



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

August 23, 2013

Mr. Scott Batson
Site Vice President
Oconee Nuclear Station
Duke Energy Carolinas, LLC
7800 Rochester Highway
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3, ISSUANCE OF
AMENDMENTS REGARDING THE TECHNICAL SPECIFICATION FOR
KEOWEE HYDRO UNITS (TAC NOS. ME9880, ME9881, AND ME9882)

Dear Mr. Batson:

The Nuclear Regulatory Commission has issued the enclosed Amendment Nos. 382, 384, and 383 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 Technical Specifications (TSs) in response to your application dated October 30, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12307A377), as supplemented by letters dated July 16, 2013 (ADAMS Accession No. ML13204A385), and July 26, 2013 (ADAMS Accession No. ML13217A002).

These amendments revise the TSs by changing the allowed 45-day outage time for each Keowee Hydro Unit to be a cumulative 45 days over 3 years rather than one 45-day outage every three years.

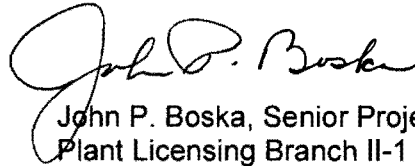
A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

S. Batson

- 2 -

If you have any questions, please call me at 301-415-2901.

Sincerely,

A handwritten signature in black ink that reads "John P. Boska". The signature is written in a cursive style with a large, looping initial "J".

John P. Boska, Senior 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. 382 to DPR-38
2. Amendment No. 384 to DPR-47
3. Amendment No. 383 to DPR-55
4. Safety Evaluation

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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-269

OCONEE NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 382
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 Duke Energy Carolinas, LLC (the licensee), dated October 30, 2012, and supplemented by letters dated July 16 and July 26, 2013, 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. 382, 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



Robert J. Pascarelli, 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
and the Technical Specifications

Date of Issuance: August 23, 2013



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-270

OCONEE NUCLEAR STATION, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 384
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 Duke Energy Carolinas, LLC (the licensee), dated October 30, 2012, and supplemented by letters dated July 16 and July 26, 2013, 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. 384, 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



Robert J. Pascarelli, 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-47
and the Technical Specifications

Date of Issuance: August 23, 2013



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

DUKE ENERGY CAROLINAS, LLC

DOCKET NO. 50-287

OCONEE NUCLEAR STATION, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 383
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 Duke Energy Carolinas, LLC (the licensee), dated October 30, 2012, and supplemented by letters dated July 16 and July 26, 2013, 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. 383, 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



Robert J. Pascarelli, 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
and the Technical Specifications

Date of Issuance: August 23, 2013

ATTACHMENT TO LICENSE AMENDMENT NO. 382
RENEWED FACILITY OPERATING LICENSE NO. DPR-38
DOCKET NO. 50-269
AND
TO LICENSE AMENDMENT NO. 384
RENEWED FACILITY OPERATING LICENSE NO. DPR-47
DOCKET NO. 50-270
AND
TO LICENSE AMENDMENT NO. 383
RENEWED FACILITY OPERATING LICENSE NO. DPR-55
DOCKET NO. 50-287

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

Remove Pages

Licenses

License No. DPR-38, page 3
License No. DPR-47, page 3
License No. DPR-55, page 3

TSs

Page 3.8.1.5
Page 3.8.1.8

Insert Pages

Licenses

License No. DPR-38, page 3
License No. DPR-47, page 3
License No. DPR-55, page 3

TSs

Page 3.8.1.5
Page 3.8.1.8

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 382 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

Any particular bulk power supply transaction may afford greater benefits to one participant than to another. The benefits realized by a small system may be proportionately greater than those realized by a larger system. The relative benefits to be derived by the parties from a proposed transaction, however, should not be controlling upon a decision with respect to the desirability of participating in the transaction. Accordingly, applicant will enter into proposed bulk power transactions of the types hereinafter described which, on balance, provide net benefits to applicant. There are net benefits in a transaction if applicant recovers the cost of the transaction (as defined in ¶1 (d) hereof) and there is no demonstrable net detriment to applicant arising from that transaction.

1. As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
- (b) "Neighboring Entity" means a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or a lawful association of any of the foregoing owning or operating, or proposing to own or operate, facilities for the generation and transmission of electricity which meets each of

A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 384 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

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1. As used herein:

- (a) "Bulk Power" means electric power and any attendant energy, supplied or made available at transmission or sub-transmission voltage by one electric system to another.
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A. Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 383 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. This license is subject to the following antitrust conditions:

Applicant makes the commitments contained herein, recognizing that bulk power supply arrangements between neighboring entities normally tend to serve the public interest. In addition, where there are net benefits to all participants, such arrangements also serve the best interests of each of the participants. Among the benefits of such transactions are increased electric system reliability, a reduction in the cost of electric power, and minimization of the environmental effects of the production and sale of electricity.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	<p>C.2.2.4 Verify alternate power source capability by performing SR 3.8.1.16.</p> <p><u>AND</u></p> <p>C.2.2.5 Restore KHU and its required overhead emergency power path to OPERABLE status.</p>	<p>72 hours</p> <p><u>AND</u></p> <p>Every 31 days thereafter</p> <p>28 days when Condition due to an inoperable Keowee main step-up transformer</p> <p><u>AND</u></p> <p>-----NOTE----- Not to exceed 45 days cumulative per rolling 3-year time period for each KHU -----</p> <p>45 days from discovery of initial inoperability when Condition due to an inoperable KHU</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. -----NOTE----- Condition may be entered only when both required offsite sources are verified by administrative means to be OPERABLE and the requirements of LCO 3.8.3, "DC Sources-Operating;" LCO 3.8.6, "Vital Inverters-Operating;" LCO 3.8.8, "Distribution Systems-Operating;" LCO 3.3.17, "EPSL Automatic Transfer Function;" LCO 3.3.18, "EPSL Voltage Sensing Circuits;" LCO 3.3.19, "EPSL 230 kV Switchyard DGVP," are verified by administrative means to be met.</p> <p>-----</p> <p>Both KHUs or their required emergency power paths inoperable for planned maintenance or test with both standby buses energized from LCT via isolated power path.</p>	<p>H.1 Energize both standby buses from LCT via isolated power path.</p> <p><u>AND</u></p> <p>H.2 Restore one KHU and its required emergency power path to OPERABLE status.</p>	<p>1 hour from discovery of deenergized standby bus</p> <p>60 hours</p> <p><u>AND</u></p> <p>240 hours cumulative per 3-year rolling time period when entered during the 45-day Completion Time of Required Action C.2.2.5</p>

(continued)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 382 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-38

AMENDMENT NO. 384 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-47

AND

AMENDMENT NO. 383 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-55

DUKE ENERGY CAROLINAS, LLC

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

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

1.0 INTRODUCTION

By application dated October 30, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12307A377), as supplemented by letters dated July 16, 2013 (ADAMS Accession No. ML13204A385), and July 26, 2013 (ADAMS Accession No. ML13217A002), Duke Energy Carolinas, LLC (Duke, the licensee), requested changes to the Technical Specifications (TSs) for the Oconee Nuclear Station, Units 1, 2, and 3 (ONS 1/2/3). The supplements dated July 16, 2013, and July 26, 2013, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on February 19, 2013 (78 FR 11691).

The proposed changes will revise the TS by changing the allowed 45-day outage for each Keowee Hydro Unit (KHU), with any of the three reactors at power or with the reactor coolant system hotter than 200 °F, to be a cumulative 45 days over the previous 3 years rather than one 45-day outage every 3 years. As part of this change, the TSs will restrict the duration of any dual unit KHU outages associated with the 45-day outage period to be less than or equal to 240 hours over the previous 3 years.

The licensee provided a traditional deterministic evaluation (not risk-based) in the license amendment request (LAR), and the staff's regulatory evaluation is based on a deterministic approach.

Enclosure

In its letter dated October 30, 2012, the licensee stated that the current TS 3.8.1 Required Action (RA) C.2.2.5 Completion Time (CT) requires the KHU and its required overhead emergency power path to be restored to operable status within 45 days of discovery of an initial inoperability when Condition C is entered due to an inoperable KHU if not used for that KHU in the previous 3 years. The licensee stated that they interpret the 45-day CT as cumulative and available for maintenance, as long as the cumulative time does not exceed 45 days over any 3-year time period.

To further clarify their interpretation, the licensee stated that the 45-day RA C.2.2.5 CT was confirmed as cumulative and available for maintenance activities requiring single or multiple entries as long as the cumulative time does not exceed 45 days over any 3-year time period during a conference call with NRC staff on November 20, 1985, and documented in a letter to NRC dated November 22, 1985. The licensee further stated that another call was held with NRC staff on September 25, 2006, in which the NRC staff accepted the use of the 45 day CT as cumulative over 3 years, but stated that the NRC staff recommended that Duke submit an LAR to clarify TS 3.8.1. No documentation of the call in 2006 was found by the NRC staff.

The NRC staff reviewed the letter from Duke to the NRC dated November 22, 1985, related safety evaluations (SEs) dated April 25, 1990 (ADAMS Accession No. ML012000152) and September 4, 1998, and Duke's letter dated September 27, 2006 (ADAMS Accession No. ML062720111) related to the ONS KHU 45 days inoperability. However, the staff review did not find any NRC documentation such as an SE or letter from the NRC to the licensee which would confirm the licensee's claim in the LAR that NRC reviewed and approved 45 days KHU inoperability as cumulative over 3 years. There is NRC documentation which states that the 45-day outage time was approved on the basis of being used once in a 3 year period (see the NRC SEs dated April 25, 1990, and September 4, 1998). Therefore, the NRC staff performed a regulatory review of this LAR based on the current licensing documents.

2.0 REGULATORY EVALUATION

The regulatory requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) which the NRC staff applied in its review of the application include:

- 10 CFR 50.36, "Technical Specifications," requires, in part, that a licensee establish TSs with limiting conditions for operation (LCOs) and surveillance requirements (SRs) for equipment that is required for safe operation of the facility. Specifically, Section 50.36(c) stipulates the items to be included in the TS, Section 50.36(c)(2) stipulates the LCOs, and Section 50.36(c)(3) stipulates the surveillance requirements.
- 10 CFR 50.63, "Loss of all alternating current power," requires, in part, that all nuclear plants have the capability to withstand a loss of all alternating current (AC) power (station blackout) for an established period of time, and to recover there from. ONS 1/2/3 describe their compliance with 10 CFR 50.63 in UFSAR Section 8.3.2.2.4, "Station Blackout Analysis."
- 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," includes the requirement to monitor the performance of specified structures, systems, and components (SSCs) to provide reasonable assurance the SSCs are

capable of fulfilling their intended functions, and to balance preventive maintenance activities against the objective of minimizing the unavailability of the SSCs due to monitoring or preventative maintenance.

The following explains the applicability of General Design Criteria (GDC) for ONS 1/2/3. The construction permits for ONS 1/2/3 were issued by the Atomic Energy Commission (AEC) on November 6, 1967. The operating licenses were issued on February 6, 1973, for ONS 1, October 6, 1973, for ONS 2, and July 19, 1974, for ONS 3. The plant GDC are discussed in the Updated Final Safety Analysis Report (UFSAR) Chapter 3.1, "Conformance With NRC General Design Criteria," with more details given in the applicable UFSAR sections. The AEC published the final rule that added 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," in the *Federal Register* (36 FR 3255) on February 20, 1971, with the rule effective on May 21, 1971. In accordance with an NRC staff requirements memorandum from S. J. Chilk to J. M. Taylor, "SECY-92-223 - Resolution of Deviations Identified During the Systematic Evaluation Program," dated September 18, 1992 (ADAMS Accession No. ML003763736), the Commission decided not to apply the Appendix A GDC to plants with construction permits issued prior to May 21, 1971. Therefore, the GDC which constitute the licensing bases for ONS 1/2/3 are those in the UFSAR.

As discussed in the UFSAR, the licensee for ONS 1/2/3 has made some changes to the facilities over the life of the units that have committed to some of the GDCs from 10 CFR Part 50, Appendix A. The extent to which the Appendix A GDC have been invoked can be found in specific sections of the UFSARs and in other ONS 1/2/3 licensing basis documentation, such as license amendments.

Based on a review of UFSAR Section 3.1, "Conformance With NRC General Design Criteria," UFSAR Section 8.3, "Onsite Power Systems," and the licensee's submittals, the NRC staff identified the following criteria as being applicable to the proposed amendment:

- ONS UFSAR, Chapter 3, GDC 24, "Emergency Power for Protection System," states that in the event of loss of all offsite power, sufficient alternate sources of power shall be provided to permit the required functioning of the Protective Systems. In the event of loss of all off-site power to all units at Oconee or to any unit alone, sufficient power for operation of the Protective Systems of any unit will be available from either of two on-site independent hydroelectric generators.
- ONS UFSAR, Chapter 3, GDC 39, "Emergency Power for Engineered Safety Features (ESF)," states that alternate power systems shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning required of the ESF. As a minimum, the on-site power system and the off-site power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system.

3.0 TECHNICAL EVALUATION

3.1 Requested Change to TS

The licensee is proposing the following revisions to its current TS RA C.2.2.5 CT and RA H.2 CT.

Current TS 3.8.1 Condition C Required Action C.2.2.5 Completion Time:

----- NOTE -----
An additional 30 days is
allowed prior to
November 3, 2006 at 1029 hours.

45 days from discovery of
initial inoperability when
Condition due to an inoperable KHU if not
used for that KHU in the previous 3 years.

Revised TS 3.8.1 Condition C Required Action C.2.2.5 Completion Time:

----- NOTE -----
Not to exceed 45 days
cumulative per rolling
3-year time period for
each KHU.

45 days from discovery of
initial inoperability when
Condition due to an
inoperable KHU.

Current TS 3.8.1 Condition H Required Action H.2 Completion Time:

60 hours

Revised TS 3.8.1 Condition H Required Action H.2 Completion Time:

60 hours

AND

240 hours cumulative per
3-year rolling time period
when entered during the
45 day Completion Time of
Required Action C.2.2.5

3.2 Evaluation of the Change

In its letter dated October 30, 2012, the licensee proposed to revise the Note in TS 3.8.1 RA C.2.2.5 CT to state, "Not to exceed 45 days cumulative per rolling 3-year time period for each KHU." The existing Note has expired and can be removed or replaced. In the LAR, the licensee proposed the 45-day CT to be cumulative and available for maintenance activities allowing single or multiple entries as long as the cumulative time does not exceed 45 days over any 3-year rolling time period. The proposed change will allow for the 45-day extended outage of a KHU to be cumulative over 3 years rather than once every 3 years. It will also place a limit in the TSs to restrict the duration of any dual unit KHU outages associated with the 45-day outage period to be less than or equal to 240 hours over the previous 3 years.

The current TS 3.8.1 RA C.2.2.5 requires the licensee to restore the KHU and its required overhead emergency power path to operable status within 45 days from the initial discovery if not used for that KHU within the previous 3 years. The current 45 days KHU inoperability, to be used once in a 3 year period, was reviewed and approved by NRC staff in safety evaluations (SEs) dated April 25, 1990 (ADAMS Accession No. ML012000152), and September 4, 1998.

The NRC staff's review of the ONS UFSAR Section 1.2.2.6 indicated that each of the three nuclear units has the following available sources of AC power:

- 1) Eight 230 kilo Volt (kV) transmission lines and three 525 kV transmission lines,
- 2) The other two nuclear units,
- 3) The Central Switchyard or the Lee Steam Station Combustion Turbines via the 100 kV transmission line, which is capable of being separated from other system loads,
- 4) One of the KHUs connected to ONS 1/2/3 through underground 13.8 kV cable, and
- 5) The other KHU connected to ONS 1/2/3 by an overhead 230 kV transmission line to the 230 kV switching station and from there to the plant startup transformers.

In addition, ONS UFSAR Section 9.6, "Standby Shutdown Facility," states that the Standby Shutdown Facility (SSF) can be used under extreme emergency conditions and it provides additional "defense in-depth" to the existing safety systems. The UFSAR explains that the SSF provides an alternate means to achieve and maintain mode 3 (hot standby) with an average Reactor Coolant temperature ≥ 525 °F (RCS cold leg temperature ≤ 555 °F and RCS pressure about 2155 psig) following postulated fire, sabotage, or flooding events, and is designed in accordance with criteria associated with these events. Loss of all other station power does not impact the SSF's capability to mitigate each event, as the SSF contains a large diesel generator.

The ONS UFSAR Section 8.3.1.1.1, "Keowee Hydro Station", states that each KHU is shared by all three Oconee Units for emergency AC power supply by two separate and independent paths if there is a loss of normal AC power. One path is an underground 13.8 kV feeder to transformer CT4, which supplies the two standby buses which then can supply redundant power to the 4.16 kV main feeder buses (two per unit). The main feeder buses then supply the 4.16 kV engineered safeguards (ES) buses (three per unit). The other path is a 230 kV overhead transmission line to

the 230 kV switching station at Oconee which supplies each unit's startup transformer. The startup transformer can supply 4.16 kV power to the two main feeder buses for the unit. During operation with an inoperable KHU, the remaining KHU is required to be verified operable on the underground path within one hour by performing SR 3.8.1.3, if not performed in the previous 12 hours, and once per 7 days thereafter.

In addition, UFSAR 8.2.1.4, "100 kV Switching Station," states that the ONS configuration is designed such that it allows a Lee Combustion Turbine (LCT) unit to supply AC power to energize the standby buses (which can then energize the main feeder buses) through a 100 kV overhead line to transformer CT5 and be available in one hour. There are two LCT generators, located about 30 miles from Oconee, each capable of serving as the emergency AC power source for all the units at Oconee. This maintains defense-in-depth.

Per the current ONS TS 3.8.1 RA C.2.2.1, if the licensee wishes to extend a KHU outage past 72 hours with any reactor hotter than 200 °F, one LCT is required to be energizing the standby buses via a power path which is isolated from other transmission lines to enhance reliability. The unit's main feeder buses are normally energized by the unit auxiliary transformer, but will automatically transfer to the startup transformer or the standby buses on loss of power. The following actions are required by existing TS 3.8.1 RAs C.2.2.1, C.2.2.2, C.2.2.3, and C.2.2.4 prior to exceeding 72 hours of inoperability of a KHU:

- 1) Energize both standby buses from LCT via isolated power path, AND
- 2) Suspend KHU generation to grid except for testing, AND
- 3) Verify by administrative means that the remaining KHU and its required underground emergency power path and both required offsite sources are OPERABLE, and verify by administrative means that the electrical TS LCOs 3.8.3, 3.8.6, 3.8.8 and instrumentation TS LCOs 3.3.17, 3.3.18, 3.3.19, and 3.3.21 are met, AND
- 4) Verify alternate power source capability by performing SR 3.8.1.16, AND
- 5) Restore KHU and its required overhead emergency power path to Operable status.

One LCT energizing both standby buses via an isolated power path provides defense in-depth for the emergency power system during an extended outage of a KHU. In this configuration, the LCT is serving as an additional emergency power source and provides defense-in-depth. In addition, suspending KHU commercial generation reduces the number of possible failures which could cause loss of the underground emergency power path to the standby buses. Verifying that the remaining KHU and its required underground emergency power path and both required offsite sources are OPERABLE provides additional assurance that defense-in-depth will be maintained.

3.3 Evaluation of Dual KHU Outages

The NRC staff expressed a concern that allowing the 45-day KHU outage time to be cumulative over 3 years rather than once in 3 years may result in an increase in dual KHU outage time, where both KHUs are inoperable simultaneously. This is due to the design of the KHUs. There is a common water supply tube (penstock) from Lake Keowee that branches to supply each KHU. When one KHU is being removed from service to perform turbine or generator maintenance, it may be necessary to make the other KHU inoperable due to the sharing of the intake structure and the common penstock. In order to perform major turbine or generator maintenance on a Keowee unit, the penstock section for that KHU must be sealed. This is performed by closing the intake gate and draining the common penstock, which makes both KHUs inoperable. After the inlet to the KHU undergoing maintenance is sealed, the penstock is flooded and the other KHU is restored to operable status. When restoring the inoperable KHU to service from a maintenance outage, it is necessary to perform the same dewatering evolution again to remove the intake seal. Therefore, an increase in the number of maintenance outages will likely result in an increase in the number of dual KHU outages. A dual KHU outage reduces defense-in depth.

TS 3.8.1 RA H.2 requires restoring one KHU and its required emergency power path to OPERABLE status within 60 hours when both KHUs or their required emergency power paths are inoperable for planned maintenance or tests, with both standby buses energized from an LCT via an isolated power path. In a request for additional information (RAI) dated June 16, 2013, the NRC staff requested the licensee to explain how the dual KHU outage hours could be controlled to avoid a potential increase in the unavailability of both KHUs simultaneously. In its response dated July 16, 2013, the licensee stated that they use an electronic risk assessment tool (ERAT) to evaluate maintenance configurations, and that the removal of both KHUs from service creates an ORANGE risk condition which is undesirable from a risk perspective. If this elevated risk condition is entered, then the license limits maintenance and testing on other risk-significant equipment during the time that both KHUs are inoperable. The reduction in maintenance and testing protects the risk significant equipment.

The licensee stated that currently dual KHU outage time is limited by their implementation of the maintenance rule (10 CFR 50.65). Their performance goal restricts the underground path being inoperable or unavailable to 2% of the operating cycle (2 years), or else they must take corrective actions. The licensee noted that the current TS allow a 60-hour period for a dual KHU outage for planned maintenance. Assuming there is the need to dewater the penstock at the beginning and end of the current 45-day outage allowed by TS 3.8.1, there could be as much as 120 hours of dual KHU outage time in a 3-year period for each KHU. This adds up to 240 hours of dual KHU outage time when counting both KHUs. The licensee's qualitative risk analysis in its letter dated July 26, 2013, indicated an insignificant impact on average annual plant risk with the maximum inoperability time of 240 hours for both KHUs when this unavailability is averaged over a 3-year period. Based on this analysis, the licensee proposed to limit the time allowed for dual KHUs outages to 240 hours when using the extended outage period of 45 days cumulative over 3 years. The licensee provided a revision to TS LCO 3.8.1 RA H.2 CT by adding an additional condition stating that the total duration of dual KHU outages shall not exceed 240 hours cumulative in a 3-year rolling time period when entered during the 45-day CT of RA C.2.2.5. The NRC staff determined that this additional condition would limit the total dual KHU outage time in a manner that is consistent with the current TSs, and addresses the staff's question about potential increases in total (3-year cumulative) dual KHU outage time.

The NRC staff questioned how a KHU being restored to operability following the draining of the penstock is tested to verify reliability. The licensee stated that after each dual KHU outage, SR 3.8.1.3 is performed to demonstrate operability of the remaining KHU prior to declaring the unaffected KHU operable. While in TS 3.8.1 Condition C for an inoperable KHU, RA C.1 requires SR 3.8.1.3 be performed once per 7 days instead of the normal frequency of once per 31 days. This helps to ensure the remaining KHU will function as designed. In addition, TS 3.8.1 RA C.2.2.3 requires verification that the remaining KHU and its required underground emergency power path are operable and that LCO 3.3.21 for the Emergency Power Switching Logic Keowee Start Function is met prior to exceeding 72 hours of outage for a KHU. If a Keowee Emergency Start channel becomes inoperable during the extended single KHU outage, RA L.2 requires restoring compliance with the LCO within 4 hours when there is a KHU out of service, compared to the 72 hours allowed by TS 3.3.21 RA A.1 when both KHUs are operable. Based on the review of the above licensee's statements, the NRC staff concludes that the above measures provide satisfactory assurance that the remaining KHU brought back to service between dual KHU outages will perform as intended.

In its response dated July 16, 2013, related to the NRC staff's RAI on readiness of the SSF during single or dual KHU outages, the licensee stated that KHU outages (single or dual) are controlled by the plant Operations Procedure for removal and restoration of the overhead and underground power paths individually or concurrently. One of the initial conditions for removal of both power paths (overhead and underground) is to verify that the SSF is operable. The licensee also stated that no discretionary maintenance or testing is allowed on the SSF during a dual KHU outage. In addition, the Protected Equipment Program is implemented if both KHUs and/or power paths are inoperable. This provides assurance that certain critical equipment will be protected and will remain available, which helps to reduce plant risk during a dual KHU outage.

3.4 Conclusion

The NRC staff reviewed the licensee's proposed changes to TS 3.8.1 RA C.2.2.5 CT to make the 45-day outage period cumulative in a 3-year rolling time period for each KHU and the proposed change to TS 3.8.1 RA H.2 CT to add a limit of 240 hours for dual KHU outages cumulative in a 3-year rolling time period when entered during the 45-days CT of RA C.2.2.5. Based on the above evaluation, the NRC staff concludes that operation with the proposed TS changes will continue to provide adequate protection to public health and safety.

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, which was published in the *Federal Register* on February 19, 2013 (78 FR 11691). 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) there is reasonable assurance that 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.

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Date: August 23, 2013

S. Batson

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If you have any questions, please call me at 301-415-2901.

Sincerely,

/RA/

John P. Boska, Senior 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. 382 to DPR-38
2. Amendment No. 384 to DPR-47
3. Amendment No. 383 to DPR-55
4. Safety Evaluation

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