

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 23, 2009

TO: T. J. Dwyer, Technical Director
FROM: W. Linzau and R. Quirk, Hanford Site Representatives
SUBJECT: Hanford Activity Report for the Week Ending January 23, 2009

Waste Treatment Plant: A team of experts met to determine if conservatism in the design for hydrogen controls in piping and ancillary vessels (HPAV) can be reduced. At the in-process brief to the Office of River Protection (ORP), the team outlined a new strategy to address hydrogen hazards that they may formally recommend to ORP when they complete their review. The team suggested that the design for HPAV should distinguish between controls that are needed for nuclear safety, the safety case, and those needed for operations, the mission case. Currently, the controls for hydrogen events prevent releases at the system pressure boundaries and secondary confinement is provided by the facility boundaries, including cell walls and the filtered ventilation system. The new strategy would eliminate the reliance on the confinement at the system pressure boundary and would only credit the facility boundaries in the safety analysis. This mitigative approach would allow localized failures of system pressure boundaries, but the team members suggested that a smaller set of mitigative controls, if comprehensive, is better than a large set of individual preventive controls. Team members also believe that the HPAV controls will no longer be classified as safety-class after the contractor reevaluates the accident scenarios. The following are some of the areas the team believes will have to be evaluated to achieve the new strategy: hydrogen generation rates; the safety case strain limits for piping; and the allowed time period between the initiating event and when non-safety controls can be credited in stopping event progression. Team members stated that the report from this review must be evaluated concurrently with the report from the recent Material at Risk (MAR) Update Task Team (see Activity Report 1/9/09).

The MAR Update Task Team issued their report. In addition to their general recommendations on reducing MAR, the report contains some specific suggestions, such as the contractor should evaluate the survivability of the passive building confinement boundary for cases where hydrogen detonations cannot be prevented from causing a release from the system boundary.

ORP directed the contractor to immediately suspend ongoing work to provide equivalent fire protection for HEPA filters per DOE-STD-1066, except for the analysis for the Analytical Laboratory, which ORP wants completed by the end of this month. ORP is pursuing an exemption to Section 14 of the standard and asked the contractor to propose analysis and testing that would support compliance with DOE Order 420.1B, Chapter II, Fire Protection. Though not stated in the ORP letter, the direction to suspend work appears to be in anticipation of the expected reduction of MAR and the significant changes to the safety basis control strategy recommended by the MAR Update Task Team.

Tank Farms: ORP issued a Safety Evaluation Report for the Justification for Continued Operation for safety-significant equipment that has questionable quality assurance documentation (see Activity Report 1/16/09). Subsequently, the contractor performed a double-shell tank (DST) to DST waste transfer and restarted a single-shell tank retrieval. Both of these were the first time these activities were performed since the contract transition in October 2008. A significant number of contractor and ORP oversight personnel were present for both evolutions, which were conducted without incident.