

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 4, 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 August 4, 2000

Mr. Gubanc was on annual leave Thursday and Friday.

A. Y-12 Enriched Uranium Operations (EUO) Reduction: On Tuesday, we met with the LMES Director of EUO and the lead design and process engineers in EUO in an attempt to assure ourselves that the safety concerns with reduction were being properly understood and that they recognized the safety responsibility that was being assumed of them by operations. As a result of our evangelism,

1. The EUO lead engineers understand that they have a key role in determining the safety to proceed with the reduction process.
2. EUO is working to develop a technical basis to quantify the margin of safety expected while using the current reduction vessels. The technical basis must give due credit to historical information from production operations which clearly documents peak vessel temperatures significantly higher than observed in recent experiments (which do not reflect true process conditions). Moisture contributions to peak pressure must also be considered.
3. Safety controls on moisture content are being re-evaluated for their adequacy. A furnace shut down for safety may also be considered to ensure that the reaction does not initiate at too high of a temperature (which could threaten the integrity of the vessel).
4. The previous test plan that contained no explicit operational controls or safety criteria for continued operations is being abandoned. Instead, the data collection plan is being revised to include formal roles and responsibilities, safety criteria, and safety approvals by an appropriate design authority.
5. LMES recognizes that the above open issues must be resolved prior to the readiness evaluations and these reviews have been delayed by approximately two weeks. The management self assessment is now expected to begin at the end of August and the operational readiness reviews will likely extend through the end of September.

We will review the reactor vessel technical basis and the data collection plan when available to ensure that our concerns have been adequately addressed. (2-A)

B. Y-12 Deuterium Facility: On Tuesday, we toured the Y-12 facility where heavy water is electrolyzed to form deuterium gas and then compressed for storage. Key observations include:

1. The process engineer was extremely knowledgeable of the process, the process equipment, and the related safety controls. While we did not review his formal training files, he appeared to embody the Board's expectations of a "system engineer" espoused in Recommendation 2000-2.
2. Since the system was last operated several years ago, LMES had conducted a process safety evaluation, identified NFPA code compliance issues with grounding, and corrected them.
3. Numerous hydrogen detectors are located throughout the facility. Due to a recent equipment failure, however, the detectors are inoperable and there is no effort planned to return them to service before the facility restarts. A quick review of OSHA's hydrogen regulation, 29CFR1910.103, does not require such detectors. LMES formally evaluated the change and determined that with the required facility airflows and process surveillances, the detectors are not effective and thus unnecessary. (2-A)

cc: Board Members