



## ASME CODE N E W S

By John Swezy, Jr., Engineering Technology Division

### Questions and Answers

**Q** A Section I Certificate Holder routinely supplies mechanically assembled (threaded) boiler external piping to its boilers, including appropriate fittings and valves. The piping is not pressure tested in the shop, nor documented by the Certificate Holder on a Manufacturer's Data Report. The Certificate Holder may assemble the external piping prior to shipping, or place the piping in boxes for assembly by others at the installation point. What responsibility does the Certificate Holder have for this piping?

**A** Boiler external piping must have proper material identification markings, meet the design requirements of ASME B31.1 Power Piping, be subjected to a hydrostatic test, and be certified by an A, S, or PP Certificate Holder on a P-4A or P-4B Manufacturer's Data Report per PG-109.4. This is true whether the piping is installed by mechanical assembly or welding.

Per PG-104.1, Note 2, the boiler manufacturer may terminate the scope of its work at the boiler proper, shifting responsibility for the boiler external piping to another Certificate Holder at the time of installation. This does not remove the requirement to have properly certified and documented boiler external piping upon installation; it merely passes that responsibility on to others. The purchaser must make arrangements for this to be done, in compliance with jurisdictional requirements.

Organizations or individuals may mechanically assemble boiler external piping, whether they have a Certificate of Authorization or not. If installed by welding, it must be performed by an A, S, or PP Certificate Holder. In either case, the Certificate Holder that certifies the piping on the P-4A or P-4B Manufacturer's Data Report for Piping assumes responsibility for proper material identification, performing the hydrostatic test, and final certification. Responsibility for compliance with the design requirements of ASME B31.1 Power Piping shall be indicated on Line 5 of either data report, and may be assumed by installer/assembler or another organization with a Certificate of Authorization.

Some options for carrying out the assembly/installation of boiler external piping:

1. The boiler manufacturer takes full responsibility for the boiler external piping, documenting it on a P-6 form attached to the P-2 form, or on a P-4A or P-4B, as it sees fit. If the piping is disassembled for shipment, it must be reassembled and tested for integrity of the mechanical joints at the point of installation to obtain certification for operation by the jurisdiction. For mechanically assembled installations, the assembly does

not need to be performed by a Certificate Holder. The pressure test, if performed only to verify mechanical joint integrity, does not require a Certificate Holder. Piping that was assembled with the boiler and broken down for shipment is often painted, and markings obscured. The piping must be traceable to its documentation at the point of installation through proper identification markings. One recommendation for maintaining identification is to stamp or otherwise mark the piping with the manufacturer's name and the serial number of the boiler. Using the National Board Number for such identification is inappropriate, but serial numbers are acceptable, even if they are the same as the National Board Number. Jurisdictions have been known to reject painted piping, which was otherwise acceptable, purely because it had no traceability or identification.

2. The manufacturer supplies pre-cut and threaded boiler external piping components as materials with shipment of the boiler. It takes no responsibility nor provides documentation for the piping, other than required material documentation. Another Certificate Holder must verify the piping materials, ensure design suitability, conduct the hydrostatic test, and certify the piping on the P-4A or P-4B Manufacturer's Data Report for Piping. The boiler manufacturer has merely supplied the materials. The actual installation of mechanically assembled piping may be conducted by anyone, but the certification must be by an A, S, or PP Certificate Holder.
3. The manufacturer fabricates the boiler pressure vessel and terminates its responsibility at the boiler proper, supplying no piping components for installation. Another Certificate Holder must obtain the required piping components, ensure design suitability, conduct the hydrostatic test, and certify the piping on the P-4A or P-4B Manufacturer's Data Report for Piping. Once again, installation of mechanically assembled piping can be by anyone, but certification of the piping must be by an A, S, or PP Certificate Holder.
4. Some combination of the above options.

Option 1 seems to make sense for many manufacturers. Boiler units are frequently fully assembled and test fired by the manufacturer. Adding a documented fabrication step of having the AI witness a hydrostatic test of the external piping should not create an undue hardship. This makes the boiler immediately ready for assembly and firing at the point of installation, which is a customer service consideration. Any reputable mechanical contractor or boiler sales organization could do the installation in this scenario with a minimum of problems. This also gives the boiler manufacturer some degree of control of the installation process, and hence the performance of the completed boiler unit.

## Final Word

### ■ Chamfer and Blend Radii for Nozzle-to-Shell Attachments: New Code Revisions for 1999

by John Swezy, Jr., Engineering Technology Division

The '97 Addenda to Section VIII, Division 1 revised UW-16(a)(3), imposing mandatory chamfer and blend radii for nozzle-to-shell attachments. The intent of a minimum blend radii was to minimize stress concentrations at sharp directional changes and improve fatigue characteristics. The chamfers and radii on nozzle edges were intended to improve safety, by minimizing the sharp edges that often result from cut edges of nozzles.

These revisions caused a substantial hardship for many shops, and an Inquiry was sent to ASME requesting relief. It was felt that producing the chamfers and radii on nozzle edges required additional time and cost, with negligible benefit, and that UG-76(c) addressed the safety issues adequately. Consequently, an intent Interpretation and related Code revisions were approved at the December 11, 1998 Main Committee Meeting.

The Interpretation reads as follows:

*Question: Is it the intent that the 1/16 inch minimum chamfer or 1/8 inch minimum radius given in paragraph UW-16(a)(3) of*

*Section VIII, Division 1 is only applicable to those sketches of Fig. UW-16.1 that show the term "Radius"?*

*Reply: Yes*

As a result of the Interpretation, the following Code revisions were made:

- Paragraph UW-16(a)(3) has been deleted, eliminating broad application of these requirements to all the various sketches of Figure UW-16.1.
- The definition "Radius = 1/8 in. minimum blend radius" has been added to UW-16(b) nomenclature. This affects only the blend radii of Sketches (f-3), (g), (n), and (o) in Figure UW-16.1. All other radii are specified within the sketches, the accompanying notes, or the text of the Code.
- The note "Where the term 'Radius' appears, provide a 1/8 inch minimum blend radius" was added to Fig. UW-16.1. The note was added since defining the term "Radius" in the nomenclature may be too subtle for many users.

The Code revisions will be published July 1, 1999 in the 1999 Addenda to the Code. The intent Interpretation becomes valid for use on the ballot closure date: February 11, 1999.

## NATIONAL BOARD

### Task Group Reviewing Steam Locomotive Rules

by Dave Griner, Technical Consultant

A task group has been directed by the National Board Inspection Code Committee to provide technical direction for Appendix 3 of the National Board (Steam Locomotive Fire Tube Boiler Inspection and Repair).

The group has its origin as the Steam Locomotive Engineering Standards Committee, supported by the Smithsonian Institute. Its mandate was to review and provide updated changes to the Federal Railroad Administration rules for the inspection of steam locomotives, which was last revised in 1947.

Since The Hartford Steam Boiler Inspection and Insurance Company insures many of the currently operating steam locomotives, the original committee asked us to participate. Work began in 1991 with a group of 12 people representing the industry. The initial focus was to provide a nationally recognized standard for inspection and repair of the boilers. This was accomplished through the cooperation of the National Board of Boiler and Pressure Vessel Inspectors.

A coincident area of work has been reviewing and providing revision to CFR49 Part 230 regarding Federal Railroad Administration rules for inspecting steam locomotives. This work has progressed over 5 years and is expected to be completed as a functioning document in early 1999.

The National Board Inspection Code Committee Task Group continues to address issues regarding the National Board Inspection Code and finalization of the Federal rules.

## TAKING CARE

by Tim Healey, Manager, Engineering Safety

**Q** What do SCUBA tanks, IM101 containers, and gasoline tank trucks have in common with your portable propane barbecue?

Containers, tanks, tank trailers, and other objects used in domestic or international transportation are subject to several layers of regulation in the United States. The foundation for the safe transportation of people and goods by road, rail, aircraft, and vessel is the regulation of the design and fabrication of these objects. If you presently build such objects, Hartford Steam Boiler may be able to assist you in complying with applicable Department of Transportation (DOT) standards. If you are already an ASME shop customer, our work together will move quickly.

HSB has been authorized by both DOT's Research and Special Projects Administration (RSPA) and the U.S. Coast Guard (USCG) to conduct certain inspections on their behalf. These inspections are

made at a manufacturer's facility and address the design and construction of various cylinders and tanks, pressurized and nonpressurized, that are intended to be sold or used to transport products in the United States or around the world. Virtually all of the regulatory construction and design standards have their basis in the ASME Code: an area of recognized expertise for HSB.

DOT standards will be imposed on tank trucks, tank trailers, pressurized cylinders and intermodal tank containers intended for transportation of goods. HSB can offer assistance if you are involved in the design and construction of tanks or cylinders used to transport a variety of substances such as hazardous materials or gases under pressure.

Have a question? Need more information? Please call Phil Martin at 1-603-336-7318, or contact him via e-mail at [phillip\\_martin@hsb.com](mailto:phillip_martin@hsb.com). Let him help you get your products on the road.

**A** All of the tanks or containers mentioned are built to DOT standards and are subject to review and inspection, as well as stamping.

# EDUCATIONAL SERVICES 1999 TRAINING SCHEDULE

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

April 12	Electrical Equipment Operation and Maintenance	Fort Lee, New Jersey	\$ 169.00	990401
April 13	Air Conditioning & Refrigeration Equipment Operation & Maintenance	Fort Lee, New Jersey	\$ 169.00	990402
April 14	Boiler Operation and Maintenance	Fort Lee, New Jersey	\$ 169.00	990403
April 15 - 16	Operation and Maintenance of Manufacturing Machines	Fort Lee, New Jersey	\$ 530.00	990404
	<b>Full week schedule: Electrical, AC &amp; Refrig., BOM, Manufacturing</b>		<b>\$ 930.00</b>	<b>990401-X</b>
April 12 - 14	Process Piping, ASME B31.3 - API-570	Sarnia, Ontario	\$ 650.00*	990405
April 15 - 16	Basic NDE Methods	Sarnia, Ontario	\$ 530.00*	990406
	<b>Full week schedule: Process Piping and Basic NDE</b>		<b>\$ 1,060.00*</b>	<b>990405-X</b>
April 19 - 20	Pressure Vessel Basic Design and Fabrication	Las Vegas, Nevada	\$ 565.00	990407
April 21	Repairs and Alterations to Boilers and Pressure Vessels	Las Vegas, Nevada	\$ 250.00	990408
April 22 - 23	ASME Section IX Welding Qualification	Las Vegas, Nevada	\$ 530.00	990409
	<b>Full week schedule: PV Design &amp; Fab., Repairs, Section IX</b>		<b>\$ 1,210.00</b>	<b>990407-X</b>
	ASME Section IX, Welding Qualification Certification Course			
April 19 - 20	Module 1: Introduction to ASME Section IX - Including Brazing	Las Vegas, Nevada	\$ 600.00	990411
April 21	Module 2: Section IX, Advanced - Including Supplemental Variables	Las Vegas, Nevada	\$ 400.00	990412
April 22	Module 3: Welding Processes - Including Welding Metallurgy	Las Vegas, Nevada	\$ 500.00	990413
April 23	Module 4: Final Examination	Las Vegas, Nevada	\$ 100.00	990411-E
	<b>Full week schedule: Modules 1-4</b>		<b>\$ 1,350.00</b>	<b>990411-X</b>
April 19 - 21	Process Piping, ASME B31.3 - API-570	Las Vegas, Nevada	\$ 650.00	990414
April 22 - 23	Basic NDE Methods	Las Vegas, Nevada	\$ 530.00	990415
	<b>Full week schedule: Process Piping and Basic NDE</b>		<b>\$ 1,060.00</b>	<b>990414-X</b>
April 19	ISO Overview and Transition from ASME to ISO	Las Vegas, Nevada	\$ 250.00	990416
April 20 - 21	ISO Quality Manual and Procedure Development	Las Vegas, Nevada	\$ 450.00	990417
April 22	ISO 9000 as a Management Tool for Continuous Improvement	Las Vegas, Nevada	\$ 250.00	990418
	<b>Full week schedule: ISO Overview, QCM, Management Tool</b>		<b>\$ 850.00</b>	<b>990416-X</b>
May 11 - 28	National Board Examination Preparation	Nashville, Tennessee	\$ 3,150.00	990503
May 24 - June 1	API-510 Pressure Vessel Inspector Examination Preparation	Edmonton, Alberta	\$ 1,495.00*	990501
May 27 - June 1	API-570 Piping Inspector Examination Preparation	Edmonton, Alberta	\$ 995.00*	990502
May 31 - June 1	Introduction to Section VIII, Div. 1	Moncton, New Brunswick	\$ 530.00*	990601
June 2	Repairs and Alterations to Boilers and Pressure Vessels	Moncton, New Brunswick	\$ 250.00*	990602
June 3 - 4	Section IX, Welding Qualifications	Moncton, New Brunswick	\$ 530.00*	990603
	<b>Full week schedule: Intro. to Section VIII, Repairs, Section IX</b>		<b>\$ 1,160.00*</b>	<b>990601-X</b>
June 7 - 8	Introduction to Section VIII, Div. 1	Portland, Oregon	\$ 530.00	990604
June 9	Repairs and Alterations to Boilers and Pressure Vessels	Portland, Oregon	\$ 250.00	990605
June 10 - 11	Section IX, Welding Qualifications	Portland, Oregon	\$ 530.00	990606
	<b>Full week schedule: Intro. to Section VIII, Repairs, Section IX</b>		<b>\$ 1,160.00</b>	<b>990604-X</b>
June 7 - 9	Process Piping, ASME B31.3 - API-570	Portland, Oregon	\$ 650.00	990608
June 10 - 11	Basic NDE Methods	Portland, Oregon	\$ 530.00	990609
	<b>Full week schedule: Process Piping and Basic NDE</b>		<b>\$ 1,060.00</b>	<b>990608-X</b>

\*Prices are in U.S. Dollars

## ISO 9000 UPDATE

### HSB Registration Services Adds Automotive Requirements to Scope of Operation

by Phillip Dobyns, HSB Registration Services

HSB Registration Services has expanded the scope of our ISO 9000 services to include QS-9000, the quality system expectations of Chrysler, Ford, and General Motors to their suppliers. This joint

ISO 9000-based requirement was developed to promote third-party certification of the automotive suppliers' quality systems.

Since the third quarter of 1997, when HSB Registration Services was awarded the QS-9000 scope expansion by the Registrar Accreditation Board (RAB), we have issued 11 QS-9000 certificates. With additional QS-9000 clients in process, HSB Registration Services has added approximately one QS-9000 client per month to date.

For more information on ISO 9000 or QS-9000 services, please call me at 800-345-1122, extension 8488.

# 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 Tom DiMartino, 303-838-5323, or via e-mail at [thomas\\_dimartino@hsb.com](mailto:thomas_dimartino@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), AS-9000 requirements (aerospace focus) and ISO 14000 environmental management systems standards (through a partnership with AWM, US).

Contact Sam Corona, 770-716-9773, or via e-mail at [sam\\_corona@hsb.com](mailto: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 Bob Trombley, 925-602-4515, or via e-mail at [robert\\_trombley@hsb.com](mailto:robert_trombley@hsb.com).

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For more information on Engineering Services, contact:

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- Or visit our Web site, [www.hsb.com](http://www.hsb.com), and click on the Engineering icon.

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

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