

FALCONBRIDGE NICKEL MINES LIMITED

INTER-OFFICE MEMORANDUM

DATE February 22, 1980

TO: ✓D. J. Emery

COPIES TO

FROM: P. J. Raleigh

SUBJECT: Giant Arsenic Upgrading Project

In an effort to make further progress on the development of the earnings potential represented by arsenic-gold bearing wastes in the Yellowknife area a meeting of the project group was held on February 21, 1980.

Waste materials under consideration include the following:

1. Current Baghouse Product now being stored in especially prepared underground openings.
± 4500 T/year containing 90% As_2O_3 - 0.08 Au.
2. Con Mines Arsenic Ponds - 50000 tons of waste containing 70% As_2O_3 - 0.48 Au.
3. Giant Mines Underground Storage Stopes - 200,000 tons of material containing 70% As_2O_3 - .50 Au.

Considerable work has been done to date on a hot water leach scheme for arsenic upgrading and release of gold bearing sludges for gold recovery. A final evaluation of pilot plant results and a capital cost estimate have been completed.

Capital Cost estimates have increased to \$4.2 million for the project. The significant increase in costs are accounted for by:

1. A need to go to a multi-stage leach.
2. The need for a new building over 50 feet high.
3. The desire to use commercially available equipment over in house alternatives.
4. The need for automatic controls to reduce labour.
5. The need to maximize heat recovery from the process.

Though capital costs are high the scheme remains one that may be considered further. Operating limitations which allow only one raw material at a time to be treated in the plant are an additional concern.

The project group consisting of

Giant Staff	- DJE
	WAM
Falconbridge Metallurgy	- FJTP
	JFJ
Falconbridge Engineering	- PJR
	LSP
Falconbridge Marketing	- TJD
	DZ

reviewed all available data and arrived at the following conclusions which were unanimous. They are summarized as follows:

1. A decision on the upgrading facility using the Hot Water Leach System will be delayed for up to two years.
2. The sale of current baghouse product to Koppers Corp. may be finalized in March by the F.N.M. marketing group. Selling price seven cents per pound of As_2O_3 . Gold bearing residues to be returned to Giant.
3. Test work on a fuming scheme considered to have potential as an inexpensive arsenic upgrading process will be pursued at the F.N.M. labs. The fuming schemes testing be handled by Giant's metallurgical consultants.

In order to pursue the programme the following items will require consideration and approval by the Giant Board.

1. (a) Sale of Crude Arsenic - Net revenue is estimated at \$500,000 plus additional gold recovery per year for an initial period of two years.
- (b) Construct a load out facility for the product. Estimated costs (based on quotes) \$200,000
2. (a) Fuming research initial evaluation - \$10,000 - if successful, research to continue to fully evaluate the process costs not developed but in the range of \$50,000.

Continuing research is required to fully evaluate the methods available in order that the most economical and universal process can be applied to the raw materials available.

- (b) In order to fully realize the potential of the overall concept, a method for the recovery of material now in storage at Giant will need to be investigated.

Methods to be considered will need to meet all environmental constraints and be based on proven commercially available equipment.

Initial investigations will be limited to concept development and equipment familiarization costs should be in the range of \$5,000 for the first three months.

We are available to provide back-up data and answer pertinent questions.

P. J. Raleigh

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PJR/dh