

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 August 8, 2014

Building 9206: Early Wednesday morning, a portion of the Y-12 Protected Area experienced an unplanned power outage, which in turn caused the Building 9206 Criticality Accident Alarm System (CAAS) to lose functionality of its audible and visual alarms. Per the Building 9206 CAAS Limiting Condition of Operation (LCO) actions, the shift manager suspended fissile material handling activities in the facility and established a restricted access area for the affected CAAS annunciation area. The LCO Bases stipulate that only personnel performing certain specified duties may enter a CAAS restricted area, provided they use an approved means of alternate coverage (e.g., personal radiation detection instruments, or PRDIs). Complicating the establishment of a restricted access area for Building 9206 is the fact that its CAAS annunciation area is adjacent to the main personnel entry point on the east end of the Protected Area. During this event, an employee with a PRDI escorted an employee who did not meet the stipulations of the LCO Bases through the restricted access area to the Protected Area entry point. The Plant Shift Superintendent may have contributed to the confusion regarding access to the restricted area by making an announcement that personnel may pass through the entry point if wearing a PRDI. CNS management is developing actions to improve the implementation of this LCO.

Building 9212: This week, the CNS Y-12 Site Manager approved resumption of casting operations (see last week's report). Until the cause of last week's event is determined, the Enriched Uranium Operations (EUO) Production Manager has restricted the feed for casting operations to bulk uranium metal.

During a recent Intermediate Evaporator (IE) run, operators observed indications of greater than expected quantities of organic in the feed leg for the system. The criticality safety evaluation for the IE system contains a requirement that organic solutions shall not be transferred to the IE system, with the caveat that "very small quantities of organics may appear." The supervisor suspended operations and directed the operators to drain the feed leg. This is similar to the issues encountered on the IE system last year (see 3/29/13, 4/26/13, and 5/3/13 reports). CNS chemistry experts believe the unexpected quantities of organics in the IE system are caused when the Primary Extraction (PX) system is shut down for extended periods of time, which was the case recently when PX raffinate transfers were suspended due to gamma monitor issues. This gives organic droplets entrained in the pulse extraction columns sufficient time at ambient temperatures to react with the nitric acid in the system and create organic degradation products that are more soluble in the aqueous phase than the organic feed for the system. Upon restart of the PX system, these soluble degradation products can bypass the phase separators and be transferred to the IE system. EUO personnel plan to issue a procedure change requiring the system to be pulsed if down for an extended period of time. This should allow entrained organic droplets to aggregate, significantly reducing the organic surface area available for reaction.

The gamma monitor for the PX system failed post-work testing (see 7/11/14 report) and has not returned to service. Engineers continue to work with the vendor to troubleshoot the problem.

Fire Protection/Utilities: In early June, NPO sent a letter to the contractor that expressed concern about the lack of configuration control in the potable water systems that support the site's fire protection systems (see 6/6/14 report). Last week, CNS responded with a plan identifying actions to improve the configuration control of utility systems, including actions to correct or create new piping diagrams. CNS estimates that it could take up to four years to complete the actions specified in the plan unless additional funding is obtained.