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DUKE POWER

December 22, 1989

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

Subject: Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
NRC Inspection Report Nos. 50-413 & 50-414/89-29
Reply to a Notice of Violation

Gentlemen:

Enclosed is the response to the Notice of Violation issued November 3, 1989 by Alan R. Herdt concerning inadequate post maintenance testing associated with an electrical circuit breaker and inadequate design control measures associated with the Annulus Ventilation System.

As discussed in Attachment I, I admit to the violation that the Hydrogen Skimmer Fan breaker was not adequately tested.

Duke Power met with Region II to discuss the violation associated with the Annulus Ventilation System on December 21, 1989. As discussed at this meeting, the Annulus Ventilation Systems on both Units were unable to produce and maintain a negative pressure of -0.5 inches water gauge (WG) throughout the Annulus under all possible outside air temperatures following a loss of coolant accident. Contrary to what was stated in the notice of violation, however, the systems were at all times capable of performing their required safety function. The degradation was a reduction in the negative pressure design limit of -0.5 inches WG; not the safety limit of -0.25 inches WG. Additionally, the station has been able to meet the Technical Specification surveillance requirements associated with the systems at all times. Attachment II provides background information on the Annulus Ventilation issue discussed at the December 21, 1989 meeting.

Following the meeting with Messrs. Shymlock, Merschoff, and Lesser, there was some question as to the appropriateness of the violation as written. Therefore, as indicated in Attachment III, I neither admit nor deny the violation. I request that the Region either reconsider the violation or

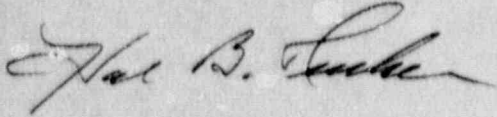
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provide additional details as to the exact nature of the violation in light of the discussions held yesterday.

Very truly yours,



Hal B. Tucker

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Attachment

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

Mr. M. B. Shymlock, Section Chief
Division of Reactor Projects
U. S. Nuclear Regulatory Commission
Region II
101 Marietta St., NW, Suite 2900
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Mr. W. T. Orders
NRC Resident Inspector
Catawba Nuclear Station

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REPLY TO A NOTICE OF VIOLATION
414/89-29-05

Technical Specification 6.8.1 requires that written procedures be established, implemented, and maintained covering the activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978. Implicit in this is the stipulation that the procedure be adequate for the task being performed.

Maintenance Management Procedure (MMP) 1.0 states that a functional verification will demonstrate that a component or components operate as designed and a retest will demonstrate that a component or components meet the minimum acceptance criteria as defined in Technical Specifications or other regulatory documents. The retest must adequately test all components on which maintenance or incidental adjustments were performed if a reasonable possibility exists that the parameter to be tested was affected by the maintenance.

Contrary to the above, section 4.9.10 of MMP 1.0 which outlines the program for post maintenance testing of circuit breakers was inadequate to assure proper operation of equipment following circuit breaker replacement, in that on May 12, 1989 the electrical circuit breaker for the 2A Hydrogen Skimmer Fan Motor was replaced and the fan was not started to verify operability nor was an evaluation of the instantaneous overcurrent trip characteristics of the breaker performed. The breaker subsequently tripped on instantaneous overcurrent upon the first start attempt on June 19, 1989.

RESPONSE:

1. Admission or Denial of Violation

Duke Power Company admits the violation

2. Reasons for Violation if Admitted

The post maintenance testing program failed to adequately address retest requirements for circuit breaker replacement. The contributory cause of this violation resulted from the fact that the product literature, specifications and qualification tests supplied to Duke Power Company from Westinghouse were inadequate and unsubstantiated in regards to the HFB-3125A Ambient Compensated Breaker. (Reference 10CFR Part 21 Report from Westinghouse concerning Molded-Case Ambient Compensated Circuit Breakers).

3. Corrective Actions Taken and Results Achieved

- a. An adjusted Westinghouse breaker was installed in the 2A Hydrogen Skimmer Fan.
- b. 2A Hydrogen Skimmer Fan satisfactorily passed post-maintenance testing by starting the fan per Performance Test PT/2/A/4450/05A.

4. Corrective Actions to be Taken to avoid further Violations

- a. Maintenance Management Procedure 1.12 will be revised to include the IAE Section's functional verification requirements. This procedure will require functionals to include running loads for breaker replacements. Breakers that have adjustable settings will be set to the Design specification document. If plant conditions preclude running loads, Maintenance Engineering Services will be notified to determine appropriate test methods.
- b. A Retest Manual is being created to address retest requirements, on a component basis, for any type of maintenance performed on components in the plant.

5. Date of Full Compliance

Duke Power Company will be in full compliance by June 1, 1990.

Discussion of Annulus Ventilation Issue

Catawba FSAR Section 9.4.9.1 states that the design basis of the Annulus Ventilation (VE) System is to: (1) produce and maintain a negative pressure in the annulus following a LOCA; (2) minimize the release of radioisotopes following a LOCA by filtering and recirculating a large volume of annulus air relative to the volume discharged for negative pressure maintenance; and (3) provide long-term fission product removal capacity by decay and filtration. These design bases define the VE System's safety functions and are consistent with the regulatory guidance and acceptance criteria specified in the NRC's Standard Review Plan (NUREG-0800) and Branch Technical Position CSB 603. It should be noted that in both of these documents positive annulus pressure is defined as a pressure greater than -0.25 inches water gauge.

Catawba FSAR Section 9.4.9.2 describes the design parameters of the VE System. It states that the VE System functions to discharge sufficient air from the annulus to effect a negative pressure with respect to the containment and the atmosphere 60 seconds following a LOCA. Subsequent to attaining a negative pressure, additional air is discharged to maintain the pressure at or below -0.5 inches water gauge. Utilizing a design limit of -0.5 inches water gauge was intended to provide sufficient design margin to assure that the VE System's design bases were not violated. The operating set point of the VE System was further reduced to -1.0 inches water gauge to conservatively account for instrument inaccuracies and thus provide additional assurances of not violating design bases.

Analyses performed during August 1989, and documented on August 25, 1989, determined that under the conditions identified in Information Notice 88-76 the VE System would not be able to establish and maintain an annulus pressure of at least -0.5 inches water gauge. However, the same analyses also determined that the VE System's design bases would not be violated (i.e., an annulus pressure of -0.5 inches water gauge would be established and maintained) at air temperature of 45F or greater. This determination included the conservative treatment of instrument inaccuracies utilized in the original system design. (It was subsequently determined, and documented on September 29, 1989, that removal of the explicit instrument inaccuracy conservatism demonstrated that the VE System design bases would not be violated for air temperatures as low as -5F, the recorded low temperature for Charlotte and vicinity.) Furthermore, it was determined that applicable Technical Specifications were not violated and that no unreviewed safety questions existed.

Station personnel were informed of this determination on August 28, 1989. An operability evaluation request was made on August 31, 1989 and the results of the August 25 determination were formally provided to the

station September 6 as part of a CONDITIONALLY OPERABLE determination. It should be emphasized that the VE System was declared conditionally operable because the safety functions defined by the design bases (FSAR Section 9.4.9.1) were being maintained at air temperatures of 45F or greater, via a temporary change in the system's design limits. Since the system design parameters are considered part of Catawba's licensing basis, these parameters could not be permanently modified without NRC concurrence. The VE System was at all times in compliance with applicable Technical Specifications. On September 12, 1989, the operating set point of the VE System was reduced to -1.5 inches water gauge, thus assuring that an annulus pressure of -0.5 inches water gauge would be established and maintained under all possible air temperatures following a LOCA. This change restored the VE System to conformance with the design parameters described in FSAR Section 9.4.9.2.

The ability of the VE System to achieve the specified design bases was evaluated utilizing calculational methods. This is necessary since conditions simulating a LOCA can not be established to test the operating performance of the VE System following a LOCA. The adequacy of the calculational methods to model the operation of the VE System has been validated by comparing calculated VE performance (i.e., the time required to achieve the operating setpoint) under ambient conditions with actual VE performance during system tests. Additionally, periodic tests are performed to verify system flowrate and reactor building in-leakage. These two parameters are the governing factors in determining the time required to achieve negative pressure in the annulus. These tests thus assure the continued validity of the assumptions and calculational models used to characterize VE System performance in the FSAR.

Therefore, as required by 10CFR50, Appendix B, Criterion III, design control measures did ensure through testing and analysis that the VE System design bases were not violated (i.e., the system's safety functions were preserved at times).

A conference call with Region II personnel on September 11, 1989 produced NRC concurrence that the VE System's conditionally operable status was adequate while a permanent resolution was under development. On September 12, 1989 a reduction in the VE operating setpoint was selected as the permanent resolution. The VE system operating setpoint was reduced to -1.5 inches water gauge on September 12, 1989. A conference call with Region II and NRR personnel on September 12 concluded that Catawba's course of action was satisfactory and that discretionary enforcement was not required. Both trains of VE for both Units were successfully tested at the new operating setpoints by September 13, 1989. Test procedures have been revised to reflect the new operating setpoint.

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10CFR50, Appendix B, Criterion III, Design Control, requires in part that measures be established to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions. It is further required that these measures provide for verifying the adequacy of design, such as by the performance of design reviews, by the use of calculational methods, or the use of a testing program.

Contrary to the above, design control measures were inadequate to ensure that the Annulus Ventilation System could perform its required safety function. In September 1989, it was found that the Annulus Ventilation System on both units had been inoperable since initial licensing. It was found that the Annulus Ventilation Systems were unable to produce and maintain a negative pressure of -0.5 inches water gauge throughout the annulus under all possible outside air temperatures following a loss of coolant accident.

RESPONSE:

1. Admission or Denial of Violation

Duke Power Company neither admits nor denies the violation.

2. Reason for the Violation if Admitted

Duke Power neither admits nor denies the violation at this time because discussions held with Messrs. Shymlock, Marschoff, and Lesser indicated that some questions concerning the original violation were raised after understanding the background behind the event at Catawba. Based on those discussions we are requesting reconsideration of the violation.

3. Corrective Actions Taken and Results Achieved

- a. A conference call with Region II personnel on September 11, 1989 produced NRC concurrence that the Annulus Ventilation (VE) System's conditionally operable status was adequate while a permanent resolution was under development. On September 12, 1989 a reduction in the VE operating setpoint was selected as the permanent resolution. The VE system operating setpoint was reduced to -1.5 inches water gauge on September 12, 1989. This ensured that the design limit of -0.5 inches water gauge would be satisfied under all operating conditions. A conference call with Region II and NRR personnel on September 12 concluded that Catawba's course of action was satisfactory and that discretionary enforcement was not required. Both trains of VE for both Units were successfully tested at the new operating

setpoints by September 13, 1989. Test procedures have been revised to reflect the new operating setpoint.

- b. All information notices have been reviewed to ensure that they have received an adequate evaluation.
- c. The Operating Experience Program (OEP) ensures that Duke Power will be pro-active in evaluating emerging problems and in looking at similar problems across our system.
- d. Performance tests have been established for VE that have acceptance criteria that are more limiting than Technical Specifications and provide a relationship between the Technical Specification surveillance and the Design Basis accident.

4. Corrective Steps Planned

- a. Design Engineering personnel will review all safety related ventilation system differential pressure transmitters that indicate or control building pressurization (positive or negative) to ensure that reference point differences are accounted for.
- b. Design Engineering personnel will develop a Design Basis document for the VE System. Following completion of this work, FSAR and Technical Specification revisions will be made as appropriate.

5. Date When Full Compliance Will be Achieved

Completion of the above Corrective Steps Planned for the VE System is scheduled for June, 1990. This date allows time to complete the Design Basis Document for the VE System, and prepare necessary license document revisions. As Duke Power is requesting Region II to reconsider this violation or provide more detail on the violation itself, it would be premature to state a final date for full compliance. A final response will be issued if and when a subsequent violation is issued or when additional clarification on this violation is received.