John T. Conway, Chairman
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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September 23, 2002

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

Dear Secretary Abraham:

The Defense Nuclear Facilities Safety Board (Board) is concerned about a number of recent issues related to the implementation of safety and hazard analysis methodology at Department of Energy (DOE) defense nuclear facilities. The identification and selection of an appropriate control set is one of the most important cornerstones of nuclear safety. Thus, it is vitally important that the analytical methodology used to evaluate the potential consequences of postulated accidents be sufficiently robust and conservative so as to accurately and reliably identify the need for important safety controls. Results of safety reviews by the Board's staff indicate that a number of DOE contractors and site offices may be improperly interpreting and implementing DOE guidance provided in DOE standard, DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*. The Board believes that the DOE standard provides adequate guidance for the development of documented safety analyses (DSA). However, a number of important deficiencies in implementing this standard have been identified by the Board's staff that warrant your attention.

The Board recognizes that unrealistic conservatism can undermine the process for the development and implementation of safety controls. Consequently, the Board has encouraged DOE to take advantage of opportunities to reduce this type of conservatism in the development of DSAs. Appropriate examples of such an approach include recognizing physical limitations of process equipment based on actual configurations, and recognizing physical dependencies and mutually exclusive conditions to limit certain assumptions. Notwithstanding this position, the Board's staff has identified a number of instances where input parameters and assumptions used in performing analyses have not always used bounding or physically limiting conditions. Consequently, the resulting safety analyses are not representative of the bounding consequences of the associated accident. The use of bounding inputs is pivotal in the approach to estimating the unmitigated consequences of postulated accidents and determining the need for safety-class controls for protection of the public.

The Board's staff has also identified a number of instances where the DSA implicitly credits a number of operator actions to detect and mitigate postulated accidents, or credits unqualified equipment in the unmitigated analysis of hazards. The Board believes that such an approach is inappropriate and in conflict with existing DOE guidance, which requires that the unmitigated analysis take no credit for unqualified equipment and be representative of the bounding consequences of postulated accidents. The impact of these methodological deficiencies is that the bounding consequences of analyzed scenarios may be artificially masked by these inappropriate assumptions and non-bounding inputs. As a result, the DSA may not correctly identify the need for, and proper functional classification of, required safety equipment.

The Board is concerned that the desire to achieve cost-effectiveness by eliminating conservatisms in safety analyses may not always be properly aligned with DOE guidance and expectations concerning nuclear safety. This information is provided for your review and to aid your staff in their review and approval of the large number of DSAs being submitted to establish compliance with the *Nuclear Safety Management* rule as published in Part 830 to Title 10 of the *Code of Federal Regulations*. The Board is interested in being kept informed of your activities and initiatives to ensure that the guidance and expectations concerning appropriately conservative and bounding safety analyses are being met.

Sincerely,

John T. Conway
Chairman

c: The Honorable Jessie Hill Roberson
The Honorable Everet H. Beckner
The Honorable Beverly Ann Cook
Mr. Mark B. Whitaker, Jr.