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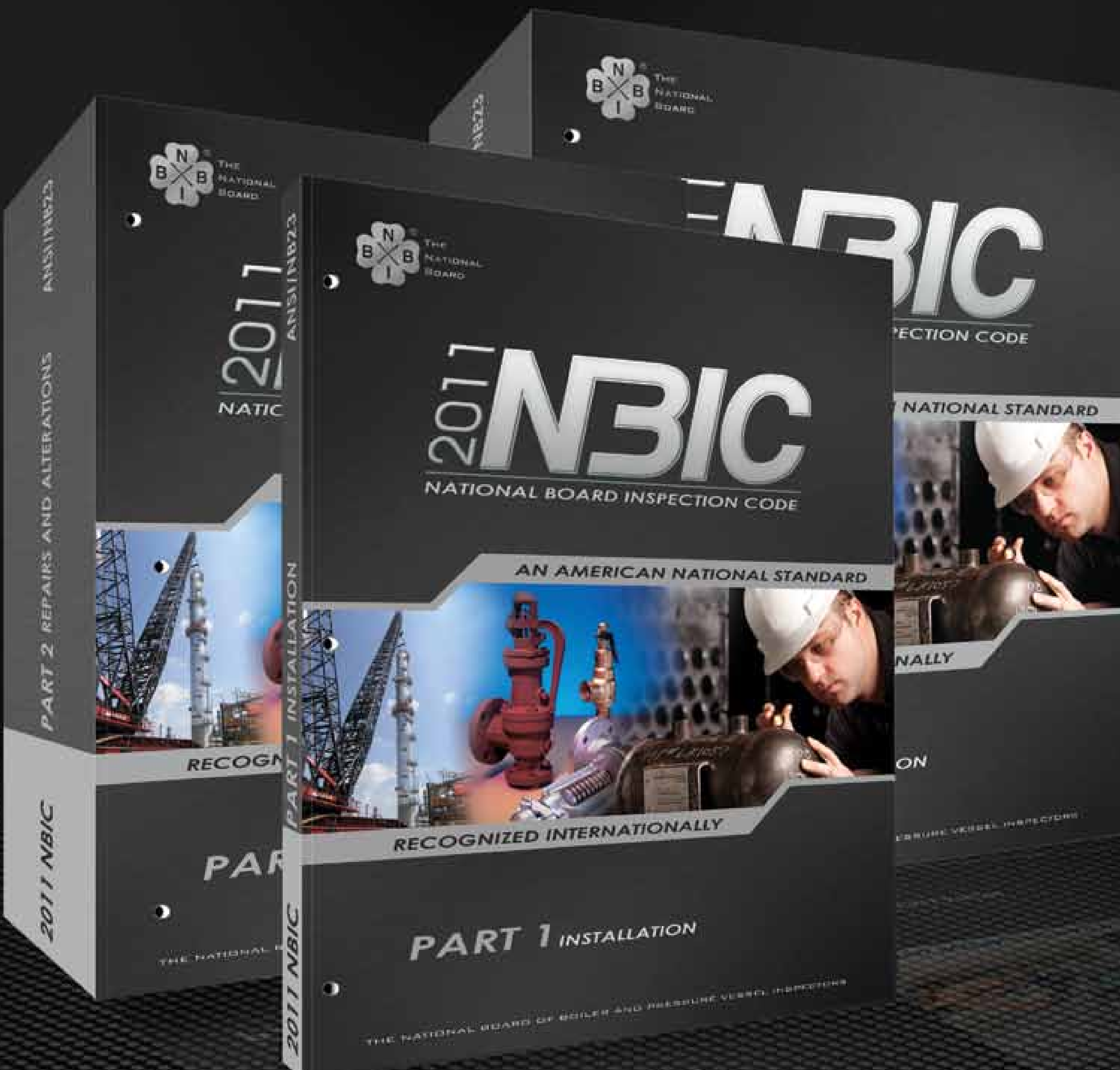
NATIONAL BOARD BULLETIN



A NEW ERA

BULLETIN

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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 ensuring acceptance and interchangeability among jurisdictional authorities empowered to ensure adherence to code construction and repair of boilers and pressure vessels.

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The 80th General Meeting Highlights
Read more on page 14. *BULLETIN* photograph by Greg Sailor

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NBIC VOLUNTEERS: A JOB WELL DONE

BY DAVID A. DOUIN, EXECUTIVE DIRECTOR

With this issue of the *BULLETIN* primarily devoted to the newest generation NBIC, I want to take time to recognize the dedicated individuals who make this world-class document possible: the volunteers of our NBIC Committee.

We often speak to the importance of the Code's role in helping preserve both the public's safety and trust. Indeed, a world without the NBIC would be a dangerous place for anyone in close proximity of pressure equipment.

Yes, the National Board coordinates NBIC development. And we arrange for its publication and distribution. However, without volunteer committee members (and the support of their respective companies), this document would be of little substance.

Consider for a moment the thousands upon thousands of hours devoted to NBIC preparation, the appreciable travel, countless and unending discussions, the meticulous review process – all professionally accomplished by volunteers. While the National Board places significant value on their devotion and critical input, we are also most grateful for the personal and professional sacrifices made on behalf of NBIC development.

I would be remiss in my praise if I failed to mention the many companies who have also been major contributors to the development process: utilities, manufacturers, repair organizations, refineries, insurance organizations, and the many others who have graciously and generously lent their valued professionals and support. And let us not forget the assistance of private consultants who have also played a vital role.

Volunteering one's time and specialized expertise has always been an essential component of the pressure equipment industry. Perhaps nowhere is this more evident than witnessing the thousands of professionals who each year donate their capabilities and knowledge to a variety of technical standards groups. Not unlike their NBIC counterparts, these volunteers should also be singled out for what can only be described as outstanding contributions to the codes and standards process.

Of particular note to our industry are the volunteer experts who serve both ASME *and* National Board. And there are many. These ultra-dedicated individuals share not only an elevated knowledge of safety, but the understanding their work helps ASME and the National Board do more than would be independently possible.

As we all know, benefits evolving from use of the NBIC are numerous. Not only does this document promote safe installation, repair, and modification of boilers and pressure vessels, it contributes significantly to a company's bottom line by providing for inspection consistency, and increased efficiency.

The 2011 NBIC is of stark contrast to the 24-page version first published in 1945. During these 66 years, it has grown exponentially to meet the changing needs of industrialized nations worldwide.

The story of this growth can be revealed by perusing the names of those on NBIC Committees during each distribution cycle. It is no surprise many of those names comprise a veritable *Who's Who* of pressure equipment professionals who went on to become early pioneers in our storied industry.

I will be first to admit: serving almost in anonymity on the NBIC Committee can be at times a thankless task. And while the job may be *thankless*, it is also *selfless*. It takes a very special type of individual to devote a significant part of his or her career to simply achieve professional satisfaction.

It is not my intention to dissuade anyone from committee or subcommittee work. But if you as a *BULLETIN* reader genuinely care about pressure equipment safety, I urge you to get involved and explore committee opportunities.

Having seen the 2011 NBIC for the very first time, I can feel the excitement building. One cannot pick up this vital living document without some sense of admiration for the men and women who developed it. Nor can you easily dismiss the herculean effort behind it.

To the NBIC Committee I say: thank you – thank you not only for your valuable time but also for your dedication. While the public may not understand the important roles each of you play, we at the National Board commend your sense of profound responsibility. You have distinguished yourselves in a way few can.

And while we can robustly express our appreciation to each of you, it is far less than what you as a committee have given us.

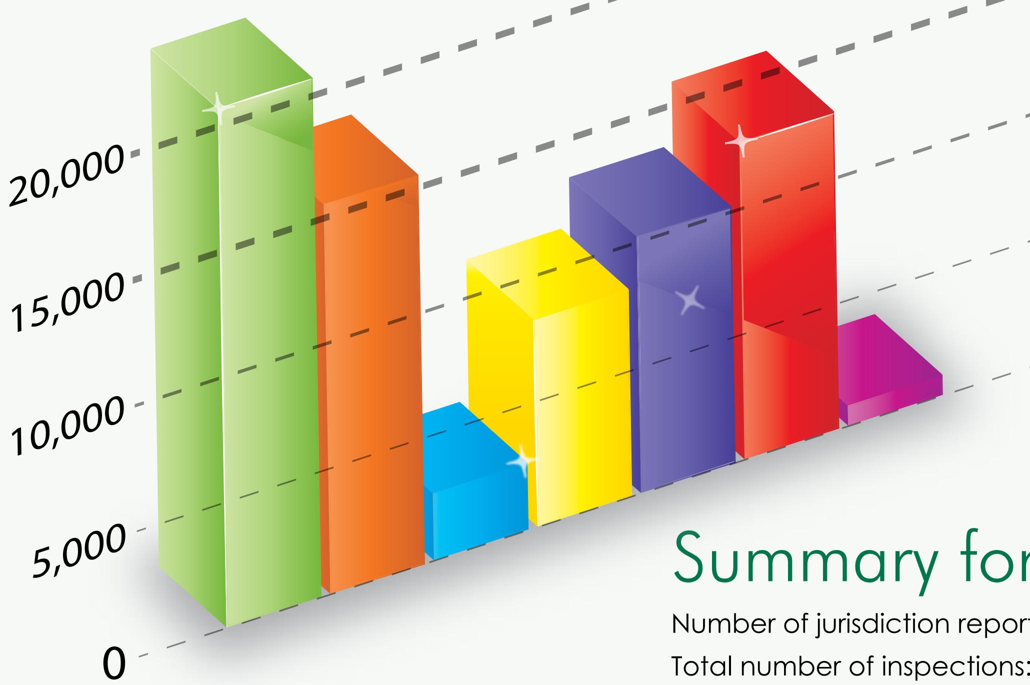
All of us.

2010 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 2010.

Annual Report 2010

Category	Number of Violations	Percent of Total Violations
Boiler Controls	21,158	29%
Boiler Piping and Other Systems	16,142	23%
Boiler Manufacturing Data Report/Nameplate	2,611	4%
Boiler Components	8,173	11%
Pressure-Relieving Devices for Boilers	10,406	14%
Pressure Vessels	12,582	18%
Repairs and Alterations	744	1%



Summary for 2010

Number of jurisdiction reports: ________275
Total number of inspections: ______688,963
Total number of violations: _________71,816
Percent violations:__________________ 10%

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.

NEWS FROM ABROAD: **R** Stamp and the International Market

National Board Independent Consultants Talk Accreditation

The National Board **R** Stamp *Certificate of Authorization* program was developed over 35 years ago to protect public safety by providing a uniform standard for the repair and alteration of boilers and pressure vessels. Organizations such as petrochemical facilities, power plants, and school districts now require **R** Certificate-holding companies for repair work to ensure repairs and alterations are performed in accordance with the *National Board Inspection Code* (NBIC). And across the globe, more and more organizations are seeking **R** accreditation. As a result, the number of **R** stamps issued to repair organizations outside the US and Canada continues to grow.

"International growth of the **R** program is primarily customer- and market-driven," says Terry O'Connell, independent consultant for National Board and ASME. "The price of oil, competitive advantage, and expanding international acceptance of US safety standards are major factors in this growth."

O'Connell has been an **R** stamp consultant since 2005 and relocated to Asia – Mactan Island in the Philippines – in 2006. "I love living and working in Asia," he shares. "People here have a high degree of respect for the National Board and ASME review and survey process. They are open to comments and look at the review and survey process not only as a way to acquire a certificate, but as a way to improve their quality program." Mr. O'Connell says the Middle East region is showing the most interest in the **R** program, primarily due to the number of companies involved in the oil refining business.

Terry O'Connell

Sunil Sharma

Before consulting for the National Board and ASME, O'Connell worked for 16 years in code shops as a quality assurance (QA) manager and was a regional manager of an authorized inspection agency (AIA) for six years. "One of the factors in my choice to relocate to Asia was the rapid growth of code activity in that region," he explains.

O'Connell believes the main reason any company chooses to seek **R** stamp certification is because it is a smart business decision. "Becoming an **R** stamp holder gives companies a competitive advantage and makes them more attractive to potential customers," he says. But he also sees room for advancement as evidenced by increased interest in the **R** program. "Many Asian companies are simply not aware that the NBIC and **R** program exist."

This creates an opportunity for continued growth. "Most major projects today have multinational companies responsible for site activities, including the repair and alteration of various types of pressure-retaining items. In order to reach a consensus on standards for repair and alteration, the rules of the NBIC are a logical choice," he says. The challenge, however, is promoting the **R** program to major construction companies in Asia and other parts of the world. But tackling that challenge could reap great reward in matters of safety and working toward a uniformed, international repair standard.

With many construction companies untapped, O'Connell envisions continual international growth of the NBIC and more requests for the **R** program. "I have found it extremely interesting to live and work in Asia after living in the US for 47 years. I am always proud to perform my work as a National Board and ASME consultant. The continued growth in acceptance of the NBIC and the **R** program is professionally gratifying."

R Stamp and Oil Fields

When a company is accredited with an **R** Stamp *Certificate of Authorization*, the National Board issues an **R** stamp, which is physically imprinted onto every vessel or boiler repaired or altered by an accredited company. The stamp indicates a qualified organization has performed the work. The National Board retains a copy of every manufacturer's data report for each item registered with the National Board. Repair organizations can obtain these reports, which aid in identifying the design conditions and materials used in the construction of the item to be repaired or altered.

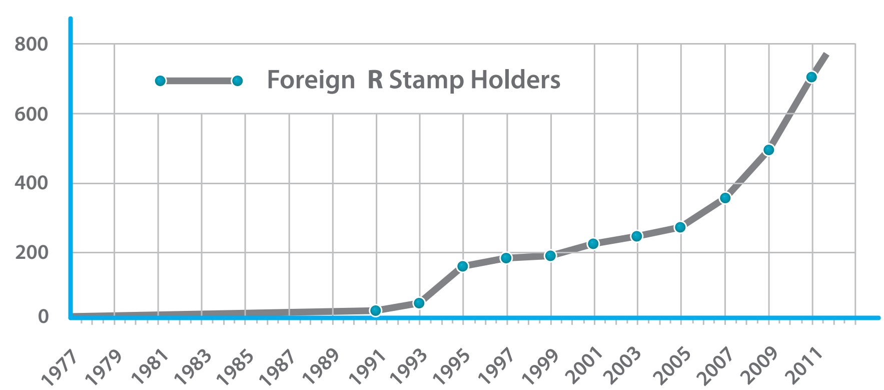
No story conveys the importance of this record-keeping system better than Sunil Sharma's.

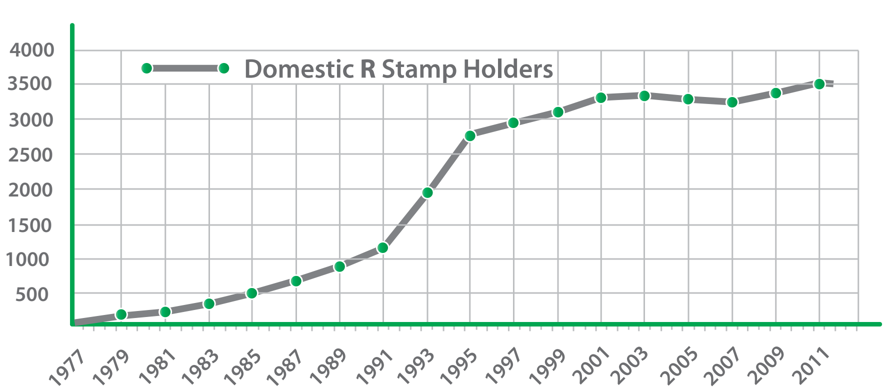
Nearly 5,000 miles west of where Terry O'Connell lives in the Philippines, his counterpart, Sunil Sharma, travels throughout the Middle East and Europe conducting reviews as a National Board and ASME independent consultant. His home is Kuwait City, Kuwait, where he's lived since 1999.

Before becoming a National Board and ASME consultant in 2008, Sharma worked as an authorized inspector and authorized inspector supervisor in India and the Middle East, first with LR Insurance and then with Hartford Steam Boiler Inspection and Insurance Company of Connecticut. He received a degree in mechanical engineering from Indore University in India in 1980.

"When I first came to the Middle East (Kuwait) in 1995 for a few months on assignment as an authorized inspector, ASME code work was mainly limited to field site installation activities. Kuwait was recovering from the Iraqi invasion and refurbishing their oil field installations. There was only one company with an **R** *Certificate of Authorization*, and that they had never used. Many oil field installations and records were burned by Iraqis," he recalls.

"In 1999, oil company personnel took us to one of the oil fields and showed us a few damaged pressure vessels. The vessels still had bullet marks. The owners wanted to use the vessels but had no records of them. When we looked at the nameplate, we were happy to see the National Board number. The **R** Certificate Holder, who was engaged by the owners, was able to get copies of data reports from the National Board based on the stamping details. The vessels were repaired and put back into service. Upon





First R Stamp

The first R stamp was issued on December 1, 1975, to the Babcock and Wilcox Construction Company. R-1 has been continuously renewed and is still active today. The R-1 stamp and certificate was a fitting addition to Babcock and Wilcox, as the company also possesses ASME A-001 and S-002, both issued in the early 1920s.

learning about the National Board registration and **R** program, the owners made it mandatory to register all new vessels and to use **R** stamp holders for any repair. There was so much work. I must have signed at least 300 **R** forms while working as an inspector."

Sharma's experience has shown him the **R** program in the Middle East is mainly driven by the owners (oil, power, and petrochemical majors). He explains **R**-stamping is not a statutory or jurisdictional requirement internationally, but many overseas manufacturers opt for **R** certification because they see a good business opportunity, especially when they realize local owners are making it mandatory for repairs and maintenance work. "Although **R**-stamping may not be required, many owners want only **R** stamp holders to perform the repairs," he says.

"The **R** program has definitely become popular in countries where owners are aware of it," explains Sharma. But he also recognizes the potential for more growth. "There are still many owners who are not fully aware of the benefits of this program."

Sharma points out that almost all **R** stamp holders in the Middle East are also ASME stamp holders. "And they are quite happy with the National Board review process (along with the ASME review process)," he adds.

Sharma says perception of the **R** program in the Middle East is favorable. "It is considered an uncomplicated program easily adapted for most of the work in the Middle East. Owners generally feel repairs [made by **R** stamp holders] are performed by a company with proper authorization, and is both inspected and monitored by somebody with requisite experience and qualifications."

As the **R** program continually gains the attention of international industries, both as a savvy business decision and as a matter of uniform administrative and technical guidelines to ensure quality repair and/or alterations of pressure equipment, the **R** program will undoubtedly continue its mission of safety assurance to the general public… the world over.

R stamp holders can be found in 63 countries worldwide.

Africa/Middle East
- Egypt
- Israel
- Kazakhstan
- Kingdom of Bahrain
- Kuwait
- Nigeria
- Saudi Arabia
- South Africa
- State of Qatar
- Sultanate of Oman
- Tunisia
- Turkey
- United Arab Emirates

Asia/Pacific
- Australia
- India
- Indonesia
- Japan
- Malaysia
- Pakistan
- People's Republic of China
- Philippines
- Singapore
- South Korea
- Taiwan, Republic of China
- Thailand
- Vietnam

Central America & Caribbean Islands
- Aruba
- Costa Rica
- Dominican Republic
- El Salvador
- Trinidad and Tobago

Europe
- Austria
- Belgium
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- The Netherlands
- Norway
- Poland
- Romania
- Spain
- Sweden
- Ukraine

North America
- Canada
- Mexico
- United States of America

South America
- Argentina
- Bolivia
- Brazil
- Chile
- Columbia
- Ecuador
- Peru
- Suriname
- Venezuela

United Kingdom
- England
- Scotland

The Making of a Good Quality System Manual

BY CHUCK WITHERS, ASSISTANT EXECUTIVE DIRECTOR – TECHNICAL

Organizations involved in construction, repair, or alteration of pressure-retaining items understand the importance of maintaining quality to ensure safety. Safety is of the utmost importance, but if an organization wants to continue in business, it is equally important to develop a quality system to achieve customer satisfaction by meeting customer requirements and continually improving quality within the organization.

A written quality manual should serve to define controls necessary to manufacture, repair, or alter pressure-retaining items within an organization's capability. Necessary criteria to be included in the quality manual are defined in codes, such as the *ASME Boiler & Pressure Vessel Code* and the *National Board Inspection Code* (NBIC). So let's explore what makes a good quality manual by identifying strengths and weaknesses.

When we analyze each required feature to be incorporated into a quality manual, we can easily identify the requirements, but the real key is how to address these requirements. For instance, the NBIC states, "organizations shall explain their intent, capability, and applicability for each required feature." The NBIC also states these features shall be relative to the scope of work. By understanding and combining these requirements, it is apparent there are no two organizations alike within scope, intent, capability, and applicability. Therefore, each organization's manual should be unique.

Adequately addressing required features with consideration of these four key areas (scope, intent, capability, and applicability) is the strength of a good quality manual. This can be a difficult task for organizations developing a new manual, or for organizations undergoing change in management, ownership, or key personnel, because invariably, these key areas will not be clearly understood by responsible personnel as they relate to each required feature. There are many so-called "canned manuals" organizations can obtain to begin the process of developing a quality manual effectively covering the required features needed to meet code requirements. However, when an organization fully recognizes its uniqueness to the four key areas and begins to clearly define these differences within the quality manual, the manual becomes a distinctive tool easily understood by both personnel and customers.

Reading a quality manual can be interesting or boring depending on how well the manual is written, organized, and detailed. Simple things like punctuation, spelling, grammar, and format make the difference between a quality manual easily understood and followed, and one that is not. Some questions to consider are these: Is the quality manual formatted in such a way as to readily identify code requirements? Is the style of writing consistent throughout? Are the required features clearly defined, adequately detailed, and organized in a logical sequence? When these questions are answered positively, the strength of the quality manual is much improved. A boring manual will be left on a shelf, untouched, collecting dust. This is contrary to the whole purpose of having a manual that defines the quality requirements to be followed within the organization *each and every day*.

Changes in code requirements, materials, technology, process methods, and personnel responsibilities affecting change in quality procedures and work instructions should ultimately result in change to the details of the quality manual. Quite often, however, once a manual is approved internally and accepted by outside organizations, it becomes a stagnant document not updated for years. This leads to a quality program that does not accurately reflect the uniqueness of the organization. A consistently well-maintained and updated manual typically reflects a well-implemented quality program due to the fact that appropriate personnel are involved in making or suggesting required changes. When more people are aware of changes within the quality manual, a better understanding of quality requirements is maintained. A well-maintained and updated manual is just as important as training and maintaining proficiency of personnel for quality to improve.

Keys to improving and strengthening a quality manual:

- Clearly identify scope, intent, capability, and applicability of requirements.
- Consider formatting, grammar, punctuation, spelling, logic, and organization of requirements.
- Continually review, revise, and update requirements, procedures, and instructions.
- Clearly identify management and key personnel responsibilities.
- Recognize quality as an ongoing improvement process.
- Constantly update implemented changes.
- Consider suggestions and concerns of employees and customers.

A well-written manual that accurately identifies the uniqueness of an organization, incorporates controls necessary to ensure code compliance, and considers customer satisfaction, will strengthen and improve quality within the organization. A quality-minded environment within any organization should begin with a good manual as its foundation. The manual should continually improve and become recognized throughout the organization as a useful tool to follow. Hopefully, with a good foundation of quality, an organization will live long and prosper.

Magnetic Particle Examination

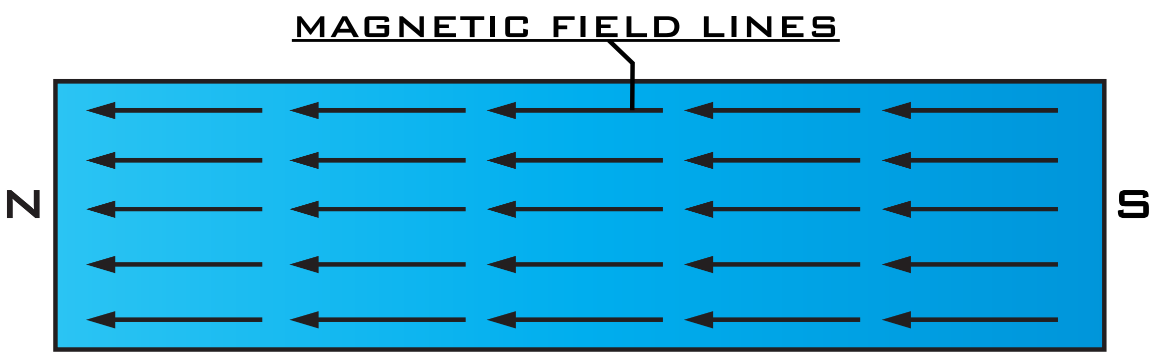
BY JIM WORMAN, SENIOR STAFF ENGINEER

INSPECTOR'S INSIGHT

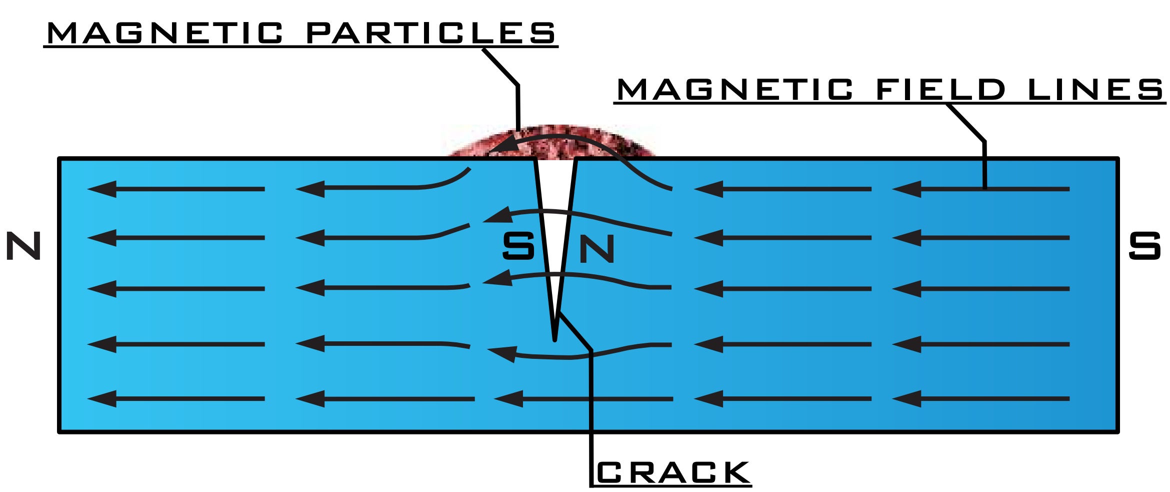
Magnetic particle examination (MT) is a very popular, low-cost method used to perform nondestructive examination (NDE) of ferromagnetic material. Ferromagnetic is defined in ASME Section V as "a term applied to materials that can be magnetized or strongly attracted by a magnetic field." MT is an NDE method that checks for surface discontinuities but can also reveal discontinuities slightly below the surface.

How Magnetic Particle Examination Works

When ferromagnetic material (typically iron or steel) is defect-free, it will transfer lines of magnetic flux (field) through the material without any interruption.



But when a crack or other discontinuity is present, the magnetic flux leaks out of the material. As it leaks, magnetic flux (magnetic field) will collect ferromagnetic particles (iron powder), making the size and shape of the discontinuity easily visible.



However, the magnetic flux will only leak out of the material if the discontinuity is generally perpendicular to its flow. If the discontinuity, such as a crack, is parallel to the lines of magnetic flux, there will be no leakage and therefore no indication observed. To resolve this issue, each area needs to be examined twice. The second examination needs to be perpendicular to the first so discontinuities in any direction are detected. The examiner must ensure that enough overlap of the areas of magnetic flux is maintained throughout the examination process so discontinuities are not missed.

History of Magnetic Particle Examination

Magnetism was first used as early as 1868 to check for cannon barrel defects. Cannon barrels were first magnetized and then a magnetic compass was moved down the length of the barrel. If a discontinuity was present, the magnetic flux would leak out and cause the compass needle to move. Defects could be easily located with this technique.

In the early 1920s, William Hoke noticed metallic grindings from hard steel parts (held by a magnetic chuck while being ground) formed patterns that followed the cracks in the surface of parts he was machining. He also found that by applying fine ferromagnetic powder to the parts, there was a build-up of powder at the discontinuities which formed a more visible indication.

By the 1930s, MT was quickly replacing the oil and whiting method of NDE (liquid penetrant [PT]) in the railroad industry. It was quicker and did not leave behind the white powder that required clean-up. After an MT evaluation, only iron powder was left behind, which could easily fall off the part or be blown away.

Different Techniques

There are many different techniques and combinations of techniques of MT. The *ASME Boiler and Pressure Vessel Code,* Section V, Article 7, recognizes five different techniques of magnetization:

1. Prod technique
2. Longitudinal magnetization technique
3. Circular magnetization technique
4. Yoke technique
5. Multidirectional magnetization technique

There are two different ferromagnetic examination media: dry particles and wet particles. Both forms can be either fluorescent or non-fluorescent (visible, color contrast) and come in a variety of colors to contrast with the tested material.

Most-Used Methods

Two of the most-used methods are the stationary horizontal system, using longitudinal and circular magnetization techniques, and the very portable yoke technique.

A stationary magnetic particle examination system set up for longitudinal and circular magnetization using wet fluorescent particles.

Stationary systems are generally used for smaller parts such as crank shafts and valve stems. They are often found indoors around machine shops and heat-treating facilities. Typically they have a headstock and tailstock. Parts can be clamped between stocks for magnetization. There is also a coil placed around the part to magnetize it in the perpendicular direction. Stationary horizontal systems use the wet particle technique with a circulation tank below the equipment. Wet particles flow over the examined part and drain into the circulation tank. Wet particles have more mobility flowing in a liquid than do dry particles. This mobility helps sensitivity by allowing particles to easily move to the discontinuities. Fluorescent particles are commonly used with stationary horizontal systems because indoor operation makes it easy to darken the area; required ultraviolet (black) light can then be used to evaluate the parts. Both wet method examinations have about the same sensitivity, but under correct lighting conditions, fluorescent indications are much easier to see. This type of stationary system can cost $15,000 or more.

The MT yoke technique is the most portable and lowest-cost method, and therefore the most popular method. A typical yoke kit would cost around $750. Most yokes can operate in alternating current (AC) or direct current (DC) modes. DC gives the most penetration and is recommended if subsurface discontinuities need to be detected. AC is recommended if the surface is rough, because AC gives the particles more mobility than DC. A yoke has an electric coil in the unit creating a longitudinal magnetic field that transfers through the legs to the examined part. The yoke technique is easy to use with minimal training. It can be used indoors, outdoors, inside vessels and tanks, and in all positions. Prior to use, the magnetizing power of electromagnetic yoke shall have been checked within the past year. An AC yoke must have a lifting power of at least 10 lb and a DC yoke of at least 40 lb.

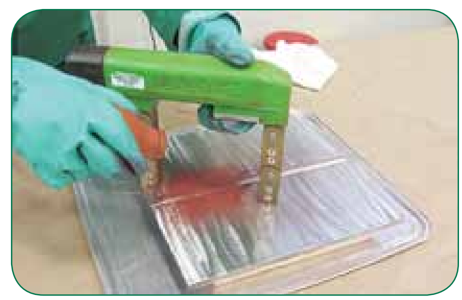
External longitudinal seam of an inservice boiler being checked with magnetic particle examination using an AC yoke with dry powder.

Basic Steps

The following illustrate steps to use with the dry powder, non-fluorescent, yoke technique. Prior to the start of examination, all equipment and meters shall be calibrated in accordance with ASME Section V, Article 7.

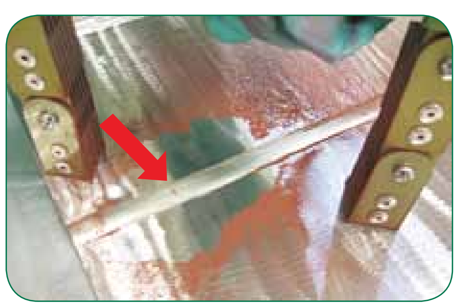
1. Clean the surface to be examined. This may be accomplished using detergents, organic solvents, descaling solutions, paint removers, vapor degreasing, sand or grit blasting, or ultrasonic cleaning methods.

2. Introduce a magnetic field into the part.



3. Apply the ferromagnetic medium while the part is still magnetized.

4. Remove excess ferromagnetic medium with a light air stream from a bulb, syringe, or other source of low-pressure dry air.



5. Interpret and evaluate any indications to the applicable acceptance standard.

6. Turn the yoke 90 degrees from the original position and repeat steps 2-5. Clean and demagnetize if necessary.

ASME Section V, Article 7 requires the magnetic particle visible method (color contrast) be evaluated with a minimum light intensity of 100 footcandles on the part surface. The proper quantity of light must be verified using some type of calibrated light meter and witnessed and accepted by the inspector. If fluorescent magnetic particles are being used, a black light shall achieve a minimum of 1,000 microwatts per square centimeter on the examined surface. If alternate wavelength light sources are used to provide ultraviolet light, causing fluorescence in the particles, it shall be qualified in accordance with ASME Section V, Article 7, Appendix IV.

Light meter showing 107.0 footcandles of light.

Typical Examples of ASME Code-Required Inspections

In the ASME codes of construction, magnetic particle examination or liquid penetrant examination is specified many times to detect the possibility of surface defects. If material is nonmagnetic, the only choice is liquid penetrant examination. However, if material is ferromagnetic, magnetic particle examination is generally used. Some typical examples of ASME Code-required inspections include, but are not limited to:

- Castings for surface defects
- Plates for laminations in corner joints when the edge of one plate is exposed and not fused into the weld joint
- Head spin hole plug welds
- Weld metal build-up on plates
- Areas where defects have been removed before weld repair

MT examination of the longitudinal seam on an inservice boiler.

Once boilers and pressure vessels are inservice, MT can be a widely-used examination method. The *National Board Inspection Code* (NBIC) specifies MT may be used for the inspection of items such as:

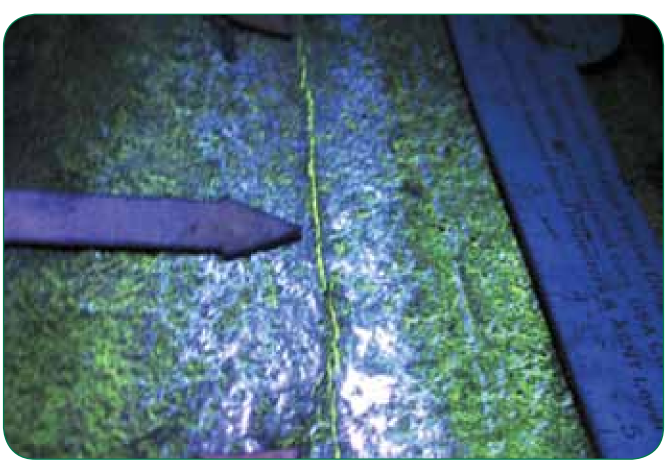
- Internal and external surfaces of boilers and pressure vessels
- Vessels in liquid ammonia service
- Components subjected to fire damage
- Locomotive and historical boilers
- Yankee dryers
- Cargo tanks
- Vessels in LP gas service
- Weld repairs and alterations to pressure-retaining items

MT examination of a lifting lug weld on an inservice boiler.

Typical Inservice Inspection

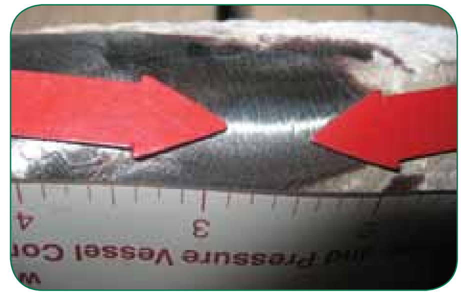
Use of an AC yoke in the MT process to detect fatigue-type discontinuities in welded seams of a steam drum during inservice evaluation.

Crack in seal weld of boiler tube to steam drum discovered with MT. This was the result of improper repair procedures.

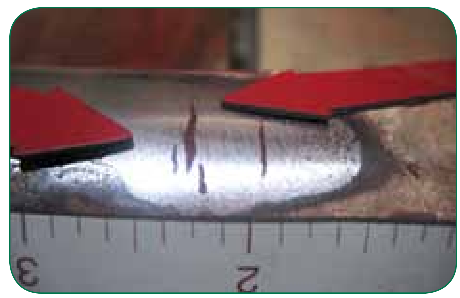


Wet fluorescent MT process showing a crack in a steam drum circumferential weld seam.

Watertube Inspection



During visual examination, a boiler watertube exhibited unusual transverse marks in the fireside deposits. The tube has been wire-brushed to prepare for MT examination.



MT examination revealed transverse indications, which were determined upon further investigation to be heat stress cracks.

Video probe inside the watertube revealed scale plugging, which led to overheating of the tube.

Photos on this page courtesy of Coastal Inspection Services

Advantages and Disadvantages of Using Magnetic Particle Examination

Advantages:

- Can detect both surface and near-surface indications.
- Surface preparation is not as critical as with other NDE methods. Most surface contaminants will not hinder detection of a discontinuity.
- A relatively fast method of examination.
- Indications are visible directly on the surface.
- Low-cost compared to many other NDE methods.
- A portable NDE method, especially when used with battery-powered yoke equipment.
- Post-cleaning generally not necessary.
- A relatively safe technique; materials generally not combustible or hazardous.
- Indications can show relative size and shape of the discontinuity.
- Easy to use and requires minimal amount of training.

Disadvantages:

- Non-ferrous materials, such as aluminum, magnesium, or most stainless steels, cannot be inspected.
- Examination of large parts may require use of equipment with special power requirements.
- May require removal of coating or plating to achieve desired sensitivity.
- Limited subsurface discontinuity detection capabilities.
- Post-demagnetization is often necessary.
- Alignment between magnetic flux and indications is important.
- Each part needs to be examined in two different directions.
- Only small sections or small parts can be examined at one time.

In conclusion, magnetic particle examination can be a useful nondestructive examination method during new construction and inservice inspections. It can only be used on ferromagnetic materials; therefore, it is not the best method for all applications. For quick, low-cost inspections, MT is often the best NDE method for detecting surface and slightly subsurface discontinuities.

2012 Technical Scholarship Submission Period Begins in September

Open submission for the 2012 National Board Technical Scholarship begins September 1 and will run through February 29, 2012. Up to two $6,000 scholarships will be awarded to selected students who meet eligibility standards and who are pursuing a bachelor's degree in certain engineering or related studies.

Full requirements are listed on the National Board Web site under ABOUT US. Contact National Board Scholarship Coordinator Connie Homer at chomer@nationalboard.org for more information.

The 80th General Meeting Highlights

LAS VEGAS 2011

Photographs by **Greg Sailor**

It's no secret: *SAFETY* – or at least plenty of discussion about safety – **is what happened in Vegas this year at National Board's landmark 80th General Meeting, organized around the theme "SAFETY: Consider the Alternative." Pressure equipment professionals gathered to discuss current industry topics while enjoying the excitement of Las Vegas.**

To kick things off, Elvis made a special appearance at the Opening Session on Monday morning, rallying the crowd before football legend Joe Montana gave his inspiring opening remarks. Next, a panel of featured speakers shared their professional insight and expertise with guests. Speakers included Joe Brzuszkiewicz, project engineering administrator; James R. Chiles, author; Robert D. Bessette, president of the Council on Industrial Boiler Owners; Mike Pischke, vice president of PVMA; Jim Pillow, operating committee chairman of Common Arc Corporation; and Michael Zdinak, assistant vice president of the Chubb Group of Insurance Companies. Look for narrative versions of their presentations on National Board's Web site in coming weeks.

This year's guest tours included the best Vegas has to offer. Monday featured a Las Vegas city tour and shopping at Bonanza Gift Shop, "the world's largest gift shop." Tuesday's guest outing included a backstage tour of the famous Jubilee Theater followed by a fun afternoon as audience members of *The Price is Right*. Wednesday, all registrants and guests had the choice of touring Hoover Dam or Red Rock Canyon. Afterwards they were treated to food, drink, and casino table games. Topping off the week, country superstar Lorrie Morgan gave a stellar performance at the Wednesday Evening Banquet.

2011 National Board Honorary Members

Five former National Board members were elected as honorary members (at the October 2010 Members' Meeting) and presented with plaques at the 80th General Meeting on Tuesday, May 10, in Las Vegas, Nevada.

The honorary members are: Pete Hackford, formerly representing the State of Utah; Mark Mooney, formerly representing the Commonwealth of Massachusetts; Mark "Rudy" Peterson, formerly representing the State of Alaska; Daniel Price, formerly representing Yukon, Canada; and Dale Ross, formerly representing the Province of New Brunswick, Canada.

From left to right: Board of Trustees Chairman Jack Given Jr., Dale Ross, Mark Mooney, Mark "Rudy" Peterson, Daniel Price, Pete Hackford, and National Board Executive Director David Douin.

2011 Board of Trustees Election Results

Ballots cast during the 80th National Board/ASME General Meeting in May resulted in the election of three National Board members to the Board of Trustees.

Members elected North Carolina Bureau Chief Jack M. Given Jr. Board Chairman, while New Jersey Chief Boiler Inspector Milton Washington and Nebraska Boiler Inspection Program Manager Christopher B. Cantrell were each elected members at large.

Mr. Given served on the Board as a member at large from April 2008 to September 2010. He was elected chairman in October 2010 to complete the unexpired chairman's term of retiring Michigan Boiler Division Chief Robert Aben.

Mr. Washington was reelected in May after having been voted member at large in October to fill the vacancy left by Mr. Given.

Mr. Cantrell is newly elected to the Board of Trustees.

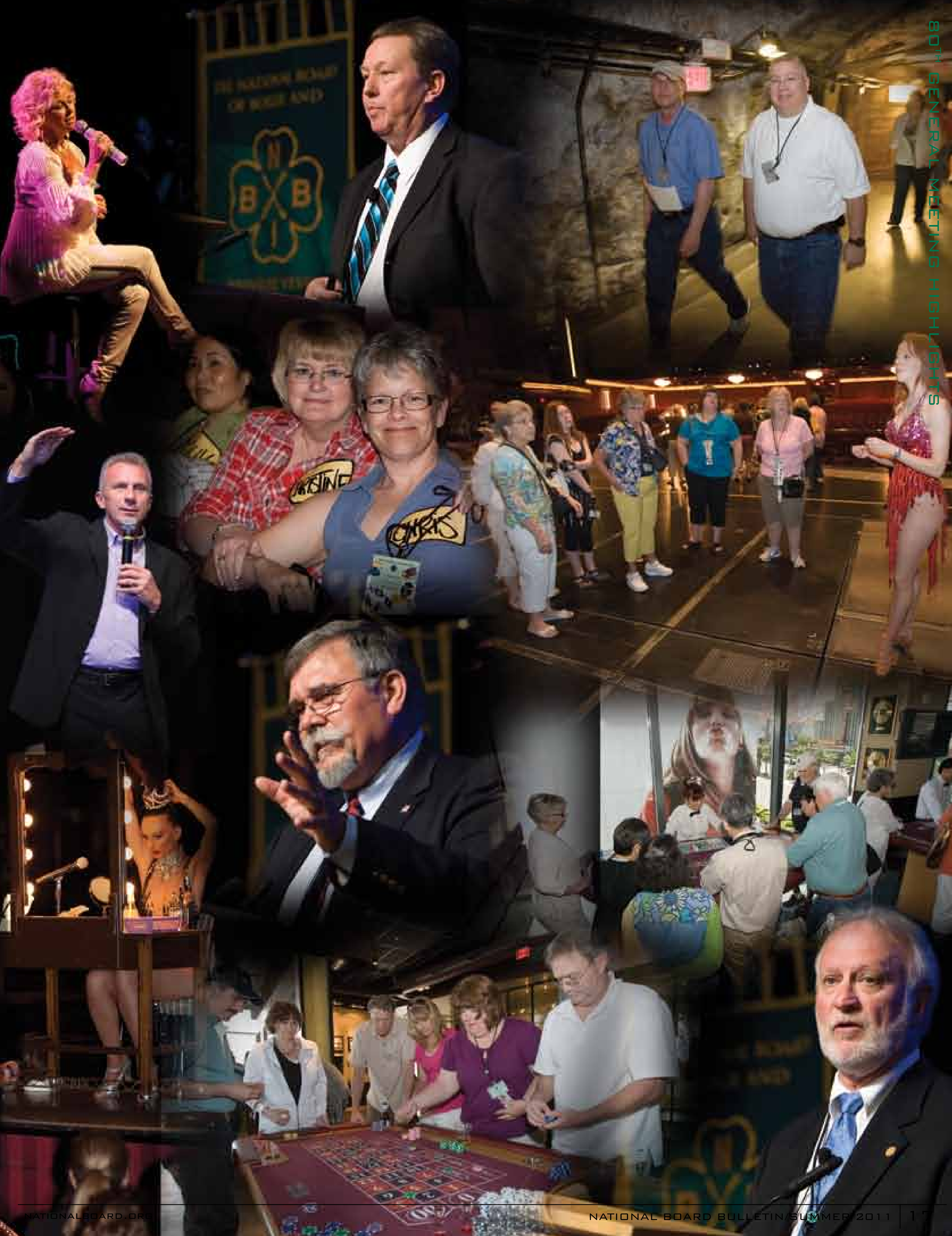
All terms are for three years.

Jack M. Given Jr.

Milton Washington

Christopher B. Cantrell


Jubilee Theater
CAESARS PALACE
LAS VEGAS
SAFETY
CONSIDER
THE
ALTERNATIVE
ASME



Root Cause Analysis for the Rest of Us

By James R. Chiles

James R. Chiles, author of **Inviting Disaster** *and* **The God Machine**, *has been writing about technology and history for over 30 years. His work has appeared in* **Smithsonian, Air & Space, Popular Science, Harvard, Aviation Week, Mechanical Engineering**, *and* **Invention & Technology.** *He maintains a blog called* **Disaster-Wise.**

The purpose of a root cause analysis (RCA) project is to dig out fundamental reasons behind an undesired event, such as a numerically-controlled machine tool that turns out bad parts, intermittently and seemingly at random. RCAs are most valuable for tackling incidents for which the cause isn't clear from prior experience, or when stakes are high, or when the incident stubbornly resurfaces after a company picked fixes by trial and error. Because almost every disaster is preceded by close calls and anomalies (aka precursors or signal events), consider applying RCA methods *before* injuries or damage pile up.

In the steam boiler and pressure-vessel field, undesirable incidents worthy of RCA work could include:

- A reappearance of mineral scale in boiler tubes despite routine treatment of the feedwater.
- Fractures in steel brackets supporting a pressurized-air tank on a truck, which threaten integrity of the vessel and its connections.
- Stress corrosion cracking in the steam drum of a heat recovery steam generator.
- Repeated violations of permit-to-work during contractor maintenance at an operating refinery.

Major RCA projects are usually carried out by teams. The word "root" in RCA should serve as a reminder to all involved to keep digging past intermediate factors that, however treated, won't make the problem go away. And remember, "cause" could well be plural. Only after being brought to light and pinned on the wall can deep-seated causes be disarmed.

To illustrate how a typical RCA might play out, imagine a company called AutoNaut is making robot-navigated freighters designed for use in Arctic climates. After the second winter, AutoNaut's warranty department hears the steel hulls are having problems. (Metallurgists: you'll recognize some facts borrowed from experiences with Liberty ships during World War II.)

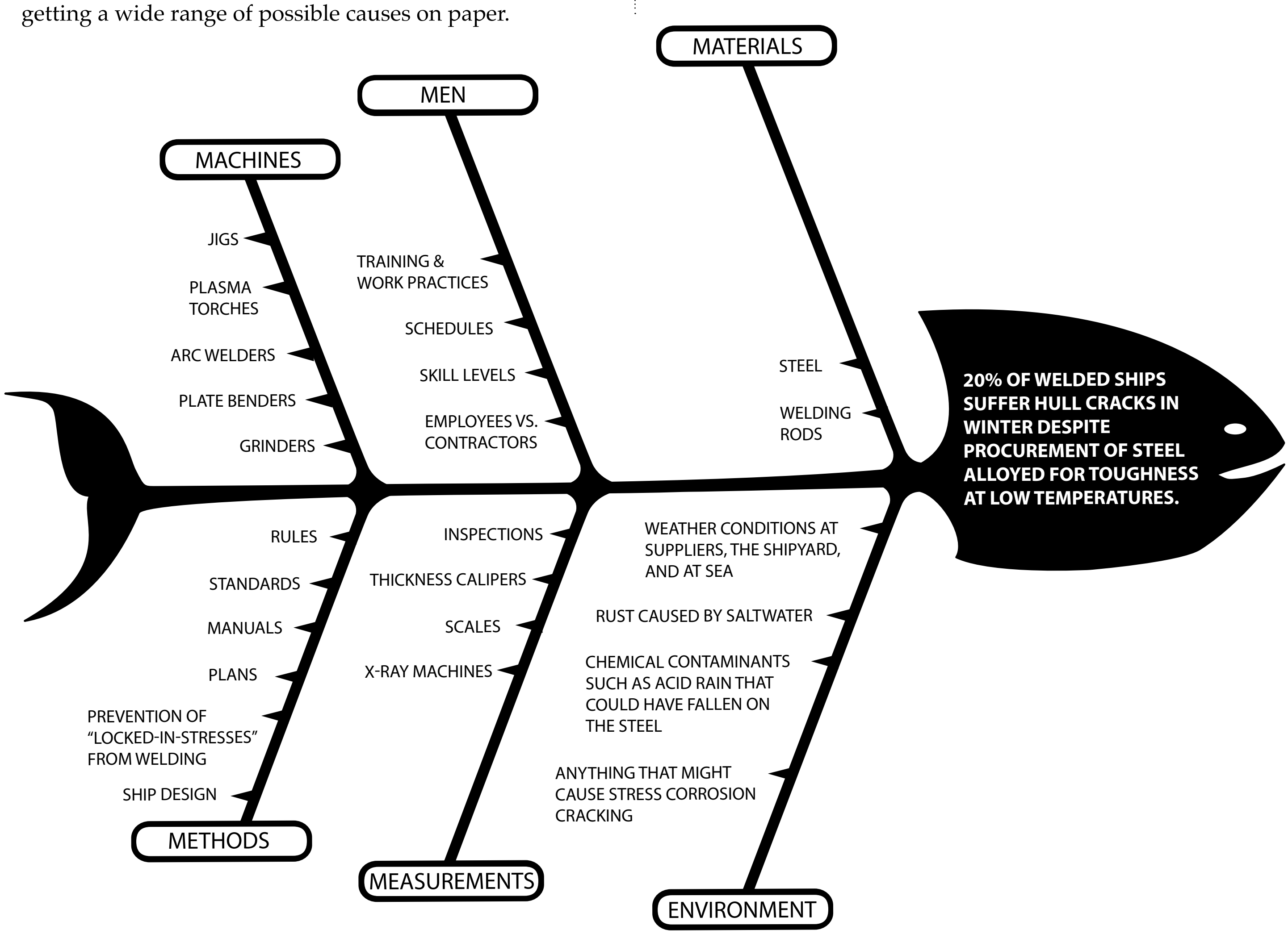
The root cause analysis season begins when the warranty department drafts and sends around an incident description: *"An unacceptably high number of our unmanned freighters are suffering from cracked hulls inservice."* There's no hard data yet, and it's too early for theories, but the description will help investigators hold a steady course as distractions loom.

Next, AutoNaut assembles a root-cause team of staff-level, subject matter experts who can brainstorm ideas and also track down "who, what, when, where, why, and how" information. It pulls in managers from the shipyard and engineering branches. These are to champion the research even when departmental egos get bruised, and later make sure effective actions are taken.

The team writes a short, declarative problem statement: *"At least 20 percent of our Storm King brand of welded ships are suffering hull cracks in winter despite our procurement of steel alloyed for toughness at low temperatures."*

Using books and forms from the Internet, the team begins brainstorming every possible cause anyone can dream up. They write these causes as short sentences on big sticky notes. They begin to sketch out an Ishikawa fishbone diagram, named after Japanese university professor Kaoru Ishikawa. While filling out such a diagram may not nail down a specific cause on its own, it can be a good way of getting a wide range of possible causes on paper.

Their fishbone diagram positions the core problem statement on the right – the head of the fish. A long spine runs to the left. Joining the spine are fishbones – the major categories of possible causes. (This is usually four to eight categories, but the numbers and labels depend on the setting.) The goal is to prompt team members to think thoroughly about each category then flesh out all "bones" with a full range of conceivable factors – even those seemingly at the extremes of believability. Put another way, the best team of detectives can't get far if they leave a prime suspect off their list.



The team settles on six major categories and begins filling them in with their brainstormed ideas about possible causes of the ship-breaking problem:

- **Machines:** Jigs, plasma torches, arc welders, plate benders, and grinders.
- **Men:** Training and work practices, schedules, skill levels, employees versus contractors.
- **Materials:** Steel, welding rods.
- **Methods:** Rules, standards, manuals, plans, prevention of "locked-in stresses" from welding, ship design.
- **Measurements:** Inspections, thickness calipers, scales, X-ray machines.
- **Environment:** Weather conditions at suppliers, the shipyard, and at sea; rust caused by saltwater; chemical contaminants such as acid rain that could have fallen on the steel; anything that might cause stress corrosion cracking.

The next two sessions are productive and noisy as they find spots for their sticky notes and sort through information already in hand. They argue about whether "ship design" should be a seventh major category but decide to fit such issues under Methods.

Having read articles and books about how RCA is done, the team starts to employ the "Five Whys" approach, originally used for quality engineering inside Toyota. This approach probes for deeper causes by taking a factor of interest and asking successive questions, such as "why" or "how could."

Let's say one theory on the diagram suggests ships are cracking because arc welds were substandard.

Why? A team member replies, "Because employees used the wrong welding rods." *How could that happen*? "Tenders were pulling rods from the wrong supply bin." *Why*? "The supply department shifted welding supplies around and labels got mixed up for a week." *How could that happen*? "A snowstorm collapsed half the roof and they had to move the bins."

Asking "why" five times to chase each factor is average; it might be less. Or more! The goal is to keep digging until an important cause – one within the company's control – is found.

Now the fishbone is getting crowded. One member says all these theories could lead to so many permutations, it will be impossible to check them out between RCA meetings. Departments start to resist following up on theories they regard as insinuations from other departments. Showing signs of fatigue, the team falls into a rut when answering the "why" question. "Budget was tight," or "Training was neglected," are recurring answers.

The company champions call a time-out and hire an outside facilitator to help the team resume its forward march. She arrives and has them explain their fishbone diagram. With its subcategories and sub-subcategories, the work now covers two walls of a conference room. The fishbone could use more detail here and there, she says, but first they need to pick out the most promising avenues. "According to Vilfredo Pareto," she says, "80% of effects come from 20% of causes."

She explains that a detailed chronology of relevant events is one way to close in on driving factors: "List when and where the affected ships were built; when manufacturing processes and designs changed; and when problems started. If you've been worried about a change in process but find it didn't even occur until after the problem was already underway, you can set it aside."

The team finds the tools she suggests – chronology plus bar charts comparing factors and incidence – eliminated half the original ideas because there was no correlation to the problem statement.

Now the team is inclined to conclude three factors are contributing to their problem: steel; cold Arctic waters; and the tendency of first-generation navigation software to slam the ship into waves at full speed, whatever the weather. Because the third factor will be the easiest to change, some are inclined to end the process immediately and change the robot navigation software to slow ships and allow more circuitous routes. There is majority support, but Sales warns customers will not be happy with slower ships. Quality Assurance (QA) says the problem lies deeper.

The facilitator says it's time to run the short list of theories and problems through a cause-and-effect process called the Current Reality Tree (CRT) diagram. CRT, she explains, was created by business theorist Eliyahu Goldratt as one tool in a larger toolbox he called the Theory of Constraints, which he detailed in a series of bestselling business novels. The CRT process helps a company figure out *what* went wrong when something deviated from a desired state. Goldratt's other tools are more about deciding *which* changes to make and *how* to make them.

One peculiarity of building a CRT along Goldratt's lines is that team members can only ask questions of eight types, called Categories of Legitimate Reservation (CLR). The team is puzzled at such a rule: the facilitator explains the CLR rule helps defuse personality clashes and gets the team to forge strong and logical connections between causes and problems. By the end of the CLR process, a clear set of problems and causes should join up like links of a strong chain, connecting the problem statement at the top to the root cause (or causes) at the bottom.

"Any factors left floating unlinked at the end of the process or stranded in a dead end are probably irrelevant to our undesirable effect, or else a symptom," she finishes. "Go for the root causes, that once fixed, will take care of the problem statement you started with, but don't hold out for perfection. Your main job is to point the way to corrective actions that will be sufficient, affordable, and prompt."

Within a day, work on the Current Reality Tree persuades the group to acknowledge a point the QA department pressed before, but without success. QA argued computer-aided design had contributed to the problem by putting sharp corners in the hulls – such as at hatch openings and where prefabricated modules joined up – and that's why most cracks were starting from these points of stress concentration.

After two months of hard work, the team presents its answer to the board of directors. They report four contributing factors, with two more important than the rest: low temperatures and sharp corners in certain hull details. This leads to remedies suited for the existing fleet and design changes to ships on order.

How might a typical company dip its toe in the waters of root cause analysis? Handbooks and seminars teach the wide range of methods available, and staff teams can document their work by filling out RCA diagrams available on the Internet. Hundreds of case studies and filled-out logic trees are online for those who prefer to learn from example. Sometimes revelations from thorough root-cause work are amazing, at work and at home. (One analyst used the fishbone method to figure out why his daughter's home insulin injections suddenly seemed to stop working.)

In-house practice will get your company familiar with choices and terminology. Hands-on experience you build now will help later if you encounter a high-priority problem and need to solicit bids from root-cause consultants. Interviews with bidders will be more productive and having skilled factfinders on staff will speed up the consultant's work.

In either case, whether home-grown or imported, root cause analysis will serve the firm best if used regularly and as part of a larger, continuous-improvement process such as Six Sigma (a widely-used business management strategy). RCA is a good tool for rooting out knotty problems, so keep it sharp!

Calendar of Industry Events

NBIC Committee Meetings
July 18-21, 2011
National Board Training and Conference Center
Columbus, Ohio

ASME Code Week
August 8-12, 2011
Boston Park Plaza Hotel & Towers
Boston, Massachusetts
http://events.asme.org/BCW/Committee_Meetings.cfm

The National Board Board of Trustees Meeting
August 23-24, 2011
Sheraton Inner Harbor
Baltimore, Maryland

Pressure Vessel Manufacturers Association (PVMA) Fall Meeting
September 26-27, 2011
National Board Training and Conference Center
Columbus, Ohio
www.pvma.org/meetings/default.aspx

2011 National Board Members' Fall Meetings and Seminars
October 3-6, 2011
National Board Training and Conference Center
Columbus, Ohio

Temperature Considerations for Pressure Relief Valve Application

BY JOSEPH F. BALL, P.E., DIRECTOR,
PRESSURE RELIEF DEPARTMENT

The process of selecting or evaluating correct set pressure for pressure relief valve application is relatively straightforward – the set pressure of the pressure relief valve is compared to the pressure vessel maximum allowable working pressure (MAWP). The correct set pressure can be determined by using ASME Code rules and the general principle that at least one valve must be set at or below the MAWP.

The Code does not thoroughly explain temperature considerations, and application concerns related to temperature are just as important as proper selection of the correct set pressure. The purpose of this article is to examine some of these concerns when applying pressure relief valves in pressure vessel service.

One concern is selecting correct material for pressure relief valve construction. For pressure vessels, service temperature is considered part of the vessel design conditions, and the maximum temperature is used to select allowable stress limits for the chosen vessel material. Design temperature is recorded on the pressure vessel's data report and nameplate (Section VIII, UG-119). Additionally, minimum design metal temperature (MDMT) is also considered in material selection and marked on the nameplate.

Pressure relief valve stamping rules do not require temperature marking on the nameplate; therefore, the valve manufacturer's literature must be consulted to determine appropriate temperature limits for valve design. The valve must be applied using this data since it represents the mechanical limits of the design. When low temperatures may be encountered, materials appropriate for this application must be selected. Particular attention is called out for application of carbon and low-alloy steels when used below -20°F. Impact testing of valve body materials may be required, and alternative materials with better impact resistance characteristics are often selected for low-temperature applications.

Once proper material for a valve is identified, temperature effects on valve operation and capacity must also be considered.

Valves are required to be tested with test fluid similar to the application fluid [UG-136(d)(4)]. Steam valves are tested with saturated steam by the manufacturer; if they are used in saturated steam service, performance inservice should be very similar to how the valve was set.

Valves for gas applications are set using ambient temperature air. Liquid service valves are set using water. The Code makes provisions for use of a cold set pressure which compensates for the difference between test medium temperature during the manufacturer's original test and the valve's actual temperature encountered inservice. Temperature of the system fluid, and possibly ambient operating temperature, should both be considered in application of the cold set pressure.

Cold set pressure is typically within several percentage points of the specified valve set pressure. For example, a Dresser 1900 series valve specified for 400° F service will have a multiplier of 1.013 applied to the required set pressure to achieve the desired set pressure inservice. (Reference: *Dresser Maintenance Manual 1900-MM*, dated 2009.) For most designs in elevated temperature applications, set pressure on the test stand will be higher than the set pressure inservice. This is because of thermal expansion of the valve's bonnet (where the spring is located), and relaxation of the spring when it is heated above ambient temperature.

Both final set pressure (set pressure desired inservice), and cold set pressure are listed on the valve nameplate. Cold set pressure is listed as CDTP (Cold Differential Test Pressure). CDTP also includes a differential value to compensate for the effect of back pressure on a conventional type design (no bellows), with the back pressure compensation first considered.

Valve tested with low-temperature fluid.

Photographs courtesy of Flow Safe Inc.

Valve in low-temperature service. (Note lack of frost on bonnet.)

Example using the aforementioned Dresser 1900 series valve:

A valve is required to open at 500 psig inservice where the service temperature is 400°F, and back pressure = 25 psig.

Differential set pressure = 500 psig – 25 psig = 475 psig
Temperature multiplier: 1.013
Cold differential test pressure = 475 psig x 1.013 = 481 psig

This valve would have a stamped set pressure of 500 psig and a CDTP of 481 psig. Back pressure of 25 psig would also be marked. Once the valve is inservice with specified back pressure applied at service temperature of 400°F, it should open at the desired set pressure of 500 psig.

When inservice inspections are performed, stamped set pressure value is compared to the vessel's MAWP to determine whether set pressure was correctly specified. However, when this valve is tested on a test stand to verify inservice condition, measured set pressure should be compared to the CDTP to evaluate performance.

Interestingly, cold set pressure is usually not specified for valves inservice where temperatures are below ambient. The maintenance manual referenced above did not include a multiplier value for cold temperatures. Another manufacturer of valves for cryogenic services reported it did not use a cold set factor for valves in low temperatures. The reason: the pressure relief valve is normally installed in a location where the valve body is at ambient conditions, and the valves are not normally insulated. Therefore, the valve will operate at a temperature not much different from ambient.

Valves used in superheated steam service will also require a temperature correction, even though tested with saturated steam. Superheated steam is steam with energy added so the temperature is above saturation temperature for the given pressure. Under those conditions, a temperature correction is also applied to test set pressure, based upon the difference between saturated steam temperature and the superheat steam temperature. Manufacturer's literature should always be consulted to determine the proper use of correction factors.

Valve capacity is also affected by temperature. Valve capacity markings are reported in standard units of pounds per hour of steam, standard cubic feet per minute of air at 60° F, or gallons per minute of water at 70°F. Service fluid temperature may often be different from standard conditions for capacity marked on the nameplate. A conversion from capacity on the valve nameplate to the service fluid must be performed to determine whether valve capacity is correctly sized at service temperature conditions.

This calculation can be done using the guidance of ASME Code Section VIII, Appendix 11. Paragraph UG-125(a)(2) of ASME Code Section VIII indicates it is the pressure vessel user's responsibility to select required pressure relief devices for a pressure vessel prior to initial service. Calculations used to select the pressure relief device should reflect sufficient capacity. When necessary, these calculations must be made available to the inspection organization.

Pressure relief valves are provided for the purpose of plant and personnel safety, and consideration of temperature effects on valve set pressure and capacity are important aspects to be reviewed during selection and inservice inspection of pressure relief valves for pressure vessel applications.

COVER STORY

A NEW ERA FOR THE NATIONAL BOARD INSPECTION CODE

INTERVIEW WITH NBIC COMMITTEE CHAIRMAN TERRY PARKS

For 66 years the *National Board Inspection Code* (NBIC) has upheld a reputation of quality, safety, and uniformity that has made it the premier, internationally-recognized standard for rules and guidelines for the installation, inspection, repair, and alteration of boilers, pressure vessels, and pressure relief devices.

This longstanding, "living" document has gone through many adaptations since its first publication in 1945 to meet the changing needs of the boiler and pressure vessel industry.

The July release of the 2011 Edition marks a new era for the NBIC. The books will feature a progressive new design, reformatted layout, and a new publication cycle. Undertaking such a project takes the cooperation and skills of many people, including National Board staff and NBIC Committee members. Leading the way is NBIC Chairman and National Board Manager of Field Services Terry Parks.

Mr. Parks has served as NBIC Committee chairman for four years and has spent a total of six years on the NBIC Committee. In 2007, he joined the National Board staff as manager of field services. He is also certification and accreditation supervisor for the National Board and is a member of numerous ASME Code committees. He served the US Navy from 1968-1990 and for 17 years was assigned to ships operating steam propulsion plants. He retired from the US Navy as a senior chief machinist mate. In addition to a career that includes thermal plant operator, field technician and supervisor, deputy boiler inspector, and inspection specialist, he served the State of Texas as chief inspector for nearly five years before joining the National Board staff. In this interview, Mr. Parks talks about the changes to the NBIC and its bright future.

Photographs by **Greg Sailor**

BULLETIN: In July, National Board releases the newly formatted *National Board Inspection Code* (NBIC). It also begins the new two-year publication cycle. What is new and different about the reformatted version, and why change the publication cycle?

Mr. Parks: In terms of content, everything remains the same. What have changed are the interior page layout and the physical design of the book. The interior is now a single-page, one-column format, which makes the information much easier to read. Additionally, the NBIC will no longer come in loose-leaf, three-ring binders – the books are softcover and capable of lying flat open, which makes them much easier to use. The books are three-hole punched to fit into a binder.

Another significant change: there will be no more Addenda. Going forward, the NBIC will be published every two years in July. The new two-year cycle is easier for people to use and ensures they have the right version. This new cycle also syncs with ASME Codes, so all code books will be released at the same time.

BULLETIN: In what format is the new NBIC offered?

Mr. Parks: It will be offered in three different formats: as an electronic download, on a flash drive, or as a hard copy. People can order through our online subscription (IHS) or through National Board beginning July 1. It is no longer available on CD.

BULLETIN: What are the major differences between purchasing a hard copy of the NBIC versus an electronic version?

Mr. Parks: There is not much difference; it is a matter of choice. Some prefer using the electronic format and others prefer the traditional hard copy. Personally, I like having both. For code work and meetings, the electronic version works well for me. When working at my desk, I prefer the hard copy.

BULLETIN: If changes or updates need to be made between cycles, how will it be handled since there is no longer an Addendum?

Mr. Parks: If a change needs to be made between cycles, and if it is a matter of safety, the National Board will publish an announcement on our Web site. Errata changes will continue to be published and available on the National Board Web site after committee meetings, which are held every six months. Otherwise, all other updates will come out on an as-needed basis as safety requires.

BULLETIN: When was the NBIC Executive Committee formed and how has it guided the evolution of the NBIC?

Mr. Parks: The Executive Committee was established in February 2009 and the charter approved July 21, 2009. It is a steering committee whose purpose is to provide administrative guidance and strategic direction. The scope of the Executive Committee is to develop the NBIC to be the singular, world-class post-construction code for boilers and pressure vessels, and to further ensure the NBIC addresses the industry and jurisdictional needs.

BULLETIN: Incorporating industry advancements means reaching out to professionals within the boiler and pressure vessel community. How has outside involvement enhanced the NBIC?

Mr. Parks: The NBIC Main Committee, Sub-committees, and Sub and Task groups are represented by a broad spectrum of professionals within the boiler and pressure vessel industry. We have individuals representing users, manufacturers, authorized inspection agencies, **R** Certificate holders, **VR** Certificate holders, jurisdictions, regulatory authorities, labor, and general interest. This allows all of the boiler and pressure vessel industry to participate in the process of improving the NBIC. This balance truly enhances the principles of fairness, openness, and lack of dominance of any single interest category required by the American National Standards Institute (ANSI) consensus process. Additionally, there is always an open invitation for the public as a whole to be involved in the process by attending the semiannual meetings and making comments during the public review comment period. Any public review comment we receive must be addressed and resolved by the NBIC Main Committee.

BULLETIN: In June 2009 the National Board signed an agreement with the China Special Equipment Inspection and Research Institute (CSEI) to translate the NBIC into Mandarin Chinese. What progress has been made since then?

Mr. Parks: They are currently waiting for the 2011 Edition to begin the translation process. As soon as we have an ANSI-approved 2011 Edition, they will receive a copy for translation.

BULLETIN: How do you see this partnership advancing the NBIC worldwide?

Mr. Parks: The NBIC is the only post-construction code for boiler and pressure vessels worldwide. The NBIC was founded on the principles of promoting safety and maintaining uniformity. With the translation to Mandarin Chinese, these principles of safety and uniformity will be available in a large geographical portion of the world. The objective of the NBIC is to afford reasonable protection of life and property and to give a reasonably long, safe period of usefulness. Translation into Chinese will definitely enhance this objective by making the NBIC available for use for installation, inspection, and repairs or alterations to boiler and pressure vessels in China. Ultimately, I'd like to see the NBIC being used all over the world.

BULLETIN: Are other countries interested in similar agreements?

Mr. Parks: At this time, no other country has made such a request, but as the NBIC is used more internationally, I am confident there will be similar requests. In addition to Mandarin, translation to Spanish would also allow the NBIC to be used more easily in a large portion of the international community. Personally, I would like to see this happen soon.

BULLETIN: What notable international growth are you seeing?

Mr. Parks: International National Board R Certificate holders have increased dramatically over the past 10 years (see page 5). The Middle East had a 225% increase in certificate holders from 1999-2009. Asia also had large growth during the same period. India had the greatest increase, from 11 certificate holders to 47.

BULLETIN: What do you see in the future for the NBIC?

Mr. Parks: There are some notable changes that will occur in future editions of the NBIC. Sections from all three Parts of Pressure Relief Devices are being pulled together and made into one book. Our goal is to have it ready for the 2013 publication. There is also a proposal to remove the Supplements section from each Part and combine them into one book, possibly for the 2015 publication.

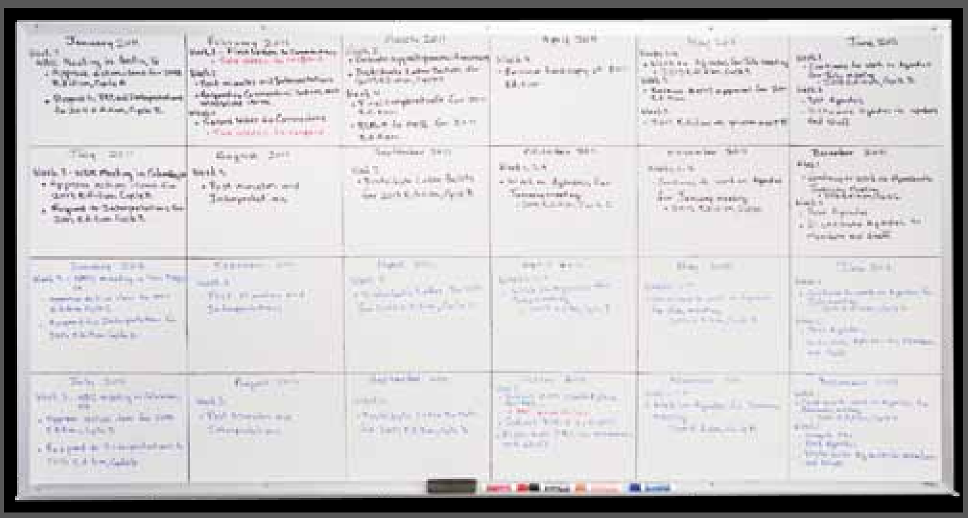
Additionally, I see the creation of international versions of the NBIC that consider the geographical regulation for pressure-retaining items. As new pressure technologies and equipment emerge, it is incumbent on the NBIC Committees to incorporate needed requirements into the NBIC in order to meet the objectives of affording reasonable protection of life and property and providing long and safe periods of usefulness.

BULLETIN: What has been your personal experience working with the NBIC?

Mr. Parks: Over the past six years of my involvement with the NBIC, I have seen a significant amount of change. To me, the NBIC is a dynamic, living document constantly in motion and changing to meet industry and jurisdictional needs. The process is time-proven and works like a finely-tuned machine. It's exciting and invigorating to be a part of it.

I am also always impressed by the work ethic of the Committee volunteers (see page 2, *NBIC Volunteers*: *A Job Well Done*). They work long, tedious hours during the semiannual meetings, in addition to working on items throughout the periods between meetings, to ensure the NBIC is a quality document. I am impressed with their knowledge, expertise, and willingness to provide their services for the betterment of the NBIC. Without them the work could not proceed. I cannot say enough to show my appreciation for their hard work and efforts.

Mr. Parks' timeline for the 2011-2013 Editions of the NBIC.



Comprehensive planning is involved in preparing the NBIC for publication. Since NBIC revisions are developed based on rules of the American National Standards Institute (ANSI) for consensus, ANSI must approve new editions within one year of the public review comment period. Mr. Parks elaborates: "The timeline helps ensure all ANSI requirements are met in time for our publication deadline. We must also factor in NBIC Committee meetings and make sure minutes and agendas are available and posted in time for members to review prior to the meetings. Additionally, we must consider when the final, edited version of the NBIC needs to be delivered to the printer for our July 1 publication date."

National Board Expands Equipment Search for Inspection Training Center (ITC)

During summer 2008, the Inspection Training Center (ITC) opened its doors on the National Board campus in Columbus, Ohio, to provide comprehensive training for pressure equipment inspection. The state-of-the-art teaching facility accommodates up to 100 students and features an 6,800-square-foot inspection room containing equipment for a hands-on learning experience. Acquiring industry equipment for the inspection room has been an ongoing project for National Board staff. Recent additions include a tube end prep tool and an air-powered saw donated by Esco Tool.

In a continued effort to enhance the training experience of pressure equipment professionals from around the world, the National Board is seeking companies interested in donating equipment for educational use in the Inspection Training Center (ITC).

"At present, our ITC inspection room contains equipment, both large and small, provided to us by a variety of companies across North America, and we are very grateful for their contributions," explains National Board Senior Staff Engineer John Hoh. "While this is a very comprehensive collection of equipment, we are still in need of items to provide the broadest range of hands-on experience to our students. In a perfect situation, we would like to have at least one example of everything related to the boiler and pressure vessel industry. However, reality and the physical space we have available dictate that we be selective when searching for training aids."

Opposite page: Manager of Training Kimberly Miller and Senior Staff Engineer John Hoh in the Inspection Training Center.

Left: Esco Tool donation.

While the not-for-profit National Board does not purchase used equipment for training, it does make all necessary financial arrangements to transport the items to the Inspection Training Center. Donated items are affixed with a plate acknowledging the donor.

Those interested in donating equipment may contact Mr. Hoh at jhoh@nationalboard.org.

Contributions or gifts to the National Board are not deductible as charitable contributions for federal income tax purposes.

Among the items presently being sought:

1) ASME Section IV coil-type hot water boiler
2) ASME Section IV cast aluminum monoblock boiler
3) ASME Section IV copper fin watertube boiler
4) ASME Section I electrode-type electric boiler
5) ASME Section I immersion resistance element electric boiler
6) Vertical firetube boiler
7) Bladder-type expansion tank
8) Pressure vessel with non-circular cross section
9) Shell and tube heat exchanger with removable tube bundle
10) Autoclave with a wedge/ring door closure ⚙

The National Board thanks the following companies for their donations to the Inspection Training Center:

Alfa Laval
American Welding & Tank
Anderson Greenwood Crosby
Bell & Gossett
Boilermakers Local #374
Bryan Steam Corporation
Burnham Commercial
CNA Insurance Companies
Clark-Reliance Corp.
Cleaver-Brooks
Combustion Safety
Commercial Metal Forming
Eastman Chemical Company
Esco Tool
Farris Engineering
Gurina Company
Hamilton Tanks, LLC
Hartford Steam Boiler Inspection and Insurance Company of Connecticut
Hobart Institute of Technology
Missouri Division of Fire Safety
Pennsylvania Department of Labor and Industry
Paul Mueller Company
Pentair Water Treatment
Phoenix International Inc.
PVI
S.G. Loewendick and Sons, Inc.
SGL Group
State of Ohio Department of Commerce, Division of Industrial Compliance and Labor
Taylor Valve
The Lincoln Electric Co.
Triangle Engineering
Trinity Containers
Tyco Safety Products/Ansul Tank
Vulcan Hart
Westerman, Inc.

Scotch Marine firetube boiler donated by Cleaver-Brooks.

Strategic Executive Committee Shapes Future of NBIC

The *National Board Inspection Code* (NBIC) Executive Committee was formed in 2009 to provide overarching administrative and strategic direction to continue the NBIC's evolution as the world's foremost, accredited pressure-retaining repair standard.

The 2011 Edition of the NBIC, issuing in July, underwent notable changes shaped by the Executive Committee. From physical and graphic redesign of the books to planning measured expansion, the Executive Committee is dedicated to advancing this one-of-a-kind resource.

One advancement was a change in the publication cycle. "This is significant because it is a change in the general philosophy of code and standards publications," explains committee member Robert Wielgoszinski. "Over the years, many code and standards materials (which are maintained by industry volunteers), had a three-year cycle, including the *ASME Boiler and Pressure Vessel Code*. Due to volunteers having less time to work on updates, there has been considerable pressure to publish changes annually via the Addenda. I believe this compromise to a single issue every two years will alleviate that burden."

"A two-year edition without addenda will also make it easier for jurisdictions that must adopt by edition and addenda," adds Executive Committee Chairman Gary Scribner.

The Executive Committee also favored changes to the design and format of the books to make the NBIC easier to read and promote consistency with other codes and standards. "The recent rewrite of ASME Section VIII, Division 2, utilizes the same format of the new NBIC layout and has been received favorably by its users," notes member Brian Morelock.

Those who have utilized the NBIC over the years will appreciate the new design, as National Board Board of Trustees Chairman and former NBIC Executive Committee Chairman, Jack Given, points out. "While it is no longer the size I used in 1974 – I was able to put it in my hip pocket – the new bound books will still be easier to use in the field compared to the loose-leaf binders."

Member Frank Hart agrees. "The bound editions will not require page replacement and will provide consistency for all users," he says.

Vested Interests

The NBIC is developed and administered by a consensus committee composed of experts representing varying interests within the boiler and pressure vessel industry. Representatives include users, repair organizations, manufacturers, jurisdictional authorities, authorized inspection agencies, and government agencies. The same is true for the Executive Committee. Those involved with the NBIC share a vested interest in how the Code benefits their respective industries.

George Galanes, representing high-pressure boiler and pressure vessel users, says the main benefit to his group is consistent practices for inservice inspections, repairs, and alterations of pressure-retaining items. Michael Richards, also representing users, agrees. "Many companies are installing new equipment and the NBIC provides great guidance toward that end," he says.

From a jurisdictional authority viewpoint, Mr. Scribner emphasizes the NBIC's strength as a certified standard. "Adopting any nationally-recognized standard is much easier to sell than making your own rules," he says.

As a representative of users, Mr. Morelock has witnessed many benefits resulting from the NBIC. He works for Eastman Chemical Company, which was the first accredited Owner-User Inspection Organization (OUIO). Eastman holds owner/user certificate #1 from the National Board. "The ability to have 24/7 onsite inspection, repair, and alteration capability has improved the safety of Eastman's pressure vessel program, reduced downtime, increased production, and has resulted in significant cost savings," he shares. "The National Board also provides excellent training to Eastman employees during the commissioning process as well as continuing education to satisfy the continuing education requirements for commissioned inspectors."

Morelock says the NBIC has helped him gain professional knowledge and experience in the safe operation and maintenance of boilers and pressure vessels. "Personally," he adds, "I have the opportunity to participate in the consensus process to develop and maintain a standard that promotes boiler and pressure vessel safety to protect my family, my neighbors, my friends, and all people living within the jurisdictions that have adopted the NBIC."

Worldwide Reach

Advancing the NBIC worldwide is something the Executive Committee envisions. "If we are to remain a viable organization in this day of globalization, we must work to advance the NBIC worldwide," says Mr. Given. "Our associates at ASME are doing the same thing, and as National Board Executive Director Mr. Douin has said in the past, we must continue working closely with ASME. In doing so, both organizations will do even better."

Translating the NBIC into other languages is one way to expand internationally, but Mr. Wielgoszinski advises caution. "Translating the Code into foreign languages is a double-edged sword," he says. "Presenting the Code in a user's native language gives them tremendous advantage in uniform application of rules. However, translation must be spot-on accurate. The slightest misrepresentation of a phrase (because of nonlinear translation) could result in misapplication of the intent of the English word. Great care must be taken to ensure an accurate conversion takes place."

In 2009, National Board signed an agreement with the China Special Equipment Inspection and Research Institute (CSEI) to translate the NBIC into Mandarin. "China is one of the foremost world leaders in pressure-retaining equipment manufacturers. Their export of pressure-retaining equipment and devices to locations around the world, as well as their domestic use, is an avenue toward safety regardless of location. By having the NBIC in their hands, it provides a 'ready-made' recipe for success. This is evidenced by how well the NBIC has improved the safety of pressure-retaining items since its inception," Mr. Richards explains.

Mr. Galanes agrees. "I view China as leading development to improve the standard of living for Chinese citizens. As development continues, there will need to be more production facilities, which in turn will create a need to build boilers and pressure vessels, and ultimately, to repair them after being inservice. The NBIC will become part of this growth."

In addition to China, Executive Committee members also look to Europe. "I would like to see the NBIC adopted in the European community," says Mr. Hart, who represents VR Certificate holders. "Currently I am forming a group of my service centers in Europe. All centers will have the same quality system and one authorized agency to provide the International Organization for Standardization (ISO) auditing. Each country will have the same system based on the most-stringent requirements of all of the countries involved. I am somewhat doing my own code compliance without a centralized code as guidance," he shares.

Mr. Morelock points out that as other nations continue to grow their economies and increase manufacturing and production capabilities, the National Board will have the opportunity to play a vital role in areas of development and adoption of post-construction boiler and pressure vessel standards (NBIC), commissioning of inspectors, relief device testing, and training.

Future Expansion

What was once a pocket-sized resource for chief inspectors is now an internationally-recognized standard containing over 800 cumulative pages in three separate publications. Expansion of the NBIC is inevitable as new industry techniques and practices develop.

For instance, the Executive Committee foresees use of the American National Standards Institute (ANSI) standard in areas of new technology where pressure or temperature/pressure applications are required for energy, such as fuel cells, advanced medical devices, and solar energy. Mr. Scribner suggests Part 3 could be expanded since the need for welding repair standards and procedures can benefit most industrial applications. "And Part 1, if properly developed, could become a tool benefitting anyone involved in planning or installing boilers and pressure vessels," he adds. "Once developed, Part 1 could very well become the most-used portion of the NBIC."

Mr. Morelock sees another possibility. "Any industries needing, but not currently using, a post-construction standard for installation, inspection, and repair could utilize the NBIC process," he says. "The NBIC provides guidance for risk-based inspection assessment programs that could also be utilized in other industries that conduct periodic inspections based solely on time inservice," he adds. And in the future, Mr. Richards would like to see evaluation and expansion of a risk management program based on sound engineering practices, including inservice inspection and similar evaluations.

Plans are already underway to separate the pressure relief device sections and compile them into an additional book, which Mr. Hart says will be a very useful change. "This will make compliance and the auditing process better for all involved."

With new directions to explore, the mission of the NBIC remains the same: to provide for the protection of life and property to give pressure-retaining items a reasonably long, safe period of usefulness. In this spirit, Mr. Wielgoszinski predicts the NBIC will continue to provide new and state-of-the-art repair methods for years to come: "There really is no other resource available where installation, repair, and inspection are enveloped in a single publication."

The NBIC Executive Committee

Don Cook
Principal Safety Engineer
State of California
Representing Jurisdictional Authorities

George Galanes
PE, Manager, Metallurgy and QA
Edison Mission Group/Midwest Generation
Representing Users

Frank Hart
Manager, Valve Services
Furmanite Houston
Representing VR Certificate Holders

Brian R. Morelock
PE, Engineering Associate
Eastman Chemical Company
Representing Users

Terry Parks
Manager of Field Services and
Certification and Accreditation Supervisor
The National Board of Boiler and Pressure Vessel Inspectors
Representing General Interests and National Board

Michael H. Richards
Senior Engineer
Southern Company
Representing Users

Gary L. Scribner
Deputy Chief/NBIC Executive Committee Chairman
State of Missouri
Representing Jurisdictional Authorities

Robert V. Wielgoszinski
Principal Code Consultant
Hartford Steam Boiler I&I Co. of Connecticut
Representing Authorized Insurance Agencies (AIA)

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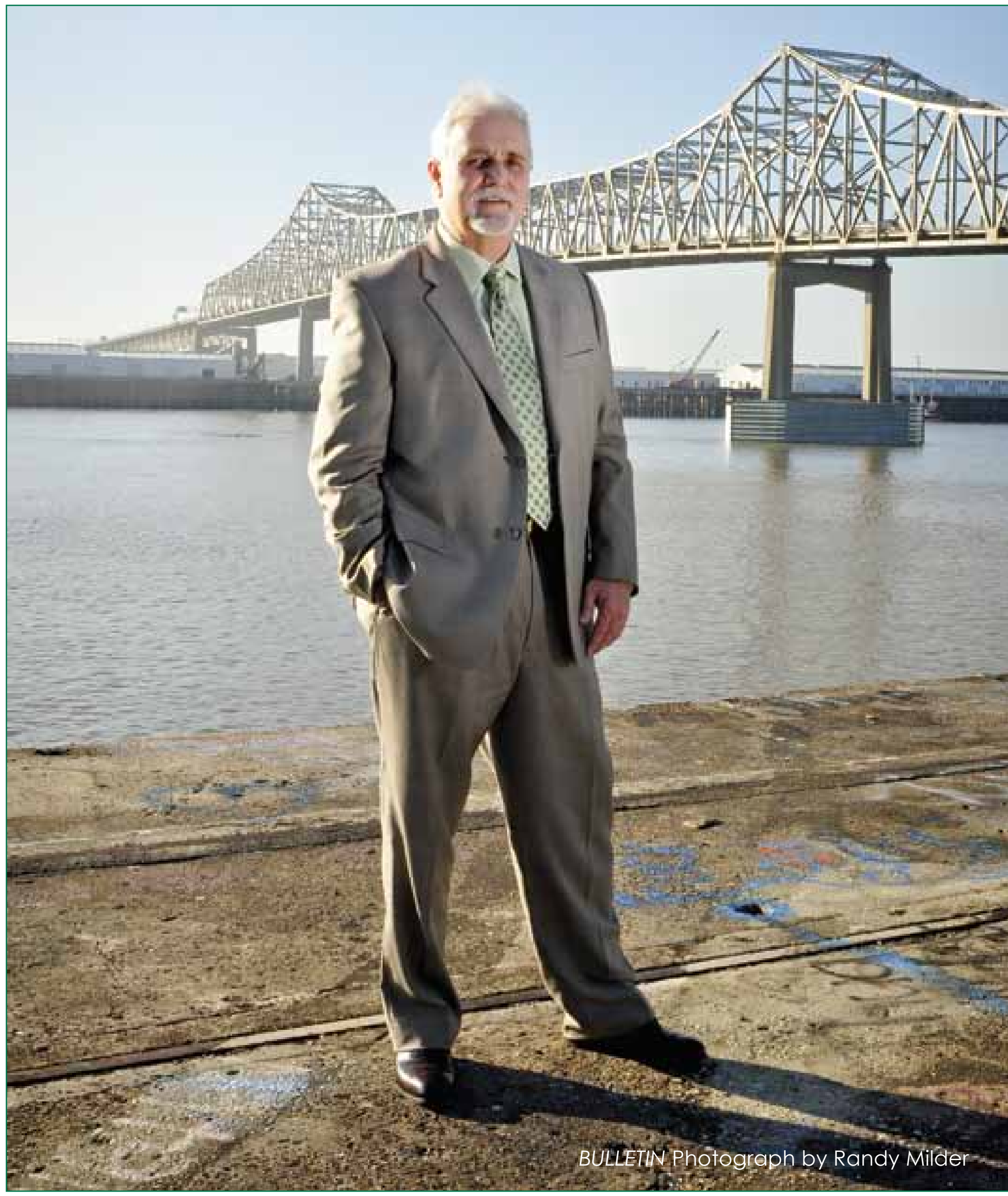
BILL OWENS

Chief Boiler Inspector, State of Louisiana

Quick . . .



Name the National Board member to visit the Playboy Mansion. Several times.

If you said Louisiana Chief Boiler Inspector Bill Owens, give yourself a pat on the back.

Suffice it to say, Bill's face takes on a crimson glow as he relates the Playboy experience. But more on that later.

Perhaps what is more important than Bill's sojourn to Hefner's lair is his incredible journey from a small football community in the northeast suburbs of Ohio to one of the most important responsibilities in the Louisiana state fire marshal's office.

"My father was a postman and my mother was a factory worker," Bill reveals with a knowing smile. "Shortly after I was born in Massillon, Ohio, they decided to put the cold weather behind them and move southwest."

Next stop: Venice, California.

To synopsize Bill's youth and chronicle his evolution into adulthood is to explain his affinity for beach life – a life he would enjoy throughout high school.

"Wow," he remarks in measured exclamation, "those were the days! Living on the water, cruising, racing down to the beach every day after school, meeting up with friends. It was like growing up in paradise."

But even paradise has its limits. "I wasn't very plugged in to high school," he reveals. And having a real job was necessary to support the beach boy lifestyle. "I worked for several years at a convenience store and also pumped gas and fixed cars at the local Chevron," he smiles.

Bill freely admits the Air Force dominated his plans following high school graduation. "My dad flew on B-24s," he emphasizes. "And that is where I wanted to be. Joining the Air Force was everything to me."

After joining the Air Force, he was sent to boiler training school. Almost immediately, the Louisiana official was ready to go. "My orders said to report to

Ellsworth Air Force Base in Ellsworth, SD," he grins. "You should have seen my face when I realized SD did not stand for San Diego!"

Upon arriving in Rapid City, *South Dakota* – in the middle of winter, no less – the California beach boy was like a fish out of, well . . . the Pacific Ocean.

"I was never so cold in my life," he laments with shake of the shoulders.

The future National Board member bided his time during the two-year stint, taking reserve status before his discharge. Bill returned to Venice and a job welding with a relative at an ornamental iron company.

"We made circular staircases. It actually was an enjoyable and interesting job," he recalls. "We once built a staircase for 60's *Dragnet* actor Jack Webb. While we had no problem delivering the staircase – or even dipping it in gold per Mr. Webb's instructions – we had one heck of a time hoisting it 32 stories piece-by-piece to his home above Sunset Strip."

While welding ornamental iron may have been a welcome change from Bill's boiler education, the Ohio native wanted to pursue his own professional agenda. "I accepted a job at Westlake Community Hospital in Westlake, California, working on small boilers and performing maintenance work," he explains.

Then, in 1979, Bill learned of a boiler inspection opening from an acquaintance who worked for Hartford Steam Boiler. He joined Hartford shortly thereafter and earned his National Board Commission before being assigned to the Los Angeles territory.

Bill remained in the City of Angels only a couple of years before taking a job in Tucson, Arizona, with the City of Tucson. Despite being landlocked, Tucson marked some new beginnings for the former Hartford inspector. Bill not only was a boiler inspector but he also became a building inspector and earned his ICBO (International Conference of Building Officials Certification). But Bill says the real reason for the move: a beautiful lady named Toni.

"I had known this girl in grade school," he recollects with a grin. "I ran into her in Tucson and we instantly reconnected. A year later we moved in together."

The reunion meant instant family expansion for the former Venice Elementary classmates: Bill's four kids from a previous marriage and Toni's two.

"In the 1990's I returned to work for Hartford and they assigned me to the territory from Los Angeles to Santa Barbara," the Louisiana official explains. "I got into a little bit of everything: shops, repairs, reviews. It was my dream job for a number of reasons, not the least of which was my access to the Pacific coast."

It didn't take long for the future National Board member to reacquaint himself with Southern California and the people who depended on his services.

"I was called to Michael Jackson's ranch several times to do inspections," he grinned. "Before I entered the premises I had to sign a ten-page release preventing me from revealing anything I might see on the property. If Jackson arrived at the ranch while I was there, I was told to leave."

In 1999, Bill learned of a job that had opened up in the State of Louisiana for a boiler inspector. "I joined the state shortly thereafter and bounced between most of the jurisdictions." In between reviews, audits, and training, the new state inspector managed to obtain his National Board and ASME team leader status.

Five years later he earned a promotion to supervisor, thus prompting Bill and Toni to make the move to Louisiana's State Capital, Baton Rouge. In the position for only six months, the Louisiana National Board member was surprised to learn of the December 2005 retirement of then-Chief Inspector Bob Cate. Before year's end, Bill was promoted to replace his predecessor.

Today, Chief Inspector Bill Owens oversees responsibility for the Fire Marshal's Office Fleet section, fireworks/pyrotechnics divisions, amusement parks/inspection division, and of course, the boiler and pressure vessel divisions. "What I never envisioned when I took the chief's position would be my involvement as a first responder," he explains. "[Hurricane] Katrina brought the Fire Marshal's responsibilities into sharp focus. As a result, our department underwent a considerable amount of training on how to deal with all types of public disasters."

When he's not displaying his loyalties to the New Orleans Saints during football season, Bill still manages to get back to southern California a couple of times a year. But not to visit the Playboy Mansion.

"Actually," he chuckles, "it was my responsibility with Hartford to inspect the mansion's boilers. And although I did 'visit,' it was through a back door leading to the boiler room. I didn't see much."

Seen one boiler room, seen them all. . .

National Board Training Hits the Information Highway

BY KIMBERLY MILLER, MANAGER OF TRAINING

In June of last year the National Board Training Department launched its new online training center. This center, also referred to as a Learning Management System (LMS), was designed as a "one-stop shop" for National Board online training students. Anytime day or night, from the convenience of home or office, students can access course descriptions, enroll for classes, pay tuition, take the training, and print a Certificate of Completion.

How the Center Works

Students enter the online center through the Training Menu on the National Board Web site. Students are first requested to establish an account using a simple one-step form. This allows complete access to the training center, even if students are not ready to enroll. Once there, a list of available online courses can be found in the CATALOG section. (Online courses and their descriptions are also available on the Training Catalog and Schedule page of the National Board Web site.) Students may then add one or more courses to their "shopping cart" which allows tuition payment to be processed for immediate entry to the training.

After enrolling, students can access all "In Progress" training from the MY ELECTIVE LEARNING button, which displays all of the student's current courses. Here, students can also print a Certificate of Completion at the end of a training course, or anytime after, as all certificates are permanently stored under the student's HISTORY tab.

For easy reference, the MY TRANSCRIPT section allows students to run a report on all online training taken in the National Board's Online Training Center.

Courses Offered

Currently, the National Board has four online training courses available: Controls and Safety Devices for Automatically Fired Pressure Vessels (CSD-1), and the three Parts of the *National Board Inspection Code* (Part 1, *Installation*; Part 2, *Inspection*; and Part 3, *Repairs and Alterations*). It is estimated each course takes four hours to complete, but students have the option of leaving and returning to a course as many times as needed to complete the training. There is no time limit or course expiration – a unique feature providing great flexibility allowing students to complete training around their work schedule.

It is required students have the applicable code book before taking any National Board training courses, since several situations refer students to the actual publication. Periodic knowledge checks are provided along the way so students may gauge their understanding of the related code presented in training.

Future Offerings

Within the next few months several more online training courses will be made available in our online training center. Three training sessions for Certified Individuals (Cast Aluminum, Cast Iron, and Unfired Miniature Pressure Vessels) will be offered along with ASME Code Reading and Math/Calculations primers.

2011 Training Courses and Seminars

COMMISSION/ENDORSEMENT COURSES

(I) **Authorized Nuclear Inservice Inspector Course**
TUITION: $1,495
July 25-29, 2011

(N) **Authorized Nuclear Inspector Course**
TUITION: $1,495
October 31-November 4, 2011

(IC) **Inservice Commission Course**
TUITION: $2,995
October 17-28, 2011

(NS) **Authorized Nuclear Inspector Supervisor Course**
TUITION: $1,495
November 14-18, 2011

(A) **New Construction Commission and Authorized Inspector Course**
TUITION: $2,995
September 12-23, 2011

CONTINUING EDUCATION SEMINARS

(RO) **NEW FORMAT! Boiler and Pressure Vessel Repair Seminar (Three-Day Course)**
TUITION: Day One $275;
Complete Seminar $725
August 23-25, 2011
October 4-6, 2011 (Seattle, Washington)

(VR) **Pressure Relief Valve Repair Seminar**
TUITION: $1,495
July 11-15, 2011
September 26-30, 2011 (Seattle, Washington)

(WPS) **Welding Procedure Workshop**
TUITION: $795
October 18-20, 2011

All courses and seminars are held at the National Board Training Centers located in Columbus, Ohio, unless stated otherwise.

Delegates from China Visit National Board

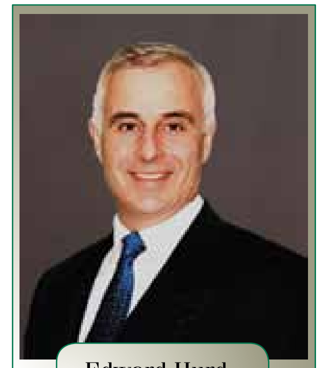
Representatives from the People's Republic of China visited National Board headquarters and met with senior staff on January 14. Three members of the Administration of Quality Supervision, Inspection, and Quarantine (AQSIQ), two representatives from the National People's Congress (NPC), and one translator toured National Board's campus and spent time reviewing similarities and differences between China and North America's execution of the inservice and new construction inspection process. They also reviewed the roles of US jurisdictions, state boiler inspectors, the National Board, and insurance companies, and how they work together to promote public safety.

"This was an historic occasion as it was the first time the National Board hosted representatives from AQSIQ. The National Board's working relationship with the administration dates back more than 20 years, and it was a pleasure having them visit National Board headquarters," said National Board Executive Director David Douin.

Mr. Cui Gang and Mr. David Douin

Present during discussions were (left to right): Ms. Wang Ping, translator; Mr. Liu Sanjiang, director, Special Equipment Safety Supervision Bureau, AQSIQ; Ms. Yao Xiaoyan, vice director general, Department of Legislative Affairs, AQSIQ; Mr. Patrick Nightengale, senior staff engineer, National Board; Mr. Cui Gang, delegation head and vice director general, Special Equipment Safety Supervision Bureau, AQSIQ; Mr. David Douin, executive director, National Board; Ms. Kimberly Miller, manager of training, National Board; Mr. Zhong Zhenzhen, vice director general, Legislative Office of the Financial and Economic Committee, NPC; Mr. Dick Allison, assistant executive director – administrative, National Board; and Ms. Chu Lin, senior staff member, Office of the Financial and Economic Committee, NPC.

Hurd Becomes National Board Member



Edward Hurd

Edward Hurd has been elected to the National Board representing British Columbia, Canada. He is employed by British Columbia Safety Authority as provincial safety manager, boiler safety program.

Mr. Hurd served as a marine engineer in the Canadian Armed Forces from 1977 to 1987. He received his bachelor of engineering degree from the Royal Military College of Canada in 1981. During his career he worked as an engineering inspector, technical officer, design survey engineer, and as a codes and standards engineer.

He started with the engineering department of the British Columbia Boiler Safety Branch in 1991, becoming codes and standards supervisor in the British Columbia Boiler, Gas, and Railway Safety Branch in 1998. In 2004 he accepted a position with British Columbia Safety Authority as leader of engineering and research.

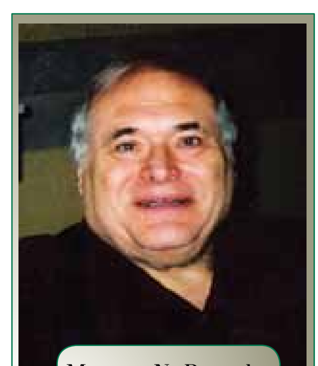
Mr. Hurd is a member of the Association of Professional Engineers and Geoscientists of British Columbia.

Logan Elected National Board Member

Brian E. Logan

Brian E. Logan has been elected to the National Board representing the Commonwealth of Massachusetts. Mr. Logan was a First Class Engineer instructor for the Steam Engineering Institute in Braintree, Massachusetts, from 1997 to 2010. Simultaneously, he worked as a shift supervisor at Mirant Canal Generating Station in Sandwich, Massachusetts, from 1979 to 2010. In June of 2010 he assumed his current role of manager, District Engineering, with the Massachusetts Department of Public Safety. He is a member of the American Society of Mechanical Engineers (ASME), ASTM International, and the National Association of Amusement Ride Safety Officials.

Bressler Remembered



Marcus N. Bressler

Marcus Nathan Bressler, well-known throughout the power industry and regarded internationally as an expert on the use and interpretation of the *ASME Boiler and Pressure Vessel Code*, passed away on January 7, 2011.

Mr. Bressler's life work included over 54 years in the power industry. He specialized in materials technology and applications, quality assurance (QA) requirements for nuclear power plant components, and QA management audits. He was also involved in litigation and failure analysis for the power, petroleum, and chemical industries.

Mr. Bressler earned a bachelor's of mechanical engineering degree from Cornell University in 1952 and a master's of science in mechanical engineering from Case Institute of Technology in 1960. His professional career began with Babcock and Wilcox in 1955. He also worked for Gulf + Western Energy Products Group and the Tennessee Valley Authority. In 1988 he established M.N. Bressler, PE, Inc., where he served as president and chief consultant.

Throughout his career Mr. Bressler earned several certifications and honors and was extensively involved in codes and standards activities, which resulted in a steady progression of assignments with the Nuclear Power Committee.

Early Morning Blast Rocks Garment Plant

March 3, 1954

Early on a Tuesday morning, 20 people were working at the Springfield Garment Company in Springfield, Missouri, when the plant's concrete boiler room "was blown to smithereens." According to an article in the Springfield Leader & Press newspaper (published the day of the explosion), the boiler blew up at approximately 7:34 am, presumably because of escaping gas.

The boiler was located in the back of the company's main plant and positioned in a pit about five feet below ground level. It was used to generate steam for the pressing department. The force of explosion propelled the natural gas boiler through the roof. It landed nearly 60 feet away on the rear of a parked car owned by the plant's shipping clerk. Flying debris caused light damage to the presser foreman's car and hurled a 2-by-4 board through the roof, which landed between two men working on pressing machines. Ten minutes before the explosion, the maintenance man was in the boiler room. Despite an estimated $7,500 in cumulative damages to the boiler, building, and property of others (nearly $60,000 in 2011 dollars), no one was injured.

"We were plenty lucky," Walter N. George, president of the company, reported to the Leader & Press. "I only felt the concussion and then saw a lot of smoke and a flash of fire," he said. The blast broke several windows throughout the plant, but it was believed the force of explosion was minimized because the boiler was positioned below ground level.

CALL FOR PRESENTATIONS

TAKE CENTER STAGE IN NASHVILLE, TENNESSEE AT THE 81ST GENERAL MEETING MAY 14-18, 2012!

Professionals within the boiler and pressure vessel industry are invited to submit presentation proposals for next year's General Session.

Topics relating to the safe operation, maintenance, construction, repair, and inspection of boilers and pressure vessels will be considered. Additional subjects include safety valves, other unit components, testing, codes and standards, risk and reliability, and training.

Submission Deadline: October 1, 2011.

See the General Meeting section at nationalboard.org for more information.