



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30303

Report No.: 50-413/84-86

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

Docket No.: 50-413

License No.: NPF-24

Facility Name: Catawba Unit 1

Inspection Conducted: August 27-31, 1984

Inspector: Gerald R. Wiseman  
G. R. Wiseman

9/19/84  
Date Signed

Approved by: T. E. Conlon  
T. E. Conlon, Section Chief  
Engineering Branch  
Division of Reactor Safety

9-19-84  
Date Signed

SUMMARY

Scope: This routine, announced inspection involved 35 inspector-hours in the area of Fire Protection Open Items.

Results: No violations or deviations were identified.

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Q PDR

## REPORT DETAILS

### 1. Licensee Employees Contacted

- \*A. R. Franklin, Superintendent, Station Services
- \*C. L. Hartzell, LTP Engineering
- \*H. D. Brandes, Design Engineering
- \*J. M. Rucci, Design Engineering
- \*D. P. Hensley, QA Projects
- R. G. Morgan, Assistant Operations Engineer
- J. D. Lee, I&E Coordinator
- B. Beaver, Supervisor, Performance Engineering
- B. East, Assistant Engineer, I&E
- F. VanFijk, I&E Engineer
- K. Bryan, I&E Specialist

#### NRC Resident Inspectors

- \*P. K. VanDoorn
- \*P. H. Skinner

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on August 31, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the following inspection findings.

Inspector Follow-up Item (413/84-86-01), Installation of Safe Shutdown System Related Equipment Access Platforms - Paragraph 5.a.(6).

Inspector Follow-up Item (413/84-86-02), Issuance of Cold Shutdown Procedures Following a Fire in the Plant - Paragraph 5.b.(1).

Inspector Follow-up Item (413/84-86-03), Issuance of Damage Control Procedures Following a Fire in the Plant - Paragraph 5.b.(2).

Inspector Follow-up Item (413/84-86-04), Completion of Training for Cold Shutdown Procedures and Damage Control Procedures - Paragraph 5.b.(3)

Inspector Follow-up Item (413/84-86-05), Review of Acceptance Test Results for the Carbon Dioxide System for 1A Diesel Generator - Paragraph 5.c.

Inspector Follow-up Item (413/84-86-06), Replace Cork Sealant Material with Fire-rated Silicone Foam - Paragraph 5.e.(4).

### 3. Licensee Action on Previous Enforcement Matters

- a. (Open) Unresolved Item (413/84-46-01), Standby Makeup Pump Capacity for Primary Side Volume Control: As a result of a Region II review of data for the standby pump capacity test, where a value of 25 gpm was obtained, the licensee has modified the standby makeup pump motor driven pulley by replacing the 8" driver with a 9" diameter driver.

The Standby Makeup Pump Performance Test, Procedure PT/1/A/4200/07C, is scheduled to be rerun prior to initial criticality to verify that the pump delivers at least 26 gpm. At the time of this inspection, this retest was not completed. The results of the test will be reviewed during a future NRC inspection.

- b. (Closed) Unresolved Item (413/84-46-07), Standby Makeup System FSAR Update to "As-Built" Status and Complete System Installation: The inspector reviewed the system flow diagram CN-1554-1.8, Revision 2, and updated FSAR Figure 9.3.4-9 which has been revised to show the system "as-built" status. The inspector verified the installation of strainer INV870 and pressure gauge INVPG6160 within the annulus at elevation 555' - 275°.
- c. (Closed) Unresolved Item (413/84-46-08), Scale Range for SSF Standby Makeup Pump Flow Rate Indicator Is Inadequate: This instrument was originally scaled over a range of 0-26 gpm, the total flow rate of the standby makeup pump. The licensee has recalibrated this gauge located on the SSF console OCNSL001 to a scale range of 0-40 gpm.
- d. (Closed) Unresolved Item (413/84-46-11), Reevaluation of Fuel Oil Line Arrangement to SSF Diesel Generator Engine: The licensee has provided a steel guard to protect that fuel oil piping at the floor outside the engine dike from any direct impact from objects moving in the walkway. In addition, the original flex hoses outside the area have been hard-piped to within the diked area to where the flex hoses now are connected. The inspector found this installation acceptable.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

### 5. Licensee Actions for License Conditions Items for Low Power License

#### a. Standby Shutdown System Operability Features

- (1) (Closed) Standby Shutdown Facility Diesel Generator Fuel Line Modification: Refer to paragraph 3.d.
- (2) (Open) Standby Makeup Pump Capability Modification: Refer to paragraph 3.a.

- (3) (Closed) Train A Disconnect Enclosure Cover Modification: Refer to paragraph 6.c.2.
- (4) (Closed) Standby Makeup Pump SSF Flow Gauge Modification: Refer to paragraph 3.c.
- (5) (Open) Standby Shutdown System Related 8-Hour Emergency Lights Modifications: Refer to paragraph 6.a.
- (6) (Open) Standby Shutdown System Related Equipment Access Platforms: The licensee has identified the necessity for an access platform to accomplish the manual throttling of valve 1-CA-48 (CA Pump No. 1 Flow to S/G) located in the Mechanical Penetration Room, Elevation 543, Col line DD/EE-52/53. At the time of this inspection, the platform had not been installed, but will be provided prior to initial criticality. This item is identified as Inspector Follow-up Item (413/84-86-01), Installation of Safe Shutdown System Related Equipment Access Platforms. This item will be reviewed during a future NRC inspection.

b. Damage Control Measures and Cold Shutdown Procedures

- (1) (Open) Cold Shutdown Procedures: The inspector reviewed a draft copy of operations procedure, OP/1/A/6100/20, Operational Guidelines for Achieving Cold Shutdown Following a Fire in the Plant. This procedure in conjunction with procedures OP/1/A/6100/04, Shutdown Outside the Control Room From Hot Standby To Cold Shutdown; OP/0/B/6100/13, Standby Shutdown Facilities Operations; and IP/0/A/3890/27, I&E Guidelines for Achieving Cold Shutdown Following a Fire in the Plant, describes the minimum steps and damage control measures necessary to bring Unit 1 from Hot Standby to Cold Shutdown after a fire in the plant. This procedure has yet to be issued to the station operations organization. This item is identified as Inspector Follow-up Item (413/84-86-02), Issuance of Cold Shutdown Procedures Following a Fire in the Plant.

The procedures will be reviewed by other NRC Region II staff. This item will be reviewed during future NRC inspections prior to initial criticality.

- (2) (Open) Damage Control Measures: A draft copy of procedure IP/0/A/3890/27 was also reviewed by the inspector. This procedure describes required damage control measures including specific identification of the required cold shutdown repair materials and procedures for their installation.

This procedure has not yet been issued to the station operations organization. The procedure will be reviewed by other NRC Region II staff. This item is identified as Inspector Follow-up Item (413/84-86-03), Issuance of Damage Control Procedures Following a Fire in the Plant, and will be reviewed during future NRC inspections prior to initial criticality.

- (3) (Open) Training for Cold Shutdown Procedures and Damage Control Measures: The cold shutdown and damage control procedures have not been yet issued. Therefore, training had not commenced at the time of this inspection. This item is identified as Inspector Follow-up Item (413/84-86-04), Completion of Training for Cold Shutdown Procedures and Damage Control Procedures.

The licensee stated that they will have all damage control materials, procedures, and training in place by initial criticality and will confirm this action by letter to NRC/NRR.

- c. (Open) Carbon Dioxide Fire Protection System For 1A Diesel Generator: At the time of this inspection, the licensee had completed installation of the Carbon Dioxide System for 1A Diesel Generator. The acceptance test TP/1/A/1400/05B, Diesel Generator CO<sup>2</sup> Functional Test, had been performed; however, the acceptance criteria for the system of achieving 34% CO<sup>2</sup> room concentration in 60 seconds could not be met. Test discrepancy, Item 12, has been written to identify the problem. System piping modifications will be required and the test performed again. This item is identified as Inspector Follow-up Item (413/84-86-05), Review of Acceptance Test Results for the Carbon Dioxide System for 1A Diesel Generator. The test results will be reviewed during a future NRC inspection.
- d. (Closed) Installation of a Fire Detector in the Bay Above the Turbine Driven Auxiliary Feedwater Pump Pit: The inspector verified that fire detectors A12 and B12, were installed in the bay above the Turbine Driven Auxiliary Feedwater Pump Pit as indicated on design drawing CN-1762-01.01-02, Revision 8A.

Additionally, the inspector reviewed the test results of procedure IP/0/A/3350/06 to verify that the detectors were successfully tested and operational on August 31, 1984.

- e. Fire Protection Program
- (1) (Open) Justification for the adequacy of the standby makeup pump capacity: (Refer to paragraph 3.a.)
- (2) (Open) Specific identification of the required cold shutdown repair materials and procedures for their installation: (Refer to paragraph 5.b.)



- (3) (Open) Post-fire shutdown procedures and training: The inspector performed a walkdown of the post-fire alternate shutdown procedures, AP/1/A/5500/17, Loss of Control Room; and AP/0/B/6100/13, Standby Shutdown Facility Operations, which utilized the standby shutdown system and SSF to bring the plant to hot standby condition following a fire in the plant. Within this area, all previous Region II staff concerns have been adequately addressed. This item appears to be satisfactory. Cold shutdown procedures and training are addressed in paragraph 5.b. of this report.
- (4) (Open) Replace cork sealant material with fire-rated silicone foam: The licensee has completed the cork replacement in areas of the control complex. The inspector reviewed these areas and the silicone foam application appears adequate. By letter dated June 29, 1984, DPC committed to replace the cork with a fire-rated silicone foam in fire areas 4, 11, and 18. This work is scheduled to be completed prior to initial criticality. At the time of this inspection, this work was in progress, however, was not completed. This item is identified as Inspector Follow-up Item (413/84-86-06), Replace Cork Sealant Material with Fire-rated Silicone Foam. This item will be reviewed during a future NRC inspection.
- (5) (Closed) Install a fire detector in the bay above the Turbine Driven Auxiliary Feedwater Pump Pit: (Refer to paragraph 5.d)
- (6) (Open) Complete the installation and acceptance test of the carbon dioxide fire suppression system for 1A Diesel Generator: (Refer to paragraph 5.c.)

Within the areas examined, no violations or deviations were identified.

#### 6. Inspector Identified Items

- a. (Open) Inspector Followup Item (413/84-36-01), Inadequate Number of 8-Hour Emergency Lighting Units: The inspector examined the design and installation of the following 8-Hour emergency lighting units for Unit 1 based upon the licensee design drawings and the post-fire alternate shutdown procedures utilizing the Standby Shutdown System, OP/0/B/6100/13, Standby Shutdown Facility Operations, and OP/1/A/5500/17, Loss of Control Room.

<u>Design Drawing No.</u>	<u>Plant Elevation</u>	<u>Emergency Lighting Units - Location</u>
CN-1837-01	594'	CC-57 CC-56 BB-55 DD-55 DD-53/54

(cont'd)

<u>Design Drawing No.</u>	<u>Plant Elevation</u>	<u>Emergency Lighting Units - Location</u>
CN-1835-03	594'	DD-51/52 BB-53 BB-51* DD/CC-52**
CN-1851-04	SSF-594'	B/C-2*** B/C-4*** A/B-4*** B-6*** C-6*** B/C-8***
CN-1835-01	594'	FF/GG-53/54 GG-54 HH-53 JJ/KK-53 MM-52 MM-51
CN-1834-03	577'	CC/DD-52** BB-51 BB-46 AA/BB-45 BB-46 AA-49 BB-51
CN-1834-01	577'	PP-50/51**
CN-1833-01	560'	PP-51**
CN-1833-03	560'	CC/DD-52**
CN-1832-01	543'	PP-51** MM/NN-50/51 KK-50/51 KK-50 JJ/KK-50/51 JJ-51 HH-52 GG-52/53 FF-52/53* EE-52/53

(cont'd)

<u>Design Drawing No.</u>	<u>Plant Elevation</u>	<u>Emergency Lighting Units - Location</u>
CN-1832-03	543'	CC/DD-52** CC-52/53 CC-53 BB-52 BB-51 AA/BB-51 AA-51/52 DD-52/53 DD/EE-53/54

Notes: \* Two (2) Lighting Units installed at location  
 \*\* Lighting Units installed in staintower  
 \*\*\* Lighting Unit rated at 90-minute capacity.

Except as noted below, the 8-hour battery emergency lighting system design appears to be adequate to enable operators to transfer control to and operate the SSF and SSS functions to accomplish and maintain the plant in Hot Standby condition.

- (1) The NRC/NRR review, SSER 2, Section 9.5.3, Lighting Systems, is based on required emergency lighting as identified in Table 9.5.3.2. This table does not include all lighting units required for SSF operation and transfer which are indicated on the Duke design drawings. At the exit meeting, the inspector requested that the licensee revise Table 9.5.3.2 to accurately indicate all required emergency battery units.
  - (2) The installation of all the lighting units required as shown on design drawings has not been completed. The licensee has committed to complete the installation of these units prior to initial criticality.
  - (3) Catawba operations procedure PT/1/B/4350/09, provides for periodic testing of the emergency battery lighting units. The inspector's review of this procedure revealed that the testing frequency and scope was not in accordance with the manufacturer's recommendations. Duke has committed to revise the present procedure or prepare additional procedures to provide the surveillance and maintenance required by the lighting manufacturer. This will be completed prior to initial criticality.
- b. (Closed) Inspector Followup Item (413/84-36-03), Reevaluation of Fire Protection/Detection Systems for Ventilation Systems: Surveillance of the fire protection related heat detection systems (Alison A971 Fire Detection Panels) for the MSA carbon filter units is provided under a



Standing Work Request (SWR) for 18 month periodic calibration tests. These tests utilize procedures IP/0/A/3890/18 and IP/1/A/3163/01. These procedures were reviewed and found to be adequate. A review of the following records verified that the ventilation systems heat detection Alison Panels have received the required calibration:

Alison Fire Detection Panels - Standing Work Requests for 18-Month Calibration

<u>System</u>	<u>Filter</u>	<u>SWR#</u>	<u>Last Calibration</u>	
			<u>WR#</u>	<u>Issue Date</u>
VA	ABFU-1A	3835	1793 1AE	3/31/84
	ABFU-1B	3835	1793 1AE	3/31/84
	ABFU-2A	3836	1793 1AE	3/31/84
	ABFU-2B	3836	1793 1AE	3/31/84
	CRFU-1	3869	1793 1AE	3/31/84
VC	1CRA-PFT-1	3837	1187 1AE	11/1/83
	2CRA-PFT-1	3838	1187 1AE	11/1/83
VE	AVFU-1A	3839	1187 1AE	11/1/83
	AVFU-1B	3840	1187 1AE	11/1/83
VF	FPFU-1A1	3841	1897 1AE	4/26/84
	FPFU-1A2	3841	1897 1AE	4/26/84
	FPFU-1B1	3841	1792 1AE	3/31/84
	FPFU-1B2	3841	1792 1AE	3/31/84
VP	CPFU-1A	3868	1187 1AE	11/1/83
	CPFU-1B	3868	1187 1AE	11/1/83
	IIFU-1	3868	1187 1AE	11/1/83

NOTE: Initial Calibrations were for fire detection panels only; control room annunciators were all checked under 1293 1AE (written 11/10/83).

NOTE: Panels calibrated under 11871AE were calibrated by an Alison Service Representative.

c. (Closed) Inspector Followup Item (413/84-46-09), SSS Potential Electrical Discrepancies:

- (1) Installation of unsupported SSS cable lengths: The inspector verified that the cables at the Turbine Building/SSF Cable Tunnel Penetration were supported. The support installation appeared to be adequate.

- (2) Enclosure cover for easy access to Train "A" Solenoid operated valves disconnects: The inspector verified that the original screw secured clamps on the enclosure door have been replaced with thumb-wing/nuts which require no hand tools to remove. This modification was found acceptable.
- (3) Procedural controls for opening of RHR suction valve breakers when SSS operation is initiated: The inspector reviewed procedure OP/1/A/6200/04, Shutdown and Alignment for Standby Readiness. Enclosure 4.3, Section 2.15 has been revised to indicate the opening and white tagging of the following breakers for the ND (RHR) system, (1) 1EMXD-F01A and (2) 1EMXS-F02A.