

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

Report Nos.: 50-413/87-35 and 50-414/87-35 Licensee: Duke Power Company 422 South Church Street Charlotte, NC 28242 Docket Nos.: 50-413 and 50-414 License Nos.: NPF-35 and NPF-52 Facility Name: Catawba 1 and 2 Inspection Conducted: October 19-23, 1987 Inspectors: Crowley 11-10-87 Date Signed Approved by 187 10 J. J. Blake, Chief Date Signed Materials and Processes Section /Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of Inservice Inspection (ISI), (Units 1 and 2) and Maintenance Program (Units 1 and 2).

Results: No violations or deviations were identified.

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## REPORT DETAILS

## 1. Persons Contacted

Licensee Employees

\*J. W. Hampton, Station Manager
J. W. Willis, QA Station Manager
\*R. F. Wardell, Superintendent of Technical Services
\*G. Smith, Superintendent of Maintenance
G. B. Robinson, Supervising QA Engineer - QA Technical
\*C. B. Cheezem, QA - ISI Engineer
\*J. E. Cherry, QA - ISI Specialist
\*R. C. Giles, QA - ISI Coordinator
T. A. Bumgardner, QA - ISI Coordinator
H. D. Mason, QA Engineer - Technical Support - Mechanical
J. A. Kinard, Technical Specialist - Welding - CMD
T. W. Huffstickler, Welding Engineering Technician - CMD
M. A. Cote', Compliance Specialist
M. L. Cornwell, Mechanical Maintenance Technical Support

Other licensee employees contacted included QA/QC personnel, engineers, security force members, and office personnel.

Other Organization

R. L. Rawlings, QC Specialist, Babcock & Wilcox (B&W)

NRC Resident Inspectors

P. K. VanDoorn, Senior Resident Inspector \*M. Lesser, Resident Inspector

\*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on October 23, 1987, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

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

5. Inservice Inspection - Review of Program (73051) (Units 1 and 2)

The inspectors reviewed the licensee's inservice inspection (ISI) program for the current Unit 1 outage (Outage 2) in the areas indicated below. With exception of Volume 2 of the ISI Plan, all documents reviewed were applicable to both Units 1 and 2. In accordance with Revision 2 of the ISI Plan (submitted to the NRC on August 18, 1986), the applicable code is the ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition with Addenda through W81. The current ISI was being performed under the Duke Power Company (DPC) ISI Plan listed below with DPC having the primary responsibility. Both DPC and B&W examiners were being used.

Many of the documents listed below were reviewed during previous inspections (See RII reports 50-413/86-34, 50-414/86-37, 50-413/86-42 and 50-414/86-45. During the current inspection, only changes since the last review were examined.

- a. The following DPC and B&W documents were reviewed:
  - DPC Inservice Inspection Plan, Catawba Nuclear Station Units 1 and 2, Revision 3, Volumes 1 and 2
  - DPC QA Department Quality Assurance Program, Revision 84
  - Procedure QA-100, Revision 10, Preparation and Issue of Quality Assurance Procedures
  - DPC QA-101, Revision 6, Quality Assurance Records Storage Area (General Office - Corporate Vault)
  - DPC QA-102, Revision 6, Storage of Special Processed Records
  - DPC QA-107, Revision 3, Temporary Procedure Changes
  - DPC QA-111, Revision 4, Transfer of QA Records
  - DPC QA-113, Revision 7, Qualification and Training of Auditors
  - DPC QA-116, Revision 10, Quality Assurance Records Collection, Storage and Retention
  - DPC QA-123, Revision 1, Processing of Nonconforming Item Report By Quality Assurance General Office Personnel
  - DPC QA-125, Revision 1, Problem Investigation Process
  - DPC QA-130, Revision 15, Qualification and Training of Auditors

- DPC QA-131, Revision 10, Quality Assurance Training

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- DPC QA-132, Revision O, Qualification and Training of Operations Division Surveillance Personnel
- DPC QA-140, Revision 12, Quality Assurance Inspector Training
- DPC QA-160, Revision 2, Performance of Corporate Quality Assurance Audits
- DPC QA-210, Revision 20, Departmental Audit Procedure
- DPC QA-230, Revision 10, Departmental Audit Scheduling and Followup
- DPC QA-301, Revision 8, Management of Project QA Records
- DPC QA 500, Revision 19, Operations Division Surveillance Program
- DPC QA-502, Revision 5, Evaluating and Approving Quality Control Inspection Records
- DPC QA-504, Revision 16, Quality Assurance Records, Operations
- DPC-QA-513, Revision 5, Control of Inservice Inspection Plans and Reports
- DPC QA-516, Revision O, Evaluation of ISI Indications
- DPC QA-601, Revision 14, Vendor Evaluation
- DPC QA-602, Revision 10, Vendor Surveillance Procedure
- DPC QCL-5, Revision 8, Control of Preservice and Inservice Inspection Activities
- DPC QCK-1, Revision 23, Control of Nonconforming Items
- DPC NDE-A, Revision 8, Nondestructive Examination Program Procedure
- DPC NDE-B, Revision 12, Training, Qualification and Certification of NDE Personnel
- B&W Quality Assurance Manual Special Products and Integrated Field Services (SPIFS), Revision 4

- B&W SPIFS 1986 Administrative Manual, Revision O

and and

The documents were reviewed in the areas of:

- Conformance with ASME B&PV, Code, Section XI and applicable code cases
- Approval of code cases
- Use of an authorized nuclear inservice inspector (ANII) and approval of plan and procedures by the ANII.
- Review and approval of the ISI plan and procedures
- Identification of commitments and regulatory requirements
- Procedures for preparing plans and schedules and filing with enforcement and regulatory authorities
- Sufficient organizational staff to ensure performance of acceptable ISI work
- Site administrative procedures to define authorities and responsibilities for final evaluation and acceptance of ISI results
- Maintenance and retention of appropriate ISI records
- QA review including assurance that plans and procedures have been reviewed by appropriate personnel and meet regulatory requirements
- Establishment of procedures for corrective action
- Procedures for auditing ISI activities by qualified QA personnel
- Corrective action of conditions adverse to quality
- Audits or surveillance of ISI activities
- Oversee contractor activities concerned with ISi
- Personnel qualification requirements
- Reporting requirements per ASME code and Technical Specifications
- Identification and process of relief requests
- b. In addition to the above programmatic review, the inspectors reviewed drawings and procedures for the system leakage tests for class 1 components, to determine whether the test boundaries were properly established and valves were positioned correctly for the tests.

Section XI, Table IWB-2500-1 of the ASME Code requires that a system leakage test be conducted prior to plant startup following each reactor refueling outage. The following drawings and procedures were reviewed to insure that DPC's Class 1 leak test program for the Catawba facility complies with the requirements of the ASME Code:

## Drawing/Procedure No.

## Title

DWG.CN-1553-1.0	Reactor Coolant System (NC)
DWG.CN-1562-1.4	Safety Injection System (NI-Upper Head)
DWG.CN-1562-1.3	Safety Injection System (NI)
DWG.CN-1562-1.2	Safety Injection System (NI)
DWG.CN-1562-1.1	Safety Injection System (NI)
DWG.CN-1562-1.0	Safety Injection System (NI)
DWG.CN-1561-1.1	Residual Heat Removal System (ND)
DWG.CN-1561-1.0	Residual Heat Removal System (ND)
DWG.CN-1554-1.5	Chemical and Volume Control System (NV)
DWG.CN-1554-1.0	Chemical and Volume Control System (NV)
DWG.CN-1553-1.2	Reactor Coolant System (NC)
DWG.CN-1553-1.1	Reactor Coolant System (NC)
PT/1/A/4150/01A	Reactor Coolant System Leak Test
OP/1/A/6100/01	Controlling Procedure for Unit Startup
PT/1/A/4600/16	Surveillance Requirements for Unit 1 Startup

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

6. Inservice Inspection - Review of Procedures (73052) (Units 1 and 2)

The inspectors reviewed the ISI procedures indicated below to determine whether the procedures adequately covered the required aspects of the approved ISI program. See paragraph 5 above for the applicable code.

Many of the procedures were reviewed during previous inspections (See RII Inspection Report Nos. 50-413/86-34, 50-414/86-37, 50-413/86-42, and 50-414/86-45). During the current inspection, only changes to the procedures since the last review were examined.

- a. The following procedures were reviewed in the areas of: compliance with licensee commitments; approval of procedures by the ANII; qualification of NDE personnel; recording, evaluating, and dispositioning of findings; records retention; and specification of responsibilities of licensee and contractor personnel.
  - DPC .NDE-12, Revision 5, General Radiography Procedure for Preservice and Inservice Inspection

- DPC NDE-25, Revision 10, Magnetic Particle Examination Procedure and Techniques
- DPC NDE-35, Revision 9, Liquid Penetrant Examination
- DPC QCL-13, Revision 5, ISI Visual Examination, VT-1
- DPC QCL-14, Revision 7, ISI Visual Examination, VT-3 and VT-4
- B&W ISI-1, Revision 6, Administrative Procedure for Control of Inservice Procedures and Procedure Qualifications
- B&W ISI-104, Revision 24, Ultrasonic Examination of Threads In Flanges and of Studs and Bolts
- B&W ISI-114, Revision 6, Ultrasonic Examination of Calibration Blocks to Determine Block Quality
- B&W ISI-117, Revision 11, Ultrasonic Examination of Reactor Coolant Pump Motor Flywheel Forging
- B&W ISI-119, Revision 7, Ultrasonic Examination of Stainless Steel and Nickel Alloy Weld Seams
- B&W ISI-120, Revision 25, Ultrasonic Examination of Piping and Vessel Welds Joining Similar and Dissimilar Materials
- B&W ISI-125, Revision 5, Ultrasonic Examination for Intergranular Stress Corrosion Cracking in Stainless Steel or Nickel Base Alloy Piping
- B&W ISI-130, Revision 23, Ultrasonic Examination of Vessel Welds and Nozzle Inside Radius Sections
- B&W ISI-131, Revision 12, Remote Ultrasonic Examination Using the ARIS Device
- B&W ISI-187, Revision O, Ultrasonic Examination of Reactor Vessel Flange to Shell Weld From Flange Top Surface
- b. Procedure NDE-35 was reviewed for technical content relative to: method consistent with ASME Code, specification of brand names of penetrant materials, specification of limits of sulfur and total halogens for materials, pre-examination surface preparation, minimum drying time following surface cleaning, penetrant application and penetration time, temperature requirements, method of applying emulsifier (when applicable), method of removing penetrant, method of surface drying prior to developer application, type of developer and method of application, examination technique and conditions, minimum lighting requirements, technique for evaluation of indications, reporting requirements, and acceptance criteria.

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- c. Procedure NDE-25 was reviewed for technical content relative to: examination method, surface preparation, use of color contrast particles, surface temperature, light intensity, coverage, prod spacing, magnetizing current, yoke pole spacing, and acceptance criteria.
- d. Procedures QCL-13 and QCL-14 were reviewed for technical content relative to: method-direct visual, remote visual or translucent visual; how visual examination is to be performed; type of surface condition available; surface preparation, if any; whether direct or remote viewing is used; special illumination, instruments, or equipment to be used, if any; sequence of performing examination, when applicable; data to be tabulated, if any; acceptance criteria specified and consistent with the applicable code section or controlling specification; and report form completion.
- e. The UT procedures listed in paragraph a. above were reviewed for technical content relative to: method consistent with ASME Code, specification of branch names of penetrant materials, specification of limits for sulfur and total halogens for materials, pre-examination surface preparation, minimum drying time following surface cleaning, penetrant application and penetration time, temperature requirements, method of removing penetrant, method of surface drying prior to developer application, type of developer and method of application, examination technique and conditions, technique for evaluation, and acceptance criteria.

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

 Inservice Inspection - Observation of Work and Work Activities (73753) (Unit 1)

The inspectors observed the ISI activities described below to determine whether these activities were being performed in accordance with regulatory requirements and licensee procedures. See paragraph 5 above for the applicable code.

- a. The inspectors reviewed the licensee's ISI Plan and schedule for the current inspection period to determine if the inspection plan concerning component selection, calibration block size and method of examination had been properly documented and approved.
- b. Qualification and certification records of the visual and liquid penetrant examination personnel observed by the inspectors were reviewed to ascertain whether the qualification and certification records properly reflected the following:
  - Employer's name
  - Person certified

- Activity qualified to perform
- Level of certification

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- Effective period of certification
- Signature of individual certifying title and level
- Basis used for certification, such as the required number of training hours, for the examination method specified.
- Annual visual acuity, color vision examination, and periodic recertification
- c. The following three different methods of examination were observed by the inspectors:
  - (1) Visual Examination of Component Supports and Snubbers

The inspectors observed the visual examinations of the following snubbers and supports:

Snubbers/Support DWGID

1-R-KC-0458, Rev. 5 1-R-KC-0462, Rev. 4 1-R-KC-0465, Rev. 5 1-R-RN-0120, Rev. 6 1-R-KC-0463, Rev. 10 1-R-KC-0461, Rev. 7 1-R-KC-0457, Rev. 9 1-R-RN-0259, Rev. 5

The examinations were performed in accordance with Procedure No. QCL-14 by a Level II, DPC visual examiner.

(2) Liquid Penetrant Examination of Piping and Components

The inspectors observed the liquid penetrant examination of the following welds:

Weld No.	Component/Piping Configuration		
1PZR-W2SE	Pressurizer Spray Nozzle Safe-end		
1PZR-W3SE	Pressurizer Relief Nozzle Safe-end		
1NC-173-01	Reactor Coolant Piping Terminal End		
1NC-190-24	Reactor Coolant Piping Terminal End		

The examinations were performed in accordance with Procedure NDE 35 A-F Revision 9 by two DPC Level II, liquid penetrant examiners.

(3) Ultrasonic Examination Using the Manual A Scan Technique

The inspectors observed B&W Level II and DPC Level I examiners perform the instantent calibrations for the welds listed in (2) above. The following instruments and calibration blocks were involved in the  $45^\circ$  and  $60^\circ$  calibrations for examination of the welds.

UT Instrument ID	Calibration Due Date		
SN-1344	5-12-88		
SN-1346	1-7-88		
SN-1288	5-12-88		
SN-1343	1-7-88		
SN-1345	1-7-88		

Calibration Blk ID

For each methods of examination delineated above, the inspectors verified that the following requirements were met:

- Approved procedures were available, were being followed, and specified nondestructive examination (NDE) equipment and materials being used.
- Examination personnel are knowledgeable of examination method and operation of test equipment.
- Examination personnel with proper level of qualification and certification were performing the various examination activities.
- Examination and calibration reports, results, evaluations and corrective actions were recorded as specified in the ISI Program and NDE procedures.

Within the area examined, no violation or deviation was observed.

8. Maintenance Program (62702) (Units 1 and 2)

The inspector reviewed the licensee's mechanical maintenance program in the areas indicated below. Requirements are specified in various Regulatory Guides, Section 6 of the Technical Specifications, and ANSI N18.7-1976. The following licensee documents were reviewed to the extent necessary to assure that procedures were in place (written, approved, issued, and implemented) to control the activities detailed below:

- Administrative Policy Manual (APM), Revision 25

Section	3.3	-	Maintenance
Section	3.5	-	Inspections
Section	3.6	-	Special Processes
Section	3.11	-	Housekeeping
Section	4.6	-	Administrative Instructions for Work
Section	4.0		Requests

- Station Directives

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2.1.7 (TS), Revision 3, FSAR and Technical Specification Amendment Processing and Interpretation

2.2.1 (SS), Revision 36, Procedure for Records Management

3.1.1, Revision 18, Safety Tags and Delineation Tags

3.3.1, Revision 3, Determination of QA Condition for Structures, Systems and Components

3.3.3 (M), Revision 4, Preventative Maintenance Program

3.3.4 (M), Revision 1, Nuclear Plant Reliability Data System (NPRDs)

3.3.5 (M), Revision 8, Preventative Maintenance Review Committee

3.3.7 (M), Revision 6, Work Request Preparation

3.3.9, Revision 3, Hot Work Procedure

3.3.12 (M), Revision O, Equipment Qualification Program

3.11.1 (AS), Revision 16, Housekeeping and Cleanliness Levels in Safety and Nonsafety-Related Areas

3.11.4, Revision O, Reactor Building Personnel/Material Accountability

4.2.2, Revision 1, Independent Verification Requirements

CNS Maintenance Manual, Maintenance Management Procedures (MMPs)

1.0, Revision 22, Work Request Preparation

1.6, Revision 2, Housekeeping Requirements During Maintenance Activities on Open Systems and Components

3.0, Revision 10, Preventative Maintenance Program

6.3, Revision 1, Administration of the Mechanical Maintenance Procedure Development

- DPC Quality Assurance Procedure Manual
- DPC Quality Control Procedures Manual
- DPC Welding Manual, Procedure L100, Revision 11, Welding Program
- DPC QA Department NDE Program Manual
- CNS Maintenance Manual Welding Section
- CNS Power Chemistry Materials Guide Manual
- CNS Equipment Qualification Reference Index (EQRI) Document No. CNLT 1780.03-01, Revision 6

The documents were reviewed in the following areas:

- a. Corrective Maintenance reviewed in the areas of:
  - (1) Written procedures for initiating requests for maintenance
  - (2) Criteria and responsibilities for review and approval of maintenance requests
  - (3) Criteria and responsibilities for designating an activity as safety-related or nonsafety-related
  - (4) Criteria and responsibilities for performance of inspections of maintenance activities
  - (5) Provisions and responsibilities for identification of inspection hold points
  - (6) Methods and responsibilities for performing functional testing following maintenance prior to returning equipment to service

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- (7) Administrative controls for maintenance records including:
  - approval of maintenance requests
  - identification of personnel who performed maintenance tasks
  - identification of personnel who inspected maintenance work
  - reason for maintenance work

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- description of corrective action
- identification of functional tests
- identification of personnel performing functional tests
- identification of replacement parts or materials
- identification of test and measuring equipment
- (8) Responsibilities for assembly and review of above records for transfer to storage
- (9) Review of completed records to access adequacy of preventative maintenance records
- (10) Responsibilities to assure implementation of record review
- (11) Work control procedure relative to requirements for special authorization and fire watch when burning, welding, cutting, etc., near flammable material, cable trays, vital equipment, etc.
- (12) Incorporation of Technical Specification (TS) revisions into plant requirements
- b. Equipment Control reviewed in the areas of:
  - Operating staff granting permission to release equipment for maintenance
  - (2) Identification and control of environmentally qualified material and equipment
  - (3) Documentation of testing of redundant components or systems when required by technical specification or 10 CFR 50
  - (4) Clear identification of status of equipment or systems
  - (5) Determination when independent verification has been implemented correctly
  - (6) Procedures and responsibility for returning equipment to service
  - (7) Incorporation of TS revisions into plant requirements

С.	Preventative	Maintenance	- reviewed	in the areas of	:
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- (1) Responsibility for the program
- (2) Master schedule for preventative maintenance
- (3) Documentation and review of completion of preventive maintenance activities
- (4) Responsibilities and methods for establishing PM frequencies
- (5) Responsibility for periodic upgrading based on system or component failures
- (6) Methods for incorporating revisions to TS into plant requirements

Special Processes - reviewed in the areas of: d.

- (1) Administrative controls for special processes including.
  - use of qualified procedures
  - use of qualified personnel
  - current file or qualification records of procedures and personnel
- (2) Assignment of responsibilities for the above special process activities
- Cleanliness Controls reviewed in the areas of: e.
  - (1) Development of procedures for cleaning safety-related components and systems
  - (2) Establishment of procedures for maintaining cleanliness of previously cleaned systems
  - (3) Establishment of cleanliness classifications of plant systems
  - (4) Assignment of responsibilities for cleanliness activities
- Housekeeping Controls reviewed in the area of: f.
  - (1) Definition of housekeeping zones
  - (2) Control of housekeeping during work activities

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

9. Maintenance Program Implementation (62700) (Unit 1)

The inspectors examined the maintenance activities described below to determine whether these activities were being performed in accordance with regulatory requirements and licensee procedures. See Paragraph 8 above for reference to applicable standards and procedures.

The following in-progress maintenance/modification activities were examined to determine if the maintenance program was being properly implemented.

a. Work Request 7707MNT - Shot Peening of Steam Generator (S/G) Tubes

During the current outage, B&W was shot peening all S/G tubes. The area being peened started at the tube to tube sheet weld and extended 23" into the tubes on the hot leg side.

The inspectors (1) reviewed the Work Request and referenced B&W procedure 1163035A.9, (2) discussed the shot peening process and controls of the process with B&W and DPC responsible personnel, (3) reviewed QC sign-off requirements for the process, and (4) observed the remote operation of the peening equipment during actual peening operations.

b. Work Request 10933NSM - Removal of the Upper Head Injection System

DPC was in the process of removing the Upper Head Injection System in accordance with modification NSM CN-10910.

The inspectors (1) reviewed the Work Request, (2) discussed the work with responsible licensee personnel, (3) reviewed referenced procedure TN/1/A/0910/00/AM1, (4) reviewed incomplete field Weld Data Sheets 1NC286-1, 2, 3, and 4 on ISO CNM 1201.01-424.001/CN1NC 286 for capping the reactor vessel head penetrations, and (5) reviewed welder qualification records for six welders trained and qualified for capping the penetrations.

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