DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 2, 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 March 2, 2012

L-Area: A site rep review of the contents of fuel isolation cans and their packaging configurations has identified nine cans where uranium (U) metal (or mostly U metal fuel) is stored with water inside the can. While this fuel has cladding, these cans contain cut up fuel pieces where the water may be able to directly contact and corrode the U metal. In addition, there are three cans containing intact U and thorium metal fuel assemblies where the only thing protecting the metal fuel is the 45-50 year old cladding, whose current condition is unknown. In several of the above cans, the water in the can is isolated from the rest of the basin. This has four potential effects. First, sampling of basin water would not detect any Cs-137 released from the fuel due to corrosion. Second, the water in the can may simply be untreated, filtered river water that has been there for 10-50 years. Third, if the water in the can becomes anoxic, U oxide formed by corrosion of the U metal starts to spall periodically rather than form a protective layer. Thus, the U metal corrosion rate may be 10 to 1000 times greater than that caused by aerated water. Fourth, corrosion of U metal in water can lead to the formation of U hydride, which is pyrophoric if the fuel is later exposed to air. The site rep also questioned SRNS about two drums containing highly enriched U metal foils, chips, turnings, and small filings/specks, most of which is stored in a plastic jar. U metal with a high specific surface area can be pyrophoric.

F-Tank Farms: The site rep observed the in-briefing for the readiness assessment (RA) for grouting tanks 18 and 19. While the assessment covers the functional areas adequately and the personnel conducting the review have adequate expertise, the Plan of Action does not clearly identify that a change to the Documented Safety Analysis (DSA) may be required prior to completing the grouting (see 2/24/12 report). The site rep talked to SRR about the wisdom of beginning the RA when the path forward is not fully developed. SRR tank farm management assured the site rep that site procedures for completing an independent validation review would be followed once the review of the DSA was completed.

H-Tank Farms: Three maintenance workers' shoes were contaminated (up to 110,000 dpm $\beta\gamma$) while walking in the 3H evaporator. Subsequent surveys found contamination that probed up to 150 mrad/hr $\beta\gamma$ and a second spot was located a few days later. Extensive surveys have not conclusively identified the source of liquid or contamination, but condensate may be leaking through a high efficiency particulate air filter bank that is adjacent to the contaminated spots.

Tritium: The site rep observed a training drill for a simulated earthquake with major site-wide consequences. In the scenario, the earthquake was assumed to cause a fire in the Tritium Extraction Facility and major structural damage to other tritium facilities. While it is noted that performance has improved, the command and control and the formality of communications still need significant improvement.

Transuranic (TRU) Waste: Four weeks ago, SRNS suspended shipments of TRU waste because they were not complying with their Onsite Safety Assessment (OSA). (See 2/3/12 report). This had the effect of shutting down TRU waste remediation work at F- and H-Areas. Shipments and remediation resumed this week after SRNS revised the OSA and confirmed its implementation.