DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 13, 2013

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman and D. L. Burnfield, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending December 13, 2013

Ventilation: The Board's staff conducted a review of the ventilation systems at H-Canyon, tank farms, and the Savannah River National Laboratory. In addition, the staff reviewed the receipt, storage, and testing of high efficiency particulate air filters.

Modular Caustic Side Solvent Extraction Unit (MCU): For several months, MCU has been in an outage while SRR personnel prepared MCU to start using the next generation solvent. This week, SRR began the process of restarting MCU by running a micro batch demonstration at 4 gpm. Once SRR successfully completed this run, they realigned the equipment and prepared to start the second micro batch demonstration at 6 gpm by transferring material from MCU to tank 50 and the Defense Waste Processing Facility (DWPF). While SRR could transfer the contents of the decontaminated salt solution hold tank to tank 50, they were unable to transfer the contents of the strip effluent hold tank (SEHT) to the strip effluent feed tank (SEFT) at DWPF. SRR's troubleshooting revealed that the wiring of the A and B pumps were crossed. As a result, the A pump had started when SRR had previously tried to start the B pump. SRR generated a non-conformance report and swapped the pump wiring back to the correct configuration. SRR plans to transfer the SEHT contents to the SEFT and then attempt to start the second micro batch of MCU again.

H-Canyon: While repackaging transuranic waste in the warm shop, a rigger's electronic personal dosimeter (EPD) alarmed three times (5- 7 seconds each) due to high dose rates. (The dose rate alarm was set at 2.5 rem/hr deep dose and 10 rem/hr shallow dose). However, the rigger apparently did not hear the audible alarm due to the noise of his reciprocating saw and continued working. Meanwhile, the working dose rates measured by the radiological protection inspectors monitoring the job were below the suspension guides of the radiation work permit. When radiological personnel later realized there had been an EPD alarm, they called a time out and notified their management and operations. The rigger's EPD, thermoluminescent dosimeter, and finger ring were pulled and analyzed. The measured doses from this job were 34 mrem deep dose and 670 mrem shallow dose. The highest dose to the fingers was 281 mrem. Peak dose rates were 973 mrem/hr deep dose and 46 rem/hr shallow dose. The radiological protection organization is evaluating options that may help workers wearing plastic suits and operating noisy tools better hear EPD alarms.

L-Area: SRNS will be using an underwater vacuum to remove bacterial growth that is located on top of several fuel racks (see 10/28/11 report).

Nuclear Safety: The H-Canyon and HB-Line Documented Safety Analyses assume a stack release, which provides a 30 – 50 times reduction in the collocated worker dose compared to a ground level release. A recent positive unreviewed safety question determined that if a seismic event caused the stack liner to collapse (see 1/25/08 and 3/28/08 reports), the potential resistance to the exhaust flow could result in a ground level release via system connections downstream of the canyon exhaust fans. SRNS will be conducting a series of evaluations to determine which connections are vulnerable to leaks and the modifications required to address these leakage points.