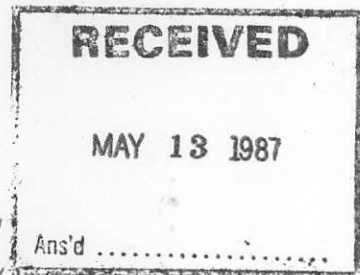


Rea Metallurgy.

825130
Rea Gold



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FAX TO LARRY REAUGH.

May 12, 1987

You may be interested in this
for the Discovery Zone

Me x

Mr. A. Davidson, P. Eng.
Minova
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V6B 1B8

'Direct determination of 'invisible' gold in refractory gold sulphide ores and implications to metallurgical testing'

Dear Sir:

I wish to bring to your attention a unique technology which was developed at Surface Science Western. This technology, enables the in-situ detection of gold in common sulphides (pyrite, pyrrhotite, arsenopyrite etc.) in grains as small as 100 µm diameter. Gold concentrations as low as 0.3 parts per million (0.01 oz/t) can be directly determined by this method, which uses a form of Secondary Ion Mass Spectrometry (SIMS). By contrast, the detection limit for gold with the electron microprobe is 300 parts per million (10 oz/t).

The development of an analytical method affording direct identification of sulphide minerals containing the "invisible" gold is clearly important to the extractive metallurgist. Knowledge of the mineralogical distribution of the "invisible" gold on a microscopic scale in the final tailings guide metallurgical testing for concentrating the specific gold-bearing mineral. This could improve the recovery of gold by mining operations now in place and lead to economic recovery in ore bodies now considered unprofitable.

Surface Science Western submitted in February 1987 an unsolicited proposal to Supply and Services Canada covering the application of this technology to the improvement of gold recovery from sulphide ores. We proposed to address recovery problems from ten mines distributed across the country. Based on the results of the mineralogical distribution of gold, metallurgical bench testing will be carried out by an internationally recognized metallurgical laboratory.

As a general guideline it has been proposed that every ore will be subjected to direct cyanidation to determine its refractoriness (in the case of final tailings this step may not be necessary) then be examined microscopically both with the optical microscope and the electron microprobe to determine the presence of gold minerals and their composition. Image analysis will be performed as required to determine the size and liberation of the gold minerals. The most common sulphide minerals in the ore will be analyzed with the ion microprobe for gold. Based on the results, a mineralogical balance for gold will be obtained which will be used as a guide to bench scale metallurgical testing.

Mining operations interested in the proposed program are encourage to participate by providing samples, participating in discussions and supporting the program financially. The federal Government has favourably received the proposal and has agreed to contribute \$154,000 (54.6%) towards the total cost of the program, which approximately is \$282,000, on the condition that the ten participating mines will be contributing \$6,000 each (2.2%). The provincial governments are being approached to cover the remainder of the expenses (\$66,000, 24.2%). So far four mines have agreed to participate in the program, and CRM (Quebec) has agreed to do the metallurgical testing on Quebec ores for free.

SAMPLE REQUIREMENTS

For this study, at least one selected lump sample and a mill head sample are required. The mill sample should be 1/4". Also 100 gram samples of any sulphide concentrates which are produced should be provided. In the case where a mill sample is not available, a composite sample representative of the ore may be used. Alternatively an ore sample from each discrete ore zone could be submitted. A minimum of 70 SIMS determinations for gold per ore is anticipated. A minimum of 20 kilograms of mill head and of selected ore samples are required. All samples should be frozen and stored or shipped frozen immediately.

I plan to visit British Columbia in the near future. During this visit I shall be providing additional information on the program and if Minova decides to participate, we can discuss specific requirements you may have for the ore to be tested.

Yours truly,



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SC/sb
Enc.

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