

ASME BPVC.XI-2017

SECTION XI

2017

ASME Boiler and
Pressure Vessel Code
An International Code

Rules for Inservice
Inspection of Nuclear
Power Plant Components


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AN INTERNATIONAL CODE

2017 ASME Boiler & Pressure Vessel Code

2017 Edition

July 1, 2017

XI

RULES FOR INSERVICE INSPECTION OF NUCLEAR POWER PLANT COMPONENTS

ASME Boiler and Pressure Vessel Committee
on Nuclear Inservice Inspection



The American Society of
Mechanical Engineers

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^{*} The 2015 Edition of Section III was the last edition in which Section III, Division 1, Subsection NH, *Class 1 Components in Elevated Temperature Service*, was published. The requirements located within Subsection NH were moved to Section III, Division 5, Subsection HB, Subpart B for the elevated temperature construction of Class A components.

INTERPRETATIONS

Interpretations are issued in real time in ASME's Interpretations Database at <http://go.asme.org/Interpretations>. Historical BPVC interpretations may also be found in the Database.

CODE CASES

The Boiler and Pressure Vessel Code committees meet 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 2017 Code Cases book: "Boilers and Pressure Vessels" or "Nuclear Components." Supplements will be sent or made available automatically to the purchasers of the Code Cases books up to the publication of the 2019 Code.

FOREWORD*

In 1911, The American Society of Mechanical Engineers established the Boiler and Pressure Vessel Committee to formulate standard rules for the construction of steam boilers and other pressure vessels. In 2009, the Boiler and Pressure Vessel Committee was superseded by the following committees:

- (a) Committee on Power Boilers (I)
- (b) Committee on Materials (II)
- (c) Committee on Construction of Nuclear Facility Components (III)
- (d) Committee on Heating Boilers (IV)
- (e) Committee on Nondestructive Examination (V)
- (f) Committee on Pressure Vessels (VIII)
- (g) Committee on Welding, Brazing, and Fusing (IX)
- (h) Committee on Fiber-Reinforced Plastic Pressure Vessels (X)
- (i) Committee on Nuclear Inservice Inspection (XI)
- (j) Committee on Transport Tanks (XII)
- (k) Technical Oversight Management Committee (TOMC)

Where reference is made to “the Committee” in this Foreword, each of these committees is included individually and collectively.

The Committee’s function is to establish rules of safety relating only to pressure integrity, which govern the construction** of boilers, pressure vessels, transport tanks, and nuclear components, and the inservice inspection of nuclear components and transport tanks. The Committee also interprets these rules when questions arise regarding their intent. The technical consistency of the Sections of the Code and coordination of standards development activities of the Committees is supported and guided by the Technical Oversight Management Committee. This Code does not address other safety issues relating to the construction of boilers, pressure vessels, transport tanks, or nuclear components, or the inservice inspection of nuclear components or transport tanks. Users of the Code should refer to the pertinent codes, standards, laws, regulations, or other relevant documents for safety issues other than those relating to pressure integrity. Except for Sections XI and XII, and with a few other exceptions, the rules do not, of practical necessity, reflect the likelihood and consequences of deterioration in service related to specific service fluids or external operating environments. In formulating the rules, the Committee considers the needs of users, manufacturers, and inspectors of pressure vessels. The objective of the rules is to afford reasonably certain protection of life and property, and to provide a margin for deterioration in service to give a reasonably long, safe period of usefulness. Advancements in design and materials and evidence of experience have been recognized.

This Code contains mandatory requirements, specific prohibitions, and nonmandatory guidance for construction activities and inservice inspection and testing activities. The Code does not address all aspects of these activities and those aspects that are not specifically addressed should not be considered prohibited. The Code is not a handbook and cannot replace education, experience, and the use of engineering judgment. The phrase *engineering judgment* refers to technical judgments made by knowledgeable engineers experienced in the application of the Code. Engineering judgments must be consistent with Code philosophy, and such judgments must never be used to overrule mandatory requirements or specific prohibitions of the Code.

The Committee recognizes that tools and techniques used for design and analysis change as technology progresses and expects engineers to use good judgment in the application of these tools. The designer is responsible for complying with Code rules and demonstrating compliance with Code equations when such equations are mandatory. The Code neither requires nor prohibits the use of computers for the design or analysis of components constructed to the

* The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI’s requirements for an ANS. Therefore, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Code.

** *Construction*, as used in this Foreword, is an all-inclusive term comprising materials, design, fabrication, examination, inspection, testing, certification, and pressure relief.

requirements of the Code. However, designers and engineers using computer programs for design or analysis are cautioned that they are responsible for all technical assumptions inherent in the programs they use and the application of these programs to their design.

The rules established by the Committee are not to be interpreted as approving, recommending, or endorsing any proprietary or specific design, or as limiting in any way the manufacturer's freedom to choose any method of design or any form of construction that conforms to the Code rules.

The Committee meets regularly to consider revisions of the rules, new rules as dictated by technological development, Code Cases, and requests for interpretations. Only the Committee has the authority to provide official interpretations of this Code. Requests for revisions, new rules, Code Cases, or interpretations shall be addressed to the Secretary in writing and shall give full particulars in order to receive consideration and action (see Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees). Proposed revisions to the Code resulting from inquiries will be presented to the Committee for appropriate action. The action of the Committee becomes effective only after confirmation by ballot of the Committee and approval by ASME. Proposed revisions to the Code approved by the Committee are submitted to the American National Standards Institute (ANSI) and published at <http://go.asme.org/BPVCPublicReview> to invite comments from all interested persons. After public review and final approval by ASME, revisions are published at regular intervals in Editions of the Code.

The Committee does not rule on whether a component shall or shall not be constructed to the provisions of the Code. The scope of each Section has been established to identify the components and parameters considered by the Committee in formulating the Code rules.

Questions or issues regarding compliance of a specific component with the Code rules are to be directed to the ASME Certificate Holder (Manufacturer). Inquiries concerning the interpretation of the Code are to be directed to the Committee. ASME is to be notified should questions arise concerning improper use of an ASME Certification Mark.

When required by context in this Section, the singular shall be interpreted as the plural, and vice versa, and the feminine, masculine, or neuter gender shall be treated as such other gender as appropriate.

STATEMENT OF POLICY ON THE USE OF THE CERTIFICATION MARK AND CODE AUTHORIZATION IN ADVERTISING

ASME has established procedures to authorize qualified organizations to perform various activities in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. It is the aim of the Society to provide recognition of organizations so authorized. An organization holding authorization to perform various activities in accordance with the requirements of the Code may state this capability in its advertising literature.

Organizations that are authorized to use the Certification Mark for marking items or constructions that have been constructed and inspected in compliance with the ASME Boiler and Pressure Vessel Code are issued Certificates of Authorization. It is the aim of the Society to maintain the standing of the Certification Mark for the benefit of the users, the enforcement jurisdictions, and the holders of the Certification Mark who comply with all requirements.

Based on these objectives, the following policy has been established on the usage in advertising of facsimiles of the Certification Mark, Certificates of Authorization, and reference to Code construction. The American Society of Mechanical Engineers does not “approve,” “certify,” “rate,” or “endorse” any item, construction, or activity and there shall be no statements or implications that might so indicate. An organization holding the Certification Mark and/or a Certificate of Authorization may state in advertising literature that items, constructions, or activities “are built (produced or performed) or activities conducted in accordance with the requirements of the ASME Boiler and Pressure Vessel Code,” or “meet the requirements of the ASME Boiler and Pressure Vessel Code.” An ASME corporate logo shall not be used by any organization other than ASME.

The Certification Mark shall be used only for stamping and nameplates as specifically provided in the Code. However, facsimiles may be used for the purpose of fostering the use of such construction. Such usage may be by an association or a society, or by a holder of the Certification Mark who may also use the facsimile in advertising to show that clearly specified items will carry the Certification Mark. General usage is permitted only when all of a manufacturer’s items are constructed under the rules.

STATEMENT OF POLICY ON THE USE OF ASME MARKING TO IDENTIFY MANUFACTURED ITEMS

The ASME Boiler and Pressure Vessel Code provides rules for the construction of boilers, pressure vessels, and nuclear components. This includes requirements for materials, design, fabrication, examination, inspection, and stamping. Items constructed in accordance with all of the applicable rules of the Code are identified with the official Certification Mark described in the governing Section of the Code.

Markings such as “ASME,” “ASME Standard,” or any other marking including “ASME” or the Certification Mark shall not be used on any item that is not constructed in accordance with all of the applicable requirements of the Code.

Items shall not be described on ASME Data Report Forms nor on similar forms referring to ASME that tend to imply that all Code requirements have been met when, in fact, they have not been. Data Report Forms covering items not fully complying with ASME requirements should not refer to ASME or they should clearly identify all exceptions to the ASME requirements.

(17) SUBMITTAL OF TECHNICAL INQUIRIES TO THE BOILER AND PRESSURE VESSEL STANDARDS COMMITTEES

1 INTRODUCTION

(a) The following information provides guidance to Code users for submitting technical inquiries to the applicable Boiler and Pressure Vessel (BPV) Standards Committee (hereinafter referred to as the Committee). See the guidelines on approval of new materials under the ASME Boiler and Pressure Vessel Code in Section II, Part D for requirements for requests that involve adding new materials to the Code. See the guidelines on approval of new welding and brazing materials in Section II, Part C for requirements for requests that involve adding new welding and brazing materials (“consumables”) to the Code.

Technical inquiries can include requests for revisions or additions to the Code requirements, requests for Code Cases, or requests for Code Interpretations, as described below:

(1) *Code Revisions.* Code revisions are considered to accommodate technological developments, to address administrative requirements, to incorporate Code Cases, or to clarify Code intent.

(2) *Code Cases.* Code Cases represent alternatives or additions to existing Code requirements. Code Cases are written as a Question and Reply, and are usually intended to be incorporated into the Code at a later date. When used, Code Cases prescribe mandatory requirements in the same sense as the text of the Code. However, users are cautioned that not all regulators, jurisdictions, or Owners automatically accept Code Cases. The most common applications for Code Cases are as follows:

(-a) to permit early implementation of an approved Code revision based on an urgent need

(-b) to permit use of a new material for Code construction

(-c) to gain experience with new materials or alternative requirements prior to incorporation directly into the Code

(3) *Code Interpretations*

(-a) Code Interpretations provide clarification of the meaning of existing requirements in the Code and are presented in Inquiry and Reply format. Interpretations do not introduce new requirements.

(-b) If existing Code text does not fully convey the meaning that was intended, or conveys conflicting requirements, and revision of the requirements is required to support the Interpretation, an Intent Interpretation will be issued in parallel with a revision to the Code.

(b) Code requirements, Code Cases, and Code Interpretations established by the Committee are not to be considered as approving, recommending, certifying, or endorsing any proprietary or specific design, or as limiting in any way the freedom of manufacturers, constructors, or Owners to choose any method of design or any form of construction that conforms to the Code requirements.

(c) Inquiries that do not comply with the following guidance or that do not provide sufficient information for the Committee’s full understanding may result in the request being returned to the Inquirer with no action.

2 INQUIRY FORMAT

Submittals to the Committee should include the following information:

(a) *Purpose.* Specify one of the following:

(1) request for revision of present Code requirements

(2) request for new or additional Code requirements

(3) request for Code Case

(4) request for Code Interpretation

(b) *Background.* The Inquirer should provide the information needed for the Committee’s understanding of the Inquiry, being sure to include reference to the applicable Code Section, Division, Edition, Addenda (if applicable), paragraphs, figures, and tables. Preferably, the Inquirer should provide a copy of, or relevant extracts from, the specific referenced portions of the Code.

(c) *Presentations.* The Inquirer may desire to attend or be asked to attend a meeting of the Committee to make a formal presentation or to answer questions from the Committee members with regard to the Inquiry. Attendance at a BPV Standards Committee meeting shall be at the expense of the Inquirer. The Inquirer's attendance or lack of attendance at a meeting will not be used by the Committee as a basis for acceptance or rejection of the Inquiry by the Committee. However, if the Inquirer's request is unclear, attendance by the Inquirer or a representative may be necessary for the Committee to understand the request sufficiently to be able to provide an Interpretation. If the Inquirer desires to make a presentation at a Committee meeting, the Inquirer should provide advance notice to the Committee Secretary, to ensure time will be allotted for the presentation in the meeting agenda. The Inquirer should consider the need for additional audiovisual equipment that might not otherwise be provided by the Committee. With sufficient advance notice to the Committee Secretary, such equipment may be made available.

3 CODE REVISIONS OR ADDITIONS

Requests for Code revisions or additions should include the following information:

(a) *Requested Revisions or Additions.* For requested revisions, the Inquirer should identify those requirements of the Code that they believe should be revised, and should submit a copy of, or relevant extracts from, the appropriate requirements as they appear in the Code, marked up with the requested revision. For requested additions to the Code, the Inquirer should provide the recommended wording and should clearly indicate where they believe the additions should be located in the Code requirements.

(b) *Statement of Need.* The Inquirer should provide a brief explanation of the need for the revision or addition.

(c) *Background Information.* The Inquirer should provide background information to support the revision or addition, including any data or changes in technology that form the basis for the request, that will allow the Committee to adequately evaluate the requested revision or addition. Sketches, tables, figures, and graphs should be submitted, as appropriate. The Inquirer should identify any pertinent portions of the Code that would be affected by the revision or addition and any portions of the Code that reference the requested revised or added paragraphs.

4 CODE CASES

Requests for Code Cases should be accompanied by a statement of need and background information similar to that described in 3(b) and 3(c), respectively, for Code revisions or additions. The urgency of the Code Case (e.g., project underway or imminent, new procedure) should be described. In addition, it is important that the request is in connection with equipment that will bear the Certification Mark, with the exception of Section XI applications. The proposed Code Case should identify the Code Section and Division, and should be written as a Question and a Reply, in the same format as existing Code Cases. Requests for Code Cases should also indicate the applicable Code Editions and Addenda (if applicable) to which the requested Code Case applies.

5 CODE INTERPRETATIONS

(a) Requests for Code Interpretations should be accompanied by the following information:

(1) *Inquiry.* The Inquirer should propose a condensed and precise Inquiry, omitting superfluous background information and, when possible, composing the Inquiry in such a way that a "yes" or a "no" Reply, with brief limitations or conditions, if needed, can be provided by the Committee. The proposed question should be technically and editorially correct.

(2) *Reply.* The Inquirer should propose a Reply that clearly and concisely answers the proposed Inquiry question. Preferably, the Reply should be "yes" or "no," with brief limitations or conditions, if needed.

(3) *Background Information.* The Inquirer should provide any need or background information, such as described in 3(b) and 3(c), respectively, for Code revisions or additions, that will assist the Committee in understanding the proposed Inquiry and Reply.

If the Inquirer believes a revision of the Code requirements would be helpful to support the Interpretation, the Inquirer may propose such a revision for consideration by the Committee. In most cases, such a proposal is not necessary.

(b) Requests for Code Interpretations should be limited to an Interpretation of a particular requirement in the Code or in a Code Case. Except with regard to interpreting a specific Code requirement, the Committee is not permitted to consider consulting-type requests such as the following:

(1) a review of calculations, design drawings, welding qualifications, or descriptions of equipment or parts to determine compliance with Code requirements

- (2) a request for assistance in performing any Code-prescribed functions relating to, but not limited to, material selection, designs, calculations, fabrication, inspection, pressure testing, or installation
- (3) a request seeking the rationale for Code requirements

6 SUBMITTALS

(a) *Submittal.* Requests for Code Interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at <http://go.asme.org/InterpretationRequest>. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt. If the Inquirer is unable to use the online form, the Inquirer may mail the request to the following address:

Secretary
ASME Boiler and Pressure Vessel Committee
Two Park Avenue
New York, NY 10016-5990

All other Inquiries should be mailed to the Secretary of the BPV Committee at the address above. Inquiries are unlikely to receive a response if they are not written in clear, legible English. They must also include the name of the Inquirer and the company they represent or are employed by, if applicable, and the Inquirer's address, telephone number, fax number, and e-mail address, if available.

(b) *Response.* The Secretary of the appropriate Committee will provide a written response, via letter or e-mail, as appropriate, to the Inquirer, upon completion of the requested action by the Committee. Inquirers may track the status of their Interpretation Request at <http://go.asme.org/Interpretations>.

PERSONNEL

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January 1, 2017

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PREFACE TO SECTION XI

INTRODUCTION

Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, of the ASME Boiler and Pressure Vessel Code provides requirements for examination, testing, and inspection of components and systems, and repair/replacement activities in a nuclear power plant. Application of this Section of the Code begins when the requirements of the Construction Code have been satisfied.

GENERAL

The rules of this Section constitute requirements to maintain the nuclear power plant and to return the plant to service, following plant outages, in a safe and expeditious manner. The rules require a mandatory program of examinations, testing, and inspections to evidence adequate safety and to manage deterioration and aging effects. The rules also stipulate duties of the Authorized Nuclear Inservice Inspector to verify that the mandatory program has been completed, permitting the plant to return to service in an expeditious manner.

INSERVICE TESTING OF PUMP AND VALVES

With the 1998 Edition with the 2000 Addenda, all requirements for testing pumps and valves have been removed from Section XI, Division 1. These requirements are now located in the ASME Code for Operation and Maintenance of Nuclear Power Plants.

OWNER RESPONSIBILITIES

The Owner of the nuclear power plant is assigned the responsibilities to develop a program which will demonstrate conformance to the requirements of this Section of the Code.

These responsibilities include:

- (a) provision of access in the design and arrangement of the plant to conduct the examination and tests;
- (b) development of plans and schedules, including detailed examination and testing procedures;
- (c) conduct of the program of examination and tests, system leakage and hydrostatic pressure tests; and
- (d) recording of the results of the examinations and tests, including corrective actions required and the actions taken.

DUTIES OF THE AUTHORIZED NUCLEAR INSERVICE INSPECTOR

Section XI differs from Section VI, Recommended Rules for the Care and Operation of Heating Boilers, and Section VII, Recommended Guidelines for the Care of Power Boilers, in that the requirements for Inservice Inspection of Nuclear Power Plants are mandatory, while the other two Sections are recommended practices. Duties of the Authorized Nuclear Inservice Inspector are assigned by Section XI to verify that the responsibilities of the Owner and the mandatory requirements of this Section are met. Duties of the Authorized Nuclear Inservice Inspector include the following:

- (a) verifying system pressure tests;
- (b) reviewing nondestructive examination procedures and Repair/Replacement Programs and Plans; and
- (c) verifying that the visual examinations and tests have been completed and the results recorded.

Listed as one of the duties is the prerogative of the Inspector to require requalification of any operator or procedure when he has reason to believe the requirements are not being met.

ORGANIZATION OF SECTION XI

1 DIVISIONS

Section XI consists of three Divisions, as follows:

Division 1 = Rules for Inspection and Testing of Components of Light-Water-Cooled Plants

Division 2 = Rules for Inspection and Testing of Components of Gas-Cooled Plants

Division 3 = Rules for Inspection and Testing of Components of Liquid-Metal-Cooled Plants

2 SUBSECTIONS

The Divisions are broken down into Subsections which are designated by capital letters, preceded by the letters IW in Division 1, by the letters IG in Division 2, and by the letters IM in Division 3.

Division 1 consists of Subsections covering the following aspects of the rules:

Subsection	Title
IWA	General Requirements
IWB	Class 1 Components
IWC	Class 2 Components
IWD	Class 3 Components
IWE	Class MC and CC Components
IWF	Class 1, 2, 3, and MC Component Supports
IWG	Core Internal Structures (In course of preparation)
IWL	Class CC Concrete Components

Division 2 consists of Subsections covering the following aspects of the rules:

Subsection	Title
IGA	General Requirements
IGB	Class 1 Components
IGC	Class 2 Components
IGD	Class 3 Components
IGG	Reactor Internals
IGH	Elevated Temperature Material
IGI	Graphite and Thermal Insulation Materials
IGK	Concrete Reactor Vessels
IGP	Pumps
IGQ	Compressors
IGV	Valves

Division 3 consists of Subsections covering the following aspects of the rules:

Subsection	Title
IMA	General Requirements
IMB	Class 1 Components
IMC	Class 2 Components
IMD	Class 3 Components
IMF	Class 1, 2, and 3 Component Supports
IMV	Valves

Subsections are divided into Articles, Subarticles, paragraphs, and, where necessary, into subparagraphs.

3 ARTICLES

Articles are designated by the applicable letters indicated above for the Subsections, followed by Arabic numbers, such as IWA-1000 or IWB-2000. Where possible, Articles dealing with the same general topics are given the same number in each Subsection, in accordance with the following scheme:

Article Number	Title
1000	Scope and Responsibility
2000	Examination and Inspection
3000	Acceptance Standards
4000	Repair/Replacement Activities
5000	System Pressure Tests
6000	Records and Reports

The numbering of Articles and material contained in the Articles may not, however, be consecutive. Due to the fact that the complete outline may cover phases not applicable to a particular Subsection or Article, the requirements have been prepared with some gaps in the numbering.

4 SUBARTICLES

Subarticles are numbered in units of 100, such as IWA-1100 or IWA-1200.

5 SUBSUBARTICLES

Subsubarticles are numbered in units of 10, such as IWA-2130, and may have no text. When a number such as IWA-1110 is followed by text, it is considered a paragraph.

6 PARAGRAPHS

Paragraphs are numbered in units of 1, such as IWA-2131 or IWA-2132.

7 SUBPARAGRAPHS

Subparagraphs, when they are *major* subdivisions of a paragraph, are designated by adding a decimal followed by one or more digits to the paragraph number, such as IWA-1111.1 or IWA-1111.2. When they are *minor* subdivisions of a paragraph, subparagraphs may be designated by lowercase letters in parentheses, such as IWA-1111(a) or IWA-1111(b).

8 REFERENCES

References used within this Section generally fall into one of six categories, as explained below.

(a) *References to Other Portions of This Section.* When a reference is made to another Article, Subarticle, or paragraph number, all numbers subsidiary to that reference shall be included. For example, reference to IWA-2000 includes all materials in Article IWA-2000; reference to IWA-2200 includes all material in Subarticle IWA-2200; reference to IWA-2220 includes all paragraphs in IWA-2220, IWA-2221, and IWA-2222.

(b) *References to Other Sections.* Other Sections referred to in Section XI are as follows:

(1) *Section II, Material Specifications.* When a requirement for a material or for the examination or testing of a material is to be in accordance with a specification such as SA-105, SA-370, or SB-160, the reference is to material specifications in Section II. These references begin with the letter "S." Materials conforming to ASTM specifications may be used in accordance with the provisions of the last paragraph of the Foreword to the Boiler Code.

(2) *Section III, Nuclear Power Plant Components.* Section III references begin with the letter "N" and relate to nuclear power plant design or construction requirements.

(3) *Section V, Nondestructive Examination.* Section V references begin with the letter "T" and relate to the nondestructive examination of material or welds.

(4) *Section IX, Welding and Brazing Qualifications.* Section IX references begin with the letter "Q" and relate to welding and brazing requirements.

(c) *References to Specifications and Standards Other Than Published in Code Sections*

(1) Specifications for examination methods and acceptance standards to be used in connection with them are published by the American Society for Testing and Materials. For example, reference to ASTM E71-64 refers to the specification so designated and published by American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428.

(2) Recommended practices for qualifying and certifying nondestructive examination personnel are published by the American Society for Nondestructive Testing (ASNT). These documents are designated SNT-TC-1A and CP-189. A reference to SNT-TC-1A or CP-189 shall be understood to mean the practice and its supplements, so designated and published by the American Society for Nondestructive Testing (ASNT), 1711 Arlingate Lane, P. O. Box 28518, Columbus, OH 43228-0518.

(3) Specifications and standards for materials, processes, examination and test procedures, qualifications of personnel, and other requirements of the Code approved by the American National Standards Institute are designated by the letters ANSI followed by the serialization for the particular specification or standard. Standards published by ASME are available from ASME (<https://www.asme.org/>).

(4) Specifications and standards for materials, processes, examination and test procedures, and other requirements of the Code relating to concrete are listed in Table IWA-1600-1, designated by the letters ACI, and are approved and published by the American Concrete Institute. Standards published by the American Concrete Institute can be obtained by writing ACI, Box 19150, 22400 West Seven Mile Road, Detroit, MI 48219.

(5) Specifications and standards for determining water chemistry as identified in Table IWA-1600-1 by the letter designation APHA are approved and published by the American Public Health Association. Standards published by the American Public Health Association can be obtained by writing APHA, 1015 15th Street, NW, Washington, D.C. 20005.

(6) Specifications and standards for welding are listed in Table IWA-1600-1 and are approved and published by the American Welding Society. Standards published by the American Welding Society can be obtained by writing AWS, 550 N.W. LeJeune Road, P.O. Box 351040, Miami, FL 33135.

(d) *References to Government Regulations.* U.S. Federal regulations issued by executive departments and agencies, as published in the Federal Register, are codified in the Code of Federal Regulations. The Code of Federal Regulations is published by the Office of the Federal Register, National Archives and Records Service, General Service Administration, and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Title 10 of the Code of Federal Regulations contains the regulations for atomic energy. The abbreviated reference "10 CFR 50" is used to mean "Title 10, Code of Federal Regulations, Part 50."

(e) *References to Appendices.* Two types of Appendices are used in Section XI and are designated Mandatory and Nonmandatory.

(1) Mandatory Appendices contain requirements which must be followed in Section XI activities; such references are designated by a Roman numeral followed by Arabic numerals. A reference to III-1100, for example, refers to a Mandatory Appendix.

(2) Nonmandatory Appendices provide information or guidance for the use of Section XI; such references are designated by a capital letter followed by Arabic numerals. A reference to A-3300, for example, refers to a Nonmandatory Appendix.

(f) *References to Technical Reports.* The following reports prepared at the request of the American Society of Mechanical Engineers and published by Electric Power Research Institute are relevant to Code-related articles of Section XI. Requests for copies should be directed to EPRI Research Reports Center, Box 50490, Palo Alto, CA 94303.

(1) NP-1406-SR — Nondestructive Examination Acceptance Standards Technical Basis and Development for Boiler and Pressure Vessel Code, ASME Section XI, Division 1, Special Report, May 1980.

(2) NP-719-SR — Flaw Evaluation Procedures — Background and Application of ASME Section XI Appendix A — Special Report, August 1978.

SUMMARY OF CHANGES

Errata to the BPV Code may be posted on the ASME Web site to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in the BPV Code. Such Errata shall be used on the date posted.

Information regarding Special Notices and Errata is published by ASME at <http://go.asme.org/BPVCerrata>.

Changes given below are identified on the pages by a margin note, **(17)**, placed next to the affected area.

The Record Numbers listed below are explained in more detail in “List of Changes in Record Number Order” following this Summary of Changes.

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
xxiii	List of Sections	Updated
xxviii	Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees	Revised in its entirety (13-2222)
xxxii	Personnel	Updated
1	Preface to Section XI	Under Owner Responsibilities, subpara. (b) revised (11-1100)
1	IWA-1310	Revised (11-1100)
2	IWA-1400	Subparagraphs (c), (d), (l), (m), and (q) revised (11-1100, 14-1483, 16-2520)
3	Table IWA-1600-1	Revision Date or Indicator for ASTM D95, ASTM D512, ASTM D974, ASTM D992, ASTM E185, ASTM E1921, and ASTM E2215 revised (15-2371)
3	IWA-1700	Subparagraphs (a) and (b) editorially revised
4	IWA-1800	In fourth line, “normal” corrected by errata to “nominal” (15-1931)
5	IWA-2200	In subpara. (c), last sentence revised (15-205)
6	IWA-2211	In subpara. (e), “nonbattery-powered” corrected by errata to “non-battery-powered” (16-422)
7	Table IWA-2211-1	In second column, “(lx)” corrected by errata to “(lux)” (16-2340)
6	IWA-2213	In subpara. (e), “nonbattery-powered” corrected by errata to “non-battery-powered” (16-422)
7	IWA-2221	In subpara. (c), “50 fc” corrected by errata to “50 fc (550 lux)” (16-2340)
7	IWA-2222	In subpara. (b), “50 fc” corrected by errata to “50 fc (550 lux)” (16-2340)
8	IWA-2232	Revised (10-129)
8	IWA-2310	In subpara. (a), fourth sentence, “Levels” corrected by errata to “Level” (16-2340)
8	IWA-2312	(1) Subparagraph (c) revised (10-129) (2) New subpara. (d) added and subsequent subparagraphs redesignated (10-129)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
9	IWA-2314	In subparas. (a), (c), and (d), "Levels" corrected by errata to "Level" (16-2340)
9	IWA-2315	Revised (10-129, 15-205)
9	IWA-2318	Added (16-44)
11	IWA-2324	Added (08-1139)
12	Table IWA-2324-1	Added (08-1139)
11	IWA-2330	Last sentence revised (15-205)
13	IWA-2430	Subparagraph (f) deleted and (g) redesignated (10-129)
13	IWA-2441	Subparagraphs (c), (d), and (e) revised (11-1100)
15	IWA-3100	Subparagraph (b) revised (15-2464)
15	IWA-3300	Subparagraph (d) deleted (10-129)
17	IWA-3320	In subpara. (b), "IWC-2420(c)" corrected by errata to "IWC-2420(b)" (16-2340)
27	IWA-4110	(1) Subparagraph (b) revised (15-1810) (2) Subparagraph (d) added (14-1567)
27	IWA-4120	In subpara. (b)(7), "Classes" corrected by errata to "Class" (16-2340)
30	IWA-4150	(1) Subparagraphs (b) and (c) revised (15-3, 15-1810) (2) Subparagraph (d) deleted (15-3)
33	IWA-4311	First paragraph revised (15-1810)
33	IWA-4321	First paragraph and subpara. (e) added (15-1647)
34	IWA-4332	Title revised (15-206)
35	IWA-4421	(1) First paragraph and subpara. (c) revised (14-711) (2) Subparagraph (d) deleted (14-711)
36	IWA-4422.1	Subparagraph (b) revised (15-206)
37	IWA-4461.3	Revised (10-1838)
37	IWA-4461.4	(1) First paragraph revised (10-1838) (2) Subparagraphs (a) and (b) added and subsequent subparagraphs redesignated (10-1838)
38	IWA-4462	Revised (14-711)
39	IWA-4540	(1) Title and subparas. (a), (b)(3), (b)(5), (b)(9), and (d) revised (09-1141) (2) Subparagraph (b)(8) editorially revised
39	IWA-4600	Subparagraphs (b)(1) and (b)(2) revised (13-178, 16-1154)
40	IWA-4610	(1) Subparagraphs (a), (b)(1)(-a), (b)(1)(-d), (b)(1)(-e), (b)(1)(-e)(-2), and (e)(1) revised (13-178, 15-1123) (2) Subparagraph (b)(1)(-f) deleted (13-178) (3) Subparagraph (c) added (13-178)
41	IWA-4611.1	In subpara. (b), reference to IWA-4654 deleted (16-1154)
41	IWA-4611.2	Subparagraph (b) revised (15-206)
42	IWA-4621	(1) Revised (13-178) (2) Endnote 13 revised (see Endnotes) (13-178)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
42	IWA-4623.1	Revised in its entirety (13-178)
43	Figure IWA-4623.1-1	Deleted (13-178)
42	IWA-4623.2	Subparagraph (c) revised (13-178)
43	Figure IWA-4623.2-1	Deleted (13-178)
42	IWA-4624.1	Subparagraph (c) revised (13-178)
42	IWA-4631	(1) Subparagraph (a) revised (13-178) (2) In subpara. (b), period added after "(9.5 mm)" by errata (16-2340) (3) Subparagraphs (c) and (d) added (13-178)
43	IWA-4633.1	Revised (13-178)
44	Figure IWA-4633.1-1	Deleted (13-178)
43	IWA-4633.2	Subparagraph (d) revised (13-178)
44	Figure IWA-4633.2-1	Deleted (13-178)
44	IWA-4634.1	Subparagraph (b) revised (13-178)
44	IWA-4641	Subparagraph (a) revised (13-178)
44	IWA-4643.1	Subparagraphs (b), (c), (d), and (f) revised (13-178)
45	IWA-4643.2	Subparagraph (d) revised (13-178)
45	Figure IWA-4643.2-1	Deleted (13-178)
45	IWA-4644.1	Subparagraph (b) revised (13-178)
45	IWA-4650	Deleted (16-1154)
46	IWA-4663.1	First paragraph revised (15-1675, 16-908)
48	IWA-4666.1	Subparagraph (c) revised (15-206)
48	IWA-4666.2	Subparagraph (a) revised (15-206)
48	IWA-4670	Title revised (13-178)
49	IWA-4671	(1) Subparagraphs (a), (b), and (f) revised (13-178) (2) Subparagraph (g) added (13-178)
49	IWA-4673	(1) Paragraphs redesignated (13-178) (2) In subpara. (a) [formerly (a)(1)], last line revised (13-178) (3) Former subpara. (b) deleted (13-178)
50	IWA-4680	Added (13-178)
60	IWA-5110	Subparagraph (c) deleted (09-835)
60	IWA-5120	Added (09-835)
60	IWA-5213	(1) Subparagraphs (a)(2) and (a)(3) revised (15-11) (2) Subparagraph (b) revised (11-1410)
61	IWA-5241	Subparagraph (f) revised (11-808)
62	IWA-5242	Added (09-835)
62	IWA-5250	(1) Subparagraph (a)(2) revised (11-808) (2) Subparagraph (a)(4) added (09-835)
64	IWA-6211	Subparagraph (c) revised (11-1100)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
64	IWA-6230	Subparagraph (b)(1) revised (14-1483, 16-2520)
65	IWA-6340	Subparagraph (d) revised (16-2520)
66	Article IWA-9000	(1) Definitions of <i>analytical evaluation</i> , <i>corrective action</i> , <i>corrective measures</i> , <i>material</i> , <i>relevant condition</i> , and <i>structural factor</i> revised (15-207, 15-208, 15-2464) (2) Definition of <i>NDE evaluation</i> added (15-206)
71	IWB-1220	(1) Endnote 19 deleted (14-2012)
72	IWB-2200	(1) Subparagraph (a) revised (10-129, 15-2839) (2) Subparagraph (a) corrected by errata (16-2340) (3) Subparagraph (b)(1) revised (15-2464) (4) New subpara. (b)(3) added and former (b)(3) redesignated as (b)(4) (16-1195) (5) Subparagraph (c) deleted (10-129)
72	Table IWB-2411-1	First column editorially revised
73	IWB-2413	Deleted (10-129)
73	IWB-2420	(1) Subparagraphs (b) and (c) revised (15-208) (2) New subpara. (d) added and subsequent subparagraphs redesignated (15-208) (3) Subparagraph (e) [formerly (d)] revised (15-208)
73	IWB-2430	(1) Subparagraphs (a)(2)(-a), (a)(2)(-b), (a)(2)(-c), and (b) revised (15-208) (2) Endnotes 22 and 23 (formerly endnotes 21 and 22) revised (10-129)
74	IWB-2500	(1) Subparagraph (e)(1) revised (15-208) (2) Subparagraphs (f) and (g) added (09-1169)
77	Table IWB-2500-1 (B-A)	(1) Examination Method for B1.40 revised (13-1902) (2) Note (6) added (13-1902)
80	Table IWB-2500-1 (B-D)	(1) Successive Inspection Intervals for B3.90 and B3.100 revised (09-1169) (2) Examination Method for B3.100 revised (09-1169) (3) Notes (6) and (7) added (09-1169)
94	Table IWB-2500-1 (B-Q)	Revised (10-129)
119	IWB-3111	Subparagraphs (a) and (b) revised (14-2012, 15-208)
119	IWB-3112	(1) In subparas. (a)(2) and (a)(3), “nonsurface-connected” corrected by errata to “non-surface-connected” (16-2340) (2) Subparagraph (a)(3) revised (15-208)
119	IWB-3114	Deleted (14-2012)
119	IWB-3121	Subparagraphs (a) and (b) revised (14-2012, 15-208)
120	IWB-3124	Deleted (14-2012)
120	IWB-3131	Subparagraph (a) revised (15-208)
120	IWB-3132.3	Revised (15-208)
120	IWB-3134	Revised (14-2012)
120	IWB-3141	Subparagraphs (a) and (b) revised (15-208)
121	IWB-3142.4	Title and subparas. (a) and (b) revised (15-208)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
121	IWB-3144	Deleted (15-208)
121	IWB-3200	Subparagraphs (a) and (b) revised (15-205, 15-208)
122	Table IWB-3410-1	Last row deleted (10-129)
122	IWB-3510.1	Subparagraph (a) revised (10-129)
123	Table IWB-3510-1	Subtitle revised (14-1594)
124	Table IWB-3510-3	Subtitle revised (14-1594)
122	IWB-3510.4	Added (14-1594)
125	Table IWB-3512-1	Subtitle revised (14-1594)
126	Table IWB-3514-1	Subtitle revised (14-1594)
128	Table IWB-3514-4	Subtitle revised (14-1594)
131	Table IWB-3519.2-1	Subtitle revised (14-1594)
132	Table IWB-3519.2-2	Subtitle editorially revised
131	IWB-3521	Deleted (10-129)
131	IWB-3522.1	(1) Endnote number corrected by errata (16-422) (2) Subparagraphs (b) and (d) revised (09-1502) (3) Subparagraph (e) added and subsequent paragraph redesignated (09-1502)
133	IWB-3610	Subparagraph (d)(2) editorially revised
135	IWB-3630	Deleted (10-129)
137	IWB-3700	(1) Title revised (15-207) (2) IWA-3710 through IWA-3740 revised (15-207)
138	IWB-5221	(1) New subpara. (a) added and subsequent subparagraphs redesignated (15-10) (2) Subparagraph (d) added (11-1410)
138	IWB-5222	Subparagraphs (b)(1) and (b)(2) added (15-10)
142	IWC-2200	(1) In subpara. (a), second line corrected by errata (16-2340) (2) Subparagraph (b)(1) revised (15-2464) (3) New subpara. (b)(3) added and subsequent subparagraph redesignated (16-1195)
142	IWC-2420	(1) Subparagraphs (b) and (c) revised (15-208) (2) New subpara. (d) added and subsequent subparagraphs redesignated (15-208) (3) Subparagraph (e) [formerly (d)] revised (15-208)
143	IWC-2430	Subparagraphs (a)(2)(-a), (a)(2)(-b), (a)(2)(-c), and (b) revised (15-208)
144	IWC-2500	In subpara. (e)(1), second sentence revised (15-208)
156	Figure IWC-2500-3	General Note (b) corrected by errata (16-2947)
172	IWC-3111	Subparagraphs (a) and (b) revised (14-2012, 15-208)
172	IWC-3112	(1) Subparagraph (a)(3) revised (15-208) (2) In subpara. (a)(3), "nonsurface-connected" corrected by errata to "non-surface-connected" (16-2340)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
172	IWC-3114	Deleted (14-2012)
173	IWC-3122.3	Revised (15-208)
173	IWC-3125	Revised (14-2012, 15-208)
173	IWC-3131	Revised (14-2012, 15-208)
173	IWC-3132.3	Subparagraph (a) revised (15-208)
173	IWC-3134	Deleted (14-2012)
174	IWC-3200	Revised (14-2012, 15-205, 15-208)
180	IWC-3516.1	(1) Subparagraphs (b) and (d) revised (09-1502) (2) Subparagraph (e) added and subsequent subparagraphs redesignated (09-1502)
182	IWC-5221	Revised (15-1774)
185	IWD-2200	Revised by errata (16-2340)
185	IWD-2411	In subpara. (a), fourth line, "of" corrected by errata to "of Examination" (16-2340)
185	IWD-2420	Subparagraphs (b), (c), and (d) revised (15-208)
186	IWD-2430	Subparagraphs (a)(2)(-a), (a)(2)(-b), (a)(2)(-c), and (b) revised (15-208)
191	IWD-3131	Revised (14-2012, 15-208)
191	IWD-3132.3	Subparagraph (a) revised (15-208)
191	IWD-3134	Deleted (14-2012)
191	IWD-3200	Revised (15-208)
192	IWD-3511.1	(1) Subparagraphs (b) and (d) revised (09-1502) (2) New subpara. (e) added and subsequent subparagraphs redesignated (09-1502)
194	IWD-5221	Revised (15-1774)
196	IWE-1220	Subparagraphs (a), (b), and (c) revised by errata (16-2340)
198	IWE-2200	Subparagraph (d) revised (15-2464)
200	Table IWE-2411-1	Revised in its entirety (14-2187)
200	IWE-2430	Added (14-2187)
202	Table IWE-2500-1 (E-A)	(1) Revised (14-2187, 16-1775) (2) Note (4) revised (14-2187) (3) Note (5) added (14-2187)
204	Table IWE-2500-1 (E-C)	Row E4.10 revised (16-1775)
207	IWE-3122.3	Subparagraph (a) revised (14-870)
208	IWE-3200	Period added at the end of the paragraph by errata (16-2340)
208	IWE-3511	Revised (15-208, 14-870)
208	IWE-3513	Subparagraph (a) revised (14-870)
208	IWE-3514	Added (14-2187)
209	IWE-3521	Subparagraph (a) revised (14-870)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
210	IWE-5224	Title and subpara. (a) revised by errata (16-2947)
215	IWF-2420	Subparagraph (c) revised (14-1323)
216	IWF-2430	"Subparagraphs (a), (a)(1)(-a), (a)(1)(-b), (a)(1)(-c), (a)(1)(-d), (a)(2)(-a), (a)(2)(-b), (a)(2)(-c), (a)(2)(-d), and (b) revised (14-1323, 15-208, 15-1321)
218	Table IWF-2500-1 (F-A)	(1) Revised (16-362) (2) Note (1) deleted and remaining notes renumbered (16-362)
219	Article IWF-3000	Title revised (15-208)
219	IWF-3111	Revised (15-208)
219	IWF-3121	Revised (15-208)
220	IWF-3200	Revised (15-208)
220	IWF-3410	Subparagraph (a)(7) added (15-2541)
221	IWL-1100	Subparagraph (a) editorially revised
223	IWL-2410	Subparagraph (a) editorially revised
232	IWL-3111	Revised (15-208)
232	IWL-3112	Title revised (15-208)
232	IWL-3211	Revised (15-208)
232	IWL-3212	Title revised (15-208)
233	IWL-3222	Title revised (15-208)
233	IWL-3300	Titles of IWL-3300 and IWL-3310 revised (15-208)
234	IWL-4220	Subparagraph (c) revised (15-208)
236	IWL-5210	Subparagraph (a) revised by errata (16-2947)
252	Table II-2	Line 21 revised (16-2520)
266	IV-2200	Subparagraph (b)(3) revised (15-205)
267	Table IV-3110-1	Last row added (13-107)
273	Mandatory Appendix IV, Supplement 2, 1.0	Subparagraphs (d)(2), (d)(2)(-a), and (d)(2)(-b) revised (16-35)
273	Mandatory Appendix IV, Supplement 3, 1.0	Subparagraph (b) revised (15-205)
274	Mandatory Appendix IV, Supplement 4	(1) Added (13-107) (2) Tables 3.2.2-1 and 3.3-1 added (13-107)
282	VI-4300	"Levels" corrected by errata to "Level" (16-2340)
285	Article VII-1000	Revised (10-129)
288	Table VII-4110-1	General Note (c) editorially revised
290	VII-4320	(1) "Levels" corrected by errata to "Level" throughout (16-2340) (2) VII-4323(c)(6) revised (15-205)
290	VII-4330	Subparagraph (a) revised (15-205)
290	VII-4341	In title, "Levels" corrected by errata to "Level" (16-2340)
290	VII-4350	In subpara. (b), "Levels" corrected by errata to "Level" (16-2340)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
291	VII-4400	"Levels" corrected by errata to "Level" (16-2340)
295	VIII-1100	Revised (16-255, 16-256)
304	Mandatory Appendix VIII, Supplement 2, 1.2	Subparagraph (a) revised and subpara. (c)(4) added (14-1377)
304	Mandatory Appendix VIII, Supplement 2, 1.3	Revised (14-1377)
305	Mandatory Appendix VIII, Supplement 2, 2.2	Revised (14-1377)
308	Mandatory Appendix VIII, Supplement 4, 3.2	Subparagraphs (b) and (c) revised (14-1379)
312	Mandatory Appendix VIII, Supplement 6, 3.2	Subparagraphs (b) and (c) revised (14-1379)
314	Mandatory Appendix VIII, Supplement 8	Revised in its entirety (16-1071)
315	Table VIII-S8-1	Note (1) revised (16-1071)
325	Mandatory Appendix XI	Added (14-1567)
329	Nonmandatory Appendix A	(1) Title revised (15-207) (2) In A-1100, first paragraph and subpara. (g) revised (15-207) (3) Endnote 44 revised (15-207)
330	Article A-2000	Title revised (15-207)
332	Figure A-3100-1	Variable t added to illustration (b) by errata (15-1931)
336	A-3311	Nomenclature following eq. (5) editorially reordered
338	A-3412	Revised (14-1546, 16-743)
338	A-3413	Subparagraphs (a) and (b) revised (16-743)
340	A-3422	First equation in subpara. (a) revised
347	A-3550	(1) Revised in its entirety (14-1546) (2) Tables A-3532-1 and A-3532-2 added (14-1546) (3) Figures A-3550-1 and A-3551-1 added (14-1546)
360	A-3560	(1) Revised in its entirety (16-743) (2) Figures A-3560-1 and A-3561-1 added (16-743)
372	A-3600	Table numbers revised (16-743)
373	Table A-3610-1	Row 17, last column; row 29, column 7; and row 52, column 4 entries revised (16-1167)
375	Table A-3610-2	Row 2, column 4; row 15, last column; row 18, last column; row 21, last column; row 24, last column; row 27, last column; row 30, last column; row 33, last column; row 36, last column; row 39, last column; row 42, last column; row 45, last column; row 48, last column; row 51, last column; row 54, last column; row 57, last column; row 60, last column; row 63, last column; row 66, last column; row 69, last column; row 72, last column; and row 75, last column entries revised (16-1167)
379	Table A-3610-4	Row 12, column 7 revised (16-1167)
372	A-3640	Added (14-1546)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
372	A-3650	(1) Added (14-1546) (2) Tables A-3650-1 through A-3650-8 added (14-1546)
372	A-3660	(1) Added (16-743) (2) Tables A-3660-1 through A-3660-8 added (14-1546)
413	A-4200	U.S. Customary equation for $RT_{K_{Ia}}$ corrected by errata (16-1118)
423	Article A-5000	Title revised (15-207)
423	A-5200	Subparagraph (b)(1)(-d) corrected by errata (16-422)
427	Article A-9000	(1) Definition of <i>flaw acceptance criteria</i> deleted (15-207) (2) Definition of <i>linear elastic fracture mechanics</i> revised (15-207)
429	C-1100	Subparagraphs (a) and (a)(3) revised (15-207, 16-1160)
429	C-1200	(1) First paragraph and subparas. (e) and (g) revised (15-207, 16-1160) (2) Subparagraph (h) editorially revised
430	C-1300	(1) Nomenclature for a , C_o , J_{1mm} , M , M_b , M_e , and NPS revised (16-1160) (2) Nomenclature for DN , M_x , M_y , M_z , and τ added (16-1160)
433	C-2500	(1) First paragraph revised (16-1160) (2) Nomenclature in subpara. (a) revised (16-1160)
434	C-2610	Revised (16-1160)
441	C-3210	Subparagraph (a) revised (16-1160)
441	C-3220	Subparagraph (a)(2) revised (16-1160)
443	C-4100	Revised (16-1160)
443	C-4221	Revised (16-1160)
443	C-4310	Revised (16-1160)
448	Figure C-4310-1	Title revised (16-1160)
448	Figure C-4310-2	Title revised (16-1160)
449	Figure C-4310-3	Added (16-1160)
449	Figure C-4310-4	Added (16-1160)
450	C-5100	Revised (16-1160)
450	C-5300	Subparagraph (b) revised (16-1160)
452	C-5400	Subparagraph (b) revised (16-1160)
453	C-5420	Revised (16-1160)
461	C-6100	Revised (16-1160)
461	C-6311	In Step 1, nomenclature added (16-1160)
462	C-6312	(1) Revised (15-207) (2) In Step 1, nomenclature added (16-1160)
462	C-6321	Nomenclature revised (16-1160)
463	C-6322	Nomenclature revised (16-1160)
464	C-6400	Subparagraph (b) revised (16-1160)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
465	C-6420	Revised (16-1160)
473	C-7100	Revised (16-1160)
474	C-7320	Revised (16-1160)
475	C-7420	Revised (16-1160)
477	C-8321	Subparagraph (a) revised (16-1160)
483	Table C-8321-1	Units of measure added to column heads by errata (15-1207)
484	Table C-8322-1	Units of measure added to column heads by errata (15-1207)
497	Nonmandatory Appendix E	Title revised (15-207)
497	E-1100	Revised (15-207)
497	E-1300	Title and subparas. (a) and (b) revised (15-207)
498	Table E-2	Title and Note (2) revised (15-207)
499	G-1100	Revised (15-207)
500	G-2110	Subparagraph (a) editorially revised
500	G-2120	Metric equivalents revised (15-2241)
502	G-2214.3	In subpara. (b) equations, units added (15-2241)
512	Figure G-2214-1	Revised (15-2241)
513	Figure G-2214-1M	Revised (15-2241)
503	G-2215	In subpara. (b)(4), metric equivalent for 200°F revised (15-2241)
504	G-2216	Paragraph below metric nomenclature revised (15-207)
507	G-2222	Subparagraphs (b) and (d) revised (15-207)
507	G-2223	Equation (5) and subpara. (e) revised (15-207, 15-2241)
509	G-2520	Paragraph below metric nomenclature revised (15-207)
516	G-3100	Last line revised (15-207)
517	G-4100	Revised (15-207)
518	H-1100	In first paragraph, first line revised (15-207)
519	H-1200	First line revised (15-207)
532	Article J-2000	Subparagraphs (b)(2) and (b)(6) revised (15-206, 15-1810)
535	Article K-1000	(1) In K-1100, first and second sentences revised (15-207) (2) In K-1200, title, first paragraph, and subpara. (d) revised (15-207) (3) In K-1300, nomenclature for A and σ_o revised (15-207)
537	Article K-2000	(1) In K-2100, first sentence revised (15-207) (2) In K-2200, subparas. (a), (a)(1), and (b) revised (15-207) (3) In K-2300 and K-2400, subparas. (a) and (b) revised (15-207)
539	Article K-3000	(1) Title revised (15-207) (2) K-3100 and K-3500 revised (15-207) (3) In K-3300, first paragraph, first and third lines revised (15-207)
541	Article K-4000	(1) Title revised (15-207)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
		(2) Titles of K-4200, K-4220, K-4300, K-4323, and K-4333 revised (15-207)
		(3) In K-4310, first sentence revised (15-207)
		(4) In K-4331, paragraph below metric eqs. (5) and (7) revised (15-207)
550	Article K-5000	(1) Title revised (15-207) (2) In K-5100, first line revised (15-207) (3) In K-5200, title revised (15-207) (4) In K-5220, title and subpara. (b) revised (15-207) (5) In K-5300, title and subparas. (a), (b)(1), and (c) revised (15-207) (6) K-5400 revised (15-207)
552	L-1100	Last sentence revised (15-207)
552	L-1200	Revised (15-207)
553	Article L-2000	(1) Title revised (15-207) (2) L-2100 revised (15-207) (3) Titles of L-2200 and L-2210 revised (15-207)
554	Article L-3000	Title revised (15-207)
554	L-3100	(1) Revised (15-207) (2) In L-3110, subparas. (a) and (e) revised (15-207)
555	Figure L-3110-1	Title revised (15-207)
557	L-3300	(1) Revised (15-207) (2) Titles of L-3310, L-3320, L-3330, and L-3340 revised (15-207) (3) In L-3311 and L-3331, title and subpara. (a) revised (15-207)
557	L-3410	Subparagraph (a) revised (15-207)
559	L-4200	Revised (15-207)
566	Nonmandatory Appendix O	(1) Title revised (15-207) (2) O-1100 and O-1200 revised (15-207)
567	Article O-2000	(1) Title revised (15-207) (2) In O-2400, last sentence revised (15-207) (3) In O-2500, first line revised (15-207)
569	Article O-3000	(1) Title revised (15-207) (2) O-3100 and O-3200 revised (15-207) (3) In O-3230, subpara. (a)(4) revised (15-207) (4) In O-3300, title revised (15-207)
576	Article Q-3000	Subparagraph (a) revised (15-206)
580	Table R-1320-1	Note (1) revised (15-208)
580	R-1330	Title revised (15-208)
581	R-2220	Subparagraph (b) revised (15-208)
581	R-2410	Subparagraphs (b), (c)(1), and (c)(2) revised (15-208)
582	R-2500	Revised (07-486)
583	Table R-2500-1	(1) For R1.11, third and fourth columns revised (07-486) (2) Notes (1), (2), (3), and (4) revised (14-1573, 15-208) (3) Note (10) added (07-486)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
585	Figure R-2500-1	Added (07-486)
591	Nonmandatory Appendix R, Supplement 1, 2.4	Revised (15-208)
592	Nonmandatory Appendix R, Supplement 1, 3.1	Subparagraph (a) revised (15-208)
593	Nonmandatory Appendix R, Supplement 1, 4.2.4	First paragraph and subpara. (a) revised (15-208)
594	Nonmandatory Appendix R, Supplement 1, 4.2.5	Subparagraphs (d)(2), (f), and (i) revised (15-208)
596	Nonmandatory Appendix R, Supplement 1, 4.2.7	Revised (15-208)
596	Nonmandatory Appendix R, Supplement 1, 4.2.8	Subparagraphs (b)(1) and (b)(2) revised (15-208)
597	Nonmandatory Appendix R, Supplement 1, 4.2.9	Title and subparas (a), (c)(5), (d), (d)(1), (d)(3), and (d)(4) revised (15-208)
599	Nonmandatory Appendix R, Supplement 1, 5.0	Title and paras. 5.1, 5.2, and 5.3 revised (15-208)
599	Nonmandatory Appendix R, Supplement 2, 1.0	Revised (15-208)
600	Nonmandatory Appendix R, Supplement 2, 2.0	Revised (15-208)
607	Table R-S2-1	Third column for ECSCC revised (14-1573)
600	Nonmandatory Appendix R, Supplement 2, 3.2	(1) Title revised (15-208) (2) In 3.2.1, first paragraph revised (15-208) (3) In 3.2.2, subparas. (b)(3), (c), (d), and (e) revised (15-208)
603	Nonmandatory Appendix R, Supplement 2, 6.0	Title and subparas. (a), (b)(1), (b)(2), and (b)(2)(-b) revised (15-208)
604	Nonmandatory Appendix R, Supplement 2, 7.0	Title and paras. 7.1, 7.2, and 7.3 revised (15-208)
612	S-1100	Revised (15-205)
620	Nonmandatory Appendix U	Title revised (15-207)
621	Supplement U-S1	Title revised (15-207)
621	U-S1-1	First paragraph and subpara. (c) revised (15-207)
621	U-S1-2	Subparagraphs (c), (d), (e), (f), and (h) revised (15-207)
621	U-S1-3	Nomenclature for t_{adj} revised (15-207)
622	U-S1-4	Title and U-S1-4.1, U-S1-4.2, and U-S1-4.2.1 through U-S1-4.2.4 revised (15-207, 16-1158)
625	U-S1-5	Revised (15-207)
634	Supplement U-S2	Title revised (15-207)
634	U-S2-1	Subparagraphs (b) and (c) revised (15-207)
634	U-S2-2	U-S2-2.1 through U-S2-2.6 revised (15-207)

<i>Page</i>	<i>Location</i>	<i>Change (Record Number)</i>
636	U-S2-4	(1) Revised (15-207) (2) U-S2-4.1 through U-S2-4.3 revised (15-207)
637	U-S2-5	Title, first paragraph, and subpara. (c) revised (15-207)
637	U-S2-6	Subparagraphs (a) and (e) revised (15-207)

LIST OF CHANGES IN RECORD NUMBER ORDER

Record Number	Change
07-486	Replaced existing reference to Note (8) with reference to new Note (10) in Nonmandatory Appendix R, Table R-2500-1, Item No. R1.11. Clarified the associated examination qualifications in Nonmandatory Appendix R, R-2500.
08-1139	Added new IWA-2324, titled "Practical Examination Techniques for CP-189."
09-835	Added new IWA-5120 for Periodic System Pressure Test Exemptions and a new IWA-5242 for Pneumatic Component Testing to provide better rules for pressure testing pneumatically filled, classed systems or portions of systems. Modified IWA-5110 and IWA-5250 to work with these two new sections.
09-1141	Revised IWA-4540 to include items from NB/NC/ND-6111 and IWC/IWD-5230 that are exempt from pressure testing. Made editorial clarifications.
09-1169	Added subparas. (f) and (g) to IWB-2500 to describe requirements for using alternate examination frequencies. Added Notes (6) and (7) to Table IWB-2500-1 (B-D) to reference IWB-2500(f) and IWB-2500(g).
09-1502	Revised IWB-3522.1, IWC-3516.1, and IWD-3511.1 to clarify relevant conditions for which acceptance in accordance with IWB-3142 and IWA-5250 is required, prior to continued service.
10-129	Revised IWA-2312 and IWA-2315 and Mandatory Appendix VII to properly address the eddy current training and qualification requirements and to remove the preservice requirements and acceptance standards. Revised Table IWB-2500-1 (B-Q) to refer to Technical Specifications only.
10-1838	Revised IWA-4461 to expand applicability so that all materials are included. Revised IWA-4461.4 to provide requirements for alternatives to mechanical processing for materials both with and without P-numbers.
11-808 (Intp)	Approved Intent Interpretation 11-808b and associated Code changes to IWA-5241(f) and IWA-5250(a)(2) for portions of borated systems that do not normally contain borated solution. Previously, 11-808a was approved to clarify IWA-4540(c) exemptions for joints made NPS 1 and smaller during a repair/replacement activity.
11-1100	Replaced the term "summary report" with the term "OAR-1" to be consistent with the 2015 Edition changes made in Record 09-1697. This record contains a partial set of broader planned Section XI changes to paragraphs containing specific regulatory requirements. In recognition of the international use of ASME Section XI, the potential differing regulatory requirements in different countries, and need to address changes in regulatory requirements in the United States and internationally, applicable regulatory authorities should impose their specific requirements in their regulations rather than ASME attempting to include the specific requirements in Section XI. It is noted that some general regulatory requirements and interface with the regulatory authorities is expected to be retained in Section XI.
11-1410	Revised IWA-5213(b) to show extended hold times. Added IWB-5221(c) to define an alternative reduced test pressure for BWRs following repair/replacement activities.
13-107	Incorporated Code Case N-773 as a new Mandatory Appendix IV, Supplement 4.
13-178	Revised IWA-4600 for consistency with approved rules from Code Case N-839 (Record 06-859), Code Case N-638-7 (Record 10-550), and Code Case N-638-8 (Record 14-8). Eliminated potential conflicts with Section IX, QW-290 (weld procedure requirements) and Section III (exemption from impact testing for cladding).
13-1902	Added Note (6) to Table IWB-2500-1 (B-A) related to Item No. B1.40.
13-2222	Revised the front guidance on interpretations in its entirety.
14-711	Revised IWA-4421 "General Requirements" to delete subpara. (e) referencing IWA-4340 and to modify subpara. (c) by adding subparas. (1) (addressing defect removal by removing all or a portion of the defective item) and (2) (addressing restoration of thinned areas by welding). Removed the term "mitigation" from IWA-4421 to make it clear that defect removal is mandatory when repairs are performed in accordance with IWA-4421.
14-870	Revised IWE-3122.3(a), IWE-3511, IWE-3513(a), and IWE-3521(a).

Record Number	Change
14-1323	Revised IWF-2420 to address repair/replacement activities to be consistent with IWF-3112.2 and IWF-3122.2. Revised IWF-2430(a) to clarify that additional examinations are required when repair/replacement activities are required to correct unacceptable support conditions.
14-1377	Revised Mandatory Appendix VIII, Supplement 2 to address axial flaw criteria and to clarify categorization of service-induced flawed specimens.
14-1379	Revised Mandatory Appendix VIII, Supplement 4 and Supplement 6 to address administration of detection and sizing tests when performed separately or in conjunction.
14-1483	Revised IWA-1400(q) to reword the “evaluated and analysis” terms, and deleted five existing and added two new evaluation paragraph references. Revised IWA-6230(b)(1) to add the words “analytical or engineering” before the existing “evaluation” term, and added the same evaluation paragraph references as in revised IWA-1400(q). Revised Mandatory Appendix II, Form OAR-1, Table 1 (two places) and Table II-2, lines 21 and 22 by adding the words “analytical or engineering” before the existing “evaluation” terms.
14-1546	Implemented new axial ID flaw equations and tables into Nonmandatory Appendix A, Article A-3000. The changes affect A-3412, A-3550, and A-3600 given in Record 10-783.
14-1567	Added new Mandatory Appendix XI, which provides an interface between Section XI and Section III, Mandatory Appendix XXVI for installation of HDPE piping in an operating nuclear power plant.
14-1573	Deleted “length of the” from Note (1) in Nonmandatory Appendix R, Table R-2500-1. Deleted “Includes examination locations and” and “that typically” from Note (2) in Nonmandatory Appendix R, Table R-2500-1. Inserted “essentially” between “Includes” and “100%” and replaced “location” with “volume or area” in Note (3) in Nonmandatory Appendix R, Table R-2500-1. Replaced current Note (4) in Nonmandatory Appendix R, Table R-2500-1 with Notes (4) and (5) from Table IWB-2500-1 (B-J) (deleting reference to Categories B-F and B-J). Replaced “tensile strength” with “tensile stress” in Nonmandatory Appendix R, Table R-S2-1. Revised the next condition at the “or” with “OR” as a line separator between the two conditions in Nonmandatory Appendix R, Table R-S2-1.
14-1594	Added new IWB-3510.4 to define IWB-3500 ferritic steel limitation/requirements and include those steel specifications that have met the fracture toughness requirements.
14-2012	Reinstated “and IWC-3133” (i.e., not deleted) in IWC-3131 as that deletion is unrelated to regulatory requirements (however is part of record 15-208 changes). Reinstated “and IWD-3133” (i.e., not deleted) in IWD-3131 as that deletion is unrelated to regulatory requirements (however is part of record 15-208 changes). Removed references to regulator review since everything is subject to review by the regulator. Retained specific requirements for submittals to the regulator. Removed endnote 19 (callout from IWB-1220), discussing regulator jurisdiction, as it is already clearly stated in IWA-1320(b).
14-2187	Added columns for Minimum and Maximum Examinations per period to Table IWE-2411-1. Added section IWE-2430 for additional examinations (scope expansion). Added Item No. E1.32 for Accessible Leak Chase Channel System Closures and explanatory Note (5) to Table IWE-2500-1. Added section IWE-3514 for acceptance criteria for the Item No. E132 exams.
15-3	Revised IWA-4150(b) and deleted IWA-4150(d) to remove regulatory requirement wording. This record contains a partial set of broader planned Section XI changes to paragraphs containing specific regulatory requirements. In recognition of the international use of ASME Section XI, the potential differing regulatory requirements in different countries, and need to address changes in regulatory requirements in the United States and internationally, applicable regulatory authorities should impose their specific requirements in their regulations rather than ASME attempting to include the specific requirements in Section XI. It is noted that some general regulatory requirements and interface with the regulatory authorities is expected to be retained in Section XI.
15-10	Added new IWB-5221(a) incorporating Code Case N-731. Added new IWB-5222(b)(1) and IWB-5222(b)(2) incorporating Code Cases N-798 and N-800. Revised IWA-5213.
15-11	Revised IWA-5213.
15-205	Revised IWA-2200; IWA-2315; IWA-2330; IWB-3200(a); IWC-3200(a); Mandatory Appendix IV, IV-2200 and Supplement 3, 1.0(b); Mandatory Appendix VII, VII-4323(c) and VII-4330; and Nonmandatory Appendix S, S-1100.

Record Number	Change
15-206	Added "NDE evaluation" to Article IWA-9000. Revised IWA-4332; IWA-4422.1; IWA-4611.2; IWA-4666.1; IWA-4666.2; Nonmandatory Appendix J, Article J-2000; and Nonmandatory Appendix Q, Article Q-3000 to reflect new evaluation terminology.
15-207	Revised the definitions for "analytical evaluation" and "structural factor" in Article IWA-9000, Glossary. Revised IWB-3630 and IWB-3700. Revised Nonmandatory Appendices A, C, E, G, H, K, L, O, and U. Revised endnote 44.
15-208	Updated the definitions for "analytical evaluation," "engineering evaluation," and "NDE evaluation" that were originally in Article IWA-9000 or incorporated under Record Nos. 12-552 and 15-206. Incorporated the correct use of these terms and any associated use of the term "evaluation" into those sections of Section XI that are under the jurisdiction of the Subgroup on Water Cooled Systems.
15-1123	Revised IWA-4610(b)(1)(e)(-2) to clarify that impact testing of the procedure qualification weld metal may be limited to Charpy V-notch testing even when drop weight testing of the test coupon weld metal is required by the Construction Code. Corrected IWA-4610(b)(1)(e) by including references to IWA-4670 and IWA-4680.
15-1207	Errata correction. See Summary of Changes for details.
15-1321	Revised IWF-2430(a)(1)(c) to replace "corrective actions" with "corrective measures or repair/replacement activities" in the last sentence to be consistent with changes addressed in Record 14-1323.
15-1647	Added new IWA-4321(e) to incorporate the requirements of Section III, NB-3671.7 for sleeve coupled or other patented joints. Added introduction to IWA-4321, mirroring the lead-in in Section III, NB-3671 with some minor changes to align with Section XI language.
15-1675	Revised IWA 4663.1 to clarify impact test requirements.
15-1774	Revised IWC-5221 and IWD-5221.
15-1810	Revised Article IWA-4000 to clarify that the scope of Article IWA-4000 relative to design includes rerating and excludes all other design-only activities, which are not to be considered repair/replacement activities.
15-1931	Errata correction. See Summary of Changes for details.
15-2241	Corrected the stress intensity coefficients in SI units in Nonmandatory Appendix G, G-2214.3. Corrected eq. (5) in Nonmandatory Appendix G, G-2223. Corrected or added several notations referring to SI units.
15-2371	Updated the revision dates for ASTM standards D95, D512, D974, D992, E185, E1921, and E2215 in Table IWA-1600-1.
15-2464	Replaced references to Section III with references to the Construction Code or to Owner-determined Classifications.
15-2541	Added IWF-3410(a)(7) to provide acceptance criteria for visual examination of viscoelastic dampers.
15-2839	Revised the second sentence of IWB-2200(a) to read "In addition, except in those components exempted from examination by IWB-1220(a), IWB-1220(b), or IWB-1220(c), these preservice examinations shall be extended to include the defined examination extent of all of the pressure-retaining welds in all Class 1 components categorized under the Item Numbers in Table IWB-2500-1, regardless of the sample sizes applicable to inservice inspection."
16-35	Revised Mandatory Appendix IV, Supplement 2, 1.0 to provide specific eddy current examination qualification criteria for austenitic stainless steels and nickel alloys and different qualification criteria for ferritic materials based on the IWB-3500 tables.
16-44	Added IWA-2318, Qualifications for Pneumatic Pressure Test Personnel to provide personnel qualification requirements for personnel performing pneumatic pressure tests for systems and components containing compressible fluids during normal plant operation.
16-255	Added information to Article VIII-1000 that will be used to describe the term performance demonstration administrator (PDA).
16-256 (Intp)	Added new subpara. (f) to Mandatory Appendix VIII, Article VIII-1000.
16-362	Moved "Note (1)" from column header to Item Nos. F1.10, F1.20, and F1.30 in Table IWF-2500-1, effectively removing Note (1) from Item No. F1.40.
16-422	Errata correction. See Summary of Changes for details.

Record Number	Change
16-743	Added the OD axial flaw equations into Nonmandatory Appendix A, Article A-3000. The changes affect A-3412, A-3413, A-3560, and A-3600.
16-908	Revised IWA-4663.1 to clarify impact test requirements.
16-1071	Replaced Mandatory Appendix VIII, Supplement 8 with the ASME Board-approved wording of Code Case N-845, as reflected in Record Numbers 13-2273 and 16-258.
16-1118	Errata correction. See Summary of Changes for details.
16-1154	Deleted IWA-4650 and revised IWA-4600(b)(2) to allow IWA-4670 and IWA-4680 ambient temperature temper bead for welding of Class MC and CC containments. Allowed existing IWA-4650 WPSs and PQRs to continue to be used without requalification.
16-1158	Revised U-S1-4.2.1(c) in Nonmandatory Appendix U-S Supplements to include important guidance related to the LEFM analysis of through-wall flaws.
16-1160	Clarified applicability to subsurface flaws throughout, surface flaws on internal/external surfaces, and definitions throughout. Updated stress intensity factor solutions as appropriate. Added provisions for torsion. Resolved errata items.
16-1167	Revised Tables A-3610-1, A-3610-2, and A-3610-4.
16-1195	Added new IWB-2200(b)(3) and IWC-2200(b)(3) to address qualification requirements for NDE personnel performing magnetic particle and liquid penetrant examinations. Changed the existing IWB-2200(b)(3) to IWB-2200(b)(4).
16-1775	Changed formatting of Tables IWE-2500-1 (E-A) and IWE-2500-1 (E-C). For Table IWE-2500-1 (E-A), continued the line separating Item No. E1.10 from Item No. E1.11 completely across the table. This made the column input "blank" for Item No. E1.10 starting at the third column. For Table IWE-2500-1 (E-C), continued the line separating Item No. E4.10 from Item No. E4.11 completely across the table. This made the column input "blank" for Item No. E4.10 starting at the third column.
16-2340	Errata correction. See Summary of Changes for details.
16-2520	Revised IWA-1400(l), (m), and (q) to use the generic "evaluation" term. Revised IWA-1400(q) to use the word "service" instead of "operation" in two places and to use the words "in accordance with" instead of "as permitted by." Added the five referenced paragraphs deleted by approved record 14-1483. In IWA-6230(b)(1), used the generic "evaluation" term and made a number of wording changes to clarify exactly what referenced paragraphs require reporting on Form OAR-1. Revised IWA-6340 to use the generic "evaluation" term and other wording to agree with the wording of IWA-1400(q) and IWA-6230(b)(1). Revised Mandatory Appendix II, Form OAR-1, Table 1, and the Table II-2 Guide for Completing Form OAR-1 to use the generic "evaluation" term as was originally published in the 2015 Edition, and added the words "flaws or relevant" within the second sentence of line 21.
16-2947	Errata correction. See Summary of Changes for details.

CROSS-REFERENCING AND STYLISTIC CHANGES IN THE BOILER AND PRESSURE VESSEL CODE

There have been structural and stylistic changes to BPVC, starting with the 2011 Addenda, that should be noted to aid navigating the contents. The following is an overview of the changes:

Subparagraph Breakdowns/Nested Lists Hierarchy

- First-level breakdowns are designated as (a), (b), (c), etc., as in the past.
- Second-level breakdowns are designated as (1), (2), (3), etc., as in the past.
- Third-level breakdowns are now designated as (-a), (-b), (-c), etc.
- Fourth-level breakdowns are now designated as (-1), (-2), (-3), etc.
- Fifth-level breakdowns are now designated as (+a), (+b), (+c), etc.
- Sixth-level breakdowns are now designated as (+1), (+2), etc.

Footnotes

With the exception of those included in the front matter (roman-numbered pages), all footnotes are treated as endnotes. The endnotes are referenced in numeric order and appear at the end of each BPVC section/subsection.

Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees

Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees has been moved to the front matter. This information now appears in all Boiler Code Sections (except for Code Case books).

Cross-References

It is our intention to establish cross-reference link functionality in the current edition and moving forward. To facilitate this, cross-reference style has changed. Cross-references within a subsection or subarticle will not include the designator/identifier of that subsection/subarticle. Examples follow:

- *(Sub-)Paragraph Cross-References.* The cross-references to subparagraph breakdowns will follow the hierarchy of the designators under which the breakdown appears.
 - If subparagraph (-a) appears in X.1(c)(1) and is referenced in X.1(c)(1), it will be referenced as (-a).
 - If subparagraph (-a) appears in X.1(c)(1) but is referenced in X.1(c)(2), it will be referenced as (1)(-a).
 - If subparagraph (-a) appears in X.1(c)(1) but is referenced in X.1(e)(1), it will be referenced as (c)(1)(-a).
 - If subparagraph (-a) appears in X.1(c)(1) but is referenced in X.2(c)(2), it will be referenced as X.1(c)(1)(-a).
- *Equation Cross-References.* The cross-references to equations will follow the same logic. For example, if eq. (1) appears in X.1(a)(1) but is referenced in X.1(b), it will be referenced as eq. (a)(1)(1). If eq. (1) appears in X.1(a)(1) but is referenced in a different subsection/subarticle/paragraph, it will be referenced as eq. X.1(a)(1)(1).

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DIVISION 1

RULES FOR INSPECTION AND TESTING OF COMPONENTS OF LIGHT-WATER-COOLED PLANTS

SUBSECTION IWA GENERAL REQUIREMENTS

ARTICLE IWA-1000 SCOPE AND RESPONSIBILITY

IWA-1100 SCOPE

This Division provides requirements for inservice inspection and testing of light-water-cooled nuclear power plants. The requirements identify the areas subject to inspection, responsibilities, provisions for accessibility and inspectability, examination methods and procedures, personnel qualifications, frequency of inspection, record keeping and report requirements, procedures for evaluation of inspection results and subsequent disposition of results of evaluations, and repair/replacement activity requirements, including procurement, design, welding, brazing, defect removal, fabrication, installation, examination, and pressure testing.

IWA-1200 JURISDICTION

The jurisdiction of this Division covers individual components and complete plants that have met all the requirements of the Construction Code, commencing when the Construction Code requirements have been met, irrespective of physical location. When portions of systems or plants are completed at different times, jurisdiction of this Division shall cover only those portions for which all of the construction requirements have been met. Prior to installation, an item that has met all

requirements of the Construction Code may be corrected using the rules of either the Construction Code or this Division, as determined by the Owner.

IWA-1300 APPLICATION

IWA-1310 COMPONENTS SUBJECT TO INSPECTION AND TESTING

(17)

Components identified in this Division for inspection and testing shall be included in the inservice inspection plan. These components include nuclear power plant items such as vessels, containments, piping systems, pumps, valves, core support structures, and storage tanks, including their respective supports.

IWA-1320 CLASSIFICATIONS

(a) Application of the rules of this Division shall be governed by the group classification criteria of the regulatory authority having jurisdiction at the plant site as follows.

(1) The rules of [Subsection IWB](#) shall be applied to those systems whose components are classified ASME Class 1.

(2) The rules of [Subsection IWC](#) shall be applied to those systems whose components are classified ASME Class 2.