

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 3, 2025

TO: R. T. Davis, Acting Technical Director
FROM: Frank Harshman and Clinton Jones, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending January 3, 2025

Special Nuclear Material Vehicle (SNMV): On September 19, 2024, CNS entered the potential inadequacy in the safety analysis (PISA) process due to discrepancies between a SNMV criticality safety evaluation (CSE) and the SNMV safety analysis report (SAR). On September 26, 2024, CNS declared a PISA and followed up by performing an unreviewed safety question (USQ) determination which also returned as positive. The PISA was discovered during the annual review of the SNMV safety basis and efforts to implement changes associated with new containers and loadings. CNS placed operational restrictions on the movement of the two materials of interest that were not analyzed in the CSE and filed an occurrence report on the issue.

CNS is required to submit a justification for continued operations or a safety basis document change notice (DCN)/revision and develop an evaluation of the safety of the situation (ESS) within 30 days of a positive USQ determination or notify YFO of the need for an extension with a justification. YFO granted a requested extension to CNS for the required documentation to December 19, 2024. To resolve the PISA, CNS prepared a DCN to the SNMV SAR to demonstrate that the materials of interest are bounded by a recent increase to the maximum anticipated quantity (MAQ) of certain materials. The DCN incorporates a new material loading limit to bound the consequences presented by one of the materials of interest identified in the PISA. The increased limit better reflects current use of the SNMV and is supported by analysis for various material forms and increased loadings. CNS completed the ESS and DCN submittal within the requested extension period allowing YFO to review and approve an addendum to the SNMV SAR.

The revision covers the basis for the approval with an explanation of the changes in the MAQ limits for the SNMV. YFO approved the removal of the operational restrictions that were in place for the materials in question upon approving the DCN and ESS submittal by CNS. The resident inspector (RI) discussed the changes with the YFO nuclear safety specialist.

Building 2026: An RI conducted a general facility walkdown and observed thorium drying operations in Building 2026 at Oak Ridge National Laboratory. Isotek dries extracted thorium-229 in glass vials prior to packaging for shipment. The RI did not note any safety concerns or issues during the walkdown and observed that the facility was minimally staffed due to the holidays. The RI discussed the completion of a recent building outage and future planned operations with the acting facility manager. Isotek has been exclusively processing oxides to date; however, they intend to move forward with the processing of other forms of uranium-233 early in the next calendar year.