

Licensing Digital I&C

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Outline

- Context
- Challenges and Opportunities
- NPP Rulemaking & Commission Direction
- Integrated Action Plan
 - Common Cause Failure
 - 50.59
 - NPP Specific- Commercial Grade Dedication of Digital Equipment
 - Regulatory Infrastructure

Challenges and Opportunities

- Obsolescence is a Growing Concern
- Limited Approved Digital Equipment
- Component Replacements (Embedded Digital Devices)
- Limited System Replacements

Context

- Challenges and Opportunities
- Need for Common Understanding of Regulatory Requirements
 - University of Florida – Training Reactor
 - TAMU AGN CAL
 - MIT Nuclear Reactor Library
 - Purdue PUR-1
 - AFFRI
 - NIST

NPP Rulemaking & Commission Direction

- SECY 15-0106 (ML113190983)
 - Incorporate IEEE 603 & Other Perspective Requirements
- SRM to SECY-15-0106 (ML16156A614)
 - Commission Disapproved Recommendation
 - Develop Plan to Modernize I&C Regulatory Infrastructure
 - Stakeholder Interaction
 - “to reach a common understanding of the digital I&C regulatory challenges, priorities, and potential solutions to address them”
 - continue meaningful interaction through implementation of the plan
- Reaching out to NPUF community

Integrated Action Plan

- Near-Term Topics (generally within 2 years)

Prioritize and implement the regulatory activities needed to provide near-term regulatory clarity and support industry confidence to perform DI&C upgrades

- Position on Common Cause Failure
- Incorporating DI&C using the 10 CFR 50.59 Process
- Commercial Grade Dedication of Digital Equipment

Integrated Action Plan

- Longer Term Item

Assessment and Implementation of Modernization of the I&C Regulatory Infrastructure.

- Building on the results and conclusions of the first four activities
- Implement a simpler, streamlined and agile I&C regulatory infrastructure

IAP – Common Cause Failure

- The objectives are to
 - Evaluate the current NRC position using best science and experience since 1993
 - Provide clear and effective guidance to licensees to determine the potential for CCF in digital I&C
- To achieve this objective, the NRC staff will
 - Develop a technical basis
 - Consult with external technical experts
 - Engage industry through workshops and public meetings
 - Make recommendation to the Commission

IAP – 50.59 Process

- Per NEI 96-07 Rev. 1 as endorsed by RG 1.187
 - Applicability
 - TS Changes require a LAR
 - Excludes changes controlled by other more specific requirements
 - Screening
 - Is the activity a change to the facility or procedures as described in the FSAR (as updated)?
 - Is the change adverse?
 - Is the activity a test or experiment not described in the FSAR (as updated)?
 - Evaluation
 - Address the eight questions in 10 CFR 50.59 (c)(2)

IAP – Commercial Grade Dedication of Digital Equipment

- Evaluation of third-party certification of digital hardware and software
 - Independent, third-party certification has been effective in some other industries.
 - The use of this process either alone or in conjunction with the CGD process could reduce the scope of digital systems reviews that the staff need to complete
- NRC will need to evaluate this concept and any policy implications that it may have

IAP – Modernization of the I&C Regulatory Infrastructure

- Assessment for Modernization of the I&C Regulatory Infrastructure.
 - Objectives
 - Provide near-term regulatory clarity
 - Support industry confidence to perform DI&C upgrades
 - Broadly evaluate current I&C regulatory infrastructure
 - Consider other Important Areas
 - (licensing review experiences, research efforts, operating experience, other safety-critical industries, & international perspectives)
 - identify and prioritize the improvements to modernize the regulatory infrastructure over the longer term in light of evolving approaches to I&C.

Conclusion

- Few Opportunities for Clarify Regulatory Criteria
- Please Participate While you can
 - CCF
 - Public Meetings
 - 50.59 – NEI 96-07 Appendix D
 - Public Meetings
 - NEI
 - TRTR