

IN THIS ISSUE:

<i>Freezing Damage to Pressure Equipment</i>	1
<i>Design Registration Requirements For Mobile Piping Units</i>	2
<i>2017 ACI and CSA B51/B52 Annual Meetings</i>	2
<i>National Board Inspection Code Update</i>	2
<i>ABSA Code Update Seminar</i>	3
<i>Sulphuric Acid Piping Failure at Central Alberta Gas Plant</i>	3
<i>Documents Issued by ABSA</i>	4

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 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.

Over the last few years, we have received a number of incident reports detailing damage to equipment due to freezing. There have also been reports of significant overpressure events due to operation of equipment when freezing damage to adjacent lines had isolated the equipment from its pressure relief device. Fortunately, in the last five years, there have been no serious injuries or fatalities as a result of these types of incidents, although the costs relating to repairing affected equipment and loss of production time have run into the millions.

Over the winter months of December 2016 through March 2017, ABSA received 21 incident notifications, two of which involved damage to equipment due to freezing. Of the two freezing incidents, one resulted in a frozen compressor discharge line, which caused significant damage to the compressor upon start-up. The second incident involved a pressure relief valve, which was destroyed by the effects of a frozen discharge line.

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.

Experience has unfortunately shown us that even small fittings, and especially valves, can be particularly hazardous when damaged by freezing. Past incidents have seen individuals killed when valves damaged by freezing have failed when they were subsequently operated by personnel. Plant owners are strongly cautioned that pressure equipment which has been subjected to freezing, even including small parts such as valves and other fittings, could be unfit for service. ❖

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.

DESIGN REGISTRATION REQUIREMENTS FOR MOBILE PIPING UNITS

Alberta manufacturers and plant owners generally understand that the Pressure Equipment Safety Regulation requires registration of pressure piping systems in Alberta. There has at times been some confusion as to how these requirements apply to mobile piping units which have no fixed location – in particular when these units have a volume of less than 500 liters and are by themselves exempt from registration.

Historically, the Design Survey department has accommodated requests for registration of mobile piping packages by issuing 'ALD' ("Alberta Limited Design") registration numbers or category 'H' fitting registration numbers for such units. Although these registration types meet legislated requirements for registration, they are not congruent with our system for registration of fixed-location piping, which is based on a separate series of 'PP' ("Pressure Piping") registration numbers. We have recently worked to clarify the registration requirements of mobile piping units and to ensure that they can be registered in a manner consistent with our general practices for pressure piping.

The Pressure Equipment Safety Regulation requires registration of piping systems, including mobile piping units, but offers an exemption for piping systems having an aggregate capacity of less than 500 liters. Although this exemption extends equally to mobile piping units, there is a significant additional consideration in determining the aggregate capacity of a mobile piping unit: if the mobile unit itself has a volume capacity of less than 500 liters, but in use it may be attached to another system and the aggregate capacity of the combined system will be larger than 500 liters, then design registration of the entire system is required. In these cases, the mobile piping unit design must be registered, either on its own as a mobile piping unit, or as a part of the fixed-location system where it will be installed.

The process of obtaining design registration for a mobile piping unit is similar to that for obtaining registration for a fixed-location system, and more details can be found on our website at <http://www.absa.ca/design-registration/pressure-piping-design/registration-of-mobile-pressure-piping/>. ❖

2017 ACI AND CSA B51 / B52 ANNUAL MEETINGS

The annual meetings of the Association of Chief Inspectors (ACI) and of the CSA B51 and B52 technical committees were held in Moose Jaw, Saskatchewan, from August 21 to 24, 2017.

The Association of Chief Inspectors comprises the chief boiler inspectors from every Canadian province and territory, and representatives from the Government of Canada, the Canadian Nuclear Safety Commission, and the National Board of Boiler and Pressure Vessel Inspectors. The purpose of these meetings was to share information and to promote a harmonized approach to the application of adopted codes and standards across Canada.

The CSA B51 and B52 technical committees are made up of subject matter experts from industry and regulatory organizations; they work together to manage ongoing development and revision of the CSA B51 Boiler, Pressure Vessel, and Pressure Piping Code, and of the CSA B52 Mechanical Refrigeration Code. Both technical committees' business included the review of ballots for proposed changes to these codes. Each of these codes is on a five-year publication schedule, with a new edition of CSA B52 due to be published in 2018, and a new edition of CSA B51 due in 2019. Development is undertaken by means of CSA Group's accredited consensus standard process, which provides for public review during the development cycle – interested parties may wish to monitor CSA Group's public review website, found at <http://publicreview.csa.ca>.

Next year's meetings will be held in Montreal, Quebec, from August 20 to 23, 2018. ❖

NATIONAL BOARD INSPECTION CODE UPDATE

In July, the National Board of Boiler and Pressure Vessel Inspectors published the 2017 edition of their National Board Inspection Code. Although not declared in force by the Pressure Equipment Safety Regulation, this code serves as a widely recognized and generally accepted standard and as a valuable reference for the installation, inspection, and repair and alteration of pressure equipment.

The 2017 edition has a fourth part added, covering the installation, inspection, and repair of pressure relief devices. Anyone interested in purchasing the new edition can do so through the National Board website at <http://www.nationalboard.org>. ❖

ABSA CODE UPDATE SEMINAR

The pressure equipment business is ever-changing, as are our industry's governing codes and standards. By attending the ABSA Code Update Seminar, you will receive the best possible information relating to substantial changes recently made in these codes and standards, delivered directly by ABSA technical experts.

The agenda for the 2017 seminar has now been set. The most significant changes are to *ASME Section I: Rules for Construction of Power Boilers*, and to *ASME Section VIII-2: Alternative Rules for Construction of Pressure Vessels*. Presentations will also be made covering changes to ASME Section VIII-1, ASME Section IV, and to ASME B31.3. Additional topics will include changes to ABSA publications and expected changes to future code editions. The full agenda has been published on our website at <http://www.absa.ca/wp-content/uploads/2017/05/ACUAgenda.pdf>.

The seminar is to be presented in Calgary, Red Deer, and Edmonton in October. For more information and to register, please visit our website at <http://www.absa.ca> and click on 'Seminar Schedule' or 'Seminar Registration Form', in the 'Seminars' drop-down menu. ❖

SULPHURIC ACID PIPING FAILURE AT CENTRAL ALBERTA GAS PLANT

A recent incident was reported to ABSA involving plastic sulphuric acid piping at a gas plant. On the evening of May 30th, two workers were operating valves on a one-inch polyvinyl chloride (PVC) drain line to transfer sulphuric acid from a storage tank. They were following a written procedure, had held a tailgate meeting to discuss the hazards and emergency procedures, and had all necessary personal protective equipment for the task. The first worker was wearing the required full chemical suit when operating the drain valves. Although access to the drain valves was limited, the suit did not impede his ability to conduct the task.

During the process, inadvertent contact with a 60-mm-long PVC pipe nipple between the two drain valves caused the nipple to fail, resulting in pressurized sulphuric acid spraying in the workers' direction. Both workers received aid from the plant's emergency response personnel, utilizing the on-site emergency chemical showers. The worker who was operating the drain valves below the storage tank was airlifted to hospital and released the following day; the second worker suffered minor exposure injuries and was treated on site.

A subsequent investigation of the accident revealed:

- There were no records indicating the age, installation date, or repair history of the failed component.
- The final drain valve had a plug installed which appeared to have been subjected to repeated removal and reinstallation, whereas this component should have been replaced every time it was removed.
- The fracture appearance did not show signs of plastic deformation; a circumferential crack in the PVC nipple may have propagated and worsened over time.
- It was undetermined whether the effects of weather or ultraviolet light exposure on the PVC material were contributing factors.

This incident could have resulted in much more severe consequences if the personnel involved had not been adequately trained, had not followed plant procedures, were not using the required protective equipment, or had not reviewed emergency procedures prior to starting the task. The incident serves as a sound reminder of the dangerous nature of the equipment found at plant sites, and of some of the substances involved – pressure equipment operators cannot become complacent, even when conducting seemingly routine tasks. Owners are also encouraged to periodically verify that all of their piping (including non-metallic piping) is adequate for the intended purpose, and to keep careful records of fabrication and maintenance. ❖

DOCUMENTS ISSUED BY ABSA

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

2017-05-08 - AB-66b, *Application for College Practicum for Power Engineers Experience*, application form was updated.

2017-05-30 - IB17-005, *Interpretation: ASME CSD-1 Controls and Safety Devices for Automatically Fired Boilers*, was issued to clarify the applicability of ASME CSD-1 in Alberta.

2017-05-30 - IB17-006, *Interpretation: Heating Plant Supervision*, was issued to interpret and clarify the provisions of the Power Engineers Regulation for suspension of general supervision of heating plants during weekends and holidays.

2017-05-30 - IB17-007, *Interpretation: Qualifying Experience for Power Engineers*, was issued to clarify that the Power Engineers Regulation is understood to permit partial operator experience in each of several areas to be combined, so that all relevant experience can contribute to an applicant's qualifications.

2017-05-30 - IB17-008, *Interpretation: Exemption for Power Plants with Aggregate Capacity Not Exceeding 0.085 m³*, was issued to clarify that a power plant having an aggregate capacity not exceeding 0.085 m³ is exempt from continuous, overall, and general supervision.

2017-05-30 - IB17-009, *Interpretation: Qualifying Experience for Certificate of Competency Candidates*, was issued to clarify the intended interpretation of wording in several sections of the Power Engineers Regulation.

2017-06-28 - IB17-010, *ALERT: Notice of Deregistration*, was issued to warn end users that 3/4" hose assemblies having a certain CRN have been deregistered and should be withdrawn from service.

2017-07-07 - IB17-011, *Interpretation: Use of 2017 Edition of ASME Section I*, was issued to clarify that the use of ASME Section I, 2017 Edition, is acceptable only if the design does not use Part PA.

2017-07-07 - VA17-004 (IB17-012), *Variance: Variance Regarding the Use of 2017 Edition of ASME Section VIII-2*, was issued to clarify restrictions on the use of ASME Section VIII-2, 2017 Edition.

2017-07-10 - IB17-013, *Interpretation: Foreign Operating Experience*, was issued to clarify the acceptability of operator experience gained outside of Canada when applying for a power engineer certificate of competency.

Other documents have been updated with editorial 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

Internet address

<http://www.absa.ca>

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

Red Deer

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