

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 5, 2015

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

Staff Activity: During the week of October 26–30, 2015, two members of the Defense Nuclear Facilities Safety Board's (Board) staff were onsite to observe fire testing of pipe overpack containers (POC) to gain insight on the integrity of the containers under various thermal fluxes. Two tests were conducted in which POCs were placed in and around a fuel pool fire for one hour at the Fire Laboratory for Accreditation of Modeling by Experiment facility. During the week, the staff members also met with personnel from the Office of Environmental Management and the National Nuclear Security Administration to discuss future waste container fire testing. Insight from testing will be utilized to re-evaluate the damage ratios within Department of Energy Standard DOE-STD-5506-2007, *Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities*.

Annual Emergency Exercise: During the week of October 12-16, 2015 two members of the Board's staff observed the annual Sandia National Laboratories (SNL) site wide exercise. The Board's staff observed pre-exercise training, the emergency operations center (EOC), response activities at Technical Area V, participant hot washes, and evaluator after-action sessions. The exercise scenario involved a simulated earthquake that resulted in damaged facilities across the site, multiple personnel injuries of varying degrees, a breached transuranic radioactive waste drum, two uncontaminated patients with minor blast injuries, and one contaminated patient with significant blast injuries in Technical Area V. The exercise objective was for SNL personnel to demonstrate preparedness for a severe event.

The Board's staff shared their observations with federal Sandia Field Office and SNL contractor staff during a teleconference outbriefing on October 22, 2015. The Board's staff believes the scenario was moderately challenging and representative of operational emergencies anticipated for the site. The Board's staff discussed their thoughts on improving specific radiological response actions, communication interfaces between the area and incident commanders, evacuation planning, utilization of the Technical Support Team, and proficiency of the EOC team in conducting meaningful periodic update briefings.

Fission Products in Reactor Pool Water. On September 28, 2015, gamma spectroscopy results for routine monitoring samples at the Annular Core Research Reactor (ACRR) indicated fission products were present in the reactor pool water at trace levels. On September 29, 2015, the ACRR facility generated a Potential Inadequacy of the Safety Analysis (PISA) entry form to evaluate entry into the PISA process. Nuclear safety engineers at SNL determined that there was no PISA because the potential for fission products in the ACRR pool water has already been evaluated in the Documented Safety Analysis (DSA). Since September 29, 2015, the ACRR staff has been trying to identify the source of the fission products. The ACRR staff is currently developing a special water sampling tool capable of sampling near the reactor core during operation. Reactor core fuel element cladding is a safety significant design feature credited in the DSA to retain fission products generated by reactor operations. Except for purposes of identifying the fission product source, the ACRR remains in shutdown status.