INTERPRETATIONS NO. 9

Replies to Technical Inquiries
September 1, 1991, Through August 31, 1992
Interpretation 9-1

It has been agreed to publish interpretations issued by the B31 Committee concerning B31.8 as part of the update service to the Code. The interpretations have been assigned interpretation numbers in chronological order. Each interpretation applies either to the latest Edition or Addenda at the time of issuance of the interpretation or the Edition or Addenda stated in the reply. Subsequent revisions to the Code may have superseded the reply. The interpretations are not part of the Code or the 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.

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.
Interpretation: 9-1

Subject: Paragraph 841.231, Wrinkle Bends

Date Issued: August 31, 1992

File: B31-92-009

Question (1): First of all, please acknowledge if it is correct that ASME can give answers to any question on ANSI B31.8 since ANSI B31.8 has been developed by one of ASME's committees.

Reply (1): This interpretation originates from the B31.8 committee directly and is in full accordance with the ASME policy on inquiries.

Question (2): ANSI B31.8, para. 841.231(a), states “all bends shall be free from buckling ...” Please advise us of the definition of buckling and how buckling is different from wrinkle bends in para. 841.231(f).

Reply (2): There is no definition of buckling in B31.8. Paragraph 841.231(a) is intended to mean bends other than wrinkle bends.

Question (3): ANSI B31.8, para. 841.231(f) states: “Wrinkle bends shall be permitted only on systems operating at less than 30% of the specified minimum yield strength. When wrinkle bends are made in welded pipe, the longitudinal weld shall be located as nearly to 90 deg. with the top of the wrinkle as conditions will permit. Wrinkle bends with sharp kinks shall not be permitted. Wrinkles shall have a spacing not less than the distance equal to the diameter of the pipe measured along the crotch. On pipe NPS 16 and larger, the wrinkle shall not produce an angle of more than 1½ deg. per wrinkle.”

(a) What is the definition of “wrinkle bends”? Is it wrinkles in bends which happen to exist unavoidably on intrados of the bends during the bending process, or is it one kind of bending method such as hot bend and cold bend?

(b) What is the definition of “crotch”? Could you explain how to measure “the diameter of the pipe measured along the crotch” by a drawing?

(c) It seems to be practically difficult to measure an angle of wrinkle. Could you recommend the method of measuring the angle of a wrinkle?

(d) On pipe NPS 16 and larger, there is a permitted tolerance for the angle per wrinkle. How is it in the case of pipe under NPS 16?

(e) Would you acknowledge the following specific case? “Pipe bend of material API 5L X46 seamless pipe can be permitted on systems operating at 1,250 psi even though it has wrinkles on intrados, if wrinkles meet the tolerances of spacing and angle specified in para. 841.231(f).” We believe the above is correct, as 1,250 psi is less than 30% of the minimum yield strength of X46 pipe (1,250 psi < 46,000 psi x 30% = 13,800 psi).

Reply (3):

(a) A wrinkle bend as used in B31.8 is a bend in which the wrinkles are produced intentionally to secure a shorter radius bend. The use of such bends is restricted to systems operating at less than 30% of SMYS. It is not related to the method of bending.

(b) The term crotch in para. 841.231 refers to the line along the inner curvature of a pipe bend.

(c) The geometry of the individual wrinkle is not specifically measured. The language refers to the total angle of the bend divided by the number of visible wrinkles, i.e., the change in bend angle per wrinkle.
(d) Paragraph 841.231 does not include a limit for the angle of a bend containing wrinkles in pipe smaller than NPS 16.

(e) The example stated is incorrect. The internal pressure has been confused with the specified minimum yield strength of the bend material. The maximum allowable operating pressure of the example bend depends on its thickness and is 30% of the pressure calculated according to the equation in para. 841.11.

Question (4): We understand that there is a separate standard ES-24 issued by PFI (Pipe Fabrication Institute) which specifies pipe bending methods, tolerances, processes, and material requirements. Please advise whether PFI Standard ES-24, para. 6.2, has any relation with ANSI B31.8, para. 841.231(f).

Reply (4): The PFI Standard ES-24 is not under the jurisdiction of ASME and we are unable to comment on how it is to be applied.

Question (5): We would like to know whether there is any charge for your service.

Reply (5): There is no charge for the B31.8 Section Committee to provide interpretations of the B31.8 Code.