DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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November 2, 1999

Brigadier General Thomas F. Gioconda
Acting Assistant Secretary
for Defense Programs
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear General Gioconda:

The Defense Nuclear Facilities Safety Board (Board) has been concerned for some time with the hazardous condition of materials stored in Building 9206 (B9206) at Oak Ridge's Y-12 Plant, and the delays in reducing risk at the facility. The building stores large amounts of highly enriched uranium in unstable forms. The Board issued a letter to the Department of Energy (DOE) on February 6, 1998, noting that the lack of attention the materials stored in this building were receiving was causing hazards and risks to increase, and that the facility needs to transition to a safe, stable condition. Subsequent communications between the DOE's Y-12 Site Office and Lockheed Martin Energy Systems acknowledged that minimal progress had been made in stabilizing materials and the pace of deactivation merited acceleration.

Despite the Board's previous advisory to DOE, many of the same issues persist. There has been little progress in risk reduction through deactivation and decommissioning activities (e.g., stabilization of excess in-process material and quantification and characterization of legacy materials). Indications are that risk reduction activities planned for fiscal year (FY) 2000 will not accomplish meaningful hazard reduction, and hazard reduction activities in succeeding years are also questionable. Key activities such as removal of pyrophoric materials and liquids in glass columns, previously expected to be accomplished by FY 2000, have been deferred.

The Board believes it important that the facility and its systems not be allowed to deteriorate any further and that risk reduction activities be expedited. The Board considers the accomplishment of B9206 materials stabilization and deactivation activities to be an important part of DOE's near-term mission to reduce risks at its aging facilities. Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests DOE to provide a report within 30 days of receipt of this letter detailing the path forward to achieve more timely hazard reduction in B9206 than currently appears planned.

The enclosed report is a summary of observations made during a review of B9206 by the Board's staff on September 17, 1999. If you have any questions on this matter, please do not hesitate to call.

Sincerely,

John T. Conway
Chairman

c: Ms. Gertrude Leah Dever
Mr. Mark B. Whitaker, Jr.

Enclosure

99.2573

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

September 20, 1999

MEMORANDUM FOR: G. W. Cunningham, Technical Director
J. K. Fortenberry, Deputy Technical Director

COPIES: Board Members

FROM: T. L. Hunt

SUBJECT: Review of Building 9206 Deactivation and Risk Reduction Activities at the Oak Ridge Y-12 Plant

This report documents a Defense Nuclear Facilities Safety Board (Board) staff review of deactivation and risk reduction activities at the Y-12 Plant's Building 9206 (B9206). The review was undertaken by Board staff members T. Hunt, R. Tontodonato, and J. Troan on September 17, 1999.

Background. Building 9206 is a Hazard Category 2 nuclear facility and is currently functioning in warm standby as an in-process storage building. Since the September 1994 plant-wide standdown, B9206 has continued some operations on a limited basis (e.g., ventilation and nuclear materials storage) to maintain facility and personnel safety. The facility is preparing for deactivation, which will involve removing fissile and other hazardous materials from the building. The driver for the deactivation is the desire to reduce the cost of maintaining the facility.

The Board issued a letter to the Department of Energy (DOE) in February 1998 noting that the hazards and risks of B9206 were increasing due to neglect. Many of these same issues persist 19 months later (e.g., lack of adequate funding, insufficient progress toward stabilization of excess in-process material, and lack of holdup quantification).

Staff Observations. Overall risks and hazards at B9206 have not changed appreciably in the past year. Although DOE expressed satisfaction at the pace of progress, B9206 still stores large amounts of highly enriched uranium (HEU) in unstable forms such as pyrophoric compounds in uninspected vessels, uranyl nitrate and organic solutions in leaking glass columns, and dispersible powders in single containments of varying integrity. Furthermore, the facility condition continues to erode, most noticeably by water intrusion from roof leaks on drums of stored material and on a hood storing pyrophoric compounds. The ventilation system and associated equipment also continue to degrade, adding uncertainty to meeting design air flow requirements.

Funding shortfalls remain the primary reason given for the evident lack of risk reduction, and the budget continues to be an uncertainty for long term planning. The facility has requested approximately $3M in fiscal year (FY) 2000 (about the same as FY 1999) to proceed with deactivation activities such as development of technical support documents, work control programs, and cost and schedule estimates. Processing pyrophoric materials, removing high equity containerized uranium, draining liquid systems, and stabilizing process residues are not included in the FY 2000 deactivation work scope.

Characterization of uranium holdup in the process equipment, piping, and ducting continues to progress at an unacceptably slow pace. B9206 has pinned its hopes on a new cadmium zinc telluride (CZT) detector technology being developed at Los Alamos National Laboratory to expedite the quantification of uranium holdup, especially in areas of high background dose rates and in material with interfering isotopes. The holdup measurements are still largely incomplete, and procurement of the CZT nondestructive assay equipment has been delayed due to technical issues.

The facility is not aggressively pursuing alternatives to remove some of the lower equity material from storage more quickly. Present plans are to send most of the non-combustible HEU-bearing material to Building 9212 for recovery. Based on the many technical and schedular issues associated with that approach, it may be expeditious to consider other disposition options (e.g., ship as waste to Nevada Test Site).

One bright spot in the facility's operations during FY 1999 was the completion of a special project that transferred 90 kg of uranium-aluminum alloy off site. B9206 is hoping that a similar opportunity transpires in FY 2000 where United States Enrichment Corporation would take ownership of about half of the HEU remaining in B9206. The facility continues to look for these types of opportunities, possibly at the expense of pursuing more efficient options, such as the direct disposal of low equity materials noted earlier.

Staffing changes have the potential to negatively impact future deactivation efforts at B9206. Maintenance personnel and a Deactivation Program Specialist recently received layoff notifications. The Deactivation Program Specialist was instrumental in developing many of the recently issued deactivation planning documents, and, even at present staffing levels, maintenance has been noted as a facility weakness in past staff reports.

The DOE Office of Environmental Management (EM-60) visited B9206 in January 1999 to assess the possibility of accepting the facility from Defense Programs in 2002. They declined to accept the facility in its current condition. Although deactivation has historically been a DOE-EM function, the EM-60 representatives informed Y-12 that DOE-EM will not enter B9206 into the transition pipeline until the hazards are reduced (i.e., until after deactivation).