



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3106
ATLANTA, GEORGIA 30303

Report Nos. 50-413/81-10 and 50-414/81-10

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

Facility Name: Catawba

Docket Nos. 50-413 and 50-414

License Nos. CPPR-116 and CPPR-117

Inspection at Catawba Site near Lake Wylie, South Carolina

Inspectors: ~~J. E. Coley~~ 6-15-81
For W. P. Kleinsorge Date

~~J. E. Coley~~ 6-15-81
J. E. Coley Date

Approved by: A. R. Herdt, Section Chief, EI Branch Date
Division of Engineering and Technical
Inspection

SUMMARY

Inspection on May 18-22, 1981

Areas Inspected

This routine, unannounced inspection involved 75 inspector-hours onsite in the areas of safety-related components (Units 1 and 2), safety-related piping (Units 1 and 2), reactor pressure boundary piping (Unit 2), safety-related structures (Units 1 and 2) and preservice inspection (Unit 1).

Results

Of the five areas inspected, no violations or deviations were identified in two areas; three violations were found in three areas (Violation - "Inadequate Measures to Control Preservation of Safety Related Materials and Equipment" paragraphs 6a and 6b; Violation - Inadequate Measures to Control Handling of Safety Related Materials and Equipment" paragraph 7a(1) and; Violation - "Failure to Follow UT Procedure for Baseline Inspection" paragraph 10c).

DETAILS

1. Persons Contacted

Licensee Employees

- *J. C. Rodgers, Project Manager (Incoming)
- *D. G. Beam, Project Manager (Outgoing)
- *C. B. Cheezen, ISI Coordinator
- *S. W. Dressler, Sr. Construction Engineer
- *R. A. Morgan, Sr. QA Engineer
- *R. Johnson, Assistant General Superintendent
- *J. Warren, QC Engineer
- *H. L. Atkins, Associate QA Engineer
- *W. T. McClure, QA Technician
- *T. M. Hildebrand, Asst. ISI Coordinator

Other licensee employees contacted included construction craftsmen, technicians, mechanics, and office personnel

Other Organizations

- *D. J. Patterson, Group Leader, Babcock and Wilson (B&W)
- *C. R. Meredith, Assistant Group Leader, B&W

NRC Resident Inspector

- *P. K. VanDoorn

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 22, 1981 with those persons indicated in Paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

Violation 413/81-10-01: "Failure to follow UT Procedure for Baseline Inspection" - Paragraph 10.

Violation 413, 414/81-10-02: "Inadequate Measures to Control Preservation of Safety Related Materials and Equipment" - Paragraphs 6a and 6b.

Violation 413, 414/81-10-03: "Inadequate Measures to Control Handling of Safety Related Materials and Equipment" - Paragraph 7a(1).

Unresolved Item 413, 414/81-10-04: "Code of Record for PSI" - Paragraph 10.

Unresolved Item 413, 414/81-10-05: "Transfer Method not Addressed in UT Procedure" - Paragraph 10a(1).

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. New unresolved items identified during this inspection are discussed in paragraphs 10 and 10a(1).

5. Independent Inspection Effort (Units 1 and 2)

The inspectors conducted a general inspection of the Unit 1 and 2 containments, auxiliary buildings, fuel buildings, and electrode issue station to observe construction progress and construction activities such as welding, material handling and control, house-keeping and storage.

6. Safety Related Components (Units 1 and 2)

The inspectors reviewed records and observed work activities as described below relative to safety related components to determine whether regulatory requirements are being met. Duke procedure P-3, revision 12, "Storage Inspection" governs the work activities and records examined. P-3 implements the requirements of ANSI N45.2.2-1972, "Packaging Shipping, Receiving Storage, and Handling of Items for Nuclear Power Plants (During the construction phase)" in the areas of storage.

a. Observation of Work Activities

The inspectors observed the below listed equipment to assure that the procedure for storage, cleanliness and preservation, was being met.

Equipment Special
Storage and
Maintenance
Inspection-P3A

Unit

Component

M-93	1	Letdown Chiller Heat Exchanger
M-107	2	Letdown Chiller Heat Exchanger
M-92	1	Letdown Reheat Heat Exchanger
M-104	2	Letdown Reheat Heat Exchanger
M-46	1	Letdown Heat Exchanger
M-47	2	Letdown Heat Exchanger
M-99	1	Moderating Heat Exchanger

M-106	2	Moderating Heat Exchanger
M-17	1&2	Residual Heat Removal Heat Exchanger
M-266	2	Containment Spray Heat Exchanger
M-20	1	Reactor Coolant Drain Tank Heat Exchanger
M-45	2	Reactor Coolant Drain Tank Heat Exchanger
C-10	1	Steam Generator Loop 3
C-19	2	Steam Generator Loop 3
----	2	Accumulator Tank B
M-213	2	Diesel Generator Starting Air after Cooler 2A1
M-214	2	Ditto 2A2
M-215	2	Ditto 2B1
M-216	2	Ditto 2B2
M-199	1	Diesel Starting Air Compressor 1A1
M-74	2	Diesel Starting Air Compressor 2A1
M-200	1	Diesel Starting Air Compressor 1A2
M-72	2	Diesel Starting Air Compressor 2A2
----	1	Diesel Starting Air Compressor 1B1
M-12	1	Diesel Starting Air Compressor 1B2
M-75	2	Diesel Starting Air Compressor 2B2
M-318	1	Jacketwater Keep Warm Pump 1A
M-339	2	Jacketwater Keep Warm Pump 2A
M-319	1	Jacketwater Keep Warm Pump 1B
M-340	2	Jacketwater Keep Warm Pump 2B

With regard to the above inspection the inspectors, accompanied by a representative of the licensee on May 21, 1981 noted the following:

- (1) Diesel starting air compressor 1B1 was missing the air filter on the air intake port. The preceeding is contrary to the requirements of ANSI N45.2.2 paragraph 6.4.2.(1) which requires items in storage to have caps covers or closures intact.
- (2) Diesel generator starting air compressor 1A1 was low on oil. The preceeding is contrary to the requirements of M-199 which requires the crankcase to be full.

- (3) Rust on Loop No. 3 steam generator nozzle covered by non adhering tape. It was apparent that the above condition had existed for many months. P3A C-10 Rev. 2 requires inspection in this area monthly. Therefore it appears that inspection in this area was not effective.
- (4) The nitrogen purge pressure requirements in P3A Nos. M-213-216 and M-266 are specified as approximate values. The maintenance inspection requirement in the above P3As is to report significant drops in pressure. The licensee does not define "approximate" or "significant". Therefore inspectors are inspecting to undefined acceptance criteria.

The above indicates inadequate measures to control the preservation of safety related material and equipment and are examples of Violation 413, 414/81-10-02 discussed further in paragraph 6b.

b. Review of Quality Records

The inspectors reviewed the storage/maintenance inspection records (P3As) for the safety related components listed in paragraph 6a. The records were reviewed to insure that inspection requirements for cleanliness, preservation and protection were being met.

With regard to the above review the inspectors on May 21, 1981 noted that there were no storage/maintenance records (P3A) for diesel starting air compressor 1B1. The licensee after an investigation, indicated the above compressor had no documented inspection after October 1979. The licensee further indicated that a monthly inspection form was required therefore required storage and maintenance inspections were not accomplished.

The above combined with the examples discussed in paragraph 6a indicate that the licensee has not established adequate measures to control the storage and preservation of equipment and materials. Failure to establish adequate measures to control storage and preservation of materials and equipment in accordance with work and inspection instructions to prevent damage is in violation of 10 CFR 50 Appendix B Criterion XIII. This violation will be identified as 413, 414/81-10-02: "Inadequate Measures to Control Preservation of Safety Related Materials and Equipment".

7. Safety-Related Piping (Units 1 and 2)

The inspectors observed non-welding and welding work activities for safety-related piping as described below to determine whether

applicable code and procedure requirements were being met. The applicable code for safety-related piping is the ASME B and PV Code, Section III, Subsection NC and ND 1974 Edition with addenda through Summer 1974.

a. Observation of Non-Welding Activities

Observation of specific work activities were conducted to determine conformance, where applicable, with the following inspection and/or work procedures, record keeping, installation specifications or plans, specified materials, specified NDE, calibration and use of proper test equipment and qualified inspection and NDE personnel.

<u>Activity</u>	<u>System or Components</u>	<u>Unit</u>	<u>Procedure</u>
Handling	Various	1 & 2	See Paragraph 7a(1)

- (1) With regard to material handling, the inspectors noted, on May 21, 1981, that the licensee did not have a documented program established for the inspection of rigging slings or chokers used for handling safety-related materials or equipment. ANSI N45.2.2-1972, "Packaging Shipping, Receiving and Handling of Items for Nuclear Power Plants (During the Construction Phase)" has been identified as the applicable standard for material and equipment handling. ANSI N45.2.2, paragraph 7.4 requires an inspection program be established for rigging and a system be established that will indicate acceptability of all rigging after each inspection. Therefore the licensee has not established adequate measures to control the handling of materials and equipment. Failure to establish adequate measures to control the handling of materials and equipment by work and inspection procedures to prevent damage is in violation of 10 CFR 50, Appendix B, Criterion XIII. The above violation will be identified as 413, 414/81-10-03: "Inadequate Measures to Control Handling of Safety Related Materials or Equipment".

b. Observation of Welding Activities

- (1) The inspectors examined weld joint fitup, prior to welding, to determine whether weld identification/location, joint preparation and alignment, evidence of QC verification meet applicable procedures. The following weld joints were examined:

<u>Joint No.</u>	<u>Unit</u>	<u>Size</u>	<u>System</u>
2-ND-4-5	2	14"x0.438"	Residual Heat Removal (Repair)

1-SM-27-2 1 14"x2.33" Main Steam

- (2) The inspectors observed activities at weld material issue stations to determine adequacy of; weld material storage/segregation, over temperatures, issue records and return of unused weld material. Also the inspectors observed work areas for uncontrolled weld material.

Within the areas examined, there were no violations except as identified in paragraph 7a or deviations identified.

8. Reactor Coolant Pressure Boundary Piping (Unit 2)

The inspectors observed welding work activities for reactor coolant pressure boundary (RCPB) piping. The applicable code for installation of RCPB piping is the ASME B and PV code, Section III, Subsection NB 1974 edition plus addenda through summer 1974.

The inspectors observed field welding of reactor coolant pressure boundary piping at various stages of weld completion. The inspectors examined weld joint fitup, prior to welding, to determine whether weld identification/location, joint preparation and alignment, evidence of QC verification meet applicable procedures. The following weld joint was examined:

<u>Joint No.</u>	<u>Unit</u>	<u>Size</u>	<u>System</u>
2-NC-11-6	2	31" x 3.22"	Reactor Coolant

The inspectors observed activities at weld material issue stations to determine adequacy of; weld material storage/segregation, over temperatures, issue records and return of unused weld material. Also, the inspectors observed work areas for uncontrolled weld material.

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

9. Safety-Related Structures (Units 1 and 2)

The inspectors observed field welding activities associated with safety-related structures and supports outside containment during various stages of weld completion. Observations were made in order to determine whether the requirements of applicable specifications, standards, work and/or inspection procedures are being met for the activities involved and in the following stages of weld completion:

- a. The inspectors examined weld joint fitup, prior to welding, to determine whether weld identification/location, joint preparation and alignment and QC verification are in conformance with existing requirements.

<u>Structure/ Support</u>	<u>Unit</u>	<u>Weld No.</u>	<u>Drawing</u>
Diesel Generator Plenum	1	---	CN-1684-VD-000-H
Steam Generator Draw Tank	1	251	CNFO-1438.31-81A

- b. The inspector's examined weld joints where welding is in progress to determine whether weld identification, weld procedures, welder qualification, weld material, defect removal (if applicable), specified NDE and periodic checks of welding variables are in conformance with existing requirements.

<u>Structure/ Support</u>	<u>Unit</u>	<u>Weld No.</u>	<u>Drawing</u>
Diesel Generator Plenum	1	---	CN-1684-VD-000-H
Steam Generator Drain Tank	1	251	CNFO-1438.31-81A
Spent Fuel Pool Liner Plate	2	197D	CNFO-1438.31-32E
Spent Fuel Pool Liner Plate	2	197R	CNFO-1438.31-32E
Spent Fuel Pool Liner Plate	2	197C	CNFO-1438.31-32E

- c. Observation of weld material control included; identification, segregation, oven temperatures, issue slips and control of unused material at issue stations and work areas.
- d. During observation of welding activities there were a sufficient number of qualified inspection personnel at the work site.

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

10. Preservice Inspection (Unit 1)

The applicable Code for preservice inspection is the ASME B and PV Code Section XI 1974 Edition through summer 1975 Addenda as implemented by the Duke QA Program.

With regard to the above, the inspectors determined, at the time of this inspection, that inservice inspection, as required by 10 CFR 50.55a(g)(4)(i) will be accomplished in accordance with ASME B and PV Code Section XI 1977 Edition through summer 1978 Addenda. It could not be determined during this inspection whether preservice inspection accomplished in accordance with ASME Section XI summer 1975, would provide sufficient baseline data for correlation with inservice data from an ASME Section XI summer 1978 inservice inspection. The licensee indicated that they would look further into the matter. The above will be identified as unresolved item 413, 414/81-10-04: "Code of Record for PSI".

a. Review of Procedures

The inspectors reviewed the preservice inspection procedures indicated in the following paragraphs to determine whether the procedures were consistent with regulatory requirements and licensee commitments.

- (1) Procedure No. ISI-120 Rev. 11 "Ultrasonic Examination of Piping and Vessel Welds Joining Similar and Dissimilar Materials" was reviewed for technical content in the areas of type of apparatus, extent of coverage, calibration requirements, size and frequencies of search angles, methods of compensation for metal distance traveled by ultrasonic beam, reference level for monitoring discontinuities, method of demonstrating penetration, limits for evaluation and recording of indications, method of recording significant indications, and acceptance limits.

With regard to the above review the inspectors noted that B&W's procedure ISI-120 Rev. 11 did not address the transfer method for determining attenuation differences between the calibration block and the material being tested. The licensee referred to code cases N-92 and 1698 as their basis for waiving this requirement. The licensee, however did not have copies of the code cases in order for the inspectors to determine if they would be applicable for section V, of the ASME Code, 1974 Edition, with summer 1975 Addenda. The licensee was informed that this item would be reported as unresolved item no. 50-413, 414/81-10-05, "Transfer Method not Addressed in UT Procedure". Basis for waiving this requirement will be verified on a subsequent inspection.

- (2) Procedure No. ISI-120 Rev. 11 was reviewed in conjunction with the QA Manual to determine if compilation of required records were specified.

b. Observation of Work and Work Activities

The inspectors observed the preservice activities described below to determine whether these activities were being performed in accordance with regulatory requirements and licensee approved program and procedures.

- (1) The personnel qualification records for the three level II examiners of record for the welds discussed in paragraph 10b(2) were reviewed.
- (2) In-Process ultrasonic examination, including portions of the calibration sequence were observed for the following welds:

- | | | |
|-----|------------|------------------------|
| (a) | 1-NC-60-1 | 60° examination |
| (b) | 1-NC-179-2 | 60° examination |
| (c) | 1-NC-231-3 | 0° and 45° examination |

The above inspections were compared with the applicable procedures in the following areas:

- Use of specified type of apparatus.
- Extent of coverage and scanning technique.
- Calibration method including frequency and use of required calibration block.
- Size and frequencies of search units.
- Beam angles and DAC curves.
- Definition of reference level for monitoring discontinuities.
- Demonstration of penetration.
- Limits for evaluating and recording indications.
- Acceptance limits.

c. Verification of Licensee Work Activities and Records by NRC Reinspection (Unit 1)

The inspectors selected the following reactor plant coolant system pipe weld joints for inspection reverification. This reverification was accomplished with Region II Ultrasonic (UT) equipment and personnel.

<u>Weld Joint No.</u>	<u>Size</u>	<u>Comments</u>
1-NC-44-7	6" dia. x .715" wall	Tape residue on pipe
1-NC-44-20	6" dia. x .715" wall	Tape residue, Nicks and raise metal on pipe

1-NC-31-1	6" dia. x .715" wall	Tape residue on pipe
1-NC-44-19	6" dia. x .715" wall	Satisfactory (Sat.)
1-NC-30-2	6" dia. x .715" wall	Sat.
1-NC-30-3	6" dia. x .715" wall	Sat.
1-NC-31-2	6" dia. x .715" wall	Sat.
1-NC-31-3	6" dia. x .715" wall	Sat.
1-NC-30-1	6" dia. x .715" wall	Sat.

The inspectors performed both compression and shear wave inspections using NRC procedure NDE-1 supplemental by B&W's procedure ISI-102 Rev. 11. The inspectors noted that weld joints nos. 1-NC-44-7, 1-NC-44-20 and 1-NC-31-1 had a heavy gum layer of tape residue within the inspection scanning area which the inspector could not transmit through for approximately $\frac{1}{4}$ the circumference of the welded pipe joints. This was old tape and made total UT coverage of the welded joints impossible. This surface condition was verified by the B&W assistant group leader before the inspector attempted to clean the weld joints with Kim-Wipes. In addition weld joint no. 1-NC-44-20 had raised metal within the inspection scanning area intermittently for approximately 360°. The licensee (B&W) records indicated that no reportable indications were observed. No comments, however were made indicating that the surface condition was such that complete examination had not been performed. The ASME Boiler and Pressure Vessel Code, Section V paragraph T-534.1 states: "Finished contact surfaces shall be free from weld splatter and any roughness that would interfere with free movement of the search unit or impair the transmission of ultrasonic vibrations". B&W's procedure ISI-120 referenced B&W procedure ISI-50 for surface preparation. ISI-50 has the same requirements for surface preparation as the ASME Code.

This item was reported to the licensee as a violation No. 50-413/81-10-01, "Failure to follow UT procedure for baseline inspection".

Within the areas inspected no violations or deviations were identified except as noted in paragraph 10.c above.