

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 27, 2019

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** B. Caleca and P. Fox, Hanford Resident Inspectors  
**SUBJECT:** Hanford Activity Report for the Week Ending December 27, 2019

**Waste Encapsulation and Storage Facility (WESF):** DOE-RL and the Plateau Remediation Contractor nuclear safety personnel completed independent reviews of recent studies that provide updated information for seismic and volcanic ash fall hazards at Hanford site. The purpose of the reviews was to determine if the updates affect the design criteria for the WESF and the recently designed Capsule Storage Area (CSA), which will be used for future dry storage of the cesium and strontium capsules that are currently stored in the WESF pool. Their review evaluated the updated information against the WESF documented safety analysis (DSA) and the CSA preliminary DSA. The analysis determined that the WESF can withstand the structural loads predicted by the studies. Additionally, the Cask Storage Pad, which is part of the CSA, is designed to withstand the predicted seismic accelerations and the Cask Storage System (CSS) will remain in a stable, upright position (cask will not slide or tip over) during the postulated earthquake. Additionally, the storage facility is designed to withstand the predicted roof loading for ash fall. Based on their reviews, DOE-RL and the contractor concluded that no additional analysis or facility modifications are necessary for the WESF or the CSA. However, administrative controls will be developed to ensure that the cooling vents are not completely blocked by ash fall.

**Waste Treatment Plant (WTP):** The WTP contractor sent a letter to DOE-ORP that stated that they had concluded that spargers are not required for the High Level Waste (HLW) Facility Melter Feed Preparation Vessel and Melter Feed Vessel designs. Their position is based on a technical evaluation that they performed that determined that the spargers do not provide any substantial mixing of waste that is blended with glass forming chemicals, and that spargers are no longer credited as a nuclear safety control for preventing hydrogen explosion hazards. In response, DOE-ORP directed the contractor to comply with applicable WTP contract requirements for design of WTP HLW systems; they also directed the contractor to ensure that concerns recently communicated by the Board regarding the contractor's hydrogen control strategy are addressed during design verification. The referenced Board communication noted that the hydrogen control strategy identified by the contractor is conceptually viable, but technically challenging, and noted that the contractor must be able to show that the mechanical mixers and process vessel air purge systems will perform reliably, as expected, or provide an additional method for agitating the waste in the event of a mechanical mixer failure. DOE-ORP's direction requires the contractor to ensure that all modes of operations, including abnormal/upset conditions are considered in verifying the HLW facility melter feed process requirements related to mixing.

**Tank Side Cesium Removal (TSCR) System:** DOE-ORP approved a recent Tank Farm Operations Contractor Startup Notification Report (SNR) that indicates that a Readiness Assessment will be used to establish readiness for TSCR System startup. Startup authorization authority will remain with DOE. Based on the SNR, the contractor intends to startup TSCR in July 2021.