



Annual Technical Report Exploration Licence 29689 "Copper Queen - Virginia"

For the period: 20th August 2013 – 19th August 2014 (Year 1)

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1.0 Summary

Exploration Licence 29689 "Copper Queen - Virginia" is located approximately 100 km northeast of Alice Springs. Vehicle access into the area is reasonable, via the Stuart Highway and Plenty Highway to Mt Riddock Station and then by station tracks.

During the reporting period Core Exploration began its exploration program on EL29689. Core has two exploration models which it is actively exploring within the tenement. EL29689 covers part of the Aileron Province as well as part of the Irindina Province and their contact. Core believes that the Proterozoic Aileron Province is prospective for Cu-Au mineralization, possibly with iron oxide copper gold (IOCG) affinities, whilst the Neoproterozoic to Cambrian aged Irindina Province is a highly deformed and amphibolite to granulite grade metamorphosed province which has recently been found to be prospective for copper-nickel-cobalt. The Riddock Amphibolite is a deformed amphibolite to gabbro and is an extensive unit within the Irindina Province which hosts copper-cobalt mineralization at Mithril Resources Basal Deposit. Core believes that the outcropping Riddick Amphibolite Member within EL29689 is under explored for base metals within EL29689.

Within the EL29689, Core Exploration has investigated the Copper Queen, Copper King, Skippy Tail, MR3 and Copper Mogul Prospects targeting copper-gold mineralisation within the Aileron Province, as well as the Virginia and Selins copper prospects within the Riddock Amphibolite of the Irindina Province. This work has focused on expanding on the exploration completed by Tanami Gold in the early 2000's.

Exploration activities completed within the tenure during the reporting period involved the collection of fourty-three (43) rock chip samples, predominantly from the known prospects listed above (Figure 1.1). Core also undertook Induced Polarisation (IP) geophysical surveying at the Virginia and Copper Queen Prospects (Figure 1.1). Chargeable features have been defined in the IP data and are interpreted to be orientated parallel to measured dipping mineralisation bearing outcrops, leading to the interpretation that the chargeable feature may represent disseminated sulphides. This interpretation forms the target for drilling programs proposed by Core at the Virginia and Copper Queen Prospects planned for early 2015. Core has submitted a Mine Management Plan (MMP) covering the Virginia and Copper Queen Prospects for its proposed first drilling phase within EL29689.



Figure 1.1 Exploration Index Map

2.0 Introduction

This report details first year exploration activities completed by Core Exploration Ltd within EL29689 "Copper Queen - Virginia". The tenement is owned and operated by Core Exploration through its 100% subsidiary DBL Blues Pty Ltd. The tenement is located approximately 110 kilometres northeast of Alice Springs, midway between the Harts Range and Hale River. Light vehicle travel time to the project area is just under three hours from the township of Alice Springs (Figure 2.1) via the Stuart Highway and Plenty Highway to Mt Riddock Station and then by station tracks.



Figure 2.1 Location Map of EL 29689

Vehicle access within the tenement is limited, the general area is hilly with only a few vehicle tracks available. The climate is typical of central Australia, hot summers and mild winters. Due to seasonal rains, much of the area is overgrown inhibiting detailed ground exploration activities and access, and the rivers are prone to flooding during heavy rainfalls over the summer. Accommodation can be found at Old Ambalindum Station (approximate one hour drive).

3.0 Geology and Mineralisation

EL 29689 covers both the Proterozoic Aileron Province and the Neoproterozoic Irindina Province and there contact in the Central Arunta Region. The Aileron Province rocks mostly comprise variably metamorphosed sediments, volcanics, calcsilicates, amphibolites and granite (Figure 3.1). Detailed geology of the Aileron Province is covered by Murrell (1989)

and Zhao & Cooper (1992).

The Irindina Province is a Neoproterozoic to Cambrian aged province that has been highly metamorphosed and multiply deformed by the Larapinta Event and the Alice Springs Orogeny. The bulk of the units within the Irindina Province are interpreted as forming the Harts Range Metamorphic Complex which includes Irindina Gniess (which includes the Naringa Calcareous Member, the Stanovos Gneiss Member and the Riddock Amphibolite) and the stratigraphically overlying Brady Gneiss (Maidment 2005). The Virginia Prospect is interpreted to be within the Riddock Amphibolite. The Riddock Amphibolite is described as a variably deformed metagabbro or metadolerite, interlayered with layered, quartz rich amphibolite, metapsammopelitic rock, and minor marble calc-silicate rock and quartzo-feldspathic gneiss (Scrimgeour IR, 2013). It is also interpreted to be interlayered with the Irindina Gneiss in places.



Figure 3.1 Extract from Alice Springs 1:250,000 Geology

Core has studied the recent investigations undertaken by Geoscience Australia (GA) and the Geological Survey of the Northern Territory, in conjunction with other explorers in the region, all of whom suggest Iron Oxide Copper Gold (IOCG) affinities can be attributed to the Aileron Province, making it a newly identified IOCG terrain.

This recently suggested IOCG terrain represents a newly-recognised Proterozoic copper – gold province characterised by a long belt of structurally deformed granite and sedimentary sequences that contain variable amounts of quartz veining, strong iron and fluorite alteration, and outcropping copper- silver- gold mineralisation.

The Irindina Province has become an area of greater interest for mineral exploration in the last decade due to some recent discoveries by exploration companies. Mithril Resources (MTH) have identified a number of Cu-Co and Cu-Ni prospects within the Irindina Province

including at Basil where an inferred resource of 26.5 Mt @ 0.57 % Cu, 0.05% Co at a 0.3% Cu cut off was identified (MTH ASX release 21-03-2012). Studies of the Basil Cu-Co deposit (Sharrad et al., 2013) suggest a volcanic – exhalative (VHMS) on the seafloor emplacement history for the deposit which was metamorphosed by the Ordovician Larapinta Event, making it a metamorphosed VHMS style deposit hosted within the Riddock Amphibolite.

Within EL29689, a number of existing prospects were identified when Core was granted the tenement. Copper Queen, Copper King, Skippy Tail and Copper Mogul had been previously identified and reconnaissance drill tested by Tanami Gold in the early 2000's. These prospects are all located within the Aileron Province within the Strangways Metamorphic Complex. The Virginia and Selins Prospects were also identified as historic copper prospects which have never been drill tested, these two prospects are hosted in the Riddock Amphibolite of the Irindina Province (Figure 3.1).

4.0 Tenure

EL29689 was granted on the 20th August 2013 and overlies pastoral lease PPL 989 (Mt Riddock) (Table 4.1). Core Exploration 100% holds the tenement through its wholly owned subsidiary DBL Blues (whom the tenement is held under).

Tenement	Owner	Date Granted	Tenure	Size	Rent Year 1	Expenditure Commitment
EL 29689	Core Exploration (DBL Blues)	20/8/2013	6 Years	99 blocks	\$3,643	\$41,000

 Table 4.1: Tenement Summary

5.0 Previous Exploration

The earliest modern exploration in the area was conducted on EL346 by Russgar Minerals NL during the early 1970's. The work included geological mapping and extensive rock chip sampling for base metals and gold. The majority of the work was concentrated on the Oonagalabi prospect which had been discovered in the 1930's.

Kinex held EL1337 over the area between 1977 and 1983. Geopeko, Amoco Minerals and Pan D'Or Mining farmed into the tenement at various times. Most of the work was concentrated on the Oonagalabi prospect where geophysical surveys and drilling were carried out.

White Industries and BHP Minerals jointly explored EL 2648 between 1981 and 1984 primarily for diamond. Stream sediment samples were collected and the silt fraction was analysed for base metals. No significant anomalous values were found.

Astron Resources carried out a heavy mineral survey over EL4462. The aim of the survey was to determine if gold or gahnite (zinc spinel) were present in the stream sediments. Gahnite was found in a number of the samples and may indicate the presence of Oonagalabi style mineralisation. No further work was done.

Clarence River Finance Group held the ground under EL 6940 and EL 9420 from 1990 to 2000. They are also the current holders of the mining lease over the Oonagalabi prospect. Exploration was mainly conducted for industrial minerals (garnet). Some minor exploration

work was done on the Oonagalabi prospect.

Tanami Gold explored the area under EL10078 and EL22917 between 2001 and 2006. Soil and rock chip sampling, RAB drilling and a hyperspectral airborne survey (Hymap) were completed. Unfortunately these ELs were part of a project group for a number of years and the group annual reports were not included in the compilation. Work was completed at the Virginia Prospect which was described as "a stratiform copper horizon over 1 km strike hosted by a 3-5 m thick leucocratic garnet gneiss band within mafic gneisses" of the Riddoch Amphibolite. Rock chip sampling of the malachite stained rocks returned values in the 1-5% Cu range. Soil sampling showed a strong copper anomaly extending along strike from the main prospect. The prospect does not appear to have been drilled.

The Copper King prospect was identified from regional 400x40 soil traverses. An area of abundant malachite staining measuring 10x30m returned rock chip assays <1% Cu with a peak gold value of 38.5 g/t Au. Two other prospects lie close to Copper King – Skippy Hole and MR3. Fifty one RAB holes were drilled on these prospects. Narrow zones of anomalous copper were intersected with the best result being 3m at 0.25% Cu from 6m in hole MRB029 at Copper King.

The CSIRO undertook some investigations of the Oonagalabi prospect in 2004, and showed that the mineralisation had a distinct geochemical signature – Au-Bi-Cd-Cu-Pb-Sn-W-Zn.

Most of the previous exploration work conducted in this area has been concentrated on the Oonagalabi Prospect. The mineralisation at Oonagalabi is stratabound in a distinct package of rocks which also trends southwest into Core's adjoining tenement EL 29280. Primary mineralisation consists of chalcopyrite and sphalerite patches, disseminations and veinlets in calc-silicate rocks, minor pyrrhotite, pyrite and galena are also found. The mineralisation is thought to have either a syngenetic volcanogenic or epigenetic origin. Soil sampling should identify any outcropping zones of mineralisation. Blind zones of mineralisation may be detectable by IP or EM surveys.

6.0 Year 1 Work Summary & Discussion

During the first year of tenure, Core Exploration completed the following exploration activities within EL 29689:

- Historical literature and data review
- Reconnaissance field trips to meet stakeholders, assess access tracks, rock chip sample existing prospects and target lithologies/stratigraphy with mapping observations. A total of forty three (43) rock chip samples were collected and assayed from within EL29689 (Figure 6.1).
- Induced Polarisation (IP) surveys were completed at the Copper Queen and Virginia Prospects. Two IP lines were completed at each prospect, with lines between 1-1.5km long (Figure 6.1). The lines of IP identified chargeable bodies underneath outcropping mineralisation at the Virginia Prospect, which dip parallel with the measured dip of surface outcrops at depth. This has lead to the interpretation that the chargeable feature may represent the observed surface mineralisation (disseminated malachite) at depth, represented by chargeable disseminated copper sulphides (Figure 6.2).
- Mine Management Plans (MMP) for proposed drill program s at both the Virginia and Copper Queen Prospects have been submitted to the NT government department for consideration.



Figure 6.1: IP chargeability sections underneath locations of copper bearing rock chips from Copper Queen Prospect



Figure 6.2: IP chargeability sections underneath outcropping copper bearing rock chips at the Virginia Prospect

Reconnaissance Rock Chip Sampling

Core's exploration work has focused on both the Aileron Province and the Irindina Province. Core undertook a number of reconnaissance field trips to EL29689 in its first year of tenure visiting existing prospects at Copper Queen, Copper King, Skippy Tail, Copper Hill, MR3 and Copper Mogul all of which are within the Aileron Province, as well as Virginia, Selins and unnamed ultramfics from within the Irindina Province. A total of 43 rock chip samples were collected and assayed from EL29689 in this first year of tenure (Appendix 1).

<u>Induced Polarisation (IP) Geophysical Surveying – Virginia and Copper</u> <u>Queen Prospects</u>

Core contracted Search Geophysics to complete a dipole-dipole Induced Polarisation (IP) survey at the Virginia and Copper Queen Prospects. Each survey was composed of two ~1-1.2km lines orientated perpendicular to known east-west outcropping mineralisation at both Virginia and Copper Queen (Appendix 2). The two lines of IP completed at the Virginia Prospect identified chargeable bodies underneath outcropping copper mineralisation. The anomaly appears to dip parallel with the measured dip of surface outcropping disseminated malachite mineralised layer, and could host disseminated copper sulphides at depth (Figure 6.2).

At the Copper Queen Prospect, the eastern of the two lines of IP collected gave a chargeable feature at depth coincident with the interpreted plunge of surface mineralisation (i.e. dipping ~50 to 60 degrees to the north). However, the IP line located west of the mineralised outcrop gave less clear results, with chargeable features which are less easily distinguishable in thickness and orientation at depth (Figure 6.1).

Reconnaissance Field Trip Notes

Notes from the field geologist (report author) from the reconnaissance field trip in October 2013 are as follows;

Virginia Prospect (EL 29689) (High priority)

- Good access along existing rarely used station tracks to get to Virginia Prospect.
- Where the road has been made cuts across the strike of the main horizon that hosts malachite at Virginia, common malachite in road side rubble. A historical costean has been put in about 100m east of road across Virginia horizon, malachite and azurite on withered fracture and bedding plains within it.
- Geology at Virginia is dominated by shallowly dipping to the N-NW relatively thin <5m mafic and felsic? Folded layers. One of these layers contains secondary copper minerals. The mineralised unit is a c.g garnet + quartz unit, which is a low deformation highly metamorphic unit, late stage metamorphism (?) than strikes approximately east/west. Layer parallel malachite and azurite are found at Virginia once again associated with c.g to extremely coarse grained garnet in a quartz rich metamorphic unit, this is on a different mineralised horizon on a quite steep portion of the hill at Virginia.
- 14 rock chip samples were collected and assayed from the Virginia Prospect in the reporting period with 14.4 % Cu (sample 1192) the best result, but the mineralised layer assayed 0.5-14% Cu with an average ~3 % Cu. No significant Au was detected from Virginia.

• Recommendations/Conclusions:

1) Lines of geophysics can be completed at Virginia (IP), best orientation would be slightly oblique to north 160-000 degrees.

2) The more local scale work that can be done at Virginia the better before drilling, best done post geophysics.

3) Extensive outcrop in the region must be prospective for further outcropping mineralised unit, mapping lithologies at Virginia and broader area would be effective.

4) Any drilling would involve earthworks in the form a repairing existing tracks and cutting in tracks to get to ideal drill locations, would be quite a big job.

Copper Queen Prospect (moderate – high priority)

- Reasonable drilling rig accessible tracks lead to the Copper Queen Prospect (would require repair). Previous drilling tracks within the prospect are still usable and run parallel with the targeted mineralised unit for approximately 20m up hill, with the dip of the mineralised unit taking it underneath the track, where existing drilling was undertaken.
- A mineralised 2-4m red garnet +- magnetite + quartz + malachite unit, (high Ca in innov-x consistent with it being a Calc-silicate) strikes east-west and dips to the north. This is a consistent mineralised unit.
- Eight (8) rock chip samples were collected and assayed in the reporting period from Copper Queen. Best Au g/t graded 20.8 g/t Au (sample 1214) and a best copper result of 12.7% Cu (sample 1214), with ranges of 380ppm – 12% Cu with an average of ~3% copper.
- Recommendations/Conclusions:
 1) Propose to run north-south IP lines over mineralised zone.
 2) Existing drilling does seem to have drilled out the target based on its outcropping expression. However, geophysics may indicate that they missed a consistent

geophysical target at depth.

Copper Queen West (low priority)

• Evidence of copper in a relatively consistent east-west trend. Main sample sites are malachite staining in a course grained quartz + feldspar + biotite pegmatite/granite, with the other samples visited representing low tenure malachite scraps within the dominant unit.

Copper Hill (low priority)

 Occasional malachite mainly restricted to float. Heavily folded area, amphibolites which are sometimes magnetic common along with course grained banded quartz + epidote + iron oxide ± garnet units (calc-silicates?). No consistent association between magnetic units and copper.

Copper Mogul West (low-moderate priority)

• No road found into this prospect in reconnaissance field trip. Mineralised outcrop is on the southern side of a low-moderate hill, dipping back into the hill. A historical

costean has been put in at this location that cross cuts the mineralised unit, not much evidence of mineralisation found within costean.

- Within a micaceous high lusture unit (schist) which varies from 2-10m thick are thin 1-3mm wide malachite bands which are layer parallel with the foliation plains within the unit. Unit strike east/west and dips between 50-70 degrees to the north. Coarse grained epidote + quartz ± iron oxides non mineralised unit in contact with unit to north (calc-silicate?)
- Recommendations/Conclusions:
 - 1) Mineralisation is consistent within unit rather than a surficial staining. Therefore, there is some scope for low to moderate copper grades in drilling. Ground-based geophysics may detectable disseminated sulphides at depth within the prospect

Copper King - Skippy Tail - Skippy Hole

- The Copper King area (including adjacent Skippy areas) is the most accessible Prospect within the tenure and contains malachite often associated with magnetite in a coarse grained skarn like mineral assemblage within sheared micaceous gneisses. The mineralised zones strike east-west and are generally relatively thin <2m. The area was intensely drilled by Tanami in the early 2000's with a series of traverse at Copper King.
- Without further evidence to indicate that the existing drilling data missed a buried target zone then the area should be described as having had the surface outcrop expressions drilled out.
- Recommendations/Conclusions:
 - 1) The area would benefit from the completion of north-south traverses of IP geophysical surveying, looking for new zones of potential mineralisation
 - 2) The completion of exploration wok at Copper King would be a lower priority then the Virginia and Copper Queen Prospects

Notes from the field geologist (report author) from the reconnaissance field trip in March-April 2014 are as follows;

Selins (moderate priority)

 Drove to within 800m of the Selins Prospect locality - by turning in at Kong Bore and following old track to the southwest. Two historical shafts were found at Selins containing malachite and chrysocolla, one more remobilised malachite and pods of chrysocolla, the other both interstitial to coarse grained garnets. No further copper was identified away from these shafts. Ten (10) samples were submitted for geochemistry with the best results being 13.3% Cu (sample 1221) from a mullock heap from the northerly shaft.

Unnamed Ultramafic (low priority)

• Drove to within 1km of mapped ultramafic north of Cu Royals. High lusture mafic, crumbly soft 1-5mm crystals, irregularly orientated, possible volcanic (basalt) or

more likely very withered ultramafic, quite homogeneous. Three rock chip samples were collected and assayed with up to 502 ppm Ni (sample 1233) the best result.

7.0 Rehabilitation

There were no earth disturbing activities on the tenement. No rehabilitation was required.

8.0 Year 2 Proposed Exploration Activities

The company is actively exploring for Iron-Oxide Copper-Gold mineralisation within the eastern Arunta region. Core Exploration (DBL Blues) plans to undertake the following exploration activities within EL 29689 during the second year of tenure:

- AAPA heritage surveys at Copper Queen and Virginia Prospects as part of the Mine Management Plan (MMP) for clearance certificates to allow drilling at each prospect
- Phase one drilling program at Virginia Prospect testing for the presence of copper sulphides at depth and testing to see if any discovered copper sulphides are responsible for the chargeable IP anomaly identified in the IP survey.
- Target generation work focusing on the potential of the Riddock Amphibolite to host copper-nickel-cobalt mineralization similar to recent discoveries within the Irindina Province by other companies in the last two years.
- Report preparation, logistics and planning, data analysis.

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