



**U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REGULATORY RESEARCH**

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**DRAFT REGULATORY GUIDE**

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**DRAFT REGULATORY GUIDE DG-1126**

(Proposed Revision 1 to Regulatory Guide 1.193)

**ASME CODE CASES NOT APPROVED FOR USE**

**A. INTRODUCTION**

In 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," 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,"<sup>1</sup> of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV Code) 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 "Code for Operation and Maintenance of Nuclear Power Plants" (OM Code) of the ASME OM Code or equivalent quality standards. Finally, 10 CFR 50.55a(g), "Inservice Inspection Requirements," requires, in part, that Classes 1, 2, 3, MC, and CC 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 three years and new addenda every year. The latest editions and addenda of Section III, Section XI, and the OM Code that have been approved for use by the NRC 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 or explain the intent of existing Code Requirements. Revision 32 of Regulatory Guide 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III,"<sup>2</sup> Regulatory Guide 1.192, "Operation and

<sup>1</sup> Copies may be obtained 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>2</sup> Revision 32 to Regulatory Guide 1.84 combined Regulatory Guides 1.84 and 1.85 to list all the Section III Code cases in one guide. The title of Regulatory Guide 1.84 has been modified to reflect this.

This regulatory guide is being issued in draft form to involve the public in the early stages of the development of a regulatory position in this areas. It has not received complete staff review and does not represent an official NRC staff position.

Public comments are being solicited on the draft regulatory guide (including any implementation schedule) and its associated regulatory analysis or value/impact statement. Comments should be accompanied by appropriate supporting data. Written comments may be submitted to the Rules and Directives Branch, DAS, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. E-mail comments may be sent to [NRCREP@nrc.gov](mailto:NRCREP@nrc.gov). Comments may also be submitted via the NRC's rulemaking web site at <http://ruleforum.llnl.gov>. Please include the draft guide

number [DG-1126] in the subject line of your comments. Comments will be most helpful if received by **September 2, 2004**.

Requests for single copies of active or draft regulatory guides (which may be reproduced) or for placement on an automatic distribution list for single copies of future draft guides in specific divisions should be made in writing to the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention, Office of Information Resources Management, Distribution Services Section; or by fax to (301) 415-2260. This guide is also available in the Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html> **ML040850236**.

Maintenance Code Case Acceptability, ASME OM Code,” and Revision 13 of Regulatory Guide 1.147, “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,” are being revised to identify the Code cases that have been determined by the NRC to be acceptable alternatives to applicable parts of Section III, the OM Code, and Section XI.

Section III and Section XI Code cases listed in Supplement 12 to the 1998 Edition of the ASME B&PV Code through Supplement 6 to the 2001 Edition have been reviewed by the NRC. Draft Regulatory Guide DG-1124, the proposed Revision 33 to Regulatory Guide 1.84, and Draft Regulatory Guide DG-1125, the proposed Revision 14 to Regulatory Guide 1.147, listing the Code cases determined to be acceptable have been published concurrently with this draft guide for public comment. 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 (44 U.S.C. 3501 *et seq.*). If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

## **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. A licensee must submit a plant-specific request that addresses the NRC’s concern 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 Supplement 12 to the 1998 Edition of the ASME B&PV Code through Supplement 12 to the 2001 Edition. Licensees must not implement Code cases listed in this guide without prior NRC approval. Periodic updates to this regulatory guide are planned to accommodate new Code cases and any revisions of existing Code cases.

### **1. UNACCEPTABLE SECTION III CODE CASES**

The following Section III Code cases were determined to be unacceptable for use by licensees in their Section III design and construction programs. The ASME issues Section III Code cases quarterly in supplements to a specific edition, i.e., a new edition of Section III is published every three years and supplements are published quarterly. Hence, there are 12 supplements to each edition. To distinguish new Code cases from those listed in previous versions of this guide, the new Code cases are shaded. The shading will assist in focusing attention during the public comment period on the changes to the guide. To assist users, the third column of Table 1 lists the date of approval by the ASME, the reaffirmation date (signified by the letter “R”), or for new Code cases, the supplement and edition in which each Code case was published (e.g., 3/01E means Code Case Supplement 3 to the 2001 Edition).

**TABLE 1 - UNACCEPTABLE SECTION III CODE CASES**

| CODE CASE NUMBER | TABLE 1, UNACCEPTABLE SECTION III CODE CASES   | DATE OR SUPPLEMENT/ EDITION |
|------------------|--|-----------------------------|
|                  | SUMMARY  |                             |
| N-284-1          | <i>Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC</i>  | R10/2/00                    |
|                  | <p>(1) The following errata, misprints, recommendations, and errors have been identified:</p> <ul style="list-style-type: none"> <li>• Fig. -1511.1, The curve for <math>\alpha_{\theta L}</math> should not exceed 0.8 for any value of (R/t).</li> <li>• - 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>• - 1513, Recommend "Use the value of <math>\alpha_{\theta i}</math> given for spherical shells in accordance with -1512."</li> <li>• - 1521, (i) In (a) <i>Axial Compression</i>, "<math>\alpha_{\theta G} = \alpha_{\theta L}</math>" should be changed to "<math>\alpha_{\theta G} = \alpha_{\theta 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. "Summary of Buckling Tests on Fabricated Steel Cylindrical Shells in USA," by C. D. Miller, in "Buckling of Shells in Offshore Structures," 1982.)</li> <li>• - 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>• Fig. -1712.1.1-1, The leftmost curve should be labeled <math>C_{\theta h}</math>.</li> <li>• - 1712.2.2, (a) <i>Axial Compression</i>, (i) In the formula for <math>\sigma_{\phi e j}</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> </ul> |                             |

| CODE CASE NUMBER    | TABLE 1, UNACCEPTABLE SECTION III CODE CASES   | DATE OR SUPPLEMENT/ EDITION |
|---------------------|--|-----------------------------|
|                     | SUMMARY  |                             |
| N-284-1<br>(cont'd) | <i>Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC</i>  | R10/2/00                    |
|                     | <ul style="list-style-type: none"> <li>• - 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^{3/4}</math>".</li> <li>• - 1713.1.1, (i) The equation "<math>\sigma_{Ta} = \alpha_{\phi\theta} \cdot \sigma_{\phi\theta el} / FS</math>" should be changed to "<math>\sigma_{Ta} = \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>• Fig. -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>• - 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> <p>(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.</p> |                             |
| N-483-2<br>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<br>R2/25/02          |
|                     | The Code case lacks sufficient detail to ensure that the supplied material is as represented by the Certified Material Test Report.  |                             |
| N-510<br>N-510-1    | Borated Stainless Steel for Class CS Core Support Structures and Class 1 Component Supports, Section III, Division 1   | 12/9/93<br>R8/14/01         |
|                     | 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.  |                             |

| CODE CASE NUMBER            | TABLE 1, UNACCEPTABLE SECTION III CODE CASES  | DATE OR SUPPLEMENT/ EDITION   |
|-----------------------------|---|-------------------------------|
|                             | SUMMARY   |                               |
| N-519                       | <i>Use of 6061-T6 and 6061-T651 Aluminum for Class 1 Nuclear Components</i>   | R2/23/00                      |
|                             | 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>  | R5/5/00                       |
|                             | There are numerous errors in the equations. The errors must be corrected before the Code case can be approved for use.  |                               |
| N-565                       | <i>Alternative Methods of Nozzle Attachment for Class 1 Vessels</i>   | R12/3/99                      |
|                             | 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<br>N-595-1<br>N-595-2 | <i>Requirements for Spent Fuel Storage Canisters, Section III, Division 1</i>   | 2/26/99<br>9/24/99<br>12/8/00 |
|                             | Regulatory approval for the use of multi-purpose casks is presently addressed by the NRC Spent Fuel Project Office Interim Staff Guidance No. 4, Rev. 1 (ISG-4, Rev. 1). 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.  |                               |
| N-595-3                     | <i>Requirements for Spent Fuel Storage Canisters, Section III, Division 1</i>   | 6/01E                         |
|                             | Regulatory approval for the use of multi-purpose casks is presently addressed by the NRC Spent Fuel Project Office Interim Staff Guidance No. 4, Rev. 1 (ISG-4, Rev. 1). The ASME has recently approved the incorporation of the provisions of Code Case N-595-3 into Section III, Division III, "Containment Systems for Storage and Transport Packagings of Spent Nuclear Fuel and High Level Radioactive Material and Waste." Thus, the Code case is no longer required. |                               |

| CODE CASE NUMBER | TABLE 1, UNACCEPTABLE SECTION III CODE CASES  | DATE OR SUPPLEMENT/ EDITION |
|------------------|---|-----------------------------|
|                  | SUMMARY   |                             |
| N-645<br>N-645-1 | <i>Use of Rupture Disk Devices on Nuclear Fuel Storage Canisters, Class 1, Section III, Division 1</i>  | 6/14/00<br>4/01E            |
|                  | The NRC does not permit the use of rupture disk devices in spent nuclear fuel storage canister designs. |                             |

## 2. UNACCEPTABLE SECTION XI CODE CASES

The following Section XI Code cases were determined to be unacceptable for use by licensees in their Section XI inservice inspection programs. The ASME issues Section XI Code cases quarterly in supplements to a specific edition, i.e., a new edition of Section XI is published every three years and supplements are published quarterly. Hence, there are 12 supplements to each edition. To distinguish new and revised Code cases from those listed in previous versions of the guide, the new and revised Code cases are shaded. The shading will assist in focusing attention during the public comment period on the changes to the guide. To assist users, the third column of Table 2 lists the supplement and edition in which each Code case was published (e.g., 7/95E means Code Case Supplement 7 to the 1995 Edition).

**TABLE 2 - UNACCEPTABLE SECTION XI CODE CASES**

| CODE CASE NUMBER | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES   | DATE OR SUPPLEMENT/ EDITION |
|------------------|---|-----------------------------|
|                  | SUMMARY   |                             |
| N-323-1          | <i>Alternative Examination for Welded Attachments to Pressure Vessels, Section XI, Division 1</i>   | R4/8/02                     |
|                  | This Code case was reinstated but modified from the original Code case. The revised Code case would permit surface examinations from the accessible side, which are of limited value. Volumetric examination of the Class 1 integrally welded attachment from the accessible side is practical and must be performed to adequately determine the condition of the weld. |                             |
| N-465<br>N-465-1 | <i>Alternative Rules for Pump Testing, Section XI, Division 1</i>   | 11/30/88<br>8/14/97         |
|                  | 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 RG 1.147 approved N-465 for use. The disapproval of N-465 for use applies only to new users.  |                             |

| CODE CASE NUMBER   | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES  | DATE OR SUPPLEMENT/ EDITION |
|--------------------|--|-----------------------------|
|                    | SUMMARY  |                             |
| N-473<br>N-473-1   | <i>Alternative Rules for Valve Testing, Section XI, Division 1</i>   | 3/8/89<br>8/14/97           |
|                    | 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 RG 1.147 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 on<br>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."  |                             |
| N-498-2<br>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<br>5/20/98           |
|                    | Code Case N-498-4 is conditionally approved in Revision 13 to Regulatory Guide 1.147. Those licensees choosing to implement this Code case are to implement Revision 4.  |                             |
| 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</i>   | 5/01E                       |
|                    | The following concerns were identified during review of the Code case:<br>(1) The Code case references new paragraph IWA-6350 which has not yet been incorporated into the ASME Code;<br><br>(2) NRC staff had difficulty reconciling Footnote 1 and Table 4 regarding the applicable edition and addenda; and<br><br>(3) Submission of Form OAR-1 is at the end of each inspection period rather than 90 days following the outage. |                             |

| CODE CASE NUMBER            | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES  | DATE OR SUPPLEMENT/ EDITION  |
|-----------------------------|--|------------------------------|
|                             | SUMMARY  |                              |
| N-542                       | <i>Alternative Requirements for Nozzle Inside Radius Section Length Sizing Performance Demonstration, Section XI, Division 1</i>   | Annulled on 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 N-542.  |                              |
| N-547                       | <i>Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings, Section XI, Division 1</i>   | Annulled on 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. |                              |
| N-560<br>N-560-1<br>N-560-2 | <i>Alternative Examination Requirements for Class 1, Category B-J Piping Welds, Section XI, Division 1</i>   | 8/9/96<br>2/26/99<br>3/28/00 |
|                             | (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.<br><br>(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<br>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<br>R3/28/01         |
|                             | 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.  |                              |



| CODE CASE NUMBER | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES  | DATE OR SUPPLEMENT/ EDITION |
|------------------|--|-----------------------------|
|                  | SUMMARY  |                             |
| N-562<br>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<br>R3/28/01        |
|                  | Neither the ASME Code nor the Code case have criteria for determining the rate or extent of degradation of the repair or the surrounding basemetal. 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>   | 8/14/97                     |
|                  | 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 does not support re-certification examinations at a frequency of every 5 years.  |                             |
| 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>  | 8/14/97                     |
|                  | 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<br>N-577-1 | <i>Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A, Section XI, Division 1</i>   | 9/2/97<br>3/28/00           |
|                  | (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.<br><br>(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. |                             |

| CODE CASE NUMBER | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES   | DATE OR SUPPLEMENT/ EDITION |
|------------------|---|-----------------------------|
|                  | SUMMARY   |                             |
| N-578<br>N-578-1 | <i>Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B, Section XI, Division 1</i>  | 9/2/97<br>3/28/00           |
|                  | <p>(1) The Code case does not address inspection strategy for existing augmented and other inspection programs such as intergranular stress corrosion cracking, flow-assisted corrosion, microbiological corrosion, and pitting.</p> <p>(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.</p>   |                             |
| N-587            | <i>Alternative NDE Requirements for Repair/Replacement Activities, Section XI, Division 1</i>   | 12/12/97                    |
|                  | 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.  |                             |
| N-589            | <i>Class 3 Nonmetallic Cured-in-Place Piping, Section XI, Division 1</i>  | R4/19/02                    |
|                  | <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> |                             |

| CODE CASE NUMBER | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES   | DATE OR SUPPLEMENT/ EDITION |
|------------------|---|-----------------------------|
|                  | SUMMARY   |                             |
| N-589-1          | <i>Class 3 Nonmetallic Cured-in-Place Piping, Section XI, Division 1</i>  | 5/01E                       |
|                  | <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.<br/>(Note: Conditions are identical to those contained in Revision 13 to RG 1.147 for Code Case N-589).</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 on 4/8/02          |
|                  | <p>The NRC staff is developing a rule that will endorse the ASME Code through the 2000 Addenda. Several licensees have submitted relief requests to use Subsection IWE, 1998 Edition. This Code case is a duplicate of the provisions contained in Subsection IWE, 1998 Edition. The licensee submittals and NRC approval, as supplemented by the licensee's commitments in the responses to the staff's Request for Additional Information, were plant-specific. A draft generic approval of Subsection IWE has been developed for the proposed rule but, at this time, is considered predecisional. Thus, a generic position is not yet available for this Code case.</p>   |                             |

| CODE CASE NUMBER | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES  | DATE OR SUPPLEMENT/ EDITION |
|------------------|--|-----------------------------|
|                  | SUMMARY  |                             |
| 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 on 4/8/02          |
|                  | The NRC staff is developing a rule that will endorse the ASME Code through the 2000 Addenda. Several licensees have submitted relief requests to use Subsection IWL, 1998 Edition. This Code case is a duplicate of the provisions contained in Subsection IWL, 1998 Edition. The licensee submittals and NRC approval, as supplemented by the licensee's commitments in the responses to the staff's Request for Additional Information, were plant-specific. A draft generic approval of Subsection IWL has been developed for the proposed rule but, at this time, is considered predecisional. Thus, a generic position is not yet available for this Code case. |                             |
| 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.  |                             |
| N-615            | <i>Ultrasonic Examination as a Surface Examination Method for Category B-F and B-J Piping Welds, Section XI, Division 1</i>  | 12/98E                      |
|                  | 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-622            | <i>Ultrasonic Examination of RPV and Piping, Bolts, and Studs, Section XI, Division 1</i>  | R4/19/02                    |
|                  | 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.   |                             |

| CODE CASE NUMBER | TABLE 2, UNACCEPTABLE SECTION XI CODE CASES   | DATE OR SUPPLEMENT/ EDITION |
|------------------|---|-----------------------------|
|                  | SUMMARY   |                             |
| N-653            | <i>Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds, Section XI, Division 1</i>  | 3/01E                       |
|                  | (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.<br>(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. |                             |
| N-654            | <i>Acceptance Criteria for Flaws in Ferritic Steel Components 4 in. and Greater in Thickness, Section XI, Division 1</i>  | 4/01E                       |
|                  | 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).  |                             |

### 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   | DATE OR 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. |                         |

## REGULATORY ANALYSIS

This regulatory guide lists only the Code cases that the NRC staff has determined to be unacceptable for use in the design and construction, inservice inspection, and inservice testing of nuclear power plant systems and components. Therefore, a regulatory analysis has not been prepared for this guide.

Previous reviews of ASME Code cases discussed only the Code cases that the NRC staff determined to be acceptable. This guide was developed at industry request to list the Code cases that the NRC staff has determined to be unacceptable for use in licensee design and construction, inservice inspection, and inservice testing programs, including a summary of the basis for disapproval. Providing the basis for disapproval of a Code case affords licensees the opportunity to address NRC staff concerns through 10 CFR 50.55a(a)(3), which permits the use of alternatives to the mandated ASME Code requirements provided the proposed alternatives result in an acceptable level of quality and safety and their use is authorized by the Director of the Office of Nuclear Reactor Regulation.

Providing the basis for disapproval of a Code case in this guide will also result in a conserving of industry resources. The cognizant ASME committees will be able to focus their attention on specific issues. In addition, licensees who choose to request alternatives under 10 CFR 50.55a(a)(3) will understand the NRC staff concerns to be addressed. NRC resources will be saved because the 10 CFR 50.55a(a)(3) process will be more efficient. When the ASME modifies a Code case to address NRC staff concerns, additional NRC resources will be saved because the NRC will be able to generically approve the Code cases thus obviating the need for case-by-case approval. In addition, since many Code cases generally simplify implementation of ASME Code provisions, reduce radiological exposure, or incorporate operating experience and technological improvements, it is anticipated that, when NRC staff concerns have been addressed, licensees will still be able to further reduce allocated resources.