

Patricia L. Lee

**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

Washington, DC 20004-2901



April 15, 2026

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

Dear Secretary Wright:

The Defense Nuclear Facilities Safety Board (Board) has worked with the U.S. Nuclear Regulatory Commission to include data related to the location of Department of Energy (DOE) sites with defense nuclear facilities into the U.S. Geological Survey (USGS) ShakeCast system. The USGS ShakeCast is a web-based automated notification system that provides near-real-time ground shaking estimates at specific sites and is utilized by safety regulators for nuclear power plants around the world. By including this data in the system, the Board's staff will now receive notifications of respective ground motion levels at DOE sites with defense nuclear facilities when earthquakes of a certain magnitude occur nearby. This enhancement improves the Board's oversight of seismic safety for these DOE sites.

The Board encourages DOE to adopt the notification system. This would provide a significant benefit by ensuring that facility operators receive timely notifications when earthquakes occur near DOE sites with defense nuclear facilities. The information provided from these notifications can assist DOE in making timely and informed decisions after such an emergency event. The enclosure discusses the benefits to DOE in more detail.

Sincerely,

Dr. Patricia L. Lee
Board Member

Enclosure

c: Mr. Joe Olencz, Director, Office of the Departmental Representative to the Board

Enclosure

The U.S. Geological Survey (USGS) ShakeCast system is a web-based automated notification system that provides near-real-time ground shaking estimates at specific sites. These estimates are based on recordings from regional seismic instrumentation networks and calculations using ground motion prediction equations. The U.S. Nuclear Regulatory Commission (NRC) and the International Atomic Energy Agency collaborated with the USGS to further enhance the system into the Nuclear ShakeCast system, which is applied to commercial nuclear power plants.

The Defense Nuclear Facilities Safety Board's (Board) staff worked with the NRC's staff to include data related to the location of Department of Energy (DOE) sites with defense nuclear facilities into the USGS ShakeCast system. As a result, the Board's staff now receives notifications of respective ground motion levels at DOE defense nuclear facilities when earthquakes of a certain magnitude occur nearby. DOE would receive the following benefits from adopting this system:

- Section 3f in Chapter IV of DOE Order 420.1C, *Facility Safety*, requires facility operators to inspect for damage from severe natural phenomena hazards, such as earthquakes, and placing facilities into a safe configuration when damage has occurred. However, it is often difficult to determine whether earthquake damage has occurred as failures of equipment or components may not be visible. The operators could use the ground motion estimates provided by the USGS ShakeCast system to assess whether the earthquake shaking exceeded the design criteria for structures, systems, or components that perform a nuclear safety function.
- Many DOE sites have seismometers that record ground motion level at particular facilities. However, these instruments require continuous maintenance and calibration to ensure accurate data. When an earthquake occurs nearby and seismometers fail to provide usable data, facility operators may lack the information necessary to determine whether to continue or suspend operations. For example, in 2018, a magnitude 4.0 earthquake occurred near Amarillo, Texas, causing ground shaking at the Pantex Plant (Pantex). At the time, the only onsite seismometer was not functioning. As a result, site personnel were unable to retrieve the earthquake data. If Pantex was included in the USGS ShakeCast system at that time, the notifications could have provided valuable information to the operators. When onsite seismometers are fully operational, the USGS ShakeCast system can complement onsite recordings, because some DOE sites are geographically extensive.
- As noted above, the USGS ShakeCast system provides notifications of ground shaking estimates at specific sites after a nearby earthquake occurs. These near-real-time notifications could assist DOE in making timely and informed decisions after such an emergency event. Other public organizations and emergency responders utilize this system for such purposes.