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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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June 11, 2002

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

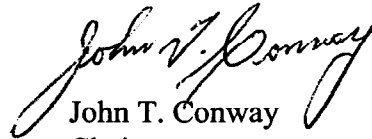
Dear Ms. Roberson:

The Defense Nuclear Facilities Safety Board (Board) recently received deliverables due under the Implementation Plan for the Board's Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. One of those deliverables was the *In-Service Inspection Plan for High-Level Waste Tanks*. The development of a new inspection plan was deemed necessary after the discovery of several leak sites in the walls of high-level waste tanks at the Savannah River Site (SRS).

The Board recognizes the latest efforts of the Department of Energy (DOE) to understand corrosion mechanisms in high-level waste tanks—including the March 2002 workshop on corrosion in the vapor space of high-level waste tanks. The Board also notes and appreciates DOE's commitment to inspect all Type III high-level waste tanks at SRS as noted in the cover letter for the inspection plan. The Board accepts this inspection plan (deliverable 1.3 per the Implementation Plan) as modified by the commitment to inspect all Type III high-level waste tanks. The Board urges DOE to aggressively pursue these tank inspections with a goal of completing them in less than 10 years, particularly if early inspections reveal accelerated corrosion. Please see the additional comments and questions regarding the inspection plan provided in the enclosure for use in developing the revised plan that reflects inspection of all the Type III tanks. The Board requests that you provide the revised inspection plan once it is complete.

The Board encourages DOE to continue an aggressive investigation of the condition of the high-level waste tanks at SRS and to continue research into the corrosion mechanisms that may affect those tanks. Once ultrasonic testing of the tanks begins, the Board requests that you provide the Board the tank inspection reports.

Sincerely,



John T. Conway  
Chairman

c: Mr. Greg Rudy  
Mr. Mark B. Whitaker, Jr.

Enclosure

## Enclosure

### Comments on the *In-Service Inspection Plan for High-Level Waste Tanks*

WSRC-TR-2002-00061, *In-Service Inspection Plan for High-Level Waste Tanks*

1. This document should be revised to specify inspection of all 27 Type III high-level waste tanks, consistent with the Department of Energy's (DOE) letter forwarding the plan to the Board. The extent of inspection for each tank as well as the schedule and periodicity of inspections should be specified.

WSRC-TR-2002-00063, *Acceptance Criteria for Disposition of Inspection Results for SRS Type III High-Level Waste Tanks*

2. The documented criteria appear to be acceptable to ensure that flaws that pose a threat to the gross structural integrity of the tanks would be investigated. However, it is not clear that the proposed action thresholds would ensure that the detection of flaws indicative of major deficiencies in the corrosion control program would lead to appropriate actions. For example, per the proposed acceptance criteria, cracks in a Type III tank would not prompt expanded investigation unless the cracks were greater than 50 percent through-wall or more than a foot long. The flaw screening criteria should be reconsidered to ensure that they address the need to identify, characterize, and mitigate accelerated corrosion (e.g., cracking, pitting, etc.) in the early stages of development, to protect both the structural integrity and leak-tightness of the tanks.

WSRC-TR-2001-00469, *Selection of Representative High-Level Waste Tanks for Ultrasonic Examination*

3. The prioritization process used in this report should be useful for prioritizing the inspections of all 27 Type III high-level waste tanks. However, the selection process ought to be revisited to ensure that the first tanks inspected will adequately represent the various worst-case conditions in the tank farms. Examples of issues that ought to be considered include the following:
  - The tank selection report does not consider Tank 50 to be among the priority tanks, even though (1) the report rated it worst in terms of inhibition of corrosion and (2) corrosion coupons exposed in Tank 50 appeared to exhibit significant pitting corrosion.
  - Tradeoffs were made in developing the report's list of seven Type III tanks to be inspected under the initially proposed program. For example, the decision to inspect only one unconcentrated salt solution tank led to the need to choose between Tank 30 and Tank 47. Both tanks appear to be good candidates for inspection early in the program.