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February 1, 2010

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

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NSS&L/MLC	R0
Docket No.	50-423
License No.	NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING RELIEF REQUEST IR-3-13 PROPOSED ALTERNATIVE FOR DISSIMILAR METAL WELD EXAMINATION DEPTH-SIZING REQUIREMENTS (TAC NO. ME2125)

By letter dated August 19, 2009 (Agencywide Documents Access and Management System Accession No. ML092370296), Dominion Nuclear Connecticut, Inc. (DNC) submitted Relief Request IR-3-13 for Millstone Power Station Unit 3 (MPS3). IR-3-13 requests relief from certain examination requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, for the third 10-year inservice inspection (ISI) interval which began on April 23, 2009 and ends on April 22, 2019. The request pertains to the use of an alternative to the ASME, Section XI, dissimilar metal weld examination depth-sizing requirements. In a letter dated December 23, 2009, the Nuclear Regulatory Commission (NRC) issued a request for additional information (RAI) in order to complete the review. At that time, DNC agreed to provide the RAI response to the NRC by January 28, 2010. In a subsequent telephone call with the NRC project manager, DNC requested a one week extension for submittal of this relief request to coincide with submittal of the RAI response for Relief Request IR-3-10. A due date of February 4, 2010 was agreed to by the NRC project manager.

Attachment 1 provides the DNC response to the RAI questions. Attachment 2 provides Revision 1 to Relief Request IR-3-13. Revision 1 includes changes resulting from the responses to the RAI questions as well as additional changes resulting from revision to Relief Request IR-3-10. The revision to Relief Request IR-3-10 is being transmitted with a separate cover letter.

If you have any questions or require additional information, please contact Ms. Wanda Craft at (804) 273-4687.

Sincerely,

J. Alan Price
Vice President – Nuclear Engineering

Attachments:

1. Response to Request for Additional Information Regarding Relief Request IR-3-13, Proposed Alternative for Dissimilar Metal Weld Examination Depth-Sizing Requirements (TAC No. ME2125).

2. Alternative Request IR-3-13, Rev. 1 for the Use of Alternative Dissimilar Metal Weld Examination Depth-Sizing Requirements from ASME Code, Section XI.

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission
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ATTACHMENT 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING RELIEF REQUEST IR-3-13 PROPOSED ALTERNATIVE FOR DISSIMILAR METAL WELD EXAMINATION DEPTH-SIZING REQUIREMENTS (TAC NO. ME2125)

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NRC Question 1

IR-3-13, Section 1.0(c), indicates that the applicable Code Category is "B-P as required by Code Case N-722." However, Code Case N-722 does not cite any Code Category. Please clarify IR-3-13 to reflect that the examinations, for which an alternative is being requested, are for ASME Code, Section XI, Code Case N-722 Item Numbers B15.90 and B15.95.

DNC Response

The reference to Category B-P in Section 1.0(c) was meant to indicate that ASME Section XI, Table IWB-2500-1, VT-2 visual inspection requirements for the subject welds in the 2004 Edition of Section XI are required to be met. DNC understands the unintended confusion caused by the reference and that the applicable code requirement for which the alternative is being requested is that of Code Case N-722. As a consequence, Relief Request IR-3-13 has been revised (see Attachment 2) to remove the reference to Category B-P from Section 1.0(c). Section 1.0(d) references ASME Code, Section XI, Code Case N-722, Item Numbers B15.90 and B15.95 as the applicable requirement for which an alternative is being requested.

NRC Question 2

Is the request intended to address the depth sizing requirements of Section XI, Appendix VIII, as they pertain to Table IWB-2500, Examination Category B-F and, potentially, B-J welds? Please clarify IR-3-13 to reflect this aspect of the request.

DNC Response

This request is intended to address the depth sizing requirements of ASME Section XI, Appendix VIII, Supplement 10 as they pertain to Table IWB-2500-1 Category B-F welds. Section 3.0 of Relief Request IR-3-13 has been revised (see Attachment 2) to clarify this aspect. This request does not apply to Category B-J welds.

Additional Changes

Since the content of Relief Request IR-3-13 was impacted by DNC's response to RAI questions pertaining to Relief Request IR-3-10 (contained in DNC Letter 09-781dated February 4, 2010), IR-3-13 was further revised to remove Table 2, MPS3 Class 1 PWR Components Alloy 600/82/1826, and other references to inspection frequencies.

ATTACHMENT 2

ALTERNATIVE REQUEST IR-3-13, REV. 1
FOR THE USE OF ALTERNATIVE DISSIMILAR METAL WELD EXAMINATION DEPTH-SIZING REQUIREMENTS FROM ASME CODE, SECTION XI

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

ALTERNATIVE REQUEST IR-3-13, REV. 1
FOR THE USE OF ALTERNATIVE DISSIMILAR METAL WELD EXAMINATION DEPTH-SIZING REQUIREMENTS FROM ASME CODE, SECTION XI

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)

- Alternative Provides Acceptable Level of Quality and Safety -

1.0 ASME CODE COMPONENTS FOR WHICH THE ALTERNATIVE IS REQUESTED

The reactor vessel dissimilar metal welds to be examined under this request are identified in Table 1 as follows:

Table 1 - Millstone Unit 3: Nozzle-to-Safe End Welds

Weld Identification Number	Internal Diameter (inches)	Wall Thickness (inches)
301-121-A Inlet Nozzle To Safe End (RC Loop 3)	27.5	2.32
301-121-B Inlet Nozzle To Safe End (RC Loop 4)	27.5	2.32
301-121-C Inlet Nozzle To Safe End (RC Loop 1)	27.5	2.32
301-121-D Inlet Nozzle To Safe End (RC Loop 2)	27.5	2.32
302-121-A Outlet Nozzle To Safe End (RC Loop 3)	29	2.45
302-121-B Outlet Nozzle To Safe End (RC Loop 4)	29	2.45
302-121-C Outlet Nozzle To Safe End (RC Loop 1)	29	2.45
302-121-D Outlet Nozzle To Safe End (RC Loop 2)	29	2.45
Materials: Nozzle is SA508 Class 2, Safe End is SA 182 F316, and weld metal is Alloy 82/182		

a) ASME Code Class:

American Society of Mechanical Engineers (ASME) Code Class 1, Dissimilar Metal Welds

b) System:

Millstone Power Station Unit 3 (MPS3), Reactor Coolant System

c) Code Category:

N/A

d) Item Nos.:

ASME Code, Section XI, Code Case N-722

B15.90 – Hot Leg Nozzle Welds
B15.95 – Cold Leg Nozzle Welds

2.0 APPLICABLE CODE EDITION AND ADDENDA

MPS3 is in the third 10-year inservice inspection (ISI) interval which began on April 23, 2009, and is scheduled to end April 22, 2019. The ASME Code, Section XI, 2004 Edition, Division 1, with No Addenda is the code of record for the current third 10-year ISI interval program.

3.0 APPLICABLE CODE REQUIREMENTS FOR WHICH THE ALTERNATIVE IS REQUESTED

The requirements for ultrasonic test (UT) examination of the reactor vessel dissimilar metal nozzle-to-safe end welds, which are performed once each 10-year ISI interval, are listed in ASME Section XI, Table IWB-2500-1, Examination Category B-F. In the second 10-year ISI interval, MPS3 performed volumetric UT examination of these welds in accordance with the risk-informed ISI program and the industry requirements in Electric Power Research Institute (EPRI), Materials Reliability Program (MRP) – 139, "Primary System Piping Butt Weld Inspection and Evaluation Guideline," (Reference 5) and its revisions.

In the third 10-year ISI interval, examinations were conducted consistent with the requirements mandated in 10 CFR 50.55a, Code Case N-722, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials Section XI, Division 1" (Reference 6). Code Case N-722 requires bare metal visual examinations of these welds on the outside surface at varying frequencies. For MPS3, bare metal visual examination of the welds is extremely difficult to perform, which is the subject of Relief Request IR-3-10. In lieu of bare metal visual examination of the welds, MPS3 will volumetrically UT examine these welds. The UT examinations will be performed from the inside surface at varying frequencies. These volumetric UT examinations will be performed in accordance with the performance demonstration requirements in ASME Code, Section XI, 2001 Edition, with No Addenda under Appendix VIII, Supplement 10 as they pertain to Table IWB-2500-1, Examination Category B-F welds. Application of these requirements specify a demonstrated Root Mean Square (RMS) error of 0.125 inches if depth-sizing is used.

4.0 REASON FOR THE REQUEST

Dominion Nuclear Connecticut, Inc. (DNC) is submitting this request as a contingency to the reactor vessel nozzle examination depth-sizing requirements of ASME Code, Section XI, although there is no expectation that an identifiable indication exists at MPS3 which would require depth-sizing during these examinations. This request supports the reactor vessel nozzle-to-safe end weld volumetric examination schedule frequency per Alternative Request IR-3-10 that was included in the submittal of the MPS3 Third 10-year ISI Interval Program (Reference 7).

The ASME Code of record for the current MPS3 Third 10-Year ISI Interval Program is ASME Code, Section XI, 2004 Edition, Division 1, with No Addenda (Reference 1). In accordance with the provisions of 10 CFR 50.55a(b)(xv), licensees that use later editions and addenda than the 2001 Edition of the ASME Code, shall use the 2001 Edition of Appendix VIII. Therefore, for MPS3, UT examination of the subject dissimilar metal nozzle-to-safe end welds is required to be implemented in accordance with the requirements of the ASME Code Section XI, 2001 Edition, with No Addenda, Appendix VIII, Supplement 10 (Reference 2).

Code Case N-695, "Qualification Requirements for Dissimilar Metal Piping Welds, Section XI Division 1" (Reference 3) may be used as an alternative to the ASME Section XI, Appendix VIII, Supplement 10 requirements. Code Case N-695 is identified as acceptable for use in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 15 (Reference 4), with no conditions required.

The specific Code requirements for this alternative request pertain to the depth-sizing qualification requirements for the performance demonstration of UT examination systems for dissimilar metal piping welds. Specifically, Code Case N-695 requires a demonstrated ability to meet the depth-sizing qualification requirements using a RMS error of 0.125 inches for the ultrasonic examination of dissimilar metal piping welds.

To date, an examination vendor for UT of the reactor vessel dissimilar metal nozzle-to-safe end welds shown in Table 1 has not been chosen. Although qualified for detection and length sizing on these welds, examination vendors have not met the established RMS error requirement for depth-sizing criteria (0.125 inches). DNC's examination vendor will be chosen from the available vendors that have demonstrated their ability to meet the depth-sizing qualification requirement with a RMS error of no greater than 0.224 inches instead of the required 0.125 inches.

Consequently, DNC proposes to use an alternative through wall depth-sizing criteria for volumetric UT examinations performed from the inside surface of ASME Code, Section XI, Appendix VIII, Supplement 10, components.

5.0 PROPOSED ALTERNATIVES AND BASIS FOR USE

The volumetric examinations are to be conducted in accordance with Code Case N-695 as an alternative to ASME Code, Section XI, 2001 Edition with No Addenda, Appendix VIII,

Supplement 10. The specific Code requirement for which an alternative is requested pertains to the depth-sizing qualification requirement for the performance demonstration of UT examination systems for dissimilar metal piping welds.

- **Code Case N-695** - "Qualification Requirements for Dissimilar Metal Piping Welds," Section XI, Division 1

  Code Case Requirement: Examination procedures, equipment, and personnel are qualified for depth-sizing when the RMS error of the flaw depth measurements, as compared to the true flaw depths, do not exceed 0.125 inches (3 mm).

  Proposed Alternative: To use Code Case N-695 with a modified demonstrated maximum RMS error of 0.224 inches instead of the 0.125 inches as specified in the Code Case.

  DNC proposes to use the maximum RMS error values that have been demonstrated and approved previously for other licensees. In the event an indication is detected that requires depth-sizing, the difference between the required RMS error and the demonstrated maximum RMS error of the selected vendor will be added to the measured through-wall extent for comparison with applicable acceptance criteria. Addition of the difference in allowable depth-sizing tolerance from that actually demonstrated to the estimated flaw depths measured will compensate for the variance in the measured depth.

  Because the UT examinations will be performed over the 10-year ISI interval, DNC is proposing that this request be applied for the entire interval to alleviate the need to submit this request each time a different vendor is used. By using the maximum demonstrated RMS error values, this request will not change the acceptable level of quality and safety related to these examinations as they are performed at MPS3.

6.0 DURATION OF THE PROPOSED ALTERNATIVE

The proposed alternative to the ASME Code is applicable for the remainder of the MPS3 third 10-year ISI interval.

7.0 PRECEDENTS

There have been multiple requests submitted and approved regarding the use of similar alternatives to the requirement for depth-sizing contained in Section XI, Appendix VIII and Code Case N-695. Alternative Request (RR-11-20) has been approved for use at the V.C. Summer Station in NRC letter dated February 3, 2004 (ADAMS Accession No. ML040340450). In addition, Alternative Request IR-2-42 was

approved for MPS3 for use during the second 10-year ISI interval in NRC letter dated May 1, 2007 (ADAMS Accession No. ML070740586).

8.0 REFERENCES

1. 2004 Edition, ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," Division 1, with No Addenda.

2. 2001 Edition, ASME Code, Section XI, Division 1, with No Addenda, Appendix VIII, Supplement 10.

3. Code Case N-695, "Qualification Requirements for Dissimilar Metal Piping Welds," Section XI, Division 1.

4. NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 15.

5. Electric Power Research Institute (EPRI), Materials Reliability Program (MRP) – 139, "Primary System Piping Butt Weld Inspection and Evaluation Guideline," and its revisions.

6. Code Case N-722, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials," Section XI, Division 1.

7. DNC letter to NRC Document Control Desk, "Millstone Unit 3 – Third 10-Year Interval Inservice Inspection Program and Associated Proposed Alternatives and Relief Requests," dated April 28, 2009 (ADAMS Accession No. ML091310666).

9.0 CONCLUSION

DNC has determined that the alternative in this request will result in an acceptable level of quality and safety, pursuant to the provisions of 10 CFR 50.55a(a)(3)(i), because the proposed alternative assures that the subject welds will be fully examined by procedures, personnel and equipment qualified by demonstration in all aspects except depth-sizing. The proposed addition of the difference between the ASME required RMS error value and the vendor demonstrated RMS error value to any flaw that is required to be depth sized, compensates for the potential variation and likewise assures an acceptable level of quality and safety.