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ANNUAL CODE UPDATE SEMINAR

The Annual Update Seminar provides an overview of the effects of the Code changes on Designers, Quality Control Inspectors, and other users of the Codes.

This is a one-day seminar and this year's scheduled dates are October 7th in Nisku and October 9th in Calgary.

For more information, please contact Cynthia Formaniuk at 780-437-9100 Ext 3325 or visit www.absa.ca.

HYDROSTATIC TESTING CAN BE DANGEROUS TOO!!!

There are many dangers when testing any vessel. The industry is all too aware of the power behind a pneumatic test but what about the hydrostatic test?

Hydrostatic tests are commonplace in all shops, we do them once a week, maybe two at a time, over and over again. We get so good at doing the hydrostatic test that we forget how dangerous they can be, but many things can and sometimes do go wrong.

You are rushing to get the hydrostatic test ready for all the various inspectors and AI's to witness, you've done this same type of vessel many times, same blinds, same vents, same gauges, and the list goes on.

Many questions need to be asked including:

- Upon rushing, you forget to check the threads on the vent piping; what could happen?
- You install the vent in the hub of the quick closure head; were you able to vent all the air? Are you doing a hydrostatic test or partial pneumatic test?
- The threaded connection is leaking; do you tighten it under pressure or not?
- Are all flanged joints properly tightened and the correct gaskets being used?
- Have the correct pressure gauges with the right ranges and measurement units been used?

Recently, there was an accident in Alberta and two experienced workers were injured. The workers attempted to tighten the leaking and worn vent piping while the vessel was under pressure during a hydrostatic test. It was said that water shot out of the vent hole hitting one worker causing bruising and swelling while a fitting blew out of the vessel striking the railing and ricocheted onto another worker's chest and ribcage causing immediate swelling. Upon investigation, the workers admitted that they knew they should have released the pressure before attempting to tighten the worn vent piping but they had tightened many connections at previous hydrostatic tests with no problems.

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FOUNDING ABSA BOARD MEMBER PASSED AWAY

Mr. Al Brekke, a founding member of ABSA and a staunch and untiring advocate of and leader in public safety, particularly, in the field of pressure equipment safety, passed away after a lengthy battle with heart disease on Sunday August 31, 2008.

A First Class power engineer and a professional engineer with a mechanical engineering degree from the University of Alberta, Al worked in the utility industry, retiring as a senior executive of the industry in 2001. He was also an active volunteer in the community, in many capacities, including being Chair of the Alberta Chamber of Commerce and a Director of Alberta College.

All of us who worked over the years with Mr. Brekke will fondly remember and be grateful for having known the perfect gentleman we called Al. He served as a member of Advisory Board since 1976 under the Boilers and Pressure Vessels Act and chaired the Board between 1989 and 1994 providing advice to the Minister responsible for the Act and direction to the Chief Inspector administering the Act. With the repeal of the Boilers and Pressure Vessels Act, the pressure equipment

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The solutions may seem like common sense but often someone doing the same repetitive job may become complacent and may take shortcuts.

In this case, fortunately, the two workers suffered injuries that were not life threatening. While both workers were sent to hospital, one was back at work on light duty right away and the other one hospitalized for a short period of time. We have heard of hydrostatic tests overseas with far worse consequences including resulting in fatalities. We would urge everyone to take proper care at all time when equipment is pressurized, including when conducting hydrostatic tests. ❖

CARBON MONOXIDE POISONING AND EQUIPMENT RECALLS

We wish to remind all owners and operators of boilers and furnaces of the risk of carbon monoxide poisoning due to defective equipment or incorrect installations with inadequate combustion ventilation.

According to the US Consumer Product Safety Commission "Every year more than 100 people in the United States die from exposure to carbon monoxide associated with consumer products." Low level exposure to carbon monoxide can also produce symptoms such as headaches, fatigue, shortness of breath, nausea, or dizziness. As the consequences of public exposure to carbon monoxide poisoning are serious, it is critical that owners and operators must ensure adequate air supply and openings are not blocked while flue gas exhausts and chimneys are properly installed and maintained. .

As further information to this goal, three recalls related to the risk of carbon monoxide leaks are presented here.

With one recall, a leak can occur in the vent piping, causing carbon monoxide to leak into the building posing a risk of CO poisoning. A recall for this equipment was issued in 2008 and involves Weil-McLain CG's and CGi gas boilers. Models and serial numbers of boilers affected by this recall are models CGs-3, CGs-4, CGs-5, CGs-6, serial number CP 5071501 through CP 5694976 and models CGi-3, CGi-5, CGi-6 Series 2, serial number CP 4134351 through CP 5698635. The model name and serial number are located on separate labels on the outside of the left panel. For more information, contact Weil-McLain toll-free at (866) 783-9276 or visit the firm's Web site at www.weil-mclain.com/footer/recalls.html; at the Consumer Product Safety Commission Web site www.cpsc.gov/cpsc/pub/prerel/prhtml08/08566.html; or at the CSA International website at www.csa-international.org

With another recall, the internal black plastic venting components can crack and cause a carbon monoxide leak. A recall for this equipment was issued in 2007 for Laars 9600 CB Condensing Heating Boilers (models CB150, CB175, and CB 200) and Laars 9600 HWG Condensing Water Heaters (models HWG 150, HWG 175, and HWG 200). For more information, contact Laars Service Department at (800) 900-9276, Extension 4, or visit the firm's Web site at www.Laars.com. This recall can also be found at the Consumer Product Safety Commission Web site at www.cpsc.gov/cpsc/pub/prerel/prhtml07/07535.html or at the CSA International website at www.csa-international.org.

With a third recall, a condensate drain fitting may fail causing a carbon monoxide leak. A recall for this equipment was issued in 2007 and involves Trinity™ boiler models Ti100, Ti150, Ti150C, Ti200 and Ti200C, manufactured between November 2005 and January 8, 2007, and model Ti400, manufactured before January 8, 2007. For more information contact NY Thermal Inc. by calling toll free (800) 688-2575, or via the company website at www.nythermal.com. This recall can also be found at the CSA International website at www.csa-international.org

It should be noted that flue gas exhausts and chimneys are not subject to the requirements and inspections of the Pressure Equipment Safety Regulation under the Safety Codes Act. As with other areas not specifically addressed by the pressure equipment standards and regulations, owners and operators are strongly reminded that health and safety hazards involved in the non-pressure part of the boiler installation must be addressed with all necessary precautions. ❖

PREVENTING BOILER FURNACE EXPLOSIONS

Introduction

"No furnace nor any kind of fuel is immune to explosion hazard. As long as the human element is involved, we will have the possibility of explosions in the small furnaces of heating boilers, as well as in the large furnaces of power boilers." (1)

"A large number of furnace explosions occur in starting up or lighting off and shutdown. The next prevalent condition causing explosion is the stopping or decreasing of the fuel feed, which causes loss of ignition, immediately followed by a resumption of the fuel feed without following the proper lightoff cycle." (1)

Type of Operation and Methods of Firing

- Fully automatic unattended type (General Supervision) which are heating boilers.

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- Fully automatic attended type (Continuous Supervision) – industrial boilers.
- Manually operated type.

Ways to Prevent Boiler Explosions (Gas Firing)

- a) **Always** follow the manufacturer's procedures for lighting off the boiler.
Never tamper with or by-pass any of the controls.

"When boiler is in operation it must be able to distinguish between unsafe firing conditions and normal variation in combustion control. Nuisance shut-downs and failures to restart have detrimental psychological effects on the operator. It causes him to devise ways and means of by-passing the combustion safe guarding system."⁽¹⁾

- b) **Always** remain at the boiler (industrial type) during the lightoff cycle and verify the sequences, such as:
- Check purge time required per manufacturer's recommendations.
 - Check F.D. fan linkages and travel (motor to louvers).
 - Verify ignition cycle that the air supply in the burners is kept low enough to prevent blowing out the flames.
 - A sufficiently rich mixture should be supplied so that ignition will take place immediately (visual flame check).
 - Check flame pattern through furnace port sight glass (visual) after the main burner has been established.
 - After stable ignition has been obtained the lighting torch should be shut off automatically.
- Never** leave the boiler during the start-up cycle to perform other duties.
- c) **Always** do dry-run start-up sequence for any new boilers, based on manufacturer's recommendations and interlock systems. Items to be observed as follows:
- The furnace should be purged for at least 5 minutes with a volume change of no less than 5 times (ASME Section VII).
 - Ignition cycle should be accomplished within 10 seconds after gas supply cock is opened. If ignition is delayed longer than 10 seconds, fuel to the burner and ignitor should be shut off immediately, auto-shutdown should be activated (ASME VII).
 - Gas pressure before and after the regulator are within range, both pilot and main burner.
- Never** assume all new boilers combustion controls have a correct setting .

The highest percentage of furnace explosion accidents have been caused by operators failing to follow items a) and b). ❖

Note: (1) *Excepts from Handbook of Instrumentation and Controls by McGraw-Hill Book Company, Inc.*

AIR RECEIVERS UNDER THE PRESSURE EQUIPMENT SAFETY REGULATIONS

An air receiver is defined as a vessel for compressed air installations that is used both to store the compressed air and to permit pressure to be equalized in the system. The process of compressing air creates an increase in temperature of the air and when it is stored in the air receiver it cools. This causes condensation to be formed in the vessel. Draining the vessel of the condensate is required to prevent corrosion. The air receiver shall be equipped with a suitable drain opening at the lowest point practicable with a manual or automatic drain valve. It is the operator's responsibility to ensure the automatic drain valve is working correctly and, in the case of a manual drain valve, to ensure the vessel is drained regularly.

A pressure vessel that (i) has a volume exceeding 500 liters; (ii) has a maximum allowable working pressure exceeding 1725 kilopascals, and (iii) is used as an air receiver, is subject to initial inspection and annual fees. Pressure vessels exceeding 1725 Kilopascals and having a volume not exceeding 500 liters that are designated as air receivers, are subject to initial inspection only. If a vessel is subject to initial inspection, it must be inspected at the time of installation to verify that the vessel is safe for operation.

Pressure relief valves (PRV's) on air receivers must be manually tested at least annually as well as any time the air receivers are subjected to a thorough inspection, in accordance with the *Pressure Equipment and Servicing Requirements (AB-506)* issued by the Administrator of Pressure Equipment Safety. For access to this document, please visit ABSA's website, www.absa.ca, or by following the link (<http://www.absa.ca/Forms/AB-506%20Pressure%20Inspection%20Interval%20Requirements.pdf>) directly. If and when a PRV shows any signs of leakage or other malfunction, it shall be serviced or replaced by a reliable servicing company.

When an air receiver is not fitted with a manway and an internal inspection cannot be conducted at time of periodic inspection, ultrasonic testing is recommended to verify the vessel wall thickness, and over time, to determine corrosion rates and the remaining life of the vessel.

Operators of air receivers must understand the importance of draining air receivers, testing the safety devices and performing the required inspections as part of the regular maintenance program to avoid serious incidents which may result in severe injury or death. ❖

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discipline fell under the Safety Codes Act when it came into force in 1994. Al became the Chair of the Boilers and Pressure Vessels Technical Council of the Province under the Safety Codes Act from 1994 to 1997. Since the inception of the Safety Codes Council in 1993, Al was a member of the Council and then the Vice Chair of the Council, a position he held until his passing.

Through Al's effort and with support from the pressure equipment industry and the Alberta Government, the Alberta Boilers Safety Association (ABSA the pressure equipment safety authority) was formed in 1994. The delivery of pressure equipment safety programs transferred from the Government of Alberta to ABSA in 1995 and Al became the Vice Chair (1995-2000) and the Chair of the five-member Board of Directors of ABSA prior to his retirement (2000-2001).

With the huge amount of pressure equipment in Alberta and a safety record we are justly proud of, we have been fortunate and greatly in debt to Al who contributed so very significantly to public safety in the boiler and pressure vessel discipline. Just prior to succumbing to his illness, he noted that he was happy and appreciative to have been associated with pressure equipment safety and ABSA, while urging all to carry on with the good work in public safety which ABSA staff members will be proud and duty bound to continue. ❖

DISQUALIFICATION FROM WRITING POWER ENGINEER EXAMINATIONS

ABSA has found that some candidates have continued writing examinations in other provinces while they are under a penalty in Alberta. The Administrator has established that the results of those examinations will not be accepted for certification in Alberta. The policy for penalties is posted at www.absa.ca and is duplicated below.

Candidates for Power Engineer examinations should be aware of the policy for imposing penalties for successive examination failures. Section 28 (g) of the Power Engineers Regulation (AR 85/2003) allows the Administrator to disqualify, from writing another examination paper, candidates who consecutively fail 3 papers of any examination for a period not exceeding 12 months after the date of the last attempt.

The Administrator establishes policy for disqualifications due to consecutive failures of examination papers. The disqualification time starts at the last failed examination date. A summary of disqualification guidelines follows:

1. Failure of any 3 examination papers in succession or failure of the same paper 3 times will result in a **6 month** disqualification from writing any further papers of that examination.
2. Subsequent failures of any examination papers in succession or more than 3 failures of the same paper will each result in a further **6 months'** disqualification.
3. Candidates are not allowed to schedule examination papers for situations where they have potential to be under disqualification at the scheduled examination date.
 - Candidates with 2 consecutive failures may not schedule more than 1 paper in advance.
 - Candidates with 1 failure may not schedule more than 2 papers in advance.
 - No candidate may schedule more than 3 papers in advance.
4. The time period under consideration for failed papers is 2 years. Failed examination papers older than 2 years are not considered in determination of disqualification from writing future examination papers.
5. Any exam results achieved outside of the Province of Alberta during a penalty period are not transferable to Alberta for Power Engineer certification.

The **6 month** disqualifications are minimum penalties. The Administrator may impose a disqualification for up to **12 months**, if deemed appropriate. Applicants who apply while under a penalty will receive a disqualification letter and the examination fee will automatically be refunded. ❖

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