



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

December 8, 2016

Mr. Charles R. Pierce
Regulatory Affairs Director
Southern Nuclear Operating Company, Inc.
P.O. Box 1295 / Bin 038
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 –
ALTERNATIVE FOR PUMP AND VALVE INSERVICE TESTING PROGRAM
(CAC NOS. MF8186 AND MF8187)

Dear Mr. Pierce:

By letter dated July 28, 2016 (Agencywide Documents Access and Management System Accession No. ML16210A460), Southern Nuclear Operating Company, Inc. (the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of Alternative RR-PR-02, Version 0.0, "Establish test flow reference ranges per Code Case OMN-21," to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements associated with the pump and valve inservice testing (IST) program at the Vogtle Electric Generating Plant (Vogtle), Units 1 and 2.

The NRC staff reviewed the proposed Alternative RR-PR-02, Version 0.0, for Vogtle, Units 1 and 2, and concludes that the licensee has adequately addressed all of the regulatory requirements set forth in Title 10 of the *Code of Federal Regulations* 50.55a(z)(1). Therefore, the NRC staff authorizes the use of the Alternative Request RR-PR-02, Version 0.0, for Vogtle, Units 1 and 2, for the fourth 10-year IST program interval, which begins on June 1, 2017, and is scheduled to end on May 31, 2027.

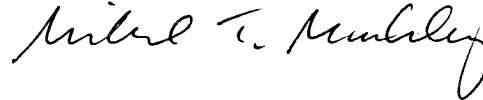
C. Pierce

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

If you have any questions, please contact Bob Martin at 301 415-1493 or via email at Robert.Martin@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael T. Markley". The signature is written in a cursive style with a large, looping 'M' and 'y'.

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

Docket Nos. 50-424 and 50-425

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUEST RR-PR-02, VERSION 0.0

FOURTH 10-YEAR INTERVAL INSERVICE TESTING PROGRAM

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By letter dated July 28, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16210A460), Southern Nuclear Operating Company, Inc. (SNC, the licensee), submitted a request to the U.S. Nuclear Regulatory Commission (NRC, the Commission) for the use of Alternative RR-PR-02, "Establish test flow reference ranges per Code Case OMN-21," to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements associated with the pump inservice testing (IST) program at the Vogtle Electric Generating Plant (Vogtle), Units 1 and 2.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

The regulation in 10 CFR 50.55a(f), states, in part, that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with the specified ASME OM Code and applicable addenda incorporated by reference in the regulations.

The regulation in 10 CFR 50.55a(z) states that alternatives to the requirements of paragraph (f) of 10 CFR 50.55a may be used, when authorized by the NRC, if the licensee demonstrates that (1) the proposed alternatives would provide an acceptable level of quality and safety; 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.

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 Commission to authorize, the alternative requested by the licensee.

Enclosure

3.0 TECHNICAL EVALUATION

3.1 Licensee's Alternative Request RR-PR-02, Version 0.0

The licensee has requested an alternative to the pump testing reference value requirements of ISTB-5121, ISTB-5122, ISTB-5123, ISTB-5221, ISTB-5222, and ISTB-5223. These requirements state:

- ISTB-5121, "Group A Test Procedure," (b) states, in part, "The resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5122, "Group B Test Procedure," (c) states, in part, "System resistance may be varied as necessary to achieve the reference point."
- ISTB-5123, "Comprehensive Test Procedure," (b) states, in part, "For centrifugal and vertical line shaft pumps, the resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5221, "Group A Test Procedure," (b) states, in part, "The resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5222, "Group B Test Procedure," (c) states "System resistance may be varied as necessary to achieve the reference point."
- ISTB-5223, "Comprehensive Test Procedure," (b) states, in part, that "The resistance of the system shall be varied until the flow rate equals the reference point."

ASME OM Code Case, OMN-21, "Alternate Requirements for Adjusting Hydraulic Parameters to Specified Reference Points," states, in part:

It is the opinion of the Committee that when it is impractical to operate a pump at a specified reference point and adjust the resistance of the system to a specified reference point for either flow rate, differential pressure or discharge pressure, the pump may be operated as close as practical to the specified reference point with the following requirements. The Owner shall adjust the system resistance to as close as practical to the specified reference point where the variance from the reference point does not exceed + 2% or - 1% of the reference point when the reference point is flow rate, or + 1% or - 2% of the reference point when the reference point is differential pressure or discharge pressure.

The Vogtle, Units 1 and 2, fourth 10-year IST program interval begins on June 1, 2017, and is scheduled to end on May 31, 2027. The applicable ASME OM Code edition and addenda for the Vogtle, Units 1 and 2, fourth 10-year IST program interval is the 2004 Edition, with Addenda through OMB-2006.

The components affected by this alternative request are the pumps listed in Table 1 below.

Table 1

Pump Groups (Units 1 and 2)	Description	Pump Type	ASME Code Class	ASME OM Code Category
1-1202-P4-001 1-1202-P4-002 1-1202-P4-003 1-1202-P4-004 1-1202-P4-005 1-1202-P4-006 2-1202-P4-001 2-1202-P4-002 2-1202-P4-003 2-1202-P4-004 2-1202-P4-005 2-1202-P4-006	Nuclear Service Cooling Water (NSCW) Pumps	Vertical Line Shaft Centrifugal	3	Group A
1-1202-P4-007 1-1202-P4-008 2-1202-P4-007 2-1202-P4-008	NSCW Transfer Pumps	Vertical Line Shaft Centrifugal	3	Group A
1-1203-P4-001 1-1203-P4-002 1-1203-P4-003 1-1203-P4-004 1-1203-P4-005 1-1203-P4-006 2-1203-P4-001 2-1203-P4-002 2-1203-P4-003 2-1203-P4-004 2-1203-P4-005 2-1203-P4-006	Component Cooling Water Pumps	Centrifugal	3	Group A
1-1204-P6-003 1-1204-P6-004 2-1204-P6-003 2-1204-P6-004	Safety Injection Pumps	Centrifugal	2	Group B
1-1205-P6-001 1-1205-P6-002 2-1205-P6-001 2-1205-P6-002	Residual Heat Removal Pumps	Centrifugal	2	Group A
1-1206-P6-001 1-1206-P6-002 2-1206-P6-001 2-1206-P6-002	Containment Spray Pumps	Centrifugal	2	Group B

Pump Groups (Units 1 and 2)	Description	Pump Type	ASME Code Class	ASME OM Code Category
1-1208-P6-002 1-1208-P6-003 2-1208-P6-002 2-1208-P6-003	Centrifugal Charging Pumps	Centrifugal	2	Group A
1-1208-P6-006 1-1208-P6-007 2-1208-P6-006 2-1208-P6-007	Boric Acid Transfer Pumps	Centrifugal	3	Group A
1-1302-P4-001 2-1302-P4-001	Turbine Driven Auxiliary Feedwater Pumps	Centrifugal	3	Group B
1-1302-P4-002 1-1302-P4-003 2-1302-P4-002 2-1302-P4-003	Motor Driven Auxiliary Feedwater Pumps	Centrifugal	3	Group A
1-1592-P7-001 1-1592-P7-002 2-1592-P7-001 2-1592-P7-002	ESF Chilled Water Pumps	Centrifugal	3	Group B

Reason for Request

In its July 28, 2016, submittal, the licensee states, in part, that:

For pump testing, there is difficulty adjusting system throttle valves with sufficient precision to achieve exact flow reference values during subsequent IST tests. Subsection ISTB of the ASME OM Code does not allow for variance from a fixed reference value for pump testing. However, NUREG-1482 ["Guidelines for Inservice Testing at Nuclear Power Plants,"], Revision 2, Section 5.3, acknowledges that certain pump system designs do not allow for the licensee to set the flow at an exact value because of limitations in the instruments and controls for maintaining steady flow.

ASME OM Code Case OMN-21 provides guidance for adjusting reference flow or differential pressure (ΔP) to within a specified tolerance during pump inservice testing. The Code Case states "It is the opinion of the Committee that when it is impractical to operate a pump at a specified reference point and adjust the resistance of the system to a specified reference point for either flow rate, differential pressure or discharge pressure, the pump may be operated as close as practical to the specified reference point with the following requirements. The Owner shall adjust the system resistance to as close as practical to the specified reference point where the variance from the reference point does not exceed + 2% or - 1% of the reference point when the reference point is flow rate, or + 1% or - 2% of the reference point when the reference point is differential pressure or discharge pressure.

Proposed Alternative

The licensee requested to perform IST for the pumps listed in Table 1 above in a manner consistent with the requirements as stated in ASME OM Code Case OMN-21. The testing of the pumps listed in Table 1 will be performed such that flow rate is adjusted as close as practical to the reference value and within proceduralized limits of + 2 percent /- 1 percent of the reference flow rate.

The licensee's plant operators will continue to strive to achieve the exact test flow reference values during testing. Typical test guidance will be to adjust flow to the specific reference value with additional guidance that if the reference value cannot be achieved with reasonable effort, the test will be considered valid if the steady state flow rate is within the proceduralized limits of + 2 percent /- 1 percent of the reference value.

NRC Staff Evaluation

An inquiry was submitted to the ASME OM Code to determine what alternatives may be used when it is not possible to operate a pump at a specified reference point for either flow rate, differential pressure or discharge pressure. ASME OM Code Case OMN-21 was developed to provide guidance on alternatives. The guidance in ASME OM Code Case OMN-21 states that when it is not possible to operate a pump at a specified reference point for either flow rate, differential (or discharge) pressure, the pump may be operated as close as practical to the specified reference point with the following requirements.

ASME OM Code Case OMN-21 specifies that the variance from the reference point shall not exceed + 2 percent or - 1 percent of the reference point when the reference point is flow rate, or + 1 percent or - 2 percent of the reference point when the reference point is differential (or discharge) pressure.

ASME OM Code Case OMN-21 was approved by the ASME OM Standards Committee on April 20, 2012, with the NRC representative voting in the affirmative. The code case has not yet been incorporated into Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," August 2014 (ADAMS Accession No. ML13340A034) The licensee proposes to adopt ASME OM Code Case OMN-21. The applicability of ASME OM Code Case OM-21 is the ASME OM Code 1995 Edition through the 2011 Addenda. The NRC staff notes that the language from ASME OM Code Case OMN-21 has been included in the ASME OM Code, 2012 Edition. Also, the NRC staff plans to add Code Case OMN-21 as an acceptable Code Case in Revision 3 of Regulatory Guide 1.192.

The NRC staff notes that in certain situations, it is not possible to operate a pump at a precise reference point. The NRC staff has reviewed the alternatives proposed in ASME OM Code Case OMN-21 and found that the proposed alternatives are reasonable and appropriate, when a pump cannot be operated at a specified reference point. Operation within the tolerance bands specified in ASME OM Code Case OMN-21 provides reasonable assurance that licensees will be able to utilize the data collected to detect degradation of the pumps. Based on the NRC staff's review of ASME OM Code Case OMN-21 and the licensee's proposed alternative to use the bands specified in ASME OM Code Case OMN-21 for flow rate, the NRC staff concludes that implementation of the alternatives contained in ASME OM Code Case OMN-21 are

acceptable for the pumps listed in Table 1. Therefore, the NRC staff concludes that the licensee's proposed alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff concludes that for Alternative Request RR-PR-02, Version 0.0, for Vogtle, Units 1 and 2, the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of Alternative Request RR-PR-02, Version 0.0, for Vogtle, Units 1 and 2, for the fourth 10-year IST program interval, which begins on June 1, 2017, and is scheduled to end on May 31, 2027.

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

Principal Contributor: R. Wolfgang

Date: December 8, 2016

C. Pierce

- 2 -

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

If you have any questions, please contact Bob Martin at 301 415-1493 or via email at Robert.Martin@nrc.gov.

Sincerely,

/RA/

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

Docket Nos. 50-424 and 50-425

Enclosure:
Safety Evaluation

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