

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 31, 2021

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** B. Caleca, P. Fox, and P. Meyer, Hanford Resident Inspectors  
**SUBJECT:** Hanford Activity Report for the Week Ending December 31, 2021

**Waste Treatment Plant (WTP):** WTP management determined that they are ready to receive and store anhydrous ammonia in the Balance of Facilities (BOF) Ammonia Reagent (AMR) System. The readiness declaration is limited to the BOF portion of the system. Ammonia process components located within the Low-Activity Waste (LAW) Facility are part of the off-gas system and will be evaluated under a separate assessment that is being tracked under a condition report within the contractor's performance assurance system. The ammonia hazard is one of the most significant hazards associated with the LAW Facility processes. Ammonia is used to treat melter off-gas to reduce concentrations of nitrogen oxides prior to discharge of the off-gas to the environment. The system includes two storage tanks with a total capacity of 12,000 gallons. The anhydrous ammonia is a highly hazardous chemical and 12,000 gallons exceeds the threshold value in Appendix A of 21 CFR 1910.119, which requires its management under the process safety management requirements contained in the same regulation. Their readiness determination for the BOF AMR system is based on completion of a Pre-Startup Safety Review (PSSR) conducted between September 16 and October 8, 2021. The PSSR was performed using a checklist that focused on ensuring that (1) construction and equipment of the system is in accordance with design specifications; (2) adequate safety, operating, maintenance, and emergency procedures are in place; (3) an adequate process hazard analysis was performed, and related recommendations have been resolved or implemented; and (4) the training of each employee involved in operating the process has been completed. The PSSR team identified 22 pre-start findings and four post-start findings, as well as 21 other opportunities for improvement (OFIs), and one condition adverse to quality (CAQ). All pre-start finding, except one, have been closed. The remaining pre-start finding requires placement of equipment that has a limited life expectancy. That requirement is being tracked in a pre-startup plan and the equipment will be in place at least one week prior to receipt of ammonia into the system. Additionally, three of the four post-start findings, twelve of the OFIs, and the CAQ have been closed. After the readiness declaration, the contractor's Executive Safety Review Board met and approved the report that documents the PSSR results and pre-start finding closures. The contractor will establish a date to receive ammonia that will support the melter heat-up and tuning plan.

**Reduction Oxidation Facility (REDOX):** A resident inspector observed the performance of a Job Hazard Analysis review meeting. The related work package provides instructions and controls that support installation of new exhaust fan skids. The work scope includes installation of electrical and mechanical components, instrumentation and control components, fire protection equipment, and high-efficiency particulate air filters. The event was well managed, and attendees were engaged throughout the meeting, resulting in improved work instructions.

**Radiochemical Processing Laboratory:** The contractor issued their final fact-gathering notes for the boot contamination that occurred in the Radiological Buffer Area around the High-Level Radiochemistry Facility (HLRF) (see 12/17/2021 report). Additional surveys did not identify the contamination source. Facility management is executing a decontamination plan for the area around the B-Cell door, increasing the frequency of radiological surveys and cleaning in the HLRF area, and evaluating exit survey requirements for exiting the HLRF area.