

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 30, 2022

TO: Katherine R. Herrera, Acting Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for the Week Ending December 30, 2022

Cold Weather Impacts: CNS experienced several system failures in multiple buildings due to prolonged below freezing temperatures in the region.

- CNS suspended operations in Building 9995 when all heat was lost due to the supply fans tripping off from the low temperatures. CNS isolated all water systems in the building, including the building's fire suppression systems, and implemented fire patrols. CNS had to contend with multiple leaks from various water systems that froze due to the loss of heat, and they are evaluating the extent to which future Building 9995 operations will be impacted.
- In Building 9215, failure of a supply fan resulted in the steam heating coils driving temperatures in the plenum high, which in turn actuated two fire suppression sprinkler heads on one of the building's safety significant wet pipe systems. CNS entered a limiting condition for operation (LCO) because the fire sprinklers were isolated and declared an occurrence for the degradation of a safety significant system. CNS remained in the LCO and associated fire patrols for five days until they were able to repair the system and restore it to operability.
- In Building 9720-82, an air handling unit and associated exhaust fan tripped due to freezing temperature. This resulted in a loss of smoke detection in a section of the building. CNS entered a LCO and declared an occurrence for degradation of a safety significant system.
- In Building 9105, which contains the site's alternate emergency operations center (EOC), a potable water line froze and ruptured resulting in the flooding of the building. The rupture was not detected through the weekend and, as a result, the building's interior sustained significant damage. The alternate EOC rooms did not sustain any direct damage, however the supporting utility service was disabled, thereby rendering the alternate EOC unavailable for use also.
- In Building 9212, a heating coil ruptured which resulted in water damage to general office space. In the area between Building 9212 and Building 9995, a heating steam pipe ruptured. CNS determined that the noise from the leaking steam exceeded the audibility level of the criticality accident alarm system (CAAS). CNS controlled the area as a CAAS inaudible area until the steam leak was repaired. CNS engineering is currently evaluating the conditions caused by the extreme cold to ascertain if the systems in question are rated correctly and failed due to their advanced age or if the prolonged below freezing conditions exceeded the design criteria.

Conduct of Operations: Chemical operators in Building 9212 failed to perform steps in accordance with the monthly surveillance procedure. The chemical operators discovered an abnormal issue and performed actions outside of the procedure to drain the system trap and clear an alarm without contacting the shift manager. Afterwards, an NPO facility representative observing the surveillance alerted the shift manager of the issue. The shift manager directed the operators to reperform the surveillance per the procedure to ensure it was completed satisfactorily. Later in the day, the chemical operators were performing a surveillance in another part of the system and utilized the incorrect type of water to test the actuation of an automatic isolation valve. This resulted in CNS entering a LCO for failure of a required surveillance. The error was discovered prior to the end of the shift, but the system was not declared operable until the surveillance was reperformed satisfactorily and the event investigated.