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

March 17, 2016

Mr. Steven D. Capps
Vice President
McGuire Nuclear Station
Duke Energy Carolinas, LLC
12700 Hagers Ferry Road
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION, UNIT 2 - PROPOSED RELIEF REQUEST 15-MN-003 (TAC NO. MF6470)

Dear Mr. Capps:

By letter dated July 9, 2015, as supplemented by letter dated January 21, 2016, Duke Energy Carolinas, LLC (the licensee) submitted relief request (RR) 15-MN-003, which requested relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code) specifically related to ASME Code Case N-460 "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1." The licensee requested relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(i). The request was on the basis that the ASME Code requirement is impractical in this instance and pertains to the examination coverage of the welds at McGuire Nuclear Station, Unit 2.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, inspections performed by the licensee provide reasonable assurance of structural integrity or leak tightness of the subject welds. Therefore, the NRC grants RR 15-MN-003. This relief is applicable to the third 10-year Inservice Inspection interval which commenced on March 1, 2004, and ended on July 14, 2014.

All other ASME Code, Section XI, requirements, for which relief was not specifically requested and authorized herein by the NRC staff, remain applicable, including the third party review by the Authorized Nuclear In-service Inspector.

If you have any questions, please contact the Project Manager, G. Edward Miller at 301-415-2481 or via e-mail at ed.miller@nrc.gov.

Sincerely,

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

Docket No. 50-370

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST NO. 15-MN-003

DUKE ENERGY CAROLINAS, LLC

MCGUIRE NUCLEAR STATION, UNIT 2

DOCKET NO. 50-370

1.0 INTRODUCTION

By letter dated July 9, 2015 (Accession No. ML15202A126), as supplemented by letter dated January 21, 2016 (Accession No. ML16043A354), Duke Energy (the licensee) requested relief from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (B&PV Code) specifically related to ASME Code Case N-460 "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1." Relief Request (RR) 15-MN-003 pertains to the examination coverage of the welds at the McGuire Nuclear Station (McGuire), Unit 2.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(i), the licensee requested relief from the required examination coverage and to use alternative requirements (if necessary), for inservice inspection (ISI) of the welds on the basis that the ASME Code requirement is impractical.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), the ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components.

Pursuant to 10 CFR 50.55a(g)(4)(ii), inservice examination of components during successive 120-month inspection intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (a) of 50.55a 12 months before the start of the 120-month inspection interval (or the optional ASME Code Cases listed in NRC Regulatory Guide (RG) 1.147, Revision 17, when using Section XI, that are incorporated by reference in paragraphs (a)(3)(ii) and (iii) of 50.55a), subject to the conditions listed in paragraph (b) of 50.55a.

Pursuant to 10 CFR 50.55a(g)(5)(iii), if the licensee has determined that conformance with the ASME Code requirement is impractical for its facility, the licensee must notify the NRC and submit, as specified in § 50.4, information to support the determinations. Determinations of impracticality in accordance with 50.55a must be based on the demonstrated limitations experienced when attempting to comply with the Code requirements during the ISI interval for which the request is being submitted. Requests for relief made in accordance with 50.55a must be submitted to the NRC no later than 12 months after the expiration of the initial or subsequent 120-month inspection interval for which relief is sought.

Pursuant to 10 CFR 50.55a(g)(6)(i), the Commission will evaluate determinations under paragraph (g)(5) of 10 CFR 50.55a that ASME Code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines are authorized by law, and will not endanger life or property or the common defense and security, and are otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the NRC to authorize the alternative requested by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Background

By letter dated June 12, 2002 (Accession No. ML021480421), the NRC approved implementation of the risk informed inservice inspection (RI-ISI) program for the Class 1 piping welds (Examination Category B-F and B-J) and the Class 2 piping welds (Examination Category C-F-1 and C-F-2) at McGuire, Unit 2, in the third 10-year ISI interval. The licensee developed the McGuire, Unit 2, RI-ISI program in accordance with the NRC-approved methodology of the Westinghouse Owners Group Topical Report WCAP-14572, Revision 1-NP-A, "Application of Risk-Informed Methods to Piping Inservice Inspection" (Accession No. ML012630349).

3.2 Components Affected

In this relief request, the affected components are ASME Code Class 1 and 2 piping welds. The licensee identified the Class 1 welds as Weld No. 2NC2FW39-1 and Weld No. 2NC2FW45-5. These welds are classified as Examination Category R-A, Item No. R1.11 (elements subject to thermal fatigue) in accordance with WCAP-14572, Revision 1-NP-A, (Table 4.1-1 in Supplement 2).

The licensee stated that Weld No. 2NC2FW39-1 (2A cold leg branch connection) and Weld No. 2NC2FW45-5 (2D cold leg branch connection) are pipe to nozzle welds located in the reactor coolant system. Each nozzle is 1.5 inches nominal pipe size (NPS) and has thickness of 0.281 inches. The materials of construction of components of Weld No. 2NC2FW39-1 include stainless steel pipe SA-376 TP-304, stainless steel nozzle (branch connection) SA-182 F-304, and stainless steel ER-308 weldment. The materials of construction of components of Weld No.

2NC2FW45-5 include stainless steel pipe SA-376 TP-304, stainless steel nozzle (branch connection) SA-182 F-304, and stainless steel ER-308 weldment.

The licensee stated that the Class 2 weld, 2RCHPA-10-1, was a shell to head circumferential weld for the Unit 2 Reciprocating Charging Pump Accumulator. The weld has a diameter of 6.66 inches and a thickness of 0.495 inches. The materials of construction of components of Weld No. 2RCHPA-10-1 include stainless steel shell SA-312 F 304, stainless steel head SA-403 WP 304, and stainless steel ER-308L weldment.

3.3 Applicable Code Edition and Addenda

The code of record for the third 10-year ISI interval is the 1998 Edition through 2000 Addenda of the ASME Code, Section XI.

3. 4 Duration of Relief Request

The licensee submitted this relief request for the third 10-year ISI interval which commenced on March 1, 2004, and ended on July 14, 2014.

In the letter dated January 21, 2016, the licensee stated that the third 10-year ISI interval was extended from February 28, 2004 to July 14, 2014, in accordance with IWA-2430. All applicable requirements in IWA-2430 have been met.

3.5 ASME Code Requirement

In accordance with WCAP-14572, Revision 1-NP-A, (Table 4.1 1), the welds classified as Item No. R1.11 are required to be volumetrically examined during each 10-year ISI interval, and 100 percent coverage of the required examination volume must be achieved. The extent of examination coverage required for these welds is reduced to essentially 90 percent by ASME Code Case N-460. This Code Case has been incorporated by reference into 10 CFR 50.55a by inclusion in RG 1.147, Revision 17.

3.6 Impracticality of Compliance

For the Class 1 welds, the licensee stated that it was not possible to obtain greater than 90 percent of the required examination volume of each weld because the taper configuration did not allow meaningful interrogation from the welding boss (nozzle) side of the weld, therefore, the weld was only scanned from the pipe side (single-sided scan). The schematic diagrams in Appendices B and C of RR 15-MN-003 show the impracticality of compliance with the ASME Code examination coverage requirements for each weld. In order to scan all of the required volume of each weld, it would be necessary to redesign and/or replaced the welding boss. The licensee proposes that this is impractical.

For the Class 2 weld, the licensee stated that the component was scanned manually with conventional methods. Scanning requirements are described in ASME Section XI, Appendix III. Appendix III-4420 requires coverage of the examination volume in two beam path directions and Appendix III-4430 requires scanning on the weld crown in two directions. These requirements

describe and are specific to scanning components in two axial and two circumferential directions. This component was scanned to the extent possible to meet these requirements. The aggregate coverage that was obtained is described and calculated from the following:

- Exam Volume coverage using 45 degree & 60 degree shear waves for axial scan (S1 and S2) obtained 50% coverage.
- Exam Volume coverage using 45 degree shear waves for clockwise (CW) and counter-clockwise (CCW) scans obtained 74.3% coverage.
- The aggregate coverage was calculated to be (50% + 74.3% /2) = 62.2%.

Supplemental coverage was obtained using a 70 degree shear wave in areas that were limited to a single sided scan. This coverage is not included in the reported total aggregate coverage.

The impracticality was caused by configuration of the vessel head that limited scanning from Surface 2, Axial, CW, and CCW directions. In order to scan all of the required volume for this weld, the head would have to be redesigned and replaced, which is impractical.

3.7 Bases for Relief

3.7.1 Class 1 Welds

The licensee stated that it performed the UT of each weld to the maximum extent possible utilizing personnel qualified and procedures demonstrated in accordance with Appendix VIII to the 1998 Edition through 2000 Addenda of the ASME Code, Section XI. The licensee did not find any unacceptable indications in the subject welds during the third 10-year ISI interval.

The licensee stated that the ultrasonic scanning of each weld was only possible from the pipe side of the weld (single sided scan). Scanning from the welding boss (nozzle) side was not possible due to taper configuration. Due to access limitations, the licensee extended the beam path (70 degree refracted shear waves) into the far side of the weld centerline to examine, to the extent practical, the other side of weld. The licensee characterized this as a supplemental "Best Effort" examination. The licensee did not claim any coverage past the weld centerline.

The licensee stated that it reviewed the other manual or automated (conventional and phased array) UT techniques to determine if coverage for each weld could be increased. The licensee determined that the use of any other techniques available would incur the same physical scanning limitations. The radiographic testing (RT) is not a desired technique because the RT is limited in the ability to detect service induced flaws, and has not been qualified in accordance with performance demonstration.

In addition, the licensee stated that the performance of VT-2 visual examinations during system leakage testing in accordance with IWB-2500 (Examination Category B-P in Table IWB-2500-1) as well as online leakage monitoring systems (e.g., reactor building normal sump) provide additional assurance that a through wall flaw would be detected.

In the January 21, 2016, letter, the licensee provided additional information for the subject welds which are as follows:

- The licensee stated that it performed a surface examination on Weld No. 2NC2FW45-5 on September 13, 2003, and on Weld No. 2NC2FW39-1 on April 9, 1996, in the second 10-year ISI interval. The examination results were found acceptable and there was no coverage limitation. During the third 10-year ISI interval, Weld No. 2NC2FW45-5 was categorized as high safety significant weld in the RI-ISI program and received a volumetric examination on April 1, 2014. The volumetric examinations identified a circumferential linear indication adjacent to the downstream side of the weld and an axial indication approximately 0.8 inch in length. The licensee repaired Weld No. 2NC2FW45-5 and performed the preservice inspection (PSI) using ultrasonic testing (UT) that achieved less than essentially 100 percent coverage with no unacceptable indications. Therefore, the licensee submitted RR 15-MN-003 for Weld No. 2NC2FW45-5 for the limited examination coverage. As part of the extent of the condition activities following the discovery of the indication in Weld No. 2NC2FW45-5, the licensee performed the UT on Weld No. 2NC2FW39-1. The examination results found acceptable, however, essentially 100 percent coverage was not achieved. Therefore, the licensee submitted RR 15-MN-003 for Weld No. 2NC2FW39-1 for the limited coverage.

- The licensee stated that the surface examination or the RT performed during construction and preservice inspections did not identify any indications in Weld No. 2NC2FW39-1. During construction and preservice inspections of Weld No. 2NC2FW45-5, no crack-like or geometric reflector type indications were detected, however, one rounded tungsten indication with a dimension of 0.039 inch was recorded by the RT in the area not covered by the UT. This indication was dispositioned as a tungsten inclusion from the welding process.

- The licensee stated that during every refueling outage, Weld Nos. 2NC2FW39-1 and 2NC2FW45-5 are within the general inspection areas covered by formal Mode 3 power-down walkdowns and the Boric Acid Corrosion Control Program (BACCP). Through-wall leakage resulting in boric acid accumulation would be detected by the walkdowns performed every refueling outage. Additionally, these areas are also inspected for evidence of boric acid leakage during Mode 5 engineering walkdowns.

- The licensee stated that leakage from the subject welds would be considered a pressure boundary leak and is not allowed in accordance with Technical Specification (TS) 3.4.13. If leakage is identified and the source of leakage is determined to be from the subject welds, the plant is required to be in Mode 3 in six hours and Mode 5 in 36 hours. Furthermore, if this leakage cannot be identified as pressure boundary leakage, it would be seen as unidentified leakage. If the unidentified leakage rate increases to greater than 1 gallon per minute (gpm), the plant would be required to be in Mode 3 in six hours and Mode 5 in 36 hours as required by TS 3.4.13. For a leakage rate of less than 1 gpm, adequate makeup coolant through the use of the Volume Control Tank is available. The impact to the reactor cooling system (RCS) is minimal and the effect on accident analysis is minimal. Should leakage increase to greater than 1 gpm, a required shut down would be in order. In addition, the primary system leakage detection capability

would identify a leak early enough so actions could be taken prior to the leak propagating to failure.

- The licensee stated that a review of applicable Operating Experience (OpE) revealed that the subject welds are susceptible to cracking by thermal cycling and vibration. There were no OpE regarding severe loading

- The licensee stated that in accordance with EPRI Interim Guidance MRP 2015-025 2.3.1, the examination volume coverage for Weld No. 2NC2FW39-1 is increased to include the pipe to nozzle butt weld and the vertical pipe base metal up to two pipe diameters. This inspection is performed every refueling outage and the one completed during refueling outage 2EOC23 (fall 2015) identified no indications. Due to nozzle configuration, similar coverage limitations as obtained in refueling outage 2EOC22 (aggregate coverage of 50 percent) were encountered in refueling outage 2EOC23. Thermocouples were installed upstream of the weld to monitor temperatures every refueling outage at full temperature and pressure. All readings during refueling outage 2EOC23 were within tolerance.

- The licensee stated that Weld No. 2NC2FW45-5 is inspected every refueling outage in accordance with MRP-146 and completed refueling outage 2EOC23 (fall 2015) with no indications. Due to nozzle configuration, similar coverage limitations as obtained in 2EOC22 (aggregate coverage of 50 percent) were encountered in refueling outage 2EOC23. Valve 2NI-3 has been removed which will prevent in leakage through this upstream valve. Thermocouples were also installed upstream of the weld to monitor temperatures every refueling outage at full temperature and pressure. All readings during refueling outage 2EOC23 were within tolerance.

- The licensee stated that during normal operation, leakage monitoring is achieved through the RCS leakage detection and ventilation drain tank accumulations if a through wall leak occurs in the subject welds.

- The licensee stated that several similar welds that were subjected to same environment and were susceptible to the same degradation have been examined in McGuire, Units 1 and 2. Essentially 100 percent coverage was obtained in one weld and the aggregate coverage in seven other welds was limited to 50 percent.

3.7.2 Class 2 Weld

The licensee stated that no indications were recorded during this examination. Ultrasonic examination of Weld ID 2RCHPA-10-1 (Summary Number M2.C1.20.0025) was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

The licensee indicated that they had examined Weld ID 2RCHPA-10-1 (Summary Number M2.C1.20.0025) to the maximum extent possible utilizing approved examination techniques and equipment. Based on the acceptable results for the coverage completed by the volumetric examination and the pressure testing (VT-2) examinations required by Section XI, it is Duke's position that the combination of examinations provide a reasonable assurance of quality and safety.

3.8 Proposed Alternative

In this relief request, the licensee reported for each weld the percentage of the examination coverage achieved by the UT in the examination performed.

Weld No. 2NC2FW39-1	50 percent
Weld No. 2NC2FW45-5	50 percent
Weld No. 2RCHPA-10-1	62.2 percent

The licensee proposed to use this alternative coverage to satisfy the ASME Code requirement (essentially 100 percent coverage of the examination volume).

3.9 NRC Staff Evaluation

3.9.1 Class 1 Welds

The NRC staff has evaluated RR 15-MN-003 pursuant to 10 CFR 50.55a(g)(6)(i). The NRC staff's evaluation focused on: (1) whether a technical justification exists to support the determination that the ASME Code requirement is impractical; (2) that imposition of the Code required inspections would result in a burden to the licensee; and (3) that the licensee's proposed alternative (accepting the reduced inspection coverage in this case) provides reasonable assurance of structural integrity and leak tightness of the subject welds. The NRC staff finds that if these three criteria are met that the requirements of 10 CFR 50.55a(g)(6)(i), (i.e., granting the requested relief will not "endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility") will also be met.

As described and demonstrated in Attachments B and C and the sketches in enclosure to RR 15-MN-003, the predominant limitations that prevented the licensee's UT to achieve essentially 100 percent coverage of the ASME Code required volume was taper configuration that restricted the UT examinations to a single sided scanning from the pipe side only. Thus, the NRC staff finds that this scanning from both sides of the weld, as is required to achieve the required coverage, is impractical.

The licensee proposed that making the weld accessible for inspection from both sides would require replacement or significant modification of the nozzle. Thus, the NRC staff finds that replacing or reconfiguring the nozzle is the only reasonable means to achieve dual sided coverage of these welds and that replacement or reconfiguration of the nozzles constitutes a burden on the licensee.

The NRC staff considered whether the licensee's proposed alternative provided reasonable assurance of structural integrity and leak tightness of the subject welds based on: (1) the examination coverage achieved and (2) safety significance of unexamined volumes - unachievable coverage (i.e., the presence or absence of known active degradation mechanisms, the significance of a leak and/or structural failure of the subject welds, and essentially 100 coverage achieved for similar welds in similar environments subject to similar degradation mechanisms).

In addition to the coverage analysis described above, the NRC staff evaluated the safety significance of the unexamined volumes of welds. From review of Sections 3 and 4 and the sketches in Attachments B and C of enclosure to RR 15-MN-003, the NRC staff verified that the licensee's UT has covered, to the extent possible, the regions (i.e., the weld root and the heat affected zone (HAZ) of the base material near the ID surface of the joint) that are typically susceptible to higher stresses and, therefore, potential degradation. The NRC staff notes that the coverage obtained for axial scans was limited to the volume up to the weld centerline (near-side). This is appropriate because claiming coverage for the volume on the opposite side of the weld centerline (far-side) requires meeting the 10 CFR 50.55a(b)(2)(xv)(A)(2) far-side UT qualifications, which has not been demonstrated in any qualification attempts to date. As an extra effort to interrogate the examination volume on the far-side in a single-sided examination, the licensee conducted a supplemental UT as a "Best Effort" examination which is not included in the aggregate coverage.

In the volume examined by the supplemental UT, the licensee did not identify any unacceptable indications in any of the welds. Furthermore, the licensee has inspected other similar welds in the comparable environment subjected to the same degradation mechanism (thermal fatigue) as the welds under consideration. No unacceptable indications were found in any of the other welds inspected. To comply with the industry's recent interim guidance EPRI MRP 2015-025 and better manage thermal fatigue, the licensee assessed the potential risk from thermal fatigue cracking in the welds under consideration. As a result of this assessment, the licensee has increased both inspection volume coverage and frequency of inspection. Based on the above (i.e., increased inspection volume coverage, increased frequency of inspection, the coverage achieved by the qualified UT, the supplemental "Best Effort" examinations, the examination of the weld root and its HAZ to the extent possible), that it is reasonable to conclude that if significant service induced degradation had occurred, evidence of it would have been detected by the examinations that the licensee performed.

In performing this analysis the NRC staff noted that the welds under consideration are made of stainless steel, their inspections are governed by the McGuire RI-ISI program, and could be subject to degradation by thermal fatigue but not generally by stress corrosion cracking (SCC). However, thermal fatigue cracking is fairly wide spread and is detectable by the examinations that the licensee performed. In addition, the licensee has implemented industry guidance (i.e., MRP-146 and recent EPRI MRP Interim Guidance) to better manage thermal fatigue cracking. Therefore, the NRC staff concludes that significant service induced degradation would likely be detected by the volume covered.

In this analysis, the NRC staff also found that, in addition to the required volumetric examinations, these welds have received the required system leakage test according to the ASME Code, Section XI, IWB-2500 (Table IWB-2500-1, Examination Category B-P) during each refueling outage. Despite reduced coverage of the required examination volume, the NRC staff concludes that the licensee's supplemental and other inspections provide additional assurance that any pattern of degradation, if it were to occur, would be detected and the licensee will take appropriate correction actions.

In this analysis, the NRC staff also notes that if in an unlikely event, these welds that are all located inside the primary containment developed a through wall flaw and a leak, the existing plant leakage monitoring system will be able to identify the leakage during normal operation, and the licensee will take appropriate corrective actions in accordance with the plant's TS.

Therefore, the NRC staff concludes that the volumetric examinations performed to the extent possible and accompanied by other examinations (visual, walkdowns, and/or augmented) provide a reasonable assurance of structural integrity and leak tightness of the subject welds. Compliance with the ASME Code requirements for these welds would be a burden on the licensee.

3.9.2 Class 2 Weld

The ASME Code, Section XI, Table IWC-2500-1, Examination Category C-A, Item No. C1.20, Figure IWC-2500-1(a), Examination Volume A-B-C-D requires essentially 100 percent volume coverage of the accessible weld length. The MNS, Unit 2 Reciprocating Charging Pump Accumulator Shell-to-Head Circumferential Weld No. 2RCHPA-10-1 weld was scanned to the extent possible, and the requirements of Note 1 of ASME Code, Section XI, Table IWC-2500-1, Category C-A were met. However, the design configuration of the subject weld limited examination of the weld volume due to the configuration of the vessel head that did not allow complete scanning from Surface 2 of the weld volume in the axial, and CW and CCW circumferential directions. In order to effectively increase the examination coverage of the weld volume, the subject vessel would require design modifications or replacement. Therefore, examining essentially 100% of the ASME Code-required volume is considered impractical.

The subject weld was examined using procedures, equipment and personnel qualified in accordance with ASME Code, Section XI, Appendix VIII. This component was scanned to the extent possible to meet these requirements. ASME Code, Section XI, Appendix III, Appendix III-4420 requires coverage of the examination volume in two beam path directions and Appendix III-4430 requires scanning on the weld crown in two directions. These requirements describe and are specific to scanning components in two axial and two circumferential directions. The subject component was scanned to the extent possible to meet the ASME Code requirements. The aggregate coverage that was obtained for 45 and 60 degree shear waves and axial scans was 50 percent. For the 45 degree shear waves for circular scans (CW and CCW) obtained 74.3 percent, coverage. The licensee obtained an aggregate coverage of 62.2 percent. During these examinations the licensee found no indications.

The licensee also performed a supplemental examination using a 70 degree shear wave in areas that were limited to a single sided scan. Although this coverage is not included in the reported total aggregate coverage, it does provide additional assurance to the structural integrity of the subject component.

The licensee performs system leakage tests each inspection period in accordance with ASME Code, Section XI, Table IWC-2500-1; Examination Category C-H that requires a VT-2 visual examination to detect evidence of leakage. The leakage testing and VT-2 visual examination provide additional assurance of leak tightness of the subject components.

The NRC staff agrees that RT is not a feasible option because RT is limited in the ability to detect service induced flaws, and has not been qualified through performance demonstration. Further, the NRC staff concurs that the use of other manual or automated techniques would not increase coverage due to the limitation created by the component configuration.

Based on the volumetric coverage obtained, the NRC concludes that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. Furthermore, the NRC staff concludes that the volumetric examinations performed to the extent practical, supplemental volumetric examination, and system leakage tests performed each refueling testing period provide reasonable assurance of structural integrity and leak tightness of the subject components.

4.0 CONCLUSION

As set forth above, the NRC staff determines that it is impractical for the licensee to comply with the ASME Code, Section XI requirement; that the proposed inspection provides reasonable assurance of structural integrity or leak tightness of the subject welds; and that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). Therefore, the NRC staff grants RR 15-MN-003 at McGuire, Unit 2, for the third 10-year ISI interval which commenced on March 1, 2004, and ended on July 14, 2014.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and authorized herein by the NRC staff remain applicable, including the third party review by the Authorized Nuclear In service Inspector.

Principal Contributors: A. Rezai, NRR
T. McLellan, NRR

Date: March 17, 2016

If you have any questions, please contact the Project Manager, G. Edward Miller at 301-415-2481 or via e-mail at ed.miller@nrc.gov.

Sincerely,

/RA/

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

Docket No. 50-370

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

DISTRIBUTION:
PUBLIC
Branch Reading
RidsNrrDorlDpr Resource
RidsNrrDorlLpl2-1 Resource
RidsNrrDeEpnb Resource
RidsAcrs_MailCTR Resource
RidsNrrLASFigueroa Resource
RidsNrrPMMcGuire Resource
RidsRgn2MailCenter Resource
ARezai, NRR
TMcLellan, NRR

ADAMS Accession No.: ML16063A188 *Via Email **SE Input

OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DE/EPNB/BC	NRR/DE/EVIB/BC	NRR/DORL/LPL2-1/BC
NAME	GEMiller	SFigueroa	DAlley**	JMcHale*	MMarkley
DATE	03/14/16	03/10/16	02/18/16	03/14/16	03/17/16

OFFICIAL RECORD COPY