

# REGULATORY GUIDE 1.205 RISK-INFORMED, PERFORMANCE-BASED FIRE PROTECTION FOR EXISTING LIGHT-WATER NUCLEAR POWER PLANTS

## A. INTRODUCTION

This regulatory guide provides guidance for use in complying with the requirements that the U.S. Nuclear Regulatory Commission (NRC) has promulgated for risk-informed, performance-based fire protection programs that meet the requirements of Title 10, Section 50.48(c), of the *Code of Federal Regulations* (10 CFR 50.48(c)) and the referenced 2001 Edition of the National Fire Protection Association (NFPA) standard, NFPA 805, "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants."

In accordance with 10 CFR 50.48(a), each operating nuclear power plant must have a fire protection plan that satisfies General Design Criterion (GDC) 3, "Fire Protection," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." In addition, plants that were licensed to operate before January 1, 1979, must meet the requirements of 10 CFR Part 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," except to the extent provided for in 10 CFR 50.48(b). Plants licensed to operate after January 1, 1979, are required to comply with 10 CFR 50.48(a), as well as any plant-specific fire protection license condition and technical specifications.

Section 50.48(c), which was adopted by the Commission in 2004 (69 FR 33536; June 16, 2004), incorporates NFPA 805 by reference, with certain exceptions, and allows licensees to voluntarily adopt and maintain a fire protection program that meets the requirements of NFPA 805 as an alternative to meeting the requirements of 10 CFR 50.48(b) or the plant-specific fire protection license conditions. Licensees who choose to comply with 10 CFR 50.48(c) must submit a license amendment application to the NRC, in accordance with 10 CFR 50.90. Section 50.48(c)(3) describes the required content of the application.

The Nuclear Energy Institute (NEI) has developed NEI 04-02, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," Revision 2, dated April 2008, to assist licensees in adopting 10 CFR 50.48(c) and making the transition from their current fire protection program (FPP) to one based on NFPA 805. This regulatory guide endorses NEI 04-02, Revision 2, because it provides methods acceptable to the NRC for implementing NFPA 805 and complying with 10 CFR 50.48(c). The regulatory positions in Section C, below, provide additional clarification of the guidance provided in NEI 04-02. All references to NEI 04-02 in this regulatory guide refer to Revision 2 of that NEI guidance document. All references to NFPA 805 in this regulatory guide refer to the 2001 Edition of NFPA 805. Where "NFPA 805" is used in this regulatory guide to describe the FPP, license, etc., of a nuclear power plant, it means that the FPP, license, etc., is in accordance with 10 CFR 50.48(c).

This regulatory guide contains information collections that are covered by the requirements of 10 CFR Part 50 which the Office of Management and Budget (OMB) approved under OMB control number 3150-0011. The NRC may neither conduct nor sponsor, and a person is not required to respond to, an information collection request or requirement unless the requesting document displays a currently valid OMB control number.

## B. DISCUSSION

### Background

Title 10, Section 50.48(a), of the *Code of Federal Regulations*, requires all operating nuclear power plants to implement an FPP that satisfies GDC 3 of Appendix A to 10 CFR Part 50. In addition to the requirements of 10 CFR 50.48(a), plants licensed to operate before January 1, 1979, must meet the requirements of Appendix R to 10 CFR Part 50, to the extent described in 10 CFR 50.48(b). Nuclear power plants that were licensed to operate after January 1, 1979 (post-79 plants), must comply with 10 CFR 50.48(a), as well as any plant-specific fire protection license conditions and technical specifications. Fire protection license conditions typically reference NRC safety evaluation reports (SERs), which are the products of the staff's initial licensing reviews against either (1) Appendix A to Branch Technical Position (BTP) Auxiliary Power Conversion Systems Branch (APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," and the criteria in certain sections of Appendix R to 10 CFR Part 50, or (2) Section 9.5.1, "Fire Protection Program," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (SRP). The SRP closely follows the structure and requirements of Appendix R to 10 CFR Part 50.

The fire protection requirements of GDC 3, Appendix R, and the guidance provided in the BTP and SRP are considered deterministic. The industry and some members of the public have described these requirements as prescriptive and creating unnecessary regulatory burden. The NRC has issued approximately 900 plant-specific exemptions to the requirements of Appendix R.

In SECY-98-058, "Development of a Risk-Informed, Performance-Based Regulation for Fire Protection at Nuclear Power Plants," dated March 26, 1998, the staff proposed to the Commission that the staff work with the NFPA and industry to develop a risk-informed, performance-based consensus fire protection standard for nuclear power plants. This consensus standard could be endorsed in future rulemaking as an alternative set of fire protection requirements to the existing regulations set forth in 10 CFR 50.48. In SECY-00-0009, "Rulemaking Plan, Reactor Fire Protection Risk-Informed, Performance-Based Rulemaking," dated January 13, 2000, the NRC staff requested and received Commission approval to proceed with a rulemaking to permit reactor licensees to adopt NFPA 805 as a voluntary alternative to existing fire protection requirements. On February 9, 2001, the NFPA Standards Council approved the 2001 Edition of NFPA 805 as an American National Standard for performance-based fire protection for light-water nuclear power plants.

Effective July 16, 2004, the Commission amended its fire protection requirements in 10 CFR 50.48 to add 10 CFR 50.48(c), which incorporates by reference the 2001 edition of NFPA 805, with certain exceptions, and allows licensees to apply for a license amendment to comply with NFPA 805 (69 FR 33536). The NRC may incorporate by reference future editions of NFPA 805. However, until the NRC does so, licensees who wish to use specific risk-informed or performance-based alternatives included in future additions of NFPA 805 must submit a license amendment application, in accordance with 10 CFR 50.48(c)(4).

In parallel with the Commission's efforts to promulgate a rule endorsing risk-informed, performance-based fire protection provisions of NFPA 805, NEI worked with the industry and the NRC staff to develop implementing guidance for the specific provisions of NFPA 805 and 10 CFR 50.48(c). The NEI published such guidance in NEI 04-02, Revision 1, in September 2005. Revision 2 to NEI 04-02 was published in April 2008. This regulatory guide provides the staff's

position on NEI 04-02 and offers additional information and guidance to supplement the NEI document and assist licensees in meeting the Commission's requirements.

## **Appendices to NFPA 805**

As discussed in the Statements of Considerations for the final rulemaking incorporating by reference NFPA 805 (69 FR 33536), the appendices to NFPA 805 are not considered part of the rule. However, Appendices A–D provide useful information for implementing the requirements of NFPA 805. The staff finds the specific guidance contained in those appendices to be acceptable to the extent that the guidance is specifically endorsed within the positions contained in Section C of this regulatory guide.

## **Fire Probabilistic Safety Assessment**

Although a licensee may transition to an NFPA 805-based FPP without a fire probabilistic safety assessment (PSA)<sup>1</sup> model, the NRC anticipates that licensees will develop a plant-specific fire PSA for this purpose. The NRC recommends that licensees adopting an NFPA 805 license develop a plant-specific fire PSA as an integral part of their transition process. Without a fire PSA, licensees will not realize the full safety and cost benefits of transitioning to NFPA 805. See Regulatory Positions 3.1 and 4.3 for specific guidance.

## **C. REGULATORY POSITION**

### **NEI 04-02**

This regulatory guide endorses the guidance of NEI 04-02, Revision 2, which provides methods acceptable to the staff for adopting an FPP consistent with the 2001 edition of NFPA 805 and 10 CFR 50.48(c). Future revisions of NEI 04-02 may be evaluated by the NRC, and acceptable revisions will be endorsed in accordance with the appropriate regulatory process.

NEI 04-02 provides the majority of the guidance applicable to implementing the regulatory requirements of 10 CFR 50.48(c) and NFPA 805. The guidance included in this regulatory guide is provided to emphasize certain issues or clarify the requirements of 10 CFR 50.48(c) and NFPA 805.

In addition, the NRC's endorsement of NEI 04-02 does not imply the NRC's endorsement of the references cited in NEI 04-02. The guidance provided by these references has not necessarily been reviewed and approved by the NRC, except where specifically noted in this regulatory guide.

NEI 04-02, Appendix D, "Fire Modeling," and NFPA 805, Appendix C, "Application of Fire Modeling in Nuclear Power Plant fire Hazard Assessments," contain detailed discussions that are useful in determining which fire models to use and in applying those fire models within their limitations. However, the NRC only endorses these appendices to the extent described in Regulatory Position 4.1. Analyses performed by licensees using the information in these

---

<sup>1</sup> The NRC considers probabilistic safety analysis (PSA) and probabilistic risk analysis (PRA) to be synonymous. PSA will be used in this regulatory guide. The term "fire PSA," as used in this regulatory guide, encompasses all levels and types of PSAs, including pre-NUREG/CR-6850-based fire PSAs, fire individual plant examination of external events (IPEEEs), and enhanced internal events PSAs.

appendices should include adequate technical justification for methodologies and data, as appropriate.

## **2. License Transition Process**

### **2.1 General**

Neither 10 CFR 50.48(c) nor NEI 04-02 mandates a specific schedule for implementing an FPP that meets the provisions of NFPA 805. However, licensees who wish to take advantage of the Commission's interim enforcement discretion policy for fire protection will need to establish an implementation schedule consistent with the enforcement policy. NEI 04-02 Section 3 provides additional information on the general transition process.

### **2.2 License Amendment Request**

Section 4.6.1 of NEI 04-02 provides a list of key items that should be included in the license amendment request. Certain aspects of the plant's FPP may not have been specifically approved by the NRC (e.g., through an approved 10 CFR 50.12 exemption request). This has resulted in uncertainty in licensees' fire protection licensing bases. Licensees may elect to submit uncertain elements of their plant's FPP, such as the crediting of operator manual actions and circuit analysis methods, in order to obtain explicit approval of these elements under 10 CFR 50.48(c). NEI 04-02 provides guidance on elements of the FPP that licensees may want to address in the license amendment request for this purpose. The submittals addressing these FPP elements should include sufficient detail to allow the NRC to adequately assess whether the licensee's treatment of these elements meets 10 CFR 50.48(c) requirements.

10 CFR 50.48(c)(2)(vii) allows a licensee to request NRC approval (by license amendment) of the use of NFPA 805 performance-based methods in determining the licensee's compliance with the fire protection program elements and minimum design requirements in Chapter 3 of NFPA 805. 10 CFR 50.48(c)(4), allows a licensee to request NRC approval (by license amendment) of the use of alternative risk-informed or performance-based methods (i.e., methods that differ from those prescribed by NFPA 805) to demonstrate compliance with 10 CFR 50.48(c). Regulatory Position 3.2.3 provides guidance for including such requests in the license amendment request for transitioning to NFPA 805. NEI 04-02 Sections 2.2, 4.3.1, and Appendix L provide guidance related to this topic.

Upon completing the transition to an NFPA 805 licensing basis, the baseline FPP risk will be the risk of the plant as-designed and operated according to the NRC-approved FPP licensing basis.

### **2.3 Existing Engineering Equivalency Evaluations**

Section 2.2.7 of NFPA 805 describes the application of existing engineering equivalency evaluations (EEEEEs) when using a deterministic approach during the transition to an NFPA 805 FPP. One type of EEEEE, commonly referred to as a "Generic Letter 86-10 (GL 86-10) evaluation," allows licensees who have adopted the standard fire protection license condition (under their current FPP and in accordance with GL 86-10) to make changes to the approved FPP without prior NRC approval if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. NEI 04-02 Sections 4.1.1, 4.3.1, 4.3.2, and Appendix B-3 provide guidance on the transitioning of existing engineering equivalency evaluations.

## **2.4 Operator Manual Actions**

Operator manual actions credited for protection of redundant trains in lieu of Appendix R III.G.2 protection, do not meet the deterministic requirements in Chapter 4 of NFPA 805. Consequently, unless specifically approved by the NRC, these operator manual actions should be addressed as plant changes in accordance with Section 2.4.4 of NFPA 805 using performance-based methods. The change process must include an evaluation of the risk impact associated with the operator manual action (either qualitative or quantitative), as appropriate. Quantitative risk calculations should be in accordance with Section 4.2.4.2 of NFPA 805 (a bounding calculation approach is acceptable). Recovery actions (NFPA 805 terminology for operator manual actions and repairs) that meet the required performance criteria of NFPA 805 and the criteria in this regulatory guide for making changes without prior NRC review and approval do not need to be submitted to the NRC for approval. NEI 04-02 Appendix B-2 provides guidance on the transitioning of Operator Manual Actions.

## **2.5 Documentation of Prior NRC Approval**

NEI 04-02 Sections 2.3.1 and 2.3.2 provides guidance for determining and documenting NRC previous approval.

## **3. NFPA 805 Fire Protection Program**

### **3.1 Standard License Condition**

As specified in 10 CFR 50.48(c)(3)(i), the license amendment request must identify any license conditions to be revised or superseded. 10 CFR 50.48(c) and NFPA 805 identify aspects of a performance-based FPP that must be specifically approved by the NRC (referred to as the AHJ in NFPA 805) via a license amendment. It is the intent of 10 CFR 50.48(c) that certain changes may be made to the FPP without prior NRC review and approval. This intent is reflected in the regulatory analysis for 10 CFR 50.48(c), which states, "Licensees choosing to use the flexibilities provided by the rulemaking could use risk-informed and performance-based approaches and methods in NFPA 805, rather than submitting an exemption or deviation request each time they wish to depart from current requirements."

The NRC intends to provide this flexibility to make changes without prior NRC review and approval for licensees that transition to 10 CFR 50.48(c) by adopting the following fire protection license condition, which includes acceptance criteria for making changes to the licensee's fire protection program without prior NRC review and approval. The application of these risk acceptance criteria requires that the plant have an acceptable fire PSA that is in accordance with the guidance in Regulatory Position 4.3 and has been subjected to a peer or NRC review process assessed against a standard as endorsed by the NRC:

(Name of Licensee) shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c) as specified in the licensee amendment request dated \_\_\_\_\_ and as approved in the safety evaluation report dated \_\_\_\_\_ (and supplements dated \_\_\_\_\_).

Except where NRC (AHJ) approval for changes or deviations is required by 10 CFR 50.48(c) and NFPA 805, the licensee may make changes to the fire protection program without prior approval of the Commission if those changes satisfy the provisions set forth in 10 CFR 50.48(a), 10 CFR 50.48(c), and the following:

- (a) Prior NRC review and approval is not required for a change that results in a net decrease in risk for both CDF and LERF. The proposed change must also be consistent with the

- defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation.
- (b) Prior NRC review and approval is not required if the change results in a net calculated risk increase less than  $1E-7/yr$  for CDF and less than  $1E-8/yr$  for LERF. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The change may be implemented following completion of the change evaluation. Change reports need not be submitted to the NRC for these changes.
  - (c) Where the calculated plant change risk increase is  $<1E-6/yr$ , but  $\geq 1E-7/yr$  for CDF or  $<1E-7/yr$ , but  $\geq 1E-8/yr$  for LERF, the licensee must submit a summary description of the change to the NRC following completion of the change evaluation. The proposed change must also be consistent with the defense-in-depth philosophy and must maintain sufficient safety margins. The NRC will respond within 90 days.

NEI 04-02 Sections 4.6 and 5.3 provide guidance on the license amendment request and the post-transition change process.

### **3.2 NFPA 805 Fire Protection Program Change Evaluation Process**

The licensee should perform an engineering evaluation to demonstrate acceptability of the change in terms of the plant change evaluation criteria and compliance with the fire protection requirements of 10 CFR 50.48(a) and NFPA 805. The plant change evaluation process includes an integrated assessment of the acceptability of risk, defense-in-depth (DID), and safety margins, regardless of the methods or approaches used to evaluate the change. NEI 04-02 Section 5.3 contains guidance for performing plant change evaluations.

#### ***3.2.1 Deviations from NFPA 805 Chapter 3 Requirements***

10 CFR 50.48(c)(2)(vii) allows a licensee to request NRC approval (by license amendment) of the use of NFPA 805 performance-based methods in determining the licensee's compliance with the fire protection program elements and minimum design requirements in Chapter 3 of NFPA 805. Performance-based methods must ensure the following:

- (a) the required NFPA 805 performance goals, performance objectives, and performance criteria are satisfied.
- (b) safety margins are maintained.
- (c) fire protection defense-in-depth is maintained.

The license amendment request should include complete and concise details of the proposed methodology to minimize the potential for misinterpretations. Where the performance-based methods have been adequately described in the license amendment request and have been accepted by the NRC in an SER, these methods may be applied to the licensee's FPP. A licensee may apply these approved methods within the limits specifically described in the licensing basis to implement plant changes that affect the FPP without prior NRC review and approval

The types of plant changes that may be approved without prior review and approval will be limited to those for which the risk assessment methods are adequate to demonstrate that any increase in risk will be below the appropriate thresholds. In addition, subsequent changes to the approved performance-based method must be submitted for NRC review and approval (via a license amendment request) prior to being applied to the licensee's FPP

#### ***3.2.2 NRC Approval of Fire Protection Program Changes***

NEI 04-02 Section 5.3.1 provides a discussion of the types of plant changes that may be subject to NRC approval.

### **3.2.3 Plant Changes Without Prior NRC Approval**

This regulatory guide provides one acceptable approach for licensees to make FPP changes without prior NRC review and approval. NFPA 805 Section 2.4.4.1, "Risk Acceptance Criteria," notes that the change in public health risk from any plant change shall be acceptable to the AHJ. The risk acceptance criteria for plant changes as provided in the standard license condition in Regulatory Position 3.1 are acceptable to the NRC.

Where permitted by the approved fire protection license condition, plants that have an acceptable fire PSA that is in accordance with the guidance in Regulatory Position 4.3 and has been subjected to a peer review process assessed against a standard that is endorsed by the NRC, may make changes without prior NRC review and approval based on the criteria in Regulatory Position 3.1.

NEI 04-02 Section 5.3 provides guidance on performing change evaluations.

### **3.2.4 Cumulative Risk of Changes**

Section 2.4.4.1 of NFPA 805 requires licensees to evaluate the cumulative effect of plant changes (including all previous changes that have increased risk) on overall risk. Evaluation of the cumulative risks shall be performed in accordance with Section 3.3.2 of Regulatory Guide 1.174.

Section 2.4.4.1 further states that if more than one plant change is combined into a group for the purposes of evaluating acceptable risk, the evaluation of each individual change shall be performed along with the evaluation of combined changes. Following the transition to the NFPA 805 license, the total risk associated with multiple changes should be combined in accordance with Sections 2.1.1 and 2.1.2 of Regulatory Guide 1.174, when evaluating the combined change against the risk thresholds provided in this regulatory guide or the plant's fire protection license condition. For plants using PSA methods, approved changes should be incorporated in the periodic updates of the PSA model. Cumulative risk increase associated with all changes made after the transition is complete does not need to be calculated. Acceptability of total plant risk will be judged according to Regulatory Guide 1.174. Post-transition risk reductions for plant changes that are not related to the FPP may be used to offset risk increases attributable to FPP-related changes in accordance with Section 2.1.2 of RG 1.174, but must be pre-approved by the NRC as required by the standard fire protection license condition. Risk reductions for changes related to the FPP may be used as offsets without pre-approval by the NRC.

## **3.3 Circuit Analysis**

Industry guidance document NEI 00-01, Revision 1, "Guidance for Post-Fire Safe Shutdown Circuit Analysis," used in conjunction with NFPA 805 and this regulatory guide, provides one acceptable approach to circuit analysis for a plant that has transitioned to a 10 CFR 50.48(c) licensing basis. Where the deterministic requirements in Chapter 4 of NFPA 805 cannot be met for the protection of required circuits, circuit analysis assumptions regarding the number of spurious actuations, the manner in which they occur (e.g., sequentially or simultaneously), and the time between spurious actuations should be supported by engineering analysis and/or test

results that are accepted by industry and the NRC. Aspects of circuit protection that do not conform to the deterministic requirements in Chapter 4 of NFPA 805 and were not previously approved by the NRC in accordance with Regulatory Position 2.4 may be evaluated using the NFPA 805 plant change process. Those evaluations of nonconformances that adequately demonstrate that the required performance criteria of NFPA 805 are met in accordance with this regulatory guide, do not need to be submitted to the NRC for approval.

Section B.2.1 of NEI 04-02 describes three thresholds that are applicable to the change in risk associated with multiple spurious actuations when performing the post-fire safe-shutdown circuit analysis, including change evaluations. The staff accepts the NEI thresholds for screening ( $<1\text{E-}8/\text{yr}$  for  $\Delta\text{CDF}$  and  $<1\text{E-}9/\text{yr}$  for  $\Delta\text{LERF}$ ) and for circuit protection ( $<1\text{E-}6/\text{yr}$  for  $\Delta\text{CDF}$  and  $<1\text{E-}7/\text{yr}$  for  $\Delta\text{LERF}$ ). However, for a risk increase  $\geq 1\text{E-}7/\text{yr}$  but  $<1\text{E-}6/\text{yr}$  for CDF, or  $\geq 1\text{E-}8/\text{yr}$  but  $<1\text{E-}7/\text{yr}$  for LERF, the actions required should be in accordance with the standard license condition in Regulatory Position 3.1. Although the NEI 04-02 thresholds assume no credit for recovery actions, the thresholds in the standard license condition may be applied after appropriate credit is given to feasible and reliable recovery actions.

Quantitative risk calculations must use the approach described in Section 4.2.4.2 of NFPA 805 (compare the noncompliance risk to the compliance risk based on the deterministic approach in Section 4.2.3 of NFPA 805). A bounding calculation approach reviewed and approved by the NRC is acceptable. New scenarios resulting from multiple spurious actuations that are identified should be entered into the corrective action program and evaluated for inclusion into the fire protection licensing basis.

## **4. NFPA 805 Analytical Methods and Tools**

### **4.1 General**

Engineering analyses and associated methods that the licensee applies to demonstrate compliance with the nuclear safety and radioactive release performance criteria should have the requisite degree of technical and defensible justification, as dictated by the scope and complexity of the specific application. Persons qualified in the specific analytical methods should perform these analyses.

### **4.2 Fire Models**

NEI 04-02 section 5.1.2 contains acceptable guidance on the use of fire models.

### **4.3 Fire Probabilistic Safety Assessment/Risk Analysis**

Section 2.4.3.3 of NFPA 805 requires that the PSA approach, methods, and data must be acceptable to the AHJ. This regulatory position provides guidance with respect to acceptability of the approaches, methods and data used for the PSA approach. Additional guidance for the PSA approach is provided by NEI 04-02, including Sections 5.1.3, 5.3.4, J.4, and J.5.

RES and EPRI have documented **one set of** fire PSA methods, tools, and data to support risk assessments in NUREG/CR-6850/EPRI 1011989, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities"-Guidance on PSA quality is provided in Regulatory Guide 1.174 and Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities".

The fire PSAs developed by the licensees that participate in the NFPA 805 Pilot Program will be reviewed by the NRC over the course of the program, such that a separate peer review of the fire PSA will not be required. Plants that do not participate in the Pilot Program should subject their fire PSA to a peer review to the extent that adequate industry guidance is available in a timely manner to support the transition process. The industry guidance will be reviewed and accepted by the NRC prior to its application to specific fire PSAs. The NRC will also review the results of the plant-specific peer reviews. A peer review should be conducted for all types and levels of fire PSAs, including pre-NUREG/CR- 6850-based fire PSAs, fire IPEEEs, and enhanced internal events PSAs. (In the event that adequate industry guidance is not available for conducting a fire PSA peer review, the NRC will review the fire PSA for acceptability.)

The licensee should submit the documented high-level findings from the fire PSA peer review with the 10 CFR 50.48(c) license amendment request, including the resolution (or proposed resolution) of potentially risk-significant findings. Actions required as a result of the review may be completed later, but a schedule for completion should be provided prior to license amendment request approval. Incomplete actions that could have a nonconservative effect on the outcome of a plant change evaluation, should be completed before the licensee's fire PSA is applied to the evaluation of the plant change.

#### **D. IMPLEMENTATION**

The purpose of this section is to provide information to licensees regarding the NRC staff's plans for using this regulatory guide. No backfitting is intended or approved in connection with the issuance of this guide.

Except in those cases in which a licensee proposes or has previously established an acceptable alternative method for complying with specified portions of the NRC's regulations, the NRC staff will use the methods described in this guide to evaluate licensee compliance with the requirements of 10 CFR 50.48(c), as presented in (1) submittals in connection with applications for construction permits, standard plant design certifications, operating licenses, early site permits, and combined licenses; and (2) submittals from operating reactor licensees who voluntarily propose to initiate system modifications that have a clear nexus with the subject for which guidance is provided herein.

#### **REGULATORY ANALYSIS**

The NRC staff did not prepare a separate regulatory analysis for this regulatory guide. The regulatory basis for this guide is the regulatory analysis prepared for the amendments to 10 CFR Part 50, "Voluntary Fire Protection Requirements for Light-Water Reactors; Adoption of NFPA 805 as a Risk-Informed, Performance-Based Alternative," issued on June 16, 2004 (see 69 FR 33536), which examines the costs and benefits of the rule as implemented by this guide. A copy of that regulatory analysis is available for inspection and may be copied (for a fee) at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike, Room O1-F15, Rockville, Maryland.

#### **BACKFIT ANALYSIS**

As stated in the backfit analysis for the rulemaking (see 69 FR 33536), the rulemaking does not involve a backfit because it does not impose new regulatory requirements, because it provides a voluntary alternative to the existing fire protection requirements in 10 CFR 50.48. This

regulatory guide also does not involve a backfit because it does not impose requirements on licensees, and does not contain changed positions on compliance with 10 CFR 50.48(c).

## REFERENCES

**GL 86-10**, "Implementation of Fire Protection Requirements," U.S. Nuclear Regulatory Commission, Washington, DC, April 24, 1986, available electronically through the NRC's public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/gen-letters/1986/gl86010.html>.

**NEI 00-01**, "Guidance for Post-Fire Safe-Shutdown Circuit Analysis," Revision 1, Nuclear Energy Institute, Washington, DC, January 2005, available electronically through the NRC's public Web site, at [http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU\\_ADAMS^PBNTAD01&ID=053010826:2](http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU_ADAMS^PBNTAD01&ID=053010826:2).

**NEI 04-02**, "Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)," Revision 2, Nuclear Energy Institute, Washington, DC, April 2008. Available in ADAMS under Accession #ML052590476.

**NFPA 805**, "Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants," 2001 Edition, National Fire Protection Association, Quincy, MA.<sup>4</sup>

**NUREG/CR-6850/EPRI 1011989**, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," Volume 1: Summary and Overview, Volume 2: Detailed Methodology, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC, September 2005.

---

<sup>4</sup> Copies may be purchased from the National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA [phone: (800) 344-3555; fax: (800) 593-NFPA (6372)]. Purchase information is available through the NFPA's Web-based store at <http://www.nfpa.org/catalog/product.asp?category%5Fname=&pid=80501&target%5Fpid=80501&src%5Fpid=&link%5Ftype=search>.

<sup>7</sup> All Commission papers (SECYs) listed herein were published by the U.S. Nuclear Regulatory Commission, and are available electronically through the Public Electronic Reading Room on the NRC's public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/>. Copies are also available for inspection or copying for a fee from the NRC's Public Document Room at 11555 Rockville Pike, Rockville, MD; the PDR's mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; email [PDR@nrc.gov](mailto:PDR@nrc.gov).

**Regulatory Guide 1.174**, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” Revision 1, U.S. Nuclear Regulatory Commission, Washington, DC, November 2002.

**Regulatory Guide 1.200**, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” U.S. Nuclear Regulatory Commission, Washington, DC, January 2007 .

**SECY-98-0058**, “Development of a Risk-Informed, Performance-Based Regulation for Fire Protection at Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, Washington, DC, March 26, 1998.<sup>7</sup>

**SECY-00-0009**, “Rulemaking Plan, Reactor Fire Protection Risk-Informed, Performance-Based Rulemaking,” U.S. Nuclear Regulatory Commission, Washington, DC, January 13, 2000.

**U.S. Code of Federal Regulations**, Title 10, *Energy*, Part 50, “Domestic Licensing of Production and Utilization Facilities.”<sup>8</sup>

**U.S. Code of Federal Regulations**, Title 10, *Energy*, Part 50, Appendix A, “General Design Criteria for Nuclear Power Plants.”

**U.S. Code of Federal Regulations**, Title 10, *Energy*, Part 50, Appendix R, “Fire Protection Program for Nuclear Power Facilities Operation Prior to January 1, 1979.”

**U.S. Code of Federal Regulations**, Title 10, Section 50.48, “Fire Protection.”

**U.S. Nuclear Regulatory Commission**, “Voluntary Fire Protection Requirements for Light-Water Reactors; Adoption of NFPA 805 as a Risk-Informed, Performance-Based Alternative,” Proposed Rule, *Federal Register*, Vol. 67, No. 212, November 1, 2002, pp. 66578–66588.<sup>9</sup>

**U.S. Nuclear Regulatory Commission**, “Voluntary Fire Protection Requirement for Light-Water Reactors; Adoption of NFPA 805 as a Risk-Informed, Performance-Based Alternative,” Final Rule, *Federal Register*, Vol. 69, No. 115, June 16, 2004, pp. 33536–33551.

**U.S. Nuclear Regulatory Commission**, “NRC Enforcement Policy,” Policy Statement: Revision, *Federal Register*, Vol. 69, No. 115, June 16, 2004, pp. 33684–33685.

---

<sup>8</sup> All NRC regulations listed herein are available electronically through the Public Electronic Reading Room on the NRC’s public Web site, at <http://www.nrc.gov/reading-rm/doc-collections/cfr/>. Copies are also available for inspection or copying for a fee from the NRC’s Public Document Room at 11555 Rockville Pike, Rockville, MD; the PDR’s mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; email [PDR@nrc.gov](mailto:PDR@nrc.gov).

<sup>9</sup> All *Federal Register* notices listed herein were issued by the U.S. Nuclear Regulatory Commission, and are available electronically through the Federal Register Main Page of the public GPOAccess Web site, which the U.S. Government Printing Office maintains at <http://www.gpoaccess.gov/fr/index.html>. Copies are also available for inspection or copying for a fee from the NRC’s Public Document Room at 11555 Rockville Pike, Rockville, MD; the PDR’s mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415-3548; email [PDR@nrc.gov](mailto:PDR@nrc.gov).

**U.S. Nuclear Regulatory Commission**, “NRC Enforcement Policy; Extension of Enforcement Discretion of Interim Policy,” Policy Statement: Revision, *Federal Register*, Vol. 70, No. 10, January 14, 2005, pp. 2662–2664.

## **GLOSSARY**

NFPA 805, Section 1.6, contains definitions applicable to terminology used in the standard.