ABSA
the pressure equipment safety authority

THE PRESSURE NEWS

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CODE CASE 2891 FOR CONSTRUCTION OF DIVISION 2 CLASS 1 VESSELS

The 2017 Edition of ASME Section VIII-2 introduced the concept of vessel class, with a Class 1 vessel having lower allowable stresses than a corresponding Class 2 vessel. Having lower allowable stresses effectively increases the factor of safety on ultimate tensile stress, making up for reduced requirements elsewhere in design and construction. Generally speaking, however, Division 2 Class 1 vessels are still Division 2 vessels, and Alberta manufacturers must hold an ASME Certificate of Authorization with a 'U2' Designator in order to fabricate them.

ASME has published Code Case 2891 with the intent of making Division 2 Class 1 vessel construction more accessible to existing Division 1 manufacturers. The code case does not directly allow a Division 1 manufacturer to fabricate Division 2 Class 1 vessels, but rather provides an expedited means for obtaining a separate ASME Certificate of Authorization that permits only Division 2 Class 1 vessel construction.

This code case is acceptable for use in Alberta, but there are important limitations to consider. Although Alberta manufacturers are not required to hold an ASME Certificate of Authorization for Division 1 vessel construction, such a certificate of authorization *is* required by the code case in order to apply for a certificate permitting Division 2 Class 1 construction. This effectively limits the use of the code case to those manufacturers who already have a Certificate of Authorization for Division 1 construction that was issued by ASME, in addition to the certificate of authorization permit that was issued by ABSA in accordance with the Alberta regulations.

Information Bulletin IB18-002 was published in February and provides more detail outlining the use of this code case in Alberta. It is available on our website at http://www.absa.ca. ❖

LOCATING A SAFETY CODES OFFICER FOR IN-SERVICE INSPECTION

Finding contact information for a Safety Codes Officer based on region of service or assigned vessel 'A'-number is now more convenient with the addition of two new lookup features on our website. A map-based lookup shows Alberta subdivided into geographical regions, and lists the name and contact information of the Safety Codes Officer serving a given region. A separate equipment-based lookup feature prompts the user to enter the equipment's assigned 'A'-number, and then similarly responds with the name and contact information for the appropriate Safety Codes Officer. Each of these features can be found in the 'Looking for…' menu on our website.

Although the cities of Edmonton and Calgary are each subdivided and shared by several Safety Codes Officers, it should be noted that the map-based interface does not differentiate between areas within these cities. For these locations, users are directed to call our head office, although if a vessel 'A'-number is available it may be convenient to use the vessel number lookup feature rather than choosing to call in.

ABSA is interested in hearing feedback that could help to improve these features – any such feedback can be directed by email to Mr. Mike Prefumo, Manager of Inspections, at *prefumo@absa.ca*. ❖

ASME Code Cases and Interpretations

The ASME Boiler and Pressure Vessel Code is used in Alberta for the design and construction of pressure equipment as it is called into force by the Pressure Equipment Safety Regulation. It is divided into several voluminous sections, each of which pertains to the construction of a specific type of equipment, and each of which are maintained by committees comprising industry volunteers. One of the main tasks assigned to these committees is to keep their respective sections of the code current, incorporating updates and improvements in accordance with a regular publication cycle.

Although a lot of work goes into maintaining these volumes, there is vast diversity in the types of equipment produced by industry. The code cannot comprehensively cover all types of equipment, nor can the code committees foresee all circumstances that manufacturers will face in their individual applications. In order to support industry, code committees develop and issue code cases to address some of the unusual situations that are not addressed directly by the code.

Code cases are stand-alone sets of design, construction, or inspection rules issued by ASME in order to extend or supplement code rules. A given code case pertains directly to one or more sections of the code, and typically contains some provision, and an associated list of conditions that must be met in order for it to be used. It is identified by a four-digit code case number that is indicated on the Manufacturer's Data Report when the code case is applied to equipment construction. Typical uses of code cases include allowing construction with materials that are not yet listed for use in the code, allowing the use of less-conservative rules for certain low-risk situations, and providing alternative rules for certain types of equipment for which specific code rules may not be applicable. Code cases are generated based on urgent need in response to industry request when industry stakeholders apply to the code committee with a statement of need and appropriate background information. The request is deliberated and voted on by the committee, and if the committee is in agreement, a code case is issued. Code cases are published quarterly, in order that an official response can be given quicker than a major change can be implemented in the code.

Another role assigned to the code committees is to support code users by issuing interpretations, particularly in cases where the code uses unclear language, or its suitability is not clear for a given application. Interpretations are similarly issued in direct response to requests made by industry, but they are intended to clarify code rules, rather than to present new requirements or to provide alternatives. Typical interpretations include questions as to how specific code subparagraphs are meant to be applied, or requests for clarification in cases where the wording is complex or appears to be unclear. Code interpretations are typically published in question-and-answer format in stand-alone volumes, although ASME also provides them freely through a database available on their public website at http://go.asme.org/interpretations.

It is important to note that code cases and interpretations are issued separately from the code, and are not an integral part of the documents to which they pertain. In the 'Foreword' text of each section of the ASME Code, it is clarified that not all jurisdictions, owners, and regulators automatically accept code cases and that code users need to be careful with their use – a code interpretation is similar in that although it can serve as a tool in interpreting the code and resolving ambiguities, the interpretation itself is not a part of the code text and individual interpretations may not be acceptable to some owners or jurisdictional authorities. In particular, interpretations may be outdated, having been written for a code edition that is now obsolete, or in other cases the interpretation itself may not have been worded carefully enough to draw the desired conclusion. In all cases, it is advisable for code users intending to rely on a code case or interpretation to approach both the jurisdiction and the ultimate equipment owner to ensure that it is acceptable for use. ❖

Upcoming Seminars

ABSA delivers a number of regularly-scheduled seminars throughout the year, providing industry members with excellent continuing education and development opportunities. Subject matter for the seminars ranges from general coverage of Alberta's pressure equipment legislation, to half-day, one-day, and two-day seminars covering various special-interest topics. Some upcoming opportunities include the *AB-525 Overpressure Protection Seminar* and the *AB-528 Requirements for Reduced Supervision of Power Plants Seminar*, both being held in Edmonton in late April, and the three-day *Quality Systems and Inspection for Pressure Equipment Construction Seminar* being held in early May. For more information or to register, please visit our online seminar registration website at http://seminars.absa.ca. ❖

Caution

Previous issues of The Pressure News may contain information which is outdated or no longer valid. Please be cautious when using information from old articles.

Carbon Monoxide Accident in Alberta

ABSA was involved in the investigation of a December accident involving a fatality in Alberta from carbon monoxide exposure. The incident was related to the malfunction of a small boiler that was being used to heat a workplace. Although the boiler had its design registered with ABSA and its Manufacturer's Data Report registered with the National Board, it was not required by Alberta regulations to have a certificate of inspection permit due to its small size.

The investigation concluded that supports for the vent piping had deteriorated over time and eventually failed, allowing the piping to sag, compromising its connection to the boiler. With the vent piping disconnected, exhaust gases were able to leak into the building, allowing carbon monoxide to accumulate to dangerously high levels. Several workers were treated in hospital, one of whom died due to exposure to the gas.

This unfortunate incident underscores the importance of regular inspection and maintenance of boilers by their owners, even when regular jurisdictional inspection is not a legal requirement. Consideration should be given to having alarm systems installed in mechanical rooms, including for air quality and for contamination by carbon monoxide. Inspection and maintenance activities must be completed on a regular basis by competent individuals. A thorough inspection should focus not only on the boiler itself, but should consider attached piping, support systems, low-water fuel cut-offs and other controls, pressure safety valves, burners, and fresh air intake into the boiler room.

Boilers such as the one involved in this incident may not be subject to inspection by ABSA, but are still required to have mandatory gas, electrical, and building permits issued by other Safety Codes Act disciplines. Although ABSA's jurisdiction is province-wide, jurisdictional authorities for other disciplines depend on the locality. For contact information for your respective local authority in disciplines other than pressure equipment, please contact the Alberta Municipal Affairs Communication Inquiry Centre, which can be reached by telephone at 1-866-421-6929, or by email at safety.services@gov.ab.ca. ❖

Summary of Accident Reports for 2017

In 2017, ABSA received 43 accident notifications, 28 of which involved a loss of containment. Unfortunately, the following accidents resulted in the deaths of two workers and injuries to seven others:

- A heating boiler's exhaust piping failed, causing flue gas to accumulate in a building; one worker died from exposure to carbon monoxide.
- Pressure released from a sandblast hopper caused a worker to fall off the equipment. The worker later died from injuries related to the fall.
- During maintenance of an ammonia system, a worker inadvertently caused an isolation valve to partially open, releasing ammonia. Two workers were injured as a result of contact with the fluid.
- A non-metallic pipe failed during operation, releasing a strong acid and causing injuries to two operators.
- A process fluid leak created a vapour cloud which ignited and caused a fire. One worker was treated for burns.
- Buried piping was damaged by construction activities, causing a hydrocarbon leak and an ensuing explosion. One worker dislocated a shoulder during a subsequent evacuation.
- Pressure vessels and piping were damaged by a fire unrelated to the equipment. One worker was treated for burns.

Of the 43 reported accidents, 14 were attributed to unanticipated in-service deterioration; 13 were due to errors in maintenance or operation; four were a result of defective construction or installation; three were due to inadequate design; and two were due to malfunctioning instrumentation or control systems. The remaining six were attributed to miscellaneous causes.

ABSA's mandate is to administer the Safety Codes Act and associated regulations and to deliver safety programs as they relate to pressure equipment. Our ultimate quality objective is to prevent injury to people and damage to property arising from its operation. Equipment owners are reminded that the Safety Codes Act requires that accidents and unsafe conditions be reported to the Administrator in a timely fashion. Reporting is a legal obligation: it helps ABSA and its stakeholders to learn from past mistakes, decreasing the likelihood of a repeated accident and increasing the achieved level of public safety. A summary list of reported pressure equipment accidents and incidents is available on our website with the intent of heightening awareness and helping to ensure that history does not repeat itself. ❖

DOCUMENTS ISSUED BY ABSA

The following documents issued by ABSA are available at http://www.absa.ca.

2017-09-15 - IB17-018, *Reference Syllabi for Power Engineer Examinations*, was issued to provide an updated list of current reference syllabi for various power engineer examinations.

2017-09-19 - IB17-019, *Alert: CSB Releases Final Report into 2016 Refinery Fire that Seriously Injured Four Workers*, was issued to share key lessons learned from an American investigation into a fire incident at a refinery.

2017-09-25 - IB17-020, *Interpretation: Power Engineers Regulation Section 29 Boiler Rating*, was issued to clarify that Section 29 of the Power Engineers Regulation is pertinent to various types of heating equipment, and to clarify rules pertaining to the calculation of heating surface areas.

2017-11-15 - AB-250, *Reference Syllabus for Pressure Tack Welder Certificate of Competency Examination, Edition 2, Revision 1*, was issued with revisions to the rules pertaining to weld test coupons.

2017-11-15 - IB17-021, *Interpretation: Permanent Tack Welds*, was issued with simplifications made to the rules limiting the sizes of tack welds on circumferential joints.

2017-11-17 - IB17-022, *Information Bulletin: Authority Having Jurisdiction for the CSA B52 Mechanical Refrigeration Code*, was issued to clarify that ABSA is the authority having jurisdiction for those portions of CSA B52 which pertain to pressure equipment.

2017-12-18 - IB17-023, *Interpretation: Display of Certificates of Competency* was issued to establish guidelines for electronically displaying certificates of competency in order to meet the requirements of the Power Engineers Regulation.

2018-01-30 - AB-513, *Pressure Equipment Repair and Alteration Requirements, Edition 3, Revision 0,* was issued with updates and revisions throughout.

2018-02-23 – IB18-002, *Information: ASME Code Case 2891 for Division 2 Class 1 Pressure Vessels* was issued with information pertaining to the use of Code Case 2891 in Alberta.

2018-02-23 – IB18-004, *Interpretation: Reporting Unsafe Conditions, Accidents and Fires* was issued to clarify the types of events that are to be classified as unsafe conditions, accidents, or fires, and which are therefore required to be reported to the Administrator when they occur.

2018-02-28 – IB18-005, *Interpretation: In-Service Pressure Equipment Inspector Certificates of Competency* was issued to establish AB-526, *In-Service Pressure Equipment Inspector Certification Requirements, Edition 2, Revision 0* now includes an In-Service Pressure Equipment Inspector Certificate of Competency for Pressure Piping.

Other documents have been updated with editorial corrections only. ❖

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