

Digest Report On Yellowknife Visit June 29th to July 5th

(1) As requested, I investigated the surface protective measures which would be necessary at the proposed arsenic dumping area adjacent to the Yellowknife Golf Club. Briefly, it would appear that the area should be well fenced for maximum protection as there was a difference of opinion regarding possible traffic thereabouts. Guarding the area hardly seems practical as it is of enormous size and an effective system of supervision would involve a considerable staff. Covering the arsenic pits would be necessary.

By the time of my arrival the interest in this area had somewhat changed as wellwater at the nearby golf club was found to contain 0.024 p.p.m. arsenic at 14 feet, according to analysis by Mr. Raht of Consolidated Mining and Smelting Company. This meant that percolation of arsenic from the surface had occurred. It raised a question as to whether the sandy soil would safely contain the dumped arsenic. Additionally, it was considered that exploratory excavation would have to be undertaken to determine the depth of sand as outcroppings of rock showed in many places. Finally, the expense of dumping in this area was calculated by the Giant Mine to equal that of steel storage tanks, for the area is 10 miles from Giant's operation.

(2) The continuing survey, details of which were set forth in your letter of February 11th to Mr. Gibson, had not been well developed at the time of this visit. Dr. Stanton had left on holidays a few days prior to my arrival and was therefore not available for comment. Dr. Bickford, who was carrying on in his place, was not fully conversant with the matter.

The Giant Mine had just begun sampling and analysis when their chemist resigned so that they had only completed one series of tests and these were of doubtful value owing to difficulties which had been encountered in the arsenic analysis technique.

The Con Mine had carried out sampling at indicated positions and at a multitude of other locations.

Available data showed that arsenic values in drinking water from the three operating systems rose gradually during the course of the spring break-up to roughly twice the safe limit. At the third week in June a decline was in evidence. Kam Lake was running 1.5 mgms. per litre during the week of my arrival, Rat Lake 5 mgms. per litre and Pud Lake around 35 mgms. per litre, even though arsenic slurry was no longer being dumped there. The other lakes in the area were proportionately high. Warning signs should be erected around many of these locations because of picnicing and fishing.

A standard arsenic analysis technique was worked out with Mr. Raht; an up-to-date map of sampling locations and analytical results was compiled; Dr. Bickford was asked to initiate testing at the sites assigned to MOH Yellowknife; I undertook to perform the analysis on behalf of Giant Yellowknife until their laboratory was again operating.

Collection of Arsenic

Giant's Cottrell system will be in operation around November and will yield guaranteed 92% collection with 96-97 promised. Meanwhile, this mine continues to stack discharge. The Con mine claims a high operating continuity with collection in the 90's currently. Nevertheless, Trail has not yet finally decided upon this method so far as could be learned. The Negus mine will begin roasting October, 1951, and had not decided upon a collection method, though Cottrell appears to be favoured at this time.

Disposal of Arsenic

Con Mine

The Con trench method will be abandoned owing to capacity limitations and overflow problems during freezing weather. New tributary trenches have been dug to take care of overflow and pumping back of supernatant solution to the impinger has been going on for several days. Test holes were dug but the experiment was not a success owing to difficulties with frost in the ground and the collection of rain water in the holes. Mr. Raht feels that no liquid is escaping the trenches through the ground.

It is now proposed by this mine that a depression in the near-by pillar^{ow} lava be dammed by a cement wall for use as a collection and settling basin. Geological examination of the rock structure had not been completed. Meanwhile, Mr. Giegrich, of Trail, arrived yesterday to discuss the whole problem.

Giant Mine

The interest of this mine in the disposal area adjacent to the Yellowknife Golf Club appears to have waned owing to the considerations dealt with above. In view of Con Mine's pillar^{ow} rock basin proposal, Giant is giving consideration to draining a lake and carrying out tests to establish its practicability in the event that the principle of ground storage be accepted by Ottawa. Meanwhile, negotiations with Manitoba Bridge Company have been under way with a view to establishing a price on suitable steel tank storage.

Negus Mine

Mr. McNiven has been estimating cost of underground rock chamber storage as compared with steel tank storage. He is not partial to surface dumping in tailings pits or pillar lava basins. Possibly tank storage for one year will be arranged pending final decision on the method adopted by the two senior mines.

Conclusions

1. It is possible that Con and Giant will request official attitude toward rock basin storage. If so, this will come forward quickly as cement work would be necessary before frost.

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2. Giant and Negus regard steel tank storage as the safest and possibly the cheapest in the long run, especially if Ottawa would establish a research on uses for As_2O_3 .
3. Without prejudice to the principle of experiment, it is apparent that in the absence of uniform directive regarding safe collection and storage, each new operation will expect to carry out full scale trials of individual methods. Under these circumstances, clean up of the area and removal of the threat to life would be indefinitely delayed.

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