

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

May 20, 2005

**TO:** J. Kent Fortenberry, Technical Director  
**FROM:** R. Todd Davis/Donald Owen, Oak Ridge Site Representatives  
**SUBJECT:** Activity Report for Week Ending May 20, 2005

Mr. Davis was out of the office this week.

A. Microwave Casting. As reported on April 8<sup>th</sup>, YSO had completed their Readiness Assessment (RA) for startup of the microwave casting operation (a prototype campaign limited to 15 runs) in the Enriched Uranium Operations building. Following efforts to close the RA findings, YSO authorized startup of operations with enriched uranium on May 13<sup>th</sup>. This week, enriched uranium was introduced to the microwave caster. During the later portion of the heat-up, the power supply to the microwave failed. Initial troubleshooting found blown fuses in the power supply. Certain prior microwave runs with surrogate material have also had power supply problems. BWXT is completing troubleshooting and conducting a review of the microwave power supply design with vendor support. BWXT anticipates some modifications will be necessary.

B. Authorization Basis Violation. YSO recently started their Implementation Validation Review (IVR) for authorization basis (AB) controls developed under 10 CFR 830 for the Quality Evaluation building. The YSO IVR team inquired about implementation of an administrative safety control that calls for a certain material to be placed in a dedicated, locked storage cage and to have that action independently verified. In responding to the YSO IVR inquiry, BWXT personnel determined that this administrative safety control had not been implemented into operating procedures and subsequently a can containing the material was found in a different (unlocked) rack. BWXT then declared an AB violation and initiated fact-finding and investigation. Areas that are being investigated include various AB implementation processes as well as the adequacy of training on AB requirements and performance of the BWXT IVR that was completed in January.

C. Chip Oxidation Operation. Chip oxidation operations are performed as part of Special Processing activities in the Enriched Uranium Operations building. Chip oxidation is performed in a pipe component vessel. A water cooling coil is welded to the outer vessel wall to remove heat after the oxidation reaction is started. A small flow of oxygen through the vessel is provided to sustain the oxidation reaction. During an operation to oxidize batches of enriched uranium chips on Wednesday, the wall of the vessel failed (i.e., burned through), leaving about a 1/2-inch diameter hole near a cooling coil weld and close to where oxygen is introduced. Some hot, oxidizing chip material spilled to the floor (the loading end of the vessel is in a ventilated enclosure, but the other end of the vessel protrudes over the room floor). Upon seeing the material spilling onto the floor, operators secured the oxygen flow and exited the room. A slightly elevated airborne level on a personnel air monitor was noted. Fact-finding and investigation is ongoing in several areas including design of the process equipment that had replaced an older model in late 2003. BWXT had not yet reported the event in the DOE occurrence reporting system; however, YSO personnel have inquired with BWXT on need to externally report the event.

cc  
Board Members