NEGUS MINES LIMITED
(No Personal Liability)

Yellowknife, N.W.T.
June 7, 1951

Mr. S. Homulos
Mining Inspector,
Yellowknife, N. W. T.

Dear Steve:

The following is additional to our discussion of yesterday afternoon (June 6) re disposal of AS_2O_3.

As you know we are installing a 30 ton Dorrco roaster. For collecting AS_2O_3 we plan on a hydraulic scrubber of either the Con impinger type or the Peabody scrubber, which has been recommended to us by the Dorr Company. Our concentrate runs about 12.5% As. Therefore, in a month we will produce, assuming a complete As elimination in the roast, say 115 tons of As or 152 tons of As_2O_3. Assuming that the stuff will settle to a weight of 1 ton occupying 30 cubic feet, then 4560 cubic feet per month will be required for storage alone, or in a year 54720 cubic feet will be required. Assitional settling space would be required to ensure a clear return solution. This could amount to say one third of the above volume or say 18000 cubic feet. These total to 72720 cubic feet of storage space, or in round figures 73000 cubic feet. This is equivalent to a storage tank 80 feet in diameter by 20 feet high, which in either concrete or wood, would be a very expensive structure.

We have gone over the surface of the Negus property, within a 1000 foot radius of the proposed roaster site, looking for a suitable site. The 1000 foot radius has been chosen mainly because of pumping difficulties during the cold months of the year, as we do not consider it practicable to pump the relatively small quantities for a longer distance in cold weather. There is one possible site which could be made available by rock excavation and a concrete dam. The rock appears to be shattered considerably, and surface drainage is to the lake - which we consider to be a very bad feature.

We have therefore investigated the possibility of an underground settling chamber on one of the upper levels of the old mine. There is a stoped out area available in No. 2 vein. This was a "tight" vein with no shearing on either the foot or hanging wall which could be considered as impervious to water as the surrounding greenstones. This stope, number 217, extends from the first to second levels. The vein which has been cut on the third level station, and on the fourth level west crosscut, has not been mined below the second level. Also, the vein "pinches out" before reaching the Rycon-Negus boundary.

We propose to slash this stope out to an average width of 8 feet, and to a length of 100 feet, with a level interval of 100 feet, providing a total of 80,000 cubic feet of storage. We also propose to connect this storage area to the surface by

Mr. S. Homulos - - - - - - - - - - - -

a raise, which would be used for necessary pipe lines from and to the roaster building and for forced ventilation of the storage area. It is recognized that the latter is important, mainly on account of the accompanying sulphur dioxide gas. It is therefore proposed to ventilate the area with a 3 horsepower suction fan, discharging through vent pipe to the surface, via the raise.

We propose to form an overflow compartment with adjustable weir overflow at the south end of the stope, with the overflow solution being pumped back to the scrubber for reuse. As a safety precaution, to prevent any possibility of an overflow into the mine workings, the normal high water level will be maintained a minimum distance of 10 feet below the first level. This would provide at this height, three days of roaster and scrubber operation without return pumping. It is not anticipated however that this condition could occur since duplicate pumps would be arranged, providing one spare pump at all times.

A concrete bulkhead would of course be necessary on the second level. The design and installation of this is a relatively simple affair. As a check for leaks, after necessary excavation and construction of the bulkhead, we propose to fill the storage basin with water, colored with an aniline dye and watch for seepages of this colored water. Any seepage points so noted would be grouted off.

This in general covers the major points of the proposed installation. Any further details required will be supplied on request.

Maps showing the location of the proposed storage area are enclosed.

Yours sincerely,

J. McNiven (Sgd.)
Mines Manager.

P.S. After reading this letter, we feel that some further explanation may be necessary regarding scrubber operation. The scrubber solution plus precipitated As_2O_3 will be pumped to the settling basin. Clean solution will be pumped back for reuse in the scrubber. There appears to be sufficient evaporation in the scrubber to prevent any build up of solution in this circuit.