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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 10, 1996

The Honorable Thomas P. Grumbly
Under Secretary
Department of Energy
Washington, D.C. 20585-1000

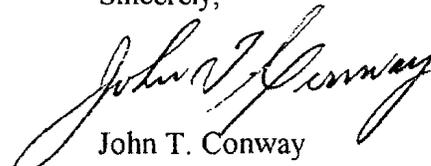
Dear Mr. Grumbly:

Staff members of the Defense Nuclear Facilities Safety Board (Board) and an outside expert observed the Department of Energy's (DOE) Operational Readiness Review (ORR) for startup of the High-Level Liquid Waste Evaporator at the Idaho Chemical Process Plant. The ORR, led by DOE's Idaho Operations Office, was conducted from May 28 to April 2, 1996. The ORR team suspended the ORR after finding major deficiencies in key areas important to safety, including conduct of operations, procedure adequacy and compliance, and facility design.

The findings of the ORR team, confirmed by the Board's staff, indicate that DOE and contractor line management did not achieve a state of readiness in the areas noted above. In addition, it appears that DOE line management did not properly assess the contractor's state of readiness before certifying readiness for this operation and commencement of the ORR. This may cause the ORR team to function as an adjunct to line management, rather than as a means of independently confirming that a state of readiness has been achieved. This is contrary to the original intent of DOE's policy on ORRs as defined in DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, and is a key tenet of Board Recommendation 92-6.

Enclosed for your consideration and action as appropriate is the Board's staff trip report from this review. Mr. Matthew Moury of the Board's staff will be available to provide any assistance in addressing these issues.

Sincerely,


John T. Conway
Chairman

c: The Honorable Tara O'Toole
Mr. Mark Whitaker
Mr. John M. Wilczynski
Mr. Brian Monson

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 19, 1996

MEMORANDUM FOR: G.W. Cunningham, Technical Director**COPIES:** Board Members**FROM:** Russell A. Green**SUBJECT:** Review of the Department of Energy's Operational Readiness Review of High-Level Liquid Waste Evaporator at the Idaho Chemical Processing Plant, Idaho National Engineering Laboratory, April 1-4, 1996

- 1. Purpose:** This report documents a review of the High-Level Liquid Waste Evaporator (HLLWE) by Defense Nuclear Facilities Safety Board's (Board) staff members, M. Moury and R. Green, and outside expert D. Boyd. The review took place at the New Waste Calcining Facility (NWCF) of the Idaho Chemical Processing Plant (ICPP) at Idaho National Engineering Laboratory (INEL) from April 1-4, 1996. The staff observed the Department of Energy (DOE) Operational Readiness Review (ORR) for startup of the HLLWE.
- 2. Summary:** On the third day of the DOE ORR, the ORR team leader suspended certain portions of the ORR stating: "The inability of the HLLWE to operate as designed, and a lack of implementation of DOE Order 5480.19, *Conduct of Operations for DOE Facilities*, [have] resulted in a condition which is less than adequate to support safe operation of the HLLWE." The Board's staff concurs with the team leader's assessment. The contractor line management did not adequately prepare the facility for startup. Although conduct of operation deficiencies were noted in both the Lockheed Idaho Technologies Company (LITCO) Management Self Assessment and ORR, corrective actions were ineffective in resolving the problems before the start of the DOE ORR. In addition, DOE's line management did not adequately verify the contractor's preparations for HLLWE startup as required by DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, and then led to the premature commencement of the DOE ORR.
- 3. Background:** The ICPP is managed and operated for the DOE by LITCO. Calcining operations at NWCF were routinely shut down in November 1993 at the end of campaign H-3. The Hazard Category 2 HLLWE was constructed in the NWCF blend and hold cell, and several modifications were made to the NWCF systems in the intervening period. The HLLWE is a new thermo-siphon evaporator, regulated under the Resource Conservation and Recovery Act (RCRA) and is designed to reduce the volume of dilute radioactive waste stored in the ICPP Tank Farm.

Because the schedules for operation of the HLLWE and NWCF are different, separate ORRs will be conducted for each; LITCO and DOE ORRs to restart calcining operations are planned for late 1996. The DOE Idaho Operations Office (DOE-ID) Deputy Assistant Manager for Program Execution is the designated startup authority for the HLLWE and the restart authority for calcining operations. According to DOE-ID, operation of the HLLWE is essential for meeting the dates of the Notice of Noncompliance consent order and the Settlement Agreement signed by DOE and the State of Idaho for reducing the volume of waste in the tank farm by 330,000 gallons by December 31, 1997, and for emptying the Tank Farm tanks by the year 2012.

4. **Discussion:** The DOE ORR was conducted by the DOE-ID in accordance with an approved plan of action and implementation plan. On April 2, 1996, the ORR team leader suspended certain portions of the ORR. In an April 2, 1996, memorandum to the DOE-ID, the DOE ORR team leader correctly noted: “. . . numerous examples of inadequate implementation and understanding of conduct of operations requirements. . . . Lack of appropriate policy, procedures, and management enforcement of the principles and requirements of conduct of operations as specified in DOE Order 5480.19 and Lockheed Idaho Technologies Company Conduct of Operations Manual precludes safe operation of the HLLWE.” The DOE ORR team will recommence the ORR once contractor and DOE line management certify readiness to proceed based on correction of the deficiencies noted by the ORR team.

The Board's staff agreed with the DOE ORR team's assessment and had the following additional observations:

- a. DOE Line Management Certification of Readiness: DOE line management did not document its actions taken to verify contractor readiness. This included review of closure of contractor ORR findings, assessments of completion of defined prerequisites, and other assessments performed to ascertain readiness, as required by DOE Order 425.1. The DOE readiness to proceed memorandum certified only DOE's readiness to oversee operations.
- b. Conduct of Operations: The Board's staff also noted many conduct of operations deficiencies including defective procedures, noncompliance with procedures, unfamiliarity with procedures, failure to implement LITCO conduct of operations manual requirements, and ineffective conduct of operations training. Many deficiencies are recurring from previous contractor assessments. For example, a finding by the contractor ORR stated that conduct of operations is “. . . less than adequate to support High-Level Liquid Waste Evaporator operations.” However, this finding was classified as a post-start finding. In addition, one conduct of operations reviewer during the contractor Management Self Assessment performed in July 1995 stated: “None of the procedures I reviewed that are used in the field could be complied with verbatim.”

- c. Evaporator operation: During the ORR, the HLLWE did not operate as designed and was not ready for startup. Process condensate flow intermittently splits between vessels NCC-122 and NCC-119 instead of draining only to NCC-122. Proposed resolution of this problem will require facility modifications.
 - d. Training: The training for the HLLWE is based on existing training for the CPP-604 process equipment waste evaporator that has been operating for a number of years. However, a job task analysis or other needs analysis was not conducted to define specific HLLWE training requirements. Furthermore, the written examination is not challenging and does not effectively check trainee retention and comprehension of HLLWE principles, systems, and procedures.
 - e. ORR team: The implementation plan contains 23 core requirements (CRs) to be assessed by the seven-person DOE-ID ORR team. The team aggressively pursued the core requirements, but the specialized qualifications of several team members limit the number of CRs they can assess. This leads to an unequal division of the workload. For example, two team members are assigned to assess one CR each while another individual is responsible for six CRs. Furthermore, the Board's staff believes that including qualified personnel with ORR experience from DOE Headquarters or another DOE independent field organization as team members would bring an added dimension to the team's capabilities and approach.
5. **Future Staff Actions**: The staff will monitor LITCO's and DOE's preparations to start the HLLWE. In addition, the staff will perform a systems and process review of both the HLLWE and the NWCF in May 1996.