

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 23, 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 February 23, 2024

**High Level Waste (HLW) Facility:** DOE briefed contractors on the results of their Baseline Design Review of the HLW facility, given the direct feed HLW approach. The team elected to review major facility systems, considering their interfaces with other systems in determining design maturity, design improvement opportunities, and concerns with the current approach. The team's results are largely in line with the contractor's estimates of design maturity, noting areas to reduce complexity and improve maintenance and operability.

**West Area Risk Management (WARM):** WRPS held a kickoff meeting for the WARM Safety Design Integration Team (SDIT). The SDIT received presentations on the status of the Safety Design Strategy and conceptual design. WARM will utilize the SY Tank Farm for feed receipt and preparation. Remediation of Tank SY-103 (see 2/16/2024 report) and installation of needed equipment in the SY Farm will be made under changes to the existing Tank Farms Documented Safety Analysis (DSA). New construction, including the ion exchange treatment system and a low activity waste storage capability, will be a major modification to the tank farm DSA.

**Tank Farms:** The resident inspectors met with WRPS pipe integrity engineers to discuss ongoing efforts to understand the extent and effect of retained water in transfer line encasements and primaries (see 5/27/2022 report). The inspections determined that there is localized pitting corrosion on the interior surface of some transfer lines. The engineers also noted that observed conditions challenge the free draining assumption that underlies previous pipe integrity evaluations. They also noted that conditions varied between tank farms, indicating that a single approach for managing transfer lines may not be appropriate. Based on their evaluation, they expect that the pipe integrity program will be modified to require more frequent pneumatic pressure integrity tests, periodic borescope inspections within the encasements, adjustments to flushing practices to mitigate corrosion mechanisms, and ultrasonic measurements to confirm mitigation effectiveness.

**222-S Laboratory:** HLMI held an event investigation meeting to discuss the Richland Bomb Squad's removal of two milliliters of crotonaldehyde from the facility after it was determined to have explosive properties. The chemical, which was being prepared for disposal, had an opaque outer package and the conditions inside were unknown prior to opening it. When opened, the physical properties of the crotonaldehyde were different than expected. The work was stopped, and the room was restricted. It was determined that peroxidation may have occurred, which prompted bringing in the bomb squad to handle the material. Further, restrictions of adjacent rooms were established. The facility was evacuated prior to the bomb squad removing the chemical. At the meeting, it was found that the manufacturer's storage requirements were not maintained after the chemical was dispositioned as waste and it was not known if the storage requirements were met prior to receipt. In addition, the process for inspecting chemicals based on quantity and not requiring periodic inspection of waste was questioned. HLMI is evaluating their processes and will determine if a potential inadequacy in the safety analysis exists.