

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 13, 2018

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros, Resident Inspector
SUBJECT: Oak Ridge Activity Report for Week Ending February 9, 2018

Building 9204-2E: The resident inspector observed maintenance work to repair a Lexan viewing port on a positive pressure glovebox. In September, the adhesive connecting the window to the glovebox failed and the viewing port fell off while an operator was working (see 9/8/17 report). Shortly after the event, maintenance workers installed a temporary patch that was fabricated using additive manufacturing to fit the unique geometry of the glovebox. They then returned the glovebox to service. Maintenance workers this week replaced the temporary modification with a vendor-supplied, Lexan viewing port. During the installation activity, the resident inspector discussed with system engineers the adhesive used to secure the new window and examined test cards that demonstrate the stability of the adhesive. The resident inspector observed no issues with the work. Next week, maintenance workers will leak test the new window prior to restoring the glovebox to service.

Nuclear Criticality Safety (NCS): NPO NCS staff, with assistance from NNSA Office of Infrastructure and Environment personnel, conducted field analysis this week to support an independent assessment of the CNS Large Geometry Exclusion Area (LGEA) program. The assessment will evaluate whether CNS appropriately credits and implements the LGEA program and is part of the NPO Fiscal Year 2018 Site Integrated Assessment Plan. NPO staff also briefed CNS on their preliminary observations and will issue an assessment report later this month.

Building 9720-5: In January, NPO approved a safety basis supplement that will support hardware modifications to the facility Criticality Accident Alarm System (CAAS). CNS is planning to rebuild a key CAAS annunciation component and tie the CAAS annunciation power supply into the facility standby generator in order to improve system reliability. CNS is also planning system logic changes that will prompt alarm activation in the event that one detector in a station identifies a high radiation condition while the other detector in the station has failed. Currently, CAAS system logic is programmed such that both detectors in a given station must activate in order to initiate an audible CAAS alarm. Once the logic changes are complete, CNS will retire a Justification for Continued Operations that addresses a deficiency in Technical Safety Requirements (TSR)-mandated overlapping detector coverage (i.e. at least two detector stations must provide coverage for each fissile material activity- see 12/19/14 report).

In order to support this work, the safety basis supplement temporarily modifies the existing CAAS limiting condition of operation (LCO) included in the approved facility TSR. CNS will perform the modifications listed above during an extended system outage that will last approximately 4 months. The current CAAS TSR LCO requires that the system remain inoperable no longer than 72 hours. The safety basis supplement thus suspends the 72 hour requirement and, in turn, suspends fissile material handling activities throughout the CAAS outage. It further mandates that workers accessing the facility material storage areas wear personal radiation detection instruments capable of alarming in the event of an inadvertent criticality. Once hardware modifications are complete, CNS will verify system operability using existing TSR surveillances, restore the system to operable, and retire the safety basis supplement. CNS will also implement CAAS LCO improvements previously implemented at other legacy facilities (see 11/17/17 report). CNS plans to implement the safety basis supplement and begin the hardware modifications later this year.