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**REPORT ON THE 2017 DIAMOND DRILLING PROGRAM  
AT THE LUNDMARK-AKOW LAKE PROPERTY  
OF ROMIOS GOLD RESOURCES INC.**

**Patricia Mining Division,  
Northwestern Ontario.**

**NTS Mapsheets 53B/15 and 53B/16**

*By*

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## 1. SUMMARY

In late July-early August 2017, one diamond drill hole (RGR-17-1) was drilled in the Atim Lake North area of the Lundmark Lake-Akow Lake claim block held by Romios Gold Resources Inc. Located 18 km north of Goldcorp's Musselwhite gold mine, these claims were originally staked in the 1990's to cover the on-strike extension of the same banded iron formation (BIF) that hosts the gold mineralization at Musselwhite but the focus in recent years has shifted to a >1.5 km long copper-(gold) enriched zone of staurolite-garnet-biotite-sericite schists approximately 100 m wide known as the "Romios Copper-(Gold) Zone". This zone was tested with three holes in 2016 and the geological knowledge gained from those holes was used to revise the deposit model from the original "mineralized shear zone" model to that of a "lower semi-conformable alteration zone" such as those found beneath many massive sulphide deposits. This revised model led Romios to then focus efforts on any untested electromagnetic conductors within a few hundred metres of the alteration zone and a series of three adjacent conductors at Atim Lake North was selected for drilling in 2017. Due to the budgetary, logistical and timing constraints the drill that had been left on the property since 2016 was only available for this one hole before it had to be removed by the drill contractor.

Drill hole RGR-17-1 intersected the source rocks for two of three target conductors, the first of which corresponded to a massive sulphide style horizon which assayed 2.35% copper, 1.4 g/t gold and 68.2 g/t silver over a drilled length of 1.9 m and an estimated true width of 1.4 m. In addition to this notable massive sulphide horizon, copper-(gold) mineralization was discovered in three intervals of hydrothermally altered, quartz veined/flooded staurolite-garnet-biotite-sericite schists similar to those encountered in past drilling of the copper-(gold) enriched alteration zone approximately 1.5 to 3 km to the southeast; these intercepts range from 1.6 m to 3.9 m in true width with 0.28 to 0.58% Cu and nil to 0.34 g/t Au. The second conductor corresponded to a 40 cm thick horizon of semi-massive barren pyrrhotite.

There seems little doubt that the massive sulphide horizon discovered at Atim Lake North in 2017 is associated with the extensive copper-(gold) enriched alteration zone and that additional massive sulphide occurrences might be found at other sites along this zone. A review of the existing geophysical data is recommended to refine the footprint of the massive sulphide horizon, and if this is unsatisfactory then additional ground surveys (Mag and EM) should be undertaken to delineate the extent of the discovery zone and any on-strike repetitions. Follow-up drilling with at least nine drill holes is recommended to scope out the size potential of this massive sulphide deposit. Down-hole geophysics is recommended for hole RGR-17-1 to provide an additional vector towards potentially thicker portions of the mineralized horizon, as well as for hole RGR-16-2 in an effort to locate any sulphide accumulations near this potential vent site. A geophysical review of surveys over a ~4 km long untested portion of the BIF is also recommended, to be followed by humus sampling and potential diamond drilling of any areas with anomalous gold levels.

## 2. INTRODUCTION

Romios Gold Resources Inc. (“Romios” or “the company”) is the owner of 13 mining claims in the Lundmark-Akow Lake area of northwestern Ontario. Romios Estates Ltd. acquired these claims by staking in 1994 and 1996 and transferred them to Romios Gold Resources Inc. shortly thereafter. From 1996 to 2014 the company conducted a series of work programs including prospecting and geological mapping, line-cutting and a variety of ground geophysical surveys, airborne geophysical surveys, and 2 diamond drilling programs. The geophysical work identified a series of electromagnetic conductors and magnetic highs and the mapping program located 2 small surface gold showings (the Spence and Bishop showings) as well as a ~100 m wide gossanous, schistose zone termed the “Romios Shear Zone” (Zhang, 1998; Spence, 1998). After being partially intersected by drill hole 98-9 in the 1998 drill program, the “Romios Shear Zone” was targeted by 5 drill holes in 1999 (holes 99-1 to 99-5). These holes returned broad zones of low-grade copper-(gold) mineralization with short, sporadic higher-grade intervals, within a package of coarse-grained garnet-staurolite-biotite-sericite schists (Zhang, 1999). Since that 1999 drill program, a large-loop Transient EM (TEM) survey was carried out over the Akow Lake grid and identified in more detail the apparently formational conductors flanking the “Romios Shear Zone” and as well as a shorter conductor which appears to correspond to the copper-(gold) zone. A VTEM survey flown in 2014 also returned strong anomalies along the known formational conductors as well as a somewhat weaker response over the copper-(gold) zone.

After securing an exploration permit from the Ontario MNDM and an MoU with the local First Nation (North Caribou Lake FN) Romios undertook a 4-hole drilling program in September-October 2016 in order to further delineate the copper-(gold) zone. Three of these holes intersected the mineralized zone and returned similar values to previous holes (e.g. typically ~10-14 m of ~0.2% Cu, 100 ppb Au, plus adjacent smaller zones, within a broad zone of hydrothermally altered schists). Based on observations from these holes, the author interpreted the copper-(gold) zone as a “Lower Semi-Conformable Alteration Zone” similar to those found beneath many volcanogenic massive sulphide (VMS) deposits. Any significant electromagnetic conductor within a few hundred metres of this alteration pathway might reflect an associated exhalative massive sulphide body and therefore would be a high-priority target for follow-up drilling. A series of three stacked conductors identified by previous airborne geophysical surveys (particularly the 2014 VTEM survey) occurring at Atim Lake North, approximately 200 m west of the northern projection of the copper-(gold) zone, was selected for drill testing based on this revised geological model. Following the granting of a new exploration permit (#PR-17-11089) by the MNDM on June 19, 2017 and the signing of a new 3 year MoU with the North Caribou Lake First Nation in May 2017, a 5-600 m hole was planned to test the aforementioned conductors and drilling commenced July 28th, 2017. This hole, #RGR-17-1 intersected a notable Cu-Au-Ag massive sulphide horizon and several intervals of mineralized schist. This report presents the results of the 2017 drill program in detail.

Much of the background sections of this report, numbered 2 to 8, are taken largely from Biczok (2016) with only minor updates and revisions.

### 3. LOCATION AND ACCESS

The Lundmark-Akow Lake property held by Romios is located 493 km north of Thunder Bay, Ontario and 146 km north of Pickle Lake, Ontario (Fig. 1). It lies within the Patricia Mining Division on NTS map sheets 53B/15 and 16. The area of interest in this program is centred at about 52° 46' 33" N and 90° 29' 00" W. The property is about 18 km north-northwest of Goldcorp's Musselwhite gold mine on Opapimiskan Lake. The nearest settlement is the First Nation community of Round Lake (a.k.a. Weagamow) which is 61 km to the north-northwest of Akow Lake. Both Pickle Lake and Round Lake are serviced by regular scheduled air service from Thunder Bay and charter float plane service is available from both communities. A paved road leads to Pickle Lake from the Trans-Canada highway, 300 km to the south, and an all-weather gravel road, the "North Road", leads from Pickle Lake to the southern shore of Round Lake, with a branch road to the Musselwhite mine. An old drill trail leads from the north shore of Opapimiskan Lake northwards towards Akow Lake for a distance of at least 9 km.

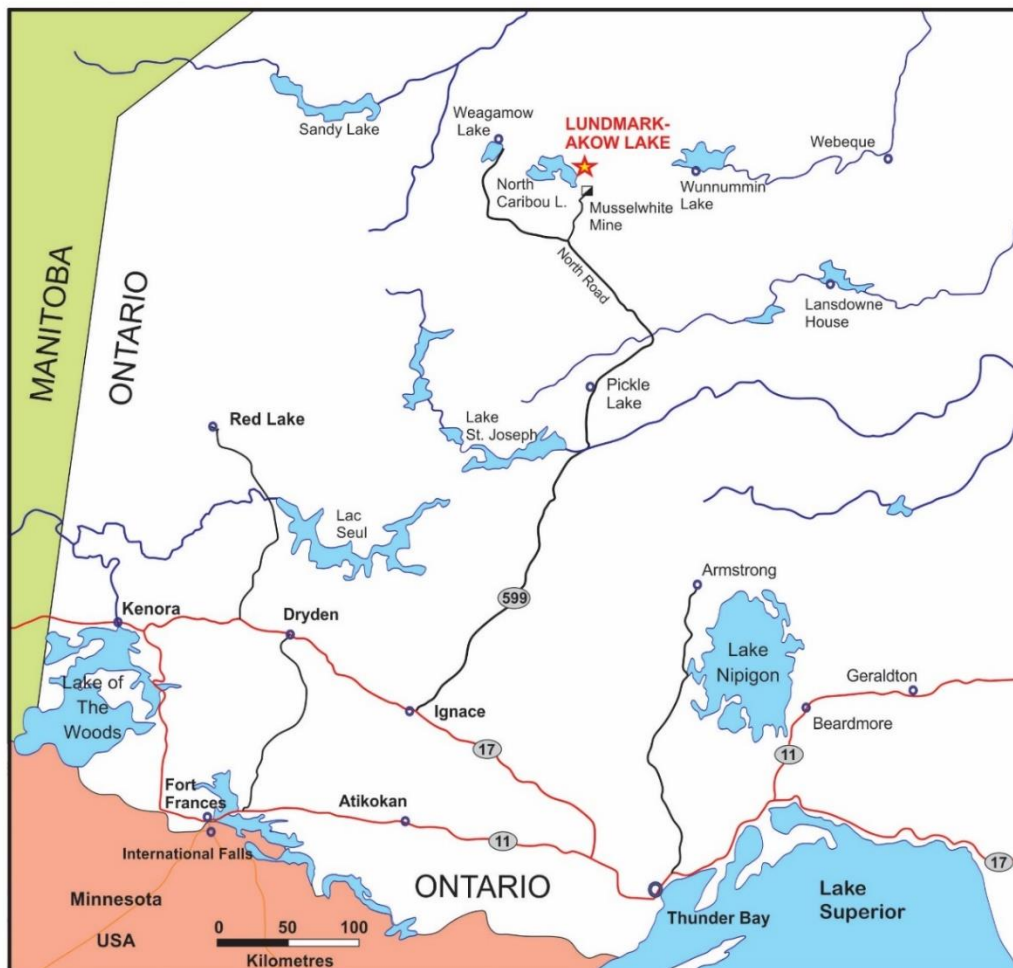


Figure 1: Regional Location Map

Access to the Akow Lake property for this program was by float plane and helicopter from a staging area at Mawley Lake on the North Road, 53 km SSW from Akow Lake and 11 km past (north of) the start of the Musselwhite mine road. The YHS1000 drill used in the 2016 program had been left on the property and was utilised for the 2017 program, consequently there was a minimal amount of new equipment and supplies required. A float-equipped Otter aircraft chartered from Osnaburgh Airways of Pickle Lake, a Cessna 185 and a Beaver chartered from Weagamow Air of Round Lake, and an A-Star B2 helicopter chartered from Forest Helicopters of Kenora, Ontario, were used to move the equipment, fuel, supplies and personnel to and from the site. During the drill program, the crew stayed at the Skinner Lake fishing lodge 16.5 km southeast of Atim Lake North, and commuted to the drill site each day by helicopter.

#### **4. TOPOGRAPHY**

The topography of the Lundmark-Akow Lake area features the subdued relief typical of most of the northern Canadian Shield. The terrain is relatively flat with numerous low-lying, somewhat boggy areas interrupted by several north-trending low ridges and rows of outcrops. The majority of the region is thickly forested with spruce, tamarack and jack pine with minor birch or poplar dominant areas. Several lakes 1-2 km across and a few small ponds occur throughout the claims west of Akow Lake. The area north and northwest of Lundmark Lake, including the two northernmost claims, is dominated by a prominent SSW-trending linear glacial dispersion pattern that extends westward across much of North Caribou Lake.

#### **5. PROPERTY DESCRIPTION**

Romios currently holds 13 mining claims in the Lundmark-Akow Lake area (see Table 1, Fig. 2). The claims were originally staked on behalf of Romios Estates Ltd. and then transferred to Romios Gold Resources Inc. who now hold a 3% NSR on the claims. The drill program described herein was carried out on claim #1208561.

The property is covered to a large degree by several cut grids which are described in detail in Vickers (2001). The grid upon which the 2017 drill holes are sited in is known as the Lundmark-Akow Lake grid (Fig. 3). The baseline for this grid trends 340° degrees with perpendicular section lines cut every 100 m from Line 2300S to Line 2600N. The section lines are between 1,000 m and 3,000 m in length and were originally marked with cut and labelled pickets every 25 m. Very few of these pickets are still standing or readable any longer. Only one grid line was located in the Atim Lake North target area, however, there were no standing pickets and the orientation of the line as measured was about 10 degrees off of the expected orientation.

As the property consists of mining claims and not leases, there are no surface rights inherent in the claims. Any substantial work program such as those involving drilling with a large (>150 kg) rig, trenching >3 cubic metres, or other appreciable disturbance to the land requires an exploration permit from the Ontario Ministry of Northern Development and Mines as well as consultation with the local First Nation community (ies), in this case - the North Caribou Lake First Nation (see the Mining Act of Ontario at <https://www.ontario.ca/laws/statute/90m14> ). In 2014



Romios was granted an exploration permit (#PR-13-10449) for the Lundmark-Akow Lake property by the Ontario Ministry of Northern Development and Mines (MNDM). In 2015 Romios then signed a Memorandum of Understanding (MoU) with the North Caribou Lake First Nation (the NCLFN) within whose traditional territories the property is situated. Under the terms of the MoU Romios undertook to provide opportunities for the employment of community members and utilization of local businesses during any work program whenever feasible and cost-effective, abide by certain environmental and cultural safeguards, etc. The NCLFN in turn agreed to support Romios' exploration efforts. With these permits and agreements in place, Romios began planning a diamond drill program to follow-up on the previous results from the copper-(gold) zone drilled in 1999 and this program began in September, 2016. Both the MoU and the Exploration Permit expired in early 2017. A new 3-year MoU was signed with the NCLFN in May 2017 and a new 3-year Exploration Permit, #PR-17-11089 was granted by the MNDM on June 19, 2017.

There are no significant environmental liabilities on the property that the author is aware of. A number of old wooden platforms from 1998-99 (?) remained at the old camp site on the southeastern shore of Akow Lake when this program began in 2016, however, these were demolished and the rotting wood piled up in heaps for later burning in the winter (by the local trapper). The diamond drill rig and all related equipment and supplies were removed from the property at the end of the 2017 drilling except for two wooden drilling platforms. It is expected that these platforms will be re-used during a future drill program but if they are not, the wood will be gifted to the local trappers for their use.

**Table 1: Mining claims held by Romios Gold Resources Inc.**

| <b>TOWNSHIP/AREA</b> | <b>CLAIM #</b> | <b>UNITS</b>     | <b>HECTARES</b> | <b>STAKED</b> | <b>DUE DATE</b> |
|----------------------|----------------|------------------|-----------------|---------------|-----------------|
| Akow Lake Area       | 1208559        | 16               | 256             | 1994-05-20    | 2018-05-27      |
| Akow Lake Area       | 1208561        | 16               | 256             | 1994-05-20    | 2018-05-27      |
| Akow Lake Area       | 1208991        | 8                | 128             | 1994-08-02    | 2019-05-27      |
| Akow Lake Area       | 1208992        | 15               | 240             | 1994-08-02    | 2019-05-27      |
| Akow Lake Area       | 1208993        | 16               | 256             | 1994-08-02    | 2018-05-27      |
| Akow Lake Area       | 1208994        | 12               | 192             | 1994-08-02    | 2018-05-27      |
| Akow Lake Area       | 1209235        | 9                | 144             | 1994-06-16    | 2019-05-27      |
| Akow Lake Area       | 1209237        | 16               | 256             | 1994-06-16    | 2019-05-27      |
| Akow Lake Area       | 1209252        | 6                | 96              | 1994-06-16    | 2019-05-27      |
| Akow Lake Area       | 1215802        | 16               | 256             | 1997-06-17    | 2018-05-27      |
| Akow Lake Area       | 1216798        | 16               | 256             | 1997-06-17    | 2018-05-27      |
| Akow Lake Area       | 1217216        | 8                | 128             | 1997-06-26    | 2019-05-27      |
| Akow Lake Area       | 1215222        | 16               | 256             | 1996-06-24    | 2018-05-27      |
|                      | <b>TOTALS</b>  | <b>170 units</b> | <b>2720 Ha</b>  |               |                 |

**\*Prior to filing of this report**

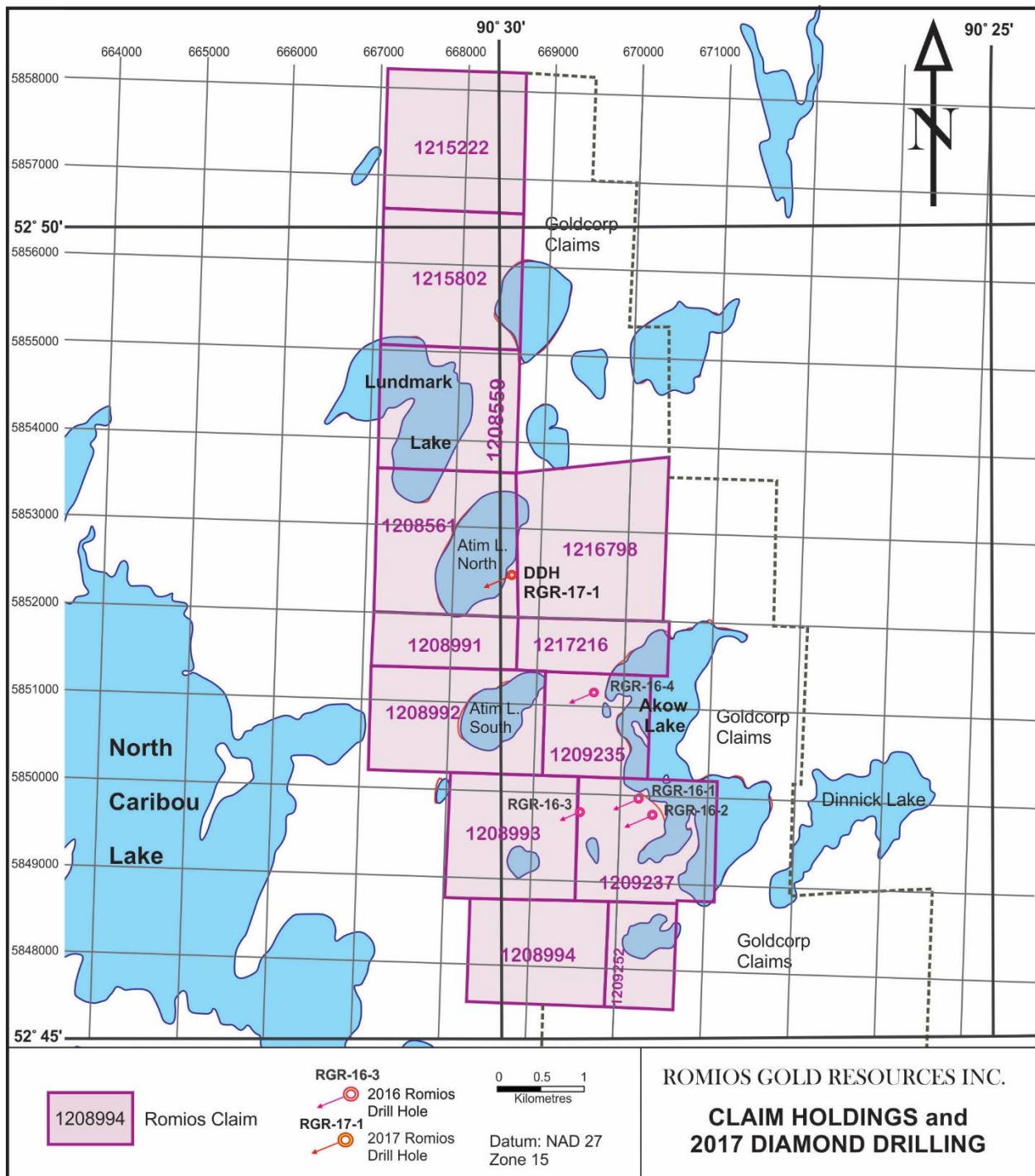


Figure 2: Claim holdings and 2016-17 diamond drilling

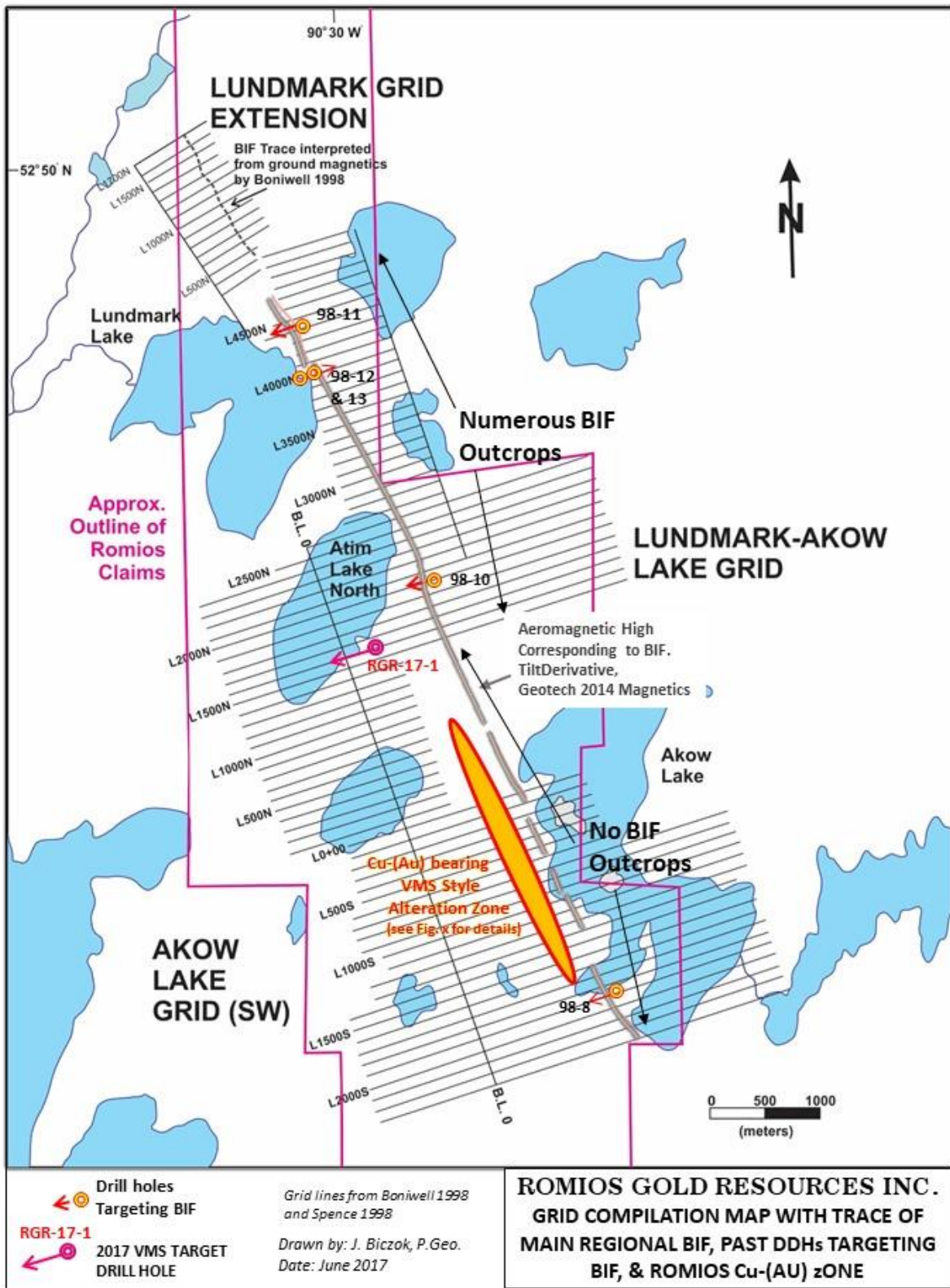


Figure 3: Grid Compilation Map



## 6. REGIONAL GEOLOGY

The Lundmark-Akow Lake area lies within the central portion of the Archean North Caribou Lake greenstone belt (NCGB), one of the northernmost belts in the North Caribou Superterrane adjacent to its internal contact with the Island Lake Domain (Fig. 4). The belt was mapped in detail by the Ontario Geological Survey over a 3 year period in the 1980's (Breaks et al., 2001). These workers divided the belt into 8 groups which were modified somewhat by Thurston, (1991) and Hollings and Kerrich (1999). Only those units of relevance to the Romios property will be discussed in any detail here. For information on the other units the reader is referred to Breaks et al. (2001) and Biczok et al. (2012).

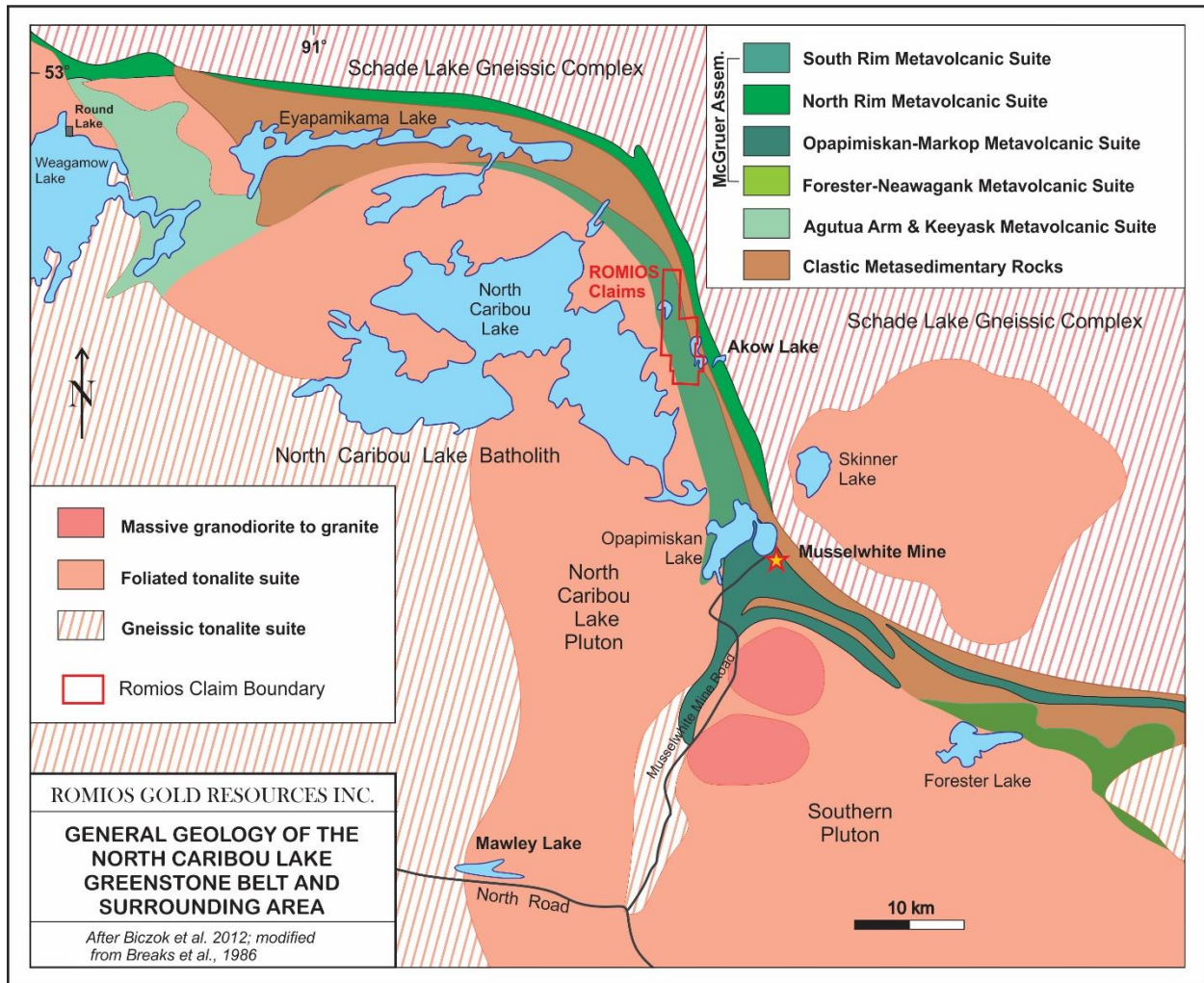


Figure 4: General geology of the North Caribou Greenstone Belt and surrounding area.

## LITHOLOGIES

The central portion of the NCGB and the adjacent part of the northwestern arm are dominated by three assemblages designated by Breaks et al. (1986, 2001) as the South Rim Volcanics along the southern and western margins of the belt, the Eyapamikama metasediments along the axial centre of the belt, and the North Rim volcanic assemblage along the northern and eastern margins of the belt (Fig. 4).

The **South Rim volcanic assemblage (SRV)** is dominated by fine- to medium grained, massive to pillowed basalt flows with lesser intercalated felsic to intermediate volcanics, including a major felsic pile structurally overlying the iron formation at Musselwhite, rare ultramafic flows (Breaks et al., 1986), as well as locally prominent packages of intercalated clastic metasediments and banded iron formations (Newman, 1987). Age-dating of the felsic-intermediate units has returned ages of 2982 Ma (Davis and Stott, 2001) and 2980 and 2978 Ma (V. McNicoll et al, 2013) with one felsic horizon NW of Musselwhite returning an age of 3053 Ma. The complex iron formation that hosts the Musselwhite deposit has historically been assigned to the Opapimiskan-Markop assemblage (the OMU) in the mine area. However, it is known from the OGS mapping and various airborne geophysical surveys to continue north of Musselwhite onto and beyond the Romios claims in what is mapped as the South Rim assemblage. Research undertaken at Musselwhite suggests that these two assemblages, the South Rim and the OMU, are gradational into each other and largely age-equivalent to each other along strike.

The **Eyapamikama assemblage (ELS)** is described by Breaks et al. (2001) as “a fining-upward sequence in which basal alluvium and fan delta conglomeratic cycles grade vertically and laterally into finer grained metasedimentary rocks”. It occupies the centre of the belt for tens of kilometres. The ELS was dated at between <2846 Ma and <2880 Ma by Davis and Stott (2001) and Kelly and Schneider (2015) report a minimum U-Pb zircon core age of 2800 Ma from eleven samples with younger overgrowths in the 2788-2703 Ma range (a regional hydrothermal event).

The **North Rim volcanic assemblage (NRV)** occupies the eastern margin of the belt in the claims area and is clipped by the easternmost corners of several Romios claims. It is very similar to the South Rim as it is dominated by basalt flows with lesser felsic to intermediate volcanic centres and at least one banded iron formation. It has been suggested by various workers over the years that the entire greenstone belt is a synform and that the North Rim unit is the folded equivalent of the South Rim. However, this is not supported by the age dates of the two volcanic assemblages. An age of 2870 Ma was obtained by Davis and Stott (2001) in the McGruer Lake area and work contracted by Musselwhite returned an age of 2868 Ma from a felsic horizon NE of Doubtful Lake. These ages indicate that the North Rim volcanics are more than 100 Ma younger than the South Rim volcanics and cannot be their folded equivalent.

The greenstone belt is cut off along the western edge of the claims by the large North Caribou Lake composite batholith which has been dated at between 2880 and 2830 million years (Ma) (Davis and Stott, 2001; Van Lankvelt, 2013). To the east, the belt is in fault contact with the Schade Lake Gneiss Complex, dated at 2860 to 2840 Ma (Biczok et al., 2012; Van Lankvelt, 2013). Where

observed by the author, the fault contact between the Schade Lake complex and the North Rim volcanics is marked by a well-developed L-tectonite plunging very shallowly to the south and dipping shallowly to the east; elsewhere the fault contact is reported to be closer to vertical.

## **STRUCTURE**

Three periods of deformation have been mapped in the North Caribou belt by Hall and Rigg (1986) and Breaks et al. (2001 and references therein) and supported by subsequent workers. To date there has been no detailed comparable structural studies on the Lundmark-Akow Lake claims and this author has not spent any time mapping the local lithologies or structure as yet.

The earliest event,  $D_1$ , was until recently recognized almost exclusively only in iron formations as tight isoclinal folds with a penetrative foliation. Mapping by the author in the Musselwhite mine area combined with high-precision age-dating by the GSC, revealed a major  $F_1$  fold that has completely overturned the stratigraphy in the mine area. Many small scale recumbent folds have also been found in mapping of the iron formations in that area.  $D_2$  is the strongest phase of deformation and is evidenced by northwest-plunging folds, often with a steeply dipping axial planar foliation. The intersection of  $D_1$  and  $D_2$  locally creates well developed fold-interference patterns such as the “dome and basin” on Grunerite Island in Opapimiskan Lake and a similar pattern evident in the aeromagnetic pattern on the NW side of the same lake.  $D_3$  appears to have been a relatively minor, heterogeneous event that produced small-scale, asymmetric, broad to open or chevron folds with a steep southwest trending crenulation cleavage (Oswald et al., 2014).

Mineral lineations throughout the NCGB exhibit a well-developed and somewhat unusual pattern in that they are quite shallow plunging and reverse plunge directions at several points along the belt, but their axes remain roughly parallel to the axis of the belt overall. The reason for this flip in the lineation plunge is uncertain but may in part be due to the intrusion of the crescent shaped North Caribou pluton (Stott and Biczok, 2010) or perhaps a large-scale  $F_3$  effect. In the central part of the belt, in the region of the Romios claims, the intensity of deformation appears to increase eastward towards the contact with the Schade Lake gneiss complex, a contact marked locally by a highly lineated L-tectonite plunging very shallowly (<5 deg.) to the southeast. Examination of the aeromagnetic pattern of the Schade Lake gneiss suggests that it underwent a pronounced south-directed movement adjacent to the central part of the greenstone belt and this deformation event likely induced a dextral strain throughout much of the adjacent belt. Dextral offsets on fault structures of all scales are the norm throughout the NCGB.

## **METAMORPHISM**

The metamorphic grade of the NCGB exhibits an overall increase from low grade (chlorite and biotite bearing assemblages) in the western arm to medium grade assemblages east and south of Doubtful Lake where index minerals such as garnet, staurolite, cordierite, grunerite and rarely, sillimanite are found (Beaks et al. 2001). Work by Kelly and Schneider (2015) suggests that some of the higher-grade assemblages are produced by contact metamorphism from small intrusions throughout the belt. Assemblages in metasedimentary rocks at Akow Lake include garnet, staurolite and grunerite indicative of medium grade (amphibolite) conditions.

## 7. PROPERTY GEOLOGY

The current Romios claims are underlain primarily by two of lithological groups, the South Rim Volcanics on the west side and the Eyapamikama Metasediments to the east. The contact between these two assemblages trends north along the western shore of Akow Lake (Fig. 5).

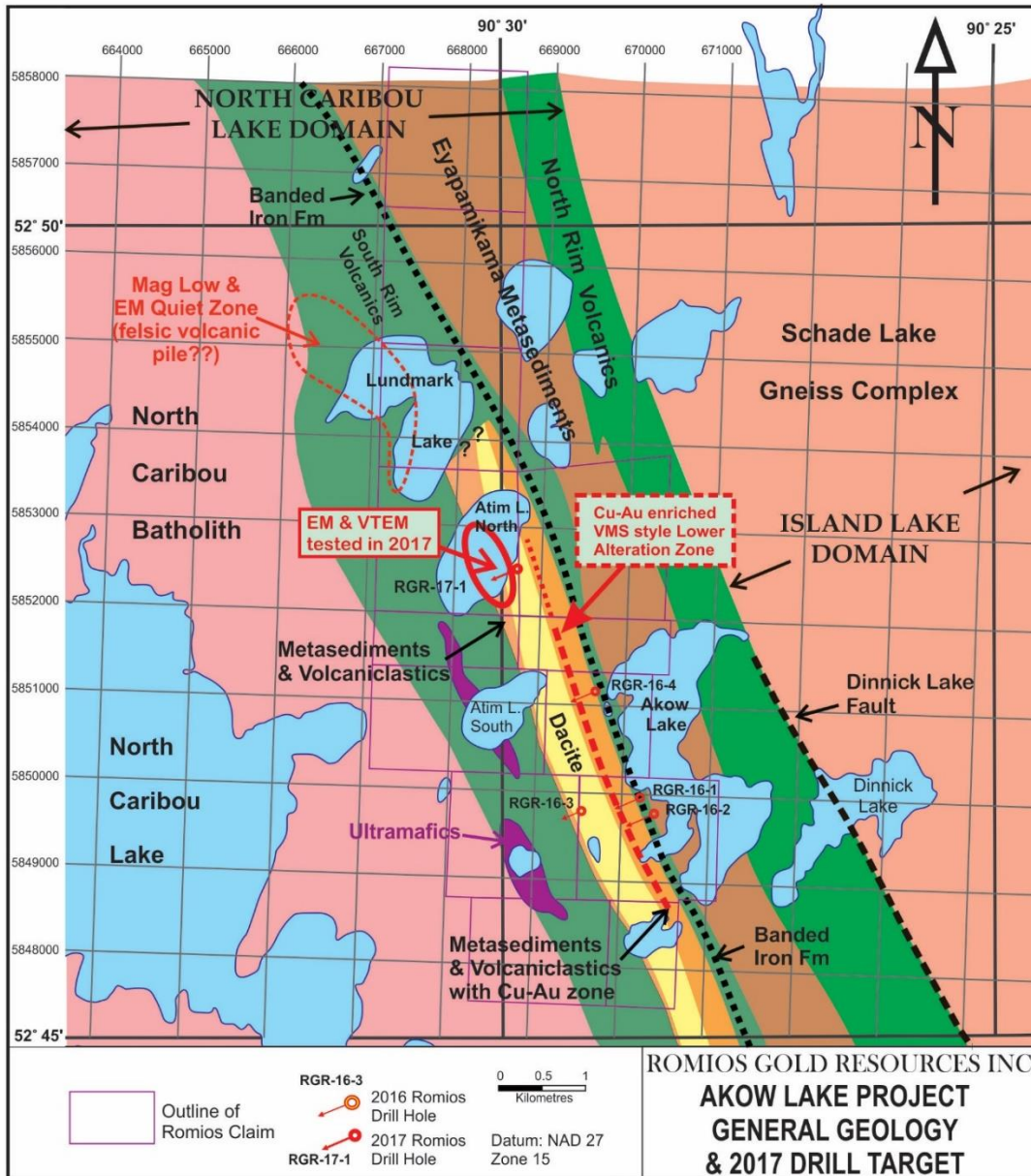


Figure 5: General geology of the claims area

The area of the Romios claims at the Lundmark-Akow Lake were mapped by the Ontario Geological Survey at various times and levels of detail but most recently and in the greatest detail by Breaks et al. (1986). Localised mapping was conducted in detail by various exploration



company geologists including Moss Resources (Adams and North, 1985) and Romios (Zhang, 1998). The overall setting is as previously described, i.e., a north-trending ~1 km wide belt of South Rim volcanic rocks dominates the claims and is intruded along the western margin by the North Caribou Lake batholith and is in fault contact along the eastern edge with the younger Eyapamikama clastic sediments (Fig. 5) (this fault contact is assumed from one evident at Musselwhite). A major regional iron formation occurs in the South Rim Volcanics less than ~100 m west of its contact with the Eyapamikama assemblage. The North Rim volcanics occur east of the Eyapamikama sediments in the easternmost margins of several claims. Results of Romios drilling programs and detailed mapping has revealed a somewhat more complicated picture, particularly when it comes to the South Rim volcanics. The general stratigraphy of the North Rim will be described from west to east across the Akow Lake grid taking into account the results of the work by Romios in the Akow Lake area and using the terminology of Zhang (2015) where appropriate.

## LITHOLOGIES

**Granite Batholiths:** The western edge of the Akow Lake grid lies close to the margin of the North Caribou Lake batholith and several granite-tonalite outcrops occur in this area at ~9+00W.

**The Lower Metavolcanic Unit:** The first outcrops of the of the greenstone belt are basalts of the South Rim assemblage (SRV) that occur at about 3+50W on lines 2+00S and 14+00S, near the Spence and Bishop showings, and these outcrops continue east to the baseline 0+00. These were termed the “Lower Metavolcanic Unit” by Zhang (2015). Based on the results of DDH RGR-16-3 and 98-7, these basalts can be mapped as far east as ~0+75E and as far west as 6+25W for a total thickness of at least 700 m. These appear to be typical tholeiitic basalts composed of ~equal amounts of fine-grained feldspar and amphibole. It varies from relatively massive and unaltered to moderately strained and overprinted by biotite alteration, particularly in the area of the Spence showing. Zhang (2015) reports the presence of deformed pillows in some areas. Drill hole 98-7 intersected 43 m of magnetic ultramafics within the volcanic sequence and the magnetic surveys indicate that this unit is semi-continuous to the south and north past Atim Lake although it may pinch and swell significantly. Small gabbro dykes/sills are also noted throughout the basaltic sequence. Numerous thin intraformational horizons of clastic and chemical sediments (iron formations) occur throughout the basaltic sequence. Typically the iron formations are <2 m thick and the clastic metasediments (siltstone, mudstone, etc. +/- pyrrhotite pyrite) may be a few metres thick. These intraformational units are common throughout the belt and may contain significant amounts of syngenetic pyrrhotite-(pyrite) that make them quite conductive.

**Dacitic Volcanics:** This is a newly discovered volcanic horizon that was intersected in drill hole RGR-16-3, the only hole drilled between the baseline and the TEM conductors to the east. The hole initially intersected about 80 m of dacite with lesser felsic tuffs followed by a band of siltstone about 50 m thick before ending in the aforementioned basalts. The siltstone appears to correlate with a Max-Min conductor that extends from the south end of South Atim Lake off the grid to the south. The eastern limit of the dacite is unknown as there is no drilling or outcrops

between this hole at 2+07E and an outcrop at 4+50E. The magnetic and EM patterns in this gap are “quiet” and relatively flat in contrast to the basalts farther west and the mixed assemblage to the east. For this reason, the dacites have, for now, been assumed to extend from 1+20E to 4+25E.

**Lower Clastic Metasediments:** Eastward from the dacitic volcanics is a package of fine-grained clastic metasediments and lesser felsic volcanoclastics that host the copper-(gold) zone targeted by the 2016 drill program. This sequence was referred to as the “lower clastic metasediments” by Zhang (1998, 2015). Many of the horizons in this package are schistose and part of it was referred to as the “Romios Shear Zone” by Zhang (1998, 2015). The holes drilled in 2016 were longer than those from 1998 and 1999 and provide a better overall picture, especially when combined with the earlier drilling. Based on these drill sections it seems apparent that the least altered sections of the metasedimentary package consists predominantly of meta-siltstones, +/- varying amounts of fine-grained garnet, staurolite and sericite, with lesser intervals of intercalated sericite schist +/- varying amounts of garnet-staurolite and biotite (NB: all of the schists contain anywhere from 10-40% fine-grained quartz and feldspar but this is frequently omitted from the unit names in this text for the sake of brevity). These two lithologies are commonly hydrothermally altered to varying degrees over a ~100-160 m wide interval resulting in much more coarse-grained garnet-staurolite-biotite and/or sericite schists. This alteration can be pervasive over tens of metres as well as focussed in narrow veins of intense alteration, typically <0.5 m wide. These veins typically have a matrix of massive biotite +/- minor chlorite or sericite and are studded with up to 50% very coarse-grained garnets and/or medium grained staurolite. Both the pervasive and vein-type alteration are commonly accompanied by chalcopyrite +/- pyrrhotite mineralization in the form of thin seams along the foliation, discrete thin veinlets, and as fracture fillings in the coarse-grained garnets. This mineralization is locally accompanied by euhedral arsenopyrite crystals up to 3-4 mm across. Pyrite is relatively rare. Local intervals of the sericite schists up to a few metres wide contain <1% disseminated euhedral magnetite crystals 1-2 mm across. Typically there are no sulphides within these intervals.

While the aforementioned schists locally display shear fabrics, such fabrics are common throughout the NCGB, and in the author's opinion they do not mean that these schists were produced by shearing or represent a discrete shear zone. Rather, it now seems more likely that these rocks were strongly hydrothermally altered resulting in a significant increase in micaceous minerals and forming schists that were then more prone to the effects of the regional strain than their more massive counterparts.

Numerous small basaltic horizons occur throughout this metasedimentary package, e.g. there are ten in hole RGR-16-1 ranging from 0.4 to 5.7 m in width. These basalts are quite uniform within and between drill holes. They are fine-grained, a moderately bright green colour, composed of ~60:40 amphibole:plagioclase, weakly foliated and generally quite “fresh” with only minor local biotite alteration. Contacts are sharp. There are no obvious flow textures and given the setting and thinness of these horizons they are assumed to be sills or dykes. There is commonly a clear increase in the intensity of alteration and mineralization near these basalts suggesting that

perhaps the hydrothermal fluids were locally focussed between these sills/dykes, and/or that the basalts were part of the heat source driving fluid circulation. Several of the basalt sills/dykes are themselves cut by thin dykes of olivine lamprophyre and some impressive clusters of these lamprophyre dykes locally cut the metasediments (e.g. 18 dykes, 1-40 cm wide, occur between 320 and 346 m in hole RGR-16-4). A small number of gabbro and ultramafic dykes were also encountered within the metasedimentary package in the 2016 and 2017 drilling.

**Banded Iron Formation:** Immediately overlying the “Lower Clastic Metasediments” is the main banded iron formation (BIF) on the property, equivalent to the “Northern Iron Formation” at Musselwhite that hosts the great majority of gold mineralization in that area. It has been dated at <2967 Ma at Musselwhite (McNicoll et al., 2013). Past ground and airborne magnetic surveys of the Romios property indicate that the BIF pinches and swells on a scale of 2-4 km although the conductive portions of it still provide a continuous EM response. This was illustrated in hole RGR-16-2 which drilled through a “pinch-out” in the main BIF and intersected a thin layer of sulphidic mudstone (similar to the “4H” at Musselwhite) but no oxide or other facies of the BIF. This pinch and swell pattern has been ascribed to a regional boudinage effect by Zhang (2015) and while this may be the case, there remains the possibility that the original basin architecture control has had an effect as well.

The main BIF has been intersected in 5 drill holes by Romios (98-8, 10, 11, 12 and 13) and varies from 39 m to ~100 m in width. It is exposed in numerous outcrops over a 3 km interval from Atim Lake North to Lundmark Lake. A brief examination of the BIF east of Atim Lake North by the author in 2016 revealed that the iron formation here consists almost entirely of well banded chert > grunerite > magnetite. Very little of the magnetite-chert facies that dominates the BIF at Musselwhite, and none of the silicate facies which hosts the majority of the Musselwhite ore, crops out in this area. Past mapping by the author north of Lundmark Lake revealed only this chert-rich facies as well. This chert-rich facies is rarely mineralized at Musselwhite; only in extremely tightly folded and fractured areas is it known to be mineralized. No such tight folding or fracturing was noted in the Atim Lake-Lundmark lake area in the author’s brief visits. If the stratigraphy in the Lundmark-Akow Lake area is largely equivalent to that at Musselwhite, the favourable 4EA silicate facies would be expected to occur along the western margin of the BIF, if it is present at all. This unit is flanked by a relatively soft biotite-garnet schist (“4F”) which itself is capped by a garnetiferous amphibolite facie (“4E) that is commonly mineralized itself. Although they have not been noted in outcrop, it is possible that these units are present but recessively weathered and therefore not exposed. None of the drill holes that tested the BIF went far enough west to be sure no 4EA, 4F or 4E was present. In fact, hole 98-13 ended in 4 m of “mafic volcanics with up to 50% garnets” (a common early description of the 4E) and even hole 98-8 ended in 17 m of “sediments with 2 cm garnets”. Further work is needed to examine any core still available from these holes to see if the favourable silicate facies are present, and to determine if any sections of the BIF are dominated by magnetite-rich oxide facies rather than the chert-dominant facies seen at Atim Lake – Lundmark Lake.

East of the main BIF, drilling by Romios typically intersected mafic metavolcanics and gabbro for up to 50 m followed by fine-grained clastic metasediments. Presumably the volcanic rocks and some of the intercalated metasediments are part of the South Rim Assemblage (SRV) whereas the easternmost metasediments (in holes 98-8 and RGR16-2) may belong to the Eyapamikama assemblage.

Numerous small (Quartz)-Feldspar Porphyry (QFP) dykes occur throughout the area and cut all major members of the SRV. These dykes are generally weakly deformed, light to medium grey in colour, and contain ~20-40% seriate porphyritic feldspar phenocrysts, up to 2-3 mm in length, and rare quartz phenocrysts, within a fine-grained groundmass of quartz-feldspar and minor biotite. These dykes cross-cut the stratigraphy at Musselwhite as well and have been dated at 2909 Ma (McNicoll et al., 2013).

## **STRUCTURE**

The presence or absence of major folds on the claims remains an important and largely unresolved issue. The author has not located any reference to actual folds in any of the previous mapping on this property, other than local secondary folds in the iron formation. Previous workers (e.g. Adams and North, 1985) have assumed the entire NCGB was a synform which repeated the volcanics and iron formations on the south rim onto the north rim. We now know that the South Rim and North Rim volcanics are roughly 100 million years different in ages and therefore cannot be folded repetitions. Similarly, a series of tight isoclinal folds have been assumed by some previous workers within the North Rim assemblage itself due to a series of parallel magnetic and conductive horizons and broad similarities in some exposed lithologies. Adams and North (1985) for example placed a tight synclinal axis about 130 m west of and parallel to the iron formation along the western side of Akow Lake but presented no supporting field evidence and Zhang (2015) reports that deformation has obliterated virtually all indicators of younging directions (“tops”).

While there remains the distinct possibility of major isoclinal folds being present on the Akow Lake grid, this cannot be assumed simply because of an apparent symmetry between various geophysical responses. Multiple stratigraphic horizons that may appear similar to each other occur within this same sequence of rocks in the Musselwhite area. Three major iron formations (BIF) occur in close succession at Musselwhite: the “Northern BIF”, which hosts the bulk of the gold mineralization and is equivalent to the BIF along the west side of Akow Lake, and two thinner horizons known as the “Southern BIFs” which occur structurally below the Northern BIF. (N.B. The stratigraphy at Musselwhite is overturned and consequently units which are structurally lower are actually younger than those above). One of these Southern BIFs may be in the same stratigraphic position as the partially defined EM conductors that occur about 100 m east of the main BIF in the southwestern corner of Akow Lake. In addition, there are 4 thinner silicate facies BIFs structurally overlying the main BIFs and numerous thin and conductive chert-sulphide-mudstone horizons in the basaltic rocks below. Structurally above the main BIFs is a thick sequence of felsic volcanics and lesser volcanoclastics known locally as the “Felsic Wedge”. The

lower portion of this felsic pile contains a prominent horizon(s) with abundant syngenetic pyrite. This horizon(s) is very similar to the 2 horizons of formational pyrite observed in drilling at Akow Lake west of the main BIF there. The mixed sequence of metasediments and lesser felsic volcanoclastics that host the copper-(gold) zone at Akow Lake is therefore likely to be the on-strike facies equivalent of the felsic wedge at Musselwhite. If these stratigraphic comparisons are valid, the overall younging direction in the North Rim volcanics at Akow Lake is to the east. Whether or not there are tight isoclinal folds within the metasediment package remains unknown. A concerted effort to locate top indicators should be made to answer this important question in order to determine if the rocks hosting the copper-(gold) zone are repeated to the west.

A fold nose was noted by the author in 2016 on the SW shore of Akow Lake within the Eyapamikama metasediments. Bedding in these rocks trends approximately  $250^\circ$  and is cut at a high angle by a well-developed axial planar foliation striking  $332^\circ$ , dipping  $88^\circ$  east and plunging  $15^\circ$  SE. The high angle between foliation and bedding here,  $82^\circ$ , indicates that this outcrop occurs at a fold nose. Whether this folding pattern extends into the adjacent South Rim volcanics is unknown.

## **MINERALIZATION**

The target of the early exploration work on claims in the Akow Lake area that began in the early to mid-1980s was gold-in-iron formation mineralization like that first found in 1962 by the Musselwhite brothers at Opapimiskan Lake, about 18 km to the south. Work on these showings intensified during the period from 1972 to 1989. The Musselwhite Mine opened in 1997 with reserves of 1.8 million ounces of gold, sufficient for ten years of production. A series of exploration successes increased these reserves significantly since that time. Production to the end of 2015 stood at 4.35 million ounces with reserves and resources of 2.07 Moz (Goldcorp Annual Report 2015 and earlier reports) putting Musselwhite into the “giant” class of gold deposits. Geological research by the mine’s exploration geologists since 2003 combined with the work of numerous sponsored academic research partners has led to a model of ore formation different that is quite different than the typical “mineralized cross-cutting faults” that was in vogue in the 1980s. Gold at Musselwhite is now believed to be largely confined to high-strain zones along the most steeply dipping limbs of F2 folds (Biczok et al., 2012 and references therein). These high-strain zones are not fault or shear zones *per se* as they are confined to the steepest fold limbs, do not cross-cut stratigraphy, and developed during the folding process. The majority of the mineralization occurs in the garnet-grunerite dominant silicate facies (“4EA”) of the Northern Iron Formation. During deformation, the grunerite matrix in this unit flowed in a ductile fashion whereas the more brittle garnets within it fractured and created space for the deposition from the gold bearing fluids. Mineralization is accompanied by the alteration of grunerite (iron-rich amphibole) to ferrotschermakite, a more calcium-rich amphibole, as well as silicification, the formation of large, hydrothermal garnets, and the deposition of abundant pyrrhotite. Lesser ore zones occur in the chert-magnetite oxide facies BIF and minor mineralized zones are found in chert-dominant horizons but only in very tightly folded areas. The iron formation at Lundmark-Akow Lake has a dip close to vertical, a favourable setting, and has received less attention than

other mineralized occurrences on the Romios claims. Only five holes have been drilled through this BIF over a strike length of over 6 km and its potential remains largely unknown in major intervals.

The first appreciable gold mineralization discovered on the Romios claims was the **Spence Showing** (Fig. 6), a series of five thin shear zones occurring at or near the contact between mafic volcanics and a quartz-feldspar porphyry (QFP) intrusion (Spence, 1997 and 1998). The shear zones are between 0.5 and 2.0 wide, pinch and swell along strike and do not exceed a few tens of metres in strike length (Zhang, 2015). High-grade gold values up to 38.6 oz/t were returned from selected grab samples (Spence, 1997) but subsequent close-spaced drilling of 7 holes in 1998 returned more modest values, typically in the range of 1-4 g/t Au over 0.5 to 3.2 m (Spence, 1998). No further drilling, trenching or stripping has been done on this showing since 1988. Similar mineralized small faults/fractures occur at the contacts of QFPs on the north shore of Opapimiskan Lake but these too have very little limited extent.

A minor prospect named the “**Bishop Showing**” was discovered about 1 km grid south of the Spence showing in 1997 (Spence, 1997a) following the discovery of an old trench in the area in 1996 (Fig. 6). The showing is described as being within a “weak iron formation” but there is little description given as to the width of the BIF and there is no indication on the magnetic surveys that a significant BIF is present under cover here. Out of 32 samples collected in 1997 only 2 returned anomalous values, the best being 705 ppb Au (Spence, 1997a). This showing was tested with drill hole 98-15 which intersected two thin intraformational BIFs <2 m wide along with several thin sulphidic sedimentary horizons. The maximum gold value was 1.2 g/t Au from Po-Cp filled fractures in the volcanics. The thin BIFs returned a maximum value of only 544 ppb Au/0.6 m.

The most unique and significant mineralization discovered to date on the Romios claims, and the subject of the 1999 and 2016 drill programs, is the “**Romios Copper-(Gold) Zone**” discovered by drilling in 1998 (hole 98-9). It lies within a package of various metasedimentary garnet-staurolite-biotite-sericite schists originally discovered in a rusty outcrop and subsequently partially tested by drill hole 98-9 which was targeting an adjacent EM conductor. Follow-up drilling in 1999 with 5 holes intersected broad zones of low-grade copper-(gold) mineralization (e.g. 185 m @ 0.06% Cu) which contained many narrow zones of higher grades of copper, gold and silver (e.g. 0.84 m @0.5% copper and 3.9 g/t Au in DDH 99-4 (Zhang, 1999 and 2015). Typically the mineralization is concentrated in highly altered, moderately mineralized intervals. The 1999 drilling traced the zone from Line 2+00S to Line 11+00S, a distance of 900 m and the 2016 drilling then extended this zone to 1,500 m from 12+60S to 2+55N and to depths of 350 m.

A particular section of the host package of schists was termed the “Romios Shear Zone” by Zhang (1999) who noted local dextral shear fabrics. While there is little doubt that these schists are strained to some degree (as are virtually all rocks in this belt), any implication that they were

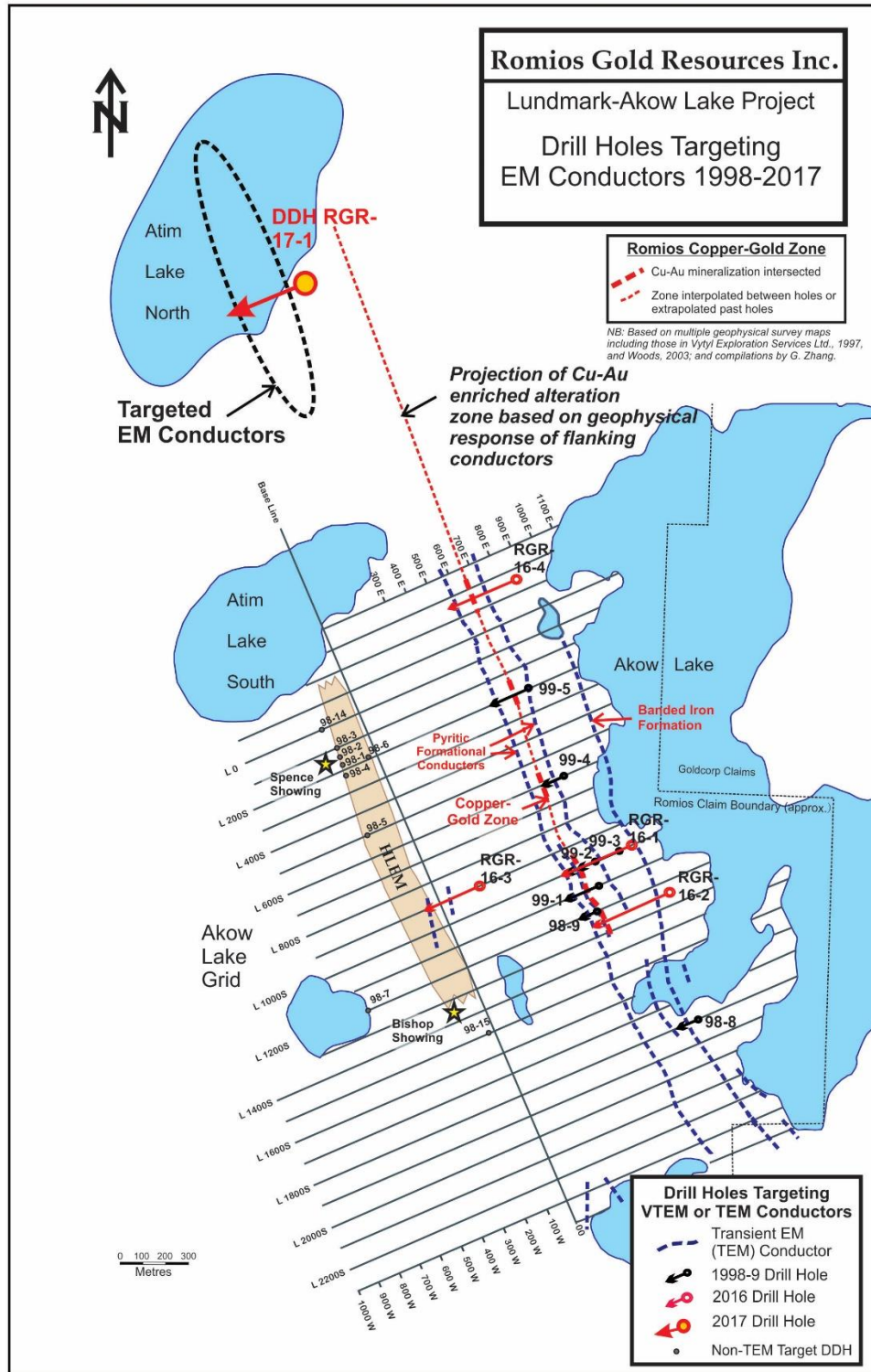


Figure 6: Compilation of drill holes targeting EM conductors and showings

formed largely by shearing, or that the mineralization was generated by shearing, is not supported by the evidence observed in the recent drilling by this author. As noted in Biczok (2016), the geological evidence afforded by drilling a more complete section across the mineralized schists and their flanking unit in 2016 has resulted in new model for the formation of this mineralization. It is now interpreted as a “lower semi-conformable alteration zone” such as those found beneath many VMS deposits (e.g. the Snow Lake belt in northern Manitoba, portions of the Mattabi-Lyon Lake camp in NW Ontario, etc.). These alteration zones are essentially the metamorphosed pathway of metal-enriched hydrothermal fluids that moved laterally in porous strata above a magmatic heat source before breaking through the overlying rocks at some point and exhaling metalliferous fluids onto the sea-floor. Under the right conditions these exhalative fluids can produce significant base metal deposits. By following this revised model and targeting EM conductors flanking the alteration pathway in 2017 Romios discovered an unusual Cu-Au-Ag massive sulphide-tourmalinite horizon at Atim Lake North. This mineralization is described in Sections 9 and 11.

## **8. SUMMARY OF PREVIOUS WORK**

The North Caribou Lake greenstone belt, which encompasses Romios’ Akow – Lundmark Lake claims, has been the focus of extensive exploration work at various times since the discovery of the first significant gold-in-iron formation occurrence at Opapimiskan Lake by the Musselwhite brothers in 1973. This work culminated in the opening of the Musselwhite gold mine in 1997, however, regional exploration in the belt peaked in the 1980s and has been sporadic and localised since that time. A great deal of work, including major diamond drilling programs, was undertaken by various companies between the south side of Akow Lake and the north shore of Opapimiskan Lake with no economic discoveries. To the north of the Romios claims, a number of large claims blocks have been held by other companies at various times but all of these claims have lapsed. Work on those claims included diamond drilling programs but only a small program of shallow packsack drilling (by INCO) extended onto the current Romios claims. Only the work relevant to the current Akow – Lundmark Lake claims held by Romios is summarised below.

1961-1963: Canadian Nickel (INCO) conducted the first recorded exploration work in the Akow Lake area (assessment report 53B09NW0012B1) which consisted of an airborne magnetic-electromagnetic survey followed by packsack drilling of selected targets. Two holes were spotted between the south side of Akow Lake and Dinnick Lake, presumably targeting the iron formations in the North Rim volcanics. One hole reached bedrock and intersected minor Py-Po in brecciated quartz and schist. There is no record of any drilling on the current Romios claims at that time. Five shallow packsack drill holes were drilled later in the northwest part of the current Romios property but only two reached bedrock. One of these drill holes intersected 74 feet of chert-magnetite iron formation. No assays were reported (Inco Ltd., 1963).

1981-1982: Cominco Ltd. staked 80 claims covering an area similar to the current Romios land package. They carried out a 61 hole, 755 ft., overburden drilling program in the Akow Lake area (Szabo, 1982). The great majority of the 53 basal till samples collected were taken at shallow



depths along a single NNW trending line parallel to the west shore of Akow Lake. The copper results were uniformly low and the gold values showed only minor variations. Given that most of the samples were collected east (up-ice) of the Romios “Copper-(Gold) Zone” the results are currently of little use in evaluating the potential of this zone as we now know it.

1983: Eldor Resources Ltd. drilled five diamond holes in the Doubtful Lake area between 2.5 and 6.5 km northwest of the current Romios claims NW limit (untitled series of drill logs by G. Williams, 1983. AFRI file # 53B15NE0009). One hole intersected ~70 m and another ~72 m of oxide and lesser sulphide iron formation with minor disseminated pyrrhotite, pyrite, and chalcopyrite. No significant gold assays were reported.

1985: Moss Resources conducted VLF-EM ground surveys (Hodge, 1986), geological mapping and sampling (Adams and North, 1985) on their 92 claim Akow Lake – North property which covers an area extending south from the southern portion of Akow Lake. The VLF survey delineated both the main iron formation along the western shore of Akow Lake and the formational conductor 200 m to the west of the BIF. The field work focussed on the iron formations extending north from Musselwhite and returned values less than 95ppb Au from these formations.

1985: A helicopter-borne magnetic and electromagnetic survey of the North Caribou Lake greenstone belt was conducted by Aerodat Limited on behalf of the Ontario Geological survey (OGS, 1985). The line spacing was 200 m with a magnetometer height of 45 m and the EM bird height of 30 m above ground level. This survey clearly delineated the main BIF on the Romios claims as well as the nearby weak formational conductors which parallel the BIF on its west side and a cluster of weak magnetic highs and adjacent EM conductors along the west side of the claims.

1987: Claims covering the Akow-Lundmark Lake area were optioned from the Four Square syndicate by Power Exploration who conducted a program of line-cutting, VLF surveys, prospecting, stripping and trenching (Newman, 1987). Numerous samples of gossanous iron formation were sampled, returning a maximum gold value of 790 ppb.

1994-7: Romios Estates Ltd. stakes claims covering the Lundmark-Akow Lake area, including the claims held at present, and transfers them to Romios Gold Resources Inc.

1996: Magnum Explorations Inc. was contracted by Romios Gold Resources Inc. to establish a cut grid west of Akow Lake and carry out magnetometer and VLF/EM surveys over this grid (Magnum Explorations Inc., 1996). A total of 51.3 km of gridlines and baselines were cut and 45.7 km of Mag/VLF surveys conducted. The main BIF along the western side of Akow Lake was partially outlined by the magnetic survey along with weaker features to the west and numerous VLF/EM responses were detected. Without corresponding geological control there was no concerted effort made at this time to interpret the EM results.

1996: Under contract to Romios, Aero Surveys Inc. undertook a helicopter-borne magnetic survey of the Lundmark-Akow Lake area covering ~60 sq. km and a total of 1315 line km (Fiset, 1996).

Flight lines were spaced 50 m apart and the sensor bird flown at a height of 33 m. The survey results were similar to those of the 1985 Aerodat survey but provided more detail of the magnetic features.

1997: Vytel exploration services cut and chained 150 km of grid lines and baselines and then carried out 140 km of ground magnetometer and 80 km of Max-Min II Horizontal Loop EM survey (100 m cable) on behalf of Romios. The surveyed grid extended from the south end of Akow Lake past the north end of Lundmark Lake and clearly delineated the main iron formation along the west shore of Akow Lake on both the Max-Min and magnetic surveys. A prominent Max-Min response was identified between 5+00E and 6+00E in the Akow Lake area which appears to correlate with the pyritic sericite schist intersected in the 2016 drill holes RGR-16-1 and 2. A more complex but still quite persistent Max-Min response was also identified between the baseline and ~2+25W extending grid south from Atim Lake South and lying immediately east of the Spence showing. It appears that this conductive zone would have been missed by most of the past drilling in the Spence showing area, only holes 98-6 and 98-15 should have intersected it (see Figure 6). There is little in the available logs of these 2 holes to account for such a well-defined response other than a few scattered thin intraformational sulphidic sedimentary horizons which may have produced a combined response large enough to explain this conductor. A 1.5 km gap in coverage exists from roughly the position of drill hole RGR-16-4 northwards and consequently the “Romios Shear Zone/Copper-Gold Zone” in this area was not surveyed and there is no discrete Max-Min response over the known locations of this zone.

1997 Geological Field Programs: Romios contracted geologist Ian Spence to undertake two programs. A 9-day program in July focussed on mapping and prospecting around the Bishop showing where a 1996 grab sample returned 1.3 g/t Au from an intraformational iron formation (Spence, 1997a). Only two anomalous samples (max. 705 ppb Au) were returned from the Bishop showing area but a new zone to the NNW termed the “Spence Showing” returned gold values up to 2 ounces per ton. This new discovery was followed up by Mr. Spence in September-October 1997 and consisted of outcrop stripping, mapping and sampling over a 100x100 m area and a local humus sampling grid (Spence, 1997b). The Spence showing was described as a series of thin rusty shears with quartz veinlets at or near the contacts of the local basalts with quartz-feldspar porphyry intrusions. Gold mineralization is accompanied by potassic (biotite) alteration and minor chalcopyrite. Selected grab samples of these thin shears assayed up to 38.6 oz/t Au. The local humus sampling program outlined several anomalous areas.

1998 Diamond Drilling: Under the supervision of Ian Spence, Romios undertook a winter drill program on the property and completed 2,182.5 m of drilling in 15 holes (Spence, 1998a) ( Figures 3 and 6). The primary goal of this program was to delineate the Spence gold showing (with 7 drill holes) as well as testing a number of geophysical conductors/possible iron formations across the property. This drill program suggested that the Spence showing had limited continuity and that the majority of the conductors tested were due to sulphidic horizons with only sporadic and weakly elevated gold values. The results of one drill hole proved to be of considerable geological interest, however, and that was DDH 98-9. This hole intersected “30 metres of disseminated

chalcopyrite (copper mineralization) in a garnetiferous, sericite schist” (Spence, 1998a). This was the first hole to intersect what became known as the “Romios Shear Zone” and the “Zhang-Skimming Copper-Gold Zone” (hereafter referred to simply as the “copper-(gold) zone”). It led to follow-up drilling in 1999 and eventually to the 2016 drill program.

1998 Geophysics and Geology: Geologists Ian Spence and Dr. Guowei Zhang spent 3 weeks mapping the Akow-Lundmark Lake area and supervising geophysical surveys and line-cutting contracted to IPTEC. This work improved the company’s understanding of the iron formation stratigraphy and the geophysical response of various targets (Spence, 1998; Zhang, 1998).

1998 Geophysics Phase 2: Under a contract with Romios Gold Resources Inc., IPTEC, a division of Lone Pine Exploration Services Ltd., extended the Lundmark Lake grid to the north, cutting a total of 11.5 km of new lines (Vickers, 1999). They then undertook a dipole-dipole IP/Resistivity survey of 2 areas: the Spence showing (Lines 1+00S to 3+00S) and the copper-(gold) zone discovered in drill hole 98-9 (covering a 500-700 m wide strip centred on 600E for 10 lines, 600S-1500S incl.). A 700x 400 m gravity survey was also conducted in the vicinity of drill hole 98-9, as well as 11,172.5 m of total field magnetometer and VLF geophysical surveys in areas of the Lundmark Lake and Akow Lake grids not previously covered. The IP survey identified a prominent chargeability high trending grid north-south which appears to correlate with a pyritic formational horizon (the western TEM response) as well as a subsidiary high on the eastern edge of the major response which might correlate with the copper-(gold) zone (this suggestion requires an evaluation by a trained geophysicist). A roughly linear residual gravity high, trending grid north-south, was detected at ~6+50E from Line 10+00S to Line 14+00S. This high was later tested by drill holes RGR-16-1 and 2. Although sulphide mineralization was encountered in both holes it was insufficient to explain the gravity high. However, this anomaly does correlate with the thick sequences of garnet-staurolite rich metasediments that host the copper-(gold) mineralization. Both staurolite and almandine garnet are relatively dense minerals, the former having a density of 3.7-3.8 gm/cc and the latter 4.3 gm/cc, versus an average density of 2.7 to 2.9 gm/cc for metamorphic rocks. The combined percentage of these minerals is commonly >40-50% of these rocks and seems a likely explanation for the gravity high.

As noted previously, two of the 1998 drill holes, 98-8 and 98-9, were believed to have suspect coordinates and these were indeed found to be incorrect by 150 to 250 m when located in the field. They have been plotted in the correct locations on the maps in this report.

1998: J.B. Boniwell reviewed and interpreted existing geophysical survey data on the claims.

1999: A five-hole diamond drilling program totalling 944 m was undertaken by Romios in January-February 1999 targeting the copper-(gold) zone in the “Romios Shear Zone” (Fig. 6). Four holes successfully intersected the target copper-(gold) zone and provided good information about its width, grade, strike and host rocks (Zhang, 1999). Hole 99-4 was lost before reaching the target.

2003: A large-loop Transient EM survey (TEM) was undertaken on the Akow Lake claims by Discovery Int'l Geophysics Inc. on behalf of Romios (Woods, 2003). The survey covered ~2.8 km

from the south side of Atim Lake (south) to the southern edge of Akow Lake. A prominent conductor was detected over the iron formation near the western shore of Akow Lake along with 2 long, formational-type parallel conductors ~150-200 m and 350 m to the west. Of more interest were a 400 m long conductor between the 2 aforementioned formational conductors and several scattered, partially defined short conductors including two near the baseline on Line 9+00S. These 2 latter conductors were the target of drill hole RGR-16-3 while holes RGR-16-1, 2 and 4 targeted the 2 formational conductors and the area between them, including the 400 m conductor (holes 1 and 2).

2014: Geotech Ltd. undertook an airborne geophysical survey of the Lundmark-Akow Lake property on behalf of Romios using a versatile time domain electromagnetic (VTEMplus) system and a horizontal magnetic gradiometer (Geotech, 2014). A total of 262 line km were flown at a line spacing of 100 m with the EM bird 40 m above the ground and the magnetometers 48 m above the ground. This survey outlined the main iron formation along the western side of Akow Lake and a weak-moderate magnetic high with flanking EM conductors roughly 750-1,000 m to the west. It has been suggested by some workers that this western magnetic high is a folded repetition of the main BIF horizon, however, there is no evidence for this as yet. Only one drill hole, 98-7, was drilled close to this magnetic feature and it intersected 33 m of a magnetic ultramafic and a few thin intraformational BIFs. The nearby EM conductors are likely caused by more of these conductive intraformational sulphidic BIFs. Of more interest in the Geotech survey data is a weaker and shorter linear response in the area west of southern Akow Lake and 2-300 m west of the main BIF. This response is coincident with the copper-gold zone identified in the 1998-9 and 2016 drill programs.

2016: Romios conducted a four-hole drill program in September-October (Biczok, 2016). Three holes targeted the copper-(gold) zone and intersected similar grades and widths to those in the 1999 drill program (i.e. typically ~8-14 m grading 0.2% Cu and 100 ppb Au with additional smaller parallel zones). The range of fresh, altered and mineralized lithologies encountered in these holes allowed the author to revise the geological model from the previous interpretation of a mineralized shear zone to that of a “lower semi-conformable alteration zone” similar to those found beneath many VMS deposits. This revised model led directly to the 2017 drill program. The fourth hole of the 2016 program targeted two poorly-defined EM conductors west of the copper-(gold) zone without encountering any significant alteration or mineralization.

## **9. 2017 DIAMOND DRILLING PROGRAM**

The 2017 diamond drilling was contracted to Orbit Garant Drilling Inc. of Val d’Or, Quebec. The drill utilised was a helicopter-portable drill manufactured by Orbit Garant, model YHS-1000. As noted previously, the drill was mobilised to the property in 2016 from Val d’Or to a staging area at Mawley Lake on the “North Road” about 11 km past (northwest) the turnoff to the Musselwhite mine and 53 km SSW of Akow Lake, and moved to the property with a combination of float planes and a helicopter.

The target area east of Atim Lake North is for the most part heavily forested and the drill pad were prepared in less than one day by a three-man crew with chain saws. The drill was then slung with the helicopter from the site of DDH RGR-16-4 to the new site (DDH RGR-17-1).

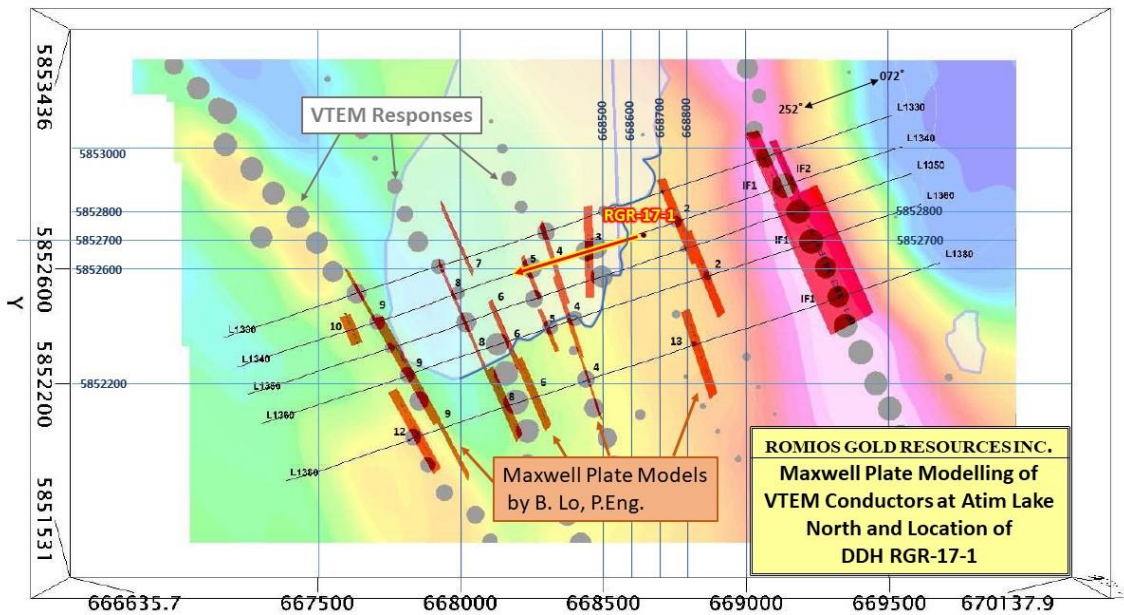
The target and the results of the drill hole is discussed below. The drill log is presented in Appendix One and a list of abbreviations used in the logs and sections is included at the end of this report. Analytical techniques and assays are presented in Appendix Two. The QAQC procedures and data verification results are presented in Appendix Three; no significant issues were found with the quality of the analyses. A graphical cross-sections of the hole follows the description below. Lithology names given to the various schists are based on their dominant mineralogy (most abundant and significant minerals first) followed by a probable protolith name in brackets in some cases. The intensity of the garnet-biotite alteration and quartz flooding/veining are rated on a scale from 1 to 5 (weakest to strongest) in the log.

#### **DRILL HOLE RGR-17-1**

Collar: 668645E, 5852713N (NAD 83). Azimuth: 252°. Dip: -45 °

#### **TARGET**

The target of this hole was three parallel VTEM conductors spaced across ~200 m and lying largely beneath Atim Lake North (see Fig. 7). These conductors were postulated to be sulphide horizons, potentially linked to the northward projection of the copper-(gold) enriched alteration zone located 200 m to the east. Maxwell plate models of the VTEM conductors were created by professional geophysicist Bob Lo, P.Eng., and are illustrated on Fig. 7 as the orange lines. Of particular note is the lack of a VTEM response for the central and otherwise longest conductor, #4, in the area between conductors #3 and #5. This lack of response is likely due to interference from the flanking conductors whereas the best fit for the Maxwell models requires this conductor (#4) to be continuous as shown (B. Lo, pers. comm. 2017).



**Figure 7: Maxwell Plate Models and Location of DDH RGR-17-1**

## RESULTS

This drill hole was successful in discovering a massive sulphide style horizon with abundant chalcopyrite and pyrrhotite and significant copper, gold and silver grades (see Table 2 and Figure 8). In addition, three intervals of copper-(gold) mineralized schist similar to that in the “Romios Copper-(Gold) Zone”/Lower Alteration Zone were intersected at hole depths between 96 m and 162 m.

**Table 2: Significant mineralized intercepts in DDH RGR-17-1**

| From (m) | To (m) | Drilled Width | True Width | Cu % | Au g/t | Ag g/t | Description                                   |
|----------|--------|---------------|------------|------|--------|--------|---|
| 96.55    | 98.75  | 2.2           | 1.6        | 0.58 | 0.24   | -      | Quartz veined schists with chalcopyrite blebs |
| 100.95   | 106.3  | 5.35          | 3.9        | 0.38 | 0.34   | -      | Quartz veined schists with chalcopyrite blebs |
| 159.0    | 161.7  | 2.7           | 1.97       | 0.28 | -      | -      | Quartz veined schists with chalcopyrite blebs |
| 299.2    | 301.1  | 1.9           | 1.4        | 2.35 | 1.4    | 68.2   | Massive sulphide                              |

## **LITHOLOGIES**

From the start of the bedrock at 17.0 m to a depth of 450.4 m, this drill hole intersected a package of fine-grained clastic metasediments (mainly meta-siltstone with minor meta-arenites) with intervals of various intercalated staurolite-garnet-sericite-biotite-quartz-feldspar schists and sericite dominant schists thought to be derived from felsic tuffs (see Fig. 8 below and drill log in Appendix One). The meta-siltstones vary from relatively fresh units composed largely of fine-grained biotite-quartz-feldspar through intervals with increasing amounts of garnet and staurolite into hydrothermally altered, coarse-grained schists dominated by garnet and staurolite. These schists are very similar to those encountered by drilling in the “Romios Copper-(Gold) Zone”/Lower Alteration Zone 1.5 to 3 km to the southeast. (This zone is believed to continue northward and pass about 200 m east of the 2017 drill hole collar). The sericite content is nil to low in most of the meta-siltstones but increases to a minor component (~5-10%) in some intervals and then to a predominant component in the intercalated sericite+/-garnet+/-biotite schist horizons. Several minor basalt horizons are found scattered throughout this package, especially in the lowermost 50 m.

From 450.4 to the end of hole at 513 m the lithologies are dominated by basalt with a 10 m gabbro unit. Biotite alteration of the basalt ranges from nil to moderate in the first 30 m and then increases to moderate-strong (20-30% biotite concentrated in bands about 5 mm wide) below the gabbro from 490.6-513 m (biotite alteration is prominent within and adjacent to highly strained and/or mineralized areas at the Musselwhite mine).

## **MINERALIZATION**

The mineralization encountered in this hole was primarily of two types: a massive sulphide style horizon encountered from 299.2-301.1 m and three intervals of chalcopyrite mineralized, quartz veined/flooded schists very similar to the style of mineralization in the “Romios Copper-(Gold) Zone”/Lower Alteration Zone. These are discussed separately below.

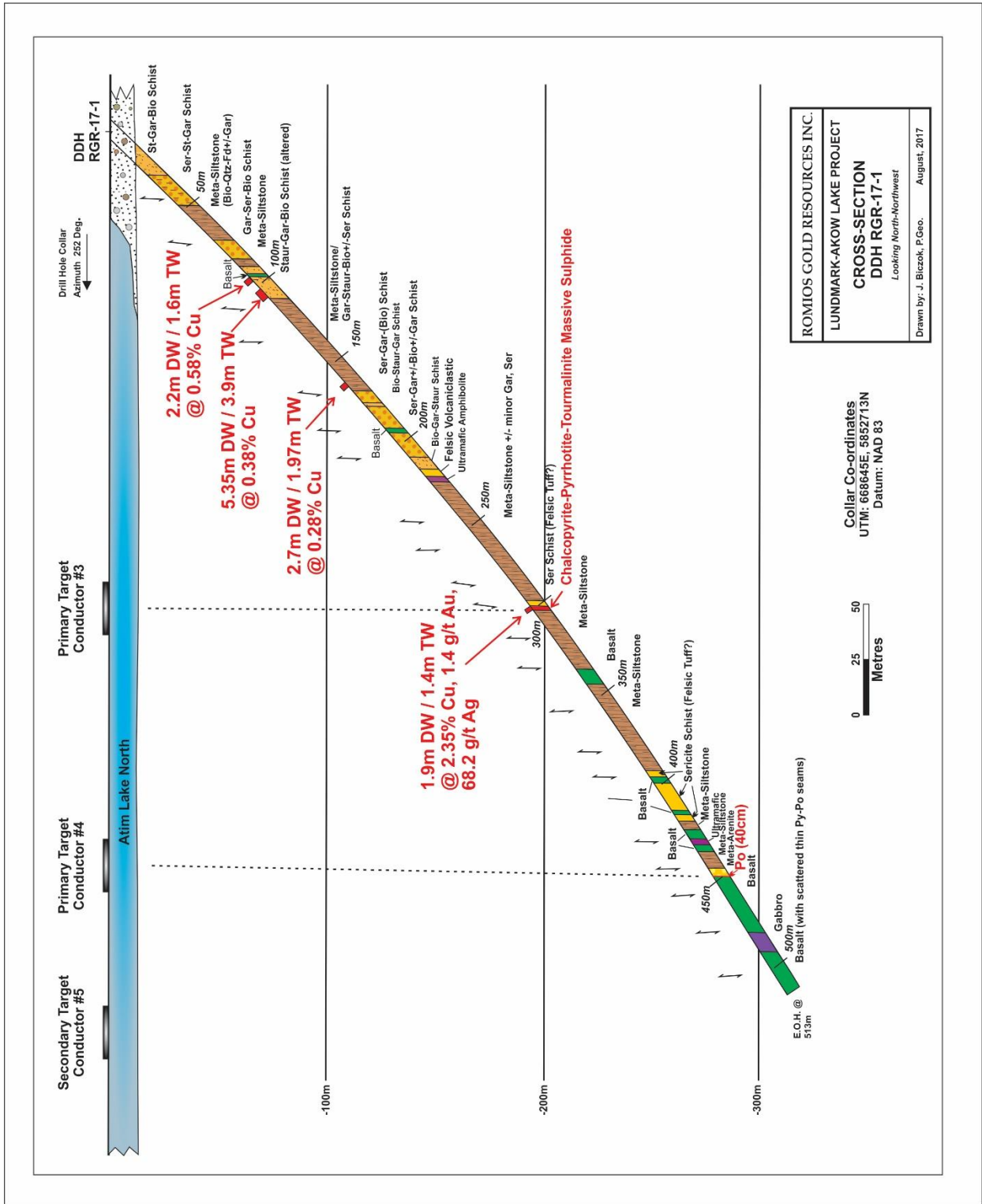


Figure 8: Cross-section of DDH RGR-17-1



### The Massive Sulphide Horizon

Drill hole RGR-17-1 was successful in intersecting the first base-metal rich massive sulphide horizon to be discovered in the Lundmark-Akow Lake - Musselwhite area. This horizon was intersected from 299.2 m to 301.1 m, a drilled width of 1.9 m which is estimated to have a true width of 1.4 m (based on foliation angles in the core) and the intersection is 200 m vertically below surface. The mineralized horizon was broken down into three samples reflecting changes in the amount of sulphides and the nature of the host rock (see Table 3 below).

**Table 3: Assay results from the massive sulphide zone**

| Sample # | From (m) | To (m) | Drilled Width (m) | Au g/t | Cu %  | Ag g/t |
|----------|----------|--------|-------------------|--------|-------|--------|
| 390029   | 299.2    | 299.7  | 0.5               | 1.11   | 2.57% | 81.5   |
| 390031   | 299.7    | 300.3  | 0.6               | 1.10   | 1.63% | 57.9   |
| 390032   | 300.3    | 301.1  | 0.8               | 1.85   | 2.76  | 67.5   |

The first 0.5 m and lower 0.8 m average ~5-7% each of visible chalcopyrite and pyrrhotite which is locally concentrated in semi-massive zones exhibiting a milled texture (see Plate One). The host rock contains a high percentage of tourmalinite (very fine-grained, black, massive tourmaline, typically produced by certain hydrothermal fluids at or near vent sites) as thin laminae, milled fragments within the sulphide rich zones, and as massive veins up to several centimetres wide (see Plate Three). The remainder of these intervals is too fine-grained to distinguish individual minerals but it is believed to be a mix of quartz, tourmalinite, siltstone and sulphides. Trace fine-grained disseminated arsenopyrite occurs throughout the horizon. The assay results from these two intervals are quite encouraging with 2.57-2.76% Cu, 1.1-1.85 g/t Au and 67.5-81.5 g/t Ag (Table 3). The levels of other base metals such as Pb, Zn, Ni, Co are too low to be of economic significance although the cobalt values were the most elevated at 134 to 161 ppm.

The central 60 cm of the massive sulphide zone, from 299.7 to 300.3 m, is more siliceous and contains less sulphides than the upper and lower portions (see Plate Two) but still assayed 1.63% Cu, 1.1 g/t Au and 57.9 g/t Ag (Table 3). It consists of ~3-4% visible chalcopyrite and 1-2% pyrrhotite in a hard, siliceous, light grey unit composed of alternating layers/laminae of silica (very fine-grained quartz) a few mm to 5-6 cm thick, and ~40% tourmalinite laminae <5 mm thick, with local intervals of dismembered tourmalinite laminae. The levels of the other base metals is also too low to be of significance in this central portion.

There are no obvious quartz veins or zones of quartz flooding within this mineralized horizon and it is interpreted as an exhalative massive sulphide, very likely related to the >3 km long alteration pathway (i.e. "the Romios copper-(gold) zone) located ~200 m to the east. No obvious

hydrothermal alteration pipe is noted in the rocks flanking the massive sulphides, however, tourmalinite spots up to 1 cm across are locally abundant (e.g. up to 3-15% across 1.4 m) in the first 13.4 m of meta-siltstone below the massive sulphides indicating that hydrothermal fluids exhaled onto or passed through those sediments as well.



**Plate 1: High grade portions of the massive sulphide horizon.** (metre marks refer to core in lower row, Sample 390032. Upper row is part of sample #390029)



**Plate 2: Central, more siliceous - less sulphide portion of the massive sulphide horizon.** (Sample #390031)





**Plate 3: Black, fine-grained tourmalinite-rich section of the massive sulphide horizon.**

### **Mineralized Schist Intervals**

Multiple zones of modest copper-(gold) mineralization were intersected in staurolite-biotite-garnet-quartz-feldspar schists and intercalated sericite-dominant schist layers (see drill log in Appendix One) and the three most significant of these intercepts are listed in Table 4 below. The three mineralized schist intervals were intersected at depths between 68 m and 110 m. Chalcopyrite mineralization in these intervals typically occurs as scattered blebs and veinlets <2 cm wide flanking or within quartz veins up to 40 cm wide and/or biotite veins up to 20 cm wide. It is generally associated with the development of coarse-grained hydrothermal garnets, staurolite, and massive black biotite. These mineralized schist intervals are very similar to those encountered in the 2016 drilling of the “Romios copper-(gold) zone”/alteration pathway 1.5 to 3 km to the southeast. This zone was assumed to continue northward to the Atim Lake North area some 1.8 km from the northernmost drilled intersection (DDH RGR-16-4) based on the EM signature of two pyritic horizons that flank the copper-(gold) zone. The intersection of mineralized schists at Atim Lake North similar to those in the copper-(gold) zone suggest that this latter zone does indeed extend from Akow Lake to Atim Lake North, a distance of >3.3 km.

Nine additional smaller zones of mineralized quartz veining/flooding are found scattered throughout the hole. These range from 0.13 to 0.75 m in drilled width and grade up to 0.29% Cu and 1.66 g/t Au.

**Table 4: Mineralized intercepts in quartz veined schists**

| From (m) | To (m) | Drilled Width | True Width | Cu % | Au g/t | Ag g/t | Description                                   |
|----------|--------|---------------|------------|------|--------|--------|---|
| 96.55    | 98.75  | 2.2           | 1.6        | 0.58 | 0.24   | -      | Quartz veined schists with chalcopyrite blebs |
| 100.95   | 106.3  | 5.35          | 3.9        | 0.38 | 0.34   | -      | Quartz veined schists with chalcopyrite blebs |
| 159.0    | 161.7  | 2.7           | 1.97       | 0.28 | -      | -      | Quartz veined schists with chalcopyrite blebs |

### **CORRELATION WITH GEOPHYSICAL TARGETS**

Drill hole RGR-17-1 was planned to test three conductors identified from the 2014 VTEM survey and modelled by B. Lo, P.Eng., as shown in Figure 7. The approximate surface position of these conductors are depicted on the drill hole cross-section (Figure 8) and numbered from east to west as #3, 4 and 5. It is apparent from the drill section that the massive sulphide horizon lies approximately vertically below conductor #3 and can be correlated with it. Conductor #4 lies approximately vertically above a 40 cm zone of semi-massive (30-40%) pyrrhotite intersected at a down-hole depth of 449.9 m and can be correlated with this barren horizon. Due to the increasingly slow drilling rate near the end of the hole combined with various logistical and budgetary constraints, the hole was terminated prior to reaching the source of conductor #5. While there may be a sulphidic source for that conductor, the fact that the hole had passed from the package of metasediments and felsic metavolcanics that were the target of this program, and the host to the massive sulphide horizon, made conductor #5 a low priority for this program in the end.

### **10.QAQC**

To ensure that the analytical analyses were accurate a standard program of inserting regularly spaced blanks and standards, both copper and gold, into the sample stream was followed. These company standards and blanks were in addition to those inserted by ActLabs as part of their routine QAQC. A series of samples were also re-analysed for copper to compare these duplicate results with the originals. The details of this QAQC as well as the sample security protocol are provided in Appendix III.

The analytical results of the company's as well as ActLabs standards and blanks were inspected by the author, the Qualified Person for this project, and no issues of any consequence with the accuracy or reproducibility of the assays were noted. The author is of the opinion that the analytical data is of good quality in terms of precision and reproducibility and sufficient for the purpose of this report.

## 11.DISCUSSION

The 2017 diamond drilling program at Atim Lake North consisted of just one hole but was successful in discovering the first known base-metal rich, massive sulphide-type horizon in the Lundmark-Akow Lake – Musselwhite area. This discovery was a direct result of the revised geological model for the >3 km long “Romios Copper-(Gold) Zone” which developed after the recognition of key geological features in the three holes drilled into this zone in 2016 (Biczok, 2016). This latter zone was re-interpreted in 2016 as a “lower semi-conformable alteration zone”, in essence a metamorphosed hydrothermal fluid pathway such as those found beneath many massive sulphide deposits. This pathway served as the sub-seafloor conduit for hot fluids carrying elevated levels of copper, gold and silver which may have then exhaled these fluids onto the paleo-seafloor at some point (Biczok, 2016). The results of drill hole RGR-17-1 confirmed that this alteration zone extended at least 1.8 km farther north than the previously northernmost drill hole (RGR-16-4) to the Atim Lake North area, as evidenced by the presence of the same type of copper-(gold) mineralized staurolite-garnet-biotite-sericite schists that dominate the “Romios Copper-(Gold) Zone”. The massive sulphide horizon discovered in this hole is elevated in the same metals as various portions of the “Romios Copper-(Gold) Zone”, i.e. copper, gold and silver. In addition it contains an abundance of the same type of tourmalinite as was found in the “Romios Copper-(Gold) Zone” in drill hole RGR-16-2, further linking this alteration zone with the massive sulphide horizon.

The abundant tourmalinite found in both DDH RGR-16-2 and the massive sulphide horizon is quite unusual for mineral deposits in the Canadian Shield. Tourmalinite consists of semi-massive to massive, very fine-grained tourmaline that resembles black chert or a very-fine-grained sediment in appearance, and is typically found at or near hydrothermal vents on the sea-floor or at hot springs. It is distinctly different from the more coarse-grained masses of tourmaline commonly found in veins +/- quartz near so many gold deposits. The author is unfamiliar with any Canadian massive sulphide deposits (other than the Sullivan Pb-Zn deposit) that have abundant tourmalinite but is familiar with such a setting in India: the Singhbhum copper belt and its four main past-producing mines (Rakha, Surda, Mosaboni and Kendadih as well as numerous smaller mines and occurrences) spaced over a strike length of about 20 km. Total estimated reserves for the belt in 1983 were 173 Mt at 1.38 % Cu, out of which Mosaboni contributed 19.77 Mt at 1.70 % Cu (Mining Magazine, November, 1983, quoted in Deb and Kaur, 2008). The author has observed fragmented tourmalinite in the footwall rocks of the Rakha copper mine as well as thick intervals of tourmalinite laminae at some distal locations. Like the Atim Lake North discovery, the Singhbhum deposits are almost exclusively copper deposits with little or no lead or zinc. The Bieluwutu mine in Inner Mongolia is also a copper dominant deposit associated with abundant tourmalinite, appreciable by-product silver and only minor Pb-Zn, estimated at <2% (Nie, 1993; USGS Mineral Resources Online). The deposit has a reported tonnage of 7.8 Mt grading 0.64%Cu and is thought to be the product of the mixing of copper-bearing fluids derived from mafic volcanism and boron-rich seawater or meteoric fluids circulating in the felsic volcano-sedimentary strata within a continental margin rift zone.

As noted in Biczok (2016), copper mineralization in the “Romios Copper-(Gold) Zone” was commonly concentrated at or near the margins of basaltic units scattered throughout the volcano-sedimentary pile. This correlation implies that either the copper was derived from/associated with mafic magmatism, and/or the movement of the copper-bearing fluids was focussed along these more impermeable units. This setting would seem to be similar to the Bieluwutu setting whereby mafic magmatism within a rifting basin generated copper-bearing fluids that interacted with boron rich fluids from the volcano-sedimentary pile.

With so few analogous deposits to compare Atim Lake North to, there remain more unknowns relative to the more typical volcanogenic massive sulphide deposits such as Mattabi, e.g. is there metal zoning throughout the horizon?, is there a higher-grade central core?, are there well-defined structural boundaries controlling the distribution of mineralization?, and, is there a central alteration pipe that can be used to guide us to the central core of the deposit? Typical VMS deposits have a well-developed alteration pipe near the centre of the deposit where the mineralizing fluids vented. These metamorphosed, chemically altered pathways commonly consist of coarse-grained minerals such as garnet, staurolite, sericite, kyanite, etc. While coarse-grained garnet-staurolite and massive biotite and sericite zones marked the “lower semi-conformable alteration zone” (i.e. the Romios Copper-(Gold) Zone), there is no guarantee that such diagnostic minerals will have formed in an alteration pipe beneath the centre of the Atim Lake North deposit if it formed by a more pervasive mixing event. At this stage, however, such scenarios are speculative and can only be resolved by drilling.

As noted previously, there were considerable budgetary, timing and logistical constraints on the 2017 drill program and the drill hole was terminated at a depth of 513 m before reaching the source of conductor #5. By that point the hole had been in basalt and gabbro for some 63 metres, well past the target horizon of felsic volcanic and clastic metasediments that hosted the copper mineralization. While it is most likely that the source of conductor #5 is another barren (?) pyrrhotite horizon one cannot be certain of this without further drilling. The aforementioned basalts were often overprinted by moderate to strong biotite alteration. This type of alteration in the basalts is also prominent within and adjacent to highly strained and/or mineralized areas at the Musselwhite mine consequently the gold potential of the basalts at Atim Lake North cannot be discarded.

## **12. CONCLUSIONS AND RECOMMENDATIONS:**

DDH RGR-17-1, the single drill hole drilled in 2017 on the Lundmark-Akow Lake property, tested two adjacent electromagnetic conductors at Atim Lake North and was successful in discovering an unusual chalcopyrite-pyrrhotite-tourmalinite massive sulphide horizon. This zone assayed 2.35% Cu, 1.4 g/t Au and 68.2 g/t Ag, and is the first significant base metal discovery in the Lundmark-Akow Lake-Musselwhite area. Although the drilled width of this horizon is only 1.9 m and the true width is estimated at 1.4 m, the Cu-Au-Ag grades are economically significant and the zone is open along strike as well as up and down dip. The drill hole also intersected three zones of copper-(gold) mineralized garnet-staurolite-biotite-sericite schist grading 0.28 to 0.58% Cu and 0.0-0.34 g/t Au over true widths of 1.6 to 3.9 m. These mineralized schist intercepts are very similar to the typical mineralization in the “Romios Copper-(Gold) Zone” which is now believed to be a “lower semi-conformable alteration zone” (i.e. the pathway for hydrothermal, mineralizing fluids typically found beneath many massive sulphide deposits). The evidence now indicates that this Cu-(Au) enriched alteration pathway is over 3 km long, extending from the southern part of Akow Lake north to Atim Lake North and likely beyond. The unusual copper-silver-tourmalinite rich, Pb-Zn poor nature of the Atim Lake North massive sulphide is very similar to portions of the alteration pathway and support the model where this pathway for hydrothermal fluids deposited massive sulphides at Atim Lake North and perhaps elsewhere along its length in the adjacent strata.

With this model in mind the following recommendations for further work are given:

1. The past geophysical surveys should be examined in detail to look for any indication of more massive sulphide accumulations along strike from the Atim Lake North massive sulphide as well as in rocks adjacent to the package of schists hosting the “Romios Copper-(Gold) zone”. Additional ground magnetometer and EM surveys should be undertaken to delineate the massive sulphide horizon in detail and determine the most favourable sections for further drilling.
2. A down-hole EM survey should be undertaken on drill holes RGR-17-1 and RGR-16-2. In the case of the former hole this is to determine in which direction the largest volume of sulphides is located. Hole RGR-16-2 intersected several metres of vein-type tourmalinite with significant Cu-Ag mineralization and it is quite possible that this system deposited exhalative, massive sulphide style mineralization nearby.
3. Diamond drilling should be undertaken at Atim Lake North to trace the extent of the newly discovered massive sulphide horizon both along strike and up/down dip. A minimum of nine holes spaced 100 m apart vertically and horizontally from the discovery hole is recommended to scope out the extent of this zone. The 5 holes testing the -100 m level would be ~175 m long and the 4 holes testing the -200 m level would be ~350 m long for

a total of ~2,300 m of initial drilling. The initial layout of the diamond drill hole pattern may be further dictated by the results of any new or re-interpreted geophysical surveys but any pattern in the thickness or style of mineralization that develops after the initial holes should then be used as guide for continued drilling.

4. If possible, at least one of the drill holes testing the massive sulphide horizon (EM conductor #3) should be extended far enough to also intersect conductor #4 in the area of its greatest strength near the south shore of Atim Lake North or >100-200 m north of hole RGR-17-1 (Fig. 7).
5. If the detailed review and refining of the existing or newly acquired geophysical data indicates that there are untested conductors along strike from the Atim Lake North discovery hole then these should be drill tested as well. In particular there is a 6-700 m long VTEM conductor starting ~600 m north and along strike from the discovery hole that should be covered by the new EM-Mag surveys and then drill tested if warranted.
6. If a worthwhile down-hole geophysical response is detected from hole RGR-16-2 this should be drill tested with one hole.

In addition to the Atim Lake North massive sulphide discovery and the “Romios Copper-(Gold) zone” discussed above, the Akow-Lundmark Lake claims cover approximately 9 km of the same banded iron formation (BIF) that hosts the Musselwhite gold deposit 18 km to the south. This BIF has been tested by one drill near the southern end of the claims and 4 holes in the northern section leaving a ~4 km long interval of un-explored BIF in the area west of Akow Lake. The BIF is known to pinch and swell as evidenced by the aeromagnetic pattern and the only hole drilled through it in 2016 (RGR-16-2) was in a known pinch-out. Given the limited drilling so far and the variability inherent in this BIF, it is unknown if the silicate facies (“4EA”) that hosts most of the mineralization at Musselwhite occurs on the Romios claims or not. To address this shortcoming the following steps are recommended:

1. The known BIF outcrops should be re-mapped by a geologist very familiar with the complex stratigraphy of this BIF as is evident at Musselwhite.
2. All available core from past drilling through this BIF should be re-examined by this same expert to see if any units flanking the obvious BIF that were mapped as “garnetiferous sediments” or “garnetiferous volcanics” are in fact one of the silicate iron formation facies.
3. A study of the strongest magnetic profiles over the BIF in areas of outcrop and no outcrop should be undertaken to compare the response over chert dominant exposures with potentially narrower portions of the BIF with equally high magnetic signatures that might reflect more magnetite dominant intervals. Oxide iron formation has potential to be



mineralized itself, much more so than the cherty iron formations, and has a greater probability of grading into 4EA nearby.

4. If the geophysical evaluation indicates that magnetite-rich BIF is present in untested areas beneath cover, humus sampling is recommended over these areas in an effort to locate areas of anomalous gold in the soil. If any prominent gold-in-humus anomalies are detected they should be tested with short drill holes.

Respectfully submitted,

*John Biczok*

John L. Biczok, P.Geol.

### 13. STATEMENT OF QUALIFICATIONS

I, John Biczok, of the city of Greely, Ontario, do hereby swear and affirm that:

1. I am a Professional Geologist registered in good standing with the Association of Professional Geoscientists of Ontario (Membership #1493) (since 2007).
2. I have an Honours B.Sc. degree in Geology from Lakehead University in Thunder Bay, ON.
3. I was employed as an exploration geologist by several major mining companies on a full-time basis from 1979 to 2003 throughout central and western Canada and much of India. From 2003 to March 2015 I was employed as a geologist at the Musselwhite gold mine, initially as a project geologist, followed by a senior exploration geologist position and then as senior research geologist.
4. I am currently an independent consulting geologist and personally undertook the geological work and directly supervised the drill program described in this report.
5. I have no financial interest in Romios Gold Resources Inc. or the Lundmark-Akow Lake property.

Signed: \_\_\_\_\_ *John Biczok* \_\_\_\_\_

Date: \_\_\_\_\_ October 16, 2017 \_\_\_\_\_

**Table 5: Abbreviations used in drill logs and sections**

| <b>ABBREVIATIONS USED IN DRILL LOGS &amp; SECTIONS</b> |                      |                                |                |
|--|----------------------|--------------------------------|----------------|
| <b>MINERALS &amp; ROCK TYPES</b>                       |                      | <b>GRAIN SIZE</b>              |                |
| amph   | amphibole            | f.g.                           | fine-grained   |
| amph'd   | amphibolitized       | m.g.                           | medium-grained |
| Asp  | arsenopyrite         | c.g.                           | coarse-grained |
| bio  | biotite              |                                |                |
| bio'd  | biotitized           | <b>TEXTURES &amp; FEATURES</b> |                |
| bio'n  | biotitization        | alt'd                          | altered        |
| Cc   | calcite              | alt'n                          | alteration     |
| Cp   | chalcopyrite         | brx'd                          | brecciated     |
| Dol  | dolomite             | fol'n                          | foliation      |
| Fd   | feldspar             | fol'd                          | foliated       |
| gar or gnt   | garnet               | frags                          | fragments      |
| metaseds   | metasediments        | mod                            | moderate       |
| Mt   | magnetite            | phenos                         | phenocrysts    |
| Plag   | plagioclase          | Sil'n                          | silicification |
| Po   | pyrrhotite           | Sil'd                          | silicified     |
| Py   | pyrite               | Str                            | strong         |
| Qtz  | quartz               | Vn                             | vein           |
| sed  | sediments            | Wk                             | Weak           |
| Ser  | sericite             |                                |                |
| Staur  | staurolite           |                                |                |
| <b>MISCELLANEOUS</b>                                   |                      |                                |                |
| assoc'd  | associated           |                                |                |
| avg  | average              |                                |                |
| dca  | degrees to core axis |                                |                |

#### 14. STATEMENT OF EXPENDITURES

| ITEM  | Expense             |
|---|---------------------|
| <b>Assays</b> (ActLabs): 39 core samples for Cu and/or Au +/- multi-element analyses, + 3 boron assays, standards, sample bags, sample storage.                                     | <b>\$1,457.90</b>   |
| <b>Aircraft Charter:</b> Osnaburgh Airways flights & use of staging area at Mawley L.   | <b>\$15,156.00</b>  |
| <b>Aircraft Charter:</b> Weagamow Airways   | <b>\$4,146.15</b>   |
| <b>Camp rental</b> (Osnaburgh Airway's Skinner Lake Camp, 10 days plus set-up charge)   | <b>\$5,600.00</b>   |
| <b>Diamond Drilling:</b> 513 m @ \$70/m plus mob/demob, crew moves, etc. Orbit Garant Drilling Services   | <b>\$38,860.00</b>  |
| <b>Fuel: Jet</b> fuel for helicopter from Forest Helicopters  | <b>\$523.30</b>     |
| <b>Fuel: Jet</b> fuel for helicopter plus <b>Diesel</b> for drill from Morgan Fuels   | <b>\$11,476.27</b>  |
| <b>Groceries:</b> Northern Store in Pickle Lake   | <b>\$2,761.51</b>   |
| <b>Helicopter charter</b> (Forest Helicopters, 46.2 hours + 14 days Pilot time)   | <b>\$77,910.00</b>  |
| <b>Labour</b> (1Core splitter/helper; 13 days total @ \$225/day, site inspector 1.0 days @ \$250/day)   | <b>\$3,175.00</b>   |
| <b>Labour</b> (Paramedic from Safe-Tee: 10 days @ \$625/day, July 26th to Aug. 4th) plus travel expenses  | <b>\$8,890.90</b>   |
| <b>Labour</b> (Geologist: 31 days of on-site drill supervision July -August, travel time, prep for program, plus report writing and drafting and management afterwards @ \$500/day) | <b>\$15,500.00</b>  |
| <b>Geophysical Interpretation:</b> Mr. Bob Lo, P.Eng.   | <b>\$3,825.00</b>   |
| <b>Travel Costs:</b> Scheduled flights (Ottawa to Thunder Bay)  | <b>\$892.76</b>     |
| <b>Truck Rental</b>   | <b>\$1,840.71</b>   |
| <b>Gasoline for truck</b>   | <b>\$535.76</b>     |
| <b>Trucking Costs:</b> fuel transport; drill demob to Pickle Lake, WM Koval Contracting -50:50 split with Orbit Garant  | <b>\$4,700.00</b>   |
| <b>Hotel</b>  | <b>\$941.04</b>     |
| <b>Meals</b> during travel  | <b>\$394.82</b>     |
| <b>Camp supplies</b>  | <b>\$928.45</b>     |
| <b>Equipment Rental:</b> Core Splitter from Clark Expl. Consulting, 13 days @ \$15/day  | <b>\$195.00</b>     |
| <b>Equipment Rental:</b> Sat phone  | <b>\$233.73</b>     |
| <b>Shipping</b>   | <b>\$106.29</b>     |
| <b>TOTAL EXPENDITURES*</b>  | <b>\$200,050.59</b> |

\*Excluding HST

**NB: All of the expenses related to the 2017 drill program were incurred on one claim, #1208561**

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**APPENDIX ONE:**

**DIAMOND DRILL LOG**

**DRILL HOLE RGR-17-1**

### DIAMOND DRILL LOG

| COMPANY:          |             | <b>Romios Gold Resources Inc.</b>   | LOCATION:    | <b>Akow Lake Property</b> |           |    |          | LOGGED BY:   | J. Biczok, P.Geo. |           |           | HOLE No. | <b>RGR-17-1</b> |            |         |        |           |           |                 |  |  |
|-------------------|-------------|---|--------------|---------------------------|-----------|----|----------|--------------|-------------------|-----------|-----------|----------|-----------------|------------|---------|--------|-----------|-----------|-----------------|--|--|
| DRILL CONTRACTOR: |             | Orbit Garant  | UTM (NAD 83) | 668645E, 5852713N         |           |    |          | GRID CO-ORDS | N/A               |           |           |          |                 | AZIMUTH    | 250 deg |        |           |           |                 |  |  |
| CORE STORED AT:   |             | 668674E, 5852701N   | FINAL DEPTH: | 513m                      | CORE SIZE | NQ | STARTED: | 28-Jul-17    |                   | FINISHED: | 04-Aug-17 |          |                 | COLLAR DIP | -45 deg |        |           |           |                 |  |  |
| FROM              | TO          | LITHOLOGICAL DESCRIPTION  |              |                           |           |    | Sample   | From (m)     | To (m)            | Length    | Au ppb    | Cu ppm   | % Py            | % Cp       | % Po    | % Asp  | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |  |  |
|                   |             |   |              |                           |           |    |          |              |                   |           |           |          |                 |            |         | 1 to 5 | 1 to 5    | 1 to 5    |                 |  |  |
| <b>0.0</b>        | <b>17.0</b> | <b>Casing.</b> Glacial till overburden, sand and boulders.  |              |                           |           |    |          |              |                   |           |           |          |                 |            |         |        |           |           |                 |  |  |
| <b>17.0</b>       | <b>22.3</b> | <b>STAUROLITE-GARNET-BIOTITE-QTZ-FD SCHIST</b>  |              |                           |           |    |          |              |                   |           |           |          | 0.05            |            |         |        | 3         | 3         |                 |  |  |
|                   |             | Heterogeneous section of metasediments, well foliated to schistose with variable alteration. Freshest section (~10%) is light grey, comp. of 10-20% staurolite 1-2mm, 5% lensoid red garnets to 1cm rimmed with bio-staur, rest is f.g. qtz-fd. Grades into a predominant unit of altered schist with 20-40% staur, 1-2mm, anhedral, with 20-30% f.g. bio, conc'd in bands 1-2cm wide of >50% bio, with 5-20% m.g. staur & garnet, plus 5-10% garnet porphyroblasts up to 2cm, concentrated in irregular bands. Appears to be hydrothermally altered with ~pervasive bio alt'n up to 2cm and m-c.g. staur-gar bands. Lower Contact (LC) @ 40 deg to core axis (dca) marked by 1cm zone of 1-2% f.g. Asp. FOLIATION: 43 deg at 17.5m and 30.5m |              |                           |           |    |          |              |                   |           |           |          |                 |            |         |        |           |           |                 |  |  |
| <b>22.3</b>       | <b>23.9</b> | <b>BASALT</b>   |              |                           |           |    |          |              |                   |           |           |          |                 |            |         |        |           |           |                 |  |  |
|                   |             | Homog. f.g., med grey, mod well foliated. Composed of 40-50% f.g. prismatic amph, 40-50% f.g. feldspar. <10% f.g. biotite in thin zones <3mm, Upper Contact (UC) sharp at 40 dca. LC sharp but broken core.   |              |                           |           |    |          |              |                   |           |           |          |                 |            |         |        |           |           |                 |  |  |

| FROM | TO   | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|------|------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
| 23.9 | 29.7 | <b>STAUROLITE-BIOTITE-GARNET-QTZ-FD SCHIST</b>   |        |          |        |        |        |        |      |      |      |       | 2         | 3         |                 |
|      |      | Similar to 17.0-22.3m metaseds but more pervasive bio'n and coarser gar-staur. Overall mod to locally strong bio'n in bands 1-3mm, 10% m.g. anhedral garnets, rest is f.g. qtz-fd.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | Gar-bio-staur could be metamorphic and/or hydrothermal alteration, some obvious bio-staur veins to 1cm and garnets to 2cm in qtz veined areas 2-5cm wide. LC gradational over 60cm   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 29.7 | 49.8 | <b>SERICITE-STAUROLITE-GARNET-QTZ-FD SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | Well foliated to schistose, light grey to off-white, ~homog unit probably a meta- felsic tuff layer. Comp'd of 30-40% f.g. sericite mixed with f.g. qtz-fd studded with 5-10% each of f-m.g. staur and m-c.g. garnets, locally up to 20%. No obvious hydrothermal alteration other than a few thin qtz veins.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | <u>31.6</u> : 5cm with 1-2% m.g. equant Asp.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | <u>30.4-35.5</u> : Fault rubble, friable.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | <u>42.0-42.2</u> : 2 syngenetic Py seams with 20-30% Py/1cm.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | <u>42.3</u> : 10cm irregular qtz vein, no sulphides.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | <u>45.2-49.2</u> : Fault rubble, friable. 50% recovery.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | FOLIATION: 39 deg at 38.5m, 43 deg at 43.5m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 49.8 | 72.0 | <b>META-SILTSTONE (BIO-QTZ-FD +/- GARNET SCHIST)</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | Well foliated, only locally schistose near qtz veined intervals with associated sericite alt'n. Varies from a ~plain, light grey unit of 30% f.g. bio in thin folia within a f.g. matrix of qtz-fd to intervals with 40-50% biotite and 5-10% garnets 2-4mm. Local qtz veined/ flooded zones up to 10cm wide assoc'd with c.g. garnets, bio and a few sericitic intervals. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|      |      | FOLIATION: 46 deg at 50.5m, 42 deg at 54m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | 60.0-60.9: Staur-Gar-Qtz-Fd metased.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 61.0-61.8: Staur (40%)-Bio-Qtz-Fd metasilstone.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 61.8-62.2: 50% qtz veins to 10cm, no sulphides.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 62.2-63.0: Ser (60%)-Gar(5-15%)-Qtz-Fd Schist, no sulph or QV.   | 390001 | 62.5     | 63.25  | 0.75   | 86     | 133    |      |      |      |       |           |           |                 |
|              |              | 63.25-63.70: Qtz veined/flooded in 50% of interval, 10% garnets mod sheared with local Chalco-Pyrrhotite seams <1cm. // to foliation.  | 390002 | 63.25    | 63.7   | 0.45   | 264    | 2860   |      | 0.4  | 0.5  |       | 3         | 3         | 5               |
|              |              | 63.7-72.0: Homog, light grey, Bio-Qtz-Fd meta-siltstone, minor garnets. ~8 white bands of Fd-Amp alt'n, one with Cp-Po.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 65.7-65.75: Fd-Amph alt'n with 2-3% Cp and 0.5% Po in irreg veinlets/irreg fractures to 4mm.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>72.0</b>  | <b>81.1</b>  | <b>GARNET-BIOTITE SCHIST with local SERICITE-Qtz-FD SCHIST</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Matrix of 30% f.g. Bio and 70% f.g. Qtz-Fd, spotted with 5-20% anhedral garnets 2-8mm, avg 4-5mm. Looks metamorphic, not hydrothermal. Well foliated, no signif sulphides or veins.    |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Several Ser>>Bio sections at 72.3-73.0m, 73.3m, 76m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | LC gradational into sericite schist.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 39 deg at 76m, 43 deg at 76m, 36 deg at 80.5m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>81.1</b>  | <b>83.9</b>  | <b>SERICITE-GARNET SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Varies from white Sericite (>75%) Schist with minor Qtz-Fd, rare garnets, to more hetero section with 20% c.g. anhedral garnets, 10-20% Bio. No visible Staur, Qtz Veins or Sulphides. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>83.90</b> | <b>86.25</b> | <b>META-SILTSTONE</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Well foliated metasediment with 20-30% f.g. Bio, rest f.g. Qtz-Fd, locally minor garnets, minor thin sericitic layers <1-2cm.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 36 deg.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM  | TO    | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|-------|-------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
| 86.25 | 87.05 | <b>BASALT</b><br>Med green, well foliated, 20% bands of bio'n. Several irreg Qtz veins <2-3cm, no sulph. LC sharp at 31 deg.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 87.05 | 89.95 | <b>META-SILTSTONE, GARNETIFEROUS</b><br>Similar to previous siltstone but with 5-10% garnets 2-6mm, no obvious alt'n or sulphides. LC fairly sharp into alt'd unit below. FOLIATION: 32 deg at 89m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 89.95 | 93.80 | <b>ALTERED BIOTITE-STAUROLITE-GARNET-QTZ-FD SCHIST</b><br>Sudden and dramatic change from the siltstone above into this black to light grey banded unit of hydrothermally alt'd metaseds. Consists of 30-40% black bands 3-10mm composed of massive fg biotite spotted with 10-20% euhedral staurolite crystals 3-7 mm, and minor garnets, cutting the host schist composed of 20% bio folia, 70% Qtz-Fd, minor scattered staur and garnets. Staur is conc'd in or near the Bio bands. No sulphides or QV. FOLIATION: 43 deg at 93m. LC sharp. |        |          |        |        |        |        |      |      |      |       | 5         | 5         |                 |
| 93.8  | 96.3  | <b>BASALT</b><br>As before, med green, f.g., well foliated, ~sharp, wavy contacts, local weak bio'n.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 96.3  | 109.4 | <b>STAUROLITE-BIOTITE-GARNET-QTZ-FD SCHIST</b><br>Similar to previous interval of schist from 89.95-93.8m but now with multiple scattered intervals of modest Cp-Po mineralization assoc'd with Qtz flooding/veining, bio'n, c.g. garnets, etc. One 30cm vein of Bio>Gar>Staur with Cp+Po plus several smaller veins of the same type; veins are ~same as those in the "Romios Copper-Gold Zone". Mineralized zones range from 2cm to  |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | 95cm, most have some qtz veins, up to 40cm, but a few do not.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Local Ser>>Bio intervals <1m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>96.55-96.9</u> : First Cp-Po zone, isolated, flanked by barren schist.   | 390003 | 96.55    | 96.90  | 0.35   | 551    | 2.05%  |      | 7    | 3    |       |           |           | 5               |
|              |              | ~7% Cp, 3% Po as c.g. blebs/veinlets with Qtz,< 2cm wide.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Max 15% Cp/5cm.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>97.7-97.85</u> : 5cm Bio vein with 15% c.g. garnets, 10% Cp, 2% Po.  | 390004 | 97.70    | 97.85  | 0.15   | 1100   | 2.92%  |      | 8    | 1.5  |       | 3         | 3         |                 |
|              |              | <u>97.85-98.45</u> : Schist cut by 6 Bio-Gar alt'n veins <2cm wide with garnets up to 1cm plus local staur. No qtz or sulphides.  | 390005 | 97.85    | 98.45  | 0.6    | 9      | 338    |      | 0    | 0    |       | 2         | 3         |                 |
|              |              | <u>98.45-98.75</u> : Massive vein of black f.g. Biotite 20cm wide with 20-25% c.g. garnets 1-2cm across, 5-10% c.g. Staur up to 6mm, minor chlorite, plus 1-2% Cp over a 5cm interval. Flanked by 5cm massive Po on lower side of the vein. Rocks below are barren. | 390006 | 98.45    | 98.75  | 0.3    | 537    | 2420   |      | 0.7  | 12   |       | 6         | 6         |                 |
|              |              | <u>98.75-100.95</u> : Sericite schist, minor garnets, locally <20% Staur  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>100.95-101.55</u> : Ser Schist + garnets. 20cm of qtz flooding incl 10cm of 30% c.g. garnets, 5% massive Bio, scattered Cp blebs.  | 390007 | 100.95   | 101.55 | 0.6    | 146    | 2630   |      | 0.5  |      |       | 5         | 1         |                 |
|              |              | <u>101.55-102.0</u> : 40cm qtz vein cutting schist. 1st 20cm is barren, rest has 3% Cp, 3% Cp with 10% gar bands. 1cm bio-gar veinlet.  | 390008 | 101.55   | 102.00 | 0.45   | 624    | 6020   |      | 1.5  | 1.5  |       | 1         | 1         | 90%             |
|              |              | <u>102.0-102.4</u> : Continuation of the vein above, ~all qtz vein with 15cm of semi-massive Po, 5cm with 5-10% Cp.   | 390009 | 102.00   | 102.40 | 0.4    | 2670   | 2.06%  |      | 2    |      |       |           |           | 80%             |
|              |              | <u>102.4-106.2</u> : Staur-Bio-Gar Schist with 5-6 qtz veined intervals up to 10cm across with assoc'd massive black Bio, cg Gar, m-c.g. Staur, and minor Cp-Po blebs.  | 390011 | 102.40   | 103.00 | 0.6    | 102    | 1670   |      | 0.2  |      |       | 1         | 1         | 1               |
|              |              |   | 390012 | 103.00   | 104.00 | 1.0    | 16     | 282    |      | 0    |      |       | 2         | 2         |                 |
|              |              |   | 390013 | 104.00   | 104.75 | 0.8    | 293    | 3330   |      | 0.4  | 0.05 |       | 5         | 5         | 4               |
|              |              |   | 390014 | 104.75   | 105.75 | 1.0    | 39     | 1370   |      | 0.2  |      |       | 1         | 1         | 1               |
|              |              |   | 390015 | 105.75   | 106.30 | 0.6    | 119    | 5170   |      | 0.3  | 0.05 |       | 1         | 1         | 2               |
|              |              | <u>106.2-109.4m</u> : Strong bio'n, c.g. Garnets and mod Staur formation throughout with local Chl (in the massive Bio)   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>109.4</b> | <b>167.1</b> | <b>GARNET-STAUROLITE-BIOTITE-QTZ-FD SCHIST &amp; SER. SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Lighter grey meta-siltstone than above, still well foliated, ~wavy, still high % med to c.g. anhedral garnets, 5-15%, only minor bio'n bands. Contains 10-15% staur, 1-3mm, locally 20-30%, plus the  |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | garnets in a f.g. matrix of ~30% bio in thin folia, 0-10% sericite, rest f.g. qtz-fd. No significant hydrothermal alteration evident, just a few scattered Bio-Gar veins <4cm (~1-2% overall). Trace syngenetic Py, Po, rare Asp. Minor Ser>>Bio intervals, generally with 10-20% c.g. garnets but less staur (e.g. 122-125m, 127-128m 140-142m). |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: Avg 46° from 110-131m, 44° at 164m, 40° at 159m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>132.8-134.0</u> : 12 olivine lamprophyre dykes, 7mm to 10cm wide.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>140.5</u> : 5cm olivine lamp dyke.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>145.7</u> : 5cm olivine lamp dyke // to foliation.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>153.2-154.05</u> : Diffuse to closely spaced network of thin, 1-2mm fractures lined with blue serpentine. Alt'n from lamp dyke below.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>154.05-154.35</u> : Olivine lamp dyke with relatively large, serp'd black olivine grains 3-4mm. Multiple irreg intrusive phases.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>156.0-160.8</u> : Tr-0.2% Cp-Py and rare Po, as <1mm thick streaks/micro-veinlets // to foliation. A few qtz veins <2cm flanked by disseminated Cp for ~1cm. Overall very low % Cp.  | 390016 | 159.0    | 160.0  | 1.0    | 27     | 2210   | 0.05 | 0.2  |      |       |           |           |                 |
|              |              | <u>160.8-161.4</u> : Very unusual c.g. Garnet-Quartz vein. UC is a ~  | 390017 | 160.0    | 160.8  | 0.8    | 33     | 3070   | 0.05 | 0.2  |      |       |           |           |                 |
|              |              | sheeted vein for 10cm, then a massive Qtz-Gar comp of 50% cg garnets 1-2cm, and lesser smaller ones, surrounded by white qtz. Minor disuse's Asp as f.g. crystals in the lower 10cm.  | 390018 | 160.8    | 161.4  | 0.6    | 54     | 331    |      | 0.05 |      | 0.05  | 5         |           |                 |
|              |              | <u>161.4-161.65</u> : 2% Cp, 0.2% Asp as streaks and dissem'd grains in the bio-ser-(gar-staur) schist.   | 390019 | 161.4    | 161.7  | 0.3    | 159    | 10300  | 0.05 | 2    |      | 0.2   |           |           |                 |
| <b>167.1</b> | <b>176.2</b> | <b>SERICITE-GARNET-(BIOTITE)-QTZ-FD SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Fairly sudden transition from biotite dominant schist above into this sericite dominant unit. Contains 30-40% f-m.g. sericite, well foliated, ~wavy, with 15-20% c.g. anhedral garnets, avg 3-6mm, 2-15% bio, minor staur in the more bio rich sections.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | Rare local streaks and blebs of Cp assoc'd with a small Qtz Vn.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 46° at 174m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>176.2</b> | <b>178.9</b> | <b>BIOTITE-STAUROLITE-GARNET-(SERICITE)-QTZ-FD SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Back into the more even textured, biotite dominant schist, well foliated, ~straight foliation, with 30-40% f.g. bio in folia <1mm, separated by very f.g. qtz-fd grains and spotted with 5-10% c.g. anhedral garnets 3-20mm, plus 5-10% mg euhedral Staur. LC grades over a few cm into Ser>Bio. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>178.9</b> | <b>190.6</b> | <b>SERICITE-GARNET-BIOTITE QTZ-FD SCHIST</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Variable section of Ser>>Bio schist with up to 30-40% Ser in folia 1-3mm thick, minor local biotite folia, <5-10%, plus 20-30% c.g. garnets which are often lensoid with mica wrapped around them. Minor intervals of Bio>Ser. Trace Py, Po, Cp veinlets, blebs in garnet.                       |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 46° at 185m, 190m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>190.6</b> | <b>191.9</b> | <b>META-SILTSTONE</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Light grey, fairly homogeneous unit, no banding but well foliated. Composed of 30-40% f.g. Bio, rest is f.g. Qtz-Fd and Trace m.g. garnets.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>191.9</b> | <b>194.4</b> | <b>BASALT</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Medium grey-green, well foliated, composed of ~60% f.g. dark green amphibole, 40% feldspar. More foliated and streaky than previous basalts. FOLIATION: 45° @ 192.7m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>194.4</b> | <b>196.4</b> | <b>META-SILTSTONE</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Similar to 190.6-191.9m but locally banded in shades of grey   |        |          |        |        |        |        |      |      |      |       |           |           |                 |



| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | (due to ratio of Bio vs Qtz-Fd). 1% garnets, 1-2mm, Trace Py.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | LC gradational over 10cn into schist. FOLIATION: 46° at 196m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>196.4</b> | <b>208.4</b> | <b>SERICITE-GARNET +/- BIOTITE +/- STAUROLITE QTZ-FD SCHIST</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Mixed section dominated by Ser-Gar schists similar to previous units. 10-20% c.g. garnets, anhedral to subhedral, 3-7mm across, in a sericite dominant schist. Lesser sections with Bio>Ser, usually with 10-20% m.g. Staur. Numerous intervals 10cm to 2m with dissem'd Asp crystals ~1mm across (prob meta'd syngenetic Asp, not hydrothermal but some is remob'd by Qtz vns). 2 zones of qtz flooding, one is 20cm wide with c.g. hydrothermal garnets and 10% Po, another has minor Cp filled fractures over 10cm. No Cp elsewhere just minor Po veinlets <1-2cm. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 45° at 198 and 207m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>201.7-202.3</u> : 1% dissem'd Asp crystals, 1-2mm.   | 390021 | 201.7    | 202.3  | 0.6    | 168    |        |      |      | 0    | 1     | 2         | 2         |                 |
|              |              | <u>205.3-206.0</u> : Bio-Staur-Gar schist with numerous thin Po filled fractures and veinlets in 1-3cm wide zones.  | 390022 | 205.3    | 206.0  | 0.7    | 127    |        |      |      | 3    |       | 1         |           |                 |
|              |              | <u>207.05-207.35</u> : Qtz flooded Bio-Staur-Gar Schist with 7-8cm of 40% c.g. Garnets, 10-15% Po veins & specks in the qtz flood.  | 390023 | 207.05   | 207.35 | 0.3    | 356    |        |      |      | 12   | 2     | 5         |           | 5               |
| <b>208.4</b> | <b>216.0</b> | <b>BIOTITE-GARNET-STAUROLITE-QTZ-FD SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 30-40% f.g. Bio, 50% Qtz-Fd, 10-20% f.g. Staur with 2-5% Gar porphyroblasts up to 8mm. Local Ser rich intervals. From 211 to 216m there are less garnets (0-5%). Staur varies from ~1% to rarely 40%. FOLIATION: 41 deg at 211m, 45 deg at 215m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>216.0</b> | <b>221.2</b> | <b>FELSIC-INTERMEDIATE VOLCANICLASTICS</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Light to med grey, well foliated, ~homog matrix Of 30-40% Ser, rest is f.g. Qtz-Fd. Fairly hard, looks like a dacite but has 1-3% mg garnets and Tr-minor Bio alt'n bands <6mm, one 5cm wide with cg Gar. No Staur, overall low Gar & Bio, and hardness   |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | suggests this is a volcanic. FOLIATION: 43° at 219m.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>221.2</b> | <b>224.8</b> | <b>ULTRAMAFIC AMPHIBOLITE</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Light to med green, weak-mod foliation, little or no banding in this ultramafic unit, composed of 80-90% f-m.g. amphibole with 0-20% dissem'd Bio flakes 1-2mm. Lower 5-10cm is a hydration zone converted to massive Biotite for 1-2cm flanked by a few cm of dissem'd Bio. UC has 20cm of 50% Bio.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>224.8</b> | <b>294.6</b> | <b>META-SILTSTONE</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Light to med grey, mod-well foliated unit composed of 30-40% f.g. Bio in Qtz-Fd matrix with variable but low % m.g. Garnets (0% in ~1/2, ~5% in the other 1/2). Minor Sericite Schist intervals and local Bio-poor, Qtz rich arenaceous intervals. Several bands, 5mm to 3cm wide, of med-dark green amph alt'n. Minor Gar-Bio alt'n bands @ ~ 245m. Banding, possible bedding, varies from nil to well developed in ~1/2 of the unit. Bands/beds are 3mm to 3cm wide (based on % of Bio vs Qtz-Fd. Sericite schist intervals at 263.8-264.7, 275.5-277.4m. Trace Py-Po-(rare Cp) seams <3 mm at 289.2-290m. Trace dissem'd f.g. Py from 293.5-295m. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 2 intervals <1m wide with multiple thin Po seams 2-4mm from 265.4-266.15 and 274.55-275.3m. 2 seams in each interval are 1.5-2cm wide with a milled texture in the 50-70% Po surrounding rock frags. Hard to tell if all seams are syngenetic, probably some are and some are remobilised veinlets. Trace Py @260m, 0.5% Py over 10cm.   | 390024 | 265.40   | 266.15 | 0.75   | 33     | 139    | 0.05 | 0.02 | 1.5  |       |           | 1         |                 |
|              |              |  | 390025 | 274.55   | 275.30 | 0.75   | 233    | 297    | 0.05 | 0.02 | 2    |       |           |           |                 |
|              |              | <u>278.8-279.1</u> : Well developed sericite schist with some 5-10cm intervals of almost pure sericite with assoc'd Qtz Veins 1-2cm. Possible potassic alteration zone rather than just felsic volc?   |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb      | Cu ppm       | % Py          | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|--|--------|----------|--------|--------|-------------|--------------|---------------|------|------|-------|-----------|-----------|-----------------|
|              |              | 279.9-280.1: As above.   |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              | FOLIATION: 45° at 231m, 48° at 247m, 52° at 257, 261m, 45° at 263, 269m, 52° at 274m, 37° at 281m, 44° at 287, 293, 297m.  |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              |  |        |          |        |        |             |              |               |      |      |       |           |           |                 |
| <b>294.6</b> | <b>295.9</b> | <b>SERICITE - (GARNET-QTZ-FD) SCHIST</b>   |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              | First 90cm looks like ~normal Ser-(Gar)-Qtz-Fd Schist but quickly grades into c.g. Ser Schist with 1-2% m-c.g. garnets and a spotted texture of very f.g. grey Ser-Qtz-Fd aggregates 2-4mm within c.g. Sericite forming wavy, anastomosing folia 3-4mm thick. Possibly some hydrothermal alteration involved. One Po seam <3mm wide. LC sharp over <1cm, // to foliation at 44°. |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              |  |        |          |        |        |             |              |               |      |      |       |           |           |                 |
| <b>295.9</b> | <b>299.2</b> | <b>SERICITE SCHIST (FELSIC TUFF)</b>   |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              | Predominantly Sericite-Qtz-Fd Schist with ~80 cm interval(s) of metasiltstone (Bio-Qtz-Fd Schist). Composed of >75% Sericite, 5% Qtz-Fd, 0-10% Biotite. Numerous intervals with 0.5-2% f.g. dissem'd Pyrite along the foliation planes (syngenetic).   |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              | 297.0-297.8: 0.5% f.g. dissem'd Py.  | 390026 | 297.0    | 297.8  | 0.8    | 18          | 66           | 0.5           |      |      |       |           |           |                 |
|              |              | 297.8-298.6: 1% f.g. dissem'd Py incl. a 1cm vein of c.g. Py   | 390027 | 297.8    | 298.6  | 0.8    | 22          | 53           | 1             |      |      |       |           |           |                 |
|              |              | 298.6-299.2: 0.5-1% f.g. dissem'd Py, Trace Po, plus a 2cm vein of hydrothermal Biotite.   | 390028 | 298.6    | 299.2  | 0.6    | 18          | 62           | 0.7           |      | 0.01 |       |           | 3         |                 |
|              |              | LC with the massive sulphides is sharp but irregular/deformed.   |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              |  |        |          |        |        |             |              | <b>Ag ppm</b> |      |      |       |           |           |                 |
| <b>299.2</b> | <b>301.1</b> | <b>MASSIVE SULPHIDE HORIZON</b>  | 390029 | 299.2    | 299.7  | 0.5    | <b>1110</b> | <b>2.57%</b> | <b>81.5</b>   | 6    | 5    |       |           |           |                 |
|              |              | Chalcopyrite-Pyrrhotite-Tourmalinite exhalative horizon. Upper 50cm and lower 80 cm are darker and more mineralized than the central 60cm. Central part is hard, streaky/banded siliceous light grey unit with alternating 60% siliceous layers 3 mm to 5-6 cm thick, and 40% steel grey-black tourmalinite (?) layers generally <5mm and fragments of dismembered layers, plus  | 390031 | 299.7    | 300.3  | 0.6    | <b>1100</b> | <b>1.63%</b> | <b>57.9</b>   | 3    | 1    |       |           |           |                 |
|              |              |  | 390032 | 300.3    | 301.1  | 0.8    | <b>1850</b> | <b>2.76</b>  | <b>67.5</b>   | 6    | 6    |       |           |           |                 |
|              |              |  |        |          |        |        |             |              |               |      |      |       |           |           |                 |
|              |              |  |        |          |        |        |             |              |               |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | diffuse layers of mixed tourmalinite and siliceous bands. Central part has ~2-3% each Chalcopyrite and Tourmalinite.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | The upper 50cm and lower 80cm are much more sulphide-rich, with 6-7% each of Cp & Po. Consists of ~50% Tourmalinite layers, both diffuse and well defined, mixed with siliceous layers, and local irregular networks of Chalco and Po veins, blebs, often displaying a milled texture of ~40% rounded Tourmalinite frags 4-8mm in the Cp-Po matrix. Minor Asp crystals to 3mm in the margins. LC is sharp and abrupt back into the metaseds.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>301.1</b> | <b>335.5</b> | <b>META-SILTSTONE with local Tourmalinite spots</b>   | 390033 | 301.1    | 302.1  | 1      | 2.5    | 148    |      | 0    | 0    |       |           |           |                 |
|              |              | Light grey to grey-brown, well foliated and often thinly bedded f.g. metasediment. Composed of 20-30% f.g. Bio, rest is mainly Qtz-Fd plus rare to minor m.g. Garnets, local f.g. Staurolite-rich layers, and a few more Bio-rich, garnetiferous intervals with 3-4% Gar over 10cm. Has minor unusual tourmalinite (?) spots locally, spots are 1mm to 1cm, ~ovoid, possible dismembered veins (?). Tourm spots start at 307.8m with 1-2% spots <1cm. Spectacular tourmalinite spotted zone @ 308-309.4m with 3-15% spots/dismembered veins (?) up to 1cm wide within a distinctly browner unit with up to 20-30% f.g. Staur concentrated near Tour-Qtz veinlets (alteration effect?). More Tour spots at 314.5m for ~50cm. LC sharp at 60 degrees. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>325-335.5m</u> : Siltstone has little or no garnets, 20-40% Bio, minor Amph-Cc alteration veins/bands.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 45° at 303, 305m, 50° at 306m, 52° at 307m, 47° at 313m, 54° at 316, 319, 322m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              |   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              |   |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM  | TO    | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|-------|-------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
| 335.5 | 342.8 | <b>BASALT</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Light to med green, equigranular, composed of ~60% f.g. amph, 40% very f.g. feldspar. Upper 3-4m is moderately foliated, lower part is ~massive. Minor qtz veins and several Tour-(Asp) veins <1cm, ~dismembered. LC sharp at 70°, UC sharp at 60°, both are higher than the adjacent foliation of 53° and 63° respectively. FOLIATION: 59° at 336m. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 342.8 | 391.8 | <b>META-SILTSTONE</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Same as 325-335.5m. Consists of ~20-30% f.g. Bio, rest is Qtz-Fd. No garnets or staurolite. Several qtz veins <2cm. Trace Po seams <1mm locally. Sericite schist intervals from 362.7-363.3, 365.0-365.4, 385.4-386.4m. FOLIATION: 63° at 344, 348m, 59° at 351, 57° at 358m, 55° at 377 63° at 385m, 54° at 390m.                                   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 391.8 | 395.5 | <b>SERICITE-QTZ-FD SCHIST</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | White, schistose unit composed largely of f.g. sericite, prob >90% in much of it. The lower 1.5m is ~mottled with light grey, streaky patches of very f.g. quartz and Tr-1% Bio. LC sharp at 59°. FOLIATION: 57° at 394m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 395.5 | 399.5 | <b>BASALT</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Light to medium green, f.g., moderately strained and hard to estimate mineral %. Probably ~70% amph, 30% Fd. Possibly a high-Mg basalt (indicated by hi amph % and serpentine coating some fractures). LC sharp but distorted. FOLIATION: 57°.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 399.5 | 413.4 | <b>SERICITE SCHIST (FELSIC ASH TUFF)</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Well foliated to schistose, generally thinly banded (few mm) in  |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | shades of grey (quartzose) and off-white (sericitic). Scattered syngenetic Py seams to 2cm, rare thin Asp seams, and one 75cm zone with Asp plus Po.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | FOLIATION: 56° at 401m, 54° at 403m, 62° at 407m, 52° at 408m, 57° at 411, 413m. BEDDING at 51° at 409.3m.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Several argillaceous metased layers (Bio>Fd-Qtz) up to 15cm thick with sharp contacts.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | 400.2-400.4: Sericite schist with several zones/bands of 30-40% med-c.g. Asp crystals 1-3mm in layers 5-7mm thick, plus a 1-3cm wide irreg network of Po.   | 390034 | 400.2    | 400.4  | 0.2    | 114    |        | 0.1  | 0    | 6    | 3     |           |           |                 |
|              |              | 407.1-408.2: Basalt. F.g., med green, mod foliated, sharp contacts. UC at 54°, LC at 45°.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>413.4</b> | <b>417.3</b> | <b>BASALT</b><br>Typical medium green, mod well foliated basalt. Consists of 60% f-m.g. amph 40% Fd. Local weak Bio'n. UC sharp at 54°, LC sharp at 59°.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>417.3</b> | <b>420.4</b> | <b>FELSIC VOLCANIC</b><br>Similar to unit above 413.4m, not truly schistose anymore, fairly massive usually. Likely a flow or welded tuff. Some strained parts have <1-2mm long siliceous streaks, 2-3%, prob a metamorphic recrystallization texture. Locally 3-4% Fd crystals <2-3mm. Minor thin biotitic siltstone layers. 3cm thick olivine lamprophyre dykes at 419.3 and 419.5m, sub // to foliation. LC gradational over 10cm. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>420.4</b> | <b>421.6</b> | <b>META-SILTSTONE, BIOTITIZED and AMPHIBOLITIZED</b><br>Similar to highly altered portions of the siltstone below 422.1m. Consists of 30-40% f.g. light grey very fg Qtz-Fd layers <3mm, ~50% brown, biotite-rich laminae 2-8mm thick. Rest is f.g. - m.g.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|              |              | dark green amph alteration in thin bands and patches, later than the bio alt'n? Several qtz veins ~1cm, one qv 40cm wide, irregular   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>421.6</b> | <b>422.1</b> | <b>OLIVINE LAMPROPHYRE DYKE</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Typical olivine lamp dyke. >70% ovoid black serpentinized olivine grains 1-3mm surrounded by f-m.g. phlogopite and carbonate. No garnets visible.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>422.1</b> | <b>424.8</b> | <b>META-SILTSTONE</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Light grey, fairly typical meta-siltstone where fresh. 20-30% Bio, rest mainly very fg Qtz-Fd. Minor siliceous layers <few mm thick. ~1/2 is weakly to moderately Bio'd, minor green amphibole. Last 50cm is very Bio'd, >40-50% Biotite. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>424.8</b> | <b>426.7</b> | <b>FELSIC ASH TUFF</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Off-white to light grey, f.g., well foliated felsic volcanic unit. Composed of 20% Ser, rest is Qtz-Fd. UC sharp at 52°, LC obscured by qtz vein. FOLIATION: 45°.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>426.7</b> | <b>430.8</b> | <b>BIOTITIZED BASALT</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Appears to be a f.g. basalt, mod strained which obscures texture. Overprinted by ~20% up to 50% Bio'd bands and minor dark green amph alteration. LC obscured by 5cm Qtz Vein. FOLIATION: 57° at 429m.                                    |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>430.8</b> | <b>433.6</b> | <b>ULTRAMAFIC</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Light green UM, uniform texture, mod well foliated, moderately serpentinized. Probably was an ultramafic amphibolite, now mod serpentinized.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM         | TO           | LITHOLOGICAL DESCRIPTION  | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|--------------|--------------|---|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
| <b>433.6</b> | <b>437.2</b> | <b>BASALT</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | F.g. basalt with variable Bio'n, ~5% to 25%, generally in streaky bands a few mm thick. LC is uncertain over 30cm due to 6 Po layers up to 1cm thick, plus Calcite alt'n, amph alt'n, increased strain, etc.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>436.9-437.2</u> : 6 distinct Po bands 1/2 to 1cm thick with rare blebs of Cp. Local Cc alteration.   | 390035 | 436.9    | 437.2  | 0.3    | 1660   | 1370   |      | 0.01 | 10   |       |           |           |                 |
| <b>437.2</b> | <b>445.2</b> | <b>META-SILTSTONE</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Thinly banded, well foliated, fine to m.g. argillaceous metased. Consists of 20-30% Bio, rest is Qtz-Fd with minor Amph alt'n bands <3mm. Minor Py blebs assoc'd with scattered qtz veins. FOLIATION: 61° at 441m, 58° at 443m.                                     |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>438.8-439.9</u> : Serpentinized Ultramafic.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| <b>445.2</b> | <b>450.4</b> | <b>META-ARENITE</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Much more Qtz-Fd and less Bio (10-15%) than typical siltstone so termed an arenite. Little or no banding, only one minor interval ~20cm of interbedded siltstone. Lower 40cm has 30-40% Po in massive to net-textured zones. FOLIATION: 61° at 449m, 65° at 449.5m. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>449.9-450.3</u> : Po-rich zone with 30-40% Po throughout. Varies from massive to net-textured to disseminated grains.  | 390036 | 449.9    | 450.3  | 0.4    | 105    |        |      |      | 35   |       |           |           |                 |
| <b>450.4</b> | <b>480.5</b> | <b>BASALT</b>   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | Medium grey-green, f.g., mod foliated ~typical basalt composed of ~60:40 Amph:Fd. Bio alteration varies from nil to strong, avg is weak, ~5-10% Bio. From 459-472m Bio'n is weak and there are 5 qtz veins <5cm wide with minor Py-Po, no Cp.                       |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|              |              | <u>453.8-454.6</u> : Interflow sediment, siltstone.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |



| FROM  | TO    | LITHOLOGICAL DESCRIPTION   | Sample | From (m) | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |
|-------|-------|--|--------|----------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|
|       |       | 470.35-470.65: White, intermediate m.g. dyke.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 479.0-479.2: Sheared, Bio'd interval with 2% Po seams.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 477.8: Two Qtz veins <5-10cm wide with minor Cp-Po-Py blebs in a boudin neck.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       |  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 480.5 | 490.6 | <b>GABBRO</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Relatively massive gabbro composed of ~60% equant Amph grains 1-3mm, surrounded by very f.g. Fd. A few minor Qtz veins, no sulphides. LC mod sheared over 20cm.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       |  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
| 490.6 | 513.0 | <b>BASALT</b>  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Weak to mod foliated, Bio'n varies from nil to mod (as zones of 20-30% strongly Bio'd bands ~5mm wide forming a prominent but irreg foliation in these more strained, Bio'd zones). Weak to mod Bio'n overall. Foliation angles varies between fresh and strained areas, often by ~10 deg. |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | Mineralization is minor Po and/or Py seams scattered throughout typically as 1-2% Po-Py elongated streaks <1mm thick along the foliation over 1-2cm widths. One 10-20cm Qtz-Py-(Po) vein.  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | FOLIATION:   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 62° at 491m in non-sheared basalt.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 52° at 493.5, 494.6m in mod strained basalt.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 63° at 498.6m in probable syngenetic Py-Po layering.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       |  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 501.8-501.95: Quartz vein, ~10cm true width, ~irregular, cut by several Py filled frax 3-6mm wide and flanked on upper margin by a 5-8mm semi-massive Py vein. Trace Cp. Sampled Qtz vein and 6cm of adjacent altered and Py veined basalt. Overall ~8-10% Py.                             | 390037 | 501.71   | 501.0  | 0.3    | 121    | 756    | 9    | 0.01 | 1    |       |           |           | 70              |
|       |       |  |        |          |        |        |        |        |      |      |      |       |           |           |                 |
|       |       | 503.43-503.63: Olivine lamprophyre dyke.   |        |          |        |        |        |        |      |      |      |       |           |           |                 |

| FROM | TO    | LITHOLOGICAL DESCRIPTION  | Sample | From (m)         | To (m) | Length | Au ppb | Cu ppm | % Py | % Cp | % Po | % Asp | Gar-Alt'n | Bio alt'n | Qtz Vn/flooding |  |
|------|-------|---|--------|------------------|--------|--------|--------|--------|------|------|------|-------|-----------|-----------|-----------------|--|
|      |       | 503.77-503.9: Olivine lamprophyre dyke.   |        |                  |        |        |        |        |      |      |      |       |           |           |                 |  |
|      |       | 510 - 512.5: Basalt is mod bleached with weak-mod Bio'n.  |        |                  |        |        |        |        |      |      |      |       |           |           |                 |  |
|      |       | 511.3-511.6: Trace to minor dissem'd Asp and one Po vein/<br>tension gash ~5mm wide.  | 390038 | 511.3            | 511.6  | 0.3    | 36     |        |      |      | 0.1  | 0.05  |           |           |                 |  |
|      |       | 511.6-511.73: ~6cm True Width Qtz vein, 11cm core length, with<br>1% scattered Asp blebs 3-7mm and one 2-3mm wide seam along<br>the foliation. Smaller 1 cm wide // vein in lower margin. Contacts<br>sharp at 47deg. Only trace sulphides below this vein. | 390039 | 511.6            | 511.73 | 0.13   | 716    |        |      |      |      | 1     |           | 90%       |                 |  |
|      |       |   |        | REFLEX Dip Tests |        |        |        |        |      |      |      |       |           |           |                 |  |
|      | 513.0 | End Of Hole   |        | Depth            | Dip    | Depth  | Dip    |        |      |      |      |       |           |           |                 |  |
|      |       |   |        | 31m              | -43.7  | 302m   | -37.1  |        |      |      |      |       |           |           |                 |  |
|      |       |   |        | 55m              | -43.9  | 355m   | -35    |        |      |      |      |       |           |           |                 |  |
|      |       |   |        | 100m             | -43.1  | 403m   | -33.2  |        |      |      |      |       |           |           |                 |  |
|      |       |   |        | 151m             | -41.6  | 454m   | -32    |        |      |      |      |       |           |           |                 |  |
|      |       |   |        | 202m             | -40.5  | 502m   | -30.5  |        |      |      |      |       |           |           |                 |  |
|      |       |   |        | 253m             | -38.9  |        |        |        |      |      |      |       |           |           |                 |  |
|      |       |   |        |                  |        |        |        |        |      |      |      |       |           |           |                 |  |

**APPENDIX TWO:**

**ANALYTICAL METHODS AND RESULTS**

## **Analytical Procedures**

All gold assays, copper analyses, whole rock analyses and specialty analyses such as the boron assays were performed on behalf of Romios by Activation Laboratories (ActLabs) in Thunder Bay, Ontario, or in the case of the boron analyses, at their main laboratory in Ancaster, Ontario. ActLabs is a Canadian based company with 21 locations worldwide. They are ISO 17025 (includes ISO 9001 and 9002) accredited and/or certified for Mineral Analysis/Geological Tests (CAN-P-1579) as well as accredited by Health Canada, the Food & Drug Administration (FDA) and the Ontario Ministry of Agriculture and Food (for soil analysis). ActLabs has no relation to Romios.

All gold values were determined by fire assay (ActLabs code 1A2) and copper was determined by ICP analysis (code 1E3 / 1E-Cu). These two techniques and the sample crushing procedure are described below briefly from information on ActLabs website.

### Sample Crushing and Pulverising Code Rx 1:

The samples are crushed such that up to 90% passes through a 2mm sieve, followed by splitting the sample down to 250g which is then pulverized (mild steel) to 95% passing 105 $\mu$ .

### Gold Fire Assay 1A2-ICP:

A 30 g sample of the rock pulp is mixed with fire assay fluxes (borax, soda ash, silica, litharge) and with Ag added as a collector, and the mixture is placed in a fire clay crucible. The mixture is preheated at 850°C, intermediate at 950 °C and finish at 1060 °C; the entire fusion process should last 60 minutes. The crucibles are then removed from the assay furnace and the molten slag (lighter material) is carefully poured from the crucible into a mould, leaving a lead button at the base of the mould. The lead button is then placed in a preheated cupel which absorbs the lead when cupelled at 950°C to recover the Ag (doré bead) + Au. The Ag doré bead is then digested in hot (95°C) HNO<sub>3</sub> + HCl. After cooling for 2 hours the sample solution is analyzed for Au by ICP-OES using a Varian 735 ICP.

### Copper Analysis by 1E3 - Aqua Regia - ICP

0.5 g of rock pulp sample is digested with aqua regia for 2 hours at 95 °C. The sample is cooled and then diluted with deionized water. The samples are then analyzed using an Agilent 700 series ICP for a 38 element suite including copper. QC for the digestion is 15% for each batch, 2 method reagent blanks, 6 *in house* controls, 8 sample duplicates and 5 certified reference materials. An additional 20% QC is performed as part of the instrumental analysis to ensure quality in the areas of instrumental drift.

### Boron Assay by Peroxide Fusion and ICP/MS

Fused samples are diluted and analyzed by Perkin Elmer Sciex ELAN 6000, 6100 or 9000 ICP/MS. Fused blank is run in triplicate for every 22 samples. Controls and standards fused with samples are run after the 22 samples. Fused duplicates are run every 10 samples. Instrument is recalibrated every 44 samples

## ANALYTICAL RESULTS

*(Note: The copper re-assay results for samples 390001-390019 are presented in the final 2 pages of this Appendix, after the first Certificate of Analyses. These re-assay values are used in the drill log and calculations of mineralization for the corresponding intervals)*



Date Submitted: 08-Aug-17  
Invoice No.: A17-08284 (i)  
Invoice Date: 15-Sep-17  
Your Reference:

Romios Gold Resources Inc.  
500 2 Toronto Street  
Toronto Ontario M5C 2B6  
Canada

ATTN: John Biczok

CERTIFICATE OF ANALYSIS

50 Core samples were submitted for analysis.

The following analytical package(s) were requested:

- Code 1A2-Tbay Au - Fire Assay AA (QOP Fire Assay Tbay)
- Code 1E-Cu Tbay Aqua Regia ICP(AQUAGEO)
- Code 1E3-Tbay Aqua Regia ICP(AQUAGEO)

REPORT A17-08284 (i)

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Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

Values which exceed the upper limit should be assayed for accurate numbers.

Values which exceed Upper limit should be assayed for most accurate values.

Footnote: 390020B and 390040A are insufficient samples for 1E-Cu.

CERTIFIED BY:

Emmanuel Esemé , Ph.D.  
Quality Control

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**Date Submitted:** 08-Aug-17  
**Invoice No.:** A17-08284 (i)  
**Invoice Date:** 15-Sep-17  
**Your Reference:**

**Romios Gold Resources Inc.**  
**500 2 Toronto Street**  
**Toronto Ontario M5C 2B6**  
**Canada**

**ATTN: John Biczok**

**CERTIFICATE OF ANALYSIS**

50 Core samples were submitted for analysis.

The following analytical package(s) were requested: Code 4F-B(2ppm) PGNAA

REPORT **A17-08284 (i)**

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Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3

Values which exceed the upper limit should be assayed for accurate numbers.

Values which exceed Upper limit should be assayed for most accurate values.

Footnote: 390020B and 390040A are insufficient samples for 1E-Cu.

CERTIFIED BY:



Emmanuel Esemé , Ph.D.  
Quality Control

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| Analyte Symbol | B         | Au    | Ag     | Cd     | Cu      | Mn     | Mo     | Ni     | Pb     | Zn     | Al     | As     | B      | Ba     | Be     | Bi     | Ca     | Co     | Cr     | Fe     | Ga     | Hg     | K      |
|----------------|-----------|-------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Unit Symbol    | %         | ppb   | ppm    | ppm    | ppm     | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | %      | ppm    | ppm    | %      |
| Lower Limit    | 0.05      | 5     | 0.2    | 0.5    | 1       | 5      | 1      | 1      | 2      | 2      | 0.01   | 2      | 10     | 10     | 0.5    | 2      | 0.01   | 1      | 1      | 0.01   | 10     | 1      | 0.01   |
| Method Code    | FUS-Na2O2 | FA-AA | AR-ICP | AR-ICP | AR-ICP  | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP |
| 390001         |           | 86    |        |        | 133     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390002         |           | 264   |        |        | 2740    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390003         |           | 551   | 33.7   | 2.5    | > 10000 | 656    | < 1    | 29     | 4      | 81     | 3.19   | 23     | < 10   | 20     | < 0.5  | 12     | 0.82   | 25     | 33     | 8.45   | < 10   | 2      | 1.43   |
| 390004         |           | 1100  | 41.4   | 2.0    | > 10000 | 394    | < 1    | 27     | 3      | 30     | 3.16   | 4      | < 10   | 19     | < 0.5  | 19     | 0.29   | 50     | 27     | 10.8   | < 10   | < 1    | 1.74   |
| 390005         |           | 9     |        |        | 326     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390006         |           | 537   | 4.1    | < 0.5  | 2580    | 177    | < 1    | 62     | 5      | 12     | 4.58   | 14     | < 10   | 16     | < 0.5  | 15     | 0.29   | 89     | 34     | 17.0   | < 10   | < 1    | 2.57   |
| 390007         |           | 146   |        |        | 2570    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390008         |           | 624   |        |        | 5870    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390009         |           | 2670  |        |        | > 10000 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390010         |           | 7     |        |        | 65      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390011         |           | 102   |        |        | 1640    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390012         |           | 16    |        |        | 262     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390013         |           | 293   |        |        | 3200    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390014         |           | 39    |        |        | 1370    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390015         |           | 119   |        |        | 5060    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390016         |           | 27    |        |        | 2210    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390017         |           | 33    |        |        | 3000    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390018         |           | 54    |        |        | 331     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390019         |           | 159   |        |        | > 10000 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390020A        |           | 866   |        |        | 158     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390020B        |           | 5     |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390020C        |           | 3610  |        |        | 24      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390021         |           | 168   |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390022         |           | 127   |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390023         |           | 356   |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390024         |           | 33    |        |        | 139     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390025         |           | 233   |        |        | 297     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390026         |           | 18    |        |        | 66      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390027         |           | 22    |        |        | 53      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390028         |           | 18    |        |        | 62      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390029         | 0.93      | 1110  | 81.5   | 2.6    | > 10000 | 297    | < 1    | 31     | 6      | 62     | 0.36   | 185    | 44     | 16     | < 0.5  | 12     | 0.26   | 134    | 21     | 12.3   | < 10   | 2      | 0.15   |
| 390030A        |           | < 5   |        |        | 43      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390030B        |           | 28    |        |        | 3810    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390030C        |           | 858   |        |        | 136     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390031         | 0.79      | 1100  | 57.9   | 2.2    | > 10000 | 365    | < 1    | 14     | 4      | 59     | 0.43   | 183    | 42     | 26     | < 0.5  | 22     | 0.28   | 100    | 26     | 9.79   | < 10   | < 1    | 0.14   |
| 390032         | 1.02      | 1850  | 67.5   | 3.5    | > 10000 | 194    | 6      | 45     | 5      | 70     | 0.23   | 125    | 38     | < 10   | < 0.5  | 14     | 0.20   | 161    | 15     | 11.6   | < 10   | 1      | 0.07   |
| 390033         |           | < 5   | 0.4    | < 0.5  | 148     | 520    | 2      | 16     | < 2    | 51     | 2.34   | 66     | < 10   | 162    | < 0.5  | < 2    | 0.43   | 28     | 27     | 5.18   | < 10   | 1      | 1.22   |
| 390034         |           | 114   |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390035         |           | 1660  |        |        | 1370    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390036         |           | 105   | 0.6    | < 0.5  | 534     | 780    | 3      | 103    | < 2    | 105    | 1.78   | 9      | < 10   | 10     | < 0.5  | < 2    | 0.74   | 110    | 40     | 15.6   | < 10   | < 1    | 0.78   |
| 390037         |           | 121   |        |        | 756     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

| Analyte Symbol | B             | Au    | Ag     | Cd     | Cu     | Mn     | Mo     | Ni     | Pb     | Zn     | Al     | As     | B      | Ba     | Be     | Bi     | Ca     | Co     | Cr     | Fe     | Ga     | Hg     | K      |
|----------------|---------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Unit Symbol    | %             | ppb   | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | %      | ppm    | ppm    | %      |
| Lower Limit    | 0.05          | 5     | 0.2    | 0.5    | 1      | 5      | 1      | 1      | 2      | 2      | 0.01   | 2      | 10     | 10     | 0.5    | 2      | 0.01   | 1      | 1      | 0.01   | 10     | 1      | 0.01   |
| Method Code    | FUS-<br>Na2O2 | FA-AA | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP |
| 390038         |               | 36    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390039         |               | 716   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390040A        |               | < 5   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390040B        |               | 838   |        |        | 133    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390040C        |               | 3570  |        |        | 24     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390000A        |               |       |        |        | 4000   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390000B        |               |       |        |        | 4      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390010A        |               |       |        |        | 4040   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390020D        |               |       |        |        | 3980   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

Results

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| Analyte Symbol | La     | Mg     | Na     | P      | S      | Sb     | Sc     | Sr     | Ti     | Th     | Te     | Tl     | U      | V      | W      | Y      | Zr     | B     | Mass  | Cu      |      |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|---------|------|
| Unit Symbol    | ppm    | %      | %      | %      | %      | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm   | g     | %       |      |
| Lower Limit    | 10     | 0.01   | 0.001  | 0.001  | 0.01   | 2      | 1      | 1      | 0.01   | 20     | 1      | 2      | 10     | 1      | 10     | 1      | 1      | 2     |       | 0.001   |      |
| Method Code    | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | PGNAA | PGNAA | ICP-OES |      |
| 390001         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390002         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390003         | < 10   | 0.77   | 0.189  | 0.103  | 3.55   | 3      | 6      | 7      | 0.18   | < 20   | < 1    | < 2    | < 10   | 58     | < 10   | 10     | 62     |       |       | 2.05    |      |
| 390004         | < 10   | 0.93   | 0.077  | 0.108  | 3.66   | 4      | 6      | 3      | 0.22   | < 20   | < 1    | < 2    | < 10   | 63     | < 10   | 8      | 44     |       |       | 2.92    |      |
| 390005         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390006         | < 10   | 1.26   | 0.095  | 0.122  | 4.34   | 5      | 7      | 5      | 0.28   | < 20   | < 1    | < 2    | < 10   | 98     | < 10   | 7      | 29     |       |       |         |      |
| 390007         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390008         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390009         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         | 2.06 |
| 390010         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390011         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390012         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390013         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390014         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390015         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390016         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390017         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390018         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390019         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         | 1.03 |
| 390020A        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390020B        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390020C        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390021         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390022         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390023         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390024         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390025         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390026         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390027         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390028         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390029         | < 10   | 0.08   | 0.031  | 0.058  | 6.06   | 5      | < 1    | 4      | 0.04   | < 20   | < 1    | < 2    | < 10   | 38     | < 10   | 5      | 14     |       |       | 2.57    |      |
| 390030A        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390030B        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390030C        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390031         | 19     | 0.03   | 0.038  | 0.074  | 3.16   | 4      | 1      | 7      | 0.05   | < 20   | < 1    | < 2    | < 10   | 49     | < 10   | 5      | 12     |       |       | 1.63    |      |
| 390032         | < 10   | 0.05   | 0.023  | 0.067  | 8.97   | 5      | < 1    | 3      | 0.04   | < 20   | < 1    | < 2    | < 10   | 18     | < 10   | 3      | 14     |       |       | 2.76    |      |
| 390033         | 18     | 1.17   | 0.258  | 0.040  | 0.50   | < 2    | 8      | 23     | 0.19   | < 20   | < 1    | < 2    | < 10   | 75     | < 10   | 7      | 13     | 61    | 1.05  |         |      |
| 390034         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390035         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |
| 390036         | 10     | 0.96   | 0.147  | 0.038  | 8.46   | 5      | 9      | 10     | 0.14   | < 20   | < 1    | < 2    | < 10   | 73     | < 10   | 11     | 33     |       |       |         |      |
| 390037         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |      |

| Analyte Symbol | La     | Mg     | Na     | P      | S      | Sb     | Sc     | Sr     | Ti     | Th     | Te     | Tl     | U      | V      | W      | Y      | Zr     | B     | Mass  | Cu      |  |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|---------|--|
| Unit Symbol    | ppm    | %      | %      | %      | %      | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm   | g     | %       |  |
| Lower Limit    | 10     | 0.01   | 0.001  | 0.001  | 0.01   | 2      | 1      | 1      | 0.01   | 20     | 1      | 2      | 10     | 1      | 10     | 1      | 1      | 2     |       | 0.001   |  |
| Method Code    | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | PGNAA | PGNAA | ICP-OES |  |
| 390038         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390039         |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390040A        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390040B        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390040C        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390000A        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390000B        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390010A        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |
| 390020D        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |       |         |  |

| Analyte Symbol  | B         | Au    | Cu     | Ag     | Cd     | Cu     | Mn     | Mo     | Ni     | Pb     | Zn     | Al     | As     | B      | Ba     | Be     | Bi     | Ca     | Co     | Cr     | Fe     | Ga     | Hg     |
|---|-----------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Unit Symbol   | %         | ppb   | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | %      | ppm    | ppm    |
| Lower Limit   | 0.05      | 5     | 1      | 0.2    | 0.5    | 1      | 5      | 1      | 1      | 2      | 2      | 0.01   | 2      | 10     | 10     | 0.5    | 2      | 0.01   | 1      | 1      | 0.01   | 10     | 1      |
| Method Code   | FUS-Na2O2 | FA-AA | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP |
| GXR-1 Meas  | < 0.05    |       | 1180   | 30.1   | 2.4    | 1170   | 829    | 14     | 38     | 611    | 669    | 0.37   | 392    | < 10   | 281    | 0.9    | 1490   | 0.79   | 5      | 6      | 22.2   | < 10   | 4      |
| GXR-1 Cert  | 0.00150   |       | 1110   | 31.0   | 3.30   | 1110   | 852    | 18.0   | 41.0   | 730    | 760    | 3.52   | 427    | 15.0   | 750    | 1.22   | 1380   | 0.960  | 8.20   | 12.0   | 23.6   | 13.8   | 3.90   |
| GXR-1 Meas  |           |       | 1160   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-1 Cert  |           |       | 1110   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-1 Meas  |           |       | 1170   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-1 Cert  |           |       | 1110   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-4 Meas  |           |       | 6400   | 3.8    | < 0.5  | 6240   | 145    | 318    | 39     | 48     | 76     | 2.78   | 106    | < 10   | 35     | 1.3    | 38     | 0.89   | 12     | 55     | 3.20   | 10     | < 1    |
| GXR-4 Cert  |           |       | 6520   | 4.0    | 0.860  | 6520   | 155    | 310    | 42.0   | 52.0   | 73.0   | 7.20   | 98.0   | 4.50   | 1640   | 1.90   | 19.0   | 1.01   | 14.6   | 64.0   | 3.09   | 20.0   | 0.110  |
| GXR-4 Meas  |           |       | 6320   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-4 Cert  |           |       | 6520   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-4 Meas  |           |       | 6240   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-4 Cert  |           |       | 6520   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-6 Meas  |           |       | 73     | 0.3    | 0.6    | 71     | 1060   | 2      | 25     | 93     | 131    | 7.41   | 228    | < 10   | 905    | 0.8    | < 2    | 0.18   | 12     | 80     | 5.66   | 20     | 1      |
| GXR-6 Cert  |           |       | 66.0   | 1.30   | 1.00   | 66.0   | 1010   | 2.40   | 27.0   | 101    | 118    | 17.7   | 330    | 9.80   | 1300   | 1.40   | 0.290  | 0.180  | 13.8   | 96.0   | 5.58   | 35.0   | 0.0680 |
| GXR-6 Meas  |           |       | 70     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-6 Cert  |           |       | 66.0   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-6 Meas  |           |       | 71     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| GXR-6 Cert  |           |       | 66.0   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SY-2 Meas   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SY-2 Cert   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SY-3 Meas   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SY-3 Cert   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| MP-1b Meas  |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| MP-1b Cert  |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| CCU-1d Meas   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| CCU-1d Cert   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Meas | 25.7      |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Cert | 26        |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Meas | 25.8      |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Cert | 26        |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium<br>Tetraborate FX-LT                            | 25.3      |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

| Analyte Symbol                                 | B         | Au    | Cu       | Ag     | Cd     | Cu       | Mn     | Mo     | Ni     | Pb     | Zn     | Al     | As     | B      | Ba     | Be     | Bi     | Ca     | Co     | Cr     | Fe     | Ga     | Hg     |
|--|-----------|-------|----------|--------|--------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Unit Symbol                                    | %         | ppb   | ppm      | ppm    | ppm    | ppm      | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | %      | ppm    | ppm    |
| Lower Limit                                    | 0.05      | 5     | 1        | 0.2    | 0.5    | 1        | 5      | 1      | 1      | 2      | 2      | 0.01   | 2      | 10     | 10     | 0.5    | 2      | 0.01   | 1      | 1      | 0.01   | 10     | 1      |
| Method Code                                    | FUS-Na2O2 | FA-AA | AR-ICP   | AR-ICP | AR-ICP | AR-ICP   | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP |
| 100 lot#220610B Meas                           |           |       |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium Tetraborate FX-LT 100 lot#220610B Cert | 26        |       |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium Tetraborate FX-LT 100 lot#220610B Meas | 25.5      |       |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Lithium Tetraborate FX-LT 100 lot#220610B Cert | 26        |       |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| PTC-1b Meas                                    |           |       |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| PTC-1b Cert                                    |           |       |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SdAR-M2 (U.S.G.S.) Meas                        |           |       | 240      |        | 5.5    | 248      |        | 15     | 47     | 873    | 842    |        |        |        | 145    | 5.2    | < 2    |        | 13     | 10     |        | < 10   | 2      |
| SdAR-M2 (U.S.G.S.) Cert                        |           |       | 236.0000 |        | 5.1    | 236.0000 |        | 13     | 49     | 808    | 760    |        |        |        | 990    | 6.6    | 1.05   |        | 12.4   | 49.6   |        | 17.6   | 1.44   |
| SdAR-M2 (U.S.G.S.) Meas                        |           |       | 236      |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SdAR-M2 (U.S.G.S.) Cert                        |           |       | 236.0000 |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SdAR-M2 (U.S.G.S.) Meas                        |           |       | 248      |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| SdAR-M2 (U.S.G.S.) Cert                        |           |       | 236.0000 |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 218 Meas                                 |           | 519   |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 218 Cert                                 |           | 531   |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 218 Meas                                 |           | 538   |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 218 Cert                                 |           | 531   |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 224 (Fire Assay) Meas                    |           | 2120  |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 224 (Fire Assay) Cert                    |           | 2150  |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 224 (Fire Assay) Meas                    |           | 2150  |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| OREAS 224 (Fire Assay) Cert                    |           | 2150  |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390006 Orig                                    |           |       | 2430     |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390006 Dup                                     |           |       | 2410     |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390010 Orig                                    |           | 6     |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390010 Dup                                     |           | 7     |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390021 Orig                                    |           | 161   |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390021 Dup                                     |           | 174   |          |        |        |          |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

| Analyte Symbol | B         | Au    | Cu     | Ag     | Cd     | Cu     | Mn     | Mo     | Ni     | Pb     | Zn     | Al     | As     | B      | Ba     | Be     | Bi     | Ca     | Co     | Cr     | Fe     | Ga     | Hg     |
|----------------|-----------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Unit Symbol    | %         | ppb   | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | %      | ppm    | ppm    | %      | ppm    | ppm    |
| Lower Limit    | 0.05      | 5     | 1      | 0.2    | 0.5    | 1      | 5      | 1      | 1      | 2      | 2      | 0.01   | 2      | 10     | 10     | 0.5    | 2      | 0.01   | 1      | 1      | 0.01   | 10     | 1      |
| Method Code    | FUS-Na2O2 | FA-AA | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP |
| 390026 Orig    |           |       | 68     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390026 Dup     |           |       | 64     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390028 Orig    |           | 30    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390028 Dup     |           | 5     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390032 Orig    | 1.04      |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390032 Dup     | 1.01      |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390033 Orig    |           |       |        | 0.5    | < 0.5  | 165    | 525    | 2      | 18     | < 2    | 51     | 2.37   | 66     | < 10   | 158    | < 0.5  | < 2    | 0.43   | 30     | 27     | 5.27   | < 10   | 2      |
| 390033 Dup     |           |       |        | 0.4    | < 0.5  | 131    | 515    | 2      | 14     | 3      | 50     | 2.31   | 66     | < 10   | 167    | < 0.5  | < 2    | 0.44   | 27     | 26     | 5.09   | < 10   | 1      |
| 390040B Orig   |           | 844   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| 390040B Dup    |           | 831   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           | < 5   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           | < 5   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           | < 5   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           |       | < 1    | < 0.2  | < 0.5  | < 1    | < 5    | < 1    | < 1    | < 2    | < 2    | < 0.01 | < 2    | < 10   | < 10   | < 0.5  | < 2    | < 0.01 | < 1    | < 1    | < 0.01 | < 10   | < 1    |
| Method Blank   |           |       | 1      | < 0.2  | < 0.5  | 1      | < 5    | < 1    | < 1    | < 2    | 2      | < 0.01 | < 2    | < 10   | < 10   | < 0.5  | < 2    | < 0.01 | < 1    | < 1    | < 0.01 | < 10   | < 1    |
| Method Blank   |           |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           |       | < 1    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           |       | < 1    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   |           |       | < 1    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| Method Blank   | < 0.05    |       |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |

| Analyte Symbol  | K      | La     | Mg     | Na     | P      | S      | Sb     | Sc     | Sr     | Ti     | Th     | Te     | Tl     | U      | V      | W      | Y      | Zr     | B     | Cu      |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|---------|
| Unit Symbol   | %      | ppm    | %      | %      | %      | %      | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm   | %       |
| Lower Limit   | 0.01   | 10     | 0.01   | 0.001  | 0.001  | 0.01   | 2      | 1      | 1      | 0.01   | 20     | 1      | 2      | 10     | 1      | 10     | 1      | 1      | 2     | 0.001   |
| Method Code   | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | PGNAA | ICP-OES |
| GXR-1 Meas  | 0.03   | < 10   | 0.14   | 0.054  | 0.044  | 0.20   | 78     | 1      | 170    | < 0.01 | < 20   | 3      | < 2    | 29     | 75     | 160    | 23     | 13     |       |         |
| GXR-1 Cert  | 0.050  | 7.50   | 0.217  | 0.0520 | 0.0650 | 0.257  | 122    | 1.58   | 275    | 0.036  | 2.44   | 13.0   | 0.390  | 34.9   | 80.0   | 164    | 32.0   | 38.0   |       |         |
| GXR-1 Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-1 Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-1 Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-1 Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-4 Meas  | 1.59   | 42     | 1.56   | 0.136  | 0.116  | 1.76   | 4      | 6      | 67     | 0.13   | < 20   | < 1    | 3      | < 10   | 77     | 12     | 11     | 9      |       |         |
| GXR-4 Cert  | 4.01   | 64.5   | 1.66   | 0.564  | 0.120  | 1.77   | 4.80   | 7.70   | 221    | 0.29   | 22.5   | 0.970  | 3.20   | 6.20   | 87.0   | 30.8   | 14.0   | 186    |       |         |
| GXR-4 Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-4 Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-4 Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-4 Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-6 Meas  | 1.14   | < 10   | 0.43   | 0.090  | 0.033  | 0.02   | 3      | 20     | 29     |        | < 20   | < 1    | < 2    | < 10   | 169    | < 10   | 5      | 6      |       |         |
| GXR-6 Cert  | 1.87   | 13.9   | 0.609  | 0.104  | 0.0350 | 0.0160 | 3.60   | 27.6   | 35.0   |        | 5.30   | 0.0180 | 2.20   | 1.54   | 186    | 1.90   | 14.0   | 110    |       |         |
| GXR-6 Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-6 Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-6 Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| GXR-6 Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| SY-2 Meas   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 93      |
| SY-2 Cert   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 88.0    |
| SY-3 Meas   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 106     |
| SY-3 Cert   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 107     |
| MP-1b Meas  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 3.08    |
| MP-1b Cert  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 3.07    |
| CCU-1d Meas   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 23.9    |
| CCU-1d Cert   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       | 23.93   |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Meas |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Cert |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Meas |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| Lithium<br>Tetraborate FX-LT<br>100 lot#220610B<br>Cert |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |
| Lithium<br>Tetraborate FX-LT                            |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |



| Analyte Symbol                                 | K      | La     | Mg     | Na     | P      | S      | Sb     | Sc     | Sr     | Ti     | Th     | Te     | Tl     | U      | V      | W      | Y      | Zr     | B     | Cu      |      |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|---------|------|
| Unit Symbol                                    | %      | ppm    | %      | %      | %      | %      | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm   | %       |      |
| Lower Limit                                    | 0.01   | 10     | 0.01   | 0.001  | 0.001  | 0.01   | 2      | 1      | 1      | 0.01   | 20     | 1      | 2      | 10     | 1      | 10     | 1      | 1      | 2     | 0.001   |      |
| Method Code                                    | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | PGNAA | ICP-OES |      |
| 100 lot#220610B Meas                           |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| Lithium Tetraborate FX-LT 100 lot#220610B Cert |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| Lithium Tetraborate FX-LT 100 lot#220610B Meas |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| Lithium Tetraborate FX-LT 100 lot#220610B Cert |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| PTC-1b Meas                                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         | 7.88 |
| PTC-1b Cert                                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         | 7.97 |
| SdAR-M2 (U.S.G.S.) Meas                        |        | 43     |        |        |        |        |        | 3      | 22     |        | < 20   |        |        | < 10   | 20     | < 10   | 18     | 7      |       |         |      |
| SdAR-M2 (U.S.G.S.) Cert                        |        | 46.6   |        |        |        |        |        | 4.1    | 144    |        | 14.2   |        |        | 2.53   | 25.2   | 2.8    | 32.7   | 259    |       |         |      |
| SdAR-M2 (U.S.G.S.) Meas                        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| SdAR-M2 (U.S.G.S.) Cert                        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| SdAR-M2 (U.S.G.S.) Meas                        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| SdAR-M2 (U.S.G.S.) Cert                        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 218 Meas                                 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 218 Cert                                 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 218 Meas                                 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 218 Cert                                 |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 224 (Fire Assay) Meas                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 224 (Fire Assay) Cert                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 224 (Fire Assay) Meas                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| OREAS 224 (Fire Assay) Cert                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| 390006 Orig                                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| 390006 Dup                                     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| 390010 Orig                                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| 390010 Dup                                     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| 390021 Orig                                    |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |
| 390021 Dup                                     |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |      |

| Analyte Symbol | K      | La     | Mg     | Na     | P       | S      | Sb     | Sc     | Sr     | Ti     | Th     | Te     | Tl     | U      | V      | W      | Y      | Zr     | B     | Cu      |         |
|----------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|---------|---------|
| Unit Symbol    | %      | ppm    | %      | %      | %       | %      | ppm    | ppm    | ppm    | %      | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm    | ppm   | %       |         |
| Lower Limit    | 0.01   | 10     | 0.01   | 0.001  | 0.001   | 0.01   | 2      | 1      | 1      | 0.01   | 20     | 1      | 2      | 10     | 1      | 10     | 1      | 1      | 2     | 0.001   |         |
| Method Code    | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP  | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | AR-ICP | PGNAA | ICP-OES |         |
| 390026 Orig    |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390026 Dup     |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390028 Orig    |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390028 Dup     |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390032 Orig    |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390032 Dup     |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390033 Orig    | 1.24   | 18     | 1.19   | 0.257  | 0.041   | 0.56   | < 2    | 8      | 23     | 0.19   | < 20   | < 1    | < 2    | < 10   | 76     | < 10   | 7      | 13     |       |         |         |
| 390033 Dup     | 1.20   | 18     | 1.15   | 0.258  | 0.038   | 0.44   | < 2    | 7      | 23     | 0.18   | < 20   | < 1    | < 2    | < 10   | 73     | < 10   | 7      | 13     |       |         |         |
| 390040B Orig   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| 390040B Dup    |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   | < 0.01 | < 10   | < 0.01 | 0.011  | < 0.001 | < 0.01 | < 2    | < 1    | < 1    | < 0.01 | < 20   | < 1    | < 2    | < 10   | < 1    | < 10   | < 1    | < 1    |       |         |         |
| Method Blank   | < 0.01 | < 10   | < 0.01 | 0.012  | < 0.001 | < 0.01 | < 2    | < 1    | < 1    | < 0.01 | < 20   | < 1    | < 2    | < 10   | < 1    | < 10   | < 1    | < 1    |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         | < 0.001 |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |
| Method Blank   |        |        |        |        |         |        |        |        |        |        |        |        |        |        |        |        |        |        |       |         |         |

**Preliminary Report**  
**Activation Laboratories**

Report Number: A17-08284

Report Date: 6/9/2017

| Analyte Symbol  | Cu      |
|-----------------|---------|
| Unit Symbol     | ppm     |
| Detection Limit | 1       |
| Analysis Method | AR-ICP  |
| 390001          | 133     |
| 390002          | 2860    |
| 390003          | > 10000 |
| 390004          | > 10000 |
| 390005          | 338     |
| 390006          | 2420    |
| 390007          | 2630    |
| 390008          | 6020    |
| 390009          | > 10000 |
| 390011          | 1670    |
| 390012          | 282     |
| 390013          | 3330    |
| 390014          | 1370    |
| 390015          | 5170    |
| 390016          | 2210    |
| 390017          | 3070    |
| 390018          | 331     |
| 390019          | > 10000 |
| 390000A         | 4000    |
| 390000B         | 4       |
| 390010A         | 4040    |
| 390020D         | 3980    |

**Preliminary Report**  
**Activation Laboratories**

Report Number: A17-08284

Report Date: 6/9/2017

|                         |          |
|-------------------------|----------|
| Analyte Symbol          | Cu       |
| Unit Symbol             | ppm      |
| Detection Limit         | 1        |
| Analysis Method         | AR-ICP   |
| <hr/>                   |          |
| GXR-1 Meas              | 1180     |
| GXR-1 Cert              | 1110     |
| GXR-1 Meas              | 1160     |
| GXR-1 Cert              | 1110     |
| GXR-4 Meas              | 6400     |
| GXR-4 Cert              | 6520     |
| GXR-4 Meas              | 6320     |
| GXR-4 Cert              | 6520     |
| GXR-6 Meas              | 73       |
| GXR-6 Cert              | 66       |
| GXR-6 Meas              | 70       |
| GXR-6 Cert              | 66       |
| SdAR-M2 (U.S.G.S.) Meas | 240      |
| SdAR-M2 (U.S.G.S.) Cert | 236.0000 |
| SdAR-M2 (U.S.G.S.) Meas | 236      |
| SdAR-M2 (U.S.G.S.) Cert | 236.0000 |
| 390006 Orig             | 2430     |
| 390006 Dup              | 2410     |
| Method Blank            | < 1      |
| Method Blank            | < 1      |
| Method Blank            | < 1      |

**APPENDIX III:**  
**QAQC AND DATA VERIFICATION**

## QUALITY CONTROL PROCEDURES AND RESULTS

### Sample Preparation Methods and Quality Control Measures in the Field

The core was logged by the author under a temporary shelter near the collar of DDH RGR-17-1 at UTM co-ordinates 668674E, 5852701 N (NAD 83) and all core from this program is stored at that site except for a 2 boxes currently stored in Thunder Bay. Core samples were delineated by the author with coloured markers at appropriate intervals (typically <1m wide) based on changes in geology (rock type, alteration style and intensity, amount of mineralization, etc.) and split using a manual core splitter at that site. Typically the worker splitting the core was given one box of core at a time with the sample bags marked and inserted at the beginning of each interval. The author then inspected the split (half) core remaining in the box and the bagged samples once each box was finished. Two boxes of core that contained the most prominent massive sulphide intersection were transported to Thunder Bay by the author at the end of the job and sawn under the author's supervision at a contract core sawing service there.

Samples were placed in plastic sample bags along with their corresponding assay tag and sealed with a zip tie. They were then placed in poly-weave plastic sacks along with blank samples and gold standard samples at regular intervals (typically every tenth sample was a standard or blank). The sacks were then zip-tied by the author and stored at his logging facility in the field until transport by helicopter and float plane from the site to the staging area at Mawley Lake and trucking by the author directly to ActLabs in Thunder Bay.

### Standards and Blanks

In order to ensure that the copper and gold analyses were accurate throughout the program, a number of standard QAQC steps were followed including the insertion of either a blank sample and/or one of two commercial standards in place of every tenth sample in the sample stream. In a typical program either a blank or a standard are inserted on a regular basis, most commonly every tenth sample. During the early stages of this one-hole drill program it became apparent that there would be a relatively small number of samples taken and the number of standards and blanks would be too low for any statistical analysis. Consequently the number of standards and blanks inserted was then increased to three at every tenth sample spot. Every sample number ending in a zero, "0", including those followed by "A", "B" or "C", represents a blank or standard (See assay results presented in Appendix II). These steps are in addition to those followed by the laboratory used (ActLabs in Thunder Bay, Ontario). ActLabs inserts blanks, a variety of standards, and a number of duplicates into the sample stream. No issues were noted with any of the results from the ActLabs QAQC samples. The analytical results of the company's standards and blanks were inspected by the author, the Qualified Person for this project, and no issues of any consequence with the accuracy or reproducibility of the assays were noted. The author is of the opinion that the analytical data is of good quality in terms of precision and reproducibility and sufficient for the purpose of this report.

### Blank Samples

The first step in QAQC is to ensure that there is no gold or copper contamination of the samples in transit between the field and the laboratory or during the crushing and pulverizing stages or any of the subsequent stages of the analyses at the lab. To do this a small boulder of barren granitic gneiss, with a

low content of mafic minerals and no visible sulphides, quartz veins or alteration, was located on site and broken into small pieces. Samples of this material were then inserted into the sample stream as a “blank” at a rate of one for every ten to twenty samples. In addition to the locally sourced granite gneiss, a syenite blank (#390000B) was inserted in the copper re-analyses by ActLabs at the author’s request. In addition to these blank rock samples, the two OREAS 922 standards contain <5ppb Au and can be used as additional blanks for the assaying phase of the process (post crushing). All copper analyses and gold assays of these blanks returned very low values and confirm that there was no contamination of the samples at any stage of the process. Results are presented in the table below. Gold assay results were all 7 ppb Au or lower while copper values ranged from 43 ppm to 65 ppm for the granitic gneiss and 4 ppm for the syenite blank (see Table below).

**Gold and copper assay values of blanks and OREAS 922 standards**

| <b>GRANITIC BLANKS</b>           |               |               |
|----------------------------------|---------------|---------------|
| <b>Sample #</b>                  | <b>Au ppb</b> | <b>Cu ppm</b> |
| <b>390000B</b>                   | -             | <b>4</b>      |
| <b>390010</b>                    | <b>7</b>      | <b>65</b>     |
| <b>390030A</b>                   | < 5           | <b>43</b>     |
| <b>OREAS 922 Copper Standard</b> |               |               |
| <b>390020B</b>                   | < 5           | -             |
| <b>390040A</b>                   | < 5           | -             |

**Gold Standards**

To ensure that the gold assays were accurate, 5 gold standards were inserted in the field at every tenth to twentieth sample position. The two different standards used and the assay results from these standards are as follows:

1. OREAS 220 produced by ORE Research & Exploration Pty Ltd of Australia. The standard was prepared from a blend of Archean greenstone-hosted Wilber Lode primary ore from the Andy Well Gold Mine, barren Cambrian greenstone and barren Quaternary tholeiitic basalt (company website). The certified value of this standard assayed by fire assay is 866 ppb Au and one standard deviation is 20ppb Au. The acceptable range is taken as the certified value (866 ppb) plus or minus two times the standard deviation (2 x 20 = 40 ppb), i.e. between 826 and 906 ppb Au. All three of these standards inserted in the sample stream lie within the acceptable range with a variation of only 0 to 28ppb, or 0-3% (Table 6).
2. OxK 119 produced by RockLabs and composed of basalt and feldspar minerals mixed with finely divided gold. The recommended gold content as determined after multiple assays by RockLabs is 3,604 ppb Au with a standard deviation of 105 ppb. The acceptable range of values is taken as the recommended value plus/minus 2x the standard deviation. The assay results of the two assayed standards of this material are both well within the

acceptable range, varying by only 20-60ppb, or 1-2% from the certified value (see Table below).

**Assay results of the inserted gold standards**

| <b>OREAS 220 - 866 ppb Au</b> |                      | <b>OxK 119 - 3604 ppb Au</b> |                      |
|-------------------------------|----------------------|------------------------------|----------------------|
| <b>Sample #</b>               | <b>Au Result ppb</b> | <b>Sample #</b>              | <b>Au Result ppb</b> |
| <b>390020A</b>                | <b>866</b>           | <b>390020C</b>               | <b>3610</b>          |
| <b>390030C</b>                | <b>858</b>           | -                            | -                    |
| <b>390040B</b>                | <b>838</b>           | <b>390040C</b>               | <b>3570</b>          |
| <b>Variation ppb</b>          | <b>0-28 ppb</b>      | <b>Variation ppb</b>         | <b>20-60</b>         |
| <b>Variation %</b>            | <b>0-3%</b>          | <b>Variation %</b>           | <b>1-2%</b>          |
| <b>Acceptable Range*</b>      | <b>826 - 906</b>     | <b>Acceptable Range*</b>     | <b>3394-3814</b>     |

**\*Certified Value plus  
2 x Std Dev**

The assay results from the five gold standards inserted in the sample stream, along with the assay results of the 3 granitic blanks and two copper standards, indicate that there has been no gold contamination during the sampling, transporting or assaying process and that the assay results can be taken as accurate.

**Copper Standard**

To ensure that the copper analyses were accurate, copper standards were inserted into the sequence of core samples analysed for copper, originally as samples 390020B, 390030B and 390040A. Even though two of the commercially prepared standards were combined into one sample bag, the lab reported after the initial analyses were completed that there was not enough material in two of these standard samples to analyse both gold and copper.

Consequently, the first 18 samples were re-analysed for copper with new standards inserted.

The copper standard used in this program was CZN-4, in the end four of these standards are distributed amongst the 29 samples analyzed for copper. Standard CZN-4 is produced by CANMET Mining and Mineral Sciences Laboratories of Ottawa, Canada. This material is a zinc sulphide flotation concentrate donated by Xstrata Copper Canada Division, Kidd Metallurgical Site, Timmins, Ontario, Canada. The mineral species include: sphalerite (90.6%), pyrite (4.1 %), pyrrhotite (3.3%), iron oxides (0.5%), quartz (0.5%), chalcopyrite (0.3%), various other silicates (0.2%), ankerite (0.1 %), arsenopyrite, cassiterite, chlorite and galena (all at 0.1%). The accepted, certified copper value for this standard is 4030 ppm Cu and the standard deviation is given as 100 ppm (information taken from CANMET website). Consequently the acceptable range of analytical values (certified value +/- 2 times the standard deviation) is 3830 to 4230 ppm Cu.

The copper analyses of the four CZN-4 standards are listed in the Table below. Three of the four results are within 1% of the certified value of 4030 ppm Cu and well within the acceptable range. Only sample 390030B is slightly below the acceptable range and 5% below the certified value. Although not ideal, this latter result is of little consequence.



**Analytical results of copper standard CZN-4**

| <b>CZN-4 STANDARD</b>   |                                 |                      |                    |
|-------------------------|---------------------------------|----------------------|--------------------|
| <b>Sample #</b>         | <b>Analytical Result Cu ppm</b> | <b>Variation ppm</b> | <b>Variation %</b> |
| <b>390000A</b>          | <b>4000</b>                     | <b>-30</b>           | <b>1%</b>          |
| <b>390010A</b>          | <b>4040</b>                     | <b>+40</b>           | <b>1%</b>          |
| <b>390020D</b>          | <b>3980</b>                     | <b>-50</b>           | <b>1%</b>          |
| <b>390030B</b>          | <b>3810</b>                     | <b>-220</b>          | <b>5%</b>          |
| <b>Acceptable Range</b> | <b>3830 to 4230 ppm Cu</b>      |                      |                    |
| <b>Certified Value</b>  | <b>4030 ppm Cu</b>              |                      |                    |

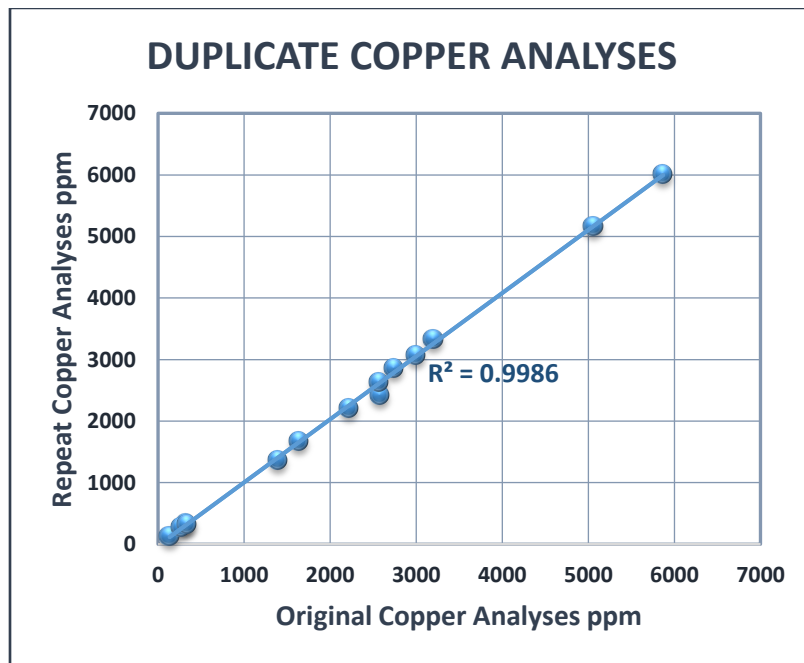
**Duplicate Analyses**

As an additional check on the accuracy of the analytical results, a series of duplicate analyses is commonly undertaken. In the case of the gold assays, the number of samples taken that were likely to contain significantly elevated levels of gold appeared to be low and therefore no duplicates were considered necessary at the sampling stage in this grass-roots drill program. This assumption was confirmed by the number of gold assays >500ppb returned being only ten and the number >1,000 ppb Au being only six. In addition, the accuracy of the inserted standard's assay results was very good, consequently no company duplicate assays for gold were deemed necessary after the initial assays stage (the correlation of the lab duplicates with the original analyses was excellent, see section below). In terms of the copper analyses, two of the standards inserted in the first half of the sample stream turned out to be too small for the lab to conduct both gold and copper analyses (even though they were two times the size of the single commercial standard supplied), consequently there was a need to re-analyze the first 19 samples with new copper standards inserted. This re-analysis also provided an opportunity to compare duplicate copper analyses. The results of the original and repeat analyses are listed below in the Table below and charted in the Figure below (minus samples that contained >10,000 ppm Cu and were subsequently assayed).

The correlation between results from the original and repeat copper analyses is excellent with a correlation coefficient of 0.9986 and there is no obvious bias evident on the graph towards a higher or lower value in the repeat analyses with respect to the overall amount of copper (see Figure below). The individual results are listed in the Table below. The average variance between the original and repeat analyses is only -1% with most values typically <4% and only two outliers beyond that at +6% and -8%.

**Table 1: Comparison of Original and Repeat Copper Analyses**

| Sample Number         | Original Copper Value | Copper Re-Analysis | Variance ppm      | Variance % |
|-----------------------|-----------------------|--------------------|-------------------|------------|
| 390001                | 135                   | 133                | 2                 | 1%         |
| 390002                | 2740                  | 2860               | -120              | -4%        |
| 390005                | 326                   | 338                | -12               | -4%        |
| 390006                | 2580                  | 2420               | 160               | 6%         |
| 390007                | 2570                  | 2630               | -60               | -2%        |
| 390008                | 5870                  | 6020               | -150              | -3%        |
| 390011                | 1640                  | 1670               | -30               | -2%        |
| 390012                | 262                   | 282                | -20               | -8%        |
| 390013                | 3200                  | 3330               | -130              | -4%        |
| 390014                | 1390                  | 1370               | 20                | 1%         |
| 390015                | 5060                  | 5170               | -110              | -2%        |
| 390016                | 2220                  | 2210               | 10                | 0%         |
| 390017                | 3000                  | 3070               | -70               | -2%        |
| 390018                | 338                   | 331                | 7                 | 2%         |
| <b>Range</b>          |                       |                    | <b>-8% to +6%</b> |            |
| <b>Avg Variance %</b> |                       |                    | <b>-1%</b>        |            |



**Scatter-plot comparison of copper values from duplicate analyses**

### **ActLabs Standards, Blanks and Duplicates**

In addition to the standards, blanks and duplicates inserted by Romios, ActLabs also inserted a variety of their own standards (8) into the sample stream as well as five blanks and six duplicates (see Table below). Results of the blanks were all excellent, at or below detection limits. Duplicate results were somewhat variable due to the generally low grades of most of the samples re-analyzed (e.g. the trivial 0.1 ppm difference between 0.5 and 0.4 ppm Ag is quite high in % terms: 25%). Gold standard assays were all excellent, within 2% of the certified value. Copper standards also returned good results, within 4 to 8% of the accepted value. Silver values for 2 of the 3 samples were very good, 3-5% variation from the accepted value and the 3<sup>rd</sup> sample was too low to give a meaningful variation number.

### **Security**

All samples were prepared and stored at the author's remote logging set-up in the forest near DDH RGR-17-1. Samples were bagged and tied by the author and placed in plastic sacks which were zip-tied before being transported by helicopter and float plane under the author's watch to the staging area at Mawley Lake. The samples was transported by pickup truck driven by the author from Mawley Lake to ActLabs in Thunder Bay.

**Analytical results of ActLabs standards, blanks and duplicates**

| Analyte Symbol              | Au    | Au   | Cu     | Cu   | Ag     | Ag   |
|-----------------------------|-------|--|--------|--|--------|--|
| Unit Symbol                 | ppb   | % Variation from Certified or Duplicate Result | ppm    | % Variation from Certified or Duplicate Result | ppm    | % Variation from Certified or Duplicate Result |
| Detection Limit             | 5     |  | 1      |  | 0.2    |  |
| Analysis Method             | FA-AA |  | AR-ICP |  | AR-ICP |  |
| GXR-1 Meas                  |       |  | 1170   | 5%   | 30.1   | -3%  |
| GXR-1 Cert                  |       |  | 1110   |  | 31     |  |
| GXR-4 Meas                  |       |  | 6240   | -4%  | 3.8    | -5%  |
| GXR-4 Cert                  |       |  | 6520   |  | 4      |  |
| GXR-6 Meas                  |       |  | 71     | 8%   | 0.3    | -77%   |
| GXR-6 Cert                  |       |  | 66     |  | 1.3    |  |
| SdAR-M2 (U.S.G.S.) Meas     |       |  | 248    | 5%   |        |  |
| SdAR-M2 (U.S.G.S.) Cert     |       |  | 236    |  |        |  |
| OREAS 218 Meas              | 519   | -1%  |        |  |        |  |
| OREAS 218 Cert              | 525   |  |        |  |        |  |
| OREAS 218 Meas              | 538   | 2%   |        |  |        |  |
| OREAS 218 Cert              | 525   |  |        |  |        |  |
| OREAS 224 (Fire Assay) Meas | 2120  | -1%  |        |  |        |  |
| OREAS 224 (Fire Assay) Cert | 2150  |  |        |  |        |  |
| OREAS 224 (Fire Assay) Meas | 2150  | 0%   |        |  |        |  |
| OREAS 224 (Fire Assay) Cert | 2150  |  |        |  |        |  |
| 390010 Orig                 | 6     | -14%   |        |  |        |  |
| 390010 Dup                  | 7     |  |        |  |        |  |
| 390021 Orig                 | 161   | -7%  |        |  |        |  |
| 390021 Dup                  | 174   |  |        |  |        |  |
| 390026 Orig                 |       |  | 68     | 6%   |        |  |
| 390026 Dup                  |       |  | 64     |  |        |  |
| 390028 Orig                 | 30    | 500%   |        |  |        |  |
| 390028 Dup                  | 5     |  |        |  |        |  |
| 390033 Orig                 |       |  | 165    | 26%  | 0.5    | 25%  |
| 390033 Dup                  |       |  | 131    |  | 0.4    |  |
| 390040B Orig                | 844   | 2%   |        |  |        |  |
| 390040B Dup                 | 831   |  |        |  |        |  |
| Method Blank                | < 5   |  |        |  |        |  |
| Method Blank                | < 5   |  |        |  |        |  |
| Method Blank                | < 5   |  |        |  |        |  |
| Method Blank                |       |  | < 1    |  | < 0.2  |  |
| Method Blank                |       |  | 1      |  | < 0.2  |  |