SECTION VIII-1

Interpretation: VIII-1-04-44

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); Part UHX, UG-34, UG-47, UW-13, and Appendix A

Date Issued: January 13, 2005

File: BC04-472

Question (1): A fixed tubesheet shell-and-tube heat exchanger, meeting the description in UHX-3.2 and meeting all the scope requirements in Part UHX, transfers heat between a fluid in the shell and a fluid in the tubes through the wall of the tubes such that there is an axial differential thermal expansion between the shell and tubes. May the rules for the design of braced and stayed surfaces in UG-47 of Section VIII, Division 1 be used in lieu of the tubesheet design rules in Part UHX for the fixed tubesheet heat exchanger described above?

Reply (1): No.

Question (2): May the rules for the design and attachment of unstayed flat heads and covers in UG-34 of Section VIII, Division 1 be used for tubesheets that meet the requirements of Part UHX?

Reply (2): No.

Question (3): Shall the requirements for the attachment details in UW-13(e) or UW-13(f) of Section VIII, Division 1 be used for integral tubesheets that meet the requirements of Part UHX?

Reply (3): Yes.

Question (4): May the rules for tube-to-tubesheet joints in Nonmandatory Appendix A of Section VIII, Division 1 be used for shell-and-tube heat exchangers that meet the requirements of Part UHX?

Reply (4): Yes; see UHX-15.2(b).

Interpretation: VIII-1-04-45

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); UG-20, UG-99, and UCS-66(a), Hydrostatic Test Pressure

Date Issued: January 13, 2005

File: BC04-1070

Question: Must the hydrostatic test be considered when establishing the minimum design metal temperature per UG-20(b)?

Reply: No.

Interpretation: VIII-1-04-46

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); Fig. UW-13.2 and Table UW-12

Date Issued: January 13, 2005

File: BC04-1113

Question (1): Is it required by the rules of Section VIII, Division 1 for welded joints as per Fig. UW-13.2, sketches (m) and (n) to be examined by full radiography or spot radiography when the vessel in which these corner joints are included is subject to the full radiography requirements of UW-11?

Reply (1): No.

Question (2): Are the Category C joints as shown in Fig. UW-13.2, sketches (m) and (n) to be considered as Type 7 from Table UW-12?

Reply (2): Yes.

Interpretation: VIII-1-04-47

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); U-1(c)(2)(e)

Date Issued: January 13, 2005

File: BC04-1115

Question: Is a pressure vessel intended for storage or processing of a fluid, built from piping components, exempt from the scope of Section VIII, Division 1 per U-1(c)(2)(e), if none of the other exemptions listed in U-1(c)(2) apply?

Reply: No.

Interpretation: VIII-1-04-48

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); UW-2(a), UW-3(b), and Table UW-12

Date Issued: January 13, 2005

File: BC04-1205

Background: Consider a vessel, constructed according to the rules of Section VIII, Division 1, containing a cone with a half-apex angle exceeding 30 deg. The cone is attached to a cylindrical shell at its large end and a nozzle at its small end. Both ends are full penetration welds and neither contain knuckle transitions.

Question (1): Is it required by the rules of Section VIII, Division 1 for the welds on both sides of the cone to be considered Category B?

Reply (1): Yes.

Question (2): Is it required that these welds by considered as Type 8 per Table UW-12?

Reply (2): Yes.

Question (3): Is it permitted for these joints to be used in a vessel which has been designated for lethal service as per UW-2(a)?

Reply (3): No.

Interpretation: VIII-1-04-49

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); UG-130 and Form UV-1

Date Issued: January 14, 2005

File: BC04-1276

Question: When Form UV-1 is completed in accordance with UG-130 by a UV Certificate Holder whose scope is limited to assembly of pressure relief valves, may the responsible representative sign the Certificate of Shop Compliance with the understanding that the original parts fabricated by the Certificate-holding valve Manufacturer met the applicable rules for design, material, and construction?

Reply: Yes.

Interpretation: VIII-1-04-50

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); UG-129(e)

Date Issued: January 14, 2005

File: BC04-1369

Question: Section VIII, Division 1, UG-129(e)(9) and (10) provide mandatory requirements for marking of rupture disks used on pressure vessels constructed to the requirements of Section VIII, Division 1. Is it required that a rupture disk be marked in accordance with UG-129(e) for use on a pressure vessel that has been constructed to the latest edition of the Code?

Reply: Yes.

Interpretation: VIII-1-04-51

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); Appendix 13, Design of Vessels of Noncircular Cross Section Subject to External Pressure (Full Vacuum)

Date Issued: January 14, 2005

File: BC04-1500

Question: Does Appendix 13 of Section VIII, Division 1 provide external pressure design rules for stayed noncircular vessels similar to those shown in Fig. 13-2(a), sketches (7), (8), (9), and (10)?

Reply: No; see 13-4(e).

Interpretation: VIII-1-04-52

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); Part UHX, UHX-10, Internally Spherical-Shaped Channels

Date Issued: February 10, 2005

File: BC05-005

Question: Do the rules in Part UHX of Section VIII, Division 1 apply to the design of tubesheets integral with channels that do not have a uniform cylindrical shape and thickness for a minimum length of $1.8\sqrt{D_c t_c}$ adjacent to the tubesheet?

Reply: No; see U-2(g).

Interpretation: VIII-1-04-53

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); Part UHX, UHX-10, Tubesheets With Flexible Rims

Date Issued: February 10, 2005

File: BC05-006

Question: Since the equations in Part UHX of Section VIII, Division 1 are derived based on the assumption that the untubed rim (unperforated annular region between the shell and tubes) acts like a ring (i.e., its cross section does not distort), may alternative tubesheet design rules be used for tubesheets having flexible untubed rims (i.e., the cross section does distort)?

Reply: Yes; see U-2(g).

Interpretation: VIII-1-04-54

Subject: Section VIII, Division 1 (2004 Edition); UHX-14, Internally Sealed Floating Tubesheet

Date Issued: February 23, 2005

File: BC05-075

Question: A floating tubesheet heat exchanger with the arrangement shown in Fig. UHX-14.1(c) has an internally sealed floating tubesheet [Fig. UHX-14.3(d)] that is required to be much thicker than the stationary tubesheet (Fig. UHX-14.2) to accommodate the packing, lantern ring, and tube layout. Does this geometry fall within the scope of Section VIII, Division 1, Part UHX?

Reply: No; see UHX-14.2 and U-2(g).

Interpretation: VIII-1-04-55

Subject: Section VIII, Division 1 (2004 Edition); UHX-4(e)(1), UHX-13.4(e)(1), UHX-14.4(f), UHX-15, and Appendix A, Tube-to-Tubesheet Joint Loads

Date Issued: February 23, 2005

File: BC05-092

Question (1): UHX-4(e)(1) of Section VIII, Division 1 establishes the allowable axial tube stress. When complying with the requirements of UHX-13.4(e)(1) and UHX-14.4(f), is it required to perform a shear load test in accordance with A-3 and A-4 to establish the allowable tube-to-tubesheet joint load?

Reply (1): No; see UHX-15, A-2, and U-2(g).

Question (2): Does Part UHX of Section VIII, Division 1 contain rules to determine the stresses in the tubesheet, shell, tubes, and tube-to-tubesheet joints when test ring devices are used during hydrostatic test?

Reply (2): No; see U-2(g).

Question (3): May the rules for tube-to-tubesheet joints in Nonmandatory Appendix A of Section VIII, Division 1 be used for floating tubesheet heat exchangers?

Reply (3): Yes; see UHX-15.2(b) and A-1(a).

Interpretation: VIII-1-04-56

Subject: Section VIII, Division 1 (2004 Edition); UW-40(f) and Appendix A, Fig. A-2, PWHT Tube-to-Tubesheet Welds

Date Issued: February 23, 2005

File: BC05-093

Question: When applying the postweld heat treatment rules of Section VIII, Division 1 to tube-to-tubesheet welds shown in Fig. A-2, the thickness of the fillet weld, groove weld, and combined groove and fillet weld is defined in UW-40(f)(2) and (f)(3). For welds of other shapes shown in Fig. A-2, should weld dimension a be used to comply with UW-40(f)(5)(g)?

Reply: Yes.

Interpretation: VIII-1-04-57

Subject: Section VIII, Division 1 (2004 Edition); UG-37

Date Issued: March 8, 2005

File: BC04-1634

Question (1): In accordance with the rules of Section VIII, Division 1, is it permissible to include weld metal build-up as available area of reinforcement, as required in UG-37, for a forged integrally reinforced nozzle neck if the provisions of UG-42 are satisfied?

Reply (1): Yes.

Question (2): If the reply to Question (1) is "Yes," may the F factor presented in Fig. UG-37 be used in the nozzle reinforcement calculations?

Reply (2): Yes.

Question (3): Paragraph UG-37 sets limits for nozzle reinforcement as a function of the thicknesses of the shell, nozzle, and reinforcing pad (element). For a nozzle with a configuration similar to that of Fig. UW-16.1(g), is the reinforcement limit $2.5t_n + t_e$ in Fig. UG-37.1 to be determined using t_n equal to the thicker (shoulder) portion of the nozzle neck?

Reply (3): See Fig. UG-40, sketches (e), (e-1), and (e-2).

Interpretation: VIII-1-04-58

Subject: Section VIII, Division 1 (2001 Edition, 2003 Addenda); UHX-13.4(a) and UHX-14.4(b), Operating Pressure and Differential Thermal Expansion

Date Issued: March 8, 2005

File: BC05-007

Question: UHX-13.4(a) and UHX-14.4(b) state it is necessary to evaluate all the anticipated loading conditions to ensure that the worst load combination has been considered in the design. Load Cases 4, 5, 6, and 7 include the effect of pressure and differential thermal expansion. When tubesheets are designed in accordance with Part UHX of Section VIII, Division 1, does the use of the coincident operating pressure(s) and the differential thermal expansion corresponding to each of these load cases meet the requirement for considering the worst load combination?

Reply: Yes.

Interpretation: VIII-1-04-59

Subject: Section VIII, Division 1 (2004 Edition); Appendix W, Form U-1A

Date Issued: March 8, 2005

File: BC05-078

Question: Is it permitted by the rules of Section VIII, Division 1 to include in the Remarks section of Form U-1, U-1A, U-2, or U-2A a note stating that material used on a vessel also meets requirements of a different specification, noting any limitations, provided the material used for construction is permitted?

Reply: Yes.

Interpretation: VIII-1-04-60

Subject: Section VIII, Division 1 (2004 Edition); U-1 and UG-22

Date Issued: March 8, 2005

File: BC05-103

Question: Does the scope of Section VIII, Division 1 include pressure vessels mounted and operated on a floating ship?

Reply: Yes; see U-1(c)(1).

Interpretation: VIII-1-04-61

Subject: Section VIII, Division 1 (2004 Edition); UHX-10(a) and UHX-14

Date Issued: June 16, 2005

File: BC05-411

Question: Do tubesheets for shell-and-tube heat exchangers having a no-tubes-in-window (NTIW) baffle design fall within the scope of Section VIII, Division 1, Part UHX?

Reply: No; see UHX-10(a) and U-2(g).

Interpretation: VIII-1-04-62

Subject: Section VIII, Division 1; UG-34 and UG-36(c)(3)

Date Issued: June 30, 2005

File: BC04-517

Question (1): In UG-34(d), Sketches (e), (f), and (g) of Section VIII, Division 1, may an opening meeting all of the requirements of UG-36(c) and UG-37 be placed in the shell within a $2\sqrt{dt_s}$ distance from a flat head for values of m less than 1?

Reply (1): The Code does not address this issue; see U-2(g).

Question (2): May the rules in UG-34 of Section VIII, Division 1 be used to design flat heads with multiple head-to-shell attachment details on the same head?

Reply (2): No; see U-2(g).