

CCF, Design Attributes, & Graded Approach: under 50.59

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Progress on Appendix D

Introduction / Background

Definitions

Screen Guidance

Evaluation Guidance

Examples

Evolving CCF Strategy

- Common Goal: Remove consideration of CCF from certain licensing decisions for simpler systems
- “CCF Unlikely” and “Sufficiently Low” language was removed from Appendix D
- Current Focus for Addressing CCF:
 - Design Attributes (part of EPRI/Industry objective)
 - Bounding (discussed at 12/1/16 CCF Public Meeting)

Objectives

- September 21, 2016 Public Meeting Open Item:
“1) NRC staff to address what it means when it says a CCF is beyond the design basis.”
- November 2, 2016 Public Meeting Open Item:
“6) NRC staff will provide additional clarification on the use of design attributes to eliminate further consideration of SW CCF.”
- November 2, 2016, Public Meeting Open Item:
“2) NRC staff will provide information on graded approach before the December 14, 2016 meeting”

What it means when it says a CCF is beyond the design basis

- What 50.59 guidance tells you how to treat equipment that addresses “Beyond Design Basis” events?
 - ATWS
 - CCF
 - Meteor Impact
- This question is not relevant
 - Design Basis Events are a subset of the Design Basis
 - Design Basis is a subset of Licensing Basis
 - Consideration of CCF is part of Licensing Basis (but not as a DB accident)
 - 50.59 addresses certain changes to the licensing basis

How to address CCF under 50.59

- Design Attribute Evaluation
 - Determines if Coping is required
 - Used during Evaluation for elimination of further consideration of SW CCF
- Coping
 - Determination of outcomes (based on Best Estimate analysis for SW CCF)
 - Done as part of design work (i.e., prior to start of 50.59 evaluation)
 - Used during Evaluation
- Bounding
 - Comparison of Proposed Outcomes to FSAR Outcomes?
 - Done as part of 50.59 Evaluation
 - Two Case: (1) Replacing Digital Equipment, (2) Replacing Analog Equipment
 - Options?
 - Directly compare Coping outcomes to FSAR values when answering 50.59 Questions
 - Use other (e.g., relaxed) comparison criteria (e.g., 10% of Part 100 Limits)
- Graded Approach

Objective:

Allow Design Attribute Evaluation under 50.59

- Proposal: If a SSC has sufficient “design attributes to eliminate consideration of CCF” (e.g., meets BTP 7-19 Section 1.9 Criteria, or other NRC approved criteria) then Software CCF need not be considered when answering the 50.59 evaluation questions.
- Implementation:
 - Need a methodology, process, or procedure to follow for each design attribute.
 - Scope for CCF Group not 50.59 Group
- No Specific Methodology is being Endorsed at this time
(Just opening the door)

Potential Graded Approach

- LAR: New protection system (i.e., RTS & ESFAS) designs/modifications (to demonstrate adequate diversity is maintained, per GDC 22)
- If Design Attributes do not allow elimination of CCF from consideration then: (per design guidance; i.e., BTP 7-19 Sections 1.9; not 50.59 guidance)
 - All modifications to safety functions require a D3 analysis (per SRM to SECY 93-087)
 - Mitigation System
 - LAR required if BTP 7-19 Criteria are NOT met with existing analysis (i.e., new analysis requires NRC review via a LAR)
 - BTP 7-19 is considered an NRC approved methodology
 - Support System
 - Even after Coping, a Mitigation System is impacted (i.e., new analysis required)
 - Non-SAFETY Related
 - 50.59: ALL failures of non-safety-related equipment are mitigated with existing analysis
 - LAR: new analysis requires NRC review via a LAR