



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

Report No.: 50-414/85-42

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

Docket No.: 50-414

License No.: CPPR-117

Facility Name: Catawba 2

Inspection Conducted: September 30 - October 4, 1985

Inspector: McKenzie Thomas
M. Thomas

10/28/85
Date Signed

Approved by: Frank Jape
F. Jape, Section Chief
Test Programs Section, Engineering Branch
Division of Reactor Safety

10/28/85
Date Signed

SUMMARY

Scope: This routine, unannounced inspection involved 46 inspector-hours on site in the areas of preoperational test procedure review and test witnessing, hot functional test witnessing, and followup on previous enforcement matters.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. W. Hampton, Station Manager
W. F. Beaver, Performance Engineer
*J. W. Cox, Superintendent, Technical Services
#C. L. Hartzell, Compliance Engineer
#R. A. Jones, Unit 2 Test Engineer
#J. A. Kammer, Hot Functional Test Coordinator
P. G. LeRoy, Licensing Engineer
*W. R. McCollum, Superintendent, Integrated Scheduling
*#F. P. Schiffley, Licensing Engineer
*E. G. Williams, Project QA Technician

Other licensee employees contacted included test coordinators, engineers, technicians, and operators.

NRC Resident Inspectors

*#P. H. Skinner, Senior Resident Inspector, Operations
#P. K. VanDoorn, Senior Resident Inspector, Construction

*Attended exit interview October 4, 1985

#Attended exit interview via telecon October 7, 1985

2. Exit Interview

The inspection scope and findings were summarized on October 4 and via telecon on October 7, 1985, 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.

- Inspector Followup Item (IFI) 414/85-42-01, Followup licensee resolution of low oil level in diesel generator 2A governor - paragraph 6.b.
- IFI 414/85-42-02, Followup on resolution of discrepancies identified during Auxiliary Shutdown Panel Cooldown Functional Test - paragraph 6.d.(1).
- IFI 414/85-42-03, Resolve question concerning location of controls on the auxiliary feedwater pump turbine control panel for steam generators 2A and 2B - paragraph 6.d.(2).

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

(Closed) Violation 414/85-12-01, concerning inadequate procedure and failure to follow procedure which resulted in overpressurization of portions of the residual heat removal (RHR) system.

(Closed) Violation 414/85-12-02, concerning overpressurization of the volume control tank (VCT) and other portions of the chemical and volume control system (CVCS).

The inspector reviewed the licensee's response to the above violations, dated June 28, 1985, and verified that the stated corrective actions had been completed. The overpressurization events were also reported to NRC under 10 CFR 50.55(e), as report no. SD 414/85-06, dated May 22, 1985, for the VCT, and report No. SD 414/85-08, dated May 31, 1985, for the RHR system. The design evaluations and related corrective actions are addressed in these reports. Followup on resolution of the 50.55(e) items will be discussed in subsequent inspection reports by the resident inspector.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Preoperational Test Procedure Review (70300, 70304, 70336, 70352)

The inspector reviewed the preoperational (preop) tests listed below to verify that they were consistent with applicable sections of Final Safety Analysis Report (FSAR) Chapters 5, 6, 8, and 14; Safety Evaluation Report (SER) and its supplements; Regulatory Guides 1.68, 1.68.2, 1.79, and 1.108. The following procedures were reviewed:

TP/2/A/1200/02A, Residual Heat Removal System Functional Test

TP/2/A/1200/02B, Residual Heat Removal System (Hot) Functional Test

TP/2/A/1200/03E, Safety Injection System Check Valve Functional Test

TP/2/A/1400/14A, Auxiliary Shutdown Panel 2A Functional Test

TP/2/A/1400/14B, Auxiliary Shutdown Panel 2B Functional Test

TP/2/A/1400/14C, Auxiliary Feedwater Pump Turbine Control Panel
Functional Test

TP/2/A/1400/15, Auxiliary Shutdown Panel Cooldown Functional Test

The procedures were reviewed for conformance to administrative controls. This included verifying that pertinent prerequisites were identified, initial test conditions and system status were specified, acceptance criteria specified, the required reviews were performed, and management approval was indicated.

No violations or deviations were identified in the areas inspected.

6. Preoperational Test Witnessing (70312, 70314, 70315, 70441, 70452)

The inspector witnessed portions of the preop tests discussed below. Some of the tests were being performed at various temperature and pressure plateaus as part of the overall hot functional testing (HFT) sequence. The tests were witnessed to verify that:

- Appropriate revisions of the procedures were available and in use by test personnel.
- Test prerequisites were met.
- Personnel involved in the tests were briefed prior to beginning the tests.
- Proper plant systems were in service.
- Special test equipment required by the procedure was calibrated and in service.
- The tests were performed in accordance with requirements.
- Adequate coordination among personnel involved in the test.
- Test data were collected and recorded in the proper manner.
- Problems encountered during testing were properly identified and documented for evaluation.

The following tests were reviewed:

- a. TP/2/A/1100/01, Controlling Procedure for Hot Functional Testing, Section 12.3, which covers the reactor coolant system (RCS) cooldown from normal operating temperature and pressure. This section also coordinates all other testing to be performed during the cooldown.
- b. TP/2/A/1100/02A, Diesel Generator 2A Preoperational Functional Test, Sections 13.8 and 13.11. Section 13.8 verifies the proper operation of engine controls when diesel generator (DG) 2A is started from the main control room. This test was being run in conjunction with Section 13.11, which is the procedure for the 35 consecutive start verification

tests, which demonstrates that DG 2A can be successfully started and loaded to 3500 KW and run for 60 minutes 35 consecutive times without a valid failure (as specified in Regulatory Guide 1.108).

During testing on October 1, 1985, DG 2A output breaker tripped on overcurrent on two separate occasions. Each trip occurred during the 60 minute load run. Licensee personnel stated that the meter indicating DG output power was oscillating just before each trip. During troubleshooting after the first trip, the licensee discovered that the oil level was low in DG 2A governor, so oil was added. The governor oil level was found to be low after the second trip also. Oil was added again and several start verification tests were run successfully without any further problems with the governor oil level. During further review of this problem, it was learned that a 24-hour load run and over 20 start verification tests had been run on DG 2A prior to the trips on October 1. The only significant problem encountered during those tests was a problem with the voltage regulator which resulted in a trip. This occurred after approximately ten consecutive start verification tests. The licensee determined that trip to be a valid failure. The voltage regulator was replaced and approximately 11 more consecutive start verification tests had been run when the trips occurred on October 1. Based on the tests which had been run prior to October 1, 1985, and the several tests which had been run after oil was added to the governor the second time, the licensee concluded that the low oil level in the governor led to the trips on October 1, 1985. The licensee determined the trips to be valid failures. During further discussions of this problem, the inspector raised the question of why was the oil level low in the governor, given that the oil level should not decrease under normal conditions. Licensee personnel speculated that since there were no signs of external oil leakage, there could be either a small internal oil leak or a problem with their method of monitoring governor oil level. The licensee stated that the governor oil level will continue to be monitored during DG 2A testing and appropriate corrective actions will be taken if another decrease in oil level is observed. The inspector informed the licensee that followup on this problem will be done during future inspections. This item will be tracked as IFI 414/85-42-01, Resolve question of low oil level problem in DG 2A governor.

- c. TP/2/A/1200/03E, Safety Injection System Check Valve Functional Test, Sections 12.4 and 12.5. This test demonstrates the ability of various emergency core cooling system (ECCS) components to supply flow through the ECCS injection lines and proper operation of the injection lines check valves. This is done while the RCS is at the operating conditions of the various components. Section 12.4, safety injection pumps and hot leg injection check valves test and Section 12.5, cold leg accumulators and check valves test, were witnessed. This test was part of the HFT sequence.

- d. TP/2/A/1400/15, Auxiliary Shutdown Panel Cooldown Functional Test, Section 12.2. This portion of the test demonstrates the ability to cool down the RCS by lowering the RCS temperature and pressure sufficiently from hot standby conditions (starting with RCS temperature at approximately 400°F) to permit operation of the RHR system (350°F and 385 psig) where RCS temperature will be lowered another 50°F using RHR. This section of the test is to be performed outside the main control room.

- (1) There were several discrepancies written during performance of the test on October 4, 1985. Two of the discrepancies concerned problems encountered during attempts to operate the RHR system from the auxiliary shutdown panels (ASP). A discrepancy was written during attempts to operate RHR system train A when valve 2ND-1B (RHR pump 2A suction from RCS loop B) could not be automatically opened from the ASP. Attempts to manually open the valve locally also proved unsuccessful. The licensee then switched to RHR system train B. Train B of RHR could not be put into operation either because train B of component cooling water could not be supplied to train B RHR from locations outside the main control room. Valve 2KC-81B (component cooling water to RHR heat exchanger 2B supply isolation valve) could not be opened locally because the valve handwheel was missing. This valve can be opened either automatically from the main control room or locally, but not from the ASP. Rather than delay the test in order to locate a handwheel for the valve, the licensee decided to open the valve from the main control room. A test discrepancy was written for the missing handwheel and for the valve being opened from the main control room. After transferring to RHR, the RCS was successfully cooled down another 50°F.

During discussions with the licensee on October 7 and 8, 1985, it was stated that valve 2ND-1B was opened after completion of the test. The apparent problem with the valve was that it was stuck on its seat. The licensee stated that additional corrective actions will be taken after completion of HFT to ensure that the valve operates properly. The licensee also committed to replace the handwheel on valve 2KC-81B and prior to transferring to the RHR system, verify that it can be opened. This will be done prior to completing HFT, during cooldown from the second system heatup for RCS thermal expansion monitoring. The inspector informed the licensee that followup on resolution of the above discrepancies, as well as others identified during the test, will be done during future inspections. This item will be tracked as IFI 414/85-42-02, Resolution of discrepancies identified during performance of auxiliary shutdown panel cooldown test.

- (2) The inspector noted another item while observing the above test from the auxiliary feedwater pump turbine control panel (AFWPTCP). The controller used for operating valve 2CA64 (steam generator 2A auxiliary feedwater flow control valve) is located directly

beneath the instrumentation displaying steam generator 2B parameters. Also, the controller for valve 2CA52 (steam generator 2B auxiliary feedwater flow control valve) is located directly beneath the instrumentation displaying steam generator 2A parameters. Since steam generator level and auxiliary feedwater flow are among the parameters displayed, the inspector expressed concern over possible operating errors due to the location of the instrumentation and controls for steam generators A and B on the AFWPTCP. The licensee stated that item will be reviewed and appropriate corrective actions taken. This item will be tracked for followup as IFI 414/85-42-03, Resolve question concerning location of controls on the auxiliary feedwater pump turbine control panel for steam generators 2A and 2B.

No violations or deviations were identified in the areas inspected.