



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

March 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 FOR  
ALTERNATIVE RR-PR-03 REGARDING NUCLEAR SERVICE COOLING  
WATER PUMP INSTRUMENT ACCURACY (CAC NOS. MF8184 AND MF8185)

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-03, the licensee proposed an alternative regarding the instrumentation accuracy for the nuclear service cooling water pumps 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-03 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-03 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.

C. Pierce

- 2 -

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](mailto:Michael.Orenak@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Markley" followed by a stylized flourish and the initials "for".

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUEST RR-PR-03, VERSION 0.0

NUCLEAR SERVICE COOLING WATER INSTRUMENTATION ACCURACY

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-03, the licensee proposed an alternative regarding the instrumentation accuracy for the nuclear service cooling water (NSCW) pumps 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 regulations in 10 CFR 50.55a(f), "Inservice Testing Requirements," require, 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), require, 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, 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. In accordance with 10 CFR 50.55a(z)(1), relief request RR-PR-03 stated that the proposed alternatives would provide an acceptable 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 requested by the licensee.

### 3.0 TECHNICAL EVALUATION

#### 3.1 System Description

Cooling water for each VEGP unit is normally pumped from the cooling tower basins, one for each train, by two of three NSCW pumps provided in each train, to the essential components coolers, through the two main redundant NSCW supply headers (trains A and B). After removing heat from the components, the coolant is piped back to the cooling towers where the heat is rejected through direct contact with ambient air. Each tower basin is provided with a transfer pump to effect water transfer between the two basins to permit full utilization of the water inventory in the two basins, even with the loss of one NSCW train.

#### 3.2 Applicable ASME OM Code Requirements

ISTB-3510(a), "Accuracy," states:

Instrument accuracy shall be within the limits of Table ISTB-3510-1.

Table ISTB-3510-1, "Required Instrument Accuracy," requires that Comprehensive and Preservice Test pressure instrument accuracy to be  $\pm 0.5$  percent.

#### 3.3 Affected Pumps

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

<b>Pump Groups (Units 1 &amp; 2)</b>	<b>Description</b>	<b>Pump Type</b>	<b>Code Class</b>	<b>OM Code Category</b>
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

### 3.4 Licensee's Proposed Alternative and Basis

Table ISTB-3510-1 specifies the instrument accuracy to be  $\pm 0.5$  percent for pressure during the comprehensive pump test. Due to the design of these pumps (vertical line shaft), the suction pressure is determined using the cooling tower basin level and pump elevation. The accuracy of the existing level instrumentation loop is a combination of the accuracy of the transmitter, the NLP1 card, NSC3 card, and control board instrument card. The level instrumentation results in a reading that has a loop accuracy of  $\pm 1.38$  percent of full scale. At the full scale of 54 inches of water, the error is 0.74 inches. When converted to pounds per square inch (psi), this maximum error equates to 0.027 psi.

The ASME OM Code required accuracy ( $\pm 0.5$  percent) for this same instrument configuration equates to 0.01 psi. The difference of 0.017 psi is inconsequential when determining the suction pressure (normal range 36.8 to 37.8 psi) for the NSCW pumps and the NSCW Transfer Pumps.

VEGP proposes to perform comprehensive pump testing using the installed instrumentation with a loop accuracy of  $\pm 1.38$  percent to determine suction pressure for the specified pumps. All other measurements for the comprehensive pump test will comply with OM Code requirements.

### 3.5 NRC Staff Evaluation

The ASME OM Code, Table ISTB-3510-1, requires that comprehensive pump test differential pressure instrument accuracy be within  $\pm 0.5$  percent. The licensee requests relief from the ASME OM Code requirement because they have determined that the NSCW cooling tower basin level instrumentation loops do not meet the accuracy requirements for the NSCW pumps and the NSCW transfer pumps suction pressure measurements. The licensee proposed to use the existing NSCW cooling tower basin level instrumentation loops that would determine the pump suction pressure to an accuracy of  $\pm 1.38$  percent. Differential pressure is driven primarily by discharge pressure, and the NSCW cooling tower basin level has little effect on the overall pressure differential calculation. The difference between the installed instrument of 1.38 percent and the Code-required 0.5 percent accuracy amounts to 0.017 psi, and is inconsequential when determining the suction pressure of normal range 36.8 to 37.8 psi. Therefore, the NRC staff finds that use of the NSCW cooling tower basin level instrumentation has little effect on the overall differential pressure determination.

The NRC staff has reviewed the requirements in Table ISTB-3510-1. The intent of the requirements is to ensure that accurate readings are obtained from differential pressure instrumentation to make degradation monitoring meaningful. Based on the above evaluation, the NRC staff finds that use of the installed NSCW cooling tower basin level instrumentation has inconsequential effect when determining the suction pressure, and very little effect when determining overall differential pressure. Therefore, the NRC staff concludes that the proposed alternative meets the intent of the OM Code requirements and, therefore, is acceptable.

## 4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternatives described in alternative request RR-PR-03 provides an acceptable level of quality and safety for the pumps listed in the Table 1 in Section 3.3 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-03 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: John Billerbeck

Date: March 17, 2017

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 – REQUEST FOR ALTERNATIVE RR-PR-03 REGARDING NUCLEAR SERVICE COOLING WATER PUMP INSTRUMENT ACCURACY (CAC NOS. MF8184 AND MF8185) DATED MARCH 17, 2017

DISTRIBUTION:

- PUBLIC
- LPL2-1 R/F
- RidsNrrLAKGoldstein Resource
- RidsACRS\_MailCTR Resource
- RidsRgn2MailCenter Resource
- RidsNrrDorlLpl2-1 Resource
- RidsNrrDeEpn Resource
- JBillerbeck, NRR
- RidsNrrPMVogtle Resource

**ADAMS Accession No. ML17061A202**

\*by e-mail

OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DE/EPNB/BC*	NRR/DORL/LPL2-1/BC
NAME	MOrenak	KGoldstein	DAlley	MMarkley (SKoenick for)
DATE	03/15/17	03/14/17	02/28/17	03/17/17

**OFFICIAL RECORD COPY**