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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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June 19, 1998

The Honorable Victor H. Reis  
Assistant Secretary for Defense Programs  
Department of Energy  
1000 Independence Avenue, SW  
Washington, D.C. 20585-0104

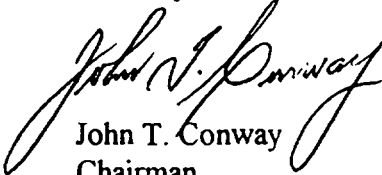
Dear Dr. Reis:

The Defense Nuclear Facilities Safety Board (Board) has been following the actions of the Department of Energy (DOE) and Lockheed Martin Energy Systems (LMES) for restart of certain operations, designated Phase A1, for Enriched Uranium Operations (EUO) in Buildings 9212 and 9215 at the Y-12 Plant. Phase A1 includes casting, rolling, forming, machining, and certain accountability operations. Progress over the last year addressing the safety issues at EUO has been erratic, and many problems, including issues raised in several Board letters to DOE and significant findings of Operational Readiness Reviews (ORRs) by LMES and DOE, needed to be addressed. However, DOE and LMES have now corrected the most significant safety issues and authorization has been given to resume Phase A1 operations. The Board would like to note that ORRs by both DOE and LMES were thoroughly and professionally executed. The Board understands that casting operations in E-wing of Building 9212 were resumed on June 8, 1998.

During the course of the preparations for restart of Phase A1 operations, the Board, DOE, and LMES have identified a number of matters that the Board believes should be addressed as soon as practicable in the preparations for restarting planned follow-on phases of EUO (Phase A2 and Phase B). These are discussed in the enclosure and include: identification and implementation of safety basis controls; closure of safety issues; readiness reviews of follow-on phases of EUO; and the scope of EUO Authorization Agreements. The Board believes appropriate action to address these matters will aid preparations for restart and will improve the safety of the EUO operations in Phases A2 and B. Therefore, the Board requests a briefing by DOE and LMES in the near future to discuss the planned path forward to address these matters.

The Board will continue to follow DOE's efforts for restart of additional enriched uranium operations at the Y-12 Plant.

Sincerely,

  
John T. Conway  
Chairman

c: Mr. Mark B. Whitaker, Jr.  
Mr. Gene Ives  
Mr. James Hall

Enclosure

## Enclosure

### Y-12 Enriched Uranium Operations Matters for Consideration

**Identification and Implementation of Safety Basis Controls:** In Board letters dated November 4, 1997, and January 30, 1998, the Board called attention to the lack of complete identification and implementation of various safety controls discussed in the Basis for Interim Operation (BIO) documents for Building 9212 and Building 9215. The Lockheed Martin Energy Systems (LMES) Operational Readiness Reviews (ORRs) for Phase A1 operations identified findings where active design features for ensuring criticality safety were not addressed as Limiting Conditions for Operation as required. The subsequent Department of Energy (DOE) ORR identified findings in areas such as surveillance of ventilation system functions and control of material-at-risk, where assumptions in the BIO were not being addressed, properly identified as controls, and carried through to floor level implementing procedures.

These examples point to the lack of a comprehensive, systematic approach to ensuring that all safety controls are appropriately identified from hazard analyses, included as controls in safety basis documents, and translated to floor implementing procedures, manuals or process controls. Regarding implementation of identified controls, for the restart efforts of the Chemical Separations facilities at the Savannah River Site, a Linking Document Database tool was used to map defined safety basis controls to implementing procedures, manuals and process controls and provide a mechanism for control of changes. This mapping was required at Savannah River because of the complex nature of the safety basis and its implementation. Such complexity will be present for Enriched Uranium Operations (EUO) as additional activities are prepared for restart beyond Phase A1. LMES had been working on such a tool for EUO Phase A1, but the effort had not reached a point of completeness and verification to fully support Phase A1 restart efforts.

**Issue Closure:** The Board's staff review of LMES closure of issues (including deficiencies found by LMES and DOE line management assessments and the findings from LMES and DOE ORRs) found uneven and often no evaluation of the root cause of issues and findings and incomplete information in closure documentation. LMES and DOE ORR teams, including a post-DOE ORR effort to independently verify closure of findings, also noted these problems. A DOE ORR finding noted potential inadequate staffing of the EUO issues management group after restart. The Board's staff found that there was often no evaluation of whether programmatic deficiencies existed that may have contributed to the issue (e.g., a deficiency with a training program guidance document manifesting itself in a specific training problem). The LMES issue management process does not explicitly require evaluation of programmatic deficiencies. Closure packages also often did not include a summary discussion of actions taken and reasons for concluding closure has been achieved. DOE Order 425.1, *Startup and Restart of Nuclear Facilities*, requires evaluation of root cause and programmatic deficiencies along with inclusion of a summary discussion of actions taken and reasons for concluding closure has been achieved as part of the process for closing prestart findings for ORRs.

**Readiness Reviews of Follow-on Phases of EUO (Phase A2 and Phase B):** In parallel with restart efforts for Phase A1, DOE and LMES have been planning restart efforts for Phase A2

(various headend, waste stream, and remaining accountability operations) and Phase B EUO operations (recovery, purification, and reduction to metal). Consistent with the approach for Phase A1, ORRs are currently planned for confirming readiness for Phase A2 activities. For Phase B activities, however, preliminary plans for the level of readiness review have indicated that ORRs may not be performed for confirming readiness of those activities. These Phase B plans have yet to be finalized by LMES and DOE. Phase B activities involve wet chemistry operations, which are some of the most complex and highest hazard tasks in EUO and these activities have been shutdown for several years. While recent ORRs may provide justification for tailoring the scope of an ORR for the Phase B activities, DOE Order 425.1 requires ORRs for restart of such activities after an extended shutdown.

**DOE Authorization Agreements:** The Authorization Agreement for Building 9212 signed on May 15, 1998, by LMES and DOE was written to authorize most EUO activities beyond Phase A1 with a few caveats such as “following the completion of a DOE ORR and subject to the conditions specified in the DOE restart approval letter signed by the DOE Manager.” Despite the eventual successful outcome, there were clearly problems with the approach taken to achieve readiness, verify readiness, and close findings for Phase A1. Restart preparations, including full definition of the safety basis, for Phase A2 and Phase B are at varying stages of completion. Therefore, it is not clear why the Building 9212 Authorization Agreement should be authorizing such future activities at this time. Additional terms and conditions for those activities, based on the experience of restart preparations and completion of the safety basis, will need to be developed. Agreement on such terms and conditions would then need to be reached and factored into the Authorization Agreement at that time.