

Duke Power Company
P.O. Box 33195
Charlotte, N.C. 28242

Hal B. Tucker
Vice President
Nuclear Production
(704)573-4531



DUKE POWER

March 30, 1990

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
NRC Inspection Report Nrs. 50-413 and 50-414/90-03
Reply to a Notice of Violation

Gentlemen:

Enclosed is the response to the Notice of Violation issued March 2, 1990 by Alan R Herdt concerning failure to take prompt and timely corrective action for the inoperable 2ABFX System.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'Hal B. Tucker', followed by a horizontal line.

Hal B. Tucker

WRC140/lcs

Attachment

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xc: Mr. Stewart D. Ebnetter
Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta St., NW, Suite 2900
Atlanta, Georgia 30323

Mr. W. T. Orders
NRC Resident Inspector
Catawba Nuclear Station

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bx: A. V. Carr - PB05E
R. L. Gill, Jr.
R. C. Futrell
R. M. Glover - CNS
D. L. Rehn
F. G. Hudson
G. W. Hallman
W. R. Cross
Mgr., QA T/S - EC12A
R. O. Sharpe - MNS
T. D. Curtis - ONS
M. S. Tuckman
E. M. Parris - WC18C
CN-815.01 (90-03)

DUKE POWER COMPANY
REPLY TO A NOTICE OF VIOLATION
414/90-03-01

10 CFR 50, Appendix B, Criterion III, Design Control, requires in part that measures be established to assure that applicable regulatory requirements are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of structures, systems and components. Further, measures are to be established for the identification and control of design interfaces.

10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires in part that, measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Including measures to assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Technical Specification 3.7.7., requires that two independent trains of Auxiliary Building Filtered Exhaust System be operable in Modes 1, 2, 3, and 4.

Contrary to:

1. The licensee failed to establish measures for identification and control of design interfaces between Auxiliary Building Ventilation and the Radiation Protection clothes dryers. This resulted in inoperability of the safety-related Auxiliary Building Exhaust System.
2. On May 9, 1989, the licensee after determining the Unit 2 Auxiliary Building Filtered Exhaust (VA) System air flow monitor device, 2ABFX-AFMD-2, was clogged with lint, failed to promptly determine the cause and take corrective action to preclude repetition of the condition.
3. The licensee failed to take adequate corrective action following identification of clogging in air flow monitor device 2ABFX-AFMB-2 on May 9, 1989 and May 25, 1989 to preclude repetition of this condition. On November 11, 1989, the licensee determined that Unit 2 VA system air flow monitor device, 2ABFX-AFMD-1, was clogged with lint.

4. Both trains of the Unit 2 Auxiliary Building Filtered Exhaust System, were inoperable for a period of five months between June 10 and November 11, 1989, while the unit operated in Modes 1, 2, 3, and 4.

RESPONSE:

1. Admission or Denial of Violation

Duke Power admits the violation.

2. Reasons for Violation if Admitted

1. Inadequate evaluation of the previous problem (May 31, 1989) did not fully eliminate the source of lint. Although the Cook Model 207 clothes dryers are equipped with exhaust filter housings, they were not originally designed to remove all the lint exiting the dryers. These dryers have been installed since startup, and lint has accumulated in the VA duct between the clothes dryer filters and the air flow monitors over time.
2. The air flow monitor flow straightener located in the duct consists of many tubes that can become clogged with lint, thereby reducing the total flow.
3. Had a more thorough evaluation of the May 31, 1989 occurrence taken place, the following contributing causes would not have been a factor.
 - (a) Inappropriate action (action taken was not best alternative) because of faulty assumptions.
 - (b) Inappropriate action (no action taken when required because need was not recognized) in failing to properly monitor downstream components.
4. The VA system is designed to provide the normal ventilation and heating requirements, and the emergency (accident) exhaust requirements for the Auxiliary Building. The VA system is comprised of three (3) subsystems: supply, unfiltered exhaust, and filtered exhaust. Each subsystem operates independently of the other subsystems. Auxiliary Building supply and unfiltered exhaust subsystems are not nuclear safety related (i.e., not QA

Condition 1). Only a portion of the filtered exhaust subsystem, providing filtration of the Emergency Core Cooling System (ECCS) pump rooms, is an engineered safety feature. This portion of the filtered exhaust subsystem is required by Technical Specification to be operable in modes 1, 2, 3, and 4.

5. The problem identified did render the VA system not in compliance with Technical Specification requirements because of the inability of the system to achieve the required flow rate of 30,000 cfm \pm 10% (reference Technical Specification Section 4.7.7). However, the safety significance of this is inconsequential. The Technical Specifications are written to verify system parameters under the most severe operating conditions. For VA system flow rate, the worst condition is in the normal plant operating alignment. The required emergency flow rate is much less (~6500 cfm). Therefore, not meeting the Technical Specification surveillance requirement does not indicate a degraded safety function.
6. While not in compliance with Technical Specifications, the VA system would still have performed its intended safety function (i.e. providing filtration of the ECCS pump rooms) since the emergency flow was virtually unaffected.
7. While normal flow was degraded from ~30,000 cfm (per fan) to ~15,000 cfm (per fan), the emergency flow would have decreased by an insignificant amount (<1%). With the normal flow decreased from 30,000 cfm to 15,000 cfm, the effect on the emergency flow would have been a decrease from 6540 cfm to approximately 6500 cfm. This flow is adequate to negatively pressurize the ECCS pump rooms and, therefore, filter all air exhausted from these rooms. Also, as stated in Section 15.6.5.3 of the CNS FSAR, no credit is taken for the VA system filters for ECCS leakage. Even if the VA system had failed to maintain a negative pressure in the ECCS pump rooms, no increase in the calculated off-site or operator dose would have occurred.
8. The interaction of the RP clothes dryer exhaust and the VA system was considered in the original system design. However, the resulting level of interaction was greater than anticipated. When the magnitude of the interaction was discovered on

May 9, 1989 and again on May 25, 1989, the corrective actions initiated through work requests 944MES and 7086PRF, did not resolve the interaction. A more thorough evaluation of the problem under PIR-2-C89-0211 would have required an engineering evaluation of the interaction. Additionally, the continued degradation of VA flow should have provided an indication that the above referenced actions had not adequately resolved the problem.

3. Corrective Actions Taken to Avoid Further Violations

1. The design review and the design basis documentation effort is in progress and should, in the long term, prevent the problem of design deficiencies from recurring. This review and documentation effort may produce additional design deficiencies that will be reported as necessary.
2. 2ABFX-AFMD-1 was inspected and cleaned per Work Request 453300PS on November 11, 1989.
3. Standing Work Requests 14069SWR and 11854SWR have been initiated to perform weekly inspections of 2ABFX-AFMD-1 and 2ABFX-AFMD-2.
4. The RP clothes dryer filters were modified on December 8, 1989 (CEVN-2694) to prevent the observed mechanism for lint bypassing the filter.
5. Accessible VA duct was cleaned under Work Request 7305PRF upstream of 2ABFX-AFMD-2 on December 21, 1989 following the RP clothes dryer filter modification per CEVN-2694. VA duct between 2ABFX-AFMD-2 and 2ABFX-AFMD-1 was then inspected and cleaned under Work Request 7325PRF on January 11, 1990.
6. Weekly inspections of 2ABF-AFMD-1 and 2ABFX-AFMD-2 were completed on February 26, 1990.
(Performance)
7. The Unit 2 Vent Air Flow Monitor was periodically inspected until the performance of the modified clothes dryer filters had been proven adequate.
(MES)
8. The Operations shift performed increased surveillance of 2VAP5280 while the lint problem was being corrected.

9. On December 7, 1989, MES and Performance inspected the Inlet, Bypass and Isolation dampers for Train 2A and 2B filtered exhaust units to ensure lint accumulation had not affected the ability of the dampers to close and found no lint accumulation in the dampers. A prefilter screen inspection was also performed.
10. This incident was covered in the monthly Shift Supervisors meeting to reinforce the need to initiate corrective action for abnormal indications, on December 8, 1989.
11. On December 7, 1989, the dryer filter cleaning frequency was changed to after every load pending the completion of the Internal Modification.
12. A memorandum was issued to the technical support staff in Maintenance, Operations and Technical Services, emphasizing evaluation of the affect of corrective maintenance on associated components using this incident as an example.
13. Procedures have been revised to provide documentation of control board review for abnormal indications and notification of supervision. (Operations)
14. A systematic review of Control Room indications and controls has been conducted to determine if Operators have received proper training and have good understanding of the function of controls and gauges.
15. Operations, with appropriate consultation with the System Expert and Design Engineering, has reviewed plant indications of all safety-related ventilation system performance to ensure that all Technical Specification requirements are being met. A review of abnormal indications in the Control Room has been performed.

4. Corrective Actions to be Taken to Avoid Further Violations

1. Weekly inspections of 2ABFX-AFMD-1 and 2ABFX-AFMD-2 were completed on February 26, 1990. The inspection frequency has been changed to monthly based on little or no lint accumulation.

This will continue until the end of April 1990, at which time the frequency will be re-evaluated and may be terminated. (Performance)

2. Work Request 2439MES was written 3/1/90 to clean all remaining VA ductwork that is susceptible of having lint from the dryers. This action is to be complete by 7/1/90. (MES)
3. Flow criteria will be added to the appropriate ventilation procedures by 5/1/90 in order to alert the Operators of discrepancies in flow. (Operations)
4. Training will be provided by 7/1/90 to operators with respect to abnormal indications. (Operations)
5. Standing Work Requests will be written by 7/1/90 for the inspection of air flow monitors and dampers. (MES)
6. A permanent solution to correct the interaction between the RP clothes dryers exhaust and the Unit 2 VA System will be developed by Design Engineering and Catawba Station personnel. Proper control of this interface will be achieved either through further modification or other steps. The RP clothes dryer filters will be evaluated for inclusion in design documentation. The installation of a backup filter to be installed between the clothes dryers and the VA duct will be evaluated. (Design)
7. Design Engineering personnel will develop a design basis document for the VA system. The DBD to the VA system will be evaluated by Design Engineering to determine whether further potential foreign matter inputs to the VA System should be addressed. Following completion of this work, appropriate station procedure, FSAR and Technical Specification revisions will be made. (Design)
8. The Performance Group, working with Operations and Design Engineering personnel, will review available plant parameters for addition to the Performance Monitoring Database System to enhance the analysis and trending of ventilation systems (as well as other systems) performance data. This will provide better assurance of proper overall system performance, as well as specific

surveillance compliance, and a historical perspective of performance over time. This enhancement will more closely tie the effective use of system performance data with data generation, e.g. monthly system operation data used to supplement periodic surveillance results. (Performance - Initial Review for Ventilation Systems)

9. Design Engineering will initiate a thorough and systematic review of ventilation system design requirements and compare them against nominal operating data to ensure consistency with the FSAR and Technical Specification parameters. (Design)

5. Date of Full Compliance

The Auxiliary Building Ventilation System has always been able to perform its safety related function with regard to providing filtration of ECCS pump room air. The corrective actions outlined above restore the intended normal operation design capabilities of the system.

Completion of the corrective actions, described in section 4 is scheduled for completion by December 31, 1981. This date allows time to complete the Design Basis Document for the VA system, and prepare any necessary station procedure or license document revisions. The actual implementation date of any necessary Technical Specification changes is unknown since this depends on NRC processing and approval. The corrective actions that have already been implemented assure continued compliance with Technical Specifications until such times as a determination is made regarding the necessity of additional corrective actions.