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

January 15, 2013

Mr. Preston Gillespie
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, DENIAL OF AMENDMENT REQUEST REGARDING EXTENSION OF LICENSE CONDITION FOR NFPA 805 TRANSITION (TAC NOS. ME9184, ME9185, AND ME9186)

Dear Mr. Gillespie:

By letter dated July 31, 2012, as supplemented on September 5, 2012, you submitted Amendment Request No. 2012-09 to extend due dates in the license conditions for the Oconee Nuclear Station, Units 1, 2, and 3, for completing certain modifications for the transition to a revised fire protection program using the National Fire Protection Association (NFPA) 805 Standard. After careful review, the U.S. Nuclear Regulatory Commission staff has concluded that your request cannot be approved. The basis for this finding is documented in the enclosed Safety Evaluation.

A copy of the Notice of Denial of Amendment will be forwarded by separate letter and will also be forwarded to the Office of the Federal Register for publication.

Sincerely,

Michele G. Evans

Michele G. Evans, Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosure:
Safety Evaluation

cc w/encls: Distribution via Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-38

RENEWED FACILITY OPERATING LICENSE NO. DPR-47

AND

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 July 31, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12262A372), as supplemented by letter dated September 5, 2012 (ADAMS Accession No. ML12251A010), Duke Energy Carolinas, LLC (Duke or the licensee), submitted a license amendment request (July 2012 application) which requested changes to the license conditions for the Oconee Nuclear Station, Units 1, 2, and 3 (Oconee 1, 2, and 3), for completing transition to a revised fire protection program using the National Fire Protection Association (NFPA) Standard 805.

The proposed changes requested to extend the due dates for certain plant modifications required by a previous license amendment which approved the transition to NFPA 805 for Oconee 1, 2, and 3. As described below, the increase in core damage frequency (CDF) resulting from the change requested in the July 2012 application is about four times the greatest acceptable increase in CDF for a facility with a very low total risk, and 40 times the greatest acceptable CDF increase for a high total risk plant. This significant increase in CDF warrants denial of the application based on the guidance of RG 1.174.

1.1 Background

1.1.1 Transition to NFPA 805

On June 16, 2004, the U.S. Nuclear Regulatory Commission (NRC or the Commission) revised its regulation in Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.48 to include paragraph 50.48(c) which incorporated by reference the NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants 2001 Edition,"

hereafter referred to as NFPA 805. This change to the NRC's fire protection regulations provides licensees with the opportunity to adopt a performance-based fire protection program as an alternative to the existing, deterministic fire protection regulations. Specifically, NFPA 805 allows the use of performance-based methods, such as fire modeling, and risk-informed methods, such as fire probabilistic risk assessment (PRA), to demonstrate compliance with the nuclear safety performance criteria. However, in accordance with 10 CFR 50.48(c)(3), a licensee who seeks authorization to use NFPA 805 to satisfy NRC fire protection requirements must do so by requesting a license amendment. As described in more detail below, Duke submitted an application for such a license amendment in May 2008, and the NRC issued a license amendment approving the transition to the NFPA 805 standard in December 2010. When this safety evaluation refers to a fire protection program element as being in compliance with NFPA 805 or meeting the requirements of NFPA 805, the NRC staff intends this to indicate that the element is in compliance with 10 CFR 50.48(c) as well as the applicable portions of NFPA 805 incorporated into § 50.48.

1.1.2 Oconee Transition to NFPA 805 (2005 to 2010)

In February 2005, Duke informed the NRC staff by letter (ADAMS Accession No. ML050670305) that Duke intended to transition to a fire protection program based on NFPA 805 at all of its nuclear power plants that it owned at the time. The Duke letter included an assessment of the feasibility and practicality of such a transition, beginning with Oconee 1, 2, and 3. Duke also requested that the NRC staff treat Oconee as a "pilot" plant, which would afford the NRC the opportunity to observe the transition to NFPA 805 at Oconee and develop related guidance, among other benefits. In return, treatment of Oconee as a pilot would afford Duke benefits such as the waiver of fees for a license amendment requesting transition to NFPA 805. In the February 2005 letter, Duke stated that it expected to begin this process at Oconee in the second quarter of 2005.

In a letter dated June 8, 2005 (ADAMS Accession No. ML051080005), the NRC staff acknowledged Duke's proposed schedule, and granted two years of enforcement discretion for newly found and existing 10 CFR 50.48 non-compliances for the transition period. In 2005 and 2006, most licensees were requesting three years to transition to the NFPA 805 fire protection regime. Since the extension of enforcement discretion from two to three years would facilitate a regulatory approach that encourages licensees to find and resolve their own issues in ways consistent with Enforcement Policy goals, the Commission amended the NRC Enforcement Policy to allow up to three years of enforcement discretion to allow for such a three-year transition period (ADAMS Accession No. ML060940348.) In 2007, Duke requested and the staff granted an additional year of enforcement discretion to complete the development of the Oconee transition to NFPA 805 (ADAMS Accession No. ML071280287). In May 2008, Duke submitted an application requesting an amendment to transition the Oconee fire protection program to a performance-based program in accordance with NFPA 805 (ADAMS Accession Nos. ML081650475 and ML082041014) (2008 application). The Duke application stated that the application would be submitted in two parts.

Since Oconee was a pilot plant, the staff conditionally accepted the 2008 application, even though the first Duke submission was not a complete application (ADAMS Accession No. ML090330496), and Duke continued to receive enforcement discretion regarding its fire protection program while the staff conducted its review. Duke submitted the second part of its application in October 2008. After numerous supplements and submission of a totally revised application in April 2010

(ADAMS Accession No. ML101121042), the staff approved the requested license amendment regarding transition to NFPA 805 on December 29, 2010 (ADAMS Accession No. ML102640043). The amendment included a two year deadline for implementation of the NFPA 805 standard, and a license condition to govern risk-informed fire protection program-related plant changes.

1.1.3 NFPA 805 Transition License Condition Period (2011 to 2012)

After the NRC approved the 2008 amendment request, the Oconee fire protection program was considered an NFPA 805 fire protection program (i.e., a risk-informed, performance-based fire protection program), even though Duke had not fully implemented NFPA 805 at Oconee. The NRC Enforcement Policy no longer provided for enforcement discretion in regard to the Oconee fire protection program under these circumstances. However, each Oconee unit's fire protection program was covered by a transition license condition, which was issued in the December 2010 transition license amendments. This license condition specified that most of the plant modifications associated with the transition to NFPA 805 at Oconee (and for which an extension is now requested) were required to be completed by January 1, 2013. To maintain safety during this period, the transition license condition requires that appropriate compensatory measures remain in place. Because Duke chose to credit a significant risk reduction modification (i.e., a new Protected Service Water system) at Oconee, with a relatively long installation schedule, Duke was granted 18 months to complete installation of the Protected Service Water system and another 6 additional months to complete implementation, including procedures for the use of that system. At the end of this transition period, Duke should have fully implemented its NFPA 805 fire protection program at Oconee, and the long standing compensatory measures would no longer be needed.

1.1.4 History of the Protected Service Water System

The Protected Service Water (PSW) system modification is designed to allow the operators to maintain all three reactors in a safe shutdown condition following the loss of all electrical buses in the turbine building (which includes the 4kv safety buses) due to a turbine building fire or a turbine building high-energy line break (HELB), using equipment diverse from the Standby Shutdown Facility and without relying on any power from the Standby Shutdown Facility diesel generator. The PSW system is also credited for maintaining safe shutdown in the event of internal flooding that may be the consequence of an HELB in the turbine building. One way this can occur is if a ruptured pipe impacts the circulating water system, resulting in a large leak rate.

The PSW building is being constructed as seismically qualified (seismic category 1). Most PSW components are designed as Quality Assurance Condition1 (QA-1, safety-related) in accordance with the Duke quality assurance program, although components that receive backup power from the PSW system or systems that connect to the PSW system retain their existing seismic and quality classifications.

The licensee previously described their plans to install the new PSW system by letter dated April 12, 2006 (ADAMS Accession No. ML061240445), as part of their tornado mitigation strategy. They also described the PSW system in a letter dated April 28, 2006 (ADAMS Accession No. ML061380552), as part of their HELB mitigation strategy. In a letter dated November 30, 2006 (ADAMS Accession No. ML070290328), Duke initially committed to have the PSW system installed by the end of 2010. When Duke submitted the second part of the LAR for transition to

NFPA 805 in October 2008, they took credit for the proposed PSW system in order to offset variances from the deterministic requirements of NFPA 805.

1.2 Requested Licensing Action

The purpose of the licensee's July 2012 application is to extend the due dates required by the Oconee licenses for certain plant modifications to be installed and functional.

1.2.1 Delayed PSW Installation Schedule

The licensee's July 2012 application requested extension of the due date for full implementation of the PSW system to December 31, 2014. The licensee stated in the July 2012 application that the first risk benefit from the PSW system would be gained by December 31, 2012, when the PSW switchgear would be capable of providing alternate power to the Standby Shutdown Facility, which could compensate for a failure of the Standby Shutdown Facility diesel. However, during a clarification call on November 27, 2012 (ADAMS Accession No. ML13010A439), between the NRC staff and Duke, Duke noted that they had encountered further delays in the schedule and would supplement the Oconee July 2012 application to further extend the completion date for installing the PSW system. This would revise the schedule such that alternate power from PSW to the Standby Shutdown Facility would not be available until December 31, 2013 (the first risk benefit from PSW), and full PSW system implementation would be delayed until December 31, 2015.

2.0 REGULATORY EVALUATION

2.1 Applicable Regulations

The following are the applicable regulatory criteria:

1. 10 CFR 50.48(a) requires that each operating nuclear power plant have a fire protection plan that meets the requirements of General Design Criterion (GDC) 3, which is in 10 CFR Part 50, Appendix A.
2. 10 CFR 50.48(c) incorporates NFPA 805 (2001 Edition) by reference, with certain exceptions, modifications, and supplementation, and is an alternative to the deterministic requirements of § 50.48.
3. 10 CFR Part 50, Appendix A, GDC 3, "Fire protection," establishes the general criteria for fire and explosion protection of systems, structures, and components (SSCs) important to safety. It is a requirement for Oconee Units 1, 2, and 3 as stated in 10 CFR 50.48.

2.2 Applicable Guidance

1. Regulatory Guide (RG) 1.205, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants," Revision 1, issued December 2009 (ADAMS Accession No. ML092730314), which provides guidance to licensees for implementing a risk-informed, performance-based fire protection program in compliance with 10 CFR 50.48(c).

2. RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Revision 1, issued November 2002 (ADAMS Accession No. ML023240437), which provides guidance to licensees on the acceptability of risk-informed changes to the licensing basis.

3. RG 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Revision 2, issued March 2009 (ADAMS Accession No. ML090410014), which provides guidance to licensees on methods for determining the technical adequacy of PRA results when used for risk-informed changes to the licensing basis.

4. NUREG-0800, Section 19.2, "Review of Risk Information Used to Support Permanent[1] Plant-Specific Changes to the Licensing Basis: General Guidance," June 2007.

2.3 Regulatory Criteria Summary

Section 50.48, "Fire protection," of 10 CFR provides the NRC requirements for nuclear power plant fire protection. Paragraph 50.48(c) outlines the NRC requirements applicable to licensees that choose to adopt a risk-informed, performance-based fire protection program as an alternative to meeting the requirements of 10 CFR 50.48(b) for plants licensed to operate before January 1, 1979, or the approved fire protection license conditions for plants licensed to operate after January 1, 1979. Oconee Units 1, 2, and 3 received operating licenses prior to January 1, 1979.

The NRC regulations include specific procedural requirements for implementing a risk-informed, performance-based fire protection program based on NFPA 805. The license conditions issued to Oconee in connection with the NRC approval of the application to adopt NFPA 805 superseded the conditions governing fire protection previously included in the Oconee operating licenses. The new conditions allowed implementation of a fire protection program in accordance with NFPA 805. In addition, 10 CFR 50.48(c)(3)(ii) states that "the licensee shall complete its implementation of the methodology in Chapter 2 of NFPA 805 (including all required evaluations and analyses) and, upon completion, modify the fire protection plan required by paragraph (a) of this section to reflect the licensee's decision to comply with NFPA 805, before changing its fire protection program or nuclear power plant as permitted by NFPA 805."

The underlying purpose of this paragraph is given in the statements of consideration for the final rule, which was published in the *Federal Register* on June 16, 2004 (69 FR 33536). The statements of consideration states:

> This paragraph requires licensees to complete all of the Chapter 2 methodology (including evaluations and analyses) and to modify their fire protection plan before making changes to the fire

[1] The change requested by Duke would be in place for more than 90 days at power and would be considered a "permanent" change for the purpose of NRC inspections (NRC Inspection Manual, Part 9900: 10 CFR 50.59 Guidance). The risk acceptance guidelines in RG 1.174 are based on average annual frequency and may be adjusted for changes lasting less than one year. The change requested by Duke would be in place for more than one year at power and so the acceptance guidelines in RG 1.174 can be applied without modification.

> protection program or to the plant configuration. This process ensures that the transition to an NFPA 805 configuration is conducted in a complete, controlled, integrated, and organized manner. This requirement also precludes licensees from implementing NFPA 805 on a partial or selective basis (e.g., in some fire areas and not others, or truncating the methodology within a given fire area). (69 FR at 33548)

In the July 2012 application, the licensee provided a description of a revised fire protection program transition license condition and is requesting NRC approval to extend the original implementation schedule. This safety evaluation documents the NRC staff's evaluation of the July 2012 application and, as set forth below, concludes that the licensee was provided an appropriate period of time to implement the plant changes they were required to complete, and the licensee has failed to complete those plant changes. The NRC staff had approved the Duke 2008 application to adopt NFPA 805 and permitted the licensee to continue to operate in a higher risk environment for a significant period of time, based, in large part, on the license condition that required that the lower risk environment would be achieved through installation and implementation of the PSW system by the end of 2012. Therefore, the request to extend the schedule would extend the duration for which Duke would operate Oconee in a higher risk environment, which is a request to change the existing licensing basis. Also, the risk increase associated with this request is far greater than that specified as acceptable in the guidance on risk-informed changes to the licensing basis. Accordingly, the NRC has concluded that the July 2012 application for an extension of time cannot be granted.

3.0 TECHNICAL EVALUATION

3.1 Denial Based on Risk Assessment

The July 2012 application was not submitted as a risk-informed application. However, the July 2012 application substantively changes the risk profile of the as-operated configuration of the Oconee units by postponing the installation of the PSW system. The PSW system is the central risk-reduction feature upon which the NRC's December 29, 2010, approval of Duke's 2008 risk-informed application to adopt NFPA 805 rests. The information received and reviewed as part of the Duke 2008 application documents the substantial risk impact associated with the installation of the PSW system.

Therefore, consistent with NUREG-0800, Chapter 19.2, the staff has reviewed the July 2012 application as a risk-informed application, using the guidance of RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The proposed change requested by Duke would be in place for more than one year at power. Therefore, the risk increase from postponing the installation is correctly expressed as an average annual increase and can be compared to the acceptance guidelines in RG 1.174.

Principle 4 in RG 1.174 summarizes its risk acceptance guidelines as follows: "[w]hen proposed changes result in an increase in CDF or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement." The acceptance values depend on both the total risk from all hazards at the facility, and the change in risk associated with a proposed change. The greater the total risk, the smaller the acceptable risk increase. RG 1.174

defines a high total risk plant as one that has a Core Damage Frequency (CDF) or Large Early Release Frequency (LERF) greater than 1.0E-4/year and 1.0E-5/year, respectively. In the 2008 Application, Duke reported a decrease in risk after credit for PSW installation, and therefore did not need to report the total risk. Nonetheless, the total risk from internal events and fire hazards is reported as 8E-5/year and 4E-6/year for CDF and LERF respectively (ADAMS Accession No. ML102640043). Seismic, tornado, and external flood hazards would be expected to represent a possibly small but non-negligible increase in this total.

As described below, the increase in CDF associated with the change requested in the July 2012 application is about four times the greatest acceptable CDF increase for a facility with a very low total risk, and 40 times the greatest acceptable CDF increase for a high total risk plant. This significant increase in CDF warrants denial of the application based on the guidance of RG 1.174.

3.2 PSW Installation Evaluation

The PSW modification provides substantial risk benefit to the operation of the three Oconee units. The turbine building at Oconee is a large building that contains all three of the Oconee turbine-generators, which are not safety-related equipment, along with numerous pieces of safety-related equipment. There are numerous fire hazards in the turbine building. The 4 kV safety buses for Oconee Units 1, 2, and 3 are located in the turbine building, and are susceptible to damage from a large fire. The PSW system is being designed to provide the capability to maintain all three reactors in a safe shutdown condition in the event of a fire in the turbine building (for example, see the Duke letter dated May 31, 2009, ADAMS Accession No. ML091590045).

3.3 Fire Risk Assessment

Section 50.48(c) provides a risk-informed, performance-based alternative to the deterministic elements specifying an acceptable fire protection program (i.e., the pre-transition fire protection program). A licensee may request to implement the alternative allowed by the rule and thereby transition from a fire protection program based on 10 CFR 50.48(b) to one based on 10 CFR 50.48(c) and NFPA 805. The NFPA 805 alternative allowed by § 50.48(c) affords significant flexibility to a licensee that is not available under § 50.48(b). The risk-informed alternative specifies that a plant change evaluation shall be performed to ensure that the changes to previously approved fire protection program elements are acceptable. During the transition from 10 CFR 50.48(b) to 10 CFR 50.48(c) and NFPA 805, all changes to the fire protection program elements together with other changes the licensee proposes are combined into a single change evaluation. The PRA approach, methods, and data, and the change in public health risk from any plant change must be acceptable to the NRC.

Duke identified more than 200 instances at the Oconee units where the fire protection program elements were not in compliance with the pre-transition fire protection program required by 10 CFR 50.48. Duke chose not to bring most of these elements into compliance. Rather, the NRC approved the Duke request to utilize the flexibility in 10 CFR 50.48(c) based on Duke's proposal to add major risk-reducing equipment (the PSW system) to the facility. Only in view of the reduction in risk from the installation of the PSW system could Duke demonstrate that there was an acceptable change in risk even though the non-compliant elements of its current fire protection program were not brought into compliance. As described in the NRC staff's December 29, 2010, safety evaluation, the staff concluded that Duke satisfied the NRC's risk acceptance guidelines specified in 10 CFR 50.48(c) with respect to the Oconee units, with conditions and

limitations, because the addition of the PSW system would result in a major risk reduction, and other proposed changes would provide a minor risk reduction. The principal conditions and limitations were included in the license conditions and described in tables of implementation items in the December 2010 license amendment.

In the July 2012 application, Duke requests changes to the Oconee license conditions and implementation items. However, as explained in the December 2010 license amendment, the implementation of the PSW system provided a large decrease in plant risk. Moreover, the Oconee fire PRA did not meet all the NRC standards for the quality of the PRA, as described in part below, but in regard to the December 2010 license amendment, the staff judged that the large decrease in plant risk from the implementation of the PSW system outweighed the defects in the Oconee fire PRA. The licensee has not fixed the defects in the Oconee fire PRA, so there is no new information to consider in that regard. The staff considered the magnitude of the impact on plant risk due to this request. The staff finds no basis to approve the significant extension of the time to implement the PSW system which the licensee requested.

3.3.1 Fire Risk Assessment During LAR Review

A fire PRA is constructed by taking the internal events PRA model and modifying it to include the effects of fires. The NRC staff reviews a licensee's PRA evaluations and results using guidance in RG 1.205. RG 1.205, in turn, relies on the more general risk-informed guidance in RG 1.174 and RG 1.200. A guiding principle in both RG 1.174 and RG 1.200 is that the technical adequacy of the PRA approach, methods, and data is dependent on the role the PRA results play in the integrated decision process. Principle 4 in RG 1.174 guides the staff in what changes to the licensing basis would normally be acceptable, even if there is an increase in plant risk, if the increase is small and the resulting plant risk is in an acceptable range.

The general guidance in RG 1.200 is that the licensee's PRA, if used as a basis for licensing actions, should have a peer review by independent industry peers in order to provide assurance that the PRA is valid. As described in RG 1.205, Revision 0, for the NFPA 805 pilot plants such as Oconee, the NRC staff reviewed the fire PRA in lieu of the peer review by independent industry peers. The Oconee internal events PRA had been previously reviewed by independent industry peers according to an earlier version of RG 1.200. As described in the December 2010 license amendment, the NRC staff identified numerous issues with the method applied to modify the internal events PRA to include the effects of fire, and unresolved issues from the internal events PRA itself.

In its 2008 application, including the supplements, Duke estimated the net change of transitioning to NFPA 805 (*without* taking credit for the PSW system) increased risk, due to retaining most of the non-compliant elements of the fire protection program, as discussed above. In its 2008 application, Duke then utilized the risk-informed option in 10 CFR 50.48(c) to credit the risk decrease from installation of the PSW system to demonstrate a substantial net risk decrease from transitioning without removing the non-compliant fire protection program elements. Applying the risk-informed principle that the technical adequacy of the PRA depends on the role the PRA results play in the decision process, the NRC staff discontinued its review of the PRA upon reaching the conclusion that changes to the PRA to resolve all the issues identified are not expected to change the substantial estimated risk decrease associated with the 2008 application into a risk increase. This conclusion, the basis for which is discussed in more detail below, was sufficient to find that Principle 4 of NRC guidance in RG 1.174 had been met, since granting the

2008 application would not result in an increase in plant risk because of the installation of the PSW system.

3.3.2 Technical Adequacy of the PRA

Prior to the 2008 application, the NRC staff used the same general process to review the fire PRA as that described in RG 1.200. The fire PRA was reviewed against the (then draft) "supporting requirements" described in ASME/ANS RA-Sa-2009, Part 4, "Fire PRA Technical Elements and Requirements," and weakness or differences between the supporting requirements and the Duke fire PRA for Oconee were noted as NRC staff findings in the NRC's audit report (ADAMS Accession No. ML080940603). The NRC staff noted that the fire PRA was incomplete at the time of the NRC staff's review and, in addition to identifying deficiencies on the completed portion, concluded that a focused scope Peer Review performed between the time of the NRC staff's review and the submission of the 2008 application may be necessary. The licensee had not performed this review.

The licensee's internal events PRA was completed in December 1996 and peer reviewed in accordance with NEI 00-02, "Industry PRA Peer Review Process," by the B&W Owners Group in May 2001. An independent contractor for the licensee reviewed the PRA using the ASME RA-Sb-2005 PRA standard in June 2006. The licensee reported that in October 2008, it performed a self-assessment of its PRA against the 2005 ASME PRA Standard, as modified by Revision 1 of RG 1.200. The NRC staff reviewed the reported findings that were generated during these reviews and reviewed the licensee's resolution of these findings. The findings cover numerous aspects of the internal events PRA (e.g., human reliability modeling, internal flooding modeling, and LERF calculations). A number of the findings' resolutions have not been implemented and will involve PRA modifications.

The licensee identified a modification to install a PSW system, which will reduce internal event and fire risk. The fire PRA model includes credit for the planned implementation of PSW. The licensee identified three PSW functions and described how these functions are credited in the Fire PRA, in a September 13, 2010 letter (ADAMS Accession No. ML102640454), which supplemented the 2008 application, as summarized below:

1. PSW will provide an additional power source for the High Pressure Injection pumps, given a failure of the safety-related 4kV switchgear (located in the Turbine building).
2. PSW will provide an additional power source to support the Standby Shutdown Facility functions in the case of unavailability of the Standby Shutdown Facility diesel generator.
3. PSW will provide a water source to support secondary side heat removal by replacing the current station auxiliary service water pump, which is used as a backup feedwater supply but could be affected by a fire in the turbine building, with a PSW pump, which would be unaffected by a fire in the turbine building, to offset the loss of main feedwater and emergency feedwater.

The NRC staff notes that the PSW modifications are relatively simple to model in the PRA. Most of the new PSW hardware will be located in the new PSW building. Fires in the PSW building do not contribute to nuclear-safety risk since the building is isolated and a fire there will only affect the

PSW system mitigative functions and not the rest of the plant. The design of the PSW system cable routings was to be performed such that fire interactions not included in the PRA would not occur and conservative exclusion of credit for the PSW in the case of fires in the buildings expected to house the PSW cables and components was incorporated.

The NRC staff concluded that the estimated risk benefit from installation of the new PSW system adequately reflects the design and operation of the system. It is a simple system that includes the most important attributes (independence from fire areas, capability to provide sufficient power, and capability to provide sufficient water flow) as items to be preserved during the design. Therefore the NRC staff has confidence that revisions to the PRA to resolve PRA quality issues would not result in any changes of significance to the risk benefit provided by the PSW system. As described in the NRC license amendment issued in December 2010, the staff accepted the proposal to transition to NFPA 805 as described in the transition condition included in the December 2010 amendment based on a determination that unresolved fire PRA findings would not likely cause the estimated transition risk to become a risk increase upon eventual resolution.

3.3.3 Cumulative Changes in Risk

The licensee's change in risk estimates are provided in the following table for Core Damage Frequency (CDF) and Large Early Release Frequency (LERF). As illustrated by the table, the risk decrease from installing the PSW system is about an order of magnitude larger than the risk increase from retaining the Variations From Deterministic Requirements (VFDRs) (i.e., the current non-conformances with the deterministic fire protection requirements in 10 CFR 50.48(b)).

Fire CDF and LERF for ONS

	Unit 1		Unit 2		Unit 3	
	Fire CDF	Fire LERF	Fire CDF	Fire LERF	Fire CDF	Fire LERF
Risk increase from accepting VFDRs	6E-06	6E-07	6E-06	6E-07	8E-06	4E-07
Risk decrease from PSW installation	4E-05	2E-06	4E-05	2E-06	4E-05	7E-07
Total Change in Risk	-3E-05	-1E-06	-3E-05	-1E-06	-3E-05	-3E-07

3.3.4 PRA Conclusion

The licensee is currently required to complete full implementation of a licensing basis that includes compliance with 10 CFR 50.48(c) instead of 10 CFR 50.48(b) by December 31, 2012.[2] Completed transition was primarily measured by completing the installation of all three PSW system functions. Therefore, the licensing basis as of December 31, 2012, includes a fully installed and functional PSW system.

The request to postpone the implementation of the PSW system for some number of years is a request to change the licensing basis from one that has a functional PSW system to one that does not have a functional system. The licensee estimated that installation of a functional PSW system decreases CDF risk from fire by about 4E-05/year. The total risk decrease associated with installation of this system is expected to be larger if non-fire events are included because the system can be relied upon as a last resort in numerous accident scenarios. Therefore, the July 2012 application requests a change to the licensing basis that causes an increase in CDF of about 4E-05/year for Units 1, 2, and 3 and an increase in LERF of about 2E-06/year for Units 1 and 2, and about 7E-07/year for Unit 3. This is far above the acceptance guidelines in RG 1.174, which would normally not allow for an increase in CDF of greater than 1E-05/year. Therefore, the requested license amendment is not acceptable.

4.0 CONCLUSION

The licensee has requested to modify the licenses for Oconee Units 1, 2, and 3 to allow further operation in a higher risk condition for a longer time than was previously approved for Oconee by the NRC staff. The NRC staff has concluded, based on the consideration that the request to modify the license would result in a plant risk that exceeds the guidelines in RG 1.174 for acceptable risk increases, that the July 2012 application should be denied.

Principal Contributors: P. Lain, NRR
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Date: January 15, 2013

[2] The licensee's NFPA 805 transition license amendment request, dated April 14, 2010, and as supplemented, provided an overall schedule for completing the NFPA 805 transition at Oconee. The licensee stated that it would complete the implementation of the new program, including procedure changes, process updates, and training for affected plant personnel, within 24 months after NRC approval, as conveyed by the date on issuance of the transition license amendment (December 29, 2010). The staff noted that some modifications that provided less risk benefit than the PSW system installation were scheduled for refueling outages beyond this initial 24 month period and that compensatory measures would remain in place until these modifications were complete. The staff deemed this as acceptable.

January 15, 2013

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7800 Rochester Highway
Seneca, SC 29672-0752

SUBJECT: OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3, DENIAL OF AMENDMENT REQUEST REGARDING EXTENSION OF LICENSE CONDITION FOR NFPA 805 TRANSITION (TAC NOS. ME9184, ME9185, AND ME9186)

Dear Mr. Gillespie:

By letter dated July 31, 2012, as supplemented on September 5, 2012, you submitted Amendment Request No. 2012-09 to extend due dates in the license conditions for the Oconee Nuclear Station, Units 1, 2, and 3, for completing certain modifications for the transition to a revised fire protection program using the National Fire Protection Association (NFPA) 805 Standard. After careful review, the U.S. Nuclear Regulatory Commission staff has concluded that your request cannot be approved. The basis for this finding is documented in the enclosed Safety Evaluation.

A copy of the Notice of Denial of Amendment will be forwarded by separate letter and will also be forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Michele G. Evans, Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosure:
Safety Evaluation

cc w/encls: Distribution via Listserv

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ADAMS Accession No. LTR/Denial SE ML12345A204

OFFICE	NRR/LPL2-1/PM	NRR/LPL2-1/LA	DRA/AFPB/BC*	DRA/APLA/BC*	OGC NLO	NRR/LPL2-1/BC	NRR/DORL/D
NAME	JBoska	SFigueroa	AKlein	DHarrison	RWeisman	RPascarelli	MEvans
DATE	1/11/13	12/12/12	1/11/13	1/11/13	1/11/13	1/14/13	1/15/13

***Via email** **OFFICIAL RECORD COPY**