

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 21, 2005

**TO:** K. Fortenberry, Technical Director  
**FROM:** D. Grover, W. Linzau, and R. Quirk, Hanford Site Representatives  
**SUBJ:** Activity Report for the Week Ending October 21, 2005

Tank Farm Conduct of Operations: Flammable gas concentrations in double shell tank (DST) SY-103 increased to an indicated level of 33 percent of the lower flammability limit (LFL) before appropriate corrective actions were taken. Tank SY-103 is one of the six DSTs that is susceptible to spontaneous gas release events (GRE) and there is evidence that it has experienced multiple GREs in relatively short periods of time. Existing analysis for tank SY-103 indicates that it would be approximately a month before these flammable gas levels could be reached by steady state gas generation, yet they were reached in six days. It is postulated that there were at least two spontaneous GREs in SY-103 this week before actions were taken to reduce flammable gas concentrations. However, this has not been confirmed because the SY-103 supernate level equipment used to confirm this hypothesis was not available.

The normal SY farm ventilation system was inoperable because there was a planned electrical outage. The indicated flammable gas concentrations increased from zero percent on October 13 to 15 percent of LFL on October 15, and then to 33 percent of LFL on October 19. The first actions to reduce flammable gas did not occur until 15 hours after the 33 percent reading was obtained. Although no technical safety requirements (TSR) were violated, the safety expectations of CH2MHill Hanford Group (CHG) management were not met. These included not promptly notifying senior CHG management or the Department of Energy (DOE) after the 15 percent increase, not administratively entering the appropriate TSR limiting condition for operation (LCO) prior to beginning the power outage, and not adequately evaluating the impact of changing plant conditions during the work planning process. Other areas that may require further evaluation include DOE oversight of facilities under LCOs and the adequacy of the TSR controls for tanks, such as SY-103, that are anticipated to undergo multiple spontaneous GREs.

Waste Treatment and Immobilization Plant (WTP): The Office of River Protection (ORP) held an exit meeting to discuss the draft results of an assessment of quality issues. ORP noted weaknesses in the Bechtel National, Inc. safety culture, as demonstrated by the lack of a comprehensive plan to correct repetitive problems with procedural compliance, inadequate training requirements that also lacked a measurement of effectiveness, and a lack of a questioning attitude during problem resolution. The final report will not be finished for at least two weeks.

Plutonium Finishing Plant (PFP): Fluor Hanford recommended to DOE that the new storage facility should be built at a new location within the PFP protected area rather than reuse the underground structure of an existing facility. This is because the floors of the existing facility are not structurally connected to the existing walls. Additionally, the ability of the underground utility trenches that surround the old facility to support a new facility is expected to be more difficult to demonstrate than anticipated.

cc: Board Members