



**Northeast
Nuclear Energy**

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The Northeast Utilities System

FEB 17 2000

Docket Nos. 50-336

50-423

B17985

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

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

**Millstone Nuclear Power Stations, Unit Nos. 2 and 3
Inservice Inspection on Class MC and Class CC Components
Alternative to Requirements of ASME Section XI**

In the Federal Register, dated August 8, 1996 (61 FR 41303), 10 CFR 50.55a was amended to incorporate by reference the ASME Code Section XI, 1992 Edition with the 1992 Addenda of Subsections IWE and IWL for expedited examination of containments. On April 22, 1999, in accordance with provisions of 10 CFR 50.55a(a)(3)(i), Northeast Nuclear Energy Company (NNECO) submitted Relief Requests RR-E1 and RR-L1, along with line-by-line comparisons for the 1998 Edition to the 1992 Edition with the 1992 Addenda.⁽¹⁾

NNECO subsequently amended its request to use the 1998 Edition of ASME Section XI for Subsections IWE and IWL as an alternative to the 1992 Edition of ASME Section XI, by proposing to use the 1998 Edition of ASME Section XI, including the 1999 Addenda⁽²⁾. Discussion with the Staff identified that review and approval of this request could not be completed prior to the Millstone Unit No. 2 refueling outage in April, 2000 due to our request to utilize the 1998 Edition of ASME Section XI, including the 1999 Addenda in lieu of 1998 Edition of ASME Section XI for Subsections IWE and IWL.

(1) R. P. Necci to the Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit Nos. 2 and 3, Inservice Inspection on Class MC and Class CC Components, Alternative to Requirements of ASME Section XI," dated April 22, 1999.

(2) R. P. Necci to the Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit Nos. 2 and 3, Inservice Inspection on Class MC and Class CC Components, Alternative to Requirements of ASME Section XI," dated December 13, 1999.

NNECO hereby retracts the portion of our request to use the 1999 Addenda. This retraction does not effect any other portion of our December 13, 1999 submittal.

Based on NNECO's submittal of December 13, 1999 the Staff provided a supplemental request for additional information containing five (5) questions. Our responses to these questions are presented in Attachment 1.

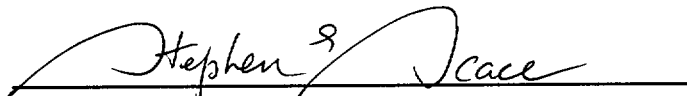
NNECO generally agrees with previous submittals on the issues identified by the Staff, such as those provided in the letters from Texas Utilities Electric.⁽³⁾⁽⁴⁾ The Staff's evaluation of the Texas Utilities Electric submittals was provided in the letter dated July 23, 1999.⁽⁵⁾ Where appropriate, excerpts from these letters have been incorporated into our responses.

There are no regulatory commitments contained in this letter.

Should you have any questions regarding this matter, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



Stephen E. Scace
Director - Nuclear Oversight and
Regulatory Affairs

cc: See next page

⁽³⁾ C. L. Terry of Texas Utilities Electric to U.S. NRC, "Comanche Peak Steam Electric Station (CPSES), Response To Request For Additional Information Regarding Unit No. 1 And Unit No. 2 Inservice Inspection Program Relief Requests E-1 And L-1," dated March 26, 1999 (TXN 99082).

⁽⁴⁾ C. L. Terry of Texas Utilities Electric to U.S. NRC, "Comanche Peak Steam Electric Station (CPSES), Response To Request For Additional Information Regarding Unit No. 1 And Unit No. 2 Inservice Inspection Program Relief Requests E-1 And L-1," dated June 8, 1999 (TXN 99130).

⁽⁵⁾ R. A. Gramm, Chief, Section 1, Project Directorate IV & Decommissioning, Division of Licensing Project Management, Office of Nuclear Reactor Regulation to C. L Terry Texas Utilities Electric, "Comanche Peak Steam Electric Station (CPSES), Unit Nos. 1 and 2 - Evaluation Of Relief Requests: Use Of 1998 Edition Of Subsections IWE and IWL of the ASME Code For Containment Inspections (TAC Nos. MA2038 And MA2039)," dated July 23, 1999.

Attachment 1: Alternative Requirements for ASME Code Section XI, 1998 Edition

cc: H.J. Miller, Region I Administrator
J. I. Zimmerman, NRC Project Manager, Millstone Unit 2
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit 2
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
A. C. Cerne, Senior Resident Inspector, Millstone Unit 3

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Attachment 1

Millstone Nuclear Power Station, Unit Nos. 2 and 3

Responses to Supplemental Requests for Additional Information
Regarding Alternative Requirements for ASME Code Section XI, 1998 Edition

February 2000

Responses to
NRC Requests for Additional Information Regarding
Alternative Requirements for ASME Code Section XI, 1998 Edition

Question #1

Subsections IWE and IWL of the 1998 Code deviate from the general requirements contained in IWA-2000 and allow the use of owner-defined requirements in some areas (i.e., acceptance criteria, minimum personnel qualifications, etc.). As such, the 1998 Code must be augmented to maintain industry-wide consistency. In the NRC RAI, the licensee was requested to provide specific details of the Millstone General and Detailed Visual examination program. The following clarifications are required to establish that the proposed alternative provides an acceptable level of quality and safety.

- a) The licensee provided information regarding the acceptance criteria for the General Visual, but did not provide similar information for the Detailed Visual examination. Provide the acceptance criteria to be used for the Detailed Visual examination.
- b) The licensee provided a few details and a list of the topics covered by the NNECO Containment Inspection Manual to address personnel training and qualification requirements. However, the licensee has not provided enough specific details to support the determination that the owner-defined program provides an acceptable level of quality and safety. Provide a detailed comparison describing how the proposed owner-defined program is consistent with IWA-2000 of the 1992 Code with the 1992 Addenda or the current acceptable Code of record.
- c) In some cases, the qualifications appear to describe an existing individual (see examples below). Do these descriptions represent the minimum qualifications for the stated individuals? Will replacements have equivalent qualifications? Provide a clarification regarding the qualifications of personnel performing containment examinations.

Prerequisites for Responsible Individual (IWE)

The IWE Responsible Individual is knowledgeable in the requirements for design, inservice inspection and testing of Class MC and metallic liners of Class CC components. The IWE Responsible Individual graduated from a four-year accredited engineering or science college or university and has a minimum of 10 year civil engineering work experience at a nuclear facility.

Prerequisites for Visual Inspector (IWE/IWL)

The Visual Inspector has graduated from a four-year accredited engineering or science college or university and has a minimum of 5 years work experience at a nuclear facility or an equivalent combination of education and experience. The Visual Inspector has completed training and meets qualification requirements specified in the Program Manual.

Responses to Question #1

- a) **The licensee provided information regarding the acceptance criteria for the General Visual, but did not provide similar information for the Detailed Visual examination. Provide the acceptance criteria to be used for the Detailed Visual examination.**

The General Visual examinations performed per the NNECO Containment Inspection Manual provide a screening mechanism to locate conditions that may be indicative of damage or distress. Containment surfaces are accepted on the basis of a general visual examination, only when there are no indications of damage or distress that are a Code concern.

IWE and IWL detailed visual examinations are conducted when the criteria for acceptance by general visual examination are not met, or when the surface or component is initially classified as suspect or otherwise requires augmented examination. Augmented examination requirements are specified in IWE-1241, and suspect areas in Table IWL-2500-1, Categories L1.12 and L2.30.

For Subsection IWE detailed visual examinations, surfaces and components may be accepted for continued service without further evaluation provided one of the following is demonstrated:

1. For indications of loss of base metal, the IWE Responsible Engineer determines by detailed visual examination that the loss of base metal is not greater than 10% of the nominal wall thickness.
2. For all other indications without loss of base metal, the Responsible Engineer is able to accept the indication based on a review of a previous evaluation from historical records.

For Subsection IWL detailed visual examinations, surfaces may be accepted for continued service without further evaluation provided one of the following is demonstrated:

1. the Responsible Engineer determines that the flaw or area of degradation is nonstructural in nature or has no unacceptable effect on the structural integrity of the containment, as determined by an evaluation of the magnitude

and extent of the relevant indication from ACI 201.1R, and ACI 349.3R as appropriate. or,

2. the Responsible Engineer determines that the flaw or area of degradation is limited to the outermost concrete layer or when the depth of deterioration exposes rebar without evidence of corrosion, or,
3. the Responsible Engineer is able to accept the indication based on a review of a previous evaluation from historical records.

The detailed visual examination acceptance criteria outlined above for IWE/IWL exams provides a conservative basis for accepting containment surfaces without further evaluation. For these reasons the acceptance criteria presented in the NNECO Containment Inspection Manual provide a level of quality and safety consistent with the 1992 Code.

- b) **The licensee provided a few details and a list of the topics covered by the NNECO Containment Inspection Manual to address personnel training and qualification requirements. However, the licensee has not provided enough specific details to support the determination that the owner-defined program provides an acceptable level of quality and safety. Provide a detailed comparison describing how the proposed owner-defined program is consistent with IWA-2000 of the 1992 Code with the 1992 Addenda or the current acceptable Code of record.**

As previously discussed in Attachment 3 to NNECO's submittal of December 13, 1999,⁽⁶⁾ Appendix I of the Containment Inservice Inspection Manual specifies the training and qualification requirements for IWE and IWL Responsible Engineers and Visual Examiners in accordance with IWE-2300, and IWL-2300, 1998 Edition. A line-by-line comparison of the requirements in ASME Section XI, 1992 Edition, IWA-2300, and requirements in Appendix I has been made. It is concluded that Appendix I provides an acceptable level of quality and safety when compared to IWA-2300. A summary of the similarities and differences between these requirements are detailed as follows.

IWA-2310 General. IWA-2310 requires preparation of a written practice in accordance with ANSI/ASNT CP-189, and qualification and certification of personnel to that written practice. As stated in CP-189, the scope of the written practice shall define the minimum training, education, and experience requirements for NDT personnel, and that the employer incorporate any unique or additional requirements in the qualification procedure. The NNECO Containment Inservice Inspection Program Manual, Appendix I, Qualification and Training, fulfills the requirements of IWA-2310 as the required written practice,

⁽⁶⁾ R. P. Necci to the Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit Nos. 2 and 3, Inservice Inspection on Class MC and Class CC Components, Alternative to Requirements of ASME Section XI," dated December 13, 1999.

and includes specific training and qualification topics mentioned previously. The Manual provides the same level of quality and safety as stated in IWA-2310.

IWA-2311 Written Practice. IWA-2311 requires duties and responsibilities of the Principal Level III to be defined. Appendix I of the NNECO Containment Inservice Inspection Program details the roles and responsibilities of the IWE/IWL Responsible Engineer and the IWE/IWL Visual Examiner. The requirements of IWA-2311 are met having defined these roles, differences in title notwithstanding. Titles described in CP-189 (Levels I, II, III) are intentionally avoided so as not to confuse them with the alternative education and experience requirements incorporated into the IWE/IWL program. The level of quality and safety provided is the same as stated in IWA-2311.

IWA-2313 NDE Methods Not Listed in ANSI/ASNT CP-189. IWA-2313 requires personnel performing visual examinations or using other NDE methods not addressed in ANSI/ASNT CP-189 be qualified and certified to comparable levels of qualification as defined in ANSI/ASNT CP-189 and the Employer's written practice. The IWE/IWL written practice specifies the training, and qualification, requirements for the IWE/IWL Responsible Engineer and IWE/IWL Visual Examiner. These requirements are comparable to the requirements for visual examiners as specified in ASNT SNT-TC-1A. Titles in SNT-TC-1A (Level I, II, and III) are intentionally avoided so as not to confuse them with the alternative requirements incorporated by the NNECO IWE/IWL written practice. The level of quality and safety provided is the same as stated in IWA-2313.

IWA-2314 Certification and Recertification. IWA-2314 requirements, including certification intervals, are comparable to NNECO's IWE/IWL written practice for documentation of qualification. Therefore, the level of quality and safety is acceptable.

IWA-2321 Vision Tests. IWA-2321 vision test requirements include conduct of vision testing, test methods, frequency of test administration and vision test acceptance. NNECO's IWE/IWL written practice requires vision tests to be conducted in a manner that is comparable to VT-1 vision test requirements. Therefore, the IWE/IWL written practice is equal to or better than IWA-2321, 1992 Edition, and the level of quality and safety is acceptable for vision tests.

IWA-2323 Level III Personnel. IWA-2323 is not applicable to the IWE/IWL written practice for qualification and training of the IWE/IWL Responsible Engineer. Roles and responsibilities of the IWE Responsible Individual and the IWL Responsible Engineer are as follows.

The Responsible Individual (IWE) is knowledgeable in the requirements for design, inservice inspection, and testing of Class MC and metallic liners of Class CC components (IWE-2320).

The Responsible Engineer (IWL) is a Registered Professional Engineer experienced in evaluating the condition of structural concrete, and has

knowledge of the design and Construction Codes and other criteria used in design and construction of concrete containments in nuclear power plants (IWL-2320).

These individuals are responsible for the following:

1. development of plans and procedures for examination surfaces
2. approval, instruction, and training of examination personnel
3. evaluation and examination results
4. preparation or review of Repair/Replacement Plans and procedures
5. review of procedures for pressure tests following repair/replacement activities
6. submittal of Owner's report.

Qualification, experience, and education requirements have been detailed previously in Attachment 3 to NNECO's submittal of December 13, 1999⁽⁷⁾, and further clarified in the response to question #1c of this Attachment. The qualification, experience, and education requirements for the IWE/IWL Responsible Engineer are the same as, or exceed, those in IWA-2370.

Summary

The NNECO Containment Inspection Program has a written practice that meets the requirements specified in the 1992 Edition of the Code, ANSI/ASNT CP-189 and SNT-TC-1A. In addition, the inspection and evaluation procedures that are used to perform inspections are reviewed and approved by a certified NDE Level III and also the ANII. Therefore, the written practice and associated procedures provides an acceptable level of quality and safety.

⁽⁷⁾ R. P. Necci to the Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit Nos. 2 and 3, Inservice Inspection on Class MC and Class CC Components, Alternative to Requirements of ASME Section XI," dated December 13, 1999.

- c) **In some cases, the qualifications appear to describe an existing individual (see examples below). Do these descriptions represent the minimum qualifications for the stated individuals? Will replacements have equivalent qualifications? Provide a clarification regarding the qualifications of personnel performing containment examinations.**

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Prerequisites for Visual Inspector (IWE/IWL)

The Visual Inspector has graduated from a four-year accredited engineering or science college or university and has a minimum of 5 years work experience at a nuclear facility or an equivalent combination of education and experience. The Visual Inspector has completed training and meets qualification requirements specified in the Program Manual.

These descriptions correspond to the minimum qualifications for the Responsible Engineer and the Visual Examiner.

Question #2

The licensee provided a description of procedure qualification as requested in the NRC RAI. In general, the description provided appears reasonable except for the use of a 1/32 inch division on a machinist scale which may not represent a consistent standard. Describe how the consistency of the selected standard will be maintained. Were other commonly used industry standards considered (i.e., 1/32 inch line on 18% neutral gray card)?

Response to Question #2

Based upon NNECO's further consideration of the options for procedure qualification, NNECO agrees that procedure qualification using the 1/32 inch line on 18% neutral gray card would be a more consistent standard. Therefore, the standard to be used at Millstone has been revised, as follows.

Direct Visual Examination Distance and Illumination Requirements

Distance and illumination requirements for visual examination by the direct method are satisfied if the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination. This particular acceptance standard has been incorporated into 10 CFR 50.55a(b)(x)(B) when performing visual examination by remote methods. At Millstone Units 2 and 3, this acceptance standard is applicable to visual examination by direct or remote methods. The examination, using natural or artificial lighting, shall be sufficient to resolve an 1/32 inch black line on an 18% neutral gray card or equivalent procedure, to detect indications for which the examination is performed. Prior to visual inspection of any surface or component by the direct visual examination method, the required capability shall be demonstrated and results recorded, using either actual lighting and distance conditions or simulated worst case conditions.

Remote Visual Examination Distance and Illumination Requirements

Remote examination may use aids, such as telescopes, cameras, binoculars, or other suitable instruments, provided such systems are capable of detecting indications for which the remote visual examination is performed. The examination, using natural or artificial lighting, shall be sufficient to resolve an 1/32 inch black line on an 18% neutral gray card. Prior to visual inspection of any surface or component by the remote visual examination method, the required capability shall be demonstrated and results recorded, using either actual lighting and distance conditions, or simulated worst case conditions.

Question #3

In the draft response to the NRC RAI, the licensee refers to the NNECO Protective Coatings and Linings Program Manual to address base metal condition prior to the application of coatings and linings. However, the licensee has not provided a clear commitment as to how the condition of the base metal will be verified. The licensee stated, in part:

NNECO concurs that IWE-2500(b) paint or coating examination requirements should be performed prior to reapplication of the paint or coating, and should invoke detailed examinations, either detailed visual or augmented, as conditions require. NNECO also concurs that examinations should be performed by qualified inspection personnel.

The appropriate Coatings Program procedures will be updated to require IWE/IWL Program notification in the event a coating or recoating application is planned. This notification will permit the IWE/IWL Responsible Engineer to conduct inspections prior to coating removal, base metal examination, and preservice examination prior to return to service, as required.

Describe how the coating program procedures will ensure that the base metal will be thoroughly examined prior to paint or coating application at Millstone Units 2 and 3.

Response to Question #3

The Protective Coatings and Linings Program implementing procedures are being revised to require IWE/IWL Responsible Engineer notification of a planned coating or recoating application. Once notified, the IWE/IWL Responsible Engineer shall ensure that the surface is inspected per the requirements of IWE-2600, evaluated, and results documented using the same methods, procedures, and acceptance standards that are specified for Class MC and CC preservice and inservice inspections. This examination will be performed prior to painting or coating application, and will ensure a thorough examination of the existing containment surface, including the condition of the base metal.

Question #4

To address the acceptance criteria for material loss of metallic liners (Class CC), the licensee cites concurrence with a Texas Utilities submittal dated June 8, 1999. However, it is unclear how the licensee will address Class CC metallic liners at Millstone 2 and 3. Confirm that the acceptance criteria for Class MC liners will be used for Class CC metallic liners (evaluation or repair of areas exceeding 10% material loss).

Response to Question #4

Acceptance criteria for the Class CC metallic liners at Millstone Units 2 and 3 are the same as the acceptance criteria for Class MC liners. If greater than 10% material loss is identified, the area shall be subject to acceptance by engineering evaluation or acceptance by repair.

Question #5

Regarding the visual examination of disassembled bolted connections, the licensee cited concurrence with a Texas Utilities submittal dated March 28, 1999, however, made no commitment to perform visual examination of disassembled bolted connections. Other plants have committed to perform either detailed visual or VT-1 visual examinations of disassembled bolted connections. Confirm that a detailed visual (or VT-1) examination will be performed on disassembled bolted connections. Also confirm that bolted connections are limited to equipment and personnel hatches, and electrical penetrations.

Response to Question #5

The bolted connections at Millstone Units 2 and 3 are limited to the equipment and personnel hatches, and electrical penetrations. All accessible bolted connections will be inspected each inspection period per the requirements of Category E-A of Table IWE-2500-1, whether assembled or disassembled. NNECO will perform detailed visual examinations on bolted connections that are disassembled at the time of the inspection. In addition, indications of damage on assembled bolted connections will require connection disassembly for detailed visual inspection. Existing station maintenance procedures will be relied upon to ensure that the integrity of reassembled bolted connections are maintained.

Accessible bolted connections at Millstone Unit Nos. 2 and 3 are therefore examined three times per inspection interval, which exceeds the once per interval requirement of the 1992 Edition. Specific conditions for which bolted connection examinations are conducted are included in Attachment 3 to NNECO's submittal of December 13, 1999⁽⁸⁾, and are comparable to those in the 1992 Edition. Based on the comparison of bolted connection examination frequencies, the conditions for which examinations are conducted, and the acceptance criteria employed, the same level of quality and safety will be achieved for all bolting examinations.

⁽⁸⁾ R. P. Necci to the Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit Nos. 2 and 3, Inservice Inspection on Class MC and Class CC Components, Alternative to Requirements of ASME Section XI," dated December 13, 1999.