DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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September 25, 2001

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 242-16H evaporator at the Savannah River Site (SRS) is being prepared to restart operation following its shutdown in January 2000. This evaporator is located in the H-Area Tank Farm within a reinforced concrete enclosure lined with stainless steel to retain any leakage. Safe operation of this and other evaporators at SRS is key to the capability of the high-level waste facilities to support their programmatic missions. The upgrades made to the 242-16H evaporator system and related safety basis documents are intended to support the evaporator's startup and continued operation for the next several decades. These upgrades have been reviewed and approved by the Department of Energy's Savannah River Operations Office (DOE-SR), and the facility is scheduled for startup in late October 2001.

The Defense Nuclear Facilities Safety Board (Board) and its staff have been following the progress made to support the restart of the 242-16H evaporator to ensure that long-term operation of this facility will not result in any undue risk to the public or workers. To this end, a detailed review of the revised safety basis for the evaporator has been performed. Based on this review, it appears that a lack of detailed analysis of some scenarios in the Safety Analysis Report (SAR) may have resulted in a less than adequate set of controls, and additional safety systems may be warranted.

Specifically, recent calculations performed by the SRS contractor in response to inquiries made by the Board's staff indicate that collocated workers could be exposed to significant radiological consequences as the result of a potential hydrogen detonation following a loss-of-steam event with continued feed of the waste material into the evaporator. Although procedural and administrative controls are identified in the SAR to prevent this event, the pedigree of these controls is not commensurate with the risk posed to workers. DOE's directives and the contractor's procedures require safety systems to prevent such scenarios. The Board believes a safety-significant high-level alarm and interlock system is required to ensure that the necessary

actions are taken to secure the feed in a timely manner and prevent this event. The Board recognizes the time necessary to implement such a modification may extend beyond the scheduled startup date. Based on discussions with the Board's staff, DOE-SR and the SRS contractor have identified appropriate compensatory measures to support the safe startup of the evaporator, as well as actions to resolve this safety issue in the near future. The Board and its staff are continuing to evaluate the SRS safety analysis process and efforts to develop a fully-compliant SAR for the SRS high-level waste system.

Sincerely,

John T. Conway
Chairman

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