Southern Nuclear

Regulatory Affairs

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May 1, 2023

10 CFR 50.90

NL-23-0217

Docket Nos.: 50-424
50-425

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

Vogtle Electric Generating Plant - Units 1 and 2
License Amendment Request to Revise
Technical Specification Surveillance Requirement 3.4.14.1
and Proposed Inservice Testing Alternative ALT-VR-02

Ladies and Gentlemen:

Pursuant to 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requests an amendment to Facility Operating License Nos. NPF-68 and NPF-81 for the Vogtle Electric Generating Plant (VEGP) Units 1 and 2. The amendment request proposes to revise Technical Specifications (TS) Surveillance Requirement (SR) 3.4.14.1. Specifically, the proposed change is a request to revise TS SR 3.4.14.1 to allow surveillance frequencies in accordance with the Inservice Testing Program.

Pursuant to 10 CFR 50.55a(z), the application also proposes an alternative to the testing frequencies in the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code, by adoption of 10 CFR 50 Appendix J performance-based testing frequencies.

Enclosure 1 provides a description and assessment of the proposed license amendment. Attachment 1 provides the existing TS pages marked to show the proposed changes. Attachment 2 provides revised (clean) TS pages. Attachment 3 provides existing TS Bases pages marked to show the proposed changes for information only. Attachment 4 provides a list of pressure isolation valves subject to testing under SR 3.4.14.1. Attachment 5 provides Inspection history for VEGP Pressure Isolation Valves.

Enclosure 2 provides the request for an alternative to ASME OM Code.

Approval of the proposed amendment is requested by August 15, 2024, to support the Fall 2024 refueling outage for Unit 1. The proposed changes will be implemented within 90 days of issuance of the amendment. The proposed LAR revisions will be implemented prior to the Alternative.

In accordance with 10 CFR 50.91, SNC is notifying the state of Georgia of this license amendment request by transmitting a copy of this letter to the designated state official.

This letter contains no regulatory commitments. If you have any questions or if additional information is needed, please contact Amy Chamberlain at 205.992.6361.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 1st day of May, 2023.

Respectfully submitted,

R. Keith Brown
Regulatory Affairs Director
Southern Nuclear Operating Company

RKB/dsp/cbg

Enclosure 1: Evaluation of the Proposed Change

Attachment 1. Proposed Technical Specification Changes (Mark-Up)
Attachment 2: Revised Technical Specification Changes
Attachment 3. Proposed Technical Specifications Bases Changes (Mark-Up)
– For Information Only
Attachment 4. Pressure Isolation Valves Subject to Testing Under SR 3.4.14.1
Attachment 5. Pressure Isolation Valve Leakage Test History

Enclosure 2: Proposed Inservice Testing Alternative ALT-VR-02

cc: Regional Administrator, Region II
NRR Project Manager – Vogtle 1 & 2
Senior Resident Inspector – Vogtle 1 & 2
State of Georgia Environmental Protection Division
RType: CVC7000

Vogtle Electric Generating Plant - Units 1 and 2
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Technical Specification Surveillance Requirement 3.4.14.1
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Enclosure 1

Evaluation of the Proposed Change

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5. Pressure Isolation Valve Leakage Test History

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Southern Nuclear Operating Company, Inc. (SNC) requests an amendment to Renewed Facility Operating License Nos. NFP-68 and NFP-81, for Vogtle Electric Generating Plant (VEGP), Units 1 and 2, respectively.

The proposed amendment would revise Technical Specification (TS) 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," Surveillance Requirement (SR) 3.4.14.1, to only require testing at the frequencies specified in the Inservice Testing Program. The Inservice Testing Program complies with the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code).

2.0 DETAILED DESCRIPTION

2.1 System Design and Operation

The Reactor Coolant System (RCS) PIVs are two normally closed valves in series which separate the high-pressure RCS from attached lower pressure systems, such as the Residual Heat Removal (RHR) system, the Safety Injection (SI) system, and the Accumulators. Failure of both PIVs in a connection or excessive PIV leakage could lead to overpressurization of the low-pressure piping or components that could lead to a system rupture, potentially resulting in a loss of coolant accident (LOCA) outside of containment. The 1975 NRC WASH-1400 study (NUREG-75/014) identified potential intersystem LOCAs as a significant contributor to plant risk.

The low pressure systems connected to the RCS are designed and operated to limit and detect leakage past PIVs. PIV leakage would be detected by increasing low-pressure system level, temperature, or pressure indications or the lifting of relief valves.

The PIVs are required to be tested by both the TS and the ASME OM Code. A list of the PIVs subject to testing under SR 3.4.14.1 is provided in Attachment 4.

10 CFR 50.55a(f) requires operating plants to meet the inservice test requirements set forth in the ASME OM Code and addenda. ASME OM Code-2004 Edition with Addenda through OMb-2006, is the applicable Code for the VEGP 4th 10-Year Inservice Testing (IST) interval ending May 31, 2027. The following ASME OM Code requirement applies to seat leakage testing of PIVs subject to SR 3.4.14.1:

> **ISTC-3630 Leakage Rate for Other Than Containment Isolation Valves.** Category A valves with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J program, shall be tested to verify their seat leakages within acceptable limits. Valve closure before seat leakage testing shall be by using the valve operator with no additional closing force applied.
>
> (a) *Frequency*. Tests shall be conducted at least once every 2 years.

2.2 Current Technical Specifications Requirements

VEGP TS Section 1.1 provides the following definition:

INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

VEGP TS SR 3.4.14.1 states:

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	----------NOTES---------- 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. ----------	
	Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig.	In accordance with the INSERVICE TESTING PROGRAM, and 18 months AND Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months (except for valves HV-8701A/B and HV-8702A/B) AND For systems rated at less than 50% RCS design pressure, within 24 hours following valve actuation (except for valves HV-8701A/B and HV-8702A/B)

2.3 Reason for the Proposed Change

The proposed change will align the VEGP TS PIV testing frequency with the ASME OM Code.

The VEGP TS SR 3.4.14.1 requires testing in accordance with the Inservice Testing (IST) Program (i.e., the ASME OM Code as required by 10 CFR 50.55a(f)). In addition, the SR requires performances:

- Every 18 months,
- Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months (except for valves HV-8701A/B and HV-8702A/B), and
- For systems rated at less than 50% RCS design pressure, within 24 hours following valve actuation (except for valves HV-8701A/B and HV-8702A/B)

These additional performance requirements restrict the implementation of the Inservice Testing (IST) Program testing in accordance with the Code and approved Code cases, and application of alternatives in accordance with 10 CFR 50.55a(z) with prior NRC approval.

The testing history of the PIVs demonstrates that more frequent testing is not necessary to ensure the PIVs can perform their specified safety functions.

Eliminating the additional Frequencies would eliminate unnecessary testing, which would reduce occupational radiation exposure and potentially reduce the length of refueling outages.

The existing PIV testing frequency is inconsistent with the frequency for the same testing performed for VEGP Units 3 and 4. There are no significant differences between the Units 1 and 2 PIVs and the Units 3 and 4 PIVs; however, the Units 3 and 4 PIV testing (SR 3.4.15.1) does not require the more frequent testing specified in the Units 1 and 2 TS.

2.4 Description of the Proposed Change

The proposed change will revise VEGP TS SR 3.4.14.1 to require performance in accordance with the Inservice Testing Program and all other frequency requirements are removed. The SR 3.4.14.1 Frequency will state:

> In accordance with the INSERVICE TESTING PROGRAM.

Attachment 1 provides TS markups.

Attachment 2 provides the “clean” retyped TS.

The TS Bases are revised to reflect these changes. Markups of the TS Bases are provided in Attachment 3 for information only.

3.0 TECHNICAL EVALUATION

The proposed change:

- Eliminates the requirement to periodically perform the SR every 18 months in addition to the Frequency specified in the ASME Code;

- Eliminates the requirement to perform the SR prior to entering Mode 2 whenever the unit has been in Mode 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months; and

- Eliminates the requirement to perform the SR within 24 hours following valve actuation for systems rated at less than 50% RCS design pressure.

The elimination of these Frequencies also removes the need for the exceptions for valves HV-8701A/B and HV-8702A/B.

The proposed change to SR 3.4.14.1 has no effect on the TS PIV allowable leakage limits (i.e., the Surveillance Requirement itself). With the proposed change, only the frequency of the testing is affected, and RCS PIV testing would continue to be performed in accordance with the IST Program and the ASME Code.

3.1 Elimination of the 18 Month Frequency

The proposed change would remove an overly restrictive 18 month Surveillance Frequency for performing SR 3.4.14.1. The current SR relies on the IST Program to establish the required methods for measurement, the method and criteria for evaluating results, any associated corrective actions, the personnel qualification requirements, and the requirements for record keeping and submittal of reports. However, even though the ASME Code establishes a testing frequency for PIV testing of 2 years, the TS includes a more restrictive requirements to perform the SR every 18 months.

The leakage rate testing performance of each VEGP PIV is shown in Attachment 5, "Pressure Isolation Valve Leakage Test History." The PIV testing performance has been excellent and there is no evidence that performing the SR at the IST Program frequency would result in the SR not being met.

The NRC regulations give precedence to the ASME Code when there are conflicts between the TS and the Code. 10 CFR 50.55a(f)(5)(ii), "IST program update: Conflicting IST Code requirements with technical specifications," states, "If a revised inservice test program for a facility conflict with the technical specifications for the facility, the licensee must apply to the Commission for amendment of the technical specifications to conform the technical specifications to the revised program."

In summary, the proposed change is acceptable because the more frequent performance requirement of 18 months is inconsistent with the ASME Code, could unnecessarily limit plant operation, and is not supported by the operating history. In addition, the proposed change is consistent with the regulations.

3.2 Elimination of the Nine Month Frequency

The SR 3.4.14.1 Frequency requires the SR to be performed, "Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months." This has the effect of requiring performance of the SR every 9 months, but only if there is a mid-cycle outage of sufficient length to perform the test.

In addition, PIV testing to meet the 9 month frequency requirement prior to entering Mode 2 has been required once in the past 16 years, and the testing returned satisfactory results.

As discussed above, elimination of the more frequent performance of the SR is acceptable because the ASME Code, which provides all other aspects of the testing, specifies a longer testing frequency, and the more frequent testing is not warranted given the VEGP PIV test performance. There is no need to perform the testing every 9 months, as permitted by plant conditions, in order to verify that PIV leakage is within the limit.

3.3 Elimination of the Event-Based Frequency

The SR 3.4.14.1 Frequency requires the SR to be performed within 24 hours following valve actuation for systems rated at less than 50% RCS design pressure. The purpose of the performance is to verify that the PIVs are closed or seated after being actuated. This test is redundant to other ASME OM Code testing (e.g., exercise testing per ASME OM Code Subsection ISTC-3520 and position indication verification per ASME OM Code Subsection ISTC-3700) and is unnecessary. PIV testing to meet the 24 hour post-actuation frequency has been required once in the past 10 years at VEGP, with satisfactory results.

In addition, there are other readily available indications that a PIV has failed to close or seat, such as low-pressure system level, temperature, or pressure indications or the lifting of relief valves. Performing the PIV leakage testing for this purpose is unnecessary and may result in higher occupational exposure.

3.4 Proposed Frequency is Consistent with the Vogtle 3 and 4 TS

VEGP Units 3 and 4 are of the Westinghouse AP1000 design. The VEGP Units 3 and 4 TS 3.4.15, "RCS Pressure Isolation Valve (PIV) Integrity," is identical to the equivalent generic specification in the NRC-approved AP1000 Design Control Document, Revision 19, incorporated by reference into 10 CFR 52 Appendix D, Section III.A.

VEGP Units 3 and 4 SR 3.4.15.1 require performance of the same leakage testing, under the same conditions, and with the same acceptance criteria as the Units 1 and 2 SR.

SR 3.4.15.1	Verify leakage of each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 and ≤ 2255 psig.

The VEGP Units 3 and 4 SR 3.4.15.1 Frequency is "24 months," with no additional Frequencies requiring testing within 18 months, 9 months, or 24 hours after actuation. In the

Units 1 and 2 TS, a fixed frequency such as "24 months" would be replaced with a reference to the Surveillance Frequency Control Program. Unlike Units 1 and 2, the VEGP Units 3 and 4 TS do not include a Surveillance Frequency Control Program. Given that the testing is required by the ASME OM Code and the current Units 1 and 2 TS Frequency, the proposed change retains the current SR Frequency that references the Inservice Testing Program.

The absence of the 18 month, 9 month, and 24 hours after actuation Frequencies in the VEGP Units 3 and 4 TS is attributable to differences between the Units 1 and 2 and Units 3 and 4 the design and licensing bases. SECY-90-016, "Evolutionary Light Water Reactor (LWR) Certification Issues and their Relationship to Current Regulatory Requirements," dated January 12, 1990, presented the NRC staff's recommendations concerning proposed departures from current regulations for the evolutionary advanced light water reactors (ALWRs), such as the AP1000 design. One of the issues identified was protection from an intersystem LOCA.

SECY-90-016, Section II, Preventative Feature Issues, E, "Intersystem LOCA" stated the following in part regarding Pressurized Water Reactors (PWRs):

> Future evolutionary ALWR designs can reduce the possibility of a loss-of-coolant accident (LOCA) outside containment by designing (to the extent practicable) all systems and subsystems connected to the reactor coolant system (RCS) to an ultimate rupture strength at least equal to the full RCS pressure.
>
> For both BWRs and PWRs, EPRI states that low-pressure systems which could be over-pressurized by the RCS should be designed with sufficient margin to withstand full RCS pressure without structural failure.
>
> For PWRs, relief valves sized to protect against overpressure transients, should be provided on the RHR system. RHR suction valves should be provided with permissive interlocks to prevent opening if RCS pressure exceeds RHR design pressure.
>
> The staff concluded that designing, to the extent practicable, low-pressure systems to withstand full RCS pressure is an acceptable means for resolving this issue. However, the staff believes that for those systems that have not been designed to withstand full RCS pressure, evolutionary ALWRs should provide (1) the capability for leak testing of the pressure isolation valves, (2) valve position indication that is available in the control room when isolation valve operators are deenergized and (3) high-pressure alarms to warn control room operators when rising RCS pressure approaches the design pressure of attached low-pressure systems and both isolation valves are not closed. Imposition of these requirements exceed Commission regulations and guidance: therefore, the staff recommended that the Commission approve these positions for evolutionary ALWRs.
>
> The staff noted that for some low-pressure systems attached to the RCS, it may not be practical or necessary to provide a higher system ultimate pressure capability for the entire low-pressure connected system. The staff will evaluate these exceptions on a case-by-case basis during specific design certification reviews.

The June 26, 1990, version of the SECY also stated:

> The Commission (with all Commissioners agreeing) has approved the staff's position on intersystem LOCA provided that, as recommended by the ACRS, all elements of the low pressure system are considered (e.g., instrument lines, pump seals, heat exchanger tubes, and valve bonnets.)

While no definitive documentation could be located, the most likely reason the VEGP Units 3 and 4 TS do not contain the additional frequency requirements that appear in the VEGP Units 1 and 2 TS is due in part to satisfying the additional requirements discussed in SECY-90-016. However, a comparison of the relevant VEGP Units 1 and 2 design to the VEGP Units 3 and 4 design determined that the simplified frequency is equally applicable to Units 1 and 2.

SECY-90-016, Section II, Preventative Feature Issues, E, "Intersystem LOCA," provides the following criteria for evaluating the design and administrative provisions that serve to limit and detect leakage past PIVs:

1) Relief valves sized to protect against overpressure transients, should be provided.

2) RHR suction valves should be provided with permissive interlocks to prevent opening if RCS pressure exceeds RHR design pressure.

3) The capability for leak testing of the pressure isolation valves.

4) Valve position indication that is available in the control room when isolation valve operators are deenergized.

5) High-pressure alarms to warn control room operators when rising RCS pressure approaches the design pressure of attached low-pressure systems and both isolation valves are not closed.

These criteria are evaluated for each VEGP Units 1 and 2 low-pressure systems protected by PIVs.

- RHR System (Suction Side)

  The RHR System is isolated from the RCS on the suction side by motor-operated valves. Leakage past the isolation valves would be detected by the lifting of RHR pump suction relief valves, accompanied by increasing pressurizer relief tank level, pressure, and temperature indications and alarms on the main control board. This satisfies Criteria 1 and 5.

  Each inlet line to the RHR System is equipped with a relief valve to prevent RHR System overpressurization during plant startup, shutdown, and cold shutdown decay heat-removal operation. Each valve has a relief capacity of 900 gpm at a set pressure of 450 psig. An analysis of the capability of the RHR System relief valve to prevent overpressurization in the RHR System considered all credible events, including normal

operating conditions, infrequent transients, and abnormal occurrences. The analysis confirmed that one relief valve has the capability to maintain the RHR System maximum pressure within the ASME Code limits. This satisfies Criterion 1.

Indication of PIV leakage is also provided by an alarm on open hot leg valves and high RCS pressure. This satisfies Criterion 5.

Criterion 4 is not met for the RHR Loop Suction motor operated valves, but meeting this criterion is unnecessary because the valves are locked with a padlock in a tripped closed position to prevent unauthorized opening of the valve during the operating cycle.

TS SR 3.4.14.2 requires that operators, "Verify RHR System suction isolation valve interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 450 psig at a frequency in accordance with the Surveillance Frequency Control Program." This satisfies Criterion 2.

These valves are currently and will continue to be tested in accordance with the IST Program, which satisfies Criterion 3.

- Accumulators

  The accumulators are isolated from the RCS by check valves. Leakage past these valves and into the accumulators is detected by redundant control room accumulator pressure and level indications and alarms. This satisfies Criterion 5.

  Over pressure protection of the accumulators is provided by relief valves with a lift setpoint of 700 psig and a capacity of 1500 scfm. This satisfies Criterion 1.

  Criterion 2 is not applicable to the accumulators.

  Criterion 4 is not applicable to the accumulator PIV check valves; however, there are motor operated valves upstream of these check valves which are provided with power lockout and restoration from the motor control center. Valve position indication is provided in the control room. This satisfies criterion 4.

  These valves are currently and will continue to be tested in accordance with the IST Program, which satisfies Criterion 3.

- RHR System (Discharge Side)

  The RHR pump is isolated from the RCS by check valves and by a normally closed motor-operated valve. Any leakage past these valves will eventually pressurize the RHR discharge header and the pump suction header through the normally open RHR pump miniflow isolation valves. A continued increase in RHR pump discharge pressure will be indicated in the control room and ultimately result in lifting of relief valves in the suction header. This satisfies Criteria 1 and 5.

  Each inlet line to the RHR System is equipped with a pressure relief valve designed to

prevent RHR System overpressurization assuming the most severe overpressure transients. These relief valves protect the system from inadvertent overpressurization during plant startup, shutdown, and cold shutdown decay heat-removal operations. This satisfies Criterion 1.

Criterion 2 is not applicable to the RHR System discharge PIVs.

Each discharge line from the RHRS to the RCS is equipped with pressure relief valves, designed to relieve the maximum possible leakage through the valves isolating the RHR System from the RCS. These valves lift at 600 psig with relief capacity of 20 gpm. This satisfies Criterion 1.

Criterion 4 is not applicable to the RHR to RCS Hot Leg Isolation check valves; however, there is a motor operated valve upstream of these check valves which are provided with power lockout, restoration and valve position indication from the control room. This satisfies criterion 4.

These valves are currently and will continue to be tested in accordance with the IST Program, which satisfies Criterion 3.

- Safety Injection Pump

  The Safety Injection pump discharge piping is isolated from the RCS by check valves and normally closed motor-operated valves. Leakage past these valves could pressurize the safety injection pump discharge header, resulting in control room indication of increasing pressure and, eventually, lifting of relief valves at 1750 psig and a capacity of 20 gpm. This satisfies Criteria 1 and 5.

  Criterion 2 is not applicable to the safety injection pumps.

  Criterion 4 is not applicable to the SI to RCS Hot Leg Isolation check valves; however, there is a motor operated valve upstream of these check valves which are provided with power lockout, restoration and valve position indication from the control room. This satisfies criterion 4.

  These valves are currently and will continue to be tested in accordance with the IST Program, which satisfies Criterion 3.

In addition, the VEGP Units 1 and 2 design provides additional protection from an intersystem LOCA:

- The RHR discharge to the cold legs from the RHR heat exchangers is isolated by a motor-operated valve with power lockout, restoration and valve position indication from the control room.

- All PIVs are normally closed check valves without external operating mechanisms except for motor operated valves HV-8701A/B and HV-8702A/B. RHR System suction isolation valve interlock prevents the opening of HV-8701A/B and HV-8702A/B if RCS

pressure ≥ 450 psig. The opening of both, in series, valves with RCS pressure ≥ 450 psig would require multiple failures.

- All PIVs are located inside containment.

A summary table comparing the VEGP Units 1 and 2 and VEGP Units 3 and 4 relevant requirements and design follows:

Comparison of VEGP Units 1 and 2 and VEGP Units 3 and 4 PIVs and Requirements

	VEGP Units 1 and 2	VEGP Units 3 and 4
PIV Surveillance Requirements	SR 3.4.14.1 Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig.	SR 3.4.15.1 Verify leakage of each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 and ≤ 2255 psig.
PIV Valve Types and Sizes	In series check valves ranging in sizes of 2" to 10". 12" shutdown cooling motor operated gate valves in series.	In series check valves ranging in sizes of 6" to 8". 10" shutdown cooling motor operated gate valves in series.
PIV Valve Pressure Ratings	PIV design pressure of 2500 PSI at 650 °F with nominal pressure rating greater than 1500 lbs., stainless steel, Class 1 valves.	PIV design pressure of 2485 psig at 680 °F with nominal pressure rating greater than 1500 lbs., stainless steel, Class 1 valves.
Valve Seating Forces[1]	Check valves: 2” = 7,084 lbs. 6" = 63,759 lbs. 8” = 113,349 lbs. 10” = 177,107 lbs. Shutdown cooling valves: 12" = 255,035 lbs.	Check valves: 6" = 63,759 lbs. 8" = 113,349 lbs. Shutdown cooling valves: 10" = 177,107 lbs.

All of the VEGP Units 1 and 2 system piping and components protected by PIVs are at a minimum ASME Class 2, Seismic Class 1, Safety Class 2, Quality Group B which is comparable to the qualifications of the VEGP Units 3 and 4 piping and components which are ASME Class 2 or 3, Quality Group B or C, respectively.

Under Valve Seating Forces, the one difference between VEGP Units 1 & 2 and Units 3 & 4 is the shutdown cooling valves. The difference is insignificant because VEGP Units 1 & 2 shutdown cooling valves are locked with a padlock in a tripped closed position to prevent unauthorized opening of the valve during the operating cycle as previously stated in the SECY-90-016 section.

[1] This comparison is a simple calculation using πr^2 x peak PIV test pressure, where 'r' = 1/2 the valve diameter.

In summary, the intersystem LOCA protection of VEGP Units 1 and 2 satisfies the expectations in SECY-90-016, Section II, Preventative Feature Issues, E, "Intersystem LOCA," for ALWR plants, and comparable to the relevant design features of VEGP Units 3 and 4. As a result, the absence of the additional PIV testing frequencies of 18 months, 9 months, and 24 hours after actuation in the VEGP Units 3 and 4 TS is equally applicable to the VEGP Units 1 and 2 SR.

3.5 Conclusion

The 18 month, 9 month, and 24 hours after actuation Frequencies of SR 3.4.14.1 are unnecessary and can be removed from the VEGP Units 1 and 2 TS because the remaining requirement to perform the SR in accordance with the IST Program will ensure the PIVs are capable of performing their specified safety function. The revised Frequency is consistent with the ASME OM Code, the regulations, and is supported by the excellent operating history of the PIVs. In addition, elimination of the additional testing frequencies is consistent with the NRC-approved VEGP Units 3 and 4 TS and the AP1000 DCD, and is equally applicable to the VEGP Units 1 and 2 design.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements and Guidance

10 CFR 50.36

The NRC's regulatory requirements related to the content of the TS are set forth in Title 10 of the Code of Federal Regulations (10 CFR) Section 50.36, "Technical specifications." This regulation requires that the TS include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings, (2) limiting conditions for operation, (3) SRs, (4) design features, and (5) administrative controls. The regulation does not specify the particular requirements to be included in a plant's TS.

Per 10 CFR 50.36(c)(3), SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

The proposed change will not eliminate any SRs. Therefore, the requirements of 10 CFR 50.36(c) continue to be met.

10 CFR 50.54(jj)

Structures, systems, and components subject to the codes and standards in 10 CFR 50.55a must be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed.

The proposed change does not alter the design, fabrication, erection, construction, or inspection of any components. The proposed change will continue to test the PIVs to the quality standards commensurate with the importance of the safety function being performed. Therefore, the requirements of 10 CFR 50.54(jj) continue to be met.

10 CFR 50.55a

In accordance with 10 CFR 50.54, the applicable requirements of 10 CFR 50.55a are conditions of every nuclear power reactor operating license issued under 10 CFR Part 50. These requirements include inservice testing of pumps and valves at nuclear power reactors pursuant to the ASME OM Code as specified in 10 CFR 50.55a(f). Paragraph (f) of 10 CFR 50.55a states in part that systems and components of pressurized water-cooled nuclear power reactors must meet the requirements of the ASME Boiler and Pressure Vessel (BPV) Code and ASME OM Code as incorporated by reference into 10 CFR 50.55a. The proposed change will not affect the current TS requirement to test the PIVs in accordance with the ASME OM Code. Therefore, the requirements of 10 CFR 50.55a continue to be met.

10 CFR Part 50, Appendix A, General Design Criteria (GDC) 1, 14, 30, 32, 54, 55

Appendix A, GDC 1, “Quality standards and records,” states in part:

> Structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Where generally recognized codes and standards are used, they shall be identified and evaluated to determine their applicability, adequacy, and sufficiency and shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function. A quality assurance program shall be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety functions.

Appendix A, GDC 14, “Reactor coolant pressure boundary,” states:

> The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.

Appendix A, GDC 30, Quality of reactor coolant pressure boundary," states

> Components which are part of the reactor coolant pressure boundary shall be designed, fabricated, erected, and tested to the highest quality standards practical. Means shall be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.

Appendix A, GDC 32, “Inspection of reactor coolant pressure boundary,” states:

> Components which are part of the reactor coolant pressure boundary shall be designed to permit (1) periodic inspection and testing of important areas and features to assess their structural and leaktight integrity, and (2) an appropriate material surveillance program for the reactor pressure vessel.

Appendix A, GDC 54, “Piping systems penetrating containment,” states:

> Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.

Appendix A, GDC 55, “Reactor coolant pressure boundary penetrating containment, " states:

> Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:
>
> (1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or
>
> (2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or
>
> (3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or
>
> (4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment. Isolation valves outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.
>
> Other appropriate requirements to minimize the probability or consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements, such as higher quality in design, fabrication, and testing, additional provisions for inservice inspection, protection against more severe natural phenomena, and additional isolation valves and containment, shall include consideration of the population density, use characteristics, and physical characteristics of the site environs.

The proposed change does not alter the design of any plant components. Therefore, compliance with the Appendix A GDCs, as described in the VEGP Updated Final Safety Analysis Report, is not affected by the proposed change.

Conclusion

SNC has evaluated the proposed changes against the applicable regulatory requirements described above. Based on this evaluation, there is reasonable assurance that the health and safety of the public will remain unaffected following the approval of the proposed change.

4.2 Significant Hazards Consideration

Pursuant to 10 CFR 50.90, Southern Nuclear Operating Company, Inc. (SNC) hereby requests a revision to the Technical Specifications (TS) for Vogtle Electric Generating Plant, Units 1 and 2 (VEGP). The proposed amendment would revise the Surveillance Requirement (SR) Frequency for Reactor Coolant System (RCS) pressure isolation valve (PIV) operational leakage testing to only require testing at the frequency specified in the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code).

SNC has evaluated whether a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of amendment,” as discussed below:

(1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed amendment would revise the SR Frequency for RCS PIV operational leakage testing to only require testing at the frequencies specified in the Inservice Testing Program, which complies with the ASME OM Code. RCS PIV testing is performed during a plant shutdown and is not an initiator to any accident previously evaluated. The RCS PIV operational testing acceptance criteria are not affected by the proposed change. The RCS PIVs will continue to be tested to ensure leakage is within the TS allowable leakage limits. As a result, the consequences of any accident previously evaluated are unchanged.

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

(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 amendment would revise the SR Frequency for RCS PIV operational leakage testing to only require testing at the frequencies specified in the Inservice Testing Program, which complies with the ASME OM Code. RCS PIV operational testing is only performed during a plant shutdown. The testing methodology and acceptance criteria remain unchanged. The proposed change does not involve a physical change to the plant or the manner in which the plant is operated or controlled.

The proposed change does not alter the design function or operation of the RCS PIVs. The proposed change does not alter the ability of the RCS PIVs to perform their design function. Since pressure boundary leakage is an evaluated accident, the proposed change does not create any new failure mechanisms, malfunctions, or accident initiators not considered in the design and licensing bases.

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

(3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed amendment would revise the SR Frequency for RCS PIV operational leakage testing to only require testing at the frequencies specified in the Inservice Testing Program, which complies with the ASME OM Code. The proposed change does not affect the initial assumptions, margins, or controlling values used in any accident analysis. The amount of allowed leakage is not increased. The proposed change does not affect any design basis or safety limit or any Limiting Condition for Operation.

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

Based upon the above evaluation, SNC concludes that the proposed amendment presents no 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.

4.3 Conclusions

In conclusion, 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.

5.0 ENVIRONMENTAL CONSIDERATIONS

SNC has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined by 10 CFR 20, or it would change an inspection or surveillance requirement. However, the proposed changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs be prepared in connection with the proposed amendment.

6.0 REFERENCES

None

Vogtle Electric Generating Plant - Units 1 and 2
License Amendment Request to Revise
Technical Specification Surveillance Requirement 3.4.14.1
and Proposed Inservice Testing Alternative ALT-VR-02

Attachment 1

Proposed Technical Specification Changes (Mark-Up)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	----------NOTES---------- 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. ----------	
	Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ 2215 psig and ≤ 2255 psig.	In accordance with the INSERVICE TESTING PROGRAM~~, and 18 months~~ ~~AND~~ ~~Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months (except for valves HV-8701A/B and HV-8702A/B)~~ ~~AND~~

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
~~SR 3.4.14.1 (continued)~~		~~For systems rated at less than 50% RCS design pressure, within 24 hours following valve actuation (except for valves HV-8701A/B and HV-8702A/B).~~
SR 3.4.14.2	Verify RHR System suction isolation valve interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ 450 psig.	In accordance with the Surveillance Frequency Control Program

Vogtle Electric Generating Plant - Units 1 and 2
License Amendment Request to Revise Technical Specification Surveillance Requirement 3.4.14.1 and Proposed Inservice Testing Alternative ALT-VR-02

Attachment 2

Revised Technical Specification Changes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	----------NOTES---------- 1. Not required to be performed in MODES 3 and 4. 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. ---------- Verify leakage from each RCS PIV is equivalent to $\leq$ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure $\geq$ 2215 psig and $\leq$ 2255 psig.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.4.14.2	Verify RHR System suction isolation valve interlock prevents the valves from being opened with a simulated or actual RCS pressure signal $\geq$ 450 psig.	In accordance with the Surveillance Frequency Control Program

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Attachment 3

Proposed Technical Specifications Bases Changes (Mark-Up) - For Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1 (continued)

Testing is to be performed ~~every 18 months, a typical refueling cycle, if the plant does not go into MODE 5 for at least 7 days. The 18 month Frequency is consistent with 10 CFR 50.55a(f) (Ref. 9)~~ as contained in the INSERVICE TESTING PROGRAM, ~~is within the frequency allowed by the American Society of Mechanical Engineers (ASME) OM Code (Ref. 7),~~ and is based on the need to perform such surveillances under the conditions that apply during an outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

~~In addition, for systems rated at less than 50% design pressure, testing must be performed once after any RCS PIV, whether a first or second isolation valve has been actuated to ensure tight reseating except for RHR suction isolation valves HV-8701 A/B and HV-8702 A/B. The exception for valves HV-8701 A/B and HV-8702 A/B is based on the existence of full closure indication in the control room, interlocks to prevent inadvertent opening when RCS pressure is above the RHR system design pressure, and high pressure alarms. PIVs disturbed in the performance of this Surveillance should also be tested unless documentation shows that an infinite testing loop cannot practically be avoided. For the systems rated at less than 50% design pressure, testing must be performed within 24 hours after the valve has been actuated. Within 24 hours is a reasonable and practical time limit for performing this test after the actuation of a valve.~~

The leakage limit is to be met at the RCS pressure associated with MODES 1, 2, 3, and 4, but the SR is not required to be performed during MODES 3 and 4. The entry into MODES 3 and 4 is allowed to establish the necessary differential pressures and stable conditions to allow for performance of this Surveillance. ~~The Note that allows this provision is complementary to the Frequency of prior to entry into MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months (except for valves HV-8701 A/B and HV-8702 A/B).~~ In addition, this Surveillance is not required to be performed on the RHR System when the RHR System is aligned to the RCS in the shutdown cooling mode of operation. PIVs contained in the RHR shutdown cooling flow path ~~must be~~ are leakage rate tested after RHR is secured and stable unit conditions and the necessary differential pressures are established.

SR 3.4.14.2

Verifying that the RHR System suction isolation valve interlock is OPERABLE ensures that RCS pressure will not pressurize the RHR system beyond 125% of its design pressure of 600 psig. The interlock setpoint that prevents the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.2 (continued)

valves from being opened is set so the actual RCS pressure must be < 450 psig to open the valves. This setpoint ensures the RHR design pressure will not be exceeded. To ensure that the RHR relief valves will not lift, the actual interlock setpoint used in performing the surveillance is < 365 psig, and takes into consideration various allowances for relief valve setting variation, transmitter elevation, and the total instrument channel uncertainty. The total instrument channel uncertainty is calculated in accordance with reference 10, and the allowance for process instrumentation (rack drift) is 1%. Once the interlock setpoint is initially reached, administrative controls ensure that the RHR suction isolation valves are closed prior to reaching an RCS pressure that could cause the RHR suction relief valves to open. Due to the bistable reset design, the valves could be opened at a pressure above the interlock setpoint, but below the reset pressure. The administrative controls ensure that the valves will not be opened if RCS pressure exceeds 365 psig after RCS pressure has decreased below the interlock setpoint.

REFERENCES

1. 10 CFR 50.2.
2. 10 CFR 50.55a(c).
3. 10 CFR 50, Appendix A, Section V, GDC 55.
4. WASH-1400 (NUREG-75/014), Appendix V, October 1975.
5. NUREG-0677, May 1980.
6. FSAR Section 5.4.
7. ~~ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code).~~ Deleted
8. WCAP-16294-NP-A, Rev. 1, “Risk-Informed Evaluation of Changes to Technical Specification Required Action Endstates for Westinghouse NSSS PWRs,” June 2010.
9. ~~10 CFR 50.55a(f).~~ Deleted
10. WCAP-11269, Rev. 1, Westinghouse Setpoint Methodology for Protection Systems.

Vogtle Electric Generating Plant - Units 1 and 2
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Technical Specification Surveillance Requirement 3.4.14.1
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Attachment 4

Pressure Isolation Valves Subject to Testing Under SR 3.4.14.1

Pressure Isolation Valves Subject to Testing Under SR 3.4.14.1

Notes:

1) All listed valves are included in the scope of the Vogtle Unit 1 and 2, 4th Interval Inservice Testing Plan.

2) The listed PIVs are all of the design pressure of 2500 PSI at 650°F with nominal pressure rating greater than 1500#, stainless steel, Class 1 valves.

Valve Number	Description	System[1]	ASME Code Class	OM Code Category[2]
1/2-HV-8701A/B	RHR Pump Supply Isolation From RCS Loops	RCS	1	A
1/2-HV-8702A/B	RHR Pump Supply Isolation From RCS Loops	RCS	1	A
1/2-1204-U4-143 1/2-1204-U4-144 1/2-1204-U4-145 1/2-1204-U4-146	SI To RCS Cold Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U4-120 1/2-1204-U4-121 1/2-1204-U4-123 1/2-1204-U4-122	SI to RCS Hot Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U6-079 1/2-1204-U6-080 1/2-1204-U6-081 1/2-1204-U6-082	SI Accumulator Discharge Check Valve	SI	1	A/C
1/2-1204-U6-083 1/2-1204-U6-084 1/2-1204-U6-085 1/2-1204-U6-086	SI/RHR Cold Leg Admission Check Valve	SI	1	A/C
1/2-1204-U6-147 1/2-1204-U6-148 1/2-1204-U6-149 1/2-1204-U6-150	RHR To RCS Cold Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U6-128 1/2-1204-U6-129	RHR To RCS Hot Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U6-126 1/2-1204-U6-124 1/2-1204-U6-127 1/2-1204-U6-125	RCS Hot Leg SI Admission Check Valve	SI	1	A/C

[1] SI – Safety Injection
RCS – Reactor Coolant System
RHR – Residual Heat Removal

[2] A - Valves for which seat leakage is limited to a specific maximum amount in the closed position
A/C – Check valves for which seat leakage is limited to a specific maximum amount in the closed position.

Vogtle Electric Generating Plant - Units 1 and 2
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Attachment 5

Pressure Isolation Valve Leakage Test History

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
VEGP Unit 1			
RHR Pump Supply Isolation From RCS Loops			
1-HV-8701B	Fall 2021	0.3	5.0
	Spring 2020	0.5	
	Fall 2018	0.8	
	Spring 2017	0.0	
	Fall 2015	0.9	
	Spring 2014	2.1	
	Fall 2012	0.4	
	Spring 2011	0.4	
1-HV-8701A	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-HV-8702B	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.2	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-HV-8702A	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
SI To RCS Cold Leg Isolation Check Valve			
1-1204-U4-143 1-1204-U4-144 1-1204-U4-145 1-1204-U4-146	Fall 2021	0.0	1.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.3	
	Spring 2011	0.1	
SI to RCS Hot Leg Isolation Check Valve			
1-1204-U4-120	Fall 2021	0.0	1.0
	Spring 2020	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U4-121	Fall 2021	0.0	1.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U4-123	Fall 2021	0.0	1.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U4-122	Fall 2021	0.0	1.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
SI Accumulator Discharge Check Valve			
1-1204-U6-079	Fall 2021	0.1	5.0
	Spring 2020	0.1	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.1	
	Fall 2012	0.0	
	Spring 2011	0.1	
1-1204-U6-080	Fall 2021	0.0	5.0
	Spring 2020	0.1	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Spring 2011	0.0	
1-1204-U6-081	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U6-082	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
SI/RHR Cold Leg Admission Check Valve			
1-1204-U6-083	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U6-084	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U6-085	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.1	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U6-086	Fall 2021	0.0	5.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Fall 2015	0.0	
	Spring 2014	0.2	
	Fall 2012	0.0	
	Spring 2011	0.0	
RHR To RCS Cold Leg Isolation Check Valve			
1-1204-U6-147 1-1204-U6-148	Fall 2021	0.0	3.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U6-149 1-1204-U6-150	Fall 2021	0.0	3.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
RHR To RCS Hot Leg Isolation Check Valve			
1-1204-U6-128	Fall 2021	0.0	4.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
1-1204-U6-129	Fall 2021	0.0	4.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
RCS Hot Leg SI Admission Check Valve			
1-1204-U6-126	Fall 2021	0.1	3.0
	Spring 2020	0.0	
	Fall 2018	0.1	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.1	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Spring 2011	0.0	
1-1204-U6-124	Fall 2021	0.2	3.0
	Spring 2020	0.3	
	Fall 2018	0.4	
	Spring 2017	0.3	
	Fall 2015	0.3	
	Spring 2014	0.2	
	Fall 2012	0.4	
	Spring 2011	0.3	
1-1204-U6-127	Fall 2021	0.1	3.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.1	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.1	
	Spring 2011	0.1	
1-1204-U6-125	Fall 2021	0.1	3.0
	Spring 2020	0.0	
	Fall 2018	0.0	
	Spring 2017	0.0	
	Fall 2015	0.0	
	Spring 2014	0.0	
	Fall 2012	0.0	
	Spring 2011	0.0	
VEGP Unit 2			
RHR Pump Supply Isolation From RCS Loops			
2-HV8701B	Spring 2022	0.0	5.0
	Fall 2020	0.8	
	Spring 2019	0.0	
	Fall 2017	0.2	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.2	
2-HV8701A	Spring 2022	0.5	5.0
	Fall 2020	0.5	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
2-HV8702B	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Fall 2017	0.1	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
2-HV8702A	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
SI To RCS Cold Leg Isolation Check Valve			
2-1204-U4-143 2-1204-U4-144 2-1204-U4-145 2-1204-U4-146	Spring 2022	0.0	1.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
SI to RCS Hot Leg Isolation Check Valve			
2-1204-U4-120	Spring 2022	0.5	1.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.1	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U4-121	Spring 2022	0.1	1.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.4	
	Spring 2016	0.0	
	Fall 2014	0.1	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U4-123	Spring 2022	0.0	1.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Fall 2011	0.2	
2-1204-U4-122	Spring 2022	0.0	1.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.1	
SI Accumulator Discharge Check Valve			
2-1204-U6-079	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
2-1204-U6-080	Spring 2022	0.0	5.0
	Fall 2020	0.1	
	Spring 2019	0.1	
	Fall 2017	0.1	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U6-081	Spring 2022	0.3	5.0
	Fall 2020	0.0	
	Spring 2019	0.3	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U6-082	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
SI/RHR Cold Leg Admission Check Valve			
2-1204-U6-083	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Fall 2017	0.4	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.1	
	Fall 2011	0.1	
2-1204-U6-084	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.1	
	Spring 2016	0.0	
	Fall 2014	0.2	
	Spring 2013	0.1	
	Fall 2011	0.1	
2-1204-U6-085	Spring 2022	0.1	5.0
	Fall 2020	0.0	
	Spring 2019	0.1	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.1	
	Spring 2013	0.1	
	Fall 2011	0.1	
2-1204-U6-086	Spring 2022	0.0	5.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.1	
	Fall 2014	0.1	
	Spring 2013	0.2	
	Fall 2011	0.2	
RHR To RCS Cold Leg Isolation Check Valve			
2-1204-U6-147 2-1204-U6-148	Spring 2022	0.0	3.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.4	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U6-149 2-1204-U6-150	Spring 2022	0.0	3.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.4	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
RHR To RCS Hot Leg Isolation Check Valve			
2-1204-U6-128	Spring 2022	0.0	4.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
2-1204-U6-129	Spring 2022	0.0	4.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	
RCS Hot Leg SI Admission Check Valve			
2-1204-U6-126	Spring 2022	0.0	3.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.0	
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U6-124	Spring 2022	0.1	3.0
	Fall 2020	0.1	
	Spring 2019	0.1	
	Fall 2017	0.3	
	Spring 2016	0.1	
	Fall 2014	0.0	
	Spring 2013	0.1	
	Fall 2011	0.1	
2-1204-U6-127	Spring 2022	0.0	3.0
	Fall 2020	0.0	
	Spring 2019	0.0	
	Fall 2017	0.7	
	Spring 2016	0.6	
	Fall 2014	0.4	
	Spring 2013	0.0	
	Fall 2011	0.1	
2-1204-U6-125	Spring 2022	0.0	3.0
	Fall 2020	0.0	
	Spring 2019	0.3	
	Fall 2017	0.0	

PIV Leakage Test History			
Component Number	**Date of Test**	**Measured Value (gpm)**	**Maximum Allowable Leak Rate (gpm)**
	Spring 2016	0.0	
	Fall 2014	0.0	
	Spring 2013	0.0	
	Fall 2011	0.0	

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Enclosure 2

Proposed Inservice Testing Alternative ALT-VR-02

Vogtle Electric Generating Plant - Units 1 and 2
Proposed Inservice Testing Alternative ALT-VR-02

1. **American Society of Mechanical Engineers (ASME) Code Component(s) Affected**

Table 1, PIVs Subject to Leakage Rate Testing in Accordance with TS SR 3.4.14.1				
Valve Number Units 1 and 2	**Description**	**System[1]**	**ASME Code Class**	**OM Code Category[2]**
1/2-HV-8701A/B	RHR Pump Supply Isolation From RCS Loops	RCS	1	A
1/2-HV-8702A/B	RHR Pump Supply Isolation From RCS Loops	RCS	1	A
1/2-1204-U4-143 1/2-1204-U4-144 1/2-1204-U4-145 1/2-1204-U4-146	SI To RCS Cold Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U4-120 1/2-1204-U4-121 1/2-1204-U4-123 1/2-1204-U4-122	SI to RCS Hot Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U6-079 1/2-1204-U6-080 1/2-1204-U6-081 1/2-1204-U6-082	SI Accumulator Discharge Check Valve	SI	1	A/C
1/2-1204-U6-083 1/2-1204-U6-084 1/2-1204-U6-085 1/2-1204-U6-086	SI/RHR Cold Leg Admission Check Valve	SI	1	A/C
1/2-1204-U6-147 1/2-1204-U6-148 1/2-1204-U6-149 1/2-1204-U6-150	RHR To RCS Cold Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U6-128 1/2-1204-U6-129	RHR To RCS Hot Leg Isolation Check Valve	SI	1	A/C
1/2-1204-U6-126 1/2-1204-U6-124 1/2-1204-U6-127 1/2-1204-U6-125	RCS Hot Leg SI Admission Check Valve	SI	1	A/C

Note: All valves in Table 1 are included in the scope of the Vogtle Unit 1 and 2 4th Interval Inservice Testing Plan.

[1]SI – Safety Injection
RCS – Reactor Coolant System
RHR – Residual Heat Removal

[2]A – Valves for which seat leakage is limited to a specific maximum amount in the closed position
A/C – Check valves for which seat leakage is limited to a specific maximum amount in the closed position

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2. **Applicable ASME OM Code Edition and Addenda**

American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) – 2004 Edition through, and including, the 2006 Addenda.

3. **Applicable Code Requirement(s)**

ASME OM Code, Subsection ISTC-3522, "Category C Check Valves," states category C check valves shall be exercised as follows:

(a) During operation at power, each check valve shall be exercised or examined in a manner that verifies obturator travel by using the methods in ISTC-5221.

(c) If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

ASME OM Code, Subsection ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," states, in part:

> Category A valves with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J, program, shall be tested to verify their seat leakages within acceptable limits. Valve closure before seat leakage testing shall be by using the valve operator with no additional closing force applied.

ASME OM Code Subsection ISTC-3630(a), "Frequency," states, "Tests shall be conducted at least once every two years".

4. **Reason for Request**

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), "Alternatives to codes and standards requirements," Southern Nuclear Operating Company (SNC) proposes an alternative to the requirements of ASME OM Code Section ISTC-3522, "Category C Check Valves," and Subsection ISTC-3630(a) under Section ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," for the subject pressure isolation valves (PIVs) listed in Table 1. Approval of this alternative will allow PIV testing to be performed at the Vogtle Electric Generating Plant (VEGP) on a performance-based frequency. The proposed 10 CFR 50.55a(z)(1) alternative provides for more efficient plant operation and lower cumulative radiation exposure (CRE), while maintaining an acceptable level of quality and safety.

Since PIVs may or may not be containment isolation valves, they are not necessarily included in scope for performance-based testing, as provided in 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Option B, "Performance-Based Requirements." The reason for this 10 CFR 50, Appendix J, Option B alternative for containment isolation valve testing is for VEGP to adopt cost-effective methods, including the setting of test intervals, for complying with regulatory requirements. Nuclear Energy Institute (NEI) 94-01, "Industry Guideline for Implementing Performance Based Option of 10 CFR 50, Appendix J," Revision 3-A (Reference 1), describes a risk-informed basis for extending containment isolation valve test intervals under Option B. That justification shows that for containment isolation valves which have demonstrated good performance by successful completion of two consecutive leakage

rate tests over two consecutive cycles, licensees may increase their test frequencies. Additionally, NEI 94-01 states that if the component does not fail within two operating cycles, further failures appear to be governed by the random failure rate of the component. NEI 94-01 also presents the results of a comprehensive risk analysis, including the conclusion that “risk impact associated with increasing [leak rate] test intervals are negligible (i.e., less than 0.1 percent of total risk).”

The proposed performance-based scheduling of PIV tests at VEGP will enable SNC to implement a reduction in the resources required for testing, as well as a reduction in refueling outage duration.

NUREG-0933, "Resolution of Generic Safety Issues," Issue 105, "Interfacing Systems LOCA at LWRs," (Reference 3) discusses the need for PIV leak-rate testing based primarily on three pre-1985 historical failures of applicable valves industrywide. These failures all involved human errors in either operations or maintenance. None of these failures involved inservice equipment degradation.

The performance of PIV leak rate testing provides assurance of acceptable seat leakage with the valve in a closed condition. For check valves, functional testing is accomplished per ASME OM Code ISTC-3522, "Category C Check Valves," under ISTC-3520, "Exercising Requirements." Power-operated valves are routinely full stroke tested per ASME OM Code ISTC-5100, “Power-Operated Valves”, to ensure their functional capabilities. Upon approval of this alternative, the closure functional testing of the PIV check valves will be monitored through a Condition Monitoring Plan in accordance with ISTC-5222, "Condition-Monitoring Program".

The use of a Condition Monitoring Plan is intended to align the frequency for the closure exercise testing with the pressure isolation valve test. By use of a Condition Monitoring Plan, the check valve closure test, based on performance, would be verified concurrently with the PIV seat leakage test. The frequency of the check valve closure test would then be the same as the PIV seat leakage test since closure performance and seat leakage performance are linked. The PIV seat leakage test would not pass if the valve failed to close.

5. **Proposed Alternative and Basis for Use**

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), "Alternatives to codes and standards requirements," SNC proposes the following alternative to the ASME OM Code requirements. The specific test interval for each PIV would be a function of its historical performance and would be established in a manner consistent with the containment isolation valve testing process under 10 CFR 50, Appendix J, Option B. Performance-based scheduling of PIV testing will be controlled in a manner consistent with the prescribed frequency described in NEI 94-01, Revision 3-A. PIV test performances would occur at a nominal frequency ranging from every refueling outage to every fourth refueling outage, subject to acceptable valve performance. Valves that have demonstrated good performance for two consecutive cycles may have their test interval extended up to 75-months, with a permissible extension (for non-routine emergent conditions) of nine months (84 months total).

Conservative controls will be established such that if any valve fails the PIV test, the test interval will be reduced consistent with Appendix J, Option B, requirements. PIV test failure is defined as the low-pressure and high-pressure tests exceeding the Maximum

Allowable Leak Rate. Any PIV leakage test failure would require the component be returned to the initial ASME OM Code interval until good performance can again be established.

The primary basis for this proposed alternative is the excellent performance history of the VEGP PIVs. Table 2, "PIV Leakage Test History for VEGP Units 1 and 2" provides the leakage history for the 30 subject PIVs for each unit for eight consecutive refueling outage test performances.

The functional capability of the check valves is demonstrated by exercise testing which consist of open and close tests. The open testing is separate and distinct from the PIV testing and is currently performed in accordance with the Condition Monitoring Program, currently every 54 months. The close testing will take credit for the PIV leak rate testing and will be on the same frequency as the PIV leak rate testing. The fact that the PIVs exhibit excellent historical performance (i.e., none of the check valve test results have exceeded the Required Action Limit) shows that the Category A/C check valves are exhibiting the required obturator movement to close and remain closed.

Note that NEI 94-01, Revision 3-A, is not the sole basis for this alternative since NEI 94-01, Revision 3-A does not address seat leakage testing with water. This NEI document is being cited as an approach similar to the requested alternative method for determining test frequency. If the proposed alternative is authorized and the valves exhibit good performance, the PIV test frequency will be controlled consistent with the prescribed frequency described in NEI 94-01, Revision 3-A, so that testing of these PIVs would not be required each refueling outage.

The proposed extension of test frequencies is consistent with the guidance provided in 10 CFR 50, Appendix J, Type C leak rate tests as detailed in NEI 94-01, Revision 3-A, Paragraph 10.2.3.2, "Extended Test Interval," which states:

> Test intervals for Type C valves may be increased based upon completion of two consecutive periodic as-found Type C tests where the result of each test is within a licensee's allowable administrative limits. Elapsed time between the first and last tests in a series of consecutive passing tests used to determine performance shall be 24 months or the nominal test interval (e.g., refueling cycle) for the valve prior to implementing Option B to Appendix J. Intervals for Type C testing may be increased to a specific value in a range of frequencies from 30 months up to a maximum of 75 months. Test intervals for Type C valves should be determined by a licensee in accordance with Section 11.0.

Additional justification for NRC approval of this proposed alternative is provided below:

- Although not within the scope of this alternative, separate functional testing of motor-operated valve (MOV) PIVs is performed in accordance with ASME OM Code ISTC-3700 “Position Verification Testing” and stroke-time testing under ISTC-5120 “Motor-Operated Valves”, which provides additional assurance that these valves will continue to perform their function.

- Operators are highly trained to recognize symptoms of the presence of an ISLOCA (i.e., alarms that identify high pressure to low pressure leakage), and to take appropriate actions in accordance with their Emergency Operating Procedures.

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Following implementation of this alternative, leakage test intervals will be established based on performance. The leakage test intervals remain consistent with the process established under 10 CFR 50 Appendix J, Option B.

6. **Duration of Proposed Alternative**

This alternative is requested for the fourth ten-year IST interval, which began June 1, 2017, and is scheduled to end on May 31, 2027, for VEGP, Units 1 and 2.

7. **Precedent**

Several recently approved alternatives to allow PIV testing under a performance-based testing approach similar to that established under 10 CFR 50, Appendix J, Option B are listed below:

1. River Bend Station, Unit 1, NRC letter to Entergy Operations, "River Bend Station, Unit 1 – Safety Evaluation of Relief Request VRR-RBS-2021-1 Regarding the Fourth 10-year Interval of the Inservice Testing Program (EPID L-2021-LLR-0090)," (ML22265A180), dated September 27, 2022

2. Grand Gulf Nuclear Station, Unit 1, NRC letter to Entergy Operations, "Grand Gulf Nuclear Station, Unit 1 – Inservice Testing Program Relief Request VRR-GGNS-2021-1, Alternative Request for Pressure Isolation Valve Testing Frequency (EPID L-2021-LLR-0040), (ML21294A067), dated October 28, 2021

3. Limerick Generating Station, Units 1 and 2, NRC letter to Exelon, "Limerick Generating Station, Units 1 and 2 – Safety Evaluation of Relief Requests GVRR-8, 11-PRR-1, 90-PRR-1 and 47-VRR-2, Regarding the Fourth 10-year Interval of the Inservice Testing Program (EPID L-2018-LLR-0384, EPID L-2018-LLR-0385, EPID L-2018-LLR-0386, and EPID L-2018-LLR-0387), (ML19228A195), dated October 28, 2019

4. LaSalle County Station, Units 1 and 2, NRC letter to Exelon Generation Company, LLC (Exelon), "LaSalle County Station, Units 1 and 2 – Request from the Requirements of the ASME Code Related to Pressure Isolation Valve Testing Frequency (EPID L-2019-LLR-0062)," (ML19217A306), dated September 10, 2019

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8. **References**

1. Nuclear Energy Institute (NEI) 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 3-A, dated July 2012 (ADAMS Accession No. ML12221A202)

2. U.S. NRC NUREG-1493, “Performance-Based Containment Leak-Test Program” (ADAMS Accession No. ML20098D498)

3. U.S. NRC NUREG-0933, "Resolution of Generic Safety Issues, Issue 105, Interfacing Systems LOCA at LWRs (NUREG-0933, Main Report with Supplements 1-35)"

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
VEGP Unit 1				
SI To RCS Cold Leg Isolation Check Valve				
1-1204-U4-143 1-1204-U4-144 1-1204-U4-145 1-1204-U4-146	Fall 2021	0.0	1.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.3		1R17
	Spring 2011	0.1		1R16
RHR Pump Supply Isolation From RCS Loops				
1-HV-8701B	Fall 2021	0.3	5.0	1R23
	Spring 2020	0.5		1R22
	Fall 2018	0.8		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.9		1R19
	Spring 2014	2.1		1R18
	Fall 2012	0.4		1R17
	Spring 2011	0.4		1R16
1-HV-8701A	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-HV-8702B	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.2		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-HV-8702A	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
SI to RCS Hot Leg Isolation Check Valve				
1-1204-U4-120	Fall 2021	0.0	1.0	1R23

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U4-121	Fall 2021	0.0	1.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U4-123	Fall 2021	0.0	1.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U4-122	Fall 2021	0.0	1.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
SI Accumulator Discharge Check Valve				
1-1204-U6-079	Fall 2021	0.1	5.0	1R23
	Spring 2020	0.1		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.1		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.1		1R16
1-1204-U6-080	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.1		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Spring 2011	0.0		1R16
1-1204-U6-081	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U6-082	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
SI/RHR Cold Leg Admission Check Valve				
1-1204-U6-083	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U6-084	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U6-085	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.1		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U6-086	Fall 2021	0.0	5.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Spring 2014	0.2		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
RHR To RCS Cold Leg Isolation Check Valve				
1-1204-U6-147 1-1204-U6-148	Fall 2021	0.0	3.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U6-149 1-1204-U6-150	Fall 2021	0.0	3.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
RHR To RCS Hot Leg Isolation Check Valve				
1-1204-U6-128	Fall 2021	0.0	4.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
1-1204-U6-129	Fall 2021	0.0	4.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
RCS Hot Leg SI Admission Check Valve				
1-1204-U6-126	Fall 2021	0.1	3.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.1		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.1		1R17
	Spring 2011	0.0		1R16
1-1204-U6-124	Fall 2021	0.2	3.0	1R23

Vogtle Electric Generating Plant - Units 1 and 2
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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Spring 2020	0.3		1R22
	Fall 2018	0.4		1R21
	Spring 2017	0.3		1R20
	Fall 2015	0.3		1R19
	Spring 2014	0.2		1R18
	Fall 2012	0.4		1R17
	Spring 2011	0.3		1R16
1-1204-U6-127	Fall 2021	0.1	3.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.1		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.1		1R17
	Spring 2011	0.1		1R16
1-1204-U6-125	Fall 2021	0.1	3.0	1R23
	Spring 2020	0.0		1R22
	Fall 2018	0.0		1R21
	Spring 2017	0.0		1R20
	Fall 2015	0.0		1R19
	Spring 2014	0.0		1R18
	Fall 2012	0.0		1R17
	Spring 2011	0.0		1R16
VEGP Unit 2				
SI To RCS Cold Leg Isolation Check Valve				
2-1204-U4-143 2-1204-U4-144 2-1204-U4-145 2-1204-U4-146	Spring 2022	0.0	1.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
RHR Pump Supply Isolation From RCS Loops				
2-HV8701B	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.8		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.2		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.2		2R15
2-HV8701A	Spring 2022	0.5	5.0	2R22
	Fall 2020	0.5		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
2-HV8702B	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.1		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
2-HV8702A	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
SI to RCS Hot Leg Isolation Check Valve				
2-1204-U4-120	Spring 2022	0.5	1.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.1		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U4-121	Spring 2022	0.1	1.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.4		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.1		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U4-123	Spring 2022	0.0	1.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.2		2R15
2-1204-U4-122	Spring 2022	0.0	1.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
SI Accumulator Discharge Check Valve				
2-1204-U6-079	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
2-1204-U6-080	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.1		2R21
	Spring 2019	0.1		2R20
	Fall 2017	0.1		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U6-081	Spring 2022	0.3	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.3		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U6-082	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
SI/RHR Cold Leg Admission Check Valve				
2-1204-U6-083	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.4		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.1		2R16
	Fall 2011	0.1		2R15

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
2-1204-U6-084	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.1		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.2		2R17
	Spring 2013	0.1		2R16
	Fall 2011	0.1		2R15
2-1204-U6-085	Spring 2022	0.1	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.1		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.1		2R17
	Spring 2013	0.1		2R16
	Fall 2011	0.1		2R15
2-1204-U6-086	Spring 2022	0.0	5.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.1		2R18
	Fall 2014	0.1		2R17
	Spring 2013	0.2		2R16
	Fall 2011	0.2		2R15
RHR To RCS Cold Leg Isolation Check Valve				
2-1204-U6-147 2-1204-U6-148	Spring 2022	0.0	3.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.4		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U6-149 2-1204-U6-150	Spring 2022	0.0	3.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.4		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
RHR To RCS Hot Leg Isolation Check Valve				
2-1204-U6-128	Spring 2022	0.0	4.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18

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Table 2
PIV Leakage Test History for VEGP Units 1 and 2

Component Number	Date of Test	Measured Value (gpm)	Maximum Allowable Leak Rate (gpm)	Outage
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
2-1204-U6-129	Spring 2022	0.0	4.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15
RCS Hot Leg SI Admission Check Valve				
2-1204-U6-126	Spring 2022	0.0	3.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U6-124	Spring 2022	0.1	3.0	2R22
	Fall 2020	0.1		2R21
	Spring 2019	0.1		2R20
	Fall 2017	0.3		2R19
	Spring 2016	0.1		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.1		2R16
	Fall 2011	0.1		2R15
2-1204-U6-127	Spring 2022	0.0	3.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.0		2R20
	Fall 2017	0.7		2R19
	Spring 2016	0.6		2R18
	Fall 2014	0.4		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.1		2R15
2-1204-U6-125	Spring 2022	0.0	3.0	2R22
	Fall 2020	0.0		2R21
	Spring 2019	0.3		2R20
	Fall 2017	0.0		2R19
	Spring 2016	0.0		2R18
	Fall 2014	0.0		2R17
	Spring 2013	0.0		2R16
	Fall 2011	0.0		2R15

PIV Leakage Test Exceptions
None.