DEFENSE NUCLEAR FACILITIES SAFETY BOARD

September 12, 1997

MEMORANDUM FOR: G.W. Cunningham, Technical Director

FROM: T. Dwyer and H. Waugh, Pantex Site Representatives

SUBJECT: Pantex Plant Activity Report for Week Ending September 12, 1997

DNFSB Activity Summary: Timothy Dwyer was on site all week. Harry Waugh was on leave Tuesday morning and Wednesday. Outside Expert Dave Boyd was on site all week, and James McConnell was on site Wednesday-Thursday, both reviewing Dynamic Balancer efforts.

Dynamic Balancer: Efforts to restart the Dynamic Balancer are continuing. A two day meeting involving DOE-HQ (Stello), the Dynamic Balancer Project Team, and Board staff personnel was held to resolve outstanding questions prior to approval of the Dynamic Balancer BIO by DOE-HQ. As a result, the Project Team and DOE-HQ developed a path forward for Dynamic Balancer restart. Proposed requirements include completing a specific list of pre-start safety improvements, such as upgrading specific "Dynamic Balancer Protective Features" (BIO Table 13) to safety controls, placing the Dynamic Balancer under configuration control, and ensuring only bolts of known quality are used for high load face-plate/shaft/upper housing members. Of significant importance, the Project Team will also develop a comprehensive list of all of the controls relied upon for safe operation of the Dynamic Balancer, and formalize this list in a DRAFT Authorization Agreement. Once these improvements are completed, the Independent Review Team (under DOE-AL imprimatur) will verify readiness to proceed. Restart of the Dynamic Balancer will then be authorized *for the W87 and W88 only*, under a JCO valid for a period of two or three months. Following additional safety improvements including further laboratory analyses (e.g., failure modes leading to separation of the unit from the machine, and fire hazards) and design of associated safety features, satisfactory completion of a yet-to-be-determined type of readiness review, and execution of the final Authorization Agreement, approval of unrestricted Dynamic Balancer operations on W76, W78, W87 and W88 will be authorized. Several site-wide (generic) issues will be required to be addressed in specific projects by the DOE-HQ letter approving the JCO (approval conditions), but will not be resolved necessarily prior to Dynamic Balancer restart. Dynamic balancing of the W62 is not covered under this plan. After the Dynamic Balancer is restarted, DOE will initiate a lessons learned effort. Details of the Dynamic Balancer Path Forward are in Attachment 1 to this report.

As part of this review, four walkdowns of the draft Dynamic Balancer NEOP were observed. The NEOP was generally usable, although errors continue to be identified in each revision. A portion of the NEOP involving several contingent operations had been inadequately validated, however, and could not be performed as written. The length and complexity of the present NEOP are increased by trying to accommodate the five different warhead types in one procedure.

W69 Program: The W69 program SED was completed this week with no prestart findings.

Attachment 1

Outcome of Dynamic Balancer Meeting at Pantex September 10-11, 1997

The proposed path forward includes completing a specific list of pre-start safety improvements (see item 1, below). Once these improvements are completed, the Independent Review Team (under DOE-AL imprimatur) will verify readiness to proceed. Restart of the Dynamic Balancer will then be authorized *for the W87 and W88 only*, under a JCO subject to specific conditions (see item 2, below). Following additional safety improvements (see item 3, below), satisfactory completion of a yet-to-be-determined type of readiness review, and execution of the final Authorization Agreement, approval of the unrestricted Dynamic Balancer operations on W76, W78, W87 and W88 will be authorized. Several site-wide (generic) issues will be required to be addressed in specific projects by in the DOE-HQ letter approving the JCO (approval conditions shown in item 2, below), but will not be resolved necessarily prior to Dynamic Balancer restart. Dynamic balancing of the W62 is not covered under this plan. After the Dynamic Balancer is restarted, DOE will initiate a lessons learned effort.

(1) Safety improvements to be implemented prior to authorizing W87/W88 operations via JCO:

- Dynamic Balancer Protective Features in Table C-13 of the draft BIO change (except the drive motor thermostat and the drive belt) will be upgraded to safety controls and will be added to Table C-16, Summary of Controls, of the draft BIO change. This will in turn trigger additional required follow-on actions, such as revisions to Manual 37, additions to the pre-operational check/facility status board, and supplemental training.

- The NEOP will be revised to ensure that the PTs verify that applicable NESRs/strong link checks have been satisfied prior to dynamic balancing. Requirements on use of the hoist isolation strap will be clarified.

- All bolts whose failure could cause the unit to separate from the Dynamic Balancer will have appropriate safety controls on quality. All such bolts than can be removed with a "reasonable effort" (e.g., without damaging hydraulic seals) will be replaced with bolts of known quality. If possible, other structural members, such as the shaft itself, will be evaluated for quality.

- The CSSM will be checked and/or revised to ensure that the building structure, including the walls, is controlled as safety class. The basis for lightning protection system and hoist isolation strap controls will also be clarified.

- The Project Team will verify (and the Independent Review Team will confirm) that a unit can not be placed within one foot of the rear wall.

- Forklifts will be allowed in Building 12-60 Bay 2 only when the bay is in REPAIR Mode.

- The material limit for the bay will be one unit.

- The Dynamic Balancer (including the hydraulic power plant) will be placed under configuration control. The Project Team will resolve deficiencies with hydraulic plant maintenance. The Independent Review Team will review Dynamic Balancer configuration documentation, as well as the adequacy of the maintenance program.

- The Project Team will develop a DRAFT Authorization Agreement that clearly defines conditions under which the Dynamic Balancer can be operated, and that includes, among other things, a comprehensive list of the controls relied upon for safe operation. Note that this Authorization Agreement will be finalized and signed prior to releasing the Dynamic Balancer for <u>unrestricted</u> operations.

(2) The Justification for Continued Operations structure:

- Only W87 and W88 operations will be authorized.

- The time for which the JCO will be valid will be limited to the shorter of:
  (a) The time reasonably required to complete the current backlog of W87 and W88 program work; or,
  (b) The time reasonably required to complete the additional safety improvements (item 3).

- The DOE-HQ JCO approval letter will include a requirement to address the following site-wide (generic) issues, which will not necessarily be resolved prior to resuming dynamic balancing operations:
  (a) On-Site Transportation;
  (b) Natural Phenomena Hazards (specifically seismic and tornado hazards); and
  (c) Airplane Crashes.

(3) Safety improvements to be completed prior to approving unrestricted operations:

- A comprehensive analysis of failure modes leading to the unit separating from the Dynamic Balancer, or the shaft seizing (e.g., due to thrust or radial bearing failure), shall be completed.

- Weapon response to the worst case Dynamic Balancer accident identified above shall then be analyzed.

- A comprehensive analysis of the hazards of a bay fire shall be completed.

- In parallel with these analytical efforts, Pantex will design and implement an engineered safety control to mitigate scenarios involving weapon separation from the Dynamic Balancer.

(4) Additional questions.

- Questions associated with defining the critical characteristics/surveillance frequencies for the Building 12-60 Bay 2 Lightning Protection System were not resolved at the meeting. However, these questions can be addressed as post-start items.

Attachment 2

Upcoming Pantex Events:

September 16-18 -- W56 Project Team and HATT Meetings

September 16-18 -- W76/W78 Risk Management Hazzard Assessment Team Meeting

September 19 -- W69 Authorization Agreement Pilot Lot Closed

September 22-23 - W79 Final Project Team Walkdown

September 22-26 -- Dynamic Balancer Independent Evaluation [*likely to be delayed*]

September 22-26 -- DOE-STD-3009-94 seminar (run by SNL)

September 22-26 -- W76 Table Top Procedure Review

September 22-October 23 -- W56 Cell Final Walkthrough**

September 24-25 - W79 SIIR Confirmative Review

September 30 - W79 Type 6B Startup**

September 29 -- Dynamic Balancer startup [target date - *likely to be delayed*]

October 7 -- SNL Institutional Operational Issues and Initiatives Meeting (@ SNL)

October 20-24 -- NESD Annual Appraisal

November 30 -- Electrical Tester Master Study completion

December 1-12 -- W56 SIIR**

NOTES: ** highlights events for which schedule has changed