

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 18, 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 February 18, 2022

Hanford Site: M. Sautman, DNFSB Associate Technical Director – Field Operations, was onsite to observe Resident Inspector activities and provide training to Resident Inspectors.

Personnel from the Hanford Site Emergency Response and Preparedness (ER&P) organization, with support from other site contractor ER&P organizations, conducted a site limited exercise to test and validate the effectiveness of the Hanford Emergency Response Organization. The scenario simulated a radiological release resulting from the detonation of an explosive device which was placed in 224-B Facility F cell by a disgruntled worker. The detonation and release resulted in multiple radiologically contaminated personnel, including some with significant injuries. The exercise was placed into administrative hold twice. First a miscommunication on wind direction resulted in responders relocating to areas that the exercise director determined would prevent the exercise from achieving its objectives. The exercise was resumed after resetting the event scene and briefing event responders. The second hold occurred because of a non-exercise related event that required response by security and emergency response personnel, resulting in exercise termination. The exercise team is collecting and evaluating information that was obtained prior to exercise termination to determine if objectives were met.

Tank Farms. Contractor management held a Plant Review Committee (PRC) meeting to evaluate proposed Documented Safety Analysis and Technical Safety Requirement (TSR) changes to support upcoming waste retrievals from Waste Group B single-shell tanks (see 2/4/2022 report). The TSR change adds a Specific Administrative Control that requires the performance of an evaluation to determine if either modified sluicing or large water additions during waste retrieval can induce a flammable gas release sufficient to create a flammable atmosphere in the tank's headspace. If a flammable atmosphere can be achieved, they will implement process controls to keep headspace flammable gas concentrations at or below 25% of the lower flammability limit, assuming no tank ventilation. The PRC voted to send the proposed changes to the DOE Safety Basis Approval Authority for consideration.

Tank Side Cesium Removal (TSCR): Contractor personnel paused processing, then shut down the TSCR process when operators determined readings received at the Human Machine Interface (HMI) panel from gamma detectors downstream of the ion exchange columns (IXCs) were not tracking expected trends. Based on previously performed laboratory analyses and resin bed performance modeling, they expected a sharp increase in radionuclide concentration which would prompt the addition of the polishing IXC to the process. A contractor team subsequently entered the TSCR enclosure airlock to obtain local readings from the gamma detectors. The local readings were substantially higher than the HMI panel readings and were much closer to expected trends; further investigation determined that incorrect unit settings caused the unexpected HMI panel readings. The contractor is performing a technical evaluation of gamma detector logs to ensure the TSCR process operated as expected and is identifying other necessary actions to safely resume waste processing.