

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 16, 2018

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan, Resident Inspector
SUBJECT: Oak Ridge Activity Report for Week Ending November 16, 2018

DNFSB Staff Activity: As part of an ongoing review of nuclear criticality safety, A. Miller and S. Thangavelu visited Y-12 to perform process walkdowns of several operations in Building 9212, including ultrasonic chip cleaning, casting, and reduction.

Building 9212: CNS continues to perform casting operations in Building 9212 with enhanced oversight and controls from a casting oversight management plan. This plan is intended to eventually result in robust and predictive data-driven process control of casting operations that prevents violation of nuclear criticality safety requirements. Based on additional operating experience and data from nuclear material control and accountability, CNS has revised the plan twice to date. There have been several notable changes from the baseline plan reported previously (see 7/13/18 and 7/20/18 reports). Pallet scrap and briquette casting operations are no longer restricted. The number of equivalent consolidation-type castings allowed per line between cleanouts of all accumulated material has been increased from 24 to 25 or 50, depending on location. There are new and revised consolidation-type casting equivalencies. For example, a single briquette casting is currently estimated to be equivalent to 9.5 consolidation-type castings. There is no longer a maximum stack loss per run, though the overall cumulative zone loss limit has not changed. The requirement for a monitoring team to be present during cleanouts has been relaxed such that they will intermittently monitor cleanouts and be present during visual inspections prior to resuming operations. Additional changes and eventual closure will be approved by the enriched uranium operations production manager based on recommendations from the facility operations manager, the nuclear criticality safety manager, and the material control manager.

Building 9720-5: In August, CNS declared a potential inadequacy of the documented safety analysis due to the discovery of more than 200 containers containing chips, turnings, cuttings, and fines in select vaults of Building 9720-5 (see 8/10/18 report). This material is considered ignitable and expandable with piloted ignition, but not pyrophoric. The hazard evaluation study assumed that no chips and fines are stored in the area. The initial compensatory measures were to suspend hot work and receipt of materials in these vaults without approval by the Operational Safety Board. Later in August, CNS determined the situation represented a positive unreviewed safety question as the situation could increase the consequences of a fire in the vaults and could result in a new accident type—a loss of containment. In September, CNS submitted a justification for continued operation and evaluation of the safety of the situation to NPO for approval. CNS proposed to keep the hot work suspension in place and add three additional compensatory measures: (1) ensure the containers are not removed from their storage location without Operational Safety Board approval, (2) ensure that additional containers do not contain pyrophoric materials, and (3) ensure that additional containers do not contain chips, turnings, cuttings, or fines. Last week, NPO approved CNS's proposal but directed a change to the first new compensatory measure. Instead of Operational Safety Board approval, any container removed from its storage location must be permanently removed from these vaults.