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

June 14, 2019

Mr. J. Ed Burchfield, Jr.
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 AMENDMENT NOS. 411, 413, AND 412 REGARDING THE TECHNICAL SPECIFICATIONS FOR ELECTRICAL POWER SYSTEMS (EPID L-2018-LLA-0149)

Dear Mr. Burchfield:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment Nos. 411, 413, and 412 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 revise the Technical Specifications in response to the application from Duke Energy Carolinas, LLC dated May 17, 2018 (RA-19-0023), as supplemented by letter RA-2019-0116, dated February 26, 2019. The amendments revise Technical Specification 3.8.1, "AC [Alternating Current] Sources – Operating," by adding a new surveillance requirement that verifies the ability of each Keowee Hydroelectric Unit auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source. The staff's safety evaluation of the amendments is enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

Audrey L. Klett, 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. 411 to DPR-38
2. Amendment No. 413 to DPR-47
3. Amendment No. 412 to DPR-55
4. Safety Evaluation

cc Listserv

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. 411
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 May 17, 2018, and supplemented by letter dated February 26, 2019, 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 changes to the Operating License and 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. 411, 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 60 days of issuance.

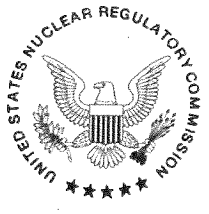
FOR THE NUCLEAR REGULATORY COMMISSION

FOR

Michael T. Markley, 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: June 14, 2019



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. 413
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 May 17, 2018, and supplemented by letter dated February 26, 2019, 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.

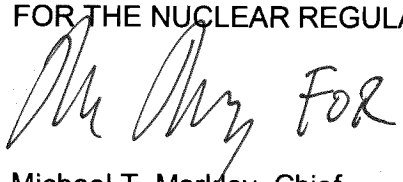
2. Accordingly, the license is hereby amended by changes to the Operating License and Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 3.B of Renewed Facility Operating License No. DPR-47 is hereby amended to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 413, 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, 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: June 14, 2019

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. 412
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 May 17, 2018, and supplemented by letter dated February 26, 2019, 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.

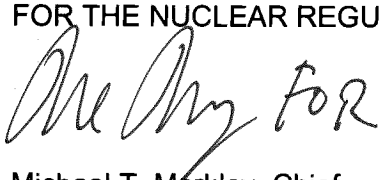
2. Accordingly, the license is hereby amended by changes to the Operating License and Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 3.B of Renewed Facility Operating License No. DPR-55 is hereby amended to read as follows:

   B. Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 412, 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, 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: June 14, 2019

ATTACHMENT TO

AMENDMENT NO. 411 RENEWED FACILITY OPERATING LICENSE NO. DPR-38

AMENDMENT NO. 413 RENEWED FACILITY OPERATING LICENSE NO. DPR-47

AMENDMENT NO. 412 RENEWED FACILITY OPERATING LICENSE NO. DPR-55

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

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

Replace the following pages of the Operating Licenses and the Appendix A Technical Specifications 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
Operating Licenses	*Operating 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
Technical Specifications	*Technical Specifications*
3.8.1-17	3.8.1-17

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. 411 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. 413 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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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. 412 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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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.16	----------NOTE---------- Only applicable when complying with Required Action C.2.2.4. ---------- Verify one KHU provides an alternate manual AC power source capability by manual or automatic KHU start with manual synchronize, or breaker closure, to energize its non-required emergency power path.	As specified by Required Action C.2.2.4
SR 3.8.1.17	Verify each KHU's Voltage and Frequency out of tolerance logic trips and blocks closure of the appropriate overhead or underground power path breakers. The allowable values with a time delay of 5 seconds ± 1 second shall be as follows: a. Undervoltage ≥ 12.42 kV and ≤ 12.63 kV b. Overvoltage ≥ 14.90 kV and ≤ 15.18 kV c. Underfrequency ≥ 53.992 hz and ≤ 54.008 hz d. Overfrequency ≥ 65.992 hz and ≤ 66.008 hz	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	Verify the ability of each KHU auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source	In accordance with the Surveillance Frequency Control Program

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION FOR AMENDMENT NO. 411 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-38 AMENDMENT NO. 413 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-47 AMENDMENT NO. 412 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 letter RA-18-0023 dated May 17, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18144A788), as supplemented by letter RA-19-0116 dated February 26, 2019 (ADAMS Accession No. ML19058A206), Duke Energy Carolinas, LLC (the licensee), applied for license amendments to change the Technical Specifications (TSs) for the Oconee Nuclear Station, Units 1, 2, and 3 (Oconee), which are contained in Appendix A of Renewed Facility Operating Licenses DPR-38, DPR-47, and DPR-55. The licensee proposed to add a surveillance requirement (SR) to TS 3.8.1, "AC [Alternating Current] Sources – Operating," that verifies the ability of each Keowee Hydroelectric Unit (KHU) auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source.

By electronic mail (e-mail) dated January 24, 2019 (ADAMS Accession No. ML19032A107), U.S. Nuclear Regulatory Commission (NRC or the Commission) staff (i.e., "the staff") sent the licensee a request for additional information (RAI). By letter RA-19-0116 dated February 26, 2019, the licensee responded to the request. The supplement dated February 26, 2019, 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* (FR) on August 28, 2018 (83 FR 43904).

2.0 REGULATORY EVALUATION

2.1 System Descriptions and Requirements

KHUs and Zone Overlap Protection Circuitry

Section 8.1 of the Updated Final Safety Analysis Report (UFSAR), Revision 26, states that an offsite power system and an onsite power system are provided for each unit to supply the unit auxiliaries during normal operation and the reactor protection system and engineered safeguards protection systems during abnormal and accident conditions. Section 8.1 of the UFSAR states that each Oconee unit has five available sources of power to the Engineered Safeguards Systems: the 230-kilovolt (kV) transmission system, the 525-kV transmission system, two KHUs, and the 100-kV transmission system. The TS 3.8.1 Bases states that the AC Power System is designed to supply the required Engineered Safeguards (ES) loads of one unit and safe shutdown loads of the other two units and is so arranged that no single failure can disable enough loads to jeopardize plant safety.

Section 8.3.1 of the UFSAR states that the Keowee Hydro Station contains two units (i.e., KHU-1 and KHU-2) that are rated at 87,500 kilovolt-amperes (kVA) each. The KHUs generate power at 13.8 kV and serve as the standby onsite emergency power source. Upon a loss of power from the Oconee generating units and the 230-kV switchyard, both KHUs start automatically and accelerate to full speed within 23 seconds from receipt of the emergency startup initiation signal. In its application, the licensee stated that upon a loss of power from the Oconee generating unit and 230-kV switchyard, power is supplied from both KHUs through two separate and independent routes. The underground emergency power path is from one KHU through the underground feeder circuit, transformer CT-4, incoming breakers (i.e., the SK breakers), the standby bus, and the standby breakers (i.e., the S breakers). The overhead emergency power path is from the other KHU through the startup transformer and the startup incoming breakers (i.e., the E breakers).

In its application, the licensee stated the Oconee licensing basis includes allowances for using the KHUs for commercial generation in addition to their TS 3.8.1 required function of onsite emergency power sources. The licensee stated that TS 3.8.1 and Selected Licensee Commitment (SLC) 16.8.4, "Keowee Operational Restrictions," include requirements for certain features and operational restrictions to ensure that KHUs can transition from commercial operation mode to onsite emergency power mode and meet all accident analysis assumptions. The licensee stated that one such feature is the Zone Overlap Protection Circuitry, which was designed and licensed to mitigate electrical faults in the zone overlap region.

During commercial generation to the grid using the KHU assigned to the underground path, an electrical fault assumed in the zone overlap region would initially result in the lockout of the KHU aligned to the underground emergency power path from both underground and the overhead emergency power paths. The KHU that was aligned to the overhead emergency power path would not be electrically connected to the remaining operable emergency power path (the underground power path). The Zone Overlap Protection Circuitry would detect this and automatically re-align the operable KHU to the operable power path.

TS 3.8.1 establishes requirements for alternating current electrical power sources, including the KHUs, when the Oconee units are in MODES 1 through 4. Limiting Condition for Operation (LCO) 3.8.1.a and c require, in part, that two offsite sources and two KHUs be operable and that the Zone Overlap Protection Circuitry be operable when the overhead

electrical disconnects for the KHU associated with the underground power path are closed. TS 3.8.1 also contains SRs for the KHUs and for using the Zone Overlap Protection Circuitry.

Keowee Auxiliaries and Transfer Function

In its application, the licensee stated that the KHUs have AC- and direct current-powered auxiliary systems required for operation. While a KHU can start and operate for some time without AC power to auxiliary loads, this power must be recovered to ensure continued operability of the KHU. The AC powered auxiliary loads are fed from Keowee load center 1X for KHU-1 and 2X for KHU-2. The licensee stated that these load centers receive power from any of the following sources:

(1) The Keowee Generator overhead path output through Keowee transformers 1X and 2X and air circuit breakers (ACB)-5, 6;

(2) Oconee Unit 1 switchgear 1TC through Keowee transformer CX and ACB-7, 8; or

(3) the 230-kV switchyard by back feed through the Keowee main step-up transformer, Keowee transformer 1X or 2X, and ACB-5 or 6.

In its application, the licensee stated that the normal alignments for the Keowee auxiliaries are: the unit aligned to the overhead will receive normal power as stated in (1) or (3) above; the unit aligned to the underground will receive normal power as stated in (2) above; the incoming ACB normally closed for each unit (i.e., ACB-5 or 6 for the overhead unit, ACB-7 or 8 for the underground unit) is referred to as the normal breaker, and the associated source is called the normal source; the other ACB and source for each unit is referred to as the alternate breaker and source. The licensee's application and supplement describe the sources of normal and alternate power sources and associated breaker arrangements to the load centers.

In its application, the licensee stated that the KHU aligned to the underground power path is required to have its auxiliaries aligned to receive power from Keowee transformer CX, and the KHU aligned to the overhead power path is required to have its auxiliaries aligned to receive power from its auxiliary transformer (i.e., Keowee transformers 1X and 2X for KHU-1 and KHU-2, respectively). This is to ensure independence of auxiliary power sources for the two KHUs to preclude the possibility of a single failure causing a loss or lockout of auxiliary power to both Keowee units. The licensee stated that each normal and alternate breaker has its own undervoltage relay and manual control switch. One auto-manual switch per load center is provided to allow changeover from "Auto" to "Man" control. With the selector switch in "Auto," the logic is designed such that if normal power is lost and alternate power is available, then the incoming breakers will transfer automatically to the alternate source.

The most limiting auxiliary load in terms of timing to restore auxiliary power is the governor oil system. In RAI-5, the staff requested the licensee to provide high-level system descriptions of the governor oil system, including the breaker alignment for normal and alternate power sources that feed the accumulators, and the normal and auxiliary power swaps to the load centers. In its supplement dated February 26, 2019, the licensee responded to the staff's request and stated:

> The governor oil system is required to be operable during all modes of unit operation. There are three governor oil pumps with the same capacity and only one is required for the governor to be operable. Governor oil volume is maintained in the governor oil pressure tank (GOPT). The oil in the GOPT is

blanketed with pressurized air. The governor oil pumps are needed to maintain a level in the GOPT such that proper oil pressure exists for unit operation.

Governor oil is depleted during unit operation and when in standby, resulting in a decrease in GOPT oil level and thus a lower oil pressure. Although there are several oil loads internal to the governor, the largest load during unit operation is the gate servomotor. This mechanism controls the KHU wicket gates. The depleted oil returns to the governor oil sump. Oil depletion is made-up by the governor oil pumps. One pump, the lead pump, maintains the normal operating pressures. The governor oil pumps are powered from three different breakers at the unit motor control centers. The breakers are listed below. The associated load centers have normal and alternate power supplies that feed their downstream loads, including the governor oil pumps.

Governor Oil Pump Power Sources:
1A - MCC 1XA, breaker 1XA1D fed from Load Center 1X, breaker 1X2C
1B - MCC 1XA, breaker 1XA2E fed from Load Center 1X, breaker 1X2C
1C - MCC 1XA, breaker 1XA4D fed from Load Center 1X, breaker 1X2C
2A - MCC 2XA, breaker 2XA1D fed from Load Center 2X, breaker 2X2B
2B - MCC 2XA, breaker 2XA2E fed from Load Center 2X, breaker 2X2B
2C - MCC 2XA, breaker 2XA4D fed from Load Center 2X, breaker 2X2B

In its application, the licensee states that circuitry already exists that would automatically realign the load center from its normal source to its alternate source. The circuitry is designed to realign power upon loss of power to load center 1X and/or 2X, well within the time limitations of the governor oil system capacity. While the circuitry is QA-1[1] and is periodically tested, the testing is not required by TS 3.8.1. The licensee stated that this is discussed in letters from the licensee to the NRC dated May 17, and December 6, 1993, and in a letter from NRC to the licensee dated September 4, 1998. During that time, the NRC questioned why an SR was not considered necessary for the auxiliary power automatic transfer logic at Keowee. The licensee's response at that time was that it credited manual operator action to realign auxiliary power for accident mitigation and that the automatic logic was defense in depth, was installed QA-1, would be maintained QA-1, and would be periodically tested.

2.2 Licensee's Proposed Changes

In its application, the licensee stated that it wished to credit the Keowee auxiliary power automatic transfer feature in place of the currently credited manual operator actions during a postulated electrical fault mitigated by the Zone Overlap Protection Circuitry when the underground assigned KHU is generating to the grid. The postulated fault would cause lockout of both the underground KHU and overhead power path, resulting in Keowee transformers 1X and 2X becoming de-energized. The only remaining source of AC auxiliary power for Keowee would then be transformer CX. While the Zone Overlap Protection Circuitry ensures the generator of the overhead KHU is realigned to the underground power path, the circuitry does not realign auxiliary power for the KHU to transformer CX. While a KHU can start and operate for some amount of time without AC power to auxiliary loads, this power must be recovered to

[1] As discussed in Section 3.1.1.1, "Oconee QA-1 Program," of the UFSAR, the licensee defined its QA-1 program to meet the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." The program is applied to the "essential systems and components" as discussed in the UFSAR.

ensure continued operability of the KHU. The licensee currently credits manual operator actions to realign auxiliary power for accident mitigation but has automatic circuitry to realign the load center from its normal auxiliary source to its alternate auxiliary source. The circuitry is QA-1, periodically tested, and designed to realign power within the time limitations of governor oil system capacity.

The licensee stated in its application that the most limiting auxiliary load in terms of timing to restore AC auxiliary power is the governor oil system. The licensee determined that for events where a KHU is initially in commercial generation mode, following an emergency start signal, the governor oil accumulators would be exhausted, and governor oil pumps would be required to start within a few minutes. More time is available if the KHU is initially in standby instead of commercial generation, as less wicket gate movement is required to bring a KHU to rated speed from standby compared with recovering from load rejection that occurs on receipt of an emergency start signal if operating for commercial generation.

The licensee determined that existing procedures and staffing requirements could challenge the ability to manually realign auxiliary power in the short timeframe necessary to support accident mitigation (i.e., within a few minutes of receipt of emergency start signal). Because TS 3.8.1 did not contain requirements to ensure the automatic auxiliary power transfer logic is operable to support Keowee operability, the licensee considered this a non-conservative Technical Specification and took immediate action to restrict the underground assigned KHU from commercial generation. To resolve the issue, the licensee proposed to revise TS 3.8.1 to require testing the automatic Keowee auxiliary power transfer logic.

The licensee proposed to revise Technical Specification 3.8.1 by adding the following new SR:

SR 3.8.1.18	Verify the ability of each KHU auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source.	In accordance with the Surveillance Frequency Control Program

In its application, the licensee stated that the initial frequency for the SR would be set at 18 months. The licensee provided marked up TS Bases and UFSAR pages for information only. The TS Bases markups state that this new SR verifies the ability of each KHU auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source. The surveillance frequency would be based on operating experience, equipment reliability, and plant risk and controlled under the Surveillance Frequency Control Program (SFCP). The TS Bases markups also state that the testing demonstrates the ability of each KHU 600-Volt Auxiliary Load Center 1X or 2X to close its alternate feeder breaker after a time delay from its normal feeder breaker opening either as the underground or overhead power path unit. The marked-up UFSAR pages discuss the auxiliary power line-up for the KHUs, KHU operating restrictions during commercial power generation, and Zone Overlap Protection Circuitry functions.

2.3 Regulatory Review

The staff considered the following regulatory requirements, licensing and design basis information, and guidance during its review of the proposed changes.

Regulatory Requirements

Section 50.36(b) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires that TSs be derived from the analyses and evaluation in the safety analysis report.

Section 50.36(c) of 10 CFR requires that the TSs include items in the following categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) SRs; (4) design features; and (5) administrative controls. Section 50.36(c)(2)(ii) states that a limiting condition for operation must be established for each item meeting one of four criteria of which subsection (C), Criterion 3, lists, "A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier." Section 50.36(c)(3), "Surveillance requirements," states that SRs are requirements related to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

Section 50.63, "Loss of all alternating current power," of 10 CFR requires that all nuclear power plants have the capability to withstand a loss of all AC power (i.e., a "station blackout") for a specified duration (based on factors identified in the regulation), and to recover therefrom. The licensee's compliance with 10 CFR 50.63 is described in UFSAR Section 8.3.2.2.4, "Station Blackout Analysis."

Licensing and Design Basis

TS 3.8.1, "AC Sources – Operating," establishes requirements for alternating current electrical power sources, including the KHUs, when the Oconee units are in MODES 1 through 4. The LCO requires, in part, that two offsite sources and two KHUs be operable and that the Zone Overlap Protection Circuitry be operable when the overhead electrical disconnects for the KHU associated with the underground power path are closed. TS 3.8.1 also contains SRs for the KHUs and for using the Zone Overlap Protection Circuitry.

By Amendment Nos. 372, 374, and 373 dated March 21, 2011 (ADAMS Accession No. ML110470446), the NRC approved the licensee to relocate specific TS surveillance frequencies to a licensee-controlled program (i.e., the Surveillance Frequency Control Program (SFCP)) and provided requirements for the new program in TS 5.5.21. These amendments approved the licensee's adoption of Technical Specification Task Force (TSTF) Traveler 425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk-Informed Technical Specification Task Force] Initiative 5b," dated March 18, 2009 (ADAMS Accession No. ML090850627). As discussed in TSTF-425, Revision 3 and in the NRC staff's safety evaluation for Amendment Nos. 372, 374, and 373, the following types of SR frequencies cannot be relocated to the SFCP: surveillance frequencies that reference other approved programs for the specific interval, are purely event-driven, are event-driven but have a time component for performing the surveillance on a one-time basis once the event occurs, or are related to specific conditions or conditions for the performance of an SR.

The Atomic Energy Commission (AEC) issued the construction permits for Oconee Units 1, 2 and 3 on November 6, 1967. The AEC issued the operating licenses for the three units on February 6, 1973, October 6, 1973, and July 19, 1974. The plants' general design criteria (GDC) are discussed in the UFSAR, Chapter 3.1, "Conformance with NRC General Design Criteria," and in the applicable UFSAR sections. The AEC published the final rule that

added Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," in the FR (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,[2] 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 Oconee are those in the UFSAR. As discussed in the UFSAR, the licensee made changes to the facilities and committed to some of the GDC from 10 CFR Part 50, Appendix A. Based on its review of UFSAR, Section 3.1 and the licensee's submittal, the staff identified the following GDC as being applicable to the proposed amendment.

- UFSAR, Chapter 3, Section 3.1.24, "Criterion 24 – Emergency Power for Protection Systems," which states that in the event of a loss of all offsite power, sufficient alternate sources of power shall be provided to permit the required functioning of the Protective Systems. The UFSAR states that in the event of loss of all offsite 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 onsite independent hydroelectric generators.

- UFSAR, Chapter 3, Section 3.1.39, "Criterion 39 – Emergency Power for Engineered Safety Features," which states that alternate power systems shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning required of the engineered safety features. The UFSAR states that as a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system.

UFSAR Section 6.3.3.3, "Loss of Normal Power Source," and Section 15.14.4.3.6, "ECCS [Emergency Core Cooling System] Performance and Single Failure Assumption," address the capability of the high pressure injection (HPI) and low pressure injection (LPI) systems' pumps and valves to actuate and attain the required flow within prescribed times during a loss-of-coolant accident.

Guidance

NUREG-1430, "Standard Technical Specifications [STSs] Babcock and Wilcox (B&W) Plants, Revision 4.0, Volume 1, "Specifications," (ADAMS Accession No. ML12100A177), contains the improved STS for B&W plants and was developed based on the criteria in the Final Commission Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132), which was subsequently codified by changes to 10 CFR 50.36 (dated July 19, 1995, 60 FR 36953). STS SR 3.8.1.8 states, "Verify [automatic [and] manual] transfer of AC power sources from the normal offsite circuit to each alternate [required] offsite circuit," at a frequency of [18] months or in accordance with the SFCP.

3.0 TECHNICAL EVALUATION

In determining whether an amendment to a license will be issued, the Commission is guided by the considerations that govern the issuance of initial licenses to the extent applicable and

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[2] U.S. Nuclear Regulatory Commission, SECY-92-223 – *Resolution of Deviations Identified During the Systematic Evaluation Program*, September 18, 1992, ADAMS Accession No. ML003763736.

appropriate. The staff evaluated the licensee's application to determine if the proposed changes are consistent with the regulations and licensing and design basis information discussed in Section 2 of this safety evaluation. The staff reviewed the acceptability of the proposed changes for conformance to the design bases described in the UFSAR and compliance with 10 CFR 50.36. To determine whether the new SR complies with 10 CFR 50.36, the staff reviewed the design and operation of the KHU auxiliary systems and automatic transfer capability that the SR would be testing, to determine whether the automatic transfer function ensures that the auxiliary loads, including the governor oil system, can operate to support accident mitigation, and whether the proposed initial frequency of the new SR is adequate. The staff considered how the licensee's proposed SR was related to test, calibration, or inspection and how it assured that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that LCO 3.8.1 will be met.

3.1 Design and Operation of KHU Automatic Transfer Capability

The licensee proposed a new TS SR that would require the licensee to verify the ability of each KHU auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source so that the licensee can credit the automatic transfer function in its design basis. To determine if the new TS SR would be derived from the analyses and evaluation included in the UFSAR, the staff reviewed the design and operation of the automatic transfer of auxiliary power during various operating states of the KHUs to support KHU operability and capability to mitigate design basis events and accidents. The staff focused its review on the most limiting auxiliary load (i.e., the governor oil system, including the currently credited manual operator actions) from a timing perspective.

Timing of Automatic Power Transfer Capability

The staff reviewed how long a KHU can operate without auxiliary power. Based on References 3 and 4 of the licensee's application, the time within which power needs to be restored to the auxiliaries has evolved since 1993 from a maximum of one hour to the current time provided in the application of "a few minutes." The staff requested the licensee via RAI-1 to clarify how the current time was determined because it was concerned that the available time of "a few minutes" for restoration of auxiliary power may not have reasonable margin with respect to the automatic power transfer. In its supplement dated February 26, 2019, the licensee responded to RAI-1 and stated, in part:

> The apparent "evolution" of the time needed for the restoration of auxiliary power is attributed to the extent of Keowee operating experience and analysis at the time of the referenced statements. The 1993 statements cited in the RAI regarding "a maximum of 1 hour" and "greater than 30 minutes" appear to have been based on Keowee battery capacity and operating experience.
>
> During the recent development of actions needed in support of the Keowee stator replacement outages, it was recognized that, under the most limiting scenario, the time available to manually re-align power to the Keowee auxiliaries would be less than the "approximately 1 hour" and the "greater than 30 minutes" stated in the noted correspondence. The limiting scenario assumed worst-case conditions and did not credit the automatic transfer of auxiliary power because there is no current technical specification surveillance requirement to validate that design feature. The analysis was performed to determine the time available for manual operator actions to restore power to the AC hydraulic oil pumps.

> Governor oil usage was conservatively analyzed to ensure adequate oil is available to meet the design basis conditions of a LOCA/LOOP [loss-of-coolant accident/loss of offsite power] and associated load rejection of a commercially generating Keowee unit. During a design basis event, auxiliary power is automatically restored to a Keowee unit once the required Keowee generator achieves proper frequency and voltage and required breakers close. During preparation of the license amendment request (LAR), limiting time for operator manual response was based on the minimum expected initial oil level and the amount of time that oil volume would allow for unit operation without the AC oil pumps operating. This analysis provided only "a few minutes" for manual operator actions as noted in the LAR. Since the LAR was submitted, procedure changes have been implemented that place tighter controls on oil pressure/level acceptance criteria that result in more margin and thus provide more time for operator action. The new calculated time for operator action is ~ [approximately] 13 minutes.

In its supplement dated February 26, 2019, the licensee responded to RAI-3.a.ii and provided the following additional pertinent information:

> Manual Action to re-establish auxiliary power was credited in the design of the emergency power system as discussed in Section 2.3 of the LAR and the correspondence referenced therein. Manual restoration of auxiliary power was step-timed by Keowee Operations and is documented to have taken just over 27 minutes.
>
> The auto transfer logic will re-establish auxiliary power within 36 seconds. This auto transfer logic is already installed and is tested on an 18-month frequency. The normal position for the auto/manual switch for power transfer is "auto" allowing this transfer to occur in the event of an auxiliary power loss.

The staff determined that the licensee's response addressed the staff's concern because the margin between the approximately 13 minutes needed to restore power to the auxiliaries and the 36 seconds that the auto transfer logic takes to re-establish auxiliary power is reasonable and acceptable.

UFSAR Sections 6.3.3.3 and 15.14.4.3.6 address the capability of the HPI and LPI systems' pumps and valves to actuate and attain the required flow during a loss-of-coolant accident. The staff requested the licensee via RAI-2 to confirm whether it considered the potential loss of power to the KHU auxiliaries and the subsequent restoration of power, either by manual switchover or the automatic switchover, in the plant accident analysis and in UFSAR Sections 6.3.3.3 and 15.14.4.3.6. In its supplement dated February 26, 2019, the licensee responded to RAI-2 and stated:

> No changes are being proposed to the accident analyses detailed in UFSAR Sections 6.3.3.3 and 15.14.4.3.6. The Keowee units are capable of starting, accelerating and powering required loads without AC power to either of its unit's auxiliaries. The ability to restore auxiliary power to a Keowee unit is only required for single failure scenarios involving commercial generation of the Keowee unit aligned to the underground power path. In this case, the ability to automatically transfer power is required.

The licensee's response to RAI-2 is augmented by its response to RAI-3.a.ii, in which the NRC staff requested the licensee to confirm whether the commercial generation and the standby modes were analyzed for design basis event (DBE) mitigation, how long it takes to manually align the KHU auxiliary power sources to mitigate a DBE, and how long it takes for auxiliary power alignment using the automatic transfer logic to mitigate a DBE. In its response to RAI-3.a.ii, the licensee stated the following:

> Both the commercial generation mode and standby mode have been analyzed for design basis event (DBE) mitigation. For DBE mitigation a Keowee unit must be running and have adequate voltage and frequency in 23 seconds or less.
>
> Auxiliary (AC) power to a Keowee unit is not required for initial DBE mitigation. The Keowee units are capable of a "black start" (no AC power available) and will provide their own auxiliary AC power through either (1) the Overhead Unit through ACB-1 or ACB-2 to transformer 1X or 2X, or (2) the Underground Unit though 1TC switchgear (once re-powered) to transformer CX. For most emergency power system single failure scenarios, the loss of auxiliary power to a Keowee unit is bounded by the loss of that Keowee unit (for any reason) and is mitigated by the availability of the other Keowee unit, with no transfer of auxiliary power required. For single failure scenarios involving a Keowee unit aligned to the underground power path and initially commercially generating, the ability to automatically transfer auxiliary power is required to maintain one operable and available Keowee unit and power path. Because the automatic transfer feature is not currently included in station technical specifications, no credit can be taken for its operation. This is the reason for the current Keowee operating restriction and for the license amendment request.
>
> Manual Action to re-establish auxiliary power was credited in the design of the emergency power system as discussed in Section 2.3 of the LAR and the correspondence referenced therein. Manual restoration of auxiliary power was step-timed by Keowee Operations and is documented to have taken just over 27 minutes.
>
> The auto transfer logic will re-establish auxiliary power within 36 seconds. This auto transfer logic is already installed and is tested on an 18-month frequency. The normal position for the auto/manual switch for power transfer is "auto" allowing this transfer to occur in the event of an auxiliary power loss."

To confirm the reliability of the Zone Overlap Protection Circuitry, the staff requested the licensee via RAI-4 to identify any breakers involved in the auto transfer logic and confirm whether they are covered by QA-1 maintenance procedures, and to describe any operating experience regarding automatic transfer logic failures caused by a circuitry malfunction. In its supplement dated February 26, 2019, the licensee responded and stated maintenance on these breakers is performed under QA-1 maintenance procedures and that it has performed the surveillance procedure 17 times since 1995, the most recent being January 9, 2019. The licensee stated that the Zone Overlap Protection Circuitry worked as designed during each of these surveillances.

The staff notes that the automatic transfer logic is already installed, is maintained QA-1, and has been periodically tested prior to the requested change. Also, there are no physical changes to

the plant resulting from the proposed change. Based on its review of the timing requirements in licensee's application and RAI responses, the fact that no physical modifications are being made, and operating experience with testing the automatic transfer logic, the staff concludes that the accident analyses in the UFSAR would not be impacted after implementation of the NRC-approved SR 3.8.1.18, with no restrictions on either KHU for commercial generation.

Electrical Design of the Automatic Transfer Circuitry

The staff reviewed the licensee's logic and electrical diagrams provided in its response to RAI-5 to understand the breaker alignment for normal and alternate auxiliary power sources, including associated breakers and buses fed from these auxiliary power sources. The staff also reviewed the automatic transfer logic. The staff reviewed the licensee's comparison of these diagrams to Figure 1 in the application dated May 17, 2018, with respect to the Zone Overlap Protection Circuitry, as discussed in the licensee's response to RAI-5. The staff then reviewed the design against UFSAR Figures 8.1, 8.3, and 8.4 of the plant electrical distribution system.

To confirm the initial operating states of the KHUs and how this affects the transfer logic, in RAI-3.a.i, the staff requested the licensee to describe if or when both KHUs can be in commercial generation mode and under what conditions one KHU can be in standby while the other is in commercial generation mode. In RAI-3.a.iv, the staff requested the licensee to confirm whether the licensing basis allows both KHUs to be operated in commercial generation mode. In its supplement dated February 26, 2019, the licensee responded and stated that both KHUs are capable of being in commercial generation mode under normal conditions but that administrative restrictions were in place that prevented the aligned underground KHU from commercial generation because of not having the automatic auxiliary power transfer logic in TS 3.8.1 to support Keowee operability. The licensee stated that because of this line-up, the aligned overhead KHU can be in commercial generation mode at any time, and the aligned Underground KHU will be shut down in standby and ready to start if emergency power is required. The licensee also stated that the licensing basis allows both KHUs (individually or simultaneously) to be operated in commercial generation mode. UFSAR Section 8.3.1.1.1 describes the KHUs' response to a demand for emergency power and states, "If the units are already operating...they are separated from the network...," and the "Applicability" statement for Selected Licensee Commitment 16.8.4, "Keowee Operational Restrictions," includes, "during periods of commercial generation by one or both Keowee Hydro Units."

In RAI-3.a.ii, the staff requested the licensee to also confirm whether these modes have been analyzed for DBE mitigation, how long it takes to manually align the KHU auxiliary power sources to mitigate a DBE, and how long it takes for auxiliary power alignment using the automatic transfer logic to mitigate a DBE. The licensee's response, which this safety evaluation previously quotes, stated that a KHU must be running and have adequate voltage and frequency in 23 seconds or less, as described in UFSAR Section 8.3.1.1.1 and verified via TS SR 3.8.1.9, but the auxiliary AC power to the KHU is not required for initial DBE mitigation. The licensee stated that for certain single failure scenarios involving a KHU aligned to the underground power path and initially commercial generating, the auxiliary power transfer is required to maintain one operable and available KHU and power path. The automatic transfer logic can accomplish this within 36 seconds, which is within the licensee's calculated needed time of approximately 13 minutes.

The capability of the automatic transfer of auxiliary power is required to maintain one operable and available KHU and power path. The staff determined that the automatic feature enables the licensee to meet its calculated design basis timing required of approximately 13 minutes by

enabling the restoration of auxiliary power in 36 seconds. The normal position for the auto/manual switch for the power transfer is in "auto," which the staff notes allows this transfer to occur in the event of an auxiliary power loss. The automatic transfer logic is already installed and is tested on an 18-month frequency.

To confirm the reliability of the Zone Overlap Protection Circuitry, the staff requested the licensee via RAI-4 to identify any breakers involved in the auto transfer logic and confirm whether they are covered by QA-1 maintenance procedures, and to describe any operating experience regarding automatic transfer logic failures caused by a circuitry malfunction. In its supplement dated February 26, 2019, the licensee responded and stated that the breakers involved in the Keowee auxiliary power automatic transfer logic are the 600-volt breakers ACB-5, 6, 7, and 8, which are fed from the secondary side of transformers 1X, 2X, or CX and are in the 1X or 2X 600-volt load centers. The licensee stated that maintenance on these breakers is performed under QA-1 maintenance procedures and that it has performed the surveillance procedure 17 times since 1995, the most recent being January 9, 2019. The licensee stated that the circuitry worked as designed during each of these surveillances.

Based on its review of the diagrams and the comparison, the staff determined that the breaker alignment for the normal and alternate auxiliary power sources would support the transfer of power function and, therefore, the KHU function would continue to conform with UFSAR Chapter 8 and Chapter 3, Design Criteria 24 and 39. The staff also noted that the auto transfer of auxiliary power meets the intent of Design Criterion 24 of UFSAR, Chapter 3, Section 3.1.24. The UFSAR states that in the event of loss of all offsite 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 onsite independent hydroelectric generators.

3.2 Initial Frequency of the Proposed SR

The licensee proposed to verify the ability of each KHU auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source at a frequency that is "[i]n accordance with the [SFCP]." In its application, the licensee stated that the initial frequency for the SR would be set at 18 months and based on operating experience, equipment reliability, and plant risk and be controlled under the SFCP. By Amendment Nos. 372, 374, and 373 dated March 21, 2011, the NRC approved the licensee's request to relocate specific TS surveillance frequencies to the SFCP, which is subject to the requirements in TS 5.5.21.

As discussed in TSTF-425, Revision 3 and in the NRC staff's safety evaluation for Amendment Nos. 372, 374, and 373, the following types of SR frequencies cannot be relocated to the SFCP: surveillance frequencies that reference other approved programs for the specific interval, are purely event-driven, are event-driven but have a time component for performing the surveillance on a one-time basis once the event occurs, or are related to specific conditions or conditions for the performance of an SR. The staff determined that the proposed frequency for the new SR (i.e., an initial frequency of 18 months) does not reference other approved programs for the specific interval, is not event-driven, and is not related to specific conditions or other conditions for the performance of an SR. Therefore, the staff determined that it is acceptable for the licensee to control the frequency in accordance with the SFCP.

In its supplement dated February 26, 2019, the licensee responded to RAI-4 and stated that it performs maintenance on the breakers involved in the Keowee auxiliary power auto transfer logic under QA-1 maintenance procedures and that it has performed the surveillance procedure

17 times since 1995 with the most recent performance in January 2019. The licensee stated that the circuitry worked as designed during each of these surveillances. In its application dated May 17, 2018, the licensee stated that it is currently testing the circuitry every 18 months. In its application dated May 2018, the licensee stated that this testing was initially performed on a 12-month frequency but later changed it to 18 months based on operating experience and reliability verified during testing. The licensee stated that its review of completed tests performed since installation of the logic circuitry confirmed that the logic on both KHUs passed test acceptance criteria. The staff determined that this performance history demonstrates reasonable operating experience and equipment reliability to establish the initial frequency for the SR at 18 months in the SFCP. The staff also notes that this frequency matches that of STS SR 3.8.1.8, which is the verification of automatic and manual transfers of AC power sources from the normal offsite circuit to each alternate required offsite circuit. The staff also finds that the new SR provides reasonable assurance that the automatic auxiliary power transfer logic can perform its intended design function and that maintenance and testing activities will be controlled in accordance with the operability requirements for the affected equipment contained within the TSs.

Because the staff determined that it is acceptable for the licensee to control the frequency in accordance with the SFCP and that the initial frequency of the SR is reasonable, the staff finds the proposed frequency for the new SR 3.8.1.18 is acceptable.

3.3 10 CFR 50.36 Evaluation

The NRC staff reviewed the licensee's proposed changes to TS 3.8.1. The automatic transfer function is tested periodically and maintained QA-1. Based on the operating experience and reliability of the automatic transfer logic and associated breakers, the staff concludes that the proposed SR assures that facility operation will be within safety limits, and that LCO 3.8.1 will be met. The automatic transfer of auxiliary power and testing of the automatic transfer logic also conforms with the UFSAR, Chapter 3, Design Criteria 24 and 39. The KHUs are the licensee's primary standby source of power and must function to meet 50.36(c)(ii)(C) Criterion 3 as discussed in LCO 3.8.1. Because the KHUs have auxiliary systems that need an AC power source restored to the governor oil system, which is the most limiting auxiliary load, within a shorter time than that which may currently be afforded it using current manual restoration methods, an automatic restoration method must be used. Although automatic circuitry exists to restore power within the required time and it is tested, testing was not required within the TSs as needed for a system that would support accident mitigation to meet 10 CFR 50.36(c)(2)(ii)(C). Therefore, the SR must be added to test the automatic restoration of auxiliary power to the KHUs to support LCO 3.8.1 meeting 50.36(c)(3).

The staff reviewed the acceptability of the proposed changes for conformance to the design bases described in the UFSAR and compliance with 10 CFR 50.36(c). The staff concludes that the inclusion of a TS SR for the auto transfer logic under the purview of TS 3.8.1 will comply with the requirements of 10 CFR 50.36(c)(3) and allows the licensee to take credit for the auto transfer logic to ensure power to at least one KHU during a postulated electrical fault mitigated by the Zone Overlap Protection Circuitry when the underground assigned KHU is generating to the grid. Based on the above review, the staff has concluded that the licensee's proposal to revise TS 3.8.1 by adding a new SR to verify the ability of each KHU auxiliary power system to automatically transfer from its normal auxiliary power source to its alternate auxiliary power source, is acceptable and complies with the 10 CFR 50.36(c)(3) requirements related to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for

operation will be met. Based on its evaluation as documented in Sections 3.1 and 3.2 of this safety evaluation, the staff concludes that new SR 3.8.1.18 meets the requirements of 10 CFR 50.36(c)(3) and is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the staff notified the State of South Carolina official by telephone and email on May 14, 2020 (ADAMS Accession No. ML19135A259), 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 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, which was published in the *Federal Register* on August 28, 2018 (83 FR 43904). 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: June 14, 2019

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 – ISSUANCE OF AMENDMENT NOS. 411, 413 AND 412 REGARDING THE TECHNICAL SPECIFICATIONS FOR ELECTRICAL POWER SYSTEMS (EPID NO. L 2018-LLA-0149) DATED JUNE 14, 2019

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ADAMS Accession No.: ML19140A026 ***by email **by memorandum**

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