**DEFENSE NUCLEAR FACILITIES SAFETY BOARD**

December 8, 2000

**TO:** J. Kent Fortenberry, Technical Director
**FROM:** Paul F. Gubanc and David T. Moyle, Oak Ridge Site Representatives
**SUBJ:** Activity Report for Week Ending December 8, 2000

A. Y-12 Integrated Safety Management (ISM): On November 30, BWXT delivered to YAO its corrective action plan for dealing with the DOE ISM Phase-2 verification. Some key observations:

1. BWXT commits to completing ISM implementation by March 1 to be followed by an internal verification to be completed by March 31, 2001.
2. The plan addresses 4 major elements; management accountability, assessment processes, issues management and budget prioritization. Each element is supported by 3 to 8 specific actions.
3. Treatment of specific technical issues identified in the ISM report (e.g., fire protection, maintenance planning) are not addressed in the plan. While we know of actions underway on-site to deal with some of these issues, there does not appear to be an overarching coordination.
4. The specific actions identified to address management accountability and assessments are heavily focused on procedure and performance indicator development. In our opinion, the ISM weaknesses are more attributable to individuals' poor understanding of requirements and expectations and will not be corrected by introducing yet more changes to the paper. (1-C)

B. Y-12 Fire Protection: Two weeks ago, we reported on impaired (i.e., painted over) heat detectors in the Building 9201-5, 7W fire sprinkler system. Last week, we reported on an inadvertant fire fighting foam system actuation. This week, the following additional details emerged:

1. The most recent Fire Protection Engineering Assessment (FPEA) of Bldg. 9201-5, dated May 30, 2000, clearly identifies the 17 impaired heat detectors. The FPEA clearly identifies fire department response to a low air pressure supervisory alarm as a compensatory measure.
2. BWXT confirmed that a Supervisory Low Air Alarm was received three days before the foam system actuated. No record can be found that action was initiated to respond. BWXT is investigating whether other instances of fire system alarms not being responded to have occurred recently. BWXT declared this a reportable occurrence on Dec. 4th.

We continue to discuss with YAO and BWXT the implications of this coincidence. (1-C)

C. Y-12 Enriched Uranium Operations - Reduction: The reduction vessel technical basis reports present a reasonable approach to justifying limited use of the current vessels for data collection. An important safety control for the initial reduction runs is managing the maximum vessel pressure by understanding void volume and pressure contributions (i.e., argon, and $H_2O$ or H content in the reactants, sand, and liner). Mr. Moyle identified the following issues:

1. The void volume does not account for the liner cover which would decrease the void and increase predicted pressure (up to 3%). Furthermore, the void after the reaction is calculated at room temperature. Adjusting for reaction temperature, the pressure could be up to 3% more.
2. The application of uncertainty to moisture measurements is questionable. The experimental measurement error was estimated by taking ten samples from the same batch of low moisture $UF_4$. The results varied widely with a standard deviation greater than the mean. BWXT intends to apply that uncertainty to batches of higher moisture. There currently does not seem to be adequate understanding of uncertainty to confidently bound expected reaction pressures.

These issues were communicated to YAO and BWXT personnel, and a revision to the calculations is likely. We will investigate the measurement uncertainty issue further. (2-A)

cc: Board Members