JENSEN HUGHES

Advancing the Science of Safety

NFPA 805 CHAPTER 3 MODEL LAR
NEI Risk Informed Regulation and Fire Protection Forum

VINCENT RUBANO | **SEPTEMBER 2019**

Background

- During the NFPA 805 licensing process there were multiple examples of requests to approve risk-informed and performance-based deviations from certain Chapter 3 elements
  - The requests were typically documented in the License Amendment Request (LAR) Attachment L
  - Usually one-time requests to approve as-built plant conditions that did not meet a particular Chapter 3 element
  - Later LARs sometimes requested approval for evaluating the deviation for the Chapter 3 element to account for future discoveries
- There continues to be similar issues with certain Chapter 3 elements that would benefit from the ability to evaluate the deviation without requiring prior approval
  - This can lead to many small LARs or needless changes in design
- The proposed Chapter 3 LAR will allow an evaluation method to self-approve minor deviations from certain Chapter 3 elements

Introduction

- NFPA 805 Chapter 3 contains fundamental elements that NFPA 805 does not permit the use of performance based methods to show compliance DL1
- The NRC, through 10 CFR 50.48(c)(2)(vii), allows performance-based methods to be applied to the Chapter 3 elements provided it is done via a License Amendment Request (LAR) and meets the requirements in 10 CFR 50.48(c)(2)(vii)
- The NRC, through the standard license condition, allows for functionally equivalent evaluations for Chapter 3 elements and allows Adequate for the Hazard evaluations for Sections 3.8, 3.9, 3.10, and 3.11
- The industry continues to find minor issues with certain Chapter 3 elements that cannot be self-approved, leading to additional LARs or changes to the plant (or modifications) to bring the issue into compliance with little or no improvement in safety

Slide 3

DL1 This does not make sense

Dorado, Leanne, 9/12/2019

Introduction Continued

- Need the ability to make changes to the approved Fire Protection Program without NRC Approval for select NFPA 805 Chapter 3 elements that self-approval (or functionally equivalent evaluation) is not an option
- Several requests for deviations from Chapter 3 elements were made during the original licensing process (LAR Attachment L)
- Most deviation requests were backward looking and did not propose a method for forward looking deviations
- A standard LAR to allow a method for allowing evaluation of minor deviations to certain Chapter 3 elements beyond what is in the current license condition would be beneficial to the industry and NRC

Purpose

- To obtain the ability to make changes to the approved fire protection program for non-compliant NFPA 805 Chapter 3 elements that cannot be evaluated as functionally equivalent and excluded by the NFPA 805 standard license condition as eligible for Adequate for the Hazard evaluation (Sections 3.8, 3.9, 3.10, and 3.11) without NRC Approval
- Would be a 'performance-based' approach since the justification for the element would not be functionally equivalent
- This process is specifically allowed by 10 CFR 50.48(c)(2)(vii)
- This requires a license amendment and NRC approval
  - Multiple uses of 10 CFR 50.48(c)(2)(vii) during the original licensing process for NFPA 805 but most were backward looking
  - There have been a few requests for methods (forward looking) that have been approved via a LAR and SE to evaluate deviations from selected Chapter 3 elements
    - Specifically Sections – 3.3.4 (thermal insulation), 3.3.5.1 (cable above ceiling), and 3.3.5.2 (raceway materials)

Methodology

Any method proposed must meet the requirements of 10 CFR 50.48(c)(2) (vii).

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

The method proposed must show that any self-approval of an element deviation will meet the above criteria.

This model LAR is not asking for an approval for a specific deviation but a method for evaluating a deviation

Chapter 3 Sections for Performance-Based Methods

Only certain sections of Chapter 3 are amenable to this treatment as some parts represent basic requirements that should not be changed.

Sections proposed for a performance based treatment include:

Section	Title	Section	Title	Section	Title
3.2.3(1)	Procedures	3.3.7	Bulk Flammable Gas Storage	3.5.6	Water Supply
3.3.1.2(1), (2), (3), (5), & (6)	Control of Combustible Materials	3.3.8	Bulk Storage of Flammable and Combustible Liquids	3.5.10	Water Supply
3.3.1.3.4	Control of Ignition Sources	3.3.9	Transformers	3.5.13	Water Supply
3.3.2	Structural	3.3.12	Reactor Coolant Pumps	3.5.15	Water Supply
3.3.3	Interior Finishes	3.5.1	Water Supply	3.5.16	Water Supply
3.3.4	Insulation Materials	3.5.2	Water Supply	3.6.1	Standpipe and Hose Stations
3.3.5.1	Electrical	3.5.3	Water Supply	3.6.2	Standpipe and Hose Stations
3.3.5.2	Electrical	3.5.4	Water Supply	3.6.4	Standpipe and Hose Stations
3.3.6	Roofs	3.5.5	Water Supply	3.7	Fire Extinguishers

License Amendment Request

Summary Description

This evaluation supports a request to amend Renewed Facility Operating License {###} for {Plant and Units}.

The proposed license amendment request (LAR) revises the fire protection licensing condition to allow deviations from certain sections of NFPA 805 Chapter 3 to be evaluated by the licensee without submittal to the NRC for approval.

This request is being made in accordance with provisions of 10 CFR 50.48(c)(2)(vii) to use a performance-based method for fire protection program elements and minimum design requirements.

License Amendment Request

Proposed Change

The proposed amendment will revise the fire protection license condition {insert specific license condition sections} for {insert plant and units} as shown below:

The Licensee may make changes to the approved fire protection program using performance-based methods for the following sections of NFPA 805 Chapter 3 using the NRC approved methodology as submitted by {letter(s) submitting the LAR}. Such evaluations shall be kept and made available for NRC inspections.

LAR Technical Evaluation

The 10 CFR 50.48(c) (NFPA 805) standard license condition only permits licensees to make changes to the approved Fire Protection Program for non-compliant NFPA 805 Chapter 3 elements that cannot be evaluated as functionally equivalent to Sections 3.8, 3.9, 3.10, and 3.11 of NFPA 805 without NRC approval.

- Licensees have been submitting individual approval requests for NFPA 805 Chapter 3 deviations after receipt of the original NFPA 805 Safety Evaluation (SE) and, to date, the approval requests have been granted via a SE from the NRC
- In lieu of submitting a LAR each time the situation arises, a generic process is proposed where the licensee can follow a prescribed evaluation format which is available for NRC review/inspection
- Submitting individual LARs is costly to the utility and burdensome to the NRC
  - Utility costs include compensatory measures and/or forgoing reasonable changes to the plant until approval is received

Evaluation Process Requested to be Approved

The engineering evaluation shall document the deviation, why a deviation is required, and the acceptable end condition.

- The evaluation shall review the deviation against the acceptance criteria of nuclear safety, radiological release, safety margin, and defense-in-depth
- If the performance goals, objectives, and/or criteria cannot be met or the deviation does not maintain safety margin or fire protection defense-in-depth, then the deviation is not permitted without prior approval of the NRC
- The engineering evaluations shall be entered into the document control system and available to the NRC for review
- The specific sections for which this applies is as follows:
  - 3.2.3(1), 3.3.1.2(1), (2), (3), (5), (6), 3.3.1.3.4, 3.3.2, 3.3.3, 3.3.4, 3.3.5.1, 3.3.5.2, 3.3.6, 3.3.7, 3.3.8, 3.3.9, 3.3.12, 3.5.1, 3.5.2, 3.5.3, 3.5.4, 3.5.5, 3.5.6, 3.5.10, 3.5.13, 3.5.15, 3.5.16, 3.6.1, 3.6.2, 3.6.4, and 3.7

Evaluation Acceptance Criteria

Nuclear Safety and Radiological Release Performance Criteria

The ability to approve deviations from NFPA 805 Chapter 3 elements not permitted in the current license does not impact the nuclear safety performance criteria.

- As part of any engineering evaluation to determine if the deviation is acceptable, the process must evaluate the specific conditions against the nuclear safety performance criteria
- If the deviation was determined to have a negative impact on nuclear safety it is not permitted under this process

The ability to approve deviations from NFPA 805 Chapter 3 elements not permitted in the license does not have any impact on the radiological release performance criteria.

- As part of any evaluation to determine if the deviation is acceptable, the unique evaluation must evaluate the specific conditions against the radiological release performance criteria
- If the deviation was determined to have a negative impact on nuclear safety it is not permitted under this process

Evaluation Acceptance Criteria

Safety Margin

The ability to approve deviations from NFPA 805 Chapter 3 elements not permitted in the current license does not affect safety margin.

- As part of any engineering evaluation to determine if the deviation is acceptable, the process must evaluate the specific conditions against the analysis for the fire event for maintenance of safety margin
  - The inherent safety margin and conservatisms in the analysis for the fire event have been preserved and the analysis methods remain unchanged
- If the deviation was determined to have a negative impact on safety margin it is not permitted under this process

Evaluation Acceptance Criteria

Defense-in-Depth

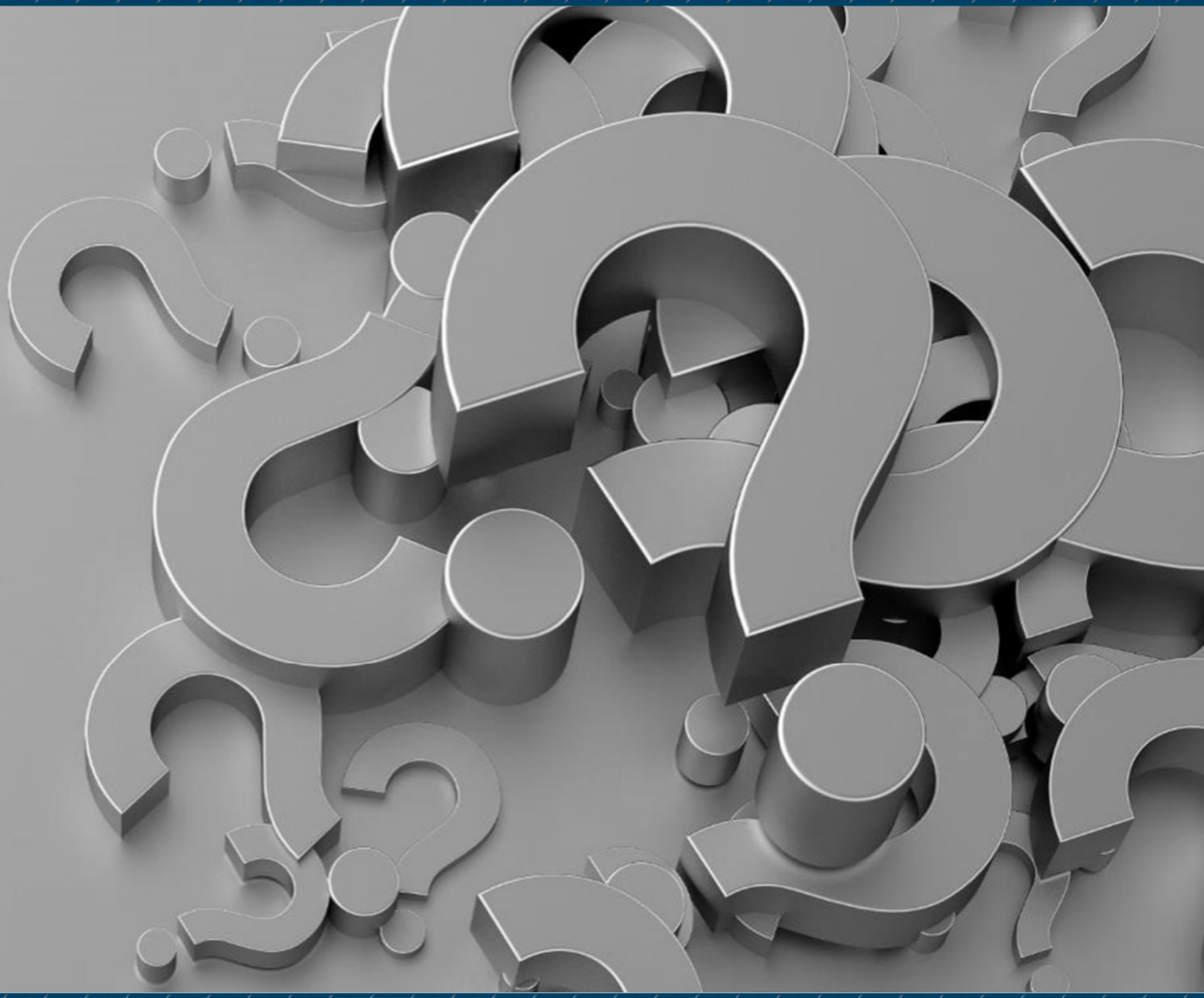
The ability to approve deviations from NFPA 805 Chapter 3 elements not permitted in the license does not affect Defense-in-Depth.

- As part of any engineering evaluation to determine if the deviation is acceptable, the unique evaluation must evaluate the specific conditions against the three echelons of defense-in-depth
- If the deviation was determined to have a negative impact on defense-in-depth it is not permitted under this process

Key Points

- The evaluation process must consider the acceptance criteria in 10 CFR 50.48(c)(2)(vii)
  - Each item in 10 CFR 50.48(c)(2)(vii) should be explicitly addressed
- The evaluations must be available for NRC inspection
- The evaluation process should be added to the existing fire protection change process procedures
- The evaluation should be part of the listing of risk-informed changes that is submitted periodically to the NRC
- There is precedent for sections of Chapter 3 that have been approved encompassing methods to evaluate future deviations
  - This request just expands the applicable sections and makes it more generic
  - Will reduce the burden on licensees and the NRC for minor issues that have no impact on plant safety

Questions?



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