OCT 3 1997

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-l Implementation Plan

REFERENCE: 1. Ltr, McCoy to Conway, "Defense Nuclear Facilities Safety Board Recommendation 96- 1 Implementation Plan" 6/26/97
2. Ltr, Watkins to Conway, "Defense Nuclear Facilities Safety Board Recommendation 96-1 Deliverable - Safety Strategy foi Tanks 48, 49, and 50 Deflagration" 1/28/97

In Reference 1 you were informed that a program review of Recommendation 96-i 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 rhe 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-l 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 Tetraohenylborate (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 sdlids 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

status anti path forward for completion of TPB solids decomposition studies is provided in Enclosure 1. The additional tests are anticipated to be completed and documented in December 1997.

Real Waste Confirming Studies (Milestone # 5.2.2-41

The purpose of real waste confirming studies was to perform tests using radioactive materials from the Tank Farms to confirm that correlations developed from simulant tests are consistent: with results from real waste tests and that benzene generation rates used 'in the Authorization Basis are bounding. Completion of the real waste confirming studies has been delayed due to difficulties in obtaining the initial test conditions outlined in the test plan, including high concentrations of soluble NaTPB in the supernate. Catalyst ID studies have shown that some benzene accumulation is required to develop decomposition rates similar to those observed in Tank 48. Therefore, the test approach has been revised to discontinue agitation and purge, thus allowing the accumulation of benzene. Since benzene generation was previously measured by monitoring benzene concentration in the purge vent stream while maintaining constant agitation, the revised approach will determine the benzene generation rate constants by measuring the aqueous concentrations of the TPB decomposition products, including total soluble boron. A revised test plan reflecting the revised fest approach is provided in Enclosure 2. The results of the revised test is expected to be completed and documented in December 1997.

Benzene Retention Mechanism (Milestone # 5.2.3-l) and Capacity (Milestone # 5.2.3-2)

A singie test plan for determining benzene retention mechanisms and capacities was issued in January 1997. The test plan identified three studies to be performed :1) investigation of methods to detect and observe benzene in KTPB slurries; 2) bench scale tests to determine the impact of process variables on benzene retention capacity and release; and 3) pilot scale tests to study retention and release on a scale and in equipment that is expected to allow direct and indirect observation of the benzene retention form/mechanism. The first study listed has been completed, but the bench scale and pilot scale tests 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.

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) Tetraphenylborate Solids Stability Tests (U), WSRC-TR-97-O 185, Rev. 0 (Enclosure 4)
2) Benzene Retention in TPB Slurry - Status Report (U), WSRC-RP-97-217 (Enclosure 5)

The items above have been previously discussed with your staff. Please direct any questions to me or W. F. Spader at (503) 208-7409.

Sincerely,

ORIGINAL SIGNED BY
F. R. McCOY, JR.

Frank R. McCoy
Assistant Manager
for High Level Waste

ED:JWM: kl

Mr. Conway

PC-98-002

5 Enclosures

bcc w/o encl:
M. P. Fiori, Manager, SR
M. W. Frei (EM-30). HQ
R. E. Erickson (EM-32), HQ
M. B. Whitaker. Jr., (S-3.1). HQ
W. F. Spader, ED, 704-S
A. B. Poston, AMESHQ, 703-47A
AMHLW Rdg. File
ED Rdg. File
Manager's Rdg. File
DMC, 703-A