ASME BPVC.SSC.III.II.V.IX.XIII-2023

Summary of Significant Changes in the

2023 ASME Boiler and Pressure Vessel Code

Section III
Section II
Section V
Section IX
Section XIII

ASME
SETTING THE STANDARD

ASME BPVC.SSC.III.II.V.IX.XIII-2023

Summary of Significant Changes in the 2023 ASME Boiler and Pressure Vessel Code

Sections III, II, V, IX, and XIII

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FOREWORD

This book is a companion to the 2023 ASME Boiler and Pressure Vessel Code (BPVC). It explains only significant changes to Code requirements that will be published in the 2023 Edition. It covers the following ASME BPVC Sections:

- Section III, Divisions 1, 2, 3, 4, and 5
- Section II, Parts A, B, C, and D
- Section V
- Section IX
- Section XIII

For each of the above Sections, an Introduction describes the historical background, scope of coverage, and commercial application of that Section. The list of changes follows the Introduction. The "Explanation" for each change provides the reason for the action and the value to the Code user. The sequence of the changes follows the order of the Code requirements.

ACKNOWLEDGMENTS

This book is the work of the following ASME Standards and Certification (S&C) staff:
- Adam P. Maslowski, *S&C Project Engineering Manager*, Section III
- Colleen E. Rodrigues, *S&C Project Engineering Manager*, Section II, Parts A, B, and D; and Section XIII
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- Carlton R. Ramcharran, *S&C Project Engineering Manager*, Section V

ASME Press's *Online Companion Guide to the ASME Boiler and Pressure Vessel Codes: Criteria and Commentary on Select Aspects of the Boiler & Pressure Vessel and Piping Codes* (January 2020) provided source material for the Introduction preceding each list of changes. The complete Guide is available in the ASME Digital Collection at https://asmedigitalcollection.asme.org/ebooks/pages/onlinecompanionguide.

ASME gratefully acknowledges the members of the following volunteer committees, who are responsible for development of the ASME Boiler and Pressure Vessel Code Sections noted in this book:
- BPV Committee on Construction of Nuclear Facility Components (III)
- BPV Committee on Materials (II)
- BPV Committee on Nondestructive Examination (V)
- BPV Committee on Welding, Brazing, and Fusing (IX)
- BPV Committee on Overpressure Protection (XIII)

SECTION III

Introduction

Section III consists of five major Divisions that cover nuclear components, concrete containments, transportation and storage containment systems, fusion energy devices, and high temperature reactors. These Divisions provide requirements that address the material, design, fabrication, installation, examination, testing, overpressure protection, inspection, stamping, and certification for the construction of nuclear facility components, ensuring pressure boundary integrity and structural integrity.

Subsection NCA provides the general requirements of Section III, Division 1 and Division 2, which are applicable to all Classes of construction, including steel vessels, piping, pumps, and valves, as well as concrete structures. It identifies how to classify components and describes how the jurisdictional boundaries of Section III define what is within and outside the scope of the Code. The requirements for Design Basis, Design and Construction Specifications, and Design Reports are included. This Subsection also addresses the responsibilities and Quality Assurance Program requirements of the different entities involved in constructing a nuclear power plant, from the manufacturer of materials to the Owner. Requirements for ASME accreditation, application of the ASME Certification Mark, and use of Code Data Reports are also included.

Section III Appendices are designated as either mandatory or nonmandatory. Mandatory Appendices are required by Section III rules for construction. Nonmandatory Appendices provide additional information or guidance when using Section III.

Division 1, Subsection NB contains rules for the material, design, fabrication, examination, testing, overpressure relief, marking, stamping, and preparation of reports by the Certificate Holder for items that conform to the requirements for Class 1 construction. The rules of Subsection NB cover the requirements for strength and pressure integrity of items, the failure of which would violate the pressure-retaining boundary. The rules cover initial construction requirements, but not deterioration that may occur in service as a result of corrosion, radiation effects, or instability of materials.

Division 1, Subsection NCD contains rules for the material, design, fabrication, examination, testing, overpressure relief, marking, stamping, and preparation of reports by the Certificate Holder for items that are intended to conform to the requirements for Class 2 and Class 3 construction. The rules of Subsection NCD cover the strength and pressure integrity of items, the failure of which would violate the pressure-retaining boundary. The rules cover load stresses but not deterioration that may occur in service as a result of corrosion, radiation effects, or instability of materials. Subsection NCD does not contain rules that cover all details of construction of Class 2 and Class 3 vessels and storage tanks.

Division 1, Subsection NE contains rules for the material, design, fabrication, examination, inspection, testing, and preparation of reports for metal containment vessels. Class MC containment vessels are constructed in accordance with the rules of this Subsection, except as provided in NCA-2134(c). Only containment vessels and their appurtenances are classified as Class MC. Piping, pumps, and valves that are part of the containment system (NE-1130) or that penetrate or are attached to the containment vessel are classified as Class 1 or Class 2 by the Design Specification.

Division 1, Subsection NF contains rules for the material, design, fabrication, examination, installation, and preparation of certification documents (Certificate of Compliance and NS-1 Certificate of Conformance) for component supports and piping conforming to the requirements for Class 1, 2, 3, and MC construction as required by Subsections NB, NCD, and NE. Requirements covered in Subsection NF do not include deterioration that may occur in service as a result of corrosion, erosion, radiation effects, or metallurgical instability of materials (NCA-1130).

Division 1, Subsection NG contains rules for materials, design, fabrication, examination, and preparation of reports required in the manufacture and installation of core support structures.

Section III, Division 2 contains rules for the material, design, fabrication, construction, examination, testing, marking, stamping, and preparation of reports for prestressed and reinforced concrete containments. The containments covered by this Division include structural concrete pressure resisting shells and shell components, shell metallic liners, and penetration liners extending the containment liner through the surrounding shell concrete.

Section III, Division 3 rules address transport and storage containments for only the most hazardous radioactive materials associated with spent fuel and other highly radioactive materials such as high-level waste. Rules pertaining to the containment of other types of less-hazardous nuclear material and waste are not specifically addressed in Division 3.

Section III, Division 4 contains the rules for fusion components used in the construction of fusion devices and their supporting systems. These rules address only those fusion components that are serving a pressure boundary or structural integrity function.

Section III, Division 5 contains rules for high temperature reactors (HTRs), addressing both high temperature gas-cooled reactors (HTGRs) and high temperature liquid-cooled reactors (HTLRs). These rules address both low temperature operating conditions [typically 370°C (700°F) or less for carbon and martensitic steels and 425°C (800°F) or less for austenitic or high nickel alloys] and elevated temperature conditions for both metallic and nonmetallic materials.

Subsection NCA

Location: Articles NCA-3000 and NCA-5000
Subject: Reliability and Integrity Management Programs
Explanation: Articles NCA-3000 and NCA-5000 have been updated to permit the use of Reliability and Integrity Management (RIM) Programs from Section XI, Division 2 as a basis for designing inservice monitoring and nondestructive examination.

Location: Table NCA-7100-2
Subject: Referenced Standards and Specifications
Explanation: "Other Acceptable Editions" and "Subsection Applicability" columns have been added to Table NCA-7100-2 for consistency with Table NCA-7100-1. References in Table NCA-7100-2 have been updated.

Appendices

Location: Mandatory Appendix V
Subject: Data Report Forms
Explanation: Data Report Forms N-1A, N-2A, N-3, N-5, N-6, NPV-1, NCS-1, NM-1, NS-1, C-1, G-1, G-2, and G-4 have been updated for consistency among forms in Mandatory Appendix V.

Location: Mandatory Appendices XI and XII and Nonmandatory Appendix L
Subject: Elevated Temperature Design
Explanation: Mandatory Appendices XI and XII and Nonmandatory Appendix L have been revised to extend their applicability to Division 5, Subsection HC, Subpart B.

Location: Mandatory Appendix XIII, XIII-1223
Subject: Qualification of Certifying Engineers
Explanation: Paragraph XIII-1223 has been revised to clarify the role of the International Engineering Alliance and the European Federation of National Engineering Associations in the qualification of Certifying Engineers.

Location: Mandatory Appendix XIII, Articles XIII-2000 and XIII-3000
Subject: Migration of Core Support Structures From Subsection NG
Explanation: Design-by-analysis requirements for core support structures have been moved from Subsection NG, NG-3220 to Articles XIII-2000 and XIII-3000 so that the requirements can be consistently maintained.

Location: Mandatory Appendix XIII, XIII-3500
Subject: Analysis of Fatigue due to Cyclic Operation
Explanation: Paragraph XIII-3500 has been revised to align with revisions made to NG-3222.4. See the explanation at NG-3222.4 for more information.

Location: Mandatory Appendix XXVI
Subject: Buried High-Density Polyethylene Piping to Include Sidewall Fusion, Fittings, and Volumetric Examination
Explanation: Mandatory Appendix XXVI has been revised to include sidewall fusion, fittings, and volumetric examination and to incorporate Code Case N-891. This revision incorporates material, design, fusing, installation, and volumetric examination requirements for use of branch saddle fittings in buried high-density polyethylene (HDPE) piping systems. Code Case N-891 provided new allowable flaw depth criteria for surface indentations (gouges or cuts) on HDPE piping material. The criteria are based on an analytical evaluation of the results from the Electric Power Research Institute's testing of large bore piping.

Location: Mandatory Appendix XXVIII
Subject: Powdered Metal–Hot Isostatic Pressing
Explanation: Mandatory Appendix XXVIII has been added to allow the use of powdered metal–hot isostatic pressing for the production of items from 316L stainless steel. The text of Mandatory Appendix XXVIII is similar to the text in Code Case N-834, which has been available for use by industry.

Location: Nonmandatory Appendix G, G-2223
Subject: Toughness Requirements for Nozzles
Explanation: Paragraph G-2223 has been revised to clarify toughness requirements for nozzles and to provide methods for determining external and thermal loads. This revision aligns the requirements in G-2223 with those in Section XI, Nonmandatory Appendix G.

Subsection NB

Location: NB-2121
Subject: Permitted Material Specifications
Explanation: Paragraph NB-2121(a) has been revised to permit the use of advanced-manufacturing product forms not included in Article NB-2000 or Section II, Part D, Subpart 1, Table 2A or Table 2B, provided the product forms meet the requirements of Mandatory Appendix XXVIII.

Location: NB-2321.2
Subject: Charpy V-Notch Tests
Explanation: In NB-2321.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows the use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Location: NB-4413
Subject: Effects of Weld Residual Stress on Material Susceptible to Stress Corrosion Cracking
Explanation: Paragraph NB-4413 has been added to require that the Certificate Holder be aware of and control weld residual stresses during fabrication.

Location: Article NB-5000
Subject: Reliability and Integrity Management Programs
Explanation: Article NB-5000 has been updated to permit the use of Reliability and Integrity Management Programs from Section XI, Division 2 as a basis for designing for inservice monitoring and nondestructive examination.

Location: NB-5540
Subject: Qualification of Nondestructive Examination Personnel
Explanation: Paragraph NB-5540 has been added to permit the use of ANSI/ASNT CP-189 for qualification of nondestructive examination (NDE) personnel. Previously, Section III specified only ASNT SNT-TC-1A for NDE personnel qualification. This change makes Section III consistent with Section XI, thus allowing personnel qualified to ANSI/ASNT CP-189 to perform both Section III and Section XI examinations.

Subsection NCD

Location: NCD-2121
Subject: Permitted Material Specifications
Explanation: Paragraph NCD-2121(a) has been revised to permit the use of advanced-manufacturing product forms not included in Article NCD-2000 or Section II, Part D, Subpart 1, Table 2A or Table 2B, provided the product forms meet the requirements of Mandatory Appendix XXVIII.

Location: NCD-2321.2
Subject: Charpy V-Notch Tests
Explanation: In NCD-2321.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows the use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Location: NCD-3124
Subject: Reliability and Integrity Management Programs
Explanation: Paragraph NCD-3124 has been updated to permit the use of Reliability and Integrity Management Programs from Section XI, Division 2 as a basis for designing for inservice monitoring and nondestructive examination.

Location: NCD-4413
Subject: Effects of Weld Residual Stress on Material Susceptible to Stress Corrosion Cracking
Explanation: Paragraph NCD-4413 has been added to require that the Certificate Holder be aware of and control weld residual stresses during fabrication.

Location: NCD-5540
Subject: Qualification of Nondestructive Examination Personnel
Explanation: Paragraph NCD-5540 has been added to permit the use of ANSI/ASNT CP-189 for qualification of nondestructive examination (NDE) personnel. Previously, Section III specified only ASNT SNT-TC-1A for NDE personnel qualification. This change makes Section III consistent with Section XI, thus allowing personnel qualified to ANSI/ASNT CP-189 to perform both Section III and Section XI examinations.

Subsection NE

Location: NE-2321.2
Subject: Charpy V-Notch Tests
Explanation: In NE-2321.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows the use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Location: NE-3125
Subject: Reliability and Integrity Management Programs
Explanation: Paragraph NE-3125 has been updated to permit the use of Reliability and Integrity Management Programs from Section XI, Division 2 as a basis for designing for inservice monitoring and nondestructive examination.

Location: NE-5540
Subject: Qualification of Nondestructive Examination Personnel
Explanation: Paragraph NE-5540 has been added to permit the use of ANSI/ASNT CP-189 for qualification of nondestructive examination (NDE) personnel. Previously, Section III specified only ASNT SNT-TC-1A for personnel qualification. This change makes Section III consistent with Section XI, thus allowing personnel qualified to ANSI/ASNT CP-189 to perform both Section III and Section XI examinations.

Subsection NF

Location: Articles NF-1000, NF-2000, and NF-3000; Table NF-D; and Nonmandatory Appendix NF-E
Subject: Energy Absorbers
Explanation: Articles NF-1000, NF-2000, and NF-3000; Table NF-D; and Nonmandatory Appendix NF-E have been revised to add requirements for energy absorbers. Requirements for energy-absorbing devices were not fully defined in previous Editions.

Location: NF-2321.2
Subject: Charpy V-Notch Tests
Explanation: In NF-2321.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows the use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Location: NF-3300
Subject: Structural Stainless Steel Design Rules
Explanation: Design rules for duplex and precipitation-hardened stainless steel have been added to NF-3300. The rules reflect applicable requirements from AISC Design Guide 27.

Location: NF-5540
Subject: Qualification of Nondestructive Examination Personnel
Explanation: Paragraph NF-5540 has been added to permit the use of ANSI/ASNT CP-189 for qualification of nondestructive examination (NDE) personnel. Previously, Section III specified only ASNT SNT-TC-1A for NDE personnel qualification. This change makes Section III consistent with Section XI, thus allowing personnel qualified to ANSI/ASNT CP-189 to perform both Section III and Section XI examinations.

Subsection NG

Location: NG-2321.2
Subject: Charpy V-Notch Tests
Explanation: In NG-2321.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Location: NG-3200 and NG-3220
Subject: Migration of Core Support Structures from Subsection NG
Explanation: Paragraphs NG-3200 and NG-3220 have been revised to facilitate the merging of primary stress limits, special stress limits, Level C and Level D limits, limit analysis, and experimental analysis into Mandatory Appendix XIII, XIII-3000.

Location: NG-3222.4
Subject: Analysis of Fatigue due to Cyclic Operation
Explanation: Paragraph NG-3222.4 has been revised to align titles and terminology with the titles and terminology used in Mandatory Appendix XIII and to clarify areas where analysis for cyclic service is not required.

Location: NG-4413
Subject: Effects of Weld Residual Stress on Material Susceptible to Stress Corrosion Cracking
Explanation: Paragraph NG-4413 has been added to require that the Certificate Holder be aware of and control weld residual stresses during fabrication.

Location: NG-5540
Subject: Qualification of Nondestructive Examination Personnel
Explanation: Paragraph NG-5540 has been added to permit the use of ANSI/ASNT CP-189 for qualification of nondestructive examination (NDE) personnel. Previously, Section III specified only ASNT SNT-TC-1A for NDE personnel qualification. This change makes Section III consistent with Section XI, thus allowing personnel qualified to ANSI/ASNT CP-189 to perform both Section III and Section XI examinations.

Division 2

Location: CC-2331.2; CC-3532.1.7; Table CC-4333-1; and Mandatory Appendix D2-VIII, Table D2-VIII-1410-1
Subject: Tensile Strength Requirements
Explanation: Paragraphs CC-2331.2 and CC-3532.1.7 and Tables CC-4333-1 and D2-VIII-1410-1 have been revised to align material requirements and grade options with those in ASTM A615/A615M-20.

Location: CC-2522.1.2
Subject: Charpy V-Notch Tests
Explanation: In CC-2522.1.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows the use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Division 3

Location: WB-2321.2, WC-2321.2, and WD-2321.2
Subject: Charpy V-Notch Tests
Explanation: In WB-2321.2, WC-2321.2, and WD-2321.2, the requirement to use full-size test specimens has been replaced by a requirement to use test specimens in accordance with SA-370. This revision allows the use of subsize specimens when the expected value will exceed 80% of the full scale of the Charpy machine to ensure maintaining accuracy of the machines as permitted by SA-370.

Division 4

Location: Section III, Division 4
Subject: Fusion Energy Devices
Explanation: Division 4 has been added to Section III to provide requirements for fusion energy devices. Division 4 is based on ASME FE.1-2018, Rules for Construction of Fusion Energy Devices, a draft standard published for trial use and comment.

Division 5

Location: Tables HBB-3225-4A and HBB-3225-4B
Subject: Thermal Aging Factor for Grade 91
Explanation: Table HBB-3225-4 has been replaced by Tables HBB-3225-4A and HBB-3225-4B. The new tables extend the thermal aging factor for Class A components constructed of Grade 91 from 300,000 hr to 500,000 hr to accommodate plants with longer design lives.

Location: Mandatory Appendix HBB-I-14
Subject: Elevated Temperature Stress Rupture Factor Values for Grade 91
Explanation: Mandatory Appendix HBB-I-14 tables have been revised to extend stress rupture factor values for Grade 91 from 300,000 hr to 500,000 hr to accommodate plants with longer design lives.

Location: Nonmandatory Appendix HBB, HBB-T-1800
Subject: Grade 91 Isochronous Stress–Strain Curves
Explanation: Paragraph HBB-T-1800 has been revised to extend isochronous stress–strain curves for Grade 91 components from 300,000 hr to 500,000 hr to accommodate plants with longer design lives.

Location: Nonmandatory Appendix HBB-Z
Subject: Guidance on Constitutive Models for Design by Inelastic Analysis
Explanation: Nonmandatory Appendix HBB-Z has been added to provide guidance on constructing a suitable inelastic model from data and to provide designers an acceptable reference model for Grade 91.

Location: HHA-3142 and HHB-3142
Subject: Use of "Fluence" and Equivalent DIDO Nickel
Explanation: Paragraphs HHA-3142 and HHB-3142 have been revised to give damage dose limits only in units of displacements per atom rather than in both displacements per atom and equivalent DIDO nickel. Due to variations in energy spectrum from reactor to reactor and the definition associated with the fast spectrum, the word "fluence" has been replaced by "damage dose" in text that defines damage-dose exposure limits.

Location: Nonmandatory Appendices HHB-D and HHB-E
Subject: Carbon–Carbon Ceramic Matrix Composites
Explanation: Nonmandatory Appendices HHB-D and HHB-E have been added to provide information on carbon–carbon ceramic matrix composites.

SECTION II

Introduction

Section II, Materials, is a "service section" of the ASME Boiler and Pressure Vessel Code (BPVC). This Section provides specifications for ferrous and nonferrous materials, and for welding rods, electrodes, and filler metals. It also provides material properties, including allowable, design, tensile, and yield stress values; physical properties; and external pressure charts and tables. Section II is divided into four parts, as follows:

- Part A — Ferrous Material Specifications
- Part B — Nonferrous Material Specifications
- Part C — Specifications for Welding Rods, Electrodes, and Filler Metals
- Part D — Properties

(a) Parts A and B contain material specifications published by ASTM International, Inc., and other national and international developers. These specifications have been modified as necessary for use in ASME BPVC construction. These specifications are designated with an "S" added to the beginning of the other organization's specification designation (e.g., ASTM A105 becomes ASME SA-105). These specifications contain requirements for chemical and mechanical properties, heat treatment, manufacture, heat and product analyses, and methods of testing. Note that all materials contained within a specification adopted by ASME and included in Parts A and B are not necessarily permitted for use in ASME BPVC construction. This Summary of Significant Changes describes only significant specification changes affecting materials permitted by the ASME BPVC. It does not include specification changes affecting materials not permitted by the ASME BPVC.

(b) Part C contains material specifications, most of which are identical to corresponding specifications published by the American Welding Society (AWS) and other recognized national or international organizations. All adopted specifications are either reproduced in Part C, where permission to do so has been obtained from the originating organization, or so referenced and information about how to obtain them from the originating organization is provided. The ASME BPV Committee on Welding, Brazing, and Fusing (Section IX) reviews all material specifications submitted to it and, if the Committee feels a specification needs to be adapted for ASME BPVC purposes, they revise it accordingly. However, ASME, AWS, and other originating organizations communicate regularly in an effort to maintain identical specifications.

(c) Part D primarily comprises tables providing stress and property data for materials permitted for use in ASME BPVC construction. These tables contain allowable stresses; design stress intensities; mechanical properties, including tensile strength and yield strength; and physical properties, including thermal expansion, thermal conductivity and diffusivity, moduli of elasticity, and Poisson's ratio. In addition to these tables, Part D provides charts and tables for determining shell thickness of components under external pressure.

Part A

Location: Statement of Policy on the Use of ASME Material Specifications, and Mandatory Appendix II
Subject: Use of ASME Material Specifications
Explanation: A new statement of policy on the use of ASME material specifications has been added to clarify terminology used in the body of the specifications. Mandatory Appendix II has been retitled "The Framework of ASME Material Specifications" and completely rewritten.

Location: SA-29/SA-29M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A29/A29M-20 has been adopted as the revised ASME SA-29/SA-29M. The SA-29/SA-29M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) In Table 2, the carbon content for 5160 has been revised.

(b) The maximum Cb, V, Cb + V verbiage has been deleted, and the maximums for Cb, V, and Cb + V in regards to grain-refining usage have been removed.

Location: SA-53/SA-53M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A53/A53M-20 has been adopted as the revised ASME SA-53/SA-53M. The SA-53/SA-53M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Distinctions for types and other manufacturing processes have been removed from Table 2.

(b) The flattening test requirements for seamless pipe formerly in para. 9.2 have been moved to Supplementary Requirement S1.

(c) ASTM Practice E273 has been added to para. 9.1.1 for nondestructive test of electric-resistance-welded pipe.

(d) Paragraph 9.1.1 has been revised to require the use of full-volumetric nondestructive examination on Type E pipe produced on a hot-stretch reducing mill.

(e) Paragraph 17.2 has been revised to remove allowance to take tension test specimen from the skelp as well as other considerations related to full-size tension test specimens.

Location: SA-105/SA-105M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A105/A105M-21 has been adopted as the revised ASME SA-105/SA-105M. The SA-105/SA-105M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) In Table 2, para. 8.3.4, and Supplementary Requirement S1, the hardness limit has been increased from 187 to 197 HBW.

(b) Paragraph 7.4 has been revised to clarify hardness testing requirements.

(c) Paragraph 12.2.4 has been revised to clarify the number of hardness results required to be reported.

(d) Paragraph 12.2.3 has been revised on chemistry reporting.

(e) In Table 1, the allowable manganese content has been increased from 1.35% to 1.65%.

(f) Paragraph 6.2 has been revised on heat treatment.

(g) Multiple quenching has been reinstated as a heat treatment option in para. 6.2.1.

(h) Paragraph 8.2 has been revised to clarify test specimen location.

(i) Paragraph 8.3.2 has been revised to address testing requirements for different size forgings in the same heat-treatment charge, to clarify the location for removal of test specimens, and to move mandatory Note 2 into the text.

(j) Section 11 on appearance, surface protection, and corrosion protection has been added.

(k) Sections 13 and 14 on certification and marking have been revised.

Location: SA-182/SA-182M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A182/A182M-21 has been adopted as the revised ASME SA-182/SA-182M. The SA-182/SA-182M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Material Grades F115 UNS K91060, F317LNCb UNS S31740, and F347LNCuB UNS S34752 have been added to Tables 1, 2, 3, and 4.

(b) In Table 3, the mechanical properties for F53 ≤2 in. (≤50 mm) have been split into two classes.

(c) In Table 2, footnote O, the formula for UNS S32760 has been modified to % Cr + 3.3 × %(Mo + ½ W) + 16 × % N = 41 min.

(d) In Table 2, Notes J and K, nitrogen has been added to the formula that determines titanium content for Grades F321 and F321H.

(e) A511/A511M hollow bar has been added as a starting material alternative to forged or rolled bar in para. 1.2, section 2, paras. 6.4.2 and 6.4.3 on cylindrical shaped products, and para. 7.6 on heat treatment.

(f) Paragraphs 13.1, 13.2, and 13.3 have been revised to clarify the time of examination for required nondestructive examination of hollow forgings of Grade F 91 Types 1 and 2, and Grades F 92, F 115, F 122, and F 911.

(g) Predominantly ferrous materials, Grades F700 UNS N08700, FNIC UNS N08800, FNIC10 UNS N08810, FNIC11 UNS N08811, F1925 UNS N08925, and F1925N UNS N08926, coming from ASTM B366/B366M have been added to Tables 1 through 4 and para. 15.1.2 for repair welding.

Location: SA-193/SA-193M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A193/A193M-20 has been adopted as the revised ASME SA-193/SA-193M. The SA-193/SA-193M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) In Table 1, the carbon, manganese, and chromium limits for Grade B7, B7M have been changed; tantalum has been removed for Grades B8C, B8CA, B8R, and B8RA; and the nitrogen maximum for UNS S31254 has been raised to 0.25.

(b) Alloy UNS S34752 has been added to Tables 1 through 3.

(c) Grades B8ML4CuNa, B8ML4CuNa, and UNS S31730 have been added in Tables 1, 2, 3, and 5.

(d) Table 3 has been revised to correct the maximum size range for B16.

(e) Grade B8MLNCuB has been added to para. 6.2.3 and Table 5.

(f) Paragraph 9.1.1 has been revised to allow for machined specimen testing for bolting greater than 1.500 in. in diameter.

Location: SA-194/SA-194M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A194/A194M-22 has been adopted as the revised ASME SA-194/SA-194M. The SA-194/SA-194M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) The title of the specification has been revised to include “Stainless Steel.”

(b) Paragraph 8.1.3.1 has been revised to permit use of electromagnetic hardness testing.

(c) Grade 7 nuts have been identified as a suitable substitute for Grade 4 nuts.

(d) The nitrogen maximum for UNS S31254 has been raised to 0.25 from 0.22.

(e) Chemistry has been harmonized with specifications ASTM A29/A29M and ASTM A276 as applicable in Table 1.

(f) UNS S31730, Grades 8ML4CuN and 8ML4CuNA, have been added to paras. 6.5 and 6.6 and Tables 1, 2, and 7.

(g) Grade 4 has been removed throughout.

(h) References to metric sizes smaller than M12 and to ISO 4033 have been removed throughout.

(i) Grades 8CLNCuBA and 8CLNCuB have been added to paras. 6.5 and 6.6 and Tables 1, 2, and 7.

(j) Grade 43 has been added to sections 3, 8, and 12; para. 6.4; and Tables 1, 2, 3, 4, and 7.

Location: SA-213/SA-213M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A213/A213M-22 has been adopted as the revised ASME SA-213/SA-213M. The SA-213/SA-213M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) The nitrogen content for UNS S31254 has been revised from 0.18–0.22 to 0.18–0.25.

(b) The carbon maximum for UNS S31002 has been revised from 0.02 to 0.015.

(c) Grades T128 (UNS K91421) and T921 (UNS K91201) have been added to para. 9.1.2 and Tables 1, 3, 4, and 5.

(d) UNS S31043, UNS S31740, and UNS S34752 have been added to Tables 2, 3, and 4.

Location: SA-266/SA-266M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A266/A266M-21 has been adopted as the revised ASME SA-266/SA-266M. The SA-266/SA-266M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) In para. 8.1.1.1, the description of the test depth for hollow forgings has been reworded from "midway between the center and outer surfaces of the wall" to "midwall."

(b) An alternative test depth has been added for forgings heat treated as a solid and then subsequently bored.

Location: SA-276/SA-276M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A276/A276M-17 has been adopted as the revised and redesignated ASME SA-276/SA-276M. The SA-276 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) UNS N08020, UNS N08367, UNS N08800, UNS N08810, UNS N08811, UNS N0925, UNS N08926, UNS N08904 (904L), UNS S20162, UNS S31266, UNS S31727, UNS S31730, UNS S32053, UNS S32101, UNS S31020, UNS S32202, UNS S32506, UNS S32654, UNS S32750, UNS S34565, UNS S40976, and UNS 40976 have been added to Tables 1 and 2.

(b) The tensile strength for UNS S32205 has been increased from 90 ksi to 95 ksi (620 MPa to 655 MPa).

(c) A 0.03 carbon minimum has been added to UNS S41000.

(d) The nitrogen maximum for UNS S31254 has been raised from 0.22 to 0.25.

Location: SA-283/SA-283M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A283/A283M-13 has been adopted as the revised ASME SA-283/SA-283M. The SA-283/SA-283M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Grades A and B have been deleted due to lack of use.

(b) Paragraph 4.2 has been added.

(c) The title of para. 6 has been revised from "Tensile Properties" to "Mechanical Properties."

(d) Paragraph 6.1 has been added, and the previous para. 6.1 redesignated as 6.1.1.

(e) In Table 1, the requirements for phosphorus have been changed from 0.035% to 0.030%, and the requirements for sulfur from 0.040% to 0.030%.

(f) Supplementary Requirement S97 has been deleted.

Location: SA-320/SA-320M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A320/A320M-22 has been adopted as the revised ASME SA-320/SA-320M. The SA-320/SA-320M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) The minimum reduction area for Class 2 Grades B8, B8C, B8P, B8F, and B8T, sizes over $^{3}/_{4}$ to 1, has been revised from 30% to 35%.

(b) The nickel limits for Grades B8LN, B8LNA, B8MLN, and B8MLNA have been changed.

(c) The titanium limits for Grades B8T and B8TA have been changed.

(d) The carbon and nickel limits for Grades B8P and B8PA have been changed.

(e) Paragraph 5.1.2 has been added and subsequent paragraphs redesignated.

Location: SA-350/SA-350M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A350/A350M-18 has been adopted as the revised ASME SA-350/SA-350M. The SA-350/SA-350M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) In Table 1, footnote C has been removed from copper grades LF3 and LF5.

(b) In Table 1, Grades LF1 and LF2 have been revised to allow higher columbium by agreement.

(c) Paragraph 5.4.2.1(3) has been added to allow intermediate heat treatment in the quenching and tempering process, at the option of the manufacturer.

(d) Paragraph 5.4.2 has been revised to add normalizing prior to the quenched and tempered (Q&T) heat treatment, at the option of the manufacturer.

(e) Paragraphs 7.1.3.2(1) through 7.1.3.2(3) and Figures 2 through 4 have been added to specify impact test specimen locations in separately forged test blanks for forgings that are not Q&T and in forgings that are Q&T or are quenched and precipitation hardened.

Location: SA-351/SA-351M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A351/A351M-18e1 has been adopted as the revised ASME SA-351/SA-351M. The SA-351/SA-351M listing in Table II-200-1 has been revised accordingly. This specification has been revised in its entirety, and the title of the specification has also been revised.

Location: SA-358/SA-358M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A358/A358M-19 has been adopted as the revised ASME SA-358/SA-358M. The SA-358/SA-358M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) UNS S31655 has been added to Table 1.
(b) Alloy heat treatment has been added to Table 2.
(c) UNS S34752 has been added to paras. 7.2 and 7.3.

Location: SA-370/SA-370M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A370/A370M-21 has been adopted as the revised and redesignated ASME SA-370/SA-370M. The SA-370 listing in Table II-200-1 has been revised accordingly. This specification has been revised in its entirety.

Location: SA-372/SA-372M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A372/A372M-20e1 has been adopted as the revised ASME SA-372/SA-372M. The SA-372/SA-372M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) In Table 1, phosphorus and sulfur values have been updated to 0.015% and 0.010% maximum, respectively, for all grades.
(b) Normalized, liquid quenched, and tempered have been added as heat treatment options for several grades and classes in paras. 4.3.1 and 4.3.2.
(c) Grades N and P have been added to paras. 4.3.2 and 4.3.3.1 and Tables 1 through 4.
(d) Class 90 for Grade J has been added to paras. 4.3.2 and 4.3.3.1 and Tables 2 through 4.
(e) Grade R has been added to paras. 4.3.2 and 4.3.3.1 and Tables 1 through 4.
(f) Paragraph 4.1 has been revised to add Grades N, P, and J Class 110 mandatory vacuum treating.
(g) Paragraph 5.4 has been added, pointing the purchaser to S24 of ASTM A788 if temper embrittlement is of concern (J factor).
(h) Paragraph 6.4.1.1 has been revised to clarify that the test depth requirement does not apply for bending properties.
(i) Paragraph 6.3.2 has been revised to permit all applicable ASTM E290 bend test methods, not just Arrangement C.

Location: SA-376/SA-376M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A376/A376M-19 has been adopted as the revised ASME SA-376/SA-376M. The SA-376/SA-376M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Grade TP347LN (UNS S34751) has been added to para. 5.2.3 and Tables 1 and 2.
(b) UNS S31266 has been added to para. 5.2.6 and Tables 1 and 2.
(c) Section 11 has been revised as follows:
(1) Paragraph 11.1 has been revised to add more detail to testing definitions.
(2) In para. 11.2, the number of required tension tests has been revised.
(3) Paragraph 11.3 has been revised to distinguish the flattening test requirements for batch furnaces with recording pyrometers from the requirements for batch furnaces without recording pyrometers.

Location: SA-403/SA-403M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A403/A403M-19a has been adopted as the revised ASME SA-403/SA-403M. The SA-403/SA-403M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Type 310H has been added back into the specification.
(b) In Table 2, the nickel minimum for UNS S38815 has been revised from 13.00 to 15.00.
(c) The interchangeable use of the terms “niobium” and “columbium” has been addressed in Table 2 and section 7.

(d) In paras. 6.2 and 6.4 and Supplementary Requirement S2, "stabilization" has been revised to "a stabilizing treatment" and the option for resolution anneal has been eliminated.
(e) Paragraph 10.7 has been added to reinstate passivation as part of surface preparation.
(f) Supplementary Requirement S3 has been added for ASME BPVC Section III construction.

Location: SA-409/SA-409 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A409/A409M-14(R19) has been adopted as the revised ASME SA-409/SA-409M. The SA-409/SA-409M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following change: Supplementary Requirement S7 has been added for ASME BPVC Section III and Section VIII, Division 1 construction.

Location: SA-414/SA-414M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A414/A414M-14(R19) has been adopted as the revised ASME SA-414/SA-414M. The SA-414/SA-414M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) Testing requirements have been revised.
(b) Grade H has been added.

Location: SA-423/SA-423M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A423/A423M-19 has been adopted as the revised ASME SA-423/SA-423M. The SA-423/SA-423M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following change: Grade 3 has been added to Tables 1 and 3.

Location: SA-439/SA-439 and Mandatory Appendix II, Table II-200-1
Subject: Added Specification
Explanation: ASTM A439/A439M-18 has been adopted as ASME SA-439/SA-439M. SA-439/SA-439M has been added to Table II-200-1.

Location: SA-450/SA-450 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A450/A450M-21 has been adopted as the revised ASME SA-450/SA-450M. The SA-450/SA-450M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) Paragraph 12.1 has been added.
(b) Paragraph 27.1 has been revised to make providing a material test report mandatory.
(c) ASTM test method A1058 has been incorporated throughout.

Location: SA-453/SA-453M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A453/A453M-17 has been adopted as the revised ASME SA-453/SA-453M. The SA-453/SA-453M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following change: separate strength requirements for Class 660 D bolting materials >$2^1/_2$ in. (>63.5 mm) in diameter have been added to Table 5.

Location: SA-479/SA-479M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A479/A479M-21 has been adopted as the revised ASME SA-479/SA-479M. The SA-479/SA-479M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following change: UNS S34752 has been added to Tables 1 and 2.

Location: SA-484/SA-484M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A484/A484M-21 has been adopted as the revised ASME SA-484/SA-484M. The SA-484/SA-484M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) UNS S34752 has been added to Table 2.
(b) Paragraph 6.2.1 has been added to address rules for checking tolerance limits for ratios.

(c) Paragraphs 7.2.3 and 8.1.4 have been revised.
(d) Section 17 on certification has been rewritten, and paras. 17.1.1, 17.2, and 17.4 have been added.

Location: SA-487/SA-487M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A487/A487M-21 has been adopted as the revised ASME SA-487/SA-487M. The SA-487/SA-487M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following change: Grade 17 has been added to Tables 1 through 4.

Location: SA-508/SA-508M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A508/A508M-18 has been adopted as the revised ASME SA-508/SA-508M. The SA-508/SA-508M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) In Table 1, the maximum aluminum content for Grades 1, 1a, 2, and 3 has been changed from 0.025% to 0.030%.
(b) Paragraph 7.1.2.1 has been revised to allow individual forgings that were not made in multiples and that weigh less than 1,000 lb to be qualified on a per-heat per-lot basis.

Location: SA-530/SA-530M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A530/A530M-18 has been adopted as the revised ASME SA-530/SA-530M. The SA-530/SA-530M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) Material test reports are now required.
(b) Paragraph 5.2 has been revised in its entirety.
(c) ASTM A1058 has been added to section 7.
(d) Section 20 has been revised so that test specimens must be removed from the "as-heat treated" finished pipe.

Location: SA-557/SA-557M and Mandatory Appendix II, Table II-200-1
Subject: Deleted Specification
Explanation: ASME SA-557/SA-557M has been deleted and Table II-200-1 updated accordingly.

Location: SA-572/SA-572M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A572/A572M-21e1 has been adopted as the revised ASME SA-572/SA-572M. The SA-572/SA-572M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) In Table 1, the maximum thickness or size of plates and bars has been increased from 2 in. to 2½ in. (50 mm to 64 mm) for Grade 55, from 1¼ in. to 2½ in. (32 mm to 64 mm) for Grade 60, and from 1¼ in. to 2 in. (32 mm to 50 mm) for Grade 65.
(b) In Table 2, diameter, thickness, and distance between parallel faces, plates, and bars have been revised to increase maximum thickness to 2½ in. (64 mm) for Grades 55 and 60, and to 2 in. (50 mm) for Grade 65.

Location: SA-691/SA-691M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A691/A691M-19 has been adopted as the revised ASME SA-691/SA-691M. The SA-691/SA-691M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) In Table 1, columbium has been replaced with niobium.
(b) Supplementary Requirement S13 has been added for ASME BPVC Section III construction.

Location: SA-727/SA-727M and Table II-200-1
Subject: Revised Specification
Explanation: ASTM A727/A727M-14(R19) has been adopted as the revised ASME SA-727/SA-727M. The SA-727/SA-727M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) References to A370 have been replaced with A961/A961M.
(b) Section 12 on surface finish, appearance, and corrosion protection has been added.
(c) The language in Section 15 has been simplified.

Location: SA-731/SA-731M and Mandatory Appendix II, Table II-200-1
Subject: Deleted Specification
Explanation: ASME SA-731/SA-731M has been deleted and Table II-200-1 updated accordingly.

Location: SA-751/SA-751M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A751/A751M-21 has been adopted as the revised and redesignated ASME SA-751/SA-751M. The SA-751 listing in Table II-200-1 has been revised accordingly. This specification has been revised in its entirety.

Location: SA-813/SA-813M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A813/A813M-14(R19) has been adopted as the revised and redesignated ASME SA-813/SA-813M. The SA-813/SA-813M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) UNS S31727 and UNS S32053 have been added to Tables 2 and 3 and their heat treatment requirements added in new para. 4.2.4.

(b) Types 201 and 201LN have been added to Tables 2 and 3.

(c) UNS S31266 has been added to Table 2 (and Note J) and Table 3.

Location: SA-814/SA-814M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A814/A814M-15(R19) has been adopted as the revised ASME SA-814/SA-814M. The SA-814/SA-814M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) SI units have been added to Table 1.

(b) ASME B31.3 has been added to section 2.

(c) UNS S31727 and UNS S32053 have been added to Tables 2 and 3 and their heat treatment requirements added in new para. 4.2.4.

(d) Types 201 and 201LN have been added to Tables 2 and 3.

Location: SA-836/SA-836M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A836/A836M-14(R20) has been adopted as the revised ASME SA-836/SA-836M. The SA-836/SA-836M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Section 10 on surface finish, appearance, and corrosion protection has been added.

(b) Language in sections 13 and 14 has been simplified.

Location: SA-941/SA-941M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A941/A941M-22a has been adopted as the revised and redesignated ASME SA-941/SA-941M. The SA-941 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Definitions of "controlling cross section thickness (Tc)" and "wrought product" have been added.

(b) Definitions of "fine grain practice" and "patenting" have been revised.

(c) In section 3, discussion has been added to "nonferrous material" and discussion of "stabilized stainless steel" has been revised.

Location: SA-960/SA-960M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A960/A960M-20 has been adopted as the revised ASME SA-960/SA-960M. The SA-960/SA-960M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) ASTM A1058 has been added to the references.

(b) Paragraph 4.1.6 has been added to indicate that ordering information should include the chosen testing track from the options in ASTM A1058.

(c) Paragraph 9.1 has been revised to reference ASTM A1058 if the M suffix (SI Units) standard is specified.

(d) Paragraphs 9.4.1 and 9.4.2 have been revised to allow test methods per ASTM A1058 if SI units are specified.

Location: SA-962/SA-962M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A962/A962M-22 has been adopted as the revised ASME SA-962/SA-962M. The SA-962/SA-962M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) References to ASME B18.2.2, ASME B18.2.6, ASME B18.2.4.6M, ASME B18.2.6, ASME B18.31.2, and ISO 4762 have been added.

(b) Dimensional references have been added to section 13.

(c) Requirements for carburization have been added to section 14.

(d) Test requirements have been added to para. 15.2.

(e) Retest and rework requirements have been updated in section 16.

Location: SA-965/SA-965M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A965/A965M-21a has been adopted as the revised ASME SA-965/ SA-965M. The SA-965/SA-965M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) Paragraph 6.3 has been revised to remove FXM-19 with a 1,950°F anneal.

(b) Grades UNS N08020, UNS N08367, UNS N08904, UNS N08700, UNS N08800, UNS N08810, UNS N08811, UNS N08925, and UNS N08926 have been added. Tables 1 and 2 and Sections 6, 9, and 10 have been revised to include the new grades.

Location: SA-995/SA-996M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM A995/A995M-20 has been adopted as the revised and redesignated ASME SA-995/ SA-995M. The SA-995 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes in Table 1:

(a) Additional heat-treat options have been added for Grade 6A to allow for a drop in temperature before the rapid cool.

(b) The composition formula for CD3MWCuN has been updated to include W.

Location: SA-1058 and Mandatory Appendix II, Table II-200-1
Subject: Added Specification
Explanation: ASTM A1058-19 has been adopted as ASME SA-1058. SA-1058 has been added to Table II-200-1.

Location: Non-ASTM Specifications SA-CSA-G40.21, SA/EN 10025-2, SA/IS 2062, and SA/JIS G3118
Subject: Marking Requirements
Explanation: Marking requirements have been added to the cover pages of SA-CSA-G40.21, SA/EN 10025-2, SA/IS 2062, and SA/JIS G3118.

Location: Mandatory Appendix II, Table II-200-1
Subject: Lowered Maximum Carbon Content for SA-266/SA-266M
Explanation: For SA-266/SA-266M, the earliest other acceptable ASTM edition has been changed from 1987 to 1999 because the maximum carbon content for Grade 3 was changed in the 1999 edition.

Part B

Location: Use of ASME Material Specifications, and Mandatory Appendix II
Subject: Use of ASME Material Specifications
Explanation: A new statement on the Use of ASME Material Specifications has been added. Mandatory Appendix II has been retitled "The Framework of ASME Material Specifications" and completely rewritten.

Location: SB-167 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B167-18 has been adopted as the revised ASME SB-167. The SB-167 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes: UNS N06696, UNS N06674, UNS N06235, and UNS N06699 have been added.

Location: SB-168 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B168-19 has been adopted as the revised ASME SB-168. The SB-168 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes: UNS N06696, UNS N06674, UNS N06235, and UNS N06699 have been added.

Location: SB-211/SB-211M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B211/B211M-19 has been adopted as the revised and redesignated ASME SB-211/SB-211M. The SB-211 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) ASTM has combined specifications B211 and B211M.
(b) ASTM B985 and ASTM E3061 have been added to section 2 and ASTM E34 has been deleted.
(c) The phrase "(US Customary)" has been added to the title of Table 2 and "(Metric SI)" to the title of Table 3.
(d) The unnumbered table in section 14 that referred to specific ANSI H35.2 [H35.2M] tolerance tables has been deleted, and section 14 has been revised to point the reader to ANSI H35.2 [H35.2M].

Location: SB-625 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B625-17 has been adopted as the revised ASME SB-625. The SB-625 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes: UNS N08034, UNS N08354, and UNS N08830 have been added, and UNS N08904 has been deleted.

Location: SB-649 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B649-17 has been adopted as the revised ASME SB-649. The SB-649 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) UNS N08034, UNS N08354, and UNS N08936 have been added, and UNS N08904 has been deleted.
(b) Table 2 has been deleted, and para. 6.2.1 has been revised to refer users to ASTM B880 for tolerance limits.

Location: SB-677 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B677-21 has been adopted as the revised ASME SB-677. The SB-677 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:

(a) The title of SB-677 has changed: alloy descriptors have replaced the UNS numbers.
(b) UNS N08354 has been added, and UNS N08904 has been deleted.
(c) Table 3 has been deleted and text revised to refer users to ASTM B829.
(d) Sections 9 through 18 and Appendix X1 have been replaced with Section 4, which mandates conformance to B829 for a number of topics.
(e) Ordering information in section 5 has been changed from mandatory requirements to guidance.
(f) Section 8 has been revised to require that nondestructive tests be done in accordance with B829.

Location: SB-729 and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B729-20 has been adopted as the revised ASME SB-729. The SB-729 listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes:
(a) The title of SB-729 has changed: alloy descriptors have replaced the UNS numbers.
(b) Ordering information in section 4 has been changed from mandatory requirements to guidance.
(c) The maximum hydrostatic pressure values have been removed, and the text revised to refer users to the hydrostatic pressure equation found in B829.
(d) Furnishing the certification and test report has been made mandatory.

Location: SB-752/SB-752M and Mandatory Appendix II, Table II-200-1
Subject: Revised Specification
Explanation: ASTM B752/B752M-22 has been adopted as the revised ASME SB-752/SB-752M. The SB-752/SB-752M listing in Table II-200-1 has been revised accordingly. The revised specification includes the following changes: UNS numbers have been added to the Zr casting grades.

Location: SB/EN 1706 and Mandatory Appendix II, Table II-200-1
Subject: Updated Specification and Tables
Explanation: ASME SB/EN1706 has been updated to reference the 2020 edition of EN1706. Corresponding changes have been made to the Section II, Part D tables.

Part C

Location: SFA-5.5/SFA-5.5M
Subject: Revised Specification
Explanation: AWS A5.5/A5.5M:2022 has been adopted as the revised ASME SFA-5.5/SFA-5.5M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes the following changes:

(a) Text has been added to require that the level of boron in weld metal be reported if boron is intentionally added or known to be present at levels greater than 0.0010%.

(b) The following filler metal classifications have been added: E9016-B9A, E8016-B23A, E9016-B92A, E9015-B115, E9016-C1, E7016-C6, E8016-C7, E10016-NM3, E9016-NM4, E10016-NM5, E11016-NM6, E11016-NM7, E11018-NM8, E(X)XX45-G, E10016-Mn2, and E10018-Mn2.

(c) Paragraph 3.2 has been revised to allow an electrode to be classified with both a "-G" chemical composition designator and a defined chemical composition designator. This change is intended to ease the transition from "-G" classification to a defined composition classification and to prevent burdensome requalification for long-entrenched products with "-G" classifications.

Location: SFA-5.9/SFA-5.9M
Subject: Revised Specification
Explanation: AWS A5.9/A5.9M:2022 has been adopted as the revised ASME SFA-5.9/SFA-5.9M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes classifications from ISO 14343 that were identified by AWS A5 to be well-vetted and used in industry. Those alloys classified in ISO 14343 that could not meet the vetting and industry-use criteria have been omitted from the specification.

Location: SFA-5.10/SFA-5.10M
Subject: Revised Specification
Explanation: AWS A5.10/A5.10M:2021 has been adopted as the revised ASME SFA-5.10/SFA-5.10M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The following weld strength requirements have been added to the specification:

(a) A standardized test joint and standardized welding procedures have been established.
(b) The requirement to determine all-weld-metal strength and elongation has been added for all classifications.
(c) Minimum tensile strength requirements have been established for the most common alloys.

Location: SFA-5.13/SFA-5.13M
Subject: Revised Specification
Explanation: AWS A5.13/A5.13:2021 has been adopted as the revised ASME SFA-5.13/SFA-5.13M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The specification has been updated to conform to current AWS practices and to maintain ANSI approval; however, there have been no substantive changes.

Location: SFA-5.16/SFA-5.16M
Subject: Revised Specification
Explanation: AWS A5.16/A5.16:2023 has been adopted as the revised ASME SFA-5.16/SFA-5.16M. The specification has been updated to conform to current AWS A5 wording. The only substantive change is to allow classification of unlisted composition as ERTi-G, as do other A5 filler metal specifications.

Location: SFA-5.18/SFA-5.18M
Subject: Revised Specification
Explanation: AWS A5.18/A5.18:2021 has been adopted as the revised ASME SFA-5.18/SFA-5.18M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes the following changes:

(a) An optional supplemental designator has been added to indicate conformance of an S-6 electrode to ASME BPVC Section IX, A-No. 1.

(b) An optional supplemental designator has been added to indicate that the electrode meets the requirements for classification across a range of shielding gases.

Location: SFA-5.20/SFA-5.20M
Subject: Revised Specification
Explanation: AWS A5.20/A5.20:2021 has been adopted as the revised ASME SFA-5.20/SFA-5.20M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes the addition of an optional supplemental designator to indicate that the electrode meets the requirements for classification across a range of shielding gases.

Location: SFA-5.23/SFA-5.23M
Subject: Revised Specification
Explanation: AWS A5.23/A5.23M:2021 has been adopted as the revised ASME SFA-5.23/SFA-5.23M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes the following changes:

(a) New designators have been added for low Mn + Ni B91 weld deposit.

(b) New classifications, EB115 and B115, have been added for an electrode and corresponding weld deposit with 10.5% Cr and 0.5% Mo modified with niobium and vanadium.

(c) A new classification, Mn2, has been added for an austenitic high manganese (nominal 19% Mn) weld deposit.

Location: SFA-5.24/SFA-5.24M
Subject: Revised Specification
Explanation: AWS A5.24/A5.24M:2023 has been adopted as the revised ASME SFA-5.24/SFA-5.24M. The specification has been updated to conform to current AWS A5 wording. The only substantive change is the change of reference standard for chemical composition testing.

Location: SFA-5.28/SFA-5.28M
Subject: Revised Specification
Explanation: AWS A5.28/A5.28M:2022 has been adopted as the revised ASME SFA-5.28/SFA-5.28M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes the following changes:

(a) Optional supplemental designators have been added to indicate ranges of shielding gases for which an electrode meets the requirements for classification.

(b) The maximum manganese limit for the E80C-Ni1 classification has been raised to 1.75%.

(c) New classifications ER90S-B115 (ER62S-B115) and E90C-K14 (E62C-K14) have been added.

(e) Text has been added to allow an electrode to be classified with both a "-G" chemical composition designator and a defined chemical composition designator. This change is intended to ease the transition from "-G" classification to a defined composition classification and to prevent burdensome requalification for long-entrenched products with "-G" classifications.

Location: SFA-5.29/SFA-5.29M
Subject: Revised Specification
Explanation: AWS A5.29/A5.29M:2022 has been adopted as the revised ASME SFA-5.29/SFA-5.29M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The only substantive change is the inclusion of an optional supplemental designator to indicate ranges of shielding gases for which an electrode meets the requirements for classification.

Location: SFA-5.30/SFA-5.30M
Subject: Revised Specification
Explanation: AWS A5.30/A5.30M:2022 has been adopted as the revised ASME SFA-5.30/SFA-5.30M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The revised specification includes the following changes:

(a) A method has been added to allow consumable inserts to be made from a solid wire classified to another A5 solid wire specification (e.g., A5.18, A5.9, A5.14).

(b) The general classification "G" has been added to classify compositions not covered in another A5 specification. Consumable inserts classified by either of these provisions will not be listed in Section IX, Table QW-432 and thus will require separate welding qualifications.

Location: SFA-5.31/SFA-5.31M
Subject: Revised Specification
Explanation: AWS A5.31/A5.31M:2022 has been adopted as the revised ASME SFA-5.31/SFA-5.31M. This action has been taken to keep Section II, Part C current with the latest AWS specification. The specification has been revised to clarify test methods and to bring the wording up to date with other AWS A5 specifications. It is not anticipated that any of these revisions would require changes in classification, use, or properties of a brazing flux.

Location: SFA-5.32/SFA-5.32M
Subject: Revised Specification
Explanation: AWS A5.32/A5.32:2021 has been adopted as the revised ASME SFA-5.32/SFA-5.32M. This action has been taken to keep Section II, Part C current with the latest AWS specification.

Part D
Customary and Metric

Location: Tables 1A, 2A, and 5A
Subject: Lowered Maximum Carbon Content
Explanation: The following notes have been deleted for SA-266 Grade 3: Note W8 in Table 1A, Note W1 in Table 2A, and Note W1 in Table 5A.

Location: Table 1A
Subject: Incorporation of Code Case 2577
Explanation: Type/grade 316L is now permitted for Section VIII, Division 1 applications, and allowable stress values have been added above 1,000°F (500°C). Note T12 has been applied to the revised lines.

Location: Tables 1A, U, and Y-1
Subject: SA-240 S43932 for Section VIII, Division 1 Applications
Explanation: Allowable stress values for 18Cr–Ti SA-240 S43932 have been added to Table 1A for Section VIII, Division 1 applications. Additionally, the values for this material have been added to Tables U and Y-1.

Location: Tables 1A, U, and Y-1
Subject: Incorporation of Code Case 2903
Explanation: SA-240 S31655 has been added to Tables 1A, U, and Y-1.

Location: Tables 1A, 2A, 5A, U, and Y-1
Subject: Remove SA-283 Grades A and B
Explanation: Due to the adoption of ASTM A283/A283M-13, SA-283 grades A and B have been removed from Tables 1A, 2A, 5A, U, and Y-1.

Location: Tables 1A, U, and Y-1
Subject: Incorporation of Code Case 2591
Explanation: New lines for SA-213 S31002 and SA-312 S31002 have been added to Tables 1A, U, and Y-1 U.

Location: Tables 1A, U, Y-1, TE-1, TCD, and TM-1
Subject: Incorporation of Code Case 2586-1
Explanation: New lines for SA-789 S32707 and SA-790 S32707 have been added to Tables 1A, U, and Y-1. In addition, 27Cr–7.5Ni–4.5Mo–Co–N has been added to Note 2 of Table TE-1, Note 11 of Table TCD, and Note 8 of Table TM-1.

Location: Table 1B
Subject: Specification Reference Update for N08904 Bar and Seamless Tube
Explanation: Alloy N08904, formerly considered a nickel-base alloy, was reclassified by ASTM as a stainless steel alloy and has been incorporated in the respective stainless specifications. Table 1B has been revised to update the specification references to SA-479 for N08904 bar and to SA-213 for N08904 seamless tube.

Location: Table 1B
Subject: Application of SB-366 Fittings to Section III, Class 2 and Class 3 Construction
Explanation: Table 1B has been revised to allow use of fittings manufactured to SB-366 alloys N02201, N04400, N06002, N06022, N06030, N06600, N06625, N08020, N08367, N08800, N08825, N10276, and N10665 for Section III construction.

Location: Table 1B
Subject: UNS N06025
Explanation: Several lines for time-dependent values for UNS N06025 have been revised in Table 1B.

Location: Table 1B
Subject: Addition of Section XII Applicability
Explanation: Section XII applicability temperatures for SB-75 C12000 and C12200, SB-359 and SB-466 C70600 and C70620, and SB-148 C95800 and C95820 have been added to Table 1B.

Location: Table 1B
Subject: High Stress Lines
Explanation: High stress lines have been added to Table 1B for SB-111 and SB-395 C19200 and for SB-543 C19400 WO61. Stress values for SB-543 C19400 WO61 and WC55 temper lines were also revised.

Location: Table 1B
Subject: High Stress Lines
Explanation: Stress values for SB-111, SB-359, SB-395, and SB-466 C71000 in Table 1B have been revised, and new high stress lines have been added.

Location: Table 1B
Subject: High Stress Lines
Explanation: High stress lines have been added to Table 1B for C68700.

Location: Tables 1B and 3
Subject: New and Revised Stress Lines
Explanation: High stress lines have been added for SB-283 C64200 in Table 1B. In addition, stress lines have been revised for SB-283 C64200 in Table 1B and for SB-150 C64200 in Table 3.

Location: Tables 1B, 2B, and 5B
Subject: Addition of Stress Lines
Explanation: High stress lines have been added to Table 1B for SB-98 C65100, C65500, and C66100 and to Tables 2B and 5B for SB-98 C65100, C65500, and C66100. In addition, SB-96 C65500 lines have been revised in Tables 2B and 5B.

Location: Tables 1B, 2B, U, and Y-1
Subject: C72200, C71500 HR 50, C71520 HR50, and C68700
Explanation: Values have been added to Tables 1B, U, and Y-1 for C72200, C71500 HR 50, C71520 HR50, and C68700. Some values in Tables 1B and 2B have also been revised.

Location: Tables 1B and 6B
Subject: SB-75 O50 Temper Lines
Explanation: Stress lines for SB-75 O50 temper have been added to Table 1B for C10200 and to Table 6B for C10200, C12000, and C12200. Additionally, Applicability columns for these SB-75 alloys have been revised in Table 1B.

Location: Tables 1B, 6B, U, and Y-1
Subject: SB-283 C37700 Stress Values
Explanation: Several lines for SB-283 C37700 have been revised in Tables 1B, 6B, U, and Y-1.

Location: Tables 1B, U, and Y-1
Subject: UNS R60705
Explanation: Tensile and yield strength values for 95.5Zr + 2.5Nb UNS R60705 (both 70/55 and 80/55) have been added to Tables U and Y-1. Several allowable stress values in Table 1B for this material have also been revised.

Location: Tables 1B, U, and Y-1
Subject: Incorporation of Code Case 2923
Explanation: 52Ni–22Cr–13Co–9Mo (UNS N06617) welded tube lines have been added to Tables 1B, U, and Y-1 for Section I and Section VIII, Division 1 use.

Location: Tables 1B, U, and Y-1
Subject: Incorporation of Code Case 2633
Explanation: The following changes have been made:
(a) The maximum allowable stress values from Code Case 2633 have been added to Tables 1B, U, and Y-1.
(b) In Table 1B, for all R60705 zirconium alloy product forms, Note W2 has been deleted and grade NFZ-2 has been changed to NFZ-1.

Location: Table 2A
Subject: 17Cr–4Ni–4Cu H1100
Explanation: Applicability and maximum use temperature limits for Section VIII, Division 2, Class 1 have been revised for 17Cr–4Ni–4Cu H1100 in Table 2A.

Location: Tables 2A and 2B
Subject: Addition of Materials for Section VIII Use
Explanation: Numerous lines have been added to Tables 2A and 2B for materials for Section VIII use. These materials were previously included in Tables 5A and 5B only.

Location: Tables 2B and 5B
Subject: Type/Grade Column
Explanation: A Type/Grade column has been added to Tables 2B and 5B and titanium grade designations have been added in these tables.

Location: Table 3
Subject: Size and Stress Line Correction
Explanation: The thickness range has been corrected for SA-540 B23 H43400 and K24064. Additionally, stress lines have been revised for SB-335 N10001.

Location: Table 5A
Subject: SA-537 Stress Values
Explanation: Several lines in Table 5A have been revised to modify the maximum allowable stress values for SA-537.

Location: Table 5A (Metric Only)
Subject: Modification to Allowable Stress Values
Explanation: Allowable stress values in Table 5A for SA-487 Gr 8 Class A, SA-508 Gr 22 Class 3, and SA-541 Gr 22 Class 4 at 450°C have been changed from 197 to 162.

Location: Table 6A
Subject: Incorporation of Code Cases 2687-1 and 2849
Explanation: Allowable stress values for UNS S31635 Grade TP316Ti for SA-213 tubing and SA-312 seamless and welded pipe have been added to Table 6A.

Location: Table U (Metric Only)
Subject: Missing Values
Explanation: Values for SB-283 and SB-150 C64200 have been added to metric Table U.

Location: Tables U and Y-1
Subject: Aluminum Alloy AlSi7Mg SB/EN 1706 AC42000
Explanation: Yield and tensile strength values for aluminum alloy AlSi7Mg SB/EN 1706 AC42000 have been incorporated into Tables U and Y-1 from Section IV, Code Case 2483.

Location: Tables U and Y-1
Subject: Addition for S31635
Explanation: Values for S31635 tube (SA-213) and pipe (SA-312) have been added to Tables U and Y-1. Additionally, revisions have been made to plate (SA-240) values in Table U.

Location: Tables U and Y-1 (Metric Only)
Subject: Addition of Line Entries for Nine Specifications
Explanation: Values have been added to metric Tables U and Y-1 for the following:
17.5Cr–17.5Ni–5.3Si SA-240 S30601
18Cr–15Ni–4Si SA-182 S30600
18Cr–15Ni–4Si SA-240 S30600
18Cr–15Ni–4Si SA-312 S30600
18Cr–15Ni–4Si SA-479 S30600
18Cr–20Ni–5.5Si SA-213 S32615
18Cr–20Ni–5.5Si SA-240 S32615
18Cr–20Ni–5.5Si SA-312 S32615
18Cr–20Ni–5.5Si SA-479 S32615

Location: Table Y-1
Subject: SA-736 Grade A Class 1 and Class 2
Explanation: Lines for SA-736 Grade A Class 1 and Class 2 have been removed from Table Y-1.

Location: Table TM-3
Subject: Copper Alloys
Explanation: Lines for C19200, C37700, C46500, C62300, C72200, and C96200 with modulus values have been added to Table TM-3.

Location: Nonmandatory Appendix A, A702.1.6
Subject: Hydrogen Environment Embrittlement of Cold-Worked Stainless Steels
Explanation: Paragraph A-702.1.6 on hydrogen environment embrittlement of cold-worked stainless steels t low temperatures has been added to Nonmandatory Appendix A.

SECTION V

Introduction

Section V of the ASME Boiler and Pressure Vessel Code (BPVC) contains requirements and methods for nondestructive examination (NDE), which are referenced and required by other ASME BPVC Sections or other referencing documents. These NDE methods are intended to detect surface and internal imperfections in materials, welds, fabricated parts, and components. They include requirements for radiographic examination, ultrasonic examination for welds and materials, liquid penetrant examination, magnetic particle examination, eddy current examination, visual examination, leak testing, acoustic emission examination, alternating current field measurement, and magnetic flux leakage. Article 1, Mandatory Appendix II covers supplemental personnel qualification requirements for NDE Certification to be included in the employer's written practice for NDE personnel certification when the employer uses computed radiography, digital radiography, phased array ultrasonics, ultrasonic time-of-flight diffraction, and ultrasonic full matrix capture.

Section V is divided into two Subsections that include both Mandatory and Nonmandatory Appendices. Subsection A describes the methods of NDE to be used when referenced by other Code Sections or referencing documents. Subsection B includes ASME/ASTM standards covering various NDE methods. These standards are not mandatory unless specifically referenced in whole or in part by Subsection A or as indicated in other Code Sections or referencing documents.

Significant Changes

Location: Article 1, T-110 and T-120
Subject: Methods of Nondestructive Examination
Explanation: The list nondestructive examination (NDE) methods has been deleted from T-110(a). The list was incomplete. Removal of the list will reduce the potential for conflicts as NDE methods are added to or modified in Section V.

Location: Article 1, T-120
Subject: Adoption of ANDE-1–2020
Explanation: Paragraph T-120(h) has been updated to reference ASME ANDE-1–2020.

Location: Article 1, T-120 and Mandatory Appendices III and IV
Subject: Exceptions to ASNT SNT-TC-1A and ANSI/ASNT CP-189
Explanation: Paragraph T-120(e) has been revised to include the exceptions to ASNT SNT-TC-1A and ANSI/ASNT CP-189. Consequently, Mandatory Appendices III and IV, which previously explained the exceptions, have been deleted.

Location: Article 1, T-150
Subject: Samples for Procedure Demonstrations
Explanation: Paragraphs T-150(a) and T-150(b) have been revised to clarify that the sample on which a procedure demonstration is performed shall contain a discontinuity, which the demonstration shall detect.

Location: Article 1, Mandatory Appendix II, Table II-121-1
Subject: Training and Experience Requirements
Explanation: General Notes (a), (b), and (d) of Table II-121-1 have been revised to apply to previously certified individuals as well as currently certified individuals. Individuals previously certified in a radiography technique shall meet the same additional training and experience requirements as currently certified individuals to qualify in a subsequent technique.

Location: Article 1, Mandatory Appendix II, II-122.1 and Table II-121-1
Subject: Level I and Level II Practical Examinations in Computed and Digital Radiography
Explanation: Paragraph II-122.1 has been revised to reduce from five to two the number of flawed test specimens an individual is required to examine for Level I or Level II Practical Examinations in computed radiography (CR) and digital radiography (DR). The change aligns requirements for CR and DR qualifications with those for conventional nondestructive examination methods such as time of flight diffraction, phased array ultrasonic testing, and ultrasonic full matrix capture.

In addition to the changes in II-122.1, Table II-121-1, General Note (d)(3) has been revised to allow the use of raw, unfiltered digital images as test specimens. Level II-qualified individuals who seek a subsequent qualification but do not meet the training requirements of General Note (a) shall examine ten specimens during the practical examination. Eight of those ten specimens may now be raw, unfiltered digital images. This revision has been made to reduce the individual's exposure to radiation during the testing process. An individual will use the first two specimens to demonstrate the ability to set up and perform an exposure. The individual will use the remaining eight specimens to demonstrate the ability to interpret, evaluate, and document the results.