UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 5, 2010

Mr. Regis T. Repko
Vice President
McGuire Nuclear Station
Duke Energy Carolinas, LLC
12700 Hagers Ferry Road
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, ISSUANCE OF AMENDMENTS REGARDING DELETION OF A LICENSE CONDITION RESTRICTING FUEL ROD BURNUP (TAC NOS. ME2620 AND ME2621)

Dear Mr. Repko:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 258 to Renewed Facility Operating License (RFOL) NPF-9 and Amendment No. 238 to RFOL NPF-17 for the McGuire Nuclear Station, Units 1 and 2. The amendments consist of the deletion of license conditions in each of the unit's RFOLs in response to your application dated October 29, 2009.

The amendments delete a license condition located in each of the unit's RFOLs which restricts the maximum fuel rod average burnup. Deletion of this condition would allow the maximum fuel rod average burnup up to increase.

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.

If you have any questions, please call me at 301-415-1119.

Sincerely,

Jon Thompson

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

Docket Nos. 50-369 and 50-370

Enclosures:
1. Amendment No. 258 to NPF-9
2. Amendment No. 238 to NPF-17
3. Safety Evaluation

cc w/encls: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-369

MCGUIRE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 258
Renewed License No. NPF-9

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

   A. The application for amendment to the McGuire Nuclear Station, Unit 1 (the facility), Renewed Facility Operating License No. NPF-9, filed by the Duke Energy Carolinas, LLC (licensee), dated October 29, 2009, 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 Renewed Facility Operating License as indicated in the attachment to this license amendment.

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

Karla Tatton for

Gloria Kulesa, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-9

Date of Issuance: August 5, 2010

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-370

MCGUIRE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 238
Renewed License No. NPF-17

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

   A. The application for amendment to the McGuire Nuclear Station, Unit 2 (the facility), Renewed Facility Operating License No. NPF-17, filed by the Duke Energy Carolinas, LLC (the licensee), dated October 29, 2009, 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 Renewed Facility Operating License as indicated in the attachment to this license amendment.

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

Gloria Kulesa, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-17

Date of Issuance: August 5, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 258

RENEWED FACILITY OPERATING LICENSE NO. NPF-9

DOCKET NO. 50-369

AND

LICENSE AMENDMENT NO. 238

RENEWED FACILITY OPERATING LICENSE NO. NPF-17

DOCKET NO. 50-370

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

Remove	Insert
License Pages	License Pages
NPF-9 page 3 Appendix B, page 1	NPF-9 page 3 Appendix B, page 1
NPF-17 page 3 Appendix B, page 1	NPF-17 page 3 Appendix B, page 1

(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproducts and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2; and;

(6) Pursuant to the Act and 10 CFR Parts 30 and 40, to receive, possess and process for release or transfer such byproduct material as may be produced by the Duke Training and Technology Center.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at a reactor core full steady state power level of 3411 megawatts thermal (100%).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 258, are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than June 12, 2021, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-9

Duke Energy Carolinas, LLC shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Conditions		Implementation Date
184	The schedule for the performance of new and revised surveillance requirements shall be as follows: For surveillance requirements (SRs) that are new in Amendment No. 184 the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment No. 184. For SRs that existing prior to Amendment No. 184, including SRs with modified acceptance criteria and SRs whose intervals of performance are being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of amendment No. 184. For SRs that existed prior to Amendment No. 184, whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 184.	.	Within 90 days of the date of this amendment.

(4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproducts and special nuclear materials as may be produced by the operation of McGuire Nuclear Station, Units 1 and 2; and,

(6) Pursuant to the Act and 10 CFR Parts 30 and 40, to receive, possess and process for release or transfer such byproduct material as may be produced by the Duke Training and Technology Center.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at a reactor core full steady state power level of 3411 megawatts thermal (100%).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 238 are hereby incorporated into this renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than March 3, 2023, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59, and otherwise complies with the requirements in that section.

APPENDIX B

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-17

Duke Energy Carolinas, LLC shall comply with the following conditions on the schedules noted below:

Amendment Number	Additional Conditions	Implementation Date
166	The schedule for the performance of new and revised surveillance requirements shall be as follows: For surveillance requirements (SRs) that are new in Amendment No. 166 the first performance is due at the end of the first surveillance interval that begins at implementation of Amendment No. 166. For SRs that existed prior to Amendment No. 166, including SRs with modified acceptance criteria and SRs whose intervals of performance are being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of amendment No. 166. For SRs that existed prior to Amendment No. 166, whose intervals of performance are being reduced, the first reduced surveillance interval begins upon completion of the first surveillance performed after implementation of Amendment No. 166.	Within 90 days of the date of this amendment.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 258 TO RENEWED FACILITY OPERATING LICENSE NPF-9

AND

AMENDMENT NO. 238 TO RENEWED FACILITY OPERATING LICENSE NPF-17

DUKE ENERGY CAROLINAS, LLC

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-369 AND 50-370

1.0 INTRODUCTION

By application dated October 29, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093140092), Duke Energy Carolinas, LLC (Duke, the licensee), requested changes to the Renewed Facility Operating Licenses (RFOLs) for the McGuire Nuclear Station, Units 1 and 2 (McGuire 1 and 2). The proposed changes would delete a license condition located in each of the unit's RFOLs which restricts the maximum fuel rod average burnup. Deletion of this condition would allow the licensee to increase the maximum fuel rod average burnup.

McGuire 1 and 2 have a condition in Appendix B of each of their RFOLs which limits the peak rod average burnup to up to and including 60 Gigawatt-days per Metric Ton Uranium (GWd/MTU) until the completion of a U.S. Nuclear Regulatory Commission (NRC) environment assessment (EA) supporting an increased limit. In January 2001, the NRC staff published NUREG/CR-6703, entitled "Environmental Effects of Extending Fuel Burnup Above 60 Gwd/MTU," (ADAMS Accession No. ML010310298) to support the burnup increase. The McGuire 1 and 2 reactor cores contain a Westinghouse Electric Company (Westinghouse) robust fuel assembly (RFA) design with a 17x17 array. The RFA fuel design features the ZIRLO material for fuel rod cladding and other assembly structures, which were approved in topical report (TR) WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report." The VANTAGE+ fuel design, including the RFA fuel, was approved to a peak rod average burnup limit of 60 GWd/MTU. In letter dated May 25, 2006 (ADAMS Accession No. ML061420458), the NRC staff approved the Westinghouse request for the VANTAGE+ fuel burnup limit to be increased to 62 GWd/MTU, conditioned upon the evaluation of the fuel performance using the PAD 4.0 code. The PAD 4.0 code is a Westinghouse fuel performance code, as described in TR WCAP-15063-P-A, "Westinghouse Improved Performance Analysis and Design Model (PAD 4.0)," and was approved to a peak rod average burnup limit of 62 GWd/MTU.

Based on the EA dated January 2001 and the NRC staff approval of TR WCAP-12610-P-A (along with the additional burnup using this TR authorized by the NRC staff in its letter dated May 25, 2006), the licensee requested an amendment for each of the RFOLs at McGuire 1 and 2 for the purpose of removing the license condition located in each RFOL, Appendix B, related to a fuel burnup limit. This license amendment will enable the licensee to increase the peak rod average burnup limit up to and including 62 GWd/MTU for RFAs.

2.0 REGULATORY EVALUATION

The regulations in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.90, "Application for Amendment of License or Construction Permit," allow a licensee to amend or change the original license application.

The regulation at 10 CFR 50.92, "Issuance of Amendment," states in part that:

> In determining whether an amendment to a license ... will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses ... to the extent applicable and appropriate.

The regulation at 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants, Criterion 10, "Reactor design," (GDC 10) states that:

> The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits [SAFDLs] are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

3.0 TECHNICAL EVALUATION

3.1 Environmental Assessment

In the EA to extend fuel burnup above 60Gwd/MTU dated January 2001, the NRC staff concluded that there were no significant adverse environmental impacts associated with increasing the peak rod average burnup for nuclear fuel assemblies to 62 GWd/MTU. The licensee evaluated the applicability of the EA dated January 2001 to McGuire 1 and 2 and determined that its analysis enveloped the impacts at McGuire 1 and 2. In an EA dated July 15, 2010 (ADAMS Accession No. ML101670302), the NRC staff issued a finding of no significant impact with respect to the removal of these license conditions from the RFOL, Appendix B, for each of these units. Based on these EAs, the NRC staff concluded that the peak rod average burnup for fuel at McGuire 1 and 2 can be increased to 62 GWd/MTU with no significant effect on the quality of the human environment.

3.2 NRC Staff's Position

In the past, the NRC staff has approved various burnup limits for Westinghouse fuel designs and fuel performance codes. Noticeably, the VANTAGE fuel series, including VANTAGE+, was approved to a burnup limit of 60 GWd/MTU, and the more recent Westinghouse fuel performance code, PAD 4.0, was approved for use to the burnup limit of 62 GWd/MTU.

Recently, the NRC staff conducted an audit of the Westinghouse documents describing the fuel data, analytical models, and the fuel change procedures. The NRC staff reviewed documents, including several plant reload analyses. The reload analyses provided results for all the SAFDLs as described in GDC 10. The analyses were typically performed at bounding conditions such that plant thermal-mechanical safety evaluations were not required for each reload cycle. The SAFDLs include rod internal pressure, clad stress and strain, corrosion, clad fatigue, fuel melting temperature, rod growth, creep collapse, etc. The results showed that all SAFDLs were met for the bounding conditions. The NRC staff also recognized that the SAFDLs were analyzed using the PAD 4.0 code, which was approved to a peak rod average burnup of 62 GWd/MTU. Based on the audit results, the NRC staff concludes that burnup limit for WCAP-12610-P-A can be increased to 62 GWd/MTU provided that the evaluation of the fuel design performance is performed with PAD 4.0. This is consistent with the letter from the NRC staff dated May 25, 2006, which approved the burnup increase for the VANTAGE fuel series. Therefore, the burnup limit of the VANTAGE+ fuel design including the McGuire 1 and 2 RFA fuel can be increased to a 62,000 GWd/MTU peak rod average.

3.3 License Condition

The license condition of McGuire Units 1 and 2 in Appendix B of the RFOL states:

> "The maximum rod average burnup for any rod shall be limited to 60 GWd/MTU until the completion of an NRC environmental assessment supporting an increased limit."

The licensee proposes to delete the license condition. Based on the NRC staff's evaluation, the NRC staff finds this acceptable.

3.4 Summary of Technical Evaluation

The NRC staff has reviewed the licensee's proposed license amendment to delete a license condition. Based on the application and the evaluation as set forth above, the NRC staff concludes that the proposed license amendment to delete the license condition in Appendix B of the RFOL is acceptable for McGuire 1 and 2.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact was published in the *Federal Register* on July 26, 2010 (75 FR 43571). Accordingly, based upon the environmental assessment, the Commission has determined that issuance of this amendment will not have a significant effect on the quality of the human environment.

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. Wu

Date: August 5, 2010

If you have any questions, please call me at 301-415-1119.

Sincerely,

/RA/

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

Docket Nos. 50-369 and 50-370

Enclosures:
1. Amendment No. 258 to NPF-9
2. Amendment No. 238 to NPF-17
3. Safety Evaluation

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ADAMS Accession No. ML102010055
*no significant change from SE transmitted by memo dated 6/7/10 (ML101440422)

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NAME	JThompson	MO'Brien	AMendiola*	LSubin (w/ comments)	GKulesa (KCotton for)	JThompson
DATE	07/21/10	07/21/10	06/07/10	07/23/10	08/04/10	08/04/10

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