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BEING PROVIDED TO SUPPORT THE 2/7/2017 ACRS REGULATORY  
POLICIES AND PRACTICES SUBCOMMITTEE MEETING  
AND NOT TO SOLICIT EXTERNAL STAKEHOLDER FEEDBACK**

**APPENDIX D**

**GUIDANCE ON REGULATORY ANALYSIS  
RELATED TO ASME CODE CHANGES**

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## ABBREVIATIONS AND ACRONYMS

ASME	American Society of Mechanical Engineers
BPV	Boiler and Pressure Vessel
CC	concrete containment
CFR	<i>Code of Federal Regulations</i>
FR	<i>Federal Register</i>
ISI	inservice inspection
IST	inservice testing
MC	metal containment
NRC	U.S. Nuclear Regulatory Commission
OM	operation and maintenance
UT	ultrasonic testing



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## D.1 REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a, "Codes and Standards," requires nuclear power plant licensees to construct, inspect, and test certain components following certain American Society of Mechanical Engineers (ASME) codes. Under 10 CFR 50.55a, licensees must construct ASME Boiler and Pressure Vessel (BPV) Code Class 1, 2, and 3 components following the rules of ASME BPV Code (Section III, Division 1). Under 10 CFR 50.55a, licensees must inspect Class 1, 2, 3; Class MC; and Class CC components following the rules provided by ASME BPV Code (Section XI, Division 1). Finally, under 10 CFR 50.55a, licensees must test Class 1, 2, and 3 pumps and valves under the rules provided in the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM) Code. From time to time, the U.S. Nuclear Regulatory Commission (NRC) amends 10 CFR 50.55a to incorporate by reference later editions and addenda of Section III, Division 1, of the ASME BPV Code; Section XI, Division 1, of the ASME BPV Code; and the ASME OM Code.

The NRC periodically reviews and endorses consensus standards, such as new versions of the ASME codes. These NRC endorsements can typically involve hundreds, if not thousands, of individual provisions. Thus, evaluating the costs and benefits of each individual provision in a regulatory analysis can be a monumental task. Further, the value gained by performing such an exercise appears limited. These consensus standards tend to be noncontroversial, having already undergone extensive external review, and having already been endorsed by industry. Although regulatory actions endorsing these consensus standards need to be addressed in a regulatory analysis, it is usually not necessary for the regulatory analysis to address the individual provisions of the consensus standards.

The NRC believes this is appropriate for several reasons:

- It has been a longstanding NRC policy to incorporate later versions of the ASME Code into NRC regulations; thus, licensees know when receiving their operating licenses that updating the ASME Code is part of the regulatory process.
- Endorsement of the ASME Code 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 (ISI), and inservice testing (IST) by rulemaking.
- These consensus standards undergo significant external review and discussion before the NRC endorses the standards.

Some aspects of these regulatory actions endorsing consensus standards may impose additional burden, which are addressed and justified individually. For example, the NRC endorsement (incorporation by reference) of the ASME BPV Code provisions on ISI and IST, and the NRC endorsement on ASME OM Code are not ordinarily considered as sources of incremental costs or benefits in regulatory analyses because of the NRC's longstanding policy to incorporate later versions of the ASME codes into its regulations. However, under some

circumstances, the NRC treats its endorsement of a later ASME BPV or OM Code as a new requirement that results in additional burden. This appendix discusses the how to consider ASME Code endorsements in regulatory analyses. Regulatory analyses should include consideration of the changes (e.g., process changes, staff conditions, and recordkeeping requirements) necessary to implement individual requirements of the regulatory action. The NRC should aggregate the costs of these changes to produce qualitative or quantitative estimates of the overall costs and benefits of each requirement, to the extent practical, to determine whether each individual requirement of the action is cost beneficial.

## **D.2 INCORPORATION BY REFERENCE OF LATER EDITIONS AND ADDENDA OF SECTION III, DIVISION 1 OF ASME BPV CODE**

Incorporation by reference of later editions and addenda of Section III, Division 1, of the ASME BPV Code does not affect a plant that has already received an NRC construction permit or an operating license, or a design that has already been approved by the NRC. The edition and addenda of the ASME BPV Code that the plant will use for construction are, by rule, determined on the basis of the date of the construction permit. The ASME BPV Code edition that a plant uses does not change, unless the licensee volunteers for the change. Thus, incorporation by reference of a later edition and addenda of ASME BPV Code, Section III, Division 1, establishes the regulatory baseline for a new applicant and does not increase the regulatory burden.

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### **D.3 INCORPORATION BY REFERENCE OF LATER EDITIONS AND ADDENDA OF SECTION XI, DIVISION 1, OF THE ASME BPV AND OM CODES**

Incorporation by reference of later editions and addenda of Section XI, Division 1, of the ASME BPV Code and the ASME OM Code affect the ISI and IST programs of operating reactors. However, the incorporation by reference of later editions and addenda of the ASME BPV Code (Section XI) and OM Code does not generally change the regulatory baseline of a regulatory analysis for the following reasons:

- The NRC's longstanding policy has been to incorporate later versions of the ASME codes into its regulations; thus, licensees know when receiving their operating licenses that such updating is part of the regulatory process. This is reflected in 10 CFR 50.55a, which requires licensees to revise their ISI and IST programs every 120 months to the latest edition and addenda of Section XI of the ASME BPV Code and the ASME OM Code incorporated by reference into 10 CFR 50.55a. In effect, that is 12 months before the start of a new 120-month ISI and IST interval. Thus, when the NRC endorses a later version of a code, it is implementing this longstanding policy.
- ASME BPV and OM codes are national consensus standards developed by participants with broad and varied interests. All interested parties (including the NRC and utilities) participate in developing these standards. The consideration is consistent with both the intent and spirit of the backfit rule (i.e., the NRC provides for the protection of the public health and safety, and does not unilaterally impose undue burden on applicants and licensees).
- Endorsement of these ASME codes 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.

Instances where the NRC adds conditions or restrictions above and beyond those specified in the later edition or addenda of the ASME BPV or OM Codes are evaluated individually within the regulatory analyses for their costs and benefits.

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#### **D.4 OTHER CIRCUMSTANCES IN WHICH THE NRC DOES NOT APPLY THE BACKFIT RULE TO ENDORSEMENT OF A LATER CODE**

Other circumstances in which the NRC does not assess the costs and benefits related to the endorsement of a later code are as follows:

- When the NRC takes exception to a later ASME BPV or OM code provision and merely retains the current existing requirement, prohibits the use of the later code provision, or limits the use of the later code provision. The regulatory analysis does not evaluate this circumstance because this condition reflects the status quo (i.e., the NRC is not imposing new requirements). However, the NRC provides the technical and/or policy bases for taking exceptions to the code in the statements of consideration for the rule.
- When an NRC exception relaxes an existing ASME BPV or OM code provision but does not prohibit a licensee from using the existing code provision, the regulatory analysis does not evaluate this circumstance because this condition reflects the status quo (i.e., the NRC is not imposing new requirements).

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## **D.5 ENDORSEMENT OF LATER ASME BPV OR OM CODES THAT ARE CONSIDERED BACKFITS**

Circumstances under which the NRC considers it appropriate to assess the costs and benefits of a later ASME BPV or OM code:

- When the NRC endorses a later provision of the ASME BPV or OM code that takes a substantially different direction from the currently existing requirements, the action is treated as a new requirement. An example is the NRC's initial endorsement of Subsections IWE and IWL of Section XI, which imposed containment inspection requirements on operating reactors for the first time. The final rule dated August 8, 1996 (Volume 61 of the *Federal Register*, p. 41303 (61 FR 41303)), incorporated by reference in 10 CFR 50.55a the 1992 Edition with the 1992 Addenda of IWE and IWL of Section XI to require that containments be routinely inspected to detect defects that could compromise a containment's structural integrity. This action expanded the scope of 10 CFR 50.55a to include components that were not considered by the existing regulations to be within the scope of ISI and the costs to implement these inspections should be included in the regulatory analysis. Because the corrosion rate was found to be greater than that for which the containment was designed and there existed a lack of activities to manage the corrosion, the NRC concluded that, unless the agency imposed Subsections IWE and IWL, it was likely that this situation could adversely affect containment structural integrity and leak-tightness during the unit's operating license term.
- When the NRC requires implementation of later ASME BPV or OM code provisions on an expedited basis, the action is treated as a new requirement. The analyst would treat this as a new requirement because industry implementation is required sooner than it would be required if the NRC simply endorsed the codes without any expedited language. An example of this circumstance was the final rule dated September 22, 1999 (64 FR 51370), which incorporated by reference the 1989 Addenda through the 1996 Addenda of Section III and Section XI of the ASME BPV Code, and the 1995 Edition with the 1996 Addenda of the ASME OM Code. The final rule expedited the implementation of the 1995 Edition with the 1996 Addenda of Appendix VIII of Section XI of the ASME BPV Code for qualification of personnel and procedures for performing ultrasonic testing (UT) examinations. The analyst should consider the costs for the expedited implementation of Appendix VIII because licensees were required to implement the new requirements in Appendix VIII before the next 120-month ISI program inspection interval update. Another example of expedited implementation of code was the final rule dated August 6, 1992 (57 FR 34666). This final rule incorporated by reference in 10 CFR 50.55a the 1986 Addenda through the 1989 Edition of Section III and Section XI of the ASME BPV Code. The final rule added a requirement to expedite the implementation of the revised reactor vessel shell weld examinations in the 1989 Edition of Section XI. The NRC considered the imposition of these examinations as a new requirement because licensees were required to implement the examinations before the next 120-month ISI program inspection interval update.
- When the NRC takes an exception to an ASME BPV or OM code provision and imposes a requirement that is substantially different from the current existing requirement as well as substantially different than the later code, the NRC treats this as a new requirement.

An example of this is presented in the portion of the final rule dated September 26, 2002 (67 FR 60520), in which the NRC adopted dissimilar metal piping weld UT examination coverage requirements different from those in the ASME Code.

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## D.6 REFERENCES

- D.1. American Society of Mechanical Engineers (ASME). "ASME Boiler Pressure Vessel Code." Current Ed., American Society of Mechanical Engineers, New York, New York.
- D.2. American Society of Mechanical Engineers (ASME). "ASME Code for Operations and Maintenance of Nuclear Power Plants." Current Ed., American Society of Mechanical Engineers, New York, New York.
- D.3. National Technology Transfer and Advancement Act. 1995. Pub. L. 104-113, 110 Stat. 775. <http://energy.gov/ehss/national-technology-transfer-and-advancement-act-1995-public-law-pl-104-113>.
- D.4. U.S. Nuclear Regulatory Commission (NRC). 1996. Final Rule: 10 CFR Part 50, *Codes and Standards for Nuclear Power Plants; Subsection IWE and Subsection IWL*. 61 FR 41303, August 8, 1996.
- D.5. U.S. Nuclear Regulatory Commission (NRC). 1999. Final Rule: 10 CFR Part 50, *Industry Codes and Standards; Amended Requirements*. 64 FR 51370, September 22, 1999.
- D.6. U.S. Nuclear Regulatory Commission (NRC). 1992. Final Rule: 10 CFR Part 50, *Codes and Standards for Nuclear Power Plants*. 57 FR 34666, August 6, 1992.
- D.7. U.S. Nuclear Regulatory Commission (NRC). 2002. Final Rule: 10 CFR Part 50, *Industry Codes and Standards; Amended Requirements*. 67 FR 60520, September 26, 2002.