

Regulatory Guide Periodic Review

Regulatory Guide Number: 1.70, Revision 3

Title: Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)

Office/Division/Branch: NRR/DNRL/NLIB

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Recommended Staff Action: Reviewed with issues identified for future consideration

1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?

Regulatory Guide (RG) 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR¹ Edition)," was initially published February 1972 and revised for the second time on November 1978 (Revision 3). The staff conducted its most recent periodic review of RG 1.70 on September 29, 2014, and recommended withdrawal of the RG after the guidance information for obtaining a Title 10 of the Code of Federal Regulation (10 CFR) Part 50 construction permit and an operating license has been incorporated into RG 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," Revision 1. RG 1.70, to date, has not been withdrawn.

RG 1.70 pertains to licensing processes under Part 50 and provides detailed guidance in preparing applications for construction permits and operating licenses for new nuclear power plants. Since that time, the Commission established a new combined (construction and operating) licensing process under 10 CFR Part 52; in addition, rulemaking is currently in progress for new licensing process under 10 CFR Part 53.

Since the last review of RG 1.70, there have been several updates proposed not only for RG 1.70, but also for RG 1.206 as well as sections of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," in support of new reactor licensing. As such, RG 1.70 is no longer being exclusively used by applicants for licensing new reactors.

RG 1.206, Revision 1, was developed to provide guidance to applicants who planned to use the 10 CFR Part 52 process to reference an early site permit, a design certification (DC), both, or neither, in a Combined License application. RG 1.206 was based on the existing guidance provided in RG 1.70. RG 1.206 provides additional guidance from where RG 1.70 left off.

¹ The acronym for LWR is Light Water Reactor

There has been increased focus on licensing new advanced and small modular reactors (SMR) (including microreactors), which feature lower safety risk levels, new technology, and novel processes, all of which are not completely addressed by existing regulations and guidance. The staff recognized gaps in RG 1.206, NUREG-0800, and RG 1.70, and in response developed Interim Staff Guidance DNRL-ISG-2022-01, "Safety Review of Light-Water Power Reactor Construction Permit Applications."

In the LWR space the staff has been engaged with significant pre-application activities. As far as SMR LWR applications, the staff reviewed and issued the NuScale SMR DC under Part 52, using RG 1.206, and NUREG 0800. The Clinch River SMR Construction Permit (CP) application is currently under review under Part 50, using a combination of RG 1.70, RG 1.206, NUREG 0800, and DNRL-ISG-2022-01.

Ongoing rulemaking per SRM-SECY-23-0021, under Part 53 "Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors," offers a performance-based alternative regulatory framework for licensing future commercial nuclear plants, including non-LWRs and LWRs, SMRs, and microreactors.

Ongoing rulemaking for microreactors associated with SRM-SECY-24-0008 and SECY-25-0052 address regulatory and guidance gaps associated with microreactors, such as manufacturing and testing of multiple reactors in factories, transportation, fueling, spent fuel storage, and decommissioning.

Rulemaking, including the revision or successor to RG 1.70, will be required to revise or develop new guidance to fully address all technical and processes items for applications submitted under Part 50, 52, and 53, either inclusively into one guidance document, or individually for each Part. It is anticipated that the guidance revision/development should follow the completion of said rulemaking, and for the review of applications such as the Clinch River CP be completed, so the staff may apply insights from new regulations, lessons learned, and efficiency initiatives.

2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?

RG 1.70 was used and referenced in the Clinch River CP application. It is anticipated that RG 1.70, in conjunction with RG 1.206, NUREG 0800, and DNRL-ISG-2022-01, maybe also be used and referenced in applications in the near future, until new, more encompassing, guidance is developed.

With significant changes happening in the current regulatory environment, including among other things, the above-mentioned rulemaking, ADAVCE Act, and Executive Orders, not updating RG 1.70 at this time is anticipated to have a minimal impact on internal and external stakeholders. Not updating RG 1.70 at this time is advised.

3. What is an estimate of the level of effort needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?

NRC staff requires approximately 3 FTE to conduct rulemaking to incorporate RG 1.70 and updates into RG 1.206, or to develop new guidance. This is referred to as RG 1.70 successor rulemaking. No contract dollars are anticipated.

This RG 1.70 successor rulemaking effort is estimated at 12 months, with solicitation of public comments, and Office of the General Counsel and the Office of Information and Regulatory Affairs reviews. It is estimated that 1 dedicated Project Manager FTE and equivalent of another 2 FTE for review and project support will be required.

4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?

Reviewed with issues identified for future consideration. As applicants still use and reference RG 1.70, RG 1.70 withdrawal is postponed.

5. Provide a conceptual plan and timeframe to address the issues identified during the review.

The Clinch River CP application review is estimated to be completed November 2026, the Microreactors rulemaking is estimated to be completed November 2026, and 10 CFR Part 53 rulemaking is estimated to be completed December 2027. At the conclusion of these activities the staff will make a decision to either 1) incorporate RG 1.70 into RG 1.206, to include, in phases, guidance for a construction permit and an operating license in a later phase, or 2) to develop new guidance. As stated above, the RG 1.70 successor rulemaking for this revised/new guidance is estimated to take 12 months, with an estimated completion date of December 2028. The resulting regulatory guide will then supersede RG 1.70, which will subsequently be withdrawn.

NOTE: This review was conducted in August 2025 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.