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Relationship of Epithermal Gold Deposits to Large-Scale Fractures in Northern Nevada

D. A. Ponce† and J. M. G. Glen

U.S. Geological Survey, MS 989, 345 Middlefield Rd., Menlo Park, California 94025

Abstract

Geophysical maps of northern Nevada reveal at least three and possibly six large-scale arcuate features, one of which corresponds to the northern Nevada rift that possibly extends more than 1,000 km from the Oregon-Idaho border to southern Nevada. These features may reflect deep discontinuities within the earth's crust, possibly related to the impact of the Yellowstone hot spot. Because mid-Miocene epithermal gold deposits have been shown to correlate with the northern Nevada rift, we investigate the association of other epithermal gold deposits to other similar arcuate features in northern Nevada. Mid-Miocene and younger epithermal gold-silver deposits also occur along two prominent aeromagnetic anomalies west of the northern Nevada rift. Here, we speculate that mid-Miocene deposits formed along deep fractures in association with mid-Miocene rift-related magmatism and that younger deposits preferentially followed these preexisting features. Statistical analysis of the proximity of epithermal gold deposits to these features suggests that epithermal gold deposits in northern Nevada are spatially associated with large-scale crustal features interpreted from geophysical data.