

January 25, 2001

Ms. Donna Bergman-Tabbert, Manager  
U.S. Department of Energy  
Grand Junction Office  
2597 B3/4 Road  
Grand Junction, CO 81503

SUBJECT: DISPOSAL OF GRAND JUNCTION OFFICE REMEDIAL ACTION PROJECT  
RADIOACTIVE WASTES IN THE CHENEY DISPOSAL CELL

Dear Ms. Bergman-Tabbert:

By letter dated November 30, 2000, the U.S. Department of Energy (DOE) requested the concurrence of the U.S. Nuclear Regulatory Commission (NRC) in the DOE's planned disposal of Grand Junction Office Remedial Action Project (GJORAP) radioactive wastes in the Grand Junction (Cheney site), Colorado, Disposal Cell. The subject radioactive wastes will be generated from the planned demolition of GJORAP Building 7A as part of DOE's responsibilities under Title I of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), as amended. As DOE is aware, UMTRCA requires that NRC concur in DOE's remedial actions at abandoned mill tailings facilities and vicinity properties in the Grand Junction area, including DOE's plans for disposal of radioactive wastes resulting from remediation activities.

The NRC staff has completed its review of DOE's plans for disposal of the radioactive waste resulting from the demolition of Building 7A. Building 7A was primarily used to process and prepare samples of uranium mill tailings, ores and contaminated soils from DOE remedial action programs for subsequent analysis in the GJO analytical laboratory. These remedial action programs included radioactive materials from the Monticello Superfund site as well as from GJORAP activities. In order to characterize the radiological conditions within Building 7A prior to its demolition and disposal as radioactive waste, DOE took samples and smears of areas and equipment surfaces potentially contaminated from prior operational activities. In those samples and smears where radioactivity was detected, radionuclide analysis indicated the presence of uranium series elements (uranium, thorium, radium, lead, etc.), as expected. However, DOE also analyzed these samples and smears for the presence of other alpha and gamma emitting radionuclides not commonly found with the uranium series elements. These analyses indicated the presence of trace amounts of plutonium ( $\text{Pu}^{239/240}$ ), americium ( $\text{Am}^{241}$ ), and cesium ( $\text{Cs}^{137}$ ) in several of the samples and smears.

For a number of reasons, the staff has little concern for the cesium detected in Building 7A. Cesium was found in only two samples and at very small activity levels (less than 27 pCi/g). Materials contaminated with cesium at these levels could be released for unrestricted use. However, the Building 7A materials bearing these trace levels of cesium will not be released for unrestricted use but will be disposed of as radioactive wastes in a facility (the Cheney Disposal Cell) designed for that purpose. Lastly, the half-life of  $\text{Cs}^{137}$  (30 years) is short relative to the minimum 200 year design for control of radiological hazards from the Cheney Disposal Cell, as

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required by NRC regulations (10 CFR Part 40), and the Cs<sup>137</sup> will largely disappear during this time frame. Thus, the trace cesium in Building 7A materials poses no threat to public health and safety.

In light of the presence of trace amounts of transuranics (plutonium and americium) in Building 7A, DOE reviewed the pertinent NRC regulations and guidance (10 CFR Part 40, *Domestic Licensing of Source Material*, 10 CFR Part 70, *Domestic Licensing of Special Nuclear Material*, and Regulatory Guide 1.86, *Termination of Operating Licenses for Nuclear Reactors*) and DOE guidelines (DOE Order 5400.5, *Radiation Protection of the Public and Environment*) to determine if they would preclude the disposal of the Building 7A wastes in the Cheney Disposal Cell. DOE concluded that neither the NRC regulations and guidance nor the DOE guidelines were impediments to Building 7A waste disposal at the Cheney site. In support of these findings, DOE compared the reported levels of plutonium and americium surface contamination in Building 7A samples with acceptable surface contamination levels in Regulatory Guide 1.86 and DOE Order 5400.5 for release of materials for unrestricted use. In this regard, the acceptable surface contamination levels in DOE Order 5400.5 for a variety of radionuclides, including transuranics, are consistent with the corresponding values in Regulatory Guide 1.86. Seven samples indicated the presence of plutonium and six samples indicated the presence of americium, however, none of these samples yielded surface contamination levels in excess of the acceptable levels in Regulatory Guide 1.86 and DOE Order 5400.5 for transuranics (20 dpm/100 cm<sup>2</sup>). The highest reported levels of contamination in the samples were approximately 17 dpm/100 cm<sup>2</sup> and 3 dpm/100 cm<sup>2</sup> for plutonium and americium, respectively. At these levels of contamination, Building 7A materials could be released for unrestricted use. However, as noted above, DOE intends to manage all Building 7A demolition materials as radioactive wastes to be disposed in the Cheney Disposal Cell. Further, the DOE will be licensed for the custody and long-term care of the Cheney site in perpetuity. Thus, the DOE has adopted a very conservative approach to protection of public health and safety from these wastes contaminated with trace levels of transuranics.

Based on the above review, the staff concurs with DOE's plans for disposal of Building 7A demolition wastes in the Cheney Disposal Cell. The staff notes that, during these planned remediation activities, the DOE plans to conduct further sampling and analysis of Building 7A to confirm its characterization of the radiological conditions within the building. The staff endorses this further characterization. While characterization to date indicates that all contamination levels in Building 7A are below the levels in Regulatory Guide 1.86 and DOE Order 5400.5 for release of materials for unrestricted use, the DOE should inform the NRC if further sampling yields different results which otherwise alter the conclusions and findings of this review.

If you have any questions regarding this letter, please contact Rick Weller, the Project Manager for the Grand Junction site, at (301) 415-7287 or by e-mail to [RMW2@nrc.gov](mailto:RMW2@nrc.gov).

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Sincerely,

**/RA/**

Philip Ting, Chief  
Fuel Cycle Licensing Branch  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety and Safeguards

cc: L. Arnold, DOE GRJ  
J. Elmer, MACTEC GRJ  
J. Deckler, CDPHE Den

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Fuel Cycle Licensing Branch  
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