

ABSA THE PRESSURE NEWS

Alberta Boilers Safety Association

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ACI / CSA B51 AND B52 ANNUAL MEETINGS

The 39th annual meeting of the Association of Canadian Chief Boiler and Pressure Vessel Inspectors (generally referred to as the Association of Chief Inspectors or ACI) was held in conjunction with the Canadian Standards Association (CSA) B51 and B52 Standards Technical Committees' meetings in Edmonton on August 12-16, 2002.

Observers were able to hear first hand from the Chief Inspectors and various representatives, the issues and challenges they face in the various jurisdictions across the nation. We also witnessed a strong desire, commitment and willingness to work together to protect the public regarding pressure equipment safety and endeavor to move toward uniform pressure equipment standards and regulations.

All the comments we received regarding the occasion, the organized events and Alberta's hospitality were complementary and positive.

ABSA wishes to thank the many organizations who supported our planning and contributed financially to the cost of the many functions that help made the conference such a success.

ABSA was established with the involvement of stakeholders in partnership for the enhancement of pressure equipment safety. On this occasion, we are proud of our partnership in hosting the meetings here in Edmonton, promoting pressure equipment standards development and uniformity of standards application in Canada.

We in Alberta appreciate the dedication and hard work of these committees and look forward to the next annual meetings, August 11th to 15th, 2003 in Fredericton, New Brunswick.

FITNESS FOR SERVICE ASSESSMENTS

Fitness for service (FFS) assessment is increasingly being used as a means to assess if damaged equipment may continue operation for some desired length of time. Some typical FFS assessments include reviews on pressure equipment which has experienced crack-like flaws, fire damage, pitting corrosion, general or local metal loss, blisters and laminations, weld misalignments, shell distortion (out of roundness) and creep damage.

API 579 is a well known published recommended practice since the issuance of which, industry gained a useful tool to analyze, evaluate and monitor damaged pressure equipment. API 579 provides a comprehensive consensus of industry-recommended practices for making assessments for quantitative engineering evaluations and for demonstrating the structural integrity of in-service pressure equipment containing flaws. We would like to note here that while API 579 is a useful reference publication, it should be treated strictly as such and in all situations, operating pressure equipment must comply with the Safety Codes Act and regulations and the adopted codes and standards.

For all FFS analyses, similar to other engineering approaches such as provided for under Para U2(g) of Section VIII Div. 1 of ASME Code, care must be exercised to ensure that basic engineering principles are adhered to and the intent of the reference publication is understood and followed. Specifically with reference to FFS analyses, we would like to highlight some concerns:

A significant concern is the use of a plain-strain critical stress intensity or fracture toughness, K_{1C} , whose value has not been reconciled with the environment under consideration. (e.g., API 579 requires material toughness measured in the

environment under consideration) The problem quite often, is further magnified when such values are used for cracks in welded joints. The use of a K_{1C} whose value has not been determined in the correct environment, requires extreme caution and must be based upon some reputable studies. In these circumstances, the K_{1C} values presented as being conservative are not valid unless substantiated and justified. Industry's problem in finding authoritative data for their application needs to be acknowledged; however, given the fact that the equipment is damaged and may have serious defects, the industry cannot be absolved of the responsibility of using reliable assessment methods.

Other concerns:

- Particularly where cracks are being considered, the methods used to determine the state of stress in a component should include capabilities to compute stress distribution based on loading conditions and structural configuration.
- Defects must be accurately located and sized. This requires the use of appropriate NDE techniques by competent examiners.
- Crack growth analysis in stress corrosion cracking, HAC and fatigue regimes require 'increment of crack growth for a given cycle, mm/cycle' or 'increment of crack growth per unit time, mm/time' assessment. Unless authoritative data is available that had been arrived at from tests done in environmentally similar conditions, actual tests would be required to determine material data for crack growth calculations. A cracked vessel in a stress corrosion cracking environment, that is subjected to cyclic loading as well,

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PIPING SYSTEMS CONSTRUCTED OUTSIDE ALBERTA

The purpose of this article is to highlight the differences in inspection and certification requirements for pressure piping to be operated in Alberta, that are dependent upon where the pressure piping is constructed. It is important to note that the requirements discussed in this article for quality control system certification and/or inspection by an Authorized Inspector do not minimize or negate the responsibility for inspection of the pressure piping that is placed upon the owner, as provided for under the applicable ASME pressure piping code.

In Alberta, organizations constructing, modifying or repairing pressure piping are required to conduct these activities in accordance with a quality control system. This requirement is contained in paragraph 32(2) of the Alberta Design, Construction and Installation of Boilers and Pressure Vessels Regulations and the Canadian Standards Association CSA B51 Boiler, Pressure Vessel, and Pressure Piping Code, clause 4.9.1.1. The implementation of this quality control system is verified and periodically audited by an ABSA Safety Codes Officer/Authorized Inspector. When this requirement is met, pressure piping constructed in Alberta (with the exception of Boiler External Piping) is not required to be inspected by an Authorized Inspector. An Authorized Inspector is defined as an Inspector employed by a Canadian jurisdiction or, where the jurisdiction does not inspect and outside of Canada, an ASME accredited Authorized Inspection Agency (reference CSA B51, clause 4.8.1).

Irrespective of the location of construction Boiler External Piping, as defined in ASME B31.1 paragraph 100.1.2, requires inspection by an Authorized Inspector in accordance with ASME B31.1 and ASME Section I.

The inspection requirements for pressure piping systems, to be operated in Alberta, that are constructed outside of Alberta are based upon paragraph 32(3)(c) of the Alberta Design, Construction and Installation of Boilers and Pressure Vessels Regulations. This paragraph

requires evidence that the pressure piping system is inspected and tested in the same or substantially the same way that it would have been had it been constructed in Alberta. In lieu of the quality control system that is verified and audited by the jurisdiction, Alberta relies upon an Authorized Inspector to verify similar quality requirements are met.

For pressure piping systems (excluding Boiler External Piping) constructed outside Alberta, the inspection and certification requirements are as follows:

1. For pressure piping constructed in another Canadian jurisdiction with similar quality control system certification requirements, inspection of the piping system by an Authorized Inspector is not mandatory. Manufacturers holding current certification of their quality control system for pressure piping construction issued by the Canadian jurisdiction would document the pressure piping on a Construction Data Report for Pressure Piping Systems (ABSA form AB-83 or equivalent, as illustrated in CSA B51 Appendix E, Figure E5), without the signature of an Authorized Inspector in the certificate of inspection portion of this Data Report. As in Alberta, the manufacturer and the owner's inspector are required to sign the Construction Data Report for Pressure Piping Systems to certify compliance and inspection of the pressure piping.
2. Pressure piping constructed in another Canadian jurisdiction without similar quality control system certification requirements or in any other location outside Alberta, shall be inspected by an Authorized Inspector. The Manufacturer or Contractor is required to certify, on a Construction Data Report for Pressure Piping Systems Manufactured Outside Canada (ABSA form AB-83F used outside of Canada and within Canada when there is no quality control system certification by the jurisdiction) that the subject

pressure piping was constructed in accordance with the Province of Alberta Safety Codes Act and Regulations, and the applicable ASME pressure piping code. The Authorized Inspector is required to inspect the piping to an extent allowing him to state that, to the best of his knowledge and belief, the piping has been constructed in accordance with the applicable ASME pressure piping code. The requirement for the owner's inspector to sign the Construction Data Report for Pressure Piping Systems is waived when Authorized Inspector involvement is mandated.

Changes to the Pressure Welders' Regulations

The current Pressure Welders' Regulations (AR 229/75) will be replaced by the new Pressure Welders Regulation (AR 169/2002) as of October 1, 2002.

The new regulation establishes a new certificate of competency for welding examiners, eliminates the Grade A Pressure Welder Certificate of Competency, sets out a transition period for the change to the new welding examiner program, and makes several minor changes to other existing requirements. The minor changes include requiring more information to be included on the performance qualification cards given to pressure welders and extending the length of time an out-of-province welder can operate in Alberta under a temporary certificate of competency.

The changes are the result of industry consultation to promote more effective and efficient pressure equipment safety program delivery. Details of program implementation as a result of the regulation changes will be available on the ABSA internet web-site.

ABSA UPDATE SEMINAR

December 3 - Edmonton
December 5 - Calgary

It's that time of year again! The 2002 Addenda to the ASME Boiler and Pressure Vessel Codes (the 2001 Edition) have been published, and ABSA is planning its annual presentation on the effects of the Code changes on designers, quality control inspectors and other users of the Codes.

The meetings have been set for December 3 at the Days Inn in Nisku, and December 5 at the Blackfoot Inn in Calgary.

Once again, we will take this opportunity to discuss findings from recent design surveys and ASME reviews to highlight areas that are causing problems for you and for us.

As seating may be limited, we would request that the number of attendees from any one company initially be restricted to two. More openings may become available closer to the meeting dates. Registrations will be accepted on a first-come, first-served basis. Applications may be obtained after September 15 from your nearest ABSA office or from our website. The deadlines for registration will be Nov. 26 for Edmonton and Nov. 28 for Calgary .

EMPHASIS ON "EDUCATION"

Over the past decade there have been many significant changes to the way pressure equipment integrity is managed in the Province of Alberta. Large and medium sized industrial organizations have made great strides in developing integrity management systems that go far beyond what was in place 10 years ago. Smaller industrial organizations are improving quickly. Groups performing repairs and alterations to pressure equipment and construction of pressure piping have made great progress with the implementation of individual quality systems. Most organizations constructing pressure vessels and boilers continue to maintain a high degree of quality throughout the manufacturing process.

ABSA's vision is "To Lead in Pressure Equipment Safety" and we do this by working with our stakeholders to ensure that pressure equipment is constructed and operated in a manner that protects public safety. It is our intention to move forward with new initiatives to enhance this close working relationship.

An area of opportunity that has become evident recently is the need for educational programs for the general public and especially our

stakeholders. Our primary focus will be on training seminars that are most appropriate to ABSA; where there is an unfulfilled training need that could best be provided by the experience and qualifications of ABSA personnel. The first of these is the Pressure Equipment Safety Legislation seminar that was recently presented in Edmonton. There has been great interest in the seminar and the September 24 session was filled immediately after it was scheduled.

Other training sessions are being considered for development particularly in the area of Quality Control Programs and Quality Management Systems. One such seminar is a comprehensive program for developing and implementing a Quality Control Program for construction of pressure piping systems. There are over 400 companies across the province with such programs. An effective training seminar would be an excellent way to better equip the people who are involved in quality system elements of programs such as these.

Training seminars will be announced in coming issues of the Pressure News. If you have a suggestion for a training seminar that should be offered by ABSA, please let us know by email house@albertaboilers.com.

HEATING BOILERS PREVENTIVE MAINTENANCE

With the heating season fast approaching, now is probably the best time to start readying your heating boiler(s) for the long winter season.

With Low Water Cut-Offs and Furnace Explosions continuing to be the contributing causes of accidents, and, for the most part, being so easily avoidable with a little preventative maintenance, it is probably a good time to go over a template for responsible boiler operation.

Before placing a boiler into service, the entire system should be checked over by certified personnel. At the same time it wouldn't hurt to review the following:

- ◆ Operating Manuals and Procedures
- ◆ Maintenance During Summer Lay-up
- ◆ Start-up Checks after the Summer Lay-up
- ◆ Normal Start-up

Now is the best time to do this. Waiting till your boiler is needed is usually a poor time to obtain the services you may need.

Note: For a copy of ABSA brochure AB-501 "Starting Heating Boilers after Summer Lay-Up", or any other information, please contact ABSA at any one of our office locations or visit our website at www.albertaboilers.com.

SUBMISSION OF DATA REPORTS TO THE NATIONAL BOARD

We have received notice from the National Board regarding the time frame for submitting data reports. The following is an excerpt from the National Board notification:

“For many years, the National Board has permitted manufacturers to specify, within their quality control programs, the time frame in which data reports would be submitted to the National Board in order to complete the registration process. An acceptable time frame was as much as 90 days following the Authorized Inspector’s certification of the data

report. Effective immediately, we have reduced the maximum permissible time frame to 60 days.

As such, any quality control manual with a specified time frame exceeding 60 days must be revised to reflect this new requirement. Please remember that your Authorized Inspection Agency representative must accept all changes to your quality control manual.”

All companies that register data reports with the National Board must take note of the requirement.

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complicates the analysis even further.

- Capabilities of the equipment, suitability of the NDE techniques and confirmation of competency of the technicians can not always be assessed from the reports of in-service monitoring.

Selection of knowledgeable, reputable consultants who are experienced in conducting FFS assessments for pressure equipment is absolutely essential.

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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
#204, 9913 Biggs Avenue
Fort McMurray, Alberta T9H 1S2
Tel (780) 714-3067
Fax (780) 714-2380

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

Lethbridge
#360, 515 - 7th Street North
Lethbridge, Alberta T1J 2G8
Tel (403) 381-5465
Fax (403) 327-2483

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
Please note that our St. Paul office has been closed. All services will be provided through the Edmonton Office.

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

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