



U.S. NUCLEAR REGULATORY COMMISSION  
**STANDARD REVIEW PLAN**  
OFFICE OF NUCLEAR REACTOR REGULATION

### 5.3.3 REACTOR VESSEL INTEGRITY

#### REVIEW RESPONSIBILITIES

Primary - ~~Materials Engineering Branch (MTEB)~~ Materials and Chemical Engineering Branch (EMCB)<sup>1</sup>

Secondary - None

#### I. AREAS OF REVIEW

The portions of the applicant's safety analysis report (SAR) listed below are reviewed. These portions are all related to the integrity of the reactor vessel. Although most of these areas are reviewed separately in accordance with other standard review plan (SRP) sections, the integrity of the reactor vessel is of such importance that a special summary review of all factors relating to the integrity of the reactor vessel is warranted. The information in each area is reviewed to ensure that the information is complete, and that no inconsistencies in information or requirements exist that would reduce the certainty of vessel integrity.

##### 1. Design

The basic design of the reactor vessel is reviewed by ~~MTEB~~EMCB<sup>2</sup> for compatibility of design with established quality standards for material properties and fabrication methods as described in SRP Section 5.3.1, "Reactor Vessel Materials," and by ~~MTEB~~the Civil Engineering and Geosciences Branch (ECGB)<sup>3</sup> for compatibility with required inspections<sup>4</sup> as described in SRP Section 5.2.4, "Reactor Coolant Pressure Boundary Inservice Inspection and Testing."

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#### USNRC STANDARD REVIEW PLAN

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.

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2. Materials of Construction

The materials of construction are each taken into consideration by MTEB-EMCB<sup>5</sup> as described in SRP Section 5.2.3, "Reactor Coolant Pressure Boundary Materials," and in SRP Section 5.3.1, "Reactor Vessel Materials."<sup>6</sup>

3. Fabrication Methods

The processes used to fabricate the reactor vessel, including forming, welding, cladding, and machining, are reviewed by MTEB-EMCB<sup>7</sup> as described in SRP Section 5.3.1.

4. Inspection Requirements

The inspection test methods and requirements are reviewed by MTEB-EMCB<sup>8</sup> as described in SRP Section 5.3.1.

5. Shipment and Installation

Protective measures taken during shipment of the reactor vessel and its installation at the site are reviewed by MTEB-EMCB<sup>9</sup> to verify that the as-built characteristics of the reactor vessel are not degraded by improper handling.

6. Operating Conditions

All the operating conditions as they relate to the integrity of the reactor vessel are reviewed by MTEB-EMCB<sup>10</sup> as described in SRP Section 5.3.2, "Pressure-Temperature Limits."

7. Inservice Surveillance

Plans and provisions for inservice surveillance of the reactor vessel are reviewed by MTEB-EMCB as described in SRP Sections 5.3.1 and by ECGB as described in SRP Section 5.2.4.<sup>11</sup>

Review Interfaces:<sup>12</sup>

This SRP Section involves the integrated review of SRP Sections 5.2.3, 5.2.4, 5.3.1, and 5.3.2 as they relate to reactor vessel integrity. The EMCB has responsibility for these SRP sections, except for 5.2.4 which is the primary responsibility of ECGB (EMCB is secondary review branch). The review interfaces with these SRP sections are described in the above Areas of Review.<sup>13</sup>

In addition, the MTEB-EMCB<sup>14</sup> will coordinate evaluations of other branches that interface with the overall review of the reactor vessel as follows:

- 1.<sup>15</sup> The Mechanical Engineering Branch (~~MEB~~)(EMEB)<sup>16</sup> reviews the reactor vessel design regarding compliance with §50.55a of 10 CFR Part 50 and regarding applicable Code Cases, as part of its primary review responsibility for SRP Sections 5.2.1.1 and 5.2.1.2.
2. The review for Quality Assurance is coordinated and performed by the ~~Quality Assurance Branch (QAB)~~Quality Assurance and Maintenance Branch (HQMB)<sup>17</sup> as part of its primary review responsibility for SRP Sections 17.1 and 17.2.

For those areas of review identified above as part of the primary review responsibility of other branches, the acceptance criteria necessary for the review and their method of application are contained in the referenced SRP section of the corresponding primary branch.

## II. ACCEPTANCE CRITERIA

The basic acceptance criteria for each review area are covered by other standard review plan sections, so they will be discussed here only in general terms. References are made to the SRP sections that include detailed criteria. The acceptance criteria in these SRP sections describe methods to meet the requirements of the following Commission regulations in 10 CFR Part 50: General Design Criteria 1, 4, 14, 30, 31, and 32 of Appendix A; Appendixes B; §50.60 and associated Appendixes<sup>18</sup> G, and H; and §50.55a; and §50.61 (for PWRs)<sup>19</sup>. Interrelationships among review areas, and criteria for consistency, compatibility, and technical coherence among review areas, are emphasized in the following discussion:

### 1. Design

The quality standards requirements of GDC 1, GDC 30, and §50.55a are met, regarding compatibility of design with material properties and fabrication methods, by compliance with the provisions of the ASME Code (References 14 and 15)<sup>20</sup>. The basic acceptance criteria for the design of the vessel are the requirements of Section III of the ASME Boiler and Pressure Vessel Code (hereafter "the Code"). The design of the reactor vessel must be compatible with the properties of the materials used, and must permit construction by the use of standard and well proven fabrication methods. The design details should not include new or novel concepts unless they are substantiated by a comprehensive justification showing that no aspects of the design will compromise the overall integrity of the vessel in any manner.

The design details must be adequate to permit all required inspections and to provide required access to all areas requiring inservice inspection in conformance with Section XI of the Code, as detailed in SRP Section 5.2.4, "Reactor Coolant Pressure Boundary Inservice Inspection and Testing." This satisfies the requirements of GDC 32 and §50.55a regarding inservice inspection.

If the neutron radiation exposure of the reactor vessel becomes high enough that the predicted value of the adjusted reference temperature of the material exceeds 93°C (200°F)<sup>21</sup>, the design must be adequate to permit in-place annealing of the vessel to restore ductility and toughness, in accordance with Appendix G, "Fracture Toughness Requirements," of 10 CFR Part 50. ~~This~~The capability to anneal the vessel provides

assurance that fracture toughness properties can be restored to satisfy the fracture toughness requirements<sup>22</sup> of GDC 31.

## 2. Materials of Construction

The basic acceptance criteria for the materials used in the construction of the reactor vessel, and the regulations that they satisfy, are detailed in SRP Section 5.2.3, "Reactor Coolant Pressure Boundary Materials," and in SRP Section 5.3.1, "Reactor Vessel Materials." These criteria are the requirements of Appendix G, 10 CFR Part 50, as augmented by Sections III and IX of the Code.

The materials must be compatible with the design requirements. Acceptability is based on standard practice and engineering judgement, with consideration being given to such factors as material form, size-related variations in properties, and nonisotropic characteristics.

Although many materials are acceptable for reactor vessels according to Section III of the Code, the special considerations relating to fracture toughness and radiation effects effectively limit the basic materials that are currently acceptable for most parts of reactor vessels to SA 533 Gr B C1 1, SA 508 C1 2, and SA 508 C1 3. Acceptability criteria for other grades will have to be developed before they can be used.

The relationships among material compositions, expected neutron fluence, and requirements for the material surveillance program must be compatible. The reviewer uses published data to ensure that the predicted shift in toughness properties ( $RT_{NDT}$  and upper shelf energy) is conservative, based on actual material composition and predicted fluence. The predicted shift in toughness properties must be at least as conservative as that obtained by use of Regulatory Guide 1.99, "~~Effects of Residual Elements on Predicted Radiation Damage to Reactor Vessel Materials.~~"<sup>23</sup> Acceptability of the material surveillance program, as specified in Appendix H, "Reactor Vessel Material Surveillance Program Requirements," of 10 CFR Part 50, depends on these relationships.

## 3. Fabrication Methods

Acceptance criteria for the basic fabrication processes and their qualification and control requirements, and the regulations satisfied by these criteria, are detailed in SRP Section 5.3.1. These criteria are given in Sections III and IX of the Code.

Although a particular fabrication process (such as multiple wire-high heat input welding) may be generally acceptable, it may not be suitable for reactor vessel fabrication for some materials without further justification or qualification. The reviewer uses "state-of-the-art" criteria and past practice to evaluate the acceptability of materials process combinations.

Because fabrication methods, materials, and the effectiveness of nondestructive evaluation methods are interrelated, the reviewer must rely on state-of-the-art knowledge

and past practice to determine whether the proposed combinations are compatible and acceptable.

#### 4. Inspection Requirements

The basic requirements for performing nondestructive inspections, the quality assurance criteria for the reactor vessel, and the regulations that all of these criteria satisfy, are detailed in SRP Section 5.3.1. These requirements and criteria are contained in Sections III and V of the Code.

Acceptance criteria for compatibility with materials and fabrication areas are discussed in previous sections.

Very important relationships are those among in-process and final shop inspections, and the inservice inspection requirements of Section XI of the Code. The reviewer must determine that the methods of inspection, the sensitivity levels, and flaw evaluation criteria are compatible with Section XI, and that the results of the preservice baseline inspection can be correlated with the results of later inservice inspections.

#### 5. Shipment and Installation

The basic acceptance criteria for procedures and care to maintain proper cleanliness and freedom from contamination during all stages of shipping, storage, and installation of the reactor vessel, and the regulations that these criteria satisfy, are given in SRP Section 5.2.3.

The purpose of this area of review is to verify that the as-built characteristics of the reactor vessel are not degraded by improper handling. Acceptability in these areas is assured for current designs and materials by compliance with the basic acceptance criteria. If nonstandard materials or designs are used, the reviewer must determine that these criteria will be adequate, based on current technology.

If the basic criteria are not followed, either intentionally or through error, the reviewer must evaluate, on a case basis, whether the integrity of the reactor vessel is compromised, using current technology, past practice, and experience as applicable.

#### 6. Operating Conditions

Acceptance criteria for operating limits for the reactor vessel, and the regulations that they satisfy, are detailed in SRP Section 5.3.2, "Pressure-Temperature Limits." These acceptance criteria are given in Appendix G, "Fracture Toughness Requirements," to 10 CFR Part 50 and for PWRs, 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events."<sup>24</sup>

The criterion for acceptable behavior is that the vessel must remain leaktight enough to support adequate core cooling. The generally accepted principles and procedures of

linear elastic fracture mechanics provide the basis for acceptance of analyses that support conformance with this criterion.

## 7. Inservice Surveillance

The acceptance criteria for adequacy of the reactor vessel materials surveillance program, and the regulations satisfied by the criteria, are detailed in SRP Section 5.3.1. The criteria are based on the requirements of Appendix H, "Reactor Vessel Material Surveillance Program Requirements," to 10 CFR Part 50.

The SAR also provides information regarding the inservice inspections to be performed on the reactor vessel. The acceptance criteria for accessibility and inspection plan details, and the regulations that they satisfy, are detailed in Standard Review Plan Section 5.2.4, "Reactor Coolant Pressure Boundary Inservice Inspection and Testing." These criteria are those of Section XI of the Code.

### Technical Rationale:<sup>25</sup>

This SRP section involves the integrated review of reactor vessel integrity based on individual reviews performed for other SRP sections and does not introduce any new or additional criteria. Technical rationale for the acceptance criteria described above are provided in SRP Sections 5.2.3, 5.2.4, 5.3.1, and 5.3.2.

## III. REVIEW PROCEDURES

The reviewer will select and emphasize material from the procedures described below, as may be appropriate for a particular case. The reviewer initially determines that the basic criteria are met in each review area covered by this SRP section. Although ~~he will~~ not normally ~~be~~ responsible for the basic reviews of all of these areas, ~~he~~ the reviewer<sup>26</sup> will consult with those responsible for basic review of the other areas to determine that all areas are individually acceptable.

~~He~~ The reviewer<sup>27</sup> then reviews each area again, considering the information presented in other areas that interrelate with it, as discussed in subsection II above.

Because the reviewer is familiar with the specific procedures used by the reactor vendor, ~~he~~ she can readily pick out any differences from past practice. ~~He~~ The reviewer<sup>28</sup> will evaluate these in detail, consulting with other ~~MTEBEMCB~~<sup>29</sup> members 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.<sup>30</sup>

#### IV. EVALUATION FINDINGS

The reviewer verifies that sufficient information is provided to satisfy the requirements of this SRP section, and that the completeness and technical adequacy of his evaluation will support conclusions of the following type, to be included in the staff's safety evaluation report:

The staff concludes that structural integrity of the reactor vessel is acceptable and meets the requirements of General Design Criteria 1, 4, 14, 30, 31, and 32 of Appendix A of 10 CFR Part 50; the requirements of 10 CFR 50, Appendixes B; the requirements of 10 CFR 50.60 and associated Appendices<sup>31</sup> G, and H of 10 CFR Part 50; and the requirements of Section 10 CFR 50.55a; and the requirements of 10 CFR 50.61 (for PWRs) of 10 CFR Part 50.<sup>32</sup> This conclusion is based on the staff's review of the safety analysis report (SAR), conducted in accordance with the following standard review plan sections, and supplemented by the acceptance criteria of SRP Section 5.3.3:

- (1) SRP Section 5.2.3, "RCPB Reactor Coolant Pressure Boundary<sup>33</sup> Materials."
- (2) SRP Section 5.2.4, "RCPB Reactor Coolant Pressure Boundary<sup>34</sup> Inservice Inspection and Testing."
- (3) SRP Section 5.3.1, "Reactor Vessel Materials."
- (4) SRP Section 5.3.2, "Pressure-Temperature Limits."

We have reviewed all factors contributing to the structural integrity of the reactor vessel and conclude there are no special considerations that make it necessary to consider potential reactor vessel failure for this plant. The bases for our conclusion are that the design, materials, fabrication, inspection, and quality assurance requirements for the plant will conform to applicable NRC regulations and regulatory guides, and to the rules of the ASME Boiler and Pressure Vessel Code, Section III. The stringent fracture toughness requirements of the regulations and ASME Code Section III will be met, including requirements for surveillance of vessel material properties throughout service life, in accordance with Appendix H of 10 CFR Part 50. Also, operating limitations on temperature and pressure will be established for this plant in accordance with Appendix G, "Protection Against Non-ductile Failure," of ASME Code Section III, and Appendix G, 10 CFR Part 50, and 10 CFR 50.61 (for PWRs)<sup>35</sup>.

The integrity of the reactor vessel is assured because the vessel

- (1) will be designed and fabricated to the high standards of quality required by the ASME Boiler and Pressure Vessel Code and any pertinent Code Cases;
- (2) will be made from materials of controlled and demonstrated high quality;
- (3) will be subjected to extensive preservice inspection and testing to provide assurance that the vessel will not fail because of material or fabrication deficiencies;

- (4) will be operated under conditions and procedures and with protective devices that provide assurance that the reactor vessel design conditions will not be exceeded during normal reactor operation, maintenance, testing, and anticipated ~~transients~~operational occurrences<sup>36</sup>;
- (5) will be subjected to periodic inspection to demonstrate that the high initial quality of the reactor vessel has not deteriorated significantly under service conditions;
- (6) may be annealed to restore the material toughness properties if this becomes necessary; and
- (7) will be subjected to surveillance to account for neutron irradiation damage so that the operating limitations may be adjusted.

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.<sup>37</sup>

## 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.<sup>38</sup> 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.<sup>39</sup>

Implementation schedules for conformance to parts of the method discussed herein are contained in the referenced regulations and<sup>40</sup> regulatory guide.

## VI. REFERENCES

1. ~~Standard Review Plan Section 5.2.3, "RCPB Materials."~~
2. ~~Standard Review Plan Section 5.2.4, "RCPB Inservice Inspection and Testing."~~
3. ~~Standard Review Plan Section 5.3.1, "Reactor Vessel Materials."~~
4. ~~Standard Review Plan Section 5.3.2, "Pressure Temperature Limits."~~<sup>41</sup>



- 91.<sup>42</sup> 10 CFR Part 50, Section 50.55a, "Codes and Standards."
2. 10 CFR 50.60, "Acceptance Criteria for Fracture Prevention Measures for Lightwater Nuclear Power Reactors for Normal Operation."<sup>43</sup>
3. 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events."<sup>44</sup>
54. 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants." (Criterion 1, "Quality Standards and Records,"<sup>45</sup>
5. 10 CFR 50, Appendix A, General Design Criterion 4, "Environmental and Missile Dynamic Effects"<sup>46</sup> Design Bases,"
6. 10 CFR 50, Appendix A, General Design Criterion 14, "Reactor Coolant Pressure Boundary,"
7. 10 CFR 50, Appendix A, General Design Criterion 30, "Quality of Reactor Coolant Pressure Boundary,"
8. 10 CFR 50, Appendix A, General Design Criterion 31, "Fracture Prevention of Reactor Coolant Pressure Boundary,"
9. 10 CFR 50, Appendix A, General Design and Criterion 32, "Inspection of Reactor Coolant Pressure Boundary.")
- 610.<sup>47</sup> 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants."
711. 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements."
812. 10 CFR Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements."
1213. Regulatory Guide 1.99, "Effects of Residual Elements on Predicted Radiation Damage to Embrittlement of Reactor Vessel Materials."<sup>48</sup>
114. ASME Boiler and Pressure Vessel Code, Sections II, III,<sup>49</sup> V, IX, and XI, American Society of Mechanical Engineers.
1015. ASME Boiler and Pressure Vessel Code, Section III, especially<sup>50</sup> Appendix G, "Protection Against Nonductile Failure," American Society of Mechanical Engineers.

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### SRP Draft Section 5.3.3

#### 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 PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.3.
2.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.1.
3.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.2.4.
4.	Editorial	The paragraph was revised to improve clarity and consistency with the balance of the section.
5.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Sections 5.2.3 and 5.3.3.
6.	Editorial	The title for SRP Section 5.3.1 was deleted since it has been added in paragraph I.1.
7.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.1.
8.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.1.
9.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.3.
10.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.2.
11.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Sections 5.3.1 and 5.2.4.
12.	SRP-UDP format item	Added "Review Interfaces" heading to Areas of Review.
13.	Editorial	Review interfaces with SRP Sections 5.2.3, 5.2.4, 5.3.1, and 5.3.2 are described in the existing Areas of Review. Rather than restate these interfaces or reformat the Areas of Review, a paragraph was added that refers to the Areas of Review for those interfaces that are also the responsibility of the PRB assigned to SRP Section 5.3.3.
14.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Section 5.3.3.
15.	SRP-UDP format item, Editorial	Added numerical designation to existing review interfaces in accordance with SRP-UDP guidance.
16.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Sections 5.2.1.1 and 5.2.1.2.

**SRP Draft Section 5.3.3**  
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
17.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB responsibility for SRP Sections 17.1 and 17.2.
18.	<b>Integrated Impact 478.</b>	Added 10 CFR 50.60 to the acceptance criteria and associated it with Appendices G and H in the existing text.
19.	<b>Integrated Impact 474.</b>	Added the pressurized thermal shock (PTS) rule, 10 CFR 50.61, to the Acceptance Criteria. The PTS rule was incorporated into SRP Section 5.3.2, which is part of the integrated review in SRP Section 5.3.3.
20.	SRP-UDP format item, Reformat References	Added parenthetical reference to the ASME Code as listed in subsection VI.
21.	NRC Metrication Policy Implementation	Converted the cited value of 200°F to the metric equivalent of 93°C.
22.	Editorial.	This change was revised during SRP section integration to address PRB comments. As written, the paragraph implies that design of the vessel to allow annealing satisfies the fracture toughness requirements of GDC 31. The requirement to provide annealing capability is only one of several provisions in 10 CFR 50, Appendix G, related to fracture toughness requirements for the reactor vessel. The text was modified to indicate the relationship between annealing and GDC 31.
23.	SRP-UDP format item, Verification of References, Editorial	Deleted the title for Regulatory Guide 1.99 to be consistent with SRP-UDP guidance for referencing Regulatory Guides and because the title was not current. The complete reference for Regulatory Guide 1.99 is provided in the Reference subsection of the SRP.
24.	<b>Integrated Impact 474.</b>	Added the pressurized thermal shock (PTS) rule, 10 CFR 50.61, to the discussion in paragraph II.6 regarding operating limits as provided in SRP Section 5.3.2. The PTS rule provides reference temperature limits and has been incorporated into SRP Section 5.3.2 as acceptance criteria. The title of the rule was also added. Although the addition of the title deviates from SRP guidance regarding the addition of CFR references, it is consistent with the existing text style in SRP Section 5.3.3.
25.	SRP-UDP format item, Technical Rationale	Added the new sub-subsection "Technical Rationale" to the Acceptance Criteria subsection. For this SRP section, which is an integrated review of other sections and thus does not introduce any new or additional criteria, the technical rationale are provided by the individual SRP sections that are subject to the integrated review.

**SRP Draft Section 5.3.3**  
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
26.	Editorial	The text was revised to be gender neutral.
27.	Editorial	The text was revised to be gender neutral.
28.	Editorial	The text was revised to be gender neutral.
29.	Current PRB names and abbreviations.	Editorial change made to reflect current PRB name for related SRP sections.
30.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard paragraph to address application of Review Procedures in design certification reviews.
31.	<b>Integrated Impact 478.</b>	Revised the text to incorporate 10 CFR 50.60 in the Evaluation Findings, and associated the rule with related Appendices G and H in the existing text.
32.	<b>Integrated Impact 474.</b>	Revised the text to incorporate 10 CFR 50.61 in the Evaluation Findings.
33.	SRP-UDP format item, Reference Verification	Corrected the title quotation for SRP Section 5.2.3.
34.	SRP-UDP format item, Reference Verification	Corrected the title quotation for SRP Section 5.2.4.
35.	<b>Integrated Impact 474.</b>	Incorporated 10 CFR 50.61 into the Evaluation Findings discussion related to operating limitations on temperature and pressure.
36.	GSI B-3 Resolution	Changed "anticipated transients" to "anticipated operational occurrences" in accordance with the resolution to Generic Safety Issue B-3. This change is also consistent with the language in 10 CFR 50, Appendix G, which appears to be the acceptance criteria best represented by the subject Evaluation Finding.
37.	10 CFR 52 Applicability	Added the standard Evaluation Findings for design certification reviews for applications in accordance with 10 CFR 52.
38.	SRP-UDP Format Item	Added boiler-plate change to identify the applicability of the SRP to the 10 CFR 52 licensing process.
39.	SRP-UDP Format Item	Added boiler-plate statement regarding the applicability of the SRP to existing and new license applications.
40.	Editorial	Added "regulations" to the Implementation subsection as a source of schedule requirements and to accommodate the addition of 10 CFR 50.61 to the SRP section.
41.	SRP-UDP format item, Editorial	SRP Sections are referenced in subsection I, "Areas of Review" and not in subsection VI.

**SRP Draft Section 5.3.3**  
Attachment A - Proposed Changes in Order of Occurrence

Item	Source	Description
42.	Editorial	The reference to 10 CFR 50.55a was moved and renumbered in accordance with SRP-UDP guidance and to accommodate the addition of new, and revision to existing, references.
43.	<b>Integrated Impact 478.</b>	Added reference to 10 CFR 50.60.
44.	<b>Integrated Impact 474.</b>	Added reference to 10 CFR 50.61.
45.	SRP-UDP format item, Reformat References	The numbered order and format of the GDC references was revised to be consistent with SRP-UDP guidance with a separate listing for each GDC.
46.	<b>PI #21743</b> , SRP-UDP format item, Reference Verification	Revised the title for GDC 4.
47.	Editorial	The references were renumbered to accommodate the separation of GDC references and the changes in the order of references.
48.	SRP-UDP format item, Verification of References	Revised the title of Regulatory Guide 1.99 to be consistent with the latest revision.
49.	Editorial	Added ASME Section III to the general list of referenced ASME Sections.
50.	Editorial	Revised the reference to remove the word "especially." The reference is now specific to ASME Section III, Appendix G. General reference to ASME Section III was added to the other general ASME references for consistency.

**SRP Draft Section 5.3.3**  
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
474	Revise Acceptance Criteria to discuss Section 50.61 of 10 CFR 50 and PWR reactor vessel acceptability under pressurized thermal shock (PTS) conditions.	II, IV and VI.
477	Modify Acceptance Criteria to reflect staff positions related to radiation embrittlement of reactor vessel materials as outlined in Regulatory Guide 1.99, Revision 2.	No changes are proposed to the SRP for this integrated impact.
478	Revise Acceptance Criteria to incorporate 10 CFR 50.60.	II, IV, and VI.
1161	Revise the Acceptance Criteria, Review Procedures, and Evaluation Findings as necessary to incorporate the guidance of the proposed draft Regulatory Guide DG-1025.	Placeholder Integrated Impact. No changes were made to the SRP.
1164	Revise the Acceptance Criteria, Review Procedures, and Evaluation Findings as necessary to incorporate the guidance of the proposed draft Regulatory Guide DG-1027.	Placeholder Integrated Impact. No changes were made to the SRP.
1207	Revise the Acceptance Criteria, Review Procedures and Evaluation Findings to incorporate the requirements from proposed rulemaking 59 FR 50513.	Placeholder Integrated Impact. No changes were made to the SRP.
1288	Revise the Acceptance Criteria, Review Procedures, and Evaluation Findings as necessary to incorporate the guidance of the proposed draft Regulatory Guide DG-1023.	Placeholder Integrated Impact. No changes were made to the SRP.