



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

February 28, 2018

Mr. Thomas D. Ray  
Vice President  
McGuire Nuclear Station  
Duke Energy Carolinas, LLC  
12700 Hagers Ferry Road  
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION, UNIT 2 – PROPOSED RELIEF REQUEST  
MC-SRV-NS-02, ALTERNATE TO PERFORMING INSERVICE TESTING ON  
CONTAINMENT NARROW RANGE PRESSURE INSIDE ISOLATION VALVE  
2NSSV5550 (EPID NO. L-2018-LLR-0005)

Dear Mr. Ray:

By letter dated February 21, 2018 (Agencywide Documents Access and Management System Accession No. ML18058A740), Duke Energy Carolinas, LLC (Duke Energy) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) requirements at McGuire Nuclear Station (McGuire), Unit 2.

The licensee requested an alternative test plan in lieu of certain inservice testing (IST) requirements of the 2004 Edition through 2006 Addenda of the ASME OM Code for the IST program at McGuire, Unit 2 during the fourth 10-year IST program interval. The requested alternative is related to testing for Containment Narrow Range Pressure Inside Isolation Valve, 2NSSV5550.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2), the licensee requested to use an alternative on the basis that complying with the specified requirement would result in hardship due to personnel safety and ALARA (As Low As Reasonably Achievable) considerations.

As set forth above, the NRC staff determined that the proposed alternative provides reasonable assurance that valve 2NSSV5550 is 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. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(z)(2). Therefore, the NRC staff authorizes the McGuire, Unit 2 proposed alternative request until valve 2NSSV5550 is repaired during the next McGuire, Unit 2 refueling outage, M2R25, which is scheduled to begin on September 15, 2018.

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

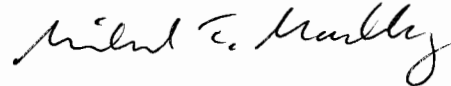
T. D. Ray

- 2 -

The details of the NRC review are provided in the enclosed safety evaluation.

If you have any questions, please contact the Project Manager, Michael Mahoney at 301-415-3867 or via e-mail at [Michael.Mahoney@nrc.gov](mailto:Michael.Mahoney@nrc.gov).

Sincerely,

A handwritten signature in cursive script, appearing to read "Michael T. Markley".

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

Docket No. 50-370

Enclosure:  
Safety Evaluation

cc w/encl: ListServ



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
ALTERNATIVE REQUEST MC-SRV-NS-02 RELATED TO INSERVICE TESTING ON  
CONTAINMENT NARROW RANGE PRESSURE INSIDE ISOLATION VALVE 2NSSV5550  
DUKE ENERGY CAROLINAS, LLC  
MCGUIRE NUCLEAR STATION, UNIT 2  
DOCKET NUMBER 50-370

## 1.0 INTRODUCTION

By letter dated February 21, 2018 (Agencywide Documents Access and Management System Accession No. ML18058A740), Duke Energy Carolinas, LLC (Duke Energy) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) requirements at McGuire Nuclear Station (McGuire), Unit 2.

The licensee requested an alternative test plan in lieu of certain inservice testing (IST) requirements of the 2004 Edition through 2006 Addenda of the ASME OM Code for the IST program at McGuire, Unit 2 during the fourth 10-year IST program interval. The requested alternative is related to testing for Containment Narrow Range Pressure Inside Isolation Valve, 2NSSV5550.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2), the licensee requested to use an alternative on the basis that complying with the specified requirement would result in hardship due to personnel safety and ALARA (As Low As Reasonably Achievable) considerations.

## 2.0 REGULATORY EVALUATION

Paragraph 10 CFR 50.55a(f), "Inservice Testing Requirements," requires, in part, that 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 pursuant to paragraphs 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

In proposing alternatives, a licensee must demonstrate that the proposed alternatives provide an acceptable level of quality and safety (10 CFR 50.55a(z)(1) or compliance 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

#### 3.1.1 Licensee's Alternative Request MC-SRV-NS-02

ASME OM Code Requirements (as stated by the licensee):

Quarterly valve stroke time (VST) testing in closed direction [ASME Omb-2006, section ISTC-5150]; Two year position verification testing [ASME Omb-2006, section ISTC-3700].

ASME Code Components Affected:

Alternative testing is requested for the following McGuire, Unit 2 component:

Valve ID	Description	Category	Class
2NSSV5550	Containment Narrow Range Pressure Inside Isolation	A	2

Component Function (as stated by the licensee)

2NSSV5550 is a normally open fast acting solenoid valve located on the impulse line for the narrow range containment pressure transmitter. The valve serves as the inside containment isolation valve for containment penetration 2M402A and closes on a containment isolation signal. 2NSSV5550 is located in the 2D cold leg accumulator room inside the Unit 2 reactor building.

Reason for Request (as stated by the licensee)

Nuclear Condition Report (NCR) 02184928 was initiated by Operations on February 15, 2018. The NCR identifies an issue with not being able to obtain a valid VST [valve stroke time] for 2NSSV5550 during normal quarterly surveillance test on February 15, 2018. The VST procedure utilizes the plant Operator Aid Computer (OAC) for indication signal timing from open to closed. It was determined that the OAC indication shows the valve position to be intermediate when the main control board shows correct valve position.

Erratic OAC indication began in October 2015 following 2NSSV5550 coil replacement with periods of correct indication. Repair of 2NSSV5550 OAC indication was attempted on February 6, 2018, per Work Order 20025829. Technicians were able to obtain correct OAC indication momentarily by making adjustments to the solenoid valve reed switches; however, proper OAC indication could not be sustained as the solenoid valve cover was reinstalled and torqued. Due to the component location, technicians were allotted a one

hour stay time due to heat stress (with ice vest) and ALARA [As Low As Reasonably Achievable] considerations. Technicians exited the building without making repeated adjustments to fine-tune the solenoid valve reed switches.

Repair of 2NSSV5550 OAC indication would require an extended amount of time at the solenoid valve to make required reed switch adjustments. Due to hardship created by personnel safety and ALARA considerations, McGuire proposes repair during the next Unit 2 refueling outage M2R25 scheduled to begin on September 15, 2018.

#### Proposed Alternative and Basis for Use (as stated by the licensee)

As an alternative to performing 2NSSV5550 quarterly VST testing [ITSC-5150] and two year position indication testing [ISTC-3700], McGuire is requesting to suspend VST and position indication testing until M2R25 repairs are complete as discussed in Section 7. 2NSSV5550 can still be exercised tested quarterly in accordance with ISTC-3510. In the event of a containment isolation signal, reasonable assurance of valve closure and containment isolation is demonstrated through previous testing (VST and Appendix J) and local observation of valve position as indicated on the control room main control board. Based on available data, McGuire considers deferral of the proposed testing for the requested duration to be low risk without compromising quality and safety.

#### Duration of Proposed Alternative (as stated by the licensee)

This relief request is only intended to permit McGuire Unit 2 operation for a limited period of time, not to exceed restart from the next Unit 2 refueling outage M2R25. Work Order 0025829 will complete necessary OAC indication repairs during M2R25, which is scheduled to begin on September 15, 2018. Following the refueling outage, McGuire will resume inservice testing of 2NSSV5550 per applicable ASME OM Code requirements.

#### 3.1.2 NRC Staff Evaluation

The ASME OM Code requirement ISTC-3510 requires that active Category A and B valves be exercised nominally every three months. In addition, the ASME OM Code ISTC-5151(a) specifies that active valves shall have their stroke time measured in accordance with section ISTC-3500.

In the proposed alternative, the licensee had also requested relief from ASME OM Code paragraph ISTC-3700 "Position Verification Testing" of valve 2NSSV5550. This requirement states in part that "Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated." This test was last performed April 16, 2017. Valve 2NSSV5550 is scheduled to be repaired prior to the next required performance of ISTC-3700, so relief is not required.

The licensee had been exercise testing solenoid valve 2NSSV5550 quarterly. 2NSSV5550 is equipped with two sets of valve position indicator reed switches. One pair feeds the valve remote position indication located on the main control board and the other set of reed switches feed the Operator Aid Computer (OAC). The set of computer input switches are used to accurately time the fast acting solenoid valve. Accurate timing of the solenoid valve is important for trending component degradation. The VST performance history has been excellent and consistent with a stroke time range between 0.1 and 0.4 seconds.

The below table, from the licensee's February 21, 2018 letter, summarizes recent VST results for valve 2NSSV550:

VST Surveillance Date	Results (seconds)	Percent of Allowable (%)
2/15/16	0.4	20
5/19/16	0.2	10
8/18/16	0.1	5
11/10/16	0.3	15
2/16/17	0.1	5
4/15/17	0.1	5
5/18/17	0.2	10
8/18/17	0.1	5
11/16/17	0.1	5

The licensee stated that performance of the set of reed switches that feed the OAC have recently become erratic while the other pair of switches feeding main control room indication have operated normally. Due to the erratic performance of the remote position indicator reed switches that feed the OAC, the licensee attempted to repair 2NSSV5550. The location of 2NSSV5550 is in the reactor building where technicians were limited in their stay time for repair due to heat stress conditions and ALARA considerations during full-power operations. The repair attempt was unsuccessful. However, technicians were able to obtain correct OAC indication momentarily by making adjustments to the solenoid valve reed switches, but indication could not be sustained as the valve cover was reinstalled. Continued attempts to repair represents a hardship or unusual difficulty without a compensating increase in the level of quality or safety. Effective repair of 2NSSV5550 would require an additional extended amount of time.

While the reed switches feeding the OAC are unreliable, the pair of contacts feeding the main control board valve position indication are stable. In the event of a containment isolation signal, reasonable assurance of valve closure and containment isolation is demonstrated through previous valve stroke time (VST) test results and local observation of valve position as indicated on the main control board.

The licensee proposes to maintain exercising valve 2NSSV5550 quarterly in accordance with ISTC-3510 and monitoring valve position in accordance with main control room remote indicators. The quarterly exercise will be performed until final repairs on valve 2NSSV5550 can be completed during the next McGuire, Unit 2 refueling outage, M2R25, scheduled to start on September 15, 2018. The NRC staff finds that the proposed alternative provides reasonable assurance that the components are operationally ready and is, therefore, acceptable.

#### 4.0 CONCLUSION

The NRC staff has concluded that the proposed alternative provides reasonable assurance that Containment Narrow Range Pressure Inside Isolation Valve, 2NSSV5550 is 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. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(z)(2).

Therefore, the NRC staff authorizes the McGuire, Unit 2 proposed alternative request until valve

2NSSV5550 is repaired during the next McGuire, Unit 2 refueling outage, M2R25, which is scheduled to begin on September 15, 2018.

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

Principal Contributor: M. Farnan, NRR

Date: February 28, 2018

MCGUIRE NUCLEAR STATION, UNIT 2 – PROPOSED RELIEF REQUEST MC-SRV-NS-02,  
ALTERNATE TO PERFORMING INSERVICE TESTING ON CONTAINMENT NARROW  
RANGE PRESSURE INSIDE ISOLATION VALVE 2NSSV5550 (EPID NO. L-2018-LLR-0005)  
DATED: FEBRUARY 28, 2018

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**ADAMS Accession No. ML18058A133**

\*safety evaluation via e-mail

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