ENCLOSURE 3

DRAFT REGULATORY ANALYSIS

REGULATORY ANALYSIS FOR PROPOSED RULE: AMENDMENT TO 10 CFR 50.55a, "CODES AND STANDARDS" INCORPORATION BY REFERENCE OF ASME BPV CODE CASES AND FOR DRAFT REGULATORY GUIDES FOR INCORPORATION BY REFERENCE OF ASME BPV CODE CASES

1. Objective of the Regulatory Action

The regulatory action that is the subject of this analysis is the incorporation by reference of the latest revisions of two previously incorporated regulatory guides (RGs) that approve Code Cases published by the American Society of Mechanical Engineers (ASME). Thus, this regulatory analysis applies to both the proposed rulemaking and draft regulatory guides; a separate regulatory analysis was not prepared for the draft guides. These RGs are RG 1.84, "Design and Fabrication Code Case Acceptability, ASME Section III," Revision 34 (temporarily designated DG-1133) and RG 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 15 (temporarily designated DG-1134). In the proposed rule, these revisions would supersede the incorporation by reference of RG 1.84, Revision 33 and RG 1.147, Revisions 0 through 14. To make Regulatory Guide 1.147 easier to use, there was an effort to ensure that the tables of annulled Code Cases in Revision 15 were all inclusive. The result should be that licensees will no longer have to refer to multiple versions of this regulatory guide in managing Code Case usage in their ISI programs. 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Code Cases applicable to the *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code), is not superseded at this time because no new OM Code Cases have been approved for use.

This action allows licensees to apply the Code Cases listed in the regulatory guides as alternatives to requirements in the ASME BPV Code for the construction and inservice inspection of nuclear power plant components without prior NRC approval.

The ASME develops and publishes the BPV Code, which contains requirements for design, construction, and inservice inspection (ISI) of nuclear power plant components, and the OM Code, which contains requirements for inservice testing of certain pumps and valves. The ASME publishes a new edition of the BPV Code and the OM Code every 3 years, and a new addenda every year. The ASME also publishes BPV Code (Sections III and XI) Cases on a quarterly basis and OM Code Cases annually. Code Cases 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 inservice testing (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 34, and RG 1.147, Revision 15.

2.1 Alterative 1 – Take no action

The no-action or status quo alternative is not to update the incorporation by reference of Regulatory Guides 1.147 and 1.84. This would mean that Revision 33 of RG 1.84 and Revisions 0 through 14 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 requested and received relief under §50.55a(a)(3).

The NRC does not consider Alternative 1 an acceptable approach for two reasons.

1. Licensees would submit a large number of relief requests 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.

2. 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 Regulatory Guides 1.84, Revision 34, and 1.147, Revision 15.

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 Code Cases that the NRC approved since incorporating the previous regulatory guides by reference. Licensees would not need prior NRC approval. This alternative would continue NRC’s policy of incorporating by reference the regulatory guides 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 rulemaking and periodic rulemakings to update the rule would create additional burden on NRC. However, the burden would be more than offset by reducing the number of relief requests that the staff would need to process.

3. Regulatory Impact - Costs and Benefits

This regulatory analysis will examine the costs and benefits of Alternative 2 relative to the baseline case, which in this analysis is the no-action alternative, or Alternative 1. First, this section addresses the guidelines on disaggregation. Next, it discusses the expected costs and benefits to licensees and NRC and the burden of Code Case, N-686 regarding visual examination, the one Case that significantly affects costs and benefits. Finally, it discusses the decision rationale and implementation schedule.

According to Section 4.3.2, "Criteria for the Treatment of Individual Requirements" of the Regulatory Analysis Guidelines (hereafter referred to as Guidelines), in evaluating a proposed 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 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 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 tend to be noncontroversial and have already undergone extensive external review and been endorsed by industry. In addition, endorsement of the ASME Code and Code Cases has been longstanding NRC policy. Licensees participate in the development of the ASME Code and Code Cases and know when receiving their operating licenses that 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. 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, inservice inspection and inservice testing by rulemaking.

Evaluating the benefits and costs of each individual provision in a regulatory analysis would be a monumental task and the value gained by performing such an exercise would be limited. These NRC endorsements can typically involve hundreds, if not thousands, of individual provisions. Thus, although regulatory actions endorsing these consensus standards must be addressed in a regulatory analysis, it is not necessary for the regulatory analysis to address the individual provisions of the consensus standards. Therefore, disaggregation will not be discussed further.

3.1 Effect on Licensees

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. 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 advantage that, on implementation of the final version of this proposed rule, licensees will be able to use the latest Code Cases that have been generically approved by the NRC through regulatory guides.

ASME Code Cases also appeal to licensees because they reduce unnecessary burden. Once a Code Case is approved by the ASME, the licensee must determine the applicability of the Code Case to its facility and the benefit. If a licensee elects to apply a Code Case that NRC has not incorporated into the regulations, the licensee must prepare a relief request pursuant to § 50.55a(a)(3). The NRC estimates that this process would take an average of 3 person-weeks or 120 hours of licensee effort for each relief request. At an estimated labor rate of $100 per hour, a single relief request would cost the licensee $12,000. It is expected that licensees would weigh this cost against the benefit. In some cases, licensees would decide that the cost of seeking relief to apply the Code Case is not justified by the reduction in radiological exposure or burden. NRC estimates that this would happen in about 15 percent of the ASME Code Cases.

Assuming that 85 percent of NRC's 104 licensees decided to implement one new Code Case, under Alternative 1 they would submit 88 relief requests (i.e., 85 percent of 104 licensees) at an industry-wide cost of approximately $1,056,000 (88 relief requests x 120 hours per relief request x $100). Under Alternative 2, one new Code Case would be implemented without the cost of preparing relief requests, saving the industry $1,056,000.

The Code Cases being endorsed through this action rely on record-keeping and reporting requirements already approved in 10 CFR 50.55a. Thus, there are no new record-keeping or reporting requirements associated with this action.

3.2 Effect on NRC Staff

NRC would also have less burden under Alternative 2. As discussed above, NRC assumes that 85 percent of reactor licensees (i.e., 88 licensees) would find it cost beneficial to apply one of these Code Cases. Thus, under Alternative 1, 88 Code Cases would be submitted for NRC approval pursuant to § 50.55a(a)(3). It is estimated that each relief request would require approximately 2 staff-weeks or 80 hours to review and approve, so the NRC would save about $619,520 (88 relief requests X 80 person-hours X $88[1]) under Alternative 2. NRC would incur implementation costs resulting from the adoption of the proposed action. In this case, these would be the rulemaking costs NRC faces from the time the proposed rule is published to getting the final rule promulgated.

3.3 Code Case N-686, “Alternative Requirements for Visual Examinations, VT-1, VT-2, and VT-3, Section XI, Division 1,” Supplement 8/9 to the 2001 Edition

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[1]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 and include only variable costs that are directly related to the implementation and operation and maintenance of the proposed requirement. This approach is consistent with guidance set forth in NUREG/CR-3560, “A Handbook for Value-Impact Assessment,” and the 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).

This Code Case simplifies and clarifies the requirements for each type of visual examination and modifies some of the provisions to make the visual examination requirements conform to the purpose and type of examination defined in IWA-2200, “Examination Methods.”

Three types of visual examinations are defined in Section XI: VT-1 to detect discontinuities and surface imperfections (including cracks, wear, corrosion, or erosion), VT-2 to detect evidence of pressure boundary leakage, and VT-3 to determine the general mechanical and structural condition of components and their supports. The three visual examinations were introduced into the ASME Code in the 1970s. Over the years, many changes have been made to these requirements to improve the quality of the visual examinations. A change to the VT-2 examination requirements in the 1996 addenda required an examiner to be within 6 feet of the surfaces being examined and use a specified minimum illumination or to perform a remote examination that provides a resolution demonstratively equivalent to the direct examination at 6 feet. However, these changes had unintended consequences. In some cases, to meet the lighting requirements, scaffolding had to be erected even though it might not have been necessary to detect evidence of pressure boundary leakage. In addition, the ASME received requests to clarify some of the changes. Finally, it was recognized that the VT-2 and VT-3 demonstration requirements had evolved through all of the changes and were essentially the same for VT-1 (i.e., the highest level).

Industry inservice inspection specialists submitted the following estimates of the cost savings from implementing this Code Case. To meet the distance requirements described above, scaffolding has to be erected 300 times per 10-year ISI interval per plant. The labor costs to do so are approximately $1000 each time, resulting in an average cost of $300,000 per plant per 10-year ISI interval or $30,000 per plant per year. Hence, the annual industry-wide savings of implementing this Code Case are estimated to be $3,120,000 (104 plants times $30,000 per plant per year).

It takes an average of 40 hours to erect the scaffolding. The average dose rate has been conservatively estimated to be 10 millirem (mR) or 0.01 rem per hour. The reduction in occupational exposure from implementing this Code Case is thus estimated to be 2,080 rem per 10-year interval per plant (104 plants times 50 builds per 10-year ISI interval times 40 hours per build times 0.01 rem per hour). Thus, the annual industry-wide reduction in occupational exposure would be 208 rem per year. At $2000 per rem, it is estimated that implementation of the Code Case would result in an additional industry-wide savings of $416,000.

The provisions of the Code Case do not modify the reporting and record-keeping requirements of the ASME Code.

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 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 regulatory guides.

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