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

February 17, 2017

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 – REQUEST TO USE ASME CODE CASE OMN-18 AS AN ALTERNATIVE TO INSERVICE TESTING REQUIREMENTS (CAC NOS. MF8188 AND MF8189)

Dear Mr. Pierce:

By letter dated July 28, 2016, Southern Nuclear Operating Company (SNC, the licensee) submitted a request for approval of four alternative test plans in lieu of certain inservice testing (IST) requirements of the 2004 Edition through 2006 Addenda of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2.

For one of the four requests, RR-PR-01, the licensee proposed the use of ASME OM Code Case OMN-18 as an alternative in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(1), on the basis that the alternative provides an acceptable level of quality and safety.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed RR-PR-01 and concludes that SNC has adequately addressed all of the regulatory requirements and that the proposed alternative provides an acceptable level of quality and safety. Therefore, the NRC staff authorizes RR-PR-01 in accordance with 10 CFR 50.55a(z)(1) for the forth 10-year IST program interval, which begins on June 1, 2017, and is scheduled to end on May 31, 2027. The NRC staff's safety evaluation is enclosed.

All other ASME OM Code requirements for which relief was not specifically requested and authorized herein by the NRC staff remain applicable.

If you have any questions, please contact the Project Manager, Michael Orenak, at 301-415-3229 or by e-mail at Michael.Orenak@nrc.gov.

Sincerely,

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

Docket Nos. 50-424 and 50-425

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUESTS RR-PR-01, VERSION 0.0

USE OF CODE CASE OMN-18 AS AN ALTERNATIVE

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

SOUTHERN NUCLEAR OPERATING COMPANY

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 (SNC, the licensee) submitted a request for approval of four alternative test plans in lieu of certain inservice testing (IST) requirements of the 2004 Edition through 2006 Addenda of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2.

For one of the four requests, RR-PR-01, the licensee proposed the use of ASME OM Code Case OMN-18 "Alternate Testing Requirements for Pumps Tested Quarterly within ± 20 percent of design flow," as an alternative in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(1), 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), "Inservice Testing Requirements," 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 U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

The regulations in 10 CFR 50.55a(z), 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)).

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.

3.0 TECHNICAL EVALUATION

The licensee requests to use ASME OM Code Case OMN-18 for the fourth 10-year IST program interval that begins on June 1, 2017, and ends on May 31, 2027.

ASME OM Code Case OMN-18 allows the elimination of the requirement for the Comprehensive Pump Test (CPT) with its associated acceptance criteria, if the quarterly test is performed at ± 20 percent of design flow and the instrumentation meets the accuracy requirements of Table ISTB-3510-1 for the comprehensive and preservice tests. The basis for the testing strategy in Code Case OMN-18 is that a quarterly Group A pump test, performed at the CPT flow rate with more accurate instrumentation, is more effective in assessing a pump's operational readiness than a standard Group A test in conjunction with a biennial CPT.

The ASME OM Code committee approved Code Case OMN-18 and it was incorporated into the 2009 edition of the ASME OM Code. Code Case OMN-18 has not yet been endorsed by the NRC in Regulatory Guide (RG) 1.192, Revision 1, "Operation and Maintenance Code Case Acceptability, ASME OM Code" (ADAMS Accession No. ML13340A034).

The ASME OM Code, Subsection ISTB, allows the categorization of pumps in the IST program. As such, a pump that otherwise meets the requirements of Group B could be categorized as a Group A pump, and tested according to the provisions of Code Case OMN-18. In doing this, additional data (vibration and flow or differential pressure) would be obtained quarterly, rather than once every two years.

3.1 Applicable ASME OM Code Requirements

The applicable ASME OM Code Requirements for this request for alternative are:

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

ISTB-3400-1, "Inservice Test Frequency," requires Group A and Group B tests to be performed quarterly and Comprehensive test be performed biennially.

ISTB-3510, "Required Instrument Accuracy," specifies instrument accuracies for Group A, Group B, Comprehensive and Preservice tests.

ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria," specifies the required acceptance criteria for Group A, Group B, and Comprehensive Tests for centrifugal pumps.

ISTB-5221-1, "Vertical Line Shaft and Centrifugal Pumps Test Acceptable Criteria," specifies the required acceptance criteria for Group A, Group B, and Comprehensive Tests for vertical line shaft centrifugal pumps.

3.2 Affected Pumps

The use of the alternative testing is requested for the following pumps:

Table 1				
Pump ID (Units 1 & 2)	**Description**	**Pump Type**	**OM Code Class**	**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 NSCW Pumps	Vertical Line Shaft Centrifugal Vertical Line Shaft Centrifugal	3 3	Group A 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
1-1208-P6-006 1-1208-P6-007 2-1208-P6-006 2-1208-P6-007	Boric Acid Transfer 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 (Note 1)
Note 1: The ESF Chilled Water Pumps will be re-categorized as Group A when this proposed alternative is implemented				

3.3 Licensee's Proposed Alternative and Basis

The licensee is proposing to utilize the provisions of Code Case OMN-18 to perform a modified Group A test in lieu of performing the ASME OM Code required biennial CPT that is required for both Group A and B pumps. The modified Group A test will be performed at ± 20 percent of design flow. The instrumentation used will meet the accuracy requirements of Table ISTB-3510-1 for the comprehensive and preservice tests. Vibration tests will be performed with the same vibration acceptance criteria as the standard Group A pump test. Additionally, VEGP will utilize an acceptable criteria associated with the upper limit as 106 percent in lieu of the 110 percent allowed by Table ISTB-5121-1 and Table ISTB-5221-1 for quarterly testing.

3.4 NRC Staff Evaluation

The ASME OM Code requires that for Group A pumps, a Group A test be performed every quarter, and a CPT be performed biennially. The Group A test is performed within ± 20 percent of the pump design flow rate, the pressure instrument accuracy is ± 2 percent, and the upper limit for the "Acceptable Range" and "Required Action Range" for flow rate and differential pressure is 110 percent of the reference values. The CPT is performed within ± 20 percent of the pump design flow rate, the pressure instrument accuracy is ± 0.5 percent, and the upper limit of the "Acceptable Range" and "Required Action Range" for flow rate and differential pressure is 103 percent of the reference values. Vibration monitoring is performed during both the Group A tests and the CPTs.

The licensee proposes that for the pumps listed in Table 1, a modified Group A quarterly test will be performed using ASME OM Code Case OMN-18, with modified "Acceptable" and "Required Action" ranges, and the biennial CPT will not be performed. The modified Group A quarterly test would be performed within ± 20 percent of the pump design flow rate, using more accurate pressure instrumentation that is required for a CPT (± 0.5 percent instead of ± 2 percent). The licensee will use a more limiting upper bound differential pressure (ΔP) value of 106 percent for the "Acceptable Range" in lieu of 110 percent that is normally required by the ASME OM Code for Group A tests. However, the upper bound 106 percent is greater than the upper bound value of 103 percent for the biennial CPT. Using more accurate pressure gauges and a more limiting "Acceptable Range" upper bound value of 106 percent during modified quarterly Group A test compensates for the elimination of the CPT with its more limiting "Acceptable Range" upper bound value of 103 percent.

OMN-18 was published in the 2009 Edition of the ASME OM Code. This edition of the ASME OM Code has not been incorporated by reference into 10 CFR 50.55a, and OMN-18 has not been incorporated into RG 1.192; however, the NRC staff has reviewed OMN-18. The elimination of the CPT, with its more limiting "Acceptable Range" upper bound of 103 percent ΔP_r, is compensated for by using more accurate pressure gauges on every quarterly test. Regular testing with more accurate instrumentation and tighter acceptance criteria will provide for better trending of pump performance.

Provided that (1) the upper end values of the Group A test "Acceptable Ranges" for flow (Q) and differential pressure (ΔP) are 106 percent Q_r and 106 percent ΔP_r, respectively, (2) the high values of the "Required Action Ranges" for flow and differential pressure are greater than 106 percent Q_r and 106 percent ΔP_r respectively, and (3) all of the quarterly tests will be performed with pressure gauges with ± 0.5 percent accuracy, the NRC staff finds the proposed alternative

acceptable. Therefore, the NRC concludes that the proposed alternative provides an acceptable level of quality and safety for testing and acceptance criteria for the pumps listed in Table 1 in Section 3.2 of this safety evaluation.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternatives described in alternative request RR-PR-01 provides an acceptable level of quality and safety for pumps listed in the Table 1 in Section 3.2 of this safety evaluation. Accordingly, the NRC staff concludes that 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 alternative request RR-PR-01 for VEGP, Units 1 and 2, for the forth 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 for relief remain applicable.

Principle Contributor: Gurjendra S. Bedi

Date: February 17, 2017.

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DATED: February 17, 2017

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