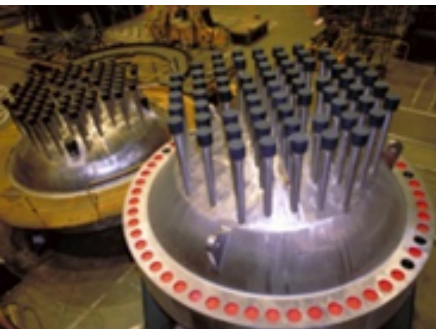




NRC UPDATE

August 3, 2017

EPRI Procurement Program

Clearwater, Florida



Kerri Kavanagh and Ashley Ferguson
Quality Assurance Vendor Inspection Branch-3, Office of New Reactors



Topics

2

- Vendor Inspection Findings
- Commercial Grade Dedication – RG 1.164
- Part 21 - Draft Guide 1291
- 10 CFR Part 50.69 Procurement Applications

3

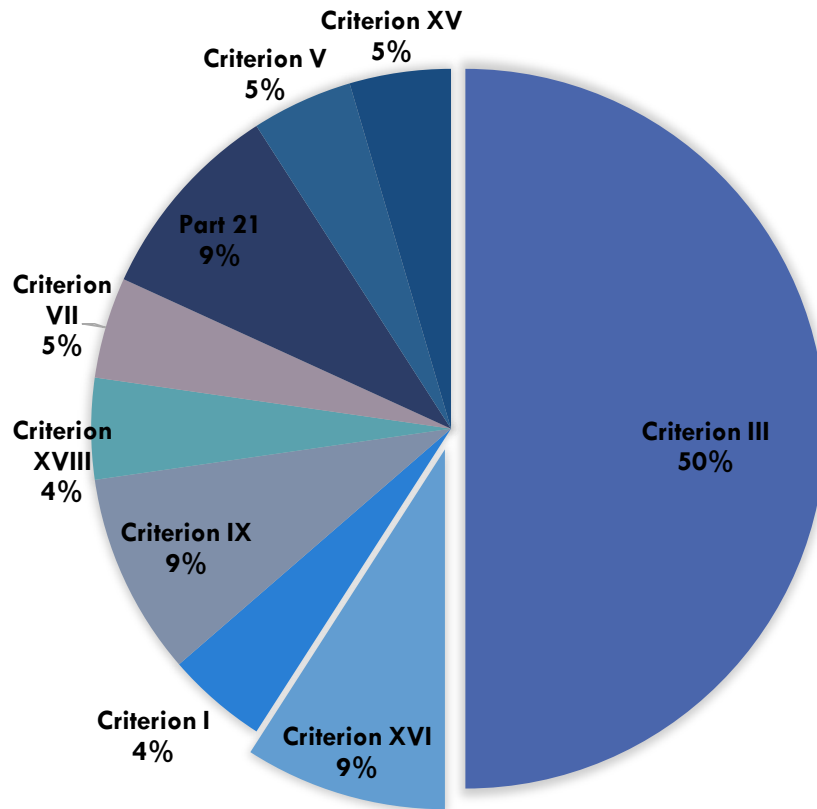
NRC Vendor Inspection Findings



Breakdown of Vendor Inspection Findings

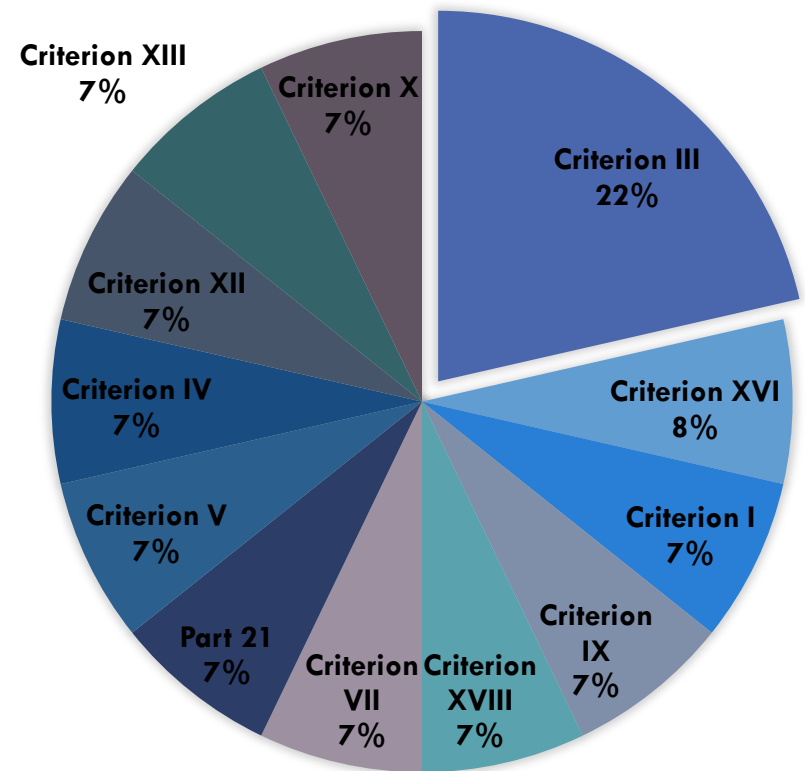
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FY 2016 NOV AND NONS



23 inspections -21 NOVs/NONS

1ST-3RD QTR FY 2017 NOV AND NONS



17 inspections – 35 NOVs/NONS

Vendor Inspection Trends

5

- ▣ Significant Findings
 - Design Control:
 - Implementation of Commercial-Grade Dedication Programs
 - Translation of Design Requirements
 - Oversight of Suppliers
- ▣ Positive Safety Culture



Commercial Grade-Dedication Implementation

6

AZZ NUCLEAR | NLI

- Inspection conducted September 2016 to observe design, fabrication, testing, and dedication of breakers, relays, switches
- Inspection Results
 1. NLI did not verify the adequacy of the design for Masterpact breakers used as motor starters with overcurrent trip devices that are powered from the load side of the breakers
- Take-away: Suppliers need to consider all end-use configurations during dedication or limit certification to specific applications (as applicable)

Commercial Grade-Dedication Implementation

7

AZZ NUCLEAR | NLI cont'd

2. NLI did not identify and verify all critical characteristics for Masterpact breakers:
 - Current interrupting rating was not identified as a critical characteristic and was not verified
- Take-away: Cannot take “credit” for commercial ratings without performing verification

Commercial Grade-Dedication Implementation

8

Ametek

- Inspection conducted in April 2017 to assess Ametek's design of a digital uninterruptible power supply systems as well as their supply of analog legacy power supply systems
- Inspection Results
 - “Design Control” finding associated with not ensuring similarity for seismically sensitive dedicated component

Commercial Grade-Dedication Implementation

9

Ametek cont'd

□ Take-away:

- Need to ensure methods are in place for ensuring similarity for seismically sensitive components when certifying to previous qualification testing
- Need to ensure acceptance criteria chosen to ensure similarity are based upon those taken from qualified specimens as opposed to catalog data



Design Requirements

10

Curtiss-Wright EMD

- Inspection conducted in November 2016 to observe testing, assembly and other manufacturing activities for the reactor coolant pumps
- Inspection Results
 - ▣ EMD did not transfer all pertinent design requirements into applicable instructions and did not to use the material specified in the design specification
 - Alloy 600 Filler weld material was used for flywheel enclosure welds
 - WEC specification required flywheel welds to be made from Alloy 625

Oversight of Suppliers

11

- Recent findings involving inadequate oversight of suppliers that provide basic components to NRC-licensed facilities
 - Not adequately imposing the requirements of Appendix B to 10 CFR Part 50 and Part 21 to their sub-suppliers in the procurement documents. Examples include:
 - Velan IR 99900061/2017-201
 - B&W Canada IR 99900067-2013-201
- Staff proposing an Information Notice to be issued Winter 2017
 - *Applicable requirements when procuring basic components from suppliers implementing ANSI/ISO/ASQ 9001 and ASME NCA-3800/4000*

Positive Safety Culture

12

Greenberry Industrial

- While performing ancillary duties, a fabricator noticed a cracking condition in some welds for a completed CA35 submodule and reported the issue to his supervisor
- The cracks were not detected during the required visual inspection and the cracks may have surfaced after the visual inspection was performed.
- Evaluation determined the cracking was due to a weld flaw, and was a Part 21 reportable defect, that *could* prevent the module from performing its structural design function
- Five AP1000 containment floor submodules recalled

Key Safety Culture Traits Demonstrated:

- ☒ Environment for Raising Concerns
- ☒ Personal Accountability
- ☒ Questioning Attitude
- ☒ Problem Identification & Resolution



13

Commercial Grade Dedication





Regulatory Guide 1.164, “Dedication of Commercial Grade Items for Use in Nuclear Power Plants”

14

- Final RG issued June 2017 (ML17041A206)

- Endorses EPRI 3002002982, Revision 1 to EPRI NP-5652 and TR-102260, “Plant Engineering: Guideline for the Acceptance of Commercial-Grade Items in Nuclear Safety-Related Applications,” with two exceptions

RG 1.164, “Dedication of Commercial Grade Items for Use in Nuclear Power Plants”

15

1) Seismic Qualification

- NRC has not reviewed or approved the following documents as an acceptable approach for meeting NRC requirements:
 - NP-7484, “Seismic Technical Evaluation of Replacement Items for Nuclear Power Plants (STERI)”
 - TR 105849, “Plant Support Engineering: Generic Seismic Technical Evaluations of Replacement Items for Nuclear Power Plants,” Revision 1
- NRC guidance on qualification is found in RG 1.100, “Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants”

RG-1.164, “Dedication of Commercial Grade Items for Use in Nuclear Power Plants”

16

2) Acceptance of Digital Devices

- EPRI 3002002982 Section 14.1, “Digital Equipment and Computer Programs Integral to Plant SSCs,” lists six EPRI guidance documents for accepting digital devices
- Only 2 have been reviewed and endorsed by the NRC:
 - TR-106439 “Guideline on Evaluation and Acceptance of Commercial-Grade Digital Equipment for Nuclear Safety Applications”
 - TR-107330 “Generic Requirements Specification for Qualifying a Commercially Available PLC for Safety-Related Applications in Nuclear Power Plants”
- Supplemental guidance for dedication of software found in RG 1.231
 - RG 1.1231 endorses EPRI 1025243, “Plant Engineering: Guideline for the Acceptance of Commercial-Grade Design and Analysis Computer Programs Used in Nuclear Safety-Related Applications, ” for safety-related use of commercial Design & Analysis Computer Programs (CPs)



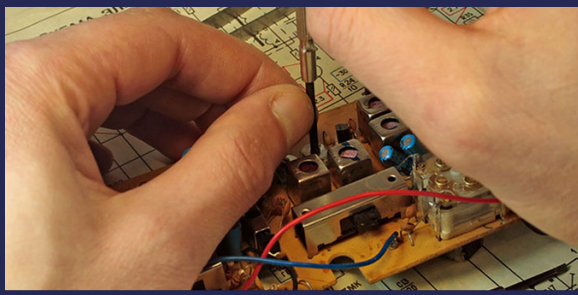


Draft Guide-1291, “Evaluating Deviations and Reporting Defects and Noncompliance”

18

Draft Guide (DG) Status Update

- ❑ Endorses Revision 1 of NEI 14-09, “Guidelines for Implementation of 10 CFR Part 21 Reporting of Defects and Noncompliance” (ML16054A825)
- ❑ Provides clarification on Part 21 requirements for reporting and evaluating
- ❑ Part 21 rulemaking has been cancelled based on 2015 Project AIM recommendations and rebalancing of agency’s work load
- ❑ DG to be issued for public comment ~August 2017



19

10 CFR 50.69 Procurement Applications



Voluntary Alternative Risk-Informed Rule

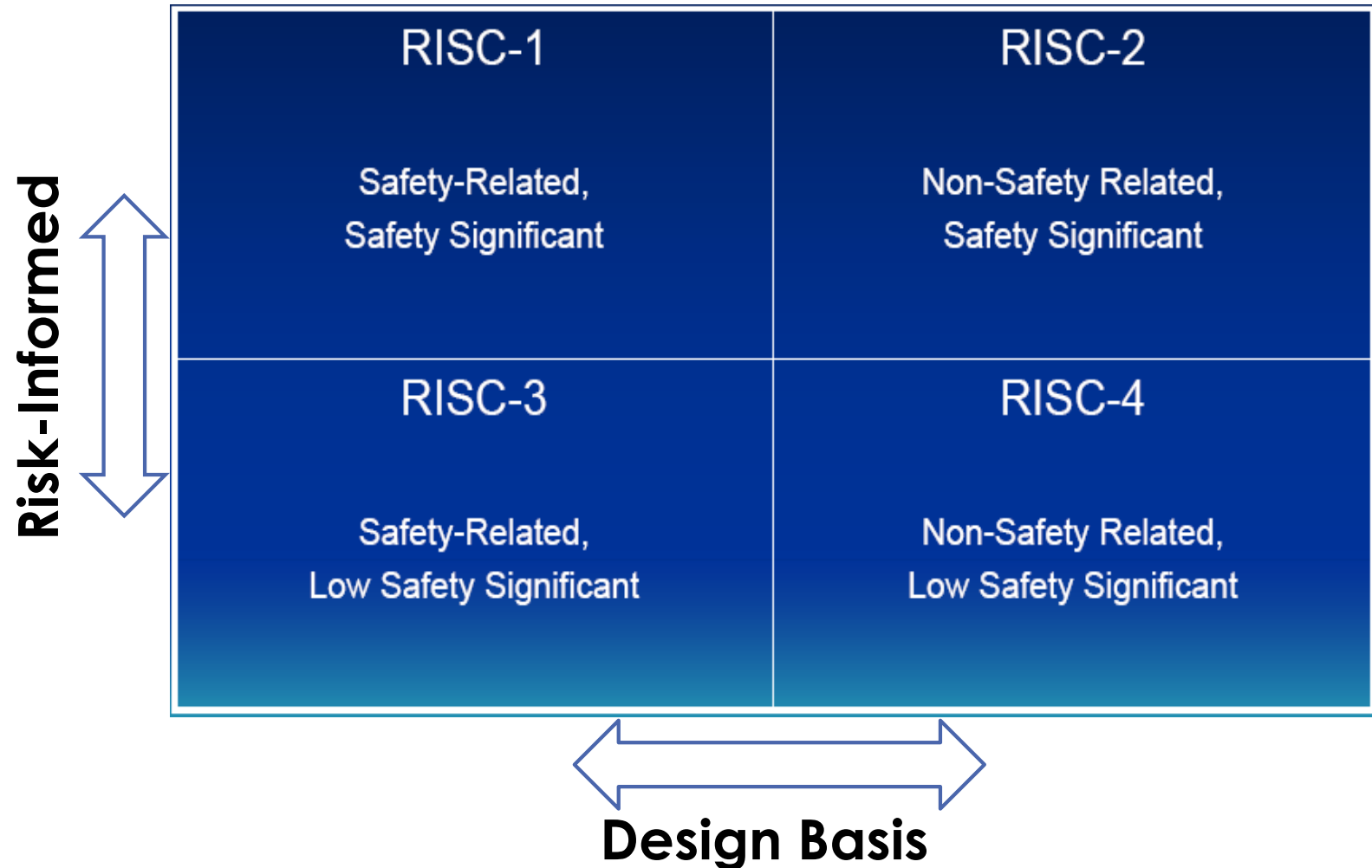
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- Determine safety significance of SSCs
- Modify special treatment requirements for SSCs of low safety significance
- Safety significance of SSCs is established based on NRC approved risk-informed categorization process



Four Box Categorization

21



SSC Treatment is Based on Safety Significance

22

- RISC-1 and RISC-2 maintain current regulatory requirements
- For RISC-3, special treatment can be replaced with alternative treatment
- For RISC-4, no new treatment requirements imposed



Special Treatment can be modified for Low Safety Significant SSCs

23

- Reporting (10 CFR Part 21)
- Quality assurance (10 CFR 50 Appendix B)
- Environmental qualification (10 CFR 50.49)
- Inservice testing, inservice inspection
- Certain containment leakage testing requirements (10 CFR 50 Appendix J)
- Seismic Qualification (10 CFR 100 App A)

Low Safety Significant SSCs Must Be Able to Perform their Function

24

- Licensee must ensure that RISC-3 SSCs can continue to perform their safety functions
- SSC functional requirements cannot be eliminated
- Licensee can select which systems to categorize, but must categorize all SSCs in the selected system



NRC Staff Review Scope

25

- LAR Reviews:
 - ▣ NRC staff reviews the quality of the PRA models used in the categorization process
 - ▣ NRC approves categorization process
- NRC does not review or approve alternative treatment
 - ▣ Decided by licensees for specific SSCs
 - ▣ Subject to inspection



For More Information...

26

- ❑ The Quality Assurance for New Reactors Website offers a variety of information including:
- ❑ Vendor Inspection Program (VIP) Plan
- ❑ <http://www.nrc.gov/reactors/new-reactors/oversight/quality-assurance/vendor-insp/vendor-insp-prog-plan.html>
- ❑ Vendor Quality Assurance (QA) Inspection Reports for New Reactors
- ❑ <http://www.nrc.gov/reactors/new-reactors/oversight/quality-assurance/vendor-insp/insp-reports.html>
- ❑ Quality Assurance (QA) Inspections for New Reactor Licensing
- ❑ <http://www.nrc.gov/reactors/new-reactors/oversight/quality-assurance/qual-assure-license.html>

ANY
QUESTIONS
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