

## **NRC Expectations for Implementation of New Methods and Data, Including 2014 Ignition Frequencies, in NFPA 805 Fire PRA**

- Problem Statement
  - The NRC and industry have had discussions regarding the schedule for integration of new data or methods, such as heat release rates and ignition frequencies, into licensee Fire PRAs, and industry has indicated that their maintenance and update process as described below as the PRA Configuration Control program will do this.
  - 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 adopted by the licensee 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.
    - New information is not identified by the peer review in the results of its F&O assignment, and thus the staff is not made aware that new information is used. The staff expects that new information will be identified by the licensee in the LAR.
  - The below discussion 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 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.
- There are four phases of the NRC staff review of NFPA 805 LARs and their supporting fire PRAs, several which call for an update by the licensee that would involve consideration of the new information such as new or corrected methods or data, e.g. ignition frequencies. By and large, expectations for the licensees rely on the Configuration Control program as described in the ASME/ANS PRA Standard and is summarized above. Additionally, the staff expects that if new risk reduction methods (e.g. new HRRs from NUREG-2178) are applied after the submittal of the LAR and prior to the issuance of the SE, then all new information must be considered by the licensee in the determination of whether the aggregate analysis results meet the acceptance guidelines.

- The first phase 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 phase 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 the staff expects that all new information must be considered by the licensee 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 phase occurs after the SE is issued and before completing full transition. The NFPA 805 license condition calls for a licensee, prior to transition to self-approval, to update their PRA model to reflect the as-built, as-operated plant following NFPA 805 modifications. Licensees should evaluate the impact of the new information, e.g. method and data updates, 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.
- The final phase occurs after full transition to NFPA 805 has been completed. The cumulative impact of new information 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 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.
- The licensees may perform an interim update depending on the extent of new information, in between periodic updates. Such an update would apply in the final phase.