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Complex History of Precious Metal Deposits,
Southern Toquima Range, Nevada

By

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This report is preliminary and has not been reviewed
for conformity with U.S. Geological Survey
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ABSTRACT

Precious metal deposits in the southern Toquima Range resulted from several distinct mineralizing events. At Round Mountain, base-metal-, precious-metal-, and tungsten-bearing veins formed in Cretaceous granite and in nearby Paleozoic wallrocks at 80 Ma. These veins were modified by introduction of base metals in the vicinity of a 35 Ma granodiorite stock and an associated rhyolite dike swarm. The main gold-silver mineralization at Round Mountain occurred at 25 Ma within a 27 Ma rhyolitic ash-flow tuff that was erupted nearby from the Mount Jefferson caldera; this tuff overlies Cretaceous granite and Paleozoic rocks. Recrystallization of minerals to form new phases in the 80 Ma veins adjacent to the zone of 25 Ma gold-silver mineralization suggests reworking of those veins and possible remobilization of precious metals from them into the younger gold-silver deposits. The youngest mineralizing event, possibly at 10 Ma, formed low-temperature, silver-, arsenic-, and manganese-bearing veins within the Round Mountain gold-silver deposit.

At Manhattan, base-metal- and precious-metal-bearing vein and tactite deposits formed in Paleozoic carbonate rocks near Cretaceous granite at about 75 Ma. A younger somewhat similar episode was probably related to an inferred early Tertiary(?) intrusive event that introduced arsenic, antimony, and mercury minerals into the eastern part of the Manhattan belt. The main gold-silver mineralizing event at Manhattan took place at 16 Ma within Paleozoic phyllitic argillite, quartzite, and carbonate rocks along the south margin of the 25 Ma Manhattan caldera. The 16 Ma event formed deposits such as those on Gold Hill, and reworked the arsenic-antimony-mercury mineralized zone to form other deposits such as that at the White Caps mine.

Silver-rich base-metal-bearing veins in Paleozoic rocks at Belmont formed near Cretaceous granite, probably at about 75-80 Ma. Tertiary reworking of the deposits is uncertain. Silver- and gold-bearing veins at Jefferson were deposited at and near the margin of the Mount Jefferson caldera at 25 Ma. The silver-rich deposits may have been derived in part from reworking of deposits associated with an inferred 35 Ma intrusive just south of the caldera.

The mineralized zones in the southern Toquima Range offer many exploration targets for precious-metal deposits. Perhaps the most promising is a Fortitude, Nevada-type gold-bearing tactite deposit near or underlying the White Caps mine in the east part of the Manhattan district.