DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 9, 2005

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
FROM: J. S. Contardi/M.T. Sautman, SRS Site Representatives
SUBJECT: SRS Report for Week Ending September 9, 2005

Tritium Extraction Facility: This week the Site Reps met with National Nuclear Security Administration (NNSA) and contractor representatives to discuss the startup and testing status of the Tritium Extraction Facility (TEF). Of notable interest, the contractor has completed leak test verifications on all nine gloveboxes, the final air balance, and is in the midst of validating the Worker Protection System software and associated controls. Phase II introduction of hydrogen will commence later this month. Recently, the contractor submitted the TEF Documented Safety Analysis to NNSA. The NNSA Safety Evaluation Report is expected by early 2006. The project is currently ahead of schedule for tritium introduction in June 2006.

High-Level Waste Management: As previously reported (Site Rep weekly 7/15/05), the Interim Processing Plan (IPP) implemented realistic assumptions and identified several significant shortfalls which may hinder the timely disposition of liquid high-level waste (HLW). Recently, the Department of Energy requested the site contractor modify the IPP assumptions such that future HLW system planning meets DOE expectations. In addition to modifying the previous assumptions, DOE also requested the contractor identify and resolve potential system constraints which could adversely impact the HLW program.

H-Canyon and HB-Line: Both H-Canyon and HB-Line are nearing resumption of full operations. To date, H-Canyon has resumed 16 of 17 operations with only first cycle solvent extraction remaining. HB-Line is currently working toward resuming the two remaining operations consisting of plutonium contaminated scrap processing and shipments requiring Safety Analysis Report for Packaging compliance.

Before a batch is transferred to some H-Canyon tanks, the uranium (U) concentration is measured using an in-line spectrophotometer, which has a faster turnaround than laboratory analysis. Based on the average of four spectrophotometer readings (6.764 g total U/l), a batch was transferred from tank 18.1 to tank 17.5 that would maintain the total U content in tank 17.5 below the 23 kg procedural limit. The average post-transfer spectrophotometer reading for tank 17.5 was higher (6.987 g total U/l) and work was suspended because the variability among the four readings exceeded the procedure limit. Meanwhile, laboratory analysis of an earlier accountability sample taken from tank 18.1 found a considerably higher concentration (7.604 g/l). When additional samples from tank 17.5 were analyzed with a more accurate analytical process, it confirmed that the spectrophotometer concentration measurements for both tanks were too low. The revised concentration for tank 17.5 (7.387 g/l) resulted in a total U mass of 24.33 kg, which exceeded the 23 kg procedure limit, but not the criticality safety limit. The cause for the discrepancy has not been determined yet, but the spectrophotometer's calibration range, the potential for detector saturation at higher concentrations, and the possibility of air entrainment in the detector cell (which could bias the results low) are being investigated.