

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 16, 2024

TO: Katherine R. Herrera, Acting Technical Director
FROM: L. Lin, Z.C. McCabe, and E.P. Richardson, Resident Inspectors
SUBJECT: Savannah River Site Activity Report for Week Ending February 16, 2024

K-Area and Surplus Plutonium Disposition (SPD): The contractor has revised calculations for the airborne release fraction (ARF) that will be used in accident analyses for pressurized releases from plutonium oxide containers. The new ARF is more conservative than the ARF value previously submitted by the contractor based on 3013 container fire testing. This change will align the K-Area safety basis and the SPD preliminary documented safety analysis if approved by DOE-SR and NA-SV, respectively.

F-Area Annual Exercise: The resident inspectors (RIs) observed F-Area personnel conducting their annual emergency preparedness evaluated exercise. The scenario consisted of a truck colliding with an energized electrical pole, a fuel leak, and a subsequent fire that impacted radiological waste. Multiple personnel injuries and contamination events were simulated during the exercise.

H-Canyon Fast Critical Assembly (FCA): H-Canyon personnel commenced the federal readiness assessment for the FCA project following the contractor readiness assessment (see 1/26/2024 report). The RIs observed the simulated chemical additions to the 6.3 dissolver and the demonstration of the new safety significant low air sparge/power interlock. The dissolver air sparge piping and the low air sparge interlock system are credited as the primary preventative controls to protect the facility and co-located workers from an explosion in the 6.3 dissolver during normal and seismic conditions by shutting off power to the dissolver electrodes to stop hydrogen generation.

Defense Waste Processing Facility (DWPF): A recent evolution required employees to wear forced air plastic suits, hard hats, and fall protection in the Contact Decontamination and Maintenance Cell (CDMC) which had elevated temperatures (approximately 80 degrees) due to equipment issues. After approximately 2 hours, a construction worker required emergency egress due to a heat stress concern. Just before Radiological Protection Department (RPD) personnel finished preparing to process the workers out, an employee reported feeling dizzy and overheated to the RPD inspector who was monitoring the workers in the CDMC. The team quickly recognized the worker's deteriorating condition and performed an expedited egress and plastic suit removal prior to the worker losing consciousness. DWPF personnel requested emergency medical services (EMS) who arrived at the scene within 14 minutes of the control room being notified. Prior to their arrival, the employee became alert. Subsequently, RPD personnel detected 6,000 dpm β/γ on the worker's right cheek and performed decontamination efforts while they (along with EMS) monitored the worker's physical condition. EMS determined that the employee did not require immediate transport to a medical facility and allowed RPD personnel to continue their efforts. Following decontamination and stabilization, the worker was evaluated and released by the site medical department. The RPD team's excellent response prevented a much more serious emergency.