Project Title: Geological Framework of the Northern Rae Province on Eastern Devon and Southeastern Ellesmere Islands

Researcher's Name and Affiliation: Dr. Gordon Osinski, University of Western Ontario

Project Location: Craig Harbour, Ellesmere Island (76° 12.568' N, 80° 59.115' W) and Dundas Harbour, Devon Island (74° 31.910' N, 82° 23.471' W)

Timeframe: From July 01, 2018, to August 15, 2018

Project Description: The objectives of this project are to: 1) Provide new age, thermal, and pressure constraints related to the crustal architecture of units exposed on eastern Devon and southeastern Ellesmere Islands; and 2) Evaluate the usage of remote sensing images and spectral data to predict the bedrock geology of eastern Devon Island and southeastern Ellesmere Islands.

The Canadian Shield of eastern Devon Island and southeastern Ellesmere Islands consists mainly of Precambrian metamorphic rocks. However, very little work has been done on these rocks since an 1983 11-page Geological Survey of Canada Paper by T. Frisch entitled "Reconnaissance geology of the Precambrian shield of Ellesmere, Devon and Coburg islands, Arctic Archipelago: A preliminary account". There are conflicting accounts of whether these rocks are part of the Rae Province, which extends south through Baffin Island and the Canadian mainland, or whether this region of the Canadian Shield represents some other tectonic domain.

Methodology: Samples will be collected for subsequent laboratory analysis. Mapping and rock sampling will be carried out in order to ground-truth the remote sensing observations. In addition, we will conduct detailed geologic field mapping and sample collection of gneisses and various units of eastern Devon and southeastern Ellesmere Islands.

Data and Reporting: Data collected on this expedition will include soil moisture data, surface roughness, rock samples, and field maps. Collected rocks will be returned to the University of Western Ontario for laboratory analyses. Laboratory analyses to be conducted on the samples include microscopic analyses to identify minerals and rock textures. Geochemical analyses will also be performed to identify the age of the rock, temperature(s) and pressure(s) that the rocks formed at. This data will result in several publications and student theses. These data will also be critical resources to future geologic exploration.

The nearest community to the project site is Grise Fiord on southern Ellesmere Island, in the lead up to the field season we will contact the Grise Fiord School to discuss opportunities for virtual presentations discussing our research. We hope to also visit the community after pull out from Craig Harbour to give in-person presentations to the school about the research we conducted.