

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

October 2, 2017

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending September 29, 2017

Building 9212: Last Friday, operators identified another storage box containing briquettes that underwent an exothermic reaction. This is the seventh batch of briquettes in storage to have undergone a spontaneous exothermic reaction since June, but the first to have done so after being containerized in an inert atmosphere (see 8/18/17 report). Enriched Uranium Operations (EUO) management plans to hold a meeting with operations, engineering, and safety representatives next week to discuss whether additional measures are needed before handling, transporting, or processing briquettes.

CNS's primary strategy for minimizing the recurrence of these events is to minimize the time that briquettes remain in storage. To that end, the Y-12 Site Manager issued a letter to the NPO Y-12 Associate Deputy Manager for Operations this week describing a plan to eliminate the backlog of briquettes in Building 9212. At the core of the plan is a campaign in which EUO intends to dedicate all casting resources towards briquette processing for several months starting in January 2018, though CNS is evaluating options to start the campaign earlier. CNS is also planning to increase briquette throughput relative to fiscal year (FY) 2017 levels when not performing the campaign. With this plan, elimination of the briquette backlog in Building 9212 is anticipated in FY19.

Aging Infrastructure: Brine chilled water systems serve dehumidification units in several Y-12 production facilities. During a structural walkdown last May, CNS engineers discovered several supports for the brine chilled water system feed to Building 9204-2 that were severely deteriorated. In response, the Y-12 Plant Health Committee requested that CNS mechanical engineers and facility system engineers perform a more comprehensive material condition inspection of the brine chilled water systems that support capabilities in Buildings 9204-2, 9204-2E, 9215, and 9201-5N/W. The report documenting the results of the inspection concludes that a portion of the system that feeds Buildings 9204-2, 9204-2E, and 9215 is in very poor condition. Condensation and water vapor intrusion have damaged the system's insulation, impacted thermal performance, and caused structural degradation to supporting elements. The report concludes that the system feeding Buildings 9201-5N/W appears to be in good condition, but there are areas needing repair and structural assessment. The report contains several recommendations, including the need for structural reinforcement in certain areas, repairs or refurbishments to components of the system, elimination of out-of-service segments, and development of a preventive maintenance plan.

Of note, personnel performing these walkdowns used inspection criteria from NUREG-1801, *Generic Aging Lessons Learned (GALL) Report*. The Y-12 extended life program for Buildings 9204-2E and 9215 (see 4/22/16 report) recommends application of GALL inspection criteria as part of an enhanced material condition monitoring strategy. In FY18, CNS plans to take additional steps to formalize and institutionalize this strategy. In the coming months, CNS intends to codify GALL inspection criteria applicable to Y-12 in an inspection guidance document. In addition, CNS Y-12 readiness assurance personnel and chief engineers plan to develop an approach for training and mentoring system engineers on additional structure, system, and component (SSC) inspection techniques. CNS Y-12 facility health managers will be responsible for selecting which SSCs will receive consideration for these enhanced material condition monitoring evaluations.