

FALCONBRIDGE NICKEL MINES LIMITED

INTER-OFFICE MEMORANDUM

DATE: April 13, 1981

TO: D.J. Emery

COPIES TO:

FROM: P.J. Raleigh

SUBJECT: PROPOSAL TO INCREASE EARNINGS BY ADDITIONAL
SALES OF ARSENIC TRIOXIDE AND GOLD

Summary

Considering the very strong arsenic markets and favourable financial picture, an ongoing test program is recommended. The program to June for drilling and design on a pilot plant if warranted, will require the expenditure of \$150,000 with a second request for an additional sum of \$195,000 being proposed if critical work is successful. The present sales of the crude product will provide cash flows to sustain this level of research work.

Introduction

All the mines current production of crude arsenic trioxide has been sold and currently is being moved on a regular basis to a plant in Georgia owned by Koppers Corporation. Koppers has better than two more years to go on their current contract for 3500 T/year. The product which now is worth over 10¢/pound brings the mine \$5,000 in revenue for every truck load leaving the mine excluding gold available from residues.

On the basis of the current contracts the cash flow to the mine is over \$700,000 per year which may be improved by the proposals contained herein.

Markets

The market for both crude and refined arsenic is very strong and as an example of this, the Osmose Company has offered to purchase 4,000 tons of pure As_2O_3 or its equivalent in crude material per year for ²10 years. (See attached letters, Osmose offer, D. Zeraldo re markets)

Objectives

The ultimate objective of the program should be:

1. to allow for all the crude arsenic available from current production and that recovered from underground to be refined into a high grade product for sale to users at a premium price,
2. to recover gold from the residues of the purification process and thus augment bullion sales.

Test Work

To achieve the objectives stated a series of tests and evaluations are needed to confirm:

1. Reserves and grades of As_2O_3 and gold in stopes.
2. The recovery methods applicable for the recovery of stored material.
3. The potential for cost savings and process flexibility shown in the fuming process.
4. The metallurgical characteristics of the fuming process.

The items covered in #1 and #2 are needed to be proven or confirmed before the fuming tests are carried out as a store of representative samples are needed for the fuming tests and if a wet process for recovery is indicated, fuming tests will be redundant for the treatment of stored material making further tests of the process less urgent.

Recommendations and Cost Estimates

It is recommended that approval be sought for a program of testing and sampling of all storage stopes as per the attached Geocon proposal at a cost of \$120,000. The proposed testing will confirm tonnage and grade of reserves now assumed to be in the range of 200,000 Tons of As_2O_3 bearing dust with 85% As_2O_3 and 0.5 oz of gold with some silver. The tests will also confirm or disprove for each stope, the feasibility of recovering the dust in a dry form. Recovery by the wet method is proposed only if the dry method is not possible.

Financial

The present contract plus an Osmose sale would provide revenues of \$1,500,000 per year if only crude were sold. (Exclusive of gold values.) Upgrading or refining of the crude As_2O_3 at Giant would increase revenues and profits substantially as the refined product is valued at 30¢/pound at Yellowknife. A summary of a recent study carried out by marketing, finance and engineering is as follows (details are attached).

Case I

Sell only crude arsenic trioxide from current production i.e. 3500 T/year only minor gold values are recovered.

Case II

Sell pure arsenic trioxide from current production only i.e. 3500 T/year using a fuming plant for product processing. Only minor gold values are recovered.

Case III

See ^upure arsenic trioxide to a maximum volume of 6,000 T/year using both current production and recovered material with an average gold content which is recovered.

Case #	Total Cash Inflow \$000	Capital Cost \$000	Net Present Value @ 17% discount rate \$000
I	6,652	-	1,788
II	16,221	1,395	2,859
III	37,142	2,023	7,240

The financial and marketing aspects are very attractive and indicate that an orderly development of the potential of the Giant property to supply part of the arsenic market should be continued and that the time table should be as short as is reasonable and possible.

It is also recommended that conditional approval be given for the design and procurement of a fuming test plant provided that the work in the first series of tests is satisfactory in meeting objectives of tonnage, grade and recovery method. Cost of the total fuming test is \$225,000 as determined by Simon Fekete, the company's metallurgical consultant. Preliminary bench scale tests at Thornhill were successful in proving the basic process parameters and pilot tests are the next step in a conservative approach to the commercial plant.

Work Schedule and Cash Flow Chart

The overall schedule for the work is as follows:

<u>Program</u>	<u>Period</u>	<u>Cost</u>
Drilling tests	April - June/81	\$120,000
Pilot plant design	June/81	30,000
Total this request		\$150,000
Pilot plant construction	July/81	70,000
Pilot plant operation	August - October/81	125,000
Total Second request		195,000
		<u>\$345,000</u>

Approval requested \$150,000 for work to June 30, 1981.
Anticipated request in June, 1981 for \$195,000 to complete program.

We hope you will find the above acceptable.



P.J. Raleigh

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1. Osmose Offer
 2. D. Zeraldo's letter
 3. Financial Study (J. Green)
 4. Geocon Proposal