Thank you for your interest in The National Board of Boiler and Pressure Vessel Inspectors, the worldwide leader in pressure equipment safety.

The National Board is comprised of chief boiler and pressure vessel inspectors representing states, cities, and provinces enforcing pressure equipment laws and regulations. Created to prevent death, injury and destruction, these laws and regulations represent the collective input of National Board members.

During the past ten years, over six million pressure equipment inspections were performed in North America. Of that total, there were more than 556,000 violations, or more than 556,000 potential accidents that were prevented: almost one out of every ten pieces of equipment inspected.

For the general public, the importance of thoroughly trained and specially commissioned inspectors is of critical significance: every person in the civilized world comes within close proximity of pressure equipment several times each day.

For more than 90 years, the not-for-profit National Board has been emblematic of the highest quality safety standards. It is a responsibility we proudly assume without reservation.

It is my hope the information in this guide will effectively communicate the integrity and dedication of a truly outstanding fraternity of professionals: the men and women of The National Board of Boiler and Pressure Vessel Inspectors.

For additional information on the National Board, please accept my personal invitation to visit our Web site at nationalboard.org.

Sincerely,

David A. Douin
Executive Director
Steam drove the industrial revolution during the mid-19th century.

At this point in history, conversion of water was considered both good and bad: good in the sense it powered industrial progress, and bad in that boilers used in the conversion process employed new and unproven technology.

According to ASME:

“For want of reliably tested materials, secure fittings and proper valves, boilers of every description, on land and at sea, were exploding with terrifying frequency...Engineers could take pride in the growing superiority of American technology but they could not ignore the price of 50,000 dead and two million injured by accidents annually.”

As catastrophic casualties continued into the early 20th century, ASME developed its boiler code in 1915.

While the code provided a solid reference of construction standards, it lacked an important component: the authority to regulate. This was complicated by existence of local and state jurisdictions having their own codes and standards. The result was a patchwork of confusion having no basis in consistency.

Enter the National Board. On December 2, 1919, Ohio Chief Inspector Carl Myers met with chief inspectors from other jurisdictions to discuss creation of a board comprised of inspector representatives from each of the existing jurisdictions.

Hence, the genesis of The National Board of Boiler and Pressure Vessel Inspectors.
There are no longer 50,000 deaths caused by pressure equipment each year.

However, if not properly maintained and inspected, boilers and pressure vessels can be lethal, and in some instances, catastrophic.

For example, rupture of a typical 30-gallon home hot-water tank generates the equivalent of 0.16 pounds of nitroglycerin. Translated, that is enough force to send the average car (weighing 2,500 pounds) to a height of nearly 125 feet - or more than the elevation of a 14-story apartment building starting with a lift-off velocity of 85 miles per hour.

When a similar hot-water tank explodes, its volume expands approximately 1,600 times. That is comparable to taking a 5-gallon trash can and causing it to fill a 12’ x 11’ living room with an 8-foot ceiling in a split second.

A large industrial boiler has the capacity to level an entire city block.

While not well-known to the general public, National Board-commissioned boiler and pressure vessel inspectors are sentries of pressure equipment safety.
Every year the National Board hosts hundreds of boiler and pressure equipment professionals from around the world.

From entry-level apprentices to company presidents, their objectives are the same: to include National Board training as an integral part of their résumés.

Attendees are taught by a faculty of outstanding professionals actively involved with codes and standards development - individuals on the cutting edge of pressure equipment technology and safety.

National Board students take an active approach to learning. Class sizes are limited for more interaction and individualized attention. Only the very latest equipment and instructional aides are employed alongside hands-on experience, as appropriate.

The renowned National Board training facility is located on an attractive 16-acre wooded campus in Columbus, Ohio. Here, students are given ample opportunity to interact, exchange experiences, and develop new industry contacts.

In most cases, the National Board can conduct its training courses at any company location. Additionally, custom courses can be developed to meet an organization’s training needs.

National Board training reflects credibility and reputation as a third party evolving from the regulation and enforcement side of the boiler and pressure vessel industry.
Registering a pressure-retaining item with the National Board requires certain uniform quality standards be achieved certifying the manufacturing, testing, and inspection process.

This certification acknowledges to owners, users, and public safety jurisdictional authorities registered items have been inspected by National Board-commissioned inspectors and built to required standards.

Purpose of National Board registration is to promote safety and document specific equipment design and construction details for future use. It takes place when the manufacturer submits data reports to the National Board for items stamped with National Board numbers.

A data report is similar to a birth certificate. Among the information included are: date of manufacture, materials of construction, specific details regarding design, and certification statements by both the manufacturer and inspector. Registration is required by most US jurisdictions for installation of pressure equipment. Registered pressure relief devices are stamped with a National Board NB Mark.

In 1999, an interactive document management system was launched called EDT (electronic data transfer). EDT transformed the registration process by simplifying and expediting the submission and access of data reports through the Internet. With no software to purchase and install, electronic registration results in considerable savings involving paper, postage and storage costs.

For the manufacturer, data reports provide an essential form of customer service over the life of the equipment - a value-added quality of significant worth to the owner or user.

Since the process began in 1921, there have been over 45 million data reports registered with the National Board.
National Board Pressure Relief Department and Testing Laboratory

Each year, representatives from around the world travel to the National Board Testing Laboratory north of Columbus, Ohio.

The purpose: to accurately measure the performance of their company’s pressure relieving devices.

Tested products undergo independent certification of function and capacity. A pressure relief device meeting new construction standards and specifications permits the manufacturer to apply the National Board NB mark to new equipment.

Capacity certification signifies equipment designs have been thoroughly reviewed. Additionally, it indicates the quality system has been audited and the equipment meets internationally recognized standards for preventing potential overpressure conditions in boilers and pressure vessels.

Testing is also performed to evaluate a company’s ability to properly repair pressure relief valves. Accredited repair organizations qualify to stamp the National Board VR symbol on repair nameplates.

The National Board lab supports industry research and development by testing new designs, serving as a comparative standard for other laboratories, validating new concepts, and - upon jurisdiction request - assist in boiler and pressure vessel incident investigations.

Pressure relief valves involved in accidents are tested to determine if activation failure contributed to the cause.
Liquid valve testing: one of more than 1,900 tests performed annually.
Repairs and alterations are essential in maintaining pressure equipment integrity. These can vary from simple welded repairs to the repair of safety relief valves.

The National Board administers three accreditation programs for organizations performing repairs and alterations. Accreditation involves a thorough evaluation of the organization’s quality system manual including a demonstration of its ability to implement the system. Authorized repair organizations are issued symbol stamps for application to equipment nameplates signifying the integrity of work performed.

The R Certificate of Authorization is issued to an accredited organization performing repairs and alterations to pressure-retaining items. The VR Certificate of Authorization is provided for repairs and modification to pressure relief devices (the R and VR stamps are required in a number of U.S. jurisdictions.) The NR Certificate of Authorization is issued for repairs and replacement of nuclear components.

All National Board code symbol stamps are registered trademarks of The National Board of Boiler and Pressure Vessel Inspectors.
R Stamp: the mark of international quality and safety for pressure equipment post-construction repairs and alterations.
As flagship publication of the National Board, the National Board Inspection Code (NBIC) is a consensus document created by an evolving committee of pressure equipment professionals.

Distributed biennially, the NBIC provides rules, information, and guidance to manufacturers, jurisdictions, inspectors, repair organizations, owners-users, installers, contractors, as well as other individuals and organizations performing or involved in post-construction activities. THE OBJECTIVE: to provide uniform administration of rules pertaining to pressure equipment items.

The NBIC was first published in 1945 and is today the only standard recognized worldwide for in-service repair and alteration of boilers and pressure vessels.

Approved as an American National Standard (ANSI) in August 1987, the National Board Inspection Code has been adopted by a number of states and jurisdictions, as well as federal regulatory agencies, including the US Department of Transportation.

Proposed changes are made available for public review and comment thus allowing industry, academia, regulatory and jurisdictional agencies, and the public-at-large to contribute to NBIC development.

It is available in hard copy, flash drive, and through a subscription basis on the Internet.
National Board’s technical journal is distributed worldwide three times annually.

In addition to insightful articles of interest to the pressure equipment industry, the BULLETIN provides an up-close look at jurisdiction chief inspectors; timely updates on National Board member changes; helpful tips on equipment inspection, repairs and alterations; industry case histories; and a comprehensive listing of jurisdiction law and regulation amendments.

Readers also find technical perspective by National Board staff and guest columnists, a complete listing of offerings from the training department, upcoming General Meeting information, and the latest violations tracking data.

Unlike most other industrial publications, the BULLETIN’s full color, high quality format makes it a unique and essential reference for new and experienced professionals alike.

Those desiring a free subscription to the BULLETIN can register online by visiting the National Board Web site.

The National Board Web site at nationalboard.org is the pressure equipment industry’s premier information resource. And for good reason.

Not only is the site regularly updated with pressure equipment news, it serves as a virtual library for those seeking accurate, comprehensive insight on a wide variety of important industry issues.

Accessed in over 160 countries, pressure equipment professionals visiting the National Board site can look up laws and regulations for every North American jurisdiction, comment on proposed changes to the National Board Inspection Code, consult the latest training offerings, register for a course, take an online training class, access forms, electronically file data reports, order National Board publications and DVDs (many of which are posted on the site), search a comprehensive up-to-date listing of manufacturers and repair organizations, get to know National Board members, and much more.

Among the most popular new features of the Home Page is the BULLETIN ARCHIVE. Here, visitors can instantly search and read entire copies of past BULLETIN issues.

Most information available on the National Board Web site is free.
Consistent with its focus on education, the National Board annually offers two $6,000 scholarships to select college students meeting eligibility standards. Application period extends from September 1 to February 28.

These generous scholarships are available to the children, step-children, grandchildren, or great-grandchildren of past or present National Board Commissioned Inspectors (living or deceased). The scholarships are also available to children of past or present National Board employees (living or deceased).

To be considered, a student must be enrolled full time at an accredited U.S. or Canadian college or university, plan to be enrolled for the upcoming academic year, major in pressure equipment-related or closely related engineering discipline, possess a cumulative 3.0 GPA or higher (4.0 scale), and be either a U.S. or Canadian citizen.

A letter of recommendation from a current National Board member is also required.

The General Meeting is conducted each spring to address important issues relative to the safe installation, operation, maintenance, construction, repair, and inspection of boilers and pressure vessels.

Accomplished in conjunction with the American Society of Mechanical Engineers, as many as 750 attendees include boiler and pressure vessel inspectors, mechanical engineers, engineering consultants, equipment manufacturers, representatives of repair organizations, operators, owners and users of boilers and pressure vessels, labor officials, welding professionals, insurance industry representatives, and government safety personnel.

Focus of the week-long event is an exchange of expertise and technical insight shared by other attendees, as well as making contacts and participating in numerous industry and committee meetings.

General session presentations cover a wide range of pressure equipment topics such as safe operation, maintenance and repair, safety valves - as well as other unit components - testing codes and standards, risks and reliability, and training.