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INSERVICE INSPECTION CODE CASE ACCEPTABILITY, ASME SECTION XI, DIVISION 1

A. INTRODUCTION

Section 50.55a, "Codes and Standards," of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," requires, in part, that each operating license for a boiling or pressurized water-cooled nuclear power facility and each construction permit for a utilization facility be subject to the conditions in paragraph (g), "Inservice Inspection Requirements," of 10 CFR 50.55a. Paragraph (g) requires, in part, that Classes 1, 2, and 3 components and their supports meet the requirements of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components,"[1] of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code or equivalent quality standards. Paragraph 50.55a(b), in part, references the latest editions and addenda in effect of Section XI of the Code and any supplementary requirements to that section of the Code. Footnote 6 to 10 CFR 50.55a states that the use of specific Code Cases may be authorized by the Commission upon request pursuant to 10 CFR 50.55a(a)(3), which requires that proposed alternatives to the described requirements or portions thereof provide an acceptable level of quality and safety.

General Design Criterion 1, "Quality Standards and Records," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 requires, in part, that structures, systems, and components important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. Where generally recognized codes and standards are used, Criterion 1 requires that they be identified and evaluated to determine their applicability, adequacy, and sufficiency and be supplemented or modified as necessary to ensure a quality product in keeping with the required safety function.

This regulatory guide lists those Section XI ASME Code Cases that are generally acceptable to the NRC staff for implementation in the inservice inspection of light-water-cooled nuclear power plants. The guide is being revised to update the NRC's position on new Code Cases, revised Code Cases, and annulled Code Cases since Revision 11 of the guide was issued in October 1994.

This regulatory guide contains no information collection activities and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

[1]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.

USNRC REGULATORY GUIDES

Regulatory Guides are issued to describe and make available to the public such information as methods acceptable to the NRC staff for implementing specific parts of the Commission's regulations, techniques used by the staff in evaluating specific problems or postulated accidents, and data needed by the NRC staff in its review of applications for permits and licenses. Regulatory guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

This guide was issued after consideration of comments received from the public. Comments and suggestions for improvements in these guides are encouraged at all times, and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience.

Written comments may be submitted to the Rules and Directives Branch, ADM, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

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B. DISCUSSION

The ASME Boiler and Pressure Vessel Committee publishes a document entitled "Code Cases."[1] Generally, the individual Code Cases that make up this document explain the intent of Code rules or provide for alternative requirements under special circumstances.

Most Code Cases are eventually superseded by revision of the Code and then are annulled by action of the ASME. In such instances, the intent of the annulled Code Case becomes part of the revised Code, and therefore continued use of the Code Case intent is sanctioned under the rules of the Code. In other instances, the Code Case is annulled because it is no longer acceptable or there is no further requirement for it. A Code Case that was approved for a particular situation and not for a generic application should be used only for the approved situation because annulment of such a Code Case could result in situations that would not meet Code requirements. The ASME considers the use of Code Cases to be optional for the user and not a mandatory requirement.

The Code Cases listed in this guide are limited to those cases applicable to Section XI of the Code.

All published Code Cases that are applicable to Section XI of the Code and were in effect on May 12, 1994,* were reviewed for inclusion in this guide. Code Cases that are not listed herein are either not endorsed or will require supplementary provisions on an individual plant basis to attain endorsement status.

The endorsement of a Code Case by this guide constitutes acceptance of its technical position for applications not precluded by regulatory or other requirements or by the recommendations in this or other regulatory guides. Contingent endorsement if applicable is indicated in Regulatory Position 1 for specific cases. However, it is the responsibility of the user to make certain that no regulatory requirements are violated and that there are no conflicts with other recommended limitations resulting from Code Case usage.

Acceptance or endorsement by the NRC staff applies only to those Code Cases or Code Case revisions with the date of ASME approval as shown in the Regulatory Position of this guide. Earlier or later revisions of a Code Case are not endorsed by this guide. New Code Cases will require evaluation by the NRC staff to determine whether they qualify for inclusion in the approved list. Because of the continuing change in the status of Code Cases, it is planned that this guide will require periodic updating to accommodate new Code Cases and any revision of existing Code Cases.

*Lines indicate substantive changes from Revision 11.

C. REGULATORY POSITION

1. ACCEPTABLE CODE CASES

The Section XI ASME Code Cases[2] listed below (by number, date of ASME approval,[3] and title) are acceptable to the NRC staff for application in the inservice inspection of components and their supports for water-cooled nuclear power plants. Their use is acceptable within the limitations stated in the "Inquiry" and "Reply" sections of each individual Code Case, within the limitations of such NRC or other requirements as may exist, and within the additional limitations recommended by the NRC staff and given with the individual Code Case in the list.

1705-1	03-01-76	Ultrasonic Examination—
N-98	11-20-78	Calibration Block Tolerances,
	01-21-82	Section XI
	12-05-84	
	12-05-87	
	12-03-90	
	08-09-93	
N-113-1	12-13-82	Basic Calibration Block for
	02-14-85	Ultrasonic Examination of
	02-14-88	Welds 10 in. to 14 in. Thick,
	12-03-90	Section XI, Division 1
	08-09-93	
N-211[4]	07-13-81	Recalibration of Ultrasonic
	07-13-84	Equipment Upon Change of
	05-07-87	Personnel, Section XI,
	04-30-90	Division 1
	04-30-93	
N-235	01-08-79	Ultrasonic Calibration Checks
	04-02-82	per Section V, Section XI,
	02-14-85	Division 1
	02-14-88	
	12-03-90	
	08-09-93	
N-236-1	09-05-85	Repair and Replacement of
	09-05-88	Class MC Vessels, Section XI,
	08-14-91	Division 1

[2]A numerical listing of the Code Cases appears in the Appendix.

[3]When more than one date is given, the earlier date is that on which the Code Case was approved by the ASME, and the later date (or dates) is that on which the Code Case was reaffirmed by the ASME.

[4]The Code Case was annulled on 3-20-81 (ASME mandatory annulment date). It was reinstated on 7-13-81. Because there was no change in the Code Case, the NRC considers that the Case was in effect during the period 3-20-81 through 7-13-81.

N-307-1	12-05-84 12-05-87 12-03-90 08-09-93	Revised Ultrasonic Examination Volume for Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1, When the Examinations Are Conducted from the Center-Drilled Hole, Section XI, Division 1
N-311	05-11-81 04-05-84 05-07-87 04-30-90 02-12-93	Alternative Examination of Outlet Nozzle on Secondary Side of Steam Generators, Section XI, Division 1
N-335-1	06-20-85 06-20-88 05-13-91 05-11-94	Rules for Ultrasonic Examination of Similar and Dissimilar Metal Piping Welds, Section XI, Division 1
N-355	07-16-82 02-14-85 02-14-88 12-03-90 08-09-93	Calibration Block for Angle Beam Ultrasonic Examination of Large Fittings in Accordance with Appendix III-3410, Section XI, Division 1
N-356	07-01-88[5] 10-23-88 08-05-94	Certification Period for Level III NDE Personnel, Section XI, Division 1, 2 and 3
N-389-1	12-09-93	Alternative Rules for Repairs, Replacements, or Modifications, Section XI, Division 1
N-401-1	05-04-88 05-13-91 05-11-94	Eddy Current Examination, Section XI, Division 1
N-402-1	03-14-91 05-11-94	Eddy Current Calibration Standards, Section XI, Division 1
N-408-3	08-09-93	Alternative Rules for Examination of Class 2 Piping, Section XI, Division 1
N-409-3	04-30-93	Procedure and Personnel Qualification Requirements for Ultrasonic Detection and Sizing of Flaws in Piping Welds, Section XI, Division 1
N-415	09-05-85 09-05-88 08-14-91	Alternative Rules for Testing Pressure Relief Devices, Section XI, Division 1
N-416-1	02-15-94	Alternative Pressure Test Requirements for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2, and 3, Section XI, Division 1

Code Case N-416-1 is acceptable subject to the following condition in addition to those conditions specified in the Code Case. Additional surface examinations should be performed on the root (pass) layer of butt and socket welds of the pressure retaining boundary of Class 3 components when the surface examination method is used in accordance with Section III.

N-429-1	02-23-87 03-05-90 07-27-92	Alternative Rules for Ultrasonic Instrument Calibration, Section XI, Division 1
N-432	02-20-86 02-20-89 12-16-91	Repair Welding Using Automatic or Machine Gas Tungsten-Arc Welding (GTAW) Temperbead Technique, Section XI, Division 1
N-435-1	07-30-86 07-30-89 07-30-92	Alternative Examination Requirements for Vessels with Wall Thickness 2 in. or less, Section XI, Division 1
N-437	07-30-86 07-30-89 07-30-92	Use of Digital Readout and Digital Measurement Devices for Performing Pressure Tests, Section XI, Division 1
N-448	07-27-87 04-30-90 04-30-93	Qualification of VT-2 and VT-3 Visual Examination Personnel, Section XI, Division 1
N-449	07-27-87 04-30-90 04-30-93	Qualification of VT-4 Visual Examination Personnel, Section XI, Division 1
N-457	12-07-87 12-03-90 08-09-93	Qualification Specimen Notch Location for Ultrasonic Examination of Bolts and Studs, Section XI, Division 1
N-458	08-14-90 04-30-93	Magnetic Particle Examination of Coated Materials, Section XI, Division 1
N-460	07-27-88 05-13-91 05-11-94	Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1
N-461	11-30-88 08-14-91	Alternative Rules for Piping Calibration Block Thickness, Section XI, Division 1

Code Case N-461 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: Thickness measurements and

[5]July 1, 1988, is the date that conditions of the Code Case were acceptable to the NRC.

weld joint contour of the pipe/component must be known and used by the inspector who conducts the UT examination.

N-463-1	03-05-90	Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2, Section XI, Division 1
N-465	11-30-88 08-14-91	Alternative Rules for Pump Testing, Section XI, Division 1
N-471	04-30-90 02-12-93	Acoustic Emission for Successive Inspections, Section XI, Division 1

Code Case N-471 is acceptable subject to the following conditions in addition to those specified in the Code Case: The first successive examination required by IWB-2420 or IWC-2420 shall be performed. The owner shall evaluate the results of the on-line acoustic emission monitoring to confirm that the conclusions from the acoustic emission data represent the condition of the flaw indication as estimated from the first successive ISI Examination and the data can be correlated with the known plant operating environment.

N-472	03-08-89 12-16-91	Use of Digital Readout and Digital Measurement Devices for Performing Pump Vibration Testing, Section XI, Division 1
N-473	03-08-89 12-16-91	Alternative Rules for Valve Testing, Section XI, Division 1
N-479-1	12-03-90 12-09-93	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test, Section XI, Division 1
N-481	03-05-90 11-25-92	Alternate Examination Requirements for Cast Austenitic Pump Casings, Section XI, Division 1
N-485-1	08-14-91	Eddy Current Examination of Coated Ferritic Surfaces as an Alternative to Surface Examination, Section XI, Division 1
N-489	08-14-90 04-30-93	Alternative Rules for Level III NDE Qualification Examinations, Section XI, Divisions 1, 2, and 3
N-490-1	05-13-91 05-11-94	Alternative Vision Test Requirements for Nondestructive Examiners, Section XI, Divisions 1, 2, and 3
N-491-1	04-30-93	Alternative Rules for Examination of Class 1, 2, 3 and MC Component Supports of Light-Water Cooled Power Plants, Section XI, Division 1
N-494-2	12-09-93	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceeds the Acceptance Standards of IWB-3514.2, Section XI, Division 1
N-495	12-03-90 12-09-93	Hydrostatic Testing of Relief Valves, Section XI, Division 1
N-496-1	05-11-94	Helical Coil Threaded Inserts, Section XI, Division 1
N-498-1	05-11-94	Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1, 2, and 3 Systems, Section XI, Division 1
N-503	02-05-92	Limited Certification of Nondestructive Examination Personnel, Section XI, Division 1
N-504-1	08-09-93	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping, Section XI, Division 1
N-509	11-25-92	Alternative Rules for the Selection and Examination of Class 1, 2, and 3 Integrally Welded Attachments, Section XI, Division 1

Code Case N-509 is acceptable subject to the following condition in addition to those conditions specified in the Code Case: A minimum 10% sample of integrally welded attachments for each item in each code class per interval should be examined.

N-512	02-12-93	Assessment of Reactor Vessels With Low Upper Shelf Charpy Impact Energy Levels, Section XI, Division 1
N-514	02-12-93	Low Temperature Overpressure Protection, Section XI, Division 1
N-515	02-12-93	Class 1 Mechanical Joint Pressure Tests, Section XI, Division 1

N-516	08-09-93	Underwater Welding, Section XI, Division 1

Code Case N-516 is acceptable subject to the following condition in addition to those conditions specified in the Code Case. When welding is to be performed on high neutron fluence Class 1 material, then a mock-up, using material with similar fluence levels, should be welded to verify that adequate crack prevention measures were used.

N-517	02-15-94	Quality Assurance Program Requirements for Owners, Section XI, Division 1
N-521	08-09-93	Alternative Rules for Deferral of Inspections of Nozzle-to-Vessel Welds, Inside Radius Sections, and Nozzle-to-Safe End Welds of a Pressurized Water Reactor (PWR) Vessel, Section XI, Division 1
N-522	12-09-93	Pressure Testing of Containment Penetration Piping, Section XI, Division 1

Code Case N-522 is acceptable subject to the following condition in addition to those conditions specified in the Code Case. The test should be conducted at the peak calculated containment pressure and the test procedure should permit the detection and location of through-wall leakage in containment isolation valves (CIVs) and pipe segments between the CIVs.

N-524	08-09-93	Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping, Section XI, Division 1
N-537	03-14-95	Location of Ultrasonic Depth-Sizing Flaws, Section XI, Division 1
N-541	06-09-95	Alternative Requirements for Performance Demonstration in Accordance with Appendix VIII, Supplements 4 and 6, Section XI, Division 1

2. ANNULLED CODE CASES

Code Cases that were endorsed by the NRC in a prior version of this guide and were later annulled by action of the ASME should be considered as deleted from the list of acceptable Code Cases as of the date of the ASME action that approved the annulment. Such Code Cases that were annulled on or after November 1, 1978, are listed below by number, effective dates,[6] and title.

1551 (N-34)	11-06-72 11-20-78 11-20-81	Inservice Inspection of Welds on Nuclear Components, Section XI
1646 (N-72)	08-12-74 11-20-78 01-01-81	Partial Postponement of Category B-C Examination for Class 1 Components, Section XI
1647 (N-73)	08-12-74 11-20-78 01-01-81	Partial Postponement of Category B-D Examination for Class 1 Components, Section XI
1730 (N-112)	11-03-75 07-01-79	Acceptance Standards for Class 2 and 3 Components, Section XI, Division 1
1738 (N-118)	12-22-75 11-20-78 01-21-82 01-21-85 01-21-88 12-03-90	Examination—Acceptance Standards for Surface Indications in Cladding, Section XI

Code Case 1738 (N-118) was acceptable subject to the following condition in addition to those conditions specified in the Code Case. The last sentence of the "Reply" should be replaced with the following: The provisions of this Code Case may not be applied for the examination of clad surfaces of nozzles, including the inner surface of the nozzle-to-vessel insert welds.

1804 (N-167)	01-14-77 01-14-80	Minimum Section Thickness Requirements for Repair of Nozzles, Section XI, Division 1
N-210	03-20-78 03-20-81	Exemption to Hydrostatic Tests After Repairs, Section XI, Division 1

Code Case N-210 was acceptable subject to the following condition in addition to those conditions specified in the Code Case. Paragraph (3) of the "Reply"

[6] Earlier date—date Code Case was approved by ASME; later date—date Code Case was annulled. Where more than two dates appear, the last date is the date that the Code Case was annulled. The middle date (or dates) was the date of reaffirmation of the Code Case.

should be replaced with the following: Repairs to piping, pumps, and valves where the depth of the repaired cavity does not exceed 25 percent of the wall thickness.

N-211	03-20-78 03-20-81	Recalibration of Ultrasonic Equipment Upon Change of Personnel, Section XI, Division 1
N-216	03-10-78 07-13-81 07-13-84 05-07-87 05-07-90	Alternative Rules for Reactor Vessel Closure Stud Examination, Section XI, Division 1
N-234	01-08-79 01-21-82 12-05-84 12-05-87 12-03-90	Time Between Ultrasonic Calibration Checks, Section XI, Division 1
N-252	11-19-79 07-16-82	Low Energy Capacitive Discharge Welding Method for Temporary or Permanent Attachments to Components and Supports, Section III, Division 1, and XI

Code Case N-252 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should indicate in the Safety Analysis Report the application, the material, and the thickness of the material to which the strain gage or thermocouple will be attached by CD welding.

N-278	03-17-80 03-17-83[7] 05-25-83[7] 02-19-86 02-19-89 02-19-92	Alternative Ultrasonic Calibration Block Configuration I-3131 and T-434.3, Section XI, Division 1

Code Case N-278 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: When a universal calibration block is used and some or all of the reference holes are larger than the reflector holes at comparable depths recommended by Article IV, Section V, 1980 edition of the ASME Code, a correction factor should be used to adjust the DAC level to compensate for the larger reflector holes. Also, if the reactor pressure vessel was previously examined by using a conventional block, a ratio between the DAC curves obtained from the two blocks should be noted (for reference) with the significant indication data.

N-288	08-25-80 05-25-83	Hydrostatic Test Requirements for Class 1 and Class 2 Components, Section XI, Division 1
N-306	01-15-81 04-05-84 05-07-87 05-07-90	Calibration Block Material Selection, Appendix 1, 1-3121, Section XI, Division 1
N-308	09-30-81 09-30-84 09-30-87 04-30-90 09-30-90	Documentation of Repairs and Replacements of Components in Nuclear Power Plants, Section XI, Division 1
N-343	04-02-82 02-14-85 02-14-88 12-03-90	Alternative Scope of Examination of Attachment Welds for Examination Categories B-H, B-K-1, and C-C, Section XI, Division 1
N-375-2	04-05-84 05-07-87 05-07-90	Rules for Ultrasonic Examination of Bolts and Studs, Section XI, Division 1
N-406	04-05-84 05-07-87 05-07-90	Alternative Rules for Replacement, Section XI, Division 1
N-419	07-18-85 07-18-88 05-13-91 05-13-94	Extent of VT-1 Examinations, Category B-G-1 of Table IWB-2500-1, Section XI, Division 1
N-424	07-18-85 07-18-88	Qualification of Visual Examination Personnel, Section XI, Division 1
N-426	07-18-85 07-18-88 05-13-91 05-13-94	Extent of VT-1 Examinations, Category B-G-2 of Table IWB-2500-1, Section XI, Division 1
N-436-1	12-07-87 12-03-90	Alternative Methods for Evaluation of Flaws in Austenitic Piping, Section XI, Division 1
N-444[8]	12-07-87 12-03-90	Preparation of Inspection Plans, Section XI, Division 1

[7]Code Case N-278 was inadvertently allowed to expire because of an ASME administrative error on 3-17-83, its mandatory annulment date. The Code Case, without any technical changes, was reinstated on 5-25-93. Because of these circumstances, the Code Case is considered to be in effect during that period of time.

[8]Valve stroke times may be documented outside of the IST program. However, if included within the IST program and it becomes necessary to revise the maximum stroke time required by "Supplement 4—Content of IWV Valve Test Tables," it is not necessary to submit a revised IST program to the NRC solely to document a revision in valve stroke time.

N-445	05-07-87 05-07-90	Use of Later Editions of SNT-TC-1A for Qualification of Nondestructive Examination Personnel, Section XI, Division 1, 2, and 3
N-446	05-07-87 05-07-90	Recertification of Visual Examination Personnel, Section XI, Division 1

3. REVISED CODE CASES

Code Cases that were endorsed by the NRC in a prior version of this guide and were superseded by revised Code Cases on or after November 1, 1978, should be considered as not endorsed as of the date of the ASME action that approved the revised version of the Code Cases. These Code Cases that are no longer endorsed are listed in the following by number, effective dates,[9] and title.

1731 (N-113)	11-03-75 11-20-78 01-21-82 12-13-82	Basic Calibration Block for Ultrasonic Examination of Welds 10 in. to 13 in. Thick, Section XI, Division 1
N-236	01-08-79 01-21-82 12-05-84 09-05-85	Repair and Replacement of Class MC Vessels, Section XI, Division 1

Code Case N-236 was acceptable subject to the following conditions in addition to those conditions specified in the Code Case: a. In paragraph 1.0(a), second sentence, the phrase, "while the plant is not in service," refers to a refueling outage. b. In paragraph 1.0(a), third sentence, the phrase, "the next scheduled plant outage," refers to the next scheduled refueling outage.

For clarification, Repair and Replacement of Class MC Vessels means Repair and Replacement of Class MC Vessels and Components (systems). Acceptance of this Code Case in no way infers NRC approval to violate the technical specification or any NRC requirements with regard to breach of containment during repair and replacement procedures while the plant is in operation.

Where a numbered Code paragraph is not identified by a particular edition of the Code, the Code in effect at the time of the ASME meeting (11-3-78) that approved the Code Case should be governing.

N-307	01-15-81 04-05-84 12-05-84	Revised Ultrasonic Examination Volume for Class 1 Bolting, Examination Category B-G-1, When the Examinations Are Conducted from the Center-Drilled Hole, Section XI, Division 1
N-335	04-02-82 02-14-85 06-20-85	Rules for Ultrasonic Examination of Similar and Dissimilar Metal Piping Welds, Section XI, Division 1
N-375[10]	02-14-83 04-14-83	Rules for Ultrasonic Examination of Bolts and Studs, Section XI, Division 1
N-375-1	04-14-83 04-05-84	Rules for Ultrasonic Examination of Bolts and Studs, Section XI, Division 1
N-389	07-25-83 05-14-89 05-14-86 02-05-92 12-09-93	Alternative Rules for Repairs, Replacements, or Modifications, Section XI, Division 1

Code Case N-389 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should submit for approval the appropriate edition and addenda of the Code that is to be used for the repair, replacement, or modification before start of the work.

N-401	02-20-84 02-23-87 05-04-88	Eddy Current Examination, Section XI, Division 1
N-402	02-20-84 02-23-87 03-05-90 03-14-91	Eddy Current Calibration Standard Material, Section XI, Division 1
N-408	07-12-84 05-07-87 03-08-89	Alternative Rules for Examination of Class 2 Piping, Section XI, Division 1
N-408-1	03-08-89 07-24-89	Alternative Rules for Examination of Class 2 Piping, Section XI, Division 1

Code Case N-408-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant for an operating license should define the Class 2 piping subject to volumetric and surface examination in the Preservice Inspection for determination of acceptability by the NRC staff.

[9]Earlier date—date Code Case was approved by ASME; later date—date revision of Code Case was approved by ASME. Where more than two dates appear, the last date is the date on which the Code Case was revised. The middle date (or dates) was the date of reaffirmation of the Code Case.

[10]Code Case N-375 was not listed prior to Revision 3 of this regulatory guide.

N-408-2	07-24-89 07-24-92 08-09-93	Alternative Rules for Examination of Class 2 Piping, Section XI, Division 1

Code Case N-408-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant for an operating license should define the Class 2 piping subject to volumetric and surface examination in the Preservice Inspection for determination of acceptability by NRC staff.

N-409	12-05-84 12-07-87	Procedure and Personnel Qualification for Ultrasonic Detection and Sizing of Intergranular Stress Corrosion Cracking in Austenitic Piping Welds, Section XI, Division 1
N-409-1	12-07-87 07-27-88	Procedure and Personnel Qualification Requirements for Ultrasonic Detection and Sizing of Flaws in Piping Welds, Section XI, Division 1

Code Case N-409-1 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should give prior notification to the NRC of the intention to use the Code Case.

N-409-2	07-27-88 05-13-91 04-30-93	Procedure and Personnel Qualification Requirements for Ultrasonic Detection and Sizing of Flaws in Piping Welds, Section XI, Division 1

Code Case N-409-2 was acceptable subject to the following condition in addition to those conditions specified in the Code Case: The applicant should give prior notification to the NRC of the intention to use the Code Case.

N-416	12-05-85 12-05-87 12-03-90 02-15-94	Alternative Rules for Hydrostatic Testing of Repair or Replacement of Class 2 Piping, Section XI, Division 1
N-429	12-05-85 02-23-87	Alternative Rules for Ultrasonic Instrument Calibration, Section XI, Division 1
N-435	05-14-86 07-30-86	Alternative Examination Requirements for Vessels with Wall Thickness 2 in. or Less, Section XI, Division 1
N-436	05-14-86 12-07-87	Alternative Methods for Evaluation of Flaws in Austenitic Piping, Section XI, Division 1
N-463	11-30-88 03-05-90	Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2, Section XI, Division 1
N-479	07-24-89 12-03-90	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test, Section XI, Division 1
N-485	04-30-90 08-14-91	Eddy Current Examination of Coated Ferritic Surfaces as an Alternative to Surface Examination, Section XI, Division 1
N-490	08-14-90 05-13-91	Alternative Vision Test Requirements for Nondestructive Examiners, Section XI, Divisions 1, 2, and 3
N-491	03-14-91 04-30-93	Alternative Rules for Examination of Class 1, 2, 3 and MC Component Supports of Light-Water Cooled Power Plants, Section XI, Division 1
N-494	12-03-90 07-17-92	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceeds the Acceptance Standards of IWB-3514.2, Section XI, Division 1
N-494-1	07-27-92 12-09-93	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceeds the Acceptance Standards of IWB-3514.2, Section XI, Division 1
N-496	03-14-91 02-15-94 05-11-94	Helical Coil Threaded Inserts, Section XI, Division 1
N-498[11]	05-13-91 05-11-94	Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems, Section XI, Division 1

[11]Code Case N-498 was approved for use by ASME on 5-13-91. It was included in Revision 9 of this guide because of an urgent need for the case.

N-504	4-30-92 8-09-93	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping, Section XI, Division 1

4. UNACCEPTABLE CODE CASES

Code Cases that are not on the approved list of this guide (Regulatory Position 1) or other regulatory guides, or for which authorization by the Commission has not been granted, are not acceptable on a generic basis.

D. IMPLEMENTATION

The purpose of this section is to provide information to applicants regarding the use of this regulatory guide.

1. Except for those Code Cases that have been annulled by action of the ASME, the NRC staff has found the Code Cases listed in this regulatory guide under Regulatory Position 1 acceptable for appropriate use. Other Code Cases may be considered for use in accordance with footnote 6 of the Codes and Standards rule, 10 CFR 50.55a.

2. Components ordered to a specific version of a Code Case need not be changed because a subsequent revision of the Code Case is listed as the approved version in this guide.

3. Code Cases to be applied during an inspection interval or Code Cases for a preservice inspection that were previously approved for use may continue to be used even though the Code Case has been subsequently annulled.

4. Code Cases on the approved list may be applied to procedures for an inspection interval and procedures for the inservice inspection that were established prior to the effective date of the Code Case within the limits specified in the Code Case and applicable regulations or recommended in other regulatory guides.

APPENDIX
NUMERICAL LISTING OF CODE CASES

N-98 (1705-1)
N-113-1
N-211
N-235
N-236-1
N-307-1
N-311
N-335-1
N-355
N-356
N-389-1
N-401-1
N-402-1
N-408-3
N-409-3
N-415
N-416-1
N-427
N-429-1
N-432
N-435-1
N-437
N-448
N-449
N-457
N-458
N-460
N-461
N-463-1
N-465
N-471
N-472
N-473
N-479-1
N-481
N-485-1
N-489
N-490-1
N-491-1
N-494-2
N-495
N-496-1
N-498-1
N-503
N-504-1
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N-524
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N-541

VALUE/IMPACT STATEMENT

A draft value/impact statement was published with the draft of this guide when it was published for public comment (Task DG-1050, May 1997). No changes were necessary, so a separate value/impact statement for Revision 12 of Regulatory Guide 1.147 has not been prepared. A copy of the draft value/impact statement is available for inspection or copying for a fee in the NRC's Public Document Room at 2120 L Street NW., Washington, DC, under Task DG-1050.

Approval Date: February 15, 1994
See Numeric Index for expiration and any reaffirmation dates.

Case N-416-1
Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding, Class 1, 2 and 3 Section XI, Division 1

Inquiry: What alternative pressure test may be performed in lieu of the hydrostatic pressure test required by para. IWA-4000 for welded repairs or installation of replacement items by welding?

Reply: It is the opinion of the Committee that in lieu of performing the hydrostatic pressure test required by para. IWA-4000 for welded repairs or installation of replacement items by welding, a system leakage test may be used provided the following requirements are met.

(a) NDE shall be performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1992 Edition of Section III.

(b) Prior to or immediately upon return to service, a visual examination (VT-2) shall be performed in conjunction with a system leakage test, using the 1992 Edition of Section XI, in accordance with para. IWA-5000, at nominal operating pressure and temperature.

(c) Use of this Case shall be documented on an NIS-2 form.

If the previous version of this case was used to defer a Class 2 hydrostatic test, the deferred test may be eliminated when the requirements of this revision are met.

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: May 11, 1994

See Numerical Index for expiration and any reaffirmation dates.

Case N-498-1
Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems
Section XI, Division 1

Inquiry: What alternative rules may be used in lieu of those required by Section XI, Division 1, Table IWB-2500-1, Category B-P, Table IWC-2500-1, Category C-H, and Table IWD-2500-1, Categories D-A, D-B, and D-C, as applicable, for the 10-year system hydrostatic test?

Reply:

(a) It is the opinion of the Committee that as an alternative to the 10-year system hydrostatic test required by Table IWB-2500-1, Category B-P, the following rules shall be used.

(1) A system leakage test (IWB-5221) shall be conducted at or near the end of each inspection interval, prior to reactor startup.

(2) The boundary subject to test pressurization during the system leakage test shall extend to all Class 1 pressure retaining components within the system boundary.

(3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.

(4) Test temperatures and pressures shall not exceed limiting conditions for the hydrostatic test curve as contained in the plant Technical Specifications.

(5) The VT-2 visual examination shall include all components within the boundary identified in (a)(2) above.

(6) Test instrumentation requirements of IWA-5260 are not applicable.

(b) It is the opinion of the Committee that, as an alternative to the 10-year system hydrostatic test required by Table IWC-2500-1, Category C-H, the following rules shall be used.

(1) A system pressure test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B.

(2) The boundary subject to test pressurization during the system pressure test shall extend to all Class 2 components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve, including a safety or relief valve, or valve capable of automatic closure when the safety function is required.

(3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for a minimum of 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.

(4) The VT-2 visual examination shall include all components within the boundary identified in (b)(2) above.

(5) Test instrumentation requirements of IWA-5260 are not applicable.

(c) It is the opinion of the Committee that, as an alternative to the 10-year system hydrostatic test required by Table IWD-2500-1, Categories D-A, D-B, or D-C (D-B for the 1989 Edition with the 1991 and subsequent Addenda), as applicable, the following rules shall be used.

(1) A system pressure test shall be conducted at or near the end of each inspection interval or during the same inspection period of each inspection interval of Inspection Program B.

(2) The boundary subject to test pressurization during the system pressure test shall extend to all Class 3 components included in those portions of systems required to operate or support the safety system function up to and including the first normally closed valve, including a safety or relief valve, or valve capable of automatic closure when the safety function is required.

(3) Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for at least 4 hours for insulated systems and 10 minutes for noninsulated systems. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.

(4) The VT-2 visual examination shall include all components within the boundary identified in (c)(2) above.

(5) Test instrumentation requirements of IWA-5260 are not applicable.

Approval Date: December 9, 1993

See Numeric Index for expiration and any reaffirmation dates.

Case N-522
Pressure Testing of Containment Penetration Piping
Section XI, Division 1

Inquiry: What alternative to the rules of Table IWC-2500-1, Category C-H may be used for pressure testing piping that penetrates a containment vessel, when the piping and isolation valves that are part of the containment system are Class 2 but the balance of the piping system is outside the scope of Section XI?

Reply: It is the opinion of the Committee that 10 CFR 50, Appendix J, may be used as an alternative to the rules in Table IWC-2500-1, Category C-H for pressure testing piping that penetrates a containment vessel, when the piping and isolation valves that are part of the containment system are Class 2 but the balance of the piping system is outside the scope of Section XI.

Approval Date: August 9, 1996
See Numeric Index for expiration and any reaffirmation dates.

Case N-566
Corrective Action for Leakage Identified at Bolted Connections
Section XI, Division 1

Inquiry: What alternative to the requirements of IWA-5250(a)(2) may be used when leakage is detected at bolted connections?

Reply: It is the opinion of the Committee that, as an alternative to the requirements of IWA-5250(a)(2), one of the following requirements shall be met for leakage at bolted connections:

(a) The leakage shall be stopped, and the bolting and component material shall be reviewed for joint integrity.

(b) If the leakage is not stopped, the joint shall be evaluated in accordance with IWB-3142.4 for joint integrity. This evaluation shall include consideration of the number and condition of bolts, leaking medium, bolt and component material, system function, and leakage monitoring.