

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 2, 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 2, 2011

R. Quirk was out of the office most of this week.

Waste Treatment Plant: The site rep observed a meeting to discuss the results of the mixing testing that was conducted to support the contractor's assertion that calculation techniques for Newtonian waste will bound the mixing performance of non-Newtonian wastes (see Activity Report 11/11/11). The preliminary results of the test did not support the project's assertion in that the area cleared of solids at the bottom of the test vessel was much smaller using a non-Newtonian fluid compared to the test with a Newtonian fluid. The contractor's design and control strategy for pulse jet mixed vessels notes that the predicted results should be "very comparable." The strategy document instructs that if the assertion cannot be supported then "CFD [computational fluid dynamic models] cannot be used to support verification of non-Newtonian solid containing vessels" and "scaling correlations and engineering analysis must be used for design verification." The switch to using scaling methods would require experiments at multiple separate test vessel scales and may cause a significant increase in the scope of the testing required to complete vessel verification. The strategy document also notes that vessel verification is required prior to installation of the remaining vessels starting in August 2012. The project has been evaluating other tests that may be conducted to support their assertion.

The contractor determined that the issues involving the facility designs not being in alignment with the safety basis should be reported as potential programmatic noncompliance. These misalignments resulted in management suspension of work of design, procurement, or installation of several key systems (see Activity Report 11/4/11).

The contractor's Environmental and Nuclear Safety department has been reorganized to better support the transition from engineering and construction to commissioning and future operations. The new organization contains a significant number of support subcontractors who are experienced in safety basis development. The nuclear safety manager believes this new organization will provide adequate resources to continue with the management assessments of the safety analysis for the individual facilities and enough people to ensure the safety basis complies with the requirements in DOE Standard 3009.

Plutonium Finishing Plant (PFP): The site rep attended two critiques this week at PFP. The first critique addressed damage that occurred to the crane in the Plutonium Recovery Facility. The damage most likely occurred when a tool (extended-reach wrench) snagged a power cable on the underside of the crane. The tool is normally hung on a wall inside the canyon for use through glove ports. Repairs to the crane are planned to start next week. The other critique addressed confusion on the application of point source ventilation when sealing the plastic sleeve around a section of exhaust duct being removed during D&D. A Richland Operations Office radiological controls assessor questioned whether the project was following the steps in the work package. Part of the confusion was due to differing requirements for point source ventilation in the work package and the follow-on procedure that covers disassembly of containments. The project plans to evaluate the requirements and determine the appropriate radiological control practices.