

*DURATION OF MAGMATIC, HYDROTHERMAL, AND SUPERGENE ACTIVITY
AT CERRO RICO DE POTOSI, BOLIVIA*

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Abstract

New high precision $^{40}\text{Ar}/^{39}\text{Ar}$ dating of sanidine and biotite from two rhyolitic domes and an ignimbrite, combined with existing fission-track data and a hydrothermal sericite age, suggests that the world-class Ag deposit at Cerro Rico was emplaced during a protracted period of magma-related hydrothermal activity beginning at 13.77 ± 0.03 Ma and continuing for at least 0.2 m.y. This may have been sustained by a large single injection or repeated injections of fractionated Ag-enriched magma into a high-level magma chamber. K-Ar dating of alunite indicates that supergene oxidation had begun by about 13.5 Ma, soon after dome emplacement, and progressed semicontinuously for at least 7.5 m.y. This oxidation, while not leading to significant enrichment, has significantly enhanced the economic viability of the disseminated part of the orebody.

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