

John T. Conway, Chairman
A.J. Eggenberger, Vice Chairman
John W. Crawford, Jr.
Joseph J. DiNunno
Herbert John Cecil Kouts

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004
(202) 208-6400



July 24, 1996

Mr. Mark B. Whitaker, Jr.
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0119

Dear Mr. Whitaker:

Enclosed for your information and distribution are two Defense Nuclear Facilities Safety Board staff reports. The reports have been placed in our Public Reading room.

Sincerely,

George W. Cunningham
Technical Director

Enclosures (2)

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 29, 1996

MEMORANDUM FOR: G.W. Cunningham, Technical Director

COPIES: Board Members

FROM: Matthew B. Moury

SUBJECT: Review of the Unreviewed Safety Question Program at the Pantex Plant, April 30 - May 2, 1996

1. **Purpose:** This report documents a review of the Pantex Unreviewed Safety Question (USQ) program by Defense Nuclear Facilities Safety Board's (Board) staff members F. Bamdad, M. Moury, J. Sanders, L. Stiles, and outside expert L. Skoblar from April 30 - May 2, 1996, at the Pantex Plant near Amarillo, Texas.
2. **Summary:** The Board's staff review focused on Pantex's performance in implementing the requirements of DOE Order 5480.21, *Unreviewed Safety Questions*. The principal measure of this performance was the quality of the safety evaluations prepared by DOE and the contractor. A secondary focus of this review was a programmatic review of the implementing procedures, training, and the Department of Energy's (DOE) oversight. The review consisted of studying specific safety evaluations and safety screens, reviewing implementing documentation, and interviewing DOE and contractor personnel.

Pantex has made significant progress in their USQ Program over the last two years. The Amarillo Area Office (AAO) recently added two knowledgeable engineers to strengthen their staff and replace one engineer who recently left the AAO staff. However, fundamental issues threaten the program's efficacy and have resulted in potentially positive USQ Determinations (USQDs) being assessed as negative. The staff also identified USQ training, USQ procedure, and contractor personnel level of knowledge deficiencies. The DOE's involvement in evaluating the USQ process, except the AAO, is virtually nonexistent contrary to the requirements of the Order.

3. **Background:** The DOE USQ program is modeled after the Nuclear Regulatory Commission's 10 CFR 50.59 requirements. It is intended to provide the contractor the flexibility to make physical and procedural changes and to conduct tests and experiments without prior DOE approval, if the changes do not explicitly or implicitly affect the authorization basis of the facility or result in a Technical Safety Requirement change. One significant difference between DOE's use of the USQ process and the process used in the commercial nuclear industry is the inclusion of the discovery USQ process. When a potential inadequacy, which may pose serious implications in a facility's currently approved safety basis, is discovered, Section 7.b of the Order states, ". . . DOE requires that a USQ determination be completed immediately, thus providing a benchmark of the relative safety significance, and that the facility be put in a safe condition. In

these instances, the contractor is responsible for making an initial assessment of the potential impact of the analytic inadequacy and for determining what operational restrictions, if any, may be warranted." In addition, Section II.5 of the Order requires that, "(1) the contractor shall immediately notify the Program Secretarial Officer (PSO); (2) (the contractor) shall take steps assuring that operation is conducted in a mode or manner within the authorization basis . . . and (3) the contractor shall complete a safety evaluation and submit it to the PSO (for approval if the USQ determination is positive) prior to removing any operational restrictions implemented to compensate for the analytical discrepancy."

4. **Discussion:** The staff's comments are divided into implementation issues; procedure issues; staffing, training, and level of knowledge issues; and DOE oversight issues.

a. Implementation:

- (1) The December 29, 1992, NE-70 memorandum, *Interpretation of DOE 5480.21, "Unreviewed Safety Questions,"* states that the Order requires "contractors to notify DOE of any increase in risk or other situation which might otherwise invalidate the current authorization basis." (emphasis added) Issues evaluated against proposed authorization basis documents can result in potentially positive USQDs being assessed as negative. Pantex is making USQ determinations against proposed authorization basis documents, as opposed to the current DOE approved authorization basis documents. For example, facility changes in Building 12-99 to support AT400-A pit packaging included replacing the deluge fire suppression system, a safety class system, with a wet pipe sprinkler system. The contractor's justification for implementing this change without DOE approval through the USQ process is that new Limiting Conditions for Operations (LCO) will be imposed to remove all high explosives from the bay and eliminate the potential for a progression of fire to high explosives detonation or deflagration. In this case, DOE Order 5480.21 requires comparison of the proposed activity to the current authorization basis, determination that a positive USQD exists due to a reduction in the Margin of Safety, and DOE line management review and determination of the acceptability of the risk through the process of approving a revised authorization basis.
- (2) There is no agreement between the AAO and the contractor on what makes up the current authorization basis for the facilities. The definition of authorization basis in contractor procedures is different from DOE Order 5480.21 and the AAO procedures. The contractor's definition is missing ". . . facility specific commitments made in order to comply with DOE Orders and policies." Consequently, no safety program commitments are in the contractor's current authorization basis nor are the commitments evaluated in the USQ process. This may result in a weakening of the authorization basis by exposing the public and workers to greater risks, although less than the bounding risk, without the DOE accepting and approving the increased risk. For example, in the USQD for sandbag partitioning of Building 12-64, Bays 13 and 16 to permit increased weapons staging, the radiation air monitors will be disconnected for the proposed staging activity,

although they are systems important to safety and their operability is a LCO for activities in the bays. A qualitative argument is provided by the contractor that only staging, retrieval, and inventory will be conducted. Therefore, local warning and evacuation for potential radiation release are not required despite the fact that the AAO definition considers these systems commitments in the current authorization basis to reduce worker risk.

- b. Procedures - The procedural basis for Justification for Continued Operations (JCOs) is weak due to the lack of DOE guidance. To date, DOE has not established a formal process for using JCOs. The purpose of the JCO process is to provide a means for a contractor to obtain DOE approval for temporary operation of a facility outside its approved safety basis, when the current requirements cannot be fully met. JCOs are often used to bridge the gap between determining that a USQ might exist and fully analyzing the condition, and identifying and incorporating the necessary upgrades. AAO has developed limited guidance on the use of JCOs. However, the contractor has not developed its own guidance on the implementation of this process. Until DOE-Headquarters develops explicit guidance on this process, the use and effectiveness of the JCO process will be highly variable.
- c. Staffing, Training, and Level of Knowledge
 - (1) Contractor's personnel level of knowledge during interviews was mixed. Staff interviews found the facility managers had a strong grasp of the USQ process as it applied to their facilities. Interviews with senior and junior USQD analysts revealed a surprisingly weak level of knowledge concerning the purpose and scope of the authorization basis and basic elements of the USQ process.
 - (2) As demonstrated during the personnel interviews, the current USQ training program does not appear to be training people to the level of capability of performing their assigned work as required by Criterion 2, DOE Order 5700.6C, *Quality Assurance*. The current training consists of a module in the facility manager core training for the facility managers and DOE-sponsored USQ evaluator training. The USQD evaluators rely a great deal on on-the-job training and mentoring. However, the newest USQD evaluator was being mentored by a junior evaluator with less than one year experience. A new USQ training program scheduled to begin this summer appears promising, but will require more active management involvement to ensure that the training meets their needs.
- d. DOE Oversight
 - (1) The staff found no evidence that the DOE Program Secretarial Office (PSO), the Environmental Safety and Health (EH), or the Albuquerque Operations Office (ALO), have evaluated the Pantex USQ program as required by DOE Order 5480.21. The PSO is apparently not actively monitoring the USQ identification, review, and decision-making process as required. EH is not monitoring the USQ identification, review, and decision-

The PSO is apparently not actively monitoring the USQ identification, review, and decision-making process as required. ES&H is not monitoring the USQ identification, review, and decision-making process; reviewing USQ governing and implementing procedures to assure their consistency in application of the requirement of the Order; or assessing the level of safety and degree of compliance by Departmental Elements with the DOE requirements of the Order.

- (2) AAO has developed Procedure Number 106.1, *Unreviewed Safety Questions and Justification for Continued Operations*, to formalize their responsibilities in the USQ process. The procedure is not being followed in that AAO has not approved contractor USQ procedures, assessed contractor compliance with USQ procedures, reviewed and evaluated the adequacy of USQ training, or formally notified the contractor of the AAO USQ Point of Contact as required by the AAO procedures.
- (3) The new AAO risk management professionals are knowledgeable in the USQ process and should have a positive impact on the program. According to AAO, the Albuquerque Operations Office recently authorized a nationwide search for two new AAO risk management staff (nuclear explosives and safety analysis) to further strengthen the AAO staff.