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MICROSCOPIC EXAMINATION

of Banks Island Project samples

submitted by

FALCONBRIDGE NICKEL MINES LIMITED

Progress Report No. 1

LAKEFIELD RESEARCH OF CANADA LIMITED

LAKEFIELD, ONTARIO, CANADA

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FALCONBRIDGE NICKEL MINES LIMITED

Progress Report No. 1

Project No. L.R. 1616

NOTE:

This report refers to the samples as received.

The practice of this Company in issuing reports of this nature is to require the recipient not to publish the report or any part thereof without the written consent of Lakefield Research of Canada Limited.

LAKEFIELD RESEARCH OF CANADA LIMITED

Lakefield, Ontario

May 1, 1973

I N T R O D U C T I O N

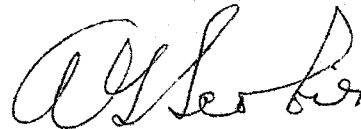
Two samples from the Banks Island project were received in the Mineralogical laboratory from Falconbridge Nickel Mines Limited. The samples were identified as:

- (1) Discovery Zone sample, and
- (2) Bob's Zone sample, respectively.

The material received consisted of minus 10 mesh material and was submitted for:

- (1) Identification of the contained non-sulphides.
- (2) Determination of the mode of occurrence of the contained gold.
- (3) Gold and silver assays.

LAKEFIELD RESEARCH OF CANADA LIMITED



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S U M M A R Y

Gold was identified in both samples. The major sulphide phases were pyrite and arsenopyrite. Also present were sphalerite, galena, chalcopyrite and silver.

Fire assay results for gold and silver were:

	<u>Au, oz/ton</u>	<u>Ag, oz/ton</u>
Discovery Zone sample	0.66	1.23
Bob's Zone sample	0.35	0.33

PREPARATION AND PROCEDURE

A portion of each sample was briquetted and polished for microscopic examination in reflected light. A portion of each sample was pulverized and submitted for qualitative x-ray fluorescence spectrometry. Silver nitrate solution was used to stain the chalcopyrite, to facilitate distinguishing between fine-grained copper sulphide and gold.

RESULTS

Gold and silver were identified in both samples. Pyrite and arsenopyrite were the major sulphide phases. Both samples contained sphalerite, chalcopyrite and galena in small amounts. Sphalerite was more abundant in the Discovery Zone sample than in the Bob's Zone sample. All of the gold and silver was 10 micrometers and smaller.

Gold:

Metallic gold was the only gold mineral identified. It was most abundant in the Discovery Zone sample. Most of the gold in this sample was present as inclusions in gangue, and 65 percent (12 out of 17 grains) of this gold was present disseminated in a single particle which measured 200 by 500 micrometers. The remaining gold was present as:

- (1) A fracture filling in arsenopyrite
- (2) A single grain in sphalerite
- (3) Minute particles ($< 5 \mu\text{m}$) in fractures in quartz and interstitially on grain boundaries.

Results - Continued

Gold in the Bob's Zone sample was present as extremely fine-grained particles disseminated interstitially in quartz.

One feature of interest relating to the occurrence of gold in the Discovery Zone sample was noted. Where particles of gold and arsenopyrite occurred together in the same gangue host, the arsenopyrite exhibited partial replacement by gangue. This replacement was pseudomorphous, in that the original rhombic outline of the arsenopyrite was distinct.

Silver:

Metallic silver was the only silver mineral identified. The occurrence of silver in the two samples was similar and occurred:

- (1) As isolated free grains 10 micrometers in diameter and smaller.
- (2) As wire-like linings in fractures in arsenopyrite.
- (3) As fine-grained particles interstitial to grains of quartz.

CONCLUSIONS

Neither gold nor silver was identified in pyrite. Arsenopyrite was more abundant in the Discovery Zone sample.

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Lakefield, Ontario
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