

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 15, 2019

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Matthew Duncan and Brandon Weathers, Resident Inspectors  
**SUBJECT:** Oak Ridge Activity Report for Week Ending March 15, 2019

**Building 9212:** On March 5, 2019, operators noticed water dripping in one of the casting furnace enclosures. Operators turned off the closed water cooling loop pump and established a fifteen-foot nuclear criticality safety administrative boundary. Nuclear criticality safety personnel responded to the event and found indications of a small amount of liquid that had dripped on to the floor of the F furnace enclosure. Most of the liquid had dried by the time NCS personnel were able to inspect the area; small drops of liquid could still be seen on a hose inside the F furnace enclosure. Furnace F was not being used for casting operations when the leak was discovered and had not been used since the last cleanout of that area on February 6, 2019. In response to the leak, Furnace F has been isolated from the closed water cooling loop.

One aspect of the casting resumption activities from the summer of 2018 was to credit the water lines inside the casting enclosures as passive design features in the criticality safety evaluation (see 6/14/18 report). This resulted in the creation of an annual inspection of the water line (hoses, piping, and fittings) and a biennial replacement of the water line hose. This leak was observed prior to the first annual inspection of the water line that is due in June 2019. In July and August 2018, CNS encountered two leaks with the hydraulic fluid lines used in the casting system (see 8/3/18 and 8/10/18 reports). The hydraulic fluid lines are also credited as a passive design feature by the criticality safety evaluation. CNS conducted a fact finding meeting for both hydraulic fluid leaks in 2018. A fact finding meeting is not planned for the recent water line leak.

**Building 9204-2E:** The Y-12 Fire Protection Program Manual limits the amount of combustible or flammable liquids for incidental operations in a single fire area, unless the liquids are in a designated flammable liquid storage room that meets National Fire Protection Association and regulatory requirements, or in an approved flammable liquid cabinet. The limit varies depending on the classification of the liquids. For Building 9204-2E, this requirement was implemented in a general fire safety inspection criteria document as “flammable/combustible liquids outside of storage cabinets/rooms for incidental operations within a single fire area are limited to 25 gallons flammable liquids in containers and 120 gallons of combustible liquids.” During the most recent quarterly fire safety inspection, each floor exceeded the limit if each drum was assumed to be full. Using this assumption, the amount per floor ranged from 165 to more than 440 gallons.

CNS held a fact finding meeting and critique and is developing corrective actions, which will likely include an extent of condition analysis for other nuclear facilities, at a minimum. This issue is not as significant as it otherwise would have been as the liquids that exceeded the limit were Class IIIB. Fire Protection Engineering determined that this issue needs to be corrected but not immediately and that no compensatory measures were required. This limit was not a safety basis requirement, and CNS has determined this was not a potential inadequacy in the safety analysis. A similar issue with the amount of flammable/combustible liquids was identified in 2009 after a walk down by a DNFSB resident inspector (see 4/17/09 report).