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

July 18, 2017

Mr. James J. Hutto
Regulatory Affairs Director
Southern Nuclear Operating Company, Inc.
P.O. Box 1295/Bin 038
Birmingham, AL 35201-1295

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 – INSERVICE TESTING ALTERNATIVE FOR PUMPS PER CODE CASE OMN-20 (RR-VR-01) (CAC NOS. MF9263 AND MF9264)

Dear Mr. Hutto:

By letter dated February 6, 2017, Southern Nuclear Operating Company Inc. (SNC, the licensee) submitted three relief requests for the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2. The three relief requests are:

RR-VR-01, Version 1.0: Establish 1st interval grace periods per Code Case OMN-20.

RR-PR-02, Version 1.0: Establish test flow reference ranges per Code Case OMN-21.

RR-PR-03, Version 1.0: Service Water Pumps and Transfer Pumps Pressure Accuracy.

This letter applies to relief request RR-VR-01, Version 1.0. Relief request RR-PR-02, Version 1.0, was authorized by the Nuclear Regulatory Commission (NRC) in letter dated May 16, 2017. Relief request RR-PR-03, Version 1.0, was authorized by the NRC in letter dated April 12, 2017.

In relief request RR-VR-01, Version 1.0, the licensee is requesting to use the requirements of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) Case OMN-20, "Inservice Test Frequency," as an alternative to the inservice testing (IST) requirements of the 2004 Edition with Addenda through OMb-2006 of the ASME OM Code for the FNP IST program during the fifth 10-year interval, which will start on December 1, 2017, and end November 30, 2027.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(z)(2), the licensee proposes to use the alternative on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has reviewed the proposed alternative (RR-VR-01, Version 1.0) and concludes, as set forth in the enclosed safety evaluation, that the alternative provides reasonable assurance that the affected components are operationally ready, and that complying with the ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2).

Therefore, the NRC staff authorizes the use of alternative request RR-VR-01, Version 1.0, for the FNP, Units 1 and 2, during the fifth 10-year IST program interval which is scheduled to begin on December 1, 2017, ending November 30, 2027. This authorization is effective until Code Case OMN-20 is incorporated in 10 CFR 50.55a, "Codes and standards."

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject request remain applicable.

If you have any questions, please contact the Project Manager, Shawn Williams, at 301-415-1009 or via e-mail at Shawn.Williams@nrc.gov.

Sincerely,

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

Docket Nos. 50-348 and 50-364

Enclosure:
Safety Evaluation

cc w/enclosure: Distribution via Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUEST RR-VR-01, VERSION 1.0

INSERVICE TESTING PROGRAM FIFTH 10-YEAR INTERVAL

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

1.0 INTRODUCTION

By letter dated February 6, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17037D324), Southern Nuclear Operating Company Inc. (SNC, the licensee) submitted three relief requests for the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2. The three relief requests are:

RR-VR-01, Version 1.0: Establish 1st interval grace periods per Code Case OMN-20.

RR-PR-02, Version 1.0: Establish test flow reference ranges per Code Case OMN-21.

RR-PR-03, Version 1.0: Service Water Pumps and Transfer Pumps Pressure Accuracy.

This safety evaluation addresses only relief request RR-VR-01, Version 1.0. Relief request RR-PR-02, Version 1.0, was authorized by the Nuclear Regulatory Commission (NRC) in letter dated May 16, 2017 (ADAMS Accession No. ML17123A262). Relief request RR-PR-03, Version 1.0, was authorized by the NRC in letter dated April 12, 2017 (ADAMS Accession No. ML17093A692).

In relief request RR-VR-01, Version 1.0, the licensee is requesting to use the requirements in American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) Case OMN-20, "Inservice Test Frequency," as an alternative to the inservice testing (IST) requirements of the 2004 Edition with Addenda through OMb-2006 of the ASME OM Code.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(z)(2), the licensee requested to use the proposed alternative Code Case OMN-20 in relief request RR-VR-01, Version 1.0, on the basis that it provides reasonable assurance that the components are operationally ready and that compliance with the ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

Section 50.55a(f), "Inservice testing requirements," of 10 CFR requires, in part, that the IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda, except where alternatives have been authorized by the NRC pursuant to 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

The regulations in 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," state, in part, that alternatives to the requirements of 10 CFR 50.55a(f) may be authorized by the NRC if the licensee demonstrates that: 1) the proposed alternative provides an acceptable level of quality and safety (10 CFR 50.55a(z)(1)), or 2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety (10 CFR 50.55a(z)(2)). In accordance with 10 CFR 50.55a(z)(2), SNC stated that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the NRC to authorize the alternative proposed by the licensee.

2.1. Applicable Code Requirements

This request applies to the frequency specifications of the ASME OM Code for all pumps and valves testing contained within the IST program scope. The frequencies for tests given in the ASME OM Code include the following:

ISTA-3120, "Inservice Test Interval," (a) states, "The frequency for inservice testing shall be in accordance with the requirements of Section IST."

ISTB-3400, "Frequency of Inservice Tests," states, "An inservice test shall be run on each pump as specified in Table ISTB-3400-1."

Table ISTB-3400-1, "Inservice Test Frequency," notes that Group A and Group B pump tests are to be conducted quarterly and comprehensive pump tests are to be conducted biennially.

ISTC-3510, "Exercising Test Frequency," states, "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222. Power-operated relief valves shall be exercise tested once per fuel cycle."

ISTC-3540, "Manual Valves," states, "Manual valves shall be full-stroke exercised at least once every 2 years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness. Any increased testing frequency shall be specified by the Owner. The valve shall exhibit the required change of obturator position."

ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," (a) "Frequency," states, "Tests shall be conducted at least once every 2 years."

ISTC-3700, "Position Verification Testing," states, in part, "Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated."

ISTC-5221, "Valve Obturator Movement," (c)(3), states, "At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years."

Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," (a), "5-Year Test Interval," states, in part, "Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation."

Mandatory Appendix I, I-1330, "Test Frequency, Class 1 Nonreclosing Pressure Relief Devices," states, "Class 1 nonreclosing pressure relief devices shall be replaced every 5 years unless historical data indicates a requirement for more frequent replacement."

Mandatory Appendix I, I-1340, "Test Frequency, Class 1 Pressure Relief Valves That Are Used for Thermal Relief Application," states, "Tests shall be performed in accordance with I-1320, Test Frequencies, Class 1 Pressure Relief Valves."

Mandatory Appendix I, I-1350, "Test Frequency, Classes 2 and 3 Pressure Relief Valves," (a), "10-Year Test Interval," states, in part, "Classes 2 and 3 pressure relief valves, with the exception of PWR [pressurized water reactor] main steam safety valves, shall be tested every 10 years, starting with initial electric power generation."

Mandatory Appendix I, I-1360, "Test Frequency, Classes 2 and 3 Nonreclosing Pressure Relief Devices," states, "Classes 2 and 3 nonreclosing pressure relief devices shall be replaced every 5 years, unless historical data indicates a requirement for more frequent replacement."

Mandatory Appendix I, I-1370, "Test Frequency, Classes 2 and 3 Primary Containment Vacuum Relief Valves," states, "(a) Tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at each refueling outage or every 2 years, whichever is sooner, unless historical data requires more frequent testing. (b) Leak tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at a frequency designated by the Owner in accordance with Table ISTC-3500-1."

Mandatory Appendix I, I-1380, "Test Frequency, Classes 2 and 3 Vacuum Relief Valves, Except for Primary Containment Vacuum Relief Valves," states, "All Classes 2 and 3 vacuum relief valves shall be tested every 2 years, unless performance data suggest the need for a more appropriate test interval."

Mandatory Appendix I, I-1390, "Test Frequency, Classes 2 and 3 Pressure Relief Devices that are Used for Thermal Relief Application," states, "Tests shall be performed on all Classes 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. In lieu of tests the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacements are necessary."

Mandatory Appendix II, "Check Valve Condition Monitoring Program," II-4000, "Condition-Monitoring Activities," (a), "Performance Improvement Activities," (1), states, in part, "If sufficient information is not currently available to complete the analysis required in II-3000, or if this analysis is inconclusive, then the following activities shall be performed at sufficient intervals over an interim period of the next 5 years or two refueling outages, whichever is less, to determine the cause of failure or the maintenance patterns."

Mandatory Appendix II, II-4000, (b), "Optimization of Condition-Monitoring Activities," (1)(e), states, "Identify the interval of each activity. Interval extensions shall be limited to one fuel cycle per extension. Intervals shall not exceed the maximum intervals shown in Table II-4000-1. All valves in a group sampling plan must be tested or examined again, before the interval can be extended again, or until the maximum interval would be exceeded. The requirements of ISTA-3120, Inservice Test Interval, do not apply."

In summary ASME OM Code, Division 1, Section IST, 2009 Edition through OMa-2011 Addenda and all earlier editions and addenda specify component (pump and valve) test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.) without any tolerance.

3.0 TECHNICAL EVALUATION

3.1 Components Affected

All pumps and valves contained within the FNP, Units 1 and 2, fifth 10-year IST interval program.

3.2 Applicable Code Edition and Addenda

The Code of record for FNP, Units 1 and 2, fifth 10-year IST program is the ASME OM Code 2004 Edition with Addenda through OMb-2006.

3.3 Duration of Relief Request

The Licensee submitted this relief request for the fifth 10-year IST interval beginning December 1, 2017, and ending November 30, 2027.

3.4 Reason for Relief Request

The ASME OM Code Section IST establishes the inservice test frequency for all components within the scope of the Code. There is no tolerance band for the testing intervals and interval extensions for IST of pumps and valves not associated with technical specifications (TS) surveillance requirements (SRs). FNP TS SR 3.0.2 provides a tolerance band less than or equal to 25 percent extension of the surveillance test interval; however, Regulatory Issue Summary (RIS) 2012-10, "NRC Staff Position on Applying Surveillance Requirements 3.0.2 and 3.0.3 to Administrative Control Program Tests" (ADAMS Accession No. ML12079A393), states, in part, that "SR 3.0.2 and SR 3.0.3 cannot be applied to TS 5.5 ["Programs and Manuals"] for tests that are not associated with a TS SR."

ASME-approved OM Code Case OMN-20 provides guidance for determining acceptable tolerance band for the testing intervals and interval extensions for IST of pumps and valves.

The licensee is requesting to adopt ASME-approved OM Code Case OMN-20 pumps and valves subject to the IST requirements of ASME OM Code to utilize the operational flexibility of a tolerance band for the testing intervals and interval extensions for IST of pumps and valves.

3.5 Basis for Hardship

The licensee provided the following as the basis for hardship:

The lack of a tolerance band applied to the ASME OM Code IST restricts operational flexibility and places an unusual hardship on the plant without a compensating increase in the level of quality or safety. There may be a conflict where a surveillance test could be required but where it is not possible or not desired that it be performed until sometime after a certain restricted plant condition is cleared. The NRC recognized this potential issue by approving TS SR 3.0.2 that provides a SR to be met if the Surveillance is performed with 1.25 times the interval specified in the Frequency. Just as with TS required surveillance testing, some tolerance is needed to allow adjusting the ASME OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. IST Interval extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for the performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test, or maintenance activities).

3.6 Licensee's Proposed Alternative

The licensee is requesting to utilize the guidance found ASME OM Code Case OMN-20, "Inservice Test Frequency," (annotated below) for determining acceptable tolerances for pump and valve test frequencies as an alternative to the IST requirements of the 2004 Edition with Addenda through OMb-2006 of the ASME OM Code.

ASME OM Code Case OMN-20 was approved by the ASME OM Code Standards Committee in February 2012, and subsequently published in the 2012 Edition through 2015 Edition of the ASME OM Code. The proposed alternative will be utilized for the fifth 10-year IST intervals at FNP, Units 1 and 2, and will apply to the various frequency specifications of the ASME OM Code for all pumps and valves contained within the FNP IST program scope.

Published ASME OM Code Case OMN-20 "Inservice Test Frequency"

ASME OM, Division 1, Section IST and earlier editions and addenda of ASME OM Code specify component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.).

(a) Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in Section IST with a specified time period between tests as shown in Table 1. The specified time period between tests may be reduced or extended as follows:

(1) For periods specified as fewer than 2 yr, the period may be extended by up to 25% for any given test.

(2) For periods specified as greater than or equal to 2 yr, the period may be extended by up to 6 mo [months] for any given test.

(3) All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in alert range) and other fewer than 2-yr test frequencies not specified in Table 1.

Period extensions may not be applied to the test frequency requirements specified in [ASME OM Code] Subsection ISTD, *Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Nuclear Power Plants*, as Subsection ISTD contains its own rules for period extensions.

(b) Components whose test frequencies are based on the occurrence of plant conditions or events may not have their period between tests extended except as allowed by the ASME OM, Division 1, Section IST, 2009 Edition through Oma-2011 Addenda and all earlier editions and addenda.

Table 1 Specified Test Frequencies

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 months)	92 days
Semiannually (or every 6 months)	184 days
Annually (or every year)	366 days
x Years	x calendar years where 'x' is a whole number of years ≥ 2

3.7 NRC Staff Evaluation

Historically, licensees have applied and the NRC staff has accepted the standard TS definitions for IST intervals (including allowable interval extensions) to ASME OM Code required testing (NUREG-1482, Revision 2, "Guidelines for Inservice Testing a Nuclear Power Plants: Inservice Testing of Pumps and Valves and Inservice Examination and Testing of Dynamic Restraints (Snubbers) at Nuclear Power Plants," Section 3.1.3, "Scheduling of Inservice Tests" (ADAMS Accession No. ML13295A020)). Recently, the NRC staff reconsidered the allowance of the TS testing intervals and interval extensions for IST not associated with TS SRs. As noted in RIS 2012-10, the NRC determined that programmatic test frequencies cannot be extended in accordance with the TS SR 3.0.2. This includes all IST described in the ASME OM Code not specifically required by the TS SRs.

The lack of a tolerance band on the ASME OM Code IST frequency restricts operational flexibility. The NRC staff recognized that, just as with TS required surveillance testing, some tolerance is needed to allow adjusting ASME OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. To provide operational flexibility when scheduling IST that minimize the conflicts between the need to complete the testing and plant conditions, the NRC staff sponsored and co-authored an ASME OM Code inquiry and Code Case to modify the ASME OM Code to include TS-like test interval definitions and interval extension criteria. The resultant ASME-Approved Code Case OMN-20, was approved by the ASME Operation and Maintenance Standards Committee on February 15, 2012. Code Case OMN-20 was subsequently published in conjunction with the 2012 Edition through 2015 Edition of the ASME OM Code.

Requiring the licensee to meet the ASME OM Code requirements and applicable adopted ASME OM Code Cases, without an allowance for defined frequency and frequency extensions for IST of pumps and valves, results in a hardship without a compensating increase in the level of quality and safety. Without the provision for applying operational flexibility to OM testing frequencies contained in ASME OM Code Case OMN-20, an unusual hardship is created for the plant to adequately facilitate test scheduling and possibly cause and unacceptable increase in the plant risk profile.

Based on the prior acceptance by the NRC staff of the similar TS test interval definitions and interval extension criteria, the NRC staff concludes that implementation of the test interval definitions and interval extension criteria contained in ASME OM Code Case OMN-20, is therefore, acceptable. Allowing usage of ASME Code Case OMN-20 provides reasonable assurance of operational readiness of pumps and valves subject to the ASME OM Code IST.

4.0 CONCLUSION

As set forth above, the NRC staff determines that for alternative request RR-VR-01, Version 1.0, provides reasonable assurance that the affected components are operationally ready and that complying with the frequencies specified in IST requirements of the 2004 Edition with Addenda through OMb-2006 of the ASME OM Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes the use of alternative request RR-VR-01, Version 1.0, for the FNP, Units 1 and 2, during the fifth 10-year IST program interval which is scheduled to begin on December 1, 2017, ending November 30, 2027. This authorization is effective until Code Case OMN-20 is incorporated in 10 CFR 50.55a.

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject request remain applicable.

Principal Contributor: Gurjendra S. Bedi

Date: July 18, 2017

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 – INSERVICE TESTING ALTERNATIVE FOR PUMPS PER CODE CASE OMN-20 (RR-VR-01) (CAC NOS. MF9263 AND MF9264) DATED: JULY 18, 2017

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