

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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TO: Christopher J. Roscetti, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Sandia National Laboratories (SNL) Report for March 2023

Transient Rod Withdrawal (TRW) Federal Readiness Assessment (FRA): From February 27 to March 3, 2023, a National Nuclear Security Administration FRA team completed their assessment of TRW operations at the Annular Core Research Reactor (ACRR). The FRA Team performed their review in accordance with the requirements of Department of Energy (DOE) Order 425.1D, *Verification of Readiness to Startup or Restart Nuclear Facilities*, and DOE Standard 3006-2010, *Planning and Conducting Readiness Reviews*. ACRR operators employ the TRW sub-mode to create a tailored power profile with repeatable pulsing resulting in low dose rate fluences. ACRR staff implemented a software change to resume TRW sub-mode operations. During the assessment, the FRA team reviewed more than two hundred documents; conducted more than twenty interviews; and completed eight observations, including pre-job and post-job briefings, work performance demonstrations, simulations, and facility and equipment walkdowns. The FRA team witnessed all evolutions in person and conducted interviews both in person and virtually. The FRA team identified two pre-start findings and six post-start findings. In addition, the FRA team noted eighteen observations that did not rise to the level of findings, including three noteworthy practices. The FRA team findings encompassed improvements to the Restart Plan; software design document updates; Configuration Management Program assessments; the nuclear maintenance management program; software quality assurance procedures, plans, and oversight; and the implementation of training requirements. While the FRA team noted several issues that need to be evaluated for corrective actions prior to declaration of readiness to restart, the FRA team concluded that the equipment, procedures, and personnel are adequate to support restart of TRW sub-mode operations. National Technology and Engineering Solutions of Sandia, LLC (NTESS) staff will prepare a corrective action plan to address the FRA findings and observations.

Technical Area V (TA-V) Emergency Management (EM) Drill: On March 14, 2023, NTESS staff conducted an EM drill at the Auxiliary Hot Cell Facility in TA-V that included TA-V, EM, and Kirtland Fire and Emergency Services personnel. The drill scenario involved the transfer of a bagged, contaminated air filter from the hot cell to the processing area using the overhead crane. During the transfer, the filter suddenly broke through the bag, hit the concrete floor, bounced, hit an employee in the leg, and came to a stop outside the processing area. This operational drill demonstrated concepts and protocols for responding to a radiological emergency involving radiological material and a contaminated patient at TA-V, and gave participants the opportunity to train to response strategies, actions, and processes, and to improve proficiency responding to a given simulated emergency at TA-V. Participants responded based on their knowledge of current plans, procedures, capabilities, and training. The drill allowed the participants to practice and demonstrate their knowledge of assigned duties, responsibilities, and response actions being taken, and gain a better understanding of the decision-making process and the benefits or consequences of those decisions. NTESS is completing a report summarizing the results.

Sandia Pulsed Reactor/Critical Experiment (SPR/CX) Defense-in-Depth (DID) Controls for Fire Events: SPR/CX staff installed a large tarp (marked with an emblem “W” that signifies “No Water”) near the SPR/CX tank as an additional DID control for firefighting scenarios. NTESS noted the purpose of the control is to reduce the likelihood that water could be sprayed into the SPR/CX tank and mitigate the amount entering if water is inadvertently sprayed toward the SPR/CX tank. NTESS considers this additional signage a final DID measure if all other barriers fail during a fire event.