

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 10, 2020

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** M. T. Sautman and Z. C. McCabe, Resident Inspectors  
**SUBJECT:** Savannah River Site Activity Report for Week Ending July 10, 2020

The above section has been redacted because DOE has marked the information as Official Use Only.

**Savannah River Tritium Enterprise (SRTE):** Last week SRTE personnel identified that a nonconformance report (NCR) written in October 2018 for the Sample Analysis System (SAS) had never been dispositioned or conditionally released. The SAS system utilizes liquid nitrogen (stored at -320°C) and includes stainless steel piping inside of the glovebox; however, the piping transitions to carbon steel (rated for only -20°C) outside of the glovebox. Thus, SRTE personnel wrote the NCR against the carbon steel piping not being rated for the potential extreme temperatures and being susceptible to brittle failure. The carbon steel piping is part of the exhaust header for the SAS and is not a pressurized component. Since the NCR was written, the SAS and liquid nitrogen has been used (sporadically) and exhausted through the carbon steel piping. Although, well below the rating for the carbon steel piping, the system does have several interlocks on the system that will shut off the flow of liquid nitrogen if various components reach -100°C.

Shift operations managers are required to review open NCRs at every shift turnover (twice per day), but the review is focused on expiration of NCRs rather than the disposition. Further, according to discussions during an issue investigation, SRTE personnel have found the SOM NCR review process to be cumbersome. It is unclear why additional reviews of open NCRs by other SRTE personnel knowledgeable of the system either did not occur or did not catch this error. SRTE personnel identified several factors that contributed to the error including that the system had not been tagged “do not operate,” but rather the exhaust header (above the glovebox) was tagged with the NCR. After the error was identified, the system was tagged out of service. SRTE personnel have since turned on the liquid nitrogen system to evaluate the temperature changes of the carbon steel. When operated normally, SRTE personnel found that the temperature quickly approached -20°C. SRTE personnel are still evaluating the appropriate path forward for the system.

**Savannah River National Laboratory (SRNL):** As of June 23, DOE has suspended the use of the 9980 shipping packages for shipment of specific plutonium material. SRNL identified that gallium was not included in the contents for the shipment and not included in the Safety Analysis Report for Packaging. This shipping package has been used across the complex for onsite and offsite shipments. The Design Authority does not believe the addition of gallium represents a safety issues and is in the process of revising the documentation to reflect that.