Redstone, Northwest Territories, Canada

Executive Summary

The Redstone Copperbelt is an underexplored district that is highly prospective for stratiform sedimentary rock hosted copper deposits in the mining-friendly jurisdiction of northern Canada. Exploration at Copper North’s 100% owned Coates Lake deposit is an opportunity to add value to and expand the historic resource of 33.4 Mt of 3.92% Cu and 11.3 g/t Ag*. Mineralization has been demonstrated over a 6 km strike length at Coates Lake and IP chargeability anomalies extend for a further 4 km towards the north. The deposit is open to the north, west and south – drill ready targets have been identified and may lead to significant expansion of known areas of mineralization. Recent technological innovations in mining methods that allow the selective extraction of narrow, inclined ore-bodies represent a breakthrough in bringing the Coates Lake deposit one step closer to production.

Geology

The style of mineralization is similar to deposits in the Central African Copperbelt such as the Kamoa deposit in the Democratic Republic of Congo or to the Kupferschiefer of Central Europe – these deposits tend to be large and have high copper grades.

The copper mineralization is hosted in Neoproterozoic microbial dolostones at the contact between continental red-beds (Rr) and an overlying limestone sequence (CP1-CP6; see above image). Mineralization comprises disseminated chalcocite, bornite and chalcopyrite with bedding parallel veins of bornite-carbonate.

The copper mineralization occurs in layers that are thin (~0.3 to 3 metres) but highly laterally extensive and show continuous mineralization over at least 6 km of strike.
Exploration

After discovery by prospecting in the early 1960s, drilling throughout the 1960s-1970s led to the definition of a historic resource of 33.4 Mt of 3.92% Cu and 11.3 g/t Ag over a weighted average true thickness of 1.00 metres. In 2012, Copper North conducted a mapping and geophysical surveying program, resulting in the identification of strong IP chargeability anomalies extending for a strike length of ~4 km from the north end of the historic resource area. Chargeability anomalies were also detected to the south of the historic resource area, where the mineralized beds appear to be thicker.

Upside Potential

There is significant potential to discover additional stratiform copper mineralization on the Redstone property. The 34.4 Mt historic resource was calculated for an area that comprises approximately 20% of the total property area that is underlain by the prospective strata. The remaining 80% of the property area is highly prospective for high-grade stratiform copper mineralization.

Drilling from areas outside of the historic resource indicate that thicker sections of copper mineralization do occur, leading to potential increases in tonnage and better suitability to traditional mining methods. For example, drillhole 64-28 intersected 9.9 metres of 3.18% Cu and drillhole 63-15 intersected 13.7 metres of 2.1% Cu.

Value creation from technological innovation

Recently, significant developments have been made in the narrow ‘reef’ mechanized mining methods applied to thin layers of platinum or gold reefs in South Africa (photo, above left). These methods include the development of continuous mining equipment that can operate in drifts of ~1 m heights (see left). Mining of inclined narrow orebodies by the selective blast method has been successful at extracting reefs as thin as 0.3 metres with no dilution. These mining methods are highly transferrable to the Coates Lake deposit where they may eliminate the problem of dilution that has previously been a barrier to bringing the project towards production and may potentially decrease the cost of underground mining.