ASME B31.3
INTERPRETATIONS NO. 15

Replies to Technical Inquiries
April 1, 1996, Through March 31, 1997

General Information

It has been agreed to publish interpretations issued by the B31 Committee concerning B31.3 as part of the update service to the Code. The interpretations have been assigned numbers in chronological order. Each interpretation applies to the Edition or Addenda stated in the interpretation, or if none is stated, to the Edition or Addenda in effect on the date of issuance of the interpretation. Subsequent revisions to the Code may have superseded the reply. These interpretations are not part of the Code or its Addenda.

These replies are taken verbatim from the original letters, except for a few typographical and editorial corrections made for the purpose of improved clarity. In some instances, a review of the interpretation revealed a need for corrections of a technical nature. In these cases, a revised reply bearing the original interpretation number with the suffix R is presented.

ASME procedures provide for reconsideration of these interpretations when or if additional information is available which the inquirer believes might affect the interpretation. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME committee or subcommittee. As stated in the Statement of Policy in the Code documents, ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

For detailed instructions on preparation of technical inquiries to the B31 Committee, refer to Appendix Z.

Code Reference and Subject Indexes

Code Reference and Subject Indexes have been prepared to assist the user in locating interpretations by location or by subject matter in the Code. They cover interpretations issued from Volume 1 up to and including the present volume, and will be updated with each volume.
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Subject: ASME B31.3c-1995 Addenda, Table A-1, Allowable Stresses

Date Issued: May 21, 1996

File: B31-95-044

Question (1): Are the material requirements of ASME SA-106 the same as ASTM A106?

Reply (2): Yes.

Question (2): When doing an ASME B31.3 system stress evaluation, what allowable stresses are used for ASTM A106 or ASME SA-106?


Interpretation: 15-02

Subject: ASME B31.3c-1995 Addenda, Para. 345.9.1(a), Examination of Welds

Date Issued: May 21, 1996

File: B31-95-045

Question: In accordance with ASME B31.3c-1995 Addenda, is it permissible to perform magnetic particle examination of a circumferential weld in lieu of radiography as specified in para. 345.9.1(a)?

Reply: No.
Interpretation: 15-03

Subject: ASME B31.3c-1995 Addenda, Para. 323.4, Fluid Service Requirements for Materials

Date Issued: May 21, 1996

File: B31-95-046

Question (1): Does the ASME B31.3c-1995 Addenda permit the use of gray cast iron at temperatures down to -150°F?

Reply (1): Yes, however, see para. 323.4.2(b) and F323.4(a).

Question (2): For temperatures below -20°F, are there any special toughness test requirements for gray cast iron?

Reply (2): No. See Table 323.2.2, Box B-1.

Question (3): For any temperatures below -20°F, are the allowable stresses at -20°F applicable?

Reply (3): Yes.

Interpretation: 15-04

Subject: ASME B31.3c-1995 Addenda, Para. 323.1.2, Unlisted Materials

Date Issued: May 21, 1996

File: B31-95-048

Question (1): In accordance with ASME B31.3c-1995 Addenda, can API 5L X65 pipe be qualified under para. 323.1.2 for Normal Fluid Service?

Reply (1): Yes.

Question (2): Can API 5L X65 pipe be qualified for applications above operating temperatures of 100°F under para. 323.2.3 for Normal Fluid Service?

Reply (2): Yes.
Interpretation: 15-05

Subject: ASME B31.3c-1995 Addenda, Para. 304.3.3, Reinforcement of Welded Branch Connections

Date Issued: May 21, 1996

File: B31-95-052

Question: In accordance with ASME B31.3c-1995 Addenda, para. 304.3.3, is it permissible to multiply the required area replacement in Eq. (6) by factor $F$ from ASME Section VIII, Division 1, 1995 Edition, Fig. UG-37? The nozzle is welded on a cylindrical header as per Fig. UW-16.1 sketch (a).

Reply: No, except as provided in para. 300(c)(3) considering the design conditions of para. 301 and design criteria of para. 302.

Interpretation: 15-06

Subject: ASME B31.3c-1995 Addenda, Para. 304.1.1, Pressure Design of Components; Straight Pipe

Date Issued: May 21, 1996

File: B31-96-007

Question: In accordance with ASME B31.3c-1995 Addenda, para. 304.1.1, shall the quality factor $E$ also include ligament efficiency?

Reply: No; see para. 304.3 for the reinforcement of multiple openings.

Interpretation: 15-07

Subject: ASME B31.3c-1995 Addenda, Para. 335.1.1(c), Alignment; Flanged Joints

Date Issued: May 21, 1996

File: B31-96-008

Question: In accordance with ASME B31.3c-1995 Addenda, para. 335.1.1(c), prior to bolting up a flanged joint, may the flange faces be out of alignment from the design plane by more than $\frac{1}{16}$ in./ft (0.5%), provided the misalignment is considered in the design of the flanged assembly and attached piping in accordance with para. 300(c)(3)?

Reply: Yes.
Question: In accordance with ASME B31.3c-1995 Addenda, may the fillet weld shown in Fig. 328.5.2B Sketch (3) (socket welding flange) be repositioned to the inside of the pipe?

Reply: No, unless qualified under para. 304.7.

Interpretation: 15-09

Subject: ASME B31.3c-1995 Addenda, Para. 300.1.3, Scope; Exclusions

Date Issued: May 21, 1996

File: B31-96-010

Question: Does ASME B31.3c-1995 Addenda apply to internal fuel gas manifolds installed in a fired heater?

Reply: No, see paras. 300.1.3(c) and (d).

Interpretation: 15-10

Subject: ASME B31.3c-1995 Addenda, Para. 304.1, Pressure Design of Components; Straight Pipe

Date Issued: May 21, 1996

File: B31-96-011

Question: May the internal pressure design thickness $t$ be computed in accordance with the provisions of ASME B31.3c-1995 Addenda, paras. 304.1.1 and 304.1.2 when $t$ is greater than or equal to $D/6$ and $P/SE > 0.385$?

Reply: Yes. However, it is the responsibility of the designer to provide the special consideration required in para. 304.1.2(b). Alternatively, as an option to the owner, the design may be in accordance with Chapter IX.
Interpretation: 15-11

Subject: ASME B31.3c-1995 Addenda, Table 323.2.2, Minimum Temperature Without Impact Testing for Carbon Steel Materials

Date Issued: May 21, 1996

File: B31-96-014

Question (1): Does the assigned curve in the second sentence of Box B-3, Table 323.2.2, ASME B31.3c-1995 Addenda refer to the curve assignment from Table A-1?

Reply (1): Yes.

Question (2): If the material has been heat treated per Note (2) or (3), Fig. 323.2.2, is further heat treatment or impact testing of the base metal required for use below the original assigned curve, but above the reassigned curve?

Reply (2): No.

Interpretation: 15-12

Subject: ASME B31.3c-1995 Addenda, Para. 323.2.2, Lower Temperature Limits, Listed Materials

Date Issued: May 21, 1996

File: B31-96-015, B31-96-016

Question (1): In accordance with ASME B31.3c-1995 Addenda, when making blind flanges of carbon steel plate materials which have a Fig. 323.2.2 Curve assignment in Table A-1, is the thickness of the finished blind considered the nominal thickness when using Fig. 323.2.2 to establish the need for impact testing?

Reply (1): Yes.

Question (2): For carbon steel materials with a letter designation in the Min. Temp. column of Table A-1, can flanges manufactured in accordance with ASME B16.5 be used at temperatures down to \(-10^\circ F\) without impact testing regardless of thickness?

Reply (2): No, the requirements of para. 323.2.2 apply.
Interpretation: 15-13

Subject: ASME B31.3c-1995 Addenda, Para. 341, Examination

Date Issued: May 21, 1996

File: B31-96-017

Question: If a fabricated valve meets all the requirements of ASME B16.34, does ASME B31.3c-1995 Addenda require that nondestructive examination in accordance with ASME B31.3 also be performed on the valve?

Reply: No, see also Interpretation 12-12.

Interpretation: 15-14

Subject: ASME B31.3c-1995 Addenda, Para. 304.2, Curved and Mitered Segments of Pipe

Date Issued: May 21, 1996

File: B31-96-018

Question (1): In accordance with ASME B31.3c-1995 Addenda, para. 304.2.1, can the minimum required thickness $t_m$ of a bend, after bending, be determined by taking in consideration of lower (pressure) stresses on the outside of a bend (and higher pressure stresses on the inside of the bend) than on a straight pipe with identical wall thickness?

Reply (1): No, except as provided in para. 300(c)(3).

Question (2): In accordance with ASME B31.3c-1995 Addenda, Chapter IX (High Pressure Piping), can the minimum required thickness $t_m$ of a bend, after bending, be determined by taking into consideration lower stresses on the outside of a bend (and higher stresses on the inside of the bend) than on a straight pipe with identical wall thickness?

Reply (2): No, except as provided in para. 300(c)(3).
**Interpretation: 15-15**

**Subject:** ASME B31.3c-1995 Addenda, Para. 302.3.5, Limits of Calculated Stresses due to Sustained Loads and Displacement Strains

**Date Issued:** May 21, 1996

File: B31-96-020

**Question (1):** What is the definition of *sustained loadings* as intended in ASME B31.3c-1995 Addenda, para. 302.3.5(c)?

**Reply (1):** The Code does not offer for sustained loadings other than in the referenced paragraph. Sustained loads do not typically include forces resulting from applied displacements such as restrained thermal growth. See para. 319.2.3.

**Question (2):** When flanges are subjected to external forces and moments, is it permissible to calculate the stresses in the flange due to these forces and moments using BPV Code, Section VIII, Division 1, Appendix 2, and using the equivalent pressure calculated from these forces and moments?

**Reply (2):** The Code does not provide specific design formulas for the design of flange joints subjected to applied external forces and moments except as provided in para. 300(c)(3). However, external forces and moments shall be considered in design. See paras. 319.1.1 and 321.1.1.

**Interpretation: 15-16**

**Subject:** ASME B31.3c-1995 Addenda, Table 323.2.2, Minimum Temperature Without Impact Testing for Carbon Steel Materials

**Date Issued:** May 21, 1996

File: B31-96-021

**Question (1):** Does the assigned curve in the second sentence of Box B-3, Table 323.2.2, ASME B31.3c-1995 Addenda refer to the curve assignment from Table A-1?

**Reply (1):** Yes.

**Question (2):** If the material has been heat treated per Notes (2) or (3), Fig. 323.2.2, is further heat treatment or impact testing of the base metal required for use below the original assigned curve, but above the reassigned curve?

**Reply (2):** No.
Interpretation: 15-17

Subject: ASME B31.3-1990 Edition, Para. 332.4.2(a), Cold Bending and Forming

Date Issued: October 30, 1996

File: B31-96-034

Question: In accordance with ASME B31.3-1990 Edition, para. 332.4.2(a), cold bending and forming, can the elongation value for SA-106 B reported in the Certified Material Test Report be substituted for the specified basic minimum elongation in calculating the maximum fiber elongation?

Reply: No.

Interpretation: 15-18

Subject: ASME B31.3c-1993 Addenda, Para. 331.1.3(b), Heat Treatment Requirements

Date Issued: October 30, 1996

File: B31-96-036

Question (1): In accordance with ASME B31.3c-1993 Addenda, Table 331.1.1 and para. 331.1.3(b), do socket welds and seal welds with P-No. 5 materials with a chromium content greater than 3% but less than 10%, a carbon content less than 0.15%, and a weld throat thickness of 0.5 in. or less require postweld heat treatment if matching filler material is used?

Reply (1): Yes, unless applicable provisions of para. 331.1.3(b) are met.

Question (2): In accordance with ASME B31.3c-1995 Addenda, Table 331.1.1 and para. 331.1.3(b), do socket welds and seal welds with P-No. 5 materials with a chromium content greater than 3% but less than 10%, a carbon content less than 0.15%, and a weld throat thickness of 0.5 in. or less require postweld heat treatment if a non-air-hardenable filler metal is used?

Reply (2): No.

Question (3): In accordance with ASME B31.3c-1995 Addenda, Table 331.1.1 and paras. 331.1.3(b) and 331.1.7, if a non-air-hardenable filler is used, is the base metal HAZ required to be 241 maximum Brinell hardness for P-No. 5 materials with chromium content greater than 3% but less than 10%?

Reply (3): Yes, unless the applicable provisions of para. 331.3(b) are met.

Question (4): In accordance with ASME B31.3c-1995 Addenda, Table 331.1.1 and para. 331.1.3(b), do the requirements of para. 331.1.3(b) override the requirements of Table 331.1.1 relating to base metal group and/or the specified minimum tensile strength?

Reply (4): No, unless the applicable provisions of para. 331.1.3(b) are met.
Interpretation: 15·19

Subject: ASME B31.3-1996 Edition, Para. 328.2.3, Performance Qualification by Others

Date Issued: October 30, 1996

File: B31-96-037

Question: In accordance with ASME B31.3-1996 Edition, para. 328.2.3, is it acceptable for an employer to accept a welder performance qualification previously conducted by an organization whose welder qualification program, with the exception of testing under the full supervision and control of the manufacturer, contractor, assembler, or installer, complies fully with the provisions of ASME Section IX?

Reply: No.

Interpretation: 15·20


Date Issued: October 30, 1996

File: B31-96-039

Question: Does ASME B31.3-1993 Edition require P-No. 1 carbon steel welds, hot bends, and hot-formed components locally heat treated to be hardness tested?

Reply: No.
Subject: ASME B31.3a-1993 Addenda, Paras. 342 and 344.2, Examination

Date Issued: October 30, 1996

File: B31-96-041

Question (1): Does ASME B31.3a-1993 Addenda, paras. 342 and/or 344.2 require that personnel performing visual examinations required by paras. 341.4 and 344.7 be qualified and certified in accordance with SNT-TC-1A, Recommended Practice for Nondestructive Testing Personnel Qualification and Certification?

Reply (1): No.

Question (2): Does ASME B31.3a-1993 Addenda, paras. 342 and/or 344.2 require that personnel performing visual examinations required by paras. 341.4 and 344.7 be qualified and certified to AWS QC1, Standard for Qualification and Certification of Welding Inspectors?

Reply (2): No.

Question (3): Does ASME B31.3a-1993 Addenda, paras. 342 and 344.2 permit that the visual examinations required by paras. 341.4 and 344.7 be performed by personnel that (1) meet the physical requirements of ASME BPV Code, Section V, Article 9, (2) are competent to perform visual examination in accordance with the manufacturer's written procedures and (3) the employer certifies and makes available records of the examiner which show dates and results of qualifications?

Reply (3): Yes.

Question (4): Does ASME B31.3a-1993 Addenda, paras. 342 and 344.2 permit that the visual examinations required by paras. 341.4 and 344.7 be performed by personnel that (1) meet the physical requirements of ASME BPV Code Section C, Article 9, (2) have training and experience commensurate with the needs of the visual examinations required by paras. 341.4 and 344.7, (3) have demonstrated competence to perform the visual examinations using the employer's written procedures through written and practical testing administered by the employer, and (4) the employer certifies and makes available records of the examiner which show dates and results of qualification?

Reply (4): Yes.
Question: In accordance with ASME B31.3-1996 Edition, para. X302.2.a, is a pneumatic leak check of an expansion joint at a test pressure of 110% of the design pressure, in accordance with para. 345.5, an acceptable test?

Reply: No.

Interpretation: 15-23

Subject: ASME B31.3-1996 Edition, Table 323.3.1, Impact Testing Requirements for Metals

Date Issued: October 30, 1996

File: B31-96-044

Question: In accordance with ASME B31.3-1996 Edition, when qualifying welding procedures which require impact testing, is the thickness range qualified to $T/2$ to $T + 1/4$ in. rather than the range given in ASME Section IX, QW-403.10?

Reply: Yes, provided the criteria and thickness limits specified in ASME Section IX, para. QW-403.10 are not exceeded. See ASME B31.3, Table 323.3.1, box A-5.

Interpretation: 15-24

Subject: ASME B31.3-1996 Edition, Para. 319.3.1(b), Thermal Expansion Data

Date Issued: October 30, 1996

File: B31-96-045

Question (1): In accordance with ASME B31.3-1996 Edition, para. 319.3.1(b), must all thermal conditions of a piping system be evaluated for end reactions on equipment?

Reply (1): Yes.

Question (2): Does ASME B31.3 provide specific allowable piping load limits for end reactions on equipment?

Reply (2): No.
Interpretation: 15-25

Subject: ASME B31.3c-1995 Addenda, Para. 323.2.2, Lower Temperature Limits, Listed Materials

Date Issued: October 30, 1996

Question: In accordance with ASME B31.3c-1995 Addenda, Para. 323.2.2 and Table 323.2.2, does P-No. 1 carbon steel subject to metal temperatures between \(-20^\circ F\) and \(-50^\circ F\) with coincident pressure in excess of 25% of the maximum allowable design pressure require impact testing?

Reply: Yes, except as provided in Note (5) of Table 323.2.2.

Interpretation: 15-26


Date Issued: October 30, 1996

File: B31-96-049

Question (1): Does ASME B31.3-1993 Edition prohibit the use of a metallic valve lined with a nonmetal in Category M Fluid Service?

Reply (1): No.

Question (2): Does ASME B31.3-1993 Edition address a sensitive leak test for a metallic valve lined with a nonmetal?

Reply (2): No.