

FALCONBRIDGE NICKEL MINES LIMITED

INTER-OFFICE MEMORANDUM

DATE: May 22, 1974

TO: D. E. Emery

COPIES TO: DRD, AC, HP, file

FROM: J. M. Mortimer

SUBJECT: Re: Environment Canada - Giant Stack Emission

I have now read over all the literature you sent me on the above or more precisely the draft form of Environment Canada's proposed "Test Methods for Determining Concentrations of Particulate and Gaseous Pollutants from Stationary Sources." It is a typical Government document in that it rigidly covers all situations without regard to specific situations or the practicality of the methods. Technically I cannot fault the suggested procedures but in specific instances they could be burdensome to do and could in effect defeat their purpose. I have a strong feeling the authors have read a lot on the subject but haven't climbed too many stacks or flues to perform their procedures.

Hal Pawson should be better informed than I on the differences between Giant's current procedures for stack testing and those that are being recommended. He can spot the objectionable features. For my part, I would comment as follows:

One of the suggestions made by Environment Canada (E.C.) is that a 90° traverse of the stack be made. This is no problem in itself but I am not sure if Giant's test platform extends over that circumference. Also E.C. have hung their hat on a fixed minimum of 12 traverse points and upstream-downstream distances of 8 and 2 stack diameters respectively. These are in excess of earlier recommended norms and perhaps could be modified for Giant. These factors are basically a function of the variations in velocity head which may be redundant as Giant has nearly a non variable volume emission.

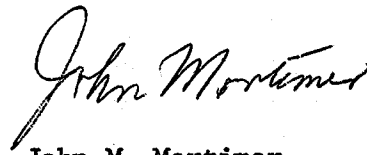
The gas analysis specifications appear a little oblique for Giant. The specifications mention carbon dioxide, carbon monoxide and excess air without any mention of sulfur dioxide. Obviously the specifications have been borrowed from carbonaceous burning installations. Gas analysis by Orsat is acceptable although Giant can probably calculate the stack gas composition with equal accuracy from all the known inputs to the system. I'm not familiar with a portable chromatograph but one wouldn't want to go outside the laboratory with a standard model chromatograph.

Moisture determinations in the effluent can in the case of Giant be calculated from the relative humidity of the air and the known input of water with reasonable accuracy. Instead I see the specifications demand an ice-pack and additional apparatus with a fussy procedure. There is no denying the theoretical accuracy of the method though tedious to perform for nebulous improvement in accuracy.

The main change in procedure that is being recommended is the cooling by ice-pack of the gas stream in the test apparatus and the entrainment of solids by solution. E.C. don't seem to like Whatman or other types of filter thimbles but prefer a loose type glass wool filter followed by solution entrainment. Here again the apparatus is more complicated and I have a feeling that the amount of submicron material getting through a standard thimble is relatively small at Giant.

In respect to the cooling of the gases by ice-pack, the net effect of this tedious procedure appears negligible. Giant stack tests in my possession indicate a stack temperature of about 170°F. If we consider this to be the thimble temperature then an ice-pack would perhaps lower the gas temperature to 40°F. Referring to E. Nenniger's letter to Archie of July 17, 1972, the temperature difference could account for an additional daily catch of less than 20 pounds of arsenic. If we normally emit 800-1200 pounds per day, then the recovery could be of the order of 1% less which most mortals would consider within overall accuracy of procedures and not worth lugging an ice-pack etc. up the stack.

In conclusion I would fault the Environment Canada specifications in that they are a great verbiage suggesting tedious procedures for testing worth very little at Giant. In fact, on the contrary they could defeat the purpose of most testing. It has been my understanding that pollution control is equally interested with continuous and comprehensive emission measurements which should not be sacrificed by stringent specifications which permit only limited testing. Apparent technical accuracy could be practically lost.



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