

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

Report Nos.: 50-413/86-42 and 50-414/86-45

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

Docket Nos.: 50-413 and 50-414

License Nos.: NPF-35 and NPF-48

Facility Name: Catawba 1 and 2

Inspection Conducted: September 29 - October 3, 1986

Inspector: Β. R. Crowley Approved by: J. Blake, Section Chief, Engineering Branch Date gned Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of inservice inspection (ISI) (Units 1 and 2) and maintenance/modification welding and nondestructive examination (NDE) (Units 1 and 2).

Results: No violations or deviations were identified.

REPORT DETAILS

Persons Contacted 1.

Licensee Employees

- *G. T. Smith, Superintendent of Maintenance
- *J. W. Cox, Superintendent of Technical Services
- J. M. Frye, Quality Assurance (QA) Manager Audit Division
- *J. W. Willis, Senior OA Engineer
- *C. B. Cheezem, QA Engineer ISI
- W. H. Bradley, QA Surveillance Supervisor
- D. Dalton, Technical Services QA
- *F. P. Schiffley, Licensing Engineer
- J. Glen, Compliance
- *J. E. Cnerry, OA Specialist ISI
- R. G. Rouse, QA Specialist
- *J. A. Kinard, Technical Specialist Welding
- J. F. Bumgarner, Technical Support QA R. C. Giles, ISI Coordinator
- T. A. Bumgardner, ISI Coordinator
- J. W. Huffstickler, Engineering Technician Welding T. M. Mauldin, NPD Specialist Welding
- J. L. Lynch, NPD Specialist Welding

Other licensee employees contacted included construction craftsmen, engineers, technicians, QC personnel, security force members, and office personnel.

Other Organization

R. J. Patterson, Group Leader - ISI - Babcock & Wilcox (B&W) W. J. Persinger, ISI Coordinator - 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 3, 1986, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

(Open) Inspector Followup Item 413/86-42-01, 414/86-45-01, Review of Section XI Manual - paragraph 5.c

(Open) Inspector Followup Item 413/86-42-02, 414/86-45-02, Revision of Welder Qualification Procedure - paragraph 7.a.(3)(a)

(Open) Inspector Followup Item 413/86-42-03, 414/86-45-03, Review of Revised PT Procedure - paragraph 7.b.

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 (92702)

This subject was not addressed in the inspection.

Unresolved Items (92701)

Unresolved items were not identified during the inspection.

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

The inspector reviewed the licensee's inservice inspection (ISI) program for the current Unit 1 outage 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 ISI Plan listed below with DPC having the primary responsibility. DPC was responsible for performing all examinations except ultrasonic (UT) and eddy current (ET), which were being performed by B&W to B&W procedures.

See RII report 50-413/86-34,50-414/86-37 for documentation of a previous inspection in this area.

- a. The following DPC and B&W documents were reviewed:
 - DPC Inservice Inspection Plan, Catawba Nuclear Station Units 1 and 2, Revision 2, Volumes 1 and 2
 - DPC QA Department Quality Assurance Program, Revision 84
 - DPC QA-111, Revision 4, Transfer of QA Records
 - DPC QA-116, Revision 9, Quality Assurance Records Collection, Storage and Retention
 - DPC QA-130, Revision 6, Qualification and Training of Auditors
 - DPC QA-131, Revision 9, Quality Assurance Training

1	DPC QA-132, Revision O, Qualification and Training Operations Division Surveillance Personnel
-	DPC QA-160, Revision 2, Performance of Corporate Quality Assurance Audits
-	DPC QA-210, Revision 19, 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-502, Revision 5, Evaluating and Approving Quality Control Inspection Records
-	DPC QA 500, Revision 18, Operations Division Surveillance Program
-	DPC QA-504, Revision 15, Quality Assurance Records, Operations
-	DPC QA-513, Revision 5, Control of Inservice Inspection Plans and Reports
-	DPC QA-601, Revision 12, Vendor Evaluation
-	DPC QA-602, Revision 9, Vendor Surveillance Procedure
-	DPC QCK-1, Revision 13, Control of Nonconforming Items DPC QCL-5, Revision 5, Control of Preservice and Inservice Inspection Activities
-	DPC NDE-B, Revision 11, Training, Qualification and Certification of NDE Personnel
-	DPC Catawba Audit Schedule, Section I, Revision 3.2
-	DPC Operations 1986 Audit Schedule
-	DPC Audit Plan - Departmental Audit NP-86-18 (CN)
-	B&W Quality Assurance Manual - Special Products and Integrated Field Services (SPIFS), Revision 4
	B&W SPIFS 1986 Administrative Manual, Revision O

The documents were reviewed to assure that procedures and plans had been established (written, reviewed, approved, and issued) to control and accomplish the following activities:

- Maintenance and retention of appropriate ISI records
- 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 review of the above documents pertaining to ISI, the inspector reviewed licensee administrative and maintenance procedures to ascertain that requirements of articles IWA-4000 and IWA-7000 of ASME Section XI for repairs and replacements were covered. The review of the welding program (see paragraph 7 below) also included a review for repairs and replacements.
- c. Based on reviews of paragraphs a. and b. above and reviews performed previously (see RII Report 50-413/86-34, 50-414/86-37), it appears that ASME Section XI requirements are being met. However, the inspector found that it is very difficult and cumbersome to ensure that all requirements are being met since the programs are covered in many different site and corporate procedures. There is not a tie-together document for ISI or repairs and replacements. Discussions with the licensee revealed that the licensee has recognized this problem and management has initiated actions to write a Section XI Manual. The inspector reviewed licensee correspondence, the outline, and initial draft of the first two sections for the manual. The ISI program will be reviewed further after implementation of the manual. Inspector Followup Item 413/86-42-01,414/86-45-01, Review of Section XI Manual, is opened.

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

6. Inservice Inspection Date Review and Evaluation (73755) (Unit 1)

The inspector reviewed the ISI records described below for the current outage to determine whether the records were consistent with regulatory and code requirements. See paragraph 5 above for the applicable code. a. NDE records for the following bolted connections were reviewed:

Item B07-050-002 Connection CN-INC-57-MJ1

Item B07-050-050 Connection CN-INV-483-MJ1

Item B07-050-051 Connection CN-INV-483-MJ2

Item B07-050-052 Connection CN-INV-487-MJ1

Item B07-050-053 Connection CN-INV-488-MJ1

Item B07-060-001 Connection 1-RCP-1A-5

The records were reviewed to ascertain that the following was included or referenced:

- Examination results and data sheets
- Examination equipment data
- Calibration data
- Evaluation data
- Extent of examination
- Deviations from program
- Disposition of findings
- Re-examination after repair work, if applicable
- Identification of NDE materials
- b. The following in-process Problem Investigation Reports (PIRs) related to ISI findings were reviewed:

1-C86-0010 1-C86-0012 1-C86-0014 1-C86-0015 1-C86-0016 1-C86-0018 1-C86-0019 1-C86-0020 1-C86-0021 1-C86-0025 1-C86-0027 1-C86-0029 1-C86-00291-C86-0031 Within the areas inspected, no violations or deviations were identified.

7. Maintenance/Modification Welding and NDE (Units 1 and 2)

The inspector examined the welding and NDE activities described below relative to maintenance/modification to determine whether applicable code and regulatory requirements were being met. In general, the governing code is the ASME Boiler and Pressure Vessel Code (B&PV), Section XI, 1980 Edition, W81 Addenda. The general controls are specified in the following sections of the Catawba Nuclear Station Maintenance Welding Manual:

Section I, Revision 6, Identification and Control of class A, B, C, E and F Piping

Section III, Revision 4, Welding of Nuclear Structures (Containment and Canal Liner Plate, Structural and Miscellaneous QA Condition Steel) and Non-QA Structures

Section I identifies ASME B&PV Code Section III, 1974 Edition, S74 Addenda as the applicable code for pipe welding. In addition, various editions and addenda of the following codes are being used:

ASME B&PV Code Section V ASME B&PV Code Section IX AWS Structural Welding Code D1.1

In addition to the above documents, the following administrative and QC inspection procedures are applicable:

QCL-8, Revision 12, Procedure for the Inspection of QA Condition 2, 3, and 4 Field Fabricated Pipe Welds

QCL-9, Revision 4, Procedure for the Inspection of Containment Plate, Canal Liner Plate, & Spent Fuel Pool liner Plate (McGuire & Catawba Nuclear Stations only)

QCL-10, Revision 9, Procedure for the Examination of Structural and Miscellaneous Steel Welds

QCL-11, Revision 4, Procedure for the Inspection of Temporary Attachment Welds

MM Procedure 1.0, Revision 20, Work Request Preparation

a. Welding (55050 and 55100)

(1) Welding Material Control

The inspector performed the following verifications related to control and handling of welding material:

That the contractor had established procedures for purchasing, receiving, storing, disbursing, and handling of welding materials. The applicable procedures are:

> CNS Maintenance Welding Manual, Section VIII, Revision 2, Issue, Control and Care of QA Condition Welding Material

Construction Department Procedure CDB-4, Revision 2, Standardized Filler Material and Electrode Requirements

QCG-1, Revision 26, Receipt, Inspection, and control of QA Condition Materials Parts and Components Except Nuclear Fuel

QCG-3, Revision 2, Inspection of Items in Storage

Administrative Policy 2.4, Revision 23, Controls of Materials, Parts and Components

QA-505, Revision 21, Processing of Procurement Documents for Operational Nuclear Stations

OA-115, Revision 3, Handling Procurement and Vendor Records

- That purchasing and receiving operations were conducted in accordance with applicable procedures. Purchasing and receiving records for the welding materials listed below were reviewed.
- That welding material storage and handling procedures contained requirements for environmental control and that actual practice followed these requirements. The NPD rod issue station and rod issue station number 2 were inspected.
- That there were effective procedures for maintaining identification of welding materials and that procedures were enforced.
- That the welding material control system met the requirements for the most restrictive application and personnel involved were knowledgeable of the system.
- That the method of disbursement of welding materials was effective and controlled in accordance with approved procedures.
- That required ASME Code tests were performed on each lot of welding material. The procurement, receiving inspection and material certification documentation were reviewed for the following welding materials:

3/32" ER 308 HT. No. 464177 1/8" ER 308

HT. No. 467832

5/32" Consumable Insert HT. No. E4252T 308

- (2) Welding Procedures
 - (a) The inspector verified that procedures for preparation, qualification, approval/certification, distribution and revision of welding procedure specifications (WPS) had been established.

The applicable procedures are:

CDB-1, Revision 2, Preparing and Controlling Welding Documents

CDB-8, Revision O, Completion of PQR Forms

L-100, Revision 10, Welding Program

CP-821, Revision 10, Operating Instructions for Site Document Control

Administrative Policy Manual, Section 2.1, Document Control

Administrative Policy Manual, Section 3.6, Revision 23, Special Processor

- (b) The inspector reviewed the WPSs and Supporting PQRs listed below to verify:
 - Compliance with applicable procedures for preparation, qualification, approval/certification, distribution, and revision of WPSs
 - That all essential variables, supplementary essential variables, and nonessential variables were defined in accordance with ASME code requirements
 - That WPS had been qualified and supporting PQR is on file
 - That PQR listed the essential variables and that values and ranges of variables were consistent with WPS and code requirements

- That all mechanical tests required by code had been completed and properly documented
- That PQR had been properly approved/certified
- That changes to WPS essential variables were supported by requalification
- That changes to WPS nonessential variables were properly identified and documented
- That changes to WPS essential variables were supported by requalification
- That changes to WPS nonessential variables were properly identified and documented
- That WPS met applicable Regulatory Guides

WPS	Supporting PQRs		
L-275, RO	L-131B and L-134B		
L-346, R2	L-109		
L-349, R1	L-121B		

- (3) Welder Performance Qualification
 - (a) The inspector verified that procedures had been established for qualification and maintaining qualification status of welders and welding operators in accordance with ASME Code requirements. The applicable procedure is:

L-1000, Revision 1, Welding Program

During review of procedures for control of welder qualification, the inspector found that provisions were not included to preclude falsification of welder qualifications. Discussions with responsible personnel revealed that means of positive welder identification during qualification were being used, although procedural requirements did not exist. The licensee agreed to revise qualification procedures to include requirements for positive identification of welders. Pending review of the revised procedures, Inspector Followup Item 413/86-42-02,414/86-45-02, Revision of Welder Qualification Procedure, is opened.

(b) The inspector reviewed the qualification status records for the below listed welders relative to the field welds listed in paragraph (4) below.

1	leld	er
	530	
	E81	
	E79	
	P64	

(4) Examination of Welds

Selected completed welds listed below were examined to verify by visual inspection that the following characteristics conformed to the ASME code and applicable procedures.

- Weld surface finish and appearance.
- Transition between components of different diameter and thicknesses.
- Weld reinforcement.
- Shape and Size of fillet and socket welds.
- Weld reinforcement
- Removal of temporary attachments, arc strikes and weld spatter.
- Finish grinding absence of wall thinning.
- Absence of surface defects.

Welds Inspected	Size	Class
INV640-2	2"	В
INV640-12	2"	В
INV631-14	3"	В
INV631-15	3"	В

5. NDE (57060)

Liquid Penetrant (PT) Examination

The inspector examined the PT activities described below relative to maintenance/modification activities.

PT procedure NDE-30, Revision 16, "Liquid Penetrant Examination Technique (color contrast, solvent removable method)", was reviewed to determine whether the procedure had been approved and issued in accordance with the QA program. In addition, the procedure was reviewed to determine whether the following parameters were specified and controlled in accordance with applicable requirements:

- Method consistent with applicable codes
- Specification of brand names and types of penetrant materials
- Specification of limits of sulfur and total halogens for materials
- Pre-examination surface preparation and cleaning
- Minimum drying time following surface cleaning
- Penetrant application and penetration time
- Temperature requirements
- Solvent removal
- Method and time of surface drying prior to developing
- Type of developer and method of application
- Examination technique
- Time interval for interpretation
- Required lighting
- Technique for evaluation
- Acceptance standards
- Acceptance standards
- Reporting requirements
- Requalification Requirements

During the above review, the inspector noted the following areas where the PT procedure needs clarifying:

- Paragraph 11.4 specifies that a five minute drying time elapse before developer application. A later sentence specifies that the time not extend beyond five minutes. The required time needs to be clarified.
- In paragraph 11.6, it is not clear that the maximum evaluation time applies to the standard PT test as well as the reduced temperature test.

The licensee agreed that the procedure needed clarification in the above areas and that changes would be made when a new generic PT procedure (now in draft) is issued. Pending review of the new procedure, IFI 413/86-42-03,414/86-45-03, Review of Revised PT Procedure, is opened.

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