11. DRIFT PROSPECTING AND GLACIAL GEOLOGY OF THE SHEFFIELD LAKE-INDIAN POND AREA, NEWFOUNDLAND

(Project 6-3, Canada-Newfoundland Mineral Exploration & Evaluation Program)

D. W. Alley* and R. M. Slatt*

Glacial drift in the Sheffield Lake-Indian Pond area contains local accumulations of massive sulfide float (grading to 6% Cu). Several prior investigations have failed to locate the source of float. The object of this research was to locate the source through combined glacial geologic, geochemical, geophysical, and sedimentological techniques, as well as to evaluate the glacial history of the area and evaluate the applicability of these techniques in the glaciated terrain of Newfoundland. This project is supplementary to glacial geologic-geochemical survey conducted in 1972-73 by the G.S.C. and Newfoundland Department of Mines and Energy.

A permanent base camp was established at the Brinex Base Camp in Springdale. Major landforms and glacial features in the study area were delineated by interpretation of aerial photographs. A hammer seismic survey revealed drift thicknesses of 5-60 feet.

One hundred and eight trenches (Fig. 1) varying from 5 to 14 feet deep were either dug by hand or with a back-hoe for the purpose of sediment sampling and till fabric analysis. Orientation measurements of striations on the few bedrock outcrops in the area and examination of crag-and-tail features will supplement the till fabric analysis.

Trenching revealed the presence of two till units. Differentiation of these tills was accomplished in the field by colour variation, stratigraphic relationship, the presence of blocks of the lower till emplaced in the upper till, and by till fabric analysis; and in the laboratory by sand-silt-clay ratios and clay mineralogy. It was found that sulfide float only occurs in the lower till. The recognition of two tills is significant in that it explains the localized occurrence of sulfide float only in areas where the lower till is exposed at the ground surface. Failure of previous investigators to recognize this greatly hindered attempts to locate the sulfide source.

Laboratory work in progress includes analysis of the -80 to +230 mesh size fraction of till samples for Cu, Pb, Zn, Ag, Co, Mn, and Fe by atomic absorption spectrophotometry and for S with a Leco sulfur analyzer, as well as analysis of mineral and lithic species comprising the tills.

*Department of Geology, Memorial University of Newfoundland

Based primarily upon field work, a probable source area of the sulfide float has been outlined and upon completion of laboratory work a target area will be delineated. Geophysical methods proved useful in this investigation and trenching provided considerable information that would not have been obtained by other means of collecting subsurface samples. Overburden drilling with a Pionjar drill proved fruitless in this terrain.