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ND-20-0668
10 CFR 50.90

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

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Request for License Amendment:
Vacuum Relief Valve Technical Specification Changes (LAR-20-005)

Ladies and Gentlemen:

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requests an amendment to the combined licenses (COLs) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 (License Numbers NPF-91 and NPF-92, respectively). The requested amendment proposes changes to COL Appendix A, Technical Specifications (TS).

The license amendment request (LAR) proposes changes to COL Appendix A, TS 3.6.3, Containment Isolation Valves, and TS 3.6.9, Vacuum Relief Valves, to exclude the vacuum relief containment isolation valves from TS LCO 3.6.3 and address the containment isolation function, operability, Actions, and Surveillances in TS 3.6.9.

These changes were previously discussed with the NRC Staff at technical exchange conference call on April 9, 2020 (ADAMS Accession Number ML20105A010) and a public pre-submittal conference call on June 11, 2020 (meeting notice ADAMS Accession Number ML20161A003).

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

Enclosure 2 identifies the requested changes and provides markups depicting the requested changes to the VEGP Units 3 and 4 licensing basis documents.

Enclosure 3 provides the information-only changes to the VEGP Units 3 and 4 Technical Specifications Bases document.

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

SNC requests NRC staff review and approval of this LAR no later than November 30, 2020 to support the initial plant entry into MODE 4, which is the Applicability for the containment isolation function for the vacuum relief valves. Delayed approval of this license amendment could put the plant at increased risk of a TS required shutdown upon discovery of an inoperable vacuum relief valve containment isolation function. SNC expects to implement the proposed amendment within 30 days of approval of the LAR.

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

Should you have any questions, please contact Ms. Amy Chamberlain at (205) 992-6361.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 19th of June 2020.

Respectfully submitted,

Amy C. Chamberlain
Manager, Regulatory Affairs
Southern Nuclear Operating Company

Enclosures
1) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment: Vacuum Relief Valve Technical Specification Changes (LAR-20-005)
2) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to Licensing Basis Documents (LAR-20-005)
3) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Conforming Changes to the Technical Specifications Bases (For Information Only) (LAR-20-005)

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Southern Nuclear Operating Company

ND-20-0668
Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment: Vacuum Relief Valve Technical Specification Changes

(LAR-20-005)

(Enclosure 1 consists of 16 pages, including this cover page.)

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

1. SUMMARY DESCRIPTION

The proposed change would revise COL Appendix A, TS 3.6.3, Containment Isolation Valves, and TS 3.6.9, Vacuum Relief Valves, to exclude the vacuum relief containment isolation valves from TS LCO 3.6.3 and address the containment isolation function, operability, Actions, and Surveillances in TS 3.6.9.

2. DETAILED DESCRIPTION

The containment air filtration system (VFS), described in UFSAR Subsection 9.4.7, Containment Air Filtration System, provides the safety-related function of containment vacuum relief. During some atmospheric weather conditions, it is possible for the pressure in the containment vessel to drop significantly below the outside atmospheric pressure if the containment purge isolation valves are not open to allow for pressure equalization inside and outside containment. The purpose of the containment vacuum relief lines is to protect the containment vessel from damage due to a high negative pressure event (lower pressure inside containment than outside containment). If excessive high negative pressure exists inside containment, the containment vessel vacuum relief is automatically actuated to protect the integrity of the containment vessel. The vacuum relief lines include two inboard check valves and two outboard automatic isolation valves to provide redundant valve sets such that failure of one valve will not prevent the vacuum relief function. The automatic actuation of the system opens the outboard motor operated containment isolation valves, VFS-PL-V800A/B, to permit air to be introduced through the inboard containment isolation check valves (VFS-PL-803A/B). The isolation valves open automatically on a Containment Pressure – Low 2 signal or by manual actuation.

The containment vacuum relief isolation valves are also containment isolation valves and must be closed to limit radiological releases to the atmosphere. They close on the same signals (containment isolation or Containment Radiation – High 1) that close the containment purge inlet and discharge isolation valves. The vacuum relief valves provide a possible radiological release path from the containment parallel to the purge discharge isolation valves. These valves are closed at any time that the inside containment valve (VFS-PL-V009) is not closed to limit the magnitude and duration of the discharge that can occur. The containment vacuum relief valves provide a possible radiological release path from the containment at any time that the inside containment purge discharge isolation valve (VFS-PL-V009) is not closed.

As noted in UFSAR Subsection 7.6.2.4, the control logic gives priority to opening the vacuum relief valves on negative pressure over closing them for the containment isolation function. Because the setpoint to open the valves is at a negative pressure, radiological material will not be released from containment because air flows into the containment from the atmosphere. If a high radiation condition exists in the reactor containment building the vacuum relief valves will close automatically as soon as the low containment pressure setpoint is no longer exceeded, thus preventing a possible radiological release to the atmosphere.

The VFS vacuum relief system is designed to mitigate the containment external pressure event in UFSAR Subsection 6.2.1.1.4, External Pressure Analysis. A loss of all ac power sources during cold ambient conditions has the potential for creating the worst-case external pressure load on the containment vessel. It has been demonstrated that the performance of the vacuum relief system is sufficient to mitigate the maximum expected external pressure scenario.

Containment vacuum relief valves VFS-PL-V803A/B (check valves) and VFS-PL-V800A/B (motor operated isolation valves) are dual purpose valves, performing the safety function to OPEN in the event of excessive negative pressure inside containment, and a safety function to CLOSE for containment isolation in the event of positive pressure accident conditions. In the case of VFS-PL-V800A/B the functions are performed on automatic engineered safety feature actuation system (ESFAS) signals required by Technical Specification (TS) LCO 3.3.8, “Engineered Safety Feature Actuation System (ESFAS) Instrumentation”; OPEN on Containment Pressure Low-2, and CLOSE on Containment Radioactivity High as well as Containment Isolation signal. Currently, the TS requirements for the vacuum relief valves for the OPEN function are found in TS LCO 3.6.9, “Vacuum Relief Valves”, while the TS requirements for the CLOSE function are found in TS LCO 3.6.3, “Containment Isolation Valves.”

In the event that three or more Containment Radioactivity High detectors are inoperable or the Required Actions to bypass and/or trip one or two (respectively) inoperable channels are not performed within the Completion Time, the specified action in TS LCO 3.3.8 is to declare the affected isolation valve(s) inoperable. This action would result in entry into TS 3.6.3 for inoperable containment isolation valve(s), requiring actions to isolate the affected penetration flow path. With the vacuum relief flow paths isolated, the operators would also be required to enter into the TS 3.6.9 for inoperable vacuum relief valves, since the isolated flow path would render them inoperable. In TS 3.6.9, the required action would be to shutdown to MODE 5 and open a containment air flow path ≥ 6 inches in diameter. The Actions of LCO 3.6.3 to close and deactivate valve(s) in the penetration in the event of inoperable vacuum relief valve(s) do not account for the priority safety function for the valves to open for vacuum relief.

Therefore, changes are proposed to TS 3.6.3 and TS 3.6.9 to provide more appropriate actions recognizing the dual safety functions provided by the containment vacuum relief valves.

Additionally, LCO 3.6.9 uses vacuum relief “flow paths” that can lead to confusion. The two inboard check valves and the two outboard isolation valves are connected by a single containment penetration. Therefore, the changes will result in additional LCO clarification.

Description of the Activity

TS 3.6.3 is changed to exclude the containment system vacuum relief valves from TS LCO 3.6.3 and address their operability, for both containment isolation and containment vacuum relief, in TS 3.6.9.

TS 3.6.9 is changed to address the two operability functions of the vacuum relief valves: operability for opening to provide containment vacuum relief, and operability for closing to provide containment isolation. In TS LCO 3.6.9, operability of two vacuum relief “flow paths” is changed to requiring operability of two vacuum relief check valves and two vacuum relief isolation valves. New Actions are provided to address inoperability for the containment isolation closing function for both the vacuum relief check valves and vacuum relief isolation valves . New Surveillance

Requirement (SR) 3.6.9.2 adds a verification that each vacuum relief isolation valve is closed except when performing its vacuum relief function or when open for Surveillances. SR 3.6.9.2 (renumbered as SR 3.6.9.3) "flow path" is changed to "valve." SR 3.6.9.3 (renumbered SR 3.6.9.4) is revised to verify the vacuum relief isolation valves are verified to actuate to both open and closed positions.

3. TECHNICAL EVALUATION

This change addresses the current LCO 3.6.3 Actions for inoperable containment isolation valves that require isolation of the penetration flow path, and the LCO 3.6.9 requirement to maintain operability of the opening vacuum relief function of the containment vacuum relief valves. Inoperability of either one or both of the inboard vacuum relief check valve(s), or inoperability of one or both of the outboard vacuum relief isolation valve(s), should not be subject to the same containment isolation requirements presented in LCO 3.6.3, Required Actions A.1 and B.1, by closure and de-activation of valve(s) in the penetration flow path, as this would prevent the automatic capability to perform the associated vacuum relief function. Therefore, LCO 3.6.3 is changed to exclude the vacuum relief valves from LCO 3.6.3 and address the operability for the containment isolation closing function of the vacuum relief valves in TS 3.6.9. As a result, TS 3.6.9 is changed to include Actions for vacuum relief valves declared inoperable for closing. TS 3.6.9 Actions also have editorial changes to distinguish the vacuum relief valves identified as inoperable for opening from Actions for the newly added closing function. The Actions for vacuum relief valves inoperable for closing and vacuum relief valves inoperable for opening are discussed in more detail below.

LCO 3.6.9 is changed from “Two vacuum relief flow paths shall be OPERABLE” to “Two check valves and two vacuum relief isolation valves shall be OPERABLE.” This change provides clarification of the operability requirements with respect to the actual flow path configuration and valve operability requirements. As shown in UFSAR Figure 9.4.7-1 (Sheet 1 of 2), motor-operated vacuum relief valves VFS-PL-V800A and VFS-PL-V800B are located in independent parallel paths outside containment. Check valves VFS-PL-V803A and VFS-PL-V803B are located in independent parallel paths inside containment. They are connected by a common containment penetration. As such, "flow path" can be ambiguous in that either of the motor operated valves VFS-PL-V800A or VFS-PL-V800B opened and one of either of the check valves VFS-PL-V803A or VFS-PL-V803B opened provides a vacuum relief flow path (i.e., four “flow paths” could be identified). To provide single-failure vacuum relief capability, two motor operated valves (VFS-PL-V800A and VFS-PL-V800B) are required to be OPERABLE for opening and the two check valves (VFS-PL-803A and VFS-PL-803B) are required to be OPERABLE for opening.

For containment isolation operability, both check valves must be able to close and both motor operated vacuum relief isolation valves must be able to close to provide single-failure isolation protection for the common penetration flow path. For a single barrier for containment isolation, either both the check valves must be able to close, or both the motor operated isolation valves must be able to close. (Note that valves VFS-PL-V009 and VFS-PL-V010 are also associated with the same penetration flow path; however, operability for these valves remain addressed by TS 3.6.3. Inoperability of these valves could impose TS 3.6.3 Actions on the containment vacuum relief valves. These requirements are not impacted by the proposed changes.) Therefore, two

vacuum relief check valves and two vacuum relief isolation valves are required to be OPERABLE for closing.

To be considered OPERABLE for opening, a vacuum relief check valve must be capable of opening on a differential pressure of less than or equal to 0.2 psi outside atmosphere-to-containment pressure. To be considered OPERABLE for closing, a vacuum relief check valve must close with a differential pressure less than or equal to 0 psi outside atmosphere-to-containment pressure. To be considered OPERABLE for opening, a vacuum relief isolation valve must be capable of opening on an ESF open signal and to be considered OPERABLE for closing, the isolation valve must be capable of closing on an ESF closure signal.

A Note is added to the Applicability to state that the vacuum relief valve operability for closing is only required in MODES 1, 2, 3, and 4. This change is consistent with TS 3.6.3 Applicability for containment isolation valves to be operable.

A Note is added to the Actions to state that if the event of vacuum relief valve leakage from containment results in exceeding the overall containment leakage rate acceptance criteria, then the applicable Conditions and Required Action of LCO 3.6.1 must be entered. This change is consistent with TS 3.6.3 Note 4 for containment isolation valves and therefore is applicable to the vacuum relief valves and their containment isolation function.

TS 3.6.9, Condition A, is changed from “One vacuum relief flow path inoperable” to “One vacuum relief check valve inoperable for opening,” and the Required Action is changed from an action for restoring the “flow path to OPERABLE status” to an action for restoring the “check valve to OPERABLE for opening status”. This revised Action addresses the clarification of replacing “flow paths” with specific requirements on valves. The revised Action also provides the clarification of opening function versus closing function (which is addressed in the addition of new Actions C and D discussed below).

A new Condition B is then proposed to address the inoperability for opening of one vacuum relief isolation valve. This new Condition B states “One vacuum relief isolation valve inoperable for opening” with the Required Action to restore the valve to operable within 72 hours. These modifications to TS 3.6.9 Action A and the addition of Action B perform the same function to maintain vacuum relief operability as the current TS 3.6.9 Condition A for the vacuum relief flow path, but are more specific to the valve configuration and the operability of these valves to open to provide vacuum relief. The Completion Time of 72 hours remains the same as the current LCO 3.6.9 Action A to restore the vacuum relief flow path. Allowing one check valve (Condition A) and one isolation valve (Condition B) inoperable concurrently provides for one 100% capable flow path through the remaining check valve and isolation valve.

For the containment isolation function, the existing Action in TS 3.6.3 for this condition would require closing and deactivating valves such that the penetration flow path was isolated. Once completed, this alignment would be allowed to continue indefinitely per TS 3.6.3; however, in the case of vacuum relief flow paths, the action would render all vacuum relief capability inoperable and require an immediate plant shutdown per TS 3.6.9, current Action C. In order to address this undesired impact, the containment isolation function for the vacuum relief valves, is addressed in proposed TS 3.6.9, Actions C and D. For the new Condition C, with one or more vacuum relief check valves inoperable for closing, or one or more vacuum relief isolation valves inoperable for closing (including either two vacuum relief check valves inoperable for closing or two vacuum

relief isolation valves inoperable for closing), provided new proposed Condition D is not entered, the penetration has not lost isolation capability; only single failure protection is lost. The new Required Action C.1 is to restore the affected valve(s) to OPERABLE for closing status within 7 days, which will restore the single failure protection for the containment isolation function. The Completion Time to restore the valve(s) to OPERABLE for closing status in 7 days is reasonable relative to the importance of supporting containment isolation capability during MODES 1, 2, 3, and 4, while retaining the capability for vacuum relief. During this 7-day period, with the containment isolation function remaining, the credited accident mitigation sequence and assumed accident radiological releases from containment are not impacted.

During the 7-day Completion Time of proposed Action C, while relying on a single failure isolation barrier, the vacuum relief isolation valves will only be automatically opened due to an ESF signal on Containment Pressure-Low 2. The setpoint to open the valves reflects a containment pressure lower than the surrounding atmosphere. With this containment differential pressure, air flows into containment from the atmosphere, preventing radiological release from containment. The probability of the containment pressure to drop significantly below the outside atmospheric pressure and require vacuum relief is low. This event is postulated to occur with a loss of AC power (or Containment Recirculation Cooling System (VCS) malfunction) with a differential (inside to outside) ambient temperature greater than 90°F. In addition, LCO 3.6.9 addresses maintaining the containment inside to outside differential air temperature to ≤ 90°F. SR 3.6.9.1 performs a verification of the containment inside to outside differential air temperature every 12 hours. As such, no challenges are anticipated to opening and reclosing the remaining relied upon vacuum relief valve containment isolation barrier.

Regulatory Guide 1.177 provides guidance for both permanent and one-time only Completion Time changes to Technical Specifications. This guidance was used to assess the impact of the containment isolation function of the vacuum relief valves without single failure protection for 7 days, while maintaining the vacuum relief function (which precludes an immediate plant shutdown). Within the Probabilistic Risk Assessment (PRA), the vacuum relief isolation valves and the vacuum relief check valves are used to support the containment isolation function. Failure of the vacuum relief function is not explicitly addressed in the PRA model. A risk assessment was performed to evaluate the increase in risk in the event that either both vacuum relief isolation valves, or both vacuum relief check valves, are inoperable for closing to perform the containment isolation function for 7 days.

Based on guidance from Regulatory Guide 1.177, an Incremental Conditional Core Damage Probability (ICCDP) of less than 1.0E-06 is considered a small quantitative impact on plant risk. An Incremental Conditional Large Early Release Probability (ICLERP) of less than 1.0E-07 is also considered a small quantitative impact on plant risk. With either both vacuum relief isolation valves, or both vacuum relief check valves, inoperable for the close function for 7 days, the risk assessment performed from the VEGP-specific at-power PRA demonstrated an ICCDP of 6.17E-09 and an ICLERP of 6.96E-09. These ICCDP and ICLERP values are the higher incremental risk of the two cases (either two isolation valves always open or two check valves always open).

This risk impact is estimated based insights from the at-power internal event PRA, internal flooding, seismic, and internal fire hazards; all other identified external hazards are screened out in the at-power external hazard assessment.

Therefore, there is a small and acceptable quantitative impact on plant risk due to loss of single failure protection in the containment isolation function by inoperability of the close function of either one or both vacuum relief isolation valves, or one or both vacuum relief check valves, for an allowed Completion Time of 7 days prior to a shutdown.

The PRA for VEGP utilizes a site-specific model developed from the AP1000 PRA for United States Design Certification of the AP1000 nuclear plant. Additional AP1000 plant specific thermal-hydraulic (T-H) analyses are performed in order to determine the system success criteria. The core damage frequency (CDF) and large release frequency (LRF) are calculated for internal events. Selected internal hazard events are also quantitatively assessed to derive plant insights and plant risk conclusions. Seismic events are assessed using detailed VEGP site-specific PRA approach. Other external hazards are evaluated with a qualitative approach. The VEGP site-specific PRA models have been updated following standards and methodologies applicable to preparing a PRA model for operations including:

- ASME/ANS-RA-Sa 2009, “Standard for Level 1/Large Release Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications,” American Society of Mechanical Engineers.
- US NRC Regulatory Guide 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk Informed Activities,” Revision 2.
- NUREG/CR-6928, “Industry-Average Performance Components and Initiating Events at U.S. Commercial Nuclear Power Plants.”
- EPRI 1019194, “Guidelines for Performance of Internal Flooding Probabilistic Risk Assessment,” Electric Power Research Institute.”
- US NRC NUREG/CR-6850, “EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities.”
- ANSI/ANS 58.21-2007, “External Events PRA Methodology.”

Therefore, the technical adequacy of the VEGP site-specific PRA, and the risk evaluations performed to support this proposed change, are sufficient to provide confidence in the results such that the PRA can be used in regulatory decision-making.

For the new TS 3.6.9 Condition D, with one or more vacuum relief isolation valves inoperable for closing and one or more vacuum relief check valves is inoperable for closing, the new Required Action D.1 is to restore either both vacuum relief isolation valves to OPERABLE for closing status, or to restore both vacuum relief check valves to OPERABLE for closing status, in order to establish a containment isolation barrier. For Action D, the Completion Time of 1 hour to restore the valves to OPERABLE for closing is the same as TS 3.6.3 Action B in which there is no isolation barrier available in the penetration flow path.

With the addition of the new Actions in TS 3.6.9, the current Condition B and associated Required Actions have an editorial update from “B” to “E.” The current Condition C and associated Required Actions have an editorial update from “C” to “F.” In addition, renumbered Condition F is now applicable if the Required Action and associated completion times for Conditions A, B, C, D, or E are not met, which covers the new Conditions added to address both the vacuum relief function and the containment isolation functions of the valves while operating in MODE 1, 2, 3, or 4. The corresponding Required Actions remain the same as the current TS 3.6.9 in the event that the

vacuum relief capability or the containment temperature differential cannot be restored within the required Completion Time, and now also addresses if the containment isolation close function cannot be restored within the required Completion Time. Condition F also includes new Conditions to address two vacuum relief check valves inoperable for opening, or two vacuum relief isolation valves inoperable for opening, in MODE 1, 2, 3, or 4 which corresponds to the change in LCO 3.6.9 from “flow paths” to “check valves and vacuum relief isolation valves.” The corresponding Required Actions remain the same as the current TS 3.6.9 in the event that the vacuum relief capability is not available due to the loss of all available flow paths.

The current Condition D and associated Required Actions are changed from “D” to “G.” For renumbered Condition G, the requirements being relocated from LCO 3.6.3 are not required in MODE 5 or 6, so this condition is only applicable if Condition A, B, or E and the associated actions to restore vacuum relief capability cannot be performed within the required Completion Time, or the containment inside to outside temperature differential cannot be restored within the required completion time, or if two vacuum relief check valves are inoperable for opening, or if two vacuum relief isolation valves are inoperable for opening. The current Condition of "Both vacuum relief flow paths inoperable" is more specifically identified as either two vacuum relief check valves inoperable for opening or two vacuum relief isolation valves inoperable for opening, as these reflect the two possible conditions where all relief capability is inoperable. The Required Actions and Completion Times remain the same as the current TS 3.6.9 for loss of all vacuum relief flow paths or loss of the allowable containment temperature differential during MODES 5 and 6.

A new SR 3.6.9.2 is added to include verification that each vacuum relief isolation valve is closed every 31 days, with exceptions for when the valves are open for other surveillances or if they are performing a vacuum relief function. Meeting one of these Noted exceptions provides an allowance for vacuum relief valves to be open and not considered inoperable. This SR ensures that the vacuum relief isolation valves are closed as required, or if open, the valves are open for an allowable reason. The vacuum relief isolation valves are normally closed. The frequency of 31 days is appropriate considering the valves should only be opened to relieve vacuum or manually opened to perform Surveillances and the probability of the valve misalignment is low. Therefore, verification every 31 days is appropriate considering the probability of the valve misalignment is low.

The current SR 3.6.9.2 has an editorial renumbering update to SR 3.6.9.3 and a clarification from “verify each vacuum relief flow path” to “verify each vacuum relief valve.” Each vacuum relief valve is to be verified OPERABLE, which includes both operable for opening and operable for closing, in accordance with the Inservice Testing Program.

The current SR 3.6.9.3 has an editorial renumbering update to SR 3.6.9.4 and is modified to address both the automatic opening and closing of the vacuum relief isolation valve. SR 3.6.9.4 is to verify each vacuum relief isolation valve actuates on an actual or simulated signal every 24 months. For vacuum relief, these valves must demonstrate the capability to open by an actuation signal. For containment isolation, these valves must demonstrate the capability to close by an actuation signal. The surveillance frequency of 24 months is the same as the current TS 3.6.9 for verification of the actuation to relieve vacuum on an actual or simulated signal (which only applies to the vacuum relief isolation valve) and the same as TS 3.6.3 SR 3.6.3.5 for automatic containment isolation valves.

There is no impact to the containment external pressure analysis in UFSAR Subsection 6.2.1.1.4, External Pressure analysis, as a result of this change. The proposed changes do not result in a change to the containment isolation or containment vacuum relief design. The proposed changes to the actions for inoperable valves continue to assure the capability for appropriate containment isolation barrier and vacuum relief capability consistent with the appropriate design prioritization.

There are no impacts adverse to safety as a result of these changes to TS 3.6.3 and TS 3.6.9. The change to TS 3.6.3 to remove the vacuum relief valves from TS 3.6.3 does not have an adverse impact to safety as the containment isolation function of the valves is addressed in the changes to TS 3.6.9. This change provides a correction to TS 3.6.3 such that the vacuum relief valves can perform their vacuum relief function and are not required to be locked closed in the event a containment vacuum relief valve (which is also an isolation valve) is identified as inoperable. The changes to TS 3.6.9 address both opening for vacuum relief and closing for containment isolation, such that both safety functions of the vacuum relief valves are addressed by LCO 3.6.9. The revised Surveillance Requirements ensure both the vacuum relief function and containment isolation functions of the valves are periodically verified.

Proposed Licensing Basis Changes

Proposed changes include the following COL Appendix A, TS changes:

- TS 3.6.3, Containment Isolation Valves, LCO statement is revised from “except for the containment isolation valves associated with closed systems” to “except for containment isolation valves associated with closed systems and for vacuum relief valves”;

- TS 3.6.9, Vacuum Relief Valves:

    - LCO replace “flow paths” with “check valves and two vacuum relief isolation valves”;

    - Applicability revised to add new Note: “Vacuum relief valve OPERABILITY for closing is only required in MODES 1, 2, 3, and 4”

    - Actions heading adds new Note: “Enter applicable Conditions and Required Actions of LCO 3.6.1, “Containment,” when vacuum relief valve leakage results in exceeding the overall containment leakage rate acceptance criteria”

    - Action A revised:

        - Condition replace “flow path inoperable” with “check valve inoperable for opening”

        - Required Action replace “flow path” with “check valve” and add “for opening” between “OPERABLE” and “status”

    - New Action B added with:

        - Condition B stating: “One vacuum relief isolation valve inoperable for opening”

- Required Action B.1 stating: "Restore vacuum relief isolation valve to OPERABLE for opening status."
- Completion Time stating: "72 hours"

- New Action C is added with:
  - Condition stating: "One or more vacuum relief check valves inoperable for closing OR One or more vacuum relief isolation valves inoperable for closing"
  - Required Action C.1 stating: "Restore affected valve(s) to OPERABLE for closing status" with Completion Time "7 days"
- New Action D is added with:
  - Condition stating: "One or more vacuum relief check valves inoperable for closing AND One or more vacuum relief isolation valves inoperable for closing"
  - Required Action D.1 stating: "Restore both vacuum relief check valves to OPERABLE for closing status" with Completion Time "1 hour"; "OR"
  - Required Action D.2 stating: "Restore both vacuum relief isolation valves to OPERABLE for closing status" with Completion Time "1 hour"
- Current Action B re-numbered E
- Current Action C re-numbered F, and:
  - First Condition revised the reference to "Condition A or B" to become "Condition A, B, C, D, or E"
  - Second Condition stating "Both vacuum relief flow paths inoperable" is revised to "Two vacuum relief check valves inoperable for opening"
  - New third Condition added stating: "OR Two vacuum relief isolation valves inoperable for opening in MODE 1, 2, 3, or 4"
- Current Action D re-numbered G, and:
  - First Condition revised the reference to "Condition A or B" to become "Condition A, B, or E"
  - Second Condition stating "Both vacuum relief flow paths inoperable" is revised to "Two vacuum relief check valves inoperable for opening"
  - New third Condition added stating: "OR Two vacuum relief isolation valves inoperable for opening in MODE 5 or 6"

- New Surveillance Requirement SR 3.6.9.2 added:
  - Surveillance stating: "Verify each vacuum relief isolation valve is closed"
  - Surveillance Note 1 stating: "Not required to be met for vacuum relief valves open during Surveillances"
  - Surveillance Note 2 stating: "Not required to be met for vacuum relief valves open when performing their vacuum relief function"
  - Frequency stating: "31 days"
- Current SR 3.6.9.2
  - Re-numbered to SR 3.6.9.3
  - Revise "flow path" to "valve"
- Current SR 3.6.9.3
  - Re-numbered to SR 3.6.9.4
  - Revise "relief valve actuates to relieve vacuum on an actual or simulated signal" to "relief isolation valve actuates on actual or simulated signals"

Conforming TS Bases changes will be incorporated, following NRC approval of the license amendment request, in accordance with TS 5.5.6, Technical Specification Bases Control Program. The markups showing these changes are provided in Enclosure 3 for information only.

Summary

The proposed changes would amend COL Appendix A Technical Specifications, TS 3.6.3, to exclude the vacuum relief containment isolation valves (i.e., the "close" function) and amend TS 3.6.9 to address operability of the vacuum relief valves containment isolation function, Actions, and Surveillances.

The proposed changes do not result in a change to the containment isolation or containment vacuum relief design. The proposed changes to the actions for inoperable valves continue to assure the capability for appropriate containment isolation barrier and vacuum relief capability consistent with the appropriate design prioritization.

The proposed changes will not adversely affect safety-related equipment or function, design function, radioactive material barrier or safety analysis. Additionally, the proposed changes have no adverse impact on the emergency plan or the physical security plan implementation because there is no change to physical access to credited equipment inside the Nuclear Island and no adverse impact on the ability to monitor plant parameters post-accident.

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 50.36, *Technical specifications*, paragraph (c) Technical specifications, requires including items in the following categories: (1) Safety limits, limiting safety system settings, and limiting control settings; (2) Limiting conditions for operation; and (3) Surveillance requirements. The safety limits, the limiting safety system settings, and limiting control settings are not affected with this proposed amendment. In addition, the proposed changes to the plant specific Technical Specifications limiting conditions for operation, applicability, actions, and surveillance requirements, as justified by this license amendment request, continue to meet the scope required by 10 CFR 50.36(c).

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 changes to plant-specific Technical Specifications (COL Appendix A). Therefore, this activity requires a proposed amendment to the COL.

10 CFR 52, Appendix D, VIII.C.6 states that after issuance of a license, “Changes to the plant-specific TS (Technical Specifications) will be treated as license amendments under 10 CFR 50.90.” 10 CFR 50.90 addresses the applications for amendments of licenses, construction permits and early site permits. As discussed above, changes to plant-specific Technical Specifications (COL Appendix A) are requested. Therefore, NRC approval is required for these plant-specific TS changes.

The proposed changes have been evaluated to determine whether applicable 10 CFR 50 Appendix A General Design Criteria (GDC) continue to be met. It was determined that the proposed changes do not affect conformance with the GDC differently than described in the plant-specific DCD or UFSAR, as described below.

- GDC 16, *Containment design*, states: “Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.”

  The proposed changes do not result in a change to the containment isolation or containment vacuum relief design. The proposed changes to the actions for inoperable valves continue to assure the capability for appropriate containment isolation barrier and vacuum relief capability consistent with the appropriate design prioritization.

4.2 Precedent

No precedents are identified.

4.3 Significant Hazards Consideration

Southern Nuclear Operating Company (SNC) is requesting an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively. The license amendment request (LAR) proposes changes to COL Appendix A, TS 3.6.3, Containment Isolation Valves, and TS 3.6.9, Vacuum Relief Valves, to exclude the vacuum relief containment isolation valves from TS LCO 3.6.3 and address the containment isolation function, operability, Actions, and Surveillances in TS 3.6.9. An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92(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.

The proposed changes do not affect the safety limits or limiting safety system settings as required by the plant-specific Technical Specifications (TS). The proposed changes do not adversely affect the operation of any structures, systems, or components (SSCs) associated with an accident initiator or initiating sequence of events. The proposed changes continue to maintain the initial conditions and operating limits assumed during normal operation, assumed by the accident analysis, and assumed in anticipated operational occurrences. Therefore, the proposed changes do not result in any increase in probability of an analyzed accident occurring.

The proposed changes do not involve a change to any mitigation sequence or the predicted radiological releases due to postulated accident conditions. Thus, the consequences of the accidents previously evaluated are not adversely affected.

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

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

Response: No.

The proposed changes have been found to continue to provide the required functional capability of the safety systems for previously evaluated accidents and anticipated operational occurrences. The proposed revisions do not change the function of the related systems, and thus, the changes do not introduce a new failure mode, malfunction or sequence of events that could adversely affect safety or safety-related equipment.

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

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

Response: No.

The proposed changes continue to provide the required functional capability of the safety systems for previously evaluated accidents and anticipated operational occurrences. The proposed changes do not change the function of the related systems nor significantly affect the margins provided by the systems. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested changes.

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

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

4.4 Conclusions

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

The proposed changes to the Technical Specifications (TS) are described in Section 2 of this Enclosure.

A review has determined that the proposed changes require an amendment to the COL. A review of the anticipated construction and operational effects of the requested amendment has determined that 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, 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 evaluation 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 changes are unrelated to any aspect of plant construction or operation that would introduce any change 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 changes do not affect any effluent release path or 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 in the requested amendment does not affect the shielding capability of, or alter any walls, floors, or other structures that provide shielding. Plant radiation zones 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 does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed 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-20-0668
Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Proposed Changes to Licensing Basis Documents

(LAR-20-005)

Insertions Denoted by Blue Underline and Deletions by ~~Red Strikethrough~~
Omitted text is identified by three asterisks (* * *)

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

Technical Specification 3.6.3, Containment Isolation Valves:

LCO 3.6.3 Each containment isolation valve shall be OPERABLE, except for ~~the~~ containment isolation valves associated with closed systems and for vacuum relief valves.

* * *

Technical Specification 3.6.9, Vacuum Relief Valves:

LCO 3.6.9 Two vacuum relief ~~flow paths~~ check valves and two vacuum relief isolation valves shall be OPERABLE.

AND

Containment inside to outside differential air temperature shall be ≤ 90°F.

APPLICABILITY: MODES 1, 2, 3, and 4.
MODES 5 and 6 without an open containment air flow path ≥ 6 inches in diameter.

- NOTE -

Vacuum relief valve OPERABILITY for closing is only required in MODES 1, 2, 3, and 4.

ACTIONS

- NOTE -

Enter applicable Conditions and Required Actions of LCO 3.6.1, “Containment,” when vacuum relief valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One vacuum relief ~~flow path~~ check valve inoperable for opening.	A.1	Restore vacuum relief ~~flow path~~ check valve to OPERABLE for opening status.	72 hours
B.	One vacuum relief isolation valve inoperable for opening	B.1	Restore vacuum relief isolation valve to OPERABLE for opening status.	72 hours
C.	One or more vacuum relief check valves inoperable for closing. OR One or more vacuum relief isolation valves inoperable for closing.	C.1	Restore affected valve(s) to OPERABLE for closing status.	7 days
D.	One or more vacuum relief check valves inoperable for closing. AND One or more vacuum relief isolation valves inoperable for closing.	D.1 OR D.2	Restore both vacuum relief check valves to OPERABLE for closing status. Restore both vacuum relief isolation valves to OPERABLE for closing status.	1 hour 1 hour
E~~B~~.	Containment inside to outside differential air temperature > 90°F.	E~~B~~.1 OR E~~B~~.2	Restore containment inside to outside differential air temperature to within limit. Reduce containment average temperature ≤ 80°F.	8 hours 8 hours

ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
F~~C~~.	Required Action and associated Completion Time of Condition A, B, C, D, or E~~B~~ not met in MODE 1, 2, 3, or 4. OR ~~Both vacuum relief flow paths inoperable~~ Two vacuum relief check valves inoperable for opening in MODE 1, 2, 3, or 4. OR Two vacuum relief isolation valves inoperable for opening in MODE 1, 2, 3, or 4.	F~~C~~.1 AND F~~C~~.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
G~~D~~.	Required Action and associated Completion Time of Condition A, B or E~~B~~ not met in MODE 5 or 6. OR ~~Both vacuum relief flow paths inoperable~~ Two vacuum relief check valves inoperable for opening in MODE 5 or 6. OR Two vacuum relief isolation valves inoperable for opening in MODE 5 or 6.	G~~D~~.1	Open a containment air flow path ≥ 6 inches in diameter.	8 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.9.1	Verify containment inside to outside differential air temperature is ≤ 90°F.	12 hours
SR 3.6.9.2	---------- **- NOTES -** 1. Not required to be met for vacuum relief valves open during Surveillances. 2. Not required to be met for vacuum relief valves open when performing their vacuum relief function. ---------- Verify each vacuum relief isolation valve is closed.	31 days
SR 3.6.9.32	Verify each vacuum relief ~~flow path~~ valve is OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program
SR 3.6.9.43	Verify each vacuum relief isolation valve actuates ~~to relieve vacuum~~ on ~~an~~ actual or simulated signals.	24 months

Southern Nuclear Operating Company

ND-20-0668
Enclosure 3

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Conforming Changes to the Technical Specifications Bases (For Information Only)

(LAR-20-005)

Insertions Denoted by Blue Underline and Deletions by ~~Red Strikethrough~~
Omitted text is identified by three asterisks (* * *)

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

Technical Specifications Bases B 3.6.3, Containment Isolation Valves

* * *

BASES

LCO (continued)

* * *

This LCO provides assurance that the containment isolation valves, except for the closed system valves and vacuum relief valves, and purge valves will perform their designed safety functions * * *

The containment system vacuum relief valves provide containment isolation, but are also required to open to mitigate a negative pressure event within containment. Therefore, the vacuum relief valves are not included in this LCO since they are covered in LCO 3.6.9, "Vacuum Relief Valves."

* * *

Technical Specifications Bases B 3.6.9, Vacuum Relief Valves

* * *

BACKGROUND

The purpose of the vacuum relief lines is to protect the containment vessel from damage due to a negative pressure (that is, a lower pressure * * * in combination with low outside ambient temperature, which reduces containment temperature. The vacuum relief valves have an additional function to provide containment isolation to establish a containment boundary during positive pressure accident conditions.

The containment pressure vessel ~~contains two~~ is protected from excessive external pressure loading by redundant 100% capacity vacuum relief ~~flow paths~~ capability within a shared containment penetration ~~that protect the containment from excessive external pressure loading~~. ~~Each flow path~~ There are two outside containment ~~contains a~~ normally closed~~,~~ vacuum relief isolation valves, which are motor-operated valves (MOVs). The vacuum relief isolation valves ~~MOVs~~ receive an engineered safety features (ESF) “open” signal on Containment Pressure–Low 2. The vacuum relief solation valves ~~MOVs~~ close on an ESF containment isolation signal, as well as on High containment radioactivity. ~~Each flow path contains a~~ There are two normally closed, self-actuated check valves inside containment that open~~s~~ on a negative differential pressure of 0.2 psi. ~~A vacuum relief flow path consists of one MOV and one check valve, and the shared containment penetration.~~ To provide 100% capacity vacuum relief capability, either one of the two vacuum relief isolation valves and either one of the two check valves need to open.

The parallel vacuum relief isolation valves ~~MOVs~~ are interlocked with the 16 inch containment purge discharge isolation valve inside containment, VFS-PL-V009, which shares the containment penetration. The vacuum relief isolation valves ~~MOVs~~ are blocked from opening if VFS-PL-V009 is not closed. If VFS-PL-V009 is not closed, then the vacuum relief isolation valves ~~MOVs~~ will automatically close to direct VFS purge exhaust through the normal VFS discharge flow path. However, if vacuum relief actuation is required, the vacuum relief isolation valve ~~MOV~~ actuation signal overrides the closing interlock with VFS-PL-V009 to allow the vacuum relief isolation valves ~~MOVs~~ to open ensuring that the vacuum relief protection actuates (Ref. 3).

APPLICABLE SAFETY ANALYSES

* * * .

The vacuum relief valves must also perform the containment isolation function ~~(as required by LCO 3.6.3, “Containment Isolation Valves”)~~

during a containment high pressure event. For this reason, the system is
* * *

* * *

LCO

The LCO establishes the maximum containment temperature initial condition and the minimum equipment required to accomplish the vacuum relief function following excessive containment cooling events (Ref. 1). This LCO also addresses the minimum equipment required to perform the containment isolation function of the vacuum relief valves. ~~Two 100% vacuum relief flow paths are required to be OPERABLE to ensure that at least one is available, assuming one or both valves in the other flow path fail to open. A vacuum relief flow path is OPERABLE if the MOV opens on an ESF open signal and the self-actuated check valves open on a negative differential pressure of 0.2 psi.~~

The vacuum relief check valves are located in independent parallel paths inside containment and the vacuum relief isolation valves are located in independent parallel paths outside containment; they are connected by a common containment penetration. Therefore, two vacuum relief check valves and two vacuum relief isolation valves are required to be OPERABLE to ensure that at least one vacuum relief path is available with the failure to open of one check valve and/or one isolation valve and to ensure that there are two barriers for containment isolation. To be considered OPERABLE for opening, a vacuum relief check valve must be capable of opening on a differential pressure of less than or equal to 0.2 psi outside atmosphere-to-containment pressure. To be considered OPERABLE for closing, a vacuum relief check valve must close with a differential pressure less than or equal to 0 psi outside atmosphere-to-containment pressure. To be considered OPERABLE for opening, a vacuum relief isolation valve must be capable of opening on an ESF open signal and to be considered OPERABLE for closing, the isolation valve must be capable of closing on an ESF closure signal.

* * *

APPLICABILITY

* * *

Therefore, the vacuum relief valves ~~flow paths~~ are required to be OPERABLE for opening in MODES 1 through 4 and in MODES 5 and 6 without an open containment air flow path ≥ 6 inches in diameter. With a 6 inch diameter or equivalent containment air flow path, the vacuum relief function is not needed to mitigate a low pressure event.

The Applicability is modified by a Note that the vacuum relief valve OPERABILITY for closing is only required in MODES 1, 2, 3, and 4. In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and

consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the vacuum relief valve OPERABILITY for closing is only required in MODES 1, 2, 3, and 4 to prevent leakage of radioactive material from containment during positive pressure accident conditions. However, containment closure capability is required in MODES 5 and 6. The requirements for containment isolation valves, including the vacuum relief valves, during MODES 5 and 6 are addressed in LCO 3.6.7, "Containment Penetrations."

ACTIONS

The Actions are modified by a Note that directs entry into the applicable Conditions and Required Actions of LCO 3.6.1, "Containment," in the event that vacuum relief valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

A.1

With ~~When~~ one ~~of the required~~ vacuum relief check valve ~~flow paths is~~ inoperable for opening, vacuum relief capability is reduced below that required to meet single failure criterion. The ~~the~~ inoperable valve ~~flow path~~ must be restored to OPERABLE for opening status within 72 hours. It is acceptable to enter Condition A and B concurrently. The vacuum relief function is maintained with at least one check valve and one isolation valve OPERABLE, which is assured provided Condition F or G is not entered for two vacuum relief check valves or two vacuum relief isolation valves inoperable for opening. The specified Completion Time ~~time period~~ is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA.

B.1

With one vacuum relief isolation valve inoperable for opening, vacuum relief capability is reduced below that required to meet single failure criterion. The inoperable valve must be restored to OPERABLE for opening status within 72 hours. Provided Condition F or G is not entered for two vacuum relief check valves or two vacuum relief isolation valves inoperable for opening, then the vacuum relief function is maintained with at least one check valve and one isolation valve (i.e., it is acceptable to enter Conditions A and B concurrently). The Completion Time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA.

C.1

With one or more vacuum relief check valves inoperable for closing or with one or more vacuum relief isolation valves inoperable for closing (including either two vacuum relief check valves inoperable for closing or two vacuum relief isolation valves inoperable for closing), provided Condition D is not entered, the penetration has not lost single failure isolation capability.

The Completion Time to restore the valve(s) to OPERABLE for closing status in 7 days has been shown to be acceptable based on probability risk assessment considering the importance of supporting containment OPERABILITY during MODES 1, 2, 3, 4, with the availability of one barrier for containment isolation, while also maintaining the capability for vacuum relief.

D.1

With one or more vacuum relief check valves and one or more vacuum relief isolation valves inoperable for closing, either both vacuum relief check valves or both vacuum relief isolation valves are to be restored to OPERABLE for closing status within 1 hour, to restore the capability to isolate the containment penetration. With one check valve and one isolation valve inoperable for closing, the containment isolation capability is lost and a release path remains open. To address this, either both vacuum relief check valves or both vacuum relief isolation valves need to be restored to OPERABLE for closing status to provide a containment isolation barrier. The 1 hour Completion Time is consistent with Action B of LCO 3.6.1.

E.1 and E.2 ~~B.1 and B.2~~

If the containment inside to outside differential air temperature is > 90°F, then the differential air temperature shall be restored to within the limit within 8 hours. The 8-hour Completion Time is reasonable, considering that limit is based on a worst case condition and the time needed to reduce the containment temperature while controlling pressure within limits of LCO 3.6.4, Containment Pressure.

If the differential temperature cannot be restored, Required Action E~~B~~.2 provides an alternate requirement. Reduction of the containment average temperature to ≤ 80°F provides an initial condition for excessive cooling events that ensures the vacuum relief system capacity is sufficient (Ref. 1).

F.1 and F.2~~C.1, C.2, and D.1~~

If the Required Action and associated Completion Time of Conditions A, B, C, D, or E ~~A or B~~ are not met in MODE 1, 2, 3, or 4, or two vacuum relief check valves are inoperable for opening in MODE 1, 2, 3, or 4, or two vacuum relief isolation valves are inoperable for opening ~~both vacuum relief flow paths are inoperable~~ in MODE 1, 2, 3, or 4, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1

Once in MODE 5 or 6, Required Action G.1 ~~D.1~~ requires that a containment air flow path ≥ 6 inches in diameter shall be opened within 8 hours if the Required Action and associated Completion Time of Condition A, B, or E is not met, or if two vacuum relief check valves are inoperable for opening, or if two vacuum relief isolation valves are inoperable for opening. Any flow path (or paths) with an area equivalent to 6 inches in diameter is adequate to provide the necessary air flow for containment vacuum relief.

* * *

SURVEILLANCE REQUIREMENTS

* * *

SR 3.6.9.2

Each vacuum relief isolation valve must be verified to be closed every 31 days. This SR assures that the vacuum relief isolation valves are closed as required, or if open, the valves are open for an allowable reason. The vacuum relief isolation valves are normally closed. The Frequency of 31 days is appropriate considering the valves should only be opened to relieve vacuum or manually opened to perform Surveillances and, therefore, the probability of the valve misalignment is low.

SR 3.6.9.2 is modified by two Notes. Note 1 states that SR 3.6.9.2 is not required to be met for vacuum relief valves that are open during Surveillances. Surveillances which open the vacuum relief isolation valves are performed infrequently and the valves will only be open for a limited period of time. Note 2 states that SR 3.6.9.2 is not required to be met for vacuum relief valves performing their vacuum relief function. If vacuum relief is required, the valves open to perform their safety function to

maintain the integrity of the containment vessel. Air will flow into containment from the atmosphere due to the differential pressure, which will prevent radiological release from containment during vacuum relief.

SR 3.6.9.3~~2~~

Vacuum relief valves are tested to be OPERABLE for opening and OPERABLE for closing. This SR cites the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 valves shall be performed in accordance with the ASME OM Code (Ref. 2). Therefore, SR Frequency is governed by the Inservice Testing Program.

SR 3.6.9.4~~3~~

This SR ensures that each vacuum relief isolation ~~motor operated~~ valve will actuate to the open position on an actual or simulated actuation signal and will actuate to the closed position on an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves. The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operations.

* * *