

**Department of Energy**

Washington, DC 20585

October 27, 2004

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

Dear Mr. Chairman:

This letter is to inform you that Commitment 118E of Revision 2 to the *Implementation Plan for Stabilization and Storage of Nuclear Material* for the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2000-1 (July 2002) calling for removal of spent nuclear fuel from the K-Basins is complete. Commitment 119E, calling for the completion of sludge containerization in K-East Basin by December 31, 2004, will likely be delayed several weeks, though completion of the overall sludge project is still on schedule. This letter also provides notification that processing the K-Basin sludge from the North Load-Out Pit (NLOP) is now planned for T-Plant, rather than Hanford's Radiochemical Processing Laboratory (Building 325). This latter notification is in accord with the May 30, 2003, letter to you from the Assistant Secretary for Environmental Management, "Concerns Regarding Interim Storage of K-Basin Sludge at the Hanford 221-T Building (T Plant)." The status and plans for the K-Basin spent fuel removal, and sludge removal and treatment, remain consistent with the briefings presented to the DNFSB during its visit to the Hanford Site on September 22, 2004.

With respect to Commitment 118E, shipment of multi canister overpack (MCO) number 386 completes removal of all fuel from K-East and K-West Basins that can be shipped at this time. A small amount of scrap from final fuel processing in K-West is prepared for loading into an MCO, but shipping a partially filled MCO at this time would not be an efficient use of storage space at Hanford's Canister Storage Building, nor be cost effective. In addition to the scrap material, the following residual fuel material remains at the K-Basins:

- One piece of single-pass reactor (SPR) fuel contained in a canister in K-East;
- One inner N-Reactor fuel piece that was dropped on the floor of K-East to be retrieved during sludge removal;
- SPR and N-Reactor fuel and scrap pieces anticipated to be found during the sludge containerization in K-East;
- SPR and N-Reactor fuel and scrap anticipated to be found during sludge containerization in K-West; and
- One canister containing 16 pieces of suspect material, thought to be plutonium recycle test reactor (PRTR) fuel cladding, in K-West.



The most prudent course of action is to hold the scrap material in K-West until it can be packaged into a single MCO with the two fuel pieces in K-East and any fuel found during sludge containerization. On this premise, the Department of Energy (DOE) considers Commitment 118E complete.

The disposition path for the 16 pieces of suspected PRTR material will be determined once this material is fully characterized. If they contain no PRTR fuel, they will either be packaged with the scrap or removed with other basin debris for shipment to the Environmental Restoration Disposal Facility. Any material containing PRTR fuel will need an alternate disposition path, as the enrichment level of such fuel exceeds the authorization basis for MCOs. The DNFSB staff will be kept apprised of plans for this suspect material through regularly scheduled interface meetings. We expect to complete removal of the remaining scrap, debris, and fuel fragments after they are all uncovered during sludge removal; hence they should be removed from K-East by June 2005 and from K-West by June 2006. These remaining materials will be packaged into a final, partially filled MCO or into one or more existing MCOs with space available ("short-stacked" MCOs).

Commitment 119E requires the consolidation and containerization of K-East Basin sludge (except that in the NLOP) into interim storage tanks within the basin by December 31, 2004. This Commitment is currently behind schedule, with completion now projected for February 2005. Multiple factors have contributed to this delay. First, testing of the sludge flocculation system showed that additional engineering and modifications were needed before installing that system to ensure it would work as intended. In addition, Fluor Hanford, Inc. (FHI) failed to anticipate the extent to which the changes to basin water conductivity and pH, resulting from recent grouting of the K-East discharge chute, would impact water clarity. The reduced water clarity has significantly impacted the sludge containerization activities.

DOE and its contractor are taking actions to recover schedule and improve project performance. The Richland Operations Office (RL) and FHI staff are working together to identify further work efficiencies and activities that can be performed in parallel, rather than sequentially. For example, as preparations for containerization continue, some sludge is being consolidated into the K-East South Load-Out Pit to accelerate subsequent containerization. Likewise, completion of the flocculation system has been removed from the project critical path based on test results that show much containerization progress can be made without flocculent. We are also reviewing the technical basis for basin water chemistry to determine whether new control parameters might minimize water clarity issues during concurrent K-East grouting and sludge containerization. This may also help prevent similar problems in K-West Basin when grouting that discharge chute. In addition, DOE and FHI have examined engineering and planning deficiencies that failed to adequately recognize some of the current problems. As a result, additional engineering and scientific expertise from off-site have been brought in to further challenge plans and designs in several critical areas and help develop contingency plans and tests in areas where considerable uncertainty remains.

When beneficial to project progress, K-East Basin staff is also working overtime to support acceleration. However, these actions may not be sufficient to recover schedule lost to date. RL has increased its oversight of sludge activities and is prepared to exercise existing contract provisions that prescribe consequences for missing DNFSB and Tri-Party Agreement milestones, if in fact they are missed. In addition, RL has made clear that FHI's performance on this project will be a significant factor in decisions regarding future work.

As for the NLOP sludge, several factors have made T-Plant a preferred location for NLOP sludge processing versus Building 325. T-Plant will not require equipment modification to the degree of Building 325. Building 325 is on a firm timetable for shutdown in 2009, and the sludge processing may prove to be a distraction from this goal. All knowledge and capabilities possessed by Pacific Northwest National Laboratory staff will be deployed at T-Plant. Finally, T-Plant staff has much more experience starting nuclear operations and has been subject to a myriad of Operational Readiness Reviews. The T-Plant facility capabilities and staff experience are expected to lead to more efficient, lower cost sludge treatment.

As part of FHI's preparations for treating sludge in T-Plant, the contractor performed an Unreviewed Safety Question Evaluation (USQE) of the safety basis in accordance with 10 CFR 830. DOE previously made a commitment to the DNFSB that no work scope would be added at T-Plant unless such an evaluation is performed. This USQE conducted for the sludge treatment activity concluded that no USQ exists; the activity is within the safety envelope defined by the Waste Management Master Documented Safety Analysis (MDSA). Since this evaluation of the Waste Management MDSA indicated that treating the NLOP sludge at T-Plant is a bounded activity, no new analyses, including consideration of ACI 318, "Building Code Requirements for Structural Concrete," were performed. These analyses will be shared with your staff.

If you have any further questions, please call Dr. Inés Triay, Deputy Chief Operating Officer, at (202) 586-0738 or Keith Klein, Manager, Richland Operations Office, at (509) 376-7395.

Sincerely,



Paul M. Golan  
Acting Assistant Secretary for  
Environmental Management

cc: Inés Triay, EM/DOE  
M. Whitaker, DR/DOE  
K. Klein, RL/DOE