

**RESOLUTION OF PUBLIC COMMENTS**

**SUBSECTION IWE**

**COMMENTS WHICH ADDRESS IWE-1000 SCOPE AND RESPONSIBILITY**

**COMMENT 1.1:**

Georgia Power and Southern Nuclear Operating believe that Subsection IWE has been developed for application to a new plant and should not be applied to existing plants.

**RESPONSE:**

The ASME Section XI Subgroup on Containment specifically developed Subsection IWE for use in existing plants. The committee considered individual plant design and construction differences by incorporating provisions such as those which address accessibility. Specifically, Subsection IWE exempts embedded or inaccessible Class MC components from examination.

**COMMENT 1.2:**

Duke Power believes that even though the scope indicates that integral attachments are to be included, this is not clearly stated by the paragraphs addressing visual examinations.

**RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, IWE-1210, Examination Requirements, clearly states that the examination requirements of Subsection IWE applies to the integral attachments of Class MC pressure retaining components.

**COMMENTS WHICH ADDRESS IWE-1200 COMPONENTS SUBJECT TO EXAMINATION**

IWE-1210 Examination Requirements

**COMMENT 2.1:**

Entergy Operations believes that the wording of this paragraph implies that the exemptions are only applicable to containments designed and built to Class MC or Class CC rules. They ask what exemption criteria may be applied to those containments not designed or built to Class MC or Class CC rules?

**RESPONSE:**

Class MC and Class CC are ASME Code definitions. Subsection IWE (Class MC) addresses the requirements for metal containments and the liners of concrete containments. Subsection IWL (Class CC) addresses the requirements for concrete containments and their post-tensioning systems. Every containment and containment component, regardless of the design and construction codes used, will by definition, be either Class MC or Class CC and the exemption criteria of Subsection IWE and Subsection IWL will apply to those containments, respectively.

## IWE-1220 Components Exempted from Examination

### **COMMENT 2.2:**

Northeast Utilities and TVA believe that there is a conflict between the exemption requirements of IWE-1220(b), Components Exempted from Examination, and those in IWE-1232, Inaccessible Surface Areas. Northeast Utilities comments, "IWE-1220(b) states that embedded or inaccessible portions of containment vessels, parts, and appurtenances that met the requirements of the original Construction Code are exempt. IWE-1232 does not allow this exemption unless additional requirements are addressed for these components which may or may not have been addressed at an old plant. Even if an old plant had met its Construction Code this point of compliance with IWE-1220(b) does not remove the requirements of IWE-1232. The IWE-1232 requirements are apparently written for a new plant and should not be applied to an old plant. Regardless of whether the additional requirements of IWE-1232 are addressed or not addressed, they do not change the fact that the components are inaccessible and cannot be examined. It appears the Staff has already tried to resolve this issue by providing an exception in the proposed rule under paragraph 50.55a(g)(4) which does not require the design and access provisions nor the preservice examination requirements of Section XI to be applied when using Subsections IWE and IWL."

### **RESPONSE:**

The NRC does not believe that the provisions contained in those paragraphs will result in licensees being unable to meet the requirements. IWE-1220 addresses areas which are exempted from the examination requirements of Subsection IWE. The next paragraph, IWE-1231, addresses areas which are to remain accessible for the life of the plant. The requirements of IWE-1232 are to be used instead of those of IWE-1231 if accessibility is not from the outside surface. IWE-1232 was developed recognizing that there may be certain cases where a containment was not accessible from the outside surface for inspection, and that not all of the provisions of IWE-1231 could be met. It is recognized, however, that the provisions of IWE-1232 address issues which would be addressed during construction (i.e., requirements contained in Section III, Subsection NE, "Ruled for Construction of Nuclear Power Plant Components, Division 1, Class MC Components." Because of the importance of some areas such as openings and penetrations, and single-welded butt joints, the committee believed that these areas needed to be accessible for the life of the plant. The provisions as written should address most situations. It has been recognized for sometime in 10 CFR 50.55a(g)(4) that some plants were built before some of the ASME standards were written. Hence, the phrase "except design and access provisions and preservice examination requirements" is specifically in § 50.55a(g)(4) to address the situation where provisions of the new codes could not be met. § 50.55a(g)(4) is expanded in this rulemaking to include Class MC and Class CC components. Licensees will need to identify in their containment ISI plans where the design and access provisions cannot be met. This will alleviate the need for submittal of relief requests.

### **COMMENT 2.3:**

Duke Power believes that experiences such as those at Oyster Creek show that some embedded areas should not be exempted from examination requirements. Duke Power notes that even though it is extremely difficult to inspect these areas, they ask for guidance specifying when additional inspection of these areas is justified. They believe that it would be appropriate to include in Subsection IWE provisions that would require licensees to document and evaluate containment degradation in inaccessible areas immediately adjacent to accessible areas where significant containment degradation has been noted.

### **RESPONSE:**

The NRC agrees with comment that some inaccessible areas known to be susceptible to degradation need to be evaluated. The ASME is continuing to monitor containment degradation, and the NRC has initiated research programs addressing items such as which areas are most susceptible to degradation and is there an effective means of examining those areas. The NRC has tried to address this issue by the addition of § 50.55a(b)(2)(x)(A) to the final rule which requires that licensees evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of degradation in inaccessible areas.

**COMMENT 2.4:**

Duke Power believes that the definition of "inaccessible portions" of containment vessels, parts, and appurtenances needs clarification so that all licensees have a uniform interpretation of this criterion. The definition of inaccessible areas in paragraph IWL-2521.1 includes areas that are not accessible for examination because of safety or radiological hazards or because of structural obstructions. Subsection IWE should define inaccessible areas similarly.

**RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC believes that the definition in Subsection IWE is clear. IWE-1220 states, "The following components (or parts of components) are exempted from the examination requirements of IWE-2000: (b) embedded or inaccessible portions of containment vessels, parts, and appurtenances that met the requirements of the original Construction Code." The definition specified in Subsection IWL was developed for different needs than those of Subsection IWE. IWL-2525.1 applies to tendon anchorages that are not accessible for examination because of structural obstructions or safety or radiological hazards. The size of some of the test equipment makes open space a consideration in performing post-tensioning system examinations. The structural obstructions make tendon detensioning impractical in some cases. Also, because of the length of time spent by personnel in one area, detensioning and retensioning of some tendons is impractical because of radiological concerns. Most of the examinations of Subsection IWE are visual examinations which can be performed remotely. The definitions are not the same for some of the reasons mentioned above. However, this comment has been transmitted to the ASME for their consideration of the adequacy of the definition of inaccessible.

IWE-1230 Accessibility for Examination  
IWE-1231 Accessible Surface Areas

**COMMENT 2.5:**

Duke Power asked for a clarification: "The intent of subparagraph IWE-1231(b) is not clear. Subparagraph IWE-1231(a) indicates that pertinent portions of Class MC containment vessels and Class CC Metallic liners shall remain accessible for either direct or remote visual examination, from at least one side of the vessel, for the life of the plant. Subparagraph IWE-1231(b) seems to contradict subparagraph IWE-1231(a) by invoking the criteria of IWE-1232 when accessibility for visual examination is not from the outside surface. Subparagraph IWE-1231(b) seems to imply that it is preferable to examine surfaces from the outside. There does not seem to be any justification for preferring examination from one particular side of containment. If accessible, all internal and external containment surfaces should be examined."

**RESPONSE:**

Comments asking for interpretations of Section XI should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. The NRC agrees that all internal and external containment surfaces should be examined. In the NRC's opinion it is not a preference for inspection from one side or the other. It is a question of accessibility. IWE-1231, Accessible Surface Areas, addresses areas which need to be inspected to ensure structural integrity and leak-tightness. These areas are to remain accessible for examination for the life of the plant. However, the ASME Subgroup on Containment recognized that there may be certain cases where a containment was not accessible from the outside surface for inspection. IWE-1231(b) addresses this case. For these plants, all of the requirements of IWE-1231 cannot be met, and IWE-1231(b) states that the provisions in IWE-1232 are to be met in these cases.

**COMMENT 2.6:**

Three commenters (Georgia Power, Southern Nuclear Operating, and Duke Power) believe that if the accessibility requirements of IWE-1231 cannot be met, relief requests will be required. IWE-1231(a) requires that certain areas remain accessible for examination from a least one side of the vessel, for the life of the plant. One of the conditions of IWE-1231(a) is that 80% of pressure retaining boundary must remain accessible. Duke Power believes that it is not clear whether the intent is to include 80% of the total of both interior and exterior surface areas, and whether embedded portions of containment should be included when computing the accessible quantity of surface area. It is not clear whether the intent of the Code is to require licensees to review construction records to confirm compliance with IWE-1231.

**RESPONSE:**

As addressed in the response to Comment 2.2, the phrase "except design and access provisions and preservice examination requirements" was added to § 50.55a(g)(4) to address the situation where provisions of new codes could not be met. Licensees will need to identify in their containment ISI plans where the design and access provisions cannot be met, but relief requests will not have to be submitted. With regard to the question of calculating 80%, IWE-1231(b) recognizes that for some plants, examination of the outside surface cannot be performed. For these plants, this provision does not apply. For those plants to which it does apply, areas which are exempted from examination by IWE-1220 do not figure in this calculation. This calculation applies only to the accessible areas of the containment.

IWE-1232 Inaccessible Surface Areas

**COMMENT 2.7:**

Duke Power believes that the intent of subparagraph IWE-1232(a) is not clear. They state that, "It appears that it is the intent of the Code that exemptions 1 through 4 apply only to vessel repairs, modifications, or replacements that result in additional areas being embedded. It would not be practical to apply inspection requirements to areas embedded during construction if they do not meet these exemptions. This comment also applies to IWE-1232(b)."

**RESPONSE:**

IWE-1232(a) clearly states that the exemptions apply either during construction or repair, modification, or replacement. As detailed in the response to Comments 2.2 and 2.7, for areas which were embedded during construction which do not meet these exemptions, § 50.55a(g)(4) addresses situations where licensees cannot meet the design and access provisions.

IWE-1240 Surface Areas Requiring Augmented Examination  
IWE-1241 Examination Surface Areas

**COMMENT 2.8:**

Duke Power comments that, "Clarification of Paragraph IWE-1241 is warranted to provide additional, specific criteria for determination of areas to be included in augmented examinations. Without specific criteria, interpretation by licensees may vary, possibly resulting in inconsistent application of these rules. It appears that it is the intent of ASME to include areas that could be subject to accelerated degradation and aging, and not just areas where previous degradation has been observed.

**RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. The NRC is in agreement with the ASME on these provisions. Some containments have unique design characteristics. A detailed list of every area in each containment type to be included in the augmented examinations would be impractical and probably not be inclusive. The Owner is in the best position to determine which areas should be included in this category.

The commenter's interpretation is correct. This category specifically includes areas likely to experience accelerated degradation and not just areas where degradation has been previously discovered.

**COMMENT 2.9:**

Duke Power states that, "IWE-1241(a) applies to areas with no or minimal corrosion allowance even if no previous degradation has been identified in these areas. Licensees could interpret this to exclude areas where a corrosion allowance has been specified or provided, even if these areas could be subjected to potential degradation."

**RESPONSE:**

The NRC disagrees. IWE-1241 pertains to surface areas likely to experience accelerated degradation. This applies to any area which is likely to experience accelerated degradation regardless of whether the surface was or was not designed with a corrosion allowance. IWE-1241(a) and (b) are simply guidance lists to be used by the Owners in developing their list of areas for this category. It should be noted that some of the most severe occurrences of corrosion which have been reported were detected in areas with corrosion allowances.

IWE-2000 EXAMINATION AND INSPECTION

IWE-2200 Preservice Examination

**COMMENT 3.1:**

TVA believes that the intent of Paragraph IWE-2200(a) is not clear as to whether a 100 percent preservice examination is required.

**RESPONSE:**

Preservice examinations can only be performed after construction and prior to operation. When implementing the final rule, the baseline examination for Subsection IWE will be the inservice inspections required during the first period of the first inspection interval. Section 50.55a (6)(ii)(B) has been clarified in the final rule.

**COMMENT 3.2:**

Two commenters responded in regard to Subparagraph IWE-2200(g). Duke Power states, "Subparagraph IWE-2200(g) seems to be applicable to repair of topcoating on containment plate even when there is no evidence that the primer coat has failed or that base metal has been damaged. To require every minor touch-up coatings repair to be documented in the Preservice Examination Records appears unreasonable and will provide little benefit. These provisions should be applicable to repair of coatings when the prime coat has been damaged and base metal has been exposed." Entergy Operations asks, "Does this paragraph imply that a VT be performed after each application of paint? How is the condition of new paint or coatings "documented in the pre-service inspection records"? Is a new pre-service examination required if only painting is performed?"

**RESPONSE:**

Comments asking for interpretations should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. IWE-2200(g) addresses reapplication of paint or coatings, and documenting the condition of the new paint or coating. The ASME Code specifically generated Code Cases to allow techniques such as magnetic-particle and ultrasonic examination through coatings so that the coatings would not have to be removed to permit examination of the base metal. IWE-2600(b) addresses situations where the paint or coatings have to be removed to permit examination of the base metal. In these cases, reapplied paint or coatings must be examined in accordance with IWE-2200(g). In the NRC's opinion, IWE-2200(g) does not apply to touch-up of the topcoat when the topcoat has not been removed for metal repair.

With regard to Entergy Operations questions, IWE-2200(g) states, "When paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records." In the NRC's opinion, this does not mean that a visual examination must be performed with every application of paint or coating. A visual examination of the topcoat to determine the soundness and the condition of the topcoat should be sufficient.

IWE-2400 Inspection Schedule  
IWE-2420 Successive Inspections

**COMMENT 3.3:**

Four commenters (Northeast Utilities System, Georgia Power, TVA, and Entergy Operations) believe that Subparagraphs IWE-2420(b) and IWE-2420(c) provide conflicting requirements regarding the number of periods that successive examinations are required to be performed following the evaluation of acceptable flaws, degradation, or repairs in accordance with IWE-3000. Additionally, Northeast Utilities pointed out that both paragraphs cite that these requirements are only applicable to Examination Category E-C, and they do not believe that this is the intent of these requirements. Duke Power states, "Subparagraph IWE-2420(b) requires that areas containing indications shall be examined during the next inspection period in accordance with TABLE IWE-2500-1, Examination Category E-C. If these corroded areas have not been recoated or are in areas where recoating is not possible, a 3-year delay in subsequent examinations could prove to be excessive. A required element of the engineering evaluation of newly discovered suspect areas should be the establishment of an examination frequency necessary to determine an effective corrosion rate. Subparagraph IWE-2420(b) should also be revised to clearly indicate that these areas shall be reexamined during the next 3 consecutive inspection periods as specified in IWE-2420(c)."

**RESPONSE:**

These comments have been transmitted to the ASME for their consideration. However, the NRC disagrees that those paragraphs provide conflicting requirements. The purpose of IWE-2420(b) is to manage components found to be acceptable for continued service (meaning no repair or replacement at this time) as an Examination Category E-C component, and the phrase "during the next inspection period" is not to be interpreted as meaning only one period. If the component had been repaired or replaced, then more frequent examination would not be needed. Per IWE-2420(c), if after three consecutive inspection periods, the flaw, degradation, or repair remains essentially unchanged, then the component reverts back to the inspection frequency mandated under its original examination category.

The NRC disagrees that these paragraphs can be interpreted as being only applicable to Examination Category E-C components.

Regarding Duke Power's comment about evaluation and suspect areas the frequency of examination, this comment has been transmitted to the ASME for their consideration. The NRC agrees that this is an issue which should be further examined.

**COMMENT 3.4:**

Duke Power believes that, "The requirements of IWE-2420(b) and (c) should not be applicable to corroded areas that meet the following criteria:

1. Corrosion is minimal and has not exceeded 10% of the nominal plate thickness.
2. Protective coatings are reapplied
3. The source or cause of the degradation has been eliminated.
4. Affected areas are reexamined during the next inspection period to verify the adequacy of the repaired coatings."

**RESPONSE:**

The NRC does not agree. With regard to: 1., there are factors other than depth to be considered. Location of the corrosion, the type of corrosion, the extent of the corrosion, corrosion rate, and the apparent cause of corrosion are other factors which must be considered; 2. Protective coatings by themselves have not proved to be effective in inhibiting corrosion; 3. In some cases, the source or cause of the degradation is unknown or there are multiple sources, and more than one reexamination will be required to be conclusive; and 4. - The NRC believes that more than one reexamination should be required due to the susceptibility of these locations to degradation.

IWE-2430 Additional Examinations

**COMMENT 3.5:**

Five commenters (BWROG, Entergy Operations, Duke Power, Northeast Utilities, and Georgia Power) responded with regard to IWE-2430. The following statement by the BWROG characterizes a position taken by each of the five commenters. "Paragraph(b) of IWE-2430, Additional Examinations, requires that if additional flaws or areas of degradation are found in the first expanded scope, all of the remaining examinations within the same category shall be performed to the extent specified in Table IWE-2500-1 for the inspection interval. This requirement is more restrictive than even Class 1 component examinations and is therefore not reasonable." Northeast Utilities believes that this is not a reasonable requirement in light of the fact that no licensee evaluation is allowed to identify the failure mechanism prior to 100% examination. Entergy Operations submitted a question on this paragraph: "IWE-2430(b) states that when additional areas of degradation are identified, the remaining number of examinations for the interval shall be performed. This requirement is unclear (i.e., does this mean only the item no. or the entire examination Code Category?)."

**RESPONSE:**

Section 50.55a(b)(2)(x)(D) has been added in the final rule which addresses alternative acceptance criteria. The NRC agrees that the acceptance criteria used for other components in Section XI (on which the Subsection IWE acceptance criteria are based) may not be practical for containment components. The degradation and failure mechanisms for containment components have been shown to be generally component unique rather than representative of the class as has been the case for other Section XI components.

**COMMENT 3.6:**

Entergy Operations also believes that the word "inspection" as it is used in Paragraph IWE-2430 needs clarification.

**RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC disagrees and does not believe that the current definition should cause confusion. Paragraph IWE-2430(a), Additional Examinations, states that, "Examinations performed during any one inspection..." Inspection would be the inspection period during which the components are examined.

**COMMENT 3.7:**

Duke Power states, "It appears to be the intent of the Code that IWE-2430(a) apply to containment surface areas in category E-A, as well as other categories. Areas of concern found during surface area inspections are likely to be unique to a particular location with a specific environment conducive to degradation. This combination of environment and degradation is not necessarily repeated at other locations; therefore additional sampling of surface areas in the same category has little benefit. Also this requirement should not apply to examinations performed in accordance with Table IWE-2500-1, Examination Category E-C because these inspections are performed every inspection period and are also unique."

**RESPONSE:**

Since 100% of the accessible interior and exterior surfaces of a containment must be visually examined per Appendix J, additional sampling does not really apply to Examination Category E-A. As pointed out by in the comment, Examination Category E-C components are already examined every period. IWE-2430(a) really addresses the other Subsection IWE examination categories. However, as detailed in the response to Comment 3.5, § 50.55a(b)(2)(x)(D) has been added in the final rule which addresses alternate acceptance criteria.

IWE-2500 Examination and Pressure Test Requirements

**COMMENT 3.8:**

Two commenters (Entergy Operations and Duke Power) asked for clarification on the requirement that coatings be examined prior to removal. They believe that this requirement is excessive for non-degraded surfaces, and an examination should not be required if the paint removal is for a reason other than degradation or if it only for repair or touch-up of the topcoat.

**RESPONSE:**

Comments asking for interpretation should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. In the NRC's opinion, IWE-2500(b) requires that when any paint or coatings are to be removed, the paint or coatings are to be visually examined before removal. The NRC believes this is a logical requirement. A painted or coated area has to be visually examined in order to determine if the base coat has been damaged or if base metal degradation has occurred. Also, a baseline needs to be established and maintained. For example, removal of the coating for a better replacement coating would require amending the preservice records noting that the coating has been changed and that the metal was sound at the time the coating was changed.

Touch-up of the topcoat was addressed in the response to Comment 3.2.

**COMMENT 3.9:**

Entergy Operations asks, "...are the current authorized Nuclear Inservice Inspector and Supervisor qualifications sufficient under ANSI N-626 for him to properly witness or verify the requirements for paint and coatings? How will he be able to determine acceptable equivalent methods under IWA-2240?"

**RESPONSE:**

The ASME has recognized that for some Authorized Nuclear Inservice Inspector's (ANII) and Supervisor's, their qualifications may not be completely sufficient with regard to paint and coatings. The ASME is presently developing appropriate criteria and training to supplement ANII and Supervisor experience.

**COMMENT 3.10:**

Duke Power submitted a comment, "Subparagraph IWE-2500(b) requires that coatings be examined in accordance with Table IWE-2500-1. It is not clear whether it is the intent of the Code that IWE-2500(b) require licensees to provide a description of the existing conditions as required by IWE-3510.1, IWE-3510.2, and IWE-3510.3 for historical purposes, or that documentation be required only when significant degradation is found."

**RESPONSE:**

The documentation required is addressed in IWA-6340, Inservice Inspection Records and Reports, which contains a list of items that is required to be in the records. One of the required reports is Form NIS-1, Owner's Report for Inservice Inspections which is in Mandatory Appendix II. Another required report is Form NIS-2, Owner's Report for Repairs and Replacements, which is also in Appendix II.

With regard to documentation related specifically to coatings, see comment 3.2.

**COMMENT 3.11:**

Entergy Operations submitted a comment, "Paragraph IWE-2500(c)(1) - This paragraph requires that a VT-1 examination be performed from both sides of the component. What is the basis for examining both sides for wear due to high traffic? It would seem that an ultrasonic examination from the wear side would suffice and provide more detailed information. Accessibility should be considered."

Duke Power submitted a similar type of comment, "For areas which are accessible from both sides, it is not clear whether it is the intent of the Code to require volumetric examinations on degraded areas only when necessary to evaluate whether nominal wall thickness has been reduced by more than 10%. If an adequate visual examination can be performed on both sides, some surface corrosion can be assessed without performing UT examinations. Subsection IWE should accommodate this practice. It appears that subparagraphs IWE-2500c(3) and c(4) should be a subparagraph of IWE-2500c(2)."

**RESPONSE:**

VT-1 examinations of both sides of the containment are performed to determine the condition of the containment. Degradation can occur from either side, and in addition to wear, conditions such as cracks, corrosion, and physical damage are to be noted. Ultrasonic examination is only required of surfaces accessible from one side only, but ultrasonic examination may be performed on any surface per IWE-2500(a). Accessibility is considered in IWE-1200.

Regarding Duke Power's comment, IWE-3200 states that when examinations detect flaws or evidence of degradation that require evaluation, other acceptable Section XI examination methods and techniques may be used to determine the character of the flaw or degradation. Visual examinations that detect surface flaws or areas that are suspect shall be supplemented by either surface or volumetric examination.

With respect to the last part of the comment about hierarchy, this comment has been transmitted to the ASME for their consideration.

### **Table IWE-2500-1 Examination Categories - General**

#### **COMMENT 4.1:**

Six commenters (Northeast Utilities, Duke Power, HT Hill, James E. Hill, BWROG, and Toledo Edison) believe that the requirements for visual examination in IWA-2210 which are referenced by Subsection IWE are too stringent. The commenters have assumed that since the proposed rule only references the 1992 Edition with 1992 Addenda then all other referenced Subsection requirements would come from this same edition and addenda. Hence, licensees would be required to use IWA-2210 of the 1992 Edition with 1992 addenda. These commenters believe that the lighting and resolution required in this version of IWA-2210 will make it very difficult to demonstrate remote visual examinations are equivalent to the direct visual examination requirements. This means that remote visual examinations will be virtually impossible to perform without erecting staging and using sophisticated lighting and telescopic devices.

James E. Hill also believes that the requirement for a recalibration of portable light sources every four hours will have adverse consequences on ALARA and tend to degrade examination quality. He believes, "... that the only viable way to assure adequate illumination is to require that it be provided to the EXAMINER'S satisfaction because that is the only reasonable way to assure any examination is effectively accomplished and is exactly the way all other examination methods are accomplished."

#### **RESPONSE:**

Comments received from ASME members on the containment committees indicate that the newer more stringent requirements of IWA-2210 were not intended to be used for the examination of containments. The NRC agrees that remote examinations are the only practical method for inspecting much of the containment surface area. § 50.55a(b)(2)(x)(B) has been added to the final rule which contains alternative lighting and resolution requirements when performing visual examinations under IWA-2210.

With regard to the comment regarding recalibration of portable light sources every four hours, comments regarding equipment recalibration should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

#### **COMMENT 4.2:**

Duke Power points out that the descriptions for both VT-1 and VT-3 visual examinations in IWE-3000 are identical. Because no quantitative acceptance standards are provided, they believe that acceptance by examination as authorized in paragraph IWE-3122.1 is essentially impossible. Duke Power suggests that more emphasis be given to setting forth unique, specific criteria for a general inspection versus attempting to adapt the existing visual requirements now in the Section XI code. Duke Power also believes that the use of VT-1 and VT-3 inspections is not warranted for these containment examinations. Toledo Edison agrees with this last comment.

**RESPONSE:**

Comments regarding the adequacy of acceptance standards should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

The descriptions the commenter refers to in IWE-3000 are not the definitions of a VT-1 or a VT-3 visual examination, but rather the descriptions under IWE-3500, Acceptance Standards, of conditions for which the examiner is looking for while performing the examination. The NRC agrees that in attempting to adapt the existing visual requirements in IWA-2200 to containment examinations, some confusion may be created.

With regard to the use of VT-1 and VT-3 visual examinations versus a general visual examination as required by Appendix J, as has been detailed in previous responses, the general visual examination has proved to be inadequate in detecting the types of degradation which have been reported.

**COMMENT 4.3:**

Duke Power Company believes that, "Current 10CFR50, Appendix J inspection and testing requirements could cause some practical problems with implementation of Section XI, IWE rules. The general visual inspection should not be tied to the Integrated Leak Rate Test. The frequency of these examinations is appropriate."

**RESPONSE:**

Appendix J presently requires a general visual examination before the Type A test is performed. Subsection IWE takes advantage of this requirement by using this mandated examination and defining the components and the type of examinations to be performed while conducting this general visual examination. The NRC does not believe that there should be any implementation problems.

Table IWE-2500-1 Examination Category E-A, Containment Surfaces

**COMMENT 4.4:**

Northeast Utilities believes that Item No. E1.11 "Accessible Surface Areas" which requires a general visual examination prior to each 10 CFR 50 Appendix J, Type A Test, is a duplicate of the one specified in Appendix J and would be a requirement in two places.

**RESPONSE:**

Subsection IWE does not duplicate the general visual examination of Appendix J. Appendix J presently requires a general visual examination before a Type A test is performed. Subsection IWE takes advantage of this requirement by using this mandated examination and defining the components and the type of examinations to be performed while conducting this general visual examination. Subsection IWE references the Appendix J general visual examination, and Appendix J sets the examination schedule.

**COMMENT 4.5:**

Two commenters (BWROG and Georgia Power) commented on Item E1.11 which references Paragraph IWE-3510.1. This paragraph requires that the general visual examinations either be performed by or under the direction of a Registered Professional Engineer or other individual knowledgeable in the requirements for design, inservice inspection, and testing of Class MC. They believe that this requirement is beyond what is needed here and beyond that required by analogous regulations. Further, the requirement should be that personnel performing this work have the appropriate training, and are performing inspections in accordance with procedures and acceptance criteria.

**RESPONSE:**

The NRC believes that this is a reasonable requirement. The NRC believes that many of the Appendix J general visual examinations have not been comprehensive enough to detect the types of degradation which are being reported. This is an inspection which occurs on average every three and a half years. The survey performed by regional inspectors indicated that many times the personnel performing this examination were not involved with the last Appendix J inspections. The appropriateness of training of new personnel performing the inspections in accordance with the procedures and acceptance criteria have been frequently questioned. The examinations of a containment cover many disciplines and subject areas. Oversight by an Registered Professional Engineer (RPE) or other knowledgeable individual seems appropriate in this instance. The requirement for oversight does not mean that the RPE or individual with equivalent experience and knowledge is required to perform the examinations or be present during all of the inspection activities. The requirement is that this individual must exercise appropriate control to certify that the procedures and acceptance criteria are met. The ASME Code committees believed that having this knowledgeable individual in an oversight capacity was preferable to developing more stringent procedures and acceptance criteria. There are unique design features even among the same containment types. In addition, the type and cause of degradation has not been the same in every instance. The advantage of this oversight is that the individuals on site, who are the most familiar with the situation, are in the best position to evaluate the occurrence and recommend corrective action. The committees believed it impractical to develop requirements to address every possible degradation scenario.

**COMMENT 4.6:**

Three commenters (Duke Power, Entergy Operations, and RF Sammataro) question the requirement of performing the Subsection IWE general visual examination at periods coinciding with the Appendix J Type A test given the industry initiative to extend the frequency of the Type A test. Duke Power believes that while it may be justified to extend the Type A test frequency, the frequency of the general visual examinations should not be decreased.

**RESPONSE:**

The NRC agrees that the frequency of the visual examinations should not be decreased. If the frequency of Appendix J Type A tests is extended, the NRC agrees that the requirements containing the visual examination frequency should be changed to coincide with the present frequency.

**COMMENT 4.7:**

Northeast Utilities System states that, "In accordance with Item No. E1.12 "Accessible Surface Areas" and Item No. E1.20 "Vent System Accessible Surface Areas" a Visual, VT-3 examination is required at the end of each inspection interval. This examination must include the coverage requirements specified in Note (4) of this Table which references paragraph IWE-1231(a)(4). Under IWE-1231(a)(4) 80% of the containment surface area must be available for examination. At the Haddam Neck Plant this will not be possible without removing a considerable amount of asbestos insulation. In this circumstance, a relief request from this requirement would likely be filed."

**RESPONSE:**

It has been recognized for sometime in 10 CFR 50.55a(g)(4) that some plants were built before some of the standards were written. The phrase "except design and access provisions and preservice examination requirements" was added to § 50.55a(g)(4) to address this situation where provisions of the new codes could not be met. Licensees will need to identify in their containment ISI plans where the design and access provisions cannot be met, but relief requests will not have to be submitted. However, the NRC believes that if an area is likely to experience accelerated degradation and is covered by insulation, it would be prudent to seal the insulation to preclude moisture intrusion.

**COMMENT 4.8:**

Four commenters (Duke Power, BWROG, Georgia Power, and Entergy Operations) believe that the scope of item E1.20, Vent system, needs clarification. Duke Power states, "The containment vent systems in Duke Power's plants are normally only penetrations. The code is not clear about what unique aspects of the vent system are to be inspected." Entergy Operations also asked for clarification on what is considered a vent system.

**RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. The NRC believes that the intent is clear. This item specifically addresses the BWR containment vent system and containment boundary (e.g., downcomers, ring headers, suppression pool).

**COMMENT 4.9:**

Two commenters (BWROG and Georgia Power) believe that performing a VT-3 examination of the accessible surface areas of a containment is not a reasonable requirement given the size of the area to be examined. The BWROG believes that the Appendix J general visual examination of the interior and exterior containment surfaces is sufficient for determining general containment integrity for this category.

**RESPONSE:**

A VT-3 examination is conducted to determine the general mechanical and structural condition of components and their supports. The general inspection of Appendix J is conducted to uncover any evidence of structural deterioration which may affect either the containment structural integrity or leak-tightness. The NRC believes that the intent of these statements is the same. As stated in previous responses, the NRC does not believe that the general visual examinations of Appendix J as performed by licensees has been generally sufficient in locating degradation. The NRC believes that part of the problem is that Appendix J does not provide specific guidance on how to perform the necessary containment examinations. The VT-3 is performed to detect such things as missing parts, debris, corrosion, wear, clearances, and physical displacements.

**COMMENT 4.10:**

Entergy Operations stated that, "It should be noted that Subsection IWE adopts NRC regulations (i.e., Appendix J) into the ASME Code. However, Appendix J was not derived from the consensus process, which deprives owners the ability to change or provide input to the requirements.

**RESPONSE:**

Subsection IWE does not adopt Appendix J into the ASME Code. The requirements of Appendix J are mandated in 10 CFR 50.55a. Subsection IWE references Appendix J and takes advantage of this requirement by using this mandated examination and defining the components and the type of examinations to be performed while conducting this general visual examination.

**COMMENT 4.11:**

Duke Power states that, "Footnote 4 is applicable to E1.12 or E1.20. This appears to require that removable insulation shall be removed to permit VT-3 inspections behind insulated areas, only if these areas are required to be accessible to satisfy the criteria of IWE-1231(a)(4). This could be a significant hardship at plants that have extensive insulation and extensive embedded portions of containment plate. It is suggested that if insulation is

adequately sealed to prevent moisture intrusion or the development of condensation, these areas should also be exempted from VT-3 examinations. If these areas are accessible from one side without removing insulation, it should be acceptable to permit a random sampling of UT examinations to be conducted in lieu of the VT-3 visual examinations."

**RESPONSE:**

The provision in § 50.55a(g)(4) "except design and access provisions and preservice examination requirements" would address this situation where provisions of the new codes could not be met. Licensees will need to identify in their containment ISI plans where the design and access provisions cannot be met, but relief requests will not have to be submitted. However, in their comment, Duke Power makes some pertinent points. This comment has been transmitted to the ASME for their consideration. The NRC believes that insulation should be adequately sealed to prevent moisture from being trapped against the containment. § 50.55a(g)(4) would address this situation. However, these areas would need to be periodically visually examined to confirm that the seal or moisture barrier still performed its intended function. Occurrences of degradation have been reported where the insulation was not properly sealed, and water ran behind insulation and caused corrosion. Subsection IWE-2500(c)(2) addresses surface areas accessible from one side only, and UT examinations are allowed instead of a VT-3 examination.

With regard to permitting a random sampling of UT examinations to be conducted in lieu of the VT-3 visual examinations, this comment has been transmitted to the ASME for their consideration.

Table IWE-2500-1 Examination Category E-B, Pressure Retaining Welds

**COMMENT 4.12:**

Entergy Operations believes that, "Examination Categories E-B, E-C, E-D and E-G: - The examination requirements portion of the tables are incomplete and/or are not consistent with other subsections of Section XI."

**RESPONSE:**

Subsection IWE addresses Class MC components. The examination requirements do not have to be consistent with other Classes, and because of the differences between a containment and Class 1, Class 2, and Class 3 components, the examination requirements are not going to be completely consistent.

**COMMENT 4.13:**

RF Sammataro states that, "Owners interpret Section XI, IWA-6000 [IWA-2610], to require that all welds included in the examination area be identified. This requirement would apply to containments upon the adoption of Subsection IWE. It would be unnecessarily burdensome and of questionable need for containments and containment liners."

**RESPONSE:**

Comments asking for interpretations should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. It should be noted, however, that IWA-2610 only applies to welds subject to surface or volumetric examination. In the final rule, based on public comments, Subsection IWE, Examination Category E-F, surface examination of pressure-retaining dissimilar metal welds, was made optional. IWA-2610 does not apply to visual examination of welds. IWA-2610 would apply if defects were discovered in containment weld material. However, recently there was an intent inquiry (IN93-035) regarding IWA-2610. The question was whether IWA-2610 required piping welds to be physically marked with reference points at regular intervals. Section XI's answer was no.

**COMMENT 4.14:**

RF Sammataro believes that, "The requirement for VT-1 examination of containment penetration welds in Item E3.10 of Table IWE-2500-1, Examination Category E-B, is unnecessary in light of the general visual and VT-3 visual examinations of all accessible containment surfaces in Table IWE-2500-1, Examination Category E-A."

**RESPONSE:**

Section 50.55a(b)(2)(x)(C) has been added in the final rule making the provisions of Examination Category E-B optional. The commenter is correct in that there is already a requirement for a visual inspection of all accessible containment surfaces. The NRC is unaware of any particular problem with containment welds or weld materials. In addition, these types of welds in other systems which operate under similar conditions have not experienced problems (i.e., containment penetration welds are not subject to excessive temperatures or fatigue which were the conditions leading to degradation in other systems).

**COMMENT 4.15:**

TVA states that, "The occurrences of containment structural degradation at nuclear power plants do not indicate problem areas with pressure retaining welds. Locating these welds, developing drawings and ISI plans, developing NDE procedures, and performing examinations are major tasks with no apparent benefits. Consideration should be given to excluding examination categories E-B and E-F from the proposed revision to 50.55a."

Northeast Utilities agrees and further states, "In order to meet the requirements for these welds, a substantial number of relief requests may be required, because many of the welds are leak chased and not accessible for examination."

**RESPONSE:**

Section 50.55a(b)(2)(x)(C) has been added in the final rule making the provisions of Examination Category E-B (discussed in the response to the previous comment) and Examination Category E-F, Pressure Retaining Dissimilar Metal Welds optional. A requirement for a visual inspection of all accessible containment surfaces already exists, and the NRC is unaware of any particular problem with stainless steel to low carbon welds in other systems in the plants.

**COMMENT 4.16:**

Duke Power states, "Footnote 5 applies to Item E3.10 (E3.11 through E3.13). It is not clear whether it is the intent of the Code to exempt penetrations with bellows assemblies from these inspections because cyclic and thermal loads transmitted to the containment vessel through these assemblies is minimal."

**RESPONSE:**

Examination Category E-B only addresses welds. Bellows are part of the pressure retaining boundary surface, and as such, are to be examined under Examination Category E-A. There have been instances of degraded bellows where the leak-tightness of the containment was affected.

Table IWE-2500-1 Examination Category E-C, Containment Surfaces Requiring  
Augmented Examination

**COMMENT 4.17:**

Three commenters (Georgia Power, BWROG, and Northeast Utilities) believe that Examination Category E-C, Containment Surfaces Requiring Augmented Examination, is the only category which should be included in Subsection IWE. These examinations along with the general visual examination required by Appendix J should be sufficient. Georgia Power and Northeast Utilities also believe that some consideration for plants that have been performing these examinations should be given. Because of the identified industry concerns with Mark I containments, many of the areas addressed under the requirements of Category E-C have already been examined and are continuing to be examined.

**RESPONSE:**

As detailed in many other responses, the NRC believes that the number of occurrences and the increasing rate of occurrence in all containment types point out the need for the examinations contained in other categories of Subsection IWE. Regarding comments which state that some consideration should be given for plants that have been performing these examinations, the NRC does not believe that any voluntary examinations which have been instituted in response to generic letters or experiences at other plants are duplicative of the examinations which will be required by Subsection IWE. Further, licensees which have been performing examinations during the general visual examination required by Appendix J would not be duplicating the examinations once Subsection IWE is implemented. Subsection IWE references Appendix J, but does not duplicate it. For licensees currently conducting voluntary containment examinations which will be required by Subsection IWE, with implementation of Subsection IWE, these examinations would then be performed under the auspices of a Section XI ISI program.

Table IWE-2500-1 Examination Category E-D, Seals, Gaskets, and Moisture Barriers

**COMMENT 4.18:**

Toledo Edison comments, "Subsection IWE does not take into account the sampling techniques recognized in other subsections of Section XI. In particular, the containment moisture barrier, accessible surface areas, seals, gaskets, and bolting all require 100% inspection rather than sampling techniques similar to those contained in Subsections IWB, IWC, and IWD. This 100 percent inspection significantly increases the costs of inspections without a corresponding increase in safety."

**RESPONSE:**

The examination of accessible surface areas, moisture barriers, seals, and gaskets is visual, and as such, very reasonable. Given the identified problems associated with those containment components, the NRC believes that the requirement for 100% inspection is appropriate. Comments regarding the scope examinations and the use of sampling techniques should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

**COMMENT 4.19:**

Seven commenters (Duke Power, Entergy Operations, Northeast Utilities, BWROG, RF Sammataro, Georgia Power, and Toledo Edison) believe that VT-3 examinations of seals and gaskets are not justified. The stated reasons are that: 1) each penetration is pressure tested in accordance with 10 CFR 50, Appendix J, and leak rate testing is a better method of detecting degradation than a general VT-3 examination;; 2) a general visual examination is adequate to detect conditions which could cause degradation; and 3) there are existing plant maintenance procedures in place. Entergy Operations further states, "In no other sub-section of Section XI are there requirements for this type of examination especially on those systems that are much more critical than the containment structure."

**RESPONSE:**

Comments regarding the justification for the examination of seals and gaskets should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. As previously detailed, the general visual examination has not proved to be effective in detecting many of the types of degradation which have been reported.

The NRC does not agree with the last statement by Entergy Operations. Examination of seals and gaskets is aimed at maintaining the leak-tight integrity of the containment. In NUREG/CR-4731, "Residual Life Assessment of Major Light Water Reactor Components - Overview," Vol. 1, studies of the major components and prioritization according to their relevance to plant safety, the containment is ranked first in BWRs and second to the reactor pressure vessel for PWRs. Other similar studies reach the same conclusion. The components studied are the ones with the greatest impact on life extension and the probability that their aging would limit plant life. The containment is ranked higher than the remaining components because it is the major barrier which would protect the public from released fission products during an accident. Many of the comments received seem to indicate a low priority given to containment ISI.

**COMMENT 4.20:**

Northeast Utilities and Georgia Power believe Item E5.30, Moisture Barriers, is considered an area of concern for certain containments depending on the environmental conditions that are present, but is not applicable to others. If degradation of these barriers could cause degradation of adjacent containment surfaces, then they should be examined under the requirements of Examination Category E-C. Having this requirement under Category E-C would allow a licensee to evaluate and assess the real need to perform these examinations. The comment submitted by Duke Power disagrees with this view: "Moisture barriers are essential to protect inaccessible areas of steel containment vessels and liners. While inspections of some moisture barriers is required during successive inspection periods, these barriers often require more frequent inspection and repair. Also, sealants between the steel containment vessel and internal or external concrete structures where sizable displacements occur (especially during ILRT), may not perform well. Because of these concerns it is recommended that the frequency of inspections for moisture barriers be increased to require 100% visual examination during each inspection period."

**RESPONSE:**

The NRC agrees with the assessment by Duke Power. There have been many examples where moisture barriers either degrade or have simply lost their seal. Typically, this breakdown of the moisture barrier allows moisture to pool against uncoated metal causing corrosion. Also, pressurization and thermal movement of the containment contributes in the loss of a tight seal between the moisture barrier and the containment. The comment of Duke Power's regarding increasing the examination of moisture barriers has been transmitted to the ASME for their consideration.

The NRC believes that degradation of moisture barriers has occurred in all containment types, and that these examinations should be performed on a regular basis.

Table IWE-2500-1 Examination Category E-F, Pressure Retaining Dissimilar Metal Welds

**COMMENT 4.21:**

Georgia Power states that, "Item E7.10 requires the surface examination (liquid penetrant) of 50% of the total dissimilar metal welds included in the containment structure. These welds would be primarily associated with containment penetrations and would consist of flued head to penetration pipe welds and possible expansion bellows to pipe welds. When paint or coatings are removed, IWE would require that the surface be visually examined prior

to the paint or coatings being removed as well as after the examination and reapplication of the paint or coatings. Visual examination should be adequate to detect any corrosion activity or degradation of the subject welds. If degradation is detected visually, IWE would require that either a supplemental surface or volumetric examinations would be performed." The BWROG made a very similar statement.

**RESPONSE:**

As detailed in the response to Comment 4.15, § 50.55a(b)(2)(x)(C) has been added to the final rule making the examinations of Examination Category E-F optional.

Table IWE-2500-1 Examination Category E-P, All Pressure Retaining Components

**COMMENT 4.22:**

Four commenters (Northeast Utilities, BWROG, Georgia Power, and Southern Nuclear Operating) believe that Examination Category E-P is a restatement of the leak rate test requirements of 10 CFR 50 Appendix J, and therefore is redundant and unnecessary. Georgia Power, Southern Nuclear Operating, and Entergy Operations believe that referencing Appendix J in Subsection IWE causes Appendix J to become a Section XI activity.

**RESPONSE:**

Subsection IWE references Appendix J. The reference to Appendix J in Subsection IWE does not mean Appendix J would become a Section XI activity. Appendix J is mandated by 10 CFR Part 50. The Appendix J leakage rate test is referenced by Subsection IWE rather than being duplicated or having another type of leakage rate test requirement in Subsection IWE. The reference to Appendix J allows Subsection IWE to take advantage of the required general visual examination schedule of Appendix J, and provide requirements for what is to be examined and how the examinations are to be performed.

**COMMENT 4.23:**

Entergy Operations stated, "In the table, the column for examination method is inconsistent with other Section XI subsections in that 10CFR50, Appendix J is not a method of examination specified in IWA-2000. Also, specific acceptance criteria is specified in the Owner's Plant Technical Specifications and not in Appendix J. It is recommended that the acceptance criteria be specified in IWE-3000 as with Subsection IWB-3000."

**RESPONSE:**

The NRC does not believe that Table IWE-2500-1, Examination Category E-P presents a problem. This table references Appendix J and does not duplicate or otherwise change the requirements in Appendix J or the Owner's Plant Technical Specifications. Since Appendix J is not a Section XI activity, IWE-3000 would not contain the acceptance criteria.

**COMMENT 4.24:**

RF Sammataro stated, "The requirements of Subsection IWE are similar to but do not replace the requirements that currently exist in Appendix J for a site walkdown prior to each Type A test. This duplication of requirements is unnecessary and costly."

**RESPONSE:**

The NRC does not believe that there is a duplication. Section XI takes advantage of the timing of the general visual examination in Appendix J to schedule the Subsection IWE examinations. Appendix J only requires a general visual examination and does not contain any details on how to perform this examination. The VT-1 and VT-3 visual examinations specified under Subsection IWE are more rigorous than the general inspection of Appendix J. Therefore, even if one were to take the interpretation that there may be duplication, by performing the more rigorous Subsection IWE examinations, the Appendix J requirements are more than satisfied.

IWE-2600 Condition of Surface to be Examined

**COMMENT 5.1:**

Entergy Operations submitted a question regarding Paragraph IWE-2600(b): "Is the application of paint or coatings contained within the scope of ASME XI? This is inconsistent with other ASME Code Sections."

**RESPONSE:**

Paint and coatings have not been previously addressed in Section XI requirements. The reason that the Subgroup on Containment addressed paint or coatings in Subsection IWE is that they are used in containments to inhibit corrosion. The condition of coatings is an indication of the condition of the base metal. The condition has to be noted in the records for comparison during subsequent examinations.

IWE-3000 ACCEPTANCE STANDARDS

**COMMENT 6.1:**

Duke Power states, "The acceptance criteria of IWE-3000 is so strict that even minor rust with no degradation will require reinspection in accordance with the augmented examination program. We believe that an exemption for coating degradation and minor corrosion as described above is justified and reasonable."

**RESPONSE:**

The NRC believes that this is a reasonable requirement. IWE-2420(b) states, "When component examination results require evaluation of flaws, areas of degradation, or repairs in accordance with IWE-3000, and the component is found to be acceptable for continued service, the areas containing such flaws, degradation, or repairs shall be reexamined during the next inspection period..." IWE-2420(c) then requires a reexamination during the next two periods, or three consecutive periods. If there has been no change in this area, then the area will no longer require augmented examination.

With examination and engineering judgement, it would be reasonable in most cases to conclude that the containment is acceptable for continued service with minor corrosion, and that repairs could be performed at a future date. However, given that in many of the instances of corrosion, the corrosion rate was much higher than that which was predicted during design, it is also reasonable to reinspect the area on an accelerated frequency to ensure continued operability and to reanalyze the need for repair if the area was not repaired. Subsection IWE only requires a reinspection every period which seems reasonable and not burdensome.

IWE-3112 Acceptance

**COMMENT 6.2:**

Entergy Operations states, "Paragraphs IWE-3112 and IWE-3122.1 state that changes of flaws or areas of degradation shall be recorded per IWA-6220. This is inconsistent with IWA-6210(d) which states that only Class 1 and 2 examinations are to be included in the Owners Summary Report (Form NIS-1). Also, it appears that these paragraphs only include requirements for reporting flaws and not for schedule examinations which are evaluated to be acceptable."

**RESPONSE:**

IWA-6210(d) does not state that only Class 1 and 2 examinations are to be included on Form NIS-1. At present, these are the only two classes required to be included on Form NIS-1. Subsection IWE contains reporting requirements for Form NIS-1. Use of Form NIS-1 for Class MC examinations will commence with implementation of Subsection IWE. Since IWE-3112 and IWE-3122.1 both state that the changes shall be recorded per IWA-6220, then the schedule examination information will be recorded per IWA-6220 (d), (e), (f), and (g).

IWE-3122 Acceptance  
IWE-3122.2 Acceptance by Repair

**COMMENT 6.3:**

Entergy Operations states, "Paragraph IWE-3122.2 - This paragraph references IWE-2430 while IWE-3122.3 and IWE 3122.4 do not. Does this mean that additional examinations are only required when performing repairs and not when the component is replaced or evaluated to be acceptable? IWE-2430 states that additional examinations shall be performed when the acceptance standards of IWE-3410-1 are exceeded with no reference to what corrective action is utilized."

**RESPONSE:**

IWE-2420(b) states, "When component examination results require evaluation of flaws, areas of degradation, or repairs in accordance with IWE-3000, and the component is found to be acceptable for continued service, the areas containing such flaws, degradation, or repairs shall be reexamined during the next inspection period..." IWE-2420(c) then requires a reexamination during the next two periods, or three consecutive periods. If the area remains unchanged for three consecutive periods, then the area will no longer require augmented examination. When an item is replaced (IWE-3122.3, Acceptance by Replacement), the component is new, and there is no need for additional examinations. IWE-3122.4, Acceptance by Evaluation, paragraph (b), states that when flaws or areas of degradation are accepted by evaluation, the area containing the flaw must be reexamined in accordance with IWE-2420(b) and (c). With regard to the question about corrective action, IWE-3410-1 refers to the appropriate Examination Category in IWE-3000. Examinations which reveal flaws or areas of degradation are subject to corrective actions required in IWE-3000 depending on which category is involved.

**IWE-3122.4 Acceptance by Evaluation VERSUS IWE-3512.3 Ultrasonic Examination**

**COMMENT 6.4:**

Duke Power submitted a question regarding IWE-3122.4: "It is not clear whether it is the intent of the Code that

IWE-3122.4(a) be applicable to areas which exhibit minor corrosion and which have sufficient material wall thickness remaining. Clarification of "degradation which is nonstructural" is warranted to specify how minor corrosion should be classified."

**RESPONSE:**

IWE-3122.2, IWE-3122.3, and IWE-3122.4 apply when the acceptance standards of IWE-3000 are not met. The NRC believes that the requirements are clear. Flaws or areas of degradation must either be accepted by examination, repair, replacement, or by evaluation. In order to be acceptable by evaluation, IWE-3122.4, the thickness of the base metal must be reduced by less than 10% of the nominal plate thickness or the reduced thickness must be shown by analysis to satisfy the requirements of the Design Specifications (i.e., the structural integrity of the containment has not been affected).

**COMMENT 6.5:**

Northeast Utilities states, "These subparagraphs conflict in the provision required to evaluate wall loss discovered during containment examinations. Under IWE-3122.4 if wall loss of any amount is discovered during supplemental examinations (e.g., those extra examinations that are required to fully determine the nature of a flaw or degradation that could be performed by visual, eddy current, ultrasonic, radiographic, or other examinations) performed in accordance with IWE-3200, than these areas of wall loss must be analyzed to satisfy the requirements of the Design Specifications to be acceptable. Under IWE-3512.3 only wall loss areas that exceed 10% of nominal containment wall thickness or areas of wall loss that could exceed 10% of the nominal containment wall thickness prior to their next examination need to be evaluated for acceptance. To require evaluation of any wall loss only during supplemental examinations and then to require evaluation of a specified wall loss under ultrasonic examination appears inconsistent."

**RESPONSE:**

The NRC does not believe that there is any inconsistency. The 10% criterion on containment wall thinning is the same in both paragraphs. IWE-3512 contains provisions for Examination Category E-C, Containment Surfaces Requiring Augmented Examination. The provision in IWE-3512.3 is that an examination which reveals wall loss greater than 10% wall is unacceptable. IWE-3122.4, Acceptance by Evaluation, paragraph (a) addresses components whose examination results do not meet the acceptance standards in Table IWE-3410-1. These components may either be accepted for service through an evaluation, or supplemental examinations may be required to determine the components acceptability. IWE-3122.4(a) further states that when supplemental examinations are required, if wall thickness is reduced by no more than 10% or the reduced thickness can be shown by analysis to satisfy Design Specification requirements, the component is acceptable by evaluation. The difference in these two cases is that in IWE-3512.3, the component is being found unacceptable through UT solely on wall loss. For IWE-3122.4, the component has been found unacceptable by other acceptance criteria. Wall loss is then one of the conditions being used to determine the components acceptability for further operation.

**COMMENT 6.6:**

Entergy Operations submitted another question concerning Paragraph IWE-3122.4(a): "Is it the intent of the first paragraph that a flaw be acceptable for continued service if the evaluation determines that the flaw has no unacceptable affect on structural integrity? As currently worded, any effect would not meet IWE-3122.4"

**RESPONSE:**

Comments regarding interpretations of Section XI should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC does not agree that any effect would not meet IWE-3122.4. After the engineering evaluation and any supplemental examinations required, any flaw that can be shown not to affect the structural integrity of the containment is acceptable for service.

## IWE-3200 Supplemental Examinations

### **COMMENT 7.1:**

Entergy Operations submitted a question regarding Paragraph IWE-3200: "Is it the intent of the last sentence to require a surface or volumetric examination on each and every area that is suspect? As an example, an irregular surface condition may exist under a painted or coated surface. The Owner would be forced to perform a surface or volumetric examination when only removal of the paint may have sufficed to indicate that there may have been only minor anomalies in the coating or paint itself. Similar wording of IWB-3200(b) should be considered."

### **RESPONSE:**

Comments regarding interpretations of Section XI should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC does not believe that there should be a problem. The NRC believes that the first response to an irregular surface condition that may be a flaw would be paint removal to determine whether the condition was in the paint or the metal itself. IWE-3510.2 addresses visual examination of coated areas. The area is examined for evidence of flaking, blistering, peeling, discoloration, etc. Once the coating has been removed, the examination becomes one addressed by IWE-3510.3, visual examinations on non-coated areas. If there is no evidence of base metal degradation, no further evaluation is needed. A coating is reapplied, and the preservice records are amended.

## IWE-3500 ACCEPTANCE STANDARDS

IWE-3510 Standards for Examination Category E-A, Containment Surfaces

IWE-3511 Standards for Examination Category E-B, Pressure Retaining Welds

IWE-3512 Standards for Examination Category E-C, Containment Surfaces

Requiring Augmented Examination

### **COMMENT 8.1:**

Duke Power, Entergy Operations believe that Subparagraphs IWE-3510, IWE-3511, and IWE-3512 are not criteria from which an Owner may derive actual acceptability of a component. Duke Power states, "These paragraphs are referenced for acceptance standards when performing VT-1 and VT-3 visual inspections. However, there are no quantitative acceptance standards described in these paragraphs. Also, IWE does not address provisions for the Owner to develop acceptance standards. As a result, acceptance by examination is not possible and the threshold for requiring an engineering evaluation and for causing additional augmented inspections is very low. The requirements as now written will require many areas that could be acceptable by examination,

under reasonable criteria, to be subjected instead to an engineering evaluation and followup augmented examination.

### **RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC does not believe that the requirements as written automatically mean that acceptance by evaluation is not possible, and that an engineering evaluation will be required with every "suspect area" found. The NRC believes that Subsection IWE has been written allowing for the exercise of engineering judgement. IWE-3510.1(a) states, "The General Visual Examination shall be performed by, or under the direction of, a Registered Professional Engineer or other individual, knowledgeable in the requirements for design, inservice inspection, and testing of Class MC and metallic liners of Class CC components. The examination shall be performed either directly or remotely, by an examiner with visual acuity sufficient to detect evidence of degradation that may affect either the containment structural integrity or leak-tightness. The NRC believes that the references in this paragraph for detecting

degradation that may affect structural integrity or leak-tightness precludes any conclusion that paint irregularities would cause an engineering evaluation to be performed. Further, the reason for the requirement to have the examinations performed under the direction of a Registered Professional Engineer (RPE) is to have a knowledgeable person making a determination on the acceptability of the examination keeping in mind that the purpose of the examinations is to detect conditions that may affect structural integrity or leak-tightness. Subsection IWE provides a list of areas to be inspected, lists unacceptable conditions, and allows the Owner, who is in the best position to make the determination, some discretion in determining the acceptability of the component. This would not have been possible without the oversight of the RPE, and Subsection IWE would have been by necessity very prescriptive regarding acceptance standards.

With regard to IWE-3510.2 and IWE-3510.3, these paragraphs lists conditions that the containment should be examined for, and then states that areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. This allows for supplemental examinations per IWE-3200 to determine the character of the flaw or degradation, or engineering evaluation to show that the requirements of the Design Specifications would be satisfied.

#### IWE-3510.1 Visual Examinations - General

##### **COMMENT 8.2:**

Northeast Utilities does not believe that it is proper to use a Registered Professional Engineer (RPE) in this manner. This is not a requirement elsewhere in the ASME Code, and they are not clear on how they would administratively approach proof of this equivalency in an audit situation.

##### **RESPONSE:**

The NRC believes that it is reasonable for RPE oversight as detailed in the response to Comment 8.1 above. Containment components have different inspection needs than other subsections of the ASME Code. Many judgements regarding acceptability and need for further examinations are needed and have been left to the Owner's judgement.

##### **COMMENT 8.3:**

Duke Power states, "IWE-3510.1(b) indicates that prior to proceeding with a Type "A" test, conditions that may affect containment structural integrity or leak tightness shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. This requirement conflicts with 10 CFR 50, Appendix J which requires that no repairs may be made until the Type "A" test is performed on the "as found" condition."

##### **RESPONSE:**

The NRC does not believe that there is a conflict. Paragraph III. A. 1. (a), Leakage Testing Requirements, Appendix J requires that no repairs or adjustments be made which will affect the leak-tightness of the containment in order to perform the test in the "as is" condition. Paragraph V. A., Appendix J, states that if there is evidence of structural deterioration, the Type A test is not to be conducted until the appropriate repair procedures, non-destructive examinations, and tests are conducted. Paragraph III addresses leak-tightness (i.e., valves and penetrations). Paragraph V. A. addresses structural integrity of the containment and specifically excludes leak-tightness. IWE-3510.1(b) indirectly references Paragraph V. A. and then delineates acceptance criteria. Appendix J does not contain acceptance criteria with regard to containment structural integrity.

IWE-3510.2 VT-3 Visual Examinations on Coated Areas  
IWE-3510.3 VT-3 Visual Examinations on Non-coated Areas  
IWE-3511.1 VT-1 Visual Examinations on Coated Areas

IWE-3511.2 VT-1 Visual Examinations on Non-coated Areas  
IWE-3512.1 VT-1 Visual Examinations on Coated Areas  
IWE-3512.2 VT-1 Visual Examinations on Non-coated Areas  
IWE-3512.3 Ultrasonic Examination

**COMMENT 8.4:**

Entergy Operations submitted a question regarding Paragraphs IWE-3510.2 and IWE-3510.3, IWE-3511.1 and IWE-3511.2, IWE-3512.1, IWE-3512.2, and IWE-3512.3: "These paragraphs specify that supplemental examinations shall be performed when specified in the "Engineering Evaluation". IWE-3200 states that all suspect areas shall receive supplemental examinations without reference to the "Engineering Evaluation". These paragraphs appear to have conflicting requirements."

**RESPONSE:**

The NRC does not believe that there is a conflict, but admittedly, the wording is not clear. The ASME has acted on this comment to make the intent more clear. Paragraphs IWE-3510.2 and IWE-3510.3, IWE-3511.1 and IWE-3511.2, IWE-3512.1, IWE-3512.2, and IWE-3512.3 each begin with the particular conditions which are to be inspected for based on the inspection area, and then each paragraph contains the following statements: "Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation." The ASME is in the process of changing the last sentence of IWE-3200 to make it clear that supplemental examinations are required only when specified as a result of the engineering evaluation.

**COMMENT 8.5:**

Entergy Operations submitted another question, "Paragraphs IWE-3510.2 and 3510.3 are worded exactly as Paragraphs IWE-3511.1 and 3511.2. Considering that the 3510 section is a VT-3 examination and the 3511 section is for VT-1, essentially the same acceptance standards exist for two different examination methods. Does this mean the examination methods are the same?"

**RESPONSE:**

The NRC does not believe that the examination methods, which are detailed in IWA-2200, are the same. The lighting and resolution requirements and the conditions to be examined for are different. The acceptance standards are the same because the examinations are visual examinations, and as previously detailed, the RPE or other knowledgeable individual has some discretion on the acceptability of components.

**COMMENT 8.6:**

Toledo Edison states, "The interior surfaces of the containment vessel are coated with paint purchased, applied, and inspected under a 10 CFR 50, Appendix B Quality Assurance Program. This paint has been qualified to adhere to the containment surfaces under Design Basis Accident (DBA) conditions and protect the containment surfaces from degradation. Environmental conditions expected in a dry containment vessel are far less severe than those during a DBA, therefore, the likelihood of finding blistered, flaking, or discolored paint during the inspections mandated under Subsection IWE is extremely remote and the expenditures necessary to meet the proposed inspection requirements are not justified."

**RESPONSE:**

There have been instances reported of paint and coating failures in dry containment vessels. In some cases, the

lack of a protective coating allowed liner degradation to occur. Based on the instances and methods of degradation which have been reported, the NRC believes that these requirements are justified for dry containment vessels.

**COMMENT 8.7:**

Georgia Power submitted the following: "We will be required that whenever paint or coatings are to be either removed or re-applied, a visual examination is to be performed."

**RESPONSE:**

In order to determine the condition of the metal, the NRC believes it is necessary to perform a visual examination when removing paint or coatings. When reapplying paint or coatings, the preservice records need to be updated which would document such items as type of paint or coating and the conditions of the metal and paint or coatings.

**COMMENT 8.8:**

Duke Power states, "IWE-3512.3 requires that areas where material loss is projected to exceed 10% of the nominal containment wall thickness prior to the next examination shall be documented. These areas may be accepted by evaluation. Licensees may not have adequate historical data to determine an effective corrosion rate to enable the licensee to delay repair of these areas. It may not be practical to require immediate repair of these areas solely because previous thickness readings have not been made."

**RESPONSE:**

Comments regarding adequacy of ASME Code requirements should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC believes that based on the historical data from occurrences at other plants, and present wall thickness measurements, this will not be a concern. Under most circumstances, acceptance by evaluation should be a viable alternative until the operating schedule allows repair activities to commence. Corrosion rates generally proceed at a relatively low rate, and experience to date shows that corrosion of metal beyond 10% first occurs locally.

**COMMENT 8.9:**

Entergy Operations submitted a question regarding Paragraph IWE-3512.3: "What mandatory appendices of Section XI are to be applied for the ultrasonic examinations required by this paragraph?"

**RESPONSE:**

Any mandatory appendix of Section XI which applies when performing ultrasonic examinations would be required.

IWE-3515 Standards for Examination Category E-G, Pressure Retaining  
IWE-3515.2 Bolt Torque or Bolt Tension

Bolting

**COMMENT 8.10:**

Entergy Operations believes that, "Paragraph IWE-3515.2 should be specific. Bolt torquing has never been considered a Section XI activity. This paragraph imposes new requirements without specifying personnel or equipment qualifications. Are current maintenance programs sufficient to satisfy the requirements?"

**RESPONSE:**

Comments regarding qualifications should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, Georgia Power and Southern Nuclear Operating believe that, "Visual examination, VT-1 of bolted connections when they are disassembled seems prudent and justifiable and is probably already included in the plant's Appendix B program." The NRC believes that bolting should be included in the containment examination program given the leak-tightness function of the containment.

Northeast Utilities states that the examination of containment bolting is adequately covered under their existing plant maintenance programs. The NRC has not been able to confirm that containment bolting is routinely addressed under plant maintenance programs or by Appendix B programs.

IWE-5000 SYSTEM PRESSURE TESTS

**COMMENT 9.1:**

Three commenters (Northeast Utilities, BWROG, and Georgia Power) believe that this article is unnecessary and confusing because it addresses leak rate testing of the containment, and leak rate testing is addressed by 10 CFR 50 Appendix J. Northeast Utilities believes that Subsection IWE should not provide exceptions to Appendix J criteria, and IWE-5222 allows deferral of leakrate tests until the next scheduled leakage test for certain repair/modifications.

**RESPONSE:**

The NRC disagrees that this article addresses leakage rate testing. This article addresses structural integrity. Paragraph V., Inspection and Reporting of Tests, A., Containment inspection, of Appendix J, states that the, "...Type A tests shall not be performed until corrective action is taken in accordance with repair procedures, non-destructive examinations, and tests as specified in the applicable code specified in § 50.55a at the commencement of repair work." Article IWE-5000 would become part of the applicable code. This section does not conflict with Appendix J, but is merely addressing appropriate repair criteria (which Appendix J does not).

With regard to the Northeast Utilities comment, the NRC believes that IWE-5222 contains a sensible approach to test scheduling after repair. The tests can only be deferred until the next scheduled leakage rate test if nondestructive examination is performed, and only for the three cases specifically cited. The three cases cited cover only minor repairs or modifications.

IWE-5220 Tests Following Repair, Modification, or Replacement

**COMMENT 9.2:**

TVA believes that paragraphs IWE-5220 and IWL-5230 appear to conflict concerning leakage tests required for containment metallic liners and should be clarified or revised.

**RESPONSE:**

Although there may appear to be a conflict, the NRC does not believe this to be the case. IWL-5230, Leakage Test, states, "If the repair or replacement penetrated the containment metallic liner, or otherwise breached containment leak-tight integrity, a leakage rate test shall be conducted as required by IWE-5000." IWE-5222 allows deferral of a leakage test only if the repair cavity does not penetrate the required design wall by more than 10%. The

difference in these requirements can be illustrated by the example of steam generator replacement. In order to remove and then replace steam generators, many times a large portion of the containment wall must be cut out. The containment was breached and a leakage rate test must be performed. However, there could be repairs to the liner as a result of corrosion. The containment was not breached, the concrete is unaffected, and if the 10% criteria was not violated a leakage rate test is not required.

#### IWE-5222 Deferral of Leakage Tests

##### **COMMENT 9.3:**

Duke Power also states, "It is not clear whether there is any criteria which supports selecting 10% of design wall thickness as the limit on repairs without requiring a Type "A" pressure test."

##### **RESPONSE:**

Comments regarding definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC agrees with this criteria. The 10% limit in thickness reduction can be considered as a derivation from NE-3210.10 which allows a stress intensity of over  $1.1 S_{mc}$  for a specified area. A 10% increase in allowable stress means a 10% reduction in thickness since the design is based on elastic analysis.

##### **COMMENT 9.4:**

Duke Power states, "IWE-5222 allows for leakage tests after minor repairs to be deferred until the next scheduled leakage test, provided the minor repairs or modifications conform to the specified limits. NDE or local pressure tests should be allowed in lieu of Type "A" pressure tests for local repair areas that exceed 10% of design wall thickness, especially if the area that has been repaired is small, and the depth of repair does not exceed 50% of design wall thickness. Some value other than 50% may be suggested and could also be acceptable, but the arbitrary 10% limit is not reasonable.

##### **RESPONSE:**

Deferral of leakage tests after minor repairs until the next scheduled leakage test is merely following the requirement currently contained in Appendix J. Appendix J does not presently allow NDE or local pressure tests in lieu of a Type A test.

With regard to a 50% value being used as a depth criteria, as outlined in the previous response, the 10% criteria is based on Section III design requirements.

#### **IWE-5240 Visual Examination**

##### **COMMENT 9.5:**

Five commenters (Entergy Operations, BWROG, Duke Power, Georgia Power, and Northeast Utilities) point out that Paragraph IWE-5240 in the 1992 Addenda refers the Owner to IWA-5246 which does not exist. This was later corrected in the 1993 Addenda to IWA-5240.

##### **RESPONSE:**

The NRC notes that the reference was incorrect in the 1992 version of Subsection IWE. However, IWA-5240 has

been a Code requirement for sometime. Regardless of the incorrect reference, the provisions of IWA-5240 for visual examination during a system leakage test would still apply.

**COMMENT 9.6:**

Entergy Operations submitted the following question regarding IWE-5240: "Does the use of IWA-5240 require examiners performing Appendix J tests to be VT-2 certified? Examiners performing Appendix J tests should not be required to be VT-2 certified." Virginia Power also believes that examiners performing Appendix J tests should not be required to be VT-2 certified.

**RESPONSE:**

Comments regarding interpretations of Section XI should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, the NRC does not believe that IWA-5240 would require examiners performing Appendix J tests to be VT-2 certified. IWE-5240 addresses examining containment repairs for leakage. Individuals assessing the leak-tightness and structural integrity of the repair (VT-2 qualified) would most likely be supplemental personnel to the crew which normally performed a routine Appendix J leakage test. The NRC believes the requirement in IWE-5240 to be reasonable.

**RESOLUTION OF PUBLIC COMMENTS****SUBSECTION IWL****COMMENTS WHICH ADDRESS IWL-1000 SCOPE AND RESPONSIBILITY****COMMENT 1.1:** (Georgia Power, Southern Nuclear Operating)

"IWL has been developed for application to a new plant and thus should not be applied to existing plants. If IWL is warranted to monitor containment integrity, then the requirements should only be applicable to future plants so that IWL could be considered and accounted for during original plant design and construction."

**RESPONSE:**

The ASME Section XI Working Group on Concrete Pressure Components specifically developed Subsection IWL for use in existing plants. That is the reason why provisions such as those addressing accessibility and preservice inspection were incorporated which account for individual plant design. Specifically, Subsection IWL exempts examination of inaccessible tendon end anchorages, and portions of the concrete covered or otherwise obstructed by structures, components, parts, or appurtenances.

**COMMENT 1.2:** (Virginia Power)

"Subsection IWL is initiated with the structural integrity test in lieu of the commercial operation date. This means IWL would have a different interval than the rest of the code. Additionally, the rulemaking does not address when the utility is to update the IWL code."

**RESPONSE:**

§ 50.55a (g)(6)(ii)(B)(2) has been clarified in the final rule to indicate that the first examinations of Subsection IWL to be performed will be inservice examinations which correspond to the year of operation for a plant. Regarding the second part of the comment, Subsection IWL is based on the same 5-year interval as that of Regulatory Guide 1.35, Rev 3. With implementation of Subsection IWL, it is anticipated that most licensees will choose to remain on their present regulatory guide examination schedule in order to spread out the required ISI activities. Others will choose to merge the containment ISI examinations with the remainder of their ISI program. Regardless, licensees will be required to update their Subsection IWL program every 10 years as is required for Section XI.

**COMMENTS WHICH ADDRESS IWL-2000 EXAMINATION AND INSPECTION**

IWL-2100 Inspection

**COMMENT 2.1:** (Northeast Utilities)

"This paragraph states that examinations shall be verified by an Inspector. Verification is a process of determining that a particular action has been performed in accordance with the rules of this Subsection by either witnessing the actions/examinations or by reviewing records of examinations. Although no requirements exist to have Authorized Nuclear Inservice Inspectors trained in Subsection IWL, we do not believe they should be verifying requirements without adequate knowledge of the subject.

Furthermore, if repairs or replacements of concrete are performed under this Subsection, it appears that we may have to have an Authorized Nuclear Inspector with a "C" endorsement cover these activities. It is our present understanding that the National Board no longer has a course to provide personnel with this endorsement and only a limited number of these personnel are available in the industry."

Virginia Power and RF Sammataro also commented on the concern as to how the requirements in Subsection IWL for Authorized Inspection can be met if there are an insufficient number of inspectors who possess the requisite training, experience, and certification for concrete structures.

**RESPONSE:**

The NRC agrees with the requirement for verification by an ANI-C inspector. Age-related degradation in concrete containments has been recently reported. Further, this is an examination which occurs only once every 5 years. The survey performed by regional inspectors indicated that many times the personnel performing containment examinations were not involved with the previous containment examinations. The appropriateness of the training of new personnel performing the inspections in accordance with the procedures and acceptance criteria has frequently been questioned.

With regard to the question about qualified ANIIs, the problem is not that the ANIIs aren't knowledgeable enough to perform the oversight. It's that ANSI/ASME N626 contains concrete experience requirements. An inspector is required to have six months of field training in concrete inspections, and a supervisor 2 years. Because of the lack of concrete construction projects over the past few years, and the lack of concrete construction projects which required the services of an ANII, it may be difficult for some inspectors to meet the present requirements in Subsection IWL. The ASME is aware of this potential problem and is currently considering alternative requirements for ANI-C inspectors.

**Comments Which Address IWL-2220 Examination Requirements**

**IWL-2220.2 Unbonded Post-Tensioning Systems**

**COMMENT 2.2:** (Entergy Operations)

"This paragraph implies that the data of items (a) through (e) was required to be recorded in the construction records of plants that were placed in service several years ago. If the information was not recorded would specific relief from these requirements be required to satisfy 10CFR50.55a?"

**RESPONSE:**

Subsection IWL is a new requirement under 10 CFR 50.55a. Licensees of operating plants were not required to perform the preservice examination under Subsection IWL. However, most plants should have the information listed under IWL-2220.2 from their initial Regulatory Guide 1.35 examinations. The first Subsection IWL examinations will correspond to the year of operation for a plant. § 50.55a(6)(ii)(B)(2) has been clarified in the final rule to indicate that the first inservice inspection will serve the same purpose for currently operating plants as the preservice inspection would for new plants (i.e., the first set of inservice inspections performed will provide the baseline).

**COMMENTS WHICH ADDRESS IWL-2300 VISUAL EXAMINATION,  
PERSONNEL QUALIFICATION, AND RESPONSIBLE ENGINEER**

**IWL-2310 Visual Examination and Personnel Qualification**

**COMMENT 2.3:**

Seven commenters (Northeast Utilities, Duke Power, Georgia Power, RF Sammataro, HT Hill, James E. Hill, and Virginia Power) believe that the references to Table IWA-2210-1 in these paragraphs for VT-1C and VT-3C examinations are excessive and exceed what is required for the visual examination of concrete. Specifically, the VT-1 or VT-3 remote visual examinations must be demonstrated to be equivalent to those of the direct visual examination requirements for illumination levels and distances when employed to examine concrete containments. The requirements for VT-1 and VT-3 visual examinations are so restrictive that remote inspection of large areas will not be practical, and to comply with the visual examination requirements of IWA-2210 licensees may have to erect extensive scaffolding or take other measures to facilitate inspections.

**RESPONSE:**

Comments received from ASME members on the containment committees indicate that the newer more stringent requirements of IWA-2210 were not intended to be used for the examination of containments and were inadvertently included in Subsection IWL. The NRC agrees that remote examinations are the only practical method for inspecting much of the containment surface area. § 50.55a(b)(2)(x)(B) has been added to the final rule which contains alternative lighting and resolution requirements which may be used in lieu of the requirements contained in Table IWA-2210-1.

**COMMENT 2.4:** (Individual, RF Sammataro)

"A better definition is needed for the duties, responsibilities, and certification requirements for the Authorized Nuclear Inspector (ANI) and the Authorized Nuclear Inservice Inspector (ANII).

**RESPONSE:**

Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

**Comments Which Address IWL-2320 Responsible Engineer**

**COMMENT 2.5:** (Duke Power)

"Paragraph IWL-2320 lists the responsibilities of the "Responsible Engineer". It is not clear whether it is the intent of the Code that a single individual be personally responsible for completing these activities, or that the Responsible Engineer have direct responsible charge over all personnel involved with completion of these activities. Compliance with these requirements may present some difficulty, especially if licensees desire to use their own personnel to perform the inspections, but wish to contract the services of an outside contractor to perform the technical evaluation of noted problems and to prepare an Engineering Evaluation Report. It is suggested that this requirement be revised to indicate that the Responsible Engineer shall be responsible for IWL-2320(a), (b), (c), (d), and (e), or shall be required to approve all work associated with IWL-2320(a), (b), (c), (d), and (e) when performed by an agent contracted by the licensee."

VSL Corporation interpreted this paragraph to require the RPE to be on site training inspectors and evaluating the surveillance. Additionally, they state, "...the proposed rule change does not clarify where the professional engineer

is to be registered. If the engineer is to be registered in the state where the work occurs, then the surveillance contractor may not be able to provide this personnel without incurring additional expense that is subsequently passed on to the utility."

**RESPONSE:**

The NRC does not believe that IWL-2320 is ambiguous. IWL-2330 does not require the responsible engineer to personally complete the required activities. IWL-2320 states that, "The Responsible Engineer shall be responsible for the following:

- (a) development of plans and procedures for examination of the concrete;
- (b) approval, instruction, and training of concrete examination personnel;
- (c) evaluation of examination results;
- (d) preparation of repair procedures;
- (e) submittal of report to Owner documenting the results."

With regard to the suggestion of revising the wording of IWL-2320, the suggested wording might be a clarification, but would not change the meaning of this paragraph. Comments regarding the adequacy of definitions should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

With regard to RPE registry, Subsection IWL only requires that the Responsible Engineer be an RPE experienced in evaluating the inservice condition of structural concrete. The Responsible Engineer must also be knowledgeable in the design and Construction Codes used for concrete containments.

**COMMENT 2.6:**

Two commenters (Northeast Utilities and Georgia Power) do not believe that a Registered Professional Engineer (RPE) is required to perform the duties specified in this paragraph. They do not believe that an RPE is needed to perform this function, and there are a limited number of these individuals. The commenters believe they may have to hire contractors to satisfy this requirement. The commenters point out that there are no similar requirements for RPEs in other parts of the ASME Code or in Appendix J. Georgia Power states, "At least IWE-3510.1 permitted the Owner to use another individual as long as the individual has the appropriate knowledge."

**RESPONSE:**

Based on conditions in concrete containments which have been discovered in the past, the NRC believes that this is a reasonable requirement. This assures that the responsible person is someone qualified to perform or oversee concrete examinations and to recommend repair procedures. These examinations occur once every 5 years, and the personnel performing the examinations frequently change over the 5-year interval. Also, the training which personnel have received prior to containment examination has been frequently questioned. It should be noted that the committee which developed Subsection IWE, examination of metal containments and the liners of concrete containments, believed that this oversight by a knowledgeable individual was needed and included a similar provision in that subsection. With regard to comment about other portions of Section XI and Appendix J not containing this oversight requirement, the NRC agrees with the ASME that examination requirements for concrete containments are unique when compared to other classes. Appendix J was not written as an ISI document, and therefore, it did not contain provisions such as that for a responsible engineer.

Regarding the benefit of this requirement, concrete structures typically contain many shallow surface cracks. IWL-2512 references ACI-201, "Guide for Making a Condition Survey of Concrete in Service." It would be difficult for someone not experienced in evaluating the inservice condition of structural concrete to distinguish acceptable cracking or other conditions from unacceptable conditions. The RPE is needed to train other individuals in

concrete examination, and the RPE is needed to make decisions on acceptable or unacceptable conditions and appropriate repair procedures.

**COMMENTS WHICH ADDRESS IWL-2400 INSERVICE INSPECTION  
SCHEDULE**

**IWL-2410 Concrete**

**COMMENT 2.7:** (Duke Power)

"Subparagraph IWL-2410(a) specifies that "concrete shall be examined in accordance with IWL-2510 at 1, 3, and 5 years following the completion of the containment Structural Integrity Test CC-6000 and every 5 years thereafter." Because 100% of all concrete surfaces are to be examined at intervals not exceeding 5 years for the life of the plant, it is suggested that the general visual examinations required prior to each Type "A" test, as specified in 10 CFR 50, Appendix J be eliminated."

**RESPONSE:**

The revision to Appendix J is a separate rulemaking activity and not in the scope of this rule. However, the NRC is considering this comment as part of the effort to revise Appendix J.

**Comments Which Address IWL-2420 Unbonded Post-tensioning Systems**

**IWL-2421 Sites with Two Plants**

**COMMENT 2.8:** (Duke Power)

"Paragraph IWL-2421 provides for a modified examination schedule for sites with two plants that meet the specified criteria. Duke's Oconee plant has three identical units that do not fit this exception. Because IWL does not have any provisions for sites with more than two plants (units), Duke Power will have to request relief from these rules to allow an alternative plan for examinations at Oconee. It would not be appropriate to consider Oconee as a site with two plants and a site with one plant in order to implement a reduction in the number of required examinations. This would result in an unequal number of examinations performed on the Oconee units."

**RESPONSE:**

Because of the difference in time between construction of the first unit and the third unit, the NRC policy with regard to examination of the post-tensioning system has been to treat the two units closest in construction dates as a site with two units, and the third unit as a site with one plant.

**COMMENT 2.9:** (Entergy Operations)

"It is unclear what "post-tensioning operations for the two containments were completed not more than two years apart" means? Is it the difference in the dates of actual post-tensioning or the difference in the dates of the respective Structural Integrity Tests or something else?"

**RESPONSE:**

It is the difference in the dates of actual post-tensioning.

## **COMMENTS WHICH ADDRESS IWL-2500 EXAMINATION REQUIREMENTS**

### **COMMENT 2.10:** (Individual, James E. Hill)

"Similarly the requirement for the examiner's eye to be within 6' of the outside surface of the containment when examining concrete (IWL-2500-1 Category L-A, Item L1.11) must be called into question. These requirements are completely arbitrary and not based on any empirical data. The provision of such access would cause very significant additional cost and radiation exposure to support personnel notwithstanding the exposure to the examiners."

### **RESPONSE:**

Even though IWA-2210 contains provisions allowing remote examination to be substituted for direct examination, the NRC agrees that the newer more stringent requirements of IWA-2210 for distance and illumination may in some cases be very difficult to meet. § 50.55a(b)(2)(x)(B) has been added to the final rule. This modification states that when performing remote visual examinations under Subsection IWL, the maximum direct examination distance may be extended and the minimum illumination requirements may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at chosen distance and illumination.

The NRC disagrees that examination of the outside surface of the containment will cause a significant additional radiation exposure. In fact, the NRC does not believe there will be any additional exposure because of examination of the outside surface.

### **Comments Which Address IWL-2510 Surface Examination**

### **COMMENT 2.11:** (Duke Power)

"Subparagraph IWL-2510(1) incorrectly refers to IWL-1200(b). IWL-2510(1) should refer to IWL-1220(b)."

### **RESPONSE:**

Comments regarding editorial changes should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. However, it should be noted that in the NRC's opinion, the incorrect reference does not change the requirements. IWL-1220 governs which items are exempt examination.

### **Comments Which Address IWL-2520 Examination of Unbonded Post-tensioning Systems**

#### **IWL-2521 Tendon Selection**

### **COMMENT 2.12:** (Duke Power)

"Subparagraph IWL-2521(a), second sentence, should be revised for clarity as follows: "The population from which the random sample is drawn shall consist of all tendons of a particular type (as defined in Table IWL-2521-1) which have not been examined during earlier inspections.""

**RESPONSE:**

Comments regarding clarifications should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

**Comments Which Address TABLE IWL-2521-1 Number of Tendons for Examination**

**COMMENT 2.13:** (Wisconsin Electric Power)

"Specific examples of how the rule would increase costs for Wisconsin Electric are as follows. As a result of a difference in round-off technique, Subsection IWL would require Wisconsin Electric to examine one additional tendon per containment at an additional cost of \$12,000 per tendon. Currently, Wisconsin Electric examines and tests one sample of corrosion protective grease from each physically examined tendon. Subsection IWL requires that a sample be tested from each end of each physically examined tendon which would result in an additional \$7,000 per surveillance. Wisconsin Electric has never had a failed tendon examination or grease sample and views the proposed additional testing requirements as unwarranted."

**RESPONSE:**

Because of the time involved and the costs of examining a large number of tendons, the number of tendons required to be examined was decreased in Revision 3 of Regulatory Guide 1.35 from the number required to be examined in Revision 2. Subsection IWL use the sampling scheme of Revision 3 except for the round-off technique. The commenter is correct in that this round-off technique could result in one additional tendon being examined. Based on the important function of the post-tensioning system, the NRC believes that the small additional cost is reasonable. The problem with examining a small population sample is that it is very hard to take this small sample and extrapolate the results to the remainder of the post-tensioning system.

With regard to the grease samples, each end of the tendon can be subjected to different environmental conditions. The NRC believes it is sensible to test grease from each end for possible contamination. It is very easy to obtain grease samples, and the NRC believes that based on the importance of the post-tensioning system, the additional low cost is reasonable.

**COMMENT 2.14:** (Northeast Utilities)

"This table provides the numbers of tendons that are required to be examined during an IWL inspection period. Note (2) states that the reduced sample size listed for the 10th year and subsequent inspections is applicable only if the acceptance criteria of IWL-3221.1 are met during each of the earlier inspections. This requirement appears to be excessive because there is no way a plant who had problems early in their plant life can ever get to a reduced sample size no matter what actions they took previously to correct the problem."

TVA submitted a question on this provision; "It is not clear if it is the intent of Table IWL-2521-1, Note 2, to never permit a reduced sample size if acceptance criteria of IWL-3221.1 was not met during a previous inspection."

**RESPONSE:**

This comment has been transmitted to the ASME for their consideration. It is recognized that some plants may have difficulty meeting the acceptance criteria based on past post-tensioning system examination history. It should be noted, however, that the NRC agrees with the provisions as presently written because, as outlined in the previous response, the number of tendons which will be examined over the lifetime of a plant is small. In addition, based on the staff's experience, we have seen that in many cases when problems occur, more than one tendon is

involved. There really should be no reduction in the number of tendons examined for units which have experienced repeated problems.

**COMMENT 2.15:** (Duke Power)

"Footnote 2 provides for a reduction in sample size of tendons to be selected for inspection if the acceptance criteria of IWL-3221.1 are met during each of the earlier inspections. It is not clear whether it is the intent of the Code to require plants to select 4% of all tendons of each type for inspection during each inspection period for the remaining life of the plant, if the plant has not met this criteria. No specific guidance is provided, but the licensee should be able to use the smaller sample size after completing 3 successful inspections in accordance with the IWL requirements."

TVA also questioned the intent of Footnote 2.

**RESPONSE:**

Comments asking for interpretation of Section XI should be addressed by the appropriate ASME committees. These comments has been transmitted to the ASME for their consideration.

With regard to the second part of Duke Power's comment that guidance should be provided on the sample size, the comment has also been transmitted to the ASME for their consideration.

**COMMENT 2.16:** (Duke Power)

"ASTM D 974 Modified Standard does not exist except as described in Table IWL-2525-1, footnote 2. It is recommended that reference to ASTM D 974 be eliminated."

**RESPONSE:**

It is recognized that the Modified Standard which is contained in Table IWL-2525-1, footnote 2, contains provisions which are different from those published in the ASTM D 974 standard. However, the NRC believes that the question of deleting the ASTM reference from Subsection IWL because of the modified requirements should be addressed by the ASME Code. This comment has been transmitted to the ASME for their consideration.

**Comments Which Address IWL-2525 Examination of Corrosion Protection Medium and Free Water**

**IWL-2525.2 Sample Analysis**

**COMMENT 2.17:** (Duke Power)

"Subparagraph IWL-2525.2(a) should be clarified to read "Each corrosion protection medium sample shall be thoroughly mixed and analyzed for reserve alkalinity, water content, and concentrations of water soluble chlorides, nitrates, and sulfides."

**RESPONSE:**

Comments regarding clarifications should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.

## **COMMENTS WHICH ADDRESS IWL-3000 ACCEPTANCE STANDARDS**

### **IWL-3300 Evaluation**

#### **COMMENT 3.1:** (Duke Power)

"It is not clear whether it is the intent of the Code that paragraph IWL-3310 require that the Responsible Engineer be responsible for preparation of the Evaluation Report."

#### **RESPONSE:**

Comments asking for interpretation of Section XI should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration. IWL-3310 states that the Owner is responsible for the preparation of the Evaluation Report. However, IWL-2320 states that the RPE is responsible for the evaluation of the examination results.

## **COMMENTS WHICH ADDRESS IWL-5000 SYSTEM PRESSURE TESTS**

### **IWL-5200 System Test Requirements IWL-5230 Leakage Test**

#### **COMMENT 4.1:**

Three commenters (Duke Power, Northeast Utilities, and TVA) believe that paragraphs IWE-5220 and IWL-5230 conflict. IWE-5222 allows deferral of a leakage test only if the repair cavity does not penetrate the required design wall by more than 10%. IWL-5230, Leakage Test, states, "If the repair or replacement penetrated the containment metallic liner, or otherwise breached containment leak-tight integrity, a leakage rate test shall be conducted as required by IWE-5000." To eliminate confusion, Duke Power suggests that IWL-5230 should be revised to read as follows: " the repair or replacement damages the containment metallic liner, a leakage rate test shall be conducted if required by IWE-5000."

#### **RESPONSE:**

The NRC agrees that the present wording may cause some confusion but does not agree that there is a conflict. Steam generator replacement illustrates the difference in requirements. When the access way is cut through the concrete, the liner is also cut out and therefore penetrated. Not only has the 10% criteria been violated, but also containment leaktight integrity. However, there are repairs which affect the liner only, and hence, only the 10% criterion governs.

### **Comments Which Address IWL-5240 Schedule of Pressure Test**

#### **COMMENT 4.2:** (Individual, RF Sammataro)

"IWL-5240 requires that the pressure test following repair or replacement be conducted prior to resumption of operation if the plant is shutdown during the repair. If the replacement is performed when the plant is in operation,

the test may be deferred until the next scheduled integrated leak rate test. This requirement places an unnecessary hardship and burden on Owners who may elect to perform concrete repair when the plant is shutdown vice [versus] when the plant is operating."

**RESPONSE:**

The NRC agrees with the pressure test provisions of Subsection IWL. Major repairs require a pressure test before continued plant operation. A pressure test is not required for all repairs. Licensees are exempted from performing a pressure test for some minor repairs (IWL-5210). Rather than a hardship, the NRC believes that the provision allowing deferral of the pressure test until the next schedule ILRT benefits licensees. If examination and evaluation confirms continued structural integrity and leak-tightness, the repair can be performed with the unit in operation, and the unit doesn't have to be shut down to conduct a pressure test.

**Comments Which Address IWL-5250 Test Procedure and Examinations**

**COMMENT 4.3:** (Duke Power)

"Paragraph IWL-5250 requires that "The pressure test shall be conducted in accordance with a detailed procedure prepared under the direction of the Responsible Engineer." Licensees already have procedures for pressure testing containments. Because the expertise required to develop and conduct these tests is not related to the expertise necessary to inspect concrete, this function should not specifically be assigned to the Responsible Engineer."

**RESPONSE:**

The requirement for the procedure to be prepared under the direction of the Responsible Engineer is not for the purpose of adding to, or changing the system pressure tests (which the commenter correctly points out are already in place). The purpose for this requirement is for the Responsible Engineer to put procedures in place for the examination of the concrete repair as required to ensure structural integrity and adequate margins.

**COMMENT 4.4:** (Individual, RF Sammataro)

"IWL-5250 requires a VT-1 visual examination prior to start of pressurization, at test pressure, and following completion of depressurization for system pressure tests of the surface of all containment concrete placed during repair. VT-1 visual examination is not applicable to concrete. The requirement should be changed to VT-1C visual examination."

**RESPONSE:**

Comments regarding editorial changes should be addressed by the appropriate ASME committees. This comment has been transmitted to the ASME for their consideration.