

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 14, 2015

TO: S. A. Stokes, Technical Director
FROM: M. T. Sautman, Site Representative
SUBJECT: Savannah River Site Weekly Report for Week Ending May 14, 2015

Messrs. Davis, Beauvais, Bradisse, Hopper (outside expert) and Ms. Meszaros were at SRS to review the SRNS nuclear criticality safety program. Mr. Burnfield was on leave.

SRR Emergency Preparedness (EP): The site representative met with senior DOE management to discuss issues (e.g., data quality, relevancy of data used to address lines of inquiry) he encountered while trying to validate the preliminary conclusions of the SRR EP Program Gap Assessment (see 11/14/14 and 5/8/15 reports). SRR is reviewing all of the data used to support this assessment. As a result of site representative feedback and this revalidation effort, the actual number of findings will be much larger. The site representative also reviewed the training records for the shift operations managers at tank farms and the Defense Waste Processing Facility (DWPF). This review raised a number of questions related to how credit was being assigned for drills and the practice of taking credit for actual events in lieu of drills.

Criticality Safety: The Double Contingency Analysis for dissolving in H-Canyon requires that two operators independently verify that two steam valves to the dissolver are closed to prevent overconcentration of the fissile solution. While preparing for the DNFSB staff's review, SRNS identified that the used nuclear fuel dissolution procedure 1) did not require any signoffs for this control in one section and 2) incorrectly identified this control as requiring only second person verification in a different section (independent verification requires the operators to be separated by time and distance). While an earlier revision correctly stated the requirement, the above errors were introduced when the procedure was reformatted in 2012. Surprisingly, none of the operations staff questioned the lack of a signoff for a criticality safety step during the 8 batches of spent fuel dissolved since the error appeared. This procedure was revised to explicitly require independent verifications. Meanwhile, the staff's review this week identified an HB-Line procedure where the criticality safety control stated an action needed to be independently verified, but was not stated as such in the procedure. However, in this case, the staff was told that a traditional independent verification was not required even though this criticality control used the term "independently verify" versus "verify" or "second person verification" like that used in different controls. These inconsistent expectations may result in confusion in how these criticality safety steps are to be implemented in the field.

High-Level Waste: SRR has been working to address concerns with mercury (see 4/17/15 report). SRR hopes to be able to resume Modular Caustic Side Solvent Extraction Unit operations this weekend and transfers of strip effluent to DWPF next week. Resumption of DWPF processing, however, may be delayed because recent lab scale testing at the Savannah River National Laboratory identified a spike in the concentration of hexamethyldisiloxane (HMDSO) following antifoam addition. SRR is considering discontinuing the use of antifoam in the short term because HMDSO is flammable. Antifoam is added, though, to retard foaming during boiling of the sludge and to prevent carryover of radionuclides during processing.