DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 25, 2003

TO: J. Kent Fortenberry, Technical Director
FROM: Donald Owen, Oak Ridge Site Representative
SUBJ: Activity Report for Week Ending April 25, 2003

A. Y-12 Building 9202 - Glovebox Explosion/Fire. As reported last week, an explosion and fire in a glovebox occurred in Building 9202, the Technology Development building. Product from a process being developed related to uranium metal production had been placed in a sealed container that had no pressure sensing or pressure relief mechanism. After approximately 10 minutes the container exploded. Development of a detailed chronology leading up to this event had been started as part of BWXT's overall investigation of the event and was nearing completion this week. Actions to sample materials from the glovebox and surrounding area have been determined but glovebox sampling actions are awaiting replacement of a damaged glovebox window.

As noted last week, YSO management indicated that BWXT's investigation is intended to be conducted at a level of detail and rigor approaching a Type B accident investigation. This week, BWXT issued a letter to YSO discussing the plans for completing the investigation. In addition to the root cause analysis in progress, a team of personnel from outside of Y-12 experienced in chemical, fire, and operational safety has been appointed to lead and complete BWXT's investigation. The team is to convene during the week of April 28th, complete the investigation, and submit a draft report by June 2nd. The letter also noted that a review of BWXT technology development process safety assessment techniques will be performed by mid-June.

Late last week, the site rep. and staff inquired with BWXT about the hazard analysis performed for the activity in progress at the time of the event. The site rep. and staff were provided with a Job Hazard Analysis (JHA) for the activity. BWXT personnel noted that the JHA is the level of analysis that had been required for technology development efforts. The JHA identifies that the product is to be containerized and sealed. This step, however, is grouped together for analysis with several other steps for which several hazards and controls are then identified. No controls, other than personal protective equipment, appear to be directed at this step of the process. Following further site rep. inquiry, BWXT personnel provided a draft Preliminary Hazard Evaluation Study being prepared to support nuclear safety analysis for any future use of this process in a Y-12 production facility. This draft study does not specifically discuss containerizing/sealing the product.

The site rep. will continue to follow the BWXT investigation of this event. (2-A)

B. Y-12 Emergency Management. The site rep. observed an emergency management exercise involving a criticality scenario resulting from adding solutions to a tank with repeated criticality pulses on about 20 minute intervals. The command and control elements in the Technical Support Center (TSC) at Y-12 and the Emergency Operations Center (EOC) at the East Tennessee Technology Park were the focus of the exercise with field play and external interfaces being simulated. While most command and control elements were noted to be satisfactory, there was some delay to arriving at a technical recommendation for stopping the criticality pulses due to communication difficulties and somewhat redundant efforts between the TSC (that had most of the technical expertise) and the EOC. Improvement actions are being determined. (1-C)