

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 5, 2024

TO: Timothy J. Dwyer, Technical Director
FROM: Mark T. Wright, Cognizant Engineer
SUBJECT: Idaho National Laboratory (INL) Report for March 2024

DNFSB Staff Activity. The Board's INL cognizant engineer held weekly meetings to maintain awareness of site activities, including attending event fact findings, management reviews, integrated project team reviews, and facility plan of the day meetings.

Integrated Waste Treatment Unit (IWTU) Shutdown. At the beginning of March 2024, IWTU had brought the Denitration Mineralization Reformer (DMR) and Carbon Reduction Reformer (CRR) up to normal operating temperatures and had commenced conditioning the Granular Activated Carbon (GAC) Beds as part of the startup process. During this period, routine radiological surveys detected internal contamination on hydrogen analyzer system filters, which are downstream of the Process Gas Filter (PGF) outlet. The engineering staff noted that this was a potential indicator of bypass around one or more of the 342 ceramic filter elements inside the PGF. The contractor began to actively monitor for other indications as IWTU continued to start up. IWTU personnel subsequently noted lower than normal oxygen dips after PGF blowbacks downstream of the CRR, which is downstream of the PGF. PGF blowbacks are a normal part of automatic plant operations to reduce loading on the PGF filter elements when the differential pressure across the filters reaches a pre-set limit. The engineering staff noted that the unusual oxygen dips are likely caused by unburned carbon from the clean side of the PGF reaching the CRR, which is another indicator of bypass from the PGF. During upcoming simulant or waste processing, the primary concern with the bypass condition is agglomerations of undesirable solids in the CRR which could result in issues associated with differential temperatures across the CRR bed. A secondary concern is unburned organics potentially reaching the GAC beds, which can be a fire hazard. After IWTU engineering personnel gathered needed operational data related to the material bypass of the PGF, IWTU personnel initiated a plant shutdown to continue the investigation of the potential issues with the PGF. Based on expected contamination and radiation levels in the associated process cell and the PGF itself, the work to investigate and perform repairs could be challenging from a radiological safety standpoint. IWTU personnel are currently planning how to conduct this work.

Procedure Violation at Advanced Mixed Waste Treatment Project (AMWTP). On March 27, 2024, the Nuclear Facility Manager placed the facility into Limiting Condition for Operation (LCO 3.1(a)) due to a procedure violation. While running the semi-annual verification of the Weekly Interfacing Matrix Performance and Examination Check Assay Drums (WIMPECAD), operators found that one assay failed. Operators determined that the origin of the failure was a missing source. During the fact-finding meeting, INL personnel established that a trainee operator who was tasked with configuring the WIMPECAD drums under the supervision of two qualified operators, failed to load the last source into the test drum. The qualified operators did not maintain oversight of the trainee and the procedure was not closely referenced as required. Sources were not signed out of the safe and into the glovebox for the operation as required. Additionally, operators did not conduct dual verification as required by the procedure. AMWTP management identified several corrective actions, including training upgrades, re-qualification of operators, and emphasis on oversight and supervision were some of the corrective actions discussed to mitigate the recurrence of this event in the future.