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Division 1

DRAFT REGULATORY GUIDE

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**DRAFT REGULATORY GUIDE DG-1112
ASME CODE CASES NOT APPROVED FOR USE**

A. INTRODUCTION

In 10 CFR 50.55a, "Codes and Standards," of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," paragraph (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,"¹ of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV Code) or equivalent quality standards. In 10 CFR 50.55a, paragraph (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, in 10 CFR 50.55a, paragraph (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 ASME or explain the intent of existing Code Requirements. Draft Regulatory Guide DG-1090 (the proposed Revision 32 of Regulatory Guides 1.84 and 1.85 combined), "Design, Fabrication, and

¹ Copies may be obtained from the American Society of Mechanical Engineering, Three Park Avenue, New York, NY 10016-5990. Phone (212)591-8500; fax (212)591-8501.

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 complete 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 Rules and Directives Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Comments may be submitted electronically or downloaded through the NRC's interactive web site at WWW.NRC.GOV through Rulemaking. Copies of comments received may be examined at the

NRC Public Document Room, 11555 Rockville Pike, Rockville, MD. Comments will be most helpful if received by **March 25, 2002.**

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Materials Code Case Acceptability, ASME Section III,”² Draft Regulatory Guide DG-1089, “Operation and Maintenance Code Case Acceptability, ASME OM Code,” and Draft Regulatory Guide DG-1091, (Proposed Revision 13 to Regulatory Guide 1.147), “Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1,” 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.

Regulatory guides are issued to describe to the public methods acceptable to the NRC staff for implementing specific parts of the NRC's regulations, to explain techniques used by the staff in evaluating specific problems or postulated accidents, and to provide guidance to applicants. Regulatory guides are not substitutes for regulations, and compliance with regulatory guides is not required. Regulatory guides are issued in draft form for public comment to involve the public in developing the regulatory positions. Draft regulatory guides have not received complete staff review; they therefore do not represent official NRC staff positions.

This regulatory guide does not approve the use of the Code Cases listed herein. Thus, it does not contain new or amended information collection requirement 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 are not 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, by addressing the NRC's concern and submitting a plant-specific request.

C. REGULATORY POSITION

For this guide, the NRC staff reviewed the Section III and Section XI Code Cases listed in Supplement 4 to the 1992 Edition through Supplement 11 to the 1998 Edition, and OM Code Cases OMN-1 through OMN-13. Licensees may not implement Code Cases listed in this guide without prior NRC approval. Licensees may request to implement one or more of the Code Cases listed in this regulatory guide 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, by addressing the NRC's concern and submitting a plant-specific request. 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

² The NRC is proposing to combine Regulatory Guides 1.84 and 1.85; therefore Proposed Revision 32 of Regulatory Guides 1.84 and 1.85 combined, issued as DG-1090, reflects the title change.

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 assist users of Section III, Column 3 of Table 1 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 1 - UNACCEPTABLE SECTION III CODE CASES

CODE CASE NUMBER	TABLE 1, UNACCEPTABLE SECTION III CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
N-284-1	<i>Metal Containment Shell Buckling Design Methods, Section III, Division 1, Class MC</i>	10/98E
	(1) The Code Case contains many errors and must be revised to correct these errors before it can be accepted. (2) As the Code Case is presently structured, if the errors were corrected and no further changes were made, prior to implementation of the Code Case, the applicant would have to demonstrate to the satisfaction of the NRC staff (via Safety Analysis Report) that any axisymmetric techniques that are proposed will be applicable to a vessel having large asymmetric openings and that the overall margin used to prevent shell buckling is acceptable.	
N-483-2 N-483-3	<i>Alternative Rules to the Provisions of NCA-3800, Requirements for Purchase of Material</i>	5/98E
	Use of the Code Case would violate Appendix B to 10 CFR Part 50. The Code Case would permit purchase of materials from sources without approved QA programs.	

CODE CASE NUMBER	TABLE 1, UNACCEPTABLE SECTION III CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
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>	10/95E
	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>	10/92E
	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>	11/92E
	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>	7/98E
	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.	

CODE CASE NUMBER	TABLE 1, UNACCEPTABLE SECTION III CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
N-595 N-595-1 N-595-2	<i>Requirements for Spent Fuel Storage Canisters, Section III, Division 1</i>	6/98E
	Revision 2 of the Code Case contains typographical errors and technical changes are being made to its provisions that will result in Revision 3 to this Code Case. In addition, 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.	

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 assist users of Section XI, Column 3 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	SUPPLEMEN T/EDITION
	SUMMARY	
N-322	<i>Examination Requirements for Integrally Welded or Forged Attachments to Class 1 Piping at Containment Penetrations, Section XI, Division 1</i>	10/98E
	Code Case would permit excluding from examination high-energy piping welds at containment penetrations in Boiling Water Reactors (BWRs) that are subject to intergranular stress corrosion cracking and in BWRs and pressurized water reactors (PWRs) that may be part of the break exclusion zone. Sufficient clearance is present to permit UT examination of these critical welds. [Note: condition contained in 10 CFR 50.55a(b)(2)(xi).]	
N-323-1	<i>Alternative Examination for Welded Attachments to Pressure Vessels, Section XI, Division 1</i>	4/98E

CODE CASE NUMBER	TABLE 2, UNACCEPTABLE SECTION XI CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
	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 N-465-1	<i>Alternative Rules for Pump Testing, Section XI, Division 1</i>	10/92E
	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.	
N-473 N-473-1	<i>Alternative Rules for Valve Testing, Section XI, Division 1</i>	10/95E
	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.	
N-480	<i>Examination Requirements for Pipe Wall Thinning Due to Single Phase Erosion and Corrosion, Section XI, Division 1</i>	9/98E
	Code Case has been superseded by Code Case N-597, "Requirements for Analytical Evaluation of Pipe Wall Thinning."	
N-498-2 N-498-3 N-498-4	<i>Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems, Section XI, Division 1</i>	12/95E 1/98E 3/98E
	These revisions to the Code Case eliminate hold times during the tests. The capability of detecting a small leak is directly proportionally to the hold time while the system is pressurized, especially if it is insulated. Hydrostatic tests or system leakage and pressure tests performed without hold times may be insensitive to smaller leaks, thereby defeating the purpose of performing these tests. The NRC staff will review reduced hold times on a case-by-case basis. [Note: conditions consistent with established regulatory position.]	

CODE CASE NUMBER	TABLE 2, UNACCEPTABLE SECTION XI CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
N-542	<i>Alternative Requirements for Nozzle Inside Radius Section Length Sizing Performance Demonstration, Section XI, Division 1</i>	12/95E
	This Code Case has been superseded by Code Case N-552, "Alternative Methods—Qualification for Nozzle Inside Radius Section from the Outside Surface"	
N-547	<i>Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings, Section XI, Division 1</i>	1/98E
	Code Case N–547 deletes the examination of CRD bolting whenever the CRD housing is disassembled. Examination of CRD bolting 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	<i>Alternative Examination Requirements for Class 1, Category B-J Piping Welds</i>	10/98E
	(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>	2/98E
	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	SUPPLEMENT/EDITION
	SUMMARY	
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>	2/98E
	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-568	<i>Alternative Examination Requirements for Welded Attachments, Section XI, Division 1</i>	8/98E
	The Code Case does not require (1) examination of similar attachments that may be unobstructed in lieu of the obstructed attachment, (2) an evaluation of the acceptability of examinations with limited coverage, and (3) consideration of alternative examinations in cases (1) and (2).	
N-574	<i>NDE Personnel Recertification Frequency, Section XI, Division 1</i>	10/95E
	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>	10/95E
	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.	

CODE CASE NUMBER	TABLE 2, UNACCEPTABLE SECTION XI CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
N-577 N-577-1	<i>Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A, Section XI, Division 1</i>	9/98E
	(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-578 N-578-1	<i>Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B, Section XI, Division 1</i>	9/98E
	(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. (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-583	<i>Annual Training Alternative, Section XI, Division 1</i>	10/95E
	Training using manual techniques is not provided for, and the alternative is less complete than that provided by Appendix VII, VII-4220, of the 1998 Edition or earlier. Also, the provisions do not meet the Appendix VIII qualification requirements as required by 10 CFR 50.55a(b)(2)(xiv).	
N-586	<i>Alternative Additional Examination Requirements for Class 1, 2, and 3 Piping, Components, and Supports, Section XI, Division 1</i>	5/98E
	Code Case would permit areas that have been determined by engineering evaluation to be subject to the same root cause and degradation mechanism as those areas that originally exceeded the Section XI acceptance criteria to go unexamined if their numbers exceed the number of additional examinations required by Section XI.	

CODE CASE NUMBER	TABLE 2, UNACCEPTABLE SECTION XI CODE CASES	SUPPLEMEN T/EDITION
	SUMMARY	
N-587	<i>Alternative NDE Requirements for Repair/Replacement Activities, Section XI, Division 1</i>	11/98E
	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>	6/98E
	<ol style="list-style-type: none"> 1) Insufficient controls are provided for the installation process. 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. 	
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>	5/98E
	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.	

CODE CASE NUMBER	TABLE 2, UNACCEPTABLE SECTION XI CODE CASES	SUPPLEMEN T/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>	5/98E
	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-619	<i>Alternative Requirements for Nozzle Inner Radius Inspections for Class 1 Pressurizer and Steam Generator Nozzles, Section XI, Division 1</i>	3/98E
	The Code Case is not acceptable to the NRC staff because the study upon which it is based was not sufficiently broad to address all applicable plants and conditions. In addition, the UT data provided in the basis is inconclusive.	
N-622	<i>Ultrasonic Examination of RPV and Piping, Bolts, and Studs, Section XI, Division 1</i>	4/98E
	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-648	<i>Alternative Requirements for Inner Radius Examination of Class 1 Reactor Vessel Nozzles, Section XI Division 1</i>	11/98E
	The Code Case references a Table (IWB-3513-3) for surface flaw acceptance criteria which does not exist.	

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 new edition or addenda. 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. [Note: Condition is consistent with established regulatory position.]	

DRAFT IMPACT STATEMENT

This guide should be developed 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. The guide should be developed in response to industry requests for the NRC to provide such a list, including a summary of the basis for disapproval.

Previous reviews of ASME Code Cases discussed only the Code Cases that the NRC staff had found acceptable. Providing the basis for any disapprovals will afford 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 requirement 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.

It is expected that this guide will save industry resources as licensees will know exactly how to address NRC staff concerns. This in turn will save NRC resources by reducing the length of the review process. 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 reduce resources relative to present ASME Code requirements.