

Staff Response to Public Comments on DG-1200 received from:

- Nuclear Energy Institute (two separate sets of comments)
- PWR Owner's group
- ABS Consulting
- Dominion Resources Services, Inc.
- Progress Energy
- Exelon
- PPL Susquehanna, LLC
- Erin Engineering & Research, Inc.
- Strategic Teaming and Resource Sharing

Enclosure

Staff Response to Public Comments on DG-1.200

No.	Comment Source	Comment	Staff Response
1	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>High Level Comments</p> <p>Need for extended trial use period relative to Fire and External Events PRAs</p> <p>The regulatory guide should not be made final until both fire and external events PRA methods provided in the combined PRA standard have been fully piloted, and the results have been incorporated back into the combined standard. Pilot applications of the external events and fire methods are now underway, and initial applications of the fire method have led to a significant effort now underway to modify the NUREG CR-6850 fire PRA method, which is codified at a certain level of detail into the fire PRA standard. Past experience has demonstrated that piloting and feedback are essential to the development of usable PRA standards. Thus, we request that a trial implementation period be provided for the fire and external events portions of the combined standard as endorsed by the Regulatory Guide. The scope of PRA addressed by this revision of the Regulatory Guide is substantially greater than that addressed in Revision 1. As a result, a substantial phase-in period is requested to allow utilities to develop more complete PRA models that meet the expectations provided. A trial use period of 1 year was allowed for Revision 1. In this case, it seems that much longer time period would be appropriate, e.g., 3 to 5 years</p>	<p>The staff disagrees with the comment and no changes were made to the regulatory guide (RG).</p> <p>The regulatory guide is a final document that is being revised for a second time. Any results obtained from the fire and external events PRA methods pilot, would be included in a subsequent revision to the RG.</p> <p>Further, the pilots were performed on the main body of the RG, and not on the technical acceptability of the requirements in the standard. The main body of the RG was revised based on the lessons learned from these pilots</p>
2	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Scope of Applicability of Regulatory Guide</p> <p>Slide 15 from the July 11 NRC meeting materials states that a “global change” has been made from Revision 1 of the Regulatory Guide to change “application” to “activity,” and “proposed change” to ‘proposed decision.’”</p> <p>Further, the subject Federal Register Notice states the following: In 1995, the NRC issued a Policy Statement on the use of probabilistic risk analysis (PRA), encouraging its use in all regulatory matters. That Policy Statement states that “...the use of PRA technology should be increased to the extent supported by the state-of-the art in PRA methods and data and in a manner that complements the NRC’s deterministic approach.” Since that time, many uses have been implemented or undertaken, including modification of the NRC’s reactor safety inspection program and initiation of work to modify reactor safety regulations.</p>	<p>The comment on Slide 15 was referring to the Standard. RG 1.200 (main body) has always used the term risk-informed activities (e.g., the title of the RG uses this term). The objection, which is in Appendix A, was meant to clarify that the standard is not limited to regulatory applications. The staff objection has been removed; this clarification can be addressed via an inquiry to</p>

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		<p>Consequently, confidence in the information derived from a PRA is an important issue, in that the accuracy of the technical content must be sufficient to justify the specific results and insights that are used to support the decision under consideration.</p> <p>The above words appear to suggest the Regulatory Guide would apply to the NRC reactor oversight process.</p> <p>Changing the applicability from “Risk-informed Application” to “Risk-Informed Activity” is a significant change in the purpose and impact of the Regulatory Guide. “Activities” connotes a much broader scope than the original intention of the Regulatory Guide to provide PRA technical adequacy guidance in support of voluntary risk-informed license applications. Further, the standards being endorsed were written in the context of licensing applications. “Activities” would include risk-informed decision-making in support of the reactor oversight significance determination process, maintenance rule, use of PRA for developing operator training scenarios, use of PRA for procedure change reviews or design change reviews, use of PRA in support of 10 CFR 50.59 reviews, and potentially many other uses. This expansion of applicability is a backfit and should not be undertaken absent a formal regulatory analysis. In addition to the backfit issue, the expansion of applicability into non-voluntary uses of PRA, such as the significance determination process would create many other problems, in that it will be many years before plants PRAs (or NRC’s SPAR models) meet the technical adequacy expectations of the regulatory guide, and in the interim these non-voluntary processes have to remain viable. The regulatory guide should be clearly stated to apply only to voluntary risk-informed initiatives. In the absence of these applications, there remains no regulatory requirement for PRA for plants licensed under Part 50.</p> <p>In Table A-1, Index No. 1-3.1 (page A-9), the Staff resolution would change the word “risk-informed application” to “risk-informed activity.” While possibly unintentional, with this choice of word change, the applicability of the Standard can be interpreted to be a much broader scope than intended by the authors. The change to “activities” would include voluntary risk-informed license applications (as intended) and other risk-informed decision-making in support of design and operational considerations such as the reactor oversight process, the significance determination process, the Maintenance Rule, the use of PRA to support 10 CFR 50.59 changes, etc. The process for these “activities” is not</p>	ASME.

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	PWROG	<p>what is described in Section 1-1.3 and other parts of the Standard. Such an expansion of scope could be considered a backfit, and should not be undertaken without a formal regulatory analysis. Accordingly, it is recommended that this global word change not be implemented in RG 1.200, Revision 2.</p> <p>Alternatively, the global comment may misinterpret the phrase "risk-informed application." While the examples may relate to regulatory applications, the phrase refers more generally to applications of risk-informed methodology. Applications of risk-informed methodology could be regulatory applications, but it also includes non-regulatory applications. An "application" does relate to a decision required by a proposed change in plant design or plant operation, as this section explains. Therefore, the proposed change is not necessary.</p>	
3	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Definition of fire as internal event</p> <p>As discussed in Slide 6 of the July 11 NRC meeting materials, NRC proposes to define internal fires and floods as "internal events" ("area" events as distinguished from "hardware events"). While this change may be desirable from a purely technical standpoint, it will create incompatibility with all the previous regulatory uses of the term "internal events PRA" in NRC regulation, regulatory guides, NUREGs, inspection manuals, regulatory information summaries, RASP handbook and many other regulatory documents. This unintended consequence could and will lead to confusion and attempted re-interpretations of existing requirements and guidance by NRC field personnel. Unless NRC intends to revise all previous agency and external regulatory uses of the term "internal events," the existing definition should be retained, or a "hazard group" definition such as used in proposed Addendum A to the combined standard should instead be referenced such that confusion with previous uses of "internal events" terminology is avoided.</p>	Although the staff disagrees with the comment, the standard has been revised and uses the terms "internal and external hazards." With the use of these terms, the staff objection has been removed.
4	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS PWROG	<p>Proposed new definition of "Large Release"</p> <p>The second half of the definition for "Large release frequency" is too subjective. A "statistically significant increase in latent health effects" could be interpreted in many ways. It is recommended that this portion of the definition be deleted.</p> <p>The first part of the definition of "large release frequency" (LRF) includes "potential for early health effects" independent of timing or evacuation and increase in latent health effects; but early health effects risk without considering timing or evacuation is conditional risk, not absolute risk. It does not make</p>	The staff agrees with the comment and revised the RG as appropriate.

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		sense to mix conditional risk of early health effects with the actual risk of latent health effects. This first part should be defined just as "potential for significant increase in latent health effects."	
5	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Combination of results from Hazard Groups</p> <p>Slide 9 from the July 11 NRC public meeting discussed interpretation of results as described on pages 15 and 16 of the draft Regulatory Guide. The first bullet notes "Combine (sum) results from different hazard groups." While the discussion in the draft Regulatory Guide provides appropriate considerations for combination of results, we believe stronger caution needs to be added regarding the potential distortion of risk insights due to simply summing results. As more complete scope PRAs are developed and used in regulatory applications, it is important for NRC field personnel to fully understand the issues associated with combining results as there will be a tendency to simply sum results and compare to decision criteria.</p> <p>Realism is an essential component of a PRA. Conservatism, while sometimes necessary to deal with uncertainties, can compromise the technical adequacy of a PRA. This draft Regulatory Guide is silent on the need for a balanced, realistic assessment of risk, especially in the base PRA addressed by Regulatory Guide 1.200. The NRC's work on NUREG-1855 provides various statements along these lines that should be considered for the body of the Regulatory Guide, as there has been an increasing propensity to apply conservative assumptions to regulatory applications of PRA methods.</p>	The staff agrees with the comment and revised the RG as appropriate.
6	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Acceptability of Seismic Margins method</p> <p>The draft Regulatory Guide notes that the Seismic Margin (SMA) method is not an acceptable approach in the base PRA for seismic contributors. This note to Table 3 contradicts a major premise of Part 4 of the ANS/ASME combined standard, and appears to go beyond regulatory "guidance" in establishing de facto requirements for SPRA. This significant departure from the approved consensus method is not in keeping with the spirit of NRC use of consensus methods. Further, Part 4 of the standard notes that SMA may be appropriate for some risk-informed applications, and this premise is not challenged by the draft Regulatory Guide. Since most regulatory applications use delta rather than baseline risk values, NRC's statements are at best confusing and at worse are directly contradictory to the intent of the standard. We request that NRC provide their safety rationale for the statements on applicability of the SMA.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>This table provides the attributes and characteristics for a seismic PRA, and a seismic margin is not a seismic PRA. RG 1.200 only provides the staff position on the technical acceptability for a base PRA. Where and when a seismic margin can be used is application specific which is outside the scope of</p>

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			RG 1.200. Moreover, OMB Circular No. A-119 gives the agency freedom to decide not to use a standard if the standard is not consistent with the agency's mission.
7	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Differing levels of detail/complexity across combined standard</p> <p>Slide 18 from the July 11 NRC meeting materials provide the following statement relative to Part 3 (fire PRA) of the combined standard:</p> <p>While the requirements are thorough, they are possibly overly complex. However, this complexity should be addressed in the pilot applications of this part of the standard.</p> <p>The issue of excessive detail in the fire portion of the standard is not trivial, nor is it likely to be successfully resolved through applications. Issues with complexity of requirements are rightly dealt with in Regulatory Guide 1.200. Fire PRA development is being predominantly driven by industry implementation of 10 CFR 50.48(c), and the use of a particular fire PRA method (NUREG CR-6850) for this application establishes expectations for PRA. This particular method for fire PRA has been essentially codified in Part 3 of the Standard. This is fundamentally different from the internal events portion of the standard. A decision was made to combine the standards, thus exacerbating this discrepancy. This provides further credence for a lengthy trial use period until all issues with the fire portion of the standard are addressed.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>While the staff may view the requirements in the standard as overly complex, the staff endorsement is relative to the technical acceptability and adequacy of the requirements, which is provided in Appendix A to the RG. It is the standard's organization (e.g., ASME) who determines the scope, detail, etc. of their standard.</p>
8	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Lack of thorough NRC review of External Events standard</p> <p>Slide 19 from the July 11 NRC meeting materials provide the following statement relative to Part 4 (external events) of the combined standard:</p> <p>This part of the standard is difficult to use because it is not formulated in a parallel manner to the other parts of the standard (i.e., Parts 2 and 3). This difficulty should be addressed in future revisions of the combined standard. Because of this difficulty, a thorough review was not performed by NRC staff on this revision”</p> <p>NRC states they have not performed a thorough review; however, NRC intends</p>	<p>On Slide 19, as discussed at the meeting, the staff was referring to the overall structure and organization of the standard. The staff reviewed Revision 0 of the standard in detail; subsequently, ANS has accepted the majority of the staff objections and revised the standard accordingly. The staff has reviewed this part of</p>

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		to move ahead and endorse the standard now for regulatory use. It appears that schedule rather than quality is driving the issuance of the Regulatory Guide. Regulatory endorsement absent thorough review is premature and provides further importance to the need for a trial use period for the external events portion of the standard. The final version of the Regulatory Guide should not be issued until this issue is resolved.	the standard in detail.
9	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Need to re-perform PRA self assessments</p> <p>NRC provides a “global qualification” that the industry self assessment needs to be re-performed to the latest version of the standard. This is inconsistent with our understanding that the self-assessments were a one-time undertaking to address the differences in the original internal event peer review method and the internal events PRA standard endorsed in Revision 1 of Regulatory Guide 1.200. NEI does not plan to develop additional self-assessment guidance for distribution to industry because it is unlikely any new requirements in later versions of the standards would have a corollary in the original peer review process (NEI-00-02). Our understanding of the intent is that for additional requirements in later versions of the standards, individual assessments should be made by the plants if these requirements are not otherwise addressed in a focused scope peer review. This is limited to internal events, and does not address the expanded scope of Revision 2 of the Regulatory Guide to include external events and fire, which would obviously be subject to new peer reviews. We request NRC clarify this position accordingly.</p>	The staff disagrees with the comment. Currently, in NEI 00-02 and in NEI 05-04, the process focuses on a peer review for when the PRA is updated. It does not appear that the process includes a peer review against the current standard. Additional clarification on this concern has been added to the RG.
10	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Additional technical comments of a general nature</p> <p>1. It is important that Regulatory Guide 1.200 and the ASME/ANS Combined PRA Standard work together in a consistent manner. Given that ASME has a significant effort underway to enhance the technical coherency and usability of the Combined Standard in an Addendum to be approved later this year, it would be prudent to delay the release of Revision 2 of the Regulatory Guide until it can endorse the improved version of the Combined Standard.</p> <p>2. Similarly, because the Combined Standard and Regulatory Guide 1.200 work together in defining the technical adequacy of a PRA, it is important that the nomenclature and concepts of the two documents be as consistent as possible. While a number of specific comments are provided in the attachment, it is recommended that the NRC perform a specific review of the use of terms like “hazard group” and “initiating event” to be sure that these terms are defined and</p>	The staff agrees with the comment and revised the RG as appropriate. However, with regard to Item #4, this comment is not applicable to the RG, but to NUREG-1855. The RG does reference NUREG-1855 in the appropriate places.

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		<p>used in a manner that is consistent with the Addendum A of the Combined Standard.</p> <p>3. The term “quality” continues to be used by the NRC staff as a surrogate for technical adequacy. These two terms have very different meanings and should not be used interchangeably. The title of the draft Regulatory Guide uses the term “technical adequacy.” The text in the second and third paragraphs talks in terms of “quality.” It is entirely possible to perform analysis that is of high “quality” and yet be technically inadequate. It is recognized that some of this ties back to the use of “quality” in Regulatory Guide 1.174. It is recommended that Regulatory Guide 1.200 use more appropriate terms, and Regulatory Guide 1.174 be similarly corrected in its upcoming revision.</p> <p>4. This Regulatory Guide needs to be better aligned with NUREG-1855 and the Combined PRA Standard with respect to what constitutes a “screening analysis,” a “bounding analysis,” and a “conservative analysis,” and the role of each in the context of risk-informed decision-making. Right now, this document blurs together screening, bounding and conservative approaches. It is important that licensees understand when each type of analysis is sufficient. That is, when a full PRA is required vs. when a conservative analysis can suffice vs. when a bounding analysis is sufficient vs. when a risk contributor can be screened. These distinctions are not yet clear in any regulatory or non-regulatory document.</p>	
11	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>B. Discussion 2nd Bullet on page 3</p> <p>The second bullet and associated footnote define a “part of a PRA” to be a “piece of the analysis for which an applicable PRA standard identifies a supporting level requirement.” However, in some cases, a “part” can be an entire hazard group which need not be addressed. In fact, in the next sentence, the bullet contrasts the reference to “part of a PRA” to a “full-scope PRA”. This could be read to imply that decisions on applicability are only made at the supporting requirement (SR) level, when in fact a “part” could be an entire hazard group or simply a portion of a the model where a particular SR applies (i.e., certain events, HFES, data, etc.).</p>	The staff agrees with the comment and revised the RG as appropriate.
12	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>3rd bullet on page 3</p> <p>It would be beneficial to clarify that the reference to “this document” in this bullet refers to RG 1.174 and not RG 1.200 so as to avoid a misunderstanding of the applicability of RG 1.200.</p>	The staff agrees with the comment and revised the RG as appropriate.

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13	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Paragraphs after bullets on page 3</p> <p>It is not clear what the purpose is of these paragraphs. Are these the extent of applicability of RG 1.200, beyond RG 1.174? If so, an introductory paragraph that explains this would be helpful.</p>	The staff agrees with the comment and revised the RG as appropriate.
14	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Bullets on top of Page 4</p> <p>It is not clear what the purpose is for the chronology of PRA Standards, since RG 1.200 will be endorsing the Combined Standard. This extraneous information should be deleted.</p>	The staff agrees with the comment and revised the RG as appropriate.
15	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Bullets on industry guidance & the PRA quality plan on pages 4 & 5</p> <p>Again, it is not clear why this chronology is provided. It seems better to just identify the applicable guidance and its relationship to RG 1.200.</p>	The staff agrees with the comment and revised the RG as appropriate.
16	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Last paragraph of page 5</p> <p>NUREG-1855 also provides guidance on limiting the scope of application. Maybe a reference to it would be useful.</p>	The staff agrees with the comment and revised the RG as appropriate.
17	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>First paragraph on page 6</p> <p>The reference to this regulatory guide as being “new” can be deleted.</p>	The staff agrees with the comment and revised the RG as appropriate.
18	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Figure 1</p> <p>In some cases, industry guidance is essential to the specific application (e.g., NEI 00-04) and those are not shown. Since this Reg. Guide is for licensees, it might be helpful to show how those industry documents relate.</p>	This relationship is discussed and illustrated in Section B, Relationship to Other Guidance Documents
19	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1. “A Technically Acceptable PRA”</p> <p>Is there a difference between a “Technically Acceptable PRA” and a “technically adequate PRA”? If so, this should be explained. If not, “technically adequate” should be used everywhere, since that is the title of the RG.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>The staff believes these terms have been properly used in the RG.</p>
20	NEI, Dominion,	1.1 Scope of PRA	The staff agrees with the

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	Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	The bullets on the bottom of Page 6 talk about the scope being defined by the “types of initiating events”. This should really be hazard groups and initiating events in order to be consistent with the definition of “initiating event.”	comment and revised the RG as appropriate.
21	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Initiating events, Page 8</p> <p>This definition should be updated to be consistent with Addendum A of the Combined Standard. As written, this definition implies that equipment failures are caused by operator actions and that operator actions alone do not cause initiating events. Here is the current Addendum A definition:</p> <p>initiating event: an event that perturbs the steady state operation of the plant by challenging plant control and safety systems whose failure could potentially lead to core damage and or radioactivity release. These events include human-caused perturbations and failure of equipment from either internal plant causes (such as hardware faults, floods, or fires) or external plant causes (such as earthquakes or high winds).</p>	The staff agrees with the comment and revised the RG as appropriate.
22	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Table 1, Page 9 and first paragraph after the table</p> <p>Table 1 includes a note that says “Interpretation of results and documentation are elements of both Level 1 and Level 2 PRAs.” While results interpretation and documentation are an important part of PRA, they are not really technical elements. Maybe it should say “Interpretation of results and documentation are important parts of technically adequate Level 1 and Level 2 PRAs.”</p> <p>This comment also applies to the last several sentences of the following paragraph.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>The staff does consider them as technical elements of a PRA, and that they should be viewed as such.</p>
23	ABS Consulting	<p>Table 1, page 9, section 1.2.2 page 11, and Table 2 page 18.</p> <p>Plant damage state analysis is listed as a technical element for Level 2. The use of plant damage states is an artifact of older ways of interfacing Level 1 models with Level 2 models. In the large event tree linking approach, plant damage states need not be used to interface Level 1 with Level 2. Instead, the containment event trees developed for Level 2 can be linked directly to the Level 1 event trees without the need to assign Level 1 sequences to plant damage states. This approach is more accurate because it avoids the need to approximate core damage scenario attributes by the binning of “similar” scenarios. Instead, to the extent that the status of each attribute affects the Level 2 analysis differently, it can be modeled as such, without approximation.</p>	The staff agrees with the comment and revised the RG as appropriate.

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		Effectively then, many thousands of combinations of Level 1 attributes or “plant damage states” can be used to quantify the Level 2 event tree. The grouping of scenarios into a smaller set of plant damage states is less accurate. The description of plant damage state analysis in section 1.2.2 should be modified to declare this alternative and more accurate approach to defining Level 2 boundary conditions as also acceptable.	
23a	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	First paragraph after Table 1 on Page 9 The first sentence of this paragraph is loose in its use of terminology. First, “contributors to risk” are not only characterized as the cause of the initiating event. Second, the parenthetical refers to “internal and external initiating events”. A better terminology might be “hazard groups”, or depending on what the real intention is for this sentence “internally and externally-caused initiating events”. Furthermore, it is potentially misleading to say that these are “equally” applicable to all hazards. In fact, some technical elements may be more important than others, depending on the hazard. Suggest that you delete the word “equally”.	The staff agrees with the comment and revised the RG as appropriate.
24	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	1.2.1 Level 1 Technical Elements This section attempts to be written to be both generic to all hazards and POSs and yet it is the only place that internal events gets “addressed”. Consequently, there is little on the actual analysis of internal events.	The staff agrees with the comment and revised the RG as appropriate.
25	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	1.2.1 First paragraph. The terminology “event classes” is not used in the PRA Standards. Typically, the Standards use “initiating event groups” or “initiating event categories”.	The staff agrees with the comment and revised the RG as appropriate.
26	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	Quantification, Page 9 The term “initiator class” is also a new one.	The staff agrees with the comment and revised the RG as appropriate.
27	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	1.2.3 Level 2 Technical Elements These technical elements do not entirely align with the PRA Standard elements (i.e., HLRs). It might be useful to make that alignment more clear.	At this time there is not a Level 2 PRA standard. In the future, when a Level 2 standard becomes more definitive, the technical elements in RG 1.200 may be revised, if appropriate.

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28	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.3 Internal floods elements These elements are not the same as the Internal Flooding PRA technical elements identified in Addendum A:</p> <ul style="list-style-type: none"> • Internal Flooding Plant Partitioning • Internal Flood Source Identification and Characterization • Internal Flooding Scenarios • Internal Flood-induced Initiating Events • Internal Flooding Accident Sequences and Quantification <p>It might be useful to align the technical elements in a similar manner the way that section 1.2.4 does for fire PRA.</p>	The staff agrees with the comment and revised the RG as appropriate.
29	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.5 External Hazards, first paragraph Screening and bounding analyses have a more important role than simply demonstrating that the hazard has an insignificant impact on risk. As discussed in NUREG-1855, such analyses may be used to show that the risk is not significant to the decision being made, regardless of the absolute value of the overall risk. Since this is the first place where such analyses are mentioned for external hazards, it is recommended that this attribute of screening and bounding analyses be identified so that the reader is not misled.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>This comment is relevant to NUREG-1855. With respect to the RG, it is a different issue; screening is performed because it is not important to risk (i.e., to the base PRA) regardless of the decision.</p>
30	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.5 External Hazard, second paragraph This paragraph seems to only discuss screening. “Bounding” analyses can take many forms and can be very effective in dispositioning hazards that may not be screenable, but can be shown to have a negligible risk impact relative to the decision being made. In effect, bounding analyses are any analysis that is more conservative, but less rigorous than a PRA that is considered Capability Category I (as defined in the Standard). This can involve an entire hazard group, or a portion of the hazard group. Additional discuss of the role of bounding analyses would be helpful in defining the valuable role that bounding analyses can play in risk-informed applications.</p>	See response to Comment # 29.
31	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL,	<p>First full paragraph on page 15 Some suggested changes to the description of Fragility Analysis: Fragility analysis characterizes conditional probability of failure of SSCs whose</p>	The staff agrees with the comment and revised the RG as appropriate.

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	PWROG, STARS	<p>failure may lead to unacceptable damage to the plant (e.g., core damage) given occurrence of an external event. For significant contributors (i.e., SSCs), the fragility analysis is realistic and plant-specific. The fragility analysis is based on extensive plant walkdowns reflecting as-built, as-operated conditions. It is recognized that at the design and initial licensing stage, plant walkdowns are not possible; however, the fragility analysis should reflect the as-designed plant.</p> <p>The fragility analysis is focused on the failure that are a direct result of the external event. The term “extensive” is unnecessary.</p>	
32	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Second full paragraph on page 15</p> <p>The term “transient and LOCA” can be removed from the paragraph on Plant Response Analysis and Quantification.</p>	The staff agrees with the comment and revised the RG as appropriate.
33	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.6 Interpretation of Results, first paragraph</p> <p>The first sentence should include hazard groups and specific hazard (i.e., fire in MCC-XXX, or F3 tornadoes, etc.) as a contributor.</p> <p>“... sorted by hazard group, initiating event or specific hazard category, accident sequences, ...”</p> <p>The second sentence is pretty complex. At a minimum it should be changed to clarify that “internal and external events” are not “initiators”, as implied in the parenthetical. In addition, it is not clear that “plant operating modes” is the right level of distinction. “POS” may be better, as full-power, low-power, and shutdown are not “operating modes” to a licensee since that term has a specific meaning in the plant license.</p>	The staff agrees with the comment and revised the RG as appropriate.
34	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.6 Interpretation of Results, second paragraph.</p> <p>It is not clear what is meant by the term “events” in the statement “...identify the contributions of various events to the model estimation of LERF or LRF for both individual sequences and the model as a whole,...”</p>	The staff agrees with the comment and revised the RG as appropriate.
35	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.7, first paragraph</p> <p>The first sentence doesn’t really make sense, as written. In particular, it is not clear what is meant by the term “defensibility”. The sentence might better read: “Traceability and defensibility The documentation of a PRA model and its</p>	The staff agrees with the comment and revised the RG as appropriate.

No.	Comment Source	Comment	Staff Response
		application needs to provide the necessary information such that the results can easily be reproduced and justified.”	
36	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.2.7, first paragraph The last sentence might be better placed right after the third sentence, where source of uncertainty is identified.</p> <p>Also, the last sentence refers to a “source of uncertainty”. This should be changed to “source of model uncertainty”, since the definition provided is the corresponding ASME PRA Standard definition.</p>	The staff agrees with the comment and revised the RG as appropriate.
37	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Table 2 Table 2 describes Level 1 PRA (internal events — transients and LOCAs). The PRA Standard does not use these terms as defining the scope of internal events. The PRA Standard includes transients and LOCAs, but also adds the following initiating event types: SGTR, ISLOCAs and special initiators.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>SGTR, ISLOCA are types of LOCAs, and special initiators is an old term meant to cover such items as loss of DC power, which is a transient.</p>
38	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Table 2, page 17 The note under initiating event analysis uses the term “relative baseline risk value”. The term “baseline” is not defined. Additionally, this note seems to put disproportionate emphasis on the screening of internal initiating events. The same concept could apply to other hazard groups and other aspects of PRAs for new reactor designs that is best dealt with in a more complete manner in other documents (e.g., the PRA Standards).</p>	The staff disagrees with the comment and no changes were made to the RG.
39	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Table 5, page 25 The term “defensibility” seems confrontational and awkward. Maybe a better term would be “justification”.</p>	The staff agrees with the comment and revised the RG as appropriate
40	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>1.4 PRA Development, Maintenance and Upgrade Addendum A provides a definition of as-built, as-operated that may be applicable here. At a minimum, the use of these terms needs to be consistent.</p>	The staff agrees with the comment and revised the RG as appropriate
41	NEI, Dominion, Progress Energy, Exelon Generation	<p>Footnote 6, Page 28 In the second sentence, it seems that the term “work” should be “word”</p>	The staff agrees with the comment and revised the RG as appropriate.

No.	Comment Source	Comment	Staff Response
	Company, PPL, PWROG, STARS		
42	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Bullet 4 of Table 8 In general, the PRA Standards do not “identify one or more acceptable method” for meeting each technical requirement.</p>	This table, as noted in the RG, was developed by ASME. However, it does say “where appropriate.”
43	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Third sub-bullet of Bullet 5 of Table 8 This bullet doesn’t make sense as written.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>The peer reviewer should assess the significance of the results, particularly when the PRA does not meet the standard.</p>
44	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>First paragraph on Page 30. The last sentence says “...the examples of noncompliance...” This might more appropriately be “...the instances of noncompliance...”</p>	The staff agrees with the comment and revised the RG as appropriate.
45	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>First full paragraph on Page 31 The first sentence on “Documentation” says that the peer review process and findings must be traceable and “defensible”. It is not clear what is meant by the term “defensible” in this context.</p>	The staff agrees with the comment and revised the RG as appropriate.
46	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Section 3.1, Bullets at bottom of Page 32 and top of 33 The last bullet on Page 32 could be deleted and the two sub-bullets on page 33 could be made major bullets. The scope of risk contributors is not part of defining acceptance criteria (guidelines).</p>	The staff agrees with the comment and revised the RG as appropriate.
47	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>First paragraph of Page 33 Item 1 of the second sentence might better read: “... (1) the logic model events elements onto which...”</p>	The staff agrees with the comment and revised the RG as appropriate.
48	NEI, Dominion, Progress Energy,	<p>First paragraph of Page 33 In Item 2 of the second sentence it is not clear what is meant by “...all the</p>	The staff agrees with the comment and revised the RG

No.	Comment Source	Comment	Staff Response
	Exelon Generation Company, PPL, PWROG, STARS	events...". This might better read: "... (2) all the events that appear in the accident sequences in which these logic model elements first group of elements appear..."	as appropriate.
49	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	First paragraph of Page 33 It is not clear what Item 3 is getting at. It might better read: "... (3) the parts scope of the PRA analysis required to evaluate the necessary results." Also, this might be best put first in the list.	The staff agrees with the comment and revised the RG as appropriate.
50	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	3.2 Scope of Risk Contributors, first paragraph In the first sentence, the parenthetical should read: “(internal and external hazards events and modes of plant operating states operation)”	The staff agrees with the comment and revised the RG as appropriate.
51	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	3.2 Scope of Risk Contributors, first paragraph In the second sentence, the word “initiating” should be deleted or it should be rewritten as “externally initiated events”.	The staff disagrees with the comment and no changes were made to the RG. It should be all hazard groups.
52	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	3.2 Scope of Risk Contributors, first paragraph In the fifth sentence, the term “to the decision” should be added after “...all risk contributors that cannot be shown as insignificant”. So that this sentence reads: “...all risk contributors that cannot be shown as insignificant to the decision,…”	The staff agrees with the comment and revised the RG as appropriate.
53	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	3.2 Scope of Risk Contributors, second paragraph In the fourth sentence, the word “initiating” should be deleted.	The staff agrees with the comment and revised the RG as appropriate.
54	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	3.2 Scope of Risk Contributors It seems like this section should reference Section 1.3 of the ANS/ASME Standard.	The staff agrees with the comment and revised the RG as appropriate.
55	NEI, Dominion, Progress Energy,	Footnote 8, Page 34 The word “model” needs to be added in the first sentence of each paragraph in	The staff agrees with the comment and revised the RG

No.	Comment Source	Comment	Staff Response
	Exelon Generation Company, PPL, PWROG, STARS	this footnote: “...key source of model uncertainty...”	as appropriate.
56	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	Third bullet at top of Page 36 The term scope should be defined in terms of “hazard groups and specific accident scenarios”, not “initiating events”	The staff agrees with the comment and revised the RG as appropriate.
57	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	Third Bullet under 4.2, Page 36 The second paragraph of this bullet says, “This justification should be in the form of a sensitivity study...”. While it may be desirable to have a sensitivity study in some cases, in many cases, such a sensitivity study is not necessary (e.g., treatment is already conservative) or even feasible to treat in a sensitivity study (e.g., failure to interview plant personnel). Furthermore, this assessment should be made in the context of the decision, not the results. Suggest changing to the following: “This justification should be in the form of a technical rationale or sensitivity study that demonstrates the accident sequences or contributors significant to the application decision were adversely not impacted (remained the same)”	The staff agrees with the comment and revised the RG as appropriate.
58	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	Sixth Bullet under 4.2, Page 36 The second sub-bullet should be changed as recommended above.	The staff agrees with the comment and revised the RG as appropriate.
59	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	Definition of “as-built, as-operated plant”, page A-6 Addendum A of the Combined Standard has an alternative definition. The problem with this definition is that it could be interpreted to have a real-time connotation for operating plants, i.e., “...at the time of the application...”. There have already been examples of NRC inspectors expecting failure data to be updated in near-real time. While it is recognized that this is not the intent of this definition, it is nonetheless too encompassing.	The staff agrees with the comment and revised the RG as appropriate.
60	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	Definition of “initiating event”, page A-8 See comment above on “initiating event” in the main RG. Addendum A has an alternative definition.	The staff agrees with the comment and revised the RG as appropriate.

No.	Comment Source	Comment	Staff Response
61	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Clarification of IE-A4a, Page A-17 As written, this change is too broad. It is not feasible for a licensee to assess every possible system alignment that could occur as a result of any conceivable routine and corrective maintenance. The purpose of including “routine” in the original SR was to provide some bounds on system alignments to be considered. This change opens up the ability to meet Capability Category II to the interpretation of the review as to what preventive and corrective maintenance need to be considered. How would you know if you have gotten all possible alignments due to maintenance for the plant? If an event occurred due to some alignment, the event would be categorized based upon criteria given in IE-B3. Please add “routine” back to the definition. The other changes are OK.</p>	<p>The staff disagrees with the comment.</p> <p>The staff believes that non-routine activities need to be addressed. However, the staff agrees that for CC II this is not “good practice” and this objection has been changed to only address CC III.</p>
62	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Clarification of SY-B15, Page A-21 Suggest the following change to this clarification:</p> <p>“(h) harsh environments induced by failure of containment venting ducts or failure of the containment boundary that may occur prior to the onset of core damage”</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p>
63	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Clarification of SY-B15, Page A-22 There should be an “e.g.,” in the beginning of the first new parenthetical and the word “including” should be deleted. Otherwise, by being explicit, this SR has just set a standard for HRA that cannot be met by all methods.</p>	<p>The staff agrees with the comment and revised the RG as appropriate; the actual comment is for SR HR-D3, not SY-B15.</p>
64	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL, PWROG, STARS	<p>Clarification of QU-A2a, QU-A2b, QU-B6, QU-E3 and associated HLRs We should decide if LERF is going to be included in other HLRs and SRs. For example, many AS and SC requirements apply to LERF, yet DG-1.200 has deleted those references. In Addendum B of the ASME Standard, a conscious decision was made to leave LERF out of the QU requirements, since the LE-E4 and LE-F3 requirements state how these should be interpreted. Suggest dropping all the changes to QU for the purpose of adding LERF.</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p> <p>For example, the requirements developed for success criteria are based on core damage prevention, and do not include core damage mitigation. It is, therefore, inappropriate to indicate in the HLR that it is for LERF.</p>
65	NEI, Dominion, Progress Energy, Exelon Generation Company, PPL,	<p>NOTE HA-G1 Page A-49 • The NRC is requiring that the spectral shape of the specific site seismic response be at least as high as the design spectra. So if the design had artificially high site amplification in the lower frequencies and lower amplification</p>	<p>This comment is not applicable to the RG, but is a comment on the standard itself and should be directed</p>

No.	Comment Source	Comment	Staff Response
	PWROG, STARS	<p>in the higher frequency areas, they would require you to update those amplifications to increase in the high frequency areas, but this statement can also be interpreted that one would not be allowed to decrease the amplifications in the low frequency areas, even if the state of the art new assessment demonstrated those amplifications to be overly conservative. We believe we should not agree to introduce unnecessary conservatism into the process based on this desire to keep everything in the original seismic design into the SPRA.</p> <ul style="list-style-type: none"> • The very vague statements within several parts of this standard now read that the use of the uniform hazard response spectra “is acceptable if it reflects the site-specific shape”. This is a very broad statement without defining what the criteria are for reflecting the site specific shape. A concern is that once the seismic hazard has been determined, the utilities want to make sure that there is an end game on re-deriving the seismic hazard. We don’t want to have to redo the hazard every couple of years every time someone comes up with a new idea on a fault or a new model for calculating the hazard. The wording of the standard does not really prevent that from happening. As a part of the new plant studies, industry has created a white paper on how to establish when a new study should be conducted. The NRC is reviewing this approach and the results should be considered for incorporation into the Regulatory Guide. 	to ASME.
66	Dominion, PWROG	Since ASME is expecting the revised combined standard to be approved in a few months, it would seem prudent for the NRC to delay action until the ASME revised combined standard is published and endorsed.	The RG has endorsed Addendum A of the combined standard.
67	ABS Consulting	<p>Page 1. Does the scope of this guide also apply to NRC developed PRA models? For example, do they apply to SPAR models which are used in regulatory decision making? It seems unlikely that SPAR models meet the requirements of this guide.</p>	This comment is not a comment on the RG.
68	ABS Consulting	<p>Footnote 3 on page 4 and Table 2 – element Quantification. The current draft is not sufficiently complete in its specification of significance. Significant sequences and significant basic events are both defined in terms of CDF, LERF, or LRF. However, the truncation values that are sufficiently low to calculate the baseline values of CDF, LERF, and LRF are not specified. The statement in Table 2 (“truncation values set relative to the total plant CDF such that the CDF is stable with respect to further reduction in the truncation value”) is not specific enough for an accurate determination of significance for either sequences or basic events. Stability of the CDF with initial reduction in truncation value is not a valid indicator of convergence. Selected basic events may contribute more to</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p> <p>Moreover, this comment is also applicable to the standard and should be directed to ASME.</p>

No.	Comment Source	Comment	Staff Response
		CDF or LERF than .005 from sequences otherwise truncated below the initial truncation values used. The vague notions in the current language suggests that lowering the truncation factor would allow one to judge that the CDF is stable even though it increases substantially more than .005.	
69	Progress Energy	<p>1.2.1 Quantification Section, Page 11 Need clarification as to the intent of the discussion on truncation limit being based upon each accident sequence not changing. If you have a single top model, it should be based on CDF not changing. Also, for BWR models that usually have numerous accident sequences, this would be time consuming. You may be spending time on accident sequences that do not contribute to the CDF. Section 1.2.1 (truncation based upon accident sequence) and Table 2-9 (truncation based upon total CDF) under quantification don't match. The truncation limit should be based upon application and total CDF.</p>	See response to Comment # 68.
70	ABS Consulting	<p>Table 2, element Quantification, Page 18. Is the CDF mean value mentioned a true mean value obtained by Monte Carlo simulation of parameter uncertainties but not modeling uncertainties, uncertainty analysis including both epistemic and aleatory; uncertainties, or a point estimate obtained by propagating only the parameter means?</p>	This comment is in regard to the standard. The RG only provides guidance on the attributes and characteristics and relies on the standard with regard to meeting them. Moreover, the standard provides what is needed, not how to meet. This concern should be forwarded to ASME as an inquiry.
71	ABS Consulting	<p>Table 4, Level 2 PRA, Interpretation of Results, page 25. Instead of identification of the contributors to containment failure, shouldn't it be contributors to LERF and LRF and resulting source terms?</p>	<p>The staff disagrees with the comment.</p> <p>The RG is written for a complete Level 2, nonetheless, it should also include LERF, LRF and source terms. The RG was revised accordingly.</p>
71a	PWROG	<p>In the opening paragraph of Section C.1, a definition of probabilistic risk assessment (PRA) is provided that limits PRA to quantitative analysis. This limitation is reinforced in Table A-1 with a clarification to the definition of PRA. As discussed on page A-1, a "Clarification" indicates that the Staff has no objection to the requirement, but feels the current text is "unclear or ambiguous."</p>	With regard to the staff "qualification," the staff agrees that the objection is a "clarification" and the staff position was changed

No.	Comment Source	Comment	Staff Response
		<p>Limiting PRA to quantitative analysis is more than a clarification and significantly changes the definition of the term PRA. The original definition is clear and unambiguous in stating that PRA is intended to include both quantitative and qualitative analysis. While a PRA may yield a quantitative result (e.g., core damage frequency or large early release frequency), the process may involve both quantitative and qualitative aspects.</p> <p>The major impact of this definition change is apparent in the note in Table 3 (page 24), which states that “a seismic margins method is not an acceptable approach in the base PRA for the seismic contributors.” This statement is inconsistent with the acceptable use of Seismic Margin Analysis (SMA) for risk-informed applications, as noted in Section 4 of the Combined Standard, and is not challenged by the Staff’s endorsement. The Staff should reconsider its definition for PRA and resolve its comments related to SMA with the intent of the Combined Standard.</p>	<p>accordingly.</p> <p>With regard to SMA, the staff disagrees with the comment and no changes were made to the RG.</p> <p>While the SMA may be acceptable for certain applications, where a SPRA is required, it is not an acceptable substitution.</p>
72	PWROG	<p>The treatment of (core damage frequency ((CDF)) screening values is not consistent between operating plants and new plants. Currently, limits which are treated in an absolute fashion for operating plants (e.g., 10^{-6} (see footnote 4 on page 14), 10^{-6} (see Initiating event Analysis in Table 2 on page 17)) are proposed to be treated in a relative fashion for new plants (with lower CDFs). This treatment creates two different criteria as a function of CDF. Will the Staff expect an operating plant to change the criteria if the CDF drops below a certain value? This inconsistent treatment needs to be reconciled.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>Commission policy is different for operating reactors versus new reactors.</p>
73	PWROG	<p>The term “quality” continues to be used by the Staff as a surrogate for “technical adequacy.” These two terms have very different meanings and should not be used interchangeably. The title of DG-1200 uses the term “technical adequacy.” There are a number of usages of the word “quality” throughout the document. It is entirely possible to perform an analysis that is of high “quality” yet technically inadequate. There is clearly a tie back to the use of the word “quality” in RG 1.174; nonetheless “technical adequacy” should be used consistently throughout DG-1200 (and RG 1.174 should be similarly revised).</p>	<p>See response to Comment #10.</p>
74	PWROG	<p>The first item in Table B-1 (page B-2) is unclear about what is expected from the industry in terms of future self-assessments. Most self-assessments were done against the ASME PRA Standard, Addendum B. Since then, Addendum C and the Combined Standard have been released. Addendum C had a minimum impact on the actual supporting requirements (SRs), and the Combined Standard (for the Internal Events Part) was prepared by not changing existing SRs or adding new SRs. So, in light of these Standard revisions, the need to</p>	<p>The staff agrees with the comment and revised the RG as appropriate; see response to Comment #9.</p>

No.	Comment Source	Comment	Staff Response
		perform a self-assessment should only be an incremental self-assessment related to any changes made since Addendum B. This clarification could be made in the Commentary/Resolution column.	
75	PWROG	DG-1200 would benefit from a thorough technical edit review. The guide contains a number of awkward sentences, inconsistent use of vocabulary, grammatical errors, etc.	The staff agrees with the comment and revised the RG as appropriate.
76	Progress Energy, PWROG	The phrases “impact risk significant” and “no significant impact” are used and are not defined. The new definition of “Significant change in risk insight” is added. This definition is not clear and the application of this definition is not practical, especially applying it to various “risk activities” versus “risk applications”.	This comment refers to the standard.
77	Progress Energy	1.2.6 Interpretation of Results, Page 15 How is the level of detail associated with each hazard group to be defined or categorized so that it will be useful in interpreting the results?	This comment is not applicable to the RG, it is application-specific. Moreover, the standard addresses the level of detail for each hazard group.
78	Progress Energy	1.2.6 Interpretation of Results, Page 16 Need more clarification on significant contributions to uncertainty regarding how to define, recognize, and document the uncertainty for each hazard group.	The comment goes beyond the standard and the RG. This comment is relevant to NUREG-1855 which has been referenced in the RG.
79	Progress Energy	Table 2 POS, Page 19 The duration of each Plant Operating State (POS) will be difficult to determine other than “at power”. Suggest using an estimate for duration in any POS other than “at power”.	This comment refers to the standard.
80	Progress Energy, PWROG	Table 2 Initiating Events, Page 19 The temporary alignments term needs a definition of what is considered a temporary alignment. This requirement seems to be blurring the line between using the PSA for 10 CFR 50.65 (a)(4) application sand the baseline PRA. The temporary system alignments are open ended and cannot be predicted.	The staff agrees with the comment and revised the RG as appropriate.
81	Progress Energy, PWROG	Table A-1 Initiating Event, Page A-8 Need to qualify which operator actions are an initiating event. Recommend that the operator actions discussion be revised to indicate that HFE are a source for IE. However, these HFE are not required to be quantified separately because the operator/maintenance actions that would cause a plan trip/ transient would be grouped with the IE that corresponds to the plat response. Each group of IEs	This comment refers to the standard.

No.	Comment Source	Comment	Staff Response
		<p>would include the HFE contribution as determined by plant experience.</p> <p>Should operator actions be included in the definition of initiating events? Suggest deleted operator actions from this definition, as any initiating event caused by a human action would be grouped with the initiating event that corresponds to the plant response.</p>	
82	Progress Energy, PWROG	<p>Table A-1 PRA Upgrade, Page A-9 Most changes impact the significant sequences in some way. Need to define how much of an impact is deemed necessary for an upgrade.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>This comment refers to the definition. The extent of the impact is reflected in the specific requirements.</p>
83	Progress Energy, PWROG	<p>Table A-1 section 1-3.1, Stage A, Page A-9 The previous revision stated that "Different portions... May be irrelevant." Why is this still not true?</p>	<p>This statement is in the standard and was not deleted. The staff considered the change made adequately addressed the staff's concern.</p>
84	Progress Energy, PWROG	<p>Table A-3 1-4.3.3, 2nd paragraph, Page A-11 The change now <u>requires</u> us of "outside experts" versus using "experts." Why are outside experts now required?</p> <p>It appears the use of "shall" in the first sentence covers the intent of the section to use outside experts. The use of "should" in the second sentence is with respect to additional experts that supplement internal experts and therefore seems appropriate as is. If the "should" becomes a "shall," then it appears the first paragraph is not correct as it refers to internal expert judgment.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>The first shall does not address the staff concern. The standard states that the team should use outside experts ... if there is a need to obtain If there is a need, the staff believes that outside experts need to be used, not should be used.</p>
85	Progress Energy, PWROG	<p>Table A-1 global, Page A-14 The term "significant change in risk insights" is used here. If the RAW changes from 1.9 to 2.1, is that a significant change? This requirement is not clear and needs examples.</p> <p>The term "significant change in risk insights" should be defined. The definition</p>	<p>This comment is on the standard.</p>

No.	Comment Source	Comment	Staff Response
		proposed is not helpful because it links the maintenance versus upgrade decision to applications. This decision needs to be made relative the baseline PRA model. Otherwise, one would need to evaluate every historical change to the model for each application to see if it crossed the threshold for "significant." Also, changes, e.g., data update, that are clearly not upgrades may cause significant change in risk insights. Change in risk insight alone is not a criterion for upgrade.	
86	Progress Energy, PWROG	Table A-1, Ex 18, Page A-16 The NRC discusses "new methodology" as something that could result in a change to success criteria and potentially HRA timing. In almost all cases, a change in the thermal hydraulic code revision will have some impact on HRA timing. Example is going from MAAP 3b to 4.0.5. Is it the NRC's position that a change from MAAP 3b to 4.0.5 or from 4.0.5 to 4.0.6 requires a Peer Review of the HRA results and MAAP results?	The staff agrees with the comment and revised the RG as appropriate.
87	Progress Energy PWROG	Table A.1 .1A.3, EX.23, Page A-16 It appears to imply that new HRAs or HRA revisions due to procedure changes are an "upgrade" that would required a focused peer review. Is that the intent? Included in the resolution is the phrase "did not invoke a different application of HRA method." This resolution is written from the perspective that the analyst would use a method inappropriately. While that may be a general concern, it has nothing to do with the specific example of power upgrade. The example clearly states that the same HRA method is used. This comment should be deleted. Alternatively, the clarification could say something like, "if the HRA method is not used in the same manner as before, then a focused peer review is advisable..."	The staff agrees with the comment and revised the RG as appropriate.
88	Progress Energy	Table A-2 HR-D3, Page A-22 Change the word "including" to "e.g.," as in the two other places. The list of quality examples in operation procedures should not become a requirement for the documentation in the PRA.	The staff agrees with the comment and revised the RG as appropriate.
89	Progress Energy, PWROG	Table A-4 WIND-A1, Page A-52 This requirement for Cat II seems to beyond what is acceptable for other external events in what is required for level of effort ant technical capabilities. Cat II requirements do not require this level of expertise or detailed computer codes.	The staff disagrees with the comment and no changes were made to the RG. This requirement is basic to the analysis and needs to be performed.

No.	Comment Source	Comment	Staff Response
90	Progress Energy PWROG	<p>IF-C3b, Page A-28 Added a requirement of consider impact of maintenance on flood barriers. This is required to be evaluated as part of 10CFR50.65(a)(4). Including this requirement here is duplication.</p> <p>Suggest adding the word “routine or repetitive” to describe “maintenance activities”</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>This requirement is part of the standard's requirements for what is needed for performing the internal flood analysis. It is not a regulatory requirement, and therefore, not duplicative.</p>
91	Progress Energy, PWROG	<p>FSS-B2, Page A-40 Typo in CAT II “remoter”</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p>
92	Progress Energy PWROG	<p>FSS-D3, Page A-41 CAT II removes the allowance for “bounded” unscreened physical analysis units. It is changed to require “accurately characterized” fire risk contributions no matter what the risk significance of the physical analysis unit. With plant having some 4000 or more fire sources, the elimination of use of bounding for some physical analysis areas is a significant increase in burden with no increase in insights. This also means that there is actually no difference between CAT III and CAT II, since in each case the accurate characterization for all areas means that the risk for all specific ignition sources has to be done in either CAT KK or CAT III.</p> <p>If the conditions “bounded” or “accurately characteristics” must be reduced to a “minimum” requirement ... that requirement should be “bounded” rather than “accurately characterized.” If the minimum requirement is “bounded,” the PRA analyst then has the option to go “beyond” that requirement with an accurate characterization.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>Cat I is a bounding analysis; for Cat II and III, it needs to be more than just bounding.</p>
93	Progress Energy, PWROG	<p>FSS-F1, Page A-42 “Typo Cat II and II”</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p>
94	Progress Energy	<p>Section 4-1.1, Page A-48 This section of the ASME standard should not be endorsed by the NRC until a pilot effort is competed to demonstrate the ability to meet the requirements, with the existing state of knowledge and available tools and resources. Currently the most technologically advanced SPRA cannot meet the requirements.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>It is an official published</p>

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			standard. If the standard is revised (e.g., as a result of a pilot), the staff will review and revise its endorsement where appropriate.
95	ABS Consulting	Page 1. Does the scope of this guide also apply to NRC developed PRA models? For example, do they apply to SPAR models which are used in regulatory decision making? It seems unlikely that SPAR models meet the requirements of this guide.	See response to Comment #67.
96	PWROG	B./Page 5 The industry appreciates the NRC review and endorsement of NEI 07-12. Please note that NEI 07-12 is currently considered a draft document. When issued, the comments in Appendix D will be considered.	This comment is an observation and does not require a reply.
97	PWROG	Table 3/Page 21 The intent of the second bullet of the NOTE is not clear and should be revised.	The staff agrees with the comment and revised the RG as appropriate.
98	PWROG	Table 3/Page 23 In the fourth bullet for Postfire Human Reliability Analysis, incorrect (human) responses are to be identified and assessed for fire scenarios. "Incorrect responses" can be a large, unbounded set of actions. There should be some limitations on which incorrect responses need to be considered.	The staff agrees with the comment and revised the RG as appropriate.
99	PWROG	Section 2.1/Page 28 The second sentence of the second paragraph reads "Which part of the PRA meet what capability category is dependent on the specific application." This statement is not correct. The assessment of supporting requirement (SR) capability category is independent of the risk-informed application. A peer review is performed and SR assessed without a specific application. Whether a SR requirement can be used to support an application is dependent on the capability category assessment, but not vice versa.	The staff agrees with the comment and revised the RG as appropriate.
100	PWROG	Page A-4, Index # 1-1.4.2, 1-1.4.3 The resolution for these items have the following statements: "HLRs set forth the minimum requirements for a technically acceptable baseline PRA independent of application." and "It is intended that, by meeting all SRs under a given HLR, a PRA will meet that HLR." These two statements could be interpreted to mean that one must meet all SRs for any application because that is the means for meeting HLRs and all HLRs must be met for any application. Perhaps guidance is needed to define what is meant by "meeting a HLR," e.g., a subset of critical	This guidance is in the application section of the standard. Moreover, NRC objection was accepted in the Addendum to the standard.

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		SRs or a separate assessment for each HLR that looks at the aggregate of compliance with SRs and Findings under each HLR.	
101	PWROG	<p>Page A-38, FSS-A4 The addition of the word “sufficient” is vague and can be arbitrarily interpreted. This clarification does not actually clarify the supporting requirement.</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>The term “sufficient” is qualified by the statement “such that a credible range ...”</p>
102	PWROG	<p>Page A-47, Section 3-2.2 The requirement for a fire HRA expert in the FPRA peer review is too specific. There may only be a few analysts world-wide that would qualify as a fire HRA expert. It should be sufficient to be an HRA expert with some exposure to operator modeling in FPRAs.</p>	The staff agrees with the comment and revised the RG as appropriate.
103	PWROG	<p>Page A-52 Are these requirements too excessive for Capability Category II?</p>	See response to Comment #89.
104	PWROG	<p>Page B-9, Step 7.a The following sentence is unclear. Please improve the wording: “However, it is reasonable to assign an SR that requires that no Appendix B self-assessment received an NEI Grade 4 for Capability Category II without further review.”</p>	The staff agrees with the comment and revised the RG as appropriate.
105	PWROG	<p>Page B-12, Global position statement Change “subties” to “subtier”</p>	The staff agrees with the comment and revised the RG as appropriate.
106	PWROG	<p>Page B-20, AS-B5 Delete “elements.”</p>	The staff agrees with the comment and revised the RG as appropriate.
107	PWROG	<p>Pages C-4 through C-9 Include the table header</p>	The staff agrees with the comment and revised the RG as appropriate.
108	PWROG	<p>Page C-4, 3.0 1st paragraph Suggest the following change: The following sentence needs improvement: “However, for any application, not all the SRs for a technical element have to be assessed to the same capability.”</p>	The staff agrees with the comment and revised the RG as appropriate.
109	PWROG	<p>Page C-9 Change “states the” to “states that”</p>	The staff agrees with the comment and revised the RG as appropriate.
110	PWROG	<p>Page D-8, 3.3.1 Change “should also assessed” to “should also assess”</p>	The staff agrees with the comment and revised the RG

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111	ERIN Engineering & Research	<p>DG-1200 provides the NRC's expectations for the technical adequacy of PRAs used in risk-informed applications. An essential part of the technical adequacy is conformance with PRA Standards.</p> <p>From an end user perspective, it would be beneficial to clarify how the Capability Categories in the PRA Standards fit into the technical adequacy requirements of DG-1200. Since the utility gap analyses performed against NEI 00-02 and peer reviews performed using NEI 05-04 are targeted on meeting Capability Category II, it seems useful to make it clear in RG 1.200 that CC-II is effectively the default level of technical adequacy. Right now, it is sort of implicit, but I think it would help if it could be made more explicit. That way, when licensees submit applications, it will be clear that they should provide justifications for any SRs where CC-II is not met. I know in 50.69 (NEI 00-04), we explicitly stated that CC-II was required, but it might be helpful to make that clear in RG 1.200 in a more general sense.</p>	<p>as appropriate.</p> <p>The staff agrees with the comment and revised the RG as appropriate.</p>
112	NEI	<p>Peer Review for External Events PRAs</p> <p>Although DG-1200 endorses the external events portion of the ASME/ANS Combined PRA Standard, there are not yet any standards or guidance documents available to facilitate the peer review of external events PRAs. The NRC should extend the implementation period for RG 1.200, Rev. 2 to allow such guidance to be developed before licensees are required to address RG 1.200, Rev. 2 in risk-informed applications.</p>	<p>This comment is not on the RG, it is a management policy issue.</p>
113	NEI	<p>Application of Large Release Frequency</p> <p>The terms "large release frequency" (LRF) and the subset term "large late release" are used throughout DG-1200. However, the applicability of the terms is not sufficiently explained in DG-1200. It is appropriate to include large release determination within a Level 2 PRA, and such information is needed for DC/COL applications. However, the current treatment of large late release in DG-1200 suggests the following expectations:</p> <p style="padding-left: 40px;">In Section 1.2, Table 1 portrays a Level 2 analysis as being a necessary element of a PRA; moreover, a PRA that is missing this element "would not be considered a complete PRA."</p> <p style="padding-left: 40px;">Section 1.1-2 gives a description for Level 2 Technical Elements. This includes the stipulation that a determination is made "whether a...large late release occurs," and also includes a quantification evaluation that "allows for identification of the LERF or LRF."</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p> <p>The RG states that LERF is the risk metric for operating plants and LRF is for new reactors which is consistent with RG 1.206.</p>

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		<p>Thus, the resulting implication is that a PRA without such treatment of large late release is not complete. The only caveat to this assertion is found in Section 3.2, where it is stated that “if the risk application is designed around using the acceptance criteria of RG 1.174, the evaluations of CDF, ΔCDF, LERF and ΔLERF should be performed with a full scope PRA...” The implication is that large late release need not be evaluated for RG 1.174 applications. This is consistent with the assertion given in Section 1.1 under “Risk Characterization,” which states that CDF serves as a surrogate for latent fatality risk. The surrogate argument is further strengthened by the very small changes allowed in CDF for many risk-informed applications such as those under RG 1.174.</p> <p>DG-1200 fails to clarify the restriction of large late release determination to DC/COL applications, even though the current ASME/ANS Combined PRA Standard does not treat large late release, making a peer review against such an attribute impossible at this time. Note that RG 1.200, Rev. 1 clarified that “CDF and LERF are generally the metrics used in decision making for operating reactors licensed under Part 50” in Section 1.1. This caveat is absent from DG-1200. Thus, it could be inferred that the proposed RG 1.200, Rev. 2 would require inclusion of large late release in the PRA model for all risk-informed applications. Moreover, the scope of such activities could be significantly broadened if the phrase “Risk-Informed Activity” replaces “Risk-Informed Application” as discussed in NEI’s August 20, 2008 letter transmitting comments on DG-1200. These interpretations would severely hamper risk-informed regulation as it exists today.</p>	
114	NEI	<p>Independence of Peer Review Team Members</p> <p>Section 2 delineates stipulations on review team independence in several places. The ideal and absolute “independent with no conflict of interest” criteria for peer review team members can be difficult to achieve if technically qualified members are also desired, as corporate structures allow multiple nuclear power stations to be owned by a single utility and PRA consulting companies and utilities frequently change employees. The following revisions would alleviate these concerns while retaining language conveying the intent of peer review team independence:</p> <p style="padding-left: 40px;">In the third paragraph of Section 2.2, replace the second sentence with “To avoid any perception of a technical conflict of interest, the peer reviewers will not have performed any actual work on the major portions of the PRA under their individual purview.”</p> <p style="padding-left: 40px;">In Table 9 in Section 2.2, replace “independent with no conflict of interest” with “independent with no conflict of interest that may influence the</p>	<p>The staff disagrees with the comment and no changes were made to the RG.</p> <p>The peer review works as a team, with the entire team participating in the result of the findings. An analyst who has previously worked on the PRA is not independent.</p>

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		outcome of the peer review.”	
115	NEI	<p>Assumptions and Sources of Uncertainty NEI has previously indicated that the use of self assessments (Appendix B) was expected to be a one-time occurrence following initial issuance of RG 1.200, Rev 1, and that Appendix B could be deleted from future revisions. However, if the intent is to retain the usability of the self assessment provisions, the regulatory positions given for a number of SRs dealing with assumptions and sources of uncertainty need to be modified if Appendix B to DG-1200 is to be maintained as a viable option to demonstrate that the PRA is adequate to support a risk-informed application. A fairly detailed discussion on assumptions and sources of uncertainty, including definitions for the terms “assumption” and “source of model uncertainty,” as well as those same terms preceded by the word “key,” was presented in the July 27, 2007 NRC memo, “Notice of Clarification to Revision 1 of Regulatory Guide 1.200.” The clarification memo states that the language of the SRs dealing with assumptions and uncertainty refer only to the PRA model or base case since there is no specific application inherent in the ASME PRA Standard. The recommendations of the clarification memo have essentially been incorporated into the language of the ASME/ANS Combined PRA Standard against which the DG-1200 states “no objection” for the definitions in the proposed standard (Section 1-2.2) as well as for the language of the related SRs (IE-D3, AS-C3, SC-C3, SY-C3, HR-I3, DA-E3, IF-F3, QU-E1, QU-E2, QU-E4, QU-F4, LE-F3, LE-G4). None contain the word “key” anymore, and thus properly relate to the base case PRA. However, Table B-4 treats most of the related SRs differently by maintaining without objection under “Industry Self-Assessment Actions” that “key” assumptions and “key” sources of uncertainty be documented for most of the related SRs (specifically, IE-D3, AS-C3, SC-C3, SY-C3, HR-I3, DA-E3, QU-E1, LE-G4). To be consistent with the requirements of a peer review as endorsed in Appendix A for a base case PRA, these SRs in Table B-4 of Appendix B for self-assessment need to be modified by deletion of the word “key.” Moreover, the sentence in the “Regulatory Position” column that reads “See staff position on definition of key assumption and key source of uncertainty in Appendix A” should be deleted or modified to refer instead to the definitions for these terms that are contained in the proposed Combined ASME/ANS Standard. There are no definitions given for the cited terms in Appendix A. Based on the discussion above, the following changes to Table B-4 are proposed:</p>	<p>The staff agrees with the comment and revised the RG as appropriate.</p> <p>The comparison in the self-assessment is against the ASME PRA standard RA-Sb-2005 where this concern exists. The staff position is in regard to RA-Sb-2005, although the word “key” has been removed in RA-Sa-2009, it still is in RA-Sb-2005. A global objection addresses this concern.</p>
116	NEI	IE-D3	See response to Comment

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		Replace wording after “No objection with clarification” with “Delete the word ‘key’ (twice) from the industry self-assessment action to be consistent with the definitions of ‘key assumptions’ and ‘key sources of uncertainty’ and with the requirements of SR IE-D3 given respectively in Section 1-2.2 and Table 2-1.4.1-2(d) of the ASME/ANS Combined PRA Standard.	#115.
117	NEI	AS-C3 Replace wording after “No objection with clarification” with “Delete the word ‘key’ (twice) from the industry self-assessment action to be consistent with the definitions of ‘key assumptions’ and ‘key sources of uncertainty’ and with the requirements of SR AS-C3 given respectively in Section 1-2.2 and Table 2-1.4.2-2(c) of the ASME/ANS Combined PRA Standard.	See response to Comment #115.
118	NEI	SC-C3 Replace wording after “No objection with clarification” with “Delete the word ‘key’ (twice) from the industry self-assessment action to be consistent with the definitions of ‘key assumptions’ and ‘key sources of uncertainty’ and with the requirements of SR SC-C3 given respectively in Section 1-2.2 and Table 2-1.4.3-2(c) of the ASME/ANS Combined PRA Standard.	See response to Comment #115.
119	NEI	SY-C3 Replace wording after “No objection with clarification” with “Delete the word ‘key’ (twice) from the industry self-assessment action to be consistent with the definitions of ‘key assumptions’ and ‘key sources of uncertainty’ and with the requirements of SR SY-C3 given respectively in Section 1-2.2 and Table 2-1.4.4-2(c) of the ASME/ANS Combined PRA Standard.	See response to Comment #115.
120	NEI	HR-I3 Replace wording after “No objection with clarification” with “Delete the word ‘key’ (twice) from the industry self-assessment action to be consistent with the definitions of ‘key assumptions’ and ‘key sources of uncertainty’ and with the requirements of SR HR-I3 given respectively in Section 1-2.2 and Table 2-1.4.5-2(i) of the ASME/ANS Combined PRA Standard.	See response to Comment #115.
121	NEI	DA-E3 Replace wording after “No objection with clarification” with “Delete the word ‘key’ (twice) from the industry self-assessment action to be consistent with the definitions of ‘key assumptions’ and ‘key sources of uncertainty’ and with the requirements of SR DA-E3 given respectively in Section 1-2.2 and Table 2-1.4.6-2(e) of the ASME/ANS Combined PRA Standard.	See response to Comment #115.
122	NEI	QU-E1 In the “Regulatory Position” column replace the second paragraph with “In the industry self-assessment action, update the title ‘ASME PRA Standard	See response to Comment #115.

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123	NEI	<p data-bbox="579 256 1530 289">Addendum B' with 'ASME/ANS Combined PRA Standard.'"</p> <p data-bbox="579 289 1530 464">LE-G4 Replace wording after "No objection with clarification" with "Delete the word 'key' (twice) from the industry self-assessment action to be consistent with the definitions of 'key assumptions' and 'key sources of uncertainty' and with the requirements of SR LE-G4 given respectively in Section 1-2.2 and Table 2-1.4.9-2(g) of the ASME/ANS Combined PRA Standard.</p>	See response to Comment #115.