DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 14, 2016

TO: Steven Stokes, Technical Director
FROM: Jennifer Meszaros and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending November 11, 2016

F. Bamdad, R. Oberreuter, and S. Sircar were on site for a review of the CNS Y-12 extended life program (ELP) safety strategy.

Criticality Accident Alarm System (CAAS): CNS system engineers recently completed an engineering evaluation following a series of issues with CAAS radiation detectors. These issues ranged from detectors that could not be successfully calibrated to detectors that activated outside the tolerance range for the high radiation alarm set point specified in the technical safety requirements (TSR). One such issue resulted in a failed TSR surveillance (see 8/5/16 report). As part of the evaluation, CNS system engineers performed tests with support from the detector manufacturer in an effort to determine the root cause of the issues. In most instances, the cause of the issue was readily identified (e.g., faulty log scale meter) and the detector was successfully re-calibrated. However, two detectors (one of which was the detector that failed a TSR surveillance), continued to experience a drift in the detector high radiation alarm set point even after key components of the detector (e.g., photomultiplier tube, high voltage card) were replaced. CNS system engineers left these detectors with the manufacturer for further evaluation. Several recent reports, such as the CNS continued safe operability oversight team fiscal year (FY) 2016 report, a recent NPO assessment of equipment degradation, and the ELP implementation plan, have highlighted the need to replace aging CAAS equipment.

ELP: In April 2016, NPO sent a letter directing CNS to update its aging management plan and develop an ELP implementation plan (see 4/22/16 report). CNS updated the aging management plan in October 2016 (see 10/14/16 report) and recently issued the ELP implementation plan. This implementation plan defines the ELP scope and suggests a long-term funding strategy to a level of refinement not captured in previous ELP documents. It will be updated periodically as the ELP matures. The ELP implementation plan identifies planned safety basis changes and facility refurbishment/ replacement activities. For instance, it proposes that facility seismic analyses and walkdowns recommended by a seismic expert panel in October 2016 begin in FY18. Further, the plan proposes that work required to replace legacy CAAS stations (see 8/5/16 report) begin in FY21. The ELP implementation plan also outlines a new maintenance outage program that will be piloted in Building 9204-2E and the 9215 Complex. The plan states that the outage program must be fully functioning by FY21 to handle the extensive scope of refurbishment and replacement activities included in the ELP.

Fire Protection: During the last three weeks, while performing NFPA inspections on a credited Building 9215 fire suppression system, CNS engineers identified several sections of piping that are undersized relative to the requirements in NFPA 13, *Standard for the Installation of Sprinkler Systems*. The Building 9215 operations manager determined that each instance constituted a discrepant, as-found condition and entered the potential inadequacy in the safety analysis (PISA) process. The operations manager then invoked a CNS Y-12 procedural allowance to exit the PISA process if TSR actions exist that place the facility in an analyzed and bounding condition. In each instance, the shift manager had already placed the system in an analyzed and bounding condition by entering the appropriate limiting condition of operation in support of an ongoing maintenance outage. CNS has reported the issues collectively as a performance degradation of a safety-significant system. CNS expects to complete repairs this week to bring the discrepant sections of the system into compliance with NFPA 13 and the TSRs. Engineering personnel are in the process of scoping an extent-of-condition review.