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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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March 3, 2004

The Honorable Spencer Abraham  
Secretary of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-1000

Dear Secretary Abraham:

The Defense Nuclear Facilities Safety Board's (Board) Recommendation 94-1, *Improved Schedule for Remediation in the Defense Nuclear Facilities Complex*, identified safety issues associated with the storage of hundreds of tons of deteriorating irradiated nuclear fuel in the Hanford K-East Basin and the thick deposit of sludge containing actinide compounds and fission products that covers the bottom of the basin. The Board recommended that these materials be placed in safe interim storage within 2-3 years. The Department of Energy (DOE) determined that this schedule was not achievable, and the Board agreed to a completion date of December 1999. Repeated project management and engineering issues, along with changes in technical approach, resulted in further requests for delays, and the current DOE Implementation Plan commits to completing fuel removal by July 2004 and sludge removal by August 2004.

The activity to begin the removal of sludge from the K-Basins is now nearly 14 months overdue. The Board believes it is imperative that DOE establish new Implementation Plan milestones for the startup and completion of sludge removal, make a firm commitment to completing these activities on schedule, and ensure that these commitments become contractual obligations at Hanford.

Workers within the Spent Nuclear Fuel Project have removed approximately 80 percent of the fuel from the K-Basins and expect to complete this task by July 2004. Efforts to develop a process for removing the sludge have been far less successful. The project failed to meet the Implementation Plan commitment to begin sludge removal from the basins by December 2002. Continued project management issues and delays in the startup of sludge retrieval led the Board to issue a letter to DOE on April 10, 2003, requesting that DOE provide either a path forward for completing sludge removal by August 2004 or a revised Implementation Plan with justification for delaying completion of sludge removal beyond this date.

DOE responded on June 10, 2003, and again on August 1, 2003, requesting additional time to develop a credible path forward for the project. In a November 14, 2003, letter, DOE informed the Board that it was evaluating alternative approaches for treatment of the sludge, but that it would continue to pursue the baseline approach of packaging sludge for storage at T-Plant until a credible alternate path could be developed. Most recently, DOE issued a letter to the

Board on February 3, 2004, stating that a plan had been developed for removing the portion of the K-East Basin sludge located in the North Load-Out Pit. DOE's letter stated that this activity may begin by March 2004, and implied that this would fulfill the overdue Implementation Plan commitment to start sludge removal. DOE's response also stated that other strategies were being considered for the remainder of the sludge, and committed to updating the Board by April 30, 2004.

Retrieving the sludge from the North Load-Out Pit would be an incremental step toward eliminating the risk posed by the K-Basin sludges. This material represents about one-seventh of the total sludge inventory of the basin. However, the North Load-Out Pit sludge has emerged as DOE's first choice for removal because it poses the least hazard and is expected to be the easiest to handle and dispose. Samples have indicated that the cesium concentration in the North Load-Out Pit sludge is approximately an order of magnitude lower than that in the remainder of the K-East Basin sludge, and the uranium concentration is approximately two orders of magnitude less than that of the remaining K-East Basin sludge. Accordingly, the strategy being developed for the North Load-Out Pit is not expected to be applicable to the remaining sludge in the basins. Continued delay in removal of the floor and canister sludge in the K-East Basin is also likely to result in delays in the recovery of any fuel elements and fragments that may be found buried in the sludge. Such delays will prolong completion of packaging, drying, and removal of these fuel materials for safe interim storage in the Canister Storage Building.

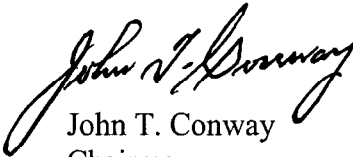
The Board considers that the startup of a process that applies only to a small fraction of the sludge (and a smaller fraction of the hazard posed by the sludge) would not satisfy the Implementation Plan commitment to begin sludge removal. This intermediate milestone was to serve as a check demonstrating satisfactory progress toward meeting the final milestone for removal of all sludge from the K-Basins through development and startup of a system capable of removing all sludge from K-East Basin. Guidelines for the selection of milestones that will provide assurance that the Board's recommendations are being accomplished can be found in the Board's Policy Statement 1, *Criteria for Judging the Adequacy of DOE Responses and Implementation Plans for Board Recommendations*.

Therefore pursuant to 42 U.S.C. § 2286b(d), the Board requests that the April 30, 2004, update promised by the Office of Environmental Management provide a revised Implementation Plan that includes:

1. The disposition path for each sludge type within the K-East and K-West Basins;
2. The disposition path for any irradiated fuel or fuel fragments that may be found in the sludge;
3. Revised milestones for the completion of sludge removal from the K-East and K-West Basins;

4. Intermediate milestones for activities that represent progress in removing the sludge from the basins, such as selection of the retrieval and treatment processes for the sludge streams and startup of removal of floor and canister sludge. The milestones should be realistic, resource loaded, and account for time to perform adequate hazards analyses and control development; readiness preparation, such as procedure development, operator training, and systems testing; and appropriate readiness reviews.

Sincerely,

A handwritten signature in black ink, appearing to read "John T. Conway". The signature is written in a cursive style with a large, sweeping initial "J".

John T. Conway  
Chairman

c: The Honorable Jessie Hill Roberson  
Mr. Keith A. Klein  
Mr. Mark B. Whitaker, Jr.