

January 31, 1997

Mr. Richard Sena, Acting Director  
Environmental Restoration Division  
Uranium Mill Tailings Remedial Action  
Project  
U.S. Department of Energy  
2155 Louisiana NE, Suite 4000  
Albuquerque, NM 87110

SUBJECT: REVIEW OF THE DRAFT COMPLETION REPORT AND THE FINAL AUDIT REPORT FOR  
THE MEXICAN HAT, UTAH-MONUMENT VALLEY, ARIZONA, URANIUM MILL  
TAILINGS REMEDIAL ACTION PROJECT SITES

Dear Mr. Sena:

By letter dated November 27, 1995, the U.S. Department of Energy (DOE) transmitted the Mexican Hat-Monument Valley Draft Completion Report (CR) and the Final Audit Report (AR) for review and comment by the U.S. Nuclear Regulatory Commission. This letter provides the results of the NRC staff's review of the two documents.

Based on its evaluation of the CR, the NRC staff has identified areas where additional information is needed. The NRC staff has no comments on the AR. Detailed discussion of the staff's specific comments may be found in the Enclosure.

On February 12, 1997, the NRC staff plans to visit the site to observe the completed site features. Following that visit, additional questions and comments may be provided, if there are any problems or deficiencies.

If you have any questions regarding this review, please contact the NRC Project Manager, Harold E. Lefevre, at (301) 415-6678.

Sincerely,

[original signed by:]

Daniel M. Gillen, Assistant Chief  
Uranium Recovery Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc: S. Arp, DOE Alb  
S. Hamp, DOE Alb  
E. Artiglia, TAC Alb  
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REQUEST FOR INFORMATION CONCERNING THE  
MEXICAN HAT/MONUMENT VALLEY DRAFT COMPLETION REPORT

Volume 1, Remedial Action Assessment Section

1. DISCUSSION: The Remedial Action Assessment Section, which discusses Pre- and Post-Remedial Action Site Conditions, should include appropriate information on the buildings on the Mexican Hat site. This revision is needed because, according to Remedial Action Plan (RAP) drawing 10-0211, the former clinic and shop building are on the designated site.

COMMENT: Revise the Remedial Action Assessment Section to include appropriate information on the former clinic and shop building.

2. DISCUSSION: Page 12 indicates that the Opposed Crystal System (OCS) measured the 1765 kev peak for Bi-214, but page 13 states that the RTRAK used the 609 kev peak for Bi-214.

COMMENT: Discuss the two systems and the differences in the values.

Volume 5, Appendix J

3. DISCUSSION: On Page 5 of Appendix J, DOE indicates that although some laboratory results exceeded the standards, the samples sent to the independent laboratory were for quality assurance purposes. DOE further states that individual sample results are not to be compared to the field measurements for the same sample. Although the NRC staff acknowledges that the differences between the paired results do not appear significant, the staff does not agree with DOE's rationale for not comparing the independent laboratory results with field measurements. While a certain amount of variation in results is expected for splits of samples analyzed by different laboratories, an effort should be made to find the reason for the difference when there are recurring significant differences.

COMMENT: DOE needs to provide additional justification for this position.

4. DISCUSSION: On page 6, DOE indicates that the sewage ponds were not sampled, because of the biological hazards, even though remediation and verification occurred along one side. Tailings could have extended under the east end of the ponds.

COMMENT: Since tailings could have extended under the east end of the ponds, address what data were collected or observations were made along this bank of the excavation during remediation. If material was left, indicate the ownership of the ponds and the expected long-term use of this area.

5. DISCUSSION: On page 7, DOE indicates that a 10 pCi/g cleanup limit was used for Th-232, although the RAP stated the limit would be 5 pCi/g. In a DOE letter dated December 1, 1989, DOE indicates that this decision was based on NRC's limit of 10 Pci/g in guidance titled "Disposal of Onsite Storage of Thorium and Uranium Wastes from Past Operations" (46 FR 52061).

assuming equilibrium with Th-228, the Th-232 limit is 5 pCi/g, at least for surface soil. This is supported by a 1986 letter from EPA (see attachment). DOE should not have increased a cleanup limit that was approved with the RAP, without NRC approval of the new limit through review of a RAP modification. Also, DOE should have ensured that NRC guidelines were interpreted correctly, and should have considered that the Th-232 guideline would need to be modified (decreased) if residual tailings were found in the same verification grid.

COMMENT: DOE should revise the Completion Report to clarify the misunderstanding on the Th-232 cleanup limit and should justify the use of 10 pCi/g with a health risk assessment.

6. DISCUSSION: On page 10, DOE states that "...Since the HGVS quality control verification samples were taken according to criteria established in verification procedures, the results from site OCS measurements are reported in the OCS soil verification tables and in the HGVS verification table lab results." It is important to note that OCS values are not the same as lab values.

COMMENT: Because OCS values are not the same as lab values, DOE should correct the column heading in the HGVS verification table.

7. DISCUSSION: On page 11, DOE indicates that some areas of the sheet metal shop (warehouse) were decontaminated. On page 12, DOE indicates that the fixed surface activity for Area E2 meets the limit when averaged (2,065 dpm) over one square meter, as allowed under NRC guidance (Regulatory Guide 1.86).

COMMENT: Provide adequate data to support the conclusion that the warehouse meets the NRC (or DOE) release guidance of 5,000 dpm/100 cm<sup>2</sup> total (not fixed) contamination averaged over one square meter and 15,000 dpm maximum total contamination for any 100 cm<sup>2</sup>.

8. DISCUSSION: On page 11, DOE indicates that the contact gamma reading on the surface of the warehouse (former sheet metal shop) was 50 uR/hr, so brick and cinder block samples were sent to a laboratory for analysis.

COMMENT: The laboratory data from the brick and block analysis and DOE's assessment of the results need to be provided as an addendum to the CR, so that NRC can complete its review.

#### Volume 5, Appendix J, Mexican Hat Verification Grid Data

9. DISCUSSION: Verification data is presented for grid blocks C-2, 3, 4, 10, 11, 17, 18 and 19; and blocks CC-37 to 47. However, the area represented by these grid blocks is not indicated within the contamination excavation area on drawing HAT-SV-0000.

COMMENT: Indicate why verification data is presented for the above grid blocks but is not indicated within the contamination excavation area shown on drawing HAT-SV-0000.

10. DISCUSSION: Although contamination was found in the west half of block EE, and in blocks E-25, 26, 33, 34, 42, and 43, these areas do not appear to be continuous with the windblown contamination.

COMMENT: Indicate what type of contamination was found in the indicated areas.

11. DISCUSSION: Grid J-15-02 has Th-230 at 24 pCi/g so that the 1000-yr Ra-226 level is 12.1 pCi/g, but it is the only grid on the page that indicates excavation was deeper than 15 cm. A similar situation exists (isolated grid had deeper excavation and higher radionuclide level) for many grids that exceed the surface cleanup guideline.

COMMENT: Indicate how depths of excavation (or areas that were not backfilled) were tracked and how this information was provided for the grid data tables. Alternatively, indicate why these isolated "hot spots" were prevalent on this site.

12. DISCUSSION: There are no laboratory quality control (QC) data for the first three pages of HGVS measurements for block K.

COMMENT: Assuming the absence of such data, indicate how QC samples were chosen for the HGVS measurements.

#### Volume 5, Appendix J, Monument Valley Verification Grid Data

13. DISCUSSION: Monument Valley grid N-3-16 is reported to have 10 pCi/g Th-230 in the top 6 inches of soil. It was NRC staff's understanding that Th-230 would be removed to near background (1-2 pCi/g) levels for surface soil (ALARA).

COMMENT: Explain the Th-230 limit for surface soils that was used and the potential health risk from inhalation of this residual Th-230.

#### Volume 6B, Appendix B, Calculation 9-421-05-00

14. DISCUSSION: Table B1 appears to be missing data for the top 1.5 or 2.5-foot sample interval. It is not clear if the top sample includes the radon barrier, as well.

COMMENT: Indicate if the radon barrier was in place when the samples were taken and why there is an apparent inconsistency in the thickness of the top sample.

15. DISCUSSION: For most of the 20 locations the value for one sample is used for 2 or 3 different layers in the radon flux model.

COMMENT: Indicate why, for most of the 20 locations, the value for one

sample is used for different layers in the radon flux model.

16. DISCUSSION: The emanation fractions for the first samples at locations R4 and R20 are very low (0.02 and 0.01).

COMMENT: Provide further explanation of the low values of the emanation fractions and indicate why such values are acceptable.