



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-413/85-30

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

Docket No.: 50-413

License No. NPF-35

Facility Name: Catawba 1

Inspection Conducted: June 24 - 28, 1985

Inspector: C. Smith

7/18/85
Date Signed

Approved by: C. Upright
C. Upright, Section Chief
Division of Reactor Safety

7/18/85
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 34 inspector-hours on site in the areas of design changes and tests and experiments.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Barrett, Training Supervisor
- *H. Barron, Superintendent of Operations
- *W. Beaver, Performance Engineer
- *M. Bolch, Station Emergency Planner
- *W. Bradley, Quality Assurance
 - L. Benjamin, Junior Engineer
- *B. Caldwell, Station Service Superintendent
- *J. Cox, Technical Services Superintendent
 - T. Deven, IAE Supervisor
 - D. Goolsby, Associate Engineer
- *J. Hampton, Manager-CNS
 - G. Helms, IAE Planner
- *C. Kiker, Jr., OPS Training
- *R. Kimroy, OPS Training
- *P. LeRoy, Licensing Engineer
- *F. Mack, Jr., Project Services Engineer
 - J. Moran, Junior Engineer
 - A. Pease, Designer
- *D. Robinson, Reactor Engineer

NRC Resident Inspectors

- *P. Skinner, Senior Resident Inspector
- *K. Van Doorn Senior Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 28, 1985, 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 did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

Inspector Followup Item, Revision of Implementation Phase of the Design Change Program, paragraph 4.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Design Changes (35744)

- References:
- (a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Criterion III
 - (b) Regulatory Guide 1.64, Quality Assurance Requirements for the Design of Nuclear Power Plants, Revision 2
 - (c) ANSI N45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants
 - (d) Regulatory Guide 1.33, Quality Assurance Requirements (Operations) November 1972
 - (e) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
 - (f) 10 CFR 50.59, Changes, Tests and Experiments
 - (g) Technical Specifications Section 6.5, Review and Audit

The inspector reviewed the licensee design change program required by references (a) through (g) to verify that these activities were conducted in accordance with regulatory requirements, industry guides and standards, and Technical Specifications. The following criteria were used during the review to assess the overall implementation of the established program:

- Procedures have been established to control design changes which include assurance that a proposed change does not involve an unreviewed safety question or a change in technical specifications as required by 10 CFR 50.59.
- Procedures and responsibilities for design control have been established including responsibilities and methods for conducting safety evaluations.
- Administrative controls for design document control have been established for the following:

Controlling changes to approved design change documents

Controlling or recalling obsolete design change documents such as revised drawings and modification procedures

Release distribution of approved design change documents

- Administrative controls and responsibilities have been established commensurate with the time frame for implementation to assure that design changes will be incorporated into:
 - Plant procedures
 - Operator training programs
 - Plant drawings to reflect implemented design changes and modifications
- Design controls require that implementation will be in accordance with approved procedures.
- Design controls require assigning responsibility for identifying post-modification testing requirements and acceptance criteria in approved test procedures and for evaluation of test results.
- Procedures assign responsibility and delineate the method for reporting design changes to the NRC in accordance with 10 CFR 50.59.
- Controls require review and approval of temporary modifications in accordance with Section 6 of the Technical Specifications and 10 CFR 50.59.

The documents listed below were reviewed to verify that these criteria had been incorporated into the licensee design program:

Duke Power Company Topical Report, Quality Assurance Program, Duke-1 Section 17.2.3, Revision 8

Nuclear Station Modification Manual

Section 4.2, Design Engineering Designed Modifications, Revision 0

Section 4.3, Station Designed Modifications, Revision 0

Section 4.4, Exempt Changes, Revision 0

Section 7.0, Administration of Nuclear Station Modifications, Revision 0

Section 7.6, Design, Revision 0

Section 7.7, Drawing Control, Revision 0

Section 8.0, Administration of Major Construction Projects, Revision 0

Section 9.0, Administration of Exempt and Temporary Changes, Revision 0

Catawba Nuclear Station Directive 4.4.4, Processing Nuclear Station Modifications, Revision No. 4

Catawba Nuclear Station Directive 4.4.5, Temporary Station Modification Post-Licensing, Revision No. 3

QA-104, Definition and Application of the Quality Assurance Program, Revision 2

In October 1984 the nuclear station modification program was revised. This resulted in the preparation of a Nuclear Station Modification Manual which specifies appropriate requirements which shall be met to implement a modification at an operational nuclear station. Specific types of modifications can be designed by the Nuclear Production Department following concurrence from Design Engineering. Nuclear Station Modification Manual Section 7.6, Design, delineates the administrative controls applicable to both Design Engineering Designed Modifications (DDMs) and Station Designed Modifications (SDMs). Additional requirements for the processing of Nuclear Station Modifications are delineated in Station Directive Section 4.4.4.

Nuclear safety evaluations are performed for DDMs and SDMs to assure that a proposed change does not involve an unreviewed safety question or a change in the Technical Specifications (TS) as required by 10 CFR 50.59. Additionally, measures have been established to control temporary modifications including the performance of a written safety evaluation for determination of an unreviewed safety question in accordance with 10 CFR 50.59. Station Directive (SD) 4.4.5, Revision 3, delineates the administrative controls applicable to the control of temporary modifications.

The review of station problem reports and the determination of the method of processing has been assigned to the Projects Engineer staff. Accountable engineers assigned responsibility for initiating and processing SDMs and DDMs are selected from this group. The inspector interviewed selected staff members to ascertain their understanding of the QA program classification requirements. The accountable engineers were knowledgeable in the QA program classification requirements, in addition to the requirements of the revised design change program.

The following design change packages were examined to verify that selected elements of the revised design change program are being implemented as specified by procedures:

NSM No. CN-10176, Replace existing chromalox model AR-2525A thermostats with ASCO model SB10A/QJ11A1 with six feet capillary and 3/8 inch bulb. Also existing 1/4 inch thermowell must be replaced with 3/8 inch thermowell, Revision 0

NSM No. CN-50052, Add jumper in 2CRA-C-1 control panel in order to bypass one of the compressor motor high temperature interlock, Revision 0

NSM No. CN-10262, Removal of power from "A" train solenoid for the Main Steam Isolation Valves and the Steam Generator PORVs and head vent valve INC252B to prevent overcooling of system due to spurious valve opening due to fire, Revision 0

NSM No. CN-10123, NC System valve INC34A (PORV), Revise jumper terminal connection in input cabinet IIC10 and on connection diagram CN-1713-10.03 to agree with elementary diagram CNEE-0150-01.16. This change will allow subject valve to be closed manually, Revision 0

NSM No. CN-10173, (1) Install a new DC auxiliary relay for contact multiplication of barring device interlock pressure switch (PS32) and interlock engine starting relays with auxiliary contacts. (2) Change input contact to generator "droop" mode relay from R3-8 to R9A-4. (3) Add relay contact R4-5 to the engine starting timer initiation circuit, Revision 0.

NSM No. CN-10260, Roll wires connected to terminals 1 and 3 on TB856 in the A and B safeguard Test Cabinets, Revision 0

NSM No. CN-10455, Rewire conductor 9B, 9W on cable 1EIA547 from switch SM168-1 and 2 to SM168-3 and 4 (Respectively). This will allow channel 2 power to supply steam generator level control instead of channel 1 power, Revision 0

NSM No. CN-10502, Add one relay to 1EATC20. Have CAPT suction logic actuate relay in 1EATC20 which will in turn actuate 1RN310B, Revision 0

NSM No. CN-10173, Relocate wiring in 1DECPA and 1DECPB as shown on the attached drawings, Revision 1

NSM No. CN-10419, Change contacts, 2, 2a on relays GB and DE from N.O. to N.C. to give proper 1.47 indication, Revision 00

NSM No. CN-10335, Revise flow alarm defeat circuits to minimize false alarms and to avoid defeating valid flow alarms. Flow alarms for the following monitors are affected: 1EMF44, 1EMF45A and B, 1EMF46A and B, EMF47, EMF-49, EMF-50, 1EMF52, Revision 00

NSM No. CN-10061, (1) Remove time delay on main feedwater pump high discharge pressure trip (2) Add controls to trip main feedwater pump on feedwater isolation signal, Revision 0

NSM No. CN-10039, Install a vent line from the 10 inch CA pump suction hotwell source supply line to the condenser. This new line will vent the CA suction line from the hotwell to remove air or vapor voids, Revision 0.

The inspector verified that the following requirements were incorporated in the documentation associated with each nuclear station modification package:

The design change request was reviewed and approved as required.

Design input requirements were specified, reviewed, and approved.

Independent design verifications were performed as required.

Post-modification acceptance tests were performed as required and designated acceptance criteria were met.

Any changes to the design documents were properly reviewed and approved.

Design reviews required by Technical Specifications were performed.

Plant drawings were updated to reflect the design change or modification.

Plant procedures have been updated to reflect the design changes.

The training organization was made aware of the modifications.

The following temporary station modification packages were reviewed by the inspector to verify conformance with written procedures:

Work Request No. 16744 OPS, Calibrate or repair PZR pressure master controller. Adjust controller to maintain a more constant PZR/NC pressure, dated June 19, 1985.

Work Request No. 4457 IAE, Install TSM on N44 to reduce loss of detector voltage set point to 400 V DC. Reference IP/O/A/3240/04C, Section 10.0, 10.1.9 and 10.1.13.22 through 10.1.13.27, dated June 23, 1985.

Work Request No. 0213LAP, Fabricate and install cooling system for the BVLIS cabinets per the attached sketch, dated June 11, 1985.

The revision of licensee design change program as delineated in the Nuclear Station Modification Manual has enhanced the programmatic controls applicable to the front end part of the design change program; i.e., the identification, review, and processing of station problem reports which may develop into a DDM or an SDM. The back end part of the process appears deficient in so far as verification activities for DDMs are concerned. Section 7.8 of the Nuclear Station Modification Manual addresses requirements for installation and return to service. Paragraph 7.8.8.1 specifies prerequisites for return to service, among which are verification activities.

The inspector determined that the licensee has developed an "Implementation Plan" which will be incorporated into the design change program. The accountable engineer has been assigned the responsibility for the development of the implementation plan for a specific modification. Among other features addressed by the Implementation Plan are testing and calibration requirements. The inspector was informed that the Nuclear Station Modification Manual is presently being revised to incorporate the requirements for preparation of an Implementation Plan during the implementation of the design change program. Station Directive 4.4.4 will subsequently be revised to also include these requirements.

The inspector discussed with licensee management the implementation of the requirements for cross-disciplinary reviews required by the Technical Specifications. Completion of cross-disciplinary reviews as documented on the existing form is not readily apparent. Licensee management concurred with this observation and stated that the applicable form was being revised to more clearly show completion of this activity.

Within this area, one inspector followup item was identified. The licensee has developed an Implementation Plan which will be incorporated into the design change program. The Nuclear Station Modification Manual is presently being revised to incorporate the requirements delineated in the Implementation Plan. Station Directive 4.4.4 will also be revised to include the requirements of the Implementation Plan. Additionally, the form used to document TS required cross-disciplinary reviews of design changes is being revised to more clearly show completion of this activity. Until the licensee has completed the revision to the above design change program documents, this is identified as Inspector Followup Item 413/85-30-01, Revision of Implementation Phase of Design Change Program.

5. Tests and Experiments (35749)

- References:
- (a) Appendix B to 10 CFR 50 - Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
 - (b) 10 CFR 50.59 - Changes, Tests and Experiments
 - (c) Duke Power Company Topical Report, Quality Assurance Program, Duke-1-A, Section 17.2.11, Revision 7
 - (d) Technical Specification, Section 6.5, Review and Audit
 - (e) Regulatory Guide 1.33, Quality Assurance Requirements (Operations) November 1972
 - (f) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

The following licensee document was used to select completed test packages for review:

FSAR Chapter 14, Figure 14.2.11-1, Testing Following Initial Fuel Loading, Revision 11.

The inspector subsequently examined the test packages to verify that selected elements of the test and experiment program were being implemented in conformance with procedures. The test packages examined are as listed below:

Test Number: TP/1/A/2600/11, Pressurizer Pressure and Level Control System Test, Test dates: 2/4/85, 3/1/85, 3/2/85

Test Number: TP/1/A/2150/01, Reactor Coolant Flow Test, Test dates: 11/21/84 through 12/4/84

Test Number: TP/1/A/2150/13, Pressurizer Functional Test, Test dates: 11/22/84 through 11/24/84

The inspector also performed a detailed examination of the test package for the auxiliary feedwater system functional test to verify that earlier identified deficiencies were corrected. The test procedure involved is listed below:

Test Number: TP/1/A/1250/04, Auxiliary Feedwater System Functional Test, Test dates: 7/29/83 through 5/9/84.

The inspector verified that plant test activities documented by the above test packages were conducted in compliance with licensee established procedures. Additionally, the inspector verified that previously identified deficiencies in the auxiliary feedwater functional test documented in Inspection Report No. 50-413/84-05 and 50-414/85-04 were corrected. Corrective actions were accomplished under design change NSM No. CN-10039 discussed in paragraph 4. Retest activities were conducted under Work Request No. 0616NSM.

The inspector determined that the Auxiliary Feedwater pumps 1A and 1B developed head was not within the acceptable band at the minimum flow condition. The test data was evaluated by Design Engineering and the pump performance was declared acceptable. An amendment was issued to the facility operating license. This amendment changed the Technical Specifications to modify the surveillance requirement acceptance criteria for the auxiliary feedwater pumps. The following document was reviewed in connection with the amendment to the Catawba Nuclear Station Facility Operating License NPF-35:

Letter from Elinor G. Adensam, Chief Licensing Branch No. 4, Division of Licensing to Mr. H. B. Tucker, Vice President Nuclear Production Department, Subject: Issuance of

Amendment No. 1 to Facility Operating License NPF-24-Catawba
Nuclear Station, Unit 1, dated September 24, 1984.

Within this area, no violations or deviations were identified.