

## Age of the Sherman-Type Zn-Pb-Ag Deposits, Mosquito Range, Colorado

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### Abstract

The Sherman-type Zn-Pb-Ag dolomite deposits in central Colorado are hosted in dolostones of the Early Mississippian Leadville Formation. Paleomagnetic analysis, using progressive alternating field and thermal demagnetization and isothermal remanent magnetization acquisition methods, was performed on specimens from samples at 37 sites in the Sherman-type Continental Chief, Peerless, Ruby, Sacramento, and Sherman deposits, in their host rocks, in the 72 Ma Pando Porphyry sill(s) and in the ~40 Ma Leadville-type Black Cloud massive sulfide deposit. Paleomagnetic fold, contact, and breccia tests were performed to test for the antiquity of the magnetizations. The results are interpreted to indicate that the Leadville carbonates were regionally dolomitized at  $\sim 308 \pm 6$  (1 $\sigma$ ) Ma in the Early Pennsylvanian and that the Sherman-type deposits were emplaced at  $\sim 272 \pm 18$  (1 $\sigma$ ) Ma during the Early Permian after northeast-trending block faulting, karstification, and  $\sim 4 \pm 1$  km of sedimentary burial, possibly as the result of subsurface gravity-driven fluid flow related to the Ouachita-Marathon orogen. Following late Ouachita-Marathon or earliest Laramide (Late Cretaceous) folding, the remanence in the Sherman-type deposits and the Leadville dolostone rocks within the contact alteration zone of the 72 Ma Pando Porphyry sill(s) was reset to acquire a Late Cretaceous normal characteristic remanent magnetization. Thereafter the Black Cloud Leadville-type massive sulfide deposit was magnetized in the Eocene to acquire a reversed polarity characteristic remanent magnetization that was not found in the Sherman-type deposits.