

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 22, 2023

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 December 22, 2023

242-A Evaporator: The DOE-ORP Senior Review Board (SRB) met to evaluate proposed safety basis changes to the 242-A evaporator facility. Among other changes, the proposed revision includes new hazard controls to address a previously unidentified hazard that was revealed during a low temperature excursion in December 2022 (see 1/6 and 1/20/2023 reports). The resulting freeze conditions within the facility damaged safety-significant (SS) components, which are credited to protect collocated and facility workers. The revised control strategy includes a new limiting condition for operation (LCO), which is applicable during the winter months (October – April) and precludes operation of the evaporator when the outdoor ambient temperature is below 32 degrees Fahrenheit. The LCO is coupled with a surveillance requirement that checks outdoor ambient temperature every 30 minutes during evaporator operation to verify that it is above the limiting temperature. Since this approach significantly restricts evaporator operations, the new control is an interim strategy and will eventually be replaced by a new SS instrumented system. This new system will be designed to monitor temperatures and automatically actuate an evaporator vessel dump if freeze conditions occur inside the facility during evaporator operation. WRPS expects to have the new system operational within four years but is trying to improve that timeline. The SRB agreed that the revisions were ready for review and approval by the safety basis approval authority.

Tank Farms: WRPS held a control decision meeting to review proposed hazard controls to support single-shell tank (SST) waste retrieval in A-Farm. WRPS will start A-Farm SST retrieval after they complete retrieval of waste from AX-Farm SSTs, and when they have adequate double-shell tank space to support continued retrieval. The decision team noted that the A-Farm retrieval system design is very similar to the design currently used for AX-Farm. However, some design changes allow simplification of the control strategy by removing the need for high-temperature monitoring of hot water used in the retrieval process. This eliminates the need for two currently used LCOs. Additionally, design revisions have resulted in the installation of different pit heaters, which, along with a new radiant heat shield, preclude overheating of equipment installed in the pits. This arrangement will be protected as an SS design feature. Lastly, the decision team noted that induced gas release event controls necessary to support retrieval of SST A-101, which is a group B tank, were put in place by a previous safety basis amendment. The decision team determined that the proposed control set, along with other existing controls, as modified for A-Farm SST applicability, are adequate to allow safe retrieval of A-Farm SST waste.

After further evaluating the adequacy of corrective actions resulting from an analysis performed to identify the apparent causes for crushed insulation found on underground AP farm waste transfer piping (see 11/24/2023 report), WRPS engineering management reviewed engineering processes used to support design of underground piping. Based on the review, the responsible manager revised the causal analysis report to include corrective actions that address the apparent cause for the damaged insulation.