BEAR PROVINCE LITHOGEOCHEMICAL SURVEY

Project 730003

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During the 1973 field season those rocks mapped as dominantly intrusive quartz, feldspar and quartz-feldspar porphyries were systematically sampled in the Wopmay Geological Subprovince from the vicinity of the abandoned Rayrock mine in the south to as far north as latitude 66°N.

The porphyry units are of Proterozoic age and show variable relations to the granitoid plutonics west of the Wopmay fault, but overlie unconformably the rocks of the Hepburn batholith to the east (see McGlynn and Hoffman in this report). During the field sampling a possible unconformity was noted 2 miles west of Hardisty Lake where felsic volcanics appear to lie unconformably on quartz monzonite. The porphyry units are complex in nature. The composition of volcanic extrusive and hypabyssal rocks vary from andesitic to rhyolitic. The mapped units also contain sediments and considerable thicknesses of pyroclastics. The currently available published geological maps of the area do not truly reflect the complexity of the volcanic units.

In addition to the regional sampling detailed sampling was undertaken in three areas where more recent mapping was available. These areas were around Hardisty (86C) and Maclaren (86K) Lakes and in the Camsell River silver district (86F). The data derived from these sampling programs will be used to aid in the interpretation of the regional survey. In total some 2, 200 rock samples were collected and are being analyzed for 15 major, minor and trace elements.

During the regional sampling, copper staining, believed to be previously unreported, was observed. Neither of these localities yielded any significant sulphides in the brief time spent at them; the localities are given in order that they be permanently recorded. Firstly, east of Mazenod Lake (85N) at UTM 504300 7069800 and secondly, south of Jaciar Lake (86K) at UTM 515800 7387200. Both localities occur in areas of red fine-grained volcanics.

A variety of sulphide mineral showings occur in the survey area in addition to the economically important silver deposits. Many of these occurrences were visited and two are considered to be of particular genetic interest. In the vicinity of Tommie Lake (86F, UTM 494200 7252500) a number of chalcopyrite-bearing veins were investigated in 1962. Close by these veins are apparently conformable units containing chert, magnetite ironstone and jaspilites lying with rocks postulated to be felsic pyroclastics, both the magnetite and jaspilite units contain disseminated pyrite. At a point west of Clut Lake (86F, UTM 459800 7272400) there is a breccia pipe where pyrite and chalcopyrite cement porphyry fragments intrudes relatively flat lying felsic volcanics. In the volcanic pile both magnetite-chert and black sedimentary horizons containing disseminated pyrite were observed. On the basis of these field observations it is suggested that the Wopmay geological sub-province felsic volcanic units might be favourable loci for volcanic exhalative-type sulphide accumulations.