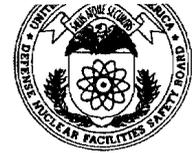


John T. Conway, Chairman  
A.J. Eggenberger, Vice Chairman  
John W. Crawford, Jr.  
Joseph J. DiNunno  
Herbert John Cecil Kouts

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004  
(202) 208-6400



December 18, 1995

The Honorable Thomas P. Grumbly  
Assistant Secretary for Environmental Management  
Department of Energy  
Washington, D.C. 20585-0113

Dear Mr. Grumbly:

The Defense Nuclear Facilities Safety Board's (Board) staff observed the Savannah River Site (SRS) Emergency Preparedness (EP) Annual Exercise on November 14, 1995, involving an assumed rupture of the Organic Waste Storage Tank at the Defense Waste Processing Facility (DWPF). This exercise was also intended to demonstrate the adequacy of EP as part of the contractor's and the Department of Energy's (DOE) Operational Readiness Reviews. The exercise was not sufficiently challenging in that it did not assume any radioactive material release and therefore did not address areas where deficiencies may exist in responding to radiological hazards. The enclosed trip report is provided for your information.

The Board has noted the proximity of the Central Training Facility (CTF) to DWPF and the number of transient occupants expected to be using the training facility. As demonstrated in the EP drill, the amount of time for CTF respondents to receive notification and enter into emergency procedures to shut down the ventilation system would not have been sufficient to prevent benzene intake by building occupants had the wind been in that direction. Specifically, less than three minutes would be available to receive notification and react even under a 5 mph wind speed.

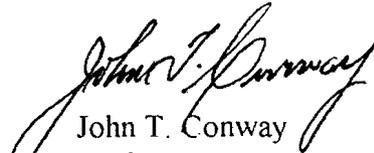
The Board discussed this topic at its meeting at SRS on November 16, 1995, and believes that further evaluation of the CTF's capability to effectively respond to a release at DWPF as well as H-Canyon/HB-Line and the Replacement Tritium Facility would be prudent.

Therefore, pursuant to 42 U.S.C. § 228b (d), the Board requests that DOE provide justification that CTF has the ability to respond to postulated accidents originating from the aforementioned hazardous facilities. This should include, for an appropriate spectrum of challenging accidents and weather conditions, an evaluation of:

- Credible accident response times
- Expected response measures
- Evacuation routes and means
- Identification of hardware and/or operational procedure upgrades which would provide a higher level of safety
- Cost-safety benefit of implementing identified beneficial hardware and/or operational procedure upgrades

The Board requests that the above report be submitted within 75 days of receiving this letter.

Sincerely,



John T. Conway  
Chairman

c: Mr. Mark Whitaker  
Dr. Mario Fiori  
Mr. A. Lee Watkins

Enclosure

**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

November 30, 1995

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**COPIES:** Board Members

**FROM:** J. Deplitch

**SUBJECT:** Report on the Savannah River Site (SRS) Emergency Preparedness (EP) Defense Waste Processing Facility (DWPF) Site Exercise

- 1. Purpose:** This report documents Defense Nuclear Facilities Safety Board's (Board) staff observations made during the conduct of the Savannah River Site (SRS) Defense Waste Processing Facility (DWPF) Emergency Preparedness (EP) Annual Exercise on November 14, 1995, and follow-up reviews. Board staff observers were J. Deplitch and D. Thompson.
- 2. Summary:** SRS performed an emergency preparedness exercise at DWPF. The exercise was intended to fulfill both the annual site-level exercise requirement and the EP portion of the Operational Readiness Reviews (ORR) for DWPF startup. The exercise involved a benzene spill scenario requiring a simple response. The seemingly inconsequential problem areas and activities noted on the exercise would likely lead to significant deficiencies with a more complicated scenario and comprehensive response. Problems were observed in notifications, communications among the emergency response organizations, confirmation of the damage to the storage tank and the extent of the accident, consequence assessment, field surveys, and public information.

The Central Training Facility (CTF), Building 766-H, located west of DWPF, has only superficial procedures to protect the large transient population normally present before an airborne release from DWPF reaches the CTF. The close proximity to DWPF leads to protective action requirements within five minutes at nominal wind speeds. Emergency notifications and protective actions have not been observed and may not be attainable in such a short time.

- 3. Background:** The scope of the SRS EP DWPF Site Exercise was to evaluate the preparedness of emergency response personnel, procedures, facilities, and supporting systems for an emergency at DWPF. It was also intended to evaluate DWPF's ability to recognize, respond, and control a declared emergency as well as coordinate actions with the site emergency response organization. SRS controlled, evaluated, and critiqued the exercise. Department of Energy (DOE) Headquarters Office of Emergency Management (NN-60) provided external evaluation. Westinghouse Savannah River Company and DOE ORR Team members observed the exercise.

The site has an annual requirement to exercise the response capability of each facility and for the site-level emergency response organization elements and resources to participate in a minimum of one exercise. Training and drills are performed periodically to develop and maintain specific emergency response capabilities. Drills provide supervised, hands-on training for members of emergency response organizations. Exercises are used to validate the elements of the emergency management program. A site exercise is designed to test and demonstrate the site's integrated emergency response capability.

The simulated DWPF accident involved the following: a 90-ton rough terrain crane rammed into the southeast side of the Organic Waste Storage Tank (OWST) at a high rate of speed. The driver had an apparent heart attack, lost consciousness, slumped forward, and accelerated the crane into the OWST. The crane boom penetrated both the inner and outer tanks about four feet above the ground. The OWST leaked and spilled 7,000 gallons (out of 35,000 gal.) of benzene with no radioactive component onto the ground at a rate of approximately 95 gallons per minute. The benzene leak created a toxic vapor, fire, and explosive hazard. The crane driver and flagman were both moderately exposed to the benzene vapors.

#### **4. Discussion/Observations:**

The Board's staff observed activities of exercise conduct and control and activities at the accident scene, incident command post (ICP), DWPF Area Emergency Facility, SRS Emergency Operation Center (EOC), and Joint Information Center (JIC). SRS and DWPF made notifications, activated their response organizations, and acted to mitigate the hazards; the DWPF took protective actions. The Board's staff also reviewed DWPF hazard assessments and emergency action level (EAL) procedures and the CTF protective action procedures.

The exercise was simplistic and uncomplicated. The exercise was generally limited to DWPF activities, SRS fire department and Operations, Emergency Operations, and Public Information Centers. The hazard was limited to benzene from the OWST with no radioactivity. The meteorological conditions directed the hazard away from adjacent facilities and areas and toward the least populated portion of DWPF and S-Area. Protective actions required only remaining inside, closing doors and windows, and shutting off ventilation. No personnel accountability was required. DWPF emergency response drills and exercises that are more representative of the spectrum of DWPF hazards should be reviewed and/or observed to support an acceptable ORR finding concerning emergency preparedness.

The emergency classification was inappropriately downgraded from a Site Area Emergency to an Alert. There was no accurate assessment of the damage to the tank. The crane boom was not removed from the tank and the holes were not patched. The fire and explosive hazards still existed. Additionally, DOE Order 151.1, *Comprehensive Emergency Management System*, prohibits downgrading emergencies unless they were initially incorrectly categorized.

The CTF is located approximately 250 meters from the DWPF stack. With a wind speed of 2 to 5 mph the facility would have less than five minutes, possibly as little as two minutes, to take protective actions. Recognition of emergencies, the need for protective actions, and the dissemination of notifications has not been observed within ten minutes and usually takes closer to 30 minutes. Presently the CTF is notified by H-Area. The impact of hazards on the CTF should be evaluated thoroughly and methods for timely protective action notifications at the CTF should be determined and implemented.

**5. Future Staff Actions:**

The staff intends to review the SRS and DOE, Office of Emergency Management, evaluation reports, when they are issued, and issue a supplemental report, if appropriate. The staff will review actions and developments to ensure adequate protective actions are implemented at the SRS CTF and monitor the conduct of future emergency preparedness exercises.