

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 7, 2019

**TO:** Christopher J. Roscetti, Technical Director  
**FROM:** Timothy L. Hunt, Acting Cognizant Engineer  
**SUBJECT:** Idaho National Laboratory (INL) Report for May 2019

**DNFSB Staff Activity.** Board's staff members conducted one person-week of on-site activities during May 2019. The Board's staff has provided an average of one person-week per month of on-site oversight for the first eight months of fiscal year 2019.

**Potential Inadequacy of the Integrated Waste Treatment Unit (IWTU) Safety Analysis Report (SAR).** While reviewing a proposed change to the IWTU SAR, the Fluor Idaho nuclear safety engineer identified that there are unanalyzed pathways for oxygen (in the forms of room air and instrument air) to enter the process off-gas system. Preliminary calculations put the resulting O<sub>2</sub> concentration near the limiting oxidant concentration for hydrogen in the off-gas system. Left unmitigated, the condition could lead to a deflagration in the process off-gas system in spaces occupied by personnel. A compensatory measure has been developed to verify that the O<sub>2</sub> concentration at the carbon reduction reformer outlet is equal to or greater than 2 percent to ensure hydrogen has been adequately scavenged, prior to and during canister filling operations.

**IWTU Status.** IWTU processed more than 63,000 gallons of simulated waste during the 50 day demonstration run that ended on May 31, 2019. All test conditions identified in TI-102 Part 5, *IWTU Integrated System Test: Hot Startup—Part 5, Demonstration Run 3*, were completed. The process gas filter (PGF) differential pressure significantly increased near the end of the run and the high alarm setpoint and the high-high setpoint were increased accordingly, per engineering direction. The feed rate was subsequently reduced after the final test condition (number 11) to ease the pressure across the PGF elements. A planned maintenance and modification outage is scheduled to start in early-June and last several months.

**Advanced Mixed Waste Treatment Project (AMWTP) Container Corrosion.** Personnel identified corrosive liquid leaking from a hole in the bottom of a BR-90 box. The container had been stored outside the retrieval contamination enclosure (RCE) in the Transuranic Storage Area-Retrieval Enclosure where there was a potential for the spread of contamination. Radiological control technicians performed surveys of the travel path of the container from its current location in an inner contamination enclosure tent to its original storage location and discovered 4000 dpm alpha contamination in the secondary containment outside the RCE. Following decontamination, the pool area was noted as 2000 dpm alpha fixed contamination, covered, and marked.

Subsequently, workers cut the front of the BR-90 off so they could rig and remove the items to check for leaks and determine the source. The source of the liquid was not evident based on inspection of the items in the box. Efforts to identify the liquid were also unsuccessful. Fluor Idaho attempted to ascertain the pH of the liquid but its stickiness (likely from the paint and metal) precluded an identification. AMWTP personnel perform weekly Resource Conservation and Recovery Act checks but have not identified any leaking containers. As a precaution, Fluor Idaho is performing a review of the parent container(s) that were processed in Accelerated Retrieval Project VII to identify and inspect other daughter containers that may have similar liquid.