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10 CFR 50.55a

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Subject: Duke Energy Carolinas, LLC (Duke Energy)  
McGuire Nuclear Station, Unit 2  
Docket No. 50-370  
Relief Request MC-SRV-NC-01  
Pressurizer Power Operated Relief Valve (PORV) Block Valve Inservice Testing

Pursuant to 10 CFR 50.55a(z)(2), Duke Energy hereby requests U.S. Nuclear Regulatory Commission's approval of alternative testing for two PORV Block Valves, 2NC-33A and 2NC-35B. These valves have packing leakage, and stroking them quarterly creates a hardship without a compensating increase in quality and safety as described in the attached relief request.

The next quarterly testing for 2NC-35B is due October 31, 2016. Duke Energy requests NRC's approval of this relief request prior to this due date.

If you have any questions or require additional information, please contact P.T. Vu of Regulatory Affairs at (980) 875-4302.

Sincerely,

Steven D. Capps

Attachment

Sept. 29, 2016  
Designate as original  
copy  
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MNS Master File MC-801.01 (MG02DM)  
ELL (EC02ZF)

ATTACHMENT

## McGuire Nuclear Station Unit 2 - Specific Valve Relief Request MC-SRV-NC-01

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(2)  
-- Hardship without a compensating increase in quality and safety --

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**1. ASME Code Component(s) Affected:**

Pressurizer Power Operated Relief Valve (PORV) Block Valves 2NC-33A, 2NC-35B.

**2. Component Function:**

The pressurizer PORV Block Valves are normally open motor-operated gate valves located on the pressurizer steam space. To perform their design safety functions, the subject valves must provide isolation in the case of a leaking or stuck open PORV and must open to vent the pressurizer during a steam generator tube rupture event. Manual operator action is credited for valve actuation in both the closed and open directions. These valves do not receive an automatic actuation signal. These valves are interlocked to prevent more than one valve being closed at a time.

**3. Applicable Code Edition and Addenda:**

ASME OM Code 2004 through 2006 Addenda.

**4. Applicable Code Requirement:**

Quarterly exercise testing [ASME OMB-2006, section ISTC-3510]; Quarterly valve stroke time testing open and closed directions [ASME OMB-2006, section ISTC-5113]. Two year position verification testing [ASME OMB-2006, section ISTC-3700]. Note the two year position indication verification testing does not apply to this relief request.

**5. 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, 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 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. Personnel safety and ALARA 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.

#### **6. 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.

**7. 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.

**8. References:**

- a) Duke Energy, McGuire Nuclear Station ASME Inservice Testing Program Revision 28, dated March 1, 2013
- b) NEI white paper "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a" Revision 1 dated June 7, 2004.
- c) Duke Energy fleet procedure AD-EG-ALL-1720 "Inservice Testing (IST) Program Implementation" Revision 01 dated April 20, 2016.
- d) Technical Specification Surveillance Requirement 3.4.11.1
- e) Technical Specification 3.4.13 RCS Operational LEAKAGE
- f) NCR 02043441 Elevated Unit 2 Identified Leakage
- g) NCR 02048025 2NC-35B identified as likely source of Unit 2 ID Leakage
- h) McGuire Flow Diagram MCFD-2553-2.0 Revision 9 NC (Reactor Coolant) System
- i) MCTC-1553-NC.V002-01 Revision 01 Test Acceptance Criteria for Pressurizer PORV Block Valves 1/2NC-31B, -33A and -35B.
- j) MCS-1553.NC-00-0001 Revision 32 Design Basis Specification for the NC System
- k) WO 20097096: 2NC-33A Repack Valve
- l) WO 20099545: 2NC 35B Investigate/Repair Packing