

April 13, 2018

Docket Nos.: 52-025  
52-026

ND-18-0390  
10 CFR 50.90

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

Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4  
Request for License Amendment:  
Remotely Operated Containment Isolation Valve Status (LAR-18-012)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, requests an amendment to Combined License Numbers NPF-91 and NPF-92, for VEGP Units 3 and 4, respectively. The requested amendment includes changes to COL Appendix A, Technical Specifications (TS) related to the statuses of the remotely operated containment isolation valves. Since the proposed changes impact the Technical Specifications, this activity has been determined to require prior NRC approval.

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

Enclosure 2 provides the proposed changes to the licensing basis documents.

Enclosure 3 provides conforming Technical Specification Bases changes for information only.

This letter contains no regulatory commitments. This letter has been reviewed and confirmed to contain no security-related information.

SNC requests NRC staff review and approval of the license amendment request (LAR) no later than October 12, 2018. Approval by this date will allow sufficient time to implement licensing basis changes necessary to support procedure development in relation to conducting the necessary operator training to support plant operations. SNC expects to implement the proposed amendment within thirty days of approval of the LAR.

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

Should you have any questions, please contact Mr. Corey Thomas at (205) 992-5221.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 13<sup>th</sup> of April 2018.

Respectfully submitted,



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Amy G. Aughtman  
Licensing Director  
Southern Nuclear Operating Company

- Enclosures: 1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: Remotely Operated Containment Isolation Valve Status (LAR-18-012)
- 2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Licensing Basis Documents (LAR-18-012)
- 3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Conforming Technical Specification Bases Changes (LAR-18-012) (For Information Only)

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**Southern Nuclear Operating Company**

**ND-18-0390**

**Enclosure 1**

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

**Request for License Amendment:**

**Remotely Operated Containment Isolation Valve Status**

**(LAR-18-012)**

**(Enclosure 1 consists of 17 pages, including this cover page)**

ND-18-0390

Enclosure 1

Request for License Amendment: Remotely Operated Containment Isolation Valve Status  
(LAR-18-012)

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ND-18-0390

Enclosure 1

Request for License Amendment: Remotely Operated Containment Isolation Valve Status (LAR-18-012)

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

## 1. SUMMARY DESCRIPTION

Two changes are proposed to revise the licensing basis documents as summarized below.

- Change 1: Clarify the post-accident monitoring (PAM) category designation for containment isolation valves statuses by explicitly stating in the licensing basis to avoid confusion and a potential human factors error and to allow operators to quickly verify that the nonessential containment flow paths are isolated and then focus on the availability of the essential flow paths for their defense-in-depth capabilities.
- Change 2: Add PAM requirements for the Normal Residual Heat Removal System (RNS), the Component Cooling Water System (CCS), and the Chemical and Volume Control System (CVS) containment isolation valve statuses to capture PAM requirements for their valve status not currently identified as being required for PAM in UFSAR Table 7.5-1.

The requested amendment requires a departure from COL Appendix A Technical Specification (TS) and Updated Final Safety Analysis Report (UFSAR) Tier 2 information. This enclosure requests approval of the license amendment necessary to implement these changes.

## 2. COMBINED DETAILED DESCRIPTION and TECHNICAL EVALUATION

### Design Overview

#### Post-Accident Monitoring System

The AP1000 design provides PAM capability for indication of certain plant variables during accident conditions. The selection of monitored variables is based on the guidance provided in Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3 and UFSAR Section 7.5.

The PAM instrumentation provides the operator with sufficient operational information to achieve and maintain a safe shutdown condition following an accident. PAM information is displayed in the Main Control Room (MCR) on the four divisions of the Protection and Safety Monitoring System (PMS) safety display subsystem, Plant Control System (PLS) workstations, and the Wall Panel Information System (WPIS).

#### Qualified Data Processing System (QDPS)

The QDPS is the portion of the PMS dedicated to processing the data used for PAM. Safety-related PAM variables required for 72 hours after an accident are displayed on the safety-related displays after being processed by the QDPS.

### Variable Classification Types and Categories

Regulatory Guide 1.97 and UFSAR Subsections 7.5.2 and 7.5.3 group PAM variables into various types and categories. The variables are grouped into Types A, B, C, D, E, and F to aid the designer in selecting accident-monitoring instrumentation and applying the applicable criteria.

- Type A variables are those that are needed for an operator to take manual actions to accomplish a safety function where no automatic control is provided. There are no Type A variables in the AP1000 design.
- Type B variables are those that provide information to indicate whether plant safety functions are being accomplished.
- Type C variables are those that provide information to indicate the potential for fission product barrier breaches.
- Type D variables are those that provide information to indicate the operation of individual safety systems and other systems important to safety.
- Type E variables are those that are used to determine the magnitude of a radioactive materials release.
- Type F variables are those needed to monitor non-safety-related systems used to mitigate the consequences of an accident and subsequent plant recovery, and to take actions using non-safety-related systems to prevent the unnecessary actuation of safety-related systems.

The qualification requirements of the Type A, B, C, D, E, and F accident-monitoring instrumentation are subdivided into the following three categories:

- The Category 1 designation is intended for key variables. A key variable is a variable, or variables, that most directly indicate the accomplishment of a safety function, the operation of a safety system, or radioactive material release. Category 1 variables are held to the most stringent qualification requirements.
- The Category 2 designation is generally applied to instrumentation designated for indicating system operating status. Category 2 variables are held to less stringent qualification requirements.
- A Category 3 designation is intended for backup and diagnostic instrumentation.

UFSAR Table 7.5-1 lists the PAM variables used in the AP1000 design, along with their category and type. Technical Specification Table 3.3.17-1 lists the Category 1 PAM variables used in the AP1000 design.

### Post-Accident Monitoring of Containment Isolation Valve Status

Certain remotely operated valves are used to isolate containment when required during an event to minimize radioactive release. These containment isolation valves are required to be available for post-accident monitoring per UFSAR Table 7.5-1. The PAM valve status for many of these valves is identified in UFSAR Table 7.5-1 as "Remotely operated containment isolation valve status." The valve statuses that make up this PAM variable are classified as Category 1 variables. LCO 3.3.17 and Technical Specification Table 3.3.17-1, Item 18 requires two channels of valve status per flowpath for the Class 1E Category 1 isolation



valves that close on a containment isolation signal (T signal) to be operable during Modes 1, 2, and 3.

A majority of the remotely operated containment isolation valves receive the containment isolation signal (T signal) as described in UFSAR Subsection 7.3.1.2.1. The T signal is reserved for nonessential fluid system paths from the containment. This is described in the AP1000 response to Criterion 54 in UFSAR Subsection 3.1.5.

The AP1000 T signal isolates all nonessential (not having an accident mitigation function to be open) flow paths penetrating containment, leaving essential flow paths open to provide accident mitigation functions. The individual status signal for each valve shows whether the valve is open or closed. The position status of the remotely operated valves receiving the T signal is summarized into a single "all closed" indication on the PMS PAM Category 1 safety display screen. This screen is used to determine if all the isolation valves in the nonessential containment penetration flow paths are closed after a T signal is generated. This summary indication is a post-accident monitoring system (PAMS) B1 variable and provides a quick verification to the operator that the nonessential containment flow paths are all isolated. The individual containment isolation valve statuses are available on the PMS safety displays.

The following valves are considered part of the non-essential containment penetration flow path in the AP1000 plant design, receive the T signal, and are included in the PAMS B1 variable:

- CAS-PL-V014
- CVS-PL-V045
- CVS-PL-V047
- CVS-PL-V092
- CVS-PL-V094
- CVS-PL-V219
- PSS-PL-V008
- PSS-PL-V010A
- PSS-PL-V010B
- PSS-PL-V011A
- PSS-PL-V011B
- PSS-PL-V023
- PSS-PL-V024
- PSS-PL-V046
- PXS-PL-V042
- RNS-PL-V061
- SFS-PL-V034
- SFS-PL-V035
- SFS-PL-V038
- SGS-PL-V074A
- SGS-PL-V074B
- SGS-PL-V075A
- SGS-PL-V075B
- VFS-PL-V003
- VFS-PL-V004
- VFS-PL-V009
- VFS-PL-V010
- VFS-PL-V800A
- VFS-PL-V800B
- VWS-PL-V058
- VWS-PL-V082
- VWS-PL-V086
- WLS-PL-V055
- WLS-PL-V057
- WLS-PL-V067
- WLS-PL-V068

Two valves in this list, SGS-PL-V075A/B, are not containment isolation valves. They are conservatively included in the remotely operated containment isolation valve status, because they receive the T signal. These valves are in series with containment isolation valves SGS-PL-V074A/B that also receive the T signal, and are functionally equivalent.

The valve position indications in the essential flow paths that penetrate containment are not categorized as PAMS B1 variables and do not close on a T signal. These essential flow paths support accident mitigation functions of non-safety systems and may be intentionally

opened for extended periods of time following an accident. The valves are isolated, when required, by separate PMS signals that are associated with each system's post-accident functions. They are designated as PAMS D2 accordingly and positions are indicated on safety displays. This includes the following valves:

- Normal Residual Heat Removal System (RNS) containment isolation valves (i.e., RNS-PL-V002A/B, RNS-PL-V011, RNS-PL-V022, and RNS-PL-V023).
- Chemical and Volume Control System (CVS) containment isolation valves (i.e., CVS-PL-V090 and CVS-PL-V091).
- Component Cooling Water System (CCS) containment isolation valves (i.e., CCS-PL-V200, CCS-PL-V207, and CCS-PL-V208).
- Steam Generator System (SGS) containment isolation valves (i.e., SGS-PL-V027A/B, SGS-PL-V036A/B, SGS-PL-V040A/B, SGS-PL-V057A/B, SGS-PL-V067A/B, and SGS-PL-V240A/B).

### **Change 1: Clarification of Category Designation for Containment Isolation Valve Statures**

UFSAR Table 7.5-1 identifies the PAM requirements for the valves associated with containment penetration flow paths. These valves are included within the row named "Remotely operated containment isolation valve status." Similarly, Technical Specification Table 3.3.17-1 Item 18, "Penetration Flow Path Remotely Operated Containment Isolation Valve Position" identifies the Category 1 PAM requirements for valves associated with containment penetration flow paths. However, these rows are reserved for nonessential systems. Only Class 1E components that receive the T signal are included in these rows. This needs to be explicitly stated in the licensing basis to avoid confusion and a potential human factors error.

A note is proposed to be added to UFSAR Table 7.5-1 and Technical Specification Table 3.3.17-1 to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). Additionally, the clarification is provided in UFSAR Table 7.5-1 to clearly show that valves SGS-PL-V075A/B are in the scope of remotely operated containment isolation valve status.

The status of the valves in the essential containment flow paths are summarized on one non-safety display screen and are separately indicated on the safety display screens within their respective systems. Keeping these indications separate from the "Remotely Operated Containment Isolation Valve Status" which is on the Category 1 display allows the operators to quickly verify that the nonessential containment flow paths are isolated enabling them to focus on the availability of the essential flow paths for their defense-in-depth capabilities.

The valve position indications in the essential flow paths that penetrate containment are not PAMS B1 variables. These essential flow paths support accident mitigation functions of non-safety systems and may be intentionally opened for extended periods of time following an accident. As a result, excluding them from the PAMS B1 summary indication will increase the value of the summary indication during operation of the essential flow paths.

Furthermore, opening these essential flow paths poses low risk of becoming an unmonitored leak path through the containment vessel. The valves are isolated, when required, by

separate PMS signals that are associated with each system's post-accident functions and the valve position indications are designated as PAMS D2 accordingly.

This change is consistent with Technical Specification Bases B 3.3.17 Item 18. This Bases currently states that LCO 3.3.17, Item 18 requires operability only for those valves which receive the "containment isolation signal." Per Bases B 3.3.17, Technical Specification Table 3.3.17-1 only applies to Category 1 and Type A PAM variables (which the AP1000 design does not have). The containment isolation valves that do not receive the containment isolation signal are not classified as Category 1 and are, therefore, not part of LCO 3.3.17, Item 18. Even though these isolation valves are not included on the safety-related display dedicated to summarizing the Category 1 variables, they are available on other safety-related displays.

In addition, limiting the PAM variable to valves that receive a containment isolation signal is consistent with the following UFSAR text, NRC regulations, and industry guidance:

- UFSAR Subsection 6.2.3.3 defines the containment isolation signal as the T signal. This signal is described in UFSAR Subsection 7.3.1.2.1. UFSAR Subsection 7.3.1.2.1 acknowledges that the containment isolation signal only closes the nonessential fluid system paths from the containment.
- This is consistent with 10 CFR 50.34(f)(2)(xiv) and NUREG-0737 which requires a containment isolation system to "ensure all nonessential systems are isolated automatically." NUREG-0737 Item II.E.4.2 Position 2 acknowledges that certain systems essential to reactor protection do not need to be automatically isolated by the containment isolation system, provided there is a basis for the selection of the essential systems.
- ANSI N271-1976 contains further guidance on the classification of essential versus nonessential systems. It states, "The post-accident position [of a containment isolation valve] depends on the requirements of the fluid system following an accident. If the fluid system is required for an engineered safety feature or is engineered safety feature related, the isolation valve may remain open or be opened. If the fluid system is not required for an engineered safety feature or engineered safety feature related system, the isolation valve shall be automatically closed if opened."

The following systems have containment isolation valves that do not close on a T signal, because they have an accident mitigation function:

- RNS valves RNS-PL-V002A/B, RNS-PL-V011, RNS-PL-V022, and RNS-PL-V023 – These valves are required to support RNS defense-in-depth decay heat removal functions.
- CVS valves CVS-PL-V090 and CVS-PL-V091 – These valves are required to support CVS defense-in-depth Reactor Coolant System (RCS) makeup and boration.
- CCS valves CCS-PL-V200, CCS-PL-V207, and CCS-PL-V208 – These valves are required to remain open to provide reactor coolant pump cooling for forced flow core cooling pump operation.
- SGS valves SGS-PL-V027A/B, SGS-PL-V036 A/B, SGS-PL-V040 A/B, SGS-PL-V057 A/B, SGS-PL-V067 A/B, and SGS-PL-V240 A/B – These valves are required for the defense-in-depth function of decay heat removal.

This proposed clarification is consistent with how Regulatory Guide 1.97, Revision 3 is committed to in the AP1000 plant licensing basis. Regulatory Guide 1.97, Revision 3 is committed to in UFSAR Appendix 1A to provide guidance on how to categorize variables into the various Types and Categories. Table 3 of the Regulatory Guide gives a classification of Category 1 for primary containment isolation valve positions. However, it is noted in UFSAR Appendix 1A in referencing Regulatory Guide 1.97 that “due to AP1000 specific design features, the selection of some plant-specific variables and their classifications and categories are different from those of this regulatory guide.”

This distinction between essential and nonessential flowpaths is also consistent with current industry practice. For example, the Vogtle Units 1 and 2 Technical Specifications only apply the PAM operability requirements to “phase A” Category 1 containment isolation valves. Phase A flow paths are defined in Chapter 7 of Vogtle Units 1 and 2 as nonessential process lines which penetrate containment.

Two valves in this list, SGS-PL-V075A/B, are not containment isolation valves. They are conservatively included in the remotely operated containment isolation valve status because they receive the T signal. These valves are in series with containment isolation valves SGS-PL-V074A/B that also receive the T signal, and are functionally equivalent. Clarification is provided to clearly show that these valves are in the scope of remotely operated containment isolation valve status.

### **Change 2: Adding a PAM Requirement for RNS, CCS and CVS Containment Isolation Valve Status**

The RNS, CCS, and CVS containment isolation valves have PAM requirements for their valve status, but are not identified as being required for PAM in UFSAR Table 7.5-1. These valves do not receive the T signal, and therefore, are not included in the “Remotely operated containment isolation valve status” row in Table 7.5-1.

The essential SGS containment isolation valves are already captured in UFSAR Table 7.5-1, as shown below. Therefore, no changes are required for these valves.

- SGS-PL-V027A/B: referred to as “Steam generator PORV block valve status”
- SGS-PL-V036A/B: referred to as “Steam line condensate drain isolation valve status”
- SGS-PL-V040A/B: referred to as “Main steam line isolation valve status”
- SGS-PL-V057A/B: referred to as “Main feedwater isolation valve status”
- SGS-PL-V067A/B: referred to as “Startup feedwater isolation valve status”
- SGS-PL-V240A/B: referred to as “Main steam line isolation bypass valve status”

“RNS pump discharge isolation valve status,” “CCS Containment isolation valve status,” and “CVS makeup line containment isolation valve status” are added as new rows to UFSAR Table 7.5-1, as shown in Table 1 below. The attributes included in UFSAR Table 7.5-1 for these three variables are consistent with the current rows in the table for other Class 1E valves that provide indication of safety system status (e.g., the Demineralized water isolation valve status and the steam generator blowdown isolation valve statuses) and with the information for these valves in UFSAR Table 3.11-1.

For consistency with Table 7.5-1, these variables are also added to UFSAR Table 7.5-7 under the RNS, safeguards, and CVS rows as Type/Category D2 Variables. In addition, a statement is changed in UFSAR Subsection 9.3.6.7 that says the CVS makeup line is closed on a containment isolation signal.

The other essential RNS flowpaths are already captured in UFSAR Table 7.5-1, as shown below. Therefore, no changes are needed for these valves.

- RNS-PL-V002A/B: referred to as “RNS hot leg suction isolation valve status”
- RNS-PL-V022 and RNS-PL-V023: referred to as “IRWST to RNS suction valve status”

**Table 1: Additions to UFSAR Table 7.5-1.**

Variable	Range / Status	Type / Category	Qualification		Number of Instruments Required	Power Supply	QDPS Indication (Note 2)	Remarks
			Environmental	Seismic				
CVS makeup line containment isolation valve status	Open / Closed	D2	Radiation Harsh / Harsh	Yes	1/valve (Note 7)	1E	Yes	Harsh applies only to the valve located inside containment
RNS pump discharge isolation valve status	Open / Closed	D2	Radiation Harsh	Yes	1 (Note 7)	1E	Yes	
CCS containment isolation valve status	Open / Closed	D2	Mild / Harsh	Yes	1/valve (Note 7)	1E	Yes	Harsh applies only to the valve located inside containment

### **Description of any Changes to Current Licensing Basis Documents**

#### **UFSAR Table 7.5-1**

- Note 13 is added to clarify that the “Remotely operated containment isolation valve status” row is limited to components that receive an engineered safety feature (ESF) containment isolation signal and show SGS-PL-V075A/B are in scope of remotely operated containment isolation valve status.
- Rows are added to Table 7.5.1 to show PAM requirements for the following:
  - CCS containment isolation valve status
  - CVS makeup line containment isolation valve status
  - RNS pump discharge isolation valve status

#### **UFSAR Table 7.5-7**

- Rows are added to Table 7.5-7 to show the following:
  - CVS makeup line containment isolation valve status as a D2 variable
  - RNS pump discharge isolation valve status as a D2 variable
  - CCS containment isolation valve status as a D2 variable

#### **UFSAR Section 9.3.6.7**

- Text related to CVS containment isolation is changed. It currently states that the CVS makeup line is closed on a containment isolation signal. This paragraph is revised to be more generic in which specific PMS signal is received. UFSAR Figure 7.2-1 provides the details on PMS signals.

#### **COL Appendix A Technical Specifications**

- Note “d” is added to Table 3.3.17-1 for Item 18 to clarify that “Penetration Flow Path Remotely Operated Containment Isolation Valve Position” is limited to components that receive an ESF containment isolation signal.

### **Summary of Changes**

The proposed changes do not affect any function or feature used for the prevention and mitigation of accidents or their safety analyses. No safety-related structure, system, or component (SSC) function is changed. The proposed changes do not involve nor interface with any SSC accident initiator or initiating sequence of events related to the accidents evaluated in the plant-specific Design Control Document (DCD) or UFSAR. The proposed changes do not affect the radiological source terms (i.e., amounts and types of radioactive materials released, their release rates and release durations) used in the accident analyses. No system or design function or equipment qualification is adversely affected by the proposed changes. The changes do not result in a new failure mode, malfunction or sequence of events that could adversely affect a radioactive material barrier or safety-related equipment. The proposed changes do not allow for a new fission product release path, result in a new fission product barrier failure mode, or create a new sequence of events that would result in significant fuel cladding failures. The proposed changes do

not adversely affect any design code limit allowable value, design analysis, nor do they adversely affect any safety analysis input or result, or design/safety margin.

The proposed changes do not revise any aspects of the plant that could have any adverse effect on safety and security, including the site emergency plan.

### **3. TECHNICAL EVALUATION (SEE SECTION 2)**

### **4. REGULATORY EVALUATION**

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

10 CFR 52.98(c) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a Combined License (COL). This activity involves a departure from COL Appendix A. Therefore, this activity requires a licensing amendment. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to 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 the Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section. The proposed departures from UFSAR Tier 2 design information involve changes to information in COL Appendix A Technical Specification Table 3.3.17-1, and thus require NRC approval for the UFSAR Tier 2 departures.

10 CFR 52, Appendix D, Section VIII.C.6 states that after issuance of a license, "Changes to the plant-specific TS will be treated as license amendments under 10 CFR 50.90." 10 CFR 50.90 addresses the application for amendments of licenses, construction permits, and early site permits. As discussed above, a change to COL Appendix A is requested, and thus a License Amendment Request (LAR) is required.

10 CFR 50.34(f)(2)(xvii) - Provide instrumentation to measure, record and readout in the control room: (A) containment pressure, (B) containment water level, (C) containment hydrogen concentration, (D) containment radiation intensity (high level), and (E) noble gas effluents at all potential, accident release points. Provide for continuous sampling of radioactive iodine and particulates in gaseous effluents from all potential accident release points, and for onsite capability to analyze and measure these samples. (II.F.1). A note is proposed to be added to UFSAR Table 7.5-1 and Technical Specification Table 3.3.17-1 to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to UFSAR Tables 7.5-1 and 7.5-7 as new PAM variables. Therefore, this regulation is still met.

10 CFR Part 50 Appendix A, General Design Criterion (GDC) 13 - Instrumentation and control: Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and

for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges. A note is proposed to be added to UFSAR Table 7.5-1 and Technical Specification Table 3.3.17-1 to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to UFSAR Tables 7.5-1 and 7.5-7 as new PAM variables. Therefore, this GDC is still met.

10 CFR Part 50 Appendix A, GDC 19 - Control room: A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures more than 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor using suitable procedures. A note is proposed to be added to UFSAR Table 7.5-1 and Technical Specification Table 3.3.17-1 to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to UFSAR Tables 7.5-1 and 7.5-7 as new PAM variables. Therefore, this GDC is still met.

10 CFR Part 50 Appendix A, GDC 64—Monitoring radioactivity releases. Means shall be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents. A note is proposed to be added to UFSAR Table 7.5-1 and Technical Specification Table 3.3.17-1 to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to UFSAR Tables 7.5-1 and 7.5-7 as new PAM variables. Therefore, this GDC is still met.

Regulatory Guide 1.97, Revision 3 describes a method acceptable to the NRC staff for complying with the Commission's regulations to provide instrumentation to monitor plant variables and systems during and following an accident in a light-water cooled nuclear power plant. This proposed clarification is consistent with how Regulatory Guide 1.97, Revision 3 is committed to in the AP1000 plant licensing basis. Regulatory Guide 1.97, Revision 3 is committed to in UFSAR Appendix 1A to provide guidance on



how to categorize variables into the various Types and Categories. Table 3 of the regulatory guide gives a classification of Category 1 for primary containment isolation valve positions. However, it is noted in UFSAR Appendix 1A in referencing Regulatory Guide 1.97 that “due to AP1000 specific design features, the selection of some plant-specific variables and their classifications and categories are different from those of this regulatory guide.”

#### **4.2 Precedent**

There are no identified precedents for the changes in this request.

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

The proposed change adds a note to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, “RNS pump discharge isolation valve status,” “CCS Containment isolation valve status,” and “CVS makeup line containment isolation valve status” are added to the post-accident monitoring (PAM) table in UFSAR Chapter 7.

An evaluation to determine if a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92(c), “Issuance of amendment,” as discussed below.

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

Response: No

This change clarifies that only Class 1E valves in the nonessential containment penetration flow paths that receive the containment isolation signal (T signal) are part of the PAM Technical Specifications and adds additional valves to the PAM table in the UFSAR. The Normal Residual Heat Removal System (RNS), Chemical and Volume Control System (CVS), Component Cooling Water System (CCS), and Steam Generator System (SGS) have containment isolation valves that do not close on a T signal because they have an accident mitigation function to be open.

The status of the valves in the essential containment flow paths are summarized on one non-safety display screen and are separately indicated on the safety display screens within their respective systems. Keeping these indications separate from the “Remotely Operated Containment Isolation Valve Status” which is on the Category 1 display allows the operators to quickly verify that the nonessential containment flow paths are isolated and then focus on the availability of the essential flow paths for their defense-in-depth capabilities.

The valve position indications in the essential flow paths that penetrate containment are not Post-Accident Monitoring System (PAMS) B1 variables. These essential flow paths support accident mitigation functions of non-safety systems and may be intentionally opened for extended periods of time following an accident. As a result, excluding them from the PAMS B1 summary indication

will increase the value of the summary indication during operation of the essential flow paths.

Furthermore, opening these essential flow paths pose low risk of becoming an unmonitored leak path through the containment vessel. The valves are isolated when required by separate Protection and Safety Monitoring System (PMS) signals that are associated with each system's post-accident functions, and the valve position indications are designated as PAMS D2 accordingly.

No structure, system, or component (SSC) or function is changed within this activity. Therefore, the proposed amendment does not involve a significant increase in the probability of an accident previously evaluated.

The proposed amendment does not affect the prevention and mitigation of abnormal events, e.g., accidents, anticipated operation occurrences, earthquakes, floods, turbine missiles, and fires or their safety or design analyses. This change does not involve containment of radioactive isotopes or any adverse effect on a fission product barrier. There is no impact on previously evaluated accidents. Therefore, the proposed changes do not involve a significant increase in the consequences of an accident previously evaluated.

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

Response: No

The proposed changes do not involve a new failure mechanism or malfunction, which affects an SSC accident initiator, or interface with any SSC accident initiator or initiating sequence of events considered in the design and licensing bases. There is no adverse effect on radioisotope barriers or the release of radioactive materials. The proposed amendment does not adversely affect any accident, including the possibility of creating a new or different kind of accident from any accident previously evaluated. Therefore, the proposed changes do not create the possibility of a new or different type of accident from any accident previously evaluated.

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

Response: No

This activity clarifies that only Class 1E valves in the nonessential containment penetration flow paths that receive the containment isolation signal (T signal) are part of the PAM Technical Specifications and adds additional valves to the PAM table in the UFSAR.

The status of the valves in the essential containment flow paths are summarized on one non-safety display screen and are separately indicated on the safety display screens within their respective systems. Keeping these indications separate from the "Remotely Operated Containment Isolation Valve Status" which is on the Category 1 display allows the operators to quickly verify that the

nonessential containment flow paths are isolated and then focus on the availability of the essential flow paths for their defense-in-depth capabilities.

The valve position indications in the essential flow paths that penetrate containment are not PAMS B1 variables. These essential flow paths support accident mitigation functions of non-safety systems and may be intentionally opened for extended periods of time following an accident. As a result, excluding them from the PAMS B1 summary indication will increase the value of the summary indication during operation of the essential flow paths.

Furthermore, opening these essential flow paths pose low risk of becoming an unmonitored leak path through the containment vessel. The valves are isolated when required by separate PMS signals that are associated with each system's post-accident functions and the valve position indications are designated as PAMS D2 accordingly.

No SSC or function is changed within this activity. The proposed changes would not affect any safety-related design code, function, design analysis, safety analysis input or result, or existing design/safety margin. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested changes.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

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

#### **4.4 Conclusions**

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. The above evaluations demonstrate that the requested changes can be accommodated without an increase in the probability or consequences of an accident previously evaluated, without creating the possibility of a new or different kind of accident from any accident previously evaluated, and without a significant reduction in a margin of safety. Having arrived at negative declarations regarding the criteria of 10 CFR 50.92, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

### **5. ENVIRONMENTAL CONSIDERATIONS**

Details of the proposed changes are provided in Section 2 of this license amendment request. This review supports a request to amend the Combined License (COL) to allow a departure from the plant-specific Technical Specifications (TS).

The proposed change adds a note to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to the post-accident monitoring (PAM) table in UFSAR Chapter 7.

This review has determined that the proposed changes require an amendment to the COL. However, a review of the anticipated construction and operational effects of the requested amendment has determined the requested amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

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

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

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

The proposed change adds a note to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to the post-accident monitoring (PAM) table in UFSAR Chapter 7.

The changes are unrelated to any aspects of plant construction or operation that would introduce any changes to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents) or affect any plant radiological or non-radiological effluent release quantities. Furthermore, the proposed change does not diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

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

The proposed change adds a note to clarify that the remotely operated containment isolation valve status is limited to components that receive a containment isolation signal (T signal). In addition, "RNS pump discharge isolation valve status," "CCS Containment isolation valve status," and "CVS makeup line containment isolation valve status" are added to the post-accident monitoring (PAM) table in UFSAR Chapter 7.

ND-18-0390

Enclosure 1

Request for License Amendment: Remotely Operated Containment Isolation Valve Status  
(LAR-18-012)

The change does not affect plant radiation zones (addressed in UFSAR Section 12.3), and controls under 10 CFR 20 preclude a significant increase in occupational radiation exposure. Therefore, the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

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

## **6. REFERENCES**

None.

**Southern Nuclear Operating Company**

**ND-18-0390**

**Enclosure 2**

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

**Proposed Changes to the Licensing Basis Documents  
(LAR-18-012)**

**Note:**

Added text is shown as **Blue Underline**

Deleted text is shown as **~~Red Strikethrough~~**

Omitted text is shown as three asterisks (\*\*\*)

(Enclosure 2 consists of 4 pages, including this cover page)

**UFSAR Table 7.5-1 “Post-Accident Monitoring System”**

Add new Note 13 to the variable column for the “Remotely operated containment isolation valve status” and the Notes at the end of the table. Add “CCS containment isolation valve status,” “CVS makeup line containment isolation valve status,” and “RNS pump discharge isolation valve status” to the table.

**Table 7.5-1  
 Post-Accident Monitoring System**

Variable	Range / Status	Type / Category	Qualification		Number of Instruments Required	Power Supply	QDPS Indication (Note 2)	Remarks
			Environmental	Seismic				
* * *								
Remotely operated containment isolation valve status <a href="#">(Note 13)</a>	Open/ Closed	B1, D2	Harsh/Mild// Radiation Harsh	Yes	1/valve (Note 7)	1E	Yes	Separate divisions on series valves
* * *								
CCS flow to RNS valve status	Open/ Closed	F3	None	None	1/valve	Non-IE	No	
<a href="#">CCS containment isolation valve status</a>	<a href="#">Open / Closed</a>	<a href="#">D2</a>	<a href="#">Mild/Harsh</a>	<a href="#">Yes</a>	<a href="#">1/valve (Note 7)</a>	<a href="#">1E</a>	<a href="#">Yes</a>	<a href="#">Harsh applies only to the valve located inside containment</a>
* * *								
Makeup flow control valve status	Position	F3	None	None	1	Non-1E	No	
<a href="#">CVS makeup line containment isolation valve status</a>	<a href="#">Open / Closed</a>	<a href="#">D2</a>	<a href="#">Radiation Harsh / Harsh</a>	<a href="#">Yes</a>	<a href="#">1/valve (Note 7)</a>	<a href="#">1E</a>	<a href="#">Yes</a>	<a href="#">Harsh applies only to the valve located inside containment</a>
* * *								
RNS hot leg suction isolation valve status	Open/ Closed	D2	Harsh	Yes	1/valve (Note 7)	IE	Yes	
<a href="#">RNS pump discharge isolation valve status</a>	<a href="#">Open / Closed</a>	<a href="#">D2</a>	<a href="#">Radiation Harsh</a>	<a href="#">Yes</a>	<a href="#">1 (Note 7)</a>	<a href="#">1E</a>	<a href="#">Yes</a>	
* * *								

**UFSAR Table 7.5-1 “Post-Accident Monitoring System” (cont.)**

**Notes:**

\* \* \*

(Notes 1 – 12 remain unchanged.)

13. Remotely operated containment isolation valve status applies to components that receive the ESF containment isolation signal (T signal). SGS-PL-V075A/B are not containment isolation valves, but are conservatively included because they receive the T signal. SGS-PL-V075A/B are in series with containment isolation valves SGS-PL-V074A/B that also receive the T signal, and are functionally equivalent.

**UFSAR Table 7.5-7 “Summary of Type D Variables”**

Add “CCS containment isolation valve status,” “CVS makeup line containment isolation valve status,” and “RNS pump discharge isolation valve status” to the table.

**Table 7.5-7  
 Summary of Type D Variables**

System	Variable	Type/Category
* * *		
Safeguards (continued)	* * *	
	IRWST gutter bypass isolation valve status	D2
	<u>CCS containment isolation valve status</u>	<u>D2</u>
	* * *	
Chemical and Volume Control	* * *	
	Demineralized water isolation valve status	D2
	<u>CVS makeup line containment isolation valve status</u>	<u>D2</u>
Normal Residual Heat Removal	RNS hot leg suction isolation valve status	D2
	<u>RNS pump discharge isolation valve status</u>	<u>D2</u>
* * *		



**UFSAR Subsection 9.3.6.7 “Instrumentation Requirements”**

Revise the text related to the Chemical and Volume Control System (CVS) containment isolation control function.

**9.3.6.7 Instrumentation Requirements**

\* \* \*

- **Containment isolation** – To preserve the containment boundary, containment isolation valves are provided in the letdown line to the liquid radwaste system, the chemical and volume control system makeup line, and the hydrogen and zinc addition lines. These valves are opened or closed manually from the main control room and the remote shutdown workstation. Interlocks are provided to close these valves automatically upon receipt of ~~a containment~~ [the applicable](#) isolation signal from the protection and safety monitoring system and require operator action to reopen.

\* \* \*

**COL Appendix A Technical Specification Table 3.3.17-1 “Post-Accident Monitoring Instrumentation”**

Add Note (d) to Function 18 in the “Required Channels” column and add New Note (d) to the list of Notes at the bottom of the table.

**Table 3.3.17-1  
 Post-Accident Monitoring Instrumentation**

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION D.1
		* * *	
18.	Penetration Flow Path Remotely Operated Containment Isolation Valve Position	2 per penetration flow path(b)(c)( <a href="#">d</a> )	E
		* * *	

(Notes a – c remain unchanged)

[\(d\) Penetration Flow Path Remotely Operated Containment Isolation Valve Position applies to components that receive the ESF containment isolation signal \(T signal\).](#)

**Southern Nuclear Operating Company**

**ND-18-0390**

**Enclosure 3**

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

**Conforming Technical Specification Bases Changes**

**(LAR-18-012)**

**(For Information Only)**

**Note:**

Added text is shown as **Blue Underline**

Deleted text is shown as **~~Red Strikethrough~~**

Omitted text is shown as three asterisks (\*\*\*)

(Enclosure 3 consists of 5 pages, including this cover page)

ND-18-0390

Enclosure 3

Conforming Technical Specification Bases Changes (LAR-18-012) (For Information Only)

**Technical Specification Bases B 3.3.8 “Engineered Safety Feature Actuation System (ESFAS) Instrumentation”**

Add “(T signal)” to Containment Isolation heading in the APPLICABLE SAFETY ANALYSIS, LCOs, and APPLICABILITY section as shown below:

**APPLICABLE SAFETY ANALYSIS, LCOs, and APPLICABILITY**

\* \* \*

**Containment Isolation (T signal)**

Containment Isolation provides isolation of the containment atmosphere and selected process systems which penetrate containment from the environment. This Function is necessary to prevent or limit the release of radioactivity to the environment in the event of a large break LOCA.

\* \* \*

**Technical Specification Bases B 3.3.9 “Engineered Safety Feature Actuation System (ESFAS) Manual Initiation”**

Add “(T signal)” to Containment Isolation bullet in the APPLICABLE SAFETY ANALYSIS, LCOs, and APPLICABILITY section as shown below:

**APPLICABLE SAFETY ANALYSIS, LCOs, and APPLICABILITY**

A description of the following ESFAS protective functions is provided in the Bases for LCO 3.3.8:

\* \* \*

- Containment Isolation **(T signal)**

\* \* \*

**Technical Specification Bases B 3.3.17 “Post Accident Monitoring (PAM) Instrumentation”**

Revise the discussion of the “Penetration Flow Path Remotely Operated Containment Isolation Valve Position” (item number 18) in the LCO section as shown below:

**LCO**

\* \* \*

**18. Penetration Flow Path Remotely Operated Containment Isolation Valve Position**

The Penetration Flow Path Remotely Operated Containment Isolation Valve Position is provided ~~for verification of containment~~ **OPERABILITY to support verification of containment integrity by confirming flowpaths without accident mitigation function to be open (non-essential) are closed. Table 3.3.17-1 Note (d) states that the Function is limited to components that receive an ESF containment isolation signal. Only nonessential systems are isolated automatically by the containment isolation signal. SGS-PL-V075A/B are not containment isolation valves, but are conservatively included because they receive the T signal. SGS-PL-V075A/B are in series with containment isolation valves SGS-PL-V074A/B that also receive the T signal, and are functionally equivalent.** The LCO requires one channel of valve position indication in the control room to be OPERABLE for each valve in a containment penetration flow path actuated on a containment isolation signal, i.e., two total channels of valve position indication for a penetration flow path with two active valves. For containment penetrations with only one active valve having post-accident monitoring control room indication, Note (c) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each nonessential, isolable penetration either via indicated status of the active valve, as applicable, and prior knowledge of a passive valve, or via system boundary status. If a normally active valve is known to be closed and deactivated, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE. Note (b) to the Required Channels states that the Function is not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each penetration flow path with one or more inoperable position indicators.

\* \* \*

**Technical Specification Bases B 3.6.3 “Containment Isolation Valves”**

Revise SURVEILLANCE REQUIREMENTS section SR 3.6.3.5 as shown below:

**SURVEILLANCE REQUIREMENTS**

\* \* \*

SR 3.6.3.5

Automatic containment isolation valves close on ~~a containment isolation~~ their respective ESF signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on ~~a containment isolation~~ its respective ESF signal. The ACTUATION LOGIC TEST overlaps this Surveillance to provide complete testing of the assumed safety function. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

**Technical Specification Bases B 3.6.7 "Containment Penetrations"**

Revise the 2<sup>nd</sup> paragraph of the LCO section as shown below:

**LCO**

\* \* \*

The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed or capable of being closed prior to steaming into the containment. The equipment hatches may be open; however, the hatches shall be clear of obstructions such that capability to close the hatch within the indicated time period is maintained. The hardware, tools, equipment and power sources necessary to install the hatches shall be available when the hatch is open. Both doors in each containment air lock may be open; however, the air locks shall be clear of obstructions such that the capability to close at least one door within the indicated time period is maintained. Alternatively, one door in an air lock may be closed. Containment spare penetrations may be open; however, the penetrations shall be clear of obstructions such that the penetrations are capable of being closed within the indicated time period. Direct access penetrations shall be closed by at least one manual or automatic isolation valve, blind flange or equivalent, or capable of being closed by at least one valve actuated by ~~a containment isolation~~ their respective ESF signal. If direct access penetrations are open, then they must be capable of being closed prior to steaming into the containment. Figure B 3.6.7-1 provides the acceptable required closure times for various representative MODES and conditions.