



Edward R. Pigott
Site Vice President
McGuire Nuclear Station

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

o: 980.875.4805
Edward.Pigott@duke-energy.com

Serial: RA-23-0025
February 15, 2023

10 CFR 50.4
10 CFR 50.36(c)(5)

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

MCGUIRE NUCLEAR STATION, UNIT NO.1
DOCKET NO. 50-369 / RENEWED LICENSE NUMBER NPF-9

SUBJECT: McGuire Nuclear Station Unit 1, End of Cycle 28 (M1R28) Steam Generator Tube Inspection Report Response to Request for Additional Information (RAI)

REFERENCE:

1. *Duke Energy Letter RA-22-0303, "McGuire Nuclear Station Unit 1, End of Cycle 28 (M1R28) Steam Generator Tube Inspection Report,"* dated October 25, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22298A071).
2. U.S. Nuclear Regulatory Commission (NRC) Email, "Request for Additional Information (RAI) Issuance for McGuire Unit 1 Steam Generator Tube Inspection Report (Email)," dated January 17, 2023 (ADAMS Accession No. ML23017A223).

Ladies and Gentlemen:

In Reference 1, Duke Energy Carolinas, LLC (Duke Energy) provided the steam generator tube inspection summary report for the McGuire Nuclear Station (MNS) Unit 1, Refueling Outage 28 (M1R28) in accordance with MNS Technical Specification 5.6.8, "Steam Generator Tube Inspection Report." In Reference 2, the NRC requested additional information to complete its review. The responses to the RAI can be found in the Enclosure to this letter.

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:

Response to Request for Additional Information (RAI)

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-23-0025
Enclosure

RA-23-0025

Enclosure
Response to Request for Additional Information (RAI)

Request for Additional Information

By letter dated October 25, 2022 (ML22298A071), Duke Energy Carolinas, LLC (the licensee), submitted information summarizing the results of the spring 2022 steam generator (SG) tube inspections performed at McGuire Nuclear Station, Unit 1 (McGuire Unit 1) during refueling outage 28 (M1R28). Technical Specification (TS) Section 5.6.8 requires that a report be submitted within 180 days after the initial entry into hot shutdown (MODE 4) following completion of an inspection of the SGs performed in accordance with TS Section 5.5.9, which requires that a SG Program be established and implemented to ensure SG tube integrity is maintained.

To complete its review of the inspection, the U.S. Nuclear Regulatory Commission (NRC) staff requests the following additional information.

1. Twenty-three foreign object (FO) wear indications were reported during M1R28 (spring 2022) with the largest reported as 23 percent through wall (TW). All FO wear indications were reported to be historical and showing no growth. The NRC staff notes that 22 FO wear indications were reported during M1R25 (fall 2017, ML18023A160) with the largest reported as 20 percent TW. Therefore, the staff is unclear on the total number of FO wear indications in the McGuire Unit 1 SGs. The attachment to the spring 2022 (M1R28) SG tube inspection report includes a list of indications greater than or equal to 20 percent TW for each SG. It is unclear whether the 23 percent TW FO wear indication is included in the list of indications greater than or equal to 20 percent TW for each SG.

TS Section 5.6.8.c.2 requires reporting the location, orientation (if linear), measured size (if available), and voltage response of all service-induced indications that are detected during the inspection. TS Section 5.6.8.c.2 states that only the total number of indications needs to be reported for tube wear at support structures less than 20 percent TW. The staff notes that tube wear at support structures refers to tube wear due to tube contact with support structures, not tube wear due to a FO that happens to be in close proximity to a support structure. Whether the service-induced indications are historical or not, and/or growing or not, have no bearing on whether indications need to be reported. To better understand how many indications are in each SG, where the indications are in each SG, and whether the indications are changing between SG inspections, the staff requests the information required by TS Section 5.6.8.c.2 for all indications in each SG that are not related to support structures.

Duke Response to Question 1:

There are twenty-three foreign object wear indications reported at M1R28. The 23%TW indication (C SG tube R33C104) is included in the list of indications. At M1R25 this tube characterized as a lattice grid wear indication.

2. The spring 2022 (M1R28) SG tube inspection report stated that a visual inspection of only the 1A SG steam drum was performed during M1R28 and that the last time the separators were inspected was at the end of cycle 25 (M1R25, fall 2017). The staff noted that the fall 2017 (M1R25) SG tube inspection report did not state whether only the 1A SG steam drum was visually inspected or whether the steam drums of other SGs were also inspected. The staff notes that the steam drums of the 1A and 1D SGs were inspected during M1R22 (spring 2013, ML13205A169) and only the 1A SG was inspected during M1R19 (fall 2008, ML101820231). The staff understands from an August 8, 2013 (ML13240A094), conference call summary that SG A is considered the leading SG in both McGuire Units 1 and 2 for inspection of the secondary separators; however, the basis for the selection of SG A is not clear and the staff notes that SG D has also been inspected.

The staff understands from an October 27, 2021 (ML2129A150), conference call summary that the original equipment manufacturer recommended additional steam drum inspections for refueling outage 27 at McGuire Unit 2 and, as a result, flow-accelerated corrosion of stiffener plates in primary separator curved arms was identified for the first time (ML22088A236).

To better understand the McGuire Unit 1 steam drum inspections, please provide:

- a. Which SG steam drums were inspected during M1R25.
- b. Whether the selection of the SG A steam drum as the leading SG has been or will be verified by inspection of the other SG steam drums.
- c. Are there any plans to perform the additional inspections as were performed at McGuire Unit 2?

Duke Response to Question 2 Part a:

Only the 1A SG steam drum was visually inspected during M1R25.

Duke Response to Question 2 Part b:

The 'A' SG steam drum in both the McGuire Nuclear Station (MNS) 1 and MNS 2 steam generators was chosen as the lead SG for consistent monitoring and trending of degradation over subsequent outages. Routine inspections of the same steam drum afford Duke Energy the opportunity to better trend the rate of degradation for planning future inspections and potential repairs. Continued inspection and trending of the 1A SG steam drum, in conjunction with top of tube sheet Foreign Object Search and Retrieval

(FOSAR) in each SG, is expected to provide satisfactory indication of degradation issues and the need to increase or expand inspection scope based on inspection findings.

This strategy has been confirmed to be effective for inspecting and monitoring degradation through the work performed on MNS Unit 2. Secondary separators in all four steam drums were inspected during the M2R25 outage and observed degradation was consistent across all four SGs. This is additionally supported by the M1R22 inspection findings which indicated that the rates of degradation were comparable in both the 1A SG and 1D SG secondary separators.

Current inspection findings from 1A SG do not indicate the need to expand the inspection scope to the remaining MNS Unit 1 SGs, and based on this data, there are no current plans to inspect the other MNS Unit 1 SG steam drums.

Duke Response to Question 2 Part c:

There are no current plans to perform additional inspections on the McGuire Unit 1 SGs similar to the extensive inspections (such as laser profilometry) that were performed on McGuire Unit 2.