

March 8, 2017

Docket Nos.: 52-025  
52-026

ND-17-0239  
10 CFR 50.90  
10 CFR 52.63

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555-0001

Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4  
Request for License Amendment and Exemption:  
Consistency Update to the Raceway Separation Requirements in the  
Main Control Room (MCR) and Remote Shutdown Room (RSR) (LAR-17-007)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment proposes changes to the VEGP Units 3 and 4 COL Appendix C (and corresponding plant-specific DCD Tier 1) information. Pursuant to the provisions of 10 CFR 52.63(b)(1), an exemption from elements of the design as certified in the 10 CFR Part 52, Appendix D, design certification rule is also requested for the plant-specific Tier 1 material departures.

The proposed changes revise the raceway separation requirements in the MCR and RSR to provide consistency with Tier 2 information in the plant-specific Design Control Document (PS-DCD).

Enclosure 1 provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes in the License Amendment Request (LAR).

Enclosure 2 provides the background and supporting basis for the requested exemption.

Enclosure 3 provides the proposed changes to the VEGP 3&4 licensing basis documents.

The changes proposed in this LAR are consistent in technical content with LAR 16-21, submitted by South Carolina Electric & Gas Company (SCE&G) on December 21, 2016 [ADAMS Accession No. ML16357A403], which was supplemented on February 23, 2017 [ML17055A701], and accepted for technical review on February 1, 2017 [ML17032A236].

SNC confirms that the changes requested in this LAR are not technically linked to any licensing basis document changes requested in LAR-17-006, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Consolidation, which was submitted by SNC letter ND-17-0213 on March 2, 2017 [ML17061A747].

This letter contains no regulatory commitments. This letter has been reviewed and confirmed to not contain security-related information.

SNC requests staff approval of this license amendment request by October 16, 2017, to support the closure of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) regarding inspections to confirm as-built separation between Class 1E raceways in the MCR and RSR. Approval by this date will allow sufficient time to implement the licensing basis changes to support ITAAC closure. SNC expects to implement this proposed amendment (through incorporation into the licensing basis documents; e.g., the UFSAR) within 30 days of approval of the requested changes. SCE&G has indicated the requested approval date for the Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3 license amendment request for this topic is September 22, 2017.


In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Mr. Christopher L. Whitfield at (205) 992-5071.

Ms. Amy G. Aughtman states that: she is the Nuclear Development Licensing Director, of Southern Nuclear Operating Company; she is authorized to execute this oath on behalf of Southern Nuclear Operating Company; and to the best of her knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Amy G. Aughtman



AGA/NH/ljs

Sworn to and subscribed before me this 8<sup>th</sup> day of March, 2017

Notary Public: Lisa Myrick Spears

My commission expires: June 18, 2019

- Enclosures:
- 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: Raceway Separation Requirements in the MCR and RSR (LAR-17-007)
  - 2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Exemption Request: Raceway Separation Requirements in the MCR and RSR (LAR-17-007)
  - 3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Licensing Basis Documents (LAR-17-007)

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cc:

Southern Nuclear Operating Company / Georgia Power Company

Mr. S. E. Kuczynski (w/o enclosures)

Mr. M. D. Rauckhorst

Mr. D. G. Bost (w/o enclosures)

Mr. M. D. Meier (w/o enclosures)

Mr. D. H. Jones (w/o enclosures)

Ms. K. D. Fili (w/o enclosures)

Mr. D. L. McKinney (w/o enclosures)

Mr. T.W. Yelverton (w/o enclosures)

Mr. B. H. Whitley

Mr. J. J. Hutto

Mr. C. R. Pierce

Ms. A. G. Aughtman

Mr. D. L. Fulton

Mr. M. J. Yox

Mr. E. W. Rasmussen

Mr. T. R. Takats

Mr. W. A. Sparkman

Mr. J. P. Redd

Ms. A. C. Chamberlain

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Nuclear Regulatory Commission

Mr. W. Jones (w/o enclosures)

Ms. J. Dixon-Herrity

Mr. C. Patel

Mr. W. C. Gleaves

Ms. R. Reyes

Ms. J. M. Heisserer

Mr. P. Kallan

Mr. G. Khouri

Mr. J. D. Fuller

Ms. S. Temple

Ms. V. Ordaz

Mr. T.E. Chandler

Ms. P. Braxton

Mr. T. Brimfield

Mr. C. J. Even

Mr. A. Lerch

State of Georgia

Mr. R. Dunn

Oglethorpe Power Corporation

Mr. M. W. Price

Mr. K. T. Haynes

Ms. A. Whaley

Municipal Electric Authority of Georgia

Mr. J. E. Fuller

Mr. S. M. Jackson

Dalton Utilities

Mr. T. Bundros

Westinghouse Electric Company, LLC

Mr. R. Easterling (w/o enclosures)

Mr. G. Koucheravy (w/o enclosures)

Mr. C. D. Churchman (w/o enclosures)

Mr. P. A. Russ

Mr. A. F. Dohse

Mr. M. L. Clyde

Mr. C. A. Castell

Ms. K. Chesko

Mr. J. Hopkins

Mr. D. Hawkins

Other

Mr. J. E. Hesler, Bechtel Power Corporation

Ms. L. A. Matis, Tetra Tech NUS, Inc.

Dr. W. R. Jacobs, Jr., Ph.D., GDS Associates, Inc.

Mr. S. Roetger, Georgia Public Service Commission

Ms. S. W. Kernizan, Georgia Public Service Commission

Mr. K. C. Greene, Troutman Sanders

Mr. S. Blanton, Balch Bingham

Mr. R. Grumbir, APOG

Mr. N. R. Kellenberger, South Carolina Electric & Gas Company

Mr. D. Kersey, South Carolina Electric & Gas Company

NDDocumentinBox@duke-energy.com, Duke Energy

Mr. S. Franzone, Florida Power & Light

**Southern Nuclear Operating Company**

**ND-17-0239**

**Enclosure 1**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Request for License Amendment:**

**Raceway Separation Requirements in the MCR and RSR**

**(LAR-17-007)**

(Enclosure 1 consists of 13 pages, including this cover page.)

ND-17-0239

Enclosure 1

Request for License Amendment: Raceway Separation Requirements in the MCR and RSR  
(LAR-17-007)

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Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC, or the "Licensee") hereby requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

## 1. SUMMARY DESCRIPTION

The requested amendment involves changes to the physical separation requirements between Class 1E division cables and between Class 1E and non-Class 1E cables described in COL Appendix C (and plant-specific Tier 1) Table 3.3-6. The proposed changes add additional acceptable configurations for raceway separation in the main control room (MCR) and remote shutdown room (RSR).

A change is proposed to revise COL Appendix C Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) No. 3.3.00.07d.i to identify additional acceptable configurations for raceway separation consistent with the existing licensing basis for cable separation documented in Updated Final Safety Analysis Report (UFSAR) Subsection 8.3.2.4.2. Changes are also proposed to revise ITAAC Nos. 3.3.00.07d.ii.a, b, and c to remove the word "except" from the first identified configuration for each acceptance criteria. Additionally, a period is removed from the end of the Acceptance Criteria for plant-specific Tier 1 Table 3.3-6, Item 7.d)ii.c), configuration #2, which was inadvertently added.

The requested amendment involves changes to COL Appendix C (and corresponding changes to plant-specific DCD Tier 1) information. This enclosure requests approval of the license amendment necessary to implement the COL Appendix C changes. Enclosure 2 requests the exemption necessary to implement the involved changes to the plant-specific DCD Tier 1 information.

## 2. DETAILED DESCRIPTION

Combined License (COL) Appendix C (and plant-specific Tier 1) Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) No. 3.3.00.07d.i identifies acceptance criteria regarding inspections of raceways in the MCR and RSR. However, ITAAC No. 3.3.00.07d.i does not currently recognize all of the configurations for raceway separation identified in the licensing basis for the MCR and RSR, as documented in UFSAR Subsection 8.3.2.4.2.

COL Appendix C (and plant-specific Tier 1) Table 3.3-6, ITAAC No. 3.3.00.07d.i, is proposed to be revised to define the minimum MCR and RSR raceway separation requirements consistent with Institute of Electrical and Electronics Engineers (IEEE) 384-1981, "IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," and consistent with the exception to the code identified in UFSAR Subsection 8.3.2.4.2. This proposed change includes adding the following separation requirements for the MCR and RSR to ITAAC No. 3.3.00.07d.i, as identified in UFSAR Subsection 8.3.2.4.2:



- For configurations involving an enclosed raceway and an open raceway, the minimum horizontal and vertical separation is 1 inch if the enclosed raceway is below the open raceway.
  - \* Note – This change is consistent with UFSAR Subsection 8.3.2.4.2 and is an exception to Regulatory Guide (RG) 1.75 and Institute of Electrical and Electronics Engineers (IEEE) Standard IEEE 384. Per Reference 13 of UFSAR Subsection 8.3.2.4.2, IEEE Transactions on Energy Conversion, Vol. 5, No. 3, Sept. 1990 Report – What Do Industry Testing Programs Show?, a separation distance of 1 inch is specified for enclosed tray to free-air cable when the enclosed raceway is below the free-air cable. It is assumed that free-air cables are considered the same as open trays. This configuration is considered equivalent to that of enclosed tray to enclosed tray separation distances, which is also 1 inch per IEEE 384-1981.
- For configurations involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions.
  - \* Note – This change is consistent with IEEE 384, Section 6.1.3 and is an acceptable configuration.

Additionally, the existing configuration of a minimum 3-inch vertical separation and 1-inch horizontal separation is clarified to identify it is applicable to open raceways by adding text to the first configuration requirement in current ITAAC No. 3.3.00.07d.i.

ITAAC Nos. 3.3.00.07d.ii.a, b, and c (and corresponding ITAAC in plant-specific Tier 1 Table 3.3-6) are revised to remove the word “except” from the end of the first identified configuration for each acceptance criteria. The word “except” is not necessary in these sentences, as the acceptance criteria already states that the inspection must confirm that separation meets one of the following requirements. The raceways must be installed according to one of the configurations listed in order for the acceptance criteria to be met. This change is made for consistency with existing licensing basis and IEEE 384 requirements for raceway separation and permits installation of raceways at the required spacing. Additionally, in plant-specific Tier 1 Table 3.3-6, an extraneous period is removed from the end of the Acceptance Criterion for Item 7.d)ii.c), configuration #2. This editorial change does not adversely affect the design commitment or acceptance criteria.

#### Licensing Basis Change Descriptions

The following changes to COL Appendix C (and corresponding plant-specific Tier 1) are proposed.

##### COL Appendix C (and plant-specific Tier 1) Table 3.3-6, ITAAC No. 3.3.00.07d.i

Revise to add two additional physical separation configurations between Class 1E divisions and between Class 1E divisions and non-Class 1E cables within the MCR and RSR rooms. Clarify that existing configuration is applicable to open raceways.

COL Appendix C (and plant-specific Tier 1) Table 3.3-6, ITAAC No. 3.3.00.07d.ii

Remove the extraneous word “except” from acceptance criteria configuration #1 for ITAAC Nos. 3.3.00.07d.ii.a, b, and c.

Note: For plant-specific Tier 1 only, an extra (i.e., second) period is removed from the end of the Acceptance Criterion for Table 3.3-6, Item 7.d)ii.c), configuration #2.

### 3. TECHNICAL EVALUATION

Regulatory Guide (RG) 1.75, Physical Independence of Electric Systems, provides acceptable methods for complying with physical independence requirements of the circuits and electric equipment that comprise or are associated with safety systems. Institute of Electrical and Electronics Engineers (IEEE) 384-1981, “IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits,” provides criteria for establishing and maintaining independence of Class 1E equipment and circuits and auxiliary supporting features by physical separation and electrical isolation. UFSAR Appendix 1A identifies that RG 1.75 endorses IEEE 384 with exceptions granted for cable separation.

NOTE: As described in UFSAR Appendix 1A, RG 1.75 endorses IEEE 384-1974, which has been superseded by a later revision, IEEE 384-1981. It is the later version that is referenced in this departure. The 1981 version has not been endorsed by a regulatory guide. The differences between the two revisions are not expected to contribute to conflicting design configurations because the jurisdiction of RG 1.75 with regard to the onsite ac power sources is limited.

As described in UFSAR Subsection 8.3.2.4.2, there are five separation groups for the cable and raceway system: group A, B, C, and D, which contain safety-related circuits for each respective division, and N for nonsafety-related circuits. Cables of one separation group are run in separate raceways and physically separated from cables of other separation groups. Group N raceways are separated from safety-related groups A, B, C, and D. Raceways from group N are routed in the same areas as the safety-related groups according to spatial separation stipulated in RG 1.75 and IEEE 384, with several exceptions, including:

- Within the main control room (MCR) and remote shutdown room (RSR) (nonhazard areas), the minimum vertical separation for open top cable trays is 3 inches and the minimum horizontal separation is 1 inch.
- For configurations involving an enclosed raceway and an open raceway, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway.

The exceptions to the guidance in RG 1.75 are based on test results used to support exceptions to the separation requirements for operating nuclear power plants. These tests are identified in UFSAR Subsection 8.3.4 Reference 13, IEEE Transactions on Energy Conversion, Vol. 5, No. 3, Sept. 1990 Report – What Do Industry Testing Programs Show?.

As defined in IEEE 384, Section 6.1.3.1, a nonhazard area does not contain high energy equipment, contains circuits limited to control and instrument functions and those power supply cables and equipment serving equipment located in the area. Nonhazard areas require that power circuit cables are installed in enclosed raceways and administrative controls limit and control introduction of potential hazards into the area. The minimum separation distances used for nonhazard areas are based on hazards being limited to failures or faults internal to the electrical equipment or cabling. IEEE 384, Section 6.1.3.3, Routing Requirements, states that separation between enclosed raceways shall be 1 inch for nonhazard areas. This is considered an acceptable configuration.

Non-Class 1E circuits are electrically isolated from Class 1E circuits, and Class 1E circuits from different separation groups are electrically isolated by isolation devices, shielding and wiring techniques, physical separation (in accordance with RG 1.75) or an appropriate combination thereof.

COL Appendix C (and plant-specific Tier 1) Table 3.3-6, ITAAC No. 3.3.00.07d.i, is proposed to be revised to define the minimum MCR and RSR raceway separation requirements consistent with existing requirements listed in UFSAR Subsection 8.3.2.4.2 and IEEE 384. This change includes adding the following separation requirements:

- For configurations involving an enclosed raceway and an open raceway, the minimum horizontal and vertical separation is 1 inch if the enclosed raceway is below the open raceway.
  - \* Note – This change is consistent with UFSAR Subsection 8.3.2.4.2 and is an exception to RG 1.75 and IEEE 384. Per Reference 13 of UFSAR Subsection 8.3.2.4.2, IEEE Transactions on Energy Conversion, Vol. 5, No. 3, Sept. 1990 Report – What Do Industry Testing Programs Show?, a separation distance of 1 inch was determined to be acceptable for enclosed tray to free-air cable when the enclosed raceway is below the free-air cable. It is assumed that free-air cables are considered the same as open trays. This configuration is considered equivalent to that of enclosed tray to enclosed tray separation distances, which is also 1 inch per IEEE 384-1981.
- For configurations involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions.
  - \* Note – This change is consistent with IEEE 384, Section 6.1.3 and is an acceptable configuration.

Additionally, the existing configuration of a minimum 3-inch vertical separation and 1-inch horizontal separation was clarified to identify it is applicable to open raceways by adding text to the first configuration requirement in current ITAAC No. 3.3.00.07d.i.

COL Appendix C ITAAC No. 3.3.00.07d.ii.a, b, c (and corresponding plant-specific Tier 1 information) are proposed to be revised to remove the extraneous word “except” from the end of the acceptance criteria for the first identified configuration for each of these ITAAC. The word “except” is not necessary as the acceptance criteria already states that the inspection must confirm that separation meets one of the following requirements. The intent of the design commitment and acceptance criteria are not adversely impacted or changed in

any manner that could prevent a design commitment from being met. Additionally, in plant-specific Tier 1 Table 3.3-6, a period is removed from the end of the sentence for the acceptance criterion for Item 7.d)ii.c), configuration #2. This change does not adversely affect the design commitment or acceptance criteria as this change is editorial in nature.

The raceways must be installed according to one of the listed configurations to meet the acceptance criteria. The changes do not adversely affect compliance with RG 1.75. Cabling located in the raceways in the MCR and RSR is not adversely impacted because separation requirements are in accordance with RG 1.75 and IEEE 384 or with approved exceptions currently identified in UFSAR Subsection 8.3.2.4.2. The functions of the cabling located inside the MCR and RSR are not changed. The proposed change does not adversely affect any safety-related equipment or a fission product barrier. Seismic requirements are not adversely affected as this change does not introduce any new spacing configurations for cable raceways that could impact seismic interactions. Configurations are acceptable and do not change any seismic requirements for installation. Fire protection requirements are not changed as a result of this activity as separation is maintained in accordance with existing fire areas. System and equipment qualifications are not adversely affected by the proposed change as neither the equipment nor the environment is changing. The proposed change does not result in a new failure mode, malfunction or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment because there are not any new credible failure modes associated with the application of the additional separation requirements, which are already described in the UFSAR or IEEE 384 code.

The proposed changes do not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in fuel cladding failures as this change provides consistency between the current licensing basis requirements in the UFSAR and industry standards only.

The change to MCR and RSR raceway spacing requirements does not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials. The types and quantities of expected plant effluents are not changed. An effluent release path is not associated with this change. Therefore, radioactive or non-radioactive material effluents are not affected by this activity.

The change to the raceway spacing requirements does not impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures are not significantly affected by this change.

### Summary

The proposed change to COL Appendix C (and plant-specific Tier 1) Table 3.3-6 to revise separation configurations for raceways in the MCR and RSR does not affect safety-related equipment or functions, design functions, radioactive material barriers or safety analyses. The change permits verification of separation criteria already established in UFSAR Subsection 8.3.2.4.2, RG 1.75, and IEEE 384.

## **4. REGULATORY EVALUATION**

### **4.1 Applicable Regulatory Requirements/Criteria**

10 CFR 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a combined license (COL). This activity involves changes to COL Appendix C, Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) information and corresponding changes to plant-specific Tier 1 information; therefore, this activity requires a proposed amendment to the COL. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants" General Design Criterion (GDC) 17 – Electric power systems. An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The proposed change does not adversely affect the design of the plant electrical systems. Changes are proposed to COL Appendix C (and plant-specific Tier 1) Table 3.3-6 for consistency with existing licensing basis, RG 1.75 and IEEE 384 requirements for raceway separation. This change does not add or remove any equipment from the onsite or offsite power electrical systems. The function of cabling in the main control room (MCR) and remote shutdown room (RSR) is not changed. Therefore, compliance with GDC-17 is not changed.

10 CFR 50, Appendix A, GDC 18 – Inspection and testing of electric power systems. Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features, such as wiring, insulation, connections, and switchboards, to assess the continuity of the systems and the condition of their components. The systems shall be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems, such as onsite power sources, relays, switches, and buses, and (2) the operability of the systems as a whole and, under conditions as close to design as practical, the full operation sequence that brings the systems into operation, including

operation of applicable portions of the protection system, and the transfer of power among the nuclear power unit, the offsite power system, and the onsite power system.

Inspections of raceway configurations are revised for consistency with existing licensing basis requirements to permit acceptable raceway spacing. This change does not adversely affect inspections of cabling of raceways for Class 1E and non-Class 1E divisions in the MCR and RSR as these changes make provision for acceptable raceway configurations. Therefore, compliance with GDC-18 is not changed.

10 CFR 50, Appendix A, GDC 19 – Control room. A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor through the use of suitable procedures.

The change for consistency to identify raceway separation requirements does not adversely affect the design of the MCR or MCR habitability. This change does not impact the ability for operators to maintain the plant safely under normal or accident conditions. Radiological consequences are not impacted for the MCR and RSR. Personnel dose levels are not changed. Therefore, compliance with GDC-19 is not changed.

#### **4.2 Precedent**

No precedent is identified.

#### **4.3 Significant Hazards Consideration Determination**

A change is proposed to revise Combined License (COL) Appendix C (and plant-specific Tier 1) Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) No. 3.3.00.07d.i to identify configurations for raceway separation that are consistent with existing licensing basis requirements in Updated Final Safety Analysis Report (UFSAR) Subsection 8.3.2.4.2, Regulatory Guide (RG) 1.75, and Institute of Electrical and Electronics Engineers (IEEE) 384.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

**4.3.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No

This activity revises the raceway spacing configurations and permits spacing in accordance with existing licensing basis requirements, Regulatory Guide (RG) 1.75 and Institute of Electrical and Electronics Engineers (IEEE) 384 for the main control room (MCR) and remote shutdown room (RSR).

The proposed consistency change to revise separation requirements for MCR and RSR raceways does not inhibit any systems, structures or components (SSCs) from performing their safety-related function, as raceways in the MCR and RSR are installed in accordance with spacing configurations currently specified in the Updated Final Safety Analysis Report (UFSAR) or in the code of record, IEEE 384. This proposed amendment does not have an adverse impact on the response to anticipated transients or postulated accident conditions because the functions of the SSCs are not changed. The change does not involve an interface with any SSC accident initiator or initiating sequence of events, and thus, the probabilities of the accidents evaluated in the UFSAR are not affected. Accidents associated with raceway separation are not identified in the safety analysis. The proposed changes do not involve a change to the predicted radiological releases due to postulated accident conditions, thus, the consequences of the accidents evaluated in the UFSAR are not affected.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

**4.3.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No

The proposed change to the inspection criteria for raceway separation requirements does not adversely affect any safety-related equipment, and does not add any new interfaces to safety-related SSCs. This change provides consistency between the Combined License (COL) Appendix C and the UFSAR and industry standards only. System design functions and equipment qualification are not adversely affected by these changes. The changes do not introduce a new failure mode, malfunction or sequence of events that could affect plant safety or safety-related equipment as the change is for consistency with existing licensing basis requirements and industry standards. New credible failure modes are not introduced by the changes in separation requirements.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

**4.3.3 Does the proposed amendment involve a significant reduction in a margin of safety?**

Response: No

The proposed change maintains compliance with the applicable Codes and Standards, thereby maintaining the margin of safety associated with these SSCs. The proposed change does not alter any applicable design codes, code compliance, design function, or safety analysis. Consequently, no safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the proposed change, thus the margin of safety is not reduced.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

**4.4 Conclusions**

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. The above evaluations demonstrate that the requested changes can be accommodated without an increase in the probability or consequences of an accident previously evaluated, without creating the possibility of a new or different kind of accident from any accident previously evaluated, and without a significant reduction in a margin of safety. Having arrived at negative declarations with regard to the criteria of 10 CFR 50.92, this assessment determined that the requested change does not involve a Significant Hazards Consideration.

**5. ENVIRONMENTAL CONSIDERATIONS**

This review supports a request to amend Combined License (COL) Appendix C and corresponding plant-specific Tier 1 information.

Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) No. 3.3.00.07d.i is revised to identify acceptable configurations for raceway separation consistent with existing licensing basis requirements in Updated Final Safety Analysis Report (UFSAR) Subsection 8.3.2.4.2, Regulatory Guide (RG) 1.75, and Institute of Electrical and Electronics Engineers (IEEE) 384.

This review has determined the proposed changes require an amendment to the COL. However, a review of the anticipated construction and operational effects of the requested



amendment has determined the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

*(i) There is no significant hazards consideration.*

As documented in Section 4.3, Significant Hazards Consideration Determination, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." The Significant Hazards Consideration Determination determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

*(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.*

The proposed change revises separation requirements for raceway configurations in the main control room (MCR) and remote shutdown room (RSR) for consistency with existing licensing basis, RG 1.75 and IEEE 384 requirements. The changes are unrelated to any aspects of plant construction or operation that would introduce any changes to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents) or affect any plant radiological or non-radiological effluent release quantities. These changes do not diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

*(iii) There is no significant increase in individual or cumulative occupational radiation exposure.*

The proposed change for consistency revises separation requirements for raceway configurations. Plant radiation zones, radiation controls established to satisfy 10 CFR 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes because the SSCs are not changed in any manner. Therefore, it is concluded that the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

ND-17-0239

Enclosure 1

Request for License Amendment: Raceway Separation Requirements in the MCR and RSR  
(LAR-17-007)

Based on the above review of the proposed amendment, it has been determined that anticipated construction and operational impacts of the proposed amendment do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## **6. REFERENCES**

None.

**Southern Nuclear Operating Company**

**ND-17-0239**

**Enclosure 2**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Exemption Request:**

**Raceway Separation Requirements in the MCR and RSR**

**(LAR-17-007)**

(Enclosure 2 consists of seven pages, including this cover page.)

## 1.0 PURPOSE

Southern Nuclear Operating Company (the Licensee) requests a permanent exemption from the provisions of 10 CFR 52, Appendix D, Section III.B, Design Certification Rule for the AP1000 Design, Scope and Contents, to allow a departure from elements of the certification information in Tier 1 of the generic AP1000 Design Control Document (DCD). The regulation, 10 CFR 52, Appendix D, Section III.B, requires an applicant or licensee referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in DCD Tier 1. The Tier 1 information for which a plant-specific departure and exemption is being requested is related to select items in Table 3.3-6 related to the raceway separation requirements in the Main Control Room (MCR) and the Remote Shutdown Room (RSR).

This request for exemption will apply the requirements of 10 CFR 52, Appendix D, Section VIII.A.4 to allow departures from Tier 1 information due to the following proposed changes to the system-based design descriptions in plant-specific Tier 1 Table 3.3-6:

- Tier 1 Table 3.3-6 Item 7.d)i):
  - Revise to add two additional physical separation configurations between Class 1E divisions and between Class 1E divisions and non-Class 1E cables within the MCR and RSR rooms. Clarify the configurations that are applicable to open raceways.
- Tier 1 Table 3.3-6 Item 7.d)ii):
  - Remove the word “except” from end of the sentence for acceptance criteria configuration #1 for ITAAC Items 7.d)ii.a), 7.d)ii.b), and 7.d)ii.c). Remove the duplicate period from the end of the acceptance criterion wording for plant-specific Tier 1 Table 3.3-6, Item 7.d)ii.c) acceptance criteria configuration #2.

This request will provide for the application of the requirements for granting exemptions from design certification information, as specified in 10 CFR Part 52, Appendix D, Section VIII.A.4, 10 CFR 52.63, §52.7, and §50.12.

## 2.0 BACKGROUND

The Licensee is the holder of Combined License Nos. NPF-91 and NPF-92, which authorize construction and operation of two Westinghouse Electric Company AP1000 nuclear plants, named Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively.

Plant-specific DCD Tier 1 Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Item 7.d)i identifies acceptance criteria regarding inspections of raceways in the MCR and RSR. However, all acceptable configurations for Class 1E and non-Class 1E division raceway separation are not identified in accordance with UFSAR Subsection 8.3.2.4.2, RG 1.75 and IEEE 384. Table 3.3-6 is revised, as proposed in Enclosure 1, to add the acceptable separation requirements.

### 3.0 TECHNICAL JUSTIFICATION OF ACCEPTABILITY

The raceways must be installed according to one of the configurations listed in order for the acceptance criteria to be met. The changes do not adversely affect compliance with RG 1.75. Cabling located in the raceways in the MCR and RSR is not adversely impacted because separation requirements applied are in accordance with RG 1.75 and IEEE 384 or with approved exceptions currently identified in UFSAR Subsection 8.3.2.4.2. The functions of the cabling located inside the MCR and RSR are not changed. The proposed change does not adversely affect any safety-related equipment or a fission product barrier. Seismic requirements are not adversely affected as this change does not introduce any new spacing configurations for cable raceways that could impact seismic interactions. Configurations are acceptable and do not change any seismic requirements for installation. Fire protection requirements are not changed as a result of this activity as separation is maintained in accordance with existing fire areas. System and equipment qualifications are not adversely affected by the proposed change as neither the equipment nor the environment is changing. The proposed change does not result in a new failure mode, malfunction or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment because there are not any new credible failure modes associated with the application of the additional separation requirements that are already in the UFSAR or IEEE 384 code.

The proposed changes do not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in fuel cladding failures as this change provides consistency between the current licensing basis requirements in the UFSAR and industry standards only.

The change to MCR and RSR raceway spacing requirements does not adversely impact any functions associated with containing, controlling, channeling, monitoring, or processing radioactive or non-radioactive materials. The types and quantities of expected plant effluents are not changed. An effluent release path is not associated with this change. Therefore, radioactive or non-radioactive material effluents are not affected by this activity.

The change to the raceway spacing requirements does not impact radiologically controlled zones. Plant radiation zones, radiation controls established to satisfy 10 CFR 20 requirements, and expected amounts and types of radioactive materials are not affected by the proposed changes. Therefore, individual and cumulative radiation exposures are not significantly affected by this change.

Detailed technical justification supporting this request for exemption is provided in Section 3 of the associated License Amendment Request in Enclosure 1 of this letter.

#### **4.0 JUSTIFICATION OF EXEMPTION**

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. Since the Licensee has identified changes to the Tier 1 information as discussed in Enclosure 1 of the accompanying License Amendment Request, an exemption from the certified design information in Tier 1 is needed.

10 CFR Part 52, Appendix D, and 10 CFR 50.12, §52.7, and §52.63 state that the NRC may grant exemptions from the requirements of the regulations provided six conditions are met: 1) the exemption is authorized by law [§50.12(a)(1)]; 2) the exemption will not present an undue risk to the health and safety of the public [§50.12(a)(1)]; 3) the exemption is consistent with the common defense and security [§50.12(a)(1)]; 4) special circumstances are present [§50.12(a)(2)]; 5) the special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption [§52.63(b)(1)]; and 6) the design change will not result in a significant decrease in the level of safety [Part 52, App. D, VIII.A.4].

The requested exemption to allow changes to the description of the acceptable configurations satisfies the criteria for granting specific exemptions, as described below.

##### **1. This exemption is authorized by law**

The NRC has authority under 10 CFR 52.63, §52.7, and §50.12 to grant exemptions from the requirements of NRC regulations. Specifically, 10 CFR 50.12 and §52.7 state that the NRC may grant exemptions from the requirements of 10 CFR Part 52 upon a proper showing. No law exists that would preclude the changes covered by this exemption request. Additionally, granting of the proposed exemption does not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations.

Accordingly, this requested exemption is "authorized by law," as required by 10 CFR 50.12(a)(1).

##### **2. This exemption will not present an undue risk to the health and safety of the public**

The proposed exemption from the requirements of 10 CFR Part 52, Appendix D, Section III.B would allow changes to elements of the Tier 1 DCD to depart from the AP1000 certified (Tier 1) design information. The plant-specific Tier 1 will continue to reflect the approved licensing basis for VEGP Units 3 and 4, and will maintain a consistent level of detail with that which is currently provided elsewhere in Tier 1 of the DCD. Therefore, the affected plant-specific Tier 1 ITAAC will continue to serve its required purpose.

The proposed changes will not impact the ability of the components to perform their design functions. There is no change to plant systems or the response of systems to postulated accident conditions. There is no change to the predicted radioactive releases due to postulated accident conditions. The plant response to previously evaluated accidents or external events is not adversely affected, and the change described does not create any new accident precursors. Therefore, no adverse safety impact that would present any additional risk to the health and safety of the public is present. The affected Design Description in the plant-specific Tier 1 DCD will also continue to provide the detail necessary to support the performance of the associated ITAAC.

Therefore, the requested exemption from 10 CFR 52, Appendix D, Section III.B would not present an undue risk to the health and safety of the public.

**3. The exemption is consistent with the common defense and security**

The requested exemption from the requirements of 10 CFR 52, Appendix D, Section III.B would allow the Licensee to depart from elements of the plant-specific DCD Tier 1 design information. The requested exemption does not alter the design, function, or operation of any structures or plant equipment that are necessary to maintain a safe and secure status of the plant. The requested exemption has no impact on plant security or safeguards procedures.

Therefore, the requested exemption is consistent with the common defense and security.

**4. Special circumstances are present**

10 CFR 50.12(a)(2) lists six “special circumstances” for which an exemption may be granted. Pursuant to the regulation, it is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subsection defines special circumstances as when “Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.”

The rule under consideration in this request for exemption is 10 CFR Part 52, Appendix D, Section III.B, which requires that a licensee referencing the AP1000 Design Certification Rule (10 CFR Part 52, Appendix D) shall incorporate by reference and comply with the requirements of Appendix D, including Tier 1 information. The VEGP Units 3 and 4 COLs reference the AP1000 Design Certification Rule and incorporate by reference the requirements of 10 CFR Part 52, Appendix D, including Tier 1 information. The underlying purpose of Appendix D, Section III.B is to describe and define the scope and contents of the AP1000 design certification, and to require compliance with the design certification information in Appendix D.

The proposed changes do not impact the ability of any structures, systems, or components to perform their functions or negatively impact safety. Accordingly, this exemption from the certification information will enable the Licensee to safely construct and operate the AP1000 facility consistent with the intent of the scope and contents of the design certified by the NRC in 10 CFR Part 52, Appendix D.

Therefore, special circumstances are present, because application of the current plant-specific certified design information in Tier 1 as required by 10 CFR Part 52, Appendix D, Section III.B in the particular circumstances discussed in this request is not necessary to achieve the underlying purpose of the rule.

**5. The special circumstances outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.**

Based on the nature of the changes to the plant-specific Tier 1 information in the proposed areas and the understanding that these changes are not related to system functions, these changes will not have a negative impact. Nevertheless, if other AP1000 licensees do not elect to request this exemption, the special circumstances continue to outweigh any decrease in safety from the reduction in standardization because the key design functions associated with this request will continue to be maintained. This exemption request and the associated marked-up table demonstrate that there is a minimal change from the generic AP1000 DCD, minimizing the reduction in standardization and consequently the safety impact from the reduction.

Therefore, the special circumstances associated with the requested exemption outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption.

**6. The design change will not result in a significant decrease in the level of safety.**

The requested exemption does not adversely impact the level of safety because the changes associated with this exemption request will not adversely affect the ability of any systems or equipment to perform their design functions, there are no new failure modes introduced by these changes and the level of safety provided by the current systems and equipment is maintained. It is concluded that the design change associated with this proposed exemption will not result in a significant decrease in the level of safety.

**5.0 RISK ASSESSMENT**

A risk assessment was not determined to be applicable to address the acceptability of this proposal.

**6.0 PRECEDENT**

None.



## **7.0 ENVIRONMENTAL CONSIDERATION**

The Licensee requests a departure from elements of the certified information in Tier 1 of the generic AP1000 DCD. The Licensee has determined that the proposed departure would require a permanent exemption from the requirements of 10 CFR 52, Appendix D, Section III.B, Design Certification Rule for the AP1000 Design, Scope and Contents, with respect to installation or use of facility components located within the restricted area, as defined in 10 CFR Part 20, or which changes an inspection or a surveillance requirement; however, the Licensee evaluation of the proposed exemption has determined that the proposed exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

Based on the above review of the proposed exemption, the Licensee has determined that the proposed activity does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed exemption is not required.

Specific details of the environmental considerations supporting this request for exemption are provided in Section 5 of the associated License Amendment Request provided in Enclosure 1 of this letter.

## **8.0 CONCLUSION**

The proposed changes to Tier 1 information are necessary and the exemption request was confirmed to meet the requirements of 10 CFR 52.63, "Finality of standard design certifications," 10 CFR 50.12, "Specific exemptions," and 10 CFR 52 Appendix D, "Design Certification Rule for the AP1000 Design." Specifically, the exemption request meets the criteria of 10 CFR 50.12(a)(1) in that the request is authorized by law, presents no undue risk to public health and safety, and is consistent with the common defense and security. Furthermore, approval of this request does not result in a significant decrease in the level of safety, presents special circumstances, does not present a significant decrease in safety as a result of a reduction in standardization, and meets the eligibility requirements for categorical exclusion.

## **9.0 REFERENCES**

None.

**Southern Nuclear Operating Company**

**ND-17-0239**

**Enclosure 3**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Proposed Changes to the Licensing Basis Documents**

**(LAR-17-007)**

**Note:**

Added text is shown as bold **Blue Underline**  
Deleted text is shown as bold **~~Red Strikethrough~~**

(Enclosure 3 consists of four pages, including this cover page.)

**COL Appendix C (and plant-specific Tier 1) Table 3.3-6, Inspections, Tests, Analyses, and Acceptance Criteria**

**Revise Table 3.3-6 as proposed below.**

| Design Commitment  | Inspections, Tests, Analyses   | Acceptance Criteria   |
|--|--|---|
| <p>7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.</p> | <p>Inspections of the as-built Class 1E raceways will be performed to confirm that the separation between Class 1E raceways of different divisions and between Class 1E raceways and non-Class 1E raceways is consistent with the following:</p> <p>i) Within the main control room and remote shutdown room, <u>the minimum separation is defined by one of the following:</u></p> <p><u>1) For configurations involving open top raceways, the minimum vertical separation is 3 inches and the minimum horizontal separation is 1 inch.</u></p> <p><u>2) For configurations involving an enclosed raceway and an open raceway, the minimum horizontal and vertical separation is 1 inch if the enclosed raceway is below the open raceway.</u></p> <p><u>3) For configurations involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions.</u></p> | <p>Results of the inspection will confirm that the separation between Class 1E raceways of different divisions and between Class 1E raceways and non-Class 1E raceways is consistent with the following:</p> <p>i) Within the main control room and remote shutdown room, <u>the minimum separation meets one of the following:</u></p> <p><u>1) For configurations involving open top raceways, the vertical separation is 3 inches or more and the horizontal separation is 1 inch or more.</u></p> <p><u>2) For configurations that involve an enclosed raceway and an open raceway, the minimum horizontal and vertical separation may be reduced to 1 inch if the enclosed raceway is below the open raceway.</u></p> <p><u>3) For configurations that involve enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions.</u></p> |

**COL Appendix C (and plant-specific Tier 1) Table 3.3-6 (cont.)**

| Design Commitment | Inspections, Tests, Analyses   | Acceptance Criteria   |
|-------------------|--|---|
| 7.d) ...          | ii) Within other plant areas (limited hazard areas), the minimum separation is defined by one of the following:<br><br>1) The minimum vertical separation is 5 feet and the minimum horizontal separation is 3 feet. | ii.a) Within other plant areas inside containment (limited hazard areas), the separation meets one of the following:<br><br>1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more<br><del>except.</del>  |
| * * *             | * * *  | * * *   |
| 7.d) ...          | ii) ...  | ii.b) Within other plant areas inside the non-radiologically controlled area of the auxiliary building (limited hazard areas), the separation meets one of the following:<br><br>1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more<br><del>except.</del> |
| * * *             | * * *  | * * *   |
| 7.d) ...          | ii) ...  | ii.c) Within other plant areas inside the radiologically controlled area of the auxiliary building (limited hazard areas), the separation meets one of the following:<br><br>1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more<br><del>except.</del>     |

**Plant-specific Tier 1 Table 3.3-6:**

| Design Commitment | Inspections, Tests, Analyses | Acceptance Criteria  |
|-------------------|------------------------------|--|
| 7.d) ...          | ii) ...                      | ii.c) Within other plant areas inside the radiologically controlled area of the auxiliary building (limited hazard areas), the separation meets one of the following:<br><br>* * *<br><br>2) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables < 2/0 AWG. |