

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 22, 2014

**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 August 22, 2014

**HB-Line:** As part of the new plutonium oxide production mission, SRNS conducted ion exchange resin column operations for the first time. Work had to be temporarily stopped because the head and heart cut (i.e., first two phases of elution cycle) volumes were larger than the parameters in the process program. Furthermore, SRNS is considering modifying their interlock criteria after it tripped during the tail cut (last phase of elution cycle) because the program did not allow for any momentary fluctuations in the plutonium concentration once it dropped below a certain limit. SRNS has also not begun precipitation because the four samples taken from the concentrate tank indicated higher acid molarity and lower plutonium concentrations than expected due to dilution with the tank heel. SRNS is investigating what may be affecting the mixing of the concentrated solution. Meanwhile, scientists are reviewing the flow sheet to ensure that a satisfactory precipitation will occur if the actual solution parameters differ from the assumed ones.

**DWPF:** SRR leases several nitrogen tanks from a vendor, including their safety grade nitrogen tanks. SRR identified that the vendor's 32-point inspection went beyond a visual inspection. The annual functional check the vendor conducted for the tank level gages would have required SRR to enter a Limiting Condition for Operation (LCO) because it involved opening a valve and momentarily taking the instrument out of service. Furthermore, the vendor replaced a pressure control valve and possibly other parts without going through the required commercial grade dedication process. SRR was unaware of these unauthorized activities and had not been entering the appropriate LCO condition. SRR is currently reviewing the vendor's work history files and both SRR and SRNS are examining other leased equipment to determine the extent of condition.

**Tritium Extraction Facility (TEF):** Last week, the power supply for the process chiller programmable logic controller started to fail, causing all of the chiller plant equipment to repeatedly alarm. While operators executed their abnormal operating procedures (AOP), they accidentally shut down TEF's ventilation. A step in the AOP to "ensure the HVAC and Process Chillers are shut down" may have been misinterpreted to mean shut down the ventilation system rather than two sets of chillers. This step has been clarified. The site rep also discussed with the facility manager the lack of documentation (e.g., no logbook entries, completed AOPs unavailable) concerning which operators completed which AOPs at what time.

**Training:** During a periodic review of the shift operations manager (SOMs) qualification card at the Solid Waste Management Facility, SRNS identified that the requirement to requalify every 24 months was not included. The two current SOMs had last qualified in 2011.

**Solid Waste Management Facility (SWMF):** The SWMF technical safety requirements (TSRs) define a Bulk Contaminated Combustible Liquid (BCCL) without specifying an upper boundary on the flash point. Other SRS specifications and several federal regulations and national consensus standards define a combustible liquid with a flash point with an upper limit, usually at or near 200°F. SRR transferred a barrel of lubricating oil (flash point > 400°F) contaminated with small levels of plutonium and mercury to SWMF in compliance with Department of Transportation (DOT) requirements. In this case, the TSRs would consider this material to be a BCCL, even though DOE would not otherwise consider it a combustible liquid. Because of a lack of specific knowledge of the SRNS TSRs and the confusing multiple levels of requirements, SRR did not identify the material as a BCCL. Further, the cognizant SWMF engineer was not experienced in receiving hazardous mixed waste, failed to realize the material was a BCCL, and did not invoke the TSR level storage and surveillance requirements.