

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 March 7, 2014

Microwave Casting: The Uranium Processing Facility (UPF) project team recently issued a report recommending a redesign of the microwave casting furnace to address two emergent issues. The first issue involves a concern by nuclear criticality safety (NCS) engineers that the casting stack assembly cannot satisfy NCS geometry control requirements during movement through the casting process (i.e., the stack assembly is susceptible to a “tip-over” event). The recommended redesign addresses this issue by accommodating the transfer and loading of the crucible separate from the remainder of the stack assembly. The second issue involves the project team’s inability to date to qualify the material surrounding the stack assembly in the furnace chamber to perform all required NCS and quality-related functions. The redesign makes the material qualification process less challenging by modifying certain furnace components.

Aging Infrastructure: Last week, the Building 9212 Operations Manager suspended work in E-Wing due to the loss of the two main exhaust fans for the Stack 110 ventilation system. The issue occurred while the Construction organization was performing startup testing following replacement of one of the fans. The two fans are interlocked such that only one can be running at a time. In this instance, during the initiation of the startup test, the newly replaced fan failed to start when the interlock shut down the other fan. Without one exhaust fan running, E-wing did not have sufficient negative air flow to support operations; however, as a normal practice during work on key ventilation system equipment, no operations were being conducted at the time. Upon investigation of the subject equipment, an electrical engineer found that two wires had been swapped in the control interlock, which resulted in both fans stopping. At the fact finding meeting, the electrical engineer explained that this job was made more challenging by the fact that there were several hundred wires associated with a 1960s-vintage control system that needed to be reconfigured to support the replacement of this fan. E-Wing resumed operations earlier this week after electricians fixed the circuitry.

Safety Culture: B&W recently released a report documenting Oak Ridge Associated Universities’ evaluation of safety culture perceptions and attitudes for the Y-12 workforce. Key conclusions from the Y-12 report include:

- Y-12 safety culture has a solid foundation based on personal accountability and a questioning attitude.
- Participants indicated they are willing to report mistakes and safety issues.
- Lower mean scores for many of the 10 safety culture elements were observed for the hourly workforce.
 - In the Production organization, lower perceptions of safety culture are predominately related to the timely resolution of safety concerns. The report postulates that this may be due to the fact that this population works in aging facilities with significant maintenance challenges and limited funding.
 - Lower scores in Facilities, Infrastructure, and Services may be explained by several factors. One factor is that these workers feel the impact of funding shortfalls that lead to deferred maintenance and are expected to maintain aging facilities at Y-12.
- The complexity of the work planning and execution processes at Y-12 elicited both positive and negative observations. While the processes improve safety, both management and hourly workers recognize that some work processes seem to be “overkill” when applied to certain situations.