



MODIFIED GASKET FAILED DURING HYDROSTATIC TEST

An NPS 6 Class 900 spiral wound gasket installed between two flanges connecting two shell-and-tube heat exchangers failed while a fabricator was attempting to hydrostatically test a process skid package containing several vessels and the associated pressure piping in the shop. The fabricator that manufactured the vessels also installed the gasket that failed.

When the gasket failed at about 1885 psi it released a powerful stream of water which shot some 200 feet across the shop.

This incident had the potential to have caused serious injury or death to workers in the vicinity of this unit. It was fortunate that in this case there were no injuries nor was there any damage to equipment.

The shop personnel assembling the two units were unable to install the

gasket in the proper position because of insufficient separation between the two flanges. The shop staff proceeded to modify the gasket by cutting five deep notches (up to 0.5" deep) around the periphery of the solid metal centering ring of the spiral wound gasket to allow the installation of the studs. The notches cut around the outer ring permitted the gasket to be installed eccentrically to the flange facing.

This outer ring is designed to serve two functions. First, the dimensions specifically meet the dimensions for each flange size and rating to ensure the gasket is installed concentric to the flanges. The ring also serves as protection against the gasket sealing component's being blown out, as happened in this case.

It is frightening to note that this gasket had successfully passed an initial hydrotest at 2600 psi but failed during

a re-test at 1885 psi. The potential was there for an even more serious failure in service.

The most likely cause of this incident was the alteration of the outer ring of the gasket. As a result of the gasket's not being properly centered, a very narrow portion of the gasket sealing element was in contact with the flanges gasket faces and the protective outer ring was not able to stop the sealing element from being blown outside the flanges gasket faces.

All fabricators, owners, and users of pressure equipment must be aware of the serious potential implications of altering the design of engineered pressure components. Additionally, any change to a part of a pressure-containment system must be sanctioned by the designer of the system rather than being unilaterally executed on the shop floor.

NATIONAL BOARD - 70TH GENERAL MEETING IN CONJUNCTION WITH THE ASME CODE COMMITTEE MEETINGS TO BE HELD MAY 14-18, 2001 IN PITTSBURGH, PENNSYLVANIA

This year, the 70th Annual General Meeting of the National Board will be held in Pittsburg, Pennsylvania. The conference will be held in conjunction with the ASME International Boiler and Pressure Vessel Code Committee meetings on May 14-18, 2001. The theme of this year's conference is "SAFETY: Achieving Through Believing".

The annual general meeting of the National Board will feature keynote speakers who will present important current boiler and pressure vessel safety issues while providing a venue for meetings of jurisdictional, code

committees' and industry people involved in pressure equipment.

Sport legends, Pete Rose, Joe Frazier and Bob Knight, will open the conference. Feature eminent speakers will make presentations on various aspects of pressure equipment safety including alternative ASME rules for bolted flanged joints, incident investigation, corrosion .. etc. In addition, numerous ASME Boiler and Pressure Vessel Code committees' meetings will also be held during the week including the ASME Section I, III, IV, V, VIII, etc as well as the ASME Boiler and Pressure Vessel

Main Committee. Please note that all National Board and ASME technical committee meetings are open to visitors.

Anyone interested in attending should visit the infoLink! Page on the website of the National Board <http://www.nationalboard.org> where detailed conference information is available as well as online registration. You may also contact the National Board directly at (614)888-8320 or Fax (614) 888-0750.

Have you visited us on the Internet yet? - www.albertaboilers.com

EXCITING NEWS FOR YOUR ACCOUNTS PAYABLE

Alberta Boilers Safety Association has implemented an alternate way for our customers to receive invoices and to make payments.

Avoid mail delays and receive your invoice the day it is generated. Provide us with one or two E-mail addresses and receive invoices and statements sooner. You will receive your invoices and statements as an Adobe Acrobat Document. You can obtain a free reader from Adobe Systems on the Internet at <http://www.adobe.com/products/acrobat/readstep.html>

For banking information to make payments by direct deposit, contact Danette Ross at :
ross@albertaboilers.com.

NEW WEB PAGE FOR DESIGN REGISTRATION PROGRAM

We are pleased to announce that a new web page for Design Registration Program has been added to our web site. Now clients can readily access information regarding design submission and registration requirements including:

- ◆ New Boiler and Pressure Vessel Designs
- ◆ Generic Boiler & Pressure Vessels Designs
- ◆ Fittings

The information is provided to assist manufacturers to prepare a complete submission package for registration which in turn will help cut down the turn around time.

We will add information to cover piping design registration in the near future. In the meantime, please visit our web site and give us your comments so that we may provide you with better service.

REPLACEMENT OF NAMEPLATES ON VESSELS AND BOILERS

There are many circumstances where a nameplate must be replaced after a vessel or boiler has been in service for some time. It may have been torn off during movement. Chemicals, corrosion or physical damage may have made it illegible. Whatever the reason, there are some requirements you must follow in Alberta when the nameplate is attached.

Generally, the requirements are as stated in NB-23 under section RB-4000.

- The replacement nameplate **can only be installed if the vessel is traceable** to the original construction or Manufacturer's Data Report. Typically, the vessel has a manufacturer's serial number stamped on the shell. This, along with the Data Report will provide the information required. If the serial number is not visible, some other method must be used to establish traceability.

- The nameplate **must** be attached in the presence of an **Authorized Inspector** of the province.

During new construction the Authorized Inspector **may not** witness the nameplate installation if the manufacturer demonstrates sufficient control to ensure it is attached to the correct vessel. This is usually done by stamping a unique serial number on the vessel and matching it to the nameplate when it is attached. However, this exception does not apply when a vessel is shipped off site without the nameplate. This case would be considered the same as the missing or illegible nameplate as discussed above.

There have been incidents where the wrong nameplate has been attached to a vessel. It is easy to see that the results of such a mistake could be disastrous. For this reason, the requirements for traceability and the presence of an Authorized Inspector must always be maintained.

MINIATURE PRESSURE VESSEL DATA REPORTS

Pressure Vessel Manufacturers that construct Miniature Pressure Vessels under the scope of their Alberta Certificate of Authorization should be aware of the requirements for Data Report distribution. The distribution of Miniature Pressure Vessel Data Reports must be in accordance with the Alberta Regulations, which also invoke CSA B51 and ASME requirements. Distribution of these data reports is covered in Alberta Regulation 227/75 Section 33, CSA B51 Clause 4.8.3 and ASME Section VIII, Division 1, paragraph UG-120.

The CSA B51 requirement, which is consistent with the Alberta Regulation, is that a copy of the Miniature Pressure Vessel Data Report be submitted to the regulatory authority

of the province of installation. In Alberta, this is the Alberta Boilers Safety Association.

Additionally; it is an ASME requirement (paragraph UG-120) that the UM vessel Manufacturer's Certificate of Compliance, on Form U-3, shall be maintained by the Manufacturer for 5 years and a copy made available upon request.

The recommended distribution for Miniature Pressure Vessel Data Reports is to:

- 1) the customer,
- 2) the job file which is maintained for a 5 year period, and
- 3) the jurisdiction where the vessel will be located.

ACCIDENT INVESTIGATIONS & SAFETY AWARENESS

A number of incident reports were received by ABSA in the three months ending January 31, 2001. Fortunately, only 2 minor injuries resulted from these incidents. In providing the information here, we believe there may be lessons to be learned by others who are not directly involved in these accidents.

Owners and operators are also reminded that it is a requirement under the Safety Codes Act and the Boilers and Pressure Vessels Regulation to report accidents, fires and unsafe conditions to ABSA in a timely manner.

Brief Description and Probable Cause	Recommendations and Actions Taken
A pyrolysis furnace exploded while being purged after it had tripped on high temperature. A second explosion occurred while an employee was setting the valves to drain liquid from the coils. The furnace was extensively damaged. The investigation indicated that the purge procedures were not clear and were not understood by operating personnel.	26 corrective actions have been developed by the company as a result of the accident.
A boiler overheated because of an inoperative low-water cut-off. The LWCO had not been blown down regularly and had filled with sludge.	A new hot water boiler was installed. The owner was reminded about the importance of maintaining suitable water treatment and regular blow down.
A faulty gas valve allowed gas leakage, through a boiler that was shutdown, to the common flue stack connecting multiple boilers. The leak resulted in a stack explosion. Damage was minimal and was restricted to the stack.	All boiler controls were checked and serviced.
A heater was out of service waiting for a new blower motor but controls were not locked out and tagged. A contract operator tried to start the heater narrowly avoiding serious injury when flames shot back out of the combustion chamber and blower.	The company was instructed to develop a lock-and-tag procedure and to start using a log book.
Three separate pressurized highway tank incidents in which the drivers lost control of their vehicles were reported.	The respective companies will take corrective action with the drivers.
Sawdust which was being loaded into the feed hopper of a waste-burning boiler caught fire in the hopper. The fire, which rapidly spread to the sawdust pile adjacent to the boiler, then involved a major part of the building. It is believed that some burning material was dragged back into the hopper on the ram that feeds the furnace.	The owner made programming changes to the controls to automatically close the hopper lid in the event of a hopper fire. All pressure equipment damaged by the fire required re-certification.
A 1" bleed nipple on a heater developed a crack. Oil leakage from the cracked nipple soaked the insulation and ignited. It was suspected that cracking was caused by cyclic stress.	Provision for piping expansion was made with additional support installed in the modification after the incident.
The derrick of a service rig fell on the inlet piping of a vessel, damaging the vessel and the piping.	The vessel and the associated piping were inspected and repaired.
An electric power surge in a gas processing plant resulted in damage to instruments controlling two regeneration gas heaters. The instrumentation failure caused the heaters to go on full fire, resulting in damaged piping due to overheating.	Process operation is under review to avoid similar controlling instrumentation failures.
A storage tank 80% full of propane was damaged when the support of the tank was knocked away by a front-end loader. The tank was dented but was not perforated.	The owner and Occupational Health and Safety were notified of the possible serious consequences of this unsafe handling practice. The owner was also advised that the vessel could not be used in pressure service without an engineering assessment.
The closing of a flue damper on an operating boiler resulted in over-pressurization and "bowing" of the combustion chamber walls. At the same time a water tube failed. It is uncertain at this time if the tube failure is related to the stress in the combustion chamber.	This incident is still under investigation.

STATUS OR DISPOSITION OF PRESSURE EQUIPMENT

To ensure that pressure equipment database records are accurate, ABSA must be notified of the **change of status** of all boilers and pressure vessels. Form AB-10 (Boiler and Pressure Vessel Status Report) is to be used to report the following status changes:

- Change of ownership
- Boilers or Pressure Vessels that are removed from service
- Boilers or Pressure Vessels that are destroyed or disposed of as scrap
- Change in location of installation within Alberta
- Change in location of installation, to a location outside of Alberta

Copies of this form (current revision 00/08) may be obtained from any ABSA office, or the form may be downloaded from the ABSA web-site. When there is a change of ownership ABSA would appreciate receiving all of the applicable information that is listed on the AB-10 form so that we can ensure the database records are accurate. Your co-operation in advising ABSA of these status changes will ensure that the Annual Vessel Registration invoices are as accurate as possible.

If Boilers or Pressure Vessels are destroyed, disposed of as scrap or if the equipment is no longer suitable for pressure service, we strongly recommend that it be cut up and the nameplate removed to ensure that it cannot be returned to pressure service at a later date. Failing to do so may place the original equipment owner in a liability position if the equipment were to fail when pressurized at a later date.

New owners of used pressure equipment should be aware that they are responsible for the condition and safe operation of this equipment immediately upon acquiring it. Purchase of this equipment should be with the condition that it passes an appropriate inspection. The previous owner's inspection records and all documentation pertaining to the vessel, including the most recent Certificate of Inspection, should also be requested as part of the purchase package.

Should you require further information regarding pressure equipment status changes please contact the ABSA Records Section at:

Tel (403) 433-0281 Ext. 322 .

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