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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 28, 1996

The Honorable Victor H. Reis
Assistant Secretary for Defense Programs
Department of Energy
Washington, D.C. 20585-0104

Dear Dr. Reis:

Members of the Defense Nuclear Facilities Safety Board's (Board) staff and an outside expert recently performed two reviews at the Oak Ridge Y-12 Plant. The staff reviewed readiness preparations for resumption of the Disassembly and Assembly (D&A) mission area prior to the authorization to start D&A operations by the Oak Ridge Operations Office on March 22, 1996. In another recent review, the staff assessed implementation of criticality safety requirements used in Highly Enriched Uranium (HEU) operations. The enclosed reports are provided for your information and use.

The Board is pleased to note the progress made in D&A operations since September 1994 in implementing Board Recommendation 94-4, *Deficiencies in Criticality Safety at Oak Ridge Y-12 Plant*. Improvements were observed in implementation of criticality safety requirements, conduct of operations, compliance with operational safety requirements, and the training of Department of Energy and contractor personnel.

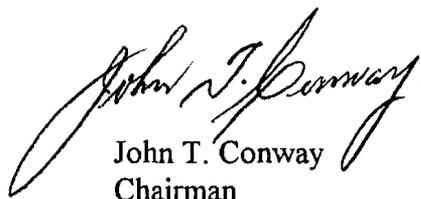
The enclosed report on Y-12 D&A operations contains an observation that preparations for operations on weapon systems in the future may not require an independent readiness review of the procedures, personnel training, and equipment specific to that system. In general, the Board has observed that appropriately scoped, independent reviews of procedures, personnel training, and equipment are useful in order to confirm readiness prior to startup of such operations. Reviews of this kind are performed at Pantex for startup and restart of specific weapon system assembly and disassembly activities. However, such independent reviews may not be warranted for every D&A operation, especially those on weapon systems that have hazards, procedures, and equipment similar to those recently worked.

With respect to implementation of criticality safety requirements in HEU operations, the staff noted that many deficiencies still exist and that insufficient analysis is being done to identify the

root causes for these deficiencies. On the other hand, the process by which these deficiencies are identified and corrected is much improved.

The Board would appreciate being advised of the actions taken regarding the above observations.

Sincerely,



John T. Conway
Chairman

c: Mr. Mark B. Whitaker, Jr.
Mr. James Hall

Enclosures

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 19, 1996

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: D. Owen

SUBJECT: Y-12 Plant (Y-12) - Review of Resumption of the Disassembly and Assembly (D&A) Mission Area

1. **Purpose:** This memorandum provides Defense Nuclear Facilities Safety Board (Board) staff observations from a review of Y-12's preparations for resumption of D&A operations. The review included an on-site observation of the Department of Energy's (DOE) Readiness Assessment (RA) completed March 7, 1995; review of the DOE RA report issued March 15, 1995; and review of actions taken to close DOE RA prestart findings prior to authorization of D&A operations on March 22, 1996. Board staff member D. Owen and outside expert R. West conducted this review.
2. **Summary:**
 - a. Progress under Board Recommendation 94-4, *Deficiencies in Criticality Safety at Oak Ridge Y-12 Plant*, has been made for the D&A mission area at Y-12 since September 1994 in:
 - Criticality safety.
 - Conduct of operations.
 - Operational safety requirements (OSRs) compliance.
 - DOE and contractor personnel, performance, and training.
 - b. The staff review of D&A readiness activities, including the DOE RA and corrective actions, indicates that Y-12 can resume D&A operations for the planned initial weapon system in a safe manner that is consistent with the objectives of Recommendation 94-4. It is noted, however, that conduct of operations mentor oversight is still required and is being provided.
 - c. The Y-12 procedure for determining the type of readiness review for weapon systems undergoing D&A operations beyond the initial system planned for resumption may allow new operations to be started/restarted without appropriate independent readiness reviews. Such reviews are performed for the specific weapon operations at Pantex. The process for training and certifying operations personnel for weapon D&A operations in the future is unclear regarding documentation of certification, use of mockups, and system-specific drills.

2. Discussion:

- a. **D&A Operations Improvements:** Efforts in implementing Recommendation 94-4 have resulted in a number of improvements that were demonstrated in D&A operations during the DOE RA. Examples include:
- (1) Procedures for disassembly and control and implementation of building Operational Safety Requirements (OSR) were executable as written and were accomplished satisfactorily by a team of personnel that included a conduct of operations mentor. The mentors are a key compensatory measure being taken by Y-12 during implementation of conduct of operations improvements under Recommendation 94-4. During the observed evolutions, the mentors participated actively in ensuring proper execution of procedures.
 - (2) Y-12 had a mockup unit fabricated for procedure validation and training purposes. While the DOE RA team noted certain areas that need improvement to obtain the full benefit of the intended purpose of the mockup, the mockup disassembly demonstration conducted for the RA indicated the value of the mockup for achieving readiness for these D&A operations.
 - (3) Verification of implementation of Criticality Safety Approval (CSA) requirements during the RA indicates much improvement over the conditions existing prior to Recommendation 94-4. Very few minor discrepancies were noted and Y-12 personnel took appropriate response actions. Disassembly areas had clear postings of key criticality safety requirements.
 - (4) A new drill program applicable to D&A operations has been developed and implemented. The program exercises several credible scenarios such as the evacuation of an injured, potentially contaminated worker and the spill of a hazardous liquid in a radiologically controlled area.
 - (5) The DOE Facility Representative assigned to D&A operations is highly competent and aggressive in impressing appropriate conduct of operations principles in D&A operations.
- b. **DOE Readiness Assessment:** The staff observed the RA from February 29 through March 1, 1996. The RA team consisted of personnel having sound qualifications and technical expertise to review the assigned areas. The RA team observed a disassembly evolution of a mockup system, two abnormal event drills, CSA walkdowns, and OSR surveillances on the fire protection and criticality alarm systems. RA prestart findings were made in the following areas: coverage planned by DOE Y-12 Site Office (DOE-YSO) to monitor resumption; lack of a defined startup plan detailing required oversight during initial operations; lack of criticality alarm audibility in a utility room in Building 9204-2E; and lack of a procedure to remove

certification for lack of proficiency. Corrective action plans developed for the prestart finding are considered by the staff to adequately resolve the prestart findings for D&A resumption.

- c. Staff Observations: While not considered as cause to delay restart of D&A operations for the initial planned weapon system, the staff has the following observations regarding readiness preparations for weapon systems undergoing startup/restart of D&A operations beyond the initial planned system:
- (1) The Y-12 procedure governing future startup of D&A activities (Y10-190, *New Activity Startup Requirements*) for weapon systems could allow a major new D&A program to be started without an independent readiness review. This would not be consistent with the approach to startup of disassembly, assembly, and modification operations for weapon systems at Pantex. The practice at Pantex is to employ independent reviews by National Laboratory and DOE personnel for startup of each new program for a weapon system. These reviews are focused on operational readiness of the new procedures including demonstrations on a mockup, the new tooling and related facility support systems and personnel, including system-specific training and level of knowledge. For follow-on weapon systems at Y-12 that require new or substantially changed procedures, tooling, training, etc., appropriately focused, independent readiness reviews of the new procedures, equipment, and personnel appear warranted.
 - (2) While training for the initial weapon system has been performed, the certification of D&A operators and supervisors for a given system did not formally include system-specific training requirements. Per discussions with D&A training personnel, Y-12 intends (as part of a contractor RA post-start finding) to incorporate such system-specific training requirements so that certification for a given weapon system is clearly documented and tracked for operations personnel.
 - (3) Discussions with DOE-YSO personnel indicate that use of a mockup as procedure verification and training tools may not be a standard practice for weapon systems in the future. Based on the benefit realized by the mockup used to prepare for initial D&A operations, it is not clear why use of mockups would not be considered a standard practice for readiness preparations for new or restarted D&A programs.
 - (4) While the drill program has several scenarios to exercise response to credible abnormal events, apparently no attempts in defining or exercising response to credible, system-specific abnormal event scenarios have been made. Credible abnormal event scenarios based on special hazards of certain weapon systems could be considered for the drill program and exercised as part of readiness preparations and continuing training for a given weapon system program. Such scenarios are to be developed for weapon operations at Pantex.

5. **Future Staff Actions:** As part of continued monitoring of Y-12 progress under Recommendation 94-4, the staff will review the action taken in response to post-start findings and other actions related to readiness preparations for D&A operations on new weapon systems.