

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

TO: Timothy Dwyer, Technical Director
FROM: Wayne Andrews and David Kupferer, Site Representatives
SUBJECT: Oak Ridge Activity Report for Week Ending November 4, 2011

Microwave Casting. This week, the site representatives observed the first melting and casting evolution using the production microwave casting unit (see the 10/7/11 report). The low-enriched uranium casting was produced using operating procedures that were augmented by approved test instructions. Operators experienced several minor issues during this evolution (e.g., flashing—which is an indicator of plasma generation—and overheating of a waveguide window). B&W is developing corrective actions to address these issues prior to resuming operational testing of the microwave casting unit.

Uranium Processing Facility (UPF). YSO formally provided B&W comments on the latest revision of the Safety Design Strategy (SDS) for UPF (see the 10/21/11 report). YSO requested for B&W to submit a revised SDS by November 23rd. YSO's comments include the following:

- The SDS should better describe how fire protection features (e.g., fire suppression, fire barriers, inerting systems, penetrations, etc.) are integrated to meet the requirements contained in applicable DOE directives (i.e., DOE Standard 1189, DOE Standard 3009, and DOE Standard 420.1B) and to describe which of these features are expected to be identified as safety-significant and why. YSO stated that the fire suppression systems should continue to be identified as safety-significant.
- The SDS should better describe how criticality controls are evaluated for designation as safety-significant controls as required by Appendix C of DOE Standard 1189. YSO stated that the SDS should be revised to clearly state that criticality accidents will be prevented during and following a seismic event.
- The SDS should state whether worker notification and evacuation will be credited for preventing significant consequences to the facility worker during credible events.
- The Preliminary Fire Hazards Analysis should be updated to support development of the Preliminary Documented Safety Analysis, currently planned for submittal in December 2013.
- The SDS should better describe the expected condition of the facility following a seismic event including (a) the operability of necessary safety equipment and (b) how hazardous materials would be confined as required by DOE Order 420.1B.

ORNL Building 3019/Uranium-233 Disposition. In September, Isotek submitted a revision of the Building 3019 Documented Safety Analysis (DSA) and Technical Safety Requirements (TSRs) to DOE-ORO. The revised DSA and TSRs include additional hazards analyses, accident analyses, and identification of controls associated with Isotek's campaign to ship Zero Power Reactor (ZPR) plates to the Device Assembly Facility at the Nevada Nuclear Security Site (see the 10/7/11 report). Specifically, the scope of this activity includes the following: accessing specified storage vaults, retrieving the ZPR canisters, inspecting the canisters, overpacking the canisters into Type B shipping containers, and loading the containers into a transport vehicle. Isotek's revised TSRs identify three new Specific Administrative Controls related to (a) only allowing access to specific vaults and specific containers and (b) limiting the number and type of containers that can be removed from the vaults at a time. Isotek developed a white paper to support its conclusion that potential deflagration events related to hydrogen generation are not credible. DOE-ORO approved the revised DSA and TSRs and concluded that the DSA and TSRs provide an adequate level of safety to support ZPR shipment campaign activities.