

June 19, 2000

MEMORANDUM TO: Ashok C. Thadani, Director
Office of Nuclear Regulatory Research

FROM: Samuel J. Collins, Director */RA Signed by S. Collins/*
Office of Nuclear Reactor Regulation

SUBJECT: REQUEST FOR ASSISTANCE IN REVIEW OF NEI 00-02,
"PROBABILISTIC RISK ASSESSMENT PEER REVIEW PROCESS
GUIDANCE" (TAC NO. MA8899)

We request the assistance of the Office of Nuclear Regulatory Research (RES) in the review of NEI 00-02, "Probabilistic Risk Assessment Peer Review Process Guidance," submitted by the Nuclear Energy Institute (NEI) on April 24, 2000. NEI has requested review of this document for applicability to the risk-informed categorization and treatment of nuclear plant equipment as described in SECY-99-256. Since the quality required of a probabilistic risk assessment (PRA) is directly related to the application for which the PRA results and insights are to be applied, NEI 00-02 will be reviewed in conjunction with NEI's *Industry Guideline for Risk-Informed Categorization and Treatment of Structures, Systems, and Components*, and with the staff's draft version of Appendix T to 10 CFR Part 50.

This memorandum documents our specific needs for your assistance. Review tasks are discussed below. Note that some of these tasks contain subtasks that may not be directly related to the review of NEI 00-02, but are related to establishing guidance on how the NRC staff is to use the results of the PRA peer review process. This review scope accommodates situations where there may be compensatory measures (or "tradeoffs") which can be used by a licensee when certain elements of the PRA do not fully conform to staff expectations.

REQUESTED ACTIONS

The outline of the overall staff review is described in the attachment to this memorandum. Based on discussions between the Office of Nuclear Reactor Regulation (NRR) and RES staff, we request that RES review the PRA technical elements and requirements given in NEI 00-02 to determine if they provide sufficient information for categorization of structures, systems, and components (SSCs) for application to the risk-informing of 10 CFR Part 50 (RIP 50) Option 2 effort. High-level characteristics and attributes required for an acceptable PRA should be used as the basis for this review. We also request that RES review the NEI 00-02 subtier criteria against typical industry and NRC good practices as reflected in various guidelines including the proposed ASME PRA standard. Review results should address discrepancies and their potential impact on Option 2 activities. This request corresponds to Task 2 of the attached outline. NRR staff will take the lead for Tasks 1, 3, and 4 which address the application of the PRA Certification process to RIP 50 Option 2.

CONTACT: Joseph Williams
415-1470

NRR will provide your staff with a proposed outline of our assessment report. This outline can be used to format your contributions in as close to final form as possible. We will coordinate development of our overall assessment with your staff, and will request RES comments on our product. As we proceed in our review, we will also need your support for technical meetings with NEI, the Advisory Committee on Reactor Safeguards (ACRS), and for NRC management briefings, such as the Risk-Informed Licensing Panel (RILP).

SCHEDULE

We request that you initiate your activities as soon after receipt of this memorandum as possible. Projected future milestones are as follows:

- Support discussion of high-level issues during the June 27 meeting with NEI.
- Review comments submitted to the project manager: July 31.
- Letter to NEI forwarding comments: August 21.
- Report inputs: 6 weeks after resolution of comments.
- Final assessment report and letter to NEI: 10 weeks after comment resolution.

The overall schedule is dependent on the scope of issues the staff develops in its comments on the guideline, and the time required for NEI's response. The peer review and Option 2 guidelines will be discussed at an upcoming meeting with NEI scheduled for June 27. Additional meetings are anticipated after issuance of the NRC comment letter, and as NEI completes its response. As NEI responds to the comments, we expect to promptly assess the responses and forward additional issues to NEI within about a month of receipt of the response.

We plan to request RILP briefings on the comment letter content and on the final assessment report. Additional briefings may be scheduled, if required.

At this time, we expect that we will forward our assessment to NEI with a letter documenting our findings with respect to the acceptability of the process for application to the Option 2 pilot program. On completion of the pilot program, lessons learned will be incorporated into the guidance documents. Eventually, we expect to describe acceptable methods for PRA quality, and SSC categorization and treatment in a regulatory guide that can be used for implementation of the Option 2 rule changes.

RESOURCES

From discussion with your staff, we understand that RES will perform this review effort in tandem with its current tasks on PRA standards and PRA quality. We understand that the review of NEI 00-02 will not affect RES's efforts and schedules on other NRR user needs.

Ashok Thadani

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The NRR project manager for this activity is Joseph Williams, who may be reached at 415-1470.

Attachment:
As stated

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Attachment:
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Outline for Review of NEI 00-02

Probabilistic Risk Assessment Peer Review Process Guidance

Task 1: Process Review

- a. Review the objectives, the mechanics of the peer review process, review team qualifications, required documentation, etc., to determine if the process is consistent with staff expectations of the characteristics and attributes of a peer review process.
- b. Determine if the elements of the review process for determining “quality assurance” of the PRA are consistent with the requirements provided in Section 2.5 of Regulatory Guide 1.174.

Task 2: Review the technical elements and requirements for application to Option 2.

- a. Determine if the technical requirements in NEI 00-02 are sufficient to provide assurance that the staff’s high level expectations for the “characteristics and attributes of an acceptable PRA” can be satisfied.
- b. Review the subtier criteria for “Grade 3” PRAs and compare to typical industry and NRC good practices as reflected in various guidelines including the ASME PRA standard. Document the differences. Provide relevance of the differences with respect to RIP 50 Option 2 applications.
- c. Provide insights into other applications which a “Grade 3” PRA will support and the applications that it may not be good enough to support.

Task 3: Review the requirements for SSC categorization as required by RIP 50 Option 2. Determine the quality of PRA needed in light of the other requirements of the RIP 50 Option process.

- a. Review the draft Appendix T requirements as well as NEI’s categorization guidance document. From these documents:
 - i) define the decision to be made;
 - ii define the decision-making process, specifying the role of PRA results (what results are to be used, and how are they to be used); and
 - iii identify what is needed of the PRA to give confidence in the results in the context of the decision.
- b. In conjunction with the findings of Tasks 2(b) and 3(a) above, determine if a PRA for which the peer review team has assigned a “Grade 3” for all its elements, can be used for the categorization of SSCs in the context of Option 2. Perform this review in light of: the risk exposure (e.g., backstops, controls, extent of change

permitted, etc.); performance monitoring requirements (e.g., measures and criteria, timely detection and corrective action, margin to safety, etc.); use of traditional engineering analyses (e.g., defense-in-depth, safety margins, issue-specific engineering analyses, licensing basis calculations, etc.); and use of an integrated decision-making panel to appropriately utilize the PRA insights.

Note that, not all review elements have to be assigned a Grade 3 or higher for the PRA to be usable for Option 2. Some elements may be determined to be unimportant for Option 2 applications. Even if important elements (as defined by Task 2(b)) are non-conforming, there may be “tradeoffs” that a licensee may choose, e.g., when a PRA element does not meet a certain requirement, there could be different mechanisms to compensate for this non-conformance. Task 3(c) discusses the application-specific tradeoffs (i.e., tradeoffs that would apply for all applications in RIP 50 Option 2), and Task 3(d) discusses the decision-specific tradeoffs (i.e., tradeoffs that could result because of differences and variations in the plant-specific PRAs).

- c. Define measures which could be used to compensate for cases when NEI 00-02 review elements are not consistent with staff expectations.
 - i) Define sensitivity studies and other deterministic approaches that could be used in place of “consensus” PRA approaches (e.g., seal LOCA modeling, use of the MAAP code, etc.).
 - ii) Determine if the sensitivity studies as currently specified in Appendix T and in NEI’s categorization guidance document are sufficient to compensate for the non-use of consensus approaches in HRA modeling, CCF modeling and parameter estimation.
- d. In the review of Option 2 applications, it is expected that the staff will have to address variations (on a plant-to-plant basis) in the level of conformance to the NEI 00-02 guidelines. For PRA elements that do not conform to “Grade 3” requirements and which are amenable to tradeoffs, define guidance for the staff review of these tradeoffs (e.g., use of conservatism, more reliance in defense-in-depth or margins, better monitoring, etc.).

Task 4: Review the documentation requirements (and define level of staff review)

- a. Using the NEI 00-02 documentation requirements, determine the peer review documentation that should be included as part of the Option 2 submittal to the NRC, and the documentation that should be available at the plant site and available for NRC audit. Suggest additional documentation requirements if necessary.
- b. Relate the level of NRC review for Option 2 submittals to the results obtained from the peer review of the PRA supporting that submittal. Under what conditions is the “no-prior staff review and approval” option feasible?