



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
OF THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PLAN

RELIEF REQUEST NO. 10

NORTHERN STATES POWER COMPANY

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NUMBER 50-263

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(6)(g)(i). The regulation at 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (9) 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.

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 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. The regulations require that inservice examination of components and system pressure tests be conducted during the first 10-year interval and, in 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. For the Monticello Nuclear Generating Plant's third 10-year ISI interval, the applicable edition of Section XI of the ASME Code is the 1986 Edition.

2.0 EVALUATION

By letter dated July 24, 1998, Northern States Power Company (the licensee) submitted Relief Request No.10 related to its third 10-year interval ISI program plan for the Monticello Nuclear

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Generating Plant. The Idaho National Engineering and Environmental Laboratory (INEEL) has evaluated the information provided by the licensee in support of its relief request related to its third 10-year interval ISI program. Based on the results of the review, the staff adopts the contractor's conclusions and recommendations presented in the technical letter report (TLR) attached.

The information provided by the licensee in support of the request for relief from Code requirements has been evaluated and the basis for disposition is documented below and in INEEL's TLR.

#### Relief Request No. 10, Part A

ASME Code, Section XI, Examination Category B-D, Items B3.90 and B3.100, require 100-percent volumetric examination of nozzle-to-reactor vessel welds and nozzle inside radius sections, as defined by Figure IWB-2500-7.

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required 100-percent volumetric examination of the reactor vessel nozzle welds.

The Code requires 100-percent volumetric examination of the subject reactor pressure vessel (RPV) nozzle-to-vessel welds and inside radius sections. However, complete examination is restricted by geometric configuration and/or instrument attachments that make the 100-percent volumetric examination impractical. To gain access for examination, the RPV nozzles would require design modifications. Imposition of this requirement would create an undue burden on the licensee.

The staff determined that the Code coverage requirements for the subject nozzle-to-vessel welds and inside radius sections are impractical. Further, the staff determined that the inspections performed by the licensee to the extent practical and examinations that were completed on these and other Class 1 nozzles provide reasonable assurance of structural integrity of the subject nozzles. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). The relief granted 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 on the licensee if the requirements were imposed on the facility.

#### Relief Request No. 10, Part B

ASME Code, Section XI, Examination Category B-J, Items B9.11 and B9.31, require 100-percent volumetric and surface examination, as defined by Figures IWB-2500-8, 9, 10, and 11, for Class 1 circumferential welds and branch pipe connection welds in piping 4-inch nominal pipe size and larger.

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required 100-percent volumetric or surface examination coverage of residual heat removal (RHR) return A&B and recirculation manifold B welds.

The Code requires 100-percent surface and volumetric examination of the subject Class 1 piping welds. The staff determined that the Code requirements are impractical and that design modifications would be required in order to meet the Code examination requirements. Imposition of this requirement would create a significant burden on the licensee.

The licensee has obtained 43–50 percent of the required volumetric examination coverage on three welds, and 88 percent of the surface examination coverage on one weld. In addition, these welds are part of a larger sample of B-J welds to be examined. Therefore, the examinations performed and completed on these and other welds within the entire sample provide reasonable assurance of structural integrity of the subject components. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). The relief granted 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 on the licensee if the requirements were imposed on the facility.

#### Relief Request No. 10, Part C

ASME, Section XI, Examination Category B-G-1, Item B6.10, requires a surface examination of all RPV closure head nuts each 10-year interval. Item B6.40 requires 100-percent volumetric examination of the threads in the RPV flange, as defined by Figure IWB-2500-12.

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required surface examination on the RPV closure head nuts and the Code-required volumetric examination of the threads in the RPV flange.

The staff determined that Code requirements are impractical. To perform the Code-required examination the licensee would have to redesign the subject components. Imposition of the Code requirements would create a significant burden on the licensee.

The licensee has proposed that it will perform a VT-1 visual examination allowed in the 1992 Edition of ASME XI. Since the licensee has performed 96 percent of the required volumetric examination of the threaded region of the vessel flange, the licensee has proposed to not perform any additional examinations of the vessel flange threads.

The staff has determined that based on the impracticality of meeting the Code-required surface and volumetric examination requirements for the subject components, and the reasonable assurance of structural integrity provided by the examinations that have and will be completed, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). The relief granted 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 on the licensee if the requirements were imposed on the facility.

#### Relief Request No. 10, Part D

ASME Code, Section SI, Examination Category C-C, Item C3.20, requires 100-percent surface examination, as defined by Figure IWC-2500-5, for integrally welded attachments to piping.

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required integral attachment surface examinations on control rod drive (CRD) Scram Header B attachment (support) H-7 and RHR discharge B lugs for double spring attachment (support) H-9.

The staff determined that the Code requirements are impractical and the licensee would have to redesign the subject components to perform the Code-required examinations. Imposition of these requirements would create a significant burden on the licensee.

The staff determined that based on the impracticality of meeting the Code-required surface examination coverage requirements for the subject components, and the reasonable assurance of structural integrity provided by the examinations that have and will be completed, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). The relief granted 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 on the licensee if the requirements were imposed on the facility.

#### Relief Request No. 10, Part E

ASME, Section XI, Examination Category C-F-2, Item C5.51, requires 100-percent surface and volumetric examination of the circumferential piping welds  $\geq 3/8$ -inch nominal wall thickness for piping greater than NPS 4 as defined by Figure IWB-2500-7.

Pursuant to 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required 100-percent volumetric and surface examination coverage of the high pressure coolant injection (HPCI) steam discharge weld. The Code requires 100-percent surface and volumetric examination of the subject Class 2 piping weld. Examination of this weld is limited to 80 percent of the required volumetric examination coverage and 58 percent of the surface examination coverage. The staff concluded that Code requirements are impractical and the licensee would have to redesign the subject components in order to perform the examinations to requirements of the Code. Imposition of these requirements would create a significant burden on the licensee.

The staff concluded that based on the impracticality of meeting the Code volumetric and surface examination coverage requirements for the subject welds, and the reasonable assurance of structural integrity that is provided by the examinations that have been or will be completed, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i). The relief granted 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 on the licensee if the requirements were imposed on the facility.

### 3.0 CONCLUSION

The staff evaluated the licensee's submittal and concluded that the subject inservice examinations for Relief Request No. 10, Parts A, B, C, D, and E, are impractical to perform to the extent required by the Code at the Monticello Nuclear Generating Plant. The subject components would have to be redesigned and this would cause a significant burden on the licensee. The staff concludes that the examinations performed and the examinations to be

performed provide reasonable assurance of structural integrity. Therefore, Relief Request No. 10, Parts A, B, C, D, and E, are granted pursuant to 10 CFR 50.55a(g)(6)(i). The relief granted 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 on the licensee if the requirements were imposed on the facility.

Principal Contributor: T. McLellan

Date: August 4, 1999

Attachment: Technical Letter Report

**TECHNICAL LETTER REPORT**  
**ON THIRD 10-YEAR INTERVAL INSERVICE INSPECTION**  
**REQUEST FOR RELIEF NO. 10**  
**FOR**  
**NORTHERN STATES POWER COMPANY**  
**MONTICELLO NUCLEAR GENERATING PLANT**  
**DOCKET NUMBER: 50-263**

1. INTRODUCTION

By letter dated July 24, 1998, the licensee, Northern States Power Company, submitted Request for Relief No.10 seeking relief from the requirements of the ASME Code, Section XI, for the Monticello Nuclear Generating Plant, third 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 Northern States Power Company 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 Monticello Nuclear Generating Plant, third 10-year ISI interval, which began June 1, 1992, is the 1986 Edition of Section XI of the ASME Boiler and Pressure Vessel Code.

A. Request for Relief No. 10, Part A, Category B-D, Full Penetration Welds of Nozzles in Vessels

Code Requirement: Examination Category B-D, Items B3.90 and B3.100, require 100% volumetric examination of nozzle-to-reactor vessel welds and nozzle inside radius sections, as defined by Figure IWB-2500-7.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required 100% volumetric examination of the reactor vessel nozzle welds listed below.

COMPONENT	ITEM	DESCRIPTION	COVERAGE	LIMITATION
N-2G NV	B3.90	Nozzle-to-Vessel Weld	51%	Nozzle Configuration
N-2H NV	B3.90	Nozzle-to-Vessel Weld	47%	Instrument Attachments and Nozzle Configuration
N-2H-IR	B3.100	Nozzle Inner Radius	92%	Instrument Attachments
N-3C NV	B3.90	Nozzle-to-Vessel Weld	51%	Nozzle Configuration

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N-4B NV	B3.90	Nozzle-to-Vessel Weld	51%	Instrument Attachments and Nozzle Configuration
N-4B-IR	B3.100	Nozzle Inner Radius	98%	Instrument Attachments
N-7 NV	B3.90	Nozzle-to-Vessel Weld	89%	Nozzle Configuration

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

"Monticello was designed and constructed prior to development of ASME XI, therefore, plant and component design and layout for inspection coverage required by ASME Section XI Code in many cases, is not sufficient to permit satisfying the current code requirements. Inspection limitations are primarily due to obstructions and configuration interference.

"Reactor Vessel Nozzle N-2G NV: Coverage for nozzle/vessel weld is 51% inspection limited due to nozzle configuration. (See Figure 1)<sup>1</sup>.

"Reactor Vessel Nozzle N-2H NV: Coverage for nozzle/vessel weld is 47%. Inspection limited due to two instrumentation attachments at bottom dead center and nozzle configuration. (See Figure 2).

"Reactor Vessel Nozzle Inner Radius N-2H-IR: Coverage for the inner radius inspection is limited to 92% due to two instrument attachments at bottom dead center. (See Figure 3).

"Reactor Vessel Nozzle N-3C NV: Coverage for nozzle/vessel weld is 51% inspection limited due to nozzle configuration. (See Figure 4).

"Reactor Vessel Nozzle N-4B NV: Coverage for nozzle/vessel weld is 51% inspection limited due to nozzle configuration and welded instrument attachments at 16" CW limits all scans. (See Figure 5).

"Reactor Vessel Nozzle Inner Radius N-4B-IR: Coverage for the inner radius inspection is limited to 98%, due to instrumentation attachments located 6" from bend radius and 24" CW from TDC. (See Figure 6).

"Reactor Vessel Nozzle N-7 NV: Coverage for nozzle/vessel weld is 89% limitation due to nozzle configuration. (See Figure 7).

"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.

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<sup>1</sup> Tables, Figures and attachments furnished with the licensee's submittal are not included in this report.

"All in-service inspection at Monticello has been done to the greatest extent practical. When limitations to required inspections are encountered Materials & Special Process procedure ISI-LTS-1 is applied, which requires alternative examination techniques to 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 was achieved."

Licensee's Proposed Alternative Examination (as stated):

"The nature of the limitations have been noted on the ISI examination reports and are included in the ISI Outage Summary Report. NSP will continue to document the limitations.

"In addition, hydrostatic tests are performed during regular inspection intervals to ensure the piping system is capable of maintaining pressure integrity. System integrity is monitored continuously during normal operation by routine operator rounds during shift and remote monitoring methods, e.g., containment radiation monitoring, containment air monitoring, containment leakage detection and monitoring, containment temperature monitoring, etc."

Evaluation: The Code requires 100% volumetric examination of the subject RPV nozzle-to-vessel welds and inside radius sections. However, complete examination is restricted by geometric configuration and/or instrument attachments that make the 100% volumetric examination impractical. To gain access for examination, the RPV nozzles would require design modifications. Imposition of this requirement would create an undue burden on the licensee.

The licensee has examined these welds to the extent practical, obtaining 47-89% coverage of each nozzle-to-vessel weld and 92-98% coverage for each nozzle inside radius section. In addition, other Class 1 nozzles are examined as required by the Code. Therefore, any existing patterns of degradation would have been detected by the examinations that were/will be completed 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 provided by the examinations that were completed on these and other Class 1 nozzles, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

B. Request for Relief No.10, Part B, Category B-J, Pressure-Retaining Welds in Piping

Code Requirement: Examination Category B-J, Items B9.11 and B9.31 require 100% volumetric and surface examination, as defined by Figures IWB-2500-8, 9, 10, and 11, for Class 1 circumferential welds and branch pipe connection welds in piping 4-inch nominal pipe size and larger.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required 100% volumetric or surface examination coverage of the welds listed below.

COMPONENT	ITEM	DESCRIPTION	COVERAGE	LIMITATION
W-10	B9.31	RHR Return A	43%	Weld Orientation, Pipe Configuration
W-11	B9.11	RHR Return A	50%	Configuration of Flange and Weldolet
W-6	B9.11	RHR Return B	88%*	Proximity to structural beam
W-13 LS-U&D	B9.11	Recirc Manifold B	50%	Support Interference

\*Per conference call April 12, 1999, the licensee confirmed that relief is for surface examination.

Licensee's Basis for Requesting Relief (as stated)<sup>2</sup>:

"Monticello was designed and constructed prior to development of ASME XI, therefore, plant and component design and layout for inspection coverage required by ASME Section XI Code in many cases, is not sufficient to permit satisfying the current code requirements. Inspection limitations are primarily due to obstructions and configurations interference.

"RHR Return A weld W-10: Volumetric examination limited to 43%. Limitation due to weld orientation and pipe configuration. (See Figure 8).

"RHR Return A weld W-11: Volumetric examination limited to 50%. Limitation due to configuration of flange and weldolet. (See Figure 9).

"RHR Return B weld W-6: Surface<sup>3</sup> examination limited to 88%. Limitation due to proximity of structural beam. (See Figure 10).

"Recirc. Manifold B weld W-13 LS U&D: Volumetric examination limited to 50% of long seam weld. Examination limited to only six inches of downstream long seam weld due to support interference. (See Figure 11).

"All in-service inspection at Monticello has been done to the greatest extent practical. When limitations to required inspections are encountered Materials & Special Process procedure ISI-LTS-1 is applied, which requires alternative examination techniques to 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 was achieved."

Licensee's Proposed Alternative Examination (as stated):

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2 Figures included with the licensee's submittal are not included in this report.

3 Per conference call April 12, 1999, the licensee confirmed change from "volumetric" to "surface".

"The nature of the limitations have been noted on the ISI examination reports and are included in the ISI Outage Summary Report. NSP will continue to document the limitations.

"In addition, hydrostatic tests are performed during regular inspection intervals to ensure the piping system is capable of maintaining pressure integrity. System integrity is monitored continuously during normal operation by routine operator rounds during shift and remote monitoring methods, e.g., containment radiation monitoring, containment air monitoring, containment leakage detection and monitoring, containment temperature monitoring, etc."

Evaluation: The Code requires 100% surface and volumetric examination of the subject Class 1 piping welds. Figures supplied by the licensee revealed that component configuration and interference from other components limit access and preclude complete volumetric examination of these welds. To meet the Code examination requirements, design modifications would be necessary. Therefore, the Code volumetric or surface examination requirement, as applicable, is impractical for these welds. Imposition of this requirement would create a significant burden on the licensee.

The licensee has obtained 43-50% of the required volumetric examination coverage on three welds, and 88% of the surface examination coverage on one weld. In addition, these welds are part of a larger sample of B-J welds to be examined. Therefore, reasonable assurance of structural integrity is provided by the examinations that have been completed on these and other welds within the entire sample.

Based on the impracticality of meeting the Code's volumetric and surface examination requirements for the subject welds, and the reasonable assurance of structural integrity provided by the examinations that will be completed, it is recommended that the relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

C. Request for Relief No. 10, Part C, Category B-G-1, Pressure-Retaining Bolting Greater Than 2 inch In Diameter

Code Requirement: Examination Category B-G-1, Item B6.10 requires a surface examination of all RPV closure head nuts each 10-year interval. Item B6.40 requires 100% volumetric examination of the threads in the reactor pressure vessel flange, as defined by Figure IWB-2500-12.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required surface examination on the RPV closure head nuts and the Code-required volumetric examination of the threads in the reactor pressure vessel flange.

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

"Monticello was designed and constructed prior to development of ASME XI, therefore, plant and component design and layout for inspection coverage required by ASME Section XI Code in many cases, is not sufficient to permit satisfying the

current code requirements. Inspection limitations are primarily due to obstructions and configurations interference.

"Reactor Vessel Closure head nuts: Surface examination limited to 57%. Limitation is due to threading. (See Figure 12).

"Reactor Vessel Ligament Threads in Flange: Volumetric examination limited to 96%. Limitation is due to seal ring groove on reactor flange. (See Figure 13).

"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.

"All in-service inspection at Monticello has been done to the greatest extent practical. When limitations to required inspections are encountered Materials & Special Process procedure ISI-LTS-1 is applied, which requires alternative examination techniques to 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 was achieved."

Licensee's Proposed Alternative Examination (as stated):

"The nature of the limitations have been noted on the ISI examination reports and are included in the ISI Outage Summary Report. NSP will continue to document the limitations.

"In addition, hydrostatic tests are performed during regular inspection intervals to ensure the piping system is capable of maintaining pressure integrity. System integrity is monitored continuously during normal operation by routine operator rounds during shift and remote monitoring methods, e.g., containment radiation monitoring, containment air monitoring, containment leakage detection and monitoring, containment temperature monitoring, etc.

"...Because of the limitations of examination methodology on the threaded region of the nuts, future examination on this item will be performed according to the requirements of 1992 ASME Code Sec. XI, Table IWB 2500-1, item B6.10, which requires a visual, VT-1 inspection of the surface area of the nuts."

Evaluation: The Code requires 100% surface examination of the RPV closure head nuts and 100% volumetric examination of the threads in the RPV flange. Figures supplied by the licensee revealed that the closure head nut configuration is not conducive to a complete, meaningful, surface examination, particularly in the threaded region of the nuts. Additionally, a seal ring groove on the reactor vessel flange limits access and precludes complete volumetric examination of the threaded portions of the flange.

To obtain the Code-required surface and volumetric examination coverage, design modifications would be necessary. Therefore, the Code-required surface examination requirements on the closure head nuts and the volumetric examination requirements on

the flange threads are impractical for these components. Imposition of these requirements would create a significant burden on the licensee.

As an alternative for future RPV closure head nut examinations, the licensee proposed to perform a VT-1 visual examination as allowed in the 1992 Edition of ASME XI. In the 1992 Edition, Examination Category B-G-1 requires that all items be examined using VT-1 visual examination and/or volumetric examination (as applicable); RPV closure head studs require surface and volumetric examination when removed.

The 1986 Edition of the Code, Item B6.10, does not provide acceptance criteria for surface examination of RPV closure head nuts. (At that time the acceptance criteria were in the course of preparation.) Indications that would require corrective action on RPV closure head nuts are typically associated with degradation mechanisms such as boric acid attack, corrosion, or handling (such as galled threads and deformation). Typical surface examination procedures and techniques are not qualified to identify these forms of degradation.

Article IWB-3000, Acceptance Standard, IWB-3517.1, Visual Examination, VT-1, describes conditions that require corrective action prior to continued service of bolting and associated nuts. IWB-3517.1 requires crack-like flaws to be compared to the flaw standards of IWB-3515. Because the VT-1 visual examination acceptance criteria include evaluation of crack-like indications and other relevant conditions requiring corrective action (i.e., deformed or sheared threads, localized corrosion, deformation of part, and other degradation mechanisms), it can be concluded that the VT-1 visual examination provides a comprehensive assessment of the condition of the closure head nut. It appears that the licensee has performed a significant portion (57%) of the surface examination on each of the scheduled subject nuts so far in this interval. It is reasonable to conclude that the surface examinations performed would have detected any existing patterns of degradation.

Therefore, the INEEL staff believes that surface examinations performed and the VT-1 visual examination that will be performed in the future will provide reasonable assurance of operational readiness.

The licensee has examined a significant portion (96%) of the required volume of the RPV flange threads. Code Case N-460, *Alternative Examination Coverage for Class 1 and Class 2 Welds*, approved in Regulatory Guide 1.147, allows for a reduction in examination volume of less than 10% for Class 1 and Class 2 welds, provided the reduction in coverage is due to interference or part geometry. While the RPV flange threads are not welds, the INEEL staff believes that the concept of greater than 90% coverage being acceptable for Class 1 and Class 2 welds is also applicable to other components. Therefore, the 96% volumetric coverage obtained is "essentially 100% coverage" and provides reasonable assurance of structural integrity.

Based on the impracticality of meeting the Code's surface and volumetric examination requirements for the subject components, and the reasonable assurance of structural integrity provided by the examinations that have and will be completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

D. Request for Relief No.10, Part D, Category C-C, Integral Attachments for Vessels, Piping, Pumps, and Valves

Code Requirement: Examination Category C-C, Item C3.20, requires 100% surface examination, as defined by Figure IWC-2500-5, for integrally-welded attachments to piping.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required integral attachment surface examinations on the following components.

COMPONENT	ITEM	DESCRIPTION	COVERAGE	LIMITATION
H-7	C3.20	CRD Scram HDR B	0%	Restraint Configuration
H-9	C3.20	RHR Discharge B	85%	Stabilizing Lug

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

"Monticello was designed and constructed prior to development of ASME XI, therefore, plant and component design and layout for inspection coverage required by ASME Section XI Code in many cases, is not sufficient to permit satisfying the current code requirements. Inspection limitations are primarily due to obstructions and configurations interference.

"CRD Scram Header B hanger attachment H-7: Surface examination limited to 0%. Limitation due to restraint configuration. (See Figure 14).

"RHR discharge B, Double Spring 4 lugs H-9: Surface examination limited to 85%. Limitation due to stabilizing lug welded to clamp prohibits examination of one end of weld. (See Figure 15)

"All in-service inspection at Monticello has been done to the greatest extent practical. When limitations to required inspections are encountered Materials & Special Process procedure ISI-LTS-1 is applied, which requires alternative examination techniques to 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 was achieved."

Licensee's Proposed Alternative Examination (as stated):

"The nature of the limitations have been noted on the ISI examination reports and are included in the ISI Outage Summary Report. NSP will continue to document the limitations.

"In addition, hydrostatic tests are performed during regular inspection intervals to ensure the piping system is capable of maintaining pressure integrity. System integrity is monitored continuously during normal operation by routine operator rounds during shift and remote monitoring methods, e.g., containment radiation monitoring, containment air monitoring, containment leakage detection and monitoring, containment temperature monitoring, etc.

Evaluation: The Code requires 100% surface examination of the subject integral attachment welds. Figures supplied by the licensee reveal that the restraint configuration on the CRD Scram Header B H-7 does not allow access to the four lug fillet welds. Additionally, stabilizing lugs welded to a clamp on RHR Discharge B H-9 limit access and preclude complete surface examination of the integral attachment. To obtain the Code required surface examination coverage, design modifications would be necessary. Therefore, the Code-required surface examination is impractical. Imposition of this requirement would create a significant burden on the licensee.

The licensee was unable to achieve any surface coverage on the CRD Scram Header B H-7 integral attachments. The licensee considered alternative examination techniques to maximize the inspection coverage. However, due to the lack of access to the lugs no alternative examination techniques were found to be practical. The licensee will continue to perform the hydrostatic tests during the regular inspection intervals to ensure the piping system is capable of maintaining pressure integrity. Additionally, these integral attachments are part of a larger sample of C-C components to be examined. Therefore, reasonable assurance of structural integrity is provided by the hydrostatic tests and surface examinations that have been completed within the entire sample population.

The licensee was able to complete a significant portion (85%) of the Code-required surface examination on the RHR Discharge B H-9 integral attachment. It is reasonable to conclude that the surface examination would have detected any existing patterns of degradation. Therefore, the INEEL staff believes that the surface examination performed provides reasonable assurance of structural integrity.

Based on the impracticality of meeting the Code's surface examination coverage requirements for the subject components, and the reasonable assurance of structural integrity provided by the examinations that have and will be completed, it is recommended that the relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

E. Request for Relief No. 10, Part E, Category C-F-2, Pressure-Retaining Welds in Carbon or Low Alloy Steel Piping

Code Requirement: Examination Category C-F-2, Item C5.51 requires 100% surface and volumetric examination of the circumferential piping welds  $\geq 3/8$ " nominal wall thickness for piping  $>NPS 4$  as defined by Figure IWB-2500-7.

Licensee's Code Relief Request: In accordance with 10 CFR 50.55a(g)(5)(iii), the licensee requested relief from the Code-required 100% volumetric and surface examination coverage of the weld listed below.

COMPONENT	ITEM	DESCRIPTION	COVERAGE	LIMITATION
W-29	C-F-2	HPCI Steam Disch	80% Vol.	Welded Restraint
W-29	C-F-2	HPCI Steam Disch	58% Surf.	Welded Restraint

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

"Monticello was designed and constructed prior to development of ASME XI, therefore, plant and component design and layout for inspection coverage required by ASME Section XI Code in many cases, is not sufficient to permit satisfying the current code requirements. Inspection limitations are primarily due to obstructions and configurations interference.

"HPCI Steam Discharge Weld W-29: Volumetric and Surface examination limited to 80% and 58%, respectively. Limitations due to restraint with fillet weld on weld crown and downstream area of weld. (See Figure 16)."

"All in-service inspection at Monticello has been done to the greatest extent practical. When limitations to required inspections are encountered Materials & Special Process procedure ISI-LTS-1 is applied, which requires alternative examination techniques to 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 was achieved."

Licensee's Proposed Alternative Examination (as stated):

"The nature of the limitations have been noted on the ISI examination reports and are included in the ISI Outage Summary Report. NSP will continue to document the limitations.

"In addition, hydrostatic tests are performed during regular inspection intervals to ensure the piping system is capable of maintaining pressure integrity. System integrity is monitored continuously during normal operation by routine operator rounds during shift and remote monitoring methods, e.g., containment radiation monitoring, containment air monitoring, containment leakage detection and monitoring, containment temperature monitoring, etc.

Evaluation: The Code requires 100% surface and volumetric examination of the subject Class 2 piping weld. The figure supplied by the licensee, revealed that component interference from a welded restraint limits access and precludes complete surface and volumetric examination of this weld. To meet the Code examination requirements, design modifications, including removal of the welded restraint, would be necessary. Therefore, the Code volumetric and surface examination coverage requirements are impractical for this weld. Imposition of these requirements would create a significant burden on the licensee.

The licensee has obtained 80% of the required volumetric examination coverage and 58% of the surface examination coverage. In addition, this weld is part of a larger sample of C-F-2 welds to be examined. Therefore, reasonable assurance of structural integrity is provided by the examinations that have been completed on the subject weld, and on other welds within the entire sample.

Based on the impracticality of meeting the Code volumetric and surface examination coverage requirements for the subject welds, and the reasonable assurance of structural integrity that is provided by the examinations that can be completed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).

3. CONCLUSION

The INEEL staff has reviewed the licensee's submittal and concludes that for Request for Relief No. 10, Parts A, B, C, D, and E the requirements are impractical at Monticello Nuclear Generating Plant and that reasonable assurance of the structural integrity is provided by the examinations performed. Therefore, it is recommended that relief be granted pursuant to 10 CFR 50.55a(g)(6)(i).