

**Preliminary Outline
Industry Implementation Guidance for
Risk-Informed, Performance-Based Fire Protection
December 11, 2001**

1. Introduction
2. Framework for revision of fire protection regulations (NRC letter 7-31-01)
 - 2.1 Draft rule language
3. Application of risk-informed, performance-based concepts/methods to fire protection regulation
 - 3.1 NFPA 805
 - 3.1.1 NFPA 805 elements related to nuclear safety and release goals
 - 3.2 Regulatory Guide 1.174
4. Definitions and applicability of terms

Specifics to be supplied after guidance document written
5. Options available (overview)
 - 5.1 Maintain existing licensing basis
 - 5.1.1 Use of NFPA 805 tools within current licensing basis
 - 5.1.1.1 Appendix R plants (exemptions, GL 86-10 evaluations, new change process)
 - 5.1.1.2 BTP plants (deviations, GL 86-10 evaluations, new change process)
 - 5.1.1.3 SRP plants (deviations, GL 86-10 evaluations, new change process)
 - 5.2 Adoption as new licensing basis
6. Industry assumptions and positions associated with transition process
 - 6.1 Adoption is optional
 - 6.2 Other
7. Implementation guidance for adoption of new licensing basis (transition process)
 - 7.1 Applicability
 - 7.2 Potential additional analysis required – shutdown, low power operations, PSA
 - 7.3 Analysis/documentation of current licensing basis (address compensatory measures)
 - 7.4 Review of NFPA 805 (see Appendix A)
 - 7.5 Documentation of current licensing basis vs NFPA 805
 - 7.5.1 Scope/level of documentation required to demonstrate compliance with rule
 - 7.5.2 Deviations from NFPA codes other than NFPA 805
 - 7.6 Identification of licensee positions
 - 7.6.1 Acceptable provisions of NFPA 805
 - 7.6.2 Exceptions/alternate approaches to provisions of NFPA 805
 - 7.6.2.1 Current approaches in docketed licensing basis to be retained
 - 7.6.2.2 New RI or PB approaches (in lieu of current or NFPA 805 approaches)
 - 7.7 Preparation of license amendment submittal
 - 7.7.1 Documentation to be submitted

- 7.7.2 Documentation to be maintained onsite
 - 7.7.3 Recommended criteria for NRC review and approval
 - 7.7.4 Licensee actions after NRC approval
- 7.8 Changes to fire protection programs after initial submittal and NRC approval
 - 7.8.1 Changes not requiring prior NRC approval
 - 7.8.1.1 Types of changes
 - 7.8.1.2 Plant documentation guidance
 - 7.8.2 Changes requiring prior NRC approval
 - 7.8.2.1 Types of changes
 - 7.8.2.2 Documentation and submittal guidance
- 8. Implementation guidance for use of NFPA 805 tools within current licensing basis
 - 8.1 General regulatory guidance
 - 8.1.1 Guidance for determining whether prior regulatory review required
 - 8.1.2 Preparation of GL 86-10 evaluations
 - 8.1.3 Preparation of exemptions
 - 8.1.4 Preparation of deviations
 - 8.1.5 Preparation of other exceptions (if appropriate)
 - 8.1.6 Documentation
 - 8.1.6.1 Documentation to be submitted
 - 8.1.6.2 Documentation to be retained
 - 8.1.7 Recommended criteria for NRC approval
 - 8.1.8 Licensee Actions After Approval
 - 8.2 Application of NFPA 805 tools within the current licensing basis
 - 8.2.1 Fire modeling
 - 8.2.2 Fire risk evaluations (address PSA quality)
 - 8.2.3 NEI 00-01
 - 8.2.4 Performance-based tools
- 9. Configuration management (change impact review)
 - 9.1 Determining impact of plant changes (should be covered by existing processes)
 - 9.2 Determining impact of NFPA 805 revisions, Tentative Interim Amendments, or formal interpretations
 - 9.3 Determining impact of generic operating experience and new regulatory guidance
- 10. Relationship with other rules, regulatory guidance, industry standards, and programs
 - 10.1 Reactor Oversight Process/Significance Determination Process
 - 10.2 Corrective action Program
 - 10.3 New 10 CFR 50.59 rule
 - 10.4 Maintenance Rule
 - 10.5 Regulatory Guide 1.189
 - 10.6 10 CFR 50.72, 50.73
 - 10.7 NUMARC 91-06 (Shutdown)

Appendix A: Interpretations of (or acceptable methods to implement) NFPA 805 provisions

(Address content of section and appropriate appendices; provide for one acceptable method and allowance for licensee-recommended alternatives)

A-0 Positions on applying NFPA 805 (may be folded into specific subsection discussions A-1 to A-5)

A.0.1 Industry assumptions and positions associated with NFPA 805

A.0.1.1 Barriers to implementation to be addressed in rule (see NEI letter 3-23-01)

Interior finishes (3.3.3)

Plenum-rated cable (3.3.5.1)

Seismic IE motor-driven fire pumps (3.5.4)

Exception in 3.6.4

Operator actions (4.2.3.1)

3-hour barriers (4.2.3.2)

Section 5 changes corresponding to rule exceptions above

A.0.1.2 Defining fire scenarios

Maximum Expected Fire Scenario

Limiting Fire Scenario

A.0.1.3 Assessment of uncertainties

A.0.1.4 Acceptance criteria (including 86-10 evaluations)

A.0.1.5 Plant risk, baselining, and risk bundling

A.0.1.6 PSA quality

A.0.1.7 PSA methods

A.0.1.8 Acceptable to AHJ (if different from A.0.1.4)

A.0.1.9 Life safety and business interruption not applicable

A.0.1.10 Manual operations

A.0.1.11 Shutdown, low power operations

A.0.1.12 Chapter 5 not applicable

A.0.2 Guidance related to NRC exceptions to NFPA 805 in rule (NRC Letter 4-6-01)

A.0.2.1 Nuclear safety performance criteria for PWR decay heat removal

A.0.2.2 Hose station/standpipe exception in NFPA 805

A.0.3.3 Use of recovery actions in performance-based approach

A-1 NFPA 805 Section 1

Relationship between goals, objectives, and performance criteria

Business interruption

Life safety

Equivalency

Part 20 vs Part 100

Applicability of standard to all modes of operation

Other

A-2 NFPA 805 Section 2

Monitoring

Models; other performance-based methods; PSA approaches, method, and data acceptable to AHJ

Risk acceptance

Uncertainty analysis

Figure 2.2 and its relationship to performance criteria

What size change triggers plant evaluations

Safety margins and defense-in depth

Baseline risk

Approach for fire risk evaluation of non-PRA engineering evaluations
Personnel actions influencing the fire scenario to be evaluated
Guidance for risk-informed change evaluations, fire risk evaluations (synonymous)
Smoke impacts

A-3 NFPA 805 Section 3

Documenting deviations from NFPA codes, either existing or future
Impairment duration (3.2.3)
Combustible control (3.3.1.2)
Hot drills (3.4.3 (2))
Fire pump separation (3.5.5)
Hydrants (3.5.15)
Fire water supply (3.5.16)
Class III standpipe (3.6.1)
Sprinklers for diesel-driven fire pumps (3.9.4)
Conduits (3.11.4 (b))
Exception 2 to 3.11.5
Other sections as needed

A-4 NFPA 805 Section 4

Selection of approach for each fire area (4.4.2)
Evaluation of additional risk posed by recovery actions (4.2.4)
Evaluation of risk of alternative compared with deterministic requirements (4.2.4.2)
Implementation of Figure 4.2.2
Treatment of “shall” requirements for plant damage/business interruption
Treatment of “shall” requirements for life safety
Guidance to operators (4.2.4.1.6)
Embedded conduits
Separation with radiant energy shields

A-5 NFPA 805 Section 5

Appendix B: Methods for performing engineering analysis

Appropriate methods for circuit analysis
Treatment of power, low power, shutdown operating states (B.2.1)

Appendix C: Application of fire modeling

Appendix D: Use of fire PSA methods

Appendix E: Not required

Appendix F: Report on NFPA 805 pilot

Section 4.6.2 – area vs. plant risk guidance
Section 4.6.4 – guidance on integrated decisionmaking
Section 5.3.1 – Part 20