



Department of Energy
Savannah River Operations Office
P.O. Box A
Aiken, South Carolina 29802

97-0003628

RECEIVED
97 NOV -4 PM 12:34
DNF SAFETY BOARD

OCT 31 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 96-1
Implementation Plan - Report on Catalytic Decomposition of Soluble
Tetraphenylborate (TPB) Studies

DNFSB Recommendation 96-1 Implementation Plan Milestone # 5.2.2-1 requires completion of laboratory studies on catalytic decomposition of soluble TPB. Enclosure 1, "Soluble Tetraphenylborate Decomposition Studies Status," summarizes the laboratory studies completed to date. These studies have identified palladium, coupled with benzene, diphenyl mercury, and decomposition intermediates, as the active catalyst system for decomposition of TPB and triphenylborane. Also, copper has been identified as the primary catalyst for decomposition of diphenylborinic acid and phenylboronic acid. Decomposition reaction rates under a range of conditions have been determined, but a statistical analysis of the rate constants has not yet been completed. Our current expectation is that the statistical analysis will be completed and the decomposition reaction rates fully documented by December 31, 1997. At that time, a complete report on catalytic decomposition of soluble TPB will be provided to you for closure of Milestone # 5.2.2-1.

Enclosure 1 has been previously discussed with your staff. Enclosures 2 through 9 are reference documents which have not been previously transmitted to you. Please direct any questions to me or W. F. Spader at (803) 208-7409.

Sincerely,

Frank R. McCoy, III
Assistant Manager for
High Level Waste

ED:JWM:kl

PC-97-008

9 Enclosures

cc w/encl 1:

G. Rudy, Deputy Manager, SR
M. W. Frei (EM-30), HQ
R. E. Erickson (EM-32), HQ
M. B. Whitaker, Jr., (S-3.1), HQ

DOE-SR Letter #PC-97-008

List of Enclosures

1. WSRC-RP-97-00940, Revision 0, 10/30/97, "Soluble Tetraphenylborate Decomposition Studies Status" 9 7 / 3 6 2 9 -
2. WSRC-TR-97-0238, Revision 0, 8/29/97, "Copper-Catalyzed Decomposition of Diphenylborinic Acid and Phenylboronic Acid" 9 7 / 3 6 3 0
3. WSRC-TR-97-0230, Revision 0, 8/13/97, "Sodium Tetraphenylborate Catalyst Identification: Phase B and C Statistical Design Studies" 9 7 / 3 6 3 1
4. WSRC-TR-97-0275, Revision 0, 9/5/97, "Sodium Tetraphenylborate Catalyst Identification: Phase D Statistical Design Studies" 9 7 / 3 6 3 2 -
5. WSRC-RP-96-0600, Revision 2, 6/20/97, "Task Technical Plan for Sodium Tetraphenylborate Decomposition Catalyst Identification Studies" 9 7 / 3 6 3 3
6. WSRC-RP-97-293, Revision 0, 6/5/97, "Task Technical Plan for Additional Decomposition Studies of Triphenylborane, Diphenylborinic Acid, and Phenylboronic Acid in Aqueous Solutions Containing the Enhanced Catalyst Composition" 9 7 / 3 6 3 4 -
7. WSRC-RP-97-0054, Revision 0, 4/1/97, "Task Technical Plan for Continued Decomposition Studies of Triphenylborane, Diphenylborinic Acid and Phenylboronic Acid in Aqueous Alkaline Solutions Containing Potential Catalysts" 9 7 / 3 6 3 5 -
8. WSRC-RP-96-568, Revision 0, 11/5/96, "Task Technical Plan for Decomposition Studies of Triphenylboron, Diphenylboronic Acid and Phenylboric Acid in Aqueous Alkaline Solutions Containing Copper" 9 7 / 3 6 3 6 -
9. WSRC-RP-96-549, Revision 0, 10/23/96, "Technical Task Plan for Decomposition Studies of Tetraphenylborate Slurries" 9 7 / 3 6 3 7