

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



September 17, 2008

The Honorable James A. Rispoli  
Assistant Secretary for Environmental Management  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0113

Dear Mr. Rispoli:

The Defense Nuclear Facilities Safety Board (Board) remains focused on the safety of aging electrical systems in nuclear facilities at the Hanford Site. As part of this focus, members of the Board's staff visited the Hanford Site recently to review electrical systems at the high level waste (HLW) Tank Farms and the Plutonium Finishing Plant (PFP). Enclosed is a report containing observations made by the staff—observations which include deficiencies that could compromise safety if not corrected.

The main issue at the Tank Farms is the existence of several deficient design conditions affecting electrical systems. Examples of these design deficiencies include non-compliance with national codes, improper modifications and settings of circuit breakers, and improper fuses. Some of these deficiencies were identified by electrical calculations and studies conducted years ago, but the deficiencies remain uncorrected.

The Board notes that power to the safety-significant ventilation system for double-shell tanks in the Tank Farms is not classified as safety-significant. This situation is acceptable as long as the time to reach flammable conditions in the tank head space is on the order of a month or longer. However, waste retrieval and transfer operations can reduce this time. If the time to reach flammable conditions is significantly reduced by these operations, the Department of Energy (DOE) should reevaluate the functional classification of the electrical power supply and distribution systems.

The Board's staff also reexamined electrical safety at PFP. The main safety concerns at PFP, identified during a walkdown of the electrical systems, are (1) safety-related cables may have exceeded their design life, (2) the potential for short-circuiting safety-significant switchgear, and (3) a potential explosion from hydrogen produced by lead-acid batteries.

The Board believes that the identified safety-related deficiencies in electrical systems at PFP should be resolved in order to ensure reliable operation. Regarding deficient design conditions at the Tank Farms, the Board believes DOE should complete an evaluation of deficient design conditions as soon as possible. For those deficiencies posing electrical safety risks, DOE should implement corrective actions on a priority basis. Pursuant to 42 U.S.C. § 2286b(d), the Board requests that DOE brief the Board within 90 days of receipt of this letter on the status of efforts to correct the deficiencies in electrical safety at PFP and the Tank Farms at Hanford.

Sincerely,

A handwritten signature in black ink, appearing to read "A. J. Eggenberger". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

A. J. Eggenberger  
Chairman

Enclosure

c: Ms. Shirley J. Olinger  
Mr. David A. Brockman  
Mr. Mark B. Whitaker, Jr.