

Atlas Minerals
Division of Atlas Corporation
P. O. Box 488
Moab Utah

March 3, 1967

Dr. Donald I. Walker
Director Region IV
Division of Compliance USAEC
P. O. Box 15266
Denver 15, Colorado

Dear Dr. Walker:

A plan view of the tailings pond area at the Moab mill is shown in the enclosed Figure 1. Normally the clarified solution from the main tailings pond overflows in a decant tower through a pipeline under the main tailings pond to a series of two scalping ponds. Barium chloride solution is added between the two ponds to coprecipitate radium with barium sulfate or carbonate. The precipitated barium-radium settles in the second scalping pond.

On February 6 at approximately 6:00 o'clock in the morning, some clarified overflow from the main tailings pond inadvertently began to overflow through the auxiliary decant system. Subsequent investigation indicated that freezing and thawing of the surface of the pond slightly lifted the wooden tower on the auxiliary decant system. This tower has since been firmly anchored in place.

A series of photographs were taken on the afternoon of February 7 and are enclosed as Figures 2 through 8. The position of the camera and the direction it was facing when the photographs for Figures 3 through 8 were taken are indicated on Figure 1. Figure 2 shows a distant view looking east across the main tailings pond. The auxiliary decant tower had had an earth dike built around it by this time. Figure 3 shows a closer view of the decant towers. The tower to the viewer's left is the normal decant tower; the tower to the right is the auxiliary decant tower. Figure 4 is a close-up view of the auxiliary decant tower. Figure 5 shows the auxiliary decant pond. Please note the barium chloride solution tank on the left side of the pond and the overflow solution on the right side of the pond. Figure 6 shows a close-up view of the temporary barium chloride solution treatment system on the auxiliary decant pond. Figure 7 shows the overflow weir used to measure the flow from the auxiliary decant pond.

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Dr. Donald I. Walker--2

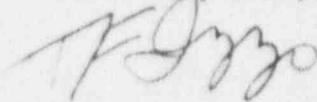
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Upon discovery of the added flow through the auxiliary system, three programs were initiated. Earth was bulldozed from the west end of the main tailings pond around the auxiliary decant tower. This project was completed and the flow through the auxiliary system was stopped by 12 noon on February 7. The results can be seen in Figures 2, 3 and 4. A temporary barium chloride solution treatment system was operating on the auxiliary decant pond by 1:00 p.m. on February 6. A rectangular weir was installed in the overflow from the auxiliary pond. Measurements at the weir indicate that the flowrate of solution during the period of no treatment averaged 1047 gallons per minute and contained 5.48×10^{-8} uc/ml Ra 226, 0.035×10^{-6} uc/ml Th 230, and 0.017×10^{-5} uc/ml of natural uranium. This period was from approximately 6:00 a.m. to 1:00 p.m. on February 6. The flowrate during treatment with BaCl_2 solution from 1:00 p.m. on February 6 to 12 noon on February 7 averaged 649 gallons per minute and contained 0.34×10^{-8} uc/ml Ra 226, 0.038×10^{-6} uc/ml Th 230 and 0.024×10^{-5} uc/ml of natural uranium.

The occurrence described above of the release of tailings pond overflow through the auxiliary decant system appears to fall within the requirements of the Atlas Minerals license as amended for tailings pond effluents. However, in order to keep your office fully informed this letter and my telephone contacts with you on February 6 have been made.

If you need any further information, please let me know.

Yours very truly,



T. F. Izzo
Manager

TFI:sw

Enclosures

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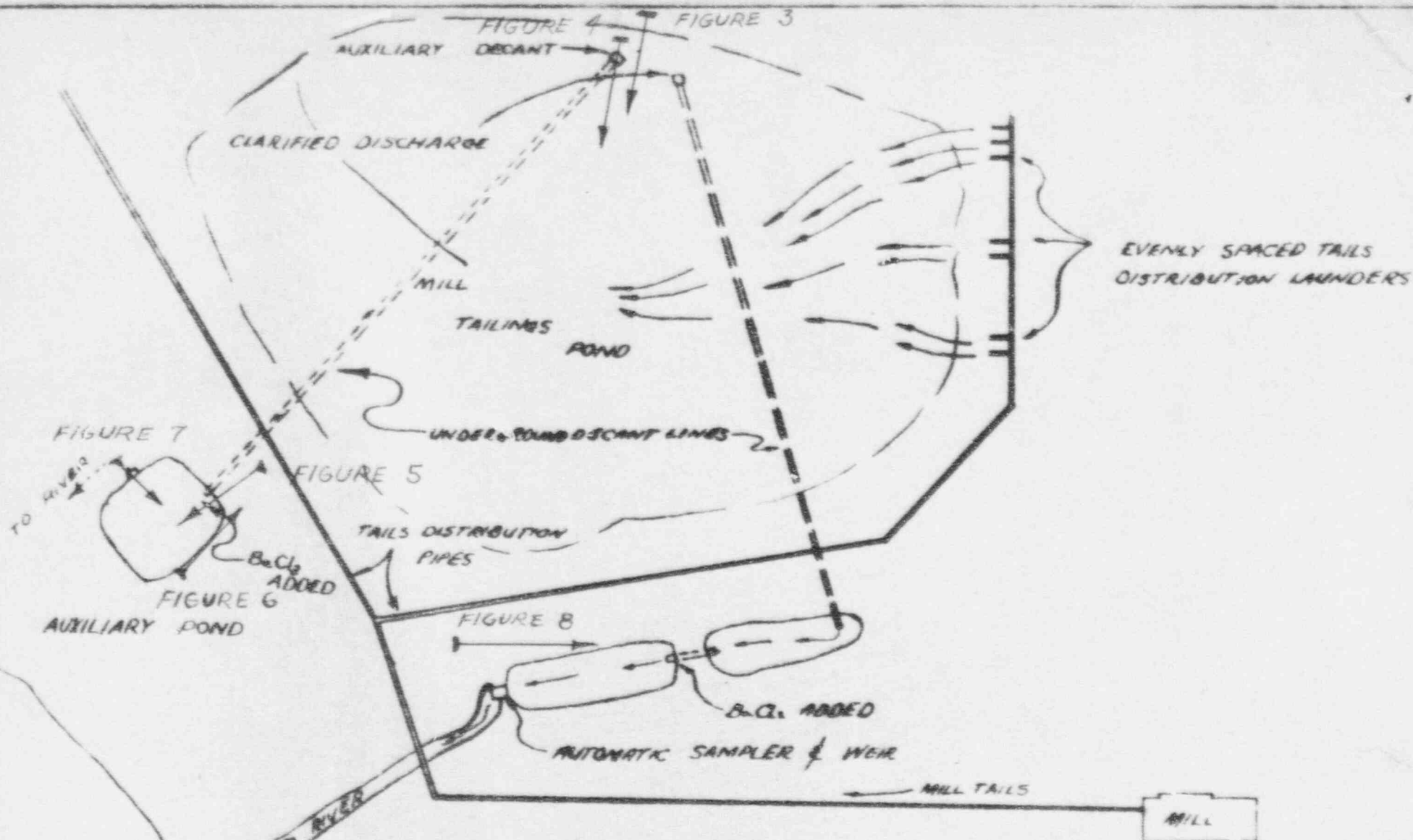


FIGURE 1

ATLAS MINERALS MILL MOAB, UTAH
 TAILINGS RETENTION & RADIUM TREATMENT SYSTEM
 NOT TO SCALE
 1-27-64

3. With regard to the 592 notes which accompanied your memorandum to me, there appears to be a discrepancy in both the second page of Exhibit B (memorandum dated May 21, 1965, Woolsey to Page) and paragraph 34 of the 592 notes. Both refer to the acidification of the samples prior to filtration with "2% HCl." Page 9 of the document referenced in paragraph 2 above calls for the addition of "sufficient concentrated nitric acid (emphasis added) to make the sample 2% acid by volume." I am pointing this out only because later in the May 21, 1965 memorandum it is stated "We prefer the ID technique because it is our opinion that 'solubility' is defined as being soluble in human body fluids and acidification with dilute HCl would be more representative of the process which takes place in the human gut." I assume this is the definition of solubility which is mentioned in your December 2, 1966 memorandum to me. I believe there is a big difference between acidification with 2% HCl and the addition of concentrated HNO_3 to make the sample 2% acid by volume. Furthermore, it appears that the reason for acidification is not to approximate what happens in the gut, but rather to assure that the sample contains the radium which might be expected to be redissolved under conditions different from those at the point of sample collection.
4. I also reviewed Exhibit A of the 592 notes (your memorandum to Paulus dated December 9, 1964) and discussed it with Lee Rouse. The difference between column 1 and 2(a) for the radium analysis is only a factor of about 2.5, and for the thorium analysis is practically insignificant. This leads me to believe that the addition of the nitric acid made no appreciable difference.
5. Section 20.106(d) states that the limits of Appendix B apply at the boundary of the restricted area or at the point where the material leaves a conduit. Hence, the limit for soluble radium must be applied to the material sampled at that point. If it could be shown that (1) a portion of the insoluble radium released was subsequently redissolved in the river; (2) the redissolution process measurably increased the radium concentrations in the river; and (3) the ID acidification technique accurately reflected the degree of redissolution, then we would have a case for specifying particular analytical procedures. In the absence of such information, however, we see no reason for questioning the licensee's analytical technique.

(continued)

6. Finally, after reviewing the entire file, I can't get too concerned over the releases of effluents by this licensee. It appears that they have been within the limits of their license without taking any credit for the large volume of flow in the Colorado River. I note that paragraph 37 of the 592 notes states that independent samples were taken. I would be interested in the results. Unless these are significantly different from the licensee's results, I am considering the matter of the differences in analysis techniques closed.

cc: R. G. Page, SLR