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STRUCTURAL EVOLUTION AND GOLD REMOBILIZATION AT THE MOSQUITO CREEK GOLD MINE, CARIBOO DISTRICT, BRITISH COLUMBIA.

*Robert, François, and Taylor, Bruce E., Geological Survey of Canada, 601 Booth St., Ottawa, K1A 0E8

The Mosquito Creek, Island Mountain and Cariboo Gold Quartz mines in east-central B.C. occur in a sequence dominated by clastic metasedimentary rocks and have produced ~40 t of Au from quartz-pyrite veins and from pyritic orebodies in impure limestone bands. Rock units parallel the regional NW-SE strike and moderate NE dip of an S1 foliation. Overturned beds suggest the presence of F1 folds, and ductile faults were probably associated with this early D1 event. Consistently Z-shaped F2 open folds plunging 10-20° NW, an S2 axial planar cleavage striking E-W and dipping 30° N, and a strong L2 stretching lineation parallel to F2 fold axes define a D2 deformation. N-S faults postdate the F2 folds.

The two main types of auriferous veins postdate F2 folds. Diagonal veins are oblique to L2, commonly buckled, strike 070-090°, and are subvertical. Orthogonal veins, perpendicular to L2, occupy extensional fractures; they strike 030-040° and dip 70° SE. Orthogonal veins may either crosscut, or splay from, diagonal veins, and both vein types are interpreted to represent continued extension along L2.

Pyritic orebodies in or at contacts with marble bands range in shape from the common cigar-shape parallel to L2 in F2 fold hinges to rarer tabular bodies in the long limb. These orebodies consist of stacked layers of massive to semi-massive pyrite comprising fine-grained pyrite high in gold, and coarse-grained porphyroblastic pyrite low in gold. The pyrite layers are parallel to S1 and to S0 in the marble bands, and are folded about F2 axes and transposed by S2 in hinge zones.

A multistage genesis for the mineralization is indicated by the early pyritic orebodies and the post-F2 veins. Loss of gold during growth of coarse pyrite porphyroblasts suggests that gold in the late veins is remobilized from the early pyrite.