



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-369/78-40 and 50-370/78-17

Docket No.: 50-369 and 50-370

License No.: CPPR-83 and CPPR-84

Category: A3, A2

Licensee: Duke Power Company
Power Building
422 South Church Street
Post Office Box 2178
Charlotte, North Carolina 28242

Facility Name: McGuire Nuclear Station, Units 1 and 2

Inspection at: Lake Norman, North Carolina
Corporate Offices, Charlotte, North Carolina

Inspection conducted: November 28 to December 1, 1978

Inspectors: N. Economos
E. J. Vallish
R. Hardwick

Reviewed by:

T. E. Conlon

T. E. Conlon, Chief
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

12/12/78
Date

Inspection Summary

Inspection on November 28 to December 1, 1978 (Report Nos. 50-369/78-40 and 50-370/78-17)

Areas Inspected: Units 1 and 2 reactor coolant pressure boundary piping activity records, 10 CFR 50.55(e) items, safety-related pipe supports and restraint system work; Unit 1 unresolved items, main coolant loop resistance temperature detector installation and QA records, component cooling water pump motor storage and related records, radiation monitoring equipment installation, nonconforming report status, pressure boundary piping material QA records; Unit 2 welding of reactor coolant pressure boundary piping, reactor vessel internal and safety-related components work quality records, installation progress of incore neutron monitoring system piping, RHR pumps, lower containment air filters and the reactor primary coolant loop. The inspection involved 72 inspector-hours on-site by three NRC inspectors.

Results: Of the fifteen areas inspected, no apparent items of noncompliance or deviations were identified.

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DETAILS I

Prepared by:

N. Economos
N. Economos, Metallurgical Engineer
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

12/12/78
Date

Dates of Inspection: November 28 - December 1, 1978

Reviewed by:

T. E. Conlon
T. E. Conlon, Chief
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

12/12/78
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1. Persons Contacted

a. Duke Power Company (DPC)

*J. C. Rogers, Project Manager
*G. W. Grier, III, Project Engineer
*D. C. Leslie, Assistant QA Engineer
*L. R. Barnes, QA Manager, Construction
*R. A. Calhoun, Project Sr. QA Engineer
Ned Riddle, Civil Engineer
G. S. Cox, Welding Technical Support
Jerry Goodman, Mechanical Engineer, Technical Support

b. Westinghouse Nuclear Services Division (W)

J. Elmendorf, McGuire Site Manager

In addition to the above, other craft and inspection personnel were interviewed.

*Denotes those present at the Exit Interview.

2. Licensee Action on Previously Identified Inspection Findings

(Closed) Unresolved Item 369/78-34-04, Upper Head Injection (UHI) Valve Seat/Disc Replacement (Unit 1). The switch from liquid penetrant inspection to a visual inspection of the valve seat root pass repair weld was documented in W field deficiency report (FDR) #DAP-10123 and forwarded to engineering for disposition. On November 30, 1978, W Engineering approved the aforementioned field action.

3. Unresolved Items

No new unresolved items were identified on this inspection.

4. Independent Inspection Effort

a. Pressurizer Surge Line-Review of Quality Records (Unit 1).

At the time of this inspection, installation of the surge line had been completed and the entire line was covered with insulation. Piping material for this line was supplied by Southwest Fabricating and Welding Company under the requirements of DPC pipe specification PS2501.1 and ASME Code Section III, 1971 Edition. Line installation was controlled by DPC layout drawing number and ISO MCFI-INC53. Welding was controlled by Section IX of the ASME Code and applicable DPC QA/QC procedures.

In order to verify that materials, installation and welding of this line was consistent with the aforementioned codes and supporting documents, the inspector reviewed Westinghouse quality release forms 21751 and 21752, Code data report Forms NPP-1, field weld process control sheets (M-4a) for welds NCIF-3613-3092, NCIF-3612-3613 and NCIF3612-Pressurizer. Material certifications of welding consumables, used to fabricate these welds, were reviewed for compliance to applicable specifications.

b. Weld Rod Issue Stations.

Rod issue stations 2 and 3 were inspected to ascertain whether procedural requirements were being met in the areas of material storage, identification, segregation and cleanliness, rod oven temperature control, records and material handling. In addition, the inspector randomly selected the following consumable heat numbers for a check of material certifications:

<u>Heat Number</u>	<u>Size</u>	<u>Type</u>
16797C	3/32"Ø	ER308
36613C	1/8"Ø	ER309
6092A	5/32Ø	E309-18

c. Walk-through Inspection (Fab Shop and Reactor Building, Unit 2).

A walk-through inspection was conducted in the Fab Shop and Reactor Building Unit 2 in order to observe welding activities, control of weld consumables and housekeeping conditions.

In the Fab Shop, the work observed included fabrication of Unit 2 pressure boundary pipe spools. Most of the welds were being ground for final RT or to remove NDE identified indications. The inspector selected the following welds for inspection and QA/QC record review.

<u>Weld Number</u>	<u>ISO</u>	<u>Size</u>
NC2FW13-8	2NC13	6" dia. Sch. 160
NC2FW13-15	2NC13	6" dia. Sch. 160
NC2FW13-16	2NC13	6" dia. Sch. 160
NC2FW13-17	2NC13	6" dia. Sch. 160

Weld ID and OD were checked for contour and appearance. QC records were reviewed. In the reactor building, the inspector checked field weld NI2F-525 which was being tacked, and field welds NI2F-568 and NI2F-567, which were being prepared for pre-service inspection; all welds appeared on ISO MCFIN219.

In the areas inspected, no items of noncompliance or deviations were identified.

5. Licensee Identified Items (10 CFR 50.55(e))
(Closed) Item 369/78-04-02 and 370/78-01-01, "Piping Restraints" (Crossover Leg and Hot Leg Pipe Whip Restraints) (Units 1 and 2): The repair work on the crossover leg restraints and hot leg pipe whip restraints is complete for both units. These restraints were procured under purchase order number C-56372 and fabricated under the requirements of Duke's specification number NICS-1117.00-13. According to this specification, welding was controlled by requirements of ASME Section IX while inspection of fabrication (welding) was controlled by Subsection NF, Section III of the ASME Code. Upon receipt, the licensee inspected and nonconformed these restraints for poor welding. This condition precipitated the extensive field repair program performed by DPC. Repair welding and inspection requirements were described on process control drawing number MCFO-234 while weld joint details were identified on drawing number MC-1070-16, Revision 6. Field weld check-off list Form M-21A was used to document weld repair and subsequent NDE inspections for each weld. The inspector inspected the following welds.

Unit 1

Loop A, Crossover Leg - Welds ICLR-2T, -21, -25B and -25T

Loop B, Hot Leg (H.L.) - Stiffeners and Saddle Plate

Unit 2

Loop A and B H.L.-Stiffeners and Saddle Plates

In addition, the inspector reviewed M-21A forms for the aforementioned crossover leg restraint welds and for the following hot leg restraint welds: 6-A-11, 6-B-6, 7-B-16, 8-A-11, 8-A-12, and 8-A-16. Performance qualification records of welders, involved with the repair work, were reviewed for compliance with ASME Section IX requirements. Those selected were identified by stencil numbers M23, M57, M63, H25 and 296.

Within the areas inspected, no items of noncompliance or deviations were identified.

6. Reactor Coolant Pressure Boundary Piping-Review of Storage
Inspection Records and Audits (Unit 2)

Storage inspections are performed in accordance with DPC procedure P-3, Revision 9, which establishes measures to assure storage conditions are consistent with ANSI N45.2.2 requirements. Inspection results are documented on Form P-3C. Records of inspections performed between October 23, 1978 and November 15, 1978 were reviewed to ascertain whether (1) storage requirements were being maintained, (2) identified deficiencies were corrected in a timely manner, and (3) inspections were being performed in the required frequency.

Within these areas, the inspector noted that the inspection reports identified several problems, including valve and pipe openings left without caps, piping and valves resting on the ground, valves and fittings stored upright causing water and dirt to accumulate, deterioration of wooden cribbing causing stored items to rest on the ground, and poor grounds keeping conditions. Discussions with DPC's QA representative disclosed that this was a continuing problem which had been brought to management's attention with the request that corrective measures be taken. Management's action on this matter was documented by memorandum from site management to file on October 25, 1978. The inspector stated that Region II would look into this area on future inspections to determine what progress had been made. This was identified as inspector follow-up item Number 370-17-01.

Records of QA audits associated with pressure boundary piping were reviewed to ascertain whether they were consistent with procedure QA-300, Revision 7, "Construction Surveillance". Records reviewed reflected audits performed on October 31, 1978 and November 7, 1978.

Within the areas inspected, no items of noncompliance or deficiencies were identified.

7. Reactor Coolant Pressure Boundary Piping-Review of Quality Records
(Unit 2)

Valves, pipe pieces and elbows were randomly selected from the reactor coolant (RC) and the safety injection (SI) system for a review of quality records to ascertain whether applicable quality requirements were met.

Fabrication of these components was controlled by ASME Section III, 1971 Edition, 1971 Winter addenda. Storage and receipt inspections requirements are controlled by ANSI-N45.2.2 and applicable DPC QA/QC procedures.

The items selected for review were as follows:

<u>Item</u>	<u>S/N or Nt. No.</u>	<u>Size</u>	<u>System/ISO</u>
Valve	55194	14"Ø	Residual Heat Removal (ND)
Valve	A-0170	8"Ø	Safety Injection (SI)
Valve	A-0173	8"Ø	Safety Injection (SI)
Pipe	17369	31"Ø	Reactor Coolant (RC)
Pipe	17370	31"Ø	Reactor Coolant (RC)
Pipe	534821	12" Sch. 140	Safety Injection (SI), 2N123
Ell	71	12"Ø Sch. 140	Safety Injection (SI), 2N123
Ell	56	12"Ø Sch. 140	Safety Injection (SI), 2N123
Fitting	EDEA	3/4"	Residual Heat Removal (NA), 2NDI

For these items, the inspector reviewed material test records/certification records, vendor shop manufacturing and NDE records as applicable, w quality releases, receipt inspections, records of disposition of nonconforming material as applicable and installation records as applicable. Storage record review is discussed in paragraph 6 of this report.

Within the areas inspected, no items of noncompliance or deviations were identified.

8. Exit Interview

The inspector met with licensee representatives denoted in paragraph 1 at the conclusion of the inspection and summarized the scope and findings of the inspection. The inspection included actions on previous findings, weld rod issue, walk-through inspection of fab shop and Unit 2 reactor building, 10 CFR 50.55(e) item, and reactor coolant pressure boundary piping records.

DETAILS II Prepared by: E. J. Vallish 12-11-78
E. J. Vallish, Mechanical Engineer Date
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

Dates of Inspection: November 28 - December 1, 1978

Reviewed by: J. C. Bryant 12/12/78
J. C. Bryant, Chief Date
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

1. Persons Contacted

Duke Power Company (DPC)

- *J. C. Rogers, Project Manager
- *L. R. Barnes, QA Manager, Construction
- *R. A. Calhoun, Project Senior QA Engineer
- G. B. Robinson, Mechanical QA Engineer
- H. H. Wallace, Mechanical Construction Engineer

*Denotes attendance at exit interview.

2. Licensee Action on Previous Inspection Findings

Licensee actions on previous inspection findings were not reviewed during this inspection.

3. Unresolved Items

No unresolved items were identified during this inspection.

4. Independent Inspection Effort - Unit 2

This effort included the progress of installation of safety-related mechanical components including the incore neutron monitoring system piping, the RHR pumps, lower containment air filters, fuel storage building operating area, main steam line safety and relief valve building and the progress of assembling the reactor coolant loop.

No items of noncompliance were identified.

5. Licensee Identified Items - Units 1 and 2 (50-369/77-08-01
and 50-370/77-06-01) Safety-Related Valve/Operator Natural
Frequency Analysis

The licensee's progress in resolving this item was reviewed. Activity is still in the design analysis stage. Hardware requirements are being defined. The licensee's representative stated that there is no hardware activity concerning this item occurring on the site.

6. Reactor Vessel Internals - Work Observation - Unit 2

The reactor vessel upper and lower internals were observed in their stored position in the reactor building fuel handling pool. Both items were supported by their specifically designed support stands and are covered with heavy plastic sheets and taped closed. W designed modification of the coolant water flow thru the flanges was observed to be underway. No other activity concerning the internals was observed.

No items of noncompliance were identified.

7. Reactor Vessel Internals - Quality Record Review - Unit 2

This inspection is a follow-on of that reported in RII Report No. 50-370/78-8. Records of the scheduled weekly inspections of the internals were reviewed covering the time from August 29, 1978 thru November 29, 1978. These records indicated that the protection requirements were maintained and agree with the conditions observed during this inspection.

No items of noncompliance were identified.

8. Safety-Related Components II - Work Observation - Unit 2

The licensee's Construction Procedure P-3 titled "Storage Inspections" was reviewed to determine commitments and equipment in-storage inspection requirements. The steam generator, pressurizer and primary coolant system pumps were selected as safety-related components within the reactor coolant pressure boundary and the safety injection pump 2A was selected as a safety-related component outside the reactor coolant pressure boundary. These components were inspected in their stored-in-place positions for storage environment and protection, signs of improper handling, identification, cleanliness preservation and surveillance during storage by the licensee.

No items of noncompliance were identified.

9. Safety-Related Components II - Quality Record Review - Unit 2

Quality records of in-storage inspections concerning the reactor coolant pump casings in loop 2 and loop 4 and the safety injection pump 2A were reviewed for frequency of inspection and documentation of required storage conditions. Using Construction Procedure P-3 as criteria it was observed that the monthly inspections of the pump casings and the quarterly inspections of the safety injection pump were conducted at the required frequency. Review of inspection records of the pump casings from September 21, 1977 thru November 22, 1978, and of the safety injection pump from June 10, 1976 thru August 7, 1978, confirmed that storage requirements were maintained.

No items of noncompliance were identified.

10. Safety-Related Pipe Supports and Restraint Systems - Work Observation - Units 1 and 2

This portion of the inspection was a follow-on of that reported in RII Report Nos. 50-369/78-22 and 50-370/78-10.

The status of the open "Nonconformance Item Report" (NCIR) Serial Number 6273 was reviewed and corrective action taken by the licensee was inspected. The following procedures were reviewed. These procedures were issued to control the hydraulic snubber program.

- a. QA Procedure M-15 R5, "Installation Pipe Support Inspection"
- b. QA Procedure M-51 R0, "Component Supports"
- c. Construction Procedure (CP) No. 555 R0, "The Receiving, Storage and Handling of Hydraulic Shock Suppressors"
- d. CP No. 558 R1, "Hydraulic Shock Suppressor Purging and Calibration Procedure"
- e. CP No. 559 R0, "Repair Procedure for Hydraulic Shock Suppressors"
- f. CP No. 561 R0, "Installation and Cold Piston Setting of Hydraulic Snubbers"
- g. CP No. 562 R0, "Purging and Calibrating Hydraulic Snubbers Not Stored in Accordance With Construction Procedure 555"
- h. CP No. 563, "Method of Installation, Relocation and Reorientation of Snubber Reservoir"

Inspection of installed snubbers and supports in the Units 1 and 2 auxiliary buildings and the Unit 1 main steam line safety and relief valve enclosure disclosed many hydraulic snubbers which were still not in conformance with the new procedures. The licensee's representative stated that the planned resolution of the NCIR would correct these conditions.

No items of noncompliance were identified.

11. Exit Interview

A meeting was held at the end of this inspection with the licensee's representatives denoted in paragraph 1, and others, to discuss the results of this inspection. Items discussed included the valve/operator natural frequency analysis progress, the storage of the Unit 2 reactor vessel internals, steam generators, pressurizer, primary coolant pump casings on loops 2 and 4, safety injection pump 2A and the inspection records of those pumps. Also discussed were incore neutron monitoring system piping, the RHR pumps, lower containment air filters, fuel storage building and general construction progress of the reactor coolant loop. Also discussed was the inspector's concern over the progress of the resolution of the NCIR No. 6273. The licensee was informed that no noncompliances or new unresolved items were identified.

The licensee acknowledged these findings.

DETAILS III

Prepared by: R. J. Hardwick, Jr. 12/12/78
R. J. Hardwick, Jr., Electrical Date
Engineer
Engineering Support Section No. 1
Reactor Construction and
Engineering Support Branch

Dates of Inspection: November 28 - December 1, 1978

Reviewed by: J. C. Bryant 12/12/78
J. C. Bryant, Chief Date
Engineering Support Section No. 1
Reactor Construction and
Engineering Support Branch

1. Persons Contacted

Duke Power Company (DPC)

- *G. W. Grier, Project Engineer
- *R. A. Calhoun, Senior QA Engineer
- *E. B. Miller, Senior QA Engineer
- K. S. Kisida, QA Engineer
- R. G. Bennette, QC Inspection Supervisor
- C. D. Smith, QC Inspector
- J. W. Glenn, QA Engineer
- R. H. Ledford, QC Engineer

*Denotes those present at the exit interview.

2. Licensee Actions on Previous Inspection Findings

Licensee actions on previous inspection findings were not reviewed during this inspection.

3. Unresolved Items

No unresolved items were identified during this inspection.

4. Independent Inspection Effort

The in-place storage of Component Cooling Water Pump Motors, Serial Numbers (SN) 3S-74 and 4S-74 was inspected. The selected pump motors were observed to have heat applied to windings and adequate protection from work activities. Specific storage and maintenance requirements

specified by Duke Power Company (DPC) Procedure M-45, "Electrical Motors - Installation and Inspections" were being documented on DPC Form 45A, "Motor Megger and Rotation Log."

The inspector reviewed the Nonconforming Item Report (NIR) Status Book for NIR's between SN 7000 and SN 7723 for problem area trends and status. The NIR status book indicated no major trends in any specific problem area and was current with the individual nonconforming item reports checked.

Within the areas inspected, no items of noncompliance were identified.

5. Instrumentation (Components and Systems I) - Observation of Work and Work Activities (Unit 1)

The inspector selected the resistance temperature detectors (RTD) of main coolant loops "A" and "B", as indicated below, for examination.

Main Coolant Loop A

<u>RTD Number</u>	<u>Serial Number (SN)</u>	<u>Function</u>
1NCRD5410	7392	Hot Leg Temperature - Spare
1NCRD5420	7398	Hot Leg Temperature
1NCRD5430	7371	Cold Leg Temperature - Spare
1NCRD5440	7495	Cold Leg Temperature

Main Coolant Loop B

<u>RTD Number</u>	<u>Serial Number (SN)</u>	<u>Function</u>
1NCRD5450	7400	Hot Leg Temperature - Spare
1NCRD5460	7462	Hot Leg Temperature
1NCRD5470	7454	Cold Leg Temperature - Spare
1NCRD5480	7487	Cold Leg Temperature

The RTD's identification, location, mounting, physical separation and independence, protection, and installation QC inspection records were reviewed. Electrical Penetration Assembly (EPA) E-439, SN 6736A, and Process Cabinet System (PCS) Cabinet 1, SN 9030, for main coolant loop "A" RTD's and EPA E-209, SN 6728A, and PCS Cabinet 2, SN 9031, for main coolant loop "B" RTD's were examined for cable separation and independence, terminations, and indicator and alarm identification.

Within the areas examined there were no items of noncompliance identified.

6. Instrumentation (Components and Systems I) - Review of Quality Records (Unit 1)

The inspector selected the components identified in paragraph 5 for record review to assure that Final Safety Analysis Report (FSAR) commitments were being met in the areas of receipt inspection, storage, handling and identification, and installation QC inspection. The material certification or Westinghouse QC releases were reviewed. The certificate of calibration and testing for each RTD was examined.

Within the areas examined there were no items of noncompliance identified.

7. Instrumentation (Components and Systems II) - Observation of Work and Work Activities - (Unit 1)

The inspector selected Radiation Monitors Number 1EMF46A, SN 2591-1, and Number 1EMF46B, SN 2591-2, for examination. The radiation monitor's identification, location, physical protection, and cleanliness were examined. Process Radiation Monitoring Cabinet Number 1PRC1, BAY 1, was examined in the areas of cable terminations, and indicator and alarm identification.

Within the areas examined there were no items of noncompliance identified.

8. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 1, 1978. The inspector summarized the scope and findings of the inspection as listed below:

- a. Instrumentation (Components and Systems) - Observation of Work and Work Activities
 - (1) Radiation Monitoring Equipment
 - (2) Main Coolant Loop Resistance Temperature Detectors
 - (3) In-place Storage of Component Cooling Water Pump Motors
- b. Instrumentation (Components and Systems) - Review of Quality Records

RII Rpt. Nos. 50-369/78-40
and 50-370/78-17

III-4

- (1) Main Coolant Loop Resistance Temperature Detectors
- (2) Nonconforming Item Report Status Book

There were no items of noncompliance identified