



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 16, 2021

Mr. Tom Ray
Site Vice President
Duke Energy Carolinas, LLC
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: WILLIAM B. MCGUIRE NUCLEAR STATION, UNIT 1 – REQUEST TO USE PROVISIONS OF LATER EDITION AND ADDENDA OF THE ASME CODE, SECTION XI (EPID; L-2021-LLR-0048)

Dear Mr. Ray:

By letter dated July 1, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession ML21182A028), as supplemented by letter dated October 4, 2021 (ADAMS Accession ML21277A313), Duke Energy Carolinas, LLC (the licensee, Duke Energy) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for approval to use certain provisions of a later edition and addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI during the first inspection period of the fifth 10-year inservice inspection (ISI) interval at the McGuire Nuclear Station (McGuire), Unit 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(4)(iv), “Applicable ISI Code: Use of subsequent Code editions and addenda,” the licensee requested to; (a) use the 2017 Edition of the ASME Code, Section XI, IWA-4540(b) for the pressure testing of the Class 1, 2, and 3 items following the repair and replacement activities, (b) use the 2017 Edition of the ASME Code, Section XI, IWA-2318, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 for pressure testing of the Class 1, 2, and 3 systems; and (c) use the 2017 Edition of the ASME Code, Section XI, IWA-4340 for repair and replacement activities on the Class 2 and 3 components, subject to the conditions specified in paragraph (b) of Section 50.55a.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that Duke Energy has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(4)(iv).

If you have any questions, please contact me at (301) 415-3867 or via email at John.Klos@nrc.gov.

Sincerely,

Michael T. Markley, Branch Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-369

Enclosure: Safety Evaluation

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO USE CERTAIN PROVISIONS

OF LATER EDITION AND ADDENDA OF THE ASME CODE, SECTION XI

DUKE ENERGY CAROLINAS, LLC

MCGUIRE NUCLEAR STATION, UNIT 1

DOCKET NUMBER 50-369

EPID: L-2021-LLR-0048

1.0 INTRODUCTION

By letter dated July 1, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession ML21182A028), as supplemented by letter dated October 4, 2021 (ADAMS Accession ML21277A313), Duke Energy Carolinas (the licensee) submitted a request containing Enclosure 1, 2, and 3 for the U.S. Nuclear Regulatory Commission (NRC) approval. The licensee requested to use certain provisions of the later edition and addenda of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI during the first inspection Period of the Fifth 10-year inservice inspection (ISI) interval at the McGuire Nuclear Station (McGuire), Unit 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(4)(iv) "Applicable ISI Code: Use of subsequent Code editions and addenda," the licensee requested: (Enclosure 1) to use the 2017 Edition of the ASME Code, Section XI, IWA-4540(b) for the pressure testing of the Class 1, 2, and 3 items following the repair and replacement activities; (Enclosure 2) to use the 2017 Edition of the ASME Code, Section XI, IWA-2318, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 for pressure testing of the Class 1, 2, and 3 systems; and (Enclosure 3) to use the 2017 Edition of the ASME Code, Section XI, IWA-4340 for repair and replacement activities on the Class 2 and 3 components, subject to the conditions specified in paragraph (b) of Section 50.55a.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(a)(1)(ii), "ASME Boiler and Pressure Vessel Code, Section XI," have been approved for incorporation by reference, but limited to those provisions identified in paragraph (b)(2) of Section 50.55a.

The regulations in 10 CFR 50.55a(g)(4)(iv), “Applicable ISI Code: Use of subsequent Code editions and addenda,” state that inservice examination of components and system pressure tests may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (a) of Section 50.55a, subject to the conditions listed in paragraph (b) of Section 50.55a, and subject to Commission approval. Portions of editions or addenda may be used, provided that all related requirements of the respective editions or addenda are met.

The regulations in 10 CFR 50.55a(b)(2)(xxv), “Section XI condition: Mitigation of defects by modification,” state, in part, that use of the provisions of ASME Code, Section XI, IWA-4340 shall be subject to the conditions in paragraph (b)(2)(xxv)(A) and (b)(2)(xxv)(B) of Section 50.55a.

The regulations in 10 CFR 50.55a(b)(2)(xxvii)), “Section XI condition: Removal of insulation,” states that, when performing visual examination in accordance with IWA-5242 of Section XI of the ASME Code, 2003 Addenda through the 2006 Addenda, or IWA-5241 of the 2007 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(ii) of this section, insulation must be removed from 17-4 PH or 410 stainless steel studs or bolts aged at a temperature below 1100 degrees Fahrenheit (°F) or having a Rockwell Method C hardness value above 30, and from A-286 stainless steel studs or bolts preloaded to 100,000 pounds per square inch or higher.

NRC Regulatory Issue Summary (RIS) 2004-12, “Clarification on Use of Later Editions and Addenda to the ASME OM Code and Section XI” (ADAMS Accession No. ML042090436), provides clarification to the requirements for inservice testing (IST) and ISI when using later editions and addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code), and Section XI as required by paragraphs (f)(4)(iv) and (g)(4)(iv) of 10 CFR 50.55a.

Based on the above, and subject to the following technical evaluation, the U.S. Nuclear Regulatory Commission (NRC) staff finds that regulatory authority exists for the licensee to request and the NRC to approve the request submitted by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Background

By letter dated August 21, 2020 (ADAMS Accession ML20230A205), the NRC authorized an alternative allowing McGuire, Unit 1 to continue to use the 2007 Edition with 2008 Addenda of the ASME Code, Section XI for the Class 1, 2, and 3 piping components and associated supports until the end of the first inspection Period of the Fifth 10-year ISI interval.

By letter dated November 9, 2020 (ADAMS Accession ML20300A206) the NRC approved use of the 2017 Edition of the ASME Code, Section XI, IWA-4540(b) for pressure testing of the Class 1, 2, and 3 items after the repair and replacement activities, during the remainder of the Fourth 10-year ISI interval of McGuire, Units 1 and 2.

By letter dated February 16, 2021 (ADAMS Accession ML21029A335), the NRC approved use of the 2017 Edition of the ASME Code, Section XI, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 for the pressure testing of the Class 1, 2, and 3 systems, during the remainder of the Fourth 10-year ISI interval of McGuire, Units 1 and 2.

By letter dated May 6, 2021 (ADAMS Accession ML21113A013), the NRC approved use of the 2017 Edition of the ASME Code, Section XI, IWA-4340 for repair and replacement activities on the Class 2 and 3 components, during the remainder of the Fourth 10-year ISI interval of McGuire, Units 1 and 2.

3.2 Component Affected

Enclosure 1. ASME Code Class 1, 2, and 3 piping components are affected.

Enclosure 2. ASME Code Class 1, 2, and 3 piping components are affected.

Enclosure 3. ASME Code Class 2 and 3 piping components are affected.

3.3 Applicable Code Edition and Addenda

The code of record for the Fourth 10-year ISI interval of McGuire, Unit 1 is the 2007 Edition with 2008 Addenda of the ASME Code, Section XI. In the August 21, 2020 letter (ADAMS Accession ML20230A205), the NRC authorized McGuire, Unit 1, to continue to use the 2007 Edition with 2008 Addenda of the ASME Code, Section XI for the Class 1, 2, and 3 piping until the end of the first inspection period of the Fifth 10-year ISI interval.

3.4 Duration of Request

The licensee's request, provided in Enclosure 1, 2, and 3, covers the duration of the first inspection Period of the Fifth 10-year ISI interval of McGuire, Unit 1. The Fifth 10-year ISI interval is scheduled to commence on December 1, 2021, and end on November 30, 2031.

3.5 Request

The licensee's request in each enclosure to the licensee's letter dated July 1, 2021, is provided as follows:

Enclosure 1. Request to use the 2017 Edition of the ASME Code, Section XI, IWA-4540(b) for pressure testing of the Class 1, 2, and 3 items following the repair and replacement activities. The licensee stated that there are no related requirements in the 2017 Edition of the ASME Code, Section XI, or applicable conditions in 10 CFR 50.55a(b) for IWA-4540(b).

Enclosure 2. Request to use the 2017 Edition of the ASME Code, Section XI, IWA-2318, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 for pressure testing of the Class 1, 2, and 3 systems. The licensee stated that all related requirements in the 2017 Edition of the ASME Code, Section X, for IWA-2318, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250, and the conditions in 10 CFR 50.55a(b)(2)(xxvii) for IWA-5241 will be met. There are no conditions in 10 CFR 50.55a(b) for IWA-2318, IWA-5120, IWA-5213, IWA-5242, and IWA-5250.

Enclosure 3. Request to use the 2017 Edition of the ASME Code, Section XI, IWA-4340 for repair and replacement activities on the Class 2 and 3 components. The licensee stated that all related requirements in the 2017 Edition of the ASME

Code, Section X, and the condition in 10 CFR 50.55a(b)(2)(xxv)(B) for IWA-4340 will be met.

3.6 NRC Staff Evaluation

The NRC staff has evaluated the request in Enclosures 1, 2, and 3 in accordance with 10 CFR 50.55a(g)(4)(iv). The NRC staff focused on whether: (1) the subsequent editions and addenda of the ASME Code, Section XI, as requested for use, is incorporated by reference in paragraph (a) of Section 50.55a, (2) the Code requirements subject to the conditions listed in paragraph (b) of Section 50.55a are met, (3) a request is submitted for the NRC approval, and (4) all related requirements of the respective editions and addenda are met. The NRC staff finds that if these four criteria are met, the requirements of 10 CFR 50.55a(g)(4)(iv) will also be met.

In evaluating the licensee's request in Enclosures 1, 2, and 3, the NRC staff confirms that,

1. The 2017 Edition of the ASME Code, Section XI has been incorporated by reference in 10 CFR 50.55a.
2. The licensee has acknowledged to meet the applicable provisions in 10 CFR 50.55a, as follows:
 - Enclosure 1. There are no conditions in 10 CFR 50.55a(b) for IWA-4540(b).
 - Enclosure 2. The conditions in 10 CFR 50.55a(b)(2)(xxvii) for IWA-5241 will be met.
 - Enclosure 3. The condition in 10 CFR 50.55a(b)(2)(xxv)(B) for IWA-4340 will be met.
3. The submittal containing Enclosures 1, 2, and 3 serves as the licensee's request for NRC approval as follows:
 - Enclosure 1. To use the 2017 Edition of the ASME Code, Section XI, IWA-4540(b) for pressure testing of the Class 1, 2, and 3 items following the repair and replacement activities.
 - Enclosure 2. To use the 2017 Edition of the ASME Code, Section XI, IWA-2318, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 for pressure testing of the Class 1, 2, and 3 systems.
 - Enclosure 3. To use the 2017 Edition of the ASME Code, Section XI, IWA-4340 for repair and replacement activities on the Class 2 and 3 components.
4. The licensee has indicated plans to meet all related requirements of the 2017 Edition of the ASME Code, Section XI, applicable to the submittal in Enclosures 1, 2, 3.

Based on the above, the NRC staff determined that the licensee met the four regulatory requirements of 10 CFR 50.55a(g)(4)(iv). The staff also finds that (a) the use of the 2017 Edition of the ASME Code, Section XI, IWA-4540(b) for pressure testing of the Class 1, 2, and 3 items following repair and replacement activities, (b) IWA-2318, IWA-5120, IWA-5213, IWA-5241, IWA-5242, and IWA-5250 for pressure testing of the Class 1, 2, and 3 systems, and (c) IWA-4340 for repair and replacement activities on the Class 2 and 3 components during the first inspection period of the fifth 10-year ISI interval of McGuire, Unit 1 is acceptable.

4.0 CONCLUSION

As set forth above, the NRC staff determined that the use of certain provisions of the 2017 Edition of the ASME Code, Section XI as requested in Enclosures 1, 2, and 3 has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(4)(iv). Therefore, the NRC staff authorizes the use certain provisions of a later edition and addenda of the ASME Code, Section XI during the first inspection Period of the Fifth 10-year inservice inspection (ISI) interval as provided in Enclosures 1, 2, and 3, to the licensee's request dated July, 1, 2021, and supplemented by letter dated October 4, 2021, for the McGuire Nuclear Station (McGuire), Unit 1.

Principal Contributor: Ali Rezai

Date: November 16, 2021

SUBJECT: WILLIAM B. MCGUIRE NUCLEAR STATION, UNIT 1 – REQUEST TO USE PROVISIONS OF LATER EDITION AN ADDENDA OF THE ASME CODE, SECTION XI (EPID; L-2021-LLR-0048) DATED NOVEMBER 16, 2021

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***by email**

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