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**From:**  
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**TACs:**  
MD1288

**To:**  
J.E. Dyer

**\*\*\* YELLOW \*\*\***

**For Signature of:**

**Routing:**

**Description:**

ASME Actions to Address NRC Limitations Identified in 10CFR50.55 and  
Regulatory Guide 1.47 Related to the ASME Code and Code Cases

**Assigned To:**

DCI

**Contact:**

GROBE, JOHN A

**Special Instructions:**

DCI will be receiving input from RES.



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CODES & STANDARDS

April 24, 2006

Mr. James E. Dyer  
Director Office Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, Md. 20852

Dr. Carl J. Paperiello  
Director Office of Nuclear Regulatory Research  
U.S Nuclear Regulatory Commission  
11545 Rockville Pile  
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Subject:            ASME Actions to Address NRC Limitations Identified in 10CFR50.55a and  
                          Regulatory Guide 1.147 Related to the ASME Code and Code Cases

References:        1. 10CFR50.55a  
                          2. Regulatory Guide 1.147 Revision 14

Dear Mr. Dyer and Dr. Paperiello:

This letter identifies actions that the ASME Subcommittee on Nuclear Inservice Inspection (Subcommittee XI) has taken to address NRC limitations on the use of the ASME Boiler and Pressure Vessel Code Section XI and Code Cases defined during the regulatory endorsement process. Nuclear stakeholders, including utility personnel and ASME members, are concerned about the number of limitations included in 10CFR50.55a and Regulatory Guide 1.147 related to the ASME Code and Code Cases. ASME and the NRC discussed these concerns in joint meetings in 2003 and 2004, including a meeting on October 28, 2004 where the issues were summarized and actions were defined to address them. As a result of these meetings, Subcommittee XI started an initiative to review and address the limitations. We have observed and wish to thank the NRC staff for enhancing their coordination efforts ensuring that their concerns and negative comments on proposed standards actions are known throughout the consensus process. Both the ASME and NRC staff are striving to reduce the current limitations and to minimize the number of limitations in the future.

To implement the initiative, Subcommittee XI developed a process to perform and track those reviews. The process assigns the responsible Working Group to review and evaluate each limitation. The Working Group then either initiates an action to incorporate the relevant aspects of the limitation (or some version of the limitation) or provides a justification as to why the NRC limitation will not be incorporated into the Code or Code Case. An action to incorporate the limitation (or some version of the limitation) is processed through the ASME consensus approval process resulting in a Code change, a Code Case revision or an annulment of a Code Case. If the recommendation is not to incorporate, the justification for this decision is developed and goes

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through the ASME voting process to receive approval up through the Subcommittee. Then, the justification is provided to the NRC with sufficient detail so the limitation can be re-evaluated by the NRC staff and consideration be given to withdraw the limitation based on this additional information.

Please find attached two tables that summarize ASME actions taken to date. Table 1 in Attachment 1 addresses limitations on the 2001 Edition of the ASME Code with the 2003 Addenda. Table 2 in Attachment 2 addresses the limitations on published ASME Code Cases. For convenience each table includes the limitation as identified in 10CFR50.55a or Regulatory Guides 1.147 and the ASME action item number that was used to track the Subcommittee review. For those limitations that Subcommittee XI incorporated, the Code Edition/Addenda or Code Case that included the revision is also identified.

This letter also includes discussion of three limitations where the Subcommittee XI review has resulted in the Subcommittee respectfully requesting that the NRC withdraw the limitation. The three limitations are shown in the attached tables as shaded items. The justification for ASME's request to remove each of the limitations is included in Attachment 3.

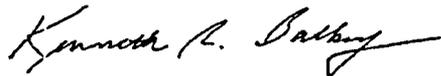
Please consider this letter as an interim status report that addresses only those current limitations where ASME has incorporated resolution and the three limitations that ASME requests the NRC to reevaluate and remove. As Subcommittee XI continues to review the remaining and any future limitations, further correspondence will be provided.

ASME requests that the NRC review our justification that the NRC can remove the three limitations discussed in Attachment 3. Please comment on our justification in Attachment 3 particularly if it is determined that the limitations cannot be removed. ASME also requests that the NRC comment on plans to address those NRC limitations where ASME has already taken action to incorporate them in Section XI and in revisions to Code Cases.

Thank you for your consideration in reviewing the enclosed information and in responding to our above requests. We hope that you find these actions to be constructive in addressing the subject limitations.

As always, if you have any questions, please do not hesitate to contact either me or Kevin Ennis in our New York office, at your convenience.

Sincerely,



Kenneth R. Balkey, PE  
Vice President,  
Nuclear Codes and Standards

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cc: Dr. Brian Sheron, Associate Director of Engineering and Safety Systems, Office of Nuclear Reactor Regulation, U.S. N.R.C.  
Mr. John A. Grobe, Director, Division of Component Integrity, Office of Nuclear Reactor Regulation, U.S. N.R.C.  
Mr. William H. Bateman, Deputy Director, Division of Component Integrity, Office of Nuclear Reactor Regulation, U.S. N.R.C.  
Mr. Kevin Ennis, ASME Staff, Director, Nuclear Codes & Standards  
Mr. Richard Porco, Vice Chair, ASME Board on Nuclear Codes & Standards Operations  
Mr. Bryan Erler, Vice Chair, ASME Board on Nuclear Codes & Standards Strategic Initiatives  
Mr. Guido Karcher, Chair, ASME Boiler & Pressure Vessel Standards Committee  
Mr. Gary Park, Chair, ASME Subcommittee on Nuclear Inservice Inspection  
Mr. Richard Swayne, Vice Chair, ASME Subcommittee on Nuclear Inservice Inspection

Table 1 - Limitations on ASME Section XI - 2001 Edition with the 2003 Addenda

Limitation/Modification	SG	Status
<p>(ix) <i>Examination of metal containments and the liners of concrete containments.</i> Licensees applying Subsection IWE, 1998 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, shall satisfy the requirements of paragraphs (b)(2)(ix)(A), (b)(2)(ix)(B), and (b)(2)(ix)(F) through (b)(2)(ix)(I) of this section.</p> <p>(A) For Class MC applications, the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report as required by IWA-6000:</p> <p>(1) A description of the type and estimated extent of degradation, and the conditions that led to the degradation;</p> <p>(2) An evaluation of each area, and the result of the evaluation, and;</p> <p>(3) A description of necessary corrective actions.</p> <p>(F) VT-1 and VT-3 examinations must be conducted in accordance with IWA-2200. Personnel conducting examinations in accordance with the VT-1 or VT-3 examination method shall be qualified in accordance with IWA-2300. The "owner-defined" personnel qualification provisions in IWE-2330(a) for personnel that conduct VT-1 and VT-3 examinations are not approved for use.</p> <p>(G) The VT-3 examination method must be used to conduct the examinations in Items E1.12 and E1.20 of Table IWE-2500-1, and the VT-1 examination method must be used to conduct the examination in Item E4.11 of Table IWE-2500-1. An examination of the pressure-retaining bolted connections in Item E1.11 of Table IWE-2500-1 using the VT-3 examination method must be conducted once each interval. The "owner-defined" visual examination provisions in IWE-2310(a) are not approved for use for VT-1 and VT-3 examinations.</p> <p>(H) Containment bolted connections that are disassembled during the scheduled performance of the examinations in Item E1.11 of Table IWE-2500-1 must be examined using the VT-3 examination method. Flaws or degradation identified during the performance of a VT-3 examination must be examined in accordance with the VT-1 examination method. The criteria in the material specification or IWB-3517.1 must be used to evaluate containment bolting flaws or degradation. As an alternative to performing VT-3 examinations of containment bolted connections that are disassembled during the scheduled performance of Item E1.11, VT-3 examinations of containment bolted connections may be conducted whenever containment bolted connections are disassembled for any reason.</p>	SGWCS/WGC	<p>2/06</p> <p>(A) BC05-144 To be published in the 2006 Addenda</p> <p>(F) BC05-144 To be published in the 2006 Addenda</p> <p>(G) BC05-144 To be published in the 2006 Addenda</p> <p>(H) BC05-144 To be published in the 2006 Addenda</p>



Limitation/Modification	SG	Status
<p>notches.</p> <p>(I) When applying Supplement 5, Paragraph (a), to Appendix VIII, the following provision must be used in calculating the number of permissible false calls:</p> <p>(1) The number of false calls allowed must be <math>D/10</math>, with a maximum of 3, where D is the diameter of the nozzle.</p> <p>(J) [Reserved]</p> <p>(K) When performing nozzle-to-vessel weld examinations, the following provisions must be used when the requirements contained in Supplement 7 to Appendix VIII are applied for nozzle-to-vessel welds in conjunction with Supplement 4 to Appendix VIII, Supplement 6 to Appendix VIII, or combined Supplement 4 and Supplement 6 qualification.</p> <p>(1) For examination of nozzle-to-vessel welds conducted from the bore, the following provisions are required to qualify the procedures, equipment, and personnel:</p> <p>(i) For detection, a minimum of four flaws in one or more full-scale nozzle mock-ups must be added to the test set. The specimens must comply with Supplement 6, paragraph 1.1, to Appendix VIII, except for flaw locations specified in Table VIII S6-1. Flaws may be either notches, fabrication flaws or cracks. Seventy-five (75) percent of the flaws must be cracks or fabrication flaws. Flaw locations and orientations must be selected from the choices shown in paragraph (b)(2)(xv)(K)(4) of this section, Table VIII-S7-1--Modified, with the exception that flaws in the outer eighty-five (85) percent of the weld need not be perpendicular to the weld. There may be no more than two flaws from each category, and at least one subsurface flaw must be included.</p> <p>(ii) For length sizing, a minimum of four flaws as in § 50.55a(b)(2)(xv)(K)(1)(i) must be included in the test set. The length sizing results must be added to the results of combined Supplement 4 to Appendix VIII and Supplement 6 to Appendix VIII. The combined results must meet the acceptance standards contained in § 50.55a(b)(2)(xv)(E)(3).</p> <p>(iii) For depth sizing, a minimum of four flaws as in § 50.55a(b)(2)(xv)(K)(1)(i) must be included</p>		

Limitation/Modification	SG	Status
<p>in the test set. Their depths must be distributed over the ranges of Supplement 4, Paragraph 1.1, to Appendix VIII, for the inner 15 percent of the wall thickness and Supplement 6, Paragraph 1.1, to Appendix VIII, for the remainder of the wall thickness. The depth sizing results must be combined with the sizing results from Supplement 4 to Appendix VIII for the inner 15 percent and to Supplement 6 to Appendix VIII for the remainder of the wall thickness. The combined results must meet the depth sizing acceptance criteria contained in §§ 50.55a(b)(2)(xv)(C)(1), 50.55a(b)(2)(xv)(E)(1), and 50.55a(b)(2)(xv)(F)(3).</p> <p>(2) For examination of reactor pressure vessel nozzle-to-vessel welds conducted from the inside of the vessel,</p> <p>(i) The clad to base metal interface and the adjacent examination volume to a minimum depth of 15 percent T (measured from the clad to base metal interface) must be examined from four orthogonal directions using a procedure and personnel qualified in accordance with Supplement 4 to Appendix VIII as modified by §§ 50.55a(b)(2)(xv)(B) and 50.55a(b)(2)(xv)(C).</p> <p>(ii) When the examination volume defined in § 50.55a(b)(2)(xv)(K)(2)(i) cannot be effectively examined in all four directions, the examination must be augmented by examination from the nozzle bore using a procedure and personnel qualified in accordance with § 50.55a(b)(2)(xv)(K)(1).</p> <p>(iii) The remainder of the examination volume not covered by § 50.55a(b)(2)(xv)(K)(2)(ii) or a combination of § 50.55a(b)(2)(xv)(K)(2)(i) and § 50.55a(b)(2)(xv)(K)(2)(ii), must be examined from the nozzle bore using a procedure and personnel qualified in accordance with § 50.55a(b)(2)(xv)(K)(1), or from the vessel shell using a procedure and personnel qualified for single sided examination in accordance with Supplement 6 to Appendix VIII, as modified by §§ 50.55a(b)(2)(xv)(D), 50.55a(b)(2)(xv)(E), 50.55a(b)(2)(xv)(F), and 50.55a(b)(2)(xv)(G).</p> <p>(3) For examination of reactor pressure vessel nozzle-to-shell welds conducted from the outside of the vessel,</p> <p>(i) The clad to base metal interface and the adjacent metal to a depth of 15 percent T, (measured from the clad to base metal interface) must be examined from one radial and two opposing circumferential directions using a procedure and personnel qualified in accordance with Supplement 4 to Appendix VIII, as modified by §§ 50.55a(b)(2)(xv)(B) and</p>		

Limitation/Modification	SG	Status															
<p>50.55a(b)(2)(xv)(C), for examinations performed in the radial direction, and Supplement 5 to Appendix VIII, as modified by § 50.55a(b)(2)(xv)(J), for examinations performed in the circumferential direction.</p> <p>(ii) The examination volume not addressed by § 50.55a(b)(2)(xv)(K)(3)(i) must be examined in a minimum of one radial direction using a procedure and personnel qualified for single sided examination in accordance with Supplement 6 to Appendix VIII, as modified by §§ 50.55a(b)(2)(xv)(D), 50.55a(b)(2)(xv)(E), 50.55a(b)(2)(xv)(F), and 50.55a(b)(2)(xv)(G).</p> <p>(4) Table VIII-S7-1, "Flaw Locations and Orientations," Supplement 7 to Appendix VIII, is modified as follows:</p> <p style="text-align: center;"><b>Table VIII-S7-1—Modified</b></p> <table border="1" data-bbox="226 750 1325 987"> <thead> <tr> <th colspan="3" data-bbox="226 750 1325 794">Flaw Locations and Orientations</th> </tr> <tr> <th data-bbox="226 797 548 842"></th> <th data-bbox="552 797 873 842">Parallel to weld</th> <th data-bbox="877 797 1325 842">Perpendicular to weld</th> </tr> </thead> <tbody> <tr> <td data-bbox="226 845 548 890">Inner 15 percent</td> <td data-bbox="552 845 873 890" style="text-align: center;">X</td> <td data-bbox="877 845 1325 890" style="text-align: center;">X</td> </tr> <tr> <td data-bbox="226 893 548 938">OD Surface</td> <td data-bbox="552 893 873 938" style="text-align: center;">X</td> <td data-bbox="877 893 1325 938" style="text-align: center;">.....</td> </tr> <tr> <td data-bbox="226 941 548 986">Subsurface</td> <td data-bbox="552 941 873 986" style="text-align: center;">X</td> <td data-bbox="877 941 1325 986" style="text-align: center;">.....</td> </tr> </tbody> </table> <p>(L) As a modification to the requirements of Supplement 8, Subparagraph 1.1(c), to Appendix VIII, notches may be located within one diameter of each end of the bolt or stud.</p>	Flaw Locations and Orientations				Parallel to weld	Perpendicular to weld	Inner 15 percent	X	X	OD Surface	X	.....	Subsurface	X	.....		<p>(L) – BC05-645 – to be published in the 2006 Addenda</p>
Flaw Locations and Orientations																	
	Parallel to weld	Perpendicular to weld															
Inner 15 percent	X	X															
OD Surface	X	.....															
Subsurface	X	.....															
<p>(xvi) <i>Appendix VIII single side ferritic vessel and piping and stainless steel piping examination.</i></p> <p>(A) Examinations performed from one side of a ferritic vessel weld must be conducted with equipment, procedures, and personnel that have demonstrated proficiency with single side examinations. To demonstrate equivalency to two sided examinations, the demonstration must be performed to the requirements of Appendix VIII as modified by this paragraph and §§50.55a(b)(2)(xv) (B) through (G), on specimens containing flaws with non-optimum sound energy reflecting characteristics or flaws similar to those in the vessel being examined.</p> <p>(B) Examinations performed from one side of a ferritic or stainless steel pipe weld must be conducted with equipment, procedures, and personnel that have demonstrated proficiency with single side examinations. To demonstrate equivalency to two sided examinations, the</p>	SGNDE	<p>10/05 BC04-1561 – published in the 2005 Addenda</p>															

Limitation/Modification	SG	Status
demonstration must be performed to the requirements of Appendix VIII as modified by this paragraph and §50.55a(b)(2)(xv)(A).		
(xvii) <i>Reconciliation of Quality Requirements</i> . When purchasing replacement items, in addition to the reconciliation provisions of IWA-4200, 1995 Edition through the 1998 Edition, the replacement items must be purchased, to the extent necessary, in accordance with the licensee's quality assurance program description required by 10 CFR 50.34(b)(6)(ii).	SGRRA/WGGR	2/06 BC04-255 (RRA 03-03). ASME made a change to the Code in 2001, and the NRC has agreed to delete this specific note.
(xviii) <i>Certification of NDE personnel</i> . (B) Paragraph IWA-2316 of the 1998 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, may only be used to qualify personnel that observe for leakage during system leakage and hydrostatic tests conducted in accordance with IWA-5211(a) and (b), 1998 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section. (C) When qualifying visual examination personnel for VT-3 visual examinations under paragraph IWA-2317 of the 1998 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, the proficiency of the training must be demonstrated by administering an initial qualification examination and administering subsequent examinations on a 3-year interval.	SGNDE	2/06 (B) IWA-2316 BC04-618 published in 2005 Addenda  (C) IWA-2317 BC04-618 published in 2005 Addenda
(xix) <i>Substitution of alternative methods</i> . The provisions for the substitution of alternative examination methods, a combination of methods, or newly developed techniques in the 1997 Addenda of IWA-2240 must be applied. The provisions in IWA-2240, 1998 Edition through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, are not approved for use.  The provisions in IWA-4520(c), 1997 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, allowing the substitution of alternative examination methods, a combination of methods, or newly developed techniques for the methods specified in the Construction Code are not approved for use.	SGNDE  SGRRA	2/06 BC04-257, IWA-2240 revised in 2005 Addenda  IWA-4520 portion of action assigned to BC04-257 (RRA 03-05). Also addresses R.G. 1.147 limitations on Case N-587. Published in 2005 Addenda
(xx) <i>System leakage tests</i> . When performing system leakage tests in accordance IWA-5213(a), 1997 through 2002 Addenda, a 10-minute hold time after attaining test pressure is required for Class 2 and Class 3 components that are not in use during normal operating conditions, and no hold time is required for the remaining Class 2 and Class 3 components provided that the system has been in operation for at least 4 hours for insulated components or 10 minutes for uninsulated components.	SGWCS/WGPT	2/06 BC02-2712, Revised to agree with NRC comment – Published in 2003 Addenda

Limitation/Modification	SG	Status
<p><i>(xxiv) Incorporation of the Performance Demonstration Initiative and Addition of Ultrasonic Examination Criteria.</i> The use of Appendix VIII and the supplements to Appendix VIII and Article I-3000 of Section XI of the ASME BPV Code, 2002 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(2) of this section, is prohibited.</p>	<p>SGNDE</p>	<p>10/05  Addressed via action items associated with 10 CFR 50.55a(b)(2)(xv) and 10 CFR 50.55a(b)(2)(xvi) above.</p>

Table 2 - Limitations on ASME Published Code Cases

Code Case	Condition	SG	Status
N-512-1	The material properties and transient selection must follow the guidance in Regulatory Guide 1.161, "Evaluation of Reactor Pressure Vessels with Charpy Upper-Shelf Energy Less Than 50 Ft-lb," or an equivalent method approved by the NRC staff.	ES	10/04 No action, this Code Case has been annulled. This is good practice, but not a limitation
N-513 N-513-1	(1) Specific safety factors in paragraph 4.0 must be satisfied (2) Code Case N-513 may not be applied to: (a) Components other than pipe and tube (b) Leakage through a gasket (c) Threaded connections employing nonstructural seal welds for leakage prevention (through seal weld leakage is not a structural flaw; thread integrity must be maintained). (d) Degraded socket welds	RRA	These limitations were incorporated into N-513-2 (BC03-249). Code Case N-513-2 was published in Supplement 1 of the 2004 Edition.
N-516-2 N-516-3	Licensees must obtain NRC approval in accordance with 10CFR 50.55a(a)(3) regarding the technique to be used in the weld repair or replacement of irradiated material underwater.	RRA	2/06 Assigned to BC04-1005 (RRA 03-02). Passed BNCS review. Actions are complete.
N-528-1	The requirements of 10CFR Part 21 are to be applied to the nuclear plant site supplying the material as well as to the nuclear plant site receiving the material that has been purchased, exchanged, or transferred between sites.	RRA	10/04 R.G. 1.147 limitations on Case N-528-1 are regulatory (10CFR21) and cannot be addressed in the Case. SGRRA will be taking no action to address this limitation.
N-554-2	The component used for repair/replacement must be manufactured, procured, and controlled as a safety-related component under an NRC-approved Quality Assurance program meeting the requirements of Appendix B to 10CFR Part 50	RRA	10/04 R.G. 1.147 limitations on Case N-554-2 are addressed by Note 2 in the Case. There will be no additional changes to address this limitation. (see attachment 3)
N-567-1	The component used for repair/replacement must have been manufactured, procured, and controlled as a safety-related component under an NRC-approved Quality Assurance program meeting the requirements of Appendix B	RRA	10/04 R.G. 1.147 limitations on Case N-567-1 are addressed by Note 2 in

Code Case	Condition	SG	Status
	10 CFR Part 50		the Case. There will be no additional changes to address this limitation. (see attachment 3)
N-583	(1) Supplemental practice shall be performed on material or welds that contain cracks, or by analyzing prerecorded data from material or welds that contain cracks	NDE	2/06 (1) Revised Code to incorporate this limitation in 1999 addenda.
N-586	The engineering evaluations addressed under Item (a) and the additional examinations addressed under Item (b) shall be performed during this outage. If the additional examinations performed under Item (b) reveal indications exceeding the applicable acceptance criteria of Section XI, the engineering evaluations and the examinations shall be further extended to include additional evaluations and examinations at this outage.	WCS/ ISC	2/06 N-586-1 (BC00-732) published in Supplement 1 to the 2004 Edition that incorporated the limitations.
N-593	Essentially 100 percent (not less than 90 percent) of the examination volume A-B-C-D-E-F-G-H must be inspected.	WCS/ ISC	2/06 N-593-1 published in Supplement 3 of 2004 Edition (BC04-159) that incorporated the limitations.
N-630	The Responsible Engineer's written practice must define qualification requirements for concrete and tendon hardware examination personnel in accordance with IWA-2300 in lieu of the Owner defined qualification requirements specified in Paragraph (c) of the Code Case. However, limited certification in accordance with IWA-2350 is permitted.	WCS/ WGC	This code case has been annulled.
N-639	Chemical ranges of the calibration block, may vary from the materials specification if: (1) the calibration block material is produced under an accepted industry specification or standard, and (2) the phase and grain shape are maintained in the same ranges produced by the thermal process required by the material specification.	NDE	2/06 No action needed. Considered a clarification



## **EXECUTIVE SUMMARY**

The ASME Codes and Standards Committees are currently in the process of reviewing and addressing limitations and modifications that the Staff has placed on ASME Code requirements listed in 10CFR50.55a to ascertain whether any changes to the requirements are warranted from a Code perspective. For the specific limitation on the use of IWB-1220(d) the ASME Section XI Subcommittee on Nuclear Inservice Inspection has determined that no change should be made within ASME Section XI and with the information contained in this Action requests the removal of this limitation from the Code of Federal Regulations.

### **BASIS FOR 10CFR50.55a(b)(2)(xi) LIMITATION ON IWB-1220(d) REMOVAL REQUEST**

## **BACKGROUND**

### NRC Issues And ASME Comments On The Final Rule, September 22, 1999

The limitation on the use of IWB-1220(d) first occurred in the Final Rule, September 22, 1999, applicable to 10CFR50.55a Codes and Standards. The information for limiting the use of IWB-1220(d) was addressed by the NRC as follows:

#### **2.3.1.2.3 Class 1 Piping**

The third proposed limitation to the implementation of Section XI [Sec. 50.55a(b)(2)(xiii) in the proposed rule] pertained to the use of Section XI, IWB-1220, "Components Exempt from Examination," that are contained in the 1989 Edition in lieu of the rules in the 1989 Addenda through the 1996 Addenda. Subparagraph IWB-1220 in these later Code addenda contain provisions from three Code Cases: N-198-1, "Exemption from Examination for ASME Class 1 and Class 2 piping Located at Containment Penetrations;" N-322, "Examination Requirements for Integrally Welded or Forged Attachments to Class 1 Piping at

Containment Penetrations;" and N-334, "Examination Requirements for Integrally Welded or Forged Attachments to Class 2 Piping at Containment Penetrations," which the NRC found to be unacceptable. The provisions of Code Case N-198-1 were determined by the NRC to be unacceptable because industry experience has shown that welds in service sensitive BWR stainless steel piping, many of which are located in containment penetrations, are subjected to an aggressive environment (BWR water at reactor operating temperatures) and will experience IGSCC. Exempting these welds from examination could result in conditions, which reduce the required margins to failure to unacceptable levels.

***ASME Comment - This concern for IGSCC degradation is now covered under individual plant commitments utilizing the criteria contained in the BWRVIP-75 document. The concern with applying the Code exemption and not examining these welds is no longer valid because if these welds are susceptible to IGSCC, this augmented program will address them.***

The provisions of Code Cases N-322 and N-334 were determined to be unacceptable because some important piping in PWRs and BWRs was exempted from inspection. However, the NRC developed the break exclusion zone (BEZ) design and examination criteria utilized for most containment penetration piping expecting not only that Section XI inspections would be performed, but that augmented inspections would be performed. These design and examination criteria are contained in Branch Technical Position MEB 3-1, an attachment of the NRC Standard Review Plan 3.6.2, "Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping."

***ASME Comment - Augmented examinations required in BEZs are basically the same as the Code examinations for these same welds except that the BEZ examinations usually include full volumetric coverage and a larger percentage of examinations (e.g., 100% volumetric of all the welds every 10 years in lieu of the 25% under Code requirements every 10 years). When mandated by the NRC and committed to by an Owner/Licensee as part of their Licensing Basis, these augmented examinations far outweigh what would be required under Section XI. Since the regulatory commitment is overriding, the application of the IWB-1220(d) exemption has no effect on the BEZ examinations.***

Twenty-one comments were received on this limitation. Some commenters understood the bases for the limitation and did not believe that significant hardship would result. Many of the commenters argued that the Code Cases were developed because these configurations are generally inaccessible and cannot be examined. Some argued that the piping in question is not safety significant and, thus, the examinations are unwarranted and the repairs, which will be required, are unnecessary.

The NRC disagrees with these comments. The provisions of Sec. 50.55a(g)(2) require that facilities that received their construction permit on or after January 1, 1971, for Class 1 or 2 systems be designed with provisions for access for preservice inspections. Several early plants with limited access have been granted plant specific relief for certain configurations. These exemptions were granted on the basis that the examinations were impractical because these plants were not designed with access to these areas. Modifications to the plant would have been required at great expense to permit examination. Therefore, narrow exceptions were granted to these early plants. For later plants, however, Sec. 50.55a(g)(2) required that plants be constructed to provide access. The rationale for granting exemptions to early plants is not applicable to these later plants. In addition, there have been improvements in technology for the performance of examination using remote automated equipment. In designs where these welds are truly inaccessible, relief will continue to be granted when appropriate bases are provided by the Licensee per section 50.55a(g)(5). With regard to the safety significance of this piping, failure of Class 1 piping within a containment penetration may lead to loss of containment integrity and an unisolable pipe break. These areas were considered BEZs as part of their initial design, in part, due to the augmented examinations performed on this portion of the piping system. Further, this issue could affect the large early release frequency (LERF). For these reasons the limitation has been retained in the final rule [Sec. 50.55a(b)(2)(xi)] to require licensees to use the rules for IWB-1220 that are contained in the 1989 Edition in lieu of the rules in the 1989 Addenda through the 1996 Addenda.

***ASME Comment - The requirements for design and preservice inspection accessibility under 50.55a(g)(2) are well understood, but the interactions between the Owner/Licensee and NRC in dealing with these regulatory***

***requirements is not an ASME Code issue. We recognize that technology has evolved over the years and accessibility may be gained for some welds or portions of welds inside of penetrations, but that is a very plant specific determination and not enough of an issue to warrant a change in the Code exemption provided by IWB-1220(d).***

NRC Issues and Current ASME Comment On The Final Rule, September 26, 2002

The limitation on the use of IWB-1220(d) was not specifically addressed in the Final Rule, September 26, 2002, applicable to 10CFR50.55a Codes and Standards, because it was already in the regulations. However, a provision to add the same limitation on the use of IWC-1223 was addressed and not incorporated into the regulations. IWC-1223 is identical to IWB-1220(d) except that it is applicable to Class 2 piping, but the issues are the same. The information for not limiting the use of IWC-1223 was addressed by the NRC as follows:

#### 2.2.4 Containment Penetration Piping

Section 50.55a(b)(2)(xii)(A) in the proposed rule would have prohibited welds in high-energy fluid system piping that are located inside a containment penetration assembly or encapsulated by a guard pipe from being exempted from the provisions of Subsection IWC as permitted by the 1997 Addenda, 1998 Edition, 1999 Addenda, and 2000 Addenda of IWC-1223. The revised Code provisions appeared to be inconsistent with NRC's guidelines on BEZ design and examination criteria for containment penetration piping. Specifically, Branch Technical Position EMEB 3-1, "Postulated Rupture Locations in Fluid Systems Piping Inside and Outside Containment," an attachment to NRC Standard Review Plan (SRP) Section 3.6.2, "Determination of Rupture Locations and Dynamic Effects Associated with Postulated Rupture of Piping" (NUREG-0800), allows that breaks and cracks in high-energy fluid piping in containment penetration areas need not be postulated provided that certain criteria are met. These criteria include a commitment that where guard pipes are used, the enclosed portion of fluid system piping should be seamless construction and without circumferential welds unless specific access provisions are made to permit inservice volumetric examination of the longitudinal and circumferential welds; and 100 percent volumetric inservice examination of all pipe welds is

conducted during each inspection interval as defined in IWA-2400 of Section XI of the ASME B&PV Code. Licensees may have made commitments to follow the provisions in SRP 3.6.2 as a part of their licensing design basis.

The commenters stated that Sec. 50.55a(b)(2)(xii)(A) of the proposed rule is unnecessary because the regulatory requirements associated with high-energy line breaks are independent from the scope of Section XI. Commenters also noted that it is inappropriate for the NRC to impose limitations to maintain commitments used to license plants.

The NRC agrees that the regulatory guidelines associated with high-energy line breaks are separate from the regulatory requirements associated with the ISI of nuclear power plant components. The intent of Sec. 50.55a(b)(2)(xii)(A) in the proposed rule was to ensure that licensee commitments regarding high-energy line breaks in Branch Technical Positions under SR 3.6.2 would not be eliminated from a misapplication of the exemption allowed in IWC-1223. **The NRC concludes that it is the responsibility of each licensee to ensure that changes to later editions and addenda of the ASME Code are not misapplied to licensing design bases commitments, and that it is inappropriate for the NRC to impose modifications or limitations in Sec. 50.55a to ensure that commitments, not directly related to Section XI requirements but part of the licensing design basis, are maintained.** Therefore, Sec. 50.55a(b)(2)(xii)(A) in the proposed rule is not adopted.

***ASME Comment - In light of the NRC conclusion above and the similarities between IWB-1220(d) and IWC-1223 shown in this attachment, there is no reason that the limitation on the use of IWB-1220(d) should remain in the regulations.***

## CONCLUSION

Based on the information provided above, the ASME has determined that the ASME Code Section XI exemption for volumetric and surface examinations under IWB-1220(d) for Class 1 piping written as follows: **“welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe.”** is a valid exemption from Code required examinations and should be maintained within the Code as currently written. This exemption has no bearing on an Owner's/Licensee's specific commitments made with the regulatory authorities having jurisdiction at a plant site. Specifically, the Code has not chosen to address these plant specific issues related to design and examination criteria that the NRC is currently controlling under Branch Technical Position MEB 3-1, an attachment of the NRC Standard Review Plan 3.6.2, “Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping, ” nor has it chosen to address NRC augmented examination requirements for Intergranular Stress Corrosion Cracking (IGSCC) at certain Boiling Water Reactor (BWR) plants that have susceptible material inside piping penetrations that would be exempted by IWB-1220(d), but that are being examined under the BWR Vessel Improvement Project (BWRVIP) - 75 “Technical Basis for Revision to Generic Letter 88-01 Inspection Schedules,” Dated: October 1999. Additionally, for plants where the IWB-1220(d) exemption could be applied and where high energy line break and IGSCC is not an issue, the current weld examination sampling schemes required by the Code for accessible welds of similar material and operating conditions, coupled with other Owner programs such as Flow Accelerated Corrosion (FAC) programs, and continued Code pressure test requirements, are more than adequate to determine if any generic degradation issue is occurring. Therefore, the ASME concludes that the application of this IWB-1220(d) exemption in regards to the issues raised by the NRC continues to provide an acceptable level of quality and safety within the nuclear industry and requests that the limitation on the use of this exemption be removed from the regulations.

**SUBJECT:** Limitation on Code Cases N-554-2 and N-567-1

**FILE NUMBER:** N-554-2 (BC98-543) and N-567-1 (BC98-383)

**CATEGORY PRIORITY:** M-N

**PROPOSAL:** Removal Request for Limitation on Code Cases N-554-2 and N-567-1

**EXPLANATION:**

The U.S. Nuclear Regulatory Commission (NRC) has placed a limitation on the use of Code Cases N-554-2 and N-567-1. The limitation is

*"The component used for repair/replacement must be manufactured, procured, and controlled as a safety-related component under an NRC-approved Quality Assurance program meeting the requirements of Appendix B to 10CFR Part 50."*

This action is a request for the removal of this limitation for both code cases.

**SUMMARY OF CHANGE:**

This action does not address a Code change, but is intended to provide a Code approved basis for a request to the NRC to remove a limitation placed on the use of code cases N-554-2 and N-567-1

**WORKING PROJECT MANAGER:**

Gary Park

**WE/PMS PROJECT MGR:**

N/A.

**SC/SG/Ind. Email Distribution List:**

Subcommittee XI Nuclear Inservice Inspection  
Subgroup Repair, Replacement and Modification

## **EXECUTIVE SUMMARY**

The ASME Codes and Standards Committees are currently in the process of reviewing and addressing limitations and modifications that the Staff has placed on ASME Code requirements listed in Regulatory Guide 1.147 and 1.193 to ascertain whether any changes to the requirements are warranted from a Code perspective. For the specific limitation on the use of Code Cases N-554-2 and N-567-1 the ASME Section XI Subcommittee on Nuclear Inservice Inspection has determined that no change should be made to the code cases and with the information contained in this Action requests the removal of this limitation from Regulatory Guide 1.147.

### **BASIS FOR RG 1.147 LIMITATION ON CODE CASES N-554-2 AND N-567-1 REMOVAL REQUEST**

## **BACKGROUND**

NRC reviews published Code Cases and provides the results of their review in Regulatory Guides 1.147 or 1.193. Often times the NRC reviews results in the acceptance for the use of Code Cases with some limitation imposed.

The information for limiting the use of Code Cases N-554-2 and N-567-1 was addressed by the NRC as follows:

The component used for repair/replacement must be manufactured, procured, and controlled as a safety-related component under an NRC-approved Quality Assurance program meeting the requirements of Appendix B to 10CFR Part 50.

ASME's understanding of the limitation is that if the Code Cases are used, the NRC is concerned that the user might not follow their Quality Assurance Program in the manufacturing, procurement, and control of any safety-related component used for repair/replacement activities.

The Code Cases as written provide an alternative to the reconciliation requirements of the ASME Section XI Code. N-554-2 addresses the 1995

Edition through the 1996 Addenda, while N-567-1 addresses the 1991 Edition through later editions and addenda. It is believed that the NRC limitation is tied to the reconciliation of the administrative requirements. Neither Code Case requires the administrative requirements to be reconciled. Both Code Cases include the following statement:

“Administrative requirements, (i.e. those that do not affect the pressure boundary or core support or component support function) need not be reconciled. Examples of such requirements include quality assurance, certification, Code Symbol Stamping, Data Reports and Authorized Inspection”.

The Code Cases go on to allow the use of the administrative requirements of either the construction code of the item being replaced or of the replacement item.

However, recognizing that the owner is still required to comply with their Quality Assurance Program for all applications a footnote 2 in the Code Cases provides a caution that states:

“This provision does not negate the requirement to implement the Owner's QA program, nor does it affect Owner commitments to regulatory and enforcement authorities”.

Note that this footnote was added to Code Case N-554-2 under BC98-543 and N-567-1 under BC98-383. N-554-2 was issued in Supplement 9 of the 1998 Edition, while N-567-1 was issued in Supplement 4 to the 1998 Edition.

This change would mean if the Owner decided to use the administrative requirements of the construction code of the item being replaced, they would still need to meet the specific requirements of the Owner's QA Program.

## **CONCLUSION**

Based on the information provided above the ASME has determined that the footnote within each code case already addresses the NRC concern and that the limitation is not needed and should be removed from Code Cases N-554-2 and N-567-1.