Duke Power Company
Catawba Nuclear Generation Department
4800 Concord Road
York, SC 29745

D. L. Rehn
Vice President
(803)831-3205 Office
(803)831-3426 Fax

DUKE POWER

February 2, 1995

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
Reply to Notice of Violation
Inspection Report Nos. 50-413/94-17 and 50-414/94-17

References: 1. Letter from Albert F. Gibson, NRC to D.L. Rehn, DPCo, dated January 3, 1995

2. Letter from D.L. Rehn, DPCo to NRC, dated November 8, 1994

Gentlemen:

Pursuant to 10CFR2.201(a), please find attached Catawba's reply to the two Level IV violation examples (Examples A.1 and B.2) as cited in Reference 1. Please note that Catawba is again denying that portion of Example A.1 that pertains to the failure to consider Standby Nuclear Service Water Pond (SNSWP) level and temperature instrument inaccuracy. The basis for this denial is explained fully in the attachment.

In addition, in Reference 1, the NRC requested to be informed concerning the planned date for conducting a flow split test for the SNSWP. This test is currently scheduled to be performed in late April of 1995. Catawba will provide the exact date as soon as the test is scheduled. Should this schedule change, Catawba will inform the NRC.

If you have any questions concerning this reply, please call L.J. Rudy at (803) 831-3084.

Very truly yours,

D.L. Rehn

9502150191 950202
PDR ADOCK 05000413
Q PDR

IE01
1/1

Printed on recycled paper

\LJR:RESP94.17.01

Attachment

xc: S.D. Ebneter, Regional Administrator
Region II

R.J. Freudenberger, Senior Resident Inspector

R.E. Martin, Senior Project Manager
ONRR

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
50-413, 414/94-17-02

Notice of Violation

A. 10 CFR 50, Appendix B, Criterion III, "Design Control" requires that "Measures shall be established to assure that applicable regulatory requirements and the design basis ... are correctly translated into specifications, drawings, procedures, and instructions."

Contrary to the above, as of August 1, 1994, applicable design basis had not been correctly translated into specifications, drawings, or procedures in that:

1. The ultimate heat sink analysis did not consider pump heat, inventory loss via seepage or the fire protection, auxiliary feedwater, component cooling water and fuel pool makeup systems, level and instrument inaccuracies causing the theoretical peak temperature of 100°F to be exceeded by 0.5°F.

This is a Severity Level IV violation (Supplement I).

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
50-413, 414/94-17-02

RESPONSE: (Example A1)

1. **Basis for Denying Violation**

In Reference 2, Catawba admitted all portions of Violation Example A1 with the exception of the portion pertaining to the lack of consideration of instrument inaccuracy for SNSWP level and temperature indication. Corrective actions taken to address all other aspects of Violation Example A1 are still valid.

Catawba has reviewed the NRC's position with respect to the application of instrument inaccuracy as documented in Reference 1. In Reference 1, the NRC concluded that the instrument inaccuracy portion of Violation Example A1 should stand based upon the following:

1) The NRC position that the nuclear service water system was accepted on the basis that Regulatory Guide 1.105 would be utilized in factoring instrument error into the inaccuracies of the SNSWP level and temperature instrumentation,

2) The instrumentation loops which monitor the process variables of SNSWP level and temperature are important to safety as defined by NUREG-0800, Standard Review Plan, and

3) The monitored parameters of SNSWP level and temperature are important to safety, and as such, were specifically included in the Catawba Technical Specifications by the NRC.

The NRC disagreed with the Catawba position that the instrument inaccuracy associated with the installed process instrumentation which monitors the process variables of SNSWP level and temperature have an insignificant impact on nuclear safety.

Finally, there appeared to be a misunderstanding with respect to the source of the 0.5°F difference between the SNSWP surveillance temperature (91.5°F) and the starting point of the containment pressure analysis (92°F).

NRC acceptance of the RN system based on utilization of RG 1.105

In Reference 1, the NRC states, *"... the licensee's operating license and design was approved on the basis that the licensee would utilize Regulatory Guide 1.105 for factoring instrument uncertainties into the design control measures for the SNSWP level and temperature as follows: ..."*

The NRC appears to have reached this conclusion from a review of Section 7.1.1 of the Catawba Safety Evaluation Report (NUREG-0954) and the SRP and its referencing of RG 1.105. Section 7.1.1 of the Catawba SER contains a definition of the acceptance criteria for the NRC review of Chapter 7 of the Catawba Final Safety Analysis Report.

However, Section 7.1.2.4.2 of the Catawba FSAR clearly states that RG 1.105 is not applicable to Catawba by virtue of its implementation date. The initial issue of RG 1.105 states that the methods defined in this regulatory guide will be applied to all contruction permits docketed after July 1, 1976. Revision 1 of RG 1.105 states that the methods defined in this regulatory guide will be applied to all contruction permits docketed after December 15, 1976.

The Catawba construction permit was filed with the Atomic Energy Commission on July 24, 1972 and issued on August 7, 1975. Section 7.1.2 of the Catawba SER describes the general findings of the review and accepts Catawba's position with respect to the regulatory guides, industry codes, and standards which were applicable to the design of the instrumentation and control systems at Catawba as defined in Section 7.1.2 of the FSAR. Therefore, it is concluded that the NRC was aware of Catawba's position with respect to the applicability of RG 1.105, and that its use was not a condition for NRC acceptance of the nuclear service water system instrumentation and controls (which includes the SNSWP level and temperature instrumentation).

SNSWP level and temperature process instrument loops' importance to safety

Section 7.4.2 of the Catawba FSAR discusses nuclear service water system instrumentation and control and identifies the instrumentation which performs the automatic swap from Lake Wylie to the SNSWP as the only RN instrumentation important to safety. Therefore, only a single channel of non-safety related process SNSWP level and temperature instrumentation was designed and installed at Catawba. This was reviewed and accepted by the NRC in Section 7.4.1.1.6 of the Catawba SER.

SNSWP level and temperature parameters' importance to safety

In Reference 1, the NRC states, *"Since the SNSWP level and temperature are important to safety (included as such in the licensee's Technical Specification), ..."*.

Catawba maintains that the parameters of SNSWP level and temperature are important, and as such, are appropriately included in the Catawba Technical Specifications; although not all items in technical specifications are "important to safety".

Governing documents for instrumentation and control systems, such as regulatory guides, industry codes, and standards define what is "important to safety". These documents do not maintain that the existence of a technical specification requirement results in the instrumentation and control system being classified as "important to safety".

The surveillance requirement for the SNSWP only requires level and temperature to be verifed every twenty-four hours. The twenty-four hour requirement is consistent with NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors". The NRC does not require a continuous surveillance of SNSWP level and temperature, as would be expected if these parameters were truly "important to safety".

Safety significance of instrument inaccuracy

The above discussion clearly establishes the position that Catawba is not required to perform instrument inaccuracy analysis in accordance with RG 1.105. As discussed in Reference 2 (response to Violation E), the effect of SNSWP instrument inaccuracy was evaluated in order to determine its significance. The results of this evaluation showed that even with instrument inaccuracy applied, the peak containment pressure remained below the technical specification limit of 14.68 psig, and all equipment supported by the nuclear service water system remained fully operable. Therefore, even if Catawba were required to satisfy RG 1.105, applying instrument inaccuracy in this situation results in no benefit with respect to safety significance.

Source of 0.5°F difference between the technical specification SNSWP temperature limit and the containment analysis

In Reference 1, the NRC states, *"Also, the critical nature of the pond temperature was such that a 0.5°F temperature difference was established in the SNSWP*

Technical Specification Bases 3/4.7.5 between the input to the peak containment pressure analysis and the Technical Specification limit of 91.5°F."

This statement indicates that the NRC believes that Catawba consid[illegible]d SNSWP temperature so important, that 0.5°F was added to the 91.5°F technical specification value prior to starting the containment peak pressure analysis. Catawba would like to ensure that the source of this temperature difference is clarified. As detailed in the NRC Safety Evaluation for Technical Specification Amendments 108 and 102 to Facility Operating Licenses NPF-35 and NPF-52, respectively, Catawba originally submitted a technical specification amendment request for a 92°F SNSWP temperature limit. The containment peak pressure analysis was performed at this temperature. During the course of the NRC review, it was noted that this starting temperature for the SNSWP did not allow for the historical difference of 2.4°F between the Duke Power Company analysis methodolgy and the NRC analysis methodolgy. As a result, Catawba submitted a revised technical specification amendment request at a lower temperature of 91.5°F to allow for this historical temperature difference. Because the new SNSWP temperature was lower than the originally analyzed value of 92°F, the containment analysis was not re-performed at the lower temperature. This is the reason for the 0.5°F temperature difference; it was not a belief of a "critical" nature of the SNSWP temperature.

Completed corrective actions

When the issue of SNSWP level and temperature instrument inaccuracy was raised during the Service Water System Operational Performance Inspection (SWSOPI), Catawba took immediate conservative action. This action was to account for instrument inaccuracy, as well as the other factors not considered as stated in the violation example (e.g., pump heat, inventory losses, etc.), by changing the SNSWP temperature and level technical specification surveillance procedure from 91.5°F and 570 feet to 88°F and 570.2 feet. These changes provide additional assurance that the service water supply temperature assumed in the containment pressure analysis (92°F) and the design temperature assumed for long-term nuclear service water pump motor and diesel generator operation (100°F) will not be exceeded. As a conservative measure, Catawba will maintain the above modified SNSWP surveillance procedure in place until this issue is resolved. Catawba's intention is to resolve this issue with the NRC in a timely manner.

With regard to the consideration of instrument inaccuracy in general, procedure EDM-102 was added to the Engineering Documents Manual. This procedure, entitled "Instrument Setpoint/Uncertainty Calculations", provides a consistent, programmatic methodology for the development of setpoint and uncertainty calculations, and is intended to support modification activities and the evaluation of existing setpoints on an as-needed basis.

Planned corrective actions

Refer to Reference 2 (response to Violation E) for a description of planned corrective actions of a programmatic nature which will address the control and application of instrument error as it relates to nuclear station testing.

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
REPLY TO NOTICE OF VIOLATION
50-413, 414/94-17-05

Notice of Violation

B. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Catawba periodic test, PT/1/A/4400/06E, "KD Heat Exchanger 1A Heat Capacity Test," states in step 9.0 under test method that "The heat exchanger under test will have shell side and tube side flow set up as close to design flow as possible. Inlet and outlet temperatures will be taken for both sides of the heat exchanger. From this data, a tube side fouling factor will be obtained."

Contrary to the above:

2. An activity affecting quality was not accomplished in accordance with prescribed procedures in that a flow in excess of 1400 gallons per minute instead of the design flow of 900 gallons per minute was achieved by marking as not applicable steps 12.4, 12.5, and 12.6 which throttle the tube side flow in completed PT/1/A/4400/06E procedures dated October 14, 1992, and August 17, 1993.

This is a Severity Level IV violation (Supplement I).

RESPONSE: (Example B2)

1. **Reason for Violation**

Procedures PT/1(2)/A/4400/06E and PT/1(2)/A/4400/06F stated in Section 9.0 (Test Method) that, "The heat exchanger under test will have shell side and tube side flow set up as close to design flow as possible."

Catawba concurs that the subject procedures were inadequate and required improvement. The Test Method section did not describe the test in the manner in which it was actually being performed in the field. Catawba attributes this violation example to a poorly-worded Test Method section in the procedures and poor followup on procedure revisions to clarify test performance in the field. The Test Method section, which required flows at or near design values, originated in an early version of the procedure and was written before a large amount of baseline data became available. This wording should have been revised to reflect the latest testing methodology that was correctly stated in the body of the procedure.

2. **Corrective Actions Taken and Results Achieved**

Catawba has reviewed the affected procedures and system calculations and has determined that the results of the tests are not adversely affected by the higher flow rates. The calculated heat transfer rate is not adversely affected by varying flow because flow rate is compensated for in the calculations for fouling. The fouling factor program automatically compensates for variance in flow; if flow variables are outside of the assumed boundaries, the program prints a warning statement in the output clearly stating that the results are invalid.

Changes have been previously incorporated in the subject procedures, changing the Test Method section from, "The heat exchanger under test will have shell side and tube side flow set up as close to design flow as possible." to, "The heat exchanger under test will have shell side and tube side flow stabilized before data is recorded."

3. **Corrective Actions to be Taken to Avoid Future Violations**

Catawba will further modify the subject procedures to clarify that flows must be large enough so the Reynolds number is within its acceptable range and small

enough so the flow constraints associated with the integrity of the heat exchanger tubes are not exceeded. This effort will be completed by May 1, 1995.

4. **Date of Full Compliance**

Catawba Nuclear Station is in full compliance.