DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 6, 2015

TO: Steven Stokes, Technical Director
FROM: William Linzau and Rory Rauch, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending November 6, 2015

Staff members F. Bamdad, D. Cleaves, and A. Poloski were at Y-12 to attend a workshop on CNS' plans for establishing an extended life program for Buildings 9204-2E and 9215.

Building 9212/Aging Infrastructure: Tray dissolver units are used to dissolve uranium oxide in an acid bath heated by steam coils. The condensed steam inside the coils is drained through the accountable steam condensate (ASC) system. In the event of a breach in the coils, the ASC system is credited in the technical safety requirements (TSRs) to detect a high conductivity condition and isolate the lines in order to prevent the discharge of fissile solutions to components with an unfavorable nuclear criticality safety (NCS) geometry. Last week, during tray dissolver operations, the ASC isolation valve closed indicating a potential leak of fissile solution into the steam lines. Operators took appropriate actions to secure and isolate the system and made appropriate notifications. The suspect steam coil was installed 15 to 20 years ago, and, in addition to identification of the cause of the leak and making repairs, CNS engineering personnel plan to review operating records to determine a means to predict and prevent similar failures.

Last weekend, in a separate event, operators identified a leak of approximately 50 liters of uranyl nitrate process solution on the floor of B-1 Wing while performing 12 hour rounds. Per procedure, the operators established administrative control of the area and sought guidance on recovery actions from the responsible NCS engineer. The engineer allowed the operators to enter the administratively-controlled boundary as needed to perform tasks associated with cleanup of the spill. The source of the leak could not be identified initially. However, while pouring the salvaged solution into a series of tanks, operators observed solution leaking from the muffler of the transfer pump tied to these tanks. It appears that the diaphragm on the pump had failed, allowing solution to leak into the area. The system alignment checklist for these tanks had prescribed the inlet and outlet valves on the pump to be left in the open position, even when the system was not operating. CNS system engineers, in consultation with NCS personnel, are evaluating potential changes to the isolation strategy for the system. Further, system engineers are evaluating the procedures and system alignment checklists governing the valve positions for other systems supported by diaphragm pumps in Building 9212 for opportunities to minimize the potential for leaks of this magnitude to occur in the future.

Transuranic Waste Processing Center (TWPC): On October 20, 2015, WAI violated a TSR during the receipt and inspection of waste drums being transferred from UCOR. The applicable specific administrative control (SAC) required the transport container on the trailer of the truck to be closed while fuel is present in the staging area. This fuel includes the diesel fuel in the truck used to transport the waste container into the storage area. Once receipt inspections are complete, WAI takes custodial ownership of the waste and the SAC is then in effect. In this case, due to a miscommunication, the transfer of ownership occurred while the door of the container was still open and the truck (fuel) was still in the area, which is a violation of the SAC. In addition to this violation, during the same week, a worker inadvertently failed to comply with the implementing procedure for another fuel-related SAC when he inadvertently transported a small amount of fuel (joint sealant) through a fuel exclusion area without obtaining the required permit. In this event, the amount of fuel did not exceed the area's limit and did not represent a violation. Earlier this year, WAI revised the TSRs to address increased consequences from a new dispersion analysis (see 12/5/14 and 6/12/15 reports). These events demonstrate the difficulty implementing and complying with the revised TSR control set.