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

August 5, 2024

Mr. Eric S. Carr
Senior Vice President and
Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060-6711

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 — ISSUANCE OF AMENDMENT NO. 227 TO MODIFY TECHNICAL SPECIFICATION 3.8.3.1 TO INCREASE COMPLETION TIME FOR THE 120-VOLT A.C. VITAL BUSSES (EPID L-2023-LLA-0157)

Dear Eric Carr:

The U.S. Nuclear Regulatory Commission (NRC, or the Commission) has issued the enclosed Amendment No. 227 to Renewed Facility Operating License No. NPF-12 for the Virgil C. Summer Nuclear Station, Unit 1. The amendment revises the Technical Specifications (TSs) in response to your application dated November 9, 2023 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML23317A224), as supplemented by letters dated November 28, 2023 (ML23332A194), March 26, 2023 (ML24087A226), and June 25, 2024 (ML24178A119).

The amendment revises TS 3.8.3.1 to increase the TS Action required completion time for the 120-volt alternating current vital busses from 24 hours to 7 days.

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

Sincerely,

/RA/

G. Edward Miller, Project Manager
Plant Licensing Branch II-I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosures:
1. Amendment No. 227 to NPF-12
2. Safety Evaluation

cc: Listserv

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

DOMINION ENERGY SOUTH CAROLINA, INC.

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

DOCKET NO. 50-395

VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 227
Renewed License No. NPF-12

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Virgil C. Summer Nuclear Station, Unit No. 1 (the facility), Renewed Facility Operating License No. NPF-12, filed by the Dominion Energy South Carolina, Inc. (the licensee), dated November 9, 2023, as supplemented by letters dated November 28, 2023, March 26, 2024, and June 25, 2024, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering public health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations as set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by a page change to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-12 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 227, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the renewed license. Dominion Energy South Carolina, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

MICHAEL MARKLEY

Digitally signed by MICHAEL MARKLEY
Date: 2024.08.05 12:27:49 -04'00'

Michael T. Markley, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renewed Facility Operating
License and Technical Specifications

Date of Issuance: August 5, 2024

VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1

ATTACHMENT TO LICENSE AMENDMENT NO. 227

RENEWED FACILITY OPERATING LICENSE NO. NPF-12

DOCKET NO. 50-395

Replace the following pages of the renewed facility operating license with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Page	Insert Page
License Page 3	License Page 3
Technical Specifications 3/4 8-13	Technical Specifications 3/4 8-13

(3) DESC, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage amounts required for reactor operation, as described in the Final Safety Analysis Report, as amended through Amendment No. 33;

(4) DESC, pursuant to the Act and 10 CFR Part 30, 40 and 70 to receive, possess and use at any time byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed neutron sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(5) DESC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus of components; and

(6) DESC, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as m[a]y be produced by the operation of the facility.

C. This renewed license shall be deemed to contain, and is subject to, the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

DESC is authorized to operate the facility at reactor core power levels not in excess of 2900 megawatts thermal in accordance with the conditions specified herein and in Attachment 1 to this renewed license. The preoccupation tests, startup tests and other items identified in Attachment 1 to this renewed license shall be completed as specified. Attachment 1 is hereby incorporated into this renewed license.

(2) Technical Specifications and Environmental Protection Plant

The Technical Specifications contained in Appendix A, as revised through Amendment No. 227, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the renewed license. Dominion Energy South Carolina, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3/4.8.3 ONSITE POWER DISTRIBUTION

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.3.1 The following electrical busses shall be energized in the specified manner with tie breakers open between redundant busses:

a. Train A A.C. Emergency Busses consisting of:
   1. 7200 volt Emergency Busses # 1DA and 1EA.
   2. 480 volt Emergency Busses # 1DA1, 1DA2 and 1EA1.
b. Train B A.C. Emergency Busses consisting of:
   1. 7200 volt Emergency Busses # 1DB and 1EB.
   2. 480 volt Emergency Busses # 1DB1, 1DB2, and 1EB1.
c. 120 volt A.C. Vital Busses # 5902 and 5901 energized from an associated inverter connected to D.C. Bus # 1HA*.
d. 120 volt A.C. Vital Busses # 5904 and 5903 energized from an associated inverter connected to D.C. Bus # 1HB*.
e. 120 volt A.C. Vital Bus #5907 energized.
f. 120 volt A.C. Vital Bus #5908 energized.
g. 125 volt D.C. Bus 1HA energized from Battery Bank #1A.
h. 125 volt D.C. Bus 1HB energized from Battery Bank #1B.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one of the required trains of A.C. Emergency busses not fully energized, re-energize the division within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one A.C. Vital Bus not energized, re-energize the A.C. Vital Bus within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one of A.C. Vital Busses #5901, 5902, 5903, or 5904 either not energized from its associated inverter, or with the inverter not connected to its associated D.C. Bus re-energize the A.C. Vital Bus from its associated inverter connected to its associated D.C. Bus within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*The inverters may be disconnected from their D.C. Bus for up to 24 hours as necessary for the purpose of performing an equalizing charge on their associated battery bank provided (1) their vital busses are energized, and (2) the vital busses associated with the other battery bank are energized from their associated inverters and connected to their associated D.C. Bus.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 227 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-12

DOMINION ENERGY SOUTH CAROLINA, INC.

VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1

DOCKET NO. 50-395

1.0 INTRODUCTION

By application dated November 9, 2023 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML23317A224), as supplemented by letters dated November 28, 2023 (ML23332A194), March 26, 2024 (ML24087A226), and June 25, 2024 (ML24178A119), Dominion Energy South Carolina, Inc. (DESC, the licensee) requested changes to the Technical Specifications (TS) for the Renewed Facility Operating License No. NPF-12 for Virgil C. Summer Nuclear Station (VCSNS), Unit 1. The proposed change would modify the TS section 3/4.8.3, "Onsite Power Distribution - Operating," Limiting Condition for Operation (LCO) 3.8.3.1, Action c., to increase the TS Action required completion time (CT) associated with the 120-volt alternating current (V AC) vital busses from 24 hours to 7 days. The licensee proposed this change based on a deterministic engineering evaluation supported by a risk insights assessment.

The supplemental letters dated November 28, 2023, March 26, 2024, and June 25, 2024, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on January 23, 2024 (89 FR 4345).

2.0 REGULATORY EVALUATION

2.1 System Description

The licensee provided a description of the 120-V AC vital bus system and its inverters in section 2.1, "System Design and Operation," and section 3.1.1, "Defense-in-Depth," of the initial application, and in section 8.3 "Onsite Power Systems," of the VCSNS updated final safety analysis report (UFSAR) (ML23208A088).

The nominal 120-V AC vital bus system consists of six distribution panels (busses) and four inverters which provide power to four independent channels A, B, D, and E of Engineered

Safety Features (ESF) instrumentations. Channels A and B consist of two distribution panels and one inverter each, while Channels D and E consist of one distribution panel and one inverter each. The channels are aligned to two independent trains: channels A and D on Train A and channels B and E on Train B.

The 120-V AC vital busses constitute a reliable electrical system which provides a stable power supply to vital equipment. Six 120-V AC vital busses are provided. Four 120-V AC vital busses, APN5901 (120-V AC Vital Distribution Panel 1, Nuclear Steam Supply System (NSSS)), APN5902 (120-V AC Vital Distribution Panel 2, NSSS), APN5903 (120-V AC Vital Distribution Panel 3, NSSS), and APN5904 (120-V AC Vital Distribution Panel 4, NSSS), are supplied by one single phase static inverter to each of them. The remaining two busses, APN5907 (120-V AC Vital Distribution Panel 7, NSSS) and APN5908 (120-V AC Vital Distribution Panel 8, NSSS), are powered by two of the four inverter backed busses. Bus APN5907 is fed from Bus APN5901, and bus APN5908 is fed from bus APN5903. The vital busses APN5901 and APN5907 are in channel A, bus APN5902 is in channel D, busses APN5903 and APN5908 are in channel B, and bus APN5904 is in channel E.

The 120-V AC vital inverter in each system provides continuous power to the 120-V AC vital busses. Vital inverters XIT5901, XIT5902, XIT5903, XIT5904 supply power to the vital busses APN5901/APN5907, APN5902, APN5903/APN5908, and APN5904, respectively. The normal source of power for the 120-V AC vital inverters is through the inverters' static rectifiers and their standby power source is the 125-V direct current (DC) ESF batteries and battery chargers. According to UFSAR Figure 8.3-1, the rectifiers of channels A and D inverters/uninterruptible power supplies (UPS) XIT5901 and XIT5902 are fed from 480-V AC Bus 1DA2. Similarly, according to UFSAR Figure 8.3-2, the rectifiers of channels B and E inverters/UPS XIT5903 and XIT5904 are fed from 480-V AC Bus 1DB2. In the event of loss of 480-V AC power, the power source for the inverters is the ESF batteries, which are floating on standby service. The change from the normal to standby power source occurs without exceeding the stated inverter output voltage and frequency regulation and without interrupting the inverter output. Channel A and D inverters are connected to ESF battery 1A, and Channels B and E inverters are connected to ESF battery 1B.

The output of each 120-V AC vital inverter is connected to a distribution cabinet through an automatic static transfer switch and a normally closed-circuit breaker. An alternate 480-V to 120-V regulating transformer Class 1E power source is provided through the automatic static transfer switch. The alternate transformers are fed from a 480-V Motor Control Center with emergency diesel generator (EDG) backup. Following the loss of an inverter, the inverter output will automatically switch to the alternate regulating transformer without loss of AC output. Additionally, the inverters are equipped with an Independent Static Bypass Switch (ISBS) to allow the inverters' units to default to the alternate regulating transformer in the event of a failure of the UPS controller.

2.2 Description of Proposed Changes

Technical Specification 3/4.8.3, "Onsite Power Distribution," LCO 3.8.3.1 requires, in part, that the 120-V AC vital busses shall be energized in the specified manner with the tie breakers open between redundant busses during Modes 1, 2, 3, and 4:

c. 120-volt A.C. Vital Busses # 5902 and 5901 energized from an associated inverter connected to D.C. Bus # 1HA*.

d. 120-volt A..C Vital Busses # 5904 and 5903 energized from an associated inverter connected to D.C. Bus # 1HB*.
e. 120-volt A.C. Vital Bus #5907 energized.
f. 120-volt A.C. Vital Bus #5908 energized.

Current TS LCO 3.8.3.1, Action c. states:

> c. With one of A.C. Vital Busses #5901, 5902, 5903, or 5904 either not energized from its associated inverter, or with the inverter not connected to its associated D.C. Bus re-energize the A.C. Vital Bus from its associated inverter connected to its associated D.C. Bus within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Revised TS LCO 3.8.3.1, Action c. would state:

> c. With one of A.C. Vital Busses #5901, 5902, 5903, or 5904 either not energized from its associated inverter, or with the inverter not connected to its associated D.C. Bus re-energize the A.C. Vital Bus from its associated inverter connected to its associated D.C. Bus within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

The proposed change would increase the inverter fed 120-volt AC Vital busses TA Action c. required CT from 24 hours to 7 days.

In Section 2.3, “Reason for the Proposed Change,” of its submittal dated November 9, 2023, the licensee states, in part, that:

> Experiences both at VCSNS and at other nuclear power plants have shown that the current 24-hour AOT for restoration of an inoperable inverter is insufficient in certain instances to support complex on-line troubleshooting, corrective maintenance, and post-maintenance testing while the unit is at power. This is especially true of the newer style inverter/UPS systems that utilize more digital components to perform their function as these components are generally not simple to troubleshoot. Further, as is common with digital systems vs. analog systems, the post-maintenance testing window needs to be long enough to account for the potential for intermittent or non-repeatable (i.e., ability to trigger the condition vice it repeating at a specific interval) issues...
>
> In addition to the above-mentioned maintenance needs for the proposed change, the impact of the proposed change would allow the station to enhance safety decision-making by the use of risk insights, be more efficient in implementation of station resources, and to reduce unnecessary burden on the station staff…

2.3 Regulatory Requirements and Guidance

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 provides the general provisions for “Domestic Licensing of Production and Utilization Facilities.” Under 10 CFR 50.90, whenever a holder of a license wishes to amend the license, including technical specifications in the license, an application for amendment must be filed, fully describing the changes desired. Under 10

CFR 50.92(a), determinations on whether to grant an applied-for license amendment are to be guided by the considerations that govern the issuance of initial licenses or construction permits to the extent applicable and appropriate. Both the common standards in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be reasonable assurance that the activities at issue will not endanger the health and safety of the public.

10 CFR 50.36, “Technical specifications,” section (c)(2), Limiting conditions for operation,” requires, in part, that “(i) Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.”

10 CFR Part 50, Appendix A, “General Design Criterion [GDC] for Nuclear Power Plants,” criterion 17, “Electric power systems,” as incorporated into Section 3.1.2.2 of the Updated Final Safety Analysis for VCSNS, states, in part:

> 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 onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

NUREG-0800, “Standard Review Plan [SRP] for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition,” Chapter 8, “Electric Power,” section 8.3.1, “A-C Power Systems (Onsite),” Revision 4 (ML100740289), provides the guidance for NRC staff review of onsite power systems to determine that power systems meet the GDC including criterion 17. The SRP section 8.3.1 states that, "Meeting the requirements of GDC 17 provides assurance that a reliable electric power supply will be provided for all facility operating modes, including anticipated operational occurrences and design-basis accidents (DBAs) to permit safety functions and other vital functions to be performed, even in the event of a single failure.”

Regulatory Guide (RG) 1.177, Revision 2 (ML20164A034), “Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications,” describes an approach that is acceptable to the NRC for developing risk-informed applications for changes to CTs and surveillance frequencies (SFs) of plant TS.

3.0 TECHNICAL EVALUATION

3.1 Defense-in-depth

Based on the UFSAR figures 8.3-1 and 8.3-2, when a 120-V AC vital bus is under TS LCO 3.8.3.1, Action c., this vital bus may be aligned to the alternate regulating transformer fed

from a 480-V AC bus (i.e., not energized from its inverter), or this vital bus may be supplied by its inverter connected to a 480-V AC bus (through rectifier), but not connected to its standby DC bus. In both cases, the affected 120-V AC vital bus will be de-energized when AC power is lost.

In Section 3.1.1, "Defense-In-Depth," of its submittal dated November 9, 2023, the licensee stated that, "Because of the preferred failure mode defined for reactor protective instrumentation, failure of an instrument channel power source results in a reactor trip signal from the affected channel. Multiple power supplies are provided to prevent a single power supply failure from initiating a false reactor trip." The licensee discussed the impact of a loss of offsite power (LOOP) events on the 120-V AC vital busses, as summarized below:

- In the event of a LOOP while the AC vital bus associated with inverter XIT5902 or XIT5904 is aligned to its alternate regulating transformer power supply (back-up source), the vital bus will remain de-energized until the DG [diesel generator] starts and energizes the alternate power supply. However, if a LOOP occurs while the AC vital bus associated with inverter XIT5901 or XIT5903 is aligned to its alternate regulating transformer power supply, the vital bus will remain de-energized due to loss of power to the ESF Load Sequencer. In this situation, a series of mitigating actions will be taken to restore power to either diesel-backed 7.2-kilovolt switchgear XSW1DA or XSW1DB.

- In both cases, if a LOOP, the remaining three operable AC vital busses will be unaffected because they are supplied automatically by their associated batteries (through associated inverters) and will still provide the required two-out-of-three channel actuation logic to the Reactor Protection System (RPS) and Engineered Safety Features Actuation System (ESFAS). Only three inverter channels, as described in Section 2.1 of the licensee's submittal dated November 9, 2023, are necessary to supply the safety related equipment required for (1) the safe shutdown of the facility, and (2) the mitigation and control of accident conditions.

The licensee stated that the impact of a loss of power to the single affected 120-V AC vital bus on plant operations while in TS LCO 3.8.3.1, Action C, will be minimal because the plant will be shut down due to the LOOP, and the remaining three AC vital busses will still provide the required two-out-of-three channel actuation logic to the RPS and ESFAS. The licensee also stated that if a redundant channel fails or is taken out of service during the proposed extended AOT, the plant would be in TS 3.0.3, requiring a plant shutdown.

The NRC staff reviewed the information related to defense-in-depth of the 120-V AC vital busses in the LAR and UFSAR. The NRC staff notes that the above description of the available AC vital busses in the event of a LOOP during entry into TS LCO 3.8.3.1, Action C, is consistent with the current design of the AC vital system in the plant and the TS 3/4.3.8.1 requirement. Given the continued diverse and redundant means of supplying the needed electrical busses, the NRC staff finds that the proposed change to TS LCO 3.8.3.1, Action C, would not impact the current defense-in-depth philosophy because the three remaining 120-V AC vital busses will be available to support the required minimum safety functions during a design basis event (DBE) involving a LOOP.

3.2 Evaluation of extended completion time

The LAR proposed to extend the required CT for TS LCO 3.8.3.1, Action c., from 24 hours to 7 days. In Section 2.3 of its submittal dated November 9, 2023, the licensee provided a postulated

timeline of 116 hours for required to support on-line troubleshooting, corrective maintenance, and post-maintenance testing of an inverter failure if the corrective maintenance would necessitate replacement of cards for which burned-in spares were not immediately available.

During entry into the proposed extended 7-day AOT for TS LCO 3.8.3.1, Action c., the redundancy of the inverters for the 120-V AC vital busses is impacted when an inverter is unavailable, but sufficient redundancy of the operability of the other three vital AC instrument busses and alternate means of providing the needed electrical busses will remain. In Section 3.1.1 of its submittal dated November 9, 2023, the licensee stated that the proposed extended AOT [allowed outage time] or CT "is consistent with the assumptions in the plant's safety analysis and does not result in a significant increase in risk."

In Section 3.1.1, the licensee also stated that the following administrative controls will be in place when the plant is in TS LCO 3.8.3.1, Action c., and recognize that with an inverter inoperable and the distribution panel being powered by the alternate AC power distribution system, continued instrumentation power for that train is dependent on power from the associated EDG following a loss of power event:

> Entry into the extended inverter AOT will not be planned concurrent with EDG maintenance, and entry into the extended inverter AOT will not be planned concurrent with planned maintenance on another ECCS [emergency core cooling system] or isolation actuation instrumentation channel that could result in that channel being in a tripped condition.

Based on the above, the NRC staff finds that the licensee has demonstrated that the configuration allowed by the proposed change will remain within the current configurations allowed by the TSs, along with administrative controls, to justify the proposed 7-day required CT. Additionally, there would be no increase in the accident dose analysis from the extended completion time. The revised TS LCO 3.8.3.1, Action c. will provide the plant sufficient time to perform major repairs and maintenance actions necessary for restoring an inoperable 120-V AC vital bus while taking remedial measures to ensure timely correction of the degraded condition. Based on the above, the NRC concludes that the proposed 7-day CT would continue to meet 10 CFR 50.36 and is, therefore, acceptable.

3.3 Safety Margin

In Section 3.1.2, "Safety Margin Evaluation," of its submittal dated November 9, 2023, the licensee states:

> The proposed extension of the vital A.C. inverter TS completion time remains consistent with the codes and standards applicable to VCSNS onsite A.C. sources and electrical distribution system. Safety analysis acceptance criteria in the VCSNS UFSAR are met, and the safety analysis acceptance criteria, as stated in the VCSNS UFSAR, are not impacted by these proposed changes.

In its November 9, 2023, submittal, the licensee stated that the margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident. The proposed change does not impact the ability of these barriers to accomplish their function and protect the safety limits.

The NRC staff finds that the proposed 7-day required CT change in TS 3.8.3.1, Action c., does not affect the plant design criteria, testing, and the safety analysis acceptance criteria for the 120-V AC vital busses specified in applicable codes and standards described in VCSNS UFSAR. Therefore, the NRC staff finds that there will be no additional reduction in safety margin during the proposed 7-day CT since the proposed CT extension does not impact the plant safety analysis and its applicable codes and standards, and, as such, the licensee will continue to comply with 10 CFR Part 50 Appendix A, GDC 17 and 10 CFR 50.57.

3.4 Risk Insights

In its submittal dated November 9, 2023, the licensee requested to extend the current CT of TS 3.8.3.1, Action c., for an inoperable inverter from 24 hours to 7 days based on deterministic evaluation plus risk insights from the probabilistic risk assessment (PRA) model. The licensee provided the results of an assessment using the three Tiers in RG 1.177. As such, the NRC review was limited in that the detailed quantitative and qualitative risk evaluation that was submitted by the licensee was not considered a fully risk-informed submittal in accordance with Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-informed Decisions on Plant-Specific Changes to the Licensing Basis.

While not submitted as a risk-informed amendment request per GR 1.174, the licensee provided risk insights related to the proposed TS CT change. To aid in its deterministic review of the proposed change, the NRC staff considered the licensee-provided risk insights utilizing guidance described in RG 1.177, Section 2.3, "Evaluation of Risk Impact," and Section 2.4, "Acceptance Guidelines for Technical Specification Changes." The NRC evaluated the licensee's assessment using the three-tiered in RG 1.177 and noted that:

- The licensee has demonstrated that the change in completion time has only a small quantitative impact on plant risk. An incremental conditional core damage probability of less than $1x10^{-6}$ and an incremental conditional large early release probability of less than $1x10^{-7}$ are considered small for a single TS condition entry;
- The licensee has demonstrated that there are appropriate controls on the potentially risk-significant configurations associated with the change; and
- The licensee has implemented a risk-informed plant configuration control program, including procedures to use, maintain, and control such a program.

The licensee provided risk insights associated with the 7-day period for the AOT that were consistent with acceptance guidelines in RG 1.177. Based on the above, the NRC staff determined the risk insights support the deterministic review findings in this safety evaluation.

3.5 Compliance with Existing Regulations

The regulations at 10 CFR 50.36(c) specify the requirements for TS LCO. When a TS LCO is not met, 10 CFR 50.36(c)(2)(i) requires that remedial actions be taken until the LCO is met or the reactor be shut down. The LAR proposed an AOT extension for TS 3.8.3.1, Action c., from 24 hours to 7 days. In TS 3.8.3.1, Action c., the LCO is not met if a 120-V AC vital bus is not energized from its associated inverter or if its inverter is not connected to its associated DC bus. The proposed TS 3.8.3.1, Action c., would provide remedial action to re-energize the AC vital bus from its associated inverter connected to its associated DC bus within a limited time (7 days). When the action cannot be met within the limited time, the revised TS 3.8.3.1, Action c., would continue to require the plant to be in shutdown modes within specified required times. Based on the above, the NRC staff finds that the proposed TS 3.8.3.1, Action c., provides would

continue to meet 10 CFR 50.36 and 10 CFR 50.57 and, therefore, reasonable assurance of public health and safety.

Appendix A, GDC 17 of 10 CFR Part 50 requires the onsite electric power supplies, including the batteries, and the onsite electric distribution system to have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. Temporary operation while an inverter is unavailable is allowed by TS 3.8.3.1, Action c., within a limited time, but the LAR proposed no changes to the design of the 120-V AC vital system and its power supplies. Therefore, the NRC staff finds that the proposed change does not impact the licensee's continued compliance with GDC 17 as described in its UFSAR.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the NRC staff notified the South Carolina State official of the proposed issuance of the amendment on June 28, 2024. On July 10, 2024, the State official confirmed the State of South Carolina had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on January 23, 2024 (89 FR 4345). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that public health and safety will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to public health and safety.

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Date of issuance: August 5, 2024

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 — ISSUANCE OF AMENDMENT NO. 227 TO MODIFY TECHNICAL SPECIFICATION 3.8.3.1 TO INCREASE COMPLETION TIME FOR THE 120-VOLT A.C. VITAL BUSSES (EPID L-2023-LLA-0157) AUGUST 5, 2024

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DATE	7/5/2024	6/27/2024	7/12/2024	7/3/2024
OFFICE	NRR/DRA/APLB/BC	OGC (NLO)	NRR/DORL/LPL2-1/BC	NRR/DORL/LPL2-1/PM
NAME	SMakor (CMoulton for)	PLom	MMarkley	GEMiller
DATE	7/8/2024	7/25/2024	8/2/2024	8/5/2024

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