## Evolution of Eocene Magmatism at Swales Mountain, North-Central Nevada, and the Relationship to Carlin-Type Gold Deposits

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Swales Mountain, located in north-central Nevada, USA, features a shallow to mid-crustal Eocene magmatic complex, dated between 39.5 and 37.1 Ma, consisting of various intrusive and subvolcanic bodies tilted and exposed by Basin and Range extension. Northern Nevada hosts multiple Carlin-type gold deposits (CTGDs); some of the largest gold deposits in the world, and their origin is still under debate. One model proposes that Cenozoic magmatism associated with slab delamination and rollback of the Farallon plate swept NE to SW across Nevada from ~45 to 17 Ma, with Eocene magmatism in northern Nevada possibly driving mineralization of CTGDs. Located <20 km northeast of the Carlin trend, the Swales Mountain intrusions could have served as a heat source for CTGD mineralization.

Here, we present a detailed study that explores the spatial, temporal, and geochemical evolution of the Swales Mountain system using new $^{40}Ar/^{39}Ar$ and U-Pb zircon ages, hornblende barometry, and Sr-Nd-Pb isotopes. The peraluminous, calc-alkaline suite ranges from basaltic andesite to rhyolite and consists of three distinct unmineralized plutons, as well as various dikes and sills interacting with weakly mineralized Paleozoic sedimentary rocks. Geochronological data suggest that magmatic activity began around 39.5 Ma, with the Eastern Swales quartz monzodiorite forming at shallow depths. The mid-crustal Central Swales quartz monzonite was emplaced between 38.5 and 37.1 Ma at depths of 5 to 11 kilometers, supporting models that link magmatic activity to the Carlin trend (37 to 41 Ma). We conclude that Swales Mountain may have provided a magmatic heat source contributing to the mineralization of CTGDs.