

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 13, 2018

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Matthew Duncan and Dibesh Shrestha (acting), Resident Inspectors  
**SUBJECT:** Oak Ridge Activity Report for Week Ending September 14, 2018

**DNFSB Staff Activity:** D. Shrestha visited Oak Ridge to take a required training course at Y-12 and to support the resident inspector office. The resident inspector also took the training course and continued familiarization activities, performing walk-downs and observing operations at Building 9212, the Transuranic Waste Processing Center, and the Highly Enriched Uranium Materials Facility.

**Building 9212:** While performing an annual nuclear criticality safety operational review, a nuclear criticality safety engineer noted that a spacing violation occurred while operators were loading cans into DT-200 containers. Operators placed some cans on a table with approximately six to eight inches of spacing between them. The criticality safety evaluation requires a minimum spacing of twelve inches. An operator, who was not handling the cans, noticed this violation and told the can handling operator about the situation. The can handling operator immediately moved the cans apart instead of following the required abnormal condition procedure, which would have required stopping work, making no immediate attempt to correct the situation, establishing a fifteen-foot boundary around the area, and notifying the shift manager and criticality safety officer.

**Transuranic Waste Processing Center:** The resident inspectors conducted a familiarization walk-down and observed operations at the Transuranic Waste Processing Center. The walk-down covered most of the facilities, including the waste storage and handling areas and the processing building. Discussions included recent events, including an incident involving a waste drum sliding off of a dolly with no damage or contamination spread, and an error discovered by contractor personnel with the Waste Inventory Control System.

**Building 9215 Casting:** On September 5, 2018, NPO approved the justification for continued operation (JCO) for Building 9215 11s and 12s casting furnaces. The JCO is for a discrepant as-found condition associated with the depleted uranium (DU) casting furnace pour rod sleeve that was discovered on June 6, 2018. A potential inadequacy in the documented safety analysis was declared on June 13, 2018, and a positive unreviewed safety question determination was made on June 21, 2018 (see 7/27/18 report). The accident of concern is a steam and/or hydrogen explosion resulting from the contact of liquid water with molten DU in the crucible. The JCO proposed compensatory measures in the form of administrative controls intended to ensure the safety of furnace operations while an engineered solution resulting in a passive design feature is being developed. The administrative controls require that: (1) the design of the crucible used for each casting operation will be the same design as the evaluated crucible design, (2) the maximum height of the stack assembly does not exceed the limit determined in the analysis, (3) the maximum mass load of DU does not exceed the value evaluated in the analysis; and (4) the pour rod evaluated in the analysis will be the same for each casting operation. NPO had one condition: that within 120 calendar days, CNS will develop, implement, and successfully perform an acceptance test for a physical modification and use it for all future casting operations.