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Secretary  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001  
ATTN: Rulemakings and Adjudications Staff

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Subject: Comments on Proposed Rule 10 CFR 50.55a (RIN 3150-AH24) Regarding  
Modifications and Limitations on the Reference to Section XI of the ASME  
Boiler and Pressure Vessel Code

Dear Secretary,

The Regulatory Endorsement Task Group of the Board on Nuclear Codes and Standards (BNCS) of the American Society of Mechanical Engineers (ASME) has reviewed the proposed rule published in the Federal Register, Vol. 69, No. 4, January 7, 2004 – 10 CFR Part 5055a, RIN 3150-AH24. BNCS would like to express its appreciation for the NRC's timely effort to update the endorsement of ASME Codes and Standards. Specific comments on the proposed rule impacting B&PV Code Section XI are attached. Separate letters have been submitted with comments on the B&PC Code Section III and OM Code Section IST rule proposed limitations.

Thank you for the opportunity to review and comment on the Proposed Rule 10 CFR 50.50.55a. Should there be questions regarding these comments, please direct them to Mr. Kevin Ennis, ASME Director, Nuclear Codes and Standards at the above address or by phone at 212-591-7075.

Sincerely Yours,

C. Wesley Rowley, PE  
Vice President, Nuclear Codes & Standards

**Comments on Proposed 50.55a Rule  
January 7, 2004 Federal Register  
Modifications and Limitations on the Reference to Section XI of the  
ASME Boiler and Pressure Vessel Code**

1) General Comments:

A) In previous Final Rule changes to 50.55a starting in the mid 1990s, there have been an increased number of limitations and modifications to the incorporation by reference of ASME Section III, Section XI and OM Codes. These limitations and modifications are making the Regulations confusing and difficult to use.

B) The NRC is an active participant in the ASME Codes and Standards consensus process and supports the participation of numerous NRC staff members in the ASME process and attendance at ASME Code meetings. The NRC staff members on the ASME committees are, by NRC direction, to assure the NRC's positions on Code changes are input into the ASME consensus process. However, during the ASME Codes and Standards consensus process, many of the currently proposed limitations and modifications were not offered as NRC concerns or positions on actions considered as part of the consensus process. This resulted in the inability of the ASME consensus process to provide for consideration and resolution prior to ASME endorsement. Although Subcommittee XI of the Boiler and Pressure Vessel Committee has assigned volunteer experts to review the NRC's currently approved 50.55a modifications and limitations to determine if future Code revisions are needed, this is an inefficient process and does not address the problems that cause this post-approval review.

The primary problem appears to be that the NRC rulemaking personnel and processes are not effectively integrated with the important NRC participation in the ASME standards development work. A second problem is that NRC staff concerns or proposed changes to Code actions sometimes can not be clearly categorized as an NRC position versus an individual staff member's concern. Although both are considered in the consensus process, being able to distinguish between the two is obviously important.

The NRC should identify a plan and take the necessary steps to assure that NRC positions are provided in the ASME Codes and Standards consensus process so that the number of limitations and modifications to ASME Codes is significantly reduced and the inclusion of limitations and modifications occurs primarily on issues where the NRC concerns were not resolved during the ASME consensus process. As a positive example of the way the NRC has changed their processes to improve efficiencies and address the needs of stakeholders, the NRC found a way to include consideration of the GALL in the 50.55a rulemaking process. Similarly, there would be improvements in NRC, ASME, and utility efficiencies by changing the rulemaking process to get NRC concerns and positions considered in the ASME consensus process rather than increasing the length and complexity of 50.55a. Furthermore, as can be seen in the following comments on specific proposed modifications, developing modifications and limitations to ASME Codes without the benefits of input and dialog on the concerns obtainable through the consensus process results in unnecessary proposed modifications.

2) 50.55a(b)(2)(xvii)

The Supplementary Information notes that the proposed amendment would revise a number of existing modifications, one of which is 50.55a(b)(2)(xvii), to apply the 2001 Edition through 2003 Addenda because the earlier Code provisions were not revised in the 2001 Edition through 2003 Addenda to address the underlying issues that led the NRC to impose the modification. However, the ASME Section XI 2000 Addenda added Footnote 3 to IWA-4222 to address the NRC modification. Therefore, 50.55a(b)(2)(xvii) should be deleted rather than continue its applicability to 2001 Edition through 2003 Addenda.

3) 50.55a(b)(2)(viii)

The stated reasons for the new proposed modification 50.55a(b)(2)(viii)(G) are the concern for the importance of restoration of the corrosion protection medium (CPM), the 2002 Addenda changes to IWL-4110 that exempted the removal, replacement, or addition of CPM from repair/replacement activity requirements, and the 2002 Addenda changes that removed provisions in IWL-4240 that specified that the CPM must be restored following containment post-tensioning system repair/replacement activities.

However, the changes to IWL-4000 to clarify that removal and reinstallation of CPM is not a repair/replacement activity and have no affect on the Code requirements for restoration of the CPM. The primary Code requirements for removal, testing, and restoration of the CPM are located in IWL-2525 and IWL-2526, which are unchanged by the 2002 Addenda. Because the Code has requirements located in IWL-2500, the quality assurance requirements of IWA-1400(n) continue to apply to the removal, testing, and restoration of CPM and are not affected at all by the changes to IWL-4000. Therefore, the proposed modification 50.55a(b)(2)(viii)(G) is unnecessary and should be removed.

4) 50.55a(b)(2)(ix)(B)

There was an error in the publication of the 2003 Addenda change to Table IWA-2210-1. In December 2003 ASME issued errata to the 2003 Addenda (issued with Volume 53 of Section XI Interpretations) to withdraw the 2003 Addenda changes to IWA-2210 through IWA-2216 and Table IWA-2210-1. These 2003 Addenda changes are cited as the reason for the proposed rule change to not apply the existing modification 50.55a(b)(2)(ix)(B) to the 2003 Addenda. Therefore, the proposed rule change to not apply the existing modification 50.55a(b)(2)(ix)(B) to the 2003 Addenda should be deleted.

5) 50.55a(b)(2)(xxii)

Instead of prohibiting the provisions of IWA-2220 that allow an ultrasonic examination method from the inside surface to be used as an acceptable outside surface examination, the proposed modification should allow the ultrasonic examination provided it has been demonstrated by a successful performance demonstration. Using UT examination from the ID of the reactor vessel nozzles has been commonly performed by the industry and has been demonstrated. In addition, the NRC has granted relief requests for such UT examinations to be used to satisfy the required OD surface examinations.

6) 50.55a(b)(2)(xxiii)

The proposed modification in 50.55a(b)(2)(xxiii) refers to the changes in IWA-4461.4 that were made in the 2001 Edition. These changes were made to allow an Owner to perform a documented evaluation to determine whether elimination of mechanical processing is acceptable when the mechanical processing is deemed impractical due to field conditions.

It is noted that the NRC's list of thermal processes included in the Supplementary Information does not include the metal disintegration machining (MDM) and electrodischarge machining (EDM) processes. MDM and EDM do not leave stress risers, rough surfaces, or heavy oxidation. In some conditions even other thermal processes that leave these surface conditions may be acceptable. For example, in a high radiation area, an Owner may use a thermal cutting process to cut off a section of an ASME hanger to eliminate an interference. The cut end will not be load bearing, nor will the resulting as-cut surface cause other concerns. Without this change, personnel would need to spend additional time in the high radiation area to either cut the support by other means or grind the thermal cut surface.

Prior to this 2001 Edition Code change, IWA-4460 as approved for use in 50.55a, allowed qualification testing as an option in lieu of mechanical grinding or machining following thermal processes. This 2001 Edition Code change added another option to allow performance of an application-specific evaluation to determine if elimination of mechanical processing was acceptable. IWA-4461.4 now allows elimination of mechanical processing only if either the qualification testing of IWA-4461.4.1 or the evaluation of IWA-4461.4.2 is performed.

IWA-4461.4.2 specifies the adverse effects that are to be considered in the evaluation and requires the evaluation to be documented and included in the Repair/Replacement Plan. The NRC's proposed modification would appear to require that tests and analysis to address each of the adverse effects listed in IWA-4461.4.2 must be performed whenever a thermally cut surface is not mechanically processed. This is an unreasonable imposition for two reasons. First, when qualification testing is performed in accordance with IWA-4461.4.1, then the evaluation provisions of IWA-4461.4.2 are not needed or used but the proposed modification would impose IWA-4461.4.2 in addition to the qualification testing. Secondly, based on the application specific evaluation, not all of the adverse effects listed would be applicable and this would be documented in the evaluation. To illustrate this, in the example of the support noted above, reduction in material toughness and reduction in corrosion resistance may not be a concern and this would be documented in the evaluation. To require that testing for reduction in corrosion resistance be performed, as would be imposed in the proposed modification, is not reasonable for this example.

Therefore, the proposed modification 50.55a(B)(2)(xxiii) should be deleted.

7) 50.55a(b)(2)(xxiv)

It has been a major goal of Section XI Subgroup on Nondestructive Examination to incorporate the differences in the Regulation and Section XI Appendix VIII. It is our understanding that ASME committee members have been requesting formal response from the NRC for some time regarding the issues that remain to be resolved before the NRC can endorse Section XI Appendix VIII without modification. With the addition of proposed modification 50.55a(b)(2)(xxiv) it is clear that there are still issues that must be resolved. ASME requests that NRC management assist in resolving the remaining issues and work with ASME Section XI committee members to complete the changes necessary to endorse Appendix VIII without modification.

8) 50.55a(b)(2)(xxv)

The proposed rule prohibits the use of the provisions in IWA-4340 when using the 2001 Edition and the 2002 and 2003 Addenda of Section XI. Regrettably, these provisions were added by ASME committee members at the request of NRC staff and included in the 2000 Addenda because the NRC staff wanted to see provisions in Section XI that addressed the long standing industry practice of mitigating defects by performing a modification such that the structural integrity of the item no longer relied on the defective area. An example of such a modification would be an encapsulation of the defective area, which provides a new pressure boundary.

Such modifications have always been allowed by performing what used to be called a Section XI "replacement", which included modifications and is now called a repair/replacement activity. The Section XI requirements invoke the Construction Code rules for materials and for designing, fabricating and examining the modification. Additionally, Section XI specifies the requirements for installing, testing and inspecting the modification.

Now that ASME has added the provisions, the NRC appears to be using this to eliminate this long standing practice by identifying concerns that they have been well aware of for years and have not determined to be important enough to address until now. In general the NRC appears to be expecting ASME to identify every conceivable modification and include all the specifics for each modification so that the NRC can check off the details in evaluating a licensee's modification. However, this isn't done in constructing a new plant and isn't necessary for modifying an existing plant.

The first concern stated in the Supplementary Information is that the scope of the activity envisioned by this subsubarticle is not clear and the NRC is unable to determine if the provisions of IWA-4340 would maintain safety and ensure protection of the public health and safety. ASME Codes do not provide details and examples of every configuration that a designer faces in designing a new plant nor for a designer modifying an existing plant. Designs that comply with the provisions of the Codes are acceptable. IWA-4340 is not limited to application nor to specific designs or configurations because the Code rules for materials, design, fabrication, examination, installation, testing and inspection take the application into account in providing such rules and provide the general configuration requirements for assuring structural integrity. Since these rules must be met for the modification to be acceptable, the concern for the application and with maintaining safety and protecting the public is addressed by the existing Code rules.

The second concern is that pressure testing of the modification may not be required for a new welded pressure boundary. Because the new weld makes a new pressure boundary, a Section XI pressure test would be required.

The third concern is that the terminology "beyond the limits of the modification" needs to be more specifically defined. Section XI defines the terms flaw and defect and uses these terms with those specific definitions in mind. Therefore, a flaw outside of the modification might be acceptable until it reached the condition of a defect, which makes it unacceptable or a flaw outside of the modification might be acceptable until it violated the design or configuration requirements used in the design of the modification. The specifics depend on the type of degradation and the design of the modification.

The fourth concern is that the NRC does not agree with the wording "when practicable" in IWA-4340(c), relating to validation of the projected flaw growth. The configuration of the modification may not allow validation of the projected flaw growth once the modification is installed, which is why such wording was added. Not being able to validate the projected flaw growth was considered in the approval of IWA-4340 and was accepted because the modification

must be designed with an intended life that includes a projection of any growth in the defective area. The additional examinations to detect propagation of the flaw beyond the limits of the modification are confirming the adequacy of the original projected growth and assigned intended life of the modification. The intended life must be documented in accordance with IWA-4150(c)(5). If it is not practicable to validate the projected growth itself, the frequency of the examinations would need to be established based on the knowledge of the projected growth used in the design of the modification and the assigned intended life of the modification. In some cases there is no need to validate the projected growth, such as a socket weld crack, because the modification assumes the defect extends the full circumference of the weld or item and has provided for structure integrity such that no credit is taken for the weld or item; in such examples the defect can never grow outside the modification.

The fifth concern is that the licensee would be responsible for determining the method, frequency and acceptance criteria of the additional examinations to detect propagation of the flaw beyond the limits of the modification. The method, frequency, and acceptance criteria are based on the type of degradation. In addition, if the projected flaw growth can be validated, these examinations are being performed in the defective area that is not credited for any structural integrity so the specifics of these examinations are not critical other than to assure the defective area doesn't grow outside the limits of the modification. In addition, licensees have structural integrity requirements in their Technical Specifications or in their Technical Requirements Manual that require licensees to assure structural integrity is maintained.

Therefore, to assure structural integrity, licensees would be required to design the limits of the modification and the intended life of the modification based on a conservative determination of the projected growth of the defect and establish the method and frequency of examination to confirm that the degradation has not propagated outside the limits of the modification. This is what IWA-4340 requires and it provides adequate assurance of structural integrity and therefore safety.

Lastly, the NRC is concerned that the provisions of IWA-4340 could result in inconsistencies in application at different facilities for the same type of mitigating action. While consistency may be desirable in regulating licensees, it should be remembered that plants are not designed with consistency, because the designers have many options in designing to address similar conditions. The same is true of these modifications. The modifications may be different and the examination requirements will depend on the type of modification, the configuration of the component on which the modification has been installed, and the type and growth rate of the degradation. Therefore, consistency is not applicable.

Based on the details provided above, the proposed modification 50.55a(b)(2)(xxv) should be deleted.

9) 50.55a(b)(2)(xxvi)

In response to the NRC's request for information that would justify the elimination of the pressure test requirements of IWA-4540(c) in the 1998 Edition, the following information is submitted.

The required pressure test in the 1998 Edition of Section XI for replacement of mechanical connections was a system leakage test conducted during operation at nominal operating pressure. Contrary to the statement in the Supplementary Information, this pressure test does not verify structural integrity of the pressure boundary.

IWA-4540(c) is only applicable for mechanical joints where one or both of the connecting items has been replaced. Thus the mechanical connection has already been disassembled resulting in inspection of the items and bolting, if bolting is involved in the mechanical connection. Therefore, the purpose of the system leakage test was only to inspect for leakage after reassembly. 10 CFR 50 Appendix B criterion XI and ANSI N18.7 paragraph 5.2.19 and other Quality Assurance standards all require that post-maintenance testing (PMT) be performed to demonstrate satisfactory performance following work such as a Section XI replacement. Therefore, licensees are required to perform PMT whether or not Section XI specifies a system leakage test. In addition, Section XI did not prescribe acceptance criteria for the amount of leakage that might occur at a mechanical connection. This has always been the responsibility of the licensee and its test control program requirements.

Finally, licensee operators and system engineers are routinely performing walk downs that identify and respond to system leakages.

For the above reasons, ASME determined that the requirement for a Code examination to look for leakage of these replaced mechanical connections was unnecessary and was adequately addressed by licensee's programs.

Therefore, there is no need for the proposed modification 50.55a(b)(2)(xxvi) and it should be deleted.

10) 50.55a(b)(2)(xxvii)

The proposed modification 50.55a(b)(2)(xxvii) on page 892 imposes an additional requirement not discussed in the FR Supplementary Information. This additional requirement states that if insulation is removed from a bolted connection to perform a VT-2 examination with the system depressurized in accordance with IWA-5242(a), a system pressure test and VT-2 examination must be performed after the insulation is reinstalled. This condition was not included in RG 1.147 conditions on Code Case N-616.

The wording in IWA-5242(a) implies that the system pressure test and VT-2 is performed prior to the system being depressurized for performance of the VT-2 with insulation removed. With this sequence of performance, there is no need to re-perform the system pressure test after the insulation is reinstalled. Because IWA-5242(a) is only applicable to systems borated for the purposes of controlling reactivity, it doesn't matter whether the insulation is removed for examination of the bolting prior to performing the system pressure test or after performing the system pressure test since evidence of leakage would be indicated by the presence of boric acid residues.

Therefore, for the reasons stated above and because the NRC has not explained the basis for this additional requirement, this portion of the proposed modification 50.55a(b)(2)(xxvii) should be deleted.

11) 50.55a(b)(2)(xxviii)

The proposed modification 50.55a(b)(2)(xxviii) is based on a misunderstanding of the Code requirements. The NRC apparently does not realize that IWA-4221 and IWA-4222, not IWA-4226, address the stated concern and that the NRC already had a modification 50.55a(b)(2)(xvii) that essentially addressed the same concern.

The change to IWA-4226.1 in the 2003 Addenda only addresses reconciliation of design requirements, not administrative requirements, such as QA, certification and stamping, reports, and authorized inspection. The correct paragraph to address the subject of reconciliation of these administrative requirements is IWA-4222. Although IWA-4222(a)(2) does not require reconciliation of these administrative requirements, IWA-4222(b) requires that a complete set of administrative requirements be met, either those of the Construction Code of the item being replaced or the Construction Code of the item to be used for the replacement. However, to address a previous NRC modification to IWA-4222 [50.55a(b)(2)(xvii)], Section XI was revised in the 2000 Addenda to add Footnote 3 to IWA-4222 to clarify that IWA-4222 does not negate the requirement to implement the Owner's QA Program, nor does it affect Owner commitments to regulatory and enforcement authorities. Thus IWA-4222 already addresses the concern that is driving the proposed modification 50.55a(b)(2)(xxviii).

The following comments address the NRC's example included in the Supplementary Information to illustrate their concern. The example indicates that a component manufactured in a commercial shop that does not have a quality assurance program could be used in a safety-related application without having to reconcile quality assurance requirements. For some older plants with components not constructed to Section III, a component could conceivably be manufactured in a commercial shop if that was the way the original component was manufactured, but as clarified by Footnote 3, Owner's commitments would require the Owner to perform a commercial grade dedication to justify acceptability of a commercial item in a safety-related application. For plants with components constructed to Section III, this example is not allowed by Section XI IWA-4221(b) and (c) and IWA-4222(b).

As justified above, this proposed modification 50.55a(b)(2)(xxviii) should be deleted.