

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 12, 2004

**TO:** K. Fortenberry, Technical Director  
**FROM:** D. Grover and M. Sautman, Hanford Site Representatives  
**SUBJ:** Activity Report for the Week Ending November 12, 2004

Waste Treatment Plant: Bechtel began using their design guide to evaluate hydrogen accumulation in piping and ancillary vessels and a number of issues with implementing this guidance became evident to the Site Rep. Better guidance is needed for determining the impacts to systems and nearby equipment from an accidental ignition of various hydrogen volumes (quantified in terms of TNT-equivalent) as well as the durations of various maintenance scenarios during which hydrogen may accumulate. Concurrently, Engineering is evaluating the systems at a higher-level to identify what design changes may simply eliminate/address common accumulation points without extensive analysis. In many cases, this latter approach may adequately resolve this issue quicker.

The Board's August 26 letter discussed how the design of the A-6 Substation could allow damage to the equipment in the event the sprinkler system activated. Bechtel has been evaluating the potential for code-required sprinkler systems in the other facilities to damage important-to-safety (ITS) equipment. At the High-Level Waste Facility, the sprinkler systems for several rooms will be converted to a pre-action system to prevent accidental activation. Other facilities are looking at the use of cabinets or barriers to prevent water contacting ITS electrical equipment.

K Basin Closure Project: The Site Rep attended the preliminary hazards analysis meeting for scabbling the K-East Basin safety class walls while sludge and potentially some fuel is still being stored in the basin. While the effect of scabbling was considered in wall thickness reduction and effect on bonding of the concrete with the rebar, the effects on any patches made over the shrinkage cracks in the basin walls was not discussed until brought up by the site rep.

During removal of long-handled tools from the K-West Basin, an operator became contaminated on his modesty clothing and legs. Work place air monitoring showed airborne levels up to 20 DAC. The contractor critique into the event identified that the operators started to move the tools before the radiological control organization conducted surveys of the tools. These surveys would have identified that the contamination levels were outside the termination limits of the radiological work permit and additional radiological work planning would be needed. That the work conditions were not evaluated for specific hazards and controls instead of relying on historic procedures and termination limits does not appear to have been addressed. This is the second major worker contamination event in the recent past. Both appear to have been caused by poor work package development followed by inappropriate work actions. It does not appear that the K Basin Closure Project handling these deactivation activities is appropriately considering the degradation of radiological conditions of unused equipment compared to that of the frequently used equipment under fuel processing.