

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 2, 2017

**TO:** S. A. Stokes, Technical Director  
**FROM:** P. Fox and D. Gutowski, Hanford Resident Inspectors  
**SUBJECT:** Hanford Activity Report for the Week Ending June 2, 2017

**Tank Farms.** The contractor successfully removed the plugged pump from AW-106 (see Activity Report 4/28/2017) using equipment and techniques developed partly due to lessons learned from the AP-02A pump removal (see Activity Report 11/13/2015). A punching rig allowed much of the waste holdup in the pump to drain through holes punched into the pump column. The rig also included features to reduce worker dose, especially shallow dose from beta particles. Preliminary indications are that these were successful, with the Armaflex shielding that was installed with minimal contact handling as the pump rose out of the pit providing a factor of 10 reduction in beta dose.

**PUREX Plant.** RL and the contractor notified the Washington Department of Ecology that they intend to fill PUREX storage tunnel one with engineered grout to address structural integrity concerns following a recent partial tunnel collapse (see Activity Report 05/12/2017). Use of the low-density fill will improve tunnel stability and reduce the potential for radiological releases and is expected to provide a durable interim solution without precluding future remediation. They expect to start the grouting as soon as possible and complete the effort before November.

**222-S Laboratory.** The resident inspector observed an evaluated field drill for exercise credit at the 222-S Lab. The scenario had a bomb blowing a hole in the exterior wall of the 11A hotcell annex injuring and contaminating individuals working there. There was also second, unexploded bomb in 222-S. All laboratory personnel participated in the drill along with the Hanford Fire Department and Patrol. While some radiological practices improved from previous drills and exercises, establishment and control of radiological boundaries remained a weakness.

**Waste Treatment Plant (WTP).** The contractor submitted a revised engineering study that addresses technical concerns raised in an August 2012 technical staff issue report regarding the potential for sliding bed erosion of WTP piping. The contractor states that their evaluation has determined that sliding bed erosion wear is less aggressive than turbulent erosion wear in non-Newtonian waste pipes. Therefore, they conclude that sliding bed wear testing is not required. Additionally, the study provides references for design basis fluid and particle properties and defines the assumptions used to support their determination.

The contractor notified ORP that they completed the Direct Feed Low Activity Waste design completion milestone on May 26, 2017.

**Low Activity Waste Pretreatment Facility (LAWPS).** The contractor submitted the LAWPS Preliminary Safety Design Report (PSDR) for DOE review. The PSDR includes a revised control strategy for mitigating the effects of a hydrogen explosion that could occur in the processing system ion exchange columns. Under the strategy, the ion exchange columns will be vented to another tank if flow is lost through the columns and restoration is delayed. Ion exchange system components will be designed to maintain integrity if an explosion results from the residual hydrogen that remains after the system is vented to atmospheric pressure.