



KEY CHANGES TO 2019 BOILER CODE EDITIONS (BY SECTION):

SECTION I:

- Developed a new Non-mandatory Appendix for fabrication of Dissimilar Metal Welds (DMW) for CSEF steel to austenitic materials.
- Section PW-38 rewritten, incorporating Non-Mandatory Appendix A-100, detailed rules for preheating and inter-pass temperatures, as well as interruption of welding and preheat
- Replaced elements describing Authorized Observer and Laboratory Quality Control System requirements with applicable references to ASME CA-1

SECTION II:

- Addition of 4 new “for information only” tables for BPV IV stress values (Tables 6A-6D), it is intended that they will become mandatory in the next edition.
- Mandatory Appendix 5 in Section II, Part D was revised to include provision for wrought allowable stresses to be applied to HIP powder metallurgy material/components of the same grade in the time-independent range.

SECTION III:

- Major editorial alignment of Division 1, Class 2 and Class 3 requirements - Comparisons were made between corresponding paragraphs in Subsections NB and NC in order to align them in areas of divergence
- Revision of Division 5, Subsection HA Subpart B - General Requirements for Graphite Materials was revised to include Ceramic Composite Materials
- New Division 5, Subsection HH Subpart B for Class SN Non-metallic Core Components
- This Subpart establishes rules for Composite Core Components, where Composite Core Components are defined as components manufactured from carbon or ceramic fibre composites that are installed to form a Core Assembly within a reactor pressure vessel of a high temperature, graphite-moderated, fission reactor
- Revised Mandatory Appendices II, XI, XII, XXII and Nonmandatory Appendices L and Q to expand their use to Divisions 3 and 5 where applicable
- 2 New Nonmandatory Appendices that provide guidance for developing Division 3 and Division 5 Design Specifications and Fabrication Specifications.

SECTION IV:

- Stress values for SA-268 S44400 & TP349 Materials were added in Table HF-3001.
- Added language to parts HC-403, HC-520, HA-404 and HA-504 to allow for the use of electronic signatures.
- Guidance for the use of HLW or PRT designator together with the certification mark for marking parts was added.

SECTION V:

- A new Mandatory Appendix was created for Full Matrix Capture (FMC).
- A new Non mandatory Appendix was created for Examination of Welds using Full Matrix Capture (FMC).
- Adoption of the 2016 Edition of ASNT SNT-TC-1a and a new Mandatory Appendix that outlines the exceptions and additional requirements noted.
- Adoption of the 2016 Edition of ANSI/ASNT CP-189 and a new Mandatory Appendix that outlines the exceptions and additional requirements noted.

SECTION VI:

- Para. 6.3, Mounting was updated to add consistent verbiage so that of BPV Section IV. • F & T Trap high level "spill" was revised to Steam Trap (optional) in Figure 5.9.1

SECTION VIII:

- Paragraph U-2(g) of Div. 1, revised with rules to allow usage of Div. 2 for design methods not provided in Div. 1 as well as other recognized Standards or Codes. New Appendix 46 was created to provide a means for the designer to use the rules given in Div. 2.
- Revised UG-14 to improve clarity, and to allow for the production of hollow cylindrical components with a greater range of diameters under qualifying conditions.
- Nameplate markings between Divs. 1 and 2 have been aligned, by reducing the "construction type" markings that are mandatory on the nameplate for Section VIII.
- Relaxation of post forming heat treatment rules in UCS-79 (Div. 1) and para. 6.1.2.3 (Div. 2) for thin wall pipe and tube after cold forming.
- Added new subparagraphs 2.2.2 and 2.3.1.3 in Div. 2, permitting pressure vessels being designed and constructed to the same design specifications to follow a single UDS, and their compliance to the UDS.
- Created new Article KM-6 in Div. 3, to consolidate location of all material models used for analysis.
- Design Guidance for Impulsively Loaded Vessels has been incorporated into Div. 3

SECTION IX:

- Major addition to Table QW/QB-422: EN base metal grades were added to Table QW/QB-422 with the same P-number and Group-number previously assigned to the corresponding ASME adopted and modified EN material specifications designated with the SA/EN prefix.
- Revisions to Tube-to-Tube sheet rules, including revising QW-193 and QW-288 to arrange essential variables into a tabular format for both procedure and performance

qualifications. QW-303.5 has been replaced by a new paragraph in QW-387. Variables were added or revised in Article IV to accommodate this revision as well.

- The addition of qualification requirements for personnel supervising welding qualifications in Para QW-106.

SECTION X:

- The inspection process with regard to acoustic emission examination has been streamlined, but still provides a proper and meaningful inspection result. The changes are based on improved understanding of the inspection process gained through experience in assessing production vessels.
- Currently, ASME Section X can be interpreted to allow intermediate valves between the vessel and the test gage. Compared to Section VIII, Division 1, that does not allow intermediate valves between the vessel and the test gage. Wording similar to Section VIII, Division 1 has been added.
- The requirements for the qualification test for cyclic fatigue has been reduced to be more reflective of those in other industry standards that are less severe, yet have proven safe for over 25 years, since their incorporation in the early 1990's the previous requirements were unnecessarily severe, thus creating an artificial barrier to qualification of Section X Class III pressure vessels.
- Requirements for Class III vessels with liners in stationary service to include use for additional materials. These vessels are routinely used for other fluids in addition to gaseous hydrogen.
- Requirements for stress calculations clarified. The industry uses nominal properties and thicknesses when analysing composites, not minimums. Use of minimum thickness and properties can lead to inaccurate results.
- Fatigue test procedure revised to essentially address the issue that if the vessel was subject to some full cycles and some partial cycles, you could use the actual partial cycle rather than making all cycles full cycles.
- Burst test procedure revised to set the maximum allowable pressurization rate at 200 psi/sec, which is common within the industry, and means to assure that the pressure is correctly measured. This pressurization rate is consistent with that for acoustic emission testing.

SECTION XI:

- The major change for BPV XI will be Division 2 – Requirements for Reliability and Integrity Management (RIM) Programs for Nuclear Power Plants. Division 2 provides an alternative approach to current ISI activities needed to accommodate the new advanced nuclear reactor designs, other than light water reactors. Division 2 RIM will be replacing the current Division 2 and Division 3.

Section XII:

- New Nonmandatory Appendix to build QC Manual per B620
- Vacuum Jackets Requirements Additions, Non-mandatory Appendix E
- New rules for the Traceability of Multi-Page Data Report Forms
- Incorporation of requirements from BPV II Part D; Tables 1A & 1B General Notes (c) and (d) and Table 3 General Notes (b) and (c) to BPV XII TD-210