	up to 0.3
- chromite	trace	0.05 to 0.9

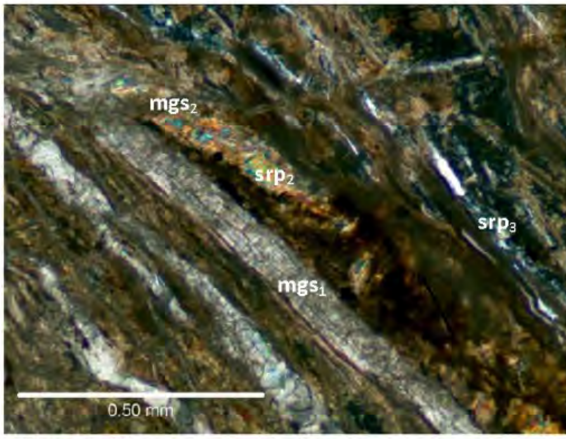


Figure 1: Photomicrograph of two generations of serpentine alteration (srp$_2$ and srp$_3$) overprinted by magnesite veining (mgs$_1$ and mgs$_2$). Serpentine 1 is so heavily overprinted by veins and replaced by fine-grained magnesite so as to be nearly impossible to distinguish here. Photo taken in cross polarized transmitted light.

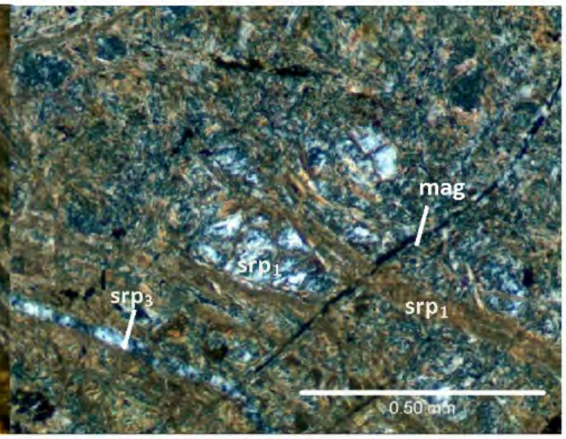


Figure 2: Photomicrograph of fine-grained, colourless serpentine (srp$_1$) that has completely replaced original mineral cores and has not been substantially altered. The serpentinization of these relict cores are coeval with net-textured rusty brown serpentine that cuts across them. Stringy magnetite veinlets (mag) cutting serpentine 1 are then cut by serpentine 3 (srp$_3$) veinlets. Photo taken in cross polarized transmitted light.

Petrographic Report: Polished thin section 5523101

General Rock type: serpentinized dunite

This rock is slightly more olivine-rich than others in the suite. It is an intensely and pervasively altered serpentinite after dunite primarily consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, tremolite, talc, chromite, and magnetite, and trace awaruite, pentlandite, and wustite. Based on the high percentage of olivine relative to pyroxene, this rock was probably a dunite pre-serpentization. The thin section displays the typical web texture of serpentine replacing olivine and orthopyroxene, and remnant grains are severely broken up. Remnant phases are medium-grained and equigranular. Olivine is more intensely broken up than orthopyroxene and very little of it remains. Orthopyroxene occurs as rounded to irregular, subhedral grains and shows poor cleavage in one direction, which is generally replaced by iddingsite, serpentine, and magnetite. Orthopyroxene is commonly replaced by fibrous to wood-grain textured serpentine, which is in some places overprinted by tremolite. Two generations of serpentine are apparent in this thin section. The first generation (serpentine 1) is characterized by web-textured rusty brown to yellow-green serpentine associated with minor iddingsite and trace stringy magnetite where olivine has been replaced, and patches of massive to wood-grain textured yellow-green serpentine where orthopyroxene has been replaced (Fig. 1). The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, but minor amounts of chrysotile are also present where serpentine appears to have a fibrous texture. Stringy veinlets of magnetite up to 1 mm long commonly occur within the centers of the serpentine veins, and are cogenetic with serpentinization. Randomly oriented fibrous, pale green veins (0.02 to 0.2 mm wide) are pervasive across the thin section and represent a second generation of serpentinization (serpentine 2). The fibrous texture indicates this serpentine is probably chrysotile. Chromite occurs as moderately to heavily fractured subhedral to anhedral grains with very little magnetite alteration around grain boundaries. Only a few small (less than 0.05 mm) pods of pentlandite, awaruite, and wustite occur in serpentine alteration of olivine (Fig. 2). Pentlandite in these pods is rimmed and replaced by wustite, and wustite fills the fractures between pentlandite. Pentlandite and awaruite also occur as fine isolated grains disseminated in serpentine or associated with chromite. Native tin occurs as tiny inclusions in olivine.

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- serpentine	70	Up to 0.2
- olivine	17	0.05 to 0.5
- orthopyroxne	4	0.05 to 0.5
- iddingsite	4	Up to 0.3
- chromite	2	0.03 to 1.5
- magnetite	2	Up to 0.03
- tremolite	1	0.05 to 0.2
- awaruite	trace	0.005 to 0.05
- pentlandite	trace	0.002 to 0.02
- wustite	trace	0.005 to 0.01
- native tin	trace	0.008

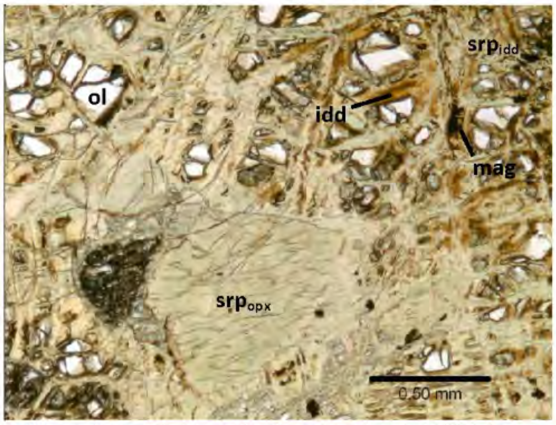


Fig. 1: Photomicrograph of serpentine 1, which is characterized by web-textured rusty brown to yellow-green serpentine (srp$_{idd}$) associated with minor iddingsite and trace stringy magnetite where olivine has been replaced, and patches of massive to wood-grain textured yellow-green serpentine (srp$_{opx}$) where orthopyroxene has been replaced. Photo taken in plane polarized transmitted light.

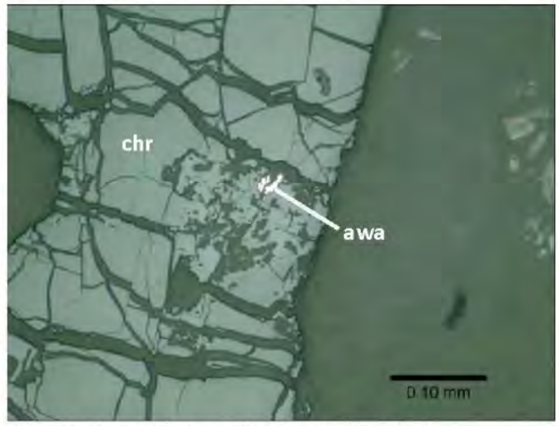


Fig. 2: Photomicrograph of a small pod of pentlandite (pn), native copper, awaruite (awa), and wustite (wus) with a generally brecciated and cracked texture hosted serpentine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523102

General Rock type: serpentinized harzburgite

This rock is a serpentinized harzburgite primarily consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, chromite, and magnetite, and trace awaruite, pentlandite, wustite, and native iron. In general this specimen is slightly coarser grained than others in the suite. The thin section displays the web or sieve texture typical of this suite, with serpentine replacing olivine and orthopyroxene. Any relict grains are severely broken up. Remnant phases are medium-grained, ranging up to 6 mm and equigranular. Olivine is more intensely broken up than the orthopyroxene. Orthpyroxene occurs as rounded to irregular, subhedral grains and shows poor cleavage in one direction, which is commonly replaced by iddingsite, serpentine, and magnetite. The orthopyroxene is partially replaced by fibrous to wood-grain textured serpentine. Only one generation of serpentine is present in this thin section. This serpentine is characterized by web-textured rusty brown to yellow-green serpentine associated with minor iddingsite and trace stringy magnetite where olivine has been replaced, and patches of massive to wood-grain textured yellow-green serpentine where orthopyroxene has been replaced, similar to serpentine 1 of thin section 5523101. The mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, but minor amounts of chrysotile are also present where serpentine appears to have a fibrous texture. Stringy veinlets of magnetite up to 1 mm long commony occur within the centers of the serpentine veins, and are cogenetic with serpentinization. Thin calcite veins (0.5 to 12 mm long, and up to 0.5 mm wide) crosscut serpentine and altered orthopyroxene in random orientations. Chromite occurs as moderately to heavily fractured subhedral to anhedral grains with very little magnetite alteration around grain boundaries (up to 0.01 mm wide). Only a few small (less than 0.02 mm) pods of pentlandite, awaruite, and wustite occur in serpentine alteration in olivine (Fig. 1). Pentlandite in these pods is rimmed and replaced by wustite. Pentlandite and awaruite also occur as fine isolated grains disseminated in serpentine, particularly in the centres of serpentine, or associated with chromite grain boundaries. Native iron occurs as tiny isolated grains disseminated in serpentine.

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- Serpentine	50	Up to 0.3
- Olivine	28	0.2 to 6
- orthopyroxene	15	Up to 6.3
- iddingsite	3	Up to 0.2
- chromite	2	0.05 to 1.5
- magnetite	1	Up to 0.05
- calcite	1	Up to 0.5
- awaruite	trace	0.001 to 0.02
- pentlandite	trace	0.002 to 0.01
- wustite	trace	0.001 to 0.02
- native iron	trace	0.005

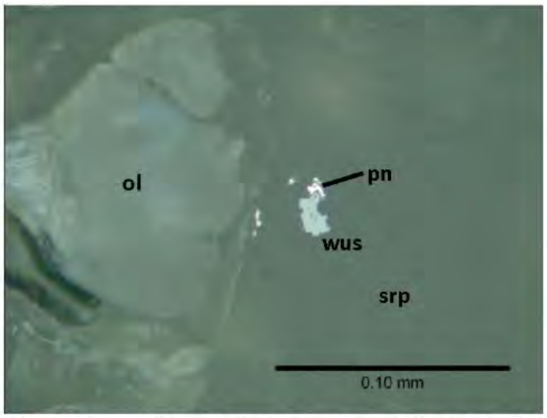


Fig. 1: Photomicrograph of a small pod of pentlandite (pn) and wustite (wus) in serpentine (srp) alteration along the edge of olivine (ol). Photo taken in plane polarized reflected light.

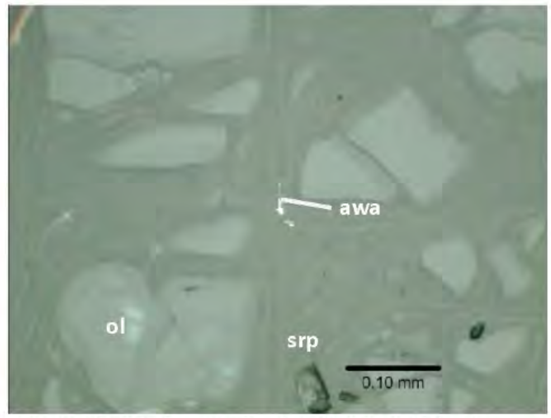


Fig. 2: Photomicrograph of an isolated grain of awaruite (awa) within the centre of serpentine (srp) alteration which cuts olivine (ol). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section 5523103

General Rock type: serpentinized harburgite

Similar to most rocks in the suite this specimen is a serpentinized harburgite primarily consisting of serpentine, olivine, orthopyroxene, and clinopyroxene, with minor iddingsite, talc, calcite, chromite, and magnetite, and trace awaruite, native iron, pentlandite, wustite, and native copper. The thin section has an overall web texture of serpentine replacing olivine and orthopyroxene. The relict grains are broken up and altered. Remnant phases are medium- to coarse-grained and equigranular. Olivine is more intensely broken up than the orthopyroxene. The orthopyroxene occurs as rounded to irregular, subhedral grains and shows poor cleavage in one direction, which is commonly replaced by iddingsite, serpentine, and talc. Orthopyroxene and clinopyroxene are variably replaced by fibrous to wood-grain textured serpentine bearing iddingsite and veiny to plumose talc. Talc occurs as short veiny cross-cuts across orthopyroxene and as patches around grain edges. Two generations of serpentine are apparent in this thin section. The first generation (serpentine 1) is characterized by web-textured rusty brown to yellow-green serpentine associated with cogenetic minor iddingsite and trace granular magnetite where olivine has been replaced, and patches of massive to wood-grain textured yellow-green serpentine where the pyroxenes have been replaced, similar to serpentine 1 of thin section 5523101. As is typical in this suite, the mesh-like or net-like texture of serpentine in some places indicates it is likely lizardite or antigorite, but minor amounts of chrysotile are present where serpentine appears to have a fibrous texture. The second generation (serpentine 2) is characterized by dark, rusty, thin veins up to 0.1 mm wide and cut across the length of the thin section. Most of the veins trend E-W, but some of the more well-developed veins trend N-S. A few discontinuous, short, bifurcating calcite veinlets (0.5 to 2 mm long, and up to 0.3 mm wide) cut serpentine and altered orthopyroxene in random orientations. Chromite occurs as moderately to heavily fractured subhedral to anhedral grains with very little magnetite alteration around grain boundaries (up to 0.05 mm wide). Isolated anhedral grains of awaruite and native iron occur in the centres of serpentine 1, and are in some places associated with magnetite (Fig. 1) or chromite. Only one grain of native copper (Fig. 2) was observed and is associated with chromite. This copper grain contained tiny inclusions of pentlandite and wustite. These three phases are texturally secondary, but no relict primary material remains.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	44	Up to 0.7
- olivine	22	0.4 to 4
- orthopyroxene	13	0.4 to 3
- clinopyroxene	4	Up to 2
- talc	7	0.01 to 0.1
- calcite	5	0.01 to 0.1
- iddingsite	3	Up to 0.3
- chromite	1	0.2 to 1.5
- magnetite	1	0.001 to 0.3
- awaruite	trace	0.005 to 0.02
- native iron	trace	0.001 to 0.01
- native copper	trace	0.03
- pentlandite	trace	0.001 to 0.005
- wustite	trace	0.001

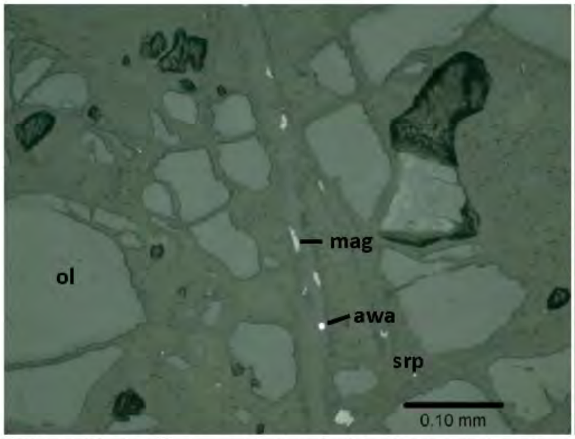


Fig. 1: Photomicrograph of an isolated anhedral grain of awaruite (awa) associated with magnetite (mag) within the centre of serpentine (srp) alteration which cuts olivine (ol). Photo taken in plane polarized reflected light.

Fig. 2: Photomicrograph of an isolated grain of native copper (Cu) associated with chromite (chr) within serpentine (srp) which cuts olivine (ol). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523104

General Rock type: serpentinized layered? harzburgite

This specimen displays layering along the N-S axis of the thin section. The layers are essentially an easterly orange-brown layer and a westerly transparent-clear layer. The brown layer is severely altered to serpentine, with small relicts of dominantly olivine, but also some orthopyroxene. The other layer is dominated by orthopyroxene, with minor olivine, generally as inclusions in the orthpyroxene. Thus this may represent a primary layering of dunitic-harzburgite and harburgite. Other than the two distinct layers, this rock is similar to thin section 5523103 and is essentially a very intensely and pervasively serpentinized harzburgite. It consists of serpentine, olivine, and orthopyroxene, with minor iddingsite, magnetite, chromite, and talc, and trace awaruite and native iron. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by webby yellow-green to rusty brown serpentine with substantial iddingsite and a finely fibrous texture. In general it replaces the olivine almost entirely and replaces the edges and along fractures within the orthopyroxene. It is mostly lizardite-antigorite, but more fibrous textures may indicate minor chrysotile. Granular magnetite veinlets (0.5 to 2 mm long) occur with iddingsite along the centres of serpentine, and clumps of granular to massive magnetite (up to 0.4 mm) occur in wider patches of serpentine. The second generation (serpentine 2) is characterized by grey to pale green scaly serpentine that almost completely replaces olivine and monticellite, much more so than serpentine 1, and contains significantly less iddingsite and magnetite. This serpentine overprints serpentine 1 in irregular patches of varying degrees of intensity, and may correspond with serpentine 2 of thin section 5523094. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite. Thin veins of massive pale green serpentine, sometimes bearing minor talc within the vein centre, probably represent a third generation of serpentine (serpentine 3). These thin (0.005 to 0.05 mm wide), pale green fibrous serpentine veins occur in random orientations and cut the whole thin section. These veins are in some places overprinted by thin, wormy talc veinlets that are 0.005 to 0.03 mm wide and 1 to 6 mm long, which are more pronounced and well-developed where cutting monticellite. Chromite in serpentine veins is commonly fractured by serpentine which cuts across chromite in fractures and altered to magnetite in thin rims (up to 0.02 mm wide) on grain boundaries. Due to the extreme serpentinization of this thin section, it was devoid of the small pods of pentlandite and wustite seen in most other thin sections. However, native iron and awaruite

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - brown lizardite-antigorite 2 - grey lizardite 3 - veins	53 50 45 5	Up to 0.5
- olivine	18	0.4 to 5
- orthopyroxene	18	0.5 to 5
- iddingsite	6	Up to 0.4
- magnetite	2	0.001 to 0.3
- chromite	2	0.5 to 5
- talc	1	Up to 0.03
- awaruite	trace	0.005 to 0.08
- native iron	trace	0.001 to 0.01

are very finely disseminated throughout the serpentine (Fig. 1), but are mostly concentrated in serpentine 1. Occasionally, native iron occurs as inclusions in olivine and orthopyroxene (Fig. 1), and awaruite as inclusions in chromite and orthopyroxene (Fig. 2). As observed in other sections, there appears to be two generations of native metals and awaruite. One primary generation contained as inclusions in the primary igneous minerals (i.e. awaruite in chromite: Fig. 2) and a later secondary generation associated with the serpentization. In this sample evidence of the secondary generation of the metals is observed in figure 1, where the native iron is clearly associated with and contained within the serpentine.

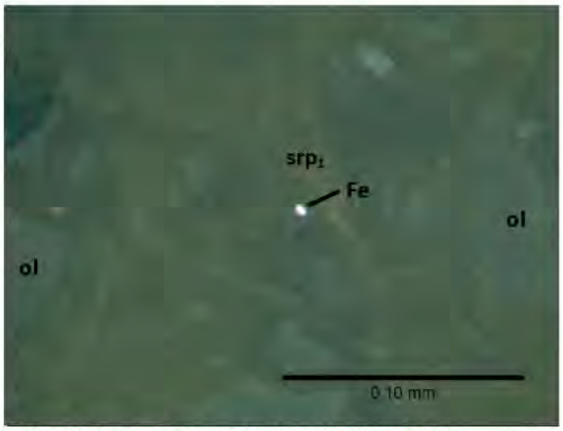


Fig. 1: Photomicrograph of native iron (Fe) in serpentine 1 (srp1) cutting olivine (ol). Photo taken in plane polarized reflected light.

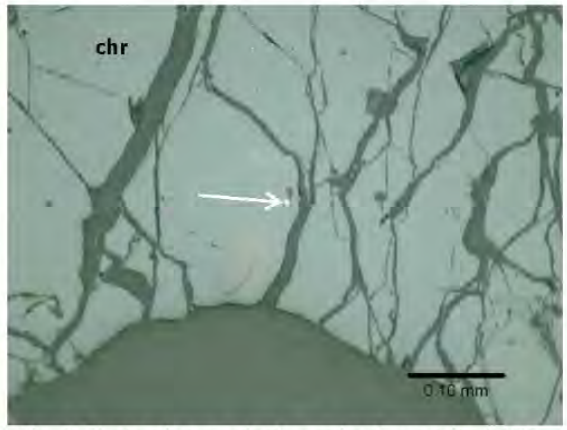


Fig. 2: Photomicrograph of a grain of awaruite (white grain at end of arrow) embedded in chromite (chr). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523105

General Rock type: serpentinite

Comprised of approximately two-thirds serpentine, this rock has been intensely and pervasively altered and is a serpentinite after a dunite. It is most similar to thin section 5523075, consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, magnetite, chromite, and talc, and trace awaruite, pentlandite, wustite and calcite. The serpentine replaces olivine and orthopyroxene. The texture the typical sieve or web textures seen in most of the rocks of this suite. Relict grains are severely fractured. The orthopyroxene is slightly less abundant in this thin section. However it has suffered the same fate as the rest of the thin sections and is replaced by minor iddingsite, serpentine, and magnetite. This sample also displays the three types of serpentine alteration seen in others of this suite. The first type (serpentine 1) is pervasive and intense, and characterized by webby yellow-green to rusty brown serpentine with substantial iddingsite and a finely fibrous texture that replaces the rims of olivine and the rims and cores of orthopyroxene. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. This section also has the same stringy veinlets of granular magnetite (0.2 to 2 mm long) which occur with iddingsite along the centres of serpentine, and clumps of granular to massive magnetite (up to 0.8 mm) which occur in wider patches of serpentine. Serpentine 2 is characterized by grey to pale green scaly serpentine that almost completely replaces olivine and orthopyroxene, much more so than serpentine 1, and contains significantly less iddingsite and magnetite. It is difficult to tell whether this serpentine overprints serpentine 1 or if it is simply intergrown cogenetically with serpentine 1. Serpentine 2 occurs in irregular patches of varying degrees of intensity, and may correspond with serpentine 2 of thin section 5523075. The felty or mesh-like texture of serpentine in some places indicates it is likely lizardite or antigorite, though more fibrous patches exist where chrysotile may be present. Thin veins of massive pale green serpentine, sometimes bearing minor talc within the vein centre, represents a third type of serpentine (serpentine 3). These thin (0.005 to 0.05 mm wide), pale green fibrous serpentine veins occur in random orientations and cut the whole thin section. These veins are sometimes overprinted by thin, wormy talc veinlets that are 0.005 to 0.03 mm wide and 0.5 to 3 mm long. Trace short, wormy calcite veins with serpentine selvages are up to 1 mm long and cross-cut all serpentine and talc.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - brown lizardite-antigorite 2 - grey lizardite 3 - veins	65 30 65 5	Up to 0.3
- olivine	20	0.1 to 2
- orthopyroxene	5	0.2 to 2
- iddingsite	5	Up to 0.2
- magnetite	2	0.001 to 0.05
- chromite	2	0.1 to 1.2
- talc	1	Up to 0.05
- calcite	trace	0.01 to 0.05
- awaruite	trace	0.002 to 0.07
- pentlandite	trace	0.001 to 0.005
- wustite	trace	0.002

Chromite is often fractured by serpentine and altered to magnetite in thin rims (up to 0.01 mm wide) along grain boundaries. This thin section only hosted one of the small pods of pentlandite and wustite (Fig. 1) observed in most other thin sections in this suite. Awaruite (and possibly some native iron) is very finely disseminated throughout the serpentine (Fig. 2), but largest in serpentine 3 veins. Awaruite also occurs as a primary phase as inclusions in chromite and orthopyroxene, but this mode of occurrence for awarite is generally of less abundance.

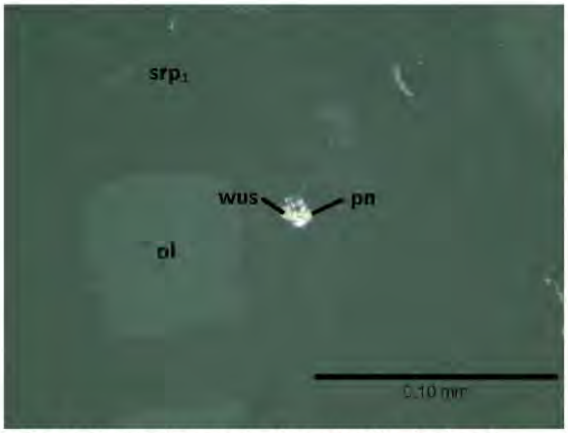


Fig. 1: Photomicrograph of pentlandite (pn) and wustite (wus) pod in serpentine 1 (srp1) cutting olivine (ol). Photo taken in plane polarized reflected light.

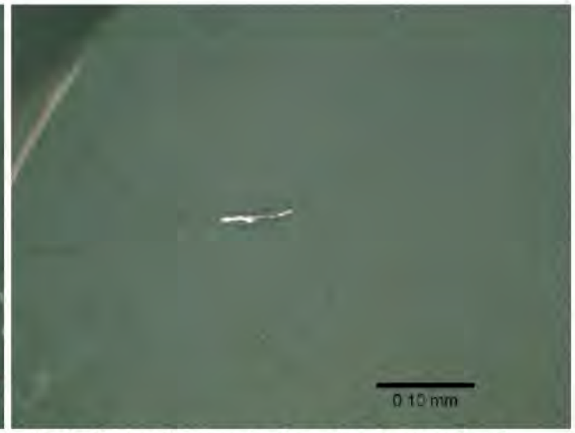


Fig. 2: Photomicrograph of an elongated grain of awaruite (white grain) embedded in serpentine 3 vein cutting serpentine 2. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523106

General Rock type: serpentinized harzburgite

This rock is a very strongly and pervasively altered serpentinite after harburgite. The mineral assemblage is the same as others in the suite consisting of serpentine, olivine, orthopyroxene, and clinopyroxene, with minor iddingsite, magnetite, chromite, calcite, and talc, and trace awaruite, pentlandite, wustite, native copper and native iron. The serpentine textures are web- or sieve-like. Serpentine dominates the section and in general the serpentine replaces olivine and to a lesser extent the orthopyroxene and clinopyroxene . Both pyroxenes show replacement by minor iddingsite and serpentine. The same three generations of serpentine as in 55230105 are present. The (serpentine 2) veins of mesh-like to finely fibrous pale green serpentine range up to 1.3 mm wide. Again the veins are mostly lizardite-antigorite with minor chrysotile. Magnetite is concentrated in vein centres and as disseminated grains and clumps ranging up to 0.8 mm in size and concentrated generally in the serpentine. The third generation (serpentine 3) is characterized by thin (0.01 to 0.15 mm wide), E-W trending colourless serpentine veins hosting abundant granular to cubic magnetite (0.01 to 0.08 mm wide) along the vein selvages. It is difficult to tell whether these serpentine veins overprint serpentine 2 veins or if they are simply intergrown cogenetically with serpentine 2 (Fig. 1). These veins are sometimes overprinted by thin, anastomosing talc veinlets that are 0.005 to 0.03 mm wide and 0.5 to 1 mm long. Short wormy calcite veins of lengths less than a cm fill fractures and trace calcite occurs as small, irregular patches up to 0.5 mm

Mineral	Modal Percent Abundance	Size Range (mm)
- Serpentine 1 - brown lizardite-antigorite 2 - pale green veins 3 –colourless veins	50 70 25 5	Up to 1
- olivine	25	0.5 to 3
- orthopyroxen	10	0.4 to 3.8
- clinopyroxene	2	Up to 0.7
- iddingsite	5	Up to 0.4
- magnetite	3	0.002 to 0.06
- chromite	3	0.1 to 1.4
- talc	1	Up to 0.005
- calcite	1	0.01 to 0.3
- awaruite	trace	Up to 0.01
- native copper	trace	0.005
- native iron?	trace	0.005
- pentlandite	trace	0.001 to 0.005
- wustite	trace	0.005

long. Chromite is commonly fractured by serpentine and altered to magnetite in thin rims (up to 0.01 mm wide) along grain boundaries. A very few small pods of pentlandite and wustite, in some occurrences including native copper (Fig. 2), are present in serpentine 1. Awaruite (and possibly some native iron) was very finely disseminated throughout serpentine 1 and 2 (Fig. 3). Very fine-grained native iron occurs in serpentine 3. The native iron was identified by its high reflectance and cubic morphology, but was too small to identify via SEM/EDS.

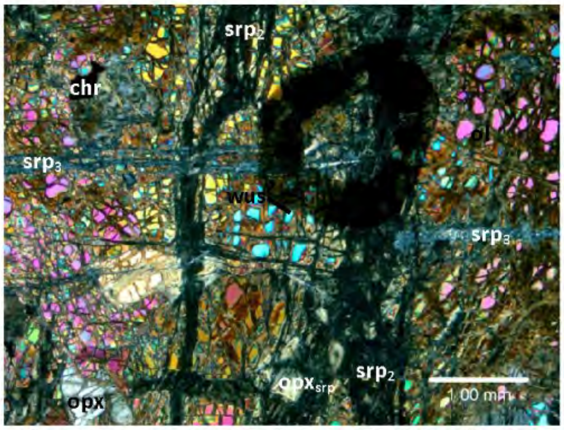


Fig. 1: Photomicrograph of serpentine 3 (srp_3) veins cutting a serpentine 2 (srp_2) vein on the left, and a serpentine 3 vein being offset by a serpentine 2 vein. It is difficult to tell which set of serpentine veins overprints which, or if they are simply intergrown cogenetically. A serpentinized othopyroxene grain (opx_{srp}) occurs at the bottom of the photo in the serpentine 2 vein. Photo taken in plane polarized transmitted light.

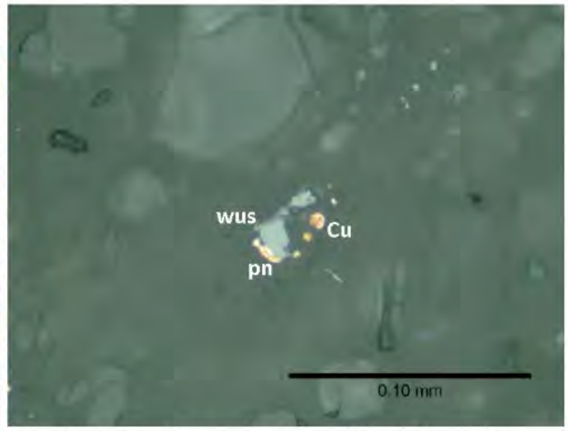


Fig. 2: Photomicrograph of a small pod of wustite (wus) with pentlandite (pn) and native copper (Cu) in serpentine 1. Photo taken in plane polarized reflected light.

Fig. 3: Photomicrograph of a bright white leaf-shaped awaruite (awa) in serpentine 1 cutting olivine. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523107

General Rock type: serpentinized harzburgite

Percentages and textures in this rock are very similar to those observed for 5523106. This specimen is a very strongly and pervasively altered serpentinite after harzburgite. The mineralogy is dominantly serpentine, olivine, orthopyroxene, and clinopyroxene, with minor iddingsite, magnetite, chromite, calcite, and trace awaruite and possibly trace native iron. The section has an overall webby to flooded texture of serpentine replacing olivine and both pyroxenes, and is overprinted by thin serpentine veins. Olivine is severely fractured and replaced by serpentine along fracture edges. The orthopyroxene is locally replaced by serpentine, but is also replaced by minor iddingsite and magnetite. Clinopyroxene is severely altered to serpentine, with few relict grains remaining. The same three generations of serpentine alteration are apparent and some serpentine veins contain trace amounts of stringy and fine-grained granular magnetite. The third generation (serpentine 3) is characterized by thin (0.01 to 0.2 mm wide), E-W trending colourless serpentine veins hosting abundant granular to cubic magnetite (0.01 to 0.08 mm wide) along the vein selvages. It is difficult to tell whether these serpentine veins overprint serpentine 2 veins or if they are simply intergrown cogenetically with serpentine 2. Serpentine 2 veins are sometimes overprinted by subparallel, thin, wormy carbonate and talc veinlets that are 0.005 to 0.07 mm wide and 0.2 to 1 mm long that also cut across serpentine 3. Trace calcite fills the cores of wider serpentine 2 veins, and calcite veins up to 0.3 mm long cut orthopyroxene. Chromite is commonly fractured by serpentine and altered to magnetite in thin rims (up to 0.01 mm wide) along grain boundaries. Pentlandite and wustite are absent in this section. Trace awaruite (and possibly trace native iron) occurs as very finely disseminated anhedral to cubic grains throughout serpentine 1, 2, and 3, but is largest and most abundant in serpentine 3 (Fig. 2).

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite 2 - pale green veins 3 - colourless veins	55 65 30 5	Up to 0.7
- olivine	20	0.2 to 3
- orthopyroxene	15	0.3 to 4
- clinopyroxene	1	Up to 2
- iddingsite	4	Up to 0.3
- magnetite	2	0.001 to 0.06
- chromite	2	0.1 to 0.8
- calcite	1	0.005 to 0.2
- awaruite	trace	0.002 to 0.01
- native iron?	trace	Up to 0.007

Fig. 1: Photomicrograph of awaruite (awa) and magnetite (mag) in serpentine 1 (srp_1) cutting and replacing olivine (ol). Photo taken in plane polarized reflected light.

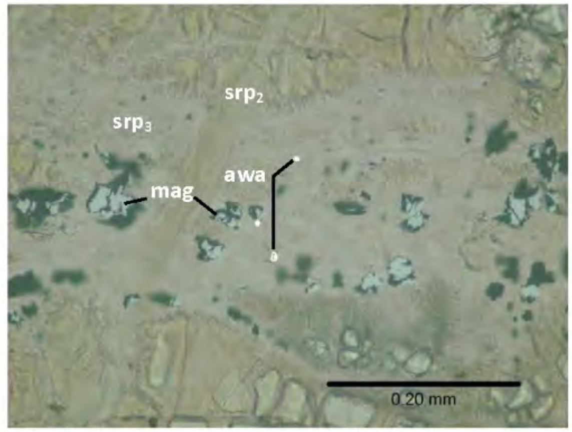


Fig. 2: Photomicrograph of awaruite (awa) and magnetite (mag) in serpentine 3 vein (srp_3) intergrown with a serpentine 2 vein (srp_2). Photo taken in plane polarized transmitted and reflected light.

Petrographic Report: Polished thin section E5523108

General Rock type: serpentinized harzburgite

The unaltered rock was a harzburgite. The ultramafic mineralogy was dominated by olivine, lesser amounts of orthopyroxene, and trace clinopyroxene. The rock has been severely altered to serpentinite similar to thin section E5523106. Relicts of the primary ultramafic silicates remain, with minor iddingsite, magnetite, chromite, and talc, and trace calcite, awaruite, wustite and native iron. The section has an overall sieve or web texture of serpentine replacing olivine and orthopyroxene, and is overprinted by thin serpentine veins. The orthopyroxene displays poor cleavage in one direction, which is commonly replaced by minor iddingsite, serpentine, and magnetite. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by webby yellow-green to rusty brown serpentine with substantial iddingsite and iron oxidation and trace granular magnetite in patches and strings. It generally has a finely fibrous texture that replaces the rims of olivine and a wood grain texture that replaces orthopyroxene. It tends to be rustier where olivine is present. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. The second generation (serpentine 2) is characterized by randomly oriented veins of mesh-like to finely fibrous pale green serpentine up to 1.0 mm wide. The veins are mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. These veins contain trace amounts of fine-grained granular to stringy magnetite within vein centres (up to 0.8 mm long). The third generation (serpentine 3) is characterized by thin (0.01 to 0.2 mm wide), NE-SW trending colourless serpentine veins hosting abundant granular to cubic magnetite (0.01 to 0.08 mm wide) along the vein selvages. It is difficult to tell whether these serpentine veins overprint serpentine 2 veins or if they are simply intergrown cogenetically with serpentine 2. All three vein sets are overprinted by thin, wormy talc veinlets that are 0.005 to 0.04 mm wide and 0.5 to 1 mm long. Talc veinlets are most abundant with orthopyroxene. One short, irregular calcite vein cuts serpentine, and is 3 mm long and up to 0.2 mm wide.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - brown lizardite-antigorite 2 - pale green veins 3 –colourless veins	43 75 20 5	Up to 1
- olivine	27	0.5 to 4
- orthopyroxene	18	0.4 to 3.5
- iddingsite	5	Up to 0.4
- clinopyroxene	2	Up to 2.2
- magnetite	2	0.001 to 0.08
- chromite	2	0.1 to 0.8
- talc	1	Up to 0.01
- calcite	trace	0.01 to 0.2
- awaruite	trace	0.002 to 0.07
- wustite	trace	0.002 to 0.005
- native iron	trace	0.001 to 0.005

Chromite is commonly fractured by serpentine and altered to magnetite in thin rims (up to 0.01 mm wide) along grain boundaries (Fig. 1). Pentlandite is absent in this section and has probably been altered to wustite. Awaruite (and possibly some native iron) is very finely disseminated throughout serpentine 1 and 3, and occasionally occurs with magnetite in orthopyroxene (Fig. 2). Small and minor amounts of native iron occur as cubic grains disseminated in the serpentine 3.

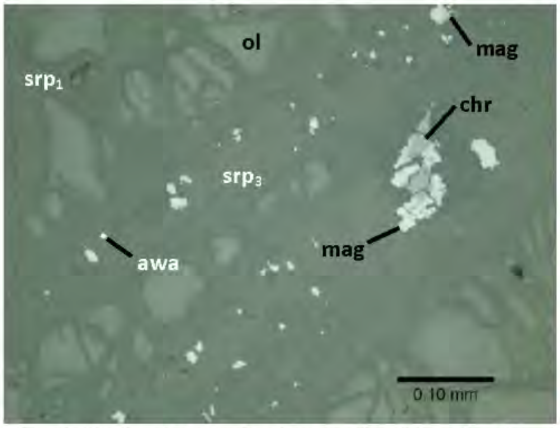


Fig. 1: Photomicrograph of serpentine 3 (srp$_3$) veins cutting serpentine 1 (srp$_1$). These veins contain cubic to subhedral magnetite (mag) grains along vein selvages, and a primary chromite (chr) grain that is altered to magnetite around grain boundaries. Photo taken in plane polarized reflected light.

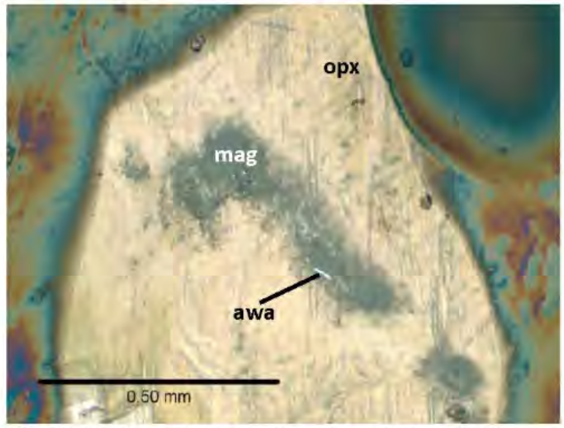


Fig. 2: Photomicrograph of an elongated grain of awaruite (awa) with magnetite (mag) in serpentinized orthopyroxene (opx). Photo taken in plane polarized transmitted and reflected light.

Petrographic Report: Polished thin section E5523109

General Rock type: serpentinite

Approximately two thirds of the original rock has been altered to serpentine. The original rock was a harzburgite, consisting of dominantly olivine, orthopyroxene, and chromite. This specimen varies from most of the others in the suite as it does not contain any clinopyroxene. Relict primary minerals are still present with minor iddingsite, magnetite, chromite, limonite, and calcite, and trace talc, native copper, and awaruite. The section has an overall patchy texture of webby and scaly serpentine replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is commonly replaced by minor iddingsite. Wood-textured serpentine almost completely replaces orthopyroxene locally. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by green to rusty brown serpentine with a finely fibrous texture, and some iddingsite and minor granular magnetite. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Pale green to green-grey scaly serpentine represents a second alteration generation similar to the serpentine 2 of thin section 5523094, and occurs in irregular patches overprinting serpentine 1. This serpentine often partially or completely replaces olivine and orthopyroxene, more so than serpentine 1, and contains little iddingsite. The third generation (serpentine 3) of serpentinization is characterized by randomly oriented veins of mesh-like to finely fibrous pale green to pale brown serpentine 0.01 to 0.6 mm wide. The veins are mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. These veins contain trace amounts of fine-grained granular magnetite (Fig. 1). Serpentine 3 veins in some places are cut by randomly oriented, short, discontinuous stringy magnetite veinlets (1 to 2 mm long, up to 0.03 mm wide) and limonite veinlets (2 to 3 mm long, up to 0.02 mm wide). Short calcite veinlets (2.5 mm long, up to 0.04 mm wide) are parallel to fractures in the thin section, and have fibrous serpentine along their selvages. Other calcite veinlets are short (1 to 4 mm long, 0.02 mm wide) and are subparallel to and cut serpentine 3 veins. Rare veinlets of talc less than 0.5 mm long, and up to 0.01 mm wide crosscut orthopyroxene and olivine. Primary chromite is commonly fractured and altered by magnetite as thin rims around grain boundaries (up to 0.02 mm wide). Isolated, very small grains of awaruite and native copper (Fig. 2) occur within serpentine 1, and are very rare.

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- serpentine	65	Up to 0.8
1 - lizardite-antigorite with iddingsite	75	
2 – lizardite	15	
3 – lizardite-antigorite	10	
- olivine	18	0.2 to 3
- orthopyroxene	8	0.4 to 2
- iddingsite	4	Up to 0.5
- chromite	2	0.05 to 1
- magnetite	2	0.001 to 0.06
- calcite	1	0.01 to 0.1
- limonite	1	Up to 0.02
- talc	trace	Up to 0.01
- awaruite	trace	Up to 0.005
- native copper	trace	0.005

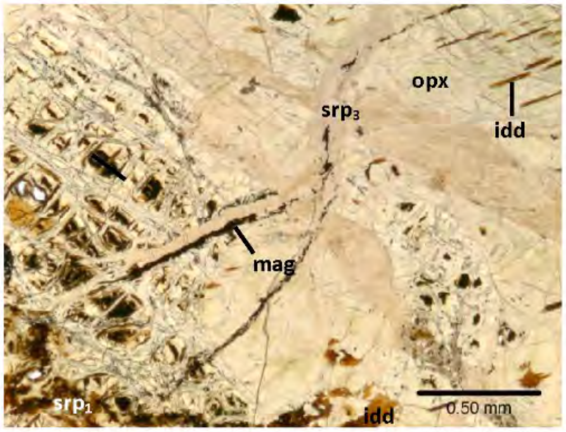


Fig. 1: Photomicrograph of a serpentine 3 (srp$_3$) vein with granular magnetite (mag) along its selvages cutting webby serpentine 1 (srp$_1$) alteration. Iddingsite (idd) alteration accompanies serpentine 1, and also can be seen along cleavages in an orthopyroxene (opx) grain in the upper right corner. Photo taken in plane polarized transmitted light.

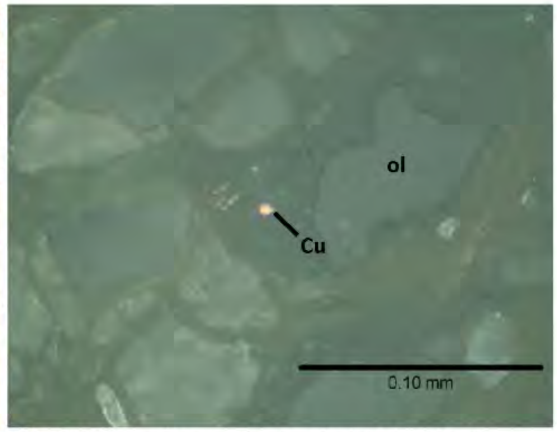


Fig. 2: Photomicrograph of an isolated grain of native copper (Cu) embedded in serpentine 1 which cuts olivine (ol). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523110

General Rock type: serpentinized harzburgite

This rock is a strongly and pervasively serpentinized harzburgite, consisting of serpentine, olivine, and orthopyroxene, with minor iddingsite, magnetite, chromite, and calcite, and trace talc, native copper, wustite, titanite, and awaruite. The section has an overall patchy texture of webby and scaly serpentine replacing olivine and orthopyroxene, and remnant grains are severely fractured. Othopyroxene shows poor cleavage in one direction, which is sometimes replaced by minor iddingsite. Wood-textured serpentine almost completely replaces orthopyroxene in places. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by yellow-green to rusty brown serpentine with a finely fibrous texture, and some iddingsite and trace granular magnetite. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Pale green to green-grey scaly serpentine represents a second alteration generation similar to the serpentine 2 of polished thin section 5523094, and occurs in irregular patches (1 to 4 mm wide) overprinting serpentine 1. This serpentine often partially or completely replaces olivine and orthopyroxene, more so than serpentine 1, and contains little iddingsite and no magnetite. The third generation (serpentine 3) of serpentinization is characterized by randomly oriented veins of mesh-like to finely fibrous pale green to pale brown serpentine 0.01 to 0.3 mm wide. The veins are mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. These veins contain minor amounts of fine-grained granular to stringy magnetite. Short calcite veinlets (similar to E5523109) are sub-parallel to orthogonal to serpentine 3 veins, and one of these veins has fibrous serpentine along its selvages. The calcite in the veins ranges in size up to maximum veinlet width. Randomly oriented, discontinuous trace talc veinlets (1 to 2 mm long, and 0.01 mm wide) cut serpentine 3, orthopyroxene, and olivine. Primary chromite is generally fractured and altered by magnetite as thin rims around grain boundaries (up to 0.02 mm wide). Very fine, isolated grains of awaruite are disseminated in serpentine 1 and 3 (Fig. 1), and also occur as inclusions in olivine. Native copper, wustite, and titanite commonly occur together, where wustite and titanite rim the copper (Fig. 2). Rare grains of native copper occur as isolated rounded grains disseminated in serpentine 1.

Mineral	Modal Percent Abundance	Size Range (mm)
- Serpentine 1 - lizardite-antigorite with iddingsite 2 – scaly green lizardite 3 – lizardite-antigorite veins	60 56 40 4	Up to 0.5
- olivine	22	0.1 to 4
- orthopyroxene	10	0.1 to 4
- iddingsite	3	Up to 0.4
- chromite	2	0.1 to 0.6
- magnetite	2	0.001 to 0.06
- calcite veins	1	0.001 to 0.01
- talc	trace	Up to 0.01
- awaruite	trace	Up to 0.001
- wustite	trace	0.001 to 0.02
- native copper	trace	0.005 to 0.02
- titanite	trace	0.005 to 0.02

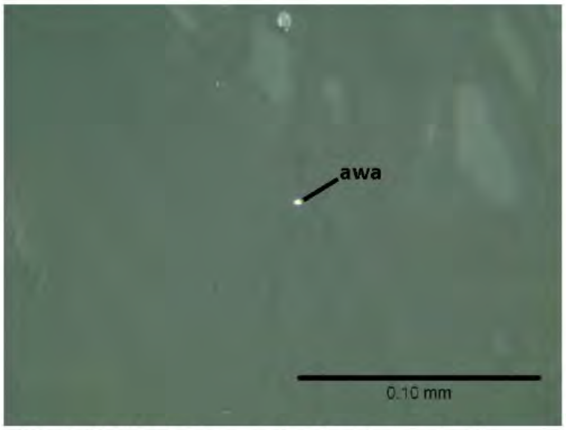


Fig. 1: Photomicrograph of an isolated grain of awaruite (awa) in serpentine 3. Photo taken in plane polarized reflected light.

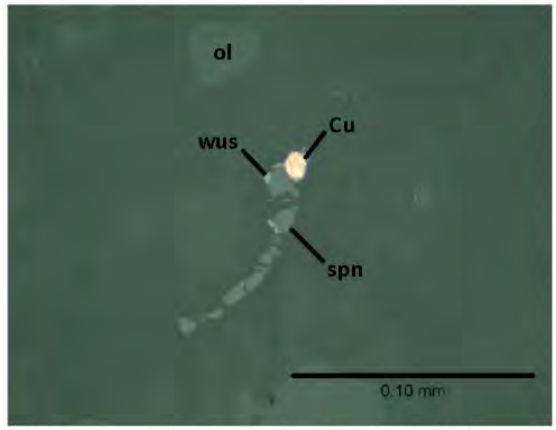


Fig. 2: Photomicrograph of native copper (Cu) embedded in serpentine 1 associated with titanite (ttn) which are rimmed by wustite (wus). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523111

General Rock type: serpentinized harzburgite

This rock is a strongly and pervasively serpentinized harzburgite similar to thin section E5523110. The typical primary ultramafic suite minerals olivine, orthopyroxene, and chromite are present. Serpentinization has mostly affected the olivine, and orthopyroxene. The alteration has resulted in dominantly serpentine with minor iddingsite, magnetite, and trace calcite, actinolite, awaruite, native copper, and wustite. This section has trace amounts of actinolite identified by its slightly greenish pleochroism, cleavage and inclined extinction. The section has the typical patchy texture of sieve and web-like serpentine replacing olivine and orthopyroxene. Most of the relict primary grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is locally replaced by minor iddingsite or bladed actinolite. Wood-textured serpentine almost completely replaces orthopyroxene in places. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by yellow-green to rusty brown serpentine with a finely fibrous texture, and hosts some iddingsite and trace granular magnetite. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Pale green to green-grey scaly serpentine represents a second alteration generation similar to the serpentine 2 of thin section E5523110, and occurs in irregular patches (1 to 3 mm wide) overprinting serpentine 1. This serpentine commonly partially or completely replaces olivine and orthopyroxene, more so than serpentine 1, and contains little iddingsite and no magnetite. The third generation of serpentinization (serpentine 3) is characterized by randomly oriented veins of mesh-like to finely fibrous pale green to pale brown serpentine 0.01 to 0.25 mm wide. The veins are mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. These veins contain minor amounts of fine-grained granular to stringy magnetite (up to 1 mm long). A short calcite veinlet (6 mm long, up to 0.01 mm wide) is sub-parallel to orthogonal to serpentine 3 veins, and has fibrous serpentine along its selvages. Primary chromite is commonly fractured and altered by magnetite as thin rims around grain boundaries (up to 0.01 mm wide). Very fine, isolated grains of awaruite are disseminated in serpentine 1, 2, and 3, and in some places are associated with trace irregular wustite (Fig. 1). A single grain of native copper occurs with actinolitic alteration in orthopyroxene (Fig. 2).

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- serpentine 1 - lizardite-antigorite with iddingsite 2 – scaly green lizardite 3 – lizardite-antigorite veins	50 72 20 8	Up to 0.5
- olivine	25	0.2 to 4
- orthopyroxene	17	0.1 to 3
- iddingsite	3	Up to 0.2
- chromite	3	0.1 to 1
- magnetite	2	0.001 to 0.05
- actinolite	trace	0.01 to 0.03
- calcite	trace	0.001 to 0.01
- awaruite	trace	Up to 0.01
- wustite	trace	0.001 to 0.005
- native copper	trace	0.02

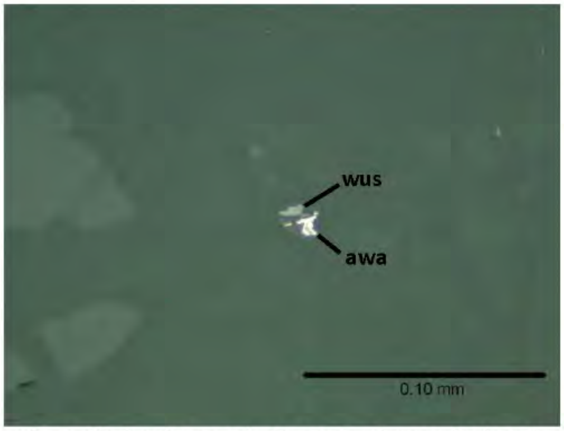


Fig. 1: Photomicrograph of a grain of awaruite (awa) associated with wustite (wus) in serpentine 2. Photo taken in plane polarized reflected light.

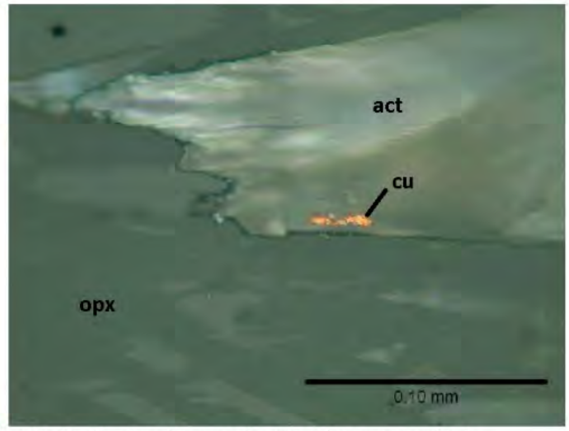


Fig. 2: Photomicrograph of native copper (cu) embedded in actinolite (act) replacing orthopyroxene (opx). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523112

General Rock type: serpentinized harzburgite

Typical of this suite, this rock is a strongly and pervasively altered serpentinized harzburgite similar to thin section E5523111, consisting of serpentine, olivine, orthopyroxene, with minor clinopyroxene, iddingsite, magnetite, chromite, and talc, and trace limonite, awaruite and native copper. The section has the overall patchy texture of web-like and sieve textures. Scaly serpentine replacing olivine and orthopyroxene, and relict grains of these minerals are severely fractured. Orthopyroxene is locally replaced by minor iddingsite or magnetite, but dominantly wood-textured serpentine with minor iddingsite completely replace orthopyroxene. Four generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, and characterized by yellow-green to rusty brown serpentine with a finely fibrous texture, and hosts some iddingsite, granular to webby magnetite (in stringy veinlets up to 1 mm long), and trace limonite. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Pale green to green-grey scaly serpentine represents a second alteration generation similar to the serpentine 2 of thin section E5523110, and occurs in irregular patches (0.5 to 3 mm wide) overprinting serpentine 1. This serpentine generally partially or completely replaces olivine and orthopyroxene, more so than serpentine 1, and contains little iddingsite and no magnetite. The third generation of serpentinization (serpentine 3) is characterized by randomly oriented veins of mesh-like to finely fibrous pale green to pale brown serpentine 0.01 to 0.3 mm wide. The veins are mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. These veins contain minor amounts of granular to aggregate magnetite (up to 0.2 mm long). The fourth generation (serpentine 4) is characterized by mostly NW-SE trending gashes (up to 0.2 mm wide, and 1 to 3 mm long) filled with pale brown, fibrous chrysotile and a core of fine-grained mesh-textured lizardite. Some talc veins are parallel to and bifurcate from these serpentine 4 gashes. The talc veins are up to 0.05 mm wide and 1 to 4 mm long. Primary chromite is commonly fractured and altered by magnetite as thin rims around grain boundaries (up to 0.02 mm wide). Very fine, isolated grains of awaruite are disseminated in serpentine 1 and 3, and in some occurrences are associated with trace

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite with iddingsite 2 – scaly green lizardite 3 – lizardite-antigorite veins 4 – chrysotile	54 65 20 10 5	Up to 0.5
- olivine	17	0.3 to 3
- orthopyroxene	15	0.25 to 3
- iddingsite	4	Up to 0.4
- magnetite	4	0.001 to 0.1
- clinopyroxene	2	Up to 1.9
- chromite	2	0.1 to 1
- talc	2	Up to 0.07
- limonite	trace	0.01 to 0.05
- awaruite	trace	Up to 0.008
- native copper	trace	0.005

limonite (Fig. 1). A single sub-micron grain of native copper occurs with chromite and magnetite in serpentine 2 (Fig. 2). It is difficult to determine if the native copper is part of the primary igneous assemblage, but it position on the edge of a magnetite altered chromite grain suggests that a secondary origin associated with one of the serpentinization events is more likely.

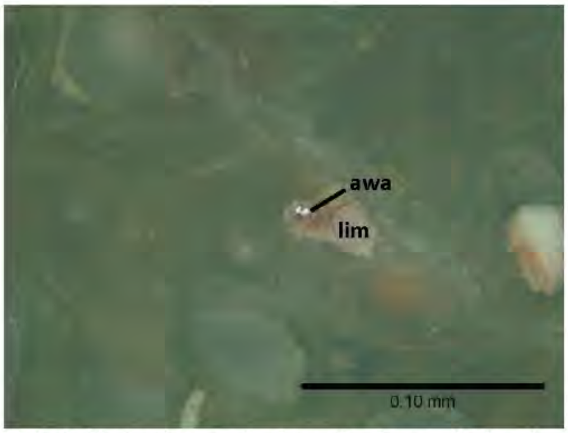


Fig. 1: Photomicrograph of a grain of awaruite (awa) associated with limonite (lim) in serpentine 1. Photo taken in plane polarized reflected light.

Fig. 2: Photomicrograph of native copper (cu) embedded in actinolite (act) replacing monticellite (mtc). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523113

General Rock type: serpentinized harzburgite

Typical of this suite, this rock is a strongly and pervasively serpentinized harzburgite similar to thin section E5523111, consisting of serpentine, olivine, orthopyroxene, and clinopyroxene, with minor iddingsite, magnetite, and chromite, and trace talc, awaruite, native iron, and native copper. The primary igneous mineralogy was dominantly olivine with lesser amounts of orthopyroxene, clinopyroxene, and chromite. The section displays the overall patchy web-like or sieve texture of scaly serpentine replacing olivine and orthopyroxene. Again all relict grains are severely fractured. Orthopyroxene shows the typical low birefringence, parallel extinction, and poor cleavage in one direction. The orthopyroxene is locally replaced by wood-textured serpentine minor iddingsite or magnetite to varying degrees. Similar to E5523112, four generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and intense, characterized by yellow-green to rusty brown serpentine with a finely fibrous texture, and hosts some iddingsite and trace granular, stringy magnetite. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Pale green to green-grey scaly serpentine represents a second alteration generation similar to the serpentine 2 of thin section E5523110, and occurs in irregular patches (1 to 5 mm wide) overprinting serpentine 1. This serpentine often partially or completely replaces olivine and orthopyroxene, more so than serpentine 1, and contains little iddingsite and trace magnetite that is probably relict from serpentine 1. The third generation of serpentinization (serpentine 3) is characterized by randomly oriented veins of mesh-like to finely fibrous pale green to pale brown serpentine 0.01 to 0.5 mm wide. Most of the prominent veins trend NW-SE, but others trend N-S and many of the finer veins trend NE-SW. The veins are mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. These veins contain minor amounts of fine-grained granular to stringy magnetite (up to 2 mm long) and aggregates of larger grains up to 0.3 mm long. A few short talc veinlets (3 mm long, up to 0.01 mm wide) overprint and are sub-parallel to serpentine 3 veins, sometimes shooting off of them. The fourth generation (serpentine 4) are characterized by mostly NE-SW trending gashes (up to 0.03 mm wide, and up to 0.6 mm long) filled with colourless, finely fibrous serpentine.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	47	Up to 1
1 - lizardite-antigorite with iddingsite	65	
2 – scaly green lizardite	25	
3 – lizardite-antigorite veins	9	
4 – colourless gashes	1	
- olivine	28	0.2 to 4
- orthopyroxene	15	0.2 to 4
- iddingsite	4	Up to 0.4
- magnetite	2	0.001 to 0.1
- clinopyroxene	2	Up to 1.7
- chromite	1	0.1 to 1
- talc	1	Up to 0.03
- awaruite	trace	Up to 0.02
- native copper	trace	0.005 to 0.01
- native iron	trace	Up to 0.01

Primary chromite is commonly fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.01 mm wide). Fine, isolated grains of awaruite are disseminated in serpentine 1 and 3 and in some places also occur as inclusions in orthopyroxene (Fig. 1). Awaruite is more abundant in this thin section than any previously described. Trace fine, isolated grains of native iron also occur in serpentine 1 and 3, but more commonly as inclusions in olivine. Two grains of native copper occur also within serpentine 1 (Fig. 2).

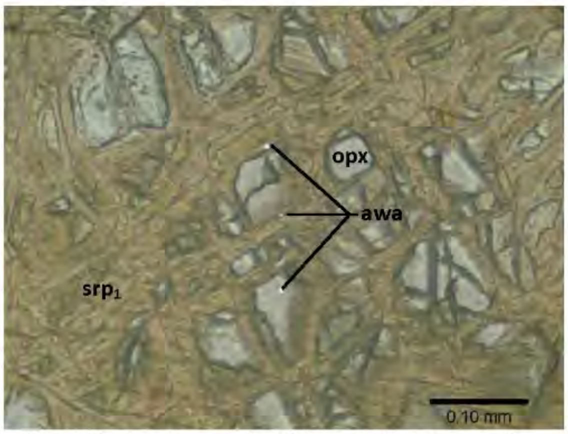


Fig. 1: Photomicrograph of three grains of awaruite (awa) associated with serpentine 1 (srp_1) and as an inclusion in orthopyroxene (opx). Photo taken in plane polarized reflected and transmitted light.

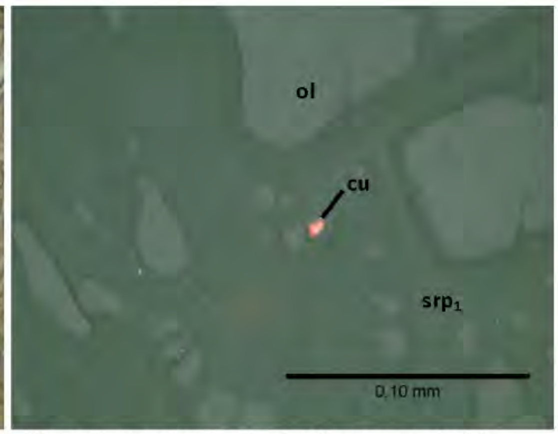


Fig. 2: Photomicrograph of native copper (cu) in serpentine 1 (srp_1). Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section E5523115

General Rock type: Serpentinized lherzolite

This rock is an intensely and pervasively altered serpentinitized lherzolite, consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor magnetite, iddingsite, and chromite, and trace talc, actinolite, awaruite, wustite, and pentlandite. The section has an overall flooded texture of webby and scaly serpentine replacing olivine, orthopyroxene and clinopyroxene, where remnant grains are severely fractured, and is overprinted by veining. Orthopyroxene shows poor cleavage in one direction, which is in some places replaced by minor magnetite. Wood-textured serpentine almost completely replaces orthopyroxene and olivine in places. At least four (possibly five) generations of serpentine alteration are apparent (Fig. 1). The first generation (serpentine 1) is pervasive and intense, characterized by pale green to rusty apple green serpentine with a mesh to finely fibrous texture, and which hosts minor granular to stringy magnetite. This serpentine partially to completely replaces olivine and orthopyroxene. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. The second generation (serpentine 2) is represented by stringy grey to pleochroic grey-mauve serpentine veins hosting granular magnetite. These veins are 0.01 to 0.4 mm wide, and the widest veins are compositionally zoned with an increase in magnetite towards vein cores. The best formed of these veins trend NE-SW, but the thinner veins are randomly oriented. The third generation of serpentinization (serpentine 3) is characterized by randomly oriented veins of colourless mesh-like to finely fibrous serpentine containing abundant bladed magnetite. The veins are 0.01 to 0.2 mm wide. Where these veins are generally thinner, magnetite is more abundant than serpentine and the veins are branchy to wormy. The fourth generation of serpentine (serpentine 4) is characterized by colourless to pale green serpentine with minor cubic magnetite and radiating iddingsite. These veins are 0.01 to 0.1 mm wide and generally trend N-S. This sample has a number of fractures filled with grinding compound (brucite) and detritus from the grinding process. These fractures are 0.05 to 0.3 mm wide and trend ENE-SWS.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	53	Up to 1
1 – green to grey massive serpentine	75	
2 – grey serpentine veins	10	
3 – colourless serpentine veins	9	
4 – colourless gashes	6	
- orthopyroxene	15	0.1 to 3
- olivine	8	0.1 to 2
- clinopyroxene	6	0.2 to 2
- magnetite	13	0.005 to 0.8
- calcite?	2	0.01 to 0.15
- iddingsite	1	Up to 0.4
- chromite	1	0.3 to 1
- talc	1	Up to 0.1
- awaruite	trace	Up to 0.02
- wustite	trace	Up to 0.005
- pentlandite	trace	Up to 0.02
- actinolite	trace	Up to 0.2

Minor talc occurs around orthopyroxene grain boundaries, especially where serpentine replaces orthopyroxene, and in patches 0.1 to 0.5 mm wide. Primary chromite is often fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.02 mm wide). Fine, isolated grains of anhedral awaruite are disseminated in serpentine 1, especially where serpentine alters orthopyroxene rims. Trace anhedral wustite is rarely associated with awaruite. Trace fine, isolated grains of pentlandite are generally rimmed by wustite and occur in serpentines 2, 3, and 4, as well as in altered orthopyroxene rims.

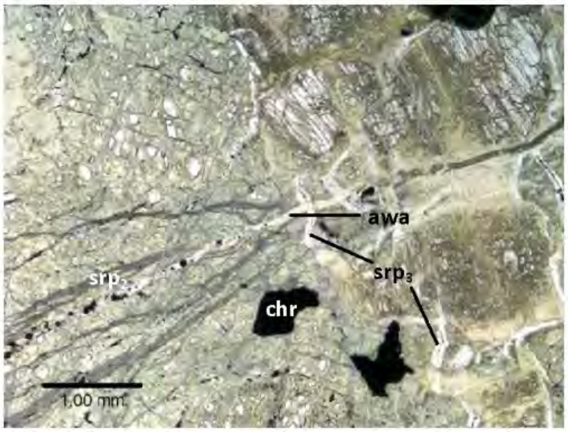


Fig. 1: Photomicrograph of several generations of serpentine alteration. Serpentine 1 is characterised as the pervasive, green flooding serpentine which partially to completely replaces host rock olivine and orthopyroxene. Serpentine 2 (srp_2) is characterised by grey veins with minor magnetite. Serpentine 3 (srp_3) is characterized by colourless serpentine veins hosting bladed magnetite. Serpentine 4 is not visible in this photo. Serpentine 5 (srp_5) is characterised by pale brown to beige serpentine, minor ovoid calcite, and minor cubic magnetite. Photo taken in plane polarized transmitted light.

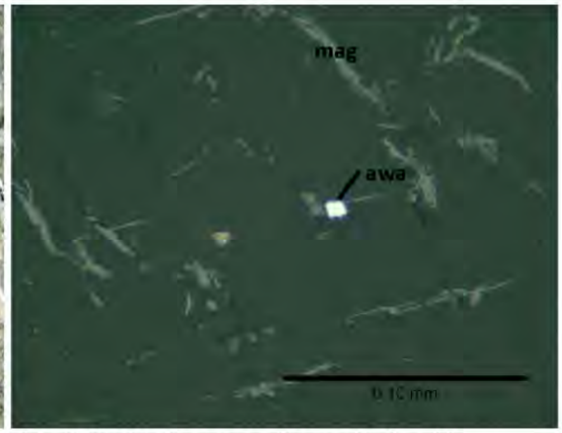


Fig. 2: Photomicrograph of awaruite (awa) in serpentine 1 surrounded by stringy to bladed magnetite of serpentine 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP2

General Rock type: Serpentinized lherzolite

This rock is a moderately to pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, talc, magnetite, chromite, and limonite, and trace pentlandite, wustite, and native copper. The section has an overall web-like or sieve texture of serpentine partially to completely replacing olivine, orthopyroxene and clinopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is generally replaced by wood-textured serpentine. Serpentine may almost completely replace orthopyroxene in places. Three generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture, and hosts some iddingsite and minor limonite. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. Thin, pale green to colourless serpentine veins represent a second generation (serpentine 2), which are 0.01 to 0.07 mm wide, and trend roughly N-S overprinting serpentine 1. This serpentine contains trace magnetite and no iddingsite. The third generation of serpentinization (serpentine 3) is characterized by thin, green serpentine veinlets containing granular magnetite in strings up to 1 mm long. These veins are 0.01 to 0.05 mm wide and randomly oriented, though most are oriented E-W across the thin section. Short talc veinlets (0.5 to 2 mm long, up to 0.06 mm wide) overprint and are sub-parallel to serpentine 2 veins, sometimes shooting off them. Talc veinlets also often overprint serpentine alteration of orthopyroxene and rim altered orthopyroxene grains. Primary chromite is commonly fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.01 mm wide). Fine, isolated grains of native copper are disseminated in serpentine 1 and sometimes are rimmed by wustite (Fig. 1). The native copper is of secondary origin. Trace, very fine grains of pentlandite also occur as dustings in patches in serpentine 1 (Fig. 2).

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite with iddingsite 2 – pale green veins 3 – serpentine-magnetite veins	50 80 5 15	Up to 2
- olivine	12	0.2 to 4
- orthopyroxene	16	0.2 to 7
- clinopyroxene	11	0.2 to 1.5
- iddingsite	4	Up to 0.7
- chromite	2	0.1 to 1
- magnetite	2	0.005 to 0.02
- talc	3	Up to 0.02
- limonite	1	0.01 to 0.2
- native copper	trace	0.006 to 0.01
- wustite	trace	0.01 to 0.02
- pentlandite	trace	Up to 0.005

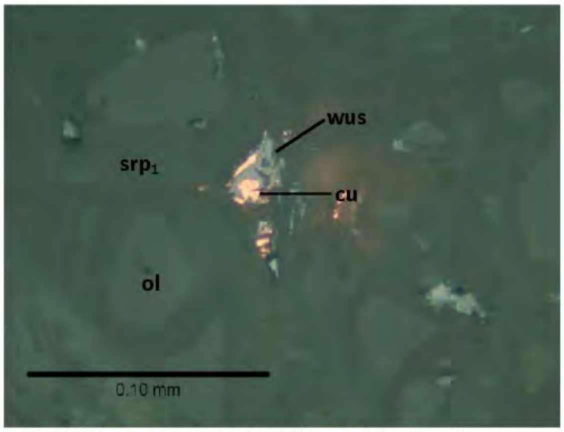


Fig. 1: Photomicrograph of fine grains of native copper (cu) rimmed by wustite (wus) in serpentine 1 (srp_1). Photo taken in plane polarized reflected light.

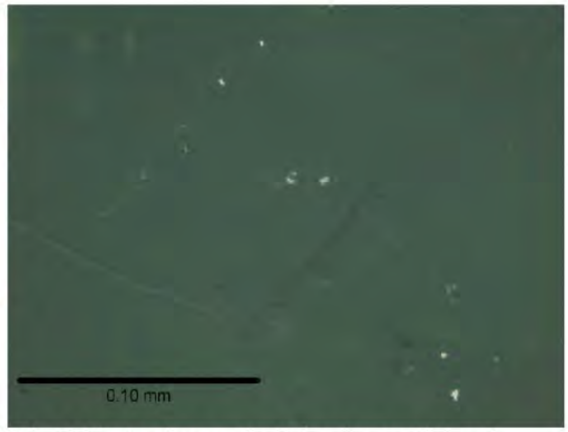


Fig. 2: Photomicrograph of very fine particles of pentlandite in serpentine 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP3

General Rock type: Serpentinized lherzolite

This rock is an intensely and pervasively altered lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, talc, magnetite, and chromite, and trace pentlandite, wustite, awaruite, native copper, and chalcopyrite. The section has an overall webbed to flooded texture of serpentine partially to completely replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction, which is generally replaced by iddingsite and magnetite, and wood-textured serpentine almost completely replaces orthopyroxene in places. Two generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby to flooded, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture, and hosts some iddingsite and minor thin magnetite veinlets. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. This serpentine partially to completely replaces olivine and orthopyroxene. The magnetite veinlets are 0.1 to 0.7 mm long, up to 0.02 mm wide, and are almost always associated with iddingsite. Pale green to pale brown-green serpentine veins represent a second generation (serpentine 2), which are up to 0.6 mm wide, 2 to 6 mm long, and mostly trend E-W across the section. Thinner veins are generally randomly oriented. The serpentine is mesh textured to bladed within these veins. Randomly oriented and wormy short talc veinlets (0.5 to 2 mm long, up to 0.1 mm wide) overprint and are sometimes sub-parallel to serpentine 2 veins. Talc veinlets commonly also overprint serpentine alteration of orthopyroxene and talc rims altered orthopyroxene grains. Primary chromite is generally fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.01 mm wide). Fine, isolated grains of pentlandite and awaruite (Fig. 1) are disseminated in serpentine 1. Pentlandite grains are in some places rimmed by wustite. Small micron-sized grains of awaruite are locally associated with iddingsite. The awaruite is identified by its high reflectivity, whitish colour, and lack of any other optical properties. Trace native copper is intergrown with clumps of pentlandite replaced by wustite (Fig. 2). The intergrown pentlandite copper grain is bent around an orthopyroxene grain. A single isolated grain of chalcopyrite was observed in serpentine 1.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite with iddingsite 2 – pale green veins	70 85 15	Up to 1.5
- olivine	9	0.1 to 1.4
- orthopyroxene	8	0.2 to 1.2
- clinopyroxene	4	
- iddingsite	3	Up to 0.4
- chromite	1	0.1 to 0.9
- magnetite	1	0.005 to 0.03
- talc	4	Up to 0.05
- pentlandite	trace	0.005 to 0.15
- wustite	trace	0.002 to 0.03
- awaruite	trace	0.005 to 0.01
- native copper	trace	0.002 to 0.01
- chalcopyrite	trace	0.005

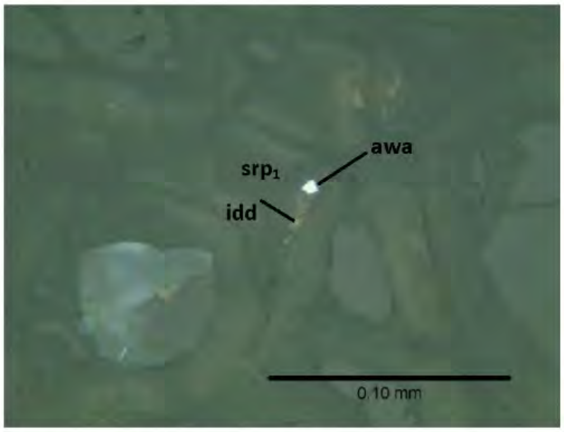


Fig. 1: Photomicrograph of the largest grain of awaruite (awa) in this section associated with iddingsite (idd) and hosted in serpentine 1 (srp_1). Photo taken in plane polarized reflected light.

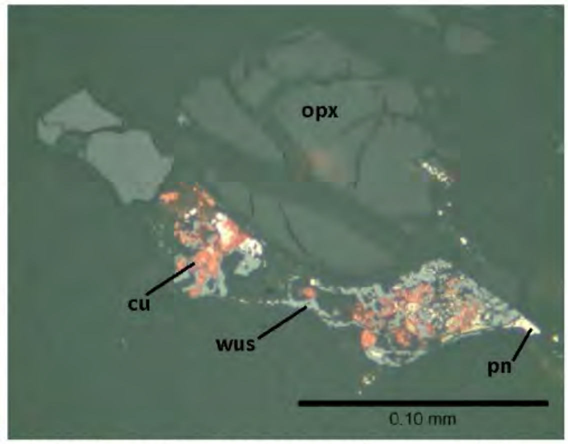


Fig. 2: Photomicrograph of red native copper (cu) intergrown with pentlandite (pn) replaced by wustite (wus) wrapped around an orthopyroxene (opx) grain in serpentine 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP4

General Rock type: Serpentinized harzburgite

Similar to most rocks of this suite, this rock is an intensely and pervasively serpentinized harzburgite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor limonite, iddingsite, magnetite, chromite, and talc, and trace pentlandite, wustite, native copper, and pyrrhotite. The section has an overall webbed to flooded texture of serpentine partially to completely replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction which is commonly replaced by iddingsite and magnetite, and wood-textured serpentine almost completely replaces orthopyroxene in places. Two generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby to flooded, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture, and hosts some limonite, iddingsite, and minor thin magnetite veinlets. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. This serpentine partially to completely replaces olivine and orthopyroxene. The magnetite veinlets are 0.1 to 1 mm long, up to 0.01 mm wide, and are almost always associated with iddingsite. Pale green to pale brown-green serpentine veins represent a second generation (serpentine 2), which are up to 1.5 mm wide, 2 to 9 mm long, and mostly trend NE-SW across the section. Thinner veins are generally randomly oriented. The serpentine is mesh textured at vein edges to fibrous and bladed toward vein cores. Randomly oriented and wormy short talc veinlets (0.5 to 2 mm long, up to 0.1 mm wide) overprint and are sometimes sub-parallel to serpentine 2 veins. Talc veinlets often overprint serpentine alteration of orthopyroxene and talc rims altered orthopyroxene grains. Primary chromite is commonly fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.01 mm wide). Very fine, isolated grains of pentlandite are disseminated in serpentine 1 along magnetite veinlets (Fig. 1). Coarser grains of pentlandite with wustite rims are disseminated throughout serpentine 1 and occasionally in serpentine 2 veins. Trace native copper is intergrown with pentlandite rimmed by wustite (Fig. 2). One of these pentlandite grains exhibits exsolution of pyrrhotite.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite with iddingsite 2 – pale green veins	55 90 10	Up to 1
- olivine	18	0.2 to 4
- orthopyroxene	9	0.2 to 3.8
- clinopyroxene	3	0.2 to 1.2
- limonite	7	Up to 0.1
- iddingsite	5	Up to 0.6
- chromite	2	0.1 to 0.6
- magnetite	2	0.001 to 0.03
- talc	1	Up to 0.05
- pentlandite	trace	0.002 to 0.05
- wustite	trace	0.001 to 0.01
- native copper	trace	0.001 to 0.03
- pyrrhotite	trace	0.002 to 0.01

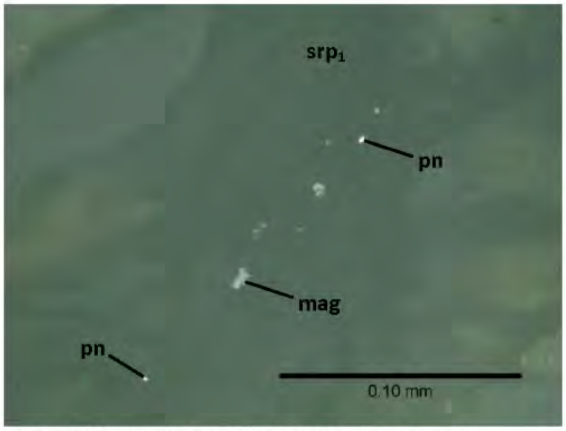


Fig. 1: Photomicrograph of very fine grains of pentlandite (pn) along magnetite (mag) veinlets hosted in serpentine 1 (srp_1). Photo taken in plane polarized reflected light.

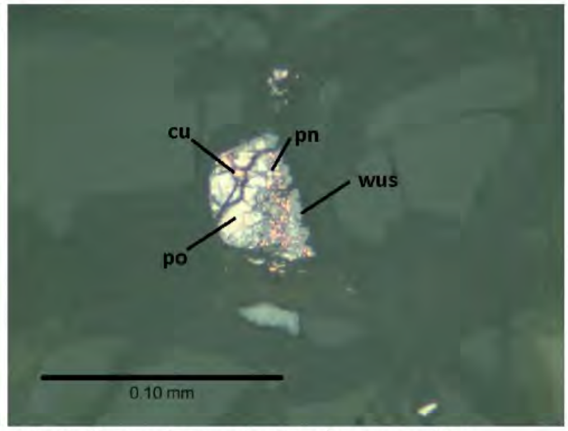


Fig. 2: Photomicrograph of native copper (cu) intergrown with pentlandite (pn) which is rimmed by wustite (wus). Trace pyrrhotite (po) is exsolved from pentlandite. Photo taken inplane polarized reflected light.

Petrographic Report: Polished thin section SP6

General Rock type: Serpentinized lherzolite

This rock contains slightly more orthopyroxene than some of the suite, but the primary mineralogy would still classify it as a lherzolite. It is intensely and pervasively altered, comprising serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, talc, actinolite, magnetite, chromite, and limonite, and trace pentlandite, wustite, awaruite and pyrite. The section displays the overall web or sieve texture of serpentine partially to completely replacing mostly olivine and lesser amounts of orthopyroxene, which is overprinted by black veins visible in the offcut. Orthopyroxene shows poor cleavage in one direction which is commonly replaced by wood-textured serpentine and which may almost completely replace orthopyroxene in places. Thin blades of magnetite and iddingsite replacement also occur along cleavage planes. Four generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture which hosts some iddingsite, minor limonite, and minor granular to stringy magnetite. Mesh-like, scaly, and hourglass textures indicate it is mostly lizardite-antigorite. Thin, pale green to colourless serpentine veins with abundant granular to stringy magnetite (strings 0.1 to 2 mm long) represent a second generation (serpentine 2), which are 0.01 to 0.3 mm wide, and trend roughly SE-NW to N-S overprinting serpentine 1. This generation is rarely overprinted by iddingsite. The third generation of serpentinization (serpentine 3) is characterized by wide, composite, yellow-green chrysotile veins (Fig. 1) containing minor amounts of hourglass textured lizardite and iddingsite oriented parallel to chrysotile fibres. These veins are 0.02 to 0.7 mm wide and oriented NE-SW to E-W. The fourth generation of serpentine (serpentine 4) is characterized by short (less than 2 mm) gash-shaped veinlets of pale

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite with iddingsite 2 – pale green veins 3 – serpentine-magnetite veins 4 – pale green gashes	59 78 12 12 2	Up to 2
- olivine	8	0.1 to 2
- orthopyroxene	7	0.1 to 4
- clinopyroxene	3	0.2 to 1.5
- iddingsite	7	0.01 to 1
- talc	6	0.01 to 0.2
- actinolite	4	0.1 to 0.5
- limonite	3	Up to 0.05
- magnetite	2	0.001 to 0.05
- chromite	1	0.1 to 1
- awaruite	trace	0.002 to 0.01
- pentlandite	trace	0.002 to 0.01
- pyrite	trace	0.01
- wustite	trace	0.01

green serpentine. Very thin talc veinlets (up to 0.02 mm wide) cut serpentine 2 and 3 veins. Talc occurs in patches (0.1 to 0.6 mm wide) replacing serpentine after orthopyroxene, especially along cleavage, and also as plumose rims around altered orthopyroxene grains. Actinolite occurs in patches (0.1 to 1.5 mm wide) of acicular to bladed crystals, especially around the edges of orthopyroxene. Primary chromite is often fractured by serpentine and rarely altered to magnetite as thin rims around grain boundaries (up to 0.01 mm wide). Fine, isolated grains of awaruite are disseminated in serpentine 1 and sometimes in talc replacing serpentine 1 (Fig. 2). Pentlandite occurs as very fine grains rimmed by wustite and hosted in serpentine 1. Fine grains of cubic pyrite occur along the selvage of serpentine 3 veins.

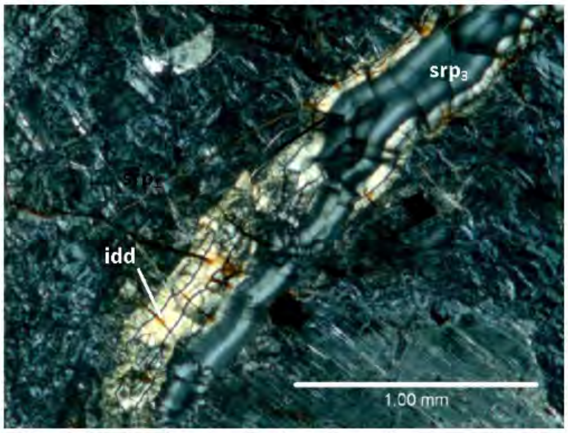


Fig. 1: Photomicrograph of a composite serpentine 3 (srp_1) vein consisting of fibrous chrysotile and iddingsite (idd). Photo taken in plane polarized transmitted light.

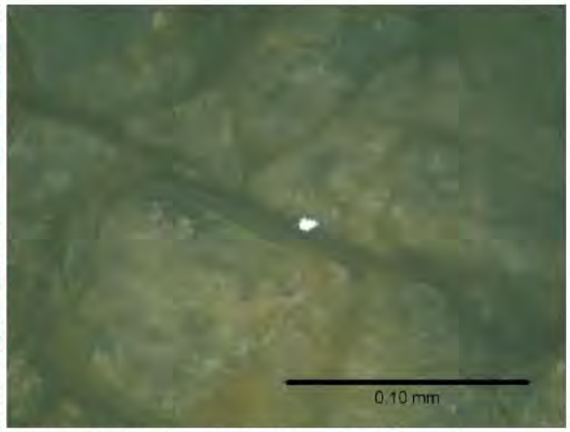


Fig. 2: Photomicrograph of a grain of awaruite associated with iddingsite in serpentine 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP7

General Rock type: Serpentinized lherzolite

This rock is an intensely and pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, talc, magnetite, and chromite, and trace pentlandite, wustite, and awaruite. The section is dominated by serpentine, which has an overall sieve or web-like texture partially to completely replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction which is commonly replaced by iddingsite and magnetite, and wood-textured serpentine almost completely replaces orthopyroxene in places. Two generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby to flooded, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture, and hosts some limonite, iddingsite, and minor thin magnetite veinlets. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. This serpentine partially to completely replaces olivine and orthopyroxene. The magnetite veinlets are 0.1 to 2 mm long, up to 0.03 mm wide, composed of granular to stringy magnetite, and are almost always associated with iddingsite. Short, discontinuous pale green serpentine veins represent a second generation (serpentine 2), which are up to 0.5 mm wide, 2 to 6 mm long, and trend NE-SW to NW-SE across the section. The serpentine is mesh textured and likely comprised of lizardite-antigorite. Randomly oriented and wormy short talc veinlets (0.5 to 3 mm long, up to 0.05 mm wide) overprint serpentine 2 veins. Talc veinlets often overprint serpentine alteration of orthopyroxene as wider veinlets (up to 0.3 m wide), and plumose talc rims altered orthopyroxene grains (rims up to 0.2 mm wide). Talc also occurs in serpentine 1 outside of orthopyroxene as fibrous to fan-shaped patches (0.1 to 1 mm wide). Primary chromite is generally fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.02 mm wide). The awaruite textures vary from the normal individual grains typical of this suite and awaruite occurs as very fine and isolated grains generally proximal to pentlandite. Both are disseminated in serpentine 1 (Fig. 1), and pentlandite often occurs along magnetite strings. Trace wustite occurs with pentlandite in a string within serpentine 1 (Fig. 2). Similar to most sections in the suite, the pentlandite is being replaced by wustite.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 - lizardite-antigorite with iddingsite 2 – pale green veins	51 92 8	Up to 0.6
- olivine	18	0.1 to 2
- orthopyroxene	10	0.1 to 2.1
- clinopyroxene	6	0.1 to 0.8
- iddingsite	5	0.01 to 0.7
- limonite	2	Up to 0.2
- talc	5	0.01 to 0.4
- magnetite	2	0.001 to 0.05
- chromite	1	0.1 to 0.9
- pentlandite	trace	Up to 0.008
- awaruite	trace	0.005 to 0.01
- wustite	trace	0.002 to 0.08

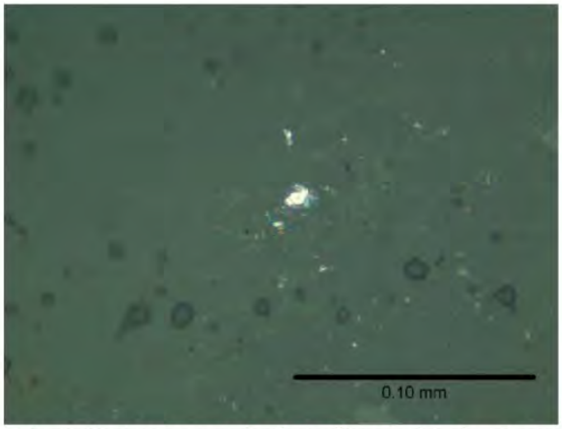


Fig. 1: Photomicrograph of very fine, isolated grains of bright white highly reflective awaruite disseminated in serpentine 1. Photo taken in plane polarized reflected light.

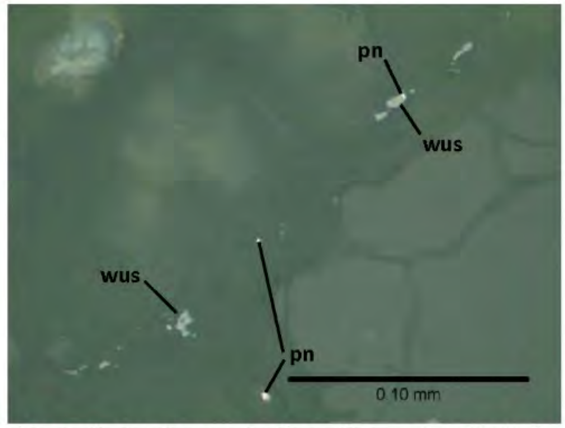


Fig. 2: Photomicrograph of very fine pentlandite (pn) and wustite (wus) occurring in a string within serpentine 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP10

General Rock type: Serpentinized lherzolite

This rock is an intensely and pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, talc, magnetite, chromite, and calcite, and trace pentlandite, wustite, awaruite and anthophyllite. The section has an overall patchy webbed texture of serpentine partially to mostly replacing olivine and orthopyroxene, and remnant grains are severely fractured. Orthopyroxene shows poor cleavage in one direction which is commonly replaced by iddingsite and magnetite, and wood-textured serpentine almost completely replaces orthopyroxene in places. Two generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby, characterized by pale green to rusty brown serpentine with a mesh to finely fibrous texture, and hosts some limonite, iddingsite, and minor thin magnetite veinlets. It is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile. This serpentine partially to completely replaces olivine and to a lesser degree orthopyroxene. Magnetite veinlets range up to 0.1 to 1 mm long, up to 0.02 mm wide, are composed of granular to stringy magnetite, and are almost always associated with iddingsite. The second type of serpentine (serpentine 2) is difficult to distinguish as a separate alteration event from serpentine 1, as it is patchy and intermixed with serpentine 1. Serpentine 2 is characterized as scaly apple green serpentine in rounded patches up to 2 cm wide, with slightly more intense replacement of olivine and orthopyroxene. Scaly and hourglass textures indicate this serpentine is likely lizardite-antigorite. There is very little iddingsite associated with serpentine 2. Thin pale green serpentine veins represent a third generation (serpentine 3), which are 0.01 to 0.3 mm wide, greater than 2 mm long, and randomly oriented across the section. The serpentine is mesh textured and likely composed of lizardite-antigorite. These veins are visible in the offcut as stringy, white, crosscutting veins. Randomly oriented and wormy short talc veinlets (0.5 to 8 mm long, 0.005 to 0.07 mm wide) overprint serpentine 3 veins. Wider talc veins are zoned with calcite in the vein centres (Fig. 1). Talc veinlets often overprint serpentine alteration of orthopyroxene as wider veinlets (up to 0.3 m wide).

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 – brown lizardite-antigorite with iddingsite 2 – green lizardite-antigorite 3 – pale green veins	45 45 35 20	Up to 1
- olivine	30	0.1 to 4
- orthopyroxene	12	0.1 to 2.5
- clinopyroxene	5	0.1 to 1
- iddingsite	4	0.01 to 0.7
- limonite	3	Up to 0.3
- talc	3	0.001 to 0.07
- magnetite	2	0.001 to 0.03
- chromite	1	0.1 to 0.9
- calcite	1	0.02 to 0.2
- anthophyllite	trace	0.05 to 0.2
- pentlandite	trace	Up to 0.01
- awaruite	trace	0.005 to 0.012
- wustite	trace	0.002 to 0.03

Primary chromite is often fractured by serpentine and rarely altered by magnetite as thin rims around grain boundaries (up to 0.02 mm wide). Trace euhedral anthophyllite occurs along serpentine 3 vein edges in serpentine 1. Very fine, isolated grains of pentlandite and awaruite (Fig. 2) are disseminated in serpentine 1 with magnetite strings and in serpentine 3 veins, and pentlandite often occurs in association with magnetite strings. Trace wustite occurs with or rims pentlandite in strings within serpentine 3.

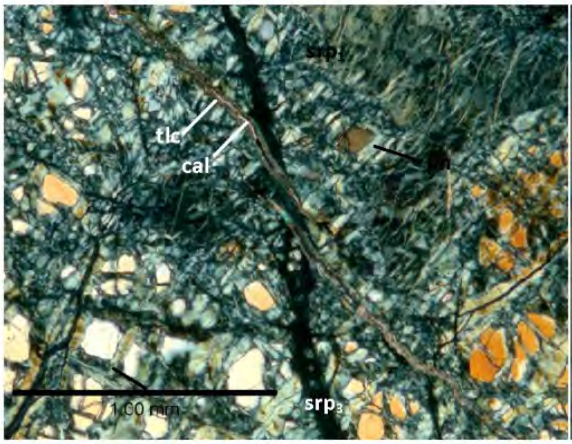


Fig. 1: Photomicrograph of a composite talc (tlc) vein with minor calcite (cal) in the centre crosscutting a serpentine 3 vein (srp$_3$). Photo taken in plane polarized reflected light.

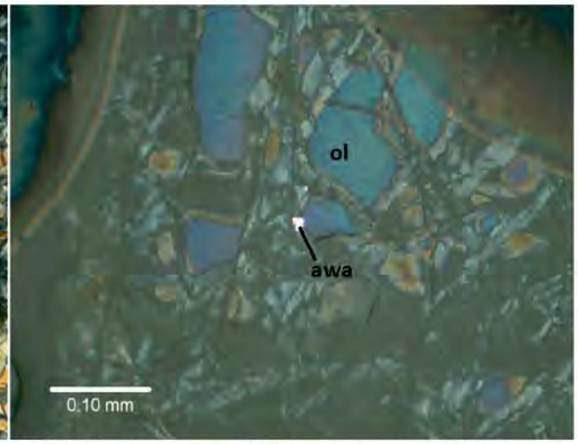


Fig. 2: Photomicrograph of a large awaruite (awa) grain occurring within serpentine 1 replacing olivine (ol). Photo taken in plane polarized simultaneous reflected and transmitted light.

Petrographic Report: Polished thin section SP11

General Rock type: Serpentinized harzburgite

This rock is an intensely and pervasively altered serpentinite after harzburgite. It comprises serpentine, olivine, and orthopyroxene, with minor iddingsite, limonite, magnetite, chromite and clinopyroxene, and trace pentlandite, awaruite and talc. The section has an overall flooded texture of serpentine partially to completely replacing olivine and orthopyroxene, which is overprinted by white, dark grey, and black veins visible in the offcut. Orthopyroxene shows poor cleavage in one direction which is commonly replaced by thin blades of magnetite and iddingsite, and wood-textured serpentine almost completely replaces orthopyroxene in places. Limonite often replaces olivine and serpentine as amorphous red clumps, and is generally associated with minor magnetite. Four generations of serpentine alteration are apparent (Fig. 1). The first generation (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine with a mesh to finely fibrous texture that floods the entire section and which hosts iddingsite, limonite, and minor granular to stringy magnetite. Mesh-like, scaly, and hourglass textures indicate it is mostly lizardite-antigorite, but more fibrous textures in some places indicate some chrysotile is also present. Thin, pale brown-green, fine-grained serpentine veins with minor limonite represent a second generation (serpentine 2), which are 0.01 to 0.7 mm wide, and trend roughly NW-SE to E-W overprinting serpentine 1. The third generation of serpentinization (serpentine 3) is characterized by short (1 to 4 mm) gash-shaped veinlets of pale brown-green chrysotile fibres overprinted by minor iddingsite. These gash veins are up to 0.4 mm wide and oriented roughly WNW-ESE. Very thin (up to 0.02 mm wide) branching and wormy magnetite veins with minor iddingsite cross-cut serpentine 1, 2, and 3. These veins may be contemporaneous with the fourth serpentine generation as they occur along serpentine 4 vein selvages and as offshoots of these veins. Serpentine 4 is characterized by zoned, randomly oriented, branching veins. These veins consist of a centre of fine-grained mesh-textured and medium-grained bladed/tooth-like pale tan lizardite-antigorite, and selvages of very fine grained amorphous brown lizardite-antigorite with minor iddingsite. Very few, very thin talc veinlets (up to 0.01 mm wide) cut serpentine 3 and 4 veins. Primary chromite is generally fractured by serpentine and rarely altered to magnetite

Mineral	**Modal Percent Abundance**	**Size Range (mm)**
- serpentine 1 - lizardite-antigorite with iddingsite 2 – pale brown-green veins 3 – pale green chrysotile gashes 4 – zoned veins	60 67 15 10 8	Up to 1.2
- olivine	12	0.05 to 4
- orthopyroxene	8	0.1 to 3
- clinopyroxene	1	0.1 to 0.3
- iddingsite	7	0.01 to 0.6
- limonite	6	0.005 to 0.3
- magnetite	6	0.002 to 0.05
- chromite	1	0.1 to 1
- talc	trace	0.005 to 0.2
- awaruite	trace	0.001 to 0.005
- pentlandite	trace	0.001 to 0.005

as thin rims around grain boundaries (up to 0.01 mm wide). Very fine, isolated grains of awaruite are disseminated in serpentine 1 (Fig. 2). Pentlandite also occurs as finer grains, and is not as abundant as awaruite. One awaruite grain in this thin section was not exposed on the polished surface, but was still visible through three microns of overlying serpentine. This particular grain had obviously not been oxidized, had high reflectivity from a natural surface and displayed the typical colour and lack of optical properties characteristic of awaruite.

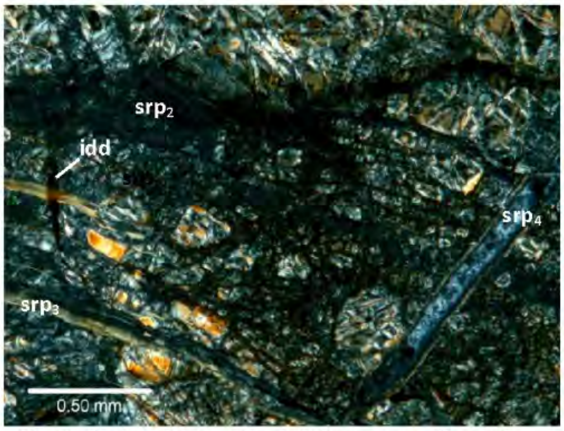


Fig. 1: Photomicrograph of all four generations of serpentine and their relationships. Serpentine 1 is the first and pervasive serpentinization that floods the whole section, and includes more fibrous chrysotile patches (orange). Serpentine 2 (srp_2) is characterized by dark, thin root-like veins. Serpentine 3 (srp_3) is characterized by brown-green, fibrous, gash-like chrysotile veins and cut by iddingsite (idd). Serpentine 4 (srp_4) is characterized by branching zoned veins. Photo taken in cross polarized transmitted light.

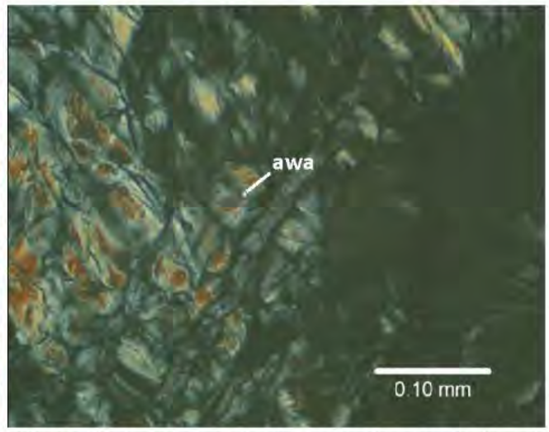


Fig. 2: Photomicrograph of a grain of awaruite (awa) associated with iddingsite in serpentine 1. Photo taken in cross polarized transmitted light.

Petrographic Report: Polished thin section SP12

General Rock type: Serpentinized lherzolite

This rock is an intensely and pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, magnetite, and chromite, and trace talc, actinolite, pentlandite, awaruite, pyrite, wustite and native copper. The section has an overall patchy flooded texture of serpentine which partially to completely replaces olivine, orthopyroxene and clinopyroxene, which is overprinted by white and grey veins visible in the offcut. Orthopyroxene shows poor cleavage in one direction which is commonly replaced by thin blades of magnetite and iddingsite, and wood-textured serpentine almost completely replaces orthopyroxene in places. Limonite sometimes replaces olivine and serpentine as amorphous red to brown clumps, and is generally associated with minor magnetite. Four generations of serpentine alteration are apparent. The first generation (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine with a mesh to finely fibrous texture that floods the entire section and which hosts iddingsite, limonite, and minor granular to stringy magnetite. Mesh-like, scaly, and hourglass textures indicate it is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. Serpentine 1 is visible in hand sample as patchy buff brown serpentine. Patches of serpentine 2 are characterized by sea green, scaly serpentine, which is visible in hand sample as dark green to black patches of serpentine. This serpentine floods the thin section and contains no limonite and very little iddingsite and magnetite. Trace thin, stringy magnetite veinlets are up to 3 mm long and 0.02 mm wide. It is difficult to determine whether serpentine 1 and 2 are cogenetic or if one predates the other. Thin, pale brown-green, fine-grained serpentine veins with minor limonite represent a third generation (serpentine 3), which are 0.01 to 0.15 mm wide. The larger veins have a root-like texture and trend roughly E-W overprinting serpentine 1, while thinner veins are randomly oriented. The fourth generation of serpentinization (serpentine 4) is characterized by zoned, randomly oriented, branching veins associated with

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine	54	Up to 2
1–lizardite-antigorite & iddingsite	45	
2 – pale green lizardite-antigorite	40	
3 – pale green root-like veins	9	
4 – colourless veins with magnetite	6	
- olivine	18	0.1 to 3
- orthopyroxene	10	0.2 to 4
- clinopyroxene	6	0.1 to 2
- iddingsite	4	0.01 to 0.4
- limonite	4	0.005 to 0.05
- magnetite	3	0.002 to 0.2
- chromite	1	0.1 to 1
- talc	trace	0.01 to 0.1
- actinolite	trace	0.4
- awaruite	trace	0.002 to 0.02
- pentlandite	trace	0.001 to 0.02
- pyrite	trace	0.002 to 0.02
- native copper	trace	0.005
- wustite	trace	0.01 to 0.06

branching magnetite-limonite veins (Fig 1). These veins consist of a centre of fine-grained mesh-textured and medium-grained bladed/tooth-like colourless lizardite-antigorite, and selvages of very fine-grained, mesh to fibrous textured, green to brown chrysotile with minor magnetite in contact with the host rock. Very few, very thin short talc veinlets (up to 0.04 mm wide) cut serpentine alteration in orthopyroxene parallel to cleavage. Primary chromite is commonly fractured by serpentine and very rarely altered to magnetite around grain boundaries. Very fine, isolated grains of awaruite are disseminated in serpentine 2 and possibly 4, and rarely occur with pentlandite (Fig. 2). Pentlandite also occurs as even finer dusty grains disseminated in serpentine 1, 2, and 4, and is not as abundant as awaruite. Pyrite and possibly awaruite are also disseminated as very fine grains in serpentine 1, 2, and 4, but the grain size is too small to distinguish between the two minerals. The awaruite in figure 2 is slightly less reflective than is normally seen in this suite and has been confirmed by SEM/EDS. Wustite occurs as colloform rims around pentlandite and pyrite. Native copper occurs as fine, isolated grains in serpentine 2.

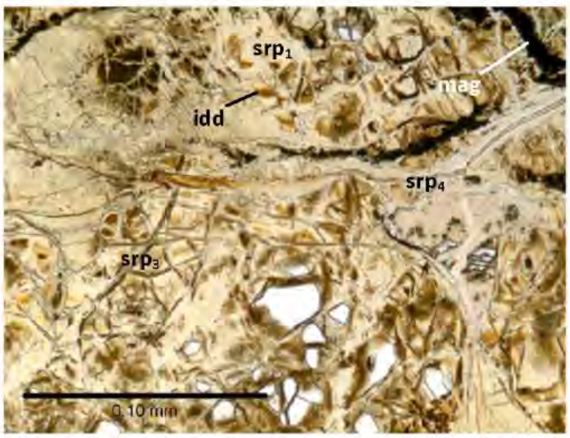


Fig. 1: Photomicrograph of the fourth generation of serpentinization (srp$_4$), characterized by zoned, randomly oriented, branching veins associated with branching magnetite (mag)-limonite veins. A serpentine 4 vein cuts a serpentine 3 vein (srp$_3$) on the left side of the photograph. Photo taken in plane polarized transmitted light.

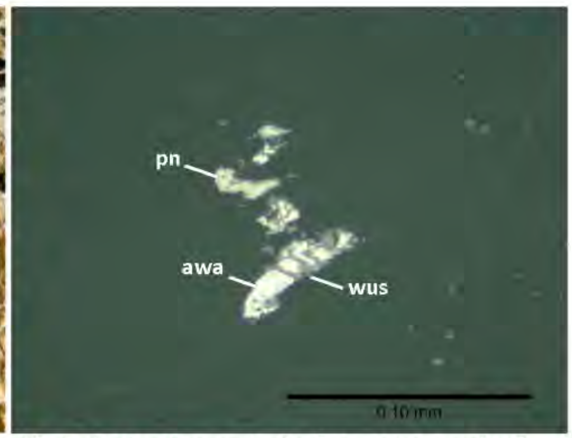


Fig. 2: Photomicrograph of a three-micron grain of awaruite (awa) associated with pentlandite (pn) rimmed by wustite (wus) in serpentine 1. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP13

General Rock type: Serpentinized lherzolite

This rock is a very intensely and pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, magnetite, and chromite, and trace talc, awaruite, and pentlandite. The section has an overall flooded to net texture of serpentine which partially to completely replaces olivine, orthopyroxene and clinopyroxene. Orthopyroxene shows lamellar twinning in one direction, and wood-textured serpentine almost completely replaces orthopyroxene in places. Limonite in some places replaces serpentine as amorphous red to brown clumps, and is commonly associated with minor magnetite. Two (possibly three) types of serpentine alteration are apparent (Fig. 1). The first type (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine with a mesh to finely fibrous texture that floods the entire section and which hosts abundant iddingsite, limonite, and minor granular to stringy magnetite. Mesh-like, scaly, and hourglass textures indicate it is mostly lizardite-antigorite, but more fibrous textures in some places indicate minor chrysotile is also present. Serpentine 1 covers one half of the thin section and is visible in hand sample as buff brown serpentine. Serpentine 2 covers the other half of the section and is characterized by pale grey to sea green, scaly serpentine, which is visible in hand sample as dark green to black serpentine. This serpentine floods the thin section and contains no limonite and very little iddingsite and magnetite. Trace thin, stringy magnetite veinlets are up to 1 mm long and 0.02 mm wide. It is difficult to determine whether serpentine 1 and 2 are cogenetic or if one predates the other. Thick, short, wood grain-textured elongate patches of pale green-yellow serpentine are common in serpentine 1, commonly trend roughly SW-NE, and may be a third type of serpentine or may be cogenetic with serpentine 1. This serpentine shows trace amounts of replacement by chlorite. Very few, thin talc veinlets (0.01 to 0.04 mm wide, up to 3 mm long) cut serpentine alteration in orthopyroxene parallel and sub-perpendicular to cleavage, and also cross into the host rock. Primary chromite is generally fractured by serpentine and very rarely altered to magnetite around grain boundaries. Very fine, isolated grains of awaruite are disseminated in serpentine 2 (Fig. 2) and as inclusions in olivine. Pentlandite also occurs as even finer dusty grains disseminated in serpentine 2 and as inclusions in orthopyroxene.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 – rusty lizardite-antigorite with iddingsite 2 – pale green lizardite-antigorite 3 – pale green patches	55 45 50 5	Up to 2
- olivine	16	0.1 to 3.5
- orthopyroxene	13	0.15 to 4.5
- clinopyroxene	4	0.1 to 1.3
- iddingsite	4	0.005 to 0.8
- limonite	5	0.005 to 0.4
- magnetite	2	0.002 to 0.05
- chromite	1	0.1 to 1.5
- talc	trace	0.01 to 0.04
- awaruite	trace	0.001 to 0.005
- pentlandite	trace	0.001 to 0.05

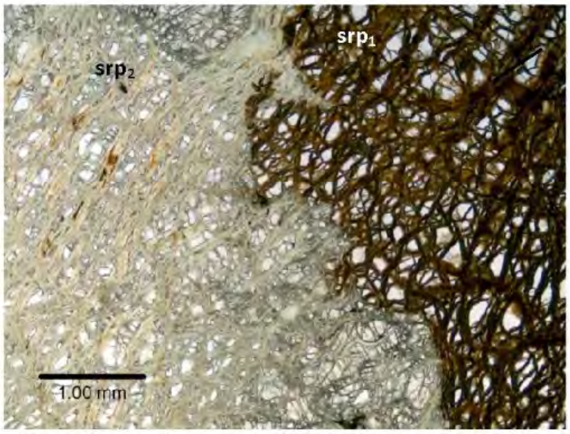


Fig. 1: Photomicrograph of the two major types of serpentine in this thin section. The right half of the photo shows the rusty iddingsite-limonite rich serpentine 1 (srp$_1$). The left half of the photo shows the iddingsite-poor, grey to sea green serpentine 2 (srp$_2$). The contact between the two is often sharp and irregular. Photo taken in plane polarized transmitted light.

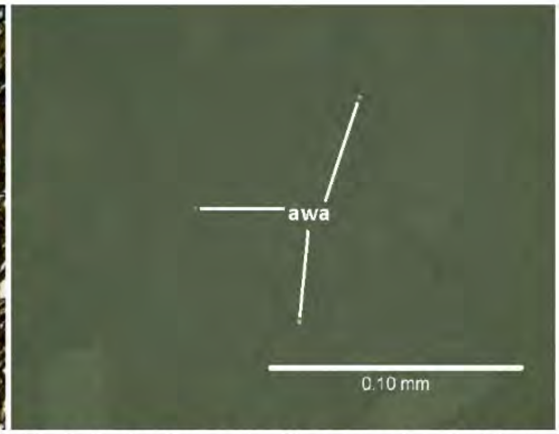


Fig. 2: Photomicrograph of three very fine, isolated grains of awaruite (or possibly pentlandite) disseminated in serpentine 2. This is a typical texture in this section. Photo taken in plane polarized reflected light.

Petrographic Report: polished thin section SP15

General Rock type: Serpentinized lherzolite

This rock is a moderately to pervasively altered serpentinite after lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, talc, magnetite, and chromite, and trace native copper and pentlandite. The section has an overall flooded to net texture of serpentine which partially to completely replaces olivine, orthopyroxene and clinopyroxene. Orthopyroxene shows lamellar twinning in one direction, and wood-textured serpentine almost completely replaces orthopyroxene in places. Limonite sometimes replaces serpentine as amorphous red to brown clumps up to 0.5 mm wide, and is often associated with minor magnetite. Three (possibly four) types of serpentine alteration are apparent. The first type (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine similar to serpentine 1 of thin section TT-49. Serpentine 1 covers most of the thin section and is visible in hand sample as buff brown serpentine. Serpentine 2 occurs in patches 1 to 5 mm wide across the section and is characterized by pale grey to sea green, scaly serpentine, which is visible in hand sample as dark green to black serpentine. This serpentine is similar to serpentine 2 of TT-49 and shows trace amounts of replacement by chlorite. It is difficult to determine whether serpentines 1 and 2 are actually separate serpentinization events or if they are cogenetic. Thin, pale brown-green, fine-grained serpentine veins with minor limonite and subhedral magnetite represent a third generation (serpentine 3), which are 0.005 to 0.25 mm wide. The larger veins have a root-like texture and trend roughly N-S to SSW-NNE overprinting serpentines 1 and 2, while thinner veins are randomly oriented. The fourth generation of serpentinization (serpentine 4) is characterized by thin, randomly oriented, fibrous brown-green chrysotile veins that are gash-like in shape (Fig 1). Some thin wormy talc veinlets (0.01 to 0.1 mm wide, 2 to 4 mm long) cut serpentine alteration in orthopyroxene parallel and sub-perpendicular to cleavage, and also cross into the host rock. Sometimes these veinlets run alongside serpentine 2 veins. Primary chromite is often fractured by serpentine and very rarely altered to magnetite around thin grain boundaries. A single very fine, isolated grain of native copper is present in serpentine 2. This sample is relatively devoid of sulphides compared to others in the suite. A single grain of pentlandite also occurs as an even finer grain in a talc veinlet cutting serpentine 1 in orthopyroxene (Fig. 2).

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 –lizardite-antigorite & iddingsite 2 – pale green lizardite-antigorite 3 – pale green patches 4 – brown-green chrysotile veinlets	55 68 25 5 2	Up to 2
- olivine	14	0.05 to 3
- orthopyroxene	10	0.1 to 3
- clinopyroxene	5	0.2 to 2.5
- iddingsite	4	0.01 to 0.7
- limonite	6	0.01 to 0.3
- magnetite	1	0.002 to 0.05
- chromite	1	0.1 to 1.2
- talc	4	0.01 to 0.3
- native copper	trace	0.003
- pentlandite	trace	0.01

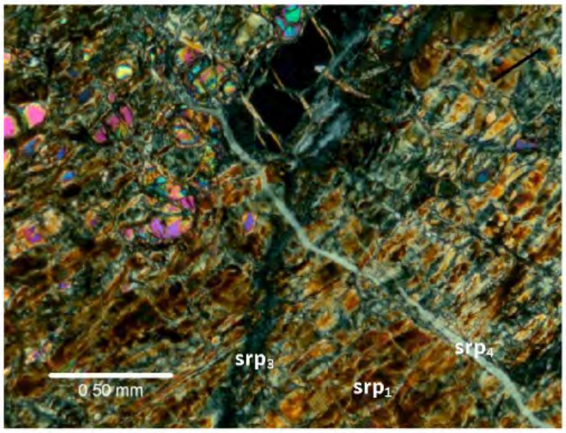


Fig. 1: Photomicrograph of the two serpentine vein types in this thin section. The dark grey serpentine 3 vein (srp$_3$) is cut by the fibrous, light grey serpentine 4 vein (srp$_4$). Both veins overprint pervasive, net-textured serpentine 1 (srp$_1$). Photo taken in cross polarized transmitted light.

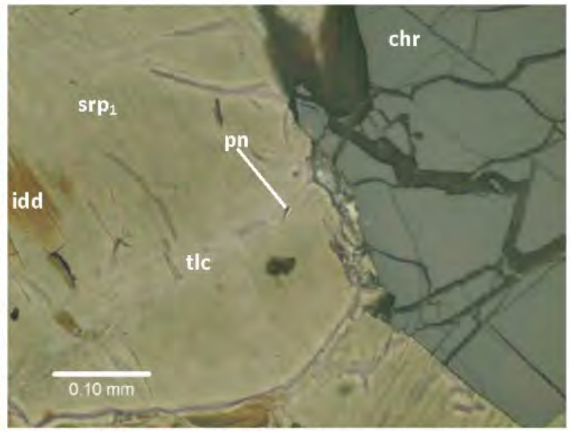


Fig. 2: Photomicrograph of a single grain of pentlandite (pn) associated with talc (tlc) cutting serpentine 1 (srp$_1$) after orthopyroxene. Photo taken in plane polarized reflected and transmitted light.

Petrographic Report: Polished thin section SP16

General Rock type: Serpentinized lherzolite

This rock is a pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, magnetite, and chromite, and trace awaruite and pentlandite. The section has an overall sieve or web texture of serpentine which partially to completely replaces olivine, orthopyroxene and clinopyroxene, overprinted by very thin veins comprised dominantly of serpentine. Orthopyroxene shows lamellar twinning in one direction, and wood-textured serpentine almost completely replaces orthopyroxene in places. A trace amount of this serpentine replacing orthopyroxene has been altered to chlorite. Limonite in some places replaces serpentine as amorphous red to brown clumps up to 0.5 mm wide, and is generally associated with minor magnetite. Three generations of serpentine alteration are apparent. The first type (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine similar to serpentine 1 of thin section SP13. Serpentine 1 covers most of the thin section and is visible in hand sample as buff brown serpentine. This is the generation replacing orthopyroxene. Serpentine 2 occurs in very thin veins 0.005 to 0.03 mm wide, 0.05 to >10 mm long, and mostly trend E-W across the section. Serpentine 2 veins are characterized by colourless very fine-grained serpentine with trace subhedral to bullet-shaped to elongate magnetite along selvages, in some places in thin strings up to 0.2 mm long, and is visible in hand sample as spidery white veins. Thin, pale brown-green, fine-grained serpentine veins with minor limonite and subhedral magnetite represent a third generation (serpentine 3), which are 0.01 to 1 mm wide. The larger veins have a root-like texture and trend roughly NW-SE to NNE-SSW overprinting serpentines 1 and 2 (Fig. 1), while thinner veins are randomly oriented. In some places, iddingsite overprints serpentine 3 veins. Primary chromite is commonly fractured by serpentine and very rarely altered to magnetite around thin grain boundaries (up to 0.02 mm wide). A single very fine, isolated grain of awaruite was found in serpentine 1 (Fig. 2). Several very fine grains of pentlandite were found as dustings disseminated in serpentine 1 and as slightly coarser grains associated with magnetite in serpentine 2 veins.

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 – rusty lizardite-antigorite with iddingsite 2 – colourless serpentine-magnetite veins 3 – pale green lizardite-antigorite veins	50 85 7 8	Up to 2
- olivine	19	0.1 to 2.5
- orthopyroxene	16	0.1 to 3
- clinopyroxene	3	0.1 to 0.7
- iddingsite	6	0.01 to 0.5
- limonite	4	0.01 to 0.3
- magnetite	1	0.002 to 0.03
- chromite	1	0.1 to 0.9
- pentlandite	trace	0.002 to 0.01
- awaruite	trace	0.005

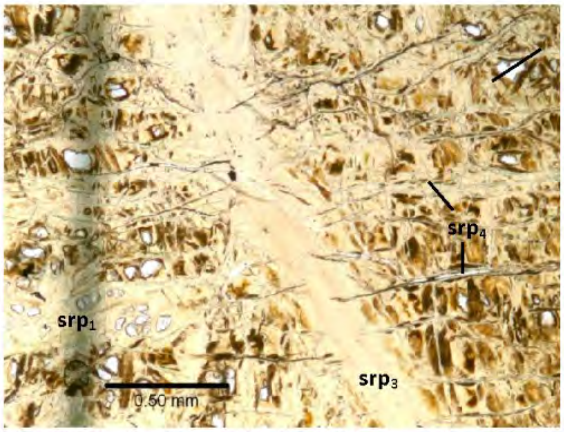


Fig. 1: Photomicrograph of the two serpentine vein types in this thin section. The very thin, colourless, magnetite-bearing serpentine 2 veins (srp$_2$) are cut by the wide, mesh-textured brown-green serpentine 3 vein (srp$_3$). Both veins overprint pervasive, net-textured serpentine 1 with iddingsite (srp$_1$). Photo taken in plane polarized transmitted light.

Fig. 2: Photomicrograph of a single very fine, isolated grain of awaruite (awa) within serpentine 1 (srp$_1$). Photo taken in simultaneous plane polarized reflected and transmitted light.

Petrographic Report: Polsihed thin section SP17

General Rock type: Serpentinized lherzolite

Similar to most in this suite, this rock is a pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, talc, magnetite, and chromite, and trace pentlandite and awaruite. The section has an overall flooded to sieve or net texture of serpentine which partially to completely replaces olivine, and to a lesser extent both pyroxenes, overprinted by very thin serpentine and iddingsite veins. Orthopyroxene shows lamellar twinning in one direction. Limonite and iddingsite in some places replace serpentine as amorphous red to brown and orange patches up to 0.5 mm wide, and are generally associated with minor magnetite. Three types of serpentine alteration are apparent. The first type (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine similar to serpentine 1 of thin section SP-13. Serpentine 1 comprises over a third of the thin section and is visible in hand sample as buff brown serpentine. Minor granular to stringy magnetite exists within the core of the serpentinized zones, and occurs as strings up to 1 mm long. Wood-textured serpentine belonging to serpentine 1 almost completely replaces orthopyroxene in places and shows trace amounts of replacement by chlorite. Serpentine 2 occurs in patches 0.5 to 12 mm wide across the section and is characterized by pale grey to sea green, scaly serpentine, which is visible in hand sample as dark green to black serpentine. This serpentine is similar to serpentine 2 of SP-13. It is difficult to determine whether serpentines 1 and 2 are actually separate serpentinization events or if they are cogenetic. Thin, pale brown-green, fine-grained serpentine veins with minor limonite and subhedral magnetite represent a third generation (serpentine 3), which are 0.01 to 0.2 mm wide. The larger veins have a root-like texture and trend roughly NE-SW to NW-SE overprinting serpentines 1 and 2, while thinner veins are randomly oriented. Some thin wormy talc veinlets (0.005 to 0.08 mm wide, 0.5 to 6 mm long) cut serpentine alteration in orthopyroxene parallel and sub-perpendicular to cleavage, and also overprint and are parallel to serpentine 3 veins. Talc veins also occur along the walls of empty fractures. Primary chromite is commonly fractured by serpentine and very rarely altered to magnetite around thin grain boundaries (up to 0.01 mm wide). Several very fine grains of pentlandite occur as dustings disseminated in serpentine 1, and as slightly coarser grains associated with magnetite, limonite,

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 – rusty lizardite-antigorite with iddingsite 2 – grey-green lizardite-antigorite 3 – pale brown-green veins	52 40 50 10	Up to 0.5
- olivine	20	0.1 to 3
- orthopyroxene	12	0.1 to 2
- clinopyroxene	4	0.1 to 0.7
- iddingsite	3	0.01 to 0.5
- limonite	6	0.02 to 0.35
- magnetite	1	0.002 to 0.04
- chromite	1	0.05 to 0.9
- talc	1	0.01 to 0.08
- pentlandite	trace	0.001 to 0.06
- awaruite	trace	0.002

and/or iddingsite in serpentine 1 (Fig. 1), and also very fine grains in serpentine veins. A single very fine, isolated grain of awaruite is present in serpentine 2 associated with iddingsite (Fig. 2).

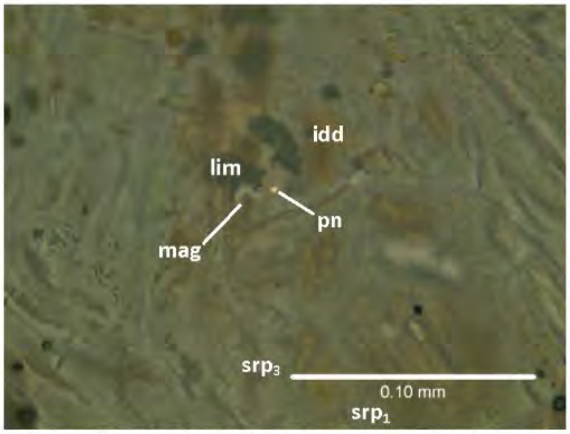


Fig. 1: Photomicrograph of a very fine grain of pentlandite (pn) associated with magnetite, limonite, and iddingsite disseminated in serpentine 1 (srp_1). Photo taken in plane polarized transmitted light.

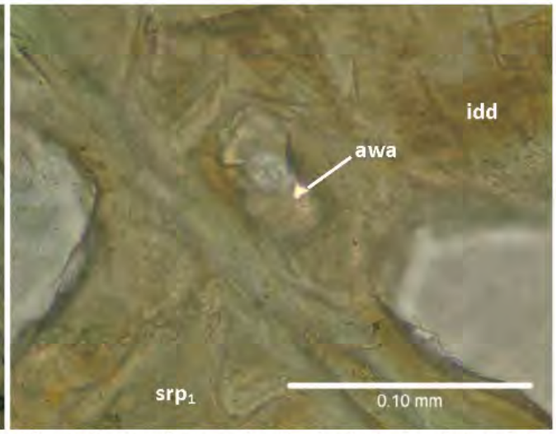


Fig. 2: Photomicrograph of a single grain of very fine, isolated awaruite (awa) found in serpentine 1 (srp_1) associated with iddingsite (idd). Photo taken in plane polarized reflected and transmitted light.

Petrographic Report: Polished thin section SP18

General Rock type: Quartz-muscovite-biotite schist (meta-siltstone)

This rock is a layered, well-sorted meta-siltstone that has been metamorphosed to greenschist facies with very weak E-W/layer-parallel preferred orientation of micas and elongated pyrrhotite. The rock primarily consists of quartz, muscovite, biotite, pyrrhotite, and goethite, with minor pyrite, limonite and rutile, and trace chalcopyrite. The thin section has an overall silty to very fine-grained sand texture with poorly developed, disturbed layering (possibly relict bedding) that is cut by three generations of veins. Muscovite occurs throughout the section and in some places in knots or patches, particularly where associated with goethite and limonite. Limonite occurs in clumps up to 0.2 mm wide. Sulphides overprint micas, and some pyrrhotite contains inclusions of mica. The sulphides are especially abundant in coarser layers with more abundant biotite and proximal to a wide goethite vein. Pyrite and pyrrhotite commonly display limonite alteration in their cores (Fig. 1), and pyrrhotite is rarely rimmed by pyrite. Trace irregular grains of chalcopyrite are almost always associated with limonite clumps or goethite, or as inclusions in pyrrhotite and pyrite (Fig. 1).

Vein density is roughly 10% of the rock, and three sets of veins are present. Vein set A is dominated by biotite in poorly developed, thin, stringy to root-textured veinlets generally oriented ESE-WNW and generally longer than 1.5 mm. Minor phases in this set include limonite and trace pyrite. These few veinlets are cut by vein set B (quartz veins), which are comprised largely of coarse, anhedral quartz. These veins have sharp, discrete vein selvages, and are generally oriented ENE-WSW, with a few thin veins at SE-NW. These veins are relatively wide (0.03 to 0.75 mm) and composed of quartz, goethite (interstitial between quartz boundaries), trace pyrite

Mineral	Modal Percent Abundance	Size Range (mm)
Wall Rock	90	
- quartz	26	0.01 to 0.15
- muscovite	23	0.01 to 0.25
- biotite	21	0.005 to 0.15
- pyrrhotite	12	0.01 to 0.45
- goethite	7	0.01 to 0.4
- limonite	5	0.001 to 0.4
- pyrite	5	0.005 to 1.3
- rutile	1	0.01 to 0.03
- chalcopyrite	trace	0.005 to 0.1
Veins		
- vein set A (biotite veinlets)	1	0.01 to 0.15 mm wide
biotite	*90*	*0.005 to 0.1*
limonite	*10*	*0.01 to 0.2*
pyrite	*trace*	*0.02*
- vein set B (quartz veins)	5	0.03 to 0.75
quartz	*92*	*0.05 to 1.2*
goethite	*8*	*0.01 to 0.25*
chalcopyrite	*trace*	*0.005 to 0.02*
pyrite	*trace*	*0.01*
- vein set C (goethite veins)	4	0.02 to 1.5
goethite	*98*	*0.01 to 0.1*
rutile	*2*	*0.02*

(associated with goethite), and trace chalcopyrite (with goethite). These quartz veins are cut by vein set C (goethite veins) that are 0.01 to 0.08 mm wide, webby to root-textured, and E-W oriented with minor, thin veins trending SE across layering. These veins are primarily composed of goethite with minor rutile. These veins have fractured during cutting and because of this contain approximately 20 percent epoxy and a number of grains of grinding compound and associated ground rock fragments from the thin section preparation process. These veins cross cut chalcopyrite (Fig. 2), indicating this set of veins post-dates sulphide mineralization.

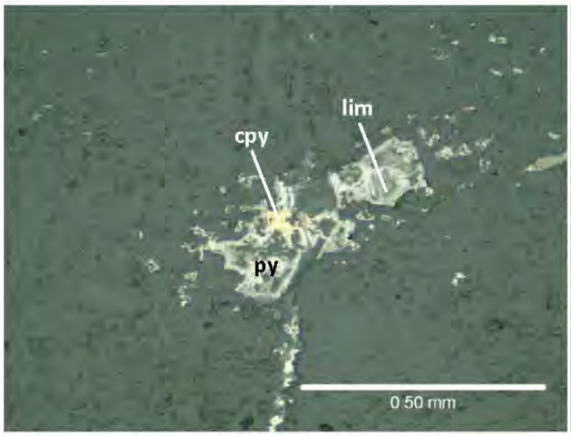


Fig. 1: Photomicrograph of an irregular chalcopyrite (cpy) inclusion in pyrite (py). The pyrite displays intense limonite alteration (lim) within its core. Photo taken in plane polarized reflected light.

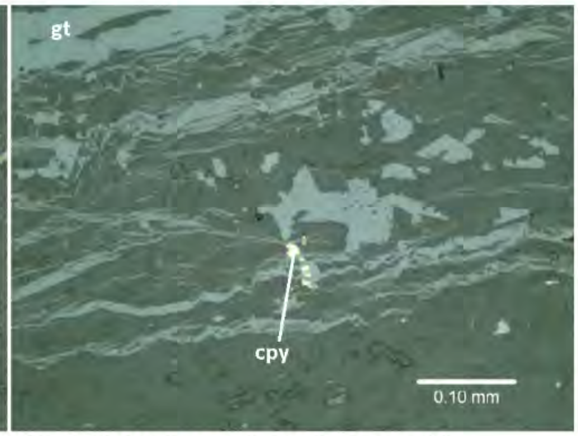


Fig. 2: Photomicrograph of vein set C, webby goethite (gt) veins, cutting across a chalcopyrite (cpy) grain. Photo taken in plane polarized reflected light.

Petrographic Report: Polished thin section SP19

General Rock type: Serpentinized lherzolite

This rock is slightly enriched in clinopyroxene relative to others in the suite, but is still classified as a moderately to pervasively serpentinized lherzolite consisting of serpentine, olivine, orthopyroxene and clinopyroxene, with minor iddingsite, limonite, talc, magnetite, and chromite, and trace pentlandite, awaruite, native copper, wustite, and native metal. The section has an overall patchy flooded to net texture of serpentine which partially to completely replaces olivine, orthopyroxene and clinopyroxene, overprinted by very thin veins. Orthopyroxene shows lamellar twinning in one direction. Limonite and iddingsite in some places replace serpentine as amorphous red to brown and orange patches up to 0.5 mm wide, and are generally associated with minor magnetite. Three types of serpentine alteration are apparent. The first type (serpentine 1) is pervasive and webby, characterized by pale yellow-green to rusty brown serpentine similar to serpentine 1 of thin section SP-13. Very minor granular to stringy magnetite exists within the core of the serpentinized zones, and occurs as strings up to 1 mm long. Wood-textured serpentine belonging to serpentine 1 almost completely replaces orthopyroxene in places and shows trace amounts of replacement by chlorite. Serpentine 2 occurs in patches 0.5 to 6 mm wide across the section and is characterized by pale grey to sea green, scaly serpentine, which is visible in hand sample as dark green to black serpentine. Very minor magnetite occurs in serpentine 2 as strings and anhedral clumps. This serpentine is similar to serpentine 2 of SP-13. It is difficult to determine whether serpentines 1 and 2 are actually separate serpentinization events or if they are cogenetic. Thin, pale, brown-green, fine-grained serpentine veins with minor limonite represent a third generation (serpentine 3), which are 0.01 to 0.25 mm wide and 1 to 4 mm long, some with a gash-like shape. The larger veins have a root-like texture, and all are randomly oriented. Some thin wormy talc veinlets (0.01 to 0.05 mm wide, 0.5 to 4 mm long) cut serpentine alteration in orthopyroxene parallel to cleavage,

Mineral	Modal Percent Abundance	Size Range (mm)
- serpentine 1 – lizardite/antigorite & iddingsite 2 –grey green lizardite-antigorite 3 – pale brown-green veins	40 45 50 5	Up to 1.2
- olivine	22	0.05 to 3
- orthopyroxene	17	0.2 to 3
- clinopyroxene	10	0.1 to 1.2
- iddingsite	3	0.01 to 0.4
- limonite	4	0.01 to 0.25
- magnetite	1	0.002 to 0.05
- chromite	1	0.1 to 1.5
- talc	2	0.01 to 0.05
- pentlandite	trace	0.001 to 0.006
- awaruite	trace	Up to 0.003
- native copper	trace	0.005 to 0.04
- wustite	trace	0.002 to 0.005
- native metal (Fe or Sn)	trace	0.001

and also overprint and are parallel to serpentine 3 veins. One well-formed talc vein has limonite along the selvage. Primary chromite is commonly fractured by serpentine and very rarely altered to magnetite around thin grain boundaries. Several very fine grains of pentlandite and awaruite occur as disseminations in serpentine 1 and 2 (Fig. 1). Their abundance is much greater than in thin sections Sp-16 and SP17. The grains are slightly coarser grained where associated with limonite and/or iddingsite in serpentine 1. Relatively coarser grained native copper occurs within patches of serpentine 1 and in serpentine-filled fractures in olivine and orthopyroxene (Fig. 2), and is in some places rimmed by wustite. Here, as in most samples of the suite, the native copper is associated with the serpentinization and is not a primary igneous phase. A single, very fine, isolated grain of native metal occurs as an inclusion in orthopyroxene. The grain was too small to identify as awaruite, native iron or native tin.

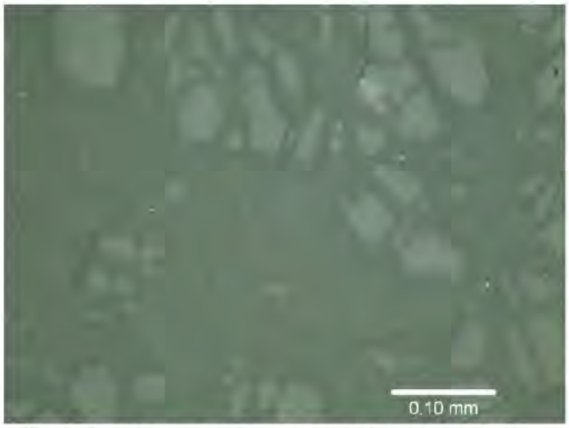


Fig. 1: Photomicrograph of a typical mineralization texture of very fine grains of awaruite (bright specks) disseminated as very fine dustings in serpentine. Photo taken in plane polarized reflected light.

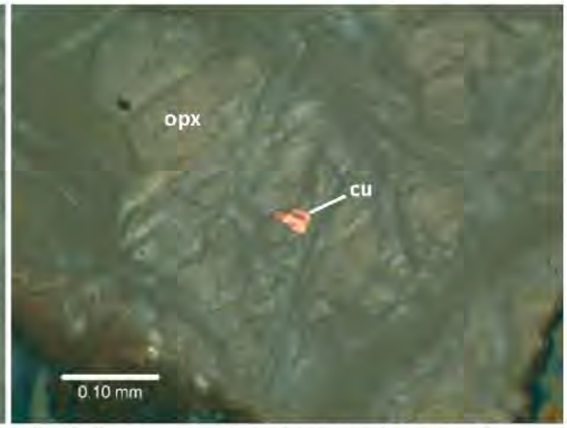
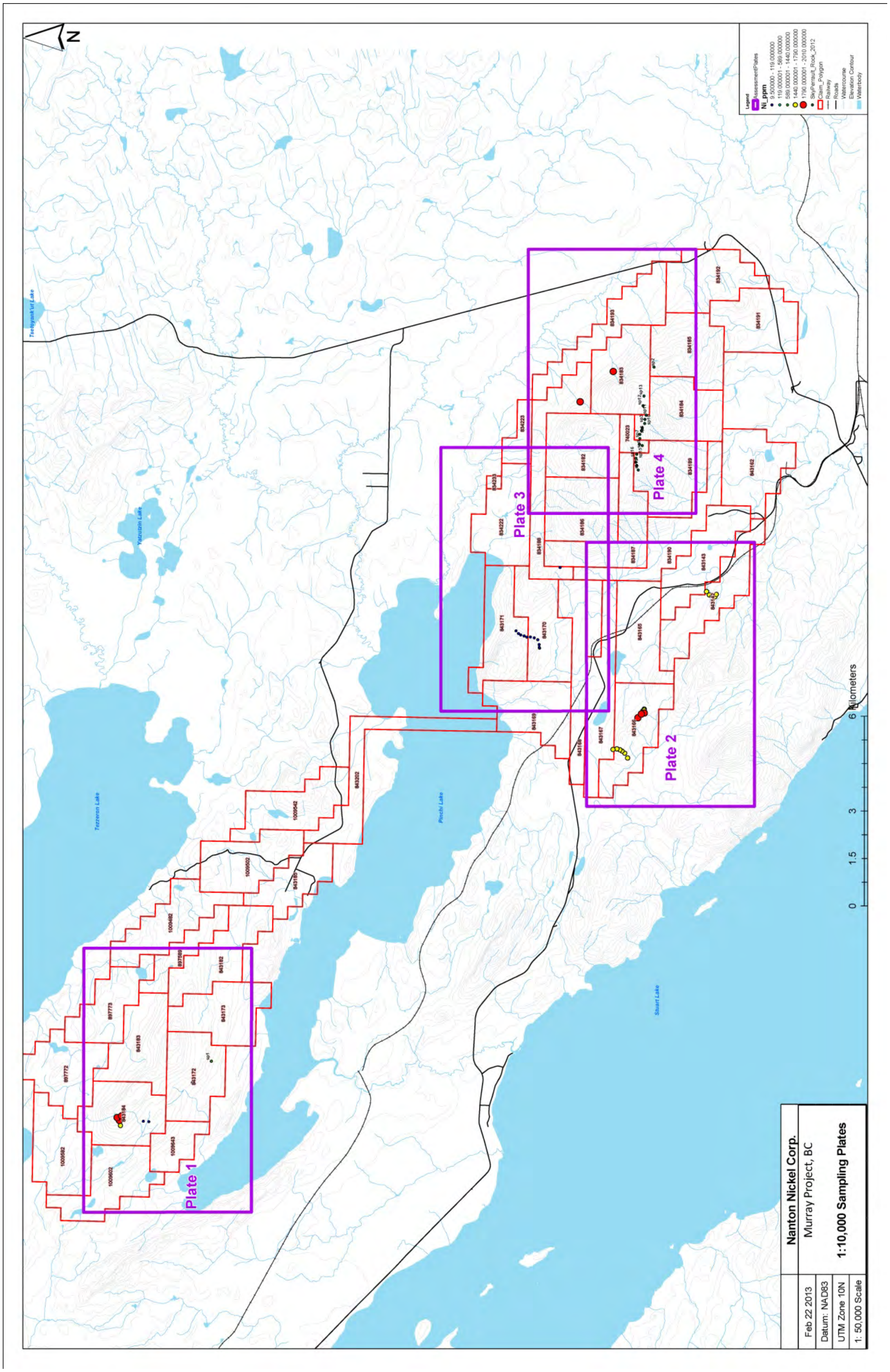
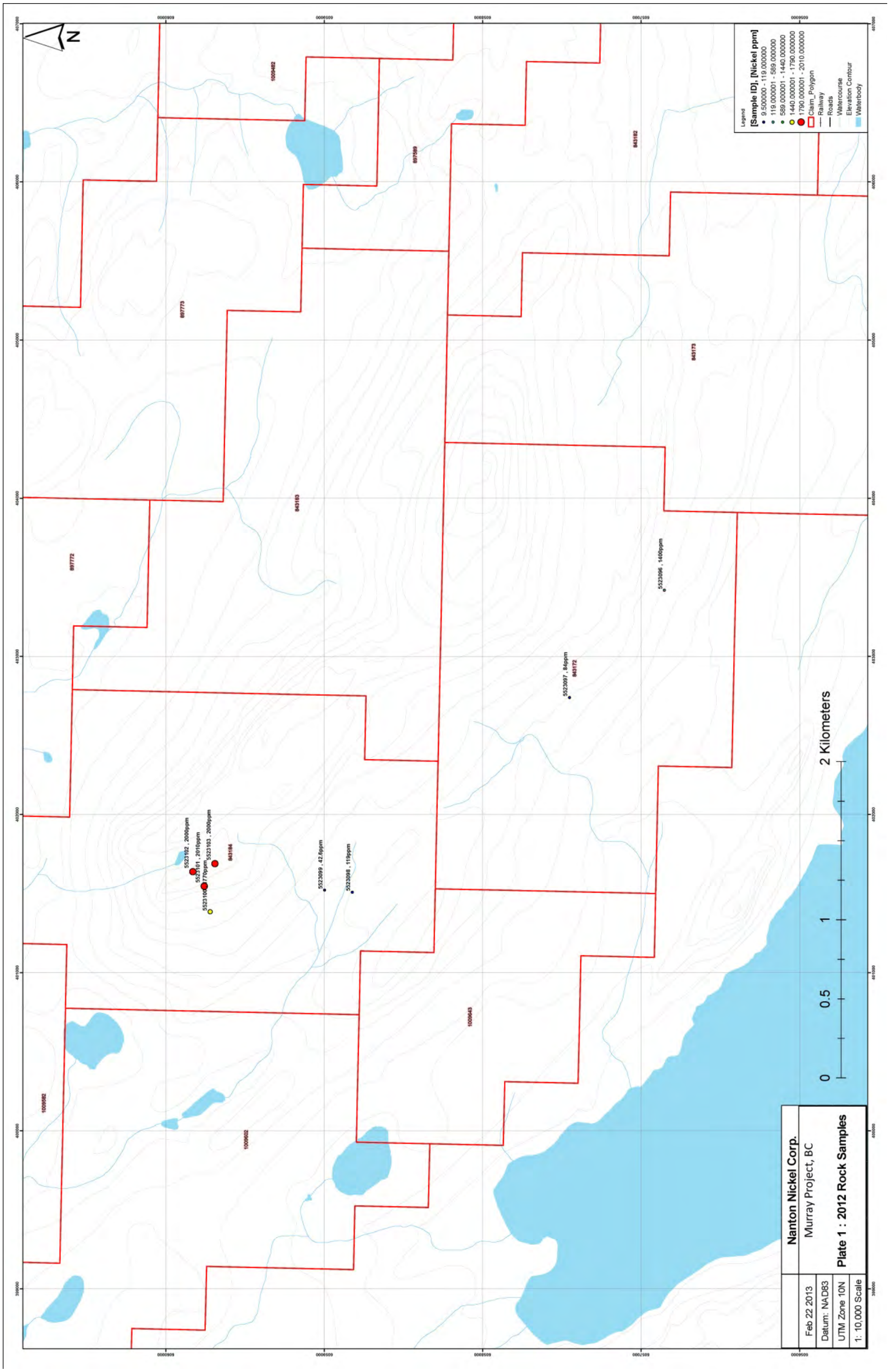


Fig. 2: Photomicrograph of an irregular grain of native copper (cu) found in serpentine 1 alteration of orthopyroxene (opx). Photo taken in plane polarized reflected and transmitted light.

Appendix III

1:10,000 (ANSI D) Rock and Soil Sample Location Maps


Nanton Nickel Corp.
Murray Project, BC
1:10,000 Sampling Plates
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 50,000 Scale
Plate 1
Plate 2
Plate 3
Plate 4
0
1.5
3
6
Kilometers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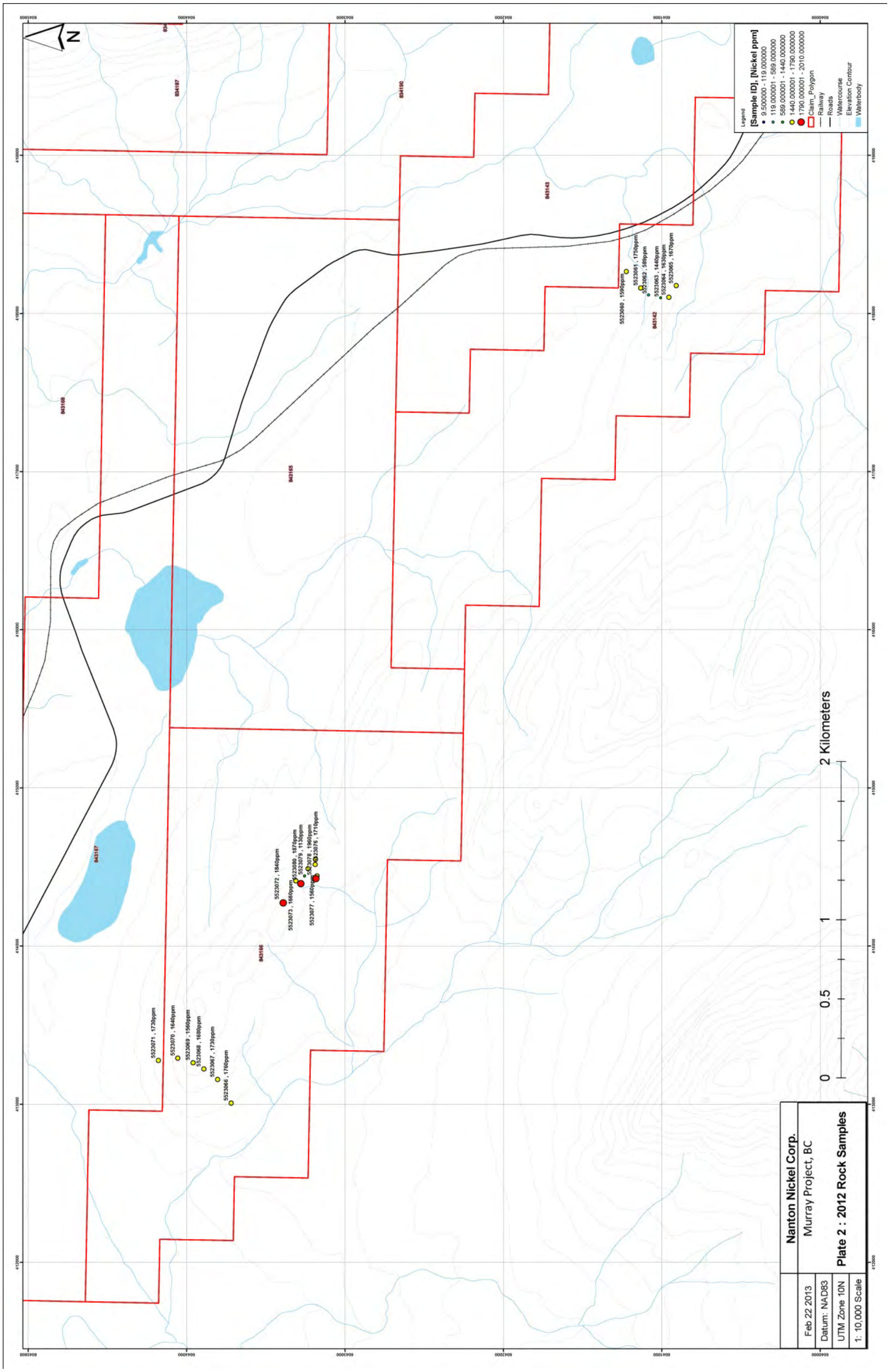
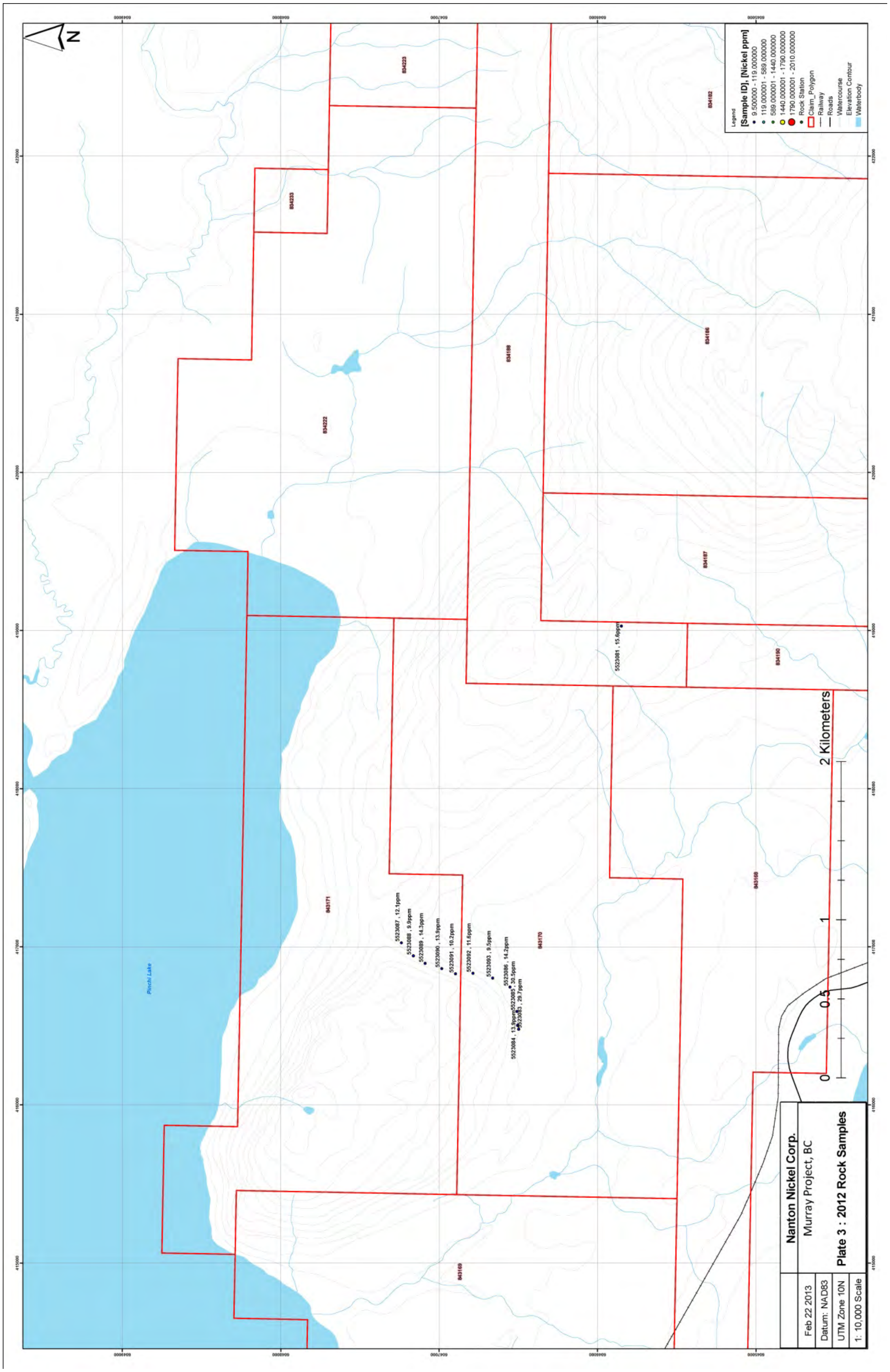
119.000001 - 589.000000
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody
5523096 , 1400ppm
5523097 , 84ppm
5523099 , 42.6ppm
5523098 , 119ppm
5523102 , 2000ppm
5523101 , 2010ppm
5523103 , 2000ppm
2 Kilometers
0
0.5
1
Nanton Nickel Corp.
Murray Project, BC
Plate 1 : 2012 Rock Samples
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale


Nanton Nickel Corp.
Murray Project, BC
Plate 2 : 2012 Rock Samples
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
0
0.5
1
2 Kilometers
N
Legend
[Sample ID], [Nickel ppm]
9.500000 - 119.000000
119.000001 - 589.000000
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody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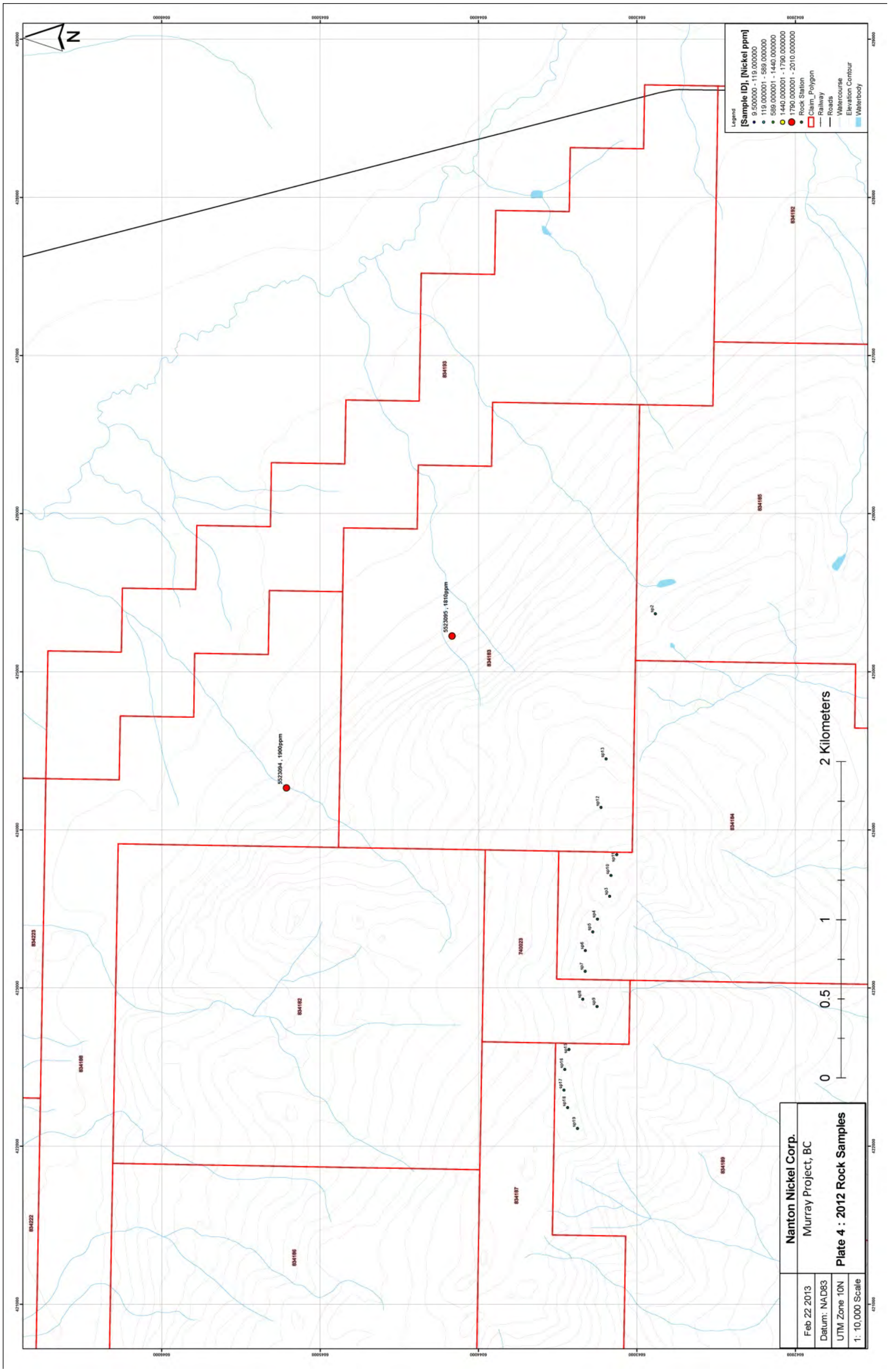
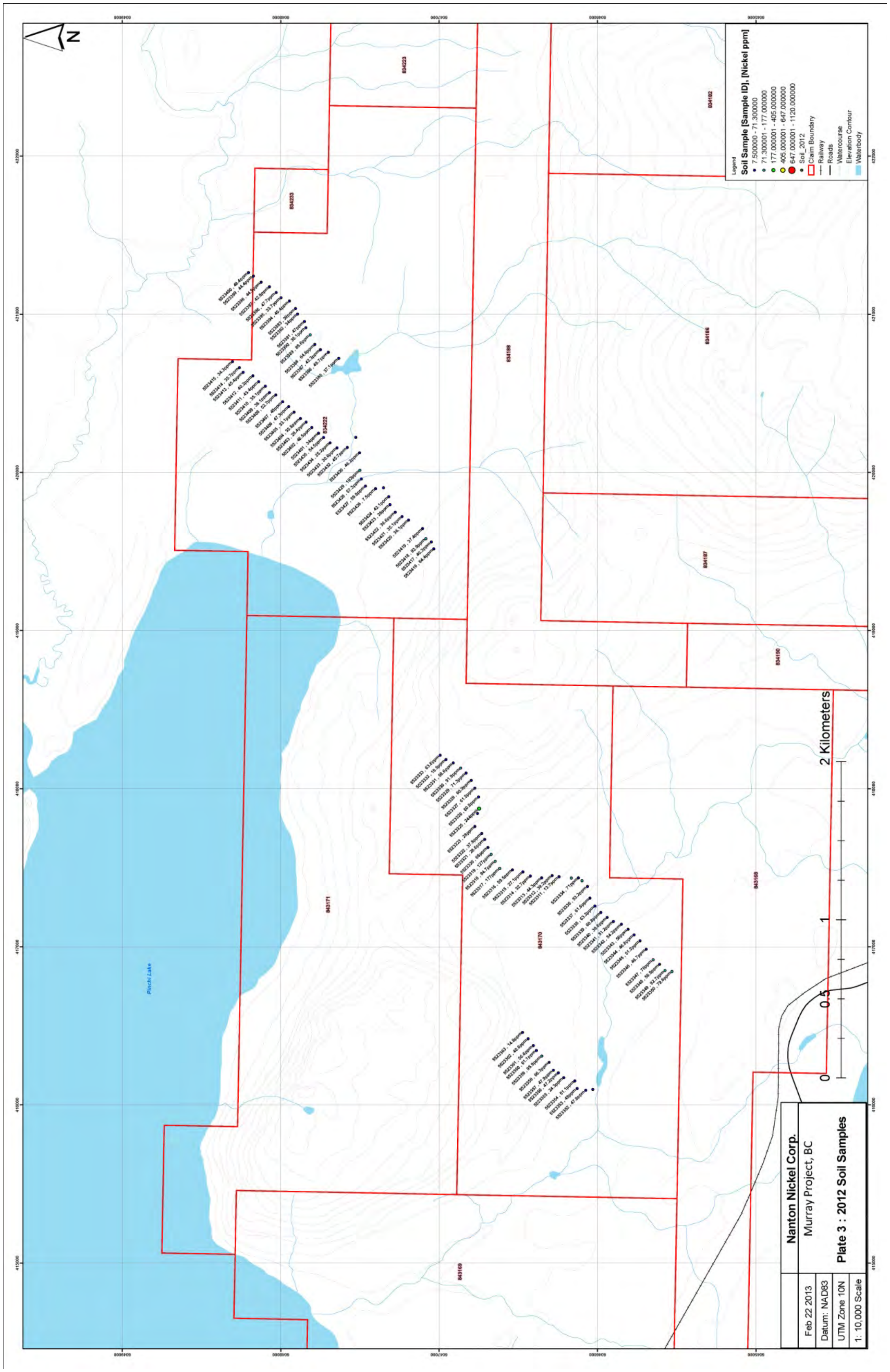
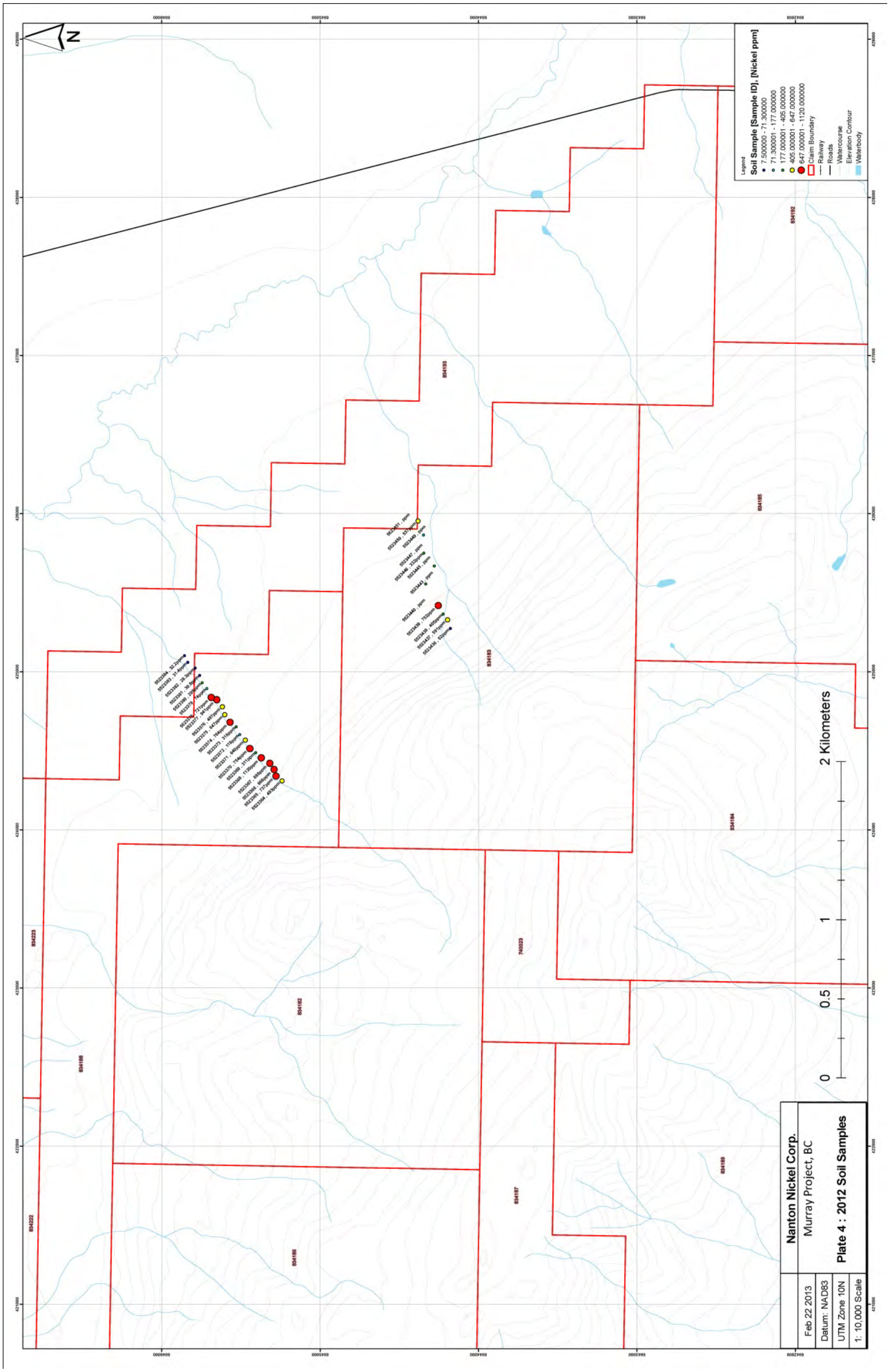
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
Rock Station
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody
Pinchi Lake
2 Kilometers
0
0.5
1
Nanton Nickel Corp.
Murray Project, BC
Plate 3 : 2012 Rock Samples
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale


Nanton Nickel Corp.
Murray Project, BC
Plate 4 : 2012 Rock Samples
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
0 0.5 1 2 Kilometers
Legend
[Sample ID], [Nickel ppm]
Rock Station
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody
5523094 , 1900ppm
5523095 , 1810ppm


Nanton Nickel Corp.
Murray Project, BC
Plate 3 : 2012 Soil Samples
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
2 Kilometers
Soil Sample [Sample ID], [Nickel ppm]
Claim Boundary
Railway
Roads
Watercourse
Elevation Contour
Waterbody


Nanton Nickel Corp.
Murray Project, BC
Plate 4 : 2012 Soil Samples
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
0
0.5
1
2 Kilometers
Soil Sample [Sample ID], [Nickel ppm]
Claim Boundary
Railway
Roads
Watercourse
Elevation Contour
Waterbody
N


N
Tezzeron Lake
Yatzutzin Lake
Tsetoyank'ut Lake
Pinchi Lake
Stuart Lake
Plate 1
Plate 2
Plate 3
Plate 4
1009582
897772
1009602
843184
897773
843183
1009643
1009482
897589
843172
sp1
843173
843182
1009502
1009542
843185
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843171
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834233
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843169
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834188
843168
834186
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843167
834193
834183
740023
843166
843165
834187
834190
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843143
843142
834192
843162
834191
0
1.5
3
6 Kilometers
Legend
AssessmentPlates
Ni_ppm
9.500000 - 119.000000
119.000001 - 589.000000
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
SkyPerrault_Rock_2012
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody
Nanton Nickel Corp.
Murray Project, BC
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 50,000 Scale
1:10,000 Sampling Plates

N
1009582
1009602
1009643
897772
897773
843183
843184
843172
843173
843182
897589
1009482
5523102 , 2000ppm
5523101 , 2010ppm
5523100 , 1770ppm
5523103 , 2000ppm
5523099 , 42.6ppm
5523098 , 119ppm
5523097 , 84ppm
5523096 , 1400ppm
Legend
[Sample ID], [Nickel ppm]
9.500000 - 119.000000
119.000001 - 589.000000
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody
0
0.5
1
2 Kilometers
Nanton Nickel Corp.
Feb 22 2013
Murray Project, BC
Datum: NAD83
UTM Zone 10N
Plate 1 : 2012 Rock Samples
1: 10,000 Scale
399000
400000
401000
402000
403000
404000
405000
406000
407000
6060000
6059000
6058000
6057000
6056000

Nanton Nickel Corp.
Murray Project, BC
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
Plate 2 : 2012 Rock Samples
0
0.5
1
2 Kilometers
N
843166
843167
843168
843165
834187
834190
843143
843142
5523071 , 1730ppm
5523070 , 1640ppm
5523069 , 1560ppm
5523068 , 1680ppm
5523067 , 1730ppm
5523066 , 1760ppm
5523072 , 1840ppm
5523073 , 1660ppm
5523080 , 1870ppm
5523079 , 1130ppm
5523078 , 1960ppm
5523077 , 1560ppm
5523076 , 1710ppm
5523060 , 1590ppm
5523061 , 1750ppm
5523062 , 589ppm
5523063 , 1440ppm
5523064 , 1630ppm
5523065 , 1670ppm
Legend
[Sample ID], [Nickel ppm]
9.500000 - 119.000000
119.000001 - 589.000000
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody

	Nanton Nickel Corp.
Feb 22 2013	Murray Project, BC
Datum: NAD83	
UTM Zone 10N	Plate 3 : 2012 Rock Samples
1: 10,000 Scale	

Nanton Nickel Corp.
Murray Project, BC
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
Plate 4 : 2012 Rock Samples
0
0.5
1
2 Kilometers
N
Legend
[Sample ID], [Nickel ppm]
9.500000 - 119.000000
119.000001 - 589.000000
589.000001 - 1440.000000
1440.000001 - 1790.000000
1790.000001 - 2010.000000
Rock Station
Claim_Polygon
Railway
Roads
Watercourse
Elevation Contour
Waterbody
5523094 , 1900ppm
5523095 , 1810ppm
834222
834223
834188
834186
834182
834183
834193
834187
740023
834189
834184
834185
834192
sp2
sp3
sp4
sp5
sp6
sp7
sp8
sp9
sp10
sp11
sp12
sp13
sp15
sp16
sp17
sp18
sp19
421000
422000
423000
424000
425000
426000
427000
428000
429000
6046000
6045000
6044000
6043000
6042000

Nanton Nickel Corp.
Murray Project, BC
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
Plate 3 : 2012 Soil Samples
0
0.5
1
2 Kilometers
N
Pinchi Lake
843171
843169
843170
843168
834222
834233
834223
834188
834187
834186
834182
834190
Legend
Soil Sample [Sample ID], [Nickel ppm]
7.500000 - 71.300000
71.300001 - 177.000000
177.000001 - 405.000000
405.000001 - 647.000000
647.000001 - 1120.000000
Soil_2012
Claim Boundary
Railway
Roads
Watercourse
Elevation Contour
Waterbody


Nanton Nickel Corp.
Murray Project, BC
Feb 22 2013
Datum: NAD83
UTM Zone 10N
1: 10,000 Scale
Plate 4 : 2012 Soil Samples
0
0.5
1
2 Kilometers
N
Legend
Soil Sample [Sample ID], [Nickel ppm]
7.500000 - 71.300000
71.300001 - 177.000000
177.000001 - 405.000000
405.000001 - 647.000000
647.000001 - 1120.000000
Claim Boundary
Railway
Roads
Watercourse
Elevation Contour
Waterbody
834222
834223
834188
834186
834182
834193
834183
834187
740023
834189
834184
834185
834192
421000
422000
423000
424000
425000
426000
427000
428000
429000