ABSTRACT

TITLE:	A Fracture Analysis to Assess the Structural History of the Equity Block at Creede, CO
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ABSTRACT: The Creede district in central Colorado has a mining history of nearly 150 years. During this time most of the mining has focused on Ag-Pb-Zn-Cu mineralization associated with main-stage Creede mineralization, which happened around 25 Ma in response to hydrothermal circulation on the margin of the 26 Ma Creede caldera. Exploration and mining in the northern part of the district has focused on the Equity fault. This fault represents a major mineralized structure characterized by gold mineralization. The Equity fault forms the southern margin of a major fault-bounded block known as the Equity "horst" block. A prevailing thought was that the Equity block was uplifted about 1,300 feet prior to mineralization either by emplacement of a shallow pluton or by compressive tectonics that caused reverse displacement. An alternative hypothesis was the block had experienced normal displacement, but then underwent rotation to produce an apparent reverse displacement. In this research project, joints that developed within and adjacent to the Equity block, as well as structural features in the Equity fault, were examined to gain insight into the origin of the block and test previous hypothesis. Stereonet plots of over 440 joint measurements reveal two distinct and dominant joint patterns. One joint set strikes at 195 and dips 80 west, subparallel to the Amethyst fault that bounds the Equity block to the west and is one the main mineralized zones in the district. The other set of joints strikes at 270 and dips ~70 north, subparallel to the Equity fault. Movement on both of the faults appears to have influenced joint development in the area. Considering the joint data, and structural fabrics and features along the Equity fault, we propose that the structure is an extensional feature even though it has apparent reverse displacement. Our analysis suggests the possibility that the entire Equity block was tilted south during the resurgence of the 26.9 Ma San Luis caldera, changing the orientation of the Equity fault.