

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 24, 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 February 24, 2012

**L-Area:** Because of the potential long-term storage of spent nuclear fuel (SNF) at SRS, the staff reviewed the SNF inventory and monitoring plans, basin water chemistry, and the condition of the basin and associated systems. Much of the review focused on the subset of SNF stored in sealed cans or vented “J-tube” isolation cans stored inside the basin. In a very small number of cans, uranium metal and reactive 98% U/2% Zr fuels are stored in direct contact with water, where the fuel will continue to generate gas as it corrodes and forms sludge inside the can. (U metal fuel was stored in contact with water at Hanford K-Basins). Last week, DOE provided SRNS an additional \$700k to support augmented monitoring of SNF and accelerate the evaluation of fuel in isolation cans. However, unlike other characterization programs (e.g., plutonium residues at Rocky Flats, 3013 surveillance, tank sampling), none of the planned surveillance involves actual inspection of the condition of the isolation cans or the fuel itself. For example, while some sealed cans were welded, others relied on mechanical interference seals and either did not have gaskets or have gasket seals that have likely degraded after decades of radiation exposure. Some of the cans were stored in P and R basins in the past and some of these containers are heavily pitted. Some of the J-tube cans were packaged in P and R basins so the fuel has been in constant contact with water that is just untreated, filtered river water. If an isolation can did fail, SRNS does not currently have any spare overpack canisters, portable deionizers, and other equipment necessary to repack the fuel although the basin ion exchangers would eventually remove any released Cs-137. The staff also inspected some of the cracks, stains, and stalactites associated with some of the active and inactive drip sites on the -20 and -40 levels that share a wall with the basin. DOE and contractor personnel are well aware of the potential issues with the facility and vulnerable fuels, but are not currently funded and/or authorized to address the above issues.

**F-Tank Farms:** The current “Removed from Service” mode in the Technical Safety Requirement limits additions of grout to a tank to 100,000 gallons. SRR nuclear safety personnel proposed reclassifying Tanks 18 and 19 as radiological facilities once a 15-inch grout layer above the waste was allowed to set 24+ hours. DOE personnel and the site rep questioned the reliance on engineering judgment as the technical basis for concluding that the residual waste on the exposed tank walls met radiological facility inventory criteria. Although SRR is still trying to determine their safety basis strategy for grouting, SRR intended to commence their Readiness Assessment (RA) for Tank 18 and 19 grout closure operations next week. The site rep questioned the plan to start a RA without an approved safety basis. The site reps met with DOE to discuss SRR’s revised plan to limit the scope of the RA to the addition of 100,000 gallons of grout. When the site rep raised very similar issues for a previous HB-Line RA (see 9/15/06 report), DOE EM issued guidance requiring an approved DSA for the specific operations prior to commencing a RA.

**H-Tank Farms:** As part of the upcoming removal of a telescoping transfer pump (TTP) from Tank 30, SRR will have to remove trapped waste from the bottom of the pump. In 2003 when a similar TTP was removed, a hole was burned in the bottom of the jet using a welding torch while the pump was still in the tank riser. (See 2/2/12 report.) This week, the site rep observed a mockup demonstration of an alternative method of breaching the pump wall. The site has developed a remote handled tool that uses of a counter rotating saw. The use of this tool will allow the SRR personnel to cut the pipe while reducing the risk from exposure as well as a deflagration.