

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 17, 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 September 17, 2021

Leigh Lin reported for duty as a resident inspector.

H-Canyon: H-Canyon personnel were preparing a batch for the 17.6 Evaporator when they identified that they had exceeded a procedural mass limit. The H-Canyon Double Contingency Analysis controls the U-235 mass and the volume of the liquid in the evaporator through separate control suites to prevent an over concentration. The mass is first confirmed to be below the CSOL prior to transferring solutions into the evaporator feed tank through analyzing a sample from each source tank. After the material is transferred into the feed tank, it is sampled and analyzed again. In this case, H-Canyon personnel pulled samples from two sources prior to transferring material into the evaporator feed tank and sent them to the Savannah River National Laboratory (SRNL) for analysis. For the sample from the Outside Facilities tank, SRNL reported a concentration that was significantly higher than H-Canyon expected. After discussion, the SRNL first line manager (FLM) agreed to look at the results again before confirming the concentration. Another SRNL FLM reviewed the analytical results the following day and noted that a recorded sample dilution of 10 μL was uncommon and the laboratory technician may have meant to record 100 μL . Had this been the error, the sample results would have been closer to the concentration H-Canyon personnel had expected. The following day, the first FLM returned to work, saw the second FLM's note, and believed that it was a conclusion rather than a question. As such, the first FLM reported a concentration an order of magnitude lower than the actual results to H-Canyon, who then proceeded with the transfer into the evaporator feed tank. After the transfer, H-Canyon personnel sampled the feed tank as required. Based on the concentration SRNL reported for this sample, H-Canyon personnel determined that they had exceeded the mass limit.

H-Canyon personnel began investigating the issue and found multiple errors, including the incorrectly reported results. Additionally, H-Canyon personnel found that they had also used incorrect concentration results (from another analytical method) to determine the mass in the other source tank they transferred to the feed tank. Notably, this error was verified by a second person. As part of the investigation, H-Canyon requested a re-analysis of the Outside Facilities tank for sample. SRNL confirmed the original results. Upon further analysis, H-Canyon personnel determined that the procedure mass limit for total uranium had been exceeded, but the U-235 CSOL had not been. H-Canyon personnel are still investigating this issue before continuing with the evolution. BSRA is also developing corrective actions to address the inadequate turnover of information between the two FLMs.

Savannah River Tritium Enterprise (SRTE): Contrary to their training and the procedure, a subject matter expert observing a post-maintenance test took it upon themselves to operate a valve to depressurize a system in H-Area Old Manufacturing. This action caused a rupture disk to blow. SRTE personnel called a time out and informed supervision.