

## REGULATORY ANALYSIS FOR PROPOSED RULE:

### AMENDMENT TO 10 CFR 50.55a, "CODES AND STANDARDS"

#### NRC REGULATORY GUIDES 1.84, REVISION 35, AND 1.147, REVISION 16, LISTING

#### APPROVED ASME BOILER AND PRESSURE VESSEL CODE CASES

### 1. Objective of the Regulatory Action

The regulatory action would incorporate by reference the latest revisions of two previously incorporated regulatory guides (RG) that list the Nuclear Regulatory Commission (NRC) approved code cases published by the American Society of Mechanical Engineers (ASME). These are RG 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," Revision 35, and RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 16. These revisions would supersede the incorporation by reference of RG 1.84, Revision 34, and RG 1.147, Revision 15. RG 1.192, which lists NRC-approved code cases applicable to the *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code), is not superseded at this time because no new OM Code Cases have been approved for use. The NRC believes that this regulatory action will improve the effectiveness of future licensing actions.

This regulatory analysis applies to both the proposed rulemaking and regulatory guides. This proposed action would allow licensees to apply the code cases listed in the RGs as alternatives to requirements in the ASME Boiler and Pressure Vessel (BPV) Code for the construction and inservice inspection (ISI) 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 requirements for design, construction, and ISI of nuclear power plant components, and the OM Code, which contains requirements for inservice testing (IST) of certain pumps and valves. The ASME publishes a new edition of the BPV Code and the OM Code every 3 years as well as a new addenda every year. The ASME also publishes BPV Code Cases on a quarterly basis and OM Code Cases annually. Code cases (Sections III and XI) provide alternatives to existing code requirements developed and approved by the ASME. Code cases are developed to gain experience with new technology before the alternative requirements are incorporated into the ASME code. Code cases also permit licensees to use advancements in ISI and IST and provide alternative examinations for older plants, expeditious responses to user needs, and limited, clearly focused alternatives to specific ASME Code provisions.

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 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 in accordance with the OM Code.

## **2. Identification and Analysis of the Alternative Approaches**

The alternatives are (1) to take no action or (2) incorporate by reference NRC-approved ASME BPV Code Cases in RG 1.84, Revision 35, and RG 1.147, Revision 16.

### **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, Rev. 35, and 1.147, Rev. 16. This would mean that Revision 34 of RG 1.84 and Revision 15 of RG 1.147 would contain the latest ASME Code Cases that are incorporated by reference in NRC's regulations. Licensees 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 § 50.55a(a)(3).

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

- Licensees would submit a large number of requests for alternatives to apply code cases that are not approved through the RGs that are incorporated by reference in § 50.55a. This process would be burdensome both to the licensee and to the NRC.
- NRC's role as an effective industry regulator would be undermined because 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 BPV Code Cases in RG 1.84, Revision 35, and RG 1.147, Revision 16**

Alternative 2 is to incorporate the most recent regulatory guides listing NRC-approved code cases into the *Code of Federal Regulations*. This action would permit licensees to implement, without prior NRC approval under § 50.55a(a)(3), code cases that the NRC approved since incorporating the previous RGs by reference. This alternative would continue NRC's policy of incorporating by reference the RGs that list NRC-approved alternatives to the provisions of the ASME BPV code.

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 relief requests.

This alternative would also support 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 rule by incorporating and by referencing the editions and addenda of the ASME BPV Code would create additional burden on NRC. However, the burden would be more than offset by reducing the number of requests for the use of alternatives under § 50.55a(a)(3) that the staff would need to process.

### **3. Regulatory Impact - Costs and Benefits**

This regulatory analysis has been prepared in accordance with the Regulatory Analysis Guidelines (RA Guidelines) of the NRC, NUREG/BR 0058, Revision 4, dated September 2004 (ML042820192). This regulatory analysis examines the costs and benefits of Alternative 2 relative to the baseline case, Alternative 1. First, this section addresses the guidelines on disaggregation. Next, it discusses the minor costs and benefits of Code Case N-730 regarding Roll Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in boiling water reactors (BWR), Section XI, Division 1. Finally, 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 regulatory analysis 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 Code and associated code cases. This is because consensus standards have already undergone extensive external review and been endorsed by industry. In addition, endorsement of the ASME Code and Cases has been longstanding NRC policy. Licensees participate in the development of the ASME Code and Code Cases and are aware that periodic updating the ASME Code is part of the regulatory process. Code Cases are ASME developed alternatives to the ASME Code that licensees may voluntarily choose to adopt if they are approved through incorporation by reference in NRC's regulations. Finally, endorsement of the ASME Code 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 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 regulatory analysis would be prohibitive, and the value gained by performing such an exercise would be limited. Thus, it is not useful for this regulatory analysis to address the individual provisions of the consensus standards.

#### **3.1. Effect on Licensees**

##### **3.1.1. Relief Requests**

The application of ASME BPV 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 without prior NRC approval. 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 indicate that there are too many examinations or tests or that occupational exposure can be reduced. Alternative 2 has the advantage that, on implementation of the final rule, licensees will be able to unilaterally use the latest code cases that have been generically approved by the NRC through RGs. Therefore, licensees 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 § 50.55a(a)(3).

Once the code case is approved by the ASME, the licensee must make a determination as to the applicability of the code case to its facility and the benefit to be derived. A request must be prepared, and all appropriate levels of licensee management must review and approve the request prior to submission to the NRC. The NRC estimates that this process would involve an average of 3 person-weeks or 120 hours of effort by a licensee. At an estimated labor rate of \$100<sup>1</sup> per hour, this would result in a cost to the licensee of \$12,000 per request for use of alternatives under § 50.55a(a)(3). It is expected that licensees 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 staff estimates that this would occur in the case of approximately 15 percent of new ASME Code Cases.

If it is assumed that each of NRC's 104 nuclear power reactor licensees would desire to implement 2 ASME Code Cases per year, under Alternative 2, there would be 208 code cases implemented without incurring any cost for use of alternatives under § 50.55a(a)(3) (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 177 (i.e., 85 percent of 208 code cases) relief requests would be averted at an industry-wide cost reduction of approximately \$2.1 million (208 reactor units x 0.85 x 12K per relief request) per year.

### **3.1.2. Code Case N-730, "Roll Expansion of Class 1 Control Rod Drive Bottom Head Penetrations in BWRs, Section XI, Division 1"**

This Code Case requires licensees to maintain the repair records of the control rod drive bottom head penetrations in BWRs for the life of the reactor pressure vessel. The Code Case applies only to the 35 BWRs. It is estimated that the Code Case will be applied five times each year across the industry and consume approximately 5 hours per repair for a recordkeeping burden of \$2,500/year (i.e., 5 occurrences x 5 hours per occurrence x \$100 per hour). The NRC considers this recordkeeping burden as negligible.

## **4. Decision Rationale**

The staff recommends Alternative 2. As discussed above, this alternative meets the NRC goal of ensuring the protection of public health and safety and the environment by NRC's approving

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<sup>1</sup>It 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," and general cost-benefit methodology. Alternatively, NRC 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).

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 relief requests. This alternative would also support 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 staff 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

This proposed rule will become effective 30 days after the publication of the final rule in the *Federal Register*.