

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 18, 2019

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Matthew Duncan and Brandon Weathers, Resident Inspectors  
**SUBJECT:** Oak Ridge Activity Report for Week Ending October 18, 2019

**Building 9212:** A technical safety requirement violation was declared on the accountable steam condensate isolation units as a result of discovering that a step in the surveillance procedure for the system was not being performed adequately. Upon discovery of this issue, it was considered a missed surveillance. The accountable steam condensate isolation units were declared inoperable and the processes that these units support were placed on an administrative hold. The isolation units are credited to detect and stop a large release of fissile solutions into the storm drain system that could result from a heat exchanger tube leak. The signal to close the isolation valves is from a conductivity probe detecting an increase in conductivity.

The specific issue concerned whether a conductivity probe was positioned within a pipe at the depth assumed in the system design. A nuclear criticality safety engineer observed calibration crew personnel and operators perform the surveillance while conducting a nuclear criticality safety operational review. The nuclear criticality safety engineer questioned how the surveillance procedure step specifying the required position of the conductivity probe within the pipe was met. In response to the question, a member of the calibration crew measured the distance of the conductivity probe wire from the top of the pipe to the bottom of the conductivity probe wire housing with a tape measure and compared this to the previously measured distance from the tip of the conductivity probe to the bottom of the wiring housing. After observing the surveillance, the nuclear criticality safety engineer consulted with system engineers and identified a possible discrepancy in the measurement. A subsequent walkdown was performed by system engineers to take additional measurements for all isolation units. These measurements indicated that the conductivity probe was positioned closer to the bottom of the pipe than assumed in the system design and the condition was treated as a discrepant as-found condition.

In a separate nuclear criticality safety operational review, the nuclear criticality safety engineers witnessed a violation of a nuclear criticality safety requirement while observing beaker leaching operations. In this event, an operator inadvertently placed two 4-liter beakers, dissolving contaminated graphite crucibles, into a dissolution workstation. Only one 4-liter beaker for dissolution is allowed to be in a workstation. The event was noticed almost immediately by the criticality safety engineers and the appropriate abnormal operating procedure actions were taken.

**Emergency Management:** Y-12 implemented new protective action zones for emergencies that divide the site into three geographical zones. Individual buildings requiring evacuation will continue to be announced separately by the Plant Shift Superintendent, but if a large area of Y-12 needs to take other protective actions such as sheltering, this can now be announced by zone. This should improve efficiency and effectiveness of protective action announcements and reduce the need for lengthy public announcements, emergency notification system announcements, and radio announcements. For example, during the April hydrogen fluoride event that resulted in declaration of an operational emergency further classified as an alert (see 6/21/19 report), some announcements required reading a list of more than 30 separate buildings.