



To: Henry Hau Chairman, Pressure Equipment Sub Council
Diederic Godin, Chairperson of Codes & Standards Working Group

From: International Pressure Equipment Integrity Association (IPEIA) on behalf of:
Alberta Pressure Piping Contractors Association (APPCA)
Alberta Refinery and Petrochemical Inspection Association (ARPIA)
Alberta Welding Optimization Committee (AWOC)
Contract Chief Inspectors Association (CCIA)
Saskatchewan Integrity Association (SIA)
Upstream Chief Inspectors Association (UCIA)

Date: 2025-January-24

Subject: CSA B51:24 “Boiler, Pressure Vessel, and Pressure Piping Code”

The International Pressure Equipment Integrity Association (IPEIA) is a not-for-profit organization, comprised of individuals active in the pressure equipment industry and related educational groups. The stakeholders in the association include the associations listed below as well as individuals employed or engaged in the pressure equipment industry.

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In April 2024, CSA released the new 2024 edition of CSA B51 (“Boiler, pressure vessel, and pressure piping code”). While Alberta’s Jurisdictional Authority, ABSA, has not declared the 2024 edition to be “in force” at this time (please refer to ABSA Information Bulletin No. IB24-002 Rev. 5, <https://www.absa.ca/media/2534/ib24-002r5.pdf>), CSA B51:24 may become “in force” as early as April 2025. ABSA has requested industry feedback regarding questions and concerns.

Compared to the current in-force edition of CSA B51 (“CSA B51:19”), the 2024 edition includes additional verbiage that would appear to enforce supplemental destructive impact testing for most pressure-containing carbon steels that do not by default require Charpy V-Notch (CVN) testing. Please note that while CSA B51:24 clauses 6.2.6 and 6.3.7 reference “carbon steel”, a formal definition of “carbon steel” is not provided within CSA B51:24.

- In clause 6.2.6, carbon steels used in pressure vessels require CVN test results to be reported directly on the manufacturer’s MTR unless the material thickness is less than 2.5 mm (0.098 in.) or both the stress ratio is equal to or less than 0.3 and the MDMT is warmer than -46°C (-50°F).
- In clause 6.3.7, carbon steels used for pressure piping require CVN test results to either be reported on the manufacturer’s MTR or on a 3rd party CVN test report that is traceable to the manufacturer’s MTR.

For pressure piping, impact testing is required unless the material thickness is less than 2.5 mm (0.098 in.), the stress ratio is equal to or less than 0.3, or the MDMT does not fall below 0°C (32°F).

- Please note that it is unclear why the use of traceable 3rd CVN test reports is permitted for pressure piping carbon steels (in clause 6.3.7) but not for pressure vessel carbon steels (in clause 6.2.6).

As-written, the additional impact testing requirements from CSA B51:24 may prohibit the use of carbon steels intended for pressure vessel fabrication. It would also force pressure piping fabricators to develop complex sacrificial testing management plans to validate the use of off-the-shelf normal temperature carbon steel materials until the supply chain has enough time to drive in supplemental CVN testing for mill runs. Even under ideal conditions, these new requirements have the potential to delay virtually all new projects, escalate project costs, and overwhelm 3rd party testing facilities.

As of the writing of this letter, members of IPEIA's Task Group received evidence suggesting that change in the industry is required as there is growing concern over the potential for brittle failure in carbon steels that have not undergone CVN testing. That having been said, the associations represented by IPEIA are not aware of any in-service failures of normal temperature carbon steel based on low toughness properties. The authors of this letter hope that the PESC will take this into account and permit the use of a grace period to allow the supply chain to be informed and adapt before clauses 6.2.6 and 6.3.7 are fully adopted.

Resolution:

The associations represented through IPEIA would like to request the Pressure Equipment Sub-Council to adopt CSA B51:24 code with the following caveats:

- Clauses 6.2.6 and 6.3.7 will not be enforced until such time that the industrial supply chain has been properly educated, has had suitable time to move the majority of existing and pre-ordered carbon steel products, and has had time to adapt their ordering and receiving processes.
- It is requested that traceable 3rd party CVN test reports be permitted to supplement MTRs for pressure vessel carbon steels (as-written, supplemental CVN test reports are permitted in clause 6.3.7 but not in 6.2.6).
- A formal definition of "carbon steel" is requested. For example, will it be based on UNS requirements, an exhaustive list of specifications and applicable grades, a specific range of chemical composition requirements, specific ASME P-No. and G-No. materials, or a combination of the above? It is critical for all parties to have a firm understanding of and agreement on which materials are affected by clauses 6.2.6 and 6.3.7.
- A formal confirmation of testing frequency, impact test procedure, and test specimen requirements is requested. In CSA B51:19, ASTM E23 and ISO 148-1 were included in the reference publications, and specified as acceptable test methodologies in clause 14.2 but this has been removed in CSA B51:24.

Regards,



Jim Yukes
IPEIA Integrity Challenges Forum
IPEIA Co-Chair