

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 26, 2001

**TO:** J. Kent Fortenberry, Technical Director  
**FROM:** Paul F. Gubanc and David T. Moyle, Oak Ridge Site Representatives  
**SUBJ:** Activity Report for Week Ending January 26, 2001

A. Y-12 HEPA Filters: In response to the Board's May 1999 TECH-23 report on HEPA filters, Y-12 in June 2000 issued a vulnerability assessment of HEPA systems in Y-12's nuclear facilities. Based on DOE guidance and relevant technical data, Y-12 utilized a lifetime criteria of 10 years (from date of manufacture) for dry systems and 5 years for applications where wetting is a potential. Of the 51 systems reviewed, six were identified as vulnerable. Since that assessment:

1. Two of the six vulnerable systems have had their filters replaced and are off the list; three others remain in service. Of these three, one is scheduled for HEPA replacement next month.
2. Y-12 Engineering (as the Y-12 "Design Authority") has yet to formalize a maximum HEPA filter life criteria. Based on our highlighting of this issue last week, a formal policy proposal to BWXT management is now expected out of Engineering this week. (We also assisted Engineering in understanding how Y-12 implements PMs, including the use of "grace periods.")
3. One system at 9215 has now aged to the point of being considered "vulnerable." Another system at 9404-4 will also "age in" later this year. Due to the lack of a Y-12 HEPA service life policy, there is currently no site-wide mechanism to identify and address new vulnerabilities.

This story is typical of Y-12's ISM. Responsiveness to the *issue du jour* is laudable, but issue follow-through and feedback is a major weakness. (1-C)

B. Moisture Analysis: Further investigating moisture measurement uncertainty issues, Mr. Moyle observed the laboratory equipment and techniques used to analyze Reduction process feed materials.

1. The calcium analysis is well controlled to yield representative results, assuming that hydroxides and hydrides (that release water and hydrogen upon heating) are only on the surface of the Ca particles. While this assumption appears reasonable, it should be experimentally confirmed.
2. The UF<sub>4</sub> analysis uses a standard laboratory technique for moisture measurement, but it is difficult to apply to such low moisture contents. A small amount of moist room air is introduced to the system while the sample boat is loaded into the apparatus. The lab is attempting to subtract off this background error, and therefore, could report some non-conservative results. BWXT plans to better quantify variability in the UF<sub>4</sub> and the analysis method by randomly submitting six samples from each of three cans to the lab in a "blind" fashion for analysis next week.

We hope to resolve moisture analysis issues during the upcoming staff review. (2-A)

C. Y-12 Hydrogen Fluoride Supply System (HFSS): The BWXT corporate assessment report released last week offered some practical suggestions to improve the HFSS including: contingency planning for HF releases, more reliable backflow prevention, and HF supply cylinder refrigeration to avoid difficulties in handling flashing vapor. Unfortunately, the assessment did not address computer interface human factors issues identified by the Board's staff. (2-A)

D. Y-12 Criticality Safety: A follow-up DOE-EH criticality safety review of building 9212 this week concluded that reasonable corrective actions have been taken since the last review in December 1999. The two safety issues and five weaknesses from the prior review are being adequately addressed, and no new safety issues or weaknesses were discovered. The team specifically noted the success of the new criticality safety officers and improved operator involvement in criticality safety. (1-C)

cc: Board Members