

Department of Energy  
Albuquerque Operations Office  
P.O. Box 5400  
Albuquerque, New Mexico 87185-5400

WM-67

NOV 22 1996

Mr. Joseph J. Holonich, Chief  
Uranium Recovery Branch  
Office of Nuclear Material Safety  
and Safeguards Mail Stop T7J9  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Holonich:

Enclosed for your review is the Certification Report for the Ambrosia Lake, New Mexico, Uranium Mill Tailings Remedial Action disposal site. The Certification Report consists of the following:

1. The final Completion Report dated August 1996 (the August 1995 draft Completion Report and enclosed Replacement Pages, four (4) sets);
2. Four (4) Appendix B, Volume 6B, design calculations;
3. The Final Audit Report (already provided to the NRC); and
4. Two signed Certification Summaries.

Also enclosed is Exhibit I. Exhibit I contains responses to comments on the draft CR as well as the instructions for updating the draft CR with the Replacement Pages. If the NRC is satisfied with the Certification Report, we request the NRC to concur in the site certification and return one signed Certification Summary to this office.

Please provide the Certification Summary or your comments to this office in accordance with the Department of Energy/Nuclear Regulatory Commission Memorandum of Understanding. Should there be any questions, please have your staff contact me at (505) 845-5758.

Sincerely,

*Michael F. Abrams*

Michael F. Abrams  
Site Manager  
Environmental Restoration Division

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Enclosures

cc See Page 2

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PDR WASTE  
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Mr. Joseph J. Holonich

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cc w/out enclosures:

D. Gillen, NRC-HQ

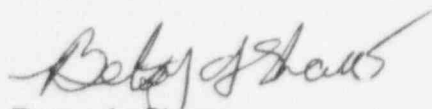
S. Cox, TAC

E. Artiglia, TAC

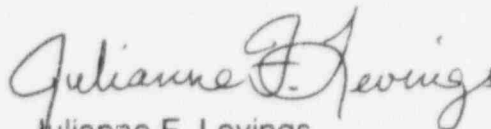
C. Spencer, RAC

**CERTIFICATION SUMMARY**  
for the  
**Ambrosia Lake, New Mexico, Disposal Site**

The Environmental Restoration Division Director and the Contracting Officer for the U.S. Department of Energy certify the Ambrosia Lake, New Mexico, combined processing and disposal site is complete and meets all design criteria, technical specifications, and the surface Remedial Action Plan required under Public Law 95-604. The undersigned request that the U.S. Nuclear Regulatory Commission concur in this certification.



Betsy A. Shaw  
Contracting Officer  
Major Programs Team  
Field Management Branch  
Contracts and Procurement Division



Julianne F. Levings  
Acting Director  
Environmental Restoration Division

DATE: NOV 22 1996

DATE: NOV 22 1996

The U.S. Nuclear Regulatory Commission's Chief of the Uranium Recovery Branch hereby concurs with the U.S. Department of Energy's completion of surface remedial action at the Ambrosia Lake, New Mexico, combined processing and disposal site.

Joseph J. Holonich, Chief  
Uranium Recovery Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

DATE: \_\_\_\_\_

## EXHIBIT I

## EXHIBIT I

### NRC Open Issues on the Ambrosia Lake Completion Report

#### NRC Comment No. 1:

DOE should present the tabulated tailings embankment displacement data of Volume 5 in tabular form.

#### **Response:**

The displacement data is in tabular form in the completion report as noted above. Graphs have been provided to support the settlement performance data shown in the tables. In addition, the settlement calculation has been incorporated into Volume 6 of the completion report. In Volume 1 Section III, paragraph E has been revised as follows:

"During the course of remedial action, settlement measurements were obtained within the tailings embankment. An evaluation of settlement performance is provided in Appendix K, and the settlement design calculation is provided in Appendix B."

(Reference the response to NRC Comment No. 5 for revising the completion report.)

The following "step-by-steps" have been provided for revising the completion report:

- Step No. 1: Obtain Volume 5 of the completion report. Turn to the tab titled "Appendix K" and remove the title page.
- Step No. 2: Obtain Attachment No. 1. Insert pages 1-3 (text) of the "Replacement Pages" after the Appendix K tab, and insert the remaining 8 pages (graphs) following the last page of Appendix K.

#### NRC Comment No. 2:

NRC's TER states that the trench (debris pit) will not be required to meet EPA design standards due to the low level of contamination associated with the material (rubble) to be placed in the trench. CR Design Basis Memorandum No. 16-473-00 indicates that selection of material for burial in the debris pit was based on contamination equal to or less than that of materials allowed to be abandoned in place and released for unrestricted use (criteria for NRC Inspection Procedure 83890). DOE should provide data or information documenting the level of contamination placed in the debris pit, in order to support the assumption made in the RAP and TER.

**Response:**

A summary of the data has been included in the Appendix J text. Therefore, the following "step-by-steps" have been provided for revising the completion report:

Step No. 1: Obtain Volume 5 of the completion report. Turn to the tab titled "Appendix J" and remove the written text only.

Step No. 2: Obtain Attachment No. 2. Insert the "Replacement Pages" after the title page.

NRC Comment No. 3:

Soil Background Ra-226: The RAP (Appendix D, page 9) indicates that the background value for Ra-226 in soil is 1.0 pCi/g, but the CR (Appendix J, page 2) states that the value is 1.2 pCi/g. These values are not significantly different, but DOE should indicate what data was used to determine the 1.2 pCi/g background value for soil Ra-226.

**Response:**

The Ra-226 background used at the Ambrosia Lake site for radiological verification was originally obtained from the Bendix Field Engineering Corporation (BFEC) Radiological Characterization Report for the Ambrosia Lake UMTRA Site which was produced in 1985. The draft RAP from July of 1989 references the 1.2 pCi/g Ra-226 background which was taken from the 1985 Bendix report. This value was used during the early stages of cleanup at the Ambrosia Lake site. When the final RAP came out in 1990 it referenced a different background of 1.0 pCi/g obtained from a 1980 ORNL report. The RAC continued to use the Bendix value because it had been used in the earlier stages of cleanup at the site as allowed by the draft RAP. Therefore, there will be no change to the completion report.

NRC Comment No. 4:

Soil Cleanup: CR Appendix J indicates that all areas were cleaned according to DOE UMTRA Project procedures. However, DOE should indicate where the Ra-226/U-238 ratio was applied and how in situ ore was distinguished from mill-related ore.

**Response:**

The Ra-226/U-238 ratio process was only used to determine the surface extent of the windblown contamination. The site boundary was entirely within the windblown area. There were no distinctions made between in-situ ore and mill-related ore within the established site or windblown contaminated areas. Both areas were cleaned up to the EPA Standards for Ra-226. Therefore, the ore differentiation process was not necessary. The completion report is adequate as written.

NRC Comment No. 5:

Soil Cleanup Verification: For four percent of the grids, soil samples were analyzed for Th-230 by an outside laboratory. The average value was 1.3 pCi/g and the highest value was 13 pCi/g. However, DOE should indicate if any areas of the processing site were likely to have elevated Th-230 based on site history and characterization data.

For example, DOE should clarify if the heap leaching of protore performed in association with the ion-exchange circuit (Appendix D, page 5), was an alkaline leach process.

**Response:**

The heap leaching of the protore was conducted at the Section 27E mine to the east of the designated site and the leachate was pumped into the mine feed water line going to the IX facility at the mill site. The liquid was processed through the IX facility and returned to the mines for discharge. The leachate was not discharged on site so the leachate would not have contacted the soil on-site. A statement explaining the above information has been added to Section III.D of the Remedial Action Assessment text along with an indication of the likelihood of migration of Th-230 into underlying soils. Therefore, the following "step-by-steps" have been provided for revising the completion report:

- Step No. 1: Obtain Volume 1 of the completion report. Turn to the tab titled "Remedial Action Assessment" and remove the written text only.
- Step No. 2: Obtain Attachment No. 3. Insert the "Replacement Pages" as follows: Pages 1 and 2 should be inserted after the title page and before the photographs; pages 3-4 should be inserted before the fourth photograph (Figure 1); pages 5-14 should be inserted following the last photograph (Figure 21).

NRC Comment No. 6a:

NRC staff notes that two important parameter values in the flux model, the radon barrier long-term moisture content and diffusion coefficient, are not as conservative as the values used in the PID 32 flux model. Page six of the calculation states that additional diffusion coefficient tests will be performed on radon barrier material to confirm the design. Page 8 indicates that a conservative moisture value of 9.26 percent was considered, but the flux model on page 16 uses 10.26 percent. To resolve this issue, DOE should provide the additional radon barrier material diffusion coefficient test results at 9.3 and 10.3 percent moisture to confirm the design.

**Response:**

The value of 9.26 noted by the NRC, in the MKES Calculation No. 16-491-04-00, was incorrectly stated on sheet 8, as corroborated by the values shown on sheet 21.



The correction was made to sheet 8 in the subsequent revision of the calculation (Calculation No. 16-491-04-01). (For further information, the value of 9.26 shown on sheet 21 is an average of an arbitrarily selected subset of all the applicable data, and therefore is not appropriate for design.)

Note: In the original submittal of the draft completion report, Design Calculation Nos. 16-439-01-01, 16-439-04-05, 16-491-04-01, and 16-495-01-00 were not provided for review. This was due to revisions not being completed and an early submittal date requirement for the completion report. The total volume of these calculations exceeded the binder volume in Volume 6 and Volume 6A of the completion report. Therefore, Volume 6B has been provided as an additional Volume to Appendix B to complete the submittal of design calculations. (Copies of Volume 6B, revised and complete, are provided with this response.)

Based on Volume 6B being added to the completion report, the table of contents has been revised to reflect the change. Therefore, the following "step-by-steps" have been provided for revising the completion report:

Step No. 1: Obtain each Volume of the completion report. Turn to the first tab and remove the Table of Contents only.

Step No. 2: Obtain Attachment No. 4. Insert the "Replacement Pages" at the beginning of each binder Volume.

NRC Comment No. 6b:

Staff did not find mention in the CR calculation of the Ra-226 level for the radon barrier material. DOE should provide the average Ra-226 level for the radon barrier material to substantiate the flux model.

**Response:**

Section 4 of Appendix J indicates that the radon barrier and erosion protection materials were near background levels. The actual calculated average Ra-226 value for the radon barrier and erosion protection materials is 1.2 pCi/g. The EPA standards do not require radon from cover materials to be considered in determination of compliance with the design standard of 20 pCi/m<sup>2</sup>-s, only radon from RRM. The regulation indicates that radon emissions from covering materials should be estimated as part of developing a remedial action plan to comply with the EPA standards. Therefore, radon barrier Ra-226 information is not required to substantiate the radon flux model used in the completion report.



#### DOE/TAC COMMENTS:

The following DOE/TAC comments were not adequately addressed by MK-F in the previous above referenced letter, therefore, a response to the comments has been provided. The responses resulted in additional revisions to the completion report as follows:

- F. Article 3.5.A.1.b - There is no discussion of the development, use and restoration of Demolition Debris Burial Pit in the CR.

**Response:**

The Contaminated Material section of Appendix E has been revised to more clearly address the Demolition Debris Burial Pit. In Appendix J, monitoring data and a short discussion have been provided for clarification. Reference MK-F response to NRC Comment No. 2 above for revising the completion report.

- H. Article 3.6.B.8.b - The discussion in Appendix E for radon barrier placement does not state that water was not introduced to the first lift on contaminated materials.

**Response:**

The radon barrier section of Appendix E has been revised to incorporate a discussion on how the first lift of radon barrier was placed and moisture conditioned. Therefore, the following "step-by-step" has been provided for revising the completion report:

**Step No. 1:** Obtain Volume 3 of the completion report. Turn to the tab titled "Radon Barrier Material" and remove the written text only.

**Step No. 2:** Obtain Attachment No. 5. Insert the "Replacement Pages" after the title page.

- J. Articles 3.6.B.9 and 10 - The discussions in Appendix E do not address these requirements (2%) slope, ponding, and placement of fill or frozen fill on frozen materials.

**Response:**

The percent slope and ponding was adequately addressed in the previous response to DOE/TAC comments. The second half of the comment, which referenced the placement of frozen fill or the placement of material on a previously placed lift, has been addressed in the contaminated, buttress, and radon barrier material sections of Appendix E. Therefore, the following "step-by-step" has been provided for revising the completion report:

Step No. 1: Obtain Volume 3 of the completion report. Turn to the tab titled "Buttress Material" and remove the written text only.

Step No. 2: Obtain Attachment No. 6. Insert the "Replacement Pages" after the title page.

Also provided in this transmittal, are the Final As-built Drawings, Post-Remedial Action Photographs, a correction to Figure 02850 C (Appendix C), revised tables of contents for Volume 6, and a discussion which addresses the vertical pipe issue. The following "step-by-steps" have been provided for revising the completion report:

Step No. 1: Obtain Volume 2 of the completion report. Turn to the tab titled "Appendix D" and remove all of the drawings.

Step No. 2: Obtain Attachment No. 7. Insert the "Replacement Drawings" after the title page.

Step No. 3: Obtain Volume 4 of the completion report. Turn to the tab titled "Appendix H" and remove the written text.

Step No. 4: Obtain Attachment No. 8. Insert the "Replacement Pages" after the title page.

Step No. 5: Obtain Volume 3 of the completion report. Turn to the tab titled "Contaminated Material" and remove the written text only.

Step No. 6: Obtain Attachment No. 9. Insert the "Replacement Pages" after the title page.

Step No. 7: Obtain Volume 2 of the completion report. Turn to the tab titled "Appendix D" count back six pages from the tab, and remove Figure 02850 C.

Step No. 8: Obtain Attachment No. 11. Insert the "Replacement Page" where Figure 02850 C was.

Step No. 9: Obtain Volume 6. Remove the Design Calculations Table of Contents only.

Step No. 10: Obtain Attachment No. 12. Insert the "Replacement Page" after the general Table of Contents.

Step No. 11: Obtain Volume 6. Remove the tab for Design Calculation 16-439-01-00 and the calculation text (pages 1 through page 22 only). The last two drawings should remain.

Step No. 12: Obtain Attachment No. 13. Insert the "Replacement Tab and Text Pages" in front of the two existing drawings.

The completion report has been adequately revised. The final covers, spines and backs have been provided in Attachment No. 10 for revising the completion report.