DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 22, 2015

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending December 25, 2015

Building 9212/Briquette Processing: In 2007, the Y-12 contractor switched to a new fluid for cleaning residual machining coolant from enriched uranium (EU) chips. This material has proven to be ineffective at fully removing coolant. As a result, the Y-12 contractor has encountered several issues with the briquettes formed from these chips, including unanticipated localized thermal reactions (see 5/2/08 report) and unanalyzed nuclear criticality safety (NCS) conditions (see 1/31/14 report). In addition, these coolant-contaminated briquettes have proven to be undesirable feedstock for casting operations (the intended process path) as they generate high quantities of EU oxide when cast. A CNS team has therefore been pursuing alternate process paths that would more efficiently convert the briquettes into a recoverable or usable form and aid ongoing material-at-risk reduction initiatives.

Last September, Enriched Uranium Operations (EUO) personnel received approval to begin executing one of the alternate process paths, which involves processing briquettes in the Holden Gas Furnace (HGF). Operators completed two runs, one with a broken briquette and one with an intact briquette. The runs demonstrated promising oxidation rates. However, during the run with the intact briquette, the heat generated from the briquette formed a hole in the bottom of its container. EUO management paused briquette processing operations in the HGF while NCS and other safety disciplines evaluated the implications of this issue. CNS engineers have since performed an analysis demonstrating that the use of a fortified container will be sufficient to prevent future containment issues. NCS personnel recently issued an update to the NCS analysis approving the use of the new container assembly and providing greater specificity regarding the allowable types of briquette loading conditions. EUO personnel received the final approvals to resume briquette processing in the HGF last week.

Contractor Assurance System (CAS): CNS recently issued the CAS performance report for the fourth quarter of fiscal year 2015. Noteworthy issues in the report that address the Y-12 Site include the following:

- With regard to the Key Initiative on Performance Excellence, CNS continues to focus on long-term operational improvements while also taking some more visible immediate actions. For example, 31 of 36 Production areas at Y-12 have implemented status boards capturing key Performance Excellence-related metrics. The site reps walked down several of these status boards this week. The status boards varied in maturity level but represent a positive step forward.
- During this calendar year, Y-12 has experienced eight instances in which drums bulged due to the build-up of internal pressure (see 9/19/15, 4/17/15 and 8/28/15 reports). CNS management took corrective actions that include implementing a new waste review team to review upcoming drum loading activities. In addition, CNS is pursuing the procurement of additional drum punch equipment.
- CNS has taken actions to improve the performance of the lockout/tagout (LO/TO) process. These actions include additional crew briefings and lessons learned sessions with LO/TO Issuing Authorities. The CAS report notes there were no LO/TO-related occurrences during the review period.
- CNS began focused activities on improving housekeeping across the Y-12 site. An example of these activities includes reducing combustible loading and legacy equipment in Building 9212's E-Wing Basement.