

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 1, 2018

**TO:** S. A. Stokes, Technical Director  
**FROM:** P. Foster and P. Fox, Hanford Resident Inspectors  
**SUBJECT:** Hanford Activity Report for the Week Ending June 1, 2018

**Tank Farms:** The contractor's Corrective Action Review Board met to assess the Apparent Cause Analysis Report generated in response to a positive USQD related to a calculation that supports the crediting of passive ventilation for hydrogen control in several types of tanks (see 4/27/2018 report). The analysis team determined that two of the causes of the deficiency were: (1) the use of legacy simplifying assumptions related to tank geometry that were no longer conservative given the current flammable gas control strategy and (2) a failure to adequately document the rationale for the assumptions. The analysis team further determined that these causes are addressed by corrective actions taken in response to previous causal analysis reviews. Those corrective actions include modifications to an engineering document check procedure and an initiative to improve the rigor of work performed by engineering staff. As an improvement opportunity, they also recommended use of this case as a training example to illustrate the need to question assumptions supporting calculations. The extent of condition performed for this event was limited to calculations directly supporting passive ventilation in this subset of tanks. It identified one additional case where an incorrect assumption yielded a non-conservative result in the expected hydrogen concentration in the tank AY-102 annulus.

The resident inspectors note that there have been five similar cases over the last two years where errors have been found in calculations or documents that support TSR implementation in the Tank Farms. The resident inspectors have discussed this observation with Tank Farm managers and also provided the observation to DOE-ORP. Tank Farm managers have acknowledged that the observation is valid but have also stated that, because of the number of existing documents (tens of thousands), it is not feasible to perform a comprehensive review. Consequently, they intend to address any existing deficiencies through improved technical rigor as the documents are reviewed to fulfill other tasks. Given the large number of documents, the resident inspectors acknowledge that a comprehensive review would not be practical. However, they suggest that it may be appropriate to consider a more systematic approach that identifies key documents that support implementation of TSRs and then places those documents on a schedule for review over a reasonable period of time. Such an approach would improve confidence in the technical foundation that supports safety basis implementation.

**Low Activity Waste Pretreatment System (LAWPS).** The contractor held multiple sessions of a Process Hazard Analysis (PrHA) focused on the facility's ion exchange columns. The PrHA focused on first identifying the baseline operation of each of the three columns during each step of the process and then identified the potential consequences and controls for each category of process upset (e.g., no process flow, elevated process temperature). This methodology will be repeated throughout the LAWPS process nodes to inform the development of the PDSA.

**Building 324.** The resident inspector observed a facility hazard review board (HRB) evaluation of a work package that will be used to demolish and remove the facility's Sample-Load Out Room. The HRB's evaluation was thorough and involved appropriate subject matter experts.