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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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December 5, 2000

The Honorable Carolyn L. Huntoon
Assistant Secretary for
Environmental Management
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0013

Dear Dr. Huntoon:

The Hanford Spent Nuclear Fuel Project (SNFP) is critical to resolving the spent nuclear fuel vulnerabilities identified in the Defense Nuclear Facilities Safety Board's (Board) Recommendation 94-1, *Improved Schedule for Remediation*. The Board's staff and outside experts have observed the Fluor Hanford and Department of Energy (DOE) Operational Readiness Reviews (ORRs) used to assess the SNFP's ability to safely handle, process, and store this spent fuel. The K-West Basin, Canister Storage Building, and Cask Transportation ORRs identified problems with procedural compliance and radiological control practices. These problems continued during the Cold Vacuum Drying Facility (CVDF) ORRs despite the presence of a contractor senior supervisory watch and mentors.

Additionally, during the CVDF ORRs, operators failed to adequately demonstrate the ability to identify and respond to abnormal conditions during activities to vent and purge potentially explosive concentrations of hydrogen from the multi-canister overpack (MCO). These failures were not identified by the operations organization, senior supervisory watches, or mentors. These failures are detailed below:

- During the contractor ORR, an operator did not recognize that the helium purge of an MCO was unsuccessful even though the procedure gave specific criteria for an acceptable purge. This was caused by mistakenly isolating the helium supply system, which prevented pressurization of the MCO. This pressurization was to be monitored at a pressure gauge by the operator.
- During the DOE ORR, an operator did not recognize that a solid cover plate on the MCO process port would have prevented the vent and purge. In addition, the cover plate would have been the only barrier to a pressurized release of hydrogen into the bay if the port valve had been in its proper configuration. The operator removed the solid cover plate without notifying his manager of the abnormal condition. A release of hydrogen into the bay could result in an explosion with life threatening implications.

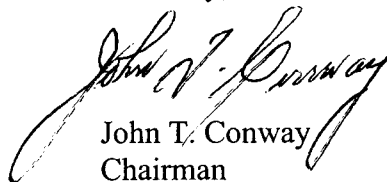
- Further review by the Board's staff identified that the Technical Safety Requirement administrative control addressing the process port cover plate was not adequately implemented in the SNFP procedures. While performing one of these procedures for the first MCO to be loaded with spent fuel, maintenance personnel installed a solid cover plate on this process port in violation of the procedure. The quality control inspection required by the procedure also incorrectly identified the installation as correct.

These deficiencies should be addressed before commencing SNFP operations. The relevant SNFP procedures require revision to ensure that the administrative controls protecting against the accumulation of hydrogen in the MCO are adequately implemented. Furthermore, based on the issues discussed above, the marginal level of performance by the SNFP during the ORRs, and the procedural violations while preparing the first production MCO, the Board believes that continuous oversight by DOE Richland Operations Office (DOE-RL) personnel is required during MCO handling and processing to ensure the safe operation of the SNFP facilities. The personnel performing such oversight will need to possess a thorough understanding of the SNFP Authorization Basis, conduct of operations, and radiological protection, as well as the authority to terminate activities which could adversely affect the safety of the workers, the public, or the environment.

The Board also believes that an independent assessment of Fluor Hanford's ability to operate the SNFP facilities proficiently, without the aid of senior supervisory watches or mentors, should be conducted prior to the removal of continuous DOE-RL oversight of MCO handling and processing activities.

The Board requests to be briefed on actions taken in response to this letter prior to removal of the first MCO from the K-West Basin.

Sincerely,



John T. Conway
Chairman

c: Mr. Keith A. Klein
Mr. Mark B. Whitaker, Jr.