

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 17, 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 17, 2022

242-A Evaporator: Tank Operations Contractor (TOC) personnel recently replaced safety-significant solenoid valves that operate other valves used to prevent overflow of the evaporator vessel, control flammable gas generation, and remove waste during a seismic event. The replacement supports completion of two design improvements documented in the facility's documented safety analysis (DSA) (see 7/30/2021 report). During tests to support operational acceptance of the modified system, the safety-significant seismic dump valve failed to fully open when a trip was entered into the system. During subsequent testing, the vessel feed valve, which is expected to fully shut when a trip occurs, also did not perform as expected. In both cases, the trip deenergized the solenoid valve, as required; manual operation of the feed valve and dump valve did not identify any mechanical deficiencies that would cause the failures. Engineering and test personnel are evaluating the condition to determine the cause of the failures.

Tank Farms: The Plant Review Committee met and determined that the potential inadequacy of the safety analysis for hydrogen generation in some transfer line encasements (see 6/3/22 report) constitutes a positive unreviewed safety question. Based on the extent of condition performed, 85 encasements have installed equipment that must be verified to have ignition controls or isolated from electrical power to mitigate the condition. While this determination will not require any DSA changes, supporting documents with non-conservative assumptions about hydrogen gas generation in transfer line encasements will require an update.

Building 324: Workers heard glass break while tightening tie-downs used to secure a glovebox, that had been removed from Building 324, for shipment. They inspected the glovebox packaging, which did not appear damaged, and moved the glovebox to a container transfer area to await shipment to the Environmental Restoration Disposal Facility. They did not notify facility and waste group personnel of the event. Waste group personnel reviewing radiological survey reports a week later noted a comment about the noise and contacted the facility. Facility management held a critique to understand the event. They determined that the glovebox had been walked down several times during work planning. However light fixtures and other appurtenances on top of the glovebox were not removed or protected by dunnage. Facility personnel believe the glass broken was most likely fluorescent bulbs contained inside a light fixture on top of the box that was crushed when the tie-downs were tightened. The critique determined that work planning did address the hazards of lifting the box with a crane but did not adequately address the need for securing the load. Critique attendees also noted that the contents of the box, which had been cleaned and coated with contamination control fixative by another contractor over a decade ago, were not verified, and some glove ports were not protected with rigid covers to prevent inadvertent breaching. Finally, because the work crew did not notify the shift office of the event, the box was moved out of the confinement boundary of the facility and into an outdoor area open to the elements prior to determining the cause of the unexpected condition. Contractor personnel are working to develop a recovery plan and intend to place a tarp over the waste package to reduce potential degradation to the packaging material.