

NRC Staff Perspective and Feedback on ASME Section III Alternate Requirements

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Background

- There are various frameworks to categorize or classify system, structure, and components (SSCs) by risk or safety significance under NRC regulations and guidance:
 - 10 CFR 50.69
 - Regulatory Treatment of Nonsafety Systems (RTNSS)¹ for advanced light water reactors (LWRs)
 - NEI 18-04 for non-LWRs (endorsed by Reg Guide 1.233)
 - Technology-Inclusive Content of Application Project (TICAP) guidance under development (NEI 21-07, Rev. 1)
 - Part 53 (under development) incorporates similar approaches into its proposed frameworks

¹ NUREG-0800 Section 19.3, Revision 0 (ML14035A149)

50.69 Alternative Treatment – RISC-2

- 10 CFR 50.69 (c)(1) states “SSCs must be categorized as RISC–1, RISC–2, RISC–3, or RISC–4 SSCs using a categorization process that determines if an SSC performs one or more safety significant functions and identifies those functions. The process must: ...
 - (iii) Maintain **defense-in-depth.**”
- 10 CFR 50.69(d)(1) states “The licensee or applicant shall ensure that RISC–1 and **RISC–2 SSCs perform their functions consistent with the categorization process assumptions by evaluating treatment being applied to these SSCs to ensure that it supports the key assumptions** in the categorization process that relate to their assumed performance.”
- 10 CFR 50.69(e)(2) states “The licensee shall **monitor the performance of RISC–1 and RISC–2 SSCs. The licensee shall make adjustments as necessary to either the categorization or treatment processes so that the categorization process and results are maintained valid....**”

50.69 Alternative Treatment – RISC-3

- 10 CFR 50.69 (c)(1) states “... The [categorization] process must: ...
 - (iii) Maintain **defense-in-depth**.
 - (iv) Include evaluations that provide **reasonable confidence that for SSCs categorized as RISC–3, sufficient safety margins are maintained ...”**
- 10 CFR 50.69(d)(2) states “The licensee or applicant shall ensure, with reasonable confidence, that **RISC–3 SSCs remain capable of performing their safety-related functions under design basis conditions, including seismic conditions and environmental conditions and effects throughout their service life. ... Inspection and testing, and corrective action shall be provided for RISC–3 SSCs.”**
- 10 CFR 50.69(e)(3) states “The licensee shall **consider data collected in § 50.69(d)(2)(i) for RISC–3 SSCs to determine if there are any adverse changes in performance** such that the SSC unreliability values approach or exceed the values used in the evaluations conducted to satisfy § 50.69(c)(1)(iv)...”

Questions

- NRC Endorsement of Proposed Code Cases and Code Changes?
- Scope
 - How broadly could the alternate requirements be applied?
 - Metallic components only or also graphite?
- Technical
 - Does using Section III for design combined with industrial codes for construction provide reasonable confidence of reliability?

Other Thoughts and Feedback

- Generic approach vs. case by case
 - LWRs: long operating history / experience
 - Non-LWRs: different design functions, little to no history / experience
- Other ASME changes to definition of an Owner