

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 3, 2022

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 June 3, 2022

Tank Side Cesium Removal (TSCR) System: The Safety Basis Approval Authority approved an amendment to the Tank Farms Documented Safety Analysis (DSA) that addresses a redesign of the process hoses (see 4/8/2022 and 5/6/2022 reports). Under the original design, the hose lengths and configurations were different to ensure that the hoses could not be installed incorrectly. This feature was assigned a defense-in-depth safety function in the DSA, intended to prevent hydrogen explosions in an ion exchange column (IXC) by ensuring the ability to perform a successful blowdown of the IXC prior to removal. However, the original design did not provide sufficient length tolerance making them difficult to install. To resolve the problem, the hoses have been made longer, but with a different connection on the outlet hose and associated process piping to preclude installation in the wrong location, preserving the original safety intent.

The contractor's Corrective Action Review Board (CARB) met to evaluate an apparent cause evaluation (ACE) that was performed to address the recent inadvertent release and transfer of a contaminated instrument to a calibration facility (see 4/8/2022 report). The ACE team determined that the problem was caused by inadequate work planning and a failure to perform adequate contamination surveys prior to releasing the instrument from contamination control. The corrective actions proposed by the team are designed to eliminate the procedural and training shortcomings, reinforce management expectations, and revise personnel assignment practices. The CARB's evaluation was deliberate and thorough, and the CARB chairperson allowed non-quorum attendees to ask questions and provide comments. The CARB voted to accept the ACE and associated corrective actions, with comments.

Tank Farms: After discovering substantial quantities of water inside of an AW farm transfer line encasement, Tank Farms Operating Contractor (TOC) personnel reviewed the documentation to place the line under ignition controls due to the potential for hydrogen generation in line with controls in the safety basis for other encasements that are known to have standing water. An ongoing extent of condition has identified other encasements with liquid that will require ignition controls, and engineers have identified non-conservative assumptions in supporting calculations for hydrogen venting of encasements. TOC management convened a Plant Review Committee (PRC) meeting to determine whether this constituted a potential inadequacy of the safety analysis (PISA). The PRC determined a PISA existed and is in the process of placing affected encasements under ignition controls.

High Level Waste (HLW) Facility: DOE ORP management convened a Senior Review Board (SRB) to provide concurrence on the Safety Strategy Summary Document (SSSD) for alternative hydrogen controls needed for the HLW facility to reach a safe shutdown condition during a volcanic ashfall event. The primary hazard is a hydrogen detonation in the melter feed process vessels with high unmitigated consequences to collocated workers. The SSSD is similar to a Safety Design Strategy, though it identifies three potential control strategies. The SRB concurred with the document and recommended transmittal to DOE headquarters for review.