

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 6, 2017

TO: Steven Stokes, Technical Director
FROM: Bradford Sharpless, Idaho Cleanup Project Cognizant Engineer
SUBJECT: Idaho National Laboratory (INL) Report for December 2016

DNFSB Staff Activity: Board's staff member R. Quirk was on site at INL during December 12–16, to provide routine oversight, with a focus on the implementation of technical safety requirements (TSR) at the Radioactive Waste Management Complex. The Board's staff provided an average of 2 man-weeks of on-site oversight for the first three months of fiscal year 2017.

Integrated Waste Treatment Unit (IWTU). On December 06, IWTU workers began an internal inspection of the inlet and outlet isolation dampers for process high-efficiency particulate air (HEPA) filter bank "D." During the course of the inspection, the inlet damper seal was discovered to be damaged/deteriorated, potentially affecting its ability to provide a seal with the damper housing.

IWTU contains four process HEPA filter banks (installed in parallel), which are components of the IWTU process off-gas system. The process off-gas system is designated as a safety-significant structure, system, or component by the IWTU documented safety analysis to prevent exposure of workers to hazardous concentrations of nitrous oxide (NO_x) and mercury. Each process HEPA bank contains an inlet and outlet isolation damper to allow isolation of the filter bank from the process off-gas system. TSR-level controls are placed on the isolation dampers to prevent an uncontrolled release of hazardous gases into the occupied area during filter replacement activities while the facility is in Operations Mode.

IWTU has not yet processed any radiological material. There were no personnel injuries or releases to the environment related to this discovery. An extent-of-condition (EOC) review performed after the discovery of the damaged/deteriorated isolation damper seal involved an inspection of the inlet and outlet isolation damper seals for the remaining three process HEPA filter banks. The EOC review indicated the inlet and outlet isolation damper seals on the remaining three process HEPA filter banks exhibited similar damage/deterioration.

On December 19, IWTU's Nuclear Facility Manager (NFM) declared a potential inadequacy of the safety analysis due to the discovery that the process HEPA filter inlet and outlet isolation damper sealing capability may be at a lower differential pressure than that which is required to provide off-gas confinement. Under certain plant conditions, the pressure differential across the process HEPA isolation dampers could exceed could the dampers' sealing capability (1.8 psid) while remaining below the setpoint for the protective rupture disc (3.0 psid) located upstream of the process HEPA banks.

The NFM directed the implementation a compensatory measure to prohibit any activity that would compromise the process HEPA filter confinement boundary when feeding simulant or sodium-bearing waste. IWTU remains in Shutdown Mode for planned facility maintenance.