

# SECTION XI

Rules for Inservice Inspection of  
Nuclear Reactor Facility Components

# 2023

ASME Boiler and  
Pressure Vessel Code  
An International Code

## Division 2

Requirements for Reliability and  
Integrity Management (RIM)  
Programs for Nuclear Reactor Facilities

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AN INTERNATIONAL CODE

# 2023 ASME Boiler & Pressure Vessel Code

2023 Edition

July 1, 2023

## XI

### RULES FOR INSERVICE INSPECTION OF NUCLEAR REACTOR FACILITY COMPONENTS

#### Division 2

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#### Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Reactor Facilities

ASME Boiler and Pressure Vessel Committee  
on Nuclear Inservice Inspection



The American Society of  
Mechanical Engineers

Two Park Avenue • New York, NY • 10016 USA

Date of Issuance: July 1, 2023

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Library of Congress Catalog Card Number: 56-3934

Adopted by the Council of The American Society of Mechanical Engineers, 1914; latest edition 2023.

The American Society of Mechanical Engineers  
Two Park Avenue, New York, NY 10016-5990

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# TABLE OF CONTENTS

List of Sections .....	viii
Foreword .....	ix
Statement of Policy on the Use of the ASME Single Certification Mark and Code Authorization in Advertising .....	xi
Statement of Policy on the Use of ASME Marking to Identify Manufactured Items .....	xi
Personnel .....	xii
Correspondence With the Committee .....	xxxiv
Preface to Section XI .....	xxxvi
Organization of Section XI .....	xxxvii
Summary of Changes .....	xli
Cross-Referencing in the ASME BPVC .....	xlii
<b>Article RIM-1</b>	
<b>Scope and Responsibility</b> .....	1
RIM-1.1 Scope .....	1
RIM-1.2 Jurisdiction .....	1
RIM-1.3 Components Subject to the Requirements of This Division .....	1
RIM-1.4 Owner's Responsibility .....	1
RIM-1.5 Standard Units .....	2
RIM-1.6 Inspection .....	2
RIM-1.7 Regulatory Review .....	2
RIM-1.8 Tolerances .....	2
RIM-1.9 Referenced Standards and Specifications .....	3
<b>Article RIM-2</b>	
<b>Reliability and Integrity Management (RIM) Program</b> .....	4
RIM-2.1 RIM Program Overview .....	4
RIM-2.2 RIM Program Scope and Definition .....	4
RIM-2.3 Degradation Mechanism Assessment (DMA) .....	4
RIM-2.4 Facility and SSC Reliability Target Allocation .....	5
RIM-2.5 Identification and Evaluation of RIM Strategies .....	5
RIM-2.6 Evaluation of Uncertainties .....	6
RIM-2.7 RIM Program Implementation .....	6
RIM-2.8 Performance Monitoring and RIM Program Updates .....	9
RIM-2.9 Examination Methods .....	9
RIM-2.10 Additional Considerations for RIM Program Implementation .....	11
<b>Article RIM-3</b>	
<b>Acceptance Standards</b> .....	13
RIM-3.1 Evaluation of Examination Results and Acceptance Standards .....	13
<b>Article RIM-4</b>	
<b>Repair/Replacement Activities</b> .....	14
RIM-4.1 Scope .....	14
RIM-4.2 Leakage Test Requirements After a Repair/Replacement Activity .....	14
RIM-4.3 Responsibilities .....	15

RIM-4.4	Corrective Action . . . . .	15
RIM-4.5	Records . . . . .	15
<b>Article RIM-5</b>	<b>System Leakage Monitoring and Periodic Tests . . . . .</b>	<b>16</b>
RIM-5.1	Scope . . . . .	16
RIM-5.2	Leakage Monitoring . . . . .	16
RIM-5.3	Corrective Action . . . . .	16
RIM-5.4	Records . . . . .	16
<b>Article RIM-6</b>	<b>Records and Reports . . . . .</b>	<b>17</b>
RIM-6.1	Scope . . . . .	17
RIM-6.2	Documentation Requirements . . . . .	17
RIM-6.3	Record Retention . . . . .	17
<b>Article RIM-7</b>	<b>Glossary . . . . .</b>	<b>19</b>
RIM-7.1	Terms and Definitions . . . . .	19
RIM-7.2	Acronyms . . . . .	21
<b>Mandatory Appendix I</b>	<b>RIM Decision Flowcharts for Use With the RIM Program . . . . .</b>	<b>22</b>
<b>Article I-1</b>	<b>Flowcharts . . . . .</b>	<b>22</b>
I-1.1	General . . . . .	22
<b>Mandatory Appendix II</b>	<b>Derivation of Component Reliability Targets From Facility Safety Requirements . . . . .</b>	<b>29</b>
<b>Article II-1</b>	<b>General Requirements . . . . .</b>	<b>29</b>
II-1.1	Scope . . . . .	29
II-1.2	Adequacy of the PRA . . . . .	29
II-1.3	Procedure Overview . . . . .	29
<b>Article II-2</b>	<b>Derivation of Reliability Targets . . . . .</b>	<b>30</b>
II-2.1	Facility-Level Safety Requirements . . . . .	30
II-2.2	Allocation of Reliability Targets . . . . .	30
II-2.3	Identification of Component Groups . . . . .	30
II-2.4	Trial Assignment of Reliability Targets . . . . .	30
II-2.5	Evaluation of Impacts of Reliability Targets on Facility-Level Risk . . . . .	30
II-2.6	Determination of Reliability Targets . . . . .	30
<b>Mandatory Appendix III</b>	<b>Owner's Record and Report for RIM Program Activities . . . . .</b>	<b>31</b>
<b>Article III-1</b>	<b>Guides to Completing Forms . . . . .</b>	<b>31</b>
III-1.1	Form OAR-1 . . . . .	31
III-1.2	Form NIS-2 . . . . .	31
<b>Mandatory Appendix IV</b>	<b>Monitoring and NDE Qualification . . . . .</b>	<b>33</b>
<b>Article IV-1</b>	<b>Introduction . . . . .</b>	<b>33</b>
IV-1.1	Scope . . . . .	33
IV-1.2	Methods . . . . .	33
IV-1.3	Owner's Monitoring and NDE Expert Panel (MANDEEP) . . . . .	33
<b>Article IV-2</b>	<b>Personnel Qualification . . . . .</b>	<b>35</b>
IV-2.1	Basic Personnel Qualification . . . . .	35
IV-2.2	Method-Specific or Technique-Specific Personnel Qualifications . . . . .	35
<b>Article IV-3</b>	<b>Mande Methods and Techniques Reliability-Based Qualification . . . . .</b>	<b>36</b>
IV-3.1	General . . . . .	36
IV-3.2	Determination of the Qualification Requirements . . . . .	36

IV-3.3	Qualification Process . . . . .	36
<b>Article IV-4</b>	<b>MANDE Performance Demonstrations (Figure I-1.1-6) . . . . .</b>	<b>38</b>
IV-4.1	General . . . . .	38
IV-4.2	Personnel Performance Demonstration for Monitoring Methods . . . . .	38
IV-4.3	NDE Personnel Performance Demonstration . . . . .	38
IV-4.4	Procedure and Equipment Performance Demonstration . . . . .	38
<b>Article IV-5</b>	<b>Records . . . . .</b>	<b>39</b>
IV-5.1	General . . . . .	39
IV-5.2	Records for Methods and Technique Qualification . . . . .	39
IV-5.3	Records for Personnel Performance Demonstrations . . . . .	39
<b>Mandatory Appendix V</b>	<b>Catalog of NDE Requirements and Areas of Interest . . . . .</b>	<b>40</b>
<b>Article V-1</b>	<b>Examination Categories . . . . .</b>	<b>40</b>
V-1.1	Initial Consideration . . . . .	40
<b>Mandatory Appendix VI</b>	<b>Reliability and Integrity Management Expert Panel (RIMEP) . . . . .</b>	<b>49</b>
<b>Article VI-1</b>	<b>Overview . . . . .</b>	<b>49</b>
VI-1.1	Responsibilities and Qualifications of RIMEP . . . . .	49
<b>Mandatory Appendix VII</b>	<b>Supplements for Types of Nuclear Reactor Facilities . . . . .</b>	<b>50</b>
<b>Article VII-1</b>	<b>Supplement for Light Water Reactor-Type Facilities . . . . .</b>	<b>50</b>
VII-1.1	Scope . . . . .	50
VII-1.2	RIM Program — Damage Degradation Assessment . . . . .	50
VII-1.3	Acceptance Standards . . . . .	50
VII-1.4	Acceptance Standards for Specific Examination Categories . . . . .	59
VII-1.5	Analytical Evaluation of Planar Flaws . . . . .	65
VII-1.6	Analytical Evaluation of Facility Operating Events . . . . .	68
<b>Article VII-2</b>	<b>Supplement for Liquid Metal Reactor-Type Facilities . . . . .</b>	<b>69</b>
<b>Article VII-3</b>	<b>Supplement for High-Temperature Gas Reactor-Type Facilities . . . . .</b>	<b>70</b>
VII-3.1	Scope . . . . .	70
VII-3.2	RIM Program — Damage Degradation Assessment . . . . .	70
VII-3.3	Acceptance Standards . . . . .	70
VII-3.4	Acceptance Standards for Specific Examination Categories . . . . .	78
VII-3.5	Analytical Evaluation of Planar Flaws . . . . .	83
VII-3.6	Analytical Evaluation of Facility Operating Events . . . . .	86
<b>Article VII-4</b>	<b>Supplement for Molten Salt Reactor-Type Facilities . . . . .</b>	<b>88</b>
<b>Article VII-5</b>	<b>Supplement for Generation 2 LWR-Type Facilities . . . . .</b>	<b>89</b>
<b>Article VII-6</b>	<b>Supplement for Fusion Machine-Type Facilities . . . . .</b>	<b>90</b>
<b>Nonmandatory Appendix A</b>	<b>Alternate Requirements for Monitoring and NDE . . . . .</b>	<b>91</b>
<b>Article A-1</b>	<b>General . . . . .</b>	<b>91</b>
A-1.1	Scope . . . . .	91
A-1.2	Methods . . . . .	91
A-1.3	Responsibilities . . . . .	91
<b>Article A-2</b>	<b>Procedure for Determining Acceptability of Alternative Monitoring or NDE . . . . .</b>	<b>93</b>
A-2.1	Overview . . . . .	93
A-2.2	SSC Reliability Target . . . . .	93
A-2.3	Degradation Mechanisms and Failure Modes . . . . .	93

A-2.4	Approaches — Probabilistic and Deterministic . . . . .	93
<b>Article A-3</b>	<b>Stage I Evaluation</b> . . . . .	94
A-3.1	Introduction . . . . .	94
A-3.2	Input Related to Safety Evaluation . . . . .	94
A-3.3	Input Related to Structural Evaluation . . . . .	94
A-3.4	Probabilistic Approach — Reliability Evaluation . . . . .	94
A-3.5	Deterministic Approach — Margin Assessment . . . . .	94
<b>Article A-4</b>	<b>Stage II Evaluation</b> . . . . .	95
A-4.1	Introduction . . . . .	95
A-4.2	Input Related to Safety Evaluation . . . . .	95
A-4.3	Input Related to Structural Evaluation . . . . .	95
A-4.4	Detectability . . . . .	95
A-4.5	Criteria to Establish Additional Requirements . . . . .	95
A-4.6	Probabilistic Approach . . . . .	96
A-4.7	Deterministic Approach . . . . .	96
<b>Article A-5</b>	<b>Procedure for Structural Reliability Evaluation for Passive Components</b> . . . . .	97
A-5.1	General Requirements . . . . .	97
A-5.2	Reliability Evaluation . . . . .	97
A-5.3	Setting of Failure Scenario . . . . .	98
A-5.4	Modeling . . . . .	99
A-5.5	Reliability Calculation . . . . .	100
<b>Article A-6</b>	<b>Records and Reports</b> . . . . .	101
A-6.1	Retention of Records and Reports . . . . .	101
<b>Article A-7</b>	<b>References</b> . . . . .	102
<b>Nonmandatory Appendix B</b>	<b>Regulatory Administrative Provisions for Nuclear Reactor Facilities Using RIM Program</b> . . . . .	103
<b>Article B-1</b>	<b>General Requirements</b> . . . . .	103
B-1.1	Scope . . . . .	103
B-1.2	Application of Code Edition . . . . .	103
B-1.3	Application of Code Cases . . . . .	103
B-1.4	Review by Regulatory and Enforcement Authority Having Jurisdiction at the Facility Site . . . . .	103
B-1.5	Report Submittal . . . . .	103
<b>Article B-2</b>	<b>Requirements for Passive Components in the RIM Program</b> . . . . .	104
<b>Figures</b>		
I-1.1-1	Inputs to the RIMEP for NPP Owner's RIM Program Development . . . . .	23
I-1.1-2	RIM Program Development and Integration . . . . .	24
I-1.1-3	Process for Identifying the SSCs to Be in MANDE Program . . . . .	25
I-1.1-4	Selection of Strategies for SSCs to Meet Reliability Targets . . . . .	26
I-1.1-5	Upper Half Shows Input to MANDEEP for Developing MANDE Specification and Lower Half Shows Process for Evaluating if Section XI, Division 1 Requirements Meet MANDE Specifications . . . . .	27
I-1.1-6	Select, Develop, and Validate Performance Demonstration Approach to Meet SSC Reliability Target . . . . .	28



A-1.2-1	Logic Flow Diagram of the Process for Determining Acceptability of Alternative Requirements . . . . .	92
A-5.2.1-1	Reliability Evaluation Procedure . . . . .	97
A-5.3.1-1	Procedure for Setting Failure Scenarios . . . . .	98
A-5.4.1-1	Modeling Procedure . . . . .	99
<b>Tables</b>		
RIM-1.9-1	Referenced Standards and Specifications . . . . .	3
III-1.1-1	Guide for Completing Form OAR-1 . . . . .	32
V-1.1-1	Examination Category A, Pressure-Retaining Welds in Reactor Vessels .	40
V-1.1-2	Examination Category B, Pressure-Retaining Welds in Vessels Other Than Reactor Vessels . . . . .	41
V-1.1-3	Examination Category D, Full-Penetration Welded Nozzles in Vessels .	41
V-1.1-4	Examination Category F, Pressure-Retaining Dissimilar Welds in Vessel Nozzles . . . . .	42
V-1.1-5	Examination Category G-1, Pressure-Retaining Bolting Greater Than 2 in. (50 mm) in Diameter . . . . .	43
V-1.1-6	Examination Category G-2, Pressure-Retaining Bolting 2 in. (50 mm) or Less in Diameter . . . . .	44
V-1.1-7	Examination Category J, Pressure-Retaining Welds in Piping . . . . .	45
V-1.1-8	Examination Category K, Welded Attachments for Vessels, Piping, Rotating Equipment, and Valves . . . . .	46
V-1.1-9	Examination Category L-2, Pump Casings; Examination Category M-2, Valve Bodies . . . . .	46
V-1.1-10	Examination Category N-1, Interior of Reactor Vessels; Examination Category N-2, Welded Core Support Structures and Interior Attachments to Reactor Vessels; Examination Category N-3, Removable Core Support Structures . . . . .	47
V-1.1-11	Examination Category O, Pressure-Retaining Welds in Control Rod Drive and Instrument Nozzle Housings . . . . .	47
V-1.1-12	Examination Category P, All Pressure-Retaining Components . . . . .	47
V-1.1-13	Examination Category F-A, Supports . . . . .	48
VII-1.2-1	Degradation Mechanism Attributes and Attribute Criteria (LWR) . . . . .	51
VII-1.3.3-1	Acceptance Standards . . . . .	59
VII-3.2-1	Degradation Mechanism Attributes and Attribute Criteria for High Temperature Gas Reactors . . . . .	71
VII-3.3.3-1	Acceptance Standards . . . . .	77
<b>Endnotes</b>	. . . . .	105

# LIST OF SECTIONS

## SECTIONS

- I Rules for Construction of Power Boilers
- II Materials
  - Part A — Ferrous Material Specifications
  - Part B — Nonferrous Material Specifications
  - Part C — Specifications for Welding Rods, Electrodes, and Filler Metals
  - Part D — Properties (Customary)
  - Part D — Properties (Metric)
- III Rules for Construction of Nuclear Facility Components
  - Subsection NCA — General Requirements for Division 1 and Division 2
  - Appendices
  - Division 1
    - Subsection NB — Class 1 Components
    - Subsection NCD — Class 2 and Class 3 Components
    - Subsection NE — Class MC Components
    - Subsection NF — Supports
    - Subsection NG — Core Support Structures
  - Division 2 — Code for Concrete Containments
  - Division 3 — Containment Systems for Transportation and Storage of Spent Nuclear Fuel and High-Level Radioactive Material
  - Division 4 — Fusion Energy Devices
  - Division 5 — High Temperature Reactors
- IV Rules for Construction of Heating Boilers
- V Nondestructive Examination
- VI Recommended Rules for the Care and Operation of Heating Boilers
- VII Recommended Guidelines for the Care of Power Boilers
- VIII Rules for Construction of Pressure Vessels
  - Division 1
  - Division 2 — Alternative Rules
  - Division 3 — Alternative Rules for Construction of High Pressure Vessels
- IX Welding, Brazing, and Fusing Qualifications
- X Fiber-Reinforced Plastic Pressure Vessels
- XI Rules for Inservice Inspection of Nuclear Reactor Facility Components
  - Division 1 — Rules for Inspection and Testing of Components of Light-Water-Cooled Plants
  - Division 2 — Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Reactor Facilities
- XII Rules for Construction and Continued Service of Transport Tanks
- XIII Rules for Overpressure Protection

# 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) Committee on Overpressure Protection (XIII)
- (l) 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 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. For nuclear items other than pressure-retaining components, the Committee also establishes rules of safety related to structural integrity. 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 and, for nuclear items other than pressure-retaining components, structural 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 components addressed by the Code. 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 requirements of the Code. However, designers and engineers using computer programs for design or analysis are cautioned that they are

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\* 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 overpressure protection.

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 the ASME Single 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.

The words "shall," "should," and "may" are used in this Standard as follows:

- *Shall* is used to denote a requirement.
- *Should* is used to denote a recommendation.
- *May* is used to denote permission, neither a requirement nor a recommendation.

# **STATEMENT OF POLICY ON THE USE OF THE ASME SINGLE 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 ASME Single 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 ASME Single Certification Mark for the benefit of the users, the enforcement jurisdictions, and the holders of the ASME Single 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 ASME Single 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 ASME Single 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 ASME Single 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 ASME Single Certification Mark who may also use the facsimile in advertising to show that clearly specified items will carry the ASME Single Certification Mark.

# **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 ASME Single Certification Mark described in the governing Section of the Code.

Markings such as “ASME,” “ASME Standard,” or any other marking including “ASME” or the ASME Single 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.

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(23)

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January 1, 2023

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# CORRESPONDENCE WITH THE COMMITTEE

## General

ASME codes and standards are developed and maintained by committees with the intent to represent the consensus of concerned interests. Users of ASME codes and standards may correspond with the committees to propose revisions or cases, report errata, or request interpretations. Correspondence for this Section of the ASME Boiler and Pressure Vessel Code (BPVC) should be sent to the staff secretary noted on the Section's committee web page, accessible at <https://go.asme.org/CSCcommittees>.

NOTE: See ASME BPVC Section II, Part D for guidelines on requesting approval of new materials. See Section II, Part C for guidelines on requesting approval of new welding and brazing materials ("consumables").

## Revisions and Errata

The committee processes revisions to this Code on a continuous basis to incorporate changes that appear necessary or desirable as demonstrated by the experience gained from the application of the Code. Approved revisions will be published in the next edition of the Code.

In addition, the committee may post errata and Special Notices at <http://go.asme.org/BPVCerrata>. Errata and Special Notices become effective on the date posted. Users can register on the committee web page to receive e-mail notifications of posted errata and Special Notices.

This Code is always open for comment, and the committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent background information and supporting documentation.

## Cases

(a) The most common applications for cases are

- (1) to permit early implementation of a revision based on an urgent need
- (2) to provide alternative requirements

(3) to allow users to gain experience with alternative or potential additional requirements prior to incorporation directly into the Code

(4) to permit use of a new material or process

(b) Users are cautioned that not all jurisdictions or owners automatically accept cases. Cases 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.

(c) The committee will consider proposed cases concerning the following topics only:

- (1) equipment to be marked with the ASME Single Certification Mark, or
- (2) equipment to be constructed as a repair/replacement activity under the requirements of Section XI

(d) A proposed case shall be written as a question and reply in the same format as existing cases. The proposal shall also include the following information:

- (1) a statement of need and background information
- (2) the urgency of the case (e.g., the case concerns a project that is underway or imminent)
- (3) the Code Section and the paragraph, figure, or table number(s) to which the proposed case applies
- (4) the edition(s) of the Code to which the proposed case applies

(e) A case is effective for use when the public review process has been completed and it is approved by the cognizant supervisory board. Cases that have been approved will appear in the next edition or supplement of the Code Cases books, "Boilers and Pressure Vessels" or "Nuclear Components." Each Code Cases book is updated with seven Supplements. Supplements will be sent or made available automatically to the purchasers of the Code Cases books until the next edition

of the Code. Annulments of Code Cases become effective six months after the first announcement of the annulment in a Code Case Supplement or Edition of the appropriate Code Case book. The status of any case is available at <http://go.asme.org/BPVCCDatabase>. An index of the complete list of Boiler and Pressure Vessel Code Cases and Nuclear Code Cases is available at <http://go.asme.org/BPVCC>.

## **Interpretations**

*(a)* Interpretations clarify existing Code requirements and are written as a question and reply. Interpretations do not introduce new requirements. If a revision to resolve conflicting or incorrect wording is required to support the interpretation, the committee will issue an intent interpretation in parallel with a revision to the Code.

*(b)* Upon request, the committee will render an interpretation of any requirement of the Code. An interpretation can be rendered only in response to a request submitted through the online Interpretation Submittal Form at <http://go.asme.org/InterpretationRequest>. Upon submitting the form, the inquirer will receive an automatic e-mail confirming receipt.

*(c)* ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Code requirements. If, based on the information submitted, it is the opinion of the committee that the inquirer should seek assistance, the request will be returned with the recommendation that such assistance be obtained. Inquirers may track the status of their requests at <http://go.asme.org/Interpretations>.

*(d)* ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME committee or subcommittee. ASME does not “approve,” “certify,” “rate,” or “endorse” any item, construction, proprietary device, or activity.

*(e)* Interpretations are published in the ASME Interpretations Database at <http://go.asme.org/Interpretations> as they are issued.

## **Committee Meetings**

The ASME BPVC committees regularly hold meetings that are open to the public. Persons wishing to attend any meeting should contact the secretary of the applicable committee. Information on future committee meetings can be found at <http://go.asme.org/BCW>.

# PREFACE TO SECTION XI

## INTRODUCTION

Section XI, Division 1, Rules for Inspection and Testing of Components of Light-Water-Cooled Plants, 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 Division 1 begins when the requirements of the Construction Code have been satisfied.

Section XI, Division 2, Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Reactor Facilities, is a technology-neutral standard of the ASME Boiler and Pressure Vessel Code. It provides requirements for protecting pressure integrity of structures, systems, and components (SSCs) that affect reliability. Application of Division 2 begins when the requirements of the Construction Code have been satisfied. It is applicable regardless of the Construction Code classification used for an SSC if the SSC is designated as important to the safety and reliability of an operating facility.

## GENERAL

The rules of this Section constitute requirements to maintain the nuclear reactor facility and to return the facility to service, following facility outages, in a safe and expeditious manner.

Section XI, Division 1 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.

Section XI, Division 1, rules require the development of a Reliability and Integrity Management (RIM) Program that considers the combination of design, fabrication, degradation mechanisms, inspection, examination, monitoring, operation, and maintenance of SSCs to ensure they will meet their required reliability target values. The rules also stipulate duties of the Authorized Nuclear Inservice Inspector to verify that the program has been completed, implemented, and updated in accordance with the requirements of Division 2.

# ORGANIZATION OF SECTION XI

(23)

## 1 DIVISIONS

Section XI consists of two Divisions, as follows:

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

*Division 2* = Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Reactor Facilities

## 2 ORGANIZATION OF DIVISION 1

### 2.1 SUBSECTIONS

Division 1 is broken down into Subsections that are designated by capital letters, preceded by the letters IW. 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

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

### 2.2 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.

### 2.3 SUBARTICLES

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

### 2.4 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.

### 2.5 PARAGRAPHS

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

### 2.6 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).

## 3 ORGANIZATION OF DIVISION 2

Division 2 is broken down into Articles that are designated by the capital letters RIM, followed by the Article number. Division 2 Articles consist of the following:

Article	Title
RIM-1	Scope and Responsibility
RIM-2	Reliability and Integrity Management (RIM) Program
RIM-3	Acceptance Standards
RIM-4	Repair/Replacement Activities
RIM-5	System Leak Monitoring and Periodic Tests
RIM-6	Records and Reports
RIM-7	Glossary

Division 2 also maintains Mandatory Appendices that are required for the development and implementation of the RIM Program. Mandatory Appendices consist of the following:

Appendix	Title
I	RIM Decision Flowcharts for Use With the RIM Program
II	Derivation of Component Reliability Targets From Facility Safety Requirements
III	Owner's Record and Report for RIM Program Activities
IV	Monitoring and NDE Qualification
V	Catalog of NDE Requirements and Areas of Interest
VI	Reliability and Integrity Management Expert Panel (RIMEP)
VII	Supplements for Types of Nuclear Reactor Facilities

Articles are divided into paragraphs and subparagraphs. Appendices are divided into Articles, paragraphs, and subparagraphs.



## 4 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, 8669 NW 36 Street, No. 130, Miami, FL 33166.

(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

The 2023 Edition of Section XI, Division 2 has been revised in its entirety. Changes listed below are identified on the pages by a margin note, **(23)**, placed next to the affected area.

<i>Page</i>	<i>Location</i>	<i>Change</i>
viii	List of Sections	(1) Under Section III, Division 4 added (2) Title of Section XI and subtitle of Section XI, Division 2 revised (3) Information on interpretations and Code cases moved to "Correspondence With the Committee"
xii	Personnel	Updated
xxxiv	Correspondence With the Committee	Added (replaces "Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees")
xxxvi	Preface to Section XI	Revised
xxxvii	Organization of Section XI	Paragraphs 1 and 3 revised
xlii	Cross-Referencing in the ASME BPVC	Updated

## CROSS-REFERENCING IN THE ASME BPVC

Paragraphs within the ASME BPVC may include subparagraph breakdowns, i.e., nested lists. The following is a guide to the designation and cross-referencing of subparagraph breakdowns:

*(a) Hierarchy of Subparagraph Breakdowns*

- (1) First-level breakdowns are designated as (a), (b), (c), etc.
- (2) Second-level breakdowns are designated as (1), (2), (3), etc.
- (3) Third-level breakdowns are designated as (-a), (-b), (-c), etc.
- (4) Fourth-level breakdowns are designated as (-1), (-2), (-3), etc.
- (5) Fifth-level breakdowns are designated as (+a), (+b), (+c), etc.
- (6) Sixth-level breakdowns are designated as (+1), (+2), etc.

*(b) Cross-References to Subparagraph Breakdowns.* Cross-references within an alphanumerically designated paragraph (e.g., PG-1, UIG-56.1, NCD-3223) do not include the alphanumeric designator of that paragraph. The crossreferences to subparagraph breakdowns follow the hierarchy of the designators under which the breakdown appears. The following examples show the format:

- (1) If X.1(c)(1)(-a) is referenced in X.1(c)(1), it will be referenced as (-a).
- (2) If X.1(c)(1)(-a) is referenced in X.1(c)(2), it will be referenced as (1)(-a).
- (3) If X.1(c)(1)(-a) is referenced in X.1(e)(1), it will be referenced as (c)(1)(-a).
- (4) If X.1(c)(1)(-a) is referenced in X.2(c)(2), it will be referenced as X.1(c)(1)(-a).

# ARTICLE RIM-1

## SCOPE AND RESPONSIBILITY

### RIM-1.1 SCOPE

(a) This Division provides the requirements for establishing Reliability and Integrity Management (RIM) Programs for any type of nuclear reactor facility.

(b) The program shall include the following elements:

- (1) Owner's responsibility
- (2) areas subject to inspection or monitoring or both
- (3) provisions for accessibility and inspection
- (4) examination methods and procedures
- (5) personnel qualifications
- (6) frequency of inspection
- (7) record keeping and report requirements
- (8) procedures for evaluation of inspection and monitoring results and subsequent disposition of results of evaluations

(9) repair and replacement activity requirements, including procurement, design, welding, brazing, defect removal, fabrication, installation, examination, and leakage testing

(c) The RIM Program addresses a facility's entire life cycle. It is applicable over the entire life of the facility and includes each passive structure, system, or component (SSC) that is in its scope. It specifies a combination of monitoring, examination, tests, operation, and maintenance requirements that ensure SSCs meet the facility risk and reliability goals (i.e., Reliability Targets) that are selected for the RIM Program. The RIM process is described in [RIM-2.1.1\(d\)](#) and is illustrated in [Mandatory Appendix I](#).

### RIM-1.2 JURISDICTION

The Owner is responsible for meeting the requirements of Section XI, Division 1, IWA-1200. When Section XI, Division 2 refers to Section XI, Division 1, the reference is to the corresponding Edition of Division 1. In addition, the Owner is responsible for establishing and meeting the Reliability Targets for all SSCs within the scope of this Division.

### RIM-1.3 COMPONENTS SUBJECT TO THE REQUIREMENTS OF THIS DIVISION

(a) The RIM Program requirements of this Division shall apply to all SSCs included in the RIM Program scope definition.

(b) SSCs identified in this Division for inspection and monitoring shall be included in the inservice inspection plan. These SSCs include items such as vessels, containments, piping systems, pumps, valves, core support structures, turbine and compressor casings, and storage tanks, including their respective supports.

### RIM-1.4 OWNER'S RESPONSIBILITY

The Owner is responsible for meeting the requirements of Section XI, Division I, IWA-1200. In addition, the Owner is responsible for establishing and meeting the Reliability Targets for all SSCs within the scope of this Division. The Owner's responsibilities also include the following:

(a) establishing the Code Editions, Addenda, and Code Cases to be used in Design Specifications and determining that they are acceptable to the regulatory and enforcement authorities having jurisdiction at the nuclear reactor facility site.

(b) preparing preservice and inservice inspection plans, schedules, and RIM Program summary reports.

(c) preparing written examination instructions and procedures, including diagrams or system drawings identifying the extent of areas of components subject to examination.

(d) having an arrangement with an Authorized Inspection Agency, recognized by the ASME or national regulatory authorities used to provide inspection services.

(e) establishing a monitoring and nondestructive examination (MANDE) qualification program in accordance with [Mandatory Appendix IV](#).

(f) establishing a RIM Expert Panel (RIMEP) in accordance with [Mandatory Appendix VI](#) responsible for overseeing the RIM Program development and implementation in accordance with [Article RIM-2](#), and for performing the evaluations for alternative requirements in accordance with [Nonmandatory Appendix A](#), if applicable.

(g) establishing a MANDE Expert Panel (MANDEEP) responsible for overseeing the qualification of MANDE methods and techniques in accordance with [Mandatory Appendix IV](#), under the RIM Program.

(h) performing required MANDE and tests.

(i) recording MANDE and test results to provide a basis for evaluation and to facilitate comparison with the results of subsequent MANDE and test activities.

(j) evaluating MANDE and test results.