

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 6, 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 September 6, 2002

**Low-Curie Salt:** Two emergent technical problems have delayed low-curie salt retrieval efforts (i.e., interstitial liquid removal and salt dissolution) in Tank 41. Initial attempts to transfer Tank 41 interstitial liquid to Tank 49 last week were unsuccessful due to a pump nozzle leak inside Tank 41. WSRC believes that the salt-well was mined too narrow and that during pump installation a bending moment was imparted to the pump assembly causing separation at the nozzle connection. A path forwarded is being pursued to widen the salt-well and re-gasket the leaking nozzle connection. Additionally, samples taken to verify that adequate sodium is available to preclude criticality during salt dissolution indicated that there is an insufficient amount of sodium in Tank 41 for this purpose. WSRC is preparing a new Nuclear Criticality Safety Evaluation to demonstrate an alternate technical basis for ensuring that criticality will be precluded during salt dissolution.

**3H Evaporator:** The 3H evaporator has been in cold standby for the last four months due primarily to feed tank temperature exceeding the protective limit for the feed pump seals (65°C). WSRC plans to run the evaporator next week using water as a surrogate feed with the intent of maintaining operator proficiency. The long-term solution to the cooling problems in the 3H system is to bring Tank 37 into service as the replacement evaporator drop tank (site rep weekly 7/5/02). The physical modifications required for Tank 37 are complete. However, the schedule for bringing Tank 37 into service has slipped three months to early-December because space is not yet available in Tank 35 to receive dissolved salt from Tank 37. Lack of space in Tank 35 is due to delays in establishing the technical basis for ensuring scale will not form in the 3H evaporator pot when processing this material.

**H-Canyon:** A potential criticality scenario for H-Canyon involves a slow leak of solution into a canyon cell that accumulates material. Subsequent flushing to the cell sump could challenge the Criticality Safety Limit (CSL) for this configuration. Controls identified for this scenario include periodic visual inspection and periodic cell flushing. The flush periodicity for each cell is based on the amount of material that is transferred within that particular cell. Based on current operations at H-Canyon, WSRC performs approximately 125 flushes per year. Each flush requires approximately 6 to 8 hours of dedicated crane operations. To meet the production requirements for the Highly Enriched Uranium Blend Down program, the amount of material transfers will significantly increase. WSRC estimates the number of flushes will increase to approximately 250 per year based on the current requirements.

After reviewing several options to help reduce flush requirements, WSRC is pursuing a non-soluble poison insert for the canyon cell sumps. The inserts will allow WSRC to increase the CSL for this scenario and, therefore, reduce the frequency of cell flushes. The final insert design is being developed and WSRC hopes to update the criticality analysis and install several inserts by March 2003. One issue that will have to be addressed is sand and aggregate material that has accumulated in the sumps and will likely impact insert installation.