

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 21, 2002

**TO:** J. Kent Fortenberry, Technical Director  
**FROM:** Matt Forsbacka, Oak Ridge Site Representative  
**SUBJ:** Activity Report for Week Ending June 21, 2002

A. BWXT Y-12 Disassembly Operations: This week, the Site Representative observed the completion of the first-use of the Phase I Disassembly process. Functional tests of the repaired tooling were conducted by operations personnel, but the cutting tool failed a second time after the cut had been completed on Monday. This introduced yet another delay; however, BWXT Y-12 staff actions to address the issue went relatively smoothly. On Tuesday, it was found that the threaded extractor would not engage due to damaged threads on the object, so the gripper device had to be used to complete the process. The two major tooling changes, as shown in this evolution, failed to meet expectations. (2-A)

B. BWXT Y-12 Reduction Vessel: On Wednesday, BWXT Y-12 personnel and the Site Representative discussed plans for the path forward to resume test operations of the Reduction Vessel (RV). BWXT Y-12 has been responsive in developing experimental protocols that will support the design effort for a code certified vessel. Near term plans involve:

1. Validating the computational model which shows a maximum vessel temperature of 890°C by applying a tailored set of temperature sensitive lacquers.
2. Collecting additional temperature data to determine the time the vessel spends above 800°C. This will be input to a cumulative damage model specified in subsection NH of the ASME Boiler and Pressure Vessel Code® used for service life specification.
3. Adding enhanced instrumentation to increase the fidelity of key measurements.

In addition, BWXT Y-12 personnel presented evidence that the hoop stress as predicted by the linear elastic model using a reduced Young's Modulus correlates well with a detailed creep analysis based on an inelastic constitutive model. This accounts for secondary stresses, thus facilitating a more detailed understanding of vessel response. On Friday, a Justification for Continued Operations (JCO) was submitted to YSO that addresses the technical details discussed above, operator proficiency, and system configuration walk-downs. Pending YSO approval of the JCO, RV operations may resume as early as next week. (2-A)

C. BWXT Y-12 Enriched Uranium Operations: The Performance Self Assessment for Wet Chemistry restart has been postponed until next week. Delays in completing maintenance and the discovery of inconsistencies in instrument calibration procedures and data recording are contributing factors. (2-A)

D. Recommendation 97-1: Last week ORNL personnel discovered that the stack height of the cans in one of the tube vaults was 20-in shorter than expected. This week, the Site Representative observed operations as the inspection tempo was increased to determine the extent of the issue. For the 6 cans that have been inspected to date, the cumulative can-length is 13-in shorter than predicted. It appears that errant data was recorded when the vault was loaded. The mass and assay measurements of these cans will be performed next week. (1-C)

cc: Board Members