

POLICY ISSUE
(Information)

April 24, 2002

SECY-02-0070

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: PUBLICATION OF REVISIONS 1 TO REGULATORY GUIDE 1.174 AND SRP
CHAPTER 19 AND NOTICE OF A STAFF PLAN FOR ENDORSING
CONSENSUS PROBABILISTIC RISK ASSESSMENT STANDARDS AND
INDUSTRY PEER REVIEW PROGRAMS

PURPOSE:

- (1) To inform the Commission of the staff's intention to publish Revisions 1 to Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" and Standard Review Plan Chapter 19, "Use of Probabilistic Risk Assessment in Plant-Specific, Risk-Informed Decisionmaking: General Guidance."
- (2) To provide, for the Commission's information, the staff's plan for endorsement of pending ASME and ANS consensus standards and industry peer review programs on probabilistic risk assessment (PRA) in a new regulatory guide and standard review plan chapter.

BACKGROUND:

The Commission's May 20, 1998, Staff Requirements Memorandum (SRM) approved the publication of Regulatory Guide (RG) 1.174 and Standard Review Plan (SRP) Chapter 19 which

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discuss the scope, level of detail and quality of licensee PRA submittals in support of risk-informed changes to the licensing basis. It also directed that an annual review be performed to insure that new experience in PRA practice is regularly incorporated.

The Commission's April 18, 2000, SRM directed the staff to "provide its recommendations to the Commission for addressing the issue of PRA quality until the ASME and ANS standards have been completed, including the potential role of an industry PRA certification process."

In SECY-00-0162, dated July 28, 2000, the staff approach was described which included identification of the scope and "minimal functional attributes necessary to ensure the PRA" is capable of providing certain results, such as core damage frequency, large early release frequency (LERF) and accident contributors. It further noted that "if appropriate, the staff will endorse them [e.g., ASME PRA standard] in an update of Regulatory Guide 1.174 or elsewhere to support other risk-informed activities.....The staff endorsement may take exception to or include additional specific criteria to address any identified weaknesses in the standards to ensure that PRAs used in regulatory decision-making will have an adequate technical basis." The staff also indicated that "to strengthen this guidance [RG 1.174 and SRP 19] and thus improve the efficiency and consistency of the staff review process, the staff intends to include the information [Attachments 1 and 2] from the SECY paper in the next update of the guide and SRP chapter." Attachment 1 provided details on functional attributes of PRAs and Attachment 2 provided examples of risk-informed decisionmaking.

The Commission's October 27, 2000, SRM indicated that it had no objection to the proposed update of RG 1.174 and SRP Chapter 19, that "the timely resolution of PRA quality requirements is necessary to support existing and developing risk-informed regulation," and that the staff should expand discussion (in Attachment 2 to SECY-00-0162) to include further examples "of how PRA quality influences risk-informed decision-making."

DISCUSSION:

RG 1.174 (as DG-1110) and SRP Chapter 19 were revised and issued in June 2001 for public review and comment. Proposed changes to the RG and SRP Chapter were made in four areas:

- The staff has postulated that issues may arise in relation to a licensing basis change request which cause plant risk to increase, perhaps substantially and beyond an acceptable level. In response to such an eventuality, NRC would be required to exercise its statutory authority to request additional information from licensees and require them to take action. The proposed regulatory guide revision states that risk-related information may be requested by the staff if new, unforeseen hazards or substantially greater prospects for a known hazard emerge as a result of a licensee change request, even if the licensee did not originally submit risk information in the request.¹
- The staff became aware that underlying assumptions which form a basis for the current LERF guidelines and which include assumptions of nuclear plant fuel, power levels and

¹This staff guidance was the subject of SECY-99-246, dated October 12, 1999. Commission approval was provided in an SRM dated January 5, 2000.

fuel burnup rates in effect over the past few years, may be affected by increases in these parameters. As a result, the staff proposed the following advice to licensees indicating to them that the staff may need to reexamine the appropriateness of current LERF guidelines:

- Proposed reactor power level increases above 3800 Mwt may need to be evaluated for their impact on LERF.
 - Increases in fuel burnup beyond 40,000 MWD/MT are not expected to have a significant effect on current LERF guidelines, but a staff sponsored expert panel is investigating the effects on source terms arising from these higher burnup rates and the use of mixed-oxide fuel. The implications for LERF will then be assessed.
- As a result of the October 27, 2000, SRM, the staff was directed to provide the nuclear industry with guidance on the development of a PRA acceptable for risk-informed applications. This guidance, contained in SECY-00-0162, Attachment 1, dated July 28, 2000, included the identification and description of the scope and the minimum functional and technical attributes of a PRA. This input was included primarily in Attachment 1 to the proposed regulatory guide revision.
- Also as a result of the same SRM, the staff was directed to provide examples of applications which used risk insights in the decision-making process, as referred to in SECY-00-0162, Attachment 2.

Comments, as indicated below, were received from stakeholders including the Nuclear Energy Institute, nuclear steam supply system owners groups, individual utilities and unaffiliated members of the public (Reference 1):

- Risk-information for unforeseen hazards or greater prospect for known hazards–
 - No public comments received.
- Increases in power level, fuel burnup and use of mixed-oxide fuel–
 - Several stakeholders suggested that more justification was needed if this new staff guidance was to be adopted. In addition, it was pointed out that nuclear plants had already made application for power levels above 3800 MWt and so the precedent had already been set for these power levels without the as-yet-to-be-developed requirements alluded to in DG-1110. Their concern was that additional guidance was needed immediately if new requirements were to be initiated in the near term.
- Description of the scope and minimum functional/technical PRA attributes–
 - Several stakeholders felt that the revised RG departed extensively from the original intent of RG 1.174 in that it would now be overly prescriptive and would not allow any room for licensee interpretation and judgement in the construction of their PRAs.
 - Several stakeholders felt that new requirements regarding Level 2, late containment failure, were being added. They noted that RG 1.174 only considered LERF and they interpreted NUREG-1150 as demonstrating that late

containment failures did not contribute to risk, so they objected to the discussion which elaborated on Level 2 technical attributes.²

- Several stakeholders felt that the RG did not appear to be the appropriate place to include the SECY-00-0162 guidance.
- Examples of applications using risk-insights in the decision-making process–
 - No comments were received on the risk-informed in-service inspection example provided.

After reviewing the public comments the staff has revised RG 1.174 and SRP Chapter 19 (Attachments 1 and 2) as follows:

- Risk-information for unforeseen hazards or greater prospect for known hazards–
 - Keep the updated revision in the RG and SRP
- Increases in power level, fuel burnup and use of mixed-oxide fuel–
 - Remove this revision from the RG and SRP until the staff expert panel investigation is complete and a staff position is formulated.
- Description of the scope and minimum functional/technical PRA attributes–
 - Rather than include this guidance as part of RG 1.174, the staff intends to develop a new RG and SRP chapter. The new RG and SRP chapter will provide guidance to licensees on how to use the PRA standards and industry peer review programs to demonstrate that the risk input to a risk-informed decision is technically defensible. This new RG and SRP chapter will be used to support a broader set of regulatory issues, including license amendments (the subject of RG 1.174) and other activities such as the proposed 10CRF50.69. In addition, it will serve as the vehicle for staff endorsement of all future industry PRA standards and peer review programs. Attachment 3 contains the staff plan for development of this RG and SRP chapter. It will be incorporated into the Risk Informed Regulation Implementation Plan. Consequently, Appendix A in DG-1110 and references to it in the SRP will be removed from the final versions.
- Examples of applications using risk-insights in the decision-making process–
 - The staff will modify and expand the risk-insights examples in SECY-00-162, Attachment 2, and relocate them to the new RG and SRP chapter discussed above. This location appears the most appropriate because the new RG and SRP chapter will support all risk-informed activities that address PRA quality, including those discussed in RG 1.174.

²In a subsequent public meeting the staff clarified that, in NUREG 1150, late containment failure was a significant contributor, on the order of approximately 30 percent to latent cancer risk.

Stakeholder Communications:

The staff held public meetings in December 2001 and February 2002 to present the staff's intentions with regard to these initiatives. Generally positive feedback was received on the staff

plans to endorse the PRA standard and industry peer review program in a new RG and associated SRP. The new proposed RG and SRP chapter will be issued for public comment.

COORDINATION:

The proposed revisions to RG 1.174 and SRP Chapter 19 were reviewed by ACRS in a meeting on February 7, 2002. All substantive changes to be included in the updated RG and SRP have been the subject of previous ACRS reviews and agreement. However, the ACRS raised issues in a recent letter (to EDO, March 19, 2002) regarding the proposed rulemaking and associated guidance for risk-informing the special treatment requirements of 10CFR Part 50. The ACRS noted that late containment failure and inadvertent release of radioactive material should be considered in the risk metrics that supplement core damage frequency and large early release frequency. Once a staff position on this issue is established, it will be incorporated, as appropriate, in the new proposed RG and associated SRP or in a future update of RG 1.174 and SRP Chapter 19.

The Office of the General Counsel has also reviewed both documents and has no legal objection to their publication.

CONCLUSION:

The staff plans to publish Revisions 1 of RG 1.174 and SRP Chapter 19, provided in Attachments 1 and 2.

The staff also requests that the Commission make note of the staff's plan to develop a new RG and SRP chapter that would provide guidance to licensees and the staff, respectively, on how to use standards and other industry programs in evaluating the technical appropriateness of PRA results for risk-informed applications (provided in Attachment 3). The staff plans to continue meeting with the ACRS as this new RG and SRP chapter are developed.

/RA by William F. Kane Acting For/

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Attachments: 1. Regulatory Guide 1.174 (Revision 1)
2. SRP Chapter 19 (Revision 1)
3. Staff plan for endorsing industry standard and peer review programs

Reference: 1. Memorandum from Mary Drouin, RES, to Mark Cunningham, RES, "Public Comments on DG-1110 (Revision 1 to RG 1.174) and Revision 1 to SRP Chapter 19," March 20-02.

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