Department of Energy
Washington, DC 20585
November 1, 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 report completion of 2000-1 Implementation Plan Milestone, titled, "Complete Stabilization and Packaging of Solutions," due July 31, 2002. The Plutonium Finishing Plant (PFP) completed packaging on July 29, 2002.

The solutions were stabilized and packaged using several methods. High plutonium content solution materials were stabilized using a precipitation process followed by thermal stabilization. The lower plutonium content solutions were either placed in an absorbent matrix inside drums that were shipped to the Hanford Site Central Waste Complex (CWC) or labpacked and shipped to the CWC. The organic solution drum that was labpacked and shipped to CWC is awaiting further characterization prior to shipment to the Waste Isolation Pilot Plant.

In addition, attached is our response to your June 11, 2002 letter forwarding a Defense Nuclear Facilities Safety Board Staff Issue Report, titled, "Recommendation 94-1/2000-1 Stabilization Activities at Hanford Plutonium Finishing Plant". Hanford also provided you a status of actions related to the issues identified in the referenced report during a Board visit to Hanford in July 2002. We will continue to manage and track progress on all Recommendation 2000-1 commitments and keep you and your staff apprised of our progress. If you have any further questions, please contact me at (202) 586-7709 or Paul Golan at (202) 586-0738.

Jessie Hill Roberson
Assistant Secretary for
Environmental Management

Enclosure

cc: Mark Whitaker, S-3.1
Paul Golan, EM-3
Keith Klein, DOE-RL

Attachment

Responses to Defense Nuclear Facilities Safety Board (DNFSB) Staff Issue Report on Stabilization Activities at the Plutonium Finishing Plant

1a) Unique Item Disposition – Organic Solutions.

- **DNFSB Staff Observations:** It would be prudent to formally confirm that this organic solution can be disposed of at the Waste Isolation Pilot Plant (WIPP) without further stabilization or repackaging before shipping the material to the Central Waste Complex for interim storage. In particular, it is not clear that this item will pass gas generation testing required for shipment to WIPP. Treatment and/or repackaging may be required. PFP has significant processing and repackaging capabilities, and is a more robust facility for interim storage than the Central Waste Complex.

  It would be prudent to determine whether similar material exists elsewhere at the site, particularly in Plutonium Reclamation Facility (PRF). Similar material may exist as hold-up in PRF process equipment.

  Response: The organic solution referred to above was placed into two bottles, lab packed as transuranic waste, and shipped to the Hanford Site Central Waste Complex (CWC) for storage. During the receipt verification process, free liquids were discovered. The waste profile sheets have been revised. The Hanford Site Waste Management Program reviewed the material, and verified that it meets the CWC waste acceptance criteria and can be safely stored there pending its ultimate disposal at WIPP.

  This material joins other lab packed transuranic waste from other facilities at Hanford that have organic and headspace gas generation issues that need to be resolved before they can be shipped to WIPP. Efforts are ongoing between Carlsbad Field Office and Rocky Flats to develop hydrogen getters that address the transportation issues of the TRUPACT II Safety Analysis Requirements for Packaging for these types of waste around the Complex.

  The Fluor Hanford, Inc. (FHI) Transuranic Program Manager has reviewed the subject drum and determined that it can be disposed of once the material is stabilized for transportation and WIPP acceptance. Stabilization of transuranic organic wastes is on hold pending resolution of the gas generation issues. Any modification to the waste package would be done only after the recommendation for the National TRU Program on organic containing wastes. In preparation for shipment of the waste, confirmation characterization would be performed.

  The potential exists for similar material to be found in PRF. The PFP Decommissioning team is fully aware of this. The disposition path would be the same. The data obtained during confirmation characterization of the lab pack could be used to support disposition of similar legacy material found

during PFP cleanout.

1b) Unique Item Disposition - High plutonium-238 drums.

- **DNFSB Staff Observations**: A final disposition path needs to be determined. The contractor believes the drums can be sent to either SRS or to Los Alamos National Laboratory (LANL) for possible inclusion in the plutonium-238 scrap recovery process. Based on the impure isotopic content, this material may not be appropriate for the LANL recovery process.

  A hazards analysis needs to be performed in order to develop safe retrieval and handling procedures. The high specific activity and associated heat content of these drums pose a unique hazard compared to other drum retrieval activities.

  An appropriate facility needs to be available for handling/repackaging processes.

  Response: RL staff contacted LANL and SRS. Both expressed little interest in accepting this waste stream for reuse. The current baseline disposition plan is to retrieve these drums from the burial ground and transfer the Pu-238 oxide waste to a solid waste facility having "M-91 capability". "M-91" refers to a Tri-Party Agreement milestone for providing the capability for sorting, partitioning, and repackaging waste for shipment offsite to WIPP. The current baseline plan is to modify the T-Plant Facility to provide M-91 capability. As part of the transuranic waste acceleration proposal in the Hanford Performance Management Plan, the Carlsbad Field Office will station mobile vendor units at Hanford to process retrieved and newly generated transuranic waste. RL and the Carlsbad Field Office will decide which facility (T Plant or the mobile units) will provide optimal treatment of this waste stream. RL expects to complete a hazards analysis prior to retrieval activities.

2) Moisture Measurement and Control.

- **DNFSB Staff Observations**: After stabilization and sampling, the contractor places stabilized plutonium oxide in a vented convenience container for interim storage. Use of a vented container is contrary to the storage standard. Additionally, it is a poor practice to leave thermally stabilized plutonium oxide materials open to a humid environment even if the material subsequently can be shown to meet the moisture requirements.

  Although the contractor=s stated practice is not to delay packaging into the sealed inner container, the storage period between re-weighing and final sealing can be prolonged. The only limit imposed by the contractor on the duration of the time between re-weighing and placement into the inner container is that the period be less than the time between the initial weighing and re-weighing, which in several cases has extended to hundreds of hours.

The contractor uses a potentially non-conservative extrapolation method to estimate moisture reabsorption between re-weighing and final packaging. Such extrapolation could be non-conservative depending on the relative humidity in the glovebox during this period.

Response: FHI packing limits are established tighter than the .5 percent limit for weight percent moisture. FHI observed that maintaining the vented lid in place for the duration of the waiting period potentially introduced less moisture to the material than use of a solid lid. This is likely due to increased exposure while opening the container to exchange lids.

RL and FHI are currently working with SRS to document how Hanford meets the SRS acceptance criteria. A document is being finalized which describes the Hanford practices related to control and measurement of moisture on oxides stabilized to meet DOE-STD-3013-2000 requirements. Historical data on glovebox moisture measurement are included. The storage time and extrapolation issues are addressed, as well as an evaluation of the significance of the potential non-conservatism. The evaluation shows that there is a potential for non-conservatism; however, the magnitude of the potential non-conservatism does not jeopardize compliance with DOE-STD-3013-2000. This document will be provided to SRS for review and approval in November 2002.

3) Material Surveillance.

- **DNFSB Staff Observation**: Contractor personnel indicated they believe PFP material types are represented in the Material Identification and Surveillance (MIS) Program since there are samples in the program, which bound the chloride and the moisture content of PFP material. The staff does not believe bounding in this manner is sufficient or consistent with the intent of the standard. PFP personnel indicated they would perform a crosswalk to demonstrate that PFP=s plutonium oxide inventory is adequately represented in the MIS program.

  Response: In May 2002, the FHI MIS representative presented to the MIS Working Group, and received initial agreement on, the position that all of PFP's material is represented based on the bounding samples in the program. In July 2002, another MIS Working Group meeting was held in Denver to reach resolution and define an agreed upon path forward. EM-20 is finalizing the document entitled, "Represented Items in the MIS Project." This document establishes the DOE position that all material is represented in the MIS program. RL and FHI plan to comply with and execute the path determined by the MIS Working Group.

4) Alternative Plutonium Storage.

- **DNFSB Staff Observations**: The current state of the vaults is unknown. The staff was informed that the last entry into a vault was in 1992. Before additional resources are spent on the planning effort, it would be prudent to examine the interior of the vault for signs of deterioration (cracking, pooled water, etc.).

An acceptable surveillance program that meets the requirements of DOE-STD-3013 must be developed.

Response: A decision to use the grout vaults is expected in Spring 2003. If a decision is made to use the vaults, RL agrees that an acceptable surveillance program would need to be developed and would be an integral part of interim storage in the alternative storage location. The use of strategically placed "pucks and pods" in the 3013 container and 9975 shipping cask, respectively, will be a cornerstone of an advanced warning of potential problems. The disposition of problem items is also being planned. Potential options could include: potentially mothballing 2736-ZB (existing vaults), relocating one furnace and the welders, or shipping to LANL or SRS. The disposition path for problem items will be identified prior to relocating material to the alternative storage area.

Alternative Vault Storage for PFP Plutonium - A camera was inserted into Grout Vault 105 on September 11, 2002, to videotape and assess the current condition of the vault's interior. No degradation was noted in the structural integrity of the concrete surfaces. Approximately one to two inches of water covers the floor of the vault (estimated to be 3300 to 3500 gallons; the vault measures 123.5'1 x 50.5'w x 34'h). The source of the water could be the remaining heel from the initial vault leak test after construction, possibly from the pipe and vent penetrations that are not leak tight, or from a combination of the two. A work package to sample the water is being prepared. The water will be sampled for radiological, biological, and hazardous constituents. After all samples and characterization has been completed, a path forward to remove and properly dispose of the water will be formulated. A grab sample of the water will be collected by early November 2002, with analysis to follow.

A copy of the videotape was provided to DNFSB RL Site Representative.