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General Comment

November 3, 2009

Rulemaking and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Industry Comments on Draft Regulatory Guide DG-1226 (Federal Register of September 4, 2009, FR 45884)

Project Number: 689

The NRC has issued for public comment DG-1226, the proposed Revision 2 to Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The industry appreciates the opportunity to comment on DG-1226. As RG 1.174 serves as the umbrella document for all risk-informed license applications, it is vital that the guidance given in the document is clear, stable, and practical. The industry appreciates that several of the revisions proposed in DG-1226 improve the clarity of the expectations given in the document. Specifically, industry appreciates that DG-1226 includes proposed additional language that aligns with common industry practice, such as extensive references to the need for the PRA to reflect the as-built, as-operated plant.

However, the industry is concerned that some of the revisions do not enhance clarity and stability, and, in some cases, these revisions include ambiguous language and leave important aspects of review of risk-informed licensing applications open to wide interpretation. Some specific areas that merit additional careful review

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Add: D. Helton (dmh2)

include the following:

- A key companion document, RG 1.200, "An Approach for determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," is listed in the references without a revision number; this should be corrected to specifically reference Revision 2, which would be consistent with the citations on pages 13 and 14 of DG-1226. Referencing RG 1.200 without a revision number is not conducive to maintaining regulatory stability, as issuance of future revisions of RG 1.200 could appreciably alter the implications

Attachments

NRC-2009-0385-DRAFT-0002.1: Comment on FR Doc # E9-21470

NRC-2009-0385-DRAFT-0002.2: Comment on FR Doc # E9-21470



NUCLEAR ENERGY INSTITUTE

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However, the industry is concerned that some of the revisions do not enhance clarity and stability, and, in some cases, these revisions include ambiguous language and leave important aspects of review of risk-informed licensing applications open to wide interpretation. Some specific areas that merit additional careful review include the following:

- A key companion document, RG 1.200, "An Approach for determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," is listed in the references without a revision number; this should be corrected to specifically reference Revision 2, which would be consistent with the citations on pages 13 and 14 of DG-1226. Referencing RG 1.200 without a revision number is not conducive to maintaining regulatory stability, as issuance of future revisions of RG 1.200 could appreciably alter the implications of portions of RG 1.174 without any prior NRC or public review. The lack of a specific revision number in the reference could also lead to ambiguity in the guidance during the implementation period for any future revisions to RG 1.200, as during this time, it would not be clear which revision is intended in

the reference.

- One proposed revision references the possibility of additional or revised guidance for reactors licensed under 10 CFR Part 52. Discussions on this topic are taking place in a process separate from this RG revision, and a commission-level decision may be forthcoming. Inclusion of a discussion on this process in RG 1.174, Revision 2 prior to completion of the decisionmaking process does not enhance the clarity of the guidance, and the reference to this potential additional or revised guidance should be removed.
- The discussions on expectations for PRA scope and technical adequacy need to better emphasize that quantitative bounding and margins analysis may be sufficient to demonstrate that the impact of a specific hazard group is minimal or bounded, and that a complete PRA is not necessary. These discussions should also clarify that it is not necessary for the licensee to quantify risk contributors that would not affect the decision to demonstrate the lack of significance. This comment is significant in light of industry's finite resource capability, current issues with inaccuracy in fire PRA, current state of piloting of the external events portion of the combined standard, and our desire to continue implementing risk-informed applications that use the best available information to assess risk impacts commensurate with their significance. Applications provide the best method to enhance risk understanding and use of risk concepts.

Supplementary detailed comments, which were prepared with input from several industry groups, including the Boiling Water Reactor Owners' Group, are enclosed for your consideration. Additionally, NEI has reviewed the comments prepared by the Pressurized Water Owners' Group and endorses those comments.

Should you have any questions about these comments, please contact me or Victoria Anderson (vka@nei.org, 202.739.8101).

Sincerely,



Biff Bradley

Attachment

c: Mr. Mark Cunningham, U.S. Nuclear Regulatory Commission
Ms. Mary Drouin, U.S. Nuclear Regulatory Commission
Mr. Donald Helton, U.S. Nuclear Regulatory Commission
NRC Document Control Desk

Detailed NEI Comments on DG-1226 (Proposed Revision 2 of RG 1.174)

Page, Section	Comment
Throughout document	The term "technical acceptability" should be changed to "technical adequacy" to better align with the ASME/ANS PRA Standard and RG 1.200.
Page 4, "Background," Last Paragraph of Section	"Section 2.2.4" should be changed to "Section 2.4."
Page 4, "Purpose of This Regulatory Guide"	The last sentence of this section should be removed. The issue of risk metrics for reactors licensed under 10 CFR 52 is being addressed in separate venues, and a Commission-level decision may be forthcoming. The industry suggests that such statements not be incorporated into regulatory guides until the decisionmaking process is complete.
Page 7, "Regulatory Position," Third Bullet on Page	This bullet references NUREG-1855 and uses the term "significant uncertainties." This term is not defined and could be subject to interpretation. Addressing uncertainties and assessing their "significance" merits more discussion in this RG. It should not be solely deferred to a NUREG, which has no regulatory standing. Currently, this is only covered in a NUREG and in the staff's plan on the Phased Approach to PRA Quality. As the umbrella RG for all risk-informed activities, RG 1.174 should give this subject more elaboration.
Page 7, "Regulatory Position," Sixth Bullet on Page	It would seem appropriate and consistent with NRC philosophy to also include in the "cumulative effect" any changes that decrease risk in the decision process. It is suggested that the second sentence of bullet 6 be revised to read "The cumulative effect of such changes, risk increase and risk decrease (if available), should be tracked and considered in the decision process."
Page 8, Section 1, Figure 2	Figure 2 should be moved to just after the last paragraph on page 7, which is where it is referenced.
Page 12, Section 2.2, Second to Last Sentence in Top Paragraph	This sentence should be revised to clarify that "bounding risk estimates" will be adequate for some applications by explicitly using that term rather than simply stating that "bounding estimates" will be adequate.
Page 12, Section 2.2, First Full Paragraph on Page	The second sentence should be revised to remove the references to latent cancer fatalities and land contamination to maintain the clear, concise point that long-term containment performance is an important consideration.
Page 12, Section 2.2, Item 3	Since the title of the cited "Section 2.5" does not mention uncertainty, it would be clearer if the word "provides" were replaced with the word "includes" in the last sentence of Item 3.
Page 12, Section 2.2, First Full Paragraph on Page	While CDF and LERF have historically been the risk metrics used to support risk-informed applications, the draft revision to this RG suggests that licensees should also qualitatively address "the impact of the proposed change on those aspects of containment function not addressed in the evaluation of LERF." However, as there is no information on the expectations for such assessments available in this RG or elsewhere, the statement should be removed.
Page 12, Section 2.2, Footnote 4	This footnote appears to be improperly associated with the last sentence in the paragraph. It seems more appropriate that the footnote be placed at the end of the third to last sentence, which ends with "...to provide adequate justification."

Page 13, Section 2.3.1	<p>The discussion on hazard groups states that "when the risk associated with a particular hazard group or operating mode is significant to the decision being made, it is the Commission's policy that, if a staff-endorsed PRA standard exists for the hazard group or operating mode, then the risk will be assessed using a PRA that meets that standard," and also allows qualitative treatment of modes and hazard groups "when the licensee can demonstrate that those risk contributors would not affect the decision." This language needs to be clarified that quantitative bounding and margins analysis may still be sufficient to demonstrate that the impact of a specific hazard group is minimal or bounded, and that a complete PRA is not necessary.</p> <p>Further, it should be clarified that it is not necessary for the licensee to quantify risk contributors that would not affect the decision to demonstrate the lack of significance. The intent would be more clear if the beginning of the last sentence were revised to read "However, when the risk associated with a particular hazard group or operating mode is significant to the decision (i.e., if quantitatively accounted for, would affect the decision)..."</p>
Page 13, Section 2.3.2, Last Paragraph	The reference to Regulatory Position C.3 of RG 1.200 does not appear to address the subject of the paragraph. This reference may more appropriately belong prior to section 2.3.1 since that regulatory position address scope, level of detail, and technical adequacy. If not, then the subsection of C.3 related to accounting for changes in the PRA model should be referenced.
Page 14, Section 2.3.3, Fourth Bullet	The bullet would be more clear if worded as "documentation of the technical adequacy of the PRA to support a regulatory submittal."
Page 14, Section 2.3.3, Last Paragraph	The second sentence should be re-worded, as the use of the term "strive" is not consistent with conveying a regulatory expectation. A more appropriate statement would be "In general, meeting Capability Category II is expected to be sufficient for most applications."
Page 14, Section 2.3.3, Footnote 5	This footnote does not appear to be grammatically correct, and would be better stated as "The American Nuclear Society (ANS) is developing a draft standard for low-power and shutdown modes of operation (to be incorporated into the ASME/ANS PRA standard (Ref. 14)), and for Level 2 and Level 3 PRAs."
Page 14, Section 2.3.4, Last Paragraph	Consistent with other footnotes in this DG, it seems appropriate that the text from footnote 9 of RG 1.200 be included here in the description of the as-built, as-operated plant. Suggest adding the following before the last sentence of the paragraph "As-built, as-operated is a conceptual term that reflects the degree to which the PRA matches the current plant design, plant procedures, and plant performance data, relative to a specific point in time."
Page 18, Section 2.5.2	The description of a "parameter" in the context of this section would be more clear if a more specific example were given. Additionally, the last sentence of the section needs clarification.
Page 20, Section 2.5.4, Last Paragraph	The last sentence of this paragraph implies that Section 2.5.5 is going to discuss approaches to deal with incompleteness. In reality, Section 2.5.5 is more broad, dealing with comparison of PRA analysis results with acceptance guidelines in general. Thus, it is recommended that the word "discusses" be changed to "includes" in the last sentence of Section 2.5.4.

Page 20, Section 2.5.5, Fourth Paragraph	<p>The second sentence of the cited paragraph implies that the need for additional detail in Region III of Figure 3 is the same as that needed for Region II if the calculated risk change is near the region boundary. This implies the same accuracy need for a two order of magnitude spread in the calculated risk change. If the change is in Region III, it is already classified as "very small." In fact, if the maximum CDF risk change of Region III is assumed (i.e. 10^{-6} or "near the region boundary"), this change is only about 1% of the maximum allowed base CDF (and surrogate safety goal), allowing significant margin to accommodate uncertainty.</p> <p>This additional burden on Region III assessments also seems inconsistent with the philosophy implied in paragraph 2, where it is stated that if the calculated value of delta CDF is very small as defined by Region III, "a detailed quantitative assessment of the baseline value of CDF --- will not be necessary." A similar argument holds for LERF.</p> <p>It is recommended that the second sentence of the fourth paragraph of Section 2.5.5, which begins with "In Region III of Figures 3 and 4," be deleted, and for grammatical consistency, the word "Similarly" be deleted from the next sentence.</p>
Page 21, Section 2.5.5, Second Paragraph	<p>The discussion of "reasonable" is not entirely consistent with the definitions given in footnote 10 of this DG and in the ASME/ANS PRA Standard as endorsed by RG 1.200. To avoid unnecessary hypotheses being postulated, the fourth sentence should be revised to read "In this context, "reasonable" means that the hypotheses, adjustment factors, or modeling approximations or methods have broad acceptance within the technical community and that the technical bases for consideration are <u>at least as sound</u> as that of the hypotheses, adjustment factors, or modeling approximations or methods."</p>
Page 21, Section 2.5.5, Last Full Paragraph on Page	<p>The second to last sentence in this paragraph could be interpreted to say that the only approach to be taken when a sensitivity study exceeds an acceptance guideline is to identify compensatory actions or increase monitoring. However, NUREG-1855 says that those are two alternatives, but it may also be the case that the analyst can explain that the analysis result is unduly conservative or the alternative assumption is not applicable to the application case. It is the analyst's responsibility to provide a clear assessment of the credibility of the assumption. Specifically, on Page 116, the NUREG states that, "When one or more of the sensitivity results demonstrate that the acceptance guidelines are not met and the recommendation is for rejection of the proposed change, the analyst should provide the decisionmaker with a clear assessment of the credibility of the sensitivity study as a reasonable alternative to the proposed base case analysis." This sentence should be revised to be consistent with NUREG-1855, both to prevent confusion and to avoid unnecessary and unsound rejection of applications.</p>
Page 22, Section 2.6, Fifth Paragraph	<p>In the first sentence, the term "scope of implementation" should be defined, perhaps with an example. It would seem that many proposed changes to the LB would be either disallowed or permitted in their entirety. An example of a change that is only partly implemented could provide clarification.</p>

<p>Page 23, Section 2.6, Eight Paragraph</p>	<p>This paragraph implies that the 7 bulleted items that follow are required for a submittal only "when the calculated values of the changes in the risk metrics, and their baseline values, when appropriate, approach the guidelines." If this condition is true, it is recommended that it be reinforced by inserting the phrase "if the risk metrics approach the guidelines" after the word "Therefore" in the sentence preceding the bulleted items.</p>
<p>Page 23, Section 3, First Paragraph</p>	<p>The last sentence of the first paragraph includes a reference to Reference 6 (cited as "Refs. 5-9") which is RG 1.176. The section titled "Relationship to Other Guidance Documents" states that RG 1.176 has been superseded by RG 1.201 (Ref. 9). It is recommended that Reference 6 (cited in Refs. 5-9) in the reference on page 23 be deleted, and that other references to RG 1.176 in DG-1226 be corrected as well.</p>
<p>Page 25, Section 3, Last Paragraph in Section</p>	<p>It is not clear why the need for a corrective action program is stated since it should already be part of the QA program whether or not changes are being made to the LB. Moreover, DG-1226 is not where one would expect characteristics of the corrective action program to be specified. Its inclusion may imply some sort of new requirement related to the LB change when that is not the case. It is recommended that the last paragraph of Section 3 be deleted.</p>
<p>Page 26, Section 5, Third Bullet</p>	<p>"Section 3" should be replaced with "Section 6."</p>
<p>Page 27-28, Section 6.3, Last Bullet and Following Paragraph</p>	<p>This stipulation could be interpreted to require the PRA to be subject to the QA provisions of Appendix B to 10CFR50 if it is used in part to enhance or modify safety-related functions. Depending on the interpretation of "enhance or modify safety related functions," this requirement has the potential for severely restricting risk-informed changes to the LB for a number of utilities and appears unnecessary with normal QA coverage of the non-risk portion of the submittal for safety related functions, and PRA technical adequacy covered by RG 1.200. Very few, if any, utilities have placed their PRAs under the umbrella of Appendix B to 10CFR50. It is recommended that the last bullet and the paragraph that follows in Section 6.3 be deleted, and that the following sentence be used as a conclusion to Section 6.3: "The licensee would be expected to control PRA activity in a manner commensurate with its impact on the facility's design and licensing basis and in accordance with all applicable regulations."</p>

Page 28, Section 6.3, Second to Last Paragraph	The second sentence would seem to require that a peer review report on the base PRA include statements relative to a specific PRA application. The only way this could occur is if a peer review were done for each application, which is an untenable requirement. (Alternately, if the intent is that the peer review and its report specify the Capability Categories for the supporting requirements of the PRA standard that relate to the application, then the intent of the cited paragraph is appropriate. However, that intent would need to be more clearly stated.) Moreover, the third sentence implies that a peer review report of the base model specify limitations for a specific application which is impossible absent a peer review for each application. It is the licensee that should identify such limitations at the time of the specific application. It is recommended to replace the second sentence of the second to last paragraph with the following: "The licensee's submittal should discuss measures to ensure technical adequacy such as a report of a peer review and discuss the appropriateness of the PRA model for supporting a risk assessment of the LB change under consideration." Also, in the following sentence, the word "report" should be replaced with "submittal."
Page 28, Section 6.3, Last Paragraph	To clarify intent, it is recommended that in the second sentence, the phrase "following the peer review" be inserted after "PRA was modified" in the second sentence of the last paragraph
Page 28, Section 6.3.1, Fifth Bullet	As stated, it is difficult to discern which fault and event trees are required for submittal. If CDF is calculated as part of the analysis, essentially all such trees are in scope. If the intent is to include only those trees that are modified for the application (by structure or failure rate/initiating event data) then the language of the fifth bullet be revised to state this. It is recommended that bullet 5 be revised to read as follows: "The event and fault trees that require modification to support analyses of the proposed change with a description of their modification."
Page 28, Section 6.3.1, Footnote 10	This footnote should include the definition of "key," as it is associated with the term "key modeling assumption."
Page 29, Section 6.3.1, Ninth and Tenth Bullets	The term "total plant PRA" should be more precisely defined, or replaced with the term "baseline PRA" if appropriate. Additionally, in the last sentences of these bullets the stated need for "results of margin analyses and outage configuration studies" as related to the baseline PRA is not clear.
Page 29, Section 6.3.2, Last Paragraph	As stated, the guidance is confusing in that it specifies "that the submittal could list (not submit to the NRC) past changes..."
Page 32, "References," Reference 12	It should be specified that RG 1.200, Revision 2 is the revision referenced throughout this DG.
Page A-1 to A-3, Section A-2	Under Section A-2, <i>Technical Issues Associated with the Use of Importance Measures</i> , the impact of the use of conservative methods in fire PRA should be added as an issue to consider. A major issue right now is the mandated use of conservative fire PRA methods. Conservative biases can undermine the validity and utility of importance measures.