

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 5, 2024

**TO:** Timothy J. Dwyer, Technical Director  
**FROM:** L. Lin, Z.C. McCabe, and E.P. Richardson, Resident Inspectors  
**SUBJECT:** Savannah River Site Activity Report for Week Ending July 5, 2024

**Defense Waste Processing Facility (DWPF):** DWPF management declared a Potential Inadequacy in the Safety Analysis due to the flowrate from the Precipitate Reactor Feed Tank to the Sludge Receipt Addition Tank exceeding the 14 gallons per minute (gpm) limit assumed in the safety basis. The concern was that excess flammable gas generation could overwhelm the exhaust capabilities of the system resulting in a flammable headspace. DWPF Engineering personnel discovered the violation while evaluating the first transfer done following the removal of a flow restricting orifice.

**Salt Waste Processing Facility (SWPF):** Maintenance established a lockout to partially drain the tempered water loop to replace pressure relief devices as part of a preventive maintenance package. After replacement, the lockout was removed. However, the work instructions only contained a generic statement to have operations return the system to normal operating lineup and there was no direction to refill the tempered water loop. While starting up the caustic side solvent extraction (CSSX) process, the procedure has an operator verify the solvent strip feed pump temperature is above a certain setpoint. The operator took the wrong reading and continued startup while the temperature was too low due to the air bubble that remained from not refilling the water loop, resulting in the plant automatically shutting down the process. After the issue was discovered and the tempered water loop refilled, the facility attempted to start up CSSX again. A high radiation alarm was received on the barium decay tank that shut down the process. The facility determined that the alarm was received due to shine from the nearby solvent hold tank. They believe the radiation spiked due to the solvent having more cesium in it during the previous startup where the proper temperature was not reached, resulting in less effective cesium stripping in the CSSX process. The facility conducted a post-job review and will be taking corrective actions, including performing an extent of condition on other preventive maintenance work orders that may include draining systems.

**Savannah River Tritium Enterprise (SRTE):** While performing facility inventory preparations, SRTE personnel failed to properly monitor pressure on a tritium storage bed which led to a protective rupture disk bursting. The operations team did not meet the required tank pressure conditions stated in a procedure note but proceeded to secure nitrogen cooling to the bed to begin a 12-hour steady state waiting period. Additionally, they did not monitor the subsequent pressure increase throughout the night. The off-gassing tritium increased the pressure in the closed system, which caused the rupture disk to burst. Alarms sounded in the unoccupied room in 233-H. Someone working in the facility acknowledged the alarm but did not notify management or log the action taken. A sample assay system operator noticed the issue upon arriving at work the following morning and reported it to management, who initiated corrective actions. The issue investigation meeting determined that both operators assigned to this work failed to follow a procedural note and note the pressure limitation. However, the investigation

team did not pursue nor identify who acknowledged the alarm without possessing the qualifications necessary to do so.