November 14, 2007

Mr. Bruce H. Hamilton
Vice President, Oconee Site
Duke Power Company LLC
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3, ISSUANCE OF AMENDMENTS REGARDING THE FLOOD PROTECTION MEASURES FOR THE AUXILIARY BUILDING (TAC NOS. MD3589, MD3590, AND MD3591)

Dear Mr. Hamilton:

The Nuclear Regulatory Commission has issued the enclosed Amendment Nos. 357, 359, 358 to Renewed Facility Operating Licenses DPR-38, DPR-47, and DPR-55, for the Oconee Nuclear Station, Units 1, 2, and 3, respectively. The amendments consist of changes to the Updated Final Safety Analysis Report (UFSAR) in response to your application dated November 16, 2006, supplemented by letters dated May 9 and August 28, 2007.

These amendments revise the UFSAR to describe the flood protection measures for the auxiliary building.

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, Sr. Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosures:
1. Amendment No. 357 to DPR-38
2. Amendment No. 359 to DPR-47
3. Amendment No. 358 to DPR-55
4. Safety Evaluation

cc w/encls: See next page

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Package No.: ML072900268
License Amendment No.: ML072900272
Tech Spec No.: ML073240200 *SE transmitted by memo dated

OFFICE	NRR/LPL2-1/PM	NRR/LPL2-1/LA	OGC	NRR/DE/EMCB/BC	NRR/LPL2-1/BC
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DATE	11/14/07	11 /14/07	11/7/07	10/16/07*	11/15/07

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DUKE POWER COMPANY LLC

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 357
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 Power Company LLC (the licensee), dated November 16, 2006, and supplemented May 9 and August 28, 2007, 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 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 Specifcations

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 357, are hereby incorporated in the license. These license shall operate the facility in accordance with Technical Specifications.

3. Further, Renewed Facililty Operating License No. DPR-38 is hereby amended to authorize revision to the Updated Final Safety Analysis Report as required by 10 CFR 50.71(e) to describe the flood protection measures for the auxiliary building.

4. This license amendment is effective as of its date of issuance and shall be implemented within 30 days after completion of the flood protection measures for the auxiliary building.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renewed Facility
Operating License No. DPR-38

Date of Issuance: ovember 14, 2007

DUKE POWER COMPANY LLC

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 359
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 Power Company LLC (the licensee), dated November 16, 2006, and supplemented May 9 and August 28, 2007, 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 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 Specifcations

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 359, are hereby incorporated in the license. These license shall operate the facility in accordance with Technical Specifications.

3. Further, Renewed Facility Operating License No. DPR-47 is hereby amended to authorize revision to the Updated Final Safety Analysis Report as required by 10 CFR 50.71(e) to describe the flood protection measures for the auxiliary building.

4. This license amendment is effective as of its date of issuance and shall be implemented within 30 days after completion of the flood protection measures for the auxiliary building.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renwed Facility
Operating License No. DPR-47

Date of Issuance: November 14, 2007

DUKE POWER COMPANY LLC

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 358
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 Power Company LLC (the licensee), dated November 16, 2006, and supplemented May 9 and August 28, 2007, 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 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 Specifcations

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 358, are hereby incorporated in the license. These license shall operate the facility in accordance with Technical Specifications.

3. Further, Renewed Facility Operating License No. DPR-55 is hereby amended to authorize revision to the Updated Final Safety Analysis Report as required by 10 CFR 50.71(e) to describe the flood protection measures for the auxiliary building.

4. This license amendment is effective as of its date of issuance and shall be implemented within 30 days after completion of the flood protection measures for the auxiliary building.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renewed Facility
Operating License No. DPR-55

Date of Issuance: November 14, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 357

RENEWED FACILITY OPERATING LICENSE NO. DPR-38

DOCKET NO. 50-269

AND

TO LICENSE AMENDMENT NO. 359

RENEWED FACILITY OPERATING LICENSE NO. DPR-47

DOCKET NO. 50-270

AND

TO LICENSE AMENDMENT NO. 358

RENEWED FACILITY OPERATING LICENSE NO. DPR-55

DOCKET NO. 50-287

Replace the following pages of the Licenses with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages	Insert Pages
Licenses	Licenses
License No. DPR-38, page 3	License No. DPR-38, page 3
License No. DPR-47, page 3	License No. DPR-47, page 3
License No. DPR-55, page 3	License No. DPR-55, page 3

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 357 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-38

AMENDMENT NO. 359 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-47

AND

AMENDMENT NO. 358 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-55

DUKE POWER COMPANY LLC

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

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

1.0 INTRODUCTION

By application dated November 16, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML063260251), as supplemented by letters dated May 9, 2007 (ADAMS Accession No. ML071410140), and August 28, 2007 (ADAMS Accession No. ML 072480267), Duke Power Company LLC (Duke, the licensee), requested changes to the Updated Final Safety Analysis (UFSAR) for the Oconee Nuclear Station, Units 1, 2, and 3 (Oconee 1/2/3). The supplements dated May 9 and August 28, 2007, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on January 3, 2007 (72 FR 151).

The request proposes to clarify the current licensing basis (CLB) and the UFSAR regarding flood protection measures for the auxiliary building, based on the seismic evaluation of the high-pressure auxiliary building sprinkler systems. These piping systems are classified as non-Category I, and, therefore, were not designed to plant piping seismic licensing design basis requirements. The piping is nonsafety-related and is not required to function during and after an earthquake.

A meeting was held with the staff on October 5, 2004, to discuss changes to the licensing basis. The meeting summary was issued on October 25, 2004 (ADAMS Accession No. ML042920388). Subsequent to this meeting, the licensee completed realistic seismic analyses of the auxiliary building sprinkler piping systems (two in Unit 1 and one each in Units 2 and 3).

2.0 BACKGROUND

By letter dated September 26, 1972, the Atomic Energy Commission requested that the licensee determine whether the failure of any non-Category I equipment in the auxiliary buildings of Units 1, 2 and 3 could result in flooding that could adversely affect the performance of safety-related equipment required for safe shutdown of the plant. This required that the licensee implement measures to ensure that all flood sources in the auxiliary buildings be isolated or restricted in the event of a single pipe break, or that the break be isolated before safe-shutdown or accident-mitigating equipment were flooded. These requirements were stated in the plant licensing basis, but are not reflected in the current UFSAR Section 3.4.1.1.1, "Current Flood Protection Measures for the Turbine and Auxiliary Buildings."

The licensee also determined that three postulated flood sources could not be restricted or isolated. One of the sources is the high-pressure service water (HPSW) system and the associated fire protection system.

The CLB, requires the implementation of modifications to isolate or limit flow from the HPSW system in case of breaks occurring in this system. The licensee has requested a change to the CLB for portions of four sprinkler piping systems, on the basis that the likelihood of breaks in these systems resulting from earthquakes is remote. The licensee supported this request by performing a realistic dynamic analysis of these sprinkler systems subjected to seismic loading and demonstrated that no breaks would occur under the maximum hypothetical earthquake posited for Oconee1/2/3. As stated above, these systems are non-Category I systems, and, therefore, were not designed seismically or licensed as safety-related systems.

The licensee intends to augment UFSAR Section 3.4.1.1.1 by adding a paragraph to indicate that the auxiliary building could be subjected to flooding from a single break in any one of three non-seismic sources, but the Unit 1, 2 and 3 hatch and the Unit 1 drumming station sprinkler systems are not considered as possible/credible auxiliary building flood sources, based on the results of a realistic seismic analysis that demonstrates that the pipes and supports will not fail during a seismic event.

3.0 TECHNICAL EVALUATION

The licensee performed individual realistic piping analyses of the four piping sprinkler systems, in accordance with NRC staff recommendations made at the October 5, 2004, meeting. The realism of the analysis consists of specifying higher allowable stresses and higher damping values than those specified in the CLB.

The analyses are based on conventional dynamic linear elastic piping analyses, using the Uniform Response Spectrum method with loading based on 5 percent damped auxiliary building floor response spectra. These spectra were based on the CLB Maximum Hypothetical Earthquake (MHE) for Oconee 1/2/3, and were not required to be broadened, in accordance with UFSAR Section 3.7.2.4.2. The analysis methodology conforms with current industrial practice.

Piping moments were computed for internal pressure, deadweight and seismic inertia and

anchor motion loading. The combined stresses resulting from these moments were calculated using Equation 12 of the American Society of Mechanical Engineers' (ASME) B31.1, 2001, power piping code, subject to a faulted condition stress limit of the lesser of 3Sh (Sh = basic material allowable stress at temperature) or 2Sy (Sy = material yield stress at temperature). Pipe supports were also analyzed for the reaction loads using a linear elastic analysis.

The licensee provided the highest calculated piping stress in the four analyzed systems. The highest stress ratio, defined as the ratio of maximum membrane plus bending stress to the allowable stress, was calculated as 0.95 in the Unit 2 hatch area piping. The highest stress ratios for the other systems were shown to be lower. The licensee also provided the highest load ratio, defined as the ratio of the maximum load to the allowable load for the worst case threaded load hanger and anchor bolt connection as 0.44. The calculated stresses and support loads were therefore shown to meet the allowable stress and load criteria, which demonstrates adequate margin against pipe failure.

As part of the seismic verification process, engineers familiar with seismic analyses and verification techniques performed a seismic and verification walkdown of these systems to identify potential vulnerability to seismic loading. The walkdown was focused on identifying excessively long spans, heavy unsupported components, non-ductile piping or support material, high localized stresses, severe corrosion, and poor anchorage. The walkdown was also intended to identify potential interaction caused by failure and proximity impact, and differential and anchor displacements of structures, equipment and piping.

Based on the results of the walkdown and the realistic analysis, the licensee concluded that the evaluated piping systems and supports are seismically adequate, provided minor modifications are implemented to limit displacements at selected locations. These modifications consist of removing some non-seismically qualified masonry above and adjacent to a sprinkler system in the laundry room of the Unit 2 auxiliary building, adding silicon foam to four pipe penetrations that will increase resistance sprinkler piping movement, and adding vertical and lateral guide supports at three piping locations to reduce vertical and lateral pipe movements.

The NRC staff has evaluated the approach used in the realistic analyses of the sprinkler piping systems and finds it acceptable because the licensee conforms with the currently accepted industrial piping dynamic analysis methodology and because the damping values and the specified stress limits have been previously found acceptable by the NRC staff for the qualification of nonsafety-related, non-seismically designed piping. Based on the reported results of this analysis that demonstrate that the piping stress and support load criteria were met, and the modifications implemented based on the results of the walkdown, the NRC staff concludes that the licensee has provided reasonable assurance that the sprinkler system piping will have sufficient seismic margin to maintain pressure integrity during and following an MHE seismic event.

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 a requirement with respect to the installation or use of facility components 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 (72 FR 151). 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: M. Hartzman, NRR/DE/EMCB

Date: November 14, 2007

Oconee Nuclear Station, Units 1, 2, and 3

cc:

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