

A.J. Eggenberger, Chairman
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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August 21, 2006

The Honorable J. Clay Sell
Deputy Secretary of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Mr. Sell:

The Defense Nuclear Facilities Safety Board (Board) recently completed its second in a series of public hearings concerning the integration of safety into design. These hearings have been helpful in instigating actions by both the Department of Energy (DOE) and the Board to improve the early integration of safety into the design of new nuclear facilities. The Board would like to thank DOE for its cooperation and participation.

During the Board's public meeting on December 7, 2005, DOE acknowledged that safety was not being integrated consistently into the design of new defense nuclear facilities. In preparation for that hearing, your memorandum of December 5, 2005, *Integrating Safety into Design and Construction*, outlined your expectations for integrating safety into design and established a framework for achieving needed improvements. The Board was encouraged by these expectations.

During the second hearing, on July 19, 2006, the Board further explored the integration of safety into design and the progress being made in implementing the expectations outlined in your December 5, 2005, memorandum. Some progress has been made, but many of the actions being undertaken by both the Office of Environmental Management (EM) and the National Nuclear Security Administration (NNSA) have not yet been completed. The Board believes completion of these actions should help establish a robust process that will ensure consistent integration of safety into the design process from the early phases of design. Once such a process has been established, continued senior management attention, resources, and cooperation among DOE programmatic elements will be necessary to ensure its proper implementation.

A summary of observations from the Board's public hearing and from a review of DOE's actions taken to date to improve the integration of safety into design is provided as an enclosure to this letter. These observations are intended for your information and use in carrying out DOE and NNSA actions to meet your expectations for such efforts.

Sincerely,

A. J. Eggenberger
Chairman

c: Mr. Mark B. Whitaker, Jr.

Enclosure

ENCLOSURE

As a result of the Defense Nuclear Facilities Safety Board's (Board) public hearings on the topic, the Department of Energy (DOE) has identified a number of actions to improve its process for the design of new nuclear facilities. These actions are aimed primarily at ensuring that safety is more consistently integrated into the design starting early in the process. A number of observations follow that resulted from review of these actions, as well as information gleaned from testimony during the Board's public hearings:

- DOE intends to revise the following directives: DOE Order 413.3, *Program and Project Management for the Acquisition of Capital Assets*, and DOE Manual 413.3-1, *Project Management for the Acquisition of Capital Assets*. DOE also intends to develop a new standard, DOE-STD-1189-2006, *Integration of Safety into the Design Process*. These revisions and the new standard are expected to significantly improve the integration of safety into the design of new Hazard Category 1, 2, and 3 nuclear facilities.

The Board believes that for DOE to achieve its objectives, the revised directives and the new standard should be implemented together, as a system. Also, an implementation strategy should be developed that ensures that the directives are applied uniformly and effectively to all new design projects and major facility modifications.

- DOE's implementation strategy for DOE-STD-1189-2006 is not clear.

The Board understands that the content proposed for the new standard is central to DOE's strategy for implementing its safety-in-design objectives. Therefore, the Board believes that critical direction related to safety in design contained in the standard, such as details associated with completing a Conceptual Safety Design Report, should be required for all design projects. There are several ways to accomplish this, such as by establishing the standard as a safe harbor to the Nuclear Safety Rule, by elevating the standard to a DOE Manual in the directives document hierarchy, or by including an explicit requirement to comply with the standard in a relevant DOE order.

- The Board recognizes that DOE depends on the quality and availability of technically competent federal project directors and integrated project team members for successful completion of complex technical projects.

The Board believes that ongoing efforts to train and qualify federal project directors and integrated project team members to properly implement the safety-related requirements of DOE's directives should continue to be a top priority. It would be prudent for DOE to review the training requirements to assess whether safety considerations in design are appropriately incorporated, and to perform an assessment of the qualifications of current project personnel.

- DOE has established the Energy System Acquisition Advisory Board (ESAAB) and ESAAB-equivalent processes for the National Nuclear Security Administration and the Office of Environmental Management as tools for evaluating every project's safety-related design elements early in the critical decision process.

The Board believes that the processes for these bodies should be formalized and reviewed periodically to ensure that they are performing this function effectively.

- DOE intends to ensure that safety-related tailoring objectives will be met without compromising safety.

The Board believes that DOE should evaluate, early and on a periodic basis, the tailoring of requirements on key projects to ensure that safety is not compromised. The review of the tailoring of requirements could be included as part of the ESAAB process.

- DOE has committed to ensuring that safety-related risks are identified and resolved early in the design process.

The Board believes that the ability to identify and resolve safety-related technical risks early in the design process is likely the most critical aspect of the ultimate success of DOE's safety-in-design initiative. DOE must consistently be able to review each project thoroughly prior to Critical Decision-1, and identify safety-related technical risks and risk resolution strategies that will minimize risks to the public and workers, as well as overall project uncertainties. Technical risks and risk resolution strategies must be thoroughly reviewed as part of the ESAAB and ESAAB-equivalent processes, and acquisition executives must allocate sufficient funding and resources, including technical staff, to resolve identified risks early in the design process.

- The Board understands that all requests for exemptions from DOE directive requirements related to nuclear safety will be reviewed by the Central Technical Authority, the Cognizant Secretarial Officer, the Office of Environment, Safety and Health, and the Office of Primary Interest.

The Board believes DOE should monitor this process to ensure it is effective in maintaining consistent application of safety requirements across the complex.