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 January 21, 2011

Uranium Processing Facility (UPF). YSO is still reviewing the Safety Design Strategy (SDS) that B&W submitted last month and the first CD-2/3 package (site preparation and some long-lead procurement) that B&W submitted in September (see the 5/21/10 and 12/10/10 reports). B&W is planning to submit a full-scope Preliminary Safety Design Report to YSO this summer (see the 7/23/10 report). During the past few years, various stakeholders—including the DNFSB, DOE Headquarters, YSO, and B&W—have emphasized the importance of integrating safety analysis development efforts with preliminary design efforts to ensure effective configuration management of project assumptions (see the 9/5/08, 5/22/09, 4/16/10, 4/23/10, 5/21/10, 9/3/10, and 10/15/10 reports).

Last week, YSO completed its 'vertical slice' review of the UPF project (see the 1/7/11 report). The review team was unable validate the current control set because some of the controls identified in the design criteria are not derived from the safety analysis documents (i.e., hazard evaluation studies and accident analyses), which is inconsistent with the requirements of DOE Standard 1189, *Integration of Safety into the Design Process*. For example, the UPF project team made changes to the control set (e.g., downgrading the ventilation system from safety-significant to defense-in-depth) based its recent revision of the SDS; however, the safety analysis documents have not yet been updated to provide the bases for these changes. YSO's review team also noted that the 'safety structures, systems, and components table' (see the 9/3/10 report)—which is intended to function as an integrating document between design and safety analysis documents—does not presently include facility-level controls (i.e., the table is limited to process-level controls). The review team identified several positive observations including (a) the process and instrumentation diagrams and the system design descriptions are reasonably consistent, (b) the maturity of the criticality safety process studies is appropriate for this stage of the design and (c) the hazard evaluation studies included comprehensive evaluations of process hazards. The UPF project team is developing a corrective action plan in response to the issues noted above.

Nuclear Criticality Safety (NCS). Section 7.2 of ANSI/ANS 8.19, *Administrative Practices for Nuclear Criticality Safety*, requires that procedures include controls and limits significant to the nuclear criticality safety of the operation. Section 7.8 of ANSI/ANS-8.19 requires frequent review of operations (at least annually) to ascertain that these procedures are being followed and that process conditions have not been altered so as to affect the nuclear safety evaluation. DOE Order 420.1B, *Facility Safety*, mandates all requirements from the ANSI/ANS 8.x standards be complied with, including the two noted above.

B&W's process for complying with these requirements is defined in a number of Y-12 procedures, which overlap in their coverage. The site-wide requirements are flowed down to facility-specific procedures in a very uneven manner. It is very difficult to map the site-wide requirements into the facility specific procedures. In addition, there appears to be redundancy between the specific annual surveillance done by the criticality safety officers and those done by the criticality safety engineers. B&W is in the process of resolving some of these issues as part of its NCS program improvement plan initiative (see the 10/29/10 report).