

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 10, 2023

TO: Christopher J. Roscetti, Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending March 10, 2023

Building 9212: During startup of the Oxide Conversion Facility (OCF), a rupture disk in the hydrogen fluoride system (HF) failed, resulting in an alarm and shutdown of the system. The rupture disk is part of the OCF primary confinement which is required to be operable during this part of OCF operations. The Building 9212 shift manager (SM) declared the HF primary confinement boundary inoperable and entered a limiting condition for operations (LCO). Operators could not complete the LCO action to drain the system because the valves required for draining the system were closed by a confinement interlock. This interlock was being maintained by the signal received from the loss of primary confinement alarm. Facilities operation management determined that it was necessary for operators to override the interlocked valves to place the system in a safe and stable configuration by completing the required LCO actions. The SM gave permission to bypass the alarm to clear the interlock. With the interlock cleared, CNS operators drained and purged the system. CNS is investigating the cause of the rupture disk failure. The operators reported that the pressure indications during the event were below the rupture disk's pressure rating. The HF was contained within the secondary confinement, which prevented a release of HF to the environment. CNS reported the failed rupture disk as an occurrence under DOE Order 232.2A for performance degradation of a safety significant system. CNS has previously had reliability issues with the rupture disks (see 4/19/19, 7/24/20, and 8/21/20 reports).

Emergency Notification System: The recent fire event at Building 9212 highlighted audibility issues with the installed emergency notification system (ENS) that many Y-12 buildings have experienced for several years. The ENS system is credited for life safety during events at Y-12. During the Building 9212 fire event, the operations center made several shelter in place and evacuation announcements. Personnel in the affected buildings could not understand the announcements in some areas and relied on the shift managers to relay the communication over the specific building's public address (PA) systems. After the event, compensatory measures were established that required personnel to either carry radios or portable bull horns to be able to make additional announcements to areas with known ENS audibility problems. CNS has implemented multiple fixes in Building 9212 to address the problem, including adjusting gains on amplifiers and changing tap settings on the ENS speakers, but the issues are still prevalent. Facility operations management in Building 9204-2E performed multiple evaluations on the audibility of both the ENS and building PA systems to document problem areas. A change request to address ENS audibility was approved in October of 2021. The scope of work included adjusting tap settings on the ENS speakers and resetting the gains on the accompanying amplifiers to improve the audibility of the ENS speakers in the facility. However, this work has not been performed and was only recently scheduled after the Building 9212 fire event occurred. CNS engineering recently performed maintenance on the Building 9204-2E PA system that substantially improved its audibility, but the PA system is not the credited life safety notification system for the building.