

# PRESSURE POINTS

The Official Newsletter of HSB Global Standards

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## UPCOMING EVENTS

In an effort to promote our services to new and existing customers, HSB Global Standards participates in a number of industry events throughout the world each year.

Many of our staff that focus on Codes and Standards development attended ASME's Boiler and Pressure Vessel Code meeting and the 82nd General Meeting of the National Board of Boiler and Pressure Vessel Inspectors held this year in Miami, Florida, USA, on May 13 – 17, 2013. Our participation provides feedback for continued code development from an inspector's point of view and a way to gain feedback from our customers.

HSB Global Standards will be attending and exhibiting at PowerGen Europe in Vienna, Austria, June 4 – 6, 2013. HSB Global Standards will be located at booth A453. HSB Global Standards will also be presenting 2013 Code Edition Change Summary at a public meeting.

Internationally, HSB Global Standards will be attending, exhibiting and presenting at the 21st International Conference on Nuclear Engineering (ICONE 21). This year, the conference is being held in Chengdu, China, July 29 – August 2, 2013. ICONE 21 is a technical conference with hundreds of technical papers related to the safe use of nuclear energy for electric power.

In September HSB Global Standards will be attending and exhibiting at PowerGen Brazil, September 24 – 26, at the Transamerica Expo Center in Sao Paulo, Brazil. HSB Global Standards will be located at booth 1211.

In November, HSB Global Standards will be attending and exhibiting at PowerGen International in Orlando, Florida, November 12 – 14, 2013 at the Orange County Convention Center in Orlando, Florida, USA. HSB Global Standards will be located at booth 3821.

## ASK THE ENGINEER

By Codes and Standards Group

**Q** My shop is constructing a Section VIII Division 1 vessel using a Curve D plate material for the shell. The unadjusted MDMT of the plate material per Fig UCS-66 [or Table UCS-66] is  $-20^{\circ}\text{F}$  ( $-29^{\circ}\text{C}$ ). The nominal thickness of the plate exceeds the required thickness for the shell and the unadjusted MDMT of the plate can be further reduced from  $-20^{\circ}\text{F}$  ( $-29^{\circ}\text{C}$ ) by  $10^{\circ}\text{F}$  ( $-12^{\circ}\text{C}$ ) as permitted in UCS-66(b). Assuming that the shell adjusted MDMT [ $-20^{\circ}\text{F}-10^{\circ}\text{F} = -30^{\circ}\text{F}$  ( $-35^{\circ}\text{C}$ )] is the warmest of all components used in this vessel, and the one that gets stamped on to the name plate, do I need to qualify the WPS used for welding the longitudinal weld seam in the shell plate material with impact testing?

**A** It is hard to answer this question with a straight Yes or No because it depends on "Which MDMT" is used to decipher the requirements of UCS-67.

The key is, the MDMT used in UCS-67 for determining the impact test requirements of the WPS can either be:

1. The MDMT of the welded component before applying the temperature reduction permitted by UCS-66(b) or UCS-68(c), which is  $-20^{\circ}\text{F}$  ( $-29^{\circ}\text{C}$ ) in this case, or
2. The MDMT to be stamped on the nameplate, which is  $-30^{\circ}\text{F}$  ( $-35^{\circ}\text{C}$ ).

Also note the words in UCS-67(a) "Welds made with filler metal shall be deposited using welding procedures qualified with impact testing in accordance with UG-84 when ANY of the following apply". This means ALL of the subparagraphs [UCS-67(a)(1) through (4)] of UCS-67 shall be reviewed/checked off to see which one [or ones] apply to the situation in hand.

- UCS-67(a)(1) is not applicable since the material does not have to be impact tested by the rules of Section VIII Division 1.

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- ▶ Assuming that the WPS doesn't call for any individual weld pass in excess of 1/2" in thickness, UCS-67(a)(2) is not applicable.
- ▶ UCS-67(a)(4) is not applicable since the material is not covered by UCS-66(g).
- ▶ UCS-67(a)(3) seems to be applicable in this situation since we have a Curve D material and the MDMT stamped on the vessel is -30°F (-35°C) which is colder than -20°F (-29°C) but not colder than -55°F (-48°C).

However as mentioned above, it is possible to use either -20°F (-29°C) or -30°F (-35°C) as the MDMT in UCS-67(a)(3). It is interesting to note that if -20°F (-29°C) is used, impact testing is not required for the WPS and if -30°F (-35°C) is used, impact testing is required for the WPS unless each individual weld pass in the production weld doesn't exceed 1/4" in thickness; and each heat and/or lot of filler metal or combination of heat and or lot of filler metal and batch of flux is classified by their manufacturer through impact testing per the applicable SFA specification at a temperature not warmer than the MDMT.

It is perfectly acceptable to use -20°F (-29°C) as the MDMT for the paragraph UCS-67 in this example to arrive at the conclusion that the WPS used for welding the shell plate material doesn't need to be qualified with impact testing.

One could interpret this to be a conundrum or a loophole in the Code, but in reality, it is not. The materials addressed in UCS-67(a)(3) [Curve C or D or UCS-66(g) materials] are engineered to be tougher [which means more crack resistant for a given crack size and applied stress] and UCS-67(a)(3) requires that the filler metal to be proven equally tough when the MDMT is between -20°F (-29°C) and -55°F (-48°C).

On the other hand, Curve A or B materials [less tough compared to Curve C or D materials] can only get colder exemptions through UCS-66(b) or UCS-68(c), both of which reduce the applied and residual stress respectively. When the applied and/or residual stress is reduced, both the base metal and the weld metal would see the benefit, with the weld metal assumed to be of about the same toughness as the base metal.

In this example, due to the excess thickness in the plate, it was possible to use UCS-66(b) to reduce the applied stress in the shell. Therefore, both the base and the weld metal [though not specifically proven or classified as required in UCS-67(a)(3)] were able to receive the benefit of being "less stressed" and get rated up to a MDMT of -30°F (-35°C) without impact testing. If, in fact the Curve D material used for the shell had an unadjusted MDMT of -30°F (-35°C) from Fig UCS-66 or Table UCS-66 [as opposed to -20°F (-29°C) used in this example] with no excess thickness, UCS-66(b) option would not have worked and WPS would have required qualification with impact testing unless each individual weld pass in the production weld doesn't exceed 1/4" in thickness; and each heat and/or lot of filler metal or combination of heat and/or lot of filler metal and batch of flux is classified by their manufacturer through impact testing per the applicable SFA specification at a temperature not warmer than the MDMT.

This example clarifies why the provision exists in UCS-67 that allows the designer to select the MDMT to be used in that paragraph.

**Q** My Company manufactures pressure vessels that are usually examined by radiography and I am familiar with the various "RT" marking designators [RT1, RT2, etc] that are required to be stamped on the name plate. I realize that Section VIII Division 1 now permits ultrasonic examination (UT) in lieu of radiographic examination (RT) as stated in UW-51(a)(4). Do I have to use different designators when I use UT instead of RT?

**A** No. The same RT Designators shall be applied for Ultrasonic Examination. See below the underlined and italics words from UG-116(e).

When *radiographic* or *ultrasonic* examination has been performed on a vessel in accordance with UW-11, marking shall be applied under the Certification Mark.

## DEPARTMENT OF TRANSPORTATION/TRANSPORT CANADA CYLINDERS

HSB Global Standards announces the release of the Department of Transportation/Transport Canada (DOT/TC)

Cylinder Service Program. The safety standards developed by the Department of Transportation and the Transport Canada are recognized and utilized globally for the construction of cylinders for the containment of various gases, cryogenic



liquids and hazardous chemical material. Application of the DOT/TC process allows manufacturers to set a high level of consistent quality for the fabrication of cylinders.

The primary market for HSB Global Standards cylinder services is outside the United States. The DOT regulations allow the United States cylinder manufacturers to perform self inspection in many cases, where manufacturers outside the United States require inspection from an approved Independent Inspection Agency. Transport Canada requires inspection by an Independent Inspection Agency for all cylinders manufactured outside of Canada.

The DOT/TC Cylinder program is supported by Technical and Commercial Tools, which document internal and external requirements when providing technical assistance, surveys and assistance, design reviews and inspection for cylinders placed in the United States or Canada markets.

For additional information, contact Julie Hoskinson, DOT/TC Program Manager at [Julie\\_Hoskinson@HSBCT.com](mailto:Julie_Hoskinson@HSBCT.com)

## SINGAPORE MOM/ MALAYSIA DOSH TECHNICAL AND COMMERCIAL TOOLS

HSB Global Standards announces the launch of the Singapore Ministry of Manpower (MOM) and Malaysia Department of Occupational Safety and Health (DOSH), program which document the internal and external requirements when providing Singapore Ministry of Manpower and Malaysia DOSH design review and inspection services. HSB Global Standards is approved by the Singapore MOM and Malaysia DOSH to review and approve design documents on their behalf and therefore we are a single-source provider for design review and inspection services of pressure equipment being exported to Singapore and Malaysia when the design and fabrication code is ASME.

For additional information, contact Delinda Whiting, Singapore MOM/Malaysia DOSH Program Manager at [Delinda\\_Whiting@HSBCT.com](mailto:Delinda_Whiting@HSBCT.com)

## ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATION

There are more reasons than ever to have your Environmental Management System certified.



► Certification encourages and promotes continuous improvement in all areas of a company, not just manufacturing or engineering.

► Certification provides bona fide proof of your company's commitment to the environment. You can leverage this certification to help you with new business and grow market share.

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ISO 14001 is the world's most recognized and used standard for environmental management systems. It is applicable to any industry or service, large or small. ISO 14001 is based on continual improvement and regulatory compliance.

ISO 14001 requires companies to identify environmental impacts, define environmental objectives and implement actions to improve performance and processes. ISO 14001 sets forth a practice of proactive management of the environmental impact of your organization. An ISO 14001 certified environmental management system is more than compliance, it focuses on continual improvement.

ISO 14001 contains the core elements for an effective environmental management system. It is applicable to both the manufacturing and services industries. The core elements of the ISO 14001 Standards are:

- ▶ Environment Policy
- ▶ Planning
- ▶ Implementation and Operation
- ▶ Checking and Corrective Action
- ▶ Management Review

Benefits of implementing ISO 14001 Environmental

Management Systems include potential reduction in process by-products and waste; potential increased energy efficiency and energy conservation in design, production and post production processes; creation of systemic structure for complying with environmental regulations; competitive advantage; ease of trade; avoiding non-tariff trade barriers; potential for improved market share; and improved image with community and environmental groups.

HSB Registration Services, a division of HSB Global Standards, is backed by more than 145 years of experience in inspecting, auditing, and certifying to numerous domestic and international standards for business and industry worldwide. Our network of management, technical personnel and engineers, together with one of the largest and most skilled audit and inspection staffs in the world, provides the industry specific experience to make your ISO 14001 certification a reality.

HSB Registration Services is fully accredited by the ANSI-ASQ National Accreditation Board (ANAB).

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