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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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April 22, 1998

Mr. James M. Owendoff
Acting Assistant Secretary of
Environmental Management
1000 Independence Avenue, SW
Washington, D.C. 20585-0113

Dear Mr. Owendoff:

Enclosed for your consideration are the observations developed by the staff of the Defense Nuclear Facilities Safety Board (Board) concerning worker protection and formality of operations at the Idaho National Engineering and Environmental Laboratory (INEEL). The Board notes the enclosed issue report concludes:

- The safety programs at the INEEL Chemical Processing Plant are not integrated and do not consistently use a team approach to hazard analysis where appropriate.
- The formality of operations (including procedures, supervision, and actual operations) for fuel transfers at the Chemical Processing Plant was unsuitable.

The Board's staff notes that changes are being made at INEEL to improve these activities. The Board encourages you to expedite efforts by INEEL to fully implement the Integrated Management System concept for planning and performing work at all levels—site, facility, activities/tasks. The enclosed issue report is being provided for use in taking actions you may deem appropriate in the furtherance of our mutual interest in safe operations. The staff will continue to follow INEEL operations closely as they progress.

Should you need further information, please do not hesitate to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "John T. Conway".

John T. Conway
Chairman

c: Mr. Mark B. Whitaker, Jr.
Mr. John M. Wilczynski

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

DNFSB Staff Issue Report

March 27, 1998

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: J. W. Troan

SUBJECT: Review of Worker Protection at the Idaho National Engineering and Environmental Laboratory (INEEL) Chemical Processing Plant (CPP)

This memorandum documents an issue reviewed by the staff of the Defense Nuclear Facilities Safety Board (Board) concerning the activity-level Integrated Safety Management System (ISMS) at the Idaho National Engineering and Environmental Laboratory (INEEL). The staff conducted a review at INEEL during March 10–12, 1998, that focused on the worker protection aspects of the ISMS at the Chemical Processing Plant (CPP). A previous review of the work planning processes at the CPP was conducted by the Board's staff in November 1996.

An ISMS is in the very early stages of implementation at INEEL. Initial effort commenced in February 1998, when the Department of Energy Acquisition Regulations (DEAR) clause was incorporated into the site contract. Full ISMS implementation is tentatively planned for August 1999. Although positive steps have been taken in activity-level work planning since November 1996, some areas previously observed as requiring improvement remain deficient.

Currently, at least three separate systems are used to perform the activity-level ISMS core functions at the CPP. The system used depends on the tasks to be performed (i.e., operations, maintenance, or construction activities). Noteworthy practices and areas of potential improvement are identified below under each of the five ISMS functional areas.

Work Scope Definition. The processes used to define the activity-level work for facility operations and maintenance appeared to be formal and to support the ISMS functional areas.

Identification and Analysis of Hazards. The staff made the following observations in this area:

- **Operations.** The hazards associated with spent nuclear fuel transfer in the Irradiated Fuel Storage Facility (IFSF) Canning Station appeared to be adequately identified. Hazards are identified and baselined in safety documentation (e.g., Postulated Abnormal Occurrences) and further defined for a particular fuel transfer using a systems engineering approach. Recent experience revealed that radiation (gamma)

streaming could be expected during certain portions of the transfer. However, the streaming was not appropriately analyzed to determine whether engineered controls (e.g., temporary shielding) could be used to reduce all streaming radiation paths.

- **Maintenance.** The process for the identification and analysis of hazards in the maintenance area is disjointed and not consistently applied. The Board's staff believes this process needs improvement to ensure that all plausible work hazards are identified and analyzed. An individual identified as the Responsible Person (RP) is assigned the responsibility for planning and overseeing each maintenance work item. A computer-driven tool is used to screen for hazards associated with the work. It appears to the staff that this tool does not provide sufficient capability to ensure that all hazards are identified and analyzed. This screening triggers reviews by supporting organizations such as Industrial Health, Industrial Safety, and Radiological Controls for the specific identification of hazards. These organizations use different processes to identify and analyze hazards. Additionally, their efforts are not integrated, nor is a team approach consistently used. The staff believes the lack of a consistent, integrated process could result in a failure to adequately identify and analyze the hazards. Further, the CPP procedures do not adequately define the skills craftsmen are expected to maintain to perform their work. An adequate definition of the "skill of the craft" allows low-risk work to be completed safely and expeditiously without complex procedures. Use of informal definitions of the "skill of the craft" could result in workers performing more hazardous tasks without proper procedures.

Various procedures, directives, and processes associated with work planning and control are being revised. For example, the computer-driven tool for hazard screening has been revised and is being used; however, the associated implementing procedure has not been reissued. The staff believes these changes must be carefully managed to preclude a negative impact on the ability to plan and control work so as to ensure adequate worker protection.

The training and certification of an RP is not formalized. This area was noted as requiring improvement in November 1996. The Board's staff also observed a wide variation in the level of knowledge of individual RPs. The issue of ensuring adequate training and certification for RPs has taken on increased significance with the recent CPP management decision to include the work planning functions as a specific RP responsibility. This lack of consistent formalized training could further complicate the identification and analysis of hazards.

Development and Implementation of Controls. The staff's observations in this area are as follows:

- **Operations.** It appeared to the staff that adequate controls had been developed and implemented for all areas of the fuel transfer except radiological controls. In the latter area, administrative controls were implemented where engineered controls, such as temporary shielding, would have been more appropriate. Because of the lack of appropriate controls, radiation streaming paths crossed the normal egress path for the

control room and also caused a radiation monitor to alarm. The egress path was temporarily routed through a building emergency exit, and the radiation monitor alarm was silenced.

- **Maintenance.** Weaknesses noted above in the methodology used for the identification and analysis of hazards and the knowledge and training of the RPs could adversely impact the development and implementation of adequate controls to ensure worker protection.

Performance of Work. The technical procedure for the nuclear fuel transfer does not adequately define the proper actions to be taken for abnormal or unusual situations. During the transfer, the operator was unable to verify that the handling tool was latched to the fuel bucket within the cask. The supervisor did not stop the evolution to resolve the issue. Instead, he continued with improvised actions to reorientate the tool. Additionally, the staff noted that the fuel transfer evolution was conducted in an extremely informal manner and lacked the discipline the staff believes is appropriate for a nuclear operation. The Board's technical report entitled, *Operational Formality for Department of Energy Nuclear Facilities and Activities: An Evaluation Guide* (DNFSB/TECH-15) specifically identifies these expectations. This lack of formality could have resulted in injury to the workers involved (e.g., by violating occupational safety procedures) and/or damage to the spent nuclear fuel or its container.

Feedback and Continuous Improvement. The staff made the following observations in this area:

- **Operations.** Although this type of fuel transfer evolution had been conducted previously, it did not appear that the lessons learned from the previous evolutions had been fully incorporated in the procedure and training for this event.
- **Maintenance.** Several months ago, emergent work delayed the completion of a maintenance activity. Personnel at the CPP rescheduled this work, and it is to be accomplished in the near future. However, lessons learned from the previous attempt were not captured by a post-job brief; therefore, the opportunity to improve the process was reduced.

Conclusion. It is the staff's opinion that some of the preceding observations raise the question of whether the work planning and control processes in effect at the CPP can be relied upon to ensure worker safety adequately and consistently. The staff believes movement toward ISMS and site-wide implementation of Enhanced Work Planning will contribute to improved worker protection efforts at the site.

Future Staff Actions. The staff will continue to monitor INEEL's efforts to improve their processes for work planning to ensure worker protection. A further review of the formality of operations at the CPP will be conducted within the next 6 months.