

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 8, 2017

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Resident Inspectors
SUBJECT: Oak Ridge Activity Report for Week Ending May 5, 2017

Staff members R. Jackson, Y. Li, and L. Schleicher were at Y-12 to observe a Uranium Processing Facility flood hazard meeting.

U-233 Downblending Campaign: This week, OREM assumed ownership of Building 2026 from the DOE Office of Science. In the near term, Isotek personnel will operate the facility in surveillance and maintenance mode; in the future, they plan to use the facility to downblend U-233 material currently stored at Building 3019 (see 7/13/12 and 7/29/16 reports).

Building 9212: Enriched Uranium Operations (EUO) personnel have not operated the primary extraction (PX) system since March 2016 due to the metal production improvement project outage and subsequent equipment issues (see 6/3/16, 12/2/16, and 1/13/17 reports). The latest issue, which surfaced in late January, involves problems achieving required flow rates on the organic feed pump. Cognizant engineering and EUO staff have been troubleshooting various components of the pump (e.g., wiring, control unit), but have been unable to resolve the problem. Last week, following a review of vendor information, EUO staff identified an adjustment on the pump's actuator that could resolve the problem. EUO management is considering replacing the pump if this adjustment does not resolve the issue.

NPO staff raised questions regarding operational readiness on the system because EUO last completed a PX evolution approximately one year ago. NPO staff reviewed CNS readiness criteria, operator logs, shift manager logs, and the PX procedure and determined that EUO personnel had run key PX equipment a sufficient number of times in the past year (primarily as part of post maintenance test evolutions) to satisfy readiness requirements.

Nuclear Criticality Safety (NCS): NCS engineers recently identified a non-conservative error in a calculation that evaluates shipment of a type of on-site container via the Special Nuclear Material Vehicle (SNMV, see 3/24/17 report). The calculation documents Criticality Safety Index for On-site transfer (CSIO) values for several loaded "drum-type" shipping containers. In turn, the CSIO value establishes a limit on the number of loaded containers that can be shipped on-site via the SNMV at a given time. In response to the event, the responsible CNS manager initially suspended all movement of the affected drum-type containers on the SNMV.

NCS engineers subsequently documented a more conservative CSIO value via technical deviation (TD) that only applies to the affected drum-type container when it is loaded with a certain weapon program assembly (the CSIO value documented in the original calculation remains applicable to the container when it is loaded with other weapon program assemblies). Concurrently, the responsible CNS manager drafted a standing order that references this new TD in order to resume shipments of the impacted drum-type container. Two weeks ago, the manager issued the standing order before the TD that it referenced was fully approved. CNS personnel held a fact-finding meeting in response and identified that the standing order was prematurely issued primarily because operations personnel did not fully understand the TD approval process. As such, CNS personnel identified corrective actions to update the TD form in order to clearly identify approval responsibilities, and to review the procedure governing the TD process in order to refine identified roles and responsibilities. CNS will cancel the standing order and TD once NCS engineers revise the original calculation to include the new CSIO value.