

NUCLEAR GENERATION GROUP

STANDARD PROCEDURE

VOLUME 99

BOOK/PART 99

**FIR-NGGC-0010**

***FIRE PROTECTION PROGRAM CHANGE PROCESS***

REVISION 0

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## TABLE OF CONTENTS

SECTION	PAGE
1.0 PURPOSE.....	3
3.0 DEFINITIONS.....	4
4.0 RESPONSIBILITIES .....	4
4.1 Fire Protection Program Evaluator	4
4.1.1 Nuclear Safety Performance Analysis (Attachment 1, Section 2) .....	5
4.1.2 Classical Fire Protection (Attachment 1, Summary, Section 1, and Section 3) .....	5
4.1.3 Fire PRA (Attachment 1, Section 4) .....	5
4.2 Reviewer	5
5.0 PREREQUISITIES .....	5
6.0 PRECAUTIONS AND LIMITATIONS .....	5
7.0 SPECIAL TOOLS AND EQUIPMENT .....	5
8.0 ACCEPTANCE CRITERIA .....	6
9.0 INSTRUCTIONS.....	6
9.1 General	6
9.2 Change Definition	8
9.2.1 Change Impact Reviews .....	8
9.2.2 Licensing Basis Determination – NFPA 805 Chapter 3.....	10
9.3 Preliminary risk review	10
9.3.1 Screening of Trivial or Editorial Changes.....	10
9.3.2 Determination of Minimal Risk Impact.....	10
9.4 Risk Evaluation	11
10.0 RECORDS.....	12

## ATTACHMENTS

1	Fire Protection Program / Plant Change Evaluation Form
1A	Fire Protection Program / Plant Change Evaluation Form – Editorial or Trivial Changes Examples
1B	Fire Protection Program / Plant Change Evaluation Form – Changes Affecting NFPA 805 Chapter 3 Requirements Examples
1C	Fire Protection Program / Plant Change Evaluation Form – Preliminary Risk Review Examples
2	Fire Protection Review Summary Form
3	Nuclear Safety Analysis Summary Form
4	Radioactive Release Consideration Summary Form
5	Background Information - Risk-Informed, Performance-Based Change Evaluations
6	Change Process – Documentation Interface Diagram (Simplified)

## 1.0 PURPOSE

The purpose of this procedure is to provide the methodology for the 10 CFR 50.48 (c) / NFPA 805 Change Evaluation process. This assures that changes to the Fire Protection Program and the plant are reviewed for compliance to the applicable requirements of 10 CFR 50.48(c) and applicable plant commitments.

The use of this procedure is typically directed by other controlling procedures that manage change and reviews. Related procedures include:

- REG-NGGC-0010, 10 CFR 50.59 and Selected Regulatory Processes
- EGR-NGGC-0005, Engineering Change
- EGR-NGGC-0003, Design Review Requirements
- PRO-NGGC-0204, Procedure Review and Approval

This procedure may also be entered as directed by another procedure or process not listed above.

A simplified diagram showing the relationship between the various documents and attachments is provided as Attachment 6.

## 2.0 REFERENCES

- 2.1 10 CFR 50.48(c)
- 2.2 NEI 04-02, Guidance for Implementing a Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)
- 2.3 FIR-NGGC-0001, Fire Detection Systems
- 2.4 FIR-NGGC-0004, Determination of Combustible Loading and Equivalent Fire Severity
- 2.5 FIR-NGGC-0005, Fire Door and Frame Repair
- 2.6 EGR-NGGC-0003, Design Review Requirements
- 2.7 EGR-NGGC-0005, Engineering Change
- 2.8 PRO-NGGC-0204, Procedure Review and Approval
- 2.9 ??? User manual for database
- 2.10 CP-252, Commitment Management

- 2.11 Action Requests:
  - 1. 111308-17 (RNP)
  - 2. 80340-29 (HNP)
- 2.10 Regulatory Guide 1.174, An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, dated November 2002.
- 2.11 NFPA 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition.
- 2.12 Regulatory Guide ????, Risk-Informed, Performance-Based Fire Protection For Existing Light-Water Nuclear Power Plants
- 2.13 Technical Specification Change/Operating License Amendment Procedures
  - 0AP-019, Licensing Document Changes [BNP]
  - AP-009, Amendments To The Operating License/Technical Specifications And Other Licensing Basis Changes [HNP]
  - AP-029, Revisions to the Operating or Special Nuclear Material Licenses [RNP]
  - REG-NGGC-0100, Operating License Amendment and Technical Specification Bases Control Program

### 3.0 DEFINITIONS

??? Need to add a definition for fire protection program

#### **Fire Protection Evaluation**

A record of a determination pursuant to 10 CFR 50.48 (c) that determines whether a proposed permanent or temporary change to procedures or the facility which are described in the Fire Protection Program, involves a License Amendment, a change to the Technical Specifications, or requires prior regulatory approval. This record includes Attachments 1-4 as applicable.

### 4.0 RESPONSIBILITIES

#### **4.1 Fire Protection Program Evaluator**

The Fire Protection Change Evaluator is responsible for performing the technical reviews in the areas of fire protection fundamental elements and minimum design requirements, nuclear safety performance criteria (power operations and non-power operational modes), and radioactive release.

The Evaluator shall complete and sign the forms in Attachments 1 through 4 and ensure the results are summarized appropriately in REG-NGGC-010.

Refer to REG-NGGC-0010 for qualification and training requirements for REG-NGGC-010 Evaluators.

Due to the diverse nature of fire protection, the Fire Protection Evaluator may include different individuals for the same change. General guidance is provided below relative to qualifications required for the major skill and knowledge areas within the fire protection change process:

#### **4.1.1 Nuclear Safety Performance Analysis (Attachment 1, Section 2)**

- NSPA – Plant Systems
- REG-NGGC-0010 Evaluator

#### **4.1.2 Fire Protection Features(Attachment 1, Summary, Section 1, and Section 3)**

- Fire Protection Features
- Fire Protection Programmatic Issues
- REG-NGGC-0010 Evaluator

#### **4.1.3 Fire PRA (Attachment 1, Section 4)**

- Fire PRA Level I (Qualified to fill out FIR-NGGC-0010, Attachment 1, Section 4)
- REG-NGGC-0010 Evaluator

#### **4.2 Reviewer**

The Reviewer is responsible for reviewing and signing the completed technical reviews in Attachments 1 through 4. The reviewer shall have the same qualifications as the evaluator.

### **5.0 PREREQUISITIES**

N/A

### **6.0 PRECAUTIONS AND LIMITATIONS**

N/A

### **7.0 SPECIAL TOOLS AND EQUIPMENT**

N/A

## **8.0 ACCEPTANCE CRITERIA**

Acceptance criteria for change evaluations are provided in Section 9.5.

## **9.0 INSTRUCTIONS**

Section 9 provides the overall process for assessing changes that could impact the fire protection program, including the performance of the risk-informed change evaluation. The Evaluator shall use the background information in Attachment 5 to this procedure to complete the forms in Attachment 1 through 4. Attachment 1 is completed for all changes. Attachments 2 through 4 are completed, as applicable, based upon the subject matter.

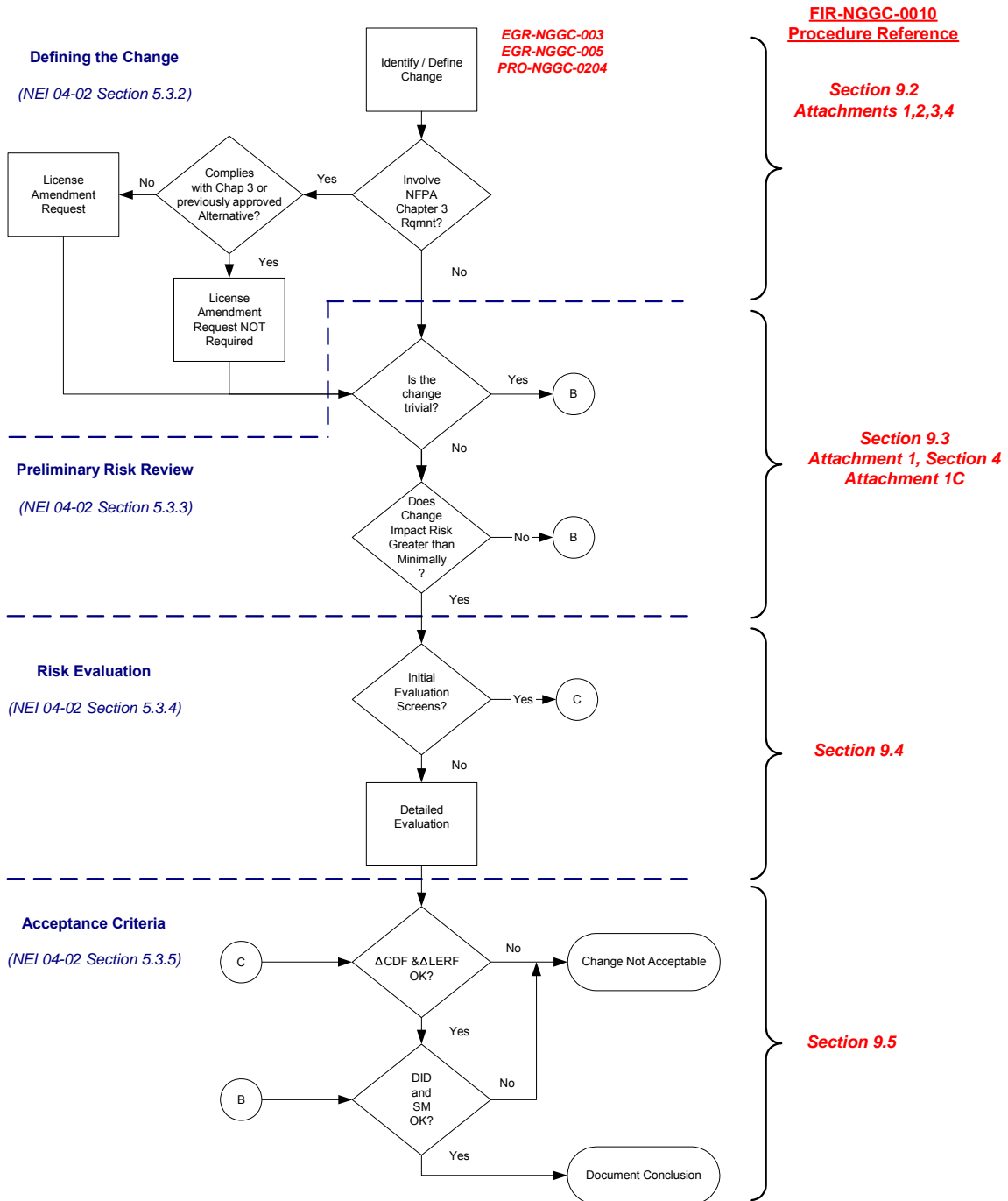
A simplified diagram showing the relationship between the various documents and attachments is provided as Attachment 6.

### **9.1 General**

The plant change evaluation is a required step in the methodology for all changes to previously approved fire protection program elements. NFPA 805 Section 2.2.9 states that:

*In the event of a change to a previously approved fire protection program element, a risk-informed plant change evaluation shall be performed and the results used as described in 2.4.4 to ensure that the public risk associated with fire-induced nuclear fuel damage accidents is low and the adequate defense-in-depth and safety margins are maintained. [NFPA 805, Section 2.2.9]*

NEI 04-02 provides detailed guidance on the process for change evaluations. The following Figure (based upon Figure 5-1 of NEI 04-02) depicts the process:



The Plant Change Process consists of the following subtasks:

- Defining the Change (Section 9.2)
- Preliminary Risk Review (Section 9.3)
- Risk Evaluation (Section 9.4)
- Acceptance Criteria (Section 9.5)

## **9.2 Change Definition**

The Evaluator shall define the change or altered condition to be examined and the baseline configuration as defined by the Licensing Basis (current licensing basis pre-transition or NFPA 805 Licensing Basis post-transition). Attachments 2 through 4 may be used as guidance to assist in defining the change.

### **9.2.1 Change Impact Reviews**

The Evaluator shall perform the following change impact reviews and complete the appropriate sections of Attachments 1 through 4.

- Fire protection fundamental elements and minimum design requirements (Attachment 1 – Section 1 and Attachment 2)
- Nuclear safety performance criteria (Attachment 1 – Section 2 and Attachment 3)
  - Power Operations
  - Non-power Operational Modes
- Radioactive release (Attachment 1 – Section 3 and Attachment 4)

If additional input is required from other disciplines in completing the attachments, this input should be requested in accordance with established procedures (e.g. modification procedures). Inclusion of forms in the completed documentation is only necessary as may be required by EGR-NGGC-0003 (Design Review Requirements), EGR-NGGC-0005 (Engineering Change) and PRO-NGGC-0204 (Procedures).

#### **9.2.1.1 Fire Protection Program Fundamental Element / Minimum Design Requirements**

The Evaluator shall utilize the background information in Attachment 5, in conjunction with the site Fire Plan, to properly assess technical and licensing basis impact. The Evaluator shall document the results on the Fire Protection Program Fundamental Element / Minimum Design Requirements Review Summary Form (Attachment 2 to this procedure).



If any questions on the Review Summary Form (Attachment 2 to this procedure) are answered "yes," indicating a potential Fire Protection impact, the reviewer shall evaluate the potential effects as required, including any recommended actions.

The Evaluator shall document the summary results in Section 1 "Fire Protection Program Fundamental Element / Minimum Design Requirement Change Questions" of Attachment 1 to this procedure.

**Note:** Changes impacting Fire Protection Program Fundamental Element / Minimum Design Requirements Review have the potential for requiring a License Amendment Request. Refer to Section 9.2.2 for additional considerations.

### **9.2.1.2 Nuclear Safety Performance Criteria**

The Evaluator shall utilize the background information in Attachment 5, in conjunction with the **site Fire Plan**, to properly assess technical and licensing basis impact. The Evaluator shall document the results on the Nuclear Safety Analysis Review Form (Attachment 3 to this procedure). The review shall consider fires occurring during power operation, as well as non-power operational modes.

If any questions on the Review Summary Form (Attachment 3 to this procedure) are answered "yes," indicating a potential Nuclear Safety Analysis impact, the reviewer shall evaluate the potential effects as required, including any recommended actions.

The Evaluator shall document the summary results in Section 2 "Nuclear Safety Compliance Strategy Change Questions" of Attachment 1 to this procedure.

### **9.2.1.3 Radioactive Release Requirements**

The Evaluator shall utilize the background information in Attachment 5, in conjunction with the **site Fire Plan**, to properly assess technical and licensing basis impact. The Evaluator shall document the results on the Radioactive Release Consideration Summary Form (Attachment 4 to this procedure).

If any questions on the Review Summary Form (Attachment 4 to this procedure) are answered "yes," indicating a potential Radioactive Release impact, the Evaluator shall evaluate the potential effects as required, including any recommended actions.

The Evaluator shall document the summary results in Section 3 “Radioactive Release Change Questions” of Attachment 1 to this procedure.

### **9.2.2 Licensing Basis Determination – NFPA 805 Chapter 3**

The Evaluator shall facilitate the reviews necessary to determine if a License Amendment Request is required utilizing the technical guidance in this procedure.

Refer to Attachment 1.B for additional detail and examples of the determination of when a License Amendment may or may not be required.

If a License Amendment is required, then it should be pursued in accordance with Reference 2.13. The Evaluator shall document the basis for this conclusion in Section 1 of Attachment 1.

If a License Amendment is not required, then the Evaluator shall document the basis for this conclusion in Section 1 of Attachment 1.

## **9.3 Preliminary Risk Review**

Once the definition of the change is established, a preliminary risk review is performed to identify and resolve minor changes to the fire protection program.

### **9.3.1 Screening of Trivial or Editorial Changes**

The Evaluator shall determine if the change is trivial, based upon examples in Attachment 1.A of this procedure, NEI 04-02 guidance, and judgment. The results shall be documented as necessary in Attachment 1 (Summary and Sections 1, 2, and 3).

***[Note for process consideration – not part of the revised procedure: This step may also be performed by a higher level screening (i.e., REG-NGGC-0010).]***

### **9.3.2 Determination of Minimal Risk Impact**

If the change is determined not to be trivial, the Evaluator shall perform a preliminary risk review, using the guidance in Attachment 1.C, Attachment 5, and NEI 04-02.

The Evaluator shall characterize the impact as “no” impact, “minimal” impact or “greater than minimal” impact and document the results on Attachment 1, Section 4.

If any of the preliminary risk review questions have “greater than minimal” impact, a detailed **quantitative** risk evaluation is required.

#### **9.4 Risk Evaluation**

The Evaluator shall coordinate as necessary with the Fire Protection Engineer and Fire PRA Engineer to perform/revise the calculations to assess the change using risk-informed, performance-based techniques (including, but not limited to fire modeling and PRA). The risk evaluation may be in the form of a limiting or bounding fire modeling/fire risk analysis or a detailed integrated analysis.

#### **9.5 Acceptability Determination**

The risk evaluation shall be measured quantitatively for acceptability using the  $\Delta$ CDF and  $\Delta$ LERF criteria from Regulatory Guide 1.174, as clarified in Section 5.3.5 of NEI 04-02. The results of the acceptability determination shall be clearly documented in the calculations/analyses.

A review of the impact of the change on defense-in-depth and safety margins shall be performed and documented.

If the risk evaluation determines that  $\Delta$ CDF and  $\Delta$ LERF are acceptable and that defense-in-depth and safety margins are maintained, then the Evaluator shall document the results in Attachment 1. This indicates that the change is acceptable.

If the risk evaluation determines that either  $\Delta$ CDF or  $\Delta$ LERF are not acceptable or that defense-in-depth or safety margins are not maintained, then the Evaluator shall document the results in Attachment 1. This indicates that the change is not acceptable and that alternatives should be pursued.

## 10.0 RECORDS

Attachment 1 becomes a QA Record and is processed in accordance with applicable plant records management procedures.

Documentation of the Nuclear Safety Analysis, Fundamental Elements / Minimum Design Requirements, and Radioactive Release reviews (Attachments 2 through 4) is per the requirements of EGR-NGGC-0003 (Design Review Requirements) and EGR-NGGC-0005 (Engineering Change).

# ATTACHMENT 1 – Fire Protection Program / Plant Change Evaluation Form

Page 1 of ____					
Applicable Plant(s):	Identification Number(s)				Revision Number: ____
	____	____	____	____	
	BNP	CR3	HNP	RNP	

Implementing Document No: \_\_\_\_\_

Complete each section and summarize results below.

### CONCLUSIONS

#### CHANGE EVALUATION :SUMMARY

- The change is editorial or trivial in nature. (Screening per Section 1.a, 2.a, or 3.a)
- The change affects compliance with a Fundamental Elements / Minimum Design Requirements of NFPA 805 Chapter 3 (Section 1).  
License Amendment Required?  
 Yes                       No
- The change affects compliance with the Nuclear Safety Criteria of NFPA 805 as defined in [insert reference to the appropriate document] (Section 2).  
 Yes                       No
- The change affects compliance with the Radioactive Release Criteria of NFPA 805 as defined in [insert reference to the appropriate document] (Section 3).  
 Yes                       No

#### RISK EVALUATION SUMMARY

- The change can be evaluated using a PRELIMINARY RISK REVIEW (Section 4)  
 Yes                       No
- The RISK EVALUATION demonstrates that  $\Delta$  CDF/LERF are acceptable and defense-in-depth / safety margin are maintained. Therefore, the change is acceptable.
- The RISK EVALUATION demonstrates that either the  $\Delta$  CDF/LERF are unacceptable and/or defense-in-depth / safety margin are not maintained. Therefore, the change is NOT acceptable.

### SIGNOFFS

Print Name _____	Signature _____	Date _____
EVALUATOR		
Print Name _____	Signature _____	Date _____
REVIEWER		

### CHANGE DESCRIPTION

Provide a brief description of what is being changed and why.

### REFERENCES

List applicable references. Include sufficient identifying detail to facilitate independent review and retrieval.

# ATTACHMENT 1 – Fire Protection Program / Plant Change Evaluation Form

**FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an NFPA 805 Chapter 3 requirement as defined in the site Fire Plan? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated, Sections 2.0 and 3.0, respectively.
- Yes – Proceed to Question 1.a.
  - No – Document basis and proceed to Question 2

\_\_\_\_\_

\_\_\_\_\_

- a. Is the change editorial or trivial in nature? (See Attachment 1.A)
- o  Yes Document basis and stop.
  - o  No Proceed to Question 1.b.

\_\_\_\_\_

\_\_\_\_\_

- b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in the site Fire Plan?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 1.B)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval.

\_\_\_\_\_

\_\_\_\_\_

Complete remaining sections.

SIGNOFFS			
<b>Print Name</b>	_____	<b>Signature</b>	<b>DATE</b>
<b>EVALUATOR</b>		_____	_____
<b>Print Name</b>	_____	<b>Signature</b>	<b>DATE</b>
<b>REVIEWER</b>		_____	_____

# ATTACHMENT 1 – Fire Protection Program / Plant Change Evaluation Form

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a Nuclear Safety Compliance Strategy requirement as defined in the site Fire Plan for fires originating at power or during non-power operational modes?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1.A)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805 for fires originating at power or during non-power operational modes?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in the site Fire Plan for fires originating at power or during non-power operational modes? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation.

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

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SIGNOFFS			
<b>Print Name</b>	_____	<b>Signature</b>	<b>DATE</b>
<b>EVALUATOR</b>		_____	_____
<b>Print Name</b>	_____	<b>Signature</b>	<b>DATE</b>
<b>REVIEWER</b>		_____	_____

# ATTACHMENT 1 – Fire Protection Program / Plant Change Evaluation Form

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a Radioactive Release requirement as defined in the site Fire Plan?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

\_\_\_\_\_

\_\_\_\_\_

a. Is the change editorial or trivial in nature? (See Attachment 1.A)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

\_\_\_\_\_

\_\_\_\_\_

b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

\_\_\_\_\_

\_\_\_\_\_

c. Is the change equivalent to the Radioactive Release compliance strategy as defined in the site Fire Plan? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation.

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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SIGNOFFS			
Print Name _____	Signature _____	DATE _____	
EVALUATOR			
Print Name _____	Signature _____	DATE _____	
REVIEWER			



# ATTACHMENT 1 – Fire Protection Program / Plant Change Evaluation Form

## PRELIMINARY RISK REVIEW

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 1.C for examples.

4.0 Can the change be evaluated using a preliminary risk screen?

a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?

- No Impact
- Minimal Impact
- Greater than minimal

\_\_\_\_\_

\_\_\_\_\_

b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?

- No Impact
- Minimal Impact
- Greater than minimal

\_\_\_\_\_

\_\_\_\_\_

c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?

- No Impact
- Minimal Impact
- Greater than minimal

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\_\_\_\_\_

d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?

- No Impact
- Minimal Impact
- Greater than minimal

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\_\_\_\_\_

# ATTACHMENT 1 – Fire Protection Program / Plant Change Evaluation Form

- e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
- No Impact
  - Minimal Impact
  - Greater than minimal

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- f. If any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - Yes, a detailed quantitative risk evaluation is required.

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- g. Evaluate the effect of the change on defense-in-depth and safety margin.

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SIGNOFFS			
Print Name _____	Signature _____	DATE _____	
EVALUATOR			
Print Name _____	Signature _____	DATE _____	
REVIEWER			

## ATTACHMENT 1.A – Fire Protection Program / Plant Change Evaluation Form

### Editorial or Trivial Changes

Trivial changes are changes necessary to maintain the fire protection program that clearly have no adverse effect on the ability to meet program performance requirements. Examples include:

- Changes to titles in procedures or program documents
- Change to Fire Brigade Training facility that has no impact on established training scenarios
- Changes to the Combustible Control Form that does not affect content.
- Changes to document layout.
- Changes to document numbers.

## Attachment 1.B – Fire Protection Program / Plant Change Evaluation Form

### Changes Affecting NFPA 805 Chapter 3 Requirements

In general, deviations from Chapter 3 must be submitted for NRC approval per the Rule. However, licensees can deviate from the NFPA standards referenced in Chapter 3 without NRC approval if allowed by the code of record and the changed condition is in accordance with the terms of the code of record (e.g., many earlier editions of NFPA Codes included the following statement: “Nothing in this standard is intended to restrict new technologies or alternate arrangements, providing the level of safety prescribed by the standard is not lowered.” - From 1985 edition of NFPA 13) or if the code (including NFPA 805, Chapter 3) does not dictate the specific issue (e.g., suppression system or detection system coverage). The following are examples of changes that do not require NRC approval:

- Replacing a fire rated component (e.g., fire rated penetration seal, fire door, fire rated wrap, etc.) with a different component having the same or greater fire rating.
- Use of fire hoses manufactured from a different material.
- Use of a valve assembly supplied by a different manufacturer for a suppression system.
- Changing the surveillance frequency for a fire protection feature, as long as the new frequency is bounded by the NFPA code of record, providing reasonable assurance that the system or component is maintained in an operable condition.
- Changes to Fire Brigade Training requirements that do not affect performance.
- Evaluating a blocked sprinkler head(s) for adequate coverage in the area. Chapter 3 of NFPA 805 and the referenced code do not dictate where a sprinkler system should be installed. Therefore the adequacy of the coverage should be evaluated with respect to the nuclear safety component(s) the sprinkler system is protecting.

## Attachment 1.C – Fire Protection Program / Plant Change Evaluation Form

### Preliminary Risk Review Examples

- Frequency of fire scenarios: A “like-kind” replacement of fire protection equipment or systems has “no” impact on fire frequencies. Installing an electrical cabinet in a switchgear room could cause “minimal” or “greater-than-minimal” impact on the fire frequency. Changing administrative procedures to allow welding in an area where it was previously prohibited could cause a “greater-than-minimal” increase in the frequency of fire.
- Magnitude of expected fires: Replacing a cable with one of equivalent combustible loading and type has “no” impact on the magnitude of the expected fires. Routing a new cable through a switchgear room could cause “minimal” increase in the fire magnitude. Storing a drum of oil in the emergency diesel generator room could cause a “greater-than-minimal” increase in the magnitude of expected of fire.
- Detection capability: Changes to safe shutdown equipment generally have “no” impact on the detection capability. A decrease in the normal area occupancy level where manual suppression and automatic detection are available could cause a “minimal” decrease in the fire detection capability. A decrease in normal area occupancy level where manual suppression is available but no automatic detection is provided could cause a “greater than minimal” decrease in the fire detection capability. A discovery of an NFPA code compliance issue can be evaluated and may or may not have a ‘greater than minimal’ impact on risk.
- Suppression capability: Adding a few new cables to a cable tray without reducing the separation between redundant success path or adding an obstacle to a sprinkler spray-down path has “no” impact on the suppression capability. A decrease in the number of fire extinguishers available to fight fires or an equipment change that creates a minor obstruction to a suppression system spray pattern could cause “minimal” decrease in the fire suppression capability. Converting an automatic suppression system to a fixed manual fire suppression system could cause a “greater than minimal” reduction in the fire suppression capability. A discovery of an NFPA code compliance issue can be evaluated and may or may not have a ‘greater than minimal’ impact on risk.
- Post-fire capability of plant systems to prevent damage to the core: Replacing a component with a similar component will typically have “no” impact on plant systems’ post-fire capability to prevent damage to the core, as long as the location of the component and cable routing remain unchanged. Rerouting one cable associated with a very low risk-significant system could cause “minimal” decrease in the plant systems’ capability to prevent damage to the core. Rerouting cables of a safety-related or a risk- significant system where separation is reduced or replacing a check valve with a motor- operated valve could cause a “Greater than minimal” decrease in the plant systems’ capability to prevent damage to the core. (Procedural changes should also be evaluated as part of this evaluation factor.)
- Addition of minor amounts of cable to a cable tray, where margin is provided in combustible control programs (assuming no impact on the nuclear safety criteria)

## Attachment 1.C – Fire Protection Program / Plant Change Evaluation Form

### Preliminary Risk Review Examples

- Changing a handwheel on a valve to a similar type.
- Relocating a fire extinguisher several feet due to planned modifications (as long as it is within allowable travel distances)
- Sealing a wall penetration with an approved rated material that is commensurate with the hazard
- Changing the one type of approved fire hoses with another that is appropriate for the hazards in the area.
- Changing a fire protection feature (e.g., barrier, detection, or suppression system) in an area with no potential for impact on nuclear safety or radioactive release (e.g., warehouse or office areas)
- Changing a protective device setting on a power supply credited for post-fire nuclear safety, within the limits for acceptable coordination (as long as the setting was based on the limit and not on the setting)
- Rewiring a circuit for a component credited for ensuring nuclear safety. The rewiring does not result in any new or more likely failure modes due to fire in any plant fire area.
- Discovery of an unrated penetration in a barrier that has been previously evaluated as “adequate for the hazard” under a Generic Letter 86-10 fire area boundary evaluation. If the particular penetration is bounded by the current evaluation.

## ATTACHMENT 2 – Fire Protection Review Summary Form

### Fire Protection Fundamental Elements and Minimum Design Requirements Review Summary Form

DOCUMENT NO.: \_\_\_\_\_  
DOCUMENT TITLE: \_\_\_\_\_

REVISION: \_\_\_\_\_

- |          |   | <b>Impact</b> |           |
|----------|---|---------------|-----------|
| <b>1</b> | <b>Fire Protection Program Elements</b>   | <b>Yes</b>    | <b>No</b> |
|          | <ul style="list-style-type: none"> <li>▪ <b>Fire Protection Plan (NFPA 805 Section 3.2)</b> <ul style="list-style-type: none"> <li>○ Management Policy Direction and Responsibility <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Procedures <input type="checkbox"/> <input type="checkbox"/></li> </ul> </li> <li>▪ <b>Prevention (NFPA 805 Section 3.3)</b> <ul style="list-style-type: none"> <li>○ Fire Prevention for Operational Activities <input type="checkbox"/> <input type="checkbox"/> <ul style="list-style-type: none"> <li>▪ General Fire Prevention Activities <input type="checkbox"/> <input type="checkbox"/></li> <li>▪ Control of Combustible Materials <input type="checkbox"/> <input type="checkbox"/></li> <li>▪ Control of Ignition Sources <input type="checkbox"/> <input type="checkbox"/></li> </ul> </li> <li>○ Bulk Flammable Gas Storage <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Bulk Storage of Flammable and Combustible Liquids <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Transformers <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Hot Pipes and Surfaces <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Electrical Equipment <input type="checkbox"/> <input type="checkbox"/></li> </ul> </li> <li>▪ <b>Industrial Fire Brigade (NFPA 805 Section 3.4)</b> <ul style="list-style-type: none"> <li>○ On-site Fire-Fighting Capability <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Pre-Fire Plans <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Training and Drills <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Fire Fighting Equipment <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Off-Site Fire Department Interface <input type="checkbox"/> <input type="checkbox"/></li> </ul> </li> </ul> |               |           |
| <b>2</b> | <b>Passive fire protection features subject to impact review include:</b>   |               |           |
|          | <ul style="list-style-type: none"> <li>▪ <b>Prevention (NFPA 805 Section 3.3)</b> <ul style="list-style-type: none"> <li>○ Interior Finishes <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Insulation Materials <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Electrical <input type="checkbox"/> <input type="checkbox"/></li> <li>○ Roofs <input type="checkbox"/> <input type="checkbox"/></li> </ul> </li> </ul>  |               |           |

**ATTACHMENT 2 – Fire Protection Review Summary Form**

○ Reactor Coolant Pumps

▪ **Passive Fire Protection Features (NFPA 805 Section 3.11)**

- Building Separation
- Fire Barriers
- Fire Barrier Penetrations
- Through Penetration Fire Stops
- Electrical Raceway Fire Barrier Systems

**3 Active fire protection features subject to impact review include:**

- **Water Supply (NFPA 805 Section 3.5)**
- **Standpipe and Hose Stations (NFPA 805 Section 3.6)**
- **Fire Extinguishers (NFPA 805 Section 3.7)**
- **Fire Alarm and Detection Systems (NFPA 805 Section 3.8)**
- **Automatic and Manual Water-Based Fire Suppression Systems (NFPA 805 Section 3.9)**
- **Gaseous Fire Suppression Systems (NFPA 805 Section 3.10)**



# ATTACHMENT 3 – Nuclear Safety Analysis Review Summary Form

## Nuclear Safety Analysis Review Summary Form

DOCUMENT NO.: \_\_\_\_\_

REVISION: \_\_\_\_\_

DOCUMENT TITLE: \_\_\_\_\_

<b>Nuclear Safety Considerations</b>	<b>Impact</b>	
	<b>Yes</b>	<b>No</b>
▪ <b>Nuclear Safety Systems and Equipment</b>	<input type="checkbox"/>	<input type="checkbox"/>
▪ <b>Nuclear Safety Capability Circuit Analysis</b>		
○ Required Circuits	<input type="checkbox"/>	<input type="checkbox"/>
○ Common Power Supply	<input type="checkbox"/>	<input type="checkbox"/>
○ Common Enclosure	<input type="checkbox"/>	<input type="checkbox"/>
▪ <b>Nuclear Safety Capability Equipment and Cable Locations</b>	<input type="checkbox"/>	<input type="checkbox"/>
▪ <b>Fire Area Assessment</b>		
○ Fire Protection/Separation Schemes	<input type="checkbox"/>	<input type="checkbox"/>
○ Recovery Actions	<input type="checkbox"/>	<input type="checkbox"/>
▪ Feasibility	<input type="checkbox"/>	<input type="checkbox"/>
▪ Procedures	<input type="checkbox"/>	<input type="checkbox"/>
▪ Emergency Lighting	<input type="checkbox"/>	<input type="checkbox"/>
▪ Communications	<input type="checkbox"/>	<input type="checkbox"/>
▪ <b>Non-Power Operational Modes</b>	<input type="checkbox"/>	<input type="checkbox"/>

**ATTACHMENT 4 – Radioactive Release Review Summary Form**

**Radioactive Release Review Summary Form**

DOCUMENT NO.: \_\_\_\_\_ REVISION: \_\_\_\_\_  
DOCUMENT TITLE: \_\_\_\_\_

1	Radioactive Release Considerations	Impact	
		Yes	No
	▪ Ability to control or monitor radioactive release related to fire suppression activities.	<input type="checkbox"/>	<input type="checkbox"/>
	▪ Pre-fire plan changes related to controlling the release of radioactivity.	<input type="checkbox"/>	<input type="checkbox"/>
	▪ Fire brigade Training related to controlling the release of activity.	<input type="checkbox"/>	<input type="checkbox"/>

## **ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations**

### **Change Definition (Section 9.2)**

*[Refer to NEI 04-02 Section 5.3.2 and Appendix J for more detail]*

The Change Evaluation process begins by defining the change or altered condition to be examined and the baseline configuration as defined by the Licensing Basis (CLB pre-transition or NFPA 805 Licensing Basis post-transition).

- The Baseline is defined as that plant condition or configuration that is consistent with the Licensing Basis (CLB pre-transition or NFPA 805 Licensing Basis post-transition).
- The changed or altered condition or configuration, either ‘as found’ or proposed by a plant change, that is not consistent with the Licensing Basis is defined as the Proposed Alternative.

Engineering analysis may be needed to fully understand and quantify the plant performance contemplated by the change. For example, a cable raceway barrier may need a technical evaluation to determine its rating or a fire model may be needed to determine the margin to damage of a potential target. The engineering analysis may be performance-based technical evaluations or equivalency evaluations.

### **Change Impact Reviews (Section 9.2.1)**

Change impact reviews are performed in the topical areas of:

- Fire protection fundamental elements and minimum design requirements (Attachment 1 – Section 1 and Attachment 2)
- Nuclear safety performance criteria (Attachment 1 – Section 2 and Attachment 3)
  - Power Operations
  - Non-power Operational Modes
- Radioactive release (Attachment 1 – Section 3 and Attachment 4)

#### **Fire Protection Program Fundamental Element / Minimum Design Requirements (Section 9.2.1.1)**

##### **Areas of Interest**

Chapter 3 of NFPA 805 outlines Fire Protection Program Fundamental Elements / Minimum Design Requirements. The site Fire Plan contains the Fundamental Element / Minimum Design Requirement Transition Table (based upon Table B-1 of NEI 04-02). This table provides the sites compliance statements (with the NFPA Chapter 3 requirement, previously approved alternatives, or a summary of the License Amendment).

## ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations

Evaluations of changes that could affect these compliance statements are required to ensure that the fundamental elements and minimum design requirements are maintained and to ensure that the nuclear safety performance criteria are met. The following topical areas are addressed in NFPA 805 Chapter 3:

Topic	NFPA 805 Reference
Fire Protection Plan	3.2
Prevention	3.3
Industrial Fire Brigade	3.4
Water Supply	3.5
Standpipe and Hose Stations	3.6
Fire Extinguishers	3.7
Fire Alarm and Detection Systems	3.8
Automatic and Manual Water-Based Fire Suppression Systems	3.9
Gaseous Fire Suppression Systems	3.10
Passive Fire Protection Features	3.11

Impact reviews of active features should consider not only changes (e.g., revisions, temporary changes, removal) to the subject equipment, but the installation of equipment or barriers that could impact the performance of these systems.

Procedure ??? presents a detailed point-by-point evaluation of the impact of a plant change on the programmatic elements and the passive and active fire protection features.

### **Nuclear Safety Performance Criteria (Section 9.2.1.2)**

NFPA 805 Section 4.1, states that, “Deterministic requirements shall be “deemed to satisfy” the performance criteria and require no further engineering analysis.” Chapter 4 of NFPA 805 provides the requirements for the baseline evaluation of the fire protection program’s ability to achieve the performance criteria outlined in Section 1.5 of NFPA 805. The ‘deemed to satisfy’ with out additional engineering analysis does not imply that a Plant Change Evaluation would not be performed. For example if a licensee was changing its current licensing basis in a fire area to a ‘deterministic method’, that change would require a ‘Plant Change Evaluation’. Note the Defense in Depth and Safety Margin

## ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations

portion of the “Plant Change Evaluation’ would be satisfied by the fact that a ‘deterministic’ option was chosen for compliance (See Sections 2.4.4.2 and 2.4.4.3 of NFPA 805).

<b>Nuclear Safety Considerations</b>	<b>NFPA 805 Reference</b>
Nuclear Safety Systems and Equipment	2.4.2.1
Nuclear Safety Capability Circuit Analysis	2.4.2.2.1
Required Circuits	2.4.2.2.2.
<ul style="list-style-type: none"> <li>• Common Power Supply</li> </ul>	2.4.2.2.2.a
<ul style="list-style-type: none"> <li>• Common Enclosure</li> </ul>	2.4.2.2.2.b
Nuclear Safety Capability Equipment and Cable Locations	2.4.2.3
Fire Area Assessment	2.4.2.4
<ul style="list-style-type: none"> <li>• Fire Protection / Separation Schemes</li> </ul>	4.2.3, 4.2.4
<ul style="list-style-type: none"> <li>• Recovery Actions</li> </ul>	4.2.4
<ul style="list-style-type: none"> <li>• Feasibility</li> </ul>	4.2.4
<ul style="list-style-type: none"> <li>• Procedures</li> </ul>	4.2.4
<ul style="list-style-type: none"> <li>• Emergency Lighting</li> </ul>	4.2.4
<ul style="list-style-type: none"> <li>• Communications</li> </ul>	4.2.4
Non-Power Operational Modes	B.6

### **Power Operations**

The site Fire Plan contains the Nuclear Safety Performance Analysis Methodology and Fire Area Transition Tables (based upon Tables B-2 and B-3 of NEI 04-02). The Methodology Table provides a roadmap for the NSPA Documentation and provides a detailed description of the assumptions, definitions, methodologies and analysis processes. The Fire Area Transition Table provides an overview of the compliance strategies by Fire Area and provides a cross reference to the detailed analyses as applicable. The NSPA Documentation must be utilized in performing Nuclear Safety Performance criteria assessments of plant changes.

### **Non-Power Operational Modes**

Change analyses must also consider fires originating in non-power operational modes. Since this is a “new” fire protection requirement, a change relative to a “baseline” configuration would typically not be necessary until after transition to the new protection licensing basis.

## **ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations**

### **Radioactive Release Requirements**

NFPA 805 Section 1.5.2 states:

*Radiation release to any unrestricted area due to the direct effects of fire suppression activities (but not involving fuel damage) shall be as low as reasonably achievable and shall not exceed applicable 10 CFR, Part 20, Limits.*

The site Fire Plan contains the Radioactive Release Transition Table (based on Table G-1 of NEI 04-02). The Radioactive Release Transition Table provides an overview and provides a cross reference to analyses as applicable. The Radioactive Release Documentation must be utilized in performing Radioactive Release performance criteria assessments of plant changes.

**Procedure ???** provides details on how to perform an evaluation of the impact of a plant change on the Radioactive Release performance criteria.

### **Licensing Basis Determination – NFPA 805 Chapter 3 (Section 9.2.2)**

Additional consideration should be given to changes to Fundamental Program Elements and Minimum Design Requirements. 10 CFR 50.48(c)(2)(vii) allows licensees to use performance-based methods to demonstrate compliance with NFPA 805 Chapter 3 requirements. However, these alternate methods must be approved via the license amendment process (10 CFR 50.48(c)(4)).

Most changes to the Fundamental Program Elements and Minimum Design Requirements should not require a License Amendment request, since they are evaluations that demonstrate compliance with requirements of Chapter 3 of NFPA 805.

It is important to note that there is overlap between the Fundamental Program Elements and Minimum Design Requirements in NFPA 805 Chapter 3 and the protection strategies defined in Chapter 4 of NFPA 805, particularly for fire protection features relied upon to satisfy the nuclear safety criteria of Section 4.2 of NFPA 805. In cases where NFPA 805 Chapter 4 specifies separation or protection methods and Chapter 3 discusses minimum design requirements for the methods, care must be taken to understand whether or not risk-informed, performance-based methods can be used. Examples and clarifications include the following:

## ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations

- ***Licenseses can deviate from the NFPA standards referenced in NFPA 805 Chapter 3 without NRC approval if allowed by the code of record, so long as the evaluated condition is in accordance with the terms of the code of record*** (e.g., “Nothing in this standard is intended to restrict new technologies or alternate arrangements, providing the level of safety prescribed by the standard is not lowered.” – Excerpt from 1985 edition of NFPA 13) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Note that this code of record interpretation is applicable to the following sections of NFPA 805 Chapter 3:
- Section 3.11.5, Electrical Raceway Fire Barrier Systems, provides requirements for “ERFBS required by Chapter 4”. The requirements are deterministic in nature and are intended to apply barriers meeting the Chapter 4 deterministic criteria. ***If a barrier relied upon for meeting nuclear safety criteria is found not to meet acceptance criteria in Section 3.11.5, then a risk-informed, performance-based change evaluation in accordance with Section 2.4.4 of NFPA 805 is appropriate to assessment impact on the nuclear safety capability, rather than a License Amendment Request for approval.***
- Note that several sections of NFPA 805, Chapter 3 specify requirements for systems/features that are required to meet the performance-based or deterministic requirements of Chapter 4. It is important to note the restriction to the systems/features required to meet Chapter 4 criteria, in order to not place an unnecessary focus on systems and features that are not required. These limitations are provided in the following sections of NFPA 805:
  - 3.8.2 – *Detection*
  - 3.9.1 – *Automatic and Manual Water-Based Fire Suppression Systems*
  - 3.10.1 – *Gaseous Fire Suppression Systems*
  - 3.11.2 – *Fire Barriers*
  - 3.11.5 – *Electrical Raceway Fire Barrier Systems (ERFBS)*

### Preliminary Risk Review (Section 9.3)

*[Refer to NEI 04-02 Section 5.3.3 and Appendix J for more detail]*

Once the definition of the change is established, a screening is then performed to identify and resolve minor changes to the fire protection program. This screening is consistent with fire protection regulatory review processes in place at nuclear plants under traditional licensing bases. This screening process is modeled after the NEI 02-03 process. This process will address most

## **ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations**

administrative changes (e.g., changes to the combustible control program, organizational changes, etc.).

### **Screening of Trivial or Editorial Changes (Section 9.3.1)**

Trivial changes are changes necessary to maintain the fire protection program that clearly have no adverse effect on the ability to meet program performance requirements.

Examples include:

- Changes to titles in procedures or program documents
- Change to Fire Brigade Training facility that has no impact on established training scenarios
- Changes to the Combustible Control Form that does not affect content.
- Changes to document layout.
- Changes to document numbers.

### **Determination of Minimal Risk Impact (Section 9.3.2)**

If the change is determined not to be trivial, an assessment is then performed in accordance with 5.3.3 to determine if the change can be characterized as having a “minimal” risk impact in accordance with Section 5.3.3 of NEI 04-02.

Attachment 1 of this procedure contains a Preliminary Risk Review form derived from NEI 04-02 Appendix I. The screening process is divided into assessing if the change is trivial (Sections 1.a, 2.a, 3.a) and performing a risk screen in Section 4.0. The risk screen identifies and documents the factors that contribute to the risk associated with the change. In general, these factors include changes in:

- a) frequency of all fire scenarios which are affected by the change,
- b) magnitude of expected fires,
- c) detection capability,
- d) suppression capability, and
- e) post-fire capability of plant systems to prevent damage to the core.

The impact of the plant change on each of these factors can be evaluated (either qualitatively or quantitatively) and categorized as: “no” impact, “minimal” impact or “greater than minimal” impact. The nature of the change would enable a licensee to choose among the three categories. For those changes that do not meet the screening criteria a more detailed Risk Evaluation is required.

If a plant change could cause a “greater than minimal” impact with respect to any of the above factors, a risk evaluation should be performed as described in Section 9.4.



## **ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations**

### **Special Considerations for Treatment of Multiple Spurious Actuations (Section 9.3.3)**

Methods have been developed for screening and risk assessment of the potential for fire-induced circuit failures resulting in spurious actuations. These methods are presented in NEI 00-01 Appendix F and Section B.2.1 of the NEI 04-02. Specific criteria related to Regulatory Guide 1.174 criteria single spurious component actuations and potentially risk significant multiple spurious actuations are presented in these documents. Refer to NEI 00-01 and NEI 04-02 for detail on these topics. Progress Energy procedure ???? contains specific positions on multiple spurious actuations and should be reviewed as necessary.

### **Risk Evaluation (Section 9.4)**

*[Refer to NEI 04-02 Section 5.3.4 and Appendix J for more detail]*

Screening is followed by engineering evaluations that may include fire modeling and risk assessment techniques. The results of these evaluations are then compared to the acceptance criteria. Changes that satisfy the acceptance criteria of NFPA 805 Section 2.4.4 can be implemented within the framework provided by NFPA 805. Changes that do not satisfy the acceptance criteria cannot be implemented within this framework.

The quantitative risk evaluation involves the application of fire modeling analyses and risk assessment techniques to obtain a measure of the changes in risk associated with the proposed change.

### **Initial Evaluation - Fire Modeling (Section 9.4.1)**

Fire modeling analyses are used to identify and define the fire scenarios that require consideration in the risk assessment. Fire modeling analyses are applied to examine the response of the “target set(s)” identified in the change definition.

Fire modeling analyses can also be used to determine which fire scenarios are not credible and therefore, do not need to be included in the quantitative risk assessment. In order to screen out a fire scenario, certain conditions must be satisfied.

**Target Damage Occurs?** – The fire modeling analysis must define and evaluate a postulated scenario involving the Maximum Expected Fire Scenario (MEFS). If target set damage is predicted to occur then the fire scenario cannot be screened out and further analysis using quantitative risk assessment techniques will be required. If target set damage does not occur, then continue to next step.

## **ATTACHMENT 5 – Background Information Risk-Informed, Performance-Based Change Evaluations**

**MEFS<<LFS?** – A comparison of MEFS and LFS is used to determine if a sufficient fire modeling margin exists. If sufficient fire modeling margin exists, then the fire scenario can be screened from the quantitative risk assessment as having a minimal impact on risk (MEFS does not generate damage, and MEFS - LFS margin is sufficiently large to address uncertainties in modeling)

Refer to Section 5.3.4.1 and Appendix D of NEI 04-02 for additional guidance on fire modeling. Progress Energy Procedure ??? also provides specific guidance on fire modeling.

### **Initial Evaluation - Bounding Risk Assessment (Section 9.4.2)**

A bounding risk assessment can be performed using the existing available plant fire risk analysis, IPEEE, or the plant internal events PRA model. The analysis would simply determine the change in the calculated core damage frequency (CDF) and large early release frequency (LERF) with and without the postulated fire induced failure of the plant feature being examined by the Change Evaluation. This approach conservatively assumes that target set damage occurs for all postulated fire events.

The resulting change in CDF and LERF is compared against the acceptance criteria, which are derived from Regulatory Guide 1.174 and are specifically discussed in Section 5.3.5 of NEI 04-02. If the change meets the acceptance criteria, then the bounding risk assessment can be used to demonstrate the acceptability of the change.

### **Detailed Risk Evaluation (Section 9.4.3)**

If the bounding risk assessment cannot demonstrate the acceptability of the change, a detailed combined analysis can be performed incorporating fire modeling into the risk assessments. This is discussed further in Appendix J of NEI 04-02.

### **Acceptability Determination (Section 9.5)**

The acceptance criteria for a risk-informed, performance-based fire protection assessment consists of the following elements:

- Quantitative Risk Acceptance
- Defense-in-Depth
- Safety Margins
- Uncertainty

The acceptance criteria for the Plant Change Evaluation consist of two parts. One is quantitatively based and the other is qualitatively based. The quantitative figures of merit are  $\Delta$ CDF and  $\Delta$ LERF. The qualitative factors are defense-in-

**ATTACHMENT 5 – Background Information  
Risk-Informed, Performance-Based Change Evaluations**

depth and safety margin. If a change meets the acceptance criteria described below, this is confirmation that a success path effectively remains free of fire damage.

**Quantitative Risk Acceptance Criteria (Section 9.5.1)**

The acceptance criteria for a risk increase are taken from Regulatory Guide 1.174. The criteria from the regulatory guide are depicted in Figures 5-2 and 5-3 of NEI 04-02 and are a function of the total calculated CDF and LERF for the plant. Refer to Section 5.3.5.1 of NEI 04-02 for detailed discussion and use of the figures that define acceptable changes for  $\Delta$ CDF and  $\Delta$ LERF.

**ATTACHMENT 5 – Background Information  
Risk-Informed, Performance-Based Change Evaluations**

<b>Region</b>	<b><math>\Delta</math>CDF/yr</b>	<b><math>\Delta</math>LERF/yr</b>	<b>Status</b>	<b>Comments/Conditions</b>
I	$\geq 1.0E-05$	$\geq 1.0E-06$	Unacceptable	Proposed changes in this region are not acceptable.
II	$< 1.0E-05$ and $\geq 1.0E-06$	$< 1.0E-06$ and $\geq 1.0E-07$	Acceptable w/ conditions	Proposed changes in this region are acceptable provided the cumulative total CDF from all CDF initiators is less than $1.0E-04$ /yr and from all LERF initiators is $< 1E-5$ /yr. Cumulative effect of changes must be tracked and included in subsequent changes.
III	$< 1.0E-06$	$< 1.0E-07$	Acceptable w/ conditions	Proposed changes in this region are acceptable provided the cumulative total CDF from all initiators is less than $1.0E-03$ /yr and from all LERF initiators is $< 1E-4$ /yr. Cumulative effect of changes must be tracked and included in subsequent changes.

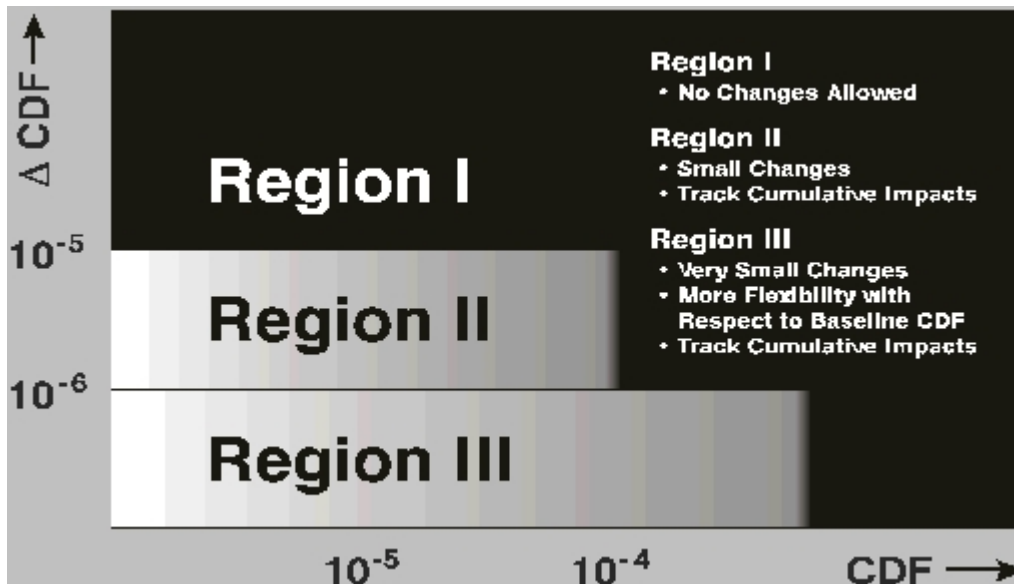


Figure 5-2 of NEI 04-02 –  $\Delta$ CDF Acceptance Criteria

**ATTACHMENT 5 – Background Information  
Risk-Informed, Performance-Based Change Evaluations**

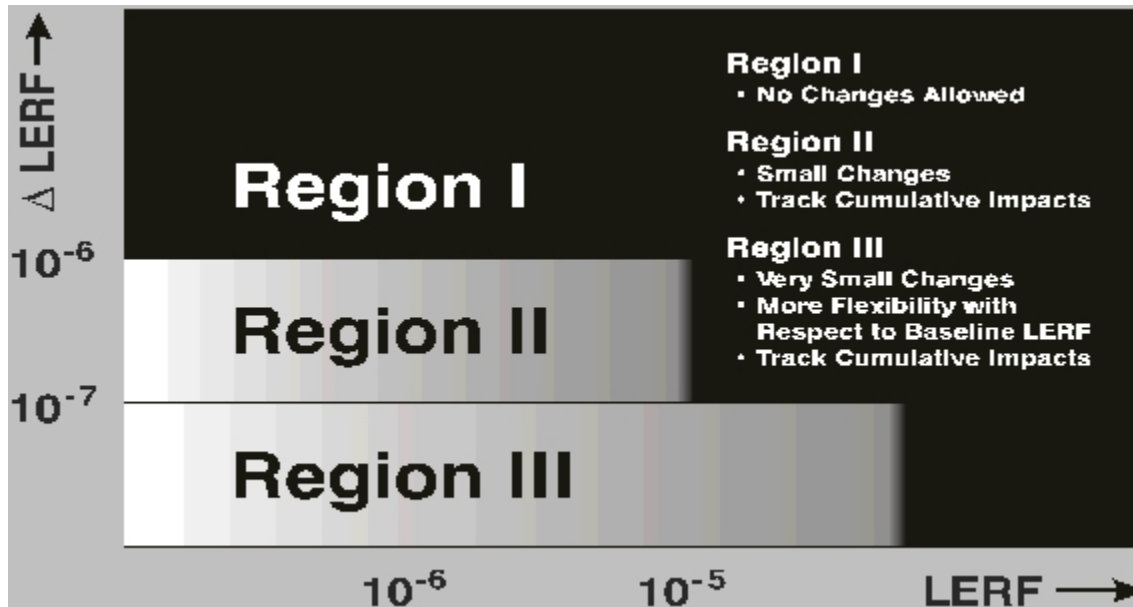


Figure 5-3 of NEI 04-02–  $\Delta$ LERF Acceptance Criteria

**Defense-in-Depth (Section 9.5.2)**

The result of the proposed change must also satisfy defense-in-depth and safety margin considerations. In general, the defense-in-depth requirement is satisfied if the proposed change does not result in a substantial imbalance in:

- Preventing fires from starting
- Detecting fires quickly and extinguishing those that occur, thereby limiting damage
- Providing adequate level of fire protection for structures, systems and components important to safety so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed

Additional clarification on defense-in-depth with respect to fire protection changes are provided in NEI 00-01. Refer to NEI 00-01 and Section 5.3.5.2 of NEI 04-02 for additional guidance and clarification on defense-in-depth.

**Safety Margins (Section 9.5.3)**

Sufficient safety margins must be maintained as part of any change. An acceptable set of guidelines for making that assessment is summarized below. Other equivalent acceptance guidelines may also be used.

**ATTACHMENT 5 – Background Information  
Risk-Informed, Performance-Based Change Evaluations**

- Codes and standards or their alternatives accepted for use by the NRC are met, and
- Safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) are met, or provides sufficient margin to account for analysis and data uncertainty.

Refer to Section 5.3.5.3 of NEI 04-02 for additional discussion of safety margins and their applicability to a risk-informed, performance-based fire protection program.

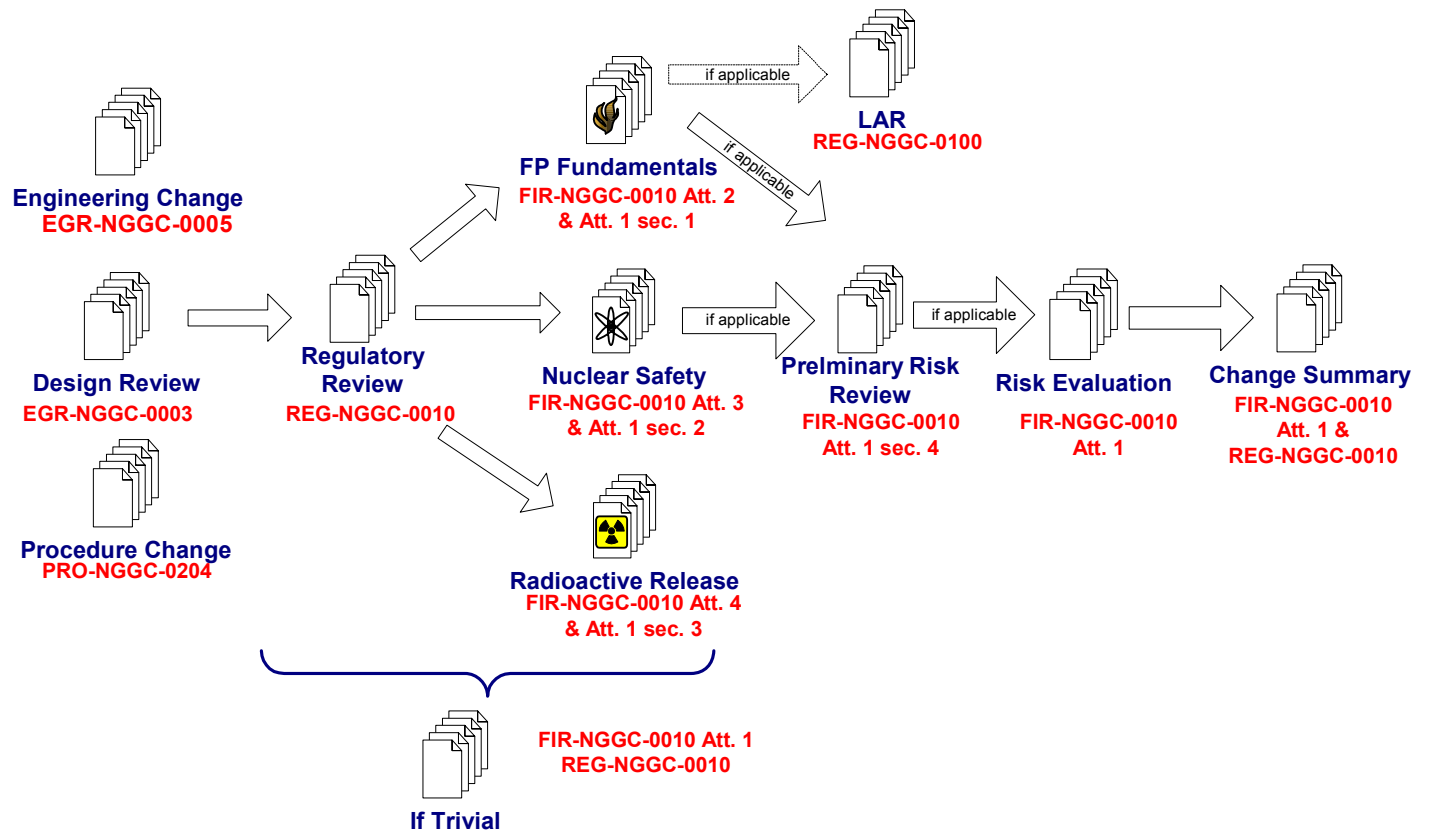
**Uncertainty Considerations (Section 9.5.4)**

Regulatory Guide 1.174 describes two types of uncertainty. These are aleatory and epistemic. Refer to NEI 04-02 Section 5.3.5.4 for additional clarification of uncertainty with respect to a risk-informed, performance-based fire protection program.

In a risk-informed, performance-based engineering evaluation, uncertainties must be considered and addressed.

## ATTACHMENT 6 – Change Process – Documentation Interface Diagram (Simplified)

<i>Task</i>	<i>Initiating Activity</i>	<i>Change Definition</i>	<i>Preliminary Risk Review</i>	<i>Risk Evaluation &amp; Acceptability Determination</i>
NEI 04-02 Guidance		[NEI 04-02 Section 5.3.2]	[NEI 04-02 Section 5.3.3]	[NEI 04-02 Section 5.3.4]
FIR-NGGC-0010 Guidance		[FIR-NGGC-0010 Section 9.2]	[FIR-NGGC-0010 Section 9.3]	[FIR-NGGC-0010 Section 9.4 and 9.5]



# **NFPA 805 NRC Pilot Observation Meeting Change Process**

**Jeff Ertman**

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**Charlotte, NC  
November 8, 2005**





# NFPA 805 Change Process

## PE Change Control Philosophy

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- Other processes point to FP change process
- Only need to spend time on those changes that are potentially impact to risk, DID
- Risk review performed by site FP Engineer/NSPA Engineer or PRA analyst
- Process needs to mesh with PRA change process to ensure proper handoffs [maybe add a picture for this]
- Most changes will not require a mid revision cycle PRA model update
- [Others?]

# NFPA 805 Change Process

## Defining the Line

---

- List of changes that we think need NRC approval.
- List of changes that we think do not.

# NFPA 805 Change Process Items for Consideration

---

- Items/features we want the NRC to focus on as we go through examples
- Go through examples

# Aggregate risk of deficiencies

---

- Make it clear this is different from ‘Cumulative risk’ due to changes once transition has occurred.
- Will define a baseline coming out of transition
  - Industry PRA practices will define resetting of the baseline after periodic updates
- Make point that some things are being done

# PRA Quality and Peer reviews

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- PE is not creating a PRA non-power operations to support NFPA 805 program
- PE is performing self assessments and requesting NRC review of methodology to mitigate likelihood of major issues our of Peer Review

# NFPA 805 Change Process

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Example 2a - Fire Barrier Deviations  
Degraded 3 hour conduit wrap, sufficient for the hazard.  
No suppression. LFS>>MEFS  
Chap 3 applicability 'no' on change form

Excerpt of Transition Table: B-1

NFPA 805  
Chapter 3 Fundamental Fire  
Protection  
Program and Design Elements  
3.11.5\* Electrical Raceway Fire Barrier  
Systems (ERFBS).  
ERFBS required by Chapter 4 shall be  
capable of resisting the fire effects of the  
hazards in the area. ERFBS shall be tested in  
accordance with and shall meet the  
acceptance criteria of NRC Generic Letter 86-  
10, Supplement 1, "Fire Endurance Test  
Acceptance Criteria for Fire Barrier Systems  
Used to Separate Safe Shutdown Trains  
Within the Same Fire Area." The ERFBS  
needs to adequately address the design  
requirements and limitations of supports and  
intervening items and their impact on the fire  
barrier system rating. The fire barrier system's  
ability to maintain the required nuclear safety  
circuits free of fire damage for a specific  
thermal exposure, barrier design, raceway  
size and type, cable size, fill, and type shall be  
demonstrated

Exception No. 2: ERFBS systems employed  
prior to the issuance of Generic Letter 86-10,  
Supplement 1, are acceptable providing that  
the successfully met the limiting end point  
temperature requirements as specified by the  
AHJ at the time of acceptance.

Compliance Statement

ERFBS credited for Chapter 4 compliance  
has been qualified as follows:  
  
Thermo-Lag enclosures used are qualified to  
GL 86-10 Supplement 1 criteria.  
  
3M enclosures utilized are qualified prior to  
the issuance of GL 86-10 Supplement 1  
criteria:

Current Licensing Basis Document  
Identification

Thermo-Lag qualification process meets  
requirements of NFPA 805– SER dated  
9/09/92  
  
3M qualification process meets requirements  
of NFPA 805– SER dated 2/19/85

Example 2a - Fire Barrier Deviations  
 Degraded 3 hour conduit wrap, sufficient for the hazard.  
 No suppression. LFS>>MEFS  
 Chap 3 applicability 'no' on change form

Excerpt of Transition Table B-3:

Fire Area	Fire Area Description	Appendix R Compliance Methods	Exemption / Deviation	Nuclear Safety Performance Criteria	Evaluations
H1	Hallway	III.G.1, III.G.2.a	<ul style="list-style-type: none"> <li>▪ None</li> </ul>	The nuclear Safety Criteria are met as follows: <ul style="list-style-type: none"> <li>▪ Reactivity control – Charging (Tr. B)</li> <li>▪ Inventory and pressure control – Charging (Tr. A &amp; B), Aux. Spray or PORV B</li> <li>▪ Decay heat removal (AFW A, B, or C, RHR A &amp; B)</li> <li>▪ Vital auxiliaries (CCW A&amp;B), (SW A&amp;B)</li> <li>▪ Process monitoring (dependant on location)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Eval. 88-05, Manual Action Feasibility</li> <li>▪ Qualification package Thermo-Lag enclosure</li> </ul>



Example 2a - Fire Barrier Deviations  
Degraded 3 hour conduit wrap, sufficient for the hazard.  
No suppression. LFS>>MEFS  
Chap 3 applicability 'no' on change form

**Issue to be discussed:**

The Chapter 3 commitment is not involved, unless Chapter 4 'requires the qualification of the wrap.

<b>FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS</b>
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Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **Upper Level Program Document**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.
- Yes – Proceed to Question 1.a.
  - No – Document basis and proceed to Question 2

Chapter 4 Engineering Calculation shows that the wrap is adequate for the hazards in the area and therefore is not required to be qualified per Chapter 3 requirements.

- a. Is the change editorial or trivial in nature? (See Attachment 1)
- o  Yes Document basis and stop.
  - o  No Proceed to Question 1.b.

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- b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in [Insert appropriate document reference]?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Example 2a - Fire Barrier Deviations  
Degraded 3 hour conduit wrap, sufficient for the hazard.  
No suppression. LFS>>MEFS  
Chap 3 applicability 'no' on change form

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **Upper Level Program Document**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Calculation XXX shows that MEFS will not 1) weaken the supports for the Thermo-Lag enclosure, and 2) will not introduce heat into the enclosed envelop in excess of the qualification temperature. The LEFS required to damage the enclosed commodity either through structural failure or introduction of heat into the enclosure requires a fuel package three times as large as the MEFS.

Example 2a - Fire Barrier Deviations  
Degraded 3 hour conduit wrap, sufficient for the hazard.  
No suppression. LFS>>MEFS  
Chap 3 applicability 'no' on change form

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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Example 2a - Fire Barrier Deviations  
Degraded 3 hour conduit wrap, sufficient for the hazard.  
No suppression. LFS>>MEFS  
Chap 3 applicability 'no' on change form

**PRELIMINARY RISK SCREENING**

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

Example 2a - Fire Barrier Deviations  
Degraded 3 hour conduit wrap, sufficient for the hazard.  
No suppression. LFS>>MEFS  
Chap 3 applicability 'no' on change form

Engineering Calculation XXX shows that MEFS will not damage the protected cables, and that LFS requires a fuel package 3 times greater than that of the MEFS. Sensitivity studies were conducted varying parameters to demonstrate that sufficient fire modeling margin exists. The fire scenario can be screened from further quantitative risk assessment. And the change in configuration of the Thermo-Lag enclosure was determined to have a minimal impact on risk (MEFS does not generate damage, and MEFS - LFS margin is sufficiently large to address uncertainties in modeling)

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - Yes, a detailed quantitative risk evaluation is required.
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Example 2b - Fire Barrier Deviations  
Lack of Barrier - Cable found not protected in the NSPA analysis, sufficient for the hazard. No suppression. LFS>>MEFS

**Definition of Change:**

The Chapter 3 commitment is not involved, unless Chapter 4 'requires the 'separation'.

The NSPA compliance strategy for as-transitioned Fire Area B1 credited one success path of equipment (Train A) free of fire damage. During walkdowns, post transition it was found that a train "A" conduit containing circuits for Train A Service Water pump is routed through Fire Area B1.

**FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **Upper Level Program Document**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
- No – Document basis and proceed to Question 2

a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 1.b.

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b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in [Insert appropriate document reference]?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Example 2b - Fire Barrier Deviations  
Lack of Barrier - Cable found not protected in the NSPA analysis, sufficient for the hazard. No suppression. LFS>>MEFS

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **Upper Level Program Document**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Calculation XXX shows that MEFS will not damage the redundant success paths of Service Water. The LEFS required to damage the redundant success path requires a fuel package two times as large as the MEFS.

Example 2b - Fire Barrier Deviations  
Lack of Barrier - Cable found not protected in the NSPA analysis, sufficient for the hazard. No suppression. LFS>>MEFS

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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- a. Is the change editorial or trivial in nature? (See Attachment 1)
- o  Yes Document basis and stop.
  - o  No Proceed to Question 3.b.

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- b. Does the change meet the requirements of the Radioactive Release criteria?
- o  Yes Document conclusions and proceed to risk screening.
  - o  No Proceed to Question 3.c.

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- c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)
- o  Yes Document conclusions and proceed to risk screening
  - o  No Perform a Risk Evaluation.

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Example 2b - Fire Barrier Deviations  
Lack of Barrier - Cable found not protected in the NSPA analysis, sufficient for the hazard. No suppression. LFS>>MEFS

**PRELIMINARY RISK SCREENING**

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

Engineering Calculation XXX shows that MEFS will not damage the redundant success paths, and that LFS requires a fuel package 3 times greater than that of the MEFS. Sensitivity studies were conducted varying parameters to demonstrate that sufficient fire modeling

Example 2b - Fire Barrier Deviations  
Lack of Barrier - Cable found not protected in the NSPA analysis, sufficient for the hazard. No suppression. LFS>>MEFS

margin exists. The fire scenario can be screened from further quantitative risk assessment, since damage to redundant trains will not occur.

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.
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NOTE NEI 04-02 APPENDIX I FORM DOES NOT CONTAIN A SUMMARY QUESTION ON DEFENSE-IN-DEPTH / SAFETY MARGIN.

For this example Defense in Depth would be met because:

- Fire area is controlled combustible and ignition source control program. Additional controls were added to maintain the ‘input parameters’ from the fire modeling evaluation
- Detection exists in the area to ‘rapidly detect’ fires that do occur
- Separation and physical layout of the area provides adequate level of protection.

Therefore DID is maintained because:

1. *A reasonable balance is preserved among 10 CFR 50 Appendix R DID elements.*
2. *Over-reliance and increased length of time or risk in performing programmatic activities to compensate for weaknesses in plant design is avoided.*
3. *Pre-fire nuclear safety system redundancy, independence, and diversity are preserved commensurate with the expected frequency and consequences of challenges to the system and uncertainties (e.g., no risk outliers). (This should not be construed to mean that more than one safe shutdown train must be maintained free of fire damage.)*
4. *Independence of defense-in-depth elements is not degraded.*
5. *Defenses against human errors are preserved.*
6. *The intent of the General Design Criteria in Appendix A to 10 CFR Part 50 is maintained.*

## Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

### NFPA 805 Chapter 3 Fundamental Fire Protection Program and Design Elements

### Compliance Statement

### Current Licensing Basis Document Identification

#### 3.11.2 Fire Barriers.

Fire barriers required by Chapter 4 shall include a specific fire-resistance rating. Fire barriers shall be designed and installed to meet the specific fire resistance rating using assemblies qualified by fire tests. The qualification fire tests shall be in accordance with NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, or ASTM E 119, Standard Test Methods for Fire Tests of Building Construction and Materials.

Where required by Chapter 4, fire barriers are rated or evaluated as adequate for the hazard. As noted in the clarification of the definition fire area boundaries in NFPA 805 fire areas are defined as "That portion of a building or plant sufficiently bounded to withstand the fire hazards associated with the area and, as necessary, to protect important equipment within the area from a fire outside the area."

Will transition a 'process and criteria' for evaluating adequacy of a fire barrier. This process shall include:

- Evaluation method to determine rating of a barrier
- Evaluation method to determine if an area is 'sufficiently bounded to withstand the fire hazards.

- Reference documents that contain the evaluation methods.
- May also reference specific exemptions/deviations received for fire area boundaries

#### 3.11.3\* Fire Barrier Penetrations.

Penetrations in fire barriers shall be provided with listed fire-rated door assemblies or listed rated fire dampers having a fire resistance rating consistent with the designated fire resistance rating of the barrier as determined by the performance requirements established by Chapter 4. (See 3.11.3.4 for penetration seals for through penetration fire stops.)

Where required by Chapter 4, penetrations within fire barriers are rated or evaluated as adequate for the hazard. As noted in the clarification of the definition fire area boundaries in NFPA 805 fire areas are defined as "That portion of a building or plant sufficiently bounded to withstand the fire hazards associated with the area and, as necessary, to protect important equipment

- Reference documents that contain the evaluation methods.
- May also reference specific exemptions/deviations received for fire area boundaries

## Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

### NFPA 805 Chapter 3 Fundamental Fire Protection

#### Program and Design Elements

Passive fire protection devices such as doors and dampers shall conform with the following NFPA standards, as applicable:

- (1) NFPA 80, Standard for Fire Doors and Fire Windows
- (2) NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems
- (3) NFPA 101, Life Safety Code

*Exception: Where fire area boundaries are not wall-to-wall, floor-to-ceiling boundaries with all penetrations sealed to the fire rating required of the boundaries, a performance-based analysis shall be required to assess the adequacy of fire barrier forming the fire boundary to determine if the barrier will withstand the fire effects of the hazards in the area. Openings in fire barriers shall be permitted to be protected by other means as acceptable to the AHJ.*

#### 3.11.4\* Through Penetration Fire Stops.

Through penetration fire stops for penetrations such as pipes, conduits, bus ducts, cables, wires, pneumatic tubes and ducts, and similar building service equipment that pass through fire barriers shall be protected as follows.

- a. The annular space between the penetrating item and the through opening in the fire barrier shall be filled with a

### Compliance Statement

within the area from a fire outside the area.”

Will transition a 'process and criteria' for evaluating adequacy of a fire barrier. This process shall include:

- Evaluation method to determine rating of a barrier
- Evaluation method to determine if an area is sufficiently bounded to withstand the fire hazards.

Note the AHJ approval for this case will be the approval of the methodology and criteria for Progress Energy evaluations.

Where required by Chapter 4, through penetration fire stops are rated or evaluated as adequate for the hazard. As noted in the clarification of the definition fire area boundaries in NFPA 805 fire areas are defined as “That portion of a building or plant sufficiently bounded to withstand the fire hazards associated with the area and, as necessary, to protect important equipment within the area from a fire outside the area.”

Will transition a 'process and criteria' for

### Current Licensing Basis Document Identification

- Reference documents that contain the evaluation methods.
- May also reference specific exemptions/deviations received for fire area boundaries

## Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS

Chap 3 applicability 'no' on change form

### NFPA 805 Chapter 3 Fundamental Fire Protection

#### Program and Design Elements

qualified fire-resistive penetration seal assembly capable of maintaining the fire resistance of the fire barrier. The assembly shall be qualified by tests in accordance with a fire test protocol acceptable to the AHJ or be protected by a listed fire-rated device for the specified fire-resistive period.

- b. Conduits shall be provided with an internal fire seal that has an equivalent fire-resistive rating to that of the fire barrier through opening fire stop and shall be permitted to be installed on either side of the barrier in a location that is as close to the barrier as possible.

*Exception: Openings inside conduit 4 in. (10.2 cm) or less in diameter shall be sealed at the fire barrier with a fire-rated internal seal unless the conduit extends greater than 5 ft (1.5 m) on each side of the fire barrier. In this case the conduit opening shall be provided with noncombustible material to prevent the passage of smoke and hot gases. The fill depth of the material packed to a depth of 2 in. (5.1 cm) shall constitute an acceptable smoke and hot gas seal in this application.*

### Compliance Statement

evaluating adequacy of a fire barrier. This process shall include:

- Evaluation method to determine rating of a barrier
- Evaluation method to determine if an area is sufficiently bounded to withstand the fire hazards.

### Current Licensing Basis Document Identification

### Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

#### Issue to be discussed:

The as-found condition is with a Chapter 3 requirement (rating of walls and through penetration fire stops).

The Chapter 3 requirement transitioned was the method and acceptance criteria for performing evaluations to deem a barrier (and its subcomponent) are adequate for the hazard.

This type of evaluation currently does not require AHJ approval and therefore should not require approval in the future.

#### FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **[Insert appropriate document reference]**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
- No – Document basis and proceed to Question 2

- a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 1.b.

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- b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in [Insert appropriate document reference]?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Barrier evaluation shows that the unsealed hole in the wall does not affect the ability of the barrier to withstand the hazards on either side of the boundary. The evaluation was performed in accordance with the transitioned methodology.

Example 2d - Fire Barrier Deviations  
New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

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Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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## Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

### PRELIMINARY RISK SCREENING

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

Example 2d - Fire Barrier Deviations

New hole found in a wall not sealed. Tech evaluation indicates it is adequate for the hazard. Both sides have detection, no suppression. No fire scenarios in immediate vicinity of the opening. LFS>>MEFS  
Chap 3 applicability 'no' on change form

Evaluation shows that the boundary is adequate for the hazard as is.

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.
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Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

**Issue to be discussed:**

The use of 'screening criteria' for evaluating preliminary risk.

The use of the word 'equivalent' in questions 2c and 3c.

**FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **[Insert appropriate document reference]**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
- No – Document basis and proceed to Question 2

a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 1.b.

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b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in **[Insert appropriate document reference]**?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Evaluation XXX shows although the timing to perform the action has been lengthened, it is still well within the acceptance criteria. All other parameters evaluated for feasibility are unchanged.

Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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### Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

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### Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

#### PRELIMINARY RISK SCREENING

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact

### Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicability is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

- Minimal Impact
- Greater than minimal



Example 3a – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Hot shutdown action in III.G.3. Does not directly fail safe shutdown.

Action was previously approved.

The time to perform the action has been increased, however is still well within the timeframe necessary given the losses in the area. All other feasibility criteria continues to be met.

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.
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Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Does not directly fail safe shutdown. Action was not previously approved.

Issue to be discussed:

The use of 'screening criteria' for evaluating preliminary risk.

Once a recovery action is transitioned, its previous approval status is immaterial.

The use of the word 'equivalent' in questions 2c and 3c.

FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an NFPA 805 Chapter 3 requirement as defined in [Insert appropriate document reference]? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes - Proceed to Question 1.a.
No - Document basis and proceed to Question 2

a. Is the change editorial or trivial in nature? (See Attachment 1)
Yes Document basis and stop.
No Proceed to Question 1.b.

Four horizontal lines for handwritten input.

b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in [Insert appropriate document reference]?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- Yes Document conclusions, complete remaining sections.
No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Does not directly fail safe shutdown.

Action was not previously approved.

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Evaluation XXX shows although the timing to perform the action has been lengthened, it is still well within the acceptance criteria. All other parameters evaluated for feasibility are unchanged.

Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Does not directly fail safe shutdown. Action was not previously approved.

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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### Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Does not directly fail safe shutdown. Action was not previously approved.

#### PRELIMINARY RISK SCREENING

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

### Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Does not directly fail safe shutdown.

Action was not previously approved.

e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?

- No Impact
- Minimal Impact
- Greater than minimal

The time to perform the action has been increased, however is still well within the timeframe necessary given the losses in the area. All other feasibility criteria continues to be met.

f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.

- No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - Yes, a detailed quantitative risk evaluation is required.
- 
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Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Directly fails safe shutdown if not performed properly.

Action was not previously approved.

**Issue to be discussed:**

The use of 'screening criteria' for evaluating preliminary risk.

**FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **[Insert appropriate document reference]**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
- No – Document basis and proceed to Question 2

a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 1.b.

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b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in [Insert appropriate document reference]?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Directly fails safe shutdown if not performed properly.

Action was not previously approved.

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.



### Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicability is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Directly fails safe shutdown if not performed properly.

Action was not previously approved.

Evaluation XXX shows although the timing to perform the action has been lengthened, it is still well within the acceptance criteria. However, the action is the primary means of recovery for the nuclear safety performance criteria. This action if improperly performed directly affects safe shutdown. All other parameters evaluated for feasibility are unchanged.

Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Directly fails safe shutdown if not performed properly.

Action was not previously approved.

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in [Insert appropriate document reference]?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in [Insert appropriate document reference]? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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### Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Directly fails safe shutdown if not performed properly.

Action was not previously approved.

#### PRELIMINARY RISK SCREENING

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  - Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

### Example 3b – Recovery Action

A feature installed in the plant to meet security needs results in a recovery time increase to 7 minutes from 4 minutes.

Chapter 3 applicably is 'no' for effect on fire brigade response and for FP equipment.

Chapter 4 Recovery Action performance criteria is met with new time.

The Thermo-hydraulic timeline indicates 15 minutes is available to perform the action.

Non III.G. 3 Hot shutdown action transitioned. Directly fails safe shutdown if not performed properly.

Action was not previously approved.

- e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
- o  No Impact
  - o  Minimal Impact
  - o  Greater than minimal

Evaluation XXX shows although the timing to perform the action has been lengthened, it is still well within the acceptance criteria. However, the action is the primary means of recovery for the nuclear safety performance criteria. This action if improperly performed directly affects safe shutdown. All other parameters evaluated for feasibility are unchanged.

- f. Do any of the risk screening questions have "Greater than minimal" impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.
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## Example 4a – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record allows equivalency evaluations without AHJ approval. Tech evaluation indicates system performance acceptable as is.

NFPA 805 Chapter 3 Fundamental Fire Protection Program and Design Elements	Compliance Statement	Current Licensing Basis Document Identification
3.9 Automatic and Manual Water-Based Fire Suppression Systems.	Fire Area XX, required a suppression system during transition. Transitioned as a compliant III.G.2.a. area. With no Generic Letter 86-10 evaluation for partial adequacy.	Will refer to the previous acceptance of III.G.2.a compliance strategy.
3.9.1* If an automatic or manual water-based fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be installed in accordance with the appropriate NFPA standards including the following:	Transition documentation will show that the code of record does not require previous AHJ approval .	Will refer to methodology and acceptance criteria for performing suppression and detection coverage evaluations
(1) NFPA 13, Standard for the Installation of Sprinkler Systems	Transition documentation will also show that 'coverage issues (adequate for the hazards evaluation)' are not under the purview of the code	
(2) NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection		
(3) NFPA 750, Standard on Water Mist Fire Protection Systems		
(4) NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems		

### Example 4a – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record allows equivalency evaluations without AHJ approval. Tech evaluation indicates system performance acceptable as is.

#### Issue to be discussed:

The continued ability to evaluate coverage issues regardless of the code of record.

<b>FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS</b>
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Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **[Insert appropriate document reference]**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
  - No – Document basis and proceed to Question 2
- a. Is the change editorial or trivial in nature? (See Attachment 1)
- o  Yes Document basis and stop.
  - o  No Proceed to Question 1.b.

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b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in **[Insert appropriate document reference]**?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Summarize and refer to the engineering evaluation that was performed that demonstrates that the coverage is adequate for the hazard.

Example 4a – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record allows equivalency evaluations without AHJ approval. Tech evaluation indicates system performance acceptable as is.

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Evaluation XXX shows although the timing to perform the action has been lengthened, it is

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Example 4a – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record allows equivalency evaluations without AHJ approval. Tech evaluation indicates system performance acceptable as is.

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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## Example 4a – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record allows equivalency evaluations without AHJ approval. Tech evaluation indicates system performance acceptable as is.

### PRELIMINARY RISK SCREENING

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

### Example 4a – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record allows equivalency evaluations without AHJ approval. Tech evaluation indicates system performance acceptable as is.

Summarize and refer to the engineering evaluation that was performed that demonstrates that the coverage is adequate for the hazard.

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.

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## Example 4b – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.

Greater than minimal impact

NFPA 805 Chapter 3 Fundamental Fire Protection Program and Design Elements	Compliance Statement	Current Licensing Basis Document Identification
3.9 Automatic and Manual Water-Based Fire Suppression Systems.	Fire Area XX, required a suppression system during transition. Transitioned as a compliant III.G.2.b. area. With no Generic Letter 86-10 evaluation for partial adequacy.	Will refer to the previous acceptance of III.G.2.a compliance strategy.
3.9.1* If an automatic or manual water-based fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be installed in accordance with the appropriate NFPA standards including the following:	Transition documentation will show that the code of record does not require previous AHJ approval .	Will refer to methodology and acceptance criteria for performing suppression and detection coverage evaluations
(1) NFPA 13, Standard for the Installation of Sprinkler Systems	Transition documentation will also show that 'coverage issues (adequate for the hazards evaluation)' are not under the purview of the code	
(2) NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection		
(3) NFPA 750, Standard on Water Mist Fire Protection Systems		
(4) NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems		

Example 4b – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Greater than minimal impact

**Issue to be discussed:**

The continued ability to evaluate coverage issues regardless of the code of record.

Coverage issue performance based analysis alone does not require a License Amendment Request

**FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **[Insert appropriate document reference]**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
  - No – Document basis and proceed to Question 2
- a. Is the change editorial or trivial in nature? (See Attachment 1)
- o  Yes Document basis and stop.
  - o  No Proceed to Question 1.b.

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b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in **[Insert appropriate document reference]**?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Performance Based evaluation determines that the obstruction of the sprinkler coverage may allow the fire to grow beyond that originally anticipated, potentially damaging redundant equipment.

Detailed Risk Evaluation shall be performed. See attached.

Example 4b – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Greater than minimal impact

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Evaluation XXX shows that coverage of suppression system may not be adequate for the hazard. Detailed risk evaluation to be performed.

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Example 4b – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Greater than minimal impact

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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Example 4b – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Greater than minimal impact

**PRELIMINARY RISK SCREENING**

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

### Example 4b – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Greater than minimal impact

Summarize and refer to the engineering evaluation that was performed that demonstrates that the coverage may not be adequate for the hazard.

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.
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Example 4c – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Same except new code of record

NFPA 805 Chapter 3 Fundamental Fire Protection Program and Design Elements	Compliance Statement	Current Licensing Basis Document Identification
3.9 Automatic and Manual Water-Based Fire Suppression Systems.	Fire Area XX, required a suppression system during transition. Transitioned as a compliant III.G.2.b. area. With no Generic Letter 86-10 evaluation for partial adequacy.	Will refer to the previous acceptance of III.G.2.a compliance strategy.
3.9.1* If an automatic or manual water-based fire suppression system is required to meet the performance or deterministic requirements of Chapter 4, then the system shall be installed in accordance with the appropriate NFPA standards including the following:	Transition documentation will show that the code of record requires previous AHJ approval.	Will refer to methodology and acceptance criteria for performing suppression and detection coverage evaluations
(1) NFPA 13, Standard for the Installation of Sprinkler Systems	Transition documentation will also show that 'coverage issues (adequate for the hazards evaluation)' are not under the purview of the code	
(2) NFPA 15, Standard for Water Spray Fixed Systems for Fire Protection		
(3) NFPA 750, Standard on Water Mist Fire Protection Systems		
(4) NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems		

Example 4c – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Same except new code of record

**Issue to be discussed:**

The continued ability to evaluate coverage issues regardless of the code of record.

**FIRE PROTECTION PROGRAM FUNDAMENTAL ELEMENT / MINIMUM DESIGN REQUIREMENT CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

1. Does the proposed change involve an **NFPA 805 Chapter 3** requirement as defined in **[Insert appropriate document reference]**? For those fire protection program changes that involve a Nuclear Safety Compliance Strategy requirement or a Radioactive Release requirement, ensure the effect of the change is evaluated in Appendix I, Sections 2.0 and 3.0, respectively.

- Yes – Proceed to Question 1.a.
  - No – Document basis and proceed to Question 2
- a. Is the change editorial or trivial in nature? (See Attachment 1)
- o  Yes Document basis and stop.
  - o  No Proceed to Question 1.b.

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b. Does the change meet NFPA 805 Chapter 3 requirements or the previously approved alternative as defined in **[Insert appropriate document reference]**?

Changes that deviate from the NFPA standards referenced in NFPA 805 Chapter 3 can be made without NRC approval if allowed by the code of record (so long as the evaluated condition is in accordance with the terms of the code of record) or if the code does not dictate the specific issue (e.g., adequacy of coverage of suppression and detection systems). Ensure documentation for determination of acceptability is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions, complete remaining sections.
- o  No License Amendment Request must be processed for NRC approval. Complete remaining sections.

Summarize and refer to the engineering evaluation that was performed that demonstrates that the coverage is adequate for the hazard and that this evaluation can be ‘self approved’.

Example 4c – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Same except new code of record

**NUCLEAR SAFETY COMPLIANCE STRATEGY CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

2. Does the proposed change involve a **Nuclear Safety Compliance Strategy** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 2.a.
- No – Document basis and proceed to Question 3.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 2.b.

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b. Does the change meet the deterministic requirements of Chapter 4 of NFPA 805?

- o  Yes Document basis and complete remaining sections.
- o  No Proceed to Question 2.c.

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c. Is the change equivalent to the NFPA 805 Chapter 4 compliance strategy as defined in Upper Level Fire Protection Program Document? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document basis and complete remaining sections.
- o  No Perform a Risk Evaluation.

Evaluation XXX shows although the timing to perform the action has been lengthened, it is

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Example 4c – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Same except new code of record

**RADIOACTIVE RELEASE CHANGE QUESTIONS**

Considering the proposed change, answer the following questions, including a reference to the applicable regulatory, licensing basis, or NFPA document(s), and a brief description of why the proposed change does or does not satisfy the referenced document(s).

3. Does the proposed change involve a **Radioactive Release** requirement as defined in **[Insert appropriate document reference]**?

- Yes – Proceed to Question 3.a.
- No – Document basis and proceed to risk screening.

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a. Is the change editorial or trivial in nature? (See Attachment 1)

- o  Yes Document basis and stop.
- o  No Proceed to Question 3.b.

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b. Does the change meet the requirements of the Radioactive Release criteria?

- o  Yes Document conclusions and proceed to risk screening.
- o  No Proceed to Question 3.c.

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c. Is the change equivalent to the Radioactive Release compliance strategy as defined in **[Insert appropriate document reference]**? Ensure documentation for determination of equivalency is included and meets NEI 04-02 requirements for documentation. (See Attachment 2)

- o  Yes Document conclusions and proceed to risk screening
- o  No Perform a Risk Evaluation.

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Example 4c – Code Deviation  
Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Same except new code of record

**PRELIMINARY RISK SCREENING**

Considering the proposed change, answer the following questions. The nature of the change should enable you to choose among the three categories. Refer to the IPEEE, a plant-specific fire PRA, or other documents to determine whether the change could have “no”, “minimal” or “greater than minimal” impact. Document the basis for the conclusion. The potential for common cause effects of a given plant change on the above factors should be considered. For example, an increase in combustible loading in an area can impact all of the factors. See Attachment 3 for examples.

- 4.0 Can the change be evaluated using a preliminary risk screen?
- a. Does the proposed change impact the FIRE FREQUENCY of any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - b. Does the proposed change impact the MAGNITUDE OF THE EXPECTED FIRES for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - c. Does the proposed change impact the DETECTION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - d. Does the proposed change impact the SUPPRESSION CAPABILITY for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal
  
  - e. Does the proposed change impact the POST-FIRE CAPABILITY OF PLANT SYSTEMS TO PREVENT CORE DAMAGE (including fire affected human actions) during any mode of operation for any fire scenarios affected by the change?
    - No Impact
    - Minimal Impact
    - Greater than minimal

### Example 4c – Code Deviation

Code Deviations. Suppression system found partially obstructed. Old code of record. Tech evaluation indicates system performance acceptable as is.  
Same except new code of record

Summarize and refer to the engineering evaluation that was performed that demonstrates that the coverage is adequate for the hazard.

- f. Do any of the risk screening questions have “Greater than minimal” impact, then a detailed quantitative risk evaluation may be required.
- o  No. The Fire Protection Program Plant change meets the risk-informed acceptance criteria of NFPA 805 Section 2.4.4.
  - o  Yes, a detailed quantitative risk evaluation is required.

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