DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 26, 2010

TO: T. J. Dwyer, Technical Director
FROM: D. L. Burnfield and M. T. Sautman, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending February 26, 2010

Modular Caustic Side Solvent Extraction Unit (MCU): Laboratory analyses identified Isopar™ concentrations in the Strip Effluent Hold Tank that exceeded the Waste Acceptance Criteria. MCU is shut down until confirmatory analyses are completed.

Conduct of Operations and Radiological Protection: The site rep met with the SRNS deputy radiological protection manager to discuss their causal analysis for the increase in radiological events over the past several months. Site personnel described their methodology and team composition. The site rep verified that the team will include subject matter experts for work planning and conduct of operations since many recent events also included those elements.

Solid Waste Management Facility: SRNS plans to conduct transuranic waste container remediation inside a contamination control hut within the Mixed Waste Processing Facility (MWPF). The draft Nuclear Criticality Safety Evaluation (NCSE) allowed the MWPF holdup inventory to be reset after performing 1) a holdup measurement or 2) a thorough cleanout without a holdup measure and assigning the highest of all previous holdup measurements. After hearing that only one holdup measurement was planned, the site rep questioned the basis for the latter option. Facility personnel decided to eliminate that option rather than develop a larger baseline.

Oral Boards: The site rep attended the continuation of a shift operations manager oral board, whose initial conduct was unacceptable (see 1/29/10 report). Overall, the board's conduct was significantly improved. SRNS's training manager observed the board and noted opportunities for further improvement. The site rep attended a first line manager oral board. The board conducted the oral examination in a professional manner.

Fire Department: The site rep observed a live burn at the brand new Martinez-Columbia Fire Rescue Training Center. This facility is a significant improvement over other regional facilities relied on previously (see 2/27/09 report).

F-Canyon: The site reps reviewed the 3-D model of the conceptual design for Phase IIIA Transuranic Waste Remediation. Workers in plastic suits will use a crane to unload containers from medium-to-large boxes, remove any prohibited items, and then resize/repack inner containers as necessary. The site reps also walked down the mock-up that carpenters are building. Multiple airlocks, ventilated enclosures, and glovebags are planned to prevent releases of the significant masses of plutonium-238 that will be present.

Tritium Extraction Facility (TEF): Last month, TEF personnel observed a pressure increase in process piping and later found a flammable mixture (oxygen > 21%). Engineers theorize that the oxygen-rich mixture was generated from electrolysis. While the piping and pumps are grounded, and therefore do not create a voltage source, the strain gage pressure transducer is powered from a 24 Volt power supply. The internal amplifier and bridge completion circuit for the pressure transducer produces a 4 to 20 mA current. This current flows from the pressure transducer through a 250 Ω resistor then returns. The 24 VDC power supply is not grounded to prevent ground loops and therefore it acts like a battery. The transducer generates between 1 to 5 volts as the pressure increases. Approximately 1.3 Volts can theoretically drive the electrolysis of water given the right conditions. The site has not yet replicated these conditions.