

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

March 29, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending March 29, 2019

Building 9204-2E: During disassembly operations, machining was being performed within a glovebox when a section of the machined material fell in a position that punctured a bellows that covers a glovebox penetration. The glovebox atmosphere is required to be at an oxygen level of less than one percent to reduce the risk of a fire. The bellows is also relied on to prevent water intrusion to reduce the potential for a nuclear criticality accident. When the bellows was punctured, the oxygen level rapidly increased above one percent. The disassembly and machining operations were suspended and the abnormal operating procedure was entered. The initial recovery actions involved using binder clips to clamp and close the tear in the bellows. Oxygen levels decreased after the tear was clamped, but the temporary modification was not sufficient to reach an oxygen level of one percent. A revised recovery plan was developed that required manual (non-lathe) dismantlement activities to remove the material from the glovebox with oxygen levels above one percent. Prior to performing the manual dismantlement operation, hazardous materials were bagged and removed from the area of the glovebox where the in-process piece of material was located. The in-process piece of material was able to be removed from the machining area and transferred to a drum for removal from the glovebox. A repair of the bellows is being planned.

The same glovebox has been having issues with the plate seal on the outside of the glovebox (see 10/19/18 and 2/1/19 reports). In January, the plates slightly separated during startup operations and compromised the integrity of the glovebox by providing a pathway for potential water intrusion and exposing the glovebox to normal atmospheric conditions. Then in March, the plate seal stuck and came close to compromising the glovebox integrity again. The plate seal has since been functioning using a lubricant that has improved its operation while maintaining the proper seal to the outside atmosphere. A new seal design is being developed that is anticipated to be ready later this year. The standing order described in previous reports remains in place.

Electrorefining Project: Last month, NNSA approved Critical Decision-2/3, *Approve Performance Baseline and Start of Execution*, for the Electrorefining Project. CD-4 approval, *Approve Start of Operations*, is scheduled for 2023. NNSA expects that completion of this project will ensure more reliable and cheaper production of purified uranium metal. The Electrorefining Project—along with the Calcliner Project—could allow the Oxide Conversion Facility and reduction processes to be shut down, eliminate the use of extraction solvents, and greatly reduce the use of uranyl nitrate solutions.

Building 9215: The NPO fire protection authority having jurisdiction approved an equivalency to NFPA 13, *Standard for the Installation of Sprinkler Systems*, for a small location where sprinkler coverage is partially obstructed in Building 9998 (part of the 9215 Complex). An additional sprinkler will be installed as part of the Electrorefining Project, though complete coverage cannot be provided. Combustible storage will be prohibited under the obstruction and the area will be marked with paint.