



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

Report Nos. 50-413/86-51 and 50-414/86-54

Licensee: Duke Power Company  
422 South Church Street  
Charlotte, N.C. 28242

Docket Nos.: 50-413 and 50-414

License Nos.: NPF-35 and NPF-52

Facility Name: Catawba 1 and 2

Inspection Conducted: December 26, 1986 - January 25, 1987

Inspector: <u>T. A. Peebles Jr</u>	<u>2-5-87</u>
P. K. Van Doorn	Date Signed
Inspector: <u>T. A. Peebles Jr</u>	<u>2-5-87</u>
P. H. Skinner	Date Signed
Inspector: <u>T. A. Peebles Jr</u>	<u>2-5-87</u>
M. S. Lesser	Date Signed
Approved by: <u>T. A. Peebles</u>	<u>2-5-87</u>
T. A. Peebles, Chief, Section 2A	Date Signed
Division of Reactor Projects	

SUMMARY

Scope: This routine, unannounced inspection was conducted on site inspecting in the areas of review of plant operations; surveillance observation; maintenance observation; review of licensee nonroutine event reports; design, design changes and modifications; and followup of previously identified items; and cold weather preparations.

Results: Of the seven (7) areas inspected, three apparent violations were identified in two areas (Failure to follow procedures and Technical Specification (T.S.) 4.11.2.1.1 involving a radioactive gas release - paragraph 5.d., Failure to follow procedure for annunciator response - paragraph 5.d., and Failure to comply with T.S. 3.3.2 - paragraph 8.b.) and one deviation was identified in one area (Failure to meet commitments contained in DPC correspondence dated November 18, 1986 - paragraph 3.F.)

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. W. Hampton, Station Manager
- \*H. B. Barron, Operations Superintendent
- W. H. Bradley, QA Surveillance
- A. S. Bhatnager, Performance Engineer
- S. Brown, Reactor Engineer
- B. F. Caldwell, Station Services Superintendent
- R. N. Casler, Operating Engineer
- R. H. Charest, Station Chemistry Supervisor
- \*M. A. Cote, Licensing Specialist
- \*T. E. Crawford, Superintendent of Integrated Scheduling
- W. P. Deal, Health Physics Supervisor
- C. S. Gregory, I. & E. Support Engineer
- \*C. L. Hartzell, Compliance Engineer
- J. Knuti, Operating Engineer
- W. W. McCollough, Mechanical Maintenance Supervisor
- F. N. Mack, Project Services Engineer
- C. E. Muse, Operating Engineer
- F. P. Schiffley, II, Licensing Engineer
- \*G. T. Smith, Maintenance Superintendent
- J. Stackley, I. & E. Engineer
- \*R. F. Wardell, Superintendent, Technical Services
- J. W. Willis, Senior QA Engineer, Operations

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

\* Attended exit interview.

### 2. Exit Interview

The inspection scope and findings were summarized on January 26, 1987, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection. The following new items were identified at the exit interview:

Violation 413/86-51-01, 414/86-54-01: Failure to follow procedures and T.S. 4.11.2.1.1 involving a radioactive gas release (paragraph 5.d.).

Violation 413/86-51-02, 414/86-54-02: Failure to follow procedure for annunciator response (paragraph 5.d.).

Inspector Followup Item 413/86-51-03, 414/86-54-03: Review of evaluation of Auxiliary Building radiation monitor (paragraph 5.d.).

Deviation 414/86-54-04: Failure to meet commitments contained in DPC correspondence dated November 18, 1986 (paragraph 3. F.).

Violation 413/86-51-04: Failure to comply with T.S. 3.3.2 (paragraph 8.b.).

Unresolved Item 413/86-51-05, Inadequate incident investigation report 86-161-1 and subsequent LER 413/86-59 (paragraph 8.b.).

3. Licensee Action on Previous Enforcement Matters (92702)

- a. (CLOSED) Violation 413/86-24-01, 414/86-26-01: Failure to Follow Procedures - Four Examples. The response to this item was addressed by the licensee in correspondence dated August 20, 1986. The inspector reviewed the corrective action taken and considers this item as closed.
- b. (CLOSED) Unresolved Item 413/86-24-03, 414/86-26-03: Procedural Discrepancies Associated With Similar Procedures Between Units 1 and 2. The licensee has completed a comparison of similar procedures for Units 1 and 2. Minor changes of an editorial nature were made to several procedures of both units. In addition, additional procedure writing guidance has been incorporated to assure that changes made to one unit will be reviewed to determine if the change needs to be performed on the other unit. Based on this action, this item is closed.
- c. (CLOSED) Violation 413/86-27-02: Failure to Follow Procedure For Corrective Maintenance. The licensee responded to this item in correspondence dated August 27, 1986. The inspector reviewed the corrective actions described in the correspondence and considers this item to be closed.
- d. (CLOSED) Violation 413/86-27-03: Failure to Provide Adequate Procedure For Valve Operator Maintenance For ICA-46B. The licensee responded to this item in correspondence dated August 27, 1986. The inspector reviewed the corrective action identified in this correspondence and considers this item closed.
- e. (CLOSED) Violation 413/86-47-01: Failure to Use Written and Approved Procedures While Testing Safety-Related Equipment. The licensee responded to this item in correspondence dated January 9, 1987. The inspector has verified implementation of the corrective actions as described and considers this item closed.

- f. (OPEN) Violation 414/86-39-02: Failure to Follow Procedures To Troubleshoot and Repair Solid State Controls, Inc. Inverters. The licensee responded to this item in correspondence dated November 18, 1986. This response stated that training would be completed by November 30, 1986 and the controlling procedure for maintenance work request would be revised by December 31, 1986. As of January 15, 1987, training was not complete in that, only 70% of the personnel who were to receive this training, had been trained and the procedure revision had not been completed. This is identified as a Deviation 414/86-54-04: Failure to meet commitments contained in DPC correspondence dated November 18, 1986.

One deviation was identified as described in paragraph 3.f. above.

#### 4. Unresolved Items\*

One new unresolved item is identified in paragraph 8.

\*An Unresolved Item is a matter about which more information is required to determine whether it is acceptable or may involve a violation.

#### 5. Plant Operations Review (Units 1 and 2) (71707 and 71710)

- a. The inspectors reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements. T.S., and administrative controls. Control room logs, danger tag logs, T.S 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, the 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 activities. Also, the inspectors reviewed Nonconforming Items Reports and Problem Investigation Reports to determine if the licensee was appropriately documenting problems and implementing appropriate corrective actions.

- b. The inspectors conducted a detailed Engineering Safety Features walkdown of the Upper Head Injection System (Unit 1).
- c. License Condition Review (Unit 1)

Facility Operating License NPF-35 item 2.c. (1R) required that prior to startup following the first refueling outage, the licensee would upgrade the pressurizer power operated relief valves and the steam generator power operated relief valves to safety related. This upgrade was accomplished by Nuclear Station Modification (NSM) CN-10523, Upgrade Pressurizer PORV's to Safety-Related, and NSM CN-10524, Upgrade Steam Generator PORV's to Safety-Related. The inspector reviewed in part these NSM's and considers this license condition to be complete.

- d. The inspectors conducted a detailed review of an incident involving an inadvertent release of radioactive noble gas which occurred on January 5, 1987. The incident resulted in a release of approximately 60 curies of noble gases into the auxiliary building some of which was subsequently released to the atmosphere through the unit vent stack. No personnel overexposures occurred and T.S. release limits were not exceeded. However, several problems were identified which were associated with this event. Waste Gas System valves were being modified by construction personnel and these personnel operated the valves while implementing the modifications. These modifications were being performed in accordance with a Shutdown Request program controlled in part by Station Directive 3.0.3, Rev. 8: Management of Shutdown Requests. This procedure, paragraph 5.5 requires appropriate personnel to assign the responsible group for releasing the system to be worked on. In this case, the responsible group assigned was Operations rather than Radwaste Chemistry which should have been assigned. This contributed to the event in that the valves were operated without Radwaste Chemistry knowledge while the Waste Gas System was in operation. This is in violation of T.S. 6.8.1 which requires procedures to be implemented to control activities involved with radioactive waste systems. T.S. 4.11.2.1.1 requires dose rates to be determined for gaseous effluent releases. This was not accomplished for the above release since the release was inadvertent and therefore the T.S. was violated. It should be noted that dose rates were able to be calculated after the release using indications from the Unit vent monitor which was in operation during the event. Also it is noted that the Waste Gas System is designed as a closed system and the failure of a gas trap in the system allowed the gas to enter the auxiliary building. The licensee is investigating the need for improved maintenance or a better designed trap. The above T.S. violations are two examples being cited as a single Violation 413/86-51-01, 414/86-54-01: Failure to follow procedures and T.S. 4.11.2.1.1 involving a radioactive gas release.

Licensee Operations Procedure OP/1/B/6100/10X, Annunciator Response for Radiation Monitoring Panel 1RAD-1 requires operator actions upon receiving the alarm for the Auxiliary Bldg. Ventilation Hi Rad Monitor, EMF-41. Contrary to this procedure an operator cleared this alarm without taking further required corrective actions which included in part: Verifying Auxiliary Building Ventilation (VA) System is operating in the filtered mode, monitoring the 12-point EMF-41 monitor and checking activity levels on other monitors. This is a violation of

T.S. 6.8.1 which requires procedures to be implemented for alarm conditions. This is Violation 413/86-51-02, 414/86-54-02: Failure to follow procedure for annunciator response.

While reviewing the gas release incident, the inspector noted that EMF-41 monitors 12 (twelve) different points in the Auxiliary Building for 5 (five) minutes each. The inspector questioned whether this was the optimum use of this monitor since it would be one hour between a specific point being remonitored. Since the primary purpose of EMF-41 appears to be for ALARA it appears that quicker knowledge of releases may be warranted and able to be accomplished within the design limitations of the system. Licensee personnel agreed to evaluate operation of this monitor for optimum benefit. The results of this review will be reviewed by NRC when completed. This is Inspector Followup Item 413/86-51-03, 414/86-54-03: Review of evaluation of Auxiliary Building radiation monitor.

- e. Based on a problem identified at a similar nuclear plant NRC:RII requested the licensee to verify whether sufficient drainage capability exists in the containment in the area of the Air Return Fans in the event of a LOCA. The inspector verified that a six inch line exists for drainage and a locked open manual valve is in the line. The inspector verified that a regular surveillance of the valve (FW-79) is performed by procedure prior to each startup. Although it appears that adequate drainage is available the licensee agreed to review the design of this system to verify adequate design. Licensee actions are acceptable and results of the design review will be forwarded to NRC:RII.
- f. On January 11, 1987, Unit 1 was shutdown due to a reactor coolant system leak of approximately 5.5 gallons per minute. The inspectors conducted a detailed review of this incident including licensee corrective actions. The leak was caused by a 1/2-inch instrumentation tubing becoming dislodged at a mechanical fitting. This tubing formed a part of the Reactor Coolant System boundary and had been hydro tested during construction. The licensee determined that the fitting had not been installed properly based on the fact that the tubing did not show the normal indentation. The licensee indicated that detailed instructions and special gauges had been given to licensee personnel responsible for instrument fittings and that the fittings had been reverified during construction. Apparently this particular fitting was missed during the reverification. The licensee had experienced leaking of these type fittings at the McGuire station and once near the Pressurizer at Catawba and had implemented plans to change the mechanical fittings in Containment to welded connections at Catawba. Unit 2 work has been completed but portions of Unit 1 had not yet been accomplished. The licensee indicated that this work item will be a high priority item during the next outage.

Two violations were identified as described in paragraph 5.d. above.

6. Surveillance Observation (Units 1 and 2) (61726)

During the inspection period, the inspector verified plant operations were in compliance with various T.S. requirements. Typical of these requirements were confirmation of compliance with the T.S. 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.

The following Surveillances were observed or reviewed:

IP/2/A/3240/04/H	Power Range Nuclear Instrument Analog Channel Operational Test
PT/2/A/4600/15	Manual Reactor Trip Function Test
PT/2/A/4250/06	Aux Feed Pump Head and Valve Verification

No violations or deviations were identified.

7. Maintenance Observations (Units 1 and 2) (62703)

Station maintenance activities of selected systems and components were observed/reviewed to ascertain that they were conducted in accordance with 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 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.

The inspector followed activities involving post maintenance retesting the valve actuator on INI-243. (Upper Head Injection line isolation valve).

No violations or deviations were identified.

8. Review of Licensee Nonroutine Event Reports (Units 1 and 2) (92700)

- a. The below listed Licensee Event Reports (LER) were reviewed to determine if the information provided met NRC requirements. The determination included: adequacy of description, verification of

compliance with Technical Specifications and regulatory requirements, corrective action taken, existence of potential generic problems, reporting requirements satisfied, and the relative safety significance of each event. Additional inplant reviews and discussion with plant personnel, as appropriate, were conducted for those reports indicated by an (\*). The following LERs are closed:

LER 413/86-08, Rv.2	Auxiliary Feedwater Start Due To Malfunction of Main Feedwater Control Valve
*LER 413/86-31	Forced Shutdown Caused By Excessive Leakage Due To Weld Failure
LER 413/86-34, Rv.1	Auto Start Of Auxiliary Feedwater Due To Equipment Malfunction
*LER 413/86-42	Reactor Trip During Breaker Testing Due To Personnel Error
LER 414/86-18, Rv.2	Main Feedwater Isolation On High-High Steam Generator Level Due To Design Deficiency
*LER 414/86-26, Rv.2	Feedwater Isolation On Hi-Hi Steam Generator Level Due To Design Deficiency
*LER 414/86-36	Reactor Trip Signal And ESF Actuation Due To Personnel Error
*LER 414/86-48	Main Feedwater Isolation During Reactor Trip Functional Test Due To An Unknown Cause
LER 414/86-54	Termination Of A Containment Air Release Due To A Spurious Radiation Monitor Alarm

- b. On November 19, 1986, on Unit 1, the operator noticed one of four channels of containment pressure to be reading inconsistently with the other channels. The channels provide various Engineered Safety Features actuations on Containment Pressure-High (2 out of 3) and Containment Pressure-High-High (3 out of 4). T.S. 3.3.2 requires placing an inoperable channel of Containment Pressure-High in the tripped condition and an inoperable channel of Containment Pressure-High-High in the bypassed condition. The licensee failed to apply T.S. 3.3.2 to the situation but instead applied T.S. 3.3.3.6 which gives requirements for containment pressure instrumentation for accident monitoring. The accident monitoring instrumentation is completely different from the ESF instrumentation however the licensee failed to realize this distinction. In cases such as this, the practice had been to apply both T.S. and implement the most limiting action statement. While this is appropriate when one is in doubt as to the correct action to take, it is inappropriate to apply non-applicable



T.S. In this case the operator failed to apply both T.S., resulting in failure to apply the correct T.S. On December 6, 1986, the licensee discovered the applicable containment pressure transmitter to be isolated. Further evaluation of the condition resulted in the correct application of T.S. 3.3.2 at this time, and Licensee Event Report (LER) 413/86-59 was issued describing the incident. Between November 19 and December 6, 1986 the licensee was in violation of T.S. 3.3.2 and this is identified as Violation 413/86-51-04 failure to comply with T.S. 3.3.2.

Review of LER 413/86-59, associated with the above Violation 413/86-51-04, revealed certain inadequacies in the licensee's LER and Incident Investigation Report (IIR) program. The investigation failed to discover the fact that operators did not recognize the distinction between Accident Monitoring Instrumentation and ESF instrumentation nor did it recognize an apparent inconsistency in applying two different T.S. to the same equipment. It is not obvious from visual inspection of the control room instrumentation which T.S. to apply to which instrument as they are all labeled "PAM" (Post Accident Monitoring). (The labeling of "PAM" is not directly related to T.S. 3.3.3.6 Accident Monitoring Instrumentation.) Thus a training deficiency may exist and corrective action for the incident was inadequate due to an incomplete evaluation. The IIR C86-161-1 identified the root cause of the incident as the work request written to correct the inoperable channel specifying the gauge rather than the entire channel as inoperable. This assumption of the gauge being the inoperable component is inconsistent with licensee policy and reflects a possible significant training deficiency on the part of the operator writing the work request. However, no corrective action regarding this training deficiency was done or planned. The licensee has stated that this proposed root cause was probably incorrect. This is being identified as Unresolved Item 413/86-51-05; Inadequate Incident Investigation Report C86-161-1 and subsequent LER 413/86-59 and will remain open pending licensee evaluation of this incident.

One violation was identified as described in paragraph 8.b. above.

9. Design, Design Changes and Modifications (Units 1 and 2) (37700)

The inspector reviewed the process established by the licensee to assure that design changes and modifications (NSM's) are being developed, processed and controlled in accordance with the requirements of the T.S., Duke Power Company Topical Report Quality Assurance Program (QCP) and 10 CFR 50.59. Specific attributes reviewed were: review and approval was performed in accordance with established procedures; post modification testing was performed where specified; associated procedure changes were made, as required; as built drawings were changed to reflect the NSM's; training on the modifications was being provided to operations personnel in a reasonable timeframe depending on the NSM; and, changes are planned to be on or were listed on the required 10CFR50.59 annual report to the NRC.

The specific NSM's reviewed were as follows:

NSM CN 20369  
 CN 10873  
 CN 10129  
 CN 10147  
 CN 10523

No violations or deviations were identified.

10. Previously Identified Inspector Findings (92701)

- a. (CLOSED) Open Appraisal Item 414/83-35-26: Review Entire Area (4.2.1.3). This item involves non-radiation process monitors. These monitors were found to be in and operational for Unit 2. This included steam generator levels, feedwater storage tank levels, pressurizer temperatures and pressures, primary loop temperatures and pressures, containment pressure, boric acid tank levels, Control Room ventilation intake chlorine monitors, and the seismic monitoring system.
- b. (CLOSED) Inspector Followup Item 413/85-12-06: Improve Readability of Valve Tags. The licensee has completed a program to improve readability of valve tags. This program addressed areas where radiation dosage would be reduced if tags were installed that would be readily visible and more readable. Bakelite Tags were installed in both units in radiation areas with the tags for Unit 1 being engraved with black letters on a white background and vice versa for Unit 2. Since this item addressed ALARA concept, changes were made only to radiation areas. Based on this action, this item is closed.
- c. (CLOSED) Inspector Followup Item 413/86-47-05: Review of Licensee Action for D.G. Visicorder Calibration Methods. The inspector reviewed Problem Investigation Report (PIR) 1-C86-0092 which adequately solved problems with calibration of Diesel Generator Visicorder instrumentation. The inspector also verified a revision to IP/O/B/3680/12 Calibration of Honeywell Model 1883 Frequency, Voltage and Power Span which required ideal transducer output values to be used as input values for visicorder calibration.

No violations or deviations were identified.

11. Followup of IE Notices (92701)

The inspector reviewed the actions taken by the licensee upon receipt of an IE Notice (IEN) sent for information purposes only. The Compliance Engineer, at present, controls receipt and distribution of these documents to assure appropriate personnel review the contents and determine actions that may be required as a result. The following notice was reviewed to assure receipt, review by appropriate personnel, and any resulting action identified, documented and followed to completion:

IE Notice 87-01      RHR Valve Misalignment Causes Degradation of  
ECCS in PWR's

No violations or deviations were identified.

12. Cold Weather Preparations

The inspector verified that the licensee had taken appropriate actions for protection of systems against cold weather conditions.

No violations or deviations were identified.