THE DEEP COVE PLUTON AND ASSOCIATED POLYMETALLIC MINERALIZATION, GABARUS BAY, CAPE BRETON ISLAND, NOVA SCOTIA

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The Deep Cove Pluton and country rocks of the Fourchu Group at Gabarus Bay, Cape Breton Island are being studied in detail as part of a M.Sc. research program. The study is based on both field mapping and logging of core from a total of 22 holes drilled by Amax Minerals Exploration in the pluton and in the adjacent country rock to delineate alteration zones containing polymetallic Cu-Zn-Bi-Ag.

The Upper Precambrian Fourchu Group consists of a complex sequence of mainly pyroclastic rocks of predominantly intermediate composition. The Deep Cove Pluton is a small, roughly pear-shaped, monzogranitic body of Devonian age. The monzogranite is seriate porphyritic, with 1 mm- to 1 cm-sized phenocrysts of plagioclase (oligoclase/andesine)

and minor quartz and biotite in a fine grained groundmass of quartz, sanidine and minor plagioclase. Associated with the pluton are co-magmatic dykes ranging in composition from tonalite to syenogranite.

Mineralization at Deep Cove is of two types. One is a simple quartz-molybdenite association, with molybdenite occurring as coarse "books" up to 2 cm in size predominantly near the walls of quartz veins which are up to 7 cm wide. These veins occur both within the pluton and in the country rocks up to 1.5 km east of the pluton, but are absent to the west of the pluton.

The main type of mineralization consists of polymetallic sulphide veins, containing Fe, Cu, Zn and Mo sulphides, generally associated with lensoid to tabular greisen bodies up to 30 m thick within the monzogranite. These greisen zones display gradational to sharp contacts with the relatively unaltered monzogranite and are marked by complete obliteration of original textures. They are dominated mineralogically by quartz and white mica, but in places contain up to 40% sulphides over 10-20 cm zones. Sulphides may occur both as disseminations within the greisen, and more commonly, in mm- to cm-sized veins, typically with calcite. The greisen zones also contain significant Ag and Bi. Electron microprobe analyses confirm the presence of both tetrahedrite and a Bi-Ag-Sb-Cu sulfosalt.