



U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

5.2.1.2 APPLICABLE CODE CASES

REVIEW RESPONSIBILITIES

Primary - Organization responsible for the review of mechanical engineering issues

Secondary - Organization responsible for component performance and testing

I. AREAS OF REVIEW

The specific areas of review are as follows:

1. The primary organization 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, Subsection ND - Class 3 Components, and Subsection NE - Class MC Components, as described in the Codes and Standards Rule, Section 50.55a(a) of 10 CFR Part 50. The review should include the approval of Code Cases applied to ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsection NE - Class MC Components, Subsection NF - Component Supports, and Subsection NG - Core Support Structures, and ASME Boiler and Pressure Vessel Code, Section III, Division 2, Concrete Containment. The review should also include the approval of Code Cases that may be applied to ASME Section XI, Division 1, Inservice Inspection, and ASME Code for Operation and Maintenance for Nuclear Power Plant Components (OM). These Code Cases contain requirements, Code alternatives, or special rules which may be used for application in the construction of components for light-water-cooled nuclear power plants.

Revision 3 - March 2007

USNRC STANDARD REVIEW PLAN

This Standard Review Plan, NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission staff responsible for the review of applications to construct and operate nuclear power plants intends to use in evaluating whether an applicant/licensee meets the NRC's regulations. The Standard Review Plan is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide an acceptable method of complying with the NRC regulations.

The standard review plan sections are numbered in accordance with corresponding sections in Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of Regulatory Guide 1.70 have a corresponding review plan section. The SRP sections applicable to a combined license application for a new light-water reactor (LWR) are based on Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

These documents are made available to the public as part of the NRC's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-0800 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments may be submitted electronically by email to NRR_SRP@nrc.gov.

Requests for single copies of SRP sections (which may be reproduced) should be made to the U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Reproduction and Distribution Services Section, or by fax to (301) 415-2289; or by email to DISTRIBUTION@nrc.gov. Electronic copies of this section are available through the NRC's public Web site at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0800/>, or in the NRC's Agencywide Documents Access and Management System (ADAMS), at <http://www.nrc.gov/reading-rm/adams.html>, under Accession # ML070040004.

2. Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC). For design certification (DC) and combined license (COL) reviews, the staff reviews the applicant's proposed ITAAC associated with the structures, systems, and components (SSCs) related to this SRP section in accordance with SRP Section 14.3, "Inspections, Tests, Analyses, and Acceptance Criteria." The staff recognizes that the review of ITAAC cannot be completed until after the rest of this portion of the application has been reviewed against acceptance criteria contained in this SRP section. Furthermore, the staff reviews the ITAAC to ensure that all SSCs in this area of review are identified and addressed as appropriate in accordance with SRP Section 14.3.
3. COL Action Items and Certification Requirements and Restrictions. For a DC application, the review will also address COL action items and requirements and restrictions (e.g., interface requirements and site parameters).

For a COL application referencing a DC, a COL applicant must address COL action items (referred to as COL license information in certain DCs) included in the referenced DC. Additionally, a COL applicant must address requirements and restrictions (e.g., interface requirements and site parameters) included in the referenced DC.

Review Interfaces

Other SRP sections interface with this section as follows:

1. Code Cases pertaining to nondestructive testing are evaluated by the organizations responsible for the review of mechanical engineering issues and for the review of materials engineering issues related to flaw evaluation and welding under SRP Sections 3.12 and 3.13.
2. Code Cases pertaining to ASME Section III, Division 2, are evaluated by the organization responsible for structural analysis reviews under SRP Sections 3.8.1, 3.8.3, and 3.8.5. Code Cases pertaining to OM Code are evaluated by the organization responsible for component performance and testing under SRP Section 3.9.6.
3. All other areas covered by ASME Code Cases are evaluated with assistance from other appropriate organizations as necessary.

The specific acceptance criteria and review procedures are contained in the referenced SRP sections.

II. ACCEPTANCE CRITERIA

Requirements

Acceptance criteria are based on meeting the relevant requirements of the following Commission regulations:

1. 10 CFR Part 50, Appendix A, General Design Criterion 1, as it relates to the requirement that SSCs 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 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.
3. 10 CFR 52.47(b)(1), which requires that a DC application contain the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the design certification is built and will operate in accordance with the design certification, the provisions of the Atomic Energy Act, and the NRC's regulations;
4. 10 CFR 52.80(a), which requires that a COL application contain the proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations.

SRP Acceptance Criteria

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are as follows for the review described in this SRP section. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations.

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

1. Regulatory Guide 1.84, "Design and Fabrication Code Case Acceptability, ASME Section III, Division 1." This guide lists those Section III, Division 1, ASME Code Cases oriented to design, fabrication, materials, and testing, which are acceptable to the staff for implementation in the licensing of nuclear power plants.
2. 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, of this SRP.
3. Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code." This guide lists ASME OM Code Cases oriented to operation and maintenance for nuclear power plant components which are acceptable to the staff for implementation in the licensing of nuclear power plants.

Code Cases pertaining to ASME Code Section III, Division 2, as well as Code Cases alternatives to Regulatory Guides 1.84, 1.147, or 1.192, or for those not covered in Regulatory Guides 1.84, 1.147, or 1.192 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.

Technical Rationale

The technical rationale for application of these acceptance criteria to the areas of review addressed by this SRP section is discussed in the following paragraphs:

1. Compliance with General Design Criterion 1 requires that SSCs 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, 1.147, and 1.192 to provide a list of Code Cases for ASME Section III, Division 1, components and materials and Section XI, Division 1, tests and inspections and OM Code for operation and maintenance of nuclear power plant components, 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. 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.

The staff endorses the application of Code Cases that provide adequate assurance that these SSCs will perform acceptably, commensurate with the importance of their safety function.

2. Section 50.55a of 10 CFR requires that SSCs 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 SSCs.

SRP Section 5.2.1.2 cites Regulatory Guides 1.84, 1.147, and 1.192 (also cited in 10 CFR 50.55a(b)) to provide a list of Code Cases for ASME Section III, Division 1, components and materials and Section XI, Division 1, tests and inspections and OM Code for operation and maintenance of nuclear plant components, 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. 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.

The staff endorses the application of Code Cases that provide adequate assurance that these SSCs will perform acceptably, commensurate with the importance of their safety function.

III. REVIEW PROCEDURES

The reviewer will select material from the procedures described below, as may be appropriate for a particular case.

These review procedures are based on the identified SRP acceptance criteria. For deviations from these acceptance criteria, the staff should review the applicant's evaluation of how the proposed alternatives provide an acceptable method of complying with the relevant NRC requirements identified in Subsection II.

1. 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, 1.147, and 1.192.
2. ASME Section III, Division 2, Code Cases oriented to Concrete Containments are reviewed by the staff on a case-by-case basis.

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 the primary organization with assistance from the other organizations as appropriate.

For review of a DC application, the reviewer should follow the above procedures to verify that the design, including requirements and restrictions (e.g., interface requirements and site parameters), set forth in the final safety analysis report (FSAR) meets the acceptance criteria. DCs have referred to the FSAR as the design control document (DCD). The reviewer should also consider the appropriateness of identified COL action items. The reviewer may identify additional COL action items; however, to ensure these COL action items are addressed during a COL application, they should be added to the DC FSAR.

For review of a COL application, the scope of the review is dependent on whether the COL applicant references a DC, an early site permit (ESP) or other NRC approvals (e.g., manufacturing license, site suitability report or topical report).

For review of both DC and COL applications, SRP Section 14.3 should be followed for the review of ITAAC. The review of ITAAC cannot be completed until after the completion of this section.

IV. EVALUATION FINDINGS

The reviewer verifies that the applicant has provided sufficient information and that the review and calculations (if applicable) support conclusions of the following type to be included in the staff's safety evaluation report. The reviewer also states the bases for those conclusions.

1. 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 50.55a, General Design Criterion 1, and the guidance provided in Regulatory Guides 1.84, 1.147, and 1.192. 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 and General Design Criterion 1, and is therefore acceptable.

For DC and COL reviews, the findings will also summarize the staff's evaluation of requirements and restrictions (e.g., interface requirements and site parameters) and COL action items relevant to this SRP section.

In addition, to the extent that the review is not discussed in other SER sections, the findings will summarize the staff's evaluation of the ITAAC, including design acceptance criteria, as applicable.

V. IMPLEMENTATION

The staff will use this SRP section in performing safety evaluations of DC applications and license applications submitted by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52. Except when the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the staff will use the method described herein to evaluate conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications submitted six months or more after the date of issuance of this SRP section, unless superseded by a later revision.

VI. REFERENCES

1. 10 CFR Part 50, Appendix A, General Design Criterion 1, "Quality Standards and Records."
2. 10 CFR 50.55a, "Codes and Standards."
3. ASME Boiler and Pressure Vessel Code, Section III, "Nuclear Power Plant Components," American Society of Mechanical Engineers.
4. ASME Boiler and Pressure Vessel Code, "Code Cases: Nuclear Components," American Society of Mechanical Engineers.
5. Regulatory Guide 1.84, "Design and Fabrication Code Case Acceptability, ASME Section III, Division 1."
6. Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."
7. Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code."

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50 and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval number 3150-0011 and 3150-0151.

PUBLIC PROTECTION NOTIFICATION

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.