

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 5, 2024

**TO:** Katherine R. Herrera, Acting Technical Director  
**FROM:** B. Caleca, P. Fox, N. Huntington, and P. Meyer, Resident Inspectors  
**SUBJECT:** Hanford Activity Report for the Week Ending January 5, 2024

**Tank Side Cesium Removal (TSCR):** The TSCR process was shut down after personnel observed a pressure control valve was not operating as designed. At the time of the shutdown, TSCR had processed ~76% of the fifth batch. The cumulative volume of treated waste has already exceeded the contractor's goal for the 5-batch campaign. The current waste level in the receipt tank is above historic fill heights. Contractor personnel will be comparing the current cesium concentration to sample results taken last fall to verify that unexpectedly high concentrations seen earlier are due to waste residue on the tank walls rather than by other processes (see 10/20/2023 report). Contractor operations personnel intend to perform a reprocessing campaign to remove additional cesium using the TSCR process starting in March.

**High Level Waste (HLW) Facility:** DOE approved the contractor's new Safety Design Strategy (SDS) for the HLW facility. This revision addresses the new direct-feed strategy, and changes to the code of record and waste acceptance criteria. It also outlines the project's tailored approach to incorporating DOE-STD-1189-2016, *Integration of Safety into the Design Process*. DOE placed directed actions on the contractor and conditions of approval to address near-term inconsistencies in the SDS, preliminary documented safety analysis, Laboratory facility documents, and the safety evaluation process that will be reconciled as the project matures.

**River Protection Project:** DOE released revision 10 of the River Protection Project System Plan. An update to the plan is required every three years under the Tri-Party Agreement (TPA), which governs environmental cleanup of the Hanford Site. The system plan uses a computer model to evaluate different scenarios and sensitivities for achieving the tank waste cleanup mission and shows expected cost and duration of the task. This revision evaluates the current technical approach for completing the tank waste retrieval, treatment, and disposition mission. It also evaluates five alternative scenarios, including four selected by the Washington State Department of Ecology. The results show completion under the baseline scenario in 2070, which is four years later than evaluated by revision 9. The longer duration is caused by delays in the start of HLW processing and low-activity waste (LAW) supplemental treatment. Both result from constrained funding. However, this revision also shows that single-shell tank (SST) retrieval completion for the baseline case is accelerated by 3 years. Lastly, the revision indicates that, under the baseline case, total mission quantity of immobilized HLW increases primarily because of flowsheet changes, while the total amount of immobilized LAW decreases, primarily because of an improved glass formulation model and improvements in leaching algorithms. The analysis also indicates that the alternative cases, which DOE considers to be supported by more achievable assumptions, have the potential to accelerate the mission compared to the baseline case. This revision also evaluates the practicability of retrieving waste from leaking SSTs B-109 and T-111 on an accelerated timeline. In the document, DOE concluded that full retrieval of B-109 and T-111 cannot be practicably accelerated beyond the baseline case scenario without increasing the overall environmental risk posed by the Hanford tank farms.