

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 21, 2020

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending August 21, 2020

Building 9212: In July, CNS discovered that the rupture discs in the oxide conversion facility had failed (see 7/24/20 report). Y-12 contractors have used several different materials for the rupture discs over the operating history of the facility in an effort to improve the reliability of the rupture discs. CNS believes that the rupture disc failures are in part due to their exposure to liquid and hydrofluoric acid vapor. CNS would like to use a different alloy that has better corrosion resistance to hydrofluoric acid vapor, but rupture discs made from it are not readily available and will take time to procure. In the meantime, CNS approved an engineering evaluation and temporary modification to allow the use of another rupture disc alloy that had been used in the system before. Rupture discs made from this alloy have failed after four months of service. In the temporary modification, CNS recommended replacing the rupture discs after six months. Since the previous failure, CNS has implemented changes to reduce moisture in the system by requiring the system to be purged if maintenance activities breach the system. The requirement to purge the system was in place prior to the most recent rupture disc failures, which occurred after approximately a year of service. The oxide conversion facility has been operating with additional temporary modifications (one of which has been in place since 2017) that CNS plans to address in an outage this fall.

Nuclear Criticality Safety: On Monday, NPO started an integrated assessment to review corrective actions related to the uranium accumulation events discovered starting three years ago. NPO plans to outbrief CNS on September 3 with preliminary results and issue a final report by September 30. The assessment objective is to verify the corrective actions have been planned and implemented adequately to address the safety of current conditions and prevent recurrence. The team consists of two NPO nuclear criticality safety engineers, an NPO facility representative, and one person from NNSA headquarters.

CNS recently performed an effectiveness review of completed 2017 and 2018 nuclear criticality safety committee recommendations and actions. Of the 24 specific recommendations and/or actions, the review team considered 18 to be fully effective. Among the completed recommendations was the development of a resource loaded, integrated schedule for nuclear criticality safety tasks. The review team found that four actions were implemented, but only partially effective. The review team determined one action was partially completed and one action was not yet completed. Based on this review, the team concluded that the nuclear criticality safety committee is generally effective in implementing its recommendations and actions although follow-on actions and continuing diligence are considered appropriate.

Calcliner Project: NPO issued a safety review letter approving the revision to the calcliner safety design strategy that was submitted earlier this summer (see 6/26/20 report). NPO closed previous comments and provided additional comments to be incorporated into the next revision of the safety design strategy and the criticality safety process study. NPO did not have any conditions of approval.