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RA-19-0310

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10 CFR 50.55a

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

Subject: Duke Energy Carolinas, LLC (Duke Energy)  
McGuire Nuclear Station, Unit No. 2  
Renewed Facility Operating License NPF-17  
Docket No. 50-370  
Relief Request MC-SRV-NC-03  
Proposed Alternative in Accordance with 10 CFR 50.55a(z)(2) for Pressurizer  
Power-Operated Relief Valve (PORV) Block Valve 2NC-35B 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 Pressurizer PORV Block Valve 2NC-35B. This valve has packing leakage, and stroking the valve 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 September 10, 2019. The last date for the surveillance, including the 23-day grace period in accordance with ASME Code Case OMN-20, *Inservice Test Frequency*, is October 3, 2019. Duke Energy requests NRC's approval of this relief request no later than September 30, 2019.

If you have any questions or require additional information, please contact Mr. James Smith, Manager – Nuclear Support Services, at (980) 875-5477.

Sincerely,

Thomas D. Ray, P.E.  
Site Vice President  
McGuire Nuclear Station

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Enclosure: Specific Valve Relief Request MC-SRV-NC-03

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McGuire Nuclear Station Unit 2 - Specific Valve Relief Request MC-SRV-NC-03

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 Valve 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. There is a total of three PORV block valves (single A train and two B train) directly upstream of their respective PORVs. These valves do not receive an automatic actuation signal. These valves are interlocked to prevent more than one valve from closing 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-5121]. 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) 02275540 was initiated by Engineering on June 4, 2019 due to an increasing trend in identified reactor coolant system (RCS) leakage between May 27, 2019 and June 9, 2019. The May 27, 2019 corrected identified RCS leakage value was 0.055 GPM and gradually increased to 0.23 GPM by June 9, 2019. Technical Specification (TS) 3.4.13 limits RCS identified leakage to a maximum of 10 GPM. A containment entry was made on June 8, 2019 to investigate the source of identified RCS leakage. The investigation determined the leakage source to be from the common PORV block valve stem leak off line. A troubleshooting plan was developed and 2NC-35B was stroked closed on June 10, 2019 resulting in a significant decrease in RCS identified leakage. From June 10, 2019 to June 18, 2019, RCS identified leakage remained low with 2NC-35B in the closed position as shown in Figure 1.

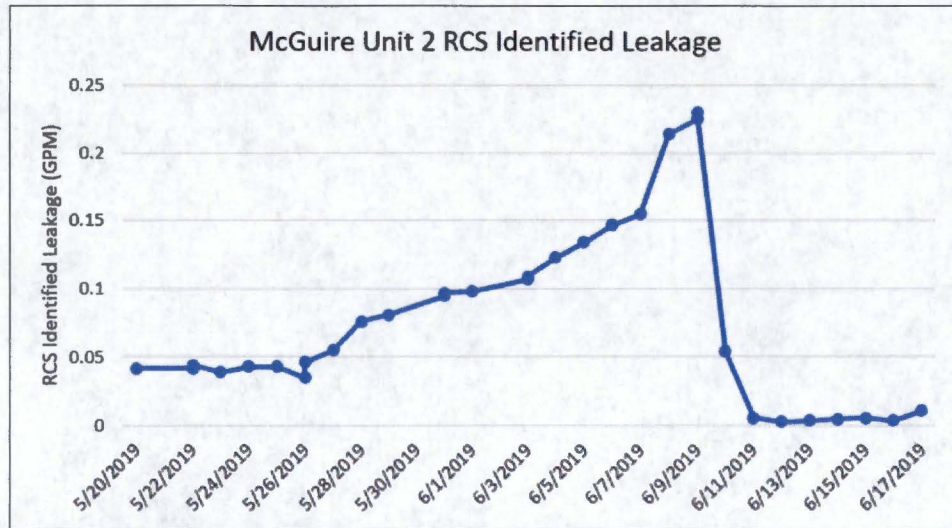


Figure 1: McGuire Unit 2 RCS Identified Leakage

Stroking 2NC-35B can create a hardship as further packing degradation may result, reducing operational RCS leakage margin. Current RCS leakage values are stable with 2NC-35B closed and the remaining two PORV block valves 2NC-31B and 2NC-33A open. 2NC-35B remains operable with emergency power available. Based on current plant conditions and as described in the proposed alternative basis, Duke Energy 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, which is currently scheduled to begin on March 21, 2020.

Repair of 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-35B, Duke Energy is requesting to defer exercise and valve stroke timing testing for the remainder of the current Unit 2 fuel cycle. 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. All other PORV block valves will continue to be stroked quarterly per applicable ASME code requirements.

As stated in Section 5, to control stem packing leakage on 2NC-35B, the valve was manually closed, with emergency power available. Operational valve stroke timing testing was conducted on June 10, 2019 in both the closed and open directions with satisfactory results. This testing demonstrates the valve is fully operationally ready to open in the current configuration.

When the valve is closed due to valve packing leakage, the valve is administratively maintained closed with emergency 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.

PORV block 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.

Inservice Testing (IST) performance history of McGuire Unit 1 and 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-35B valve stroke timing performance (open and closed directions) has been consistently between 5.5 and 6.0 seconds, demonstrating acceptable margin to the maximum limit of 10 seconds.

This relief request is similar to relief request MC-SRV-NC-02 for PORV block valve 2NC-31B that was approved by the NRC on January 17, 2017 (i.e., Reference 8.k).

#### **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-35B repair is planned for the next McGuire Unit 2 refueling outage M2R26 scheduled to begin on March 21, 2020. Following the refueling outage, Duke Energy will resume quarterly testing of 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 04 dated October 17, 2018.
- d) Technical Specification Surveillance Requirement 3.4.11.1
- e) Technical Specification 3.4.13 RCS Operational LEAKAGE
- f) NCR 02275540 Elevated Unit 2 Reactor Coolant System Identified Leakage
- g) McGuire Flow Diagram MCFD-2553-2.0 NC (Reactor Coolant) System
- h) MCTC-1553-NC.V002-01 Revision 01 Test Acceptance Criteria for Pressurizer PORV Block Valves 1/2NC-31B, -33A and -35B.
- i) MCS-1553.NC-00-0001 Revision 35 Design Basis Specification for the NC System
- j) WO 20332860: Investigate/Repair Elevated Stem Leakoff from 2NC-35B
- k) McGuire Relief Request MC-SRV-NC-02, dated December 1, 2016 (ADAMS ML16349A620), and NRC SE, dated January 17, 2017 (ADAMS ML16358A696).