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The Robertson Deposit: Eocene Intrusion Related Gold Deposit in the Northern Shoshone Range, Nevada

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The Robertson deposit, formerly known as “Tenabo,” is located about 7 km North of Pipeline, a 20 Moz+ Carlin-type gold deposit in the northern Shoshone Range, Nevada. Robertson is an Eocene intrusion-related gold deposit hosted in paleozoic sedimentary lithologies, part of the Roberts Mountain allochthon known as the “upper plate.” Gold mineralization is spatially and temporally related to an intrusive complex characterized by an early diorite, polyphase granodiorite, and associated dikes, sills, and plugs that vary in composition from dioritic to rhyolitic. Most of the previously defined gold mineralization occurred near the contacts of intrusive centers and is hosted by hornfels in the overlying lithologies. Ongoing exploration has discovered significant free gold, both within the stock and in distal settings that had not been recognized in the past.

This study is the first in-depth examination of Robertson focusing on gold mineralization in these settings. The purpose of this study is to characterize gold mineralization as it relates to intrusive phases, alteration styles, and structural controls. This is done through careful examination of host lithologies using applied geochronology, petrography, and SEM work. Ongoing petrographic investigations have identified hornfelsing, potassic alteration, endo/exoskarn, and sericitic alteration related to a multiphase ilmenite-bearing granodiorite stock. Native gold has been found to have a strong association with Bi-Te-Se-S, spatially adjacent to or on the surface of arsenopyrite and loellingite grains. Understanding intrusion-related systems such as Robertson is critical for evaluating potential fluid sources that led to prolific mineralization in this district.