



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

Report Nos.: 50-369/78-34 and 50-370/78-14

Docket Nos.: 50-369 and 50-370

License Nos.: CPPR-83 and CPPR-84

Category: A3, A2

Licensee: Duke Power Company  
Power Building  
422 South Church Street  
P. O. 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: October 3-6, 1978

Inspectors: M. D. Hunt  
V. L. Brownlee  
N. Economos

Reviewed by: FER A. R. Herdt  
A. R. Herdt, Chief <sup>en</sup>  
Projects Section  
Reactor Construction and Engineering Support Branch

1/2/78  
Date

Inspection Summary

Inspection on October 3-6, 1978 (Report Nos. 50-369/78-34  
and 50-370/78-14)

Areas Inspected: Upper head injection valve seat/disc replacement; reactor coolant pressure boundary piping-welding and observation of work activities; safety-related piping-welding and observation of work activities; corrective action on infractions; IE Bu'letins and Circulars; licensee identified items; and unresolved items. The inspection involved 48 inspector-hours by three NRC inspectors.

Results: Of the seven (7) areas inspected no apparent items of noncompliance were identified in six areas; one apparent item of noncompliance (infraction - failure to follow piping cleanliness inspection procedure (Details II, paragraph 5)) was identified in one area.

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DETAILS I

Prepared by:

M. D. Hunt  
M. D. Hunt, Principal Inspector  
Projects Section  
Reactor Construction and Engineering  
Support Branch

11/2/78  
Date

V. L. Brownlee  
V. L. Brownlee, Principal Inspector  
Projects Section  
Reactor Construction and Engineering  
Support Branch

11/2/78  
Date

Dates of Inspection: October 4-5, 1978

Reviewed by: A. R. Herdt  
A. R. Herdt, Chief  
Projects Section  
Reactor Construction and Engineering  
Support Branch

11/2/78  
Date

1. Persons Contacted

Duke Power Company (DPC)

J. R. Wells, Corporate QA Manager  
L. R. Barnes, QA Manager, Construction  
J. M. Curtis, QA Manager, Vendors  
W. H. Bradley, QA Manager, Engineering Services  
J. M. Frye, Senior QA Supervisor, Audit Division  
J. C. Rogers, Project Manager  
G. W. Grier, III, Project Engineer  
R. A. Calhoun, Project Senior QA Engineer

2. Licensee Action on Previous Inspection Findings

- a. (Closed) Unresolved Item 369/78-14-05, Spent Fuel Pool Liner Plate: The design of the fuel pool liner has been accepted by NRR. RII has no further questions regarding this item.
- b. (Closed) Unresolved Item 369/78-07-01, Piping Modelling Technique Structural Overlapping: This technique may be used and is acceptable to NRC. In the future all other DPC plants undergoing licensing review shall require a commitment that whatever technique is employed be adopted and documented in the SAR's.

- c. (Closed) Infraction 370/78-09-01, Reactor Coolant Pressure Boundary Piping: The inspectors conducted a walk through inspection of Unit 2 containment and found the licensee in compliance with his commitment forwarded to RII by DPC letter dated August 31, 1978. The inspectors also reviewed the records of training sessions held regarding storage and protection of safety-related equipment.

3. Unresolved Items

No new unresolved items were identified during this inspection.

4. Independent Inspection Effort

The inspectors visited the corporate offices of DPC to introduce and acquaint M. D. Hunt, who will become the construction project inspector for McGuire Units 1 and 2, to the responsible QA staff. The onsite visit was also to introduce the new project inspector to the onsite staff.

5. IE Bulletins and Circulars

(Closed) IEB 78-06 Defective Cutler-Hammer, Type M Relays with DC Coils: The licensee had reported this condition as Construction Deficiency Report CD-369/76-5 and 370/76-4, which was closed after corrective action was taken and verified. RII has no further questions regarding this bulletin.

6. Licensee Identified Items 10 CFR 50.55(e)

(Open) Item Nos. 369/78-34-01 and 370/78-14-01 Safety-related Containment Isolation Valve Type C Leakage Deficiency: DPC's Construction Deficiency Report (CDR) dated August 30, 1978, identified an air leakage rate which exceeded Type C containment isolation valve leakage criteria. The licensee's report committed to a resolution of the problem prior to fuel loading.

(Open) Item Nos. 369/78-34-02 and 370/78-14-02 Valve Electric Motor Operator Environmental Qualification Deficiency: The licensee advised RII of this condition in their CDR dated August 25, 1978. Twelve valves were identified which did not have electric operators qualified for accident environmental conditions inside containment. The valve operators will be replaced.

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(Open) Item Nos. 50-369/78-34-03 and 50-370/78-14-03, Upper Head Injection Accumulator Instrument System (10 CFR 50.55(e)). This item remains open pending DPC's review and approval of the full blowdown test results.

7. Exit Interview

The inspectors did not attend the exit interview conducted October 6, 1978. The scope and findings of Details I were discussed as part of the exit meeting covered by Details II of this report.

DETAILS II

Prepared by:

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

11/8/78  
Date

Dates of Inspection: October 3-6, 1978

Reviewed by:

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

11/8/78  
Date

1. Persons Contacted

a. Duke Power Company (DPC)

\*J. C. Rogers, Project Manager  
\*G. W. Grier, III, Project Engineer  
\*R. A. Calhoun, Project Senior QA Engineer  
\*G. B. Robinson, QA Construction  
Jerry Mize, Fitter Foreman  
F. A. Shaikh, QC Welding

b. Westinghouse Nuclear Services Division (W)

\*J. Elmendorf, McGuire Site Manager  
P. Rapone, Catawba 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

- a. (Closed) Noncompliance Item (369/78-14-01): Failure to maintain end-caps on valves. The inspector conducted a tour of Unit 1 auxiliary and reactor buildings to verify, by observation/inspection, the licensee's corrective action and housekeeping conditions around these general areas. Conditions appeared to be consistent with applicable procedures and standards. This item is closed.

- b. (Closed) Noncompliance Item (369/78-14-02): Interpass temperature check records for structural field welds. The inspector reviewed the licensee's corrective action on this item and observed no discernable heat damage on the concrete surface near the designated welds. This item is closed.

3. Unresolved Items

"Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraph 4."

4. Independent Inspection Effort

a. Upper Head Injection (UHI) Valve Seat/Disc Replacement (Unit 1)

Welding (replacement) of the downstream seat rings on safety injection valves INI-242B, -243A, -244B and -245A was in progress. Replacement of the original seat rings became necessary because of surface cracks developed as a result of the UHI system instrumentation problem identified by DPC as a construction deficiency report (CDR) on May 22, 1978. The CDR is discussed in Details I of this report. The controlling document for seat replacement is the vendor's (Anchor-Darling Valve Company) Standard, EPS-125 "Field Reseating of Double Disc Gate Valves," issued in September of 1978. Westinghouse is directing the project with technical assistance provided from the vendor whose field representative was following the work effort. The licensee was providing the manpower for welding, inspections and NDE. The inspector checked weld appearance on INI-2451 and reviewed pertinent QA/QC records including weld data sheets process control forms, weld rod issue slips, welder qualifications. For the replacement seat rings the inspector reviewed receiving inspection reports, certificates of compliance and W QR #25930-1.

Within these areas the inspector noted the requirement for liquid penetrant inspection of the root pass as established by the W equipment specification 95236' Revision 0 and included in paragraph 4.5 of the vendor's report. The requirement EPS-125 had been waived in favor of a visual inspection. This action had been authorized by the W site representative and documented as DAP-1690 on form W 2478K.



In response to questioning, the W representative stated that he had discussed waiving the PT requirement with the vendor and had obtained his verbal approval. However the inspector stated the valves were manufactured to the W specification and since this was a significant relaxation of the NDE requirements, W engineering should provide the necessary authorization for this waiver. In response, W agreed to provide this documentation and the inspector stated that this would be identified as unresolved item 369/78-34-04.

b. Lamination in Stainless Steel Pipe (Unit 2)

While reviewing weld records, the inspector noted that a nonconformance report, NCIR #-6825, had been generated against a section of 12" diameter pipe, schedule 20, stainless steel type 304 produced from heat number 346507. The material had been purchased on purchase order number A-33970 from Trentweld Company. The licensee's records indicated the presence of a lamination approximately midway thru the pipe wall thickness, running longitudinally parallel to the surface. Metallurgical and NDE examinations, PT and UT, were conducted on material on hand. All of the material in storage was 100% UT inspected, installed pieces were UT inspected on a random basis. Three pipe sections or approximately 30 feet of pipe were discarded. Acceptance standards were based on ASME Section III requirements.

c. Review of Quality Records - Pressure Boundary and Safety-Related Components (Unit 2)

Valves and pipe spools from systems where the inspector had observed various work activities discussed elsewhere in this report were selected for a review of quality documentation to ascertain whether they (records) were consistent with applicable codes, procedures and standards. These components were identified as follows:

<u>Item</u>	<u>Type</u>	<u>Size</u>
<u>Valves</u>		
A0261	Check	12"Ø
A0609	Check	8"Ø

A0271	Gate	12"Ø
C55492	Gate	14"Ø

Surge Line

5039	Pipe	14", schedule 160
5040	Pipe	14", schedule 160

Residual Heat Removal

NDP1	Pipe	14", schedule 140
2NDP2	Pipe	14", schedule 140
Elbow	68° EIL	14", schedule 140

For these items the inspector reviewed material test reports, receiving inspection reports, vendor QA certification reports, code data reports, W quality releases as applicable and installation records.

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

5. Reactor Coolant Pressure Boundary Piping - Observation of Work Activities (Unit 2)

Piping activities are controlled by ASME Section III 1971 including Summer and Winter 1971 addenda together with applicable standards and QA approved procedures.

Several piping activities were selected, in order to test by direct observation, evaluation of work performance and record auditing whether work accomplishment was in accordance with Code requirements and SAR commitments. Activities selected included receipt inspection, storage, installation, identification and generation of pertinent quality records. The systems selected for this work effort were as follows:

1. Pressurizer surge line - from pressurizer nozzle S/M 1491 to the ot leg of RC loop 2-2, ISO-2MCF1-2NC2.
2. Residual Heat Removal - from valve number 2ND1B to the 184° cr. ne wall azimuth penetration.

For these portions of the systems the inspector verified performance of QC inspection, recordkeeping, adherence to



installation requirements and drawings, issuance and use of specified materials, utilization of qualified inspection personnel.

In addition the inspector discussed the liquid penetrant examination in progress, on the steam generator nozzle safe-end weld surfaces. This was being performed to verify the removal of surface indications resulting from oxidation. The work was being done by the licensee to DPC procedure NDE-30.

Within these areas the inspector noted that the weld joints on the surge line, which had only been signed off for fitup/tacked and cleanliness were left unprotected causing some rusting and a buildup of dirt on the weld prep and adjacent internal surfaces. Failure to protect these surfaces was contrary to the requirement of DPC procedure M-24, paragraph 7.3 which requires that tacked or fitup joints left overnight be protected to prevent the entry of contamination.

The inspector discussed this finding with the licensee who concurred and agreed to take the necessary corrective action. This finding represents an example of failure to follow procedural requirements which is in noncompliance with Criterion V of Appendix B, to 10 CFR 50. This was assigned item number 370/78-14-04.

6. Safety-Related Piping - Observation of Work and Work Activities  
(Unit 2)

Activities affecting safety-related pipe systems are controlled with the same codes, standards and DPC QA procedures discussed in paragraph 5 above. Activities relative to safety-related piping such as receipt inspection, identification, storage, handling, protection installation, documentation, inprocess quality control inspections and NDE were selected in order to verify by direct observation, evaluation of work performance and record auditing whether work accomplished was consistent with applicable codes, standards procedures and SAR commitments. Pipe system selected for this work effort were as follows:

1. Containment Spray - from pump 2B to 12" gate valve S/N A0271, ISO-MCF1-2NS1
2. Safety Injection - from 8" check valve S/N A0609 to safety injection pump 2A, ISO-MCF1-2NI1

3. Residual Heat Removal - from 14" valve S/N 2ND43 to 14" valve S/N 2FW-27A, ISOs-MCF/-2ND3, MCF1-2NDF, MCF1-2FW7.

For the aforementioned activities, as they apply to these systems, the inspector verified conformance with QC inspection requirements, recordkeeping, installation per applicable drawings/specifications, issuance and use of specified material, performance of NDE as required, instrument calibration and utilization of qualified personnel as applicable.

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

7. Safety-Related Piping (Welding) - Observation of Work and Work Activities (Unit 2)

At the time of this inspection welding was in progress on various safety-related systems including the containment spray (NS) feedwater (FW), safety injection (NI) and residual heat removal (ND) systems. Welding and related QA/QC including NDE activities are controlled by the ASME Code, Section III 1971 Edition including Summer and Winter addenda.

From the above systems the inspector selected ten (10) field welds at different stages of fabrication for observation to determine whether the requirements of applicable codes, standards, work and inspection procedures were being implemented as required. The selected welds were as follows:

<u>Weld No.</u>	<u>Size</u>	<u>System</u>	<u>Fabrication Stage</u>
FW2F-259	8"x.148"	Feedwater	Fitup and root closure
FW2F-248	8", 90' Ell	Feedwater	Fitup
NS2F-32	10"x8" Reducer	Containment Spray	Fitup
2NDF-85	14" Schedule 10	Residual Heat Removal	Completed
2NDF-82	14" Schedule 40	Residual Heat Removal	Completed/Repair in progress
2NDF-304	12" Schedule 20	Residual Heat Removal	Completed/Repair in progress
2NDF-305	12" Schedule 20	Residual Heat Removal	Completed/Repair in progress

FW2F-211	18" Schedule 10	Feedwater	Fitup and root closure
NI2F-23	6"x.134"	Safety Injection	Root Closure

For the above welds the inspector verified, as applicable weld identification, alignment, use of applicable weld procedure, bead appearance, welder qualification, use of specified weld electrode, shielding gas, purge, NDE performed. For the welds under repair, the inspector reviewed in-process records, overlays and procedures for controlling this type activity.

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

8. Reactor Coolant Pressure Boundary Piping (Welding) - Work Observation (Unit 2)

Field weld fabrication inspection and testing is being controlled by the ASME Code, Section III, 1971 Edition including Summer and Winter 1971 addenda.

In-process field welds in various stages of fabrication were randomly selected for observation in order to determine whether welding QC inspection and NDE were consistent with code and procedural requirements. Welds selected for this work effort were as follows:

<u>Weld No.</u>	<u>Size</u>	<u>ISO/Dwg.</u>	<u>Fabrication Stage</u>
ND2F-1	14"x1.25"	MCF1-2ND1	Complete, Repairs in Progress
NC2FW2-1	14", Schedule 160	MCF1-2NC2	Fitup/tacked
NC2F2-1	31"x2.317"	MC2676-4	Partial
NC2F3-1	33"x2.488"	MC2676-4	Partial

For the above welds, the inspector reviewed applicable field drawings (ISOs), weld data sheets; weld rod issue slips; welder qualifications; process control sheets; weld repair history and corrective action records. Fitup and alignment, purge, weld prep bead appearance including undercut, arc strikes, etc., were checked to verify conformance with code and procedural requirements. Work areas were surveyed for uncontrolled weld consumables. QA/QC personnel monitoring work progress appeared to be adequately trained to perform the assigned tasks.

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

9. Exit Interview

The inspector met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection. The inspector identified the areas inspected which included observation of pressure boundary and safety-related piping activities, welding, review of QA records; upper head injection valve seat/disc replacement. With regard to noncompliance 370/78-14-04 discussed in paragraph 5. and UNR (369/78-34-04), the licensee acknowledged the inspector's findings.