

REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE DG-1362 ACCEPTABILITY OF PROBABILISTIC RISK ASSESSMENT RESULTS FOR RISK-INFORMED ACTIVITIES

(Proposed Revision 3 of Regulatory Guide 1.200, dated March 2009)

The U.S. Nuclear Regulatory Commission (NRC) is considering revising Regulatory Guide (RG) 1.200 (Revision 3) to update guidance for determining whether the acceptability of a base probabilistic risk assessment (PRA), in total or the portions used to support an application, is sufficient to provide confidence in the results, such that the PRA can be used in regulatory decision-making for light-water reactors (LWRs). Revision 3 is intended to be consistent with the NRC's PRA Policy Statement, "Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities: Final Policy Statement," and Commission policies pertaining to the industry peer review process; and reflects and endorses, with staff exceptions and clarifications, national consensus PRA standards provided by standards development organizations as well as guidance provided by nuclear industry organizations.

1. Statement of the Problem

Based on the discussions below, the NRC is considering revising RG 1.200, Revision 2. The majority of changes made are intended to help facilitate application of the industry peer review process to newly developed methods. Proposed Revision 3 of RG 1.200 applies to LWR licensees subject to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." RG 1.200 could also be used by applicants who prepare PRA models in support of design certifications (DC) or combined operating licenses (COLs).

Since issuance of RG 1.200, Revision 2, new industry guidance regarding the peer review process has been developed, and applications in risk-informed licensing activities have resulted in lessons learned. Specifically, the development of peer review requirements and guidance in Nuclear Energy Institute (NEI) 17-07, Revision 2, "Performance of PRA Peer Reviews Using the ASME/ANS PRA Standard," and Pressurized-Water Reactor Owners Group (PWROG) 19027-NP, Revision 1, "Newly Developed Method Requirements and Peer Review," are particularly important because the NRC identified a gap in the guidance with respect to the application of the industry peer review process to newly developed methods. The NRC participated in the development of these documents through public meetings and observation of industry workshops and pilots of the process.

Additionally, in this revision, the staff is using the term PRA acceptability with respect to the scope, level of detail, conformance with PRA technical elements (i.e., technical adequacy), and plant representation of a PRA as related to the outcome of the NRC staff's review of a given risk-informed application. For additional information, see DPO-2016-001 (ML17013A015).

2. Objective

The objective of this revision of RG 1.200 is to update the NRC's guidance and endorse specific industry guidance documents, with exceptions and clarifications. Specifically, this revision would: 1) endorse, with staff clarifications, NEI 17-07, Revision 2; 2) endorse, with staff

exceptions and clarifications, requirements in American Society of Mechanical Engineers (ASME) and American Nuclear Society (ANS) RA-S Case 1 for seismic PRA, "Case for ASME/ANS RA-Sb-2013 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment of Nuclear Power Plant Applications," 3) endorse, with staff clarifications, requirements for the peer review of newly developed methods from PWROG-19027-NP, Revision 1, 4) endorse a process for determining whether a change to a PRA is classified as PRA maintenance or a PRA upgrade from PWROG-19027-NP, Revision 1, 5) endorse, with staff clarifications, definitions related to defining a model, newly developed methods, PRA maintenance, and PRA upgrade from PWROG-19027-NP, Revision 1, and 6) enhance guidance related to key assumptions and sources of uncertainty. This revision would retain the endorsement, with the staff's exceptions and clarifications, of ASME/ANS RA-Sa-2009, from RG 1.200, Revision 2, without any changes.

3. Alternative Approaches

The NRC staff considered the following alternative approaches:

1. Do not revise Revision 2 of Regulatory Guide 1.200
2. Withdraw Revision 2 of Regulatory Guide 1.200
3. Revise Revision 2 of Regulatory Guide 1.200.

Alternative 1: Do Not Revise Regulatory Guide 1.200

Under this alternative, the NRC would not revise RG 1.200 and would retain the current version of the RG. This alternative is considered the "no-action" alternative and provides a baseline condition from which the staff will assess any other alternatives. The no-action alternative results in no additional costs to the public, licensees, or the NRC. However, this alternative also means no potential new benefits to the public, licensees, or the NRC and any identified concerns with the current version of the RG would not be addressed. The NRC staff would continue to review each application on a case-by-case basis. This would forgo any potential benefits that could be gained from enhanced efficiencies and effectiveness from incorporating lessons learned since the publication of Revision 2 of RG 1.200 in March 2009.

Alternative 2: Withdraw Regulatory Guide 1.200

Under this alternative the NRC would withdraw RG 1.200. This would eliminate the only readily available description of the methods the NRC staff considers acceptable for determining the acceptability of a base PRA for use in support of risk-informed regulatory activities. Withdrawing RG 1.200 would be less costly than revising it; however, it would also mean that users would no longer have access to important regulatory guidance.

Alternative 3: Revise Regulatory Guide 1.200

Under this alternative, the NRC would revise RG 1.200. This revision would incorporate the latest staff positions on and endorsement of industry peer review guidance of newly developed methods and PRAs, and the staff endorsement of alternative seismic PRA requirements of the ASME/ANS PRA standards. Revising RG 1.200 would help ensure that NRC staff, the licensees, applicants for DCs and COLs, and the public have access to the most current guidance available that reflects the agency's position. When used in support of an

application, the use of this RG would obviate the need for an in-depth review of the base PRA by NRC reviewers, allowing them to focus their review on key assumptions and areas identified by peer reviewers as being of concern and relevant to the application.

The impact to the NRC would be the costs associated with preparing and issuing the RG revision. The impact to the public would be the voluntary costs associated with reviewing and providing comments to NRC during the public comment period. The benefit to NRC staff and its applicants would be to further enhance the efficiency and effectiveness of using a common guidance document to help support the technical basis for license applications and other interactions between the NRC and its regulated entities. Additionally, it could also lead to cost savings for the industry, especially regarding the development of seismic PRAs for use in support of risk-informed regulatory activities, peer review of newly developed methods, and industry PRA peer review programs.

Conclusion

Based on this regulatory analysis, the NRC staff concludes that revision of RG 1.200 is warranted. The action will enhance the efficiency and effectiveness of licensee applications for risk-informed regulatory activities that rely on the acceptability of a base PRA and related regulatory reviews.