

John T. Conway, Chairman  
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Joseph J. DiNunno  
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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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(202) 694-7000



March 29, 2002

The Honorable Spencer Abraham  
Secretary of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-1000

Dear Secretary Abraham:

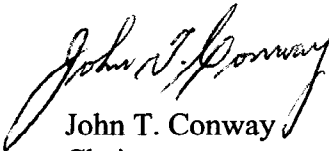
The Defense Nuclear Facilities Safety Board's (Board) Recommendation 96-1, *In-Tank Precipitation System at the Savannah River Site*, addressed safety concerns regarding the treatment of salt wastes in the high-level waste system at the Savannah River Site (SRS). Previously, the Department of Energy (DOE) had chosen a precipitation process using tetraphenylborate (TPB) to separate cesium from the salt fraction of waste stored in 49 high-level waste system tanks at SRS. The cesium removal process was termed In-Tank Precipitation (ITP) and was first demonstrated in 1983. Following a successful demonstration, a permanent ITP facility was constructed. The ITP facility began operations in 1995, but had to be shut down that year after unacceptable levels of flammable benzene gas were emitted. Some benzene was expected to be generated from ITP, but not at such high levels. These high levels of benzene and the lack of understanding of the generation process led the Board to issue Recommendation 96-1.

Recommendation 96-1 called on DOE to develop a better understanding of the TPB degradation process as well as the subsequent evolution of benzene, and to identify safety measures for current and future ITP operations. DOE accepted the Recommendation and conducted extensive research into the ITP process. Following evaluation of the technical and safety issues, DOE abandoned the project entirely in 1998. After the termination of ITP, DOE researched new technologies for cesium removal and recently selected a solvent extraction process. However, this new process cannot readily treat waste in Tank 48, which contains significant quantities of TPB precipitates dating back to the original ITP demonstration.

As a result of work completed under Recommendation 96-1, controls are in place to maintain Tank 48 in a safe interim condition. Only the disposition of the waste in Tank 48 remains as a safety issue. Recovery of Tank 48 is also addressed in the Board's Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. As discussed in the implementation plan for that Recommendation, the Board expects that the DOE evaluation of technical options for Tank 48 recovery will consider the technical and regulatory risks and identify any research and development work that must be accomplished.

Since the elements of Recommendation 96-1 have been satisfied, the Board believes its closure would be appropriate. However, the recovery of Tank 48 has the potential to pose significant hazards. The Board requests that, before initiating actions to recover Tank 48, DOE provide the Board with a report that describes the technical approach for treatment and disposition of the waste in Tank 48 and identifies the safety measures that will be implemented for this activity. The Board requests to be briefed on the proposed actions following issuance of the requested report.

Sincerely,

A handwritten signature in cursive script, appearing to read "John T. Conway".

John T. Conway  
Chairman

c: The Honorable Jessie Hill Roberson  
Mr. Mark B. Whitaker, Jr.  
Mr. Greg Rudy