

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 21, 2002

MEMORANDUM FOR: J. Kent Fortenberry, Technical Director
J. J. McConnell, Deputy Technical Director
FROM: R. T. Davis/ T. D. Burns
SUBJECT: SRS Report for Week Ending June 21, 2002

Canyon Criticality Scenario: On Wednesday, WSRC identified an unanalyzed criticality scenario for the H-Canyon solvent extraction cycles. This issue has been identified as a Potential Inadequacy in the Safety Analysis and administrative controls have been established to prevent 1st and 2nd cycle operation.

Aqueous/solvent interface level in the mixer-settler aqueous outlet stage is maintained by controlling pressure to the weir box. If this control loop (aqueous outlet interface controller) fails such that pressure in the weir box is high, aqueous will not be able to exit the mixer-settler. Aqueous will then build-up in the bank and eventually exit the bank with the organic stream. This scenario would lead to the introduction of a high acid stream to the subsequent mixer-settler bank; potentially causing a reflux condition and buildup of product material. In March 2002, the F-Canyon 2A bank aqueous outlet interface controller failed resulting in the introduction of a high acid stream to the 2B bank. A reflux condition in the 2B bank occurred; however, operators recognized the condition and shut down the cycle. The Criticality Safety Limit was not exceeded.

This event was identified as a process upset and the interface controller was repaired. At the time, WSRC did not recognize that this particular reflux scenario was not analyzed in the criticality analysis. Criticality controls are implemented for other canyon reflux scenarios but only one of the controls (neutron monitors) would apply for this particular scenario. In late May, a report was completed that detailed the F-Canyon event. This week, H-Canyon personnel recognized that this scenario is not analyzed and double contingency controls are not implemented. WSRC will likely implement administrative controls for the near-term while long-term engineering solutions are evaluated.

Public Interaction: On Tuesday, Dr. Burns briefed the Citizens Advisory Board on DNFSB perspectives regarding high-level waste activities at the Savannah River Site. Dr. Burns outlined several areas important to the Board including continued pursuit of alternate cesium removal technologies, minimization of the DWPF recycle influent stream, and mitigation of potential worker safety vulnerabilities at the Saltstone Production Facility prior to introduction of low-activity salt solution. Recent Board letters to DOE were also discussed, and the Board's positive influence on the high-level waste tank structural integrity inspection plan was noted.

HLW Operations: Last weekend, a loss-of-phase event in the H-Tank Farm-East power distribution system resulted in damage to several ventilation fan motors and a significant amount of instrumentation and control equipment. Repair efforts are underway and WSRC has commenced a review to determine why over-current protection devices were ineffective in preventing the equipment damage.

A problem with properly establishing an electrical lock-out was also encountered this week. On Wednesday, an operator preparing to work on Tank 7 waste removal equipment determined that there was voltage on a supposedly isolated system. Subsequent review of the lock-out revealed significant conduct of operations lapses in both execution and validation. The site representatives are following this issue to ensure appropriate corrective actions are implemented.