

# Structure and Predictability of Meguma Gold Deposits

*R. J. Horne*

Meguma lode gold deposits consist of 'saddle reef' vein arrays, where vein development is governed by flexural folding. Several stratabound and discordant vein types occur within these deposits. All major veins, however, can be shown to be synchronous and are kinematically related to fold development. Variation seen in vein development between deposits largely reflects variation in fold geometry. Dependence of vein development on fold geometry allows predictability of vein occurrences within fold structures. For example, it has been long recognized that vein arrays are known to be restricted to the hinge zones of folds, particularly on steep limbs, and that the classic, large saddle veins occur in tight chevron style folds. Evaluation of regional fold geometries would provide targets for the discovery of new deposits.

Historical mining of Meguma deposits was limited to shallow depths; however, the relationship of vein arrays to fold geometry can be applied as a guide to presence of veins at depth. This approach has recently revealed a regular distribution of vein concentrations (ribbons) in the Bendigo Gold District of Australia that has been used in the successful delineation of previously unidentified saddle vein arrays below historical workings. Drilling has identified a regular distribution of veins at the Dufferin deposit and new veins have been recognized at the Goldboro deposit. Both of these deposits are classic chevrons and further veins are predictable below the tested levels. Similar evaluation of fold structures would provide predictability of vein occurrence at depth in other deposits.

Unfortunately, the distribution of gold within vein arrays may not be as predictable as the occurrence of veins, although some observations suggest systematic control on gold distribution. Several historical reports cite the intersection of veins, particularly bedding-parallel and angular veins, as important for gold distribution. Development of the Forest Hills deposit in the 1980s reported angular veins as controlling gold distribution and recent work by the author at the Mooseland deposit indicates notable high gold concentrations at intersections of bedding-parallel and angular veins. Recognition of such controls would be important to identifying ore zones within the vein arrays.