

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 15, 2016

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending January 15, 2016

Board Chair Joyce Connery, Board Member Bruce Hamilton, and staff members R. Oberreuter and D. Shrestha visited Oak Ridge this week. NPO, OREM, UPO, and contractor personnel briefed the Board members and staff on the status of operations, safety initiatives, and ongoing design efforts at Y-12 and ORNL. The Board members and staff walked down Buildings 9212, 9204-2E, 9204-2, 9215, and the Highly Enriched Uranium Materials Facility at Y-12, and ORNL's Transuranic Waste Processing Center (TWPC) and Building 2026.

Building 9215/Nuclear Criticality Safety (NCS): Last week, an operator manipulating a piece of equipment in Building 9215 inadvertently knocked a container with a small quantity of fissile material on the floor. Some of the contents of the container spilled into a nearby fissile material storage array. The array happened to be empty at the time, but the spill prompted an NCS engineer to question whether the applicable NCS evaluation analyzed a scenario in which spilled material contacts or enters containers staged inside an array. The following workday, the responsible NCS engineer determined that this scenario was not analyzed. NCS engineers performed an extent-of-condition review for the rest of Building 9215 and identified the potential for this scenario to occur in other storage racks. The top two positions of these storage racks have been taken out of service until the analysis can be updated. Late this week, CNS engineers determined that this condition was a potential inadequacy in the safety analysis (PISA). NCS engineers plan to initiate an extent-of-condition review next week to determine if this unanalyzed scenario applies to other facilities.

Building 9212: The steam coils used to heat certain aqueous processing systems in Building 9212 are tied to technical safety requirement (TSR)-level accountable steam condensate (ASC) systems. In the event of a breach that allows fissile process solution into the steam lines, the ASC systems are equipped with conductivity probes that are credited to detect the presence of material and isolate the system before the material is discharged to a location with an unfavorable NCS geometry. This week, while preparing to revise a design analysis calculation (DAC) supporting the ASC system for the Oxide Dissolver, a CNS engineer identified an error that made the analyzed response time of the ASC system inadequate. The error involved a discrepancy between the type of condensate trap present in this system relative to the one assumed in the calculation, which in turn affects the condensate flow rate and decreases the allowable response time of the isolation system. CNS engineers subsequently declared a PISA as a result of this concern. Oxide Dissolver operations are currently on hold. CNS engineers have determined that this error does not exist in the DACs supporting the other ASC systems.

Building 9720-5: In August 2015, Special Nuclear Materials Operations personnel discovered a bulged and hissing drum in a batch of drums stored at Building 9720-5 (see 8/28/15 report). This batch of drums was loaded in Building 9204-2E prior to 2012 and has been stored in Building 9720-5 awaiting final disposition. The bulging drum was successfully vented using a remotely-operated drum punch. Since venting of this initial drum, several other drums from this batch have bulged and require venting; therefore, CNS management decided to vent all the drums loaded with similar materials to mitigate the potential pressurization hazard even though the drums had not yet shown signs of bulging. Last week, the site reps observed a CNS work team's pre-job briefing prior to remotely venting 12 of 40 drums that were identified to be similarly loaded. After venting, the drums will be transported to Building 9204-2E to be opened, inspected, and repackaged as necessary to prevent future issues.