DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 19, 2010

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending November 19, 2010

Staff member T. Hunt was on-site to observe the conduct of operations in the Tank Farms. Staff members B. Caleca, F. Bamdad, and J. Troan were on-site to observe the 60-percent design review for removal of the K East Reactor core.

River Corridor Closure Project: The contractor deployed radiological detectors into soil under Building 324 and discovered very high radiation readings from leakage from B-Cell. The readings were collected by feeding probes down steel tubes that were driven horizontally into the soil. The closed-end tubes were driven from a trench outside the building's footprint through roughly 60 to 80 feet of soil to extend under B-Cell. The largest reading to date from the beta/gamma probes was ~8,900 Rad/hour. Based on process knowledge of activities conducted in B-Cell, the contamination is assumed to be predominately Cs-137 and Sr-90. The contractor was conducting this characterization because a hole had been found in the stainless-steel liner of B-Cell late last year during decontamination activities (see Activity Report 11/27/09). While they expected to find contamination under the hole in the liner, readings also spiked as the probe passed under the edges of the slab corresponding to the location of the expansion joints. The contractor currently assumes that contaminated liquids migrated under the liner, across the slab, and through the expansion joints to the soil below. The contractor created a standing order with actions to limit or prevent spread of contamination. In addition, an unreviewed safety question determination was completed that evaluated both the substantial radioactive material inventory in the soil under B-Cell and the insertion of the closed-end steel tubes used to perform the characterization. The determination concluded that these new conditions did not change the probability or consequences of previously analyzed accidents, and credits the existing radiation protection controls to monitor the low-level dose (shine) being emitted from the ends of the tubes and potential contamination spread if the seals on the tubes failed. A review of historic records of spills during processing activities in B-Cell indicates only trace quantities of fissionable material were present and that criticality remains incredible. The site reps met with the contractor to discuss immediate and long-term actions. The contractor expressed that the discovery will significantly affect Building 324 D&D plans, which involve cutting the cells using diamond wire saws and lifting out large sections as monolith for disposal.

Plutonium Finishing Plant (PFP): The contractor completed a level-3 readiness assessment (RA) for the start of activities using Aspigel® to chemically decontaminate gloveboxes and hoods. The RA team identified one pre-start finding, which involved adding lessons learned during mock-up training to the procedure. This was the first use of a level-3 RA per the contractor's revised start-up procedure. A level-3 RA allows the contractor to conduct a more formal review of relatively simple activities. The team noted that the project was well prepared and will recommend approval for start-up.

Tank Farms: The Office of River Protection conducted an assessment of the contractor's hazard analysis process, which resulted in five findings. One of the findings was that the contractor's process does not require verification that standard industrial hazards that are screened out for analysis are covered under safety management programs or basic worker safety programs.