

January 7, 2004

Mr. David A. Christian
Sr. Vice President and Chief Nuclear Officer
Dominion Nuclear Connecticut, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PLAN, REQUEST
FOR RELIEF IR-2-27 FOR MILLSTONE POWER STATION, UNIT NO. 3
(TAC NO. MB6943)

Dear Mr. Christian:

By letter dated November 26, 2002, as supplemented July 1, 2003, Dominion Nuclear Connecticut, Inc. submitted to the U.S. Nuclear Regulatory Commission (NRC), Relief Request No. IR-2-27, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i), requesting approval of an alternative to the requirements of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI. The alternative would allow the one-time use of a non-ASME Code Section III N-type certificate holder to perform fabrication activities at its facility while meeting the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."

Based upon the review of the information you provided, the NRC concluded that the proposed alternative provides reasonable assurance of structural integrity, and the NRC finds that removing the subassemblies from the Feedwater System and reworking the entire "A" and "D" Trains would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, your proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the life of the replacement. The NRC staff's Safety Evaluation is enclosed. If you have any questions, please contact the Project Manager, Victor Nerses at (301) 415-1484.

Sincerely,

/RA by REnnis for/

Darrell J. Roberts, Acting Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosure: As stated

cc w/encl: See next page

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NAME	VNerses	CRaynor	TChan	RHoefling	REnnis for DRoberts
DATE	01/06/04	01/05/04	01/06/04	12/12/03	01/07/04

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Millstone Power Station, Unit No. 3

cc:

Lillilan M. Cuoco, Esquire
Senior Counsel
Dominion Resources Services, Inc.
Rope Ferry Road
Waterford, CT 06385

Edward L. Wilds, Jr., Ph.D.
Director, Division of Radiation
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

First Selectmen
Town of Waterford
15 Rope Ferry Road
Waterford, CT 06385

Mr. P. J. Parulis
Manager - Nuclear Oversight
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. W. R. Matthews
Senior Vice President - Nuclear Operations
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. John Markowicz
Co-Chair
Nuclear Energy Advisory Council
9 Susan Terrace
Waterford, CT 06385

Mr. Evan W. Woollacott
Co-Chair
Nuclear Energy Advisory Council
128 Terry's Plain Road
Simsbury, CT 06070

Senior Resident Inspector
Millstone Power Station
c/o U.S. Nuclear Regulatory Commission
P. O. Box 513
Niantic, CT 06357

Mr. G. D. Hicks
Director - Nuclear Station Safety
and Licensing
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Ms. Nancy Burton
147 Cross Highway
Redding Ridge, CT 00870

Mr. William D. Meinert
Nuclear Engineer
Massachusetts Municipal Wholesale
Electric Company
Moody Street
P.O. Box 426
Ludlow, MA 01056

Mr. J. Alan Price
Site Vice President
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. Chris Funderburk
Director, Nuclear Licensing and
Operations Support
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

Mr. David W. Dodson
Licensing Supervisor
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Millstone Power Station, Unit No. 3

cc:

Mr. S. E. Scace
Assistant to the Site Vice President
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. M. J. Wilson
Manager - Nuclear Training
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. A. J. Jordan, Jr.
Director - Nuclear Engineering
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

Mr. S. P. Sarver
Director - Nuclear Station Operations
and Maintenance
Dominion Nuclear Connecticut, Inc.
Rope Ferry Road
Waterford, CT 06385

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SECOND TEN-YEAR INTERVAL INSERVICE INSPECTION

REQUEST FOR RELIEF NO. IR-2-27

MILLSTONE POWER STATION, UNIT NO. 3

DOMINION NUCLEAR CONNECTICUT, INC.

DOCKET NUMBER 50-423

1.0 INTRODUCTION

By letter dated November 26, 2002, as supplemented July 1, 2003, Dominion Nuclear Connecticut, Inc. (DNC or the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC or the Commission), Relief Request No. IR-2-27, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i), requesting approval of an alternative to the requirements of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section XI. The alternative would allow the one-time use of a non-ASME Code Section III N-type certificate holder to perform fabrication activities at its facility while meeting the requirements of 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."

2.0 REGULATORY REQUIREMENTS

Inservice Inspection (ISI) of the ASME Code Class 1, 2, and 3 components are performed in accordance with Section XI of the ASME Code and the applicable addenda, as required by 10 CFR 50.55a(g), except where written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) of 10 CFR states that alternatives to the requirements of 10 CFR 50.55a(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 or 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 pre-service examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) 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 examinations of components and system pressure tests conducted during the first ten-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 applicable ASME Code of record for the second ten-year ISI for Millstone Power Station, Unit No. 3 (MP3) is the 1989 Edition of the ASME Code Section XI.

When performing replacements in accordance with the ASME Code Section XI, 1989 Edition, IWA-7210(b) requires that items to be used for replacement meet the Construction Code and the existing design requirements. If the original Construction Code was Section III, then all the requirements of ASME Code Section III apply unless they are modified or exempted by the other provisions of IWA-7000. Because of this, ASME Code Section XI general requirements for quality assurance and documentation of ASME Code Section III, Subsection NA, and Class 2 requirements of Subsection NC that are applicable to this request shall be met. When piping subassemblies are fabricated by a vendor at the vendor's facility to meet ASME Code Section III requirements, an ASME Code N-type certificate of authorization is required to be used with at least an NPT stamp, and all of the quality assurance provisions that are associated with the vendor's authorization shall be applied. When all these requirements have been met, an applicable Code Data Report would be issued by the fabricator and signed by an Authorized Nuclear Inspector (ANI).

3.0 PROPOSED ALTERNATIVE AND BASIS FOR RELIEF

DNC proposes, as an alternative to the requirements of ASME Code Section XI, 1989 Edition, IWA-7210(b), and ASME Code Section III, 1971 Edition, with the Summer 1973 Addenda that require a vendor to have an ASME Code N-type certificate of authorization (NPT-type) and provide with a completed subassembly a Code Data Report Form NPP, that the provisions of 10 CFR 50, Appendix B be used along with the participation of an ANI. The application of the 10 CFR 50, Appendix B criteria proposed in this alternative is specific to the MP3 ASME Code Section XI Repair and Replacement Program regarding the vendor portion (i.e. subassembly fabrication) for the replacement activity described in this request.

The original ASME Code Section XI Repair and Replacement activity described in this request took place during Refueling Outage 6 in the spring of 1999 and was intended to be performed solely at the Millstone site with the vendor working under the Millstone ASME Code Section XI Repair and Replacement Program and 10 CFR 50 Appendix B. The licensee stated that if the work had been performed at the licensee's facility, no issue would exist as MP3 would have been in full compliance with Section XI. However, the licensee decided that schedule enhancements would result if the vendor could fabricate the piping subassemblies at the vendor facility. The revised purchase order, to allow this work, did not identify that the vendor needed to have an ASME Code Section III, N-type certificate of authorization to perform the work at the vendor facility.

The licensee received and reviewed the following documentation from the vendor to support the vendor subassembly fabrication:

- (a) Welding Procedures
- (b) Welding Procedure Qualifications
- (c) Heat Treatment/Bending/Cleaning Procedures-Covered By Weld Procedures
- (d) Nondestructive Examination (NDE) Procedures
- (e) NDE Reports
- (f) Radiographic Records and Film

- (g) Material Certificates (Including Filler Metal)
- (h) Control Isometrics
- (i) Pipe Weld Data Sheets
- (j) Nonconformance Reports and Dispositions - No Nonconformance Reports were issued. However, several welds were repaired during the fabrication. Repair weld and acceptance documentation is provided in the Vendors Data Package for Fabrication
- (k) Third Party ANI Inspection - Evidence of ANI involvement is provided on the Vendor Quality Assurance Travelers for the subassemblies.
- (l) Pressure Testing Reports - Part of the Millstone installation work documentation.

The licensee stated that similar documentation would be used to support the vendor subassembly fabrication under ASME Code Section III requirements if a Code Data Report Form NPP had been issued.

Based upon the above information, the licensee concluded that the proposed alternative would provide an acceptable level of quality and safety and would not adversely impact the health and safety of the public. The licensee's proposed alternative is to be applied for the life of the replacement.

4.0 EVALUATION

The licensee requested relief from the requirements of the ASME Code, Section XI, 1989 Edition, Subsection IWA 7000, Replacement. Specifically, the following non-conformance was identified: work performed under the requirements of ASME Code Section XI, 1989 Edition, IWA-7210(b), and the ASME Code Section III, 1971 Edition, with the Summer 1973 Addenda was performed at the vendor's facility on the licensee's "A" (Table I) and "D" (Table II) Trains of the Feedwater System by a vendor who did not have an ASME Code N-type certificate of authorization.

The affected welds included the application of ID stainless steel cladding using ER309L filler material to 18", 16", and 8" SA-106 Grade C Schedule 100 piping, with two 16"x 18" SA-234 Gr. WPC Schedule 100 reducers, and the shop welds listed in Table I and II:

The licensee stated that all the applied cladding had a penetrant dye test performed, and the subassemblies were pressure-tested following installation.

The NRC staff evaluated the information provided by the licensee and sent a Request for Additional Information (RAI) to the licensee in a letter dated March 28, 2003. The letter requested the licensee to verify that procedures and qualifications involving various in-process work by the vendor were witnessed and approved by the licensee. The licensee responded to the RAI in a letter dated July 1, 2003 and verified the following:

1. The licensee's welding engineer reviewed the vendors production welding procedures and supporting qualification data and found them to be acceptable.
2. The licensee reviewed the vendors non-destructive evaluation reports and found them to be acceptable. Reviews of the NDE procedures and inspection documentation (including

radiography testing (RT) film) verified that the required quality levels of the tests performed were sensitive enough to identify discontinuities that may have been detrimental to the integrity of the welds. This was supported by four flaws found during the in-process welding. The flaws were as follows:

The "A" Train weld FW83 had two (2) areas of incomplete fusion, excavated by grinding, and repair welded. The inspection results of Radiography Testing (RT) and Magnetic Particle Testing (MT) were acceptable per ASME Section III, 1992 Edition.

The "B" ["D"] Train weld FW67 had two (2) areas of incomplete fusion, excavated by grinding, and repair welded. The inspection results of RT and MT were acceptable per ASME III, 1992 Edition.

3. The licensee verified that the radiograph results and technique were reviewed by a Level III Examiner and found to be acceptable. The licensee also stated that the tests were determined by the Level III Examiner to be sensitive enough to identify discontinuities that may have been detrimental to the integrity of the welds. The RT, MT and penetrant testing (PT) met the requirements of the ASME Code Section III, 1992 Edition.
4. The licensee verified that the base material and filler material certifications used for production were reviewed, and met the requirements of the ASME Code.
5. The licensee stated that production weld records were reviewed and found to be acceptable against the parameters of the production weld procedures. Production welds were performed by qualified welders. The licensee's welding engineer also observed some of the production welding at the vendor's facility. The licensee also stated that production welding was witnessed and the welding documentation was approved and signed by an ANI on the vendor's Quality Assurance Travelers ("travelers" are forms that contain the process steps involved in the fabrication, welding, etc. of a component) and Weld Process Travelers contained in the Final Vendor's Data Package.
6. The licensee stated that the repair welding that was performed during fabrication exceeded 10% of the base material wall thickness and were considered major. The flaws were detected by RT. The licensee stated that the size of the flaws are documented on the RT data sheets and the vendor's weld repair data sheets contained in the Final Vendor's Data Package. The flaws were removed by grinding and the indications were dimensionally inspected. This documentation is provided on the vendor's weld repair data sheets and NDE reports. The in-process inspection and discrepancy was documented on the vendor's Weld Process Travelers and then on the RT and weld repair data sheets described above, which are all included in the Final Vendor's Data Package.
7. The licensee verified that the ANI witnessed the production welding, inspection and subassemblies and provided signatures on the travelers. These documents are contained in the Final Vendor's Data Package.
8. The licensee stated that pressure testing was performed to Code Case N-416-1 upon installation of the subassemblies. The pressure testing was found to be acceptable.

TABLE I "A" Train					
Vendor Weld Number	Construction NDE	ISI Weld Number	ISI Item No./ Category	Section XI PSI NDE	Description
FW72	RT, PT	FWS-11-FW-72	C5.81/C-F-2	RT, PT	Pressure Retaining 18" Pipe to Reducer Butt Weld
FW82	MT	N/A	N/A	N/A	Non-Pressure Retaining Reinforcement Plate Full Penetration Weld
FW83	RT Repair Welded	FWS-11-FW-83	C5.81/C-F-2	Construction RT Used. Inaccessible After Welding Reinforcement Plate	8" To 18" Pipe Stab-In Partial Penetration Weld. Original Design
FW84	MT	N/A	N/A	N/A	Non-Pressure Retaining Reinforcement Plate Full Penetration Weld
FW85	MT	FWS-11-FW-85	C3.20/C-C	MT	Reinforcement Plate Fillet Weld Attachment
FW86	MT	FWS-11-FW-86	C5.20/C-C	MT	8" To 18" Partial Penetration Plate Weld/Fillet Attachment

TABLE II "D" Train					
Vendor Weld Number	Construction NDE	ISI Weld Number	ISI Item No./ Category	Section XI PSI NDE	Description
FW67	RT, PT Repair Welded	FWS-17-FW-67	C5.81/C-F-2	RT, PT	Pressure Retaining 18" Pipe to Reducer Butt Weld
FW76	MT	N/A	N/A	N/A	Non-Pressure Retaining Reinforcement Plate Full Penetration Weld
FW77	RT	FWS-17-FW-77	C5.81/C-F-2	Construction RT Used Inaccessible After Welding Reinforcement Plate	8" to 18" Pipe Stab-In Partial Penetration Weld Original Design
FW78	MT	N/A	N/A	N/A	Non-Pressure Retaining Reinforcement Plate Full Penetration Weld
FW79	MT	FWS-17-FW-79	C3.20/C-C	MT	Reinforcement Plate Fillet Weld Attachment
FW80	MT	FWS-17-FW-80	C3.20/C-C	MT	8" To 18" Partial Penetration Plate Weld/Fillet Attachment

9. The licensee verified that the vendor's facility and work was audited. The vendor is an approved supplier under 10 CFR 50, Appendix B. Additionally, the licensee stated that the welding engineer was at the vendor's facility and observed some of the welding being performed on butt welds and the cladding on parts of the subassemblies. The licensee stated that the welding engineer confirmed the work being performed by the vendor was acceptable.

The NRC staff reviewed the information provided by the licensee to support the request to use an alternative to the ASME Code, Section XI at MP3. Based upon its review of the information, the staff concludes that the proposed alternative provides reasonable assurance of structural integrity and is acceptable pursuant to 10 CFR 50.55a(a)(3)(ii). This conclusion is based upon the following: the licensee has verified that the work performed by its subcontractor was performed by qualified personnel; procedures were reviewed and approved by the licensee; inspections were performed and reviewed by qualified personnel; and all required quality assurance documentation was provided to the licensee. Pressure testing was performed on the subassemblies and were acceptable. The licensee also stated that some production welding was witnessed by the licensee's welding engineer and was acceptable. The licensee also verified that the ANI witnessed the production welding, inspection and subassemblies, and provided signatures on the travelers. The licensee stated that similar documentation would be used to support the vendor's subassembly fabrication under ASME Code Section III requirements if a Code Data Report Form NPP had been issued along with any pertinent notes. In addition, it would be a hardship for the licensee to comply with the requirements of the ASME Code because the licensee would have to remove the subassemblies from the Feedwater System which were fabricated by the vendor and rework the entire "A" and "D" Trains. Performing this rework by the licensee would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety over what has been performed by the vendor.

4.0 CONCLUSION

The NRC staff has reviewed the licensee's request to use an alternative to the ASME Code, Section XI at MP3. Based upon its review of the information provided by the licensee in support of its request for relief, the staff finds that the above listed alternative is acceptable pursuant to 10 CFR 50.55a(a)(3)(ii). Removing the subassemblies from the licensee's Feedwater System and reworking the entire "A" and "D" Trains would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the life of the replacement.

All other ASME Code Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the ANI Inspector.

Principal Contributors: E. Reichelt

Date: January 7, 2004