

July 29, 2003

Mr. D. M. Jamil
Vice President
Catawba Nuclear Station
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745

SUBJECT: CATAWBA NUCLEAR STATION, UNITS 1 AND 2 RE: ISSUANCE OF
AMENDMENTS (TAC NOS. MB6782 AND MB6783)

Dear Mr. Jamil:

The Nuclear Regulatory Commission has issued the enclosed Amendment No.207 to Facility Operating License NPF-35 and Amendment No. 201 to facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated November 20, 2002, as supplemented by letters dated January 21, and June 4, 2003.

The amendments revise the TS Required Actions requiring suspension of operations involving positive reactivity additions and revise various Notes that preclude reduction in boron concentration. These changes are similar to those proposed in the Technical Specification Task Force (TSTF) change traveler TSTF-286, Revision 2.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

/RA/

Robert E. Martin, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosures:

1. Amendment No. 207 to NPF-35
2. Amendment No. 201 to NPF-52
3. Safety Evaluation

cc w/encls: See next page

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The amendments revise the TS Required Actions requiring suspension of operations involving positive reactivity additions and revise various Notes that preclude reduction in boron concentration. These changes are similar to those proposed in the Technical Specification Task Force (TSTF) change traveler TSTF-286, Revision 2.

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*See previous concurrence

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NAME	RMartin	CHawes	RWeisman	LOlshan for JNakoski
DATE	7/29/2003	7/29/2003	6/30/03	7/29/2003

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DUKE ENERGY CORPORATION
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. 207
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 Energy Corporation, acting for itself, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc. (licensees), dated November 20, 2002, as supplemented by letters dated January 21 and June 4, 2003, 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-35 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 207 , which are attached hereto, are hereby incorporated into this license. Duke Energy Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by Leonard Olshan for /

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Technical Specification Changes

Date of Issuance: July 29, 2003

DUKE ENERGY CORPORATION
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. 201
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 Energy Corporation, acting for itself, North Carolina Municipal Power Agency No. 1 and Piedmont Municipal Power Agency (licensees), dated November 20, 2002, as supplemented by letters dated January 21 and June 4, 2003, 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:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 201, which are attached hereto, are hereby incorporated into this license. Duke Energy Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by Leonard Olshan for

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Technical Specification Changes

Date of Issuance: July 29, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 207

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

AND LICENSE AMENDMENT NO. 201

FACILITY OPERATING LICENSE NO. NPF-52

DOCKET NO. 50-414

Replace the following pages of the Appendix A Technical Specifications and associated Bases with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

<u>Remove</u>	<u>Insert</u>
3.3.1-3	3.3.1-3
3.3.1-4	3.3.1-4
3.3.1-5	3.3.1-5
3.3.9-1	3.3.9-1
3.3.9-2	3.3.9-2
3.3.9-3	3.3.9-3
3.4.5-1	3.4.5-1
3.4.5-2	3.4.5-2
3.4.6-1	3.4.6-1
3.4.6-2	3.4.6-2
3.4.7-1	3.4.7-1
3.4.7-2	3.4.7-2
3.4.8-1	3.4.8-1
3.4.8-2	3.4.8-2
3.8.2-2	3.8.2-2
3.8.5-2	3.8.5-2
3.8.8-2	3.8.8-2
3.8.10-1	3.8.10-1
3.9.2-1	3.9.2-1
3.9.2-2	3.9.2-2
3.9.4-1	3.9.4-1
3.9.5-1	3.9.5-1
B 3.3.1-35	B 3.3.1-35
B 3.3.1-36	B 3.3.1-36
B 3.3.9-2	B 3.3.9-2
B 3.3.9-3	B 3.3.9-3
B 3.4.5-3	B 3.4.5-3
B 3.4.5-5	B 3.4.5-5
B 3.4.5-6	B 3.4.5-6
B 3.4.6-2	B 3.4.6-2

Remove

Insert

B 3.4.6-4
B 3.4.6-5
B 3.4.7-2
B 3.4.7-3
B 3.4.7-4
B 3.4.7-5
B 3.4.8-1
B 3.4.8-2
B 3.4.8-3
B 3.8.2-5
B 3.8.5-2
B 3.8.5-3
B 3.8.8-3
B 3.8.8-4
B 3.8.10-3
B 3.8.10-4
B 3.9.1-2
B 3.9.1-3
B 3.9.2-2
B 3.9.2-3
B 3.9.2-4
B 3.9.2-5
B 3.9.4-2
B 3.9.4-3
B 3.9.4-4
B 3.9.5-2
B 3.9.5-3
B 3.9.5-4

B 3.4.6-4
B 3.4.6-5
B 3.4.7-2
B 3.4.7-3
B 3.4.7-4
B 3.4.7-5
B 3.4.8-1
B 3.4.8-2
B 3.4.8-3
B 3.8.2-5
B 3.8.5-2
B 3.8.5-3
B 3.8.8-3
B 3.8.8-4
B 3.8.10-3
B 3.8.10-4
B 3.9.1-2
B 3.9.1-3
B 3.9.2-2
B 3.9.2-3
B 3.9.2-4
B 3.9.2-5
B 3.9.4-2
B 3.9.4-3
B 3.9.4-4
B 3.9.5-2
B 3.9.5-3
B 3.9.5-4

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 207 TO FACILITY OPERATING LICENSE NPF-35
AND AMENDMENT NO. 201 TO FACILITY OPERATING LICENSE NPF-52

DUKE ENERGY CORPORATION, ET AL.

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter dated November 20, 2002, (Reference 1), as supplemented January 21 and June 4, 2003, Duke Power Company, et al. (the licensee), submitted a request for changes to the Catawba Nuclear Station, Units 1 and 2, and McGuire Nuclear Station, Units 1 and 2, Technical Specifications (TS). The proposed changes would revise the TS Required Actions for several Limiting Conditions for Operation (LCOs) that require suspension of operations involving positive reactivity additions and revise the Notes for several LCOs that preclude a reduction in boron concentration. The proposed changes would limit the introduction of positive reactivity such that the required margin to criticality, as defined by k_{eff} , the required reactor Shutdown Margin (SDM), and refueling boron concentration limits will be maintained. The licensee stated that these operations may involve additions to the reactor coolant system (RCS) of borated water cooler than that in the RCS, or makeup from borated sources that have lower boron concentration than the existing RCS boron concentration. The licensee indicated that these changes would be allowed if the overall effect on core reactivity still assures that the required SDM or the refueling boron concentration is maintained. The proposed changes are generally consistent with Technical Specification Task Force (TSTF) change traveler 286, Revision 2, with exceptions noted in the following evaluation. The licensee identified deviations from TSTF-286 and provided a correlation of the proposed changes to the complete list of approved TSTF-286 changes as part of its application. Associated changes to the TS Bases are also included.

The letter dated June 4, 2003, provided clarifying information that did not change the scope of the November 20, 2002, application and its supplement dated January 21, 2003, nor the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

The licensee adopted the Improved Technical Specifications for Catawba, Units 1 and 2, and McGuire, Units 1 and 2, in License Amendment Numbers 173, 165, 184, and 166, respectively (References 3 and 4), based on NUREG-1431, "Standard Technical Specifications [STS] for Westinghouse Plants," Revision 1, dated April 1995. Since then, industry and the NRC staff have been working to improve the STS, in NUREG-1430 through NUREG-1434 for the different plant vendors, and as a result, generic changes have been developed for the STS in NUREG-1431.

The proposed changes adopt NRC-approved generic changes in the industry's TSTF-286, Revision 2, that were approved for incorporation into the STS by the staff in a letter dated July 6, 2000 (Reference 5). This TSTF revises the TS Required Actions that address suspension of operations involving positive reactivity additions and also revises several LCO Notes that address prevention of operations involving a reduction in RCS boron concentration. The revisions limit the introduction into the RCS of reactivity that would be more positive than that necessary to meet the required SDM or refueling boron concentration, as applicable. TSTF-286 provides a model for licensees seeking to revise their plant TS and, thus, clarify the limits on the introduction of reactivity such that the required SDM or refueling boron concentration will be satisfied. The licensee identified deviations from TSTF-286 in its application.

The licensee employs two independent reactivity control systems. One uses the movable control and shutdown rod cluster control assemblies (RCCAs), and the other uses the chemical and volume control system (CVCS) to adjust the soluble boron concentration in the reactor coolant system (RCS). In Modes 1 and 2, both systems are used to compensate for the reactivity effects from fuel and coolant temperature changes in the RCS during power operation from full load to a no-load condition. In Modes 3, 4, and 5, the CVCS is used to compensate for the reactivity effects from core temperature and xenon changes. In Mode 6, the CVCS is used to maintain the boron concentration within the required limits.

The SDM limit for Catawba and McGuire provides subcritical reactivity margin sufficient to ensure that the specified acceptable fuel design limits (SAFDLs) will not be exceeded for normal operation and anticipated operational occurrences (AOOs). The SDM definition assumes that the single RCCA with the highest reactivity worth remains fully withdrawn following a reactor scram. In Modes 1 and 2, TSs 3.1.5 and 3.1.6 satisfy the required SDM by limiting the insertion of the control and shutdown banks. Small reactivity changes due to RCS coolant inventory management and temperature control are also considered in specifying SDM, including moderator temperature coefficient (MTC) effects. At the beginning of core life, a positive MTC coefficient must be considered as allowed by TS 3.1.3, "Moderator Temperature Coefficient (MTC)." In Mode 2 with $k_{\text{eff}} < 1.0$, and in Modes 3, 4, and 5, the TSs specify the required SDM by reference to the Core Operating Limits Report (COLR). In Mode 6, the reactor subcriticality margin is ensured by the limit on the boron concentration of all filled portions of the RCS and the refueling pool that have direct access to the reactor vessel.

The proposed TS changes permit the addition of positive reactivity and changes to the RCS boron concentration as long as the change preserves the margin to core criticality as defined by the SDM and refueling boron concentration limit specifications. The limit specifications for the SDM and refueling boron concentration are given in TSs 3.1.1, "Shutdown Margin (SDM)," and 3.9.1, "Boron Concentration," respectively, with the limit values specified in the COLR.

The NRC has previously approved the type of changes addressed by TSTF-286 for other plants. These previous approvals include, but are not limited to, H.B. Robinson, Unit 2, dated March 14, 2001 (ADAMS Accession Number ML010810282), Callaway, Unit 1, dated May 1, 2002 (ADAMS Accession Number ML020220051), and Wolf Creek, dated July 29, 2002 (ADAMS Accession Number ML021290254).

3.0 EVALUATION

TSTF-286, Revision 2, revises the following in the STS: (1) various Required Actions that require suspension of operations involving positive reactivity additions, and (2) various Notes in TS LCOs that preclude a reduction in boron concentration. The revised TSs for Catawba and McGuire limit the introduction of positive reactivity into the RCS so that, as applicable, the TS-required SDM or refueling boron concentrations will be maintained, and k_{eff} will be maintained at a value of < 0.99 in MODES 3, 4 and 5.

The justification for the changes proposed in the TSTF is that the changes provide the flexibility necessary for continued safe reactor operations, while also limiting any potential for excess positive reactivity addition to the core. The Required Actions and LCO Notes that preclude positive reactivity changes and/or reduction in boron concentration ensure that either no power increases will be experienced or that continued core criticality margins will be maintained. During conditions in which these Required Actions may be required, activities associated with maintaining RCS inventory and RCS temperature must be controlled. These activities may involve addition to the RCS of water cooler than that in the RCS and inventory makeup from sources that are at boron concentrations lower than the current RCS boron concentration. The TSTF changes require that operations involving positive reactivity additions into the core are limited such that the required SDM or refueling boron concentration, as applicable, are maintained. Therefore, the specific activities (i.e., RCS inventory makeup) that could introduce positive reactivity into the core do not need to be precluded in the TSs to ensure, for the worst-case overall effect on the core, that there would still be assurance that the required SDM is maintained.

In Modes 1 through 4, the minimum required SDM is assumed as an initial condition for the reload safety analyses to ensure that the SAFDLs will not be exceeded for normal operation and AOOs, assuming that the highest worth RCCA remains stuck out following a reactor scram. The main steam line break is the most limiting event to establish the minimum SDM value for LCO 3.1.1.

In Modes 3, 4, and 5, the reactivity of the core must be consistent with the initial conditions assumed for the boron dilution accident analysis to ensure that the minimum time required for operator action to terminate the event is provided. This requirement is met by the requirements of LCO 3.1.1 for the minimum SDM. Additionally, for Mode 6, the required boron concentration in LCO 3.9.1 ensures subcriticality during refueling operations.

As stated in the Bases for LCO 3.1.1, a sufficient shutdown margin ensures that: (1) the reactor can be made subcritical from all operating conditions, transients, and design basis events; (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits; and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition. The Bases for LCO 3.9.1 on

refueling boron concentration in the RCS, the refueling canal, and the refueling cavity similarly indicate that the limitations on boron concentration during refueling ensure that the reactor will remain subcritical during Mode 6. Since the proposed changes will not alter the limits established in these specifications, the NRC staff concludes that the proposed changes will have no effect on the licensee's ability to shut down and maintain the reactor in a subcritical condition.

TSTF-286, Revision 2, provides controls that ensures, under the specified plant conditions for each operating mode, unplanned power increases or reductions in the margin to core criticality are precluded. The proposed revision to existing TS Notes and the addition of notes to the TS ACTIONS allow small reactivity variations that result from temperature or boron concentration fluctuations associated with normal RCS inventory management or temperature control. These normal activities are permitted to be performed while maintaining the minimum SDM requirement of LCO 3.1.1 and the minimum boron concentration requirement of LCO 3.9.1. Based on the detailed discussion above, the NRC staff finds that the Catawba and McGuire plant-specific clarifications provide assurance that the initial assumptions of the most limiting accident safety analyses will be maintained.

In its application, the licensee provided justification for changes that are consistent with TSTF-286, Revision 2. Where plant-specific design would dictate differences, the licensee provided plant-specific justification for deviations from TSTF-286, as discussed below. The proposed TS changes are applicable to both Catawba and McGuire unless otherwise specified.

- (a) The proposed changes include adding notes to TS 3.3.1, "Reactor Trip System (RTS) Instrumentation," Required Actions G.1 and I.1.

The current Required Actions G.1 and I.1 both state the following: "Suspend operations involving positive reactivity additions." TSTF-286, Revision 2, adds equivalent notes that allows limited insertions of positive reactivity associated with routine plant operations, and states that "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM." The licensee, however, proposed that the notes added to the Actions would state: "Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed."

The licensee stated that its proposed change clarifies the Required Actions for inoperable intermediate range and source range RTS instrumentation channels in Modes 1 and 2, while maintaining the intent of TSTF-286 to allow limited insertions of positive reactivity that are associated with routine plant operations while ensuring that there are no reductions in the margin to core criticality. For Catawba and McGuire, SDM is not normally a "calculated" value in Modes 1 and 2. Rather, SDM is assured by operation within rod insertion limits of LCO 3.1.4, "Rod Group Alignment Limits," LCO 3.1.5, "Shutdown Bank Insertion Limits," and within the temperature limits of LCO 3.4.2, "RCS Minimum Temperature for Criticality." These three LCOs are applicable for the same modes that the two Required Actions are applicable. As stated in the Bases of LCOs 3.1.5 and 3.1.6, the shutdown and control bank insertion limits ensure that the SDM is maintained. This clarification is given in the licensee's proposed Bases discussion of the new Note in which the licensee states that the normal plant operations are not precluded provided the SDM limits of LCOs 3.1.1, 3.1.5, and 3.1.6 are met.

Furthermore, the staff finds the wording "temperature changes" refers to the fact that the Catawba and McGuire TSs allow a positive MTC at reduced power levels. Therefore, under positive MTC conditions a temperature increase would cause a positive reactivity addition. Similarly, the staff finds the wording "limited boron concentration changes associated with RCS inventory control" is more descriptive of operations at Catawba and McGuire than "boron dilution." These wording changes are more accurate with regard to the existing Catawba and McGuire design of employing two independent reactivity control systems.

The NRC staff concluded that the licensee's proposed changes to TS 3.3.1, Required Actions G.1 and I.1, maintain SDM and reactor coolant boron concentration consistent with the current TS for Catawba and McGuire and are consistent with TSTF-286, Revision 2, but are clarified to more accurately define the plant-specific application of the TSTF at Catawba and McGuire. Therefore, the NRC staff finds that the proposed changes, with the plant-specific differences, are acceptable.

- (b) The proposed changes include adding a note to TS 3.3.1, "Reactor Trip System (RTS) Instrumentation," Required Action L.1 (McGuire only).

The current Required Action L.1 states the following: "Suspend operations involving positive reactivity additions." At McGuire, Condition L is applicable when the one required Source Range Nuclear Instrument is inoperable in Modes 3, 4, or 5 with the reactor trip breakers open. In this condition, the Source Range Nuclear Instrument does not provide reactor trip but does provide indication. Therefore, the licensee proposed to add a note to Action L.1 that would state: "Plant temperature changes are allowed provided that SDM is maintained and k_{eff} remains < 0.99 ."

The licensee stated that the proposed change allows a temperature change that would increase reactivity of the reactor. Direct monitoring of core reactivity is not possible with one required Source Range Nuclear Instrument inoperable, but monitoring is available to control and monitor a reactor coolant system temperature change. The k_{eff} requirement was added to the note since maintaining SDM is not equivalent to maintaining margin to criticality when control rods are withdrawn (to provide for trippable rod worth or prepare for reactor startup). The licensee's proposed change to Condition L limits any temperature change and, therefore, reactivity change, such that SDM is maintained and k_{eff} remains < 0.99 . In addition, the NRC staff determined that the proposed change is consistent with the intent of TSTF-286, Revision 2. Therefore, the NRC staff finds that the proposed change to TS 3.3.1, Required Action L.1 is acceptable.

- (c) The proposed changes include adding notes to TS 3.3.9, "Boron Dilution Mitigation System (BDMS)," Required Actions A.2.1 and B.2.1 (Catawba only).

The current Required Actions A.2.1 and B.2.1 state the following: "Suspend operations involving positive reactivity additions." At Catawba, Condition A is applicable when one train of the BDMS is inoperable in Modes 3, 4, and 5. Condition B is applicable when two trains of the BDMS are inoperable in Modes 3, 4, and 5. The licensee proposed to

add notes to Actions A.2.1 and B. 2.1 that would state: "Plant temperature changes are allowed provided that SDM is maintained and k_{eff} remains < 0.99 ."

The licensee stated that the proposed change allows a temperature change that would increase reactivity of the reactor. However, the Required Actions A.2.1 and B.2.1 will continue to require suspension of operations involving positive reactivity additions. The k_{eff} requirement was added to the notes since maintaining SDM is not equivalent to maintaining margin to criticality when control rods are withdrawn to provide for trippable rod worth or prepare for reactor startup. The licensee's proposed changes to Conditions A and B limit any temperature change and therefore, reactivity change, such that SDM is maintained and k_{eff} will be < 0.99 . In addition, the NRC staff determined that the proposed changes to TS 3.3.9, Require Actions A.2.1 and B.2.1 are consistent with the intent of TSTF-286, Revision 2. Therefore, the NRC staff finds that the proposed changes are acceptable.

(d) The proposed changes include changes to Notes for the following LCOs:

- LCO 3.4.5, "RCS Loops - MODE 3," Note a
- LCO 3.4.6, "RCS Loops - MODE 4," Note 1.a

These Notes currently state: "No operations are permitted that would cause reduction of the RCS boron concentration." These Notes are intended to preclude dilution of the RCS when no forced mixing (i.e., coolant circulation by residual heat removal (RHR) pumps or reactor coolant pumps) is taking place. The LCO Notes would be changed to state that "No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1 and maintain $k_{\text{eff}} < 0.99$." The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the SDM requirement of LCO 3.1.1. The k_{eff} requirement was added to the notes since maintaining SDM is not equivalent to maintaining margin to criticality when control rods are withdrawn (i.e., to provide for trippable rod worth or prepare for reactor startup).

The licensee stated that the proposed changes are consistent with the intent of TSTF-286, Revision 2, and provide plant-specific controls for operation. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its letter dated June 4, 2003. The proposed changes limit reactivity changes introduced by RCS coolant additions to changes that are consistent with maintaining SDM and $k_{\text{eff}} < 0.99$. Further, the NRC staff determined that the proposed changes are consistent with the intent of TSTF-286, Revision 2. Therefore, the NRC staff finds that the proposed changes to LCOs 3.4.5 and 3.4.6 are acceptable.

(e) The proposed changes include changes to Notes for the following LCOs:

- LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," Note 1.a
- LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," Note 1.b

These Notes currently state: "No operations are permitted that would cause reduction of the RCS boron concentration." These Notes are intended to preclude dilution of the RCS when no forced mixing is taking place. The LCO Notes would be changed to state that "No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1." The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the SDM requirement of LCO 3.1.1.

The NRC staff found that these changes achieve the same goal as TSTF-286, Revision 2, and are applicable to both Catawba and McGuire. The licensee provided the same justification for these changes as that provided by the NRC staff for the TSTF. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its letter dated June 4, 2003. The proposed changes limit reactivity changes introduced by RCS coolant additions to changes that are consistent with maintaining SDM. Therefore, the NRC staff finds that the proposed changes to LCOs 3.4.7 and 3.4.8 are acceptable.

(f) The proposed changes include changes to Required Actions for the following TS:

- TS 3.4.5, "RCS Loops - MODE 3," Required Action D.2
- TS 3.4.7, "RCS Loops - MODE 5, Loops Filled," Required Action B.1
- TS 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," Required Action B.1

The current Required Actions state: "Suspend all operations involving a reduction of RCS boron concentration." These Required Actions are intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed changes would revise the Required Actions to state the following: "Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1." The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the SDM requirement of LCO 3.1.1.

The NRC staff found that these changes achieve the same goal as TSTF-286, Revision 2, and are applicable to both Catawba and McGuire. The licensee provided the same justification for these changes as that provided by the NRC staff for the TSTF. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its letter dated June 4, 2003. The proposed changes limit reactivity changes introduced by RCS coolant additions to changes that are consistent with maintaining SDM. Therefore, the NRC staff finds that the proposed changes to TSs 3.4.5, 3.4.7, and 3.4.8 are acceptable.

(g) The proposed changes include changes to Required Actions for the following TS:

- TS 3.4.6, "RCS Loops - MODE 4," Required Action C.1

The current Required Action C.1 states: "Suspend all operations involving a reduction of RCS boron concentration." The Required Action C.1 is intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed change would revise Required Action C.1 to state that "Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1 and maintain $k_{\text{eff}} < 0.99$." The proposed change allows dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the SDM requirement of LCO 3.1.1. The k_{eff} requirement was added to the notes since maintaining SDM is not equivalent to maintaining margin to criticality when control rods are withdrawn to provide for trippable rod worth or prepare for reactor startup.

The licensee stated that the proposed changes are consistent with the intent of TSTF-286, Revision 2, and provides for plant-specific controls for operation. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its letter dated June 4, 2003. The proposed changes limit reactivity changes introduced by RCS coolant additions to changes that are consistent with maintaining SDM and $k_{\text{eff}} < 0.99$. Further, the NRC staff found that the proposed changes are consistent with the intent of TSTF-286, Revision 2. Therefore, the NRC staff finds that the proposed changes to TS 3.4.6 are acceptable.

(h) The proposed changes include changes to Required Actions for the following TS:

- TS 3.8.2, "AC Sources - Shutdown," Required Actions A.2.3 and B.3
- TS 3.8.5, "DC Sources - Shutdown," Required Action A.2.3
- TS 3.8.8, "Inverters - Shutdown," Required Action A.2.3
- TS 3.8.10, "Distribution Systems - Shutdown," Required Action A.2.3

These Required Actions currently state: "Initiate action to suspend operations involving positive reactivity additions." These Required Actions are intended to initiate suspension of operations involving positive reactivity additions based on the loss of required electrical sources and distribution equipment. The proposed Required Actions would state the following: "Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration." The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the SDM requirement of LCO 3.1.1 or the refueling boron concentration of LCO 3.9.1. The proposed changes will also allow temperature changes that could increase reactivity provided the reactivity insertions do not result in a loss of required SDM. The NRC staff determined that these proposed changes are identical to the changes in TSTF-286 for the same Required Actions and are applicable to Catawba and McGuire. The licensee provided the same justification for these changes as that provided by the staff for the TSTF. The proposed revisions limit reactivity changes to those that are consistent with maintaining SDM and boron concentration. Therefore, the NRC staff finds that the proposed changes to TSs 3.8.2, 3.8.5, 3.8.8, and 3.8.10 are acceptable.

(i) The proposed changes include changes to Required Actions for the following TS:

- TS 3.9.2, "Nuclear Instrumentation," Required Action A.1.2 (Catawba only)
- TS 3.9.3, "Nuclear Instrumentation," Required Action A.2 (McGuire only)

The Required Actions currently states: "Suspend positive reactivity additions." These Required Actions are intended to initiate suspension of operations during refueling operations involving positive reactivity additions when there is a loss of one or both boron dilution mitigation system trains. The proposed Required Actions state the following: "Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1." The proposed change allows dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1, which ensures that an inadvertent criticality will not occur. The proposed changes also removes the implicit limitation on temperature changes that could result in a positive reactivity addition. No limitation on temperature change-induced reactivity insertion is needed, because the appropriate SDM in Mode 6 is maintained by compliance with LCO 3.9.1.

The NRC staff determined that these changes achieve the same goals as TSTF-286 and are applicable to Catawba and McGuire as indicated. The licensee provided the same justification for these changes as that provided by the staff for the TSTF. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its letter dated June 4, 2003. The proposed revisions limit reactivity changes to those that are consistent with maintaining SDM and boron concentration. Therefore, the NRC staff finds that the proposed changes to TSs 3.9.2 (Catawba only) and 3.9.3 (McGuire only) are acceptable.

(j) The proposed changes include changes to Notes for the following LCOs:

- LCO 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (Catawba only)
- LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (McGuire only)

The LCO Notes currently states that: "The required RHR loop may be removed from operation for \leq 1-hour per 8-hour period, provided no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration." The allowance of removing the required RHR loop for \leq 1-hour per 8-hour period is not being changed by the proposed amendment. These notes are intended to preclude dilution of the RCS when no forced mixing is taking place during refueling. The proposed Notes would state the following: "The required RHR loop may be removed from operation for \leq 1-hour per 8-hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1." The proposed change allows dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1, which ensures that an inadvertent criticality will not occur.

The NRC staff determined that these changes achieve the same goal as TSTF-286 and are applicable to Catawba and McGuire as indicated. The licensee provided the same justification for these changes as that provided by the NRC staff for the TSTF. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its letter dated June 4, 2003. The proposed revisions limit changes to those that are consistent with maintaining the limiting boron concentration. Therefore, the NRC staff finds that the proposed changes to LCO 3.9.4 (Catawba only) and 3.9.5 (McGuire only) are acceptable.

(k) The proposed changes include changes to Required Actions for the following TS:

- TS 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," Required Action A.1 (Catawba only)
- TS 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level," Required Action B.1 (Catawba only)
- TS 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," Required Action A.1 (McGuire only)
- TS 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level," Required Action B.1 (McGuire only)

These Required Actions currently state: "Suspend operations involving a reduction in reactor coolant boron concentration." These Required Actions are intended to preclude dilution of the RCS when no forced mixing is taking place during refueling. The proposed Required Actions would state the following: "Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1." The proposed changes allow dilution of the RCS, but the source of the boric acid is required to contain a soluble boron concentration greater than or equal to that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1, which ensures that an inadvertent criticality will not occur.

The NRC staff determined that these changes achieve the same goal as TSTF-286 and are applicable to Catawba and McGuire as indicated. The licensee provided the same justification for these changes as that provided by the NRC staff for the TSTF. The NRC staff requested the licensee to revise the wording of this change to a form that is more grammatically correct than that approved in TSTF-286, Revision 2. The licensee revised the wording as documented in its licensee's letter dated June 4, 2003. The proposed revisions limit changes to those that are consistent with maintaining the limiting boron concentration. Therefore, the NRC staff finds that the proposed changes to Catawba TSs 3.9.4 and 3.9.5, and McGuire TSs 3.9.5 and 3.9.6 are acceptable.

(d) The TS Bases are also being revised to incorporate the changes discussed above. These proposed Bases changes are consistent with TSTF-286, Revision 2. The licensee also made other editorial changes to the TS Bases for Catawba and McGuire. These include clarifications to TS 3.9.1, "Boron Concentration" Required Actions A.1 and A.2, TS 3.9.2, "Unborated Water Source Isolation Valves" (McGuire only), and TS 3.9.1, "Boron Concentration" Required Action A.3.

TS 3.9.1 Required Actions A.1 and A.2 Bases were revised to clarify that operations that individually add limited positive reactivity, but result in a net negative reactivity addition when combined with all other operations affecting reactivity, are not precluded by the requirement to suspend positive reactivity additions. TS 3.9.2 Bases (McGuire only) are clarified to state that reduction of boron concentration during Mode 6 is permitted as long as the minimum shutdown margin or boron concentration limits are met. TS 3.9.1 Required Action A.3 Bases are modified to reflect that core alterations and positive reactivity additions are both to be immediately suspended. The use of the word and is consistent with the requirements of TS 3.9.1.

4.0 SUMMARY

The NRC staff has reviewed the licensee's application with the supporting documentation. Based on its review, the NRC staff concludes that the proposed TS changes are acceptable because the proposed Notes and Required Actions limit the introduction into the RCS of coolant with a boron concentration that is less than that required to meet the required SDM, k_{eff} , or refueling boron concentration. These changes are consistent with the approved TSTF-286, Revision 2, taking into account the plant-specific design differences of Catawba and McGuire, as discussed above. The justification for TSTF-286, Revision 2, is applicable to Catawba and McGuire, and continues to ensure that the required minimum SDM of LCOs 3.1.1, 3.1.5, and 3.1.6, and boron concentration of LCO 3.9.1 to preclude inadvertent criticality are met. Since the licensee's proposed amendment will still require the minimum SDM and boron concentration to be maintained, the NRC staff concludes that the proposed amendment is acceptable.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the South Carolina State official was notified of the proposed issuance of the amendments. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC 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 radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (68 FR 18273). 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 the amendments.

7.0 CONCLUSION

The Commission has 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, (2) such activities will be conducted in compliance with the

Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. Tuckman, M. S., Duke Energy Corporation, to USNRC, "Catawba Nuclear Station, Units 1 and 2, McGuire Nuclear Station, Units 1 and 2, Proposed Technical Specification Amendment to Modify Requirements Applicable When Actions Require No Positive Reactivity Additions," November 20, 2002.
2. Peterson, G. R., Duke Energy Corporation, to USNRC, "Catawba Nuclear Station, Units 1 and 2, McGuire Nuclear Station, Units 1 and 2, Proposed Technical Specification Amendment to Modify Requirements Applicable When Actions Require No Positive Reactivity Additions," January 21, 2003.
3. Tam, P. S., USNRC, to G. R. Peterson, Duke Energy Corporation, "Issuance of Amendments - Catawba Nuclear Station, Units 1 and 2 (TAC Nos. M95298 and M95299)," September 30, 1998.
4. Rinaldi, F., USNRC, to H. B. Barron, Duke Energy Corporation, "Issuance of Amendments - McGuire Nuclear Station, Units 1 and 2 (TAC Nos. M98964 and M98965)," September 30, 1998.
5. Beckner, W. D., USNRC to J. Davis, Nuclear Energy Institute, July 6, 2000.

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