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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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November 26, 2001

Brigadier General Ronald J. Haeckel  
Acting Deputy Administrator  
for Defense Programs  
Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0104

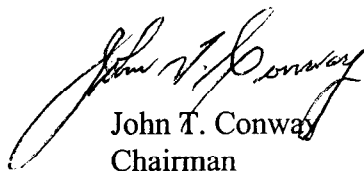
Dear General Haeckel:

The Defense Nuclear Facilities Safety Board (Board) has conducted a number of reviews of the maintenance program at the Y-12 National Security Complex (Y-12). The enclosed report prepared by the Board's staff summarizes observations from the most recent review of the Y-12 maintenance program.

Many of the issues discussed in the enclosed report are long-standing and have been identified previously. As noted in the report, the current maintenance improvement program does not incorporate certain fundamental aspects of an acceptable program, such as integrated scheduling for the performance of maintenance activities and a comprehensive approach to the tracking of material history and equipment failures. The enclosed report also notes that the Y-12 Area Office staff does not have an aggressive program with respect to oversight of the overall Y-12 maintenance program.

As a result of these observations and the Board's continuing concerns regarding problems with the Y-12 maintenance program, the Board requests that you provide a briefing on the issues in the enclosed report and the impact of the upgraded maintenance program on the material condition of the Y-12 Plant. The Board is especially interested in learning about specific achievements and outcomes of your maintenance upgrade efforts such as backlog reduction, establishment of reliable maintenance schedules, tracking and reduction of equipment unavailability, tracking of maintenance history, and identification of required maintenance for vital equipment.

Sincerely,



John T. Conway  
Chairman

c: Mr. Mark B. Whitaker, Jr.

Enclosure

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

## Staff Issue Report

October 29, 2001

**MEMORANDUM FOR:** J. K. Fortenberry, Technical Director

**COPIES:** Board Members

**FROM:** J. L. Shackelford

**SUBJECT:** Follow-up Review of Maintenance Program at Y-12 National Security Complex

This report documents a review performed by the staff of the Defense Nuclear Facilities Safety Board (Board) of maintenance activities at the Y-12 National Security Complex (Y-12).

**Background.** A number of long-standing problems with the maintenance program at Y-12 have been identified. These problems include deficiencies related to preventive and corrective maintenance planning, scheduling, configuration management, and feedback and improvement. The Board's concerns in these areas were documented in letters dated September 16, 1997, and March 15, 2001. As a result of these concerns, the contractor developed a maintenance improvement plan (MIP) at the site. This review by the Board's staff focused on assessing progress made toward implementing the MIP and how well the program was addressing maintenance deficiencies.

**Progress made on Y-12 Maintenance Improvement Program.** The Board's staff noted that the site had focused additional resources and management attention on implementing the MIP. In particular, a number of disparate maintenance guidance documents had been consolidated into a single reference to simplify and standardize the overall maintenance approach. Progress had also been made toward developing a number of "standing" work packages to address common or repetitive maintenance activities.

However, these actions, as well as others outlined in the MIP, were in the very early stages of implementation. As a result, the staff was unable to make a meaningful assessment of their effectiveness. While the approach to improvement in these areas appeared reasonable, additional data will be needed to determine whether this approach will be successful.

**Deficiencies in Y-12 Maintenance Improvement Program.** Although the MIP was developed to improve the Y-12 maintenance program, the staff noted several weaknesses in the program that are either not specifically identified or inadequately addressed in the plan and represent significant barriers to a robust maintenance program:

- The current maintenance performance metrics do not capture some significant attributes of maintenance quality (e.g., percent rework, work package rejection rate). Likewise, some metrics do not effectively measure the attribute of concern. For example, the metric for total time required to complete the maintenance process for

individual structures, systems, and components is inaccurate since time is measured only from the point at which a work order is entered into the work planning system, not from the time of equipment failure.

- The current maintenance program does not make use of predictable, recurring outage periods during which required preventive maintenance and deferred corrective maintenance can be scheduled. Doing so would allow for a more stable and predictable work planning process whereby all required maintenance could be effectively scheduled with respect to the available resources. The use of a predictable outage schedule is especially important when there is a large maintenance backlog.
- The current maintenance backlog is approximately 230,000 man-hours. However, overall maintenance productivity at the facility remains low. It is estimated that the current “wrench time” (i.e., time spent actually performing maintenance) for maintenance personnel is about 30 percent (up from 10 percent last year).
- The overall process for providing feedback and improvement remains weak. For example, there is still no method by which feedback from one task can be identified for use in similar tasks. Additionally, the MIP does not provide a path forward for addressing this deficiency.
- Efforts directed to benchmarking the Y-12 program with respect to other nuclear industry programs has focused primarily on other Department of Energy (DOE) sites. As a result, Y-12 has not adopted a wide range of industry good practices, but appears to be expending considerable effort on addressing maintenance program issues that have already been resolved in industries outside the DOE complex. For example, the commercial nuclear industry has developed effective methods for collecting, classifying, and analyzing equipment failures and maintenance history—an area of continued weakness in the Y-12 program.

**Weaknesses in Y-12 Area Office Oversight of Y-12 Maintenance Program.** The Board’s staff also noted weaknesses in the Y-12 Area Office’s (YAO) oversight of the facility’s maintenance program that appear to have contributed to its slow pace of improvement. As an example, the assessment activities of YAO staff are not directed toward identifying and pursuing the types of issues discussed in this report. Instead, the assessments are focused primarily on the preparation for and conduct of individual maintenance activities. While these assessments provide useful insights into the conduct of the specific maintenance activities, very little value is added toward broad-based programmatic improvements. A refocusing of some YAO oversight resources on such issues as backlog reduction, maintenance scheduling, and other programmatic aspects of the maintenance program could provide additional benefits.