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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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December 16, 2002

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

Dear Secretary Abraham:

In a letter dated July 30, 2002, the Defense Nuclear Facilities Safety Board (Board) evaluated estimates of maximum increases in design load that might arise from various seismic-related uncertainties associated with the design of the Waste Treatment Plant. The Board deemed these uncertainties to be acceptable given the margins then being used in the development of the design. Many of these uncertainties remain, however, and the Board sees a continued need for careful management of these and other design margins.

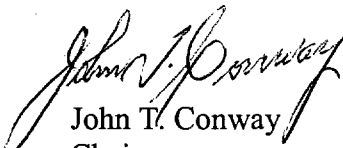
The Board believes that the Department of Energy (DOE) and Bechtel National Incorporated have not instituted a formal strategy for maintaining design margins as a function of design uncertainties. For example, the Board recently learned that the demand-to-capacity ratio limit of 0.85 applied to the structural design will be maintained only for the basemat and walls to grade and not for other portions of the high-level waste structure. At this time the design of the upper portions of the structure remains largely incomplete and uncertain and hence should reflect design margins. The approach of erosion of margins does not appear to be reasonable since it is the Board's experience that problems manifest themselves throughout the process of design development. Specifically, structural design margins should be reduced only after more detailed design development has been completed and/or a better understanding of the specific hazards (e.g., the seismic hazard) has been gained. This is not the case for the current Waste Treatment Plant structural design or the development of any new information related to the seismic hazard.

The Board is also concerned about the federal oversight of this project. The Board believes that the recent decision by DOE to authorize construction of the High-Level Waste, Low-Activity Waste, and portions of the Pretreatment facilities should be followed by more detailed assessments of the design to identify and address potential problems before they manifest themselves as significant safety issues. The Board recognizes that DOE used the Safety Evaluation Report as the basis for authorizing construction, but also believes that DOE has yet to initiate a program of design reviews at a sufficient level of detail to identify potential problems and ensure that they are being addressed properly. As an example, the Board is particularly concerned that the current structural design for the High-Level Waste facility could result in levels of seismic floor response that would significantly challenge the ability of safety systems and equipment to withstand seismic loadings.

To address this challenge, more robust equipment would need to be procured and more robust equipment supports installed. Until recently, this problem was largely unrecognized by DOE. Since this facility is critical for long-term risk reduction at the Hanford site, the Board believes DOE needs to take every precaution to ensure that it will be properly designed and constructed.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report within 45 days of receipt of this letter that documents (1) how structural design margins will be managed as a function of design uncertainty, and (2) how DOE plans to systematically review the Waste Treatment Plant design to identify and address potential problems before they manifest themselves as significant safety issues.

Sincerely,



John T. Conway  
Chairman

c: The Honorable Jesse Hill Roberson  
Mr. Roy J. Schepens  
Mr. Keith A. Klein  
Mr. Mark B. Whitaker, Jr.