

**[DNFSB LETTERHEAD]**

April 28, 1995

The Honorable Victor H. Reis  
Assistant Secretary for Defense Programs  
Department of Energy  
Washington, D.C. 20585

Dear Dr. Reis:

The Defense Nuclear Facilities Safety Board (Board) continues to closely monitor the Department of Energy's (DOE) efforts to improve the Nuclear Explosive Safety Study (NESS) process. Members of our staff recently attended the NESS conducted at the DOE's Nevada Operations Office evaluating interim storage of W-48 weapons in bunkers within Area 27 of the Nevada Test Site. The enclosed report is provided for your review. The Board was pleased to note reports of more thorough investigation of technical issues by the NESS members. However, the late arrival of the NESS Input Document and its lack of thoroughness, combined with the insufficient readiness of the facilities and inadequacies in operational documents, lead the Board to question the value of the study as a measure of readiness from a nuclear explosive safety perspective to safely conduct this operation.

Please contact Mr. Steve Krahn of the Board's staff at (202) 208-6585 if you require any additional information or assistance.

Sincerely,

John T. Conway  
Chairman

c: Mr. Mark Whitaker, EH-9  
Mr. Terry Vaeth, Acting Manager, DOE-NV

Enclosure

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**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

March 30, 1995

**MEMORANDUM**  
**FOR:** G. W. Cunningham, Technical Director  
**COPIES:** Board Members  
**FROM:** Joe Sanders  
**SUBJECT:** Nuclear Explosive Safety Study (NESS) for Interim Storage of W-48 Weapons at the Nevada Test Site

1. **Purpose:** This trip report documents staff observations concerning a meeting of the NESS Group (NESSG) charged with evaluating interim staging of W-48 weapons at the Nevada Test Site (NTS). This meeting took place at the Department of Energy's Nevada Operations Office (DOE-NV) and at NTS. It was attended by the Defense Nuclear Facilities Safety Board (Board) technical staff (J. Sanders) and outside expert (J. Drain) on February 6-9, 1995.
2. **Summary:** This NESS experienced some of the same problems identified in earlier NESSs by the NESS Independent Review Team, and again identified by the Board in its letter of February 3, 1995. For example, the NESS Input Document was delivered late to the group members and, in addition, it lacked detailed information and analyses in certain areas. Further, although the scope of the NESS included reloading of W-48 containers in the Safe Secure Trailer (SST), this portion of the operation did not appear to have been treated with sufficient rigor.

Technical presentations were complete and rigorous. Most NESSG members were technically inquisitive and pursued areas of potential deficiency. However, the operating procedures and facilities were not ready to use. Thus, the technical presentations were primarily based on general plans rather than as-built information. As was noted by the NESSG Chairman and members, the NESS proceeded in violation of the NESS interim guidance from the Deputy Assistant Secretary for Military Applications and Stockpile Support (DOE/DP-20) on the quality and timeliness of Input Documents, and on member preparedness. The Board's staff believes that DOE should consider either repeating the NESS when the facility and procedures are ready or reconvening the NESSG.

3. **Background:** In a memorandum of October 4, 1994, DOE/DP-20 requested the Manager of DOE-NV to evaluate the feasibility of providing interim staging (at least one year) for more than 100 W-48 weapons at six bunkers within Area 27 at NTS. DOE-NV tasked the Lawrence Livermore National Laboratory (LLNL) to assess the technical and economic feasibility for such staging. If deemed feasible, LLNL would prepare for the operation.

The need for additional staging space arises because DOE apparently has an agreement to accept a certain number of W-48s from the Army. Due to problems with procedures, disassembly of W-48s has been significantly delayed at Pantex, resulting in a shortage of staging space.

The six bunkers in Area 27 could accept a maximum of approximately 300 W-48 weapons (in M467 shipping and storage containers). These bunkers are approved assembly and staging locations as identified in the Assembly, Storage, and Transportation Master Study, though not for the number of weapons requested. To address this change in operational scale, a Basis of Interim Operation (BIO) has been developed to address the contingency for temporary staging of large quantities of nuclear weapons in essentially stockpile configurations in these bunkers, and the NESS was performed.

4. **Discussion:**

The NESSG members were active in their review of safety issues. Most members were inquisitive and fully expected this NESS to be performed to the same level of rigor as those performed for disassembly operations at Pantex. During the executive sessions, concerns were raised by the NESSG members about (a) the NESS Input Document's apparent lack of thoroughness and technical detail, (b) its lateness in arriving to some NESSG members, and (c) the questionable readiness of the facility for the review. Initially, this led certain NESSG members to believe that the conduct of the NESS was premature, and to propose delay of the study.

The Chairman stated his concern that certain members were not fully prepared; those NESSG members who received the Input Document late were unable to fully study it and could not comment on its incompleteness. Following the technical briefings, which were thorough and technically rigorous, the Chairman concluded that he had two options: (a) cancel the study due to lack of member preparedness (as required by the Interim Guidance from DOE/DP-20) or (b) continue the study in violation of the Interim Guidance. The Chairman chose the latter option and reconvened discussions.

The staff has the following additional observations:

- a. At the time of the NESS, the facility and personnel were not ready to begin operations. For example: (1) procedures remained to be completed and approved; (2) operators were not trained and qualified on these procedures; (3) unneeded equipment remained to be removed from the bunkers; (4) unneeded energy sources were not locked out; (5) access denial blocks--large concrete blocks placed in front of the bunker doors to provide increased security--needed to be fabricated; and (6) forklifts needed to be modified to move these blocks. Certain NESSG members suggested that the facilities and operations be reviewed subsequent to the declaration of readiness for changes in nuclear explosive safety status and closeout of NESS recommendations. The Board's staff believes that if this NESS is not redone, it would be prudent to formally reconvene the NESSG subsequent to the formal declaration of facility readiness.
- b. The NESS Input Document did not include detailed analyses and results in certain areas, including thermal analyses and plutonium dispersal. Furthermore, as noted by the NESSG members themselves, the document arrived late to several NESSG members, preventing them from conducting an adequate document review. The Interim Guidance issued by DOE/DP-20 requires that "Input documents. . .include detailed information and analysis describing design and operations." Further, it requires that "Acceptable input documents shall be submitted to the members at least 30 calendar days prior to study commencement. The NESSG member must evaluate and judge the sufficiency of (the) Input Document."
- c. The reloading of the W-48 containers into the SST has not been treated with the same rigor as the remainder of the operation. The Board's staff inquired whether the scope of the NESS included future container reloading onto the SST for shipment to Pantex. An affirmative response was given, stating that it is the

reverse of the unloading operation; however, the subsequent live demonstration of reloading did not go smoothly. Performing this operation may not be as simple as reversing the unloading procedure steps and may need to be treated with greater care.

- d. Given the W-48's susceptibility to elevated temperatures, administrative limits have been established for maximum pit temperature (150 degrees Fahrenheit) and maximum exposure time of the shipping/storage container to direct sunlight (30 minutes). These limits, and the means by which they are satisfied, were closely scrutinized by the NESSG. The pit temperature is inferred from air temperature measurements made every two hours from a single, uncalibrated thermometer. The NESSG concluded that one thermometer was inadequate. The NESSG left it up to the LLNL thermal analyst to determine how many thermometers are needed, how frequently they should be monitored, and where they should be located.

5. **Future Staff Actions:** The staff will continue to evaluate for adequacy any readiness review activities. The staff will also review NESS Final Report recommendations for adequacy and closure for this operation.