DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004-2901
(202) 694-7000

February 15, 2002

The Honorable Jessie Hill Roberson
Assistant Secretary for
Environmental Management
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Ms. Roberson:

Recommendation 94-1, *Improved Schedule for Remediation in the Defense Nuclear Facilities Complex*, recommended that the deteriorating spent nuclear fuel stored in the Hanford K-East Basin be removed and placed into safe interim storage. The Department of Energy (DOE) Implementation Plan committed to place the fuel into a storage facility that would provide equivalent safety to commercial spent nuclear fuel storage facilities.

During the design phase of the Hanford Spent Nuclear Fuel Project (SNFP), DOE revised the design of the Multi-Canister Overpack (MCO) to be used for storage of the K-Basin fuel to incorporate a sealed closure, instead of the vented lid that had been proposed originally. This strategy incorporated the use of a mechanical seal for short-term storage and a welded closure that meets the requirements of Section III of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. The Board believes that this approach provides an equivalent measure of safety to commercial spent fuel storage facilities, and in its letter of March 18, 1998, found no technical barriers to this strategy.

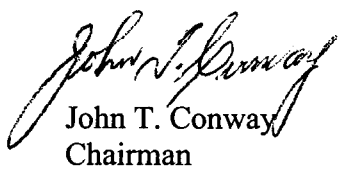
Closure welding of the MCOs was originally scheduled to begin early in the project but was delayed until February 2003, to allow the SNFP to focus resources on the startup of fuel removal and treatment activities for the K-West Basin, including Cold Vacuum Drying Facility operations and storage in the Canister Storage Building. Operations within the SNFP have been ongoing since December 2000.

Short-term storage of MCOs without a welded closure is supported by the SNFP authorization basis. However, an MCO recently failed an integrated leak test, and the investigation into this event has raised concerns that improper compression of the mechanical seal led to the leaking condition. As a result, it is not clear to the Board that the MCO assembly process used for the past year was sufficient to seal the MCOs for an extended storage period, irrespective of whether or not the initial leak check was satisfactory. Anticipated increases in the MCO pressure and temperature during interim storage may lead to leakage if the seal is not properly compressed. Seal welding the MCOs as planned would eliminate any doubt regarding the adequacy of the existing closure.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests that DOE provide a report within 60 days of receipt of this letter that addresses:

- The activities required to initiate and complete welding and inspection needed to place the MCOs into a safety condition equivalent to commercial spent fuel storage, and the schedule for these activities.
- The sequence for welding MCOs, taking into consideration accelerated completion of MCOs with potentially suspect seals.
- If welding is no longer planned, the revised strategy for providing equivalent safety to commercial spent nuclear fuel storage facilities, and the schedule for these activities.
- Any barriers to welding of MCOs.

Sincerely,



John T. Conway
Chairman

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