



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323

Report Nos.: 50-413/86-03 and 50-414/86-03

Licensee: Duke Power Company  
 422 South Church Street  
 Charlotte, NC 28242

Docket Nos.: 50-413 and 50-414

License Nos.: NPF-35 and CPPR-117

Facility Name: Catawba 1 and 2

Inspection Conducted: January 6-10, 1986

Inspector: S. J. Vias 2/7/86  
 S. J. Vias Date Signed

Approved by: J. J. Blake 2/10/86  
 J. J. Blake, Section Chief Date Signed  
 Engineering Branch  
 Division of Reactor Safety

SUMMARY

Scope: This routine, announced inspection entailed 47 inspector-hours on site and at the licensee's design engineering office in Charlotte, North Carolina, in the areas of pipe support baseplate designs using concrete expansion anchors (IEB 79-02) and seismic analysis for as built safety-related piping systems (IEB 79-14) - Unit 2. Also, inspected and evaluated the information related to the failed supports/restraints in the Auxiliary Steam (SA) System - Unit 1.

Results: Two violations were identified - Failure to follow procedures in restoring to service failed support/restraints, paragraph 5a, and inadequate engineering evaluation of an event that damaged support/restraints, paragraph 5b.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*E. M. Couch, Project Manager, Construction and Maintenance
- \*T. B. Bright, Engineering Manager, Construction and Maintenance
- \*C. L. Ray, Jr., Principal Engineer, Design Engineering
- \*H. B. Barron, Superintendent of Operations
- \*B. F. Caldwell, Superintendent of Station Services
- \*J. W. Cox, Superintendent Technical Services
- \*L. N. Adams, Quality Assurance (QA), Operations
- \*C. L. Hartzell, Compliance
- \*P. G. LeRoy, Licensing Engineer
- \*F. P. Schiffley II, Licensing Engineer

Other licensee employees contacted included construction craftsmen, technicians, operators, QA/QC inspectors, design engineers, and office personnel.

#### NRC Resident Inspectors

- P. Skinner, SRO
- \*P. J. VanDoorn, SRC

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on January 10, 1986, with those persons indicated in paragraph above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

Violation 50-413/86-03-01, Failure to follow procedures in restoring to service failed support/restraints - paragraph 5a.

Violation 50-413/86-03-02, Inadequate engineering evaluation of an event that damaged support/restraints - paragraph 5b.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

### 3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

#### 4. Unresolved Items

Unresolved items were not identified during the inspection.

#### 5. Auxiliary Steam System (SA) Damaged Supports (Unit 1) (92700)

The inspector conducted an independent inspection of the Auxiliary Steam (SA) System support/restraint damages that was discovered on January 3, 1986, to determine the systems integrity/operability. The inspector held discussions with selected licensee personnel in the areas involved in the restoration of the support/restraints and the engineering evaluation of the event, including design engineers, mechanical maintenance, and quality assurance/control (QA/QC) inspectors.

On the morning of January 3, 1986, the licensee's field personnel reported to design engineering that the "SA" line had damage to four pipe supports (1-R-SA-1505, 1-R-SA-1507, 1-R-SA-1508, and 1-R-SA-1510). Design Engineering personnel began evaluating the damage based on the data from the field personnel. Engineering concluded that all four supports were required for the system to be declared operational, and instructed the craft to restore the four hangers including minor modifications to the anchor bolts. On the morning of January 6, 1986, the field personnel reported to engineering that they were not going to be able to install one of the four supports (1-R-SA-1510) by the deadline, as required by the Technical Specifications, Section 3.7.8. At this time, Engineering concluded that they were not going to be able to complete an analysis of the system without the fourth support, so the licensee declared the SA system inoperable.

- a. During the inspection of the four supports, which had been signed off as complete and acceptable by QC, the inspector noted that restraint 1-R-SA-1507 was not properly reinstalled per the design drawing. The pipe clamp had rotated approximately four degrees due to the pipe movement and the angle between the strut and clamp axis was approximately nine degrees. In specification CNS-1206.00-04-003, "Procedure Requirements for Fabrication and Erection of Hangers, Supports and Seismic Controls", Section 7.10.B.4.a, states: "The strut axis must remain within an eight degree cone of action from the pipe clamp load stud...". In procedure MP/O/A/7650/59, "Controlling Procedure for Support/Restraint Maintenance Activities", Section 11.3.7, states: "The newly installed/restored to service support/restraint shall meet the requirements of all applicable design drawings and documents and this procedure". Section 11.3.7.1, states: "Perform maintenance inspection of support to verify it conforms to the requirements of this procedure and referenced documents".

Contrary to the above, procedures for the restoring and inspection of the pipe support were not being met. This is a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", and is identified as Violation 50-413/86-03-01, Failure to Follow Procedures in Restoring to Service Failed Support/Restraints.

- b. On January 7, 1986, during the inspection of the SA line and the four damaged supports, the inspector noted that damage to insulation due to the movement of the pipe indicated that there was a possibility that the snubber in restraint 1-R-SA-1529 could have bottomed out. The inspector inquired if the licensee had looked into this possibility and if they had ascertained that the snubber could be stroked properly, or if the setting was correct, the licensee stated that they had not and they would issue a rework order. In the evening of January 8, 1986, the inspector was told that an additional support was found to be damaged and that an additional rework order was issued to repair 1-R-SM-1534. It was after identifying a fifth damaged support, that the field personnel decided to walkdown the SA line to ascertain if there was any additional damage to any other supports, piping, and equipment and/or structures. It was found that four additional supports were slightly damaged, (1-R-SA-005, 1-R-SA-006, 1-R-SA-009, and 1-R-SA-027). During a telephone conversation between nuclear production and design engineering, on the morning of January 9, 1986, nine additional hangers were listed as having sustained some damage. In correspondence from the Civil Engineering/Environmental Division to the Nuclear Maintenance, dated January 9, 1986, it was concluded that based on engineering review and evaluation of all the corrective actions taken to date, including the last 13 hangers reported the morning of January 9, 1986, the affected portion of the SA system was operable with no further action required.

With respect to the above, the first evaluation done by Design Engineering on January 3, 1986, was inadequate. This is a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action", and is identified as Violation 50-413/86-03-02, Inadequate Engineering Evaluation of an Event that Damaged Support/Restraints.

6. Safety-Related Pipe Supports and Restraints System (50090) Unit 2

The inspector selected the following sample of eight hangers/supports in the area of dynamic pipe supports and component support structures that had been QC final inspected.

<u>Hanger Number</u>	<u>System</u>	<u>Type</u>
2-R-CA-1021	Auxiliary Feedwater	#1 Strut
2-R-CA-1024	Auxiliary Feedwater	#3 Snubber
2-R-CA-1626	Auxiliary Feedwater	#3 Spring
2-R-CA-1645	Auxiliary Feedwater	#6 Spring
2-R-CA-1646	Auxiliary Feedwater	# 1/2 Snubber
2-A-NI-4233	Safety Injection	Double #000 Springs
2-R-ND-0316	Residual Heat Removal	#8 Spring
2-R-ND-0324	Residual Heat Removal	#8 Spring

Design Calculations for the eight supports were reviewed and evaluated for thoroughness, clarity, consistency, and accuracy. They appeared to be adequate in terms of using design input, references, units (dimension,

force, and movement), equations, tables, and computer analytical models. In general, design calculations were of good quality.

Within the areas examined, no violations or deviations were identified.