

P R E S S U R E P O I N T S

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ASME CODE N E W S

By Tom Pastor & John Swezy Jr., Engineering Technology Division

Questions and Answers

Q When conducting welder performance testing, the welder deposits an overlay of 300-series stainless (F5) of a given thickness (t1) on a test coupon (assume P-No.1). He then applies a second overlay of E-NiCrFe-3 (F-4X) of a given thickness (t2) on top of the first overlay, using qualified weld procedures within their thickness ranges. Will the successful testing of this coupon simultaneously qualify the welder for depositing both of the overlay processes described?

A QW-306 permits this type of qualification scheme for welder performance. QW-423 allows the use of base metals with "similar chemical composition" for welder performance qualification, but not for procedure qualification. Therefore, the 300-series stainless steel deposit may approximate a P-No. 8 base metal for qualifying the E-NiCrFe-3 overlay process. The welder performance variables of QW-350, and qualification tests specified in QW-453 for corrosion resistant weld metal overlay, shall be applied for this type of test (as opposed to applying hard facing overlay requirements).

Q For a vessel constructed in accordance with Section VIII, Division 1, must all radiography be performed after any mandatory PWHT?

A No. Code-required radiography may be performed before or after the PWHT.

Final Word

Design Margin Code Cases for Components Built to Section I and Section VIII, Division 1

Newly released Code Cases have been approved for use in designing boilers and pressure vessels. These Code Cases have been prepared to permit the use of allowable stresses based in part on a lower design margin of 3.5 on ultimate tensile strength (UTS), versus the current factor of 4.0. The Section I Code Case (2284 – approved 6/17/98) is fairly simple to use, providing the user with tabular stress values for the applicable materials, with a minimum of added conditions. The Section VIII-1 Code Cases (2278 and 2290) are a little more complicated.

CC-2278 (approved 7/1/98) has been tagged the "Do It Yourself" Code Case. This CC requires the user to calculate the allowable stress values, rather than look up the values in a table. The user must obtain the specified minimum UTS and yield strength from the material listing in Tables 1A or 1B, or U and Y-1 as applicable. These values serve as the starting point for the calculations. A sample set of calculations for four common materials is provided on the right:

SAMPLE ALLOWABLE STRESS CALCULATIONS for 400°F									
Material	Current Allowable Stress @400F ksi	Su Room Temp ksi	Sy Room Temp ksi	Su@ 400F ksi	Sy@ 400F ksi	Su-RT 3.5 ksi	Su-400 3.5 ksi	2/3SyRT ksi	2/3Sy 400F ksi
SA-516-70	17.5	70	38	70	32.6	20	20	25.33	21.73
SA-240-304	13.8 (Lo)	75	30	64.4	20.7	21.43	18.4	20	13.8
SA-36	13.3	58	36	-	30.8	16.57	-	24	20.53
SA-387-11	15.0	60	35	60	29.5	17.14	17.14	23.33	19.67

The values in bold represent the adjusted allowable stresses based on the new design margin. Note that in the case of SA-36, no adjustment is possible at 400°F since there is no published UTS data above 100°F for this material.

There are several conditional requirements imposed in these cases.

- This Code Case is not recommended for use with mechanical joints or other components where slight distortions could affect service performance.
- Minimum design metal temperature (MDMT) and maximum design temperature play a role. In some cases, a more limiting upper temperature limit has been set.
- The impact testing associated coincident ratio of 0.4 in UCS-66(b) is reduced to 0.35, revising the curve of Figure UCS-66.2.
- The pressure test factors of UG-99 and UG-100 are revised to 1.3 and 1.1 respectively, maintaining a consistency with the prior test factors of 1.5/1.25 used for a design margin of 4.0
- A detailed listing of the calculated stress and coincident temperature basis for all components designed under this Code Case shall be listed in the Remarks section of the U-1 data report. This makes it possible to re-establish the design basis of the vessel and facilitate future re-rates and alterations.

CC-2290 has tabular values for stress, and some of the conditions imposed in CC2278 have been incorporated in their preparation. Conditions remaining include the coincident stress ratio reduction to 3.5, and the test factor reductions to UG-99 and UG-100. A detailed listing of stress values for various component parts is not required, since the values are taken from the Table.

Users of these Code Cases are **strongly cautioned** about applying them to their products. First, the stress values presented in the Case 2290 tables are not necessarily higher than those found in current Section II, Part D. Some values are actually lower. This is due to the use of the latest material trend curve data (UTS and Yield Strength) in developing the allowable stresses. This effect will be noticed as the Tables of Section II, Part D are revised as well, so check closely.

Second, as mentioned in the Foreword of the Code:

"Manufacturers and users of components are cautioned against making use of revisions and Cases that are less restrictive than former requirements, without having assurance that they have been accepted by the proper authorities in the jurisdiction where the component is to be installed."

Continued on next page

EDUCATIONAL SERVICES 1998/1999 TRAINING SCHEDULE

For more information, call 1-800-626-4441, or visit the HSB website at <http://www.hsb.com>.

October 12 - 13	Introduction to Section VIII Div. 1	Reno, Nevada	\$ 530.00	981050
October 14	Repairs and Alterations to Boilers and Pressure Vessels	Reno, Nevada	\$ 250.00	981051
October 15 - 16	Section IX, Welding Qualifications	Reno, Nevada	\$ 530.00	981052
	Full week schedule; Intro. to Section VIII, Repairs, Section IX		\$ 1,050.00	981050-X
October 12 - 14	Process Piping, ASME B31.3 - API-570	Reno, Nevada	\$ 650.00	981053
October 15 - 16	Basic NDE Methods	Reno, Nevada	\$ 530.00	981054
	Full week schedule; Process Piping and Basic NDE		\$ 925.00	981053-X
October 12	ISO 9000 Overview and Transition from ASME to ISO	Reno, Nevada	\$ 250.00	ISO10
October 13- 14	ISO 9000 Quality Manual and Procedure Development	Reno, Nevada	\$ 450.00	ISO11
October 15	Understanding Foreign Boiler and Pressure Codes	Reno, Nevada	\$ 250.00	ISO12
	Full week schedule; ISO Overview, ISO QCM, Foreign		\$ 950.00	ISO10-X
October 19 - 20	Introduction to Section VIII Div. 1	Montreal, Quebec	\$ 530.00*	981055
October 21	Repairs and Alterations to Boilers and Pressure Vessels	Montreal, Quebec	\$ 250.00*	981056
October 22 - 23	Section IX, Welding Qualifications	Montreal, Quebec	\$ 530.00*	981057
	Full week schedule; Intro. to Section VIII, Repairs, Section IX		\$ 1,050.00*	981055-X
October 26 - 28	Process Piping, ASME B31.3 - API-570	Montreal, Quebec	\$ 650.00*	981058
October 29 - 30	Basic NDE Methods	Montreal, Quebec	\$ 530.00*	981059
	Full week schedule; Process Piping and Basic NDE		\$ 925.00*	981058-X
November 2 - 20	National Board Examination Preparation	San Diego, California	\$ 3,150.00	981160
November 16 - 20	API-570 Piping Inspector Examination Preparation	San Diego, California	\$ 995.00	981161
November 9 - 13	API-570 Piping Inspector Examination Preparation	Calgary, Alberta	\$ 995.00*	981162
November 5 - 13	API-510 Pressure Vessel Inspector Examination Preparation	Calgary, Alberta	\$ 1,495.00*	981163
January 18 - 19	Introduction to Section VIII Div. 1	New Orleans, Louisiana	\$ 530.00	990101
January 20	Repairs and Alterations to Boilers and Pressure Vessels	New Orleans, Louisiana	\$ 250.00	990102
January 21 - 22	Section IX, Welding Qualifications	New Orleans, Louisiana	\$ 530.00	990103
	Full week schedule; Intro. to Section VIII, Repairs, Section IX		\$ 1,160.00	990101-X
January 19	Boiler Tube Failure Analysis	New Orleans, Louisiana	\$ 350.00	990104
January 18 - 20	Process Piping, ASME B31.3 - API-570	New Orleans, Louisiana	\$ 650.00	990105
January 21 - 22	ASME Quality Control Programs	New Orleans, Louisiana	\$ 530.00	990106
	Full week schedule; Process Piping and QC Programs		\$ 1,060.00	990105-X
January 18	ISO Overview and Transition from ASME to ISO	New Orleans, Louisiana	\$ 250.00	990107
January 19 - 20	ISO Quality Manual and Procedure Development	New Orleans, Louisiana	\$ 450.00	990108
January 21	ISO 9000 as a Management Tool for Continuous Improvement	New Orleans, Louisiana	\$ 250.00	990109
	Full week schedule; ISO Overview, QCM, Management Tool		\$ 1,060.00	990107-X
January 25 - 26	Introduction to Section VIII Div. 1	Calgary, Alberta	\$ 530.00*	990110
January 27	Repairs and Alterations to Boilers and Pressure Vessels	Calgary, Alberta	\$ 250.00*	990111
January 28 - 29	Section IX, Welding Qualifications	Calgary, Alberta	\$ 530.00*	990112
	Full week schedule; Intro. to Section VIII, Repairs, Section IX		\$ 1,160.00*	990110-X
February 8 - 10	Process Piping, ASME B31.3 - API-570	Houston, Texas	\$ 650.00	990201
February 11 - 12	Basic NDE Methods	Houston, Texas	\$ 530.00	990202
	Full week schedule; Process Piping and Basic NDE		\$ 1,060.00	990201-X
February 8	Boiler Operation and Maintenance	Portland, Oregon	\$ 169.00	990203
February 9	Air Conditioning & Refrigeration Equip. Operation & Maintenance	Portland, Oregon	\$ 169.00	990204
February 10	Electrical Equipment Operation and Maintenance	Portland, Oregon	\$ 169.00	990205
February 11 - 12	Operation & Maintenance of Manufacturing Machines	Portland, Oregon	\$ 530.00	990206
	Full week schedule; BOM, AC & Refrig., Electrical, Manufacturing		\$ 850.00	990203-X
February 8 - 26	National Board Examination Preparation	San Diego, California	\$ 3,150.00	990210
March 8	Boiler Operation & Maintenance	Denver, Colorado	\$ 169.00	990301
March 9	Air Conditioning & Refrigeration Equip. Operation & Maintenance	Denver, Colorado	\$ 169.00	990302
March 10	Electrical Equipment Operation & Maintenance	Denver, Colorado	\$ 169.00	990303
March 11 - 12	Operation & Maintenance of Manufacturing Machines	Denver, Colorado	\$ 530.00	990304
	Full week schedule; BOM, AC & Refrig., Electrical, Manufacturing		\$ 930.00	990301-X
March 8	Introduction to Section VIII Div. 1	Hartford, Connecticut	\$ 265.00	990207
March 9 - 10	Pressure Vessel Basic Design & Fabrication	Hartford, Connecticut	\$ 565.00	990208
March 11 - 12	Pressure Vessel Advanced Design	Hartford, Connecticut	\$ 735.00	990209
	Full week schedule; Intro. to Section VIII, PV Design & Fab., PV Advanced Design		\$ 1,456.00	990207-X
March 22 - 26	API-653 Above Ground Storage Tank Examination Preparation	Toronto, Ontario	\$ 995.00*	990305
March 15 - 17	Process Piping, ASME B31.3 - API-570	Buffalo, New York	\$ 650.00	990306
March 18 - 19	Basic NDE Methods	Buffalo, New York	\$ 530.00	990307
	Full week schedule; Process Piping and Basic NDE		\$ 1,060.00	990305-X
March 22 - 23	Section I Power Boilers	Hartford, Connecticut	\$ 530.00	990308
March 24	ASME B31.1 Fabrication	Hartford, Connecticut	\$ 250.00	990309
March 25 - 26	ASME B31.1 Design	Hartford, Connecticut	\$ 625.00	990310
	Full week schedule; Section I, B31.1 Fab., B31.1 Design		\$ 1,265.00	990308-X

*Prices are in U.S. Dollars ** ASME Section VIII Division 1 Pressure Vessels

FINAL WORD *Continued from previous page*

Not all jurisdictions automatically accept Code Cases as their laws are written, plus some jurisdictions are opposed to these Code Cases. What this means is the manufacturer should be diligent in verifying acceptance before use. If a component is built for "stock," it may be wise to ensure that the Code Case is not applied, since this could affect the marketability of the component.

Section VIII Design Seminar

HSB's Codes and Standards Group is pleased to announce that a three-day Section VIII design seminar will be presented Nov. 9-11, 1998 in Fresno, CA. Tom Pastor and Jay Cameron will present this

popular course which covers all the basic design requirements in Section VIII, plus coverage of several U-2(g) topics such as external loads on nozzles, wind and seismic consideration, and horizontal vessels on saddles. This will be last time this course will be offered this year, so please register early by contacting Educational Services, Ms. Linda Frye at 1-800-472-1866 x5491.

A course description and registration information are included in the insert.

MEET THE CODES & STANDARDS STAFF

Thomas P. Pastor, P.E. – Director

Tom manages HSB's Codes & Standards Group, a job he has had for seven of his 12 years with HSB. He holds a B.S. and M.S. in Civil Engineering from the University of Connecticut, is a licensed professional engineer in the states of Connecticut and Indiana, and holds a National Board Commission. His technical expertise is in the areas of stress analysis and pressure vessel design. With regard to ASME B&PV committees, Tom is currently serving as Chairman of Subcommittee VIII, a member of Subgroup Design of SC-VIII, a member of the Main Committee Executive Committee, and a member of Subcommittee XII on Transport Tanks. Tom can be reached at 860.722.5615 or thomas_pastor@hsb.com.



Wil LaRochelle – Senior Code Consultant

Wil has been with HSB for over 22 years where he has worked at all levels of the ASME inspection business, from AI to Regional Supervisor, Regional Manager, Manager Codes & Standards, and Corporate QA Manager. He holds a National Board Commission with "N", "T", "S", "B" and "IS" endorsements. His expertise is in the areas of quality assurance and ASME accreditation. He is a member of ASME's SC on Nuclear Accreditation, SC-QAI and Vice Chairman SC-AIA Accreditation. So the next time you need some help with an accreditation or quality issue, give Wil a call at 860.722.5662 or send an e-mail to wil_larochelle@hsb.com.



Evangelos (Angelo) Michalopoulos, P.E. – Senior Consulting Engineer

Angelo has worked in Codes & Standards at HSB for 10 years and currently holds a professional engineering license in the State of Connecticut. He received his B.S. and M.S. in Civil Engineering from the Massachusetts Institute of Technology, where he specialized in structural engineering and earthquake engineering. Angelo has so many areas of expertise, it's hard to know where to begin. He is a first-class structural engineer with many years of experience in seismic analysis. He is a member of B31 piping committees (Main Committee, Mechanical Design and Fabrication, Examination and Materials). He is an expert in the



field of risk-based inspection methodology and fitness-for-service evaluation. Angelo is a member of the ASME Post Construction Main Committee, the Subcommittee on Inspection Planning and its Subgroup on Quantitative Risk Based Analysis. And, as you can guess, he speaks fluent Greek. So the next time you have a project in Greece, Angelo's the man! Angelo can be reached at 860.722.5496 or evangelos_michalopoulos@hsb.com.

Sandy Babka – Engineer I

Sandy joined HSB in 1993. He holds a B.S. degree in Mechanical Engineering from Worcester Polytechnic Institute and is a National Board Commissioned Inspector. Since joining HSB, Sandy has worked in the Pressure Equipment Technology Group, was a boiler inspector in the Insurance Inspection Services Division, and recently joined the Codes & Standards staff this past February. Sandy provides technical assistance for all ASME B&PV codes, supports clients with design reviews, and is our point man in the area of foreign codes and standards. So for the latest on what's happening with the PED (Pressure Equipment Directive), give Sandy a call at 860.722.5197, or send him an e-mail at sandy_babka@hsb.com.



John P. Swezy, Jr. - Engineer I

A new addition from Kemper in July 1998, John brings a lot of field and operating experience to our staff. His background includes an A.S. from the University of New York, and varied formal and non-traditional educational experiences. After an extended period of time in the Navy as a Submarine Nuclear Propulsion Engineer, he has been a National Board Commissioned Inspector for eight years, serving the last two years as a Staff Code Consultant at Kemper's Home Office in Long Grove, Illinois. As an ASME Codes and Standards volunteer he serves on Subgroup Personnel Qualification and Inquiry of SC-V, Subgroup General Requirements of SC-VIII, and on Subgroup Fabrication and Inspection and the Subcommittee on Transport Tanks SC-XII. He provides technical assistance for all ASME B&PV Codes, with special strengths in Section V (NDE) and Section IX (Welding). John can be reached at 860.722.5127 or john_swezy_jr@hsb.com.



ENGINEERING SERVICES S O L U T I O N S

Engineering Services provides the following services to clients around the world:

- **ASME Codes and Standards Services** provides authorized inspection services to boilers, pressure vessels, nuclear components, and process and power plants. Services also include pressure vessel and piping design, finite element analysis, and quality assurance program development. Contact Keith Burns, 630-955-1866, extension 5604 or via e-mail at keith_burns@hsb.com.
- **HSB Registration Services** provides document reviews, pre-audits, certification audits, and registration to ISO 9000 quality system management standards, QS-9000 requirements (automotive-focus), and ISO 14000 environmental management systems standards (through partnerships with AWM, US and QAS, Australia). Contact Sam Corona, 770-716-9773, or sam_corona@hsb.com.
- **Pressure Equipment Technologies** provides comprehensive engineering surveys of critical plant equipment designed for pressure service such as boilers, deaerators, paper machine dryers, general service pressure vessels, and piping systems. Contact Joe Hoyt, 309-829-9551, or joseph_hoyt@hsb.com.
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- **Technical Resource Support** provides independent and objective analyses of equipment, processes, and systems through the following services: vendor surveillance, third-party inspection, expediting, auditing, and project management. Contact Bryce Hart, 610-962-2364, or via e-mail at bryce_hart@hsb.com.

For more information on Engineering Services, contact:

- Consultant, Engineering Services
Bernie Hrubala, 800-472-1866 extension 5651

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You can also find current and past articles from Pressure Points on The Hartford Steam Boiler Inspection and Insurance Company's web site. Go to www.hsb.com, and click on the Engineering icon. In addition to information about HSB's many engineering services, this section includes an electronic version of Pressure Points.

Do you have a question or topic suggestions for future issues? Contact Jill Smolnik in Hartford, CT at 800-472-1866, extension 5294, or via the Internet at jill_smolnik@hsb.com.

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