



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

Report Nos.: 50-413/85-52 and 50-414 '85-62

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

Docket Nos.: 50-413 and 50-414

License Nos.: NPF-35 and CPPR-117

Facility Name: Catawba 1 and 2

Inspection Conducted: November 26 - December 25, 1985

Inspectors: C. W. Burger, for 2/5/86  
P. H. Skinner Date Signed  
C. W. Burger, for 2/5/86  
P. K. VanDoorn Date Signed  
Approved by: V. L. Brownlee 2/5/86  
V. L. Brownlee, Acting Section Chief Date Signed  
Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection involved 103 inspector-hours on site in the areas of followup of licensee and NRC identified items (Units 1 and 2); plant operations (Unit 1); surveillance observation (Unit 1); maintenance observations (Unit 1); observation of preoperational testing (Unit 2); review of administrative control of operating procedures; and review of TMI action items (Units 1 and 2).

Results: Of the seven areas inspected, no violations or deviations were identified.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. W. Hampton, Station Manager
- E. M. Couch, Project Manager
- H. L. Atkins, QA Engineering Supervisor
- H. B. Barron, Operations Superintendent
- \*W. F. Beaver, Performance Engineer
- T. B. Bright, Construction Engineering Manager
- \*R. N. Casler, Shift Operating Engineer
- \*B. F. Caldwell, Station Services Superintendent
- J. W. Cox, Superintendent, Technical Services
- T. E. Crawford, Operations Engineer
- L. R. Davidson, Project QA Manager
- J. R. Ferguson, Assistant Operating Engineer
- \*C. L. Hartzell, Licensing and Projects Engineer
- R. A. Jones, Test Engineer
- C. S. Kelly, Instrumentation/Electrical Technical Support
- P. G. LeRoy, Licensing Engineer
- T. D. Mills, Construction Engineer, Electrical
- C. L. Ray, Principal Design Engineer
- T. Robertson, Construction Engineer
- \*F. P. Schiffley, II, Licensing Engineer
- G. T. Smith, Maintenance Superintendent
- \*D. Tower, Operating Engineer

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 December 23, 1985, with those persons indicated in paragraph 1 above. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

### 3. Licensee Action on Previous Enforcement Matters (92702) (Unit 1)

- a. (Open) Violation 413/85-43-01: Failure to Follow QA Procedure for Control of Nonconforming Items. The response for this item was submitted on December 6, 1985. The inspector verified that corrective actions described in the response were completed. Licensee actions are acceptable, however, the QA Surveillance of Nonconforming Item Reports

has identified findings requiring licensee followup. This item remains open pending review of this licensee followup.

- b. (Open) Unresolved Item 414/85-56-02: Evaluation of Cold Spring in Safety-Related Piping. The licensee had reported this issue as potentially reportable on November 8, 1985. The licensee reported on December 3, 1985, that technical evaluation of the cold spring incidents had shown that the piping was acceptable as is and therefore the item was not reportable. The NRC reviewed this evaluation and documented this review in NRC Report 50-414/85-63. During this inspection period, the inspector reviewed the affidavits of those personnel interviewed by the licensee's investigators. The affidavits affirm the incidents that the licensee has investigated and do not identify other technical issues. The licensee is preparing a report of the investigation and evaluating the need for personnel action. This item remains open pending further review of licensee actions.

No violations or deviations were identified.

4. Licensee Identified Items 50.55(e) (99020) (Unit 2)

- a. The inspector reviewed interim licensee actions relative to Diesel Generator 2B main bearing failures. The licensee informed the NRC on November 25, 1985 and December 5, 1985 that No. 7 main bearing had failed on November 20, 1985 and again on December 5, 1985. On December 19, 1985, the licensee informed the NRC that this was a potentially reportable item. The inspector observed the first failed bearing and held discussions with licensee personnel as to their evaluation of this problem. Duke vendors (Delaval and FAA Corp.) are performing failure analysis. Preliminary information indicates possible installation errors, however, evaluation is still in progress. Further inspection of this problem will be conducted.
- b. The inspector reviewed interim licensee evaluation of a problem relative to a missing closure spring one of the Pressurizer PORVs. This was one of two springs which close the valve upon loss of non-safety-related instrument air. Duke informed NRC that this was a potentially reportable item on December 6, 1985. The licensee's preliminary evaluation has shown that the valve was from a lot different than the other PROVs on both units and the valve would have closed on loss of air but may not have met response time. The licensee has performed system pressure valve timing tests with air available which would not have detected the missing spring. It should be noted that a safety-related modification which supplies nitrogen to these valves for closing has been implemented for Unit 2 and is planned for Unit 1. Unit 1 valves were declared operable based on the above information and available operable block valves.

No violations or deviations were identified.

5. Previously Identified Inspector Findings (92701) (Unit 2)

(Closed) Inspector Followup Item 414/85-63-03: Duke Audits of Bahnson. The inspector reviewed two corporate QA audits dated August 1, 1984 and October 16, 1985 of FLAKT/Bahnson Corporation. Attributes considered in this inspection were audits performed as scheduled, appropriate areas reviewed, documentation, review and approval, disposition of findings and followup of corrective actions. Licensee actions are acceptable.

6. Plant Operations Review (Unit 1) (71707 and 71710)

- a. The inspectors reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements, Technical Specifications (TS), and administrative controls. Control room logs, danger tag outs, Technical Specification Action Item Log, and the removal and restoration log were routinely reviewed. Shift turnovers were observed to verify that they were conducted in accordance with approved procedures.

The inspectors verified by observation and interviews, that measures taken to assure physical protection of the facility met current requirements. Areas inspected included the security organization, the establishment and maintenances of gates, doors, and isolation zones in the proper condition, that access control and badging were proper and procedures followed.

In addition to the areas discussed above, the areas toured were observed for fire prevention and protection activities. These included such things as combustible material control, fire protection systems and materials, and fire protection associated with maintenance and construction activities.

- b. On December 19, 1985, the utility experienced a failure in the auxiliary building ventilation system. One of the ventilation exhaust fans required replacement. Since this replacement could not be performed within the 24 hour action statement of TS 3.7.7, the utility requested relief from this TS limiting condition for operation (LCO) on a one time basis as discussed in NRC correspondence EGM-85-05A dated November 21, 1985. Since the system would still perform its intended function if an emergency occurred the region extended the corrective action time by 96 hours. This fan was repaired and returned to service about 2:00 a.m. on December 22.

No violations or deviations were identified.



7. Surveillance Observation (61726) (Unit 1)

During the inspection period, the inspector verified plant operations were in compliance with various TS requirements. Typical of these requirements were confirmation of compliance with the TS for reactor coolant chemistry, refueling water tank, emergency power systems, safety injection, emergency safeguards systems, control room ventilation, and direct current electrical power sources. The inspector verified that surveillance testing was performed in accordance with the approved written procedures, test instrumentation was calibrated, limiting conditions for operation were met, appropriate removal and restoration of the affected equipment was accomplished, test results met requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

Typical of the surveillance items that were witnessed in part or in full were various calibrations of the nuclear instrumentation, radiation monitoring systems instrumentation, auxiliary feedwater system testing, and turbine stop valve testing.

No violations or deviations were identified.

8. Maintenance Observations (62703) (Unit 1)

Station maintenance activities of selected systems and components were observed/reviewed to ascertain that they were conducted in accordance with the requirements. The inspector verified licensee conformance to the requirements in the following areas of inspection: the activities were accomplished using approved procedures, and functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities performed were accomplished by qualified personnel; and parts and materials used were properly certified. Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may effect system performance.

No violations or deviations were identified.

9. Preoperational Test Program Implementation (70302 and 71302) (Unit 2)

- a. The inspector conducted tours to verify that turned-over equipment was adequately protected and controlled. This review included observation of construction activities, observation for fire hazards and observation of security boundaries.
- b. The inspector observed conduct of portions of the Engineered Safeguards Features Functional Test. This included attendance at a coordination meeting, discussions with the test program director and test engineers, general observation of testing and operations in the control room and observation of the test described in Section 12.1 of TP/2/A/1200/03A.

This inspection was performed to assess whether the licensee was conducting a well organized program, personnel had a good understanding of responsibilities and conduct of specific tests, control or organizational interfaces was good, and procedures were properly approved. Additional documentation of this inspection is described in Report No. 50-414/85-67.

- c. The inspector also reviewed Nonconforming Item Reports to determine if documentation was clear and complete and whether appropriate resolution and corrective action was specified.

No violations or deviations were identified.

#### 10. Plant Procedures (42400B) (Unit 2)

Requirements for plant operational procedures are contained in the FSAR, Chapter 13.4; TS 6.8; Regulatory Guide 1.33, Rev. 2, and ANSI 18.7-1976. The licensee has established procedure controls via various manuals such as the Station Directives (SD) Manual, the Administrative Policy Manual (APM), and the Operations Management Procedures (OMP) Manual. The inspector reviewed these manuals generally and also reviewed specific procedures from these manuals in more detail to verify that the licensee had an administratively well controlled process for procedures in areas such as administration, general plant operation, startup and shutdown of safety-related systems, abnormal operations, emergency operations, control of radioactivity, control of measuring and test equipment, maintenance, chemical and radiochemical activities, testing, security, refueling, emergency plans and technical support. Procedures specifically reviewed included:

- SD 2.3.1 - Control of Test and Measuring Equipment
- SD 2.3.2 - Control of Process Instrumentation used as Test and Measuring Equipment
- SD 3.1.2 - Access to Containment
- SD 3.1.3 - Recall of Station Personnel
- SD 3.1.10 - Control Room Access and Control
- SD 3.1.18 - Investigation of Reactor Trip
- SD 4.2.1 - Development, Approval and Use of Station Procedures
- SD 4.2.2 - Independent Verification Requirements
- SD 4.4.3 - Temporary Station Modifications
- APM 4.1 - Administrative Instructions for Preoperational Test Procedures

APM 4.2 - Administrative Instructions for Permanent Station Procedures

APM 4.3 - Administrative Instructions for Temporary Station Procedures

OMP 1-5 - Independent Verification

OMP 1-10 - Shift Manning and Overtime Requirements

OMP 2-5 - Operations Work List and Technical Memorandums

OMP 2-17 - Control Room and Unit Supervisor Logbooks

OMP 2-22 - Shift Turnover

OMP 2-25 - Temporary Operating Instructions and Periodic Tests

The above documents were reviewed to verify that:

- Administrative controls have been established for the preparation, approval, changes, and revision of plant procedures
- Responsibilities have been established and assigned for the revision and approval of plant procedures
- Controls have been established for the format of procedures, distribution, disposal of outdated procedures, handling of temporary changes and the training organization appraisal of changes to procedures
- Controls are provided that govern the preparation and use of various types of operating logs, shift turnover activities and log reviews
- Controls are provided in the preparation of plant procedures which takes in to consideration 10 CFR 50.59 requirement to ensure that an unreviewed safety question doesn't exist
- Controls are provided in the preparation of plant procedures which takes into consideration ALARA concepts regarding radiological conditions as applicable
- Controls are provided for issuance, review, updating, approval, and limitations of standing orders (Technical Memorandums).

In addition, the inspector reviewed 11 various procedure master files to verify that procedures were controlled and approved in accordance with requirements. The inspector also reviewed five procedures in the control room to verify that the latest procedures were available. The inspector verified that a shift supervisor understands the system for control of temporary procedure changes. Finally, the inspector reviewed the active Technical Memorandums to verify that they were properly controlled and not being used in lieu of appropriate procedure changes.

No violations or deviations were identified.

# 11. TMI Action Plan Verification (Units 1 and 2)

This inspection was conducted to verify the adequacy of implementation of licensee commitments made to the NRC. The commitments were made in response to the requirements of NUREG-0660, NRC Action Plan Developed as a Result of the TMI-2 Accident, published May 1980, Revised August 1980; NUREG-0737, Clarification of TMI Action Plan Requirements, published November 1980; and NUREG-0694, TMI-Related Requirements for New Operating Licenses, published June 1980.

The verification adequacy was based upon personal observations in the plant and review of licensee drawings, procedures, and documents. The specifics are contained in each paragraph.

- a. The following items for Unit 2 are being closed based on the specific item actions which are applicable to both Units 1 and 2. The item being closed is identified in the left column and the report that discusses the verification of adequacy is shown in the right column.

I.A.1.1	413/84-63
I.A.1.2	413/84-63
I.A.1.3	413/84-29
I.C.2	413/84-63
I.C.3	413/84-106
I.C.5	413/84-29
I.C.6	413/84-63
I.C.7	414/84-34
I.C.8	414/84-34
II.B.4	413/85-20
II.D.1	413/84-29
II.E.4.1	413/84-87
II.K.2.2	413/84-29
II.K.2.13	413/84-29
II.K.2.17	413/84-29
II.K.2.19	413/84-29
II.K.3.1	413/84-29
II.K.3.2	413/84-29
II.K.3.3	413/84-29
II.K.3.5	413/84-29
II.K.3.10	413/84-29
II.K.3.12	413/84-29
II.K.3.17	413/84-29
II.K.3.25	413/84-29
II.K.3.31	413/84-29



b. II.E.1.2, Auxiliary Feedwater Initiation and Indication (Unit 2)

Safety Evaluation Report paragraph 7.3.2.6 states that the automatic initiation of Auxiliary Feedwater is part of ESFAS and a single auxiliary feedwater flow indicator is provided in the control room for each steam generator. The inspector verified the installation of the flow indicators by direct observation of the control panels. The highly reliable power supply installation was verified by review of auxiliary feedwater system elementary diagrams. This item is closed.

c. I.B.1.2, Evaluation of Organization and Management Improvements of Near-Term Operating License Applicants (Units 1 and 2)

SER paragraph 13.4.3 requires an Independent Safety Engineering Group to be implemented at Catawba essentially identical to that currently in place at McGuire Nuclear Station. The Independent Safety Engineering group has been implemented at Catawba and TS 6.2.3 addresses the functions of this group. This item is closed.

d. II.B.1, Reactor Coolant System Vents (Units 1 and 2)

SER paragraph 5.4.5 addresses the reactor vessel head vents and pressurizer vents. The proposed systems have been reviewed by NRC and found to be acceptable. The inspector observed the as-built configuration and controls to determine conformance to FSAR submittals. In addition, procedures that specify use of these components have been reviewed to assure inclusion of adequate operating instructions. Based on this action, this item is closed.

e. II.D.3, Relief and Safety Valve Indication (Unit 2)

SER paragraph 7.5.5.2 states that stem mounted limit switches are used for power operated relief valve position indication. The safety valve positions are detected by a acoustic flow detection system. The inspector verified the installation of the acoustic flow detectors and Bar Graph Monitor Panel by visual observation of the field installation. This item is closed.

f. II.G.1, Emergency Power for Pressurizer Equipment (Unit 2)

SER paragraph 8.4.12 states that the power operated relief valve (PORV) dc solenoids are powered from a Class IE 125 Vdc system. The PORV block valves are powered from the Class IE 600 Vac essential auxiliary power system. Two of the three PORV/PORV block valve combinations receive power from a Division B source and the third from a Division A source. The compressors supplying air to the PORVs are supplied from the 4160 Vac blackout auxiliary power system. And the three redundant pressurizer level instrumentation channels are powered from the vital instrumentation buses. The inspector has verified the vital power supply by review of the Mechanical Instrument and Control List. This item is closed.

g. II.E.3.1, Emergency Power for Pressurizer Heaters (Unit 2)

Position II.E.3.1 of NUREG-0737 lists various requirements for the power supply to the pressurizer heaters. Table 1.9-1 of the Catawba FSAR describes the specifics of how Catawba meets the NUREG requirements.

There are two groups of pressurizer heaters (each rated at 416 kW) for each Catawba unit, which can be supplied from offsite power or from the onsite emergency power system. The applicant has verified that one heater group has the capability to maintain natural circulation under hot standby conditions. Each group of heaters has access to only one Class 1E division power supply.

If the pressurizer heaters are being supplied from the emergency onsite system, they will be automatically load shed upon the occurrence of an SI. The SI and the diesel generator load sequencer must both be reset before the operator can manually reload the pressurizer heaters onto the emergency power sources. These resets and the manual controls for the pressurizer heater feeder breaker are located in the control room. Procedures for manually loading the pressurizer heaters onto the emergency power sources following an SI are available to the operator.

NRR reports in Catawba SER, Section 8.4.11 that the above provisions meet the requirements of TMI Item II.E.3.1 and are, therefore, acceptable.

This item is closed.

h. I.C.1, Short-Term Accident Analysis and Procedures Revision (Units 1 and 2)

SSER 4 paragraph 13.5.2 stated that NRR's review concluded that the Catawba writer's guide, verification/validation program, and Emergency Operating Procedures (EOPs) training program provided acceptable methods for meeting the objectives of NUREG-0899, "Guidelines for the Preparation of Emergency Operating Procedures", and are adequate for development of EOPs for coping with accident and transient conditions. The issued EOPs for Units 1 and 2 have been written and validated based on these guidelines. The EOPs have been reviewed in part during a team inspection conducted from May 4-18, 1984, in addition to frequent reviews conducted by the resident inspectors. Based on these reviews, this item is closed.

i. II.E.1.1, Auxiliary Feedwater Reliability (Unit 2)

On the basis of its review, NRR staff concluded that the auxiliary feedwater system (AWS) meets the requirements of GDC 2, 4, 5, 19, 34, 44, 45, and 46 with respect to protection against natural phenomena, missiles, and environmental effects, shared systems and operational capability from the control room, decay heat removal, cooling water

capability, inservice inspection functional testing; and the guidelines of RG 1.29 and BTPs ASB 10-1 and RSB 5-1 concerning seismic classification, power diversity, and the recommendations of NUREG-0611 concerning generic improvements to the AFWS design, procedures, and TS and AFWS reliability, except with regard to loss of the primary source of condensate storage water. The staff required that a condition be placed in the license requiring that before fuel loading, design modifications be made by the applicant which are satisfactory to the staff. The AFWS met the acceptance criteria of SRP Section 10.4.9 except as noted above.

SER, Supplement 2, Section 10.4.9 states that by letter dated September 28, 1983, the applicant stated that valve CA103 had been removed. (Note: This was a typographical error, the correct designation should be CA130). Removing this valve will not block the water from the primary water source to the auxiliary feedwater (AFW) pumps. The staff found this acceptable.

An onsite review confirms that the valve was removed. This item is closed.

j. I.A.2.1, Immediate Upgrading of RO and SRO Training and Qualifications (Units 1 and 2)

A review performed by NRR, the results of which were reported in the Catawba SER, Section 13.2.3, identified that Duke Power Company (DPC) has satisfied the requirements of this task of the action plan. DPC has developed Operations Management Procedure (OMP) 3-1, Conduct of Operator Training, which uses the guidance of Denton's March 28, 1980 letter on Qualifications of Reactor Operators and procedures contained in NUREG-1021, Revision 1. In addition, TS 6.4, "Training", also requires the training and experience requirements addressed in Denton's March 28, 1980 letter be met. A review of OMP 3-1 indicates that Attachment 3 does not contain the requirement that an applicant for senior operator licenses shall have held an operator's license for one year. This area was discussed with DPC management. DPC management stated that a TS change is going to be proposed to request a modification of this area. Pending this submittal and NRR review of the proposals, this item will be identified as an Inspector Followup Item 413/85-52-01, 414/85-62-01: Revision of OMP 3-1 for Senior Operator License Applicants. This TMI action item will remain open pending resolution of this issue.

k. II.E.4.2, Containment Isolation Dependability (Units 1 and 2)

A review performed by NRR, the results of which were reported in the Catawba SER, Section 6.2.4 revealed that except for two confirmatory items concerning containment purging and design provisions for isolation barriers, the containment isolation system design is acceptable and meets the requirements of GDC 1, 2, 4, 16, 54, 55, 56, and 57 and Appendix K to 10 CFR 50.

In Section 6.2.4 of SER, Supplement 2, it was reported that the additional documentation required to confirm the applicant's statement that the design provisions for containment isolation barriers (e.g., Quality Group B, seismic Category I, protection from pipe whip and jets) had been received and it had been confirmed that the appropriate design provisions for containment isolation barriers have been provided in the Catawba design.

In Section 6.2.4 of SER, Supplement 4, the staff has reviewed additional information provided by DPC. The staff determined that the information submitted demonstrated the ability of the purge valves to function as required in the event of a design base accident and were therefore acceptable.

Based on this review, this item is closed.

1. II.K.1, IE Bulletin on Measures to Mitigate Small-Break LOCAs and Loss of Feedwater Accident (Unit 2)

SER Item C.1.5: FSAR Table 1.9-1 states that a complete review of Engineered Safety Features valves receiving a safety injection or containment isolation was to verify response time and positioning was conducted. Correct valve positioning and control would be accomplished by operating procedures. The inspector reviewed the following procedures to verify the implementation of valve control: (1) OMP 4-1, Revision 9, Procedure Writing Guide; (2) OMP 1-4, Revision 25, Use of Procedures; and (3) OMP 2-18, Revision 12, Tagout/Removal and Restoration (R&R) Procedure. The implemented controls appear satisfactory.

SER Item C.1.10: FSAR Table 1.9-1 describes various controls for valve positioning, redundant system operability checks prior to removing system from service, system operability checks when returning to service after maintenance, safety tagging systems, operator notifications and shift turnovers. Some of these controls were embodied in the procedures referenced in the previous paragraph (Item C.1.5). The following additional procedures were reviewed to verify incorporation of the controls: (1) OMP 1-8, Revision 5, Authority and Responsibility of Licensed ROs and Licensed SROs; (2) OMP 2-17, Revision 14, Control Room and Unit Supervisors Logbooks; (3) OMP 2-22, Revision 12, Shift Turnover; (4) Catawba Nuclear Station Directive 3.3.2(m), Revision 1, Control of the Maintenance Program; and (5) OMP 2-29, Revision 9, TS Logbook. The implemented controls appear to be satisfactory.

SER Item C.1.7: FSAR Table 1.9-1 states that Catawba Nuclear Station does not have this safety injection feature.

Based on the above information, this item is closed.