

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 26, 2018

TO: C. Roscetti, Technical Director
FROM: R. Eul and B. Weathers, Acting Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending July 27, 2018

Building 9215 Casting: On June 12, 2018, a potential inadequacy in the safety analysis (PISA) was declared for a safety significant passive design feature associated with the depleted uranium casting furnaces. Specifically, the Documented Safety Analysis (DSA) credits use of a pour rod sleeve to limit the depth of insertion of the pour rod into the furnace to keep the water-cooled portion from entering the crucible. This passive design feature reduces the potential for a steam and/or hydrogen explosion. The current Documented Safety Analysis (DSA) for Building 9215 considers the loss of integrity of the water-cooled portion of the pour rod and evaluates several events related to pour rod failure that result in a potential facility worker fatality occurring from explosion overpressures, flying debris, and /or molten metal. CNS completed a positive Unreviewed Safety Question (USQ) determination on June 20th stating this PISA increased the probability of an accident (steam and/or hydrogen explosion) due to an increased probability of failure of the credited passive design feature (pour rod sleeves). DOE noted that the casting drawings, last updated in February 2009, do not uniquely identify pour rods of various lengths and similar diameter which may have contributed to this deficiency. The USQ determination states that the furnaces will not be placed in operation prior to resolution of the PISA. Because the furnaces will not be operated, the facility is not currently in an unsafe condition due to this deficiency. The PISA has no effect on any other processes or controls in the 9215 facility.

Briquette Processing: Ultrasonic Chip Cleaning operations have not operated since its last run in March 2018 as a result of inadvertent uranium holdup (see 6/21/18 report). On July 18, 2018 operators processed briquettes by using additional rinsing of the chips with water in lieu of the ultrasonic cleaning step. A “triple rinse” process has been used previously. The briquettes created from the “triple rinse” chips were immediately burned in the Building 9212 skull burner. Due to the briquettes retaining significant moisture, it was difficult to light them. However, the “triple rinse” process does allow limited chip processing to resume. Resumption of chip processing is needed due to the limited amount of chip dollies available for storage of chips in Buildings 9212 and 9215.

Aging Infrastructure: CNS recently removed a portion of a Building 9202 exhaust stack that a CNS engineering evaluation determined to be unsafe in its present condition and required immediate repairs (see 12/22/17 report). This engineering evaluation identified the Building 9202 exhaust stack as the highest priority needing repair, and it is now in a safe condition. The engineering evaluation identified three additional stacks, located in Buildings 9204-2E, 9995, and 9212, of second highest priority which require weekly monitoring until repairs are made. CNS has completed repairs in the Building 9212 exhaust stack by replacing its support brackets and has approved work orders to remove the 9204-2E stack in the near future. CNS also continues to finalize its long term monitoring program such that every exhaust stack will be evaluated on a 3-year basis using an approved preventive maintenance inspection procedure.