



U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

OFFICE OF NUCLEAR REACTOR REGULATION

5.2.1.2 APPLICABLE CODE CASES

REVIEW RESPONSIBILITIES

Primary - Mechanical Engineering Branch (~~MEB~~) (EMEB)¹

Secondary - None

I. AREAS OF REVIEW

The ~~MEB~~ EMEB² determines the acceptability of American Society of Mechanical Engineers (ASME) and American National Standards Institute (ANSI) Code Case interpretations specified in the safety analysis report (SAR). These Code Cases must be approved before being applied to ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsection NB - Class 1 Components, Subsection NC - Class 2 Components, and³ Subsection ND - Class 3 Components, and Subsection NE - Class MC Components, as stated as described⁴ in the Codes and Standards Rule, Section 50.55a(a)(2)(ii)⁵ of 10 CFR Part 50. The review also includes the approval of Code Cases applied to ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsection NE - Class MC Components,⁶ Subsection NF - Component Supports, and Subsection NG - Core Support Structures, and ASME Boiler and Pressure Vessel Code, Section III, Division 2, Concrete Containments. These Code Cases contain requirements or special rules which may be used for application in the construction of components for light-water-cooled nuclear power plants.

Review Interfaces⁷

The ~~MEB~~ EMEB,⁸ the Materials Engineering Branch (MTEB) Materials and Chemical Engineering Branch (EMCB),⁹ and the Structural Engineering Branch (SEB) Civil Engineering and Geosciences Branch (ECGB)¹⁰ on a generic basis, determine the acceptability of ASME and ANSI Code Case interpretations that may be applied to ASME Section III, Division 1 and 2, components. These

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Standard review plans are prepared for the guidance of the Office of Nuclear Reactor Regulation staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations and compliance with them is not required. The standard review plan sections are keyed to the Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants. Not all sections of the Standard Format have a corresponding review plan.

Published standard review plans will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience.

Comments and suggestions for improvement will be considered and should be sent to the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Washington, D.C. 20555.

branches review each revision to applicable Code Cases. Code Cases pertaining to materials, fabrication, and nondestructive testing are evaluated by the ~~MTEB~~ EMCB.¹¹ Code Cases pertaining to ASME Section III, Division 2, are evaluated by the ~~SEB~~ ECGB.¹² All other areas covered by ASME Code Cases are evaluated by the ~~MEB~~ EMEB.¹³

II. ACCEPTANCE CRITERIA

Acceptance criteria ~~is~~ are¹⁴ based on meeting the relevant requirements of the following regulations:

1. 10 CFR Part 50, Appendix A, General Design Criterion 1, as it relates to the requirement that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed.
2. 10 CFR ~~Part 50, §~~¹⁵ 50.55a, as it relates to the rule that establishes minimum quality standards for the design, fabrication, erection, construction, testing, and inspection of certain components of boiling and pressurized water reactor nuclear power plants by requiring conformance with appropriate editions of specified published industry codes and standards.

To meet the requirements of General Design Criterion 1 and 10 CFR ~~Part 50, §~~¹⁶ 50.55a, the following regulatory guides are used:

- a. Regulatory Guide 1.84, "~~Code Case Acceptability in ASME Section III – Design and Fabrication~~. Design and Fabrication Code Case Acceptability, ASME Section III, Division 1."¹⁷ This guide lists those Section III, Division 1,¹⁸ ASME Code Cases oriented to design and fabrication which are acceptable to the staff for implementation in the licensing of nuclear power plants.
- b. Regulatory Guide 1.85, "~~Code Case Acceptability in ASME Section III – Materials~~. Materials Code Case Acceptability, ASME Section III, Division 1."¹⁹ This guide lists those Section III, Division 1,²⁰ ASME Code Cases oriented to materials and testing which are acceptable to the staff for implementation in the licensing of nuclear power plants.
- c. Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." This guide lists those Section XI ASME Code Cases which are acceptable to the staff for use in the inservice inspection of components and their supports, as described in the first paragraph of subsection I, in²¹ light-water-cooled nuclear power plants.

Code Cases pertaining to ASME Code Section III, Division 2, as well as Code Cases alternative to II.2.a, II.2.b, or II.2.c or those not covered in II.2.a, II.2.b, or II.2.c may be acceptable in either of the following cases:

- (1) If the proposed Code Cases provide an acceptable level of quality and safety; or

- (2) If compliance with the specified requirements of 10 CFR 50.55a would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.²²

Technical Rationale

The technical rationale for application of acceptance criteria for compliance with General Design Criterion 1 and 10 CFR 50.55a is discussed in the following paragraphs:²³

- A. Compliance with General Design Criterion 1 requires that structures, systems, and components be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.

SRP Section 5.2.1.2 cites Regulatory Guides 1.84, 1.85, and 1.147 to provide a list of Code Cases for ASME Section III, Division 1, components and materials and Section XI, Division 1, tests and inspections that are acceptable to the staff. Code Cases for Section III, Division 2, and other Code Cases that may be proposed are reviewed on a case-by-case basis. Under these Code Cases, components of the reactor coolant pressure boundary and other specified components must meet specific criteria that have been reviewed and accepted by the staff.²⁴ The ASME Boiler and Pressure Vessel Committee adopts Code Cases that provide additions, revisions and clarifications of existing Code requirements, or when urgently needed, provides rules for construction not covered by existing requirements.²⁵

The staff endorses the application of Code Cases that provide adequate assurance that these structures, systems and components will perform acceptably, commensurate with the importance of their safety function and will contain radioactive material.²⁶

- B. Section 50.55a of 10 CFR requires that structures, systems, and components be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety functions to be performed and that suitable optional Code Cases may be applied to such structures, systems, and components.

SRP Section 5.2.1.2 cites Regulatory Guides 1.84, 1.85, and 1.147 (also cited in Footnote 6 of 10 CFR 50.55a) to provide a list of Code Cases for ASME Section III, Division 1, components and materials and Section XI, Division 1, tests and inspections that are acceptable to the staff. Code Cases for Section III, Division 2, and other Code Cases that may be proposed are reviewed on a case-by-case basis. Under these Code Cases, components of the reactor coolant pressure boundary and other specified components must meet specific criteria that have been reviewed and accepted by the staff.²⁷ The ASME Boiler and Pressure Vessel Committee adopts Code Cases that provide additions, revisions and clarifications of existing Code requirements, or when urgently needed, provides rules for construction not covered by existing requirements.²⁸

The staff endorses the application of Code Cases that provide adequate assurance that these structures, systems and components will perform acceptably, commensurate with the importance of their safety function and will contain radioactive material.²⁹

III. REVIEW PROCEDURES

The table provided by the applicant identifying those ASME Code Cases applied to Section III, Division 1 and Division 2, components is checked for compliance with the list of acceptable Code Cases identified in Regulatory Guides 1.84, 1.85, and 1.147.

ASME Section III, Division 2, Code Cases oriented to Concrete Containments are reviewed by the MEB ECGB³⁰ on a case-by-case basis for implementation in the licensing of nuclear power plants pending approval of Section III, Division 2 of the Code and the associated Code Cases by the Commission.³¹

In the event an applicant should propose to use a Code Case not previously approved by the staff, upon request, a review of the Code Case is performed by MEB with assistance from MTEB or SEB the EMEB with assistance from the EMCGB or ECGB,³² as appropriate.

For standard design certification reviews under 10 CFR Part 52, the procedures above should be followed, as modified by the procedures in SRP Section 14.3 (proposed), to verify that the design set forth in the standard safety analysis report, including inspections, tests, analysis, and acceptance criteria (ITAAC), site interface requirements and combined license action items, meet the acceptance criteria given in subsection II. SRP Section 14.3 (proposed) contains procedures for the review of certified design material (CDM) for the standard design, including the site parameters, interface criteria, and ITAAC.³³

IV. EVALUATION FINDINGS

The staff review should verify that only acceptable ASME and ANSI Code Cases are specified in the SAR in order to arrive at conclusions of the following type, which are to be included in the staff's safety evaluation report:

The specified ASME and ANSI Code Cases whose requirements will be applied in the construction of ASME Section III, Division 1, Class 1, Class 2, Class 3, and Class MC components are in accordance with the rules of 10 CFR Part 50, § 50.55a, General Design Criterion 1,³⁵ and the guidance provided in Regulatory Guides 1.84, 1.85, and 1.147. We conclude that compliance with the requirements of these Code Cases will result in a component quality level commensurate with the importance of the safety function of these components and constitutes an acceptable basis for satisfying the requirements of 10 CFR 50.55a and³⁶ General Design Criterion 1 and is therefore acceptable.

For design certification reviews, the findings will also summarize, to the extent that the review is not discussed in other safety evaluation report sections, the staff's evaluation of inspections, tests, analyses, and acceptance criteria (ITAAC), including design acceptance criteria (DAC), site interface requirements, and combined license action items that are relevant to this SRP section.³⁷

V. IMPLEMENTATION

The following is intended to provide guidance to applicants and licensees regarding the NRC staff's plans for using this SRP section.

This SRP section will be used by the staff when performing safety evaluations of license applications submitted by applicants pursuant to 10 CFR 50 or 10 CFR 52.³⁸ Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications docketed six months or more after the date of issuance of this SRP section.³⁹

Implementation schedules for conformance to parts of the method discussed herein are contained in the referenced regulatory guides.

VI. REFERENCES

1. 10 CFR Part 50, Appendix A, General Design Criterion 1, "Quality Standards and Records."
2. 10 CFR ~~Part 50~~, § 50.55a, "Codes and Standards ~~Rule~~."⁴⁰
3. ASME Boiler and Pressure Vessel Code, ~~1980 Edition~~,⁴¹ Section III, "Nuclear Power Plant Components," American Society of Mechanical Engineers (~~1980~~).⁴²
4. ASME Boiler and Pressure Vessel Code, ~~1980 Edition~~,⁴³ "Code Cases: Nuclear Components," American Society of Mechanical Engineers (~~1980~~).⁴⁴
5. Regulatory Guide 1.84, "~~Code Case Acceptability in ASME Section III Design and Fabrication~~," Design and Fabrication Code Case Acceptability, ASME Section III, Division 1."⁴⁵
6. Regulatory Guide 1.85, "~~Code Case Acceptability in ASME Section III Materials~~," Materials Code Case Acceptability, ASME Section III, Division 1."⁴⁶
7. Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."

~~TABLE 5.2.1.2-1 CODE CASE ACCEPTABILITY ASME SECTION
V-NONDESTRUCTIVE EXAMINATION, AND ASME SECTION IX
WELDING AND BRAZING QUALIFICATIONS~~

This table has been superseded by:

- ~~1. Code Cases 1400, 1452, 1632, and 1707 have been annulled as the contents of these Code Cases have been incorporated in Sections V and Section IX of the ASME Boiler and Pressure Vessel Code.~~
- ~~2. Code Case 1693 (N-212) has been identified as an acceptable Code Case in Regulatory Guide 1.84.~~
- ~~3. Code Case 1698 (N-92) has been identified as an acceptable Code Case in Regulatory Guide 1.85.~~
- ~~4. The technical content of Code Case 1816 is identical to that of Code Case 1820 which has been identified as an acceptable Code Case in Regulatory Guide 1.85.⁴⁷~~

~~TABLE 5.2.1.2-2 CODE CASE ACCEPTABILITY, ASME SECTION XI-
INSERVICE INSPECTION OF NUCLEAR POWER PLANT COMPONENTS~~

~~This table has been superseded by Regulatory Guide 1.147.⁴⁸~~

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SRP Draft Section 5.2.1.2
Attachment A - Proposed Changes in Order of Occurrence

Item numbers in the following table correspond to superscript numbers in the redline/strikeout copy of the draft SRP section.

Item	Source	Description
1.	Current primary review branch abbreviation	Changed PRB from "MEB" to "EMEB" under REVIEW RESPONSIBILITIES.
2.	Current primary review branch abbreviation	Changed PRB from "MEB" to "EMEB."
3.	Editorial modification	Added word "and" to accommodate deletion cited in item 4.
4.	Correction	Deleted "and Subsection NE - Class MC Components" from sentence because Class MC Components are not explicitly covered by 10 CFR 50.55a.
5.	Editorial correction	Deleted the designation "(2)(ii)" after citation of 10 CFR 50.55a; this subsection no longer exists.
6.	Correction and editorial modification	Added the phrase "Subsection NE - Class MC Components" to sentence that covers components included in SRP Section 5.2.1.2 but not explicitly covered by 10 CFR 50.55a.
7.	SRP-UDP format item	Added "Review Interfaces" to AREAS OF REVIEW.
8.	Current primary review branch abbreviation	Changed PRB from "MEB" to "EMEB."
9.	Current review branch abbreviation	Replaced "Materials Engineering Branch (MTEB)" with "Materials and Chemical Engineering Branch (EMCB)."
10.	Current review branch abbreviation	Replaced "Structural Engineering Branch (SEB)" with "Civil Engineering and Geosciences Branch (ECGB)."
11.	Current review branch abbreviation	Replaced "MTEB" with "EMCB."
12.	Current review branch Abbreviation	Replaced "SEB" with "ECGB."
13.	Current primary review branch abbreviation	Changed PRB from "MEB" to "EMEB."
14.	Editorial correction	Replaced "is" with "are."
15.	Editorial modification	Deleted "Part 50, §" to comply with accepted format for citing CFRs.
16.	Editorial modification	Deleted "Part 50, §" to comply with accepted format for citing CFRs.
17.	Editorial correction/ Integrated Impact No. 237	Provided correct title of Regulatory Guide 1.84.
18.	Editorial modification/ Integrated Impact No. 237	Added "Division 1" to sentence to describe scope of Regulatory Guide 1.84 accurately.

SRP Draft Section 5.2.1.2
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
19.	Editorial correction/ Integrated Impact No. 237	Provided correct title of Regulatory Guide 1.85.
20.	Editorial modification/ Integrated Impact No. 237	Added "Division 1" to sentence to describe scope of Regulatory Guide 1.85 accurately.
21.	Editorial modification	Added the phrase "components and their supports, as described in the first paragraph of Subsection I, ..." to clarify the scope of Regulatory Guide 1.147.
22.	Integrated Impact No. 235	The REVIEW PROCEDURES subsection indicates that ASME Section III, Division 2, Code Cases (as well as other Code Cases not previously approved) are to be reviewed. The current version of SRP Section 5.2.1.2 provides no guidance regarding acceptance criteria for such Code Cases. A paragraph was added to ACCEPTANCE CRITERIA, II.2, to provide the necessary acceptance criteria. This acceptance criteria was copied from 10 CFR 50.55a(a)(3)(i) and (ii). The added acceptance criteria would also cover review of Code Cases that might be submitted with COL applications.
23.	SRP-UDP format item	Added "Technical Rationale" and introductory paragraph to ACCEPTANCE CRITERIA.
24.	SRP-UDP format item	Added technical rationale to describe safety benefits conforming to General Design Criterion 1.
25.	Incorporation of EMEB comment on initial draft.	Added EMEB revised wording.
26.	Incorporation of EMEB comment on initial draft.	Added EMEB revised wording.
27.	SRP-UDP format item	Added technical rationale to describe safety benefits of conforming to 10 CFR 50.55a.
28.	Incorporation of EMEB comment on initial draft.	Added EMEB revised wording.
29.	Incorporation of EMEB comment on initial draft.	Added EMEB revised wording.
30.	Editorial correction	Assigned review responsibilities for review of Code Cases involving concrete containments to ECGB in conformance with next-to-last sentence in AREAS OF REVIEW.
31.	SRP-UDP format item	Deleted the phrase "for implementation in the licensing of nuclear power plants pending approval of Section III, Division 2 of the Code and the associated Code Cases by the Commission," which is no longer applicable.
32.	Current review branch abbreviations	Revised review branch designations to current designations.

SRP Draft Section 5.2.1.2
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
33.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard paragraph to address application of Review Procedures in design certification reviews.
34.	Editorial modification	Deleted "Part 50" for clarity and consistency.
35.	Editorial correction	Added the phrase "General Design Criterion 1" to describe the source of the guidance more completely.
36.	Editorial correction	Added the phrase "10 CFR 50.55a and" to describe the CFR requirements applicable more completely.
37.	SRP-UDP format item/ Integrated Impact No. 235	Added paragraph to EVALUATION FINDINGS to describe design certification reviews.
38.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard sentence to address application of the SRP section to reviews of applications filed under 10 CFR Part 52, as well as Part 50.
39.	SRP-UDP Guidance	Added standard paragraph to indicate applicability of this section to reviews of future applications.
40.	Editorial correction	Corrected title and citation format for 10 CFR 50.55a.
41.	Integrated Impact No. 236	Deleted citation of 1980 edition of ASME Code in Reference 3. The 1980 citation is not in accordance with 10 CFR 50.55a(b).
42.	Integrated Impact No. 236	Deleted citation of 1980 edition of ASME Code in Reference 3. The 1980 citation is not in accordance with 10 CFR 50.55a(b).
43.	Integrated Impact No. 236	Deleted citation of 1980 edition of ASME Code in Reference 4. The 1980 citation is not in accordance with 10 CFR 50.55a(b).
44.	Integrated Impact No. 236	Deleted citation of 1980 edition of ASME Code in Reference 4. The 1980 citation is not in accordance with 10 CFR 50.55a(b).
45.	Editorial correction	Provided correct title of Reference 5.
46.	Editorial correction	Provided correct title of Reference 6.
47.	Editorial modification	Deleted Table 5.2.1.2-1, which is no longer referenced in the text of the SRP section and contains obsolete information.
48.	Editorial modification	Deleted Table 5.2.1.2-2, which is no longer referenced in the text of the SRP Section and contains obsolete information.

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SRP Draft Section 5.2.1.2
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
235	Revise ACCEPTANCE CRITERIA, REVIEW PROCEDURES, and EVALUATION FINDINGS to reflect design certification and combined license (COL) applicant-related Code Case reviews.	<p>Added paragraph at the end of ACCEPTANCE CRITERIA, Subsection II.2.</p> <p>Added paragraph at the end of REVIEW PROCEDURES, Subsection III.</p> <p>Added paragraph at the end of EVALUATION FINDINGS, Subsection IV.</p>
236	Revise ASME Code references so that SRP citations are not version specific.	Delete citation of 1980 edition of ASME Code in References 3 and 4.
237	Revise the Review Procedures to identify the scope of Regulatory Guides 1.84, 1.85, and 1.147 in a consistent manner.	<p>Modify ACCEPTANCE CRITERIA, Subsections II.2.a and II.2.b.</p> <p>Modify REFERENCES, Correct titles of References 5 and 6.</p>