



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

Report Nos. 50-413/80-29 and 50-414/80-29

Licensee: Duke Power Company  
P. O. Box 33189  
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

Inspector: A. R. Herdt  
J. P. Kleinsorge

11/18/80  
Date Signed

Approved by: A. R. Herdt  
A. R. Herdt, Section Chief, RC&ES Branch

11/18/80  
Date Signed

SUMMARY

Inspection on October 14-17, 1980

Areas Inspected

This routine resident inspection involved 33 inspector-hours onsite in the areas of reactor coolant pressure boundary piping, safety related piping and concern regarding structural welding.

Results

Of the three areas inspected, no items of noncompliance or deviations were identified in one area; one item of noncompliance was found in each of two areas. (Infraction - Inadequate Measures for Flamable Storage" paragraph 7a(i)(a) and Deficiency - Failure to Properly Document PQR Testing" - paragraph 8b).

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## DETAILS

### 1. Persons Contacted

- \*D. G. Beam, Project Manager
- \*D. L. Freeze, Project Engineer
- R. A. Morgan, Senior QA Engineer
- R. G. Rouse, QA Technician
- \*J. C. Shropshire, QA Engineer (QAE) Mechanical, Welding
- \*S. W. Dressler, Senior Construction Engineer
- \*L. R. Davison, Senior QC Engineer
- \*H. D. Mason, QA
- \*J. H. Huskey, Safety
- \*R. E. Davis, Safety

Other licensee employees contacted during this inspection included ten construction craftsmen, six technicians, and three office personnel.

### Other Organizations

Hartford Steam Boiler Inspection and Insurance Company  
C. F. Toegel, Authorized Nuclear Inspector (ANI)  
J. W. Kosko, ANI  
B. Wood, ANI

\*Attended exit interview.

### 2. Exit Interview

The inspection scope and findings were summarized on October 17, 1980, with those persons indicated in Paragraph 1 above. The inspector identified the areas inspected and discussed in detail the items of noncompliance, unresolved items and the inspector follow-up item. No dissenting comments were received from the licensee.

### 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 paragraph nos. 7a(1)(b)1, 7a(1)(b)2 and 8a.

### 5. Independent Inspection Effort

The inspector conducted a general inspection of the Unit 1 and 2 containments, auxiliary building, fuel building, pipe fabrication shop, painting and blasting facility warehouse facilities and electrode issue station to observe construction progress and construction activities such as welding, material handling and control, housekeeping and storage.

Within the area examined, there were no items of noncompliance or deviations.

6. Reactor Coolant Pressure Boundary Piping (Unit 2)

The inspector observed non-welding and welding work activities for reactor coolant pressure boundary (RCPB) piping. The applicable code for installation of RCPB piping is the ASME B & PV code, 1974 Edition plus 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, NDE, calibration and use of proper test equipment and qualified inspection and NDE personnel.

Activity	System or Component	Procedure
Protection	Reactor Coolant 40° Elbow	CP-170 Rev. 7

b. Review of Quality Records

- (1) Records of the following items were selected for review to ascertain whether they (records) were in conformance with applicable requirements relative to the following areas: Material test reports/certifications; vendor supplied NDE reports; site receipt inspection; storage; installation; vendor nonconformance reports.

Item	Heat No.	System	Note
40° Elbow 33 x 3.22"	2588-2	Reactor Coolant	No CMTR
40° Elbow 33 x 3.22"	08936-2	Reactor Coolant	

The note "No CMTR" indicates that the certified material test reports for those items were not retrievable during this inspection. The licensee indicated that they would look further into the matter. The inspector stated that the retrievability of these CMTR's would be an inspector follow-up item No. 414/80-29-06, "Unavailable CMTR".

c. Observation of Welding Activities

The inspector observed field welding of reactor coolant pressure boundary piping at various stages of weld completion.

- (1) The inspector examined weld joints of pipe to pipe/fitting (PPF) and pipe to component (PC) where welding was beyond the root pass to determine; weld/welder identification, qualified welder/weld

procedure, periodic checks of welding variable, use of specified weld material, proper interpass temperature and where applicable pre-heat and post-weld heat treatment and physical appearance of weld (e.g. starts, stops, undercut and surface imperfections). The following weld joints were examined:

Joint No.	Unit No.	Isometric	Size	System
NC-13-3	2	2NC-13	33" x 3.22	Reactor Coolant
NC-9-3	2	2NC-9	33" x 3.22	Reactor Coolant

- (2) Observations of weld material control included; identification, segregation, oven temperatures, issue slips and control of unused material at issue stations and work areas.
- (3) During observation of welding activities it appeared that a sufficient number of qualified inspection personnel were at the work site.

Within the areas examined, there were no items of noncompliance or deviations.

#### 7. Safety-Related Piping (Unit 2)

The inspector observed non-welding and welding work activities for safety-related piping outside of the reactor coolant pressure boundary. The applicable code is stated in Paragraph 6.

##### a. Observation of Non Welding Activities

- (1) 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 proper test equipment and qualified inspection and NDE personnel:

Activity	System of Component	Procedure
Storage	Pipe Fitting & Piping assemblies (various)	QAP P-3 Rev. 12
Handling	2KF-45-4 (Spent Fuel Cooling)	CP-170 Rev. 7
Bending	2NV-171-AA (Chemical & Volume Control)	M-25 Rev. 9

Machining	2RN-58-5 (Nuclear Service Water)	M-61 Rev. 9
Fitting	2LD 45-10 (Diesel Generator Engine Lube Oil)	F-9 Rev. 2 H-4 Rev. 17

- (a) On October 15, 1980, the inspector accompanied by a representative of the licensee made an inspection of storage activities in Warehouse Nos. 2 and 5. The inspector noted, in Warehouse No. 5, an outboard motor boat, with attached tank, containing gasoline, stored in close proximity to safety related motor operated valves. The inspector noted in Warehouse No. 2 six aerosol cans of flammable liquid penetrant cleaner in the "QC Hold" area, adjacent to nuclear steam supply system components.

Duke Quality Assurance Program Procedure P-3 Revision 12, "Storage Inspection", paragraphs 2 and 4.1.1 require storage to be in accordance with ANSI N45.2.2. ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (During the Construction Phase), Paragraph 6.3.3 states "Hazardous chemicals, paints, solvents and other materials of alike nature shall be stored in well ventilated areas which are not in close proximity to important nuclear plant items". The licensee stated that site implementation procedures do not address the above prohibition. Therefore the licensee did not provide adequate measures to control storage of safety related valves and nuclear steam supplies components. Failure to establish adequate measures to control storage is in noncompliance with 10CFR50 Appendix B Criterion XIII. This is an infraction and is assigned item No. 413, 414/80-29-01: "Inadequate Measures for Flammable Storage".

- (b) With regard to the inspection of pipe bending activities the inspector reviewed the applicable procedure, observed the bending operation on stainless steel pipe bend No. 2NV-171-AA and noted the following:

1 Duke QA Program Procedure M-25 Rev. 9, "Pipe Cold Bending" Paragraph 4.1.5 requires Liquid Penetrant or Magnetic Particle examination on one in each twenty bends. Liquid penetrant or magnetic particle examination is being accomplished on one in each twenty bends of the same diameter, schedule and material. This practice is less stringent than that required by paragraph 4.1.5 of M-25. At the time of this inspection it could not be determined whether the actual practice is consistent with the licensee's commitments. The licensee indicated that they would look further into the matter.

The inspection stated that the above would be an unresolved item and identified as 413, 414/80-29-04: "Inconsistent Pipe Bend Inspection Requirements and Practices"

- 2 The lubricant used during pipe bending is "Triton X-100" manufactured by Fisher Scientific Company. Catawba Division of Steam Production Directive 2.4.4T Rev. 0 dated 4-14-80 "Control of Surface Applied Material Usage" paragraph (6)(f) states in part "Triton X-100 --- Product is approved for use on stainless steel followed by a thorough demineralized water rinse." Directive 2.4.4T is not available to Catawba Division of Construction craft personnel performing pipe bending operations. There is no Catawba Division of Construction documented requirement to rinse stainless steel with demineralized water after the application of Triton X-100. Triton X-100 is not removed by rinsing with demineralized water after bending operations on stainless steel piping. At the time of the above inspection the safety significance of the omitted rinse could not be determined. The licensee indicated that they would look further in the matter. The inspector stated that the above would be an unresolved item and identified as 413, 414/80-29-05: "Omitted Rinse After Bending".

b. Review of Quality Records

- (1) Records of the following items were selected for review to ascertain whether they (records) were in conformance with applicable requirements relative to the following areas: Material test reports/certifications; vendor supplied NDE reports; site receipt inspection; storage; installation; vendor nonconformance reports.

Item	Heat No.	System
Tee, Sch 40 6"x6"x6"	BD6X	Diesel Generator Engine Lube Oil (DGELO)
Elbow, 90° Sch 40 6"	YB3K	DGELO
Pipe, Sch 40, 6"	826935	DGELO
Elbow, Sch 40, 90° 6"	ZY3F	DGELO
Elbow Sch 160, 90° 3"	RW750165	Safety Injection (SI)

Pipe, Sch 160, 3"	B-8202	SI
Tee, Sch 160 4" x 4" X 3"	44444	SI
Pipe, Sch 40, 4"	462414	Chemical & Volume Control (C&VC)
Elbow, 90° Sch 40	RW-249919	C&VC
Pipe, Sch 40 3"	464479	C&VC
Elbow 90° Sch 40	56085	C&VC

c. Observation of Welding Activities

The inspector observed field welding of safety-related piping outside the reactor coolant pressure boundary at various states of weld completion.

- (1) The inspector examined weld joints where the root pass (only) had been completed to determine; weld/welder identification, qualified welder/weld procedure, physical appearance of weld and evidence of QC verification. The following weld joints were examined:

Joint No.	Unit No.	Isometric	Size	System
ND-26-9	2	2ND-26	8" x 0.250	Residual Heat Removal (RHR)
ND-24-7	2	SND-24	12" x 0.375	RHR

- (2) The inspector examined the following welds where non-destructive testing (NDE) was in progress to determine; surface suitability, specified NDE being performed and with qualified personnel:

Joint No.	Unit No.	Isometric	Size	System
ND-24-12	2	2ND-24	1" to 12"	RHR

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

Within the areas examined, there were no items of noncompliance or deviations, except as described in paragraph 7a(1)(a) identified.

8. Concern Regarding Structural Welding

The Region II office was contacted by an individual who expressed the following concerns in substance:

- a. Some of the stiffeners on the containment walls are "ground slick" from top to bottom even though the welds are not supposed to be ground in any way.

The individual believes the grinding is necessary because the welders may make the pass too wide or put in overlaps on a vertical weld (roll over). The individual also believes that although the welds are tested, the tests cannot determine if the welds are adequate.

The inspector determined that there is no prohibition for grinding containment liner plate to stiffener fillet welds. ASME B&PV Code Section V paragraph T-221.2, T-641(a) and T-721(a) permit surface preparation by grinding where surface irregularities would otherwise mask indications or be confused with discontinuities. The inspector examined approximately one hundred fifty randomly selected containment plate to stiffener fillet welds in the second and third courses of Unit 2 containment liner plate. The inspector noted no examples where weld width exceeded that permitted by the applicable Welding Procedure Specification.

Within the area inspected the inspector noted five examples of mechanical undercut, at the toe of stiffener to Unit 2 containment liner plate fillet welds in the liner plate base material. The above undercut was in excess of the 1/32" that is permitted by Section III of the ASME B&PV Code. At the time of this inspection it could not be determined whether the undercut had been evaluated to and was consistent with the type 1 defect criteria (minimum wall not violated, no weld repair required) of Catawba.

Construction Procedure CP-64, "Repair of Arc Strikes and Minor Surface Repairs on Containment Plate." The licensee indicated that they would look further into the matter. The inspector stated that the above would be an unresolved item and identified as 414/80-29-02: "Mechanical Undercut".

- b. The required preheat temperatures were not maintained when two different thicknesses of metal were welded together on the personnel hatch.

The individual said the welders were using "rosebuds" to heat the pipe and it was noted that the temperature was below 175 F degrees. An engineer subsequently said the welds were okay because the outside temperature was above freezing, but when the welds were radiographed twelve inches of bad welds (cracks) were found. The individual stated that the hatch is located at the bottom of the turbine building as one enters the containment through a conduit.

From other information provided by the individual, the inspector located Nonconforming Item Report (NCI) Serial No. 2669 dated February 10, 1978 covering the item described above. As the result of a review of the above NCI the inspector noted that although there had been a violation of the Welding Procedure Specification (WPS), there was no violation of the ASME B&PV Code. The inspector reviewed the records of radiographic inspection for weld Nos. 2 PAL-205 and 2 PAL-206 identified in NCI No. 2669 the preceeding welds contained 7 3/4" of combined slug. These welds were properly repaired and accepted by nondestructive examination.

The inspector determined that the close out of NCI 2669 was consistent with ASME B&PV Code requirements, and that the actions taken to prevent recurrence was acceptable.

With regard to the above inspection the inspector noted on October 16, 1980 that Welding Procedure Qualification Record (PQR) L-110A dated August 17, 1977 lists preheat temperature as 60° to 120°F. ASME Section IX Table QW 255 lists preheat, QW-406.1, as an essential variable. ASME Section IX Paragraph QW-201.2 requires that specific facts involved, in WPS qualification, be recorded on the PQR. In view of the fact that PQR L-110A qualification testing was accomplished in August the inspector stated that preheat range listed (60°-120°F) was not representative of the actual testing conditions without refrigerator. The licensee stated that the preheat temperature listed on the PQR was a range not the actual temperature values used.

Failure to include specific facts involved in WPS qualification on the QPR is in noncompliance with 10CFR Appendix B Criterion XVII. This is a deficiency and is assigned item No. 413, 414/80-29-03: "Failure to Properly Document PQR Testing".

- c. The individual was concerned that the close out action on NCI 2794, concerning forged inspector's initials for a preheat sign-off, was not proper.

The inspector review NCI 2794 dated May 5, 1978, including the investigation conducted by the licensee, and determined that the corrective action, investigation to determine extent of the condition and action to prevent recurrence were complete and acceptable.