



## EXEMPTION OF PRESSURIZED CARGO TRANSPORT VESSELS (HIGHWAY TANKS) FROM ALBERTA SAFETY CODES ACT

The issue of pressurized cargo transport vessel safety has been subject to an extensive review by the Boilers and Pressure Vessels Technical Council in consultation with the Department of Municipal Affairs, Alberta Transportation, Transport Canada, ABSA and industry stakeholders. Because of the introduction of new regulations by Transport Canada in recent years for uniformity of safety in the transportation of hazardous goods across Canada, there are a number of overlaps of program services and requirements from the Federal and Alberta Governments, specifically relative to pressurized cargo transport vessels.

As a result of thorough consultation with concerned parties and to promote uniformity of pressurized cargo transport vessel safety in Canada while ensuring that the interests of Alberta industry and the public are being maintained, the Hon. Guy Boutilier, Minister of Municipal Affairs, issued a Ministerial Order on June 19, 2001 exempting pressurized cargo transport vessels (highway tanks) subject to the Transportation of Dangerous Goods Act, 1992 (Canada) from the requirements of the Alberta Safety Codes Act. Accordingly, all Alberta pressure equipment safety programs under the Safety Codes Act, as administered by ABSA, will no longer be applicable to pressurized cargo transport vessels.

The effects of this Exemption Order

may be briefly summarized as follows:

1. ABSA will no longer be involved in the review and registration of pressurized cargo transport vessel designs.

The responsibility for reviewing new designs of pressurized cargo transport vessels will rest with Transport Canada under the Transportation of Dangerous Goods Act. Those designs found acceptable will be issued TCRNs (Transport Canada Registration Numbers).

2. In Alberta, for the construction of pressurized cargo transport vessels of the tank specifications required by Transport Canada and CSA B620, ABSA will, as the regulatory inspection body, continue to provide Authorized Inspection Agency (AIA) and Authorized Inspector (AI) services per the ASME and CSA B51 Codes for a design registered by Transport Canada and bearing a TCRN.

3. ABSA will provide AIA and AI services for repairs, modifications or alterations to pressurized cargo transport vessels of the specifications as required by Transport Canada and CSA B620.

4. The provincial initial/installation inspection program will not be applicable to pressurized cargo transport vessels.

5. The provincial program of in-service inspection of pressure equipment will no longer be applicable to pressurized cargo transport vessels. Owners of pressured cargo transport vessels are required to follow the in-service requirements of Transport Canada.

6. The Alberta "Certificate of Authorization" program for companies performing in-service inspection and testing/re-testing of pressurized cargo transport vessels will be withdrawn. Organizations performing such functions as well as in manufacturing, modification, repair and assembly that are not already registered with Transport Canada should seek such registration.

7. ABSA will not be investigating any accidents/incidents involving pressurized cargo transport vessels. Notifications of such occurrences, when received will be redirected to Transport Canada and Alberta Transportation.

For further details on the Federal Government's requirements on highway tanks (pressurized cargo transport vessels), you may wish to contact Transportation of Dangerous Goods, Transport Canada (Tel: 613-998-5270; website: [www.tc.gc.ca/tdg/en/menu.htm](http://www.tc.gc.ca/tdg/en/menu.htm)) and Dangerous Goods and Rail Safety Branch, Alberta Transportation (Tel 1-800-272-9600).

### A POWER ENGINEERING JOINT VENTURE

We have been advised that the Southern Alberta Institute of Technology (SAIT) signed a precedent-setting joint venture agreement with the Northern Alberta Institute of Technology (NAIT) and the British Columbia Institute of Technology (BCIT) to develop Power Engineering multimedia products. The Joint Venture materials support professionals at the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> Class Power Engineering levels. With the resources of 3 institutions, the Joint Venture can quickly and efficiently create courseware that meets the latest industry requirements.

**Have you visited us on the Internet yet? - [www.albertaboilers.com](http://www.albertaboilers.com)**

## CUSTOM-DESIGNED LARGE DIAMETER FLANGES

Attention, all those involved in the design or purchase of custom-designed flanges over 1016 mm (40") inside diameter or of pressure equipment incorporating such flanges, e. g. shell-and-tube heat exchangers!

At its meeting of June 3, 1999, the Boilers and Pressure Vessels Technical Council reviewed in detail the then-proposed ASME Code Addenda incorporating the design factor of 3.5 and approved the following action:

*"For pressure equipment in toxic, lethal or flammable service, when ASME Code Section VIII Appendix 2 is used in the design of large flanges, Appendix S-2 is to be made mandatory, as a Directive from the Administrator. This will apply to all flanges 1016 mm (40 inches) internal diameter or larger used in services other than water or air (or fluids not more hazardous than water or air)."*

This action was taken because of the possibility of leakage when large diameter flanges are designed to ASME Section VIII Appendix 2 with an increase in design stresses and the significant consequences should leakage occur. Also, the action takes into consideration the cautionary statement in the Code Cases that preceded the 1999 Addenda, which noted: *"The maximum allowable stresses obtained from the Code Cases are not recommended for flanges or other applications where slight distortion can cause leakage or malfunction."*

The Directive was published and disseminated as Information Bulletin IB99-001, which has been on the ABSA website since it was published on August 3, 1999.

IB99-001 went on to say that continued application of the pre-A99 allowable stresses would be a valid and in some cases a more suitable engineering option, although this suggestion was not to be taken as

*(Continued on page 3)*

## FIRETUBE BOILER ACCIDENT

A handhole gasket blew out of a firetube boiler causing an overheating accident that resulted in all of the first pass tubes' having to be replaced. Fortunately, there were no injuries and damage was restricted to the boiler tubes and some of the instrumentation and instrumentation wiring. The same handhole had blown out two weeks earlier. A new gasket had been used to replace the one blown out but the cause of the failure was not investigated nor was ABSA notified of the incident.

The cause of this accident was attributed to a slightly deformed yoke holding the handhole plate in place. This was a pressed steel yoke and its feet were slightly deformed or off square with the rest of the yoke. The boiler operator re-tightened the handhole bolt a number of times. It is thought that the tightening action combined with the deformation caused the handhole plate to shift, breaking the seal and resulting in the release of water and steam into the

boiler building.

Operators of firetube boilers, and companies servicing them, should make a point of checking to ensure that the handhole yokes are not deformed. The feet must be square with the body. Any ones that are suspect should be discarded. The purpose of the yoke is to hold the plate in place before the boiler is under pressure and to provide the initial seal. Once the boiler is under pressure, the internal pressure should maintain the seal. Over-tightening can damage the yoke and over stress the bolt.

It is also important to ensure that the gasket surfaces are clean and not damaged. The gasket and plate should be centred in the handhole opening and the yoke should keep the bolt true to the handhole plate. It is good practice to check the handholes prior to each startup to ensure that the handhole plates or gaskets have not shifted.

---

## EXAMINATION DEPARTMENT REORGANIZED MANAGER APPOINTED

ABSA has reorganized its Power Engineer Examination Department. Improvements will include enhanced development and delivery of internal training programs and providing new external training opportunities focused to meet the needs of our stakeholders and allow improved co-ordination of the development of technical guidelines and standards.

The reorganization will also provide better service to power engineering certification and increased support to the Standardization of Power Engineers Examinations Committee (SOPEEC). To reflect this new focus, the department has been renamed Education and Certification Programs.

On behalf of ABSA, General Manager Gordon Campbell is pleased to announce the appointment of Mike Poehlmann to the position of Manager, Education and Certification. Mike is a 1st Class Power Engineer and a Registered Engineering Technologist. He has a broad technical knowledge base with a 25 year background in the operation, installation, maintenance, repair and inspection of pressure-retaining equipment.

This new direction in Education and Training will ensure excellent education and certification program delivery and leadership in pressure equipment safety.

## DESIGNS WITH AN UNREALISTICALLY WARM MDMT

This article describes the process that is followed at ABSA in assessing the suitability of the minimum design metal temperature (MDMT) assigned to a pressure vessel design. The MDMT is a mandatory design condition that must be satisfied for ASME Code construction (see Code paragraph UG-20).

Generally speaking, for vessels that will be installed in a heated environment during cold weather there is no problem for ABSA to agree to an MDMT warmer than  $-20^{\circ}\text{F}$ . While such an MDMT is not adequate for just any service, ABSA has been in the habit of not questioning a stated MDMT of  $-20^{\circ}\text{F}$  for many types of gas and oil service vessels.

However, designs of vessels that are to be installed in an unheated environment or outdoors must consider the Alberta winter ambient conditions. In particular, if the vessel is shut down and blocked in under a pressurized condition, it will only be a matter of time until the metal temperature reaches the ambient temperature. This ambient temperature could well be colder than

the vessel's MDMT, especially if the MDMT is significantly warmer than  $-20^{\circ}\text{F}$ . Likewise during start-up the vessel temperature could well be lower than its MDMT; a condition in which the vessel should not be pressurized. Brittle failure is a definite possibility!

An understanding by the designers and by the end users regarding the assigned MDMTs of pressure vessels is essential. Setting the MDMT at the coldest temperature that will not require impact testing merely to avoid doing impact testing of the materials and welds (and thereby lowering the initial cost of the vessel) is illogical and reckless when that MDMT is not realistic for the vessel's operation in an Alberta winter. If such cases are noted, Design Survey will likely require the designer to provide some written indication from the end user that there are procedures in place to preclude the vessel's being pressurized when the temperature is below its MDMT. We have seen instances when, at ABSA's insistence, the vessel manufacturer asked for such assurances from the end user and the end user declined to

provide the assurance. That really left the manufacturer in an awkward position. Design Survey will also clearly mark the accepted drawing with the words, "*This vessel may not be pressurized at a temperature colder than  $X^{\circ}\text{C}$* ", and will require that this statement be placed in the Remarks section of the Manufacturer's Data Report.

Designers have an obligation to let their clients know the limitations of any particular vessel design they are offering for sale. And, end users must understand the consequences of purchasing a pressure vessel that has been designed with an unrealistically warm MDMT. That is, they may not be able to use the vessel for up to 8 months of the year because it will be too cold, or they will have to document and implement procedures to warm the vessel before it is pressurized or to keep it warm once it is pressurized. These consequences may not be worth the difference in cost between the vessel that is designed to meet a realistic MDMT for Alberta and one that is not.

Buyer beware!

## OVER-PRESSURE PROTECTION MUST BE THERE

Four people died in an accident in Louisiana in March 1998. The accident was the result of over-pressurization of a supposedly atmospheric tank. The tank, a third stage separator in a well battery, was not equipped with any pressure relief devices and block valves were installed in the separator outlets.

A presentation on the investigation report of this accident, highlighting the findings therefrom was made by Ms Lisa Long, a representative of the Chemical Safety and Hazard Investigation Board of the US Government during the last National Board Annual Conference. The Conference was held May 14-18 in conjunction with the ASME Boiler and Pressure Vessel Code Committees' Week. A key finding of the investigation was that "*The separator was not equipped with any pressure-relief devices, and over-pressurization*

*caused the separator to fail catastrophically*".

Readers are reminded that, in Alberta, although pressure equipment operating at or below 15 psig is exempted from the Safety Codes Act requirements, the equipment must be properly vented with no flow restrictions or be equipped with adequate pressure-relieving capacity to ensure that the equipment will not be over-pressurized. Operation procedures and process requirements can not be relied on, as highlighted in this accident, to prevent overpressure and catastrophic failures.

A detailed copy of this investigation report as well as other reports of the U.S. Chemical Safety and Hazard Investigation Board may be obtained through visiting the web site <http://www.chemsafety.gov>.

## LARGE DIAMETER FLANGES

(Continued from page 2)

discouraging the use of the Code revisions relative to the 3.5 design factor.

We have encountered several situations in the past months, where manufacturers – many from outside the province – had to scrap fabricated flanges or drop the MAWP of the design because the custom-designed flanges (all over 40" I.D.) did not meet the Technical Council's requirements.

If you will be purchasing equipment that may have large diameter flanges, **please** inform your designer/manufacturer about this requirement. It may save you time and money.

Please make yourself and your suppliers familiar with Alberta's rules and Regulations, and in this way we'll keep Alberta safe from unnecessary hazards or incidents.

## FRAUDULENT USE OF ENGINEER'S CERTIFICATE

A person was found in possession of a copy of a Power Engineer's Certificate of Competency on which the name had been changed. This temporarily allowed this individual to pass himself off as a certified boiler operator. A recommendation was made to prosecute and following a police investigation, charges were laid. As a result, the perpetrator pleaded guilty to three charges and was fined.

The Engineers' Regulations provides for the certification of operators of power plants and heating plants so that these plants are operated by competent personnel. If you know of anyone using a certificate of competency fraudulently, please provide the information to ABSA and we will follow up with the appropriate actions.

When a person is found contravening the Safety Codes Act, Section 64(1)(a) of the Act provides for a first offence: (i) a fine of not more than \$15,000 and, in the case of continuing offence, a further fine of not more than \$1,000 for each day during which the offence continues after the first day or part of a day, or (ii) imprisonment for a term not exceeding 6 months, or (iii) both fines and imprisonment.

## HEATING PLANT RELIEF VALVE REQUIREMENTS

Each low-pressure steam or hot water heating boiler is required to have at least one officially rated safety or safety relief valve identified with the ASME V or HV symbol. A problem occurs when the boiler is rated below 103 kPa as neither ASME nor the National Board certifies valves set below 103 kPa. Owners of these boilers have the following options:

- Submit a request to ABSAs' Design Survey group to re-rate the boiler to 103 kPa.
- If it is not practical to re-rate the boiler, the boiler may be protected by a pressure relief valve set below 103 kPa provided the design of the valve has been registered with ABSA.

A code stamped valve set for 103 kPa may be serviced by an Alberta authorized pressure relief valve servicing organization and reset for a lower pressure if the valve capacity is provided by the valve manufacturer for the lower pressure.

This Newsletter is a publication of Alberta Boilers Safety Association (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.

## ABSA OFFICES

Edmonton - Head Office  
#200, 4208 - 97th Street  
Edmonton, Alberta T6E 5Z9  
Tel (780) 437-9100  
Fax (780) 437-7787

Calgary  
Tower 3, #590 1212-31st Avenue N.E.  
Calgary, Alberta T2E 7S8  
Tel (403) 291-7070  
Fax (403) 291-4545

Fort McMurray  
#714, 9915 Franklin Avenue  
Fort McMurray, Alberta T9H 3A9  
Tel (780) 743-7315  
Fax (780) 743-7226

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

Lethbridge  
#360, 200 - 5th Avenue South  
Lethbridge, Alberta T1J 4C7  
Tel (403) 382-4555  
Fax (403) 382-4426

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

Red Deer  
#402, 4406 Gaetz Avenue  
Red Deer, Alberta T4N 3Z6  
Tel (403) 341-6677  
Fax (403) 341-3377

St. Paul  
5017 - 50th Street  
St. Paul, Alberta T0A 3A0  
Tel (780) 645-1164  
Fax (780) 645-1168

Internet address  
<http://www.albertaboilers.com>

## CONTENTS

Exemption of Pressurized Cargo	
Transport Vessels .....	1
A Power Engineering Joint Venture .....	1
Large Diameter Flanges .....	2
Firetube Boiler Accident .....	2
Examination Dept Reorganized .....	2
Designs with an Unrealistically Warm MDMT .....	3
Over-Pressure Protection .....	3
Fraudulent Use of Engineer s Cert .....	4
Heating Plant Relief Valve Reqmts .....	4



Alberta Boilers Safety Association  
#200, 4208-97 Street  
Edmonton, Alberta  
T6E 5Z9

**Canadian Publication  
Agreement No.  
1470019**