

Proposed Rule to Incorporate by Reference the 2015 and 2017 Editions of ASME Codes into 10 CFR 50.55a

July 30, 2018

Agenda



- Purpose and Overview
- ASME Section III
- ASME Section XI
- ASME OM Code
- Open Discussion

Purpose and Overview

Jim O'Driscoll
Division of Rulemaking
Office of Nuclear Material Safety and
Safeguards

Purpose of Meeting



- Brief status of the ongoing 10 CFR 50.55a rulemakings
- Preliminary NRC views regarding rulemaking to incorporate by reference ASME 2015 and 2017 Editions
- NRC will consider information and perspectives discussed today when developing the proposed rule, but the NRC will not prepare detailed written responses

Two Ongoing Rulemakings



1. Proposed Rule: Incorporate by reference ASME Code Case regulatory guides (RGs)

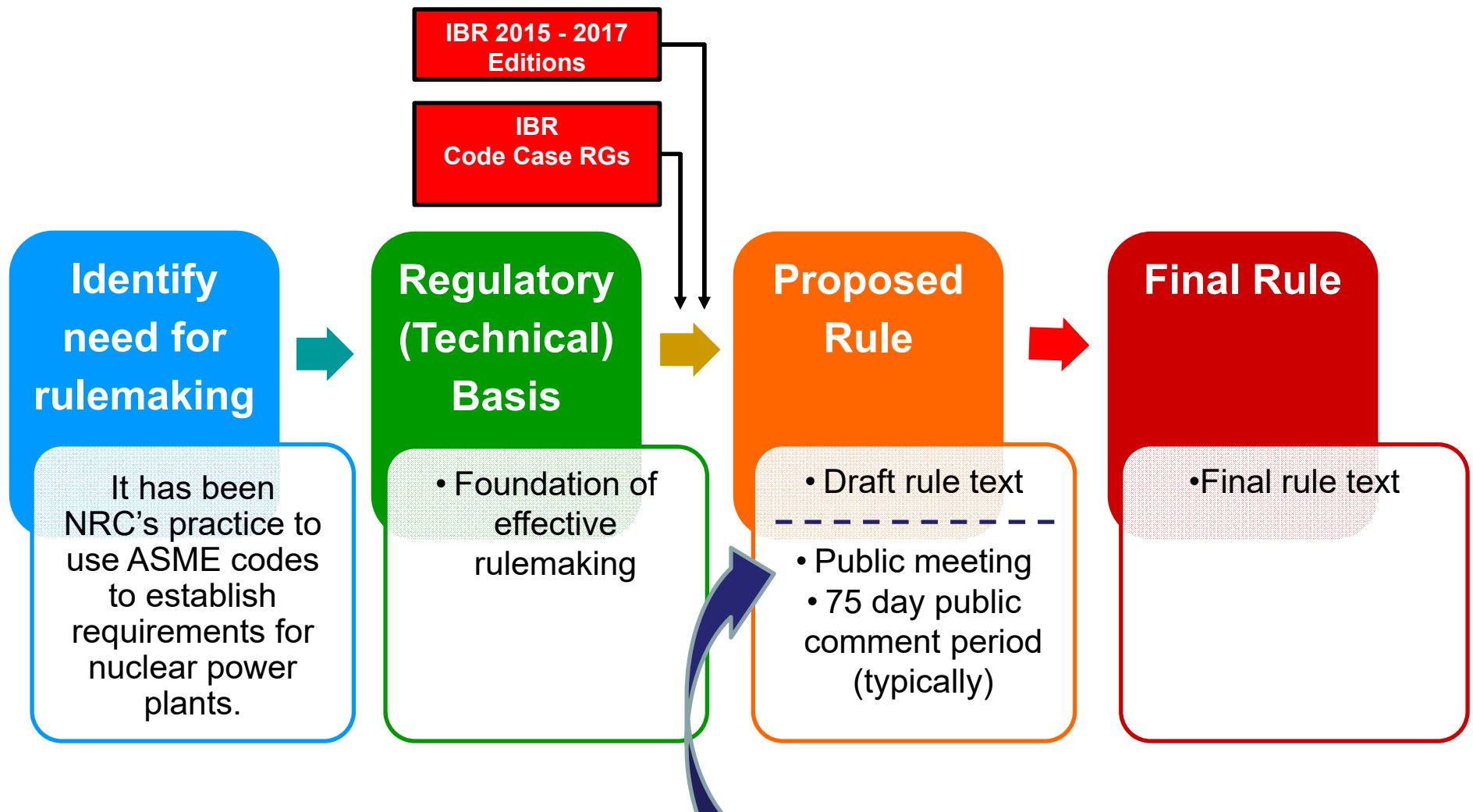
(RIN 3150-AJ93, Docket ID NRC-2017-0024)

- RG 1.84, Rev. 38
- RG 1.147, Rev. 19
- RG 1.192, Rev. 3

2. Proposed Rule: Incorporate by reference ASME BPV/OM 2015 – 2017 Code Editions

(RIN 3150-AJ74, Docket ID NRC-2016-0082)

Rulemaking Process



Opportunities for public participation

Timeline – Code Case RG Rulemakings



Publication Year	ASME BPV Code Case Supplements	NRC Proposed Rule	NRC Final Rule	RG 1.84	RG 1.147	RG 1.192*
2005	4 5 6 7		70 FR 56809 (9/29/2005)	Rev. 33	Rev. 14	
2006	8 9 10 11	71 FR 62942 (10/27/2006)				
2007	0 1 2 3		72 FR 71750 (12/19/2007)	Rev. 34	Rev. 15	
2008	4 5 6 7					
2009	8 9 10 11 0	74 FR 26303 (6/2/2009)				
2010	1 2 3 4		75 FR 61321 (10/5/2010)	Rev. 35	Rev. 16	
2011	5 6 7 8					
2012	9 10 11					
2013	0 1 2 3	78 FR 37886 (6/24/2013)				
2014	4 5 6 7		79 FR 65776 (11/5/2014)	Rev. 36	Rev. 17	Rev. 1
2015	0 1 2 3 4					
2016	5 6 7	81 FR 10780 (3/2/2016)				
2017			83 FR 2331 (1/17/2018)	Rev. 37	Rev. 18	Rev. 2
2018		Target: mid 2018**				
2019			Target: mid 2019	Rev. 38	Rev. 19	Rev. 3

* Scope of RG 1.192 Revisions (OM Code Editions/Addenda)

- Rev. 1: 2004 Edition, 2006 Addenda
- Rev. 2: 2009 Edition, 2011 Addenda, 2012 Edition
- Rev. 3: 2015 Edition, 2017 Edition

** Scope of the 2018 proposed rule also includes

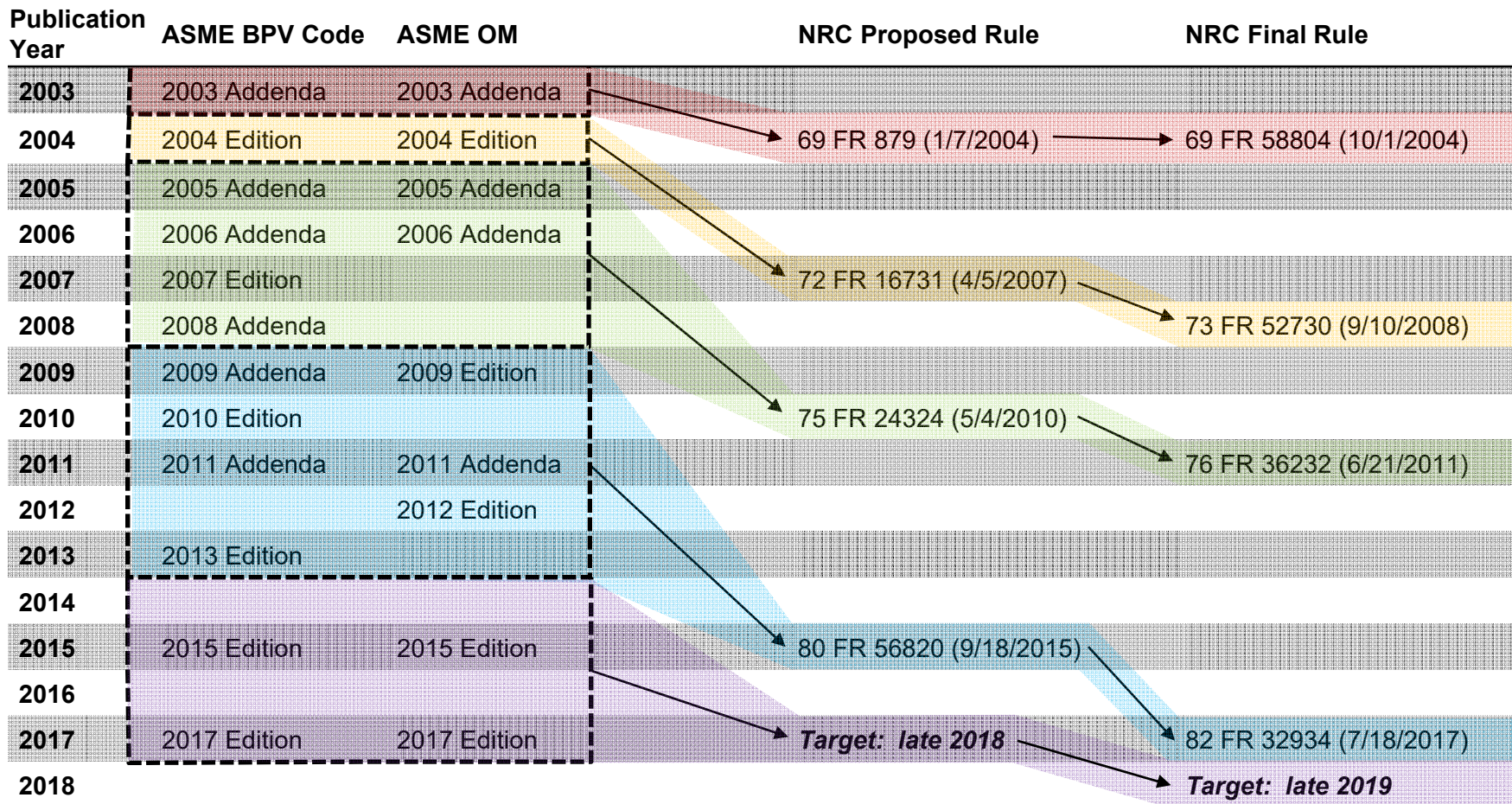
- OM Code Cases published at the same time as the 2017 Edition
- Additional Section XI Code Cases published from the 2015 Edition of the BPV

2018 ASME Code Case Proposed Rule - Schedule



- Proposed rule estimated publication in the *Federal Register*: August 8, 2018
- Public Comment period closes in October 2018
- NRC will consider all public comments submitted to the docket
 - www.regulations.gov, Docket ID (NRC-2017-0024)
- Target date to publish final rule in the *Federal Register* is summer 2019

Timeline – Edition/Addenda Rulemakings



Scope of ASME 2015-2017 Editions Rulemaking



- Incorporate by reference the 2015 and 2017 Editions of Section III, Division 1, of ASME BPV Code
 - Three new conditions with several parts being considered
- Incorporate by reference the 2015 and 2017 Editions of Section XI, Division 1, of ASME BPV Code
 - Eight new and eight revised conditions being considered

Scope of ASME 2015-2017 Editions Rulemaking (cont'd)



- Incorporate by reference the 2015 and 2017 Editions of ASME OM
 - Two new conditions being considered
 - Amend five existing conditions

Scope of ASME 2015-2017 Editions Rulemaking (cont'd)



- Propose to add new conditions:
 - Three new conditions on Section III rules
 - Eight new conditions on Section XI rules
 - Two new conditions on OM Code rules
- The NRC staff will discuss the proposed conditions in more detail later in this presentation.

ASME 2015-2017 Editions Rulemaking—Schedule



- Publish proposed rulemaking in the *Federal Register* in fall 2018
- 75 days to submit public comments
- NRC will consider public comments submitted on the docket
 - Docket ID (NRC-2016-0082)
- Target date to publish final rule in the *Federal Register* is late 2019

ASME Section III Conditions under Consideration

Dr. Chakrapani Basavaraju
Division of Engineering
Office of Nuclear Reactor Regulation

Section III New Condition



- Section III, Condition: Appendix XXVI, High-Density Polyethylene (HDPE) Piping
 - A. Requires essential variables for butt fusion joining qualification (2015 & 2017 Editions)
 - B. Requires both bend test and High Speed Tensile Impact Testing for butt fusion joining qualification (2015 & 2017 Editions)
 - C. Requires essential variables for electrofusion joining qualification (2017 Edition)
 - D. Requires both electrofusion bend test and crush test for electrofusion joining qualification (2017 Edition)
 - E. When electrofusion joining is used, only full 360° seamless sleeve electrofusion couplings and full 360° electrofusion socket joints are permitted (2017 Edition)

Section III New Condition



- Section III, Condition: Visual examination of bolts, studs, and nuts (Two provisions)
 - A. When applying the provisions of NB/NC/ND/NE/NF/NG-2582 in the 2017 Edition of Section III, the visual examinations are required to be performed in accordance with procedures qualified to NB/NC/ND/NE/NF/NG-2582 and performed by personnel qualified in accordance with NB/NC/ND/NE/NF/NG-5500.
 - B. When applying the provisions of NB/NC/ND/NE/NF/NG-2582 in the 2017 Edition of Section III, the acceptance criteria from NB/NC/ND/NE/NF/NG-2582 in the 2015 Edition of Section III, and earlier, shall be used. (2017 Edition)

ASME Section III Conditions under Consideration

Yamir Diaz-Castillo
Division of Construction, Inspection &
Operational Program
Office of New Reactors

Section III Conditions



- *The NRC is proposing to:*
 - *Add § 50.55a(b)(1)(xii) Section III condition:
Certifying Engineer*
 - *Revise § 50.55a(b)(1)(v) Section III condition:
Independence of Inspection*

Section III New Condition



- Section III, Condition: Certifying Engineer

When applying the 2017 and later editions of ASME BPV Code Section III, the NRC does not permit applicants and licensees to use a “Certifying Engineer” in lieu of a “Registered Professional Engineer” for Code related activities that are applicable to U.S. nuclear facilities regulated by the U.S. NRC.

Section III Revised Condition



- Section III condition: Independence of Inspection

Section 50.55a(b)(1)(v) is being revised to reflect changes in the ASME Code by limiting the condition applicable only for the 1995 Edition through 2009b Addenda of the 2007 Edition of ASME Section III, where the NQA-1-1994 is referenced in Subsection NCA Article-4000.

In the 2010 Edition of ASME Section III, Subsection NCA Table NCA-7100-2 referenced the NQA-1-2008 Edition 2009a Addenda. The Code removed the paragraph 3.1 exception for reporting independence of this NQA-1 Edition.

ASME Section XI Conditions under Consideration

Division of Materials & License
Renewal
Office of Nuclear Reactor Regulation

Section XI New Conditions



- Containment leak-chase channel inspections
- Appendix A, addresses calculation error
- System Leakage Tests alternative BWR Class 1 test
- Table IWB-2500-1 examination requirements BWR nozzle examinations and incorporation of N-702
- Mitigation of defects by modification
- Appendix III, Supplement 2
- Defect Removal
- Prohibitions and Restrictions on Use of IWB-3510.4(b)

Section XI Modified Conditions



- NDE personnel certification
- System leakage test in lieu of hydro
- Mitigation of defects by modification
- Pressure testing Class 1, 2 and 3 mechanical joints
- Summary report submittal
- Nonmandatory Appendix U
- Use of RT_{T0} in the K_{Ia} and K_{Ic} equations
- Fracture toughness of irradiated materials

Section XI Removing Conditions



- Effective edition and addenda of Subsection IWE and Subsection IWL
- Section XI references to OM Part 4, OM Part 6, and OM Part 10 (Table IWA–1600–1)
- Reconciliation of quality requirements
- Table IWB–2500–1 examination requirements pressurizer and steam generator IRS examinations

Code Case N-729 Update



- Proposing to update to N-729-6
 - Allows peening in accordance with MRP-335 Revision 3A
 - Extends Replaced Head volumetric inspection frequency to 20 years
 - Requests clarification of sisterhood plants and use of 40 year volumetric inspection extension
 - Allows use of Appendix I without NRC review as long as paragraph I-3000 is used

Code Case N-770 Update



- Proposing to update to N-770-5
 - Allows peening in accordance with MRP-335 Revision 3A
 - Allows the use of ASME Code Case N-824 (as conditioned) as an alternative to developing a performance-demonstration program by 2022
 - Allows cold leg temperature butt weld volumetric inspection frequency extension to one interval

Code Case N-770 Update (cont'd)



- Allows excavate and weld repair (EWR) technique with conditions
 - First cold leg temperature volumetric exam must be during 2nd refueling outage (M-2, N-1 & N-2)
 - Same volumetric inspection frequency for having an existing flaw (N-1) or not meeting the weld residual stress limits with no flaw (M-2)
 - Cracked partial arc EWR requires NRC review and approval

Other Revisions



- 10 CFR 50.55a(g)(4)(i) and (ii) considering relaxation of the time schedule for complying with the latest edition and addenda of the ASME BPV Codes for ISI programs, from 12 months to 18 months before the applicable milestones in these paragraphs.

Leak-Chase Channel Inspections



- Ensure steel containment shells and liners receive appropriate inspection
- Consistent with NRC Information Notice IN-14-07, “Degradation of Leak-Chase Channel Systems for Floor Welds of Metal Containment Shell and Concrete Containment Metallic Liner”

Appendix A



- A-4200(c) was added in the 2015 Edition to provide an alternate method to establish a fracture-toughness-based reference temperature.
- Equation (a) which was converted to U.S Customary units contains an error made in the conversion which makes equation (a) erroneous.

System Leakage Tests alternative BWR Class 1 test



- Repeats the Conditions placed on N-795 in RG 1.147
 - (1) The use of nuclear heat is prohibited (i.e., the reactor must be in a non-critical state), except during refueling outages in which the ASME Section XI Category B-P pressure test has already been performed, or at the end of mid-cycle maintenance outages fourteen (14) days or less in duration.
 - (2) the holding time shall be 1 hour for non-insulated components.

BWR nozzle examinations and incorporation of N-702



- Repeats the Conditions placed on N-702 in Draft RG 1.147
 - (1) A plant specific evaluation demonstrating the criteria of IWB-2500(f) are met must be maintained in accordance with IWA-1400(I).
 - (2) The use the provisions of IWB-2500(f) and Table IWB-2500-1 Note 6 for examination of Examination Category B-D Item Numbers B3.90 is prohibited for plants with renewed licenses in accordance with 10 CFR Part 54.
 - (3) The provisions of IWB-2500(g) and Table IWB-2500-1 Notes 6 and 7 for examination of Examination Category B-D Item Numbers B3.90 and B3.100 shall not be used to eliminate the preservice or inservice volumetric examination of plants with a Combined Operating License pursuant to 10 CFR Part 52, or a plant that receives its operating license after October 22, 2015.

Mitigation of defects by modification



(A) The use of IWA-4340 of Section XI 2001 Edition through the 2010 Addenda, is prohibited.

(B) The use of IWA-4340 of Section XI 2011 Edition through the 2017 Edition may be used subject to the following conditions:

(1) The use of IWA-4340 to mitigate crack like defects or those associated with flow accelerated corrosion are prohibited.

(2) The design of a modification that mitigates a defect shall incorporate a loss of material rate either 2 times the actual measured corrosion rate in that pipe location (established based on wall thickness measurements conducted at least twice in two prior consecutive or nonconsecutive refueling outage cycles in the 10 year period prior to installation of the modification), or 4 times the estimated maximum corrosion rate for the piping system.

(3) The Owner shall perform a wall thickness examination in the vicinity of the modification and relevant pipe base metal during each refueling outage cycle to detect propagation of the flaw into the material credited for structural integrity of the item unless the examinations in the two refueling outage cycles subsequent to the installation of the modification are capable of validating the projected flaw growth.

Appendix III, Supplement 2



- Incorporation of Code Case N-824 for ultrasonic testing examination of Cast Austenitic Stainless Steel
- Applies the conditions that were imposed on N-824 in the 2018 ASME Code Case Regulatory Guide Rule Making
 - *(A) Instead of Paragraph 1(c)(1)(-c)(-2), licensees shall use a phased array search unit with a center frequency of 500 kHz with a tolerance of ± 20 percent.*
 - *(B) Instead of Paragraph 1(c)(1)(-d), the phased array search unit must produce angles including, but not limited to, 30 to 55 degrees with a maximum increment of 5 degrees.*

Defect Removal

- The use of the provisions for removal of defects by welding or brazing in IWA-4421(c)(1) and IWA-4421(c)(2) of Section XI, 2017 Edition may be used subject to the following conditions:
 - (A) The provisions of subparagraph IWA-4421(c)(1) shall not be used to contain or isolate a defective area without removal of the defect.
 - (B) The provisions of subparagraph IWA-4421(c)(2) shall not be used for crack-like defects.

Prohibitions and Restrictions on Use of IWB-3510.4(b)



- The use of ASME BPV Code, Section XI, subparagraphs IWB-3510.4(b)(4) and IWB-3510.4(b)(5) is prohibited.
 - The NRC staff does not find Subparagraph IWB-3510.4(b) acceptable. For the prohibited materials specified in Subparagraphs IWB-3510.4(b)(4) and IWB-3510.4(b)(5), the NRC staff observed that in the technical basis document, there is no fracture toughness data associated with the weld and heat affected zone or there is no fracture toughness data to support exclusion of the fracture toughness requirements for these materials.

ASME OM Code

Robert Wolfgang
Division of Engineering
Office of Nuclear Reactor Regulation

Specific OM Items of Interest in Proposed Rulemaking



- Add 10 CFR 50.55a(f)(7) to require applicants and licensees to submit IST Plans and interim IST Plan updates related to pumps and valves, and IST Plans and interim IST Plan updates related to snubber examination and testing to NRC Headquarters, NRC Regional Office and NRC Inspector, based on planned deletion of submittal requirements from ASME OM Code
- Amend 10 CFR 50.55a(f)(4)(i) and (ii) to relax time schedule for complying with latest edition of ASME OM Code for IST programs from 12 months to 18 months before applicable milestones.

Specific OM Items of Interest in Proposed Rulemaking



- Amend 10 CFR 50.55a(b)(3)(iv) to specify that Appendix II, “Check Valve Condition Monitoring Program,” of ASME OM Code, 2017 Edition, is acceptable without conditions.
- Amend 10 CFR 50.55a(b)(3)(ix) to specify that Subsection ISTF in 2017 Edition is acceptable without conditions. Also, when applying Subsection ISTF in 2015 Edition, Mandatory Appendix V requirements must be satisfied.
- Amend 10 CFR 50.55a(b)(3)(xi) to clarify that valve position indication condition applies to all valves with remote position indicators within scope of Subsection ISTC, including MOVs in Mandatory Appendix III.

Specific OM Items of Interest in Proposed Rulemaking



- Add 10 CFR 50.55a(b)(3)(xii) to specify that use of 2015 Edition of ASME OM Code must include Appendix IV of 2017 Edition of OM Code.
- Simplify (b)(3) conditions to refer to (a)(1)(iv) rather than specific ASME OM Code editions and addenda.

How to get involved?



regulations.gov
Your Voice in Federal Decision-Making

Home Help Resources Contact Us

Search Browse Learn

Make a difference. Submit your comments and let your voice be heard.

SEARCH for: Rules, Comments, Adjudications or Supporting Documents:

NRC-2016-0082 Search

» Advanced Search

To find information about...	Search for docket ID...
ASME 2015-2017 rulemaking	NRC-2016-0082
ASME Code Case RGs rulemaking	NRC-2017-0024

Questions & Comments



ASME 2015-2017 Rulemaking

Jim O'Driscoll, Project Manager
Division of Rulemaking
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Email: James.O'Driscoll@nrc.gov
Phone: 301-415-1325

ASME 2018 Code Case Rulemaking

Margaret Ellenson, Project Manager
Division of Rulemaking
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Email: Margaret.Ellenson@nrc.gov
Phone: 301-415-0894

How did we do?



- Link to NRC Public Meeting Feedback form:



Acronyms



ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
BPV	Boiler and Pressure Vessel
BWR	Boiling Water Reactor
CFR	<i>Code of Federal Regulations</i>
EWR	Excavate and Weld Repair
FR	<i>Federal Register</i>
HDPE	High-density polyethylene
IBR	Incorporation by Reference
IRS	Inner Radius Section

Acronyms (cont'd)



ISI	Inservice Inspection
IST	Inservice Testing
MOV	Motor Operated Valve
MRP	Materials Reliability Program
MSIP™	Mechanical Stress Improvement Process
NDE	Non-destructive Evaluation
NRC	Nuclear Regulatory Commission
OM	Operation and Maintenance
RG	Regulatory Guide
RIN	Regulation Identifier Number