DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 10, 2010

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending December 10, 2010

Board staff members D. Campbell, E. Gibson, P. Meyer, R. Oberreuter, S. Stokes, and R. Verhaagen were on-site to review instrumentation and controls for the Waste Treatment Plant.

Waste Treatment Plant (WTP): The site rep and staff met with contractor and Office of River Protection personnel to discuss the mixing tests for benchmarking the Low Order Accumulation Model (LOAM). The project is conducting its fourth of six sets of tests but has experienced problems that have slowed testing. Some pulse jet mixers (PJMs) plugged when solids were allowed to settle-out in the nozzles of the PJMs. In addition, some wear plates and PJM nozzles eroded to the extent that holes in the nozzles had to be repaired. The site rep questioned if these observations were being documented and tracked by the project to determine the implications for the design of WTP vessels and PJMs. The project admitted that no formal tracking mechanism is in place for these types of observations, but it is considering creating a process with threshold criteria for what observations need to be captured. The project also noted the plans for large-scale integrated testing include tests of post-design-basis-event scenarios that would simulate periods of stagnant waste with settling that could cause plugging of the PJMs. In addition, the project also said that the observation of erosion provided an opportunity to compare erosion rates calculated for the operating plant against what has been observed during this testing. The testing is planned to be completed by the end of the year and a data analysis report completed by the end of January. A report comparing the results of these tests and the LOAM results is scheduled to be completed by mid-February.

Mission Support Contractor: DOE completed a combined Phase I and II Integrated Safety Management System (ISMS) verification. The team's preliminary findings included 102 opportunities for improvement, which have been combined into four cross-cutting findings: the system description lacks maturity as it does not reflect the breadth of all the project's work control processes; implementing procedures lack clarity, are incomplete, or are missing; the contractor's ISMS framework is highly expert-based and will degrade as the experts retire; and a company-level identification of roles and responsibilities does not exist.

Plutonium Finishing Plant (PFP): The project declared a potential inadequacy in the safety analysis (PISA) that resulted from findings from last week's DOE Headquarters assessment of specific administrative controls (SACs). The DOE finding concerned a SAC that was inappropriately credited with four orders of magnitude of event frequency reduction for an equipment explosion event in an "operationally clean" area. An area is operationally clean when as much contaminated equipment as is reasonable has been dismantled, packaged as waste, and removed from the area. Some Technical Safety Requirements (TSR) controls, such as fire protection, can be discontinued once the area is operationally clean. The PISA determination concluded that hazard controls may not provide the credited mitigation or prevention assigned to them due to inconsistencies in the flowdown from accident analysis assumptions to and through the TSR.