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Publication of the 2023 Edition ASME Boiler and Pressure Vessel Code Synopsis

Author: Paul Coco, P.E.

The Codes and Standards technical staff of HSB announces the publication of the 2023 Edition ASME Boiler and Pressure Vessel Code Synopsis. ASME publishes a new edition to the ASME Boiler and Pressure Vessel Code ("Code") every two years containing revisions, additions, and errata to the existing Code requirements. On July 1, 2023, ASME published the 2023 Edition of the Boiler Pressure Vessel Code ("BPVC") ("2023 Edition"). Use of the 2023 Edition is optional until January 1, 2024, at which time it becomes mandatory for certificate holders.

This Code update incorporates over 960 revisions, additions, and errata affecting approximately 1500 paragraphs across all code books.

As a value-added service to our clients and partners, our Codes and Standards technical staff summarize all changes to the Code in a synopsis database, thereby eliminating a line-by-line comparison to determine the change. In many instances, HSB's Code and Standards technical staff have offered brief notes to clarify the revision to the Code and its potential impact on Code certificate holders.

The 2023 Edition ASME Boiler and Pressure Vessel Code Synopsis Report includes:

– Section I – Power Boilers
– Section III and Section XI – Nuclear
– Section IV – Heating Boilers

– Section VIII, Division 1, 2, 3 – Pressure Vessels
– Section XII – Transport Tanks

In addition to these construction Codes, four ASME Boiler and Pressure Vessel reference Codes are included in the 2023 Synopsis: Section II (Materials), Section V (Nondestructive Examination), Section IX (Welding, Brazing, and Fusing Qualifications), and Section XIII (Rules for Overpressure Protection).

The 2023 Edition ASME Boiler and Pressure Vessel Code Synopsis is available to our ASME customers through Technical Resources in the Front Door customer portal. Customers can find additional resources in the Training Center and Publications applications within Front Door as well.

ANSI/ASNT CP-189 Standard for Qualification and Certification of Nondestructive Testing Personnel now in Section III

Author: Paul Coco, P.E.

The 2023 Edition of Section III now includes a provision to utilize CP-189 in accordance with Section XI. Code users now have the flexibility to choose between SNT-TC-1a or CP-189, but it is important to note significant differences between the two.

Here are some key distinctions:

Certification Approach: SNT-TC-1A follows a recommended practice approach, providing guidelines for the qualification and certification of nondestructive testing personnel. CP-189, on the other hand, is a national standard that specifies mandatory requirements for the qualification and certification of NDT personnel.

Written Practice vs. Certification Procedure: SNT-TC-1A requires the implementation of a "Written Practice" that outlines the procedures for personnel qualification. In CP-189, a "Certification Procedure" is required instead. The Certification Procedure in CP-189 cannot be modified to suit company-specific requirements and must be approved by the Level III personnel.

Vision Requirements: CP-189 has more stringent vision requirements compared to SNT-TC-1A. For near vision acuity, CP-189 mandates the ability to read Jaeger #1, while SNT-TC-1A specifies Jaeger #2. The Jaeger notation signifies different levels of visual acuity.

Levels of Qualification: SNT-TC-1A has three levels of qualification: Level I, Level II, and Level III. CP-189 introduces two additional levels: "Instructor" and "Trainee," resulting in a total of five qualification levels.

Minimum Training Hours: CP-189 sets different minimum training hour requirements compared to SNT-TC-1A. For example, CP-189 does not reduce the minimum training hours for individuals holding a two-year degree in certain methods, as SNT-TC-1A does. CP-189 may have more or less stringent training hour requirements depending on the method and level of qualification.

Certification Prerequisites: In CP-189, Level III certification requires holding an ASNT Level III certificate in the specific method as a prerequisite. However, SNT-TC-1A does not have this specific prerequisite.

Terminology and Verbs: CP-189 emphasizes mandatory requirements by using the term “shall” throughout the document. In contrast, SNT-TC-1A uses the verb “should” to indicate recommendations rather than strict mandates.

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Paul joined HSB in January 2014. Paul is a graduate of the United States Naval Academy where he earned a Bachelor of Science degree in aeronautical engineering. Paul also holds a Master of Engineering Management and a Master of Science degree in Mechanical Engineering. Paul served in the U.S. Navy from 2002 through 2010. During this time, one of his many responsibilities included the role of Reactor Mechanical Division Officer and Training Officer, where Paul was responsible for the safe operation of a nuclear power plant onboard a Nuclear Powered Aircraft Carrier. From 2007 through 2010, Paul joined the Mechanical Engineering Department at the U.S. Naval Academy, where he taught Applied Engineering Thermodynamics for Naval Applications as a Military Professor. After Military Service, Paul then joined the US Nuclear Regulatory Commission (NRC) as a Reactor Operations Engineer, where he conducted detailed technical reviews of nuclear licenses in accordance with federal codes and standards and performed quality assurance inspections on domestic and international nuclear vendors for nuclear safety related components. Within the HSB Codes and Standards group, Paul is responsible for providing code technical support to internal and external clients with a focus on nuclear construction to ASME Section III and the associated nuclear conformity assessment programs. He is responsible for the development, maintenance, and delivery of technical training related to nuclear construction, as well as supporting the HSB NQA Services Program. Paul is also responsible for the development of HSB’s remote inspection program and is the technical lead on emerging renewable technologies. He holds a Professional Engineer License in thestate of Maryland, National Board Endorsements as an AI and ANI, and is a member of various ASME Section III committees.

Documenting hydrostatic testing of completed boilers with externally supplied boiler external piping

Author: Jayaram Vattappilly, P-Eng.

It is common that a boiler (Boiler Proper, BP) is built and hydrostatically tested in the shop without attaching any Boiler External Piping (BEP) and documented on a Manufacturer’s Data Report (typically, a Form P-3). BEP in this case will be furnished by a company not contractually responsible to the boiler manufacturer and will be documented on a Manufacturer’s Data Report for Fabricated Piping (typically, a Form P-4A) as stated in Note 2 of PG-104.1. The question then is how and where the final hydrostatic test as required by PG-99 for the completed boiler (which means BP+BEP) is documented. The most logical place may be on the Form P-4A because the boiler manufacturer after signing Form P-3 has fulfilled all of their

responsibilities as described in Note 2 of PG-104.1. Section I of the Boiler Pressure Vessel Code lacked in providing clear guidance on this aspect.

PG-104.1 Note (2) is revised, in the second sentence, by replacing the words “by welding” with “either by welding or mechanical assembly”. A new final sentence has also been added noting the documentation of the final hydrostatic test of the completed boiler shall be on a Form P-4A. As a result of this action, the Committee decided to consolidate Forms P-4A and P-4B into one form adding instructions that when describing the piping it should be indicated for each section of piping which was welded and which was mechanically assembled. A concern was raised during review of these changes that this change would prohibit a non-certificate holder from performing mechanical assembly of piping, and this is not the case. The proposal is only changing how mechanically assembled BEP is documented in the shop or in the field when fabricated by other than the boiler manufacturer.

The responsibility for the documentation and hydrostatic testing must be assumed by a holder of a valid Certification Mark with the “S,” “A,” or “PP” designator.

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Mr. Vattappilly is currently a Vice-President for HSB, Global Inspection and Engineering Services division. He oversees the HSB Codes and Standards group (C&S), and all the services carried out by the group, including technical support, internal and external training, management of HSB knowledge databases, and global design review activity. Jay holds a Mechanical Engineering degree from the University of Calicut, India, a Master of Engineering in Welding from National Institute of Technology (NIT), Tiruchirappalli, India, and a second Master of Advanced Design and Manufacturing degree from the University of Waterloo, Ontario, Canada.
Jay’s work experience has principally been in the area of pressure equipment construction, working in the role of a QA/QC Engineer, Inspection Engineer for a large engineering consulting firm servicing refineries and petrochemical plants, welding engineer responsible for both structural and pressure vessel welding activity, and as design engineer of pressure equipment constructed to ASME Sections I, IV, B31.1, and VIII. Jay presently holds a Professional Engineering license from Ontario, Canada, and National Board Commissions “AI,” “IS,” and “R” endorsement. He is a member of Subgroup on Design (BPV I), Committee on Power Boilers (BPV I) and a member of Technical Oversight Management Committee (TOMC). He is also a member of the Subgroup on Design (BPV VIII), Subgroup on Toughness (BPV VIII), Special Committee on Interpretations (BPV VIII) and Subgroup on General Requirements & Piping (BPV I). Jay provides technical support on ASME Boiler and Pressure Vessel Code Sections I, IV, VIII, and IX, and is HSB’s subject matter expert on the Indian Boiler Regulations (IBR).

Ask the engineer

Clarification on Section VIII, Division 1, UW-13(g) when using bar

co-Authors: Julie Hoskinson, Senior Engineer
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Question: A flat head is machined from round bar material of SA-479 Type 347 with a hub to have a butt weld to the shell. While reading UW-13(g), it refers to forgings and plates only and not to other product forms such as bars and rods. Is it required to perform hub tension testing per UW-13(g)(1) of the Code for the hubbed flat head machined from a rod or bar?

Response: UW-13(g) does not apply because the "hub" (cylindrical projection from the disk of the flat head) was not integrally forged nor machined from a forging or plate – they were machined from a bar. Therefore, the axial tension test specimens and corner radius of UW-13(g) and Fig. UW-13.3 are not required. The general specification for SA-479 is SA-484. Since SA-484 paragraph 12.1 typically requires longitudinal specimens, this may by default satisfy the technical concern of UW-13(g)(1) anyway. Note, there is an option in SA-484 12.1 for the material manufacturer to test in the transverse direction, so the vessel Manufacturer should specify that longitudinal specimens are required.

The applicable rules would instead be UG-14. Note the following:

- The Manufacturer needs to verify that the design meets Code requirements, including UG-14(b) based on the size of this bar. Depending on the diameter of this bar, a reduction in allowable stress per UG-14(b)(3), or UT plus transverse tension testing per UG-14(b)(4) may be applicable.
- Keep in mind that the surface examination requirements of UG-14(b)(1)(-c) would exempt the cylindrical surfaces of the machined part. However, the requirements of UG-14(b)(1)(-b) would require surface examination of the tubesheet/flat head and corner radius region. For PT/MT surface examinations, features where accessibility prevents meaningful interpretation and characterization of imperfections would be subject to engineering judgement.

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Julie joined HSB in 2006 and has been part of the Codes & Standards group since 2014. Julie has been successful in several different roles within the company starting as a Project Manager serving several of HSB's largest customers and supporting their international pressure equipment inspection and certification needs. In 2009, Julie completed a temporary assignment as the Design Manager for the HSB International design office in Socx, France. Beginning in August 2011, Julie worked as a Program Manager responsible for DOT/Transport Canada Cylinder and Cargo Tank Inspections and European Pressure Equipment Directive (PED) Services, including managing two major transitions of the HSB Notified Body.

Julie is a graduate of the University of Minnesota with a B.S. in Chemical Engineering and is pursuing an M.S. in Material Science and Engineering from University of Florida. She is a National Board of Boiler and Pressure Vessel Commissioned Inspector, holding an "AI" and "IS" Commission. Julie is currently Chair ASME BPV VIII Subgroup on General Requirements and Chair of Task Group Fired Pressure Vessels. Julie provides technical support and training on ASME Boiler and Pressure Vessels Codes and other international pressure equipment regulations/standards, including the Pressure Equipment Directive.

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Jay joined Hartford Steam Boiler in 1992. He holds a B.S. degree in Mechanical Engineering, Engineering Mechanics from Worcester Polytechnic Institute, and an M.S. degree in Metallurgy from Rensselaer Polytechnic Institute, and is a Registered Professional Engineer. Since joining Hartford Steam Boiler, Jay has worked in the Home Office and at Mechanical & Materials Engineering (Austin, TX). Jay provides technical assistance for all non-nuclear ASME Boiler and Pressure Vessel Codes and the National Board Inspection Code (NBIC), supports clients with design reviews, and provides both in-house and external training. His technical expertise is in the areas of materials, stress analysis, and pressure vessel design and repair.

Jay currently serves as Chair of BPV II (Materials); and is a Member of the Subgroup on Materials (BPV VIII), Special Committee on Interpretations (BPV VIII) and TOMC Admin, and is an ASME Fellow. He has presented courses on pressure vessel design to audiences around the world. Prior to joining Hartford Steam Boiler, Jay worked in the aerospace gas turbine and oilfield exploration equipment industries.

Take note!

Strategic partnership announcement

We are thrilled to share some great news! We have been diligently working on a transformative partnership that expands our mission to drive boiler and pressure equipment safety.

The Hartford Steam Boiler Inspection and Insurance Company (HSB) and Applied Thermal Coatings, Inc. (ATC) are joining forces to deliver asset lifecycle and condition assessment services. This strategic partnership expands the horizons of both organizations, promising expanded market reach, growth, and global opportunities.

Together, we are poised to deliver solutions that will exceed expectations and drive the industry forward. Our initial focus will be on the U.S. market with global expansion to occur thereafter.

Stay tuned for more exciting details in our big announcement next month.

This is a new and exciting journey, and we thank you for your continued support. Feel free to reach out with any questions or just to share in our enthusiasm.

getinfo@hsb.com

HSB China hosts ASME Code Synopsis Seminar

The 2023 ASME Non-Nuclear and Nuclear Code Change Updates Seminar concluded successfully on August 11, 2023, in Wuxi, China. Co-organized by HSB China and CCIEA, the seminar drew 267 participants from 108 organizations across the country.

The event spanned 2.5 days and featured three sessions: (1) 2023 ASME non-nuclear construction Code changes, (2) 2023 ASME reference Code changes for both nuclear and non-nuclear audiences, and (3) 2023 ASME nuclear construction Code changes exclusively for nuclear audiences.

HSB China orchestrated the seminar with the intention of disseminating the knowledge of 2023 ASME Code changes to ASME Certificate Holders and interested organizations well in advance. This foresight allowed them to update their QC/QA programs by the close of 2023 and implement them from the outset of 2024.

The effort was successful thanks to the support of HSB Codes and Standards Group and collaborative efforts from the HSB China team. The presentations were conducted in Chinese, ensuring effective communication between the instructors and the attendees.

Events calendar

2023 Virtual Technical Training seminars - click here to register

October 10-12	ASME Section III, Division 5 - High Temperature Reactors and SMR Overview (E23)
November 28-30	ASME Section VIII, Division 1 (E23)
December 5-7	ASME Section I and B31.1 - Power Boilers and Components (E23)

2023 Code Synopsis Virtual Training schedule - click here to register

November 7	ASME 2023 Code Synopsis: Section I & II
November 8	ASME 2023 Code Synopsis: Section VIII
November 9	ASME 2023 Code Synopsis: V & IX

2023 in-person Hartford seminar series - click here to register

October 23	2023 ASME (Nuclear) Code and Industry Update Including Advanced Reactors
October 24	ASME Section IX (E23)
October 25	2023 ASME Code Synopsis: Sections I, II, V, VIII – Div. 1&2, and IX
October 26	ASME Section VIII (E23)

Industry events

October 2-3	Hydrogen Americas 2023 Summit & Exhibition – Booth # B27	Register here – free exhibition pass

For more information on HSB training and events, please email us at getinfo@hsb.com.
New topics may also be added throughout the year. Click here to visit the HSB Bookstore.

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September 2023

Pressure Points is published by

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