



Steven D. Capps
Vice President
McGuire Nuclear Station

Duke Energy
MG01VP | 12700 Hagers Ferry Road
Huntersville, NC 28078

o: 980.875.4805
f: 980.875.4809
Steven.Capps@duke-energy.com

Serial No: MNS-16-090

December 1, 2016

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-02
Pressurizer Power Operated Relief Valve (PORV) Block Valve 2NC-31B
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-31B. This valve has packing leakage, and stroking it 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-31B is due February 3, 2017. 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

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U.S. Nuclear Regulatory Commission
December 1, 2016
Page 2

xc:

C. Haney, Region II Administrator
U.S. Nuclear Regulatory Commission
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

V. Sreenivas, Project Manager
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Mail Stop O-8G9A
Rockville, MD 20852-2738

A. Hutto
NRC Senior Resident Inspector
McGuire Nuclear Station

ATTACHMENT

McGuire Nuclear Station Unit 2 - Specific Valve Relief Request MC-SRV-NC-02

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

1. ASME Code Component(s) Affected:

Pressurizer Power Operated Relief Valve (PORV) Block Valve 2NC-31B.

2. Component Function:

2NC-31B is a normally open motor-operated gate valve located on the pressurizer steam space. To perform its design safety functions, the valve must be capable of closing to provide isolation in the case of a leaking or stuck open PORV and must be opened to vent the pressurizer during a steam generator tube rupture event. Manual operator action is relied upon for valve operation in both the closed and open directions.

3. Applicable Code Edition and Addenda:

ASME OM Code 2004 through 2006 Addenda.

4. Applicable Code Requirements:

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 that the two year position indication verification testing does not apply to this relief request.

5. Reason for Request:

Nuclear Condition Report (NCR) 02074676 was initiated by systems engineering on October 31, 2016. The NCR identifies an increase in Unit 2 Reactor Coolant System (RCS) identified leakage on October 29 and 30, 2016, as compared to previous values. The October 29 and 30, 2016 identified leakage calculation values were 0.057 and 0.064 GPM, respectively, an increase from typical RCS identified leakage values of 0.01 to 0.02 GPM. Technical Specification (TS) 3.4.13 limits identified RCS leakage to a maximum of 10 GPM.

2NC-31B was stroked for routine surveillance on October 15, 2016. Following successful completion of this surveillance, RCS identified leakage slowly increased and was monitored by engineering until systems engineering generated the NCR for an adverse change in RCS identified leakage. Since a slow change in RCS identified leakage trending was present following 2NC-31B surveillance testing, this particular valve was suspected to be the source of leakage. Following surveillance testing, the valve was returned to its normally open position and remained in that configuration for the duration of the trending period.

Based on suspected leakage, Work Order (WO) 20121091 was generated for troubleshooting valve 2NC-31B. Troubleshooting efforts included station personnel making a pressurizer cavity entry on November 3, 2016, to compare valve packing leak off line temperatures between 2NC-31B and similar parallel PORV Block Valves. The as-found

2NC-31B packing leak off line temperature was approximately 296°F as compared to similar valves at 183°F and 141°F. After the as-found data was obtained, 2NC-31B was manually placed on backseat to isolate the packing area. Following a hold period, 2NC-31B as-left valve packing leak off temperature was reported to have decreased. Valve stroke timing of 2NC-31B from the backseat position (both directions) was performed with no notable change in stroke time. 2NC-31B was left in the open backseat position with power available. Note that the current positions of parallel PORV block valves 2NC-33A and 2NC-35B are open on backseat and closed, respectively, with power available for both valves.

Subsequent RCS identified leakage calculations have proven that placing 2NC-31B on backseat reduced Unit 2 RCS identified leakage to approximately 0.01 GPM, consistent with trends prior to the last 2NC-31B surveillance test. Stroking 2NC-31B could result in further packing leakage and a reduction of RCS operational leakage margin. Also, restoration after testing requires personnel entry into the pressurizer enclosure and application of the 6-hour completion time of TS 3.6.14 Condition D for removal of the enclosure hatch. Current RCS leakage values are stable with 2NC-31B open on backseat. 2NC-31B remains 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 repairs can be made during the next Unit 2 refueling outage.

Repair of 2NC-31B would require entry into containment and RCS depressurization for isolation purposes. Personal safety and ALARA practices are maximized during a scheduled refueling outage. Additionally, maneuvering the reactor to a mode outside of Technical Specification 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-31B, the licensee is requesting to perform exercise and valve stroke timing testing following valve repair as discussed in Section 7. 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 Technical Specification 3.4.13, Operational Leakage). If RCS identified leakage exceeds its allowable limit, the required action is plant shutdown.

As stated in Section 5, to control stem packing leakage on 2NC-31B, the licensee manually positioned the valve open on backseat with power available. 2NC-31B is administratively controlled in this position. If required to be closed to perform its intended safety function, the valve is closed by a control room operator. 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 operationally ready in the current configuration. Continued stroking of 2NC-31B represents a hardship with respect to manually re-positioning the valve on backseat following each quarterly exercise and valve stroke timing test. Stroking the valve with a packing leak during normal plant operation may cause further stem packing damage, resulting in increased RCS leakage.

2NC-31B has established preventative maintenance activities. The valve has 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-Service Testing 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 January 1, 2009, to present. 2NC-31B valve stroke timing performance (open and closed directions) has been consistently between 5.8 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, 2EOC24. 2NC-31B repair is planned for the next McGuire Unit 2 refueling outage 2EOC24, which is scheduled to begin on March 30, 2017. Following the refueling outage, the licensee will resume quarterly testing of 2NC-31B 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 02074676 Elevated Unit 2 Identified Leakage.
- g) WO 20121091 2NC-31B Investigate/Repair Packing Leak.
- h) McGuire Flow Diagram MCFD-2553-2.0 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 33 Design Basis Specification for the NC System.
- k) STRIDE MC-16-002 (NTM 2060304).
- l) McGuire Relief Request MC-SRV-NC-01, dated September 29, 2016 (ADAMS ML16274A066); SER dated October 20, 2016 (ADAMS ML16291A303).