

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 13, 2008

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending June 13, 2008

Staff members D. Burnfield, P. Maginot, J. Troan, R. Verhaagen, and outside expert D. Volgenau were on-site reviewing work planning/control at the River Corridor Closure Project.

Waste Treatment Plant: The site reps noted significant Office of River Protection (ORP) presence in two of three significant integrated safety design meetings this week. One meeting focused on how the contractor will revise their Authorization Basis Amendment Request associated with the tailoring of the Fire Protection Design Criteria standard (DOE-STD-1066) (see Hanford Activity Report 6/6/08). The acting ORP Assistant Manager for Engineering and Nuclear Safety noted that the "should" statements in the standard need to be interpreted as "shall" requirements in the design documents to ensure the facility is designed and operated in a safe manner. The contractor is evaluating ventilation system modifications which conform with the standard, such as adding ember screens, adding a temperature-activated mist system for soot suppression, reducing the speed of the exhaust fans if there is excessive differential pressure across the HEPA filters, and adding a second stage of HEPA filters to the Canister Storage ventilation system. The contractor is still evaluating the impact of the differential pressure across the ember screens. The mist system design, which would be similar to the automatic spray deluge system described in the standard, may be problematic because the mist volume would need to settle the soot in the plenums, yet still be fine enough so that it evaporates and does not accumulate. The safety pedigree of the mist system still needs to be determined but will probably be additional protection class.

Another meeting focused on the application of ANSI/ISA S84.01 to safety-significant interlocks in the LAW facility (see Hanford Activity Report 5/23/08). ORP personnel discussed the contractor's implementation of the standard, and noted that some changes may be required to ensure the radiological and toxicological exposure criteria for the project are met. Additionally, the authorization basis engineer noted that if the safety instrumented system (SIS) is not reliable enough to meet the requirement for mitigated radiological accidents, any additional layers of protection would probably have to be of the same safety classification as the SIS.

The third meeting was held to discuss the required controls for applying steam directly into the waste in the ultrafiltration vessels in the Pretreatment facility. The previous design relied upon steam ejectors to raise the temperature of waste to aid in the leaching process, but the new design will use submerged perforated piping to introduce steam directly to the waste. A number of hazards are created by the design change, including: migration of waste into steam lines, increased potential for corrosion due to elevated temperatures of tank components, and inadvertently overwhelming the tank ventilation system. The design team is working to devise the proper set of important-to-safety controls to ensure safe operation.

K Basins: The contractor declared readiness to start their operational readiness review for restarting spent nuclear fuel processing.

Project personnel met with ORP to discuss the option of sending the sludge to the tank farms.