



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

December 16, 2015

Mr. Jesse Toepfer
Closure Manager
Homestake Mining Company of California
Highway 605
PO Box 98
Grants, NM 87020

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - COMPLIANCE OF
HOMESTAKE GRANTS, NEW MEXICO SITE WITH 10 CFR 20.1301 AND
10 CFR 20.1302

Dear Mr. Toepfer:

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed environmental monitoring data from 2014, submitted February 25, 2015, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 40.65, "Effluent monitoring reporting requirements," for the Homestake Grants uranium mill tailings reclamation project (ADAMS Accession No. ML15068A205). The NRC staff finds that additional information is required to verify Homestake's compliance with the requirements in 10 CFR 20.1301, "Dose limits for individual members of the public," and 10 CFR 20.1302, "Compliance with dose limits for individual members of the public." Therefore, the NRC staff is issuing this request for additional information (RAI) regarding estimates of maximum potential annual radiation doses to the public resulting from effluent releases from Homestake's facility.

RAI 1

1. Description

In the dose assessment provided in Attachment 4 of the February 2015 report, Homestake applied a radon progeny equilibrium factor of 0.2 (20 percent) to reduce the "dose conversion factor" (dose per pCi/L radon concentration for continuous exposure). Homestake stated that since the nearest residence is close to the site, the equilibrium factor for radon released from the site is expected to be low due to a small flight time of radon until it reaches the residence.

2. Basis of Request

The NRC Staff finds that this approach may be acceptable for estimating equilibrium factor for outdoor exposures, although Homestake has not provided details of how it determined the specific value being used. However, the public dose limit in 10 CFR 20.1301 is a limit on dose to individual members of the public from licensed operations, and such doses may be received in multiple locations. Thus, an acceptable compliance assessment must evaluate radon and its progeny in locations where receptors are exposed. The receptors in Homestake's compliance dose assessment are nearby residents, and the NRC staff expects that these residents spend a significant fraction of their time in their homes.

3. Request for Additional Information

Please provide a dose assessment that addresses all exposures, including indoor exposure, to radon and radon progeny from licensed operations. Please provide a justification for an equilibrium factor value that addresses indoor exposures or average annual exposure. This should include: (1) justification that the equilibrium factor being used in the dose assessment is applicable to all of the exposure time of the residents for which dose is being calculated; and (2) make any appropriate, conforming changes, including changes to the equilibrium factor value used if appropriate.

RAI 2

1. Description

In Attachment 2 of the February 2015 report, Homestake compared (in the "percent Limit" column) measured concentrations of radon-222 in air to a value of 1×10^{-8} $\mu\text{Ci/mL}$ from 10 CFR Part 20, Appendix B, Table 2. This value in 10 CFR Part 20 is for radon "with daughters removed," so this value does not account for the radon progeny equilibrium factor.

2. Basis of Request

Whether Homestake demonstrates compliance by a dose assessment (10 CFR 20.1302(b)(1)) or by comparison of concentrations to the effluent values in 10 CFR Part 20, Appendix B (10 CFR 20.1302(b)(2)), it must account for the dose from radon progeny.

3. Request for Additional Information

Please provide an evaluation that properly uses measured concentrations compared to the 10 CFR 20, Appendix B, Table 2, values "with daughters present," which accounts for the radon progeny, or identify, and provide an adequate basis for, an alternate approach.

RAI 3

1. Description

The NRC staff requests additional information on Homestake's dose compliance evaluation methodology specific to how Homestake is accounting for occupancy time of the exposed residents in its public dose compliance demonstration. In particular, in the dose assessment

provided in Attachment 4 of the February 2015, report, Homestake used an occupancy factor of 0.75 (75 percent). This was based on values of indoor and outdoor occupancy recommended as default values for a residential scenario in NUREG/CR-5512. The NRC staff notes that the default values developed in NUREG/CR-5512 are default values for the exposure of an average member of the critical group. However, the public dose limit of 10 CFR 20.1301 applies to individual members of the public.

2. Basis of Request

Selected occupancy factors must address occupancy of the actual exposed individuals, not only an average. An average value may be non-conservative for certain individuals around the facility.

3. Request for Additional Information

Please (1) provide a justification for the occupancy factor being used in the dose assessment, and its applicability to actual individual residents for which dose is being calculated, including (2) any change to the occupancy factor value used, if appropriate.

RAI 4

1. Description

In the February 2015 report, Homestake did not provide quantities of the principal radionuclides released to unrestricted areas in gaseous effluents.

2. Basis of Request

10 CFR 40.65, "Effluent monitoring reporting requirements," requires that semi-annual reports be submitted to NRC and describes what information must be reported in the semi-annual reports. Section 40.65 (a)(1) states that the report must specify the quantity of each of the principal radionuclides released to unrestricted areas in gaseous effluents during the previous six months of operation. The NRC staff reviewed Homestake's February 2015 report and the August 26, 2015 Homestake's semi-annual report submitted (ADAMS ML15247A048 and ML15247A076) pursuant to 10 CFR 40.65. However, the February 2015 and August 2015 reports do not include quantities of principal radionuclides released to unrestricted areas in gaseous effluents.

3. Request for Additional Information

Homestake should provide the quantities of each of the principal radionuclides released to unrestricted areas in gaseous effluents during 2014 and the first half of 2015. The quantities should be provided for radon-222 and other principal radionuclides from significant sources, including the Large Tailings Pile, Small Tailings Pile, components of the water treatment system, and any others.

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Responding to this Request

Within 30 calendar days from receipt of this letter, please inform the NRC how and when Homestake plans to address the above-referenced matters.

If Homestake would like clarification on the NRC's RAIs, staff will arrange for a meeting or a teleconference for this purpose.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions related to this request, please contact me via email at Jack.Parrott@nrc.gov or at (301) 415-6634.

Sincerely,

/RA/

Jack D. Parrott, Senior Project Manager
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-8903
License No.: SUA-1471

cc: Homestake Distribution List

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