

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 5, 2004

**MEMORANDUM FOR:** J. Kent Fortenberry, Technical Director  
J. J. McConnell, Deputy Technical Director  
**FROM:** J. S. Contardi SRS Site Representative  
**SUBJECT:** SRS Report for Week Ending November 5, 2004

Staff members Matt Duncan, Matt Moury, Jonathan Plaue, Bob Rosen, and Rich Tontodonato were onsite for a review of the Salt Waste Processing Facility and the Savannah River National Laboratory's Semi-Integrated Pilot Plant. The review team also walked down the location for the proposed plutonium vitrification project in Building 105-K.

**Highly Enriched Uranium Blend Down Waste Processing:** To help conserve high-level waste tank space, the waste from unirradiated Mark 22 fuel reprocessing in H-Canyon will be dispositioned in the Saltstone Disposal Facility. Significant modifications to the tank farm infrastructure were required to establish a flow path from H-Canyon to Tank 50. Over 500 feet of above ground jacketed hose has been installed from Pump Pit 6 to Tank 41. A new pump has also been installed on the top of Pump Tank 6. The installation of the pump required the removal of a failed agitator. The agitator contained significant amounts of contamination and potentially high radiation fields. Part of the pre-job planning included cold runs with mock equipment. A wash assembly was installed in the pump tank to remove waste from the agitator paddles. In addition, a containment barrier was fabricated to reduce the spread of contamination. On Monday evening, the agitator was successfully removed. Video of the agitator during its removal and significantly reduced radiation levels indicate that the wash assembly worked well. Following a few minor equipment modifications and installations (e.g., jumpers) the transfer path will be complete. A Westinghouse Savannah River Company readiness assessment will be conducted the week of November 15<sup>th</sup>.

**Sealed Source Removal:** To better support neptunium contaminated waste removal in HB-Line, a sealed source in an assay machine required replacement. Due to decay and incompatible radiation peaks from the source (antimony-125) a decision was made to replace the source with a combination of three sealed sources (cesium-137, barium-133, and americium-241). While removing the antimony source from the shielded assembly, the radiological work permit suspension guideline, 100 mrem/hr at 30 cm, was exceeded. The source had only been partially removed when the radiological technician informed the operator that the radiation levels were above the suspension guideline. Work was stopped and the source was placed back into the shielded assembly of the assay machine.

A critique was held to investigate the discrepancy between the expected and measured dose rates. In addition to the workers involved in the incident, the critique was also attended by facility and senior management. The outcome of the critique indicates a failure in the integrated safety management system for this evolution. No work control documents were developed for the removal or introduction of sealed sources into the assay equipment other than the standing radiological work permit. An automated hazards analysis (AHA) was performed for the calibration of the equipment, but removal of sealed sources was not included within the scope of the AHA. Despite the work being defined as non-routine, a formal pre-job brief was not performed. An extensive list of corrective actions was developed that included tasks addressing this event as well as other site wide operations.