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N.T.S. 32D05J

REPORT ON HEAVY MINERAL SAMPLING AND ELECTRON MICROPROBE ANALYSES OF MINERAL GRAINS TAKEN FROM A CREEK LOCATED IN CELL 32D05G360: MINING CLAIM 555168

SZ PROPERTY
BEN NEVIS TOWNSHIP, ONTARIO

LARDER LAKE MINING DIVISION

Written by:

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8901 Reily Drive, Mount Brydges, Ontario

January 30, 2020

I N D E X

Summary

This report summarizes the results of a heavy mineral sample collected from a creek in cell 32D05G360 situated in Ben Nevis Township, Ontario. The sample was collected by Jim Chard on June 21, 2019. On the day the sample was collected, the cell was open for staking. The sample was submitted to Robert Dillman for heavy mineral processing and petrographic examination to identify potential kimberlite indicator minerals and other interesting minerals. Minerals selected from the concentrate were submitted to the author, Jim Renaud of RGC Ltd. for electron microprobe determinations. The minerals selected for identification included a small population of bright green grains suspected of being kimberlitic chrome diopside. Based on the presence of these minerals, a decision was made to stake the cell covering the sample site. Upon microprobe analyses however, the green grains were determined to be green Cr-rich garnets of possible kimberlitic origin or related to high-pressure alteration sometimes associated with gold deposits. The silicate and oxide inventory of minerals picked also included: low-Cr clinopyroxene, low-Cr amphibole, crustal ilmenite, olivine, serpentine, almandine garnets, grossular-spessartine-almandine garnets, titanite, magnetite, and epidote. The sulphide inventory consisted of galena and pyrite. The pyrite grains were quite unique as they commonly contained inclusions of a Fe-Ca-Si-W mineral.

Location and Access

Field work for this report was preformed in cell 32D050G360. At the time the heavy mineral sample was collected, this cell was open for staking. As a result of this work. The cell was staked with mining claim 555168 and now is part of the SZ Property.

The SZ Property straddles the intersection on Ben Nevis, Pontiac, Dokis and Tannahill township's in the Larder Lake Mining Division, Ontario. The property is located approximately 27 kilometres north of Larder Lake, Ontario, Canada (Figure 1).

The SZ Property is accessible by truck. It can be reached from the town of Larder Lake by travelling east on Highway 66 for approximately 0.83 km to the intersection of Larder Station – Killamey Road. The southeast corner of the property is crossed by the Larder Station – Killamey Road approximately 35 km north of the intersection with Highway 66.

The north section of the property is also accessible by truck and ATV via logging roads intersecting with the Roscoe Road in Tannahill Township.

Claim Logistics

Figure 2 outlines the extent of the SZ Property. It consists of 24 mining claims comprised of 40 contiguous cells. The property covers an approximate area of 847 hectares.

The property is at a mean elevation of 330 metres above sea level. The elevation ranges 310 to 380 metres. Flat areas are mostly sand covered and void of outcrop. Higher elevations have abundant outcrop and pockets of locally derived glacial till.

Most of the property is forested by a mixture of spruce, balsam and poplar trees. Some areas have been logged in the last 20 years. Some of these areas have been reforested.

All claims forming the SZ Property are equally owned by:

James M. Chard of Cordova, Ontario

Dr. Jim Renaud (author) of London, Ontario

Robert J. Dillman (author) of Mount Brydges, Ontario

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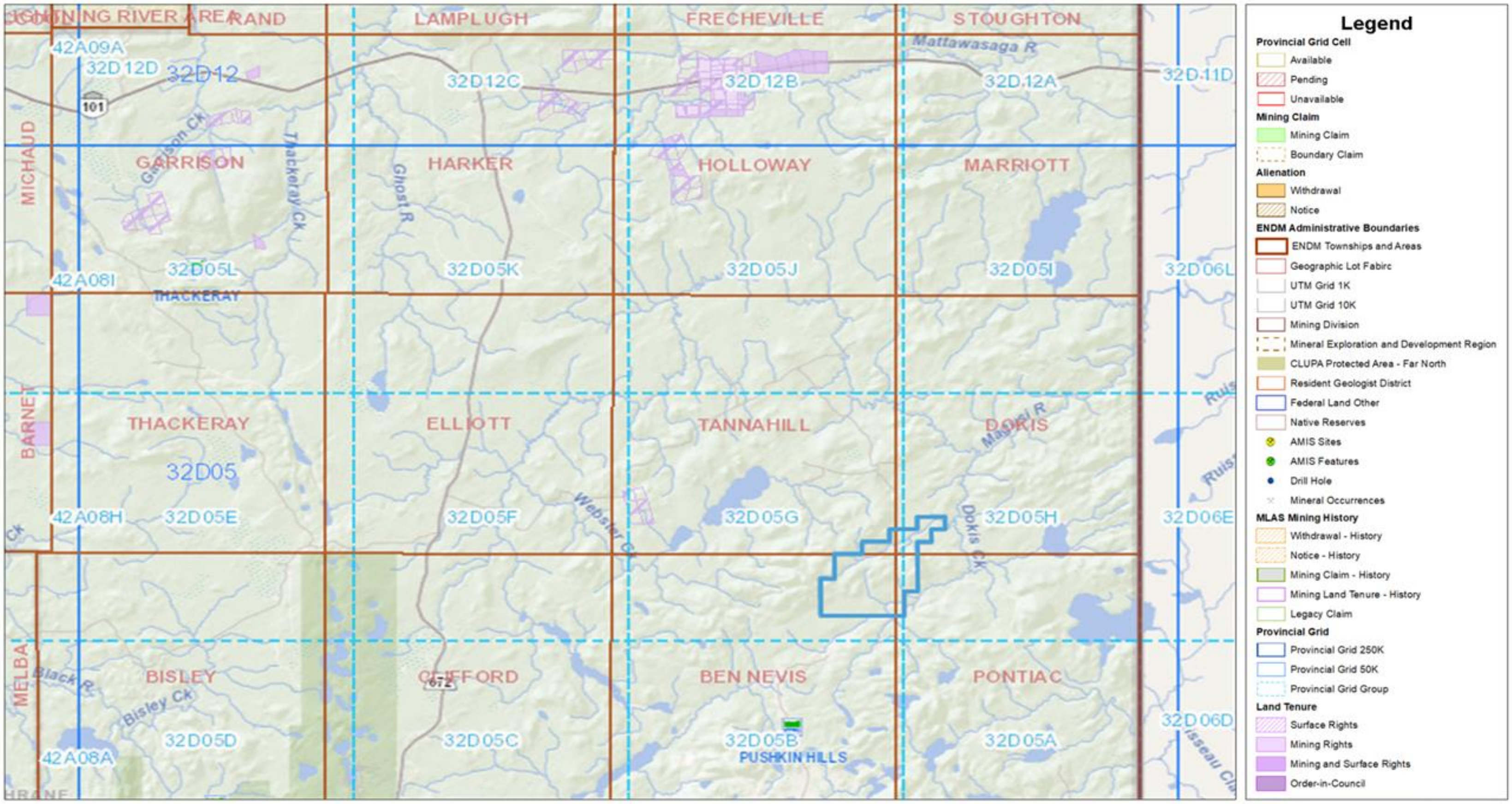
MLAS Map Viewer

Property Location Map

Notes: **Figure 1. SZ Property**



0 9.74 km

Projection: Web Mercator

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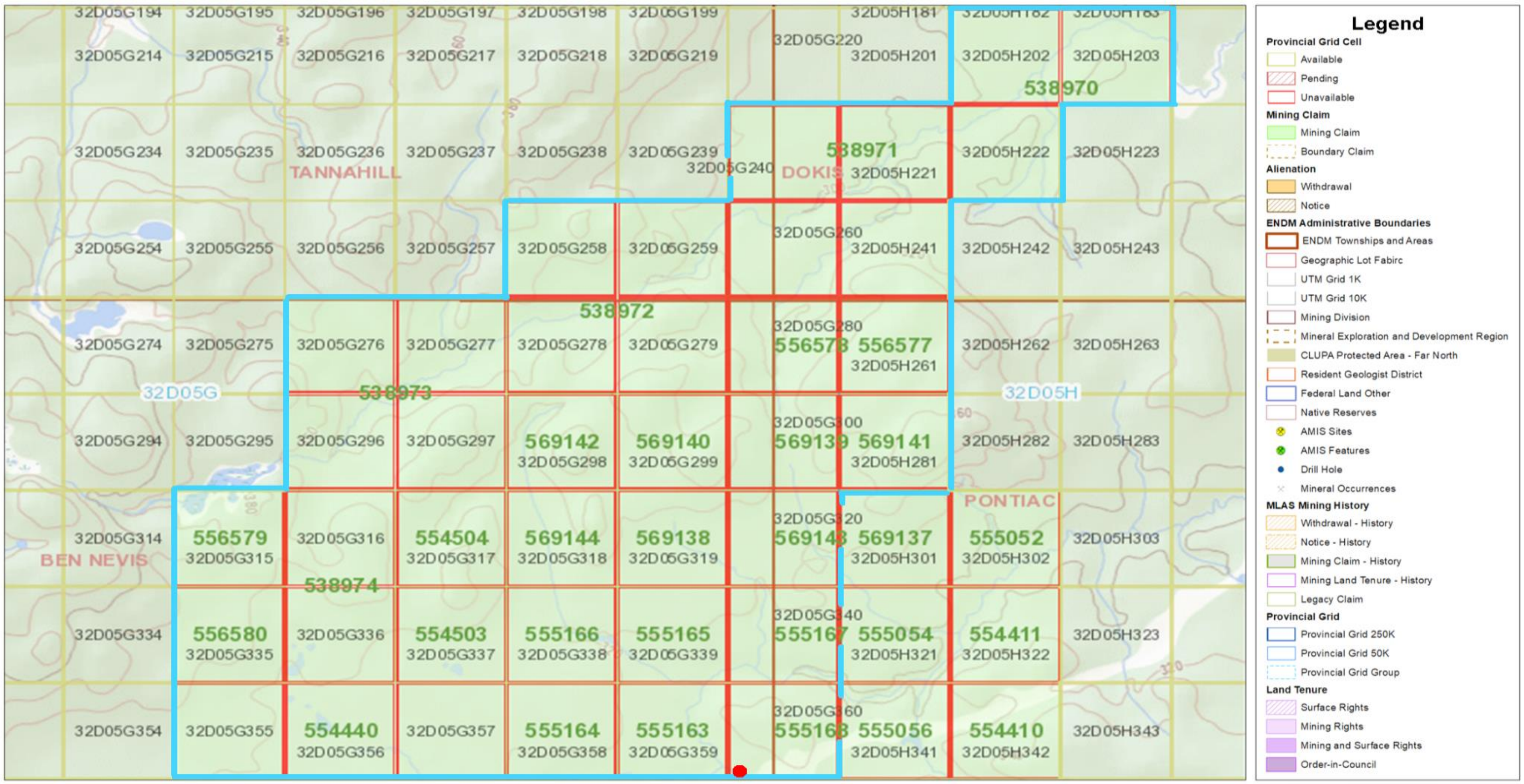
Ontario MINISTRY OF NORTHERN DEVELOPMENT AND MINES
MLAS Map Viewer

SZ Property

Notes: **Figure 2. Claim Map**



0 1.22 km

Location of Work

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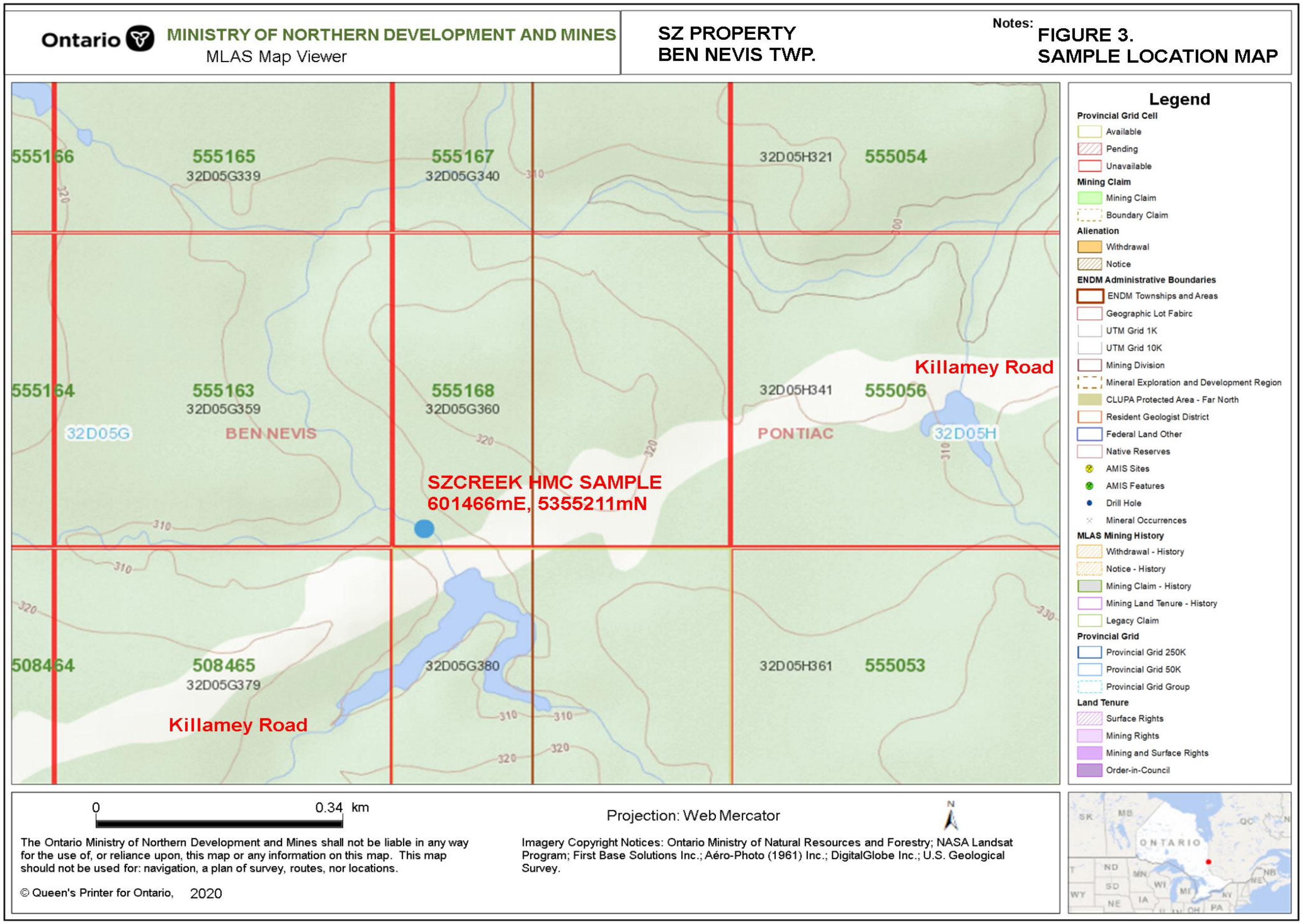

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MLAS Map Viewer
SZ PROPERTY
BEN NEVIS TWP.
Notes:
FIGURE 3.
SAMPLE LOCATION MAP
555166
555165
32D05G339
555167
32D05G340
32D05H321
555054
555164
555163
32D05G359
555168
32D05G360
32D05H341
555056
Killamey Road
32D05G
BEN NEVIS
PONTIAC
32D05H
SZCREEK HMC SAMPLE
601466mE, 5355211mN
508464
508465
32D05G379
32D05G380
32D05H361
555053
Killamey Road
310
320
330
Legend
Provincial Grid Cell
Available
Pending
Unavailable
Mining Claim
Mining Claim
Boundary Claim
Alienation
Withdrawal
Notice
ENDM Administrative Boundaries
ENDM Townships and Areas
Geographic Lot Fabirc
UTM Grid 1K
UTM Grid 10K
Mining Division
Mineral Exploration and Development Region
CLUPA Protected Area - Far North
Resident Geologist District
Federal Land Other
Native Reserves
AMIS Sites
AMIS Features
Drill Hole
Mineral Occurrences
MLAS Mining History
Withdrawal - History
Notice - History
Mining Claim - History
Mining Land Tenure - History
Legacy Claim
Provincial Grid
Provincial Grid 250K
Provincial Grid 50K
Provincial Grid Group
Land Tenure
Surface Rights
Mining Rights
Mining and Surface Rights
Order-in-Council
0
0.34 km
Projection: Web Mercator
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History of Exploration

In 1970, Amax Ltd. completed an airborne magnetometer and electromagnetic survey over northern sections of Ben Nevis Twp. (32D05SE0016)

In 1971, the geology of Clifford and Ben Nevis townships were mapped by L.S. Jenson on behalf of the Ontario Department of Mines. (G.R.132)

In 1973, McIntyre Porcupine Mines Limited completed ground magnetometer and electromagnetic surveys over their claim group in Dokis Township. The northeast section of the SZ Property is covered by part of the geophysical surveys. (32D05SE0025)

In 1974, W.J. Wolfe undertook a geochemical survey on rock samples collected in parts of Ben Nevis and Clifford townships with focus on nickel, copper and zinc. The survey was performed on behalf of the Ontario Division of Mines. (P.915, P.916, P.917)

In 1975, the geology of Pontiac and Ossian townships was mapped by L.S. Jenson on behalf of the Ontario Department of Mines. (G.R.125)

In 1979, the Ontario Geological Survey flew electromagnetic and total intensity magnetic surveys over the Kirkland Lake area which included Ben Nevis (P.2254) and Pontiac (P.2255) townships. The surveys were conducted by fixed-wing aircraft on flight lines spaced 150 metres apart and flown at mean terrain clearance of 400 feet.

In 1986, Walker Exploration Ltd. carried out a ground magnetometer survey over a 21 claim group located in the northeast section of Ben Nevis Twp. The survey was performed on east-west orientated grid lines. The survey was completed on behalf of Lac Minerals Ltd. The west section of the SZ Property covers part of this survey. (32D05SE0043)

In 1988, McAdam Resources Inc. completed ground magnetometer, VLF, Induced Polarization and geological surveys along the Killamey Road. The southeast section of the SZ Property covers some of the area surveyed.

In 1990, Joutel Resources Ltd. flew an airborne survey over the north section of Ben Nevis Twp. The airborne survey included: total magnetics, gradient magnetics, apparent resistivity and VLF – electromagnetics. The surveys were completed by helicopter on flight lines spaced 150 metres apart and flown at a mean terrain clearance of 60 metres. The south section of the SZ Property covers part of the area surveyed. (32D05SE0007)

In 1992, geologist Vital Pearson mapped geology in central and northeast areas of Ben Nevis Twp. His work was performed on behalf of Minnova Inc. The southeast section of SZ Property covers part of the geology survey. (32D05SE0071, 32D05SE0023)

Regional and Property Geology

The SZ Property is situated in Kirkland Lake section of the Abitibi Greenstone Belt. Regionally, the property is situated on the upper limb and close to the axis of a large east-west orientated synclinal structure. The property is underlain by mafic and intermediate metavolcanic units belonging to the Upper Blake River Formation dated 2704 to 2696 Ma. These units consist of basalt, andesite and dacite. Locally, the property has been intruded by Archean felsic intrusive rocks consisting of granodiorite stocks and Proterozoic aged diabase dikes. Structurally, rock units on the property trend northeast-southwest and dip moderate to steeply southeast. The property is crossed by the Kirkland Lake - Murdoch Creek - Kennedy Lake - Fault System. The fault strikes northeast-southwest across the south section of the property. Kimberlites occur in close proximity to this fault in Arnold and Clifford townships.

Survey Dates and Personnel

The SZCREEK Sample was collected by Jim Chard on June 21, 2019. One day was devoted towards sample collection.

The sample was processed for heavy minerals and examined by microscope between July 17 and July 25 by Robert Dillman at his facilities in Mount Brydges, Ontario.

Minerals selected from the heavy mineral concentrate were submitted for mounting and electron microprobe analyses by Dr. Jim Renaud at his facilities in London, Ontario. This work was completed in September 2019.

Survey Logistics

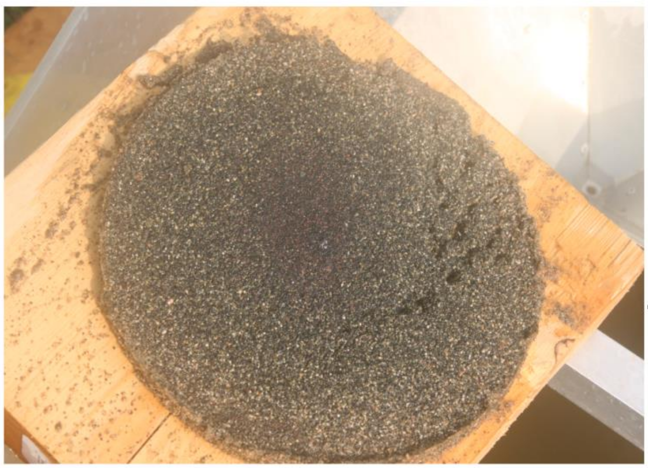
SZCREEK sample was taken in cell 32D05G360, mining claim 555168 at UTM 601466mE, 5355211mN. The sample was collected in a fast-flowing, rocky creek which flows towards the north. Outcrops of mafic metavolcanic rocks are present on the west side of the creek at the sample site. A shovel was used to gather gravel from the bottom of creek. This material was passed through a 1.0 cm mesh screen and collected in a 12.5 litre pall at the site. Approximately 10 litres of gravel was collected.

Heavy minerals were extracted from the gravels using a combination of gravity settling and density liquid techniques (Figure 4). At the lab, the sample was further screened down using a 1.0 mm mesh sieve. The –1.0 mm fraction which passed through the sieve is then fed into a Innex cable jib equipped with a No. 80 Tyler sieve (180 microns). With the jig running, this screen forms a crude heavy mineral concentrate and removes fine silt and clay from the sample. The -1.0 mm heavy mineral concentrate from the jig is dried and magnetite grains, which are ubiquitous in most heavy mineral concentrates are removed using a magnetic tray. The non-magnetic -1.0 mm concentrate is refined to a minimum specific gravity of 2.95 using Lithium Metatungstate, a reusable density liquid designed for sediment separation. The +2.95 sp.g. fraction was examined by binocular microscope for kimberlite indicator minerals and other minerals of interest. A total of 112.7 grams of concentrate was examined and 68 mineral grains were selected for electron microprobe analyses.

The selected grains were organized by mineral species and grain size and mounted on glass slides and polished. The polished sections were carbon coated and examined in transmitted and reflected light with a Zeiss Axioscope petrographic microscope. Samples were examined in detail using RGC's new Oxford Instruments Energy Dispersive System (EDS) on the microprobe and relevant minerals analyzed using the wavelength spectrometers. Backscattered electron detector images of relevant and interesting mineralogical and textural relationships were collected digitally and are appended to this report. The scale bar is located below each backscatter image to help evaluate the grain sizes of the various minerals. All minerals were analyzed using a JEOL JXA 733 electron microprobe equipped with an Oxford Instruments EDS and five wavelength spectrometers. Analyses of clinopyroxene, Cr-amphibole, Pyrope-Almandine garnet, green garnets, olivine/serpentine, and ilmenite are presented at the end of this report as Tables 1-6, respectively.

Screening

Jig



Crude concentrate

Remove magnetite

Lithium Metatungstte 2.95 concentrate

Mineral examinaton

Figure 4. Method of Concentration

Figure 5. JEOL JXA-733 Superprobe equipped with 5 wavelength spectrometers and an Oxford Instruments Xact Energy Dispersive System housed at the laboratory of Renaud Geological Consulting Ltd.

Survey Results

Although the typical kimberlite indicator minerals (pyrope garnet, chrome diopside, picroilmenite, chromite) were not present in the sample, a number of mineral grains were identified which are sometimes associated with kimberlitic intrusions. Table 1. summarizes the picking results from sample SZ Creek. The minerals identified by electron microprobe analysis include: Cr-rich green garnets (uvarovite), Cr-amphibole and pyrope-almandine garnet.

In addition, the heavy mineral concentrate consisted of a small number of cubic and eroded pyrite grains plus a grain of galena. Some of the pyrite grains contain minute inclusions of chalcopyrite, sphalerite and galena.

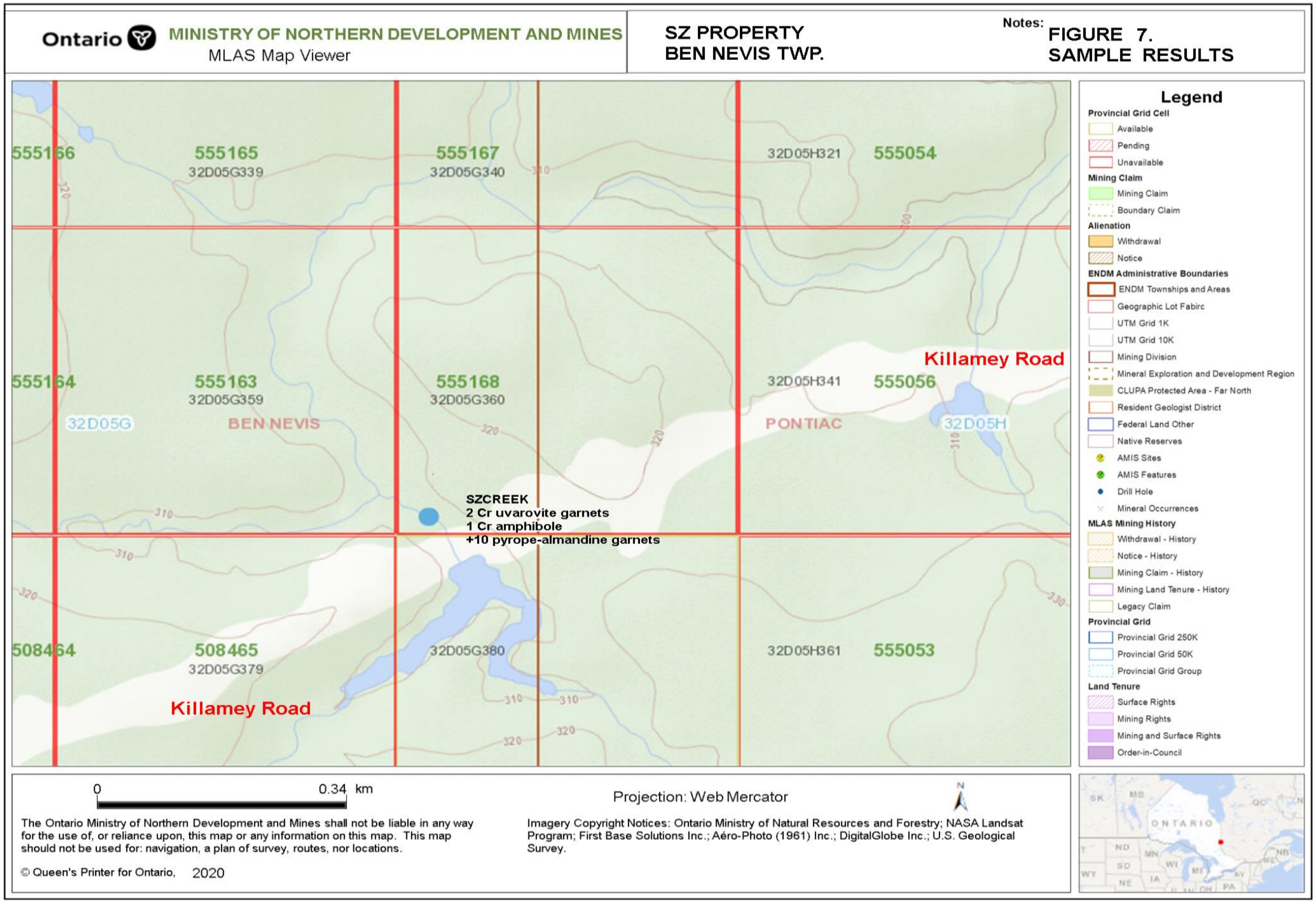
Non-kimberlitic grains identified by the E.D.S. System are appended at the end of this report.

Table 1.

SZCREEK SAMPLE **UTM: 601466mE, 5355211mN**
Amount of concentrate examined: 112.7 g
Amount of magnetite removed: 8.9 g
Total Weight of Concentrate: 121.6 g
Specific Gravity: +2.95 sp.g.

Kimberlite Indicator Minerals				Potential Kimberlite Minerals						
Pyrope	Cr Diop	Mg Ilm	Chr	Cr Uvar	Alm-Pyr	Eclo Garn	Cr Amph	Oliv	Cpx	Notes
--	--	--	--	2	+10	--	1	1?	1?	-lots of epidote -bright green uvarovite garnets, amphibole and clinopyroxene -abundant rounded grains of orange and orange-red garnet

Figure 6.
GPS Location of SZCREEK Sample
601466mE, 5355211mN
SZ Property, Ben Nevis Twp., Ontario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Notes:
FIGURE 7.
SAMPLE RESULTS
555166
555165
32D05G339
555167
32D05G340
32D05H321
555054
555164
555163
32D05G359
555168
32D05G360
32D05H341
555056
32D05G
BEN NEVIS
PONTIAC
32D05H
Killamey Road
SZCREEK
2 Cr uvarovite garnets
1 Cr amphibole
+10 pyrope-almandine garnets
508464
508465
32D05G379
32D05G380
32D05H361
555053
Killamey Road
Legend
Provincial Grid Cell
Available
Pending
Unavailable
Mining Claim
Mining Claim
Boundary Claim
Alienation
Withdrawal
Notice
ENDM Administrative Boundaries
ENDM Townships and Areas
Geographic Lot Fabirc
UTM Grid 1K
UTM Grid 10K
Mining Division
Mineral Exploration and Development Region
CLUPA Protected Area - Far North
Resident Geologist District
Federal Land Other
Native Reserves
AMIS Sites
AMIS Features
Drill Hole
Mineral Occurrences
MLAS Mining History
Withdrawal - History
Notice - History
Mining Claim - History
Mining Land Tenure - History
Legacy Claim
Provincial Grid
Provincial Grid 250K
Provincial Grid 50K
Provincial Grid Group
Land Tenure
Surface Rights
Mining Rights
Mining and Surface Rights
Order-in-Council
0
0.34 km
Projection: Web Mercator
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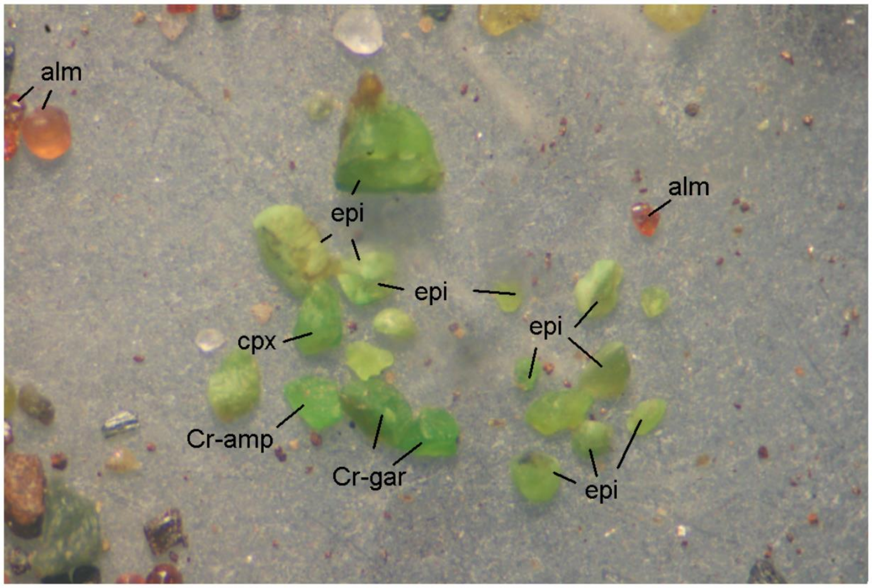


Figure 8a
Green Cr-Garnets
Cr-amphibole
Epidote
Clinopyroxene
Almandine Garnets

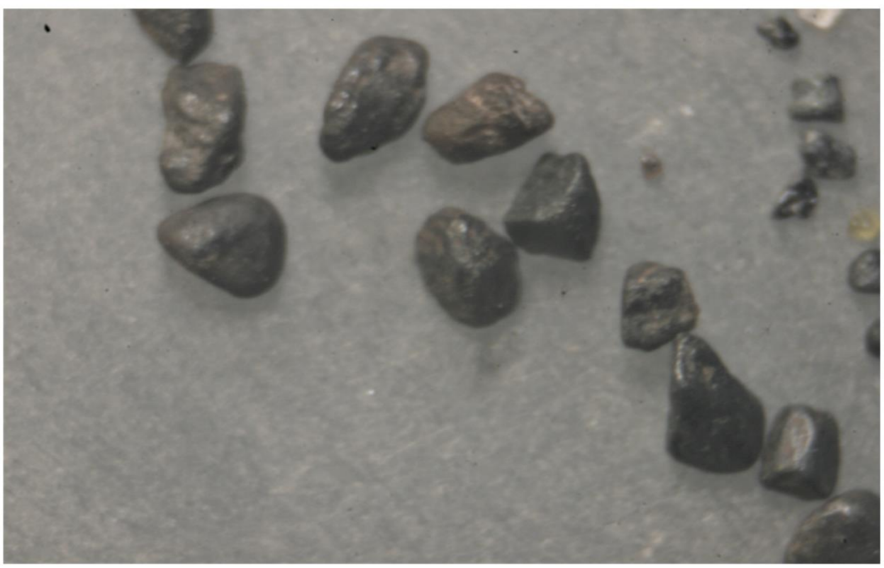
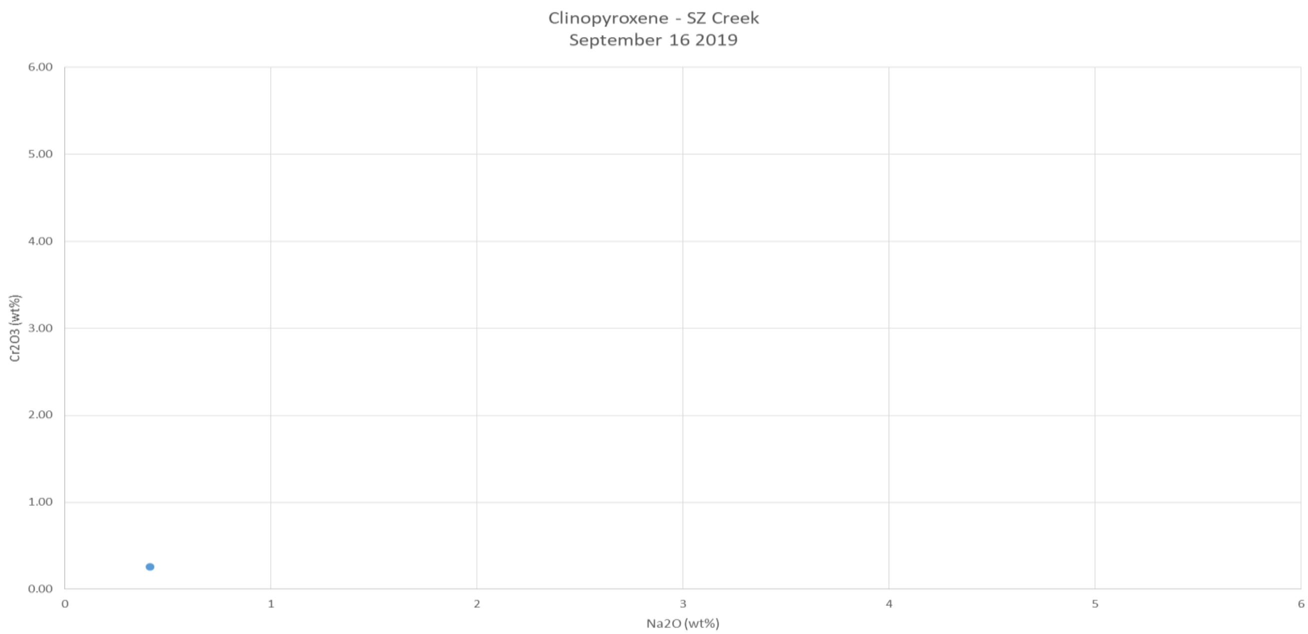


Figure 8b
Ilmenite (crustal)

The results of the microprobe investigation of the kimberlitic indicators are detailed below with corresponding graphs.

Low Cr-clinopyroxene:

There was a single clinopyroxene picked in the heavy mineral concentrate. The analysis is plotted below in terms of sodium versus chrome. The grain is essentially an augite and presumably derived from a mafic gabbroic body or crustal intrusive.



Cr-amphibole:

Although not considered a typical indicator mineral, there was 1 Cr-amphibole grain with a Cr content of 0.47 wt% Cr2O3 and a sodium content of 0.25wt% Na2O. It is important to note that the Cr and Na-enrichment in some amphibole grains may (but not always) point to a mantle origin.

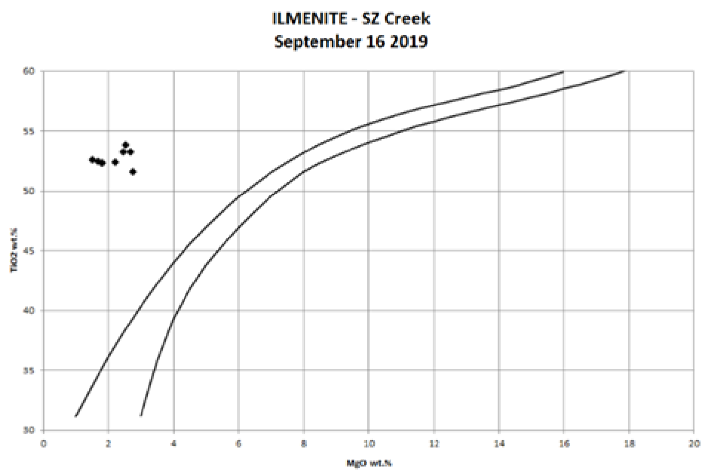
Olivine/Serpentine:

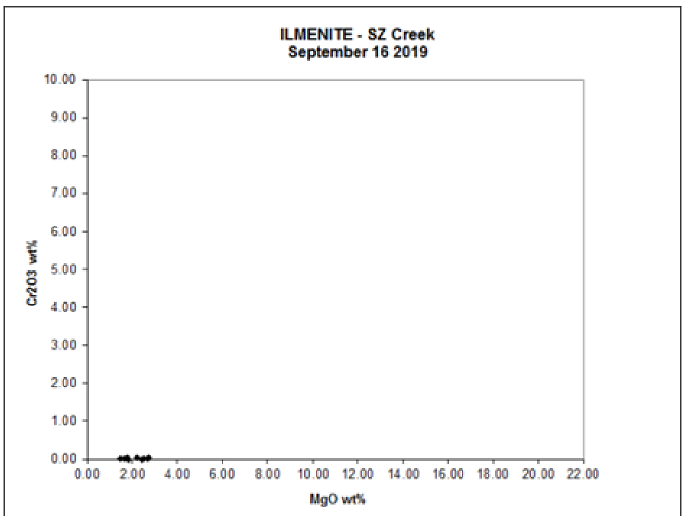
The concentrates contained 4 olivine grains and 1 serpentine grain. The four olivines have a magnesium content ranging between 21.14 and 22.61 Wt% MgO. In general these grains have a Fosterite component of Fo 46.92-48. Nickel contents range between 0.01 and 0.06 wt% NiO. These olivines are not magnesium enough to have been derived from the upper mantle and are likely associated with a gabbroic intrusion in the area.

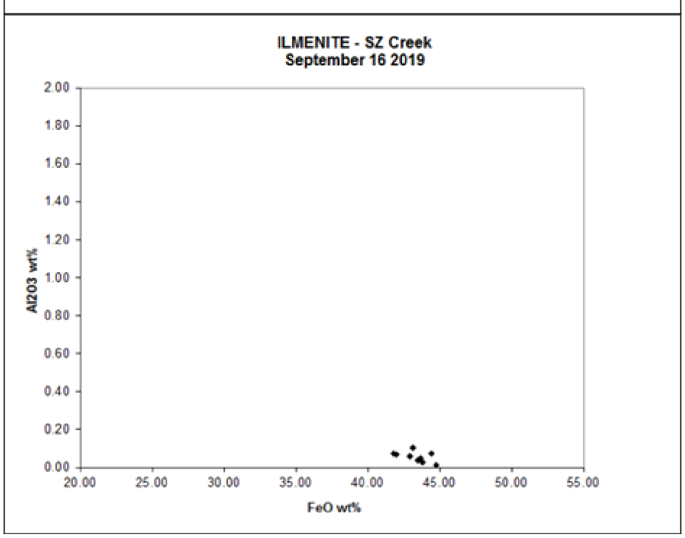
The single serpentine grain is interesting as it contains a magnesium content of 37.68 wt% MgO, a chrome content of 1.02 wt% Cr2O3, and a nickel content of 0.16 wt% NiO. These elevated elemental constituents and a low Fe-content of 3 wt% FeO suggests derivation from a potential ultramafic source like a peridotite or komatiite.

Ilmenite(Figure 8b):

The concentrates contained 9 ilmenites. Microprobe analyses indicate that these ilmenites contain elevated Fe-contents ranging from 41.79-44.75 FeO. The Mg-contents of the grains ranged from 1.49-2.74 wt% MgO and Cr-contents ranged from 0.00-0.04 wt% Cr_2O_3. The high iron contents and low magnesium and chrome contents imply a crustal rather than a mantle source.



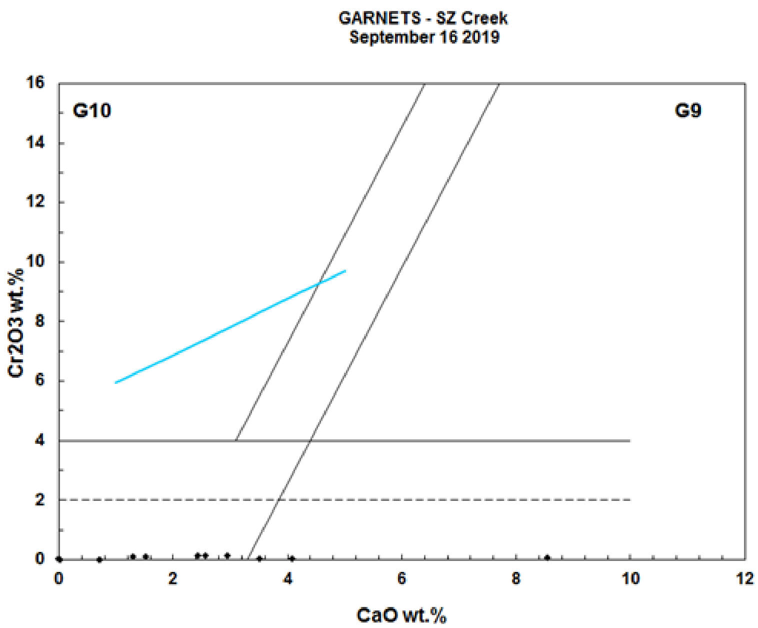




Garnets:

Garnet is a useful tracer mineral for kimberlite prospecting, and garnet color can specifically indicate the presence of typical inclusions of upper mantle material. The most distinctive indicators are Mg- and Cr-rich purple garnets, predominantly derived from upper mantle peridotites. The grains picked from the heavy mineral concentrate consisted of a mixture of grossular-spessartine-almandine solid solution series garnets likely derived from a metamorphic terrane. Interestingly, of all the garnets picked from the heavy mineral concentrate, 9 grains demonstrated an Mg-component with the EDS system and as a result were analyzed by WDS. These grains contained between: 21.55-22.98 wt% Al_2O_3, 24.64-33.15 wt% FeO, 5.33-11.28 wt% MgO, and up to 0.16 wt% Cr_2O_3. End member calculations were completed to illustrate the range of the pyrope-almandine-grossular-spessartine-uvarovite components. These grains illustrate a strong Pyrope-Almandine end-member component with an elevated grossular molecule.

Py	20.092	Py	41.392
Alm	54.551	Alm	50.981
Gro	23.161	Gro	6.751
Sp	2.056	Sp	0.605
Uvar	0.140	Uvar	0.272

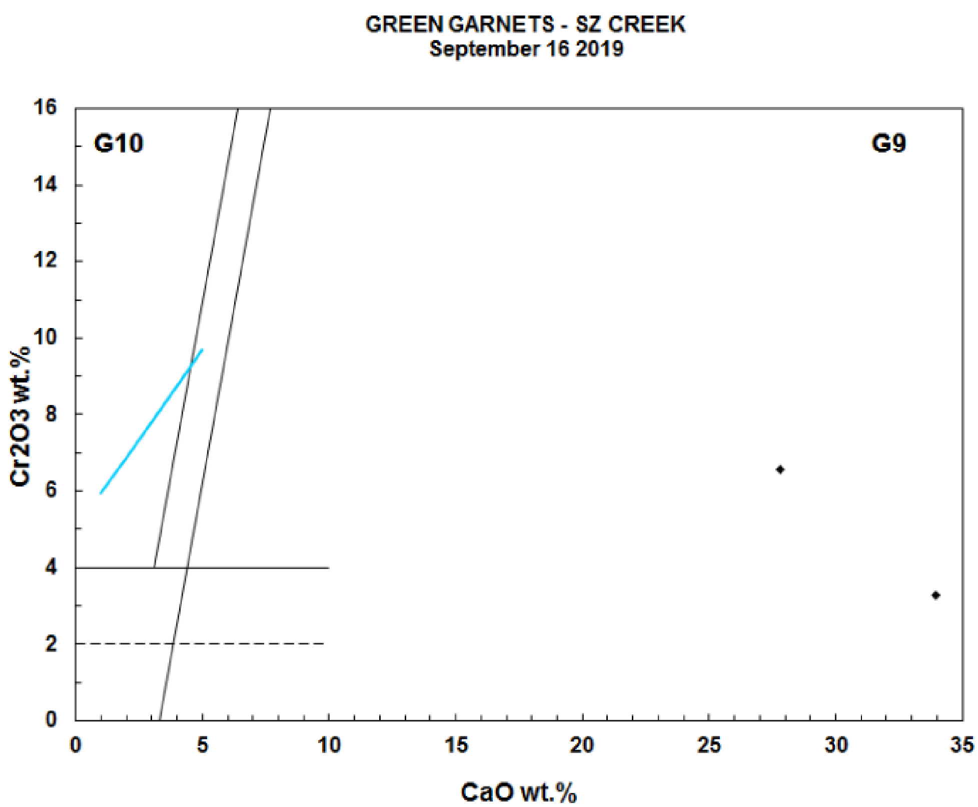


Interestingly, almandine-pyrope inclusions within natural diamond have been described by Sobelev et al. (1971) from the Urals and by Gurney et al. (1979) from the Finsh Pipe, South Africa. These garnets contain an elevated grossular component of about 28% grossular molecule. Experimental evidence from Yoder and Tilley (1962) illustrated that composition of garnet associated with clinopyroxene will become more elevated in Ca with increasing pressure (DHZ pg. 577).

Green Garnets(Figure 8a):

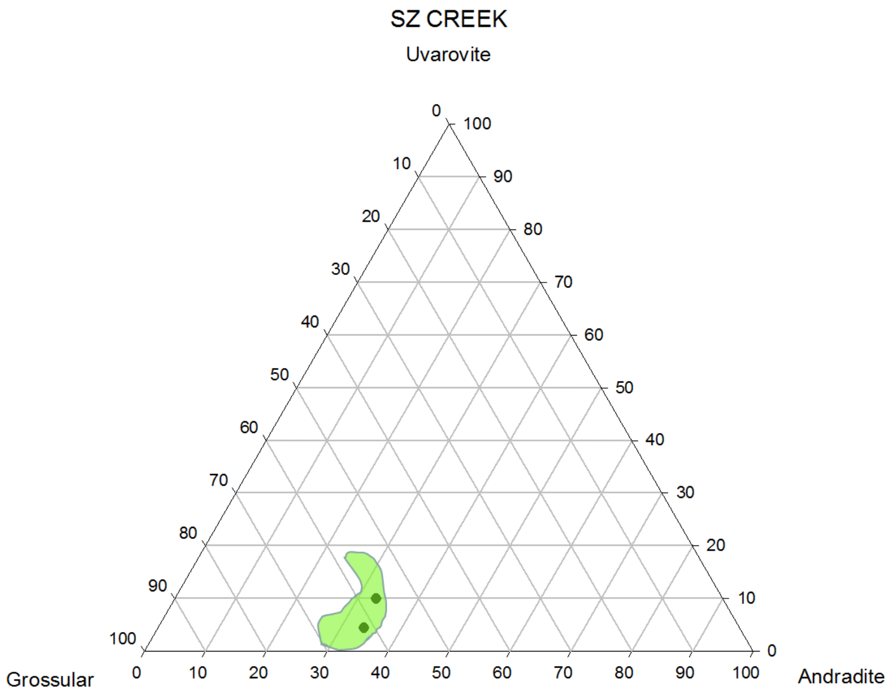
This section describes the unusual occurrence of a Cr-rich grandite garnet and a chromium grossular-pyrope garnet obtained from a creek sample on the SZ claims. The association is downstream of an area with basaltic outcrops exhibiting a magmatic breccia texture, boulders consisting of brecciated fragments of finer-grained basalt, and a geophysical magnetic anomaly covered by overburden. The creek sample contained two such grains. Their compositions are illustrated here.

ANALYSIS	SAMPLE		COMMENTS	SiO2	TiO2	Al2O3	Cr2O3	FeO	MgO	MnO	K2O	CaO	Na2O	TOTAL	Py	Alm	Gross	Spess	Uvar
1	SZ CR (LG) GRAIN 66			35.46	0.24	1.14	3.29	23.95	0.12	0.02	0.04	33.97	0.00	98.22	0.30	33.81	61.45	0.03	4.39
2	SZ CR (LG) GRAIN 67		MAIN GRAIN	35.08	0.54	1.23	6.56	20.69	5.75	0.01	0.02	27.79	0.00	97.68	14.09	28.43	48.93	0.01	8.52



The grains contain 27.79 and 33.97 wt% CaO, 1.14 and 1.23 wt% Al2O3, and 3.29 and 6.56 wt% Cr2O3. According to Dunn (1978), since Cr<Al, these are not considered uvarovites. Pan and Fleet (1989) suggest that low Cr garnets are not uvarovites but rather Cr grandites. Their work on Cr garnets at Hemlo illustrated Cr contents of between 3.84-5.15 wt% Cr2O3. When plotted on a uvarovite-grossular-andradite ternary compositional plane, these low-Cr green garnets plot as grandites (grossular-andradite solid solution with a minor uvarovite molecular component) and define a field specific to Hemlo compositions. The two data points from the SZ creek sample are plotted on the same ternary diagram as Pan and Fleet (1989). The two SZ creek data points fall within the Hemlo field defined in Figure 4 (green field) as Cr-garnet from Hemlo, Canada (Pan and Fleet, 1989; Taguchi et al., 2012).

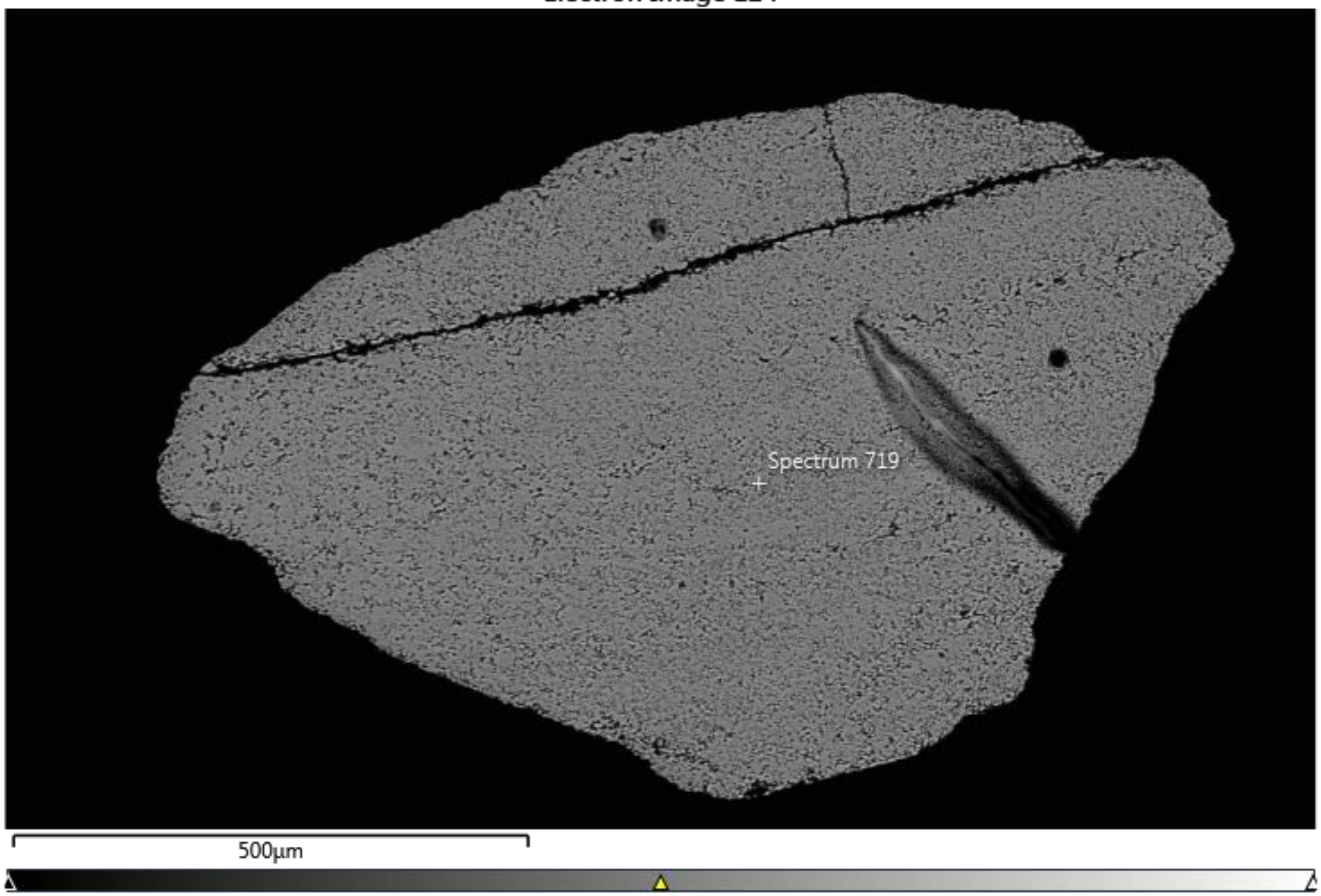
Interestingly, one of the green garnets has a pyrope molecular component making it more of a chromian grossular-pyrope. These types of green garnets are similar to those noted in the kimberlite pipe in Newlands, Cape Province, South Africa.



Garnet ternary plot with a green field defined by Pan and Fleet (1989). The green field defines compositions of green garnet obtained from the Hemlo gold mine. The two green garnets of this current report also plot within the same field.

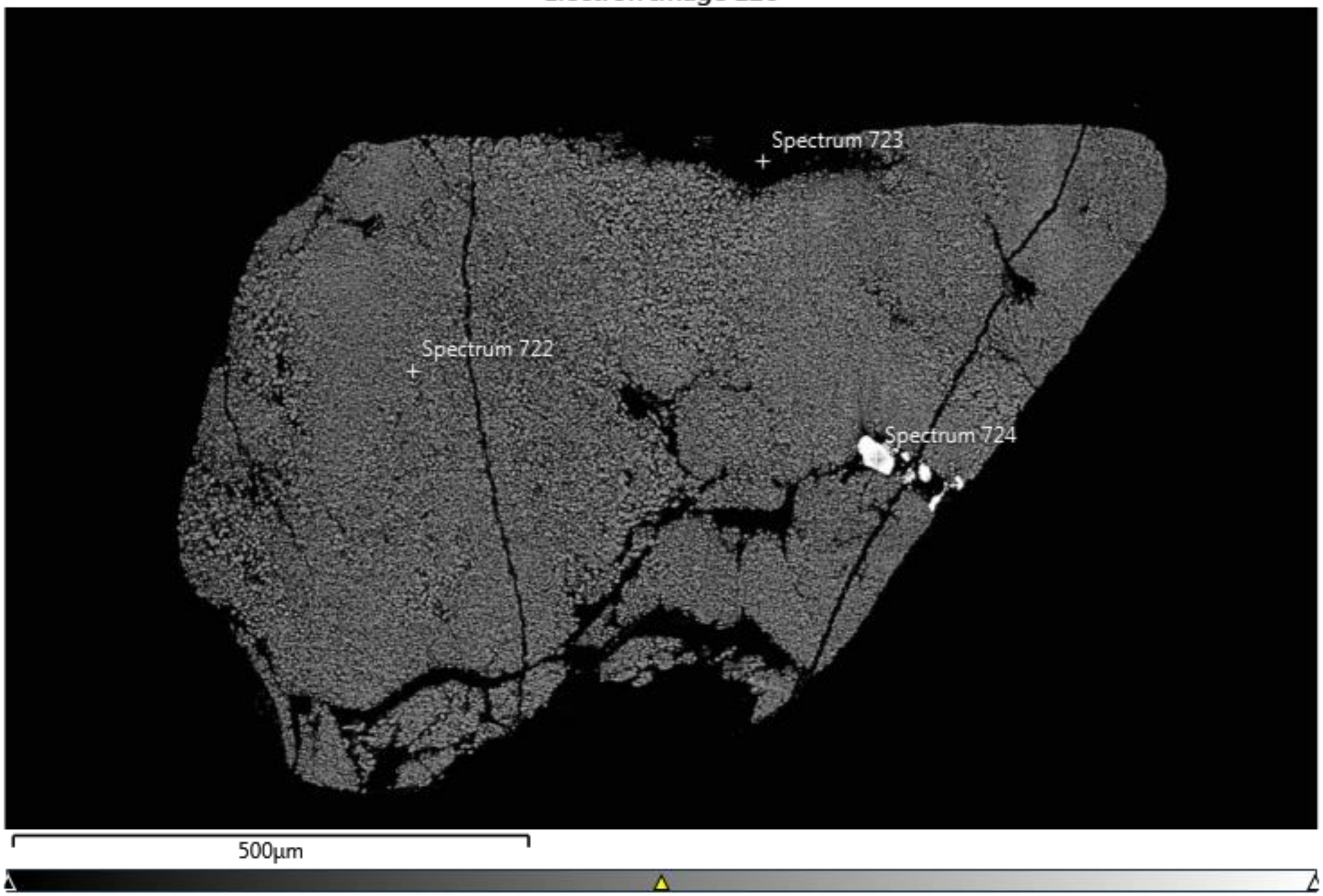
Green Garnet – Grain 66

Electron Image 124



Green Garnet – Grain 67

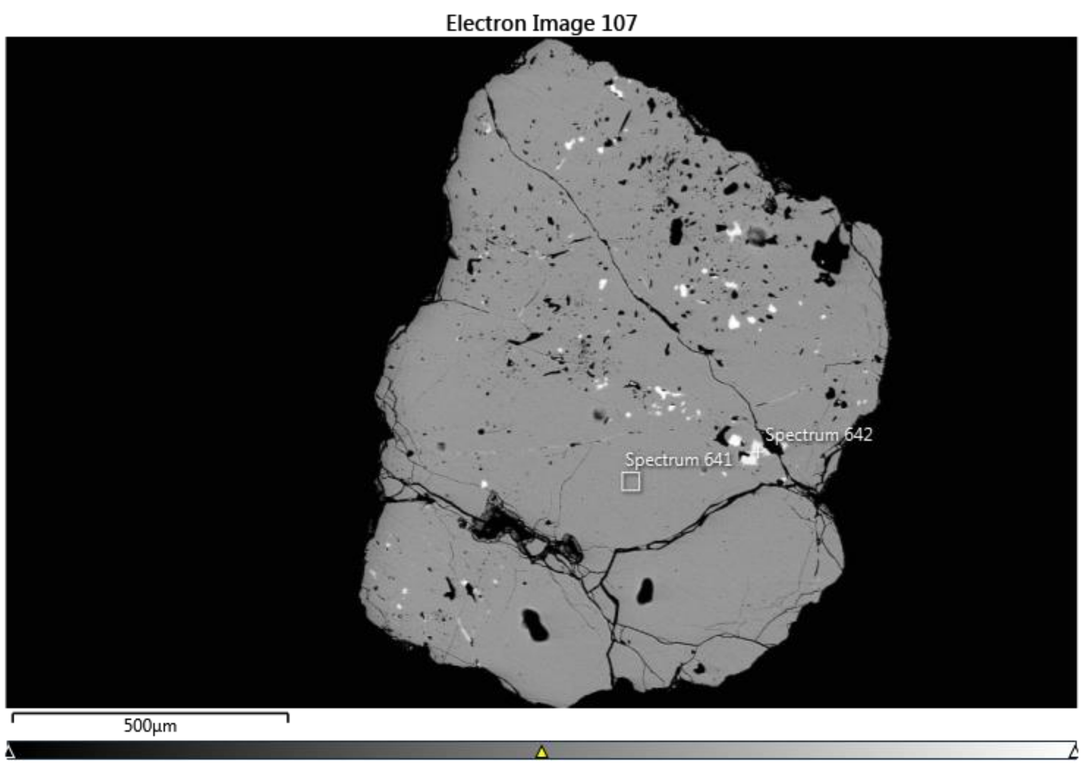
Electron Image 126

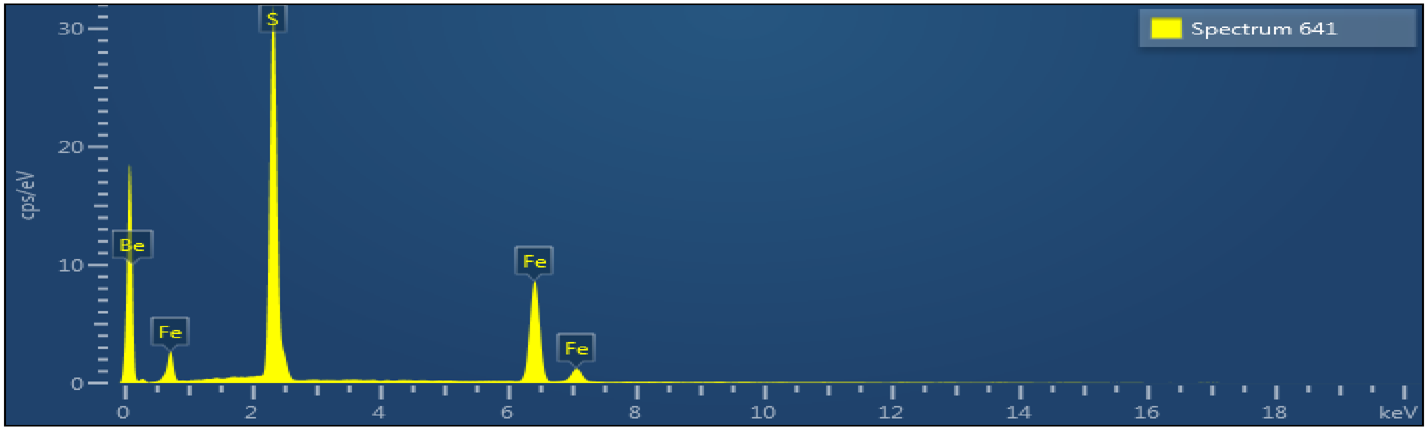


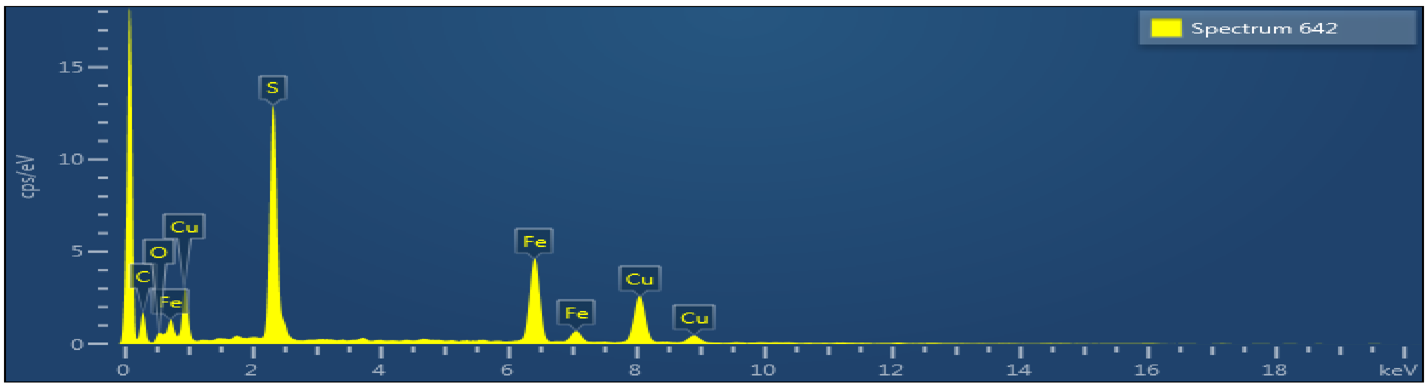
Sulphides:

The sulphide grains picked from the heavy mineral concentrate consisted of pyrite, chalcopyrite, galena and sphalerite. The pyrite grains were most interesting as they commonly contained minute inclusions of chalcopyrite, galena, and sphalerite. Interestingly, the pyrites also contained W-bearing mineral phases. Below are a number of backscatter images illustrating the different sulphides and W-bearing phases. These backscatter images have a scale bar located below the image. Each backscatter image also has a spectrum number corresponding to the EDS spectra display which illustrates the different elemental peaks and corresponding EDS normalized data.

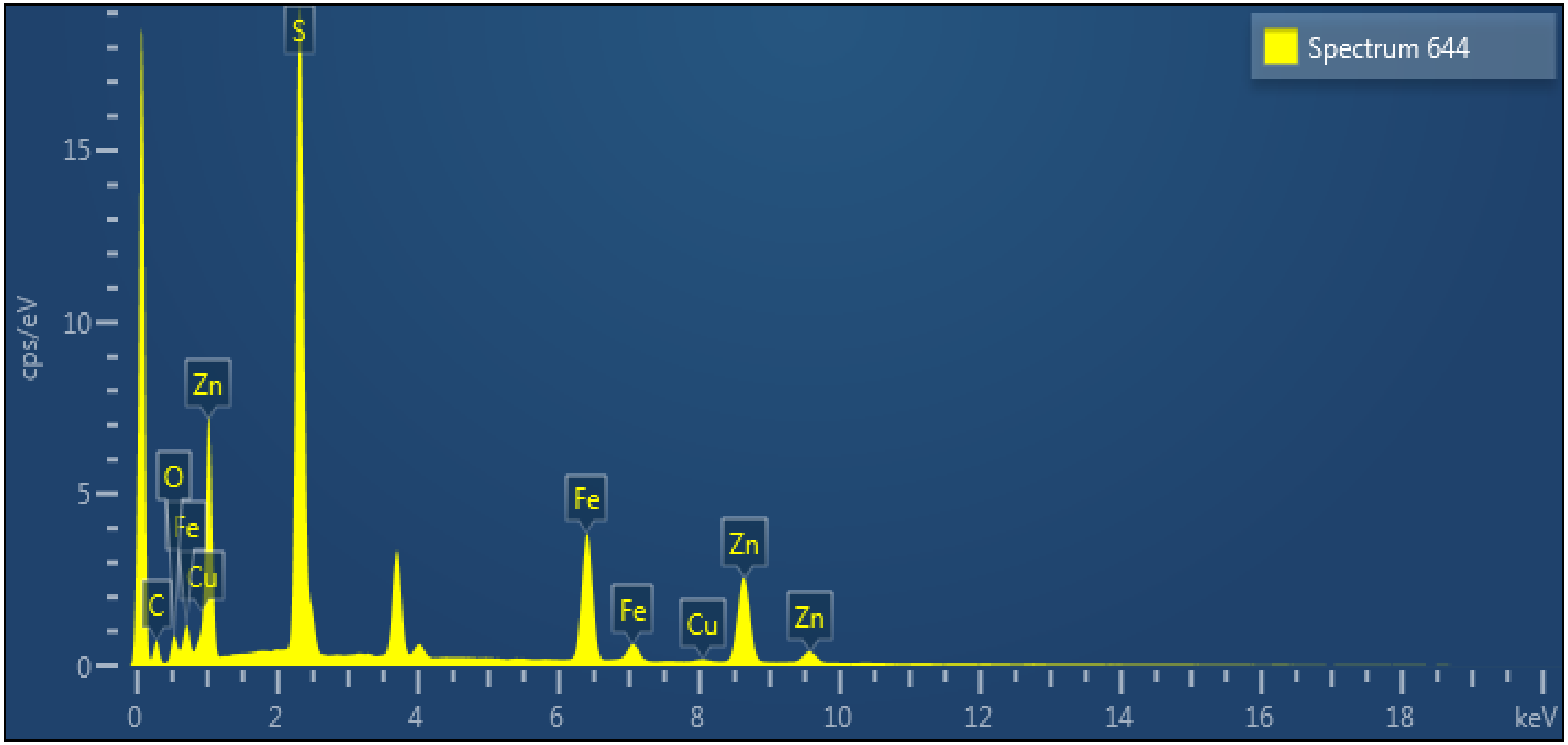
Electron image 107 (Grain 40) illustrates a grain of pyrite with numerous minute inclusions consisting of chalcopyrite, sphalerite, and galena. The spectra of the minute inclusions display some overlap with adjacent minerals due to the very fine-grained nature of the inclusions.



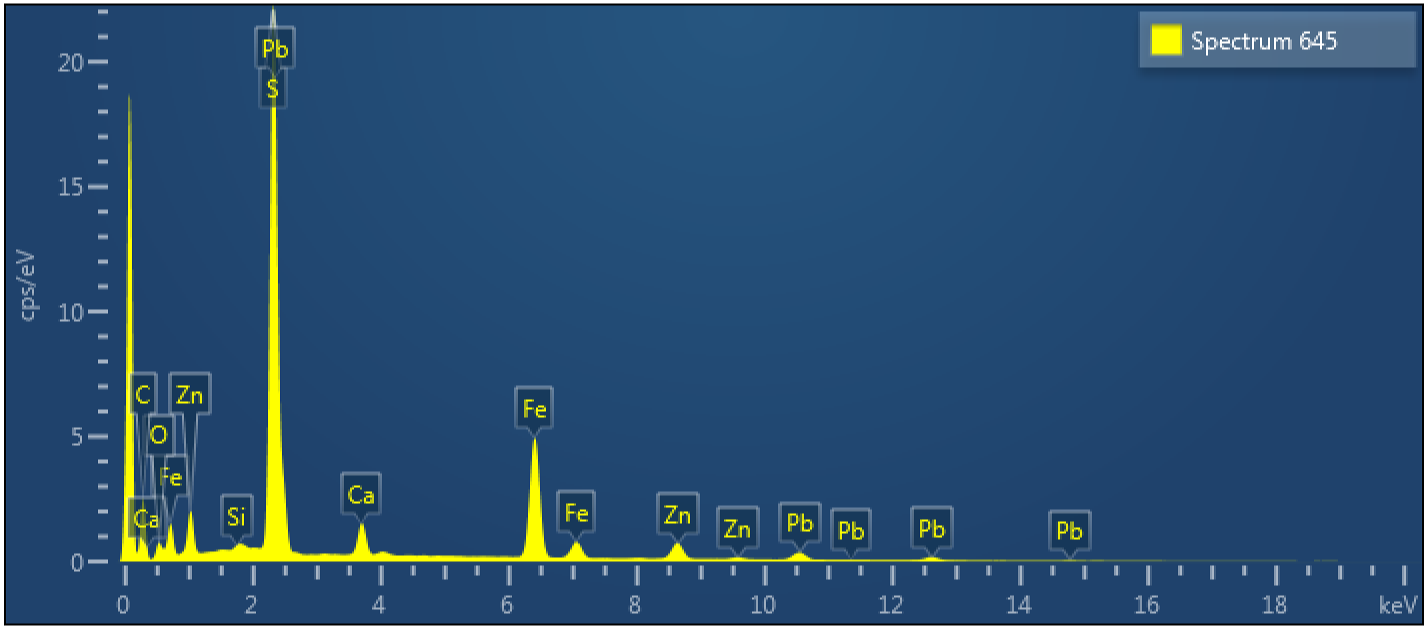




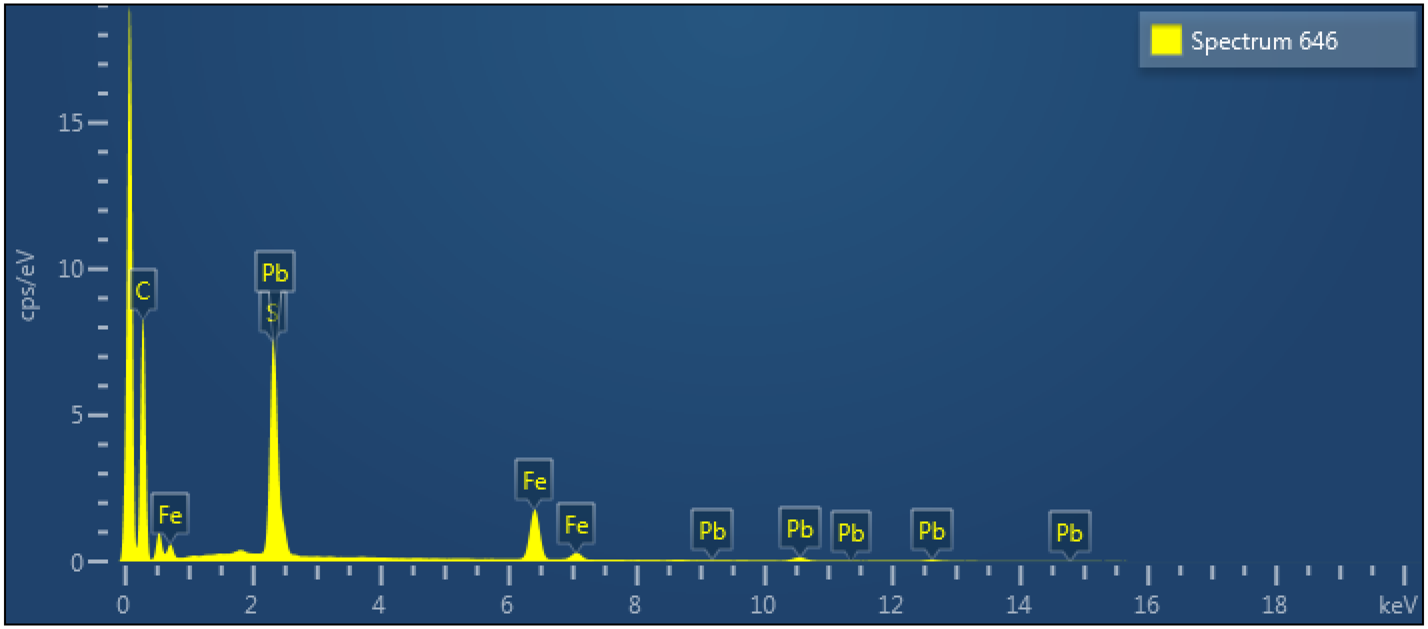
Spectrum 642							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
S	K series	16.78	0.40	14.42	SO3	41.91	1.00
Fe	K series	21.70	0.58	10.70	FeO	27.92	0.74
Cu	K series	24.11	0.77	10.45	CuO	30.18	0.96
O	K series	37.41	0.66	64.42			
Total		100.00		100.00		100.00	



Spectrum 644							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
S	K series	20.20	0.18	16.58	SO3	50.43	0.44
Fe	K series	14.54	0.20	6.85	FeO	18.70	0.26
Zn	K series	24.27	0.33	9.77	ZnO	30.21	0.41
O	K series	40.47	0.28	66.58			
Cu	K series	0.53	0.13	0.22	CuO	0.66	0.16
Total		100.00		100.00		100.00	



Spectrum 645							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	40.54	0.27	67.47			
S	K series	20.95	0.17	17.40	SO3	52.30	0.42
Ca	K series	2.09	0.06	1.39	CaO	2.92	0.08
Fe	K series	20.52	0.20	9.78	FeO	26.39	0.26
Zn	K series	6.38	0.20	2.60	ZnO	7.94	0.25
Pb	M series	9.36	0.39	1.20	PbO	10.08	0.42
Si	K series	0.16	0.03	0.16	SiO2	0.35	0.07
Total		100.00		100.00		100.00	



Spectrum 646							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
S	K series	22.16	0.26	18.40	SO3	55.34	0.64
Fe	K series	24.33	0.32	11.60	FeO	31.30	0.41
Pb	M series	12.40	0.61	1.59	PbO	13.36	0.66
O	K series	41.11	0.40	68.40			
Total		100.00		100.00		100.00	

Magnetite:

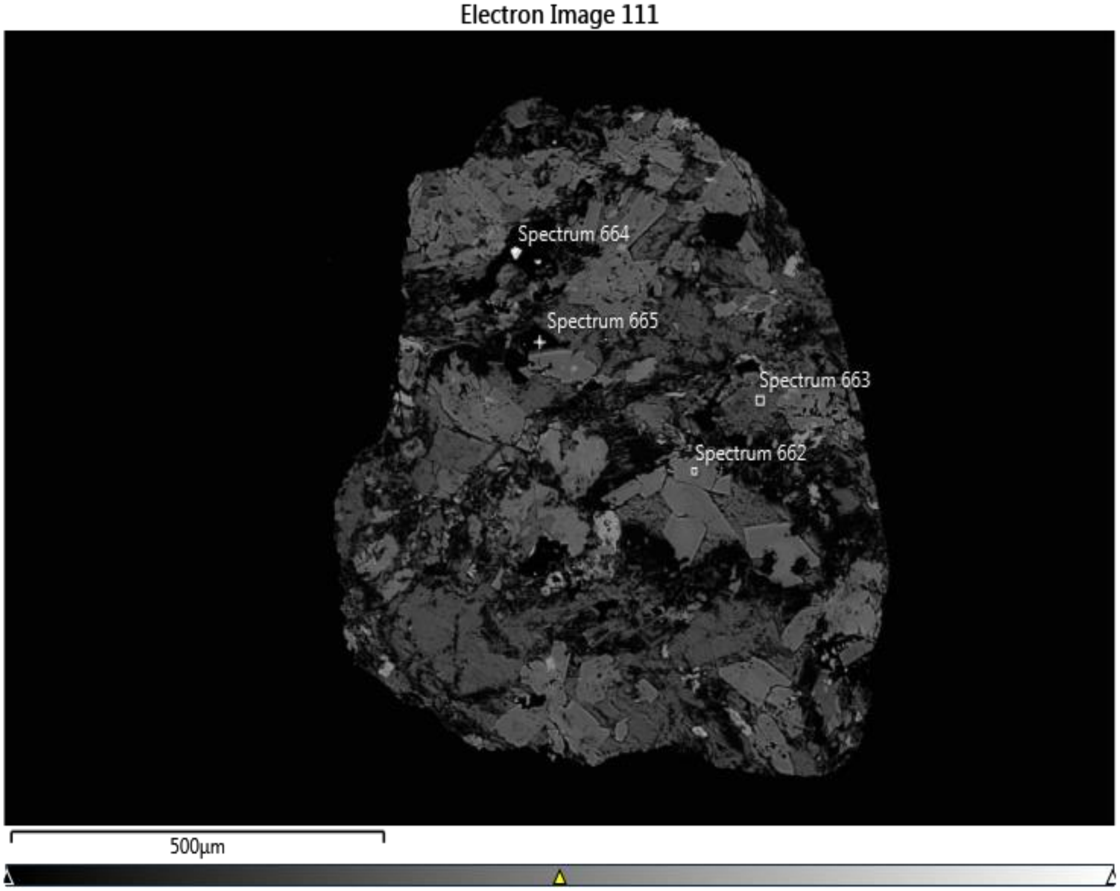
The backscatter images below illustrate some of the common rock fragments encountered during the EDS traverses. These fragments contain an assortment of minerals including vanadiferous magnetite and W-bearing mineral phases.

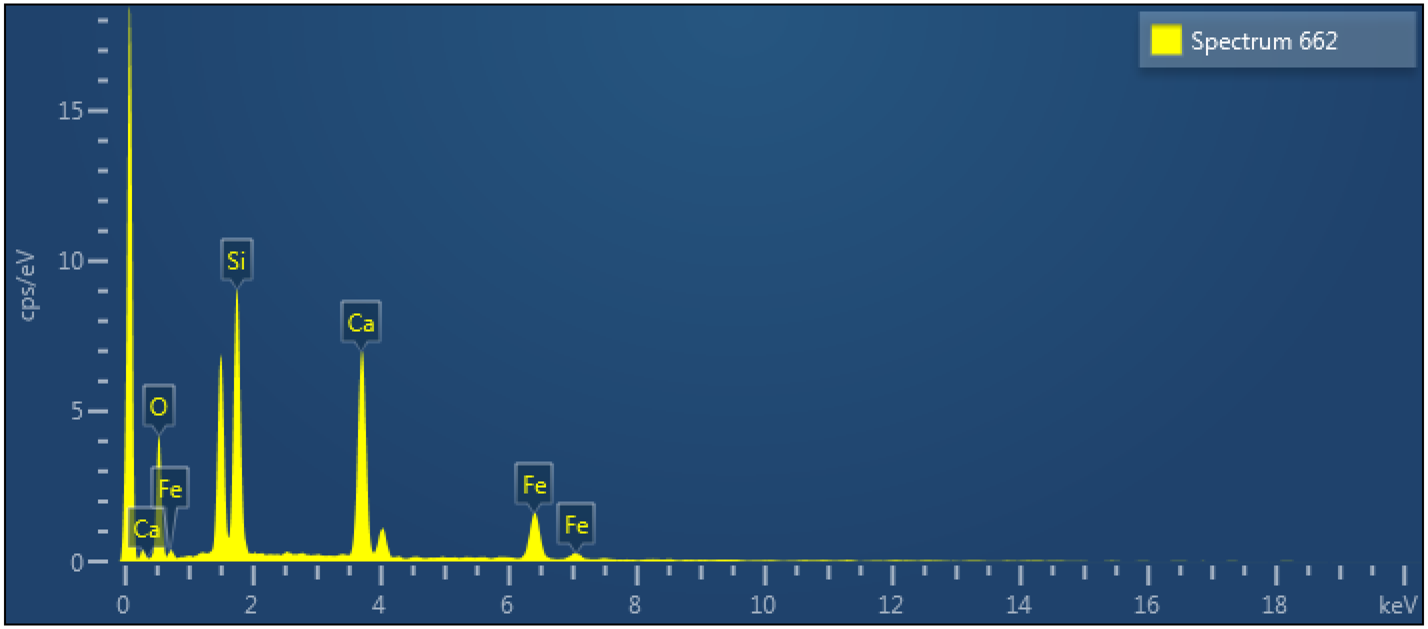
Electron image 111 is a rock fragment consisting of epidote, chlorite, Ti-V-magnetite, and a W-Fe-silicate mineral.

Electron image 112 is a fragment consisting of magnetite and V-magnetite with an Fe-W mineral.

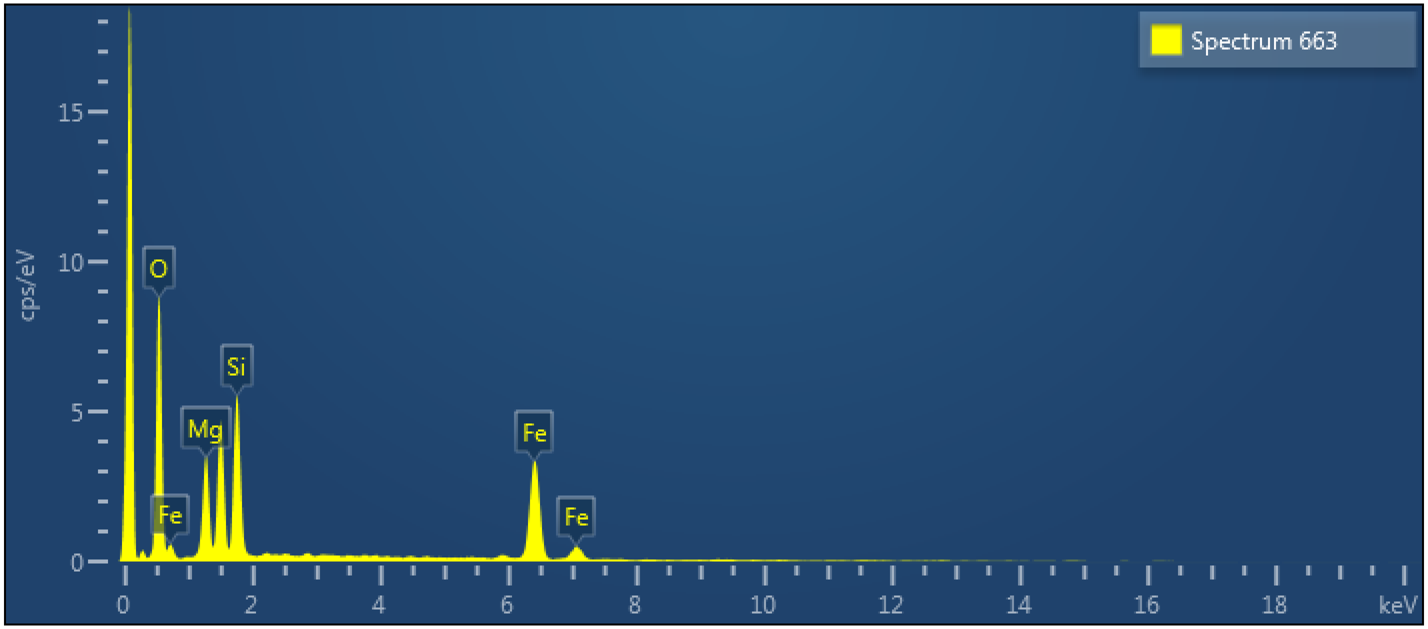
Electron image 115 and 116 (a higher magnification image of an inclusion in image 115) is dominantly a magnetite grain with an inclusion of W-Fe (ferberite).

Electron Image 111

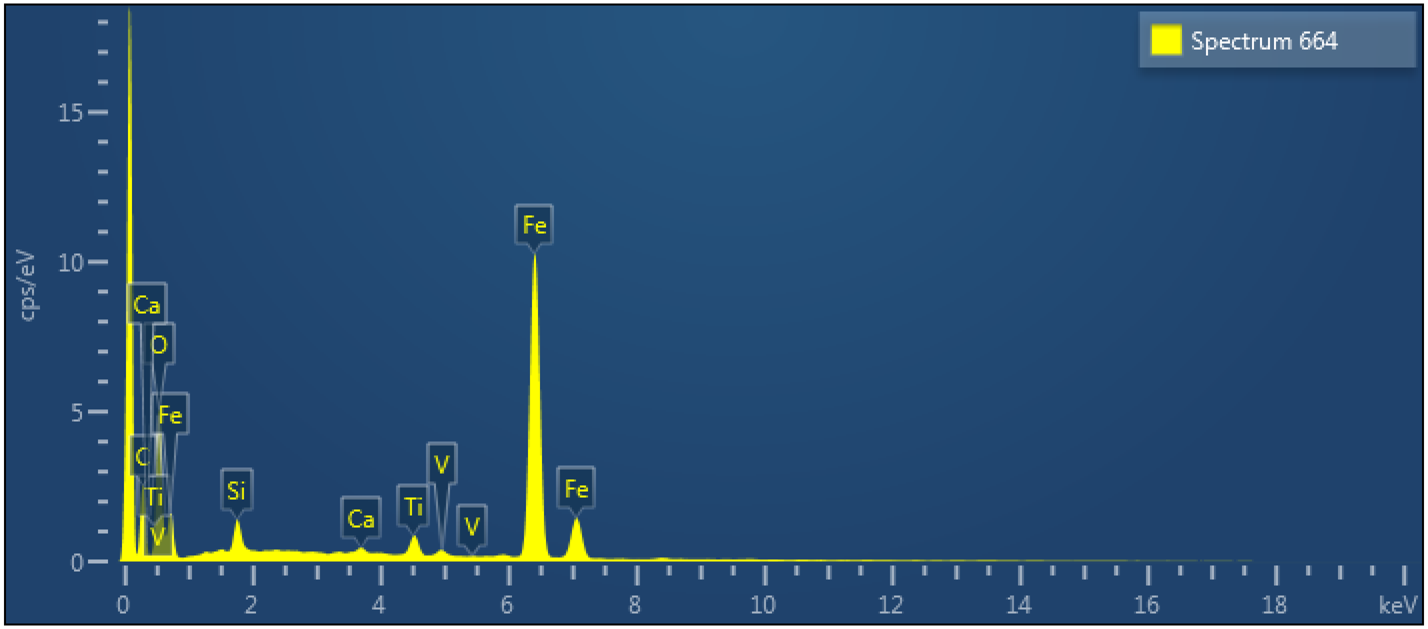




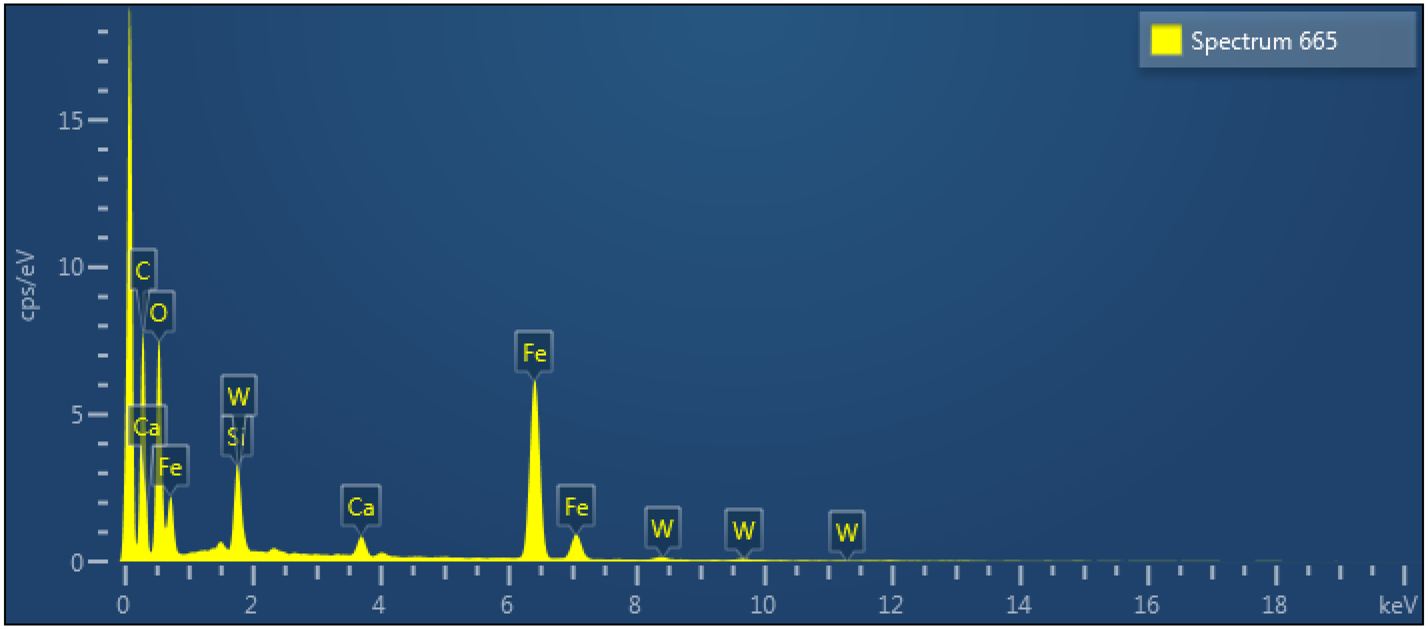
Spectrum 662							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	40.10	0.71	59.28			
Al	K series	11.87	0.44	10.41	Al2O3	22.43	0.82
Si	K series	15.87	0.49	13.36	SiO2	33.95	1.05
Ca	K series	19.98	0.53	11.79	CaO	27.96	0.75
Fe	K series	12.17	0.67	5.16	FeO	15.66	0.87
Total		100.00		100.00		100.00	



Spectrum 663							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	38.25	0.85	57.86			
Mg	K series	8.70	0.50	8.66	MgO	14.43	0.82
Al	K series	11.12	0.52	9.97	Al2O3	21.01	0.98
Si	K series	12.46	0.51	10.74	SiO2	26.66	1.09
Fe	K series	29.46	0.88	12.77	FeO	37.90	1.14
Total		100.00		100.00		100.00	

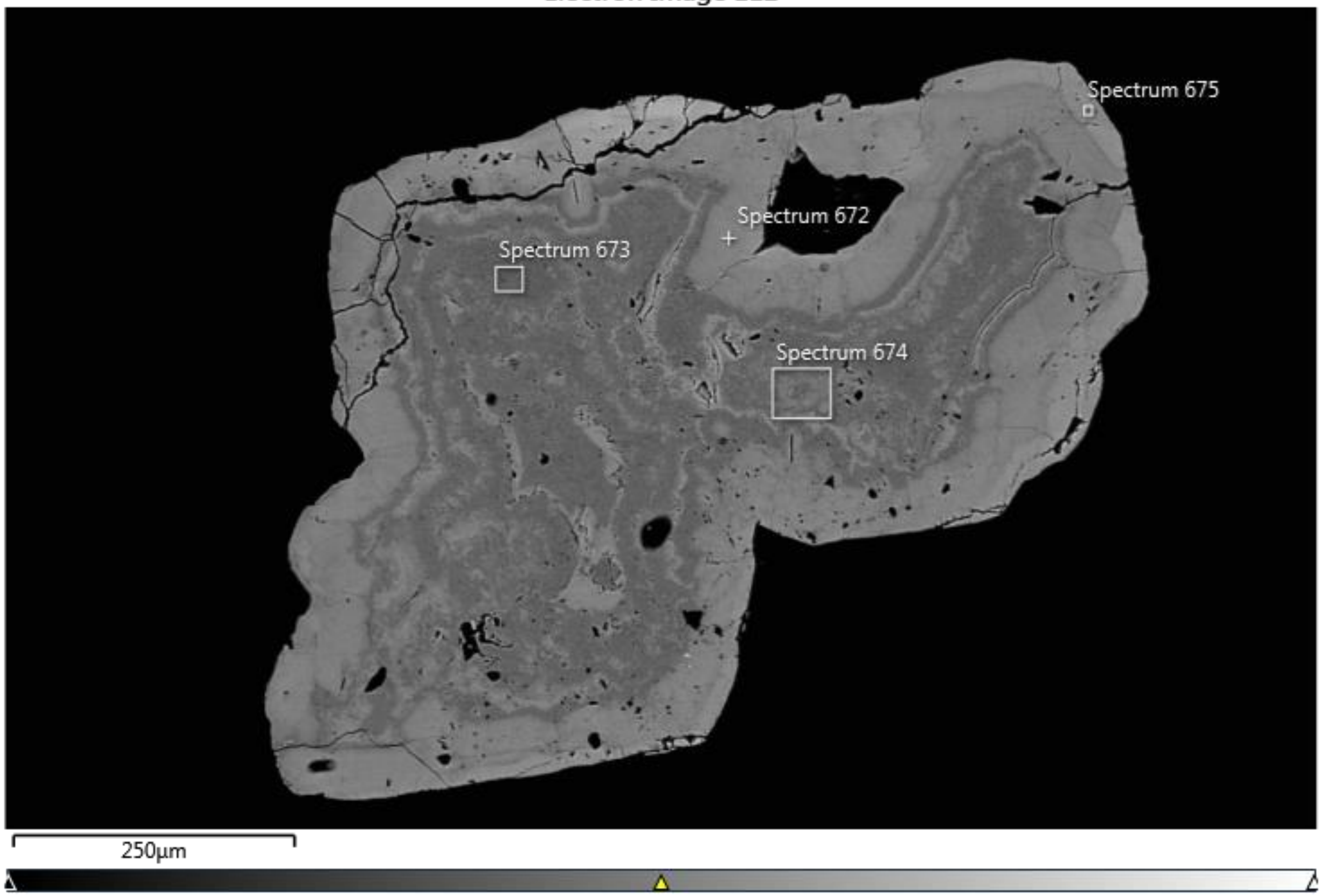


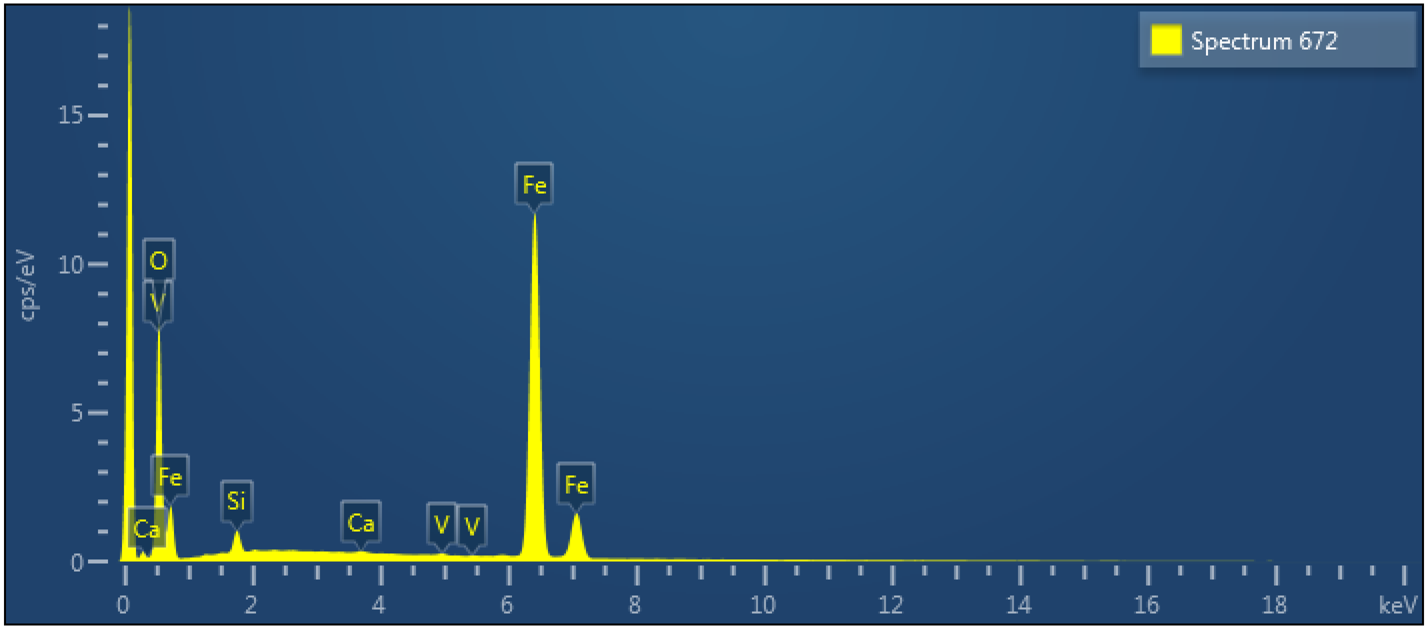
Spectrum 664							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	24.39	0.36	52.16			
Si	K series	1.93	0.12	2.36	SiO2	4.14	0.25
Fe	K series	70.65	0.39	43.28	FeO	90.89	0.50
Ti	K series	2.24	0.13	1.60	TiO2	3.74	0.21
V	K series	0.37	0.11	0.25	V2O5	0.66	0.19
Ca	K series	0.41	0.08	0.35	CaO	0.57	0.11
Total		100.00		100.00		100.00	



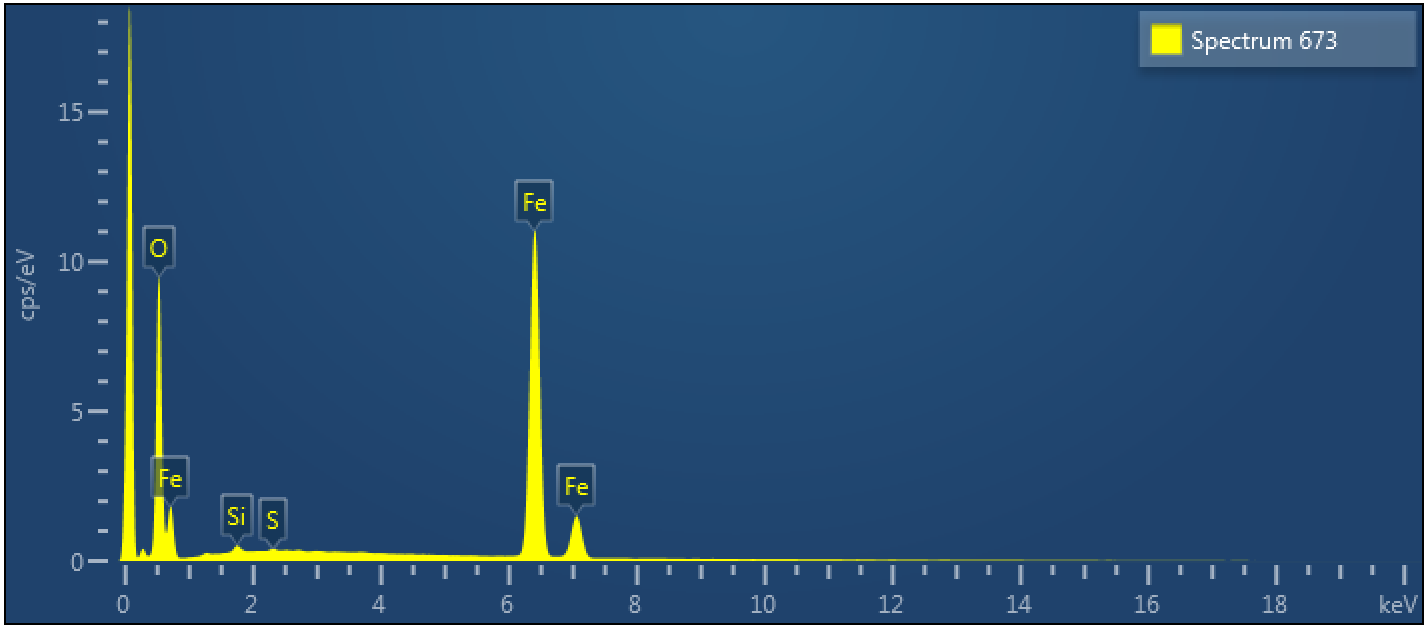
Spectrum 665							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	26.84	0.78	54.73			
Si	K series	6.12	0.31	7.11	SiO2	13.10	0.67
Ca	K series	2.33	0.18	1.90	CaO	3.27	0.25
Fe	K series	58.72	0.98	34.30	FeO	75.54	1.26
W	L series	5.13	1.11	0.91	WO3	6.46	1.40
Al	K series	0.86	0.20	1.04	Al2O3	1.63	0.38
Total		100.00		100.00		100.00	

Electron Image 112

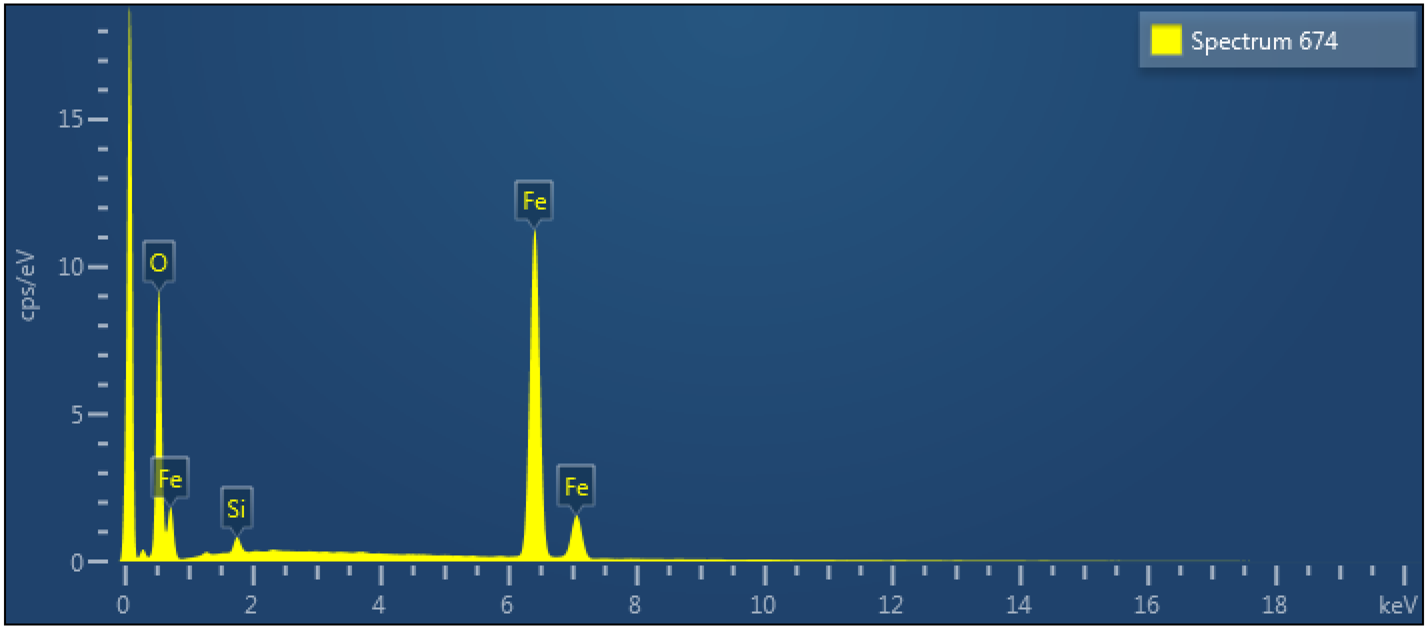




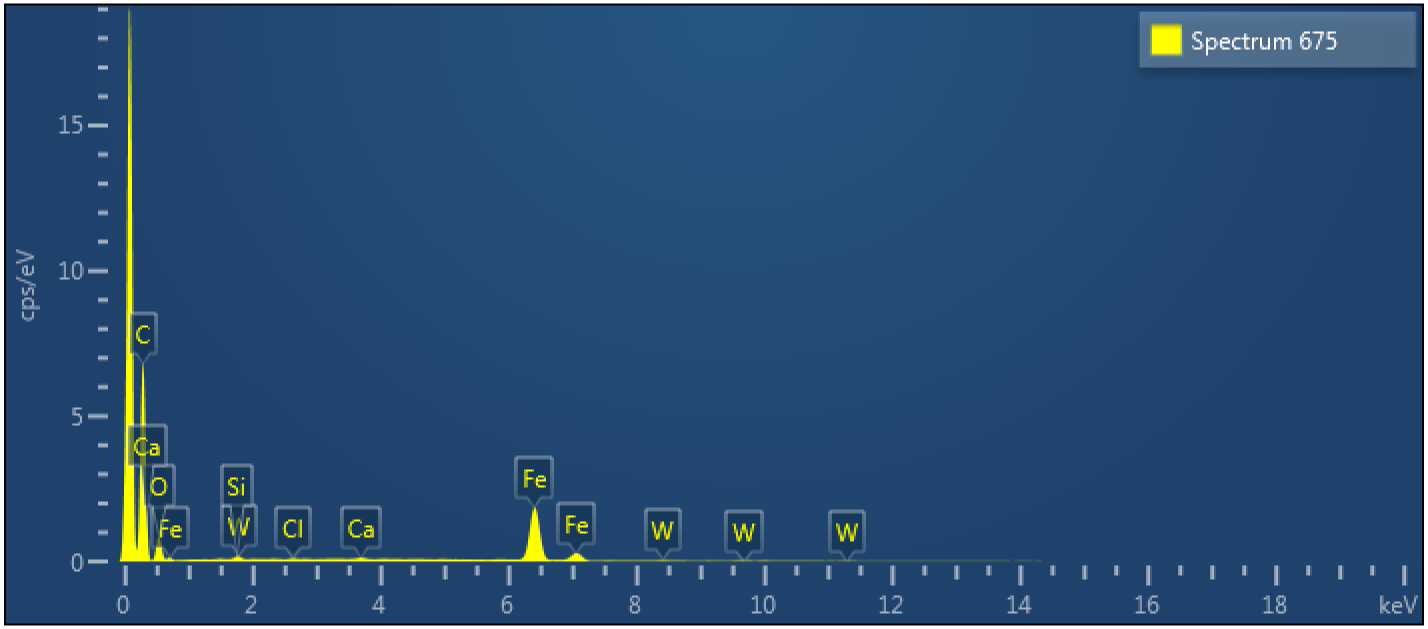
Spectrum 672							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	23.30	0.17	51.00			
Si	K series	1.41	0.05	1.76	SiO2	3.02	0.11
Fe	K series	74.95	0.18	46.99	FeO	96.42	0.23
V	K series	0.22	0.05	0.15	V2O5	0.40	0.08
Ca	K series	0.11	0.04	0.10	CaO	0.16	0.05
Total		100.00		100.00		100.00	



Spectrum 673							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	22.71	0.17	50.46			
Fe	K series	76.70	0.18	48.83	FeO	98.68	0.23
Si	K series	0.41	0.04	0.52	SiO2	0.88	0.09
S	K series	0.18	0.04	0.19	SO3	0.44	0.09
Total		100.00		100.00		100.00	

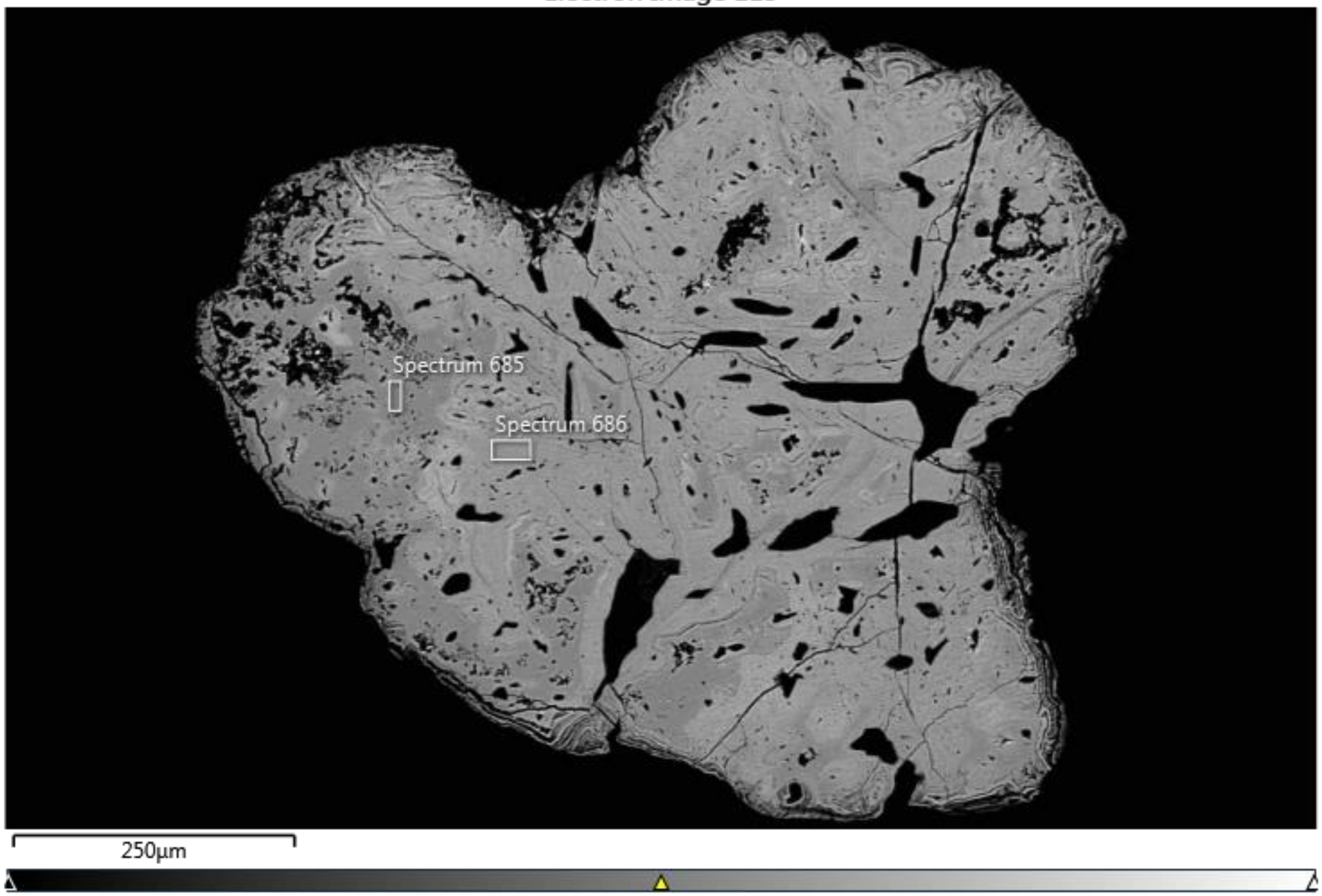


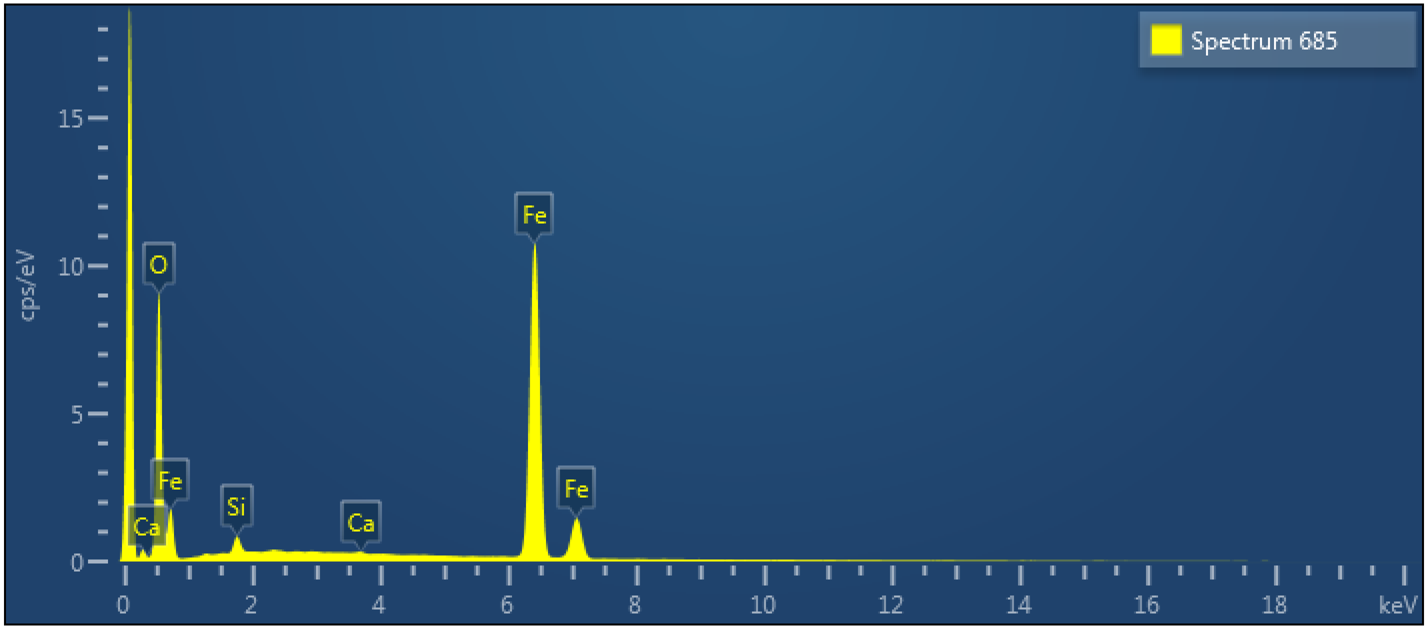
Spectrum 674							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	22.96	0.19	50.66			
Fe	K series	76.00	0.20	48.03	FeO	97.77	0.25
Si	K series	1.04	0.05	1.31	SiO2	2.23	0.12
Total		100.00		100.00		100.00	



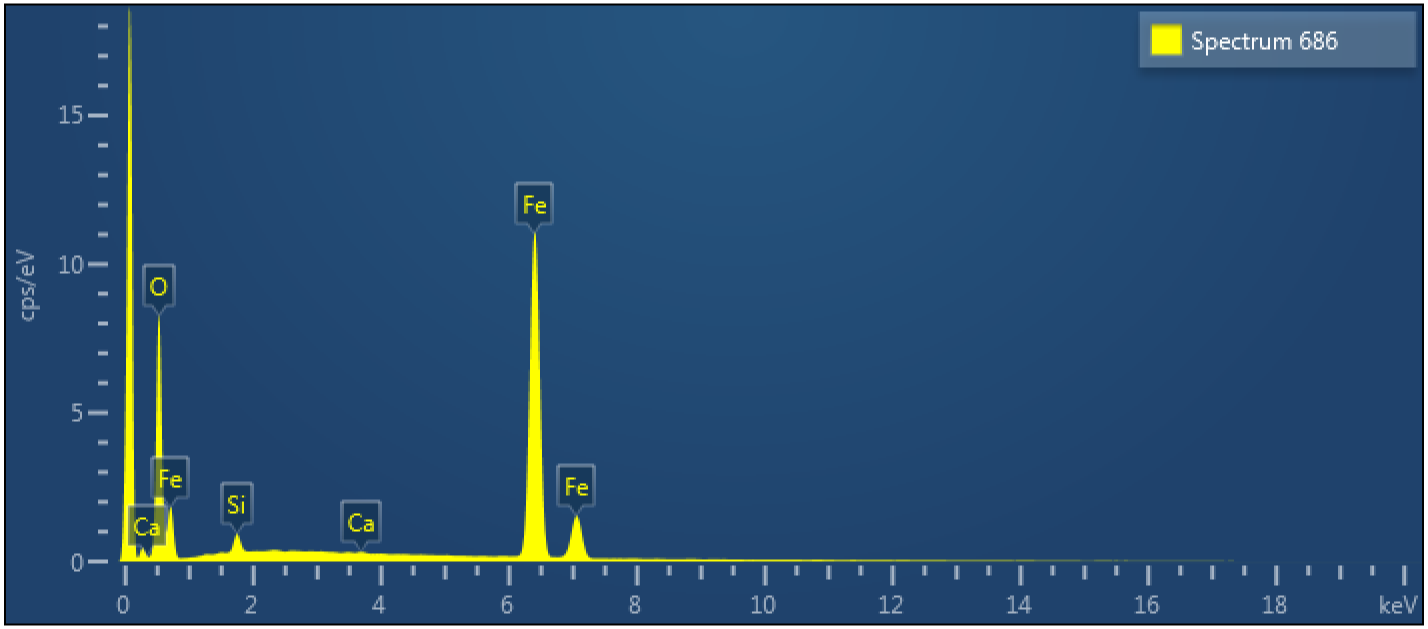
Spectrum 675							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
Fe	K series	71.53	1.01	45.89	FeO	92.03	1.29
Ca	K series	0.71	0.14	0.64	CaO	1.00	0.20
O	K series	22.83	0.68	51.11			
Si	K series	0.99	0.15	1.26	SiO2	2.11	0.32
Cl	K series	0.40	0.12	0.41		0.00	0.12
W	L series	3.54	1.06	0.69	WO3	4.46	1.33
Total		100.00		100.00		99.60	

Electron Image 115



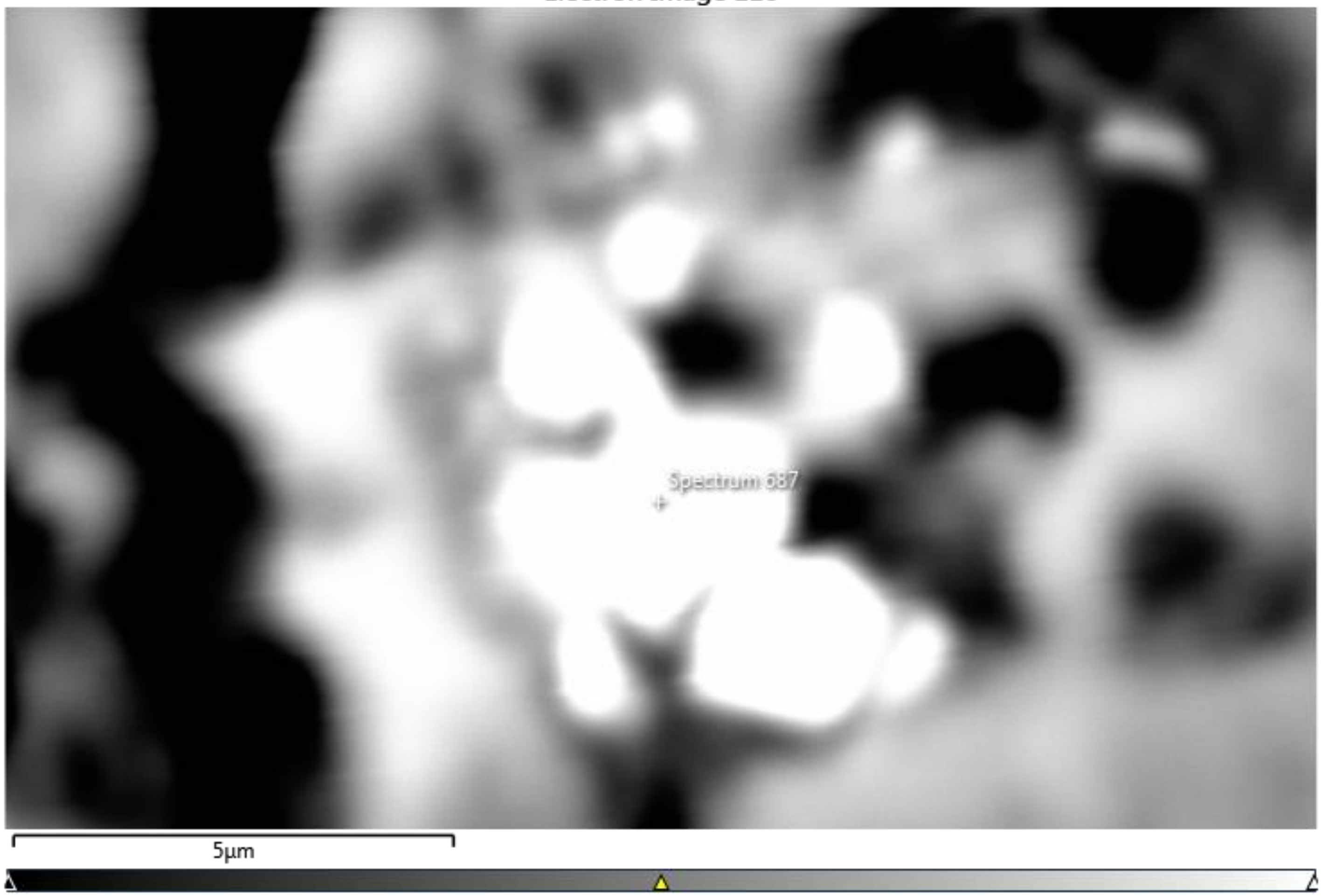


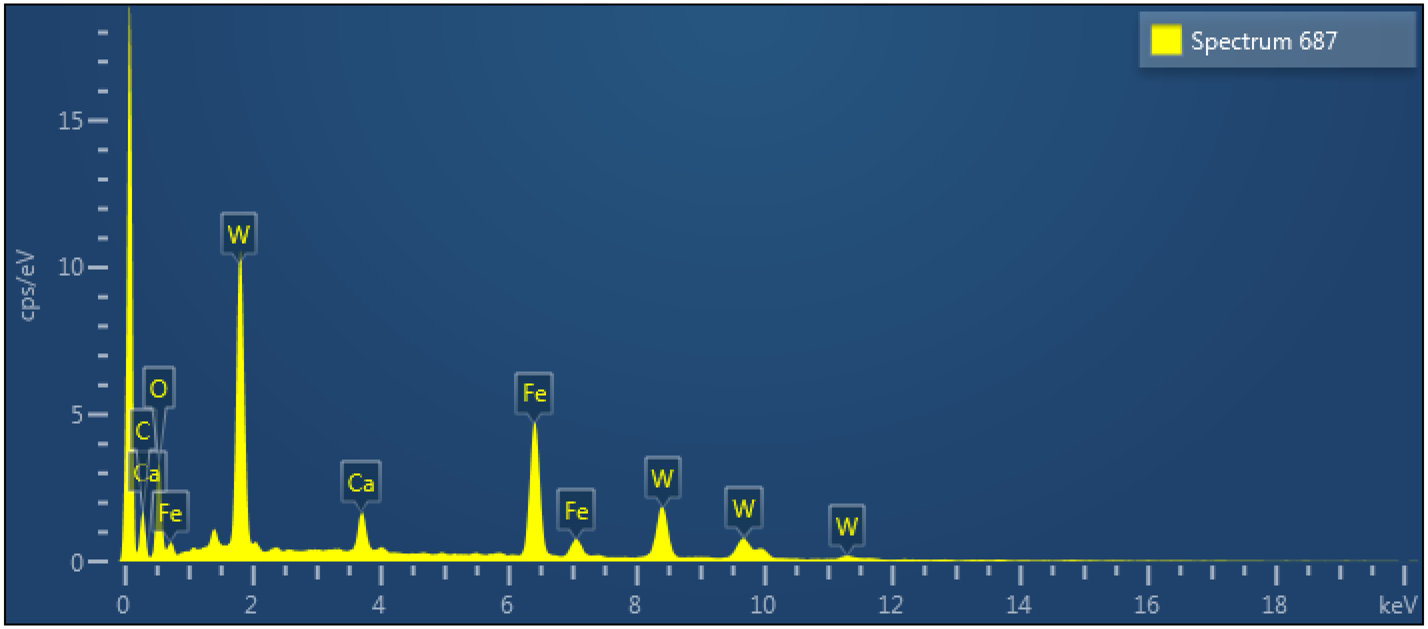
Spectrum 685							
Element	Line Type	Weight %	Weight % Sigma	Atomic %	Oxide	Oxide %	Oxide % Sigma
O	K series	23.04	0.17	50.72			
Fe	K series	75.68	0.18	47.72	FeO	97.36	0.23
Si	K series	1.15	0.05	1.44	SiO2	2.46	0.11
Ca	K series	0.13	0.04	0.12	CaO	0.19	0.05
Total		100.00		100.00		100.00	



Spectrum 686							
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**	**Oxide**	**Oxide %**	**Oxide % Sigma**
O	K series	23.09	0.17	50.77			
Fe	K series	75.54	0.18	47.57	FeO	97.18	0.23
Si	K series	1.23	0.05	1.54	SiO2	2.62	0.11
Ca	K series	0.14	0.04	0.12	CaO	0.20	0.05
Total		100.00		100.00		100.00	

Electron Image 116





Spectrum 687				
Element	**Line Type**	**Weight %**	**Weight % Sigma**	**Atomic %**
O	K series	17.40	0.78	56.79
Ca	K series	3.21	0.22	4.19
Fe	K series	25.29	0.74	23.65
W	L series	54.11	1.12	15.37
Total		100.00		100.00

Discussion of Results

Uvarovite is a member of the ugrandite series and is dominantly the grossular molecule with minor amounts of the andradite molecule entering into solid solution with the uvarovite molecule. The uvarovites are defined as having less than 10 percent of the andradite molecule. Because of the solid solution between uvarovite and grossular, many green garnets are termed uvarovite when in reality they are Cr- grossulars (Deer et al., 1997).

In the world of green garnets, the uvarovites form the right most portion of the miscibility gap between pyrope and uvarovite. There are other types of green garnets which occasionally occur in concentrates of diamondiferous kimberlite bodies in Yakutia (Udachnaya, Aykhal, Mir, Dalnaya), South Africa (Newlands, Bultfontein, Kampfersdam), Venezuela (Guaniamo sills), and Canada (Mud Lake field). These green garnets fall within the miscibility gap (~24 wt% CaO). Clarke and Carswell (1977) have offered four models of formation of such garnets at great depths. **1)** The green garnets are part of a "normal", essentially undepleted, mantle peridotite assemblage at great depths (probably >350 km), and have been brought to the surface as accidental xenocrysts in kimberlitic magma. **2)** The green garnets have formed as part of the refractory residuum during a deep-level (probably >350 km) partial melting event. **3)** The green garnets are the products of fractional crystallization of magma (not necessarily strictly kimberlitic) produced by the partial melting of mantle peridotite at depths > 250 km. **4)** The green garnets have been derived from disaggregated garnet wehrlite xenoliths formed by subsolidus recrystallization of original spinel wehrlite assemblages (abundant olivine + minor chrome diopside and chrome spinel). **5).** It is supposed also (Schulze, 1986), that kimberlitic green garnets may have originated through subduction and prograde metamorphism of uvarovite bearing crustal serpentinites.

Pellet-shaped orange, red and pink garnets are significant component of the concentrate. The vast majority of these garnets are some composition of almandine, grossular and spessartine and mostly likely derived from a metamorphic origin. Some of the garnets have a pyrope component overlapping fields of almandine-pyrope garnets of some kimberlites. Due to their pellet-shape, these garnets are easy to pick from the concentrate however, are impossible to distinguish from those of a metamorphic source without the aid of a electron microprobe. There are most likely more almandine-pyrope garnets still remaining in the concentrate however since the compositions overlap those of both metamorphic and kimberlite sources, these grains are difficult to use as a path mineral to locating kimberlite.

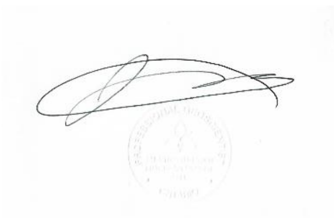
It should be noted that since the completion of field work to the time of this report, additional heavy mineral samples have been collected in the area as a follow-up to this report. Two samples in the immediate area were found to contain green garnets, pyrope garnets, chrome diopside and chromite. The identification of these minerals confirms that there is a kimberlite indicator mineral anomaly on the SZ Property.

Sulphides in the concentrate are most likely from a local source.

Conclusion and Recommendations

The green garnets identified in the SZCREEK heavy mineral sample are part of a kimberlite indicator mineral anomaly in the southeast section of the SZ Property. Additional heavy mineral sampling is recommended to determine the extent of the kimberlite minerals and discover a source.

Respectfully submitted,



Dr. Jim Renaud

And,

Robert Dillman B.Sc., P.Geo.

January 30, 2020.

Dr. Jim A. Renaud, P.Geo, Ph.D
Renaud Geological Consulting Ltd.
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CERIFICATE of AUTHOR

I, Jim A. Renaud, **Professional Geologist**, do certify that:

1. I am the President and the holder of a Certificate of Authorization for:

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   21272 Denfield Rd
   London, Ontario, Canada,
   N6H 5L2

2. I am President and CEO of Renaud Geological Consulting Ltd.;

3. That I have the degree of Bachelor of Science (Chemistry and Geology), 1999, from Western University; the degree of Honors Standing in Geology, 2000, from Western University; Masters of Science (Economic Geology), 2003, from Western University; and Doctor of Philosophy in Geology, 2014, from Western University;

4. I am an active member of:
   Association of Professional Geoscientists of Ontario, APGO, #2211

5. I have been a licensed Prospector in Ontario since 2000;

6. I have worked continuously as a Geologist for 18 years;

7. That I am a joint author of this report on
   REPORT ON HEAVY MINERAL SAMPLING AND ELECTRON MICROPROBE ANALYSES OF MINERAL GRAINS TAKEN FROM A CREEK LOCATED IN CELL 32D05G360: MINING CLAIM 555168
   SZ PROPERTY, BEN NEVIS TOWNSHIP, ONTARIO
   LARDER LAKE MINING DIVISION
   dated, January 30, 2020;

8. That I am jointly responsible for all sections of the Technical Report;

9. That, as of the date of this certificate, to the best of my knowledge, information and belief, the report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading;

10. I hereby consent to the filing of the report

Dated at London, Ontario, Canada
This 30 day of January, 2020
Jim A. Renaud, Ph.D., P.Geo.

Robert J. Dillman P.Geo, B.Sc.
ARJADEE PROSPECTING
8901 Reily Drive, Mount Brydges, Ontario, Canada, N0L1W0
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CERIFICATE of AUTHOR

I, **Robert J. Dillman**, **Professional Geologist**, do certify that:

1. I am the **President** and the holder of a **Certificate of Authorization** for:

   ARJADEE PROSPECTING
   8901 Reily Drive
   Mount Brydges, Ontario, Canada N0L1W0

2. I graduated in 1991 with a **Bachelor of Science Degree** in **Geology** at the **University of Western Ontario.**

3. I am an active member of:

   Association of Professional Geoscientists of Ontario, APGO
   Prospectors and Developers Association of Canada, PDAC

4. I have been a **licensed Prospector in Ontario** since 1985.

5. I have worked continuously as a **Professional Geologist** for 29 years.

6. Unless stated otherwise, **I am responsible** for the preparation of all sections of the Assessment Report titled:

   REPORT ON HEAVY MINERAL SAMPLING AND ELECTRON MICROPROBE ANALYSES OF MINERAL GRAINS TAKEN FROM A CREEK LOCATED IN CELL 32D05G360: MINING CLAIM 555168
   SZ PROPERTY, BEN NEVIS TOWNSHIP, ONTARIO
   LARDER LAKE MINING DIVISION
   dated, January 30, 2020

7. I am not aware of any material fact or material change with respect to the subject matter of the Assessment Report that is not contained in the Assessment Report and its omission to disclose makes the Assessment Report misleading.

Dated this 30th day of January, 2020

Robert James Dillman P.Geo
Arjadee Prospecting

PROFESSIONAL GEOSCIENTISTS ONTARIO
ROBERT J. DILLMAN
PRACTISING MEMBER
0530

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Letter of Non-Indicator Grains Determined by E.D.S. System
SZCREEK SAMPLE, SZ Property

Yellow denotes grain selected for further analysis.

SZ CREEK (SMALL)

1	
2	MAGNETITE
3	ILMENITE
4	
5	
6	PYRITE
7	
8	
9	
10	PLASTIC
11	PLASTIC
12	SPESSARTINE-ALMANDINE S.S.
13	SPHENE
14	SPESSARTINE-ALMANDINE S.S.
15	SPHENE
16	SPESSARTINE-ALMANDINE S.S.
17	
18	SPESSARTINE-ALMANDINE S.S.
19	SPESSARTINE-ALMANDINE S.S.
20	
21	ALMANDINE
22	SPESSARTINE-ALMANDINE S.S.
23	
24	
25	SPESSARTINE-ALMANDINE S.S.
26	GROSSULAR-SPESSARTINE-ALMANDINE S.S.

SZ CREEK (LARGE)

40	PYRITE WITH INCLUSION OF CHALCOPYRITE+SPHALERITE+GALENA
41	
42	
43	
44	Ti-V-MAGNETITE IN CHLORITE+ALBITE+INCLUSION OF SCHEELITE
45	
46	
47	Fe-Si-Ca-W MINERAL
48	MAGNETITE
49	
50	
51	GROSSULAR-SPESSARTINE-ALMANDINE S.S.
52	GROSSULAR-SPESSARTINE-ALMANDINE S.S. + ILMENITE
53	
54	GROSSULAR-SPESSARTINE-ALMANDINE S.S.
55	
56	
57	AMPHIBOLE
58	EPIDOTE
59	EPIDOTE
60	EPIDOTE
61	EPIDOTE+GALENA
62	EPIDOTE+SPHENE
63	AMPHIBOLE
64	EPIDOTE+QUARTZ
65	EPIDOTE+QUARTZ

27	SPESSARTINE-ALMANDINE S.S.
28	
29	
30	
31	SPESSARTINE-ALMANDINE S.S.
32	ALMANDINE
33	
34	EPIDOTE
35	
36	
37	
38	EPIDOTE
39	QUARTZ

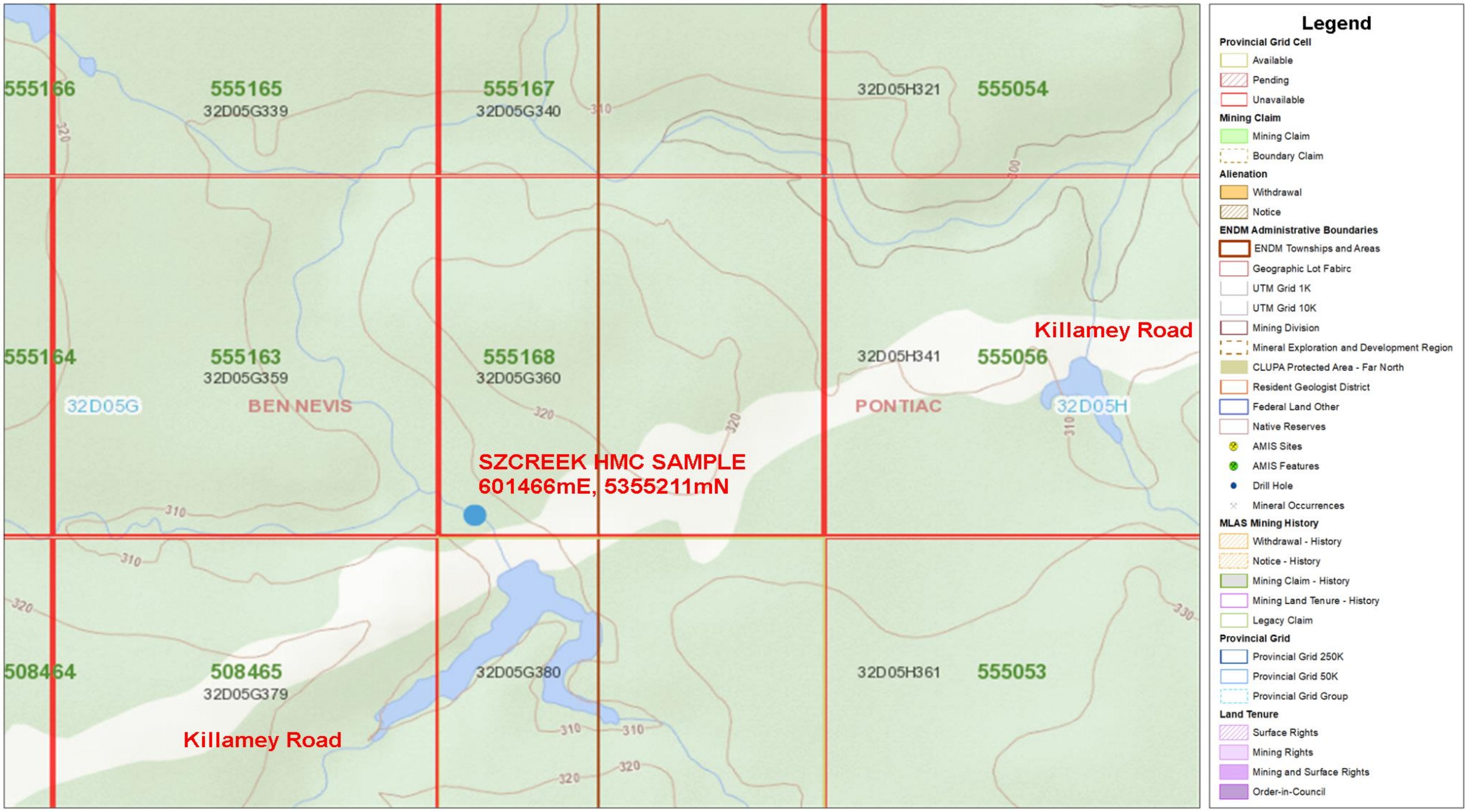
66	
67	
68	QUARTZ+EPIDOTE+INCLUSION OF SCHEELITE+Ca-SILICATE

Ontario MINISTRY OF NORTHERN DEVELOPMENT AND MINES
MLAS Map Viewer

SZ PROPERTY
BEN NEVIS TWP.

Notes:

FIGURE 3.
SAMPLE LOCATION MAP



0 0.34 km

Projection: Web Mercator

N

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