January 15, 2004

Mr. Ronald A. Jones
Vice President, Oconee Site
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2 AND 3 RE: ISSUANCE OF AMENDMENTS (TAC NOS. MB6700, MB6701, AND MB6702)

Dear Mr. Jones:

The U. S. Nuclear Regulatory Commission has issued the enclosed Amendment Nos. 337, 337, and 338 to Renewed Facility Operating Licenses DPR-38, DPR-47, and DPR-55, respectively, for the Oconee Nuclear Station, Units 1, 2, and 3. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated November 14, 2002, as supplemented by letter dated April 14, 2003.

The amendments revise TS 3.3.1, “Reactor Protective System (RPS) Instrumentation,” Surveillance Requirement 3.3.1.3, to add a correlation slope to the formula for axial power imbalance error.

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/

Leonard N. Olshan, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosures:
1. Amendment No. 337 to DPR-38
2. Amendment No. 337 to DPR-47
3. Amendment No. 338 to DPR-55
4. Safety Evaluation

cc w/encls: See next page

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DUKE ENERGY CORPORATION

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No.
Renewed License No. DPR-38

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Oconee Nuclear Station, Unit 1 (the facility) Renewed Facility Operating License No. DPR-38 filed by the Duke Energy Corporation (the licensee) dated November 14, 2002, as supplemented by letter dated April 14, 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 3.B of Renewed Facility Operating License No. DPR-38 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 337, are hereby incorporated in the license. The licensee 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 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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: January 15, 2004

DUKE ENERGY CORPORATION

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 337
Renewed License No. DPR-47

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Oconee Nuclear Station, Unit 2 (the facility) Renewed Facility Operating License No. DPR-47 filed by the Duke Energy Corporation (the licensee) dated November 14, 2002, as supplemented by letter dated April 14, 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 3.B of Renewed Facility Operating License No. DPR-47 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 337, are hereby incorporated in the license. The licensee 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 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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: January 15, 2004

DUKE ENERGY CORPORATION

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 338
Renewed License No. DPR-55

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Oconee Nuclear Station, Unit 3 (the facility) Renewed Facility Operating License No. DPR-55 filed by the Duke Energy Corporation (the licensee) dated November 14, 2002, as supplemented by letter dated April 14, 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 3.B of Renewed Facility Operating License No. DPR-55 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 338, are hereby incorporated in the license. The licensee 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 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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: January 15, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 337

RENEWED FACILITY OPERATING LICENSE NO. DPR-38

DOCKET NO. 50-269

AND

TO LICENSE AMENDMENT NO. 337

RENEWED FACILITY OPERATING LICENSE NO. DPR-47

DOCKET NO. 50-270

AND

TO LICENSE AMENDMENT NO. 338

RENEWED FACILITY OPERATING LICENSE NO. DPR-55

DOCKET NO. 50-287

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.

Remove	Insert
3.3.1-3	3.3.1-3
B 3.3.1-23	B 3.3.1-23
B 3.3.1-24	B 3.3.1-24
B 3.3.1-25	B 3.3.1-25

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 337 TO RENEWED FACILITY OPERATING LICENSE DPR-38

AMENDMENT NO. 337 TO RENEWED FACILITY OPERATING LICENSE DPR-47

AND AMENDMENT NO. 338 TO RENEWED FACILITY OPERATING LICENSE DPR-55

DUKE ENERGY CORPORATION

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

DOCKET NOS. 50-269, 50-270, AND 50-287

1.0 INTRODUCTION

By letter dated November 14, 2002, as supplemented by letter dated April 14, 2003, Duke Energy Corporation (the licensee) submitted a request for changes to the Oconee Nuclear Station, Units 1, 2, and 3, Technical Specifications (TS). The requested change would revise TS 3.3.1 "Reactor Portective System (RPS) Instrumentation," Surveillance Requirement (SR) 3.3.1.3 to add a correlation slope to the formula for axial power imbalance error. The supplement dated April 14, 2003, provided clarifying information that did not change the scope of the November 14, 2002, application nor the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36 requires that the TSs contain Limiting Safety System Settings defined by the regulation as "...settings for automatic protective devices... so chosen that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The analytic limit is the limit of the process variable at which a safety action is initiated, as established by the safety analysis, to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the analytic limit, therefore, ensures that the SL is not exceeded. In practice, the actual settings for automatic protective devices must be chosen to be more conservative than the analytic limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur.

The trip setpoint is a predetermined setting for a protective device chosen to ensure automatic actuation prior to the process variable reaching the analytic limit, which ensures that the SL would not be exceeded. As such, the trip setpoint accounts for uncertainties in setting the device (e.g., calibration), uncertainties in how the device might actually perform (e.g, repeatability), changes in the point of action of the device over time (e.g., drift during

surveillance intervals), and any other factors which may influence its actual performance (e.g., harsh accident environments). In this manner, the trip setpoint plays an important role in ensuring that safety limits are not exceeded.

The Nuclear Overpower Reactor Coolant System (RCS) Flow and Measured Axial Power Imbalance (API) trip provides protection for the specified acceptable fuel design limits at Oconee Nuclear Station. When the core power API and reactor coolant flow conditions indicate an approach to the Departure from Nucleate Boiling (DNB) or fuel centerline melt limits, this setting will initiate a reactor trip. Through the power-to-flow ratio, this trip provides direct protection for the DNB SL for the loss of a single reactor coolant pump (RCP) and for locked RCP rotor accidents (loss of reactor coolant flow events).

The power-to-flow ratio of the Nuclear Overpower RCS Flow and Measured API trip also provides steady-state protection to prevent reactor power from exceeding the allowable power when the primary system flow rate is less than full four-pump flow. Thus, the power-to-flow ratio prevents overpower conditions similar to the Nuclear Overpower trip. This protection ensures that during reduced flow conditions, the core power is maintained below that required to reach DNB conditions.

However, this trip relies on the ex-core power range nuclear instrumentation channels, and factors such as instrument drift may affect the performance of the trip function. Therefore, every 31 days, the licensee must compare the ex-core measured API to the incore measured API. The license must then adjust the power range channel output if the value of the imbalance error is greater than 2 percent rated thermal power. This limit on imbalance error ensures that the trip setpoint remains valid and, therefore, the SLs are not violated.

In its submittal, the licensee proposed adding a correlation slope to the formula for API error. The Nuclear Regulatory Commission (NRC) staff reviewed the proposed change to ensure that it will not cause the SLs DNB and fuel centerline melt, to be violated.

3.0 TECHNICAL EVALUATION

In order to gain flexibility in the calibration of the Oconee nuclear instrumentation, the licensee proposed implementing a correlation slope for calculation of the imbalance error in SR 3.3.1.3. The original SR 3.3.1.3 formula for imbalance error was:

$(RTP/TP)(API_o - API_1)$ = imbalance error

where,

RTP = rated thermal power
TP = thermal power level of reactor
API_0 = excore axial power imbalance
API_1 = incore axial power imbalance

As proposed, this new formula would be:

$(RTP/TP)(API_o - (CS \times API_l)) = \text{imbalance error}$

where,

CS = correlation slope

In its submittal, the licensee proposed using a value of 1.15 for the CS. The licensee stated that the current safety analyses for Oconee assume that the correlation slope between the excore and incore detectors is 0.95. This value would mean that the excore flux readings are assumed to be equivalent to 95 percent of the incore readings (plus or minus the allowable error). However, the way the current SR 3.3.1.3 is written, the correlation slope is assumed to be 1. That is, the excore and incore readings are equivalent. A value of 1 is conservative with respect to the accident analyses because calibrating to this factor would cause the excore flux readings to be higher, thus causing earlier reactor trips on overpower/low flow conditions. Accordingly, the licensee's proposed value of 1.15 would similarly be more conservative than that of the accident analyses. Therefore, this value would ensure that the DNB and fuel centerline melt safety limits will not be violated because of API.

The licensee proposes making this value cycle specific and listing it in the Oconee Core Operating Limits Report (COLR). However, for COLR implementation, Generic Letter (GL) 88-16, "Removal of Cycle Specific Parameter Limits from Technical Specifications," dated October 4, 1988, requires that the parameters are cycle specific and are calculated using approved methods. Furthermore, these methods must be listed in the Administrative Controls section of the TSs. The licensee stated that, for each cycle, it will choose a value for the correlation slope (currently 1.15) and verify its adequacy using NFS-1001-A, "Reload Design Methodology," dated July 29, 1981. NFS-1001-A is an approved method, and it is listed in Oconee TS 5.6.5, "Core Operating Limits Report (COLR)." This reload design methodology, in turn, would prevent the licensee from putting in any value for correlation slope that would violate the SLs.

Because the correlation slope meets the GL 88-16 guidance for inclusion in the COLR, and because the approved methodology will prevent the licensee from using a value for correlation slope that violates the SLs, the NRC staff finds the proposed change acceptable.

The licensee also proposed modifying the SR statement to more closely match the Improved Standard Technical Specifications (ISTS) contained in NUREG-1430, Revision 2, "Standard Technical Specifications Babcock and Wilcox Plants," June 2001. The SR originally stated "Adjust power range channel output if the absolute difference between the power range and incore measurements is $\geq$ 2% RTP." As proposed, the SR would state, "Adjust power range channel output if the absolute value of imbalance error is $\geq$ 2% RTP."

As written, the current SR excludes the effects of scaling to the rated thermal power. However, the proposed changes more accurately represents the point of the SR, i.e. to ensure that the imbalance error is less than or equal to 2 percent, as scaled with power. This change would have no effect on the 100-percent power imbalance error, but as the power decreases, it would narrow the tolerance window for the imbalance error. Because this proposed change is conservative and because it follows the guidance of the ISTS, the NRC staff finds it acceptable.

The NRC staff reviewed the licensee's proposed TS changes to add a correlation slope to the formula for axial power imbalance error. Based on this review, the NRC staff finds that the proposed correlation slope meets the GL 88-16 guidance for inclusion in the COLR. The NRC staff also finds that the NRC-approved methodology, NFS-1001-A, will prevent the licensee from using a value for correlation slope that allows the plant to violate the SLs. Therefore, the NRC staff finds the proposed TS changes acceptable.

4.0 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.

5.0 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 and change surveillance requirements. 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 (67 FR 75870). 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.

6.0 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

Principal Contributor: S. Peters

Date: January 15, 2004

Oconee Nuclear Station

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