

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

July 30, 1999

**TO:** G.W. Cunningham, Technical Director  
**FROM:** Paul F. Gubanc and David T. Moyle, Oak Ridge Site Representatives  
**SUBJ:** Activity Report for Week Ending July 30, 1999

Staff members Massie, Moury, Shields, Zull and outside expert Lewis visited ORNL this week to review U-233 inspection preparations. Staff member Helfrich and outside expert West visited Y-12 this week to review enriched uranium reduction processing preparations.

A. Reduction Process at Y-12 Enriched Uranium Operations (EUO): The staff reviewed the reduction process which converts UF<sub>4</sub> powder to uranium metal.

1. **Readiness**- The current plan for a contractor RA with DOE concurrence conflicts with previous DOE commitments to conduct an ORR for all phase B processes. The staff has discussed its concerns with DOE management, who will discuss this with the Board on August 11.
2. **Process Preparation** - The major work remaining includes modifications to the reactor vessel and cabling to allow remote monitoring of temperature and pressure during the reaction. The staff walked down draft operating procedures and found them generally acceptable. Some minor administrative issues were noted, as well as inconsistency in the crediting of BIO controls.
3. **UF<sub>4</sub> Purity** - The intended UF<sub>4</sub> feed has been in storage for several years. The staff is concerned that moisture and/or contaminants in the UF<sub>4</sub> could create unexpected hazards (e.g. pressure) during the reduction reaction. Samples have been taken and will be analyzed, however, some key Y-12 staff are not entirely convinced this is a real problem. Unless LMES can demonstrate the safety of using this material, appropriate precautions should be taken (e.g., baking the feed).
4. **Reaction Vessel Integrity** - Some aspects of reactor preparation may effect the vessel's peak temperature and corresponding integrity (e.g., positioning of insulating sand and the inclusion of igniters). LMES could not qualify the importance of these variables as potential accident contributors. We will continue to pursue these concerns with LMES and DOE. (II-B.2)

B. Hydrogen Supply: On July 29, Mr. Moyle verified the hydrogen supply line to Building 9212 had been isolated from areas which no longer need hydrogen, consistent with prior commitments. He was chagrined, however, to observe the lack of care in isolating the piping from the introduction of foreign material (i.e., fittings with open ends). (I-A)

C. U-233 Inspection Preparations: During the staff review, the following items were noted:

2. On July 27, a rigging attachment on the 4700 lb. transfer cask broke while a crane was taking up slack from the cask's rigging harness. Initial suspicions are that the cask tie-downs used for transporting the cask overstressed the attachment prior to the lift. ORNL is continuing its review and will examine other applications of this type of rigging attachment at Building 3019.
3. On July 28, the staff observed a demonstration of some inspection equipment and procedures. Numerous detailed procedure, conduct of operation and work flow comments were provided to ORNL for consideration. Given the effort that will be required to address these comments, the delay of the contractor ORR to September is appropriate.
4. The entire ORNL is protected by a fire department staffing of 5 FTE/shift. If an accident occurs on backshift (when additional day staff is not immediately available), the ORNL fire department may have to choose between rolling an ambulance or a fire truck. (III-A.1)

cc: Board Members