

## **TSSA - BPV Advisory Council Meeting Submitted to : CB&MUA AG Meeting, Wednesday February 20, 2013**

### **Submitted by Paul Sterescu CB&MUA Representative**

Personnel changes for the past year:

- Kathy Milsom President & CEO resigned in September 2012 and has been temporarily replaced by David Scriven Interim president and CEO
- There is a new CSRO (Chief Safety Risk Officer). Daniel Hoorweg, M. Sc, P. Eng. Previous CSRO Norman Inkster has been elected as a member of TSSA Board of Directors

There were 2 – two Advisory Council Meetings in 2012: May 1 and Dec 13. Generally the meetings focused on similar topics and included:

- **Advisory Council Chairman, Peter Harshnitz Reports**
  - Encouraged the council members to submit emerging issues for discussion and help improve the agenda and the planning for meetings
- **TSSA President, David Scriven Report**
  - Consistency of approach after Kathy's resignation. Plans stay as outlined in the past.
  - The board is actively looking for a replacement
  - Overview of Safety Initiatives in all divisions
  - Frequency of inspections on all equipment overseen by TSSA
  - Targeting the elimination of Backlog

One fatality in the elevator division when an elevator stopped between floors opened in error. Interlock did not operate.

A number of important initiatives in the BPV and Operating Engineers Division:

- (ASME) Standards Committee on Qualifications for Authorized proposed change that could open the Ontario jurisdiction to other qualified Authorized Inspection Agencies is being further researched. The issue was brought up at the latest National Public Safety Advisory Committee (NPSAC) meeting, and a request for NPSAC to issue a third letter to ASME reinforcing Canadian jurisdictions' right to not adopt the "openness principle" will be made.
- B51 standards development, a proposal for the servicing of relief valves specifically addressing the contentious issue for propane tanks was created and considerable progress was made with publication in 2013.
- Preparations for TSSA hosting the August 2013 meetings of the Association of Chief Inspectors and Canadian Standards Association (CSA) meetings for B51 and B52 have begun. This is a week-long event and significant tasks will be undertaken to prepare for this annual conference held in different Canadian cities each year.
- Power Plant Periodic Inspections  
All backlog power plant periodic inspections were completed by each month's end and OE is maintaining a zero-backlog status.
- Insured Pressure Vessels  
TSSA has completed eight reviews of insurance company quality control programs related to periodic inspections and repair inspections of insured boilers and pressure vessels that fall under the scope of the regulation. Observations are proving useful for both parties.
- **Fee Review process by Richard Smart, CFO for TSSA**  
Fee review process was completed. The review is based on previous data and on the MOU between the province MCS and TSSA. It will come into play by May 1, 2013.

- **Mike Adams Quality Review Initiative**

Mike Adams has embarked in a comprehensive review of the jurisdictional activities carried out by the Insurance companies.

- It started with the need to have the data in TSSA see Insurance Data Group RRG
- Extended by auditing all Insurance companies on their jurisdictional activity – Process almost completed
- The Licensing program may become a reality
- TSSA is looking to actually implement the regulation which would require that Certificates of inspection be issued by the TSSA not the insurer
- BPV “Inspection Regime” could require the processing of up to **72,000** Certificates of Inspection per year (*in addition to the 61,644 issued presently by other divisions*).

- **Code Adoption Document Issued in January 2013**

- Updated to change inspection frequency for hydropneumatic and cushion tanks
- Updating to refresh all references to latest codes
- Adding pressure relief valve maintenance
- Adding Boiler Inspector Examination requirements (CB&MUA endorsement received 23 Nov)
- Combining all relevant Director’s Orders, and revoking the outdated ones
- Clarifying the intent of inspection of pressure vessel or boiler with the purpose of introducing a SB to mandate the internal inspection

- **Risk Reduction Group Initiatives and outcomes**

- **Frequency of internal inspections**
  - Cathy Turylo presented the results of our meetings highlighting there deliverables: The RRG recommendation is to request TSSA to publish a safety bulletin first and if further action is required, consider a Director’s Order for an amendment to Section 4.0 of the Boilers and Pressure Vessels Code Adoption Document (BPV CAD) to allow for reinstating internal inspections on boilers at a mandatory minimum frequency.)



# Boilers and Pressure Vessels Advisory Council December 13<sup>th</sup>, 2012– Item 8 Recommendation and Final Report for Boiler Internal Inspection Frequency RRG

## Purpose For Information

This report provides the recommendation from the Risk Reduction Group (RRG) for the Council's review, comments and/or acceptance. This RRG was mandated to explore the reintroduction of mandatory minimum boiler internal inspection frequency for periodic inspections of high and low pressure boilers.

## RRG Recommendation

The RRG recommendation is to request TSSA to publish a safety bulletin first and if further action is required, consider a Director's Order for an amendment to Section 4.0 of the Boilers and Pressure Vessels Code Adoption Document (BPV CAD) to allow for reinstating internal inspections on boilers at a mandatory minimum frequency. The first document is an expeditious first step where as the second step may need to be considered in the future.

TSSA will need to maintain dialogue with the affected industry sectors to ensure the effectiveness of the document in the industry.

Key elements to be included:

- Definitions (refer to **Annex A**):
  - *Periodic Inspection*
  - *Internal Inspection*: boiler is required to be shut down, cooled and in a safe state
  - *External Inspection*: boiler is required to be in-service for verification of safety devices
  - *High Pressure Boiler*
  - *Low Pressure Boiler*

*Safety Bulletin*: a TSSA document that provides additional technical detail and typically instructional information that is in support of mandated requirements in the Act, Regulation or Director's Order including BPV CAD:

- Instructions for owner's obligations for boiler operation (e.g. water treatment, effective blowdown procedures, periodic servicing and/or replacement of safety devices ) and preparations for inspections (e.g. internal inspections require the boiler to be shut-down and in the cooled state, properly vented and isolated to meet the safety requirements for confined space entry),
- Consideration of physical limitations of some boilers that cannot have a meaningful internal inspection (e.g. cast iron boilers may not be practical) or alternative inspection techniques are warranted,
- Consideration of large boiler systems which are managed by experts and additional non-destructive inspection techniques – operating and servicing history is well documented and understood,
- Emphasis on inspector's review and discretion
- Frequency recommended (refer to **Annex B**):
- Section 4.0 of the BPV CAD identifies:
  - high pressure boilers are on an annual minimum periodic inspection cycle and,
  - low pressure boilers on a two year minimum periodic inspection cycle.
    - (i) Therefore both internal and external are needed in the same minimum inspection cycle as mandated by the BPV CAD e.g. high risk areas such as corrosion inducing environments (dry cleaners) or applications such as public occupancy (schools) and portable equipment
    - (ii) With the inspector's review and discretion, the minimum frequency may be extended to alternating between internal and external for each minimum periodic inspection cycle
    - (iii) The extension request is not to exceed three periodic inspection cycles for high pressure boilers (that is 3 years for an internal inspection) and two periodic inspection cycles for low pressure boilers (that is 4 years for an internal inspection)

## Background

BPV Council through a review of top safety issues identified internal inspections for pressure equipment as a safety issue to be addressed by an RRG. This issue was identified by representatives from the CB&MUA through their experiences with periodic inspections and challenges they have experienced since the original legislated

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requirement specifying a minimum internal inspection frequency for low pressure boilers had been removed in 2000. The RRG was formed with support of users and the insurance industry with members representing these industry sectors. In the early stages of research and discussion, the RRG quickly focused the subject to address specifically boilers as was previously identified in the legislation.

Regulation 59 of the Ontario Boilers and Pressure Vessels Act originally referred to a minimum internal inspection frequency for low pressure boilers at two years and in practice it was assumed high pressure boilers were also at a minimum internal inspection frequency of one or two years. (Refer to Annex E). This specific section was removed with the promulgation of the Technical Standards and Safety Act in 2000 and the subsequent issuance of the BPV CAD remained silent on the issue of internal inspection.

The internal boiler inspection RRG has been in session for approximately 2 years and has reviewed a variety of research material including:

TSSA prepared a statistical analysis of incident data from the National Board of Boilers and Pressure Vessels (Columbus, Ohio) which included causes of boiler failures – all of which point to the necessity of internal inspections. (Refer to Annex C).

Members presented minimum frequencies for boiler internal inspections from other jurisdictions including ABSA, many US state legislation, and abroad which in almost all cases specified minimum internal and external inspection frequencies as well as an allowance process for extensions past the minimum frequency where warranted. (Refer to Annexes D and F).

An accident report was presented that occurred in the United States due to an inadequate periodic internal inspection which also triggered considerable discussion on the quality of internal examinations. (Refer to Annex G). It was noted that with the change in legislation inspectors may have less experience than in the past with internal inspections and therefore additional review may be warranted.

### Next Steps

BPV Advisory Council to review the recommendation from the RRG and to advise whether this is a sufficient recommendation for TSSA. Also to determine whether the scope of the RRG has been addressed and if the RRG is now completed its mandate.

Other activities: Next CB&MUA Engineering Committee session is scheduled for December 18<sup>th</sup>, 2012 and the minimum internal inspection frequencies as presented are tabled for discussion.

### RRG Participation

**Members:** Yan Huang (RSA), Jorge Larez (TSSA), Ralf Klopf (Toronto District School Board), Srikanth Mangalam (TSSA), Paul Sterescu (BI&I – also representing CBMUA), Cathy Turylo (TSSA), Ron Vallier (Imperial Oil – also representing OPIA), Celeste White (TSSA), Melissa Zanette (TSSA); *Past members:* Nowell Brain (Cleaver Brooks), Ryan Jones (Zurich Insurance)

**Guests:** Colleen Sonnenberg (MCS), Debbie Kontos (MCS)

**Annexes:** A. Definitions; B. Recommended Minimum Periodic Internal Inspection Cycles;

**Attach. (Annexes) C.** Internal Inspection Update Report (July 8, 2011; J. Larez, TSSA); D. ABSA document AB506;

E. BPV Act/Reg.84 Excerpt; F. Example of US state legislation (Oregon); G. Salem Harbour Boiler Failure No. 2007 – redacted.



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## ANNEX A Definitions

- *Periodic Inspection* – an inspection of a boiler during the operating life of the boiler at a regular specified minimum interval conducted by an inspector; the purpose of the inspection is to determine the boiler is safe to operate until the next scheduled periodic inspection; the inspection can include both external and internal inspections of the boiler and testing of related safety devices.
- *Inspector* – is a TSSA inspector or an insurance inspector; insured boilers and pressure vessels are inspected by the insurer and uninsured equipment is inspected by the TSSA inspector; an insurer means a person licensed under the *Insurance Act* to undertake boiler and machinery insurance as defined by that Act. Note instructions provided in Section 12. (10), O.Reg.220/01.
- *External Inspection* - includes a visual inspection of the external boiler parts and appurtenances; boiler can be in-service or shut down however in-service is required for verification of safety devices including:
  - water control safety devices such as the low water fuel cut out device is functioning;
  - lifting lever test for safety devices.
- *Internal Inspection* - boiler is shut down, cooled and in a safe state and all preparations completed to the satisfaction of the inspector, which includes as a minimum but not limited to cleaning and isolation or lock-out of electrical and mechanical systems where applicable to allow for safe entry of a confined space, in order to conduct an internal examination. Other activities to note:
  - in some cases such as water tube boilers, non-destructive examination techniques are needed such as using a video boroscope to check the conditions of the tubes whether boiler cleaning has successfully removed scale that could cause a tube to overheat and fail (this is typically not expected to be a catastrophic failure however incidents have occurred which has lead to a fatality).
  - disassembly of a device such as a float type low water fuel cutoff to examine the linkage and connections for wear and ensured that it is free of sludge or other accumulation.
- *High Pressure Boiler*. (a) a boiler that is intended to generate steam or other vapour at a pressure above 15 psi (103 kPa) or (b) a boiler that is intended to be operated at a pressure above 160 psi (1100 kPa) or where the water temperature at any boiler outlet is above 250F (121C).
- *Low Pressure Boiler*. (a) a boiler that is intended to generate steam or other vapour at a pressure of 15 psi (103 kPa) or less, or (b) a boiler that is intended to be operated at a pressure of 160 psi (1100 kPa) or less where the water temperature at any boiler outlet is 250F (121C) or less.
- *Safety Bulletin*: provides additional technical detail and typically instructional information that is in support of mandated requirements in the Act, Regulation or Director's Order including BPV CAD.

## ANNEX B Recommended Minimum Periodic Internal Inspection Cycles

### A. High Pressure Boilers

Per Section 4.0 BPV CAD, mandatory minimum periodic inspection is conducted *annually*.

Periodic Inspection Cycle starts (*inspection conducted*) ---- (*one year*) ----New Periodic Inspection Cycle starts...

(i) Annual internal and external inspections, which are two inspections per year, are conducted.

*Inspection Schedule Example:*

New Periodic Inspection Cycle starts (*internal inspection conducted*) (*return visit for external inspection to be conducted*) ---- (*one year*) ----

(*Repeat schedule*) New Periodic Inspection Cycle starts (*internal inspection conducted*) ...



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(ii) With inspector's review and acceptance, internal inspection may be increased to two years for an internal; for example first year an internal inspection is conducted with following year an external inspection is conducted and this sequence is repeated.

*Inspection Schedule Example:*

New Periodic Inspection Cycle starts (**internal inspection conducted**) ---- (**one year**)  
New Periodic Inspection Cycle starts---- (**external inspection conducted**) ---- (**one year**)  
(**Repeat schedule**)New Periodic Inspection Cycle starts (**internal inspection conducted**)

(iii) With inspector's review and acceptance internal inspection not to exceed three years; for example, an internal inspection is conducted followed by an annual external inspection for two years and this sequence is repeated.

*Inspection Schedule Example:*

Periodic Inspection Cycle starts (**internal inspection conducted**) ---- (**one year**)  
New Periodic Inspection Cycle starts---- (**external inspection conducted**) ---- (**one year**)  
New Periodic Inspection Cycle starts----- (**external inspection conducted**) ---- (**one year**)  
(**Repeat schedule**)New Periodic Inspection Cycle starts (**internal inspection conducted**)...

### B. Low Pressure Boilers

Per Section 4.0 BPV CAD, mandatory minimum periodic inspection in conducted every *two years*:

Periodic Inspection Cycle starts (**inspection conducted**) ---- (**two years**) ----New Periodic Inspection Cycle starts...

(i) Internal and external inspection every two years; for example first year an internal inspection is conducted and the second year an external inspection is conducted

*Inspection Schedule Example:*

New Periodic Inspection Cycle starts (**internal inspection conducted**) --- (**one year**)  
(**External inspection conducted**)---- (**One year**)  
(**Repeat schedule**) New Periodic Inspection Cycle starts (**internal inspection conducted**)

(ii) With inspector's review and acceptance, internal inspection may be increased up to an additional but not to exceed four years; for example the first inspection an internal inspection is conducted with an external inspection conducted two years later and after an additional two years an internal inspection is conducted

*Inspection Schedule Example:*

New Periodic Inspection Cycle starts (**internal inspection conducted**) ---- (**two years**)  
New Periodic Inspection Cycle starts---- (**external inspection conducted**) ---- (**two years**)  
(**Repeat schedule**) New Periodic Inspection Cycle starts (**internal inspection conducted**)