RADB received
8/13/2012
E-RIDS=ADM-03
Add-R. Carpenter (rgc1)
M. Case (mjc)

Program Management Office
1000 Westinghouse Drive, Suite 380
Cranberry Township, Pennsylvania 16066

PWR Owners Group Program Management Office
Fax Cover Page

5/17/2012
77 FR 29391
3

To:
Ms. Cindy Bladey
Chief, Rules, Announcements, and Directives Branch (RADB)
Office of Administration
U.S. Nuclear Regulatory Commission
MS TWB-05-B01M
Washington, DC 20555-0001
Fax: (301) 492-3446

From:
Thomas Zachariah, Jr.
PWR Owners Group Program Management Office
Risk Management Subcommittee
1000 Westinghouse Drive
Cranberry Township, PA 16066
Phone: (412) 374-5653
Fax: (860) 731-2478

Attachment	Title	Number of Pages
OG-12-316	Comments on Draft Regulatory Guide DG-1285, DG-1287, DG-1288, DG-1286 [Docket ID NRC-2012-0110] and Revisions to Standard Review Plan (SRP), Chapter 19.1" [Docket ID NRC-2012-0113], PA-RMSC-0730	15

SUNSI Review Complete
Template = ADM-013

PWROG
PWR Owners Group

Program Management Office
1000 Westinghouse Drive, Suite 380
Cranberry Township, PA 16066

Project 694

August 10, 2012

OG-12-316

Ms. Cindy Bladey
Chief, Rules, Announcements, and Directives Branch (RADB)
Office of Administration
U.S. Nuclear Regulatory Commission
MS TWB-05-B01M
Washington, DC 20555-0001

Subject: Pressurized Water Reactor Owners Group
Comments on Draft Regulatory Guide DG-1285, DG-1287, DG-1288, DG-1286 [Docket ID NRC-2012-0110] and Revisions to Standard Review Plan (SRP), Chapter 19.1" [Docket ID NRC-2012-0113], PA-RMSC-0730

Reference:
(1) Federal Register Vol. 77, No. 126, Pages 38856-38857, [Docket ID NRC-2012–0110] , "An Approach for Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis, June 29, 2012.
(2) Federal Register Vol. 77, No. 99, Page 30335, [Docket ID NRC 2012–0113] , "Proposed Revision 3 to Standard Review Plan, Section 19.1 on Determining the Technical Adequacy of Probabilistic Risk Assessment for Risk-Informed License Amendment Requests After Initial Fuel Load," May 22, 2012.

This letter provides the Pressurized Water Reactor Owners Group (PWROG) comments on the Draft Regulatory Guide DG-1285 (Proposed Revision 3 to Regulatory Guide (RG) 1.174, May 2011), "An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (Enclosure 1) and comments on Revisions to Standard Review Plan (SRP), Chapter 19.1 "Determining the Technical Adequacy of Probabilistic Risk Assessment for Risk-Informed License Amendment Requests after Initial Fuel Load"

In addition to these comments, the PWROG feels that an industry meeting or workshop with the NRC to discuss these documents would be beneficial.

For any technical questions regarding this letter and its contents, please contact Roy Linthicum at (410) 495-6510. If you have any questions regarding all other aspects of this letter, please do not hesitate to contact me at (205) 992-7037 or Mr. W. Anthony Nowinowski of the PWR Owners Group Program Management Office at (412) 374-6855.

Sincerely yours,

Norman J. Stringfellow

Jack Stringfellow, Chairman
PWR Owners Group

NJS:TZ:las

cc: PWROG Risk Management Subcommittee
PWROG PMO
S. Levinson, AREVA NP
R. Schneider, W
D. McCoy, W
V. Anderson, NEI

Comments on Draft Regulatory Guide DG-1285 (Proposed Revision 3 to Regulatory Guide (RG) 1.174, May 2011), "An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis"

Comments

1. Section A (Introduction), last paragraph (page 2). The "boilerplate" paragraph has an additional sentence: "This regulatory guide is a rule as designated in the Congressional Review Act (5 U.S.C. 801-808)." Does this have any impact on how a licensee would use this RG? (Is the impact of this additional sentenced obviated by the next sentence, indicating that the RG "is not a major rule ..."?

2. Section B (Discussion), Reason for Change (or Issue). This new section states that the reason for the revision is to update the defense-in-depth language. See Comment 4 below.

3. Section C (Staff Regulatory Guidance), Section 2 (Element 2), first paragraph. In the last sentence, a "must" is changed to a "should." This change is consistent with "shoulds" elsewhere in the paragraph. Understanding that this is a guidance document, is there anything other meaning that should be attributed to this verb change?

4. Section C (Staff Regulatory Guidance), Section 2 (Element 2), Section 2.1.1 (Defense-in-Depth). This section has been totally revised.

    a. The new organization of the factors that should be considered when evaluating the impact of a proposed plant change on defense-in-depth does not provide any additional clarity. In Revision 2, there are seven bulleted factors listed that the RG indicated should be considered. In the DG, one of these factors (balance of preventing, mitigating, and emergency preparedness) is discussed in Section 2.1.1.1; a second factor (preserving multiple fission product barriers) is discussed in Section 2.1.1.2. The remaining five factors are discussed in Section 2.1.1.3, where the guidance states that "when evaluating the impact of a proposed plant change on the three high-level layers (Section 2.1.1.1 above) and the multiple fission product barriers (Section 2.1.1.2 above) of defense-in-depth, the licensee should consider the following factors ..." In the third paragraph of Section 2.1.1, the five factors of Section 2.1.1.3 are referred to as "***some*** factors that the licensee should consider..." [emphasis added] Further, the second paragraph of Section 2.1.1.3 states that the list of five factors is "not meant to be a comprehensive list." This raises some questions:

i. Do all five factors need to be considered when evaluating the impact on defense-in-depth?

ii. Are there other factors, not listed, that should be considered? The licensee can never be sure of completeness, if the staff is looking for other, unspecified, factors.

iii. Should the focus be on Sections 2.1.1.1 and 2.1.1.2, using the five factors of Section 2.1.1.3 as appropriate? Or should the focus be on the five factors? Note that examples provided in Section 2.1.1.3 are not in the context of the defense-in-depth philosophies discussed in Section 2.1.1.1 and 2.1.1.2.

One criticism of RG 1.174 was the lack of clarity of what the staff was expecting when evaluating the impact of the proposed change on defense-in-depth. The reorganization of the seven factors into three sections does not provide any additional clarity.

b. In Section 2.1.1.1, it states that a "reasonable balance is preserved if the proposed plant change does not significantly reduce the effectiveness of a layer that exists in the plant design before the proposed change." It is implied that the applicant needs to show that the effectiveness has not been significantly reduced. However, the words "significantly" and "effective" are subjective and not defined. Section 2.1.1.3 suggests some factors to consider, but as noted in Comment 4.a, it is not clear if all, some, or additional factors must be considered.

c. Section 2.1.1.2 is more explicit in its guidance, stating that the licensee "should evaluate the impact of the proposed change on the fission barriers and supporting systems and consider any cause and effect relationship between the barrier and the aspect of the plant proposed to be changed."

This suggests a "separate" evaluation of barriers, i.e., separate from the consideration of the five factors in Section 2.1.1.3. While the next structure appears to create a hierarchical structure (as recommended by industry comments), it falls short, as the implication is that all seven "factors" still need to be evaluated as separate entities that could impact defense-in-depth.

d. To further confuse what is expected from the licensees, the discussion for only two of the five factors in Section 2.1.1.3 include a statement that the licensee "should evaluate the impact or confirm that a reasonable balance of the defense-

in-depth layers is preserved and that multiple barriers to contain potential fission product release are maintained." This essentially, includes Section 2.1.1.1 and Section 2.1.1.2 in the list of "factors" that need to be addressed. This guidance is included in the discussion of factor 1 (over-reliance on programmatic activities, and factor 5 (plant design criteria is maintained).

e. The examples in Section 2.1.1.3 are only illustrative, but "are not meant to illustrate the actual process for assessing a risk-informed change to a plant's [licensing basis]." So, what is the value of the examples, if they cannot be used as the framework for providing agreement in a licensee's application?

f. The examples help to demonstrate an understanding of the factor described, but provides less in terms of guidance for explaining how defense-in-depth is maintained. Every example provides a "good" and "bad" aspect vis-à-vis the preservation of defense-in-depth. This does not provide substantial guidance for crafting a licensee-specific argument. Further, there are some difficulties with some of the examples:

   i. The second example for factor 1 (in Section 2.1.1.3) that suggests a new procedure to secure containment fan coolers under certain conditions. That appears to be an extreme example that could violate other plant conditions that required the fan coolers in the first place. The example lists a number of conditions that might show that defense-in-depth is not impacted, however some of these seem indefensible, e.g., "does not otherwise affect plant safety."

   ii. The third example for factor 1 (in Section 2.1.1.3) suggests that increasing the inspection interval for the reactor vessel may create an overreliance on a programmatic activity. This does not seem to be an example of a programmatic activity. In the discussion, a programmatic activity is an administrative control that substitutes for an engineering means of performing a safety function. This is a test interval extension, not the adoption of an administrative control, and certainly not one that "substitutes" for an existing engineering approach.

   iii. The first example for factor 2 (in Section 2.1.1.3) is a non sequitur. It does not matter what the impact to defense-in-depth is if the risk change from the proposed plant change does not satisfy the risk acceptance guidelines in RG 1.174 and RG 1.177. If those guidelines are not met, there would be no application for which a defense-in-depth evaluation was

needed; if those guidelines were met, the small risk increase (or decrease) would indication that defense-in-depth impact was also small.

iv. The first and second examples for factor 3 (in Section 2.1.1.3) are essentially the same. Both propose using a new "material," and suggesting a phased approach to ensure that common cause failure is not an issue.

v. The second example for factor 4 (in Section 2.1.1.3) is confusing. The "solution" to show low impact on defense-in-depth is to implement a process different from the one initially proposed. The objective is to discuss the impact on defense-in-depth from a proposed change. Modifying the proposed change does not help with the initial assessment.

vi. The first example for factor 5 is similar to comment 4.f.v. above in that to show a minimal impact on defense-in-depth, the original proposed change is modified. In this case, from eliminating inservice inspection of reactor vessel welds to changing the periodicity of these inspections.

While examples are usually encouraged to provide clarification, in the DG, many serve the opposite function. This is compounded by the statement that they examples are not "meant to illustrate the actual process ..." (as noted in comment 4.e).

It is recommended that to ensure clear and useful defense-in-depth examples, that there are some future interactions between the NRC and industry, e.g., workshop, meeting, to address the concerns raised in these PWROG comments and comments from other submitters.

g. With the expanded text and examples in the DG, there is a tendency to view the five RG 1.174 principles as separated entities. This is not the case, as Principle 2 (defense-in-depth), Principle 4 (small change in risk), and Principle 5 (monitoring) are highly interconnected.

h. Defense-in-depth should be used to identify and assess changes related to a safety function when the level of redundancy or diversity is limited, or when there is significant uncertainty. Defense-in-depth should be used when there are cross-cutting changes that affect multiple safety functions or cut across levels of protection. Defense-in-depth should be used for items that cannot be directly addressed with a probabilistic risk assessment (PRA). These limitations are neither implicit nor explicit in the DG.

i. The DG does not generally account for temporary versus permanent conditions (plant changes), which may require different guidelines to evaluate the impact on defense-in-depth. This is one mention of a temporary condition as related to compensatory measures under the discussion of "overreliance on programmatic activities (factor 1 in Section 2.1.1.3).

5. Section D (Implementation), Use by Applicants and Licensee, first paragraph. There is an "author's instruction" in angled brackets (< >) that needs to be deleted from the document.

Comments on Draft Regulatory Guide DG-1287 (Proposed Revision 2 to Regulatory Guide (RG) 1.177, May 2011), "An Approach for using Probabilistic Risk Assessment in Risk-Informed Decision-Making: Technical Specifications"

Comments

1. No substantive issues were noted.

2. Section A (Introduction), last paragraph (page 2). The "boilerplate" paragraph has an additional sentence: "This regulatory guide is a rule as designated in the Congressional Review Act (5 U.S.C. 801-808)." Does this have any impact on how a licensee would use this RG? (Is the impact of this additional sentence obviated by the next sentence, indicating that the RG "is not a major rule ..."?

3. Section D (Implementation), Use by Applicants and Licensee, first paragraph. There is an "author's instruction" in angled brackets (< >) that needs to be deleted from the document.

Comments on Draft Regulatory Guide DG-1288 (Proposed Revision 2 to Regulatory Guide (RG) 1.178, September 2013), "An Approach for Plant-Specific Risk-Informed Decisionmaking for Inservice Inspection of Piping"

Comments

1. Section A (Introduction), last paragraph (page 8). The "boilerplate" paragraph has an additional sentence: "This regulatory guide is a rule as designated in the Congressional Review Act (5 U.S.C. 801-808)." Does this have any impact on how a licensee would use this RG? (Is the impact of this additional sentence obviated by the next sentence, indicating that the RG "is not a major rule ..."?

2. The third paragraph of Section A references the two risk-informed inservice inspection (ISI) methods currently approved by the NRC (EPRI TR-112657 and WCAP-14572). Although the alternative approach described ~~in ASME Code~~ Case N-716, *Alternative Piping Classification and Examination Requirements*, has not been endorsed by the NRC, it is being applied by many licensees through an exemption request to the requirements of ASME Section XI for ISI pursuant to 10 CFR 50.55a(a)(3)(i). It may be appropriate to add some discussion of this alternative methodology to the RG.

3. On Page 6, the paragraph immediately under the "Relationship to Other Guidance Documents" heading still references "Draft Regulatory Guide DG-1122" and "Draft SRP Chapter 19.1." These should be changed to "Regulatory Guide 1.200" and "SRP Chapter 19.1" to reflect the current status of these documents.

4. The "Abbreviations and Definitions" section should include "ANS" since it is used elsewhere in the document.

5. Formatting in Section B on page 9 should be revised as follows:

   "The key principles and the section of this guide that addresses each of these principles for RI-ISI programs are as follows.
   1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change. (Regulatory Position 2.1.1)
   2. The proposed change is consistent with the defense-in-depth philosophy. (Regulatory Position 2.1.2)
   3. The proposed change maintains sufficient safety margins. (Regulatory Position 2.1.3)
   4. When proposed changes result in an increase in CDF or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement. (Regulatory Position 2.2)

5. The impact of the proposed change should be monitored by using performance measurement strategies. (Regulatory Position 3)"

This will help clarify the intent and is consistent with the existing revision of the regulatory guide.

6. Formatting on pages 11 and 12 needs to be corrected. A numbered list is started under the statement "The engineering analysis for a RI-ISI piping program will achieve the following:" in Section 2.1. However, items 2 through 9 in the list are not numbered and appear simply as paragraphs.

7. The second paragraph in Section 2.2 on page 15 references ASME RA-S-2002. This should be changed to the currently endorsed version of the PRA Standard ASME/ANS RA-Sa-2009.

8. The third paragraph under Section 2.2 on page 15 references DG-1122. This should be changed to Regulatory Guide 1.200. In addition, this paragraph on PRA technical adequacy should reference EPRI TR-1021467, "*Nondestructive Evaluation: Probabilistic Risk Assessment Technical Adequacy Guidance for Risk-Informed In-Service Inspection Programs*" as a means of identifying the specific supporting requirements (SRs) from Parts 2 and 3 of the PRA Standard that are applicable to RI-ISI programs developed under the EPRI method and the minimum Capability Category at which those SRs should be met.

9. Items 2 and 3 in the numbered list started under the statement "Each pipe segment failure may have one of three types of impact on the plant...." in Section 2.2.1 on page 16 are not numbered.

10. On page 17, the meaning of the first sentence in Section 2.2.1.1 needs to be clarified.

11. Items 2 through 12 in the numbered list started under Section 3.4 on page 21 are not numbered and appear simply as individual paragraphs.

12. The second bullet under Section 4.1 on page 23 references "five key principles of risk-informed regulations." The five items are listed as paragraphs rather than as a numbered list. Formatting these as a numbered list indented under the bullet would improve readability.

13. In Section 4.1 on page 24, the first sentence of the third bullet should be modified as follows: "A list of each segment, including the number of welds, weld type, and

properties of the welding material and base metal, the failure potential, CDF, CCDF/CCDP, LERF, CLERF/CLERP, importance measure results..."

14. The paragraph at the top of Page 27 has an explanatory note for the author, "<NOTE: If there is a current regulatory guide that is acceptable, then INSERT: The acceptable guidance may be a previous version of this regulatory guide.>" left in the text.

15. References should be updated to the current versions of the referenced documents. This is especially true for References 3 and 4 that currently reference the draft versions of documents that have been finalized.

16. ASME Code Case N-716 should be added to the references if reference to it is included in Section A.

17. EPRI TR-1021467, "*Nondestructive Evaluation: Probabilistic Risk Assessment Technical Adequacy Guidance for Risk-Informed In-Service Inspection Programs*" should be added to the references if reference to that document is included in Section 2.2 as recommended above.

Comments on Draft Regulatory Guide DG-1286 (Proposed Revision 1 to Regulatory Guide (RG) 1.175, August 1998, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Inservice Testing."

No specific comments have been provided on Draft Regulatory Guide DG-1286. Note that the generic, boilerplate comments made above also apply to DG-1286.

Comments on Revisions to Standard Review Plan (SRP), Chapter 19.1 "Determining the Technical Adequacy of Probabilistic Risk Assessment for Risk-Informed License Amendment Requests after Initial Fuel Load"

I. Areas of Review

Introduction

1. By rewriting the first paragraph to redirect design certification (DC) and combined operating license (COL) topics to SRP 19.0, the last sentence becomes unclear. SRP 19.1 maintains the expectation to focus on the status of the design, but what is stated more clearly in Section III.2.1 is that the reviewer will confirm that the probabilistic risk assessment (PRA) models the as-built, as-operated and maintained plant, and those features and conditions appropriate for the application. As re-written, the proposed re-wording of the first paragraph is unclear.

II. Acceptance Criteria

Requirements

2. The second item in the Requirements list requires an upgrade to the PRA every four years. That may be poor choice of terminology, as an upgrade from the perspective of the ASME/ANS PRA Standard implies a methodology change to the PRA, while an update refers to the more periodic data changes and minor system changes. Perhaps this review element can be clarified to reflect "upgrade or update, as appropriate."

SRP Acceptance Criteria

3. In Section II (SRP Acceptance Criteria), the last sentence changed a "must" to a "can," which could have a dramatic impact on the reviewer's perspective. The sentence reads: "Where there are differences in approach to performing a specific part, the staff can determine that the approach used by the applicant is either equivalent to, or better than, that support by the staff position."

   One implication of this change is that the reviewer facing a non-standard method has the option ("can") to determine if the non-standard methods is equivalent or better than the staff position, but is *not* obligated to do – and hence could reject an application without determining the level of equivalency. In Revision 2, the "must" would obligate the reviewer to determine and assess the equivalency. Such an increase in the reviewer's flexibility could jeopardize risk-informed applications that use non-standard, but equivalent approaches.

   Please clarify the intent of wording change.

4. In the last sentence, it is implied that there are only two alternatives. Another is provided in the text that allows consideration of bounding assessments (see last paragraph of Section III.1.2). Bounding assessments may not necessarily be "equivalent to" or better than the NRC approach, as defined in the sentence, but should be acceptable (see Section IV.1). Can clarification be provided?

III. Review Procedures

III.1.2 Scope of the PRA Model

5. In Section III.1.2 (Scope of the PRA Model), Revision 3 states that evaluations should be done with "a full-scope PRA that includes all hazard groups and all modes of operation." Revision 2 has a similar statement. Both revisions discuss compensatory measures when a full-scope PRA is not available. However, Revision 3 states that if there is a staff-endorsed PRA Standard, such a PRA should be used. However, there is no guidance as to evaluate the PRA when formal standards (or endorsements) are not available. Does this mean that while "all modes of operation" is invoked, since there is no staff-endorsed Low Power/ Shutdown PRA Standard, that an at-power PRA scope is sufficient for current risk-informed applications, Further, does this mean that mode issues should be considered using "bounding" alternate approaches or would use of interim PRA models (following a draft standard) be judged acceptable?

6. The example provided indicates that under Regulatory Guide (RG) 1.174 a full-scope, all-mode PRA is expected. As PRA standards do not exist for many modes, there will be no metric for the utility and regulator to use for the required PRA analyses. No resolution path is provided for these conflicts. A similar condition is identified more explicitly for new reactors at license renewal. For reactor licensed under 10 CFR 52, a later section indicates that an "all-modes, all hazards" PRA is to be performed even if PRA standards do not exist (or presumably exist, but may not be endorsed). However, there is sufficient time available to address this latter issue.

III.2 Assessment of the PRA

7. For new plants, footnote 2 indicates that impact of the use of generic data should be insignificant or otherwise acceptable. This may not clearly show that generic data are not important and issues may arise whether nominal data or bounding data are selected or how the bath-tub effect, high potential for early failures are treated.

III.2.2 Assessment of the Technical Adequacy of the PRA

8. Capability Category II (CC II) is identified as the target expected Capability Category, but recognizes CC I may be acceptable for selected supporting requirements (SRs) and CC III may be required for some SRs for some risk-informed applications

9. NRC highlights that older peer reviews done under the early Owners Group projects and self-assessments may be relevant to support the position of PRA technical adequacy.

IV.2 Key Assumptions and Key Sources of Uncertainty

10. A very strong statement is provided for the reviewer to **not approve** the application unless he/she is satisfied with the identification of key assumptions and treatment of uncertainty and the impact of these factors on the PRA application. This seems to be a very open instruction. Should guidance be given as to what circumstances a reviewer would not be satisfied? It seems this language provides a lot of personal preference.

VI. References

11. Reference 7, NEI-07-12 is referenced as Draft Revision H. The reference should read: Nuclear Energy Institute. "Fire Probabilistic Risk Assessment (FPRA) Peer Review Process Guidelines," NEI 07-12, Revision 1, NEI: Washington, DC, June 2010.