

The Altan Nar carbonate-base metal gold-silver deposit, southwestern Mongolia

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The Altan Nar deposit was discovered by Erdene in 2011 as part of a regional, grassroots mineral exploration program over southwest Mongolia. Since that time, Erdene has completed nearly 10 000 m of diamond drilling and 3 000 m of trenching and has established Altan Nar as a significant new Au-Ag-Pb-Zn mineralized system. The geology of Altan Nar is dominated by a series of andesite volcanic flows with several stages of late granitoid dykes (generally <30 m wide) and andesite dykes (generally <10m wide), some of which intersect mineralized zones. Altan Nar extends over a 5.6 by 1.5 km mineralized corridor that is defined by a widespread Pb and Zn soil anomaly and is host to 18 target zones with near-surface Au-Ag-As-PbZn geochemical anomalies. Mineralized zones are often associated with zones of phyllic alteration (i.e., quartzsericite/muscovite-pyrite), up to 100 m wide. Drilling to date has identified several high-grade zones within broad zones of mineralization, including a five metre wide, nearsurface intersection, that returned assay values averaging 17.7 grams per tonne Au, 69 grams per tonne Ag, and 4.6 % combined Pb-Zn. Au and Ag mineralization is mostly present in quartz breccia zones with characteristic multiple stages of brecciation, silicification and quartz veins. Quartz veins typically have comb, colloform and crustiform textures, although some late veins have chalcedonic quartz. Both low and high arsenic gold mineralization has been identified at Altan Nar. Preliminary work indicates that the low-As mineralization is widespread with high-As mineralization generally restricted to narrow zones thought to be related to late stage mineralization. Mineralogical investigations of As-rich samples indicate a complex ore and gangue mineralogy including gangue minerals quartz, mica, calcite, rhodochrosite and several Mn-bearing carbonate, oxide and silicate phases along with ore minerals including arsenopyrite, galena, sphalerite, chalcopyrite, pyrite, pyrrhotite, and tetrahedrite. Gold is mostly invisible, however, very small gold grains (0.001–0.004 mm) were observed in a few thin sections. Altan Nar is interpreted as a carbonate-base metal-gold deposit, a style of epithermal deposits that are the major gold producers in the southwest Pacific Rim region and includes the very large Porgera deposit (24 million ounces Au) of Papua New Guinea.