REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE (DG)-1283
SAFETY-RELATED CONCRETE STRUCTURES FOR NUCLEAR POWER PLANTS (OTHER THAN REACTOR VESSELS AND CONTAINMENTS)

(Proposed Revision of Regulatory Guide 1.142, last revised in 2001)

1. Statement of the Problem

RG 1.142, Revision 2, was issued in 2001. It describes methods that the staff of the U.S. Nuclear Regulatory Commission considers acceptable for complying with NRC regulations in the design, evaluation, and quality assurance of safety-related concrete structures excluding concrete reactor vessels and concrete containment. The guide endorses ACI 349-1997 "Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary," with certain exceptions as an acceptable means of complying with NRC regulations. ACI 349 was revised in 2013 and it draws upon issues encountered involving concrete design, construction, testing, and evaluation identified since issuance of ACI 349-1997. Use of the updated standard is desirable by both industry and the NRC staff.

2. Objective

The objective of this regulatory action is to assess the need to update the NRC guidance on Safety-Related Concrete Structures for Nuclear Power Plants (Other than Reactor Vessels and Containments).

3. Alternative Approaches

The NRC staff considered the following alternative approaches for providing NRC guidance on acceptable methods and procedures for Safety-Related Concrete Structures for Nuclear Power Plants (Other than Reactor Vessels and Containments):

1. Do not revise Regulatory Guide 1.142.
2. Withdraw Regulatory Guide 1.142.
3. Revise Regulatory Guide 1.142.

Alternative 1: Do Not Revise Regulatory Guide 1.142

Under this alternative, the NRC would not revise this guidance, and applicants would continue to use the present version of this regulatory guide. This is considered the "No Action" alternative. If NRC takes no action, there would be no cost to NRC in revising the guide. However, the "no-action" alternative would not provide an update to address the issues identified above. This may result in the need for NRC to request additional information (RAI) from applicants. The requests would impose a burden on applicants to respond to the RAIs and on the NRC staff to review the responses.

Alternative 2: Withdraw Regulatory Guide 1.142

Withdrawing this regulatory guide would eliminate the guidance regarding the safety-related concrete structures for nuclear power plants (other than reactor vessels and containments). Applicants would be impacted by a withdrawal by having to propose and justify methods and procedures for involving concrete design, construction, testing, and evaluation. NRC staff would be impacted by being required to review the alternate methods and procedures and the review may result in an increase in the number of RAIs which could extend the length of an application review. Applicants would be burdened by the effort required to respond to the RAIs.

Alternative 3: Revise Regulatory Guide 1.142

Under this alternative, the NRC would revise Regulatory Guide 1.142. The value to NRC staff and applicants in revising the guide would be the benefits associated with providing guidance based on current generally-accepted methods and procedures for the safety-related concrete structures for nuclear power plants (other than reactor vessels and containments). With such guidance the need for RAIs is reduced. That is a benefit for both NRC and applicants. The impact on the NRC would be the costs associated with preparing and issuing the regulatory guide. For parties who submitted a previous application, the impact would be in the cost of addressing a revised guide versus dealing with an established one they had used before. Applicants who have not submitted an application previously would not be affected by a revision of the guide.

4. Comparison of Alternatives

The three alternatives were compared against each other with respect to safety, as well as NRC and applicant resources.

With respect to safety, Alternative 1 and 2 do not necessarily represent unsafe results since organizations would either continue to use existing methods with which they are familiar and have not proven unsafe, or they may even adopt methods more recent than those found in the previous revisions of the RG. Alternative 3 would be superior to Alternative 1 and possibly 2 in that it would update the RG to include, where appropriate, revised standards and procedures that offer enhanced safety, improved clarity, reduce the uncertainty in the results, or facilitate the licensing process.

With regard to NRC resources, Alternative 3 represents the greatest initial cost to the NRC, which is attributable to the costs associated with preparing and issuing the regulatory guide. However, when considered over the lifetime of the RG and the potential for additional staff resources expenditures associated with evaluating applicant submittals which do not meet the RG, the overall NRC cost of Alternative 3 would be less than the overall cost of Alternatives 1 or 2.

With regard to applicant resources, Alternative 3 results in the least costs. Under alternatives 1 & 2 their submittals may require response to RAIs and they may have to perform additional analyses to address those RAIs. These additional activities would lead to increased costs to applicants and to the NRC for the staff time required to issue and review the RAIs.

5. Conclusion

Based on this regulatory analysis, the NRC staff concludes that revision of Regulatory Guide 1.142 is warranted. The proposed action will enhance an applicant's ability to prepare submittals to NRC. An updated guide will reduce staff review time and the need for requests for additional information thus reducing costs to applicants, and the NRC. The cost to NRC in revising the RG and to applicants in adapting to a revised RG are deemed to be less than the benefits accrued by reducing the need for RAIs.