DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 2, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Daniel B. Bullen, Ph.D., P.E., Cognizant Engineer
SUBJECT: Sandia National Laboratories (SNL) Report for September 2020

COVID-19 Response: During September 2020, the Sandia Field Office (SFO) and National Technology and Engineering Solutions of Sandia, LLC (NTESS) remained in Phase 2 of their return-to-site plans. Phase 2 includes a majority of the SFO and SNL staff continuing to telework in response to the COVID-19 pandemic. The transition to Phase 3 of these plans remains contingent on continued improvement of COVID-19 conditions in the counties surrounding SNL.

Annular Core Research Reactor Facility (ACRRF) Status: ACRRF staff resumed reactor operations to support high-priority programmatic experiments on September 21, 2020. The remaining programmatic experiments planned for the ACRRF are currently scheduled to be completed in the first quarter of fiscal year 2021. Following completion of these experiments, the ACRRF will return to maintenance mode to allow the ACRRF staff to complete the removal of the neutron radiography tube and undertake visual fuel element inspections to meet annual surveillance requirements in the current ACRR Limiting Condition of Operations (LCO 3.0.7).

Acceptance Testing for Spare ACRR Fuel Elements: NTESS management approved the Acceptance Test Plan (ATP) for Spare ACRR Fuel Elements in August 2020. The Test Plan provides details on the inspections intended to ensure the spare fuel elements still meet fabrication acceptance criteria, after decades of storage, prior to placing any accepted elements into the core for ACRR programmatic operation. The ATP includes; dimensional inspections, including diameter and length, and recording element weight; visual inspection of fuel element seal welds, including top and bottom end-cap welds, the helium backfill tube to top end-cap weld, and the backfill tube crimp weld; helium leak checks; and, if required, inspections using x-ray radiography, ultrasonic testing, dye penetrant testing, or computed tomography scans. On September 7, 2020, Technical Area V (TA-V) staff began dimensional inspections and helium leak checks of the spare fuel elements in the Auxiliary Hot Cell Facility. TA-V staff completed dimensional inspections, helium leak checks, and visual inspection of fuel element seal welds. As of September 25, 2020, seven out of ten ACRR spare fuel elements were determined to meet requirements. A total of 30 spare ACRR fuel elements will be inspected.

Approval of the Revised Plan of Action (POA) for the Readiness Review for In-Service Fuel Cladding Inspections at the ACRRF: On September 4, 2020, SFO approved the revised POA for the readiness review for in-service fuel cladding inspections at the ACRRF. SFO noted that the revised POA adequately resolved the comments previously provided by the field office review team. NTESS noted that the overall fuel health program will include qualification of non-irradiated spare fuel elements to be used as replacements for in-service fuel elements that do not pass inspection. NTESS plans to inspect and qualify non-irradiated spare fuel elements using hermeticity testing (aka, helium bombardment leak check), fluorescent dye penetrant testing, and x-ray radiography and computed tomography, if necessary. NTESS also stated that these in-service inspections will not include evaluation of control rods or safety rods, which will be addressed separately from this readiness activity. The Federal Readiness Assessment for the in-service fuel element cladding inspection activity is currently scheduled for February 2021.