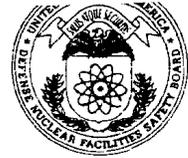


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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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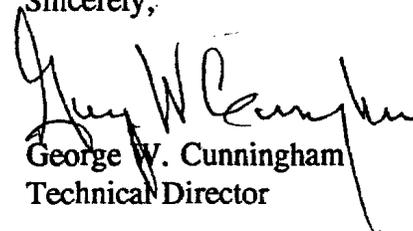
January 31, 1995

Mr. Mark Whitaker, EH-6  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, D.C. 20585

Dear Mr. Whitaker:

Enclosed for your information and distribution is a Defense Nuclear Facilities Safety Board staff report entitled "Qualification Evaluation Process." The report has been placed in our Public Reading Room.

Sincerely,

  
George W. Cunningham  
Technical Director

Enclosure

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 9, 1994

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**COPIES:** Board Members

**FROM:** M. B. Moury, Pantex Program Manager

**SUBJECT:** Pantex Plant: Staff Review of the Qualification Evaluation Process.

1. **Purpose:** This memorandum provides Defense Nuclear Facilities Safety Board (DNFSB) staff observations of four 1994 Qualification Evaluations (QE), including:
  - a. W79 Capping QE for Dismantlement (QED) [September 13-16, 1994 - Moury]
  - b. W70 Keel Erosion QED [September 13-16, 1994 - Martin]
  - c. W48 QED, which included:
    - (1) W48 DMSO QED [September 27-30, 1994 - DeLoach, Owen, Drain (SPC)]
    - (2) W48 Contingency Procedures QED [October 25-26, 1994 - DeLoach]
    - (3) W48 Mechanical QED [November 15-16, 1994 - DeLoach, Andrews, Preston]
    - (4) W48 War Reserve (WR) QED [November 29 - Ongoing - Waugh, DeLoach]
  - d. W78 QE for Surveillance (QES) [September 13-15, 1994 - Waugh]
2. **Background:** The revised guidance for readiness reviews of assembly/disassembly operations was published in Rev. 1, Change 8 to the Albuquerque Operations Office (DOE-AL) Dismantlement and Production Manual, Chapter 3.7 (D&P 3.7). Comments on the adequacy of the directive were provided by the Board to the Department of Energy (DOE) in response to a Recommendation 92-6 deliverable on December 9, 1994.

D&P 3.7, Section 6 states the QE is intended to be "a formal, systematic, performance-based examination of tooling, testers, equipment, procedures, personnel, and facility controls to ensure that nuclear weapon assembly/disassembly operations will be performed in a safe and predictable manner." D&P 3.7 describes the QE process and defines the requirements for determining readiness to start-up, restart, or continue weapon assembly/disassembly operations at the Pantex Plant. There are three variants of the QE: the Qualification Evaluation for Dismantlement (QED); the Qualification Evaluation for Surveillance (QES); and the Qualification Evaluation for Production (QEP). The requirements for conducting the evaluations are similar.
3. **Summary:** The DNFSB staff observed the W48 QEDs to assess the implementation of D&P 3.7. In addition, the staff observed the W79 Capping QED, the W70 Keel Erosion QED and the W78 QES, that were conducted before the release of the new guidance in D&P 3.7.

The QEDs observed demonstrated an increased involvement by the National Laboratories, with their unique weapons expertise and experience, in reviewing nuclear weapon operations. However, implementation of the requirements of D&P 3.7 was inadequate. Specifically, the reviews were functioning more as technical assistance visits than an independent check of readiness. The QE's observed by the staff lacked the rigor and formality demonstrated during other independent readiness reviews observed at other DOE sites. Additional concerns include: several QE team members lacked independence; the QE team composition precluded adequate review of technician training and conduct of operations; detailed criteria were not systematically assessed; and findings appeared to be forced to the lowest classification, "enhancement", including procedure deficiencies and a violation of an explosive safety rule. The staff also noted that Mason & Hanger's (M&H) implementation of the readiness to proceed process and the Amarillo Area Office (DOE-AAO) verification of M&H's readiness did not meet the requirements of D&P 3.7.

4. **Discussion:** The following general comments are applicable to the QEs observed by the staff.
  - a. The QE process is not being implemented as an independent readiness evaluation as described in D&P 3.7 or other readiness-to-proceed evaluations as described in DOE Order 5480.31, *Startup and Restart of Nuclear Facilities*. It compares more closely to a technical assistance visit than a readiness evaluation. The QE daily meetings were congenial discussions in which M&H personnel freely challenged and influenced categorization of QE team members' findings. This practice is not consistent with an independent check of "readiness to startup, restart, or continue weapon assembly/disassembly operations" as defined in D&P 3.7.
  - b. The QEs focused on the seven general areas of safe nuclear weapons operation enumerated in Section 9.2 of D&P 3.7. However, the QEs did not appear to assess operations in a systematic manner using the detailed criteria provided in section 9.3 of D&P 3.7. Observations were often subjective and there was no assurance that all defined criteria were adequately addressed by the team. A staff review of the observation sheets revealed that few of the observations made by the QE Team members were based on D&P 3.7 criteria or requirements from DOE Orders or standards in use at Pantex.
  - c. The mix of participants on the QE team limited their ability to evaluate the demonstration of procedural safety and adequacy of individual steps. Rigorous review of conduct of operations and technician training for the specific dismantlement program was lacking. There were many operational deficiencies identified by the DNFSB staff during the QEs that were not detected by the QE team. The deficiencies consisted primarily of procedure-adherence violations, use of unapproved pre-operational checklists, poor radiological controls, and recurring deficiencies with procedures and procedure sign-off sheets (Q-sheets).

- d. Several QE team members lacked independence as required by D&P 3.7 in a manner that had the potential to compromise their objectivity. In the W48 QED, several QED members including a Core Team co-chair had previously approved changes to the Nuclear Explosive Operating Procedure (NEOP). In the W79 Capping QED the Lawrence Livermore National Laboratory (LLNL) Core Team leader had been a supervisor for the capping process and the M&H Team Member was the cognizant assembly engineer for the activities being reviewed.
- e. QE team members were required to propose the necessary actions to correct their findings. This practice is not required by D&P 3.7 and is inconsistent with the handling of findings during other readiness reviews in the DOE complex, where corrective actions are developed by line management.
- f. It appeared to DNFSB staff observers that categorization of QE team findings were being skewed to the lowest level, termed "enhancement," that do not require any corrective action. Examples included findings on NEOP changes that were required to permit procedure compliance by the technicians, and one violation of an explosive safety rule (placing an explosive component on a cart without brakes). This may be due to D&P 3.7 not containing guidance or criteria for determining how to categorize findings.
- g. In some areas, the operations that were demonstrated to the QE team did not accurately represent planned operations on War Reserve (WR) units. Examples include execution of informal process and procedure changes, use of additional technicians to conduct the dismantlement than planned for the WR, and not demonstrating critical steps in the dismantlement such as handling and protection of detonator cables due to trainer constraints.
- h. The Qualification Evaluation for Surveillance (QES) observed was conducted with even less rigor and formality than the QEDs observed. Specifically, QES team members were absent for large portions of the review and no review plan was developed as required by D&P 3.7. All the concerns with the QEDs described above also applied to the QES. The value of the QESs as they are currently conducted is questionable. The differences in these evaluations appear to be due, in part, to different divisions in DOE-AL being responsible for conducting the reviews.
- i. The W48 QED was hampered by lack of full implementation of the defined readiness to proceed process as evidenced by the numerous deficiencies identified with the NEOPs. The QED team identified over 120 specific procedure issues in addition to those identified by the DNFSB staff during the first three segments of the W48 QED. Additional NEOP deficiencies continue to be identified during the ongoing W48 WR QED. M&H STD-7301, *Operational Readiness (OR) Procedure*, provides line management "a formal, auditable methodology for determining operational readiness of activities." Based on these numerous deficiencies, it is not apparent that all the reviews and actions required by

STD-7301 were fully implemented and performed. The specific provisions of STD-7301 were not provided in the readiness to proceed documentation and were not reviewed by DOE-AAO as required by D&P 3.7.

5. **Future Staff Actions:** The staff will continue to observe QE activities at Pantex and to evaluate the implementation of D&P 3.7.