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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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July 21, 1995

The Honorable Thomas P. Grumbly  
 Assistant Secretary for  
 Environmental Management  
 Department of Energy  
 Washington, D.C. 20585

Dear Mr. Grumbly:

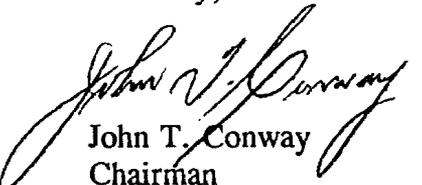
A Defense Nuclear Facilities Safety Board (Board) staff review team visited the Rocky Flats Environmental Technology Site on May 22-25, 1995, to review ventilation in selected plutonium buildings. Our staff noted that maintenance in Building 371 has deteriorated to an unacceptable level. The contractor terminated operations in the facility because the impact of the deficiencies on the authorization basis was not certain.

On June 15, 1995, the Board sent a letter to Secretary O'Leary concerning a summary report entitled "*Overview of Ventilation Systems at Selected DOE Plutonium Processing and Handling Facilities (DNFSB/TECH-3)*." The Board requested that the Department of Energy (DOE) provide a report that in part evaluates the maintenance on ventilation safety systems at DOE's plutonium processing and handling facilities.

The enclosed report is a synopsis of the observations made during the Board's staff review and provides additional information relative to the Board's June 15, 1995, letter. As part of the report requested by the June 15, 1995, Board letter, DOE is requested to specifically address the concerns noted in the enclosed report.

If any further information is needed, please let me know.

Sincerely,

  
 John T. Conway  
 Chairman

c: The Honorable Tara O'Toole, EH-1  
 Mr. Mark B. Whitaker, EH-9  
 Dr. Willis Bixby, EM-60  
 Mr. Mark Silverman, Manager, DOE-RFFO

Enclosure

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

June 14, 1995

**MEMORANDUM FOR:** G. W. Cunningham, Technical Director

**COPIES:** Board Members

**FROM:** Roger Zavadoski

**SUBJECT:** Building 371 and 776 Ventilation at Rocky Flats

1. **Purpose:** This report documents the findings of a trip to the Rocky Flats Environmental Technology Site (RFETS) on May 23-25, 1995, by Dave Moyle and Roger Zavadoski of the Defense Nuclear Facilities Safety Board (Board). The purpose of the trip was to review the state of ventilation systems in selected buildings involving plutonium.
2. **Summary:**
  - a. Building 371 has deteriorated to an unacceptable level of maintenance. The contractor terminated operations at the facility because of uncertainty as to the impact on the authorization basis. A plan has been developed to work the facility out of the present difficulties. Implementation of the plan is ongoing, and progress should be monitored by the Board's staff.
  - b. The facility contractor has found Building 776 to be outside its authorization basis. At present, it is not clear how the basis is to be reestablished. Plans to correct this situation should be closely followed by the Board's staff.
3. **Background:** Considerable effort in the past has been devoted to upgrading various facilities at RFETS, e.g., Buildings 707 and 559. This has been done at the detriment of maintenance at other facilities, e.g., Buildings 371 and 776.
4. **Discussions/Observations:**
  - a. Building 371. Activities in Building 371 were terminated on March 16, 1995, based on numerous deficiencies with the ventilation systems. As of May 24, 1995, activities have not resumed. The contractor has stated that "this termination is necessary because the impact of these deficiencies on the facility's authorization basis is unknown."

The major physical cause of the termination of operations can be traced to the malfunctioning of the instrument air system. The instrument air system is necessary to allow automatic operation of the ventilation system, i.e., the positioning of dampers is regulated by instrument air. The malfunctioning of the instrument air system is attributable to the buildup of moisture in the system and inadequate dryer maintenance. Maintenance on the dryer has not been performed because replacement parts are no longer

available. The dryer has been replaced and the system dried out. Residual problems of rust migration and filtering are now being resolved. These problems may present future difficulties.

According to the contractor's representatives, Building 371 had not received an adequate share of maintenance attention. In the past twelve months (ending April 26, 1995), maintenance work orders have been reduced by 3,534, but there are still 3,831 remaining. In 1994, the completion rate on maintenance work orders was 10%, whereas in 1995 it is 60%. Further, the vibration analysis program has been reinstated within the past few months. From these three items, it appears to the Board's staff that the maintenance difficulties at Building 371 are beginning to be turned around. However, the present program appears less than aggressive in the trending and tracking and categorizing of all outstanding work.

Another important manifestation of the unacceptable level of material condition of Building 371 is the frequency of alarms received in the Building. Prior to April 1990 this was running at approximately 500 per day and it is currently in excess of 2400. An acceptable level has not been established. At the 500 level, an adequate response to each alarm is beyond the resources and staffing for the facility. In connection with the alarms, it should be noted that a new computer control system is due to be installed by the end of July 1995.

- b. Building 776. On March 23, 1995, Building 776 at RFETS was declared in violation of five limiting conditions of operation (LCO) found in the buildings Operational Safety Requirements (OSRs). The first LCO was based on the interlocking of the supply and exhaust tank; the second on the provision of emergency power for all exhaust fans; the third on photohelic devices providing audible alarms in the control room; the fourth on a Zone II differential pressure alarming in the control room; and the fifth on an effluent monitor being operational continuously.

In actuality there are no interlocks on the supply and exhaust fans, no emergency power for all exhaust fans, no photohelic devices providing audible control room alarms, no Zone II pressure differential alarming in the control room, and no effluent monitor that operates continuously. The contractor speculated that whoever wrote the OSR LCOs (in 1988) did not physically verify the presence of the instrumentation and controls. Such flaws in the OSRs bring into question an important part of the authorization basis for the facility. The contractor stated a belief that there were approved Justifications for Continued Operation (JCOs) for each of the cited deficiencies. However, no Department of Energy approved JCOs could be found.

In its present configuration, the vast majority (several hundred) of the instrumentation and controls in the Building 776 control room are out of service. The few instruments (roughly 20) that remain in-service are marked with calibration stickers. Operational fan controls appear backlighted. The out-of-service instrument display is not clearly identified as unusable.

Unlike in Building 371, the status of maintenance, alarms and facility modifications was not readily apparent for Building 776. Also, a plan to firmly establish the authorization basis and its supporting documentation is not available at this time.

5. **Future Staff Actions.** The status of the maintenance work order reduction, alarm frequency reduction, process computer replacement installation, and trending and tracking program development for Building 371 should be followed on a routine basis until this facility can be operated without undue hindrances. The plan to resolve discrepancies in the authorization bases for Building 776 should be followed until they are fully developed and on the way to implementation. To ensure that other important plutonium facilities (such as Buildings 707, 771, 559, 779, etc.) are not allowed to slip to an unacceptable level of repair while Buildings 371 and 776 are under the limelight, the Board's staff should closely follow the working and the work off of the maintenance requests, particularly those involving vital safety systems as defined in the authorization basis.