DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 9, 2004

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 January 9, 2004

Depleted Uranium Disposition: WSRC continues to make significant progress on disposition of excess depleted uranium (DU) with all activities currently well ahead of the project plan schedule provided to the Board in a December 20, 2002 correspondence (site rep weekly 10/10/03). The following is a summary of the disposition activities:

- DU metal: Entire site inventory of 2,735 MTU has been shipped by truck to Envirocare of Utah for disposal as low-level waste.
- DU tri-oxide: The 2,000 MTU in the degraded storage buildings in F-Area has been successfully shipped by rail to Envirocare of Utah under a pilot program for disposal as low-level waste. Contracts have been let to ship the remaining inventory of 18,000 MTU to Envirocare of Utah by the end of 2004.
- LEU tri-oxide: Contract pending to ship entire inventory of 260 MTU of 1% enriched oxide to the Nevada Test Site by truck by the end of 2004.
- DU solutions: Contract let to Permafix of Oak Ridge, TN to stabilize and dispose of 186 MTU of solution off-site. Solution transport containers have been procured and are on site. First of forty shipments is scheduled for shipment off-site next week. All off-site shipments scheduled for completion by the end of 2004.

K-Area Criticality Violation: On Thursday, facility personnel identified a storage configuration of fissile material in the assembly area that was inconsistent with applicable criticality safety requirements. Current activities in the assembly area include de-nesting and packaging of unirradiated Mark 22 fuel now stored in boron impregnated storage racks and destined for dissolution and processing in H-Canyon, and preparation of cargo restraining transport pallets (CRTs) consisting of eight 6M containers (four containers double stacked) containing highly enriched uranium ingots for shipment to an off-site vendor.

The Nuclear Criticality Safety Evaluation (NCSE) for the assembly area allows for storage of un-stacked 6M containers directly adjacent to the boron impregnated storage racks. However, the NCSE did not analyze the storage of double stacked CRTs adjacent to the boron racks and thus imposes a conservative stand-off distance of 2 meters to ensure sub-criticality. Implementation of this control appears to have been weak as no markings were provided in the facility to delineate the 2 meter buffer zone in front of the boron racks.

While preparing for a simulated transportation evolution involving shipment of de-nested and packaged Mark 22 fuel from the assembly area to H-Canyon, a double stacked CRT was inadvertently placed less than 2 meters from the boron impregnated storage racks. Upon identifying the criticality violation, the evolution was suspended and the area was isolated to avoid increased moderation until engineering could determine a path forward. Proper spacing was reestablished by operators once the engineering evaluation had concluded it was safe to do so. A critique has been scheduled for Monday to identify the primary factors contributing to this event and develop corrective actions. It is expected that engineering will be directed to develop a more thorough analysis of the interaction between double stacked CRTs and the boron racks to support relaxation of the 2 meter stand-off distance.