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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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02-0000745



March 7, 2002

The Honorable Everet H. Beckner
Deputy Administrator for Defense Programs
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear Dr. Beckner:

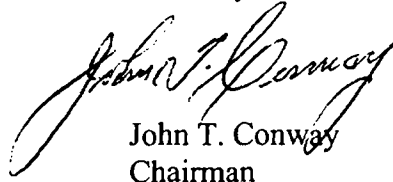
The Defense Nuclear Facilities Safety Board (Board) has observed significant improvements in the management of nuclear activities at the Nevada Test Site (NTS) during the past two years. The National Nuclear Security Administration's Nevada Operations Office (NNSA/NV) has achieved initial implementation of Integrated Safety Management and is now working to improve its safety management system, work control processes, and oversight.

However, assessment of the readiness of the Waste Examination Facility (WEF) to operate as a Hazard Category 3 (HC-3) nuclear facility did not demonstrate the rigor necessary to support such nuclear facility operations. Specifically, readiness was declared for this facility before controls from the Safety Analysis Report and Technical Safety Requirements had been implemented into facility operating and surveillance procedures. In addition, support programs, such as maintenance and training and qualification, were not adequate to support HC-3 nuclear facility operations. These comments by the Board are given because of the importance these lapses may have in safety of operation.

The Board is aware that NNSA/NV is addressing these deficiencies identified with the operation of WEF as an HC-3 nuclear facility. The Board expects that in doing so, NNSA/NV will ensure that corrective actions are appropriate to support all of the nuclear facilities at NTS. NNSA/NV should also pay particular attention to its capability to self-identify such conditions in the future. The Board plans to observe NNSA/NV actions to correct these deficiencies and wishes to stay apprised of future actions to support other nuclear facilities.

The enclosed report presents observations of the Board's staff on these issues and is provided for your information and consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "John T. Conway". The signature is fluid and cursive, with a large initial "J" and "C".

John T. Conway
Chairman

c: The Honorable Jessie Hill Roberson
Ms. Kathleen A. Carlson
Mr. Mark B. Whitaker, Jr.

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

January 28, 2002

MEMORANDUM FOR: J. K. Fortenberry, Technical Director

COPIES: Board Members

FROM: J. Deplitch

SUBJECT: Readiness of Waste Examination Facility

This report documents a review of the Waste Examination Facility (WEF) at the Nevada Test Site (NTS) conducted by the staff of the Defense Nuclear Facilities Safety Board (Board). The Board's staff reviewed the safety basis of the WEF and its readiness to begin operations as a Hazard Category 3 (HC-3) nuclear facility. It appeared to the Board's staff that Bechtel Nevada (BN) does not have in place the infrastructure needed to support operation of this nuclear facility. In addition, the issues identified indicate that the National Nuclear Security Administration's Nevada Operations Office (NNSA/NV) may not be providing adequate direction and oversight to its primary support contractor for nuclear facility operations.

Background. The WEF's mission is to provide for the examination, segregation, characterization, and repackaging of radioactive transuranic waste for shipment to the Waste Isolation Pilot Plant. BN, the NTS primary support contractor, is responsible for managing and operating the facility. The WEF is currently being operated as a radiological facility under an existing authorization basis. Its hazard designation is being upgraded from a radiological facility to a HC-3 nonreactor nuclear facility. This change will allow the WEF to manage larger inventories of radioactive materials per container and provide for greater operational flexibility in characterization and repackaging of wastes.

The WEF includes several elements. Principal among them is the Visual Examination and Repackaging Building, consisting of a glovebox, secondary confinement chamber, ventilation system, drum-handling equipment, and fire protection system. Other permanent structures include a standby diesel generator, a metal-covered drum-holding pad, a fabric-covered equipment storage area, and a transportation container configured for temporary office space. Temporary structures or trailers may be set up at the facility on an as-needed basis and may include equipment needed to perform nondestructive examination, nondestructive assay (including a segmented gamma system and a high-efficiency neutron counter), thermal conditioning, and headspace gas sampling.

Nuclear Facility Requirements. Until this past year, NNSA/NV viewed the Device Assembly Facility (DAF), which is not managed by BN, as the only nuclear facility at NTS. Consequently, no nuclear facility requirements were included in the Work Smart Standards

(WSS) and contract for BN. The only nuclear facility requirements in the WSS are found in List C—the set of requirements developed for the DAF. BN had not been organized, and had not developed programs and procedures, to support nuclear facility operations and nuclear safety. Nuclear programs at NTS have been the responsibility of the nuclear weapons design laboratories. The infrastructure of NNSA/NV for nuclear safety has been designed to support defense programs, particularly nuclear explosive safety and subcritical experiments, but not for the operation of nuclear facilities.

During the past year, NNSA/NV recognized that waste program activities include both HC-2 and HC-3 nonreactor nuclear facilities. Nonetheless, NNSA/NV attempted to prepare and approve the safety basis and operations for the WEF without addressing nuclear facility requirements. Partly in response to the Board's letter of October 15, 2001, on environmental management activities at Oak Ridge, NNSA/NV is now incorporating nuclear facility requirements in all of its contractor WSSs. In addition, BN has indicated it will begin the process of amending its prime contract to incorporate the applicable Department of Energy Orders for nuclear safety and nuclear operations into the WSS. Along with the application of nuclear facility requirements, NNSA/NV and BN will have to revise their infrastructures to support nuclear facility operations.

Readiness Assessment. The BN contractor readiness assessment (CRA), which was conducted during a period of several months, suffered from a number of deficiencies. Yet, despite the poor quality of the CRA and the clear indications it provided that the WEF was not ready, NNSA/NV accepted BN's declaration of readiness and began an NNSA/NV readiness assessment (RA).

Contractor Readiness Assessment—The BN CRA was not conducted to the standards of DOE Order 425.1B, *Startup and Restart of Nuclear Facilities*, even though the approved Plan of Action (POA) for the BN CRA included a commitment to do so. The CRA was not performance-based; it was started before readiness had been achieved; and its scope did not comply with the POA. Criteria and Review Approach Documents were not developed, and the implementation of controls from the Safety Analysis Report (SAR) and the Technical Safety Requirements (TSRs) was not adequately reviewed. No report was issued, and no lessons learned were formulated or considered. In spite of the CRA's deficient approach, lack of rigor, and weak documentation of results, many noteworthy findings were identified in the minutes and summary of comments of the BN CRA board. However, resolution and closure of the findings were inadequate. The WEF was not ready for the CRA, and the CRA drove the facility toward readiness instead of verifying readiness.

DOE Readiness Assessment—NNSA/NV began its WEF RA on December 10, 2001. The NNSA/NV RA team quickly and accurately identified the state of readiness of the WEF and appeared adequately competent and thorough to complete an effective assessment. A POA and Implementation Plan for the RA were prepared and implemented, and the results of the RA were satisfactorily reported to the NNSA/NV Manager.

BN requested that the RA be discontinued after the third day of the review upon realizing that the facility was not ready. Programs and procedures to implement controls had not been put in place. Operators had not been trained in or practiced the execution of procedures to

implement surveillance requirements and preoperational checks. In most cases, the procedures had not been developed.

Surveillance Requirements. The WEF has no system for tracking surveillances. Many surveillance requirements did not identify adequate acceptance criteria for successful performance of the TSR surveillances. There were no procedures or work packages for performing many of the surveillance requirements. Preventive maintenance tasks based on the requirements for a radiological facility (but much less rigorous) were being used to satisfy some of the TSRs, although there was no analysis of the acceptability of the maintenance to meet the TSRs.

Administrative Programs. Many administrative support programs (such as quality assurance, maintenance, training and qualification, Unreviewed Safety Questions [USQs], conduct of operations, and configuration management) were not adequately developed or implemented to meet the requirements of nuclear facilities as addressed in 10 Code of Federal Regulations (CFR) Part 830, *Nuclear Safety Management*.

Quality Assurance—BN developed a quality assurance program, submitted it to NNSA/NV, and considered it approved 90 days after submittal. This program did not meet the requirements of 10 CFR Part 830, Subpart A, and has not been approved by NNSA/NV.

Maintenance Program—The WEF maintenance program did not comply with requirements of DOE Order 433.1, *Maintenance Management Program for DOE Nuclear Facilities*. No maintenance standard was included in the BN contract with NNSA/NV. The WEF maintenance program did not include a maintenance implementation plan. Many pressure sensors and indicators did not have calibrations, and calibrations had not been identified to meet TSRs. Maintenance to support TSRs and surveillance requirements had not been incorporated into the facility's requirements. There was no mechanism to ensure that facility equipment would undergo recommended vendor maintenance and no procedures or guidance for maintenance support from outside the facility.

Training and Qualifications—Training and qualifications appeared adequate for a radiological facility; however, they did not appear to meet the additional rigor necessary for an HC-3 nuclear facility. The WEF had an approved training implementation plan, but the plan had not been implemented, and there were no compensatory measures being taken. Training was not adequate for facility operators or outside maintenance support to perform surveillance requirements or preoperational checks, which had not been practiced before the RA demonstrations.

Unreviewed Safety Questions—BN's USQ procedure had not been implemented at the WEF, nor did it appear that BN had implemented the infrastructure needed to support the USQ process. Only one BN staff member had USQ training; moreover, his training was not current, and he was not assigned to the WEF. No one at the WEF had completed USQ training.

Emergency Preparedness—The Emergency Management Hazard Assessment (EMHA) was not adequate. It did not address all the accidents in the WEF SAR or the increased quantity of hazardous material due to the shift from radiological to HC-3 operations. Emergency action

levels and protective action recommendations did not reflect HC-3 operations. The program for drills and exercises did not address appropriate scenarios for significant accidents or the frequency and participation for drills and exercises.

NNSA/NV Oversight. NNSA/NV did not take appropriate action, and conducted its RA when it was apparent that the BN CRA had been insufficient and the WEF was not ready. It appeared that NNSA/NV line management and the facility representative did not understand the flowdown of controls from the SAR and TSRs at the WEF. It also appeared that the facility representative was not adequately knowledgeable of the contents of the WEF SAR and TSRs.

Path Forward. It appears that NNSA/NV and BN currently understand the severity of the above issues and are identifying corrective actions. Steps are being taken to address and apply appropriate nuclear facility requirements. A BN CRA will be conducted before the NNSA/NV RA is resumed. However, the staff believes that NNSA/NV and BN need to review their organizations' capabilities to support nuclear facility operations in light of their limited nuclear facility expertise and take appropriate actions to enhance those capabilities as necessary. Organizational changes and more rigorous training and qualification appear to be required.