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

Report Nos.: 50-413/84-33 and 50-414/84-19

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

Docket Nos.: 50-413 and 50-414

License Nos.: CPPR-116 and CPPR-117

Facility Name: Catawba Nuclear Station Units 1 and 2

Inspection at Catawba site near Rock Hill, South Carolina

Inspectors: for P. K. VanDoorn — A. Ignatonis — 5/10/84 Date Signed

for P. H. Skinner — A. Ignatonis — 5/10/84 Date Signed

A. Ignatonis — A. Ignatonis — 5/10/84 Date Signed

Approved by: Virgil L. Brownlee — 5/10/84 Date Signed
V. L. Brownlee, Section Chief
Division of Reactor Projects

SUMMARY

Inspection on February 26 - March 25, 1984

Areas Inspected

This routine, unannounced inspection involved 357 resident inspector-hours on site in the areas of licensee action on previous enforcement matters (Units 1 and 2); followup of licensee and NRC identified items (Units 1 and 2); site tours (Unit 1); IE Circulars (Unit 1); preoperational test program implementation (Unit 1); fuel receipt and storage (Unit 1); proposed Technical Specification review (Unit 1); safety committee activity (Unit 1); steam generator level control and protection system modification - SER Confirmatory Issue 25; procedure review for independent verification; implementation of items specified in Generic Letter 83-28; and implementation of design changes identified in the control room design review.

Results

Three violations were identified-failure to maintain records of fuel pool cleanliness; failure to comply with requirements of NRC Materials License No. SNM-1920; and failure to provide adequate instructions to control installation of isolation valves in instrument air lines.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. L. Dick, Vice President-Construction
*G. W. Grier, Corporation QA Manager
*J. W. Hampton, Station Manager
*J. C. Rogers, Project Manager
*T. B. Bright, Engineering Manager
*W. G. Rixon, Project Control
*L. R. Davison, Project QA Manager
J. W. Willis, Station QA Manager
*R. A. Morgan, Senior QA Engineer
*E. M. Couch, Project Administrator
*R. E. Hardin, Design Engineer
*W. G. Goodman, Inspection Superintendent
*W. R. McCollum, Jr., Performance Engineer
*J. W. Cox, Technical Service Superintendent
C. L. Jensen, Startup Coordinator
*G. T. Smith, Maintenance Superintendent
*C. L. Hartzell, L&P Engineer
*J. Knuti, Operating Engineer
*W. Beaver, Performance Engineer
*S. W. Dressler, Project Engineer
*P. G. Leroy, Licensing Engineer
W. H. Bradley, QA Engineer
W. W. McCollough, Maintenance Engineer
*L. E. Vincent, Office Engineer
*K. W. Schmidt, QA Engineer
*S. H. Van Malsson, Construction Staff Engineer
J. W. Rowell, Construction Engineer Electrical
J. C. Shrophsire, QA Engineer
J. W. Glenn, QA Engineer
W. E. Thomas, Design Engineer Electrical
M. R. Hemphill, QA Engineer
J. M. Snow, Methods and Procedures Supervisor Hangers
D. B. O'Brien, Squad Leader Hangers
*D. P. Hensley, QA Technician

Other licensee employees contacted included construction craftsmen, technicians, operators, mechanics, security force members, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 25, 1984, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. The licensee acknowledged cognizance and understanding of the concerns identified in the meeting.

Violation 50-413/84-33-01, 50-414/84-19-01: "Inadequate Instructions for Instrumentation Control Installation" - paragraph 6.e.

Violation 413/84-33-03: "Failure to Maintain Records of Fuel Pool Cleanliness" - paragraph 3.a.

Violation 413/84-33-06: "Failure to Comply with Requirements of NRC Materials License No. SNM-1920" - paragraph 10.

Unresolved Item 413/84-33-02: "Verification of Adequate Design of Instrument Air Tubing" - paragraph 6.e.

Unresolved Item 413/84-33-04: "Verification of Adequate Control of Paint on Stainless Steel Materials" - paragraph 5.b.

Inspector Followup Item 413/84-33-07: "Verification of Bistable Installation in SSPS for Steam Generator Level Control" - paragraph 13.

Inspector Followup Item 413/84-33-08: "Verification for Implementation of Station Directive for Reactor Trip Investigation and Manual for Safety-Related Components" - paragraph 15.

3. Licensee Action on Previous Enforcement Matters

a. (Closed) Unresolved Item (413/83-44-01): Spent fuel storage room and storage rack quality cleanliness records. During the assembly and installation of the racks in the spent fuel storage pool, cleanliness requirements were established by the licensee construction procedure CP-616, Rev. 0. This procdure also required that areas of the fuel pool be made inaccessible by installation of fuel racks be inspected for cleanliness and documented on Form L-71J. This level of cleanliness was to be maintained until the spent fuel pool was turned over to Steam Production department, which was done in November 1983. Per the inspector's request of subject records, the licensee attempted to fine them but could not locate them. This was documented on NCI 17910. Licensee evaluation indicated the situation to be not significant. The inspector reviewed and agreed with this evaluation. However, lack of records constitutes a 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 was upgraded to violation: Failure to maintain records of fuel pool cleanliness (413/84-33-03).

b. (Closed) Unresolved Item (413/83-56-02): Evaluation of non-seismic pipe over D/G batteries. Further review showed that the licensee had evaluated this pipe and considers the design to be satisfactory. The inspector considers the licensee actions to be satisfactory.

c. (Closed) Unresolved Item (413/83-55-02, 414/83-41-02): Switchyard tower failure. The licensee has provided an Incident Investigation Report 1-84-01 describing this failure. This report detailed the sequence of events that occurred, plant response, evaluation of plant response including safety analysis, and design information concerning the replacement tower. The inspector reviewed the report and found the licensee actions to be satisfactory.

d. (Closed) Violation (413/83-50-02): Modification performed on pressurizer heater fuses were not documented in accordance with station procedures. This item is closed based on correspondence detailed March 9, 1984, to Duke Power Company from Regional Administrator, Region II.

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. New unresolved items identified during this inspection are discussed in paragraph 5.b and 6.e.

5. Independent Inspection Effort (71302, 92706) (Units 1 and 2)

a. The inspector conducted tours of various plant areas. During these tours, various plant conditions and activities were observed to determine that they were being performed in accordance with applicable requirements and procedures. No significant problems were identified during these tours and the various evolutions observed were being performed in accordance with applicable procedures.

b. During a site tour on March 12, 1984, the inspector noted that painting was being performed in the Unit 1 Charging Pump rooms. The inspector noted that small amounts of paint, due to slight overbrushing or dripping, were present on stainless steel materials. The inspector informed the licensee that additional review was necessary to determine if this paint was detrimental to stainless steel and/or whether appropriate cleaning methods were in place to assure its removal. The licensee plans to review the matter and take necessary corrective action for its resolution. This is an Unresolved Item:Verification of adequate control of paint on stainless steel materials (413/84-33-04).

No violations or deviations were identified within the areas reviewed.

6. Licensee Identified Items 50.55(e) and NRC Identified Items (Units 1 and 2)

a. (Closed) (CDR 413, 414/80-10) (413, 414/80-21-03): Use of nonnormalized plate on personnel air locks. Responses for this item were submitted on August 11, 1980; March 31, 1981; and July 27, 1983. The inspector reviewed and verified implementation of corrective actions for this item and considers these actions to be satisfactory.

b. (Closed) (CDR 413/82-06): Undersize socket welds. Responses for this item were submitted on March 31, 1982; April 15, 1982; and October 17, 1983. The inspector reviewed and verified implementation of corrective actions for this item and considers these actions to be satisfactory.

c. (Closed) (CDR 413, 414/82-22): Vendor weld deficiencies for personnel airlock doors. Responses for this item were submitted on November 12, 1982 and July 27, 1983. The inspector reviewed and verified implementation of corrective actions for this item and considers these actions to be satisfactory.

d. (Closed) (CDR 413, 414/82-25): Incomplete penetration identified on Class 3 circumferential butt welds. Responses for this item were submitted on December 22, 1982; January 28, 1983; September 2, 1983; December 15, 1983; and March 2, 1984. The inspector reviewed and verified implementation of corrective actions for this item and considers these actions to be satisfactory.

e. (Open) (CDR 413, 414/83-03): Control schemes for modulating active valves may not allow the valves to reach their fail safe mode in a harsh environment. This deficiency identified improper installation of non-seismic positioners, whereby upon postulated failure they may not vent air from the valve actuator and preclude it from reaching its fail safe position. During followup of licensee's corrective action for this item on March 8, 1984, the inspector noted that a non-safety-related (non-S/R) isolation valve had also been installed in a non-safety related line located between a safety-related (S/R) solenoid and a S/R air operated valve. The purpose of S/R solenoid is to assure that the S/R valve goes to its safe position upon the appropriate signal, e.g., safety injection or containment isolation. The non-S/R isolation valve could nullify the fail-safe feature. Examples of S/R valves that have the added isolation valve are 1RN291, 1KC82B, and 2RN291.

Review of the specifications, DWG. No. ICS-A-20.1, Rev. 3, and DWG. No. ICS-A-20.6, Rev. 2, showed that these instructions were not clear in that they did not specify the location of installation of isolation valves in instrument air lines. Location for valve installation was left to the discretion of craft workers. Therefore, this is a violation of 10 CFR 50, Appendix B, Criterion V, which requires that instructions include appropriate qualitative acceptance criteria for determining whether activities affecting quality be prescribed by documented instructions have been satisfactorily accomplished. This

CDR will remain open pending resolution of this additional problem. This is a Violation (413/84-33-01, 414/84-19-01): Inadequate instructions to control instrumentation installation.

In addition to the above design discrepancies, the inspector also noted that some of the instrument air tubing lines between the S/R solenoids and the S/R valves were installed as non-S/R. The S/R solenoid is the S/R component which divides non-S/R instrument air tubing from the S/R air operated valve and assures fail-safe operation. The inspector questions whether the tubing between the solenoids and valves should be S/R. This would have helped prevent the problem identified in the violation above. The inspector is also concerned about crimping of the non-S/R copper tubing. S/R tubing is stainless steel and much stronger. The licensee indicated that crimping of these lines is not considered to be a credible phenomenon. It is also noted that the instrument detail drawings for the instrument loops identified in the CDR do not show the tubing in question to be non-S/R. The licensee indicated that the intent is for this tubing to be non-S/R and the drawings were in error. It appears that the drawings should have been clarified prior to installation. The licensee indicated that a written justification for this design including the subjects of crimping, redundancy, and interaction analysis would be forthcoming. Additional inspection is necessary to review the drawing error and design justification. This is an Unresolved Item: Verification of adequate design of instrument air tubing (413/84-33-02, 414/84-19-02).

f. (Closed) Inspector Followup Item (413/83-16-01): Resolution of Comments on TP/1/A/2600/08, RTD Bypass Flow Test. The licensee has provided resolution to comments associated with TP/1/A/2600/08. In response to a portion of the inspector's comments, a change to the FSAR was required to be submitted. Revision 8 has been submitted to the FSAR and this change incorporated to resolve the comments of the inspector.

g. (Closed) Inspector Followup Item (413/83-16-02): Clarification of the use of the term "as-built." The inspector met with members of DPC design, construction and operations personnel to discuss this item on March 23, 1984. DPC personnel stated that the term as-built, as used at Catawba, implies how the system will be upon final turnover of the system from construction to production. This action will assure that the system as identified on these drawings will reflect conditions actually achieved in the field.

7. IE Bulletin (92703)

The following IE Bulletins were reviewed to ensure receipt, evaluation, and appropriate implementation:

a. (Closed) IE Bulletin 79-24 - Frozen Lines. This Bulletin is closed based on addressing the concerns of frozen instrument lines in the

Safety Evaluation Report (SER, NUREG-0954) Section 7.5.2.4. The staff has determined the Catawba design is consistent with the function's importance to safety and is acceptable.

b. (Closed) IEB-81-03, Flow Blockage of Cooling Water to Safety System Components by Corbicula Sp. (Asiatic Clam) and Mytilus Sp. (Mussel). The presence of Asiatic clams in Lake Wiley has been confirmed by previous sampling programs, and are considered to be a potential problem in the Nuclear Service Water System (RN) and the Fire Protection Systems (RF&RY). The licensee noted in his response to the subject Bulletin that provisions have been designed into the station to minimize intrusion of clams into the raw water systems and to effect their removal upon entry and growth within piping and components. Accordingly, the licensee will perform periodic flow verification and visual inspections of the intake piping and inlet heat exchanger heads to provide early detection of clam infestation of raw water systems. Appropriate corrective action will be implemented if the monitoring and inspection programs indicate any potential problems.

c. (Closed) IE Bulletin 83-04 - Failure of the Undervoltage Trip Function of Reactor Trip Breakers. This bulletin is closed since General Electric AK-2 type circuit breakers are not used at Catawba.

d. (Closed) IE Bulletin 83-08 - Electrical Circuit Breakers with UV Trip Features in Use in Safety-Related Applications Other Than Reactor Trip Breakers. This item is being closed based on Duke Power Company letter dated February 24, 1984, to Mr. James P. O'Reilly, Regional Administrator, Region II, stating that no circuit breakers with undervoltage trip attachment are in use at Catawba in safety-related applications other than as reactor trip breakers.

8. IE Circular (92703)

The following IE Circulars were reviewed to ensure their receipt, review by appropriate management, and appropriate action taken:

a. (Closed) IE Circular 80-05 - Emergency Diesel - Generator Lubricating Oil Addition And Onsite Supply. Duke Power Company memo to K. S. Canady, Manager, Nuclear Engineering Services from M. S. Tuckman, Superintendent of Technical Services (Catawba) dated October 21, 1982, addresses this IE Circular (IEC). In addition, Section 9.5.7 of the Final Safety Analysis Report (FSAR) also discusses this area. Based on the above actions, IEC 80-05 is being closed. However, as a result of this review, the inspector identified that Operating Procedure (OP) 1/A/6550/02, DG Lube Oil System dated October 14, 1983, did not accurately reflect the guidance provided in FSAR, Section 9.5.7.2.1. This area was discussed with the Operations Superintendent. Catawba management will take appropriate action to revise this procedure by May 1, 1984. This will be tracked as an inspector followup item (50-143/84-33-05).

b. (Closed) IEC 78-16: Limitorque Valve Actuators. The licensee has determined that none of the affected valves are used in safety-related applications. This action is considered satisfactory.

9. Preoperational Test Program Implementation (70302)

The inspector reviewed, in part, the implementation of the preoperational test program. Test program attributes inspected included review of administrative requirements, document control, documentation of test events and deviations to procedures, operating practices, instrument calibrations, and correction of problems revealed by the test.

As a result of this review, no violations or deviations were identified.

10. Fuel Receipt and Storage (60501)

During the inspection period, the inspector reviewed the licensee's Special Nuclear Material License (SNM-1920) dated January 16, 1984, to determine requirements that activities associated with the license requirements were being adhered to. The areas reviewed were fire safety, physical protection, fuel handling, and training of operations personnel involved in the receipt of new fuel. As a result of this review, one violation was identified. SNM-1920 states that this license is authorized to be used for receipt, possession, inspection, storage, and packaging of fuel for delivery to a carrier in accordance with the statements, representations, and conditions specified in the licensee's application dated November 22, 1983.

DPC's Special Nuclear Material License Application dated November 22, 1983, under section titled Facilities and Equipment subsection A.4, states all operations personnel involved in receipt of new fuel participate in a formal training program which includes operational walkthroughs of procedure OP/0/A/6550/15 (Receipt, Inspection, and Storage of New Fuel) using a dummy assembly. SNM-1920 in Section C, Training, also states that operations personnel must pass a written exam covering health physics procedures and a fuel handling test using a dummy fuel assembly. The inspector reviewed the training records of five operators who perform receipt and inspection of special nuclear material. Discussions with the training department and operations department indicated that these personnel did not receive fuel handling testing using a dummy fuel assembly. However, the training records indicated that each individual had received training in the areas of crane operation, rigging, and simulation of activities covered by OP/0/A/6550/15. In addition, of the personnel training records reviewed, each had participated in handling fuel at McGuire and/or Oconee Nuclear Stations. The failure to provide all the training as specified in NRC Materials License No. SNM-1920 dated January 16, 1984, is a Violation (413/84-33-06).

11. Proposed Technical Specification Review (71301)

The inspector reviewed Sections 1, 3, 5, and 6 of the proof and review copy of the Technical Specifications. This review consisted of a comparison of the proof and review copy to the Westinghouse Standard Technical Specification (STS) and a review for enforcability. A list of comments was generated and provided to Region II management to be included in the overall Region II effort for this activity.

Based on this review, no violations or deviations were identified.

12. Safety Committee Activity (40301)

The inspector reviewed this area. There is no onsite facility review group, such as described in STS. The functions described in the STS and in ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants, Section 4.4, have been assigned to supervisory personnel in the operating staff. One area that has not been addressed is post trip review; however, there is a Station Directive being written to address this area.

Based on this review, no violations or deviations were identified.

13. SER Confirmatory Issue Number 25

The inspector reviewed the modification made to the Steam generator level control and protection system designed to eliminate the issue of a single channel failure. This design change is intended to provide an initiation logic of a two-out-of-four high-high steam generator level signal for feedwater isolation. The modification relates to Confirmatory Issue Number 25 of the Catawba Safety Evaluation Report. Implementation of design change was affected by documentation numbers CNM 1399.60-0223 for the process cabinet and CNM 1399.60-0032 for the solid state protection system (SSPS) which involves installation of extra bistables. The inspector verified installation of the bistables in the process cabinet, but noted that no work was done on the SSPS. Pending completion of work for the SSPS this item will be tracked as an Inspector Followup Item (413/84-33-07): installation of bistables in SSPS for steam generator level control logic.

14. Procedure Review for Independent Verification

The inspector reviewed the application of independent verification in selected periodic test procedures, maintenance procedures, and instrument procedures. Specifically, the procedures were examined for incorporation of double sign of blanks for independent verification, that are determined to be important to safety. The procedures selected for review were as follows:

PT/1/A/4250/03A	Motor Driven Auxiliary Feedwater Pump 1A
PT/1/A/4200/04B	Containment Spray Pump 1A
PT/1/A/4200/07A	Centrifugal Charging Pump 1A

PT/1/A/4200/10A	Residual Heat Removal Pump 1A
MP/0/A/7150/11	Containment Spray Pump Corrective Maintenance
MP/0/A/2001/05	Westinghouse DS-416 Air Circuit Breaker Inspection
IP/0/A/3817/12	Calibration Procedure for Barton Model 763, 764, and 386A Transmitters
IP/0/A/3890/04	Controlling Procedure for Barton Class 1E Transmitter Installation/Removal
IP/0/A/3890/06	Controlling Procedure for Checkout of Safety Related Instruments

Within the areas inspected, no violations or deviations were identified.

15. Generic Letter 83-28, "Required Actions Based on Generic Implementation of Salem ATWS Events"

The inspector reviewed portions of the licensee's response to the NRC Generic Letter 83-28. In a letter, dated November 4, 1983, Duke Power Company described their Reactor Trip Investigation Program, Equipment Classification and Vendor Interface Program, Post-maintenance Testing, and Reactor Trip System Reliability. The licensee was committed to implment the Reactor Trip Investigation Program for the Catawba facility by initial criticality. Furthermore, the licensee has stated that at that time the implementing Station Directive, operating procedures, and performance manual guidance will be in place.

Based on the inspector's review of licensee work in this area the Station Directive on investigation of reactor trips and the equipment classification document entitled "Catawba Nuclear Station Quality Standards Manual for structures, Systems, and Components" remain to be completed. The licensee has stated that the latter document will be issued by April 15, 1984. This will be identified as an Inspector Followup Item (413/84-33-08): implementation of Station Directive for reactor trip investigation and manual for safety-related structures, systems, and components.

With regard to the inspection of reactor trip breakers (RTB) and the associated undervoltage trip attachments (UVTA), the inspector was informed that the main RTB incorporated the latest UVTA design. Also, the RTB shunt trip modification was installed. However, due to covered RTB cabinets with plastic sheeting while paint work was in progress the inspector was unable to verify component installation. This will be done in a subsequent inspection.

Based on this review, no violations or deviations were identified.

16. Control Room Design

As a part of NUREG 0737, Supplement 1 the licensee submitted a report on the control room design review. In it a number of human engineering discrepancies (HED) were identified with a schedule of HED solutions. A certain number of physical and surface enhancement HED solutions were

identified to be completed prior to fuel load. The inspector verified implementation of the following HED's:

Physical Change HEDs

9	64	429	437(P)
30	68	584	

Surface Enhancement HEDs

41	446	463	594

Based on this review, no violations or deviations were identified.