

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending July 17, 2015

Building 9212/Aging Infrastructure: One of the key milestones in NNSA's plan to transition enriched uranium operations from Building 9212 by 2025 is the installation and startup of a calciner furnace in Building 9212. Currently, all uranium-bearing aqueous streams designated for chemical recovery in Building 9212 must be processed through equipment that purifies the uranium stream before it is converted into a storable, solid form. The calciner provides the capability to convert low equity uranium-bearing aqueous solutions (e.g., mop water) into a storable oxide form without processing them through old purification equipment that is expensive to operate and maintain. Once the calciner is operational in Building 9212 and the planned electrorefining system (a uranium metal purification technology) is operational in Building 9215, CNS plans to initiate the shutdown of the hazardous process equipment that currently provides Building 9212's enriched uranium purification capability.

This week, NNSA approved Critical Decision (CD)-1, Alternative Selection and Cost Range, and CD-3A, Long Lead Procurement, for the Calciner Project. The approved cost range is \$36.5 million to \$46.4 million with a CD-4 approval date range of first quarter fiscal year 2020 to third quarter fiscal year 2020. Prior to CD-1/3A approval, NPO issued the safety validation report (SVR) approving the safety design strategy (SDS) for the Calciner Project. The SVR contained no conditions of approval. The SDS identifies six safety significant controls to prevent or mitigate the release of radiological or toxicological hazards for the calciner system. Two of these controls are process-specific and provide the same general function: to provide pressure relief that prevents failure of the calciner system vessels due to an overpressure event or explosion caused by an acid-organic reaction, ammonium nitrate reaction, or steam generation.

Nuclear Criticality Safety (NCS): This week, CNS held a management level critique to identify additional extent-of-condition and corrective actions for the issues associated with the implementation of NCS controls to address a spacing problem with chip dolly cylinders (see 7/3/15 report). One of the issues was the fact that a criticality safety officer had documented a concern regarding the site's lack of progress in implementing an engineered solution to the spacing problem for several consecutive years without the concern being elevated to the proper level of management for consideration. Implementing the engineered solution for all chip dollies would have allowed NCS personnel to close an addendum to the NCS analysis that ultimately remained open for 14 years. During the critique, NCS personnel agreed to an action to establish criteria for closing NCS analysis addendums and ensuring that decisions to extend addendums are made at the proper management level.

Transuranic (TRU) Waste Processing Center: The site reps observed WAI Operations personnel conduct a manned entry into the hot cell in the Main Process Building to support maintenance of the equipment in the hot cell (see 6/12/15 report). During the evolution, a worker noted a tear in his supplied air suit and notified radiological controls (RADCON) personnel as he proceeded to the exit. As part of the normal practice during work in high contamination areas, additional RADCON personnel are staged outside the hot cell to expedite doffing protective clothing if this type of event should occur (note that no one could recall a tear in the suit having ever occurred previously). It only took a few minutes to remove the multiple layers of protective clothing and survey the worker, which resulted in no contamination being detected. The worker believes that the tear occurred when he brushed against the sheet-metal casing of a piece of equipment that had been removed for maintenance.