



# REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

## REGULATORY GUIDE 1.193

*(Draft was issued as DG-1135, dated May 2006)*

### ASME CODE CASES NOT APPROVED FOR USE

#### A. INTRODUCTION

In Title 10, Part 50, of the *Code of Federal Regulations* (10 CFR Part 50), “Domestic Licensing of Production and Utilization Facilities” (Ref. 1), Section 50.55a(c), “Reactor Coolant Pressure Boundary,” requires, in part, that components of the reactor coolant pressure boundary be designed, fabricated, erected, and tested in accordance with the requirements for Class 1 components of Section III, “Rules for Construction of Nuclear Power Plant Components,” of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code (Ref. 2) or equivalent quality standards. Section 50.55a(f), “Inservice Testing Requirements,” requires, in part, that Class 1, 2, and 3 components and their supports meet the requirements of the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) (Ref. 3) or equivalent quality standards. Finally, 10 CFR 50.55a(g), “Inservice Inspection Requirements,” requires, in part, that Class 1, 2, 3, MC (metal containment), and CC (concrete containment) components and their supports meet the requirements of Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components,” of the ASME BPV Code or equivalent quality standards.

The ASME publishes a new edition of the BPV and OM Codes every 3 years and new addenda every year. The latest editions and addenda of Section III, Section XI, and the OM Code that the U.S.

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The U.S. Nuclear Regulatory Commission (NRC) issues regulatory guides to describe and make available to the public methods that the NRC staff considers acceptable for use in implementing specific parts of the agency’s regulations, techniques that the staff uses in evaluating specific problems or postulated accidents, and data that the staff needs in reviewing applications for permits and licenses. Regulatory guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions that differ from those set forth in regulatory guides will be deemed acceptable if they provide a basis for the findings required for the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public.

Regulatory guides are issued in 10 broad divisions: 1, Power Reactors; 2, Research and Test Reactors; 3, Fuels and Materials Facilities; 4, Environmental and Siting; 5, Materials and Plant Protection; 6, Products; 7, Transportation; 8, Occupational Health; 9, Antitrust and Financial Review; and 10, General.

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Nuclear Regulatory Commission (NRC) has approved for use by licensees are referenced in 10 CFR 50.55a(b). The ASME also publishes Code Cases for Section III and Section XI quarterly and Code Cases for the OM Code yearly. Code Cases provide alternatives developed and approved by the ASME.

The NRC staff has reviewed Section III and Section XI Code Cases listed in Supplements 7–12 to the 2001 Edition, and Supplement 1 to the 2004 Edition of the ASME BPV Code. Revision 34 of Regulatory Guide 1.84, “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III” (Ref. 4), and Revision 15 of Regulatory Guide 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1” (Ref. 5), have been revised to identify the Code Cases that the NRC has determined to be acceptable alternatives to applicable parts of Section III and Section XI. These latest revisions specify the Code Cases determined to be acceptable. *This regulatory guide does not approve the use of the Code Cases listed herein.*

Because this regulatory guide does not approve the use of the Code Cases listed herein, it does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (Ref. 6). The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or requirement unless the requesting document displays a currently valid control number issued by the Office of Management and Budget (OMB).

## **B. DISCUSSION**

This regulatory guide lists the Code Cases that the NRC has determined not to be acceptable for use on a generic basis. A brief description of the basis for the determination is provided with each Code Case. Licensees may submit a request to implement one or more of the Code Cases listed below through 10 CFR 50.55a(a)(3), which permits the use of alternatives to the Code requirements referenced in 10 CFR 50.55a, provided that the proposed alternatives result in an acceptable level of quality and safety. Licensees must submit a plant-specific request that addresses the NRC’s concerns about the Code Case at issue.

## **C. REGULATORY POSITION**

For this guide, the NRC staff reviewed the Section III and Section XI Code Cases listed in Supplements 7–12 to the 2001 Edition, and Supplement 1 to the 2004 Edition of the ASME BPV Code. Licensees must not implement Code Cases listed in this guide without prior NRC approval.

### **1. Unacceptable Section III Code Cases**

The NRC determined that the following Section III Code Cases are unacceptable for use by licensees in their Section III design and construction programs.

**Table 1. Unacceptable Section III Code Cases**

Code Case Number	Table 1 Unacceptable Section III Code Cases	Date of ASME Action
	Summary	
N-284-1	<p data-bbox="415 432 1166 495"><i>Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC</i></p> <p data-bbox="415 522 1201 1755">(1) The following errata, misprints, recommendations, and errors have been identified:</p> <ul style="list-style-type: none"> <li data-bbox="477 590 1130 653">• Fig. 1511.1, The curve for <math>\alpha_{\theta L}</math> should not exceed 0.8 for any value of (R/t).</li> <li data-bbox="477 659 1192 789">• -1512, The statement “See Fig. 1512-1 then see -1713.1.2 for method of calculating M” should be rephrased as: “See -1713.1.2 for method of calculating M, then see Fig. -1512-1.”</li> <li data-bbox="477 795 1101 858">• -1513, Recommend “Use the value of <math>\alpha_{i1}</math> given for spherical shells in accordance with -1512.”</li> <li data-bbox="477 865 1198 1167">• -1521, (i) In (a) <i>Axial Compression</i>, “<math>\alpha_{\theta G} = \alpha_{\theta L}</math>” should be changed to “<math>\alpha_{\phi G} = \alpha_{\phi L}</math>.” (ii) The source of the equations shown under “(a) <i>Axial Compression</i>” provided separate instability equations for stringer-stiffened and ring-stiffened cylindrical shells. The Code Case adopted the instability equations pertaining to ring-stiffened shells, which are less conservative than those for stringer instability, for both ring and/or stringer stiffened cylindrical shells. Is this the intent? (Ref. 7).</li> <li data-bbox="477 1173 1192 1236">• -1712.1.1, The equation “<math>C_{\theta h} = 0.92/(M_{\theta} - 0.636)</math>” should be changed to “<math>C_{\theta h} = 0.92/(M_{\phi} - 0.636)</math>.”</li> <li data-bbox="477 1243 1149 1274">• -1712.1.1-1, The leftmost curve should be labeled <math>C_{\theta h}</math>.</li> <li data-bbox="477 1281 1166 1373">• -1712.2.2, (a) <i>Axial Compression</i>, (i) In the formula for <math>\sigma_{\phi ej}</math>, the denominator should be <math>(m\pi/L_j)^2 \cdot t_{\phi}</math>. (ii) The expressions for <math>C_{\phi}</math> and <math>C_{\theta}</math> should be separated.</li> <li data-bbox="477 1379 1136 1472">• -1712.2.3, (i) The factor 1.944 in an older edition has been changed to 2.00. No basis is apparent. (ii) The misprint “<math>t_1^{1/4}</math>” should be corrected to “<math>t_1^{1/2}</math>.”</li> <li data-bbox="477 1478 1198 1570">• -1713.1.1, (i) The equation “<math>\sigma_{ra} = \alpha_{\phi \theta} \cdot \sigma_{\phi \theta el} / FS</math>” should be changed to “<math>\sigma_{ra} = \alpha_{\phi \theta L} \cdot \sigma_{\phi \theta el} / FS</math>.” (ii) The title of (c) should be changed to “<i>Axial Compression Plus In-Plane Shear.</i>”</li> <li data-bbox="477 1577 1187 1640">• -1713.1-1, In (b), the lower value “<math>K_s = \sigma_{ra}</math>” on the vertical axis should be changed to “<math>K_s = \sigma_{ha}</math>.”</li> <li data-bbox="477 1646 1187 1755">• -1713.2.1, (i) The headings for (b) and (c) should include the words “<i>In-Plane.</i>” (ii) In (b) “<i>Axial Compression Plus Shear,</i>” “<math>\sigma_{\theta}</math>” should be changed to “<math>\sigma_{\phi}</math>.”</li> </ul>	5/9/03

Code Case Number	Table 1 Unacceptable Section III Code Cases	Date of ASME Action
	Summary	
N-284-1 (cont'd)	<i>Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC</i>	5/9/03
	(2) Applicants intending to use Code Case N-284-1 shall submit a request to the NRC staff for its review and approval on a plant-specific basis.  (3) The rules applicable to evaluate the buckling and instability of containment shells for Section III, Division 3, are under development. Currently, use of Code Case N-284-1 by licensees for storage canisters and transportation casks is permissible provided it has been reviewed and approved by the NRC.	
N-483-2 N-483-3	<i>Alternative Rules to the Provisions of NCA-3800, Requirements for Purchase of Material, Section III, Divisions 1 and 3</i>	5/7/99 2/25/02
	The Code Case lacks sufficient detail to ensure that the supplied material is as represented by the Certified Material Test Report.	
N-510 N-510-1	<i>Borated Stainless Steel for Class CS Core Support Structures and Class 1 Component Supports, Section III, Division 1</i>	12/9/93 8/14/01
	No technical basis was provided for expanding the Code Case to include borated stainless steel Types 304B, 304B1, 304B2, and 304B3. A considerable amount of information was required to support the types presently contained in the Code Case. The revised Code Case would permit borated stainless steel to be used for component supports within the reactor vessel. The technical basis to support the Code Case only addresses the use of these materials as component supports in spent fuel racks and transportation casks.	
N-519	<i>Use of 6061-T6 and 6061-T651 Aluminum for Class 1 Nuclear Components</i>	Annulled 2/3/03
	Code Case is applicable to only one DOE aluminum vessel.	
N-530	<i>Provisions for Establishing Allowable Axial Compressive Membrane Stresses in the Cylindrical Walls of 0-15 Psi Storage Tanks, Classes 2 and 3</i>	R2/3/03 (7/01E)
	There are numerous errors in the equations. The errors must be corrected before the Code Case can be approved for use.	

Code Case Number	Table 1 Unacceptable Section III Code Cases	Date of ASME Action
	Summary	
N-565	<i>Alternative Methods of Nozzle Attachment for Class 1 Vessels</i>	12/3/99
	The Code Case essentially requires a design using a seal to protect the threads from the contained fluid, and seals are not a Code item. The seal, which plays a very important part in the integrity of the joint, imposes too great a vulnerability in the design. The supporting information for the Code Case does not demonstrate the resulting threaded nozzle configuration is equivalent in integrity to that of a welded connection.	
N-595 N-595-1 N-595-2 N-595-3	<i>Requirements for Spent Fuel Storage Canisters, Section III, Division 1</i>	2/26/99
	Regulatory approval for the use of multi-purpose casks is presently addressed by the NRC Spent Fuel Project Office Interim Staff Guidance No. 4 (ISG-4), Rev. 1 (Ref. 8). The interim staff guidance provides a framework to ensure that the cask system, as designed, and when fabricated and used in accordance with the conditions specified in its Certificate of Compliance, meets the requirements of 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste" (Ref. 9). The ASME has developed Code Case N-717 to replace Code Case N-595-3. Thus, Code Case N-595-3 will be retained in Regulatory Guide 1.193. Code Case N-717 is currently under review by the NRC and is listed below pending the results of the review.	9/24/99 12/8/00 04/08/02
N-645 N-645-1	<i>Use of Rupture Disk Devices on Nuclear Fuel Storage Canisters, Class 1, Section III, Division 1</i>	6/14/00
	The NRC does not permit the use of rupture disk devices in spent nuclear fuel storage canister designs.	2/3/03

Code Case Number	Table 1 Unacceptable Section III Code Cases	Date of ASME Action
	Summary	
N-659 N-659-1	<p><i>Use of Ultrasonic Examination in Lieu of Radiography for Weld Examination, Section III, Division I</i></p> <p>The NRC is not going to endorse Code Case N-659 or Code Case N-659-1 at this time given the number of issues raised by NRC staff and the concerns expressed in the public comments. The NRC has determined that a more effective approach for developing a suitable performance demonstration program would be to work with ASME International to resolve the issues.</p> <p>Code Case N-659 was conditionally approved in Draft Regulatory Guide DG-1133 (proposed Revision 34 of Regulatory Guide 1.84), which was published for public comment on October 27, 2006 (71 FR 62947). Additional draft conditions were discussed in the statement of considerations for the proposed rule. Code Case N-659-1 was listed as unapproved in Draft Regulatory Guide DG-1135 (proposed Revision 2 to Regulatory Guide 1.193, "ASME Code Cases Not Approved for Use"), which was published for public comment on June 6, 2006 (71 FR 32615).</p>	9/17/02 11/18/03
N-673	<p><i>Boron Containing Powder Metallurgy Aluminum Alloy for Storage and Transportation of Spent Nuclear Fuel, Section III, Division I</i></p> <p>The Code Case does not address the following:</p> <ol style="list-style-type: none"> <li>(1) Corrosion properties of this material in spent fuel pool chemistry and/or clean water.</li> <li>(2) Impact properties for use as a structural material.</li> <li>(3) Uniform distribution of boron carbide in the aluminum matrix.</li> <li>(4) Mechanical properties for the use of the material in high-temperature conditions.</li> </ol>	8/07/03
N-693	<p><i>Alternative Method to the Requirements of NB-3228.6 for Analyzing Piping Subjected to Reversing Dynamic Loads, Section III, Division I</i></p> <p>The Code Case would permit the use of the design, service, and test limits in Paragraph NB-3656(b) for Level D Service Limits. The limits in Paragraph NB-3656(b) are prohibited per 10 CFR 50.55a(b)(1)(iii).</p>	5/21/03

Code Case Number	Table 1 Unacceptable Section III Code Cases	Date of ASME Action
	Summary	
N-717	<i>Requirements for Construction of Storage Containments for Spent Nuclear Fuel and High Level Radioactive Waste and Material, Section III, Division 3</i>	5/04/04
	<p>The provisions of the Code Case are copied from the July 1, 2005, addenda to “Containments for Transportation and Storage of Spent Nuclear Fuel and High Level Radioactive Material and Waste,” Section III, Division 3. The changes to the ASME Code contained in the addenda are presently being reviewed by the NRC staff. The Code Case is listed in this guide pending the results of the NRC staff review.</p> <p>Regulatory approval for the use of multi-purpose casks is presently addressed by ISG-4, Rev. 1 (Ref. 8). The interim staff guidance provides a framework to ensure that the cask system, as designed, and when fabricated and used in accordance with the conditions specified in its Certificate of Compliance, meets the requirements of 10 CFR Part 72 (Ref. 9).</p>	

## 2. Unacceptable Section XI Code Cases

The NRC determined that the following Section XI Code Cases are unacceptable for use by licensees in their Section XI inservice inspection programs.

**Table 2. Unacceptable Section XI Code Cases**

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
N-465 N-465-1	<i>Alternative Rules for Pump Testing, Section XI, Division 1</i>	11/30/88 Annulled 2/14/03
	The draft standard referenced in the Code Case is outdated. The requirements contained in the OM Code, "Code for Operation and Maintenance of Nuclear Power Plants," should be used. Note that Revision 12 of Regulatory Guide 1.147 (Ref. 5) approved N-465 for use. The disapproval of N-465 for use applies only to new users.	
N-473 N-473-1	<i>Alternative Rules for Valve Testing, Section XI, Division 1</i>	3/8/89 Annulled 2/14/03
	The draft standard referenced in the Code Case is outdated. The requirements contained in the OM Code, "Code for Operation and Maintenance of Nuclear Power Plants," should be used. Note that Revision 12 of Regulatory Guide 1.147 (Ref. 5) approved N-473 for use. The disapproval of N-473 for use applies only to new users.	
N-480	<i>Examination Requirements for Pipe Wall Thinning Due to Single Phase Erosion and Corrosion, Section XI, Division 1</i>	Annulled 9/18/01
	Code Case has been superseded by Code Case N-597, "Requirements for Analytical Evaluation of Pipe Wall Thinning," implemented in conjunction with NSAC-202L, "Recommendations for an Effective Flow-Accelerated Corrosion Program" (Ref. 10).	
N-498-2 N-498-3	<i>Alternative Requirements for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems, Section XI, Division 1</i>	6/9/95 5/20/98
	Code Case N-498-4 is conditionally approved in Revision 13 of Regulatory Guide 1.147 (Ref. 5). Those licensees choosing to implement this Code Case are to implement Revision 4, which is listed in Revision 15 of Regulatory Guide 1.147.	



Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
N-532-2	<i>Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Requested by IWA-4000 and IWA-6000, Section XI, Division 1</i>	7/23/02
	<p>The following concerns were identified during review of the Code Case:</p> <ol style="list-style-type: none"> <li>(1) The Code Case references new paragraph IWA-6350, which has not yet been incorporated into the ASME Code.</li> <li>(2) NRC staff had difficulty reconciling Footnote 1 and Table 4 regarding the applicable edition and addenda.</li> <li>(3) Submission of Form OAR-1 is at the end of each inspection period, rather than 90 days following the outage.</li> </ol>	
N-542	<i>Alternative Requirements for Nozzle Inside Radius Section Length Sizing Performance Demonstration, Section XI, Division 1</i>	Annulled 3/28/01
	Code Case N-542 was subsumed by Code Case N-552, "Alternative Methods—Qualification for Nozzle Inside Radius Section from the Outside Surface," which is being implemented by licensees. Thus, there is no need to approve Code Case N-542.	
N-547	<i>Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings, Section XI, Division 1</i>	Annulled 5/20/01
	Code Case N-547 states that the examination of CRD housing bolts, studs, and nuts is not required. However, 10 CFR 50.55a(b)(2)(xxi)(B) requires the examination of CRD bolting material whenever the CRD housing is disassembled and the bolting material is to be reused. Examination of CRD bolting material is required to verify that service-related degradation has not occurred, or that damage such as bending and galling of threads has not occurred when performing maintenance activities that require the removal and reinstallation of bolting.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
N-560 N-560-1 N-560-2	<i>Alternative Examination Requirements for Class 1, Category B-J Piping Welds, Section XI, Division 1</i>	8/9/96 2/26/99 2/14/03
	(1) The Code Case does not address inspection strategy for existing augmented and other inspection programs such as intergranular stress corrosion cracking (IGSCC), flow-assisted corrosion (FAC), microbiological corrosion (MIC), and pitting.  (2) The Code Case does not provide system-level guidelines for change in risk evaluation to ensure that the risk from individual system failures will be kept small and dominant risk contributors will not be created.	
N-561 N-561-1	<i>Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping, Section XI, Division 1</i>	12/31/96 3/28/01
	Neither the ASME Code nor the Code Case have criteria for determining the rate or extent of degradation of the repair or the surrounding base metal. Reinspection requirements are not provided to verify structural integrity since the root cause may not be mitigated.	
N-562 N-562-1	<i>Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Carbon Steel Piping, Section XI, Division 1</i>	12/31/96 3/28/01
	Neither the ASME Code nor the Code Case have criteria for determining the rate or extent of degradation of the repair or the surrounding base metal. Reinspection requirements are not provided to verify structural integrity since the root cause may not be mitigated.	
N-574	<i>NDE Personnel Recertification Frequency, Section XI, Division 1</i>	2/14/03
	Based on data obtained by the NRC staff during its review of Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," to Section XI, the NRC staff noted that proficiency decreases over time. The data do not support recertification examinations at a frequency of every 5 years.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
N-575	<i>Alternative Examination Requirements for Full Penetration Nozzle-to-Vessel Welds in Reactor Vessels with Set-On Type Nozzles, Section XI, Division 1</i>	2/14/03
	The supporting basis for the Code Case applies to the specific configuration of one plant and is not applicable on a generic basis. In addition, there are insufficient controls on stress and operating conditions to permit a generic reduction in examination volume. Finally, the boundaries of the volume of the weld, cladding, and heat affected zone from Figure 2 are ambiguous.	
N-577 N-577-1	<i>Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A, Section XI, Division 1</i>	9/2/97 2/14/03
	(1) The Code Case does not address inspection strategy for existing augmented and other inspection programs such as IGSCC, FAC, MIC, and pitting.  (2) The Code Case does not provide system-level guidelines for change in risk evaluation to ensure that the risk from individual system failures will be kept small and dominant risk contributors will not be created.	
N-578 N-578-1	<i>Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B, Section XI, Division 1</i>	9/2/97 2/14/03
	(1) The Code Case does not address inspection strategy for existing augmented and other inspection programs such as IGSCC, FAC, MIC, and pitting.  (2) The Code Case does not provide system-level guidelines for change in risk evaluation to ensure that the risk from individual system failures will be kept small and dominant risk contributors will not be created.	
N-587	<i>Alternative NDE Requirements for Repair/Replacement Activities, Section XI, Division 1</i>	Annulled 2/14/03
	The NRC believes this Code Case is in conflict with the review process for approval of alternatives under 10 CFR 50.55a(a)(3). The Code Case would permit a licensee and the Authorized Nuclear Inspector to choose unspecified alternatives to regulatory requirements.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
N-589 N-589-1	<i>Class 3 Nonmetallic Cured-in-Place Piping, Section XI, Division 1</i>	4/19/02 7/23/02
	<p>(1) The installation process provides insufficient controls on wall thickness measurement.</p> <p>(2) There are no qualification requirements for installers and installation procedures such as those for welders and welding procedures.</p> <p>(3) Fracture toughness properties of the fiberglass are such that the cured-in-place piping (CIPP) could crack during a seismic event.</p> <p>(4) Equations 4 and 5 in the Code Case contain an “i” term [a stress intensification factor] that is derived from fatigue considerations. Stress intensification factors, however, have not been developed for fiberglass materials.</p>	
N-590	<i>Alternative to the Requirements of Subsection IWE, Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Plants, Section XI, Division 1</i>	Annulled 4/8/02
	The provisions of the Code Case were incorporated into the 1998 Edition, which has been approved by the NRC. Thus, the Code Case is no longer needed and was annulled by the ASME.	
N-591	<i>Alternative to the Requirements of Subsection IWL, Requirements for Class CC Concrete Components of Light-Water Cooled Plants, Section XI, Division 1</i>	Annulled 4/8/02
	The provisions of the Code Case were incorporated into the 1998 Edition which has been approved by the NRC. Thus, the Code Case is no longer needed and was annulled by the ASME.	
N-613	<i>Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No’s. B3.10 and B3.90, Reactor Vessel-To-Nozzle Welds, Fig. IWB-2500-7(a), (b), and (c), Section XI, Division 1</i>	7/30/98
	The Code Case conflicts with and unacceptably reduces the requirements of 10 CFR 50.55a(b)(2)(xv)(K)(2)(i). A revision to the Code Case has been developed to address the concerns.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
N-615	<i>Ultrasonic Examination as a Surface Examination Method for Category B-F and B-J Piping Welds, Section XI, Division 1</i>	7/28/01
	The Code Case requires that the ultrasonic technique used be demonstrated capable of detecting certain size flaws on the outside diameter of the weld, but it does not specify any demonstration requirements. To be acceptable, Section XI, Appendix VIII, type rules for performance demonstration need to be developed and applied.	
N-618	<i>Use of a Reactor Pressure Vessel as a Transportation Containment System, Section XI, Division 1</i>	6/17/03
	The Code Case was developed as a potential option for shipping and disposal of a reactor pressure vessel (RPV). The NRC staff determined, however, that the Code Case was not applicable to the review and approval process for transportation packages. The use of RPVs as a transportation package has been addressed under 10 CFR Part 71, "Packaging and Transportation of Radioactive Material" (Ref. 11).	
N-622	<i>Ultrasonic Examination of RPV and Piping, Bolts, and Studs, Section XI, Division 1</i>	4/19/02
	The Code Case was published in May 1999. Industry Performance Demonstration Initiative efforts since that time have made this Code Case obsolete. Issues associated with supplements to Appendix VIII are being addressed individually in separate Code Cases.	
N-653	<i>Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds, Section XI, Division 1</i>	9/7/01

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date of ASME Action
	Summary	
	<p>(1) Section XI, Appendix VIII, Supplement 11, requires a personnel performance qualification as part of the procedure qualification. The detection acceptance criteria in the Code Case do not require personnel performance qualification as part of the procedure qualification. Personnel qualification is necessary to validate the effectiveness of the procedure qualification.</p> <p>(2) The minimum grading unit is 1.0 inch in the circumferential direction. The acceptance tolerance, however, is 0.75 inch root mean square error. Thus, the length sizing acceptance criteria do not adequately prevent the use of testmanship rather than skill to pass length sizing tests.</p>	
N-654	<i>Acceptance Criteria for Flaws in Ferritic Steel Components 4 in. and Greater in Thickness, Section XI, Division 1</i>	4/17/02
	Licensees intending to apply the rules of this Code Case must obtain NRC approval of the specific application in accordance with 10 CFR 50.55a(3).	
N-691	<i>Application of Risk-Informed Insights to Increase the Inspection Interval for Pressurized Water Reactor Vessels, Section XI, Division 1</i>	11/18/03
	The industry topical report in support of the Code Case relies on information developed to re-evaluate present requirements related to pressure vessel embrittlement and the pressurized thermal shock screening criteria. This information has not yet been fully reviewed by NRC staff.	
N-702	<i>Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1</i>	2/20/04
	A response to the NRC staff's request for additional information has not yet been received and therefore, insufficient information has been provided for the staff to make a determination relative to the acceptability of this Code Case.	

### 3. Unacceptable OM Code Cases

The following OM Code Cases were determined to be unacceptable for use by licensees in their inservice testing programs. The ASME issues OM Code Cases annually with publication of a new edition or addenda. No new OM Code Cases were added in this revision. To assist users of the OM Code, Column 3 of Table 3 lists the edition or addenda to which each Code Case was attached (E: edition; A: addenda), and whether the Code Case is new or reaffirmed.

**Table 3. Unacceptable OM Code Cases**

Code Case Number	Table 3 Unacceptable OM Code Cases	Edition/ Addenda
	Summary of Basis for Exclusion	
OMN-10, Rev. 0	<i>Requirements for Safety Significance Categorization of Snubbers Using Risk Insights and Testing Strategies for Inservice Testing of LWR Power Plants</i>	July 1, 2000A
	The method used for categorizing snubbers could result in certain snubbers being inappropriately categorized as having low safety significance. These snubbers would not be adequately tested or inspected to provide assurance of their operational readiness. In addition, unexpected extensive degradation in feedwater piping has occurred which would necessitate a more rigorous approach to snubber categorization than presently contained in this Code Case.	

### D. IMPLEMENTATION

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this regulatory guide. *This regulatory guide does not approve the use of the Code Cases listed herein.* Licensees may submit a plant-specific request to implement one or more of the Code Cases listed in this regulatory guide. The request must address the NRC's concerns about the Code Case at issue.

## REFERENCES

1. *Code of Federal Regulations*, Title 10, *Energy*, Part 50, “Domestic Licensing of Production and Utilization Facilities” (10 CFR Part 50), U.S. Nuclear Regulatory Commission, Washington, DC.<sup>1</sup>
2. ASME Boiler and Pressure Vessel Code, Section III, “Rules for Construction of Nuclear Power Plant Components,” Division I; and Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components,” American Society of Mechanical Engineers, New York, NY.<sup>2</sup>
3. ASME Code for Operation and Maintenance of Nuclear Power Plants, American Society of Mechanical Engineers, New York, NY.<sup>2</sup>
4. Regulatory Guide 1.84, “Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,” U.S. Nuclear Regulatory Commission, Washington, DC.<sup>3</sup>
5. Regulatory Guide 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,” U.S. Nuclear Regulatory Commission, Washington, DC.<sup>3</sup>
6. Paperwork Reduction Act of 1995 (Public Law 104-13), *United States Code*, Title 44, “Public Printing and Documents,” Chapter 35, “Coordination of Federal Information Policy” (44 U.S.C. 3501 *et seq.*), 104<sup>th</sup> Congress of the United States of America, Washington, DC.<sup>4</sup>
7. Miller, C.D., “Summary of Buckling Tests on Fabricated Steel Cylindrical Shells in USA,” in *Offshore Structures Engineering III: Buckling of Shells in Offshore Structures*, J.E. Harding, P.J. Dowling, and N. Agelidis, eds., Gulf Publishing Company, Houston, TX, pp. 429–447, 1982.

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<sup>1</sup> All NRC regulations listed herein are available electronically through the Public Electronic Reading Room on the NRC’s public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/cfr/>. Copies are also available for inspection or copying for a fee from the NRC’s Public Document Room at 11555 Rockville Pike, Rockville, MD; the PDR’s mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; email [PDR@nrc.gov](mailto:PDR@nrc.gov).

<sup>2</sup> Copies may be purchased from the American Society of Mechanical Engineers, Three Park Avenue, New York, NY 10016-5990; phone (212) 591-8500; fax (212) 591-8501; [www.asme.org](http://www.asme.org).

<sup>3</sup> All regulatory guides listed herein are available electronically through the Electronic Reading Room on the NRC’s public Web site at <http://www.nrc.gov/reading-rm/doc-collections/reg-guides/>. Active guides may be purchased from the National Technical Information Service (NTIS). Details may be obtained by contacting NTIS at 5285 Port Royal Road, Springfield, Virginia 22161, online at <http://www.ntis.gov>, by telephone at (800) 553-NTIS (6847) or (703) 605-6000, or by fax to (703) 605-6900. Copies are also available for inspection or copying for a fee from the NRC’s Public Document Room (PDR), which is located at 11555 Rockville Pike, Rockville, Maryland; the PDR’s mailing address is USNRC PDR, Washington, DC 20555-0001. The PDR can also be reached by telephone at (301) 415-4737 or (800) 397-4209, by fax at (301) 415-3548, and by email to [PDR@nrc.gov](mailto:PDR@nrc.gov).

<sup>4</sup> The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is available electronically through the *Federal Register* Web site administered by the U.S. National Archives and Records Administration, at <http://www.archives.gov/federal-register/laws/paperwork-reduction/>.



8. NRC Spent Fuel Project Office Interim Staff Guidance No. 4 (ISG-4), Rev. 1, “Clarification of Baseline Design Criteria,” U.S. Nuclear Regulatory Commission, Washington, DC.<sup>5</sup>
9. *Code of Federal Regulations*, Title 10, *Energy*, Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste” (10 CFR Part 72), U.S. Nuclear Regulatory Commission, Washington, DC.
10. “Recommendations for an Effective Flow-Accelerated Corrosion Program” (NSAC-202L-R3), Electric Power Research Institute, Palo Alto, CA.<sup>6</sup>
11. *Code of Federal Regulations*, Title 10, *Energy*, Part 71, “Packaging and Transportation of Radioactive Material” (10 CFR Part 71), U.S. Nuclear Regulatory Commission, Washington, DC.

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<sup>5</sup> This interim staff guidance is available electronically through the NRC’s Agencywide Documents Access and Management System (ADAMS), <http://www.nrc.gov/reading-rm/adams.html>, under Accession Number ML051520313.

<sup>6</sup> Copies may be purchased from the Electric Power Research Institute (EPRI), 3420 Hillview Ave., Palo Alto, California 94304; telephone (800) 313-3774; fax (925) 609-1310.