March 4, 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:

The Defense Nuclear Facilities Safety Board (Board) has followed closely the Department of Energy's (DOE) efforts to implement a high-level waste salt processing capability at the Savannah River Site (SRS). Without a salt processing capability, waste disposition by vitrification in the Defense Waste Processing Facility (DWPF) is restricted to sludge only, and options for preserving adequate tank space are limited primarily to the management and concentration of tank farm influents. The volume of influents from the vitrification facility, sludge retrieval, sludge washing, and other site missions exceeds the space gained from sludge removal. Concentration of the wastes, though essential, serves only to reduce this deficit and relies on the sustained operation of evaporators that have been subject to several performance problems in recent history.

Continued deficit operations eventually lead to shortages in tank space, with the attendant choice of either curtailing waste disposition activities or pursuing higher-risk operational strategies. As free tank space diminishes, additional risk is incurred because waste transfers become more complex and frequent—leading to a greater frequency of equipment failure and more worker presence (and exposure) in the field. As an example, tank space shortages encountered at SRS in late 2000, due primarily to evaporator problems, resulted in a decision to store waste in less robust storage tanks that subsequently leaked. The Board's Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*, outlined these concerns in detail, and recommended that DOE pursue actions to accelerate the implementation of a salt processing capability and identify measures to ensure that adequate tank space is maintained in the interim.

Consistent with the Implementation Plan for Recommendation 2001-1, DOE recently completed two notable achievements with regard to maintaining adequate tank space margin: first, the 2H Evaporator was restarted on October 6, 2001, after chemical cleaning to remove internal deposits, and is currently concentrating recycle waste from DWPF; second, on October 13, 2001, Tank 49 (formerly part of the In-Tank Precipitation process) was returned to service and is now being used to store waste. Several additional initiatives are being pursued to improve tank space margin. These include initiatives to increase evaporator reliability through identification and management of equipment vulnerabilities, and to accelerate salt removal by sending some of the lowest-activity salt directly to the

Saltstone Production Facility for disposition in grout.

The Board encourages these initiatives, but recognizes that significant impediments to the implementation of direct salt disposal remain. The Board is concerned that recent DOE planning with respect to tank space management appears to assume the success of the direct disposal program. This is evident in decisions to eliminate the pilot plant for demonstration of the caustic side solvent extraction (CSSX) salt processing technology, to reduce the initial scale of the production CSSX plant to only 1–20 percent of the required capacity, and to cease pursuit of a backup technology for CSSX. The continuing indecision on pursuing an evaporator within DWPF to eliminate the facility's recycle waste stream, thereby reducing current tank farm influents by about 1 million gallons per year, appears to be driven by the assumed success of direct salt disposal, coupled with the assumed satisfactory performance of the tank farm evaporators. The Board does not believe it prudent to rely so heavily on success of these efforts for alleviating the tank space problem. Further, success in sending low-activity salt directly to the Saltstone Production Facility for disposition in grout may influence the ultimate capacity of the salt processing facility, but ought not to be used as the basis for delaying demonstration of the CSSX technology or ceasing the pursuit of a backup technology. Consistent with Recommendation 2001-1, the Board continues to believe that DOE should expedite the demonstration and implementation of the CSSX technology to the extent practicable. As communicated in a letter to DOE on July 30, 2001, the Board believes further that DOE should continue to pursue a backup salt processing technology. If properly chosen, a backup technology could also be used to alleviate other problems, such as treatment of the residual waste from the In-Tank Precipitation demonstration in Tank 48.

DOE's Implementation Plan for Recommendation 2001-1 states that DOE will provide commitments related to implementation of the revised salt processing program by April 2002. Consistent with the renewed emphasis on risk elimination that has resulted from the recent Top-to-Bottom Review of DOE's Environmental Management program, the Board requests that DOE address in this upcoming deliverable the issues identified above relative to acceleration of the CSSX program, retention of a viable backup technology, pursuit of low-activity salt disposal, and an additional evaporator at DWPF.

Sincerely,

John T. Conway
Chairman

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