MATSA RESOURCES

LIMITED
ABN 48 106 732 487

**ASX Announcement** **21st November 2013**

# Drilling Update at Symons Hill, Fraser Range

## Highlights

- *148 Phase 2, infill and step out aircore holes were completed during November for 5,392m over targets SHG01, SHG02 and SHG03 at Symons Hill. Preliminary results from handheld XRF assays at bottom of hole samples support prospectivity for Ni Cu sulphide mineralisation.*

***SHG02 and SHG03***

- *New strongly elevated nickel values from XRF up to 1.09% Ni in unweathered/fresh rock in bottom of hole samples, complements previously announced highly anomalous weathered zone results.*
- *Results confirm the presence of an elongated nickel rich zone, which is contained in a NNW trending Gabbro Sill up to 4.8km long and 0.4km wide.*
- *Nickel rich gabbro remains open beneath Tertiary sandstone cover to the south and at depth.*
- *Elevated copper values up to 234ppm Cu identified within the Ni rich gabbro may indicate presence of magmatic Ni Cu sulphides.*

***SHG01***

- *Bottom of hole samples have identified moderately elevated Ni (683ppm) and Cu (728ppm) values not previously identified in fresh gabbro.*
- *Elevated Ni and Cu values are broadly coincident with the original soil geochemical anomalies.*

***Other***

- *Drilling has revealed the presence of Tertiary sandstones up to 28m thick which has obscured basement mineralisation at SHG03 and potentially more widely through the Symons Hill Project.*
- *Exploration is progressing with gravity survey and shallow RC drilling programmes currently in progress.*

**CORPORATE SUMMARY**

**Executive Chairman**

Paul Poli

**Director**

Frank Sibbel

**Director & Company Secretary**

Andrew Chapman

**Shares on Issue**

144.15 million

**Unlisted Options**

12.55 million @ $0.31 - $0.45

**Top 20 shareholders**

Hold 48%

**Share Price on 20 November 2013**

28 cents

**Market Capitalisation**

$40.36 million

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## Aircore Drilling

Matsa Resources Limited ("Matsa" or "the Company" ASX:MAT) advises that the phase 2 programme of 148 aircore holes for a total of 5,392m has been completed. Approximately 1,300, 4m composite samples and 148 bottom of hole samples have been submitted for laboratory assay. Assays are currently awaited.

The phase 2 aircore programme comprised 148 step out and infill drillholes along lines spaced 400m apart at 100m and 50m spacings to follow up encouraging results from the phase 1 programme at SHG01 and SHG02/SHG03 (Figure 1).

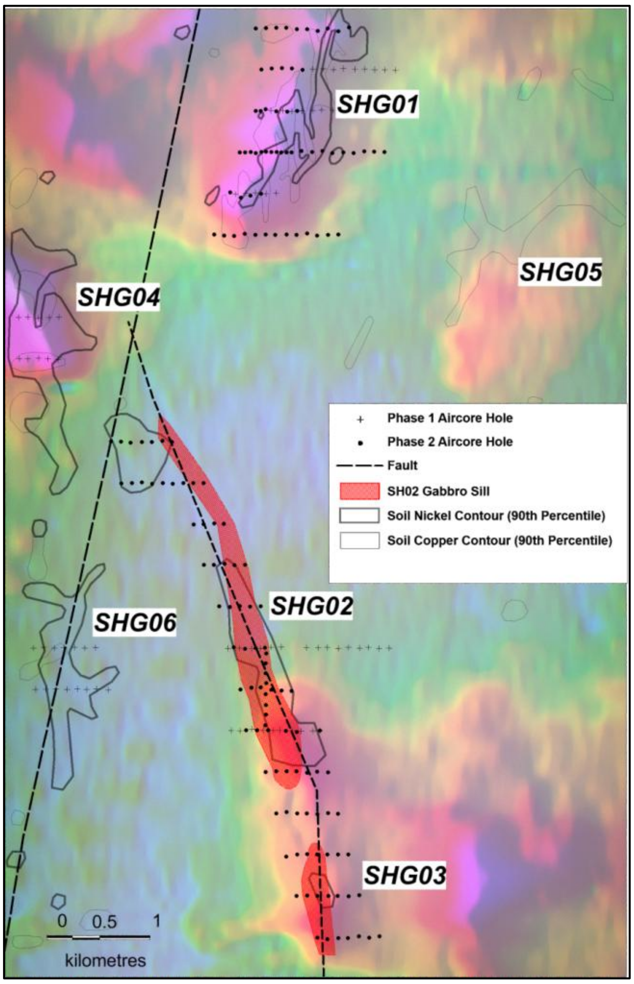


*Figure 1: **Location of Aircore Drilling and Geochemical Targets on VTEM Ch47 Image***

The objectives of the programme were to:

- Delineate the width, strike length and geological character of the nickel rich gabbro discovered at SHG02 by the Phase 1 aircore programme;
- Explore the SHG02 sill for primary nickel sulphide mineralisation in fresh rock, at or close to aircore refusal;
- Define anomalous nickel and copper zones in bedrock as possible indicators for the presence of magmatic Ni Cu sulphides at SHG01 and SHG02/03; and
- Obtain the freshest possible samples to characterise basement rocks using petrography (microscope observation) and multi-element chemistry.

Aircore holes were drilled to "refusal" which typically occurs at or close to the boundary between fresh rock and overlying highly weathered rock. Hole depths ranged between 9m and 64m with average depth being 36m.

As previously announced, basement rocks are concealed by a saprolite profile up to 55m thick and a surface layer of up to 9m of colluvial clays.

A semi-consolidated sandstone grit up to 28m thick was observed south of target SHG02 and is interpreted to form part of the Eucla Basin sequence of Tertiary age. This unit was seen to act as a blanket over strongly anomalous nickel values in basement rocks at SHG03 which prevented detection in the surface soils by residual soil sampling. This unit of unknown extent has the potential to have similarly obscured bedrock mineralisation elsewhere in the Symons Hill project.

## Handheld XRF Assays

Handheld XRF assays from the current aircore programme and the earlier Phase 1 programme have been reviewed.

The 214 bottom of hole samples under review were collected from the interval in the drillhole which was least affected by weathering. The objective was to obtain preliminary trace element values including Cu and Ni values in bedrock as a potential vector towards magmatic nickel copper sulphide mineralisation.

| | | | | Copper (ppm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | Samples | Min | Max | 75th | 90th | 95th | 98th |
| **SHG02/03** | 107 | 2 | 234 | 64 | 95 | 125 | 174 |
| **SHG01** | 76 | 15 | 728 | 122 | 273 | 445 | 603 |
| **All** | 214 | 2 | 728 | 80 | 133 | 216 | 427 |
| | | | | | | | |
| | | | | **Nickel (ppm)** | | | |
| **SHG02/03** | 107 | 0 | 10,937 | 359 | 2,291 | 4,756 | 6,997 |
| **SHG01** | 76 | 4 | 683 | 195 | 286 | 349 | 412 |
| **All** | 214 | -1 | 10,937 | 212 | 570 | 2,286 | 4,799 |
| | | | | | | | |

***Table 1:* Handheld XRF Assay Summary for Ni, Cu**

Sample preparation and assay procedures are described in Appendix 1.

The intention has been to treat hand held XRF*[1] values as a semi quantitative tool to map relative abundance of Ni and Cu in unweathered basement.

The range of XRF values for Ni and Cu are presented in Table 1 and it can be seen that:

- The highest nickel value of 1.09% Ni was returned from the SHG02/03 prospect; and
- The highest copper value of 728ppm Cu was returned from the SHG01 prospect.

## Target SHG02/SHG03 (Figure 2)

The previously identified olivine gabbro sill was shown to extend through soil Ni anomalies SHG02 and SHG03 in a NNW direction over a distance of greater than 4.8km and up to 0.4km wide. Drilling between SHG02 and SHG03 suggests that the sill has been cut or thinned by faulting between the two anomalies.

Phase 1 aircore drill sections containing strongly Ni anomalous intercepts as recently announced are highlighted in Figure 2. Results include:

- Hand held XRF assays of bottom of hole samples returned elevated Ni values over much of the sub - outcrop extent of the olivine gabbros sill;

- A peak result of 1.09% Ni contained in relatively fresh olivine rich gabbro is located to the south of, and well outside soil geochemical anomaly SHG03. It is located beneath a 28m thick layer of Tertiary grit which has masked Ni mineralisation in basement rocks from being identified by soil sampling. It can be also seen that geochemical anomaly SHG03 occupies a “window” through the Tertiary sediments; and
- Bottom of hole readings have also identified a number of previously unrecognised, elevated Cu values of between 100ppm Cu and 728ppm Cu in the central part of the sill. These define 3 discrete elongated zones of elevated copper values as shown. The presence of anomalous copper increases the potential for a magmatic Ni sulphide source rather than a lateritic or silicate source of the nickel in the Gabbro.

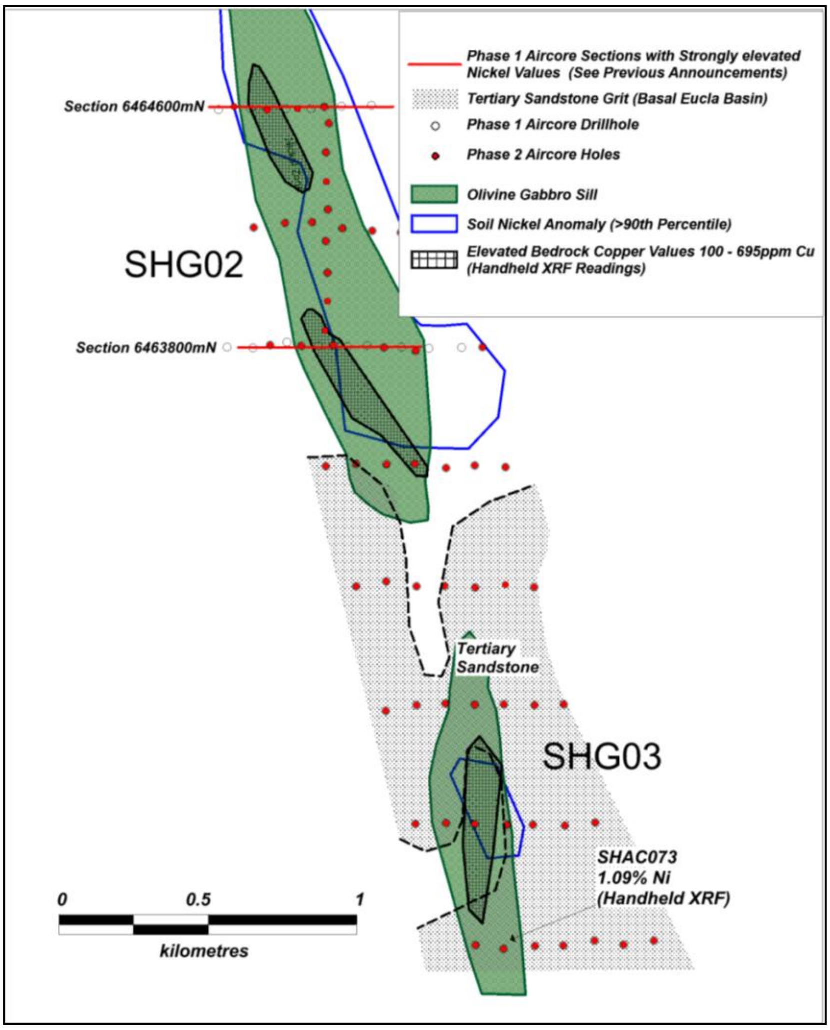


*Figure 2:* ***Target SHG02/SHG03 Summary and Phase 2 Aircore Drilling Preliminary Results***

## Target SHG01

The Phase 2 aircore programme comprised infill and step out drilling within the co–incident Ni and Cu soil anomaly at SHG01. Visual logging has confirmed observations from the Phase 1 programme that the anomaly is mostly underlain by gabbro.

The newly recognised moderately elevated Ni and Cu values in fresh rock in preliminary bottom of hole XRF assays can be seen to broadly coincide with the soil anomaly (Figure 3). As with SHG02 and SHG03, It is proposed to target these zones of anomalous bedrock Ni and Cu values as potentially defining areas of disseminated magmatic Ni and Cu sulphides.

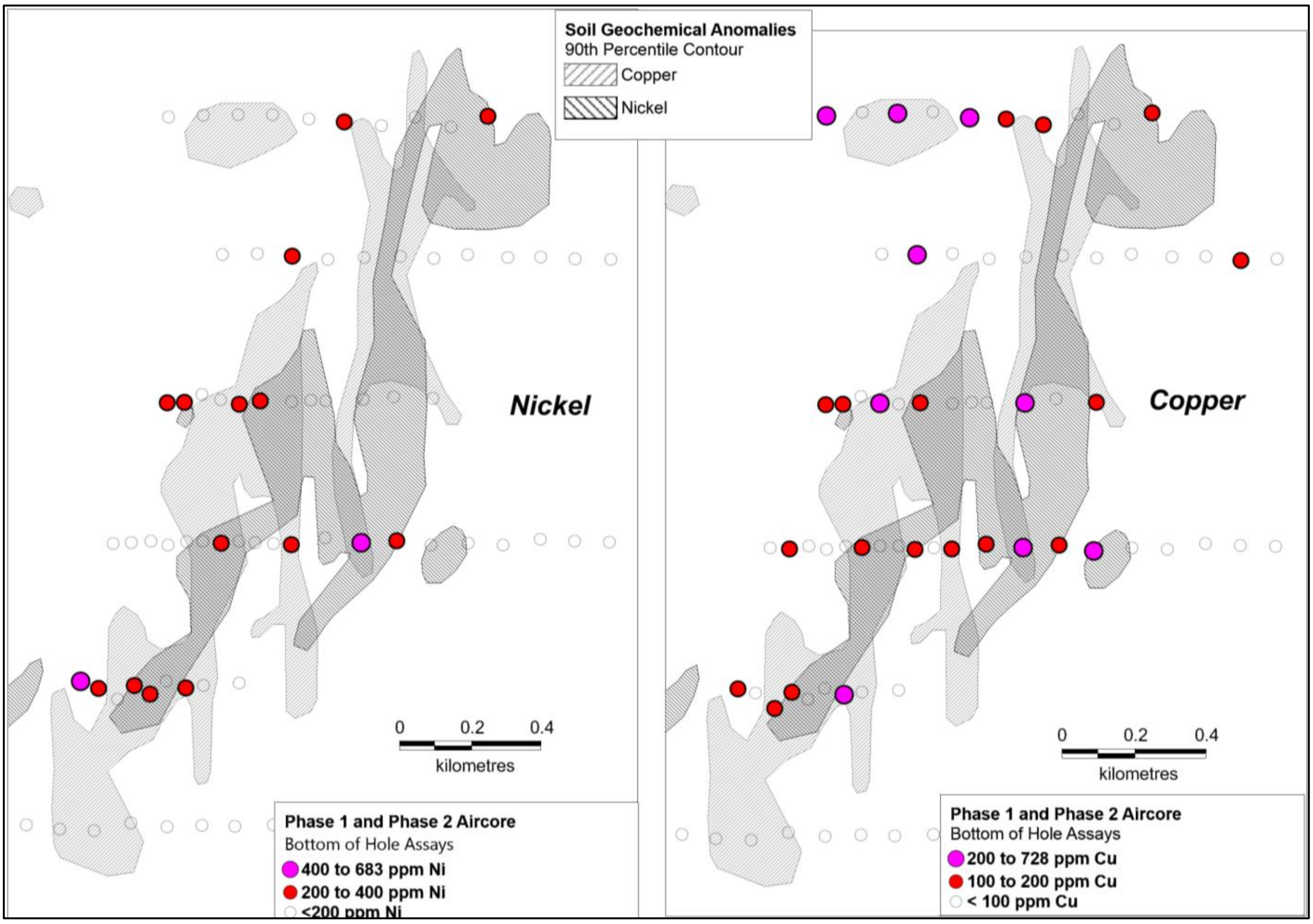


*Figure 3: Target SHG01, Aircore Drilling and Handheld XRF Results for Ni and Cu*

*[1] *Comparisons between handheld XRF values for Ni and Cu were made with the same interval assayed by the industry standard ICP-AES 4 acid digest technique in seven drillholes from the phase 1 aircore programme. Results as briefly discussed in Appendix 1 have confirmed that XRF Ni values are closely comparable with the ICP assays (+- 4 percent), while XRF copper values are generally much lower than ICP values (- 50%).*

**For further Information please contact:**


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***Exploration results***

*The information in this report that relates to Exploration results, is based on information compiled by David Fielding, who is a Fellow of the Australasian Institute of Mining and Metallurgy. David Fielding is a full time employee of Matsa Resources Limited. David Fielding has sufficient experience which is relevant to the style of mineralisation and the type of ore deposit under consideration and the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. David Fielding consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

# Appendix 1: Matsa Resources Limited Symons Hill Project JORC 2012 Table 1

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Sampling techniques*** | • *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*<br>• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*<br>• *Aspects of the determination of mineralisation that are Material to the Public Report.*<br>• *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g 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 mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.* | • Soil Samples comprise approximately 300g of -1.5mm bulk soils collected between a depth of 10 and 30cm. Assay techniques such as Mobile Metal Ion (MMI) partial digest require that stainless steel shovel for digging and plastic trowel to scoop out soil is used to minimize sample contamination.<br>• Input from geochemical consultants eg ioGlobal Ltd has been sought from time to time to ensure that the size of sample is sufficient to ensure representivity of the soil mass being sampled. The target elements being sought are not present in coarse aggregates, coarse gold is not being targeted consequently 300g is sufficient for a representative sample<br>• From a sampling perspective the target is basement mineralization. Sampling procedures for total digest are focused on the clay fraction which captures and amplifies the geochemical response above basement mineralization. Sample procedures for MMI likewise target the amplified geochemical response associated with mobile ions of the target element. |
| ***Drilling techniques*** | • *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).* | • Aircore Drilling carried out by Challenge Drilling. Vacuum Bit achieving accurate face sampling. Bit diameter 75-80mm.<br>• Second phase aircore drilling carried out by Frontline Drilling using a conventional aircore drill bit. |
| ***Drill sample recovery*** | • *Method of recording and assessing core and chip sample recoveries and results assessed.*<br>• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*<br>• *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | • Recovery was not measured. |
| ***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.*<br>• *Whether logging is qualitative or quantitative in nature. Core (or* | • Visual logging carried out on washed cuttings. All washed cuttings were retained in boxes. Selected fresh bottom of hole samples selected for petrography. Logging recorded as qualitative description of colour and lithological type. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *costean, channel, etc) photography.*<br>• *The total length and percentage of the relevant intersections logged.* | |
| ***Sub-sampling techniques and sample preparation*** | • *If core, whether cut or sawn and whether quarter, half or all core taken.*<br>• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*<br>• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*<br>• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*<br>• *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*<br>• *Whether sample sizes are appropriate to the grain size of the material being sampled.* | • Samples of 1-4m were composited for assay. The subsampling technique was carried out by hand spearing drill residues over specified intervals to achieve a final sample weight of around 3 kg. The opportunity exists to go back to individual splits as a check on composite assay values.<br>• Composite samples with results above 0.1% Ni were chosen for the 1m split sampling. Bulk residues of the bagged 1m interval were passed through a three-tier riffle splitter producing a 1-3kg sample.<br>• Sample for Hand held XRF analysis. A scoop of sample from the end of hole (EOH) meter (~200g) were placed in a calico bag and air dried before being lightly pulverized and passed through a 1.5mm sieve. The fine fraction is hand-pulverized and then sieved through an 80-mesh (180 microns) screen. The powdered sample is pressed into a standard assay vessel as supplied by Choice Analytics specifically for use with handheld xrf equipment. |
| ***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.*<br>• *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*<br>• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.* | • Soil and rock samples collected for gold and base metal exploration are assayed using an aqua regia digest and are regarded to be a total digest enabling total values for target elements to be measured. Analysis by inductively coupled plasma mass spectrometry (ICP-MS) technique is seen as the most cost effective technique for low level detection of gold and base metals. Inductively coupled plasma atomic emission spectrometry (ICP-AES) was also used to detect other elements such as Ca, Fe, K, etc. Precious metal (Au-Pd-Pt) determination is by 30g lead fire assay fusion and the resulting bead is digested in a three-stage acid process and measured using ICP-AES. For the 1m splits, four acid digestion was carried out and measured with ICP-AES.<br>• For surface sampling no QA QC samples have been inserted and reliance is placed on laboratory procedures. Samples submitted for base metal analysis are "validated" in the field by a prior assay using the Olympus Handhled XRF unit.<br>• Hand held XRF Analysis. Bottom of hole samples from aircore drillholes were analysed using a handheld Olympus Innovx Delta Premium (DP4000C model) XRF analyser. Reading times employed was 90 sec/beam for a total of 270 sec. Calibration factors were not employed on the instrument. Calibration factors for XRF readings were calculated for Ni and Cu based on comparion with seven 4 Acid digest results from samples representing the same interval in the |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | Phase 1 aircore drilling program and these are shown as graphs at the bottom of this Table below.<br>• Duplicate and blank readings were carried out every 50 samples. |
| ***Verification of sampling and assaying*** | • *The verification of significant intersections by either independent or alternative company personnel.*<br>• *The use of twinned holes.*<br>• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*<br>• *Discuss any adjustment to assay data.* | • Not carried out because laboratory QA QC procedures are regarded as sufficient for surface samples and first pass aircore samples.<br>• Data entry carried out by field personnel thus minimizing transcription or other errors. Trial plots in field and rigorous database procedures ensure that field and assay data are merged accurately. |
| ***Location of data points*** | • *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*<br>• *Specification of the grid system used.*<br>• *Quality and adequacy of topographic control.* | • Drill collars are surveyed by modern hand held GPS units with an accuracy of 5m which is sufficient accuracy for the purpose of compiling and interpreting results.<br>• Topographic control 2-5m accuracy using published maps or Shuttle Radar data is sufficient to evaluate topographic effects on assay distribution. |
| ***Data spacing and distribution*** | • *Data spacing for reporting of Exploration Results.*<br>• *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.*<br>• *Whether sample compositing has been applied.* | • Sample spacing is established using the largest spacing possible for a likely target footprint to minimize cost. Issues such as transported overburden which can blanket geochemistry response lead to a reduction in sample spacing.<br>• Aircore drillholes spacings were selected to achieve a first pass test of soil geochemical anomalies and to enable bedrock types to be characterized as a guide to a geologically driven exploration programme for Ni Sulphides. |
| ***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.*<br>• *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.* | • Soil samples are collected on a staggered grid in order to minimize orientation bias.<br>• Vertical Aircore drillholes were oriented along EW lines which is at a high angle to the geological strike. |
| ***Sample security*** | • *The measures taken to ensure sample security.* | • Not regarded as an issue for soil samples and first pass aircore samples beyond clear mark up and secure packaging to ensure safe arrival and accurate handling by personnel at assay facility. Aircore residues retained in strong green plastic bags pending further sampling. Assay Pulps retained until final results have been evaluated. |
| ***Audits or reviews*** | • *The results of any audits or reviews of sampling techniques and data.* | • Orientation surface sampling overseen by geochemical consultants to ensure best practice. First pass assays with hand held xrf machine to gain impression of mineralization.<br>• Hand held XRF Analysis. Procedure analysis of drill hole samples was developed in conjunction with Ioglobal, but yet to be formally audited or reviewed |

## Section 2 Reporting of Exploration Results

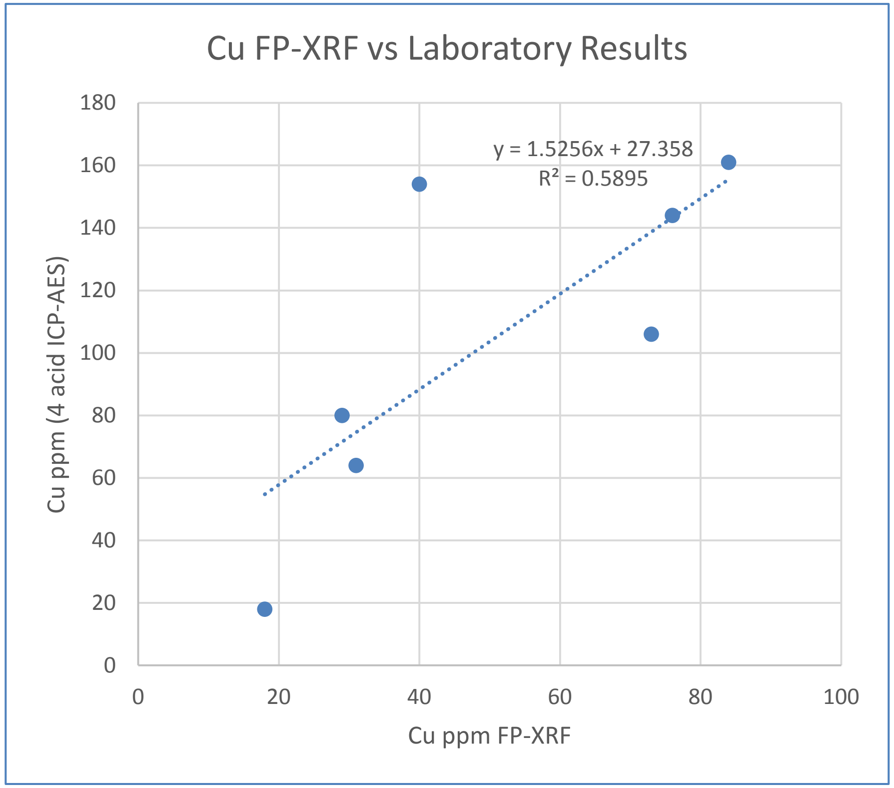
(Criteria listed in the preceding section also apply to this section.)

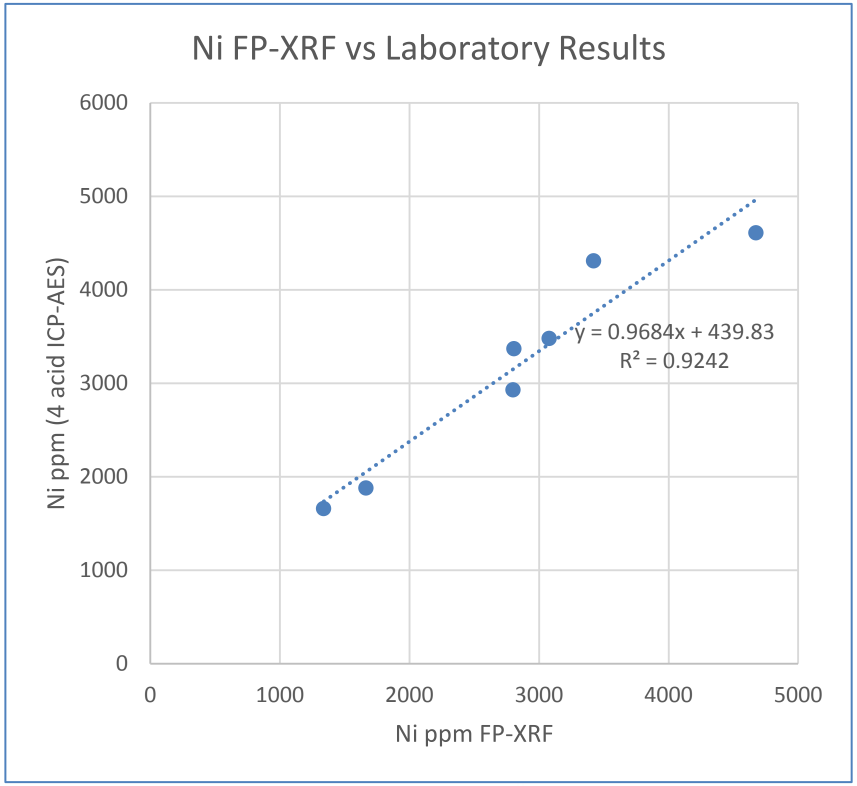
| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Mineral tenement and land tenure status*** | • *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*<br>• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.* | • EL69/3070 which is owned 100% by Matsa Resources Ltd.<br>• Located on Vacant Crown Land<br>• The License intersects the buffer zones of the Fraser Range and Southern Hills PEC's Exploration to be managed in accordance with a Conservation Management Plan.<br>• The project is located within Native Title Claim by the Ngadju people.<br>• A heritage agreement has been signed and exploration is carried out within the terms of that agreement.<br>• At the time of writing the licence is granted for a 5 year period expiring on 6th March 2018 |
| ***Exploration done by other parties*** | • *Acknowledgment and appraisal of exploration by other parties.* | • Prior work carried out by GSWA in the form of wide spaced helicopter based soil sampling and acquisition of 400m line spacing magnetic and radiometric data.<br>• No previous exploration data has been reported. |
| ***Geology*** | • *Deposit type, geological setting and style of mineralisation.* | • The target is Nova style Ni Cu mineralization hosted in high grade mafic granulites of the Fraser Complex |
| ***Drill hole Information*** | • *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*<br>○ *easting and northing of the drill hole collar*<br>○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*<br>○ *dip and azimuth of the hole*<br>○ *down hole length and interception depth*<br>○ *hole length.*<br>• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | Co ordinates and other attributes of aircore drillholes are included in Appendix 2. Each drilling programme will be attached in this way as information becomes available. |
| ***Data aggregation methods*** | • *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*<br>• *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*<br>• *The assumptions used for any reporting of metal equivalent values* | • Aggregation of downhole assay values for Ni Cu and Co were shown for intercepts containing >0.1% Ni. Intercepts were calculated by averaging length weighted intercept values for the three elements (usually 4m lengths). Raw un - aggregated Cu, Ni and Co values have been included in previous release. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *should be clearly stated.* | |
| ***Relationship between mineralisation widths and intercept lengths*** | • *These relationships are particularly important in the reporting of Exploration Results.*<br>• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*<br>• *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').* | • All intercepts reported are measured in down hole metres. |
| ***Diagrams*** | • *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.* | • Suitable summary plans have been included in the body of the report.<br>• Plan maps have been included to illustrate the results at SHG01, SHG02 and SHG03 |
| ***Balanced reporting*** | • *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | • Not required at this stage |
| ***Other substantive exploration data*** | • *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.* | • Airborne VTEM (combined magnetic and electromagnetic) carried out in December 2012 by Geotech Airborne Pty Limited. A total of 6 priority targets and 15 second order targets identified and reported on by Southern Geoscience Consultants Ltd<br>• Prior to December 2012, Comprehensive geochemical survey carried out by Matsa Resources comprising 614 samples mostly at 400m centres on a staggered grid identified targets SH01 to SH05. Infill at 200m x 200m completed over targets SH01 to SH05 in May 2013 for a total of 638 samples.<br>• Ground EM carried out in May 2013 by Bushgum Holdings Pty Ltd, under supervision by Newexco consultants, consisting of both moving-loop (MLEM) and fixed-loop (FLEM) surveys. Data acquisition was achieved using a SMARTem24 8-channel geophysical receiver manufactured by ElectroMagnetic Imaging Technology (EMIT), Bartington 3-component magnetic field sensor (up to 1Hz frequency response) and a Zonge ZT-30 Loop Driver transmitter to power the loop with up to 30A. The MLEM and FLEM surveys are both 400m wide. In the MLEM, the survey lines are spaced 400m apart with receiving stations every 100m inside the loop along an E-W direction. In the FLEM, the receiving stations are 50m apart across 1 km traverse in an E-W direction. |
| ***Further work*** | • *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>• *Diagrams clearly highlighting the areas of possible extensions,* | • RC and diamond drilling at Geochemical anomalies SHG01, SHG02 and SHG03. Aircore drilling at other areas recommended by geophysical consultant. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | • Geological mapping to commence in areas of bedrock exposure in the south of the tenement.<br>• Induced polarization (IP) geophysical surveys over geochemical targets SHG01, SHG02 and SHG03. |

## Preliminary Ni and Cu Calibration Data for Handheld XRF



# Appendix 2: Phase 2 Aircore drill hole collar locations

| Hole_ID | Hole Type | Depth | Easting | Northing | RL | Dip | Azimuth |
|---|---|---|---|---|---|---|---|
| SHAC072 | AC | 57 | 517099 | 6461792 | 283 | -90 | 0 |
| SHAC073 | AC | 62 | 517193 | 6461780 | 296 | -90 | 0 |
| SHAC074 | AC | 43 | 517299 | 6461789 | 289 | -90 | 0 |
| SHAC075 | AC | 43 | 517394 | 6461791 | 291 | -90 | 0 |
| SHAC076 | AC | 29 | 517499 | 6461807 | 287 | -90 | 0 |
| SHAC077 | AC | 40 | 517597 | 6461794 | 286 | -90 | 0 |
| SHAC078 | AC | 38 | 517699 | 6461807 | 288 | -90 | 0 |
| SHAC079 | AC | 27 | 516897 | 6462199 | 294 | -90 | 0 |
| SHAC080 | AC | 24 | 517000 | 6462201 | 297 | -90 | 0 |
| SHAC081 | AC | 51 | 517097 | 6462198 | 293 | -90 | 0 |
| SHAC082 | AC | 40 | 517204 | 6462196 | 282 | -90 | 0 |
| SHAC083 | AC | 27 | 517292 | 6462196 | 286 | -90 | 0 |
| SHAC084 | AC | 46 | 517400 | 6462193 | 284 | -90 | 0 |
| SHAC085 | AC | 21 | 517501 | 6462203 | 283 | -90 | 0 |
| SHAC086 | AC | 38 | 516797 | 6462578 | 288 | -90 | 0 |
| SHAC087 | AC | 38 | 516901 | 6462597 | 293 | -90 | 0 |
| SHAC088 | AC | 48 | 516997 | 6462602 | 284 | -90 | 0 |
| SHAC089 | AC | 60 | 517096 | 6462598 | 283 | -90 | 0 |
| SHAC090 | AC | 35 | 517195 | 6462600 | 283 | -90 | 0 |
| SHAC091 | AC | 44 | 517298 | 6462597 | 290 | -90 | 0 |
| SHAC092 | AC | 16 | 517396 | 6462599 | 285 | -90 | 0 |
| SHAC093 | AC | 15 | 516699 | 6462995 | 294 | -90 | 0 |
| SHAC094 | AC | 17 | 516799 | 6463011 | 292 | -90 | 0 |
| SHAC095 | AC | 38 | 516901 | 6462995 | 295 | -90 | 0 |
| SHAC096 | AC | 35 | 516994 | 6462996 | 295 | -90 | 0 |
| SHAC097 | AC | 32 | 517098 | 6462990 | 295 | -90 | 0 |
| SHAC098 | AC | 31 | 517200 | 6463000 | 294 | -90 | 0 |
| SHAC099 | AC | 42 | 517297 | 6462992 | 287 | -90 | 0 |
| SHAC100 | AC | 19 | 516596 | 6463397 | 305 | -90 | 0 |

| Hole_ID | Hole Type | Depth | Easting | Northing | RL | Dip | Azimuth |
|---|---|---|---|---|---|---|---|
| SHAC136 | AC | 42 | 516849 | 6464181 | 306 | -90 | 0 |
| SHAC138 | AC | 32 | 516603 | 6464258 | 294 | -90 | 0 |
| SHAC140 | AC | 33 | 516598 | 6464352 | 304 | -90 | 0 |
| SHAC142 | AC | 29 | 516597 | 6464449 | 294 | -90 | 0 |
| SHAC144 | AC | 41 | 516606 | 6464547 | 295 | -90 | 0 |
| SHAC145 | AC | 44 | 516288 | 6464603 | 299 | -90 | 0 |
| SHAC146 | AC | 24 | 516400 | 6464590 | 297 | -90 | 0 |
| SHAC147 | AC | 31 | 516502 | 6464596 | 298 | -90 | 0 |
| SHAC148 | AC | 42 | 516591 | 6464601 | 299 | -90 | 0 |
| SHAC150 | AC | 13 | 516149 | 6465003 | 296 | -90 | 0 |
| SHAC152 | AC | 32 | 516252 | 6464994 | 299 | -90 | 0 |
| SHAC154 | AC | 31 | 516349 | 6465004 | 297 | -90 | 0 |
| SHAC156 | AC | 36 | 516448 | 6464998 | 301 | -90 | 0 |
| SHAC158 | AC | 30 | 516548 | 6465002 | 301 | -90 | 0 |
| SHAC159 | AC | 22 | 516002 | 6465401 | 301 | -90 | 0 |
| SHAC160 | AC | 33 | 516098 | 6465401 | 301 | -90 | 0 |
| SHAC161 | AC | 29 | 516200 | 6465412 | 302 | -90 | 0 |
| SHAC162 | AC | 17 | 516295 | 6465399 | 303 | -90 | 0 |
| SHAC163 | AC | 21 | 516399 | 6465401 | 304 | -90 | 0 |
| SHAC164 | AC | 21 | 515901 | 6465794 | 303 | -90 | 0 |
| SHAC165 | AC | 29 | 515999 | 6465797 | 298 | -90 | 0 |
| SHAC166 | AC | 24 | 516101 | 6465804 | 311 | -90 | 0 |
| SHAC167 | AC | 17 | 516194 | 6465800 | 311 | -90 | 0 |
| SHAC168 | AC | 35 | 515204 | 6466190 | 313 | -90 | 0 |
| SHAC169 | AC | 26 | 515304 | 6466195 | 312 | -90 | 0 |
| SHAC170 | AC | 33 | 515403 | 6466201 | 292 | -90 | 0 |
| SHAC171 | AC | 24 | 515501 | 6466186 | 294 | -90 | 0 |
| SHAC172 | AC | 28 | 515603 | 6466195 | 298 | -90 | 0 |
| SHAC173 | AC | 27 | 515699 | 6466187 | 304 | -90 | 0 |

| Hole_ID | Hole Type | Depth | Easting | Northing | RL | Dip | Azimuth |
|---|---|---|---|---|---|---|---|
| SHAC195 | AC | 29 | 517096 | 6468590 | 287 | -90 | 0 |
| SHAC196 | AC | 24 | 517202 | 6468598 | 293 | -90 | 0 |
| SHAC197 | RC | 9 | 517299 | 6468602 | 291 | -90 | 0 |
| SHAC198 | AC | 54 | 516256 | 6469010 | 285 | -90 | 0 |
| SHAC199 | AC | 57 | 516359 | 6468956 | 285 | -90 | 0 |
| SHAC200 | AC | 58 | 516451 | 6468976 | 284 | -90 | 0 |
| SHAC201 | AC | 45 | 516552 | 6468993 | 288 | -90 | 0 |
| SHAC202 | AC | 26 | 516347 | 6469394 | 286 | -90 | 0 |
| SHAC203 | AC | 24 | 516399 | 6469397 | 286 | -90 | 0 |
| SHAC204 | AC | 40 | 516453 | 6469400 | 281 | -90 | 0 |
| SHAC205 | AC | 48 | 516502 | 6469390 | 282 | -90 | 0 |
| SHAC206 | AC | 30 | 516555 | 6469399 | 283 | -90 | 0 |
| SHAC207 | AC | 45 | 516600 | 6469401 | 283 | -90 | 0 |
| SHAC208 | AC | 45 | 516651 | 6469400 | 283 | -90 | 0 |
| SHAC209 | AC | 45 | 516703 | 6469400 | 281 | -90 | 0 |
| SHAC210 | AC | 46 | 516747 | 6469396 | 287 | -90 | 0 |
| SHAC211 | AC | 46 | 516800 | 6469394 | 284 | -90 | 0 |
| SHAC212 | AC | 48 | 516849 | 6469397 | 283 | -90 | 0 |
| SHAC213 | AC | 48 | 516944 | 6469410 | 286 | -90 | 0 |
| SHAC214 | AC | 64 | 517047 | 6469400 | 280 | -90 | 0 |
| SHAC215 | AC | 48 | 517146 | 6469408 | 280 | -90 | 0 |
| SHAC216 | AC | 46 | 517243 | 6469390 | 282 | -90 | 0 |
| SHAC217 | AC | 45 | 517348 | 6469395 | 287 | -90 | 0 |
| SHAC218 | AC | 40 | 517446 | 6469390 | 292 | -90 | 0 |
| SHAC219 | AC | 53 | 517552 | 6469406 | 286 | -90 | 0 |
| SHAC220 | AC | 33 | 517648 | 6469401 | 287 | -90 | 0 |
| SHAC221 | AC | 29 | 517747 | 6469398 | 290 | -90 | 0 |
| SHAC222 | AC | 60 | 516500 | 6469796 | 289 | -90 | 0 |
| SHAC223 | AC | 50 | 516548 | 6469797 | 283 | -90 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SHAC102 | AC | 31 | 516699 | 6463405 | 305 | -90 | 0 |
| SHAC104 | AC | 61 | 516801 | 6463404 | 304 | -90 | 0 |
| SHAC106 | AC | 51 | 516895 | 6463405 | 304 | -90 | 0 |
| SHAC108 | AC | 38 | 517000 | 6463391 | 314 | -90 | 0 |
| SHAC110 | AC | 45 | 517096 | 6463400 | 304 | -90 | 0 |
| SHAC112 | AC | 34 | 517200 | 6463394 | 290 | -90 | 0 |
| SHAC113 | AC | 14 | 516409 | 6463803 | 306 | -90 | 0 |
| SHAC114 | AC | 46 | 516514 | 6463800 | 306 | -90 | 0 |
| SHAC115 | AC | 58 | 516621 | 6463803 | 306 | -90 | 0 |
| SHAC116 | AC | 54 | 516621 | 6463803 | 306 | -90 | 0 |
| SHAC117 | AC | 59 | 516792 | 6463795 | 305 | -90 | 0 |
| SHAC118 | AC | 40 | 516898 | 6463784 | 296 | -90 | 0 |
| SHAC121 | AC | 44 | 516594 | 6463851 | 298 | -90 | 0 |
| SHAC123 | AC | 13 | 516602 | 6463951 | 303 | -90 | 0 |
| SHAC125 | AC | 27 | 516602 | 6464046 | 305 | -90 | 0 |
| SHAC127 | AC | 32 | 516596 | 6464152 | 299 | -90 | 0 |
| SHAC128 | AC | 33 | 516459 | 6464212 | 307 | -90 | 0 |
| SHAC130 | AC | 50 | 516550 | 6464216 | 307 | -90 | 0 |
| SHAC132 | AC | 18 | 516651 | 6464194 | 306 | -90 | 0 |
| SHAC134 | AC | 37 | 516752 | 6464186 | 306 | -90 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SHAC174 | AC | 28 | 515801 | 6466195 | 296 | -90 | 0 |
| SHAC175 | AC | 29 | 515900 | 6466193 | 297 | -90 | 0 |
| SHAC176 | AC | 38 | 515997 | 6466194 | 294 | -90 | 0 |
| SHAC177 | AC | 17 | 515103 | 6466599 | 291 | -90 | 0 |
| SHAC178 | AC | 19 | 515199 | 6466595 | 293 | -90 | 0 |
| SHAC179 | AC | 15 | 515291 | 6466586 | 290 | -90 | 0 |
| SHAC180 | AC | 17 | 515400 | 6466593 | 291 | -90 | 0 |
| SHAC181 | AC | 22 | 515498 | 6466592 | 298 | -90 | 0 |
| SHAC182 | AC | 37 | 515601 | 6466602 | 292 | -90 | 0 |
| SHAC183 | AC | 43 | 515694 | 6466593 | 292 | -90 | 0 |
| SHAC185 | AC | 32 | 516102 | 6468601 | 288 | -90 | 0 |
| SHAC186 | AC | 33 | 516196 | 6468589 | 292 | -90 | 0 |
| SHAC187 | AC | 33 | 516294 | 6468585 | 289 | -90 | 0 |
| SHAC188 | AC | 33 | 516397 | 6468607 | 284 | -90 | 0 |
| SHAC189 | AC | 43 | 516499 | 6468596 | 284 | -90 | 0 |
| SHAC190 | AC | 31 | 516598 | 6468600 | 289 | -90 | 0 |
| SHAC191 | AC | 27 | 516691 | 6468597 | 292 | -90 | 0 |
| SHAC192 | AC | 50 | 516799 | 6468601 | 289 | -90 | 0 |
| SHAC193 | AC | 54 | 516896 | 6468598 | 289 | -90 | 0 |
| SHAC194 | AC | 32 | 516999 | 6468610 | 287 | -90 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SHAC224 | AC | 53 | 516598 | 6469813 | 289 | -90 | 0 |
| SHAC225 | AC | 56 | 516702 | 6469792 | 281 | -90 | 0 |
| SHAC226 | AC | 44 | 516806 | 6469790 | 281 | -90 | 0 |
| SHAC227 | AC | 46 | 516904 | 6469797 | 287 | -90 | 0 |
| SHAC228 | AC | 41 | 516556 | 6470199 | 290 | -90 | 0 |
| SHAC229 | AC | 21 | 516656 | 6470208 | 287 | -90 | 0 |
| SHAC230 | AC | 34 | 516754 | 6470210 | 283 | -90 | 0 |
| SHAC231 | AC | 45 | 516852 | 6470209 | 284 | -90 | 0 |
| SHAC232 | AC | 45 | 516953 | 6470194 | 278 | -90 | 0 |
| SHAC233 | AC | 46 | 516503 | 6470595 | 285 | -90 | 0 |
| SHAC234 | AC | 48 | 516602 | 6470600 | 284 | -90 | 0 |
| SHAC235 | AC | 43 | 516700 | 6470602 | 285 | -90 | 0 |
| SHAC236 | AC | 28 | 516797 | 6470602 | 286 | -90 | 0 |
| SHAC237 | AC | 43 | 516899 | 6470590 | 281 | -90 | 0 |
| SHAC238 | AC | 47 | 516999 | 6470587 | 274 | -90 | 0 |
| SHAC239 | AC | 51 | 517103 | 6470571 | 272 | -90 | 0 |
| SHAC240 | AC | 40 | 517199 | 6470595 | 274 | -90 | 0 |
| SHAC241 | AC | 21 | 517300 | 6470567 | 274 | -90 | 0 |
| SHAC242 | AC | 40 | 517404 | 6470604 | 279 | -90 | 0 |
| SHAC243 | AC | 10 | 516354 | 6464197 | 307 | -90 | 0 |

## Appendix 3: Phase 2 Aircore bottom of hole XRF Sample Ledger

| HOLE ID | mFrom | mTo | Cu_ppm | Ni_ppm |
|---|---|---|---|---|
| SHAC072 | 56 | 57 | 73 | 1734 |
| SHAC073 | 61 | 62 | 28 | 10937 |
| SHAC074 | 42 | 43 | 12.9 | 40 |
| SHAC075 | 42 | 43 | 6.3 | 26 |
| SHAC076 | 28 | 29 | 8.5 | 13 |
| SHAC077 | 39 | 40 | 9.6 | 16 |
| SHAC078 | 37 | 38 | 37.4 | 12 |
| SHAC079 | 26 | 27 | 20.8 | 9 |
| SHAC080 | 23 | 24 | 35.4 | 16 |
| SHAC081 | 50 | 51 | 207 | 338 |
| SHAC082 | 39 | 40 | 10 | 182 |
| SHAC083 | 25 | 26 | 6.5 | 15 |
| SHAC084 | 45 | 46 | 8.6 | 26 |
| SHAC085 | 20 | 21 | 18.1 | 17 |
| SHAC086 | 37 | 38 | 51 | 35 |
| SHAC087 | 36 | 37 | 33.6 | 43 |
| SHAC088 | 47 | 48 | 71 | 26 |
| SHAC089 | 59 | 60 | 3.4 | 79 |
| SHAC090 | 34 | 35 | 11.7 | 8 |
| SHAC091 | 43 | 44 | 13.5 | 3 |
| SHAC092 | 15 | 16 | 78.1 | 4 |
| SHAC093 | 14 | 15 | 14.7 | 14 |
| SHAC094 | 16 | 17 | 54 | 9 |
| SHAC095 | 37 | 38 | 39.8 | 214 |
| SHAC097 | 31 | 32 | 15.3 | 10 |
| SHAC098 | 30 | 31 | 10.7 | 3 |
| SHAC099 | 41 | 42 | 36.3 | 32 |
| SHAC100 | 18 | 19 | 13.7 | 2 |

| HOLE ID | mFrom | mTo | Cu_ppm | Ni_ppm |
|---|---|---|---|---|
| SHAC136 | 41 | 42 | 26.2 | 22 |
| SHAC138 | 31 | 32 | 22 | 1306 |
| SHAC140 | 32 | 33 | 22 | 2377 |
| SHAC142 | 28 | 29 | 23 | 1082 |
| SHAC144 | 40 | 41 | 54 | 221 |
| SHAC145 | 43 | 44 | 17.8 | 4 |
| SHAC146 | 23 | 24 | 100 | 592 |
| SHAC147 | 30 | 31 | 21 | 944 |
| SHAC148 | 41 | 42 | 33 | 204 |
| SHAC150 | 30 | 31 | 29.8 | 138 |
| SHAC152 | 31 | 32 | 33 | 101 |
| SHAC158 | 29 | 30 | 5.4 | 8 |
| SHAC159 | 21 | 22 | 19.4 | 8 |
| SHAC160 | 32 | 33 | 15.6 | 3 |
| SHAC161 | 28 | 29 | 26 | 1679 |
| SHAC162 | 16 | 17 | 8.9 | 50 |
| SHAC163 | 20 | 21 | 86 | 282 |
| SHAC164 | 20 | 21 | 15.3 | 20 |
| SHAC165 | 28 | 29 | 5.8 | 2 |
| SHAC166 | 23 | 24 | 10.1 | 12 |
| SHAC167 | 16 | 17 | 58 | 331 |
| SHAC168 | 34 | 35 | 103 | 237 |
| SHAC169 | 25 | 26 | 17.2 | 4 |
| SHAC171 | 23 | 24 | 22.9 | 1 |
| SHAC172 | 27 | 28 | 16.5 | 0 |
| SHAC173 | 26 | 27 | 67.6 | 11 |
| SHAC174 | 27 | 28 | 27.9 | 34 |
| SHAC176 | 37 | 38 | 82 | 60 |

| HOLE ID | mFrom | mTo | Cu_ppm | Ni_ppm |
|---|---|---|---|---|
| SHAC198 | 53 | 54 | 102 | 683 |
| SHAC199 | 56 | 57 | 133 | 93 |
| SHAC200 | 57 | 58 | 40.3 | 266 |
| SHAC201 | 44 | 45 | 571 | 280 |
| SHAC202 | 25 | 26 | 74 | 157 |
| SHAC203 | 23 | 24 | 102 | 175 |
| SHAC204 | 39 | 40 | 97 | 119 |
| SHAC205 | 47 | 48 | 24.3 | 7 |
| SHAC206 | 29 | 30 | 67.9 | 86 |
| SHAC207 | 44 | 45 | 118 | 163 |
| SHAC208 | 44 | 45 | 74 | 221 |
| SHAC209 | 44 | 45 | 36.8 | 69 |
| SHAC210 | 45 | 46 | 136 | 130 |
| SHAC211 | 45 | 46 | 80 | 182 |
| SHAC212 | 47 | 48 | 140 | 203 |
| SHAC213 | 46 | 47 | 116 | 197 |
| SHAC214 | 63 | 64 | 445 | 429 |
| SHAC215 | 47 | 48 | 152 | 327 |
| SHAC216 | 45 | 46 | 274 | 186 |
| SHAC217 | 44 | 45 | 50.6 | 24 |
| SHAC218 | 38 | 39 | 26.6 | 58 |
| SHAC219 | 52 | 53 | 39 | 55 |
| SHAC220 | 32 | 33 | 35.6 | 41 |
| SHAC221 | 28 | 29 | 18.5 | 27 |
| SHAC222 | 59 | 60 | 119 | 395 |
| SHAC223 | 44 | 50 | 150 | 254 |
| SHAC224 | 52 | 53 | 51.6 | 92 |
| SHAC225 | 55 | 56 | 42.7 | 240 |

| | | | | |
|---|---|---|---|---|
| SHAC102 | 30 | 31 | 22.2 | 51 |
| SHAC104 | 50 | 51 | 85 | 998 |
| SHAC106 | 50 | 51 | 176 | 520 |
| SHAC110 | 44 | 45 | 72 | 19 |
| SHAC112 | 33 | 34 | 51 | 7 |
| SHAC113 | 13 | 14 | 10.6 | 9 |
| SHAC115 | 57 | 58 | 157 | 1160 |
| SHAC116 | 53 | 54 | 69 | 7257 |
| SHAC117 | 58 | 59 | 34 | 4802 |
| SHAC118 | 59 | 60 | 28 | 4790 |
| SHAC121 | 43 | 44 | 73 | 402 |
| SHAC125 | 26 | 27 | 49 | 2252 |
| SHAC127 | 31 | 32 | 72 | 5090 |
| SHAC128 | 32 | 33 | 19.5 | 22 |
| SHAC130 | 49 | 50 | 86 | 118 |
| SHAC132 | 17 | 18 | 24 | 1142 |
| SHAC134 | 36 | 37 | 15 | 95 |

| | | | | |
|---|---|---|---|---|
| SHAC177 | 16 | 17 | 14.1 | 1 |
| SHAC178 | 18 | 19 | 48.3 | 1 |
| SHAC179 | 14 | 15 | 98 | 2 |
| SHAC180 | 16 | 17 | 15.9 | 7 |
| SHAC182 | 36 | 37 | 121 | 48 |
| SHAC183 | 42 | 43 | 127 | 338 |
| SHAC185 | 31 | 32 | 39.2 | 90 |
| SHAC186 | 32 | 33 | 74 | 112 |
| SHAC187 | 32 | 33 | 90 | 62 |
| SHAC188 | 32 | 33 | 29.9 | 18 |
| SHAC189 | 42 | 43 | 27.2 | 72 |
| SHAC190 | 31 | 32 | 62 | 29 |
| SHAC191 | 26 | 27 | 48.7 | 48 |
| SHAC192 | 49 | 50 | 64 | 156 |
| SHAC193 | 53 | 54 | 327 | 280 |
| SHAC195 | 23 | 24 | 53 | 126 |
| SHAC197 | 8 | 9 | 56 | 10 |

| | | | | |
|---|---|---|---|---|
| SHAC227 | 45 | 46 | 84 | 195 |
| SHAC229 | 20 | 21 | 41.3 | 81 |
| SHAC230 | 33 | 34 | 251 | 103 |
| SHAC231 | 43 | 44 | 67 | 240 |
| SHAC232 | 44 | 45 | 67 | 130 |
| SHAC233 | 45 | 46 | 635 | 136 |
| SHAC234 | 47 | 48 | 19.4 | 16 |
| SHAC235 | 42 | 43 | 271 | 15 |
| SHAC236 | 27 | 28 | 33.7 | 10 |
| SHAC237 | 42 | 43 | 445 | 36 |
| SHAC238 | 46 | 47 | 153 | 291 |
| SHAC239 | 50 | 51 | 102 | 114 |
| SHAC240 | 39 | 40 | 88 | 132 |
| SHAC241 | 20 | 21 | 15 | 28 |
| SHAC242 | 39 | 40 | 126 | 231 |
| SHAC243 | 9 | 10 | 11.3 | 1 |