DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004-2901
(202) 694-7000

January 11, 2000

The Honorable Carolyn L. Huntoon
Assistant Secretary for
Environmental Management
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Dr. Huntoon :

As part of the development of an Integrated Safety Management System (ISMS), each site within the defense nuclear complex has been developing work planning activities that encompass the functions and principles of Integrated Safety Management at the activity level. These actions are vital to ensuring the protection of workers.

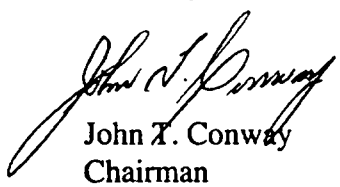
The enclosed report, prepared by members of the staff of the Defense Nuclear Facilities Safety Board (Board), documents the staff's latest observations concerning the Department of Energy's (DOE) upgrade of the work planning process at the Idaho National Engineering and Environmental Laboratory (INEEL). The staff found that there has recently been significant improvement in ISMS development at the activity level, and has identified one aspect of the process that might be considered a best practice.

Further enhancements to the work planning process are required, however, to bring the process up to the standards set by other sites within the DOE complex. These enhancements include better selection of tasks that require hazard analysis, a better connection between the identified hazards and the controls intended to mitigate them, and improved processes for conducting work in a research and development environment.

Finally, the Board is still concerned that the management attention and resources needed to resolve a long-standing problem with conduct of operations at the Idaho Nuclear Technology and Engineering Center have apparently not been applied.

The Board believes the information in the enclosed staff report will be useful to DOE in its continuing pursuit of improved safety at INEEL. If you have comments or questions on this matter, please do not hesitate to call me.

Sincerely,



John T. Conway
Chairman

c: Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

December 22, 1999

MEMORANDUM FOR: G. W. Cunningham, Technical Director
J. K. Fortenberry, Deputy Technical Director

COPIES: Board Members

FROM: D. L. Burnfield

SUBJECT: Review of Work Planning at Idaho Engineering and Environmental Laboratory

This report summarizes the results of a review by members of the staff of the Defense Nuclear Facilities Safety Board (Board). Staff members D. Burnfield and R. Daniels, along with outside expert D. Volgenau, met with representatives of the Department of Energy (DOE) and Bechtel BWXT Idaho, LLC (BBWI) at the Idaho Engineering and Environmental Laboratory (INEEL) on October 19–21, 1999, to review the implementation of an Integrated Safety Management System (ISMS) at the activity level.

Background. The staff's review focused on activity-level work planning and execution at INEEL as a follow-up to similar reviews conducted in November 1996 and March 1998. In performing this review, the staff used site-wide procedures to examine work planning and execution at the Idaho Nuclear Technology and Engineering Center (INTEC).

Work Planning and Execution. A number of areas requiring improvement had been noted in the processes for work planning and execution during the staff's visits in November 1996 and March 1998. Site directives issued since May 1999 govern three separate systems used for work planning: one covers maintenance and construction work, another covers facility operations, and a third governs the conduct of research and development work. There is significant variation in the level of maturity of these directives and their implementation. A verification review of ISMS implementation at INTEC is currently scheduled for February 2000. Meeting this schedule is a major focus of the site, but significant effort remains if this is to be accomplished.

A structured process is used for the definition of scope, prioritization, and scheduling of work at the INTEC site. The goal is to ensure that all work at the site is well planned and coordinated and authorized in the plan of the day. The process uses a rolling 5-week work window leading to work authorization and completion. Planning for work outside of this window is the responsibility of the cognizant manager. This process should assist in the implementation of an ISMS. The process is not currently being used in other parts of INEEL, but its future implementation is planned.

Several aspects of the work planning process at INEEL, such as the facility hazards list, could be identified as best practices and shared with the complex to ensure that they are understood by work planners at all sites. This might be done through a formal lessons-learned bulletin.

Additional observations resulting from the staff's review are provided below for each of the three areas of work planning at the INTEC site.

Maintenance and Construction Work—INEEL STD-101 outlines a single process for all work planning related to maintenance and construction. This process appears to be well implemented and actively practiced by management and workers. The directive captures the essence of ISM. Its application in the field has revealed a number of areas that need clarification and improvement, and a revision to the directive that incorporates these enhancements is planned for the near future. The staff has identified additional enhancements that could be made, as described below. However, the work planning process currently being used at INTEC for maintenance and construction work represents a significant improvement over that observed during the November 1996 and March 1998 reviews by the Board's staff.

The staff reviewed in detail a work package developed for the repair of a leak on a vessel drain isolation valve. This maintenance task occurred in a physically restricted area with high radiation levels, high contamination levels, and a potential for exposure to nitric acid. The package was one of the first prepared using the new standard (STD-101). Although the work had been completed successfully, the Board's staff noted a number of errors and weaknesses in the work planning process that could have increased unnecessarily the exposure of workers to hazards. Observation of these errors led the staff to identify steps that could be taken to improve the process, such as the following:

- Because an adequate method does not exist for differentiating mid-level tasks from low-level tasks, the process would not require some type of hazard analysis for what was a relatively complex, nonroutine task. Standard commercial practice, as well as practice at other DOE sites, would have required a job hazard analysis for this type of task. There is a need to evaluate ways to improve the process of selecting jobs that require hazard analysis.

- The process does not link the controls from permits, in this case a Radiological Work Permit (RWP), to the task being performed. For example, the RWP would have allowed the work to be completed in an 800 mrem/hour field, while the work was planned for a 100 mrem/hour field. Allowing work to be performed in a high radiation area eight times the level actually expected could result in unexpectedly high doses to the workers unless the controls or stay-times are adjusted accordingly. Also, at levels as high as 800 mrem/hr, one would expect to find additional task specific training to be provided to the workforce. The controls contained in the permit should be representative of the work to be performed.

Operations—The directive governing operational activities (MCP-3562) is in the very early stages of implementation. This procedure describes the process for performing hazard

identification, analysis, and control for operational activities. Although the procedure is conceptually sound, weaknesses have been identified, and a major revision is planned. Many technical procedures (approximately 1,000) require review for compliance with MCP-3562. The review process is just beginning and is scheduled to be completed by September 2000. Establishing priorities for review of the technical procedures could prove beneficial.

A review of the past year's occurrence reports, along with the review conducted by the Board's staff in March 1998 at the facility, followed by discussions with the manager of INTEC Building CPP-603/749 (spent nuclear fuel) revealed a continuing pattern of weakness in conduct of operations. Although some improvement has been observed, more is needed. The identified weaknesses appear to be hindering the ability to meet schedules mandated by federal court order for removal of the fuel from the CPP-603 basins by December 2000.

Research and Development—The directive governing the conduct of research and development (MCP-3571) does not fully capture the essence of ISM, and does not adequately require the performance of hazard identification and analysis and implementation of appropriate controls. This procedure is to be used in pilot research projects conducted at INTEC. The directive does not address formal scheduling of the work or the capturing of lessons learned for feedback. The staff believes INEEL management could improve this document by incorporating appropriate aspects of the latest Los Alamos National Laboratory (LANL) Laboratory Implementation Requirements and Laboratory Implementation Guidance on hazard analysis and controls.[1]

Feedback for Continuous Improvement. The need to improve the effectiveness of the feedback system for capturing pertinent lessons learned was noted during previous reviews of work planning conducted by the Board's staff. Although improvements have been made, the staff's most recent review revealed the need for further enhancement to ensure that the feedback system is truly effective. For example, none of the three directives governing work planning adequately addresses the capture and use of lessons learned, and the site computer database for accessing lessons learned does not appear to be user-friendly. No work control-related lessons learned since implementation of the directives in May 1999 were available for review.

DOE Oversight. The Department of Energy Idaho Field Office (DOE-ID) has an active program for the review of site contractors. Both focused and general-area reviews are being conducted. The reviews have identified issues that have required contractor action. During the past year, most of the emphasis has been on reviewing the contractors' conduct of operations. Some reviews addressed the contractors' work control processes for specific work. In these reviews, there were repeated deficiencies in the identification and analysis of workplace hazards and the implementation of effective controls for these hazards. Further, focused reviews of the worker protection aspects of ISM at the activity level could improve the DOE-ID oversight of the work planning process.

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[1] These requirements and guidance can be found under "Safe Work Practices" at the LANL Web site (http://labreq.lanl.gov/hdir/labreq.html).