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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 1, 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 has completed a series of reviews related to the development and analysis of design basis ground motion supporting structural design of the Integrated Waste Treatment Unit (IWTU). These reviews revealed a number of issues related to the development of the design basis ground motion and overall seismic design for the facility. Some of the key issues were:

- Assessment of soil site response based on randomized soil profiles that were inconsistent with site-specific soil data
- Accounting for geotechnical input to the soil-structure interaction (SSI) analysis, including issues related to strain-compatible soil properties
- The adequacy of the time histories used for the SSI analysis
- Seismic interaction criteria that allowed large permanent deformations in certain cranes, which could impact structural adequacy
- The adequacy of using mechanically anchored reinforcing bars

As a result of significant efforts made by the Department of Energy's Idaho Operations Office (DOE-ID) and the IWTU structural designer, Simpson, Gumpertz & Heger (SGH), all issues were resolved, and appropriate changes to the design were made. Both DOE-ID and SGH are to be commended for resolving these issues in an expeditious manner.

Two key actions were responsible for the successful resolution of these Board issues. First, SGH incorporated conservatism into the original design of the Performance Category 3 process and packaging cells. As a result, the process and packaging cells design was able to accommodate a substantial increase in design basis ground motion without demands exceeding structural capacity. Second, the project formed a geotechnical and SSI peer review panel (named

the Blue Ribbon Panel) that provided critical advice on incorporating appropriate soil properties into the SSI analysis. The panel provided an essential peer review process that went a long way toward strengthening the technical credibility of the IWTU design. The Board believes the use of peer review panels would benefit all DOE design efforts.

Please contact me if you have any questions on this matter.

Sincerely,



A. J. Eggenberger
Chairman

c: Ms. Elizabeth D. Sellers
Mr. Mark B. Whitaker, Jr. ✓
Mr. Robert J. McMorland

Enclosure