

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 1, 2016

TO: Steven A. Stokes, Technical Director
FROM: John R. Mercier, Cognizant Engineer
SUBJECT: Sandia National Laboratories Report for March 2016

Staff Activity at Sandia National Laboratories (SNL). On March 7-8, 2016, the Defense Nuclear Facilities Safety Board's (Board) Cognizant Engineer—with oversight responsibilities for Sandia National Laboratories—and a Board fire protection engineer conducted walkdowns of two Hazard Category 2 nuclear facilities. On March 8, 2016, the Board Cognizant Engineer also met with safety basis engineers to continue to gain insight on SNL implementation of requirements flowed down from Title 10, Code of Federal Regulations, Part 830 (10 CFR 830), *Nuclear Safety Management*, and Part 835 (10 CFR 835), *Occupational Radiation Protection*.

Sandia Pulse Reactor Facility (SPRF)—Fire Safety. The reactor building, now called the "Round Room," was built in 1960. Due to the original facility design requirements, there are no engineered fire suppression systems (FSS). A reactor maintenance building was annexed to the Round Room in 1987. This annex and subsequent annexes to the facility were not constructed with engineered FSSs. The Round Room now houses an experimental reactor assembly. The most recent SNL fire hazard analysis for the facility, dated November 2012, included a recommendation that the facility seek an exemption for continuing to omit an engineered FSS. Currently, the facility has neither a FSS nor a Department of Energy (DOE) exemption. On March 8, 2016, the Board cognizant engineer informed the DOE Sandia Field Office (SFO) and SNL that the Board staff understands introducing a sprinkler system into the Round Room could pose a new hazard to the reactor, but an alternate fire suppression technology could be considered. The Board cognizant engineer further observed to SFO and SNL that the facility does not appear to be in compliance with fire suppression requirements in the annexed areas. Both SNL and the DOE are now working toward agreement on a path forward to improve the fire protection envelop at the SPRF.

SPRF—Criticality Safety. The Board Cognizant Engineer observed that reactor core loadings are unanalyzed for criticality upon the introduction of water spray such as from a firehose. In reviewing the SPRF Critical Experiments (SPRF/CX) Safety Analysis Report (SAR), the Board Cognizant Engineer is concerned that the control set specified in the SAR may not be comprehensive in regard to a firefighting scenario. Sandia has initiated an evaluation process to address the Potential Inadequacy in the Safety Analysis (PISA). The process will evaluate the applicability, credibility, maturity, and the significance of the concern and determine whether a PISA exists. The Board Cognizant Engineer also reviewed the recently expired Memorandum of Understanding (MOU) between SFO and the supporting fire department to gain insight on responsibilities between the parties regarding prevention of a criticality event while engaged in firefighting. Whereas the MOU is being revised and renewed, the pre-fire plans implemented by the supporting fire department were amended on March 4, 2016, to instruct responding firefighters to check with the facility owner prior to applying water.

Annular Core Research Reactor Facility (ACRRF). The Board's fire protection engineer did not identify any Fire Code or other fire safety deficiencies during the walkdown at the ACRRF.