

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 18, 2019

TO: Christopher J. Roscetti, Technical Director
FROM: Matthew Duncan and Brandon Weathers, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending January 18, 2019

DNFSB Staff Activity: On Wednesday, a staff review team conducted a teleconference with CNS and NPO personnel to discuss the Building 9212 safety basis revision that provided an exclusion to an operational restriction to allow concurrent operation of the secondary extraction and high capacity evaporator processes (see 10/12/18 report).

Building 9212: Last week, CNS discovered that uranium-contaminated magnesium oxide sand—approximately eight liters—and other items had accumulated in an enclosed area underneath a hood used to prepare and load reduction reactor vessels. The criticality safety evaluation did not analyze the potential for significant quantities of uranium to be present in this particular location. CNS performed the abnormal conditions involving fissile material procedure and placed the room under administrative control. Using corrective actions specified by nuclear criticality safety personnel, operators removed most of the accumulated material. Reduction operations remain on hold. CNS held a fact finding meeting and plans to perform a critique next week. This is the latest in a series of unanalyzed uranium accumulation events (see 6/2/17, 12/15/17, 2/16/18, 3/30/18, and 6/22/18 reports).

Building 9204-2E: NPO recently approved changes to the Building 9204-2E safety basis related to 2 MeV linear accelerator operation, pipe size specification for the fire protection main drain test, and freezing period. The 2 MeV linear accelerator operation is being transferred to Building 9204-2E from Building 9212 as part of the enriched uranium mission transformation strategy for ceasing enriched uranium programmatic operations in Building 9212 by 2025. NPO staff found that the 2 MeV linear accelerator operation did not meet the American National Standards Institute / American Nuclear Society (ANSI/ANS)-8.3, *Criticality Accident Alarm System*, detection criterion requirement. Specifically, the ANSI/ANS-8.3 default minimum accident of concern cannot be demonstrably detected for some accident conditions. As a result, NPO included a directed change and condition of approval in the safety evaluation report. The directed change requires that the Y-12 nuclear criticality safety program description document be modified such that a technical basis is provided in facility-specific documented safety analysis documents when the default ANSI/ANS-8.3 detection criterion requirement is not used. The condition of approval requires that CNS determine a path forward to achieve full compliance with the ANSI/ANS-8.3 detection criterion requirement within 90 days.

Building 9212: Production personnel discovered that ammonium hydroxide had been delivered to an area at Building 9212 in violation of the hazardous material inventory control—a specific administrative control that protects assumptions of the hazard and accident analysis that limit the amount of material available for potential release in the event of an accident. CNS personnel entered the appropriate limiting condition of operation and moved the ammonium hydroxide to an approved storage location. A similar incident involving nitric acid occurred in October 2018 (see 11/9/18 report). Some of the corrective actions developed as a result of that incident have been completed. The remainder are scheduled to be completed by the end of January.