

## **Meeting of ACI**

**August 9 and 10, 2004**

Report to: CB&MUA (Canadian Boiler and Machinery Underwriters' Association)  
Executive Committee  
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Date: September 10, 2004

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This report includes the major items arising from the 41<sup>st</sup> Annual Meeting of the Association of Chief Inspectors.

### **1. The 41<sup>st</sup> Annual Meeting of the Association of Chief Inspectors**

Date: August 9 and 10, 2004  
Place: Frobisher Inn, Iqaluit, Nunavut  
Attendees: Chief Inspector Members (8 Canadian Provinces, 2 Territories), Members representing the Federal Government and the Canadian Nuclear Safety Commission, Associate Members and Representative from National Energy Board. The Chief Inspectors from P.E.I., New Brunswick, British Columbia, and Yukon, and a representative from the National Board were in absentia. Attendees also included guests from various governments and industries.

#### **1.1 The Association of Chief Inspectors (ACI) Memberships**

Following Alberta and Ontario, British Columbia privatized the boiler and pressure vessel jurisdiction to a non-profit organization in April 2004. With the name of Safety Authority, this jurisdictional authority is now led by the Chief Inspector, Mr. Malcolm Bishop.

The National Energy Board is considering becoming a formal member in 2005.

Except for British Columbia, all members remain the same as last year, as follows:

- Safety Authority, British Columbia
- Alberta Boiler Safety Association, Municipal Affairs, Alberta
- Corrections and Public Safety, Saskatchewan
- Labor and Immigration, Mechanical and Engineering Branch, Manitoba

- Boilers & Pressure Vessel Safety Division, Technical Standards & Safety Authority, Ontario
- Régie du bâtiment du Québec, Québec
- Department of Public Safety Inspection Service, New Brunswick
- Public Safety Division, Nova Scotia Environment and Labor
- Community and Cultural Affairs, Prince Edward Island
- Newfoundland and Labrador
- Public Works and Services, Government of The North West Territories
- Yukon Territories
- Department of Community and Government Services, Nunavut
- The National Board of Boiler and Pressure Vessels Inspectors
- Engineering Assessment Division, Canadian Nuclear Safety Commission
- Labor Program, Technical Services Unit, Human Resources Development Canada (HRDC), Canada

## **1.2 Accident Data Report From Federal**

At request, HRDC reported the study results of the accident statistics recorded by the federal unit for 2003. An attempt was made to obtain the numbers of accidents related to boiler and pressure vessel component failures. However, the current federal records are mainly based on injury and death related to specific occupations. There is a difficulty in sorting out the safety database for boiler and pressure vessel failure incidents. There may be a possibility to create a special occupation code to categorize accidents by dollar value and geographic area in the next National Public Safety Advisory Committee meeting in Yellowknife. This special code should be well defined for this purpose.

## **1.3 Mutual Agreement for Recognition of Welder Qualifications between the Maritime Provinces and Territories**

*An Agreement for Mutual Recognition of Welder Qualifications* has been signed among the Jurisdictions of Maritime Provinces/Territories (New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Yukon, Nunavut and Northwest Territories). Under the agreement, the jurisdictions will automatically recognize the qualifications of a mobile welder which have been accepted by another signatory.

## **1.4 Propane Tanks**

For Propane Pressure Vessels, the regulation is not uniform across the country. No action has been taken in developing an inspection guide. The ACI has decided to close the case, but will try to persuade the National Board to develop one in the NBIC (National Board of Boiler and Pressure Vessel Inspectors Code).

## **1.5 Revised Constitution**

The revised ACI Constitution was approved at this meeting. The French version will be reviewed and redistributed electronically within the ACI members.

## **1.6 Non-Code Stamped Pressure Relief Devices**

For acceptability of Non-Code Stamped Pressure Relief Devices in Canada, the code requires an ASME designated/accepted 3<sup>rd</sup> party agency to certify the capacity. However, the National Board Laboratory is now the only agency certified by ASME. Therefore, there is no other organization who can certify the capacity for non-code stamped pressure devices. A motion was passed to ask the ACI Technical Committee to continue to review and develop a proposal for the CSA B51 Technical Committee.

## **1.7 Monitoring of Pressure Equipment in Cyclic Loading Service**

Cyclic loading service vessels are very important for the chemical industry. Most of those vessels are subject to high pressures and temperatures. Cycle life prediction is critical for safe operation. Maintenance, operation and equipment condition are all contributing factors to risk prediction. The ACI task group is continuing to work in developing an inspection and assessment guideline for fatigue life expectation.

The importance of cyclic design will be seen in the new code. The PED (Pressure Equipment Directive in Europe) will bring more cyclic operating condition design to the design requirements. There is a trend that, in the future, B&PV codes may not require a safety factor but the operating condition, for the risk-based design.

## **1.8 Updates of Jurisdictions**

British Columbia: Since April 1, 2004, the boiler & pressure vessel program under the B.C. Municipal Affairs has been privatized to a new organization. Inspectors are still governed by the regulations. Consultation is under way for a fee increase.

Alberta: (1) New Regulations will be in place early next year with 6,000 notifications, including the in-service inspector qualification requirements and inspection agency qualification. However, no organization has applied for the in-service inspection agency so far. (2) Over 200 inspectors have been certified with Certificates of Competency in Alberta. (3) In 2005, a handbook will be added for Regulations to allow users to better understand the regulatory requirements.

Saskatchewan: After 9 years, the jurisdiction is still working on a revision of the regulations. A draft was sent out on April 15 for consultation. The new Act and Regulations will be implemented in the 2<sup>nd</sup> or 3<sup>rd</sup> quarter of 2005. In terms of technical standards, there will be minimum changes. The changes will consist of: (1) combining the 7 current separate regulations; (2) requirements for design review and fitting, which is not required by ASME; (3) operator requirements and

the concept of periodic supervision; (4) capacity exemptions for low pressure boilers (there are presently about 6,000 low pressure boilers in the province); (5) requirements of welding procedures; (6) owner user system; (7) provision of a central design registration for fittings; (8) full recognition of welder certification from other provinces, and boiler operation licensing; (9) licensing every year for boilers and pressure vessels; (10) piping design requiring an engineer's approval; (11) allowing insurers/owner users to carry out their own inspections; and (12) pressure vessel design reviews may be done by the AIA.

Manitoba: No changes.

Ontario: 1) the offices have physically moved from the West Tower to the Central Tower. The telephone numbers have also been changed. 2) Significant organizational changes have occurred in recent months with the resignation of the CEO and the Director of Engineering/Certification. The Board of Directors has appointed Ted Dance as acting president. During the transition, Rick Mile has been appointed to a senior position to direct boiler & pressure vessel inspections and operations, and fuel operation. Mike Krone is now acting official in charge of the B&PV inspection operation. Recruitment will occur in the next 6 months. (3) New fee structure - developing a licensing regime-cost for boiler and pressure vessel operation. (4) TSSA will consult with CB&MUA with regard to inspection certificates and inspection fees. (5) Implementation of a Quality Control program for piping installation companies. A total of 435 applications have been received, but only 10% have been audited and approved. The rest will be completed by the end of 2004. (6) A search function has been developed on TSSA's website to allow people to identify the certified/authorized organizations for piping contractors, manufacturers, and alternation companies. (7) The website will be redesigned later this fall, after which it will be operated by an outside company. (8) TSSA is finalizing a strategy for regulating agricultural use boilers and pressure vessels on a risk base. Consultation has been conducted with agricultural and insurance companies.

Quebec: (1) The Building Act has existed for 10 years. Boiler and Pressure Vessel Engineering will be captured under the new Act, which is still under review by the legislature. (2) Tracking is taking place on the responsibility of owners and contractors (including inspection agency) for the operation and inspection of boilers and pressure vessels. Recognized inspection contractors could end up with this responsibility. Results will be reviewed this fall.

New Brunswick: No report.

Nova Scotia: the jurisdiction is still working on legislation issues. Status quo.

Prince Edward Island: No report.

Newfoundland: No report.

Northwest Territories: the jurisdiction has adopted the user agreement for power engineer mobility. Qualification is limited to 2 years.

Yukon Territories: No report.

Nunavut: Up to now, Nunavut has implemented the Northwest Territories Act. The legislature has passed its own ACT, which includes jurisdictions for boilers &

pressure vessels, elevators, fuel and operating engineering. The new Regulations will be implemented soon.

HRDC: This agency is focusing on the extension of the regulations, such as marine, aviation and rails, but nothing in boilers and pressure vessels.

National Energy Board: (1) A letter will be sent to ACI for full membership. (2) In its current scope, the NEB only regulates pressure vessels, not including boilers, in inter-provincial pipelines. It is difficult to regulate the processing plants. Therefore, the NEB is now working with HRDC in this matter to include boilers.

Canadian Nuclear Safety Commission (CNSC): Under the new QC program, the inspection of boilers and pressure vessels in the nuclear stations (under federal law) will be audited. After 7 years, a new contract has been signed between CNSC and TSSA with a new model in which the insurance inspections on boilers and pressure vessels can only be signed off by TSSA. CNSC intends to introduce the provincial regulations to the operation and inspection of boilers and pressure vessels. Under an agreement between the Federal and Ontario jurisdictions, the boiler and pressure vessel inspection of the Nuclear Stations in Ontario should follow the Ontario Safety Act. The inspection in the Quebec and New Brunswick should follow Part V of the Federal Act.

### **1.9 Updates on National Board of Boiler and Pressure Vessel Inspectors**

- Starting on January 1, 2005 the National Board will require (1) all Authorized Inspection Agencies performing new construction inspections to comply with NB360 (Criteria for Acceptance of Authorized Inspection Agencies for New Construction), and (2) all Authorized Inspection Agencies performing in-service inspections to comply with NB369 (Qualifications and Duties for Authorized Inspection Agencies (AIAs) Performing In-service Inspection Activities and Qualifications for Inspectors of Boilers and Pressure Vessels). If the AIA can not meet the requirements, the National Board will not renew the NB Commissions for the Authorized Inspectors under the AIA.
- The National Board "Rules for Commissioned Inspectors", NB-263, was revised in May, 2004 with requirements for continuing education for all NB commissioned inspectors. These requirements will make the B&PV inspection profession no different from other professional and occupational groups, such as professional engineers, medical doctors and other safety disciplines.

Paragraph 2.4.3 of NB-263 Rev 12 states that:

"Each National Board Commissioned Inspector, at least once every three years, shall either attend a National Board seminar or receive other instruction related to inspections. The instruction may be in any format, e.g., classroom, home study, or web-based. The topics may include any topic of relevance to the inspection process, such as new methods, products, materials, technology or changes to construction or repair codes."

The National Board intends to implement these requirements as follows: "Starting in October, 2005 with the distribution of the National Board Commission renewals, the National Board will ask each employer to provide a list of such continuing education for each inspector applicable to the current year. Training records will be maintained for each inspector. In mid-2006, the NB will begin notifying AIA's of any inspectors in their employ for which employer has not reported such education. Beginning with October 2006 renewals for the year 2007, inspectors who have not reported (via their employer) having completed such continuing education will not have their commissions renewed."

### 1.10 Review of 2003 Incidents in Canada

The incidents, related to boiler and pressure vessel components incurred in 2003 in the United States and Canada, have been reported in the National Board Bulletin. Based on the reports from 8 Canadian Jurisdictions, 46 out of a total of 58 jurisdictions of the National Board members and 30% response from authorized inspection agencies, the results are summarized in the following table:

| Type  | Canada | United States | Total |
|---|--------|---------------|-------|
| Power Boiler                                      | 13     | 92            | 105   |
| Heating Boilers-Steam                             | 8      | 601           | 609   |
| Heating Boilers-Water (includes hot water supply) | 4      | 684           | 688   |
| Unfired Pressure Vessel                           | 35     | 52            | 87    |
| Total   | 60     | 1,429         | 1,489 |

The statistical data from the table indicates that the incident number occurring in Canada was only about one tenth in average cost, and one twentieth in percentage of the total equipment numbers of the United States.

There is also a concern that these numbers do not reflect the actual incidents due to the lack of reporting.

### 1.11 2004 Accident Reports by Jurisdictions

No major accidents were reported, except for:

**Alberta:** There were two incidents with fatality: 1) Due to the misuse of valve material and low temperatures, the failure of a large ball valve on the water column blowdown line on a boiler in a power utility plant killed one person; 2) In a chicken processing plant, a pipeline failed in a steam header, resulting in a fatality and a huge financial loss. The bulletins on these two incidents can be found on the ABSA website.

**British Columbia:** A boiler blew up in a school. Failure of a low water cut-off device and a weld defect could be the major contributing factors. No fatality was reported.

**Quebec:** There were a few rupture failures in a specific type of solid fuel boilers. Investigations are still in progress.

**Ontario:** There were about 10 incidents in total, but no fatalities or injuries were reported.

## **1.12 Liaison Report**

### **(1) ASME Boiler and Pressure Vessel Codes**

- The ASME Section VIII Div. 2 draft is now under review with additional work being carried out. There are a total of eight Phase 2B projects, and six of them received strong support from the Project Steering Committee. The six projects are: (a) guaranteed strength properties, (b) extend time-independent range for low-Cr alloys for heavy walled vessels, (c) extend fatigue rules to 900°F for low-Cr alloys for heavy walled vessels, (d) Complete nozzle design rules, (e) Welded joint design fatigue rules and (f) Complete evaluation of European rules for cold forming strain and calculations. The two projects, which did not receive support, are: (1) new design factor on yield stress and (2) analytical evaluations of PWHT and residual stresses.
- Metrication of the Boiler and Pressure Vessel Code with the Code book being published in both metric and traditional units in the same a single book with the exception of Section II D.
- The CI (Certified Inspector) is formally introduced in all Code Sections. It was first introduced in Section IV.
- Section XII is being published, but not the part respecting pressurized cargo transport.
- System design to remove the use of PRD (Pressure Relief Device)
- Mandatory use of UHX for Code stamped units
- Section VIII Div. 1 Appendix 2 and Section VIII Div. 2 Appendix 3 – Incorporate the flange rigidity indexes as a mandatory requirement
- QOC - Non-mandatory appendix for operation and maintenance of vessels with QOC is included in 2004 Edition Section VIII

### **(2) CSA Z662 Oil and Gas Pipelines**

- The quick open closure is required to be tested before installation and application to prevent the valve from becoming stuck. The Code Committee is working on a combination of bleed valve and operating procedure.

- Revisiting the steam pipeline requirements, plugging in the vessels, types of surface –making some changes per requirements of B31.3

### **1.13 Precaution on Air Receivers for Home Use**

Air receivers/pressure vessels used in home owners' garages are often found with nameplates that cannot be read, or there is no code compliance. This potentially poses a threat to public safety. A proposal is to take some cases to the American Accreditation Meeting in September 2005.

### **1.14 2004 Meeting**

The ACI 42<sup>nd</sup> Annual Meeting will be held on August 8 and 9, 2005 in Saskatoon, Saskatchewan.