DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 30, 1994

MEMORANDUM: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: Roger W. Zavadoski

SUBJECT: Trip Report on Ventilation Systems at Pantex, June 6-9, 1994

1. **Purpose:** This report documents a June 6-9, 1994, Defense Nuclear Facilities Safety Board (DNFSB) staff review of the ventilation/filtration systems in the Building 12-44, Cells 1 through 6 and Building 12-84, Bays 9 and 11 through 20 at Pantex. This review was conducted by Roger Zavadoski and Jay DeLoach.

2. **Summary:**

   a. The ventilation/filtration systems for Building 12-44, Cells 1 through 6 and Building 12-84, Bays 9 and 11 through 20 are configured consistent with the safety documentation for those facilities.

   b. If the ventilation/filtration systems are evaluated and found not to be necessary for protection of co-located workers in adjacent facilities, then they need to be properly removed from the safety bases.

   c. Full conformance with the national standard fr filter testing is not presently being achieved.

3. **Background:** This review of the ventilation/filtration systems at Pantex is a follow-up to the placing of Pantex in a maintenance mode on April 5, 1994, by Mason and Hanger. This action was taken subsequent to a violation of the safety envelope involving the use of a facility with a high efficiency particulate air (HEPA) filter that did not pass a required surveillance.

   During the maintenance mode, Mason and Hanger developed an integrated corrective action plan for issue involving the safety envelope. A Department of Energy (DOE) Validation Team reviewed Mason and Hanger's efforts and concluded that sufficient progress had been made in identifying and controlling the safety envelope to return to the operation mode. The DNFSB staff review found the requirements listed in the Critical Safety System review for the ventilation/filtration systems for Building 12-44, Cells 1 through 6 and Building 12-84, Bays 9 and 11 through 20 are consistent with the safety documentation of those facilities.

   Independent of the above actions, the contractor has evaluated the bases for the inclusion of the HEPA filters in the safety envelope and has concluded that these filters be removed from the Operational Safety Requirements.

4. **Discussion:**

    a. On May 6, 1994, the contractor published the *Critical Safety Systems Manual* followed on May 17, 1994 by the *Safety Analysis Report Identified Systems and the Technical Basis for Inclusion/Exclusion in Critical Safety Systems Manual*. Both reports list the HEPA filters for Building 12-44, Cells 1 through 6 and Building 12-84, Bays 9 and 11 through 20 as critical safety systems. Note that other facilities are also listed in these reports. Selected Bays and Cells were visited during this review and the HEPA filtration systems were noted to be operating within an allowable pressure drop and with documentation that a valid, successful, and timely penetration test had been performed. Outdoor filters, such as those found on the 12-44 facility were found to be free of animals and vegetation. Daily checklists were being used inside the facilities to note the surveillance status of the HEPA filtration systems amongst other critical items.

    b. The basis for the inclusion of the HEPA filtration system as a critical safety system is found in a cryptic statement found only in Chapter 17 of the Building 12-44 Safety Analysis Report (SAR). It states under Section 17.4, *Critical Safety Systems*, ". . . The HEPA filter system would mitigate the effect of a plutonium incident or a small explosion to the extent that other Pantex personnel would probably not be affected. Therefore, the system should also be considered a critical safety system." With this sole justification for the HEPA filtration system being included as a critical safety system, the contractor has analyzed various scenarios involving the release of plutonium and its subsequent consequences on co-located workers in adjacent facilities without operational HEPA filters and concluded that the HEPA filters should be removed from the Operational Safety Requirements. The SAR for the presently installed filtration/ventilation system does not address the blast effects from nearby facilities. If they are required for co-located worker safety, then the entire system would have to be analyzed and possibly redesigned. However, if the system is not necessary, it needs to be properly removed from the safety bases.

    c. Testing of the installed HEPA filters is accomplished by following some of the guidance contained in *Testing of Nuclear Air Treatment Systems,* ASME N510-1989, the nationally recognized standard for filter testing at nuclear facilities. The Pantex test instrument is routinely sent offsite for calibration by a certified dealer. Only trained technicians, who have attended the in-place filter testing workshop, offered by the Harvard School of Public Health, are allowed to perform the tests. On the other hand, the procedure used for performing the test is a meager one page form and does not address the standard required prerequisites of a visual inspection, air-aerosol uniformity and bypass leakage. The contractor claimed that the program is still being developed and that in the future they would strive to come into full conformance with ASME N510-1989.

5. **Future Actions:** The staff will perform follow-up reviews when DOE and Mason and Hanger complete actions on removing the HEPA filters from the safety bases or upgrading of the HEPA filter test program.