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

November 22, 2023

Ms. Jamie M. Coleman
Regulatory Affairs Director
Southern Nuclear Operating Company
3535 Colonnade Parkway
Birmingham, AL 35243

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENT NOS. 249 AND 246 TO REVISE TECHNICAL SPECIFICATION 3.6.3, "CONTAINMENT ISOLATION VALVES," SURVEILLANCE REQUIREMENT 3.6.3.5 TO ELIMINATE EVENT-BASED TESTING OF CONTAINMENT PURGE VALVES WITH RESILENT SEALS (EPID L-2022-LLA-0189)

Dear Ms. Coleman:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 249 to Renewed Facility Operating License No. NPF-2 and Amendment No. 246 to Renewed Facility Operating License No. NPF-8 for the Joseph M. Farley Nuclear Plant, Units 1 and 2, respectively. The amendments are in response to your application dated December 20, 2022, as supplemented by letter dated May 5, 2023.

The amendments revise the Technical Specifications (TS) 3.6.3, "Containment Isolation Valves," Surveillance Requirement (SR) 3.6.3.5 to eliminate event-based testing of containment purge valves with resilient seals. The amendments eliminate "AND Within 92 days of opening the valve" from SR 3.6.3.5.

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

Sincerely,

/RA/

John Lamb, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosures:
1. Amendment No. 249 to NPF-2
2. Amendment No. 246 to NPF-8
3. Safety Evaluation

cc: Listserv

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

SOUTHERN NUCLEAR OPERATING COMPANY

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 249
Renewed License No. NPF-2

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

   A. The application for amendment to the Joseph M. Farley Nuclear Plant, Unit 1 (the facility), Renewed Facility Operating License No. NPF-2 (the license) filed by Southern Nuclear Operating Company (the licensee), dated December 20, 2022, as supplemented by letter dated May 5, 2023, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in Title 10 of the Code of Federal Regulations (10 CFR) Chapter I;

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

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

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

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

2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment. Paragraph 2.C.(2) of the license is hereby amended to read as follows:

2.C.(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 249, are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications

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

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley

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Date: 2023.11.22 12:11:39 -05'00'

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

Attachment:
Changes to Renewed Facility
Operating License and Technical
Specifications

Date of Issuance: November 22, 2023

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

SOUTHERN NUCLEAR OPERATING COMPANY

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 246
Renewed License No. NPF-8

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

   A. The application for amendment to the Joseph M. Farley Nuclear Plant, Unit 2 (the facility), Renewed Facility Operating License No. NPF-8 (the license) filed by Southern Nuclear Operating Company (the licensee), dated December 20, 2022, as supplemented by letter dated May 5, 2023, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in Title 10 of the Code of Federal Regulations (10 CFR) Chapter I;

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

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

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

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

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment. Paragraph 2.C.(2) of the license are hereby amended to read as follows:

2.C.(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 246, are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley

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Date: 2023.11.22 12:12:12 -05'00'

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

Attachment:
Changes to Renewed Facility
Operating License and Technical
Specifications

Date of Issuance: November 22, 2023

ATTACHMENT TO JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT NO. 249

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-2

DOCKET NO. 50-348

AND LICENSE AMENDMENT NO. 246

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-8

DOCKET NO. 50-364

Replace the following pages of the Renewed Facility Operating Licenses and Appendix "A" Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
License	License
NPF-2, page 4	NPF-2, page 4
NPF-8, page 3	NPF-8, page 3
TSs	TSs
3.6.3-8	3.6.3-8

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 249, are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of the renewed license or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the renewed license supported by a favorable evaluation by the Commission.

a. Southern Nuclear shall not operate the reactor in Operational Modes 1 and 2 with less than three reactor coolant pumps in operation.

b. Deleted per Amendment 13

c. Deleted per Amendment 2

d. Deleted per Amendment 2

e. Deleted per Amendment 152

Deleted per Amendment 2

f. Deleted per Amendment 158

g. Southern Nuclear shall maintain a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall include:

1) Identification of a sampling schedule for the critical parameters and control points for these parameters;

2) Identification of the procedures used to quantify parameters that are critical to control points;

3) Identification of process sampling points;

4) A procedure for the recording and management of data;

5) Procedures defining corrective actions for off control point chemistry conditions; and

(2) Alabama Power Company, pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess but not operate the facility at the designated location in Houston County, Alabama in accordance with the procedures and limitations set forth in this renewed license.

(3) Southern Nuclear, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

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

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

(6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

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

(1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at reactor core power levels not in excess of 2821 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 246, are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

(3) Deleted per Amendment 144
(4) Deleted per Amendment 149
(5) Deleted per Amendment 144

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.5	Perform leakage rate testing for containment penetrations containing containment purge valves with resilient seals.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 249 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-2

AND

AMENDMENT NO. 246 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-8

SOUTHERN NUCLEAR OPERATING COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

1.0 INTRODUCTION

By letter dated December 20, 2022, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22354A087), as supplemented by letter dated May 5, 2023 (ML23125A226), Southern Nuclear Operating Company (SNC, the licensee) requested changes to the technical specifications (TSs) for the Joseph M. Farley Nuclear Plant (Farley), Units 1 and 2. The licensee proposed to change TS 3.6.3, "Containment Isolation Valves," Surveillance Requirement (SR) 3.6.3.5 to eliminate event-based testing of containment purge valves with resilient seals. The amendments eliminate "AND Within 92 days of opening the valve" from SR 3.6.3.5.

The supplement dated May 5, 2023, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on February 21, 2023, 88 FR 10558.

1.1 System Design and Operation

In Section 2.1 of its letter dated December 20, 2022, the licensee states:

> The containment isolation valves form part of the containment pressure boundary and help ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the containment atmosphere as a result of a Design Basis Accident (DBA). The

containment isolation valves include valves in the Shutdown Purge System and the Minipurge System.

The Shutdown Purge System operates during shutdown (i.e., Modes 5 and 6) to supply outside air into the containment for ventilation and temperature control and may also be used to reduce the concentration of noble gases within containment for personnel access. Because of their large size, the 48-inch purge valves are not qualified for automatic closure under DBA conditions and are required by TS to be closed in Modes 1, 2, 3, and 4. The Shutdown Purge System supply includes an outside air connection to prefilters, heating coils, a fan, a duct system, and a supply penetration with three butterfly valves in series. The Shutdown Purge System exhaust includes an exhaust penetration with three butterfly valves in series, a duct system, a filter bank with prefilters, HEPA [high efficiency particulate air] and charcoal filters, and an exhaust fan.

The only radiological accident assumed to occur inside the containment during Mode 5 or 6 is a fuel handling accident. The analysis of the radiological consequences of a fuel handling accident inside the containment takes no credit for closing of the Shutdown Purge System isolation valves. The Shutdown Purge System is assumed to continue to operate following the event.

The Minipurge System is independent of the Shutdown Purge System but there is common ductwork and common filters. The 8-inch Minipurge System is used to maintain radioactivity levels in the containment and to equalize internal and external pressures as needed in Modes 1, 2, 3, and 4. The Minipurge System exhaust also has two isolation valves in series.

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident (LOCA) and a rod ejection accident. In the analyses for each of these accidents, it is assumed that containment isolation valves are either closed or function to close within the required isolation time following event initiation. This ensures that potential paths to the environment through containment isolation valves (including shutdown purge and minipurge valves) are minimized.

2.0 REGULATORY EVALUATION

The applicable regulatory requirements and guidance are provided in the following subsections.

2.1 Licensee Proposed TS Changes

Current Farley TS 3.6.3 “Containment Isolation Valves,” SR 3.6.3.5 states: “*Perform leakage rate testing for containment penetrations containing containment purge valves with resilient seals*.” The Frequency is, “In accordance with the Surveillance Frequency Control Program AND Within 92 days after opening the valve.”

The proposed amendment would revise the Frequency of SR 3.6.3.5 to read "In accordance with the Surveillance Frequency Control Program.” The proposed change would delete “AND Within 92 days after opening the valve.”

The acceptance criteria for the leakage rate testing performed by SR 3.6.3.5 are provided in TS 5.5.17, "*Containment Leakage Rate Testing Program*," and are unchanged by the proposed amendments.

2.2 Applicable Regulatory Requirements, Guidance, and Farley TSs and SRs

2.2.1 Regulatory Requirements

In Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36, "*Technical specifications*," the NRC establishes its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. The regulation does not specify the particular requirements to be included in plant's TSs.

The regulation in 10 CFR Part 50, Appendix J, "*Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors, Option B – Performance-Based Requirements*," ensures that leakage through these containments or systems and components penetrating these containments does not exceed allowable leakage rates specified in the TS, and integrity of the containment structure is maintained during its service life.

Appendix A to Part 50, "General Design Criteria [GDC] for Nuclear Power Plants," states, in part, that:

Criterion 54—Piping systems penetrating containment. 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.

Criterion 55—Reactor coolant pressure boundary penetrating containment. 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.

Criterion 56—Primary containment isolation. Each line that connects directly to the containment atmosphere and 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 the containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Criterion 57—Closed system isolation valves. Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.

Section 50.55a, “Codes and standards,” in 10 CFR 50.55a(f)(4), “*Inservice testing standards requirement for operating plants*,” states, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants (OM) Code, Division 1, must meet the inservice testing (IST) requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in 10 CFR 50.55a(f)(2) and (3) and that

are incorporated by reference in 10 CFR 50.55a(a)(1)(iv) of this section, to the extent practical within the limitations of design, geometry, and materials of construction of the components.

2.2.2 Guidance

Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," Revision 1 (ML23073A154), provides guidance on an acceptable performance-based leak-test program and leakage rate test methods, procedures, and analyses that may be used to comply with the performance-based Option B in Appendix J to 10 CFR Part 50.

ASME OM Code, Subsection ISTC, "*Inservice Testing of Valves in LWR Nuclear Plants, paragraph ISTC-3620. "Containment Isolation Valves*," provides exercising requirements for valves.

Farley, Units 1 and 2, TS 5.5.17, "Containment Leakage Rate Testing Program," states, in part, that:

> A program shall be established to implement the leakage rate testing of containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," Revision 3-A, dated July 2012 [ML12221A202], and the conditions and limitations specified in NEI 94-01, Revision 2-A, dated October 2008 [ML1100620847] as modified by the following exceptions:

Farley, Units 1 and 2, TS 5.5.19, "Surveillance Frequency Control Program [SFCP]" states, in part, that:

> Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1 [ML071360425].

The NRC approved a SFCP based on TSTF-425, including a specific reference to NEI 04-10, for Farley Units 1 and 2 in Amendment Nos. 185 and 180, respectively (ML11167A226).

2.2.3 Farley TSs and SRs

SR 3.0.2 of the Farley, Units 1 and 2, states:

> The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.
>
> For Frequencies specified as "once," the above interval extension does not apply.
>
> If a Completion Time requires periodic performance on a "once per… [interval]" basis, the above Frequency extension applies to each performance after the initial performance.

> Exceptions to this Specification are stated in the individual Specifications.

Farley, Units 1 and 2, TS 3.6.1 "*Containment*," SR 3.6.1.1 SURVEILLANCE, states, "Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program," at a FREQUENCY, "In accordance with the Containment Leakage Rate Testing Program."

Farley, Units 1 and 2, TS 5.5.17, SNC is required to follow the requirements in Appendix J, Option B, and the guidance in NEI 94-01, Revision 3-A. Accordingly, the Farley, Units 1 and 2, Shutdown Purge System and Minipurge System isolation valves are tested as Type C valves against the criteria of 10 CFR Part 50, Appendix J, Option B, as described in NEI 94-01, Revision 3-A.

Farley, Units 1 and 2, TS 5.5.19, states, in part, that, "Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, Revision 1.

In its letter dated December 20, 2022, SNC states, in part that:

> TS 3.3.6, "Containment Purge and Exhaust Isolation Instrumentation," provides initiation signals to automatically close the Shutdown Purge System and Minipurge System isolation valves on receipt of a containment isolation signal or on receipt of a high radiation signal from the purge exhaust monitors. These requirements are unchanged by the proposed amendment.

3.0 TECHNICAL EVALUATION

The NRC staff reviewed SNC's submittals to determine whether the proposed change to the SR would continue to meet the regulatory requirements of 10 CFR 50.36(c)(3).

3.1 Frequency Change

Neither the current frequency nor the proposed frequency qualifies for the interval extension of SR 3.0.2, because Farley, Units 1 and 2, TS Section 5.5.17 prohibits containment purge and vent valve testing Frequency from exceeding 30 months.

In its submittal dated December 20, 2022, the licensee states in Section 3.4, "*Surveillance Frequency Control Program*," that "*NEI 94-01 requires the containment purge and vent valve testing Frequency to not exceed 30 months. Therefore, the testing Frequency established by the SFCP cannot exceed this length."*

The regulation in 10 CFR Part 50, Appendix J, Option B, does not require more frequent event-based testing of *"… AND Within 92 days after opening the valve*" for containment purge and vent valves.

The event-based frequent testing is required explicitly by SR 3.6.3.5. This SR ensures that the minipurge valves are closed, as required, or open for an allowable reason. If a purge valve is open contrary to this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage, when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the minipurge valves are open for

pressure control, As Low As Reasonably Achievable (ALARA) or air quality considerations for personnel entry, or for surveillances that require the valves to be open. The minipurge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time.

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR Part 50, Appendix J, Option B, is required to ensure the operability of containment penetrations. Early nuclear plant operating experience had demonstrated that this type of seal had the potential to degrade in a shorter time than do other seal types. The resolution of Generic Issue B-20, "*Containment Leakage Due to Seal Deterioration*," provided the basis for the determination that valves with resilient seals should be tested more frequently than required by Appendix J. Due to the potential direct path between containment and the environment created by an inoperability of the mini-purge valve penetrations and the importance of maintaining the containment mini-purge valve penetrations leak tight, a Frequency of "At least once per 92 days on a STAGGERED TEST BASIS each penetration containing 8-inch and 48-inch containment purge supply and exhaust valves with resilient material seals shall be demonstrated OPERABLE by …" was initially established for Farley, Units 1 and 2, as part of the NRC resolution of Multi-Plant Action B-24 (ML20211H911).

In Section 3.4 of its submittal dated December 20, 2022, SNC stated, in part, that:

> The SFCP ensures that SRs in the TS are performed at intervals sufficient to assure the regulatory requirements are met. Existing regulatory requirements, such as 10 CFR 50.65 (Maintenance Rule) and 10 CFR Part 50, Appendix B (Corrective Action Program), require monitoring of surveillance test failures and implementing corrective actions to address such failures. One of these actions may be to consider increasing the frequency at which a surveillance is performed.

In accordance with TS 5.5.17, Leakage rate acceptance criteria "c" during startup Mode ascension after an outage where the Shutdown Purge System was operated, the limit for measured leakage through each purge valve containment penetration is ≤ 0.05 L_a [i.e., 11,738 cubic centimeters per minute (cc/min)] per penetration when pressurized to the peak accident containment pressure. During all other testing, the TS limit is ≤ 0.60 L_a minus the sum of all other local leak rate test results.

SNC provided the Farley, Units 1 and 2, Appendix J Option B Type C test history for the Containment Mini-purge valves in Attachment 4, "*Unit 1 Quarterly Containment Purge Air System Containment Isolation Valve Leakage History*," and Attachment 5, "*Unit 2 Quarterly Containment Purge Air System Containment Isolation Valve Leakage History*," of its submittal dated December 20, 2022. Attachment 4 lists the Farley, Unit 1, quarterly Type C test results for containment penetrations 12 and 13. Attachment 5 lists the Farley, Unit 2, quarterly Type C test results for containment penetrations 12 and 13. The licensee noted that "*Because the acceptance criteria are dependent on the sum of the other Type B and Type C test results, the acceptance criteria vary from test to test."*

The NRC staff reviewed LAR Attachment 4 for Farley, Unit 1, and LAR Attachment 5 for Farley, Unit 2. The NRC staff acknowledges that the "Acceptance Criteria" values contained in these two attachments is variable as was noted by SNC. This variability is to be expected as the Acceptance Criteria would be updated periodically during the operating cycle based the quarterly surveillance testing per SR 3.6.3.5.

This is consistent with NEI 94-01 Revision 3-A Section 10.2 Type B and Type C Testing Frequencies which states, in part:

> ANSI/ANS-56.8–2002, Section 6.4.4 states that the combined (as found) leakage rate of all Type B and Type C tests shall be less than $0.6L_a$ when evaluated on a MNPLR (minimum pathway) basis at all times when containment operability is required. Moreover, the combined leakage rate for all penetrations subject to Type B and Type C tests shall be less than or equal to $0.6L_a$ as determined on MXPLR (maximum pathway) basis from the as-left LLRT results. This (MXPLR) criterion is only required to be met prior to entering a mode where containment integrity is required following a refueling outage or following a shutdown that included Type B or Type C testing. These combined leakage rate determinations shall be performed with the latest leakage rate test data available, and shall be kept as a running summation of the leakage rates.

Beyond this variability, based on the staff's review of the as-found leakage rate test values contained in LAR Attachments 4 & 5 the staff concluded that no consistent/clear trend of seal degradation existed during the past twelve plus years of FNP operation.

3.1.1 Farley, Unit 1, Review

3.1.1.1 Penetration 12

Of Farley, Unit 1's, past 50 quarterly Appendix J Type C tests documented in LAR Attachment 4 for penetration 12 dating back to July 2009, there was no test that would have failed the TS 5.5.17 leakage rate acceptance criterion "c" of 11,738 cc/min. Overall, for these past 50 quarterly tests, the measured leakage rates ranged from 2 cc/min to 8,002 cc/ min. The average leakage rate for all 50 quarterly tests was 1143.7 cc/min.

3.1.1.2 Penetration 13

Of Farley, Unit 1's, past 50 quarterly Appendix J Type C tests documented in LAR Attachment 4 for penetration 13 dating back to July 2009, there were two tests that would have failed the TS 5.5.17 leakage rate acceptance criterion "c" of 11,738 cc/min. These tests occurred on February 15, 2010, and April 1, 2016. Overall, for these past 50 quarterly tests, the measured leakage rates ranged from 2 cc/min to 28,634 cc/min. The average leakage rate for all 50 quarterly tests was 2,292.8 cc/min.

The leakage rate for the February 15, 2010, Type C test was measured at 28,634 cc/min. This test result was not subject to TS 5.5.17 criterion "c." This leakage rate was acceptable because this leakage rate test was performed per the requirements of SR 3.6.3.5 when the acceptance criteria of $\leq 0.05\ L_a$ did not apply (i.e., a startup Mode ascension was not dependent on the test results). The acceptance criterion for the February 15. 2010, Type C test was subject to the TS limit of $\leq 0.60\ L_a$ (126,309 cc/min).

The NRC staff acknowledged that there was no clear trend to a higher than acceptable leakage rate per TS 5.5.17 criterion "c." before the Type C test of February 15, 2010, and that the three subsequent quarterly Type C tests prior to 1F23 all would have passed the more restrictive startup mode ascension criteria. Furthermore, the post 1F23 quarterly test data through 1F24,

did not warrant requesting further information about the abnormal measured leakage rate of February 15, 2010.

The leakage rate for the April 1, 2016, Type C test was measured at 16,760 cc/min. This test result was not subject to criterion "c." This leakage rate was acceptable because this leakage rate test was performed per the requirements of SR 3.6.3.5 when the acceptance criterion of ≤0.05 L_a did not apply (i.e., a startup Mode ascension was not dependent on the test results). The acceptance criterion for the April 1, 2016, Type C test was subject to the TS limit of ≤0.60 L_a (118,080 cc/min).

The NRC staff acknowledged that there was no clear trend to a higher than acceptable leakage rate per TS 5.5.17 criterion "c." before the Type C test of April 1, 2016, and that the two subsequent quarterly Type C tests prior to 1F27 all would have passed the more restrictive startup mode ascension criteria. Furthermore, the post 1F27 quarterly test data through 1F28, did not warrant requesting further information about the abnormal measured leakage rate of April 1, 2016.

Moreover, the as-found leakage rate of February 15, 2010 and April 1, 2016 both exceed the TS 5.5.17 Leakage rate acceptance criterion "c" of ≤ 0.05 L_a. In the event these as-found leakage rates had been discovered during a plant outage, SNC would have had to provide corrective action before entering *Mode 4 Hot Shutdown* from *Mode 5 Cold Shutdown* per Condition F of TS 3.6.3.

3.1.2 Farley, Unit 2, Review

3.1.2.1 Penetration 12

Of Farley, Unit 2's, past 52 quarterly Appendix J Type C tests documented in LAR Attachment 5 for penetration 12 dating back to January 2009, there were two tests that would have failed the TS 5.5.17 leakage rate acceptance criterion "c" of 11,738 cc/min. These tests occurred on January 5, 2010, and December 19, 2018. Overall, for these past 52 quarterly tests, the measured leakage rates ranged from 34 cc/min to 17,090 cc/min. The average leakage rate for all 52 quarterly tests was 2,126.4 cc/min.

The leakage rate for the January 5, 2010, Type C test was measured at 16,090 cc/min. This test result was not subject to TS 5.5.17 criterion "c." This leakage rate was acceptable because this leakage rate test was performed per the requirements of SR 3.6.3.5 when the acceptance criteria of ≤0.05 L_a did not apply (i.e., a startup Mode ascension was not dependent on the test results). The acceptance criterion for the January 5, 2010, Type C test was subject to the TS limit of ≤0.60 L_a (130,771 cc/min).

The NRC staff acknowledged that there was no clear trend to a higher than acceptable leakage rate per TS 5.5.17 criterion "c." before the Type C test of January 5, 2010, and that the subsequent quarterly Type C test prior to 2F20 would have passed the more restrictive startup mode ascension criteria. Furthermore, the post 2F20 quarterly test data through 2F21, did not warrant requesting further information about the abnormal measured leakage rate of January 5, 2010.

The leakage rate for the December 19, 2018, Type C test was measured at 17,090 cc/min. This test result was not subject to criterion "c." This leakage rate was acceptable because this leakage rate test was performed per the requirements of SR 3.6.3.5 when the acceptance

criteria of ≤0.05 L_a did not apply (i.e., a startup Mode ascension was not dependent on the test results). The acceptance criterion for the December 19, 2018, Type C test was subject to the TS limit of ≤0.60 L_a (126,821cc/min).

The NRC staff acknowledged that there was no clear trend to a higher than acceptable leakage rate per TS 5.5.17 criterion "c." before the Type C test of December 19, 2018, and that the subsequent quarterly Type C test prior to 2F26 would have passed the more restrictive startup mode ascension criteria. Furthermore, the post 2F26 quarterly test data through 2F27, did not warrant requesting further information about the abnormal measured leakage rate of December 19, 2018.

Moreover, the as-found leakage rate of January 5, 2010 and December 19, 2018 both exceed the TS 5.5.17 Leakage rate acceptance criterion "c" of ≤ 0.05 L_a. In the event these as-found leakage rates had been discovered during a plant outage, SNC would have had to provide corrective action before entering *Mode 4 Hot Shutdown* from *Mode 5 Cold Shutdown* per Condition F of TS 3.6.3.

3.1.2.2 Penetration 13

Of Farley, Unit 2's, past 52 quarterly Appendix J Type C tests documented in LAR Attachment 5 for penetration 13, there was one test that would have failed the TS 5.5.17 leakage rate acceptance criterion "c" of 11,738 cc/min. This test occurred on August 4, 2010. Overall, for these past 52 quarterly tests, the measured leakage rates ranged from 17 cc/min to 14,714 cc/min. The average leakage rate for all 52 quarterly tests was 1796.1 cc/min.

The leakage rate for the August 4, 2010, Type C test was measured at 14,714cc/min. This test result was not subject to TS 5.5.17 criterion "c." This leakage rate was acceptable because this leakage rate test was performed per the requirements of SR 3.6.3.5 when the acceptance criteria of ≤0.05 L_a did not apply (i.e., a startup Mode ascension permissive was not dependent on the test result). The acceptance criterion for the August 4, 2010, Type C test was subject to the TS limit of ≤0.60 L_a (118,733 cc/min).

The staff acknowledged that there was no clear trend to a higher than acceptable leakage rate per TS 5.5.17 criterion "c." before the Type C test of August 4, 2010, and that the subsequent quarterly Type C tests prior to 2F21 would have passed the more restrictive startup mode ascension criteria. Furthermore, the post 2F21 quarterly test data through 2F22, did not warrant requesting further information about the abnormal measured leakage rate of August 4, 2010.

Moreover, the as-found leakage rate of August 4, 2010 exceeds TS 5.5.17 Leakage rate acceptance criterion "c" of ≤ 0.05 L_a. In the event this as-found leakage rate had been discovered during a plant outage, SNC would have had to provide corrective action before entering *Mode 4 Hot Shutdown* from *Mode 5 Cold Shutdown* per Condition F of TS 3.6.3.

3.1.3 Frequency Change Conclusion

Based on the above, the NRC staff concludes that the containment isolation valves associated with Farley, Units 1 and 2, containment penetrations 12 and 13 have a very low Appendix J Option B Type C test failure rate and very low average leakage rates dating back to 2009.

The NRC staff agrees with the licensee in that Farley the SFCP is sufficient to ensure that the requirements of SR 3.6.3.5 are performed at intervals sufficient to assure the regulatory

requirements are met. Accordingly, the NRC staff finds that the current event-based frequency of SR 3.6.3.5 "… AND Within 92 days after opening the valve" is sufficiently justified for removal from the SR.

Based on the above, NRC staff determined the SR, as amended by the proposed changes, will continue to meet 10 CFR 50.36(c)(3). The NRC has reasonable assurance that the SR will still provide the necessary quality of systems and components and that facility operation will remain within safety limits and limiting conditions for operation.

3.2 Inservice Testing

In its submittal dated December 20, 2022, SNC proposed to revise TS 3.6.3, "*Containment Isolation Valves*." SR 3.6.3.5 currently requires that containment penetration containing containment purge valves with resilient seals at both Farley, Units 1 and 2, to be leak tested at a frequency in accordance with the SFCP AND Within 92 days after opening the valves. The licensee proposed to eliminate "AND With 92 days after the opening of the valves." SNC stated that industry has made considerable improvement to the performance of containment purge and vent valves with resilient seals. SNC stated that the performance history of the Farley, Units 1 and 2, Shutdown Purge System and Mini-purge System resilient seal isolation valves does not warrant testing within 92 days after opening the valve. As a result, the Frequency is proposed to be revised to permit the Frequency of testing to be controlled by SNC in accordance with the SFCP, which will establish an appropriate performance-based testing Frequency.

The NRC staff provided a letter with requests for additional information (RAIs) on April 5, 2023 (ML23095A083). The licensee submitted responses to those RAIs in a letter dated May 5, 2023 (ML23125A226). The NRC staff review is based on the SNC LAR dated December 2022, as supplemented by letter dated May 5, 2023.

3.2.1 Frequency of containment purge and vent valves limits

In its letter dated May 5, 2023, SNC stated that TS 5.5.17 documents the adoption of NEI 94-01, Revision 3-A, dated July 2012, and the conditions and limitations specified in NEI 94-01, Revision 2-A, dated October 2008, by SNC for Farley, Units 1 and 2. NEI 94-01, Revision 3-A, and Revision 2-A discusses the performance factors that licensees must consider in determining test intervals. However, it does not address how to perform the tests because these details can be found in existing documents with reference provided to ANSI/ANS-56.8-1994.

The SNC letter dated May 5, 2023, stated:

> The SFCP has the capability to address testing intervals less than or equal to 30 months based on the leakage rate testing performance of the containment purge and vent valves. The response of the SFCP to excellent or poor/declining performance would be to perform an evaluation in accordance with the SFCP following the process in NEI 04-10, Revision 1, per TS 5.5.19.b.

In summary, NEI 94-01, Section 10.2, states in part, for containment purge and vent valves, the interval for Type C tests should be limited to 30 months. This limitation in test frequency is the base interval for testing in accordance with NEI 94-01. NEI 94-01 and ANSI/ANS 56.8-2002 do not contain provisions for testing of Type C tested valves at a frequency of less than 30 months.

Further, SNC stated that at Farley, Units 1 and 2, the SFCP has the capability to address testing intervals less than or equal to 30 months based on the leakage rate testing performance of the containment purge and vent valves.

In its letter dated May 5, 2023, SNC stated, in part, that:

> Containment Purge Valves Q1(2)P13V0281, Q1(2)P13V0282, Q1(2)P13V0283, and Q1(2)P13V0284 are 48-inch air operated butterfly valves with resilient seals. Each 48-inch containment purge valve is required to be verified sealed closed. SR 3.6.3.1 is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4.
>
> Containment Purge Valves Q1(2)P13V0301, Q1(2)P13V0302, Q1(2)P13V0303, and Q1(2)P13V0304 are 8-inch air operated butterfly valves with resilient seals. These valves are operated as required during normal plant operations and for Stroke Time Close (STC) testing quarterly in accordance with the [inservice testing program] IST Program [ML19070A247].
>
> With the 48-inch valves sealed closed, the implementation of the 92-day frequency only addresses the cycling of the 8-inch valves and their potential for seal degradation. As described in the LAR submittal section 2.3, the industry has made considerable improvement to the performance of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have corrected the valve deficiencies in many plants.
>
> There is not a method to measure seal degradation. The performance of Type C leakage rate testing in accordance with TS 5.5.17 and SR 3.6.3.5 ensures that the seals are working properly, and the 8-inch valve disks are seated properly when closed during normal plant operation.
>
> The seat leakage performance history of the FNP [Farley Nuclear Plant] Containment Purge System resilient seal isolation valves has shown that cycling the 8-inch Q1(2)P13V0301, Q1(2)P13V0302, Q1(2)P13V0303, and Q1(2)P13V0304 valves has not introduced additional seal degradation (beyond that occurring to a valve that has not been opened). Containment Purge Valves Q1(2)P13V0281, Q1(2)P13V0282, Q1(2)P13V0283, and Q1(2)P13V0284 are sealed closed in Modes 1, 2, 3 and 4.

The licensee states that Farley operating experience supports the deletion of the surveillance requirement (SR) of 92 days.

Based on the information provided by SNC in its submittal dated December 20, 2022, as supplemented by letter dated May 5, 2023, and the evaluation in sections 3.1 and 3.2 of this safety evaluation, the NRC staff finds that the proposed changes will not adversely impact the performance of these applicable containment purge valves with resilient seals in the Farley, Units 1 and 2, IST Program. The NRC staff also finds that the licensee will continue to meet

IST as required by 10 CFR 50.55a(f)(4) after implementation of this LAR with respect to these valves.

The NRC staff concludes that the proposed LAR will not adversely impact the IST Program for the containment purge valves with resilient seals such that these valves will continue to be subject to the requirements of the ASME OM Code as incorporated by reference in 10 CFR 50.55a.

By letter dated July 18, 2011 (ML11167A226), the NRC issued the Amendment No. 185 and Amendment No. 180 to Farley, Units 1 and 2, respectively, to adopt the NRC-approved TS Task Force (TSTF) traveler TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control-RITSTF [Risk-Informed TSTF] Initiative 5b." Most periodic frequencies of TS surveillances were accordingly relocated to a licensee controlled SFCP, and requirements for the new program were provided in TS 5.5.19. Therefore, the NRC staff concludes that the SFCP will adequately provide the test frequency for these containment purge valves with resilient seals.

3.3 Technical Conclusion

Based on the information provided by SNC and the analysis in Sections 3.1 and 3.2 of this safety evaluation, the NRC staff concludes that while SNC's proposed TS changes are less restrictive than the licensee's current TS requirements but that the proposed changes still provide adequate surveillance of the leakage through the containment purge valves when judged against GDCs 54, 55, 56, and 57. The NRC finds that the proposed changes to SR 3.6.3.5 continues to comply with 10 CFR 50.36 TS requirements. By letter dated July 18, 2011, the NRC issued the Amendment No. 185 and Amendment No. 180 to Farley, Units 1 and 2, respectively, to adopt the NRC-approved TSTF traveler TSTF-425, Revision 3, and SNC must continue to meet TS 5.5.19. Therefore, the NRC staff finds the proposed changes to SR 3.6.3.5 provide reasonable assurance of adequate protection with respect to leakage through the containment purge valves and are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Alabama State official was notified of the proposed issuance of the amendments on August 13, 2023. On October 30, 2023, the State official confirmed that the State of Alabama had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a surveillance requirement. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration on February 21, 2023 (88 FR 10558), and there has been no public comment on such finding. The NRC received two generic comments (ML23055A025 and ML23089A040); however, these comments did not affect the NSHC as published. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

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

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Date of Issuance: November 22, 2023

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENT NOS. 249 AND 246 TO REVISE TECHNICAL SPECIFICATION 3.6.3, "CONTAINMENT ISOLATION VALVES," SURVEILLANCE REQUIREMENT 3.6.3.5 TO ELIMINATE EVENT-BASED TESTING OF CONTAINMENT PURGE VALVES WITH RESILENT SEALS (EPID L-2022-LLA-0189) DATED NOVEMBER 22, 2023

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