

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 18, 2000

TO: G. W. Cunningham, Technical Director

FROM: M. Sautman, Hanford Site Representative

SUBJ: Activity Report for the Week Ending February 18, 2000

A. Tank Waste Remediation System Privatization Project (TWRS-P): The technical staff conducted a review of the TWRS-P process and design. A presentation is being prepared for the Board. (3-A)

B. Plutonium Finishing Plant (PFP): The Site Rep attended a meeting with Department of Energy (DOE) and contractor personnel to discuss upcoming readiness reviews at PFP. The consensus is that the DOE order requires operational readiness reviews (ORR) for residue cementation, magnesium hydroxide precipitation, and the bagless transfer system. The intent is to make these graded ORR's and take advantage of the results of other recent reviews as appropriate. The Site Rep encouraged them to examine the scope of upcoming ORR's to identify topics that overlap and then plan the scope accordingly to minimize redundant review of some topics.

A concern was recently raised by nuclear safety personnel regarding whether organic residues in certain solutions would cause flammable gases to be released while drying the precipitate cake. Radiolysis and hydrolysis of tributyl phosphate (TBP) can form dibutyl phosphate (DBP) and monobutyl phosphate (MBP), both of which generate butene gas when heated. Process knowledge indicates that much of the solution inventory would not contain TBP because the solution had been steam stripped to remove organic solvents. The 2 dozen containers with the greatest potential for containing TBP are flush solutions that were produced after the ion exchange explosion at 242-Z in 1976. However, most of the remaining DBP or MBP would likely exist as precipitates in the bottom of the containers due to their low solubility. Filtration may be sufficient for removing them prior to plutonium precipitation. In addition, prior experience with hot plates and heat transfer modeling indicate that any residual DBP or MBP in the precipitate cake would be oxidized before temperatures sufficient to generate measurable butene gas are reached. The Site Rep suggested it would be useful to get some actual characterization results to confirm the concentrations of DBP or MBP before any additional testing or modification of the controls is performed. (3-A)

The Washington Dept. of Ecology is allowing PFP to cement hazardous residues under interim status regulations provided that DOE submits by April 1, 2000 several documents related to interim status compliance (e.g., closure plan) and the identification, storage, and characterization of waste to be cemented. A final facility permit application for cementation is also to be submitted by October 31, 2000.

cc: Board members