

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 8, 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 April 8, 2022

Liquid Effluent Retention Facility (LERF): The Tank Farms Operations Contractor (TOC) is developing a Documented Safety Analysis (DSA) that supports upgrade of the LERF from a radiological facility to a HazCat 3 facility (see 3/20/2020 report) and expects to deliver the draft DSA to DOE-ORP this month. This week, TOC nuclear safety personnel held a control decision meeting to review the status of the safety basis development. During the meeting, they discussed the proposed hazard control strategy and the recently revised event consequences for LERF design basis accidents. The revised analyses show that public and worker consequences for both radiological and chemical hazards are low for all evaluated accident scenarios. The attendees were also asked to evaluate whether there is a need to elevate any existing non-safety layers of protection to a defense-in-depth level. The quorum members determined that the previously approved control set that includes a safety-significant specific administrative control which protects waste characteristic and inventory control assumptions used for the safety analysis, along with commitments to establish, maintain, and implement appropriate safety management programs (see report for weeks ending 2/19/2021 and 5/14/2021) adequately protect the public and workers; there is no need to add additional defense in depth controls.

Tank Side Cesium Removal (TSCR) System: During installation of Ion Exchange Columns (IXCs) prior to the initial batch run, TOC operators encountered difficulty in connecting the IXCs to the TSCR system piping. A decision was made to lengthen the hoses for the vent and outlet connections to eliminate the problem. Implementation of the change was delayed until after they completed the first batch run. Subsequently, while reviewing DSA controls during the installation of IXCs to support the second batch run, TOC personnel determined the length and connections of the process hoses are DSA defense-in-depth controls to prevent misconnection of the IXCs, and the modified hoses might invalidate these controls. A subsequent mockup determined that it was possible to connect the IXCs incorrectly with the modified hoses. This week, TOC engineers met with DOE field office personnel and the resident inspectors to discuss their intended resolution of the issue. The hoses will be redesigned on the process system side so that the connectors are physically different, which will preclude incorrect hose installation but still allow use of longer, more flexible hoses. They will also process a DSA change to support the modification. They intend to use the same compliant hoses that were used for the first batch run for the second batch run. They intend to produce the design and DSA changes and manufacture the new equipment prior to installing the next set of IXCs.

A calibration facility employee discovered contamination on a radiological instrument during a transfer of the instrument from the TSCR project to the calibration facility. The instrument had been used to support ongoing work in high-contamination areas within the TSCR Process Enclosure. Subsequent surveys found contamination on four other instruments located in the same storage area as the first instrument. Additionally, surveys identified contamination in the carpet of the facility where the instruments were stored. Based on surveys of vehicles, offices, work areas, and other equipment, radiological personnel believe the contamination spread was limited to the single facility. TOC personnel will perform a causal analysis.