

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 19, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: L. Lin and Z. C. McCabe, Resident Inspectors
SUBJECT: Savannah River Site Activity Report for Week Ending November 19, 2021

Staff Activity: D. Brown and D. Andersen of the Board's technical staff were onsite this week to support the staff review of the 296-H stack analysis at the Savannah River Tritium Enterprise. In addition, D. Andersen performed a walkdown of the H-canyon structure, exhaust tunnels, and fan house. J. Flora was onsite this week to support the staff review of sustained operations at the Salt Waste Processing Facility (SWPF).

SWPF: Interactions during an ongoing staff review led SWPF personnel to declare a Technical Safety Requirement (TSR) violation because a required limiting condition for operation (LCO) action had not been performed during a surveillance on the Air Dilution System (ADS) on July 2, 2021. The staff team was observing preparations for a planned surveillance (SR4.3.1.8) on the Air Dilution System (ADS), which provides a safety significant hydrogen purge for process vessels either through plant air or back-up air receivers. SWPF personnel developed a plan to complete the surveillance, with additional guidance provided by SWPF subject matter experts that entry into LCO conditions E and J was appropriate. The staff team reviewed records for the most recent completion of this surveillance and found that SWPF personnel performed a different surveillance (SR4.3.1.11) on the ADS in July 2021 that required entry into one of the LCO conditions required by SR4.3.1.8. (condition E). The SR4.3.1.11 procedure includes a conditional step directing operators to perform SR4.3.1.8 if ADS pressure drops below 30 psig. When the pressure dropped during the evolution, operations personnel entered LCO condition J but did not recognize that they needed to re-enter condition E and perform an action that had not been applicable for SR4.3.1.11. Therefore, SWPF personnel did not perform the required action or enter a subsequent LCO when the required action for condition E was not met. SWPF personnel are planning to investigate this further and have scheduled a fact-finding meeting next week. SWPF personnel are planning to implement a revision to the TSRs this week that would change the LCO conditions for performing surveillance 4.3.1.8. However, the revised LCO remains complex, and its complexity appears to have directly contributed to the violation.

In October, while processing clarified salt solution through the caustic side solvent extraction (CSSX) process, the differential pressure on the strip effluent coalescer (SEC) increased significantly, forcing a hard shutdown. After washing the SEC, the CSSX process was restarted, but was shut down once more when the differential pressure on the coalescer increased. This happened a third time when the facility washed the coalescer again and restarted. Samples of the tank contents showed a tar-like material floating on top of the solvent. The exact contents of the material are not known at this time, but facility personnel are developing a recovery plan that includes pumping the solution from the solvent drain tank to a filter in the laboratory hot cell to remove the solids. This is a new activity that will require a safety basis change and new procedures.