

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending May 1, 2015

Staff member R. Oberreuter was on site to observe NPO oversight activities.

Building 9731: On February 12, 2015, a Security Police Officer (SPO) entered Building 9731 and experienced throat irritation and coughing due to an airborne irritant present inside the building (see 2/27/15 report). The cause of the irritation is believed to be vapors or dust from an activity to process lithium hydroxide, which is being led by the Development organization. On April 1, 2015, maintenance personnel entered the building and an individual experienced similar symptoms and reported to the on-site medical facility. On April 2, a NPO facility representative entered the facility to investigate this most recent event and experienced skin and respiratory irritation. On April 21, another SPO entered a separate part of the facility and also experienced skin irritation. All air samples taken by industrial hygiene personnel indicated airborne lithium hydroxide concentrations were well below the site's exposure limit of 1 mg/m³. CNS management has posted the building as an area requiring respiratory protection as the Industrial Hygiene personnel continue to collect samples. In addition, CNS has also hired an outside contractor to sample for other possible organic contaminants. Finally, CNS's engineering organization is conducting an evaluation of the building's ventilation systems to recommend improvements that limit the release of airborne irritants inside the building.

Highly Enriched Uranium Materials Facility (HEUMF): The facility was temporarily evacuated due to a fire alarm caused by problems experienced during a maintenance activity on the fire suppression system. The HEUMF fire water distribution system has three pumps: a safety-significant diesel-driven pump, an electric-driven pump, and a smaller jockey pump. The two larger pumps are designed to supply large amounts of water for fire suppression, while the smaller jockey pump supplies a small amount of flow during quiescent periods to maintain system pressure. The electric-driven and the jockey pump are not specifically credited for a safety function in the safety-significant fire water distribution system. Maintenance personnel were upgrading the jockey pump from a ½-horsepower pump to a two-horsepower pump, but did not include the replacement of the supporting fuses and relays in the scope of work. When the new pump was energized, two fuses blew due to the increased electrical demands of the two-horsepower pump. These fuses were in a pump controller that was part of vendor supplied equipment during construction and not indicated on the facility's electrical drawings. While the maintenance crews were taking actions to restore operation of the jockey pump, the pressure in the fire water distribution system was maintained overnight by use of the much larger electric-driven pump. The next day, during one of the cycles of this electric-driven pump, the fire alarm activated due to the resultant pressure surge and initiated the evacuation of the facility. The plans for this scope of work received an unreviewed safety question determination and an informal review by an electrical engineer but the under-sized fuses were not identified during the review.

An additional concern was identified during this maintenance work activity. Several sections of pipe adjacent to the jockey pump were also being replaced because they had signs of exterior corrosion. When these sections were removed, a build-up of material was noted inside the pipe sections that restricted water flow. CNS management has directed that samples of this material be sent to the site's Analytical Laboratory for analysis. Once the analysis is complete, CNS will make plans to conduct further investigations based on the results.