

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 28, 2011

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending October 28, 2011

Board staff members R. Kazban, A. Poloski, and S. Stokes were on-site to discuss the design process for piping systems and the efforts to prevent pipe plugging at the Waste Treatment Plant.

Waste Treatment Plant (WTP): The Office of River Protection (ORP) completed a report documenting their review of the material selection process for WTP vessels with a focus on performance margins for corrosion. The scope of the review was limited to the process vessels that are designed to hold near-neutral to acidic solutions. The report documents two findings: 1) the process the project used to evaluate and select materials for 20 vessels did not include performance margins to account for uncertainties, and 2) the maximum operating temperatures for 10 of the WTP vessels are in excess of the corrosion-limiting temperature cited in literature. The 10 vessels in question were fabricated using 316L stainless steel except for one that used 304L stainless steel. The limiting temperature for the 316L stainless steel cited in the report is 122° F to preclude stress cracking corrosion, but the maximum operating temperature for these vessels ranged from 133° F to 194° F. The author of the report also notes that no corrosion testing of candidate materials was conducted during the material selection process for these vessels, which results in larger uncertainties in the material corrosion performance and requires the use of the more conservative, lower temperature limits.

The contractor sent a letter to ORP requesting direction regarding the report on the form and quantity of plutonium oxide particles in the waste in the Tank Farms (see Activity Report 8/26/11). Specifically, the letter requested that ORP provide the report and definitive direction on how to address the content of the report as it relates to the design assumptions at the WTP. The report was prepared by an independent team and was a joint investigation with representatives from Tank Farms, WTP, DOE, and off-site technical experts.

Plateau Remediation Contractor: The contractor completed their review of the conduct of nuclear operations and maintenance at the Waste Encapsulation and Storage Facility (WESF) and the Canister Storage Building (CSB) (see Activity Report 10/21/11). The review identified several preliminary issues, including: the WESF and CSB procedures reviewed contain “error traps”, lacked task-specific controls for some hazards, and were not well integrated; the corrective actions in response to the Board’s letter are still in the analysis phase and need more development to address the problem statement; safety basis training for maintenance personnel is not always required prior to performing work at WESF and CSB; the project does not have long-range succession planning for management and workers; and the alarm response procedure for radiological contamination provides insufficient information on actions to be taken if the contamination is suspected to be a radon progeny. A similar review started this week at the Plutonium Finishing Plant and is expected to last two weeks.

The contractor and Richland Operation Office are reinstating the DSA for the 209E Critical Mass Laboratory (see Activity Report 10/21/11). The contractor will conduct an independent verification review of the key elements of the DSA prior to shipping the last containers of waste staged outside the facility.