

REGULATORY ANALYSIS

REGULATORY GUIDE 1.247 TRIAL ACCEPTABILITY OF PROBABILISTIC RISK ASSESSMENT RESULTS FOR NON- LIGHT WATER REACTOR RISK-INFORMED ACTIVITIES

(Regulatory Guide 1.247 Trial)

1. Statement of the Problem

The U.S. Nuclear Regulatory Commission (NRC) is issuing trial Regulatory Guide (RG) 1.247 to provide guidance on an approach acceptable to the NRC staff for determining whether a design-specific or plant-specific probabilistic risk assessment (PRA) 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 non-light-water reactors (NLWRs).

This guide is consistent with the NRC's PRA Policy Statement and endorses, with staff exceptions and clarifications, national consensus PRA standards provided by standards development organizations and guidance provided by nuclear industry organizations. Specifically, RG 1.247: 1) endorses, with staff exceptions, requirements in ASME/ANS RA-S-1.4-2021, "Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants," and, 2) endorses, with no staff exceptions, NEI 20-09, Revision 1, "Performance of PRA Peer Reviews Using the ASME/ANS Advanced Non-LWR PRA Standard."

2. Objective

Trial RG 1.247 endorses, with staff exceptions, the requirements in ASME/ANS RA-S-1.4-2021, "Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants," and NEI 20-09, Revision 1, "Performance of PRA Peer Reviews using the ASME/ANS Advanced Non-LWR PRA Standard." The implementation of the guidance provided in trial RG 1.247 is expected to reduce the need for an in-depth review of the PRA by the NRC staff, allowing the staff to focus its review on key assumptions and areas identified as being of concern and relevant to the application and the demonstration of PRA acceptability.

3. Alternative Approaches

The NRC staff considered the following alternative approaches:

1. Do not issue trial RG 1.247
2. Issue trial RG 1.247

Alternative 1: Do Not Issue Trial RG 1.247

Under this alternative, the NRC would not issue trial RG 1.247. 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 may result in additional costs to the public and the NRC due to potential inconsistencies and inefficiencies associated with case-by-case reviews. This alternative also means no potential new benefits to the public or the NRC. Also, concerns identified by the staff related to PRA acceptability for NLWRs may not be

appropriately addressed in regulatory activities. The NRC staff would continue to review each application on a case-by-case basis, which could result in inconsistent interpretation and application of the staff positions.

Alternative 2: Issue Trial RG 1.247

Under this alternative, the NRC would issue trial RG 1.247. This RG would incorporate the latest staff positions on NLWR PRA acceptability, the endorsement of requirements in ASME/ANS RA-S-1.4-2021 with staff exceptions, and the peer review of NLWR PRAs. Issuing trial RG 1.247 would help ensure that NRC staff, the industry, and the public have access to the most current guidance available that accurately reflects the agency's position. The impact to the NRC would be the costs associated with preparing and issuing the trial RG. The impact to the public would be the voluntary costs associated with reviewing and providing comments to NRC during the trial comment period. The benefit to NRC staff and its applicants would be enhanced efficiency and effectiveness based on promulgation of a common guidance document as the technical basis for license applications and other interactions between the NRC and its regulated entities.

Conclusion

Based on this regulatory analysis, the NRC staff concludes that the issuance of trial RG 1.247 is warranted. Trial RG 1.247 will enhance the efficiency and effectiveness of preparation and reviews of NLWR licensing applications that rely on a PRA. The use of trial RG 1.247 could also lead to cost savings for the industry when used in support of risk-informed regulatory activities and industry PRA peer review programs.