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## B31.3 PRESSURE TESTING COMPONENTS IN A PIPING SYSTEM

*“Does the fabricator of a B31.3 piping system still have to pressure test components that are manufactured to a standard listed in Table 326.1 when that standard states that the component is hydrotested as a requirement of the standard?”*

This question sometimes comes up with piping fabricators and with ASME B31.3 Interpretation 23-14, there might be some confusion as far as pressure testing of components in a B31.3 piping system. The confusion might come from the second paragraph in Paragraph 326.3 which states the B31.3 testing requirements (and other requirements) are not applicable to components manufactured to a standard listed in Table 326.1 unless specifically stated in B31.3 or the listed document.

An example of a listed standard would be valves manufactured to ASME B16.34 “Valves-Flanges, Threaded and Welding End”. While it is true the B16.34 valve manufacturer has to hydrotest the valve according to the B16.34 standard, that test would only indicate if the valve was leak tight. Furthermore it is important to realize that valves manufactured to this standard are for many different types of piping system applications and not specifically for B31.3. So in that case, the pressure test of the valve is not and can not be acceptable for the required pressure test required in Paragraph 345.1 which states that each piping system (i.e. interconnected piping) shall be tested to ensure tightness.

Under B31.3, Paragraph 345.2.2 “Examination for Leaks” goes further by saying that all joints and connections shall be examined for leaks. Therefore the required B31.3 pressure test for the fabrication of a piping system must be completed by the fabricator ensuring that all component joints are examined during the test. ❖

## ERRATA TO THE SET-THROUGH AND SET-ON NOZZLE INSTALLATION ARTICLE PUBLISHED IN THE PRESSURE NEWS, VOLUME 13, ISSUE 2, JUNE 2008

An article “Set-Through and Set-On Nozzle Installation” describing the ASME Section IX’s installation requirements for the Set-Through and Set-On Nozzles was published in The Pressure News, Volume 13, Issue 2, June 2008. The information was based upon ASME Code Section IX requirement of QW-451 and Interpretation IX-80-67, issued on Dec. 8, 1980. Subsequently an errata was issued by ASME to correct the information previously provided in the interpretation IX-80-67. As a result of the errata being issued for this interpretation, the welding procedure qualification requirements that were included in the above stated Pressure News article should have read as follows:

For both Set-Through and Set-On nozzles, the welding procedure specification must be qualified to weld the base metal thicknesses ‘T’ and ‘t’ as required by QW-202.4; However, there is no consideration of the dimensions of ‘D’ or ‘d’.

T = Wall thickness of the vessel or pipe to which the nozzle is being attached;  
t = Wall thickness of the nozzle;  
D = Outside diameter of the vessel or pipe to which the nozzle is being attached;  
d = Outside diameter of the nozzle.

Readers are cautioned that, on reading all articles in the Pressure News, when legislation, codes or standards are referred to, it is important to check for revision and change to the documents referenced. Not only it is important to be in compliance with the legislative and code requirements, such revisions/changes may also have legal/safety implications. ❖

## NATIONAL BOARD—81ST GENERAL MEETING

The 81st Annual Meeting of the National Board will be held in Nashville, Tennessee, USA and will be held on **May 14 -18, 2012** in conjunction with the ASME International Boiler and Pressure Vessel Code Committee meetings.

The theme of this year's conference is "SAFETY PROFESSIONALS: Devoting Our Lives to Protecting Yours" to recognize those who have devoted countless hours accumulating experience, education, and the discipline required of truly dedicated safety specialists.

For further information, please visit the "infoLink!" page on the National Board Web site [www.nationalboard.org](http://www.nationalboard.org), or contact the National Board directly at:

Tel (614) 888-8320  
Fax (614) 888-0750 ❖

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## CONTROL OF MONITORING AND MEASURING DEVICES

Monitoring and measuring devices are used throughout the life cycle of pressure equipment. These devices must be properly controlled, calibrated and maintained.

We have observed that good systems are generally in place for pressure gauges and measuring equipment used during pressure equipment fabrication. Likewise, similar good systems are generally in place for the instrumentation, pressure gauges, regulating and controlling devices used on systems operated under formal pressure equipment integrity systems. In both of these cases, the companies have established and implemented quality management systems in accordance with their Alberta Quality Management System Certificate of Authorization Permit. While non-conformances within these systems do occur from time to time, a disproportionately larger number of observations of overlooked pressure gauges, instrumentation and controls has been noted among equipment owners that do not have a quality management system in place.

All owners of pressure equipment must have an integrity management system in place, and must ensure regulating and controlling devices are maintained in good working order as required under the Pressure Equipment Safety Regulation

Section 37 (Responsibility of owners) of the PESR provides that:

*"The owner of pressure equipment must ensure that*

- (b) an integrity management system is in place for the pressure equipment,*
- (c) the pressure equipment and pressure relief devices, pressure gauges and regulating or controlling devices on them are maintained in good working order and are operated safely"*

A maintenance program should address servicing, testing and calibration of pressure controllers, boiler controls, pressure gauges, level indicators, temperature indicators, process controllers, and other similar devices.

A simple program would include, as a minimum, the following features:

- ◇ A system to identify the equipment;
- ◇ A system to verify that the equipment has been calibrated and adjusted at prescribed intervals;
- ◇ A system to verify that the equipment is in good condition prior to use;
- ◇ A way to verify that the equipment is calibrated against internationally or nationally recognized standards, if required;
- ◇ A documented process employed for calibration, and for keeping details of equipment, unique identification, location, frequency of calibrations and checks, calibration method, acceptance criteria and action to be taken when the results are unsatisfactory;
- ◇ Records of the equipment are maintained;
- ◇ A procedure for the handling, preservation and storage of the equipment such that the accuracy and fitness for purpose could be assured; and
- ◇ A method for safeguarding the equipment from unauthorized adjustments is in place.

No matter if it is during the fabrication or the operation of pressure equipment, the control of measuring and monitoring devices must be a part of any Integrity Management System. These devices serve an important role in pressure equipment safety. ❖

## HOT TAPPING

Hot tapping is an activity that could lead to very serious consequences if not conducted properly. Section 13 of the recently revised AB 513 "Pressure Equipment Repair and Alteration Requirements" document helps to provide direction on hot tapping activities.

Contractor's or Owner/Users who hold a current Certificate of Authorization Program (CAP) may perform Hot Tapping as described below:

**Hot tapping is deemed to be an alteration!** All requirements of the AB-513 for alterations are applicable to any pressure equipment that is to be hot tapped and such requirements must be met. In addition to the requirements specified in AB-513, the API 2201 is recognized good engineering practice for the development of hot tapping procedures as well as for executing all hot tapping activities. As well, Section 11 of the API 577 provides additional information of welding issues for consideration relative to hot tapping and in-service welding.

Hot tapping can be accomplished safely provided that there are effective procedures in place to control all hot tapping activities.

Some provisions for hot tapping include :

1. The owner shall maintain documented procedures that cover the controls for all hot tapping activities including:
  - all the relevant information in AB-513 and API 2201;
  - ensuring that competent persons and required resources are assigned for all hot tapping activities;
  - conducting job analysis and preparing the justification that no alternative method is feasible;
  - conducting a hazard evaluation and developing a risk reduction plan;
  - preparing instructions for managing the changes (MOC) safely;
  - developing the design of the hot tapping connection;
  - preparing the job-specific hot tapping procedures;
  - establishing welding and mechanical attachment requirements.
2. Hot tapping procedure must be submitted to ABSA for each proposed hot tapping. Notwithstanding this requirement, Contractors and/or Owner/Users, who have acceptable hot tapping procedures and appropriate organization, documented work processes and designated competent resources to manage hot tapplings under their CAP, may be authorized to perform hot tapplings without submitting individual hot tapping procedures for registration.
3. Hot tapplings on pressure vessels shall be inspected by ABSA. Each Hot Tapping on piping shall be reported to ABSA prior to hot tapping and may be witnessed by Owner Certified Inspector.
4. A Contractor/Owner installing a fitting by welding for attaching a valve and machine for hot tapping shall:
  - hold a valid CAP for the hot tapping activity in accordance with Section 6 of the AB-513;
  - install the fitting in accordance with the requirements of the engineering design, hot tapping procedure and the QMS;
  - certify the installation using an AB-83 form if the installation was done on a pressure piping system, or an AB-40 form if the installation was done on a pressure vessel.
5. The company that uses the hot tapping equipment shall have an Alberta CAP for this activity to perform the work in accordance with its own and/or the owner's hot tapping procedures.

**In conclusion, if justified and with properly prepared procedures, Hot tapping of pressure piping systems and pressure vessels may be permitted and conducted safely. All readers are also reminded that Hot tapping of boilers is not permitted. ❖**



### EMPLOYMENT OPPORTUNITIES WITH ABSA

ABSA is looking for safety minded and customer service focused professionals to fill the positions of Design Survey Engineer (Edmonton) and Inspector (Calgary). For details of these Safety Code Officer vacancies, please visit ABSA's website: <http://www.absa.ca/ABSA-Info/Career.aspx>

## POWER ENGINEERS WORKING IN ALBERTA

Across Canada, power engineers, similar to other professional and occupational practitioners, must meet the requirements of the specific jurisdiction where they intend to work.

The current Alberta Power Engineers Regulation (Alberta Regulation 85/2003), under the Safety Codes Act, establishes the requirements for operation of boilers and thermal liquid heating systems and for certification of power engineers in Alberta.

Unless exempted by the above regulation, power engineers must obtain the appropriate level of certification in order to operate pressure equipment in Alberta.

Power engineers coming to Alberta from other Canadian jurisdictions must first apply to transfer their valid power engineer certificate, issued by the other Canadian jurisdiction, to Alberta using application form AB-130. They must obtain an Alberta power engineer certificate before they can operate pressure equipment in Alberta when the Power Engineers Regulation requires operation by certified power engineers.

Power engineers coming to Alberta must also meet all the Alberta regulation requirements before they can qualify to write the next higher level of certification.

Power engineers coming to Alberta from other countries, wanting to pursue Alberta certification, may apply to have their qualification and experience evaluated using application form AB-141.

Similarly, Alberta power engineers who are considering working outside Alberta in another Canadian jurisdiction should check for the other Canadian jurisdiction's requirements and apply to have their certificate transfer to that Canadian jurisdiction before operating pressure equipment in the other Canadian jurisdiction. ❖

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## EXTERNAL TRAINING NEWS

### Regulatory Information for Power Engineers (RIPE)

On January 31, two ABSA examiners, who work with the Power Engineers Regulation on a regular basis, delivered the first RIPE seminar to the public with 24 in attendance. The 2-day seminar was well received and many stated that the course was applicable to their work and was timely. Many have commented on the knowledge they had obtained in understanding the intent and application of the Power Engineers Regulation.

In anticipation of this new seminar being available in 2012, a schedule had been developed showing six seminars for the balance of the calendar year, alternating between Edmonton and Calgary. No one had anticipated the tremendous response from our stakeholders wanting to be in attendance at these seminars and quickly filling up all the available seats. As requested by many of our clients, two new seminar dates were added into the schedule, one in Edmonton and the other in Fort McMurray.

### Electronic Learning (e-Learning)

Progress is underway to deliver our first e-Learning course by about mid-year 2012. This will provide an option for clients who find it difficult to attend a classroom session for face-to-face learning. We are adapting parts of our Design Registration seminar to fit the e-Learning format. Please monitor our website [www.absa.ca](http://www.absa.ca) for the latest information on the availability of the online design registration modules.

### In-house and Customized Training

There has been an increase in the number of special in-house seminars where ABSA instructors go to the client's location to deliver one of our seminars. Some of the seminars have been customized to meet the client's needs. Information on all the seminars that ABSA delivers is available at [www.absa.ca](http://www.absa.ca). ❖

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