

Appendix B to 10 CFR Part 50 and Advanced Reactors The NRC Standards Forum



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Appendix B to 10 CFR Part 50

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Appendix B to 10 CFR Part 50 - “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” - 18 high level quality assurance (QA) requirements.



Describes the requirements and the criteria for the establishment of QA programs - can be applied in a graded approach.



There have been no regulatory changes to Appendix B to 10 CFR Part 50, it still applies to all safety-related structures, systems, and components (SSCs).



Appendix B to 10 CFR Part 50 is not and should not be an impediment to new reactor design and construction.



Guidance on Classification

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10 CFR Part 50 or Part 52 Applications for Light-Water Reactors

- RG 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants"

10 CFR 50.69, "Risk-informed categorization and treatment of structures, systems and components for nuclear power plants"

- RG 1.201, "Guidelines for Categorizing Structures, Systems, and Components in Nuclear Power Plants According to Their Safety Significance"

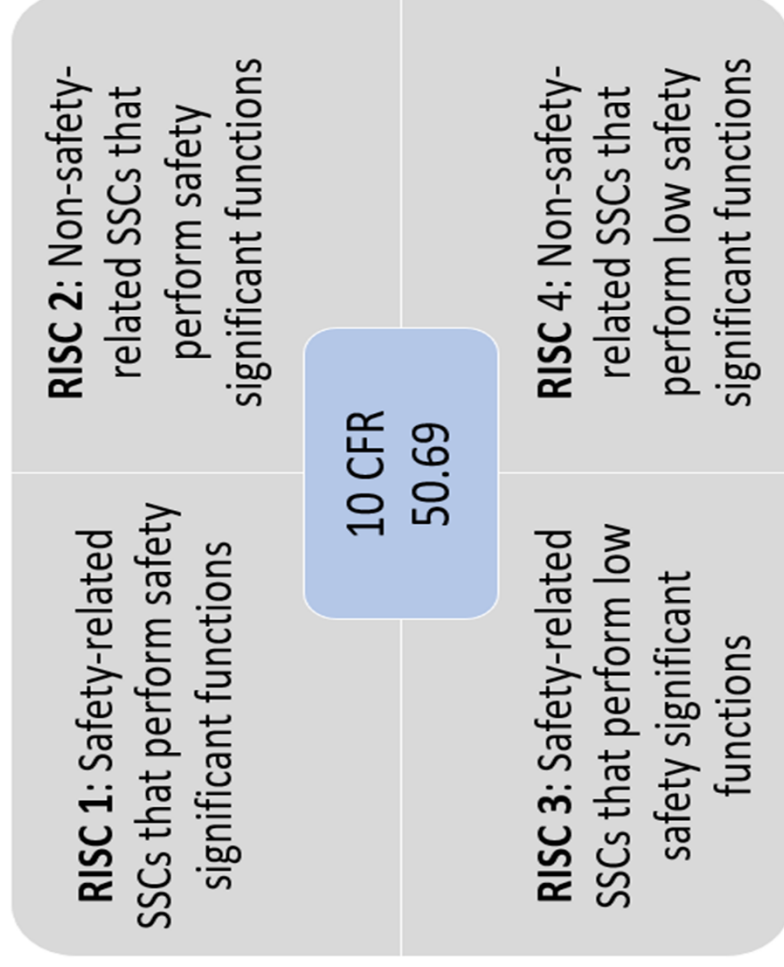
Licensing Modernization Project

- Nuclear Energy Institute (NEI) 18-04, Revision 1, "Risk-Informed Performance-Based Technology Inclusive Guidance for Non-Light Water Reactor Licensing Basis Development"
- RG 1.233, "Guidance for a Technology-Inclusive, Risk-Informed, and Performance-Based Methodology to Inform the Licensing Basis and Content of Applications for Licenses, Certifications, and Approvals for Non-Light Water Reactors"



Risk-Informed Safety Class (RISC)

Classifications



Non-Safety-Related with Special Treatment SSCs: Non-safety-related SSCs that perform risk-significant functions or perform functions that are necessary for defense-in-depth adequacy



Guidance for Implementing Quality Assurance Programs

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NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition” Section 17.5, “Quality Assurance Program Description —Design Certification, Early Site Permit and New License Applicants”	RG 1.28, “Quality Assurance Program Criteria (Design and Construction)”	RG 1.33, “Quality Assurance Program Requirements (Operation)”
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Advanced Reactors and Appendix B to 10 CFR Part 50

- New reactor designs are not finalized, which creates a challenge for the classification of SSCs by the designers/vendors.
- Anticipating fewer safety-related SSCs in advanced reactors compared to large light water reactors.
- ▣ Reduced estimate due to design differences and classification paths, and
- ▣ More non-safety-related SSCs.



Some Possible Pathways to Success: Existing Regulations and Standards

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- Both Appendix B to 10 CFR Part 50 and the ASME Nuclear Quality Assurance (NQA-1) Certification Program offer a graded approach.
- SECY-03-117, “Approaches for Adopting More Widely Accepted International Quality Standards,” dated July 9, 2003.
 - ▣ Identified the gaps between ISO 9001-2000, “Quality Management System (QMS) - Requirements,” and Appendix B to 10 CFR Part 50.
 - ▣ Discusses several approaches for using ISO 9001-2000 within the existing regulatory framework.



Some Possible Pathways to Success:

U Stamp Certificate Holders

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- Potential collaboration with domestic ASME U Stamp (boiler and pressure vessel certification) Certificate Holders:
 - ▣ There are currently over 2300 domestic ASME U stamp Certificate Holders.
 - ▣ U stamp Certificate Holders are already familiar with the ASME accreditation process.
 - ▣ Industry could collaborate with U stamp Certificate Holders to upgrade their QA programs and begin production of N stamp parts.



NUREG-1055

- NUREG 1055, “Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants,” dated May 1984.
- Congress asked the NRC to document a study of existing and alternative programs for improving quality and the assurance of quality in the design and construction of commercial nuclear power plants.
- The study concluded that the root cause for major quality-related problems was the failure or inability of some utility management to effectively implement a management system that ensured adequate control over all aspects of the project.



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