

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 26, 2012

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending October 26, 2012

Board staff members P. Meyer, A. Poloski, and F. Sutherland were on-site to discuss the plans for sampling the waste feed to the Waste Treatment Plant.

Waste Treatment Plant (WTP): The site reps were briefed on the status of the Reliability Validation Process (RVP) (see Activity Report 8/17/12). The contractor started the RVP to address the Level 1 Findings from the Office of River Protection (ORP) and identify the changes that need to be captured during the project's rebaselining efforts. In essence, the contractor is attempting to validate that the existing design will work. The RVP has 120 people evaluating three distinct areas: Foundational Processes; Facility and Systems Designs; and Issues Management. The first wave of the Functional Process Review includes three major processes: engineering/ procurement interfaces, requirements flowdown, and design verification. The RVP is using a Six Sigma Process and has completed their first "tollgate" for the Foundational Process Review by identifying the possible deficiencies in these processes. The first wave of the System Review includes seven systems important to safe operations, such as the melter off-gas and ultra-filtration systems. The flowdown of requirements and discrepancies in the design documents are being identified at the component level for these systems. One of the frequent issues identified is errors in design calculations that result from not updating the analyses as the facility designs changed over the years. The teams are documenting the results in reports and including recommendations to prevent recurrence. The initial reports are scheduled to be completed by mid-December, but the changes to resolve the causes of the problems will be conducted through fiscal year 2013. If the contractor determines that it is necessary to further improve performance, they may review up to five more processes and 10 more systems.

Tank Farms: The Board's staff identified an apparent error in the calculation that determines if tanks can have spontaneously flammable gas release events. The Authorization Agreement and the Documented Safety Analysis prohibit the creation of any new Waste Group A tanks. A Waste Group A tank could be created by waste transfers that makes the tank capable of large spontaneously buoyant displacement gas release events (BDGREs). In 2005, an ORP safety analyst identified that the Tank Farm model for these BDGREs was not conservative with respect to the scientific knowledge at that time. The ORP management in place then decided that the model was sufficiently conservative and therefore the contractor was not directed to revise it. The contractor and ORP are evaluating the path forward.

ORP approved changes to the safety basis that resolve some of the issues from an April 26, 2011, Board letter concerning the waste transfer system. The changes include new TSR administrative controls to: evacuate all personnel from the double-shell tank farms and stop all waste transfers after seismic events; terminate waste transfers following the detections of leaks except for valve stem leakage and anticipated leakage from mobile arm retrieval system rotary unions; and require in-service leak tests when connections are remade.