

25E
Yellowknife, Northwest Territories
Canada XOE 1H0
Telex 034-4-5514
Phone 403/873-6301



D R A F T

June 12, 1979

Mr. D. Billing
Chief Environmental Protection Officer,
Government of the Northwest Territories,
YELLOWKNIFE, Northwest Territories.

Mr. G. Warner,
Chairman,
N.W.T. Water Board,
P.O. Box 1500,
YELLOWKNIFE, Northwest Territories.

Gentlemen:

Re: Water Licence No. N1L3-0043
Arsenic Trioxide Upgrading Plant

The two main concerns expressed by the conditions of this licence are the effluent quality requirements which must be met by May 1, 1981 and the safety of the underground storage of arsenic trioxide method.

The Company has spent a good deal of time and money over several years examining different methods for improving the effluent quality. Lately, the most promising method to deal with the cyanide and heavy metals in the effluent would appear to be an electrochemical process devised by HSA Reactors Ltd. of Mississauga, Ontario, which will remove the heavy metals from the barren solution and enable it to be used again. In that way, the cyanide will not be wasted to tailings.

To deal with the soluble arsenic problem in the effluent, and also to stop storing any more As_2O_3 underground, the Company has been examining an alternative method that will mean removing the impurities from the soluble As_2O_3 in both the baghouse and Cottrell products and marketing the refined or upgraded As_2O_3 .

In this way, the baghouse dust now being stored underground and the soluble portion of the Cottrell dust now going to tailings will be both treated further in a new plant which we intend to build, and the refined or upgraded As_2O_3 will be sold in the United States.

*Discussed with GSAH
& agree - scag gettes remaining
(etc.)
Permits - Transportation?
Time Element - discussed
Finch Deposit - discussed.
Hobbs Ept. - 20 ppm → 185-190*

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With these two steps, the installation of a commercial sized HSA Reactor, and the installation of an arsenic upgrading plant, it is intended to do two things towards meeting the conditions of our Water Licence, and allaying the fears of some of the public, namely:

i) Meet the requirements of the final effluent quality before 1981, and

ii) Stop storing any further quantities of As_2O_3 underground at Giant, by refining and shipping all new production as As_2O_3 crystals out of the N.W.T.

We have enclosed a simplified flowsheet and description of the As_2O_3 upgrading process. Mechanical drawings and a complete metallurgical description will have to follow the completion of the test work, the design and procuring of manufacturers quotations, deliveries and drawings.

It is intended that this new facility would be capable of producing 6,000 tons annually of 99%+ As_2O_3 crystals from the following materials:

- i) Our baghouse dust current production
- ii) Our cottrell soluble As_2O_3 dust production

These two together would produce about 3,000 tons of As_2O_3 per year.

The remaining 3,000 tons per year would be produced from treating the material now stored in Cominco's Con Mine arsenic storage ponds. As we have already tested this material using this process, we have been able to demonstrate that it too is amenable to this process.

Environmentally, it is intended that:

1. The Upgrading Plant would include provision in its design and equipment for covered and vented tanks, sealed crystallizers, etc., with automated controls, so that there can be no exposure to fumes or dusts that could be harmful to the operators. For example, the crystallizers are being designed by the people who are considered foremost in the business - Struthers Wells. The floor sump would be designed to hold the contents of the largest tank.

2. There would be a storage silo and a truck-loading facility if not designed by Sprout - Waldron, then at least incorporating similar features. See copy of drawing enclosed.

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3. Since it is planned to ship the product by a tank truck, similar to a cement bulk shipping vehicle, there would be no off-loading from our plant to the customer.

4. To handle any emergency such as a highway accident in the N.W.T., when a vehicle loaded with As_2O_3 is rolled, and the tank is pierced, or split, releasing some of the contents, there would be available at all times a vehicle with a large tank and a powerful vacuum system, like a "Super Sucker" to clean up anything spilled and to transfer the shipment.

It is planned to have this plant in operation within 10 months from July 31st, but it is necessary to complete the pilot plant work, the design, the cosing, securing the necessary Governmental permits, obtaining final approval from the Directors, and placing the orders for the equipment.

It is necessary to secure whatever government permits are required for this project before we can approach our Board of Directors for their approval. For this reason, we respectfully request your prompt co-operation in this matter so that the project will not be delayed at this stage in its progress.

If there is any further information that you require, we will be only too pleased to supply it, if it is available.

Yours very truly,
GIANT YELLOWKNIFE MINES LIMITED

W. A. Moore
General Manager

WAM:jc
Attachments

c.c. D.J. Emery
L.S. Price
D. MacPhail
M.L. Brown
M. Hewitt
K.S. Morton