

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 10, 2011

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 June 10, 2011

L-Area: While much of the spent fuel inventory consists of aluminum-clad fuel, the facility has a smaller inventory of stainless steel clad fuel. Much of this material was packaged in the 1950s and 1960s and was stored in the Receiving Basins for Offsite Fuel (RBOF) before being transferred to L-Area a decade ago. The 2000 SRS Spent Nuclear Fuel Management Record of Decision stated that the Sodium Reactor Experiment (SRE) fuel and various failed or sectioned fuel would be stabilized in H-Canyon, but this has yet to occur. The SRE fuel consists of declad thorium/uranium metal fuel stored inside of sealed cans that are submerged in L-Basin. If any of these cans would develop a leak, the metal fuel could react with water and generate hydrogen gas. A similar can leaked in the past. Much of the failed and cut fuel is stored in isolation canisters. These have air-filled tubes which prevent the water inside the canister from mixing with the basin water. The water inside most canisters is the water that was present when the canister was packaged decades ago so the fuel does not benefit from the significant improvements made to basin water chemistry. As the fuel degrades, so can the quality of the water in contact with the fuel. When some of these fuel items were moved from RBOF, DOE found that three of the cans had ruptured due to excessive fuel corrosion, causing high Cs-137 contamination inside the oversize cans. The uranium fuel in one can was so corroded that it had 36 kgs of oxide sludge at the bottom of it. The staff is concerned that DOE may continue to store fuel, some with through-clad breaches, indefinitely at L-Basin. The current condition of many of these items is unknown since DOE has not inspected them since they were packaged decades ago.

Tank 48: DOE directed SRR to execute a timely suspension of the Tank 48 Treatment project while preserving the existing design such that it can be retrieved and used for future deployment if required. DOE also directed SRR to evaluate alternate technologies that may be more cost effective in meeting the Tank 48 Treatment project mission need.

Operations: At H-Area New Manufacturing, a qualified operator oversaw a trainee operator remove the stems from previously unloaded reservoirs and install loaded reservoirs to be unloaded. The trainee was preparing to install a loaded reservoir in the fixture, but paused to ask the qualified operator a question. When the trainee resumed work on the loaded reservoir, he repeated the last step he had performed (i.e., remove the stem – although that was with an unloaded reservoir) versus the correct step, which was to install it in the fixture. This released the reservoir's entire contents into the glovebox, which activated an alarm and the glovebox stripper system. Most of the tritium was removed within an hour. The qualified operator was not positioned to directly observe the actions of the trainee when this occurred.

At saltstone, a radiation survey detected that a new pipe connection that was about to be welded was leaking contaminated leachate because a valve was left open. Although the procedure was not violated, the survey and valve tagging steps were in the wrong order. The procedure only required the valve to be tagged "Do not open", but not verified closed.