

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 11, 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 11, 2000

Mr. Gubanc was on annual leave Monday.

A. Y-12 Enriched Uranium Operations (EUO) Reduction: Efforts continued this week to better understand the reduction reaction, develop a firm technical basis for startup, and define the safety envelope. After re-evaluating the BIO accident scenarios, LMES has concluded that the frequency of a reactor leak event which is currently assumed to be “unlikely” should be considered “anticipated” due to the potential for operator errors. This change will likely require additional safety controls. LMES is also still evaluating the need for more stringent temperature and moisture controls. Our review of the recent Y-12 Development experiments left us unable to account for the magnitude of the observed pressure rises based upon the “known” moisture content of the UF_4 . Uranyl fluoride (UO_2F_2 , an impurity of UF_4) may contribute to this pressure spike, either through release of waters of hydration or decomposition. We are incredulous that a detailed technical explanation does not already exist in the files given that these same phenomena were observed in a 1951 LANL report and that DOE filed and received a patent for the current process in 1961 and 1974, respectively. (2-A)

B. Hydrogen Fluoride (HF) System: While on a routine walkdown with the HF project lead, Mr. Moyle discovered another potential weakness with the proposed operation of the HF system. After transferring a batch to the vaporizer, the nitrogen over-pressure on the HF supply cylinder is to be relieved to the scrubber through a one inch vent line without secondary containment. At temperatures above 67°F (the boiling point of HF), a significant amount of HF liquid could flash to vapor and be transported through the vent line as the cylinder pressure is relieved. This is an extension of an earlier staff issue associated with the need to ensure double containment of HF through all anticipated operational modes. Recognizing the robust cylinder design, a solution to this vulnerability may be to isolate the HF cylinder without relieving the nitrogen pressure. (2-A)

C. Personnel-Related Matters:

1. On Tuesday, Mr. Thomas Touchstone, Duke Engineering and Services, reported for duty as the new Y-12 Project Manager for the HEU Materials Facility.
2. The DOE Executive Resources Board recently approved appointing Mr. Doug Dearolph of DOE-SR to an excepted service position as an authorization basis senior technical advisor at Y-12.
3. DOE-ORO this week enacted an upgrade for all its Facility Representatives to grade their positions as GS-13/14. Previously, the only GS-14 Fac Reps were assigned to Y-12 or HFIR.
4. As part of the NNSA-DP realignment initiative (i.e., shifting DOE technical resources closer to the work), interviews for those interested in transferring to a field location were held at the Nevada Test Site this week. The Y-12 office participated in hopes of supplementing its existing staff with additional facility reps and authorization basis personnel. (1-B)

D. Y-12 ISM Phase-2 Verification: Over the next two weeks, Mr. Joe King will lead a DOE effort to oversee an LMES ISM verification effort. This review supplements the 1998 DOE verification review which specifically recognized some portions of Y-12 as “immature” in ISM. The NaK explosion in December 1999 called into question the implementation of ISM across Y-12. (1-C)

cc: Board Members