

February 14, 1986

Docket No. 50-413

Mr. H. B. Tucker, Vice President  
Nuclear Production Department  
Duke Power Company  
422 South Church Street  
Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Issuance of Amendment No. 4 to Facility Operating License  
NPF-35 - Catawba Nuclear Station, Unit 1

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 4 to Facility Operating License NPF-35 for the Catawba Nuclear Station, Unit 1. This amendment is in response to your application dated May 7, 1985, as modified by your November 7, 1985, submittal.

The amendment changes Technical Specification 3/4.6.5.3 "Ice Condenser Doors" and its associated bases to limit the allowed time of power operation with the ice condenser inlet doors in a closed and inoperable condition and to clarify the definition of "inoperable." Based on a telephone discussion on January 30, 1986, with Mr. Roger W. Ouellette of your company, the following additional phrase "or a slight delay in door opening" was added to the end of Bases 3/4.6.5.3 as proposed in your November 7, 1985. The amendment is effective as of its date of issuance.

A copy of the related safety evaluation supporting Amendment No. 4 to Facility Operating License NPF-35 is enclosed.

Notice of issuance will be included in the Commission's next bi-monthly Federal Register notice.

Sincerely,

B. J. Youngblood, Director  
Project Directorate No. 4  
Division of PWR Licensing-A

Enclosures:

1. Amendment No. 4 to NPF-35
2. Safety Evaluation

cc w/encl:  
See next page

\*NOTE: PREVIOUSLY CONCURRED

LA:PDR#4:DPLA  
\*MDuncan/hmc  
12/18/85

PDR4L:DPLA  
\*KJabbour  
12/18/85

*DSH/m*  
D:PDR4:DPLA  
BJYoungblood  
2/12/86

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PDR ADDCK 05000413  
P PDR

Mr. H. B. Tucker  
Duke Power Company

Catawba Nuclear Station

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Catawba

- 2 -

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AMENDMENT NO. 4 TO FACILITY OPERATING LICENSE NPF-35 -  
CATAWBA NUCLEAR POWER STATION, UNIT 1

DISTRIBUTION: w/enclosures:

Docket No. 50-413

NRC PDR

Local PDR

NSIC

PRC System

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← this is where it goes!

BJ Youngblood



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

DUKE POWER COMPANY

NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION

SALUDA RIVER ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-413

CATAWBA NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 4  
License No. NPF-35

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Catawba Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-35 filed by the Duke Power Company acting for itself, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc., (licensees) dated May 7, 1985, as modified November 7, 1985, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public;
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachments to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-35 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 4, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license.

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PDR

Duke Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

B. J. Youngblood, Director  
Project Directorate No. 4  
Division of PWR Licensing-A

Attachment:  
Technical Specification Changes

Date of Issuance: February 14, 1986

LA: PDR#4: DPLA  
MDuncan/hmc  
12/18/85

*KNS*  
PDR4L: DPLA  
KJabbour  
12/18/85

OELD  
*[Signature]*  
12/18/85

*DST for*  
D: PDR4: DPLA  
BJYoungblood  
12/12/86

PWR-A  
J. Pulsipher  
*JCP*  
1/28/86

ATTACHMENT TO LICENSE AMENDMENT NO. 4

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

<u>Amended</u> <u>Page</u>	<u>Overleaf</u> <u>Page</u>
3/4 6-36	3/4 6-35
B3/4 6-5	
B3/4 6-6	

## CONTAINMENT SYSTEMS

### ICE BED TEMPERATURE MONITORING SYSTEM

#### LIMITING CONDITION FOR OPERATION

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3.6.5.2 The Ice Bed Temperature Monitoring System shall be OPERABLE with at least two OPERABLE RTD channels in the ice bed at each of three basic elevations (< 11', 30'9" and 55' above the floor of the ice condenser) for each one-third of the ice condenser.

APPLICABILITY: MODES 1, 2, 3, and 4.

#### ACTION:

- a. With the Ice Bed Temperature Monitoring System inoperable, POWER OPERATION may continue for up to 30 days provided:
  1. The ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed;
  2. The last recorded mean ice bed temperature was less than or equal to 20°F and steady or decreasing ; and
  3. The ice condenser cooling system is OPERABLE with at least:
    - a) Twenty-one OPERABLE air handling units,
    - b) Two OPERABLE glycol circulating pumps, and
    - c) Three OPERABLE refrigerant units.

Otherwise, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

- b. With the Ice Bed Temperature Monitoring System inoperable and with the Ice Condenser Cooling System not satisfying the minimum components OPERABILITY requirements of ACTION a.3 above, POWER OPERATION may continue for up to 6 days provided the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed and the last recorded mean ice bed temperature was less than or equal to 15°F and steady; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.5.2 The Ice Bed Temperature Monitoring System shall be determined OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours.



## CONTAINMENT SYSTEMS

### ICE CONDENSER DOORS

#### LIMITING CONDITION FOR OPERATION

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3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

- a. With one or more ice condenser doors open or otherwise inoperable, (but capable of opening automatically), POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one or more ice condenser doors inoperable (not capable of opening automatically), restore all doors to OPERABLE status within 1 hour or be in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

- a. Continuously monitored and determined closed by the Inlet Door Position Monitoring System, and
- b. Demonstrated OPERABLE during shutdown at least once per 3 months during the first year after the ice bed is initially fully-loaded and at least once per 6 months thereafter by:
  - 1) Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds;
  - 2) Verifying that each door is capable of opening automatically and that it is not impaired by ice, frost, debris, or other obstruction;
  - 3) Testing a sample of at least 25% of the doors and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. The doors selected for determination of the "door opening torque" shall be selected to ensure that all doors are tested at least once during four test intervals;

## CONTAINMENT SYSTEMS

### BASES

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#### 3/4.6.5 ICE CONDENSER

The requirements associated with each of the components of the ice condenser ensure that the overall system will be available to provide sufficient pressure suppression capability to limit the containment peak pressure transient to less than 14.7 psig during LOCA conditions.

##### 3/4.6.5.1 ICE BED

The OPERABILITY of the ice bed ensures that the required ice inventory will: (1) be distributed evenly through the containment bays, (2) contain sufficient boron to preclude dilution of the containment sump following the LOCA, and (3) contain sufficient heat removal capability to condense the Reactor Coolant System volume released during a LOCA. These conditions are consistent with the assumptions used in the safety analyses.

The minimum weight figure of 1218 pounds of ice per basket contains a 10% conservative allowance for ice loss through sublimation which is a factor of 10 higher than assumed for the ice condenser design. The minimum total weight of 2,368,652 pounds of ice also contains an additional 1% conservative allowance to account for systematic error in the weighing instruments. In the event that observed sublimation rates are equal to or lower than design predictions after 3 years of operation, the minimum ice baskets weight may be adjusted downward. In addition, the number of ice baskets required to be weighed each 9 months may be reduced after 3 years of operation if such a reduction is supported by observed sublimation data.

##### 3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

The OPERABILITY of the Ice Bed Temperature Monitoring System ensures that the capability is available for monitoring the ice temperature. In the event the system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.

##### 3/4.6.5.3 ICE CONDENSER DOORS

The OPERABILITY of the ice condenser doors and the requirement that they be maintained closed ensures that the Reactor Coolant System fluid released during a LOCA will be diverted through the ice condenser bays for heat removal and that excessive sublimation of the ice bed will not occur because of warm air intrusion.

If an ice condenser door is not capable of opening automatically, then system function is seriously degraded and immediate action must be taken to restore the opening capability of the door. Not capable of opening automatically is defined as those conditions in which a door is physically blocked from opening by installation of a blocking device or by obstruction from temporary or permanent installed equipment. Impairment by ice, frost or debris is considered to render the doors inoperable but capable of opening automatically since these types of conditions will result only in a slightly greater torque necessary to open the doors or a slight delay in door opening.

## CONTAINMENT SYSTEMS

### BASES

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#### 3/4.6.5.4 INLET DOOR POSITION MONITORING SYSTEM

The OPERABILITY of the Inlet Door Position Monitoring System ensures that the capability is available for monitoring the individual inlet door position. In the event the system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.

#### 3/4.6.5.5 DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

The requirements for the divider barrier personnel access doors and equipment hatches being closed and OPERABLE ensure that a minimum bypass steam flow will occur from the lower to the upper containment compartments during a LOCA. This condition ensures a diversion of the steam through the ice condenser bays that is consistent with the LOCA analyses.

#### 3/4.6.5.6 CONTAINMENT AIR RETURN AND HYDROGEN SKIMMER SYSTEMS

The OPERABILITY of the Containment Air Return and Hydrogen Skimmer Systems ensures that following a LOCA: (1) the containment atmosphere is circulated for cooling by the spray system, and (2) the accumulation of hydrogen in localized portions of the containment structure is minimized.

#### 3/4.6.5.7 and 3/4.6.5.8 FLOOR AND REFUELING CANAL DRAINS

The OPERABILITY of the ice condenser floor and refueling canal drains ensures that following a LOCA, the water from the melted ice and Containment Spray System has access for drainage back to the containment lower compartment and subsequently to the sump. This condition ensures the availability of the water for long-term cooling of the reactor during the post-accident phase.

#### 3/4.6.5.9 DIVIDER BARRIER SEAL

The requirement for the divider barrier seal to be OPERABLE ensures that a minimum bypass steam flow will occur from the lower to the upper containment compartments during a LOCA. This condition ensures a diversion of steam through the ice condenser bays that is consistent with the LOCA analyses.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION REPORT

RELATED TO AMENDMENT NO. 4 TO FACILITY OPERATING LICENSE NPF-35

DUKE POWER COMPANY

NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION

SALUDA RIVER ELECTRIC COOPERATIVE, INC.

INTRODUCTION

By letter dated May 7, 1985, Duke Power Company proposed changes to the Technical Specifications for Catawba Nuclear Station, Unit 1, with respect to ice condenser doors. The proposed changes are in response to an incident at Catawba Unit 1 in which 23 of the 24 pairs of ice condenser inlet doors were found to be blocked closed after 10 days of operation. The event revealed certain deficiencies in the Catawba Unit 1 Technical Specifications. By letter dated November 7, 1985, Duke Power Company modified its May 7, 1985, submittal to clarify the intent of the ice condenser door operability.

EVALUATION

The proposed changes to the Technical Specifications impose additional limitations for operation and additional surveillance requirements not presently in Specification 3/4.6.5.3 in order to eliminate a concern that ice condenser doors which are required to be closed, but capable of opening during power operation, could be blocked in a closed position for an inordinate amount of time. If an ice condenser door is not capable of opening automatically, then the safety function of the Ice Condenser System (to provide pressure suppression capability to limit the containment peak pressure transient during LOCA conditions) is degraded because the flowpath of the LOCA mass and energy discharge through the ice condenser bays for heat removal is impeded.

The licensee's proposed amendments eliminate this concern by revising Technical Specification 3/4.6.5.3, "Ice Condenser Doors" and its associated bases to limit the allowed time of power operation with the ice condenser inlet doors in a closed and inoperable condition, and by clarifying the definition of "inoperable" to mean "not capable of opening automatically." The limit is implemented by adding to the action statement for Specification 3.6.5.3 a requirement that with one or more ice condenser doors inoperable (not capable of opening automatically), all doors shall be restored to operable status within 1 hour or the facility shall be in hot standby within 6 hours and in hot shutdown within the following 6 hours and in cold shutdown within the following 30 hours. The concern is further eliminated by changing surveillance Specification 4.6.5.3.1.b.(2) to require that the periodic surveillance verify that each ice condenser door is capable of opening automatically and that it is not impaired by ice, frost, debris or other obstruction (words underlined are added). The associated Bases 3/4.6.5.3 are also clarified consistent with these changes.

The change in the definition of "operable" and the change in the bases are a more appropriate representation and are, therefore, acceptable.

The change to the surveillance requirements will assure that man-made obstructions which could impair the doors from opening automatically, such as the blocking devices found to be left in place at Catawba Unit 1, are periodically verified not to be present. Such periodic verification, in conjunction with administrative procedures employed by the licensee (e.g., a tag-out and return verification procedure for each door blocking device) provides reasonable assurance that obstructions such as temporary blocking devices used during plant shutdown will not impair the ice condenser safety function. This change is, therefore, acceptable.

Furthermore, this change considers that impairment by ice, frost or debris would render the doors inoperable but capable of opening automatically because these conditions will result only in a slightly greater torque necessary to open the doors or a slight delay in door opening. The associated bases 3/4.6.5.3 clarified this consideration. The staff finds this change acceptable.

The staff finds that the limit of one hour for continued power operation which is allowed by the revised specification to restore all doors to operable status, including the specified periods to be in hot standby, hot shutdown and cold shutdown, is appropriate considering the safety significance of such operation and is sufficiently brief such that the probability of a LOCA occurring during this interval is so small as to be negligible. Accordingly, no undue risk is associated with such limited operation and the specification, as revised, is acceptable.

#### ENVIRONMENTAL CONSIDERATION

The amendment involves a change in use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there have been no public comments on such finding. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

#### CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (50 FR 32793) on August 14, 1985, and consulted with the state of South Carolina. No public comments were received, and the state of South Carolina did not have any comments. The November 7, 1985, submittal clarified the intent of the change requested in the May 7, 1985, submittal. This clarified provision is reflected in the amendment. However, this clarification does not change the nature or the substance of the amendment noticed in the Federal Register on August 14, 1985.

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: February 14, 1986