

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**

June 6, 1995

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

Subject: Catawba Nuclear Station  
Dockets 50-413 and 50-414  
Reply to Notice of Violation  
Inspection Report 50-413, 414/95-10

Attached is Duke Power Company's response to the one (1) Level IV violation cited in Inspection Report 50-413,414/95-10, dated May 5, 1995. This violation was identified during the Resident's Monthly Inspection conducted March 5, 1995 through April 8, 1995.

This response has been delayed beyond the 30 day requirement to allow a more indepth review of this response and subsequent approval. This delay was discussed with R. J. Freudenberger, Senior Resident Inspector, on June 6, 1995.

If there are any questions concerning this response, please contact Kay Nicholson at (803) 831-3237.

Sincerely,

A handwritten signature in dark ink, appearing to read 'D. L. Rehn'.  
D. L. Rehn

\\KEN:RESP95.10

xc: S. D. Ebnetter, Regional Administrator

R. E. Martin, ONRR

R. J. Freudenberger, SRI

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DUKE POWER COMPANY  
CATAWBA NUCLEAR STATION  
REPLY TO NOTICE OF VIOLATION  
413, 414/95-10-01

**Notice of Violation**

*Technical Specification 6.8.1, Procedures and Programs, requires, in part, that written procedures be established, implemented and maintained covering the activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, which includes specific procedures for tests.*

*Procedure PT/0/A/4150/11B, Control Rod Worth Measurement By Rod Swap, Section 6.0, Limits and Precautions, Step 6.8 requires that reactivity be kept between  $\pm 40$  pcm (percent millirho) during rod swaps.*

*Contrary to the above, on March 23, 1995, during the performance of Control Rod Worth measurements, the requirements of procedure PT/0/A/4150/11B were not adequately implemented. Specifically, reactivity exceeded +40 pcm during the performance of Control Rod Worth Measurement By Rod Swap which resulted in over-ranging the reactivity instrumentation and misleading indication of actual reactivity. Misleading indication of reactivity contributed to actions which caused an inadvertent reactor power increase.*

*This is a Severity Level IV Violation (Supplement I).*

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RESPONSE:

1. Reason for Violation

This violation is attributed to inadequate planning, preparation, and job briefing, and inadequate work practices by the control room operator.

On March 23, 1995, Zero Power Physics Testing (ZPPT) was being conducted on the Catawba Unit 1 reactor. The rod swap test was in progress, with the reference bank measurement successfully completed and the rod swap measurements beginning. The test coordinator was conducting the test from the horseshoe area in the control room, using a digital volt meter (DVM) to monitor core reactivity. The test coordinator was located in this area of the control room to enhance the communications between the test coordinator and the control operator. The test coordinator understood the reactivity strip chart recorder, which is located outside the control room horseshoe, was being monitored by the reactor engineering supervisor. Due to miscommunication between the reactor engineering supervisor and the test coordinator, the strip chart recorder was left unattended.

Three rod swaps were successfully performed. During the fourth rod swap, problems with reactivity indications on the DVM led to the inappropriate withdrawal of control rods by the control room operator which exceeded the procedure limits and precautions on positive reactivity addition. The startup rate approached 3 decades per minute and reactor power peaked at approximately 3.5% full power. The reactor operator and test coordinator responded to the event and inserted control rods to their previous configuration, returning the reactor to a critical, hot zero power (HZIP) condition.

Better planning and preparation for this test would have resulted in the strip chart recorder being monitored, such that reactivity could have been kept within the 40 pcm limit. Better job briefings and work practices by the control room operator would have resulted in startup rate and power being monitored more closely, which could have prevented the power increase. The monitoring of the startup rate and power had not been included in the pre-job briefing to remind the control operator to pay special attention to this.

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2. Corrective Actions Taken and Results Achieved

After this event, with the reactor stable and critical at zero power, a meeting was held between personnel involved with the test and the shift work manager and other management personnel to discuss the event. As a result of this meeting and conference calls, it was determined that the following actions would be taken prior to resuming testing:

- a. Pull or insert rods no more than 10 steps at a time during the test and determine the desired effect has occurred before proceeding.
- b. Reactor engineering personnel will be monitoring the reactivity computer chart recorder anytime rods are being moved during the test.
- c. Control Room SRO will be more involved in the test.
- d. Limit the intermediate range power to no more than  $1E-7$  amps

The ZPPT was successfully completed using the actions listed above with no procedure limits and precautions exceeded.

A team comprised of General Office and Oconee Nuclear Site personnel performed an assessment of the implementation of corrective actions in response to the recent INPO finding regarding reactivity management to assure the corrective actions were effective. This assessment was completed in May, 1995; a report will be issued to detail their conclusion.

A Duke Power Significant Event Investigation Team (SEIT) reviewed this event and has made recommendations to improve the ZPPT program and Reactivity Management at the sites. These recommendations are listed in Section 3 as corrective actions to be taken.

3. Corrective Action to be Taken to Avoid Future Violations

System Engineering will incorporate short term corrective actions into permanent station procedures as necessary to improve rod swap testing as a result of this event prior to the next Catawba ZPPT.

Oversight of ZPPT by the control room senior reactor operator will be enhanced prior to the next Catawba ZPPT.

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Operations Training will provide operator proficiency training to operating crews to emphasize the responsibilities of the reactor operator to monitor and control reactivity prior to the next Catawba ZPPT.

A department quality improvement team (QIT) has been initiated to strengthen the ZPPT program and to promote excellence and consistency between Duke nuclear sites. Lessons learned from this event will be considered by the QIT and implemented as necessary to promote excellence. Prior to the next Catawba ZPPT, sufficient implementation of this work will be completed such that similar events will be prevented. The following specific issues will be considered and/or implemented.

- a. The reactivity computer setup during physics testing will be systematically evaluated to determine the best options. The interface between the reactor operator and the test coordinator during rod swap will be improved.
- b. Determine if it is possible to install an annunciator or alarm on the reactivity computer, or temporary OAC alarm, to warn the operator if reactivity or flux exceeds the test band.
- c. Provide training to reactor engineering personnel involved with ZPPT to ensure they understand the operational characteristics of the reactivity computer if it is over ranged.
- d. Briefings for ZPPT and other startup physics testing will be evaluated for possible improvements with respect to standards expressed in SOER 91-01.
- e. All procedures used during startup physics testing will be upgraded to include guidelines of NSD 304, "Corporate Reactivity Management Directive".
- f. Communication techniques between the ZPPT test coordinator and reactor operator will be evaluated for enhancement.

Management will review their actions of this event as a case study to reinforce the principles of conservative decision making.

4. Date of Full Compliance

Duke Power Company is now in full compliance.