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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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January 18, 2005

Mr. Paul M. Golan  
Acting Assistant Secretary for  
Environmental Management  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0113

Dear Mr. Golan:

The staff of the Defense Nuclear Facilities Safety Board (Board) has been closely following the effectiveness of the high-level waste tank integrity program for double-shell tanks (DSTs) at Hanford. The Board has previously raised issues regarding problems associated with preserving both tank leak integrity and tank structural integrity. The Board is currently concerned that DST space and management issues are not being anticipated far enough in advance to allow the analysis and testing needed to support the intended path forward.

In a recent report by a panel sponsored by the Hanford tank farms contractor and composed of nationally known chemistry and corrosion experts, *Expert Panel Workshop for Hanford Site Double-Shell Tank Waste Chemistry Optimization*, RPP-RPT-22126, it was stated, "... due to the paucity and fragmentary nature of the available relevant DST corrosion data, it is not currently possible to provide a clear technical basis for DST waste chemistry controls ...." Without a clear technical basis for DST corrosion control, changes or exemptions to the technical safety requirements (TSRs) introduce a high degree of uncertainty. The Expert Panel did endorse operating outside established chemistry control limits contingent upon the successful completion of its recommendations. The Board agrees with the Expert Panel's conclusions and recommendations.

The Board is aware of a recently approved 6-month extension to a Justification for Continued Operation (JCO) which exempts DST 241-SY-102 (SY-102) from waste chemistry limits established in TSRs. Extending the JCO is beneficial for high-level waste tank retrieval schedules, life cycle costs, and tank space, and offers the safety benefit of reducing possible additional solids formation by avoiding chemistry adjustments that would be needed to comply with the TSRs during waste transfers to SY-102. However, in approving extension of the JCO, the Department of Energy (DOE) is making life cycle and safety decisions without a thorough understanding of the tank's current condition and the corrosion rates that may be encountered. The Office of River Protection (ORP), the approving authority for the JCO, concluded that, based on the current technical basis for corrosion control, there is a low risk for excessive corrosion in SY-102.

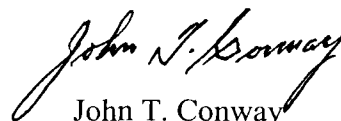
In a report on Hanford tank integrity issues forwarded to the Assistant Secretary for Environmental Management on August 29, 2000, the Board noted that "if the chemistry limits are too conservative, alternative limits should be justified and enforced." Unfortunately, DOE has not substantially improved the technical basis for the existing chemistry limits or developed a basis for revised limits in the intervening years. In addition, DOE has not adequately anticipated the need for improving the technical basis to support the planned tank retrieval sequence. As a result, in order to meet regulatory commitments for tank retrieval, DOE is in the undesirable position of having to decide with only limited data available whether to accept exemptions to TSRs or make costly and time consuming caustic additions.

Similar difficulties at the Savannah River Site (SRS) led the Board to issue Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*, in March 2001. At SRS, efforts to expedite the retrieval and vitrification of high-level waste despite severe tank space limitations led to the decision to refill two 1950s-vintage high-level waste tanks. Both tanks leaked. In its Recommendation, the Board noted that "Continued delays in achieving long-term solutions increase the pressure to accept conditions that reduce the safety margin and increase operational complexity," and urged DOE to take a more proactive approach toward managing tank farm operations. A similar approach is needed at Hanford.

The Board believes it is imperative to have a sound technical basis for formulating, changing, or departing from a TSR. The need to bypass TSRs could be avoided by better tank management planning similar to the detailed flow sheet recently used to analyze the retrieval of waste from C-Farm 100 Series tanks at Hanford. The Board believes it would be prudent to implement the Expert Panel's recommendations in a timely manner to establish a credible, defensible technical basis for the existing chemistry TSRs as well as establishing a sound basis for making any future changes.

Pursuant to 42 U.S.C. § 2286b(d), the Board requests that DOE provide the following within 45 days: (1) a report on DOE's planned approach for the long term management of waste retrieval and tank space while remaining within TSR limits, and (2) a briefing on DOE's plan for funding and implementing the Expert Panel's recommendations. Additionally, the Board requests to be informed of any delays in retrieval activities that will impact the current plan to return SY-102 into compliance with the TSRs for corrosion control.

Sincerely,



John T. Conway  
Chairman

c: Mr. Roy J. Schepens  
Mr. Mark B. Whitaker, Jr.