

Industry Proposal for Implementation of New Methods and Data, Including 2014 Ignition Frequencies

- Problem Statement
 - When can/should new methods be incorporated in the PRA
 - The NRC and industry have had discussions regarding the schedule for integration of new ignition frequencies into licensee Fire PRAs, and the industry has proposed that this be done via the normal maintenance and update process. This change is expected to increase risk.
 - At the same time, there are new HRRs that are going to be released and industry has indicated that they intend to incorporate the new HRRs into the analyses as soon as they become available. This change is expected to decrease risk.
 - Periodically, the NRC staff will release new methods, some of which may be acceptable alternatives to existing methods and others which should replace existing methods.
 - All licensees transitioning to NFPA 805 support their applications with a Fire PRA that is peer reviewed using NRC-endorsed standards and guidance.
 - This peer review involves, in addition to a thorough technical review, a review of the PRA maintenance procedures against the requirements in the NRC-endorsed ASME/ANS PRA Standard.
 - The results of the peer review, including facts and observations related to the PRA maintenance procedures, are available for NRC review, and are closely evaluated during the NRC NFPA 805 audit.
 - Any new information relevant to the licensee's Fire PRA, including new methods or data, is reviewed using the licensee's process as evaluated in the peer review.
 - New ignition frequencies would be one such element reviewed for update in this standard process.
 - The peer review is not directed by NEI 07-12 to review when a licensee should evaluate and include new methods in the fire PRA, since the MU supporting requirements in NEI 07-12 developed from Section 1-5 in the PRA Standard do not require this review
 - The below proposal applies, in general, to new information relevant to Fire PRA, including the new ignition frequencies.
- ASME/ANS PRA Standard Requirements for PRA Configuration Control
 - Requirements are provided in Section 1-5; relevant portions are provided below.
 - 1-5.2: A PRA Configuration Control Program shall be in place. It shall contain the following key elements: (a) a process for monitoring PRA inputs and collecting new information
 - 1-5.3: The PRA Configuration Control Program shall include a process to monitor changes in the design, operation, maintenance, and industry-wide operational history that could affect the PRA...The program should include monitoring of changes to the PRA technology and industry experience that could change the results of the PRA model.
 - 1-5.4: Changes in PRA inputs or discovery of new information identified pursuant to 1-5.3 shall be evaluated to determine whether such information warrants PRA maintenance or PRA upgrade...Changes that would impact risk-informed decisions should be incorporated as soon as practical.
 - 1-5.5: The PRA configuration control process shall consider the cumulative impact of pending plant changes or model improvements on the application being performed. The impact of these plant changes or model improvements on

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Comment [A1]: According to Rev 1 June 2010 of NEI 07-12 on peer review guidance, new methods are not a part of the F&O (MU-4) created for monitoring and collecting new information for maintenance and update. As a result, it does not appear that the peer review is directed to ensure that new methods are captured during their review.

Comment [A2]: RG 1.200 endorses Section 1-5 but does not endorse the MU supporting requirements. Thus section 1-5.3 which identifies PRA technology should be implemented in some fashion.

Comment [A3]: Incomplete list.

the results of the PRA and the decision under consideration in the application shall be evaluated in a fashion similar to the approach used in Section 1-3.]

- Background on PRA maintenance and upgrades
 - While undergoing a PRA update, a utility's "cutoff" time for considering new data varies from 6 months prior to 6 months after the start of the PRA update.
 - Generally speaking, new data updates could take up to 8 months depending on the scope.
 - In undergoing a PRA upgrade, the "cutoff" time required for considering new methods is anywhere from the beginning of the upgrade period to 6 months after the start of the PRA upgrade.
 - The time required for a PRA upgrade can be anywhere from a few months to a few years depending on the complexity of the upgrade.
 - The scope of sensitivity studies largely depend on the scope of the upgrades. Because of this, changes can take anywhere from a few days to many months.
 - The time for completion with changes to several new methods or data incorporated into an update/upgrade/sensitivity study involves a small delay to potentially a 6 month delay. If a smaller delay occurs, it is usually from a large increase in devotion of man-hours towards it.
- For a ~~interim-periodic~~ model update, maintenance and update procedures use criteria of a greater than 10% change in the CDF or anywhere from a 1% to 20% change in the ~~LERF~~. ~~The licensee's periodic update process typically takes place every 3-5 years.~~
- These update processes ensure that new information is evaluated for inclusion in PRAs as appropriate.
- Use ~~consideration~~ of new information for NFPA 805
 - There are ~~several phases of NFPA 805 two relevant mechanisms by~~ during which a licensee's process would call for an update that would involve consideration of the new information such as new or corrected methods or data, e.g. ignition frequencies.
 - The first stage occurs prior to the submittal of the LAR, where the PRA Configuration Control program applies. The cumulative impact of new information will be evaluated by the licensee prior to submittal of the LAR.
 - The second stage occurs with regards to the aggregate analysis upon which the NFPA 805 LAR is judged relative to RG 1.174. The aggregate analysis will continue to be performed as currently specified in the staff RAI. The staff makes its decision for transition and self approval based on the aggregate analysis, and the methods therein. The NRC staff may identify new information prior to each licensee's RAI response which resolves the list of potentially unacceptable methods identified in the staff aggregate study RAI, and will base its SE on the methods and data in the list of methods and data associated with the aggregate analysis. However, if the licensee credits risk reduction information (e.g. new HRRs) after confirming the unacceptable methods and data in their RAI response, then all new information must be considered in the determination of whether the aggregate analysis results meet the acceptance guidelines. Should a safety issue arise at any time prior to the issuance of the SE, the NRC will raise this issue and ask that its impact be evaluated on the PRA results and acceptance guidelines.
 - The third stage occurs after the SE is issued and before completing full transition. ~~first is~~ The NFPA 805 license condition calls ~~ing~~ for a licensee ~~to~~, prior to transition to self-approval, ~~to~~ update their PRA model to reflect the as-built, as-operated plant following NFPA 805 modifications. Licensees ~~shall can~~ evaluate the impact of the new information, e.g.

Comment [A4]: This white paper should discuss the use of this section. It is NRC's understanding that if a new method is important to the decision, then it is factored into the PRA results associated with the decision. If the new method is unimportant to the decision, then it is set aside until the next application or the PRA update, should the update occur sooner.

Comment [A5]: Does interim apply to the periodic update?

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Comment [A6]: Does a change refer to an increase or a decrease?

Comment [A7]: What does "as appropriate" mean given the PRA Configuration Control statements above?

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method and data updates, ~~as~~ prior to completing the required requantification of the change-in-risk that is part of the verification that the change-in-risk associated with transition meets the RG 1.174 acceptance guidelines. ~~transition as a part of this process.~~

- ~~The final stage occurs after full transition to NFPA 805 has been completed. The cumulative impact of new information~~ methods and data shall be evaluated per the Configuration Control program when exercising self approval for a plant change. The licensee's periodic update process which also applies during this stage, ~~which~~ typically takes place every 3-5 years. Maintenance and update procedures use criteria of a greater than 10% change in the CDF or anywhere from a 1% to 20% change in the LERF to identify significant changes. Should the criteria be met, then the PRA will be updated with the new information. Should the criteria not be met, then the PRA will not be updated, and the new information will be set aside until the next periodic update or application of the PRA, at which point it will be considered.
- ~~Licenses who have not yet received self approval can evaluate new methods or data as part of the update process called for in the license condition.~~
- ~~Licenses who have already fully transitioned to NFPA 805 can conduct this evaluation as part of their next periodic update.~~
- In the interim, a licensee's use of data and methods previously used to support NRC acceptance of the 805 LAR for review remains acceptable, and new information can be considered at the appropriate time as described above.