GEOCHEMICAL SURVEYS OVER THREE TUNGSTEN ANOMALIES IN THE NORTH BAY BATHOLITH, SOUTHERN NEWFOUNDLAND

by

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Introduction

The discovery of tungsten and molybdenum mineralization in the Granite Lake area of the North Bay Batholith and tin mineralization in the Ackley Granite has spurred exploration interest. In view of this, the Geochemistry Section began a two-year project in 1982 of assessing the mineral potential of some granitoid terrains and evaluating the effectiveness of various exploration methods. Areas were selected on the basis of being mineralized and/or having lake sediment anomalies characteristic of mineralized granites. During the summer of 1982 soil, stream and rock sampling was done in the areas of Granite Lake (W-Mo), the southern portion of the Ackley Granite (Sn-Mo) and Francois (Pb-F-U-Mo) (McConnell, 1983).

Stream sediment and soil surveys were both found to be very effective in reflecting tungsten mineralization in the Granite Lake area.

During the past summer, the granite project continued by conducting geochemical surveys over three areas of the North Bay Batholith (Fig. 1). The areas were chosen because of their high values of W in lake sediment as indicated by recent data of Davenport and Butler (1982). No previous exploration for W has been reported from these areas although portions of all three were staked by a mining company following the release of the Davenport - Butler data.

Bottom Brook Anomaly

Bedrock and Glacial Geology

The most recent and detailed bedrock mapping in the area (N.T.S. 11P/16) is that of Dickson and Tomlin (1983). Outcrop in the 120 km^2 area is scarce. Where present, it consists of massive to foliated, biotite ± muscovite, medium to coarse grained granite considered of Silurian age. In some instances the granite grades into pegmatite. Examples of quartz veins both in outcrop and in float were observed, some slightly mineralized with pyrite.

Topographic relief is low and the area is covered by a moderate thickness of sandy till. Several ice-contact drift deposits and south-southeast trending eskers were noted. Direction of ice movement is considered to have been generally from north to south. Typically the ground is mantled by large angular boulders of granite similar in composition to that observed in outcrop. However, the compositions of the small lithic fragments contained within the soil profile, as noted during soil sampling, were predominantly meta-clastic and meta-igneous suggesting a considerable distance (5-10 km) of transport. This observation suggests that a significant component of the soil material sampled may also be derived from a source several kilometers to the north.

Geochemical Sampling and Analyses

Tungsten is the only element known to have anomalously high concentrations in lake sediments of the Bottom Brook area. The anomaly has two foci - a northern three lake sample cluster of approximately 40 g/t W and a looser 4 sample group ranging from 14 to 31 g/t W located about 5 km to the southwest. Two types of sampling - soil and stream sediment - were employed in an effort to better define the W anomaly. B-horizon soils were sampled at 400 m intervals along E-W lines spaced 1 km apart. Some closer spaced lines were sampled over the centre of the northern portion of the lake sediment anomaly. Well defined B-horizon material, mostly sand-silt in texture, was usually obtained. In total, 120 km of line were sampled and 332 samples collected. Conventional stream sediments numbering 246 were collected from the 120 km^2 of anomalous terrain. Active sediment was easily obtained in most instances. In addition, 25 samples of granitic bedrock, locally derived float and quartz veins were obtained.

Samples will be analyzed for W and Sn plus the suite - Cu, Pb, Zn, Co, Ni, Ag, Mn, Fe, Mo, F and Loss-on-ignition - and the data released on Open File as soon as possible.

Contribution to the Canada-Newfoundland co-operative minerals program 1982-84. Project funded by the Newfoundland Department of Mines and Energy and the Geological Survey of Canada.

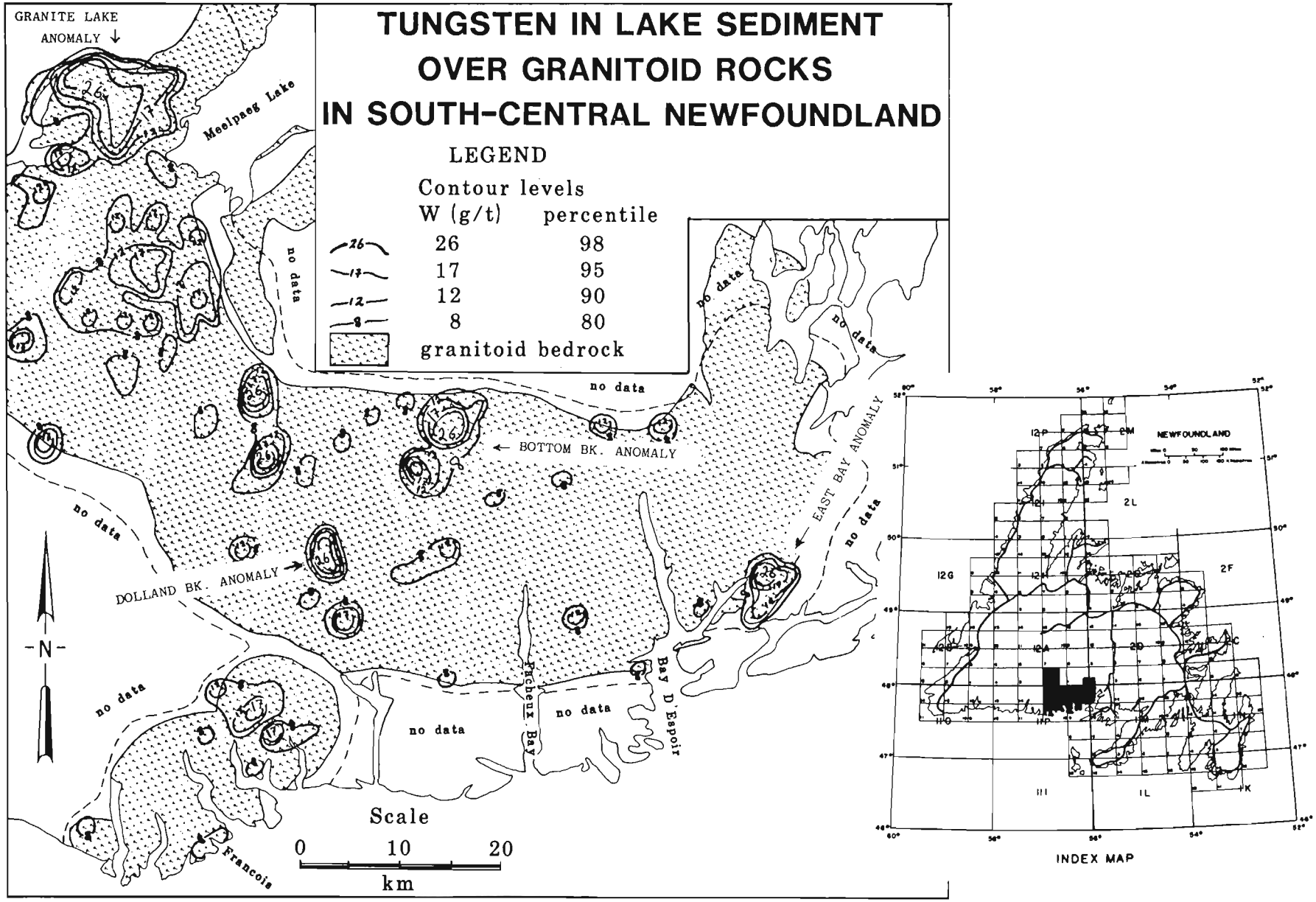

Figure 1: *Distribution of W in lake sediment and location of follow-up areas. (Geochemistry after Davenport and Butler, 1982.)*

East Bay Anomaly

Bedrock and Glacial Geology

The field area encompasses 30 km^2. Relief is rugged, outcrop abundant and till cover is thin to non-existent. The area straddles portions of N.T.S. sheets 11P/16 and 1M/13. The most recent geological mapping in 11P/16 is by Dickson and Tomlin (1983) and in 1M/13 by Colman-Sadd (1976). The central part of the anomaly is underlain by leucocratic North Bay Granite (Silurian) which irregularly intrudes psammites of the Riches Island Formation (Ordovician) toward the perimeter of the area. Immediately to the east of the sampling area disseminated molybdenite occurs in pegmatites, regarded as emanations from the North Bay Granite, which intrude psammites of the Riches Island Formation (Colman-Sadd, 1976).

Geochemical Sampling and Analyses

The high W contents in lake sediments (up to 30 g/t) are from lakes overlying the granite. Elevated values of Pb, Mo, Cu and Ag also are found in the lake sediments. Stream sediment samples (156) were collected across the area. Streams and sediments are abundant although drainage systems are poorly developed. The samples will be analyzed for the same suite of elements as described above for Bottom Brook.

Dolland Brook Anomaly

Bedrock and Glacial Geology

The field area (in southeastern N.T.S. sheet 11P/16) includes 30 km^2 and is everywhere underlain by the North Bay Granite. In general it is massive, unfoliated, medium grained, porphyritic, biotite ± muscovite granite. Previous to this summer no mineralization was known in the area. A small occurrence of pyrite in veins and disseminations in an altered quartz-feldspar-muscovite rock was located. Rock samples from this occurrence have trace amounts of a disseminated mineral which fluoresces bluish-white under ultra-violet light and which tentatively has been identified as scheelite.

This area was geologically mapped this summer at 1:50,000 by Dickson of the Department of Mines. No mapping of the quaternary geology has been done but features noted in the field indicate a southerly movement of ice. A thin to moderately thick blanket of sandy textured drift is present over virtually the entire area. Relief is low except across the deep valley formed by Dolland Brook.

Geochemical Sampling and Analyses

The lake sediment anomaly is defined by three lakes with W values ranging from 11 to 35 g/t. No other anomalous concentration of elements was noted. Samples (75) of B-horizon soil were taken at 400 m intervals along lines spaced 1 km apart. Stream sediments (128) were collected from across the area. Several rock samples of typical bedrock and mineralization were also taken. All samples will be analyzed for the element suite described above.

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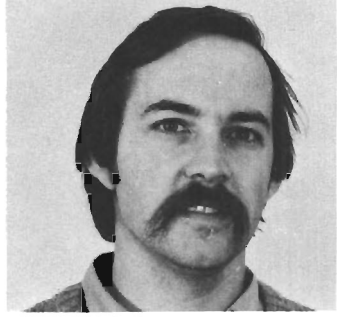

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