

## IN THIS ISSUE:

<i>General Manager's Year-End Message</i> .....	1
<i>Common Deficiencies in Submissions To Design Survey</i> .....	2
<i>Summary of Unsafe Condition, Accident, and Fire Reports</i> .....	2
<i>NDE Personnel Certification Systems</i> .....	3
<i>2019 SOPEEC Annual General Meeting</i> .....	4
<i>Ammonia Refrigeration Examination Available</i> .....	4
<i>The 2020 IPEIA Conference</i> .....	4
<i>Pressure Testing for Individual Piping System Components</i> ...	5
<i>ABSA Fee Schedule Announcement</i> .....	5
<i>Documents Issued by ABSA</i> .....	6



## GENERAL MANAGER'S YEAR-END MESSAGE

As 2019 draws to a close, we at ABSA are pleased to report that to date, there have been no pressure-equipment-related fatalities in Alberta this calendar year. Although we have seen a significant increase in the number of reported incidents, there has been no associated change in the overall number of related injuries, suggesting that this represents an increase in compliance with recently clarified reporting requirements only, rather than an increase in the actual accident rate. ABSA's high standard for workplace safety within our own organization has also been maintained, with no lost-time accidents now in the last several years. Financially, ABSA's revenues and expenses were on budget, reserves at year-end met the board's targets for financial health, and the independent external auditor again gave ABSA a clean financial audit.

This past year has been exciting in many ways, as various ABSA departments have made progress on a significant number of projects. Some of the highlights have included the continuous improvement of our ISO 9001:2015 quality management system, and development of an online training seminar which is expected to be made available for remote on-demand learning early in the new year. One of our major focuses has been in establishing harmonized practices with other Canadian provinces, with the aim of providing a more uniform experience for stakeholders that have dealings in several jurisdictions. Several projects have been related to this, including the launch of a new web portal intended to facilitate electronic design submissions and simplify reviews between provinces, and the development of an interprovincial power engineering database intended to provide for easier movement of skilled labor between provinces. For the first time, ABSA offered an online session of the annual Code Update Seminar to other regulatory authorities, helping to facilitate harmonized adoption of the new code editions across Canada.

In addition to its knowledgeable and skilled complement of staff, ABSA is very fortunate to have a dedicated and committed Board of Directors – their strategic guidance is very much appreciated by management and staff. With our stable, well-experienced workforce and the strong support of our board, Alberta Municipal Affairs, the Safety Codes Council, and Alberta industry, ABSA is well positioned to deliver its mandate in the years to come.

On behalf of the Board of Directors and management and staff at ABSA, I would like to take this opportunity to wish you all the best for this holiday season, and a safe and prosperous new year. ❖

This Newsletter is a publication of ABSA. ABSA grants readers permission to make photocopies of this Newsletter for free distribution to employees and business associates. Articles may be copied in part or in whole provided credit be given to ABSA.

## 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.

## COMMON DEFICIENCIES IN SUBMISSIONS TO DESIGN SURVEY

Approximately one half of pressure equipment design submissions received by the Design Survey department are accepted and registered following the initial review. The remainder are reviewed and placed on hold by the surveyor, and submitters given a chance to make corrections or provide additional information as required, but some designs can tend to go back and forth, being placed on hold several times before the deficiencies are adequately addressed or registration of the design is outright refused. The following list shows the top ten types of deficiencies for which designs have been placed on hold in approximately the last two-year period. Design submitters can help improve turnaround time by avoiding these common deficiencies.

1. Material information has been omitted: A pressure-containing component did not have a complete material specification, or a material specification was indicated which was not permitted by the code of construction.
2. Administrative issues: The submission was incomplete, with required forms filled out incorrectly or other required documentation left out of the submission.
3. Calculations: Mechanical or other calculations were required to be submitted to justify the design, but were missing, incomplete, incorrect, or inadequate in some other way.
4. Dimensions: Dimensions were missing from submitted drawings, or were not consistent with submitted calculations.
5. Generic Designs: A submitter attempted to register a design that provided for a variety of construction options, but the options depicted in the submissions were too broad in nature, making the design submission very difficult to review.
6. Impact Testing: The material used was not adequately justified for service at low temperatures, either by committing to using impact-tested material, or by using code rules to demonstrate that such impact testing was exempt for the intended lower-bound service temperature.
7. Specific Requirements: Requirements of the Safety Codes Act, CSA B51, CSA B52, or other standards related to the specific type of equipment in question were not met.
8. Inadequate Details: Supplementary detailed drawings were missing or did not provide adequate information.
9. Design of Openings: Nozzle attachments or other vessel openings did not meet reinforcement requirements, or nozzle neck attachments were specified with inadequate weld sizes.
10. Maximum Allowable Working Pressure Not Justified: Calculations were submitted to justify the user's required pressure, but the submitted drawings indicated a higher pressure for registration.

One of the recommended ways that a submitter can increase the likelihood of a design being registered upon initial receipt is by keeping track of the types of deficiencies that have been identified in their past submissions, and then reviewing future submissions for similar deficiencies prior to making a new application. The AB-31A and AB-31B supplemental application forms also serve as checklists for design submissions, with the intent of helping submitters to ensure that all required information is included and important items are addressed. Being able to obtain registration of a design upon its initial receipt by Design Survey helps to avoid the additional expenses and potential delays associated with making one or more resubmissions when deficiencies are identified and a submission is placed on hold. ❖

---

## SUMMARY OF UNSAFE CONDITION, ACCIDENT, AND FIRE REPORTS

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 the operation of pressure equipment. When incidents do occur, a proper and thorough investigation can help us to learn from past mistakes, decreasing the likelihood of repeating an accident. Unfortunately, this year, there were eight injuries to personnel related to pressure equipment safety in Alberta:

- Three workers were injured when a natural gas leak in a compressor skid resulted in an explosion and fire.
- One worker was sprayed in the face with a process fluid after operating a pressurized valve.
- Four workers were sprayed with hot water when they removed a blind flange from a boiler they thought had been depressurized during a planned outage.

Equipment owners are reminded that Alberta law requires that unsafe conditions and accidents related to pressure equipment be reported in a timely manner. Information Bulletin [IB18-004: Reporting Unsafe Conditions, Accidents and Fires](#), clarifies the classification of incidents and gives reporting requirements for various types of events. ABSA publishes a list of accident and incident summaries on our website – it can be found at [www.absa.ca](http://www.absa.ca) under the 'Unsafe Condition, Accident & Fire Reporting' menu, by navigating to 'Summary of Unsafe Condition, Accident & Fire Reports'. ❖

## NDE PERSONNEL CERTIFICATION SYSTEMS

When pressure equipment is built, inspected, or subjected to a repair or alteration, it is typically required to be examined for construction flaws in order to ensure that it will be safe in operation. Examination that is intended to evaluate production equipment is generally referred to as non-destructive examination (NDE), because the intent is to obtain information about the condition of equipment that will actually be used in service, and which therefore cannot be destroyed by the examination. Several technologies are available to detect different types of flaws, but their effective use requires the employment of carefully designed written procedures that can be demonstrated to be suited to the application, and the examinations then need to be carried out and the results interpreted by personnel that are qualified and certified as competent with the technology.

Rules for the qualification and certification of NDE personnel are typically prescribed by the governing code of construction. In many cases, the method used is left to the manufacturer; there are several approaches that are commonly allowed, each with distinct advantages and disadvantages.

### Employer-Based Personnel Certification Systems

One way in which personnel certification systems can be broadly categorized, is by whether individuals are certified by their own employers, or by a centralized certification body. Employer-based certification is a common approach, and relies on the employer providing their own written practice for qualifying and certifying their employees: they establish requirements for education, training, experience, examinations, qualification levels, and certification procedures that are tailored to their own business needs, but initial establishment of the program can be a major undertaking, and the costs associated with certifying new employees can be significant, especially for smaller organizations.

Two common certification systems that are employer-based are ASNT SNT-TC-1A and ANSI/ASNT CP-189. ASNT SNT-TC-1A is considered to be the most common certification system used for construction of equipment to the ASME code; it has the advantage that it is considered to be a "recommended practice" rather than a standard, and employers can thus make reasonable modifications to its recommendations to specifically suit their needs. ANSI/ASNT CP-189 is derived from ASNT SNT-TC-1A, and establishes minimum requirements for education, training, experience, and examinations for certification candidates; this provides less flexibility, but establishes more consistency between the written practices of organizations that use it.

### Centralized Certification Systems

Centralized certification systems provide for simpler compliance with requirements for certification of NDE personnel. The required qualifications are standardized across organizations that use a given system, and employees retain their credentials when they leave their organizations, as certificates are issued by a central body that is independent from their employers. This is especially advantageous for smaller organizations, as initial implementation of the program is simpler and the costs associated with in-house certification of personnel can be avoided, but with the trade-off that the certification program will not be tailored to the organization's own business needs.

Some common centralized certification systems include CAN/CGSB-48.9712 and ACCP; these standards are recognized nationally in Canada and the United States, respectively. For certifications obtained under these systems, credentials earned by an individual are not specific to the organization they work for, but to the sector of industry in which they are involved. Standardized requirements between organizations leads to an increased level of credibility for the certification, but the training and experience requirements are generally greater than with employer-based systems, because the certifications need to suit a wider variety of applications than ones that only need to suit a single organization's work.

It is important to remember that NDE personnel certification requirements are ultimately established by the governing code of construction. In particular, it should be noted that many construction codes require the employer to maintain their own written practice, even if a centralized certification body is used; it should also be noted that in referring to a certification system, the code of construction sometimes makes modifications to that system. As noted at the Alberta Code Update Seminar this year in October, there was a particularly notable revision to the 2019 edition of ASME Section V that was published in July, which introduced significant modifications to requirements for programs that are based on ASNT SNT-TC-1A. These new requirements must be addressed prior to the new year, when the new code edition becomes mandatory for code stamp work. Although actual implementation of these programs generally falls to the NDE organizations that perform this part of the work, code manufacturers are reminded that they are the ones that are ultimately responsible for code compliance of the equipment that they produce, and they are thus responsible to ensure that organizations they hire for NDE services are meeting current code requirements. ❖

## 2019 SOPEEC ANNUAL GENERAL MEETING

In late June of this year, the Standardization of Power Engineer Examinations Committee (SOPEEC) held their annual general meeting in Fredericton, New Brunswick. Committee members attended from Canadian power engineering jurisdictions to continue to work towards standardizing the content of power engineering examinations across the country. Some of the highlights of the meeting included:

- Work is complete in converting the '2B3' second-class power engineering examination from essay format to multiple choice, and the new format will be available for use by all SOPEEC jurisdictions in the new year. This work will continue with conversion of the '2B2' examination.
- A standardized steam traction engine operators examination has now been made available for use by all provinces and territories, providing for harmonization of qualification requirements for provinces who regulate their operation.
- ABSA made an initial proposal to other jurisdictions to establish a national registry for power engineers that would aid in validating examination results, and reduce the amount of time required to assess the validity of power engineer certifications.

SOPEEC's next annual general meeting will be held in June 2020, in Toronto, Ontario. ❖

---

## AMMONIA REFRIGERATION EXAMINATION AVAILABLE

In October, ABSA began to offer the newly introduced 'Introduction to Ammonia Refrigeration' examination to interested candidates.

This optional examination provides an opportunity for interested individuals to demonstrate their knowledge of ammonia refrigeration plants to the standard established by the recently released reference syllabus, AB-309: Reference Syllabus for Introduction to Ammonia Refrigeration Examination. As discussed in a previous issue of The Pressure News, it should be noted that there is no Alberta certification associated with this examination.

Those interested in applying to write this examination should contact the Examination and Certification department for more information. ❖

---

## THE 2020 IPEIA CONFERENCE

The International Pressure Equipment Integrity Association (IPEIA) is a not-for-profit organization that manages an annual conference that was first established by ABSA and SAIT more than 20 years ago. Its annual mid-winter conference attracts more than 800 pressure equipment integrity specialists from across North America, including inspectors, engineers, academics, and manufacturers, all having expertise in the oil, gas, power generation, chemical, and forestry industries. IPEIA is dedicated to improving the level of safety in the pressure equipment industry, and to protecting the environment through the promotion of integrity management. One of IPEIA's more recent focuses is to encourage the involvement of young people, sharing knowledge with them that has been garnered by the previous generation over years of service.

The 24<sup>th</sup> annual IPEIA Conference will be held from February 26<sup>th</sup> to 28<sup>th</sup>, 2020 at the Banff Centre for Arts and Creativity in Banff, Alberta. It will feature more than 40 presentations relating to pressure equipment integrity and safety, delivered by Canadian and international specialists. Presentations will include general information and case studies on codes and standards, inspection technologies, industry software, and similar topics, with the intention of providing practical value to those attending. A 90-booth exhibition will showcase integrity-related products and services, providing opportunities for networking and for learning about the latest technologies, techniques, and best practices directly from suppliers.

Conference registration is now open, and more information is available at [www.ipeia.com](http://www.ipeia.com).

ABSA will be presenting two separate two-day seminars as pre-conference training. The Pressure Equipment Safety Legislation Seminar and the Pressure Piping Fabrication Requirements and Quality Control Seminar will both be held on February 24<sup>th</sup> and 25<sup>th</sup>, immediately prior to the main conference. Persons who are interested in these seminars are encouraged to register early, as seating will be limited. ❖

## PRESSURE TESTING FOR INDIVIDUAL PIPING SYSTEM COMPONENTS

A pressure piping system built to ASME B31.3, or a similar code of construction, is commonly built of smaller components. Parts such as valves and other fittings are within the scope of the piping system and subject to the requirements of the governing code of construction, but design and construction of these components is not covered directly by the code. ASME B31.3 contains a table of reference standards to which specific component types can be manufactured and then automatically deemed suitable for use in a B31.3 piping system. Many of these referenced component standards have their own requirements for hydrostatic leak testing of individual components by their manufacturers, and an occasional point of confusion is whether these components need to then be also subjected to the hydrostatic leak test that ASME B31.3 requires of the assembled piping system.

ASME B31.3 has several rules that are relevant in considering how leak testing requirements apply to valves and similar components covered by one of these listed component standards. First and foremost, it should be pointed out that the leak test requirement in ASME B31.3 is for a leak test of the piping *system*, and the code is not written in a way that is intended to apply to leak tests of individual components. The intention is to impose a requirement to test a completed piping system, to demonstrate that the system does not leak when subjected to internal pressure – the construction code specifically states that all joints and connections between components must be checked for leaks during the test. This point is actually confused slightly by a code provision found in paragraph 345.2.3(b), which specifically permits the code user to exclude a flanged joint assembly from the required hydrostatic test if the subassemblies on either side of that joint have been previously tested. A code user considering use of this provision should be careful to consider the consequences of not checking a flanged joint for leak-tightness and failing to identify a potential leak. In the vast majority of cases, it is considered to be a best practice to ensure that all flanged joints are subjected to the leak test required for the pressure piping system.

The duration of the test is another issue that requires careful consideration in determining whether a previously-tested component must be included in the leak test for a piping system. ASME B31.3 has a specific requirement for test duration, requiring that the test pressure be maintained for at least ten minutes prior to examination for leaks. Although several of the standards listed for subcomponents have their own leak testing requirements, they may not have the same duration requirement: a valve that is manufactured to ASME B16.34 is required by that standard to be tested, but depending on the size of the valve, the test duration required by the valve standard may be as little as 15 seconds—far less than that required by ASME B31.3 for the completed piping system. Certified compliance with ASME B16.34 therefore is not adequate evidence that a valve was subjected to a pressure leak test that meets the requirements of ASME B31.3.

Questions and issues related to pressure piping systems are not always brought to ABSA directly, because in Alberta, such systems are subjected to inspection by the owner rather than by an Authorized Inspector employed by the regulatory authority. Many of these issues are therefore brought up in discussions between equipment owners and piping contractors, and compliance with the piping code and with Alberta law is therefore more heavily reliant on industry expertise. Readers are reminded that ABSA offers extensive support by offering educational seminars such as the Pressure Equipment Safety Legislation Seminar and the Pressure Piping Fabrication Requirements and Quality Control Seminar, both of which are offered in Edmonton and Calgary on a regular basis. Questions can also be directed to ABSA by contacting a Design Surveyor or Authorized Inspector, particularly in cases where a question is beyond the scope of topics discussed in these seminars. ❖

---

## ABSA FEE SCHEDULE ANNOUNCEMENT

ABSA is not planning any changes to the fee schedule for 2020. Our current fee schedule is posted on our website at [www.absa.ca](http://www.absa.ca), under the heading 'Fee Schedule', at the very top of the page.

ABSA is a self-sustaining, not-for-profit organization. We recover our costs through revenues generated by fees charged to customers, and we place a high importance on ensuring value for cost. Fees are necessary to ensure the operational effectiveness and sustainability of our organization, and we are committed to giving you our best effort with regard to the effective delivery of pressure equipment safety programs in Alberta. ❖

## DOCUMENTS ISSUED BY ABSA

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

2019-07-02 – *AB-536: Requirements for the Integrity Management of Grade 91 Steel Used Above Currently-Permitted Allowable Stresses, Edition 1, Revision 0*, was issued to introduce requirements for existing equipment which makes use of Grade 91 alloy steel with stress levels above those permitted by the current edition of the ASME code.

2019-07-02 – *IB19-004: Industry Report Proposing Requirements for the Integrity Management of Grade 91 Pressure Components Used Above Currently-Permitted Allowable Stress Levels*, was issued to make the industry task group report available for reference, which formed the basis of the new AB-536 requirements document.

2019-07-02 – *AB-521: Requirements for Engineered Pressure Enclosures, Edition 2, Revision 0*, was issued to provide guidelines for the submission of 'RRIMR' procedures for design registration using the quality plan approach, and with additional minor changes throughout.

2019-07-02 – *AB-534: Harmonized Requirements for Historical Boilers, Edition 1, Revision 2*, was issued with changes to the section pertaining to Manitoba-specific requirements, and additional minor changes throughout.

2019-07-12 – *AB-513: Pressure Equipment Repair and Alteration Requirements, Edition 3, Revision 3*, was issued to make reference to the newly published AB-536 for requirements pertaining to Grade 91 alloy steel.

2019-07-31 – *AB-522: Standard Pneumatic Test Procedure Requirements for Piping Systems, Edition 2, Revision 2*, was issued to warn of additional precautions that are required to be considered for pneumatic tests, and additional minor changes throughout.

2019-07-31 – *AB-532: Design Registration Requirements for Application-Specific Pneumatic Test Procedures, Edition 1, Revision 1*, was issued to warn of additional precautions that are required to be considered for pneumatic tests, and additional minor changes throughout.

2019-08-30 – *IB19-009: Interpretation: Certification Requirements for Providing Reduced Supervision*, was issued to clarify the power engineering certification levels required to fulfill requirements for power plants under reduced supervision.

2019-10-22 – *IB19-011: Introduction to Ammonia Refrigeration Examination*, was issued to introduce availability of the new Introduction to Ammonia Refrigeration Examination in Alberta.

2019-12-04 – *IB19-012: Interpretation: Performance Qualification Card Expiry Date Extension*, was issued to clarify rules relating to continuous employment requirements for renewal of welding performance qualification cards.

2019-12-10 – *IB19-014: Alert: Emerson Automation Solutions Product Service Bulletin*, was issued to notify the public of a product service bulletin issued by an Alberta supplier about potentially deficient pressure relief valves.

2019-12-10 – *AB-535: Requirements for Alteration Design Registration Based on Fitness-for-Service, Edition 2, Revision 0*, was issued with new Annex B outlining requirements for a quality plan approach to fitness-for-service submissions.

Other documents have been updated with editorial and other minor corrections only. ❖

## ABSA OFFICES

### **Edmonton - Head Office**

9410 - 20th Avenue  
Edmonton, Alberta T6N 0A4  
Tel (780) 437-9100  
Fax (780) 437-7787

### **Grande Prairie**

#203, 10109 - 97th Avenue  
Grande Prairie, Alberta T8V 0N5  
Tel (780) 538-9922  
Fax (780) 538-9400

### **Fort McMurray**

39C Suncor Industrial Campus  
160 MacKenzie Boulevard  
Fort McMurray, Alberta T9H 4B8  
Tel (780) 714-3067  
Fax (780) 714-2380

### **Red Deer**

#304, 4406 Gaetz Avenue  
Red Deer, Alberta T4N 3Z6  
Tel (403) 341-6677  
Fax (403) 341-3377

### **Calgary**

#380, 6715 - 8 Street N.E.  
Calgary, Alberta T2E 7H7  
Tel (403) 291-7070  
Fax (403) 291-4545

### **Lethbridge**

Unit 19, 1274 - 3 Avenue South  
Lethbridge, Alberta T1J 0J9  
Tel (403) 394-1011  
Fax (403) 329-0089

### **Medicine Hat**

#103, 346 - 3rd Street S.E.  
Medicine Hat, Alberta T1A 0G7  
Tel (403) 529-3514  
Fax (403) 529-3632

### **Internet address**

<http://www.absa.ca>