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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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April 15, 1998

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

Dear Dr. Moniz:

The Defense Nuclear Facilities Safety Board (Board) has reviewed the Department of Energy Richland Operations Office (DOE-RL) monthly progress report regarding operations in support of Recommendation 94-1 at the Hanford Plutonium Finishing Plant (PFP). The Board is disappointed to learn of the anticipated 1- to 2-year delay in meeting the milestones of Recommendation 94-1. The report details a combination of causes for this delay, including a shortage of funding, as well as an inability to verify that PFP is ready to resume plutonium stabilization operations.

There has been essentially no progress toward reducing the risk of plutonium storage at PFP since fissile material handling was put on hold in December 1996. The Board considers PFP restart to be essential to safety. Notwithstanding this urgent need to resume operations at PFP, the process by which the readiness of the facility is verified must be deliberate, objective, and well managed to ensure that the facility is safe to operate. Following a Board recommendation on this subject, this process was codified in DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, and DOE-STD-3006-95, *Planning and Conduct of Operational Readiness Reviews*. The enclosed issue report prepared by the Board's staff describes what appears to be a systemic problem with the way DOE-RL implements its startup and restart readiness verification process.

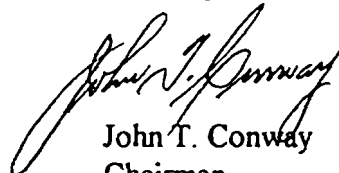
The Board is aware of DOE-RL efforts to develop a startup plan for the more hazardous plutonium stabilization operations at PFP. Likewise, the Board understands that the DOE Office of Environmental Management had requested that DOE-RL provide proposed changes to the DOE implementation plan for Recommendation 94-1 by March 6, 1998. Therefore, the Board requests that, as soon as practicable after your receipt of these reports, DOE prepare a report on the status of Recommendation 94-1 milestones at PFP and the efforts in place at DOE-RL to improve the readiness review process. In particular, the report should address the following:

- The proposed implementation plan changes and the exact reasons for schedule slippage, including technical, management, and funding issues.

- How the readiness review process is managed at the Hanford Site at both the DOE and contractor levels.
- How DOE-RL performs oversight of its own and contractors' readiness review activities.
- Corrective actions taken or planned to ensure that the readiness review process at Hanford is followed in accordance with DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, and DOE-STD-3006-95, *Planning and Conduct of Operational Readiness Reviews*.
- How DOE-RL intends to verify the technical and managerial qualifications of the DOE managers and staff responsible for PFP.
- How DOE-RL intends to verify the adequacy of the safety envelope of PFP prior to resumption of operations.

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

Sincerely,



John T. Conway
Chairman

c: Mr. James M. Owendoff
Mr. Mark B. Whitaker
Mr. John Wagoner

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD**DNFSB Staff Issue Report**

March 9, 1998

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: R. Arcaro

SUBJECT: Operational Readiness Reviews at the Hanford Site

This memorandum documents an issue reviewed by member of the staff of the Defense Nuclear Facilities Safety Board (Board) R. Arcaro.

Summary. The Department of Energy Richland Operations Office (DOE-RL) has made attempts to start two activities in the past year in which intervention by the Board and its staff has been required to ensure adherence to the appropriate requirements and intent of DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, and DOE-STD-3006-95, *Planning and Conduct of Operational Readiness Reviews*. The process by which readiness is confirmed at Hanford requires improvement to ensure that operations can proceed safely.

Readiness of the Plutonium Finishing Plant (PFP). In December 1996, the PFP contractor, Babcock and Wilcox Hanford Company (BWHC), stopped all fissile material handling because of repeated violations of the criticality safety program and other noted deficiencies in conduct of operations. Since April 1997, BWHC and DOE-RL have made several attempts to verify the readiness of the facility to resume fissile material handling. Continued failure to verify PFP readiness exacerbates the safety issue of continued storage of plutonium-bearing materials in forms poorly suited for long-term storage. PFP was to begin stabilization of plutonium-bearing solutions by June 1997. In part, because of the failure to resume fissile material handling, and also because of DOE's recently realized need to perform an Operational Readiness Review (ORR) for the startup of the Vertical Calciner, this milestone may be delayed by as much as 2 years.

The Board's staff has followed activities at PFP closely, and has determined that the failure of BWHC and DOE-RL to establish and verify PFP readiness is indicative of a lack of understanding of how this process is to be performed. The following are examples of this apparent lack of understanding:

- In the fall of 1997, after a DOE-RL Readiness Assessment (RA) was suspended because of inadequate PFP readiness, DOE-RL line management argued that a repeat

RA was unnecessary and not required by DOE O 425.1. After Board concerns with this approach were communicated to DOE by the Board's Site Representative, DOE-RL committed to a second RA.

- In November 1997, after the contractor had declared readiness, BWHC operators and managers violated the criticality safety program while performing a heavily supervised fissile material inventory. It was this type of poor performance that led to the original hold on the handling of fissile material.
- Fissile material handling has been on hold at PFP for more than a year. In accordance with DOE O 425.1, this extended shutdown of operations requires a more rigorous ORR before operations resume. Despite the continued inability to adequately establish readiness, DOE-RL granted itself an exemption to this Order requirement. Only after intervention by DOE's Office of Environment, Safety and Health did DOE-RL commit to performing a ORR for the higher-hazard stabilization operations.

Operational Readiness Review of the Aging Waste Ventilation System (W-030). The Tank Waste Remediation System's W-030 project installed a new ventilation system for the aging waste tanks. The aging waste is the hottest and most radioactive waste in the Hanford tank farms. DOE-RL's actions in verifying readiness and authorizing startup of W-030 again showed a lack of complete understanding of the tenets of DOE O 425.1 and DOE-STD 3006-95:

- The contractor and DOE ORRs for the startup of W-030 identified several significant pre-start findings. These findings included the following:
 - Shift managers were not qualified on the new system.
 - The Safety Equipment List referenced by the authorization basis document was incomplete and not used.
 - Procedures to implement some Technical Safety Requirements were not developed.
 - Operators received no training on manual operation of the W-030 system.

These findings are fundamental to the safe operation of the system and indicate that line management had not sufficiently readied the system for operation.

- In January 1998, contrary to the requirements of DOE Order 425.1, the DOE-RL manager authorized startup of Project W-030 *pending satisfactory closure of 10 pre-start items*. This action reduced the value of the senior manager's approval by allowing restart without his review of the closure of pre-start findings. After objection by the Board's staff, the Manager rescinded this approval.

The W-030 ventilation system is an improvement over the current system, and as such provides an increased margin of safety in the tank farms. Similar to the situation at PFP described

above, continued problems with the readiness verification process exacerbate the delay encountered in implementing an improvement in safety. The readiness verification process at the tank farms needs to be improved to ensure that startup of future facilities is performed such that operations can proceed safely.

Fluor Daniel Hanford Review. In January 1998, a Fluor Daniel Hanford review of the ORR/RA process revealed that the process was inefficient, time-consuming, and inconsistent. The review resulted in a number of observations, including the fact that ORR/RA team leader qualifications did not exist, and that at times, the team leader was under schedule pressure to allow the facility to start up. Significantly, the review also revealed that the contractor readiness review was often used in developing a checklist to prepare the facility for the DOE review. Such action effectively removes the contractor's responsibility to prepare the facility for operation by relying on a readiness review to identify those activities that require improvement.