November 9, 2000

Mr. H. B. Barron
Vice President, McGuire Site
Duke Energy Corporation
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION, UNIT 2 - RE: REQUEST FOR RELIEF NO. 98-001 (TAC NO. MA8090)

Dear Mr. Barron:

By letter dated January 10, 2000, Duke Energy Corporation (DEC) requested the NRC staff to approve Second 10-Year Interval Inservice Inspection Program Plan Relief Request No. 98-001 (Parts A through D) for the McGuire Nuclear Station, Unit 2.

Specifically, DEC is seeking relief from the requirements of the American Society of Mechanical Engineers (ASME) Code, Section XI, to perform 100 percent volumetric examination for the welds addressed in Relief Request No. 98-001 (Parts A through D). The applicable edition of the Code is the 1989 Edition of ASME Code, Section XI.

Based on the information provided and as discussed in the enclosed Safety Evaluation, the staff has authorized relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(6)(ii), for the second 10-year interval. This determination is based on the impracticality of performing the required inspections and the burden on the licensee if the Code requirements were imposed.

The staff considers this matter resolved and is closing out TAC No. MA8090.

Sincerely,

/RA/

Richard L. Emch Jr., Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-370

Enclosure: As stated

cc w/encl: See next page

November 9, 2000

Mr. H. B. Barron
Vice President, McGuire Site
Duke Energy Corporation
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION, UNIT 2 - RE: REQUEST FOR RELIEF NO. 98-001 (TAC NO. MA8090)

Dear Mr. Barron:

By letter dated January 10, 2000, Duke Energy Corporation (DEC) requested the NRC staff to approve Second 10-Year Interval Inservice Inspection Program Plan Relief Request No. 98-001 (Parts A through D) for the McGuire Nuclear Station, Unit 2.

Specifically, DEC is seeking relief from the requirements of the American Society of Mechanical Engineers (ASME) Code, Section XI, to perform 100 percent volumetric examination for the welds addressed in Relief Request No. 98-001 (Parts A through D). The applicable edition of the Code is the 1989 Edition of ASME Code, Section XI.

Based on the information provided and as discussed in the enclosed Safety Evaluation, the staff has authorized relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(6)(ii), for the second 10-year interval. This determination is based on the impracticality of performing the required inspections and the burden on the licensee if the Code requirements were imposed.

The staff considers this matter resolved and is closing out TAC No. MA8090.

Sincerely,

/RA/

Richard L. Emch Jr., Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-370

Enclosure: As stated

cc w/encl: See next page

Distribution:
PUBLIC
PD II-1 Rdg.
RidsNrrDlpmLpdii
TMcLellan
MAnderson, INEEL
ESullivan
RidsNrrDlpmLpdii1 (paper copy)
RidsNrrLACHawes (paper copy)
RidsNrrPMFRinaldi (paper copy)
RidsOgcRp
GHill (4)
RidsAcrsAcnwMailCenter
Srosenberg
RidsRgn2MailCenter (COgle)

OFFICE	PDII-1/PM	PDII-1/LA	PDII-1/SC	OGC
NAME	FRinaldi:cn	CHawes	REmch	RHoefling
DATE	10/2/00	10/2/00	10/23/00	11/2/00

DOCUMENT NAME: C:\RELma8090.WPD

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION

REQUEST FOR RELIEF NO. 98-001

DUKE ENERGY CORPORATION

MCGUIRE NUCLEAR STATION, UNIT 2

DOCKET NO. 50-370

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components is performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i).

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service 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. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The Code of record for the McGuire Nuclear Station, Unit 2 (McGuire, Unit 2), second 10-year ISI interval is the 1989 Edition of the ASME B&PV Code.

2.0 EVALUATION

The staff, with technical assistance from Idaho National Engineering and Environmental Laboratory (INEEL), has reviewed the information concerning the ISI program Request for Relief 98-001 (Parts A through D) for the second 10-year interval for McGuire, Unit 2 provided in a Duke Energy Corporation (the licensee) letter dated January 10, 2000.

Enclosure

The staff adopts the evaluations and recommendations prepared by INEEL for authorizing alternatives contained in the Technical Letter Report (TLR), included as Attachment 2.

For McGuire, Unit 2 the staff has determined that the Code requirement of 100 percent volumetric examination is impractical to perform for the welds discussed in Request for Relief No. 98-001 (Parts A through D) because of access limitations. To gain access for examination of the subject welds would require design modifications. Imposition of this requirement would create an undue burden on the licensee.

The licensee has volumetrically examined a significant portion of these welds, obtaining 24 percent through 89.66 percent coverage. In addition, for Request for Relief No. 98-001, Part C the licensee completed 100 percent of the Code required surface examination. Based on the coverage obtained, the staff has determined that any existing patterns of degradation would have been detected by the examinations completed, and the examinations performed provide reasonable assurance of structural integrity of the subject welds.

3.0 CONCLUSION

The McGuire, Unit 2 Request for Relief 98-001 (Parts A through D) to the Code requirements has been reviewed by the staff with the assistance of its contractor, INEEL. A summary of Request for Relief No. 98-001 (Parts A through D) determinations is presented in Attachment 1. INEEL's evaluation, Technical Letter Report (TLR), is contained in Attachment 2. The staff has reviewed the TLR and adopts the evaluations and recommendations for granting relief.

The staff concludes that certain inservice examinations cannot be performed to the extent required by the Code at McGuire, Unit 2. For the items discussed in Relief Request No. 98-001 (Parts A through D) the Code requirements are impractical to meet, and reasonable assurance of the structural integrity of the subject components has been provided by the examinations that have been completed. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). The staff has determined that granting relief pursuant to 10 CFR 50.5a(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.

Attachments: As stated

Principal Contributor: T. McLellan

Date: November 9, 2000

TECHNICAL LETTER REPORT
SECOND 10-YEAR INTERVAL INSERVICE INSPECTION
REQUEST FOR RELIEF NO. 99-001
FOR
DUKE ENERGY CORPORATION
MCGUIRE NUCLEAR STATION UNIT 2
DOCKET NUMBER: 50-370

1. INTRODUCTION

By letter dated January 10, 2000, the licensee, Duke Energy Corporation, submitted Request for Relief No. 99-001 from the requirements of the ASME Code, Section XI, for McGuire Nuclear Station Unit 2. This relief request is for the second 10-year inservice inspection (ISI) interval. The Idaho National Engineering and Environmental Laboratory (INEEL) staff's evaluation of the subject request for relief is in the following section.

2. EVALUATION

The information provided by Duke Energy Corporation in support of the request for relief from Code requirements has been evaluated and the basis for disposition is documented below. The Code of record for the McGuire Nuclear Station Unit 2, second 10-year ISI interval, which began March 2, 1994, is the 1989 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

2.1 Request for Relief No. 99-001 (Part A), Examination Category B-D, Pressurizer Full Penetration Nozzle-to-Vessel Welds and Inside Radius (IR) Sections

Code Requirement: Examination Category B-D, Items B3.110 and B3.120 require 100% volumetric examination of Pressurizer nozzle-to-shell welds and inside radius sections, as defined in Figure IWB-2500-7(b).

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), The licensee requested relief from the Code-required volumetric examinations of the following pressurizer nozzle-to-shell welds and inside radius sections.

Comp. ID	Component Description	ASME Category	Item Number	Aggregate Coverage	Limitation
B03.110.004 2PZR-13	PZR Nozzle to Vessel Weld	B-D	B3.110	62.70%	Nozzle Geometry
B03.110.005 2PZR-14	PZR Nozzle to Vessel Weld	B-D	B3.110	62.70%	Nozzle Geometry
B03.110.006 2PZR-15	PZR Nozzle to Vessel Weld	B-D	B3.110	62.70%	Nozzle Geometry
B03.110.007 2PZR-16	PZR Nozzle to Vessel Weld	B-D	B3.110	62.70%	Nozzle Geometry

Comp. ID	Component Description	ASME Category	Item Number	Aggregate Coverage	Limitation
B03.120.003 2PZR-13R	PZR Nozzle Inside Radius Section	B-D	B3.120	62.79%	Nozzle Geometry
B03.120.004 2PZR-14R	PZR Nozzle Inside Radius Section	B-D	B3.120	62.79%	Nozzle Geometry
B03.120.005 2PZR-15R	PZR Nozzle Inside Radius Section	B-D	B3.120	62.79%	Nozzle Geometry
B03.120.006 2PZR-16R	PZR Nozzle Inside Radius Section	B-D	B3.120	62.79%	Nozzle Geometry

Licensee's Basis for Requesting Relief (as stated):

"During the ultrasonic examination of the Pressurizer Safety Nozzle to Pressurizer Upper Head Welds...shown in Attachment 1[1], coverage of the required examination volume could not be obtained. The examination coverage was limited to 62.70%, due to single sided access caused by the nozzle geometry. In order to achieve more coverage, the nozzle would have to be redesigned to allow access from both sides.

"During the ultrasonic examination of the Pressurizer Safety Nozzle to Pressurizer Upper Head Inside Radius Sections...shown in Attachment 1, coverage of the required examination volume could not be obtained. The examination coverage was limited to 62.79%. The limitations are caused by the ratio of the nozzle O.D. to the vessel thickness. When the nozzle O.D. is small in relation to the vessel thickness, more coverage can be obtained when scanning from the vessel side. Conducting examinations from nozzle boss and OD blend radius using compound angles, determining which angles to use, metal paths to calibrate, and area of coverage are not accurate with manual calculations. Duke Energy is investigating the use of computer modeling to solve the limitation problems. Radiography is not practical because of the geometry of the component, which prevents placement of the film and exposure source.

"Nozzle inside radius sections were examined with the ultrasonic method to the maximum extent practical from the vessel wall. Calibration blocks and procedures were in accordance with ASME Section V, Article 4."

Licensee's Proposed Alternative Examination (as stated):

"The use of radiography as an alternate volumetric examination for all the above listed components is not practical due to component thickness and geometric configurations. Other restrictions making radiography impractical are the

1. Drawings, sketches, graphs, and attachments are not included with this report.

physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

"Since radiography is impractical, Duke Energy Corporation will continue to use ultrasonic examination procedures to obtain maximum coverage to the extent practicable of the Item Numbers referenced in Section I of this Request for Relief. No additional ultrasonic examinations or alternate exams are planned during the current interval for the welds referenced in Section I of the request.

"For the Class 1 Components listed in Section I above, Duke Energy proposes to use pressure test requirements to compliment (sic) the limited examination coverage. The Code requires (reference Table IWB-2500-1, Item Number B15.50) that a system leakage test be performed after each refueling outage. Additionally a system hydrostatic test (reference Table IWB-2500-1, Item Number B15.51) is required once during each 10-year inspection interval. These tests require a VT-2 visual examination for evidence of leakage. This testing will provide additional assurance of pressure boundary integrity."

Evaluation: The Code requires 100% volumetric examination of the subject pressurizer nozzle-to-vessel welds and inside radius sections. Sketches provided by the licensee show that complete examination is restricted due to nozzle geometries including nozzle boss limitations, vessel thickness-to-nozzle outside diameter ratio, and inner radius configuration. These limitations make the 100% volumetric examination impractical. To gain access for examination, the pressurizer and/or nozzles would require design modifications. Imposition of this requirement would create an undue burden on the licensee.

The licensee has examined a significant portion of these welds, obtaining greater than 62% coverage for each of the subject nozzle-to-vessel welds and nozzle inside radius sections. Based on the coverages obtained, it is concluded that any existing patterns of degradation would have been detected by the examinations, and reasonable assurance of the structural integrity has been provided.

Based on the impracticality of meeting the Code coverage requirements for the subject nozzle-to-vessel welds and inside radius sections, and the reasonable assurance of continued structural integrity provided by the examinations completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.2 Request for Relief No. 99-001 (Part B), Examination Category B-D, Item B3.140, Steam Generator Nozzle Inside Radius Sections

Code Requirement: Examination Category C-D, Item B3.140 requires 100% volumetric examination, as defined by Figure IWB-2500-7(b), for steam generator nozzle inner radius (IR) sections.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code requirements for the welds listed below.

Comp. ID	Component Description	ASME Category	Item Number	Aggregate Coverage	Limitation
2SGB-Inlet (IR)	B03.140.003	B-D	B3.140	83.28%	Volumetric examination limited due to the nozzle OD to the vessel thickness
2SGB-Outlet (IR)	B03.140.004	B-D	B3.140	83.28%	Volumetric examination limited due to the nozzle OD to the vessel thickness

Licensee's Basis for Requesting Relief (as stated):

"During the ultrasonic examination of the Steam Generator Nozzles (Nozzle Inside Radius Section)... shown in Attachment 1, coverage of required examination volume could not be obtained. The examination coverage was limited to 83.28%. Limitations are caused by the ratio of the nozzle O.D. to the vessel thickness. When the nozzle O.D. is small in relation to the vessel thickness, more coverage can be obtained when scanning from the vessel side. Conducting examinations from nozzle boss and OD blend radius using compound angles, determining which angles to use, metal paths to calibrate, and area of coverage are not accurate with manual calculations. Duke Energy is investigating the use of computer modeling to solve the limitation problems. Radiography is not practical because of the geometry of the component, which prevents placement of the film and exposure source.

"Nozzle inside radius sections were examined with the ultrasonic method to the maximum extent practical from the vessel wall. Calibration blocks and procedures were in accordance with ASME Section V, Article 4."

Licensee's Proposed Alternative Examination (as stated):

"The use of radiography as an alternate volumetric examination for all the above listed components is not practical due to component thickness and geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

"Since radiography is impractical, Duke Energy Corporation will continue to use ultrasonic examination procedures to obtain maximum coverage to the extent practicable of the Item Numbers referenced in Section I of this Request for Relief. No additional ultrasonic examinations or alternate exams are planned during the current interval for the welds referenced in Section I of the request.

"For the Class 1 Components listed in Section I above, Duke Energy proposes to use pressure test requirements to compliment (sic) the limited examination coverage. The Code requires (reference Table IWB-2500-1, Item Number B15.50) that a system leakage test be performed after each refueling outage. Additionally a system hydrostatic test (reference Table IWB-2500-1, Item Number B15.51) is required once during each 10-year inspection interval. These

tests require a VT-2 visual examination for evidence of leakage. This testing will provide additional assurance of pressure boundary integrity."

Evaluation: The Code requires 100% volumetric examination of the subject nozzle inner radius sections. However, complete examination of these areas is limited by nozzle configuration (i.e., nozzle bore size and vessel wall thickness). As supported by figures attached to the licensee's submittal, these restrictions limit access and make the Code examination requirements impractical for the subject inner radius sections. To meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue hardship on the licensee.

The licensee has examined a significant portion (approximately 83%) of each of the subject nozzle examination areas. As a result, any existing patterns of degradation would have been detected and reasonable assurance of the continued structural integrity has been provided. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.3 Request for Relief No. 99-001, (Part C), Examination Category B-F, Items B5.70, Dissimilar Metal Welds

Code Requirement: Examination Category B-F, Item B5.70 requires 100% volumetric and surface examination, as defined by Figure IWB-2500-8, for steam generator nozzle-to-safe end dissimilar metal welds 4-inch NPS or larger.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code required volumetric examinations for the dissimilar welds listed below.

Comp. ID	Component Description	ASME Category	Item Number	Aggregate Coverage	Limitation
2SGB-Inlet-W5SE	Steam Generator B05.070.003	B-F	B5.70	75%	Volumetric examination limited due material characteristics and single side access
2SGB-Outlet-W6SE	Steam Generator B05.070.004	B-F	B5.70	75%	Volumetric examination limited due material characteristics and single side access

Licensee's Basis for Requesting Relief (as stated):

"During the ultrasonic examination of the Steam Generator Nozzle-to-Safe End Welds...shown in Attachment 2 coverage of required examination volume could not be obtained. Material characteristics and single sided access caused by the component geometry prevents two-beam path direction coverage of the examination volume and limits the examination coverage to 75%.

"The most effective ultrasonic technique for the examination of dissimilar metal welds uses refracted longitudinal waves. The longitudinal wave is preferred, as

the austenitic weld metal and buttering create highly attenuative barriers to shear wave ultrasound. The longitudinal wave is less affected by these difficulties. However, the longitudinal wave is affected by mode conversion when it strikes the inside surface of the safe end or pipe at any angle other than a right angle to the surface.

"The calculations below shows that a 45° refracted longitudinal wave striking the inside surface of a pipe will produce a 22.9° refracted shear wave in addition to the normally expected 45° reflected longitudinal wave.

$$\text{"}\sin^{-1} = (\sin 45^\circ \times V_S) \div V_L$$

$$= (0.707 \times 0.123) \div 0.223$$

Where: $\sin^{-1}$ is the shear wave angle,
V_S is the shear wave velocity of the stainless steel safe end/pipe material in inches/μsec., and
V_L is the longitudinal wave velocity of the stainless steel safe/pipe end material in inches/μsec.

"As shown in the graph[2] below, the mode conversion process creates two sound beams of differing intensities reflecting off of the inside surface. At incident angles greater than 30° the shear wave will predominate. However, the shear wave is attenuated and scattered by the austenitic weld metal and the layer of buttering. The examination sensitivity is degraded to such an extent that any examination using the second sound path leg is meaningless. Therefore, the two-beam path direction coverage requirement is impractical. In order to obtain the required two-beam path direction coverage, welds would have to be re-designed to allow scanning from both sides."

Licensee's Proposed Alternative Examination (as stated):

"The use of radiography as an alternate volumetric examination for all the above listed components is not practical due to component thickness and geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

"Since radiography is impractical, Duke Energy Corporation will continue to use ultrasonic examination procedures to obtain maximum coverage to the extent practicable of the Item Numbers referenced in Section I of this Request for Relief. No additional ultrasonic examinations or alternate exams are planned during the current interval for the welds referenced in Section I of the request.

"For the Class 1 Components listed in Section I above, Duke Energy proposes to

---

2. Drawings, sketches, graphs, and attachments are not included with this report.

use pressure test requirements to compliment (sic) the limited examination coverage. The Code requires (reference Table IWB-2500-1, Item Number B15.50) that a system leakage test be performed after each refueling outage. Additionally a system hydrostatic test (reference Table IWB-2500-1, Item Number B15.51) is required once during each 10-year inspection interval. These tests require a VT-2 visual examination for evidence of leakage. This testing will provide additional assurance of pressure boundary integrity."

Evaluation: The Code requires 100% surface and volumetric examination for dissimilar metal safe-end welds. However, complete volumetric examination of the subject welds was limited by component geometry (one-sided access) and highly attenuative material properties. As supported by figures attached to the licensee's submittal, these restrictions limit access and make the Code volumetric coverage requirements impractical for the subject dissimilar metal welds. To meet the Code coverage requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue hardship on the licensee.

The licensee has examined a significant portion (75%) of each of the subject dissimilar metal welds, in addition to the complete surface examination. As a result, any existing patterns of degradation would have been detected and reasonable assurance of the continued structural integrity has been provided. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.4 Request for Relief No. 99-001 (Part D), Examination Category C-A, Pressure-Retaining Welds in Class 2 Pressure Vessels

Code Requirement: Examination Category C-A, Items C1.10 and C1.30 require 100% volumetric examination of pressure vessel shell circumferential and tubesheet-to-shell welds as defined by Figures IWC-2500-1 and 2. In the case of multiple vessels of similar design, size, and service, the required examinations may be limited to one vessel or distributed among the vessels.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required volumetric examination of the following welds.

Comp. ID	Component Description	ASME Category	Item Number	Aggregate Coverage	Limitation
2ASWINJF-1	C01.010.100 Seal Water Injection Filter Shell Weld	C-A	C1.10	89.66%	Vessel nozzle interference
2ASWINJF-2	C01.010.101 Seal Water Injection Filter Shell Weld	C-A	C1.10	80.31%	Vessel nozzle interference
2ACSHX-SH-48	C01.030.010 Containment Spray Tubesheet-to-Shell Weld	C-A	C1.30	24%	Permanent Support Beams

Licensee's Basis for Requesting Relief (as stated):

"During the ultrasonic examination of the Shell to Upper Flange Weld 2ASWINJF-1 (C01.010.100), shown in Attachment 3, coverage of the required examination volume could not be obtained. The examination coverage was limited to 89.66% of the required examination volume due to single sided access caused by the nozzle geometry. In order to achieve more coverage, the weld would have to be redesigned to allow for more access.

"During the ultrasonic examination of the Shell to Upper Flange Weld 2ASWINJF-2 (C01.010.101), shown in Attachment 3, coverage of the required examination volume could not be obtained. The examination coverage was limited to 80.31% of the required examination volume due to single sided access caused by the nozzle geometry. In order to achieve more coverage, the weld would have to be redesigned to allow for more access.

"During the ultrasonic examination of the Shell to Tubesheet Weld 2ACSHX-SH-48 (C01.030.010), shown in Attachment 4, coverage of the required examination could not be obtained. The examination coverage was limited to 24% of the required examination volume due to the proximity of support beams that prevented scanning significant areas of the weld. In order to achieve more coverage, the equipment support would have to be redesigned or removed to allow for more access to the weld."

Licensee's Proposed Alternative Examination (as stated):

"The use of radiography as an alternate volumetric examination for all the above listed components is not practical due to component thickness and geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

"Since radiography is impractical, Duke Energy Corporation will continue to use ultrasonic examination procedures to obtain maximum coverage to the extent practicable of the Item Numbers referenced in Section I of this Request for Relief. No additional ultrasonic examinations or alternate exams are planned during the current interval for the welds referenced in Section I of the request.

"For the Class 2 Components listed in Section I above Duke Energy proposes to use pressure test requirements to compliment (sic) the limited examination coverage. The Code requires (reference Table IWC-2500-1, Item Number C7.10) that a system pressure test be performed once each period. Additionally a system hydrostatic test required once during each 10-year inspection interval. These tests require a VT-2 visual examination for evidence of leakage. This testing will provide additional assurance of pressure boundary integrity."

Evaluation: The Code requires 100% volumetric examination for the subject circumferential shell and tubesheet-to-shell welds. Review of documents including

sketches submitted by the licensee demonstrate that complete examination was not possible due to interference from adjacent nozzles and support components that restrict access. Therefore, the Code examination requirements are impractical for these welds. To meet the Code requirements, engineering redesign and modification of the subject components would be required to allow additional access to the weld. Imposition of the Code requirements would result in a considerable burden on the licensee.

The licensee volumetrically examined a significant portion of the Seal Water Injection Filter Shell Welds (80-89%), and a reported 24% of the Containment Spray Heat Exchanger Tubesheet-to-Shell Weld. Therefore, any significant patterns of degradation would have been detected by the examinations that were completed and reasonable assurance of the structural integrity of the pressure-retaining circumferential shell and tubesheet-to-shell welds has been provided. Based on the impracticality of meeting the Code requirements for the subject welds, and the reasonable assurance of continued structural integrity provided by the examinations that were completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

3. CONCLUSION

The INEEL staff evaluated the licensee's submittal and concluded that certain inservice examinations cannot be performed to the extent required by the Code at the McGuire Nuclear Station, Unit 2. For Request for Relief 99-001, (Parts A through D) discussed above, it is concluded that the Code requirements are impractical for the subject welds. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

MCGUIRE NUCLEAR STATION UNIT 2
Second 10-Year ISI Interval

SUMMARY OF RELIEF REQUESTS

Relief Request Number	INEEL TLR Sec.	System or Component	Exam Category	Item No.	Volume or Area to be Examined	Required Method	Licensee Proposed Alternative	Relief Request Disposition
99-001, Part A	2.1	Pressurizer	B-D	B3.110 B3.120	Nozzle to Shell Weld Nozzle Inner Radius Section	Volumetric	Volumetric coverages obtained be found acceptable	Granted 10 CFR50.55a(g)(6)(i)
99-001, Part B	2.2	Steam Generator	B-D	B3.140	Nozzle Inner Radius Section	Volumetric	Volumetric coverages obtained be found acceptable	Granted 10 CFR50.55a(g)(6)(i)
99-001, Part C	2.3	Steam Generator	B-F	B5.70	Nozzle-to-Safe End Welds	Volumetric/Surface	Volumetric coverages obtained be found acceptable	Granted 10 CFR50.55a(g)(6)(i)
99-001, Part D	2.4	Class 2 Pressure Vessels	C-A	C1.10 C1.30	Circumferential Shell Weld Tubesheet-to-Shell Weld	Volumetric	Volumetric coverages obtained be found acceptable	Granted 10 CFR50.55a(g)(6)(i)

cc:
Ms. Lisa F. Vaughn
Legal Department (PBO5E)
Duke Energy Corporation
422 South Church Street
Charlotte, North Carolina 28201-1006

County Manager of
Mecklenburg County
720 East Fourth Street
Charlotte, North Carolina 28202

Michael T. Cash
Regulatory Compliance Manager
Duke Energy Corporation
McGuire Nuclear Site
12700 Hagers Ferry Road
Huntersville, North Carolina 28078

Anne Cottingham, Esquire
Winston and Strawn
1400 L Street, NW.
Washington, DC 20005

Senior Resident Inspector
c/o U.S. Nuclear Regulatory Commission
12700 Hagers Ferry Road
Huntersville, North Carolina 28078

Dr. John M. Barry
Mecklenberg County
Department of Environmental
Protection
700 N. Tryon Street
Charlotte, North Carolina 28202

Mr. Steven P. Shaver
Senior Sales Engineer
Westinshouse Electric Company
5929 Carnegie Blvd.
Suite 500
Charlotte, North Carolina 28209

Ms. Karen E. Long
Assistant Attorney General
North Carolina Department of
Justice
P. O. Box 629
Raleigh, North Carolina 27602

Mr. C. Jeffrey Thomas
Manager - Nuclear Regulatory
Licensing
Duke Energy Corporation
526 South Church Street
Charlotte, North Carolina 28201-1006

Elaine Wathen, Lead REP Planner
Division of Emergency Management
116 West Jones Street
Raleigh, North Carolina 27603-1335

Mr. Richard M. Fry, Director
Division of Radiation Protection
North Carolina Department of
Environment, Health and Natural
Resources
3825 Barrett Drive
Raleigh, North Carolina 27609-7721

Mr. T. Richard Puryear
Owners Group (NCEMC)
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745