

A.J. Eggenberger, Chairman  
John E. Mansfield, Vice Chairman  
Joseph F. Bader  
Larry W. Brown  
Peter S. Winokur

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700 Washington, D.C. 20004-2901  
(202) 694-7000



June 25, 2008

The Honorable Thomas P. D'Agostino  
Administrator  
National Nuclear Security Administration  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0701

Dear Mr. D'Agostino:

The Defense Nuclear Facilities Safety Board (Board) recently performed a structural and geotechnical review of the Waste Solidification Building (WSB) to be constructed at the Savannah River Site (SRS). During this review, several issues were raised, as discussed in the enclosed report prepared by the Board's staff. The main issues noted were that the project lacked a unified structural design package, used an improper structural roof design, and employed an inadequate design differential settlement profile. The Board understands that the structural design package is being reworked for completeness and unity and that the roof design has been altered to address the issue raised. However, the project has yet to address the inadequacy of the design differential settlement profile. The project expects to receive a combined Critical Decision 2/3 to allow start of construction in October 2008. The Board believes the differential settlement issue and other structural design issues need to be resolved before placement of the facility's basemat.

In the last several years, the Board has worked closely with the Savannah River Site on several design projects that needed to address potential settlement issues related to soft zones at the site. Soft pockets of soil, commonly referred to as "soft zones," are unique geological features below SRS that could be subject to collapse during a seismic event. Recent design projects at SRS, including the Salt Waste Processing Facility and the Pit Disassembly and Conversion Facility (PDCF), have addressed these soft zones through the development of appropriate surface design differential settlement profiles. The WSB geotechnical report indicates that the WSB soft zone settlement profile was selected to be the same as that used for the PDCF project. Review of the geotechnical report for WSB, however, indicates that the magnitude of the design settlement profile due to the soft zones for the project is 2.8 inches, while that for the PDCF design is 3.4 inches. In addition, a Board letter dated September 26, 2006, concerning PDCF noted that the methodology and analytical approach used to derive the soil settlement profile for that project had several shortcomings. These shortcomings have not been addressed in the geotechnical report for WSB or reflected in the structural design. Finally, the Board's staff noted several issues concerning dynamic settlement for WSB that make it questionable to apply the PDCF design settlement profile to WSB.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests that NNSA submit a report within 60 days of receipt of this letter documenting (1) the justification for the design differential settlement profile for WSB, addressing recognized uncertainties in the methodology and analytical approach used to derive the profile, and (2) the sensitivity of the current design to differential settlement, including an estimate of the maximum differential settlement that the structure can accommodate and still remain within design acceptance limits.

Sincerely,

A handwritten signature in black ink, appearing to read "A. J. Eggenberger". The signature is written in a cursive style with a large, stylized initial "A".

A. J. Eggenberger  
Chairman

c: The Honorable William C. Ostendorff  
Mr. Mark B. Whitaker, Jr.  
Mr. Robert J. McMorland

Enclosure