

Risk-Informed, Performance-Based Fire Protection Implementing Guidance

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Agenda

- SECY 02-132 topics
- Implementing Guidance topics
- Next revision of Implementing Guidance

Industry Perspective on Proposed Rulemaking

- Voluntary option for implementing a risk-informed fire protection program
- Transition process
- Some issues not yet resolved

Topics – SECY 02-132

- Definition of "previously approved"
- Consistency issue
- Seismic standpipes
- GL 86-10 evaluation acceptance criteria
- Feed and bleed
- Time estimate to implement
- Radioactive release
- License amendments for other methods

SECY – Previously Approved

- SECY 02-0132, III.A, “Section 2.2.1”
Licensee establishes fundamental fire protection elements in accordance with Chapter 3 of NFPA 805 on a plant-wide basis, taking credit for alternatives that have been “previously approved” by the authority having jurisdiction (AHJ) (NRC).
- 6.1.2 and 6.2.2 of Implementing Guidance
 - Section 6.1.2 provides the strategy for determining “previous approval”
 - Section 6.2 provides the process for fire protection fundamentals and nuclear safety performance criteria



Implementing Guidance – Previously Approved

- Implementing Guidance Section 6.1.2: Previous NRC acceptance or approval is found by comparing licensee submittals with NRC responses.
 - **Explicit NRC acceptance** of attribute
 - **General acceptance:** Find the related chain of supporting correspondence between the NRC and licensee and other related documentation, such as meeting minutes.
 - **No NRC correspondence:** Determine docketed licensee correspondence that informed the NRC that certain changes in the fire protection program would be taken by a certain date.

Consistency Issue

- Improve consistency of terminology used in SECY and NFPA 805:
 - Fundamental program attributes - headings of Sections 3.1 through 3.11
 - Fundamental program elements – sub-headings of some program attributes
 - Design requirements – sub-heading of other program attributes
 - Alternatives – same as fundamental program attributes

SECY – Seismic Standpipes

- 50.48(c)(2)(vi)
 - This paragraph would not allow a standpipe/hose station system in place of seismically qualified standpipes and hose stations unless previously approved in the licensing basis.
 - Comment: Need to clarify discussion on p. 25 of SECY. If design was previously approved, this requirement is of no effect.
- Section 6.2.1 of Implementing Guide
 - Example: Identification of previous approval

SECY – Generic Letter 86-10 Evaluations

- SECY 02-132, III.A, “Sections 2.2.6, 2.2.7, and 2.2.8”
 - “A licensee may demonstrate compliance with Section 4.2.3 using existing engineering equivalency evaluations (e.g., licensee-developed GL 86-10 engineering evaluations, or NRC approved exemption requests) if the licensee ensures that the reactor plant meets the threshold of Section 2.2.7 (that ‘these existing engineering evaluations shall clearly demonstrate an equivalent level of fire protection compared to the deterministic requirements’).”
- Section 6.2.2 of Implementing Guide
 - Industry agrees - will elaborate in subsequent revision of implementing guidance

SECY – Feed and Bleed

- 50.48(c)(2)(iii) *Use of Feed-and-Bleed*
 - Does not accept the use of a high pressure charging/injection pump coupled with the pressurizer PORVs as the sole fire protected shutdown path for maintaining reactor coolant inventory, pressure control, and decay heat removal capability (i.e., feed-and bleed) for PWRs.
- IG Section 8 and Appendices B-2 and D-4
 - Underlying success criteria for Fire PRA includes the use of Feed and Bleed. Intent is not to use it as the sole method of compliance but as one of several in a risk analysis



SECY – Work Estimate for Transition

- SECY 02-132, Section XII
 - There is an estimated one-time burden of 20,000 to 65,000 hours for each licensee who chooses to use NFPA 805 to complete the required one-time plant-wide reanalysis of the reactor's fire protection systems, equipment, features, and procedures
 - Comment
 - What is underlying assumption for this NRC estimate?
Upper end of the estimate seems very high
 - Industry Estimate
 - Not estimated yet

SECY – Radioactive Release

- NFPA 805 Section 1.5.2
 - “1.5.2 Radioactive Release Criteria. Radiation release to any unrestricted area due to direct effects of fire suppression activities (but not involving fuel damage) shall be as low as reasonably achievable and shall not exceed applicable 10 CFR, Part 20, limits.”

SECY – Radioactive Release

- SECY 02-132, XI
 - The NRC determined that there would not be significant radiological or non-radiological impacts. Under NFPA 805, the environment would continue to be adequately protected because the methods used for fire detection, suppression, and mitigation are the same as those used under the existing fire protection requirements.
- Section 6.2.4 of Implementing Guidance
 - Radioactive release criteria for fuel damage and fire suppression activities is met through combination of preventing fuel cladding damage and appropriate pre-fire plans

SECY – Other Methods

- SECY 50.48 (c)(4)
 - A licensee may submit, as a 50.90 license amendment, a request to use alternative methods and analytical approaches to the fundamental fire protection program elements in Chapter 3 as well as other areas of NFPA 805.
- Section 4.3.3 of Implementing Guidance
 - Disagree. Approval of such requests does not require a 50.90 license amendment; an SER is sufficient. See NEI letter of July 10, 2002.

50.48(c)(4) Comment

- Recommended language:
 - “(4) Alternative Methods and Analytical Approaches. A licensee may submit a request to use alternative methods and analytical approaches in lieu of those methods and approaches specified in NFPA 805, including performance-based methods to address the fundamental fire protection program elements and minimum design requirements identified in Chapter 3. The request may be in the form of a docketed letter to NRC from a licensee or industry organization. The Director....”

Topics – Implementation Guide

- Process:
 - Regulatory Framework - Chapter 4
 - Transition Process - Chapter 6

Implementing Guidance – Chapter 4 Regulatory

- Provides overview of rule – Section 4.2
- Provides guidance on licensee submittal - Section 4.7
- Provides guidance on use of NFPA under current licensing basis - Section 4.8

Implementing Guidance – Chapter 6 Transition Process

- Transition process overview (6.1)
 - Figure 6-1 walkthrough
- Fundamental attribute transition overview
 - Transition example walkthrough
- Nuclear safety transition overview
 - Figure 6-2 walkthrough

Topics – Implementation Guide Next Revision

- Chapter 8
 - Plant Change Evaluations
 - Program Documentation, Configuration Control, and Quality
- Appendix B: Nuclear Safety Criteria
- Appendix D-4: Fire Modeling
- Appendix H: Non-power Operations
- Appendix I: Radioactive Release