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Serial: RA-22-0238
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10 CFR 50.55a

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

MCGUIRE NUCLEAR STATION, UNIT NO.2
DOCKET NO. 50-370 / RENEWED LICENSE NUMBER NPF-17

SUBJECT: Relief Requested in Accordance with 10 CFR 50.55a(z)(2) for Pressurizer Power Operated Relief Valve (PORV) Block Valve 2NC-31B Inservice Testing

Pursuant to 10 CFR 50.55a(z)(2), Duke Energy Carolinas, LLC (Duke Energy) hereby requests U.S. Nuclear Regulatory Commission (NRC) approval of alternative testing for Pressurizer PORV Block Valve 2NC-31B. This valve has packing leakage, and stroking the valve quarterly in accordance with the inservice testing (IST) program requirements creates a hardship without a compensating increase in quality and safety, as described in the attached relief request.

The next quarterly testing for 2NC-31B is due October 6, 2022. 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 29, 2022. Duke Energy subsequently requests NRC approval of this relief request no later than October 18, 2022.

Should you have any questions concerning this letter, or require additional information, please contact Ryan Treadway – Director, Fleet Licensing, at (980) 373-5873.

Sincerely,

Edward R. Pigott
Site Vice President
McGuire Nuclear Station

Enclosure:

1. PORV 2NC-31B Relief Request

cc: (with enclosure)

J. Klos, NRC Project Manager, NRR
L. Dudes, NRC Regional Administrator, Region II
A. Hutto, NRC Senior Resident Inspector

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Enclosure 1
PORV 2NC-31B Relief Request
(5 pages including cover)

1.0 ASME CODE COMPONENT(S) AFFECTED:

Pressurizer Power Operated Relief Valve (PORV) Block Valve 2NC-31B is a Class 1 component. The pressurizer PORV block valves are located upstream of the PORVs and are normally open. The three block valves are motor-operated valves provided to ensure that a stuck-open PORV can be isolated, thereby terminating a small break LOCA due to a stuck-open PORV. Isolation of a stuck open PORV is not required to ensure safe plant shutdown. However, isolation capability under all fluid conditions that could be experienced under operating and accident conditions will result in a reduction in the number of challenges to the Emergency Core Cooling System (ECCS). Repeated unnecessary challenges to these systems are undesirable. PORV and associated Block Valve operability requirements are governed by Technical Specification 3.4.11, Pressurizer Power Operated Relief Valves (PORVs).

2.0 APPLICABLE CODE EDITION AND ADDENDA:

ASME OM Code 2004 Edition, through 2006 Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

Pressurizer PORV Block Valve 2NC-31B is exercised and stroke time tested every three months in accordance with Subparagraph ISTC-3510, "Exercising Test Frequency" of the ASME OM Code. The measurement of valve stroke times in the open and closed direction is performed in accordance with Subparagraph ISTC-5121 "Valve Stroke Testing" of the ASME OM Code for these motor-operated valves. Periodic verification of remote position indication for this motor operated valve is performed every 2 years in accordance with ISTC-3700, "Position Verification Testing" of the ASME OM Code. Note: The two-year position verification requirement of Subparagraph ISTC-3700 of the ASME OM Code is not part of this Relief Request.

4.0 REASON FOR REQUEST:

Nuclear Condition Report (NCR) #02434916, initiated on July 20, 2022, reports an increase in identified reactor coolant system (RCS) leakage above previous consistent values. The Condition Report identifies RCS leakage increasing from 0.032 to 0.085 gpm since June 25, 2022. Technical Specification (TS) 3.4.13, "RCS Operational Leakage" limits RCS identified leakage to a maximum of 10 gpm. The Condition Report identifies the elevated leakage is due to increased liquid inputs to the Reactor Coolant Drain Tank (NCDT). When issued, a definite source of the elevated NCDT in-leakage was unknown.

Following the development of troubleshooting plans a containment entry was made on July 25, 2022. The information obtained during the planned containment entry supported a possible reactor coolant system PORV or Block Valve seal leak-off as the source of the increased NCDT in-leakage. Through further troubleshooting, involving the development and execution of various alignments, the exact source of the leakage increase was identified as Block Valve 2NC-31B seal leak off. The valve was closed on July 26, 2022 to isolate the valve packing, following closure reactor coolant identified leakage decreased to 0.006 gpm.

Work Request 20230376 has been generated for the creation of a Work Order to repair/replace the valve packing of 2NC-31B. Repair of 2NC-31B would require containment entry and RCS depressurization for isolation purposes. Personnel safety and ALARA practices are maximized during a scheduled refueling activity for performance of this corrective maintenance. 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.

2NC-31B is currently being administratively maintained in the closed position, in the closed position identified reactor coolant system leakage is minimized with the current valve packing condition.

Duke Energy is requesting relief from the ASME OM Code requirement to quarterly exercise and stroke time 2NC-31B until valve repair can safely be made during the next scheduled Unit 2 refueling outage, which is currently scheduled to begin on February 18, 2023. Continued exercising and stroke timing of 2NC-31B on a quarterly frequency has the potential to create a hardship as further packing degradation could result, reducing operational RCS leakage margin.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

As an alternative to performing quarterly surveillance testing of 2NC-31B, Duke Energy is requesting to defer exercise and stroke time testing for the remainder of the current Unit 2 operating fuel cycle. In the event of PORV block valve packing leakage, stroking the respective valve creates a hardship because of the possibility for further packing degradation and increased reactor coolant system leakage. Increased leakage reduces the margin for acceptable reactor coolant system identified leakage (Reference TS 3.4.13, RCS 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 OM Code requirements.

As described in section 5, to control stem leak off leakage on 2NC-31B, the valve is being administratively maintained closed, with emergency power available. Quarterly valve stroke time testing was last conducted on 07/06/2022 in both the closed and open directions with satisfactory results, indicating 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 valve 2NC-31B has established preventative maintenance activities. The valve has maintained consistent trends with no adverse issues 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 exercising and stroke timing activities until scheduled repairs.

Inservice Testing (IST) performance history of valve 2NC-31B has been excellent with no valve stroke timing or position indication failures from July 6, 2012 to the present. 2NC31B valve stroke timing performance (open and closed directions) has been consistently between 5.5 and 6.8 seconds, demonstrating acceptable margin to the maximum limit of 10 seconds.

6.0 DURATION OF PROPOSED ALTERNATIVE:

This alternative 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. 2NC-31B repair is planned for the next McGuire Unit 2 refueling outage M2R28 scheduled to begin on February 18, 2023. Following the refueling outage, Duke Energy will resume quarterly exercising and stroke time testing of 2NC-31B per applicable ASME Code requirements.

7.0 PRECEDENTS:

- a) McGuire Relief Request MC-SRV-NC-02, dated December 1, 2016 (ADAMS ML 16349A620), and NRC SE, dated January 17, 2017 (ADAMS ML 16358A696).
- b) McGuire Relief Request MC-SRV-NC-03, dated July 17, 2019 (ADAMS ML 19204A116), and NRC SE, dated August 14, 2019 (ADAMS ML 19217A324).

8.0 REFERENCES:

- a) Duke Energy, McGuire Nuclear Station ASME Inservice Testing Program Revision 28, dated March 1, 2013.
- b) Technical Specification 3.4.11, Pressurizer Power Operated Relief Valves (PORVs).
- c) Technical Specification 3.4.13, RCS Operational LEAKAGE.
- d) NCR 02434916 (07/20/2022), Elevated Unit 2 Identified Reactor Coolant System Leakage.
- e) MCS-1553.NC-00-0001 Revision 39, Design Basis Specification for the NC System.
- f) MCFD-2553-02.00 Rev. 9, McGuire Nuclear Station Unit 2 Flow Diagram of Reactor Coolant System (NC).
- g) PT/2/A/4151/002 B revision 31, NC Train B Valve Stroke Timing-Quarterly.
- h) MCTC-1553-NC.V002-01 Revision 01 Test Acceptance Criteria for Pressurizer PORV Block Valves 1/2NC-31B, -33A and -35B.

9.0 ATTACHMENTS (OPTIONAL):

N/A