

January 19, 2017

MEMORANDUM TO: Stacey L. Rosenberg, Chief  
Probabilistic Risk Assessment Licensing Branch  
Division of Risk Assessment  
Office of Nuclear Reactor Regulation

FROM: Leslie C. Fields, Senior Project Manager */RA/*  
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SUBJECT: SUMMARY OF THE NOVEMBER 30, 2016, FIRE PROBABILISTIC  
RISK ASSESSMENT FREQUENTLY ASKED QUESTIONS  
CATEGORY 2 PUBLIC MEETING BETWEEN NUCLEAR  
REGULATORY COMMISSION AND NUCLEAR ENERGY INSTITUTE  
REPRESENTATIVES

On November 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting with the Nuclear Energy Institute (NEI) and industry stakeholders to discuss issues related to fire probabilistic risk assessment (PRA) Frequently Asked Questions (FAQs). NRC was represented by the Office of Nuclear Reactor Regulation (NRR) and the Office of Nuclear Regulatory Research (RES). After formal introductions the meeting commenced with a discussion of NRC's response to Fire PRA FAQ 14-0007 associated with transient frequencies. A copy of this response is available in the Agencywide Document Access and Management System (ADAMS) Accession No. ML16357A743. This response provides NRC's feedback on items previously discussed in the public meeting held on April 13, 2016. A meeting summary is available in ADAMS (ML16132A218).

Other discussion topics included newly proposed FAQ's regarding cable tray ignition criteria and an alternative methodology to NUREG/CR-6850 for maintaining FPRA ignition frequencies weighting factors, NEI's presentation titled, "Industry Proposal for Path Forward on Incipient Detection in Fire PRA" (ADAMS ML16357A735) and the November 17, 2016, letter from NRC to NEI, Response to July 28, 2016, Letter Regarding Retirement of National Fire Protection Association 805 Frequently Asked Question 08-0046 "Incipient Fire Detection Systems" (ADAMS ML16253A111). The meeting notice can be found in ADAMS at ML16308A442. The meeting agenda and attendance sheet are enclosed.

The questions and proposed solutions discussed during this meeting are considered pre-decisional and do not necessarily reflect the Nuclear Regulatory Commission (NRC) staff's position until they have been formally accepted for processing. In addition, the enclosed newly

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proposed FAQs provided during this meeting are not final until the formal FAQ process review is completed and they are designated as such. The summary of discussion topics, meeting agenda, and attendance list are provided in Enclosure 1, 2, and 3, respectively.

Enclosures:

1. Summary of Discussion Topics
2. Fire Probabilistic Assessment Frequently Asked Questions  
November 30, 2016 Agenda
3. List of Attendees
4. FAQ 16-00XX Alternative Methodology to NUREG/CR-6850  
For Maintaining FPRA Ignition Frequencies Weighting Factors
5. Industry Proposal for Path Forward on Incipient Detection in  
Fire PRA
6. 16-00XX Cable Tray Ignition
7. NRC Staff Response on Fire PRA FAQ 14-0007 Fire PRA on  
Transient Frequency

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FREQUENTLY ASKED QUESTIONS CATEGORY 2 PUBLIC MEETING BETWEEN NUCLEAR  
REGULATORY COMMISSION AND NUCLEAR ENERGY INSTITUTE REPRESENTATIVES

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**ADAMS Accession No.: ML16357A114-pkg, ML16357A555-memo, ML16357A564-encl. 4,  
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Date	12/19/2016 & 1/18/2017	1/ 6 /2017	1/19/2017

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## **SUMMARY OF DISCUSSION TOPICS**

### **FAQ 14-0007 (Transient Frequency)**

#### **NRR Probabilistic Risk Assessment Licensing Branch/ (APLA) lead**

NRC provided the latest feedback on this FAQ and there was engaging discussion on several aspects of the Transient Ignition Source Region (TISR) process, including the use of Physical Analysis Units (PAUs) relative to TISRs and the use of floor area weighting factors. At the conclusion of the subject, industry accepted NRC's latest remarks and agreed to modify the current version of the FAQ accordingly.

### **FAQ 16-00XX (Cable Tray Ignition)**

#### **NRR/ Fire Protection Branch (AFPB) lead**

NEI proposed a new FAQ to more realistically estimate cable tray ignition and subsequent fire propagation. Staff mentioned that this is a reasonable topic to pursue, and offered additional considerations. Industry stated that they understand the comments and will update the FAQ accordingly and submit for processing.

### **FAQ 16-00XX (Ignition Frequencies – Maintaining Ignition Frequency Weighting Factors)**

#### **NRR/Probabilistic Risk Assessment Licensing Branch/ (APLA) lead**

NEI proposed a new FAQ requesting an alternative approach to NUREG/CR 6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities" to simplify the calculation of fire ignition frequency upon a change to the number of ignition sources in the plant. The staff and industry had brief discussions on this approach, including when the PRA would be updated to account for the number of ignition sources within the plant.

### **Industry Proposal for Path Forward on Incipient Detection in Fire PRA**

#### **NRR/ Fire Protection Branch (AFPB) lead**

Industry presented conceptual slides discussing a proposed FAQ regarding additional credit for incipient fire detection systems in FPRA. The slides were at a high level and did not include detailed information regarding the eventual FAQ description. However, after the discussion, it appeared that the new FAQ plans to expand on NUREG-2180, "Determining the Effectiveness, Limitations, and Operator Response for Very Early Warning Fire Detection (VEWFDS) Systems in Nuclear Facilities" (DELORES-VEWFIRE) (ADAMS ML16172A293) credit for component-only damage without performing the de-energization plans for component-specific events including requiring additional operator actions for identifying a fire before flaming combustion occurs.

There was discussion about how the Conditional Core Damage Probability (CCDP) would be determined for the component-only damage, with perhaps the highest risk component of the cabinet determining the CCDP. The industry indicated in their slides that there was precedent for component-only damage from the NUREG/CR-6850 Appendix L method; however, the staff notes that Appendix L applies for damage to a target set. In addition, the new FAQ plans to revisit certain events used to determine the alpha factor in NUREG-2180, which refers to the probability that fire events have an incipient phase detectable by a VEWFDS. There was also some discussion with regard to revising the Fire Events Database (FEDB) entry criteria and applying previously provided operating experience with more in-depth analysis. Industry indicated that they intend to submit this FAQ by the end of December, 2016.

There was discussion about recent NRC/stakeholder conference calls where licensees are requesting to wait on the newly proposed VEWFDs FAQ before finalizing responses to requests for additional information (RAIs). NRC stated that the most appropriate use of this proposed FAQ is during post Safety Evaluation report periodic update phase, rather than when the license amendment request (LAR) is under review.

Industry Feedback on NRC Nov 17, letter to NEI on Retirement of FAQ 08-0046, Incipient Fire Detection Systems Agencywide Documents Access and Systems Management (ADAMS) Accession No. ML16253A111)

NEI requested clarification on the language in the letter shown below:

- 1) Page 2, 3<sup>rd</sup> paragraph – “Once available, it is expected that licensees will consider and incorporate the replacement methodology consistent with their licensing bases and the PRA maintenance and upgrade process.
- 2) Page 2, 4<sup>th</sup> paragraph - “If a licensee is performing a periodic or interim PRA update, performing a fire risk evaluation in support of self-approval, or submitting a future risk informed license amendment request, the staff’s expectation is that they will assess the impact of new operating experience and information on their PRA analyses and incorporate the change as appropriate per RG 1.200 ...”

NEI stated that these sentences, as written, appear to impose a backfit by requiring licensees to incorporate new guidance (e.g., NUREG-2180). NRC responded that backfit is not applicable to the information provided in the letter. The intention of both sentences is that any changes are consistent with, and as appropriate, per the PRA maintenance and upgrade process that licensees follow. Specific to the 2<sup>nd</sup> sentence, NEI stated that licensees might not update their PRA for a fire risk evaluation, while also noting that the proposed FAQ 16-0076, “NFPA 805 Fire PRA Update Process” (FAQ 76) was written to address this issue. NRC stated that the letter advises licensees to follow their PRA maintenance and upgrade process, and that FAQ 76 was not fully resolved, with differences between industry and staff. Several suggestions were made for the path to resolution, such as additional correspondence for clarification of terminology and intent. The staff provided expanded discussion to the full content of the letter beyond the referenced sentences above. Additionally, staff commented that, (including information in this Public meeting), sufficient correspondence should have occurred such that licensees understand the staffs actions on this topic.

#### Closing Remarks and Public Comments

An opportunity for public comment was provided near the end of the meeting. No public comments were received. The meeting was then adjourned.

**FIRE PROBABILISTIC RISK ASSESSMENT FREQUENTLY ASKED QUESTIONS  
CATEGORY 2 PUBLIC MEETING BETWEEN NUCLEAR REGULATORY COMMISSION AND  
NUCLEAR ENERGY INSTITUTE  
AGENDA**

**PURPOSE:** To discuss (via teleconference) fire probabilistic risk assessment (PRA) methods and frequently asked questions (FAQs) with the nuclear industry and Nuclear Energy Institute.

- 10:00 a.m. Introduction and meeting focus
- 10:05 a.m. Discussion on fire PRA methods and FAQs
- 11:45 a.m. Public comment period
- 12:00 p.m. Adjournment

**FIRE PROBABILISTIC RISK ASSESSMENT FREQUENTLY ASKED QUESTIONS  
PUBLIC MEETING BETWEEN NUCLEAR REGULATORY COMMISSION AND  
NUCLEAR ENERGY INSTITUTE REPRESENTATIVES  
LIST OF ATTENDEES**

**U. S. Nuclear Regulatory Commission Staff**

NRC/NRR/DRA

G. Casto  
J.S. Hyslop  
H. Barrett  
L. Fields  
B. Metzger  
C. Moulton

NRC/RES/DRA

M. Salley  
D. Stroup  
G. Taylor

NRC/RES/DRA

N. Melly  
Et al.

**Stakeholders**

Industry

V. Anderson (NEI)  
M. Schultz (NEI)  
J. Stone (Exelon)  
R. Cavedo (Exelon)  
H. Stiles (Duke Energy)  
K. Vincent (NextEra)  
T. Kindred (EPRI)

**\*Stakeholders participating by phone**

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