



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

June 7, 2005

Docket No. 04008980

License No. SMB-1541

Jill Lipoti
Assistant Director
State of New Jersey
Department of Environmental Protection
Radiation Protection and Release Prevention Program
P.O. Box 415
Trenton, NJ 08625-0415

SUBJECT: HERITAGE MINERALS, INC. (HMI)

Dear Dr. Lipoti:

This is in reference to your letter dated April 7, 2005, which contained additional questions regarding the Heritage Minerals, Inc. (Heritage) facility in Lakehurst, New Jersey. The following paragraphs respond to your questions and provide additional information on NRC's position with respect to the termination of this license. Your letter specifically requested the following information:

- 1) A copy of the calculations that were performed to determine that 116 pCi/g of Thorium-232 plus Thorium-228 with all daughters present in equilibrium equates to licensable source material (0.05% by weight).

As stated in our letter dated February 4, 2005, 116 pCi/g is the approved value for the unimportant quantity, as described in 10 CFR 40.13(a), of total thorium (Th-232 and Th-228, with all daughters in equilibrium) for Heritage. It is a calculated value for the concentration of thorium that corresponds to 0.05% by weight and has been cited in the Commission papers enclosed with our previous letter (SECY-98-284 and SECY-99-259). These documents state the value for 0.05% concentration of natural thorium as being 116 pCi/g. The assumptions that were used to calculate 116 pCi/g as 0.05% by weight of natural thorium for the cited SECY papers were not documented.

- 2) Performance of a dose and risk assessment of the affected area upon license termination.

The affected areas of the Heritage site (i.e., those controlled by the NRC license) were remediated to 10 pCi/g total thorium and 10 pCi/g total uranium. This is in accordance with Option 1 of the 1981 Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations" 46 FR 52061, October 23, 1981 (ADAMS Accession No. ML033630718). Because the licensee had submitted a decommissioning plan, which was approved by the Commission before August 20, 1999, per 10 CFR 20.1401(b)(1), the radiological dose-based criteria do not apply to the Heritage site. Accordingly, neither a dose assessment nor a risk assessment is required in such cases. However, NRC staff typically performs a dose assessment for sites

being remediated pursuant to 10 CFR 20.1401(b)(1) prior to terminating the license. We are in the process of performing a dose assessment for this site, in concert with our Headquarters office, and will provide a copy to you before we terminate the license for the affected areas at the Heritage site.

- 3) Discussion of the regions within the identified area that were not remediated to 10 pCi/g or less, where nonlicensable material remains (less than 116 pCi/g but greater than 10 pCi/g).

Specifically, you asked how the NRC can determine that areas with total thorium concentration between 10 pCi/g and 116 pCi/g are nonlicensable areas as opposed to being licensed areas that were not fully remediated. The locations of the pockets of fugitive licensable soil were identified in the ORISE Confirmatory Survey Report ("Confirmatory Survey of Portions of the Heritage Minerals, Inc., Facility, Lakehurst, NJ, Phase 2", December 31, 2003, ADAMS Accession No. ML040250070). The locations identified by ORISE were marked during performance of the survey, and the results listed on a map included in the report. Prior to final excavation, ENERCON Services, Inc. (consultant for Heritage) reviewed the results of the ORISE report and performed a gamma walkover survey using a ratemeter with an NaI probe linked to a Global Positioning System (GPS). This survey provided the radiation exposure rate data to define the boundary of the NRC-licensed regions. Pockets of licensable source material (> 116 pCi/g total thorium) were recorded with the precise locations identified by the GPS. The pockets of fugitive soil identified during this survey showed good agreement with the ORISE survey, indicating that migration of the licensable material had not occurred. The results of the ENERCON Services, Inc. (ENERCON) survey were submitted to the NRC in a letter dated June 30, 2004 (Law Offices of Anthony J. Thompson, P.C., Ltr. dtd 06/30/2004, re: Heritage Minerals, Inc.", June 30, 2004, ADAMS Accession No. ML041910222). The NRC confirmatory survey (documented in the final inspection report, which will be provided under separate cover), included a gamma walkover survey of the bounded area, and did not identify elevated dose rates indicating the presence of additional licensable material.

During excavation activities, which were observed by NRC inspectors, the pockets of fugitive material were remediated until the bottom of the excavation (encompassing the same boundary as had been identified for the surface of the pocket) indicated <10 pCi/g total thorium with a ratemeter. Soil samples from the bottom of the excavations were obtained to verify successful remediation. Thus, surveys were performed by the licensee, and verified by NRC Regional staff and NRC's contractor, ORISE. This process, together with knowledge of the site's history, provides assurance that the fugitive licensable material has been removed, and that remaining soil within the defined boundary having thorium concentration between 10 pCi/g and 116 pCi/g is not licensed material.

You also asked whether the site locations with thorium concentration between 10 pCi/g and 116 pCi/g were included in the final status survey. The surveys described above provide the final status survey, and included both the NRC-licensed areas and the regions in between to verify that no-licensed material remains. Use of the Elevated Measurement Comparison, as described in your letter, does not apply to these

locations, as they are not areas that were subject to the cleanup criterion of 10 pCi/g for total thorium.

- 4) Discussion of why consultation with the U.S. Environmental Protection Agency (EPA) as per the Memorandum of Understanding (MOU) is not required for this site.

Specifically, you asked for assurance that there will be no material remaining at the Heritage Minerals, Inc. site above the Table 1 trigger values for consultation with the U.S. Environmental Protection Agency based on the Memorandum of Understanding. As we noted in our previous letter, the trigger value for total thorium in the NRC-licensed areas at this site is 10 pCi/g, not the 20 pCi/g specified in your letter. The cleanup criteria for the NRC-licensed material at Heritage Minerals is less than 10 pCi/g total thorium. The final surveys that were performed in the areas where licensed material was present demonstrate that the cleanup criteria have been met. Because the concentration of total thorium remaining from the NRC-licensed material is below 10 pCi/g, consultation with the EPA, is not required.

Finally, decontamination and decommissioning of the Heritage Minerals site has resulted in the disposal of 1800 tons of steel and 4246 tons of soil as radioactive waste. The NRC license for this site encompassed the mill buildings and approximately 1400 tons of stockpiled monazite sand. Decontamination of the mill structures resulted in an additional 400 tons of licensable material. As of this date, more than three times the amount of material that was originally licensed has been removed, adding to the assurance that all NRC-licensed material has been removed from this site.

Because your office may require Heritage Minerals Inc. to conduct additional activities to meet State regulations, we recognize your interest in this matter. We trust that the above information provides the basis for our continuing action towards terminating the NRC license for Heritage Minerals. In that regard, NRC plans to attend an upcoming Manchester Township Meeting to discuss the release of this site with local residents. We will coordinate with your office on the date of the meeting, should you wish to send representation.

Thank you for your cooperation.

Sincerely,

Original signed by George Pangburn

George Pangburn, Director
Division of Nuclear Materials Safety

cc:
Edele Hovnanian, President, Heritage Minerals, Inc.

SISP Review Complete: MTM1

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