DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 25, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: L. Lin, Z. C. McCabe, E. P. Richardson Resident Inspectors
SUBJECT: Savannah River Site Activity Report for Week Ending February 25, 2022

Tritium Stack Release: Several accident scenarios analyzed in the Savannah River Tritium Enterprise (SRTE) safety basis rely on the exhaust ventilation system as defense-in-depth to mitigate the dose consequences to the facility worker by pulling tritium away from the immediate area following a release. The events consider much larger releases (i.e., several orders of magnitude larger) than the release on January 30. No events consider a portion of that tritium re-entering the building through the same ventilation system. Therefore, SRTE entered the potential inadequacy of the safety analysis (PISA) process (see 2/4/2022, 2/11/2022, and 2/18/2022 reports). SRTE and the Nuclear and Criticality Safety Engineering organization of SRNS have determined that a PISA does not exist based on the code of record. SRTE is relying on the argument that the meteorological conditions on January 30 exceed the 50th percentile meteorological conditions considered in the hazards analysis in the current safety basis. This determination has yet to be approved. Based on discussions with NNSA-SRFO and the resident inspectors, SRTE is revisiting this conclusion.

The consideration of only 50th percentile meteorological conditions has been a known weakness in the safety bases at the SRS since 2011. Current DOE requirements prescribe consideration of the 95th percentile conditions, which would likely encompass the phenomenon that occurred on January 30. SRTE incorporates the 95th percentile meteorological data in an approved, but not yet implemented safety basis. However, it does not consider the potential reintroduction of tritium into the facility.

L-Basin: Last week, L-Basin operations personnel performed the prerequisite walkdown of the High-Flux Isotope Reactor (HFIR) storage racks prior to vacuuming activities. They identified that one of the HFIR storage racks was not properly closed and informed the shift operations manager. The HFIR storage racks are a credited control to prevent an inadvertent criticality through unintended fuel interaction and are required to be closed when HFIR fuel is stored within. Thus, this discovery constituted a criticality safety violation and a Technical Safety Requirement (TSR) violation. The fuel element in question was last handled on January 8. Several steps and verifications since the placement had verified that the grating over the rack was properly closed. During a fact finding meeting, L-Area personnel discussed several weaknesses that led to this error. For instance, the operator (under instruction) was unaware that the lifting bail for the HFIR carrier would not lay flat in both directions. During the evolution, the operator placed the core in the storage rack but laid the bail down in the incorrect direction, which prevented the grating lid from properly closing and laying flat. L-Area personnel discussed several corrective actions. They will include a formal root cause analysis and investigation of the efficacy of the TSR surveillance ensuring the grating is closed, which was performed incorrectly at multiple times by multiple individuals.

Contract Transition: The liquid waste facilities, except for the Salt Waste Processing Facility, are completing the transition to Savannah River Mission Completion, LLC this week.