

February 6, 2004

Mr. Alan D. Cox, Manager  
Homestake Mining Company  
6719-D Academy Road, NE  
Albuquerque, NM 87109

SUBJECT: AMENDMENT 36 - REQUEST FOR EXTENSION OF RECLAMATION  
MILESTONES TO LICENSE SUA-1471 - DOCKET NO. 40-8903, HOMESTAKE  
URANIUM MILL, GRANTS, NEW MEXICO (TAC LU0019)

Dear Mr. Cox:

The U. S. Nuclear Regulatory Commission (NRC) received your letters dated October 28 and October 29, 2003, requesting to extend the reclamation milestones in Source Material License SUA-1471. You stated that the reason for the request is due to on-going groundwater remediation. We published the receipt of your request along with an opportunity to request a hearing in the **Federal Register** (68 FR 71171) on December 22, 2003. No request for a hearing was received within the 30 day requirement. In summary, the staff accepts the reclamation milestone extensions due to the implementation of the ground water corrective action program. We have revised License Condition 36 accordingly and the amended license is attached.

An environmental review was not performed for this action since it is an administrative change and is categorically excluded per 10 CFR Part 51.22(c)(11).

If you have questions regarding this letter or the NRC staff review, please contact the NRC project manager William von Till at (301) 415-6251 or by e-mail at [rwv@nrc.gov](mailto:rwv@nrc.gov).

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

***/RA/***

Gary Janosko, Chief  
Fuel Cycle Facilities Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

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

Enclosures:

1. Technical Evaluation Report
2. License Amendment No. 36

cc: M. Purcell, USEPA  
D. Mayerson, State of NM  
J. Sanders, State of NM

February 6, 2004

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Sincerely,

**/RA/**

Gary Janosko, Chief  
Fuel Cycle Facilities Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

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

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- 1. Technical Evaluation Report
- 2. License Amendment No. 36

cc: M. Purcell, USEPA  
D. Mayerson, State of NM  
J. Sanders, State of NM

**Closes TAC LU0019**

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<b>NAME</b>	W. vonTill		B. Garrett		R. Nelson		G. Janosko	
<b>DATE</b>	2/2/04		1/30/04		2/4/04		2/6/04	

**OFFICIAL RECORD COPY**

**TECHNICAL EVALUATION REPORT  
HOMESTAKE MINING COMPANY GRANTS SITE  
RECLAMATION MILESTONE EXTENSION  
GRANTS, NEW MEXICO**

**FACILITY:** Homestake Site

**SOURCE MATERIAL  
LICENSE:** SUA-1471

**PROJECT MANAGER  
AND TECHNICAL REVIEWER:** William vonTill

**SUMMARY AND CONCLUSIONS:**

By letters dated October 28, 2003 (ML033030501), and October 29, 2003 (ML033040196), Homestake Mining Company requested an extension to its reclamation milestones. The reason for the extension request relates to the groundwater corrective action program currently being implemented at the site. Due to prolonged remediation of groundwater and pumping of tailings solution water it is necessary to extend the surface reclamation milestones. This is due to the engineering constraint that the groundwater remediation program must be completed prior to the placement of the final radon barrier and erosion control layer placement on both the large and small tailings piles. Groundwater remediation is mandated by License Condition 35 and 10 CFR Part 40, Appendix A, and has also been mandated by the U.S. Environmental Protection Agency (EPA) through the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (Record of Decision (ROD) 1988, Unilateral Administrative Order June 29, 1989).

The licensee has demonstrated that it is technically infeasible to meet the milestone dates due to the engineering constraint of having to complete groundwater corrective action prior to the placement of final radon barriers and have demonstrated that no added risk to human health or the environment will result from the extension. To assure that no added risk is ensured, staff has proposed additional text in license condition 36 to include an annual radon flux survey, as proposed by the licensee, and an annual report submittal, as agreed to by the licensee in a phone conversation held on February 2, 2004 and subsequent e-mail dated February 2, 2004.

**BACKGROUND:**

The Homestake facility is a conventional uranium mill site under reclamation. Uranium processing started in the late 1950's and continued until 1990. Tailings generated from the milling operation were placed on two piles, a large pile and a small pile. The facility has a tailings area of 170 acres with a weight of 22 million tons. Currently there are several evaporation ponds and an ion exchange treatment building for groundwater remediation, and several administrative and maintenance buildings. Seepage from the tailings piles was noted in 1975.

Under a 1988 Memorandum of Understanding (MOU) between the EPA and the Nuclear Regulatory Commission (NRC), 53 FR 37887 (Sept. 28, 1988), the two agencies established roles and responsibilities regarding site reclamation and groundwater cleanup. The NRC is the lead agency for surface reclamation and groundwater cleanup on-site and the EPA is the lead for groundwater contamination off-site. Both agencies have been working together to oversee the groundwater corrective action program. The site was listed on the CERCLA National Priorities List (NPL) of Superfund sites by EPA, 48 FR 40658 (Sept. 8, 1983), due to migration of radionuclides and chemical constituents into the groundwater. The NRC required corrective action through License Condition 35 and groundwater remediation is mandated by 10 CFR Part 40, Appendix A. The current corrective action program consists of groundwater recovery and injection with treatment of the effluent through the use of evaporation ponds and through ion exchange. In addition, a tailing flushing/dewatering effort is included. A number of domestic water supply wells were at risk and have been hooked up to an alternate water supply.

License Condition 36 outlines the existing reclamation milestone schedules.

**Current License Condition:**

36. The licensee shall complete site reclamation in accordance with an approved reclamation plan. The groundwater corrective action plan shall be conducted as authorized by License Condition No. 35. All activities shall be completed in accordance with the following schedules.
  - A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:
    - (1) Windblown tailings retrieval and placement on the pile:  
  
For the Large Impoundment - December 31, 1996.  
  
For the Small Impoundment - May 31, 1997.
    - (2) Placement of the interim cover to decrease the potential for tailings dispersal and erosion:  
  
For the Large Impoundment - December 31, 1996.  
  
For the Small Impoundment - May 31, 1997.
    - (3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m<sup>2</sup>/s.  
  
For the Large Impoundment which has no evaporation ponds -  
December 31, 2003.

For the Small Impoundment, tailings pile surface areas are essentially covered by evaporation ponds constructed as part of the groundwater corrective action program. Prior to December 31, 2012, the areas not covered by the evaporation ponds shall have final radon barrier in place. Final radon barrier placement over the entire pile shall be completed within 2 years of completion of ground-water corrective actions.

[Applicable Amendment: 25]

B. Reclamation, to ensure required longevity of the covered tailings and ground-water protection, shall be completed as expeditiously as is reasonably achievable, in accordance with the following target dates for completion:

(1) Placement of erosion protection as part of reclamation to comply with Criterion 6 of Appendix A of 10 CFR Part 40:

For the Large Impoundment - September 30, 2004.

For the Small Impoundment - September 30, 2013.

[Applicable Amendment: 25]

(2) Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan - May 1, 2010.

C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).

D. Any license amendment request to change the target dates in Section B above, must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factors beyond the control of the licensee.

[Applicable Amendments: 13, 22]

#### **TECHNICAL EVALUATION:**

With groundwater remediation implemented on the large scale of the Homestake site, it is difficult to predict when remediation will be completed. Factors such as groundwater movement, geochemical processes, and the heterogeneity of the subsurface cause great uncertainty in long term predictions of when concentrations will reach the groundwater protection standards in the NRC license and in the EPA Release Order Directive (ROD). Homestake has completed surface reclamation milestones that could be completed prior to the

completion of groundwater remediation. Placement of both the final radon barrier and erosion control layer, however, must be implemented after the groundwater remediation is completed. Therefore, it is necessary to adjust the milestones for these tasks accordingly.

Homestake has successfully met deadlines for four milestone dates associated with windblown tailings retrieval and placement of the interim cover for both piles. With the interim radon barrier and erosion control measures in place, risk to human health and the environment is minimal from radionuclides in the tailings. Homestake's removal of tailings water is critical to the removal of the source of continuing groundwater contamination.

#### Technical Feasibility:

License condition 36C states that "any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee)." Homestake demonstrates that it is currently technically infeasible to place the final radon barrier due to the maintenance and operation of more than 300 wells and their associated piping on the top of the large tailings pile. These wells are an important part of the groundwater cleanup and therefore placement of the final radon barrier by the December 31, 2003 milestone is not technically feasible. Completion of the small tailings pile is also dependent on the completion of the groundwater cleanup and it is also not technically feasible to complete the final radon barrier. The licensee is continuously working to complete the groundwater corrective action as expeditiously as possible and NRC, EPA, and State of New Mexico staff are working with them to achieve progress, however, with groundwater remediation it is difficult to estimate completion dates. Staff agrees that it is beyond the licensee's control that the groundwater remediation effort is not complete and consequently that certain reclamation milestones can not be completed as specified in the current license.

#### Risk:

License condition 36D states that "Any license amendment request to change the target dates in Section B above, must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factor beyond the control of the licensee."

The final radon barrier has been placed on all areas of the large tailings pile except the top. Risk with dealing with the placement of the final radon barrier can be measured by sampling radon levels. Radon sampling indicates that radon levels are under the 20 pCi/m<sup>2</sup>s regulatory limit specified in 10 CFR Part 40, Appendix A, Criterion 6. In its submittal, the licensee proposes to verify compliance with the radon flux standard on an annual basis during the extension period. Therefore, the licensee has demonstrated that there will not be added risk to human health or the environment due to the extension. Staff proposed that the licensee submit an annual radon flux survey to assure compliance with the 20 pCi/m<sup>2</sup>s regulatory limit

and therefore no added risk. This was discussed with Al Cox, of Homestake Mining, on February 2, 2004. Mr. Cox agreed to this additional requirement in an e-mail dated February 2, 2004. The staff therefore accepts Homestake's proposal to extend the reclamation milestones and the following license text is proposed.

**Proposed License Text:**

36. The licensee shall complete site reclamation in accordance with an approved reclamation plan. The groundwater corrective action plan shall be conducted as authorized by License Condition No. 35. All activities shall be completed in accordance with the following schedules.
- A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:
- (1) Windblown tailings retrieval and placement on the pile:
    - For the Large Impoundment - December 31, 1996.
    - For the Small Impoundment - May 31, 1997.
  - (2) Placement of the interim cover to decrease the potential for tailings dispersal and erosion:
    - For the Large Impoundment - December 31, 1996.
    - For the Small Impoundment - May 31, 1997.
  - (3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m<sup>2</sup>/s.
    - For the Large Impoundment which has no evaporation ponds - December 31, 2012.
    - For the Small Impoundment, tailings pile surface areas are essentially covered by evaporation ponds constructed as part of the groundwater corrective action program. Prior to December 31, 2013, the areas not covered by the evaporation ponds shall have final radon barrier in place. Final radon barrier placement over the entire pile shall be completed within 2 years of completion of ground-water corrective actions.

[Applicable Amendment: 25, 36]



B. Reclamation, to ensure required longevity of the covered tailings and ground-water protection, shall be completed as expeditiously as is reasonably achievable, in accordance with the following target dates for completion:

(1) Placement of erosion protection as part of reclamation to comply with Criterion 6 of Appendix A of 10 CFR Part 40:

For the Large Impoundment - September 30, 2013.

For the Small Impoundment - December 31, 2013.

[Applicable Amendment: 25, 36]

(2) Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan - December 31, 2011.

C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).

D. Any license amendment request to change the target dates in Section B above, must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factors beyond the control of the licensee.

E. As detailed in the licensee's October 28, 2003 submittal, the licensee is to verify compliance with the radon flux standard of 20 pCi/m<sup>2</sup>s by performing a radon flux survey for the large and small tailings piles on an annual basis during the milestone extension period specified above. An annual report detailing results of this survey shall be submitted with the annual groundwater CAP report as specified in condition 35E no later than March 31 each year.

[Applicable Amendments: 13, 22, 36]

#### **ENVIRONMENTAL CONSIDERATION:**

An environmental review was not performed for this action since it is an administrative change and is categorically excluded per 10 CFR Part 51.22(c)(11).