The National Board: An Overview

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Assistant Executive Director, Administrative

The National Board of Boiler and Pressure Vessel Inspectors
The National Board - Topics for Discussion

- Getting to Know the National Board
  - Background and History

- Intersections with Industry
  - Credentialing
  - Registration of Pressure Equipment
  - National Board Inspection Code (NBIC)
  - Training
  - Accreditation of Organizations
  - Testing and Certification of Pressure Relief Devices
  - Violation Tracking
Getting to Know the National Board
Core Value: Pressure Equipment Safety

Membership in the National Board includes Chief Boiler Inspectors representing most States, Provinces and Territories of Canada, and some major cities in the United States.

Currently, there are 60 members of the National Board.
Getting to Know the National Board
Core Value: Pressure Equipment Safety

From its beginning in 1919, the National Board has been dedicated to the safety of boilers and pressure vessels. The National Board serves the boiler and pressure vessel industry by promoting uniformity in:

- administration and enforcement of laws, rules and regulations
- training, qualification and examination of Inspectors.
Getting to Know the National Board
Core Value: Pressure Equipment Safety

Since 1945, the National Board has promoted a standard for the installation, inservice inspection and repair and alteration of boilers and pressure vessels.

- The National Board develops and publishes the National Board Inspection Code (NBIC).
Getting to Know the National Board
Core Value: Pressure Equipment Safety

The National Board also provides:

- registration of boilers and pressure vessels
- testing and certification of pressure relief devices
- information and statistics related to boiler and pressure vessel inservice Inspection.
Intersections with Industry

Credentialing of Individuals

- National Board is probably best known for its Commissioning of Inspectors
  - The first commission was issued in 1920

- Commissioned Inspectors are employed by Authorized Inspection Agencies, Owner Users, Jurisdictions and Federal Inspection Agencies

- The National Board provides training and credentialing for Certified Individuals, who are employees of Manufacturers.
Intersections with Industry
Credentialing of Individuals

- The National Board provides a Pressure Equipment Inspector (PEI) Program for individuals who are not eligible for a Commission (because of their employment), but have a need for pressure equipment inspection methods.

Organizations Involved

- Authorized Inspection Agencies (AIA)
- Manufacturers
- Owner Users, Federal Inspection Agencies
- General, Individuals
- Jurisdictions
# Intersections with Industry

## Credentialing of Individuals

<table>
<thead>
<tr>
<th>Organization</th>
<th>Commissioned Inspectors</th>
<th>*Certified Individuals</th>
<th>PEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIA’s (72)</td>
<td>3183</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturers (106)</td>
<td></td>
<td>1174</td>
<td></td>
</tr>
<tr>
<td>Owner Users</td>
<td>491</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General, Individuals (49)</td>
<td></td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Jurisdictions (60)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Canadian (11)</td>
<td>287</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• United States (49)</td>
<td>348</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Total**                    | **4309**                | **1174**                | **49**

*Required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for certain products: Cast Iron Boilers, Cast Aluminum Boilers, Unfired Miniature Vessels, Pressure Relief Devices, Reinforced Thermosetting Plastic, Electric Boilers*
Intersections with Industry

National Board Registration

The National Board is also very well known for the Registration of Pressure Equipment.

- At the completion of the manufacturing of each boiler or pressure vessel, the finalized Manufacturer’s Data Report is submitted to the National Board for permanent retention
  - A Manufacturer’s Data Report contains vital information about each item including: ASME Code, material types, sizes, shapes, design, manufacturer’s certification and Inspector’s signature.

- The Manufacturer’s Data Report is always available for use by jurisdictions or repair organizations even if the manufacturer becomes inactive.
Intersections with Industry

National Board Registration

- To date, over 55 Million Objects have been Registered

- Over 5,500 manufacturers are Authorized to Register
  - Over 900 manufacturers use Electronic Data Transfer (EDT)
    - 31 Canadian Manufacturers
    - 137 International Locations
  - 12 Million Objects have been Registered with EDT

Industries Involved: Manufacturers of Boilers, Pressure Vessels
Repair Organizations
Intersections with Industry
National Board Registration

National Board Registration vs Canadian Design Registration

United States – National Board Registration of Data Reports

Purpose
- Provides history
- Jurisdictional/Owners requirements
- Permanent record for owners, manufacturers, repair organizations

Process
- Manufacturer/Repair Organization submits a printed copy of the original to the National Board
- Electronic Data Transfer (EDT)

Results
- Over 55 million Data Reports on file
Intersections with Industry

National Board Registration vs Canadian Design Registration

Canadian Design Registration

Purpose

- Provides oversight of pressure equipment design
- Meets Jurisdictional requirements

Process

- Manufacturer submits design package to jurisdiction for review/acceptance
  - Each design, not each item
  - Applies to Canadian and all other manufacturers
  - Some level of reciprocity/recognition between provinces.
Intersections with Industry

Training

The National Board is committed to providing excellence in Training

▪ Both Classroom and Online Training
  ▪ 9 Classroom Courses (1-2 weeks)
  ▪ 21 Online Courses
    – ASME Code Reading/Math
    – Controls and Safety Devices

▪ Most courses are required for either initial qualification or continuing education for Commissioned Inspectors, Certified Individuals and PEI’s.

Impact

In the past year:

Classroom Students: 641
Online Students: 3150
Number of Employers: Over 1000
Intersections with Industry

Training

Organizations Involved

- Authorized Inspection Agencies
- Jurisdictions
- Repair Organizations
- Owner Users
- Manufacturers
- General Industries
The National Board’s Inspection Training Room

We are continually adding equipment to enhance the overall training experience.
Intersections with Industry

Accreditation of Organizations

Accreditation Programs

- R Stamp (Repair of Boilers, Pressure Vessels)
- VR Stamp (Repair of Pressure Relief Devices)
- NR Stamp (Repair/Modification of Nuclear Components)
- AIA’s
- Owner User Inspection Organizations (OUIO)
  - Canada
  - United States
- Federal Inspection Agencies

Description

To be accredited, the organization must have a written Quality Program approved by the National Board. The implementation of the Quality Program is verified every three (3) years by a review at the organization’s place of business.
## Intersection with Industry
### Accreditation of Organizations

#### Organizations Involved
- Repair Organizations (R, VR, NR)
- AIA’s
- Owner Users
- Federal Inspection Agencies

<table>
<thead>
<tr>
<th>Number of Companies Accredited</th>
<th>US</th>
<th>Canada</th>
<th>Other Countries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>R Stamp</td>
<td>VR Stamp</td>
<td>NR Stamp</td>
<td>AIA</td>
<td>OUIO</td>
</tr>
<tr>
<td>US</td>
<td>3500</td>
<td>222</td>
<td>29</td>
<td>37</td>
</tr>
<tr>
<td>Canada</td>
<td>153</td>
<td>17</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Other Countries</td>
<td>1090</td>
<td>17</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>4743</td>
<td>256</td>
<td>34</td>
<td>72</td>
</tr>
</tbody>
</table>
Intersections with Industry
Accreditation of Organizations

- Repair Organizations (4743)
- Authorized Inspection Agencies (72)
- National Board Accreditation
- Owner User Inspection Organizations (75)
- Federal Inspection Agencies (2)
Intersections with Industry
Testing/Certification of Pressure Relief Devices (PRD)

Industries

- Valve Manufacturers
- Valve Repair Organizations

Description

- The National Board performs Capacity Certification for each model of PRD for each Manufacturer and/or PRD’s that have been repaired.
  - Three test mediums: Air, Water, Steam
- Pressure Relief Device Certifications (NB-18) – Complete listing of each valve model’s capacity
- One of 9 Test Labs
  - The National Board is an ASME Designee and Certifies all other Test Labs.
Intersections with Industry
Violation Tracking

Description

- Number of Inservice Inspections and Number of Violations, by specific categories, are voluntarily reported to the National Board monthly by the Jurisdictions (about 35 currently)
- These reports identify problem areas
- National Board reports annually in its technical publication (Bulletin)
- This data reflects the effectiveness of the inspection process
- Feedback from violations is used for continuing education of inspectors
### 2014 Pressure Equipment Violation Findings

<table>
<thead>
<tr>
<th>Type of Pressure Equipment</th>
<th>Total Number of Inspections</th>
<th>Total Number of Violations</th>
<th>Percent in Violation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Pressure/High Temperature Boilers</td>
<td>72,279</td>
<td>5,129</td>
<td>7.1%</td>
</tr>
<tr>
<td>Low-Pressure Steam Boilers</td>
<td>49,546</td>
<td>8,570</td>
<td>17.3%</td>
</tr>
<tr>
<td>Hot Water Heating/Supply Boilers</td>
<td>266,992</td>
<td>35,743</td>
<td>13.4%</td>
</tr>
<tr>
<td>Pressure Vessel</td>
<td>233,081</td>
<td>7,273</td>
<td>3.1%</td>
</tr>
<tr>
<td>Potable Water Heaters</td>
<td>52,089</td>
<td>5,483</td>
<td>10.5%</td>
</tr>
<tr>
<td>Totals</td>
<td>663,987</td>
<td>62,198</td>
<td>9.4%</td>
</tr>
</tbody>
</table>
## 2014 Safety Relief Device Violation Findings

<table>
<thead>
<tr>
<th>Violation Type</th>
<th>High Pressure / High Temp. Boilers</th>
<th>Low Pressure Steam Boilers</th>
<th>Hot Water Heating / Supply Boilers</th>
<th>Pressure Vessels</th>
<th>Potable Water Heaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inoperable</td>
<td>130</td>
<td>132</td>
<td>972</td>
<td>443</td>
<td>229</td>
</tr>
<tr>
<td>Device Missing – Not Installed</td>
<td>107</td>
<td>42</td>
<td>335</td>
<td>648</td>
<td>62</td>
</tr>
<tr>
<td>Improper Installation</td>
<td>289</td>
<td>635</td>
<td>2995</td>
<td>1164</td>
<td>599</td>
</tr>
<tr>
<td>Leaking</td>
<td>151</td>
<td>257</td>
<td>1882</td>
<td>108</td>
<td>199</td>
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<tr>
<td>Incorrect Capacity</td>
<td>47</td>
<td>118</td>
<td>961</td>
<td>370</td>
<td>186</td>
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<tr>
<td>Missing Nameplate</td>
<td>37</td>
<td>40</td>
<td>234</td>
<td>288</td>
<td>59</td>
</tr>
<tr>
<td>Incorrect Set Pressure</td>
<td>4</td>
<td>8</td>
<td>79</td>
<td>237</td>
<td>77</td>
</tr>
</tbody>
</table>
Thank You!

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