

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 5, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Sandia National Laboratories (SNL) Report for June 2024

Defense Nuclear Facilities Safety Board (Board) Staff Interactions: On June 17–20, 2024, the Vice Chair, members of the Board’s technical staff, and the Board’s cognizant engineer for SNL were on site to observe the SNL full-participation annual emergency exercise and to meet with Sandia Field Office (SFO) and National Technology and Engineering Solutions of Sandia, LLC (NTESS) managers and staff. The Board’s team walked down Technical Area V (TA-V), including the Annular Core Research Reactor Facility (ACRRF), Auxiliary Hot Cell Facility (AHCF), Sandia Pulsed Reactor/Critical Experiment (SPR/CX) Facility, and the Gamma Irradiation Facility (GIF).

CyberShock 24 – SNL Full-Participation Annual Emergency Exercise: On June 18, 2024, SNL conducted CyberShock 24, a full-participation annual emergency exercise. The exercise involved extensive offsite play, including from Kirtland Air Force Base, several nearby localities and hospitals, the local National Nuclear Security Administration (NNSA) Radiation Assistance Program Team, and the Nuclear Emergency Support Team. The scenario involved an earthquake causing damage to the ACRRF in TA-V, as well as the Hazardous Waste Handling Unit and the Kirtland Air Force Base burn tower. Concurrent with these emergencies, the exercise included cybersecurity-related attacks on SNL infrastructure as well as a general disruption to cellular service due to overloaded towers. This exercise was the first conducted in the new SNL emergency operations center (EOC). The staff team observed the exercise at the event scene in TA-V, the TA-V incident command post, the emergency management communications center (EMCC), and EOC. The staff team will review the after action report for the exercise when it is available.

Annular Core Research Reactor (ACRR) Potential Inadequacy of the Safety Analysis (PISA): On June 3, 2024, the ACRR operations team declared a Technical Safety Requirement (TSR) Safety Limit violation and a PISA following the identification of new information that the fuel cladding could exceed the TSR Safety Limit temperature under certain conditions. On June 6, 2024, NTESS determined that the required conditions for the TSR Safety Limit violation were not met, since there was no evidence in operational data that indicated a Safety Limit had been violated. NTESS continued the PISA process, completing an Unreviewed Safety Question Determination (USQD) on June 25, 2024, which was positive. In addition to the PISA/USQD process, NTESS completed an evaluation to determine a safe operating level that could be implemented as a compensatory measure. Following concurrence from both the SNL Laboratories Director and the SFO Field Office Manager, NTESS returned the ACRR to an operational status with limitations, which include pulse size restrictions. The Board’s staff will continue to monitor the completion of the USQD process including the development and approval of a final justification for continued operation.

Approval of Hazard Category 3 (HC-3) Experiments at the ACRRF: On June 3, 2024, the SFO Manager/Startup Authorization Authority approved an extension of the period of proficiency for NTESS to conduct HC-3 experiments at the ACRRF. SFO Nuclear Operations Team members observed activities at the ACRRF during April and May 2024 and recommended an extension of proficiency for HC-3 experiments to May 2025. The SFO team also determined that a readiness review for these activities was not required.