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Technical Evaluation Report on the Proposed Alternative To IWE/IWL Containment Inspections Northeast Nuclear Energy Company, Millstone Nuclear Power Station, Unit Nos. 2 and 3, Docket Numbers 50-336 and 50-423

M. T. Anderson, C. T. Brown, *M. J. Klatt*, A. M. Porter

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Idaho National Engineering and Environmental Laboratory
Materials Physics Department
Lockheed Martin Idaho Technologies Company
Idaho Falls, Idaho 83415

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ABSTRACT

This report presents the results of the evaluation of the licensee's proposed alternatives to the containment inspections required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL. The licensee's proposed alternatives to IWE/IWL containment inspection, submitted April 22, 1999, are evaluated in Section 2 of this report.

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SUMMARY

The licensee, Northeast Nuclear Energy Company (NNECO), prepared a proposed alternative to the IWE/IWL containment inspections in accordance with 10 CFR50.55a(g)(6)(ii)(B). The licensee proposed to use the 1998 Edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL, in lieu of the 1992 Edition with 1992 Addenda, as currently specified by the Regulation for containment inspections.

Information in the *Alternative Requirements of ASME Section XI,* submitted April 22, 1999, was reviewed. As a result of this review, a request for additional information (RAI) was prepared describing the information and/or clarification required from the licensee in order to complete the review. The licensee provided the requested information in a submittals dated December 13, 1999, and February 25, 2000.

Based on the review of the licensee's original submittal and NNECO's response to the NRC's RAI, it is concluded that, for Requests for Relief RR-E1 and RR-L1, the intent of the Regulation will be satisfied at Millstone Nuclear Power Station, Unit Nos. 2 and 3. The licensee's proposed alternative—to use the 1998 Edition of Subsections IWE and IWL, as supplemented by specific, detailed requirements contained in the licensee's response to the NRC RAIs—provides an acceptable level of quality and safety. Therefore, the INEEL staff recommends that the proposed alternatives be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

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1. INTRODUCTION

In accordance with 10 CFR 50.55a(g)(6)(ii)(B) (Reference 1), licensees of all operating nuclear power plants shall implement inservice examinations specified for the first period of the first inspection interval in Subsection IWE, and inservice examinations that correspond to the number of years of operation specified in Subsection IWL of the American Society of Mechanical Engineers (ASME), Section XI, Subsections IWE and IWL, 1992 Edition with the 1992 Addenda (Reference 2), with the modifications specified in § 50.55a (b)(2)(ix) by September 9, 2001.

By letter dated April 22, 1999 (Reference 3), the licensee, NNECO, submitted Requests for Relief RR-E1 and RR-L1 seeking relief from the ASME 1992 Edition requirements of IWE and IWL. This relief request was submitted for the second 10-year inservice inspection (ISI) interval for the Millstone Nuclear Power Station, Unit Nos. 2 and 3. The licensee proposed to use the 1998 Edition of the Code in lieu of the 1992 Edition/1992 Addenda required by the Regulations for containment inspections performed in accordance with Subsections IWE and IWL. The licensee provided tables comparing the 1998 Edition with the 1992 Edition, 1992 Addenda. The evaluation of the subject relief request included a review and comparison of requirements found in the 1992 Edition with the 1992 Addenda to those in the 1998 Edition and a brief analysis of the changes and/or implications. In general, the INEEL staff concurs with the licensee's analysis of the Code changes, except in the areas of the visual examination method description and procedure qualification, visual examination personnel qualification, and visual examination prior to paint or coating application. These areas required clarification from the licensee and an RAI (Reference 4) was issued to gather the appropriate information. By letters dated December 13, 1999, (Reference 5) and February 25, 2000 (Reference 6), the licensee submitted a response to the NRC RAI. The Idaho National Engineering and Environmental Laboratory (INEEL) staff's evaluation of the subject requests for relief are in the following section. Tables showing variations between the different Code editions, and relevant comments, are included in Appendix A and B and the disposition is summarized in Appendix C.

2. EVALUATION OF RELIEF REQUESTS

The following evaluation consists of a review of the licensee's proposed alternatives to Code requirements; the licensee has determined that these alternatives will provide an acceptable level of quality and safety.

2.1 Request for Relief RR-E1, Proposed Alternative to Use ASME Section XI, 1998 Edition, Subsection IWE, for Examination of Class MC and Metal Liners of Class CC Components

Regulatory Requirement—10 CFR 50.55a(g)(6)(ii)(B) requires that licensees implement the inservice examinations specified for the first period of the first inspection interval in Subsection IWE of the 1992 Edition with the 1992 Addenda of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code).

Licensee's Proposed Alternative—In accordance with 10 CFR 50.55a(a)(3)(i), the licensee proposed to use the requirements of the 1998 Edition of ASME Section XI for the examination requirements for IWE components. The licensee stated:

> "Refer to 1998 Edition, 1998 Addenda of Subsection IWE, 'Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Power Plants,' of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) which defines the alternate examinations of this relief request."

Licensee's Basis for Proposed Alternative—

> "In the Federal Register, dated August 8, 1996 (61 FR 41303), the NRC amended its regulations to incorporate by reference the ASME Code Section XI, 1992 Edition with the 1992 Addenda of Subsection IWE for expedited examination of containments. Based on the effective date of the Rule change of September 9, 1996, Licensees have until September 9, 2001, to have in place a Containment ISI program and to complete the first period inspection requirements contained in Section XI.
>
> "Extensive changes have been made by the ASME to the referenced Subsection IWE contained in the 1992 Edition and Addenda concerning the examination requirements for containments. These changes were published in the 1998 Edition of the ASME Code Section XI. Publication of the 1998 Edition by the ASME, with NRC participation, provides the basis for the approval of these 1998 Edition requirements which have been determined by the ASME consensus process to provide an acceptable level of quality and safety. In addition, a Safety Evaluation Report (SER) dated June 30,1998, issued to Davis-Besse Nuclear Power Station (DBNPS), Docket Number 50-346, granted approval for use of some of the requirements contained in the 1998 Edition of Section XI. Specifically, this SER granted elimination of the examination of seals and gaskets, and incorporation of the bolting exams into the general visual exams of the Table IWE-2500-1 E-A category.
>
> "The proposed alternative utilizes the ASME 1998 Edition of Subsection IWE of Section XI in its entirety. Utilizing the entire 1998 Edition of Subsection IWE incorporates other exceptions to the 1992 Addenda and provides a more cohesive approach than could be achieved by requesting relief on multiple, individual issues. These requirements were developed in accordance with the ASME Code committee process with input from interested parties, including other utilities, manufacturers, engineering organizations, Authorized Nuclear Inspection Agencies, EPRI and the NRC. The updating of the ASME Code Subsection IWE of Section XI requirements by this consensus process is intended to ensure the continued safe operation of nuclear power plants and the continued leak-

tight and structural integrity of metallic containment components. Supporting this, a line-by-line comparison of the 1998 Edition to the 1992 Edition with the 1992 and Addenda, including a line-by-line of the portions of Subsection sections of IWA which are referenced by either the 1992 Edition with the 1992 Addenda or the 1998 Edition, leads to the conclusion that the 1998 Edition of IWE provides an acceptable equivalent, and in some cases an increased, level of quality and safety to the required containment inspection program."

In the submittal dated December 13, 1999, the licensee stated:

"The subject inspection program development is giving appropriate consideration to the qualification and training of IWE/IWL inspection personnel as stated in the Background section of this response (Attachment 4). The following requirements are taken from the Program Manual as specific examples of the manner in which ASNT SNT-TC-1A guidance is modified and implemented with respect to personnel training and qualification.

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 years civil engineering work experience at a nuclear facility. In NNECO's IWE inservice inspection program, the IWE Responsible Individual is hereafter referred to as Responsible Engineer.

Supplemental Capabilities for Responsible Individual (IWE)

"As required by IWE-2320, and SNT-TC-1A, as implemented, the IWE Responsible Engineer shall have all of the capabilities of an IWE Visual Inspector. The IWE Responsible Engineer shall also be qualified to establish techniques, interpret codes, standards and specifications, and designate the particular examination method and technique to be used. The individual shall be capable of overseeing, conducting, and directing the performance of visual inspections. The Responsible Engineer will interpret and evaluate results in terms of existing codes, standards, and specifications. The Responsible Engineer shall have sufficient practical background in liner materials, fabrications, and/or product technology to establish techniques and to assist in establishing acceptance criteria where none are otherwise available. The Responsible Engineer shall also be qualified to oversee and/or conduct the training, including the approval of the course and course material, and examinations leading to the qualification and certification of IWE Visual Inspectors.

Prerequisites for Responsible Engineer (IWL)

"The IWL Responsible Engineer is a Registered Professional Engineer experienced in evaluating the condition of structural concrete and shall have knowledge of the design and Construction Codes and other criteria used in design and construction of nuclear power plant concrete containments. The IWL Responsible Engineer graduated from a four-year accredited engineering or science college or university and has a minimum of 10 years civil engineering work experience at a nuclear facility.

Supplemental Capabilities for Responsible Engineer (IWL)

"As required by IWL-2320, and SNT-TC-1A, as implemented, the IWL Responsible Engineer shall have all of the capabilities of an IWL Visual Inspector. The IWL Responsible Engineer

shall also be qualified to establish techniques, interpret codes, standards and specifications, and designate the particular examination method and technique to be used. The individual shall be capable of overseeing, conducting, and directing the performance of visual inspections. The Responsible Engineer will certify, interpret, and evaluate results in terms of existing codes, standards, and specifications. The Responsible Engineer shall have sufficient practical background in concrete materials, fabrications, and/or product technology to establish techniques and to assist in establishing acceptance criteria where none are otherwise available. The Responsible Engineer shall also be qualified to oversee and/or conduct the training, including the approval of the course and course material, and examinations leading to the qualification and certification of IWL Visual Inspectors.

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. On a case-by-case basis, the Responsible Engineer may determine that a candidate's qualifications are comparable based on work experience and previous training and/or certification as defined in the Program Manual. In such cases the basis for the determination shall be documented.

Supplemental Capabilities for Visual Inspector (IWE/IWL)

"IWE/IWL Visual Inspectors shall be qualified to perform, evaluate, and interpret the required inspections and examinations in accordance with the Inspection Plan. The Visual Inspector shall have a demonstrated proficiency in the use of the tools and equipment to be employed, and shall be capable of determining that the calibration status of inspection and measuring equipment is current; that the measuring and test equipment is in proper condition for use; and that the inspection procedures are approved. The Visual Inspector shall be capable of instructing trainee level personnel and shall be able to organize and report visual inspection results. During the performance of these examinations, the IWE/IWL Visual Inspector shall be supervised or overseen by the Responsible Engineer.

Visual acuity

"A measure of eye perception at specified distances relative to a standard baseline. When Snellen chart methods are used, both monocular and binocular acuity shall be tested, and near-distance acuity of 20/25 or greater Snellen fraction or equivalent, and far-distance acuity of 20/30 or greater Snellen fraction or equivalent must be demonstrated natural or corrected with at least one eye. When Jaeger cards are used to assess near vision acuity, a minimum of Jaeger Number 2 or equivalent type size letter at a distance of not less than 12 inches on a standard Jaeger test chart must be demonstrated natural or corrected with at least one eye.

"When required to support augmented or supplemental engineering evaluations in IWE-3200 or IWL-3300, the use of other NDE methods that are beyond the scope of the IWE/IWL visual inspection program may be required, as determined by the Responsible Engineer. The IWE/IWL Responsible Engineer shall employ NDE personnel who are trained, qualified, and certified in the specific NDE method that is required, in accordance with NNECO's NDE Program procedures.

"The above discussion demonstrates that the qualification and training of personnel utilized for the IWE/IWL Inspection Programs meets or exceeds the requirements of the 1992 Edition, thus establishing the same level of quality and safety.

"NNECO concurs that reapplied paint or coating must be compatible with the existing system and pre-service examinations conducted in accordance with IWE-2200(g) using qualified inspection personnel.

"As stated in our response to Question #2, the necessary coordination between the IWE/IWL Containment Inspection Program and the Protective Coatings & Linings Program will be established procedurally. The Protective Coatings & Linings Program establishes the characteristics of the coatings such that compatibility is maintained. The appropriate Coatings Program procedures will be updated to require IWE/IWL Program notification in the event a coating or re-coating application is planned. This notification will permit the IWE/IWL Responsible Engineer to conduct inspections prior to coating removal, base metal examination, and pre-service examination prior to return to service, as required. The same IWE/IWL personnel qualifications described in our response to Question #1 will apply when inspections are required prior to coating or re-coating. The involvement of the Protective Coatings & Linings Program along with the IWE / IWL personnel provides the same level of quality and safety as the 1992 Edition."

"General Acceptance Criteria For IWE/IWL Visual Examinations

a) Results of a general visual examination are acceptable for continued service without further evaluation only when there is no evidence of damage or degradation of the inspected component or surface area.

b) General or detailed visual examinations are performed by certified Visual Inspectors and/or the Responsible Engineer.

c) General or detailed visual examinations are performed using accepted examination methods and tools, including verification of sufficient lighting for adequate illumination, and approved visual aids to ensure appropriate visual acuity.

"Acceptance by General Visual Examination - Category E-A Item E1.11

"To meet requirements of IWE-3510.2, surface areas and components, including welds, are considered acceptable for continued service when there is no evidence of damage, distress, or degradation sufficient to warrant further evaluation. Acceptance of an area or component is defined as the absence of damage, distress or degradation in that area or component and is based on the use of personnel certified in accordance with Appendix I of the Program manual (Refer to Attachment 4), and the use of inspection methods that are as nearly in conformance with the techniques in Appendix II as are reasonably achievable. The types of damage, distress or degradation that must be absent includes the following:

- Flaking, peeling, blistering or discoloration of coated surfaces.

- Cracking, discoloration, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents in non-coated surfaces.

- Mechanical-corrosion oxidation, sleeve motion, leakage or cracking at penetrations.

- Scale buildup, mineral deposits, or chemically-induced corrosion.

- Other irregularities that would cause the pressure-retaining ability and leak-tightness of the liner to be called into question.

"The examination types listed above are essentially the same as those in Subparagraphs IWE-3510.2 and IWE-3510.3 in the 1992 Edition, and as such, the level of quality and safety is unchanged.

Acceptance by General Visual Examination - Category E-A Item E1.11, Bolting

"Visual inspection includes the bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments. As allowed by Note 1d to Table IWE-2500-1, bolted connections need not be disassembled for the performance of examinations, and bolting may remain in place under tension. Bolted connections that are disassembled at the time of inspection are inspected using the same criteria as assembled connections. Subsection IWE-3510.3 permits the discovery of loose bolted connections to be corrected using standard maintenance procedures.

"To meet requirements of IWE-3510.3, bolted connections are considered acceptable for continued service without further evaluation if there is no evidence of damage, distress or degradation sufficient to warrant further evaluation. Acceptance of a bolted connection is defined as the absence of damage, distress or degradation in that area or component and is based on the use of personnel certified in accordance with Appendix I of the Program manual (Refer to Attachment 4), and the use of inspection methods that are as nearly in conformance with the techniques in Appendix II as are reasonably achievable. The types of damage, distress or degradation that must be absent include the following:

- Missing or loose bolts, studs, nuts, or washers.
- Conditions such as bent, twisted, or deformed bolts or studs.
- Fractured bolts, studs, or nuts.
- Degraded coatings on bolted surfaces accompanied by damage or degradation of the bolting material.
- Misalignment of the bolt assembly.
- Scale buildup, mineral deposits, rust, or chemically-induced corrosion on any part of the bolt assembly.
- Conditions which may cause the bolted connection to violate either the containment leak-tight or structural integrity.

"The examination types listed above are essentially the same as those in Subparagraph IWE-3515.1 in the 1992 Edition, and as such, the level of quality and safety is unchanged.

Acceptance by General Visual Examination Category E-A Item E1.30, Moisture Barriers

"To meet requirements of IWE-3510.4, moisture barrier materials at the concrete-to-metal interface are considered acceptable for continued service without further evaluation if there is no evidence of damage, distress or degradation sufficient to warrant further evaluation. Acceptance of moisture barrier materials is defined as the absence of damage, distress or degradation and is based on the use of personnel certified in accordance with Appendix I of the Program manual (Refer to Attachment 4), , and the use of inspection methods that are as nearly in conformance with the techniques in Appendix II as are reasonably achievable. The types of damage, distress or degradation that must be absent includes the following:

- Wear, damage, erosion, tear, surface cracks, or other defects of moisture barrier materials.

- Physical damage at the moisture barrier/liner or moisture barrier/concrete interfaces that would permit moisture to enter the inaccessible areas for which its use was intended to prevent.

"The examination types listed above are essentially the same as those in Subparagraph IWE-3513.1 in the 1992 Edition, and as such, the level of quality and safety is unchanged.

"NNECO concurs that reapplied paint or coating must be compatible with the existing system and pre-service examinations conducted in accordance with IWE-2200(g) using qualified inspection personnel.

"As stated in our response to Question #2, the necessary coordination between the IWE/IWL Containment Inspection Program and the Protective Coatings & Linings Program will be established procedurally. The Protective Coatings & Linings Program establishes the characteristics of the coatings such that compatibility is maintained. The appropriate Coatings Program procedures will be updated to require IWE/IWL Program notification in the event a coating or re-coating application is planned. This notification will permit the IWE/IWL Responsible Engineer to conduct inspections prior to coating removal, base metal examination, and pre-service examination prior to return to service, as required. The same IWE/IWL personnel qualifications described in our response to Question #1 will apply when inspections are required prior to coating or re-coating. The involvement of the Protective Coatings & Linings Program along with the IWE / IWL personnel provides the same level of quality and safety as the 1992 Edition."

In the February 25, 2000, submittal, the licensee stated:

"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.

"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.

"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.

"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.

"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."

Regarding disassembled bolted connections, the licensee stated in the February 25, 2000:

"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, 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.

Evaluation—10 CFR50.55a(g)(6)(ii)(B) requires that licensees implement the inservice examinations specified for the first period of the first inspection interval in Subsection IWE of the 1992 Edition with the 1992 Addenda by September 9, 2001. The licensee is proposing to implement the 1998 Edition of Section XI, Subsection IWE in lieu of the 1992 Edition and Addenda. The licensee prepared and submitted a table comparing both Code Editions. The INEEL staff has reviewed the licensee's submittal and Subsection IWE of the 1998 Code and compared it with the 1992 Addenda. Appendix A of this report contains a comparison table, including the licensee's statements regarding the significance of Code changes and their basis for use as an alternative examination. The table also includes INEEL comments on each change. Significant differences were noted in areas such as personnel qualification, visual examination methods, containment weld inspection, paint and coating inspection, bolting inspection, seals and gasket inspection, and the requirements for successive examinations. Each of these issues will be discussed below.

Article IWE-2100 has been added to the 1998 Edition to include requirements for visual examination and personnel qualification, while taking exception to certain requirements in Subsection IWA. Specifically, in accordance with IWE-2100, to IWA-2210, *Visual Examination*; IWA-2300, *Qualification of Nondestructive Personnel*; IWA-2500, *Extent of Examination*; and IWA-2600, *Weld Reference System* are not mandatory for Table IWE-2500 visual examinations. It is understandable to exclude the IWA-2500 and IWA-2600 requirements from the containment inspection program. However, excluding the

visual examination requirements of IWA-2210 and the personnel qualification requirements of IWA-2300 may reduce the effectiveness of the Code. These issues are discussed below.

Visual Examination Methods

IWE-2300 of the 1998 Edition has invoked *Owner-defined* visual examinations and supporting visual personnel qualification requirements for metallic containments. The INEEL staff notes that Section XI is intentionally organized to refer to the General Requirements of Article IWA to define the type of examination to be performed (i.e., VT-1, VT-2, or VT-3) and the requirements to certify examination personnel for all visual examinations required by subsequent Subsections. Deferring these responsibilities to the individual Owners creates a potential for substantial inconsistencies with respect to ISI of containment structures. To ensure consistent application throughout the industry, it is necessary for each licensee to supplement the 1998 Code and provide specific details pertaining to visual examinations included in their Containment Inspection Program(s). Licensees Containment Inspection Programs are currently not required to be submitted for review by the regulatory authorities. For these reasons, the INEEL staff believes the 1998 Edition does not provide an acceptable level of quality and safety. To find the proposed alternative acceptable, the licensee must provide specific information supporting the implementation of visual examination methods.

For Millstone Units 2 and 3, the licensee has provided comprehensive acceptance criteria for the General and Detailed visual examinations. The licensee provided information that describes a containment inspection program that parallels, and meets the intent of, the 1992 Edition, with the 1992 Addenda. The general and detailed visual examinations have been developed that are essentially equivalent to VT-3 and VT-1 examinations for assessing containment integrity. Direct and remote examination distance and illumination requirements will be qualified using a 1/32-inch black line on an 18% neutral gray card prior to examination. Therefore, it is concluded that the licensee's proposed alternative provides an acceptable level of quality and safety.

Personnel Qualification

The 1992 Addenda has incorporated ANSI/ASNT CP-189 for the qualification of examination personnel. Subsection IWE, of the 1998 Edition, takes exception to the certification requirements of other Subsections of the Code and invokes plant-specific personnel certification requirements for visual examination. Subsection IWE (1998 Edition) deleted the VT-1 and VT-3 visual examination requirements and replaced them with General and Detailed visual examinations; subsequently NDE personnel may not be required to perform these examinations. The 1998 Edition relies on the *Responsible Individual* to direct the containment visual examinations. The INEEL staff believes that this approach has a substantial potential for inconsistency with respect to containment ISI. For this reason, the 1998 Edition does not provide an acceptable level of quality and safety and cannot be found acceptable without supplementary information from the licensee describing how the Containment Inspection Program meets the intent of the 1992 Edition for qualification of examination personnel. In the February 25, 2000, submittal, the licensee stated, in part:

> "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."

Based on the statement above and the information the licensee provided describing the prerequisites for the Responsible Engineer and visual inspectors, the INEEL staff concludes that the licensee's containment inspection program parallels, or meets the intent of, the 1992 Edition with the 1992 Addenda for examination personnel qualification requirements. Therefore, it is concluded that the licensee's proposed alternative provides an acceptable level of quality and safety in this area.

Successive Examinations

IWE-2420(c) (1992 Edition) requires areas containing flaws, areas of degradation, or repairs that were found acceptable by engineering evaluation, be reexamined during the next three inspection periods before they are removed from the augmented examination requirements. This is consistent with Subsection IWB-2420 requirements. The 1998 Edition, IWE-2420, has removed repairs from the list of conditions requiring acceptance by evaluation, which is consistent with Class 1, 2, and 3 components. In addition, the later edition has reduced the observation time required before a suspect area can be removed from the augmented examination requirements. IWE-2420(c) (1998 Edition) requires reexamination, during the next inspection period, of areas containing flaws or areas of degradation that have been accepted for continued service by engineering evaluation. If the suspect area is unchanged during the next period examination, the area no longer requires augmented examination. This approach is consistent with the requirements for Class 2 components. However, even though an area is removed from augmented examination, it may be re-designated for augmented examination at any time during the interval if the Owner determines that conditions that cause degradation still exist. Therefore, it is concluded that this Code change provides an acceptable level of quality and safety.

Additional Examinations

The 1998 Code does not rely on sampling and already examines 100% of containment surfaces. Therefore, elimination of this requirement is appropriate and acceptable.

Paint and Coatings

The IWE-2500(b) requirement to examine paint or coatings prior to removal has been eliminated from the 1998 Edition. Relief from this requirement has been found acceptable when adequate provisions exist in either the licensee's Containment Inspection, Repair/Replacement, Nuclear Coatings, or ISI Programs to examine the base metal for surface anomalies that could affect containment integrity prior to re-application of the coating. In addition, the base metal should be visually examined by qualified inspection personnel.

At Millstone 2 and 3 the Protective Coatings & Linings Program establishes the characteristics of the coatings such that compatibility is maintained. Coordination between the IWE/IWL Containment Inspection Program and the Protective Coatings & Linings Program will be established procedurally such that the Responsible Engineer is notified prior to coating or painting applications. Once notified, the Responsible Engineer ensures that the surface is inspected, evaluated and documented using the same methods, procedures and acceptance standards required for Class MC and CC preservice and inservice inspections. These examinations performed prior to painting or coating will verify the condition of the containment surface, including the condition of base metal. Therefore, the INEEL staff concludes that the licensee has included adequate provisions to ensure the integrity and compatibility of the paint, coatings, and liner plate, and that the licensee's proposed alternative provides an acceptable level of quality and safety.

Weld Examinations

Subsection IWE, 1998 Edition, has been revised and no longer contains any specific weld examination requirements. This approach is supported by 10 CFR 50.55a(b)(2)(x)(C), which makes the examinations specified in Examination Category E-B, *Pressure Retaining Welds*, and Examination Category E-F, *Pressure Retaining Dissimilar Metal Welds*, optional. Therefore, weld examinations will be addressed during the General Visual Examination required by Examination Category E-A. Based on

the optional nature of the Regulatory requirements for examination of containment welds, the elimination of any direct references to containment weld examinations in the Code should be considered to provide an acceptable level of quality and safety.

Bolting, Seals, Gaskets, and Moisture Barriers

Examination Category E-D, *Seals, Gaskets, and Moisture Barriers*, and Examination Category E-G, *Pressure Retaining Bolting*, have been eliminated from the 1998 Code. The examination of pressure-retaining bolting and moisture barriers are now included in Examination Category E-A, footnote (1)(d) and Item E1.30, respectively. The NRC staff has determined that verification leak-tight integrity through Appendix J testing also verifies the integrity of bolted connections, seals and gaskets. Regarding the condition of the bolting, the NRC staff has determined that all accessible bolted connections shall be visually examined each inspection period per the requirements of the 1998 Edition of IWE, Table IWE-2500-1, Category E-A which corresponds to an examination of all bolted connections three times per inspection interval. The licensee shall perform a general visual examination (VT-3 or equivalent) on the exposed portions of the connection. If the general visual examination indicates possible areas of degradation or damage, a detailed visual examination (VT-1 or equivalent) is required. If assembled, the bolted connection shall be disassembled to facilitate the detailed examination. Bolted connections need not be disassembled solely for the performance of VT-3 examinations. Furthermore, if a bolted connection is disassembled at the time of inspection, all accessible surface areas of the connection shall be visually examined (VT-3 or VT-1 if necessary). If a disassembled connection is not visually examined by a VT-3 or VT-1 qualified individual before reassembly, written maintenance procedures shall be followed to ensure that the integrity of reassembled bolted connections are maintained. The written procedures shall include acceptance criteria for the continued use of all part of the connection including bolts, studs, nuts, bushings, washers, and threads in base material an flange ligaments between fastener holes. The licensee's alternative is consistent with the staff's position, therefore, provides an acceptable level of quality and safety.

Ultrasonic Examination

In Paragraph IWE-3511.3 of the 1998 Code, examination of Class CC metallic liners has been excluded from the acceptance criteria, which require disposition of areas where material loss exceeds 10% of the nominal wall thickness. Therefore, the 1998 Code is not acceptable for Class CC metallic liners without augmentation by the licensee. For the Millstone, Units 2 and 3, the licensee has committed to use the Code-specified acceptance criteria for both Class CC and Class MC liners. Specifically, if greater than 10% material loss is identified, the area shall be subject to acceptance by engineering evaluation or acceptance by repair. This is equivalent to the requirements of the 1992 Addenda. Therefore, the INEEL staff concludes that the proposed acceptance criteria for wall thinning will ensure that the integrity of the liner plate is maintained and will provide an acceptable level of quality and safety.

Conclusion—The licensee has proposed to use the 1998 Edition of Section XI, Subsection IWE, in lieu of the 1992 Edition with the 1992 Addenda as required by 10 CFR50.55a(g)(6)(ii)(B). Review and evaluation of Subsection IWE of the 1998 Code has exposed several areas that do not provide an equivalent level of quality and safety. Consequently, the 1998 Edition cannot be considered an acceptable alternative to the existing Regulatory requirements. However, in submittals dated December 13, 1999 and February 25, 2000, the licensee provided specific information and committed to supplement the requirements of the 1998 Code. Based on the above evaluation, it is concluded that the use Subsection IWE of the 1998 Code, as supplemented by the licensee, provides an acceptable level of quality and safety. Therefore, the INEEL staff recommends that the proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.2 Request for Relief RR-L1, Proposed Alternative to Use ASME Section XI, 1998 Edition, Subsection IWL, for Examination of Class MC and Metal Liners of Class CC Components

Regulatory Requirement—10 CFR 50.55a(g)(6)(ii)(B) requires that licensees perform the inservice examinations corresponding to the number of years of operation that are specified in Subsection IWL of the 1992 Edition with the 1992 Addenda of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code.

Licensee's Proposed Alternative—In accordance with 10 CFR 50.55a(a)(3)(i), the licensee proposed to use the requirements of the 1998 Edition of ASME Section XI for the examination requirements for IWL components. The licensee stated:

> "Refer to 1998 Edition, 1998 Addenda of Subsection IWL, 'Requirements for Class CC Concrete Components of Light-Water Cooled Power Plants,' of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) which defines the alternate examinations of this relief request."

Licensee's Basis for Proposed Alternative—

> "In the Federal Register, dated August 8, 1996 (61 FR 41303), the NRC amended its regulations to incorporate by reference the ASME Code Section XI, 1992 Edition and 1992 Addenda of Subsection IWL for expedited examination of containments. Based on the effective date of the Rule change of September 9, 1996, Licensees have until September 9, 2001, to have in place a Containment ISI program and to complete the first period inspection requirements contained in Section XI.
>
> "The 1992 Edition with the 1992 Addenda of Subsection IWL contains requirements which impose difficulties in the transition from the current ISI program to a program that includes containment ISI examinations. Extensive changes have been made by the ASME to the referenced Subsection IWL contained in the 1992 Edition and 1992 Addenda concerning the examination requirements for containments. Among these, the 1998 Edition provides the Responsible Engineer with the additional requirement to train personnel, and establishes the examination categories general and detailed visual. It also provides additional inspections of tendon end caps, as well as guidelines to inspect for leakage of corrosion protection medium. These changes were published in the 1998 Edition of the ASME Code Section XI. Publication of the 1998 Edition by the ASME, with NRC participation, provides the basis for the approval of these 1998 Edition requirements which have been determined by the ASME consensus process to provide an acceptable level of quality and safety. Development and implementation of a meaningful containment ISI program would be facilitated by adopting the examination requirements contained in the 1998 Edition of Subsection IWL.
>
> "Millstone Unit 2 is a post-tensioned containment and will incorporate the rules of IWL, and Millstone Unit 3 is a free standing reinforced containment and will inspect the concrete per the rules of IWL. The proposed alternative utilizes the ASME 1998 Edition of Subsection IWL of Section XI in its entirety. Utilizing the entire 1998 Edition of Subsection IWL incorporates other exceptions to the 1992 Edition with the 1992 Addenda and provides a more cohesive approach than could be achieved by requesting relief on multiple, individual issues. These requirements were developed in accordance with the ASME Code committee process with input from interested parties, including other utilities, manufacturers, engineering organizations, Authorized Nuclear Inspection Agencies, EPRI and the NRC. The updating of the ASME Code Subsection IWL of Section XI requirements by this consensus process is intended to ensure the continued safe operation of nuclear power plants and the continued leak-tight and structural integrity of

containment components. Supporting this, a line-by-line comparison of the 1998 Edition to the 1992 Edition and Addenda, including a line-by-line of the sections of IWA which are referenced by either the 1992 or 1998 Edition, we believe leads to the conclusion that the 1998 Edition of IWL provides an acceptable and in some cases an increased, level of quality and safety to the required containment inspection program."

In the December 13, 1999, submittal, the licensee stated:

"General Acceptance Criteria For IWE/IWL Visual Examinations

a) Results of a general visual examination are acceptable for continued service without further evaluation only when there is no evidence of damage or degradation of the inspected component or surface area.

b) General or detailed visual examinations are performed by certified Visual Inspectors and/or the Responsible Engineer.

c) General or detailed visual examinations are performed using accepted examination methods and tools, including verification of sufficient lighting for adequate illumination, and approved visual aids to ensure appropriate visual acuity.

Acceptance by Visual Examination - Category L-A Item L1.11, All Accessible Surface Areas

"From IWL-3211, if there is no evidence of damage, distress or degradation sufficient to warrant further evaluation as determined by the Responsible Engineer, concrete surfaces and integral attachments are considered acceptable for continued service. The only difference in IWL 3211 between the 1992 Edition and the 1998 Edition is the 1998 requirement to apply this acceptance by examination criteria to tendon end anchorage areas. Therefore, the level of quality and safety relative to Item L1.11, All Accessible Surface Areas has not been reduced. The IWL Responsible Engineer bases the determination on guidance in ACI 201.1R, as specified in IWL-2510. The NNECO Inspection Program additionally recommends consideration of the guidance in ACI 349.3R, "Evaluation of Existing Safety-Related Concrete Structures."

In the February 25, 2000, submittal, the licensee stated:

"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 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."

Evaluation— 10 CFR50.55a(g)(6)(ii)(B) requires that licensees perform the inservice examinations that correspond to the number of years of operation which are specified in Subsection IWL of the 1992 Edition with the 1992 Addenda by September 9, 2001. The licensee is proposing to implement the 1998 Edition of Section XI, Subsection IWL in lieu of the 1992 Edition and Addenda. The licensee prepared and submitted a table comparing these requirements. The INEEL staff has reviewed the licensee's submittal and Subsection IWL of the 1998 Code and compared it with the 1992 Edition with the 1992 Addenda. Appendix B of this report contains the licensee's comparison table. It includes the licensee's statements regarding the significance of Code changes and their basis for use as an alternative examination. The table also includes INEEL comments on each change. Significant differences were noted in the areas of personnel qualification and visual examination procedure qualification. These issues are presented in table format as Appendix C and are discussed below.

Visual Examination

The 1992 Edition with 1992 Addenda, Subsection IWL, used VT-1C and VT-3C to designate visual examinations to be performed on concrete containments. In addition, minimum illumination, maximum direct examination distance, and maximum procedure demonstration lower case character height are specified in IWA-2210. The licensee's proposed alternative (1998 Edition) takes exception to the IWA-2210 requirements for visual examination. Consequently, new Code examinations (General Visual and Detailed Visual) have been introduced. The definition of these new Code examinations has been left up to individual licensees. The INEEL staff considers this change to be inconsistent with other Code visual examination prerequisites, and too generic in nature. Therefore, specific details pertaining to the Containment Inspection Program at Millstone are required in order to establish an acceptable level of quality and safety in the proposed alternative.

For Millstone Units 2 and 3, the licensee has provided comprehensive acceptance criteria for the General and Detailed visual examinations. The licensee provided information that describes a containment inspection program that parallels, and meets the intent of, the 1992 Edition, with the 1992 Addenda. The general and detailed visual examinations have been developed that are essentially equivalent to VT-3 and VT-1 examinations for assessing containment integrity. Direct and remote examination distance and illumination requirements will be qualified using a 1/32-inch black line on an 18% neutral gray card prior to examination. Therefore, it is concluded that the licensee's proposed alternative provides an acceptable level of quality and safety.

Personnel Qualification

The 1992 Addenda has incorporated ANSI/ASNT CP-189 for the qualification of examination personnel. Subsection IWL of the 1998 Edition, takes exception to the certification requirements of the rest of the Code and invokes plant specific personnel certification requirements for visual examination. By deleting the VT-1C and VT-3C visual examinations, replacing them with the General and Detailed visual examinations, and excluding the personnel qualification requirements of IWA-2300, NDE

personnel are not needed to perform containment visual examinations. The Subsection IWL of the 1998 Edition relies on the Responsible Engineer to direct the containment visual examinations. The INEEL staff believes that this approach has the potential for inconsistency with respect to containment ISI. For this reason, the 1998 Edition does not provide an acceptable level of quality.

As discussed in Section 2.1 of this report, the INEEL staff concludes that the licensee's containment inspection program parallels, or meets the intent of, the 1992 Edition with the 1992 Addenda for examination personnel qualification requirements. Therefore, it is concluded that the licensee's proposed alternative provides an acceptable level of quality and safety in this area.

Conclusion—The licensee has proposed to use the 1998 Edition of Section XI, Subsection IWL, in lieu of the 1992 Edition with the 1992 Addenda as required by 10 CFR50.55a(g)(6)(ii)(B). Preliminary review and evaluation of Subsection IWL of the 1998 Code has revealed several areas that do not appear to provide an equivalent level of quality and safety when compared to the 1992 Addenda. Consequently, the 1998 Edition cannot be considered an acceptable alternative to the Regulatory requirements without supplemental information from the licensee. However, in submittals dated December 13, 1999 and February 25, 2000, the licensee provided specific information and committed to supplement the requirements of the 1998 Code. Based on the above evaluation, it is concluded that the use Subsection IWL of the 1998 Code, as supplemented by the licensee, provides an acceptable level of quality and safety. Therefore, it is recommended that the licensee's proposed alternative be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

3. CONCLUSION

Based on the review of the proposed alternatives to IWE/IWL Containment Inspections and the licensee's response to the NRC's request for additional information, it is concluded that for Relief Requests RR-E1 and RR-L1, the intent of the Regulations in imposing the 1992 Edition with the 1992 Addenda will be satisfied at Millstone Nuclear Power Station, Units 2 and 3. The licensee's proposed alternatives—to use the 1998 Edition of Subsection IWE, as supplemented by specific details contained in the Millstone Nuclear Power Station, Unit Nos. 2 and 3 Plant Containment Inspection Program—will provide an acceptable level of quality and safety and should be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

5. REFERENCES

1. Code of Federal Regulations, Title 10, Part 50.

2. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Division 1:
   1992 Edition with 1992 Addenda
   1998 Edition

3. Letter, dated April 22, 1999, R. P. Necci (NNECO) to NRC Document Control Desk containing proposed alternative to the requirements of Subsections IWE and IWL of the ASME Code.

4. Letter, dated November 17, 1999, R. B. Eaton (NRC) to R. P. Necci (NNECO) containing NRC request for additional information (RAI).

5. Letter, dated December 13, 1999, R. P. Necci (NNECO) to NRC Document Control Desk, containing response to NRC request for additional information.

6. Letter, dated February 25, 2000, S. E. Scace (NNECO) to NRC Document Control Desk containing response to the second NRC RAI.

APPENDIX A
MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-1100	ASME Section XI generic wording change from repair, replacement and/or modification terms to repair/replacement activities.	Non significant	
IWE-1200	No Change	n/a	
IWE-1210	No Change	n/a	
IWE-1220	Changed "containment" to "containment system"	Non significant	Acceptable
IWE-1230	No Change	n/a	
IWE-1231	Removed item 3)-"single welded butt joints from the weld side"- as a specific item required to remain accessible for the life of the plant.	These single welded butt joints were removed as a separately listed examination item and is now included within the item for the pressure retaining boundary as discussed in the changes to Table IWE-2500-1 below.	Examination of welds is optional in 10 CFR 50.55a – Acceptable
	Changed wording from "80% of the surface area" to "80% of the pressure retaining boundary" and stated exclusions from that 80%.	The exclusions from 80% incorporate an existing Table IWE-2500-1 note and clarify that areas made inaccessible during construction are also excluded.	Acceptable
	Reworded paragraph b).	Change to b) is for clarity and is nonsignificant	Acceptable
IWE-1232	ASME XI generic change from repair and/or replacement to repair/replacement activities.	Non significant	Acceptable
	Deleted paragraph (a)(3) addressing inaccessible welded joints	Welded joints were removed as a separately listed examination item and are now included within the item for the pressure retaining boundary as discussed in the changes to Table IWE-2500-1 below.	Examination of welds is optional in 10 CFR 50.55a – Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-1240	Added stiffeners and, by reference to IWE-2420, flaws accepted by evaluation as areas requiring augmented examination.	Clarifies the intent of the Code that areas identified in IWE 2420(b) require an augmented exam in the next period.	Appears to be a conservative change – Acceptable
1242	Changed (c) to (b).	Non significant	
IWE-2000	No Change	n/a	
IWE-2100	Added new Subarticle 2100 - "General" - to provide reference to IWA-2000 with exceptions from IWA-2210, -2300, -2500 and-2600.	The containment examinations are completely defined within the jurisdiction of IWE, and thus reference to IWA 2210, and IWA 2300 are not applicable. The exceptions to IWA 2500, and IWA 2600 are to weld base exams which do not apply to IWE. The examinations and of IWE in the 1998 Edition provide acceptable level of quality and safety as defined in IWE of the 1992 Edition.	▸IWE examinations will not require the visual examinations identified in IWA-2210. ▸Per the 1998 Code, personnel will not have to be certified to CP-189 (IWA-2300)-licensee stated that Containment Inspection Program has written practice meeting the requirements of CP-189 and SNT-TC-1A. ▸IWA-2500 excludes repair welds from the requirements of examination. ▸IWA-2600 requires that a weld reference system be established for surface or volumetric examinations. However, IWE-2500(c)(4) requires reproducible grid markings for augmented ultrasonic thickness measurement. Details in appropriate sections below.
IWE-2200	Deleted paragraph c) which provided allowances for the use of shop or field examinations in lieu of on site preservice examinations.	The deletion of an allowance for an alternative examination ensures that proper pre-service examinations are performed and documented.	Appears to be a conservative change – Acceptable
	Deleted paragraph g) which required the condition of new coating to be documented in the preservice examination record.	The deletion of the requirement to document the condition of "new" non-pressure retaining coatings in the pre-service examination record provides for more efficient program implementation without affecting component integrity.	Millstone Protective Coatings and Linings Program requires notification of Responsible Engineer who will ensure thorough ISI and PSI examinations of containment surface including condition of base metal – Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	ASME XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Acceptable
IWE-2300	Added new Subarticle -2300 -"Visual Examination, Personnel Qualification and Responsible Individual"	The philosophy of IWE to be an engineering inspection under the direction of the Responsible Individual is contained in this new sub-article. The most significant change is the definition of the roles and responsibilities of the Responsible Individual. This individual will be accountable for the entire inspection program which will meet or exceed the level of quality and safety defined in the 1992 Edition. The specific paragraphs added will be discussed below.	See below.
IWE-2310	Added new paragraph -2310 - "Visual Examinations"- which states: a) the owner shall define requirements for visual examination of containment surfaces;	a) The VT-3 and VT-1 inspections of IWA have been replaced by Owner (Responsible Individual) defined general and detailed visual exams, respectively. The definition of critical examination items and acceptable conditions has not changed, such that any conditions adversely affecting quality or safety are not impacted by this change.	Consistency with existing ISI visual examination requirements could provide for an efficient internal program. However, open-ended, owner defined visual examination requirements do not provide uniformity and consistency industry wide. 1998 Code is unacceptable and proposed alternative cannot be found acceptable without specific details from the licensee. The licensee has provided specific details – Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	b) defines general visual examinations; and	b) The general visual examination is equivalent to the VT-3 exam in terms of assessing the general condition and potential for deterioration within the containment system. The use of owner defined inspection types allows for the involvement of qualified engineering personnel with backgrounds in programs such as the Maintenance Rule, containment coatings, and Appendix J. This provides for a containment inspection program that is performed by individuals with knowledge in containment degradation mechanisms.	There are no acceptance criteria specified since the proposal maintains owner defined examination requirements. Don't agree with the philosophy of a new visual examination method for IWE examinations. 1998 Code is unacceptable. The licensee has provided specific acceptance criteria for general and detailed visual examinations – Acceptable
	c) defines detailed visual examinations; and	c) The detailed visual examination is equivalent to the VT-1 exam in terms of assessing the general condition and potential for deterioration within the containment system. The use of owner defined inspection types allows for the involvement of qualified engineering personnel with backgrounds in programs such as the Maintenance Rule, containment coatings, and Appendix J. This provides for a containment inspection program that is performed by individuals with knowledge in containment degradation mechanisms.	There are no acceptance criteria specified since the proposal maintains owner defined examination requirements. Don't agree with the philosophy of a new visual examination method for IWE examinations. 1998 Code is unacceptable. The licensee has provided specific acceptance criteria for general and detailed visual examinations – Acceptable
IWE-2310 (con't)	d) and e) provide the requirements for the conditions of areas affected by repair/replacement activities, painted or coated areas, non coated areas, pressure retaining materials and moisture barriers.	d) and e) Previously these examination requirements did not exist within the Article IWE-2000 but rather only in the acceptance criteria of Article IWE-3000. Adding these specific attributes here ensure proper containment examinations.	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-2320	Added new paragraph 2320 - "Responsible Individual"- which a) states the qualification requirements of the responsible individual and b) defines the responsibilities of the responsible individual for the development of plans and procedures; instruction, training and approval of visual examination personnel; performance or direction of visual examinations; evaluation of results and documenting results.	The qualifications along with the roles and responsibilities of the Responsible Individual are clearly delineated within this sub-article. This section clearly states the expectations for the Responsible Individual, and brings accountability for the entire program to an individual knowledgeable in containments and their degradation mechanisms. This individual will develop the inspection plans, train personnel, direct or perform inspections, and finally evaluate the results. The cohesiveness of the inspection program has been improved by the addition of this sub-article, resulting in an increase of the level of quality and thus no adverse impact on safety.	Acceptable The duties identified must be performed regardless of who is assigned to do them. However, the 1998 philosophy gives the responsible individual complete control over the Program. Section XI consistency maintains that licensee containment programs meet the requirements of Subsection IWA.
IWE-2330	Added new paragraph 2330 - *Personnel Qualification* - which a) states that the owner is responsible for defining the qualification requirements for personnel performing visual examinations and b) provides minimum qualification requirements that were previously contained in the acceptance criteria of IWE-3510.1.	Adding requirements for the owner to define personnel qualification requirements is consistent with the philosophy that the Responsible Individual must qualify the inspection personnel. The code recognizes that the qualifications may differ depending on the containment type and even the inspection period in question. This change is consistent with the other changes discussed above and serves to improve the level of quality and thus has no adverse impact on safety.	Personnel should be qualified in accordance with Subsection IWA. 1998 Code is unacceptable. The licensee provided specific details on personnel qualification - Acceptable 1998 Code is unacceptable without licensee augmentation. 10 CFR 50.55a(b)(x)(B) requires the qualification of remote visual examinations. Licensee provided qualification requirements for direct and remote visual examinations – Acceptable.
IWE-2400	**INSPECTION SCHEDULE**		
IWE-2410	No Change	n/a	
IWE-2411	Deleted a subparagraph (b) discussing decreasing and extending inspection periods.	The deleted subparagraph eliminates duplication with IWA-2400.	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-2412	Deleted a subparagraph discussing decreasing and extending inspection periods. Added a subparagraph detailing requirements for the scheduling of added welds or components.	The deleted subparagraph eliminates duplication with IWA-2400. The added requirements for the scheduling have added welds or components to ensure that a representative sampling of examinations is maintained.	Acceptable
IWE-2420	Removed repaired areas as areas requiring re-examinations during the next successive inspection period, and	Repaired areas that are likely to experience accelerated degradation and aging are already subject to augmented examinations per IWE-1241. Some repairs may be located in non-augmented areas and may be necessary to correct physical damage caused by construction or craft activities.	Changing duration of reexamination of areas that remain essentially unchanged from *"three consecutive inspection periods" to "the next successive inspection period"* is consistent with the requirements for Class 2 components -- Acceptable.
	changed paragraph (c) to require that areas which remain essentially unchanged for the next inspection period no longer require augmented examinations. The 1992 Edition required three consecutive examinations to reach this conclusion.	The evaluation that determines that flaws or areas of degradation remain unchanged is sufficient to conclude that there is no active corrosion mechanisms present.	
IWE-2430	Deleted the paragraph - Additional Examinations" - which discussed adding examination items of the same category if flaws or areas of degradation are identified during an examination.	The changes to Table IWE-2500-1 eliminate several examination categories. The categories that remain all require 100% examination. Therefore no items are available for additional examinations.	The 1998 Code does not rely on sampling as 100% of the containment surface is already examined. Therefore, elimination of this requirement is appropriate -- Acceptable.
IWE-2500	Reworded the existing subparagraphs consistent with the previous paragraph changes and with Table IWE-2500-1 changes.	The reworded subparagraphs add clarity and provide consistency within IWE.	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	Deleted the requirement to examine paint or coatings prior to removal.	The codes jurisdiction is the pressure boundary, and not the non-pressure retaining coatings. Eliminating this requirement does not adversely impact the level of quality or the safety of the containment inspection program.	1998 Code is unacceptable. Elimination of the paint or coatings exam prior to removal has been found acceptable provided adequate provisions exist in the licensee's program to examine the base metal prior to re application of the coating. Licensee has addressed base metal examinations – Acceptable
	Replaced the requirement for one foot square grids in thickness measurements with a reference to Table IWE-2500-2.	The new Table IWE-2500-2 provides more detailed requirements for thickness measurement gridding and is discussed below.	The ultrasonic gridline approach is a sampling methodology similar to that of other portions of the Code and other erosion/corrosion monitoring programs utilized throughout the industry -- Acceptable.
	Added a reference to IWE-5000 for pressure tests.	The added reference to IWE-5000 provides direction for the performance of pressure test.	Acceptable
IWE-2600	Deleted a sentence discussing compatibility of paint and coating systems and a requirement to examine the new paint.	The jurisdiction of the code does not include the quality and compatibility of containment coating systems. This change has no impact on the scope of IWE inspections.	Addressed in licensee's Protective Coatings & Linings Program – Acceptable
IWE-3000	**ACCEPTANCE STANDARDS**		
IWE-3100	Removed the word nondestructive from the heading	Non significant	Consistent with IWB and IWC wording – Acceptable
IWE-3110	**PRESERVICE EXAMINATIONS**	n/a	
IWE-3111	Replaced the reference to Table IWE-3410-1 with a reference to Subarticle IWE-3500. Removed reference to paragraph IWE-3115.	Table IWE-3410-1 and paragraph IWE-3115 have been deleted and are discussed below. IWE-3500 adequately captures all of the information previously contained in the deleted table and paragraph.	Under the 1998 scheme, Table IWE-3410-1 probably isn't necessary because there are only two examination categories and the acceptance criteria are specified in Table IWE-2500-1 – Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-3112	Replaced the reference to Table IWE-3410-1 with a reference to Subarticle IWE-3500. ASME XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Same as above.
IWE-3114	Replaced the reference to Table IWE-3410-1 with a reference to Subarticle IWE-3500. ASME XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Same as above.
IWE-3115	Deleted subparagraph which addressed repair programs and evaluations being subject to review by authorities.	Non significant - there were no submittal or retention requirements changed by the deletion of the subparagraph.	The Regulations do not require the licensees to submit their containment inspection programs -- Acceptable
IWE-3120	Removed the word nondestructive from the heading.	Non significant	Consistent with IWB and IWC --Acceptable
IWE-3121	Removed the word nondestructive and deleted references to IWE-3124 and IWE-3125 for the acceptance of flaws for continued service.	The removal of nondestructive is non significant. The referenced subparagraphs did not actually apply to the acceptance of flaws for continued service.	Acceptable
IWE-3122	Replaced the references to Table IWE-2500-1 and to IWE-3000 with a reference to Subarticle IWE-3500. ASME XI generic change from repair and or replacement to repair/replacement activities. Reworded several sentences. Deleted sentence which addressed evaluations being subject to review by authorities.	Non significant - the changes are for clarity and to reconcile paragraph numbering. There were no submittal or retention requirements changed by the deletion of the sentence addressing evaluation reviews.	Consistent with IWB and IWC -- Acceptable
IWE-3124	Replaced the reference to Table IWE-3410-1 with a reference to Subarticle IWE-3500. ASME XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-3125	Deleted subparagraph which addressed repair programs and reexamination results being subject to review by authorities.	Non significant - there were no submittal or retention requirements changed by the deletion of the subparagraph.	Acceptable
IWE-3130	No Change	n/a	
IWE-3200	Added a statement to the end of the paragraph that states supplemental surface or volumetric examinations are required when specified by engineering evaluation.	The added statement clarifies requirements and eliminates potential duplication or contradiction of requirements in stating that the engineering evaluation requirements of IWE-3122 determine what and when supplemental examinations are required.	Acceptable
IWE-3410	Replaced the reference to Table IWE-3410-1 with a reference to Subarticle IWE-3500.	Non significant	Acceptable
IWE-3430	No Change	n/a	
IWE-3500	**ACCEPTANCE STANDARDS**	n/a	
IWE-3510	Reconciled acceptance standards with the IWE-2300 changes discussed above and the Table IWE-2500-1 changes discussed below by:	Previously examination requirements were contained in the acceptance standards of IWE-3500. This section has been restructured by the addition of IWE-2300 as discussed above.	Owner defined visual examination requirements do not provide uniformity and consistency industry wide. 1998 Code is unacceptable without specifics provided by licensee. Millstone has provided those specifics – Acceptable
	Adding the requirement in IWE-3510.1 that *The owner shall define acceptance criteria for visual examination of containment surfaces*;	This change directly corresponds to the addition of IWE-2310(a) discussed above.	
	Removing the wording for responsible individual and for personnel qualifications;	This change directly corresponds to the addition of IWE-2320 discussed above.	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	Incorporating IWE-3511;3513,3514 and 3515 with changes into IWE-3510.	These changes correspond to the changes in the examination categories of Table IWE-2500-1 as discussed below and to the removal of examination requirements from the acceptance standards paragraphs per the addition of IWE-2310(e)(3) and (4) as discussed above.	Acceptable
	By the incorporation of 3515 the acceptance standards for bolting were changed from referencing material specs and torque or tension limits to conditions affecting leak tight or structural integrity.	The resulting acceptance standards for bolting provide for more practical containment ISI program implementation without adversely affecting containment leak tight or structural integrity.	The examination of bolting, seals and gaskets to determine their ability to maintain containment leak tight integrity as a separate inspection is considered unnecessary. The Appendix J testing is considered sufficient for determining the leak-tight integrity of the penetration – Acceptable
IWE-3511	Deleted subparagraph which addressed examination category E-B.	Examination category E-B has been incorporated into examination category E-A per the changes to Table IWE-2500-1 discussed below.	Owner defined acceptance criteria do not provide consistency through out the industry. Therefore, the 1998 Code is unacceptable. The licencee will apply the Class MC acceptance criteria to Class CC liners – Acceptable.
IWE-3512	Renumbered subparagraph to IWE-3511. Reconciled acceptance standards with the IWE-2300 changes discussed above and the Table IWE-2500-1 changes discussed below.	The subparagraph was renumbered based on the deletion of previous IWE-3511 as discussed above. Previously examination requirements were contained in the acceptance standards of IWE-3500. This section has been restructured by the addition of IWE-2300 as discussed above.	Based on Regulatory requirements excluding containment welds, the elimination of any direct references to containment weld examinations in the Code – Acceptable
	Added the requirement that the owner shall define acceptance criteria for visual examination of containment surfaces.	This change directly corresponds to the addition of IWE-2310(a) discussed above.	

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	Combined 3512.2 and 3512.3 with changes into 3511.2 and removed specific VT-1 examination attribute wording; and	These changes directly correspond to the addition of IWE-2310(e)(1) and (2) discussed above and eliminate potential duplication or contradiction of requirements.	
	Reworded ultrasonic examination subparagraph.	This change is for clarity and is non-significant.	
IWE-3513	Deleted subparagraph IWE-3513, which addressed examination category E-D.	Examination category E-D has been incorporated into examination category E-A per the changes to Table IWE-2500-1 discussed below.	
IWE-3514	Deleted subparagraph IWE-3514 which addressed examination category E-F.	Examination category E-F has been incorporated into examination category E-A per the changes to Table IWE-2500-1 discussed below.	
IWE-3515	Deleted subparagraph IWE-3515 which addressed examination category E-G.	Examination category E-G has been incorporated into examination category E-A per the changes to Table IWE-2500-1 discussed below.	
IWE-4100	No Change	n/a	
IWE-5200	**SYSTEM TEST REQUIREMENTS**		
IWE-5210	No Change	n/a	
IWE-5220	ASME XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
IWE-5222	ASME XI generic change from repair and or replacement to repair/replacement activities. Changed repair to weld. Added (DN25).	Non significant DN25 is a standard measurement identification.	Acceptable
IWE-5240	Replaced a reference to IWA 5240 with requirements to perform detailed visual examination of repair/replacement areas during pressure tests.	The types of examinations performed in the containment program are all contained in IWE 2300. The requirements of IWA 5240 to detect evidence of leakage will be satisfied through the use of the detailed visual examination of IWE 2300.	Acceptable
IWE-5250	Changed Corrective Measures to Corrective Action in the heading. ASME XI generic change from repair and or replacement to repair/replacement activities. IWE-4000 now IWA-4000.	Non significant	Acceptable
IWE-7100	No Change	n/a	
TABLE CHANGES			
Table IWE-2411-1	No Change	n/a	
Table IWE-2412-1	Replaced the separate entries for 1st and successive intervals with one entry for All intervals.	Non significant - The previous requirements for the 1st and successive intervals were identical. Therefore, combining the entries does not affect any requirements.	Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	Added note: first period completion percentage for any exam category exceeds 34%, at least 16% of required exams shall be performed in the second period.	Ensures allocation of exams are done throughout the 10 year interval. No change in Millstone's philosophy.	
Table IWE-2500-1 Examination Category E-A	Revised all EXAMINATION CATEGORIES E-A. Item E1.11: Revised frequency of examination from "prior to each type A test" to "100%" during each period".	Removing the requirement to coordinate examinations with type A tests, and requiring a general visual every inspection period is more restrictive. This change corresponds with the rule as stated in 10CFR50.55a.	Conservative change. Appendix J, Option A, requires periodic (one each period) Type A tests. Appendix J, Option B, is based on historical performance and requires periodic visual inspection for Type A tests – Acceptable
Table IWE-2500-1 Examination Category E-A (con't)	Item E1.12: Redesignated item from *"accessible surface areas"* to *"wetted surfaces of submerged areas"*. Replaced examination method VT-3 with general visual.	Replacing the accessible surface area designation (which is included in E1.11) with wetted surface areas (which were previously included in E1.12 footnote 4) does not eliminate or reduce any required examination areas. The conditions of distress which would be detected by a VT-3 exam are the same conditions that will be detected by a general visual exam, as defined in IWE 2300. The requirement to perform a detailed exam on any suspect area has not changed. The new requirement to perform general visual exams every inspection period increases the total number of potential examinations on the containment surface in the interval. The overall impact of this change is to increase the level of quality and does not adversely affect the safety of the containment inspection program.	Acceptable with additional information provided by the licensee.

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
	Item E1.20: Added BWR to item description. Replaced examination method VT-3 with general visual.	See the above for a description of the equivalency of the general visual to the VT-3, and the increased frequency of exams. This change has no impact on the level of quality or the safety of the containment inspection program.	The change to general visual removes the emphasis on containment welds. Acceptable with additional information provided by the licensee.
	Item E1.30: Added item for moisture barriers with a general VT required each period.	Moisture barriers were previously included in examination category E-D with a VT-3 required each interval. Examining moisture barriers more frequently will assure reliable detection of conditions adverse to containment integrity.	Acceptable
	All items no.'s - Replaced reference to IWE-3510 for examination requirements with IWE-2310.	Non significant - Previously some examination requirements were contained in IWE-3500. They now exist in IWE-2300.	Acceptable
Table IWE-2500-1 Examination Category E-A (con't)	Notes – Revised to specifically include welds and bolting as part of the pressure retaining boundary requiring examination.	Welds and bolting were previously included in examination categories E-B, E-F and E-G. Including these items in the examination category for the containment pressure retaining boundary provides for more efficient program implementation. This change will not alter the level of quality or adversely affect the safety of the containment inspection program.	Previous visual examination requirements included VT-1 and VT-3. 1998 Edition specifies general visual. This is a significant relaxation in Code requirements. 1998 Code is unacceptable without specifics provided by licensee. Acceptable with additional information provided by the licensee.
Table IWE-2500-1. CAT. E-B	Deleted examination category which addressed pressure retaining welds.	Pressure retaining welds are now included in Examination Category E-A as addressed above.	10 CFR 50.55a makes containment weld inspections optional – Acceptable

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
Table IWE-2500-1 Examination Category E-C	Item E4.11: Replaced examination method VT-1 with detailed visual.	The conditions of distress or deterioration which would be detected by a VT-1 are the same conditions that will be detected by a detailed visual exam, as defined in IWE 2300.	Replaced VT-1 with detailed visual. 1998 Code is unacceptable without specifics provided by licensee. Acceptable with additional information provided by the licensee.
	Item E4.12: Added grid line intersections to description of parts examined. Changed examination method from volumetric to ultrasonic thickness.	The added wording clarifies inspection requirements and ensures repeatability in the location of subsequent thickness measurement points.	The recommended ultrasonic gridline sample requirements provide a more practical approach to augmented container examinations – Acceptable
	All item no.'s - Added examination requirement paragraph number references. Updated acceptance standard references.	Previously no references existed for examination requirements. These requirements have been added to IWE-2300 and -2500 as discussed above. Adding new references and updating paragraph numbers ensure proper requirements are applied to examinations.	Acceptable
Table IWE-2500-1 Examination Category E-C (con't)	Notes - Changed note 2 from requiring augmented examination until an area remains unchanged for three consecutive inspection periods to the next inspection period. Deleted note 3 which discussed inspection deferrals.	Three inspection periods cover a ten year interval. Performing augmented examinations for at least two periods while continuing general visual examinations each period provides for more efficient program implementation without adversely affecting component integrity. Deletion of note 3 is non-significant.	Change from three consecutive periods to one period consistent with the requirements for Class 2 components – Acceptable
	Extent and Frequency of Examination 2500: (c) is changed to (b).	Non-significant.	

APPENDIX A -- MILLSTONE UNITS 2 AND 3 IWE COMPARISON TABLE			
Paragraph	**Changes between IWE 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Comments**
Table IWE-2500-1 CAT. E-G	Deleted examination category which addressed pressure retaining bolting.	Pressure retaining bolting is now included in Examination Category E-A as addressed above.	1992 required VT-1 visual of bolting when a connection was disassembled. The 1998 Edition requires general visual, in place, with no requirement when the joint is disassembled. Acceptable when Millstone plant commits to perform VT-1 or Detailed visual examination of disassembled bolted connections. (Open Issue 2.3)
Table IWE-2500-1 CAT. E-P	Deleted examination category which addressed 10CFR50 Appendix J testing for all pressure retaining components.	Appendix J testing is mandated by plant technical specifications. Removing this duplicate requirement from IWE does not adversely affect component integrity.	Acceptable
Table IWE-2500-2	Added new Table IWE-2500-2 - Ultrasonic Thickness Measurements For Augmented Examinations - which details gridding and thickness measurement requirements.	The new requirements provide for consistency and repeatability in obtaining thickness measurements and thus assure the reliable detection of conditions adverse to containment integrity.	Acceptable
Table IWE-3410-1	Deleted table.	Non significant - the contents of the previous table are adequately addressed in IWE-3500.	Acceptable

APPENDIX B
IWL COMPARISON TABLE

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-1100	ASME Section XI generic wording change from repair, replacement and or modification terms to repair/replacement activities.	Non significant	None
IWL-1200	No Change	n/a	
IWL-1210	No Change	n/a	
IWL-1220	No Change	n/a	
IWL-2100	Changed "Inspection" to "General" in heading.	Non significant	
	(a) Provided reference to IWA-2000 with exceptions from IWA-2210 and -2300 for visual examinations and for qualification of visual examination personnel.	The containment examinations are completely defined within the jurisdiction of IWL, and thus references to IWA 2210, and IWA 2300 are not applicable.	IWL examinations will not require the visual examinations identified in IWA-2100. Personnel will not have to be certified to CP-189 (IWA-2300). The 1998 Code unacceptable. Licensee stated that Containment Inspection Program has written practice meeting the requirements of CP-189 and SNT-TC-1A -- Acceptable
	(b) Provided requirements for Authorized Nuclear Inservice Inspectors.	Not addressed by licensee	Inspector responsibilities addressed in IWA - Acceptable
IWL-2200	Delete reference to IWL 2500.	The reference to IWL 2500 in the 1992 Edition was incorrect, and this non-significant change is associated with a subsequent inquiry.	Acceptable
IWL-2210	No Change	n/a	
IWL-2220	No Change	n/a	

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-2230	ASME Section XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Acceptable
IWL-2300	No change; content changes in IWL-2310.	The philosophy of IWL to be an engineering inspection under the direction of the Responsible Engineer is contained in this revised sub-article. This individual will be accountable for the entire inspection program which will meet or exceed the level of quality and safety defined in the 1992 Edition. The specific changes to IWL-2310 and IWL-2320 will be discussed below.	

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-2310	(a) Replaced VT-1C and VT-3C visual examination terminology with new VT general and VT detailed examination terms.	The VT-3C and VT-1C inspections of IWA have been replaced by Owner (Responsible Engineer) defined general and detailed visual exams, respectively. The definition of critical examination items and acceptable conditions has not changed, such that any conditions adversely affecting quality or safety are not impacted by this change. The general and detailed visual examinations are equivalent to the VT-3C and VT-1C exams in terms of assessing the general condition and potential for deterioration within the containment system. The use of owner defined inspection types allows for the involvement of qualified engineering personnel with backgrounds in programs such as the Maintenance Rule, R.G. 1.~~1~~35, and Appendix J. This provides for a containment inspection program that is performed by individuals with knowledge in containment degradation mechanisms.	Open-ended, owner defined visual examination requirements do not provide uniformity and consistency industry wide. 1998 Code is unacceptable and proposed alternative cannot be found acceptable without specific details from the licensee. The 1998 Code is unacceptable. Acceptable as supplemented by the licensee.
	(b) Replaced reference to IWA-2210 for illumination levels, examination distances and resolution requirements with specific examination attributes.	IWL-2310(c) defines the visual acuity requirements which will be accessed by the Responsible Engineer in the inspection plan. This is consistent with the rules in 10 CFR50.55a.	Specific illumination and resolution details from the licensee's program should be provided. The 1998 Code is unacceptable Acceptable as supplemented by the licensee.
IWL-2310 (con't)	(c) Replaced reference to IWA-2300 for concrete examination personnel qualification requirements with provisions for the owner to define the examination personnel qualification requirements.	The Responsible Engineer has accountability for personnel qualification, and all the requirements are contained within IWL.	Consistency with existing ISI visual examination requirements could provide for an efficient internal program. However, open-ended, owner-defined visual examination requirements do not provide uniformity and consistency industry-wide. The 1998 Code is unacceptable. Acceptable as supplemented by the licensee.

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-2320	Changed wording slightly.	Non significant - clarifies wording.	Acceptable
	Made the ASME Section XI generic change from repair and or replacement to repair/replacement activities.	Non significant	Acceptable
	Added a responsibility for the Responsible Engineer to review certain pressure test procedures.	The added pressure test responsibilities for the Responsible Engineer ensures proper performance of pressure testing activities.	Acceptable
IWL-2400	No Change	n/a	
IWL-2410	Added to (c) condition which allows for deferral of concrete visual exams to the next scheduled plant outage for inaccessible portions of concrete surface.	This change insures that all surfaces that can be inspected are examined, but recognizes the personnel safety of the inspectors.	Acceptable
IWL-2420	No Change	n/a	
IWL-2421	Changed wording for sites with more than one plant. Changed frequencies by adding "and every 10 years thereafter".	Non significant - clarifies wording and accommodates plant life extensions.	Acceptable
IWL-2500	No Change	n/a	Acceptable
IWL-2510	Changed heading.	Non significant.	
IWL-2510 (con't)	Eliminated the reference to VT-3C and VT-1C and refers to the general and detailed visual exams of IWL-2310.	The conclusion that this change to owner defined inspection types has no adverse impact on the level of quality or safety is reached in the IWL-2310 discussion.	
	Adds the requirement to (b) that the Responsible Engineer will designate areas as suspect and requiring additional examinations.	Increases the level of quality and safety of the examinations.	

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
	Adds the requirement (c) for a visual examination of all tendon anchorage areas and tendon end caps shall be examined for specific conditions.	This change is applicable to Millstone Unit 2 and the post-tensioning system. The change increases the level of quality of the exams associated with the tendon anchorage and end caps. This requirement is consistent with the rule in 10CFR50.55a. This change does not apply to Millstone Unit 3.	
IWL-2520	No Change	n/a	
IWL-2521	No Change	n/a	
IWL-2522	Changed the heading and added a subparagraph to address tendon elongation.	The added details ensure proper tendon examinations. However, these changes do not apply to Millstone Unit 3	Acceptable
IWL-2523	No Change	n/a	
IWL-2524	Eliminated the VT-1 exam and replaced it with the detailed visual exam described in IWL-2310 above.	This change is consistent with the changes described in IWL-2310 above, and the change in IWE 2310 which eliminated the VT-1 exam and replaced with a detailed visual exam and is applicable to the anchorage exam of Millstone Unit However these changes do not apply to Millstone Unit 3.	Owner defined visual examination requirements do not provide uniformity and consistency industry wide. 1998 Code is unacceptable without specifics provided by licensee. Acceptable as supplemented by the licensee.
IWL-2525	Changed wording for sample analysis.	Non significant.	Acceptable
IWL-2526	Added a subparagraph addressing replacement of corrosion protection medium.	The new paragraph provides the Responsible Engineer some options from which to specify corrosion medium replacement and is applicable to Millstone Unit 2. However, these changes do not apply to Millstone Unit 3 containment.	Acceptable
IWL-3100	No Change	n/a	
IWL-3110	No Change	n/a	

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-3111	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
IWL-3112	No Change	n/a	
IWL-3113	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
IWL-3120	No change.	n/a	
IWL-3200	No change.	n/a	
IWL-3210	Removed the word concrete from the heading.	Non-significant.	
IWL-3211	Added tendon end and anchorage areas to the scope of the subparagraph and added corrosion protection medium leakage and end cap deformation as acceptance criteria attributes.	The acceptance criteria has expanded to recognize that the surface area being examined per IWL-2510 includes the concrete surrounding the tendon end anchorage, and the tendon end caps. This increases the overall quality of the exam, and is consistent with the rule in 10CFR50.55a and is applicable to Millstone Unit 2. However, these changes do not apply to Millstone Unit 3 containment.	Added clarification - Acceptable
	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Non-significant.	
IWL-3212	No change.	Not Applicable.	
IWL-3213	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Non-significant.	

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-3220	No Change	n/a	
IWL-3221	Added acceptance criteria attributes for unbonded post-tensioning systems in the following areas: 3221.1(c) evaluates the predicted force for the next scheduled exam meets the minimum design prestress force. 3221.1(d)compares the elongation with the last measurement and specifies that it can not vary by more than 10%. 3221.3(e)added evidence of free water as an unacceptable condition. 3221.4 added criteria to compare the difference of the amount of corrosion protection medium removed with that replaced.	The additions to the acceptance criteria of IWL-3221 have provided further assurance that the Responsible Engineer will evaluate all potential conditions that could impact the post-tensioning system integrity. The changes are applicable to the Millstone Unit 2 post-tensioning system. These enhancements to the 1998 Edition increase the level of quality of the inspection program and has no adverse impact on the safety of the inspection program described in the 1992 Edition. These additions are consistent with the requirements of the rule as stated in 10CFR 50.55a. However, these changes do not apply to Millstone Unit 3 containment.	Acceptable
IWL-3222	No Change	n/a	
IWL-3223	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	
IWL-3300	No Change	n/a	
IWL-3310	Added applicability for other plants at the same site.	Non significant.	Acceptable

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
IWL-3320	Deleted paragraph which addressed engineering evaluations being subject to review by authorities.	Non significant - there were no submittal or retention requirements changed by the deletion of the subparagraph.	Acceptable. The Regulations do not require the licensees to submit their containment inspection programs.
IWL-4000	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant - all related repair and replacement requirements have been consolidated into IWL-4000.	Acceptable
IWL-4100	No Change	n/a	
IWL-4110	Exempted grease cups and installation screws from the scope.	Non significant - the exempted items are non structural items. These exemptions do not apply to Millstone Unit 3 containment.	Acceptable
	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
IWL-4200	ASME Section XI generic change from repair and/or replacement to replace/replacement activities.	Non significant.	Acceptable
------	Added a new paragraph -4210 to require Repair/Replacement Plans to be developed under the direction of a Responsible Engineer.	Non significant - this is a paragraph numbering change from the 1992 Edition.	Acceptable
IWL-4210	Changed paragraph number to 4220, removed the word repair from heading and changed referenced paragraph numbers consistent with the addition of a new paragraph 4210 above.	Non significant	Acceptable

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
	Changed wording consistent with the changes to IWL-2310 addressed above.	Non significant	Acceptable
	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant	Acceptable
	Changed repair material to new material in several places.	Non significant	Acceptable
IWL-4220	Changed paragraph number to 4230.	Non significant	Acceptable
IWL-4230	Changed paragraph number to 4240 and clarified by removing the word repair.	Non significant.	Acceptable
	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
	Added detailed requirements for the contents of a repair/replacement plan.	The 1998 Edition is more prescriptive in terms of the details which are expected to be addressed in the repair/replacement plan developed by the Responsible Engineer. These changes do not apply to Millstone Unit 3 containment.	Acceptable
IWL-4300	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
IWL-5100	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
IWL-5200	No Change	n/a	
IWL-5210	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
IWL-5220	No Change	n/a	
IWL-5230	Changed wording by removing some specific IWE related requirements while maintaining the reference to IWE-5000.	Non significant - the removed wording was IWE specific and is contained in IWE-5000.	Acceptable
IWL-5240	Deleted paragraph which addressed the scheduling of pressure tests.	Non significant - the schedule of pressure tests are contained in IWE-5000 as referenced in IWL-5230.	Acceptable
IWL-5250	Changed wording regarding the role of the Responsible Engineer in pressure test activities.	The clarified role of the Responsible Engineer ensures proper pressure test procedures and examinations.	Acceptable
	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant.	Acceptable
	Changed VT terminology consistent with the changes to IWL-2310 addressed above.	The VT terminology changes are discussed in IWL-2310 above.	Acceptable
IWL-5260	Changed heading from Corrective Measures to Correction Action.	Non significant	Acceptable
	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant	Acceptable
IWL-5300	ASME Section XI generic change from repair and or replacement to replace/replacement activities.	Non significant	Acceptable
IWL-7000	Deleted Article including IWL-7000, -7110, -7120 consistent with the IWL-4000 changes above.	Non significant - all related repair and replacement requirements have been incorporated into IWL-4000.	Acceptable

APPENDIX B -- MILLSTONE UNITS 2 AND 3 IWL COMPARISON TABLE			
Paragraph	**Changes between IWL 1992 Edition/ 1992 Addenda and the 1998 Edition**	**Licensee's statement of significance and/or basis for use as an alternative examination**	**Disposition/Comments**
Table IWL-2500-1	Changed Item L1.11 from all areas to all accessible areas.	The addition of accessible provides consistency with the requirements of the scope of IWL-1000, and does not alter the level of quality of the inspection plan described in the 1992 Edition.	Acceptable
	Replaced the VT-3C, VT-1C, and the VT-1 exams with general visual and detailed visual, respectively, as described in the paragraph IWL-2310 changes above.	The acceptability of the change to a owners defined general and detailed visual inspection is discussed in the IWL-2310 section.	Owner defined visual examination requirements do not provide uniformity and consistency industry wide. 1998 Code is unacceptable without specifics provided by licensee. Acceptable as supplemented by the licensee.
Table IWL-2521-1	Changed inspection periods to state every 5th year in lieu of listing out each year and changed note 2 for having to meet acceptance criteria from "each of the earlier inspections" to "for the last 3 inspections".	Non significant - accommodates plant life extensions for tendon examinations. These requirements do not apply to Millstone Unit 2 containment.	Acceptable
Table IWL-2525-1	Added optional test methods for corrosion protection medium analysis.	Non significant - additional test method options provides for more practical test implementation and is applicable to Millstone Unit 2. These requirements do not apply to Millstone Unit 3 containment.	Acceptable

Appendix C
Millstone Supplements to 1998 Code

Appendix C Millstone Supplemental Information to the 1998 Code Edition		
Initial 1998 Code Proposed Alternative	**Supplemented Proposed Alternative (December 13, 1999 and February 25, 2000 RAI responses)**	**Recommendations/Comments**
IWE-2310 - "Visual Examinations"- a) the owner shall define requirements for visual examination of containment surfaces.	Results of a general visual examination are acceptable for continued service without further evaluation only when there is no evidence of damage or degradation of the inspected component or surface area. General or detailed visual examinations are performed by certified Visual Inspectors and/or the Responsible Engineer. General or detailed visual examinations are performed using accepted examination methods and tools, including verification of sufficient lighting for adequate illumination, and approved visual aids to ensure appropriate visual acuity.	Authorize per 10 CFR 50.55a(a)(3)(i).
IWE-2330 - "Personnel Qualification" - a) the owner shall define the qualification requirements for personnel performing visual examinations.	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.	Authorize per 10 CFR 50.55a(a)(3)(i).
IWE-2500 - Deleted the requirement to examine paint or coatings prior to removal.	Millstone Protective Coatings & Linings Program maintains compatibility and coordination between the IWE/IWL Containment Inspection Program and the Protective Coatings & Linings Program which allows responsible engineer to perform examinations prior to painting or coating and verify the condition of the containment surface, including the condition of base metal.	Authorize per 10 CFR 50.55a(a)(3)(i).

Appendix C Millstone Supplemental Information to the 1998 Code Edition		
Initial 1998 Code Proposed Alternative	**Supplemented Proposed Alternative (December 13, 1999 and February 25, 2000 RAI responses)**	**Recommendations/Comments**
IWE-3510.1 and IWE -3511.1 - The owner shall define acceptance criteria for visual examination of containment surfaces.	See IWE-2310 above.	Authorize per 10 CFR 50.55a(a)(3)(i).
Table IWE-2500-1 - Notes - Revised to include welds and bolting as part of the pressure retaining boundary requiring examination.	See criteria defined in IWE-2310 above.	Authorize per 10 CFR 50.55a(a)(3)(i).
Table IWE-2500-1, Examination Category E-C - Visible surfaces requiring an augmented examination receive a Detailed Visual Exam.	Detailed Visual exam criteria developed from VT-1 and VT-3 procedures	Authorize per 10 CFR 50.55a(a)(3)(i).
IWL-2310 - Replaced VT-1C and VT-3C visual examinations with General Visual and Detailed Visual Examinations and removed reference to visual examination procedure qualification.	General Visual exams performed in sufficient detail to identify areas of concrete deterioration and distress defined in ACI 201.1.	Authorize per 10 CFR 50.55a(a)(3)(i)

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M. T. Anderson, C. T. Brown, M. J. Klatt, A. M. Porter

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 Words or less)

This report presents the results of the evaluation of the licensee's proposed alternatives to the containment inspections required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL. The licensee's proposed alternatives to IWE/IWL containment inspection, submitted April 22, 1999, are evaluated in Section 2 of this report. .

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