DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 30, 2004

TO: J. Kent Fortenberry, Technical Director
FROM: Donald Owen, Oak Ridge Site Representative
SUBJ: Activity Report for Week Ending April 30, 2004

Staff members Andrews and Gutowski visited Y-12 to review progress on various issues.

A. Y-12 Conduct of Engineering. As reported on March 12th, a modified billet basket that was intended to preclude processing of more than one billet at a time was found by a YSO Facility Representative inspection to not preclude multiple billets from being processed. The rigor and formality in the engineering of the modified design (to be implemented as a Design Feature for Safety) was under investigation by BWXT management.

During the week of April 19th, the site rep. met with YSO and BWXT management to review the investigation information that had been previously presented by BWXT to YSO on the conduct of engineering for this modification. It was determined that the main design input for modifying the billet basket (billet dimensions) was based on a system engineer's verbal solicitation from a Building 9215 worker who provided incorrect dimensions. This engineer then gave the incorrect dimensions to the design engineer modifying the basket. BWXT personnel noted that their engineering procedures had been followed. It was apparent, however, that BWXT had not reviewed in detail what happened in this modification against their engineering procedures (i.e., what happened versus what was required to happen) to clearly determine where any deficiencies or improvement opportunities might exist. YSO management then requested that BWXT conduct such a detailed review.

This week, BWXT management presented the results of that review. It was found that requirements related to design input documentation and verification were not properly followed. BWXT management noted that actions are under development to strengthen the requirements/guidance and conduct improved training for Y-12 engineering personnel on proper design input development, documentation and verification.

B. Small Fire in Building 9995 - Update. As reported last week, a small fire was observed in a Building 9995 laboratory microwave oven that consumed a portion of a plastic carousel used for holding vials in the microwave. A dissolution activity termed "microwave digestion" was in progress to dissolve depleted uranium machine turnings in nitric acid as samples for further laboratory analysis. While investigation of the fire and development of corrective actions continues by BWXT, the following issues are being pursued:
- The Y-12 Fire Department was not notified until about 80 minutes after initial observation of the fire. Y-12 "General Employee Training" clearly requires that the fire department be notified (via a "911" call) on spotting a fire and before any attempts to extinguish the fire.
- While there was a general procedure in use for sample preparation using the microwave, the procedure provided no specific temperature parameters for dissolving the metal turnings (the technician had successively increased the temperature from 70 °C to 120 °C, well above the solution boiling point). Typically, the procedure is used to dissolve various air monitoring filter papers and oil and soil samples, but not metal turnings.

In discussing this event with Building 9995 management and YSO personnel, the site rep. observed that the "scope" section of microwave sample preparation procedure did not provide clear description and/or limitation of these activities. The site rep. noted that evaluation of the "Define Scope of Work" safety management function's role in this event may be warranted.