SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO AMENDMENT NO. 50

TO THE COMBINED LICENSE NOS. NPF-93 AND NPF-94

SOUTH CAROLINA ELECTRIC & GAS COMPANY

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

VIRGIL C. SUMMER NUCLEAR STATION, UNITS 2 AND 3

DOCKET NOS. 52-027 AND 52-028

1.0 INTRODUCTION

By letter dated November 4, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15308A595), proposed license amendment request (LAR) 15-04, South Carolina Electric & Gas Company (SCE&G/licensee), on behalf of the South Carolina Public Service Authority requested that the U.S. Nuclear Regulatory Commission (NRC) amend the combined licenses (COL) for Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3, COL Numbers NPF-93 and NPF-94, respectively, regarding reconfiguration and relocation of the diverse actuation system (DAS).

The proposed amendment (LAR 15-04) would revise the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (DCD) Tier 2 information. The proposed amendment also involves related changes to plant-specific Tier 1 information, with corresponding changes to the associated COL Appendix C information.

The licensee has also requested an exemption from the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, Appendix D, "Design Certification Rule for the AP1000 Design," Section III.B, "Scope and Contents." This exemption request will allow a departure from the corresponding portions of the certified information in Tier 1 of the generic DCD.[1]

[1] While the licensee describes the requested exemption as being from Section III.B of 10 CFR Part 52, Appendix D, the entirety of the exemption pertains to proposed departures from Tier 1 information in the generic DCD. In the remainder of this evaluation, the NRC will refer to the exemption as an exemption from Tier 1 information to match the language of Section VIII.A.4 of 10 CFR Part 52, Appendix D, which specifically governs the granting of exemptions from Tier 1 information.

In order to modify the UFSAR (the plant-specific DCD) Tier 1 information, the NRC must find the licensee's exemption request included in its submittal for the LAR to be acceptable. The staff's review of the exemption request, as well as the LAR, is included in this safety evaluation.

The NRC staff's proposed no significant hazards consideration determination was published in the *Federal Register* (FR) on January 19, 2016 (81 FR 2915).

2.0 REGULATORY EVALUATION

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 3 requires that structures, systems, and components (SSCs) important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on SSCs important to safety. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these SSCs.

10 CFR 50.48(a)(2)(iii) states that each holder of an operating license issued under this part or a combined license issued under 10 CFR Part 52 must have a fire protection plan that satisfies GDC 3 of Appendix A to 10 CFR Part 50. This fire protection plan must also describe the means to limit fire damage to SSCs important to safety so that the capability to shut down the plant safely is ensured.

10 CFR 50.48(a)(4) states that each applicant for a design approval, design certification, or manufacturing license under 10 CFR Part 52 must have a description and analysis of the fire protection design features for the standard plant necessary to demonstrate compliance with GDC of Appendix A to 10 CFR Part 50.

10 CFR 50.62, "Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants," requires that each pressurized water reactor must have equipment from sensor output to final actuation device, that is diverse from the reactor trip system, to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. This equipment must be designed to perform its function in a reliable manner and be independent (from sensor output to the final actuation device) from the existing reactor trip system.

10 CFR 50.150, "Aircraft impact assessment," requires, in part, that each applicant perform a design-specific assessment of the effects on the facility of the impact of a large, commercial aircraft.

10 CFR Part 52, Appendix D, Section VIII.A.4 states that exemptions from Tier 1 information are governed by the requirements in 10 CFR 52.63(b)(1) and 10 CFR 52.98(f). It also states that the Commission will deny such a request if it finds that the design change will result in a significant decrease in the level of safety otherwise provided by the design.

10 CFR Part 52, Appendix D, Section VIII.B.5.a requires, among other things, that an applicant or licensee who references 10 CFR Part 52, Appendix D may depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure

from Tier 1 information, Tier 2* information, or Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of 10 CFR Part 52, Appendix D, Section VIII.

10 CFR 52.63(b)(1) allows the licensee who references a design certification rule to request NRC approval for an exemption from one or more elements of the certification information. The Commission may only grant such a request if it determines that the exemption will comply with the requirements of 10 CFR 52.7, which, in turn, points to the requirements listed in 10 CFR 50.12 for specific exemptions, and the special circumstances present outweigh any decrease in safety that may result from the reduction in standardization caused by the exemption. Therefore, any exemption from the Tier 1 information certified by Appendix D to 10 CFR Part 52 must meet the requirements of 10 CFR 50.12, 52.7, and 52.63(b)(1).

10 CFR 52.98(f) states that any modification to, addition to, or deletion from the terms and conditions of a COL, including any modification to, addition to, or deletion from the inspections, tests, analyses, or related acceptance criteria (ITAAC) contained in the license is a proposed amendment to the license. Appendix C of COL Numbers NPF-93 and NPF-94 contain information that the licensee is proposing to modify. Therefore, the proposed changes require a license amendment.

10 CFR 73.54(a) requires that each licensee subject to the requirements of 10 CFR 73.54 shall provide high assurance that digital computer and communication systems and networks are adequately protected against cyber-attacks, up to and including the design basis threat as described in 10 CFR 73.1.

10 CFR 73.55, “Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage,” Item (b), “General performance objective and Requirements,” requires a licensee to establish and maintain a physical protection program, which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. This physical protection program must protect against the design basis threat of radiological sabotage as stated in 10 CFR 73.1.

3.0 TECHNICAL EVALUATION

3.1 EVALUATION OF EXEMPTION

The regulations in Section III.B of Appendix D to 10 CFR Part 52 require a holder of a COL referencing Appendix D to 10 CFR Part 52 to incorporate by reference and comply with the requirements of Appendix D, including certified information in Tier 1 of the generic AP1000 DCD. Because the licensee has identified changes to plant-specific Tier 1 information, with corresponding changes to the associated COL Appendix C information during reconfiguration and relocation of the DAS, resulting in the need for a departure, an exemption from the certified design information within plant-specific Tier 1 material is required under 10 CFR 52.63(b)(1) to implement the LAR. Also, the exemption is needed because Section VIII.A.4 of Appendix D to 10 CFR Part 52 requires a licensee to obtain an exemption to depart from the Tier 1 information of the generic AP1000 DCD.

The Tier 1 information for which a plant specific departure and exemption was requested includes corresponding changes to COL Appendix C information during reconfiguration and relocation of the DAS. The result of this exemption would be that the licensee could implement modifications to Tier 1 information described and justified in LAR 15-04 if, and only if, the NRC

approves LAR 15-04. This exemption is a permanent exemption limited in scope to the particular Tier 1 information specified.

As stated in Section VIII.A.4 of Appendix D to 10 CFR Part 52, an exemption from Tier 1 information is governed by the requirements of 10 CFR 52.63(b)(1) and 52.98(f). Additionally, Section VIII.A.4 of Appendix D to 10 CFR Part 52 provides that the Commission will deny a request for an exemption from Tier 1 if it finds that the requested change will result in a significant decrease in the level of safety otherwise provided by the design. Pursuant to 10 CFR 52.63(b)(1), the Commission may grant exemptions from one or more elements of the certification information so long as the criteria given in 10 CFR 52.7, which, in turn, references 10 CFR 50.12, is met and that the special circumstances, which are defined by 10 CFR 50.12(a)(2), outweigh any potential decrease in safety due to reduced standardization.

Pursuant to 10 CFR 52.7, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 52. As 10 CFR 52.7 further states, the Commission's consideration will be governed by 10 CFR 50.12, "Specific exemptions," which states that an exemption may be granted when: (1) the exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security; and (2) special circumstances are present. Specifically, 10 CFR 50.12(a)(2) lists six special circumstances for which an exemption may be considered. It is necessary for one of these special circumstances to be present in order for the NRC to consider granting an exemption request. The licensee stated that the requested exemption meets the special circumstances of 10 CFR 50.12(a)(2)(ii). That subparagraph defines special circumstances as when "[a]pplication 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 staff's analysis of each of these findings is presented below.

3.1.1 AUTHORIZED BY LAW

This exemption would allow the licensee to implement a revision to Tier 1, Table 2.5.1-5 and Table 3.7-1 in the plant specific DCD. This exemption is a permanent exemption limited in scope to particular Tier 1 information. Subsequent changes to Tier 1, Table 2.5.1-5 and Table 3.7-1 or any other Tier 1 information would be subject to the exemption process specified in Section VIII.A.4 of Appendix D to 10 CFR Part 52 and the requirements of 10 CFR 52.63(b)(1). As stated above, 10 CFR Part 52, Appendix D, Section VIII.A.4 allows the NRC to grant exemptions from one or more elements of the Tier 1 information. Based on 10 CFR Part 52, Appendix D, Section VIII.A.4, the NRC staff has determined that granting of the licensee's proposed exemption will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, as required by 10 CFR 50.12(a)(1), the exemption is authorized by law.

3.1.2 NO UNDUE RISK TO PUBLIC HEALTH AND SAFETY

The underlying purpose of Appendix D to 10 CFR 52 is to ensure that a licensee will construct and operate the plant based on the approved information found in the DCD incorporated by reference into a licensee's licensing basis. The changes proposed by the licensee do not add or delete systems or equipment as described in Tier 1 of the AP1000 DCD. These changes will not impact the ability of the systems or equipment to perform their design function. Because they will not alter the operation of any plant equipment or systems, these changes do not present an undue risk from existing equipment or systems. These changes do not add any new

equipment or system interfaces to the current plant design. The description changes do not introduce any new industrial, chemical, or radiological hazards that would represent a public health or safety risk, nor do they modify or remove any design or operational controls or safeguards intended to mitigate any existing on-site hazards. Furthermore, the proposed changes would 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 significant fuel cladding failures. Accordingly, these changes do not present an undue risk from any new equipment or systems. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that there is no undue risk to public health and safety.

3.1.3 CONSISTENT WITH COMMON DEFENSE AND SECURITY

The proposed exemption would allow changes to elements of the DAS and associated Uninterrupted Power Supply (UPS) distribution panels as presented in the system and non-system based ITAAC tables in the plant-specific DCD Tier #1, thereby departing from the AP1000 certified (Tier 1) design information. This proposed exemption would be a permanent exemption limited in scope to particular Tier 1, Table 2.5.1-5 and Table 3.7-1 information. Any changes to Tier 1, Table 2.5.1-5 and Table 3.7-1 or any other Tier 1 information would be subject to the exemption process in Section VIII.A.4 of Appendix D to 10 CFR Part 52. The change does not alter or impede the design, function, or operation of any plant SSCs associated with the facility's physical or cyber security and, therefore, does not affect any plant equipment that is necessary to maintain a safe and secure plant status. In addition, the changes have no impact on plant security or safeguards. Therefore, as required by 10 CFR 50.12(a)(1), the staff finds that the common defense and security is not impacted by this exemption.

3.1.4 SPECIAL CIRCUMSTANCES

Special circumstances, in accordance with 10 CFR 50.12(a)(2)(ii), are present whenever 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 underlying purpose of the Tier 1 information is to ensure that a licensee will safely construct and operate a plant based on the certified information found in the AP1000 DCD, which was incorporated by reference into the SCE&G's licensing basis. The proposed changes would reconfigure and relocate the DAS cabinets and relocate the power supplies for the DAS processor cabinets, as presented in Tier 1 ITAAC tables. These changes will enable the licensee to safely construct and operate the AP1000 facility consistent with the design certified by the NRC by clarifying the information mentioned above found in Tier 1, Table 2.5.1-5 and Table 3.7-1 of the DCD.

Therefore, special circumstances are present in the particular circumstances discussed in LAR 15-04 because the application of the specified Tier 1 information does not serve the underlying purpose of the rule. Based on the foregoing reasons, the staff finds that the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from the Tier 1 information exist.

3.1.5 SPECIAL CIRCUMSTANCES OUTWEIGH REDUCED STANDARDIZATION

This exemption would allow the implementation of changes to Tier 1, Table 2.5.1-5 and Table 3.7-1 in the DCD proposed in the LAR. The design functions of the systems associated with this request will continue to be maintained because the associated revisions to Table 2.5.1-5 and Table 3.7-1 demonstrate that the applicable regulatory requirements will

continue to be met. Consequently, the safety impact that may result from any reduction in standardization is minimized, because the proposed design change does not result in a reduction in the level of safety. Based on the foregoing reasons, as required by 10 CFR Part 52.63(b)(1), the staff finds that the special circumstances outweigh the effects the departure has on the standardization of the AP1000 design.

3.1.6 NO SIGNIFICANT REDUCTION IN SAFETY

This exemption would allow the implementation of changes to Tier 1, Table 2.5.1-5 and Table 3.7-1 in the DCD proposed in the LAR. The exemption request proposes to depart from the certified design by reconfiguring and relocating DAS cabinets and the associated UPS distribution panels and enhances the accuracy of details presented in Tier 1 ITAAC tables. The changes for consistency will not impact the functional capabilities of these components. The proposed changes will not adversely affect the ability of the DAS cabinet and UPS distribution panels to perform their design functions, and the level of safety provided by the current systems and equipment therein is unchanged. Therefore, based on the foregoing reasons and as required by 10 CFR Part 52, Appendix D, Section VIII.A.4, the staff finds that granting the exemption would not result in a significant decrease in the level of safety otherwise provided by the design.

3.2 TECHNICAL EVALUATION OF PROPOSED CHANGES

INTRODUCTION

The DAS is a nonsafety-related system that provides a diverse backup to the safety-related Protection and Safety Monitoring system (PMS). The DAS is designed to meet and perform the applicable requirements and protective functions established by 10 CFR 50.62, and conform to the NRC's four-point position of the diversity and defense-in-depth staff requirements memorandum (SRM) to SECY-93-087, Item II.Q, "Defense Against Common-Mode Failures in Digital Instrumentation and Control Systems" (ADAMS Accession No. ML003708056).

The nonsafety-related DAS is not required to prevent or mitigate the effects of design basis accidents. The nonsafety-related DAS is not required to provide or perform safety-related functions or safety-related features to mitigate or prevent against the effects of design basis accidents.

UFSAR Tier 2 reference document, WCAP-17184-P, "AP1000 Diverse Actuation System Planning and Functional Design Summary Technical Report," states that DAS Processor Cabinets 1 and 2 are located in the Annex Building and that the DAS squib valve controller cabinet and DAS instrumentation cabinet are located in the Auxiliary Building. Additionally, the DAS provides a set of dedicated, independent displays of select plant indications and manual controls in the main control room (MCR). The DAS provides the capability for manually initiating a reactor and turbine-trip from a dedicated DAS control panel, which is located in the MCR. Table 1 below identifies the DAS cabinets and the current COL location for each cabinet.

Table 1 – Current Licensing Basis DAS Locations[2]

Cabinet Name	Location	DAS Design
Squib Valve Control	Auxiliary Building	Remote
Instrument Cabinet	Auxiliary Building	Remote
Processor Cabinet 1	Annex Building	Remote
Processor Cabinet 2	Annex Building	Remote
MCR DAS Panel	Main Control Room	Primary

LAR 15-04 states that the DAS panel located in the MCR is the "Primary DAS" and that the DAS squib valve control cabinet, DAS instrumentation cabinet, and the two DAS processor cabinets are the "current remote DAS," which are located away from the MCR in either the Auxiliary Building or the Annex Building.

3.2.1 DIVERSE INSTRUMENTATION AND CONTROL (I&C) SYSTEM EVALUATION

INDEPENDENCE

10 CFR 50.62 states, in part, that ATWS equipment (i.e., DAS) must be independent (from sensor output to the final actuation device) from the existing reactor trip system (i.e., PMS). The current licensing basis for the DAS design, as listed in Section 2.5.1, "Diverse Actuation System," of Appendix C of the COL and Tier 1 of the VCSNS Units 2 and 3 UFSAR (ADAMS Accession No. ML15196A210), states that:

- The DAS provides automatic actuation of selected functions, as identified in Tier 1, Table 2.5.1-1, "Functions Automatically Actuated by the DAS," separate from the PMS.
- The DAS provides manual initiation of reactor trip and selected functions, as identified in Tier 1, Table 2.5.1-2, "Functions Manually Actuated by the DAS," separate from the PMS.
- The DAS provides MCR displays of selected plant parameters, as identified in Tier 1, Table 2.5.1-3, "DAS Sensors and Displays," separate from the PMS.
- The DAS uses a different display device than that used in the PMS.
- The DAS sensors identified in Tier 1, Table 2.5.1-3, "DAS Sensors and Displays," are separate from those being used by the PMS.

The NRC staff's review of LAR 15-04's proposed changes to the licensing basis documents found that none of the above listed DAS design basis independence requirements are being changed or modified. LAR 15-04 does not propose to use different DAS equipment or components in the reconfigured design. LAR 15-04 does not propose to use DAS equipment that would be the same or similar to the PMS equipment. LAR 15-04 does not propose any new DAS shared, operating, or programming interfaces with other systems outside of the current licensing basis. Therefore, based on the foregoing reasons, the NRC staff finds that the above

[2] As listed in DAS Cabinet Changes LAR 15-04, Table 1, "Summary of Current DAS Design."

DAS licensing basis design independence requirements are unchanged by the proposed LAR 15-04 design changes.

The current licensing basis for the DAS design, as listed in Section 2.5.1, of Appendix C of the COL and Tier 1 of the VCSNS Units 2 and 3 UFSAR, states that:

> The DAS is powered by non-Class 1E uninterruptible power supplies that are independent and separate from the power supplies which power the PMS.

Enclosure 1 of LAR 15-04 states that proposed relocation of the DAS processor cabinets to the Auxiliary Building will still use non-Class 1E DC and that the UPS system distribution panels that supply the Auxiliary Building DAS panels continue to be separate and independent from the PMS Class 1E UPS. Enclosure 1 of LAR 15-04 states that this proposed DAS reconfiguration is similar to the current power arrangement provided to the remote DAS by utilizing separate diesel generators and distribution panels in the Auxiliary Building, which is the current licensing basis for the DAS location in the Annex Building. Therefore, the NRC staff finds that the above listed DAS licensing basis power supply design requirement is not changed by the proposed LAR 15-04 DAS design reconfiguration and continue to conform to the applicable 10 CFR 50.62 ATWS independence requirements.

DIVERSITY

10 CFR 50.62 states, in part, that each pressurized water reactor must have equipment from sensor output to final actuation device that is diverse (i.e., DAS) from the reactor trip system (i.e., PMS), to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. The current licensing basis for the DAS design, as listed in Section 2.5.1, of Appendix C of the COL and Tier 1 of the VCSNS Units 2 and 3 UFSAR, states that:

- The signal processing hardware of the DAS uses input modules, output modules, and microprocessor or special purpose logic processor boards that are different than those used in the PMS.

- Software diversity between DAS and PMS will be achieved through the use of different algorithms, logic, program architecture, executable operating system, and executable software/logic.

- The DAS provides MCR displays of selected plant parameters, as identified in Tier 1, Table 2.5.1-3, “DAS Sensors and Displays,” separate from the PMS.

- The DAS uses a different display device than that used in the PMS.

The NRC staff’s review of LAR 15-04’s proposed changes to the licensing basis documents found that the above listed DAS licensing basis diversity requirement is not being changed or modified. LAR 15-04 does not propose to use different DAS equipment or components in the reconfigured design. The DAS instrument cabinet contains one Advanced Logic System (ALS) chassis to implement the internal DAS logic, which is the current licensing basis equipment utilized for DAS. Enclosure 1 of LAR 15-04 states that this instrument cabinet will be eliminated from the DAS design and that the proposed DAS reconfigured processor cabinets will provide space to house an ALS chassis. Thus, the proposed DAS reconfiguration will continue to utilize

the same DAS ALS chassis logic equipment as currently licensed, and the above listed software design licensing basis diversity requirement between the DAS and PMS is not affected with the proposed DAS reconfiguration. Therefore, the NRC staff finds that the above listed DAS diversity design criterion between the DAS and the PMS is not changed by the proposed LAR 15-04 DAS design reconfiguration and the proposed DAS design reconfiguration continues to conform to the applicable 10 CFR 50.62 ATWS diverse equipment requirement.

SINGLE POINT OF FAILURE

10 CFR 50.62 states, in part, that ATWS equipment must be designed to perform its function in a reliable manner. The NRC technical reviewer guidance of NUREG-0800, "Standard Review Plan (SRP) for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Revision 5, Chapter 7.8, "Diverse Instrumentation and Control Systems," states that diverse I&C system design should limit the potential for inadvertent actuation and challenges to safety systems. Enclosure 1 of LAR 15-04 states that the DAS instrument cabinet contains one ALS chassis. The ALS chassis contains a core logic board that generates the digital packet signal for transmittal to both of the DAS processor cabinets and the DAS displays. A postulated malfunction of the DAS instrument cabinet ALS's core logic board may result in inadvertent actuation of DAS protective functions that may also challenge safety system accident mitigation actuations.

The NRC staff reviewed proprietary Figures 3-1, "DAS Block Diagram," and 3-2, "An Overview of the DAS Cabinetry Layout," in WCAP-17184-P. The NRC staff's review of these current licensing basis figures finds that a postulated single failure of the DAS instrument cabinet's ALS core logic board may also result in failure of DAS automatic protective function actuations as well as failure to correctly display plant parameter information. However, the DAS, which is a nonsafety-related system, is not required to conform to the single failure regulatory criterion of the Institute of Electrical and Electronics Engineers (IEEE) Standard 603-1991, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," Clause 5.1, "Single-Failure Criterion," which is required by NRC regulations only for safety-related systems.

Enclosure 1 of LAR 15-04 states that the reconfiguration of the DAS signal processing design will change the design such that:

- Each DAS processor cabinet will have approximately one half of the DAS hardware;
- Each DAS processor cabinet will perform half the DAS functions;
- Each DAS processor cabinet will house an ALS chassis; and
- Half of the DAS sensor input signals will be processed by the ALS subsystem in each of the DAS processor cabinets.

Therefore, the proposed DAS reconfiguration to eliminate connecting all DAS sensor input signals to the single DAS instrument cabinet and distribute half of the DAS input signals to each DAS processor cabinet, while maintaining the licensed DAS automatic 2-out-of-2 (2oo2) actuation logic, would prevent the potential inadvertent and spurious actuation caused by the postulated single failure of one ALS chassis contained in the currently licensed DAS instrument cabinet design. The NRC staff's review of the DAS reconfiguration design as shown in the DAS design markups to proprietary Figures 3-1, and 3-2, provided in Enclosure 4 of LAR 15-04,

confirmed that the discussed potential DAS instrument cabinet spurious actuation would be prevented. The NRC staff finds that the proposed LAR 15-04 DAS design reconfiguration would address the design guidance of SRP Chapter 7.8 to limit the potential for inadvertent actuation and challenges to safety systems for postulated single and inadvertent failure of the DAS instrument cabinet ALS chassis core logic board.

The current licensing basis for DAS automatic actuation is 2oo2. Thus, if one DAS channel is not operational (i.e., 1-out-of-2 actuating signals due to single failure, then the DAS automatic component functions will not actuate. Enclosure 1 of LAR 15-04 states that the DAS reconfiguring will provide signal processing and component actuation in a 2oo2 configuration. Therefore, the DAS automatic actuation reconfiguration design changes provided in LAR 15-04 conform to the current licensing basis for DAS automatic actuation logic of 2oo2.

QUALITY

The current licensing basis for the DAS design, as listed in Section 2.5.1, of Appendix C of the COL and Tier 1 of the VCSNS Units 2 and 3 UFSAR, states that:

- The DAS has electrical surge withstand capability (SWC), and can withstand the electromagnetic interference (EMI), radio frequency (RFI), and electrostatic discharge (ESD) conditions that exist where the DAS equipment is located in the plant

Enclosure 1 of LAR 15-04 states that each of the proposed DAS processor cabinets is environmentally qualified and is qualified for electromagnetic compatibility. Section 3, "Technical Evaluation," of Enclosure 1 states that environmental qualification for a mild environment and qualification for EMI testing has been performed for the proposed DAS components and the components have been shown to maintain all four of these qualifications for their proposed relocation in the Auxiliary Building. The NRC staff's review of the DAS reconfiguration proprietary markups contained in Enclosure 4 of LAR 15-04 did not identify any changes or modifications to currently licensed and approved DAS quality or DAS qualification methods and processes. Therefore, the NRC staff finds that the above listed design quality requirement is not changed by the proposed LAR 15-04 DAS design reconfiguration.

3.2.2 FIRE PROTECTION EVALUATION

Enclosure 1 of LAR 15-04 states that the proposed DAS design reconfiguration changes do not impact fire protection in the remote DAS cabinets as discussed in UFSAR Subsection 9A.3.1.3.1.1. The LAR also states that the fire loading in the remote DAS cabinets is not affected by cabling enclosed in conduit to or between cabinets and that cabling or components within the DAS metal cabinets are not included in the room fire loading.

The NRC staff's review of the Safe Shutdown Evaluation of VCSNS Units 2 and 3 UFSAR Revision 3 Subsection 9A.3.1.3.1.1, "Fire Area 1200 AF 01" (ADAMS Accession No. ML15196A312), shows that a DAS design criterion states, in part, that spurious DAS actuation of squib valves is prevented by the use of a squib valve controller circuit, physical separation of potential hot short locations, and provisions for operator action to remove power from the fire area. The NRC staff's evaluation for the prevention of DAS spurious actuation of squib valves is covered below in sub-section "Fire-Induced Spurious Actuation of DAS Equipment Evaluation," of this safety evaluation. The NRC staff finds that the proposed DAS reconfiguration design still meets the squib valve design criterion as stated in the safe shutdown evaluation of UFSAR Subsection 9A.3.1.3.1.1.

FIRE-INDUCED SPURIOUS ACTUATION OF DAS EQUIPMENT EVALUATION

10 CFR 50.48, "Fire protection," requires, in part, that a holder of an operating license issued under Part 50 or a COL issued under 10 CFR Part 52 must have a fire protection plan that satisfies GDC 3 of Appendix A to 10 CFR Part 50. The current DAS licensing basis design criterion, as stated in VCSNS Units 2 and 3 UFSAR, Revision 3, Chapter 9, "Auxiliary Systems" (ADAMS Accession No. ML15196A312), Subsection 9A.2.7.1, "Criteria and Assumptions," states, in part, that spurious actuation of squib valves is prevented by the use of a squib valve controller circuit, which requires multiple hot shorts for actuation, physical separation of potential hot short locations, and provisions for operator action to remove power from the fire area.

The current licensing basis DAS design has the squib valve ARM, ACTUATE, and DAS manual control ENABLE switches all located within the DAS instrument cabinet. Enclosure 1 of LAR 15-04 states that a postulated single fire in the DAS instrument cabinet could cause a combination of shorts and open circuits that could actuate the squib valves. The proposed LAR 15-04 DAS reconfiguration design will provide physical separation of this equipment by placing the squib valve ARM and DAS manual ENABLE switch hardware in one DAS processor cabinet and the squib valve ACTUATE switch hardware in the other DAS processor cabinet. The NRC staff reviewed the proposed DAS reconfiguration design markups contained in the Enclosure 4 of LAR 15-04 to confirm the new design relocation of the squib valve ARM, ACTUATE, and DAS manual ENABLE switches from the DAS instrument cabinet to separate DAS processor cabinets.

The NRC staff finds that the proposed LAR 15-04 DAS design reconfiguration may minimize the likelihood that a postulated single small fire within either one of the DAS processor cabinets will result in spurious actuation of the squib valves. With regards to the fire protection guidance as committed by AP1000, a full room burn out is postulated and multiple spurious actuations are considered, regardless of whether the DAS equipment is split into two separate enclosures within the same fire area. Nonetheless, the proposed LAR 15-04 DAS reconfiguration design does not invalidate the conclusions made in the staff's evaluation in Section 9.5.1, "Fire Protection Program," of NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design," Volume 2, Supplement 2 (ADAMS Accession No. ML11293A073). In this previous evaluation, the staff determined that a spurious actuation of the DAS squib valve does not prevent the plant from achieving or maintaining safe shutdown condition. The reconfiguration of the DAS design presented in this LAR does not adversely impact the inputs or assumptions of the previous evaluation, which presents a bounding case. The reconfiguration splits the hardware into two separate cabinets to reduce a fire's ability to cause spurious actuation of the DAS squib valves; however, the analysis already assumes spurious actuation and still determined the plant can achieve and maintain a safe-shutdown condition. Therefore, the NRC staff finds that the proposed LAR 15-04 reconfiguration will maintain the current DAS fire protection licensing basis and continues to meet the applicable requirements of 10 CFR 50.48.

3.3 DAS CABINET RELOCATION FROM ANNEX TO AUXILIARY BUILDING EVALUATION

The current licensing basis location for the DAS instrument cabinet and DAS squib valve controller cabinet is in the security room in the Auxiliary Building. The current licensing basis has the DAS processor cabinet located in the Annex Building. The proposed LAR 15-04 DAS design reconfiguration will relocate all DAS control equipment to the Auxiliary Building. The proposed LAR also creates two processor cabinets and eliminates the instrument cabinet. However, the DAS squib valve actuation switches are maintained but split into the two processor cabinets.
Additionally, the proposed reconfiguration will relocate the DAS processor cabinets from the Annex Building to the same room within the Auxiliary Building (security room) that the DAS instrument cabinet is currently licensed to reside. Therefore, this DAS design reconfiguration will maintain the same DAS equipment in the same room in the Auxiliary Building as currently licensed for the DAS instrument cabinet. Enclosure 1 of LAR 15-04 states that relocating the DAS processor cabinets to the same location as the DAS instrument cabinet will reduce the amount of cabling between the cabinets. In addition, the current Annex Building location is a seismic Category II structure whereas the new Auxiliary Building location is a seismic Category I structure, as stated in Enclosure 3 of LAR 15-04.

The relocation of the DAS processor cabinets from the Annex Building to the Security Room in the Auxiliary Building places all DAS cabinets in the same room. For a fire in the Security Room, it is postulated that both cabinets will be affected and multiple fire-induced spurious signals can cause the ADS squib valves to actuate. However, this event is concluded to have no adverse impact on post-fire safe shutdown capability as evaluated in Section 3.2.2 of this safety evaluation.

3.4 DAS CABINET RELOCATION POTENTIAL AIRCRAFT IMPACT EVALUATION

10 CFR 50.150(a)(1), “Aircraft impact assessment,” requires, in part, that each applicant performs a design-specific assessment of the effects on the facility of the impact of a large commercial aircraft. The results of this assessment are listed in the VCSNS Units 2 and 3 UFSAR, Revision 3, Appendix 19F, “Malevolent Aircraft Impact” (ADAMS Accession No. ML15196A331). UFSAR Appendix 19F, Section 19F.4.2, “Site Arrangement,” states that this assessment credits the design and arrangement of certain building features to limit the effects of a potential aircraft impact on the Auxiliary Building. The physically separate locations of the MCR, the remote shutdown station, and the secondary DAS panel (DAS instrument cabinet), is a key design feature for the protection against the physical and fire damage resulting from the impact of a large commercial aircraft. To conform to the separate physical locations design feature to limit the effects of potential aircraft impact on the Auxiliary Building, the assessment’s current licensed DAS design is based on the location of the DAS instrument cabinet and the DAS squib valve control cabinet being located in Room 12554 of the Auxiliary Building. The current licensing basis, as stated in UFSAR Appendix 19F, Section 19F.4.2, states that “The detailed aircraft impact assessment shows that an aircraft impact cannot destroy all three of these locations due to the number of barriers associated with these locations.” Enclosure 1 of LAR 15-04 states that the DAS processor cabinets will be relocated to the same location in the Auxiliary Building security room (Room 12554).

The NRC staff’s review of the proposed DAS design reconfiguration markups included in the proprietary Enclosure 4 of LAR 15-04 demonstrate that the current Auxiliary Building DAS location room number did not change and that only the DAS nomenclature (i.e., instrument cabinet changed to processor cabinet 1 or 2 and DAS “panel” changed to DAS “panels”) is

proposed to be changed. In addition, Enclosure 1 of LAR 15-04 also states that moving the entirety of remote DAS to the Radiologically Controlled Area side of Auxiliary Building will ensure that, with the loss of the clean side of the Auxiliary Building (including the MCR), the DAS would still be available. Therefore, removing the DAS instrument cabinet and placing the two DAS processor cabinets in the same aircraft impact assessed licensing basis location would not change the ability of the Auxiliary Building to protect from a malevolent aircraft impact based on physically separate building location design features that are listed in the UFSAR. The NRC staff finds that the proposed LAR 15-04 DAS reconfiguration design changes continue to conform to the UFSAR Section 19F.4.2 requirements of 10 CFR 50.150(a)(1).

3.5 DAS CABINET RELOCATION SECURITY PLAN EVALUATION

10 CFR 73.55, "Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage," Item (b), "General performance objective and Requirements," requires a licensee to establish and maintain a physical protection program, which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. This physical protection program must protect against the design basis threat of radiological sabotage as stated in 10 CFR 73.1.

Because LAR 15-04, Enclosure 1, Section 3 has the potential to affect the licensee's security plans, which are described in Section 13.6, "Security," of the licensee's UFSAR, the staff reviewed the changes to ensure that the licensee's security plans continue to provide high assurance and meet the requirements of 10 CFR 73.54, "Protection of digital computer and communication systems and networks," and 10 CFR 73.55. Further, the licensee evaluated physical security in Section 3 of Enclosure 1 to LAR 15-04. The NRC staff's review finds that the information in the LAR 15-04, and material incorporated by reference, provides the required information for reviewing changes to physical security.

In LAR 15-04, Section 3 of Enclosure 1 the licensee noted the following:

- There is no change to any perimeter walls acting as a security barrier or other aspects of the structures that could affect physical security.

- Personnel access to the security panels within the security room is maintained by the design of the new DAS processor cabinets. Authorized access to the interior of each cabinet is maintained by the cabinet design and configuration of the proposed processor cabinets within the security room. Access to the security room by operators or maintenance personnel is limited by approved access levels, as necessary.

The NRC staff's review and evaluation of the licensee's assessment in LAR 15-04, Enclosure 1, Section 3 and other areas of consideration regarding the impact of the changes described in LAR 15-04, are summarized below.

PHYSICAL BARRIER

10 CFR 73.55(e), "Physical barriers," requires that each licensee shall identify and analyze site-specific conditions to determine the specific use, type, function, and placement of physical barriers needed to satisfy the physical protection program design requirements of 10 CFR 73.55(b) and that the licensee shall design, construct, install, and maintain physical barriers as necessary to control access into facility areas for which access must be controlled or denied to satisfy the physical protection program design requirements of paragraph (b) of 10 CFR 73.55.

The NRC staff reviewed the licensee's description in LAR 15-04, Enclosure 1, Section 3 against the Westinghouse Technical Report (TR)-94, "AP1000 Safeguards Assessment Report," Revision 5. The NRC staff confirmed that the proposed changes have no effect on any physical barrier credited by the Physical Security Plan (PSP) and therefore do not result in any adverse changes to physical barriers as described in 10 CFR 73.55(e). The staff finds that the proposed changes are acceptable and the high assurance requirement of 10 CFR 73.55 will continue to be met.

ACCESS CONTROLS

10 CFR 73.55(g)(6), "Access control devices," requires that the licensee shall control all keys, locks, combinations, passwords, and related access control devices used to control access to protected areas, vital areas, and security systems to reduce the probability of compromise. To accomplish this requirement, the licensee shall issue access control devices only to individuals who have unescorted access authorization and require access to perform official duties and responsibilities. The licensee must also, retrieve, change, rotate, deactivate, or otherwise disable access control devices that have been or may have been compromised or when a person with access has been terminated.

The NRC staff reviewed the licensee's description in LAR 15-04, Enclosure 1, Section 3. The NRC staff confirmed that the proposed changes have no effect on any of the access control devices credited by the PSP and, therefore, do not result in any adverse changes to access control devices as described in 73.55(g)(6)(A) and (D). The staff finds that the proposed changes are acceptable and the high assurance requirement of 10 CFR 73.55 will continue to be met.

3.5.1 PROTECTIVE STRATEGY- INGRESS PATHWAYS AND ASSOCIATED TIMELINES

10 CFR 73.55(b)(4), requires, in part, that, the licensee shall analyze and identify site-specific conditions, including target sets, that may affect the specific measures needed to implement the requirements of 10 CFR 73.55 and shall account for these conditions in the design of the physical protection program. The requirements of 10 CFR 73.55(k)(8)(ii), state, in part, that the licensee initiate response actions to interdict and neutralize threats in accordance with the requirements of 10 CFR Part 73, Appendix C, Section II, Nuclear Power Plant Safeguards Contingency Plans," and the licensee's response strategy.

The NRC staff reviewed the licensee's description in LAR 15-04, Enclosure 1, Section 3 for its effect on the implementation of the site specific physical protection program in Sections 1.5 and 14.5 of the PSP, Section 8 of the Safeguards Contingency Plan and information provided in Westinghouse TR-94. The NRC staff confirmed that the proposed changes to relocate the processor cabinets from the Annex Building to a security room in the Auxiliary Building does not change ingress pathways to vital areas or the pathways, associated timelines, utilized by

security force personnel to respond to external security response positions as described in the PSP and TR-94. The proposed changes are acceptable and the high assurance requirement of 10 CFR 73.55 and the listed protective strategy requirement of 10 CFR 73.55(k)(8)(ii) will continue to be met.

3.5.2 CYBER SECURITY

10 CFR 73.54(a) requires that each licensee subject to the requirements of this section shall provide high assurance that digital computer and communication systems and networks are adequately protected against cyber-attacks, up to and including the design basis threat as described in 10 CFR 73.1. The requirements of 10 CFR 73.55(c)(1), "Security plans," state, in part, that the licensee security plans must describe how the licensee will implement requirements of 10 CFR 73.55 through the establishment and maintenance of a security organization, the use of security equipment and technology, the training and qualification of security personnel, the implementation of predetermined response plans and strategies, and the protection of digital computer and communication systems and networks.

The NRC staff reviewed the licensee's description in LAR 15-04, Enclosure 1, Section 3. The change in moving the DAS cabinet from the Annex Building, Room 40411 to the Auxiliary Building in Room 12554 does not affect cyber-security. The change in the locations of the cabinets does not affect the licensee's Cyber Security Plan. The NRC staff confirmed that the proposed changes do not adversely change cyber security. The proposed changes are acceptable, and the high assurance requirement of 10 CFR 73.54 will continue to be met.

3.5.3 DAS CABINET RELOCATION SECURITY PLAN EVALUATION CONCLUSION

The NRC staff has reviewed LAR 15-04, of Enclosure 1, Section 3 and finds that, with regard to physical security, the proposed changes are acceptable and the high assurance requirement of 10 CFR 73.54 and 10 CFR 73.55 will continue to be met. The current physical protection program includes the necessary programmatic elements that, when effectively implemented, will provide the required high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety. The burden to effectively implement the physical protection program remains with the licensee. Effective implementation depends upon the implementing procedures and practices that the licensee develops to satisfy the programmatic elements of its PSP, Training and Qualification Plan and Safeguards Contingency Plan. Should deficiencies be identified with the programmatic elements of these plans as a result of the periodic drills or exercises conducted by the licensee or the NRC that test the effectiveness of the overall protective strategy, the plans shall be corrected to address these deficiencies in a timely manner and the licensee shall notify the NRC of these plan changes in accordance with the requirements of 10 CFR 50.54(p) or 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit." Based on the above design evaluations and findings regarding physical security listed in this safety evaluation, the NRC staff concludes that the proposed changes described in LAR 15-04, Enclosure 1, Section 3 are acceptable.

3.6 EVALUATION OF PROPOSED SUMMER UNITS 2 AND 3 UFSAR REVISIONS

LAR 15-04 proposes to include a revision to UFSAR Appendix 7A, "Instrumentation and Controls Licensing Basis Document Changes" (ADAMS Accession No. ML15196A310). This new revision, Section 7A.3, "WCAP-17184-P, AP1000™ Diverse Actuation System Planning and Functional Design Summary Technical Report," to Appendix 7A will capture the changes to

supplement Tier 2 reference document WCAP-17184. This new Section 7A.3 addition to UFSAR Appendix 7A reflects the WCAP-17184 changes related to the reconfiguration of the DAS as proposed and listed in the LAR's licensing basis changes. The design descriptions in UFSAR Appendix 7A, Section 7A.3, will present the changes to WCAP-17184 that are necessary to support LAR 15-04 DAS reconfiguration.

The VCSNS Units 2 and 3 UFSAR Appendix 7A was originally submitted to and approved by the NRC as a new section to the UFSAR under LAR 13-36, "Component Interface Module (CIM)/Diverse Actuation System (DAS) Diversity" (ADAMS Accession No. ML15176A703). Appendix 7A was submitted to capture the revised licensing basis technical reports (i.e., WCAPs) design information without incorporating the newer revisions of the WCAPs into the plant's licensing basis immediately following approval of an LAR, which was done because the new WCAP revisions will also include other design changes that will be evaluated as departures in future licensing change packages or LARs. The licensee plans to process an "administrative departure," in accordance with the 10 CFR Part 52, Appendix D, Section VIII departure evaluation requirements, to incorporate the final revisions of the WCAPs into the licensing basis and would then delete Appendix 7A from the UFSAR. The final departure is currently characterized as an administrative change because the technical changes to the WCAPs will have already been approved via the prior LARs. The licensee's letter regarding LAR 15-04 states that VCSNS expects to implement the proposed amendment (through incorporation into the licensing basis documents, e.g., the UFSAR) within 30 days of the approval of the requested changes.

3.7 SUMMARY

3.7.1 CONCLUSION REGARDING PROPOSED UFSAR MARKUP REVISIONS

Enclosure 4 of LAR 15-04 provides the non-public version of the proposed DAS reconfiguration design markups. Enclosure 4 added several new sections to the DAS licensing basis documents. The NRC staff's review of these new sections is provided below.

- New sections added to WCAP-17184-P:

  Sections 3.1.1.1, "DAS Processor Cabinet 1" and 3.1.1.2, "DAS Processor Cabinet 2"

  The NRC staff's review of these new sections identified the separation of the DAS squib valve control switches and DAS manual control switches. These DAS design details are consistent with the proposed DAS reconfiguration design and conform to the current licensing basis.

- New sections added to WCAP-17184-P:

  Sections 3.1.3.4, “DAS Remote Manual Switches,” and “3.1.3.5, “DAS Manual Enable”

  The NRC staff’s review of these new sections identified switch type and switch operation details. These DAS design details are consistent with the proposed DAS reconfiguration design and conform to the current licensing basis.

The NRC staff’s review of LAR 15-04 proposed markups of licensing basis documents revealed that most changes were administrative changes to reflect the reconfigured DAS cabinet identification (Instrument Cabinet changed to Processor Cabinet 1 or 2, DAS cabinet locations in the Annex Building changed to Auxiliary Building, corresponding tag number changes). As shown above, design details that would describe detailed DAS operation of the processor cabinets versus the instrument cabinet were also provided. Based upon the NRC staff’s LAR review and findings made in this safety evaluation, the NRC staff concludes that the proposed LAR 15-04 DAS reconfiguration revisions still conform to the applicable COL regulations listed in this safety evaluation.

3.7.2 SUMMARY CONCLUSION OF PROPOSED DAS RECONFIGURATION

Based upon the NRC staff’s LAR review and findings made in this safety evaluation, the NRC staff finds that the proposed LAR 15-04 changes to the remote DAS do not affect safety-related equipment and safety-related functions and do not result in a new failure mode or a new or different kind of accident from any accident previously evaluated.

3.7.3 CONCLUSION OF REQUESTED TIER 1 EXEMPTION

The NRC staff’s evaluation of the proposed changes to COL Appendix C and UFSAR Tier 1 information submitted in Enclosure 4 found that the changes are administrative to support the DAS reconfiguration design request. The Tier 1 changes, as provided in Enclosure 4, include:

- Deletion of the term “DAS Instrument Cabinet”
- Change of the word “Annex” to “Auxiliary”
- Change to or deletion of DAS tag numbers

A summary and listing of the proposed Tier 1 changes are provided in Section 2, “Detailed Description,” of Enclosure 1 of LAR 15-04 and Section 1.0, “Purpose,” of Enclosure 2.

Therefore, based on the NRC staff’s LAR review and findings made in this safety evaluation, the NRC grants the exemption request, as requested in Enclosure 2 of LAR 15-04, to depart from AP1000 generic Tier 1 DCD information by revising the location of DAS Processor Cabinets 1 and 2, deleting the DAS Instrument Cabinet, and revising the location and tag numbers for the UPS distribution panels that will power the DAS in Tier 1 ITAAC tables, as shown in Enclosure 4 of LAR 15-04.

3.7.4 CONCLUSION OF LAR 15-04 DAS RECONFIGURATION AMENDMENT

The NRC staff’s evaluation of the proposed DAS reconfiguration amendment, as submitted in LAR 15-04, found that the proposed DAS reconfiguration changes continue to conform to the current COL licensing basis regulations and design guidance listed in this safety evaluation.

Therefore, the NRC staff concludes, based upon the NRC staff's evaluation and findings made in this safety evaluation, that the proposed DAS reconfiguration design changes as provided in LAR 15-04, are acceptable and continue to conform to the listed VCSNS Units 2 and 3 COL licensing basis. Thus, the NRC staff approves LAR 15-04.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations in 10 CFR 50.91(b)(2), the designated State of South Carolina official was notified of the proposed issuance of the amendment. The State of South Carolina had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (81 FR 2915 (January 19, 2016)). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

Because the exemption is necessary to allow the changes proposed in the license amendment, and because the exemption does not authorize any activities other than those proposed in the license amendment, the environmental consideration for the exemption is identical to that of the license amendment. Accordingly, the 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), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the exemption.

6.0 CONCLUSION

The staff has determined that pursuant to Section VIII.A.4 of Appendix D to 10 CFR Part 52, the exemption (1) is authorized by law, (2) presents no undue risk to the public health and safety, (3) is consistent with the common defense and security, (4) presents special circumstances, (5) the special circumstances which outweigh any decrease in safety that may result from the reduction in standardization, and (6) does not significantly reduce the level of safety at the licensee's facility. Therefore, the staff grants the licensee an exemption from the Tier 1 information specified by the licensee.

The staff has concluded, based on the considerations discussed in Section 3.2 of this safety evaluation, and confirmed that these changes do not change the analysis methodology, assumptions, or the design itself, that there is reasonable assurance that: (1) the health and safety of the public will not be endangered by operation in the proposed manner, (2) the 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. Therefore, the staff finds the changes proposed in this license amendment request acceptable.

7.0 REFERENCES

1. NUREG-1793, Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design, Volume 2, Supplement 2, dated September 2011 (ADAMS Accession No. ML11293A073).

2. Virgil C. Summer Nuclear Station (VCSNS) Updated Final Safety Analysis Report (UFSAR), Revision 3, Tier 1, dated April 1, 2015 (ADAMS Accession No. ML15196A196).

3. AP1000 Design Control Document, Revision 19, dated June 13, 2011 (ADAMS Accession No. ML11171A500).

4. U.S. Nuclear Regulatory Commission, “Final Safety Evaluation Report Related to the Combined Licenses for Virgil C. Summer Nuclear Station for Units 2 and 3” Volume 1, NUREG-2124, dated September 30, 2012 (ADAMS Accession No. ML12271A045).

5. Letter from Ronald A. Jones, South Carolina Electric & Gas Company to U.S. Nuclear Regulatory Commission, “Request for License Amendment and Exemption: Diverse Actuation System (DAS) Cabinet Changes (LAR 15-04),” dated November 04, 2015, (ADAMS Accession No. ML15288A549).

6. WCAP-17184-NP, “AP1000 Diverse Actuation System Planning and Functional Design Summary Technical Report,” Revision 2, dated July 2010 (ADAMS Accession No. ML102170263).

7. Westinghouse Technical Report 94, “AP1000 Safeguards Assessment Report, Revisions 5 (TR-94).