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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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July 5, 1995

Mr. Mark Whitaker, EH-9  
Department of Energy  
1000 Independence Avenue, SW  
Washington, D.C. 20585

Dear Mr. Whitaker:

Enclosed for your information and distribution are 20 Defense Nuclear Facilities Safety Board staff reports. The reports have been placed in our Public Reading Room.

Sincerely,

A handwritten signature in black ink, appearing to read "G. W. Cunningham", is written over the typed name and title.

George W. Cunningham  
Technical Director

Enclosures (20)

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 5, 1995

MEMORANDUM FOR: G.W. Cunningham, Technical Director

COPIES: Board Members

FROM: Larry Zull

SUBJECT: Trip Report - Review of Actions Taken to Assure Readiness for Special Unload Operations at the Mound Plant

1. **Purpose:** This memo documents a visit to the Mound Plant by Defense Nuclear Facilities Safety Board (DNFSB) staff members Don Owen and Larry Zull on November 29-30, 1994, to review actions taken to achieve and verify readiness for a planned production unloading of Special Unload units.

2. **Summary:**

- a. The Special Unload project consists of approximately 500 reservoirs that are planned to be unloaded in the SW-Building at Mound over a two-year period, beginning in January 1995. This unloading project is a change in operational tempo from Mound's traditional unloading of smaller numbers of units over varying periods of time for surveillance or other purposes.
- b. The staff reviewed the contractor process to review and authorize the unloading of a series of units and found that: 1) a test unloading with an inert trainer unit is not performed; 2) detailed criteria for the reviews are not formalized; 3) results, findings, and corrective actions are not required to be formally documented; and 4) if an unloading operation should be interrupted by the unloading of different design units, no review is required to restart the unloading of the original units.
- c. The staff reviewed the planned Department of Energy (DOE) actions for the Special Unload project, and found that: 1) no DOE readiness review was planned for Special Unload operations in the SW-Building; 2) only minimal detailed oversight by the Facility Representative (FR) of the Special Unload project is planned; 2) the FR is one of only two FRs at Mound and is assigned a broad range of other facilities; and 4) FR facility-specific training for the unloading operations has not been developed. The staff was later advised that DOE would conduct a Readiness Assessment of the Special Unload project in SW-Building and that requests for additional FRs would be expedited.

- d. During a tour of the unload facilities, the staff observed that there was no interlock to prevent the inadvertent energization of the laser cutting device, or limiting the laser power level, when the belljar enclosure was open.

### 3. Background:

- a. The Special Unload project consists of approximately 500 units of a specific design reservoir that have been removed from the active stockpile. The units, that are in storage at Mound, will be unloaded at Mound. The tritium recovered from the units will be sent to the Savannah River Site and the reservoir components treated as classified waste.
- b. DOE is planning to conduct the Special Unload project over a two-year period, beginning in January 1995. This represents a change from intermittent unloading of a small number of units to a steady production unloading operation. Operations are to first be conducted in the SW-Building, followed by additional operations in the T-Building starting in mid-1995.
- c. Approximately 15% of the units which have previously been unloaded have breached (lost integrity), contaminating the belljar in which the units are unloaded.

### 4. Discussion:

- a. SW-Building Readiness Reviews Performed: In 1990 Contractor and DOE readiness reviews were conducted for the restart of unload operations in two areas of the SW-Building, SW-208 and SW-219. Unload operations were authorized in the SW-Building by the Secretary of Energy in January 1991. In June 1991 contractor and DOE readiness reviews were conducted for operation of two additional belljar enclosures (A & J belljars) in SW 219. These reviews were conducted before DOE Order 5480.31, *Startup and Restart of Nuclear Facilities*, was issued in September 1993.
- b. Tempo of Past Unload Activities: The Special Unload project in the SW-Building requires operations similar to other unload programs. The unloading is performed in the belljar enclosures that are in gloveboxes with inert atmospheres. There are differences in setup within the belljar enclosures, however, for each unit design to be unloaded. Mound personnel provided data on the tempo of such unload operations in the SW-Building that indicate these operations have been in progress in the SW-Building since the 1991 startup authorization.
- c. Readiness Actions by Line Management:
  - (1) Contractor Line Management: EG&G Mound line management described their actions to verify readiness since the readiness reviews in 1990 and 1991. These actions are governed by the Mound Safety and Hygiene Manual (MD-10286), Procedure for the

Authorization to Function Test or Unload a Unit (OP-A13). For each series of unloads of a particular design unit in a particular belljar enclosure, OP-A13 requires a review of the personnel, training, procedures, and hardware by a small (three persons minimum) independently-led team. This review is called a Test Review Panel (TRP). The staff has the following observations regarding the TRP process:

- (a) Mound personnel stated that the procedure review includes a walkdown of the procedure, but does not include a test unloading with an inert trainer unit. Such a check with a trainer device is performed for readiness reviews of weapon assembly/disassembly operations.
- (b) Detailed criteria for these reviews are not formalized. Mound personnel stated that these reviews have been performed by personnel with extensive experience in such operations and, therefore, rely on that experience to guide their reviews.
- (c) TRP assessment results, findings, and corrective actions are not required by OP-A13 to be formally documented and reported by the TRP team. The test is authorized by all TRP members placing their signature on the test series authorization form.
- (d) The TRP review applies to a series of unloads of a particular unit design in a particular belljar enclosure. Another TRP review is required if changes are made to equipment or procedures. Mound personnel stated that TRP reviews for restart of that series is not required should that series be interrupted by another set of unloads for different design units. Such interruptions have occurred in the past and have lasted several months. There is no criteria for how long an interruption is allowed without requiring another TRP review.

(2) DOE Line Management Actions:

- (a) DOE-Miamisburg Area Office (DOE-MB) personnel indicated that planned actions for DOE oversight of the Special Unload operations are to be accomplished by the DOE Facility Representative (FR). DOE-MB provided the following information on this oversight:
  - (1) The DOE Facility Representative assigned responsibility for the SW facility at the time of the review is one of only two FRs at Mound. He indicated that he is also responsible for a broad range of other Mound facilities.
  - (2) Facility-specific training for the FRs appropriate to the special unload operations in SW building has not been developed and the DOE FR has not completed FR qualifications.

- (3) The FR indicated that much of his time is required to: 1) review occurrences and occurrence reports as required by DOE Order 5000.3B, *Occurrence Reporting and Processing of Operations Information*; and 2) maintain cognizance of the status of activities at the broad range of facilities assigned to him. As a result, the FR indicated little time is available for detailed oversight of the unload operations, though some periodic oversight is planned at the start of the Special Unload campaign in early 1995.
- (b) The broad range of facilities assigned to the FR does not appear to allow for proper performance of required FR duties in the SW-Building as defined in applicable DOE requirements and guidance. Other planned tritium activities (including the startup of the Tritium Emissions Reduction Facility (TERF), authorized new unit development testing, and decommissioning activities) will also require FR oversight.
- (c) DOE has not performed any readiness reviews of reservoir unloading operations in the SW-Building since the reviews conducted in 1990 and 1991. While the tempo of operations in the SW-Building indicates that operations have been continuous, the Special Unload program will be a larger campaign. No readiness reviews for the Special Unload operations were planned at the time of this DNFSB staff review. Planned oversight by the DOE FR does not appear to provide a sound basis for DOE line management to conclude that operations for the special unload campaign will be conducted safely. In fact, the FR will be learning about tritium operations during the Special Unload project.
- (d) At the conclusion of the review, the staff's observations were discussed with the Acting Director of the DOE Miamisburg Area Office. In a subsequent conversation on December 1, 1994, the staff was advised that DOE would conduct a Readiness Assessment (RA) of the Special Unload project and that requests to obtain additional Facility Representatives at the site would be expedited.
- d. System Interlocks: Mound personnel indicated that there is an interlock to prevent energizing circuits to function (unload) the units in the SW-Building facilities if vacuum is not established in the belljar (e.g. the belljar enclosure is not sealed). However, there is no similar interlock for energizing the laser cutting device, or limiting the laser power level when the belljar is open. The potential for the laser to breach a unit and liberate gas, or cause injury to an operator, appears to exist without such an interlock. This potential hazard has not been addressed in the safety analysis documentation.
- e. Planned T-Building Operations: The staff was told of plans to perform contractor and DOE readiness reviews, starting in March 1995, to qualify an unloading station in room T-59 in the T-Building for use in the Special Unloading project. The staff was told that the contractor's Operational Readiness Review Manual currently does not conform to the

requirements of DOE Order 5480.31, but that the reviews will adhere to the requirements of the Order.

5. **Future Staff Actions:** The staff plans to monitor the contractor and DOE readiness reviews for the Special Unload project at the Mound Plant, and subsequent unloading operations.