

The Bisha Mine, Western Eritrea: Recent discoveries and update

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The Bisha VMS deposit was discovered by Nevsun Resources Ltd. in 2002 by drilling a gold-rich surface gossan. First production from the deposit began in 2011, and it remains in operation today. Shortly after the discovery of Bisha, three other deposits were found by drilling surface gossans: the Northwest deposit in 2003, the Harena deposit in 2005, and the Hambok deposit in 2006.

The initial exploration efforts at Bisha were guided by prospecting and electromagnetic methods. Over time, the use of gravity became the primary regional exploration tool. Despite a large amount of gravity surveying over the next six years, no anomalies of a similar magnitude to that of Bisha were found, and the drilling of subtler gravity highs proved fruitless. By the end of 2008, exploration virtually ceased owing to the funding constraints of building a new mine and to the perception that few new targets existed.

In 2013, regional exploration was renewed over the Bisha licenses. Recognising and understanding the limitations of the gravity method, re-emphasis was placed on the more traditional electromagnetic methods. In particular, borehole Transient Electromagnetic (TEM) surveying was initiated and continues to be conducted routinely on all new and available historical holes. Coupled with this electromagnetic approach, programs designed to improve the understanding of the host lithological framework and the alteration systems were initiated with the systematic collection and analysis of lithochemical data in all drill holes and from surface outcrops.

The results from this new approach have been very effective. Recognition of the intense alteration beneath the Harena deposit suggested that the deposit must be larger than what had been known historically and provided the impetus to continue the drilling that led to the discovery of the extensive massive sulphide body immediately to the south of the open pit. Borehole TEM has been instrumental in providing guidance to this drilling.

Application of this same methodology to our Mogoraib River exploration licences, to the west of Bisha, has also been very successful. An improved understanding of the geology and alteration patterns, coupled with perseverance, has led to the discovery of new massive sulphide mineralization at the Asheli and Aderat prospects. Currently, work is concentrated on following-up VTEM targets derived from a new survey flown in 2016.

The talk will focus on the exploration history of these exciting new developments, highlighting the exploration methodologies being applied.