The Deep Cove Pluton and associated Polymetallic Mineralization, Gabarus Bay, Cape Breton Island, Nova Scotia

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The Deep Cove Pluton and Fourchu Group rocks at Gabarus Bay, Cape Breton Island were studied in detail in the summer of 1985 as part of an Acadia University M.Sc. research program. The study included four weeks of field mapping at Gabarus Bay, and four weeks

of logging drill core at the N.S.D.M.E. core library in Stellarton. Drill core from a total of 22 wells was logged. The holes were drilled in the pluton and in the adjacent country rock to delineate alteration zones containing polymetallic (Ag-BI-Cu-Pb-Zn) minerallzation.

The Deep Cove Pluton Intruded Into Late Precambrian rocks of the Fourchu Group, which consists of a complex sequence of mainly pyroclastic rocks of predominantly intermediate composition. Preliminary results of petrographic and geochemical studies indicate that the pluton is a variably altered porphygranite with phenocrysts ritic of plagioclase in a fine grained granitic groundmass. Two other intrusive units are also identified; 1) a series of randomly oriented rhyolitic dykes ranging in width from less than 1 m to over 5 m and 2) a fine grained equigranular granite dyke of unknown dimensions (observed at a depth of approximately 270 m in a single drill core). Alteration within the pluton is complex, with zones up to 15 m wide of quartz-sericite-pyrite greisenization complete destruction of displaying original texture, separated by zones of less intense alteration where the prinalteration products Include ciple sericite, chlorite and potassium feld-Alteration generally decreases spar. with depth and strongly altered zones occur as lenses rather than uniform horizons.

Mineralization is of two main types; 1) simple molybdenite occuring in quartz veins and as disseminations and, 2) polymetallic mineralization (pyrite, pyrrhotite, chalcopyrite, sphalerite, molydenite and bismuthinite) occuring as veins and fracture coatings. Polymetallic mineralization is associated with zones of stronger alteration.