



Edward R. Pigott
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McGuire Nuclear Station

Duke Energy
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Serial: RA-23-0150
July 27, 2023

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: McGuire Nuclear Station Unit 2, End of Cycle 28 (M2R28) Inservice
Inspection Summary Report**

Pursuant to the reporting requirements of American Society of Mechanical Engineers (ASME) Section XI, as amended by ASME Code Case N-532-5, Duke Energy Carolinas, LLC (Duke Energy) hereby submits the Inservice Inspection Summary Report for the McGuire Unit 2 outage M2R28.

This submittal contains no regulatory commitments.

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. Inservice Inspection Summary Report Unit 2 McGuire Spring 2023 Refueling Outage M2R28

cc: (with enclosure)

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

U.S. Nuclear Regulatory Commission
Serial: RA-23-0150

RA-23-0150

Enclosure 1

**Inservice Inspection Summary Report Unit 2 McGuire
Spring 2023 Refueling Outage M2R28**

(7 pages including this cover)

DUKE ENERGY

INSERVICE INSPECTION SUMMARY REPORT

Location: 12700 Hagers Ferry Road

Huntersville, North Carolina 28078-9340

NRC Docket No. 50-370

Commercial Service Date: March 1, 1984

***Owner: Duke Energy
526 South Church St.
Charlotte, NC 28201-1006***

Revision 0

<i>Originated By:</i>	Kaitlyn Sullivan KASull1 (524967) <small>Digitally signed by KASull1 (524967) Date: 2023.07.12 09:11:06 -04'00'</small>	<i>Date</i> _____
	(PRINT NAME/SIGNATURE)	
<i>Checked By:</i>	Angela Staller Angela Staller <small>Digitally signed by E50268 (342024) Date: 2023.07.12 09:26:40 -04'00'</small>	<i>Date</i> _____
	(PRINT NAME/SIGNATURE)	
<i>Approved By:</i>	MAP9681 Mark Pyne (102140) <small>Digitally signed by MAP9681 (102140) Date: 2023.07.20 09:55:16 -04'00'</small>	<i>Date</i> _____
	(PRINT NAME/SIGNATURE)	

FORM OAR-1 OWNER'S ACTIVITY REPORT

Report Number RA-23-0150

Plant McGuire Nuclear Station, 12700 Hagers Ferry Rd, Huntersville, NC 28078-9340

Unit No. 2 Commercial service date 3/01/1984 Refueling outage no. M2R28
(if applicable)

Current inspection interval Inservice Inspection: 4th Interval, Containment: 3rd Interval
(1st, 2nd, 3rd, 4th, other)

Current inspection period Inservice Inspection: 3rd Interval, Containment: 3rd Interval
(1st, 2nd, 3rd)

Edition and Addenda of Section XI applicable to the inspection plans 2007 edition with 2008 addenda, 2017 edition (see attachment), and 2019 edition (see attachment)

Date and revision of inspection plans See Attachment

Edition and Addenda of Section XI applicable to repair/replacement activities, if different than the inspection plans Same as above.

Code Cases used for inspection and evaluation: The following Code Cases are permitted by the ISI Plans: N-513-3, N-513-4, N-513-5, N-526, N-532-5, N-586-1, N-600, N-613-1, N-613-2, N-639, N-643-2, N-648-1, N-648-2, N-651, N-663, N-705, N-705-1, N-706-1, N-711-1, N-712, N-716, N-716-1, N-716-2, N-722-1, N-729-6, N-731, N-735, N-747, N-751, N-765, N-768, N-770-5, N-771, N-775, N-776, N-778, N-786-1, N-786-3, N-798, N-800, N-805, N-809, N-823-1, N-825, N-831-1, N-843, N-845, N-845-1, N-854, N-858, N-864, N-865, N-874, N-882, N-885, N-892
(if applicable, include cases modified by Case N-532 and later revisions)

CERTIFICATE OF CONFORMANCE

I certify that (a) the statements made in this report are correct; (b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI; and (c) the repair/replacement activities and evaluations supporting the completion of M2R28 conform to the requirements of Section XI.
(refueling outage number)

Signed *Kaitlyn Sullivan* Digitally signed by KASull1 (524967)
 Date: 2023.07.12 10:08:49 -04'00' Date _____
Owner or Owner's Designee, Title

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of North Carolina and employed by Bureau Veritas Inspection and Insurance Company of Lynn, MA have inspected the items described in this Owner's Activity Report, and state that, to the best of my knowledge and belief, the Owner has performed all activities represented by this report in accordance with the requirements of Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the repair/replacement activities and evaluation described in this report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Jerome Swan *Jerome Swan* Digitally signed by JFSwan (245816)
INSIS Bureau Veritas Inspection and Insurance Date: 2023.07.18 12:44:19 -04'00'
 Inspector's Signature Commissions I, N, NS, NSI, R
National Board, State, Province, and Endorsements

ATTACHMENT

McGuire Unit 2 End of Cycle 28 Inservice Inspection Report

The McGuire Nuclear Station Unit 2 Fourth Ten Year Inservice Inspection (ISI) Plan complies with 10CFR50.55a(g), which implements, by reference, the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 2007 Edition with 2008 Addenda.

- Per RIS 2004-12, Letter RA-20-0262, NRC Accession Number ML20260H325 and approval NRC Accession Number ML20300A206, the NRC staff concluded that the use of subparagraph IWA-4540(b) of the 2017 Edition of the ASME B&PV Code, Section XI, is acceptable for McGuire Unit 2.
- Per RIS 2004-16, Letter RA-20-0263, NRC Accession Number ML20260H326 and approval NRC Accession Number ML21113A013, the NRC staff concluded that the use of subparagraph IWA-4340 of the 2017 Edition of the ASME B&PV Code, Section XI, is acceptable for McGuire Unit 2.
- Per RIS 2004-12, Letter RA-20-0191, NRC Accession Number ML20265A028 and approval NRC Accession Number ML21029A335, the NRC staff concluded that the use of paragraphs IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 of the 2017 Edition of the ASME B&PV Code, Section XI, is acceptable for McGuire Unit 2.
- Per RIS 2004-12, Letter RA-23-0001, NRC Accession Number ML20265A028 and approval NRC Accession Number ML21029A335, the NRC staff concluded that the use of paragraph IWA-6230 of the 2019 Edition of the ASME B&PV Code, Section XI, is acceptable for McGuire Unit 2.

This summary report is being submitted pursuant to the reporting requirements of ASME Section XI, IWA-6000 as amended by ASME Code Case N-532-5, "Repair/Replacement Activity Documentation Requirements and Inservice Inspection Summary Report Preparation and Submission Section XI, Division 1".

Contained within this summary report are the form OAR-1 (Owner's Activity Report) and Tables 1 and 2 of Code Case N-532-5 for McGuire Nuclear Station during cycle 28 and Refueling Outage 28 (M2R28). M2R28 is the second outage of the third ISI period in the fourth inspection interval. M2R28 is the second outage of the third Containment period in the third inspection interval. This report includes all Repair/Replacement activities from October 12th, 2021, through April 4th, 2023, cycle 28.

Date and Revision of Inservice Inspection Plans:

Fourth Interval Inservice Inspection Plans

The following document comprises the McGuire Nuclear Station Fourth Interval Inservice Inspection Plan for Unit 2 (Class 1, 2, and 3 Components):

- “Fourth Interval Inservice Inspection Plan - McGuire Nuclear Station Units 1 and Unit 2”, Document MISI-1462.10-0040-ISIPLAN, Rev 3, dated 06/23/2022.
- “Fourth Ten-Year Interval Inservice Inspection Schedule McGuire Nuclear Station Unit 2”, Document MISI-1462,10-0040-U2 Schedule, Rev. 4, dated 07/06/2022.

The following document comprises the McGuire Nuclear Station Fourth Interval Inservice Inspection Pressure Test Plan for Unit 2:

- “McGuire Nuclear Station Fourth Inspection Interval Inservice Inspection Pressure Test Plan”, Document MISI-1462.20-0040-PTPLAN, Rev 6, dated 02/15/2022.

Containment Inservice Inspection Plan

The following document comprises the McGuire Nuclear Station Third Interval Containment Inservice Inspection Plan for Unit 2 (Class MC):

- “McGuire Nuclear Station - Third Interval Containment Inservice Inspection Plan - Containment - Units 1 & 2”, Document MC-ISIC3-1042-0001, Rev. 10, dated 09/06/2022.

Augmented ISI Plan

The following document comprises the McGuire Nuclear Station Fourth Interval Augmented Inservice Inspection Plan and Schedule for Unit 2:

- “McGuire Nuclear Station – Fourth Interval Augmented Inservice Inspection Plan and Schedule”, Document MISI-1462.10-0040AUGISI-U1&U2, Rev. 6, dated 02/12/2022.

TABLE 1
ITEMS WITH FLAWS OR RELEVANT CONDITIONS THAT REQUIRED EVALUATION FOR
CONTINUED SERVICE

Examination Category and Item Number	Item Description	Evaluation Description
B-P, B15.10	Boric acid residue found during the performance of the ASME Section XI required VT-2 visual examinations associated with the Class A Bolted Connections in Upper Containment was performed per work order 20543582. During the examination, the following as found boric acid leakage conditions were identified on valves 2NC-31B, 2NC-35B, 2NC-53-FL1, and 2NC-53-FL2.	Relevant conditions identified in NCR 02462292 were evaluated by Engineering and found to be acceptable.
B-P, B15.10	Boric acid residue found during the performance of the ASME Section XI required VT-2 visual examinations associated with the ISI Class A Leakage Test evidence of leakage was identified on the following components: 2B, C, and D's Reactor Coolant Pump (2NCPU0002, 2NCPU0003, 2NCPU0004 respectively).	Relevant conditions identified in NCR 02467441 were evaluated by Engineering and found to be acceptable.
B-P, B15.10	Boric acid residue found during the performance of the ASME Section XI required VT-2 visual examinations associated with the ISI Class A Leakage Test evidence of leakage was identified on the following RX Seal Table locations: B-6, H-2, B- 8, D-8.	Relevant conditions identified in NCR 02467437 were evaluated by Engineering and found to be acceptable.
F-A, F1.20C	ISI VT-3 Visual Examination of support 2MCA-SV-H55 was performed and during the examination, the as found cold load setting of 1210# was observed. Design cold load setting is 1068# with +/- 10% range. Previous data was reviewed which had acceptable as found cold load setting.	Relevant condition identified in NCR 02462368 were evaluated by Engineering and found to be acceptable. Additionally, the cold load setting was reset per the loads and tolerance given by the specification documents.
E-A, E1.30	The Visual Examination of the Primary Containment Moisture Barrier was performed as required by ASME Section XI, Subsection IWE. The examination identified relevant conditions of the moisture barrier such as wear, damage, surface cracks, and lack of adhesion that could permit intrusion of moisture against inaccessible areas of pressure retaining surfaces of the metallic containment shell and insulation panels protecting the metallic shell.	Relevant conditions identified in NCR 02462564 evaluated by Engineering and restored using corrective measures.
E-A, E1.30	ASME Section XI, ISI VT-3 Visual Examination of Primary Containment Leak Chase Channel Enclosures was performed and during the examination, it was identified that leak chase channel enclosure # 69 was missing the bronze closure cover.	Relevant conditions identified in NCR 02462755 evaluated by Engineering to be acceptable for continued service and electively restored.

TABLE 2 ABSTRACT OF REPAIR/REPLACEMENT ACTIVITIES REQUIRED FOR CONTINUED SERVICE				
Code Class	Item Description	Description of Work	Date Completed	Repair / Replacement Plan Number
1	2NI-60	Bolting Material Replaced	03/02/2023	20558798-01