

NUCLEAR REGULATORY COMMISSION

10 CFR part 50

RIN 3150-AG48

Voluntary Fire Protection Requirements for Light Water Reactors;  
Adoption of NFPA 805 as a Risk-Informed, Performance-Based Alternative

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its fire protection requirements for nuclear power reactor licensees to permit existing reactor licensees to voluntarily adopt fire protection requirements contained in the National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition" (NFPA 805). These fire protection requirements are an alternative to the existing deterministic, prescriptive fire protection requirements.

EFFECTIVE DATE: [Insert date 30 days after publication]. The incorporation by reference of the publication listed in the regulation is approved by the Director of the Federal Register as of **[Insert date 30 days after publication]**.

ADDRESSES: The final rule and related documents may be examined and copied for a fee at the NRC Public Document Room (PDR), One White Flint North, Room O1-F15, 11555 Rockville Pike, Rockville, Maryland (NFPA standards are copyrighted). Copies of NFPA 805 may be purchased from the NFPA Customer Service Department, 1 Batterymarch Park, P.O. Box 9101,

Quincy, MA 02269-9101 and in PDF format through the NFPA Online Catalog ([www.nfpa.org](http://www.nfpa.org)) or by calling 1-800-344-3555 or 617-770-3000.

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**I. Background**

In 1971, the Atomic Energy Commission promulgated General Design Criterion (GDC) 3, "Fire protection," in Appendix A to 10 CFR part 50. Subsequently, the NRC developed specific guidance for implementing GDC 3 in Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," dated May 1, 1976, and Appendix A to BTP

APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," dated August 23, 1976. In the late 1970s, the NRC worked with licensees to establish configurations to meet this guidance, reaching closure on most issues. However, to resolve the remaining contested issues, the NRC published the final fire protection rule (10 CFR 50.48, "Fire protection") and Appendix R to 10 CFR part 50 dated November 19, 1980 (45 FR 76602).

Section 50.48(a)(1) requires each operating nuclear power plant to have a fire protection plan that satisfies Criterion 3 (GDC 3) of Appendix A to 10 CFR 50 and states that the fire protection plan must describe the overall fire protection program; identify the positions responsible for the program and the authority delegated to those positions; outline the plans for fire protection, fire detection and suppression capability, and limitation of fire damage. Section 50.48(a)(2) states that the fire protection plan must describe the specific features necessary to implement the program described in paragraph (a)(1) including administrative controls and personnel requirements; automatic and manual fire detection and suppression systems; and the means to limit fire damage to structures, systems, and components (SSCs) to ensure the capability to safely shut down the plant. Section 50.48(a)(3) requires that the licensee retain the fire protection plan and each change to the plan as a record until the Commission terminates the license.

GDC 3, referenced in 10 CFR 50.48(a)(1), provides broad performance objectives for an acceptable fire protection program. GDC 3 specifies, in part, that SSCs important to safety be designed and located to minimize, consistent with other safety requirements, the probability and effects of fires and explosions; noncombustible and heat resistant materials be used wherever practical; fire detection and fighting systems of appropriate capacity and capability be provided and designed to minimize the adverse effects of fires on SSCs important to safety; and fire

fighting systems be designed to assure their rupture or inadvertent operation does not significantly impair the safety capability of the SSCs.

Section 50.48(b) references Appendix R to 10 CFR 50 and states that Appendix R establishes fire protection features required to satisfy GDC 3 with respect to certain generic issues for nuclear power plants licensed to operate before January 1, 1979. As stated in 10 CFR 50.48(b)(1), with the exception of Sections III.G, III.J, and III.O of Appendix R, nuclear power plants that were licensed to operate before January 1, 1979, are exempt from the requirements of Appendix R. These plants are exempt to the extent that:

Features proposed or implemented by the licensee have been accepted by the NRC staff as satisfying the provisions of Appendix A to BTP APCS 9.5-1 that are reflected in NRC fire protection safety evaluation reports (SERs) issued before the 10 CFR 50.48 effective date of February 19, 1981; or,

Features that were accepted by the NRC staff in comprehensive SERs before Appendix A to BTP APCS 9.5-1 was published in August 1976. Otherwise, these nuclear power plants must meet 10 CFR 50, Appendix R, as well as any requirements contained in plant specific fire protection license conditions and/or technical specifications. These nuclear power plants must also comply with 10 CFR 50.48(a).

Nuclear power plants that were licensed to operate after January 1, 1979, must comply with 10 CFR 50.48(a) as well as any plant-specific fire protection license conditions and/or technical specifications. Their fire protection license conditions typically reference SERs generated by the NRC as the product of initial licensing reviews against either Appendix A to BTP APCS 9.5-1 and the criteria of certain sections of 10 CFR 50, Appendix R, or Section 9.5.1 of NUREG-0800, the NRC Standard Review Plan (SRP) which includes similar criteria specified in 10 CFR 50, Appendix R. These fire protection requirements are considered to be deterministic.

The NRC has issued approximately 900 exemptions from the technical requirements specified in Appendix R. These exemptions were granted to licensees that submitted a technical evaluation demonstrating that an alternative fire protection approach satisfied the underlying safety purpose of Appendix R. During the initial implementation period for “Pre-1979 Appendix R plants,” the NRC granted exemptions under the provisions of 10 CFR 50.48(c)(6), which has since been deleted. For exemptions requested by “Pre-1979 plants” after the licensee’s initial Appendix R implementation period, the NRC conducted its reviews in accordance with the provisions specified in 10 CFR 50.12, “Specific exemptions.” “Post-1979 plants” have also requested and, when acceptable to the NRC, received approval to deviate from their licensing requirements. The processing of exemption and deviation requests has placed a significant burden on the resources of the NRC and the nuclear industry.

Industry representatives and some members of the public have described the current deterministic fire protection requirements as “prescriptive” and an “unnecessary regulatory burden.” Beginning in the late 1990s, the Commission provided the NRC staff with guidance for identifying and assessing performance-based approaches to regulation (see SECY-00-0191, “High-Level Guidelines for Performance-Based Activities,” dated September 1, 2000, and Staff Requirements Memorandum (SRM), dated March 1, 1999, entitled, “SECY-98-0144: White Paper on Risk-Informed and Performance-Based Regulation.” This guidance augmented the risk-related guidance in the NRC’s Probabilistic Risk Assessment (PRA) Policy Statement (60 FR 42622, August 16, 1995) and Regulatory Guide (RG) 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” dated July 1998.

In SECY-98-0058, “Development of a Risk-Informed, Performance-Based Regulation for Fire Protection at Nuclear Power Plants,” dated March 26, 1998, the NRC staff proposed to the Commission that the staff work with the NFPA and the industry to develop a performance-

based, risk-informed consensus standard for fire protection for nuclear power plants and, if the standard was acceptable, the staff would endorse the standard in a rulemaking. In an SRM dated June 30, 1998, the Commission approved the staff's proposal and the staff began cooperative participation in the development of NFPA 805.

As a result of its interaction with NFPA, the NRC staff determined that the likelihood of an acceptable standard was sufficiently high that rulemaking to endorse NFPA 805 should be approved. In SECY-00-0009, dated January 13, 2000, titled "Rulemaking Plan, Reactor Fire Protection Risk-Informed, Performance-Based Rulemaking," the staff requested Commission approval to proceed with rulemaking to permit reactor licensees to adopt NFPA 805 as a voluntary alternative to existing fire protection requirements. In an SRM dated February 24, 2000, the Commission directed the staff to proceed with this rulemaking.

The NFPA Standards Council issued NFPA 805, 2001 Edition, January 13, 2001, with an effective date of February 9, 2001. It was approved as an American National Standard on February 9, 2001. The standard specifies the minimum fire protection requirements for existing light water nuclear power plants during all modes ("phases" in NFPA 805) of plant operation, including, shutdown, degraded conditions, and decommissioning.

In a memorandum dated October 9, 2001, the NRC staff informed the Commission that it planned to submit to the Commission by July 2002 a proposed rule that would revise 10 CFR 50.48 and a final rule 12 months after the proposed rule was published for public comment. Additionally, the staff informed the Commission that it was working with the Nuclear Energy Institute (NEI) to develop implementing guidance.

On December 20, 2001 (66 FR 65661), the NRC published draft rule language proposing to endorse NFPA 805 in the *Federal Register*. The NRC also posted this draft language on the NRC's interactive Rulemaking Forum Web site at <http://ruleforum.llnl.gov>. The NRC requested public comment on the draft rule language.

In response to this preliminary request for public comment, the NRC received five sets of comments from industry, consultants, licensees, industry organizations, and NRC staff. Based on those comments and on reviews by NRC Program Offices and Committees, the NRC revised the draft rule language. In SECY-02-0132, dated July 15, 2002, the staff requested the Commission's approval to publish the proposed rule in the *Federal Register* and on October 3, 2002, the Commission approved the publication of the proposed rule in the *Federal Register* for public comment. The proposed rule was published in the *Federal Register* for a 75-day public comment period (67 FR 66578; November, 1, 2002).

## **II. Discussion**

In this rule, the NRC is allowing licensees to adopt NFPA 805 as a performance-based alternative to complying with paragraph (b) of § 50.48 for plants licensed to operate before January 1, 1979; or the fire protection license conditions for plants licensed to operate after January 1, 1979. Paragraph (b) of § 50.48 refers to fire protection features that 10 CFR 50, Appendix R requires to satisfy GDC 3. Paragraph (b) discusses the extent to which those features are regulatory requirements for certain licensees, and specifically to plants licensed before January 1, 1979. Requirements for plants licensed after that date are specified in plant fire protection license conditions. The NRC considers that NFPA 805 specifies fire protection requirements or provides an acceptable methodology and performance criteria for licensees to identify fire protection requirements that are an acceptable alternative to the Appendix R fire protection features. A description of NFPA 805 and the NFPA 805 methodology follows.

NFPA 805 is a performance-based standard for fire protection prepared by the NFPA Technical Committee on Fire Protection for Nuclear Facilities. Issued by the Standards Council on January 13, 2001, it was approved as an American National Standard on February 9, 2001. NFPA 805 describes a methodology for establishing fundamental fire protection program

design requirements and elements, determining required fire protection systems and features, applying performance-based requirements, and administering fire protection for existing light water reactors during operation, decommissioning, and permanent shutdown. It provides for the establishment of a minimum set of fire protection requirements but allows performance-based or deterministic approaches to be used to meet performance criteria.

Under NFPA 805, a licensee adopts the performance goals, objectives, and criteria itemized in Chapter 1 of NFPA 805 and then meets those goals, objectives, and criteria through the implementation of performance-based or deterministic approaches. Those goals, objectives, and criteria contain provisions for nuclear safety, radioactive release, life safety, and business interruption. Relative to its mission to protect the public health and safety, the NRC is concerned with the nuclear safety and radioactive release goals, objectives, and criteria, and the protection of essential personnel aspect of the life safety goals, objectives, and criteria. Therefore, the NRC is not endorsing the Plant Damage/Business Interruption and Life Safety Goals of NFPA 805.

After a licensee adopts the performance goals, objectives, and criteria itemized in Chapter 1, it establishes plant fire protection requirements using the methodology in Chapter 2 of NFPA 805. The initial step in this methodology is to establish the minimum fire protection program elements and design criteria contained in Chapter 3 of NFPA 805. NFPA 805 does not permit the Chapter 3 elements and design criteria to be subject to the performance-based approaches allowed elsewhere within NFPA 805. However, to provide regulatory flexibility, the final rule provides for licensees to request a license amendment to apply NFPA 805 performance-based approaches to the Chapter 3 fire protection program elements and minimum design criteria.

After establishing the fundamental fire protection program elements and minimum design requirements of Chapter 3, the licensee performs a plant-wide analysis to identify fire

areas and fire hazards required to meet the performance criteria and the SSCs in each fire area to which the performance criteria apply. The licensee may apply either a performance-based or a deterministic approach to meet the performance criteria. For a deterministic approach, the performance criteria are deemed to be satisfied when the plants existing fire protection requirements are met. For a performance-based approach, the licensee must perform engineering analyses to demonstrate that the performance-based requirements are met. These engineering analyses may include engineering evaluations, probabilistic safety assessments, and fire modeling calculations.

If the approach chosen to meet the performance criteria results in a change to the approved design basis, the licensee must evaluate any resulting changes in risk and determine whether the changes in risk are acceptable to the AHJ (Authority Having Jurisdiction, i.e., NRC). NRC guidance on the acceptability of changes in risk is in RG 1.174 and is referenced by NFPA 805. The licensee must also evaluate the change to determine whether defense-in-depth and safety margins are maintained. The licensee implements a monitoring program to monitor plant performance as it applies to fire risk and must adjust the fire protection program as necessary as levels of risk change. For the resulting fire protection program, the licensee documents the results of the analyses, ensures the quality of the analyses, and maintains configuration control of the resulting plant design and operation. Section 2.7 of NFPA 805 provides requirements for program documentation, configuration control, and quality.

NFPA 805 does not supersede the requirements of GDC 3, 10 CFR 50.48(a), or 10 CFR 50.48(f). Those regulatory requirements continue to apply to licensees that adopt NFPA 805. However, under NFPA 805, the means by which GDC 3 or 10 CFR 50.48(a) requirements may be met is different than under 10 CFR 50.48(b). Specifically, whereas GDC 3 refers to SSCs important to safety, NFPA 805 identifies fire protection systems and features required to meet the Chapter 1 performance criteria through the methodology in Chapter 4 of

NFPA 805. Also, under NFPA 805, the 10 CFR 50.48(a)(2)(iii) requirement to limit fire damage to SSCs important to safety so that the capability to safely shut down the plant is ensured is satisfied by meeting the performance criteria in Section 1.5.1 of NFPA 805. The Section 1.5.1 criteria include provisions for ensuring that reactivity control, inventory and pressure control, decay heat removal, vital auxiliaries, and process monitoring are achieved and maintained.

This methodology specifies a process to identify the fire protection systems and features required to achieve the nuclear safety performance criteria in Section 1.5 of NFPA 805. Once a determination has been made that a fire protection system or feature is required to achieve the performance criteria of Section 1.5, its design and qualification must meet any applicable requirements of NFPA 805, Chapter 3. Having identified the required fire protection systems and features, the licensee selects either a deterministic or performance-based approach to demonstrate that the performance criteria are satisfied. This process satisfies the GDC 3 requirement to design and locate SSCs important to safety to minimize the probability and effects of fires and explosions.

The methodology in NFPA 805 for performance-based approaches is to a large degree consistent with the principles for performance-based regulation contained in the "White Paper on Risk-Informed, Performance-Based Regulation," attached to the SRM for SECY-98-0144. The NFPA 805 methodology incorporates the following attributes: (1) measurable or calculable parameters exist to monitor the system, including facility performance; (2) objective criteria to assess performance are established based on risk insights, deterministic analyses, and/or performance history; (3) plant operators have the flexibility to determine how to meet established performance criteria in ways that will encourage and reward improved outcomes; and (4) a framework exists in which the failure to meet a performance criterion, while undesirable, will not in and of itself constitute or result in an immediate safety concern.

### Technical Acceptability of NFPA 805 as an Alternative to 10 CFR 50.48(b)

With respect to the certain required fire protection features required to satisfy GDC 3, 10 CFR 50.48(b) references Appendix R, whereas 10 CFR 50.48(c) references NFPA 805. The NRC evaluated whether the technical approaches, methodologies, and engineering analyses specified in NFPA 805 provide criteria to establish fire protection features sufficient to satisfy GDC 3. The acceptability of NFPA 805 with exceptions and supplementation versus Appendix R is discussed below.

Appendix R, Section I, states that Appendix R sets forth the fire protection features required to satisfy GDC 3 with respect to certain generic issues. Section I also discusses the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions and that protection be provided so that a fire within only one such system will not damage the redundant system.

Appendix R, Section II, provides the general requirements for a fire protection program, discusses defense-in-depth, defines the fire hazards analysis required to be performed, describes fire prevention features, and requires alternate or dedicated shutdown capability for areas where the fire protection features cannot ensure safe shutdown capability in the event of a fire in that area.

Appendix R, Section III, provides specific requirements for certain fire protection features. The fire protection features in Section III are: A. Water supplies for fire suppression systems, B. Sectional isolation valves, C. Hydrant isolation valves, D. Manual fire suppression, E. Hydrostatic hose tests, F. Automatic fire detection, G. Fire protection of safe shutdown capability, H. Fire brigade, I. Fire brigade training, J. Emergency lighting, K. Administrative controls, L. Alternative and dedicated shutdown capability, M. Fire barrier cable penetration seal qualification, N. Fire doors, and O. Oil collection system for reactor coolant pump.

NFPA 805 establishes performance goals, performance objectives, and performance criteria that require a licensee to provide reasonable assurance that a fire will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition, the plant will not be placed in an unrecoverable condition, and will not result in a radiological release that adversely affects the public, plant personnel, or the environment. These goals, objectives, and criteria are described in Chapter 1 and elsewhere in the standard. NFPA 805 allows the use of either a deterministic or performance-based approach to achieve the performance goals, objectives, and criteria of Chapter 1. Subsequent chapters of the standard describe methodologies to be used to establish the required fire protection systems and features, including the analyses used to support the performance-based fire protection design that fulfills these goals.

NFPA 805 requires the licensee to use a deterministic or performance-based approach to assess whether the performance goals, objectives, and criteria in Section 1.5 of the standard are met. The methodologies for implementing these approaches are established in Chapters 2 and 4 of NFPA 805. Chapter 3 of NFPA 805 provides certain deterministic and administrative requirements for fire protection systems and features that are not subject to the NFPA 805 performance-based approach. The methodology in Chapter 2 describes how these approaches are to be developed and implemented. The methodology in Chapter 4 describes the process to be used to determine which fire protection systems and features are required to achieve the performance criteria outlined in Chapter 1.

NFPA 805 accomplishes the intent of the Appendix R, Section I, requirements through the methodology in Chapter 4 of NFPA 805. That methodology requires that a nuclear safety capability assessment be performed that determines that one success path is maintained free of fire damage from a single fire. The assessment may use either a deterministic or a performance-based approach. The deterministic approach requires protection for one success path of required cables and equipment to achieve and maintain the nuclear safety performance

criteria in Chapter 1. The nuclear safety performance criteria is considered to be satisfied when the protection scheme meets certain deterministic criteria such as when a 3-hour fire barrier encapsulation of one success path is provided. The performance-based approach requires that, using the Chapter 2 methodology, information on targets, damage thresholds, limiting conditions, and fire scenarios be used to determine the protection scheme necessary to ensure the nuclear safety success path(s) for required cables and equipment are maintained free of fire damage to achieve the nuclear performance criteria in Chapter 1.

Chapter 3 of NFPA 805 accomplishes the requirements for general fire protection program features described in Appendix R, Section II.A. and the general fire prevention features described in Appendix R, Section II.C. The defense-in-depth objectives described in Appendix R, Section II, *General Requirements*, are incorporated in NFPA 805. The defense-in-depth objectives of Appendix R, Section II, are (1) prevent fires from starting; (2) detect rapidly, control, and extinguish promptly those fires that do occur; and (3) provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant. These defense-in-depth objectives are stated in Section 1.2 of NFPA 805 and the methods to accomplish them are specified in the standard as described below:

1. Prevention of fires is specified in Section 3.3 of NFPA 805 and includes control of ignition sources, control of combustible and flammable materials, use of noncombustible or fire resistant structural materials, and control of cable construction and raceways.
2. Fire detection and suppression are required in Sections 3.4 through 3.11 of NFPA 805 and include on-site fire-fighting capability, fire alarms, manual and fixed suppression systems, and passive fire protection features.
3. Protection of SSCs important to achieve the nuclear safety performance criteria is specified in Chapter 4 of NFPA 805. Chapter 4 establishes the methodology to

determine the fire protection systems and features required to achieve the performance criteria and specifies that at least one success path to achieve the nuclear safety performance criteria shall be maintained free of fire damage by a single fire. The nuclear safety performance criteria specified in Section 1.5 are: (1) reactivity control, (2) inventory and pressure control, (3) decay heat removal, (4) vital auxiliaries, and (5) process monitoring.

The methodologies described in NFPA 805 Chapters 2 and 4 and the fundamental fire protection program and design elements in Chapter 3 require a general fire hazards analysis similar to that described in Appendix R, Section II.B. Appendix R, Section II.D, which describes alternative or dedicated shutdown capability, is discussed later in this section.

The NRC has evaluated Appendix R, Section III, *Specific Requirements*, and determined that, with certain differences (e.g., cold shutdown, alternate or dedicated shutdown, shutdown methods and emergency lighting), NFPA 805 Chapter 3 and the methodologies in Chapters 2 and 4 provide acceptable alternative criteria to the specific fire protection requirements in Section III.

For example, Appendix R, Section III.A, *Water supplies for fire suppression systems*, is the design criteria for fire suppression system water supplies and it requires certain design features, such as the duration of the water supply and configuration of the water sources, to be met. NFPA 805 has similar requirements in Chapter 3 for water supply and configuration that are acceptable alternatives to the requirements in Appendix R.

Another example is Appendix R, Section III.K, *Administrative controls*, which requires controls to govern the activities related to the handling of combustible materials and ignition sources and govern actions by emergency and general plant personnel. NFPA 805 has requirements in Chapter 3 for administrative controls that are acceptable alternatives to the requirements in Appendix R.

Appendix R, Section III.G, *Fire protection of safe shutdown capability*, provides the deterministic requirements to ensure that one train of systems necessary to achieve and maintain hot shutdown is free of fire damage and systems necessary to achieve and maintain cold shutdown can be repaired within 72 hours. The final rule (45 FR 76602; November 19, 1980) that promulgated 10 CFR 50.48 and Appendix R, dated November 19, 1980, stated that the objective for the protection of safe shutdown capability is to ensure that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant. NFPA 805 requires that, in the event of a fire, the plant be able to achieve and maintain the fuel in a safe and stable condition and that the plant is not placed in an unrecoverable condition in lieu of the analyzed shutdown method delineated in Section III.G. Specific criteria for the NFPA 805 conditions are provided in Section 1.5 of NFPA 805. These differences in requirements for plant shut down result from the fact that NFPA 805 is performance-based rather than deterministic. The shutdown methods delineated in Section III.G are not required by NFPA 805 because they are not needed to achieve the performance criteria of NFPA 805. However, NFPA 805, Chapter 4, requires that one success path necessary to achieve and maintain the nuclear safety performance criteria be maintained free of fire damage by a single fire. Therefore, NFPA 805 has a similar objective for the protection of safe shutdown via its requirement of one success path. These minor differences from Appendix R are acceptable because achieving the nuclear safety goals, objectives, and performance criteria of NFPA 805 provide controls for maintenance of the reactor fuel and the plant condition that ensure adequate protection of public health and safety.

The criteria and methodologies contained in NFPA 805 provide acceptable alternatives to the requirements in Appendix R, Sections I, II, and III regarding fire protection features required to satisfy GDC 3.

In addition to the requirements of 10 CFR 50.48(b) and Appendix R, the NRC reviewed the NFPA 805 fire protection criteria versus the guidance in RG 1.189, "Fire Protection for Operating Nuclear Power Plants." Section C of RG 1.189, "Regulatory Position," describes eight elements of an acceptable fire protection program. The NRC review determined that NFPA 805 provides adequately for each element. These eight elements are:

1. Delineation of organization, staffing, and responsibilities.
2. Performance of a fire hazards analysis sufficient to ensure safe shutdown functions and minimize radioactive material releases in the event of a fire.
3. The limitation of damage to SSCs important to safety so that the capability to safely shut down the reactor is ensured.
4. Evaluation of fire test reports and fire data to ensure they are appropriate and adequate for ensuring compliance with regulatory requirements.
5. Evaluation of compensatory measures for interim use for adequacy and appropriate length of use.
6. Training and qualification of fire protection personnel appropriate for their level of responsibility.
7. Quality assurance.
8. Control of fire protection program changes.

For example, element 3, limitation of damage to SSCs important to safety so that the capability to safely shut down the reactor is ensured, is addressed in NFPA Chapter 4. Chapter 4 of the standard establishes methods to determine the fire protection needed to limit fire damage to SSCs required to achieve the nuclear safety performance criteria in Section 1.5 of NFPA 805 and specifies that the design and qualification of those fire protection systems or features meet the applicable requirements of Chapter 3. The criteria in the standard are adequate to meet the intent of this element of RG 1.189.

### NFPA 805 Differences with Respect to Appendix R

NFPA 805 does not explicitly include some requirements of Appendix R. NFPA 805 has no deterministic requirements for cold shutdown and emergency lighting, no provision for an alternative shutdown capability, and allows the use of recovery actions. NFPA 805 requires that the fuel be maintained in a safe and stable condition rather than prescribing the requirement for hot shutdown, cold shutdown, or the provisions for an alternate or dedicated shutdown. These differences result from the fact that NFPA 805 is performance-based rather than deterministic, with a performance goal to achieve a safe and stable condition. Deterministic requirements for emergency lighting for operation of safe shutdown equipment are not included in NFPA 805 because varying degrees of lighting and duration of lighting may be implemented by a performance-based approach provided that the performance goal to achieve a safe and stable condition can be demonstrated and met. The use of feasible recovery actions are allowed in NFPA 805 provided that the performance-based approach is used and can demonstrate and meet the performance goal. Also, the additional risk resulting from the use of recovery actions must be evaluated. These differences from Appendix R are acceptable because the nuclear safety performance criteria of NFPA 805 must be met in order to achieve a safe and stable condition. Meeting the performance criteria ensures adequate protection of public health and safety.

NFPA 805 includes some specific requirements that are not included in Appendix R. For example, NFPA 805 applies during all phases of plant operation including shutdown and degraded conditions. NFPA 805, Chapter 5, applies to plants that have permanently ceased operation and requires that the fire protection plan specified in Chapter 3 of NFPA 805 be maintained. The application of fire protection criteria for all phases of plant operation is more inclusive than 10 CFR 50.48(b) and Appendix R, resulting in a more comprehensive fire protection program.

Appendix R, Section II.B, requires a fire hazards analysis to determine the consequences of fire on the ability to minimize and control the release of radioactivity to the environment. Similarly, NFPA 805, Chapter 1, requires that radiation release goals, objectives, and performance criteria be met. The radioactive release goal of NFPA 805 is to provide reasonable assurance that a fire will not result in a radiological release that adversely affects the public, plant personnel, or the environment. The NFPA 805, Chapter 1, Radioactive Release Performance Criteria, requires that radiation release from the effects of fire suppression activities shall be as low as reasonably achievable and shall not exceed 10 CFR part 20 limits. NFPA 805, Chapter 4, requires the evaluation for demonstrating how the criteria are met. The NFPA 805 approach to radioactive release is more comprehensive than 10 CFR 50.48(b) and Appendix R and is considered adequate to ensure the protection of public health and safety.

#### Acceptability of NFPA 805 for Decommissioning Plants

The first paragraph of 10 CFR 50.48(f) is revised to include the statement that a fire protection program that complies with NFPA 805 is deemed to be acceptable for complying with the requirements of paragraph (f). Section 50.48(f) requires licensees to maintain a fire protection program to prevent, detect, control, and extinguish fires that could result in a radiological hazard and to ensure that the risk of fire-induced radiological hazards to the public, environment, and plant personnel is minimized. Further, 10 CFR 50.48(f) requires licensees to assess and revise the fire protection program throughout the stages of decommissioning as the fire hazard threat changes and allows licensees to make changes to the fire protection program if the changes do not reduce the effectiveness of the fire protection program, taking into account the decommissioning plant conditions and activities.

The NRC reviewed NFPA 805, Chapter 5, and determined that it requires a fire protection plan to be maintained throughout decommissioning and permanent shutdown. It also

specifies that the plan maintain a fire protection program as specified by Section 3.1 of NFPA 805. The fire protection program specified in Section 3.1 requires that fundamental fire protection program elements and minimum design requirements be established and maintained as part of the plant fire protection program. NFPA 805, Section 5.2, requires controls governing the identification of fire hazards, fire prevention, fire detection, fire fighting capability, and emergency response. Section 5.2 also requires the maintenance of a fire protection program that is commensurate with the fire hazards as decommissioning progresses. NFPA 805, Section 5.3, identifies specific fire protection program elements and requires that the fire protection program elements be established and maintained as decommissioning progresses after permanent shutdown. As a plant progresses into decommissioning, the fire protection program that meets the nuclear safety criteria in NFPA 805, Chapter 1, changes because the fuel has been removed from the reactor and the reactor is no longer operating. The focus of the fire protection program changes to control fires that may cause the release of radioactivity, taking into consideration changes in plant configuration, maintenance, and activities as the plant progresses beyond permanent shutdown. Section 5.3, of NFPA 805, requires that the fire protection program be maintained commensurate with these changes in fire hazards and the potential for release of hazardous and radiological materials to the environment. Because the NFPA 805 fire protection program requirements for a decommissioning plant are technically equivalent to the requirements of paragraph (f), the NRC considers that a fire protection program that complies with NFPA 805 is acceptable for complying with the requirements of paragraph (f).

Statement of Acceptability of 10 CFR 50.48(c) and NFPA 805

The NRC considered whether 10 CFR 50.48(c) provides requirements and criteria for licensees to implement fire protection features for certain generic issues referenced in 10 CFR 50.48(b) and as established in Appendix R to 10 CFR 50, or as required by plant license conditions resulting from NRC reviews of plant licenses to those features established in Appendix R. The NRC reviewed the requirements in Chapter 3 of NFPA 805 for the establishment of fundamental fire protection program elements and minimum design requirements; the performance goals, objectives, and criteria in Chapter 1 of NFPA 805; the methodology in Chapter 4 for identifying fire protection systems and features required to meet the Chapter 1 performance criteria; and the methodology in Chapter 2 for the implementation of deterministic or performance-based approaches to establish those fire protection systems and features. The NRC determined that NFPA 805 contains requirements that address those generic issues referenced in 10 CFR 50.48(b) and provides sufficient requirements and criteria for licensees to implement fire protection features that satisfy GDC 3 with respect to those issues. Therefore, the NRC determined that compliance with 10 CFR 50.48(c) is an acceptable alternative to compliance with 10 CFR 50.48(b) for plants licensed to operate before January 1, 1979, or the fire protection license conditions for plants licensed to operate after January 1, 1979.

In addition, the NRC reviewed the requirements in Chapter 5 for licensees who have submitted the certifications required under 10 CFR 50.82(a)(1). The NRC considered the requirements in Chapter 5 to continue to maintain the fire protection systems and features needed to meet the performance criteria of Chapter 1, to continue to maintain a fire protection plan as specified in Section 3.2 of NFPA 805, and the criteria in Chapter 5 regarding issues applicable to a plant progressing through decommissioning and into permanent shutdown. The

NRC determined that a fire protection program that complies with NFPA 805 meets the requirements for a fire protection program as specified in 10 CFR 50.48(f).

#### Discussion of Provisions of the Rule

The following paragraphs discuss the bases for certain provisions in this rule. The final rule provides for licensees to request a license amendment that would permit them to maintain a fire protection program that complies with NFPA 805, identifies seven exceptions to NFPA 805, and provides a method for licensees to request to use risk-informed, performance-based alternatives to provisions in NFPA 805.

#### Provision for Adoption of NFPA 805

In accordance with 10 CFR 50.48(c)(3)(i), a licensee may maintain a fire protection program that complies with NFPA 805 as an alternative to complying with paragraph (b) of this section for plants licensed to operate before January 1, 1979, or the fire protection license conditions for plants licensed to operate after January 1, 1979. The licensee shall submit a request in the form of an application for license amendment under § 50.90. The application must identify any orders and license conditions that must be revised or superseded, and contain any necessary revisions to the plant's technical specifications and the bases thereof.

#### Provisions for Exceptions to NFPA 805

The NRC identified provisions of the NFPA 805 Standard that were determined to be unacceptable or inappropriate to endorse in this rulemaking. A description of each exception and the bases for the exception follows:

#### Life Safety and Plant Damage/Business Interruption Goals, § 50.48(c)(2)(i) and (ii)

The Life Safety and Plant Damage/Business Interruption goals, objectives, and criteria in Sections 1.3, 1.4, and 1.5 of NFPA 805 are not endorsed in this rule. The Plant Damage/Business Interruption goal to provide reasonable assurance that the potential economic consequences of the risk of a fire are acceptable is not within the regulatory

responsibility of the NRC under the Atomic Energy Act of 1954, as amended, to provide for the common defense and security and to protect the health and safety of the public. The Life Safety Goal provides for protection of plant personnel (including essential personnel) from the effects of a fire but is not fully within the regulatory responsibility of the NRC. Those portions of the Life Safety Goal that are within the scope of NRC regulatory responsibility, such as adequate protection for essential personnel, are required elsewhere in the standard. Therefore, the NRC is not endorsing the NFPA 805 Life Safety or Plant Damage/Business Interruption Goals.

Feed and Bleed, § 50.48(c)(2)(iii)

The NRC does not accept the use of a high-pressure charging/injection pump coupled with the pressurizer power operated relief valves (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 pressurized water reactors (PWRs). Reliance on feed-and-bleed as the sole method for achieving these criteria does not provide sufficient defense-in-depth. Therefore, feed-and-bleed as the sole means of demonstrating achieving the nuclear safety performance criteria in Section 1.5.1(b) and (c) is not permitted.

Uncertainty Analysis, § 50.48(c)(2)(iv)

The uncertainty analysis required by Section 2.7.3.5 of the standard is not required for the deterministic approach because conservatism is included in the deterministic criteria.

Existing Cables, § 50.48(c)(2)(v)

Section 3.3.5.3 of the standard provides that electric cable construction shall comply with a flame propagation test acceptable to the AHJ. For this rulemaking, the NRC is requiring compliance with 10 CFR 50.48(c)(2)(v), which provides for the use of flame-retardant coatings on electric cables or an automatic fixed fire suppression system in lieu of installing cables meeting an acceptable flame propagation test. The electrical flame propagation test

compliance was put in place after some licensees had installed cabling that could not be qualified to a flame propagation test. The NRC determined that flame-retardant coatings or a fixed fire suppression system provided an acceptable level of protection for these licensees (see Appendix A to BTP APCS 9.5-1). Licensees should have these configurations as part of their licensing basis, where applicable. This provision, therefore, carries forward a previously accepted alternative to meeting a flame propagation test.

Additionally, the italicized exception to Section 3.3.5.3 of the standard is not endorsed because it would allow cables that did not comply with an acceptable flame propagation test to remain in place in a reactor plant without mitigation even though they were not approved in the licensing basis. Cables that do not meet this requirement could contribute to failure of operating or shutdown systems and the contribution to risk has not been calculated or approved. The criteria that electric cable constructions should pass flame propagation testing has been in NRC guidance since 1976 (Appendix A to BTP APCS 9.5-1).

Water Supply and Distribution, § 50.48(c)(2)(vi)

The italicized exception to Section 3.6.4 of the standard is not endorsed. The exception would allow a licensee to have a “provisional” manual fire-fighting standpipe/hose station system in place of seismically qualified standpipes and hose stations even though it was not approved in the licensing basis. The NRC interprets Section 3.6.4, which is one of the fire protection elements and minimum design requirements of Chapter 3, as requiring seismically qualified standpipes and hose stations in all areas containing systems and components needed to perform the nuclear safety functions in the event of a safe shutdown earthquake. NRC guidance to supply water at least to standpipes and hose connections for manual fire-fighting in areas required for safe plant shutdown in the event of an earthquake, and that the standpipe system serving such hose stations be analyzed for seismic loading to assure system pressure integrity, has been in existence since 1976. Therefore, the NRC considers seismically qualified

standpipes and hose stations of such importance that licensees who wish to use the exception to Section 3.6.4 in NFPA 805 must obtain NRC review and approval in accordance with § 50.48(c)(2)(vii).

Performance-Based Methods, § 50.48(c)(2)(vii)

The prohibition in Section 3.1 of NFPA 805 that does not permit the use of performance-based methods for the Chapter 3 fundamental fire protection program elements and minimum design criteria is not endorsed. The NRC takes this exception in order to provide licensees greater flexibility in meeting the fire protection program elements and minimum design requirements of Chapter 3 by the use of performance-based methods (including the use of risk-informed methods) described in the NFPA 805 standard. This approach is acceptable to NRC because the rule requires NRC review and approval prior to the licensee's use of those methods, and the rule sets forth criteria for evaluating the acceptability of the licensee's proposed use of performance-based methods in meeting the fire protection program elements and minimum design requirements.

Alternatives to Compliance with NFPA 805, § 50.48(c)(4)

The final rule provides licensees the flexibility of requesting, via a license amendment, to use risk-informed or performance-based alternatives that deviate from compliance with NFPA 805. The NRC recognizes that licensees may propose acceptable approaches that are not encompassed by the criteria in NFPA 805. Therefore, the NRC is including a provision for requesting such approaches in the rule. However, to ensure adequate protection of public health and safety, the NRC is requiring that licensees obtain NRC review and approval to use those methods, and is providing criteria in § 50.48(c)(4) for review of their acceptability.

### III. Comment Resolution on Proposed Rule

The 75-day public comment period for the proposed rule ended January 15, 2003. Comments were received from organizations and individuals. Copies of the comments are available for public inspection and copying for a fee at the Commission's Public Document Room, One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. The comments were submitted by an individual, an individual representing a public interest group, a utility with a nuclear reactor, two nuclear utility groups each representing six plants with nuclear reactors, a law firm, a law firm representing several utilities, and NEI. Most commenters supported the proposed rule and made recommendations to enhance or modify elements of the rule. One commenter opposed adoption of the proposed rule.

In the following paragraphs, the NRC discusses the resolution of the public comments by topic.

#### Need for License Amendment

A commenter suggested that the NRC amend 10 CFR 50.55a, "Codes and standards," to add a paragraph referencing NFPA 805, which could then be referenced in 10 CFR 50.48 as an optional alternative approach. The commenter stated that this approach would negate the need for licensees to obtain a license amendment in order to adopt NFPA 805 or approved alternative approaches under the provisions of 10 CFR 50.55a(c)(3). The commenter also stated that the process for obtaining NRC approval of alternate methods should not require a license amendment.

The NRC does not agree that amending 10 CFR 50.55a would negate the need for a license amendment in order for licensees to adopt NFPA 805. The NRC believes that, even if § 50.55a were revised as suggested by the commenter, it would not negate the need to change the license. To adopt NFPA 805, technical specifications and license conditions will need to be

changed and such changes are amendments to the license. Regarding the use of methods, licensees may use methods such as fire modeling and fire PSAs without prior NRC review and approval. However, such use is at the licensee's risk and is subject to subsequent inspection by the NRC.

#### Risk-informed Methodology

A commenter stated that NFPA 805 does not include risk-informed methodologies such as NEI 00-01, "Methodology for Post-Fire Circuit Analysis," therefore the regulatory text or implementing guidance should recognize the use of risk-informed methodologies to address the appropriate issues.

The NRC agrees that NFPA 805 does not include risk-assessment methods. Although fire models and fire PSA methods have been developed, technical issues remain regarding their acceptability for the full range of decisions in risk-informed regulation by industry.

#### Degraded Conditions

A commenter observed that the description of NFPA 805 in the Federal Register Notice (FRN) for the proposed rule states that the standard specifies the minimum fire protection requirements for existing light water reactors during all modes ("phases" in NFPA 805) of plant operation, including shutdown, degraded conditions, and decommissioning. The commenter stated that fires should not be postulated with degraded conditions unless the fire and the degraded condition have a common cause.

The NRC disagrees with this comment. In citing the paragraph from Section 1.1, "Scope," of the standard, the NRC was identifying the modes or phases of operation for which NFPA 805 was applicable. The NRC believes the wording is appropriate as it correctly identifies the scope of NFPA 805. However, the NRC was not imposing a requirement that a degraded condition be postulated in addition to a fire for purposes of analyses.

### Existing Cables

A commenter stated that the italicized exception in Section 3.3.5.3 of NFPA 805 allowed existing cables in place prior to adoption of the standard to remain as is and argued that leaving these cables in place was consistent with the “safe today, safe tomorrow” philosophy.

Therefore, the exception should be retained in the rule.

The NRC disagrees with the suggestion that the italicized exception in Section 3.3.5.3 of NFPA 805 be retained in the rule because it would allow existing electrical cable which does not comply with a flame propagation test acceptable to the NRC to remain as is even if the existing license basis required the cables to be qualified.

### Use of Feed-and-Bleed

A commenter agreed with the NRC that feed-and-bleed is one available flow path to achieve and maintain safe shutdown but should not be considered the “preferred” or “sole” path. However, the commenter felt that feed-and-bleed should be considered as a viable path for risk calculations.

The NRC agrees that feed-and-bleed may be used in risk calculations. However, as previously noted, feed-and-bleed should not be the sole path.

Regarding § 50.48(c)(2)(iii) of the proposed rule, a commenter noted that, “This paragraph does not accept the use of a high-pressure charging/injection pump coupled with the pressurizer PORVs as the sole fire protected shutdown path. . .” The commenter stated that feed-and-bleed should be considered as one of the multiple methods when used in a risk-informed analysis of safe shutdown capability.

The NRC agrees with this comment. The purpose of § 50.48(c)(2)(iii) is to identify that this path is not to be relied on as a sole fire protected shutdown path.

### Previously Approved Licensing Basis

A commenter asserted that licensees may bring forward portions of their existing licensing basis or design configuration as alternatives to the Chapter 3 fundamental elements when adopting NFPA 805. The commenter stated that it is the licensee's responsibility to maintain the plant licensing basis, but the burden of proof is the NRC's if the NRC suggests that the licensing basis was not previously approved.

The NRC disagrees with the comment about the burden of proof. Because it is the licensee's responsibility to maintain the plant licensing basis, the burden of proof for previous approval is the licensee's. The NRC notes that this is the existing inspection and enforcement position which is generally applicable when a licensee claims that the NRC has previously approved a licensee commitment.

A commenter asked if the discussion under § 50.48(c)(3)(i) meant that existing approved exemptions remain valid under NFPA 805 and whether the licensee needed to identify that the associated safety evaluation remained in effect.

The NRC's position is that existing exemptions remain valid after transition to NFPA 805 as indicated in Section 3.1 of the standard, if not otherwise revoked by the NRC as part of the initial approval to transition to NFPA 805. The licensee's analysis of the facility to perform the transition to NFPA 805 should include a review of fire protection exemptions in effect at the time of application. The NRC will deny the application if the NRC determines that the licensee does not address the continued validity of any exemption in effect at the time of application. As stated in § 50.48(c)(3)(i), licensees must identify any orders or license conditions to be revised or superseded.

### Burden Discussion

A commenter recommended that the text in the statement of considerations (SOC) for the proposed rule on "Unnecessary Burden" be replaced with the following, "Licensee adoption

of the proposed rule or use of the techniques in the rule is expected to reduce unnecessary regulatory burdens by enabling licensees to cost-effectively adopt safe alternatives to overly conservative deterministic requirements.”

NRC agrees that the rule provides licensees with the flexibility to adopt performance-based alternatives to existing prescriptive requirements and thus reduce unnecessary regulatory burden. The text of the final rule SOC has been modified accordingly.

#### Licensee Impact

A commenter stated that the discussion on licensee impact in the SOC should identify the primary impacts on licensees and that characterizing the impacts as “significant” is not accurate and should be deleted. The commenter provided a list of the primary impacts expected and stated that they should be reflected in the FRN for the final rule.

The NRC evaluated the primary impacts identified in the comment and agreed that they are appropriate and should be included in the discussion on licensee impact. The NRC modified the final rule discussion to reflect this comment. The NRC does not agree that the term significant is inaccurate because the analysis required by the final rule is expected to be approximately 11,250 person-hours per licensee.

#### Appendices

A commenter stated that, although NRC indicated in the SOC that it intended to allow licensees to adopt NFPA 805 including Appendices B, C and D the proposed language for 10 CFR 50.48(c) and 10 CFR 50.48(f) does not specifically adopt the appendices. The commenter also stated that the language in Appendices B, C, and D, was non-mandatory and that the NRC would need to develop additional guidance as to how the language of the appendices would be made mandatory. Another commenter noted that Appendices C and D of NFPA 805 are not methodologies but descriptions of attributes of methodologies.

The NRC agrees with the comment that the proposed rule did not incorporate Appendices B, C, and D by reference and that these appendices are not part of the standard. The NRC does not endorse the appendices in this rule and expresses no position as to their acceptability for use. However, licensees may, at their discretion and risk, use the appendices subject to subsequent NRC inspection. Further, the NRC agrees with the comment that Appendices C and D are not methodologies but are considered to be guidance for application of fire modeling or fire probabilistic safety assessment respectively.

#### Seismic Standpipes and Hose Stations

A commenter stated that the italicized exception to Section 3.6.4 of NFPA 805, which requires that provisions be made to supply water to standpipes and hose stations for manual fire suppression in the event of a safe shutdown earthquake (SSE), should be endorsed in the rule. The exception would allow provisions to restore a water supply and distribution system for manual fire-fighting purposes following an SSE.

The NRC does not agree that the exception should be endorsed because it would allow licensees to use alternate provisions to seismically qualified standpipes and hose stations even if the licensing basis requires seismically qualified standpipes and hose stations. Licensees with approved exemptions or deviations or whose licensing basis does not require seismically qualified standpipes and hose stations may comply with their existing licensing basis.

A commenter noted that Appendix A to BTP APCS 9.5-1 did not require seismically qualified standpipes and hose stations for operating plants and plants with construction permits issued prior to July 1, 1976.

NRC agrees that Appendix A to BTP APCS 9.5-1 made separate provisions for operating plants and plants with construction permits issued prior to July 1, 1976, and did not require seismically qualified standpipes and hose stations for those plants. Therefore, the requirement in Section 3.6.4 of NFPA 805 is not applicable to licensees with nonseismic

standpipes and hose stations previously approved in accordance with Appendix A to BTP APCSB 9.5-1.

#### Use of NFPA 805 Methods by Other Licensees

A commenter stated that licensees who do not adopt NFPA 805 should not be precluded from using risk tools from NFPA 805.

The NRC agrees with the comment. However, licensees not adopting NFPA 805 in accordance with the final rule are not covered by the provisions for transitioning to NFPA 805. Such licensees who wish to use the risk tools in NFPA 805 will need to separately determine if their existing licensing basis would permit the use of such tools, and take appropriate action as necessary to change their licensing basis.

#### Approaches Used in Different Fire Areas

A commenter asked whether, in light of the fact that the rule is not intended to be implemented on a partial or selective basis, the NFPA 805 deterministic approach can be selected for one fire area and the performance-based approach for another.

Chapter 2 of the standard requires a licensee to select a deterministic or a performance-based approach to determine how to meet the performance criteria that apply to each fire area. Thus, Chapter 2 allows the use of different approaches for different fire areas. However, Chapter 2 does not allow NFPA 805 to be only partially implemented.

#### Meaning of the Term “Element”

A commenter stated that the word “element” in the discussion of plant change evaluations (Section 2.2.9 of the standard) should be changed to “attribute” to be consistent with language or terminology used in NFPA 805, Section 3.1. The term is used in Sections 2.2.1, 2.2.9, and 2.4.4 and Figure 2.2 of Chapter 2.

The NRC does not agree that the word “element” should be changed in Section 2.2.9 of the standard. In Chapter 2, the term “element” includes the fundamental elements of the fire

protection program described in Chapter 3 of the standard (Section 2.2.1). Fundamental elements are necessary components of an acceptable fire protection program. Attributes are features or characteristics of the fundamental elements and may vary based on the plant licensing basis. Section 3.1 states that previously approved alternatives from the fundamental protection program attributes described in Chapter 3 take precedence over the requirements contained in Chapter 3. Therefore, Section 2.2.9 applies to previously approved program elements as well as previously approved attributes and the terminology in Section 2.2.9 is appropriate.

#### Additional Issue for Public Comment

The NRC requested public comment on whether a licensee is likely to revert to their previous licensing basis after being approved to use NFPA 805 and, if they did, would a license amendment be required to revert to their previous compliance basis. Two commenters stated that licensees were not likely to revert to their previous status because the regulatory environment under the requirements of NFPA 805 would be more flexible. The commenters also stated that a license amendment would be required to revert to the previous licensing basis after being approved to use NFPA 805.

The NRC has determined that the final rule need not include provisions governing the process for reversion from NFPA 805 to a licensee's former fire protection licensing basis, because it is unlikely that such reversions will occur.

#### Regulatory Analysis Burden Estimate, Problem Statement, and Estimated Consequences

A commenter stated that the NRC estimate of 20,000 to 65,000 person-hours needed for the initial plant-wide analysis for each licensee was excessive by a factor of three and should be revised.

The NRC agrees with this comment. The estimate of 20,000 to 65,000 person-hours was for four plants per year. The NRC estimate for the initial analysis for one plant is 11,250

person-hours. The NRC clarified the Regulatory Analysis and the OMB statement to state that the hours shown were an annualized estimate of four plants adopting NFPA 805.

A commenter noted that the Statement of the Problem section of the Regulatory Analysis states that the “alternative regulatory structure would potentially reduce the number and complexity of future licensee exemption or deviation requests . . . .” The commenter stated that this section is inconsistent with the Alternatives section which states that use of the NFPA 805 methods would preclude the need for exemptions or deviations. The commenter stated that the text should be revised.

The NRC does not agree with this comment. The text in the Alternatives section of the Regulatory Analysis states that licensees may use approaches and methods contained in NFPA 805 rather than submitting an exemption or deviation request. Thus, use of the NFPA 805 methods should reduce the need for exemption or deviation requests. This text is consistent with the text in the Statement of the Problem section.

A commenter stated that the wording in the Estimated Consequences section suggests that fire protection features no longer required will be removed. The commenter stated that such features will likely be “abandoned in place” or continued to be used as the licensee determines. The NRC agrees with this comment and has revised the section to indicate that fire protection features no longer required may continue to be used, “abandoned in place,” or removed at the discretion of the licensee.

One commenter stated that the NRC discussion in the Estimated Consequences section did not follow guidance in NUREG/BR-0058, Revision 3, “Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission,” in that NRC had not adequately demonstrated that the cost savings attributed to the action (in the proposed rule) would be substantial enough to justify taking the action. Further, the commenter stated that the cost savings calculation should be based on an assumption that all licensees will take advantage of the change as noted in

Section 2.2 of the NUREG. The commenter noted that the NRC had not included reporting and recordkeeping costs in the regulatory analysis.

Based on this comment, the NRC reviewed the draft Regulatory Analysis and the draft Office of Management and Budget (OMB) statement for recordkeeping and reporting costs and determined that the person-hour estimates shown were for four plants adopting NFPA 805 annually, rather than a per-plant figure. Hence the number of hours shown as required was high by a factor of four for that of an individual plant. The NRC clarified the Regulatory Analysis and the OMB statement to state that the hours shown were an annualized estimate of 4 plants adopting NFPA 805. The NRC stated in the draft Regulatory Analysis that it was not possible to estimate the cost savings per plant as the savings would vary significantly for each plant. However, for some plants the savings in reduced downtime and spare parts maintenance could be several times the cost of adopting NFPA 805; therefore, for these plants the action is justified. Plants that do not adopt NFPA 805 are not affected.

The NRC based its cost calculations on an estimate of the number of plants likely to adopt NFPA 805 rather than on all plants. This approach is acceptable because NRC does not expect all plants to adopt NFPA 805. Industry estimates that approximately 25 plants may adopt NFPA 805 and NRC used that estimate in its calculations. Plants that do not adopt NFPA 805 are not affected. The NRC has revised the Regulatory Analysis to include reporting and recordkeeping costs.

#### Later Versions of NFPA 805

A commenter stated that the proposed rule should allow for the voluntary adoption of later versions of NFPA 805, unless NRC notifies licensees that a specific revision to NFPA 805 is not to be used. The commenter suggested language to be used in the rule for this purpose.

The NRC may not legally provide regulatory approval of future versions of NFPA 805 by rulemaking, because the NRC has no basis for determining the acceptability of all future versions of NFPA 805.

### Other Comments

#### 1. Comments on Implementation and Inspection Issues

A commenter requested that NRC consider skipping the first post-transition triennial inspection in reliance on the extensive program review being conducted by each licensee.

The NRC agrees that the inspection program should recognize the extent of the fire protection program review that would be conducted by the licensee. The NRC is considering alternatives to the triennial inspection or possibly modifying the focus of the triennial inspection to reflect the programmatic review performed by plants transitioning to NFPA 805.

A commenter suggested that, as has been done for other rules, the NRC should exercise enforcement discretion for noncompliances identified during the transition to the new fire protection requirements.

The NRC agrees with the comment and is requesting Commission permission to allow enforcement discretion for noncompliances identified during the transition to the new requirements. This action would encourage licensees to self-identify problems for placement in their corrective action programs.

A commenter asserted that the NRC should conform inspection guidance and the process for resolving noncompliances to the risk-informed, performance-based methodology in the new rule.

The NRC agrees with this comment and will conform the inspector guidance and the process for resolving noncompliances to the risk-informed, performance-based methods in the rule, for those licensees that transition to NFPA 805. No change will occur for licensees that continue to comply with their existing fire protection licensing basis.

A commenter suggested that the NRC follow the inspection practice for the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code and adopt a 10-year inspection cycle.

The NRC believes that the frequency appropriate for NRC inspection of fire protection programs differs significantly from the frequency appropriate for licensee inspection of piping and supports conducted under 10 CFR 50.55a, which references requirements in the ASME Boiler and Pressure Vessel Code. A significant difference is that § 50.55a itself establishes a 10-year interval for licensee conduct of inservice inspection and inservice testing under a fixed version of the ASME Code edition and addenda. Whereas, the greater frequency of NRC inspections of licensee fire protection programs is appropriate because of the likelihood for changes to plant configurations, procedures, and practices affecting fire protection programs to occur more often. Accordingly, the NRC does not intend to change the inspection frequency.

A commenter suggested that the NRC exercise enforcement discretion to eliminate the need to come into compliance with deviations from current licensing basis requirements if compliance will be attained by transitioning to the new requirements under NFPA 805.

The NRC is requesting Commission permission to allow enforcement discretion during the transition period to the new requirements. If enforcement discretion is implemented, licensees would need to take appropriate compensatory actions for any identified noncompliance and to place the noncompliance in the corrective action program. Corrective actions may be to restore compliance with existing requirements or to implement a performance-based approach that meets the requirements of NFPA 805.

## 2. Comments on the Process for Adopting NFPA 805

A commenter suggested that the final rule define the scope of fundamental attributes broadly enough to encompass current fire protection programs and adopt a simple and

predictable process for finding that fundamental attributes have been previously approved by the NRC.

The NRC disagrees with the commenter's suggestion that the final rule should define the scope of fundamental attributes to encompass current fire protection programs. The NRC considers Chapter 3 of NFPA 805 sufficient to describe the fundamental fire protection elements for a risk-informed, performance-based fire protection program using NFPA 805. The attributes of current fire protection program elements vary from plant-to-plant and determining generic fundamental fire protection elements applicable to the full range of as-yet-unknown risk-informed or deterministic approaches is beyond the scope of this rulemaking. Section 3.1 of NFPA 805 provides that previously approved attributes of a licensee's current fire protection program may be retained. Therefore, licensees may evaluate previously approved attributes for their plants and determine whether they wish to retain those attributes. The NRC is working with industry to develop a predictable process to be described in the implementing guidance document for identifying previously approved attributes. The licensee is responsible for maintaining its licensing basis including previous NRC approvals.

A commenter stated that the final rule should have a simple, swift process for approving the transition license amendment.

The NRC believes the process described in the rule for approving the license amendment is appropriate. The NRC expects that the implementing guidance will provide additional guidance that will help with the approval process.

### 3. Comments on the Acceptability of NFPA 805 as a Fire Protection Program

Performance-Based Program A commenter expressed concerns about whether a risk-informed or performance-based fire-protection program provides a sufficient level of protection of public health and safety compared to existing deterministic requirements. The commenter noted events where the industry experienced unexpected consequences from methods for

maintenance and testing, and cited events at Browns Ferry and Davis-Besse as examples. The commenter also expressed a concern that, in light of the terrorist attacks on the World Trade Center, blast and fire standards should be deterministic.

The NRC disagrees with the comment. The NRC evaluated the NFPA 805 program and determined that, when implemented as an integrated whole, NFPA 805 provides criteria for an acceptable fire protection program and provides an acceptable level of protection of public health and safety. This determination is based on a review of the program versus regulatory requirements of GDC 3 and 10 CFR 50.48(a), as well as the criteria for an acceptable fire protection program in RG 1.189, the risk application methods criteria in RG 1.174, and the NFPA 805 criteria for the use of performance-based methods and risk information. The NRC agrees that unexpected consequences may result from maintenance and testing and notes that such consequences may occur whether under a deterministic or a performance-based fire protection program. The events at Browns Ferry and Davis-Besse emphasize the importance of defense-in-depth and the maintenance of safety margins. Both of these fundamental aspects of fire protection must be maintained under NFPA 805. Thus, the NRC believes that proper implementation of NFPA 805 will be as effective as the current deterministic-based requirements in providing reasonable assurance of adequate protection with respect to fire protection.

Regarding terrorist type of attacks, the NRC has taken action as a result of the events that occurred at the World Trade Center and continues to evaluate additional actions that may be appropriate.

Use of Fire Models A commenter questioned the use of fire models under NFPA 805 because of the uncertainty associated with them.

The NRC disagrees that fire models should not be used because of the uncertainty associated with them. NFPA 805 provides for the use of fire models to support performance-

based approaches and gives information on the use and application of fire modeling in Appendix C. Section 2.4.1.2.2 of the standard provides that fire models must be applied within the limitations of the fire model. Any uncertainty associated with a fire model must be quantified and included, as appropriate, in the performance-based approach. The NRC believes that NFPA 805 provides appropriate requirements for use of fire models relative to associated uncertainty.

Use of NEI 00-01 A commenter questioned whether industry document, NEI 00-01, “Guidance for Post-Fire Safe Shutdown Circuit Analysis,” was sufficiently a “consensus” standard to be used in the NFPA 805 environment.

The NRC disagrees with the comment. The NRC has reviewed and commented on NEI 00-01 throughout its development and is considering endorsing NEI 00-01. If endorsed, NEI 00-01 will be a tool that licensees may use to determine the risk significance of fire effects on certain circuits. Such tools do not need to be consensus standards to be used within the NFPA 805 structure.

#### **IV. Section-by-Section Analysis**

##### **Section 50.48(c). *National Fire Protection Standard NFPA 805.***

The final rule adds a new paragraph (c) to 10 CFR 50.48 that permits nuclear power reactor licensees to voluntarily adopt NFPA 805, with certain exceptions stated in the regulatory text, as an alternative set of fire protection requirements for the operation of light-water reactors. NFPA 805, if adopted by licensees, constitutes an acceptable means for licensees of currently operating reactors to comply with 10 CFR 50.48(a), and is an alternative to meeting their existing fire protection requirements.

**Section 50.48(c)(1). *Approval of incorporation by reference.***

This paragraph states that NFPA 805, 2001 Edition, was approved for incorporation by reference by the Director of the *Federal Register*. The appendices to NFPA 805, which are not part of the standard, are not incorporated by reference.

**Section 50.48(c)(2). *Exceptions, modifications, and supplementation of NFPA 805.***

This paragraph states that references in § 50.48 to NFPA 805 are to the 2001 Edition, with certain delineated exceptions, modifications, and supplementation described in paragraphs (c)(2)(i)-(vii) of the final rule.

**Section 50.48(c)(2)(i). *Life Safety Goal, Objectives, and Criteria.***

This paragraph provides that the Life Safety Goal, Objectives, and Criteria of NFPA 805 Chapter 1 are not endorsed by the NRC.

**Section 50.48(c)(2)(ii). *Plant Damage/Business Interruption Goal, Objectives, and Criteria.***

This paragraph provides that the Plant Damage/Business Interruption Goal, Objectives, and Criteria of NFPA 805 Chapter 1 are not endorsed by the NRC.

**Section 50.48(c)(2)(iii). *Use of feed-and-bleed.***

This paragraph provides that the use of a high-pressure charging/injection pump coupled with the PORVs is not acceptable 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.

**Section 50.48(c)(2)(iv). *Uncertainty analysis.***

This paragraph provides that a licensee need not prepare an uncertainty analysis in accordance with Section 2.7.3.5 when using a deterministic approach as specified in Section 2.2.6 and Chapter 4 of NFPA 805.

**Section 50.48(c)(2)(v). *Existing cables.***

This paragraph provides that in lieu of installing cables meeting flame propagation tests as required by Section 3.3.5.3 of the standard, a licensee may use either cables with a flame-retardant coating or an automatic fixed fire suppression system to provide an equivalent level of fire protection. In addition, the italicized exception to Section 3.3.5.3 is not endorsed.

**Section 50.48(c)(2)(vi). *Water supply and distribution.***

This paragraph provides that a “provisional” manual fire-fighting standpipe/hose station system may not be used in place of seismically qualified standpipes and hose stations unless previously approved in the licensing basis. Licensees who wish to use the italicized exception in Section 3.6.4 of NFPA 805 must submit a request for a license amendment in accordance with paragraph (c)(2)(vii). However, because the NRC considers seismically qualified standpipes and hose stations of such importance, the NRC believes that licensees who wish to use the exception in Section 3.6.4 of NFPA 805 via a license amendment may have difficulty satisfying the three criteria in paragraph (c)(2)(vii).

**Section 50.48(c)(2)(vii). *Performance-based methods.***

This paragraph takes exception to the prohibition in Section 3.1 of NFPA 805 to the use of performance-based methods (including the use of risk-informed methods) for the fire protection program elements and minimum design requirements in Chapter 3. The NRC included this exception to allow licensees flexibility in meeting the fire protection program elements and minimum design requirements in Chapter 3. However, the NRC considers that the fire protection program elements and minimum design requirements in Chapter 3 are not suited to the performance-based approaches permitted in NFPA 805 on a generic basis, and that any performance-based approaches for these program elements or minimum design requirements should be approved on a plant-specific basis via a license amendment.

Licenses proposing such performance-based approaches for the fire protection program elements and minimum design requirements in Chapter 3 must submit an application for a license amendment to the NRC in accordance with § 50.48(c)(4). The Director of the Office of Nuclear Reactor Regulation (NRR), or a designee, may approve the application if the Director or designee determines that the proposed performance-based approach:

- (i) Satisfies the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release.
- (ii) Maintains safety margins.
- (iii) Maintains fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).

**Section 50.48(c)(3)(i).**

This paragraph allows licensees to adopt NFPA 805 as an alternative to complying with 10 CFR 50.48(b) or existing plant fire protection license conditions. This paragraph describes the method by which a licensee will submit their request to adopt NFPA 805. If the NRC approves a licensee's request to use NFPA 805, the Director of NRR or designee will issue a license amendment that: (1) removes superseded license conditions and (2) includes a license condition imposing the use of NFPA 805 together with an implementation schedule. In addition, if necessary, the NRC will issue an order revoking unnecessary and superseded exemptions and orders.

Licenses who are approved under paragraph (c)(3)(i) to use NFPA 805 may return to compliance with paragraph (b) and their previous licensing basis. However, each licensee must comply with all applicable requirements, including submitting an application for a license amendment, and, as applicable, a request for exemption if the licensee wishes to reinstate a revoked exemption.

**Section 50.48(c)(3)(ii).**

This paragraph requires licensees to complete all of the Chapter 2 methodology (including evaluations and analyses) and to modify their fire protection plan before making changes to the fire protection program or to the plant configuration. This process ensures that the transition to an NFPA 805 configuration is conducted in a complete, controlled, integrated, and organized manner. This requirement also precludes licensees from implementing NFPA 805 on a partial or selective basis (e.g., in some fire areas and not others, or truncating the methodology within a given fire area).

The evaluations and analyses process in Chapter 2 of NFPA 805 provides for the establishment of the fundamental fire protection program, identification of fire area boundaries and fire hazards, determination by analysis that the plant design satisfies the performance criteria, identification of SSCs required to achieve the performance criteria, conduct of plant change evaluations, establishment of a monitoring program, development of documentation, and configuration control. Chapter 2 of NFPA 805 also provides for the use of a deterministic or performance-based approach to determine that the performance criteria are satisfied and provides for the use of tools such as engineering analyses, fire models, nuclear safety capability assessments, and fire risk evaluations to support development of these approaches. The methodology for the use of these tools is established in Chapter 4 of NFPA 805.

**Section 50.48(c)(4). *Risk-informed or performance-based alternatives to compliance with NFPA 805.***

This paragraph provides licensees with a mechanism to obtain NRC approval of alternatives to NFPA 805 including the use of performance-based approaches for the fire protection program elements and minimum design requirements in Chapter 3 of NFPA 805. The licensee's request should be in the form of a license amendment request and demonstrate

that the licensee's proposed alternative satisfies the performance goals, objectives, and criteria specified in NFPA 805 for nuclear safety and radiological releases. The proposed alternative must also maintain safety margins and fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability). Addressing these criteria allows the NRC to determine that the alternative implements the performance goals, objectives, and criteria in Chapter 1 and complies with the requirements of GDC 3.

**Section 50.48(f).**

This paragraph provides that licensees who have permanently ceased operations and submitted the certifications required by 10 CFR 50.82(a)(1) may maintain a fire protection program that complies with NFPA 805 and that fire protection program will be deemed to be acceptable for complying with the requirements of paragraph (f).

**V. Availability of Documents**

The NRC is making the documents identified below available to interested persons through one or more of the following methods as indicated.

Public Document Room (PDR). The NRC Public Document Room is located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland.

Rulemaking Web site (Web). The NRC's interactive Rulemaking Forum Web site is located at <http://ruleforum.llnl.gov>. These documents may be viewed and downloaded electronically via this Web site.

NRC's Public Electronic Reading Room (PERR). The NRC's public electronic reading room is located at <http://www.nrc.gov/reading-rm.html>. The subject document may be accessed using the ADAMS accession number (e.g., ML#####) provided below.

The NRC staff contact. The NRC project manager for this rulemaking in the Office of Nuclear Reactor Regulation is Joseph L. Birmingham. Mr. Birmingham can be reached by telephone at 301-415-2829, or via email to [jlb4@nrc.gov](mailto:jlb4@nrc.gov).

<b>Document</b>	<b>PDR</b>	<b>Web</b>	<b>PERR</b>	<b>NRC Staff</b>
SECY-98-0058	X	X	ML992910106	
SECY-98-0144	X	X	ML992880068	
SECY-00-0009	X	X	ML003671923	
SECY-00-0191	X	X	ML003742883	
SRM dated 06/30/1998	X	X	ML003753120	
SRM dated 03/01/1999	X		ML003753601	
SRM dated 02/24/2000	X	X	ML003686350	
Federal Register Notice	X	X	ML040540680	X
Regulatory Analysis	X	X	ML040540542	X
Environmental Assessment	X	X	ML033440262	X
Comments Received	X	X	ML023570335	
Comments Received	X	X	ML030230288	
Comments Received	X	X	ML030160870	
Comments Received	X	X	ML030160873	
Comments Received	X	X	ML030170147	
Comments Received	X	X	ML030230293	
Comments Received	X	X	ML030230345	
Comments Received	X	X	ML030240260	

## **VI. Voluntary Consensus Standards**

The National Technology Advancement and Transfer Act of 1995, Pub. L. 104-113, requires that Federal agencies use technical standards that are developed or adopted by voluntary consensus standards bodies, unless the use of such standards is inconsistent with applicable law or otherwise impractical. Public Law 104-113 requires Federal agencies to use industry consensus standards to the extent practical, it does not require Federal agencies to endorse a standard in its entirety. The law does not prohibit an agency from generally adopting a voluntary consensus standard while taking exception to specific portions of the standard if those provisions are deemed to be “inconsistent with applicable law or otherwise impractical.” Furthermore, taking specific exceptions furthers the Congressional intent of Federal reliance on voluntary consensus standards because it allows the adoption of substantial portions of consensus standards without the need to reject the standards in their entirety because of limited provisions which are not acceptable to the agency.

Under this final rule, the NRC is amending its regulations to incorporate by reference the National Fire Protection Association (NFPA) Standard 805, “Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition,” (NFPA 805), as excepted, as an alternative set of fire protection requirements. NFPA 805 is a national consensus standard developed by participants with broad and varied interests, in which all interested parties (including the NRC and licensees of nuclear power plants) participate.

In a staff requirements memorandum dated September 10, 1999, the Commission indicated its intent that a rulemaking identify all portions of an adopted voluntary consensus standard which are not adopted and to provide a justification for not adopting such portions. The portions of NFPA 805 which the NRC proposes not to adopt, or to partially adopt, are

identified in the preceding Section II. The justification for not adopting portions of NFPA 805, as set forth in these statements of consideration, satisfy the requirements of Section 12(d)(3) of Pub. L. 104-113, Office of Management and Budget (OMB) Circular A-119, and the Commission's direction in the staff requirements memorandum dated September 10, 1999.

In accordance with the National Technology Transfer and Advancement Act of 1995 and OMB Circular A-119, the NRC requested public comment during the proposed rulemaking regarding whether other national or international consensus standards could be endorsed as an alternative to NFPA 805 and no alternative standard was identified.

#### **VII. Finding of No Significant Environmental Impact: Availability**

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment and, therefore, an environmental impact statement is not required. Through its evaluation of the provisions and requirements of NFPA 805 for fire protection and prevention of radiological release, the NRC determined that there would not be any significant radiological or nonradiological impacts to the environment from implementation of the NFPA 805 fire protection program. 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. Further, there will be no change in the release of radiological or nonradiological effluents to the environment from those releases expected under existing fire protection programs.

This determination is based on an evaluation of the goals, objectives, and performance criteria in NFPA 805. These criteria provide for defense-in-depth to control fires; control of plant reactivity, coolant inventory, and pressure; decay heat removal; vital auxiliaries; and process

monitoring to minimize radioactive releases. The NRC has determined that the environmental impacts of the proposed action, the no-action alternative, and an alternative in which the NRC would develop its own risk-informed standard, were similar. Further, the NRC determined that the proposed action does not involve the use of any different resources than those considered in the current rule.

The NRC provided every State Liaison Officer a copy of the environmental assessment and the proposed rule for this action and requested their comments on the environmental assessment. No comments were received from the State Liaison Officers and no changes were made to the environmental assessment.

#### **VII. Paperwork Reduction Act Statement**

This final rule contains information collection requirements that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0011.

There is a one-time burden to the public of 11,290 hours for each licensee, who chooses to use NFPA 805, to complete the required one-time plant-wide re-analysis of the reactor's fire protection systems, equipment, features, and procedures, and to submit a letter of intent to adopt NFPA 805. Send comments on any aspect of these information collections, including suggestions for reducing the burden, to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet electronic mail to [INFOCOLLECTS@NRC.GOV](mailto:INFOCOLLECTS@NRC.GOV); and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0011), Office of Management and Budget, Washington, DC 20503.

### **Public Protection Notification**

The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

### **IX. Regulatory Analysis**

The Commission has prepared a Regulatory Analysis on this regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The analysis is available for inspection at the NRC's Public Document Room, located at One White Flint North, Room 01-F15, 11555 Rockville Pike, Rockville, Maryland. The analysis is also available as indicated under the Availability of Documents heading of the Supplementary Information section.

### **X. Regulatory Flexibility Certification**

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule would not have a significant economic impact on a substantial number of small entities. This final rule would affect only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the definition of "small entities" found in the Regulatory Flexibility Act or within the size standards established by the NRC in 10 CFR 2.810.

### **XI. Backfit Analysis**

The NRC has determined that a backfit analysis is not required for this final rule, because the rule does not involve any provisions that would impose backfits as defined in 10 CFR 50.109(a)(1). The final rule establishes voluntary alternative fire protection requirements for licensees with construction permits prior to January 1, 1979 (all existing light-water reactor plants). Licensees may adopt NFPA 805 as an alternative set of fire

protection requirements by submitting a license amendment request. However, current licensees may continue to comply with existing requirements. Any additional burden incurred by adopting NFPA 805 would be at the licensee's discretion. The final rule does not impose any new requirements and, therefore, does not constitute a backfit as defined in 10 CFR 50.109(a)(1).

## **XII. Small Business Regulatory Enforcement Fairness Act**

In accordance with the Small Business Regulatory Enforcement Fairness Act of 1996, the NRC has determined that this action is not a major rule and has verified this determination with the Office of Information and Regulatory Affairs of OMB.

### **List of Subjects in 10 CFR Part 50**

Antitrust, Classified information, Criminal penalties, Fire protection, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, and Reporting and recordkeeping requirements.

For the reasons given in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR part 50.

### **PART 50 - DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES**

1. The authority citation for 10 CFR part 50 continues to read as follows:

AUTHORITY: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951, (42 U.S.C. 5841) as amended by Pub. L. 102-486, sec. 2902, 106 Stat. 3123 (42 U.S.C. 5851). Section 50.10

also issued under secs. 101, 185, 68 Stat. 955, as amended (42 U.S.C. 2131, 2235); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(dd), and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138). Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. In § 50.48, paragraph (c) is added and the introductory text of paragraph (f) is revised to read as follows:

§ 50.48. Fire protection.

\* \* \* \* \*

(c) *National Fire Protection Association Standard NFPA 805.*

(1) *Approval of incorporation by reference.* National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition" (NFPA 805), which is referenced in this section, was approved for incorporation by reference by the Director of the Federal Register pursuant to 5 U.S.C. 552(a) and 1 CFR part 51. Copies of NFPA 805 may be purchased from the NFPA Customer Service Department, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101 and in PDF format through the NFPA Online Catalog ([www.nfpa.org](http://www.nfpa.org)) or by calling 1-800-344-3555 or 617-770-3000. Copies are also available for inspection at the NRC Library, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland 20852-2738, and at the NRC Public Document Room, Building One White Flint North, Room O1-F15, 11555 Rockville Pike,

Rockville, Maryland 20852-2738. Copies are also available at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

[http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(2) *Exceptions, modifications, and supplementation of NFPA 805.* As used in this section, references to NFPA 805 are to the 2001 Edition, with the following exceptions, modifications, and supplementation:

(i) *Life Safety Goal, Objectives, and Criteria.* The Life Safety Goal, Objectives, and Criteria of Chapter 1 are not endorsed.

(ii) *Plant Damage/Business Interruption Goal, Objectives, and Criteria.* The Plant Damage/Business Interruption Goal, Objectives, and Criteria of Chapter 1 are not endorsed.

(iii) *Use of feed-and-bleed.* In demonstrating compliance with the performance criteria of Sections 1.5.1(b) and (c), a high-pressure charging/injection pump coupled with the pressurizer power-operated relief valves (PORVs) as the sole fire-protected safe shutdown path for maintaining reactor coolant inventory, pressure control, and decay heat removal capability (i.e., feed-and-bleed) for pressurized-water reactors (PWRs) is not permitted.

(iv) *Uncertainty analysis.* An uncertainty analysis performed in accordance with Section 2.7.3.5 is not required to support deterministic approach calculations.

(v) *Existing cables.* In lieu of installing cables meeting flame propagation tests as required by Section 3.3.5.3, a flame-retardant coating may be applied to the electric cables, or an automatic fixed fire suppression system may be installed to provide an equivalent level of protection. In addition, the italicized exception to Section 3.3.5.3 is not endorsed.

(vi) *Water supply and distribution.* The italicized exception to Section 3.6.4 is not endorsed. Licensees who wish to use the exception to Section 3.6.4 must submit a request for a license amendment in accordance with paragraph (c)(2)(vii) of this section.

(vii) *Performance-based methods.* Notwithstanding the prohibition in Section 3.1 against the use of performance-based methods, the fire protection program elements and minimum design requirements of Chapter 3 may be subject to the performance-based methods permitted elsewhere in the standard. Licensees who wish to use performance-based methods for these fire protection program elements and minimum design requirements shall submit a request in the form of an application for license amendment under § 50.90. The Director of the Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the performance-based approach;

(A) Satisfies the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;

(B) Maintains safety margins; and

(C) Maintains fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).

(3) *Compliance with NFPA 805.*

(i) A licensee may maintain a fire protection program that complies with NFPA 805 as an alternative to complying with paragraph (b) of this section for plants licensed to operate before January 1, 1979, or the fire protection license conditions for plants licensed to operate after January 1, 1979. The licensee shall submit a request to comply with NFPA 805 in the form of an application for license amendment under § 50.90. The application must identify any orders and license conditions that must be revised or superseded, and contain any necessary revisions to the plant's technical specifications and the bases thereof. The Director of the Office of Nuclear Reactor Regulation, or a designee of the Director, may approve the application if the Director or designee determines that the licensee has identified orders, license conditions, and the technical specifications that must be revised or superseded, and that any necessary revisions are adequate. Any approval by the Director or the designee must be in the

form of a license amendment approving the use of NFPA 805 together with any necessary revisions to the technical specifications.

(ii) The licensee shall complete its implementation of the methodology in Chapter 2 of NFPA 805 (including all required evaluations and analyses) and, upon completion, modify the fire protection plan required by paragraph (a) of this section to reflect the licensee's decision to comply with NFPA 805, before changing its fire protection program or nuclear power plant as permitted by NFPA 805.

(4) *Risk-informed or performance-based alternatives to compliance with NFPA 805.* A licensee may submit a request to use risk-informed or performance-based alternatives to compliance with NFPA 805. The request must be in the form of an application for license amendment under § 50.90 of this chapter. The Director of the Office of Nuclear Reactor Regulation, or designee of the Director, may approve the application if the Director or designee determines that the proposed alternatives:

- (i) Satisfy the performance goals, performance objectives, and performance criteria specified in NFPA 805 related to nuclear safety and radiological release;
- (ii) Maintain safety margins; and
- (iii) Maintain fire protection defense-in-depth (fire prevention, fire detection, fire suppression, mitigation, and post-fire safe shutdown capability).

\* \* \* \* \*

(f) Licensees that have submitted the certifications required under § 50.82(a)(1) shall maintain a fire protection program to address the potential for fires that could cause the release or spread of radioactive materials (i.e., that could result in a radiological hazard). A fire

protection program that complies with NFPA 805 shall be deemed to be acceptable for complying with the requirements of this paragraph.

\* \* \* \* \*

Dated at Rockville, Maryland, this 8<sup>th</sup> day of June, 2004.

For the Nuclear Regulatory Commission.

\_\_\_\_\_*/RA/*\_\_\_\_\_

Annette Vietti-Cook

Secretary of the Commission.