

# WHITING EQUIPMENT LIMITED



*Manufacturers of* **HEAVY INDUSTRIAL EQUIPMENT**

WELLAND, ONTARIO

L3B 6P4

AREA CODE 416

732-7585

GEN. ENGR.

April 19th, 1979.

APR 23 1979

Falconbridge Nickel Mines Ltd.,  
P.O. Box 40,  
Commerce Court West,  
TORONTO, Ontario M5L 1B4

Attention: Mr. L. Hurst.

Reference: Crystallizer for Arsenic Trioxide.

*DO WE HAVE TO BE  
TWO STAGE ?  
No but this is certainly  
first class.*

Gentlemen:

We have reviewed your requirement to crystallize arsenic trioxide. In view of the possible problems of impurities you anticipate if ammonia is used to enhance solubility characteristics, we believe the following may be of interest to you.

A system could be supplied in which your feed solution of 75 IGPM at 212 degrees F. is flash cooled in three stages. The flash vessels would be designed to provide for minimum entrainment losses and good crystal growth conditions.

If the feed contained 70 g/l  $As_2O_3$  then approximately 1997 lbs/hr. of  $As_2O_3$  crystals would be precipitated by cooling the solution to 100 degrees F. The mother liquor from the third flash vessel would be used to condense vapors from the first and second flash stages and would recapture the heat resulting in an overall steam savings. Vapors from the third stage would be condensed in a surface condenser. This condenser would heat 123 U.S. GPM of cooling water from 45 to 75 degrees F.

The mother liquor would leave the first stage barometric condenser at approximately 175 degrees F. This would require approximately 1,770 lbs/hr. of make up steam therefore to heat the mother liquor from 175 to 212 degrees F.

The flowsheet we envision is shown on SK-A-4-79 attached. As you can see, it minimizes any pollution problems by returning all evaporated vapors to the mother liquor. The heat loss in this system is simply the amount of heat gained by the cooling water.

This system would consist of three (3) 4'-0" diameter crystallizer flash vessels, two (2) 18" diameter direct contact condenser, one (1) 18" diameter surface condenser, vacuum equipment and vapor piping. Assuming stainless steel for material of construction, the above equipment would have an approximate selling price of --- \$225,000.00 (Two Hundred Twenty-Five Thousand Dollars) - in Canadian Funds, f.o.b. our plant, Welland, Ontario with taxes extra.

There are of course other methods of crystallizing the  $As_2O_3$  and we are interested in working with you to investigate these different methods.

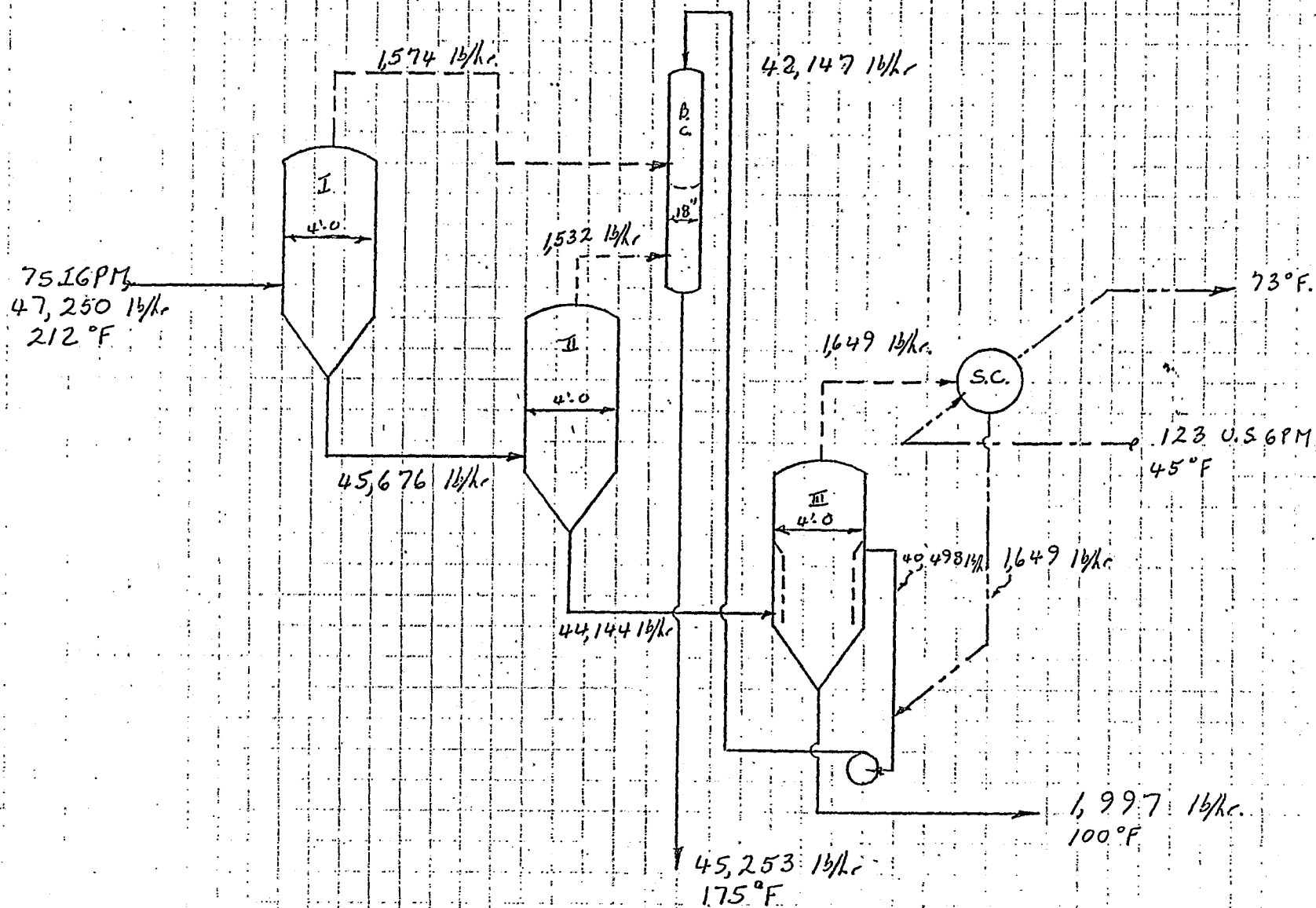
Yours very truly,

WHITING EQUIPMENT LIMITED

*D. J. Neville*

D. J. Neville,  
Chemical Engineer.

DJN:LKM  
Encl:



SK-A-4-79  
Falconbridge Nickel Mines Ltd.

DJN  
April 19, 1979.