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September 20, 1991

John D. Kinneman
Section Chief - Nuclear Materials
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Kinneman,

Thank you for your letter dated June 6, 1991. We have reviewed the NRC's rationale for not licensing various areas and materials on the Heritage Minerals, Inc. (HMI) property and other historical information including material provided by Jack Lord, Vice President of HMI, on materials processing at the site.

Based on this review we conclude that the remaining estimated 600,000 tons of combined tailings from Mineral Recovery, Inc. (MRI) and HMI Phase I operations were contaminated radioactively by the mixing of source material with what was otherwise clean material from a radiation standpoint. You state in your June 6 letter that the NRC staff has concluded that it should regulate "the monazite rich waste stream since it contains 0.05% source material by weight and the areas around the plant which are contaminated by this material" (underlining added). Consequently it appears that your Agency has erred in its rationale for not accepting regulatory jurisdiction over the combined tailings. We are, therefore, requesting that you review your prior decision, and accept that responsibility.

Zircon Separation / Monazite Generation

As you stated in the June 6 letter, it is true that a primary activity of HMI is the separation of minerals such as rutile and ilmenite from sand. Your letter, however, does not address HMI's other major activity; the separation of zircon from sand.

As you know, MRI, HMI Phase I and HMI Phase II operations employed the same physical mineral separation processes, differing only in the source of new feed and in the location and disposition of the monazite waste. Generally, new feed entered the

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wet mill where zircon, leucoxene, rutile, and monazite were concentrated (see Attachment 1). In the dry mill, the conductors (leucoxene and rutile) were separated from the non-conductors (zircon and monazite). The rationale which you provided to us only addresses the process stream for conductors, which does not contain monazite. We address below the process stream for non-conductors in which monazite is separated from zircon.

During MRI and HMI Phase I operations (November 1986 - March 1990) at the point where zircon was magnetically separated from monazite in the dry mill, the monazite waste stream, at licensable source material concentration, was sent to a hopper where it was combined with tailings from the wet mill. These combined tailings were then pumped to the combined tailings pile. Perkins and Cole, attorneys retained by HMI, in their September 27, 1990 letter to you stated that "... monazite waste at source material concentrations was re-combined with other materials and placed in the area marked in blue on the site map [the combined tailings pile]..." HMI did not possess an NRC license for any portion of Phase I operations. As documented in NRC Inspection Report Number 99990001/89-001, HMI "possessed and used ... monazite waste in which the concentrations of source material were greater that 0.05% by weight without being authorized to do so by an NRC license..."

During HMI Phase II operations (April 1990 - July 1990) at the point where zircon was magnetically separated from monazite in the dry mill, the monazite waste stream was stockpiled on the current monazite pile instead of being recombined with other tailings. HMI did not possess an NRC license for any portion of Phase II operations, and yet accumulated approximately 695 cubic yards of monazite in a pile. HMI's current NRC Materials License SMB-1541 (issued January 2, 1991), allows the company to possess, package, store and transfer this "monazite-rich product."

It is clear that, during MRI and HMI Phase I operations, radioactively clean wet mill tailings were contaminated by a monazite waste stream exceeding the threshold for classification as source material before being stockpiled on the combined tailings pile. Furthermore, during Phase II operations, HMI stockpiled a "monazite-rich product" in an unregulated pile. During both phases of operation HMI concentrated monazite, containing licensable amounts of uranium and thorium, without an NRC license.

Tailings Piles

The June 6 letter discusses areas on the HMI property known as the "original new feed area", the "salvage storage area", and the "recycle tailings area". The "original new feed area" contains mill tailings from the ASARCO process; the recovery of ilmenite from sand. The "salvage storage area" is where old machinery and equipment is currently stored on site. The "recycle tailings area", or combined tailings pile, contains the monazite-contaminated tailings from MRI and HMI Phase I operations. As documented in NRC Inspection Report Number 99990001/89-001, approximately 62 tons each of uranium and thorium in the form of monazite was combined with wet mill tailings, and placed on the combined tailings pile.

The letter also states that "many of these areas were generated at a time when Heritage was using a process which did not produce a monazite-rich waste stream." Based on our review of the process description provided by Mr. Lord, on information in NRC Inspection Report Number 99990001/89-001, and on historical descriptions contained in HMI's July 25, 1990 letter to you, it seems that a monazite-rich waste stream was always produced during MRI, HMI Phase I, and HMI Phase II operations and, as discussed above, was the source of the radioactive contamination of the combined tailings piles.

Conclusions

The June 6 letter concludes that the NRC "can regulate only the monazite-rich waste stream since it contains 0.05% source material by weight and the areas in and around the plant which are contaminated by this material." We agree, and contend that HMI operations produced a monazite waste stream at source material concentrations which should have been regulated by the NRC, and that these monazite wastes were combined with other tailings and placed on the combined tailings pile, thereby contaminating that pile. The conditions of HMI's current Materials License SMB-1541 state that only the interior of all plant buildings where source material is produced, and the outside monazite storage pile shall be decontaminated to meet the unrestricted use criteria described in the Branch Technical Position "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations." We believe that, for the reasons discussed above, the scope of NRC authority should be expanded to include the recycled tailings pile and any other piles or areas on the HMI site which were contaminated with the monazite waste stream.

Please provide a response by October 11, 1991 as to whether the NRC intends to review its previous decision on this matter.

Sincerely,

R. J. Stern

Robert Stern, Ph.D., Chief
Bureau of Environmental Radiation

Attachment

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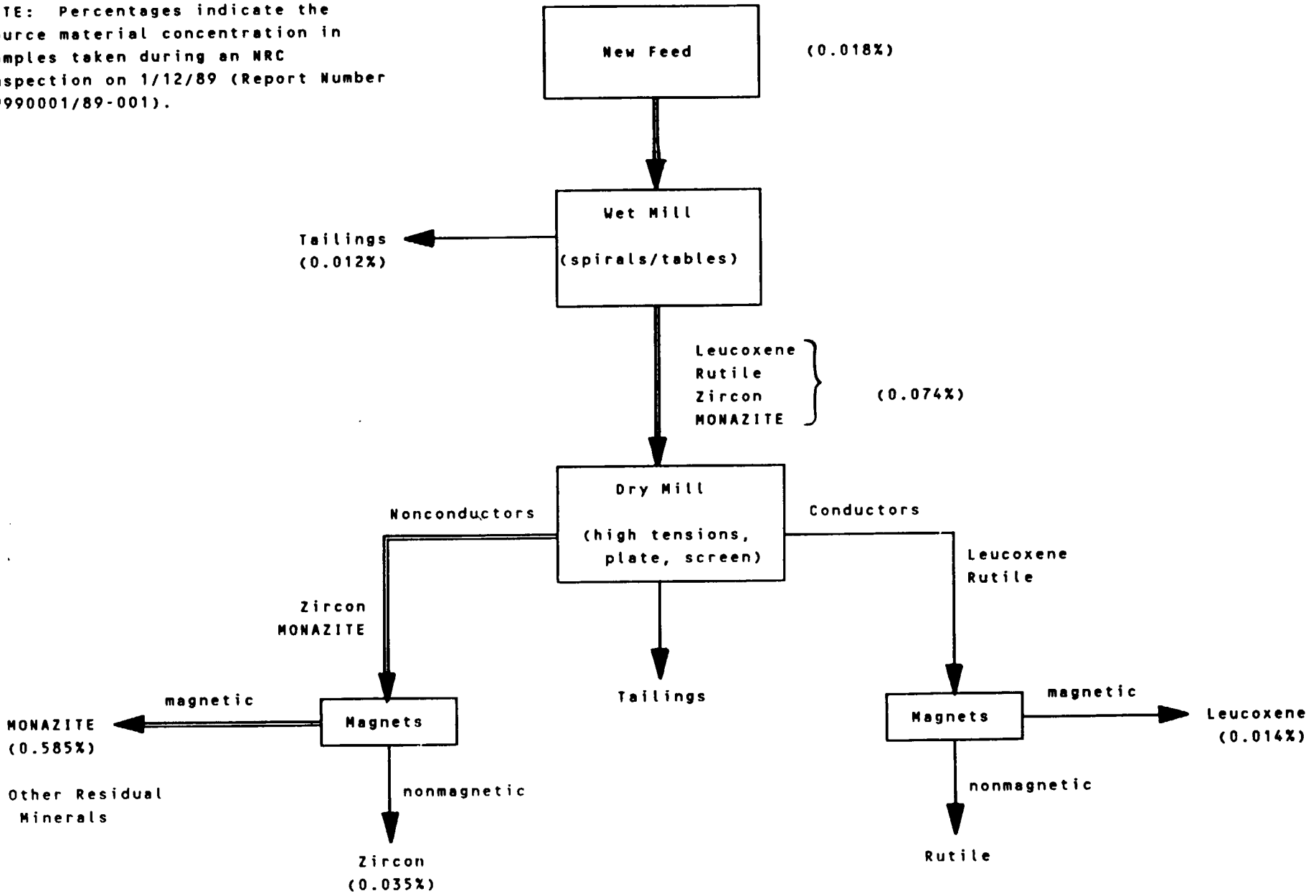
ATTACHMENT 1

NOTE: Percentages indicate the source material concentration in samples taken during an NRC inspection on 1/12/89 (Report Number 99990001/89-001).



Taken from the Heritage Minerals, Inc. Mineralogical Flowsheet dated 2/26/88