

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 14, 2011

**TO:** T. J. Dwyer, Technical Director  
**FROM:** W. Linzau and R. Quirk, Hanford Site Representatives  
**SUBJECT:** Hanford Activity Report for the Week Ending October 14, 2011

Board staff members S. Lewis, P. Meyer, A. Poloski, and S. Stokes were on-site to observe a workshop on mixing and sampling of waste in the double-shell tanks (DSTs).

Tank Farms: The site rep questioned if the contractor was complying with a compensatory measure for an unreviewed safety question concerning large, dense plutonium (Pu)-rich particles (see Activity Report 10/7/11) because an engineering analysis had tighter limits than an associated work procedure. The compensatory measure prohibits all sludge-disturbing activities in the affected waste tanks. The contractor completed an analysis to demonstrate that these heavy particles would not be mobilized and cause a criticality concern during decanting of DST AN-101. The analysis noted that waste would only be drawn from above the 230-inch level in the tank; however, the approved transfer procedure allowed the pump to be lowered to 216 inches above the tank bottom. When the site rep raised this issue to contractor managers and an Office of River Protection (ORP) facility representative, they concluded that the transfer could continue until the pump was lowered to 230 inches, but would then have to stop unless the analysis was revised. The site rep subsequently identified other weaknesses in the analysis, such as the unjustified assumption that the solids could be mixed without causing differential settling of the heavier Pu particles. This assumption was based on mixing tests in another DST that did not contain the heavy particles like those in AN-101. Both the contractor and ORP are now reviewing the revised analysis.

The site rep questioned the efficacy of old (more than five years) administrative controls that are being tracked by shift managers in a document known as the Action Tracking Binder (ATB). An ATB item can be written after temporary operational restrictions, known as "red arrow entries", are more than 28 days old, but the corrective actions are not complete. The contractor and ORP agreed to evaluate the adequacy of this administrative control process.

Waste Treatment Plant (WTP): The contractor formed a dedicated team, the Vessel Completion Team (VCT), to address technical questions associated with the design of vessels. The goal of the VCT is to verify the design of large vessels to allow the removal of the hold on placing the remaining vessels in the Pretreatment facility, starting mid-2012. The team has senior management as the leads and two major functional groups to focus on pulse jet mixers and large-scale integrated testing. These two groups have direct support from the appropriate disciplines, such as project engineering, testing, and nuclear safety. ORP questioned why there was no interface with the Tank Farms contractor in the organization and project management stated that the omission would be corrected. The site rep also questioned if the resources allocated to resolving technical questions to allow placement of vessels would also be used to address concerns presented in Recommendation 2010-2 and the contractor indicated that was their plan.

Sludge Treatment Project (STP): The contractor initiated a review of the preliminary design package for STP Phase 1, which will remove the sludge from the K West Basin. The review is being conducted by a contractor team that is independent from the project. The site rep noted that the project's presentations demonstrated they were well prepared for the review.