DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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January 16, 2009

Gerald L. Talbot Jr.
Assistant Deputy Administrator for
Nuclear Safety and Operations
National Nuclear Security Administration
1000 Independence Avenue, SW
Washington, DC 20585-0701

Dear Mr. Talbot:

Pursuant to the certification mandate provided in Section 3112 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the Defense Nuclear Facilities Safety Board's (Board) staff responsible for certification activities has reviewed Chemistry and Metallurgy Research Replacement (CMRR) design data provided to date by the National Nuclear Security Administration (NNSA). The Board's staff is focusing its review on topics previously raised regarding the CMRR nuclear safety design strategy, the Preliminary Documented Safety Analysis, and design of safety-class and safety-significant systems. Those topics were provided electronically to NNSA on November 20, 2008. The Board's staff has documented specific technical issues on a Findings Form. For purposes of the certification review, the Board's staff considers a Finding a design topic related to a concern raised by the Board's staff regarding the CMRR design that has not been adequately resolved and that could preclude Board certification.

Enclosed is a Findings Form with respect to the issue of Seismic Design of Active Confinement Ventilation Systems and Support Systems. We ask that you reply within seven calendar days from the date of Board's staff signature on the attached Findings Form, informing the Board's staff when the Finding will have a complete NNSA response. The NNSA response should contain sufficient quantity and quality of technical information necessary for the Board's staff to determine whether the Finding can be resolved. The Findings Form contains a signature block for the NNSA individual with the authority and responsibility for addressing the Finding. Please ensure that this individual signs and dates the returned Findings Form.

Sincerely,

Roy E. Kasdorf
Nuclear Facility Design and
Infrastructure Group Lead

c: Mr. Mike Thompson
Mr. James McConnell
Mr. Patrick Rhoads
Mr. Herman LeDoux
Mr. Mark B. Whitaker Jr.

Board Findings Chemistry and Metallurgy Research Replacement Facility: Congressional Certification Review
Topic: Safety-Significant Active Ventilation System
Finding Title: Seismic Design of Active Confinement Ventilation System and Support Systems
Finding: The CMRR project should not proceed into final design until there is high confidence that the PC-3 portions of the active confinement ventilation system can be seismically qualified. The CMRR Nuclear Safety Design Strategy (CMRR-AP-0307, Rev. 1) states that it may not be economically feasible to seismically design and qualify some components of the active confinement ventilation system or its support system to PC-3 seismic design requirements. The structural response of CMRR to vertical design basis ground motions (see most recent SSI calculation) has led to the concern by the project that vertical accelerations are at or above the upper limit of those for which rotating equipment can be economically seismically qualified. It is not acceptable to downgrade PC-3 seismic design requirements for the active confinement ventilation system.
Basis for Finding: DOE O 420.1B Chapter I (3)(b)(7) Safety SSCs must be designed, commensurate with the importance of the safety functions performed, to perform their safety function when called upon; and Chapter IV (3)(a)(1)(a) Facility SSCs must be designed, constructed and operated to withstand NPH and ensure confinement of hazardous materials.
Suggested Resolution or Path Forward: NNSA should reconfirm its commitment to seismically design the active confinement ventilation system to PC-3 seismic design requirements. This reconfirmation should include: (1) Near-term studies to assess the potential conservatism in PC-3 vertical design basis ground motions, and revise PC-3 vertical design basis ground motions as appropriate. (2) An assessment of equipment seismic qualification related to both the safety-class fire suppression system and the safety-significant active ventilation system, and associated support systems. The assessment should document the approach to seismically qualify safety-related equipment to PC-3 design basis ground motions including the potential use of seismic isolation for this equipment.
NNSA Response:
DNFSB Final Resolution:

DNFSB: Roy E. Kasdorf 1/16/09 Roy Kasdorf Date	NNSA: _____ _____ Date