DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 14, 2026

Sandia National Laboratories (SNL) Cognizant Engineer Report for July 2026

Staff Activity: Two members of the Board's staff visited SNL during the week of July 6, 2026. Activities included observation of the emergency exercise, discussions with site personnel about protective actions for nuclear and nearby non-nuclear facilities, and discussions regarding upcoming experiments and projects at the Annular Core Research Reactor (ACRR).

Emergency Management: On July 7, 2026, SNL conducted an emergency exercise at the Sandia Pulsed Reactor Facility. The scenario involved a forklift accident during movement of a nuclear fuel storage container, with a subsequent fire and one injured worker, but no significant personnel contamination or contamination spread outside the immediate area. This was a functional exercise rather than a full-scale one. Kirtland Air Force Base's Fire and Emergency Services (KFES) personnel and resident workers in Technical Area V were full participants, while the Sandia Emergency Operations Center and certain other organizations were simulated. Emergency management personnel are preparing their after-action report. The staff observed that KFES personnel responded to the event in a timely manner and worked effectively through operational challenges but had some minor facility access issues that may be addressed by integrating more effectively with SNL and visiting nuclear facilities on a more frequent basis. The memorandum of agreement between the two agencies is currently being revised.

Technical Area V (TA-V) – Operations: ACRR has several different mechanisms to control reactivity during operations. One method of reactor control consists of a set of three transient rods, each of which consists of an assembly of boron carbide and void sections in the fueled region of the reactor, attached to a pneumatic drive mechanism above the core. During pulse operations, these assemblies are quickly withdrawn from the reactor core to produce radiation pulses, which are used for various experiments. During an experiment earlier this month, personnel discovered that one of the transient rod assemblies had broken off from the pneumatic drive mechanism, meaning that it remained fully inserted into the core. Since the reactor's reactivity is lowest when the transient assembly is fully inserted, this was a safe condition. TA-V personnel were able to retrieve the broken-off assembly, install a spare, and re-perform the experiment in progress.

This failure was similar to another event in 2014, when the same transient rod broke at a similar location; this was reported in DOE's occurrence reporting and processing system. Due to the repeated stresses intrinsic to the reactor's pulse operations, transient rods are expected to fail occasionally and are constructed in a way that allows them to fail safe. However, the causal analysis report for the 2014 event noted that the same transient rod had also previously experienced a number of other malfunctions, while the other two transient rods did not fail at the same frequency. Given the fail-safe nature of the transient rod design, resources were not allocated at the time to further prevent potential failures. However, following this most recent event, personnel are evaluating options to help mitigate this issue going forward.