The Cape Spencer area is located 15 km southeast of the city of Saint John, New Brunswick. There are two main gold-bearing zones, the Pit zone and Northeast zone, in addition to several other prospects, namely: Road Zone, Birches Zone, Emilio Zone, and Zones A, B, C, D, and F. The Cape Spencer gold deposit presents features and characteristics of orogenic-style gold systems as the mineralization and associated alteration are concentrated along strongly faulted and sheared contacts between the lithologies in the area, mainly the Millican Lake Granite and the Cape Spencer Formation.

Gold mineralization at Cape Spencer is mainly hosted within illitized, pyrite-rich rocks along thrust faults and folds and associated quartz ± carbonate ± plagioclase ± sulphide (pyrite, galena, chalcopyrite, sphalerite, arsenopyrite) ± specularite veins that vary from several millimeters to several decimeters in width. This redistribution of Au into quartz, quartz-sulphide, and/or quartz-carbonate veins might be linked to major accretion-related faults and/or reactivation of faults. The illitic alteration consists of illite-carbonate ± quartz ± pyrite ± chlorite ± specularite, and locally overprints earlier propylitic alteration (albite-chlorite-epidote-carbonate-quartz-specularite).

By assessing the geochronology of various parts of the area, in both the host rock system and the mineralization system, it would be possible to build a better understanding of the distribution of gold mineralization in the region, by constraining the source of the metals, fluid channels, and chronologic information related to ore deposition, and its relative timing with respect to the local and regional controls. The work carried out so far focused on the analysis of polished thin sections and micro x-ray fluorescence and energy dispersive X-ray (μXRF-EDS) mapping of drill core samples collected from the Drill Core Storage Facility in Sussex. These analyses will be used for the characterization of the hosting mineralized units in the Cape Spencer area, and to aid in the identification of radiometrically dateable mineral phases. Forthcoming studies will include U-Pb (zircon, monazite, apatite, titanite, rutile, hematite) and $^{40}$Ar/$^{39}$Ar (illite) geochronology to constrain the timing of the mineralizing events.

Abstract for oral presentation