DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 14, 2012

TO: T. J. Dwyer, Technical Director
FROM: M. T. Sautman and D. L. Burnfield, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending September 14, 2012

Tank Farms: During a decennial surveillance to replace high level liquid conductivity probes in the tanks, a mechanic questioned the level calculations after taking field measurements; these level calculations were originally made using the existing drawings. The high level conductivity probe provides assurance that the level of waste in the tank does not exceed various safety requirements related to such complications as overflow, leaks, and loss of structural integrity. After engineering personnel reviewed the measurements, they determined that the conductivity probes are placed in locations allowing waste to exceed the level specified in the safety requirements. Additionally as a result of this investigation, SRR determined that the inputs to a safety class computer program were incorrectly entered allowing these probes to be positioned so that the fill level was not protected in Type III/IIIA tanks. Once this was found, SRR, through discussions with DOE engineering, declared a violation of the technical safety requirement. SRR has taken corrective actions to ensure that the levels in the tanks do not actually exceed the safety limits, either through measurement, lowering the probes, or completion of an unreviewed safety question evaluation to show that the higher waste tank levels are acceptable. Transfers to allow Saltstone and the Defense Waste Processing Facility to operate have been found to be acceptable; while transfers from H-Canyon to Tanks 39 and 50 remain on-hold.

Solid Waste Management Facility (SWMF): Three to six years ago, SWMF personnel packaged three high Fissile Gram Equivalent (FGE) drums into concrete culverts. Each of the culverts was to have seven empty/dunnage drums loaded in the bottom topped with the high FGE drum surrounded by six dunnage drums. According to the Nuclear Criticality Safety Evaluation (NCSE), this arrangement provides the correct spacing for criticality controls and also precludes the high FGE drum from being exposed to water should the culvert flood. Other controls also precluded areas where the high FGE drums could be stored when not located in the culverts. This week, SRNS personnel attempted to mine the first drum from its culvert so that it could be transferred to F-Drum TTR for waste repackaging. When the culvert was opened, the high FGE drum was located in the center of six dunnage drums on the bottom of the culvert and there was no top row of drums. SRNS personnel immediately closed the culvert and took the necessary actions to allow the drums to be transferred to F-Area.

F-TRU: This week, while preparing to repackage a TRU Waste box, F-TRU personnel discovered that the HB line slab tank within the box contained nitric acid in lieu of the domestic water that was expected. When they tested the pH of the acid using litmus paper, they learned that the solution had a pH of less than 2. Because of the increased hazard, SRNS personnel reinitiated the work planning and control process by revising the assisted hazard analysis, rewriting the procedure, and checking for material compatibility. Using the revised planning documents, the work crew safely removed the acid from the tank and correctly repackaged the remaining waste.

K-Area: The pump vendor tested the fire pump that had been damaged during vendor testing and then rebuilt with SRNS personnel present. (See 8/17/2012 report.) The test once again damaged the fire pump in a manner similar to but less severe than the last time. SRNS has rejected this pump and is reviewing corrective actions to ensure that this pump as well as the other pump from this vendor meets procurement specifications.