

ZINC (PPM)

TILL GEOCHEMISTRY

CENTRAL MINERAL BELT, LABRADOR

SNEGAMOOK LAKE NTS 13K

F.J. THOMPSON, R.A. KLASSEN, R.K. BURNS

The normal range of values for Zn is 40-200 ppm. High background values, 140-220 ppm, are generally associated with tills derived from the Moran Lake Group. Several interesting anomalous values occur in the map area. Two samples over Archean rocks north of Moran Lake returned values of 370 and 800 ppm. A value of 4300 ppm Zn with 8.5 ppm Cd in sample 85-TBA-1209 is associated with the Ellingwood Zn showing in Moran Lake Group slates north of Moran Lake. The Green Pond Zn showing 20 km to the north, also occurs in Moran Lake Group slates near the contact with the Archean. The foregoing indicates that Zn mineralization is associated with the Moran Lake Group slates and possibly with Archean granitic rocks. Sample 85-TBA-1279, over the Archean Florence Lake Group, returned value of 600 ppm Zn, 563 ppm Cu and 210 ppm Cr and may be indication of economically interesting mineralization. Values of 1350 and 6200 ppm Zn occur over Seal Lake Group volcanics south of Snegamook Lake. Four samples along the eastern margin of the Harp Lake Complex returned 400 to 7800 ppm Zn.

Introduction

Geochemical analysis of till in the Snegamook Lake area of central Labrador are presented on the accompanying maps at a scale of 1:250,000. The till samples were collected during the 1984 and 1985 field seasons by the Terrain Sciences Division, Geological Survey of Canada, to establish drift composition and patterns of glacial dispersal in the area and to develop techniques of drift prospecting. The work has been funded by the Canada - Newfoundland Mineral Development agreement.

Sample densities varied from 1-3 per 100 km² in areas with limited mineral potential, and from 8-15 per 100 km² within the Central Mineral Belt. Pits were dug, by shovel, to depths of 30-70 cm depending on depth to bedrock and on difficulties in penetrating stony till. Samples were collected from the least oxidized and most organic-free section of the modern soil profile near the base of the pit. In areas of tundra vegetation, pits were dug in mudholes where soil zonation was absent or poorly developed due to periglacial churning.

The clay-sized (<0.002 mm) fraction of the till samples was analyzed for Cu, Pb, Zn, Ni, Cr, Mo, Mn, and Fe by atomic absorption methods and for U by delayed neutron activation. The silt plus clay-sized (<0.063 mm) fraction of selected samples was analyzed for Be, Ce, Nb, Sn, Y and Zr by X-ray fluorescence and Au by fire assay/atomic absorption. All geochemical analyses were done by Bondar-Clegg and Co. Ltd., Ottawa. About 440 clay-sized samples and 111 silt plus clay-sized samples were analyzed.

Physiography and bedrock geology

The study area is rugged, with hills commonly rising 200 m above valley floors. Sample sites were preferentially located on hilltops because valley bottoms are heavily forested, providing few landing sites, and because major valleys are commonly filled with glacioluvial and glaciomarine deposits. The bedrock comprises Archean gneiss and Paleohelikian anorthosite to the north, and Grenville gneiss and Paleohelikian granite to the south. The central part of the study area is underlain by supracrustal volcanics and sediments which include Aphebian Aillik and Moran Lake Groups, Paleohelikian Bruce River Group, and Neohelikian Seal Lake Group. The volcanics and sediments are part of the Central Mineral Belt, which is considered to have potential for economic mineralization in base metals, gold and uranium.

Glacial Geology

Regional ice flow trends are indicated by the orientation of striae and glacial landforms. Sense of movement has been determined by the shape of streamlined landforms and by small scale features on outcrop surfaces. The prominent ice flow trends are east northeast in the central part of the map area, east-south east in the south and northeast in the north. Striations recording an older northeast phase of ice flow are preserved in the central part of the map area. The northeast trending striations are consistent in orientation and relative age with striation recorded in the Churchill falls area, Letitia Lake area and Labrador Trough and are considered to have formed during a major phase of ice flow prior to the last regional phase.

The dispersal patterns of glacial erratics (not shown), Red Wine Alkaline Intrusive Suite, Seal Lake Group Basalt, Bruce River Volcanics and Snegamook Granite demonstrate broad fan-shaped eastward dispersal of 30 to more than 150 km from their respective bedrock sources. Transport of erratics and development of fan shapes is consistent with the last regional ice flow trends. Erratics of Red Wine Alkaline complex occur in till north of the Kanairiktok River, 200 km northeast of the bedrock source demonstrating transport in the earlier northeast phase of ice flow (Thompson and Klassen, 1986). The foregoing suggests that glacial debris has been subjected to a complex history of transport. Furthermore, as yet unrecognized, topographically controlled local variations in ice movement, particularly in low areas or on hillsides, may have played an important role in the transport of glacial debris during the late stages of glaciation.

Geochemistry

The geochemistry of the till generally reflects the geochemistry of underlying and immediately up ice bedrock. Isolated anomalous values may reflect economically interesting mineralization in the bedrock up ice.

References

Thompson, F.J. and Klassen, R.A., 1986: Ice flow directions and drift composition, central Labrador; in Current Research, Part A, Geological Survey of Canada, Paper 86-1A, p. 713-717.

The reader is also referred to:
1983: Regional Lake Sediment and Water Geochemical Reconnaissance Data, Labrador, Geological Survey of Canada, Open File 997, NGR-62-1983, NTS 13K.

1983: Mineral Occurrence Map, Wuchusk Lake, Map 83-37; compiled by C.F. O'Driscoll and N. Noel, Department of Mines and Energy, Newfoundland.

1983: Mineral Occurrence Map, Snegamook Lake, 13K, Map 83-36; compiled by C.F. O'Driscoll and N. Noel, Department of Mines and Energy, Newfoundland.

Contribution to the

CANADA-NEWFOUNDLAND MINERAL DEVELOPMENT AGREEMENT 1984-1989



DEPARTMENT OF MINES AND ENERGY
GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

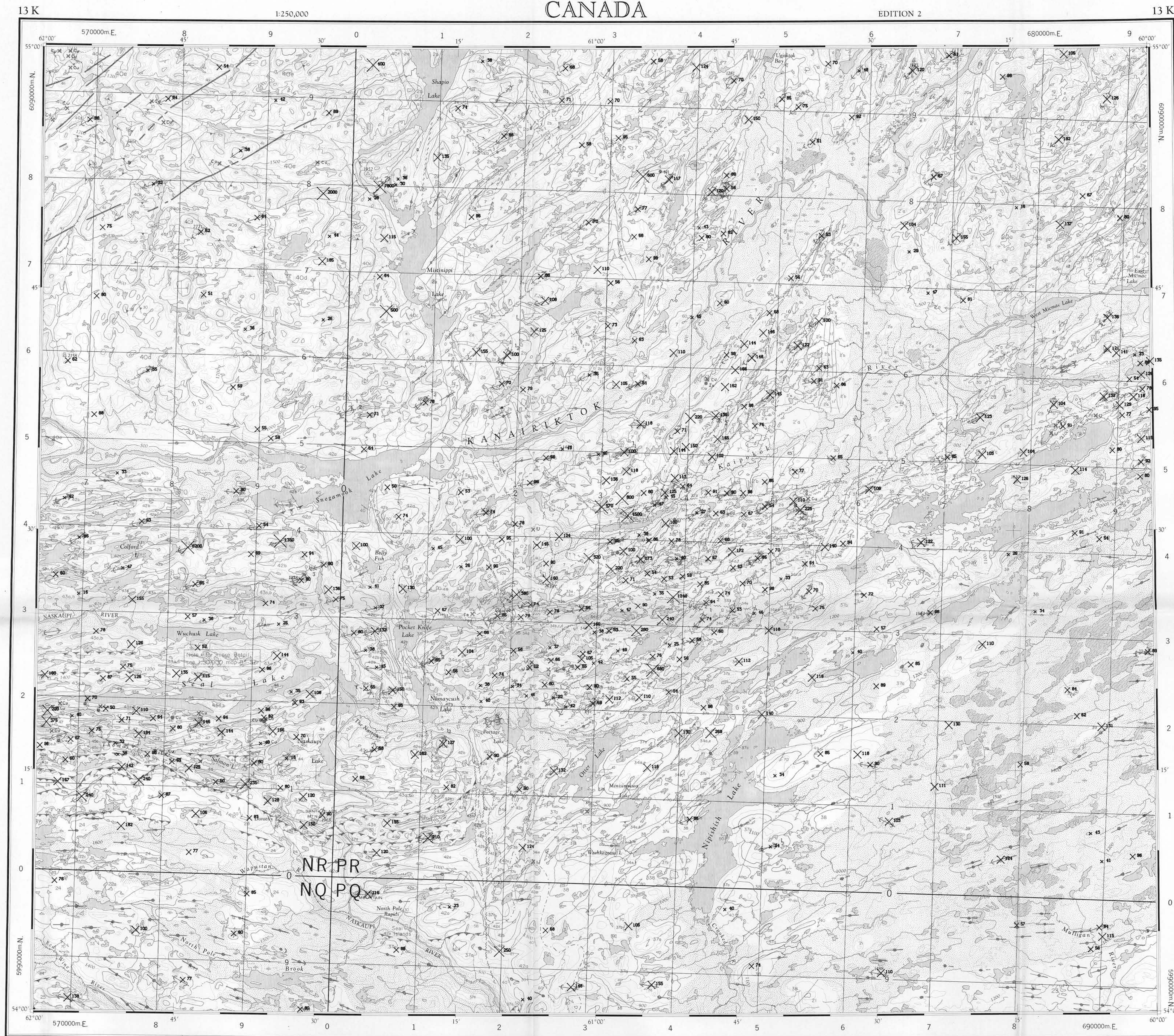


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SNEGAMOOK LAKE

NEWFOUNDLAND

Scale 1:250 000

Kilometres 5 0 5 10 15 20 Kilometres

Universal Transverse Mercator Projection

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SYMBOLS

Drift covered area

Bedding, tops known (inclined, overturned)

Bedding, tops unknown (inclined)

Schistosity, gneissosity, cleavage (inclined, vertical, dip unknown)

Fault (defined, approximate, assumed)

Thrust fault (defined, approximate, assumed)

Anticlinal axis

Synclinal axis

Geological boundary

Unconformity

Igneous layering (inclined, dip unknown, estimation from airborne observation)

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LEGEND

QUATERNARY

Recent gravel pit, basaltic tuff, and sandy moraine. Extensive exposure of basalt along Kapuskasing River.

NEOHELIKAN

GABRIEL, DORSET, DABASE

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