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Bisie - World's Largest and Richest Undeveloped Tin Deposit

Pein, H.R.[1]

[1]Pangea Exploration (Pty) Ltd, 1 Bompas Road 2196 Dunkeld West, Johannesburg, RSA hpein@pangeagroup.co.za

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Bisie Tin Project (Bisie) consists of a series of rich tin lodes located in the North Kivu Province, Eastern Democratic Republic of Congo (DRC). The deposit is set within a Precambrian orogenic-metallogenic province underlain by the Kibaran Orogenic Belt lithologies and interpreted as being an inter-cratonic collision zone. These units were intruded by multiple generations of granites, from ± 1.4 Ga until the last so-called "tin granite" intrusion of the Neoproterozoic at about 1 Ga. The classification of tin deposits by Varlamoff 1978 [1] which relates deposit characteristics, to depth of deposit, suggests a hydrothermal tin ore system with a relatively shallow depth of formation for the Bisie deposit. Fractionation is the dominant petrogenetic process controlling magmatic evolution in tin granites. One would expect mineralized hydrothermal fluid circulation to have spanned several million years at high temperatures (>300°C). The hydrothermal lode deposits at Bisie are quite different to the predominantly pegmatite tin deposits found elsewhere in Sub-Saharan Africa.

The prominent northerly striking Bisie ridge hosts a number of steeply dipping tin bearing lodes of which only the evaluated Mpama North Orebody will form part of this discussion. Mineralisation at Mpama North displays exceptional high grades, with the main tin bearing zone containing mineralised chutes of up to 20m in width. Mineralisation is accompanied by intense chloritization within easterly dipping micaceous schists and occurs in the form of irregular high grade veins of botryoidal cassiterite (classic wood tin), fine grained disseminated cassiterite blebs and irregular brecciated blocks. Zones of greater than 10% tin over more than 10m are not uncommon. Tin and subordinate copper mineralization are confined to laterally and vertically extensive brittle shear zones with the dominant structural control trending parallel to the main cassiterite zone. Structural and mineralogical studies indicate that cassiterite emplacement occurred prior to copper (chalcopyrite and bornite) mineralisation which was followed by lead (sphalerite) and zinc (galena) mineralisation. Although wood tin is understood to originate from low temperature and pressure environments, the different cassiterite phases and detailed zonal characteristics of the orebody are still not fully understood. In February 2016, Alphamin Resources Corporation as the owner of the Bisie Project, completed a Definitive Feasibility Study (DFS) on the Mpama North Orebody. The current Mineral Resource Estimate includes 2.54 M tonnes at a grade of 5.43% of Indicated Mineral Resource and 0.63 M tonnes at a grade of 5.80% of Inferred Mineral Resources using a 2% Sn cut-off, making it the largest high grade undeveloped tin project in the world. Results of the DFS indicate a robust, economically viable, metallurgically simple orebody containing over 190,000 tonnes of contained tin in Mineral Reserves which supports the development of an underground mine at Bisie with a process plant designed to treat the run of mine material using proven gravity separation methods. Although the remote mountainous terrain, poor infrastructure and political

instability at Bisie remain challenging, this interesting and exceptionally high grade deposit is well poised to become the next world class tin producer.

References:

[1] Varlamoff N (1978) Classification and spatial-temporal distribution of tin and associated mineral deposits in Geoscience Canada Volume 8(4): 155-161