

REGULATORY ANALYSIS FOR PROPOSED RULE

Approval of American Society of Mechanical Engineers' Code Cases

1. Objective of the Regulatory Action

This regulatory action would incorporate by reference the latest revisions of three previously incorporated regulatory guides (RG) that list Code Cases, published by the American Society of Mechanical Engineers (ASME) and approved by the U.S. Nuclear Regulatory Commission (NRC). These are RG 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," Revision 36; RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 17; and RG 1.192, "Operation and Maintenance [OM] Code Acceptability, ASME OM Code," Revision 1. These revisions would supersede the incorporation by reference of RG 1.84, Revision 35; RG 1.147, Revision 16; and RG 1.192, Revision 0. The NRC believes that this regulatory action would improve the effectiveness of future licensing actions.

This rulemaking also includes changes to Title 10 of the *Code of Federal Regulations* (10 CFR). These changes were made in accordance with the guidance for incorporation by reference of multiple standards that is included in Chapter 6 of the Office of the Federal Register's (OFR's) Document Drafting Handbook, January 2011 Revision. This latest revision of the OFR guidance provides several options for incorporating by reference multiple standards into regulations.

The NRC decided to incorporate by reference, in a single paragraph, the multiple standards mentioned in 10 CFR 50.55a(a). The NRC will also incorporate by reference the multiple standards in 10 CFR 50.55a(a), the first paragraph of the section, for the least disruption to the existing structure of the section. Each national consensus standard that is incorporated by reference in 10 CFR 50.55a will be listed in a separate subparagraph. Accordingly, the regulatory language of 10 CFR 50.54, 50.55, and 50.55a has been reorganized

by moving existing paragraphs, creating new paragraphs, and revising introductory and regulatory texts.

The NRC has also made conforming changes to references throughout 10 CFR 50.55a to reflect this reorganization. A detailed discussion of the affected paragraphs, other than the aforementioned reference changes, is provided in Section VII, Paragraph-by-Paragraph Discussion, of the proposed rule. The entire regulatory text of 10 CFR 50.55a has also been set out in its entirety for the convenience of the reader in viewing these changes.

It is acknowledged that these changes will necessitate licensees to revise their procedures for administrative changes. However, it should be noted that when a newly-issued statutory provision mandates a change for which the NRC has no discretion, the agency is not obligated to perform a regulatory analysis (RA) to address the costs and benefits associated with the change. Accordingly, this RA does not include detailed discussion of the impact of the changes resulting from the NRC's compliance with the OFR's guidance for incorporation by reference. However, the impact of these changes should be considered as a legitimate cost of this rulemaking. This reorganization of §§ 50.54, 50.55, and 50.55a would result in administrative changes to a limited number of procedures for all operating nuclear power plants. An order of magnitude estimate of the cost impact is provided in Section 3.1.

The NRC invites public comment on this RA.

This RA applies to both the proposed rule and the associated RGs. The proposed rulemaking would allow licensees and applicants to apply the Code Cases listed in the RGs as alternatives to requirements in the ASME Boiler and Pressure Vessel Code (BPV Code) and ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) for the design, construction, inservice inspection (ISI), and inservice testing (IST) of nuclear power plant components without a request for the use of alternatives or an exemption.

The ASME develops and publishes the BPV Code, which contains provisions for design, construction, and ISI of nuclear power plant components; and the OM Code, which contains provisions for IST of certain pumps and valves and inservice examination and testing of dynamic restraints (snubbers).

The applicable portions of the BPV Code and the OM Code are incorporated by reference in the NRC's regulations. Section 50.55a of the NRC's regulations requires that nuclear power plant owners construct Class 1, Class 2, and Class 3 components in accordance with Section III, Division 1, of the ASME BPV Code. Section 50.55a also requires that owners perform ISI of Class 1, Class 2, Class 3, Class MC, and Class CC components in accordance with Section XI, Division 1, of the BPV Code and that they perform IST of Class 1, Class 2, and Class 3 safety-related pumps and valves and inservice examination and testing of snubbers in accordance with the OM Code.

Code Cases (Section III, Section XI, and OM Code) provide alternatives to existing code requirements developed and approved by the ASME. Code Cases are developed to clarify the intent of existing requirements and utilize new technology when the need is urgent before the alternative requirements are incorporated into the ASME BPV and OM Codes. Code Cases also permit licensees to use advancements in ISI and IST and provide alternative examinations and testing for older plants, expeditious responses to user needs, and limited, clearly focused alternatives to specific ASME Code provisions.

2. Identification and Analysis of the Alternative Approaches

Two alternatives were identified by the NRC: (1) take no action, or (2) incorporate by reference NRC-approved ASME BPV Code Cases in RG 1.84, Revision 36; RG 1.147, Revision 17; and OM Code Cases in RG 1.192, Revision 1.

2.1. Alternative 1 - Take no action.

The no-action or status-quo alternative is not to update the incorporation by reference of RG 1.84, Revision 36; RG 1.147, Revision 17; and RG 1.192, Revision 1. This would mean that Revision 35 of RG 1.84; Revision 16 of RG 1.147; and Revision 0 of RG 1.192 would contain the latest ASME Code Cases that are incorporated by reference in the NRC's regulations. Licensees and applicants would not be able to use Code Cases in the next series of the RGs unless they request and receive approval for the use of alternatives under proposed § 50.55a(z).

The NRC does not consider Alternative 1 as an acceptable approach for the following two reasons:

- Licensees and applicants would submit a large number of requests for alternatives to apply Code Cases through proposed § 50.55a(z) since those Code Cases are not being approved in the RGs and are not being incorporated by reference in § 50.55a. This process would be burdensome to licensees and applicants as well as to the NRC.
- The NRC's role as an effective industry regulator would be undermined because the ASME periodically publishes, revises, and annuls its Code Cases. Under Alternative 1, outdated material would remain incorporated by reference in the *Code of Federal Regulations*.

2.2. Alternative 2 - Incorporate by Reference NRC-Approved ASME Code Cases in RG 1.84, Revision 36; RG 1.147, Revision 17; and RG 1.192, Revision 1.

Alternative 2 is to incorporate by reference the most recent RGs listing NRC-approved Code Cases into the CFR. This action would permit licensees and applicants to implement Code Cases that the NRC has approved since incorporating by reference the previous RGs without prior NRC approval under proposed § 50.55a(z). This alternative would continue the

NRC's policy of incorporating by reference the RGs that list NRC-approved alternatives to the provisions of the ASME BPV and OM Codes.

This alternative meets the NRC goal of ensuring the protection of public health and safety and the environment by approving new ASME Code Cases that allow the use of the most current methods and technology. In addition, it would help ensure that NRC actions are effective, efficient, realistic, and timely by eliminating the need for the NRC review of plant-specific requests for alternatives in accordance with proposed § 50.55a(z).

This alternative would also support the NRC's goal of maintaining an open regulatory process because approving ASME Code Cases demonstrates the agency's commitment to participate in the national consensus standard process.

This proposed rulemaking and periodic rulemakings to update the regulations by incorporating by reference the editions and addenda of the ASME BPV Code and OM Code would create additional burden on the NRC. However, the burden would be more than offset by reducing the number of requests for the use of alternatives under proposed § 50.55a(z) that the NRC would need to process.

3. Regulatory Impact - Costs and Benefits

This RA has been prepared in accordance with the Regulatory Analysis Guidelines (RA Guidelines) of the NRC, NUREG/BR-0058, Revision 4, dated September 2004 (NRC's Agencywide Documents Access and Management System (ADAMS) Accession No. ML042820192). This RA examines the costs and benefits of Alternative 2 relative to the baseline case, Alternative 1. First, this section addresses the guidelines on disaggregation. Second, it discusses the decision rationale and implementation schedule.

According to Section 4.3.2, "Criteria for the Treatment of Individual Requirements," of the RA Guidelines, in evaluating a final regulatory initiative, the NRC usually performs a RA for the

entire rule to determine whether or not it is cost justified. However, aggregating or bundling different requirements in a single analysis could potentially mask the inclusion of an unnecessary individual requirement. In the case of a rule that provides a voluntary alternative to current requirements, the net benefit from the relaxation of one requirement could potentially support a second unnecessary requirement that is not cost justified. Therefore, under the RA Guidelines, when analyzing and making decisions about regulatory initiatives that are composed of individual requirements, the NRC must determine if it is appropriate to include each individual requirement (disaggregation).

The RA Guidelines further state that a special case involves the NRC's periodic review and endorsement of consensus standards such as new versions of the ASME Codes and associated Code Cases. This is because consensus standards have already undergone extensive external review and have been endorsed by industry. In addition, endorsement of the ASME Codes and Code Cases has been longstanding NRC policy. Licensees and applicants participate in the development of the ASME Codes and Code Cases and are aware that periodic updating of the ASME Code is part of the regulatory process. Code Cases are ASME-developed alternatives to the ASME BPV and OM Codes that licensees and applicants may voluntarily choose to adopt if approved through incorporation by reference in the NRC's regulations. Finally, endorsement of the ASME Codes and Code Cases is consistent with the National Technology Transfer and Advancement Act, inasmuch as the NRC has determined that there are sound regulatory reasons for establishing regulatory requirements for design, maintenance, ISI, and IST and examination by rulemaking.

In a typical incorporation of Code Cases, the NRC endorsements can involve hundreds, if not thousands, of individual provisions. Evaluating the benefit vis-à-vis cost of each individual provision in this RA would be prohibitive, and the value gained by performing such an exercise

would be limited. Thus, this RA does not evaluate individual requirements of the consensus standards.

3.1. Effect on Licensees and Applicants

3.1.1 Revisions of Procedures

It is estimated that the NRC's reorganization of 10 CFR 50.54, 50.55, and 50.55a, needed to implement the OFR's guidance on incorporation by reference, would result in administrative revisions of approximately 50 procedures for each nuclear power plant. It is estimated that the total cost impact of this would be approximately \$3.1 million (\$3.1 million = 6 hours per procedure X 50 procedures per plant X 104 plants X \$100¹ per hour). It should be noted that applicants would not have to revise their procedures like operating reactors.

3.1.2. Requests for Alternatives

The application of ASME BPV and OM Code Cases is attractive to NRC licensees for several reasons. Applying Code Cases allows licensees to use advanced techniques, procedures, and measures on a trial basis to gain experience prior to the incorporation of the alternatives into the ASME Code and the NRC approval of the later editions and addenda. The experience is used to either refine or reject the new provisions. Code Cases are also suited for use in areas where the application of risk-informed principles indicates that there are too many examinations or tests or that occupational exposure can be reduced. Alternative 2 has the

¹It should be noted that the NRC labor rates presented here differ from those developed under the NRC's license fee recovery program (10 CFR part 170). For regulatory analysis purposes, labor rates are developed under strict incremental cost principles wherein only variable costs that are directly related to the implementation and operation and maintenance of the proposed requirement are included. This approach is consistent with guidance set forth in NUREG/CR-3560, "A Handbook for Value-Impact Assessment" (ADAMS Accession No. ML102560102), and general cost-benefit methodology. Alternatively, the NRC's labor rates for fee recovery purposes are appropriately designed for full cost recovery of the services rendered and as such include non-incremental costs (e.g., overhead, administrative, and logistical support costs).

advantage that, on implementation of the final rule, licensees and applicants will be able to unilaterally use the latest Code Cases that have been generically approved by the NRC through RGs. Therefore, licensees and applicants will be permitted to apply the Code Cases listed in the subject RGs without the need to seek NRC approval through a request for use of alternatives under proposed § 50.55a(z).

Once the Code Case is approved by the ASME, the licensees and or applicants must make a determination as to the applicability of the Code Case to its facility and the benefit to be derived. If the licensee or applicants determine that use of the Code Case would be beneficial and it has not been approved by the NRC, a request for the use of an alternative must be prepared, and all appropriate levels of licensee or applicant management must review and approve the request prior to submission to the NRC. The NRC estimates that this process would involve an average of 2 person-weeks, or 80 hours, of effort by a licensee or applicant. At an estimated labor rate of \$100¹ per hour, this would result in a cost to the licensee of \$8,000 per request for use of alternatives under proposed § 50.55a(z). It is expected that licensees or applicants deciding whether relief should be sought would weigh this cost against the benefit to be derived. In some cases, licensees would decide to forfeit the benefits of using a Code Case due to this additional burden. The NRC estimates that this would occur in the case of approximately 15 percent of new ASME Code Cases.

If it is assumed that each of the NRC's 109 nuclear power reactor including five reactors under construction would desire to implement two ASME Code Cases per year, then under

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Alternative 2, there would be 218 Code Cases implemented without incurring any cost for the use of alternatives under proposed § 50.55a(z) (assuming that each of these Code Cases and their conditions have been incorporated by reference in 10 CFR 50.55a). Under Alternative 2, the preparation of 185 (i.e., 85 percent of 218 Code Cases) alternatives would be averted at an industry-wide cost reduction of approximately \$1.48 million (218 reactor units x 0.85 x \$8,000 per alternatives) per year.

4. Decision Rationale

The NRC proposes to adopt Alternative 2. As previously discussed, this alternative meets the NRC's goal of ensuring the protection of public health and safety and the environment through the NRC's approval of new ASME Code Cases that allow the use of the most current methods and technology. In addition, this alternative would help ensure that the NRC's actions are effective, efficient, realistic, and timely by eliminating the need for the NRC review of plant-specific relief requests. This alternative would also support the NRC's goal of maintaining an open regulatory process because approving ASME Code Cases demonstrates the agency's commitment to participate in the national consensus standards process.

Other important considerations lead the NRC to recommend Alternative 2:

- The industry is familiar with the well-established process of approving Code Cases through NRC RGs.
- The public perceives that the Code Case approval process is consistent across the industry and that the NRC will continue to support the use of the most current technically sound techniques developed by the ASME while adequately protecting the public.

5. Implementation Schedule

A final rule based upon this proposed rule will become effective 30 days after the publication of the final rule in the *Federal Register*.