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TENTH LEGION

MINERAL RESOURCE ESTIMATION

AUGUST, 2014

Prepared for: Australian Hualong Pty Ltd.

Tim Callaghan, August 2014

MAP CONVENTIONS

Coordinates in this report and digital data associated with this report are recorded in Tenth Legion Local Grid or as GDA94 Zone 55 where stated

Relative Levels in this report are recorded as MSL + 1000m

Tenth Legion Local Grid transformation details are listed below:

Master TLC Co-ordinate Transformation Spreadsheet

Bearing:	120.61241	deg	Bearing:	111.73854	deg
Baselength:	593.3513	m	Baselength:	594.0249	m
Scale Factor:	1.001135		Base Error:	-673.6	mm
Scale Error:	1135.2	mm/Km	Alpha:	0.989152	
Easting Origin:	481653.9858	m	Beta	0.154435	
Northing Origin:	-5353377.3214	m	Rotation:	-8.87387	deg

Original Co-ordinates (m)

No	Easting	Northing	Elevation
TLC10	355377.0830	5361648.0210	
TLC12	355887.7400	5361345.8700	

Transformed Co-ordinates (m)

No	Easting	Northing	Elevation
TLC10	5150.5500	4989.7300	
TLC12	5702.3300	4769.7200	

EXECUTIVE SUMMARY

The Tenth Legion Magnetite Deposit is a carbonate hosted metasomatic skarn hosted in hornfelsed Precambrian sedimentary rocks on the southeastern edge of the Devonian Heemskirk Granite in Western Tasmania. Numerous magnetite skarns are located within the southeastern aureole of the Heemskirk Granite, the Tenth Legion North deposit being the focus of this resource estimation. The skarn strikes WNW and dips steeply north. It is composed of three semi-continuous lenticular lenses of magnetite-calcsilicate-serpentinite skarn. Hornfelsed quartzite forms the hangingwall and footwall to the host sequence. The skarn extends approximately east-west for 500m in strike length and has been drilled to approximately 200m depth. Mineralised lenses vary from 1 to 12m in thickness.

The deposit was first drilled by CRAE in the 1980's. Systematic exploration commenced in 2010 with a definition drilling program by Creat Resource Holdings Limited (CRHL). Australian Hualong Limited (AHL) acquired the project in 2012 and completed a second phase of resource definition drilling culminating in this resource estimation.

The resource estimation is based on diamond drilling including 87 holes for 6537.8m. All data for this estimation was captured electronically by AHL geologists and provided in an access database. Most drill collars were surveyed by licensed surveyors with the exception of some early CRAE drillholes.

Mineralised domains were modeled with Surpac(TM) software from cross sectional interpretations, drillhole data and 1m composited assay data using a 20% Fe boundary and a minimum width of 3m. Internal dilution was kept to a minimum of 3m with some allowances for continuity. Mineralised domains were split into a North Western Lode, a Central Lode, comprising 3 lenses, and a Southern Lode.

Drillhole data was composited on 1m intervals. Univariate statistical analysis was completed on all domains. Variogram modeling was completed on the largest Central Lode only as the other domains contained insufficient data. Variogram models had typical low nugget effects and moderate ranges typical of this style of mineralisation.

Fe was interpolated into a block modeled resource estimation using an Ordinary Kriged algorithm. Potential penalty elements Si, Al and S were estimated using an Inverse Distance Squared algorithm. The resource is reported in accordance with the 2012 edition of the JORC Code above a block cutoff of 20% Fe (Table 1).

Table 1. Tenth Legion Mineral Resource Estimate (Fe>20% cut off)

	MTonnes	Fe %	Al %	Si %	S %
Indicate Resource	6.23	40.34	2.1	16.9	0.2
Inferred Resource	1.41	32.96	0.7	16.8	0
Total Resource	**7.64**	**38.98**	**1.8**	**16.9**	**0.2**

Bulk density measurements were completed on site by AHL and CRHL using the Archimedes method. A strong grade-density relationship is apparent and the density of the mineralisation is expressed by the algorithm SG = (0.0139 x Fe%) + 2.85

Two composite samples were sent of for metallurgical testwork and a further 4 were sent of for Davis Tube Recovery tests. The metallurgical testwork and DTR analyses indicate the majority of the Fe in the Tenth Legion deposit is present as magnetite. A salable concentrate can be produced at medium to fine grind sizes with recoveries varying depending on the head grade. High grade ores tend to produce better quality concentrates at larger grind sizes.

The resource has been classified as Indicated Resource where the drill spacing is 60 x 60m or less down to a depth of 100m from surface. All resource below 100m depth is classified as Inferred Resource as the drill density is lower and there is some doubt as to whether this mineralisation can be economically extracted.

There is a high degree of confidence in the simple geological model. Some doubt in the accuracy of the early CRHL data exists as the QAQC results from this early phase of drilling demonstrate poor precision and accuracy relative to certified reference material. Consequently there is moderate confidence in the grade estimation.

The outcropping resource is amenable to conventional drill blast load haul open cut mining.

There is very good potential for additional resources through continued exploration and infill drilling along strike of the Tenth Legion North deposit as well as the numerous other known magnetite lenses in the immediate vicinity.

There is potential upside to the resource from a high grade surficial lag of magnetite and Fe oxides extending beyond the resource boundaries that has not been adequately tested to include in the resource estimation. Resource grades are higher in the oxide zone, containing 1.82Mt @ 45.5% Fe compared to remainder of 5.82Mt @ 36.9% Fe in the un-oxidised skarn.

Recommendations for further work include:

- Continued metallurgical testwork
- Conceptual mine design and reserve estimation
- Extension drilling of the eastern end of the Tenth Legion North Resource.
- Further exploration and infill drilling of outcropping magnetite deposits.
- Further regional exploration of the EL targeting magnetite skarns
- Mapping and aircore/auger sampling of surficial lag deposits of magnetite and Fe oxides
- Additional DTR sampling to determine Fe grade-recovery and Fe grade gaungue material relationships.

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1 INTRODUCTION

The Tenth Legion Magnetite Skarns are located on EL30/2002, EL18/2003 approximately 10km west of Zeehan on the west coast of Tasmania (Figure 1). EL30/2002 and EL18/2003 are 100% owned by Australian Hualong Pty Ltd (AHL). AHL also hold the nearby RL4/2009. The southern end of the magnetite skarns extend onto EL28/1988 held by MMG.

The Tenth Legion Magnetite Skarns consist of a series of complex carbonate hosted metasomatic skarn deposits. The skarns are located in hornfelsed Precambrian sedimentary rocks and possibly Cambrian Volcanics on the eastern margin of the Devonian Heemskirk Granite. This resource estimation is based on only three of the known magnetite skarns in the north of EL30/2003 known as Tenth Legion North. There is scope for further resource additions through continued exploration and resource definition drilling.

AHL has requested resource estimation of the Tenth Legion North Magnetite Skarn in accordance with the 2012 edition of the JORC code. The estimation is based mainly on recent drilling campaigns with some historic drilling included in the geological interpretation.

1.1 EXPLORATION HISTORY

The Heemskirk district has seen mining activity since the 1880's with numerous alluvial and hard rock prospects exploited since then. The alluvial tin deposits along the west, north and south margins of the batholith resulted in the hard rock potential of the district heavily explored from the 1890's to the present. Modern exploration of the area intensified in the late 70's with increased activity in tin mining on the west coast of Tasmania.

Tenure of the Tenth Legion district was first acquired by IMI testing the potential for iron ore production from the magnetite skarns. CRAE joint ventured with IMI in the early 1980's, focusing on the tin-tungsten potential of the skarns. After establishing a local grid, systematic mapping, sampling and ground magnetics culminated in the drilling of 14 diamond drillholes. Minor tin and tungsten mineralisation was encountered associated with the magnetite skarns.

Allegiance Mining NL acquired an exploration license over the Tenth Legion locality in 1996 focusing on the potential for further nickel skarns similar to the Avebury skarn located in the ultramafic rocks to the immediate south of the Tenth Legion skarns. Exploration included a high resolution aeromagnetic survey followed by mapping and geochemical sampling. Early CRAE drill core was re-examined. It was concluded that the serpentinised Tenth Legion skarns were hosted in Proterozoic carbonates and not the host dunite of the Avebury Deposit and therefore not prospective for Avebury style mineralisation.

Zeehan Zinc acquired EL30/2002. Little more than literature research occurred during the first 6 years of tenure. CHRL took a controlling interest in Zeehan Zinc in 2008 and initiated renewed field work. Exploration commenced with an airborne TEM survey and follow up soil geochemistry of defined anomalous targets. CHRL changed the focus of the exploration from zinc to magnetite iron ore in 2009 and drilled 18 diamond drillholes at Tenth Legion north.

AHL acquired the CHRL tenements in 2012 and continued the resource drilling focus on the magnetite potential of the Tenth Legion Skarns. AHL drilled a further 45 diamond drillholes culminating in this resource estimation.

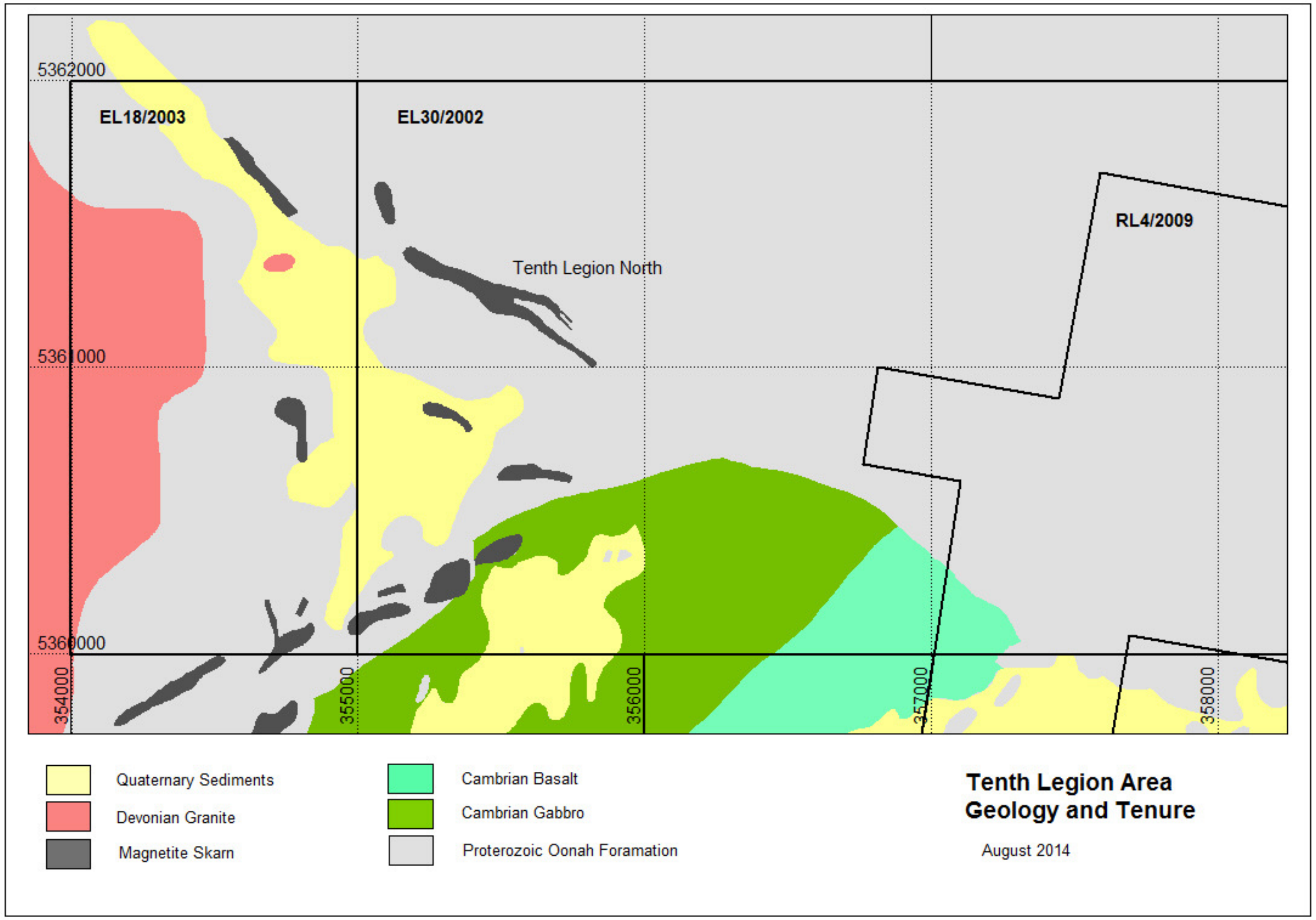


Figure 1. Tenth Legion Geology and Tenure

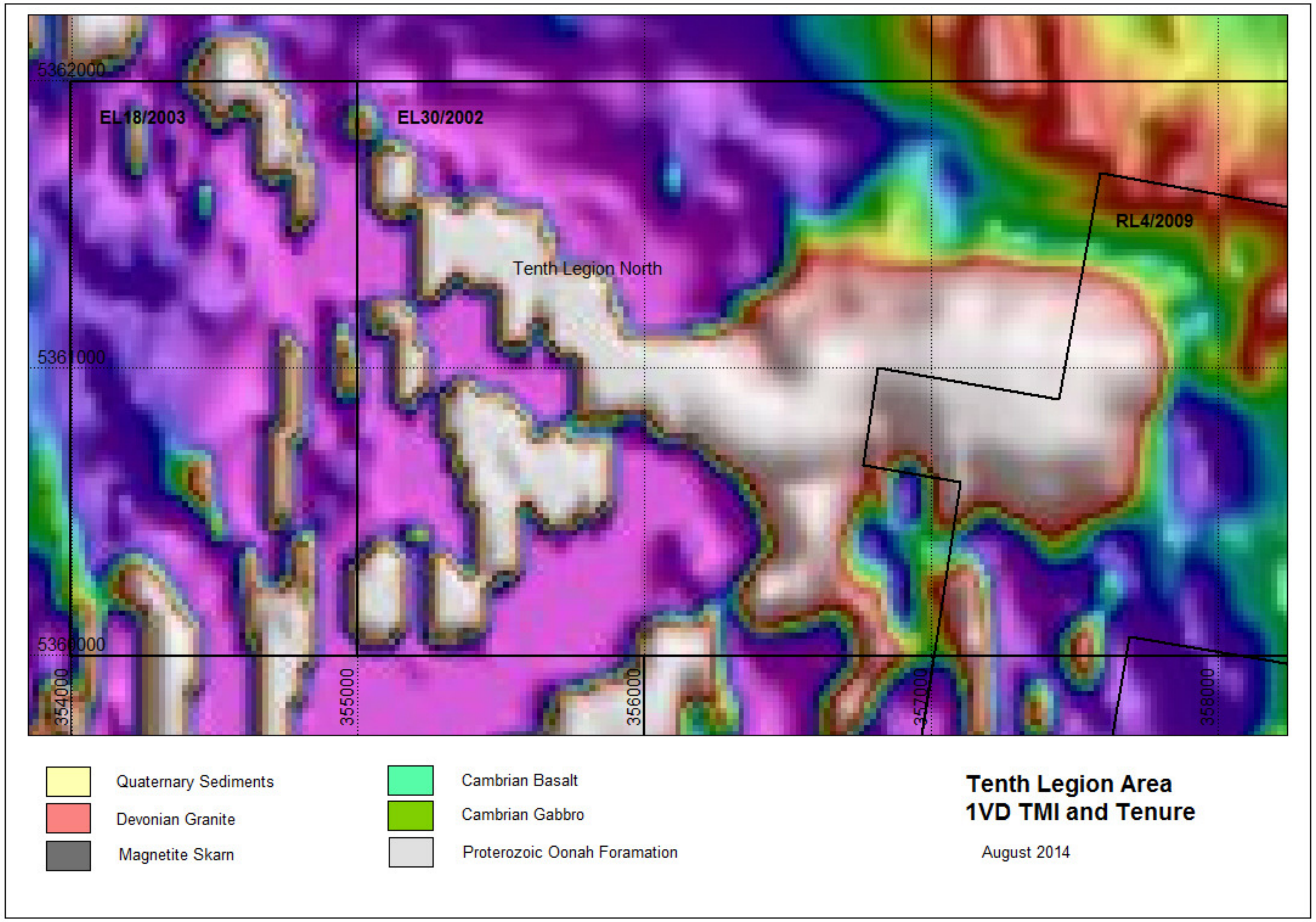


Figure 2. Tenth Legion 1VD Magnetic Image and Tenure

1.2 PREVIOUS ESTIMATIONS

No previous resource estimations have been completed on the Tenth Legion Magnetite skarns.

1.3 MINING METHOD

The outcropping Tenth Legion Magnetite Skarns are amenable to conventional drill-blast-load haul open cut mining, possibly to a depth of 70 - 100m. Pit depths will be constrained by stripping ratios and prevailing financial parameters. A detailed study into the mining methods has yet to be completed. It is conceived that further magnetite resources will be delineated in the immediate vicinity improving the fianancial viability of the project. It is anticipated that the existing infrastructure on RL4/2009 will be modified to allow processing and production of a salable magnetite concentrate.

1.4 METALLURGICAL TESTWORK

AHL commenced preliminary metallurgical testwork on the Tenth Legion skarn as part of this study. Two composite samples were submitted to the Guanzhou Research Institute of Non Ferrous Metals, China.

Beneficiation tests indicate that magnetite concentrates in excess of 64% can be produced from a grind size of 70um with recoveries of >90% using 0.15T low intensity magnetic roughing separation (LIMS). Test work demonstrates that the liberation of the magnetite is good. A single roughing, cleaning and scavenging circuit with low intensity magnetic separation is recommended. Interestingly process mineralogy research suggests appreciable cobalt, bismuth and gold is contained in the ore. Further testwork is required.

AHL also completed Davis Tube Recoveries (DTR) on 4 samples at ALS laboratories in Perth. Variability in grind size, recoveries and concentrate grade were evident with the results dependent on the head grade of the sample.

The metallurgical testwork and DTR analyses indicate the majority of the Fe in the Tenth Legion deposit is present as magnetite. A salable concentrate can be produced at medium to fine grind sizes with recoveries varying depending on the head grade. High grade ores tend to produce better quality concentrates at larger grind sizes.

1.5 SCOPE OF WORK

REG propose to carry out the following work on the Tenth Legion deposit:

- Load and validate drill data provided by AHL
- Prepare three dimensional solid models of geological elements required for resource estimation
- Undertake statistical and geostatistical investigations
- Prepare a block model of the Tenth Legion Deposits
- Estimate total Fe, S, Al, P and Si into the model.

- Validate the model
- Report the mineral resource in accordance with the 2012 edition of the JORC Code

1.6 DATA PROVIDED

Data provided for this estimate includes:

- Topographic DTM created by licensed surveyors using Differential GPS and topographic data collected from a drone.
- Access Database
- Sectional Geological Interpretation
- Geology maps and data
- Historic Exploration Reports (pdf)
- DTR data
- Metallurgical reports
- QAQC data

All data, interpretations and interpretations were provided by AHL. Responsibility for the accuracy of this data rests with AHL.

Data provided with this report includes:

- Access database used for the estimate
- Solid Models of Mineralisation Domains (Surpac)
- Surface DTM
- Block modeled Resource Estimate (Surpac)
- Mineral Resource Estimate Report (pdf)

2 GEOLOGY

2.1 REGIONAL GEOLOGY

The Zeehan district has seen complex deformation, igneous activity and sedimentation from the Late Proterozoic to the present. Basement rocks in Tasmania are dominated by the Late Precambrian Tyennan Element in the east and the Rocky Cape Association of similar age in the northwest. The Zeehan Basin on the eastern margin of the Dundas Trough was a major control on the pre-Carboniferous geology of the Zeehan District.

Around 700Ma a shallow rift basin developed between the northwest and eastern basement blocks. Siliciclastic sediments of the Forest Conglomerate, Donaldson Formation, Timbs Group and Oonah Formation were deposited in the deepening basin. Sag phase siliciclastic sedimentation and carbonate deposition followed and are represented by the Black River Dolomite, Savage Dolomite, Success Creek Group and upper Timbs Group. The Success Creek Group unconformably onlaps the Oonah Formation in the Zeehan district and is marked by a structural and low grade metamorphic contrast between the two groups (Corbett, 1989). The hiatus in deposition and increased complexity of the Oonah formation is a result of the late Precambrian Penguin Orogeny.

Continued rifting in the early Cambrian (580-550Ma) resulted in the deposition of a thick pile (>5km) of tholeiitic volcanics and associated sediments, carbonate and chert of the Crimson Creek Formation. The Crimson Creek tholeiites have a within plate geochemical signature (Brown and Jenner, 1989). Correlates of the Crimson Creek Formation occur elsewhere in NW Tasmania outside of the Dundas Trough (Brown, 1986, Brown and Jenner, 1989).

During the Middle Cambrian (515-510Ma) a sequence of mafic-ultramafic complexes were emplaced on the western margin of the Dundas Trough. Ultramafic detritus in clastic rocks suggests they were emplaced high into, or above, the Crimson Creek Formation and were subject to Middle Cambrian erosion (Corbett, 1989). Berry and Crawford, (1988) proposed an obduction model for the emplacement of the mafic-ultramafic complexes and associated sedimentary sequences where a forearc terrain was thrust over a passive continental margin.

Basaltic suites of genetically related island arc-ocean island affinities have been distinguished within the western margin of the Dundas Trough (Brown and Jenner, 1989). These have been demonstrated to be genetically related to the spatially associated ultramafic complexes and include a high magnesium boninite and low titanium tholeiites (Brown and Jenner, 1989).

Post collision extensional tectonics produced troughs into which the Cambrian Dundas Group and Mt Read Volcanics were deposited. The Dundas Group forms a complex sequence of locally derived sediments and volcanics along the western margin of the Dundas Trough. The Mt Read Volcanics occupy the eastern margin of the trough with proximal volcanics juxtaposed along the boundary with the Tyennan Block grading into extensive volcano-sedimentary sequences to the west.

The Late Cambrian Delamarian Orogeny resulted in localised uplift and erosion of the Tyennan Block and subsidence of the Dundas Trough. The Ordovician to Devonian Wurawina Supergroup unconformably fills structural and erosional basins. The succession is divided into the Late Cambrian to Middle Ordovician coarse siliciclastic Denison Group, the Ordovician carbonates of the Gordon Group, and fine siliciclastics of the Silurian to Devonian Eldon Group (Banks and Baillie, 1989).

The Middle Devonian Tabberabberan Orogeny has resulted in polyphasal deformation with intersecting fold trends forming dome and basin structures and overprinting relationships (Williams, 1978). Folds are generally upright to steeply inclined with plunging hinge lines. Many faults are steep thrusts and reactivation of Cambrian structures is common. Folding within the Zeehan Basin produced dominantly NNW trending fold hinges. Localised WNW trending folding is located in the Zeehan-Linda zone, possibly associated with the large Firewood Siding and Tenth Legion thrust faults (Williams, 1978).

Several small to medium sized post tectonic S and I type granitoids intrude the early lithologies. Granitoids were emplaced at shallow levels and are dominantly granite or biotite adamellite. Geophysical modeling has indicated the presence of a large ENE-trending ridge of granite linking the Heemskirk and Granite Tor plutons (Leaman and Richardson, 2003).

A number of styles of mineralization are associated with the Devonian granitoids including magnetite skarns, tin-tungsten and lead-zinc-silver (Collins *et al*, 1989) and the recently discovered Avebury Nickel Skarn (Callaghan and Green, *in press*).

Cassiterite mineralization is associated with stratabound massive sulphide bodies replacing carbonates of the Oonah Formation (Mt Bischoff, Queen Hill), Success Creek and Crimson Creek Groups (Renison, Severn, Montana). Stockwork and fault related cassiterite-sulphide mineralisation is associated with the Renison, Severn, Queen Hill and Montana deposits. Disseminated cassiterite is associated with greisenised granite in the southern part of the Heemskirk Granite.

Skarn tin-tungsten and tungsten-magnetite deposits occur adjacent to granite bodies in direct contact with calcareous sediments (Tenth Legion, St Dizier, Kara, Dolphin).

Lead-zinc-silver vein mineralization occurs in haloes around granite bodies. These deposits are typically small such as the numerous deposits of the Zeehan-Dundas field. The Magnet Mine was the largest known of this type at 630,000t @ 7.3%Pb, 7.3% Zn and 427g/t Ag.

Post deformation sedimentation resumed in the Permian with thick, essentially flat lying sequences of mudstone, sandstone and minor carbonates of the Parmeener Supergroup. Minor Jurassic Dolerite sills are present in the Dundas Trough.

Tertiary faulting, basin formation and alkali-olivine basalt extrusion formed the large Macquarie Harbour Graben west of Strahan and basalt flows north of Mt Heemskirk. Surficial Quaternary deposits are widespread and erosion and deposition continues to modify the landscape.

2.2 LOCAL GEOLOGY

The Tenth Legion locality is dominated by the Devonian Heemskirk granite batholith, which outcrops to the immediate northwest of the prospect forming the prominent Heemskirk Range. The Heemskirk granite is interpreted to form a distinct east-west trending ridge beneath the Tenth Legion deposit (Leaman, 1989). The granite is responsible for much of the tin-tungsten, lead-zinc, magnetite and nickel skarn mineralisation in the district.

Proximal metasomatic magnetite skarn mineralisation is hosted in the Proterozoic Oonah Formation. Some magnetite skarn may be developed in the Cambrian Volcanics in the south of the EL. Numerous magnetite skarn lenses have been delineated. Only the larger northern magnetite skarns on EL 30/2002 have been drill tested (Tenth Legion North). Three main skarn lenses of the Tenth Legion North skarn are included in this estimation.

The Oonah Formation is strongly deformed and has been thrust over the younger Cambrian mafic-ultramafic complex and Crimson Creek volcaniclastics by the low angle Tenth Legion Thrust. Later brittle faulting sand folding has disrupted the Proterozoic and Cambrian lithologies.

Mineralisation is hosted in calc-silicate skarn in what is interpreted to have been impure limestone beds associated with pale grey siltstones within the Oonah Formation. The host sequence is bound by Oonah Formation quartzite and shale to the north and south. The host siltstone/limestone and the skarn lenses strike essentially east-west (100-110^{o}).

Mineralisation consists of coarse and fine, massive to semi-massive magnetite hosted in either pale cream to white calc-silicate skarn (wollastonite-actinolite-tremolite) or dark to pale green serpentinite. Serpentinite is considered to have formed during retrograde alteration of early pyroxene skarn. Magnetite content and host lithology are variable throughout the deposit from massive magnetite skarn through to lower grade disseminated magnetite skarn.

Variable amounts of pyrrhotite, galena and sphalerite to 2-5% are sometimes associated with the magnetite. Increased sulphide contents were recorded at the south end of the Central Lode. Minor amounts of chalcopyrite-pyrite and trace tin, tungsten, gold and bismuth has been reported.

The largest Central Lode extends over 700m in strike length and consists of three main magnetite skarn lenses dipping steeply (60^{o}) north. A sub parallel Southern Lode is located to the south and also dips steeply north. A subsidiary Northwest Lode is located to the northwest forming a discrete steeply north plunging lens with a strike length of approximately 100m. All the lodes remain open down dip and have been drill tested to a depth in excess of 100m. Magnetite lenses vary in thickness from 1 to 12 metres and tend to have reasonable lateral continuity. The host sequence is bound by grey quartzite and pale grey siltstones and black shales to the north and south.

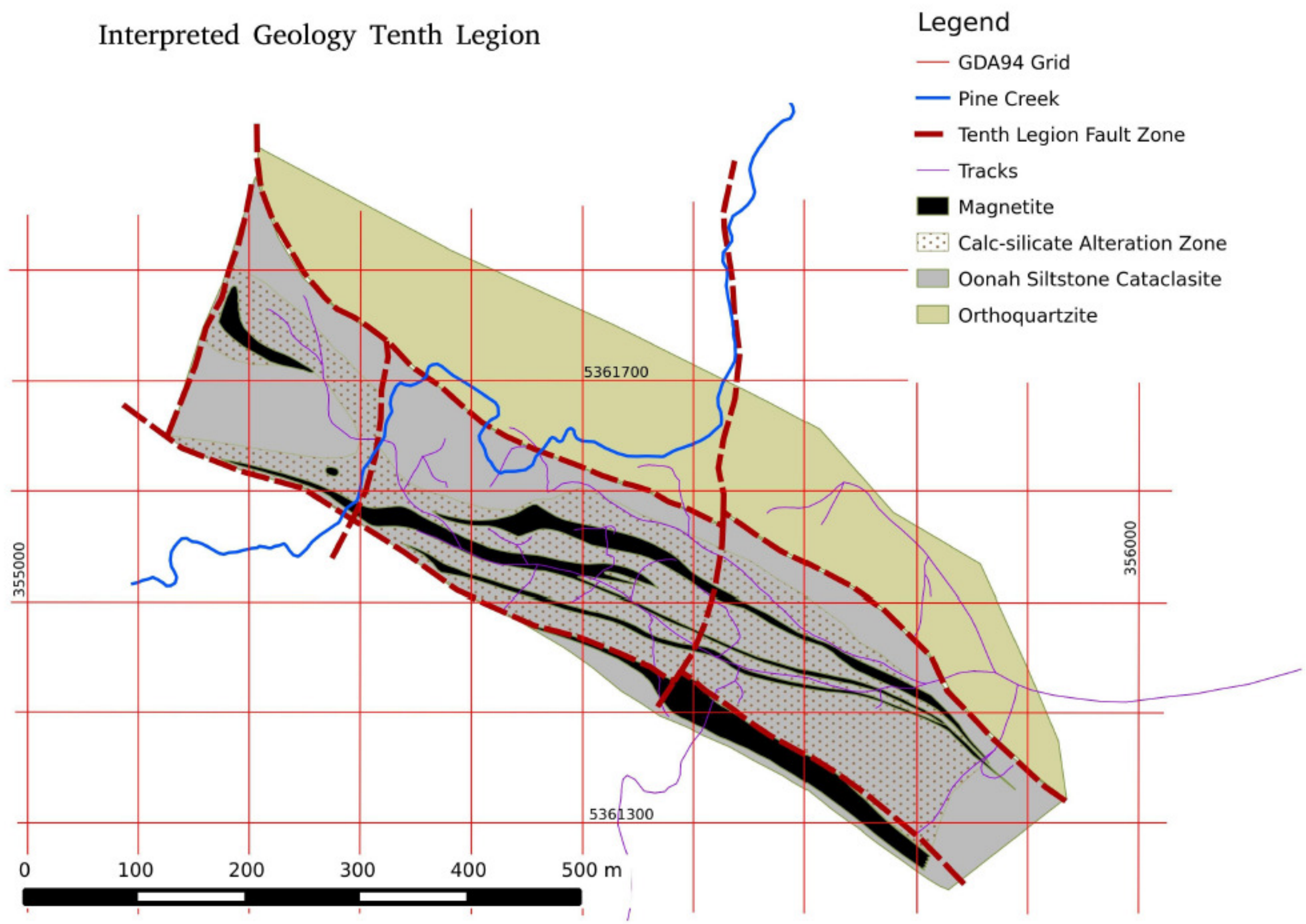


Figure 2: Interpreted geology Tenth Legion North, Veska 2014

Figure 3. Tenth Legion North Interpretive Geology, Veska 2014.

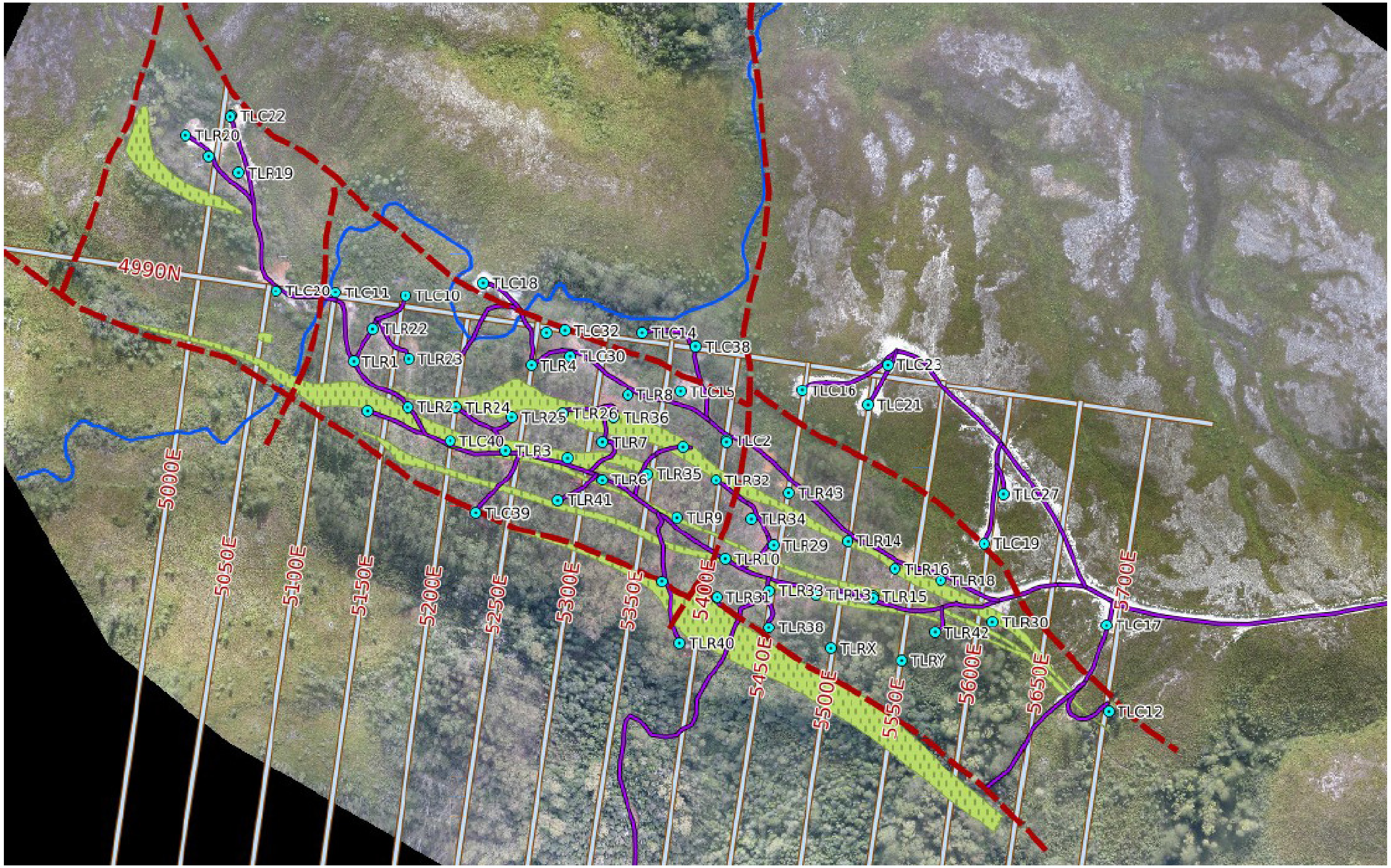


Figure 4. Tenth Legion collar locations, local grid and magnetite skarn outcrop

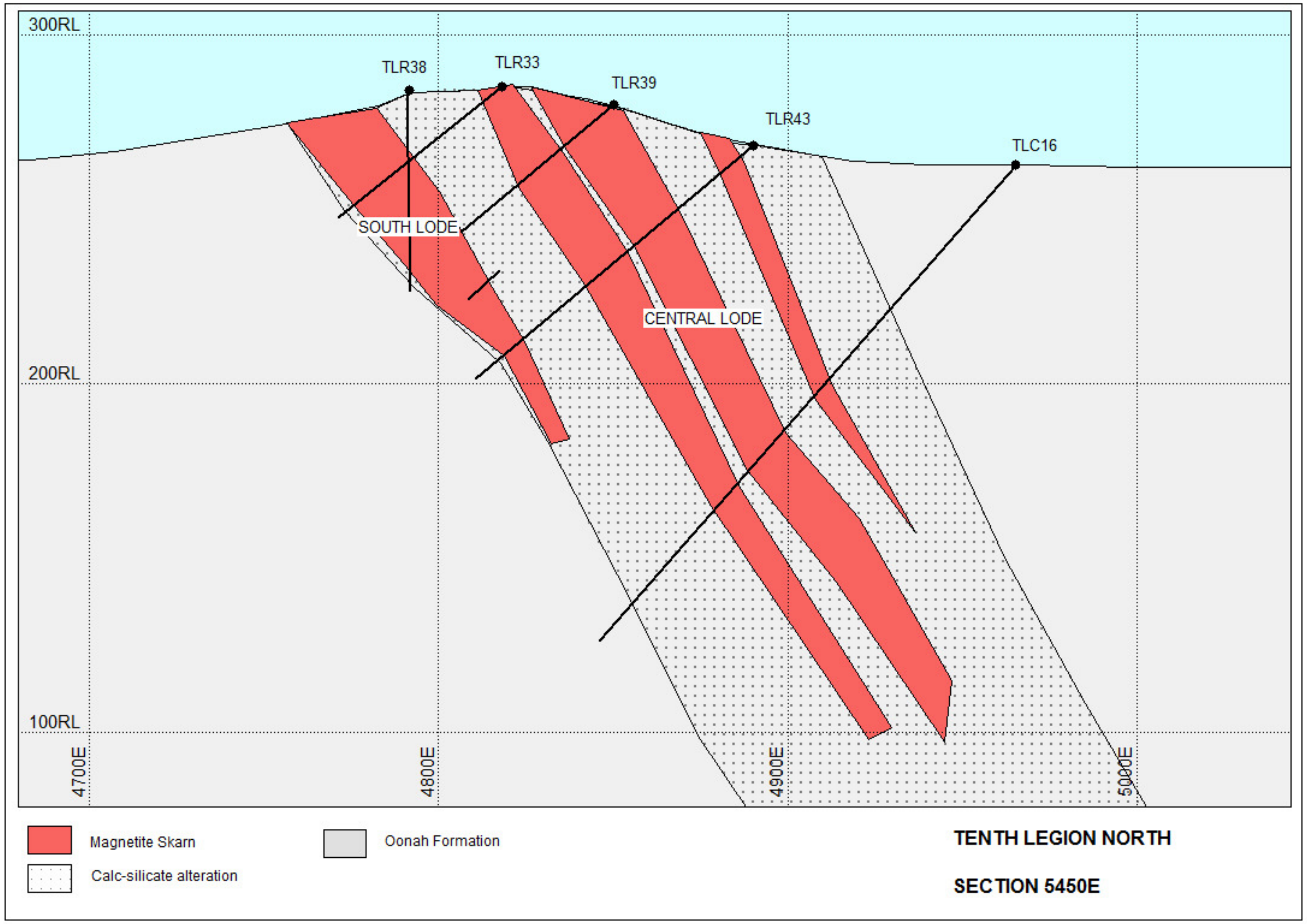


Figure 5. Tenth Legion Section 5450E.

3 DRILLING DATA

An Access database was created to manage the CRHL and AHL drilling data by Laurie Veska of AHL. A total of 14 historic drillholes were completed by CRAE in 1980's, 7 of which are within the project are for this resource estimation.

All the historic drilling data was uploaded to the Access database by AHL.

3.1 DRILLING TECHNIQUES

All drillhole data is derived from diamond drill core. Details of collar locations, core sizes and core recoveries are listed in Appendix 1. Drilling data was acquired over 30 years from 3 different exploration campaigns:

- 1980 CRAE TLC1-14 933.4m
- 2010 CRHL TLC15 – 42 3,451.3m
- 2013 AHL TLR1 – 45 2,153.1m

Drilling conditions were reported to be challenging, particularly within the weathered zone where changes in rock hardness and competency were caused by the mixture of clay, magnetite nodules and fines, limonite and goethite. Depth of weathering was observed to increase to the east (Veska, 2014).

CRAE drilled 14 holes in the Tenth Legion area during the early 1980's. Although the ground was originally acquired by IMI for Iron Ore exploration, CRAE were investigating the tin-tungsten potential of the magnetite skarns. Consequently no Fe assays were performed on the drill core.

CRHL drilled 28 wire-line diamond drill holes into the Tenth Legion prospect in 2010. Drill logs and assay data was uploaded to the AHL database by Laurie Veska. The CRHL holes were drilled conventionally with HQ collars and NQ tails with the majority of intersections being of NQ size. All mineralised intercepts were analysed for Fe. There were no downhole surveys. Core recoveries were not available from the CRHL logging but are assumed to be similar to the recoveries for the AHL drillholes as they were completed by the same drilling company.

AHL drilled 45 wire-line diamond drillholes in 2013 to 2014. Most holes were drilled triple tube HQ diameter, some with NQ tails. Core recoveries varied from poor (0 – 30%) to good (70-90%) within the weathered zone. Recoveries were generally excellent (90-100%) within fresh mineralisation. There were no downhole surveys with collar azimuths recorded by licenced surveyor.

3.2 DATA LOCATION

A local grid was established over the Tenth Legion prospect by CRAE in the 1980's. The northwestern corner of the EL 53M/75 was assigned the grid coordinates 4990 North, 5000 East. Grid lines were established with an AGD bearing of 8 degrees 43 minutes. A 2D local grid transformation was utilized by AHL using two surveyed historic drillholes (TLC10 and TLC12) that have both local grid and GDA coordinates. Grid transformation details are listed below:

Master TLC Co-ordinate Transformation Spreadsheet			
Bearing:	120.61241 deg	Bearing:	111.73854 deg
Baselength:	593.3513 m	Baselength:	594.0249 m
Scale Factor:	1.001135	Base Error:	-673.6 mm
Scale Error:	1135.2 mm/Km	Alpha:	0.989152
Easting Origin:	481653.9858 m	Beta	0.154435
Northing Origin:	-5353377.3214 m	Rotation:	-8.87387 deg

Original Co-ordinates (m)				Transformed Co-ordinates (m)			
No	Easting	Northing	Elevation	No	Easting	Northing	Elevation
TLC10	355377.0830	5361648.0210		TLC10	5150.5500	4989.7300	
TLC12	355887.7400	5361345.8700		TLC12	5702.3300	4769.7200	

Most Drill collars were located by licenced surveyors under instruction from AHL using a differential GPS. Drill collars are recorded in the database as both GDA94 and local grid. Drill collar locations presented as local grid are displayed in Appendix 1. The majority of the drillholes used in the estimation are accurately located by licenced surveyor.

Downhole surveys are problematic due to the very strong local magnetic field. Collar azimuths were recorded by licenced surveyor with no downhole azimuths used. Some of the longer CRHL drillholes were surveyed using a reflex gyroscopic tool. Given the short length of most drillholes, the drill spacing and the nature of the mineralisation the lack of downhole surveying is not considered to have a material impact on resource estimation.

Drill spacing varies from 50 x 50m in the well-drilled Central Lode to 100m x 100m or more on the periphery and deeper margins of the resource.

A detailed DTM of the magnetite skarns was created from drill hole collars and survey control and data acquired from the use of an eBee drone. The area of the digital terrain model was expanded using lands Department 10m contours to cover areas of potential waste dumps and pit walls.

3.3 SAMPLING TECHNIQUES AND LOGGING

All drill core was transported to the AHL/CHRL core storage facilities in Zeehan. Core was reconstituted and marked up for logging. AHL measured the core for recovery, no recoveries were available for earlier drilling programs.

All drill core was geologically logged by AHL or CHRL staff on personalized software using digital pads or laptop computers. Logs were uploaded to the customised database on completion. Standard lithology codes have been used for all logging based on the original CRAE exploration logging codes. Logs were validated in cross sectional analyses.

Mineralised drill core was marked up and spit with a diamond core saw as per industry standard. Core was sampled generally on a 1m basis as per industry standard although core from weathered/broken zones was sampled on 1.5m lengths between core blocks. Some massive magnetite mineralisation from HQ core was quartered due to excessive sample weights. The cut core was ticketed, bagged and delivered to ALS for analysis.

3.4 ASSAY DATA

The CRAE exploration holes were not analysed for Fe. Exploration was designed to test for Sn – W mineralisation and core was assayed for Sn, W, Cu, Pb, Zn and sporadic analyses for As and Au.

CRHL drill core was initially assayed by Perth SGS Laboratories before the ALS laboratory in Burnie was used for the bulk of the program. Half drill core was dried and then crushed before a 250g sub sample was riffle split and pulverised to >85% passing 75 micron. The suite of elements analysed changed frequently with the only consistent elemental analyses being Fe, Pb, Zn, Ni and Sn by XRF (presumably by borate fusion disc).

AHL half drill core was dried and then crushed before a 250g sub sample was riffle split and pulverised to >85% passing 75 micron. A sub sample was used to create a borate fusion disc. All AHL analyses were completed by ALS using their Iron Ore Procedure by lithium borate fusion disc XRF (Me-XRF21n) including 21 elements and LOI. All pulps and rejects were returned to AHL.

The AHL and CRHL assay data is recorded digitally and uploaded to the database from laboratory reports ensuring sample security.

All scanned drill hole data from the 1981/1982 CRAE drilling campaign has been verified by AHL geologists and has been found to be of a high standard. All lithological, geochemical and metadata has been captured into the AHL database and validated against old plans and sections.

3.5 QAQC

Standards and blanks were routinely inserted into sample batches during the CRHL drilling program. CRHL typically used a base metal standard an iron ore standard (GIOP31 Magnetite) certified reference material supplied by Geostats P/L, and a blank which was created in house from local Crotty Sandstone (Blank 1).

AHL inserted a blank and standard every 20 samples. An iron ore standard GIOP100 magnetite certified reference material supplied by Geostats P/L was used as well as a similar in house blank (Blank 3) created from local quartzite.

Certified values and the basic statistical analysis for each standard and the blanks from both the CRHL and AHL drilling programs are listed in Table 2. No QAQC report was supplied and it is unclear if QAQC monitoring or assessment was completed as the two drilling programs progressed. QAQC results have been plotted against sample number which is considered a proxy for time/batch sample submissions.

The CRHL standard GP31 performed particularly poorly with no analyses falling within 3 standard deviations of the certified value (Figure 6). The variance was very large and the results are unacceptable. Although not certified, the performance with Blank 1 improved as the program progressed. Initially the sample variance was unacceptable but after the 15th sample submission the precision and accuracy improved dramatically (Figure 7). It is apparent that SGS Laboratories were not performing well during the initial CHRL program, possibly die to the use of the ICPMS analytical technique. The change to ALS significantly improved the performance with the blank. It is unclear whether the standard was still being submitted during the entire CRHL program.

The standard for the AHL program performed very well with all samples falling within 3 standard deviations of the certified value (Figure 8). The performance of the blank was acceptable although less convincing with several submissions falling outside of 3 standard deviations (Figure 9).

Table 2. Tenth Legion QAQC statistics

	GP10	**GP31**	**Blank 1**	**Blank 3**
Certified Value	*36.63*	*37.4*		
Certified STD	*0.46*	*0.29*		
Mean	36.64	35.92	0.32	0.48
Median	36.63	36.10	0.30	0.49
Mode	36.62		0.03	0.51
Standard Deviation	0.13	3.10	0.23	0.16
Sample Variance	0.02	9.62	0.05	0.02
Skewness	1.22	-0.60	1.40	0.71
Range	0.69	9.00	1.13	0.91
Minimum	36.37	30.50	0.02	0.14
Maximum	37.06	39.50	1.15	1.05
Count	41	9	30	39

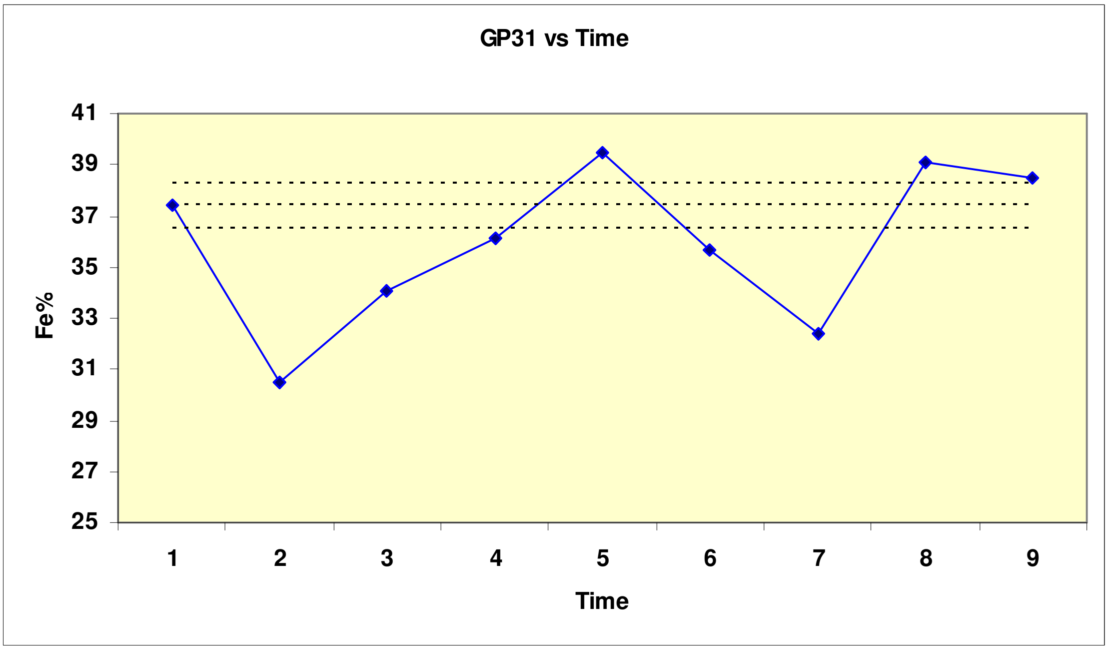


Figure 6. Standard GP31 vs time.

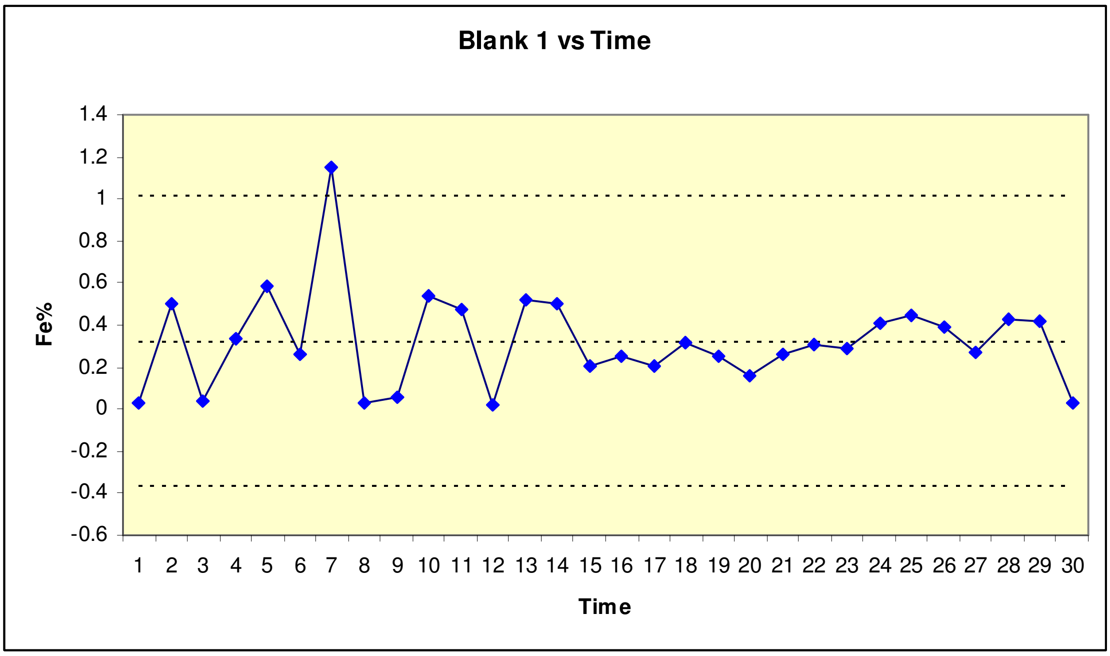


Figure 7. Blank 1 vs time.

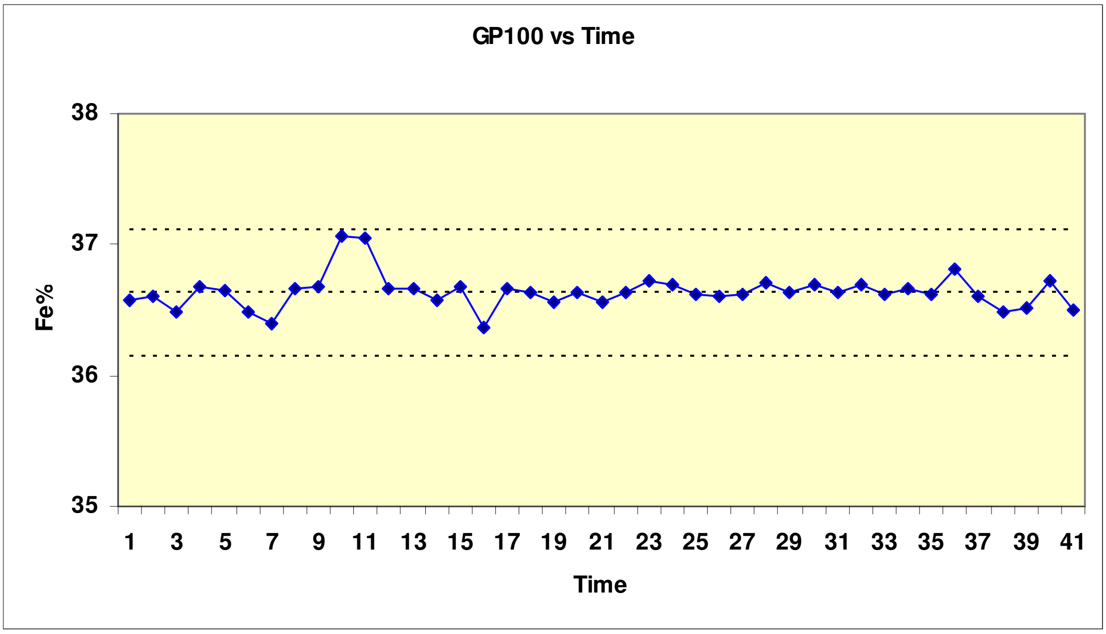


Figure 8. Standard GP 100 vs time.

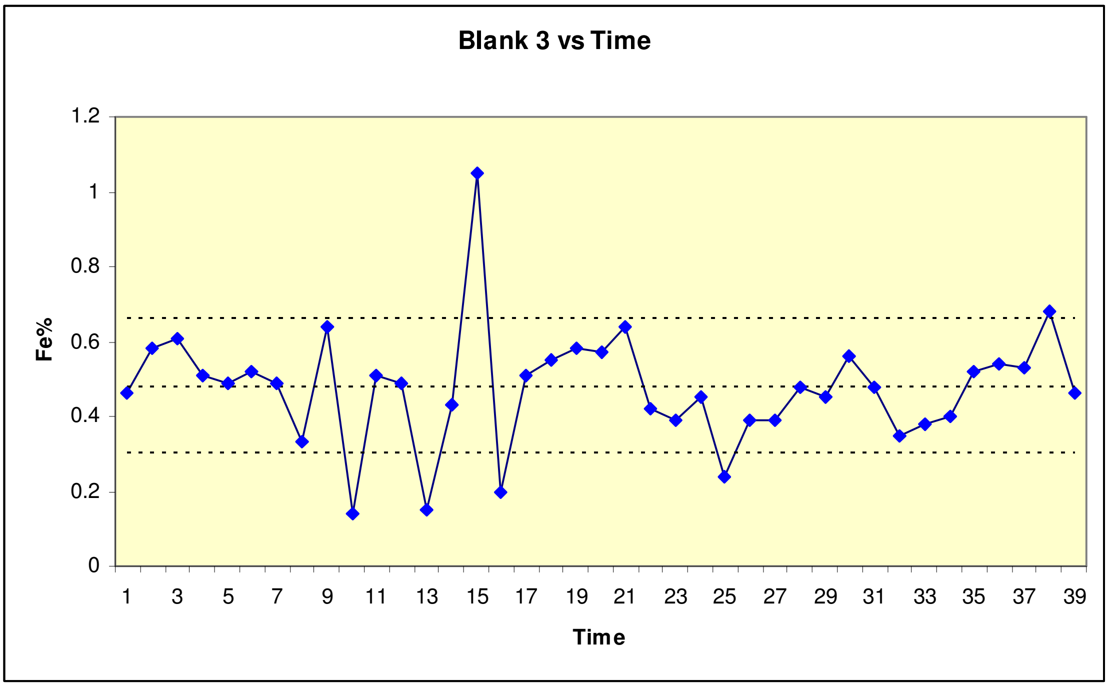


Figure 9. Blank 3 vs time.

Independent Laboratory analyses were completed on approximately 10% of sample submissions from both the CRHL and AHL programs. Sample pulps were sent to SGS Laboratories in Perth for analysis by fusion disc XRF.

Repeatability for the AHL pulps was excellent with very little variation between sample sets (Figure 10). As expected from the performance of the external standards, the CRHL analyses demonstrated appreciable variance although no appreciable bias was noted (Figure 11).

Overall the QAQC programs suggest the AHL data is of a high quality and is considered to be acceptable for resource estimation. The CRHL data is not of good quality as a result of differing assay techniques and laboratories employed and a lack of interpretation of QAQC information during the program. However given the nature of the magnetite skarn mineralisation the sample variance is unlikely to have a significant impact on resource estimation. The data reliability will be taken into account on the classification of the resource.

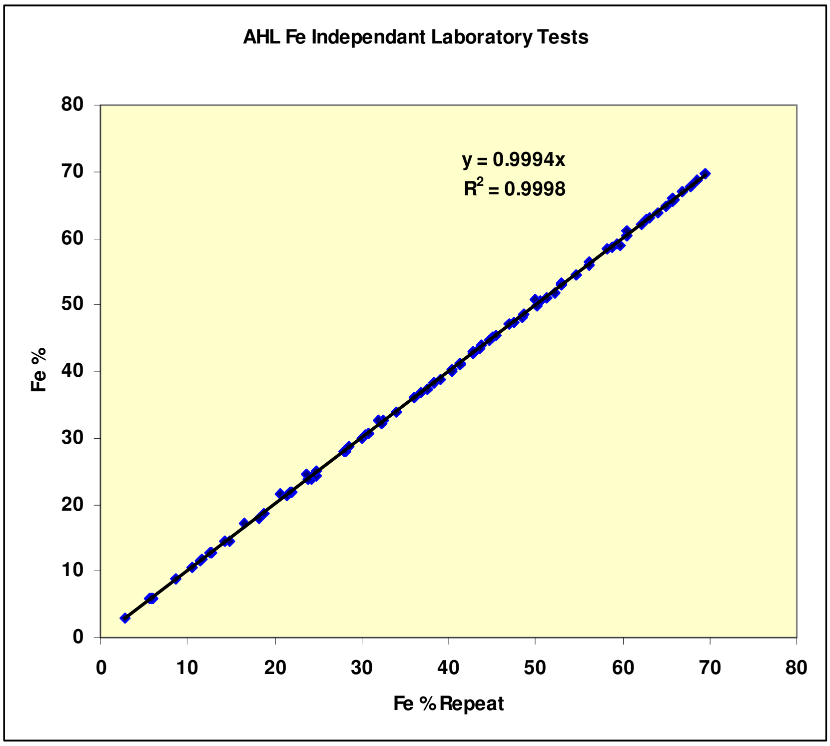


Figure 10. AHL program Fe independent Laboratory Analysis

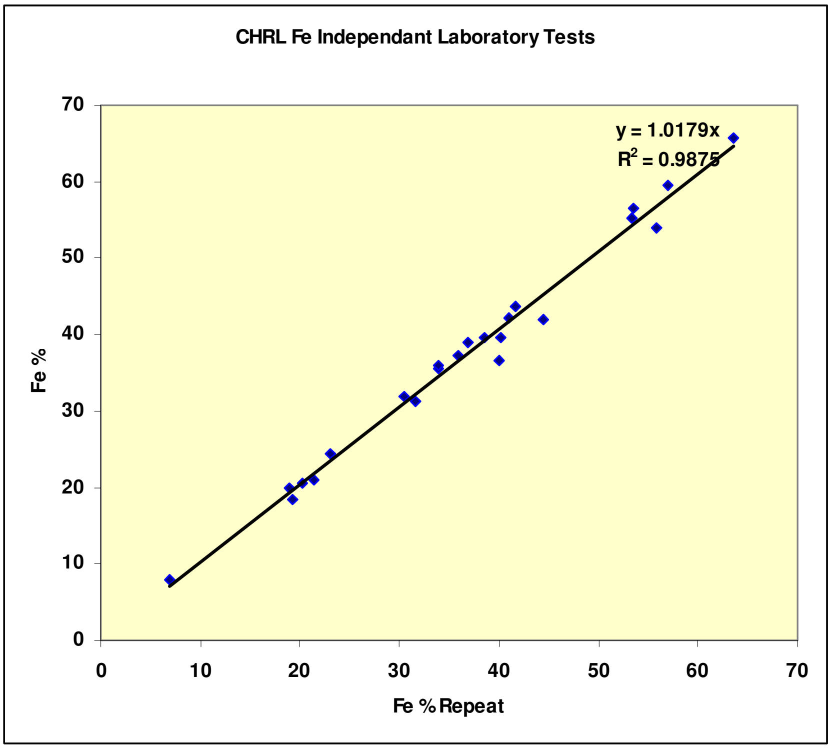


Figure 11. CRHL program Fe independent Laboratory Analysis

Table 3. Sampling Techniques and Data		
Criteria	**JORC Code Explanation**	**Commentary**
Sampling Techniques	• Nature and Quality of sampling (eg cut channels, random chips or specific specialized industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or hand held XRF instruments etc). • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1m samples from which 3kg was pulverized to produce 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or sampling types (eg submarine nodules) may warrant disclosure of detailed information.	• The Tenth Legion Magnetite deposit has been sampled through 2 recent and 1 historic diamond drilling campaigns in 2010, 2013 and 1980. , • 87 wire-line HQ, NQ diamond core for 6,537.8m • Approximately 1m samples of 2-3kg were taken from diamond saw cut drill core whilst respecting geological boundaries. Broken core was sampled on 1.5m splits between core blocks.
Drilling Techniques	• Drill type (eg core, reverse circulation, open hole hammer, rotary air blast, auger, Bngka, sonic etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face sampling bit or other type, where core is oriented and if so by what method	• 87 wire-line HQ, NQ diamond core for 6,537.8m • Core not oriented.
Sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximize sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample	• Core reconstituted, marked up and measured in all drilling campaigns • Recovery generally excellent (90 – 100%) in un-weathered zones, poor to moderate (30-60%) in weathered broken zones

	recovery and grade and whether sample bias may have occurred.	• No relationship between recovery and grade was observed
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. • Whether logging is qualitative of quantitative in nature. Core (or costean, channel etc) photography.	• Core geologically logged by experienced geologists over all campaigns. • Standard lithology codes used for interpretation. • RQD and recoveries logged • Logs loaded into customised spreadsheets and uploaded into access database.
Sub-Sample techniques and sample preparation	• If core, whether cut or sawn and whether quarter of half taken. • If non core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub sampling stages to maximize representivity of samples. • Measures taken to ensure that the sampling is representative of the insitu material collected, including for instance results of field duplicate/second half sampling. • Whether sample sizes are appropriate to the grain size of the material being sampled	• Half core split by diamond saw on 1.0m samples while respecting geological contacts. Broken core bagged on 1.5m splits between core blocks • Bagged core delivered to ALS Laboratories in Burnie or couriered to SGS Laboratories in Perth • Whole core crushed then a 250g subsample riffle split and pulverized to >85% passing 75micron
Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysics tools, spectrometers, hand held XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibration factors applied and their derivation etc. • Nature of quality control procedures adopted	• Recent AHL and some CRHL samples analysed by fusion disc XRF at ALS Laboratories Burnie. • Some CHRL core analysed by 32 element analysis by ICP_ES after Aqua Regia digestion. • QAQC analysis with Certified Reference Material (CRM) and blanks inserted every 20th sample. • Good correlation between CRM and original for AHL data. Poor correlation between CRM and early CRHL data due to differing analytical procedures.

	(eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel • The use of twinned holes • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols • Discuss any adjustment to assay data	• Independent laboratory analyses completed with good repeatability observed. • No twinned holes were completed • Primary assay data was received electronically and stored by consultant geologist. • All electronic data uploaded to access database • Historic data loaded onto spreadsheets and uploaded to Access database. • Data validation with Surpac software, basic statistical analysis and comparison with historic plans and sections. • Negative results for below detection limit assay data has been entered as detection limit
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys) trenches, mine workings and other locations used in mineral resource estimation • Specification of grid system used • Quality and accuracy of topographic control.	• All hole collar surveys by licensed surveyor. • All coordinates in local grid and GDA94 • RL's as MSL • Down hole surveys by reflex gyroscopic tool • Topographic dtm created by licensed surveyor and extended with lands department 10m contour maps adjusted for known survey points (eg. drill collars)
Data Spacing and distribution	• Data spacing for exploration results • Whether data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for Mineral Resource and Ore Reserve estimation procedures and classifications applied. • Whether sample compositing has been applied	• Sample spacing approximately 50 x 50m in better drilled areas. • Drill spacing approximately 100 x 100m or worse for deeper deposit margins • Sample spacing not clustered. • Drill spacing is considered to be appropriate for the estimation of Indicated to Inferred Mineral resources. • Samples have been composited on 1m intervals for the resource estimation.

Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between drilling orientation and the orientation of key mineralised structures is considered to have introduced sampling bias, this should be assessed and reported if material.	• The majority of DDH have been drilled north-south sub-perpendicular to vein strike. • Drill hole orientation is not considered to have introduced any material sampling bias.
Sample Security	• The measures taken to ensure sample security	• Samples ticketed and bagged on site. • Delivered by courier to ALS or AGS laboratories in Burnie or Perth. • All historic data captured and stored in customised access database • Data integrity validated with Surpac Software for EOH depth and sample overlaps. • Manual check by reviewing cross sections with the historic drafted sections and plans. • Basic statistical analysis supports data validation
Audits or Reviews	• The results of any audits or reviews of sampling techniques and data	• No audits or reviews of sampling data and techniques completed.

3.6 BULK DENSITY

Bulk Density determinations were made using the Archimedes method on both whole core and half core. Determinations for friable oxides were determined by measuring the weight and a known volume (1000cc). Measurements were made by AHL and CRHL staff on site. Calibrated electronic scales were used for all determinations.

SG data was collected for massive magnetite, serpentinite magnetite and calc-silicate magnetite as well as calc-silicate, serpentinite and quartzite waste rock.

Statistical analysis of the results for both magnetite mineralisation and waste rock are displayed in Tables 4 and 5 respectively.

Table 4. Magnetite Bulk Density Summary Statistics

	SG	Fe %
Mean	3.39	39.47
Standard Error	0.05	1.41
Median	3.33	37.55
Mode	3.27	64.63
Standard Deviation	0.67	17.56
Sample Variance	0.45	308.35
Kurtosis	0.86	-0.81
Skewness	-0.47	-0.11
Range	3.54	67.62
Minimum	1.22	2.98
Maximum	4.76	70.60
Sum	532.95	6157.95
Count	157	156

Table 5. Waste Rock Bulk Density Summary Statistics

	SG	Fe %
Mean	2.91	18.42
Standard Error	0.06	2.16
Median	2.93	14.84
Mode	2.94	
Standard Deviation	0.53	13.98
Sample Variance	0.28	195.40
Kurtosis	4.86	1.33
Skewness	-0.78	1.16
Range	3.49	60.74
Minimum	0.94	2.65
Maximum	4.43	63.39
Sum	209.34	773.64
Count	72	42

Magnetite skarn has a mean value of 3.39, mode of 3.27 and a median of 3.33. As expected there is a strong association between SG and Fe grade (Figure 12). Bulk density for the mineralised skarn is best represented through the algorithm SG = (0.0139 x Fe%) + 2.85.

Mean, median and mode for waste rock SG determinations are all approximately 2.9. Consequently an SG of 2.9 has been assigned to the background of the blockmodel.

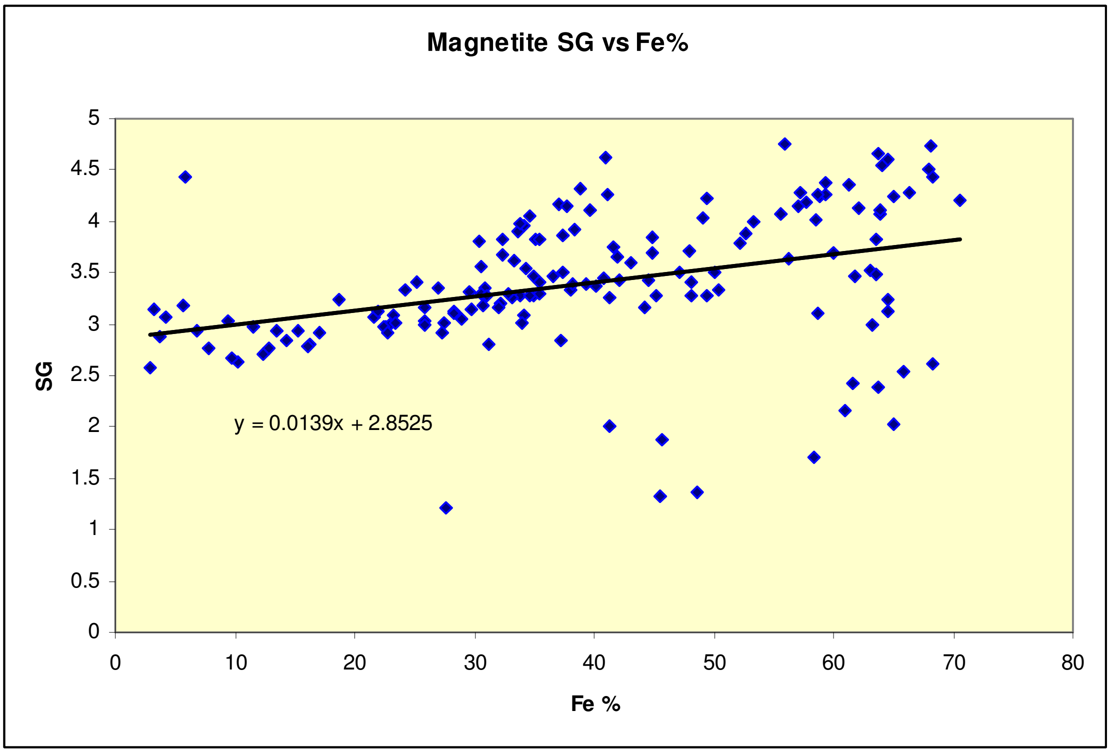


Figure 12. Magnetite skarn SG vs Fe%.

3.7 METALLURGICAL TESTWORK AND DAVIS TUBE DETERMINATIONS

Four 3-4m length composite samples of mineralised quarter-core were submitted for Davis Tube Recovery determinations (DTR) and metallurgical beneficiation testwork. Samples prepared include:

Sample ID	Hole Id	From	To	Sample No
S	TLR38	32	36	141
S	TLR41	24.8	27.8	142
C	TLR43	46	49	143
C	TLR34	29.4	32.6	144

Metallurgical testwork was completed on two composite samples (S for serpentinite gangue and C for calc-silicate gangue) at the Guanzhou Research Institute of Non Ferrous Metals, China.

Calc-silicate sample C contained 51.37% FeO with 94.6% existing as magnetic iron with the remainder occurring as serpentinite, chlorite, talc and Fe silicates. Beneficiation tests indicate 61% passing 70um can produce an Fe concentrate assaying 65.25% Fe with 96.7% recovery using 0.15T low intensity magnetic roughing separation (LIMS).

Serpentinite sample S was lower grade containing 30.8% FeO with 93.1% existing as magnetic iron with the remainder occurring as serpentinite, chlorite, talc and Fe silicates. Beneficiation tests indicate 85% passing 70um can produce Fe concentrate assaying 64.4% Fe with 94.4% recovery using 0.15T low intensity magnetic roughing separation (LIMS).

Test work demonstrates that the liberation of the magnetite is good. A single roughing, cleaning and scavenging circuit with low intensity magnetic separation is recommended. Interestingly process mineralogy research suggests appreciable cobalt, bismuth and gold is contained in the ore. Further testwork is required.

DTR analyses were completed by ALS Laboratories in Perth for the 4 separate samples, 141 – 144. Results are tabulated in Appendix 2. Recovery-grind curves are displayed in Figures 13 to 16.

Recoverable magnetite Fe is highly dependant on the ore grade. Lower grade sample 141 does not produce concentrate above 60% Fe until reduced to 75um with the recovery dropping below 40%. Conversely high grade samples 142 and 144 produce high grade concentrates at coarser grind sizes with recoveries in excess of 50%. The high grade sample 143 has low sample recoveries at coarse grind sizes with decreasing recoveries and minor grade increases with decreasing grind size suggesting magnetite is relatively fine in this sample.

The metallurgical testwork and DTR analyses indicate the majority of the Fe in the tenth legion deposit is present as magnetite. A salable concentrate can be produced at medium to fine grind sizes with recoveries varying depending on the head grade. High grade ores tend to produce better quality concentrates at larger grind sizes.

Impurities Al_2O_3, S, P and SiO_2 are relatively low in the magnetic fraction although some variability is apparent. As expected impurities levels generally decrease with decreasing grind size. Sulphur contents are generally low (<0.5%) but are variable between samples with sample 142 having relatively high sulphur (>2%). Phosphorus is usually less than the detection limit (<0.001). Al_2O_3 is generally low (0.5 – 0.02%) as is SiO_2.

Additional DTR analyses are recommended for a range of grade and gangue types to determine Fe grade – recovery relationships.

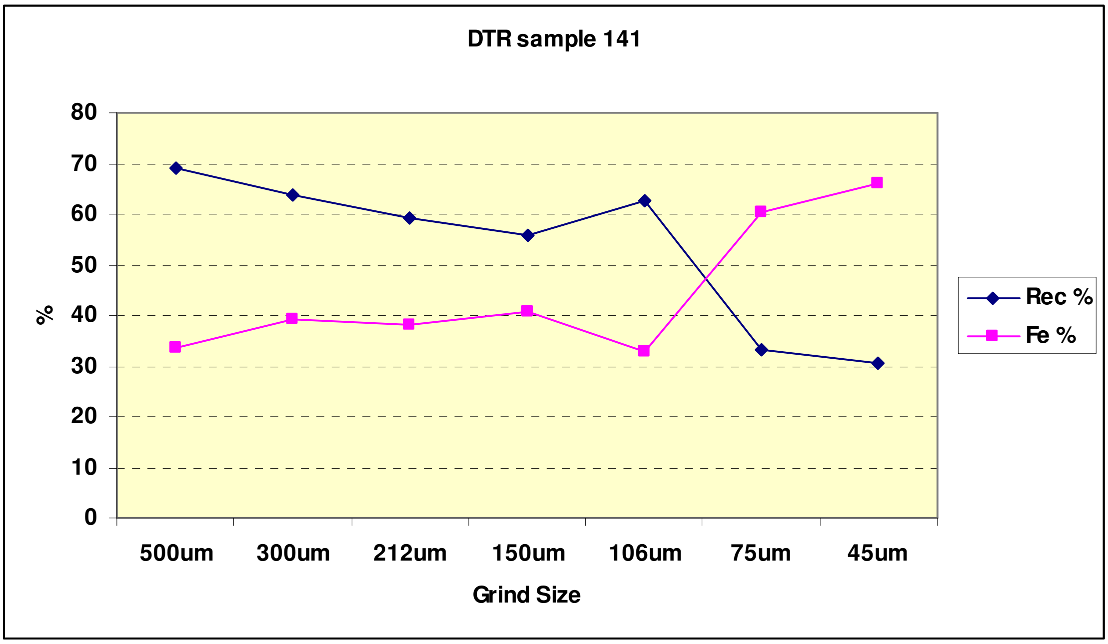


Figure 13. DTR Grind Size Recovery Curve Sample 141

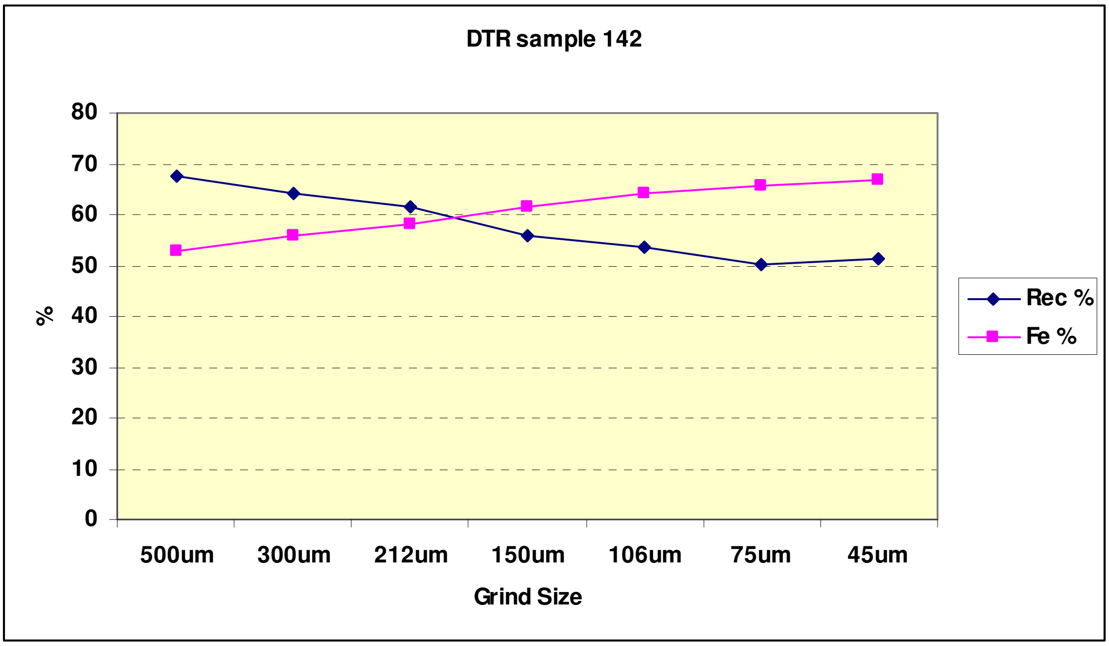


Figure 14. DTR Grind Size Recovery Curve Sample 142

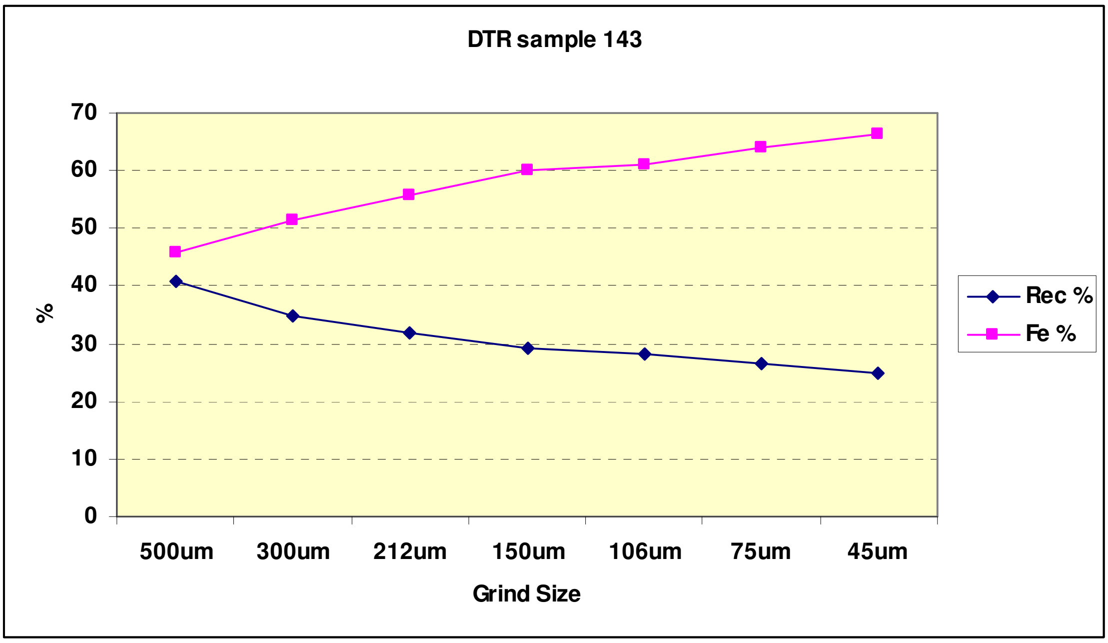


Figure 15. DTR Grind Size Recovery Curve Sample 143

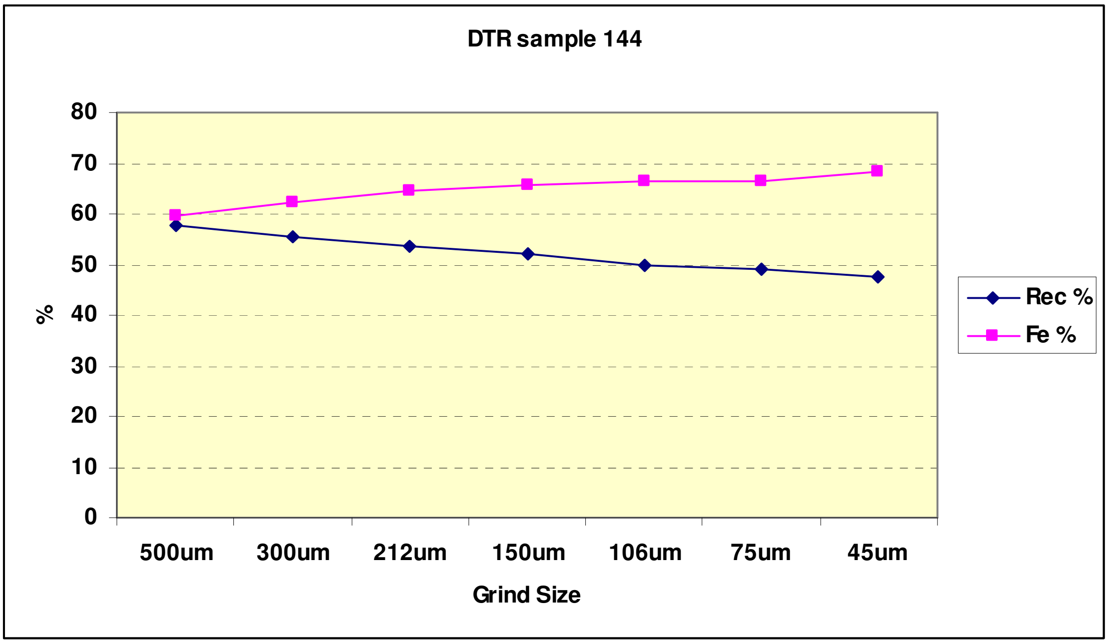


Figure 16. DTR Grind Size Recovery Curve Sample 144

4 GEOLOGICAL DOMAINING

Wire-framed solid models of geological and mineralisation domains were created from sectional cross sections utilizing drill hole data, geological string files and a topographic digital terrain model provided by AHL.

Mineralized Fe domains are delineated using a >20% Fe cutoff and a minimum downhole length of 3m with some allowances for geological continuity. Internal dilution was restricted to a maximum of 3m where possible, again maintaining geological continuity.

Solid models have been 'snapped' to drill holes where possible to accurately capture and model data and eliminate sectional projection inaccuracies.

Solid models used for this resource estimation include:

- Topographic dtm — tln_project_area.dtm
- Central Lode — magnetite_central.dtm
- South Lode — magnetite_south.dtm
- Northwest Lode — Magnetite_northwest.dtm

Domain codes were assigned to the blockmodel using the wireframe solids. Corresponding intercept and composite string codes were assigned for each mineralised shell. Mineralisation solid intercepts are stored in the access database according to their code.

Domain codes are listed in Table 6.

Table 6. Blockmodel Zone Codes and Composite String Numbers

Lithogy	Code	Solid Model	Object No	Composite String
Surface	0	tln_project_area	1	Na
Skarn	1	tln_project_area	1	Na
Central Lode	101	magnetite_central	1	1
	102	magnetite_central	2	2
	103	magnetite_central	3	3
South Lode	104	magnetite_south	4	4
Northwest Lode	105	magnetite_northewest	5	5

5 SAMPLE STATISTICAL STUDIES

Sample statistical studies have been completed with composited diamond drill hole data. DDH intercepts of solid models have been flagged with Surpac Software and relevant intervals stored in the access database. Assay data has been composited on 1m lengths.

Composites of less than 0.25m were not included in statistical studies or in the resource estimate.

Composited data is located as .csv files on the attached data disc.

Histograms of composited data for Fe in the Central Lode, South Lode and the Northwest Lode are displayed in Figures 17 and 18. Descriptive statistics for all the domains are listed in Tables 7 to 9.

The majority of the Tenth Legion Magnetite mineralisation is contained in the Central Lode which contains a total of 904 1m composite samples over an area of approximately 600m strike length by 200m vertical by 200m width.

The raw 1m composites of Fe for all domains for the Central and South Lodes demonstrate a broad Gaussian distribution typical of iron deposits (Figure 17). No sub populations are evident within the larger Central Lode histograms and further high-grade domain modeling is not considered necessary. There is some suggestion of a high grade sub domain in the Central Lode data although composite numbers are relatively low. There are insufficient 1m composites in the Northwest Lode to provide significant basic statistical analysis.

The cumulative frequency histogram and the low coefficient of variation (CV) for 1m composited Fe suggests that no top cutting is considered necessary. The mean and median values for the Central Lode are very similar at 41.2 and 41.4% Fe respectively.

Moderate levels of silica are present within the Central Lode having a mean of 14.9 and a mode of 11.6% Si.

Aluminium levels in 1m composites are quite variable with a high CV, probably reflecting the presence of clay in the oxide zone. The mean and median are low (2.7 and 1.1% Al) suggesting the majority of samples are located below the level of oxidation. A top cut of 15.8% Al was applied but care should be taken to ensure that high alumina is not reflected in the estimation below to level of oxidation.

S, Sn, Pb and WO_3 1m composites within the modeled Fe domains all demonstrate highly skewed and variable distributions with high CV's. Correlation coefficients (Table 10) between Fe and all other elements are very low indicating the very poor correlation of magnetite mineralisation with sulphides and Sn – WO_3 mineralisation. Correlation coefficients also suggest the Fe domains are not suitable for the estimation of these elements. Correlation coefficients suggest there is moderate correlation between S, and Zn.

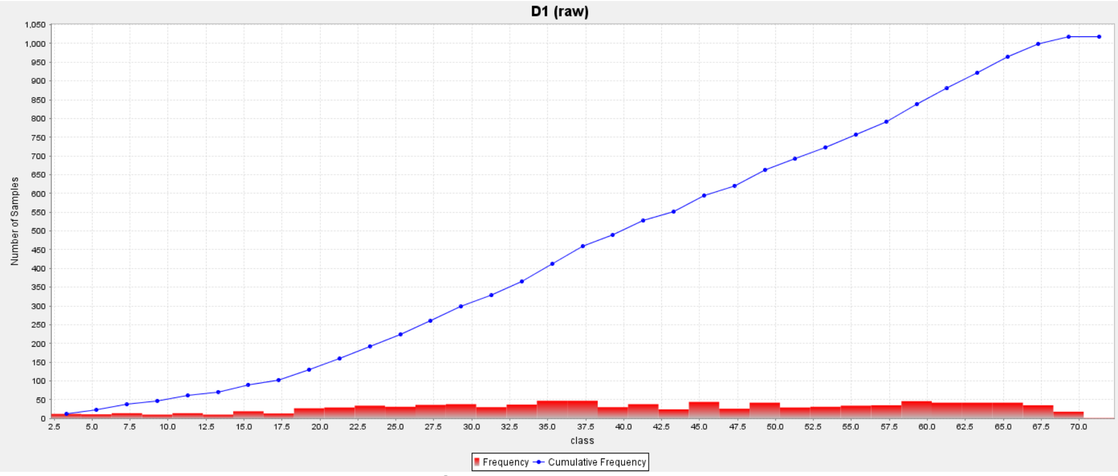


Figure 17. Tenth Legion Magnetite Central Lode 1m composite Fe histogram.

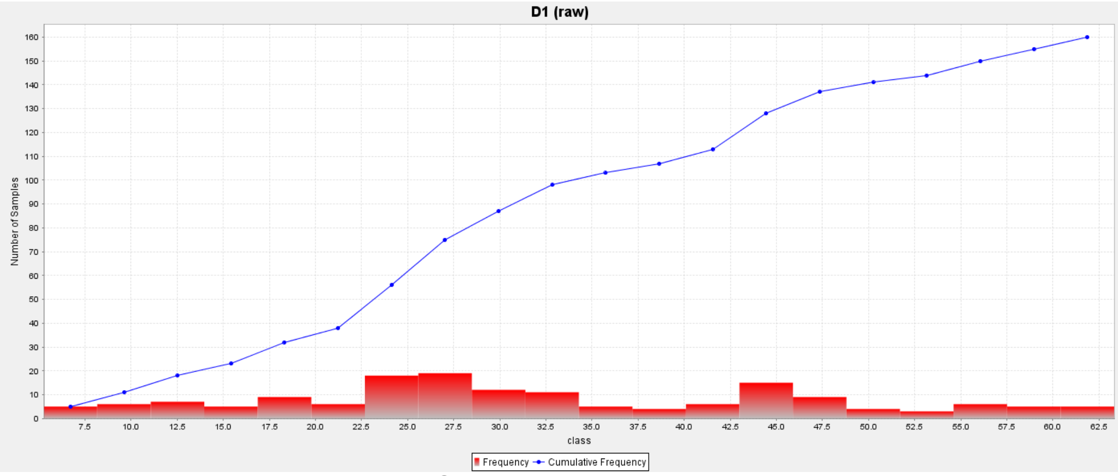


Figure 18. Tenth Legion Magnetite South Lode 1m composite Fe histogram.

Table 7. Magnetite Central Lode 1m Composite Basic Statistics

	Fe %	Si%	Al%	S ppm	Sn ppm	Pb %	Zn %	W ppm
Number of samples	1018	729	697	672	1073	922	1103	222
Minimum value	2.29	0.01	0.01	0	2	0.00	0.00	2
Maximum value	70.60	74.10	23.50	6	33000	0.58	7.28	1553
Mean	41.21	14.85	2.75	0	645	0.02	0.14	62
Median	41.36	11.55	1.10	0	230	0.01	0.04	24
Geometric Mean	36.19	7.49	0.99	0	250		0.05	26
Variance	298.93	174.44	16.65	1	3374664	0.00	0.30	23341
Standard Deviation	17.29	13.21	4.08	1	1837	0.05	0.55	153
Coefficient of variation	0.42	0.89	1.48	2.78	2.85	2.22	3.83	2.47

Table 8. Magnetite South Lode 1m Composite Basic Statistics								
	Fe %	Si%	Al%	S ppm	Sn ppm	Pb %	Zn %	W ppm
Number of samples	160	155	155	139	130	143	163	5
Minimum value	5.26	4.89	0.01	10	10	0.00	0.00	10
Maximum value	63.31	49.18	33.30	26100	1000	2.43	17.89	3900
Mean	32.58	24.59	2.34	882	83	0.04	0.18	826
Median	29.87	25.71	0.21	102	50	0.01	0.01	70
Geometric Mean	28.85	22.28	0.29	156	48	0.01	0.02	109
Variance	210.27	94.18	34.72	11747126	16190	0.05	2.01	2362984
Standard Deviation	14.50	9.70	5.89	3427	127	0.23	1.42	1537
Coefficient of variation	0.45	0.39	2.51	3.88	1.54	5.20	7.91	1.86

Table 9. Magnetite Northwest Lode 1m Composite Basic Statistics

	Fe %	Si%	Al%	S ppm	Sn ppm	Pb %	Zn %	W ppm
Number of samples	37	21	34	21	23	34	37	3
Minimum value	14.00	0.81	0.14	0	90	0.00	0.02	130
Maximum value	65.70	33.06	17.55	940	1430	0.05	0.62	170
Mean	51.11	10.89	4.06	310	510	0.01	0.10	147
Median	55.71	5.36	2.37	290	379	0.01	0.05	140
Geometric Mean	48.57	5.43	2.05	6	372	0.01	0.06	146
Variance	192.33	109.34	20.32	94293	157488	0.00	0.02	289
Standard Deviation	13.87	10.46	4.51	307	397	0.01	0.13	17
Coefficient of variation	0.27	0.96	1.11	0.99	0.78	0.72	1.34	0.12

Table 10. Magnetite Central Lode Table of Correlation Coefficients.								
	Fe %	Si%	Al%	S ppm	Sn ppm	Pb %	Zn %	W ppm
Fe %	1.00	-0.84	-0.38	-0.06	0.25	-0.01	-0.05	0.00
Si%	-0.84	1.00	0.40	-0.03	-0.24	0.02	-0.01	1.00
Al%	-0.38	0.40	1.00	-0.04	-0.09	0.04	0.01	0.19
S ppm	-0.06	-0.03	-0.04	1.00	-0.07	-0.08	0.51	1.00
Sn ppm	0.25	-0.24	-0.09	-0.07	1.00	-0.05	0.00	0.02
Pb %	-0.01	0.02	0.04	-0.08	-0.05	1.00	0.02	0.18
Zn %	-0.05	-0.01	0.01	0.51	0.00	0.02	1.00	0.89
W ppm	0.00	1.00	0.19	1.00	0.02	0.18	0.89	1.00

5.2 VARIOGRAPHY

Semi variograms and variogram models of 1m composited Fe data from the combined Central Lode were constructed using Surpac Software. None of the other domains contain sufficient data to allow the creation of meaningful semi-variograms.

Variogram models parameters are displayed in Table 11 in Figures 19-21.

Semi variograms were well constructed in the y, x and z directions. The y variogram was very well constructed demonstrating excellent grade continuity along strike. Zero nugget effect was evident with a range of 24m to the sill. The range was a little less than expected from other Fe skarns (eg. Kara) but still of excellent quality.

Nested variogram models were constructed in the x and z directions with short ranges of (10 and 5m respectively) to the first structure accounting for 50% of the variance. The sill was modeled at a range of 46 m and 27m for the x and z domains respectively demonstrating a similar moderate to long range to sill.

Table 11. Tenth Legion Central Lode Variogram Parameters (spherical models).

Direction	Nugget	Sill	Range	Major:Semi	Major:Minor
y	0	0.95	24	1	2
x	0	0.5	10	1	1
		0.5	46	1	1
z	0	0.4	5	1	1
		0.6	27	1	1

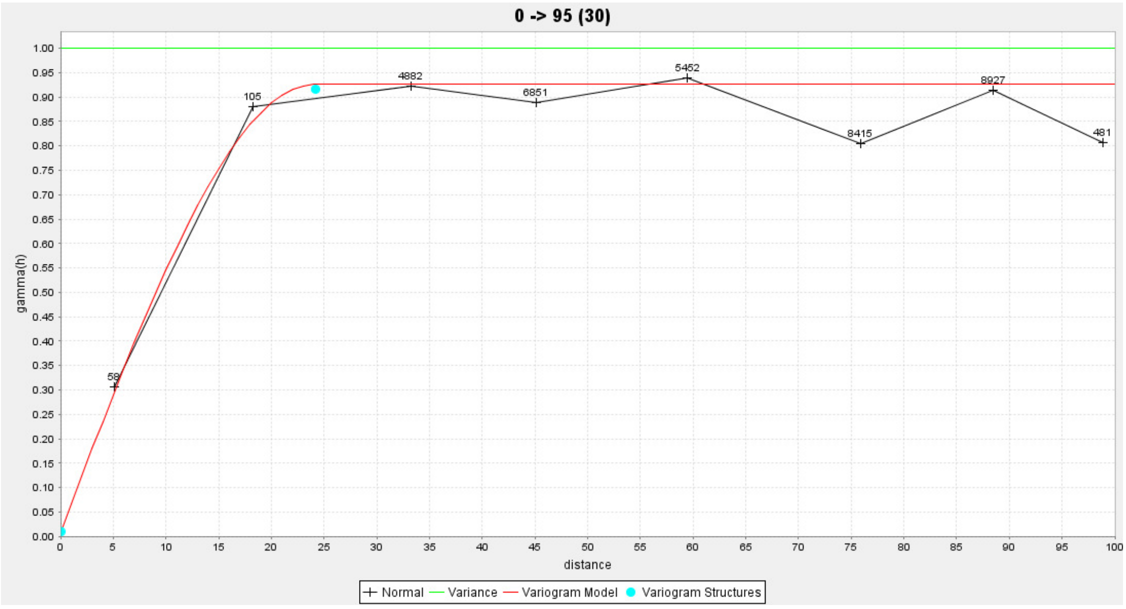


Figure 19. Tenth Legion Sn 1m composite y variogram model

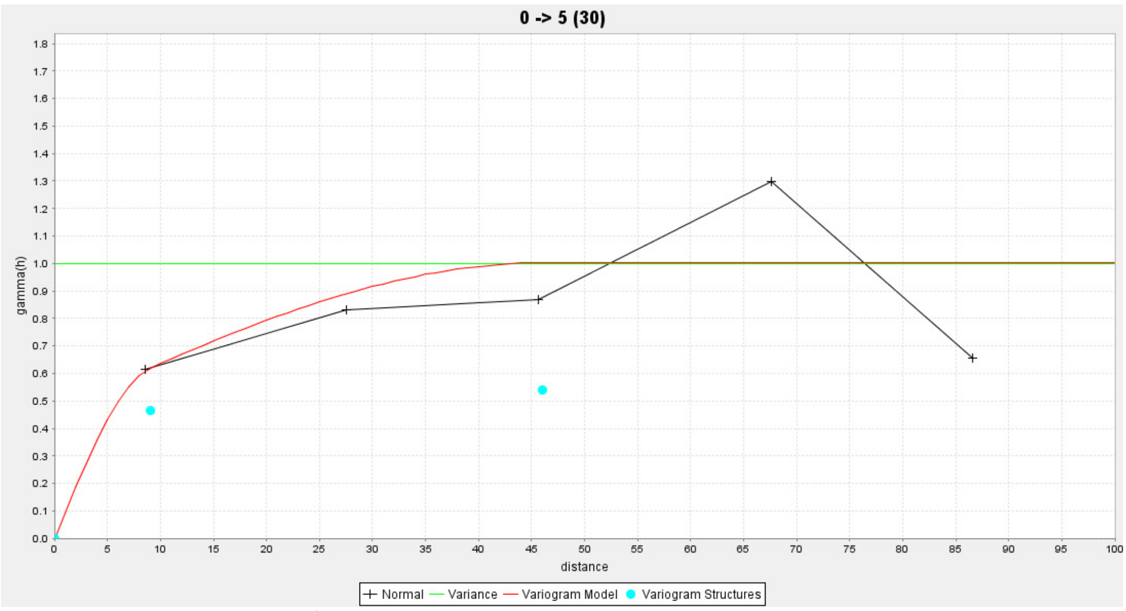


Figure 20. Tenth Legion Sn 1m composite x variogram model

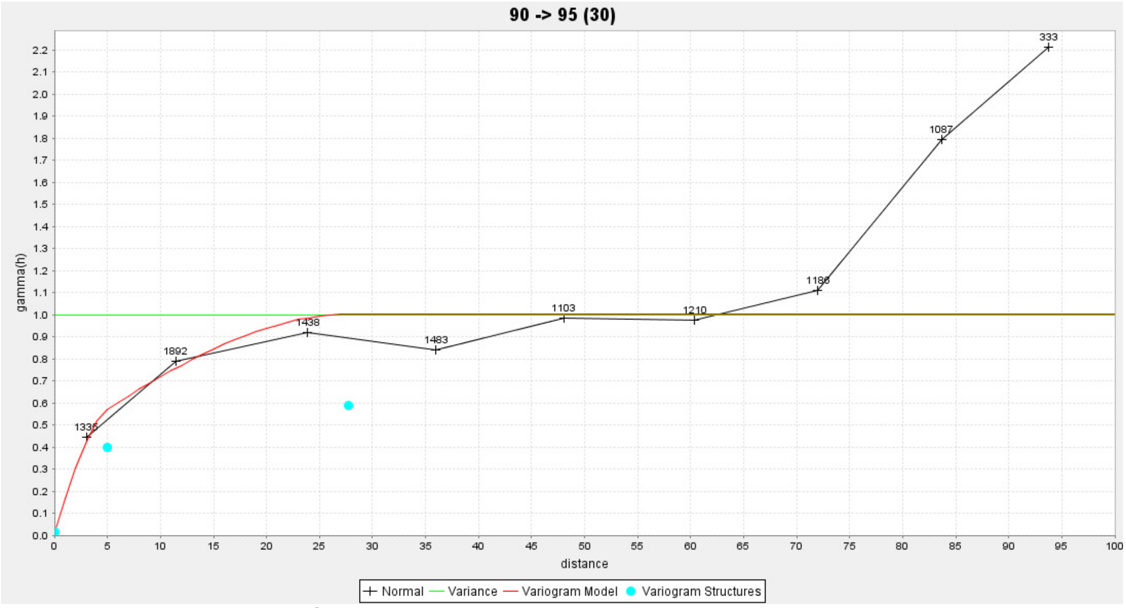


Figure 21. Tenth Legion Sn 1m composite z variogram model

6 RESOURCE ESTIMATION PROCEDURE.

The Tenth Legion Tin Deposit Mineral Resource has been estimated using a block model created with Surpac^{tm} software licensed to Tim Callaghan. The block model extends between 4,550 to 5,200N, 4,850 to 5,800E and -50 to 350m RL. Block sizes were set at 5m x 20m x 10m (xyz) with sub-celling to 1.25m in the y direction and 2.5m in the x and z and directions.

The block dimensions used are considered appropriate for the shape and thickness of the mineralisation being modeled and the block size is considered appropriate for the better drilled portion of the resource.

Fe metal grades were interpolated into the blockmodel using an Ordinary Kriging Algorithm. Variogram parameters used for the estimation were determined from 1m composite data and are detailed in Table 11.

A 100m spherical search ellipse was employed to ensure most blocks in the model were populated. Discretisation points of 3 by 3 by 3 were used for each block. A minimum of 3 and a maximum of 15 samples were used for the estimation.

Deleterious metals/elements Al, Si and S were interpolated into the block model using an inverse distance squared (ID^2) interpolation technique with top cutting of Al and S values to the 97.5th percentile respectively (15.8 and 3.3%). The same search parameters were used as the Fe interpolation.

Table 12. Table 1. Section 3, JORC Code Estimation and Reporting of Mineral Resources

Criteria	**Explanation**	**Status**
Database Integrity	• Measures to ensure the data has not been corrupted by, for example transcription or keying errors, between its initial collection and its use for Mineral Resource estimation. • Data Validation and procedures used.	• All data captured and stored in customised Access database by Red Hill. • Drop down menu validation in customised software. • Digital data uploaded from laboratory reports to Access database. • Data integrity validated with Surpac Software for EOH depth and sample overlaps and transcription errors. • Data validated against plans and sections • Negatives in database converted to half the detection limit.
Site Visits	• Comment on any site visits by the competent person and the outcome of any of those visits. • If no site visits have been undertaken indicate why this is the case.	• Site visit conducted in March 2014 to inspect core, logging and sampling procedures. • Advice on QAQC procedures and DTR analyses provided.
Geological Interpretation	• Confidence in (or conversely the uncertainty of) the geological interpretation of the mineral deposit. • Nature of the data used and any assumptions made. • The effect if any of alternative interpretations on Mineral Resource estimation • The use of geology in guiding and controlling the Mineral Resource estimation • The factors effecting continuity of both grade and geology	• High confidence in the simple geological model. Minor disruption by brittle faulting and low grade zones in mineralised structures will be difficult to predict on the scale of interpretation. • No alternative geological interpretations were attempted. • Geology model used for mineralised domain modeling. • Brittle faulting and facies changes effect grade and location of mineralisation.
Dimensions	• The extent and variability of the mineral resource expressed as length (along strike	• Central deposit consists of 3 main lenses extending 700m by 200m with a WNW strike

	or otherwise) plan width and depth below surface to the upper and lower limits of the Mineral Resource	and steep north dip (70^{o}). Mineralised width between 1 and 12m. • South Lens extends 500m strike by 90m depth with a WNW strike and steep 70o north dip. Mineralised width between 1 and 12m. • Northwest Lens 100m strike by 60m depth with 7m average width.
Estimation and Modelling techniques	• The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. • The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. • The assumptions made regarding recovery of by products • Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterization). • In the case of blockmodel interpolation the block size in relation to the average sample spacing and search employed. • Any assumptions behind modeling of selected mining units • Any assumptions about correlation	• Block modeled estimation completed with Surpac^{TM} software licensed to Tim Callaghan. • Wire-framed solid models created from surface geology, sectional interpretation and composited sample data • Solid models snapped to drill holes • minimum mining width of 3m x 30% Fe whilst respecting geological continuity • Internal dilution restricted to <3m while respecting geological continuity • Data composited on 1m composites • Top cutting based on CV and grade histograms for Al (15.8%) and S (3.3%) • Poor correlation between Fe and other metals. • Block Model extent of 4550N to 5200N, 4850E to 5800E, -50mRL to 350mRL. Block dimensions of 5mN x 20mE x 10mRL block size with sub-celling to 1.25m in the y and 2.5m in the x and z directions. • Anisotropic variogram models constructed in x, y and z direction. Well constructed models with very low nugget effect and moderate range of 25 to 45m to sill • Search ellipse set at 100m spherical range to ensure all blocks populated with no anisotropy • Ellipse strike 275^{o}, dip -70^{o} north, plunge 0^{o}

	between variables • Description of how the geological interpretation was used to control the resource estimates. • Discussion of the basis for using or not using grade cutting or capping • The process of validation, the checking process used, the comparison of model data to drill hole data, and the use of reconciliation data if available.	• Ordinary kriged estimated model constrained by geology solid model • Block grades validated visually against input data
Moisture	• Whether the tonnages were estimated on a dry basis or with natural moisture, and the method of determination of moisture content.	• The estimate based on a dry tonnage
Cut-off Parameters	• The basis of the adopted cutoff grades or cutoff parameters	• Results are reported on a 20% Fe cut off.
Mining Assumptions	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or if applicable external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters made when estimating Mineral Resources may not always be rigorous. When this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	• Conventional open cut mining techniques assumed.
Metallurgical assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is	• Test work demonstrates that the liberation of the magnetite is excellent.

	always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods methods, but the assumptions made regarding metallurgical treatment processes and parameters made when estimating Mineral Resources may not always be rigorous. When this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	• Conventional crushing and grinding followed by a single roughing, cleaning and scavenging circuit with low intensity magnetic separation is recommended.
Environmental assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status for early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	• No formal environmental studies have been conducted at this stage. • Processing is envisaged to occur on the permitted facilities located on nearby RL2/1998.
Bulk Density	• Whether assumed or determined. If assumed the basis for the assumptions. If determined the methods used, whether wet or dry, the frequency of measurements, the nature size and representativeness of the	• 157 Mineralised bulk density determinations made in house using the Archimedes Method using calibrated digital scales. • Determinations made of un-weathered core with no appreciable voids or porosity.

	samples. • The bulk density for bulk materials must have been measured by methods that adequately account for void spaces (vugs, porosity etc), moisture and difference between rock and alteration zones within the deposit. • Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	• 72 determinations on waste. • Waste assigned Mean SG of 2.9 • Mineralised domains SG defined by Fe grade relationship SG = (0.139 + Fe%) + 2.85
Classification	• The basis for the classification of the Mineral Resource into varying confidence categories. • Whether appropriate account has been taken of all relevant factors (ie relative confidence in continuity of Geology and metal values, quality, quantity and distribution of the data). • Whether the result appropriately reflects the Competent Persons view of the deposit.	• Confidence in the geological model and data quality is considered to be sufficient for Mineral Resource located within 50m of sample data to be classified as Indicated Resource. • Mineral Resource located further than 60m from sample data is classified as Inferred Resource. • The Resource Classification appropriately reflects the views of the Competent Person
Audits or Reviews	• The results of any Audits or Reviews of the Mineral Resource estimates.	• No audits or reviews have been completed for this estimation
Discussion of relative accuracy/confidence	• Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource Estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a	• The geological model and data quality within 30-60m of drill data is well understood and modeled. The effects of localised brittle faulting are difficult to predict but given the proposed mining method should not affect resource recovery. • There is reasonable confidence in the global tonnage estimation as the geology is reasonable well constrained and simple. • QAQC results for the CRHL data suggests

	qualitative discussion of the factors that could affect the relative accuracy of the estimate. • These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	there is some concern with the quality of the data from this drilling program. Given the nature of magnetite recoveries this variance is unlikely to materially effect the resource estimation.

7 RESULTS

The total, insitu estimated Mineral Resource for the Tenth Legion Magnetite Skarn classified as Indicated and Inferred Resource in accordance with the 2012 edition of the JORC Code at a 30% Fe block cut off is listed in Table 13:

Table 13. Tenth Legion Mineral Resource Estimate (Fe>20% cut off)

	MTonnes	Fe %	Al %	Si %	S %
Indicate Resource	6.23	40.34	2.1	16.9	0.2
Inferred Resource	1.41	32.96	0.7	16.8	0
Total Resource	**7.64**	**38.98**	**1.8**	**16.9**	**0.2**

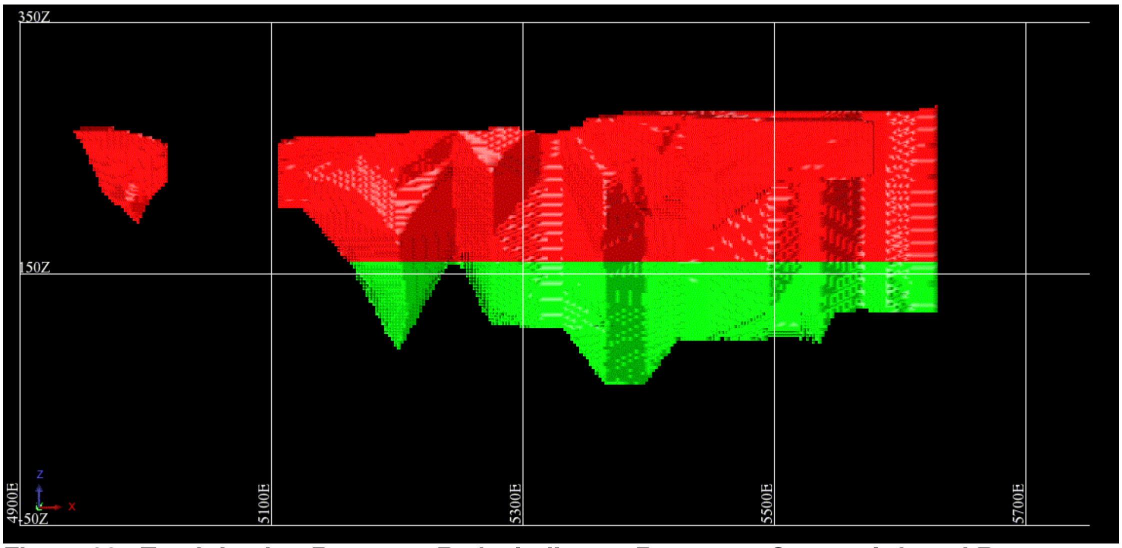


Figure 22. Tenth Legion Resource Red = Indicates Resource, Green = Inferred Resource.

Confidence in the geological model for the Tenth Legion deposit is reasonable particularly in the better drilled upper part of the resource. Some variability in grade is evident on a local level as is reflected in the variogram ranges. Grade tends to be better towards the top of the skarns (Figure 23) and Table 14. The oxidised skarn constitutes 1.8Mt @ 45.5% Fe while the fresh skarn contains 5.8% at 36.9% Fe. This is a function of concentration through oxidation but is also possible a function of drilling density.

Table 14. Tenth Legion Mineral Resource Estimate (Fe>20% cut off)

	MTonnes	Fe %	Al %	Si %	S %
Oxidised Resource	1.82	45.48	3.3	15.6	0.1
Fresh Resource	5.82	36.94	1.4	17.3	0.2
Total	**7.64**	**38.98**	**1.8**	**16.9**	**0.2**

Sulphur contents are generally low but locally high concentrations are present at the south end of the Central Lode (Figure 24).

7.1 VALIDATION

The resource estimation was validated by visually checking the interpolation results against drill hole data in plan and section, comparing input and output statistics. The estimate is considered to be robust on the basis of the above checks.

Confidence in the geological model on a global level is high as the structure and mineralisation style are relatively simple given the style of mineralisation and the mining technique proposed. The low nugget effect and moderate range of the variogram models support the classification of the resource.

Data quality is considered to be of high industry standards with the exception of the QAQC reports for the CHRL data. The poor precision and accuracy achieved from the early stages of the CRHL drilling program diminish the confidence in the grade estimation to some extent. Consequently none of the resource has been classified as Measured Resource.

7.2 CLASSIFICATION

The classification of the mineral resource has taken into account confidence in the geological interpretation and drillhole data as well as drill hole spacing. Metallurgical testwork and DTR results suggest most of the Fe mineralisation occurs as magnetite and is recoverable from conventional crushing and grinding followed by low intensity magnetic separation. Concentrations of penalty elements or contaminants in the concentrate are low. Localised areas of high sulphur are present in the western end of the Central Lode. The majority of the resource has low sulphur content.

There is a reasonable level of confidence in the grade estimation in the area of the well drilled and outcropping deposit within 100m of surface. The higher grade and better drilled portion in the top 100m of the deposit above 160mRL has been classified as Indicated Resource. All mineralisation within the resource estimate below 160mRL is classified as Inferred Resource due to the broader drill spacing and the lower probability of mineralisation below 100m from surface being economically viable in a conventional open cut mine.

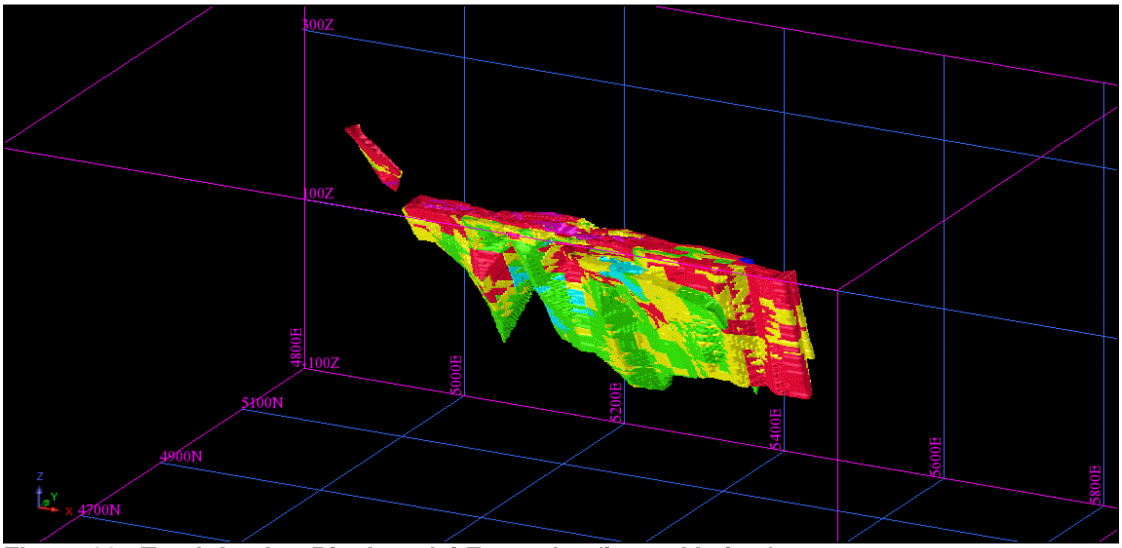
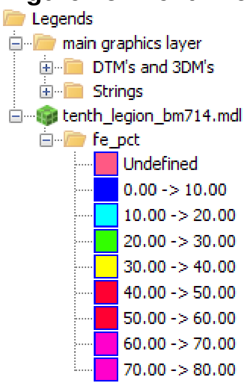


Figure 23. Tenth Legion Blockmodel Fe grades (legend below).



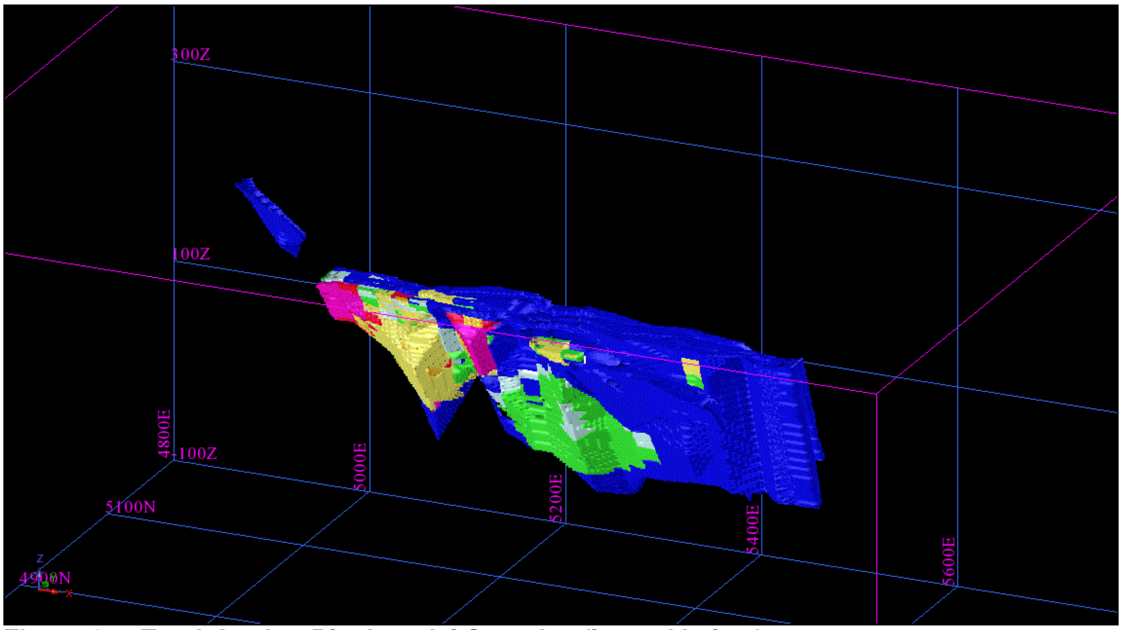
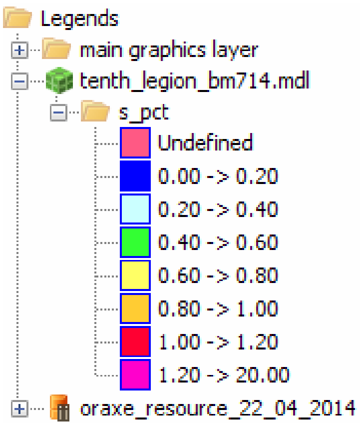


Figure 24. Tenth Legion Blockmodel S grades (legend below).



8 RECOMMENDATIONS

There is significant potential to increase the resource base of the Tenth Legion project through extension drilling of the current resource, particularly the South Lens as well as systematic exploration of the many as yet untested outcropping magnetite deposits in the locality.

There is potential upside to the resource from a high grade surficial lag of magnetite and Fe oxides extending beyond the resource boundaries that has not been adequately tested to include in the resource estimation.

Recommendations for further work include:

- Continued metallurgical testwork
- Conceptual mine design and reserve estimation
- Extension drilling of the eastern end of the Tenth Legion North Resource.
- Further exploration and infill drilling of outcropping magnetite deposits.
- Further regional exploration of the EL targeting magnetite skarns
- Mapping and aircore/auger sampling of surficial lag deposits of magnetite and Fe oxides

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ADDITIONAL NOTES

LIMITATIONS AND CONSENT

This report has been prepared using information available to the Author at the time of writing. The opinions stated herein are given in good faith and with the belief that the basic assumptions are factual and correct and the interpretations reasonable.

This report is not intended for the use as a public document nor, in whole or in part, in a public document without written consent to the form and context in which it appears.
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COMPETENT PERSON AND JORC CODE

This report was prepared in accordance with the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code") by Tim Callaghan, who is a Member of The Australian Institute of Mining and Metallurgy ("AusIMM"), has a minimum of five years experience in the estimation and assessment and evaluation of Mineral Resources of this style and is the competent Person as defined in the JORC Code. This report accurately summarises and fairly reports his estimations and he has consented to the resource report in the form and context it appears.
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STATEMENT OF INDEPENDENCE

Tim Callaghan has no material interest or entitlement in the securities or assets of Australian Hualong Ltd or any associated companies.

Competent Person's Consent Statement
Pursuant to the requirements of ASX listing rules 5.6, 5.22 and 5.24 and clause 9 of 2012 JORC code
("Consent statement")

Report name: TENTH LEGION MAGNETITE MINERAL RESOURCE ESTIMATE, **Dated:** 24th August 2014

I, Timothy John Callaghan confirm that:

- I have read and understood the requirements of the 2012 edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves ("2012 JORC Code").

- I am a competent person as defined by the 2012 JORC Code, having five years experience which is relevant to the style of mineralization and type of deposit described in the report, and to the activity for which I am accepting responsibility.

- I am a member or fellow of the *Australasian Institute of Mining and Metallurgy* or the *Australian Institute of Geoscientists* or a *'Recognized Overseas Professional Organization'* ('RPO') included in a list promulgated by the ASX from time to time.

- I have reviewed the report to which this consent statement applies.

- I am a full time employee of OR I am a consultant working for ***Tim Callaghan – Resource and Exploration Geology*** and have been engaged by ***Australian Hualong Ltd*** *to* prepare the documentation for ***Australian Hualong Ltd*** *on* which the report is based for the period ended ***August 2014***.

- I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

- I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears the information in my supporting documentation relating to Mineral Resources.

- I consent to the release of the report and this consent statement by the directors of: ***Australian Hualong Ltd.***

Signature of Competent Person: Date: 24th August 2014
Professional Membership: ***Australian Institute of Mining and Metallurgy***
Membership Number: ***222210***
Signature of Witness:

APPENDIX 1

Drill Hole Intercepts, Core Sizes and Recoveries

BHID	Easting	Northing	RL	Depth m	From	To	Length m	Fe %	Rec %	Hole Dia
TLC1	5198.9	4956.3	246.9	88.4	27.9	36.3	8.4			NQ
					53.5	70.3	16.8			BQ
					79.1	86.8	7.7			BQ
TLC10	5150.55	4989.73	245.35	134	74.9	78.9	4.0			BQ
TLC11	5100.1	4989.62	245	119			no significant intersection			
TLC12	5702.3	4769.7	289.44	127			no significant intersection			
TLC14	5324.9	4989.9	250.44	169	61.7	66.0	4.3			NQ
					75.8	95.0	19.2			NQ
					127.6	135.5	7.9			NQ
TLC15	5359.3	4951.2	255.2	212.5	59.3	63.0	3.7	49.9		NQ
					72.0	79.0	7.0	26.6		NQ
					101.0	110.0	9.0	21.5		NQ
TLC16	5446.4	4966	262.91	181.1	83.0	89.0	6.0	30.7		NQ
					101.0	117.0	16.0	28.5		NQ
					120.0	130.0	10.0	28.8		NQ
TLC17	5691.4	4831.5	301.41	191.1			no significant intersection			
TLC18	5204.4	5007.8	245.25	280.5	67.0	68.1	1.1	5.9		HQ
					106.0	110.2	4.2	20.0		NQ
					139.0	147.0	8.0	19.2		NQ
TLC19	5595	4876.4	281.73	208.5	53.0	56.0	3.0	17.6		NQ
					67.0	75.0	8.0	53.9		NQ
TLC2	5397.6	4921.5	259.95	133	49.1	56.8	7.7			NQ
					62.2	67.4	5.2			NQ
					80.5	84.4	3.9			NQ
TLC20	5056.5	4978.7	245.1	217.5			no significant intersection			
TLC21	5495.5	4963.1	271.79	203.8	105.0	116.2	11.2	16.5		NQ
					129.8	155.6	25.8	31.0		NQ
TLC22	5004.6	5099.3	252.99	194.2	41.0	55.0	14.0	57.8		HQ
TLC23	5505.3	4994.4	271.21	239.1	158.0	164.0	6.0	33.1		NQ
TLC27	5603.5	4914	284.36	188	104.5	107.0	2.5	40.3		NQ
					124.0	139.0	15.0	41.6		NQ
TLC30	5275.6	4964.6	252.41	180.2	30.7	33.7	3.0	27.6		HQ
					42.6	62.9	20.2	36.6		NQ
					88.5	100.2	11.7	25.9		NQ
TLC31	5397.8	4920.2	260.08	166.5	17.0	24.0	7.0	19.8		HQ
					47.0	55.0	8.0	35.6		NQ
					61.2	64.0	2.8	22.6		NQ
					78.0	82.4	4.4	33.1		NQ
TLC32	5268.6	4982.6	246.93	198.2	54.0	72.0	18.0	28.9		NQ
					85.0	95.0	10.0	28.5		NQ
					139.0	140.0	1.0	20.6		NQ
TLC37	5365	4985.8	245.65	248.8	100.0	106.0	6.0	41.0		NQ
					132.0	155.0	23.0	34.2		NQ
					169.0	183.9	14.9	24.0		NQ
TLC38	5365	4985.3	245.65	193.2	74.0	80.0	6.0	31.5		NQ
					95.0	127.0	32.0	47.5		NQ
					150.0	153.0	3.0	38.7		NQ
TLC39	5224.8	4841.4	265.43	63.8			no significant intersection			
TLC40	5198.6	4890	270.04	121.5	0.0	3.5	3.5			NQ
					16.0	53.0	37.0	29.0		NQ
TLC42	5004	5098.8	253.02	162.8	43.0	46.0	3.0	20.5		HQ
TLC9	5261	4982.3	249.3	163	40.4	50.8	10.5			NQ
					60.3	74.9	14.6			NQ
					92.6	103.3	10.7			NQ
TLR1	5119.8	4936.3	252.99	41.2	0.0	3.8	3.8		5.0	HQ
					7.8	23.6	15.9	48.5	12.4	NQ
					30.6	34.6	4.0	42.8	98.7	NQ
TLR10	5410.4	4836.4	284.04	29.3	5.0	21.3	16.3	61.9	33.2	HQ
TLR13	5480.1	4820.7	285.88	24.9	0.0	23.5	23.5	49.7	45.0	HQ
TLR14	5496	4862.7	277.85	55.6	4.0	16.3	12.3	31.5	55.5	HQ
					36.8	46.0	9.2	51.7	99.4	NQ
TLR15	5520.5	4825.7	289.22	39.8	0.5	11.4	10.9	51.3	5.2	HQ
					24.8	35.6	10.9	37.3	6.1	NQ

BHID	Easting	Northing	RL	Depth m	From	To	Length m	Fe %	Rec %	Hole Dia
TLR16	5533.7	4848.3	282.03	55.5	0.0	0.5	0.5			HQ
					6.4	27.5	21.1	36.1	63.8	HQ
					33.8	44.9	11.1	39.3	63.6	HQ
TLR18	5568	4845	283.75	55.4	0.0	3.1	3.1	62.4	71.7	HQ
					10.0	16.0	6.0	49.4	71.7	HQ
					16.6	23.0	6.4	44.4	71.7	HQ
TLR19	5016.3	5059	253.28	38.4	14.4	23.4	9.0	43.9	29.4	HQ
TLR2	5164.6	4910	266.48	33.7	0.0	13.7	13.7	63.4	25.3	HQ
					21.3	28.5	7.2	63.5	62.5	HQ
TLR20	4973.8	5080.6	263.91	61.7	17.0	22.0	5.0	52.4	91.0	HQ
TLR21	4992.7	5067.6	260.81	25.1	12.0	18.1	6.1	59.8	50.6	HQ
TLR22	5130.7	4962.6	248.4	57.2	9.0	20.3	11.3	43.7	91.0	HQ
					27.0	46.0	19.0	32.9	91.0	HQ
					49.0	54.0	5.0	37.8	91.0	HQ
TLR23	5159.5	4944.5	254.89	72.8	9.1	14.0	4.9	53.7	64.0	HQ
					36.0	48.0	12.0	48.3	93.8	HQ
					50.0	63.0	13.0	30.9	96.1	HQ
TLR24	5199.3	4914.8	259.9	53.1	13.0	22.9	9.9	54.4	68.7	HQ
					27.1	42.0	15.0	32.0	93.1	HQ
TLR25	5240.8	4914.4	266.81	55.6	5.1	11.3	6.2	59.9	69.6	HQ
					19.0	28.0	9.0	54.2	73.7	HQ
					33.5	37.0	3.5	37.8	98.3	HQ
TLR26	5276.9	4922.8	275.1	69.5	0.0	16.5	16.5	62.0	78.8	HQ
					32.3	45.0	12.7	27.7	91.6	HQ
					65.7	69.5	3.8		100.0	HQ
TLR27	5367.8	4911.8	266.43	41	0.0	19.7	19.7	44.7	81.0	HQ
TLR28	5521.4	4824	289.09	56.5	2.4	16.1	13.7	49.7	44.4	HQ
TLR29	5443.5	4851.4	279.93	57.7	2.0	19.4	17.4	45.7	84.1	HQ
					21.6	38.0	16.4	32.8	91.9	HQ
TLR3	5240.2	4889.4	274.01	26.2	13.5	21.3	7.8	60.0	60.0	HQ
TLR30	5610.1	4820.9	288.6	49.5	0.0	6.5	6.5	43.7	98.3	HQ
					8.5	22.5	14.0	46.7	68.6	HQ
TLR31	5408.3	4807.8	281.19	57.1	0.0	38.7	38.7	34.2	93.5	HQ
TLR32	5394.4	4891.8	268.07	59	0.0	4.0	4.0	51.2	80.0	HQ
					44.2	50.1	5.9	26.5	87.2	HQ
TLR33	5445.7	4818.4	285.07	59	0.6	6.8	6.3	36.9	100.0	HQ
					29.4	52.1	22.7	19.3	86.8	HQ
TLR34	5424	4868.2	275.33	78.8	9.0	33.0	24.0	50.8	80.5	HQ
					36.0	43.0	7.0	34.6	80.5	HQ
					66.1	71.0	4.9	24.4	98.5	HQ
TLR35	5344.3	4888.9	272.06	43.1	5.9	22.8	16.9	62.0	69.8	HQ
					30.5	40.8	10.3	19.8	95.8	HQ
TLR36	5314	4925.6	266.48	71	0.0	5.8	5.8	27.1	94.0	HQ
					25.0	31.0	6.0	37.7	78.6	HQ
					53.0	59.0	6.0	38.7	100.0	HQ
TLR37	5135.9	4902.3	263.71	39.5	1.3	10.6	9.3	53.6	62.3	HQ
					19.5	26.8	7.4	22.6	97.8	HQ
TLR38	5449.8	4792.1	284.4	57.1	16.3	54.0	37.7	33.7	88.9	HQ
TLR39	5367.1	4812.6	280.49	40.3	1.8	19.3	17.6	41.1	71.4	HQ
TLR4	5248.6	4953.7	250.72	48	12.2	22.2	10.0	50.0	54.8	NQ
					29.2	43.7	14.5	54.5	75.1	NQ
TLR40	5387.1	4770.6	278.14	46.6	0.8	8.0	7.2	51.9	75.2	HQ
TLR41	5283	4859.9	273.35	50	7.7	29.0	21.3	28.9	90.5	HQ
TLR42	5569.5	4806.7	290.4	48.5			no significant intersection			
TLR43	5448.4	4890.7	267.81	105	5.0	12.0	7.0	56.6	67.0	HQ
					28.0	45.0	17.0	47.9	99.7	HQ
					47.0	62.9	15.9	48.0	99.7	HQ
					87.0	96.0	9.0	31.3	99.0	HQ
TLR44	5498	4786	280	52.3	30.0	40.0	10.0	25.8		NQ
TLR45	5557	4782	280.8	50.7	27.7	41.0	13.3	28.0	99.2	HQ
TLR5	5284.6	4891.3	278.42	46.4	1.1	33.9	32.8	51.8	47.7	NQ
TLR6	5312.6	4879.5	277.77	50.6	0.9	18.0	17.1	61.4	41.8	NQ
					21.0	41.0	20.0	41.7	94.5	NQ
TLR7	5308.7	4906.2	273.83	50.1	6.7	24.2	17.5	61.6	68.2	HQ
					26.7	41.5	14.8	44.6	66.0	NQ
TLR8	5321.1	4943.1	259.64	54.3	14.0	18.6	4.6	45.6	59.6	HQ
					33.6	41.0	7.4	27.2	100.0	NQ
TLR9	5371.1	4860.8	280.11	46	0.0	10.7	10.7	60.9	20.4	HQ

APPENDIX 2

Basic Statistical Analysis

of SAMPLES : 28
DATE RECEIVED : 2014-06-12 DATE FINALIZED : 2014-06-26
PROJECT : " "
CERTIFICATE COMMENTS : "Screening results reported as CYC-SIZ (P80). Seq 25 -28 used for Crushing and Mat-Rolling prices.// Some samp
PO NUMBER : " "

SAMPLE DESCRIPTION	DTR_REC WashTime min	DTR_REC MassRec %	WT_DTR WtSamp g	WT_DTR WtMag g	WT_DTR WtNonMag g	DTR_PREI SEIVE um	DTR_PREI PinitWt g	DTR_PREP P1Time s	DTR_PREI P1Wt g	DTR_PREI P2Time s
20141 500um	20	69.2	20.2	14	4.92	500	150	<1	110	2
20142 500um	20	67.7	20.7	14	5.55	500	150.5	<1	117	2
40143 500um	20	40.9	20.6	8.4	11.05	500	150	<1	133.5	3
40144 500um	20	57.6	20.7	11.9	6.82	500	151	<1	106.5	2
20141 300um	30	63.9	20.3	12.95	6.01	300	151	<1	117	2
20142 300um	20	64	20.2	12.9	5.98	300	151	<1	116	2
40143 300um	20	34.8	20.4	7.08	11.45	300	150.5	<1	109.5	2
40144 300um	20	55.5	20.2	11.2	6.78	300	150	<1	101.5	2
20141 212um	30	59.4	20.6	12.25	6.63	212	150	<1	125.5	2
20142 212um	20	61.6	20.3	12.5	6.58	212	150.5	<1	115	2
40143 212um	20	31.8	20.7	6.6	12.4	212	151	<1	117.5	2
40144 212um	20	53.7	20.5	11	8.31	212	150.5	<1	113.5	2
20141 150um	30	55.8	20.6	11.5	7.06	150	150	<1	133	3
20142 150um	20	55.7	20.3	11.3	7.51	150	150.5	<1	117.5	2
40143 150um	20	29.2	20.3	5.94	12.25	150	150.5	<1	126.5	3
40144 150um	20	52.1	20.4	10.65	5.3	150	150.5	<1	125	3
20141 106um	30	62.5	20.4	12.75	6.18	106	151	5	104.5	3
20142 106um	20	53.7	20.5	11	8.13	106	150.5	5	88.8	3
40143 106um	20	28.2	20.1	5.66	13.45	106	150	5	109	4
40144 106um	20	49.7	20.3	10.1	9.33	106	150.5	5	92.5	3
20141 75um	35	33.3	20.8	6.91	10.5	75	150.5	15	101	6
20142 75um	20	50.3	20.4	10.25	8.33	75	151	15	81.3	6
40143 75um	20	26.4	20.5	5.42	13.1	75	150.5	15	101.5	6
40144 75um	20	49.1	20.7	10.15	9.41	75	150.5	15	91.7	6
20141 45um	20	30.4	20.8	6.32	11.15	45	150.5	25	100	10
20142 45um	20	51.5	20.3	10.45	9.04	45	150	25	95.5	10
40143 45um	20	25	20.2	5.06	14.2	45	150.5	25	98.4	10
40144 45um	20	47.6	20.3	9.64	9.47	45	150	25	97.6	10

P SAMPLE DESCRIPTION	DTR_PREP P2Wt g	DTR_PREI P3Time s	DTR_PREP P3Wt g	DTR_PREP P4Time s	DTR_PREI P4Wt g	DTR_PREI P5Time s	DTR_PREI P5Wt g	DTR_PREI P6Time s	DTR_PREI P6Wt g	DTR_PREI P7Time s
20141 500um	77	3	29.9	3	2.43					
20142 500um	85	2	34	3	10.05	2	1.445			
40143 500um	83.4	2	25	3	3.92					
40144 500um	62.5	2	21.9	2	2.25					
20141 300um	103	3	74.8	7	29.2	6	2.55			
20142 300um	87.9	3	41.2	4	13.4	3	1.87			
40143 300um	83.9	3	51.2	5	20.6	4	1.96			
40144 300um	54.9	2	30.6	3	11.45	2	3.67			
20141 212um	112	8	77.1	8	47.3	9	11.15	3	2.59	
20142 212um	99.9	7	58.8	6	26.4	5	9.86	3	2.13	
40143 212um	100.5	7	55.2	6	28.7	5	8.46	3	1.895	
40144 212um	89.8	6	42.6	4	21.9	4	7.41	3	2.09	
20141 150um	112	7	86.7	16	46.9	10	18.35	5	7.31	2
20142 150um	100.5	6	67.2	12	32	6	13.9	4	6.09	2
40143 150um	108.5	7	68	13	26.7	6	7.5	3	1.03	
40144 150um	92	6	55.5	11	14.7	2	7.4	3	2.29	
20141 106um	90.1	6	70.7	14	38.3	7	21.2	6	7.71	2
20142 106um	68.1	4	52.1	10	26.3	5	14.55	5	5.23	2
40143 106um	87.6	6	65.2	12	34.1	7	14.85	5	5.73	2
40144 106um	72.6	5	48.4	9	19.95	4	9.16	3	3.29	
20141 75um	86.2	6	73.6	15	47.4	8	32.8	16	12.5	6
20142 75um	62.9	4	49.9	10	31.5	6	18.55	8	6.42	4
40143 75um	85.2	6	72.2	14	49.1	10	32.6	16	14.65	7
40144 75um	73.2	5	58.3	11	34.6	7	20.7	10	7.41	4
20141 45um	82.7	8	71.7	13	56.5	11	44.4	22	24.7	12
20142 45um	80.4	8	69.7	13	54	11	42.7	21	24.5	12
40143 45um	81.9	8	67.8	13	51.5	10	38.9	18	24.4	12
40144 45um	79.2	8	66.6	13	48.8	9	36.4	17	19	9

P	DTR_PREP	DTR_PREP	DTR_PREP	DTR_PREP	DTR_PREP	CYC-SIZ	MAG-SUS	MAG-SUS	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	P7Wt	P8Time	P8Wt	P9Time	P9Wt	P80	Magnetics	MagRaw	Al2O3	As	Ba
DESCRIPTION	g	s	g	s	g	um	%	EMU	%	%	%
20141 500um						348			0.02	0.029	<0.001
20142 500um						340			1.29	0.003	<0.001
40143 500um						374			0.12	0.239	<0.001
40144 500um						319			0.03	0.006	<0.001
20141 300um						219			0.01	0.024	<0.001
20142 300um						206			0.86	0.002	0.002
40143 300um						220			0.09	0.239	<0.001
40144 300um						215			0.02	0.004	<0.001
20141 212um						162.7			0.02	0.025	0.002
20142 212um						146.2			0.79	0.002	0.003
40143 212um						163.2			0.07	0.188	<0.001
40144 212um						157.8			0.03	0.003	<0.001
20141 150um	2.48					112.4			0.01	0.022	<0.001
20142 150um	2.15					107.4			0.54	<0.001	0.003
40143 150um						109.2			0.05	0.164	0.005
40144 150um						108.7			0.02	0.003	0.001
20141 106um	3.13					83.1			0.02	0.028	<0.001
20142 106um	1.34					85.3			0.43	<0.001	0.003
40143 106um	2.31					82.8			0.04	0.136	<0.001
40144 106um						83.5			0.02	0.002	0.006
20141 75um	4.41					54.7			0.03	0.008	<0.001
20142 75um	1.015					55.2			0.35	<0.001	0.004
40143 75um	7.18	4	3.63			54.9			0.03	0.105	0.002
40144 75um	2.8					54.7			0.02	0.002	0.002
20141 45um	14.8	7	8.7	4	4.77	38.3	35.04	2335.07	0.04	0.004	0.004
20142 45um	13.6	7	6.73	3	3.52	37.6	54.47	3630.52	0.35	<0.001	0.004
40143 45um	13.7	7	8.29	4	4.86	30.1	26.05	1736.25	0.03	0.07	<0.001
40144 45um	9.99	5	5.11	3	2.28	32.5	52.19	3478.93	0.02	0.002	0.001

c	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	CaO	Cl	Co	Cr2O3	Cu	Fe	K2O	MgO	Mn	Na2O	Ni
DESCRIPTION	%	%	%	%	%	%	%	%	%	%	%
20141 500um	0.05	0.009	<0.001	<0.001	<0.001	33.71	<0.001	22.7	0.363	<0.005	<0.001
20142 500um	0.13	0.018	0.005	0.002	0.034	52.97	<0.001	9.74	0.47	0.011	<0.001
40143 500um	5.77	0.002	0.142	0.001	0.001	45.63	<0.001	9.65	0.162	<0.005	0.008
40144 500um	0.02	0.003	0.011	<0.001	0.001	59.73	<0.001	10.7	0.29	0.016	<0.001
20141 300um	0.04	0.009	<0.001	<0.001	<0.001	39.1	<0.001	19.4	0.379	<0.005	<0.001
20142 300um	0.1	0.017	0.006	0.002	0.032	55.7	<0.001	8.03	0.483	0.014	<0.001
40143 300um	4.64	0.003	0.148	<0.001	0.001	51.36	<0.001	7.97	0.16	<0.005	0.009
40144 300um	0.02	0.002	0.012	<0.001	0.001	62.38	<0.001	8.79	0.3	0.019	<0.001
20141 212um	0.05	0.01	0.002	0.004	0.002	37.94	<0.001	20.6	0.395	0.005	0.001
20142 212um	0.09	0.014	0.006	0.002	0.034	58.15	<0.001	7.04	0.506	0.02	0.001
40143 212um	3.62	0.002	0.121	0.003	0.001	55.71	<0.001	6.42	0.16	<0.005	0.009
40144 212um	0.02	0.002	0.013	0.003	0.002	64.5	<0.001	6.84	0.311	0.021	<0.001
20141 150um	0.05	0.007	0.001	<0.001	0.001	40.87	<0.001	18.5	0.412	<0.005	<0.001
20142 150um	0.08	0.013	0.006	0.005	0.032	61.59	<0.001	5.21	0.534	0.021	0.001
40143 150um	2.71	0.003	0.115	0.003	0.004	59.97	0.001	4.99	0.168	0.027	0.01
40144 150um	0.01	0.001	0.013	0.001	0.002	65.78	<0.001	5.65	0.313	0.02	<0.001
20141 106um	0.12	0.01	<0.001	<0.001	0.001	32.65	<0.001	23.4	0.37	<0.005	<0.001
20142 106um	0.07	0.012	0.006	0.005	0.029	63.98	<0.001	3.84	0.54	0.015	<0.001
40143 106um	2.16	0.002	0.099	0.002	0.002	61.12	<0.001	4.73	0.155	0.014	0.009
40144 106um	0.02	0.002	0.015	0.002	0.004	66.38	<0.001	5.16	0.322	0.024	0.001
20141 75um	0.02	0.006	0.003	0.001	0.001	60.35	<0.001	6.91	0.562	0.015	<0.001
20142 75um	0.06	0.007	0.006	0.004	0.028	65.56	<0.001	2.88	0.554	0.012	0.001
40143 75um	1.35	0.002	0.09	0.001	0.003	64.11	<0.001	3.41	0.154	0.007	0.008
40144 75um	0.01	<0.001	0.013	0.001	0.002	66.48	<0.001	3.97	0.315	0.013	<0.001
20141 45um	0.02	0.004	0.006	0.007	0.004	66.12	<0.001	4.18	0.62	0.023	0.002
20142 45um	0.05	0.007	0.006	0.006	0.024	66.89	<0.001	2.41	0.557	0.014	<0.001
40143 45um	0.8	0.001	0.08	0.006	0.002	66.24	<0.001	3.05	0.15	0.013	0.008
40144 45um	0.01	<0.001	0.013	0.004	0.001	68.16	<0.001	3.68	0.322	0.005	<0.001

c	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	P	Pb	S	SiO2	Sn	Sr	TiO2	V	Zn	Zr	Total
DESCRIPTION	%	%	%	%	%	%	%	%	%	%	%
20141 500um	<0.001	0.002	0.014	22.6	<0.001	<0.001	<0.01	<0.001	0.006	0.002	99.96
20142 500um	0.001	0.001	3.52	9.13	0.006	<0.001	0.15	0.008	0.026	0.002	108.65
40143 500um	0.01	0.024	0.209	10.5	0.005	0.003	0.01	<0.001	0.061	0.003	99.99
40144 500um	<0.001	0.005	0.004	1.14	0.001	<0.001	<0.01	0.001	0.041	0.001	99.98
20141 300um	<0.001	0.002	0.023	19.2	<0.001	<0.001	<0.01	<0.001	0.006	0.002	100
20142 300um	0.001	0.006	3.68	7.31	0.007	<0.001	0.15	0.009	0.026	0.003	108.65
40143 300um	0.007	0.029	0.162	8.34	0.005	0.002	0.01	<0.001	0.055	0.003	100
40144 300um	<0.001	0.005	0.006	0.92	0.001	<0.001	<0.01	0.001	0.042	0.001	99.99
20141 212um	<0.001	0.012	0.021	20.1	<0.001	0.003	<0.01	<0.001	0.008	0.005	100
20142 212um	0.001	0.007	3.44	6.29	0.008	0.001	0.15	0.009	0.027	0.003	108.55
40143 212um	0.006	0.028	0.137	6.54	0.006	0.001	0.01	<0.001	0.049	0.003	99.99
40144 212um	<0.001	0.007	0.01	0.74	0.002	<0.001	<0.01	0.001	0.043	0.001	100
20141 150um	<0.001	0.004	0.018	18.25	<0.001	<0.001	<0.01	<0.001	0.006	0.002	99.97
20142 150um	<0.001	0.011	2.96	4.34	0.009	0.001	0.16	0.011	0.028	0.003	107.4
40143 150um	0.004	0.029	0.12	4.55	0.01	0.003	0.01	0.002	0.045	0.003	100
40144 150um	<0.001	0.006	0.004	0.62	0.002	<0.001	<0.01	0.002	0.044	0.001	100
20141 106um	<0.001	0.003	0.021	23.4	<0.001	<0.001	<0.01	<0.001	0.006	0.002	100.05
20142 106um	<0.001	0.006	3.26	2.88	0.008	<0.001	0.16	0.011	0.028	0.002	108.15
40143 106um	0.003	0.021	0.116	4.46	0.007	<0.001	0.01	0.001	0.041	0.002	100
40144 106um	<0.001	0.015	0.051	0.59	0.003	0.003	<0.01	0.003	0.046	0.004	100
20141 75um	<0.001	0.005	0.224	6.28	0.002	<0.001	<0.01	0.001	0.008	0.001	99.99
20142 75um	<0.001	0.007	3.32	1.85	0.008	<0.001	0.16	0.011	0.027	0.002	107.9
40143 75um	0.002	0.02	0.45	2.74	0.007	0.001	0.01	0.001	0.033	0.002	100
40144 75um	<0.001	0.005	0.768	0.34	0.002	<0.001	<0.01	0.001	0.043	<0.001	100
20141 45um	<0.001	0.011	0.902	3.46	0.002	0.002	0.01	0.002	0.01	0.002	103.55
20142 45um	<0.001	0.01	2.43	1.38	0.009	0.001	0.16	0.012	0.027	0.003	106.05
40143 45um	0.001	0.015	0.066	2.38	0.008	<0.001	0.01	0.001	0.024	0.001	100
40144 45um	<0.001	0.002	0.002	0.29	0.001	<0.001	<0.01	0.001	0.044	<0.001	100

c	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	Al2O3	As	Ba	CaO	Cl	Co	Cr2O3	Cu	Fe	K2O	MgO
DESCRIPTION	%	%	%	%	%	%	%	%	%	%	%
20141 500um	0.01	0.037	<0.001	0.09	0.018	0.002	<0.001	<0.001	21.46	<0.001	30
20142 500um	2.9	0.005	<0.001	0.23	0.029	0.005	<0.001	0.028	36.25	0.002	19.3
40143 500um	0.67	0.255	<0.001	11.9	0.007	0.146	0.031	0.001	19.55	0.004	19.9
40144 500um	0.04	0.014	<0.001	0.17	0.011	0.007	<0.001	<0.001	32.79	<0.001	35.9
20141 300um	0.01	0.037	<0.001	0.09	0.016	0.002	<0.001	<0.001	22.48	<0.001	29.5
20142 300um	3.08	0.005	0.001	0.25	0.027	0.006	<0.001	0.031	34.75	0.004	20.2
40143 300um	0.62	0.303	<0.001	11.65	0.006	0.178	<0.001	0.002	20.27	0.004	19.1
40144 300um	0.04	0.014	<0.001	0.15	0.011	0.008	<0.001	<0.001	35.66	<0.001	32.7
20141 212um	<0.01	0.037	<0.001	0.1	0.015	0.002	<0.001	<0.001	21.99	<0.001	29.8
20142 212um	2.94	0.005	<0.001	0.23	0.026	0.005	<0.001	0.028	36.47	0.002	19.3
40143 212um	0.62	0.301	<0.001	11.95	0.006	0.18	<0.001	0.003	20.52	0.005	18.95
40144 212um	0.04	0.014	<0.001	0.2	0.01	0.008	<0.001	0.001	35.96	<0.001	32.7
20141 150um	<0.01	0.039	<0.001	0.11	0.016	0.002	<0.001	<0.001	20.1	<0.001	31
20142 150um	2.94	0.005	<0.001	0.27	0.027	0.005	<0.001	0.028	35.42	0.003	19.95
40143 150um	0.6	0.307	<0.001	12	0.006	0.182	<0.001	0.001	20.92	0.005	18.65
40144 150um	0.04	0.014	<0.001	0.18	0.01	0.008	<0.001	<0.001	34.67	<0.001	33.7
20141 106um	0.01	0.038	<0.001	0.16	0.016	0.002	<0.001	0.001	21.09	<0.001	30.4
20142 106um	3	0.004	<0.001	0.29	0.025	0.006	<0.001	0.029	36.71	0.003	19.6
40143 106um	0.61	0.313	<0.001	12.15	0.007	0.186	<0.001	0.002	20.23	0.004	19.1
40144 106um	0.04	0.015	<0.001	0.23	0.009	0.007	<0.001	<0.001	34.37	<0.001	33.9
20141 75um	<0.01	0.038	<0.001	0.18	0.015	0.002	<0.001	<0.001	20.42	<0.001	30.8
20142 75um	3.07	0.005	<0.001	0.33	0.024	0.006	<0.001	0.032	35.68	0.003	20.1
40143 75um	0.62	0.282	<0.001	12.1	0.006	0.168	<0.001	0.003	20.32	0.004	19.05
40144 75um	0.09	0.014	<0.001	0.31	0.01	0.008	0.002	<0.001	34.98	<0.001	32.9
20141 45um	0.01	0.038	<0.001	0.21	0.014	0.002	<0.001	0.001	21.2	<0.001	30.2
20142 45um	2.86	0.005	<0.001	0.32	0.023	0.006	<0.001	0.03	36.63	0.003	19.25
40143 45um	0.62	0.295	<0.001	12.2	0.006	0.176	<0.001	0.002	19.95	0.005	19.25
40144 45um	0.03	0.015	<0.001	0.34	0.009	0.008	<0.001	<0.001	33.76	<0.001	34.4

hu	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	Mn	Na2O	Ni	P	Pb	S	SiO2	Sn	Sr	TiO2
DESCRIPTION	%	%	%	%	%	%	%	%	%	%
20141 500um	0.279	0.005	<0.001	0.001	0.003	0.015	30.1	<0.001	<0.001	<0.01
20142 500um	0.369	0.014	<0.001	0.006	0.004	2.41	18.75	0.006	<0.001	0.11
40143 500um	0.17	<0.005	0.037	0.015	0.076	0.264	21.2	0.004	0.009	0.01
40144 500um	0.184	0.018	<0.001	0.001	0.001	0.005	3.25	0.003	<0.001	<0.01
20141 300um	0.279	<0.005	<0.001	0.001	<0.001	0.026	29.6	<0.001	<0.001	<0.01
20142 300um	0.365	0.022	<0.001	0.004	0.01	2.57	19.8	0.006	0.002	0.11
40143 300um	0.172	<0.005	<0.001	0.015	0.09	0.318	19.8	0.005	0.008	0.01
40144 300um	0.196	0.015	<0.001	0.001	0.003	0.008	3.02	0.002	<0.001	<0.01
20141 212um	0.277	0.006	<0.001	0.001	0.003	0.017	29.8	0.001	<0.001	<0.01
20142 212um	0.372	0.009	<0.001	0.004	0.007	2.45	18.75	0.006	0.001	0.11
40143 212um	0.172	<0.005	<0.001	0.015	0.103	0.351	19.6	0.005	0.009	0.01
40144 212um	0.198	0.019	<0.001	0.001	0.006	0.017	3.12	0.003	0.001	<0.01
20141 150um	0.274	0.013	<0.001	0.002	0.002	0.016	31.1	<0.001	<0.001	<0.01
20142 150um	0.373	0.013	<0.001	0.004	0.006	2.28	19.4	0.006	0.001	0.11
40143 150um	0.172	<0.005	<0.001	0.014	0.094	0.34	19.4	0.004	0.008	0.01
40144 150um	0.19	0.014	<0.001	0.001	0.001	0.006	3.19	0.002	<0.001	<0.01
20141 106um	0.279	<0.005	<0.001	0.001	<0.001	0.022	30.4	0.001	<0.001	<0.01
20142 106um	0.379	0.011	<0.001	0.006	0.009	2.54	19.05	0.006	0.002	0.11
40143 106um	0.174	<0.005	<0.001	0.014	0.105	0.338	19.6	0.004	0.008	0.01
40144 106um	0.191	0.008	<0.001	0.001	<0.001	0.008	3.29	0.002	<0.001	<0.01
20141 75um	0.28	0.007	<0.001	0.001	<0.001	0.019	30.9	0.001	<0.001	<0.01
20142 75um	0.374	0.011	<0.001	0.004	0.005	2.57	19.6	0.006	0.001	0.11
40143 75um	0.174	<0.005	<0.001	0.015	0.108	0.346	19.75	0.005	0.009	0.01
40144 75um	0.195	0.021	0.011	0.001	0.003	0.013	3.27	0.004	0.001	<0.01
20141 45um	0.281	0.007	<0.001	0.001	0.001	0.021	30.3	0.001	<0.001	<0.01
20142 45um	0.376	0.021	<0.001	0.003	0.006	2.3	18.8	0.006	0.002	0.12
40143 45um	0.174	<0.005	0.002	0.015	0.088	0.312	20.1	0.006	0.009	0.01
40144 45um	0.188	0.014	<0.001	0.001	<0.001	0.012	3.25	0.003	<0.001	<0.01

hu	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	V	Zn	Zr	Total	Al2O3	As	Ba	CaO	Cl	Co	Cr2O3	Cu
DESCRIPTION	%	%	%	%	%	%	%	%	%	%	%	%
20141 500um	<0.001	0.005	0.003	99.93	0.03	0.051	<0.001	0.14	0.02	0.002	<0.001	0.004
20142 500um	0.005	0.024	0.004	105.9	6.38	0.011	0.002	0.41	0.035	0.002	<0.001	0.02
40143 500um	<0.001	0.229	0.006	99.97	0.97	0.295	<0.001	15.65	0.006	0.186	<0.001	0.006
40144 500um	<0.001	0.031	0.002	99.97	0.07	0.024	<0.001	0.29	0.016	<0.001	<0.001	<0.001
20141 300um	<0.001	0.005	0.002	99.98	0.03	0.051	0.004	0.14	0.019	0.002	<0.001	0.007
20142 300um	0.005	0.024	0.006	106.4	6.68	0.012	<0.001	0.4	0.032	0.002	<0.001	0.027
40143 300um	<0.001	0.265	0.007	100	0.9	0.295	<0.001	15.7	0.003	0.183	<0.001	0.008
40144 300um	<0.001	0.038	0.002	99.95	0.08	0.024	<0.001	0.26	0.011	<0.001	<0.001	0.003
20141 212um	<0.001	0.006	0.002	99.95	0.02	0.052	0.002	0.16	0.021	0.003	<0.001	0.009
20142 212um	0.005	0.025	0.005	106.15	6.53	0.012	<0.001	0.45	0.032	0.002	<0.001	0.027
40143 212um	<0.001	0.314	0.008	99.99	0.92	0.307	<0.001	16	0.004	0.19	<0.001	0.01
40144 212um	<0.001	0.047	0.003	100.05	0.08	0.025	<0.001	0.35	0.012	<0.001	<0.001	0.006
20141 150um	<0.001	0.006	0.002	99.98	0.02	0.05	<0.001	0.15	0.016	0.001	<0.001	0.011
20142 150um	0.005	0.024	0.005	105.75	6.14	0.012	0.004	0.42	0.033	0.002	<0.001	0.026
40143 150um	<0.001	0.295	0.007	99.99	0.88	0.303	<0.001	16.05	0.007	0.186	<0.001	0.006
40144 150um	<0.001	0.033	0.002	100	0.07	0.026	<0.001	0.28	0.014	<0.001	<0.001	0.001
20141 106um	<0.001	0.006	0.002	99.98	0.02	0.053	<0.001	0.24	0.016	0.003	<0.001	0.007
20142 106um	0.005	0.026	0.006	107.4	6.08	0.011	0.002	0.49	0.032	0.002	<0.001	0.029
40143 106um	<0.001	0.275	0.007	99.98	0.86	0.317	<0.001	16	0.003	0.194	<0.001	0.007
40144 106um	<0.001	0.034	<0.001	99.95	0.08	0.027	<0.001	0.45	0.011	<0.001	<0.001	0.004
20141 75um	<0.001	0.006	0.002	100.05	0.08	0.051	0.002	0.23	0.018	0.002	<0.001	0.006
20142 75um	0.005	0.024	0.005	107.45	6	0.01	0.002	0.49	0.028	0.003	<0.001	0.036
40143 75um	<0.001	0.297	0.008	100.05	0.84	0.319	<0.001	16	0.005	0.194	<0.001	0.009
40144 75um	<0.001	0.032	0.003	99.96	0.14	0.026	<0.001	0.64	0.012	0.001	<0.001	0.006
20141 45um	<0.001	0.006	0.003	99.92	0.03	0.05	<0.001	0.25	0.014	0.002	<0.001	0.006
20142 45um	0.005	0.024	0.005	105.8	5.59	0.012	0.003	0.54	0.03	0.003	<0.001	0.041
40143 45um	<0.001	0.26	0.006	100.1	0.84	0.356	<0.001	15.95	0.006	0.213	<0.001	0.009
40144 45um	<0.001	0.041	0.001	100	0.1	0.026	0.003	0.75	0.016	0.002	<0.001	0.005

tu	ME-XRF21tu	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21
SAMPLE	Fe	K2O	MgO	Mn	Na2O	Ni	P	Pb	S	SiO2
DESCRIPTION	%	%	%	%	%	%	%	%	%	%
20141 500um	1.98	0.002	>40	0.155	0.022	0.002	0.004	<0.001	0.016	42.3
20142 500um	2.61	0.009	38.3	0.174	0.025	0.002	0.008	<0.001	0.528	38.1
40143 500um	4.08	0.007	25.2	0.186	0.021	0.006	0.017	0.117	0.357	25.7
40144 500um	1.24	<0.001	>40	0.083	0.017	<0.001	0.003	<0.001	0.017	5.36
20141 300um	2.17	0.002	>40	0.158	0.024	0.003	0.004	0.003	0.019	42.2
20142 300um	2.74	0.011	38.1	0.17	0.026	0.002	0.01	<0.001	0.649	37.7
40143 300um	3.91	0.007	25.3	0.192	0.024	0.007	0.018	0.094	0.38	25.6
40144 300um	1.61	<0.001	>40	0.077	0.017	0.001	0.003	<0.001	0.022	5.34
20141 212um	1.99	0.001	>40	0.15	0.024	0.002	0.004	<0.001	0.017	42.1
20142 212um	2.73	0.009	38.1	0.172	0.026	0.002	0.01	<0.001	0.677	37.6
40143 212um	3.94	0.008	25	0.187	0.025	0.007	0.019	0.112	0.41	25.4
40144 212um	1.52	<0.001	>40	0.08	0.013	0.001	0.004	<0.001	0.035	5.66
20141 150um	1.91	<0.001	>40	0.144	0.019	0.002	0.004	<0.001	0.018	42
20142 150um	3.19	0.008	37.9	0.182	0.026	0.002	0.01	<0.001	1.075	37.7
40143 150um	4.1	0.007	24.8	0.189	0.032	0.006	0.019	0.097	0.411	25.5
40144 150um	1.33	<0.001	>40	0.077	0.016	0.001	0.004	<0.001	0.015	7.16
20141 106um	1.82	<0.001	>40	0.146	0.013	0.002	0.004	<0.001	0.02	42.1
20142 106um	3.47	0.009	37.6	0.184	0.03	0.002	0.013	0.001	1.34	37.4
40143 106um	4.03	0.007	24.9	0.192	0.02	0.007	0.02	0.11	0.395	25.3
40144 106um	1.28	<0.001	>40	0.078	0.013	<0.001	0.005	<0.001	0.017	5.94
20141 75um	1.76	0.001	>40	0.15	0.023	0.002	0.004	<0.001	0.019	42.1
20142 75um	4.11	0.009	37.3	0.188	0.031	0.003	0.008	<0.001	1.74	36.9
40143 75um	4.05	0.007	24.9	0.188	0.023	0.007	0.021	0.116	0.43	25.4
40144 75um	1.4	<0.001	>40	0.079	0.014	<0.001	0.005	<0.001	0.025	6.16
20141 45um	2.04	0.001	>40	0.146	0.027	0.002	0.005	<0.001	0.022	41.9
20142 45um	4.27	0.009	36.9	0.191	0.03	0.002	0.009	<0.001	1.895	36.8
40143 45um	4.19	0.007	24.8	0.191	0.028	0.009	0.022	0.104	0.393	25.6
40144 45um	1.45	0.001	>40	0.082	0.02	0.002	0.005	<0.001	0.024	6.01

tu	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-XRF21	ME-GRA05	ME-GRA05	ME-GRA05
SAMPLE	Sn	Sr	TiO2	V	Zn	Zr	Total	LOI 1000	LOI 1000	LOI 1000
DESCRIPTION	%	%	%	%	%	%	%	%	%	%
20141 500um	<0.001	<0.001	<0.01	<0.001	0.005	<0.001	100.1	5.81	8.56	12.93
20142 500um	<0.001	<0.001	0.04	<0.001	0.024	<0.001	101.35	2.93	6.14	12.72
40143 500um	0.002	0.007	0.01	<0.001	0.297	<0.001	100.05	7.3	16.41	24.31
40144 500um	0.001	<0.001	<0.01	<0.001	0.029	<0.001	100.05	2.19	13.37	27.29
20141 300um	<0.001	<0.001	<0.01	<0.001	0.005	<0.001	100.05	4.83	8.13	12.97
20142 300um	0.001	<0.001	0.04	<0.001	0.018	<0.001	101.7	2.53	6.2	12.85
40143 300um	0.003	0.008	0.01	<0.001	0.359	<0.001	100.05	4.23	17.69	24.44
40144 300um	0.001	<0.001	<0.01	<0.001	0.042	<0.001	100.05	0.52	12.66	27.79
20141 212um	<0.001	<0.001	<0.01	<0.001	0.007	<0.001	100.05	4.32	8.3	12.74
20142 212um	<0.001	<0.001	0.04	<0.001	0.019	<0.001	101.65	1.63	5.92	12.96
40143 212um	0.002	0.007	0.01	<0.001	0.396	<0.001	100.05	2.58	17.2	24.43
40144 212um	0.003	<0.001	<0.01	<0.001	0.062	<0.001	99.99	-0.42	12.13	27.5
20141 150um	<0.001	<0.001	<0.01	<0.001	0.006	<0.001	99.94	4.06	8.54	12.98
20142 150um	<0.001	<0.001	0.04	<0.001	0.022	<0.001	102.7	0.69	6.08	12.85
40143 150um	<0.001	0.007	0.01	<0.001	0.394	<0.001	100	0.87	17.15	24.26
40144 150um	0.001	<0.001	<0.01	<0.001	0.025	<0.001	100	-0.91	12.96	27.66
20141 106um	<0.001	<0.001	<0.01	<0.001	0.007	<0.001	100.05	5.78	8.34	13.04
20142 106um	<0.001	<0.001	0.05	<0.001	0.019	<0.001	103.3	0.29	5.87	12.99
40143 106um	0.002	0.006	0.01	<0.001	0.352	<0.001	99.99	0.28	17.32	24.57
40144 106um	0.001	<0.001	<0.01	<0.001	0.023	<0.001	100.05	-1.42	12.99	27.5
20141 75um	<0.001	<0.001	<0.01	<0.001	0.006	<0.001	100	-0.91	8.46	13
20142 75um	<0.001	<0.001	0.05	<0.001	0.02	<0.001	104.35	-0.36	6.17	12.95
40143 75um	0.003	0.006	0.01	<0.001	0.387	<0.001	99.96	-0.9	17.2	24.29
40144 75um	0.002	<0.001	<0.01	<0.001	0.017	<0.001	99.98	-1.86	12.95	27.46
20141 45um	<0.001	<0.001	<0.01	<0.001	0.006	<0.001	100.05	-1.88	8.37	12.94
20142 45um	<0.001	<0.001	0.07	<0.001	0.02	<0.001	104.35	-0.94	5.67	13.18
40143 45um	0.001	0.008	0.01	<0.001	0.329	0.001	100.1	-1.64	17.24	24.24
40144 45um	0.004	<0.001	<0.01	<0.001	0.039	<0.001	100.05	-2	13.34	27.49

APPENDIX 3

Block Model Cross Sections