

January 22, 2003

Mr. Mano Nazar
Site Vice President
Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC
1717 Wakonade Drive East
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2 - EVALUATION OF RELIEF REQUEST NO. 12 FOR THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM (TAC NO. MB5300)

Dear Mr. Nazar:

By letter dated May 31, 2002, the Nuclear Management Company, LLC (the licensee), submitted Relief Request No. 12 (RR-12) for "limited examinations" for the third 10-year inservice inspection (ISI) interval at the Prairie Island Nuclear Generating Plant, Unit 2.

The licensee has performed the Code-required weld examinations to the extent practical and in all cases has achieved greater than 49.2-percent weld examination coverage. The highest achieved weld coverage was 83.00 percent. The NRC staff evaluated RR-12 and found that performance of 100-percent weld examination coverage is impractical for the third 10-year ISI interval and that the weld examination coverage of 49 percent to 83 percent achieved by the licensee should have detected any existing patterns of degradation. This level of coverage, in conjunction with the fact that no indications of service flaws were identified as a result of the weld examinations, provides reasonable assurance of continued structural integrity for the examined welds.

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.

The NRC staff's safety evaluation for RR-12 is enclosed.

Sincerely,

/RA/

John G. Lamb, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-306

Enclosure: Safety Evaluation

cc w/encl: See next page

January 22, 2003

Mr. Mano Nazar
Site Vice President
Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC
1717 Wakonade Drive East
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2 - EVALUATION OF RELIEF REQUEST NO. 12 FOR THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM (TAC NO. MB5300)

Dear Mr. Nazar:

By letter dated May 31, 2002, the Nuclear Management Company, LLC (the licensee), submitted Relief Request No. 12 (RR-12) for "limited examinations" for the third 10-year inservice inspection (ISI) interval at the Prairie Island Nuclear Generating Plant, Unit 2.

The licensee has performed the Code-required weld examinations to the extent practical and in all cases has achieved greater than 49.2-percent weld examination coverage. The highest achieved weld coverage was 83.00 percent. The NRC staff evaluated RR-12 and found that performance of 100-percent weld examination coverage is impractical for the third 10-year ISI interval and that the weld examination coverage of 49 percent to 83 percent achieved by the licensee should have detected any existing patterns of degradation. This level of coverage, in conjunction with the fact that no indications of service flaws were identified as a result of the weld examinations, provides reasonable assurance of continued structural integrity for the examined welds.

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.

The NRC staff's safety evaluation for RR-12 is enclosed.

Sincerely,
/RA/
John G. Lamb, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-306

Enclosure: Safety Evaluation

cc w/encl: See next page

DISTRIBUTION

PUBLIC OGC GGeorgiev
PDIII-1 Reading ACRS KRiemer, RIII
LRaghavan TChan
JLamb GHIII(2)
RBouling NSanfilippo

*Provided SE input by memo

OFFICE	PDIII-1/PM	PDIII-1/LA	EMCB/SC*	OGC	PDIII-1/SC
NAME	JLamb	RBouling	TChan	RHoefling	LRaghavan
DATE	01/14/03	01/14/03	12/26/02	01/21/03	01/22/03

Prairie Island Nuclear Generating Plant,
Units 1 and 2

cc:

J. E. Silberg, Esquire
Shaw, Pittman, Potts and Trowbridge
2300 N Street, N. W.
Washington, DC 20037

Site Licensing Manager
Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC
1717 Wakonade Drive East
Welch, MN 55089

Adonis A. Neblett
Assistant Attorney General
Office of the Attorney General
455 Minnesota Street
Suite 900
St. Paul, MN 55101-2127

U.S. Nuclear Regulatory Commission
Resident Inspector's Office
1719 Wakonade Drive East
Welch, MN 55089-9642

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Administrator
Goodhue County Courthouse
Box 408
Red Wing, MN 55066-0408

Commissioner
Minnesota Department of Commerce
121 Seventh Place East
Suite 200
St. Paul, MN 55101-2145

Tribal Council
Prairie Island Indian Community
ATTN: Environmental Department
5636 Sturgeon Lake Road
Welch, MN 55089

Mr. Roy A. Anderson
Executive Vice President and
Chief Nuclear Officer
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Nuclear Asset Manager
Xcel Energy, Inc.
414 Nicollet Mall
Minneapolis, MN 55401

March 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REGARDING THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION

RELIEF REQUEST NO. 12

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-306

1.0 INTRODUCTION

The regulation at 10 CFR 50.55a(g) specifies that inservice inspection (ISI) of nuclear power plant components shall be performed in accordance with the requirements of the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used when authorized by the NRC if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

The licensee submitted a Relief Request No. 12 (RR-12) for the third 10-year ISI interval. The Code of record for the third interval for PINGP Unit 2 is the ASME Code, Section XI, 1989 edition. The NRC staff has evaluated the information provided by the licensee in support of RR-12 and the basis for the NRC staff's disposition is documented below.

System/Component(s) for which Relief is Requested

Various Class 1 and 2 systems.

Impractical Examination Requirements (Code Requirements) (as stated):

"ASME Section XI (1989 no addenda) Code requires full examination of inservice inspection (ISI) components per Table IWB-2500-1, and IWC-2500-1. Reg. Guide 1.147 endorses Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds." This code case allows greater than 90% coverage of a weld to meet the "essentially 100%" requirement.

NRC Information Notice 98-42, "Implementation of 10 CFR 50.55a(g) Inservice Inspection requirements" Dec. 1, 1998, states "The NRC has adopted and further refined the definition of "essentially 100 percent" to mean greater than 90 percent" in 10 CFR 50.55a(g)(6)(ii)(A)(2) for required examination coverage of reactor pressure vessel welds. This standard has been applied to all examination of welds or other areas required by ASME Section XI.

The Prairie Island construction permit was issued in 1967. This facility was designed and constructed with limited accessibility due to component configurations and/or physical barriers for which 100% coverage is not achievable on some ISI components examined for the Third Ten Year Interval."

Basis for Relief (as stated)

"The following 10 CFR 50.55a paragraphs apply to the inservice inspection of components in accordance with the ASME Section XI code:

50.55a(g)(1): For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued prior to January 1, 1971, components (including supports) must meet the requirements of paragraphs (g) (4) and (5) of this section to the extent practical.

50.55a(g)(4): Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and pre-service examination requirements, set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code ... to the extent practical within the limitations of design, geometry and materials of construction of the components.

50.55a(g)(5)(iv): Where an examination requirement by the code or addenda is determined to be impractical by the licensee and is not included in the revised inservice inspection program as permitted by paragraph (g)(4) of this section, the basis for this determination must be demonstrated to the satisfaction of the Commission.

Prairie Island was designed and constructed prior to development of ASME XI, therefore design for accessibility and inspection coverage is not, in many cases, sufficient to permit satisfying the current Code requirements. Limitations to inspections are primarily due to obstructions, interference and design configurations."

Detailed Description of Limited Coverage (as stated)

"Part A: Category B-J, "Pressure Retaining Welds in Piping"

Summary No. 501125, W-1, Reactor Coolant Pump to Pipe Weld, is limited to volumetric (UT) examination to 49.2% coverage. The limited examination coverage is the result of interference from a 6" branch connection at 270 degrees, 3" from toe of weld.

Summary No. 501140, W-1, Reactor Coolant Nozzle to Elbow Weld, is limited to volumetric (UT) examination to 55.35% coverage. The limited examination coverage is the result of the design configuration of the nozzle to elbow weld, which prohibits one of the four directional scans required.

Summary No. 501638, W-7, Reactor Coolant Valve to 45 degree Elbow Weld, is limited to volumetric (UT) examination one sided examination 50.00% coverage. PDI [performance demonstration initiative] UT procedure is not qualified for the detection of flaws on the far side of single side access examinations. The technique provided by the PDI procedure was used for a best effort examination for flaws on the far side of the weld. Valve to elbow configuration limits this examination to single side.

Summary No. 501804, W-9, Reactor Coolant Elbow to pipe weld, is limited to volumetric (UT) examination to 58.75% coverage. The limited examination coverage is the result of interference from an install box restraint close to the weld toe that prevents four directional scanning of complete weld.

Part B: Category C-C "Integral attachments for Vessels, Piping, Pumps and Valves"

Summary No. 500978, Main Steam Hanger H-2, Integral attached welds, is limited to surface examination of only 74.3% of surface area due to restraint configuration.

Summary No. 500985, Main Steam Hanger H-3, Integral attached welds, is limited to surface examination of only 74.3% of surface area due to restraint configuration.

Summary No. 500988, Main Steam Hanger H-3, Integral attached welds, is limited to surface examination of only 74.3% of surface area due to restraint configuration.

Part C: Category C-F-1 "Pressure Retaining Welds in Austenitic Stainless Piping"

Summary, No. 500251, W-17, Safety Injection Pipe to Valve weld, is limited to volumetric examination coverage of 50.00%. PDI UT procedure is not qualified for the detection of flaws on the far side of single side access examinations. The technique provided by the PDI procedure was used for a best effort examination for flaws on the far side of the weld. Pipe to Valve configuration limits this examination to single side.

Summary No. 502388, W-1, Safety Injection Valve to Pipe weld is limited to volumetric examination coverage of 50.00%. PDI UT procedure is not qualified for the detection of flaws on the far side of single side access examinations. The technique provided by the PDI procedure was used for a best effort examination for flaws on the far side of the weld. Valve to Pipe configuration limits this examination to single side.

Summary No. 502147, W-18/LSU, Residual Heat Removal Pipe to Flange weld is limited to volumetric examination coverage of 75.00%. PDI UT procedure is not qualified for the detection of flaws on the far side of single side access examinations. The technique provided by the PDI procedure was used for a best effort examination for flaws on the far side of the weld. Pipe to Flange configuration limits this examination to single side.

Summary No. 502372, W-1/LSD, Residual Heat Removal Valve to Reducer weld is limited to volumetric examination coverage of 50.00%. PDI UT procedure is not qualified for the detection of flaws on the far side of single side access examinations. The technique provided by the PDI procedure was used for a best effort examination for flaws on the far side of the weld. Valve to reducer configuration limits this examination to single side.

Summary No. 502392, W-5/LSD, Residual Heat Removal Valve to Reducer weld is limited to volumetric examination coverage of 50.00%. PDI UT procedure is not qualified for the detection of flaws on the far side of single side access examinations. The technique provided by the PDI procedure was used for a best effort examination for flaws on the far side of the weld. Valve to reducer configuration limits this examination to single side.

Part D: Category C-F-2 " Pressure Retaining Welds in Ferritic and low alloy Piping"

Summary No. 500830, W-14/LSU, Main Steam Pipe-Flanged Nozzle weld is limited to surface examination coverage of 83.3%. Interference from a Hanger installed top dead center of weld prohibits adequate surface examination coverage."

Additional Means of Establishing Integrity (as stated)

"In addition, system pressure tests and associated visual inspections (VT-2) required by Section XI are performed at required frequency to ensure the piping system is capable of maintaining pressure integrity. System integrity is monitored during normal operation by many direct and indirect methods, e.g., containment radiation monitoring, containment air monitoring, containment sump monitoring, containment temperature monitoring, system walk downs, surveillance testing, etc.

For all listed B-J Category weld with UT volumetric limitations the associated required surface examination (PT or MT) was performed in accordance with Section XI.

For all listed C-C Category integral attached welds with surface examination limitations the associated required visual examination (VT-3) has been performed.

For all listed C-F-1 Category, austenitic piping welds with UT volumetric limitations the associated required surface (PT) examination was performed in accordance with Section XI.

All in-service inspection at Prairie Island Unit 2 have been done to the greatest extent practical. When limitation to required inspections are encountered procedure ISI-LTS-1 is applied which requires approved alternative examination techniques be considered, or applied to gain the maximum obtainable inspection coverage practical. In all of the above items identified, this procedure was used and the maximum inspection coverage has been achieved for the components listed to ensure pressure and structural integrity."

3.0 TECHNICAL EVALUATION

The licensee submitted RR-12 pursuant to 10 CFR 50.55a(g)(5)(iii). The licensee is seeking relief from the requirements of the ASME Code, Section XI, because the Code-required 100-percent examination coverage can not be achieved for certain welds at PINGP Unit 2. Relief is sought for the third 10-year ISI interval at PINGP Unit 2. The PINGP Unit 2 Third 10-year ISI Program Plan meets the requirements of the ASME Code, Section XI, 1989 edition. The ASME Code, Section XI, requires 100-percent examination of ISI components, per Tables IWB-2500-1 and IWC-2500-1. NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," endorses ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds." Code Case N-460 defines weld examination coverage greater than 90 percent to meet the

"essentially 100 percent" requirement specified in ASME Code, Section XI. The licensee stated that the construction permit for Prairie Island Unit 2 was issued in 1967 and, therefore, the facility was designed and constructed with limited accessibility due to component configurations and/or physical barriers for which 100-percent coverage is not achievable on some ISI components.

The licensee has performed the Code-required weld examinations to the extent practical and in all cases has achieved greater than 49.2-percent weld examination coverage. The highest achieved weld coverage was 83.00 percent. Details concerning the welds examined and associated examination coverage is provided in the attached table.

The NRC staff has evaluated RR-12 and found that performance of 100-percent weld examination coverage is impractical for the third 10-year ISI interval and that the weld examination coverage of 49 percent to 83 percent achieved by the licensee should have detected any existing patterns of degradation. This level of coverage, in conjunction with the fact that no indications of service flaws were identified as a result of the weld examinations, provides reasonable assurance of continued structural integrity for the examined welds.

4.0 CONCLUSION

The NRC staff concludes that the examined welds identified in the attached table cannot be examined to the extent required by the Code at PINGP Unit 2. The NRC staff further concludes that reasonable assurance of structural integrity has been provided by the examinations that were performed. Therefore, the relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). 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.

Attachment: Table

Principal Contributor: G. Georgiev

Date: January 22, 2003

Table: Limited Examinations - Prairie Island Unit 2 - 2002 Refueling Outage

Category	Item No.	System	ISO	Component ID	Description	Method	% Coverage	Report	Limitation
B-J	B9.11	Reactor Coolant	2-ISI-32C	W-1 501125	Pump to Pipe	Volumetric UT	49.2%	2002U035	Examination Limited due to 6" branch connection at 270 degrees, 3" downstream from weld toe.
B-J	B9.11	Reactor Coolant	2-ISI-33B	W-1 501140	Nozzle to Elbow	Volumetric UT	55.3%	2002U045	Examination Limited due to nozzle configuration at weld toe.
B-J	B9.11	Reactor Coolant	2-ISI-28	W-7 501638	Valve to 45 Elbow	Volumetric UT	50.00%	2002U038	Single Sided examination-PDI examination limitation. PDI procedure is not qualified for detection of flaws on the far side of single side access examinations.
B-J	B9.11	Reactor Coolant	2-ISI-20A	W-9 501804	Elbow to Pipe	Volumetric UT	58.75%	2002U033	Examination limited due to box restraint prohibiting access to weld.
C-C	F-A,B,C	Main Steam	2-ISI-47A	H-1 500978	Rupture Restraint	Surface MT	74.30%	2002M025	Weld area inaccessible due to restraint configuration.
C-C	F-A,B,C	Main Steam	2-ISI-47A	H-2 500985	Seismic Restraint	Surface MT	74.30%	2002M024	Weld area inaccessible due to restraint configuration.
C-C	F-A,B,C	Main Steam	2-ISI-47A	H-3 500988	Seismic Restraint	Surface MT	74.30%	2002M021	Weld area inaccessible due to restraint configuration.
C-F-1	C5.11	Safety Injection	2-ISI-72	W-17 500251	Pipe to Valve	Volumetric UT	50%	2002U036	Single Sided examination-PDI examination limitation. PDI procedure is not qualified for detection of flaws on the far side of single side access examinations.
C-F-1	C5.11	Safety Injection	2-ISI-70	W-1 502388	Valve to Pipe	Volumetric UT	50%	2002U037	Single Sided examination-PDI examination limitation. PDI procedure is not qualified for detection of flaws on the far side of single side access examinations.
C-F-1	C5.10	Residual Heat Removal	2-ISI-51	W-18/LSU 502147	Pipe to Flange	Volumetric UT	75.00%	2002U001	Axial examination performed from pipe side only, due to Pipe to Flange Configuration. PDI procedure is not qualified for the detection of flaws on the far side of single side access examinations.

ATTACHMENT

Table: Limited Examinations - Prairie Island Unit 2 - 2002 Refueling Outage

Category	Item No.	System	ISO	Component ID	Description	Method	% Coverage	Report	Limitation
C-F-1	C5.10	Residual Heat Removal	2-ISI-50	W1/LSD 502372	Valve to Reducer	Volumetric UT	50%	2002U028	Single Sided examination-PDI examination limitation. PDI procedure is not qualified for detection of flaws on the far side of single side access examinations.
C-F-1	C5.10	Residual Heat Removal	2-ISI-50	W-5/LSD 502392	Valve to Reducer	Volumetric UT	50%	2002U026	Single Sided examination-PDI examination limitation. PDI procedure is not qualified for detection of flaws on the far side of single side access examinations.
C-F-2	C5.80	Main Steam	2-ISI-46B	W-14/LSU 500830	Pipe Flanged Nozzle	Surface MT	83.00%	2002M016	Surface examination is limited due to hanger interference at top dead center.