Department of Energy
Washington, DC 20585
September 30, 2002

The Honorable John T. Conway, Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW
Suite 700
Washington, D.C. 20004-2901

Dear Mr. Chairman:

The purpose of this letter is to inform you of the actions taken, as well as planned, to address your March 7, 2002, letter concerning disposition of depleted uranium (DU) materials at the Savannah River Site (SRS). The Savannah River Operations Office has prepared the enclosed response that addresses short and long-term disposition plans and other DU storage concerns.

The short-term plan for disposition of the DU oxide (DUO) in Buildings 728-F and 730-F is to dispose as low-level waste (LLW) at Envirocare of Utah. The long-term disposal options include: (1) dispose as LLW as described in the short-term plans, (2) use of DUO in SRS High-Level Waste (HLW) tank closure, and/or (3) dispose of the DUO in Saltstone. The Savannah River Operations Office is preparing a long-term disposition project plan to define actions, activities, responsibilities, and decision dates to move toward the final disposition of the SRS DU materials. The long-term disposition project plan is expected to be complete by November 1, 2002, and a copy will be provided to you, along with a briefing to be scheduled at your convenience.

The enclosed response also addresses other concerns with the storage of DU materials including the adequacy of inspections, guidance for long-term storage, co-storage of chemicals, combustible loading in Building 330-M assumptions made in the hazard analysis.

If you have any further questions, please contact me at (202) 586-7709 or Paul Golan of my staff at (202) 586-0738.

Sincerely,

Jessie Hill Roberson
Assistant Secretary for
Environmental Management

Enclosure

cc:
Mark Whitaker, S-3.1
Paul Golan, EM-3
Jeffery Allison, DOE-SR

Short-Term Disposition Plans:
Savannah River Site (SRS) recognizes that storage conditions in Buildings 728-F and 730-F are unacceptable. The material is to be disposed at Envirocare of Utah (EOU). Shipments are planned to begin by March 2003 and be complete by the end of September 2003.

Long-Term Disposition Plans:
Implementation of the short-term disposition plans for depleted uranium oxide (DUO) stored in 728-F and 730-F in FY03 will correct the worst corrosion and poor storage condition issues and prove the viability of the disposal option.

A Project Plan for the Disposition of the SRS Depleted Uranium (DU) will be developed by November 1, 2002. This Plan will define actions, activities, responsibilities, and decision dates for the final disposition of the SRS DU materials. A briefing will be provided to the Defense Nuclear Facilities Safety Board (DNFSB) when the Plan is finalized. The data gained through the initial disposal actions will help establish this plan.

The disposal options include:
1. Dispose of the DUO as low level waste (LLW) as described under short-term options. The viability of the EOU disposal option for DUO will be proven in FY03.
2. Use DUO in SRS High Level Waste (HLW) tank closure. This option would combine the oxide with the concrete used to fill the tanks during final tank closure activities. Regulatory issues would need to be resolved.
3. Disposal of the DUO in Saltstone. Capacity, operational, and regulatory issues would require resolution before this option would be considered viable.

Other depleted uranium storage concerns:

Adequacy of Inspections:
One of the issues noted in the 1998 Office of Environment, Safety and Health report was that the inspections performed at that time were related to inventory control and not drum integrity. A resulting commitment was to implement a quarterly inspection of the DUO storage, including drum integrity. The DNFSB questioned the adequacy of the guidance for this inspection; the tickler has been reviewed and a procedure implemented to provide guidance for the inspections. The procedure requires that the storage locations must be inspected for radiological conditions, condition of drums, presence of standing water and building condition. The corrosion and transportation studies mentioned above were commissioned as a result of quarterly inspections using the previous guidance. These continuing inspections are designed to keep track of overall condition of storage. The inspections have noted conditions as they deteriorate so that further action can be scheduled as required. Lack of ability to inspect interior drums of the stacks was noted as a problem, however, inspection of interior drums is not presently possible. Disposition planning will require examination of drums as they are moved. However, in the summer of 1998, approximately 1,000 drums were moved from 730-F to 221-21F. This exposed drums that had previously been in the interior of that stack and showed that the condition

of these drums was similar to those on the outside of the stack. Based on this information, examination of the available drums is a reasonable representative sample.

Guidance for Long-Term Storage:
The DU/NU/LEU Trade Study performed by EM-21 in FY1999 dealt with the subject of providing complex-wide storage guidance for DU. Because of the low relative hazard, the widely varying available storage, and individual site needs, the Trade Study team concluded that a DOE Policy for DU storage was not necessary. SRS agrees with this assessment and considers the Integrated Safety Management System to provide adequate guidance to establish appropriate controls for storage of this material.

Co-storage of Chemicals:
Storage of oxidizing agents and other chemicals in building 221-12F and 221-21F was questioned. The chemicals in 221-12F are stored in an internal structure that physically separates the chemicals from the DUO drums. SRS does not agree that storage of solid, low oxidation potential material, in sealed containers, presents a significant addition to the potential for fire in a metal building with low combustion loading. The chemicals in 221-21F were stored in close proximity to large wooden storage crates. These chemicals were moved out of this building to a more appropriate location.

Combustible Loading in 330-M:
SRS also has concern with the technical evaluation of a hypothetical uranium fire in Buildings 330/331-M and is requiring that defendable documentation be developed. A fire hazard analysis is being developed for these facilities and will be completed by October 15, 2002.

Assumptions in Hazard Analysis:
A comment was made concerning Safety Analysis of the DUO material storage, with the source term considered at low end of reasonable worst case. The source term issue includes Respirable Fraction (RF) lower than given in the DOE Handbook, due to particle size. Further evaluation has developed two issues around which to consider the validity of this analysis. The first issue, presented in New Information NI-NMM-02-0006, concerns use of an incorrect formula in the calculation to determine the RF for UO_3 powder. Although the correct formula results in increased consequence by a factor of five over previous results, the original calculations did not consider deagglomeration, which was used in the Handbook. When these factors are all considered, the new consequence may be lower than the original value. The other issue under consideration is the sample size, with a finer powder resulting in increased RF. The Handbook acknowledges that powders as fine as those used in the referenced studies are "extremely atypical" of those produced by process operations. Based on the age of the sample used to evaluate particle size at SRS, it is concluded that the UO_3 from Savannah River Technology Center (SRTC) came from the older, batch denitrator and the SRTC powder has a particle size distribution that is representative of the smaller particle size. Therefore, the release fraction documented in WSMS-SAE-M-98-00049, "Uranium Trioxide Waste Powder Release Fraction," and used in the accident analysis documented in S-CLC-F-00272, "F-Area UO_3 Concentration Analysis," performed for the Basis for

Interim Operation (now converted to a Safety Analysis Report) is conservative and appropriate.

Other questions have been raised concerning the number of drums that may be involved in the tornado scenario. These determinations, found in the accident analysis documented in S-CLC-F-00272, use sliding friction calculations to demonstrate that only a single drum at the corner of the array is likely to be affected, yet three drums are assumed to fall from each corner of two arrays. This number is then tripled to account for other damage, such as missiles etc. The calculations do not credit any reduction for cylindrical shape of the drums and consider conservative wind velocity. Wind resistance of broken drums is ignored, and damage ratio is assumed at unity for offsite release. These calculations are considered to be conservative.