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DRAFT REGULATORY GUIDE

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DRAFT REGULATORY GUIDE DG-1193

(Proposed Revision 3 of Regulatory Guide 1.193, dated October 2007)

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. Nuclear Regulatory Commission (NRC) has approved for use by licensees are referenced in 10 CFR

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 area. It has not received staff review or approval and does not represent an official NRC staff position.

Public comments are being solicited on this draft 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 Rulemaking, Directives, and Editing Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; e-mailed to nrcrep.resource@nrc.gov; submitted through the Federal e-rulemaking portal: http://www.regulations.gov or faxed to (301) 492-3446. Copies of comments received may be examined on http://regulation.gov or at the NRC's Public Document Room, 11555 Rockville Pike, Rockville, MD. Comments will be most helpful if received by August 17, 2009.

Electronic copies of this draft regulatory guide are available on http://www.regulations.gov, the NRC's public Web site under Draft Regulatory Guides in the Regulatory Guides document collection of the NRC's Electronic Reading Room at http://www.nrc.gov/reading-rm/doc-collections/; and the NRC's Agencywide Documents Access and Management System (ADAMS) at http://www.nrc.gov/reading-rm/adams.html, under ML090900461.

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 2–11 to the 2004 Edition, and Supplement 0 to the 2007 Edition of the ASME BPV Code. It should be noted that Supplement 0 to the 2007 Edition also serves as Supplement 12 to the 2004 Edition. Draft Revision 35 of Regulatory Guide 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III" (Ref. 4), and Draft Revision 16 of Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1" (Ref. 5), have been published concurrently with this guide to identify the Code Cases that the NRC has determined to be acceptable alternatives to applicable parts of Section III and Section XI. *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 reviewed the Section III and Section XI Code Cases listed in Supplements 2–11 to the 2004 Edition, and Supplement 0 to the 2007 Edition of the ASME BPV Code. Licensees may 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 Summary	Date or Supplement/ Edition
N-284-1	*Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC*	5/9/03
	(1) The following errata, misprints, recommendations, and errors have been identified: ▪ Fig. 1511.1, The curve for $\alpha_{\theta L}$ should not exceed 0.8 for any value of (R/t). ▪ -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." ▪ -1513, Recommend "Use the value of α_{il} given for spherical shells in accordance with -1512." ▪ -1521, (i) In *(a) Axial Compression,* "$\alpha_{\theta G} = \alpha_{\theta L}$" should be changed to "$\alpha_{\varphi G} = \alpha_{\varphi L}$." (ii) The source of the equations shown under *"(a) Axial Compression"* 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). ▪ -1712.1.1, The equation "$C_{\theta h} = 0.92/(M_\theta - 0.636)$" should be changed to "$C_{\theta h} = 0.92/(M_\varphi - 0.636)$." ▪ -1712.1.1-1, The leftmost curve should be labeled $C_{\theta h}$. ▪ -1712.2.2, *(a) Axial Compression*, (i) In the formula for $\sigma_{\varphi ej}$, the denominator should be $(m\pi/L_j)^2 \bullet t_\varphi$. (ii) The expressions for C_φ and C_θ should be separated. ▪ -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 "$t_1^{1/4}$" should be corrected to "$t_1^{1/4}$." ▪ -1713.1.1, (i) The equation "$\sigma_{\tau a}=\alpha_{\varphi\theta}\bullet\sigma_{\varphi\theta el}/FS$" should be changed to "$\sigma_{\tau a}=\alpha_{\varphi\theta L}\bullet\sigma_{\varphi\theta el}/FS$." (ii) The title of (c) should be changed to *"Axial Compression Plus In-Plane Shear."* ▪ -1713.1-1, In (b), the lower value "$K_s=\sigma_{ra}$" on the vertical axis should be changed to "$K_s=\sigma_{ha}$." ▪ -1713.2.1, (i) The headings for (b) and (c) should include the words *"In-Plane."* (ii) In (b) "Axial Compression Plus Shear," "σ_θ" should be changed to "σ_φ."	

Code Case Number	Table 1 Unacceptable Section III Code Cases Summary	Date or Supplement/ Edition
N-284-1 (cont'd)	*Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC*	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	*Alternative Rules to the Provisions of NCA-3800, Requirements for Purchase of Material, Section III, Divisions 1 and 3*	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	*Borated Stainless Steel for Class CS Core Support Structures and Class 1 Component Supports, Section III, Division 1*	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	*Use of 6061-T6 and 6061-T651 Aluminum for Class 1 Nuclear Components*	Annulled 2/3/03
	Code Case is applicable to only one DOE aluminum vessel.	
N-530	*Provisions for Establishing Allowable Axial Compressive Membrane Stresses in the Cylindrical Walls of 0-15 Psi Storage Tanks, Classes 2 and 3*	2/3/03
	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 or Supplement/ Edition
	Summary	
N-565	*Alternative Methods of Nozzle Attachment for Class 1 Vessels*	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 N-595-4	*Requirements for Spent Fuel Storage Canisters, Section III, Division 1*	2/26/99 9/24/99 12/8/00 04/08/02 2/04E
	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), and Interim Staff Guidance No. 18 (ISG-18), Rev. 1 (Ref. 13). 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). It should be noted that Code Case N-717 replaces Code Case N-595-X.	
N-645 N-645-1	*Use of Rupture Disk Devices on Nuclear Fuel Storage Canisters, Class 1, Section III, Division 1*	6/14/00 2/3/03
	The NRC does not permit the use of rupture disk devices in spent nuclear fuel storage canister designs.	

Code Case Number	Table 1 Unacceptable Section III Code Cases Summary	Date or Supplement/ Edition
N-659 N-659-1	*Use of Ultrasonic Examination in Lieu of Radiography for Weld Examination, Section III, Division 1*	9/17/02 11/18/03
	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. 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	
N-670	*Use of Ductile Cast Iron Conforming to ASTM A 874/ A 874M-98 or JIS G5504-1992 for Transport Containments, Section III, Division 3*	6/04E
	The NRC has not yet endorsed Section III, Division 3, "Containments for Transportation and Storage of Spent Nuclear Fuel and High Level Radioactive Material and Waste." Thus, it would not be appropriate to approve a Code Case that is an alternative to the Section III, Division 3, provisions.	
N-673	*Boron Containing Power Metallurgy Aluminum Alloy for Storage and Transportation of Spent Nuclear Fuel, Section III, Division 1*	8/7/03
	The Code Case does not address the following: (1) Corrosion properties of this material in spent fuel pool chemistry and/or clean water. (2) Impact properties for use as a structural material. (3) Uniform distribution of boron carbide in the aluminum matrix. (4) Mechanical properties for the use of the material in high-temperature conditions.	

Code Case Number	Table 1 Unacceptable Section III Code Cases Summary	Date or Supplement/ Edition
N-693	*Alternative Method to the Requirements of NB-3228.6 for Analyzing Piping Subjected to Reversing Dynamic Load, Section III, Division 1*	5/21/03
	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).	
N-707	*Use of SA-537, Class 1 Plate Material for Spent-Fuel Containment Internals in Non-pressure Retaining Applications Above 700°F (370°C), Section III, Division 3*	3/04E
	The NRC has not yet endorsed Section III, Division 3, "Containments for Transportation and Storage of Spent Nuclear Fuel and High Level Radioactive Material and Waste." Thus, it would not be appropriate to approve a Code Case that is an alternative to the Section III, Division 3, provisions.	
N-717	*Requirements for Construction of Storage Containments for Spent Nuclear Fuel and High Level Radioactive Waste and Material, Section III, Division 3*	5/04/4
	The NRC has not yet endorsed Section III, Division 3, "Containments for Transportation and Storage of Spent Nuclear Fuel and High Level Radioactive Material and Waste." Thus, it would not be appropriate to approve a Code Case that is an alternative to the Section III, Division 3, provisions. The provisions of the Code Case are copied from the July 1, 2005, addenda to Section III, Division 3. The changes to the ASME Code contained in the addenda are scheduled to be reviewed by the NRC staff in FY 2009. The Code Case is listed in this guide pending the results of the NRC staff review.	
N-728	*Use of ASTM B 932-04 Plate Material for Nonpressure Retaining Spent Fuel Containment Internals to 650°F (343°C), Section III, Division 3*	7/04E
	The NRC has not yet endorsed Section III, Division 3, "Containments for Transportation and Storage of Spent Nuclear Fuel and High Level Radioactive Material and Waste." Thus, it would not be appropriate to approve a Code Case that is an alternative to the Section III, Division 3, provisions.	

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 or Supplement/ Edition
	Summary	
N-465 N-465-1	*Alternative Rules for Pump Testing, Section XI, Division 1*	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	*Alternative Rules for Valve Testing, Section XI, Division 1*	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	*Examination Requirements for Pipe Wall Thinning Due to Single Phase Erosion and Corrosion, Section XI, Division 1*	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	*Alternative Requirements for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems, Section XI, Division 1*	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 Summary	Date or Supplement/ Edition
N-532-2	*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*	7/23/02
	The following concerns were identified during review of the Code Case: (1) The Code Case references new paragraph IWA-6350, which has not yet been incorporated into the ASME Code. (2) NRC staff had difficulty reconciling Footnote 1 and Table 4 regarding the applicable edition and addenda. (3) Submission of Form OAR-1 is at the end of each inspection period, rather than 90 days following the outage.	
N-542	*Alternative Requirements for Nozzle Inside Radius Section Length Sizing Performance Demonstration, Section XI, Division 1*	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	*Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings, Section XI, Division 1*	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.	
N-560 N-560-1 N-560-2	*Alternative Examination Requirements for Class 1, Category B-J Piping Welds, Section XI, Division 1*	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.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases Summary	Date or Supplement/ Edition
N-561 N-561-1	*Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping, Section XI, Division 1*	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	*Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Carbon Steel Piping, Section XI, Division 1*	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	*NDE Personnel Recertification Frequency, Section XI, Division 1*	Annulled 7/14/06
	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.	
N-575	*Alternative Examination Requirements for Full Penetration Nozzle-to-Vessel Welds in Reactor Vessels with Set-On Type Nozzles, Section XI, Division 1*	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	*Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A, Section XI, Division 1*	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.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases Summary	Date or Supplement/ Edition
N-578 N-578-1	*Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B, Section XI, Division 1* (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.	9/2/97 2/14/03
N-587	*Alternative NDE Requirements for Repair/Replacement Activities, Section XI, Division 1* 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.	Annulled 2/14/03
N-589 N-589-1	*Class 3 Nonmetallic Cured-in-Place Piping, Section XI, Division 1* (1) The installation process provides insufficient controls on wall thickness measurement. (2) There are no qualification requirements for installers and installation procedures such as those for welders and welding procedures. (3) Fracture toughness properties of the fiberglass are such that the cured-in-place piping (CIPP) could crack during a seismic event. (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.	4/19/02 7/23/02
N-590	*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* 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.	Annulled 4/8/02

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date or Supplement/ Edition
	Summary	
N-591	*Alternative to the Requirements of Subsection IWL, Requirements for Class CC Concrete Components of Light-Water Cooled Plants, Section XI, Division 1*	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-593-1	Examination Requirements for Steam Generator Nozzle-to-Vessel Welds, Section XI, Division 1	3/04E
	The Code Case eliminates the requirement to examine the steam generator nozzle inner radius. Specifically, the examination volume for the nozzle inner radius was removed from Section XI, Figures IWB-2500-7(a) through IWB-2500-7(d). The action is applicable from the 1974 Edition through the 2004 Edition with 2005 Addenda. A similar action was taken regarding Code Case N-619. The NRC did not take exception to Code Case N-619 because 10 CFR 50.55a(b)(2)(xxi)(A) requires licensees to perform the examination in accordance with the 1998 Edition, which includes figures containing the examination volume. However, Code Case N-593-1 applies to editions prior to the 1998 Edition which do not have the appropriate figures.	
N-613	*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*	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	*Ultrasonic Examination as a Surface Examination Method for Category B-F and B-J Piping Welds, Section XI, Division 1*	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.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date or Supplement/ Edition
	Summary	
N-618	*Use of a Reactor Pressure Vessel as a Transportation Containment System, Section XI, Division 1*	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	*Ultrasonic Examination of RPV and Piping, Bolts, and Studs, Section XI, Division 1*	Annulled on 1/12/05
	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	*Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds, Section XI, Division 1*	9/7/01
	(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. (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	*Acceptance Criteria for Flaws in Ferritic Steel Components 4 in. and Greater in Thickness, Section XI, Division 1*	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(a)(3).	

Code Case Number	Table 2 Unacceptable Section XI Code Cases Summary	Date or Supplement/ Edition
N-691	*Application of Risk-Informed Insights to Increase the Inspection Interval for Pressurized Water Reactor Vessels, Section XI, Division 1* 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.	11/18/03
N-702	*Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds, Section XI, Division 1* The Electric Power Research Institute (EPRI) proprietary report, "BWR Vessel and Internals Project, Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Inner Radius (BWRVIP-108)," is the technical-basis document for Code Case N-702. EPRI is revising the report based on NRC staff review of the report and supplementary information provided by the BWRVIP (See letter dated December 19, 2007, ML073600374; Ref. 12). The NRC will reconsider the status of Code Case N-702 after receipt of the revised report.	2/20/04
N-711	*Alternative Examination Coverage Requirements for Examination Category B-F, B-J, C-F-1, C-F-2, and R-A Piping Welds, Section XI, Division 1* The Code Case would permit each licensee to independently determine when achievement of a coverage requirement is impractical, and when Code-required coverage is satisfied. As a result, application of the Code Case for similar configurations at different plants could result in potentially significant quantitative variations. Furthermore, application of the Code Case is inconsistent with NRC's responsibility for determining whether examinations are impractical, and eliminates the NRC's ability to take exception to a licensee's proposed action and impose additional measures where warranted in accordance with 10 CFR 50.55a(g)(6)(i).	8/04E

Code Case Number	Table 2 Unacceptable Section XI Code Cases	Date or Supplement/ Edition
	Summary	
N-716	Alternative Piping Classification and Examination Requirements, Section XI, Division 1	9/04E
	The NRC has approved risk-informed inservice inspection programs based, in part, on methods described in Code Case N-716. The NRC has approved programs for Grand Gulf Nuclear Station 1 (September 21, 2007; ML072430005) , Donald C. Cook Nuclear Plant (September 28, 2007; ML072620553), and Waterford Steam Electric Station (April 28, 2008; ML080980120). The approvals were specific to these units and relied on several changes to the methodology described in Code Case N-716. It is anticipated that changes will be made to the Code Case. The staff will consider the revised Code Case for generic approval when it is published by the ASME.	
N-729	*Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Nozzles, Section XI, Division 1*	7/04E
	Code Case N-729 has been superseded by Revision 1 to the Code Case. N-729-1 is conditionally approved directly in 10 CFR 50.55a and not through Regulatory Guide 1.147.	
N-740	*Dissimilar Metal Weld Overlay for Repair of Class 1, 2, and 3 Items, Section XI, Division 1*	11/04E
	Revision 2 to the Code Case is currently under development by Section XI. Revision 1 has been published, but the NRC staff has many issues with Revisions 0 and 1. The issues have been communicated to the cognizant Section XI committees, and the staff continues to work with the committees to resolve the issues. Due to the total number of issues and the nature of some (e.g., lack of certain fundamental design details), the staff believes that it would be inappropriate to attempt to conditionally approve either version 0 or 1 in Regulatory Guide 1.147. The staff will consider Revision 2 for approval when it is published by the ASME.	

Code Case Number	Table 2 Unacceptable Section XI Code Cases Summary	Date or Supplement/ Edition
N-747	*Reactor Vessel Head-to-Flange Weld Examinations, Section XI, Division 1* Alternatives to current ISI requirements that use a probabilistic risk assessment (PRA) as a basis must initially be submitted as a risk-informed ISI program relief request in accordance with 10 CFR 50.55a(a)(3)(i), i.e., on a plant-specific basis and not on a generic basis. As a general comment, the NRC staff finds that the technical basis is too qualitative. Three specific issues are provided to highlight additional concerns. First, no supporting fluence assessment or documentation to establish a conservative neutron fluence estimate for these welds and a conservative RT_{ndt} value for the welds is provided. Thus, there is no data to support a conclusion that the fracture toughness is low. Second, the methods in Appendix G to Section XI apply only to pressure-temperature limit methods and not to ISI inspection requirements. Third, the technical basis appears to credit $K\text{-}1_C$ twice - once to support the fracture toughness analysis and again in the Section XI Appendix A flaw growth analysis.	9/04E

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	*Requirements for Safety Significance Categorization of Snubbers Using Risk Insights and Testing Strategies for Inservice Testing of LWR Power Plants*	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.[1]

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.[2]

3. ASME Code for Operation and Maintenance of Nuclear Power Plants, American Society of Mechanical Engineers, New York, NY.[2]

4. Regulatory Guide 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," U.S. Nuclear Regulatory Commission, Washington, DC.[3]

5. Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," U.S. Nuclear Regulatory Commission, Washington, DC.[3]

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*.), 104th Congress of the United States of America, Washington, DC.[4]

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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[1] 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.

[2] Copies may be purchased from the American Society of Mechanical Engineers, Three Park Avenue, NewYork, NY 10016-5990; phone (212) 591-8500; fax (212) 591-8501; www.asme.org.

[3] 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.

[4] 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/ federa-register/laws/paperwork-reduction/

8. NRC Spent Fuel Project Office Interim Staff Guidance No. 4 (ISG-4), Rev. 1, "Cask Closure Weld Inspections," U.S. Nuclear Regulatory Commission, Washington, DC.[5]

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.[6]

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.

12. Mitchell, M.. letter to Libra, R., December 19, 2007, Safety Evaluation of Proprietary EPRI Report, "BWR Vessel and Internals Project, Technical Basis for the Reduction of Inspection Requirements for the Boiling Water Reactor Nozzle-to-Vessel Shell Welds and Nozzle Inner Radius (BWRVIP-108)," ADAMS Accession Number ML073600374.

13. NRC Spent Fuel Storage and Transportation Division Interim Staff Guidance No. 18 (ISG-18) Rev. 1, "The Design and Testing of Lid Welds on Austenitic Stainless Steel Canisters as Containment Boundary for Spent Fuel Storage," U.S. Nuclear Regulatory Commission, Washington, D.C.

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[5] 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.

[6] 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.