

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

August 25, 1995

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: Roger Zavadoski

SUBJECT: Ventilation for Buildings 371, 776/777, 881, 883, and 886 at the Rocky Flats Plant

1. **Purpose:** This report documents the findings of a trip to the Rocky Flats Environmental Technology Site (RFETS) on August 14-18, 1995, by Mark Sautman and Roger Zavadoski of the Defense Nuclear Facilities Safety Board (Board). The purpose of the trip was to review the status of ventilation systems in various plutonium and uranium buildings.
2. **Summary:**
 - a. The maintenance backlog and frequency of alarms at RFETS Building 371 have decreased since the previous visit of the Board's staff. Previous findings were documented in a June 14, 1995, trip report. Both of these areas still require the Board's staff attention.
 - b. RFETS Buildings 776/777 continue to resolve problems involving the authorization basis. These problems were also documented in the trip report noted above. Final resolution is not expected until March 1996 and will require some Board's staff attention until then.
 - c. The uranium facilities (Buildings 881, 883, and 886) have not field tested their high-efficiency particulate air (HEPA) filters since the 1987-1990 time frame. Contrary to common industrial practice and guidance, there is no specified frequency for testing these systems.
3. **Background:**
 - a. The Building 881 Complex is a multiple level building with the main portion of the building located below ground level. It was the first production building on plant site and was used for a uranium foundry and for the machining of enriched and depleted uranium as well as beryllium.

- b. Building 883 was used primarily for manufacturing metallurgical operations. These operations included rolling, shearing, forging, pressing, grinding, welding, heat treating, cleaning, weighing, dimensional inspection, and nondestructive testing.
- c. Building 886 was completed in 1964 and the first experiment in the Criticality Mass Laboratory (CML) was performed in September 1965. Since then, it has been used to perform approximately 1,700 criticality experiments on enriched uranium metal and solution, plutonium metal, and low enriched uranium oxide.
- d. Building 779 has been in use since May 1965. Since then, two major additions have been constructed. In addition, two new filter plenum buildings for the complex were constructed: Building 729 in 1971 and Building 782 in 1973.
- e. RFETS has approximately 10,000 HEPA filters installed in a variety of filter plenums. These ventilation/filtration plenum systems are used to control the release of airborne particulate contaminants to the environment during normal operations and also during potential design-based accidents. While conducting a safety question review in 1994, questions were raised concerning the maximum service life criteria for HEPA filters.

4. Discussion/Observations:

- a. Addition of a new air dryer for the instrument air system in Building 371 has been completed. Additional in-line filters are being added to the system to ensure further that rust debris will not enter the controllers. Phase I of the filter additions is 75% complete and ongoing. At the present time no new deficiencies have been identified which are attributable to debris in the instrument air system.
- b. For Building 371 the corrective maintenance backlog is 904 items. Of these, 304 are associated with safety systems, of which 200 are HVAC-related. HVAC-related deficiencies account for nearly 50% of the top 100 maintenance work orders of which 15-18 are required for operability. There are approximately 250 HVAC-related preventative maintenance work requests, of which 60 are predictive, with an average completion rate of 70%. While the above represents an improvement over past performance, the rate of progress currently appears to be level. It should be noted that those items which pertain to operability and safety have been identified and are being expeditiously worked off. Future progress in this area should continue to be observed by the Board's staff.
- c. For Building 371, the frequency of alarms is approximately 1200-1600 per day. While this represents an improvement over past performance of 2400 per day, the frequency

is still too high to allow for an adequate response to each alarm. Improvement plans still need to be developed to address this area of concern.

- d. Building 776/777 is resolving the five limiting condition of operation items discussed in the previous June 14, 1995, trip report. Corrective actions items are not expected to be complete until March 1996. At present there do not appear to be any problems which would prevent timely completion.
- e. During discussions with the filter test group, the Board's staff learned that the group is actively pursuing the determination of the service life of installed HEPA filters. The progress and results of this program will be followed by the Board's staff, as it has applicability throughout the complex.
- f. The uranium facilities (Buildings 881, 883, and 886) have not field tested their HEPA filters since the 1987 - 1990 time frame. It is a common industrial practice to test HEPA filters at some periodic frequency (see Chapter 8 of ERDA 76-21, The Nuclear Air Cleaning Handbook) typically not more than two years. The frequency of HEPA filter testing for these facilities needs to be reviewed to determine the appropriate periodicity.
- g. While touring the ventilation buildings for Building 779, the Board's staff noted the storage of numerous bottles (estimated at more than twenty gallon glass bottles) of sulfuric acid in Building 782. The contractor's representative told the Board's staff that the acid was not being stored properly and that it would find a more appropriate storage.