Genesis of gold mineralization in epithermal quartz veins along the Magaguadavic fault zone in the Pokiok Batholith, southwestern New Brunswick

LAURIN BRANSCOMBE - *Department of Earth Sciences, University of New Brunswick, Fredericton, New Brunswick, E3B 5A3*

The Pokiok Batholith, located approximately 45 km west of Fredericton, intruded metasedimentary rocks of the Silurian Burtts Corner Formation (Kingsclear Group) to the east and the Cambrian-Ordovician Baskahegan Lake Formation (Woodstock Group) to the west. The batholith is comprised predominantly of two intrusive units. The Allandale Granite is composed of fine-grained, grey muscovite-biotite granite (402 ± 1 Ma, U-Pb zircon). The multi-phase Hawkshaw Granite consists of fine- to medium-grained, pink biotite granite and minor muscovite-biotite granite (411 ± 1 to 416 ± 2 Ma, U-Pb zircon). The regional-scale Magaguadavic Fault generally strikes north, crosscutting the batholith and locally juxtaposing the Hawkshaw and Allandale granites near the gold-mineralized zones. Gold mineralization with pyrite-sericite-chlorite alteration has been reported along with base-metal mineralization in quartz veins that occupy the fault zone. These veins and associated alteration were re-examined to determine the timing and controls on gold mineralization. Quartz vein textures vary from coarse-grained cockade growth zones to chalcedonic quartz. The sulfide minerals identified by SEM are pyrite, chalcopyrite, matildite, galena, sphalerite, and argentite. Chlorite, chamosite, and muscovite were also identified. The Pearson Product correlation coefficient between Au and Ag in the 10 samples reanalyzed is near zero (r = 0.00). The highest correlations found are between Au and Se (r= 0.98), Cd (r= 0.63), Sb (r= 0.84), and Zn (r= 0.73). Correelations were also found between Ag and Bi (r= 0.99), Cu (r= 0.86), Fe (r= 0.61), and S (r= 0.67). Various types of geochronology are being done to ascertain the timing of faulting, alteration, and related epithermal mineralization.

Atlantic Geology, 2014, Volume 50, Number 1
Atlantic Universities Geoscience Conference 2014: 64th Annual Conference - Abstracts
doi: 10.4138/atlgeol.2014016
Copyright © 2017 Atlantic Geology