

Information Bulletin No. IB23-045

October 13, 2023

INTERPRETATION
The Acceptable Use of Appendix 46 in ASME BPV Code
Section VIII, Division 1 in Alberta

This Information Bulletin replaces IB14-004, which has been withdrawn.

Background

Appendix 46 of ASME Boiler and Pressure Vessel Code (BPVC) Section VIII, Division 1 allows the use of the ASME BPVC, Section VIII, Division 2 design rules for the construction of a pressure vessel or pressure vessel parts to ASME BPVC, Section VIII Division 1. This Interpretation provides for the use of Appendix 46 for the design of pressure vessels for use in the Province of Alberta.

Provisions for the use of U-2(g)(1)(-a) in conjunction with Appendix 46

Where design rules do not exist in the ASME BPVC Section VIII, Division 1, Appendix 46 of the ASME BPVC Section VIII, Division 1 may be used for the design of a pressure vessel for installation in Alberta provided full and satisfactory compliance with the ASME BPVC Section VIII, Division 1 and the following additional requirements:

1. A User Design Requirements form (UDR)¹ shall be completed when required per paragraph U-2(a)(2)(-a) of the ASME BPVC, Section VIII Division 1;
2. The UDR shall be made available to ABSA's SCO, when so requested;
3. The requirements of Appendix 46 shall be met;
4. A reference to Appendix 46 shall be shown on drawings submitted for registration;
5. The drawings shall identify all loads and design considerations applicable to the design;
6. The drawings shall identify:
 - a. all pressure vessel parts or components that are designed in accordance with Appendix 46 of the ASME BPVC Section VIII, Division 1; and
 - b. paragraphs from the ASME BPVC Section VIII, Division 2 (e.g. paragraphs 4.1.1.2; 4.1.1.5; 4.1.5.1; 4.5.2.2) that are used in the design of pressure vessel parts or components;

¹ Note: Non-mandatory Appendix KK of ASME BPVC, Section VIII, Div. 1 may be used as a guide for preparing a UDR.

7. The drawings shall provide information what notification will be included on the Manufacturer's Data Report under Remarks. This notification needs to list all pressure vessel parts or components designed using Appendix 46; and
8. When cyclic service is specified in the UDR, fatigue evaluation may be conducted in accordance with Part 5 of ASME BPVC, Section VIII, Division 2. Pressure vessel designs that do not satisfy the screening criteria for fatigue analysis, a fatigue evaluation shall be performed using the methods found in Part 5. Fatigue damage evaluation shall use the Design Fatigue Curves provided in Annex 3-F, 3-F.1 Smooth Bar Design Fatigue Curves or 3-F.2 Welded Joint Design Fatigue Curves.

Provisions for the use of UG-16(a) in conjunction with Appendix 46

When the alternative approach provided in UG-16(a) of the ASME BPVC Section VIII, Div. 1 is opted, Appendix 46 of the ASME BPVC Section VIII, Division 1 may be used for the design of a pressure vessel for installation in Alberta provided full and satisfactory compliance with the ASME BPVC Section VIII, Division 1 and the following additional requirements:

1. UDR shall be prepared. Among other details (e.g., Paragraph UG-22 and Appendix KK), the UDR shall clearly define the pressure vessel parts or components to which Appendix 46 is applied. The UDR shall be reviewed and certified by a Professional Engineer. The UDR shall be included in a design submission for registration;
2. The requirements of Appendix 46 shall be met. According to paragraph 46-4(a), it is not permitted the use of ASME BPVC, Section VIII, Division 2 paragraphs which refer to the use of Part 5 when design rules are provided for pressure vessels or pressure vessel parts in the ASME BPVC Section VIII, Division 1;
3. A reference to Appendix 46 shall be shown on drawings submitted for registration;
4. The drawings shall identify all loads and design considerations applicable to the design;
5. The drawings shall identify:
 - a. all pressure vessel parts or components that are designed in accordance with Appendix 46 of the ASME BPVC Section VIII, Division 1; and
 - b. paragraphs from the ASME BPVC Section VIII, Division 2 (e.g. paragraphs 4.1.1.2; 4.1.1.5; 4.1.5.1; 4.5.2.2; etc.) that are used in the design of pressure vessel parts or components;
6. The drawings shall provide information what notification will be included on the Manufacturer's Data Report under Remarks. This notification needs to list all pressure vessel parts designed using Appendix 46;
7. When cyclic service is specified in the UDR, fatigue evaluation may be conducted in accordance with Part 5 of ASME BPVC, Section VIII, Division 2. Pressure vessel

designs that do not satisfy the screening criteria for fatigue analysis, a fatigue evaluation shall be performed using the methods found in Part 5. Fatigue damage evaluation shall use the Design Fatigue Curves provided in Annex 3-F, 3-F.1 Smooth Bar Design Fatigue Curves or 3-F.2 Welded Joint Design Fatigue Curves; and

8. Acceptable designs will be registered with a Canadian Registration Number (CRN) prefix "ALT" in accordance with Clause 4.3.5 of the CSA B51².

Post construction

Following a pressure vessel designed and constructed in accordance with Appendix 46 being put into service, the following provisions also apply:

1. ABSA Safety Codes Officer must be notified before the owner commences any repair or alteration of a pressure vessel or pressure parts of a vessel designed constructed in accordance with Appendix 46; and
2. Sections of the AB-513 document that allow qualified owners (users) to conduct, inspect and certify certain types of repairs and alterations under their Certificate of Authorization Permit do not apply for any repair or alteration of pressure vessels constructed in accordance with UG-16(a) using Mandatory Appendix 46 as alternative approach.

The application of Appendix 46 of the ASME BPVC S Section VIII, Division 1 shall be assessed as detailed above when the pressure vessel design is being submitted to ABSA for registration and installed for service in Alberta.

<original signed by>

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Chief Inspector, ABSA the pressure equipment safety authority

² Designs accepted and registered with a CRN prefix "ALT" uses alternatives to the rules of ASME BPVC that are not required to record or identify on the manufacturer's data report (MDR) components where the alternative rule was applied. The assigned registration number will be prefixed by ALT, followed by a hyphen, and followed by the CRN. (ALT-Z9999.2)