

Mesothermal Gold Mineralization of Galat Sufar South Nubian Desert of Sudan

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Sudan hosts in excess of 250,000 km² of the Arabian-Nubian Shield (ANS), an assemblage of dominantly arc-accretionary belts of green schist metamorphosed, Neoproterozoic age accreted to the African craton to the west with a proven gold endowment in surrounding countries and a history of gold mining going back to Pharaonic times. However, the country has undergone almost no modern, systematic exploration since regional scale work by the BRGM in the mid 1990s. Orca Gold Inc. holds a 7,000-km² exploration licence (Block 14) within the Red Sea Hills on the northern border of Sudan, where it has been exploring since 2012. The Galat Sufar South deposit (GSS) was discovered from follow-up of artisanal workings in late 2012 and currently hosts an Indicated Resource of 26.35 Mt at 1.77 g/t for 1.5 Moz gold and an Inferred Resource of 8.65 Mt at 1.7 g/t for an additional 477,000 oz of gold (using a 1 g/t cutoff).

The geologic framework of Block 14 is dominated by the Keraf shear zone (KSZ), which is situated on the eastern flank of the main Wadi Gabgaba and separates two distinct geological terranes. Eastern Gabgaba is dominated by thick sequences of andesitic volcanics with subordinate felsic volcanics and some metasediments. The bimodal volcanic arc is intruded by multiple phases of syn-tectonic diorites and post collisional subalkalic intrusives that may represent the Bayudan phase of igneous activity (<500 Ma).

Western Gabgaba is characterized by a package of marine sediments containing numerous discrete volcanic centers. One such area of volcanics is termed the West Gabgaba “donut,” represented by an annular feature about 15 km across that contains mafic volcanics on its periphery and is cored by a package of intermediate volcanics and calcareous meta-sediments that host the GSS deposit. GSS is a shear zone-hosted mesothermal gold deposit related to a quartz + sericite + carbonate ± pyrite alteration that overprints a K-feldspar + quartz ± sericite alteration event.

Gold mineralization is widespread across Block 14, with in excess of 5,000 artisanal miners working and is considered to be a late-stage, post-suture event that is dominated by shear zones. Differing styles of mesothermal gold mineralization are fundamentally controlled by the localized structural style and host-rock composition with mixed volcano-sedimentary/volcanic sequences the most prospective hosts to mineralization. It is possible that some of the gold mineralization is related to earlier Neoproterozoic volcanogenic mineralization, as a strong base metal association (Zn, Pb, As, Cu, Mo) is seen in the larger zones of mineralization.