DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 4, 1999

TO: G.W. Cunningham, Technical Director

FROM: Paul F. Gubanc, Oak Ridge Site Representative

SUBJ: Activity Report for Week Ending June 4, 1999

The office was closed Monday for the Memorial Day holiday and I was on leave Tuesday.

A. Y-12 Hydrogen Fluoride (HF) and Fluid Beds: As discussed last week, the HF and Fluid Bed systems which are required to support Enriched Uranium Operations (EUO) Phase B, Block 1, have experienced several recent problems. Additional insights into the problems and path forward include:

1. On May 28, the H_2 preheaters were energized for the first time. The evolution of smoke and a melted cable revealed paper backing on the metal sheathing used to encase the heaters. During the critique, it was revealed the local construction contractor also filled gaps in the rigid insulation with fiberglass wool not rated for the application. Sheathing used on the H_2 preheaters, the HF preheater, their associated piping, and on some portions of the fluid beds will need to be replaced.
2. Inspection of 1/4" and 3/8" sensing line butt welds in the HF and fluid bed systems have continued to find additional discrepancies. Inspection of the HF dock module, fabricated by an outside vendor, identified 14 of 135 welds having potentially rejectable indications. Inspection of the fluid beds module, fabricated by a different vendor, identified 83 potentially rejectable welds out of 401. As there is no list of vendor weld locations, these welds must be identified by hand-over-hand search. Other welds are known to exist but are not accessible without some dismantlement. (I forwarded a sample of this type of weld and vendor literature to DNFSB-HQ on Friday.)
3. LMES confirmed that the portion of the system with the nine incorrect elbows installed was never receipt inspected by LMES. Neither the HVAC engineer (who specified the piping bend radii), nor the piping engineer recognized that portion as their's to inspect.
4. The safety classification of the subsystems and components is not well defined. What documents exist (much in draft, including the HF system "Design Basis Document") are inconsistent. Thus, there is not a good tool to help LMES focus on what's most important.
5. Engineering continues to display a poor understanding of the technical issues and their urgency.
   a. On Thursday, Engineering indefinitely postponed a followup review to discuss the above problems and corrective actions with operations and senior management.
   b. Ten days after the sensing line weld issue broke, the lead engineer for EUO was still unable to explain exactly what was specified to the vendor for these welds.
   c. The Engineering Manager was unaware (until I told him) that the LMES inspectors admitted to inspecting equipment at one vendor's shop BEFORE the vendor's own inspection.
   d. My review of the LMES engineering procedures and local discussions lead me to conclude that LMES engineering practices are largely personality dependent. Some engineers are more thorough than others but minimum standards are not clearly defined.

The LMES VP for Defense Programs (Felton) has reassigned a senior manager to "fixing" the HF and Fluid Bed systems (his charter is still being developed). Felton has also tasked his internal evaluation group to conduct an independent review of the design and construction of these systems. I have also discussed with Felton the evaluation of LMES Engineering practices overall as this is the same organization which is developing the new EU Storage Facility design. (I-A, II-B)

cc: Board Members