

NRC Staff Perspective & Questions

NEI 96-07, Appendix D, Draft Rev. 0
April 28, 2016

Outline

- NRC Review Schedule
- Positive Attributes of Proposed Guidance
- Initial Observations
 - Significant Issues
 - Draft Comments/Questions
- Path Forward

NRC Review Schedule

- April 4: Received proposed Appendix D
- April 28: Public Meeting - Overview of Appendix D
- May: Public Meeting – Discuss key issues and potential resolution
- June: Issue comments
- September: Receive updated Appendix D
- December: Issue NRC Decision

Positive Attributes of Proposed Guidance

- Response to inspection experience and 2013 NRC concerns on NEI 01-01
- Provides examples relevant to current DI&C technologies (e.g. EDDs)
- Addresses Couplings Between Systems/Functions

Initial Observations - Significant Issues

- Proposed elimination of CCF based on the likelihood of occurrence.
 - Q1: Explain apparent Contradiction between:
 - Appendix D
 - Current/revised NRC position on CCF
 - Q2: Equivalency to Licensing Conditions of “Not Credible”
 - Q3: Dependability: Commercial Grade Dedication vs Reliability
- Consistency of Terminology and Guidance
 - New Terminology
 - Q4: Deviations from current NRC and industry terminology and definitions
 - Existing Guidance & Staff Positions
- Reference to Implementing Technical Guidance
 - Q5: (Example) Coping & Hazard Analysis

Q1: Please explain “CCF Unlikely” in terms of the current regulatory context.

- Design vs Licensing Considerations
 - D3 Analysis Addresses Principle Design Criteria
 - LAR vs 50.59 is a Separate Question
- Definition: “CCF Unlikely” or “NOT credible in licensing” need further details. At a minimum a D3 analysis should be included per NRC staff accepted practice (e.g., BTP 7-19).

Q2: Explain "equivalent to a licensing condition of Not credible" and "or Not as likely."

- NRC staff is not aware of any licensing conditions of "Not Credible" or "Credible." Similar terms are used throughout the App. D. Please explain why the term is being used and how it relates to the provisions of 10 CFR 50.59 and 50.90.

Q3: Identify a particular process to make the assumption digital is “dependable.”

- CGD Not Sufficient to Eliminate “Not more than a Minimal increase” Considerations
- Section 3.2.1.4, “Dependability,” only lists three activities for design measures to address dependability.
 - A particular high integrity, high quality design development process (e.g. IEEE) should be articulated here.

Q4: Why are new terms needed?

- Background: NEI 01-01 used industry consensus terms and referenced their origin.
- New terms that deviate from existing industry and NRC terminology have been created
 - Example: “Variety and layers of design”
 - vs “diversity and defense in depth”
- Existing terminology has been revised
 - Example: CCF
- New licensing terminology (methodology?) created
 - Example: “CCF Unlikely” & “CCF Not Likely”
 - Vs. EPRI Level 0, 1, & 2

Q5: Criteria and methodologies for Coping & Hazard Analyses.

- Section 3.2.1.3, “Coping Analyses” and Section 4.2.1, “Hazard Analysis” need criteria and methodology formally found acceptable to the NRC for performing these analyses (e.g., BTP 7-19 & DSRS Appendix A).
 - Note: RIL-1101 (ML14327A359) Appendix C includes a comparative survey of methods used elsewhere for hazard analysis.

Additional Discussion Issues (as time permits)

- FSAR Assumptions based on Legacy Equip.
- Fundamental Licensing Differences.
- Criteria for to determine “adverse” change.

FSAR assumptions on accidents and malfunctions were based on the equipment at the time.

- “Combining” components through modern hardware might not affect anything explicitly stated in the FSAR but might nevertheless be contrary to tacit assumptions that are included within it.

Describe fundamental licensing basis differences - analog vs digital

- Appendix D should address the fundamental licensing basis differences analog and digital technologies.

Add criteria to determine if a fundamental “adverse” change exists.

- NEI 96-07 states: “changes that fundamentally alter (replace) the existing means of performing or controlling design functions should be conservatively treated as “adverse.”
 - Since Section 3.1 of App. D addresses “Fundamental Changes,” it should provide guidance to determine what constitutes a “fundamental change.”

If a new malfunction or accident initiator is not created a digital mod may not be OK.

- Combining components section seems to imply this. It seems to neglect the 50.59 question dealing with the likelihood of a malfunction. The examples of combining trains conclude there is no impact because no new malfunction is created. Neglects the likelihood of malfunction question.

Include analysis to show likelihood of malfunction is same or decreased as result of digital upgrade.

- Combining components, in section 3.2.1.2, provides example on “Does NOT cause adverse impact.” Include a discussion of what engineering analysis is required to demonstrate the likelihood of a malfunction is essentially the same or decreased as a result of the digital upgrade.

Path Forward

- NRC and NEI Schedule
- Topics for next meeting
- Action Items from this meeting