

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 September 3, 2010

Board Member Visit. Board member Joseph Bader and staff members John Abrefah and David Grover visited Y-12 to review the status of the Uranium Processing Facility (UPF) project and the Nuclear Facility Risk Reduction (NFRR) project. Noteworthy items from the visit include:

- UPF Safety-in-Design — YSO and B&W have issued a ‘road map’ document that illustrates when the design and safety basis deliverables for the UPF project will be issued and how they will satisfy the intent of DOE Standard 1189, *Integration of Safety into the Design Process* (see the 7/23/10 site representatives’ report). Throughout the project, B&W plans to maintain a table of safety-related Systems, Structures, and Components (SSCs) to include information related to functional requirements, safety functions, and performance criteria.
- DOE Headquarters Tasking — NNSA Headquarters has directed YSO and the Los Alamos Site Office to develop performance based incentives for 2011 that will reduce known project risks for the UPF and the Chemistry and Metallurgy Research Replacement projects and give stakeholders increased confidence in timely project execution within cost and schedule constraints. NNSA Headquarters requested that these incentives be provided next month.
- Preliminary Design Review — B&W recently completed an independent design review of the preliminary design for UPF. The review team evaluated the adequacy of design team integration and compliance with design criteria. In addition, the review team performed detailed reviews of the following areas: (a) fire protection systems, (b) the saltless direct oxide reduction process, (c) enriched uranium purification and metal production processes, and (d) dismantlement and disassembly processes. YSO shadowed this assessment. B&W is planning to issue its report later this month.
- NFRR — The purpose of the NFRR project is to repair and replace high priority SSCs in Building 9212 to ensure continued safe operations until the startup of UPF (see the 3/12/10 site representatives’ report). YSO is planning to submit the Critical Decision-2/3A package for this project to DOE Headquarters for approval next month. DOE is planning to perform an Independent Project Review later this month.

Utilities. Several months ago, B&W successfully started operations in a newly constructed steam plant that supports all of Y-12. The steam plant includes four boilers. This week, the single operating boiler unexpectedly shutdown and steam pressure was lost throughout Y-12. The Plant Shift Superintendent (PSS) was notified and initiated Y-12’s *Steam Curtailment Plan*, which details actions to take in the event that the steam plant fails to maintain necessary steam pressure. This plan specifies four sequential levels of curtailment that direct personnel to shut down hundreds of systems and components (e.g., supply fans, exhaust fans, air handling units, etc.). The third level of this plan involves shutting down systems in Hazard Category 2 nuclear facilities. While responding to this event, based on a request from utilities management, the PSS cancelled actions associated with the plan because they were not appropriate for this situation.

Approximately one hour after the boiler shutdown and attempts had been made to start operation of another boiler, B&W discovered that the cause of the shutdown was accidental actuation of an emergency stop button. B&W reset the system and was able to startup the boilers. During steam pressure recovery, an air compressor failed resulting in reduced compressed air pressure throughout Y-12. Because instrumentation in the steam plant relies on compressed air, the steam plant was shutdown again. Normal steam pressure was restored approximately 6 hours after the initial loss of pressure. A back-up air compressor for the steam plant has been purchased and is on-site, but has not yet been installed. B&W plans to critique these events next week.