September 5, 1997

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

Dear Dr. Reis:

Enclosed for your consideration and action, where appropriate, are the observations developed by the staff of the Defense Nuclear Facilities Safety Board (Board) concerning the Single Internal Readiness Review (SIRR), conducted June 18–26, 1997. The SIRR was performed prior to starting the process prove-in for the high-explosive dissolution workstation, as part of the overall preparation for the W79 Dismantlement Program. This review was the first of its kind at Pantex in that it was an attempt to integrate several reviews that previously would have been performed serially. Some of these previous reviews were performed to help line management achieve readiness, and at least one, the Weapons Program Readiness Review, was performed to confirm readiness by a group independent from line management.

The SIRR team should be commended for its thorough and conscientious effort, but it was clear that the Project Team for the W79 Dismantlement Program had declared its readiness to proceed (prior to the SIRR) without adequate validation. The findings of the Board's staff indicate that the SIRR was used to assist the W79 Project Team in achieving readiness to start the process. Given that this SIRR was the only review planned prior to authorization of operations, the failure of the Project Team to adequately establish readiness, prior to the SIRR, using whatever methods they deemed appropriate, appears to have undermined the utility of the SIRR as a confirmatory review. The hope that time might be saved through coincident reviews clearly was not realized; the Board believes that such a finding would be common, and this belief underlies the Board's emphasis on the preference for serial processes.

This matter is called to your attention in the interests of strengthening safety assurance processes. The Board will continue to follow preparations to dismantle W79 projectiles, particularly Project Team efforts to achieve and confirm readiness to conduct operations with nuclear explosives.

Sincerely,

John T. Conway
Chairman

c. Mr. Mark B. Whitaker, Jr.
Mr. Bruce G. Twining

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 30, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: J. Deplitch

SUBJECT: Review of W79 Dismantlement Program Single Internal Readiness Review, June 17–20, 1997

This memorandum documents a review by Defense Nuclear Facilities Safety Board (Board) staff member J. Deplitch. The review focused on the Single Internal Readiness Review (SIRR) performed for the W79 dismantlement of Type 6B units (W79-like units including high explosive [HE] with mock nuclear assemblies).

The SIRR was conducted June 18–25, 1997; the final report was completed on July 9, 1997. The SIRR was limited to Building 12-98, Cell 1 operations, i.e., nuclear explosive dismantlement and HE dissolution. It was performed as a prerequisite for requesting startup authorization.

The SIRR was performed by a combined team of representatives from the DOE Amarillo Area Office and Mason & Hanger Corporation, in lieu of an independent line management team review followed by an external review. The integrated team concept was intended to expedite the review process to assist in recovery of the W79 dismantlement project schedule, and to serve as a pilot for future dismantlement reviews.

The SIRR team appeared adequate and in its final report identified appropriate deficiencies and issues with the dismantlement process, including 35 pre-start findings. It was determined as a result of the SIRR that the program was not ready for Type 6B unit operations, and that the review should be redone prior to Type 6B unit operations. Deficiencies with training, procedures, and tooling were as follows:

- Production technicians, the operating supervisor, and facility management were not qualified and had completed only one-third of their planned training. The demonstrations showed their lack of preparation. Production technicians missed and misinterpreted steps in the procedures, violated procedures, and performed acts not in the procedures. The operating personnel did not appear adequately sensitized to the need to prevent electrostatic discharge during dimethylsulfoxide (DMSO) operations. The operating supervisor left the cell during dissolution workstation operations, even though the procedure requires his presence in the cell for the duration of all such operations.

- Procedures were not ready, and were not clear enough to be followed correctly. One step that was inadvertently skipped and performed out of order could not be executed as written. Some necessary cautions were omitted, and some cautions came after the

applicable steps. There were no cautions for controlling static electricity (a primary ignition source for a DMSO fire). There were no instructions for positioning the hoist while not in use; the hoist and chain appeared to be in the way on many occasions.

- The hot-water system used for heating the DMSO for HE dissolution and used as a control to prevent DMSO fires was not ready. Temperature settings were determined arbitrarily, and were not adequately prescribed. Tolerances on controls and sensors were apparently unknown. The frequency for monitoring temperatures did not coincide with the inherent fluctuations in the system. Additional prescribed controls for the hot-water system were not planned for installation before the beginning of Type 6B unit operations. Although the DMSO temperature is a critical parameter for a DMSO fire, there were no plans to apply controls directly to the DMSO temperature.

- Required wrist bands (bonding straps) were easily disconnected during DMSO workstation operations. A reliable connection is required because wrist bands are a primary control measure to prevent the buildup of electrostatic potentials. Human electrostatic discharge was determined to be the primary ignition source for a DMSO fire within the workstation. Additionally, non-antistatic plastic bags were used during DMSO operations.

- Some of the lifts were at the extent of the cell hoist and attached chain lifting device, as they were configured. The chain to the chain lifting device was often interfering with operations and could snag attachments on the W79 nuclear explosive.

In the future, the Board's staff will continue to monitor readiness for HE unit operations and subsequent war reserve operations for the W79 dismantlement program. The staff will also discuss the effectiveness and appropriateness of the combined internal and external independent review with DOE.