BULLETIN

FALL 2004 • VOLUME 59 • NUMBER 3

The National Board of Boiler and Pressure Vessel Inspectors was organized for the purpose of promoting greater safety by securing concerted action and maintaining uniformity in the construction, installation, inspection, and repair of boilers and other pressure vessels and their appurtenances, thereby assuring acceptance and interchangeability among jurisdictional authorities empowered to assure adherence to code construction and repair of boilers and pressure vessels.

The National Board *BULLETIN* is published three times a year by The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229-1183, 614.888.8320, *nationalboard.org*. Postage paid at Columbus, Ohio.

Points of view, ideas, products, or services featured in the National Board *BULLETIN* do not necessarily constitute endorsement by the National Board, which disclaims responsibility for authenticity or accuracy of information contained herein. Address all correspondence to the Public Affairs Department, The National Board of Boiler and Pressure Vessel Inspectors, at the above address.

Printed in the U.S.A. ISSN 0894-9611. CPN 4004-5415.

How-DEE! Minnie Pearl look-alike Kristi Cline welcomes visitors to the Grand Ole Opry for the 73rd General Meeting. More pictures on page 25.

Cover Story

Features

Departments

Celebrating the New NBIC

BY DONALD E. TANNER, EXECUTIVE DIRECTOR

On December 20, the 2004 *National Board Inspection Code* (NBIC) will be released. And while this triennial event may not seem overly significant, it still represents a milestone worthy of note.

But not because it is being launched just in time to celebrate its 60th anniversary. This new American National Standard edition will be substantially different than its earlier counterparts. Users will quickly note that numerical references are now metricized. In addition to the standard revisions, they will also discover a generous inclusion of new technical data, sections, and appendices.

Since 1945, the NBIC has been a living document that has humbly served as the bible to boiler and pressure vessel inspectors everywhere. Presently in use in more than 90 countries, worldwide acceptance is such that the National Board is exploring the translation of this publication into additional languages. With interest in the NBIC at a new plateau, a number of non-boiler/pressure vessel companies are looking to this document for application within their own industries.

Those of us who have witnessed its evolution over the years have marveled at the NBIC's resilience and utility. Notwithstanding the numerous changes that have taken place during this period, there are many, many more on the drawing board. Our biggest challenge between now and the 2007 edition will be to keep the NBIC to a manageable size while at the same time accommodating the many special needs of the boiler and pressure vessel industry.

Of course, no challenge has proved too great for the men and women who have been responsible for making the NBIC what it is today. I would be remiss in failing to acknowledge the outstanding and dedicated efforts of the countless NBIC Committee members who have, over the years, loyally and expertly crafted what I believe to be the most reliable and respected inspection code in the world.

How will the NBIC impact your business in the future?

If you don't know, now is the time to become involved in the NBIC process by either providing public comment on proposed code revisions regularly posted on the National Board Web site, or attending an NBIC meeting when it comes to your jurisdiction or region. (A listing of all scheduled future meetings is also available on the National Board home page.) Either way, your participation in this critical code-developing procedure ensures a publicly supported and involved process that systematically improves every aspect of the boiler and pressure vessel industry.

In conclusion, permit me to remind all of you why the NBIC and its electronic version, the NBIC on CD-ROM, exist.

While there are many in our industry who insure, design, manufacture, install, and repair boilers and pressure vessels for a living, it is the inspector who is ultimately accountable for ensuring the processes meet prescribed requirements. The work they are expected to execute represents a tremendous responsibility affecting the well being of just about everyone in the civilized world.

The *National Board Inspection Code* is the foundation on which this work is performed. There is perhaps no one technical document that has saved more lives.

And that is really worth celebrating. ❖

2004 Registrations

National Board Certificate of Authorization to Register guarantees the third-party inspection process, providing for uniform ac
data -
tion number. Once registered, each report is maintained in a permanent file by manufacturer name and National Board number.

The list below identifies boiler, pressure vessel, and nuclear vessel registrations by size for the past five fiscal years. The National Board fiscal year is from July 1 to June 30.

The total number of registrations on file with the National Board at the end of the 2004 reporting period was 37,068,061. ❖

Size		FY 2004	FY 2003	FY 2002	FY 2001	FY 2000
BOILERS						
square feet of heating surface						
≤ 55	(A)	109,064	98,312	78,695	87,681	72,700
> 55 and ≤ 200	(B)	30,642	32,927	25,445	24,670	23,614
> 200 and ≤ 2000	(C)	9,322	9,797	9,130	8,959	9,344
> 2000 and ≤ 5000	(D)	629	846	689	765	976
> 5000	(E)	912	2,105	1,184	1,057	1,605
TOTAL		**150,569**	**143,987**	**115,143**	**123,132**	**108,239**
PRESSURE VESSELS						
in square feet						
≤ 10	(A)	718,214	745,601	671,433	816,778	694,085
> 10 and ≤ 36	(B)	449,968	370,780	340,818	297,047	350,576
> 36 and ≤ 60	(C)	64,790	50,263	60,992	41,149	46,861
> 60 and ≤ 100	(D)	9,794	9,628	10,343	10,503	10,081
> 100	(E)	10,426	12,975	11,585	12,121	12,470
TOTAL		**1,253,192**	**1,189,247**	**1,095,171**	**1,177,598**	**1,114,073**
NUCLEAR VESSELS						
in square feet						
≤ 10	(A)	702	1,725	565	1,053	515
> 10 and ≤ 36	(B)	90	137	424	669	362
> 36 and ≤ 60	(C)	1	33	45	89	12
> 60 and ≤ 100	(D)	132	14	15	19	13
> 100	(E)	15	17	17	19	19
TOTAL		**940**	**1,926**	**1,066**	**1,849**	**921**
ATTACHMENTS*		77,715	100,136	79,272	82,745	73,495
GRAND TOTAL		**1,482,416**	**1,435,296**	**1,290,652**	**1,385,324**	**1,296,728**

*An attachment is any type of additional information to be submitted with the primary data report.

For more information on the Authorization to Register Program, access the National Board Web site at nationalboard.org.

Common Treatment of Repairs

BY CHUCK WALTERS, TECHNICAL PROJECTS ADMINISTRATOR

An individual's role in the repair of pressure equipment can often influence how he or she views the *National Board Inspection Code* rules covering the repair. That is why it is important that interpretations of NBIC rules come from the NBIC Committee, not through personal perspective.

A common scenario involves an inspector (that is, a National Board commissioned inspector) who discovers through an inservice inspection that a pressure-retaining item needs to be repaired. The inspector informs the owner that a repair is necessary. The owner contracts with an "R" stamp holder repair organization to make the repair. After the repair is completed, the "R" stamp holder attempts to have the Authorized Inspection Agency (AIA) of record's inspector sign Form R-1. Since this AIA's inspector did not originally authorize the repair and has no knowledge of what was proposed or approved, he refuses to sign the form. The repair organization becomes frustrated with the program and in the future may comply with NBIC rules only if its AIA of record's inspector is involved.

The NBIC repair program, developed many years ago, intended for the inspector to be informed prior to work being started. Many pressure equipment owners do not know the inspector must be advised of and be in agreement that the proposed repair meets the applicable code and/or jurisdictional rules. To reduce frustrations encountered by all parties, the first step is for the repair organization to determine which inspector will authorize and accept the repair (i.e., sign Form R-1).

Next, an agreement must be established with the appropriate inspector regarding the method, extent, and final testing of the repair. This agreement is the repair organization's prior authorization to perform the repair. The authorization may be the inspector's review and concurrence with details for repairs, or a verbal acceptance via the telephone. The complexity of repair will be determined by its nature and by the amount of detail specified by the repair organization's quality control system manual in satisfying code of construction requirements.

Repair of a pressure-retaining item may require:

- detailed repair procedures accepted by the repair organization's AIA of record;
- applicable drawings or sketches;
- a list of material requirements (e.g., plate, formed heads, pipe, fittings); and
- applicable NDE and heat treatment requirements, welding procedures, and welders' qualifications.

The authorization and acceptance requirements in the NBIC allow one inspector to authorize the repair and another inspector to accept the repair, as long as they both are employed by the same AIA. Under no circumstances can an inspector employed by one AIA authorize a repair and an inspector employed by a different AIA accept the repair.

The acceptance process has to be performed for every repair. All inspectors performing repair inspections, including routine repairs, must develop and maintain a diary to record activities related to the repair, including documentation of the repair authorization and acceptance. The diary must be bound (not loose-leaf), or alternatively the inspector may use an electronic diary controlled by the AIA or owner/user inspection agency. This is a specific requirement of NB-263, *Rules for Commissioned Inspectors*.

What are routine repairs and how do they differ from other repairs? Routine repairs are defined by the NBIC; NBIC paragraph RC-2031 describes the limitations permitted to fall under the term "Routine Repairs," however the necessity of having inspector authorization and acceptance of the proposal is evident

because the extent of each repair may be greater than the limits allow. For example, the NBIC permits replacing a tube of 2" to fall within the routine repair criteria, but if an entire bank of 2" tubes is being replaced, the inspector will consider this to be outside the definition of a routine repair and may want to overview the work.

In order to conduct routine repairs, the repair organization's specific routine repair program must be accepted by the jurisdiction where the pressure-retaining item is located. If the jurisdiction does not accept the program, the repair organization and inspector must comply fully with the requirements in Part RC, including requirements for the inspector's involvement during repair activities, nameplate requirements, and signing of Form R-1.

When working to the routine repair program, the repair organization must also:

- obtain acceptance by its AIA — that is, the jurisdictional authority, AIA, or owner/user — prior to implementing the program that will be used to control the routine repair;
- establish in its quality control system the scope or type of repairs that will be performed;
- obtain prior authorization for each specific repair by the applicable inspector;
- complete Form R-1, with the note under Item 10 remarks "Routine Repairs";
- have the inspector sign the form; and
- omit the requirements for a repair nameplate, if permitted by the jurisdiction.

Even with detailed requirements for this program provided in the repair organization's quality control system, there are still issues with implementation of routine repair requirements. There are a number of reasons why compliance is not being obtained, but the most prevalent is coordination between the repair organization and the inspector. The method and extent of repair and final testing requirements must be submitted to the inspector to obtain prior authorization to proceed with the repair.

A common misconception is that prior authorization for routine repairs is not required because there is an accepted routine repair program, and consequently the information does not need to be submitted to the inspector. When the inspector is representing the repair organization's AIA of record, compliance is achievable because the AIA of record has reviewed and accepted the repair organization's quality control system. It is when the repair organization uses an inspector other than the AIA of record's that the requirement for having prior authorization is often overlooked.

Implementation of an effective repair program, including routine repairs, must be managed by the repair organization, which must coordinate activities with the inspector, the AIA, and the owner of the equipment. ❖

Inspector Notices

Blowoff Guide Available

The treatment of boiler water is an integral part of boiler operation, and is used to control scaling, corrosion, and deposits. Many types of treatment lead to the formation of solid particles which initially are held in suspension in the boiler water. Suspended particles must periodically be removed to avoid the buildup of sludge at the bottom of the boiler. Removal of these solid particles from the boiler is accomplished by the process of "blowing off" part of the boiler water.

The blowoff water is discharged into a vented vessel to reduce pressure and temperature to acceptable levels for safe disposal. The vessel into which the blowoff water is discharged is called a blowoff tank or blowoff vessel.

To assist the vessel designer, the publication *A Guide for Blowoff Vessels* defines a method for sizing the blowoff vessel and vent. Charts and equations for estimating the water discharge rate during blowoff are also included.

As described in the publication, a blowoff vessel is sized to hold water from two boiler blowoff cycles and requires space for steam above the water. The vent is sized so that steam can be vented to the atmosphere with minimal pressure increase in the blowoff vessel. Initial design parameters may be revised to change the size of the vent and/or the size of the vessel.

This publication can be found on the National Board Web site, within the e-Publications section. ❖

Inspectors' Corner Offered

The National Board has added a new home page feature focusing on commissioned inspectors. Inspectors' Corner includes news and informational items under four main sections: Documents, Current Events, Topics, and Inspector Guides.

The "Documents" section includes National Board information relevant to inspectors, such as NB-263, *Rules for Commissioned Inspectors*, and NB-340, *Information for National Board Inspector Commission Exam Candidates*.

The "Current Events" section features a listing of training courses and seminars to be conducted offsite by National Board staff, as well as a schedule of NBIC committee and subcommittee meetings.

The "Topics" feature addresses important issues for inspectors, such as keeping a bound diary, the proper use of inspector commission numbers on data reports, and continuing education requirements.

Finally, the National Board has posted four "Inspector Guides" covering cast-iron boilers, pressure relief devices, operating controls, and water level controls and devices. The guides were developed to assist boiler and pressure vessel inspectors by providing consistent and uniform information. ❖

New High-Strength Copper Alloy Developed for Section VIII Applications

By Dr. Maan H. Jawad, Global Engineering and Technology

Many processes use copper alloy heat exchangers in order to take advantage of the excellent high conductivity of copper. Unfortunately, the pressure-temperature range of these processes is kept relatively low in order to accommodate the soft copper with its low strength. Processes with higher pressures and temperatures have to utilize other higher strength materials such as titanium, stainless steel, or copper alloy tubes encased in steel tubes. Recently a new high-strength weldable copper alloy was developed for use in Section VIII, Div. 1 applications. This copper alloy has a minimum tensile stress of 100 ksi and minimum yield stress of 80 ksi at room temperature. Such high strength enables this alloy to be utilized in pressure and temperature applications that are higher than previously used. The resultant thickness combined with the properties of copper makes this alloy very efficient as a heat exchanger material.

CHEMICAL AND MECHANICAL PROPERTIES

The chemical composition of alloy C17510 is shown in Table 1. The high strength of this alloy is achieved by adding beryllium, cobalt, and nickel.

Table 1: Chemical Compositions

Element	Weight, %
Beryllium	0.2 – 0.6
Cobalt	0.30 max.
Nickel	1.4 – 2.2
Iron	0.10 max.
Aluminum	0.20 max.
Silicon	0.20 max.
Copper	remainder

The allowable stress values established by ASME for Section VIII, Div. 1 applications are shown in Table 2. The allowable stress values for temperature up to 300°F are based on a factor of safety of 3.5 for tensile strength. Stress values above 300°F are based on a factor of safety of one-tenth the tensile strength because of the drop in the minimum elongation at ultimate strength below 8 percent. This reduction in elongation is typical for copper alloys at elevated temperatures.

A comparison of the allowable stress of this alloy with some commonly used ferrous and non-ferrous alloys is also provided in Table 2. The table lists admiralty (SB-171 C44400), aluminum (SB-209-T6 A96061), titanium (SB-265-3 R50550), carbon steel (SA 516-70), and stainless steel (SA 240-304).

Table 2: Maximum Allowable Stress Values, KSI

For Metal Temperature Not Exceeding, °F	C17510	Admiralty	Aluminum	Titanium	CS	SS
100	28.6	10.0	12.0	18.6	20.0	20.0
150	28.6	10.0	12.0	17.5	20.0	20.0
200	28.6	10.0	12.0	15.8	20.0	20.0
250	28.6	10.0	9.9	14.2	20.0	19.5
300	28.6	10.0	8.4	12.8	20.0	18.9
350	10.0	9.8	6.3	11.5	20.0	18.6
400	9.7	3.5	4.5	10.3	20.0	18.3
450	9.3	2.0		9.3	20.0	17.9
500	8.9			8.3	20.0	17.5
550	8.4			7.9	19.7	17.1

PHYSICAL PROPERTIES

The size of a heat exchanger is influenced by, among other factors, the thermal conductivity of the materials of construction. Usually a high thermal conductivity results in a smaller heat exchanger. The thermal conductivity of C17510 at room temperature is shown in Table 3, together with some commonly used alloys such as admiralty, aluminum, titanium, carbon steel, and stainless steel.

Table 3: Thermal Conductivity and Expansion at Room Temperature

	C17510	Admiralty	Aluminum	Titanium	CS	SS
Thermal Conductivity BTU/hr-ft-F	150	120	105	12.7	35.1	8.6
Thermal Expansion In/in-F	9.7	9.4	12.4	4.7	6.5	8.6

The coefficient of thermal expansion of component in heat exchangers determines its elongation at a given operating temperature. It is also used to determine the difference in elongation between various components within the heat exchanger. This difference is utilized to evaluate the need for expansion joints in heat exchangers. As shown in Table 3, the thermal expansion of C17510 is close to admiralty and stainless steel; it is smaller than aluminum but greater than carbon steel and titanium.

The modulus of elasticity of a material determines the deflection and vibration characteristics of a component in a heat exchanger. Large values of modulus of elasticity result in small amounts of deflection and vibration. The modulus of elasticity of C17510 is lower than carbon and stainless steels but higher than admiralty, aluminum, and titanium.

WELDING

Welding of C17510 is normally done by the gas tungsten arc welding process. The maximum welded thickness is presently limited to one-half inch. Post weld heat treatment (PWHT) at 900°F for four hours (plus or minus 15 minutes), followed by air-cooling, is required for this material. PWHT of the weld causes precipitation strengthening (aging) to take place. This aging gives the weld the same strength level and ductility of the plate. Under- or over-aging tends to lower the strength of the weld.

EXTERNAL PRESSURE

A new external pressure chart had to be developed for this material due to its high strength. None of the existing ASME Section VIII, Div. 1 EPC for copper could be used due to its low strength. The new chart was constructed with three temperature lines of 100°F, 250°F, and 550°F. The maximum B values for these temperatures are 40.0, 38.2, and 36.0 ksi, respectively.

SAFETY

Like many other industrial materials, proper respirator and venting are required when handling this alloy. Occupational Safety and Health Administration rules must be followed regarding limits on occupational respiratory exposures. It is also a good practice to consult the manufacturer's Material Safety Data Sheet whenever handling this or any other material. ❖

Information in this article was obtained from The American Society of Mechanical Engineers and Brush Wellman.

ABOUT THE AUTHOR:
Dr. Maan H. Jawad has over 36 years' experience in the design and fabrication of boilers and pressure vessels. An instructor of graduate courses in structural and mechanical engineering at the University of Missouri, he is a member of both National Board Advisory Committee and the Missouri Board on Boilers and Pressure Vessels.

Erratum

The summer 2004 article entitled "Time and Change: The National Board at 85" misidentified George Klikusovian. He was chief boiler inspector for the City of Detroit.

The National Board regrets any inconvenience that may have occurred. ❖

Wish You Were Here!

Nothing Says 'Hello' Like Disaster on a Postc

Rather than the idyllic views of sun, surf, and sand that accompany today's postcards, graphic photographs of life were the norm on "picture postcards" during most of the 1880s, 1890s, and early 1900s. Certainly due to their regularity during this time period, boiler explosions and resulting mangled aftermaths frequently were the subject matter of postcard imagery. But while this unusual form of communication has passed, interest in the cards most definitely has not.

Just about anything that could be documented on a picture postcard was . . . buildings, celebrations, animals, holidays, presidents, cultural performances, natural phenomena such as weather-related events, and disasters. People wanted images of everything. These things occurred in everyday life and were used as a means for spreading news to others, or even just as an item to collect and commemorate an event.

Boiler explosions were spectacular and devastating. The aftermaths were overwhelming. Buildings were ripped apart, windows were blown out, and roofs were lifted. All which made for an incredible shot for a photographer on the spot. With film advancements, negatives could easily be turned into postcards, creating hundreds of occasion-specific images in a matter of hours.

Today, these photographic pasteboards serve not only as a reminder of the way things were, but perhaps more important, as a sort of historical documentation of why boilers need to be inspected.

"The National Board has never chosen to exploit photos of present-day accidents," explains National Board Executive Director Donald Tanner. "Our focus has always been on the prevention of these terrible occurrences, not the aftermath. That is why *BULLETIN* readers will seldom see photos of recent accidents even though some argue such graphic representation might help reinforce the boiler inspection process."

Postcards can be found at antique stores, flea markets, and estate sales. But the largest amount of antique postcards for sale can be found on the Internet. Online auction sites such as eBay make locating and purchasing postcards from collectors and dealers all over the world easier than ever. But while these online auction sites offer collectors of postcards a tremendous market to grow their collections, boiler explosion postcards are seldom put up for bid. As the distance of time since the era of explosions lengthens, cards featuring the devastation become fewer and farther between.

A collector of boiler disaster photos who simply prefers to go by his online auction User ID of "writestuff" surmises that availability

ard

❦ *On August 26, 1913, in Hunslet, United Kingdom, a boiler explosion devastated a rolling mill. The stack-end of a 30-foot by 7-foot boiler that had been in use for 22 years (and inspected annually) blew out, sending steam and a nearby brick-stack in every direction. One piece of the boiler — the cylinder, estimated to weigh a half ton — was sent at least 30 yards.*

The copy on this postcard reads: This terrible disaster, which took place at the Leeds Steel Works, Hunslet, causing the death of 9 men, is the most serious known in the district for a considerable time. The sc
and occurred at about a qua . The escaping steam and red-hot debris struck down all that happened to be in the way, instantly killing 3 men, 6 other died after being conveyed to the infirmary, while 15 others received very serious injuries.

❦ *This boiler explosion took place in Crandon, Wisconsin, March 17, 1908, at the Kempf Planing Mill. The lives of three men were lost, one of whom was the mill owner. The explosion was described by* The Forest ECHO*: "The rear end (of the boiler) shot backward with a terrific force and striking the earth about three hundred feet to the rear again flew into space. In descending it struck the rear corner of the Shoepke house, tearing a large jagged hole." A jury in the inquest over the men's deaths attributed the explosion to carelessness of the mill owner in permitting the boiler, in an "unsafe condition," to be operated.*

Wish You

of boiler explosion postcards has become increasingly rare over recent years "primarily because of more people wanting to own a little piece of history, although an unusual piece."

Some boiler explosion postcards, he notes, "can command upwards of seventy dollars. But that's when available. One or two items are generally posted for auction each month." Usually the most valuable "real photo" picture postcards are of everyday life and happenings such as accidents and disasters, produced as early as 1900. Average market prices for disaster cards (which include fires, floods, tornadoes, train wrecks, and other natural and man-made disasters) run from $15 to $65. Historic cards are scarce and as a result have an increased value. Limited printings, such as disaster photos distributed regionally in small quantities, make cards more rare.

So how did the phenomena of disaster postcards begin?

While it is considered by most that the picture postcard got its start as a government postal card in 1869, its development really took off in 1874 when the Universal Postal Union was formed. Before these postal regulations were enforced, international communication


A.M. CARD CO. -3
SHOEPKE HOME - DAMAGED BY THE
KEMPF BOILER EXPLOSION - MAR. 17 08 - CRANDON, WIS.


- BOILER -
EXPLOSION
AT THE KEMPF
PLANING MILL
MAR. 17-08
8 A.M.
BOILER WAS
BLOWN NEARLY
TWO BLOCKS
CRANDON - WIS.


POST CARD
CORRESPONDENCE HERE
Dear friend & friend
your card and am glad
you were so fortunate in
securing employment
so soon. Am well and hope
you and your folks are
the same, with regards
Well. from
NAME AND ADDRESS HERE
Mr J. E Livingston
698 Hall St
Akron
Ohio
DEC
7
A.M.
1908
WIS.

Were Here

Wish You

❦ *One boiler at the J. A. Bendure Heating Plant in Fredonia, New York, exploded December 15, 1910. According to the following day's* Evening Observer*: "The explosion was of such terrific force that the new brick building is a mass of ruins, great iron girders are twisted like straws, pieces of the concrete roof weighing tons were carried blocks away and all the windows in buildings in the vicinity were damaged." The life of one man was lost and another man's was put in serious jeopardy as a result. The boiler was one of three that was being used to supply steam heat for a number of private residences, stores, and buildings in town. The loss of the only source of heat in the village left townspeople to protect themselves from zero-degree December temperatures.*

was sporadic, at best. Delivery was unreliable, and postal rates were not governed. A luxury of the wealthy, mail was now available to all. Correspondence was revolutionized.

Early postcards were known as "postals" and came printed with no picture. When postcards finally were printed with images, scenes of nature and streetscapes, humor, and glamour were common facades. The content of the images were limited by elementary photographic methods.

Field photography, that is, photography outside of a controlled studio environment, had been virtually impossible until the late 1800s, when the wet-plate negative process was developed and albumen-coated photographic printing papers were created. Now capturing images outdoors with faster film in natural light was possible for the amateur photographer. Also, reproducing photographs en masse became practicable. Postcard content reflected these revolutionary advancements in photography. More "in-the-moment" photography was being taken. And inexpensive wide distribution of a photograph was occurring.

This combination of advancements was leading to the development of the field of photojournalism. With the hindrance of bulky photography equipment and complicated film development behind them, photographers were now able to catch history as it was

We're Here

happening, rather than create history in a studio. News events could be captured by a camera lens in a timely and relevant manner, completing the journalist's story.

Because boiler explosions were such a prevalent threat to society, each disaster was indeed important local news. An explosion could likely affect most people of a small town directly or indirectly. Commerce would surely be impacted as nearly all businesses used boilers. The danger was always present. The swiftness with which they happened and the regularity of their occurrences made boiler explosions an instant hit for postcard publishers.

Picture postcards had a sort of "breaking news, live from the scene" aspect. Enterprising photographers could feed the public's desire for visual information about current events, particularly aftermaths of catastrophes, by being at the right place at the right time with

Wish You

❦ *Thompson's Saw Mill and Brick Yard of Mt. Pleasant, Michigan, was the site of this explosion in April of 1913. The boiler was to blame, and according to local news reports, "the boiler was old and patched and unsafe, and Mr. Thompson had been warned of its dangerous condition." The* Isabella County Enterprise *adds, "The turning of water into the overheated boiler is thought to have caused the explosion." Three men were killed, including William Thompson, the proprietor. The scene was described as gruesome, with broken bodies and building materials scattered for more than a city block. Ironically, the day of the explosion was the last day the boiler was to be used.*

their cameras. National weekly publications of the day tended to cover only national stories and use sketch artists at that. The market was there for freelance photographers to shoot local news.

Many small town newspapers did not have the budget to pay photographers. Having an artist on staff to sketch story images was less expensive than hiring a photographer. As a result, freelance photographers found they could make more money hawking postcards by shooting every aspect of life in that small town, cheaply turning the images into postcards, and selling them to townspeople.

But why was it necessary to show the graphic nature of tragedy and disaster? As photojournalism developed, so began the art of "the scoop." Photographers felt measured to show their effectiveness and worth; this was achieved by capturing a picture that would create great demand, often by shock and sadness. Being the first on the scene would ultimately spread the news the fastest and allow the photographer to make the most money by printing the first postcards of the event. Public demand for sending and/or collecting topical postcards became lucrative for photographers and the instant distribution with which these cards could be sent was why.

❦ *Electricity was knocked out to the city of Robinson, Illinois, when a boiler exploded at the Robinson Water, Light and Heat Company April 14, 1910. The 80-horsepower boiler was original to the 1894 plant, and released a hissing sound of escaping high-pressure steam that "sounded like a ten million gas well uncorked" according to the* Robinson Constitution. *The power outage lasted a week, affecting homes and businesses all over town. Surprisingly, there were no deaths, and only two injuries. It was reported that damage estimates were between $10,000 and $20,000. Records indicate that all three of the plant's boilers had been inspected just two months prior.*

Were Here

Look closely at the faces of the people in a boiler disaster postcard. We can only imagine the situation that put them in that place: Survivor? Rescuer? Fame seeker? History and time have indeed locked the answer away from us.

The advantage of a photograph is what it captures. The drawback is what it doesn't reveal. On the surface, the image tells a lot — the tangibles such as time of day, the location of the picture, or the people who were on hand for it. Truth is not imparted always by a camera lens; emotions and situations cannot always be documented accurately on film. The photographer can capture the facts, but the viewer can only speculate about the circumstances. ❖

Home Improvement

National Board Web Site Gets an Extreme Makeover

How do you improve upon something that was pretty good to begin with? Visitors to the new National Board Web site are finding out.

"What has always been a wealth of free industry information, updated contact data, archived technical documents, and pertinent news articles has been made more valuable through a redesign. In addition to several new features, many of the site's most popular resources have been reformatted and expanded for simpler search and access," says National Board Executive Director Donald Tanner.

When the Web site was created in 1996 — it was unveiled during the 65th General Meeting — it was hard for the National Board to imagine instant access by professionals in more than 90 countries worldwide. It has since become an essential resource for many who research projects or want instant information regarding boiler and pressure vessel rules and regulations.

The new changes (launched in August) are in response to what has been gleaned from visitor feedback. "The National Board has taken into consideration comments and suggestions of inspectors, manufacturers, insurance companies — everyone who uses the site," explains Mr. Tanner.

The objective of the reformat was to create changes that were subtle enough that the site still felt familiar and comfortable to regular visitors, but that were effective enough to add significant value to the user's visitation experience.

Other than the new look, the site's most noticeable change involves asking visitors to register with the site, creating an account that only they can access with a password. This allows the registered visitor to set up an individual account to purchase various published materials and training courses, and register for the General Meeting. Registration also provides a secure process for administering training quizzes and providing an identification function for those enrolled in programs and courses requiring participation verification.

Inspectors have a new resource available specifically for them — Inspectors' Corner. This portion of the site features events of interest to inspectors, career-related documents, inspector-focused topics of discussion, and guides for assisting with inspections. The Inspector Guides provide pointers on inspecting cast-iron boilers, pressure relief devices, water level controls and devices, and operating controls. These invaluable documents are intended to be printed and taken to an inspection for quick reference.

As before, orders from the National Board catalog for videos, forms, and publications — such as the

BULLETIN and the NBIC — can securely be placed directly from the site. Using the new shopping cart feature, guests can collect items selected for purchase before checking out and be presented an instant transaction total (which includes shipping and handling) along with a receipt. The Web site now employs VeriSign to secure transactions, thus maximizing the level of credit card protection.

For questions about the NBIC or a particular ASME Code, a link to "Code Questions?" has been added under the Features section. Here an extensive, detailed directory of National Board staff allows visitors to locate the Code in question and the appropriate staff member who is most knowledgeable about that particular document. The staff member's name, title, and telephone number are provided. The staff member can also be emailed directly from the site by clicking on his or her name.

Other new features include an author's guide for the National Board *BULLETIN*, providing guidelines for authors preparing articles. Writers are encouraged to visit this link before submitting an article for editorial consideration.

While much has changed, not all features have been modified. The National Board Web site has always offered comprehensive information on the annual General Meeting. Announcements regarding the host hotel, speakers, tours, pricing, and entertainment will continue to be posted as soon as available. From the site, those planning on attending will still be able to both preregister for the meeting and make hotel reservations.

News items continue to be updated biweekly by 9 a.m. Friday. Time-sensitive news that "breaks" is reported immediately. The scrolls have been replaced with a "ticker" along the top of the home page that is also changed biweekly. Watch this section for messages relating to members' updates, seminar deadlines, announcements of pending events, and other information relating to National Board programs and services.

Questions and comments related to all things National Board, boilers and pressure vessels, or safety can now be addressed with the new "Have a Question?" link. A response within two business days can be expected. ❖

The National Board Testing Lab: 65 Years and Counting

From the bird's-eye view on the glassed-in observation deck of the National Board's Testing Laboratory in Worthington, Ohio, a visitor donning goggles can watch pressure relief valves be pushed to their limits in the name of safety. The 10 Test Lab employees want to see the safety valves blow. Not blowing would indicate a problem, and this crew wants no problems.

Most people give little thought to pressure relief valves. That probably isn't all bad because it likely means the staff at the Test Lab is doing their job. Pressure relief valves do exactly that — relieve the pressure of a vessel such as a hot water tank or a boiler that becomes overpressurized. If a valve does not work to relieve the pressure, the vessel can explode with the potential to cause death and surely structural damage. When a valve releases the pressure in the Test Lab, success has been achieved. Such results provide a level of security that was not always enjoyed by the public before the National Board began its role of testing these safety devices nearly 70 years ago.

This Testing Laboratory evaluates the capacity of safety valves and other pressure-relieving devices from all over the world using American Society of Mechanical Engineers (ASME) Performance Test Codes. The National Board maintains this service for the safety of the general public and of the boiler and pressure vessel industry. Its Pressure Relief Department's capacity certification program is the heart and soul of the facility. Additionally, the lab is used for investigational testing when a safety valve malfunctions or is thought to have contributed to an accident.

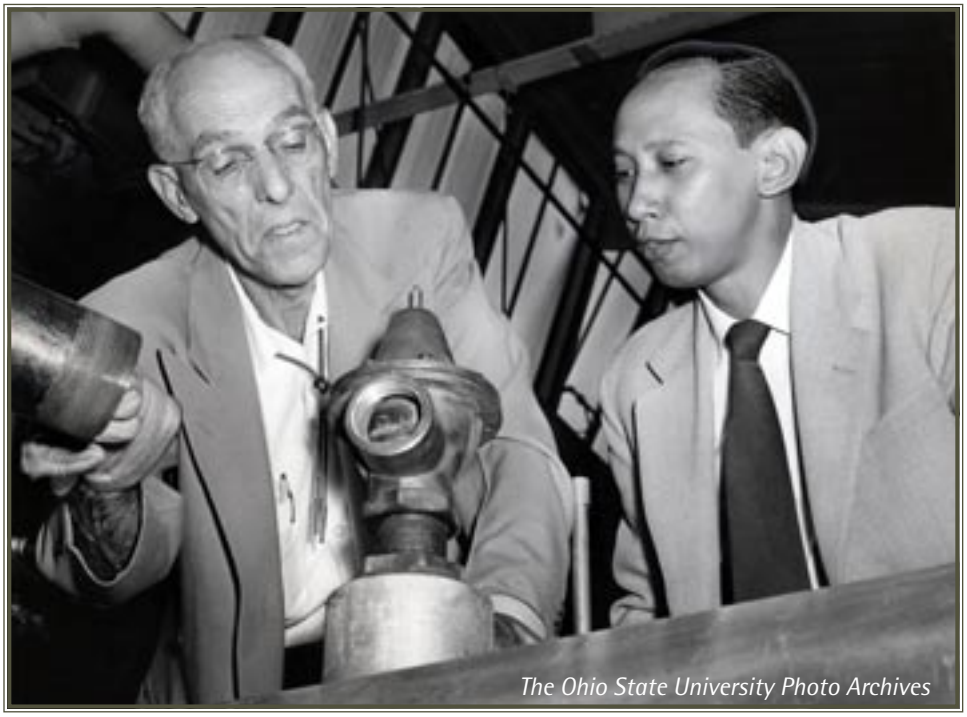
This state-of-the-art building two miles from the campus of National Board headquarters has seen more than 18,000 valves in the short time it has been around. Built in 1991, it replaced a lab used for more than 17 years, gaining 7,000 square feet, and offering services like no other. Any manufacturer or assembler, national or international, is welcome to bring a piece of equipment for testing and observe the results. The facility is the worldwide benchmark.

From its unplanned start in 1937, the Testing Lab has been one of the higher profile services to the boiler and pressure vessel industry. The pressure relief certification program established at the onset has been only fine-tuned along the way. Its purpose of trouble-shooting tragedy has always been kept at the forefront of industry change and company decision-making. There is not one lab technician who doesn't realize his impact on public safety.

A Need Arises

While safety valve testing is thought to have been going on as

■ Ohio State University Engineering Professor Paul Bucher, left, oversaw the first National Board Testing Laboratory for more than 25 years.



The Ohio State University Photo Archives

early as 1875, there was no standard universal method established for measuring valve capacity nor was there a formal testing lab in existence. ASME put together its first edition of the ASME Code in 1914, but it did not thoroughly address safety valve testing and how best to rate valves. Subsequent editions did not either. Uniform performance specifications were included, as were some design requirements, but those applied only to valves in the archetype phase.

In the early 1930s, a group of chief boiler inspectors began a dialog about the need for accurate valve testing. Although it is unclear what prompted this concern, it is known that these men thought the stamped capacity of some of the safety valves in existence did not match the values of their actual relieving capacity.

They approached the National Board staff for help. Around since 1919, the National Board was a valuable partner to inspectors. When it was suggested to the National Board that valve performance be tested, the National Board was in agreement.

Through the friendship of the National Board's Executive Director Carl O. Myers and The Ohio State University Mechanical Engineering Professor Paul Bucher, an arrangement was created in 1935 for the National Board to use Robinson Laboratory on OSU's campus to put safety valves to the test. Robinson Lab was home to the university's mechanical engineering department and was soon to become not only the first testing lab used by the National Board, but the first such testing lab anywhere.

The conclusion of the testing in 1936 revealed nameplate calculations were not enough. Actual capacity in some tests varied as much as 84 percent below to 88 percent above the stamped capacity. A better way for rating valves was needed. The ASME Code needed to be changed to demand that tests be completed on production valves.

Bucher's methods used to rate safety valves and safety valve capacity broke new ground. The work he did to develop these measures made him a pioneer in the safety valve industry. It also resulted in the 1937 edition of the ASME Code containing new language requiring testing of valve designs at a variety of different pressures and sizes in the presence of an inspector.

The Industry Standard

Had the actual capacities of the safety valves matched the stamped capacities perfectly, the National Board probably would not have had a need for a test lab. The minimal ASME Code

■ Robinson Laboratory in 1939, home to The Ohio State University's Mechanical Engineering Department and the National Board's first safety valve testing lab.

requirements would have been sufficient. But the testing did not prove that to be, and so the National Board's Test Lab was established. It would continue at Robinson Lab, under the tutelage of Professor Paul Bucher.

In the late 1950s, a promising young professor on OSU's engineering staff was recruited to help Bucher around the lab. Ed Buxton was 40 years Bucher's junior, but had a strong background in mechanical engineering. A few years into this partnership, Bucher had to give up his involvement with testing due to illness. A natural choice to carry the baton, Ed Buxton inherited the program.

Decades passed, and Buxton's testing lab continued to be an essential component of the National Board. A heating boiler pressure relief valve program was offered in the 1940s, and two-phase flow, force generation, and valve capacity research was conducted in the 1960s. Robinson Lab on the Ohio State campus provided a safe, sufficient resource for testing. There was never an injury at the lab where the slide rule was the computing king.

Eventually, though, manufacturers were becoming more numerous and making bigger valves. The demand for testing began to outgrow the OSU laboratory's ability to perform pressure test on newer designs; its 150-psi limit on safety valve set pressures had been surpassed. Technology was passing the lab by.

■ OSU Professor O. Ed Buxton Jr. continued work at the testing lab after Professor Paul Bucher departed.

"Around this time, the Vietnam War was impacting students and Ohio State's campus, which also impacted Robinson Lab. The campus was restless with students who opposed the war. University officials closed the campus to outsiders to limit war protests. Companies that wanted to be on-site for testing were prevented from accompanying their safety valves to the Test Lab," Buxton explains.

Through all of this, a new concern was arising within the boiler and pressure vessel industry: the one-time prototype testing used

to rate valve capacity did not account for production variations. The ASME Subcommittee on Safety Valve Requirements recommended new rules to require manufacturers to have production samples tested periodically to ensure continued code compliance and satisfactory valve performance.

The growing pains of the lab and the new code rules, combined with the uneasiness on campus, were becoming problematic. The National Board knew it had to do something. More space was needed and the National Board wanted to have a test lab to call its own. In 1972, under the leadership of Executive Director Sam Harrison, it was decided that the National Board Test Lab needed its own home to be able to test more valves at a greater capacity.

Address Change

In 1974, a brand-new lab was built on the site of the Columbus and Southern Ohio Electric Company's Picway Generating Station, 12 miles south of Columbus. The National Board leased a plot of land from the station. The Test Lab was close to 3,000 square feet in size.

"We found the Picway Plant site appealing because it could tap into the steam generation of the power plant. This location could test valves with air, not just steam as at Robinson. The upgrades to the equipment and the improved testing capabilities were all in an effort to improve and broaden the capacity certification program we offered," recalls Buxton.

Ed Buxton left his professorial position with Ohio State in 1974 to join the National Board full-time, supervising the lab from National Board headquarters. Only technicians worked at the lab facility. Results of tests completed at the lab were driven to the headquarters where they would be processed, analyzed, and sent to the manufacturer. Test results were completed using the then state-of-the-art programmable hand calculator.

Even at this new, independent location, the OSU connection was retained through a young mechanical engineering student named Fred Harrison who worked part-time, helping out with and supervising tests at the lab. Together with Buxton, the two men did a major rewrite of the ASME PTC-25 — the standard for testing pressure valves — based on tests the two completed.

Ed Buxton would leave the National Board in 1978 for a position with ASME. He was replaced by H. David Ray of Dresser Industries. Like his predecessor, Ray focused on perfecting the testing process. The industry benefited from the amount of devices that could now be certified.

But Ray's term would be short-lived. He passed away of bone cancer in 1981 at the age of 31. It would be almost a year before the position of Test Lab director would be filled.

In 1982, Fred Harrison was invited to rejoin the National Board, this time as director of the Test Lab. He accepted the position, anxious to put to good use his previous lab experience that was enhanced by his tours of duty as an engineer and officer on nuclear submarines.

Crossroads

One test the lab was unprepared for presented itself as the 1980s came to a close. American Electric Power acquired the Columbus and Southern Ohio Electric Company and let the National Board know its lease would not be renewed.

Feeling the Test Lab provided a valuable service and that it could still accomplish more work, the National Board decided an independent test lab was something the industry needed. D.J. McDonald, the succeeding executive director, arranged to purchase six acres of land about a five-minute drive from National Board headquarters. After 17 years of service and

■ Fred Harrison has been the Testing Lab's director since 1982. "The lab exists because of the chief boiler inspector's need for the capacity certification program."

completion of 15,766 tests, the lab at Picway Station was decommissioned in March 1991 and the new lab opened three months later, "on time and under budget," Harrison proudly adds.

The Last Stop

The Test Lab on Pingue Drive has been in its present location ever since. Not much changed in the systems between the Picway Plant location and this one; most vessels are the same. Director, engineers, and technicians are all together in this building, providing for smoother and more responsive department operations. This lab generates its own steam with two 900-psi steam generators, unlike Picway where the lab depended on the station's generation of steam. And now fast and efficient computers replace slide rules and hand-held calculators to collect test data and compile results.

Under Harrison's watch in 1997, with the publication of an addendum to the *ASME Boiler and Pressure Vessel Code*, Section VIII, Div. 1, the Test Lab began testing and certifying rupture disk devices as part of its scope of services. The inclusion of these non-reclosing devices into the capacity certification program adds another dimension to public safety: evaluating the effect rupture disk devices have on the capacity of pressure relief systems.

"I am proud of this service because it is another way the National Board Test Lab adds value to the industry," states Harrison. "Testing here provides an unbiased answer to an issue, which neither insurance companies nor manufacturers can offer. Everything done by this group is for the principle purpose of giving National Board members and the inspectors who work with them confidence in the NB mark featured on each safety relief valve unit. The NB mark serves as an indication that the device complies with National Board rules and accepted ASME standards and provides protection against overpressure and explosion."

Under the leadership of Al Justin, executive director from 1993 to 2001, and current Executive Director Don Tanner, the laboratory has been staffed with six certified engineers, two laboratory technicians, and two administrative support staff. This group meets the ever-growing demand for performing nearly 1,800 tests per year for around 350 visitors from 10 different countries.

Impressively, the National Board Testing Lab continues to use equipment that was employed at Robinson Lab at The Ohio State University. The formulas that Paul Bucher created to test valves are still followed today as part of the ASME Code. While there have been advancements in the industry pertaining to capacity and manufacturing, the Testing Lab relies on its time-tested techniques and knowledgeable personnel to sustain its reputation as the worldwide leader in safety valve testing and capacity certification. ❖

Highlights of the 73rd General Meeting in Nashville

Photos by Dean Williams Photography

Hallway Howdy

National Board Executive Director and former Tennessee Chief Boiler Inspector Donald Tanner (right) greets long-time friends Webb Morris, former director of Tennessee's Boiler Inspection Division, and his wife Dot, president of the state's American Legion Auxiliary.

Celebrity Sighting

Joy Barber (left center), Mike Verhagen (center) of Wisconsin, Kathy Verhagen (right), and Michael Barber (partially hidden) of the City of Detroit visit with Reba McEntire and Willie Nelson impersonators during the members reception.

Safety
Our Choice.
Our Challenge.

NASHVILLE

Grand Ole Greatness

National Board members enjoy the sights and sounds of great country music during the members dinner on the Grand Ole Opry stage.

Canadian Crooners

Madiha Kotb, professional engineer for the Province of Quebec, and her husband Bob take the stage of the Grand Ole Opry during the Sunday members reception.

Rhythmic Welcome

These young square dancers, part of The Rocky Top Revue, entertained guests at Monday's Opening Session.

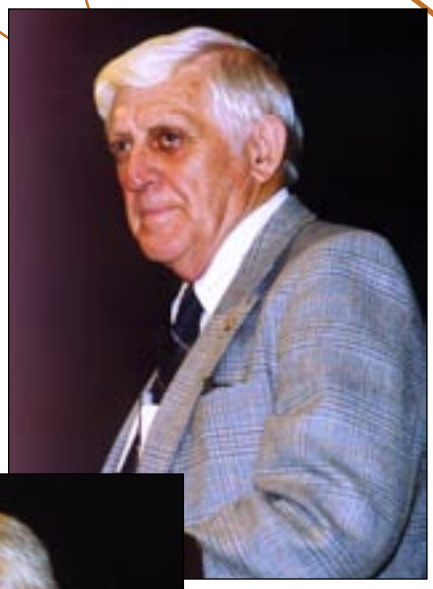
Safety
Our Choice.
Our Challenge.

NASHVILLE

Glenn McCullough Jr.
Chairman of the Board,
Tennessee Valley Authority

Herb Shivers Deputy Manager, Engineering Systems Department, NASA Marshall Space Flight Center

Morris Snow
Chairman, NBIC Task
Group on Historic Boilers



Jimmy Bedford Master Distiller,
Jack Daniel's Tennessee Whiskey

Brooks Baker
Associate Vice
President of Facilities,
University of Alabama
at Birmingham,
and President of
the Association of
Higher Education
Facilities Officers

Inside Out
Guests spend time enjoying the natural beauty of the indoor patio of the Gaylord Opryland Resort during the National Board's Monday reception.

Highway Hijinks

This "hitchhiker" was picked up to entertain guests en route to the Wednesday outing tour of the Jack Daniel's Distillery.

Panoramic Picnic

Visitors on the Jack Daniel's Distillery tour enjoy a picnic lunch with breathtaking Tennessee views in sight.

Now Hear This . . .

National Board Executive Director Donald Tanner takes the controls of the *General Jackson* during the Wednesday banquet while the *real* captain, Master Captain Paul Stinson, looks on.

"General" Elegance

Guests settle down during the Wednesday banquet to an evening of fine dining and entertainment aboard the *General Jackson*.

Safety
Our Choice.
Our Challenge.

NASHVILLE

Board of Trustees Elections Held

Board of Trustees elections were held during the 73rd General Meeting in Nashville, Tennessee, May 10-14.

Robert D. Reetz, chief boiler inspector for the State of North Dakota Insurance Department, was re-elected to a three-year term on the Board of Trustees as first vice chairman. He was elected to the board position in 2001, and also served on the board from 1993-1998.

Mr. Reetz began working for the State of North Dakota in 1979, and was named acting chief in 1982, and chief inspector in 1987.

He holds National Board Commission No. 9980.

Robert D. Reetz

E. Dennis Eastman of the Province of Newfoundland & Labrador was elected to the Board of Trustees as member at large. He will also serve a three-year term.

Mr. Eastman began working for the Newfoundland & Labrador jurisdiction in 1985 as a boiler and pressure vessel design review engineer. He currently is manager of engineering and inspection services.

He holds National Board Commission No. 10857.

E. Dennis Eastman

National Board membership confirmed the Board of Trustees election of Kansas member and Chief Boiler Inspector Donald J. Jenkins as member at large. He will serve the term vacated by John Engelking of Maryland. Mr. Jenkins' term will expire in May 2005.

Mr. Jenkins has been a National Board member for the past eight years. Prior to joining the State of Kansas Division of Industrial Safety and Health, he worked for the U.S. Bureau of Indian Affairs for 28 years in a variety of positions, including stationary engineer and chief boiler inspector.

Mr. Jenkins served in the U.S. Navy for four years, including a tour of duty in Vietnam.

He holds National Board Commission No. 11837. ❖

Donald J. Jenkins

Maryland Chief Elected to National Board Membership

Karl J. Kraft, chief boiler inspector with the Maryland Department of Labor, Licensing and Regulation, has been elected to National Board membership. Mr. Kraft has been employed by the department since 2003 when he began as a deputy boiler inspector. Prior to joining the state, he worked as an engineer at Bethlehem Steel Corporation from 1974 to 2003.

Mr. Kraft served in the Maryland National Guard from 1970 to 1977. He is a member of ASME and the National Fire Protection Association.

Mr. Kraft holds National Board Commission No. 12740. ❖

Karl J. Kraft

National Board Elects Pate of Alabama for Membership

Ralph P. Pate, chief elevator and boiler inspector for the Alabama Department of Labor, has become that state's first National Board member.

Mr. Pate was employed with the Georgia Department of Labor for 19 years as a jurisdictional boiler and elevator inspector. Prior to that, he worked for Hartford Steam Boiler and Kemper Group.

Mr. Pate received his training in the United States Air Force, where he served from 1971 to 1978 as a boiler and heating technician.

He holds National Board Commission No. 8935. ❖

Ralph P. Pate

2005 Safety Medal Nominations Sought

The National Board of Boiler and Pressure Vessel Inspectors is seeking nominations for its 2005 Safety Medal Award. This award, the highest honor bestowed by the National Board, will be presented at the 74th General Meeting in Orlando, Florida.

To be considered for the Safety Medal Award, it is required that letters of recommendation be submitted by three individuals who are acquainted with the candidate and can attest to his or her contributions to safety within the boiler and pressure vessel industry.

Each letter of recommendation should include:

- The name, title, employer, and business address of the candidate.
- A listing of specific contributions or achievements accomplished by the candidate with relevance to the award.
- A brief biography of the candidate including positions held, National Board activities, and participation in other industry activities, including any honors and awards known to the individual making the nomination.
- The name, title, employer, and business address of the individual submitting the nomination.

Letters of recommendation must be received by December 31, 2004, and be addressed to the Executive Director, The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229. ❖

Daniel C. Price

Chief Mechanical Inspector, Yukon Territory

It is a real-life postcard of imposing mountains, deep enduring lakes, and frothing white rapids. A fisherman's fantasy. A hunter's haven. All tied together by a seemingly endless ribbon of open highway weaving through a breathtaking outdoor expanse.

Welcome to the Yukon Territory, the city of Whitehorse, and the home office of Chief Mechanical Inspector Dan Price.

Located on the Yukon River about 100 miles east of the Alaskan port city of Skagway, Whitehorse's rich history as part of the 1890s gold rush and its role in pioneering the civilization of northwestern Canada defines much of what this natural spectacle is today.

"It's always fascinating to gauge the reaction of people coming here for the first time," Dan notes with a proud grin. "When visitors realize we get upwards of 22 hours of daylight in the summer, they oftentimes make some pretty outrageous plans: like wanting to play golf or water ski at midnight."

It can take some getting used to, the Yukon official readily admits. And he should know. Originally from Moncton, New Brunswick, on Canada's east coast, Dan was once a newcomer to these parts as well.

Growing up with two younger sisters, an older brother, and a twin brother, the chief mechanical inspector describes his adolescence as "a pretty typical Canadian upbringing." Influenced by his father, a Canadian National Railway machinist for more than 40 years, Dan's days outside of school involved playing a lot of hockey, camping, fishing, and hunting. "It seems my dad was always taking us somewhere," he recalls with a smile.

Life was so good growing up in New Brunswick that the Yukon National Board member remembers thinking that he would never leave the picturesque Moncton area. When time came to choose a professional direction after high school, he opted to follow in the footsteps of his father and pursue a career in mechanical technology. Dan attended the New Brunswick Institute of Technology for two years before being graduated in 1972. In two weeks, he had a job as a technologist at a coal-fired New Brunswick Power plant.

A year later, Dan spotted an opportunity to expand his professional credentials and went to work at a large steam generating plant in St. John. It was about this time the Moncton native began to refine his professional interests. Moving from operating engineer to boiler operator, he found — after four years — the 21-day-on, 13-day-off shift schedule to be grueling. For the first time in his young career, Dan faced a decision affecting both his professional ambitions and love of his home province.

A friend in the industry told Dan of a boiler inspector opening in Northwest Territories. Torn between having to continue the rigorous shift schedule or investigate a new opportunity in a faraway city, the future Yukon inspector decided to research his options by agreeing in January 1979 to interview for the position.

Away from home and on an airplane for the first time in his life, 26-year-old Dan Price was greeted in the Northwest Territories city of Yellowknife with record low temperatures.

"The Northwest Territories chief at that time oversaw both boilers and electrical in the jurisdiction," Dan recounts with a half-smile. "It was the job of the boiler inspector to go out and inspect the territory's equipment." Alone. And with boilers spread out over 1.3 million square miles, he knew it was a formidable task.

Dan reasoned that the accumulation of valuable professional experience would be worth the tremendous challenges and sacrifices that went along with the boiler inspector position. And so in February, the coldest month on record, Dan Price commenced a ten-year stint with Northwest Territories. Nothing could have prepared him for what he was about to encounter.

"I spent two weeks at a time criss-crossing the territories in small chartered planes," the soft-spoken official recalls with a grimace. To put the enormity of the job in yet another perspective, he explains that — before the territory of Nunavut was carved from its vast landmass in 1999 — Northwest Territories was bordered by just about every Canadian province.

"Perhaps the most difficult aspect of getting around back then was trying to find a place to sleep and eat." Because there were no hotels in many of the communities he visited, Dan often slept in bunk houses. "And there were no restaurants, either." As his job took him near the Tundra, he found himself dealing with many of the ethnic Inuit people and the incessant ice and snow that comprise their homeland.

In 1984, Dan took over as chief inspector for the Northwest Territories and put many of his travel adventures behind him. (Northwest Territories was not a National Board member jurisdiction at the time.)

In July of 1989, Dan applied for and consequently accepted the position of chief mechanical inspector in neighboring Yukon Territory.

"I decided to make the change because I liked the Whitehorse area," he explains with a smile. The move also allowed him to devote more attention to activities he seldom had time for while employed in the Northwest Territories, like an occasional round of golf, playing hockey (he has a pin in his shoulder and the painful memories of a broken nose to prove it), participating in curling, and getting out to hunt and fish.

Having made a decision to join the National Board, Dan set out to take the commission examination. Not only did Dan receive his commission in 1994, he became Yukon's very first National Board member.

With the assistance of two staff members, Dan is now responsible for the inspection of over 3,500 boilers and pressure vessels as well as the territory's elevator and handicapped programs. Possessing a First Class Power Engineering license, Dan also oversees propane gas inspection.

Gone are the days the New Brunswick native was expected to transit the jurisdiction à la his early tenure with the Northwest Territories (he emphasizes traveling and accommodations in the Northwest Territories are much improved today). And although he still travels as part of his professional duties, he also holds forth on holiday for several weeks each summer in Mexico ". . . primarily to neutralize the effects of Yukon's harsh winters." The blustery weather, coupled with the area's abbreviated airline service during winter months, limits Dan's wanderlust although he loves traveling to warmer climes.

When not in the office or on jurisdictional business, Dan can generally be found biking along Whitehorse's abundant highways and bike paths. It is not unusual for him to annually log well over 2,000 miles although age has recently slowed his activity to only about a 1,000 miles.

"It's a great place to be outdoors," offers the laid back and incredibly tan Yukon official.

But wait a minute . . . a tan? In the Yukon?

"Not a big deal," Dan observes with a wink. "Not when you have 22 hours of daylight . . ." ❖

Out-of-Print . . . No Longer Out-of-Mind

BY PAUL BRENNAN, DIRECTOR OF PUBLIC AFFAIRS

Not even a year old, National Board's new document service providing industry with access to out-of-print editions and addenda of the *ASME Boiler and Pressure Vessel Code* is going strong.

Up until this innovative program was launched last fall, many organizations and individuals seeking construction information for vintage equipment (before 1983) were often stymied by the limited availability of earlier codes.

A complete collection of ASME Code books is indeed a rarity. Fortunately, the National Board has perhaps the most complete set of ASME Code books in the world. These invaluable references are safely stored within a technical library that contains more than 2,000 volumes of resource material comprised of rare books, industry publications, and videos. This includes more than 1,000 codes and standards, many of which are also out of print. Unfortunately, this extensive repository is not accessible to the general public.

But with limited availability to older codes sometimes precluding compliance with current regulations (i.e., adhering to rules employed in constructing the equipment being repaired or altered), it was only natural the National Board share its collection of *ASME Boiler and Pressure Vessel Code* books. With the encouragement of ASME, National Board last year reached an agreement with the worldwide mechanical engineering organization to permit reproduction and distribution of older *ASME Boiler and Pressure Vessel Code* material.

For a modest charge of $27 for the first page and $1.50 per each page thereafter, users such as manufacturers and organizations performing repairs and alterations can conveniently access the ASME Code section (or page) of their choosing. These fees cover staff research time in locating specific code references, verifying the requester's particular needs, and providing the information in a precise, timely manner. The personalized service is easily initiated by contacting any of the National Board's technical staff or going through the ASME Document Service link located on the National Board Web site. Copies of code pages can be forwarded via email, fax, or postal mail.

The extensive selection of available ASME Code material extends back to 1914 with an original *Boiler Code Committee Rules for the Construction of Stationary Boilers and for Allowable Working Pressures*. Also accessible are a variety of codes in more frequent demand such as the 1971 edition ASME Section I, *Rules for Construction of Power Boilers*, and the rare 1952 Section III, *Rules for Construction of Boilers of Locomotives* (the last steam locomotive code edition). Much of this material is so fragile that the National Board has undertaken a major preservation effort to electronically scan each code for posterity.

For those who may not be in immediate need of this treasured archive, the National Board requests you pass the word: to manufacturers that also specialize in the repair, alteration, and rerating of their older equipment; to inspectors, who may require

a source to research old code information; to users of petrochemical equipment who often need detailed data for repairs, alterations, and modifications; and to antique-tractor owners who not only require long lost construction data for repairs, but who also seek to familiarize themselves with the mechanical intricacies and limitations of their vintage equipment.

If this document service sounds expensive, it isn't. Not compared with what it might cost to first locate an elusive code and subsequently reproduce it. For example, a copy of the 1952 Section III, *Rules for Construction of Boilers of Locomotives* was recently sold by the National Board document service in the $80 range, while a 1971 Section I, *Rules for Construction of Power Boilers* was sent out at a price of just over $300.

Remember: like many of the ASME Codes it features, the National Board document service is one-of-a-kind.

And available to all. ❖

South Carolina Revisited

The South Carolina 2003-2004 legislative session is history. And so are Senate Bill 133 and House Bill 4396.

The proposed boiler bills — as their predecessors — failed to be voted out of subcommittees, thus extending the record of boiler legislation failure in South Carolina to 29 years.

The special issue of the *BULLETIN* distributed earlier this year was prepared to enlighten South Carolina residents and public officials. And it did — passionately — as illustrated by an unprecedented response by Palmetto State citizens and legislators alike.

But nearly 30 years of indifference by the legislature is not going to change overnight. Sadly, the effort to get a strong boiler law passed in South Carolina will take many more years to accomplish. To that end, the National Board will begin working with state officials in the new 2005-2006 legislative session to promote a more substantive boiler legislation package.

Meanwhile, South Carolinians keep their fingers crossed. And the South Carolina boiler safety Web site at *SC4safety.org* continues to generate significant visitor interest . . . ❖

Synopsis Update

For a second straight year, the *National Board Synopsis of Boiler and Pressure Vessel Laws, Rules and Regulations* has exceeded sales expectations.

The new 2005 Synopsis — both hard copy version ($100 + postage & handling) and its popular CD-ROM counterpart ($150 + postage & handling) — will be available through the National Board Web site beginning January 5, and will include completely updated synopses for more than 75 North American jurisdictions. A listing of jurisdictions with boiler boards will be included as an added feature in the 2005 edition.

The *National Board Synopsis* is the only laws and regulations digest verified by chief inspectors. It is particularly useful for jurisdictional authorities, manufacturers, repair organizations, business planners, and marketing and insurance professionals. ❖

National Board Fee, Price Adjustments Announced

The National Board has announced it is increasing prices on the *National Board Inspection Code* (NBIC), the annual General Meeting, and various accreditations and certifications.

According to National Board Executive Director Donald E. Tanner, the price of a hard copy NBIC will be raised to $150 (from the current $85) beginning with the 2004 edition scheduled for December distribution. Additionally, the *National Board Inspection Code* on CD-ROM will be increased to $395 (from $240).

"The 2004 NBIC will be expanded significantly to include a variety of new information," the National Board official explains. In addition to new, fully metricized text, the 2004 edition will be supplemented with material covering: combustion controls and safety devices in Appendix I; repair requirements for ASME Section VIII, Div. 2 & 3 pressure vessels; changes in scope for accreditation programs (items other than welded repairs); RA-2300: incorporation of latest ASME Section XI requirements for nuclear repair/replacement activities; a new driven plug repair method for Yankee Dryers in Appendix K; new inspection requirements (with photos) for fiber-reinforced vessels in Appendix 9; and new inspection requirements for locomotive boilers in Appendix 3. A new Part RE separates pressure relief device administrative requirements from technical requirements.

Mr. Tanner cites the increased costs of keeping the NBIC current with "the industry's technological evolution" as a main reason for the price increase. "Many do not realize the tremendous preparation that goes into modifying the NBIC," he explains. "There are two NBIC committee meetings each year involving about 40-50 people, there is an extensive editing and public review process, and there is the annual development of an addenda. We feel that — at $150 — the NBIC is an outstanding value particularly when compared to codes in other industries."

To accommodate users requiring multiple copies of the NBIC hard copy and CD version, the National Board will continue to make available quantity discounts. Those interested are asked to call the National Board Order Department at 614.888.2463 for more information. The Order Department can also be reached via email at *orders@nationalboard.org*, or through the Catalog on the National Board Web site. Advance orders for both NBIC versions are now being taken.

In addition to the NBIC price increase, the National Board will also raise the registration and preregistration price of its annual General Meeting beginning with next year's event (May 9-13) in Orlando, Florida. At that time, preregistration will be increased from $245 to $265, while onsite registration will be raised from $275 to $295. Both fees include one ticket for the annual Wednesday evening banquet. Additional General Meeting fee increases include an increment in the purchase price of a single banquet ticket from $30 to $35, and increase in the guest fee from $110 to $120.

"These modest increases are prompted by the rising expenses associated with conducting a quality meeting event," Mr. Tanner emphasizes. "Despite this cost increase, the General Meeting continues to be one of the best-priced industry conferences to be found anywhere. Some similar professional meetings require a registration fee of as much as $1,000 or more."

Additional price adjustments announced by the National Board include an increase in the "R," "NR," and "VR" stamp certification fee from $510 to $600. The price of owner-user certification will also rise to $600 (from $450), and NB-360 and NB-369 fees for Authorized Inspection Agencies will increase to $600 (from $510). Increases become effective January 1, 2005. ❖

Tim Brown

Lab Technician
National Board Testing Lab

Tim Brown's official date of hire with the National Board is a little hard to pin down. May 25, 1984, is the date in his National Board employee file, but according to Social Security, it is April 1978. That's the month Executive Director Sam Harrison asked him to help out with odd jobs around the campus. Tim's brother Paul was working for the National Board at the time and Harrison was so impressed with Paul's work ethic that he wanted the 15-year-old on board too.

So in 1978, this Columbus native was mowing, keeping the pond clean, shoveling snow, and maintaining flower beds. Eventually this took on a 40-hour-a-week role. But it was not until that day in May 1984 when Tim became a lab tech that he was considered full-time. Got that?

"I owe having this job to Mr. Harrison. He was a great man, and I will always be thankful for his helping me start my career with the National Board," he says with conviction.

Whether he celebrates 20 years with the company or 26 doesn't bother Tim. Nope, he is just happy running tests on safety valves and meeting new people every day.

"Making friends from all over the world is the best part about my job," he explains. "About 75 percent of manufacturers accompany their valves to the test lab. When they do, I get a chance to know them better. They come from as far away as Japan. Most folks come on a regular basis, which gives me an opportunity to form friendships with them. It's great."

When not putting valves up for safety tests, this veteran lab tech is avidly following his son's — Tim Jr. — baseball career. The 15-year-old is on a traveling baseball team that plays 4-5 times a week in the spring and early summer all over the country. Tim is exceptionally proud of this, as Junior was hand-picked for the team.

Then there is that other little white ball that Tim loves to follow — or chase, rather. His passion for golf is like the Golf Channel (which he admits is always on at home) — all golf, all the time. There are very few things he would rather be doing than walking the links.

"I love to golf. There is nothing like it. My dream job would be one that I could spend every day at the golf course," Tim says with a laugh.

His laugh is contagious. Tim is easy-going and soft-spoken. He has a quick smile and striking blue eyes. It doesn't seem like much gets him stirred up.

He and his son's family doubled recently. This fall, Tim was married to Sherry, who also has a teenager. Both kids live part-time with the newlyweds in the Columbus suburb of Gahanna.

"Life is pretty good. I am newly married and have a job that I love to go to. As long as there is a golf course open somewhere, what more could a guy want?" ❖

"Do You Know . . .?" is a BULLETIN *feature introducing readers to the dedicated men and women who comprise the National Board staff.*

What Is Behind the CI?

BY RICHARD MCGUIRE, MANAGER OF TRAINING

Are you aware that the National Board is planning to offer a training/certification service for employers of Certified Individuals (CIs)?

What is a CI? A Certified Individual is an employee of an ASME certificate holder who performs oversight inspections as required by a number of *ASME Boiler and Pressure Vessel Code* sections (e.g., Section I, IV, VIII, & XII).

The code further stipulates (in Section I, see PEB 18.5) the CI is to be qualified and certified by the manufacturer. The position's requirements include: knowledge of the code section for the application of the code symbol; knowledge of the manufacturer's quality program; and training commensurate with the scope, complexity, or special nature of the activities to which oversight will be provided.

The National Board recognizes that some manufacturers could use assistance to comply with these code requirements. To that end, the National Board will be offering programs for Section I, electric boilers; Section IV, cast-iron heating boilers; Section VIII, Div. 1, unfired miniature pressure vessels; Section XII, transport pressure vessels; Sections I & VIII, Div. 1, 2, & 3, pressure relief devices; and RPT-1, reinforced thermoset plastic vessels.

The training programs will soon be available online at *nationalboard.org*. The student will be given reading assignments and tutorials explaining some of the requirements of the code. When the student feels the material has been mastered, a quiz is taken. After completion of the entire training program, the candidate will be required to pass a comprehensive examination. A score of 70 percent or higher is required. This passing grade is testimony to the candidate's code knowledge.

Ensuring the CI (in training) has an understanding of the manufacturer's quality system, an additional examination is available to test the student's knowledge. Questions pertain to specific quality control manual requirements, and the candidate must get at least 70 percent of the questions correct in order to pass. This examination also will be available online.

Upon successful completion of the required elements of the program, the National Board will issue documentation which can be used by the manufacturer in certifying the employee — all the manufacturer has to do is sign it. The manufacturer must do the certifying, not the National Board. We are simply verifying that the candidate has taken the course and passed the required examinations.

The cost for the exams and documentation will be $500. A candidate must submit an application to the National Board to begin the program, and certain education and experience requirements must be met.

These programs will allow manufacturers to certify CIs without developing their own examinations or training programs. They will also allow qualified employees to receive the mandatory ASME designation at minimal cost. Because the programs will be available online, travel will not be necessary, and the candidate can progress through the program at a comfortable pace. The National Board retains a copy of all records and paperwork.

The National Board has been administering this type of program for decades, thus underscoring its expertise in the critical areas of qualification and examination. I strongly suggest that those manufacturers needing CIs consider using the National Board program. Consult the Web site for additional information. ❖

ENDORSEMENT COURSES

(B) (O) **Authorized Inspector Supervisor Course/Owner-User Inspector Supervisor Course** — TUITION: $1,250

January 24–28 February 7–11

(N) **Authorized Nuclear Inspection Course** — TUITION: $1,250

January 24–28

(NS) **Nuclear Supervisor Course** — TUITION: $1,250

November 29–December 3

CONTINUING EDUCATIONAL OPPORTUNITIES

(1 Day) **ASME Section I** — TUITION: $275

December 20

ASME Section VIII — TUITION: $275

December 22

ASME Section IX — TUITION: $275

December 21

How to Complete a Data Report and *National Board Inspection Code* Highlights — TUITION: $115

December 23

Two one-day seminars or two participants earn 5-percent discount

(PEC) **Pre-Commission Examination Course** —
TUITION: $2,500 Full two-week course
$660 Self-Study (week 1) portion*
* self-study materials will not be sent until payment is received.
$1,190 Week 2 of course

November 8–19 February 14–25

(R) **Boiler and Pressure Vessel Repair Seminar** — TUITION: $335

November 29–30 February 15–16
January 19–20 (Texas)

(VR) **Repair of Pressure Relief Valves Seminar** — TUITION: $1,250

December 6–10 February 7–11 (Texas)

(WPS) **Welding Procedure Workshop** — TUITION: $670

December 1–3

REGISTRATION FORM

Please circle the seminar/course(s) and date(s) you wish to attend. Please print.

☐ Mr. ☐ Ms. ☐ Mrs.

Name _____

Title _____

Company _____

Address _____

City _____

State/Zip _____

Telephone _____

Fax _____

Email _____

NB Commission No. _____

PAYMENT INFORMATION (CHECK ONE):

☐ Check/Money Order Enclosed
☐ P.O. # _____
☐ Payment by Wire Transfer
☐ VISA ☐ MasterCard ☐ American Express

Cardholder _____
Card # _____
Expiration Date _____

HOTEL RESERVATIONS

A list of hotels will be sent to you with your National Board registration confirmation.

All seminars and courses are held at the National Board Training and Conference Center in Columbus, Ohio, unless otherwise noted, and are subject to cancelation.

For additional information regarding seminars and courses, contact the National Board Training Department at 1055 Crupper Avenue, Columbus, Ohio 43229-1183, 614.888.8320, ext. 300, or visit the National Board Web site at *nationalboard.org*.

There in a Moment's Notice

Before there was Associated Press photography, before there was photojournalism, even before there was the picture postcard this column often features, news images were communicated the old-fashioned way: through artist engraving.

Take for example this drawing that ran in *The Illustrated London News* (ILN) Saturday, August 27, 1864. Begun in 1842, the ILN was the world's first illustrated weekly newspaper. What a treat for readers who before had only the text to envision the article's topic. Vivid images such as fires, faces, and fashion no longer had to be imagined, thanks to the drawn depictions. Sketches and cartoons had a new forum. The ILN changed journalism by intertwining copy and graphics.

A difficult facet of being an illustrator for a weekly newspaper was the erratic and harried schedule. There was no telling when and where news would break, so always being available was key. A boiler explosion such as the one featured in this sketch is a fine example of the job's demand. The fury of a flawed boiler could unleash in a moment's notice and an illustrator had to be ready.

Common to the period was the practice of creating a sketched image from an engraved wood block. Artists would make sketches in the field and send the drawings to an ILN engraver with precise instructions on how to bring the image to life. From there, the engraver would take over the project, creating the graphic that would ultimately be printed and complete the story.

The detail of this ILN drawing tells the story of a boiler that exploded on the North London Railway, sending the engine and tender into the air and 35 feet to the ground below. The two are shown here covered with a tarp. The engine was an outside cylinder tank-engine with six wheels. According to the accompanying article, "The engine, of course, was a perfect wreck; its chimney was knocked off, the doors of the smoke-box blown off, and its dome crushed in, and that portion of the boiler nearest the fire-box, which was the seat of the explosion, was also much injured."

The piece went on to speculate that passenger lives were not lost thanks to the hook of the engine snapping off during the incident, which prevented the engine from dragging the train over the edge of the viaduct with it. So little damage was done to the railway that traffic was resumed within about an hour. ❖