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

June 16, 2017

Mr. William R. Gideon
Site Vice President
Brunswick Steam Electric Plant
8470 River Rd. SE (M/C BNP001)
Southport, NC 28461

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 – RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS CODE FOR OPERATION AND MAINTENANCE FOR INSERVICE TESTING PROGRAM, FIFTH 10-YEAR INTERVAL (RELIEF REQUESTS VRR-01 AND VRR-03) (CAC NOS. MF8938 AND MF8939)

Dear Mr. Gideon:

By letter dated December 14, 2016, Agencywide Documents Access and Management System (ADAMS) Accession No. ML16350A064, Duke Energy Progress, LLC (the licensee), submitted Relief Requests VRR-01, VRR-02, VRR-03, and VRR-04 to the U. S. Nuclear Regulatory Commission (NRC). By letter dated April 24, 2017, ADAMS Accession No. ML17115A368, Relief Requests VRR-02 and VRR-04 were withdrawn. Relief Requests VRR-01 and VRR-03 are applicable to the Fifth 10-year inservice testing (IST) program interval at Brunswick Steam Electric Plant (Brunswick) Units 1 and 2. The licensee requested an alternative test plan in lieu of certain 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 IST program at Brunswick Units 1 and 2.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, section 50.55a(z)(1), the licensee requested to use proposed alternatives VRR-01 and VRR-03 on the basis that the alternatives provide an acceptable level of quality and safety.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the proposed alternatives described in alternative requests VRR-01 and VRR-03 provides an acceptable level of quality and safety for components listed in tables 1 and 2. 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).

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

Therefore, the NRC staff authorizes the proposed alternatives in VRR-01 and VRR-03 for the Fifth 10-Year IST program interval at Brunswick Units 1 and 2, which is currently scheduled to begin on November 1, 2017, and end on October 31, 2027.

If you have any questions, please contact the Project Manager, Andrew Hon, at 301-415-8480 or Andrew.Hon@nrc.gov.

Sincerely,

Undine S. Shoop, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-325 and 50-324

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

RELIEF REQUEST NOS. VRR-01 AND VRR-03

RELATED TO THE INSERVICE TESTING PROGRAM, FIFTH 10-YEAR INTERVAL

DUKE ENERGY PROGRESS, LLC

BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2

DOCKET NOS. 50-325 AND 50-324

1.0 INTRODUCTION

By letter dated December 14, 2016, Agencywide Documents Access and Management System (ADAMS) Accession No. ML16350A064, Duke Energy Progress, LLC (Duke Energy or the licensee), submitted Relief Requests VRR-01, VRR-02, VRR-03, and VRR-04 to the Nuclear Regulatory Commission (NRC). By letter dated April 24, 2017, ADAMS Accession No. ML17115A368, Relief Requests VRR-02 and VRR-04 were withdrawn. Relief requests VRR-01 and VRR-03 are applicable to the Fifth 10-year inservice testing (IST) program interval at Brunswick Steam Electric Plant (Brunswick or BSEP) Units 1 and 2. The licensee requested an alternative test plan in lieu of certain 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 IST program at Brunswick Units 1 and 2.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.55a(z)(1), the licensee requested to use proposed alternatives VRR-01 and VRR-03 on the basis that the alternatives provide an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

It states, in part, in 10, CFR 50.55a(f), "Inservice testing requirements," that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda incorporated by reference in the regulations. Exceptions are allowed where alternatives have been authorized or relief has been granted by the NRC pursuant to paragraphs 10 CFR 50.55a(z)(1), or 10 CFR 50.55a(z)(2).

In proposing alternatives or requesting relief, the licensee must demonstrate that (1) the proposed alternatives provide an acceptable level of quality and safety (10 CFR 50.55a(z)(1)); or (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Section 50.55a allows the NRC to authorize alternatives and to grant relief from ASME OM Code requirements upon making the necessary findings.

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

3.0.1 Applicable ASME OM Code

The following requests, VRR-01 and VRR-03, are alternative test plans in lieu of certain IST requirements of the 2004 Edition through 2006 Addenda of the ASME OM Code for the IST program at Brunswick Units 1 and 2 for the Fifth 10-year IST interval currently scheduled to start November 1, 2017, and end on October 31, 2027.

3.1.1 Licensee's Relief Request VRR-01

ASME OM Code Requirements:

It states in ISTB-5113(c), "Valve Stroke Testing," that "The stroke time of all valves shall be measured to at least the nearest second."

Alternative testing is requested for the following valves:

Table 1

Valve ID	Function	Category	Class
1-B21-F013A thru 1-B21-F013L	Nuclear Steam Supply System Safety Relief Valves	B/C	1
2-B21-F013A thru 2-B21-F013L	Nuclear Steam Supply System Safety Relief Valves	B/C	1

The licensee states in part:

> Reason for Request:
>
> The functions of the primary steam line safety/relief valves are to:
>
> 1) Open upon receipt of an Automatic Depressurization System (ADS) signal to blow down the reactor vessel (i.e., for the ADS valves only)
> 2) Act as primary system safety valves actuating on high system pressure or by manual actuation from the Control Room
> 3) Close to maintain the primary system pressure boundary and prevent uncontrolled de-pressurization of the reactor (i.e., stuck open relief valve).
>
> The function of the solenoid valves is to energize upon receipt of a manual or ADS actuation signal and, in so doing, open the associated pilot valve to allow venting of the area behind the main piston resulting in the associated main valve disc opening.
>
> The valves are sent to a vendor (i.e., NTS Technologies) and as-found tested which includes visual inspection, leakage testing, stroke time testing, and set pressure testing. The stroke time of the main disc is measured by using accelerometers. The acceptance criteria is set at < [less than] 100 milliseconds. This verifies the valves will perform their desired function. The valves are full stroke exercised and remote position verified, in

accordance with ASME OM Code and Technical Specification 3.4.3, *Safety/Relief Valves (SRVs)*. Temperature sensors and acoustic monitors downstream of the valves discharge nozzles are used to provide a positive valve position indication.

The proposed alternative testing above, together with the extensive preventative maintenance requirements for these valves, gives adequate assurance that these valves will perform satisfactorily and reliably. This position and alternate testing conforms to the recommendations presented in NUREG-1482, Revision 2, *Guidelines for Inservice Testing at Nuclear Power Plants*, paragraph 4.3.2.1.

Proposed Alternative

Each of these valves will be exercised open and closed, and proper operation will be ascertained by observing the response and changes in main steam parameters within a specified time period and observation of the outputs of the downstream temperature and acoustic sensors. Specific as-found stroke times, visual inspections, set pressure and leakage testing will be measured by the vendor.

The proposed alternative will be used for the entire Fifth 10-year interval which begins November 1, 2017, and ends October 31, 2027.

3.1.2 NRC Staff Evaluation

ASME OM Code ISTC-5113 details the requirements for valve stroke testing. It states in ISTC-5113(a) that "Active valves shall have their stroke times measured when exercised in accordance with ITST-3500." It is stated in ISTC-5113(c) that "The stroke time of power operated valves to be measured to at least the nearest second."

In lieu of these requirements, the licensee proposes to full stroke exercise each valve noted in Table 1 and determine proper operation by observing the response to changes in main steam parameters within a specified time period in accordance with Technical Specification 3.4.3. As-found stroke times, set pressure, and leakage testing will be measured by a vendor during valve rework activities. The acceptance criteria for the vendor measured stroke time of the main disk is < 100 milliseconds. This value is within the stroke acceptance criteria of ISTC-5114(c), which states that "Valves that stroke in less than 2 seconds may be exempted from ISTC-5114(b). In such cases the maximum limiting stroke time shall be 2 seconds." In addition, the licensee states that the proposed alternative will be performed with an extensive preventive maintenance program. The proposed alternative is consistent with the guidance in NUREG-1482, Revision 2, paragraph 4.3.2.1. Therefore, the NRC staff concludes that the proposed alternative provides an acceptable level of quality and safety.

3.2.1 Licensee's Relief Request VRR-03

ASME OM Code Requirements:

It states, in part, in ISTC-3510, "Exercising Test Frequency," that "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."

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

Alternative testing is requested for the following valves:

Table 2			
Valve ID	**System**	**Cat**	**Class**
1-B21-F008	Excess Flow Check Valve (EFCV)	C	2
1-B21-F014A	EFCV	C	1
1-B21-F014B	EFCV	C	1
1-B21-F014C	EFCV	C	1
1-B21-F014D	EFCV	C	1
1-B21-F014E	EFCV	C	1
1-B21-F014F	EFCV	C	1
1-B21-F014G	EFCV	C	1
1-B21-F014H	EFCV	C	1
1-B21-F014J	EFCV	C	1
1-B21-F014K	EFCV	C	1
1-B21-F014L	EFCV	C	1
1-B21-F014M	EFCV	C	1
1-B21-F014N	EFCV	C	1
1-B21-F014P	EFCV	C	1
1-B21-F014R	EFCV	C	1
1-B21-F014S	EFCV	C	1
1-B21-F040	EFCV	C	1
1-B21-F042A	EFCV	C	1
1-B21-F042B	EFCV	C	1
1-B21-F044A	EFCV	C	1
1-B21-F044B	EFCV	C	1
1-B21-F046A	EFCV	C	1
1-B21-F046B	EFCV	C	1
1-B21-F046A	EFCV	C	1
1-B21-F046B	EFCV	C	1
1-B21-F047C	EFCV	C	1
1-B21-F047D	EFCV	C	1
1-B21-F048A	EFCV	C	1
1-B21-F048B	EFCV	C	1
1-B21-F049C	EFCV	C	1
1-B21-F049D	EFCV	C	1
1-B21-F050A	EFCV	C	1
1-B21-F050B	EFCV	C	1
1-B21-F050C	EFCV	C	1
1-B21-F050D	EFCV	C	1
1-B21-F052A	EFCV	C	1
1-B21-F052B	EFCV	C	1
1-B21-F052C	EFCV	C	1
1-B21-F052D	EFCV	C	1
1-B21-F054	EFCV	C	1

Table 2			
Valve ID	**System**	**Cat**	**Class**
1-B21-F056	EFCV	C	1
1-B21-F058A	EFCV	C	1
1-B21-F058B	EFCV	C	1
1-B21-F058C	EFCV	C	1
1-B21-F058D	EFCV	C	1
1-B21-F058E	EFCV	C	1
1-B21-F058F	EFCV	C	1
1-B21-F058G	EFCV	C	1
1-B21-F058H	EFCV	C	1
1-B21-F058L	EFCV	C	1
1-B21-F058M	EFCV	C	1
1-B21-F058N	EFCV	C	1
1-B21-F058P	EFCV	C	1
1-B21-F058R	EFCV	C	1
1-B21-F058S	EFCV	C	1
1-B21-F058T	EFCV	C	1
1-B21-F058U	EFCV	C	1
1-B21-F060	EFCV	C	1
1-B21-IV-2149	EFCV	C	1
1-B21-IV-2196	EFCV	C	1
1-B21-IV-2455	EFCV	C	1
1-B21-IV-2456	EFCV	C	1
1-B32-F005A	EFCV	C	2
1-B32-F005B	EFCV	C	2
1-B32-F006A	EFCV	C	2
1-B32-F006B	EFCV	C	2
1-B32-F039A	EFCV	C	1
1-B32-F039B	EFCV	C	1
1-B32-F039C	EFCV	C	1
1-B32-F039D	EFCV	C	1
1-B32-F041A	EFCV	C	1
1-B32-F041B	EFCV	C	1
1-B32-F041C	EFCV	C	1
1-B32-F041D	EFCV	C	1
1-B32-F042A	EFCV	C	1
1-B32-F042B	EFCV	C	1
1-B32-F042C	EFCV	C	1
1-B32-F042D	EFCV	C	1
1-B32-F058A	EFCV	C	1
1-B32-F058B	EFCV	C	1
1-E21-F017A	EFCV	C	1
1-E21-F017B	EFCV	C	1
1-E41-F023A	EFCV	C	1
1-E41-F023B	EFCV	C	1
1-E41-F023C	EFCV	C	1
1-E41-F023D	EFCV	C	1
1-E51-F043A	EFCV	C	1

Table 2			
Valve ID	**System**	**Cat**	**Class**
1-E51-F043B	EFCV	C	1
1-E51-F043C	EFCV	C	1
1-E51-F043D	EFCV	C	1
2-B21-F008	EFCV	C	2
2-B21-F014A	EFCV	C	1
2-B21-F014B	EFCV	C	1
2-B21-F014C	EFCV	C	1
2-B21-F014D	EFCV	C	1
2-B21-F014E	EFCV	C	1
2-B21-F014F	EFCV	C	1
2-B21-F014G	EFCV	C	1
2-B21-F014H	EFCV	C	1
2-B21-F014J	EFCV	C	1
2-B21-F014K	EFCV	C	1
2-B21-F014L	EFCV	C	1
2-B21-F014M	EFCV	C	1
2-B21-F014N	EFCV	C	1
2-B21-F014P	EFCV	C	1
2-B21-F014R	EFCV	C	1
2-B21-F014S	EFCV	C	1
2-B21-F040	EFCV	C	1
2-B21-F042A	EFCV	C	1
2-B21-F042B	EFCV	C	1
2-B21-F044A	EFCV	C	1
2-B21-F044B	EFCV	C	1
2-B21-F046A	EFCV	C	1
2-B21-F046B	EFCV	C	1
2-B21-F046A	EFCV	C	1
2-B21-F046B	EFCV	C	1
2-B21-F047C	EFCV	C	1
2-B21-F047D	EFCV	C	1
2-B21-F048A	EFCV	C	1
2-B21-F048B	EFCV	C	1
2-B21-F049C	EFCV	C	1
2-B21-F049D	EFCV	C	1
2-B21-F050A	EFCV	C	1
2-B21-F050B	EFCV	C	1
2-B21-F050C	EFCV	C	1
2-B21-F050D	EFCV	C	1
2-B21-F052A	EFCV	C	1
2-B21-F052B	EFCV	C	1
2-B21-F052C	EFCV	C	1
2-B21-F052D	EFCV	C	1
2-B21-F054	EFCV	C	1
2-B21-F056	EFCV	C	1
2-B21-F058A	EFCV	C	1
2-B21-F058B	EFCV	C	1

Table 2			
Valve ID	**System**	**Cat**	**Class**
2-B21-F058C	EFCV	C	1
2-B21-F058D	EFCV	C	1
2-B21-F058E	EFCV	C	1
2-B21-F058F	EFCV	C	1
2-B21-F058G	EFCV	C	1
2-B21-F058H	EFCV	C	1
2-B21-F058L	EFCV	C	1
2-B21-F058M	EFCV	C	1
2-B21-F058N	EFCV	C	1
2-B21-F058P	EFCV	C	1
2-B21-F058R	EFCV	C	1
2-B21-F058S	EFCV	C	1
2-B21-F058T	EFCV	C	1
2-B21-F058U	EFCV	C	1
2-B21-F060	EFCV	C	1
2-B21-IV-2149	EFCV	C	1
2-B21-IV-2196	EFCV	C	1
2-B21-IV-2455	EFCV	C	1
2-B21-IV-2456	EFCV	C	1
2-B32-F005A	EFCV	C	2
2-B32-F005B	EFCV	C	2
2-B32-F006A	EFCV	C	2
2-B32-F006B	EFCV	C	2
2-B32-F039A	EFCV	C	1
2-B32-F039B	EFCV	C	1
2-B32-F039C	EFCV	C	1
2-B32-F039D	EFCV	C	1
2-B32-F041A	EFCV	C	1
2-B32-F041B	EFCV	C	1
2-B32-F041C	EFCV	C	1
2-B32-F041D	EFCV	C	1
2-B32-F042A	EFCV	C	1
2-B32-F042B	EFCV	C	1
2-B32-F042C	EFCV	C	1
2-B32-F042D	EFCV	C	1
2-B32-F058A	EFCV	C	1
2-B32-F058B	EFCV	C	1
2-E21-F017A	EFCV	C	1
2-E21-F017B	EFCV	C	1
2-E41-F023A	EFCV	C	1
2-E41-F023B	EFCV	C	1
2-E41-F023C	EFCV	C	1
2-E41-F023D	EFCV	C	1
2-E51-F043A	EFCV	C	1
2-E51-F043B	EFCV	C	1
2-E51-F043C	EFCV	C	1
2-E51-F043D	EFCV	C	1

The licensee states in part:

Reason for Request:

This alternative is a re-submittal of NRC-approved fourth Interval Relief Request VRR-04 that was based on the ASME OM Code-2001 Edition. This fifth Interval request for relief, VRR-03, is based on the ASME OM Code-2004 Edition with Addenda through OM-2006. There have been no substantive changes to this alternative, to the OM Code requirements, or to the basis for use, which would alter the previous NRC Safety Evaluation conclusions.

Because of the design of excess flow check valves, verifying their closure indication requires a simulated instrument line break. Based on the burden and costs associated with testing these excess flow check valves, Duke Energy is proposing to perform the exercise tests and valve position verification tests on a sampling basis (i.e., approximately an equal number of excess flow check valves every 24 months such that each excess flow check valve is tested at least once every 10 years).

Duke Energy has determined that alternative excess flow check valve testing will provide an acceptable level of quality and safety for the following reasons:

1) Excess flow check valves are a simple and reliable device. The major components are a poppet and spring. The spring holds the poppet open only under static conditions, such that the valve will close upon sufficient differential pressure across the poppet. Functional testing of the valve is accomplished by venting the instrument side of the tube. The resultant increase in flow imposes a differential pressure across the poppet, which compresses the spring and decreases flow through the valve.

2) The Boiling Water Reactor Owners' Group (BWROG) has developed a basis, documented in Topical Report B21-00658-01, *Excess Flow Check Valve Testing Frequency Relaxation*, dated November 1998, for reducing the excess flow check valve testing frequency. This report was initially submitted to the NRC as part of a Duane Arnold Energy Center proposed license amendment on April 12, 1999. The BWROG report was supplemented by BWROG letter dated January 6, 2000, *Generic Response to NRC Request for Additional Information on Lead Plant Technical Specification Change Request Regarding Excess Flow Check Valve Surveillance Requirements*. The report was approved for use by an NRC Safety Evaluation dated March 14, 2000. Additionally, issues raised by the NRC in the March 14, 2000, Safety Evaluation were addressed in the issuance of General Electric [GE] Topical Report NEDO-32977-A (i.e., BWROG Topical Report B21-00658-01), *Excess Flow Check Valve Testing Relaxation*, dated June 2000.

The BWROG topical report concluded that the change in excess flow check valve test frequency has an insignificant impact on excess flow check valve reliability. The topical report evaluated the reliability of excess flow check valves at various boiling water reactor plants, including BSEP, based on information covering a 10-year period. Industry experience with excess flow check valves indicate that they have very low failure rates. A large portion of the reported test failures at other plants was related to test methodologies and not actual valve failures.

On October 4, 2001, the NRC issued License Amendments 215 and 242 for BSEP Units 1 and 2, respectively, revising the BSEP Technical Specifications to incorporate excess flow check valve testing requirements consistent with [Technical Specification Task Force Traveler] TSTF-334.

Excess flow check valves have been extremely reliable throughout the industry.

An orifice is installed on each of the affected instrument lines. The orifice limits leakage to a quantity where the integrity and functional performance of secondary containment and the associated safety systems are maintained. The process fluid loss for a postulated rupture of an instrument line is within the capability of the reactor coolant makeup systems.

The reduced testing associated with the alternative will result in an increase in the availability of the associated instrumentation during plant refueling outages. The reduced testing associated with the alternative will also reduce occupational radiological exposure.

Proposed Alternative

Duke Energy proposes to test a representative sample of excess flow check valves consisting of an approximately equal number of excess flow check valves every 24 months, such that each excess flow check valve will be tested at least once every 10 years. In addition, Duke Energy proposes to verify the open position indication at a frequency more often than what the ASME Code requires, but verify the close position indication in conjunction with excess flow check valve exercise tests.

The proposed alternative will be used for the entire Fifth 10--year interval which begins November 1, 2017, and ends October 31, 2027.

3.3.2 NRC Staff Evaluation

Excess flow check valves (EFCVs) are installed on instrument lines to limit the release of fluid in the event of an instrument line break. Examples of EFCV installations include: reactor pressure vessel level and pressure instrumentation, main steam line flow instrumentation, recirculation pump suction pressure, and high-pressure coolant injection/reactor core isolation coolant instrumentation. EFCVs are not required to close in response to a containment isolation signal and are not required to operate under post-loss-of-coolant accident conditions.

EFCVs are required to be tested in accordance ASME OM Code ISTC-3510, which states, in part, that "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months." The licensee has proposed an alternative to the required test interval. The proposed change revises the surveillance frequency by allowing a "representative sample" of EFCVs to be tested every 24 months. The "representative sample" is based on an approximately equal number of EFCVs being tested such that each valve is tested at least once every 10 years. As noted in the licensee's proposal, this alternative is a re-submittal of a previous NRC-approved request for the Fourth IST interval (ADAMS Accession No. ML081130002) and the same request made for the Third interval (ADAMS Accession No. ML012830504). There have been no substantive changes to the alternative or the basis for use.

The licensee's justification for the Relief Request is based on GE Topical Report NEDO-32977-A "Excess Flow Check Valve Testing Relaxation" dated June 2000. The topical report provided: (1) an estimate of steam release frequency (into the reactor building) due to a break in an instrument line concurrent with an EFCV failure to close, (2) and assessment of the radiological consequences of such a release. The NRC staff reviewed the GE topical report and issued its evaluation on March 14, 2000 (ADAMS Accession No. ML003691722). In its evaluation, the NRC staff found that the test interval could be extended up to a maximum of 10 years. In conjunction with this finding, the NRC staff noted that each licensee that adopts the relaxed test interval program for EFCVs must have a failure feedback mechanism and corrective action program to ensure EFCV performance continues to be bounded by the topical report results. Also, each licensee is required to perform a plant-specific radiological dose assessment, EFCV failure analysis, and release frequency analysis to confirm that they are bounded by the generic analyses of the topical report.

The staff reviewed the licensee's current proposal and previous alternative requests for its applicability to GE Topical Report NEDO-32977-A and conformance with the NRC staff's guidance regarding radiological dose assessment, EFCV failure rate, release frequency, and the proposed failure feedback mechanism and corrective action program. Based on its review, the staff concludes that the radiological consequences of an EFCV failure are sufficiently low and acceptable, and that the alternative testing in conjunction with the corrective action plan provides a high degree of valve reliability and operability. Additionally, an orifice is installed upstream of the EFCVs to limit process water leakage in the event of rupture. The orifice limits leakage to a level where the integrity and functional performance of secondary containment and associated safety systems are maintained. Therefore, the staff finds that the licensee's proposed test alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternatives described in alternative requests VRR-01 and VRR-03 provides an acceptable level of quality and safety for components listed in Tables 1 and 2. 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).

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

Therefore, the NRC staff authorizes the proposed alternatives in VRR-01 and VRR-03 for the Fifth 10-Year IST interval at Brunswick Units 1 and 2 that is currently scheduled to begin on November 1, 2017, and end on October 31, 2027.

Principle Contributor: Michael Farnan

Date: June 16, 2017

SUBJECT: BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2 – RELIEF FROM THE REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS CODE FOR OPERATION AND MAINTENANCE FOR INSERVICE TESTING PROGRAM, FIFTH 10-YEAR INTERVAL (RELIEF REQUESTS VRR-01 AND VRR-03) (CAC NOS. MF8938 AND MF8939) DATED JUNE 16, 2017

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