

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 31, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: B. Caleca and P. Fox, Hanford Resident Inspectors
SUBJECT: Hanford Activity Report for the Week Ending January 31, 2020

242-A Evaporator: In a letter in June of 2014, the Board notified DOE that the 242-A Evaporator safety basis was not compliant with Title 10, Code of Federal Regulations, Part 830. The letter also identified several safety issues associated with the facility hazard control set that DOE needed to correct in order to achieve compliance. In August of 2014, the DOE Acting Assistant Manager for Environmental Management responded to the Board's letter stating the DOE would take specific actions to address the Board's concerns. The actions included an intent to implement design changes to ensure that three credited valves in both the safety-significant C-A-1 (evaporator) vessel flammable gas control system and the safety-significant C-A-1 vessel waste high-level control system fail safe in the event of a facility fire. The letter also stated the intent to modify the C-A-1 vessel seismic dump system, which at that time was manually actuated, so that it would automatically initiate upon detection of a seismic event. Finally, the letter stated that DOE would require the Tank Farm Operations contractor (TOC) to establish a new specific administrative control and a new administrative control key element as compensatory measures pending completion of the proposed modifications. DOE-ORP subsequently issued direction to the TOC requiring implementation of the proposed design changes and compensatory measures. In subsequent analysis, the TOC has determined that implementation of the proposed changes would be extremely difficult and has proposed an alternate approach that they consider more feasible and practical. This week the TOC held a control decision meeting to discuss the proposed revision to the hazard controls. Instead of ensuring design of the credited valves to ensure safe failure during a fire, the TOC proposes to establish a TSR level control for combustible loading to protect against unacceptable fire temperatures and install defense-in-depth fire detection for locations of concern in the facility condenser room to provide input to the safety instrumented system shutdowns. Rather than install an automatic seismic shutdown, they proposed upgrade of the control room shutdown buttons to safety-significant. Additionally, the current safety relay logic solvers would be replaced with programmable logic controllers. The change in approach for the seismic event is also informed by a TOC review of a recently completed probabilistic seismic hazard analysis that indicates that the control room structure would not fail and would provide protection for control room operators during a seismic event, which would allow them time to complete shutdown of the evaporator using the safety-significant shutdown buttons. The TOC attendees at the Control Decision meeting recommended approval of the revised hazard controls.

Building 324: Initial results from an outside testing laboratory's analysis of hydraulic fluid samples from the potentially contaminated HPU (see 1/17/2020 and 1/24/2020 reports) indicated no evidence of contamination. In addition, the contractor released a Just-In-Time report to share lessons learned from the event, and is documenting the results of its extent of condition review of similar equipment which did not find any radiological control issues. As a precaution, however, the field office intends to maintain radiological controls on the HPU and dispose of it as radioactive material once micropile and permeation grouting activities are completed.