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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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June 26, 1998

The Honorable Ernest J. Moniz
Under Secretary of Energy
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Dr. Moniz:

The Defense Nuclear Facilities Safety Board (Board) has reviewed the Operational Readiness Review (ORR) conducted for the Department of Energy's Richland Operations Office (DOE-RL) in support of decommissioning activities at the 233-S Concentration Facility at the Hanford Site. The enclosed issue report prepared by the Board's staff describes what appears to be additional evidence that a systematic problem exists in the way DOE-RL implements its process for verifying readiness for start-up and restart of operations. The report provides further background that DOE may wish to use in preparing a response to the Board's April 15, 1998, letter to DOE. That letter detailed deficiencies in the readiness verification process at Hanford and requested that DOE report on efforts to improve this process.

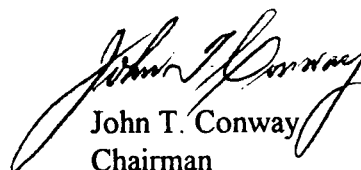
The Board's staff review of the ORR for the 233-S facility noted issues related to management and the readiness process at DOE-RL. Issues related to qualification of team members and verification of future readiness are of particular concern. For example:

- Only two of nine personnel assigned to the ORR Team were qualified to enter the area with airborne radioactivity, where much of the decommissioning work will be conducted. Therefore, the ORR Team was prevented from witnessing conditions which play a significant role in determining worker hazards. Most significantly, the individual tasked with reviewing compliance with radiological safety was unable to witness compliance of workers with radiological controls. Moreover, ORR Team membership did not contain individuals with extensive experience at plutonium facilities, and no attempt appeared to have been made to acquire this expertise from other DOE sites.
- Future readiness activities outlined in the plan of action which was prepared by DOE-RL's line management was not fully consistent with the requirements and/or guidance outlined in DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, and DOE-STD-3006-95, *Planning and Conduct of Operational Readiness Reviews (ORR)*. This situation is particularly distressing since the current ORR was only able to review work packages related to 2 of 9 decommissioning activities, none of which represent the most hazardous work to be conducted. DOE plans no explicit verification of deadlines for the 7 activities of highest hazard but rather plans to rely solely on certification by DOE-RL that all relevant work packages have been completed.

DOE-RL's ORR Team recognized these issues and made appropriate recommendations for corrective action in their exit briefing, conducted at the end of their on-site review. The Board concurs with the approaches recommended by the ORR Team. However, this alone is not sufficient to prevent similar issues from occurring in other readiness verifications.

Should you have any questions on this matter, please do not hesitate to call me.

Sincerely,



John T. Conway
Chairman

c: Mark B. Whitaker, Jr.
Mr. John D. Wagoner

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

DNFSB Staff Issue Report

June 18, 1998

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: S. A. Stokes

SUBJECT: 233-S Operational Readiness Review

This report documents an issue reviewed by the staff of the Defense Nuclear Facilities Safety Board (Board) related to the Operational Readiness Review (ORR) for decommissioning the 233-S Concentration Facility at the Hanford Site. This review was conducted by S. Stokes and outside expert R. Lewis during May 12–18, 1998.

Background. The 233-S facility comprises the original process building with modifications; the 233-SA exhaust filter building; and interconnecting piping, trenches, and ducting. The 233-S process building is a reinforced concrete structure that contains the main contaminated areas, primarily where process-related activities took place. Approximately 1.5 kg of plutonium-bearing materials remain within 233-S. This estimate is based upon preliminary characterization efforts; however, the decommissioning contractor, Bechtel Hanford Incorporated (BHI), recognizes that there are unknowns that could affect this estimate. BHI's existing work approach relies heavily on analytical studies to provide timely information about unknown or unexpected hazard conditions.

Based on the remaining radiological hazards, 233-S is a hazard category 2 nuclear facility, which, based on requirements contained in Department of Energy (DOE) Order 425.1, *Startup and Restart of Nuclear Facilities*, requires an ORR prior to initiating decommissioning activities. The attachment to this report contains a list of the activities to be completed as part of the decommissioning.

233-S ORR Plan of Action (POA). The 233-S ORR POA outlined a phased approach to verifying readiness based on three completed work packages and a review of the programs required to develop work packages and train personnel. Completion of future work packages, which involved the highest-hazard activities, was to be considered *pre-start* items for the associated tasks, and reviewed for closure by the BHI ORR team, and certified closed by Department of Energy-Richland (DOE-RL) line management. There would be no explicit verification of readiness for these high-hazard activities.

The Board's staff believes that this approach is not fully consistent with DOE Order 425.1 and DOE-STD-3006-95, *Planning and Conduct of Operational Readiness Reviews (ORR)*, given the findings of the current DOE-RL ORR Team DOE-RL line management involvement in the project was found to be less than adequate. For example, these directives require an ORR for the initial startup, and they require the examination of facilities, equipment, personnel, procedures, and management control systems to ensure that a facility will be operating safely within its approved safety envelope prior to the initiation of new or unreviewed program work. (Note that program work is defined in DOE-STD-3006-95 as work in a reactor or nonreactor nuclear facility that is accomplished to further the goals of the facility mission and/or the program for which the facility is operated.) Because of the hazards remaining in 233-S, a readiness assessment that has been graded to reflect the appropriate level of risk involved in the new/unreviewed program work, would normally be completed. The Board's staff believes that by not requiring future readiness assessments, DOE-RL line management is allowing the most hazardous work to proceed using a process less rigorous than that used to verify their readiness to proceed.

In its exit briefing, the DOE-RL ORR Team recognized this issue and recommended that a contractor independent review, followed by a DOE-RL line assessment and separate DOE-RL independent Readiness Assessment, be completed before new program work is initiated. The Board's staff concurs with this approach, and believes it to be in line with DOE Order 425.1 requirements and appropriate given the risks associated with this and other future activities.

DOE-RL Management of the ORR Process. The ORR effort was completed consistent with requirements contained in the DOE Order and Richland Implementation Document. However, the Board's staff noted the following:

- Team members were not qualified to make entries into facility airborne areas. This situation prevented team members from understanding the risks inherent in conducting decommissioning operations within the facility. This issue was recognized in the ORR Team's exit report, which recommended that future DOE readiness team members be fully qualified to make entries in the areas where work is planned.
- Assistance from outside DOE-RL was not solicited. This assistance would have benefited the team, particularly with regard to its breadth of experience. For example, decommissioning of plutonium facilities is currently being conducted at the Rocky Flats Environmental Technology Site. This issue was similarly recognized in the ORR Team's exit report, which recommended that individuals from off site, with experience in plutonium facility operations, be included on future teams.

ORR Team Findings. The following are significant findings and observations from the ORR Team's exit report that remain open (all are post-start findings [F] or observations [O]):

- DOE-RL line management involvement is less than adequate (F). This issue is particularly important given the approach outlined in the plan of action for future readiness activities, since a lack of involvement severely limits line management's ability to certify pre-start items for future work packages as closed. Additionally, the director of the project division is also director of the project support division that supports the 233-S project manager. This dual responsibility is believed not to allow the director of the project division to fully utilize his capabilities at 233-S (O).
- The 233-S program did not have a test program instruction defining guidelines for performing equipment testing to confirm operability of equipment, viability of procedures, and training of personnel (F). Additionally, lessons learned were not formally incorporated into training (O). These are both critical components of the project's approach to work planning and Integrated Safety Management.
- The Emergency Preparedness Program in support of 233-S needs improvement (F). Weaknesses related to the training and qualification of the building emergency directors (BEDs) surfaced in a drill held during the ORR. The weaknesses include the BEDs' ability to properly classify an event involving a fire at the 233-S and weaknesses in the overall drill program.

Overall, the ORR was conducted in accordance with DOE Order 425.1, and the ORR Team's findings represented an adequate assessment of the project's readiness to proceed for the current scope of planned work (three work packages). The Board's staff believes that if the recommendations made in the ORR Team's exit briefing are not fully implemented prior to the initiation of new/unreviewed program work, a significant degradation of safety is likely to result.

Attachment

The following are the major decommissioning activities anticipated for the process area decommissioning (**activities that were reviewed as part of this ORR**):

- **Process pipe removal in the pipe trench**
- **Loadout hood decontamination and removal**
- Viewing room equipment removal and decontamination
- Process hood decontamination and plastic polymethyl methacrylate panel removal
- Process hood equipment removal and decontamination
- Equipment draining
- Process system removal
- Process hood structural member removal
- Old filter house removal