



## Department of Energy

Washington, DC 20585

August 8, 2005

The Honorable A.J. Eggenberger  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, D.C. 20004

Dear Mr. Chairman:

Enclosed is the Final Report to the Defense Nuclear Facilities Safety Board (Board) on Recommendation 99-1, which provides a summary of actions taken by the Department to resolve the issues contained in the Board's August 1999 Recommendation 99-1, *Identification of Issues Needing Resolution to Ensure the Long-Term Safety of Pits at Pantex*.

The Department has implemented corrective actions to address the issues identified in Recommendation 99-1 and as of June 30, 2005, has completed repackaging more than 97 percent of the pits identified in the Secretary's February 2000 implementation plan. Repackaging of remaining pits is scheduled to be complete by September 30, 2005.

Major corrective actions implemented as a result of Recommendation 99-1 include:

- Development of the Pantex Pit Management Plan, which provides the high level framework utilized to ensure the safe storage and staging of all pits at the Pantex Site;
- Establishment of consistent program priority and funding by the Department to complete the repackaging effort;
- Development, testing, approval, and procurement of the AL-R8 (2030/2040) Sealed Insert containers needed to provide the appropriate environment for pits;
- Development of the Thermal Monitoring System in the pit storage and staging areas to provide monitoring data used to maintain a safe thermal environment for pits; and
- Implementation of a surveillance program for the AL-R8 (2030/2040) Sealed Insert containers, which will continue for the duration of pit storage at Pantex.



These actions have resulted in significant improvement to the Department's ability to ensure safe handling and storage of special nuclear material at Pantex. The Department welcomes the Board's ongoing oversight and requests the Board to consider closing Recommendation 99-1.

If you have any questions, please contact Mr. Thomas P. D'Agostino, Acting Deputy Administrator for Defense Programs, at (202) 586-2179.

Sincerely,

A handwritten signature in black ink that reads "Samuel W. Bodman". The signature is written in a cursive style with a large, prominent initial "S".

Samuel W. Bodman

Enclosure

cc w/enclosure:

M. Whitaker, DR-1

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**U. S. Department of Energy**

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**Final Report to the  
Defense Nuclear Facilities Safety Board  
on Recommendation 99-1**



**Washington, D.C. 20585  
July 2005**

**FINAL REPORT TO THE  
DEFENSE NUCLEAR FACILITIES SAFETY BOARD  
ON RECOMMENDATION 99-1**

This report addresses the following topics:

- Background
- Status of Completion of 99-1 Plan Commitments
- Enhancement of the Pantex Pit Management Plan - Breached Pit Contingency Development
- Integrated Pit Management Program
- Status of Container Surveillance Program
- Basis for Closure of Recommendation 99-1
- Status of DNFSB Points of Emphasis

The report concludes that the Department has addressed the issues raised in the Board's recommendation 99-1, and has clearly demonstrated the Department's commitment to provide a safer storage environment for pits.

## **1. BACKGROUND**

The Defense Nuclear Facilities Safety Board (Board) issued recommendation 99-1 on August 11, 1999. Under this recommendation, the Board cited the need to expeditiously develop and implement a pit management program to ensure the long-term safety of pits awaiting return to the strategic stockpile or disposition that would permanently remove plutonium from weapons use. Specifically, the Board provided four sub-recommendations:

- 1. Issues regarding the compatibility of materials used on pit storage containers be settled as soon as possible.*
- 2. Action be taken to accelerate the repackaging of pits into containers designed to provide safe storage conditions.*
- 3. A container sampling program be instituted to monitor the integrity of pit storage containers and predict the need for repackaging.*
- 4. An individual within the Department with the authority and resources to execute the actions necessary to ensure safe storage of pits be identified.*

Former Secretary Richardson accepted the Board's recommendation on October 12, 1999, and committed to the development of an implementation plan to address the recommendation.

On February 1, 2000, the Secretary provided the Board with his implementation plan, *U. S. Department of Energy Implementation Plan 99-1 Safe Storage of Pits at Pantex*. The Department committed to take the following actions:

- *Expediently resolve the compatibility issues that have the potential to impact the long-term safe storage of pits. Through a container surveillance program, the Department will monitor the AL-R8 Sealed Insert container to ensure its continued quality and reliability.*
- *Ensure that repackaging takes place at an accelerated rate so that pits are expediently placed into containers suited to safe storage. The actions undertaken in the implementation plan will focus on ensuring a safe and timely repackaging program. A process to develop a resource-loaded repackaging schedule will be established with an initial baseline repackaging rate of 200 per month. The repackaging baseline was later established as the average repackaging rate of 200 pits per month per annum.*
- *Develop a system of statistical sampling for the AL-R8 Sealed Insert containers to assess container integrity and to provide horizons for future repackaging and repackaging rate requirements.*

Recognizing the need for concerted and integrated effort to ensure that pit repackaging continues in a manner that ensures timely implementation, the Secretary assigned the Deputy Assistant Secretary for Military Application and Stockpile Operations (DASMASO), as the responsible manager for the plan implementation.

**2. STATUS OF COMPLETION OF THE 99-1 PLAN COMMITMENTS**

All 99-1 plan commitments are complete. The completion status of the 99-1 plan commitments is provided in Table 1.

**Table 1: Status of 99-1 Plan Commitments**

#	Commitment	Status
5.1.1	Incorporate a new corrosion resistant capscrew into the AL-R8 Sealed Insert design to replace the carbon steel capscrews	Complete. In July 2001, the Department incorporated a new corrosion resistant capscrew into the AL-R8 Sealed Insert pit storage container to replace the carbon steel capscrews, thus addressing all material compatibility issues.
5.2.1	Establish and sustain two double shift repackaging lines for an estimated repackaging rate of 200 pits per month	Complete. On March 18, 2002, the Department proposed a revision to this commitment to “sustaining an average repackaging rate of 200 pits a month”. On May 8, 2002, the Board accepted the revision. The Department has established performance-based incentives in the BWXT contract. As a result, the contractor identified operational efficiencies and process

		improvements in order to accelerate the pit-repackaging rate with one shift only. The contractor has consistently met and often exceeds the goal of repackaging, on average, 200 pits a month. As of June 30, 2005, BWXT had packaged over 97 percent of the pit repackaging commitment.
5.2.2	Issue quarterly repackaging status reports	Complete/Closed. The Department issued quarterly repackaging reports on a consistent basis, which lead to the reduction in frequency of the report from quarterly to annual. The first annual report was issued November 10, 2003. The Board closed this commitment in their May 8, 2002, letter to Secretary Abraham.
5.2.3	Issue Pantex Pit Management Program Plan	Complete. The Pantex Pit Management Plan (PPMP) is issued annually. This document identifies critical issues associated with safe handling, storage/staging, container development, packaging, contingency planning, and surveillance of pits & pit container configurations at Pantex.
5.3.1	Issue Technically Justified Container Surveillance Program Plan	Complete. The Container Surveillance Program Plan (CSPP) is identified in the PPMP, and identifies the methodology to assure that the current container configurations used at Pantex satisfy pit storage/staging needs. The CSPP sampling has been established to provide a 99% confidence and 95 % reliability. The initial phase CSPP will last for a five-year term (ending in FY05), at which time the plan will be re-evaluated for potential modification. Currently, the plan requires 92 container surveillances annually.
5.3.2	Issue annual container surveillance reports	Complete. The AL-R8 Sealed Insert (SI) Container Surveillance Report is issued on an annual basis. The report documents the results, issues and findings of container surveillance activities for the fiscal year. The FY 2004 annual container surveillance report was issued in March 2005 and is pending revision.

As a result of completing these planned actions, the Department has achieved significant improvement in its pit storage and management programs. The effectiveness of the Implementation Plan 99-1 is demonstrated by the following points:

- A comprehensive pit and container surveillance program is now in place.
- Path forward for breached pits has been identified.
- The Department has made progress to develop: 1) a shipping container for transporting pits to the Plutonium Disposition and Conversion Facility (PDCF), and 2) a container to handle potential breached pit conditions (DPP-2).
- Coordination among departmental offices to include transportation and disposition efforts has been enhanced.
- Clear lines of authority and responsibility have been established.
- The Integrated Pit Management Plan has been developed to provide a road map for the repackaging/packaging effort.

### **3. ENHANCEMENT OF THE PANTEX PIT MANAGEMENT PLAN - Breached Pit Contingency Development**

In FY 2004, the Pantex Pit Management Plan was revised to include the Breached Pit Contingency Plan. This plan contains a two-phased approach for addressing these pits. Phase I includes actions necessary to maximize the probability of: 1) placing the pit in a safe and stable configuration, 2) gaining approval for transportation of the pit/container configuration to the facility of disposition, and 3) evaluation/acceptance of the pit/container configuration by the receiver site, while utilizing existing NNSA containers. The technical basis for the container selections is provided as well as a matrix depicting the optimum container for each pit type. Phase II of the plan includes the development of a pre-approved process which will not require exemption for off-site shipment. This process is contingent on the development/enhancement of two new DOE shipping containers for war-reserve/non war-reserve pits: the MD-2, and DPP-2.

### **4. INTEGRATED PIT MANAGEMENT PLAN**

In FY 2004, the Department developed the AL-R8/SI FY 2005-2007 Integrated Pit Repackaging Plan. The focus of this plan is to identify all internal/external activities, resources, risks, scheduling, and funding needed to complete the pit repackaging effort by the end of FY05, and assure Pantex maintains a sound pit packaging line in the future.

### **5. STATUS OF CONTAINER SURVEILLANCE PROGRAM**

The Department developed and established a statistically based container surveillance program in order to validate the effectiveness of pit storage containers. The surveillance program plan was briefed to the Board on March 27, 2000. The surveillance program assumes that the pits will remain in storage at Pantex for up to 30 years. Therefore, the

goal of the program is to annually examine 92 AL-R8/SI containers for five years. Through FY 2001, the surveillance program was behind by 84 units. During FY 2002, 143 units were processed through the surveillance program reducing the backlog by 61%. During FY 2003, 126 units were processed, thereby eliminating the backlog. In FY 2004, 92 units were processed. Currently, the Integrated Pit Management Plan has scheduled the 92 container surveillances for the first quarter FY 2005. At the conclusion of this initial 5-year container surveillance program in FY 2005, the Department will evaluate the collected data from the surveillance program prior to modifying the annual container surveillance program requirements. The evaluation could entail an increase, a decrease or no change, in the number of containers examined on an annual basis.

**6. BASIS FOR CLOSURE OF RECOMMENDATION 99-1**

Board Recommendation 99-1 has accomplished its purpose. The implementation of this recommendation has significantly enhanced the safe storage environment of pits at Pantex. The issues raised by Recommendation 99-1 have been fully addressed. A clear basis for closure exists:

- The Department has completed all commitments and actions identified in its 99-1 implementation plan with over 97 percent of the repackaging work completed. The AL-R8/SI FY 2005-2007 Integrated Pit Repackaging Plan identifies September 2005 for completion of all repackaging activities.
- The concerns expressed in the Board’s May 8, 2002, letter have been fully addressed and are listed in Section 7, Table 2 of this report.
- The safety issues raised in the Board’s Recommendation 99-1 have been fully resolved, with programs and systems in place to ensure that they will remain resolved in the future.

**7. STATUS OF DNFSB POINTS OF EMPHASIS**

Table 2 provides the actions taken to resolve the concerns identified in the Defense Nuclear Facilities Safety Board May 8, 2002, letter to the Secretary.

**Table 2: Status of DNFSB Points of Emphasis**

#	Point	Status
1.	The container surveillance program is a key component of safe pit storage. Therefore, it is imperative that the surveillance backlog be reduced. Reduction of the current backlog below 50 percent of the number of scheduled annual surveillances and a clear trend of decreases in the total backlog should be the minimum acceptable conditions.	The container surveillance backlog was completed in FY 2003. FY 2004 container surveillance activities remained on schedule with the completion of 92 surveillances. The FY 2005 container surveillance activities are on schedule to complete in FY 2005.



2.	A container must be available for all pit families that will not be disposed of in the near term. Finalization of the AL-R8 Sealed Insert 2040 design, as certified by issuance of the Stage IV Qualification Engineering Release the AL-R8 Sealed Insert 2040, should be an adequate milestone.	The AL-R8 Sealed Insert 2040 received the Stage IV Qualification Engineering Release in the Second Quarter of FY 2003 certifying the design.
3.	The ultimate disposition path for all pit families must be clear. In particular, those pits that cannot be repackaged into the standard AL-R8 Sealed Insert 2030 or 2040 containers should be disposed of in the near term.	Currently there are four anticipated destinations/sites for pit disposition: 1) Los Alamos, 2) Y-12, 3) Plutonium Disposition and Conversion Facility (PDCF), and 4) Modern Pit Facility. The Breached Pit Contingency Plan identifies the optimal container configuration from currently available containers for all pit types at Pantex. The future pit containers include: 1) MD-2 container that will be used to ship pits to the PDCF, and 2) DPP-2.
4.	The pit repackaging program must be funded to completion. Adequate funding in the fiscal year 2003 appropriation and in the fiscal year 2004 budget request should be the minimum acceptable indicators of success.	The Department provided the funding needed to meet all pit repackaging commitments in FY 2003 through FY 2004. Funding has been made available for FY 2005 as identified in the AL-R8/SI FY05-FY07 Integrated Pit Repackaging Plan Revision 0.