

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 23, 2011

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending September 23, 2011

Plutonium Finishing Plant (PFP): Last week, the contractor concluded that operation of the confinement ventilation system (CVS) with only four of the seven safety-significant (SS) ventilation fans operable was an unreviewed safety question (USQ) because there is an increased probability that the system could malfunction (see Activity Report 9/2/11). They subsequently submitted an Evaluation of the Safety of the Situation (ESS) and the Richland Operations Office (RL) concluded the ESS is an adequate interim basis for restoring PFP to unrestricted operation. RL imposed five conditions of approval in the associated Safety Evaluation Report (SER), including: enhanced monitoring and inspections of the exhaust fans, designation of the backup exhaust fans and associated instrumentation and controls as Important to Safety (ITS)-Defense in Depth (DID), and requiring a plan for restoring the three out-of-service SS fans to full service.

The contractor, with RL approval in April 2011, downgraded the fire detection and alarm system in the building that houses the CVS exhaust fans from ITS and deactivated the system. The project downgraded and deactivated the system because the detectors were connected to a fire protection panel in the 2736-Z complex that was being prepared for final demolition. RL's SER required the contractor to implement a combustible material limits and to reevaluate the cost-benefit of restoring the fire detection and alarm system by the end of October 2011. With no fire detection system operable, the Hanford Fire Department declared (in the form of a "stand-off and protect" letter) that protecting the SS ventilation equipment in the facility during a fire has reduced importance, but it is unclear why neither the project nor RL took action to refute this position.

Waste Treatment Plant: The site rep observed a meeting that updated the Federal Project Director (FPD) on the contractor's progress on large-scale integrated testing (LSIT). The FPD stressed that the project needs to complete a comprehensive control strategy document that lays out the plan to resolve the technical issues related to pulse jet mixers (PJMs). The FPD made it clear that without agreement on the strategy, the testing schedule and the subsequent lifting of the hold on setting vessels in the Pretreatment facility in mid-2012 would be in jeopardy.

In addition, the contractor's testing organization presented an idea for modifying the design of PJMs that could minimize the chance for overblows. The concept involves making a small hole in the wall of the PJM near the bottom. When the liquid level in the PJM reaches the hole, air would vent into the vessel and cause a detectable pressure drop that would provide a signal to stop the drive stroke prior to the overblow.

Tank Farms: The contractor identified a potential inadequacy of the safety analysis (PISA) because the waste transfer system components were only analyzed for temperatures as low as 32°F, but this is inconsistent with the requirement that temperatures could be as low as -25°F.

100 K Project: Last week, the contractor concluded that a PISA (see Activity Report 7/29/11) is a USQ because the probability of a basin overflow increased. This increased probability is related to a potential failure of a new service water pipe loop installed to the west of the facility.