DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 19, 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 July 19, 2002

Evaporator Performance: Over the last two months, the 3H, 2H, and 2F evaporators have achieved attainments of 0%, 82%, and 88%, respectively (site rep weekly 5/10/02). The low attainment of the 3H evaporator was due primarily to the temperature in the feed tank (Tank 32) exceeding the 65ºC operational limit that protects the integrity of the feed pump seals. Approximately 650,000 gallons of overheads were produced during this period.

Plutonium to HLW: On Monday, WSRC began evolutions to transfer 7,200 gallons of MOX-incompatible plutonium solution (containing ~80 kg of plutonium) from H-Canyon to tank 51 for ultimate disposition via vitrification in DWPF (site rep weekly 7/5/02). The plutonium solution is being poisoned with gadolinium nitrate and neutralized in fourteen separate batches. The total volume of neutralized slurry to be sent to tank 51 is approximately 24,000 gallons. Transfer of all fourteen batches is expected be complete by early next week.

Over the operational life of the tank farms, plutonium has been introduced via low concentration canyon receipts typically consisting of less than a critical mass of plutonium per receipt. For these transfers, less efficient poisons such as depleted uranium or manganese were used to preclude criticality in the tank farms. Due to the high plutonium concentrations associated with this weeks' transfers, the more efficient gadolinium poison is necessary to avoid an increase in the number of DWPF canisters that would result from the additional volume associated with an inefficient poison.

F-Canyon: WSRC continues F-Canyon suspension activities consistent with the PUREX operations suspension plan. Canyon process piping and tanks have been divided into six loops for flush activities. The first of these loops has now been flushed. WSRC is sampling to verify that flushing was adequate. In addition, solvent is also being removed from the first cycle mixer-settlers. Suspension activities performed to date are reversible should additional F-Canyon missions be identified.

In parallel, WSRC is working with DOE to define the facility end state after deactivation. The current WSRC proposal is to complete a deactivation project that leaves the facility "cold and dark." Radioactive material in the canyon will be minimized and remaining transferrable contamination will be controlled by confinement, isolation, or fixing techniques. The facility will be unoccupied and periodic inspections will ensure the facility remains in a safe and stable condition. Canyon ventilation will be reduced to one exhaust fan operating with a second fan in standby.

WSRC has established several teams to evaluate and resolve deactivation issues. Key issues that must be resolved include disposition of depleted uranium solutions and PUREX solvents, replacement of chemical make-up capability provided by F-Canyon, and handling of lab waste and contaminated water previously performed in the canyon.