

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 12, 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 May 12, 2017

Savannah River National Laboratory (SRNL): Researchers brought in a trackable quantity of uranium hexafluoride (UF₆) before it was authorized. The SRNL material-at-risk (MAR) database not only keeps track of the amount of radioactive material, but also its contribution to the radiological dose in an accident. This database, however, treated all uranium the same and did not reflect that in an accident the UF₆ could convert from a solid to a gas, which would increase the radiological consequences. Furthermore, the hazards analysis and researchers' preparations were focused on the proposed experiment and did not address the hazards of simply storing the UF₆. As a result of assumptions and miscommunications, the custodian of the MAR database allowed the researchers to receive the UF₆ even though engineering and nuclear safety personnel were still working on the Unreviewed Safety Question Evaluation (USQE), which was examining both storage of UF₆ and the planned experiments. The Hazardous Material Inventory Control Program requires a USQE or a USQE screen on material being brought into SRNL. Once the problem was identified, SRNL personnel placed the UF₆ into a fire resistant safe and temporarily stopped all radiological material receipts. Receipts are now allowed with approval of the Engineering Programs Manager. While a preliminary calculation indicates the increase in dose consequences is negligible and there will likely not be a positive Unreviewed Safety Question, it is unclear why the facility was not in a Potential Inadequacy in the Safety Analysis while they performed this evaluation of the current situation.

H-Canyon: SRNS performed a valve lineup to transfer general purpose evaporator material to H-Tank Farms, but did not start the transfer due to a paperwork issue. Two days later, an Outside Facilities operator noticed that the transfer pump was operating. The pump had to be stopped by opening the electrical disconnect to the pump because the pump could not be stopped via the distributed control system or locally. 168 gallons were transferred to a waste header, but nothing was transferred to tank farms. An investigation revealed that moisture in the hand switch had corroded the contacts and closed the circuit, allowing the pump to start on its own.

F/H Laboratory: In preparation for a revision to the Technical Safety Requirements (TSR), SRNS used two databases for tracking the MAR inventory – the official production database for the existing TSRs and a test database reflecting the revised TSRs. When SRNS implemented the new TSRs, they updated the production database program. The test database was removed from most users' computers, but not all because it had the potential to be used for future training and testing. A nuclear material custodian, however, removed the wrong database from his computer and continued to enter sample data into the test database, which was not reflected in the official production inventory. This mistake did not cause the facility MAR limits to be exceeded and SRNS is taking action to improve configuration management.

Defense Waste Processing Facility: The resident inspector observed SRR transport melter #2 from the melt cell and place it inside a melter storage box in the inner railroad well. The melter and glass weighed ~85 tons. The evolution was well planned and executed.