

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 20, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: L. Lin and E.P. Richardson, Resident Inspectors
SUBJECT: Savannah River Site Activity Report for Week Ending December 20, 2024

H-Canyon: Following a continuous air monitor alarm, radiological protection personnel posted the warm gang valve corridor as an airborne radioactivity area (ARA) as precaution but did not find any contamination or airborne radioactivity in the area. Subsequently, a worker entered the posted ARA without the required respiratory protection. They have been placed on a radiological hold pending the results of internal dosimetry. After this issue, radiological protection personnel placed a barricade at the entrance as well.

While performing chemical addition prior to 6.3D dissolver operations in support of the Fast Critical Assembly (FCA) campaign, workers added gadolinium (a neutron poison) prior to when it was required by procedure. Informal communications between the field operators and control room operators, along with improper control of under instruction watchstanders in two positions, caused the field operators to add the gadolinium to Tank 6A prior to the completion of the nitric acid addition. Also contributing to the issue, the team conducted an informal pre-job brief, which was contrary to the operations directive to perform formal pre-job briefs for all work requiring technical work documentation due to the facility being in deliberate operations (see 11/29/2024 report). During the issue investigation meeting, personnel also identified a lack of questioning attitude by the operator adding the gadolinium and time pressure due to the nearing the end of the shift. All personnel were forthcoming, and the issue investigation meeting was conducted effectively.

H-Canyon and Savannah River National Laboratory (SRNL): H-Canyon recently discovered an issue with the uncertainty values used in fluoride sampling. Potassium fluoride is used in the dissolution process, and H-Canyon has an administrative control to ensure the fluoride molarity is below the process parameter limit (PPL) to prevent precipitation of fissile material in the dissolver. H-Canyon sends samples to SRNL, and one of the parameters analyzed is fluoride. During sampling on the sixth FCA batch, workers performed a post-job review where it was noted that the uncertainty value from the SRNL report for fluoride was not the value they expected, and a timeout was taken for 6.3D dissolver operations. In the investigation, it was revealed that SRNL listed a new uncertainty value in their Test Technical and Quality Assurance Plan (TTQAP) in August 2023, which was higher than the uncertainty value previously used for fluoride specifically. H-Canyon engineering reviewed and signed off on the new TTQAP. However, SRNL's intent to use one bounding uncertainty value for all the analytes, which would supersede the older values, was not clearly communicated. Part of the confusion is that the TTQAP refers back to the older memo containing the previous uncertainty values for individual analytes. H-Canyon confirmed that the new uncertainty value did not impact other calculations and that they had not violated their PPLs with the new uncertainty value. H-Canyon has revised their calculations and procedures to match the new uncertainty value and SRNL will evaluate transmitting a separate document that lists the uncertainty value used for each analyte of concern to H-Canyon. SRNL personnel does not believe this is a potential issue for the sampling they perform for other facilities as those use a different process.