

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 25, 2022

TO: Christopher J. Roscetti, Technical Director
FROM: Brandon Weathers, Resident Inspector
SUBJECT: Oak Ridge Activity Report for Week Ending February 25, 2022

DNFSB Staff Activity: Members of the technical staff had separate teleconferences with NPO and OREM to discuss an ongoing review of DOE approvals of safety basis documents.

Continued Safe Operability Oversight Team (CSOOT): The CNS CSOOT issued a report documenting its 2021 annual evaluation of the adequacy of Building 9212 to sustain continued reliable and safe operations. This was the first annual report issued solely for Building 9212 after CNS created the Enriched Uranium Extended Life Program Management Integration and Steering Committee to separate the Extended Life Program facilities (Buildings 9204-2E and 9215) from the CSOOT scope in light of their increased lifespan. As in previous years, the CSOOT did not identify any safety concerns that would currently provide reason to limit enriched uranium operations in Building 9212. Over the past year, CNS continued to focus on processing briquettes as the primary means of reducing the material-at-risk in Building 9212. They also greatly reduced the organic materials in the facility. The CSOOT maintained the existing open recommendations from facility risk reviews and prior CSOOT annual reports that called for installing new process equipment (calciner and electrorefining). The electrorefining project and the direct chip melt front-load furnace project experienced delays that resulted in postponing their startup dates in 2021. The CSOOT noted that further delays of new technologies increase the overall risk due to continued reliance on older equipment and more reactive material forms (uranium chips) and hazardous chemicals (hydrogen fluoride). The CSOOT reported continued improvements with their other open recommendation for increasing the resources to support maintenance activities but left the recommendation open because it was too early to determine the effectiveness of the improvement initiatives. One of the new improvements discussed in this year's report is that CNS established a Limited Life Program. The Limited Life Program analyzed maintenance trends and failure mechanisms for Building 9212 systems with the goal of identifying strategies to avoid or mitigate future issues until the Uranium Processing Facility transition is completed. That evaluation identified over 100 specific maintenance activities that represent an estimated 7950 person-hours of effort when accounting for all of the support organizations that are needed. The Limited Life Program team also recommended that a follow-on evaluation be performed that focuses on identifying additional preventive maintenance measures to address nuclear criticality safety concerns.

Nuclear Criticality Safety: After the December uranium accumulation discovery in Building 9212, CNS reexamined non-destructive assay data for Building 9215 out-of-service systems and items (see 12/10/21 report). During that evaluation, they discovered that the software database used for control and accountability of nuclear materials had a fissile mass for solidified salt bath sludge that was greater than what nuclear criticality safety engineers had assumed in their criticality safety evaluation. As a result of this discovery, the nuclear criticality safety engineers entered their process for evaluating potential nuclear criticality safety issues. The solidified sludge has been stored in this area for several years (see 10/15/21 and 1/28/22 reports). In response to the new information, CNS rewrapped the pan in plastic to prevent water intrusion.