FAQ Number 06-0008 **FAQ Revision** 3d

FAQ Title Alternative Method for Fire Protection Engineering Analyses

Plant: Harris Date: 3/30/07

Contact: Jeff Ertman Phone: 919-546-3681

Email: jeffrey.ertman@pgnmail.com

Distribution: *(NEI Internal Use)*

☒ 805 TF ☒ FPWG ☐ RATF ☐ RIRWG ☐ BWROG ☐ PWROG

Purpose of FAQ:

The purpose of FAQ 06-0008 is to provide a process/method for the use of fire protection engineering analyses post-transition to address NFPA 805 Chapter 3 requirements. Currently, licensees may self approve these evaluations under the existing fire protection license conditions. The process/method discussed in this FAQ will be submitted for approval as part of the transition license amendment request (LAR). The process/method to be submitted in the LAR is to allow fire protection engineering analyses to address NFPA 805 Chapter 3 requirements:

- When the Chapter 3 requirements are conditional based upon NFPA 805 Chapter 4; and
- For deviations from the NFPA codes and listings for rated components in NFPA 805.

Post-transition, licensees will use this process/method to self approve acceptable fire protection engineering analyses.

Is this Interpretation of guidance? Yes / No

Proposed new guidance not in NEI 04-02? Yes / No

Details:

NEI 04-02 guidance needing interpretation (include section, paragraph, and line numbers as applicable):

Sections 2.3, 2.4, 4.3.1, 4.6.1, 5.3.2, Appendix H, and Appendix I of NEI 04-02 Revision 1.

Circumstances requiring guidance interpretation or new guidance:

Risk-informed, performance-based fire protection engineering analyses are an acceptable alternative to the deterministic approaches in NFPA 805 Chapter 4. Some sections of Chapter 3 are conditional based upon Chapter 4 requirements; therefore, risk-informed, performance-based methods are allowed for those sections under NFPA 805 / 10 CFR 50.48 (c). Risk-informed, performance-based fire protection engineering analyses may also be needed to document the acceptability of fire protection systems and features addressed in NFPA 805 Chapter 3 sections that are not conditional based upon Chapter 4 requirements. Current licensing basis allows flexibility to use performance-based technical analysis per Generic Letter 86-10. An alternative method (approach) is needed to allow this flexibility following transition to NFPA 805.

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc

FAQ Number 06-0008 **FAQ Revision** 3d

FAQ Title Alternative Method for Fire Protection Engineering Analyses

Detail contentious points if licensee and NRC have not reached consensus on the facts and circumstances:

The fire protection program elements and minimum design requirements of NFPA 805 Chapter 3 may be subject to the performance-based methods permitted elsewhere in NFPA 805 per 10 CFR 50.48(c)(2)(vii), as long as the appropriate regulatory processes (i.e., a license amendment request) are utilized.

A process for a 10 CFR 50.48(c)(2)(vii) License Amendment Request has not yet been agreed upon.

Potentially relevant existing FAQ numbers:

FAQ 06-0004 includes a process for defining fire protection systems and features required to meet NFPA 805 Chapter 3 criteria.

Response Section:

Proposed resolution of FAQ and the basis for the proposal:

A high-level purpose of NFPA 805, as implemented under the endorsement of 10 CFR 50.48(c), is to clarify how licensees may use the flexibility afforded by 10 CFR 50.48(c)(2)(vii) to develop a process to maintain the current flexibility available to licensees under Generic Letter (GL) 86-10 evaluations.

BACKGROUND

10 CFR 50.48(c) requires licensees to submit 10 CFR 50.90 license amendment requests for any changes to Chapter 3 features of NFPA 805, unless they have been previously approved by the NRC. Under the standard license condition of GL 86-10, licensees are allowed to make certain types of changes without prior NRC approval as long as the changes do not adversely affect the plant's ability to safely shutdown in the event of a fire.

To apply this process/method, licensees must send the proposed process/methods outlined in this FAQ to the NRC for approval. Then, they may use the approved processes/methods without prior approval for specific applications, as long as the application is within the bounds of NRC approval of the proposed methods/processes. Approval of a license amendment for the use of this process would constitute a "previously approved alternative" as discussed in NFPA 805 Section 3.1.

The licensees' process/methodology must request an amendment under 10 CFR 50.90, using the flexibility available under 10 CFR 50.48(c)(2)(vii), "Performance-Based Methods", to allow 10 CFR 50.48(c) licensees to establish a process that enables them to make changes to Chapter 3 of NFPA 805, as long as those changes only affect the referenced standards and listings, such as Underwriters Laboratory, Inc. or Factory Mutual listings. Under the proposal the licensee will commit to a process to evaluate deviations from secondary codes and listings required by NFPA

Deleted: and 10 CFR 50.48(c)(4) provide for performance-based methods and alternatives to NFPA 805 as a means of meeting fire protection regulations,

Deleted: /10 CFR 50.48(c)(4)

Deleted: and 10 CFR 50.48(c)(4)

Deleted: and 10 CFR 50.48(c)(iv)

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc

805 Chapter 3. The NFPA 805 change evaluation process will be used to ensure that nuclear safety performance goals, objectives and criteria are satisfied along with defense-in-depth and safety margins, as described in 10 CFR 50.48(c)(2)(vii).

Therefore, application of this process/method requires two steps. First, the process/methods and bounds of the process must be submitted to the NRC for approval. Second, following approval by the NRC, all plant specific changes made under this license amendment will undergo the same evaluation process as part of 10 CFR 50.48(c)(2)(vii). This second step, application of the process/method, will not require NRC approval.

This process/method would not apply to NFPA 805 Chapter 3 changes that do not relate to either NFPA codes or listings or changes that are not conditional based on NFPA 805 Chapter 4. These types of changes would continue to require individual 10 CFR 50.90 license amendment requests addressing the specific deviation.

Deleted: .

Deleted: Changes to other portions of Chapter 3 of NFPA 805

PROCESS

Proposed addition to the post-NFPA transition fire protection standard license condition (Section C.3.1 of Regulatory Guide 1.205):

> "Licensees may perform change evaluations for fundamental fire protection program and design elements of NFPA 805 Chapter 3 that are conditional based on NFPA 805 Chapter 4 requirements.
>
> Licensees may also perform change evaluations for deviations from the NFPA codes and listings for rated components mentioned in NFPA 805, without a 10 CFR 50.90 submittal, as long as the specific requirement for the feature is not included in NFPA 805 Chapter 3 itself, and the NFPA 805 change process is used."

Deleted: and listings for rated components,

The following provides the sections of NFPA 805 that will utilize this process/method. Sections that are addressed conditionally by Chapter 4 performance-based process are also identified for completeness.

Column Heading Definition:

Fire Protection Engineering Analysis Process Applicable: Sections of NFPA 805 Chapter 3 containing referenced codes and listings. Note the "Applicability" would only apply to the referenced codes and listings contained within these sections, and the process could not be used to change the NFPA 805 Chapter 3 specific requirements.

Chapter 4 Conditional Section: These NFPA 805 Chapter 3 sections are conditional based upon NFPA 805 Chapter 4 requirements. The requested use of fire protection engineering evaluations for these sections are not limited to referenced codes and listings.

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc

FAQ Number 06-0008 **FAQ Revision** 3d

FAQ Title Alternative Method for Fire Protection Engineering Analyses

Fire Protection Engineering Analysis and Chapter 4 Not Applicable: These NFPA 805 Chapter 3 sections do not have NFPA 805 Chapter 4 conditions and do not have referenced codes and listings. Therefore, the process/method associated with this FAQ is not applicable and would be outside the scope of the associated LAR.

Section	Title	FP Eng. Analysis Process Applicable	Chapter 4 Conditional Section	FP Eng. Analysis Process and Chapter 4 Not Applicable
3.1	General			X
3.2	Fire Protection Plan			X
3.2.1	Intent			X
3.2.2	Management Policy Direction and Responsibility			X
3.2.3	Procedures			X
3.3	Prevention			X
3.3.1	Fire Prevention for Operational Activities	X		
3.3.2	Structural	X		
3.3.3	Interior Finishes	X		
3.3.4	Insulation Materials			X
3.3.5	Electrical			X
3.3.6	Roofs	X		
3.3.7	Bulk Flammable Gas Storage	X		
3.3.8	Bulk Storage of Flammable and Combustible Liquids	X		
3.3.9	Transformers			X
3.3.10	Hot Pipes and Surfaces			X
3.3.11	Electrical Equipment (Note 1)			X
3.3.12	Reactor Coolant Pumps (Note 1)			X
3.4	Industrial Fire Brigade			
3.4.1	On-Site Fire Fighting Capability	X		
3.4.2	Pre-Fire Plans			X

Deleted: FAQ 06-008

Deleted: FAQ 06-008

Deleted: X

Deleted: X

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc

Section	Title	FP Eng. Analysis Process Applicable	Chapter 4 Conditional Section	FP Eng. Analysis Process and Chapter 4 Not Applicable
3.4.3	Training and Drills	X		
3.4.4	Fire Fighting Equipment	X		
3.4.5	Off-Site Fire Department Interface			X
3.4.6	Communications			X
3.5	Water Supply	X		
3.6	Standpipe and Hose Stations	X		
3.7	Fire Extinguishers	X		
3.8	Fire Alarm and Detection Systems		X	
3.9	Automatic and Manual Water-Based Fire Suppression Systems		X	
3.10.	Gaseous Fire Suppression Systems		X	
3.11	Passive Fire Protection Features		X	
3.11.1	Building Separation		X	
3.11.2	Fire Barriers		X	
3.11.3	Fire Barrier Penetrations		X	
3.11.4	Through Penetration Fire Stops (Note 2)		X	
3.11.5	Electrical Raceway Fire Barrier Systems (ERFBS)		X	

Deleted: FAQ 06-008

Deleted: FAQ 06-008

Note 1 – Separate FAQs will be used to clarify the applicability of engineering analyses to the requirements of Section 3.3.11 and 3.3.12 of NFPA 805.

Note 2 – Through penetration fire stops referenced in Section 3.11.4 of NFPA 805 are considered conditional based upon NFPA 805 Chapter 4 requirements, since they are integral to fire barriers (Section 3.11.2)

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc

EXAMPLE

Section 3.6.1 of NFPA 805 requires a hose system to be installed per NFPA 14. Using this process/method, a hose system must be available and have access to "all power block buildings," and must also be a Class III standpipe, but may deviate from other specific requirements of NFPA 14. These deviations must not contradict other text in Chapter 3 of NFPA 805. The NFPA 805 change evaluation process will be used to ensure that nuclear safety performance goals, objectives and criteria are satisfied along with defense-in-depth and safety margins, as described in 10 CFR 50.48(c)(2)(vii).

JUSTIFICATION

Since this process/method will be approved by the NRC as part of the 10 CFR 50.90 submittal, it will meet the legal requirement of 10 CFR 50.48(c)(2)(vii). The basis for the change evaluation to be included in the 10 CFR 50.90 submittal will be that each individual change will be evaluated against the NFPA 805 change process (NFPA 805 performance goals / objectives / criteria, defense-in-depth and safety margins evaluation), and providing this flexibility does not adversely impact the features required by Chapter 3 of NFPA 805 to ensure the NFPA 805 performance goals, performance objectives, and performance criteria are satisfied. By only allowing changes to NFPA 805 Chapter 4 conditional sections and the secondary codes and listings, the changes are bounded. All features required by Chapter 3 will continue to be required (unless specifically addressed separately from this process in an LAR). Secondary features may be changed based on an evaluation, using the required methods in a similar manner as is currently allowed under the Generic Letter 86-10 license condition, without prior NRC approval.

The method will ensure that the following requirements are met:

10 CFR 50.48(c) Requirement	Method of Accomplishment
(a) The required NFPA 805 performance goals, performance objectives, and performance criteria are satisfied.	The fire protection engineering analysis process includes the assessment of impact on NFPA 805 performance goals, performance objectives, and performance criteria are satisfied. Impact will be assessed per risk-informed, performance-based change process in NEI 04-02 Chapter 5 and Appendices I and J and supplemented by RG 1.205 Section 3.2.
(b) Safety margins are maintained.	Maintaining safety margins will be ensured using the risk-informed, performance-based change process in NEI 04-02 Chapter 5 and Appendices I and J and supplemented by RG 1.205 Section C.3.2.
(c) Fire protection defense-in-depth is maintained.	Maintaining fire protection defense-in-depth will be ensured using the risk-informed, performance-based change process in NEI 04-02 Chapter 5 and Appendices I and J and supplemented by RG 1.205 Section C.3.2.

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc

The LAR will contain the following information per Regulatory Guide 1.205 Section C.3.2.3:

RG 1.205 Guidance	Method of Accomplishment
(a) detailed description of the alternative risk-informed, performance-based method	The alternative method will be described in the LAR in detail, or a reference to NEI 04-02 will be provided once the process is added to this document.
(b) description of how the method will be applied, the aspects of the FPP to which it will applied, and the circumstances under which it will be applied	Risk-informed, performance based fire protection engineering analyses will be allowed to be applied ▪ When the Chapter 3 requirements are conditional based upon NFPA 805 Chapter 4; and ▪ For deviations from the NFPA codes and listings for rated components mentioned in NFPA 805
(c) acceptance criteria, including risk increase acceptance criteria, that the licensee will apply when determining whether the results of an evaluation that uses this methodology meet the required NFPA 805 performance goals, performance objectives, and performance criteria	Acceptance criteria for changes will use the risk-informed, performance-based change process in NEI 04-02 Chapter 5 and Appendices I and J (and supplemented by RG 1.205 Section 3.2).
(d) for PSA-based methodologies, an explanation of how the PSA is of sufficient technical adequacy for evaluation of the changes to which it will be applied	Technical adequacy of the PSA used in the risk-informed, performance-based approach will be in accordance with RG 1.205.
(e) for PSA-based methodologies, a description of the peer review and how the review findings have been addressed	Peer review of the PSA used in the risk-informed, performance-based approach will be in accordance with RG 1.205.

CONCLUSION

This process/method will permit a risk-informed, performance-based approach to evaluate Fire Protection Program changes within the bounds of secondary codes and listings or changes that are conditional based on NFPA 805 Chapter 4. Following NRC approval of a 10 CFR 50.90 license amendment, this process/methodology will permit licensees to evaluate fire protection features without prior NRC approval. Other issues not involving NFPA codes or listings or changes that are not conditional based on NFPA 805 Chapter 4, would have to be submitted for NRC approval on a case by case basis.

If appropriate, provide proposed rewording of guidance for inclusion in the next Revision:

[See attached proposed revision to NEI 04-02].

Deleted: addressed by

Deleted:

Deleted: To be provided following review and discussion on the approach with the NRC.]

Deleted: ¶
A proposed method/process is to include the text from the "Process and Example" sections above in section 5.3 of NEI 04-02. Note this is similar to guidance from NEI 02-03 Appendix A. The new process/method for changes would be cross-referenced in the other sections of NEI 04-02 (i.e., 2.3, 2.4, 4.3.1, 4.6.1, Appendix H, and Appendix I).

Deleted: FAQ 06-0008 rev 3d engineering analyses.doc