DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 13, 2023

TO: Timothy J. Dwyer, Acting Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending October 13, 2023

Building 9215: On October 3rd, CNS began the semi-annual machine coolant system inventory in Building 9215. During the process an unexpected leak occurred, and the chemical operators isolated a filter housing. They established an administrative boundary and notified the shift manager, the nuclear criticality safety engineer (NCSE), and the system engineer. After receiving direction from the shift manager to clean up the spill, the chemical operators reopened the isolation valves for the polishing filters. Again, the filter assembly leaked from the top of the housing. At this point, the supervisor gave the chemical operators verbal direction to tighten the top of the filter housing. When this action did not stop the leak, the supervisor asked to see the gasket installed in the housing. The chemical operators removed the top of the housing with the gasket installed and carried it over to the edge of the airborne contamination area. This action was outside the scope of the procedure as it does not allow troubleshooting of a leak and does not allow for transport of the potentially contaminated filter housing outside of the process area. The DOE facility representative (FR) was standing with the supervisor, NCSE, and system engineer at the edge of the airborne contamination area when the chemical operators arrived with the housing. The FR advised the supervisor to enter the abnormal operating procedure for an abnormal condition involving fissile material based on the unexpected condition of the chemical operators arriving with the housing.

CNS reported an occurrence based on a less than adequate nuclear criticality safety analysis for machine coolant polishing filter change out operations. In addition, the condition of removing the filter from the housing and the condition of transporting the filter and housing outside of the process area are not analyzed in the criticality safety evaluation for this work. Prior to the event investigation, the enriched uranium machining operations (EUMO) manager identified conduct of operations as a gap, however, by the start of the investigation the EUMO manager no longer considered this as a gap. During the event investigation, the DOE FR asked where they were in the procedure while performing the troubleshooting on the leak and the EUMO manager stated a section of the procedure that did not apply. The resident inspector (RI) noted that the section of the procedure did not allow for troubleshooting and chemical operators should not have been working to the verbal direction of the supervisor. The EUMO manager entered a new issue (gap) into the timeline reflecting the verbatim compliance issue, with a corrective action to brief the chemical operators.

DNFSB Staff Activities: The RIs completed a multi-week focused review of nuclear air cleaning systems at Y-12 and ORNL facilities. The RIs reviewed multiple procedures governing HEPA filter testing at Y-12. During a review of the procedure that governs the overall program, it was discovered that the last update was performed in 2017. As a result, multiple instances of out-of-date references and a reference to a withdrawn standard were found within the procedure. The RIs informed CNS of the discrepancies and CNS committed to an evaluation and follow-up of the issues with the RIs. For both the Y-12 and ORNL programs, the RIs did not identify any significant programmatic deficiencies. The RIs will follow up with CNS to evaluate the resolution of the RIs' comments on the outdated Y-12 procedure.