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GENERAL MANAGER'S YEAR-END MESSAGE

To say the least, 2020 has been a very peculiar and challenging year. The year began with a significant decline in energy prices, which by mid-February was starting to negatively impact demand for ABSA services. Then along came the pandemic, a public health emergency, and the ensuing economic recession. ABSA management has been, and continues to be, proactive in responding to the year's challenges.

In consideration of COVID-19, management has emphasized ABSA's "People are Safe" value, with the stated position that the health and safety of our employees and their families, our stakeholders, and of the general public is our priority; and that ABSA employees would do their best to provide services with this priority in mind. ABSA's offices were closed in early March, and systems and processes were quickly modified to permit all employees to work from home. Although some services were temporarily suspended during the initial lock-down, other services could be carried on under practices that exceeded the minimum requirements of public health orders and guidelines; the result was minimal service disruption to our stakeholders. We are pleased to report that these measures have been very effective: although there were two isolated cases of employees becoming ill with COVID-19, both recognized the symptoms early, self-quarantined, and quickly recovered. Neither of them contracted the illness in the course of their work at ABSA.

Despite having to deal with the health risks associated with the pandemic, alongside the regular on-the-job hazards of our work, we are pleased to report that ABSA has had another safe year in terms of injuries to employees, with zero lost time incidents. Although some adjustments needed to be made to the employee complement due to the effects of the pandemic on Alberta's economy, we remain in a strong financial position with reserves at year-end meeting our board's targets for financial health. Again, our independent external auditor gave us a clean financial audit.

Industry stakeholders have also risen to the challenges presented by 2020 and we are pleased to have partnered with them to accommodate the logistical barriers presented by COVID. The overall safety performance of the system did not diminish: although there has been a slight increase in the reported number of pressure-equipment-related unsafe conditions, accidents, and fires, there has been a decrease in the number of reported injuries. Tragically, one fatality, which was not related to failure of pressure equipment, was reported when a worker died from a fall from scaffolding inside a large power boiler.

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 continue delivering its mandate in the years to come.

As we close out 2020, all of us at ABSA and our Board of Directors are hoping for an expeditious end to the pandemic, and would like to take this opportunity to wish you all the best for this holiday season, and a healthy, safe, and prosperous new year. ❖

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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.

~ Wishing you a happy holiday season ~

FREEZING DAMAGE TO PRESSURE EQUIPMENT

As we all know, Alberta can experience very cold temperatures throughout the winter months. When pressure equipment is exposed to temperatures below zero, it can easily be damaged by the expansion of contained fluids as they freeze. These incidents often result in significant financial losses for equipment owners both in damage to property and in plant down-time. Worse still, such damage can sometimes be difficult to detect, and subsequent operation of the equipment may have huge safety implications, with the potential for a catastrophic failure causing injury or death.

From October 2019 through March 2020, ABSA received reports of more than 40 incidents relating to freezing damage of pressure equipment in Alberta – a significant increase from the previous winter. Many of these incidents involved damage to piping systems that were left exposed to cold weather, especially when heat tracing systems had failed, though there were also several incidents involving boilers and air-cooled heat exchangers. Again this year, none of these incidents directly resulted in fatalities or injuries to personnel, although the costs related to performing unexpected repairs and the associated loss of production time have represented real financial losses to equipment owners.

In order to help mitigate these occurrences, it is important that equipment owners implement an effective pressure equipment winterization program. It is also imperative that any equipment affected by a freezing incident be taken out of service immediately. If freezing is suspected or has been observed, the equipment involved must not be placed back into pressure service until it's been subjected to a proper inspection and integrity evaluation. The use of damaged components in pressure service can be highly hazardous, and components damaged by freezing often cannot be repaired.

Pressure equipment which is subjected to damage due to freezing has a high potential to cause injury, and requires immediate action to shut down the equipment. Such an incident meets the definition of an 'unsafe condition' given in ABSA's information bulletin [IB18-004-R1](#), and is required by the Safety Codes Act to be reported to ABSA. Incident and accident reports are looked at as a learning opportunity, giving ABSA and its stakeholders a chance to learn from past incidents in order to prevent their recurrence in the future. ❖

SUMMARY OF ACCIDENT 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 five injuries to personnel related to pressure equipment safety in Alberta:

- One worker was sprayed with hot water while draining a filter pot, and received second-degree burns.
- One worker was burned by a flash fire while draining hydrocarbon condensate.
- Three workers received first, second, and third degree burns from a flash fire due to an unintentional release of naphtha.

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 Rev 1: Reporting Unsafe Conditions, Accidents and Fires](#), clarifies the classification of incidents and their specific reporting requirements. ABSA also publishes a list of accident and incident summaries on its website – it can be found at www.absa.ca under the 'Unsafe Condition, Accident & Fire Reporting' menu, by navigating to 'Summary of Unsafe Condition, Accident & Fire Reports'. ❖

ABSA ONLINE SEMINARS

Over the last two years, ABSA has been working with a third party to convert two of its seminars into a modern, online format. Web-based delivery of these seminars will allow users to take them at a time and location of their convenience, through a computer or mobile device. This new delivery format is expected to have a greater appeal to the portion of our audience that is more comfortable with technology and expects it to be used in the delivery of training materials.

The seminars chosen for the initial launch include the Pressure Equipment Safety Legislation seminar, which provides a comprehensive introduction to ABSA's programs and services and the regulations under which they operate; and the AB-528: Requirements for Reduced Supervision of Power Plants, Thermal Liquid Heating Systems, and Heating Plants seminar, which elaborates on the guidelines introduced by the AB-528 document for plants which do not require close supervision by power engineers.

Several inquiries have been received relating to ABSA Code Update seminar material for 2020. Material has been developed to discuss changes introduced in ASME B31.1: Power Piping, 2020 Edition, and will be made available alongside these online seminars when the web platform is ready to launch in early January, 2021. If you would like more information when it becomes available, please consider subscribing to our 'Seminar News' email subscription service. You can subscribe on our [website](#), by navigating to the 'Subscriptions' page along the top, and then selecting 'Subscribe to Seminar News'. ❖

'DESIGN PRESSURE' VS. 'MAWP' FOR PRESSURE VESSELS

One issue that is commonly seen on submitted pressure vessel drawings is the indication of a 'design pressure' for the vessel, in addition to the vessel's maximum allowable working pressure (MAWP). Although from a process engineering perspective, a 'design pressure' for the vessel may have been initially important in specifying the vessel's minimum purchase parameters, from a regulatory point of view and within the scope of the ASME code, the vessel's initially-specified 'design pressure' loses its relevance, and indicating it on a vessel drawing has the potential to cause problems.

From the process engineering perspective, when a pressure vessel is required to be designed for a certain MAWP, this minimum required working pressure is referred to as the vessel's 'design pressure'. The pressure vessel is then designed to suit the specific application: although the vessel is designed to accommodate this minimum specified MAWP, materials are typically chosen based on available plate thicknesses, and parts chosen based on supplier availability. Once material thicknesses, vessel geometry, and detailed component designs are finalized, the vessel can often be shown to be suited to a higher MAWP than the purchaser had originally specified. Quite often, the manufacturer seeks design registration for this higher MAWP, and marks it on the vessel's required nameplate and Manufacturer's Data Report. This does not present a problem, because in order to do this, the vessel must be fully suited to this designated MAWP, exceeding the purchaser's specified requirements.

Once a vessel has a designated MAWP, that designated MAWP for all intents and purposes *is* the vessel's MAWP, and the vessel must meet all applicable code and regulatory requirements with respect to this actual designated MAWP – the minimum MAWP that had previously been required by the purchaser is no longer relevant with respect to the vessel's required compliance with the code and associated regulations. Any revisions to the vessel's design, along with any future alterations made to the vessel, must meet all requirements with respect to the vessel's designated MAWP. Indicating the purchaser's originally-specified MAWP on the vessel drawing and identifying it as the vessel's 'design pressure' can then be a source of problems.

The main danger in indicating a 'design pressure' on a vessel drawing is that it is typically lower than the vessel's MAWP, and can be mistaken for the vessel's MAWP when that drawing is relied upon for subsequent repairs and alterations. There are known cases in the past where alterations have been made to suit a vessel's 'design pressure' based on a value shown on the vessel drawing, rather than its MAWP, leading to the vessel inadvertently being derated for the lower pressure. This can turn out to be more than a minor inconvenience to equipment owners, as overpressure protection may have been selected to suit the vessel's MAWP rather than its lower 'design pressure', or there may have been modifications made to the surrounding process to take advantage of the vessel's higher original MAWP. Fixing the problem in these instances could involve undertaking an additional alteration of the vessel to return it to its previous MAWP, or making new adjustments to the process in order to suit the vessel's lower, as-modified pressure capacity.

Confusion can also come from the fact that although ASME Section VIII-1 does not define 'design pressure' for a vessel as a whole, it does define the term with respect to a vessel *component*, or with respect to a *location within the vessel*: the 'design pressure' for a vessel component is required to be *at least* equal to the MAWP of the vessel, with additional allowance provided for any pressure caused by static liquid head at the location being considered. This 'design pressure' that is within the scope of the vessel code is thus required to be *at least* equal to the vessel's MAWP, whereas the 'design pressure' parameter from the process engineering perspective is a minimum specified MAWP, and thus it is typically *less than* the vessel's MAWP. This creates an apparent paradox between the terms that has led to some confusing discussions over the years.

A 'design pressure' specified by a purchaser as the vessel's minimum required MAWP ideally should not be included on a vessel drawing or Manufacturer's Data Report, or marked directly on the vessel, as it is no longer relevant to code compliance of the vessel once the vessel design is finalized. Experience has shown that indication of this purchase parameter on official vessel documentation or on the vessel itself can contribute to errors that can lead to unsafe situations and potential rework. If such a parameter *is* required to be placed on a vessel drawing, it should be clearly labeled as a "process design pressure" or "minimum MAWP required by purchaser", and kept away from the drawing's design data block in order to avoid potential confusion. Appropriate word choice and careful planning of drawing contents can serve a vessel owner well, by helping to avoid the potential for confusion and costly mistakes. ❖

NO FEE INCREASE FOR 2021

ABSA is not planning any changes to the fee schedule for 2021. Our current fee schedule is posted on our website at www.absa.ca, under the heading 'Fee Schedule'.

ABSA is a self-sustaining not-for-profit organization. We recover our costs through revenue 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 respect to the effective delivery of pressure equipment safety programs in Alberta. ❖

NEW EMAIL FOR TECHNICAL QUESTIONS

Several individuals in ABSA's Technical Advisory Group have part of their time dedicated to answering technical questions from industry regarding regulatory and code requirements applicable to pressure equipment in Alberta. In the past, questions have always been welcomed but were typically forwarded to these individuals when they were received by other ABSA staff. Although these previous channels can still be used, ABSA has established a new dedicated email address for these questions so that they can be dealt with more directly.

Certain technical questions should always be directed to the appropriate ABSA contact. For instance, questions related to a currently active design survey submission should be directed to the assigned design surveyor, while questions related to specific shop or field inspection activities should be directed to the assigned Authorized Inspector. Technical questions that are of a more general nature, such as those related to the Safety Codes Act and associated regulations, to adopted codes and standards, to past or future design submissions, to AB-500-series documents, or to other ABSA programs and services for which there is no obvious contact person, can be directed to tag@absa.ca. ❖

DOCUMENTS ISSUED BY ABSA

The following documents issued by ABSA are linked below, and available on our website at www.absa.ca.

2020-12-07 – *AB-506: Inspection & Servicing Requirements for In-Service Pressure Equipment, Edition 3, Revision 0* was issued with general revisions throughout.

2020-12-08 – *IB20-021: Interpretation: PER Sections 1(k) and 29(1)(a): Unfired Steam Boiler Rating*, was issued to clarify the use of heating surface area to determine the rating of an unfired steam boiler.

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

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