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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 18, 1999

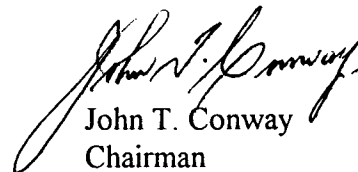
The Honorable Victor H. Reis
Assistant Secretary for Defense Programs
Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585-0104

Dear Dr. Reis:

The Defense Nuclear Facilities Safety Board (Board) has been following the steps taken by the Department of Energy (DOE) and Mason and Hanger Corporation to startup or restart certain nuclear explosives operations at the Pantex Plant. The Board acknowledges that DOE is currently attempting to improve its readiness review process, under the auspices of Recommendation 98-2, for nuclear explosive operations at the Pantex Plant. In particular, it is anticipated that effective execution of the specific actions outlined in Section 5.4 of the Implementation Plan should address current readiness review issues.

Over the past few months, the staff has noted several issues while observing readiness reviews at Pantex. These issues, detailed in the enclosed issue report, should be considered as you revise your readiness review process and move forward to ensure adequacy of the "confirm readiness" safety function at the Pantex Plant. Please call me if you have any questions.

Sincerely,


John T. Conway
Chairman

c: Mr. Mark B. Whitaker, Jr.
Mr. Gene Ives
Mr. Rick Glass

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

April 19, 1999

MEMORANDUM FOR: G. W. Cunningham, Technical Director
J. K. Fortenberry, Deputy Technical Director

COPIES: Board Members

FROM: W. Andrews
R. West (OE)

SUBJECT: Verification of Process Readiness at Pantex

This report documents three reviews performed by the staff of the Defense Nuclear Facilities Safety Board (Board) of several recent contractor and Department of Energy (DOE) readiness reviews at the Pantex Plant. Staff members W. Andrews, T. Dwyer, M. Forsbacka, M. Moury, D. Owen, and H. Waugh and outside expert R. West (Management Support Technology Incorporated) participated in these reviews.

Background. In a letter dated January 15, 1999, the Board identified issues concerning the readiness review program at the Pantex Plant regarding the failure to satisfy prerequisites before starting reviews. The Board noted that DOE should consider readiness review issues in formulating plans to address issues raised by Recommendation 98-2, *Safety Management at the Pantex Plant* and in strengthening the readiness review process at Pantex. Additional correspondence (November 30, 1998, and March 12, 1999) had also expressed concerns with the readiness review process at Pantex.

Discussion. The Board's staff noted several issues while observing the conduct of Pantex readiness reviews. These issues are discussed below.

Review Type—The startup of the W87 Life Extension Program (LEP) was scheduled for February 1999. This program included minor modifications to the W87 disassembly and inspection (D&I) operations at the same time a new authorization basis was being implemented. The activity-specific authorization basis consisted of a Hazard Analysis Report (HAR) an Activity-Based Controls Document (ABCD) (a Technical Safety Requirements [TSR]-like document that provides safety controls). In place of a contractor's Operational Readiness Review (ORR) or Readiness Assessment (RA), a combined Mason and Hanger Corporation (MHC) and DOE Amarillo Area Office (DOE-AAO) team conducted a Single Integrated Readiness Review (SIRR). That review was completed prior to the approval of the authorization basis and the subsequent implementation of safety controls, and therefore did not address this aspect of the operations. Subsequently, separate MHC and DOE Albuquerque Operations Office (DOE-AL) readiness reviews were conducted to determine whether the authorization basis controls had been

properly implemented. During the DOE review, the team leader made a point of calling the review a “Readiness Evaluation.”

The use of SIRRs and Readiness Evaluations is inconsistent with the direction and guidance of DOE Order 425.1A, *Startup and Restart of Nuclear Facilities*, and DOE-STD-3006-95, *Planning and Conduct of Operational Readiness Reviews (ORR)* as implemented by DOE Order 452.2A, *Safety of Nuclear Explosive Operations*. Since DOE Order 452.2A directs that readiness reviews incorporate the attributes of facility (defined as activities or operations in the Order) readiness review as specified in DOE Order 425.1A, the types of reviews set forth in DOE Order 425.1A should suffice for all situations encountered with nuclear explosive operations. Order 425.1A and Standard 3006-95 provide the flexibility to conduct an ORR or RA to meet the need of line management for determining readiness to operate. If reviews not defined in Order 452.2A are used, there is no assurance that the structured approach, conduct, reporting, and correction of deficiencies set forth in the DOE Order 425.1A and standard will be accomplished. Moreover, with the introduction of a new authorization basis and associated controls, it would appear that a properly graded RA should have been used.

Review Scope—As noted above, the types of reviews used are not described in a DOE Order, standard, or DOE-AL supplemental directive. Accordingly, there was no consistent, deliberate method for determining the scope of each review. The Plans of Action (POAs) for the W87 Readiness Reviews indicated that the scope of these reviews was limited based on the previous accomplishment of other types of assessments, including the Nuclear Explosive Safety Study (NESS) revalidation (1997), Safety Evaluations for D&I (1995) and rebuild (1997), the Weapons Program Readiness Review (WPRR) (1997), and the SIRR (1998). However, of these assessments, the NESS and Safety Evaluations did not have the breadth of an RA, and DOE-AL did not participate in the WPRR or SIRR. Moreover, all of these reviews predated the development and approval of the authorization basis and the conversion to Nuclear Explosive Operating Procedures for the W87. Consequently, use of these previous reviews to justify the limited scope of the readiness reviews did not appear to be warranted.

Additionally, with regard to the DOE W87 Readiness Review, a recent occurrence raised questions about the adequacy of conduct of operations. Moreover, two recent reviews (W56 DOE RA and W87 MHC Readiness Review) and a W87-specific tester NESS noted repeated problems with training. Based on these indicators, a more formal determination of scope might have been expected to result in the inclusion of conduct of operations, training, and level of knowledge in the review or to provide a justification for their exclusion.

Review Prerequisites— DOE Order 425.1A requires that for an ORR, the contractor’s POA specify the prerequisites for starting the review. The prerequisites must address each minimum core requirement (set forth in the Order) that is applicable to the review. The DOE POA is to specify additional prerequisites beyond those identified by the contractor. The Order directs further that the POA for an RA include prerequisites, based on a graded approach.

The W87 MHC RR included three core requirements for review relative to the availability of adequate and correct procedures, safety documentation describing the safety envelope, and a program to confirm/reconfirm the condition and operability of safety systems. The POA provided two prerequisites. The first required approval of the DOE POA by the Director, Weapons Programs Division (WPD), DOE-AL, but was not considered necessary by the review team for starting the review. The second, which required that the HAR, ABCD, and Pantex Activity Controls Manual (which links controls to implementing procedures) be approved and that identified controls incorporated into the process. These prerequisites did not adequately address each of the associated core requirements.

The POA for the W87 DOE Readiness Review included four prerequisites. One was similar to the prerequisite in the MHC POA concerning the approval of the HAR and ABCD and incorporation of identified controls into the process. The other three concerned approval of the POA, closure of pre-start findings and approval of corrective action plans for post-start findings, and an MHC declaration of readiness to proceed. The DOE POA also included a core requirement regarding training and qualification (limited to ABCD controls) that was not in the MHC POA. Again, the prerequisites did not adequately address the core requirements.

The current practice for defining prerequisites does not ensure that conditions are specified for each of the areas to be reviewed, and thus does not ensure that line management understands the level of preparation required for starting the review. While not a specific requirement for RAs, compliance with this type of standard for a review having the significance of that for the W87 (introduction of a new authorization basis, implementation of new controls, and revision of operating procedures) would be appropriate in meeting the intent of the graded approach for RAs.

Review Preparations—The DOE standard specifies that the responsible contractor line management must take action to bring the facility into a condition of readiness to start or resume operations. It was reported that management self-assessments were conducted for the W56 and W87 operations. However, during the W56 DOE RA and the W87 MHC Readiness Review, it was necessary to suspend the reviews because of the large number of deficiencies being found by the review teams. Each of these cases provided evidence that MHC line management was ineffective in determining readiness. For an ORR, the local DOE Operations Office is responsible for verifying readiness. It is unclear what responsibilities DOE-AAO has had for verifying readiness prior to declaring readiness to begin a review of nuclear explosive operations.

As stated in Recommendation 92-6, the ORR is to be undertaken after the intermediate level of line management has concluded that a state of readiness has been achieved for safe startup of the activity. The ORR is a means by which top management in the contractor organization and/or DOE can then arrive at an independent determination that this readiness in fact exists. Recommendation 92-6 also identifies adverse effects on safety if the line management responsible for preparing a facility for operations has not properly evaluated the state of readiness. These points are considered applicable to RAs of hazardous nuclear explosive operations as well.

Recent performance indicates that MHC line management has not established an effective method for determining readiness for nuclear explosive operations. The division of responsibilities between DOE-AAO and DOE-AL (WPD) is unclear relative to the readiness review process, creating confusion over what role DOE-AAO performs in verifying readiness.

Conclusion. A lack of adequate direction, inconsistent application of DOE Orders 425.1A and 452.2A, and ineffective validation of readiness are adversely impacting the ability of MHC and DOE to confirm readiness for weapons operations prior to startup/restart. Consideration should be given to ensuring that an RA with sufficiently broad scope is conducted for significant modifications to a process, such as Seamless Safety for the 21st Century (SS-21) startups, W62 and W88 reauthorizations, implementation of Basis for Interim Operations upgrade modules, and introduction of new authorization bases for weapons operations.