

2010 Edition of the ASME Boiler and Pressure Vessel Code (BPVC)

Summary of Changes

BPVC-I-2010 Section I Power Boilers. ASME Order No: X00010; ISBN: 978-0-7918-3230-1. ASME Staff Contact: Umberto D'Urso, 212.591.8535, dursou@asme.org.

- Added heat recovery steam generators to the list of devices covered.
- Added Mandatory Appendix III to provide for compliance with revised Conformity Assessment Policy.
- Revised Preamble to include isolable economizers and isolable superheaters.
- Revised PG-16.1 to enable use of alternative design methods when details of design are not given in the Code.
- Added PFT-52 Fusible Plugs.
- Revisions to permit inclusion of clad thickness in the calculated strength of boiler tubes.
- Added PG-5.6 to provide guidance on the necessary actions, if during any phase of construction or erection, a component is heated to a temperature greater than 1470F (800C).
- Added of Paragraph PG-26 and Table PG-26 to impose Weld Joint Strength Reduction Factors on certain welds, primarily longitudinal and spiral, designed for service in the creep regime.

BPVC-IIA-2010 Section II Part A-Ferrous Material Specifications. ASME Order No: X0002A; ISBN: 978-0-7918-3231-8. ASME Staff Contact: Noel Lobo, 212.591.8540, lobon@asme.org.

- More than 90 ferrous material specifications updated.

BPVC-IIB-2010 Section II Part B-Nonferrous Material Specifications. ASME Order No: X0002B; ISBN: 978-0-7918-3232-5. ASME Staff Contact: Noel Lobo, 212.591.8540, lobon@asme.org.

- More than 50 nonferrous material specifications updated.

BPVC-IIC-2010 Section II Part C-Specifications for Welding Rods, Electrodes and Filler Metals. ASME Order No: X0002C; ISBN: 978-0-7918-3233-2. ASME Staff Contact: Steven Rossi, 212.591.7522, rosis@asme.org.

- Adopted AWS A5.02/A5.024M:2007, "Specification for Filler Metal Standard Sizes, Packaging, and Physical Attributes" as SFA-5.02/SFA-5.02M.
- Adopted AWS A5.2/A5.2M:2007, "Specification for Carbon and Low-Alloy Steel Rods for Oxyfuel Gas Welding" as SFA-5.2/SFA-5.2M.
- Adopted AWS A5.6/A5.6M:2008, "Specification for Copper and Copper Alloy Electrodes for Shielded Metal Arc Welding" as SFA-5.6/SFA-5.6M.
- Adopted AWS A5.7/A5.7M:2007, "Specification for Copper and Copper-Alloy Bare Welding Rods and Electrodes" as SFA-5.7/SFA-5.7M.

BPVC-II-2010 Section II Part C (cont'd):

- Adopted AWS A5.16/A5.16M:2007, "Specification for Titanium and Titanium-Alloy Welding Electrodes and Rods" as SFA-5.16/SFA5.16M.
- Adopted AWS A5.23/A5.23M:2007, "Specification for Low-Alloy Steel Electrodes and Fluxes for Submerged Arc Welding" as SFA-5.23/5.23M.
- Adopted AWS A5.34/A5.34M:2007, "Specification for Nickel-Alloy Electrodes for Flux-Core Arc Welding" as SFA-5.34/SFA5.34M.

BPVC-II-2010 Section II Part D-Properties (Customary). ASME Order No: X0002D; ISBN: 978-0-7918-3234-9. ASME Staff Contact: Noel Lobo, 212.591.8540, lobon@asme.org.

- More than 15 stress lines added for incorporated materials.
- More than 25 stress lines revised.
- Nonmandatory Appendix A revised.
- Tables NF-1 and NF-2 replaced with a new Table PRD covering Poisson's ratio and density.
- Revised physical properties Tables TE-4, TE-5, and TM-5.

BPVC-III-2010 Section III Rules for Construction of Nuclear Facility Components. ASME Staff Contact: Christian Sanna, 212.591.8513, sannac@asme.org.

- Clarified requirements for supply of Standard Impact Test Specimen Material for Charpy V-Notch test machine calibration.
- Appendix F revised to provide requirements for support fillet welds.
- Consolidated list of referenced standards into Article NCA-7000.
- Updated list of reference standards (Article NCA-7000).

BPVC-IV-2010 Section IV Heating Boilers. ASME Order No: X00040; ISBN: 978-0-7918-3247-9. ASME Staff Contact: Gerardo Moino, 212.591.8534, moinog@asme.org.

- Added new Aluminum materials to the Table of allowed materials.
- Added new aluminum related requirements to enable the manufacture and stamping of Cast Aluminum boilers.
- Revised HA-303 to allow radii of one half times the thickness of the thinner of the sections being joined.
- Revised weld size in Fig. HW-701.3 sketch (e) in order to permit a smaller weld.
- The diameter based minimum thickness requirements of Tables HF-301.1 and Table 301.2 have been deleted.
- HG-101 was revised to clarify the Scope of Section IV.
- Nonmandatory Appendix I was updated.

BPVC-V-2010 Section V Nondestructive Examination. ASME Order No: X00050; ISBN: 978-0-7918-3248-6. ASME Staff Contact: Joe Brzuszkiewicz, 212.591.8533, brzuszkiewiczj@asme.org.

- Clarified the intent of the appendix for radiography using phosphor imaging plate.
- Added or revised various definitions to clarify the use of NDE terms in Section V.
- Clarified the requirements for ultrasonic performance demonstration criteria.
- Over fifteen ASTM specifications adopted or revised.

BPVC-VIII-2010 Section VIII Division 1. ASME Order No: X00081; ISBN: 978-0-7918-3251-6. ASME Staff Contact: Steven Rossi, 212.591.7522, rossis@asme.org.

- Added Part UIG and Mandatory Appendices 36 through 40 to address Requirements for Pressure Vessels Constructed of Impregnated Graphite.
- Revised UG-90(c)(2) and added Mandatory Appendix 35 to address Rules for Mass-Production of Pressure Vessels.
- Added Nonmandatory Appendix KK - Guide for Preparing User's Design Requirements.
- Added UW-16(g) – Rules for Bolting Pads.
- Added UW-54 - Qualification of Nondestructive Examination Personnel.
- Added UG-37(h) - Requirements for split reinforcing pads for nozzles.
- Revised UCS-56 to change P-No. 5B Group 2 to P-No. 15E Group 1.
- Revised Appendix 26 to limit the design temperature to a maximum of 800° F and permit the use of the operating temperature properties for the fatigue analysis.
- Added new paragraph R-11 to Appendix R describing preheat recommendations.

BPVC-VIII-2-2010 Section VIII Division 2 Alternative Rules. ASME Order No: X00082; ISBN: 978-0-7918-3252-3. ASME Staff Contact: Steven Rossi, 212.591.7522, rossis@asme.org.

- Added Annex 4.D to Part 4 – Guidance to Accommodate Loadings Produced by Deflagration.
- Revised Part 4, Para. 4.18 to make Tubesheet Rules consistent with Part UHX of VIII-1.
- Revised Part 2, Annexes 2.A and 2.B to include additional organizations with reciprocity agreements with recognized organizations.
- Added Para. 7.3.6 to Part 7 - Qualification of Nondestructive Examination Personnel.
- Added PWHT requirements for P-No 10C Group 1 materials into Table 6.15 of Part 6.
- Revised Table 6.11.A to change P-No. 5B Group 2 to P-No. 15E Group 1.

BPVC-VIII-3-2010 Section VIII Division 3 Alternative Rules for the Construction of High Pressure Vessels. ASME Order No: X00083; ISBN: 978-0-7918-3253-0. ASME Staff Contact: Steven Rossi, 212.591.7522, rossis@asme.org.

- Revised KE-112.1 to add requirements for Qualification of Nondestructive Examination Personnel.
- Revised KG-311.14 and KG-324 to update Requirements for Certification of the User's Design Specification and the Manufacturer's Design Report.
- Added Table KM-211 in order to define the applicable precipitation hardening and age hardening materials clearly.

BPVC-VIII-3-2010 Section VIII Division 3 (cont'd):

- Revised KE-301, KE-302, KE-333 and KS-100 to add wording for performance of UT in lieu of RT, definitions of geometric classification, the flaw orientations and flaw indication figures, and acceptance criteria requirements of Tables 2 and 3 of Code Case 2235-9.
- Section VIII, Division 2 structural stress method for fatigue analysis of welded joints, along with supporting portions of Div. 2 were added to Section VIII, Division 3.
- Revised KD-200 and KD-230 through KD-235 to incorporate Elastic-Plastic Analysis from Section VIII, Division 2.

BPVC-IX-2010 Section IX Welding and Brazing Qualifications. ASME Order No: X00090; ISBN: 978-0-7918-3254-7. ASME Staff Contact: Steven Rossi, 212.591.7522, rossis@asme.org.

- Revised Appendix D (Numerical List of P-Numbers) to remove P No. 5B Group 2 and replace with "15E Group 1".
- Revised QW/QB-422 {P-Number Tables} to remove P No. 5B Group 2 and replace with 15E Group 1.
- Reassigned all the existing S-Number materials in Table QW/QB-422 as P-Number materials for welding and brazing procedure qualification purposes and deleted all reference to S-Numbers from appropriate paragraphs of Section IX.
- Revised non-mandatory welding forms (QW-482, QW-483, QW-4984A, QW-484B and QW-485) to reflect current welding variables and terminology.
- Revised QW/QB-422 to add a column to indicate the assigned ISO/TR 15608 Material Grouping Number and added a paragraph in QW-420 to clarify.

BPVC-X-2010 Section X Fiber-Reinforced Plastic Pressure Vessels. ASME Order No: X00100; ISBN: 978-0-7918-3255-4. ASME Staff Contact: Paul Stumpf, 212.591.8536, stumpfp@asme.org.

- Revised requirement for frequency of volumetric expansion tests.
- Removed requirements for the assembly of the UV stamp, which are outside the scope of Section X.
- Revised thickness formulas in RD-1171.1, RD-1171.2, RD-1173.1, and RD-1174.2 (remove the 0.6 factor) to simplify and make them similar to ASME RTP-1.
- Added definition of "external pressure".
- Deleted word "vacuum" throughout the code.
- Revised to allow acceptance test for vessels designed to operate at elevated temperature to be conducted at ambient temperature.
- Revised to require attaching the partial data reports to the primary data report to provide traceability. Also permit multiple parts on a single data report form.

BPVC-XI-2010 Section XI Rules for Inservice Inspection of Nuclear Power Plant Components.

ASME Order No: X00011; ISBN: 978-0-7918-3256-1. ASME Staff Contact: Ryan Crane, 212.591.7004, craner@asme.org.

- Incorporated guidance for pressure testing of open-ended discharge piping.
- Made revisions to permit the Owner to use the personnel qualifications, methods, and acceptance criteria for repair/replacement activities.
- The factor "Y" for defining allowable sizes for subsurface flaws has been revised and the acceptance standard on a/t for subsurface flaws was limited to ~15%.
- Clarified "isolable by means of valves".
- Provided guidelines for evaluating non-destructive examination coverage percentages.
- Revised the submittal of the inspection summary.
- Clarified acceptance criteria for leakage.
- Deleted the requirement for applicable Manufacturer's Data Reports to be attached to the NIS-2 form.
- Added a new paragraph to address the Owner's responsibility for requiring the contracted Repair/Replacement Organizations to provide a report documenting their repair/replacement activities.
- Added a new paragraph to establish the contracted Repair/Replacement Organizations responsibility to prepare a report, acceptable to the Owner, documenting their repair/replacement activities.
- Added a new Nonmandatory Appendix to provide Report Form RRA-1 that may be used for documenting contracted repair/replacement activities and will assist the Owner in completing and filing the NIS-2.
- Revised the flaw Acceptance Standards for Class 1 ferritic and austenitic piping.
- Added new paragraphs to require additional examinations when new flaws or significant changes in flaw characteristics resulted in necessary corrective actions.
- Revised the membrane plus bending stress limit load cutoff for circumferential flaws.
- Revised to clarify that the examination requirements do not apply to atmospheric or 0 to 15 psig (0 kPa to 100 kPa) storage tanks.
- Incorporated analytical procedures and material properties for evaluation of flaws in piping and welds fabricated of Alloy 600/82/182/132 in both PWR and BWR environments.
- Revised to clarify requirements for mechanical clamping devices.
- Revisions provide alternative wording to correct imprecise language and ambiguity.
- Added a new article to include IGSCC growth rate equations for unirradiated, austenitic stainless steels exposed to BWR reactor water environments.
- Revised the examination requirements for cladding to be consistent with Section III.

BPVC-XII-2010 Section XII Rules for Construction and Continued Service of Transport Tanks.

ASME Order No: X00012; ISBN: 978-0-7918-3257-8. ASME Staff Contact: Dan Sharp, 212.591.8538, sharpd@asme.org.

- Added or revised various appendices, including:
 - Ton containers;
 - Hot pressure welded joint for head-to-shell welds of ton containers;
 - Guidelines for the design of supports and safety devices for cargo tanks;
 - Rules for addressing local thin areas in transport tanks.

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