

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 22, 2017

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman and Z. C. McCabe, Resident Inspectors
SUBJECT: Savannah River Site Resident Inspector Report for Week Ending Dec. 22, 2017

Tritium Extraction Facility: Workers were conducting maintenance on two supply fan dampers while the facility had reduced ventilation. When both fan dampers faulted (expected due to work being performed), this caused the integrated control system (ICS) to shut down the ventilation system per its design. The total loss of ventilation caused tritium to migrate from a contamination area into radiological buffer and clean areas. Bioassays did not indicate any uptakes in workers. This was the first time SRNS worked on two dampers at once and the operations and maintenance staff did not realize a double fault would cause a total loss of ventilation so the control room staff did not reset the ICS after the first fault. The ventilation engineer knew how ICS would react to a double fault, but the original lockout order prevented this by placing each fan into maintenance mode separately beforehand. However, in order to allow both dampers to be worked simultaneously, SRNS revised the lockout order to remove this provision because it would have also resulted in both dampers being closed and causing an upset.

K-Area: SRNS is reanalyzing the hazards of direct can cutting of DOE-STD-3013 cans in light of Surveillance and Monitoring Program data. Based on the preliminary results, SRNS believes they might be able to adequately control the hazards and they are pursuing this option.

Tank Farms: Further inspections of the new salt nodules on the 3H Evaporator pot led SRR to conclude they have two new leaks near the weld seams on the pot's cone. These are not associated with the previous leaks sites and their repair. Furthermore, SRR did not detect any leakage from these new sites during the previous leak investigation (sites were submerged with dyed water for ~16 months), the post maintenance hydrostatic leak test with heated water, or the in-service leak test with waste at normal operating conditions. Preliminary engineering evaluations of potential failure mechanisms (e.g., general corrosion, intergranular attack, fatigue, rubbing, erosion, stress corrosion cracking, repair induced, weld defect) have not identified a probable cause yet. Due to previous procurement efforts, the design for a new pot is complete and SRR has resumed procurement activities for a replacement pot. Meanwhile, they are reevaluating the future need for this evaporator and the feasibility of continuing to use or repair the evaporator in the interim.

Defense Waste Processing Facility: As the new melter continued to heat up, SRR began operation of the lower electrodes and melter bubbler. When the melter reached 1080°C, they attempted to start the feed system, but a 3-way valve would not operate properly. SRR placed the melter in standby mode and is in the process of replacing the valve. The first glass pour will likely occur next week.

Salt Waste Processing Facility: Parsons began receiving deliveries of simulant for future cold chemical runs.

Saltstone: SRR performed the first process run since a spill occurred last June.