BULLETIN

SUMMER 2005 • VOLUME 60 • NUMBER 2

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.

A Man, a Boat, and a Steam Whistle
Where have all the steam whistles gone? Ron Beberniss of Texas may have an idea. Find out on page 12.

Cover Story

Features

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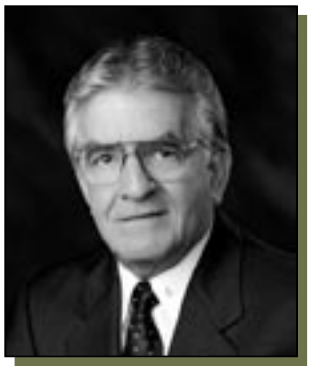


The Bottom Line

BY DONALD E. TANNER, EXECUTIVE DIRECTOR

Since 1997, this space has been used to analyze the previous year's Incident Report.

Not so this year.

After consulting with many of you from around the industry, we at the National Board have decided to discontinue annual publication of the Incident Report and instead focus on our Violation Tracking program.

The Report of Violation Findings (see page 10) not only details the number and type of violations within participating member jurisdictions, it identifies specific problems that reveal trends in boiler and pressure vessel operation, installation, maintenance, and repair.

Reasons for the transition from Incident Report to Violation Findings are several, but perhaps the most important involves providing you — the industry professional — with the most comprehensive data available.

Unlike the statistical information gathered each year for the Incident Report, the numbers provided to compile the Violation Tracking Report are an integral part of jurisdictional reporting. As such, this data is readily available and easily accessible by computer.

Incident Reports reflected only accidents involving owners and operators. Other incidents at public places such as restaurants, schools, commercial buildings, etc., were not included. Therein was our dilemma, and hence the decision to focus solely on Violation Tracking data.

As many of you are aware, the National Board Violation Tracking program has been around for less than a decade. During this time, however, its credibility and viability have been well established.

I hope that those of you who have followed this program have gained a full understanding and appreciation for these remarkable findings. And because they represent a full spectrum of inspection sites from public to private to industrial, we think this information is even more valuable to the boiler and pressure vessel industry. To avoid any presumption or bias, the National Board will post these statistics annually without analysis or commentary, preferring instead to allow the reader to independently digest the material and form his or her own conclusions.

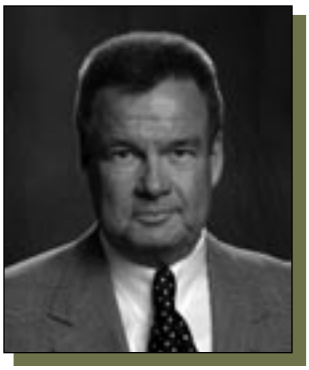
While we are grateful for the ongoing support of those jurisdictions that took the time and effort to compile and tabulate their Incident Report data, the National Board must now be both prudent and more inclusive in its examination of available statistical data — particularly in an age in which many of us fall victim to data overload.

Naturally, the involvement of our members will be critical to the future success of Violation Findings efforts. To this end, I pledge the National Board will do whatever necessary to expand jurisdiction participation.

For more than 85 years, it has been the National Board's commitment to collect and make available statistical data that is both of interest and value to our members and the boiler and pressure vessel industry. We are pleased to be able to continue this great tradition while at the same time streamlining data distribution and improving its validity.

Change can be good . . . if done for a good reason.

Hopefully, you will find Violation Tracking statistics to be a more meaningful and accurate gauge in evaluating our professional efforts. ❖



South Carolina Boiler Law Efforts Begin Anew

BY PAUL BRENNAN, DIRECTOR OF PUBLIC AFFAIRS

Legislation, it has been said, is born out of compromise.

And so it is with a new proposed South Carolina boiler law now (as of press time) before the state legislature.

S. 581 was introduced by newly elected state Senator Joel Lourie (22nd District) March 3. The senator previously introduced proposed boiler and pressure vessel legislation as a member of the South Carolina House of Representatives during the 1999-2000 and 2001-2002 legislative sessions.

By March 16, S. 581 had been favorably reported out of the Labor, Commerce and Industry Committee, passed by the full Senate, and forwarded to the House of Representatives. And then tragedy struck.

Forty-seven-year-old boiler operator Tommy Jarvis was killed during a horrific explosion March 30 at the Intertape Polymer Group Plant in Columbia, SC. Suddenly, there was a face associated with S. 581 and a new urgency to accomplish what lawmakers had failed to do for nearly three decades: pass a boiler safety law.

S. 581 bears little resemblance to any of its failed predecessors (see Special Issue Winter 2004 *BULLETIN*). Based to an appreciable degree on the recently enacted Alabama law, the new South Carolina *Boiler Safety Act* represents a compromise among stakeholders — orchestrated through the Senate Committee on Labor, Commerce and Industry — on a number of contentious issues.

Foremost among these was regulation of pressure vessels. Consequently, pressure vessels are not included under the *Boiler Safety Act*. With 10 U.S. jurisdictions presently not having pressure vessel laws, excluding regulation of this equipment group in South Carolina is a considerable disappointment. But having *no* law regulating pressure vessels *or* boilers is even more troublesome — and extremely dangerous for the people of South Carolina.

One of the most formidable challenges in attempting to pass a South Carolina law has involved parallel responsibilities that would be created within the state's building code program. The *Boiler Safety Act* eliminates duplication of government agency efforts under the jurisdiction of the Department of Labor, Licensing and Regulation.

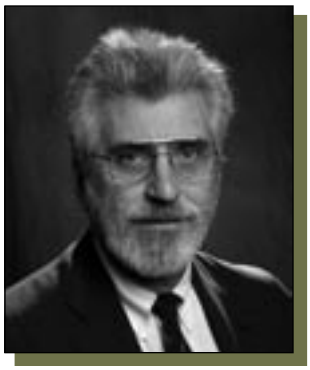
Like the Alabama law, S. 581 lists a number of exemptions. Other similarities include adoption of the ASME Code and *National Board Inspection Code*, and appointment of a commissioned boiler administrator. S. 581 also requires National Board registration. Because there is no funding for state deputy inspectors, the proposed South Carolina program would be dependent on "special" (i.e., insurance) inspectors.

The National Board recognizes that S. 581 is not an ideal blueprint for boiler safety. And while it does fall short in some regulatory categories, this bill is an earnest attempt to correct an unstable and extremely dangerous situation. In the end, regulatory parameters will be as lenient or as stringent as South Carolina citizens allow.

As National Board Executive Director Don Tanner so forcefully expressed in his Special Issue *BULLETIN* message last year: "It's now up to the people of South Carolina."

So it is. And so it must be. ❖

To review a copy of Senate Bill 581 as well as learn the bill's present status, go to *SC4safety.org*.



Common Mistakes Inspectors Face

BY VICTOR BOGOSIAN, DIRECTOR OF INSPECTIONS

With any profession, there is a right way and a wrong way. Boiler and pressure vessel inspection is no different. Be it the learning curve of a new position or the complacency of working in the field for many years, all inspectors can expect on occasion to err in judgment. What is critical, however, is what is taken from those missteps.

From construction to inservice, there are some common inspection mistakes. In the effort to inform and educate, a list of the problems inspectors face is detailed below. Let it be said that this list is certainly not all-inclusive, nor is there any significance to the order in which the items are presented.

Manufacturer's Data Reports

Each pressure-retaining item has its own particular data report. Occasionally, the manufacturer will choose an incorrect form, oftentimes with the inspector's concurrence. Certifying the correct form is essential for accurate documentation.

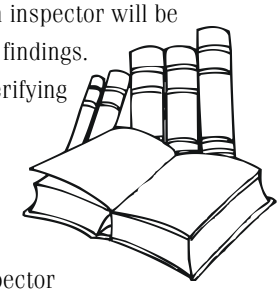
There is value in ensuring the data report is available as soon as possible. In some cases, failing to do so might lead to a rather large backlog of data reports to sign. For inspectors in the field, the lack of a data report for an installed pressure-retaining item leaves many questions.

Another mistake involves including the inspector's National Board commission number on a data report for a pressure-retaining item not registered with the National Board.

Tools

The most basic of tools are still the most valuable to an inspector: a flashlight and a mirror. It is critical these two pieces of equipment accompany every inspector to every site. They're effective, not to mention necessary to see the back side of many welds. It is a responsibility of the AIA, the inspector supervisor, and the inspector to ensure the inspector has them. Failing to utilize these fundamental essentials makes for an incomplete inspection, yet a surprising number of inspectors don't recognize this.

Trusting Memory Instead of Verifying Memory



Many times during an investigation, an inspector will be surprised at some of the investigator's findings. This is often due to an inspector not verifying the code requirements for a unique situation. It is imperative an inspector verify what he or she is being asked to accept. Read the code and review the organization's quality manual. The inspector should contact the supervisor anytime he or she cannot readily resolve a question concerning code compliance, manufacturing procedure, or quality control provision or its implementation.

Inservice inspections bring a new set of challenges. One includes having to cover a larger territory, which certainly means multiple jurisdictions with multiple regulations. Being limited to one jurisdiction necessitates remembering only one set of rules.

Certificate Inspection

More and more jurisdictions are conducting the first inspection of a pressure-retaining item. Regardless, the inspector must ensure the item is within the scope of the law. Don't report an item that is exempt from the law. An example includes reporting

boilers or pressure vessels that are too small and are therefore exempt from jurisdictional laws.

Also be aware of reporting an item that is required to be ASME-stamped and National Board-registered but lacks one or both requirements.

Repairs/Alterations

During the course of his or her career, an inspector will probably be called upon to authorize and accept a repair or alteration to a pressure-retaining item. The first thing to be aware of is the requirements of the jurisdiction where the item is located. These requirements can be gathered with the help of the chief inspector.

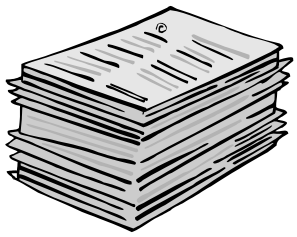
Next, an inspector should become familiar with the repair firm's quality system. Know the inspector's role as defined in the NBIC and the quality system. Ensure the work is done in compliance with both. Pay attention to the distribution and retention of records, ensuring compliance with the jurisdiction, NBIC, and quality system.

Assignment of Jurisdiction Number

In some cases, the inspector might not have the required boiler identification tags, labels, or whatever system the jurisdiction requires. The inclination is to tag the equipment later. However, later sometimes doesn't arrive for that inspector. Another inspector comes along and, not seeing any identification, assigns it another number. Now the jurisdiction's database has two listings for the same boiler. Attention to detail during the inspection can often preclude future problems.

Some installers assign great importance to the tag or label, sometimes to the point of carefully removing it from the old boiler/pressure vessel and reattaching it to the new one. While sometimes difficult for the inspector to detect, a preprinted report from the jurisdiction might reveal this has taken place. When assigned to inspect the old item, verify current information agrees with the item.

Reports



The inservice inspector is most at risk for errors in paperwork, as he or she is directly responsible for preparing the report. Sometimes inspectors transpose numbers if not using pre-prints. Before filing, be sure to check the number on the report against the number on the item.

When going over a report with an owner/user, carefully explain the deficiencies found and the steps necessary to correct them. Assume the owner — who might not even be aware he or she has a boiler — doesn't know industry acronyms and jargon. Taking the time to ensure the owner understands the deficiencies can be the difference between a corrected problem and a life-altering accident.

Most importantly, pay attention. Make sure the submitted report agrees with the assignment received. Take time to prepare for the assignment. If it is a fabrication assignment, make sure all areas are verified. If it is inservice, be knowledgeable of the jurisdiction's requirements. Contact the jurisdiction. This is the best source of information regarding inspection duties. ❖

Inspector Notices

"R" Certificate Reviews and Inspector Involvement

The inspector's role as a team member in an "R" Certificate Review begins long before the day of the review.

An inspector's monitoring of an "R" stamp holder's Quality Program and his or her detailed prior audit can make the review move smoothly and possibly more quickly. (However, some organizations go a year or more before requiring inspector involvement. This limits an inspector's time on areas requiring attention.)

The inspector's involvement is a required part of the National Board repair program. Additionally, the NBIC requires inspector acceptance of the quality program. To address these requirements, some inspectors audit the "R" Quality Program before the review. This action creates the opportunity to discover and correct problems before conducting the official review.

The very acts of performing program audits and monitoring and making the resulting corrections contribute to a properly run quality program. Inspector involvement in the program must be demonstrated by documentation as much as possible via material control, calculations, weld procedure qualification, weld inspection, pressure test procedure, marking procedure, and "R" Form completion. The traveler or equivalent means of process control should document all of this involvement and note it in the inspector diary.

When the inspector monitors a program, he or she should be aware of changes to the NBIC. Most Quality Programs require review of addenda and update to the program. A list of the most common findings from the last 50 Quality Review reports received by the National Board reveals:

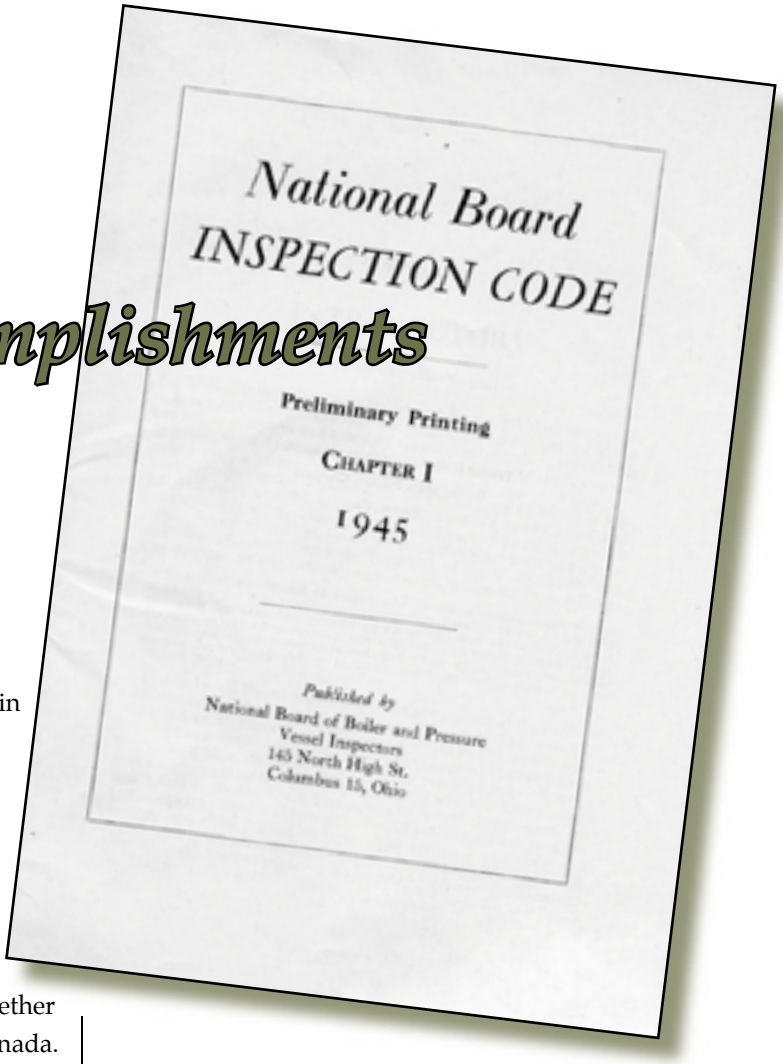
- The QC Manual does not address RC-1150. (*For those "R" Forms not registered with the National Board, the organization performing repairs or alterations shall retain a copy of the "R" Form on file for a minimum period of five years.*)
- The manual does not address RC-1151. (*The "R" certificate holder shall maintain a single, sequential log of "R" Form numbers assigned for NBIC Report Forms [e.g., R-1, R-2, and R-3] registered with the National Board.*)
- If a form is mentioned in the QC manual, it is not exhibited as required in RA-2151q.
- Welding documents are not checked against the requirements of the demonstrated item.
- Revision control and revision dates are not correctly noted on the Table of Contents.
- Material specifications do not meet those required by the original code of construction (e.g., A-105 vs. SA-105 for ASME Code repairs). ❖

Certificate Scope Changes

Part RA-2010 *Revised Scopes Listed* goes into effect July 1. The National Board will distribute Quality Review Reports (QRRs) that will note these scopes for reviews conducted July 1 or later. Applications and QRRs with the scope options will precede the July 1 date. Scopes of certificate holders with certificates listing scopes of the 2001 edition/2003 addenda are valid until the next review or until a revised application is submitted. ❖

The NBIC
60 Years of Accomplishments

by Chuck Withers, Senior Staff Engineer


National Board
INSPECTION CODE

Preliminary Printing

CHAPTER I

1945

Published by
National Board of Boiler and Pressure
Vessel Inspectors
105 North High St.
Columbus 15, Ohio

Around 1910, a movement began that would ultimately shape the boiler and pressure vessel codes in existence today. That movement involved joint efforts of boiler users, inspectors, jurisdictions, and manufacturers to develop reasonable, adequate, and safe rules for construction of boilers and pressure vessels.

One of the most important events to result from that period took place in December 1916. A meeting of the American Uniform Boiler Code Congress brought together nearly all boiler industry officials from the US and Canada. This meeting resulted in the recognition and uniform adoption of the *ASME Boiler and Pressure Vessel Code*.

However, as jurisdictions began adopting the ASME Code, problems began to arise. It became evident the Code did not provide a means for uniform enforcement, report forms, or inspection practices. Interpretation of the Code varied greatly from jurisdiction to jurisdiction, and applications of the Code caused repeated questions and concerns. With increased use of the Code, there became a greater number of varying ideas and problems to solve.

It was evident something had to be done to address these new problems. And so a meeting was called — the first of the National Board Organization — in February 1921. One concept resulting from that gathering was an "Inspector's Code," which provided guidelines for inspectors. This also involved developing a high level of standards to qualify inspectors who were responsible for the enforcement and application of the Code. Since boiler inspectors played a key role in promoting consistent and uniform enforcement, it was hoped that if inspectors were held to a uniform set of standards the inspection process could be improved.

What eventually evolved was a guide that was placed in the hands of all National Board members and all 2,000 commissioned inspectors. It was to serve as a textbook for novice inspectors and to influence uniformity for the more experienced inspectors. This manual addressed the difficulties and obstacles inspectors encountered when enforcing construction code requirements, and recognized and understood the differences within local regulations. The scope of the "Inspector's Code" also included repair practices, reference data, and charts, and expanded and improved on the existing repair rules of the National Board. This manual would eventually be known as the *National Board Inspection Code*.

In 1945, the first chapters of the NBIC were published. Chapters included introductory historical information, recommended jurisdictional laws and administrative regulations, repair instructions for boilers and pressure vessels, inspection rules for fusion welding, and rules for repairs of riveted boilers and vessels. These first steps facilitated the unification of jurisdictions and inspectors for enforcement of both new construction and inservice inspection requirements needed to meet most jurisdictional laws and regulations.

Some time passed before more chapters were added. The new chapters addressed concerns and problems the jurisdictions and inspectors were encountering. Many of the chapters were based on published National Board reports and papers that included information relating to rules for shop inspections, dished head calculations, safety of vessels on the low side of pressure reducing valves, fuel cutoffs and feed-water regulating devices, and inspections and repairs to vessels in petroleum refineries and other process industries.

Nuclear power was rapidly expanding in the early 1970s, which prompted a new section to be added that identified inspection requirements for nuclear reactor coolant systems. Later editions grew to include nuclear components. The 1972 edition contained an array of welding information, such as recommendations on how to complete procedural and performance qualifications forms, and guidelines for identification and storage of electrodes.

The 1972 edition also contained an interesting section describing qualifications of welding inspectors. Listed were requirements for eyesight, actual experience, knowledge, technical training, temperament, agility, physical strength, good judgment, integrity, and honesty. As stated on the front cover of this edition, the NBIC was truly "*A Manual for Boiler and Pressure Vessel Inspectors*."

The 1977 edition of the NBIC brought about a change in format that included a glossary of terms and added appendices that specifically addressed items of jurisdictional concern such as safety and safety relief valves, repairs to non-ASME Code boilers and pressure vessels, and requirements for owner-user inspection agencies. It was this edition that removed most of the welding information discussed in prior editions. This change was in response to changes guided by ASME committee work, as is the case today.

In 1979, the National Board "VR" symbol stamp was introduced for repairs of safety and safety relief valves. Following close behind in 1981 was the introduction of the "NR" symbol stamp for repairs and replacements to nuclear components.

Through the years the NBIC has evolved from a manual for inspectors to a standard that is recognized worldwide for enhancing public safety. A major evolutionary change occurred in 1983 when the NBIC became an American National Standard, which meant that its development now followed procedures requiring a consensus approval. The NBIC continues to meet the strict requirements stipulated by the American National Standards Institute (ANSI), the umbrella organization for standards developers in the United States. Standards developed under the policies and procedures of ANSI receive widespread support from member jurisdictions, industrial organizations, trade associations, and other standards organizations both nationally and internationally.

Continual progress in developing the NBIC can be seen through ongoing input of inspectors, jurisdictions, industry, and international organizations. All of these groups submit inquiries and proposals for revisions to address their needs and concerns. Based on this input, a number of revisions and new appendices have been added to the NBIC. Examples of this input can be seen in Appendix I, which provides installation requirements for pressure-retaining items, and in Appendix K, which identifies inspection and repair requirements for Yankee Dryers used in the pulp and paper industry.

In the 2003 addenda and 2004 edition of the NBIC, steps were taken to clarify requirements of post-construction activities to aid the user in understanding and applying the information in a safe, effective manner. Personnel safety, nondestructive examination methods, causes of deterioration and failure mechanisms, safety valves, and inspections of boilers, pressure vessels, and piping have been separated and organized specifically for the purpose of easily finding and identifying requirements. Additional information has been included to expand basic technical guidelines and general inspection information unique to specific types

■ *Executive Committee in session, 1955.*

of equipment such as black liquor recovery, waste heat, cast-iron, and electric boilers. As ASME did with the 2004 edition of its codes, the NBIC now incorporates metric units for worldwide use, following the same guidelines for conversions to maintain consistency.

Progress has also been made with how revisions are approved. Change in committee structure, improved methods for tracking changes, questions and comments, and revising procedures all serve to improve the quality of revisions and to expedite published changes. NBIC draft addenda are posted electronically for more widespread public review. All questions or suggestions in response to the draft addenda are reviewed by the National Board, laying the groundwork for the final addendum.

Establishing subcommittees in charge of specific responsibilities allows for most work, discussions, and recommended revisions to be accomplished before they are presented to the main committee for final approval. Since all NBIC main committee members participate at the subcommittee level, time needed for final approval of revisions is reduced and discussions minimized, allowing the main committee to concentrate on approval of revisions only.

An electronic database program was recently developed to track action items, inquiries, and public review comments. This database assists in generating agendas and summary reports used to monitor progress and make assignments to working groups. In addition, this database can answer questions regarding status and traceability of a completed or in-process item.

To broaden the base of stakeholders, a large amount of importance is placed on working with other standards organizations such as American Petroleum Institute, American Society of Mechanical Engineers, American Welding Society, and American Society for Nondestructive Testing, along with the many industries operating pressure equipment such as the pulp and paper, mining, and power-producing industries. The National Board is presently working to incorporate specific guidelines for evaluating remaining vessel life and adjusting inspection frequencies based on standards such as API-579. In addition, Appendix A has adopted for use over 50 Standard Welding Procedures. As the AWS approves others, the NBIC Committee will review and approve for use these industry cost-benefiting procedures.

Other exciting ideas being considered to promote the use of the NBIC include ensuring elimination of redundancy and conflicts, expanding repair methods, translating the NBIC into other languages, and referencing other acceptable national and international standards. The National Board, in addition to being reactive to comments and suggestions, will continue to take a proactive approach to seek, understand, and address issues and concerns for the many organizations, industries, and stakeholders identified as NBIC customers.

The National Board and its founding members developed a concept to address concerns for operating pressure equipment within jurisdictions. The year 2005 marks the 60th year of existence for this concept, the *National Board Inspection Code*. This essential, life-saving Code has evolved from a small 23-page document, first published in 1945, into an industry-leading inspection and repair Code, with more than 500 pages of informative text, helpful graphics, and useful tables. Requirements and data within the NBIC are constantly expanding and improving on the original concept of providing safety information that can be easily understood and enforced uniformly. ❖

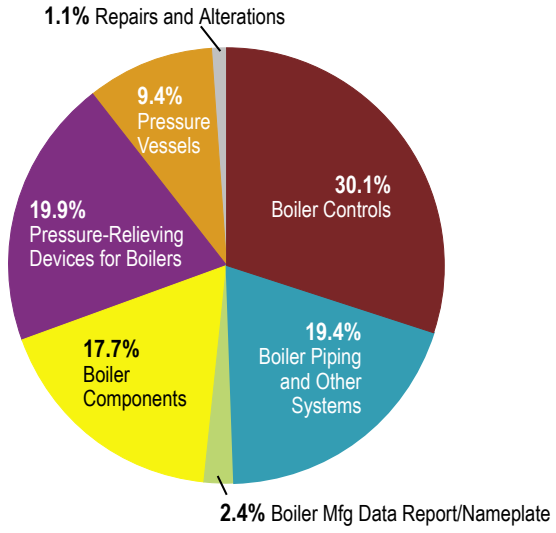
2004 Report of Violation Findings

The National Board Annual Violation Tracking Report identifies the number and type of boiler and pressure vessel inspection violations among participating member jurisdictions. The chart below details violation activity for the year 2004.

The Violation Tracking Report indicates problem areas and trends related to boiler and pressure vessel operation, installation, maintenance, and repair. Additionally, it identifies problems prior to adverse conditions occurring. This report can also serve as an important source of documentation for jurisdictional officials, providing statistical data to support the continued funding of inspection programs. ❖

Annual Report 2004

Category	Number of Violations	Percent of Total Violations
Boiler Controls	12,423	30.1%
Boiler Piping and Other Systems	8,042	19.4%
Boiler Manufacturing Data Report/Nameplate	983	2.4%
Boiler Components	7,300	17.7%
Pressure-Relieving Devices for Boilers	8,205	19.9%
Pressure Vessels	3,900	9.4%
Repairs and Alterations	470	1.1%



Summary for 2004

Number of jurisdictional reports: 349

Total number of inspections: 544,827

Total number of violations: 41,323

Percent violations: 8%

For the purpose of evaluating reader response, any favorable answer or combined approval rating (i.e., "Excellent" or "Good") above 65 percent is considered by most survey/polling experts to be an outstanding benchmark.

A total of 97 percent of those who responded in January felt the readability of the *BULLETIN* was either good or excellent. These results were similar to the 1999 survey.

High marks were also accorded *BULLETIN* design which netted a good or excellent rating from all the respondents, an increase of 3 percent over the previous survey.

BULLETIN a Hit With Readers According to Recent Survey

A January survey of more than 500 randomly chosen readers of the National Board *BULLETIN* has revealed the publication does an exceptional job of addressing boiler and pressure vessel industry issues in a format that is both well designed and highly readable.

"Our 13 percent response was particularly gratifying," explains National Board Executive Director Donald Tanner. "It illustrates a high level of industry interest in the *BULLETIN* and a desire on the part of our readers to see the *BULLETIN* maintain its high level of quality."

The last *BULLETIN* readership survey was conducted in fall 1999.

On the question asking readers whether the *BULLETIN* does an adequate job addressing current industry issues, 92 percent of the respondents answered affirmatively. A total of 83 percent of surveyed readers thought the *BULLETIN* thoroughly covered industry trends.

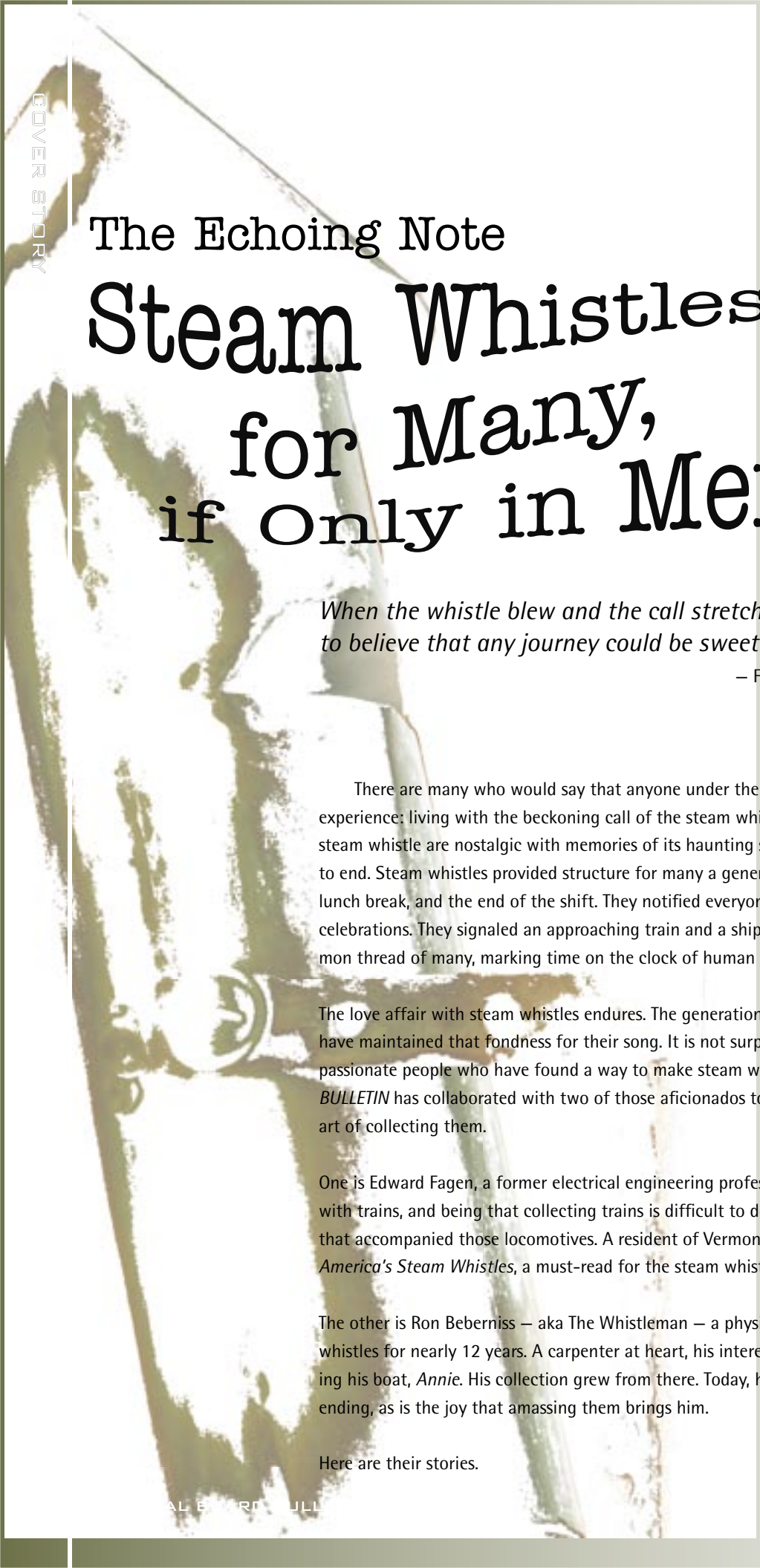
"Covering current issues and trends is difficult for a publication that is distributed only three times a year," emphasizes Mr. Tanner. "These numbers reveal a solid understanding of what is important to our readers as well as the capacity to anticipate what the reader needs in order to make informed decisions."

As for editorial content, nearly 99 percent of those responding rated the publication's articles good or excellent. This represented a modest improvement over the last survey figure of 92 percent.

When asked about technical content, 100 percent of the responding readers felt *BULLETIN* articles were technical enough for the intended audience (as opposed to too technical or not technical enough).

In addition to rating the *BULLETIN* in a number of different areas, the survey asked respondents to provide ideas for future articles and suggestions for improvement.

The survey also attempted to draw a demographic profile of *BULLETIN* readership. Among the items of interest: the largest portion of the industry represented on the *BULLETIN* mailing list is the inspection sector (56 percent) followed by the regulatory sector (15 percent). The largest group of professionals — by position — receiving the *BULLETIN* is inspectors (34 percent), followed by managers (19 percent), and engineers (14 percent). A total of 68 percent of the readership has been in the industry 21 or more years; 68 percent have been receiving the *BULLETIN* for more than 5 years; 70 percent share their copy with a coworker while 20 percent take home the *BULLETIN* for their spouse to read. ❖



The Echoing Note

Steam Whistles Exist for Many, if Only in Memory

When the whistle blew and the call stretched thin across the night, one had to believe that any journey could be sweet to the soul.

— From *The Celebrant: A Novel*, by Charles Turner

There are many who would say that anyone under the age of 60 has missed out on a rich life experience: living with the beckoning call of the steam whistle. Most whose lives were guided daily by a steam whistle are nostalgic with memories of its haunting sounds calling the day to order or allowing it to end. Steam whistles provided structure for many a generation, signaling the start of the work day, the lunch break, and the end of the shift. They notified everyone in earshot of local disasters and of global celebrations. They signaled an approaching train and a ship in the harbor. Steam whistles were the common thread of many, marking time on the clock of human experience.

The love affair with steam whistles endures. The generations enchanted with the sound of the whistles have maintained that fondness for their song. It is not surprising then to find more than a handful of passionate people who have found a way to make steam whistles part of their daily lives once again. The *BULLETIN* has collaborated with two of those aficionados to learn more about the steam whistle and the art of collecting them.

One is Edward Fagen, a former electrical engineering professor. As he explains it, he grew up fascinated with trains, and being that collecting trains is difficult to do, he has opted to collect the steam whistles that accompanied those locomotives. A resident of Vermont, he is the author of *The Engine's Moan: America's Steam Whistles*, a must-read for the steam whistle enthusiast.

The other is Ron Beberniss — aka The Whistleman — a physician in Texas who has been collecting steam whistles for nearly 12 years. A carpenter at heart, his interest in steam whistles came about while building his boat, *Annie*. His collection grew from there. Today, his accumulation of steam whistles is never-ending, as is the joy that amassing them brings him.

Here are their stories.

For the Love of Annie
Meet The Whistleman

an interview with Ron Beberniss

How did you become interested in steam whistles?

I wanted to put a whistle on *Annie*, a boat that I have been building for 16 years. She looks like a boat that ought to have a steam whistle.

How and when did you secure your first steam whistle?

It was in the late 1980s. I had been looking for a whistle for the boat for over six months. My wife and I would go antiquing just about every weekend. I looked in antique stores, junkyards, garage sales, flea markets, et cetera. I found not a clue as to where to find an old whistle.

We went on a ski vacation that winter to Breckenridge, Colorado. On the way, we stopped in an old railroad-mining town called Georgetown to rest and kill some time. We went into a couple of antique stores and I found my first whistle. It was a four-inch Buckeye chime. From there we went to a hardware store and I bought a can of brass polish; I pulled an old T-shirt out of my suitcase and told my wife to drive the rest of the way while I polished my whistle. Later in the trip we drove to Leadville and found a couple more antiques stores — and two more steam whistles which I purchased. I went home to Texas with three whistles. The rest is history.

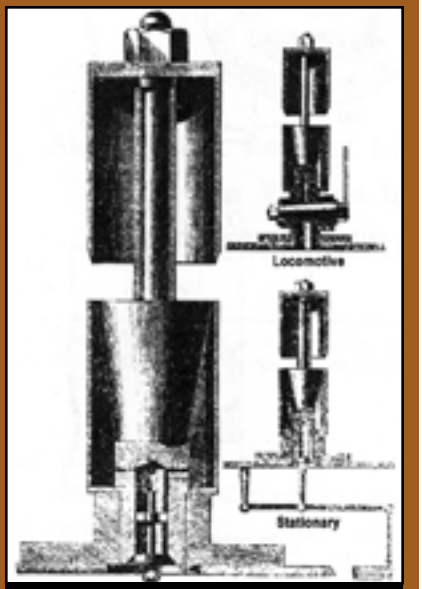
How many steam whistles do you have in your collection today?

I really don't have a clue! I ran out of fingers and toes a long time ago. If I had to make a wild guess I would say seven or eight hundred. How many I have doesn't count . . . the only important

The Steam Whistle:
Voice of the Industrial Revolution

by Edward A. Fagen

A steam whistle is basically a very simple device. Take a piece of tubing, typically two to six times its diameter in length. Close it at the top end. Arrange a bowl or cup beneath the lower end so as to direct an annular jet of steam at the rim of that end. Admit high-pressure steam and presto! A device with no moving parts that converts the kinetic energy of escaping steam into monotone acoustic energy.



The first steam whistle, this is the only representation of Stephens' original invention.

The steam whistle was invented as a low-water alarm around 1833 by an itinerant Cornish mechanic named Adrian Stephens. He did not apply for a patent, being, as he later wrote, "neither in want of, nor caring for, money." Needless to say, these low-water alarms were not fitted with shutoff valves (which would have defeated their purpose). Often they were merely superimposed on the outlet of a safety valve. The first U.S. patent of this kind was issued in 1846 to Matthias Baldwin, who went on to found the Baldwin Locomotive Works. Fewer false alarms resulted when the whistle was actuated by a float valve extending through the top of the boiler in a steam-tight gland.

thing is where the next one is coming from. Suffice it to say that there is no place left at home for whistles in the dining room, living room, or my office. The good stuff has been finding its way into the bedroom. My wife informs me she is not sleeping with any whistles. Guess that means I can't take them to bed with me??

Do you have a system of organizing and cataloging your steam whistles?
Actually, no. I have tried several times but get about a quarter of the way through and decide it's an overwhelming task and I don't really care. So I devised a very simple system that works out. Big ones on the floor, little ones on any and all horizontal surfaces.

Which is your favorite steam whistle in the collection and why?
To single out a specific whistle would be a very difficult task. They are all special. They are all my children. I don't have favorites. In many cases the whistle has a story behind it, about its history, where it came from, how I found it, and what I had to do to get it.

Are most of your steam whistles still operable?
They are all operable. Most of the time if I get a whistle that has been damaged or has parts or pieces missing, I restore it to its original condition. This may involve having parts cast at a foundry, and then machining and fitting them. Restoration may or may not involve polishing a whistle to a mirror finish. Many times I leave them exactly as I find them. There is actually very little that can go wrong with a whistle that would keep it from working.

Do you have a source of steam to blow your whistles?
No. I blow my whistles with compressed air. I have a demonstration trailer I call "Little Toot." It is set up with about 70 or so whistles and horns and a calliope. I take it to fairs, festivals, and parades. The trailer has a big compressor and an air reservoir I use to blow the whistles. I would have to have a huge boiler to blow all my whistles. Steam boilers are big, heavy, and cumbersome and require attention. So for practical purposes, air is easier and a lot safer.

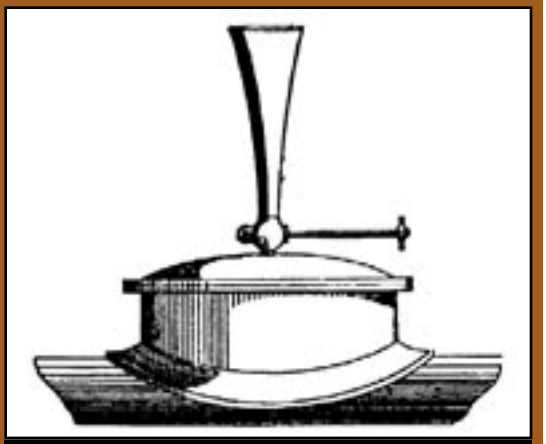
Do you collect steam whistle memorabilia?
I do. My office at work is covered with pictures of steam whistles on factories and from other places — before I have taken the whistles down. Also, I have a number of photographs of old steamships from where I have acquired the whistles. I have quite

By contrast to Stephens' original whistle, a modern steam whistle has a lever-actuated disc valve added to the base. The long tapering windway of Stephens' design, modeled on organ flue pipes, proved to be superfluous and has been replaced with a simple slot. This basic construction conceals a subtlety of importance to scientists, however. At inlet pressures exceeding about 15 psi, the velocity of steam within this slot attains the velocity of sound. Fluid flow then locks up at this velocity and enters a regime known as choked isentropic flow. Hence an ordinary steam whistle is essentially a sonic or even supersonic device, and its fluid dynamics cannot be described in terms of the usual low-pressure equations. Adrian Stephens would have been amazed.

Steam whistles were usually cast from a steam bronze containing 86 to 88 percent copper. A few manufacturers, however, favored a sleeve of drawn yellow brass tubing, a good choice from the standpoint of visual elegance but a poor choice from the standpoint of corrosion resistance. Locomotive whistles operating at pressures exceeding 200 psi were often made of cast-iron for strength and vibration resistance. So too were cheap whistles intended for 'throwaway' applications such as temporary logging camps.

The merits of Stephens' low-water alarm as a signaling device were quickly recognized by others. Within a few years, steam whistles had been applied to locomotives, ships, factories, mines, fire engines, sawmills, and industries of every description. For millions of Americans, factory whistles became the regulators of the workday, structuring it as rigidly as the ringing of the canonical hours that once regulated the lives of monks in the monastery. Steam whistles were in the truest sense the voices of the Industrial Revolution. Today, with the demise of the reciprocating steam engine as the prime mover of industrial society, they are rarely encountered, and one must visit such antiquarian organizations as museums and tourist railroads in order to hear them as they were once heard. In this context it is important to remember that the steam whistle is fundamentally a boiler accessory. It belongs to the boiler, not to the steam engine. The popular association of the whistle with the engine is so strong and pervasive that one tends to forget that most boilers in use provide process steam, not propulsive effort.

The first area of application to emerge for the steam whistle was railroading. Surprisingly, the steam whistle was not the first steam-powered railroad signal. A dreadful crossing accident at Bagworth, England, in 1833 inspired the directors of the Leicester & Swannington Railroad to ask the celebrated engineer George Stephenson to design an appropriate warning device. Stephenson responded with the so-called steam trumpet. Regrettably, no contemporary description of this device exists, but its horn-like appearance suggests that it is a variation of an organ reed pipe.



Stephenson's original steam trumpet.

a collection of magazine ads from the 1930s to the 1960s that depict old steam whistles. My office walls at home are covered with old signal boards from railroad round houses and old ships that list the signal codes for fires and other emergencies.

What does your family think of your collection?
My daughter thinks I am eccentric. She's probably right! My wife married me for better or worse. And I tell her it could be worse . . . just be glad I don't collect old tractors. They would be in the living room and bedroom.

What will happen to the steam whistles upon your "final disposition"?
They say you can't take 'em with you. I told my wife she better throw a few of them in the box with me along with a can of Brasso in case there is a delay in me getting wherever it is I'm going. I figure if I ever make it to heaven, when St. Pete opens up the pearly gates, he will hand me a big pipe wrench and a pipe cutter and there in front of me will be a never-ending row of old mills and factories all with huge whistles on the boiler houses just waiting to be saved from the junk pile!

Actually, what will happen to my whistles ultimately is a big question in my mind. There is an incredible amount of history in these old whistles and I have spent countless hours, days, weeks, and years putting this collection together. I have a hard time with the thought that someday it may be dispersed on eBay or at an auction for mere dollars. My prayer is that I may have a grandson who in some small way shares my passion for this little piece of history. Otherwise they may be relegated to the dusty, moldy basement of some museum, never to be seen again.

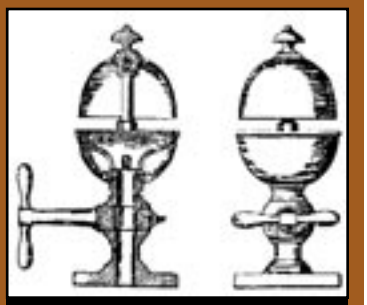
What is the age of the oldest steam whistle in your collection? And from where did you retrieve it?
Putting a date on whistles can be a difficult task. I have quite a few whistles from the 1870s and 1880s, and some possibly earlier. Old industrial catalogs are useful and can give you some idea of which companies made various types of whistles during various periods. Most of the major manufacturers marked their whistles with their names or logos. Some companies marked the patent dates on the whistles. Patent dates are an interesting piece of information but do not date a particular whistle — all it means is that that company started making that type of whistle in that year. They may have continued to make that whistle unchanged for 40 years after it was patented, as in the case of Lunkenheimer or Buckeye whistles.

How long does it take you to retrieve a steam whistle, normally?
Sometimes I have found a whistle, gotten permission, and successfully taken it down in a matter of a few hours. Other times I have spent up to five years with repeated phone calls, letters, sending secretaries flowers and honey-baked hams at Christmas to get a whistle. There are some whistles I have just given up on, knowing I will never get my hands on them. Most of them lie somewhere between those extremes.

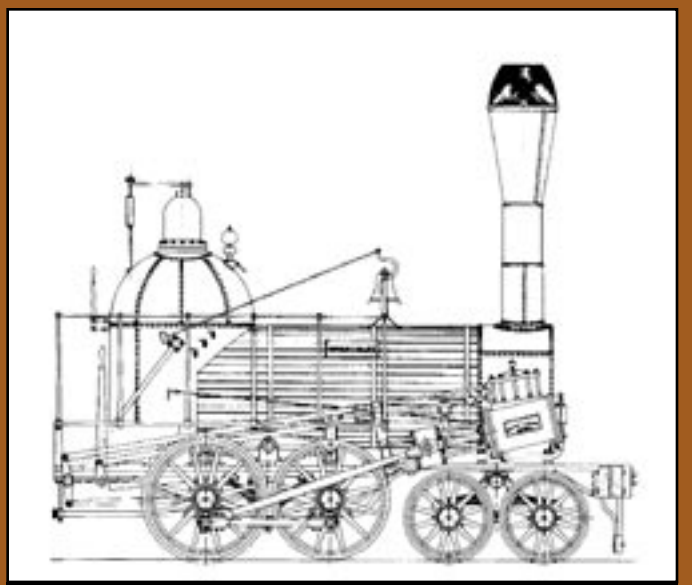
What is the most unusual thing you have done to retrieve a steam whistle?
I will stick to the less-shady things I have done just to keep up appearances for the sake of your readers. However, I must admit that whistle

In 1835, however, Thomas Turner, a workman at Sharp, Roberts & Co., locomotive builders of Manchester, showed a sketch of Stephens' device to the motive power superintendent of the Liverpool & Manchester Railway. That official quickly recognized its superiority to the steam trumpet, which was soon displaced on English railroads. Within a year the steam whistle had crossed the Atlantic and appeared on an American locomotive. That locomotive was the *Susquehanna*, one of several built by the Locks and Canals Machine Shops of Lowell, Massachusetts.

These early locomotive whistles were fitted with manually operated valves which were nothing more than adaptations of the familiar quarter-turn gas cock. There was no need for a whistle lever or whistle cord because the cock was within arm's reach of the engineer as he stood on the rear platform. These 'egg cup' whistles — so named for their shape — were short and therefore shrill, much to the annoyance of passengers aboard the train and livestock along the right-of-way. By the Civil War era the specialization of the steam whistle had begun. Railroad whistles grew taller, lowering their pitch and lessening their annoyance quotient. Gradually the custom arose of assigning low-pitched whistles to passenger traffic and higher-pitched whistles to freight traffic — a useful distinction. The reasoning seems to have been that anyone riding a freight train had probably not paid for his ticket, and therefore his aural comfort was not a consideration.



An English "egg cup" locomotive whistle ca. 1854.



A very early American locomotive, the Gowan and Marx of the Philadelphia and Reading Railroad, built in 1839.

With the exception of the 'Fitts gong,' a curious two-bell fire alarm patented in 1865, all the whistles in use before 1877 were plain whistles (i.e., those that sound a single note). If a musical chord was wanted, either to increase carrying power or to aid recognition of the source, it was necessary to mount several plain whistles on a common manifold. In 1877, however, a seminal patent was issued to John Einig for a single-bell chime whistle, an ingenious casting that combined three separate resonators within a bell of traditional shape. These were tuned to the first, third, and fifth notes of the musical scale. Manufacturing rights to the Einig patent were quickly bought up by the Crosby Steam Gage and Valve Co. of Boston, and it

hunting is occasionally a nocturnal sport. I have done quite a few rather bizarre things that were necessary to get a whistle. One is related to my biggest whistle, a twelve-inch diameter Lonergan that came from a psychiatric hospital in New York. I located the whistle through an ad that I had placed in *Hemmings Motor News*. Let me tell you, a twelve-inch whistle is a whistle collector's prize of all prizes. Even ten-inch whistles are pretty rare.

After making the connection, I negotiated with the individual for over a year about the whistle. He couldn't decide if he really wanted to sell it, and he couldn't decide what he wanted for it. We kept going back and forth; I had finally resigned myself to the fact that I was never going to see this whistle.

Several months went by and I decided to give the guy another call. When he answered the phone I reminded him who I was and he said that that was a real coincidence because he had decided to sell me the whistle and was just about to call me. I asked him what he wanted for the whistle and he told me a doable sum of money that we had hashed over before. But in addition to that he wanted a pair of cowboy boots. He lived in New York and I got the impression he thought everyone down here in Texas is a cowboy who rides a horse to work. I told him, 'You want boots . . . we got boots.' I went to a store that is a veritable boot warehouse, and lined up about 25 pairs of boots on the floor in his size and took pictures of all them. The photos were on the way to New York that day. He picked out his boots, I mailed them, and the whistle now has a good home in Texas.

Have you ever been injured while retrieving a steam whistle?
Physically, no. Economically, yes!

Have eBay and other online auctions enhanced your collection?
Yes, to some extent. On the positive side, eBay puts stuff in front of you that you would never find in three lifetimes of whistle hunting. I have picked up rare and unusual whistles for a pittance when the posted images were bad or the description was incorrect or when no one else happened to bid on it.

On the negative side, it has driven prices up. The law of supply and demand comes into play. On eBay you are competing with a large group of people who want steam whistles. Some are fairly affluent and money is no object. They will put a large bid on a whistle and pay twice what it should go for.

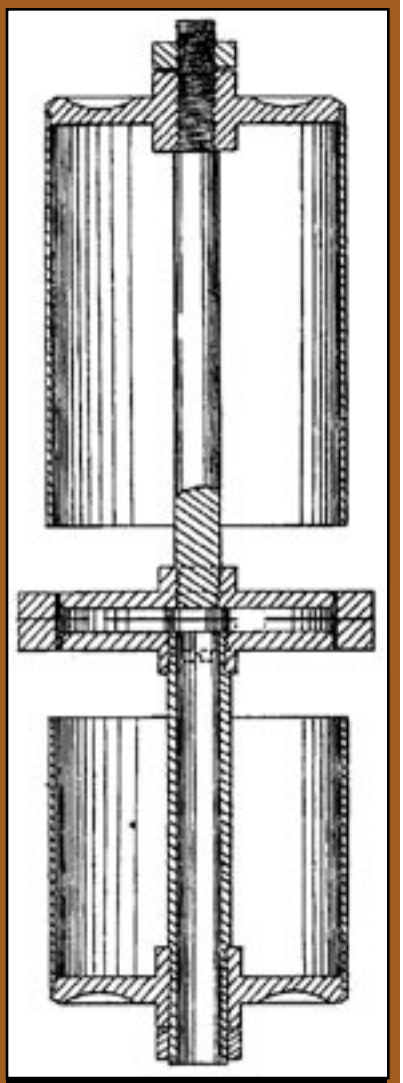
It has taken a lot of fun out of it, I think. To acquire a whistle all you have to do is sit in front of the computer, click the mouse, write the check, send it off, and miraculously a few days later a whistle appears at the front door! All it takes is a fat checkbook and anyone can be a whistle collector.

Quite frankly, I think it is a lot more fun to go out driving, looking for old warehouses, lumber mills, or factories with old unused whistles. Finding the whistles can be difficult at best — trying to get permission to go harvest the whistle is probably the hardest part. Once that is done, the real fun begins . . . climbing up on the rotting-out roof of a boiler house fifty or sixty feet in the air with a bag of tools and a rope. The trip down can be even more precarious with a 100-pound whistle in tow. But oh, what a thrill — it doesn't get much better that that!

What is your advice to someone who wants to start collecting steam whistles?
My advice to wanna-be

proved to be the cornerstone of their fortunes. It now became possible to apply chime whistles to steam locomotives, and they rapidly took the place of plain whistles on almost all railroads. After expiration of the Einig patent, single-bell chimes were offered by every other major manufacturer as well. They remain the most familiar of whistles in industrial and institutional applications.

The single-bell chime was further developed for railroad use by the introduction of the so-called steptop whistle. The classic appearance of the Crosby chime was abandoned, and the tone chambers of varying length were openly revealed in a no-nonsense casting with a top resembling a spiral staircase, whence the name. This permitted five or even six notes to be sounded simultaneously rather than the previous three, which led to some highly interesting and unorthodox harmonies. Curiously, no patent relating to the steptop design has ever been found, although it was first marketed by the Nathan Manufacturing Co. of New York around 1907. These new steptops, with their rugged one-piece tops and inherent resistance to vibration, found immediate and overwhelming favor on locomotives. Even today, those who recall with fondness the sound of a steam locomotive are almost certainly remembering the distinctive wail of a five-chime steptop.



A figure from Fitts' original patent of 1865, showing two opposed bells of different lengths, one on either side of a central bowl.

The steam whistle expanded into marine applications almost as rapidly as it had into railroad applications. In 1837 Stephen Collins installed a whistle aboard the *King Philip*, a small 'teakettle' plying between Fall River, Massachusetts, and Providence, Rhode Island. As in railroad applications, marine whistles rapidly became specialized to their tasks. Two considerations dominated: the need to be heard over great distances and the need to identify an unseen ship, as when navigating in fog. The first consideration led to whistles of large size and low pitch, the pitch being inversely proportional to the length or tonnage of the vessel. Great Lakes ore carriers and the famous Liberty ships of World War II typically carried whistles 8 to 10 inches in diameter and 30- to 40-inches tall. The second consideration led to the employment of multiple bell chimes, especially on passenger-carrying vessels. All else being equal, a three-bell chime radiates three times as much acoustic power as a plain whistle or a single-bell chime. Ready-built combinations of this kind were offered by several of the major manufacturers, and rapidly became the characteristic whistle of the riverboats and packets on America's inland waterways. The finest examples of the breed were the enormous three-bell chimes built by the

whistle hunters is to find them in their natural habitat. Look for them in areas where they used to be. There are still a plethora of them left out there waiting to be rescued. Just have to look in the right places.

What kind of steam whistle is most in demand with collectors?
Of the different brands and types of whistles out there, most wanna-be collectors gravitate toward the name brand whistles like Lunkenheimer, Buckeye Brass and Iron Works, and Powell. The chime whistles — multinote whistles — are more desirable than plain bell — single note — whistles, as their sound is more melodious and pleasing to the ear.

What can someone who wants to purchase a steam whistle expect to pay?
A small boiler alarm whistle might go for $50 or $75, while a locomotive step-top five- or six-chime whistle with a history or provenance might bring two to three thousand dollars.

Although the steam whistle can be described as simply a signaling or warning device, it seems to hold a special place for many a generation. Can you explain why?
This is a very good point. Young people do not understand the significance of steam whistles because America has changed. Ask someone who is 20-years-old what a steam whistle was used for and he will almost invariably focus on train whistles. Ask someone who is 80-years-old and he will tell you about the factory or mill whistle in the town where he grew up.

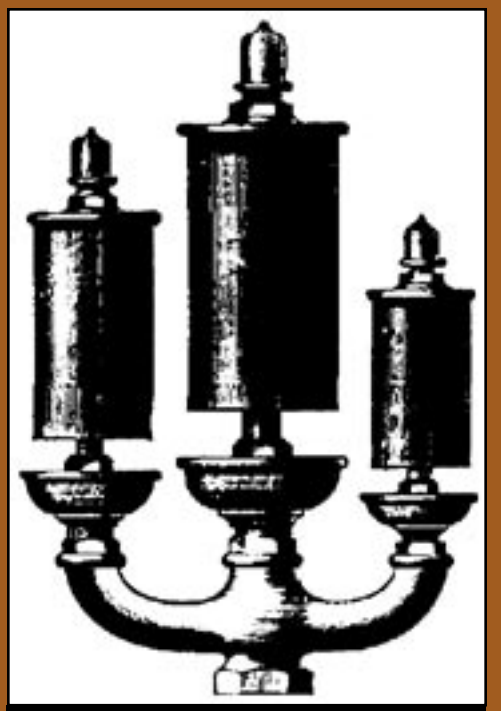
Before public transportation and the evolution of the automobile, people had to walk to work. As a result they lived close to their factory jobs. Towns grew up around the mills and factories. All of these old mills and factories had a steam whistle. The whistle would wake people in the morning. It would blow when the shift started in the morning. People would get off for lunch when the "noon whistle" blew, and they would head home at quitting time when the four o'clock whistle blew. These whistles blew for emergencies like fires and mine disasters, and for celebrations like New Year's and when the great wars ended. People would set their clocks and watches by the whistle.

I have two fairly large whistles that came off the *Miss New York*, one of the old Staten Island Ferry boats. She was put into service in about 1936 and served daily until the 1960s when she was taken out of service and sold at auction. She was in the process of being converted into a floating restaurant when she sank. She was scrapped, and I ended up with the whistles through a long series of events. These whistles blew many times each day for over 30 years as the ferryboat plowed her designated course back and forth. You could tell on the other side when the ferry was leaving the dock because you could hear her whistles blow. On a clear night, the whistles could be heard for many miles across the open waters. I think of all of the commuters, visitors to New York, heads of state, kings, queens, presidents, and gangsters who heard these whistles blow. These whistles were part of the era's whole waterfront scene.

Are steam whistles still functionally used today?
Yes. There are still some functional whistles around but because of city noise ordinances, whistles have been gradually silenced over the years. In some instances they are still used as emergency alarm systems, but electronic signaling devices or air horns have displaced most. Trains and ships no longer use whistles. They now use air horns, which are more efficient and more directional. This also reflects a decline in the use of steam as a common energy source.

How should a steam whistle be cared for?
Sort of like my wife: they need to be caressed and talked to and put on a pedestal for all to look at. Short of that, a little brass polish and a little elbow grease do a fine job. Some of my whistles I polish to a mirror finish and some I don't even clean up; I leave them exactly as I find them. Once polished and if not touched, a whistle will stay shiny for many years.

Hyson Green Valve Works of Nottingham, England, with bells 9, 12, and 15 inches in diameter. Their majestic booming was the signature of the great transoceanic passenger liners of the early 20th century, among them the *Aquitania*, the *Mauretania*, and the *Titanic*.



In 1890, now under the Lunkenheimer name, the three-bell chime acquired an elegant manifold made especially for it.

Who made all these steam whistles? Whistle manufacture probably reached its zenith in the first decade of the twentieth century. The listing under 'Whistles' in *Thomas' Register* for 1905-06 — when purged of toy whistles and teakettles — contained 45 domestic whistle manufacturers. The smallest of these were dedicated private operations capitalized at only a few thousand (1905) dollars, whereas the largest were such giants as the Crane Co. of Chicago, still flourishing a century later, for which the manufacture of steam whistles was never more than a minor sideline. But whistle manufacture was in fact dominated by three firms of moderate size, the Lunkenheimer Co. of Cincinnati, the Buckeye Iron & Brass Works of Dayton, and the Crosby Steam Gage & Valve Co. of Boston. After several near-death experiences, a remnant of the Lunkenheimer Co. still exists as the Cincinnati Valve Co. and is still manufacturing steam whistles to century-old specifications. Its principal customers are said to be prisons, amusement parks, and Navy submarines. Interestingly, none of the 'big three' ever made locomotive whistles in any quantity. These came almost exclusively from four other sources not listed in Thomas: the Nathan Manufacturing Co., the Hancock Inspirator Co., the Locomotive Finishing & Manufacturing Co., and the shops of the railroads themselves. Many railroads made some of their own whistles but two railroads in particular did so exclusively, the Southern and the Pennsylvania.

How many whistles were made during the age of steam? We can only guess the answer, because virtually all production records have been lost or destroyed. Historians of technology have succeeded in recovering only the records of Crosby of the three-year period from September 1914 to September 1917. During this period, Crosby manufactured 3,250 whistles, consistent with a total of perhaps 50,000 whistles during its productive lifetime. Lunkenheimer and Buckeye probably each manufactured twice as many as Crosby, bringing the total to around 250,000. All other manufacturers taken together probably contributed another 100,000 whistles. Surprisingly, we can estimate the number of locomotive whistles rather accurately, because approximately 66,000 steam locomotives were manufactured for domestic use, and each of them carried exactly one whistle. Thus the grand total is probably in the neighborhood of 400,000 to 500,000 steam whistles.

Is there a formal association of steam whistle collectors?
Actually no. There is a relatively small body of serious — obsessed — collectors. Most of us know each other. After all, when you bring home a real rare treasure, you have to tell someone 'cause our wives don't care. They think it's just another damn whistle!

What do you want people to know about steam whistles? Particularly relating to the history and collection of them.
I am a historian, and maybe an archeologist of sorts. I research and then search and sometimes find the relics of previous generations, restore them, and then try to put them into historical perspective. Steam whistles are, in fact, collectable in and of themselves because they are old and antique and brass and all that stuff. People like old shiny stuff. If that was the only reason I collected them then I might as well collect old marbles, or stamps, or coins. Then there wouldn't be so much polishing involved.

Unfortunately I don't think I could feel passionate about marbles and stamps and coins, as they have no memorable place in history. If you asked some older person about a marble they played with as a kid, or a particular coin they bought ice cream with when they were 12, or a stamp they mailed a letter with when they were 18 . . . they would laugh at you and think that you had a loose screw. On the other hand, if you ask anyone over age 60 — who grew up in a small town with a factory or a sawmill or a fire station or a railroad track — if they remember the sound of the old whistle . . . you'll get a different answer. Yes, they remember it. The whistle woke them in the morning. They would hear it at noon. Dad got off work when the 4 o'clock whistle blew. It's indelibly imprinted in their minds. I have taken on the task of trying to preserve this little piece of Americana.

So, what type of whistle did you ultimately pick to put on *Annie*?
Actually there was not a lot of thought put into it! We plumbed a 1" brass line to the wheelhouse and it came up through the chart table to a 1" whistle valve. The inlet for a 4" Lunkenheimer is 1.25," so that is what we installed. We hooked it up and it sounds pretty good. It is probably vintage 1900. ❖

Note the gross disparity between the total number of whistles and the number of locomotive whistles. There were at least five whistles in non-railroad use for every whistle in railroad use, yet railroad whistles are overwhelmingly more familiar to the general public. The reason of course is that trains traveled from place to place and brought their unique sound to millions of listeners along the right-of-way, whereas whistles in fixed locations were heard only by those within earshot. Moreover, trains are invested with a wealth of emotional associations which other applications lack. No one thrills to the sound of a steam laundry in the night.

How many of these whistles survive today? Perhaps 5,000 to 10,000, largely in the hands of private collectors. At least three American collectors own more than 500 whistles each (see accompanying "Whistleman" story). Most whistles outlived their usefulness and were melted down for their copper content during World War II. Yet it is a tribute to the durability of their appeal that so many have been saved. The general public may regard them with the same indifference they now accord to other paleotechnic artifacts such as the butter churn and the muzzle loader. But to those who still remember them, in the hearts and minds of an older generation, they continue to exert an unforgettable magic, a siren call to a way of life that now lives only in the imagination. ❖

Edward Fagen is a retired professor of electrical engineering. Although trained in solid state physics, he has strong avocational interests in steam locomotives, sound reproduction, and classical music. He lives in a solar house of his own design in Middlebury, Vermont, and occasionally blows a whistle or two from his large collection.

National Board Names George Bynog Assistant Executive Director, Technical

The National Board has named George Bynog assistant executive director – technical, effective May 2. Mr. Bynog is a former chief boiler inspector for the Texas Department of Licensing and Regulation. He succeeds Robert Sullivan, who will retire this summer.

Mr. Bynog joined the State of Texas in 1982, serving first as inspection specialist, moving to assistant chief inspector, then to chief inspector in 1989. He retired as chief inspector in 2003 after 14 years as a National Board member.

"Mr. Bynog has a wealth of experience serving as Texas chief boiler inspector and as a productive member of numerous National Board and ASME committees," commented National Board Executive Director Donald Tanner.

In addition to serving on the National Board's Constitution and Bylaws Standing Committee, the Task Group on Criteria for Registration, and the Strategic Plan Task Group, he was also a long-term member and chairman of the *National Board Inspection Code* Committee.

The new National Board official also served on several ASME committees, including the Subcommittee on Boiler and Pressure Vessel Accreditation and the Post Construction Committee.

In 2003, Mr. Bynog was chosen as the recipient of the National Board Safety Medal, the highest commendation given by the National Board. The award is based on service to the boiler and pressure vessel industry, and winners are peer-nominated.

A 21-year veteran of the US Navy, Mr. Bynog retired in 1981 as master chief petty officer.

Mr. Bynog holds National Board Commission No. 9683 with endorsements "A," "B," "I," "N," and "NS."

Mr. Bynog and his wife Denise presently make their home near Austin, Texas. They have two daughters. ❖

Oregon Member F. Ray Andrus Resigns

National Board Member F. Ray Andrus resigned from the State of Oregon and his National Board duties December 31, 2004.


F. Ray Andrus

Mr. Andrus joined the State of Oregon's Building Codes Division in 1996 as deputy boiler inspector. He then moved to assistant chief boiler inspector, then to acting chief boiler inspector, and eventually to chief inspector in 2002. He was elected to the National Board in September 2001.

Previously, Mr. Andrus was a stationery boiler operator and power plant operator for the University of Oregon; a boiler operator, mechanic, and boiler plant maintenance operator with the federal government; building maintenance supervisor with the Bexar County (Texas) Maintenance Department; and stationery engineer for Eastern Oregon University. He served in the US Air Force for four years.

Mr. Andrus holds National Board Commission No. 11898 with endorsements "A" and "B." ❖

Saskatchewan's Nicholas Surtees Resigns

National Board Member Nicholas Surtees resigned from his National Board duties January 3.


Nicholas Surtees

Mr. Surtees, PE, served as Executive Director, Corrections and Public Safety, Licensing and Inspections, for the province since 1988.

He started out as a trainee metallurgist for Bristol Siddeley Engines, then became a welding metallurgist with Rolls Royce. Later he was an R&D specialist with Canadair Ltd., a welding engineer and quality assurance manager for Foster Wheeler, a QC supervisor for Fiberglas Canada, and a QA manager for both Partech Lavalin and Stearns Catalytic.

Mr. Surtees was a member at large on the National Board's Board of Trustees from 1998 to 2001. Additionally, he served as chairman of the Canadian Standards Association's Steering Committee on Public Safety and as chairman of the National Board's Committee on Qualifications for Inspection. Mr. Surtees was a member of the ASME Section I Subgroup Design Committee, the Subcommittee on Boiler and Pressure Vessel Accreditation, the Association of Canadian Chief Inspectors, and the Canadian Standards Association B51 and B52 Technical Code Committees. He also served as a member of the Association of Professional Engineers of Saskatchewan.

Mr. Surtees holds National Board Commission No. 10648 with "A" and "B" endorsements. ❖

Robert R. Cate of Louisiana Steps Down

National Board Member Robert R. Cate resigned from both the State of Louisiana and his National Board duties, including the Board of Trustees, December 27, 2004.

Robert R. Cate

Mr. Cate began his employment as field inspector with the Louisiana State Fire Marshal's office in 1993. Previously he worked at the Omaha Public Power District as a steamfitter and in the quality assurance department. He also worked for Kemper Insurance, and served as a loss control representative with both Continental Insurance Company and Home Insurance Company.

Mr. Cate served the Board of Trustees as member at large since 2001. He has served on the *National Board Inspection Code* Committee since 2001.

An eight-year veteran of the US Navy, Mr. Cate holds National Board Commission No. 8946 with "A" and "B" endorsements. ❖

Zarate of Arizona Elected to National Board Membership

Edward Zarate, chief boiler inspector for the State of Arizona, has been elected to the National Board. Mr. Zarate has been employed by the state since 2004.

Edward Zarate

Prior to this position, Mr. Zarate was a senior boiler and machinery consultant for ARISE Inc. and One Beacon Insurance, a quality control engineer for the Los Angeles Department of Water and Power, and was employed for more than 20 years in various roles with HSB Group, Inc.

He served in the US Navy from 1971 to 1978 and later received a bachelor's degree from St. Mary's College of California.

Mr. Zarate holds National Board Commission No. 8867, with "A," "B," "NS," "I," and "N" endorsements. ❖

Saskatchewan Chief Krasiun Elected to National Board

Brian Krasiun, PE, chief inspector and acting executive director with the Licensing and Inspections Branch of the Government of Saskatchewan – Corrections and Public Safety, has been elected to National Board membership.


Brian Krasiun

Mr. Krasiun has been employed with the Government of Saskatchewan Boiler and Pressure Vessel Safety Division since 1992, serving as manager of Codes and Standards Compliance, as field inspector, and in the design office.

He received a bachelor's degree and a diploma of administration from the University of Regina. A member of the Canadian Association of Chief Inspectors Subcommittee and CSA B51 Subcommittee, Mr. Krasiun holds National Board Commission No. 11562 with "A" and "B" endorsements. ❖

Owens Elected to Represent Louisiana

William R. Owens, chief boiler inspector with the Louisiana Office of State Fire Marshal, Mechanical Safety, has been elected to the National Board. He has been employed with the state since 2000, serving as deputy state fire marshal, then deputy state fire marshal supervisor before taking over as chief inspector.


William R. Owens

Prior to joining the State of Louisiana, Mr. Owens was employed by Hartford Steam Boiler as boiler machinery inspector and by the City of Tucson (Arizona) as boiler/mechanical inspector.

He attended Pierce Community and Pima Community colleges and served in the US Air Force. Mr. Owens is a certified team leader and holds National Board Commission No. 9621 with "A" and "B" endorsements. ❖

Former Staff Member Mike Houle Mourned

The National Board regrets to announce the January 21 passing of former National Board staff member and instructor Michael James Houle. He was 69 and resided in La Crosse, Wisconsin.

Mr. Houle was employed with the National Board as supervisor of welding and as training instructor from 1979 to 1985. Also during
reviewed welding procedures for repair organizations. He was a consultant with the National Board until 1994.

Previously, he was employed for 15 years as chief welding engineer at The Trane Co. of La Crosse. In 1987 he started his own engineering consulting business, M.J. Houle, Inc., Welding Engineering Services – Code Specialists in La Crosse.

Mr. Houle was graduated from Michigan Technology University in 1957 with an engineering degree. He served 12 years in the US Naval Reserve. A long-time member of AWS and ASME, Mr. Houle was the author of all four editions of the *Casti Guidebook to ASME Section IX Codes*.

According to National Board Executive Director Donald Tanner, "Mike's contribution to the welding industry was tremendous. He was responsible for many guidelines in practice today. He will be missed."

Mr. Houle is survived by his wife of 46 years, Marilyn, and two sons, Mark and Christopher. ❖

National Board Remembers Former Consultant Bill Hankins

The National Board regrets to announce the December 6, 2004, passing of former National Board Pressure Relief Department consultant William R. Hankins. He was 76 years of age. Mr. Hankins resided in Hopewell Township, Bridgeton, New Jersey.

Mr. Hankins was employed for 35 years with the E.I. DuPont Company, retiring in 1984. After retirement he served as an independent consultant for 19 years with the National Board.

A veteran of World War II, Mr. Hankins served in the US Navy. He received a mechanical engineering degree from Purdue University.

"The National Board is saddened by the loss of this talented professional. Bill's dedication to the pressure relief department was exceptional. Our hearts go out to his family and friends," expressed Donald Tanner, National Board Executive Director.

Survivors include two godsons, Charles W. Sutton Jr. and the Rev. Shaun Sutton. ❖

Jovie Aclaro

Senior Safety Engineer, City of Los Angeles

Sit and chat with Los Angeles' Senior Safety Engineer and one quickly discovers a man very much at peace with himself. Someone who savors life and all its subtleties. A person keenly in touch with the myriad of wonderful things and people surrounding him.

That's Jovie Aclaro. And yes, although he works in what many feel is the center of the cosmos, he is fully aware of the world beyond.

As a youth, that world began in the Philippines. "I was born in the Visayan Islands," he offers with an easy smile. The eldest of seven children of a government surveyor father and a public school teacher mom, Jovie called the Philippines home until the age of 32.

"I guess one could say that my years as a youngster were about as close to paradise as can be imagined," the Los Angeles official explains. "Having been raised in the country, it was 180 degrees from the life I now know in the city."

Back then, home was in a hilly, tropical region where the streams were pure and life was simple. "As kids, we spent most days investigating the island's abundant plant life," Jovie observes with fond remembrance. "We would leave first thing in the morning and be out all day. And with all of the wild fruits and berries, we would never have to come home for lunch."

As the elder brother, he assumed responsibility for making sure his younger siblings didn't eat anything dangerous. "And if I didn't know, we would simply watch the wild monkeys — what they ate we felt pretty comfortable with."

As a youngster, the future National Board member says he always had intentions of coming to the United States. "American influence in the Philippines was everywhere," he observes. "Even in school, we were taught to read from the old Dick and Jane textbooks."

Following high school graduation, Jovie was encouraged by his father to study engineering. Although not excited about the math required to complete the five-year curriculum, he enrolled in the mechanical engineering program at Silliman University on the Visayan Islands in 1959.

While pursuing his degree, Jovie met Yolanda, a young civil engineering student who would become a classmate and eventually his wife of 39 years.

With degree in hand in 1964, the future senior safety engineer took a job as a mechanic on the Island of Mindanao to be close to his then-relocated parents. "Yolanda stayed behind at the university to teach, and for two years we communicated via letters — since we had no phones — until our marriage in 1966."

A mechanic for only two months, the future LA official left to work at a logging company where he received his first professional exposure to larger mechanical equipment. "After three years there, I felt I needed more exposure to an industrial setting," Jovie explains.

Taking a job as a lubrication engineer for Mobil Oil in Manila, he got the exposure he was looking for and then some. "It was a whole new big-city world that gave me a perspective on corporate life as well as allowed me to work on a variety of large equipment." It also provided him the incentive to pursue his dream of going to America.

In 1974 after three and one-half years with Mobil, Jovie and Yolanda moved to Chicago as immigrants. "We had $850 between us and no job," he emphasizes with a pause. "We stayed with a former Mobil associate who was working for Hartford Steam Boiler. He convinced me that inspecting boilers would be a good profession for someone with my background."

Later that year, Jovie joined Hartford where he secured his National Board Commission and worked as a boiler/nuclear inspector for three and one-half years before moving to Bechtel Corporation as a supplier quality representative. "It was interesting work doing vendor surveillance," the LA official notes with a grin, "but the out-of-town projects at nuclear construction sites took me away from my family for long periods of time. That's why I was sort of relieved when I was laid off in 1984 and could return to Illinois."

Taking on work as a job shopper for a temp agency, Jovie found himself making good money but nothing that would contribute toward a long-term future. After three years, he and Yolanda took a well-deserved vacation to California and fell in love with the West Coast.

When Jovie received a job offer from United Technologies in 1987 with the opportunity to relocate to California, "there was no discussion," he enthusiastically remarks. Returning to vendor surveillance — this time for the Atlas rocket program as a senior quality representative in Riverside — the Visayan Islands native again began contemplating his long-term future. But this time, he decided to do something about it and put in an employment application with the city of Los Angeles.

"When the Atlas project didn't get additional funding in 1989, I found myself without a job," he explains. But not without options.

Three weeks later, the city of Los Angeles offered him a position as safety engineer. When his supervisor experienced health problems in 1990, Jovie was promoted to senior safety engineer and subsequently was elected to National Board membership.

Because the city has a rotation policy involving professional associations, the LA official only serves as a National Board member every three years.

With over 45,000 pressure vessels in Los Angeles (more than 18,000 of which are boilers), Jovie Aclaro is a very busy guy during the workweek. So what does he do on weekends?

"I spend half my time in Las Vegas," he chuckles. "But not gambling!"

Yolanda is a civil engineer for the city of Las Vegas. "Consequently, we have places in both Los Angeles and Las Vegas. During the week, Yolanda lives in Las Vegas with my daughter, son-in-law, granddaughter, and grandson. We spend the weekends alternating between the two cities."

With a rotation policy at work and at home, Jovie's life might seem a bit complicated.

"Not so," he responds without hesitation. "Periodically being away from the National Board really makes one more fully appreciate the day-to-day importance of this exceptional organization."

As for being separated from his wife each week, Jovie reveals: "It makes our time together on the weekends very special."

How observant. And wonderfully in touch . . . ❖

Training to Become a Commissioned Inspector

BY RICHARD MCGUIRE, MANAGER OF TRAINING

Throughout the process of becoming a National Board Commissioned Inspector, the Training Department offers several seminars that provide students with the necessary knowledge to be successful as they begin their careers as Commissioned Inspectors.

One of these courses is the Pre-Commission Examination Course (PEC). This two-week class takes a student through the process of learning the necessary inspection rules within the *ASME Boiler and Pressure Vessel Code* as well as the *National Board Inspection Code*, the two primary codes used by Commissioned Inspectors. The first week of the course concentrates strongly on code requirements, familiarizing students with the format and structure of the codes, as well as content and ideas.

After reviewing code requirements, attendees are then taught how to apply this information. Instructors present math problems and then review the necessary formulas and guidelines for each one. Repetition is key to the student absorbing the "ins and outs" of each code. Student-instructor interaction is emphasized, as it is important to the students' learning the best way to arrive at solutions.

In the second week of the PEC, students work on their own as well as in groups, solving problems and completing workshops. This gives students the opportunity to reinforce the codes and learn to apply this knowledge in a practical manner.

The main goal of the PEC is to expose attendees to knowledge that will help them throughout their careers. At the end of the two weeks, a mock examination is given, designed to simulate the National Board Commission Examination. The mock exam provides students with an idea of where they stand with preparation.

The PEC will be conducted August 22 to September 2 and again October 31 to November 11.

The Introduction to Boiler Inspection Course (IBI) is another two-week seminar that presents pertinent career information to National Board students. Students with little or no inspection experience should attend this seminar, as its goal is to show the attendee how to inspect a boiler and a pressure vessel. Many jurisdictional authorities send their new employees to this course, allowing them to gain much experience in a small amount of time so they are better prepared for the job ahead.

The IBI contains sessions on the types of systems an inspector might come across in the field, as well as items to look for when inspecting these systems. Two field trips take students to a boiler room in an area hospital. Here they have the opportunity to "inspect" a boiler, fill out pertinent forms, and complete the actual inspection process. This allows students the chance to get a feel for the type of work they will be completing on the job.

The next IBI course is offered July 11-22.

The combination of these two courses is a great way for a person to get a rapid start in the boiler inspection profession, preparing for the numerous career opportunities the industry provides. ❖

ENDORSEMENT COURSES

(A) **Authorized Inspector Course** — TUITION: $2,500

September 12–23

Only time offered in 2005!

(B) **Authorized Inspector Supervisor Course** — TUITION: $1,250

August 1–5

CONTINUING EDUCATIONAL OPPORTUNITIES

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

October 3

ASME Section VIII — TUITION: $275

October 5

ASME Section IX — TUITION: $275

October 4

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

October 6

(CWI) **Certified Welding Inspector Review Seminar** —
TUITION: $1,150 (complete seminar with D1.1 Code)
$1,110 (complete seminar with API-1104 Code)
$375 Structural Welding (D1.1) Code Clinic ONLY
$335 API-1104 Clinic ONLY
$440 Welding Inspection Technology (WIT) ONLY
$335 Visual Inspection Workshop (VIW) ONLY

August 8-12 (Exam: August 13)

(IBI) **Introduction to Boiler Inspection Course** — TUITION: $2,500

July 11-22

(PEC) **Pre-Commission Examination Course** —
TUITION: $2,500 Full two-week course
$660 Self-Study (week 1) portion*
* self-study materials sent upon payment.
$1,190 Week 2 of course

August 22–September 2 October 31–November 11

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

August 15–16 October 3–4

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

July 25–29

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

June 29–July 1 September 7–9

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 with each 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 cancellation.

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*.

An Unpleasant Sensation

"The miracle is that no one was killed . . ." announced the *Olean Morning Times*. This was the paper's sentiment regarding a boiler explosion that took place in Cuba, New York, at the Phelps & Sibley flour and feed mill May 20, 1908. After the mill had closed for the day and the building was emptied of employees, its 120-horsepower boiler exploded, showering the area with debris. Amazingly, the destruction injured few and resulted in no fatalities. Some speculated this luck was attributed to the mill being shut down for the evening — the first time in a while it wasn't running all night.

It was written in the newspaper that the boiler ". . . was blown as high as the top of the ninety foot chimney, and landed a distance of about 350 feet away." Splintered wood, brick, boiler flues, and twisted iron were scattered throughout the area, even damaging nearby warehouses and residences. Buildings within several hundred feet were shaken and their windows shattered. The noise alone drew hundreds of Cuba residents to the scene.

Damage estimates to the mill were placed between $25,000 and $30,000 — a lot of money at the time that reflected the modern and expensive milling equipment

which filled the building. The mill was touted as being one of the most extensive industries in the area. With the blast of the boiler, the building and its contents were destroyed.

The newspaper went on to write, "It is safe to say that Cuba never before experienced such an unpleasant sensation."

The cause of the boiler explosion was not determined. ❖

Have any information about these pictures? We would like to know more! Email *getinfo@nationalboard.org*.
Thanks to the Cuba (NY) Historical Society and the Olean Public Library for their contributions to this column.

Robert D. Schueler
Senior Staff Engineer

Bob Schueler's formal job title at the National Board is senior staff engineer, but it might as well be storyteller. This guy has a lifetime of harrowing tales, comical anecdotes, and fables of fortune. If you are looking for a great story and a good laugh, Bob is the guy to see.

He parlays his sociable inclination into what he calls a professor-like role, fielding questions from around the world from people who want to make more sense of ASME Codes or the NBIC. These day-to-day duties combined with the number of ASME and NB committees he is involved with make it clear that Bob likes to help with projects and people.

Bob began his career at the National Board August 1, 1984, as staff engineer. He gives all the credit for this step to former Executive Director Sam Harrison. As he puts it, "Coming to the National Board was not in the game plan. I had a position that I was very happy with. But Sam convinced me. He was the difference."

A native of Erie, Pennsylvania, Bob actually grew up as "Don," a shortened version of his middle name. Today, his friends and family still refer to him as such. Only his professional peers call him "Bob," which started in 1962 when he joined Erie City Iron Works as apprentice design engineer.

With the company until 1984, one of his first assignments was to work on an aerospace project. Unbeknownst to him at the time, the project involved the F-111 fighter and later the lunar lander. It wasn't until sometime later that he learned the identity of his task. "I was tickled pink to have touched it," Bob says humbly.

A math whiz and computer guru, Bob got his degree from Penn State University. Upon return to his hometown, he and a buddy double-dated for several years — with ladies they met at youth functions at area churches. They figured this was a great way to meet fine young women. According to Bob, the plan was a good one. "We had dates weekly!"

While this system did not lead him to a bride, the story of his finding that fabulous lady is just as memorable. Bob and Jim, this same said buddy, went on a blind date with Judy and Jo. The connections clicked for both couples, as they married their respective dates. Bob and Jo have been wedded for 37 years and reside in Columbus.

Bob's position and many of his committees take him all over the world — he has been to Africa, China, Europe, and many points in between. It is for this reason he savors homelife. H.O. gauge trains are high on Bob's list. At Christmas, he and Jo have six to eight trains weaving around the tree. He also loves to golf and is a past master of his Masonic Lodge.

Bob's philosophy on working for the National Board is probably the best story he has. "When I go home at the end of the day, I know I made a difference. Saving lives is the best outcome of what we do."

Well said, Bob. ❖

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

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* Feature Article

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- Ron Scott Remembered for National Board Service, Vol. 60, No. 1, p. 35 (Winter 2005).
- Saskatchewan Chief Krasiun Elected to National Board, Vol. 60, No. 2, p. 26 (Summer 2005).
- Saskatchewan's Nicholas Surtees Retires, Vol. 60, No. 2, p. 24 (Summer 2005).
- Zarate of Arizona Elected to National Board Membership, Vol. 60, No. 2, p. 25 (Summer 2005).

Regulatory Review:
- Out-of-Print . . . No Longer Out-of-Mind, Paul Brennan, Vol. 59, No. 3, p. 34 (Fall 2004).
- South Carolina Boiler Law Efforts Begin Anew, Paul Brennan, Vol. 60, No. 2, p. 3 (Summer 2005).

Some "Truths" About Practice and Education in Welding and Joining,* Dr. Robert W. Messler Jr., Vol. 60, No. 1, p. 3 (Winter 2005).

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Training Calendar:
- Vol. 59, No. 3, p. 39 (Fall 2004).
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Training Matters:
- The Future of National Board Web-Based Training, Richard McGuire, Vol. 60, No. 1, p. 38 (Winter 2005).
- Training to Become a Commissioned Inspector, Richard McGuire, Vol. 60, No. 2, p. 30 (Summer 2005).
- What Is Behind the CI?, Richard McGuire, Vol. 59, No. 3, p. 38 (Fall 2004).

The Way We Were:
- Greetings from Greenleaf, Wisconsin, Vol. 60, No. 1, p. 40 (Winter 2005).
- There in a Moment's Notice, Vol. 59, No. 3, p. 40 (Fall 2004).
- An Unpleasant Sensation, Vol. 60, No. 2, p. 32 (Summer 2005).

Wish You Were Here! Nothing Says 'Hello' Like Disaster on a Postcard,* Vol. 59, No. 3, p. 10 (Fall 2004).

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