The Honorable John T. Conway  
Chairman, Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, N.W., Suite 700  
Washington, D.C. 20004  

Dear Mr. Chairman:

SUBJECT: Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 96-1 Implementation Plan


In Reference 1 you were informed that a program review of Recommendation 96-1 Implementation Plan activities was initiated in June 1997 to assess test results to date and to determine if additional activities were required to better understand and resolve the In-Tank Processing (ITP) chemistry issues. This review was completed in September 1997, and it is concluded that the strategy outlined in the Implementation Plan for developing an understanding of benzene generation, retention, and release, and developing a safety strategy supporting ITP operations is still valid.

Work towards development of the final safety strategy is continuing as outlined in the Safety Strategy document (Reference 2). This work is proceeding at risk based on key technical assumptions related to benzene generation and release. Recent test results have indicated higher than expected decomposition rates of solid tetraphenylborate (TPB) species, and scoping tests are currently underway to gain a better understanding of the cause. While completion of 96-1 Implementation Plan activities is targeted for December 1997, results of these tests may establish the need for further testing which could extend the program beyond December 1997. As these results are evaluated and the impacts understood, you will be notified of any necessary changes to the program.

Difficulties in test execution have delayed the milestone deliverables scheduled for the month of September 1997. The status of these deliverables is provided as follows:

Solid Tetraarylborate (TPB) Decomposition Studies (Milestone 5.2.2-2)

The purpose of TPB solids decomposition studies was to determine if insoluble TPB compounds contained in waste slurries can decompose at a significant rate under expected ITP process conditions. The original schedule for these studies reflected the assumption that little or no solids decomposition would occur. Initial results of these studies show that decomposition of the solids occurs at a rate higher than expected. Additional testing within the scope of the existing test plan has been added to determine any decomposition rate effects of: 1) sodium and hydroxide levels; 2) initial and/or continuing radiation doses; and 3) sludge solids, Palladium, Diphenyl Mercury, and TPB organic intermediate concentrations. The
The purpose of real waste confirming studies was to perform tests using radioactive materials from real waste. The additional tests are anticipated to be completed and documented in December 1997.

The status and path forward for completion of TPB solids decomposition studies is provided in Enclosure 1. The results of the revised test approach are expected to be completed and documented in December 1997.

In order to facilitate your review and understanding of the status of the solids decomposition and benzene retention studies, the following key reference documents are also enclosed:

1) Benzene Retention in TPB Slurry - Status Report (U), WSRC-TR-97-1713 (Enclosure 5)
2) Benzene Retention in TPB Slurry - Status Report (U), WSRC-TR-97-1713 (Enclosure 4)
3) Benzene Retention Mechanism (Milestone #5.2.31) and Capacities (Milestone #5.2.3-21). A revised test plan reflecting the revised test approach is expected to be completed and documented in December 1997.

The first study listed has been completed, but the second and third studies have been delayed due to test equipment problems and extension of test durations to obtain more complete data. The status and path forward for these studies are provided in Enclosure 3. Final results are expected to be completed and documented in November 1997.

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Mr. Conway

PC-98-002

S Enclosures

bcc w/o encl:
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