

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 30, 2011

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending December 30, 2011

R. Quirk was out of the office this week.

Waste Treatment Plant (WTP): The contractor has completed a plan to study alternative designs to mix non-Newtonian vessels (NNVs). The plan will evaluate modifications to the existing designs or changes to operational strategy that can be pursued if the project determines that the five NNVs cannot meet their mixing requirements. Two of the draft alternatives listed in the plan focus on designing smaller vessels for lag storage of high-level waste (HLW) in the Pretreatment facility. By reducing the volume and maintaining the same number of pulse jet mixers, the power-to-volume ratio for mixing is increased. In addition, the reduced volume of waste would lessen the need for spargers, thereby decreasing the aerosol generation that will load the vessel vent system's HEPA filters. The plan also proposes alternatives that would change the operational strategy, such as: limiting the concentration of solids in the waste to 10 percent by weight; limiting the level of waste in a vessel; or installing a bypass header to feed problematic waste with fast settling solids directly to the HLW facility. These operational options could aid mixing but would most likely decrease throughput and extend mission life. Lastly, the plan discusses alternatives that could be implemented in the Tank Farms and will be the subject of further discussions between the two contractors scheduled for next week. The final down-select will occur early in January. The project will decide if a recommended alternative should be pursued after the study is completed near the end of February 2012.

Last week, the WTP contractor provided the response to an Office of River Protection (ORP) surveillance that noted continued deficiencies in the system descriptions (SDs). The original issue was raised by DOE in a 2009 Construction Project Review Report that noted the development of more detailed SDs should be accelerated because there is a risk that failures in the design to meet functional requirements may not be discovered if SDs are incomplete. In October 2011, ORP's surveillance resulted in a concern that SDs still do not provide the information needed to support integrated safety reviews, configuration management, and the development of plant operations. The contractor's response noted that SDs are now generally used for hazard analysis activities and committed to complete an evaluation of requirements, costs, and benefits of increasing the rigor of the alignment of SDs with the design. All corrective actions are scheduled to be completed by May 30, 2012.