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

Report Nos. 50-413/88-08 and 50-414/88-08

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: January 26, 1988 - February 25, 1988

Inspectors: _____ 3/8/88
P. K. Van Doorn Date Signed

_____ 3/8/88
M. S. Lesser Date Signed

Approved by: _____ 3/8/88
T. A. Peebles, Section Chief Date Signed
Projects Branch 3
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; followup of previously identified items; refueling activities and meeting with local officials.

Results: Of the seven (7) areas inspected, two apparent violations were identified in two areas. (Failure to Follow Procedures Resulting in Two Inadvertent Safety Injections - paragraph 5.d. and Inadequate Corrective Action Involving Mounting Hardware Modification for Rotork Actuators - paragraph 7.c.).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*H. B. Barron, Operations Superintendent
W. F. Beaver, Performance Engineer
*W. H. Bradley, QA Surveillance
S. W. Brown, Reactor Engineer
R. N. Casler, Unit 1 Coordinator
R. H. Charest, Station Chemistry Supervisor
S. S. Cooper, Operating Engineer
*M. A. Cote, Licensing Specialist
*J. W. Cox, Training Manager
*T. E. Crawford, Integrated Scheduling Superintendent
W. P. Deal, Health Physics Supervisor
C. S. Gregory, I. & E. Support Engineer
*J. W. Hampton, Station Manager
*C. L. Hartzell, Compliance Engineer
F. N. Mack, Project Services Engineer
*T. A. Mathews, Manager Design Engineering
W. W. McCollough, Mechanical Maintenance Supervisor
W. R. McCollum, Station Services Superintendent
*D. S. Miller, Quality Assurance
C. E. Muse, Unit 2 Coordinator
*T. B. Owen, Assistant Station Manager
F. P. Schiffley, II, Licensing Engineer
*G. T. Smith, Maintenance Superintendent
*J. M. Stackley, I. & E. Engineer
D. Tower, Shift Operating Engineer
*R. F. Wardell, Technical Services Superintendent
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 February 26, 1988, 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:

Violation 413,414/88-08-01: Failure to Follow Procedures Resulting in Two Inadvertent Safety Injections.

Violation 413,414/88-08-02: Inadequate Corrective Action Involving Mounting Hardware Modification for Rotork Motors.

Inspector Followup Item 413,414/88-08-03: Upgrade Program for use of Jumpers to Operate MOVs.

3. Licensee Action on Previous Enforcement Matters (92702)

a. (CLOSED) Violation 413,414/87-42-02: Failure to Properly Classify and Report a Diesel Generator Invalid Failure. The licensee responded to the violation in correspondence dated February 10, 1988. The inspectors reviewed the latest revision to Operations Management Procedure 2-28 which incorporated changes to diesel generator failure classification. Based on this the item is closed.

b. (CLOSED) Unresolved item 413/87-42-03: Inadequate Test Procedure for Blackout Testing During Solid Plant Operations. The licensee submitted a Special Report pursuant to Technical Specification 6.9.2 describing the unanticipated operation of a Pressurizer Power Operated Relief Valve (PORV) in correspondence dated December 30, 1987. The licensee stated that Engineered Safety Features tests will not be conducted while the reactor plant is solid. The PORV operated as designed to protect the plant. Licensee management indicated that they would be sensitive to unusual test configurations. The licensee actions appear to be satisfactory. Therefore, this item is closed.

No violations or deviations were identified.

4. Unresolved Items

No new unresolved items were identified.

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

a. The inspectors reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements. Technical Specifications (TS), administrative controls, control room logs, danger tag logs, 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, 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. The inspectors reviewed Problem Investigation Reports to determine if the licensee was appropriately documenting problems and implementing appropriate corrective actions. The inspectors also participated in the licensee's annual emergency drill held on February 19-20.

b. Unit 1 Summary

Unit 1 began the period at 98% power. Power has been restricted due to slight decrease in as measured reactor coolant system flow. On February 6, the Unit was shut down to inspect and repair T-drains on Limitorque valves. Improper installation of T-drains was thought to have a possible effect on the environmental qualification of the valve. The Unit was restarted on February 7 and has remained at 98%. An uncontrolled waste gas release occurred on February 8 due to a personnel error. The release was within limits and not reportable to NRC but did receive media attention.

c. Unit 2 summary

Unit 2 began the period in Mode 6, refueling and ended in Mode 3, starting up from the first refueling. An inadvertent safety injection occurred on February 9, 1988, due to an operations personnel error (see below).

d. On January 23, 1988, Unit 1 was in Mode 3, heating up and pressurizing the Reactor Coolant System (NC) to normal operating temperature and pressure. At 10:39 a.m. a Safety Injection occurred when the operator allowed NC system pressure to exceed 1955 psig with steam line pressure less than 725 psig. When NC system pressure reaches 1955 psig Pressurizer and Steamline Low Pressure Safety Injection signals are automatically unblocked. Since Steamline Low Pressure Safety Injection actuates at 725 psig (steam line pressure), the operator must ensure steam line pressure is greater than 725 psig before the Safety Injection signal is unblocked. Step 2.60 of OP/1/A/6100/01, Controlling Procedure for Unit Startup cautions the operator not to exceed 1955 psig NC pressure prior to Steam Generator pressure greater than or equal to 725 psig as this will cause a safety injection on Low Steam Pressure. This is identified as one example of a violation of TS 6.8.1, Violation 413,414/88-08-01: Failure to Follow Procedures Resulting in Two Inadvertent Safety Injections.

On February 9, with Unit 2 in Mode 5, an inadvertent Safety injection occurred on "A" train. Both trains of the Solid State Protection System (SSPS) had been placed in "test" in accordance with IP/2/A/3200/02, SSPS Periodic Testing, up to step 10.2.9 which places the SSPS Output

Relay Mode Selector Switch to "test". The switch was tagged in the "test" position under Removal and Restoration (R&R) 28-223 to prevent inadvertent Engineered Safety Features (ESF) signals during the refueling outage. To accommodate train "A" reactor trip breaker time response testing, SSPS train "A" was to be restored to normal. The plan was to clear tag #410 on the SSPS Output Relay Mode Selector Switch by Operations personnel and allow Instrument and Electronics (IAE) personnel to complete applicable portions of IP/2/A/3200/02. This would have properly blocked low pressure safety injection signals prior to placing the switch to "operate". A breakdown of communications occurred between the Assistant Shift Supervisor and the equipment operator who was designated to remove the tag. The Assistant Shift Supervisor intended for the tag to be cleared and the switch to remain in "test", then control be given to IAE personnel. He attempted to retain positive control of the process by withholding the tag stubs and had not yet signed the R&R Record Sheet giving authority to remove the tag. Station Directive 3.1.1, Safety Tags and Delineation Tags, requires the designated person clearing the tag to receive the tag stubs from the recalling authority (in this case the Assistant Shift Supervisor), obtain recall approval and verify the tag number and stub number agree prior to removing the tag. Having been briefed on the evolution the equipment operators knew that the switch was to be eventually placed in "operate" yet misinterpreted his instructions. Without having received the tag stubs and without receiving the required written authority on the R&R Record Sheet, the operator cleared the tag and repositioned the switch to "operate". Since the low pressure safety injection signals had not been blocked by IAE, a safety injection occurred. This is identified as a second example of a violation of TS 6.8.1. 413,414/88-08-01: Failure to Follow Procedures Resulting in Two Inadvertent Safety Injections.

e. Management Meeting with Design Engineering

The inspectors and NRC: RII management met with licensee Design Engineering (D/E) management on January 28, 1988 at the request of the licensee. The licensee scheduled the meeting to foster improved communications between NRC and the licensee. The licensee described the D/E organization and introduced key personnel in D/E. The modification process was described as were other activities conducted by D/E to support the nuclear stations. The licensee further discussed the various measures being implemented to assure D/E quality and the status of these measures. The inspector described the NRC regional organization and the Resident Inspector's role and shared recent observations relative to D/E support of the station. Some improvements have been noted and the licensee was encouraged to continue to improve in this area.

One violation was identified as described above.

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

a. 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.

b. The inspectors witnessed or reviewed the following surveillances wholly or in part:

IP/2/A/3640/01	Diesel Generator Room Sump Instrument Calibration
PT/2/A/4200/01C	Containment Isolation Valve Leak Rate Test for 2NI95A

c. The inspector held discussions with the licensee relative to reevaluation of Eddy Current testing of Unit 1 Steam Generator (S/G) tubes. During the failure to conduct proper evaluations on Unit 2 (see NRC Report 413,414/88-09) reevaluation of Unit 1 results appeared to be appropriate. The licensee committed to conduct this review by April 15, 1988.

No violations or deviations were identified.

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

a. 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.

b. The inspectors witnessed or reviewed the following maintenance activities wholly or in part:

1ANV Pump Preventive Maintenance

Diesel Generator 1B Starting Air Compressor Corrective Maintenance (MP/0/A/7400/68, WR 26132 OPS-1)

ASP B NSM Retest (TT/2/A/9100/47, Section 12.1)

c. On February 3, 1988 the Rotork actuator for valve 2ND-2A was found with its motor completely separated from the actuator gearcase. PIR 2-C88-0048 was written to investigate the cause. Operators had attempted to open 2ND-2A, Residual Heat Removal (ND) Pump 1A Suction From Loop B, from the control room on February 1. 2ND-2A is a 12 inch motor operated gate valve. When the valve failed to open, work request (W/R) 39401 OPS was written for technicians to troubleshoot the problem. The technicians determined the valve to be sticking and the torque switch was causing the motor to deenergize. Since this actuator does not have a torque bypass switch installed, the torque switch needed to be momentarily jumpered to unseat the valve. This was done and the valve was opened. Later the motor was discovered as previously described. The licensee's investigation determined that the technicians had simultaneously jumpered the torque switch and the open limit switch (which would normally deenergize the motor when the valve opened) and failed to remove the jumpers before the valve went fully open. Thus the motor reached stall torque and remained energized. The high torque value in the open direction imposed a large force on the actuator which tended to force the motor away from the actuator. This combined with the fact that the motor was improperly mounted on the actuator gearcase caused the motor to eject from the actuator.

In July 1985 the motor on 2ND-2A was replaced with a newer post 1978 model Rotork Motor under W/R 3427 PRF. The post 1978 motors have larger motor mounting flange holes than the pre 1978 motors. This however, did not appear to be a problem to the licensee until April 10, 1986 when the motor on a similar valve 2ND-36B, ND Pump 1B Suction From Loop C, was to be replaced with a post 1978 motor under W/R 31532 OPS. During bench testing of the motor for 2ND-36B, stall torque was reached and the motor ejected from the actuator. It was at this point that the licensee determined that the mounting of post 1978 motors on older actuators was inadequate. The larger mounting flange holes allowed for insufficient surface area contact between a washer and the flange to keep the motor fastened under high torque conditions.

The licensee recognized the need for an improved fastening method, consulted Rotork and determined that a bushing inserted into the larger mounting hole, a larger flat washer and a larger hex head bolt would solve the problem. This was performed under Temporary Station

Modification, Work Request 5831 IAE for 2ND-36B. A permanent change package (CE-0840) was initiated and completed to approve the hardware modification for 2ND-36B and for future use when using post 1978 Rotork motors on older actuators. The licensee however failed to apply the corrective action to other valves in the plant in which post 1978 motors had been mounted on. Thus the February 1 incident with 2ND-2A. The licensee has since identified three other valves and installed the correct hardware modification and intends to review the issue relative to 10 CFR 21. Since these valves, when operable, normally do not have the limit switch bypassed this does not appear to be a significant technical issue. In addition, an improved corrective action program has been implemented since the occurrence of this problem. However, since taking appropriate corrective actions relative to problems is important, this is identified as a violation of 10 CFR 50 Appendix B, Criterion XVI and Duke Power Company Topical Report Quality Assurance Program section 17.2.16, Violation 413,414/88-08-02: Inadequate Corrective Action Involving Mounting Hardware Modification for Rotork Motors. The licensee has had historical problems with the ND Suction valves sticking shut. (Refer to IFI 414/87-10-03) Review by the inspectors indicated these valves have stuck shut on at least three other occasions. The inspectors noted that corrective action to ensure the valves can be opened from the control room has not been accomplished.

The inspectors were additionally concerned with the use of jumpers to open the valve. In this particular case the open limit switch and the torque switch were jumpered. Since the motor's thermal overload is permanently bypassed, no protection is available for the motor. Poor communications failed to relay when valve stem motion started such that the jumpers could be removed. The licensee determined it was necessary to upgrade their control of jumpers when used for operating valves. Areas of improvement are to include consultation with the responsible engineer, use of jumpers only at the motor to observe stem movement, use of a clamp-on ammeter to note stall torque conditions and increased training. This is identified as Inspector Followup Item 413,414/88-08-03: Upgrade Program For Use of Jumpers to Operate MOV's pending completion by the licensee.

d. The inspector also reviewed and discussed the licensee's process for control of in process instruments which are found to be out of calibration. This process is controlled by Station Directive 2.3.2. This inspection was conducted to assure that the licensee was properly handling chronic out of tolerance instruments to assure evaluation for replacement and generic implications. The licensee has developed a Chronic Out of Tolerance Review Notice which is triggered on the second out of tolerance condition to handle this evaluation. Although electric timers are not in the program, it is the licensees judgement that cognizant engineers are sensitive to chronic problems and regularly review calibration history when items are found out of tolerance. In addition, the licensee has not experienced chronic out of tolerance problems relative to timers.

One violation was identified as described above.

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:

413/86-41 Rv.3	Missed Surveillance of Several Fire Detection Zones Inside Containment Due to a Management Deficiency
413/86-59 Rv.2	Containment Pressure Channel Unknowingly Inoperable Due to Unknown Cause
*413/87-35 Rv.1	Potential Control Room Area Ventilation and Chilled Water System and NSW Pump Inoperability During D/G Testing Due to A Procedural Deficiency
413/87-46	Main Feedwater Isolation Due to a Management Deficiency
414/86-27 Rv.1	Containment Air Release Termination Due to Installation Deficiency
*414/87-32	Both Channels of Source Range Detectors Inoperable Due to Management Deficiency

Indent like para. b below

b. The licensee reported several missed retests over a period of one year on its Diesel Generator Air Start (VG) inlet valves in LER 414/87-31. Retests performed after maintenance activities were missed due to various problems. One particular problem identified was confusion by maintenance planners as to which group had retest responsibility when using the Pump and Valve Inservice Inspection Manual as a reference. In some cases two groups (Operations and Performance) were required to perform a retest on the component and the planner only assigned one group, thus a required retest was missed. The licensee's initial investigation failed to review for missed retests on valves other than the VG system, although the potential existed since they also had multiple retest requirements. The inspectors asked the licensee to address this possibility. The licensee then reviewed the latest maintenance work requests for susceptible valves on Unit 1 and compared them to the latest retest

performed to determine if a present operability problem existed. No problems were identified. Based on the results the licensee concluded that the error was isolated and a review of Unit 2 work requests was not necessary.

No violations or deviations were identified.

11. Refueling Activities (Unit 2) (60710) (71711)

The inspectors verified that TS applicable to Modes 5 and 6 were met, proper radiological controls, housekeeping and foreign material exclusion practices were met and water level control practices were followed. The inspectors regularly observed coordination activities for the refueling and observed fuel movement. Prior to startup the inspectors toured containment areas to verify condition of equipment and housekeeping and also verified valve position for selected containment isolation valves. The inspectors also witnessed testing of the lower outer airlock door.

No violations or deviations were identified.

12. Information Meetings with Local Officials (94600) (Units 1 and 2)

A meeting was held with local Rock Hill City and York County officials on February 3, 1988. This meeting was conducted to familiarize the local officials with the mission of the NRC, to introduce key NRC personnel associated with Catawba, to discuss lines of communications available between local officials and the NRC, and to discuss the status of the facility and related community concerns with these local officials. A copy of general information was provided to the attendees.