

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 15, 2009

TO: T. J. Dwyer, Technical Director
FROM: M. P. Duncan and M. T. Sautman, Site Representatives
SUBJECT: Savannah River Site Weekly Report for Week Ending May 15, 2009

Tritium Facilities: There were three notable conduct of operations events during the past two weeks.

- A rupture disc burst during a gas transfer evolution due to a failure to properly override interlocks on two valves.
- A safety-significant Tritium Air Monitor was partially impaired when valves were not restored to the proper mode following a surveillance activity.
- An uncontrolled exothermic reaction occurred in a magnesium bed during a zeolite bed regeneration operation due to a failure to verify the operability of the pipe electric trace heating system.

Because of these and other recent issues, contractor management initiated targeted senior supervisory watches. Coaching teams will be focusing on shift management engagement and shift turnover. NNSA's facility representatives are increasing their oversight on back shifts and weekends.

Modular Caustic Side Solvent Extraction Unit: During a failed attempt to start up the process two weeks ago, a fault occurred when the salt solution feed pump was started. This fault tripped an interlock which shut down all of the contactors. Although the operator acknowledged the fault, he did not recognize that the contactors had been shut off and continued with the startup procedure. The change in contactor status was indicated by a change in color, but that screen was not being displayed when the interlock activated. In addition, there were not any alarms since the process alarms are tied to specific process upsets (e.g., low flow) rather than a device fault. The salt solution feed pump continued to pump clarified salt solution, which bypassed the contactor weirs and started overflowing through both the lighter and heavier phase outlets. Meanwhile, the solvent feed pump began to flood the contactors from the other end of the extraction bank until a strip effluent hydraulic accumulator interlock shut the entire process down. The upset was not detected for three days until high pH sample results for the strip effluent hold tank were received. By that time, the contaminated strip effluent had already been transferred to the Defense Waste Processing Facility. Calculations indicate that less than 8 gallons of clarified salt solution contaminated the strip effluent system.

Saltstone: An analysis performed to support the upcoming "full organic" Documented Safety Analysis concluded that the hazard categorization of the facility will need to be increased from 3 to 2. Facility restart to implement the new suite of controls will now require an Operational Readiness Review instead of a Readiness Assessment. In addition, a more rigorous Documented Safety Analysis will be necessary.

Operations: The Site Rep observed the Activity Pre-Start Review of computerized radiography of containers at the Solid Waste Management Facility. At the Low Activity Waste Vault, a sub-contractor is using a 52 Ci Co-60 sealed source to create images of large non-drummed containers to identify inner containers and the waste contents. Later on, these large containers will be repacked in the canyons to remove any items that are prohibited in transuranic waste.

At C Reactor, the Site Rep observed vented process water deionizers being bagged and loaded into concrete culverts. The reactor crane was inspected to ensure that its cable cutter was not susceptible to the same type of accident recently encountered at H-Canyon. (5/1/09 report)