



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

October 20, 2016

Mr. Steven D. Capps
Vice President
McGuire Nuclear Station
Duke Energy Carolinas, LLC
12700 Hagers Ferry Road
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION, UNIT 2 – RELIEF REQUEST MC-SRV-NC-01
REGARDING ALTERNATE TESTING FOR PRESSURIZER POWER
OPERATED RELIEF VALVE BLOCK VALVES INSERVICE TESTING
(CAC NO. MF8416)

Dear Mr. Capps:

By letter dated September 29, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16274A066), Duke Energy Carolinas, LLC (the licensee) submitted Relief Request MC-SRV-NC-01 regarding alternate testing for pressurizer power operated relief valve block valves inservice testing (IST). 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 the McGuire Nuclear Station (MNS), Unit 2, during the fourth 10-year IST program interval. The licensee requested relief pursuant to Title 10 of the *Code of Federal Regulations* 50.55a(z)(2). The request was made on the basis that compliance with the specified ASME requirements would result in hardship or unusual difficulty, without a compensating increase in the level of quality and safety at MNS, Unit 2.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, it is acceptable to maintain the valve current configuration with Valve 2NC-35B in its closed position and Valve 2NC-33A in the open back seated position, with power on and capable of isolating on an automatic close signal configuration maintained, until maintenance can be performed at the next refueling outage. Therefore, the NRC staff authorizes the proposed alternative in Relief Request MC-SRV-NC-01, for MNS, Unit 2, until the next refueling outage, which is scheduled to begin on March 30, 2017.

During a telephone call on October 13, 2016, your staff confirmed that an evaluation was performed using the Surveillance Frequency Control Program (SFCP), and the results met the criteria in Nuclear Energy Institute (NEI) 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies, Industry Guidance Document," April 2007 (ADAMS Accession No. ML071360456), such that an associated license amendment for this relief request was not needed. By electronic mail dated October 18, 2016 (ADAMS Package Accession No. ML16294A119), the licensee provided additional information concerning the SFCP and valve testing. This matter is being referred to NRC Region II for followup via the inspection program.

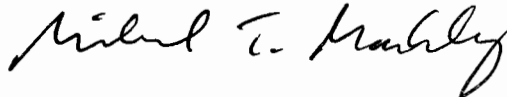
S. Capps

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All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject relief request remain applicable, including the third party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact the project managers, V. Sreenivas at 301-415-2597 or V.Sreenivas@nrc.gov, or G. Edward Miller at 301-415-2481 or Ed.Miller@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael T. Markley". The signature is fluid and cursive, with the first name "Michael" and last name "Markley" clearly distinguishable.

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/enclosure: Distribution via Listserv



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELIEF REQUEST MC-SRV-NC-01 RELATED TO ALTERNATIVE TESTING FOR
PRESSURIZER POWER OPERATED RELIEF VALVE BLOCK VALVES
INSERVICE TESTING PROGRAM FOURTH 10-YEAR INTERVAL
DUKE ENERGY CAROLINAS, LLC
MCGUIRE NUCLEAR STATION, UNIT 2
DOCKET NO. 50-370

1.0 INTRODUCTION

By letter dated September 29, 2016 (Agencywide Documents Access and Management System Accession No. ML16274A066), Duke Energy Carolinas, LLC (the licensee), submitted proposed Relief Request MC-SRV-NC-01 to the U.S. Nuclear Regulatory Commission (NRC or the Commission). The licensee requested an alternative test plan 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 IST program at the McGuire Nuclear Station (MNS), Unit 2, during the fourth 10-year IST program interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(2), the licensee requested to use proposed alternatives, since complying with the current ASME OM Code requirements would result in hardship or unusual difficulty, without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f), "Inservice testing requirements," require, 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 paragraph 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

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

Enclosure

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 Relief Request MC-SRV-NC-01

ASME OM Code Requirements

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

Alternative testing is requested for the following valves:

Table 1			
Valve ID	System	Cat	Class
2NC-33A	Pressurizer Block Valve	B	1
2NC-35B	Pressurizer Block Valve	B	1

In its letter dated September 29, 2016, the licensee stated the following:

Reason for Request:

Nuclear Condition Report (NCR) 02043441 was initiated by systems engineering due to an increase in identified reactor coolant system (RCS) leakage during performance of RCS system leakage calculation on July 4, 2016. Subsequent calculations yielded repeatable results at or near 0.148 GPM [gallons per minute], a significant change from previous results of approximately 0.038 GPM. Technical Specification (TS) 3.4.13 limits RCS identified leakage to a maximum of 10 GPM. Initial troubleshooting identified 2NC-33A packing leakage as the source of RCS leakage. Following additional troubleshooting of all Unit 2 pressurizer PORV [power operated relief valve] block valves, NCR 02048025 identified 2NC-35B as a source of RCS identified leakage due to high temperatures observed on the valve packing leak off line.

Stroking the valves can create a hardship as further packing degradation may result, reducing operational RCS leakage margin. Current RCS leakage values are stable with 2NC-33A administratively open on backseat and 2NC-35B administratively closed. Both valves remain operable with emergency power available. Based on current plant conditions and as described in the proposed alternative basis, the licensee is requesting relief from ASME Code quarterly valve surveillances to prevent quarterly valve cycles until valve repair can be made during the next Unit 2 refueling outage (2EOC24).

Repair of 2NC-33A and 2NC-35B would require entry into containment and RCS depressurization for isolation purposes. Personal safety and ALARA [as low as reasonably achievable] practices are maximized during a scheduled refueling outage. Additionally, maneuvering the reactor to a mode outside of TS applicability and depressurizing the RCS involves inherent risk and increases nuclear safety risk due to cycling plant equipment.

Proposed Alternative and Basis for Use:

As an alternative to performing quarterly surveillance testing on 2NC-33A and 2NC-35B, the licensee is requesting to perform exercise and valve stroke timing testing during cold shutdown. In the event of PORV block valve packing leakage, stroking the respective valve creates a hardship because of the increased potential for packing leakage. Increased leakage reduces the margin for acceptable reactor coolant system identified leakage (Reference TS 3.4.13, Operational Leakage). If RCS identified leakage exceeds its allowable limit, the required action is plant shutdown. For non-leaking PORV block valves, the valves will continue to be stroked quarterly per applicable ASME code requirements.

As stated in Section 5, to control stem packing leakage on 2NC-33A, the licensee manually positioned the valve open on backseat with power available. Operational valve stroke timing testing was conducted from the open backseat configuration and re-opened the valve with satisfactory results. This testing demonstrates the valve is fully operational ready in the current configuration. Continued stroking of 2NC-33A represents a hardship with respect to manually positioning the valve on backseat following each quarterly exercise and valve stroke timing test.

When the valves are closed due to valve packing leakage, the valve is administratively maintained closed with power available. If required to be opened to perform its intended safety function, the valve is opened by the control room operator. Opening the valve with a packing leak during normal plant operation may cause further stem packing damage, resulting in increased RCS leakage.

When the valves are open due to valve packing leakage, the valve is administratively maintained open with the valve stem on backseat with power available. If required to be closed to perform its intended safety function, the valve is closed by the control room operator. Closing the valve with a packing leak during normal plant operation may cause further stem packing damage, resulting in increased RCS leakage.

The subject valves have established preventative maintenance activities. The valves have maintained consistent performance with no adverse trends or abnormalities noted during Motor Operated Valve diagnostic testing. The valve actuator general and lubrication condition is of sufficient quality to support continued reliability with the relief of quarterly exercise and stroke timing activities until scheduled repairs in 2EOC24.

IST performance history of McGuire Unit 2 PORV block valves has been excellent with no valve stroke timing or position indication testing failures from reviewed data January 1, 2009 to present. 2NC-33A and 2NC-35B valve stroke timing performance (open and closed directions) has been consistently between 5.5 and 6.5 seconds, demonstrating acceptable margin to the maximum limit of 10 seconds.

Duration of Proposed Alternative:

This condition is only intended to permit McGuire Unit 2 operation for a limited period of time not to exceed restart from the next refueling outage. 2NC-33A and 2NC-35B repair is planned for the next McGuire Unit 2 refueling outage 2EOC24 scheduled to begin on March 30, 2017. Following the refueling outage, the licensee will resume quarterly testing of 2NC-33A and 2NC-35B per applicable ASME Code requirements.

3.1.2 NRC Staff Evaluation

ASME OM Code requirement ISTC-3510 requires that active Category A and B valves be exercised nominally every 3 months. In addition, the ASME OM Code specifies that if the exercise tests are not practicable to perform during power operation, the test may be deferred to either cold shutdowns or refueling outages.

The licensee stated that it has been exercise testing the valves noted in Table 1 above nominally every 3 months and that IST performance history has been excellent with no issues. Recently, there has been a noted increase in RCS leakage due to faulty packing of the pressurizer block Valves 2NC-33A and 2NC35B. Continued operation of the faulty valves in the normally open position could challenge TS RCS operational leakage limit of 10 gallons per minute (gpm) for identified leakage. To avoid an unnecessary RCS depressurization, 2NC-33A was back-seated to seal off the packing area, operationally tested from this configuration, and re-seated into the back seat. Valve 2NC-35B was placed into the closed position. RCS leakage was confirmed to return to acceptable levels. Continuation with the quarterly exercise stroke testing could result in an increase in packing degradation and lead to a plant shutdown. The NRC staff concludes that this would constitute a hardship or unusual difficulty, without a compensating increase in the level of quality or safety.

The licensee proposes to maintain the valve current configuration with Valve 2NC-35B in its closed position and Valve 2NC-33A in the open back seated position, with power on and capable of isolating on an automatic close signal. This configuration will be maintained until maintenance can be performed at the next refueling outage currently scheduled for spring of 2017. The NRC staff concludes that the proposed alternative provides reasonable assurance that the components are operationally ready.

4.0 CONCLUSION

As set forth above, the NRC staff determined that the proposed alternatives provide reasonable assurance that the affected components are operationally ready. 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).

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

Therefore, the NRC staff authorizes MSN, Unit 2, Relief Request MC-SRV-NC-01 alternative until the valves in Table 1 above are repaired during the next refueling outage, which is currently scheduled to begin March 30, 2017.

Principal Contributor: M. Farnan

Dated: October 20, 2016

S. Capps

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All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject relief request remain applicable, including the third party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact the project managers, V. Sreenivas at 301-415-2597 or V.Sreenivas@nrc.gov, or G. Edward Miller at 301-415-2481 or Ed.Miller@nrc.gov.

Sincerely,

/RA/

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

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***safety evaluation input**

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DATE	10/20/16	10/20/16	10/01/16	10/20/16	10/20/16

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