

area on the northern flank of Barrow River, Melville Peninsula (N 67°24'08.44", W 82°35'43.23"), Nunavut. The study area resides within the Proterozoic Penryhn Group, which is stratigraphically equivalent to the Piling Group of Baffin Island, Nunavut. The Penryhn Group generally consists of alternating layers of pelitic and psammitic gneisses, amphibolites, marbles and calc-silicate rocks, all intruded by continental arc and syn-collisional plutons and pegmatites.

Samples were collected from 19 outcrops spanning an area of about 400 by 100 m, in order to identify the protoliths and the nature and extent of superimposed hydrothermal and metamorphic processes. Preliminary petrographic analysis indicates that the samples are highly variable in composition, but typically contain a fine- to coarse-grained matrix dominated by quartz, potassium feldspar, plagioclase, and fine-grained euhedral tourmaline. Fine-grained sulphide and oxide minerals comprise generally greater than 30% of the groundmass as well. The small presence of sillimanite indicates upper amphibolite- to granulite-facies metamorphism.

Mineral exploration has been conducted in the area within the past forty years, notably by BHP Minerals. Aquitane Company blasted trenches in 1972 and found 20.4% Zn, 4800 ppm Pb, 1640 ppm Ni, 980 ppm Cu, and 5000 ppm Mo. BHP conducted an extensive drilling program in 1986, noting the presence of widespread gossans in the area even though no previous economically viable deposits had been found. BHP documented galena, sphalerite, pyrite, pyrrhotite, and minor chalcopyrite hosted by calc-silicate and metasedimentary rocks at low, non-economically viable, concentrations. The objective of this study will be to document the petrogenesis of the various lithologies forming this zone of gossan, determine sulphide mineral paragenesis, and the paleo-environment of deposition.

Petrology and metamorphism of a potential SEDEX-type deposit from the Paleoproterozoic Penrhyn Group, Melville Peninsula, Nunavut

ANNE C. BELANGER¹, DAVID CORRIGAN²,
AND REBECCA A. JAMIESON¹

1. *Department of Earth Sciences, Dalhousie University, Halifax, Nova Scotia B3H 4J7* 2. *Geological Survey of Canada, Ottawa, Ontario K1A 0E4*

A suite of highly metamorphosed and hydrothermally altered sedimentary and chemogenic rocks was sampled from an