

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 4, 2015

TO: Steven A. Stokes, Technical Director
FROM: John R. Mercier, Cognizant Engineer
SUBJECT: Sandia National Laboratories Report for November 2015

Staff Activity at Sandia National Laboratories (SNL): During the week of November 16–20, 2015, the Defense Nuclear Facilities Safety Board’s (Board) Cognizant Engineer shadowed a reactor operations review (see discussion below).

Annular Core Research Reactor (ACRR) Operations Review: During the week of November 16–20, 2015, the Department of Energy (DOE) Office of Nuclear Safety and Environmental Assessments (EA-31) conducted the onsite portion of their nuclear reactor facility operations review. The EA-31 team reviewed reactor operator qualification and training programs, logs and records for reactor operations, ACRR facility safety self-assessments, safety processes for experiments, compliance with reactor facility technical safety requirements, compliance with radiation protection requirements, and effectiveness of local DOE field office oversight. On November 20, the EA-31 team provided an outbriefing to SNL and DOE Sandia Field Office (SFO) personnel with preliminary results of their review that included fourteen opportunities for improvement and no formal findings.

Immediately following the EA-31 team outbriefing, the Board’s Cognizant Engineer also shared his observations with SNL and SFO personnel on November 20, 2015. The Board Cognizant Engineer observed evidence of a thorough reactor operator qualification program, an excellent performance by a reactor operator executing an ACRR reactor startup procedure, and implementation of a best practice to provide real-time awareness to reactor staff and managers throughout the facility of narrative entries into the reactor operations log in real time. The Board’s Cognizant Engineer observed evidence of a lack of familiarity with ACRR monitoring systems by some SFO staff. Also, the Cognizant Engineer learned that SNL reactor operators are not subject to baseline bioassays and will follow-up on this topic during his next visit to the site.

Fission Products in Reactor Pool Water. On September 28, 2015, gamma spectroscopy results for routine monitoring samples at the ACRR indicated fission products were present in the reactor pool water at trace levels. The ACRR staff has since conducted a series of reactor pool water sampling tests to identify the source of the fission products. The sampling results confirm trace amounts of fission products are being produced during reactor operations but are not conclusive in identifying the source of the fission products. The ACRR staff is currently conducting underwater video inspection of the reactor core. ACRR has paused operations except for the purposes of identifying the fission product source during their investigation process.