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

Report Nos. 50-413/82-21 and 50-414/82-19

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

Facility Name: Catawba Units 1 and 2

Docket Nos. 50-413 and 50-414

License Nos. CPPR-116 and CPPR-117

Inspection at Catawba site near Rock Hill, South Carolina

Inspector: J. C. Bryant for
P. K. VanDoorn — Date Signed 9/29/82

Approved by: J. C. Bryant
J. C. Bryant, Section Chief, Division of Project and Resident Programs — Date Signed 9/29/82

SUMMARY

Inspection on July 26 - August 25, 1982

Areas Inspected

This routine announced inspection involved 182 resident inspector-hours on site in the areas of safety-related components - observation of work activities (Unit 2); safety-related piping (welding) - observation of work activities (Unit 2); review of nonconforming items (Units 1 and 2); review of licensee and NRC identified items (Units 1 and 2); and, review of licensee task force effort to evaluate technical concerns of QC welding inspectors (Units 1 and 2).

Results

Of the five areas inspected, no violations or deviations were identified in four areas; four items of noncompliance were found in one area (violation - failure to adequately evaluate a rejectable defect identified by radiography (413/82-21-01) - paragraph 3.e; violation - failure to include appropriate qualitative acceptance criteria in drawings for installation of instrumentation tubing expansion coils (413/82-21-02) - paragraph 3.f; violation - failure to perform adequate evaluation of nonconforming items (413/82-21-03, 414/82-19-01) - paragraph 5; violation - insufficient documentation of QC inspection of HVAC hanger 1-H-VZ-5006 (413/82-21-06) - paragraph 3.i).

DETAILS

1. Persons Contacted

Licensee Employees

*R. L. Dick, Vice President Construction
*G. W. Grier, Corporate QA Manager
*J. C. Rogers, Project Manager
W. O. Henry, QA Manager, Technical Services
*L. R. Davison, Project QA Manager
*S. W. Dressler, Engineering Manager
*R. A. Morgan, Project QA Engineer
J. M. Curtis, QA Manager, Vendors Division
J. M. Frye, Senior QA Supervisor, Audit Division
W. H. Bradley, QA Staff Assistant
C. N. Alexander, QA Manager, Administrative Services Division
T. H. Robertson, Construction Engineer Civil
A. W. Jackson, Testing Engineer
J. C. Shropshire, QA Supervisor
T. A. Barron, QC Engineer Mechanical
J. A. Akers, QA Supervisor, Vendors Division
J. H. Lanier, QA Staff
H. L. Atkins, QA Engineer
J. W. Glenn, QA Engineer
M. L. Childers, Licensing SRAL

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

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on August 25, 1982, with those persons indicated in paragraph 1 above. The violations and unresolved item described in paragraphs 3 and 6, respectively were discussed in detail.

3. Licensee Action on Previous Enforcement Matters

a. (Closed) Unresolved Item (413, 414/81-22-02): Control of surface inspection of embedded pipe. This item concerned the fact that the licensee had identified several instances of missed surface visual inspections. These inspections are licensee implemented and not required by the installation code. The licensee has modified the procedure (CQAP M4) to preclude further missed inspections. The licensee has also provided justification of the previously installed pipe based on additional inspections performed. The inspector verified the licensee actions and considers them to be satisfactory.

b. (Closed) Unresolved Item (413, 414/81-26-01): Review of drawings and work instructions appears inadequate. This item concerned the question as to whether an excessive number of errors in design drawings for installation of the diesel generator plenum had occurred. The licensee justified the number of drawing corrections required as acceptable. This justification was based on the facts that the plenum is an extremely complicated structure; work was performed from design drawings rather than fabrication drawings, resulting in the use of a variation notice (VN) system to make typical corrections/clarifications normally done through use of fabrication drawings; and no problems were identified which would have affected the structural integrity of the plenum had they gone undetected. Further the licensee has implemented a trend analysis program for VN's. These actions are considered satisfactory.

c. (Closed) Violation (413, 414/82-03-04): Failure to follow procedure for structural steel inspection. Licensee actions concerning this item included implementation of the required inspection and training of the appropriate personnel. The inspector verified these actions and considers them to be satisfactory.

d. (Closed) Violation (413, 414/82-07-02): Inadequate procedure for control of repair welding. Licensee actions concerning this item were evaluation of the affected weld, modification of the procedure, and training of appropriate personnel. The licensee indicated that they considered the affected weld to be an isolated case. The inspector verified the licensee actions and considers them to be satisfactory.

e. (Closed) Unresolved Item (413, 414/81-24-01): Verification of appropriate corrective action for nonconforming items. The remaining portion of this unresolved item yet to be reviewed concerned whether adequate evaluation by the licensee concerning a defect identified by radiographic inspection had been performed. The NRC requested additional radiography to be performed (See NRC Report nos. 413, 414/81-26). The licensee performed this additional radiography and, based on this additional radiography, evaluated the defect to be unacceptable on July 30, 1982. The defect was ground out on August 3-4, 1982 revealing that the defect extended from approximately 1/16-inch beneath the outer surface through the remaining wall thickness. Metallurgical etching was also performed during the grinding process. This revealed that one end of the defect was touching or slightly into the weld metal (Class B Weld No. 1FW 12-6). The NRC resident inspector witnessed this grinding and etching process. In addition the NRC resident inspector and an NRC Region II inspector (J. L. Coley) reviewed radiographs associated with the defect. This review disclosed the following:

(1) Original radiographs from 1977 show the indication primarily as porosity with a faint tail. Indication should have been rejected and/or additional inspection should have been requested at this

time. Licensee reader accepted the indication as porosity on November 15, 1977.

(2) Radiographs taken July 13, 1982 show porosity connected to a linear indication; total length approximately 1/2-inch. The indication showed more clearly on this film. It appears on this film that the defect extends into the weld and is a rejectable defect. The indication should have been rejected and/or additional inspection should have been performed to further characterize the indication. Licensee Level III inspector accepted the indication on July 30, 1981 stating that the indication was "in base material" and that the "valve body was inspected and found to be acceptable by UT by the valve manufacturer."

(3) At the request of NRC, additional radiographs were taken on July 25, 1982 and July 28, 1982. These radiographs showed the indication to extend from slightly into weld metal or at the weld metal/base metal interface toward the valve body. These radiographs also showed the indication extending from near the outer surface angling toward the inner surface and having planer area in the through wall direction. The licensee rejected the defect based on this additional radiography.

Licensee QA procedure NDE 10, General Radiography Procedure, Appendix A provides acceptance criteria for production welds. This procedure requires elongated indication greater than 1/4-inch in length for Weld No. 1FW12-6 to be rejected. Therefore, acceptance of this indication is in violation of 10 CFR 50, Appendix B, Criterion V which requires activities affecting quality to be accomplished in accordance with established procedures. This Unresolved item is upgraded to Violation (413/82-21-01): Failure to adequately evaluate a rejectable defect identified by radiography.

f. (Closed) Unresolved Item (413, 414/81-28-02): Control of instrumentation expansion loops. Further review by the licensee has indicated that a 1/2-inch clearance requirement is appropriate for instrumentation line expansion coils. The requirement was implemented via Rev. 5 to Drawing No. ICS-A-20.9. Therefore, the lack of a specified clearance requirement has resulted in inadequate installations; e.g. expansion coil for instrument 1NVFT6150 in contact with a containment plate stiffener on December 7, 1981 and expansion coil for instrument 1RNFS5460 approximately 1/32-inch from steel tubing on December 16, 1981. Further review disclosed that 1NVFT6150 is not safety-related. This lack of appropriate acceptance criteria is in violation of 10 CFR 50, Appendix B, Criterion V which requires that drawings include appropriate qualitative acceptance criteria. Therefore this Unresolved Item is upgraded to Violation (413/82-21-02): Failure to include appropriate qualitative acceptance criteria in drawings for installation of instrumentation tubing expansion coils.

g. (Closed) Unresolved Item (413, 414/82-07-01): Verification of adequacy of embedments to withstand required loads. This item concerned whether the licensee had adequately evaluated missing studs in many Type I and II embedments. Upon further review the inspector determined this item to be an example that constitutes a violation. This unresolved item is upgraded to a violation with a detailed discussion provided in paragraph 5.

h. (Closed) Unresolved Item (413/82-13-02, 414/82-10-02): Verification of adequate evaluation of NCI's. Further review of NCI's questioned has revealed several examples of violation of licensee procedure requirements. This unresolved item is upgraded to a violation and its associated details are provided in paragraph 5.

i. (Closed) Unresolved Item (413/82-13-01, 414/82-10-01): Verification of adequate inspection records for HVAC hanger inspections. This item concerned the fact that the QC inspection record for HVAC hanger 1-H-VZ-5006 contained only printed inspector's names. Licensee review of 107 hanger packages revealed two additional QC records (hanger Nos. 1-H-VA-2381 and 1-H-VZ-5024) which contained only printed inspector names. In order to be a sufficent QA record, inspection records should contain a unique inspector signature, initials or identification stamp. Therefore, this item is in violation of 10 CFR 50, Appendix B, Criterion XVII which requires that sufficient records be maintained to furnish evidence of activities affecting quality. This unresolved item is upgraded to Violation (413/82-21-04): Insufficient documentation of QC inspection of HVAC hanger 1-H-VZ-5006. It does not appear that inspections were missed and, therefore, this appears to be a documentation error only.

No violations or deviations, except as described in paragraphs 3.e. through 3.i, were identified.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. A new unresolved item identified during this inspection is discussed in paragraph 8.b.

5. Nonconforming Item Report Review (Units 1 and 2)

The inspector reviewed numerous nonconforming item reports (NCI's) to determine if requirements were met in the areas of documentation, approvals, evaluation, justification, and corrective action.

The selected NCIs listed below address inadequate evaluations made by the licensee.

NCI 13,632 - Further review of this NCI pertaining to missing studs in embedded plates has revealed that the manufacturing process utilized at the Catawba facility resulted in many Type I and II embedments with studs missing from the required location of 1-inch from the ends of the plates. The licensee indicated that this discrepancy had only been considered for piping supports/restraints and HVAC supports. Further review by the licensee performed as a result of the Unresolved Item indicated this item to be possibly significant and requiring extensive evaluation. Based on this, the licensee reported this item to NRC per 10 CFR 50.55(e) on May 6, 1982. The licensee's initial evaluation of Nonconforming Item Report (NCI) No. 13,632 dated February 26, 1982 stated that this condition is rare and its root cause is insufficient inspection in the shop. This evalution further stated "It is not felt that this condition is repetitive enough to warrant corrective action." NCI 13,632 identified missing studs on the embedded plate for Hanger No. 1-R-CA-043. Licensee construction QA procedure Q1, Rev. 15, in effect at the time required that nonconforming item evaluations be complete and include consideration of other possibilities for recurrent problems. The licensee evaluation of NCI 13,632 was inadequate in that the repetitive condition of missing studs was not recognized.

NCI 12,337 - Evaluation dated April 30, 1982 was incomplete in that it did not clearly document evaluation of all possibilities of stress corrosion cracking of piping system flow sections due to zinc contamination and the evaluation also did not document consideration of welding residual stresses in the evaluation.

NCI 14,086 - Evaluation dated April 27, 1982, which addressed defects caused by construction personnel, was inappropriately performed by Design Engineering personnel and the evaluation erroneously stated that the defects described by the NCI were not generic.

NCI 14,261 - Evaluation dated April 26, 1982, which addressed a nonconforming condition caused by construction personnel, was inappropriately performed by Design Engineering personnel and the evaluation erroneously stated that the condition was not repetitive to the extent requiring corrective action.

For the latter three NCIs the licensee construction QA procedure Q1, Rev. 16, was in effect at the time of the evaluations, which required that evaluations be clear and complete and that nonconforming items be evaluated by appropriate personnel to determine if the condition is repetitive to the extent corrective action should be implemented. The above described evaluations are in violation of 10 CFR 50, Appendix B, Criterion V which requires activities affecting quality to be accomplished in accordance with established procedures. It appears that the nonconformances identified for the latter three NCI's are not technically significant and, are considered to be documentation errors. The first NCI on deficient embedded plates failed to produce an adequate evaluation of the deficiency in that possibilities for recurrence were not considered when they should have been.

The above described NCIs are examples of noncompliance with 10CFR50, Appendix B, Criterion V, which constitutes a violation (413/82-21-03, 414/82-19-01) in that the licensee failed to perform an adequate evaluation of the nonconforming items and determine if the condition is repetitive.

6. Licensee Identified Items 50.55(e) (Unit 1)

(Closed) (CDR 413/82-03): Unauthorized alterations made to Rotork EMO on valve tag No. INSO20A, S/N A3157E11. The licensee submitted a final response on March 2, 1982. The inspector verified the actions described in the response and considers them to be satisfactory. It is noted that a typographical error occurred in the response in that valve 1RCO01A should be valve 1KCO18B.

No violations or deviations were identified.

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

The inspector observed stress relief heat treatment of feedwater system weld Nos. 2CF61-6 and 7 for conformance to procedure (CQAP LSO, Rev. 6) requirements. Areas reviewed included use of appropriate data sheet; conformance to data sheet requirement for heatup rate, holding time, holding temperature, and cool down rate; use of calibrated equipment; and control of records.

No violations or deviations were identified.

8. Safety-related Components - Observation of Work Activities (Unit 2)

a. The inspector observed installation of reactor coolant pump internals for Unit 2 Reactor Coolant Loop No. 1, for conformance to procedure (CP-451, Rev. 3) requirements. Areas reviewed included cleanliness verification, rigging, lowering of the internals in accordance with the procedure details, inspection, and records control.

b. During this observation the inspector noted that the sequence of installation described by the procedure was deviated from in that guide bolts were not used. The procedure allowed approved changes to be made in the field but the changes were required to be noted on the record copy of the procedure. The deletion of the guide bolts did not apparently cause any damage to pump internals. However, the procedure change was not documented on the record copy, technical support personnel were not familiar with the use of record copy procedure, and the record copy of CP-45' could not be located when initially requested by the inspector. The record copy was later found in a QC supervisor's office file. In addition, it appears that record copies of construction procedures may not be appropriately filed in the QA records vault. Further review of this item is required to determine the significance and extent of this problem. This is Unresolved Item (413/82-21-05, 414/82-19-05): Control of "Record Copy" construction procedures.

No violations or deviations were identified.

9. Special Inspection of Licensee Task Force Evaluation of QC Welding Inspector Technical Concerns (Units 1 and 2)

On January 29, 1982 licensee management informed NRC management that technical and non-technical concerns had been expressed by QC welding inspectors at the Catawba facility. The licensee further indicated that a task force utilizing licensee and outside consultant personnel had been appointed to review the concerns. On May 25, 1982 licensee management presented a status report of the task force effort to NRC management. Since the licensee appeared to be conducting a thorough and objective review of the concerns, NRC management decided to allow the licensee to complete its review before NRC personnel performed a detailed inspection of the concerns.

The task force has completed the evaluation of each of the 129 technical concerns which had been expressed by 14 inspectors and the licensee has implemented most of the recommended actions. The inspector conducted a review of the task force evaluations to verify that each concern had been addressed, that objective evaluations had been performed, and that appropriate corrective actions appear to be specified. It appears that one inspector was not included in the task force evaluations. However, the one concern of the inspector appears to have been duplicated by another inspector and, therefore, was evaluated. The licensee indicated that the task force report would be modified to include the missed inspector. Further detailed review of non-technical concerns, verification of implementation of corrective actions, and verification of the adequacy of corrective actions will be conducted later and included in additional NRC reports.

No violations or deviations were identified.