

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 23, 2004

**TO:** K. Fortenberry, Technical Director  
**FROM:** D. Grover and M. Sautman, Hanford Site Representatives  
**SUBJ:** Activity Report for the Week Ending January 23, 2004

Board member Dr. Matthews reviewed flammable gas control strategies and waste retrieval activities at tank farms and the Waste Treatment Plant. Walk downs were conducted of the pulse jet mixer scaled tests, C Farm, the Cold Test Facility, the 242-A Evaporator, and other facilities.

Tank Farms: Repeated oxalic acid additions and sluicing campaigns have removed all but 2700 gallons of waste in tank C-106. The next phase is tank closure. (II)

Waste Treatment Plant (WTP): The staff has been raising concerns with the proposed cesium ion exchange column design because it allowed hydrogen to accumulate, possibly exceeding the lower flammability limit. (See Sept. 12 and 19 reports). To address these concerns, Bechtel is evaluating design modifications such as a nitrogen inerting system. (III)

The project is now focusing on hybrid mixing systems that combine pulse jet mixers (PJM), sparging, and recirculation pumps to prevent gas retention in non-Newtonian tanks. While test results are encouraging, the long-term reliability of air sparge tubes (which could exceed 100 in some tanks) will need to be resolved. Gas retention test data indicates that the assumptions that 1) 100% of the gas is retained upon loss of mixing and 2) there is a near instantaneous gas release upon resumption of PJM mixing (when gas holdup is high) are valid. (III)

Spent Nuclear Fuel Project (SNFP): SNFP radiation control personnel identified unanticipated contamination in the K-West Basin transfer bay. Upon further investigation high levels of contamination were discovered in the area beneath a blank flange on the Integrated Water Treatment System. Due to the proximity of the contamination to an external door for the facility the radiation control personnel extended the survey outside the facility to check for migration of the contamination. Surveys outside the facility identified an approximately three square foot area with elevated contamination requiring posting as a high contamination area. Discussions with radiation control personnel identified that the flange in question has previously been identified as intermittently leaking, however, actions to eliminate the leak or mitigate the hazard for this highly contaminated system were not done. (IV)

Waste Management Project: The Implementation Validation Review (IVR) for the Master Documented Safety Analysis (MSDA) commenced on January 23, 2004. The MSDA combines the safety bases for the Low Level Burial Grounds, Central Waste Complex, T Plant, and the Waste Receiving and Processing Facility to streamline waste retrieval, analysis, and shipment operations. (II)

Cc: Board Members