

Peter S. Winokur, Chairman  
Jessie H. Roberson, Vice Chairman  
Joseph F. Bader  
Sean Sullivan

**DEFENSE NUCLEAR FACILITIES  
SAFETY BOARD**

Washington, DC 20004-2901



March 21, 2014

The Honorable Ernest Moniz  
Secretary of Energy  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-1000

Dear Secretary Moniz:

In a letter dated March 4, 2014, Senator Udall and Senator Heinrich from New Mexico requested that the Defense Nuclear Facilities Safety Board (Board) provide our initial assessment of two recent events at the Department of Energy's Waste Isolation Pilot Plant in Carlsbad, New Mexico and the on-going response to them, as well as our perspectives on actions needed to prevent or minimize similar occurrences. The two events were a fire on February 5, 2014, and a release of radioactive material on February 14, 2014. The attached letter is the Board's response to the Senators' request and is provided for your information and use.

Sincerely,

Peter S. Winokur, Ph.D.  
Chairman

Enclosure

c: Mrs. Mari-Jo Campagnone  
Response Letter to Senator Tom Udall and Senator Martin Heinrich

Peter S. Winokur, Chairman  
Jessie H. Roberson, Vice Chairman  
Joseph F. Bader  
Sean Sullivan

**DEFENSE NUCLEAR FACILITIES  
SAFETY BOARD**

Washington, DC 20004-2901

March 21, 2014



The Honorable Tom Udall  
United States Senate  
730 Hart Senate Office Building  
Washington, D.C. 20510

The Honorable Martin Heinrich  
United States Senate  
702 Hart Senate Office Building  
Washington, D.C. 20510

Dear Senator Udall and Senator Heinrich:

As requested in your letter dated March 4, 2014, the Defense Nuclear Facilities Safety Board (Board) provides our initial assessment of two recent events at the Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico, and the on-going response to them, as well as our perspectives on actions needed to prevent or minimize similar occurrences. The two events were a fire on February 5, 2014, and a release of radioactive material on February 14, 2014. The Board and its staff are monitoring DOE activities to ensure the WIPP site is placed in a safe and stable configuration, and response and recovery actions proceed in a deliberate, safe manner.

The Board is reviewing available information to assess the causal factors, emergency response, recovery activities, and corrective actions for both events. Operations at the WIPP site were not performed with the rigor necessary for a hazard category 2 defense nuclear facility, especially for operations that were deemed to be nonnuclear in nature. Both the federal and contractor workforce proved unprepared for emergency response. No one was seriously hurt in either event, but these were both near misses.

It was fortunate that the salt truck fire in the WIPP underground did not result in serious injuries among the 86 workers who evacuated from the mine. Inadequate maintenance of this vehicle made it susceptible to fire. The actions taken by facility personnel in immediate response to the February 5, 2014, fire revealed further problems. Emergency notifications were not performed per procedure, mine ventilation was inappropriately switched to reduced flow filtered ventilation mode before all personnel were evacuated (causing smoke and other combustion gasses to fill evacuation routes), some workers had difficulty with or did not use self-rescue devices, and evacuation strobe lights were not activated in a timely fashion. Since 2010, the Board has sent four letters to DOE that revealed flaws in WIPP's fire protection program, maintenance practices, activity-level work planning and execution, and electrical safety program. Our staff has followed up and has observed incremental improvements; however, some issues, particularly those that identified fire hazards and associated risks for underground operations



were not adequately addressed in the facility Fire Hazard Analysis. Thus it is the Board's initial assessment that this accident was preventable.

The DOE investigation report released on March 13, 2014, identifies 35 "Judgments of Need" for near- and long-term corrective actions to prevent or minimize the probability or severity of a recurrence. The Judgments of Need cover a broad spectrum of concerns in the areas of maintenance, conduct of operations, fire protection, emergency preparedness and response, training and qualification, quality assurance, oversight by the DOE field office and headquarters, and nuclear safety culture. The Board will assess DOE's effectiveness in taking corrective actions in response to the Judgments of Need.

The cause of the radioactive material release on February 14, 2014, is still unknown, nor do we know how susceptible the underground may be to further releases. As result of its initial assessment, the Board wrote to the Secretary of Energy on March 12, 2014, pointing out that the ventilation system is not a designated safety system and has not been operated, maintained, and protected consistent with its current function to guard against further release of radioactive material from the mine. The Board advised DOE to thoroughly evaluate the safety controls and contingency plans necessary to maintain confinement to ensure adequate protection of the workers and public.

The Board also assesses the initial response to the release event as unsatisfactory. Shelter in place instructions were not given until ten hours after the first indication of a problem, and over four hours after a release had been confirmed by local readings. As a result, the internal contamination level of workers, although minor, was nevertheless greater than necessary. The local WIPP Emergency Operations Center was ineffective, and the DOE emergency center at headquarters in Washington, DC, was never notified, as would have been appropriate.

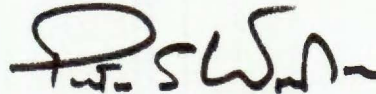
Understanding the root cause of the release event is essential to determine the needed scope of corrective actions to help reduce the chance of similar events, or reduce their potential consequences. Significant improvements in the safety strategy for WIPP are warranted to address design basis accidents that lead to radiation releases. For example, neither the filtered ventilation system nor the underground air monitor that triggered the ventilation system to switch to filtered mode is a credited safety system. In fact, for six days after the fire, no underground air monitors were operational. Had there been a failure on February 14 of the air monitor or filtered ventilation system, or if the release event had occurred three days earlier, the release of radioactive material from the aboveground mine exhaust would have been orders of magnitude larger. Until the cause of the radiation release is fully understood, these systems represent a real vulnerability to continued operations in the underground. DOE will need to upgrade the safety basis, engineered safety systems, and key safety management programs to support future waste disposal operations at WIPP. In accordance with DOE's safety directives, a formal Operational Readiness Review will also be required before waste disposal resumes.

To ensure that the ongoing recovery actions proceed safely, DOE and the WIPP contractor need to continue key, conservative actions that reduce the likelihood and mitigate the

potential consequences of another event. These actions include the ongoing efforts to improve the performance and reliability of the filtered ventilation system; execution of the Unreviewed Safety Question process in accordance with 10 CFR Part 830, *Nuclear Safety Management*, to understand the safety basis implications of the radiological event, including conservative identification of compensatory measures; interim improvements in WIPP's emergency management capabilities for a subsequent event; enhanced oversight by DOE headquarters personnel; and near-term action to address the Judgments of Need identified by DOE's Accident Investigation Board.

The Board has maintained a staff presence at WIPP since February 6 to gather information and provide oversight of investigation and recovery activities by DOE and the WIPP contractor. The Board and senior staff members are reviewing the recovery activities to ensure actions are safe and include appropriate work suspension guidelines, and the Board will communicate with DOE as appropriate. Please do not hesitate to contact us if you have any additional questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "P. S. Winokur". The signature is stylized and cursive.

Peter S. Winokur, Ph.D.  
Chairman

c: Mrs. Mari-Jo Campagnone