

January 23, 1990

Dockets Nos. 50-413
and 50-414

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. 69 TO FACILITY OPERATING LICENSE NPF-35
AND AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NPF-52 - CATAWBA
NUCLEAR STATION, UNITS 1 AND 2 (TACS 73027/73028)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 69 to Facility Operating License NPF-35 and Amendment No. 63 to Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated April 6, 1989, as supplemented September 6, 1989.

The amendments modify TSs 3/4.9.8.1 and 3/4.9.8.2 and their associated Bases to: (1) reduce the required Residual Heat Removal (RHR) system flow rate during Mode 6 (refueling) operation, when the Reactor Coolant System (RCS) is partially drained, from greater than or equal to 3000 gpm to greater than or equal to 1000 gpm, (2) add a Surveillance Requirement to ensure that the RCS temperature is maintained at or below 140°F, and (3) provide the technical justification for the revision in TS Bases 3/4.9.8.

A copy of the related Safety Evaluation is also enclosed. Notice of issuance of the amendments will be included in the Commission's bi-weekly Federal Register notice.

Sincerely,
/s/

Kahtan N. Jabbour, Project Manager
Project Directorate II-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No.69 to NPF-35
2. Amendment No.63 to NPF-52
3. Safety Evaluation

cc w/enclosures:
See next page

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Document Name: CATAWBA AMDT. RHR

*See previous concurrence

LA:PDII-3*	PM:PDII-3*	SRXB*	OGC*	PDII-3/DRPI/II
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DATED: January 23, 1990

AMENDMENT NO. 69 TO FACILITY OPERATING LICENSE NPF-35 - Catawba Nuclear Station, Unit 1
AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NPF-52 - Catawba Nuclear Station, Unit 2

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D. Matthews

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R. Ingram

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K. Jabbour

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E. Jordan

MNBB-3302

W. Jones

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G. Hill (8)

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ACRS (10)

P-135

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ARM/LFMB

AR-2015

E. Butcher

11-F-23

D. Hagan

MNBB-3302

Mr. H. B. Tucker
Duke Power Company

cc:

A.V. Carr, Esq.
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

J. Michael McGarry, III, Esq.
Bishop, Cook, Purcell and Reynolds
1400 L Street, N.W.
Washington, D. C. 20005

North Carolina MPA-1
Suite 600
3100 Smoketree Ct.
P.O. Box 29513
Raleigh, North Carolina 27626-0513

Ms. S. S. Kilborn
Area Manager, Mid-South Area
ESSD Projects
Westinghouse Electric Corp.
MNC West Tower - Bay 239
P.O. Box 355
Pittsburgh, Pennsylvania 15230

County Manager of York County
York County Courthouse
York, South Carolina 29745

Richard P. Wilson, Esq.
Assistant Attorney General
S.C. Attorney General's Office
P.O. Box 11549
Columbia, South Carolina 29211

Piedmont Municipal Power Agency
100 Memorial Drive
Greer, South Carolina 29651

Mr. Alan R. Herdt, Chief
Project Branch #3
U.S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Catawba Nuclear Station

North Carolina Electric Membership
Corp.
3400 Sumner Boulevard
P.O. Box 27306
Raleigh, North Carolina 27611

Saluda River Electric Cooperative,
Inc.
P.O. Box 929
Laurens, South Carolina 29360

Senior Resident Inspector
Route 2, Box 179N
York, South Carolina 29745

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. Heyward G. Shealy, Chief
Bureau of Radiological Health
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Ms. Karen E. Long
Assistant Attorney General
N.C. Department of Justice
P.O. Box 629
Raleigh, North Carolina 27602

Mr. Robert G. Morgan
Nuclear Production Department
Duke Power Company
P.O. Box 33189
Charlotte, North Carolina 28241



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. 69
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 April 6, 1989, as supplemented September 6, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and 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 amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - 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.

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2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-35 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 69 , are hereby incorporated into the license. The licensee 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

Keith D. Talbot for

David B. Matthews, Director
Project Directorate II-3
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification Changes

Date of Issuance: January 23, 1990



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

DUKE POWER COMPANY

NORTH CAROLINA MUNICIPAL POWER AGENCY NO. 1

PIEDMONT MUNICIPAL POWER AGENCY

DOCKET NO. 50-414

CATAWBA NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 63
License No. NPF-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 2 (the facility) Facility Operating License No. NPF-52 filed by the Duke Power Company acting for itself, North Carolina Municipal Power Agency No. 1 and Piedmont Municipal Power Agency (licensees) dated April 6, 1989, as supplemented September 6, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and 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 amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - 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 attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-52 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 63, are hereby incorporated into the license. The licensee 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



David B. Matthews, Director
Project Directorate II-3
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification Changes

Date of Issuance: January 23, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 69

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

AND

TO LICENSE AMENDMENT NO. 63

FACILITY OPERATING LICENSE NO. NPF-52

DOCKET NO. 50-414

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 areas of change. The corresponding overleaf page is also provided to maintain document completeness.

<u>Amended Page</u>	<u>Overleaf Page</u>
3/4 9-10	
3/4 9-11	3/4 9-12
B 3/4 9-2	

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one residual heat removal loop shall be OPERABLE and in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet.

ACTION:

With no residual heat removal loop OPERABLE and in operation, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required residual heat removal loop to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least once per twelve hours one residual heat removal loop shall be verified in operation and circulating reactor coolant at a flow rate:

- a) greater than or equal to 1000 gpm, and
- b) sufficient to maintain the RCS temperature at less than or equal to 140°F.

*The residual heat removal loop may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor vessel hot legs.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent residual heat removal loops shall be OPERABLE, and at least one residual heat removal loop shall be in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is less than 23 feet.

ACTION:

- a. With less than the required residual heat removal loops OPERABLE, immediately initiate corrective action to return the required residual heat removal loops to OPERABLE status, or establish greater than or equal to 23 feet of water above the reactor vessel flange, as soon as possible.
- b. With no residual heat removal loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required residual heat removal loop to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least once per twelve hours one residual heat removal loop shall be verified in operation and circulating reactor coolant at a flow rate:

- a) greater than or equal to 1000 gpm, and
- b) sufficient to maintain the RCS temperature at less than or equal to 140°F.

*Prior to initial criticality, the residual heat removal loop may be removed from operation for up to 1 hour per 8-hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor vessel hot legs.

REFUELING OPERATIONS

3/4.9.9 WATER LEVEL - REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

..9.9 At least 23 feet of water shall be maintained over the top of the reactor vessel flange.

APPLICABILITY: During movement of fuel assemblies or control rods within the containment when either the fuel assemblies being moved or the fuel assemblies seated within the reactor vessel are irradiated while in MODE 6.

ACTION:

With the requirements of the above specification not satisfied, suspend all operations involving movement of fuel assemblies or control rods within the reactor vessel.

SURVEILLANCE REQUIREMENTS

4.9.9 The water level shall be determined to be at least its minimum required depth within 2 hours prior to the start of and at least once per 24 hours thereafter during movement of fuel assemblies or control rods.

REFUELING OPERATIONS

BASES

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity conditions during CORE ALTERATIONS.

3/4.9.6 MANIPULATOR CRANE

The OPERABILITY requirements for the manipulator cranes ensure that: (1) manipulator cranes will be used for movement of control rods and fuel assemblies, (2) each crane has sufficient load capacity to lift a control rod or fuel assembly, and (3) the core internals and reactor vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE POOL BUILDING

The restriction on movement of loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the storage pool ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two residual heat removal loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating residual heat removal loop will not result in a complete loss of residual heat removal capability. With the reactor vessel head removed and at least 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating residual heat removal loop, adequate time is provided to initiate emergency procedures to cool the core.

To prevent vortexing in the suction of the residual heat removal pumps, the flow rate requirements for the residual heat removal system were lowered from 3000 gpm to 1000 gpm. A specific surveillance has been added to ensure the flow remains high enough to ensure the reactor coolant system temperature remains below 140°F. The problems associated with vortexing and mid-loop operations are provided in Generic Letter 88-17, Loss of Decay Heat Removal.



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 69 TO FACILITY OPERATING LICENSE NPF-35
AND AMENDMENT NO. 63 TO FACILITY OPERATING LICENSE NPF-52

DUKE POWER COMPANY, ET AL.

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKETS NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter dated April 6, 1989, as supplemented September 6, 1989, Duke Power Company, et al. (the licensee), proposed amendments to the operating licenses for Catawba Nuclear Station, Units 1 and 2. The amendments would revise Technical Specifications (TSs) 3/4.9.8.1 and 3/4.9.8.2, and their associated Bases to: (1) reduce the required Residual Heat Removal (RHR) system flow rate during Mode 6 (refueling) operation, when the Reactor Coolant System (RCS) is partially drained, from greater than or equal to 3000 gpm to greater than or equal to 1000 gpm, (2) add a Surveillance Requirement to ensure that the RCS temperature is maintained at or below 140°F, and (3) provide the technical justification for the revision in TS Bases 3/4.9.8.

2.0 EVALUATION

At the currently required flow rate of 3000 gpm, the RHR system could be susceptible to vortexing at the RHR pump suction when the RCS is partially drained. Vortexing can lead to RHR system air entrainment and pump cavitation and subsequent loss of RHR system flow.

Operation with the RCS partially drained in Mode 6 is necessary for required inspection and maintenance of RCS components such as reactor coolant pumps and steam generators. As indicated in NUREG-1269, "Loss of Residual Heat Removal at Diablo Canyon Unit 2," reduced RHR flow rate, when the RCS is partially drained, would provide a greater margin against vortexing and preclude an inadvertent loss of decay heat removal capability due to air entrainment and cavitation of the RHR pumps. As the time after plant shutdown increases, decay heat removal requirements from the RHR flow are reduced since decay heat decreases as a function of time after initial reactor shutdown. The change proposed by the licensee will provide sufficient flow rate to maintain RCS temperature at less than or equal to 140°F. In addition, a minimum RHR flow rate is required to prevent boron stratification and minimize the potential for localized variation in boron concentration in the RCS. For Catawba, the licensee stated that a flow rate of 1000 gpm would maintain RCS temperature below 140°F, minimize the effect of a boron dilution incident, and would prevent boron stratification.

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The licensee also reviewed the proposed TS amendments with regard to the concerns raised by NRC Bulletin 88-04, "Potential Safety-Related Pump Loss." Specifically, operating the RHR pumps at flow rates less than 3000 gpm will increase the stress on the pump lower bearings. The licensee will monitor the bearings' wear and will replace the bearings if inspection reveals significant degradation.

The proposed amendments are consistent with Generic Letter (GL) 88-17, "Loss of Decay Heat Removal," dated October 17, 1988, which recommended that licensees identify and submit appropriate changes to TSs that restrict or limit the safety benefit of actions identified in GL 88-17.

The NRC staff has reviewed the licensee's submittals and finds that the proposed changes would reduce the potential for damage and loss of an RHR pump during mid-loop or similar operations and at the same time would mitigate the consequences of a boron dilution incident and prevent boron concentration. The changes have no adverse impact on safety and would not pose an undue risk to public health and safety. Therefore, they are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve changes in requirements with respect to the installation or 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 amendments involve 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 NRC staff has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 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 these amendments.

4.0 CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register (54 FR 46145) on November 1, 1989. The Commission consulted with the State of South Carolina. No public comments were received, and the State of South Carolina did not have any comments.

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 these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: K. Jabbour, PDII-3/DRP-I/II

Dated: January 23, 1990