

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 11, 2002

TO: K. Fortenberry, Technical Director
FROM: D. Grover and M. Sautman, Hanford Site Representatives
SUBJ: Activity Report for the Week Ending January 11, 2002

Spent Nuclear Fuel Project: The fortieth MultiCanister Overpack (MCO) failed the integrated leak test of its main seal following processing at the Cold Vacuum Drying Facility. The project performed a manual torque of the set screws which maintain compression of the seal to evaluate whether the initial preload of the sealing surface at the K-West Basin was sufficient. This retorquing increased the compression of the seal which subsequently passed a second leak test. Reprocessing of the MCO was then initiated to resolve any concerns with the validity of the final product meeting quality requirements. Mr. Grover has questioned the acceptability of the seal for extended storage as the project has not torqued the bolts to recommended value in the MCO design report and that the torque is being performed on a pressurized MCO. A critique of the process used to preload the MCO at the K-West basin identified problems with the process and associated equipment for sealing MCOs that could have caused this condition. Equipment modifications or manual torquing of the seal closure are likely to be necessary to resume shipment of MCOs. (III-A)

Plutonium Finishing Plant (PFP): The current Final Safety Analysis Report (FSAR) assumes most of the facility confinement function would be maintained after a 0.20 g design basis earthquake although there could be some door warping and cracking. For this function to remain intact, however, certain structural upgrades were needed that were never completed. An Unreviewed Safety Question was declared after a recent analysis determined that earthquake damage could include the collapse of the third floor level into the process area and create new leak paths through holes in the roof. Concurrently, it was realized that oxide powders generated by oxalate precipitation may be up to 100% respirable. The combination of these 2 issues and other recent calculation changes results in a 559 rem onsite and 23 rem offsite dose for a seismic event. In their Justification for Continued Operations, PFP has requested that the Department of Energy accept the increase in risk due to the cost of the upgrades, remaining facility life, and impact to mission work from a reduced inventory limit. (I-C)

The 3013 Technical Review Board has approved the use of loss-on-ignition (LOI) for certain solutions that contain $\text{Pu} + \text{U} + \text{Am} > 80\%$ based on data (under staff review) that shows no observable bias associated with the potential oxidation of UO_2 to U_3O_8 during LOI analysis. In addition, a test plan is under review that would allow evaluation of thermogravimetric analysis data to differentiate between weight losses due to moisture and impurity reactions. (III-A)

Tank Farms: CH2M Hill Hanford Group is planning to add only enough caustic to tank AN-107 to bring the supernatant within chemistry specification because adding enough caustic to adjust both the sludge and supernatant would increase the waste level above the tank's operating limit. Although a waste transfer would free up volume, future caustic additions need to avoid a caustic concentration where testing indicates a sharp transition from 2 to 100 vol% solids. (III-A)