



**Northeast  
Nuclear Energy**

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Millstone Nuclear Power Station  
Northeast Nuclear Energy Company  
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The Northeast Utilities System **OCT 18 1999**

Docket No. 50-336  
B17886

RE: 10 CFR 50.55a(a)(3)(i)

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 2  
Request to Use an Alternative to ASME Code Section XI

Northeast Nuclear Energy Company (NNECO) hereby requests permission to use an alternative to the ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, pursuant to the provisions of 10 CFR 50.55a(a)(3)(i). Specifically, NNECO requests to utilize Code Case N-623 "Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel, Section XI, Division 1" for the Millstone Unit No. 2 Third 10-Year Interval Inservice Inspection (ISI) Program as detailed in Relief Request RR-89-24 (Attachment 1).

Code Case N-623 (Attachment 2) was approved by the ASME Boiler and Pressure Vessel Code Committee on February 26, 1999, but is not included in the most recent listing of NRC approved Code Cases in Revision 12 of USNRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability - ASME Section XI Division 1," dated May 1999.

Code Case N-623 provides an alternative to the existing examination scheduling requirements for the Reactor Pressure Vessel (RPV) shell-to-flange and head-to-flange welds contained within Examination Category B-A, "Pressure Retaining Welds In Reactor Vessel," of the 1989 Edition of ASME Section XI. These examinations may currently be partially deferred to the end of a 10-year ISI interval, but total deferral is not allowed. Code Case N-623 provides an option to the Licensee which would allow for total deferral of these weld examinations provided three basic conditions are met:

- (1) no welded repair/replacement activities have ever been performed on these welds;
- (2) the welds do not contain identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b); and
- (3) the RPV is not in the first inspection interval.

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NNECO meets these three conditions for the Millstone Unit No. 2 RPV.

Total deferral of these examinations to the end of the inspection interval would allow the RPV ultrasonic examinations to be scheduled, in aggregate, at the same time and would result in significant burden reduction with no change to the examination methods or techniques required under the 1989 Edition of Section XI.

Deferral of these shell-to-flange and head-to-flange weld examinations to the end of a specific plant's 10-year ISI interval is supported by the present large population of operating reactors. Each reactor is representative of the operating conditions throughout the population of reactors for a particular Nuclear Steam Supply System (NSSS) design. The volume and number of RPV welds inspected within successive 10-year intervals among these various operating reactors are essentially uniformly distributed. This being the case, examining the shell-to-flange and head-to-flange welds within the population of operating reactors, sequentially for the period of a plant specific 10-year interval, or all at the end of that interval provides the necessary assurance that any industry wide degrading condition will be detected. Additionally, performing ultrasonic examination of the RPV welds at one time, on a specific RPV, will improve the reliability and reproducibility of the ultrasonic examinations since the procedures and techniques utilized on the population of welds will be at a uniform level of technology. The use of this Code Case will thus close the 10-year gap in technology between various examinations now being performed on a specific RPV. The experience to date indicates that examinations performed on these shell-to-flange and head-to-flange welds have not identified any detrimental flaws or relevant conditions and that changing the schedule for examining these welds in aggregate at the end of successive 10-year intervals should provide an equivalent indication of the RPV integrity for a specific RPV. Therefore, NNECO considers this request to meet the provisions of 10 CFR 50.55a(a)(3)(i) as providing an acceptable level of quality and safety.

During the Third 10-Year Interval, NNECO plans to use Code Case N-623 subject to NRC approval, until such time as this Code Case is incorporated into a future revision of Regulatory Guide 1.147. Upon issuance of the Regulatory Guide, NNECO will follow all provisions in Code Case N-623, including any exceptions or limitations as would be discussed in the Regulatory Guide.

Review of this request is needed by March 15, 2000 to support the next Millstone Unit No. 2 refueling outage (2R13).

There are no regulatory commitments contained within this letter.

Should you have any questions regarding this matter, please contact Mr. D. W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Raymond P. Necci  
Vice President - Nuclear Oversight and  
Regulatory Affairs

BY: 

David A. Smith  
Manager - Regulatory Affairs

Attachments: (2)

1. Relief Request RR-89-24
2. ASME Code Case N-623

cc: H. J. Miller, Region I Administrator  
R. B. Eaton, NRC Senior Project Manager, Millstone Unit No. 2  
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit No. 2

Docket No. 50-336  
B17886

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Relief Request RR-89-24

October 1999

Attachment 1

**Request To Use Code Case N-623 As An Alternative To ASME Section XI**  
**Relief Request RR-89-24**

**Relief Request:** RR-89-24

**Code Class:** 1                      **Zone:** 1-01, 1-02

**Code Category:** B-A, Pressure Retaining Welds In Reactor Vessel

**Item No.:** B1.30, Shell-to-Flange Weld  
B1.40, Head-to-Flange weld

**Code Requirement:**

Section XI of the ASME B&PV Code, 1989 Edition, Table IWB-2500-1, requires that the RPV shell-to-flange weld be volumetrically examined once each inspection interval and the RPV head-to-flange weld be surface and volumetrically examined once each inspection interval. The footnotes to the Table provide partial deferrals for both of these welds, but in no case are they allowed to be totally deferred to the end of the interval.

**Code Relief Requested:**

Pursuant to the provisions of 10 CFR 50.55a(a)(3)(i), relief is requested to utilize the alternative requirements of Code Case N-623 "Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel, Section XI, Division 1," for the Millstone Unit No. 2 Third 10-Year Interval Inservice Inspection (ISI) Program Plan.

**Reason for Relief:**

Code Case N-623 provides an alternative to the examination scheduling requirements for the reactor pressure vessel (RPV) shell-to-flange and head-to-flange welds contained in Examination Category B-A, "Pressure Retaining Welds In Reactor Vessel," of the 1989 Edition of ASME Section XI. These examinations currently may be partially deferred to the end of a 10-year InService Inspection (ISI) interval, but total deferral is not allowed. Code Case

N-623 provides an option to the Owner for total deferral of these weld examinations provided three basic conditions are met:

- (1) no welded repair/replacement activities have ever been performed on these welds;
- (2) the welds do not contain identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b); and
- (3) the RPV is not in the first inspection interval.

NNECO meets these conditions for the Millstone Unit No. 2 RPV. Total deferral of these examinations to the end of the inspection interval would allow the RPV ultrasonic examinations to be scheduled, in aggregate, at the same time and would result in a significant burden reduction with no change to the examination methods or techniques required under the 1989 Edition of Section XI.

Deferral of these shell-to-flange and head-to-flange weld examinations to the end of a specific plant's 10-year ISI interval is supported by the present large population of operating reactors. Each reactor is representative of the operating conditions throughout the population of reactors for a particular Nuclear Steam Supply System (NSSS) design. The volume and number of RPV welds inspected within successive 10-year intervals among these various operating reactors are essentially uniformly distributed. This being the case, examining the shell-to-flange and head-to-flange welds within the population of operating reactors, sequentially for the period of a plant specific 10-year interval, or all at the end of that interval provides the necessary assurance that any industry wide degrading condition will be detected. Additionally, performing ultrasonic examination of the RPV welds at one time, on a specific RPV, will improve the reliability and reproducibility of the ultrasonic examinations since the procedures and techniques utilized on the population of welds will be at a uniform level of technology. The use of this Code Case will thus close the 10-year gap in technology between various examinations now being performed on a specific RPV. The experience to date indicates that examinations performed on these shell-to-flange and head-to-flange welds have not identified any detrimental flaws or relevant conditions and that changing the schedule for examining these welds in aggregate at the end of successive 10-year intervals should provide an equivalent indication of the RPV integrity for a specific RPV. Therefore, NNECO considers this request to meet the provisions of 10CFR50.55a(a)(3)(i) as providing an acceptable level of quality and safety.

**Proposed Alternative:**

During the Third 10-Year Interval, NNECO plans to use Code Case N-623 subject to NRC approval, until such time as this Code Case is incorporated into a future revision of Regulatory Guide 1.147. Upon issuance of the Regulatory Guide, NNECO will follow all provisions in Code Case N-623, including any exceptions or limitations as would be discussed in the Regulatory Guide.

Docket No. 50-336  
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Attachment 2

Millstone Nuclear Power Station, Unit No. 2

ASME Code Case N-623

October 1999



Attachment 2

ASME Code Case N-623

CASE  
N-623

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: February 26, 1989

See Numeric Index for expiration  
and any reaffirmation dates.

Case N-623

Deferral of Inspections of Shell-to-Flange and  
Head-to-Flange Welds of a Reactor Vessel  
Section XI, Division 1

*Inquiry:* What alternative rules may be used in lieu of Table 1, Examination Category B-A (Program B), "Pressure Retaining Welds in Reactor Vessel", Section XI, Division 1 to allow deferral of inspections of shell-to-flange welds and head-to-flange welds of a reactor vessel?

*Reply:* It is the opinion of the Committee that, as an alternative to the existing requirements, inspection

of shell-to-flange welds and head-to-flange welds of a reactor vessel may be deferred to the end of the inspection interval without conducting partial examinations from the flange face if the following conditions are met:

- (a) No welded repair/replacement activities have ever been performed on the shell-to-flange or head-to-flange weld.
- (b) Neither the shell-to-flange weld nor head-to-flange weld contains identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b).
- (c) The vessel is not in the first inspection interval.

CASE (continued)

N-623

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

TABLE 1  
EXAMINATION CATEGORIES

Item No.	Parts Examined	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination			Deferral of Examination to End of Interval
					1st Inspection Interval	Successive Inspection Intervals [Note (3)]	Permissible	
B1.30	Shell Welds	IWB-2500-1	Volumetric	IWB-3510	All welds [Note (2)]	Same as for 1st Interval	Permissible	
B1.31	Circumferential	IWB-2500-2						
B1.32	Longitudinal							
B1.20	Head Welds	IWB-2500-3	Volumetric	IWB-3510	Accessible length of all welds [Note (2)]	Same as for 1st Interval	Permissible	
B1.21	Circumferential							
B1.22	Meridional							
B1.30	Shell-to-Flange Weld	IWB-2500-4	Volumetric	IWB-3510	Weld [Note (2)]	Same as for 1st Interval	Permissible [Notes (4), (5)]	
B1.40	Head-to-Flange Weld	IWB-2500-5	Volumetric and surface	IWB-3510	Weld [Note (2)]	Same as for 1st Interval	Permissible [Notes (4), (5)]	
B1.50	Repair Welds [Note (1)]	IWB-2500-1 and -2	Volumetric	IWB-3510	All weld repair areas	Same as for 1st Interval	Permissible [Notes (4), (5)]	
B1.51	Bottom region							

NOTES:

- (1) Material (base metal) weld repairs where repair depth exceeds 10% nominal of the vessel wall. If the location of the repair is not positively and accurately known, then the individual shell plate, forging, or shell course containing the repair shall be included.
- (2) Includes essentially 100% of the weld length.
- (3) During the first and second periods, the examination may be performed from the flange face, provided these same portions are examined from the head during the third period.
- (4) When using Inspection Program B, the shell-to-flange weld examination may be performed during the first and third periods, in which case 50% of the shell-to-flange weld shall be examined by the end of the first period, and the remainder by the end of the third period. During the first period, the examination need only be performed from the flange face, provided this same portion is examined from the shell during the third period.
- (5) Deferral in the first inspection interval is not permitted. Deferral in successive inspection intervals is permitted provided that:
  - (a) No welded repair/replacement activities have been performed either on the shell-to-flange weld or head-to-flange weld.
  - (b) Neither the shell-to-flange weld nor the head-to-flange weld contains identified flaws or relevant conditions that require successive inspections in accordance with IWB-2420(b).