

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 13, 2002

TO: K. Fortenberry, Technical Director
FROM: D. Grover and M. Sautman, Hanford Site Representatives
SUBJ: Activity Report for the Week Ending December 13, 2002

Spent Nuclear Fuel Project (SNFP): The first Multi-Canister Overpack (MCO) of K-East Basin fuel was removed from the basins on December 11, 2002. The Site Rep observed the activities and preparations for the second K-East MCO which was shipped the following day. The proficiency of operators in loading fuel baskets and preparing MCOs for shipment has improved substantially since the beginning of the year. The ability of the Fuel Transfer System to keep up with the production rate in the K-West Basin will be challenged until operators in training to support two shift operations become more proficient. A minor concern with the increased production is that debris removal from the basin has not also increased to remove the empty fuel canisters. Currently more than 1900 empty canisters and large piles of container lids are strewn across the basin. As additional fuel canisters are added from K-East, storage conditions are likely to become increasingly difficult unless debris removal is accelerated. (III-A)

Plutonium Finishing Plant: While upgrading the furnace software to support process qualification, errors in the software allowed one furnace to self-start and heat up at its maximum rate to 1000°C undetected until a high heat interlock shut down the furnace at 1050°C. (The furnace typically overshoots to 1070°C unless power is reduced prior to reaching 1000°C). At the time of this event, this furnace was loaded with 2 boats of previously thermally stabilized plutonium oxide. The software program incorrectly used a temperature set point of 1000°C for 3 of the 4 furnaces rather than 0°C. In addition, the software mistakenly turned on the permission to the furnace power regulator for one of these 3 furnaces. This is what allowed the furnace to self-start. Although there was independent verification of the software, these errors were not identified. The furnace operation was not detected in the control room because the Human Machine Interface (HMI) was off-line during the upgrade process. Although the furnaces could have been de-energized without affecting the upgrade, this was not recognized until later. In addition, workers in the processing area were not able to detect the furnace operation because they had evacuated after the bagless transfer system leak detector indicated that helium was leaking. This evacuation did prevent operators from inadvertently working around a hot furnace. It was only realized that the furnace had started and had been shut down when the HMI was turned back on about 1-1/2 hours later and an alarm message was being displayed.

During operator training, operators switched roles and inadvertently skipped four steps in the bagless transfer system (BTS) procedure. As a result, the retracted can plug (which becomes the lid) was not lowered onto the bagless transfer can before welding began. A hole was formed in the side of the bagless transfer can during the first tack weld. Welding automatically shut down and a recovery plan was developed. PFP management is increasing their focus on conduct of operations as a result of these 2 events, 2 criticality nonconformances, and the loss of pressure when exterior and interior airlock doors were held open during a fissile material move. (III-A)

cc: Board Members