NRC PRA Technical Adequacy Working Group Summary for Objective 2
Improve process for documentation and closure of peer review Facts and Observations

Comment [NRC1]: High level comment – the Objective 2 input will be rolled into the "combined whitepaper" and future comments or outstanding comments will be reserved for the final paper. (Final NRC comments due 12/8/14.)

Background

There is no explicit guidance on the close-out of peer review Facts and Observations (F&Os), Findings and Suggestions.[1] NRC and industry guidance is geared towards how peer reviews (and their findings) are used to support an application; not in achieving close-out of the findings. There is discussion of how new peer reviews need to consider previous peer reviews and licensees rely on the most recent, or "latest," peer review, as augmented by gap assessments if the latest peer review was not against the latest endorsed PRA Standard and latest implemented revision to Regulatory Guide 1.200. After a peer review, the licensee typically addresses or "dispositions" each F&O per their PRA update processes and procedures. The licensee then identifies their implementation of their proposed resolutions, or "dispositions," of the peer review findings within each risk-informed application; including justification and application-specific actions performed (e.g., sensitivity analyses) for those findings not fully resolved for the application.

Without a formal close-out process, risk-informed license applications were required to address all findings from the latest peer review, as augmented by findings from a gap assessment if there is not a peer review against the latest endorsed PRA Standard (but a previous peer review must have been performed for the hazards subject to the application). However, because there is implicit guidance that peer reviews can be performed to close-out earlier peer reviews and because there have been issues with how the disposition of F&Os are documented (e.g., the finding is not fully characterized, the disposition only notes disagreement with the peer review, the disposition may not address all issues or extent of condition, etc.), the NRC has previously accepted the performance of a new peer review to close earlier findings.

Per the PRA Technical Adequacy Working Group Problem Statement:

> The requirement to retain and report all past peer review F&Os until re-evaluated by another peer review is an administrative burden that provides minimal benefit to the licensee. The current process results in additional burden to the licensee due to the effort required for the preparation of the discussion of PRA technical adequacy section in a License Amendment Request (LAR) which is followed by the documentation of the NRC's review of the F&O resolution. The NRC review frequently generates subsequent NRC Requests for Additional Information (RAIs) which increases the effort of the licensee in preparing RAI responses. The only currently accepted F&O closure path is the use of the Peer Review process, which is an additional cost and strain on limited PRA resources. In order to reduce this burden on the licensees to retain, report, and review the previously resolved F&Os, there is a need to provide an additional cost effective, robust process to allow licensees to close F&Os and obviate the need for an in-depth NRC review of the base PRA.

The following sections discuss different approaches, including current practice, for close-out of peer review findings as well as issues identified with the level of documentation for peer review findings and their disposition in risk-informed applications, from an NRC perspective.

[1] The three terms have been used interchangeably to account for the various vintages of peer reviews, some of which also included classifications from "A" through "D."

Current issues identified with the use of F&Os in risk-informed applications

1. Risk-informed submittals typically include only summaries of the F&Os, including only summaries of the actual dispositions for close-out. This material may be insufficient to ascertain whether the disposition proposed to address the concerns specific to the risk-informed application is appropriate.
2. Different risk-informed applications have different submittal requirements with respect to F&Os and the associated dispositions. Most risk-informed applications need to assess the impact of F&Os, relevant to the submittal, which did not meet Capability Category (CC) II. However, there are some notable exceptions. For example, Containment Type A Integrated Leak Rate Test (ILRT) extension requests need only address F&Os which did not meet CC I. Risk-informed inservice inspection (RI-ISI) applications may need to meet different categories, including some supporting requirements (SRs) at CC III, depending on the type of submittal. Finally, the NRC has set a precedent of asking for all relevant F&Os for certain applications, such as NFPA-805 and RITSTF 4b.
3. The relevance of F&Os and their dispositions to an application can be confusing if the licensee has participated in multiple peer reviews, both full- and focused-scope, on multiple versions of the PRA model. Earlier F&Os and their dispositions may no longer apply to the current model and are essentially sunset. F&Os and dispositions from focused-scope reviews may pre-empt those from more recent full-scope reviews as well.
4. Quality of more recent peer reviews, especially for other than internal events, may vary considerably, e.g., due to incomplete nature of the PRA at the time of the review, methodological uncertainty/volatility at the time of the review, or limited expertise of the review team due to limitation on available review personnel for non-internal events PRAs.
5. The limitations on available experts from the industry to serve repeatedly as peer reviewers, especially for the non-internal events reviews, remains to be alleviated. While new staff develop the skills to serve in this capacity, the more experienced staff may be retiring or leaving the nuclear arena, such that the overall total of experts remains static and still insufficient. It should be noted that not all full peer reviews are required to be performed by the Owner's Groups.
6. Disposition of F&Os as "documentation only" is sometimes overused, especially when the concern may have been the unavailability of the required material, at least in some preliminary form, for the team to review. ~~The fact that the F&O cites lack of documentation does not necessarily imply that the concern was reviewed and found to be solved, with only the lack of formal documentation remaining.~~

Comment [RRL2]: WE should take exception to this comment. If the peer review team can't assess the related technical SRs due to a documentation issue, they are required to write an F&O against the technical SR. Therefore, documentation F&Os should be just that.

Comment [NRC3]: Agreed. In cases where the F&O results due to a true lack of documentation, then it is really an un-peer-reviewed area and is typically documented that way in the peer review report (i.e., the peer review team was not able to assess the technical SR due to a lack of available documentation and the CC was "not met").

The point of this bullet was not worded clearly. The NRC concern is that when the licensee writes "Documentation Only" as the sole basis for their proposed resolution of a technical SR, it often leads the staff to ask an RAI on how they concluded that a finding on a technical SR was solely a documentation issue.

1. Original Peer Review Team Close-out

Licensee identifies implementation of the proposed resolutions to the peer review F&Os to the original peer review team. Peer review team determines if the proposed resolution resolves the original F&Os. Licensee may identify proposed resolutions during the actual performance of the peer review, but the peer review team needs to review implementation of the proposed resolution to close-out the F&O. This process has been used on a very limited basis.

PROs

- It ensures continuity and that the staff most knowledgeable about the F&Os evaluates the dispositions.
- It provides independent process for establishing closure of previous peer review findings that do not need to be addressed in new applications.
- The acceptability of the actions by the licensee in closing the finding can be more quickly assessed, as the focus of the team is solely on the prior findings and not against the latest endorsed PRA Standard.
- The costs of this approach should be less than those associated with a new peer review team as the reviewers would already be familiar with the PRA and F&Os and focused only on the close-out of the findings; not on a completely new peer review
- No need for other peer reviews (unless there is a PRA upgrade or additional hazards/modes modeled which would require a focused-scope peer review); only gap assessments to latest PRA Standard would need to be addressed.

CONs

- Close-out of the F&Os may require considerable time, and repeatedly re-assembling even part of the original team, especially with the team leader, may quickly become prohibitive.
- The review would not be against the latest endorsed PRA Standard, but only focused on what was implemented to close the finding.
- May not completely eliminate the potential for NRC performing an audit or asking questions on the close-out of the findings.
- Limited resources for conducting peer reviews results in potential scheduling issues; these impacts are more significant as licensee PRAs are upgraded to address other hazards (e.g., seismic), and thus need peer reviews in these areas too.
- Original reviewers may no longer be available.
- Imposes a standard that is higher than required for resolving issues identified against a safety related quality assurance program.

Comment [NRC4]: Accepted change.

Comment [NRC5]: Recommend deletion.

The NRC would prefer not to reference a deterministic licensing process as some type of benchmark for what is good or bad about an option. There are many aspects of the PRA, itself, that are not up to the QA program, so citing that this is a con because this particular aspect may be beyond that program could be confusing. This is a PRA technical adequacy program and it may or may not have similar attributes.

2. New Peer Review Used for Close-out

This process involves a focused-scope peer review of one element and the close-out of findings within that element (with findings on remaining elements still having to be addressed) or a completely new peer review that re-addresses how the PRA comports with the Standard. In this approach, the licensee has a new peer review performed (total or focused-scope) that includes consideration of previous peer review findings and the licensee's implementation of their proposed resolutions of those findings. Original findings of the newly peer reviewed elements are sunset/eliminated and replaced by any new findings of the new peer review. New peer reviews often result in new findings that have to be addressed in applications. Currently, the licensees decide when to perform a new peer review based on criteria from the ASME/ANS PRA Standard regarding PRA upgrades.

Comment [NRC6]: Accepted changed.

This process could also be implemented on a periodic basis (e.g., every 10 or 15 years or after a significant number of PRA ~~upgrades~~updates) to ensure all PRAs across the industry are maintained up-to-date to the latest endorsed PRA Standard and resolution of findings is part of a regular, formal process. This process may become more important as the use and scope of PRAs expand. However, most licensees will perform peer reviews on a relatively regular basis regardless, given the criteria for upgrades as outlined in the ASME/ANS PRA Standard.

Comment [NRC7]: The NRC does not agree that most licensees perform peer reviews on a regular basis. Recommend deleting this sentence or clarifying that some licensees perform focused-scope peer reviews, as necessary.

New or follow-up full-scope peer reviews appear to be rare given current NRC experience. The NRC experience is that licensees typically have follow-up focused-scope peer reviews to address upgrades. If a licensee does not perform upgrades, which many do not, then no new peer review will be performed even if there are significant changes in the plant design, as long as they do not change methods. This latter aspect is acceptable, but it does not match the added sentence.

PROs

- A new peer review allows an independent consideration and review of how prior findings were addressed by the licensee.
- It provides an independent process for establishing closure of previous peer review findings that do not need to be addressed in new applications
- It updates peer reviewed elements to the latest endorsed PRA Standard and encourages PRAs to be kept relatively contemporary as methods, plant configurations, etc., evolve.
- Need not secure availability from original peer review team members

Comment [NRC8]: Accepted change.

CONs

- Some of the important knowledge of the issues which generated the F&Os may be lost without participation by the original reviewers. This process requires that the F&Os and the associated dispositions are sufficiently documented such that close-out by a new team is viable.
- Limited resources for conducting peer reviews results in potential scheduling issues; these impacts are more significant as licensee PRAs are upgrade to address other hazards (e.g., seismic), and thus need peer reviews in these areas too.
- May not completely eliminate the potential for NRC performing an audit or asking questions on the close-out of the findings.
- Non-trivial burden associated with assembling a full peer review team.
- Imposes a standard that is higher than required for resolving issues identified against a safety related quality assurance program.

Comment [NRC9]: Accepted change.

Comment [NRC10]: Recommend deletion.

See same comment on Option 1.

3. NRC Review and Close-out

Licensee submits information to NRC identifying the implementation of their proposed resolution of findings independent of any risk-informed applications. NRC determines if the proposed resolution resolves the original findings or if additional information/action is needed. This process is informally being applied, on a very limited basis, for licensees with both NFPA-805 and other risk-informed LARs being reviewed concurrently in order to improve schedule and reduce regulatory burden.

PROs

- It provides a regulatory process for establishing closure of previous peer review findings that do not need to be addressed in new applications.
- No need for other peer reviews (unless there is a PRA upgrade or additional hazards/modes modeled which would require a focused-scope peer review); only gap assessments to latest PRA Standard would need to be addressed.
- The potential for a future audit or questions on the resolution of the finding would be greatly reduced. (The possibility may not be eliminated altogether, since not all potential applications of the PRA can be foreseen during the "generic" close-out.) Common risk-informed applications (e.g., Risk-Informed Technical Specification Task Force (RITSTF) Initiative 5b, etc.) would no longer need detailed PRA Technical Adequacy review and could instead use the Consolidated Line Item Improvement Process (CLIIP).

CONs

- Significant up-front resource and time investment for both the licensee and the NRC as this is essentially an application review, though only focused on resolution of findings, and involves schedule, resources, and associated costs typical of a regulatory review. Similarly, this process will likely require RAIs in order to come to agreement on the closure of some findings, which will extend such reviews well beyond the length of other approaches that would typically be less than two months. This process will primarily benefit licensees that plan on submitting multiple risk-informed applications.
- It would not necessarily be against the latest endorsed PRA Standard if the peer review was conducted using an earlier version of the standard. The review would be only focused on what was implemented to close out the finding, unless a gap assessment is required.
- Imposes a standard that is higher than required for resolving issues identified against a safety related quality assurance program.

Comment [NRC11]: Accepted change.

Comment [NRC12]: Recommend deletion.

See same comment on Option 1.

4. Licensee Close-out

Licensee documents implementation of proposed resolution of findings to close-out peer review findings, by using internal independent resources or contracted independent resources. This process has relatively minimal additional costs or impacts beyond the already established need to document closure of findings and should be part of the existing licensee processes for updating the PRA. Documentation is retained for NRC audit in context of risk-informed application reviews and is provided to future peer reviews for consideration.

PROs

- It provides a process, though not fully independent, for establishing closure of previous peer review findings.
- No need for other peer reviews (unless there is a PRA upgrade or additional hazards/modes modeled which would require a focused-scope peer review); only gap assessments to latest PRA Standard would need to be addressed.

CONs

- It would not necessarily be against the latest endorsed PRA Standard if the peer review was conducted using an earlier version of the standard. The review would be only focused on what was implemented to close out the finding, unless a gap assessment is required.
- It is not ~~an~~ a fully independent process~~; it allows licensees to determine solely on their own interpretation that a peer review finding has been adequately addressed~~.
- The NRC would not necessarily be provided the F&Os as part of this process and will likely have RAIs or need to audit the close-out documentation to assure there is agreement with the closure of the findings.

Comment [NRC13]: Accepted change

Comment [RRL14]: We believe that independence is possible, if criteria call for an uninvolved reviewer from the utility

Comment [NRC15]: Accepted change. Used Industry language from Option 3 for consistency.

Comment [VKA16]: We believe that independence is possible, if criteria call for an uninvolved reviewer from the utility

Comment [NRC17]: Recommend not deleting sentence but revising sentence, as shown.

The NRC concern is that although fire-walls can be established within a utility for some level of independence, for the PRA it cannot be fully achieved since there are procedural requirements and expectations that consistent methods and approaches be used across most fleets. Therefore, there may be an inherent bias to accept (or reject) the resolution recognizing it may apply to the reviewers plant as well. There are also simply organizational/ownership issues that could potentially affect most internal reviewers.

The NRC is open to exploring this option further, and was also interested in the idea proposed by Industry on 10/24/14 about some sort of expert exchange where utilities could share resources for closing out F&Os more independently.

Comment [VKA18]: We envision this documentation being provided as necessary to support licensing applications

Comment [NRC19]: The NRC would then need to provide a clear expectation of what is required for risk-informed applications and would need to revise NRC guidance accordingly.

If the NRC decides that F&Os are no longer required to support the review, then certain risk-informed applications may no longer require APLA review (i.e., if there is no PRA Technical Adequacy review, the application can use the CLIIP). However, the inspection process may then need to take on the issue of PRA Technical Adequacy in the future. Adequate documentation of F&O closure would then become even more important.

Per the RISC meeting on 10-30-14, the NRC RISC may have some concerns with the Licensee Close-out approach.

5. Hybrid Approach (Industry Proposed Approach)

Comment [NRC20]: High level comment – The NRC agrees that the hybrid approach still needs some work to expand on the details of the approach.

This process is a merger of multiple aspects of the above approaches within some hierarchical framework. This will involve the identification of attributes of findings for grouping into types of findings and then the determination of which of the above approaches are appropriate for close-out of specific types of findings.

PROs

- Provides process, with varying levels of independence, for establishing closure of previous peer review findings that do not need to be addressed in new applications.
- Allows a graded approach to the closure process for peer review findings.
- In resolving most findings, there will be no need for other peer reviews (unless there is a PRA upgrade or additional hazards/modes modeled which would require a focused-scope peer review); only gap assessments to latest PRA Standard would need to be addressed.

Comment [NRC21]: Accepted changed.

CONs

- Requires establishing a hierarchical framework for how to close out findings; including identifying the attributes of findings that can be addressed by various approaches.
- It would not necessarily be against the latest endorsed PRA Standard if the peer review was conducted using an earlier version of the standard. The review would be only focused on what was implemented to close out the finding, unless a gap assessment is required.
- May not eliminate the potential for NRC performing an audit or questions on the close-out of the findings, especially those findings allowed to be closed by the licensee since this aspect would not be an independent review.
- A monitoring program may be required for F&O close-out, particularly if some F&Os are closed out via NRC reviews of risk-informed applications or if the licensee closes out F&Os without independent review.

Comment [NRC22]: Accepted change. Used Industry language from Option 3 for consistency.

Best practices for adequate documentation of F&Os and bases for closure of F&O

- Some licensees provide the full F&O description (including distinguishing between CC I or Not Met) and disposition as well as an additional statement to assess the impact to the specific risk-informed application. Detailed F&Os and dispositions are preferred in order to understand the changes to the PRA model without follow-up questions (and to expedite audits if they are required in the future).
- Some licensees provide a detailed history and description of the peer reviews, gap assessments, and self-assessments. Additionally, some licensees also provide a timeline of PRA model updates and upgrades.
- Only F&Os applicable to the current model and relevant to the submittal are provided.
- The use of new methods or "Unreviewed Analysis Methods" (UAMs) should be clearly identified.
- Peer review teams need to be very precise when citing an F&O as "documentation only," such that a similar disposition by the licensee will be less likely to be questioned by a subsequent reviewer.
- If using a Fire PRA or Seismic PRA instead of a bounding or qualitative analysis to address external events, provide similar documentation as that required for the Internal Events F&Os.
- ~~Risk-significant~~ F&O findings should be closed-out in a timely fashion, in accordance with the licensee's PRA processes and procedures, and should not wait until a risk-informed application is submitted. (I.e., even if an F&O is not relevant to the submittal, if it is highly risk-significant and has not been resolved for an extended period of time, additional questions may be asked as part of the review.)
- Well-maintained, up-to-date PRAs reviewed to the latest endorsed PRA Standard with thoroughly documented resolutions of findings greatly expedites the review process, particularly for F&Os associated with external events or external hazards.

Comment [NRC23]: Accepted changed.

Comment [RRL24]: I don't agree with this. We need to stop using models in this way. Use of qualitative or bounding analysis should provide sufficient detail to ensure they can be judged bases on the limited nature of the models and the limited impact of the hazards to the application.

Comment [NRC25]: Agreed. This bullet should be reworded.

As background, in accordance with the NRC phased approach to PRA quality, if a risk-informed application involves a hazard that cannot be shown to be insignificant to the decision (this can be by a bounding approach), which means can increase the base PRA results or delta results beyond an acceptable amount, then it should be addressed by a PRA (i.e., one cannot argue compensatory measures likes a fire watch to avoid having to perform the fire PRA).

This bullet was meant to convey that if an application requires the use of an external events PRA, PRA technical adequacy information should be provided.

Comment [RRL26]: What is a risk significant F&O? We now only have findings and suggestions. In concept, this is okay, but we would need to define what a RS F&O is, and in what context (base model or application).

Comment [NRC27]: Agreed. This bullet was confusing. The NRC is not trying to create a new category of F&O.

The NRC concern is that (rarely) licensees still report "A" and "B" findings from their full scope peer review to still be open without providing an adequate disposition.