

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 1, 2025

TO: Technical Director
FROM: Sandia National Laboratories (SNL) Cognizant Engineer
SUBJECT: SNL Report for July 2025

Evaluation of the Safety of the Situation (ESS) for the Annular Core Research Reactor (ACRR):

On July 17, 2025, the ACRR facility manager submitted an ESS to the Sandia Field Office (SFO) in response to a Potential Inadequacy of the Safety Analysis (PISA) and a positive Unreviewed Safety Question determination related to potential worker consequences from the rupture of waterlogged ACRR fuel elements. The ACRR facility manager declared the PISA based on analysis of the results of historical nuclear reactor transient experiments that provided additional information on potential facility worker consequences in analyzed accidents for the ACRR facility (See SNL Monthly Report for [June 2025](#)). Using the results of historical nuclear reactor transient experiments, ACRR staff members computed a scaling factor by assuming a proportional relationship between dose and pulse power. ACRR staff then applied the scaling factor to calculate the facility worker dose for the postulated ACRR waterlogged fuel element accident. The ESS noted that radiation doses at five feet or greater from the reactor pool for an event rupturing seven ACRR fuel elements are expected to remain within the same consequence bin in the hazard analysis completed in the ACRR Documented Safety Analysis (DSA), including a margin for uncertainty. Therefore, the ACRR facility manager implemented a compensatory measure requiring workers to remain five feet or greater from the reactor pool during a pulse. The ESS also noted that four additional compensatory measures currently in place due to a previous PISA related to fuel element cladding temperature will also reduce the risk by reducing potential worker exposure (See SNL Monthly Report for [July 2024](#)). The ESS noted that the technical bases for the ACRR DSA and Technical Safety Requirements (TSR) will be updated with revised hazard evaluations and/or controls. The ESS stated that until changes are implemented in the approved DSA and TSR, the ESS will serve as a modification of the safety basis. SFO is currently evaluating the ESS. In addition, the Board's ACRR Fuel Health Program review team is assessing the assumptions, calculations, and conclusions in the ESS as part of their review.

Mixed Waste Landfill (MWL) – Annual Long-Term Monitoring and Maintenance Report, April 2024 – March 2025:

NTESS recently submitted the Mixed Waste Landfill Annual Long-Term Monitoring and Maintenance Report, April 2024 – March 2025, to the New Mexico Environment Department. The report documents MWL monitoring, inspection, maintenance, repair, and regulatory activities and results for the reporting period. All monitoring activities were conducted in accordance with Long-Term Monitoring and Maintenance Plan (LTMMP) requirements, and no monitoring results exceeded LTMMP trigger levels. The report also noted that inspections of the MWL final cover system, stormwater diversion structures, compliance monitoring systems, and security fence were performed in accordance with LTMMP requirements, and that required maintenance and repairs were minor and completed at the time of the inspections. Based on the monitoring, inspection, maintenance, and repair results, the evapotranspirative cover and controls are performing as designed. No media-specific trigger levels were exceeded, and all monitoring results are consistent with historical MWL monitoring data. Industrial land use and the requirement to prevent evapotranspirative cover disturbance were maintained in accordance with the LTMMP. The report concluded that MWL site conditions remain protective of human health and the environment.