

# SECTION XI

Rules for Inservice Inspection of  
Nuclear Power Plant Components

2021

ASME Boiler and  
Pressure Vessel Code  
An International Code

## Division 2

Requirements for Reliability and  
Integrity Management (RIM)  
Programs for Nuclear Power Plants

Markings such as “ASME,” “ASME Standard,” or any other marking including “ASME,” ASME logos, 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 or Standard. Use of the ASME Single Certification Mark requires formal ASME certification; if no certification program is available, such ASME markings may not be used. (For Certification and Accreditation Programs, see <https://www.asme.org/certification-accreditation>.)

Items produced by parties not formally possessing an ASME Certificate may not be described, either explicitly or implicitly, as ASME certified or approved in any code forms or other document.

AN INTERNATIONAL CODE

# 2021 ASME Boiler & Pressure Vessel Code

2021 Edition

July 1, 2021

## XI

### RULES FOR INSERVICE INSPECTION OF NUCLEAR POWER PLANT COMPONENTS

#### Division 2

---

#### Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Power Plants

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, 2021

This international code or standard was developed under procedures accredited as meeting the criteria for American National Standards and it is an American National Standard. The Standards Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable letters patent, nor assume any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations of this document issued in accordance with the established ASME procedures and policies, which precludes the issuance of interpretations by individuals.

The endnotes and preamble in this document (if any) are part of this American National Standard.



ASME Collective Membership Mark



ASME Single Certification Mark

"ASME" and the above ASME symbols are registered trademarks of The American Society of Mechanical Engineers.

No part of this document may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Library of Congress Catalog Card Number: 56-3934  
Printed in the United States of America

Adopted by the Council of The American Society of Mechanical Engineers, 1914; latest edition 2021.

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

Copyright © 2021 by  
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS  
All rights reserved

# TABLE OF CONTENTS

|  |        |
|--|--------|
| List of Sections .....   | vii    |
| Foreword .....   | x      |
| 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 .....                              | xii    |
| Submittal of Technical Inquiries to the Boiler and Pressure Vessel Standards Committees .....                    | xiii   |
| Personnel .....  | xvi    |
| Preface to Section XI .....  | xxxvii |
| Organization of Section XI .....   | xxxix  |
| Summary of Changes .....   | xliii  |
| List of Changes in Record Number Order .....   | xliv   |
| Cross-Referencing and Stylistic Changes in the Boiler and Pressure Vessel Code .....                             | xlv    |
| <br>   |        |
| <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 Tolerance .....  | 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 Plant 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> .....  | 12     |
| RIM-3.1 Evaluation of Examination Results and Acceptance Standards .....   | 12     |
| <b>Article RIM-4</b>   |        |
| <b>Repair/Replacement Activities</b> .....   | 13     |
| RIM-4.1 Scope .....  | 13     |
| RIM-4.2 Leak Test Requirements After a Repair/Replacement Activity .....   | 13     |

|                               |   |           |
|-------------------------------|---|-----------|
| RIM-4.3                       | Responsibilities . . . . .  | 14        |
| RIM-4.4                       | Corrective Action . . . . .   | 14        |
| RIM-4.5                       | Records . . . . .   | 14        |
| <b>Article RIM-5</b>          | <b>System Leak Monitoring and Periodic Tests . . . . .</b>  | <b>15</b> |
| RIM-5.1                       | Scope . . . . .   | 15        |
| RIM-5.2                       | Leakage Monitoring . . . . .  | 15        |
| RIM-5.3                       | Corrective Action . . . . .   | 15        |
| RIM-5.4                       | Records . . . . .   | 15        |
| <b>Article RIM-6</b>          | <b>Records and Reports . . . . .</b>  | <b>16</b> |
| RIM-6.1                       | Scope . . . . .   | 16        |
| RIM-6.2                       | Requirements . . . . .  | 16        |
| RIM-6.3                       | Retention . . . . .   | 16        |
| <b>Article RIM-7</b>          | <b>Glossary . . . . .</b>   | <b>18</b> |
| RIM-7.1                       | Terms and Definitions . . . . .   | 18        |
| <b>Mandatory Appendix I</b>   | <b>RIM Decision Flowcharts for Use With the RIM Program . . . . .</b>                                 | <b>20</b> |
| <b>Article I-1</b>            | <b>Flowcharts . . . . .</b>   | <b>20</b> |
| I-1.1                         | General . . . . .   | 20        |
| <b>Mandatory Appendix II</b>  | <b>Derivation of Component Reliability Targets from Plant Safety Requirements . . . . .</b>           | <b>28</b> |
| <b>Article II-1</b>           | <b>General Requirements . . . . .</b>   | <b>28</b> |
| II-1.1                        | Scope . . . . .   | 28        |
| II-1.2                        | Adequacy of the PRA . . . . .   | 28        |
| II-1.3                        | Procedure Overview . . . . .  | 28        |
| <b>Article II-2</b>           | <b>Reliability Target Derivation . . . . .</b>  | <b>29</b> |
| II-2.1                        | Plant-Level Safety Requirements . . . . .   | 29        |
| II-2.2                        | Allocation of Reliability Targets . . . . .   | 29        |
| II-2.3                        | Identification of Component Groups . . . . .  | 29        |
| II-2.4                        | Trial Assignment of Reliability Targets . . . . .   | 29        |
| II-2.5                        | Evaluation of Impacts of Reliability Targets on Plant-Level Risk . . . . .                            | 29        |
| II-2.6                        | Determination of Reliability Targets . . . . .  | 29        |
| <b>Mandatory Appendix III</b> | <b>Owner's Record and Report for RIM Program Activities . . . . .</b>                                 | <b>30</b> |
| <b>Article III-1</b>          | <b>Guides to Completing Forms . . . . .</b>   | <b>30</b> |
| III-1.1                       | Form OAR-1 . . . . .  | 30        |
| III-1.2                       | Form NIS-2 . . . . .  | 30        |
| <b>Mandatory Appendix IV</b>  | <b>Monitoring and NDE Qualification . . . . .</b>   | <b>32</b> |
| <b>Article IV-1</b>           | <b>Introduction . . . . .</b>   | <b>32</b> |
| IV-1.1                        | Scope . . . . .   | 32        |
| IV-1.2                        | Methods . . . . .   | 32        |
| IV-1.3                        | Owner's Requirements . . . . .  | 32        |
| <b>Article IV-2</b>           | <b>Procedures, Equipment, and Personnel Requirements . . . . .</b>                                    | <b>34</b> |
| IV-2.1                        | Basic Qualification (Figures I-1.1-1 Through I-1.1-6) . . . . .                                       | 34        |
| IV-2.2                        | Method/Technique Personnel-Specific Qualifications . . . . .  | 34        |
| <b>Article IV-3</b>           | <b>Reliability-Based Qualification of Monitoring and NDE (MANDE) Methods and Techniques . . . . .</b> | <b>35</b> |
| IV-3.1                        | General . . . . .   | 35        |
| IV-3.2                        | Determination of the Qualification Requirements . . . . .   | 35        |

|                                |  |    |
|--------------------------------|--|----|
| IV-3.3                         | Qualification Process .....  | 35 |
| <b>Article IV-4</b>            | <b>Performance Demonstrations for MANDE Personnel (Figure I-1.1-6)</b> | 37 |
| IV-4.1                         | General .....  | 37 |
| IV-4.2                         | Performance Demonstration for Personnel for Monitoring Methods . . .   | 37 |
| IV-4.3                         | Performance Demonstration for NDE Personnel .....                      | 37 |
| <b>Article IV-5</b>            | <b>Records</b> .....   | 38 |
| IV-5.1                         | General .....  | 38 |
| IV-5.2                         | Records for Methods and Technique Qualification .....                  | 38 |
| IV-5.3                         | Records for Personnel Performance Demonstrations .....                 | 38 |
| <b>Mandatory Appendix V</b>    | <b>Catalog of NDE Requirements and Areas of Interest</b> .....         | 39 |
| <b>Article V-1</b>             | <b>Tables</b> .....  | 39 |
| V-1.1                          | General .....  | 39 |
| <b>Mandatory Appendix VI</b>   | <b>Reliability and Integrity Management Expert Panel (RIMEP)</b> ..... | 48 |
| <b>Article VI-1</b>            | <b>Overview</b> .....  | 48 |
| VI-1.1                         | Responsibilities and Qualifications of RIMEP .....                     | 48 |
| <b>Mandatory Appendix VII</b>  | <b>Supplements for Types of Nuclear Plants</b> .....                   | 49 |
| <b>Article VII-1</b>           | <b>Supplement for Light Water Reactor-Type Plants</b> .....            | 49 |
| VII-1.1                        | Scope .....  | 49 |
| VII-1.2                        | RIM Program — Damage Degradation Assessment .....                      | 49 |
| VII-1.3                        | Acceptance Standards .....   | 49 |
| VII-1.4                        | Acceptance Standards for Specific Examination Categories .....         | 58 |
| VII-1.5                        | Analytical Evaluation of Planar Flaws .....                            | 63 |
| VII-1.6                        | Analytical Evaluation of Plant Operating Events .....                  | 66 |
| <b>Article VII-2</b>           | <b>Supplement for Liquid Metal Reactor-Type Plants</b> .....           | 67 |
| <b>Article VII-3</b>           | <b>Supplement for High-Temperature Gas Reactor-Type Plants</b> .....   | 68 |
| VII-3.1                        | Scope .....  | 68 |
| VII-3.2                        | RIM Program — Damage Degradation Assessment .....                      | 68 |
| VII-3.3                        | Acceptance Standards .....   | 68 |
| VII-3.4                        | Acceptance Standards for Specific Examination Categories .....         | 75 |
| VII-3.5                        | Analytical Evaluation of Planar Flaws .....                            | 81 |
| VII-3.6                        | Analytical Evaluation of Plant Operating Events .....                  | 84 |
| <b>Article VII-4</b>           | <b>Supplement for Molten Salt Reactor-Type Plants</b> .....            | 85 |
| <b>Article VII-5</b>           | <b>Supplement for Generation 2 LWR-Type Plants</b> .....               | 86 |
| <b>Article VII-6</b>           | <b>Supplement for Fusion Machine-Type Plants</b> .....                 | 87 |
| <b>Nonmandatory Appendix A</b> | <b>Alternate Requirements for NDE and Monitoring</b> .....             | 88 |
| <b>Article A-1</b>             | <b>General</b> .....   | 88 |
| A-1.1                          | Scope .....  | 88 |
| A-1.2                          | Methods .....  | 88 |
| A-1.3                          | Responsibilities .....   | 88 |
| <b>Article A-2</b>             | <b>Procedure</b> .....   | 90 |
| A-2.1                          | Overview .....   | 90 |
| A-2.2                          | SSC Reliability Target .....   | 90 |
| A-2.3                          | Degradation Mechanisms and Failure Modes .....                         | 90 |
| A-2.4                          | Approaches — Probabilistic and Deterministic .....                     | 90 |
| <b>Article A-3</b>             | <b>Stage I Evaluation</b> .....  | 91 |

|                                |   |            |
|--------------------------------|---|------------|
| A-3.1                          | Introduction  | 91         |
| A-3.2                          | Input Related to Safety Evaluation  | 91         |
| A-3.3                          | Input Related to Structural Evaluation  | 91         |
| A-3.4                          | Probabilistic Approach — Reliability Evaluation   | 91         |
| A-3.5                          | Deterministic Approach — Margin Assessment  | 91         |
| <b>Article A-4</b>             | <b>Stage II Evaluation</b>  | <b>92</b>  |
| A-4.1                          | Introduction  | 92         |
| A-4.2                          | Input Related to Safety Evaluation  | 92         |
| A-4.3                          | Input Related to Structural Evaluation  | 92         |
| A-4.4                          | Detectability   | 92         |
| A-4.5                          | Criteria to Establish Additional Requirements   | 92         |
| A-4.6                          | Probabilistic Approach  | 93         |
| A-4.7                          | Deterministic Approach  | 93         |
| <b>Article A-5</b>             | <b>Procedure for Structural Reliability Evaluation for Passive Components</b>   | <b>94</b>  |
| A-5.1                          | General Requirements  | 94         |
| A-5.2                          | Reliability Evaluation  | 94         |
| A-5.3                          | Failure Scenario Setting  | 95         |
| A-5.4                          | Modeling  | 96         |
| A-5.5                          | Reliability Calculation   | 97         |
| <b>Article A-6</b>             | <b>Records and Report</b>   | <b>98</b>  |
| A-6.1                          | Retention of Records and Reports  | 98         |
| <b>Article A-7</b>             | <b>References</b>   | <b>99</b>  |
| <b>Nonmandatory Appendix B</b> | <b>Regulatory Administrative Provisions for Nuclear Plants Using RIM Program</b>  | <b>100</b> |
| <b>Article B-1</b>             | <b>General Requirements</b>   | <b>100</b> |
| B-1.1                          | Scope   | 100        |
| B-1.2                          | Application of Code Edition   | 100        |
| B-1.3                          | Application of Code Cases   | 100        |
| B-1.4                          | Review by Regulatory and Enforcement Authorities Having Jurisdiction at the Plant Site  | 100        |
| B-1.5                          | Summary of Report Submittal   | 100        |
| <b>Article B-2</b>             | <b>Requirements for Passive Components in the RIM Program</b>   | <b>101</b> |
| B-2.1                          | Review by Regulatory and Enforcement Authorities Having Jurisdiction at the Plant Site  | 101        |
| <b>Figures</b>                 |   |            |
| I-1.1-1                        | Inputs to the RIMEP for NPP Owner's RIM Program Development   | 21         |
| I-1.1-2                        | RIM Program Development and Integration   | 22         |
| I-1.1-3                        | Process for Identifying the SSCs to Be in MANDE Program   | 23         |
| I-1.1-4                        | Selection of Strategies for SSCs to Meet Reliability Targets  | 24         |
| I-1.1-5                        | Upper Half Shows Input to MANDEEP for Developing MANDE Specification and Lower Half Shows Process for Evaluating if Division 1 Requirements Meet MANDE Specifications | 25         |
| I-1.1-6                        | Select, Develop, and Validate Performance Demonstration Approach to Meet SSC Reliability Target   | 26         |

|                 |  |     |
|-----------------|--|-----|
| I-1.1-7         | Process for Evaluating Which SSCs to Include in RIM Program and Redesign Process . . . . .   | 27  |
| A-1.2-1         | Logic Flow Diagram of the Process . . . . .  | 89  |
| A-5.2.1-1       | Reliability Evaluation Procedure . . . . .   | 94  |
| A-5.3.1-1       | Failure Scenario Setting Procedure . . . . .   | 95  |
| A-5.4.1-1       | Modeling Procedure . . . . .   | 96  |
| <b>Tables</b>   |  |     |
| RIM-1.9-1       | Referenced Standards and Specifications . . . . .  | 3   |
| III-1.1-1       | Guide for Completing Form OAR-1 . . . . .  | 31  |
| V-1.1-1         | Examination Category A, Pressure-Retaining Welds in Reactor Vessels . . . . .  | 39  |
| V-1.1-2         | Examination Category B, Pressure-Retaining Welds in Vessel Outer Head and Reactor Vessels . . . . .  | 40  |
| V-1.1-3         | Examination Category D, Full-Penetration Welded Nozzles in Vessels . . . . .   | 40  |
| V-1.1-4         | Examination Category F, Pressure-Retaining Dissimilar Welds in Vessel Nozzles . . . . .  | 41  |
| V-1.1-5         | Examination Category G-1, Pressure-Retaining Bolting Greater Than 2 in. (50 mm) in Diameter . . . . .  | 42  |
| V-1.1-6         | Examination Category G-2, Pressure-Retaining Bolting 2 in. (50 mm) or Less in Diameter . . . . .   | 43  |
| V-1.1-7         | Examination Category J, Pressure-Retaining Welds in Piping . . . . .   | 44  |
| V-1.1-8         | Examination Category K, Welded Attachments for Vessels, Piping, Rotating Equipment, and Valves . . . . .   | 45  |
| V-1.1-9         | Examination Category L-1, Pump Casings; Examination Category M-2, Valve Bodies . . . . .   | 45  |
| V-1.1-10        | Examination Category N-1, Interior of Reactor Vessels; Examination Category N-2, Welded Core Support Structures and Interior Attachments of Reactor Vessels; Examination Category N-3, Removable Core Support Structures . . . . . | 46  |
| V-1.1-11        | Examination Category O, Pressure-Retaining Welds in Control Rod Drive and Instrument Nozzle Housings . . . . .   | 46  |
| V-1.1-12        | Examination Category P, All Pressure-Retaining Components . . . . .  | 46  |
| V-1.1-13        | Examination Category F-A, Supports . . . . .   | 47  |
| VII-1.2-1       | Degradation Mechanism Attributes and Attribute Criteria (LWR) . . . . .  | 50  |
| VII-1.3.3-1     | Acceptance Standards . . . . .   | 57  |
| VII-3.2-1       | Degradation Mechanism Attributes and Attribute Criteria . . . . .  | 69  |
| VII-3.3.3-1     | Acceptance Standards . . . . .   | 75  |
| <b>Endnotes</b> | . . . . .  | 102 |

## 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 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 In-service Inspection of Nuclear Power Plant 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 Power Plants
- XII Rules for Construction and Continued Service of Transport Tanks
- XIII Rules for Overpressure Protection

\* In the 2021 Edition, Subsections NC and ND have been incorporated into one publication, Subsection NCD (BPVC.III.1.NCD), Class 2 and Class 3 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 2021 Code Cases book: "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 up to the publication of the 2023 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. Code Case users can check the current status of any Code Case at <http://go.asme.org/BPVCCDatabase>. Code Case users can also view an index of the complete list of Boiler and Pressure Vessel Code Cases and Nuclear Code Cases at <http://go.asme.org/BPVCC>.

## 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

\* 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.

# SUBMITTAL OF TECHNICAL INQUIRIES TO THE BOILER AND PRESSURE VESSEL STANDARDS COMMITTEES (21)

## 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) Interpretations will be issued only if existing Code text is ambiguous or conveys conflicting requirements. If a 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. This information should include a statement indicating why the included paragraphs, figures, or tables are ambiguous or convey conflicting requirements. Preferably, the Inquirer should provide a copy of, or relevant extracts from, the specific referenced portions of the Code.