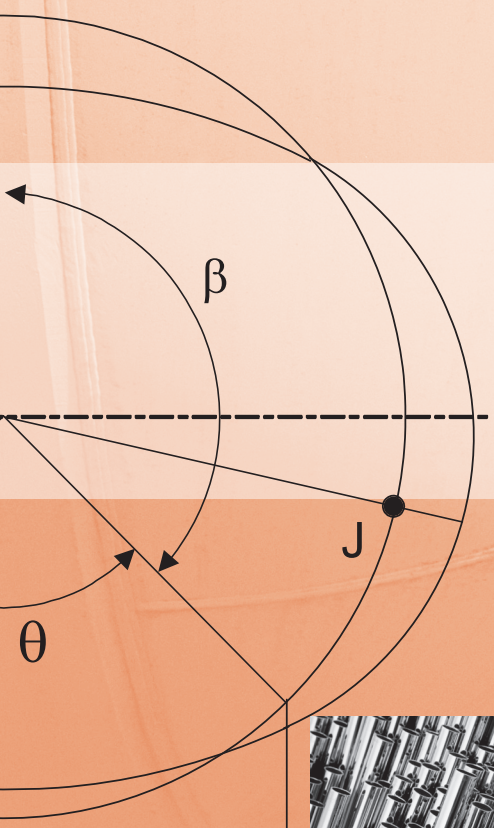
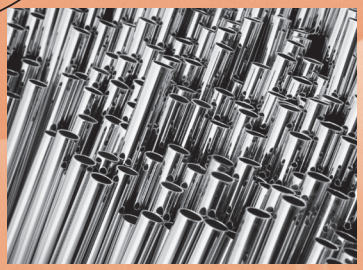
2010 ASME Boiler and Pressure Vessel Code

AN INTERNATIONAL CODE



Code Cases: Nuclear Components



ASME
SETTING THE STANDARD

AN INTERNATIONAL CODE

2010 ASME Boiler & Pressure Vessel Code

2010 Edition July 1, 2010

CODE CASES: NUCLEAR COMPONENTS

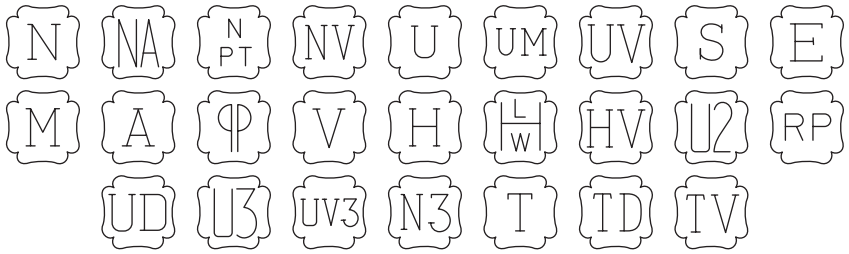
ASME SETTING THE STANDARD

Three Park Avenue • New York, NY • 10016 USA

Date of Issuance: July 1, 2010
(Includes all Code Case actions published through Supplement 11 to the 2007 Edition)

The Committee's function is to establish rules of safety, relating only to pressure integrity, governing the construction of boilers, pressure vessels, transport tanks and nuclear components, and inservice inspection for pressure integrity of nuclear components and transport tanks, and to interpret these rules when questions arise regarding their intent. This code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks and nuclear components, and the inservice inspection of nuclear components and transport tanks. The user of the Code should refer to other pertinent codes, standards, laws, regulations, or other relevant documents.

ASME collective membership mark



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2010 ASME

(10)

BOILER AND PRESSURE VESSEL CODE

SECTIONS

ADDENDA

Addenda, which include additions and revisions to individual Sections of the Code, will be sent automatically to purchasers of the applicable Sections up to the publication of the 2013 Code. The 2010 Code is available only in the loose-leaf format; accordingly, the Addenda will be issued in the loose-leaf, replacement-page format.

INTERPRETATIONS

ASME issues written replies to inquiries concerning interpretation of technical aspects of the Code. The Interpretations for each individual Section will be published separately and will be included as part of the update service to that Section. Interpretations of Section III, Divisions 1 and 2, will be included with the update service to Subsection NCA.

Interpretations of the Code are posted in January and July at www.cstools.asme.org/interpretations.

CODE CASES

The Boiler and Pressure Vessel Committee meets regularly to consider proposed additions and revisions to the Code and to formulate Cases to clarify the intent of existing requirements or provide, when the need is urgent, rules for materials or constructions not covered by existing Code rules. Those Cases that have been adopted will appear in the appropriate 2010 Code Cases book: "Boilers and Pressure Vessels" and "Nuclear Components." Supplements will be sent automatically to the purchasers of the Code Cases books up to the publication of the 2013 Code.

INDEX TO NEW AND REVISED CASES

Section III, Divisions 1, 2, and 3, and Section XI

NOTES TO NUMERIC INDEX

- The ASME Boiler and Pressure Vessel Standards Committee took action to eliminate Code Case expiration dates, effective March 11, 2005. This means that all Code Cases listed in Supplement 3 and beyond will remain available for use until annulled by the ASME Boiler and Pressure Vessel Standards Committee. Code Cases will be routinely reviewed for possible incorporation into the body of the ASME Boiler and Pressure Vessel Code.

- There is a change in the way the supplements to the 2004 Edition are distributed. Supplement 11 is the last supplement published in the 2004 Edition, Supplement 12 will be incorporated into the 2007 Edition.

- Cases may be used beginning with the date of approval shown on the Case.

- Annulled Cases will remain in the Numeric Index until the next Edition, at which time they will be deleted.

- The digit following a Case Number is used to indicate the number of times a Case has been revised.

- Newly revised cases supersede previous versions, as indicated by an "S" in the Numeric Index.

- The Cases are arranged in numerical order, and each page of a Case is identified at the top with the appropriate Case Number.

Legend of Abbreviations

Supp. = Supplement
R = Reinstated
S = Superseded

SUMMARY OF CHANGES (10)

Revisions given below are identified on the pages by a margin note, **(10)**.

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APPLICABILITY INDEX FOR SECTION XI CASES
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*Errata are identified on the above pages by a margin note, **E**, placed next to the affected area.

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SUBJECT INDEX

[1] For Cases 2143, and 2297 see Boiler and Pressure Vessel Code Cases.

SECTION III — DIVISION 2
CODE FOR CONCRETE CONTAINMENTS

INDEX OF MATERIAL SPECIFICATIONS REFERRED TO IN CASES

CHARTS FOR VESSELS UNDER EXTERNAL PRESSURE

APPLICABILITY INDEX FOR SECTION XI CASES

This Index provides the range of Section XI Editions and Addenda applicable to each Section XI Case.

Code Case No.	Title	Applicability	
		From	Up To and Including
N-34	Inservice Inspection of Welds on Nuclear Components	1970 Edition	1971 Edition with the Summer 1973 Addenda
N-72	Partial Postponement of Category B-C Examinations for Class 1 Components	1974 Edition	1977 Edition with the Winter 1977 Addenda
N-73	Partial Postponement of Category B-D Examinations for Class 1 Components	1974 Edition	1977 Edition with the Winter 1977 Addenda
N-98	Ultrasonic Examination — Calibration Block Tolerances [Note (1)]:		
	(a) For Division 1	1974 Edition	1977 Edition with the Summer 1978 Addenda
	(b) For Division 2	1974 Edition with the Winter 1975 Addenda	Not applicable
N-112	Acceptance Standards Class 2 and 3 Components	1974 Edition	1974 Edition with the Winter 1975 Addenda
N-113	Basic Calibration Block for Ultrasonic Examination of Welds 10 in. to 13 in. Thick	1971 Edition with the Summer 1973 Addenda	1974 Edition with the Summer 1976 Addenda
N-113-1	Basic Calibration Block for Ultrasonic Examination of Welds 10 in. to 14 in. Thick	1971 Edition with the Summer 1973 Addenda	2001 Edition
N-118	Examination — Acceptance Standards for Surface Indications in Cladding	1974 Edition with the Summer 1974 Addenda	1974 Edition with the Winter 1975 Addenda
N-166	Reference by Section XI to N626.1-1975 for Qualification and Duties of Authorized Nuclear Inservice Inspection	1974 Edition	1977 Edition
N-167	Minimum Section Thickness Requirements for Repair of Nozzles	1974 Edition	1977 Edition with the Winter 1977 Addenda
N-198	Exemption From Examination for ASME Class 2 Piping Located at Containment Penetrations	1974 Edition with the Summer 1976 Addenda	1977 Edition with the Winter 1977 Addenda
N-198-1	Exemption From Examination for ASME Class 1 and 2 Piping Located at Containment Penetrations	1974 Edition with the Summer 1976 Addenda	1992 Edition with the 1993 Addenda
N-209	Conditional Acceptance of Identifiable Isolated or Random Rounded Indications		
	(a) For Class 1 Systems	1974 Edition	1980 Edition with the Winter 1980 Addenda
	(b) For Class 2 Systems	1974 Edition with the Summer 1976 Addenda	1983 Edition
N-210	Exemptions to Hydrostatic Test After Repairs	1974 Edition	1977 Edition with the Winter 1977 Addenda

Code Case No.	Title	Applicability	
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N-211	Recalibration of Ultrasonic Equipment Upon Change of Personnel		
	(a) To meet requirements of I-4230	1971 Edition with the Summer 1973 Addenda	1974 Edition with the Summer 1976 Addenda
	(b) To meet requirements of III-3330	1977 Edition	1980 Edition
N-216	Alternative Rules for Reactor Vessel Closure Stud Examination	1977 Edition	1977 Edition with the Winter 1977 Addenda
N-234	Time Between Ultrasonic Calibration Checks		
	(a) To meet requirements of I-4230	1971 Edition with the Summer 1973 Addenda	1974 Edition with the Summer 1976 Addenda
	(b) To meet requirements of III-3330	1977 Edition	1980 Edition
N-235	Ultrasonic Calibration Checks per Section V	1974 Edition with the Winter 1976 Addenda	1977 Edition with the Summer 1979 Addenda
N-236	Repair and Replacement of Class MC Vessels	1974 Edition	1983 Edition with the Winter 1984 Addenda
N-236-1	Repair and Replacement of Class MC Vessels	1974 Edition	1989 Edition with the 1990 Addenda
N-252	Low Energy Capacitive Discharge Welding Method for Temporary or Permanent Attachments to Components and Supports	1971 Edition	1980 Edition with the Winter 1980 Addenda
N-278	Alternative Ultrasonic Calibration Block Configuration, I-3131 and T-434.3		
	(a) To meet requirements of I-3131	1974 Edition	1974 Edition with the Summer 1976 Addenda
	(b) To meet requirements of T-434.3	1977 Edition	1983 Edition with the Winter 1984 Addenda
N-288	Hydrostatic Test Requirements for Class 1 and 2 Components	1974 Edition	1980 Edition with the Winter 1980 Addenda
N-306	Calibration Block Material Selection, Appendix I, I-3121 [Note (2)]	1974 Edition with the Summer 1975 Addenda	1974 Edition with the Summer 1976 Addenda
N-307	Revised Ultrasonic Examination Volume for Class 1 Bolting, Examination Category B-G-1, When the Examinations Are Conducted From the Center-Drilled Hole	1974 Edition	1983 Edition with the Winter 1984 Addenda
N-307-1	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	1974 Edition	1998 Edition with the 1999 Addenda
N-307-2	Revised Ultrasonic Examination Volume for Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1, When the Examinations Are Conducted From the End of the Bolt or Stud or From the Center-Drilled Hole	1974 Edition	1998 Edition with the 1999 Addenda
N-307-3	Ultrasonic Examination of Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1	1974 Edition	1998 Edition with the 1999 Addenda
N-308	Documentation of Repairs and Replacements of Components in Nuclear Power Plants	1974 Edition	1980 Edition with the Winter 1981 Addenda
N-311	Alternative Examination of Outlet Nozzle on Secondary Side of Steam Generators	1977 Edition with the Winter 1977 Addenda	2004 Edition

Code Case No.	Title	Applicability	
		From	Up To and Including
N-322	Examination Requirements for Integrally Welded or Forged Attachments to Class 1 Piping at Containment Penetrations	1977 Edition with the Summer 1978 Addenda	1992 Edition with the 1993 Addenda
N-323	Alternative Examinations for Integrally Welded Attachments to Vessels	1974 Edition	1974 Edition with the Winter 1976 Addenda
N-323-1	Alternative Examination for Welded Attachments to Pressure Vessels	1980 Edition with the Winter 1981 Addenda	1995 Edition with the 1996 Addenda
N-334	Examination Requirements for Integrally Welded or Forged Attachments to Class 2 Piping at Containment Penetrations	1977 Edition with the Summer 1978 Addenda	1980 Edition with the Summer 1980 Addenda
N-335	Rules for Ultrasonic Examination of Similar and Dissimilar Metal Piping Welds	1974 Edition	1980 Edition with the Winter 1981 Addenda
N-335-1	Rules for Ultrasonic Examination of Similar and Dissimilar Metal Piping Welds	1974 Edition	1980 Edition with the Winter 1981 Addenda
N-343	Alternative Scope of Examination of Attachment Welds for Examination Categories B-H, B-K-1, and C-C	1974 Edition	1980 Edition with the Winter 1981 Addenda
N-355	Calibration Block for Angle Beam Ultrasonic Examination of Large Fittings in Accordance With Appendix III-3410 [Note (3)]	1974 Edition with the Winter 1975 Addenda	1983 Edition
N-356	Certification Period for Level III NDE Personnel	1977 Edition with the Winter 1977 Addenda	1983 Edition
N-375	Rules for Ultrasonic Examination of Bolts and Studs	1980 Edition	1980 Edition with the Winter 1981 Addenda
N-375-1	Rules for Ultrasonic Examination of Bolts and Studs	1980 Edition	1980 Edition with the Winter 1981 Addenda
N-375-2	Rules for Ultrasonic Examination of Bolts and Studs	1971 Edition	1983 Edition
N-389	Alternative Rules for Repairs, Replacements, or Modifications	1974 Edition with the Summer 1975 Addenda	1986 Edition with the 1987 Addenda
N-389-1	Alternative Rules for Repairs, Replacements, or Modifications	1974 Edition with the Summer 1975 Addenda	1992 Edition with the 1993 Addenda
N-390	Evaluation Criteria for Flaws Located in a Flange or Shell Region Near a Structural Discontinuity	1974 Edition with the Summer 1975 Addenda	1983 Edition with the Summer 1983 Addenda
N-401	Eddy Current Examination	1974 Edition with the Summer 1976 Addenda	1989 Edition with the 1989 Addenda
N-401-1	Eddy Current Examination	1974 Edition with the Summer 1974 Addenda	1989 Edition with the 1989 Addenda
N-402	Eddy Current Calibration Standard Material	1980 Edition with the Winter 1980 Addenda	1989 Edition with the 1989 Addenda
N-402-1	Eddy Current Calibration Standards	1980 Edition with the Winter 1980 Addenda	1989 Edition with the 1989 Addenda
N-406	Alternative Rules for Replacement	1977 Edition with the Summer 1978 Addenda	1986 Edition
N-408	Alternative Rules for Examination of Class 2 Piping	1974 Edition	1983 Edition
N-408-1	Alternative Rules for Examination of Class 2 Piping	1974 Edition	1983 Edition
N-408-2	Alternative Rules for Examination of Class 2 Piping	1974 Edition	1989 Edition
N-408-3	Alternative Rules for Examination of Class 2 Piping	1974 Edition	1989 Edition
N-409	Procedure and Personnel Qualification for Ultrasonic Detection and Sizing of Intergranular Stress Corrosion Cracking in Austenitic Piping Welds	1974 Edition	1986 Edition with the 1986 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-409-1	Procedure and Personnel Qualification Requirements for Ultrasonic Detection and Sizing of Intergranular Stress Corrosion Cracking in Austenitic Piping Welds	1974 Edition	1986 Edition with the 1987 Addenda
N-409-2	Procedure and Personnel Qualification Requirements for Ultrasonic Detection and Sizing of Intergranular Stress Corrosion Cracking in Austenitic Piping Welds	1974 Edition	1989 Edition
N-409-3	Procedure and Personnel Qualification Requirements for Ultrasonic Detection and Sizing of Intergranular Stress Corrosion Cracking in Austenitic Piping Welds	1974 Edition	1989 Edition
N-415	Alternative Rules for Testing Pressure Relief Devices	1974 Edition	1983 Edition with the Winter 1984 Addenda
N-416	Alternative Rules for Hydrostatic Testing of Repair or Replacement of Class 2 Piping	1974 Edition	1989 Edition with the 1990 Addenda
N-416-1	Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding Class 1, 2, and 3	1974 Edition	1998 Edition
N-416-2	Alternative Pressure Test Requirement for Welded Repairs, Fabrication Welds for Replacement Parts and Piping Subassemblies, or Installation of Replacement Items by Welding, Class 1, 2, and 3	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-416-3	Alternative Pressure Test Requirement for Welded or Brazed Repairs, Fabrication Welds or Brazed Joints for Replacement Parts and Piping Subassemblies, or Installation of Replacement Items by Welding or Brazing, Classes 1, 2, and 3	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-416-4	Alternative Pressure Test Requirement for Welded or Brazed Repairs, Fabrication Welds or Brazed Joints for Replacement Parts and Piping Subassemblies, or Installation of Replacement Items by Welding or Brazing, Classes 1, 2, and 3	1977 Edition with the Summer 1978 Addenda	2001 Edition with the 2002 Addenda
N-419	Extent of VT-1 Examinations, Category B-G-1 of Table IWB-2500-1	1977 Edition with the Summer 1978 Addenda	1983 Edition with the Winter 1984 Addenda
N-424	Qualification of Visual Examination Personnel	1977 Edition with the Summer 1978 Addenda	1983 Edition
N-426	Extent of VT-1 Examinations, Category B-G-2 of Table IWB-2500-1	1977 Edition with the Summer 1978 Addenda	1983 Edition with the Winter 1984 Addenda
N-427	Code Cases in Inspection Plans	1971 Edition	1986 Edition
N-429	Alternate Rules for Ultrasonic Instrument Calibration	1980 Edition with the Winter 1980 Addenda	1983 Edition with the Winter 1983 Addenda
N-429-1	Alternative Rules for Ultrasonic Instrument Calibration	1980 Edition with the Winter 1980 Addenda	1986 Edition with the 1986 Addenda
N-432	Repair Welding Using Automatic or Machine Gas Tungsten-Arc Welding (GTAW) Temper Bead Technique	1971 Edition with the Summer 1973 Addenda	1989 Edition with the 1990 Addenda
N-432-1	Repair Welding Using Automatic or Machine Gas Tungsten-Arc Welding (GTAW) Temper Bead Technique	1971 Edition with the Summer 1973 Addenda	2007 Edition with the 2008 Addenda
N-435	Alternative Examination Requirements for Vessels With Wall Thickness 2 in. or Less	1974 Edition with the Summer 1975 Addenda	1986 Edition

Code Case No.	Title	Applicability	
		From	Up To and Including
N-435-1	Alternative Examination Requirements for Vessels With Wall Thickness 2 in. or Less	1974 Edition with the Summer 1975 Addenda	1995 Edition
N-436	Alternative Methods for Evaluation of Flaws in Austenitic Piping	1983 Edition	1986 Edition
N-436-1	Alternative Methods for Evaluation of Flaws in Austenitic Piping	1983 Edition	1986 Edition
N-437	Use of Digital Readout and Digital Measurement Devices for Performing Pressure Tests	1974 Edition	1986 Edition
N-444	Preparation of Inspection Plans	1974 Edition with the Summer 1975 Addenda	1986 Edition with the 1986 Addenda
N-445	Use of Later Edition of SNT-TC-1A for Qualification of Nondestructive Examination Personnel	1977 Edition with the Summer 1978 Addenda	1986 Edition
N-446	Recertification of Visual Examination Personnel	1977 Edition with the Summer 1978 Addenda	1986 Edition
N-448	Qualification of VT-2 and VT-3 Visual Examination Personnel	1977 Edition with the Summer 1978 Addenda	1986 Edition with the 1987 Addenda
N-449	Qualification of VT-4 Visual Examination Personnel	1977 Edition with the Summer 1978 Addenda	1983 Edition with the Winter 1983 Addenda
N-457	Qualification Specimen Notch Location for Ultrasonic Examination of Bolts and Studs	1983 Edition with the Winter 1983 Addenda	1992 Edition with the 1993 Addenda
N-458	Magnetic Particle Examination of Coated Materials	1980 Edition with the Winter 1981 Addenda	1995 Edition
N-458-1	Magnetic Particle Examination of Coated Materials	1980 Edition with the Winter 1981 Addenda	1995 Edition
N-460	Alternative Examination Coverage for Class 1 and Class 2 Welds	1974 Edition	2007 Edition
N-461	Alternative Rules for Piping Calibration Block Thickness	1974 Edition with the Summer 1975 Addenda	1995 Edition
N-461-1	Alternative Rules for Piping Calibration Block Thickness	1974 Edition with the Summer 1975 Addenda	1995 Edition
N-463	Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2	1983 Edition with the Winter 1983 Addenda	1989 Edition with the 1989 Addenda
N-463-1	Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping That Exceed the Acceptance Standards of IWB-3514.2	1983 Edition with the Winter 1983 Addenda	1989 Edition with the 1989 Addenda
N-465	Alternative Rules for Pump Testing	1974 Edition with the Winter 1975 Addenda	1986 Edition with the 1987 Addenda
N-465-1	Alternative Rules for Pump Testing	1974 Edition with the 1975 Addenda	1995 Edition with the 1995 Addenda
N-471	Acoustic Emissions for Successive Inspections	1974 Edition	1998 Edition with the 1999 Addenda
N-472	Use of Digital Readout and Digital Measurement Devices for Performing Pump Vibration Testing	1974 Edition	1986 Edition with the 1987 Addenda
N-473	Alternate Rules for Valve Testing	1974 Edition with the Summer 1975 Addenda	1986 Edition with the 1987 Addenda
N-473-1	Alternative Rules for Valve Testing	1974 Edition with the 1975 Addenda	1995 Edition with the 1995 Addenda
N-478	Inservice Inspection for Class CC Concrete Components of Light-Water Cooled Power Plants	1974 Edition	1986 Edition with the 1987 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-479	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test	1977 Edition with the Winter 1977 Addenda	1989 Edition with the 1989 Addenda
N-479-1	Boiling Water Reactor (BWR) Main Steam Hydrostatic Test	1977 Edition with the Winter 1977 Addenda	1989 Edition with the 1990 Addenda
N-480	Examination Requirements for Pipe Wall Thinning Due to Single Phase Erosion and Corrosion	1974 Edition	1992 Edition with the 1993 Addenda
N-481	Alternative Examination Requirements for Cast Austenitic Pump Casings	1977 Edition with the Summer 1978 Addenda	1998 Edition with the 1999 Addenda
N-485	Eddy Current Examination of Coated Ferritic Surfaces as an Alternative to Surface Examination	1980 Edition with the Winter 1981 Addenda	1989 Edition with the 1990 Addenda
N-485-1	Eddy Current Examination of Coated Ferritic Surfaces as an Alternative to Surface Examination	1980 Edition with the Winter 1981 Addenda	1995 Edition
N-486	Inservice Inspection, Repair, and Replacement Requirements for Class MC and Metallic Liners of Class CC Components	1974 Edition	1989 Edition
N-489	Alternative Rules for Level III NDE Qualification Examinations	1974 Edition with the Summer 1975 Addenda	1989 Edition with the 1989 Addenda
N-490	Alternative Vision Test Requirements for Nondestructive Examiners	1974 Edition with the Summer 1975 Addenda	1989 Edition with the 1990 Addenda
N-490-1	Alternative Vision Test Requirements for Nondestructive Examiners	1974 Edition with the Summer 1975 Addenda	1989 Edition with the 1990 Addenda
N-491	Alternative Rules for Examination of Class 1, 2, 3, and MC Component Supports of Light-Water Cooled Power Plants	1977 Edition with the Summer 1978 Addenda	1989 Edition with the 1989 Addenda
N-491-1	Alternative Rules for Examination of Class 1, 2, 3, and MC Component Supports of Light-Water Cooled Power Plants	1977 Edition with the Summer 1978 Addenda	1989 Edition with the 1989 Addenda
N-491-2	Alternative Rules for Examination of Class 1, 2, 3, and MC Component Supports of Light-Water Cooled Power Plants	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1996 Addenda
N-494	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceed the Acceptance Standards of IWB-3514.2	1974 Edition with the Winter 1975 Addenda	1995 Edition
N-494-1	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceed the Acceptance Standards of IWB-3514.2	1974 Edition with the Winter 1975 Addenda	1995 Edition
N-494-2	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceed the Acceptance Standards of IWB-3514.2	1974 Edition with the Winter 1975 Addenda	1995 Edition
N-494-3	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Class 1 Ferritic Piping that Exceed the Acceptance Standards of IWB-3514.2 and in Class 1 Austenitic Piping that Exceed the Acceptance Standards of IWB-3514.3	1974 Edition with the Winter 1975 Addenda	1995 Edition
N-494-4	Pipe Specific Evaluation Procedures and Acceptance Criteria for Flaws in Piping that Exceed the Acceptance Standards	1983 Edition	2001 Edition
N-495	Hydrostatic Testing of Relief Valves	1977 Edition	1989 Edition with the 1990 Addenda
N-496	Helical-Coil Threaded Inserts	1977 Edition with the Summer 1978 Addenda	1989 Edition with the 1990 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-496-1	Helical-Coil Threaded Inserts	1977 Edition with the Summer 1978 Addenda	1995 Edition
N-496-2	Helical-Coil Threaded Inserts	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-498	Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1 and 2 Systems	1974 Edition with the Summer 1975 Addenda	1992 Edition with the 1992 Addenda
N-498-1	Alternative Rules for 10-Year System Hydrostatic Testing for Class 1, 2, and 3 Systems	1974 Edition with the Summer 1975 Addenda	1998 Edition with the 2000 Addenda
N-498-2	Alternative Requirements for 10-Year System Hydrostatic Testing for Class 1, 2 and 3 Systems	1974 Edition with the Summer 1975 Addenda	1998 Edition with the 2000 Addenda
N-498-3	Alternative Requirements for 10-Year System Hydrostatic Testing for Class 1, 2 and 3 Systems	1974 Edition with the Summer 1975	1998 Edition with the 2000 Addenda
N-498-4	Alternative Requirements for 10-Year System Hydrostatic Testing for Class 1, 2 and 3 Systems	1974 Edition with the Summer 1975	1998 Edition with the 2000 Addenda
N-503	Limited Certification of Nondestructive Examination Personnel	1977 Edition with the Summer 1978 Addenda	1992 Edition
N-504	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping	1977 Edition with the Summer 1978 Addenda	1986 Edition with the 1987 Addenda
N-504-1	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping	1977 Edition with the Summer 1978 Addenda	1995 Edition
N-504-2	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1995 Addenda
N-504-3	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-504-4	Alternative Rules for Repair of Class 1, 2, and 3 Austenitic Stainless Steel Piping	1977 Edition with the Summer 1978 Addenda	2004 Edition with the 2006 Addenda
N-508	Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing	1977 Edition	1989 Edition with the 1990 Addenda
N-508-1	Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing	1977 Edition	1995 Edition with the 1995 Addenda
N-508-2	Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing	1977 Edition	1998 Edition with the 2000 Addenda
N-508-3	Rotation of Serviced Snubbers and Pressure Relief Valves for the Purpose of Testing	1977 Edition with the Winter 1978 Addenda	2001 Edition with the 2003 Addenda
N-508-4	Rotation of Snubbers and Pressure Retaining Items for the Purpose of Testing or Preventive Maintenance	1989 Edition	2007 Edition with the 2008 Addenda
N-509	Alternative Rules for the Selection and Examination of Classes 1, 2, and 3 Integrally Welded Attachments	1977 Edition with the Summer 1978 Addenda	1995 Edition
N-512	Assessment of Reactor Vessels with Low Upper Shelf Charpy Impact Energy Levels	1986 Edition with the 1987 Addenda	1992 Edition with the 1992 Addenda
N-512-1	Assessment of Reactor Vessels with Low Upper Shelf Charpy Impact Energy Levels	1986 Edition with the 1987 Addenda	1995 Edition
N-513	Evaluation Criteria for Temporary Acceptance of Flaws in Class 3 Piping	1977 Edition with the Summer 1978 Addenda	2001 Edition
N-513-1	Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping	1977 Edition with the Summer 1978 Addenda	2001 Edition
N-513-2	Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping	1977 Edition with the Summer 1978 Addenda	2001 Edition with the 2003 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-513-3	Evaluation Criteria for Temporary Acceptance of Flaws in Moderate Energy Class 2 or 3 Piping	1983 Edition with the Winter 1985 Addenda	2007 Edition with the 2008 Addenda
N-514	Low Temperature Overpressure Protection	1986 Edition with the 1987 Addenda	1992 Edition with the 1992 Addenda
N-515	Class 1 Mechanical Joint- Pressure Tests	1980 Edition with the Winter 1980 Addenda	1989 Edition with the 1990 Addenda
N-516	Underwater Welding	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1995 Addenda
N-516-1	Underwater Welding	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1995 Addenda
N-516-2	Underwater Welding	1974 Edition with the Summer 1978 Addenda	1995 Edition with the 1996 Addenda
N-516-3	Underwater Welding	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-517	Quality Assurance Program Requirements for Owners	1977 Edition with the Summer 1978 Addenda	1995 Edition
N-517-1	Quality Assurance Program Requirements for Owners	1977 Edition with the Summer 1978 Addenda	2004 Edition with the 2006 Addenda
N-521	Alternative Rules for Deferral of Inspections of Nozzle-to-Vessel Welds, Inside Radius Sections and Nozzle-to-Safe End Welds of Pressurized Water Reactor (PWR) Vessel	1977 Edition	1995 Edition
N-522	Pressure Testing of Containment Penetration Piping	1974 Edition	1995 Edition with the 1996 Addenda
N-523	Mechanical Clamping Devices for Class 2 and 3 Piping	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1996 Addenda
N-523-1	Mechanical Clamping Devices for Class 2 and 3 Piping	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1996 Addenda
N-523-2	Mechanical Clamping Devices for Class 2 and 3 Piping	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1996 Addenda
N-524	Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping	1974 Edition with the Summer 1975 Addenda	1995 Edition
N-526	Alternative Requirements for Successive Inspections of Class 1 and 2 Vessels	1974 Edition	2007 Edition with the 2008 Addenda
N-528-1	Purchase, Exchange, or Transfer of Material Between Nuclear Plant Sites	1977 Edition with the Summer 1978 Addenda	2004 Edition with the 2005 Addenda
N-532	Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000	1974 Edition with the Summer 1975 Addenda	1998 Edition with the 2000 Addenda
N-532-1	Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission	1981 Edition with the Winter 1983 Addenda	1998 Edition with the 2000 Addenda
N-532-2	Alternative Requirements to Repair/Replacement Activity Documentation Requirements and Inservice Summary Report Preparation and Submission	1981 Edition with the Winter 1983 Addenda	2001 Edition with the 2002 Addenda
N-532-3	Alternative Requirements to Repair/Replacement Activity Documentation Requirements and Inservice Summary Report Preparation and Submission	1981 Edition with the Winter 1983 Addenda	2001 Edition with the 2003 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-532-4	Repair/Replacement Activity Documentation Requirements and Inservice Summary Report Preparation and Submission	1981 Edition with the Winter 1983 Addenda	2004 Edition with the 2005 Addenda
N-533	Alternative Requirements for VT-2 Visual Examination of Class 1 Insulated Pressure-Retaining Bolted Connections	1986 Edition	1998 Edition with the 2000 Addenda
N-533-1	Alternative Requirements for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure Retaining Bolted Connections	1989 Edition	1998 Edition with the 2000 Addenda
N-534	Alternative Requirements for Pneumatic Pressure Testing	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1997 Addenda
N-535	Alternative Requirements for Inservice Inspection Intervals	1977 Edition	1995 Edition with the 1995 Addenda
N-537	Location of Ultrasonic Depth-Sizing Flaws	1989 Edition with the 1989 Addenda	2001 Edition
N-538	Alternative Requirements for Length Sizing Performance Demonstrations in Accordance with Appendix VIII, Supplements 2, 3, 10, 11, and 12	1989 Edition with the 1989 Addenda	1995 Edition with the 1995 Addenda
N-541	Alternative Requirements for Performance Demonstration in Accordance with Appendix VIII, Supplements 4 and 6	1992 Edition with the 1993 Addenda	1995 Edition
N-542	Alternative Requirements for Nozzle Inside Radius Section Length Sizing Performance Demonstration	1989 Edition with the 1989 Addenda	1995 Edition
N-543	Alternative to Performing Periodic Calibration Checks	1977 Edition with the Summer 1978 Addenda	1989 Edition
N-544	Repair/Replacement of Small Items	1977 Edition with the Summer 1978 Addenda	1995 Edition
N-545	Alternative Requirements for Conduct of Performance Demonstration Detection Test of Reactor Vessel	1989 Edition	2004 Edition
N-546	Alternative Requirements for Qualification of VT-2 Examination Personnel	1977 Edition	1995 Edition with the 1997 Addenda
N-547	Alternative Examination Requirements for Pressure Retaining Bolting of Control Rod Drive (CRD) Housings	1980 Edition with the Winter 1980 Addenda	1995 Edition
N-552	Alternative Methods — Qualification for Nozzle Inside Radius Section from the Outside Surface	1989 Edition with the 1989 Addenda	2004 Edition
N-553	Inservice Eddy Current Surface Examination of Pressure Retaining Pipe Welds and Nozzle-to-Safe End Welds	1977 Edition	1995 Edition with the 1996 Addenda
N-553-1	Eddy Current Surface Examination	1977 Edition	1995 Edition with the 1996 Addenda
N-554	Alternative Requirements for Reconciliation of Replacement Items	1977 Edition	1995 Edition with the 1995 Addenda
N-554-1	Alternative Requirements for Reconciliation of Replacement Items	1977 Edition	1995 Edition with the 1996 Addenda
N-554-2	Alternative Requirements for Reconciliation of Replacement Items and Addition of New Systems	1977 Edition	1998 Edition
N-554-3	Alternative Requirements for Reconciliation of Replacement Items and Addition of New Systems	1977 Edition	2001 Edition with the 2002 Addenda
N-555	Use of Section II, V, and IX Code Cases	1977 Edition with the Summer 1978 Addenda	2001

Code Case No.	Title	Applicability	
		From	Up To and Including
N-556	Alternative Requirements for Verification of Acceptability of Replacements	1977 Edition	1992 Edition with the 1993 Addenda
N-557	In-Place Dry Annealing of a PWR Nuclear Reactor Vessel	1974 Edition with the Summer 1975 Addenda	1995 Edition
N-557-1	In-Place Dry Annealing of a PWR Nuclear Reactor Vessel	1974 Edition with the Summer 1975 Addenda	2007 Edition with the 2008 Addenda
N-560	Alternative Examination Requirements for Class 1, Category B-J Piping Welds	1974 Edition	2004 Edition
N-560-1	Alternative Examination Requirements for Class 1, Category B-J Piping Welds	1974 Edition	2004 Edition
N-560-2	Alternative Examination Requirements for Class 1, Category B-J Piping Welds	1977 Edition	2004 Edition
N-561	Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping	1977 Edition	2004 Edition
N-561-1	Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping	1977 Edition	2004 Edition with the 2005 Addenda
N-561-2	Alternative Requirements for Wall Thickness Restoration of Class 2 and High Energy Class 3 Carbon Steel Piping	1977 Edition	2007 Edition with the 2008 Addenda
N-562	Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Carbon Steel Piping	1977 Edition	2004 Edition
N-562-1	Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Carbon Steel Piping	1977 Edition	2004 Edition with the 2005 Addenda
N-562-2	Alternative Requirements for Wall Thickness Restoration of Class 3 Moderate Energy Carbon Steel Piping	1977 Edition	2007 Edition with the 2008 Addenda
N-563	Grading of Examinations, IWA-2320	1986 Edition with the 1988 Addenda	1992 Edition
N-566	Corrective Action for Leakage Identified at Bolted Connections	1983 Edition with the Winter 1984 Addenda	2004 Edition
N-566-1	Corrective Action for Leakage Identified at Bolted Connections	1983 Edition with the Winter 1984 Addenda	2004 Edition
N-566-2	Corrective Action for Leakage Identified at Bolted Connections	1983 Edition with the Winter 1984 Addenda	2004 Edition with the 2006 Addenda
N-567	Alternative Requirements for Class 1, 2, and 3 Replacement Components	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-567-1	Reconciliation Requirements for Class 1, 2, and 3 Replacement Component	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-568	Alternative Examination Requirements for Welded Attachments	1974 Edition with the Summer 1975 Addenda	1989 Edition with the 1990 Addenda
N-569	Alternative Rules for Repair by Electrochemical Deposition of Class 1 and 2 Steam Generator Tubing	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-569-1	Alternative Rules for Repair by Electrochemical Deposition of Class 1 and 2 Steam Generator Tubing	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-573	Transfer of Procedure Qualification Records Between Owners	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1996 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-574	NDE Personnel Recertification Frequency	1974 Edition with the Summer 1975 Addenda	1995 Edition with the 1996 Addenda
N-575	Alternative Examination Requirements for Full Penetration Nozzle-to-Vessel Welds in Reactor Vessels with Set-On Type Nozzles	1989 Edition	2007 Edition with the 2008 Addenda
N-576	Repair of Class 1 and 2 SB-163, UNS N06600 Steam Generator Tubing	1977 Edition with the Summer 1978 Addenda	1998 Edition with the 2000 Addenda
N-576-1	Repair of Class 1 and 2 SB-163, UNS N06600 Steam Generator Tubing	1977 Edition with the Summer 1978 Addenda	1998 Edition with the 2000 Addenda
N-577	Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method A	1977 Edition	2004 Edition
N-577-1	Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method A	1977 Edition	2004 Edition
N-578	Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B	1977 Edition	2004 Edition
N-578-1	Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B	1977 Edition	2004 Edition
N-583	Annual Training Alternative	1986 Edition with the 1988 Addenda	1998 Edition
N-586	Alternative Additional Examination Requirements for Class 1, 2, and 3 Piping, Components, and Supports	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-586-1	Alternative Additional Examination Requirements for Class 1, 2, and 3 Piping, Components, and Supports	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-587	Alternative NDE Requirements for Repair/Replacement Activities	1977 Edition with the Summer 1978 Addenda	1995 Edition with the 1997 Addenda
N-588	Alternative to Reference Flaw Orientation of Appendix G for Circumferential Welds in Reactor Vessels	1986 Edition with the 1987 Addenda	1995 Edition with the 1997 Addenda
N-589	Class 3 Nonmetallic Cured-In-Place Piping	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-589-1	Class 3 Nonmetallic Cured-In-Place Piping	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
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	1992 Edition	1995 Edition with the 1997 Addenda
N-591	Alternative to the Requirements of Subsection IWL, Requirements for Class CC Concrete Components of Light-Water Cooled Plants	1992 Edition	1995 Edition with the 1996 Addenda
N-592	ASNT Central Certification Program	1974 Edition	1998 Edition
N-593	Alternative Examination Requirements for Steam Generator Nozzle-to-Vessel Welds	1974 Edition	2004 Edition
N-593-1	Examination Requirements for Steam Generator Nozzle-to-Vessel Welds	1974 Edition	2007 Edition with the 2008 Addenda
N-597	Requirements for Analytical Evaluation of Pipe Wall Thinning	1974 Edition	2004 Edition
N-597-1	Requirements for Analytical Evaluation of Pipe Wall Thinning	1974 Edition	2004 Edition
N-597-2	Requirements for Analytical Evaluation of Pipe Wall Thinning	1974 Edition	2007 Edition with the 2008 Addenda
N-598	Alternative Requirements to Required Percentages of Examinations	1977 Edition	1995 Edition with the 1997 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-599	Alternatives to Qualification of Nondestructive Examination Personnel for Inservice Inspection of Metal (Class MC) and Concrete (Class CC) Containments	1992 Edition with the 1992 Addenda	1995 Edition with the 1997 Addenda
N-600	Transfer of Welder, Welding Operator, Brazer, and Brazing Operator Qualifications Between Owners	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-601	Extent and Frequency of VT-3 Visual Examination for Inservice Inspection of Metal Containments	1989 Edition	1995 Edition with the 1997 Addenda
N-603	Alternative to the Requirements of IWL-2421, Sites With Two Plants	1989 Edition with the 1991 Addenda	1995 Edition with the 1996 Addenda
N-604	Alternative to Bolt Torque or Tension Test Requirements of Table IWE-2500-1, Category E-G, Item E8.20	1989 Edition	1995 Edition with the 1997 Addenda
N-605	Alternative to the Requirements of IWE-2500(c) for Augmented Examination of Surface Areas	1989 Edition	1995 Edition with the 1997 Addenda
N-606	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-606-1	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique for BWR CRD Housing/Stub Tube Repairs	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-609	Alternative Requirements to Stress-Based Selection Criteria for Category B-J Welds	1977 Edition	2004 Edition with the 2005 Addenda
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)	1989 Edition with the 1989 Addenda	2004 Edition
N-613-1	Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Nozzle-to-Vessel Welds, Figs. IWB-2500-7(a), (b), and (c)	1989 Edition with the 1989 Addenda	2007 Edition with the 2008 Addenda
N-615	Ultrasonic Examination as a Surface Examination Method for Category B-F and B-J Piping Welds	1977 Edition with the Summer 1978 Addenda	1998 Edition with the 2000 Addenda
N-616	Alternative Requirements for VT-2 Visual Examination of Classes 1, 2, and 3 Insulated Pressure-Retaining Bolted Connections	1983 Edition with the Winter 1984 Addenda	2001 Edition with the 2002 Addenda
N-617	Alternative Examination Distribution Requirements for Table IWC-2500-1 Examination Category C-G, Pressure Retaining Welds in Pumps and Valves	1977 Edition with the Summer 1978 Addenda	1998 Edition with the 1999 Addenda
N-618	Use of a Reactor Pressure Vessel as a Transportation Containment System	1983 Edition	2007 Edition with the 2008 Addenda
N-619	Alternative Requirements for Nozzle Inner Radius Inspections for Class 1 Pressurizer and Steam Generator Nozzles	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-622	Ultrasonic Examination of RPV and Piping, Bolts, and Studs	1989 Edition with the 1989 Addenda	2001 Edition
N-623	Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel	1977 Edition with the Summer 1978 Addenda	1998 Edition
N-624	Successive Inspections	1977 Edition with the Summer 1978 Addenda	2007 Edition

Code Case No.	Title	Applicability	
		From	Up To and Including
N-627	VT-1 Visual Examination in Lieu of Surface Examination for RPV Closure Nuts	1977 Edition with the 1978 Addenda	1989 Edition
N-629	Use of Fracture Toughness Test Data to Establish Reference Temperature for Pressure Retaining Materials	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-630	Alternatives to VT-1C and VT-3C Visual Examination for Inservice Inspection of Concrete and VT-1 Visual Examination for Inservice Inspection of Anchorage Hardware and Surrounding Concrete for Concrete Containments	1992 Edition with the 1992 Addenda	1995 Edition with the 1996 Addenda
N-638	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-638-1	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-638-2	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1980 Edition with the Winter 1981 Addenda	2004 Edition
N-638-3	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1980 Edition with the Winter 1981 Addenda	2004 Edition
N-638-4	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1980 Edition with the Winter 1981 Addenda	2004 Edition
N-638-5	Similar and Dissimilar Metal Welding Using Ambient Temperature Machine GTAW Temper Bead Technique	1980 Edition with the Winter 1981 Addenda	2004 Edition
N-639	Alternative Calibration Block Material	1986 Edition with the 1987 Addenda	2007 Edition with the 2008 Addenda
N-640	Alternative Reference Fracture Toughness for Development of P-T Limit Curves	1992 Edition	1998 Edition
N-641	Alternative Pressure-Temperature Relationship and Low Temperature Overpressure Protection System Requirements	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-643	Fatigue Crack Growth Rate Curves for Ferritic Steels in PWR Water Environment	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-643-1	Fatigue Crack Growth Rate Curves for Ferritic Steels in PWR Water Environment	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-643-2	Fatigue Crack Growth Rate Curves for Ferritic Steels in PWR Water Environment	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-647	Alternative to Augmented Examination Requirements of IWE-2500	1977 Edition with the Summer 1978 Addenda	1998 Edition with the 2000 Addenda
N-648	Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles	1977 Edition with the Summer 1978 Addenda	2004 Edition
N-648-1	Alternative Requirements for Inner Radius Examinations of Class 1 Reactor Vessel Nozzles	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda
N-649	Alternative Requirements for IWE-5240 Visual Examination	1989 Edition	1998 Edition with the 2000 Addenda
N-651	Ferritic and Dissimilar Metal Welding Using SMAW Temper Bead Technique Without Removing the Weld Bead Crown of the First Layer	1977 Edition with the Summer 1978 Addenda	2007 Edition with the 2008 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-652	Alternative Requirements to Categories B-G-1, B-G-2, and C-D Bolting Examination Methods and Selection Criteria	1977 Edition	2001 Edition
N-652-1	Alternative Requirements to Categories B-G-1, B-G-2, and C-D Bolting Examination Methods and Selection Criteria	1977 Edition	2001 Edition with the 2003 Addenda
N-653	Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds	1989 Edition with the 1989 Addenda	2004 Edition
N-654	Acceptance Criteria for Flaws in Ferritic Steel Components 4 in. and Greater in Thickness	1974 Edition	2007 Edition with the 2008 Addenda
N-658	Qualification Requirements for Ultrasonic Examination of Wrought Austenitic Piping Welds	1989 Edition with the 1989 Addenda	2001 Edition
N-660	Risk-Informed Safety Classification for Use in Risk-Informed Repair/Replacement Activities	1980 Edition with the Winter 1981 Addenda	2007 Edition with the 2008 Addenda
N-661	Alternative Requirements for Wall Thickness Restoration of Classes 2 and 3 Carbon Steel Piping for Raw Water Service	1977 Edition	2004 Edition with the 2005 Addenda
N-661-1	Alternative Requirements for Wall Thickness Restoration of Classes 2 and 3 Carbon Steel Piping for Raw Water Service	1977 Edition	2004 Edition with the 2005 Addenda
N-661-2	Alternative Requirements for Wall Thickness Restoration of Classes 2 and 3 Carbon Steel Piping for Raw Water Service	1977 Edition	2007 Edition with the 2008 Addenda
N-662	Alternative Repair/Replacement Requirements for Items Classified in Accordance With Risk-Informed Processes	1980 Edition with the Winter 1981 Addenda	2001 Edition with the 2002 Addenda
N-663	Alternative Requirements for Classes 1 and 2 Surface Examinations	1986 Edition	2007 Edition with the 2008 Addenda
N-664	Performance Demonstration Requirements for Examination of Unclad Reactor Pressure Vessel Welds, Excluding Flange Welds	1989 Edition with the 1989 Addenda	2001 Edition with the 2002 Addenda
N-665	Alternative Requirements for Angle Beam Measurements Using Refracted Longitudinal Wave Search Units	1983 Edition with the Winter 1985 Addenda	2001 Edition with the 2002 Addenda
N-666	Weld Overlay of Class 1, 2, and 3 Socket Welded Connections	1980 Edition with the Winter 1981 Addenda	2004 Edition
N-683	Method for Determining Maximum Allowable False Calls When Performing Single-Sided Access Performance Demonstration in Accordance With, Appendix VIII, Supplements 4 and 6	1989 Edition with the 1989 Addenda	2001 Edition with the 2002 Addenda
N-685	Lighting Requirements for Surface Examination	1998 Edition	2001 Edition with the 2003 Addenda
N-686	Alternative Requirements for Visual Examinations, VT-1, VT-2, and VT-3	1989 Edition with the 1990 Addenda	1998 Edition with the 2000 Addenda
N-686-1	Alternative Requirements for Visual Examinations, VT-1, VT-2, and VT-3	1989 Edition with the 1990 Addenda	2004 Edition
N-691	Application of Risk-Informed Insights to Increase the Inspection Interval for Pressurized Water Reactor Vessels	1986 Edition	2004 Edition with the 2006 Addenda
N-694	Evaluation Procedure and Acceptance Criteria for PWR Reactor Vessel Upper Head Penetration Nozzles	1983 Edition	2001 Edition with the 2003 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-694-1	Evaluation Procedure and Acceptance Criteria for PWR Reactor Vessel Head Penetration Nozzles	1983 Edition	2001 Edition with the 2003 Addenda
N-695	Qualification Requirements for Dissimilar Metal Piping Welds	1989 Edition with the 1989 Addenda	2001 Edition with the 2003 Addenda
N-696	Qualification Requirements for Appendix VIII Piping Examinations Conducted From the Inside Surface	1989 Edition with the 1989 Addenda	2001 Edition with the 2003 Addenda
N-697	Pressurized Water Reactor (PWR) Examination and Alternative Examination Requirements for Pressure Retaining Welds in Control Rod Drive and Instrument Nozzle Housings	1977 Edition	2001 Edition with the 2003 Addenda
N-700	Alternative Rules for Selection of Classes 1, 2, and 3 Vessel Welded Attachments for Examination	1995 Edition with the 1996 Addenda	2001 Edition with the 2003 Addenda
N-702	Alternative Requirements for Boiling Water Reactor (BWR) Nozzle Inner Radius and Nozzle-to-Shell Welds	1986 Edition	2007 Edition with the 2008 Addenda
N-705	Evaluation Criteria for Temporary Acceptance of Degradation in Moderate Energy Class 2 or 3 Vessels and Tanks	1983 Edition with the Winter 1985 Addenda	2007 Edition with the 2008 Addenda
N-706	Alternative Examination Requirements to Table IWB-2500-1 and Table IWC-2500-1 for PWR Stainless Steel Residual and Regenerative Heat Exchangers	1977 Edition	2004 Edition with the 2005 Addenda
N-706-1	Alternative Examination Requirements to Table IWB-2500-1 and Table IWC-2500-1 for PWR Stainless Steel Residual and Regenerative Heat Exchangers	1977 Edition	2007 Edition with the 2008 Addenda
N-711	Alternative Examination Coverage Requirements for Examination Category B-F, B-J, C-F-1, C-F-2, and R-A Piping Welds	1989 Edition	2007 Edition with the 2008 Addenda
N-712	Class 1 Socket Weld Examinations	1986 Edition	2007 Edition with the 2008 Addenda
N-713	Ultrasonic Examination in Lieu of Radiography	1986 Edition	2007 Edition with the 2008 Addenda
N-716	Alternative Piping Classification and Examination Requirements	1989 Edition	2004 Edition with the 2006 Addenda
N-722	Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials	1980 Edition	2007 Edition with the 2008 Addenda
N-722-1	Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials	1980 Edition	2007 Edition with the 2008 Addenda
N-729	Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds	1980 Edition	2004 Edition
N-729-1	Alternative Examination Requirements for PWR Reactor Vessel Upper Heads With Nozzles Having Pressure-Retaining Partial-Penetration Welds	1980 Edition	2004 Edition
N-730	Roll Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in BWRs	1989 Edition	2007 Edition with the 2008 Addenda
N-731	Alternative Class 1 System Leakage Test Pressure Requirements	1989 Edition	2007 Edition with the 2008 Addenda

Code Case No.	Title	Applicability	
		From	Up To and Including
N-733	Mitigation of Flaws in NPS 2 (DN 50) and Smaller Nozzles and Nozzle Partial Penetration Welds in Vessels and Piping by Use of a Mechanical Connection Modification	1983 Edition	2004 Edition with the 2006 Addenda
N-735	Successive Inspections of Class 1 and 2 Piping Welds	1995 Edition with the 1996 Addenda	2007 Edition with the 2008 Addenda
N-739	Alternative Qualification Requirements for Personnel Performing Class CC Concrete and Post-tensioning System Visual Examinations	1992 Edition with the 1992 Addenda	2004 Edition with the 2006 Addenda
N-739-1	Alternative Qualification Requirements for Personnel Performing Class CC Concrete and Post-tensioning System Visual Examinations	1992 Edition with the 1992 Addenda	2004 Edition with the 2006 Addenda
N-740	Dissimilar Metal Weld Overlay for Repair of Class 1, 2, and 3 Items	1980 Edition with Winter 1981 Addenda	2004 Edition with the 2006 Addenda
N-740-1	Dissimilar Metal Weld Overlay for Repair or Mitigation of Class 1, 2, and 3 Items	1980 Edition with Winter 1981 Addenda	2004 Edition with the 2006 Addenda
N-740-2	Full Structural Dissimilar Metal Weld Overlay for Repair or Mitigation of Class 1, 2, and 3 Items	1986 Edition with the 1988 Addenda	2007 Edition with the 2008 Addenda
N-747	Reactor Vessel Head-to-Flange Weld Examination	1989 Edition	2007 Edition with the 2008 Addenda
N-751	Pressure Testing of Containment Penetration Piping	1989 Edition	2004 Edition with the 2006 Addenda
N-753	Vision Tests	1986 Edition with the 1988 Addenda	2004 Edition with the 2006 Addenda
N-755	Use of Polyethylene (PE) Plastic Pipe	1995 Edition with the 1995 Addenda	2007 Edition with the 2008 Addenda
N-762	Temper Bead Procedure Qualification Requirements for Repair/Replacement Activities Without Postweld Heat Treatment	1995 Edition with the 1995 Addenda	2007 Edition with the 2008 Addenda
N-765	Alternative to Inspection Interval Scheduling Requirements of IWA-2430	1989 Edition	2007 Edition with the 2008 Addenda
N-769	Roll Expansion of Class 1 In-Core Housing Bottom Head Penetrations in BWRs	1989 Edition	2007 Edition with the 2008 Addenda
N-770	Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities	1989 Edition	2007 Edition with the 2008 Addenda
N-770-1	Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated With UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities	1989 Edition	2007 Edition with the 2008 Addenda
N-773	Alternative Qualification Criteria for Eddy Current Examinations of Piping Inside Surfaces	1995 Edition with the 1996 Addenda	2007 Edition with the 2008 Addenda
N-778	Alternative Requirements for Preparation and Submittal of Plans, Schedules, and Preservice and Inservice Inspection Summary Reports	1989 Editiona	2007 Edition with the 2009 Addenda

NOTES:
(1) Applies to the 1974 Edition of Section V.
(2) Applies to the 1974 Edition with the Winter 1976 Addenda of Section V.
(3) Applies to the 1980 Edition of Section V.

Approval Date: February 12, 2008

Code Cases will remain available for use until annulled by the applicable Standards Committee.

Case N-4-13
Special Type 403 Modified Forgings or Bars, Class 1 and CS
Section III, Division 1

Inquiry: May Special Type 403 Modified forgings or bars be used in the construction of Section III, Class 1 and CS components in accordance with Section III, Division 1, and what special requirements apply to this material?

Reply: It is the opinion of the Committee that Special Type 403 Modified forgings or bars may be used for Section III Class 1 and CS components, and the following specified special requirements apply in addition to the applicable requirements specified in Section III.

Steel forgings or bars (AISI Type 403 Modified) conforming to the following chemical analysis, having specified minimum mechanical properties shown below, and complying with the specified additional requirements may be used in the construction.

(a) Chemistry

(AISI Type 403 Modified)

	Percent
Carbon	0.06 to 0.13
Manganese	0.25 to 0.80
Phosphorus, max.	0.03
Sulfur, max.	0.03
Chromium	11.50 to 13.00
Nickel, max.	0.50
Silicon, max.	0.50

(b) Mechanical properties in the annealed condition as received shall conform to the following requirements:

	ksi (MPa)
Tensile strength, min.	70 (480)
Yield strength, min.	40 (275)
Elongation in 2 in., min.	22%
Reduction of area, min.	50%

(c) Condition 1 material shall be given an austenitizing heat treatment, followed by air cooling or quenching in liquid media, salt bath, or oil and air cooled to room temperature, and then tempered 1125°F (605°C) minimum for 4 hr. Mechanical properties for Condition 1 material shall conform to the following requirements.

	Condition 1, ksi (MPa)
Tensile strength, min.	110 (760)
Yield strength, min.	90 (620)
Elongation in 2 in., min.	16%
Reduction in area, min.	50%
Brinell Hardness	226 to 277 or equivalent

Condition 2 material shall be given an austenitizing heat treatment, followed by air cooling or quenching in liquid media, salt bath, or oil and air cooled to room temperature, and then tempered at 1250°F (675°C) minimum. Mechanical properties for Condition 2 material shall conform to the following requirements.

	Condition 2, ksi (MPa)
Tensile strength, min.	100 (690)
Yield strength, min.	80 (550)
Elongation in 2 in., min.	15%
Reduction in area, min.	45%

Toughness requirements shall be per NB-2300 for Class 1, and NG-2300 for Class CS, except that the drop-weight tests are not required. The acceptance standards of NB-2332 or NG-2331 and NG-2332 shall apply.

(d) The material shall conform to all other requirements of SA-182 Grade F6a for forgings, and SA-276 Type 403 for bars.

(e) The maximum operating temperature shall not exceed 700°F (370°C).

(f) Design stress intensity, yield, and tensile strength values as shown in Tables 1 and 2 for the heat-treated condition may be used when the material has enhanced properties due to the special heat treatment described in (c) above.

(g) Where the method of fabrication requires welding after heat treatment, it shall be done by applying austenitic stainless steel or nickel alloy weld deposits prior to heat treatment and only on regions designed to the design stress intensity values in Table 1 for annealed properties. The minimum thickness of this weld shall be $\frac{3}{16}$ in. (5 mm) and the maximum $\frac{1}{2}$ in. (13 mm). Such weld deposits shall be liquid penetrant examined. Attachments to these weld deposits may be made austenitic stainless or nickel alloy welds subsequent to heat treatment, and the thickness shall