

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 10, 2023

**TO:** Timothy J. Dwyer, Acting Technical Director  
**FROM:** Frank Harshman and Clinton Jones, Resident Inspectors  
**SUBJECT:** Oak Ridge Activity Report for Week Ending November 10, 2023

**Staff Activity:** J. Abrefah, D. Bullen, and F. Ruz-Nuglo were onsite for discussions with CNS and NPO on Y-12 reactive materials hazards.

**Building 9212:** On Monday, the Building 9212 shift manager received a report that the sprinkler pressure monitoring system (SPMS) had a locked in alarm due to low pressure for two of the building's credited fire protection sprinkler systems. SPMS is not credited in the safety basis and a review of credited local pressure gauges confirmed all pressures were normal at that time. Subsequently, facilities operation management performed a review of data in SPMS through the previous weekend. The SPMS recorded two momentary minor pressure drops with nearly instantaneous restoration across all of the fire protection systems. The fire suppression systems at Y-12 are fed by the potable water system and common pressure drops across all systems correspond to sitewide pressure transients. However, there was an additional pressure drop noted on Sunday impacting only two of the credited fire sprinkler systems. This occurrence lasted seven minutes and could not be correlated with sitewide pressure fluctuations. The pressure drop was approximately 30 psi below normal operating pressure and fell below technical safety requirements (TSR) pressure requirements with no apparent cause.

The operations manager declared a "management concern" and convened a fact finding because of the pressure drops in the two fire suppression systems. During the fact finding it was determined that the fire department responded to a number of spurious flow and pressure switch alarms throughout the weekend. When returning from one such alarm, the fire department witnessed a water motor gong activation on a Building 9212 fire system. To reset the water motor gong and clear the alarm, the fire department manipulated the main drain and system isolation valve to flush the line. A review of the piping configuration confirmed that a partially closed isolation valve and open drain valve could cause a water supply pressure drop that would be detected both on SPMS and the local gauges. Based on the reported valve manipulations and pressure indications it was determined that the isolation valve was closed enough to impact the proper operation of the system. The operations manager determined that the limiting condition for operability (LCO) for those systems was not met due to a potentially obstructed flow path. The systems were declared inoperable and LCO actions were taken. The required surveillances were performed to confirm operability and the LCO was exited. The operations manager reported an occurrence for degradation of safety significant systems. Throughout the weekend, there was no communication to facilities operations management concerning any of the alarms or that valves on a TSR system were manipulated. The fire department did not seek authorization or obtain work start, for the manipulation of valves impacting a safety significant system or to conduct troubleshooting from the shift manager. The shift manager did not learn of the fire department actions or the issues experienced over the weekend until the fact finding was conducted. The fact finding would have not occurred if alarms from the uncredited SPMS, which is unique to Building 9212, were not noted by the shift manager. If these pressure drops occurred in another nuclear facility with credited fire systems, the pressure drop would likely never have been detected.