

## **THE STRUCTURE OF THE JARDINE GOLD DEPOSIT, JARDINE, MONTANA**

by  
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The Jardine deposit is in southwest Montana, 5 miles (8 km) northeast of Gardiner, within the southeast part of the Snowy Block of the Beartooth Uplift. Gold mineralization occurs within an Archean package of metaturbidites dominated by quartz-biotite schist, with subordinate biotite schist, iron formation and quartz. Diabase dikes crosscut this package. Metamorphic grade is greenschist to lower amphibolite facies. Folded stratiform ore is hosted by sulphide-silicate facies iron formation, biotite schist, and quartz. Arsenopyrite, pyrrhotite, pyrite and scheelite accompany the gold mineralization. A single iron formation serves as a marker horizon for the structural analysis. The iron formation is enveloped by biotite schist and quartz units. The structural synthesis demonstrates three phases of folding. The first phase of folding was isoclinal and at an high angle to the F2 and F3 phases of folding. F2 and F3 are more open styles of folding and are nearly coaxial. Mineralization conforms with this structure. This has led to the interpretation of the iron formation-hosted gold mineralization as a deformed stratiform-stratabound deposit with upgrading and thickening of ore in specific, structurally controlled sites. Controversy remains whether the biotite schist-hosted quartz ore is a refolded primary stratabound deposit or structurally controlled veins folded into gross conformity. The megascopic structural synthesis is supported by mesoscopic structural analysis. Mesoscopic structures also exhibit controls over mineralization.