Department of Energy
Washington, DC 20585

SEP 11 1998

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

Dear Mr. Chairman:

In response to your letter dated July 13, 1998, to Under Secretary Dr. Ernest J. Moniz, we are enclosing the specific responses to the five issues addressed in your letter. As you are aware, the single biggest reason for the delay in the Plutonium Finishing Plant (PFP) stabilization effort is the fissile material movement restriction, in effect since December 1996, which precludes stabilization work. Although we made progress in restarting limited fissile material movements in May 1998, restarting stabilization of plutonium bearing materials is the most important event on the near-term calendar for PFP and is currently scheduled for December 1998. The Department plans to provide the Defense Nuclear Facilities Safety Board (Board) the best available schedule to stabilize all PFP materials in a December 1998 revision to the Department's Implementation Plan for Board Recommendation 94-1.

Regaining momentum for stabilization of all materials covered by the 94-1 Implementation Plan will logically follow stabilization restart, and opportunities for accelerating the projected completion date of July 2005, will be explored. The schedule acceleration opportunities that you raise are valid and will be considered as stated in the enclosure. We recognize that the project planning and management at PFP are not of a quality that we desire, so a significant effort is underway at PFP to implement a systems engineering approach to all program activities and develop integrated resource loaded schedules by April 1999, to include the scope of the 94-1 Implementation Plan activities. With an enhanced project management system we will be in a better position to review schedule acceleration opportunities as well as fluctuations in resource availability. In my letter of August 3, 1998, to the Richland Operations Office Manager, I expressed my expectation that a forthcoming revision to the 94-1 Implementation Plan provide achievable PFP milestones supported by the budgetary resources necessary to successfully carry out the Plan.

Again our focus at PFP is on a safe restart of stabilization and enhanced project management to enable us to better define and execute the important work related to stabilization of plutonium bearing materials.

Sincerely,

James M. Owendoff

James M. Owendoff
Acting Assistant Secretary for
Environmental Management

Enclosure

DOE Responses to DNFSB Concerns

DNFSB ISSUE #1

- **The recovery schedule of stabilization activities at PFP that will be requested as part of a formal proposed change request to DOE's 94-1 Implementation Plan.**

DOE RESPONSE TO DNFSB ISSUE #1

The proposed schedule that will be submitted as part of the forthcoming formal change request to the Department of Energy's DNFSB Recommendation 94-1 Implementation Plan for completing activities at the Plutonium Finishing Plant (PFP) will be the best available schedule at the time. The basis for that schedule is contained in the July 2005 completion version of the schedule the Board already has.

In an effort to better manage the entire PFP scope of work leading to deactivation, a systems engineering approach to managing the PFP as a project is underway. As the results of this effort become available, they will be incorporated into an integrated, resource-loaded schedule. A top level Integrated Project Management Plan (IPMP) will be complete in January 1999, and the detailed resource loaded schedule will be available in April 1999.

Unfortunately the timing of completing the final resource loaded schedule and the revision to the 94-1 Implementation Plan do not coincide. But, if there are significant changes to the July 2005 completion schedule that are developed through the integration efforts, they will be incorporated into the forthcoming change to the 94-1 Implementation Plan.

DNFSB ISSUE #2

- **Reasons, if any, that the prototype vertical calciner cannot be used to accelerate stabilization of plutonium-bearing solutions.**

DOE RESPONSE TO DNFSB ISSUE #2

PFP intends to continue using the prototype calciner to stabilize solutions in support of developmental testing of the vertical denitration calciner. The additional tests, beginning in FY99, will provide final validation of design, operations, and feed specification parameters for the production vertical denitration calciner.

During these tests, an additional 100 to 400 liters of plutonium-bearing solutions will be stabilized. Following this effort, the prototype calciner will continue to be used for testing unique feed solutions to determine compatibility with the production unit. This testing of feed solutions is anticipated to extend beyond startup date of the production unit.

The prototype will remain available for use if the production calciner is not started on time or becomes inoperable. By maintaining the prototype unit in a condition where restart is practical, we ensure that a proven back-up solution

stabilization process is available.

The current baseline continues to focus on use of the production calciner for stabilization, as opposed to the prototype, for the following reasons:

1) Safety
   - The prototype unit lacks the automation, automatic shutdowns, and safety interlocks of the production unit. This lack of automation, forces the prototype operations staff to be stationed closer to the glovebox resulting in higher radiological exposure.
   - The small batch operating nature of the prototype unit results in increased numbers of solution load-ins and oxide load-outs. These load-in/load-out activities result in increased radiological exposure to workers and increased risk of radiological contamination.

2) Throughput
   - Throughput of approximately 130 liters per week for the production unit compared to 10 to 20 liters per week for the prototype.

3) Reliability
   - The prototype unit lacks some of the reliability improvements of the production unit. Additionally, operating the prototype in a batch mode increases the thermal stresses on the prototype, which in turn increases its failure rate.

4) Security Considerations
   - This is classified information and a discussion regarding these considerations is available upon request through secure methods.

5) Life cycle cost.
   - The prototype calciner throughput to labor utilization ratio is lower than that of the production calciner. Additionally, the increased failure rate discussed in number 3 above results in a higher maintenance cost per unit of stabilization than that of the production unit.

DNFSB ISSUE #3

- **Reasons, if any, that the installation of three additional muffle furnaces cannot be completed to accelerate stabilization of plutonium-metal and oxides.**

DOE RESPONSE TO DNFSB ISSUE #3

The additional muffle furnaces are currently scheduled for installation in FY 2001 (July 2005 Schedule). RL is exploring funding opportunities in FY 1999 to provide the necessary funding to install the furnaces ahead of that schedule. This is supported by a FY 1999 performance based incentive fee to motivate the contractor to install the furnaces. Opportunities to operate the furnaces to support stabilization activities in FY 1999 will be explored as well. Through the planning integration process that is ongoing we will better be able to identify those opportunities that may exist for accelerating stabilization. The important part is to get the furnaces installed so that

the capability to operate them will be available if we are able to identify an acceleration opportunity.

DNFSB ISSUE #4

- **How the use of precipitation and cementation processes can be used selectively to accelerate the stabilization of plutonium-bearing solutions.**

DOE RESPONSE TO DNFSB ISSUE #4

RFETS has two solution stabilization processes that are of interest to PFP as alternatives to the vertical calciner. RFETS uses a precipitation process followed by thermal stabilization to stabilize solutions similar to the solutions stored at PFP. RFETS uses a direct cementation process to immobilize their low concentration plutonium waste solutions, which includes the waste stream from the precipitation process.

Development of a conceptual design for implementing the hydroxide precipitation/cementation process at PFP will be completed by January 31, 1999. This conceptual design will develop performance criteria, basic configuration, and rough order of magnitude costs for the process to be implemented in the event of unanticipated technical problems with the production calciner.

It may be advantageous to use the hydroxide precipitation process to directly stabilize the impure solutions, which must now be purified by ion exchange prior to being run through the production calciner. The suitability of the hydroxide precipitation process for these feeds and the advantages of operating the hydroxide precipitation process in parallel with the production calciner will be determined.

Utilization of the RFETS plutonium-bearing solution direct cementation process is not favored at Hanford because any low concentration plutonium waste solutions would be disposed of at the Hanford tank farms. No scheduling advantage would be anticipated by implementing the direct cementation process.

DNFSB ISSUE #5

- **Impact of the above actions on the schedule for other stabilization activities such as polycube pyrolysis.**

DOE RESPONSE TO DNFSB ISSUE #5

Project management and systems engineering efforts at PFP during FY 1999 will identify the appropriate path-forward for integration of all stabilization activities at PFP. There is little doubt that implementing parallel stabilization processes or performing planned activities sooner will provide potential acceleration of other stabilization activities. Projections at this time may be premature without implementation of the integrated planning efforts that are underway, but efforts will be made to accelerate the schedule for all stabilization activities. Contractor performance based incentive fees will be enacted to accelerate stabilization activities.

Hanford is evaluating the FY 1999 funding availability to determine if acceleration opportunities exist for polycube stabilization. The Los Alamos National Laboratory (LANL) proposed catalytic oxidation off-gas treatment process provides a lower throughput than PFP's proposed process. Hanford and LANL are evaluating changes to the LANL proposed process that may increase throughput and operational safety. Other options being considered include shipping the polycubes to LANL for processing and disposal of the polycubes to WIPP. The selected option will be reflected in an update to the integrated, resource-loaded schedule.