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South Carolina legislators again face the prospect of passing boiler safety legislation. Senator Thomas Moore discusses his thoughts on the law on page 8.

DID YOU KNOW?

South Carolina's neighboring states recorded over 15,000 violations during inspections of boilers and pressure vessels since 2000, or more than seven violations for every 100 equipment items inspected. These 15,000+ violations represent as many as 15,000 accidents that were prevented by the inspection process.

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A Special Issue for a Special Circumstance

BY DONALD E. TANNER, EXECUTIVE DIRECTOR

The last time the National Board prepared a *BULLETIN* special issue was in 1992. At that time, we were obligated to tell the world about flanges of questionable metallic composition being imported from China. It was our belief that failure to communicate the facts through a special issue of the *BULLETIN* would result in countless catastrophic failures and untold destruction.

This being only the second special *BULLETIN* issue in 12 years underscores our concern for the troublesome situation that now exists in South Carolina. Since the first bill of its kind was proposed in 1976, this state's legislature has rejected all efforts to pass boiler and pressure vessel safety legislation. South Carolina is the *only* U.S. state without a safety law.

Until now, there has been no way to objectively evaluate the condition of boilers and pressure vessels in South Carolina. With no program in place, collection of incident statistics is impossible.

But boiler and pressure vessel repair companies doing business in the state have a firsthand perspective on the condition of South Carolina equipment. And it is ominous. Such was the concern of these companies that they recently met with South Carolina Senator Thomas Moore. In addition to his responsibilities as a state legislator, Senator Moore owns a boiler repair company in Clearwater. He is also a National Board "R" stamp holder.

Among the outcomes of this unprecedented meeting of South Carolina boiler industry executives is an interview with Senator Moore that begins on page 8 of this issue. For anyone who has doubted that a horrible, inevitable accident will occur in South Carolina, this thought-provoking article is required reading — particularly for those who may have children attending South Carolina schools.

And for those who think the public doesn't care about boiler and pressure vessel safety, I direct your attention to page 16 where a survey of South Carolina residents demonstrates overwhelming support for a boiler/pressure vessel law (85 percent), inspector training and certification (96 percent), and the shutting down of unsafe equipment (nearly 87 percent). A remarkable 90 percent of South Carolinians believe it is the role of the governor and state legislators to protect the public's safety and well-being.

In an attempt to present a balanced perspective on this subject, we offered several South Carolina organizations that have opposed safety legislation an opportunity to share their views by publishing their position statements in this special issue. They responded by not responding. It is a lack of dialogue that has frustrated proponents of a safety act.

Please understand: We at the National Board fully appreciate South Carolina's fragile economic circumstances, which are not unlike economic conditions in other jurisdictions. However, now is the time to identify where safety falls among the state's priorities.

The National Board was asked by the South Carolina boiler industry to become involved in this issue. However, it is one that must be resolved by South Carolinians and their elected officials. To that end, we recommend that residents contact Governor Sanford as well as their state senators and representatives *immediately* (a complete listing can be found on page 27) and voice their concern for passage of a bona fide boiler and pressure vessel safety act.

We've provided the facts. It's now up to the people of South Carolina. ❖

A handwritten signature in black ink, which appears to read "Donald E. Tanner". The signature is fluid and cursive, written over a light background.

Boilers

Everywhere You Don't Look

You may not know much about boilers, but there is a good chance that you are closer to one than you realize. One may be in the next room, on the other side of the wall. Almost every building in North America with hot water or steam heating contains at least one boiler. This includes workplaces and offices, schools and daycare centers, hospitals and nursing homes, factories, restaurants, hotels, churches, and malls. It is safe to say they are virtually everywhere.

A boiler is a device used to heat water or create steam. The hot water or steam can be used for space heating, process applications, or for the generation of electricity. A boiler is a closed vessel in which water is heated under pressure (or vacuum) by the direct application of heat. The heat may come from the combustion of fuels, such as coal, gas, or oil, or from electric heaters. The most basic example of a boiler is a teakettle. Even a cappuccino machine could be considered a boiler.

Boilers come in all sizes . . . as small as a suitcase and as large as a 20-story building. Some buildings have more than one boiler, depending on how large the building and the number of people the building serves at any time. Boilers can have thousands of internal components and hundreds of miles of tubing. A large boiler can create enough energy to power a small city.

When water is converted to steam, it has an expansion rate of approximately 1,600 times its original volume. Some industrial boilers have enough stored energy that if one exploded, it could level a city block. Its concussion and vibrations would be felt for miles.

Boilers were the principle driving force of the Industrial Revolution. They have been an essential part of our everyday lives for more than 200 years. Boilers are important energy generators that supply us power, keep us warm, and light our homes. And while boilers may be hidden away in unseen areas, their value is immeasurable. ❖



An example of a typical gas burner on a hot water boiler common to malls, schools, and offices.

Ongoing Debate: The History of Boiler Legislation in South Carolina

A boiler and pressure vessel safety bill has been introduced in the South Carolina General Assembly in all but one session since 1976. Unbelievably, not one has ever reached the full legislature for a vote.

Though South Carolina passed a building code in 1997 that requires new boilers installed in the state be manufactured according to the *ASME Boiler and Pressure Vessel Code*, it is not enough. Stronger wording and more powerful regulation need to be enacted.

Every other state in the nation but South Carolina has some variation of a boiler or pressure vessel safety law. Many of these laws require regular inspections by commissioned inspectors, a registration system for all boilers, and a state chief inspector. When given the chance, the elected leaders of South Carolina have opted not to embrace these principles.

So the question is: why does every proposed boiler and pressure vessel safety act get shot down? The answer lies partly in the primary ways a bill dies in the legislature.

When a bill is introduced in South Carolina, it goes to an appropriate standing committee to ensure its worth to the legislature. Both the House and the Senate have a number of committees. Committees essentially make or break a bill's future. Besides approving a bill and passing it along, a committee has the option of making no report at all. This will effectively halt the progress of a bill.

A bill can also die as a result of pressure from lobbyists. Certain organizations and companies can afford to pay lobbyists to influence a politician's view or stance. Lobbyists

play a significant role in moving a bill out of committee and getting it approved by either the House or Senate. An unfavorable view of a bill by a lobbyist often carries enough weight to kill a bill.

If a bill happens to make it out of committee and reaches the floor of the House or Senate, a debate is held to discuss the merits of the bill or any doubts about it. After the debate, and discussion of making any amendments, the bill is either passed or defeated by a vote of the members. One objection will kill a bill in the Senate and five will place a bill on the contested calendar in the House. The contested calendar is where a bill goes when there is a dislike for it by several representatives.

If either chamber does not pass the bill, it dies. Often, though, the committee just never meets on a bill and the bill dies when the 2-year legislative term ends (called a "pocket veto").

So, the other part of the answer to the question "why the failures?" is the legislature itself. Whether it be lack of understanding of the subject matter, politics, or influence from certain lobby groups, South Carolina legislators have historically failed to support a boiler and pressure vessel safety law.

Here is a list of boiler and pressure vessel safety bills that have been proposed (and have failed) in South Carolina.

(A bill originating in the House of Representatives is designated by the letter "H" followed by a number that it retains throughout all of its congressional stages. A Senate bill is designated by the letter "S" followed by its number. The member introducing the bill, the sponsor, is also listed.)

FAILED

1975-1976
S 0629 General Bill
 By A.S. Goodstein

1977-1978
S 0562* General Bill
 By A.S. Goodstein

FAILED

FAILED

1979-1980
S 0300 General Bill
 By A.S. Goodstein

1981-1982
H 2713 General Bill
 By J.C. Hayes

FAILED

1983-1984
 None

FAILED

1985-1986
S 0519 General Bill
 By T.E. Smith

1987-1988
H 2548 General Bill
 By B.E. Thrailkill

FAILED

FAILED

1989-1990
H 3962 General Bill
 By T.E. Huff

1991-1992
S 1099 General Bill
 By H.U. Fielding
H 4113 General Bill
 By D.E. Martin and L.S. Whipper

FAILED

FAILED

1993-1994
H 3546 General Bill
 By R.J. Sheheen, W.D. Boan, R.S. Corning, B.H. Harwell,
 J.H. Hodges, D. Jennings, P.H. Thomas, and D.H. Wilkins

1995-1996
H 4562 General Bill
 By T.G. Keegan,
 R.J. Herdklotz, and J.S. Shissias

FAILED

FAILED

1997-1998
S 1107 General Bill
 By W.K. Giese
H 3368 General Bill
 By H.R. Askins

1999-2000
S 0477 General Bill
 By W.K. Giese
H 4564 General Bill
 By J. Lourie and J. Smith

FAILED

FAILED

2001-2002
S 0139 General Bill
 By W.K. Giese
H 3893 General Bill
 By J. Lourie

2003-2004
S 0133 General Bill
 By W.K. Giese
H 4396 General Bill
 By D. Mack, F. Breeland, J. Whipper, and R. Brown

**IN
 COMMITTEE**

**Senate bill 0562 did not include legislation
 for pressure vessels. ❖*

New Web Site Focuses on South Carolina Safety Law

In an effort to accurately track boiler and pressure vessel safety legislation in South Carolina, a new Web site has been launched to keep residents apprised of ongoing developments.

Besides including much of the material found in this special issue of the *BULLETIN*, the Web page at *SC4safety.org* will also feature additional articles, a video detailing the destructive capacity of a simple water heater, and convenient email access to Governor Mark Sanford and South Carolina state legislators. Residents can identify their senators and representatives through a map illustrating all legislative districts.

“This Web site is an effective and efficient method of communicating important safety information to our friends and neighbors. And it provides an easy way for them to express their concerns to elected officials in Columbia,” explains Bob Woodward, a retired engineer who has been an active boiler safety advocate for the past ten years.

“Although not everyone in South Carolina will be able to get a copy of this special issue,” he adds, “many will now be able to access the same critical information through the Internet. That’s why I encourage those who receive this publication to contact a family member or friend and pass along the *SC4safety.org* Web address.”

Among the additional information to be found on the Internet site is an exclusive feature on the financial benefits of operating equipment to maximum efficiency, and an article describing the tremendous release of energy that results from a boiler explosion.

SC4safety.org features a listing of all boiler/pressure vessel legislation now in the South Carolina House and Senate as well as the path of each bill. Also posted is a listing of South Carolina organizations and companies supporting safety legislation.

Presently, South Carolina is the only jurisdiction in North America without such a law. A boiler and pressure vessel safety bill has been introduced in the South Carolina General Assembly in all but one session since 1976. None reached the full legislature for a vote.

Until now, Mr. Woodward admits, the boiler safety issue has received little public attention. “But we know that South Carolinians who understand the threat to their safety overwhelmingly support this important legislation.”

Visitors to the *SC4safety.org* Web page will be able to ask safety questions and make inquiries on the proposed safety legislation.

South Carolina companies and organizations are invited to link to the *SC4safety.org* Web page without prior permission. ❖

Implementing the *ASME Boiler and Pressure Vessel Code* in South Carolina

BY GERRY M. EISENBERG, ASME

Since its inception in 1880, the American Society of Mechanical Engineers (ASME) has been a leader in the development of technical standards. Today, the *ASME Boiler and Pressure Vessel Code* is widely incorporated and enforced within laws and regulations of most U.S. and Canadian jurisdictions.

Though catastrophic boiler and pressure vessel accidents are rare today, this was not always the case. During the late 1800s, thousands of boiler explosions were recorded. By 1900, increased operating pressures in boilers could release enough energy in an explosion to level a city block, and occasionally did. Public outcry in many states eventually led to laws that protected the health and property of their citizens. Under these laws, each state developed boiler construction requirements.

Having different construction requirements among the states created serious problems regarding interstate commerce and regulatory acceptance. In 1911, representatives of boiler manufacturers, insurance companies, and state regulators approached ASME with a request to develop a single set of rules for the construction of power boilers. This resulted in the formation of the ASME Committee on Boiler Construction and the first publication of the *ASME Boiler Code* dated 1914. The code was quickly adopted as the basis for meeting safety regulations in most states of the U.S.

South Carolina adopted the *International Building Code* and its associated *Mechanical Code*, which includes specific provisions requiring all boilers and pressure vessels to be designed and manufactured in accordance with the *ASME Boiler and Pressure Vessel Code*. Although this action represents a significant step in providing for public safety, this law is passive in nature: the state takes action on a violation only *after* an incident has occurred. Take for example the boiler explosion at Summerville High School in South Carolina. Luckily no students were hurt,

as school was not in session. But the fact remains that the state did not take action until *after* this incident happened.

Other jurisdictions that have adopted the ASME Code have instituted a proactive safety program that administers regulations for the effective enforcement of code rules. Without such a program, local building inspectors may not have the necessary staff or training to enforce the code, and may fail to do so as a result. To address this, the South Carolina Department of Labor, Licensing and Regulation should consider the development of regulations necessary to implement and administer a boiler and pressure vessel safety program. This includes provisions for verification of compliance with the ASME Code for construction and use of trained personnel to conduct field inspections and closely monitor repairs. Such regulations should provide for enforcement measures that may require a boiler or pressure vessel to be registered with the enforcement authority, and be removed from service if determined unsafe. There should be a system developed for maintaining records and setting maintenance schedules for operating units.

Public facilities such as schools, hotels, office buildings, theaters, and churches all use boilers or pressure vessels in daily operation. With the necessary safeguards in place, this fact should not raise a cause for concern for the public that frequents them. ❖

G.M. Eisenberg is director of Pressure Technology Codes and Standards for ASME, a 120,000-member not-for-profit organization focused on technical, educational, and research issues. ASME publishes and accredits users of internationally recognized industrial and manufacturing codes and standards that enhance public health and safety. ASME's codes and standards organization maintains approximately 600 consensus standards with over 100 ASME standards committees formed from over 3,600 volunteer committee members.

“... it's only a matter of time”

A Conversation With South Carolina Senator and Boiler Repair Company Principal Thomas L. Moore



Senator Thomas L. Moore ▲

When it comes to understanding boilers and pressure vessels, there is perhaps no one better qualified in the South Carolina legislature than Senator Thomas L. Moore (D). In addition to representing Aiken, Edgefield, and McCormick counties, he is owner and president of Boiler Efficiency, Inc., a full-service boiler repair and consulting firm (“R” stamp holder) located in Clearwater.

Senator Moore began his legislative service in 1978 with election to the South Carolina House of Representatives. First elected to the State Senate in 1980, he has been reelected five times. His standing committee assignments include Judiciary; Labor, Commerce and Industry; Rules; and Ethics.

Given his professional interest in boilers, Senator Moore has closely followed efforts to pass a boiler and pressure vessel safety law since entering the legislature. This past fall, he met with other representatives of repair firms doing business in South Carolina to gain a broader understanding of boiler and pressure vessel equipment conditions in his state and to determine why South Carolina remains the only jurisdiction in America without a safety law.

Recently, Senator Moore agreed to sit down with the *BULLETIN* to share his thoughts and observations from that meeting, as well as offer his perspective on the future of boiler and pressure vessel legislation in South Carolina.

BULLETIN — *Why doesn't South Carolina have a boiler and pressure vessel law?*

SENATOR MOORE — I think it's because the public really hasn't demanded it. And perhaps part of that reasoning is the result of the public, and legislators, not really understanding how devastating this equipment can be. After all, we're talking about explosive potential that can literally destroy everything around it including nearby buildings. Maybe the boiler/pressure vessel industry has not done enough to educate state thought-leaders. And there is the organized resistance from groups opposed to this legislation. The quest to pass a bona fide boiler and pressure vessel safety law remains a formidable task. But it is a noble task — especially when you realize that all citizens in South Carolina come into close proximity to a boiler or pressure vessel *every day!* This equipment is found in nursing homes, hospitals, restaurants, schools, daycare centers, factories, the local dry cleaners, and retail stores. They are even transported on our highways. At least one can be found in *every* public building in the civilized world. As dangerous as

this equipment can be, South Carolina is not even close to passing a safety law, yet it seems we regulate just about every other profession. You can't be a forester in this state without meeting specific qualifications, taking an examination, and becoming registered. You must be licensed in South Carolina just to be a geologist. As a result of a terrible accident a number of years ago, the state now regulates bungee jumping. In South Carolina, we have no regulatory authority over boilers or pressure vessels or the people who work on them. I am of the firm opinion that we will eventually pass a safety law. But I can only hope it will not come at the cost of human lives. It's only a matter of time.

BULLETIN — *How would you describe your recent meeting with South Carolina boiler and pressure vessel repair companies?*

SENATOR MOORE — Very disturbing. Although being in the boiler business has given me some technical perspective on the problem, it was very uncomfortable hearing first-hand accounts of the regrettable boiler and pressure vessel conditions that presently exist in our state. And while many could argue that the conditions are isolated, the accounts given by these experienced and respected companies all across the state

tell me that we have an extremely large problem that is more widespread than anyone could imagine. After our meeting began, I was sorry that other legislators were not there to share in what turned out to be a most sobering discussion.

Whereas every state, I am sure, has equipment in poor repair, I am convinced that conditions in South Carolina have steadily deteriorated and have been compounded by years of neglecting our need for boiler and pressure vessel safety standards. All of the company representatives who participated in our discussion were seasoned professionals and certainly not the type given to exaggeration. In their careers, they have witnessed, examined, and repaired a lot of equipment. The fact that *they* were shocked by equipment conditions in our state is particularly troublesome. And the fact that some of them also perform repairs in surrounding jurisdictions — and can compare conditions in neighboring states to South Carolina — tells me our state is at an extreme economic disadvantage and is lagging behind in protecting our citizens.

BULLETIN — *Specifically, in what regard?*

SENATOR MOORE — Without a safety law, there are no formal regulations. And that means everyone who has a boiler does whatever necessary to keep it running. Right now, I would have to say that as much as 40 percent of the equipment in our state is *not* insured. Unless a company has boiler insurance and is subjected to regular inspections, the chances are good that maintenance and repair of that equipment are exceptionally poor. Translated, that means the uninspected boiler is being operated in most instances with partially clogged tubes or poorly maintained burners that appreciably compromise efficiency. The net result is that the fuel cost to operate an uninspected boiler may be as much as 30 to 50 percent higher than a unit that is regularly inspected and maintained. Imagine: with proper operation and maintenance, a boiler with an annual fuel bill of \$100,000 can see savings of as much as \$50,000! That's \$50,000 in costs that don't have to be absorbed by the company or passed along to South



A mercury switch controls the low oil pressure cutoff. This one in South Carolina has been altered with insulating materials preventing the switch from shutting down the boiler in the case of low oil pressure. ▲

Carolina customers. Here's another thought: the release of excess carbon dioxide and carbon monoxide resulting from inefficient burning of boiler fuel exposes our citizens to needless pollution of South Carolina's air. One additional and important thought: although I have not seen figures, I am certain that those boiler owners who do have insurance are paying more than their counterparts in surrounding states, all of which have a boiler safety law.

As anyone can see, this is a safety issue that goes beyond an exploding piece of equipment. Without a law, the economies of operating boilers and pressure vessels in South Carolina put us at a severe disadvantage. Perhaps most important, the people of South Carolina trust their government to protect them. In this regard, we must do whatever necessary to carry out that awesome responsibility.

BULLETIN — *Without a law, who in South Carolina is the most vulnerable?*

SENATOR MOORE — I believe there are a number of groups who are vulnerable. Foremost, I think school-age children are particularly at risk. Boiler conditions at our schools are unacceptable. But even more distressing is the unfortunate reality that our schools just don't have the money to properly maintain and repair this equipment.

During my meeting with industry representatives, I learned what goes on in a typical school boiler room. And it was quite depressing.

For example, I was told of a janitor at one school who

started his boilers by throwing a switch and running like the dickens out of the boiler room and up a set of stairs and out a door where he would await the boiler start-up. He would go down and check the boiler only after he felt it was safe. This was actually witnessed by a service technician!

At another school, a service technician became puzzled by a bunch of screw holes located on the door frame around doors leading to the boiler room. He later found out that the holes represented locations of hinges that had been replaced on numerous occasions by explosions that had blown off the boiler room doors. Like the previous school, this facility also had a peculiar way of firing its boiler. It was accomplished by a maintenance person who turned on all of the boiler controls, stepped outside the boiler room, and touched together two 110-volt leads connected to a problematic flame safety control. Because the gas fuel train leaked, the ensuing ignition of the escaping fuel would blow the doors right off the hinges. Once the system was ignited, they ran it wide open and yet could barely keep the water in the school hot. The only reason that the natural gas did not find its way into the school was because it was being sucked up the boiler stack with a blower. Can you imagine the amount of fuel that was wasted . . . and the cost?



A red plastic device covering the smoke alarm that is above a South Carolina boiler. ▲

One industry representative I met with showed me photos of a smoke alarm — located over a school boiler — covered with plastic so as to prevent it from going off. Now if at least one code violation wasn't enough, the exhaust vent for the safety valve on this boiler was piped directly into the boiler room rather than, as code states, into a safe location. On one side, this boiler room was located next to a major school hallway. The other two walls faced the

A board supports a pipe connected to a South Carolina boiler. ▼



cafeteria and an outside play area. Last year, this 52-year-old cast iron sectional boiler was condemned by the boiler company hired to evaluate it. When the boiler company came to inspect the equipment a year later, nothing had changed. But it was clear the boiler had been in operation. The hot water return piping was still leaking, the pipe support consisted of a sawed-off 2" x 4" board, and the only thing holding the burner into the boiler was fire brick which — it should be noted — was crumbling away.

Despite the warnings of these reputable boiler companies, most of our schools are not in the financial position to make these repairs. So it just doesn't get done. The situation is even more upsetting in our poorer schools. In one county, a boiler repair company told me they condemned boilers in 14 of 16 schools (one of which was the facility with the boiler room door problem). The repair company was never called back. One school official in another part of the state who was courageous enough to get the repairs done to his school boiler was promptly rewarded with dismissal. That's a sad way to treat someone who acts responsibly.

BULLETIN — *How would a safety law benefit South Carolina schools?*

SENATOR MOORE — A safety law would give the state the authority to effectively shut down those pieces of equipment deemed unsafe rather than continuing to expose our children to the ever-present danger. To do nothing, I believe, is to assume tremendous risks.

Please understand: lack of resources is only part of the problem. Many of the individuals who are responsible for this equipment in our schools have received no formal training in operating a boiler let alone maintaining it. And this lack of knowledge is just as dangerous, if not

more so. In 2001, more than 90 percent of the boiler and pressure vessel accidents that occurred in North America were the result of operator error.

I have been told of night watchmen — even students themselves — looking in on boilers because there is sometimes no one qualified at

the schools to monitor the operation of this equipment.

Even the simplest of chores like preventing the boiler room from becoming a storage area is often unknown to those responsible, or is many times ignored. I was told of one school boiler room that contained gasoline containers, paint, paint thinner, and floor stripper among other unknown containers — all within proximity of an open flame. Another relatively simple task, record-keeping, is almost unheard of in our schools. Yet keeping a log book is critically important to equipment maintenance and operation. As a matter of fact, a proactive maintenance program can result in considerable fuel savings.

There is another unsettling aspect of the school boiler issue of which I think many South Carolinians are unaware — the shutting down and lay-up of this equipment each spring and restarting in the fall. It happens every year and it happens at most of our state's 1,100-plus schools. Proper shut-down, lay-up, and restart are critical. Many school boiler explosions occur because prescribed procedures were not followed during either shut-down or start-up. Without having qualified personnel to perform these important functions, the dangers are compounded.

Not all of our more than 80 school districts are this way, but most of them are victims of less than desirable operating, maintenance, and repair practices that potentially make their equipment uncomfortably dangerous. One school I heard of recently had a 30-pound safety relief valve on a

A 30 psi safety relief valve mounted on a 15 psi designed boiler in South Carolina. Discharge side of the safety valve is directed to an unsafe location. ▼



15-pound boiler. The discharge side of this safety valve not only was set up incorrectly but it was set up to discharge toward a 200 amp electrical panel.

Schools represent only one segment of South Carolina in which training and education are badly needed. The repair firms I met with told me how they get calls every day — *every day* — from companies and institutions around the state requesting information on boiler and pressure vessel training. Unfortunately, I think this underscores South Carolina's reliance on unqualified inspection and repair personnel.

By having a safety law, South Carolina could create a staff of qualified professionals — all trained and properly commissioned to perform inspections. Having a safety law could also entitle South Carolina to regularly train its inspectors for *free!* Just having these inspectors at the state level to consult with and make available during emergency situations is a prudent, wise, and responsible thing to do.

BULLETIN — *Are there other entities in South Carolina that may be vulnerable?*

SENATOR MOORE — Our tourism industry — one of South Carolina's largest industries — could be extremely vulnerable. It was explained during our meeting that boiler equipment in restaurants and hotels is maintained to minimal, almost nonexistent standards. A catastrophic accident or perhaps several incidents could be a tremendous economic blow to our state.

I was told of numerous situations in which repair companies found no performed maintenance, no evidence of inspections, no boiler log or maintenance records in many popular restaurants. The attitude of those

responsible seems to be run-it-until-it-breaks and get somebody — anybody — to fix it and fix it as cheaply as possible. And their pressure vessels, or water heaters, are no different. In one instance, a company found a plug screwed into the Temperature/Pressure Relief valve of a restaurant water heater — thereby

preventing any chance of the heater relieving excess pressure or temperatures should it overheat. As we in the industry know, rupturing a typical 30-gallon water heater can release enough energy to propel a car well over 100 feet in the air. There have been instances in which home water heaters have launched themselves through the roofs of three-story homes.

South Carolina hotels are among the finest in the country and are excellent hosts to in-state and out-of-state visitors alike. But again, many of these facilities indulge in inadequate boiler and pressure vessel maintenance practices. What makes this so dangerous is that these pieces of equipment are often located on the ground floor of a multi-story building and within close proximity of the general public. I have been told that many hotel boiler rooms double as storage areas that contain everything from fuels to golf carts and even golf cart battery chargers! A boiler room must be an open area that allows for combustive air space. To clutter it creates a very hazardous environment.

It may come as a surprise to a lot of people, but nursing homes are much like our hotels when it comes to maintenance and operation. And churches, I am sorry to reveal, are just as neglectful. Most of them rely on someone who has absolutely no knowledge or understanding of the equipment.

If there is one particular business group that would stand to benefit from a boiler and pressure safety vessel law, it would be our laundries

and dry cleaners. This is a group that has been one of the more vocal opponents of safety legislation. Yet, it is this group that would stand to economically benefit from codes and standards requiring maintenance and operational efficiencies that would significantly slash their considerable fuel costs. For whatever reasons, they simply don't want to accept outside advice or assistance. One boiler repair firm offered to practically give a new boiler to a laundry so that this business could realize the cost savings and the long-term payback that comes with the installation and operation of efficient equipment. The owner flat-out refused the offer.

Of course, wasting energy is only one dimension of this issue. When it comes to safety, there are many boiler professionals who cite example after example of conditions — they feel — are exceptionally hazardous.

One observed screwdrivers inserted into a leaking boiler relief valve to prevent it from lifting. Another told me of a laundry where the boiler's exterior casing had deteriorated to such a degree that you could actually look through the boiler from front to rear. Additionally, flames were literally extending outside the boiler itself. If it wasn't for the insulating material stacked around it, this boiler could have easily set the wood-structure building on fire. That's a scary situation but it becomes even more scary when one considers that dry cleaners use a number of chemicals in their process that are classified as hazardous. Consequently, the methods and procedures they utilize should be beyond question.

BULLETIN — *Are hazardous materials of concern to South Carolinians?*

SENATOR MOORE — The hazardous materials issue is seldom mentioned when talking about boiler and pressure vessel safety. Yet it is critically important, especially since South Carolina has a number of



companies that are involved in hazardous material operations. Back in the early 1990s, there was a boiler explosion at a company that disposed of hazardous waste. A 300-horsepower, 150-pound designed boiler traveled 150 feet in the air before striking an 8-inch pipe post and bouncing backward. If it were not for that pipe post, the boiler would have struck an oil tank. One could only imagine the devastation. By the way, that company is no longer in business.

BULLETIN — *Do state institutions do a better job of operating and maintaining their equipment?*

SENATOR MOORE — Not according to what I have been told. A service technician for a repair company recently made a call to one of our prisons. When he noticed that the electrically operated controller for the gas valves had been bypassed and the valves operated by plugging in the drop cord, he refused to get out of his truck. These types of conditions are fairly typical at many of our institutions. Without having anyone with the appropriate knowledge or expertise to operate and maintain these potentially dangerous pieces of equipment, those responsible often jerryrig the system which — intentionally or unintentionally — bypasses critical safety components. It's a problem far too common to ignore.

BULLETIN — *Are there any industries doing a good job?*

SENATOR MOORE — If there is one industry as a whole — accessible to the general public — doing a respectable job of keeping its equipment up to a safe standard, it's our hospitals. The administrators of these facilities know the economic and public relations risks of neglecting this equipment.

And speaking of economics, another group that subscribes to national

The aftermath of the 1999 boiler explosion at Summerville High School. ▼



Courtesy of Wade Spees/The Post and Courier

codes and standards is the power industry. Given the tremendous sizes of their utility boilers, they not only know the safety risks but also the negative economies of having this equipment shut down. Paper mills, which have a significant investment in recovery boilers and the reliability of this equipment, fall into the same category.

BULLETIN — *Are there companies in South Carolina that abide by the National Board Inspection Code and the ASME Code?*

SENATOR MOORE — A lot of them. Most are larger, well-known companies that understand the risks of *not* operating their equipment according to codes and standards. I would prefer to see these companies demonstrate corporate and civic leadership in the state by insisting *all* South Carolina organizations do the same.

BULLETIN — *What about those companies that contend a safety law would be financially devastating?*

SENATOR MOORE — I think that is a fallacy. Time and time again, we've seen companies experience accidents, suffer losses of tens of thousands of dollars in damage, yet manage to rebuild and stay in business. And these are the same companies that won't part with fifty dollars for a certificate or one hundred dollars for an inspection. Many would rather save the dollars they are not required to spend and risk the safety of their employees. Safety legislation will not result in a loss of jobs for workers. It will help keep those workers alive.

BULLETIN — *Were there any other major concerns that surfaced as the result of your meeting?*

SENATOR MOORE — Without a boiler and pressure vessel safety law, I am afraid qualified equipment repair firms may someday elect not to do business with those South

Carolina companies and organizations that ignore their instructions to shut down dangerous boilers and pressure vessels. Right now, these repair firms are providing a valuable service by identifying repairs that need to be made. By ignoring these instructions, companies and organizations that choose to operate this dangerous equipment without making the necessary repairs are opening themselves up to tremendous financial liability should an accident occur. And that liability could potentially impact the repair firms. Given this scenario, I can see the day when qualified repair firms might avoid servicing those companies that fail to heed their warnings, thereby limiting their own risk. Should that ever be the case, companies experiencing equipment problems will come to rely even more heavily on unqualified vendors, which will only aggravate an already serious problem.

BULLETIN — *Does South Carolina have any information on the number of boiler and pressure vessel accidents that have taken place in the state?*

SENATOR MOORE — Without a law, that data is impossible to collect. However, the news media have documented several incidents that, from my perspective, were too close for comfort — primarily because these involved our schools. In 2000, a boiler caught fire at Mid-Carolina High School. In 1999, a boiler at Summerville High School exploded, involving

a significant amount of damage. It was fortunate that there were no classes being conducted when these accidents occurred. In 1998, a Gaston man was killed by a pressurized water tank he was emptying. The energy released from that accident tossed his body 50 feet. And the tank was only about the size of a 55-gallon drum. There have been other incidents we have identified going back to when the very first boiler law was introduced in the mid-seventies. For example, a horrible explosion at a chemical plant saw a pressure vessel penetrate a two- to three-foot reinforced concrete floor. That explosion not only blew all of the insulation and metal off the building, it caused a worker to lose his legs — and he was standing a hundred yards away!

I am sure there have been numerous other incidents, but until we have legislation to record and analyze this critical information, we'll never accurately know how many deaths or injuries have occurred. Unfortunately, many of the boiler and pressure vessel explosions that have occurred have been erroneously classified as "fires."

One other thing we'll never know are the tremendous costs associated with property damage. Through the years, I am sure the amount of dollars spent to clean up after an accident, let alone to replace damaged buildings, equipment, etc., total in the millions of dollars. And that is another economic consideration for those — especially those without insurance — who think a safety law will not save them money!

BULLETIN — *What is the feeling in the legislature regarding boiler/pressure vessel legislation?*

SENATOR MOORE — I am somewhat disappointed that support has not been more widespread. After all, safety is a bipartisan issue. While a law would certainly save lives in South Carolina, there are a multitude of other solid reasons to endorse this legislation, including improving school safety, helping protect the environment by reducing emissions,

and lowering company operating costs by saving precious energy. For those of my legislative colleagues who are considering the political lay of the land, this is a win-win situation. And I am convinced that the more the public becomes aware of this issue, the more they will demand that we in the legislature do the responsible thing.

BULLETIN — *If South Carolina does not get a boiler and pressure vessel law . . .*

SENATOR MOORE — We will never change the mind-set of tens of thousands of boiler and pressure vessel owners who believe, without reservation: "If it is not required by law, we aren't going to do it." And that prompts the question: If there shouldn't be a law, why does every other jurisdiction in North America have one? What do these jurisdictions know that we in South Carolina don't?

BULLETIN — *Thank you, Senator Moore, for providing us with your perspective. ❖*

Statewide Survey Reveals . . .

Solid Majority of South Carolinians Want a Boiler and Pressure Vessel Safety Law

There is no doubt about it. By an overwhelming margin, South Carolinians want a boiler and pressure vessel safety law for their state — a law that protects *all* citizens. And they place responsibility for their personal safety directly into the hands of state legislators and the governor.

That is the conclusion of a statewide random telephone survey of 500 residents conducted last fall by Market Group One, Inc. The survey, believed to be the first addressing the boiler and pressure vessel safety law issue in South Carolina, has a +/-5 percent margin of error.

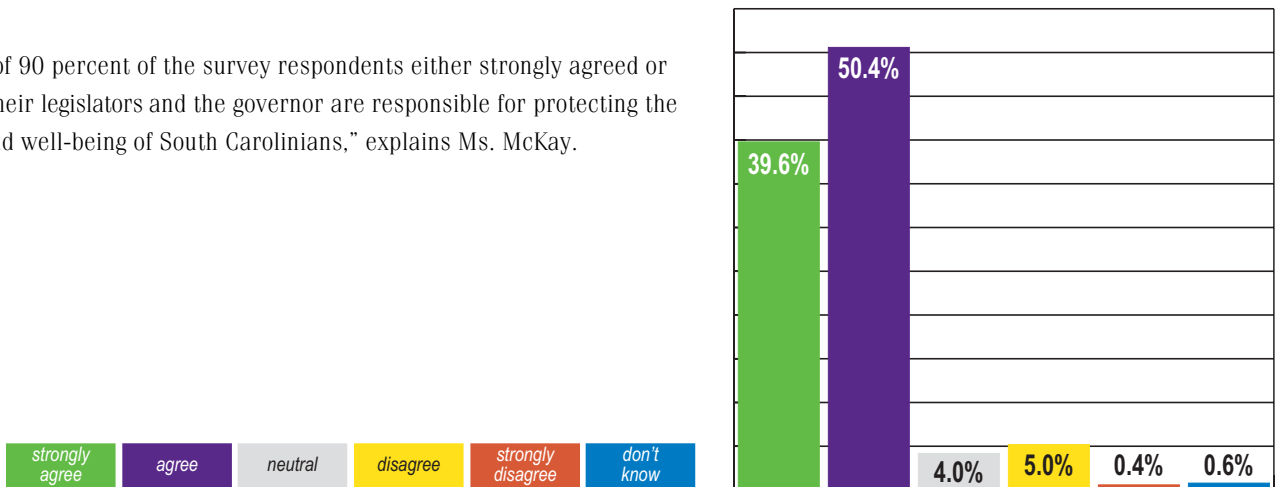
Market Group One President Monica McKay says educating South Carolinians is key to their understanding of this critical issue, and consequently, to building public support.

Ms. McKay notes that solid support for boiler and pressure vessel safety extends across all demographic lines. A total of 89.4 percent of those responding are registered voters in South Carolina.



Q1 I believe it is the responsibility of the governor/general assembly to protect the safety/well-being of South Carolina residents.

“A total of 90 percent of the survey respondents either strongly agreed or agreed their legislators and the governor are responsible for protecting the safety and well-being of South Carolinians,” explains Ms. McKay.



Q2 Would you support the new (boiler and pressure vessel safety) laws if they generated revenues for the state general fund at no cost to the general public?

<u>Yes</u>	<u>No</u>	<u>Don't Know</u>
85.0%	7.2%	7.8%

When it comes to their safety, South Carolinians support a new boiler and pressure vessel safety law “by a wide margin,” says Ms. McKay, “especially if that law costs the general public nothing and generates an increase in revenue for the state. And residents of South Carolina are holding lawmakers accountable for safety with regard to boilers and pressure vessels,” she emphasizes.

“South Carolinians not only want a law,” points out the Market Group One executive, “they want a law that protects everyone, not just certain segments of the public. Because most boiler and pressure vessel-related deaths occur in an industrial setting, we wanted to gauge how South Carolinians would view a law that would include both public places *and industrial settings* to determine if this enhances or reduces the degree of support.”

Q3 The bills being considered by the South Carolina legislature call for the inspection of boilers and pressure vessels located in or near public areas only. How supportive would you be of such a bill? Please use a scale of 1 to 7, where 1 is not at all supportive and 7 is very supportive.

Degree of Support for PUBLIC PLACES Legislation: 5.87 (Mean Score)

Q4 How supportive would you be of the bills if, in addition to public places, they also required the inspection of all boilers and pressure vessels in industrial settings, such as paper mills and textile plants? Please use the same 1 to 7 scale, where 1 is not at all supportive and 7 is very supportive.

Degree of Support for INDUSTRIAL SETTINGS Legislation: 6.13 (Mean Score)

“While we found solid public affirmation for inspections involving equipment in public places,” Ms. McKay adds, “we also witnessed an increase in the degree of support for a more comprehensive bill inclusive of industrial setting inspections.”

She emphasizes that identifying nearly half (45 percent) of those contacted as being ‘Not Aware’ of a boiler’s devastating effect provides a clearer understanding of the public’s lack of knowledge about this issue.

Q5 How aware are you that the impact from a boiler explosion could level an entire city block?

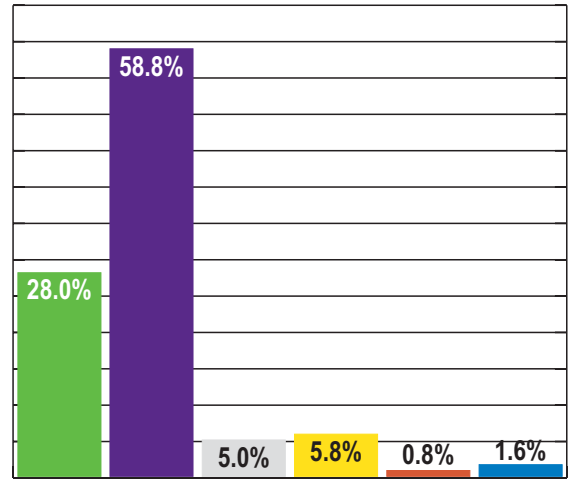
<u>Not Aware</u>	<u>Somewhat Aware</u>	<u>Very Aware</u>	<u>Don't Agree With Statement</u>
45.0%	33.2%	21.6%	0.2%

Ms. McKay explains that at the end of the survey nearly a quarter (23.4 percent) of the respondents requested to be updated on the progress of pending boiler and pressure vessel safety legislation. “For 117 people to give us personal contact information for the purpose of following an issue indicates there is interest regarding boiler and pressure vessel safety legislation.”

Another extraordinary aspect of the survey that surprised the Market Group One official was the high percentage of support for the boiler and pressure vessel safety process. “Even with a +/-5 percent margin of error, ‘Strongly Agree’ and ‘Agree’ percentages totaling in the 80s and 90s reveal public concern that should not be underestimated,” Ms. McKay emphasizes.

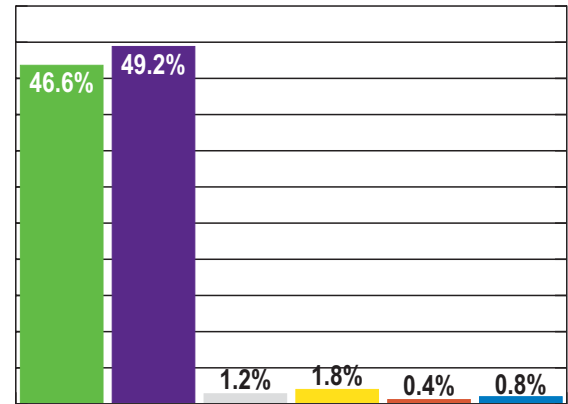
Q6 I would support a law that would require shutting down unsafe boilers and pressure vessels.

Nowhere was that more evident, she explains, than among the 86.8 percent of respondents who either strongly agreed or agreed with shutting down unsafe boilers and pressure vessels. “The opinion of South Carolinians, quite simply, is that they do not want to be exposed to dangerous equipment that threatens their well-being,” she adds.



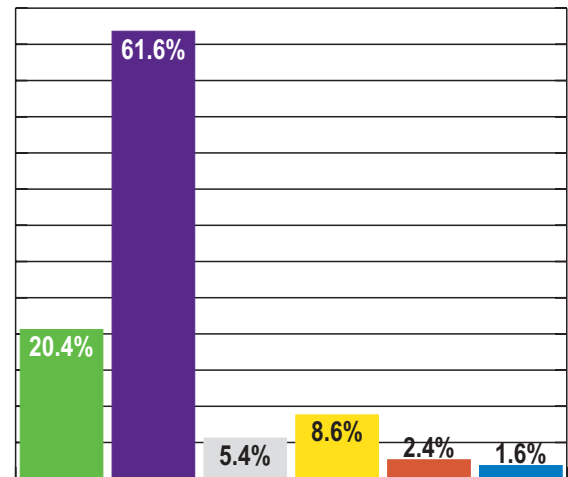
Q7 I believe all boiler and pressure vessel inspectors should be professionally trained and certified.

“This sentiment is overwhelmingly supported by a strong desire on the part of South Carolinians to place their trust in the hands of inspectors who are professionally trained and certified,” observes Ms. McKay. “A total of nearly 96 percent (95.8 percent) of the respondents who either strongly agree or agree that inspectors should be qualified is a compelling endorsement.”



Q8 I would support the appointment of a qualified chief boiler inspector.

Ms. McKay notes that support (82 percent who strongly agree/ agree) for professionally trained and certified boiler and pressure vessel inspectors is underscored by a desire on the part of South Carolina residents to have a department headed by a qualified state chief inspector. “In other words,” she explains, “South Carolinians prefer — by a significant margin — a person who has a professional background in boiler and pressure vessel inspection. They don’t want someone who is an unqualified administrator overseeing their safety.”



“We think this important random survey information will be of considerable interest to legislators and the governor,” she emphasizes. “Because it is a nonpartisan public safety matter that affects everyone in the state, the significance of this issue should not be underestimated politically.” ❖ The survey was commissioned by The National Board of Boiler and Pressure Vessel Inspectors.

Most Boiler and Pressure Vessel Programs Are Self-Sustaining

While the public perception might be that starting a new state program can be costly, the reality is that most North American boiler and pressure vessel safety departments are financially self-sustaining through the generation of operating certificates and inspection fees.

Alabama is the most recent state to pass boiler and pressure vessel safety legislation (in 2000), and launched its new program in fall 2003. Under the direction of new Commissioner of Labor Jim Bennett, the state devised a unique approach to get the boiler and pressure vessel department up and running with minimal jurisdictional resources. Like most states, Alabama has been experiencing an economic downturn that has restricted spending on new state programs. Voters decisively turned back a massive tax increase effort in September 2003.

Faced with the possibility of seeing the Alabama Boiler and Pressure Vessel Act dissolved by sunset laws, Commissioner Bennett enlisted the assistance of several outside entities including industry volunteers, insurance companies, and neighboring jurisdictions to create a department substructure that would allow Alabama to begin billing equipment owners/users and consequently provide the funding to hire a commissioned chief inspector and staff.

The first order of business, explains the commissioner, was to pull together the Board of Boilers and Pressure Vessels, comprised of nine industry volunteers who set fees and oversee the state's proposed rules and regulations.

Commissioner Bennett is working with insurance companies to identify the location of insured equipment within Alabama. From that, the department will build a database. Although at present a modest boiler and pressure vessel operation, the program is on track to begin generating revenues within a short period of time.

Like South Carolina, the Alabama legislature had found it difficult to pass a state safety act. However, with a change of administration in the late 1990s, the initiative started to take hold. Policymakers and thought-leaders met with business owners and company trustees – anyone impacted by the legislation – for input and to address concerns about the pending bill. When the Alabama legislature passed a powerful boiler and pressure vessel law that facilitated the creation of a state boiler agency, many groups were satisfied that the right legislation had finally been passed.

“The excellent cooperation we have received from the boiler and pressure vessel industry since then has allowed Alabama to proceed with a program requiring minimal state investment,” comments Commissioner Bennett. “We think it is a program that in the future will pay huge dividends by protecting our citizens and providing a dependable source of revenue.”

According to the state official, “Establishment of the Alabama program has evolved with exceptional progress and acceptance. It is an approach we would be delighted to share with South Carolina.” ❖

An Open Letter From Bob Woodward to South Carolina State Legislators and Governor Mark Sanford

Dear Governor Sanford, South Carolina State Senators and Representatives:

As a lifelong South Carolina resident, I am scared.

I was part of the recent meeting that took place between Senator Thomas Moore and boiler and pressure vessel repair organizations. Quite frankly, what I heard was frightening beyond belief.

And that is why I am appealing to you. Once again.

To those of you with whom I have met over the past several years, I extend my appreciation for the courtesy of your time and for permitting me to put forth the justification for passage of a boiler and pressure vessel safety law. Unfortunately, my efforts were not sufficient to prompt most of you to support this critically important cause.

It is for this reason that I again implore you to reconsider whatever reservations that might preclude you from taking swift and decisive action on this vital, urgent issue. Additionally, I respectfully request you use your considerable influence to encourage the companies and organizations that have been so adamantly opposed to this legislation to step forth and work in partnership with those of us who seek to craft an effective and balanced safety law — a law that will be to the benefit of all South Carolinians.

It is through your civic and moral leadership that, I believe, all parties affected by this politically nonpartisan issue can be brought together. What is needed now, more than any other time during the nearly thirty years this issue has been debated, is dialogue. The time for rhetoric is over.

Unless you act now, I am fearful that South Carolina will experience a needless tragedy that will result in the death or serious injury to our friends and loved ones. Given the pattern of boiler accidents that have occurred over the past several years, there is a disturbing likelihood that those victims will be innocent children who did nothing to earn their fate other than attending school.

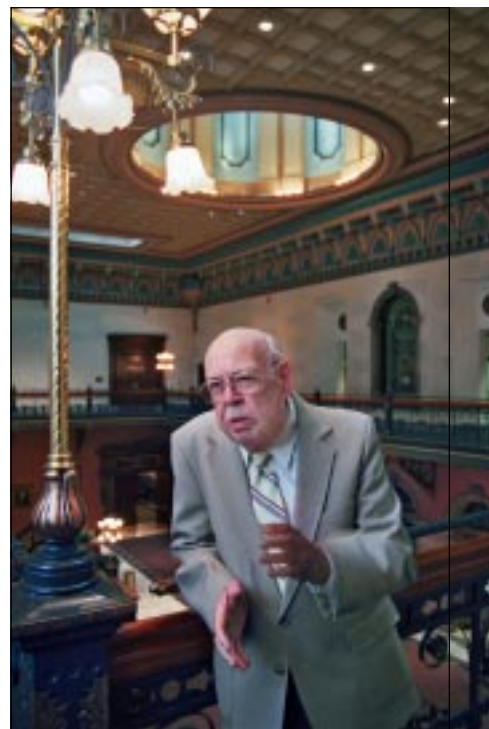
Think not?

One need only look to our neighbor Georgia to understand what prompted its legislators to finally pass a boiler and pressure vessel safety act in 1984. The deaths of four young children and an adult at a daycare center is a sobering, deeply troubling illustration of how elected officials oftentimes underestimate the public trust.

Yet we in South Carolina, for reasons unfamiliar to me, seem to feel immune from similar calamity.

However, we were not immune from the horrible 1994 bungee jumping tragedy that killed two young men in Myrtle Beach. That accident, as you well know, inspired swift legislative action to preclude another terrible occurrence. Could a bungee jumping law have prevented the deaths of those victims? We'll never know. Just like we'll never know when a catastrophic boiler or pressure vessel accident might provoke safety legislation in South Carolina.

Bob Woodward has worked to pass a boiler and pressure vessel safety law in South Carolina for the past ten years as a legislative liaison for ASME (of which he is a lifetime member). A resident of Columbia, he retired in 1993 after 28 years as an engineer.



While many of you reduce this legislation to a simple matter of economics and question the impact it may have on the state budget and South Carolina commerce, I humbly ask you to carefully weigh the considerable benefits of a safety law. Reduction in fuel consumption and equipment operating costs, less pollution, increased worker and consumer safety – and yes, even improved school safety — are noble issues on which any elected official should be proud to run.

An estimated 44,000 boilers and pressure vessels in South Carolina represent a considerable amount of potential state revenue. That revenue in turn can be used — through a diligent inspection process — to collectively improve the operating condition of each and every boiler and pressure vessel in our state.

Ladies and gentlemen, we have an extraordinary opportunity to prevent the kind of tragedy that occurred in Georgia. And we can avoid a recurrence of the legislative hindsight we experienced in 1994. But you as our elected officials must take action now.

Eighty-five percent of South Carolinians support this legislation. Yet we are in the unenviable position of being the only state not having a safety law. And although the debate has endured for nearly thirty years, it is now time to do the right and honorable thing; that for which the people have elected you. A recent survey revealing that 90 percent of South Carolina residents hold their legislators and the governor responsible for protecting their safety and well-being underscores the public's expectation. And it is overwhelming.

While I have tremendous respect for South Carolina's legislative process, I want to remind you that when a fatal boiler or pressure vessel accident occurs, there will be no safe haven from the public outcry that will surely result. Companies and organizations that have so vigorously opposed this legislation will not be able to shield the elected officials who have done their bidding. Nor will these officials be invulnerable to the guilt of knowing that a person or persons has been needlessly killed because special interest dollars were more valuable than a human life.

As Senator Moore says, "It is only a matter of time."

How true. And unfortunate.

Sincerely,

*Bob Woodward
Concerned South Carolina Citizen*

The FALLACIES and FACTS of an Effective Boiler and Pressure Vessel Safety Law

➤ FALLACY

"THE SMALL NUMBER OF BOILER AND PRESSURE VESSEL ACCIDENTS IN SOUTH CAROLINA DOES NOT WARRANT A NEW SAFETY LAW."

➤ FACT

The number of people who have been killed or injured as the result of boiler and pressure vessel accidents is not known because South Carolina does not require collection of this data. Nor are there requirements in place to record the amount of property damage. According to qualified equipment repair organizations that are intimately familiar with the condition of boilers and pressure vessels in South Carolina, there is firsthand, conclusive evidence that hundreds of incidents (major and minor) go unreported annually because there is no state system to record this information. Most boiler and pressure vessel accidents are classified as "fires," thereby further complicating the tracking process.

How important is the collection of this data?

According to former Kansas State Representative and civil engineer Philip Kline, the State of Kansas repealed its boiler inspection law in 1975. As a result, no one was charged with keeping records of Kansas's boilers and pressure vessels. The former senator explains that many pressure equipment items went uninspected and, without these records, there was no way to track the number of accidents that may have occurred. There was, however, one very apparent, measurable consequence to the repeal of Kansas's boiler inspection law: businesses in the state realized an increase of up to 30 percent in insurance costs. Worse yet, since there was no enforcement authority, the only way to deal with boiler owners whose equipment might have been faulty was to cancel their insurance. The backlash led to the 1977 reenactment of the Kansas boiler inspection law — just

two years after the general assembly had canceled the previous one. Said Mr. Kline: "A boiler with no oversight, no inspection, is more dangerous than a loaded gun. Not having a boiler inspection law is unconscionable."

➤ FALLACY

"MORE STATE REGULATIONS ARE NOT NEEDED."

➤ FACT

Nearly 87 percent of South Carolina residents disagree. According to a recent survey conducted by Market Group One, South Carolinians would support a law that would require shutting down unsafe boilers and pressure vessels. Furthermore, 90 percent stated it was the responsibility of the governor/general assembly to protect the safety/well-being of South Carolina residents. In today's political climate, 49 other states may agree that additional regulations are not needed. But all of them have a boiler/pressure vessel safety law.

➤ FALLACY

"BECAUSE BOILERS AND PRESSURE VESSELS ARE REQUIRED TO BE CONSTRUCTED TO ASME (AMERICAN SOCIETY OF MECHANICAL ENGINEERS) STANDARDS, INSPECTION WOULD BE REDUNDANT AND AN UNNECESSARY EXPENSE."

➤ FACT

The South Carolina General Assembly and the State Building Code Council have approved adoption of the *International Building Code* for commercial buildings. And it has been adopted by most, but not all, of South Carolina's 46 counties. The *International Building Code* does reference the ASME Code. But while South Carolina authorities emphasize that all boilers in their state must be constructed to the ASME Code, they admit

there is no way to enforce this requirement (either through inspections or mandatory registration) unless it is addressed during the course of an OSHA investigation or there is an investigation of an accident, *after the damage has been done*.

These facts notwithstanding, to assume that boilers and pressure vessels do not need to be inspected is analogous to believing that brand new airplanes do not need to be regularly inspected even after hundreds upon hundreds of hours of flight. While adopting a code requiring equipment be built to a respected manufacturing standard is a good first step, this preliminary safeguard does not go far enough. Consider the daily rigors of operating boilers and pressure vessels and the systematic deterioration that results over time and under normal operating conditions. Owners/Operators who regularly inspect, provide proper maintenance, and have repairs and alterations performed by qualified technicians ensure their equipment is running at maximum efficiency, minimize the possibility of an incident, and extend the equipment's useful life. As confirmed by qualified repair companies, such conscientious attention to equipment operation, maintenance, and repair in South Carolina is the exception and not the rule. A safety law requiring equipment inspection is the only viable approach to helping all owners/users both *save money* and protect South Carolinians from injury and death.

➤ FALLACY

"ANY ENACTED BOILER AND PRESSURE VESSEL LAW SHOULD ONLY COVER BUILDINGS OF PUBLIC ASSEMBLY."

➤ FACT

While this may seem to be a wise approach designed to protect the greatest number of people, it does nothing for those who are statistically the most vulnerable during a boiler or pressure vessel explosion. Between 1999 and 2001, 127 persons lost their lives and 720 were injured in North America. More than 95 percent of these individuals were in an industrial setting.

➤ FALLACY

"BETWEEN INSURANCE REQUIREMENTS, FEDERAL REQUIREMENTS, FEDERAL WORKPLACE SAFETY GUIDELINES, AND SELF-IMPOSED STANDARDS, BUSINESSES ALREADY ARE CHECKING BOILERS."

➤ FACT

"Checking" boilers is not the same as "inspecting" boilers as done by a commissioned professional. According to the Market Group One survey, 96 percent of South Carolina residents believe all boiler and pressure vessel inspectors should be professionally trained and certified.

Insurance Requirements: With as many as 40 percent of the boilers and pressure vessels in South Carolina NOT INSURED, repair companies familiar with these boilers and pressure vessels say that most of this equipment is not being inspected either.

It is estimated by The National Board of Boiler and Pressure Vessel Inspectors that there are between 35,000 and 44,000 boilers and pressure vessels in the state of South Carolina. This means between approximately 14,000 and 17,600 pressure equipment items are not insured and consequently not inspected.

IMPORTANT NOTE: Not all insured boilers and pressure vessels are inspected by their respective insurance agencies. As a matter of fact, there is no state requirement now that demands insurance be maintained.

Federal Requirements/Federal Workplace Safety Guidelines:

The only federal agency having any jurisdictional oversight in South Carolina is the Occupational Safety and Health Administration (OSHA). It does not typically involve itself (as investigators) until there is an accident involving significant injuries and/or loss of life – *in other words, after the fact*. Additionally, it does not take a proactive role unless there is an employee complaint. Unlike a commissioned professional fully qualified to perform required inspections, OSHA inspectors are not in a position to *prevent* an accident.

Self-Imposed Standards: Equipment repair companies that, as a group, are more familiar with and more technically qualified to evaluate South Carolina boilers and pressure vessels than any other individuals – or groups – in the state overwhelmingly dispute the notion that boiler and pressure vessel owners/operators are abiding by self-imposed standards or even monitoring their equipment (unless it breaks down). Additionally, they contend that the “run it until it breaks” philosophy is prevalent particularly among those companies and organizations without insurance. They point to a lack of available information on equipment operation, maintenance, and repair in South Carolina to underscore their position. Additionally, they emphasize that if self-imposed, voluntary standards worked, boilers and pressure vessels in the state would be in significantly better condition.

➤ FALLACY

“THERE ARE CURRENTLY REGULATIONS IN SOUTH CAROLINA THAT PROTECT THE PUBLIC FROM DANGEROUS BOILER AND PRESSURE VESSEL INCIDENTS.”

➤ FACT

There are no regulations or laws involving any South Carolina state or county agency that provide for the inspection of boilers and pressure vessels, or the shutting down of unsafe boiler and pressure vessel equipment.

➤ FALLACY

“NEW STATE REGULATIONS WILL INCREASE MY BUSINESS COSTS.”

➤ FACT

Larger companies currently maintaining and operating their equipment to prescribed codes and standards are already capitalizing on the efficiency and productivity of their respective boiler or pressure vessel systems. Under a new safety law, their additional costs would only involve a modest fee (typically around \$35*) for a state certificate. Companies that do not maintain and operate their equipment within code would be required to make necessary repairs and perform mandatory maintenance. While the maintenance and repair would be

out-of-pocket expenses, as would the certificate and periodic inspection fees (generally ranging anywhere from \$15 to as much as several hundred dollars for a large capacity unit*), the resulting increased efficiencies from maintenance repairs could actually help these companies save considerable dollars by substantially reducing their fuel charges (enough in many instances to offset the out-of-pocket expenses). Helping reduce the risk and consequently the considerable expenses associated with boiler and pressure vessel accidents (e.g., plant and equipment damage and replacement, cleanup, employee downtime, workers' compensation, lawsuits) is yet another appreciable financial benefit.

Conversely, what are a company's “business costs” if it must pay out several hundred thousand dollars, if not millions, resulting from a boiler or pressure vessel explosion caused by lack of maintenance and/or operational diligence?

*Established by a boiler and pressure vessel safety law.

➤ FALLACY

“THE (BOILER AND PRESSURE VESSEL) BILLS WILL REQUIRE INSPECTION OF SPECIALIZED VALVES, OUTLAW CUSTOM BOILERS, AND EXPOSE CORPORATE SECRETS TO OUTSIDE INSPECTORS.”

➤ FACT

Inspection of Specialized Valves: Any valve considered to be part of the boiler or pressure vessel proper, specialized or not, would be inspected under a safety law. To ignore any equipment component simply because it is “specialized” is to assume that it is mechanically infallible. As with other components, improper design, construction, selection, maintenance, operation, or repair of specialized equipment can be potentially hazardous. Admittedly, if the law so stated, inspection of specialized valves would be required.

Outlawed Custom Boilers: Under a safety law, no boilers – customized or otherwise – would be prevented from operating within South Carolina just as long as this equipment is manufactured to an accepted construction code and verified safe to operate. Like specialized valves, custom equipment can also be

extremely hazardous. That is why these items must be built to tested, bona fide standards.

Exposed Corporate Secrets to Outside Inspectors: It is typical practice for a company staff member (responsible for the equipment to be inspected) to escort the inspector to the boiler room or pressure vessel. That area is generally in a remote location and beyond the immediate proximity of an organization's manufacturing process. Rare is the occasion when an inspector would be left unattended. This arrangement notwithstanding, to question the honesty and integrity of professionals whose work revolves around saving lives and property is without any foundation. Indeed, in the 80-plus year history of the commissioning process, there never has been a single accusation brought to the attention of commissioning officials involving the acquisition or sale of "corporate secrets." Such activity is grounds for revocation of the inspector's commission as well as other possible liabilities.

➤ FALLACY

"CREATION OF A NEW STATE BOILER AND PRESSURE VESSEL AGENCY WILL COST TAXPAYERS MILLIONS."

➤ FACT

Actually, the start-up cost is minimal while generated revenues for the state can be appreciable.

That is what is presently occurring in Alabama, the most recent jurisdiction to pass boiler and pressure vessel safety legislation. The launch of its new boiler and pressure vessel department is happening during a time when Alabama is facing one of the worst economic climates in its long and storied history (and on the heels of a recent massive tax reform effort decisively defeated by state voters).

With assistance from several entities outside the state, Alabama has set up a modest boiler and pressure vessel operation that will allow it to begin generating revenue from certificates of inspection within months. (A certificate of inspection substantiates that an equipment item has been inspected by a qualified, commissioned inspector.) Alabama Commissioner of Labor Jim

Bennett says the revenue stream will permit his department to hire a full-time chief boiler inspector, and eventually a full staff of commissioned inspectors.

With an estimated 35,000 to 44,000 boilers and pressure vessels in the state of South Carolina, depending on what South Carolina would charge for its certificates of inspection, the state could initially realize as much as \$2.2 million for an average \$50.00 certificate fee (44,000 items), to \$1 million for an average \$30.00 certificate fee (35,000 items).^{*} Boilers and pressure vessels not insured (estimated to be 14,000 to 17,600 units) would require regular inspections by the state and be subject to an inspection fee.

According to the Market Group One survey, 85 percent of South Carolinians support a new law if it generates an increase in revenues for the state general fund at no cost to the general public.

^{*}Inspection fees may be separate or include inspection costs. Revenue projections assume all boilers and pressure vessels are identified.

➤ FALLACY

"LET BUSINESSES AVOID INSPECTIONS BY SHOWING PROOF OF INSURANCE."

➤ FACT

This statement assumes all businesses wanting boiler and pressure vessel insurance will be able to get coverage. It also assumes that all insured boilers and pressure vessels will be inspected by the insurance companies. As noted earlier, having insurance is no guarantee that a boiler or pressure vessel has been or will be inspected. Even a law requiring insurance coverage – but without a provision providing for inspections – does nothing to protect the safety of South Carolina residents and visitors. It should be noted that forcing *all* companies – especially small businesses – to secure insurance coverage may be more costly to the companies than arranging inspection services through the state. Again, there is also the question of whether *all* companies would be eligible for insurance coverage. The insurance industry does not want the state to mandate

insurance for *all* companies. From their perspective, such a regulation would create an expensive, bureaucratic nightmare that would not benefit the state, equipment operators, or the public it is expected to protect. Some insurance officials feel mandating insurance coverage would cause carriers to abandon all South Carolina business. Says one insurance industry official, "Such regulatory intrusion would be simply impossible to accomplish, as most states have realized."

Avoiding inspections will do nothing to improve the serious conditions of equipment that presently exist in South Carolina. Having a third-party inspect boilers and pressure vessels for compliance with state law is the *only effective method of helping curtail accidents.*

➤ FALLACY

"COMPANIES HAVING INSURANCE SHOULD NOT BE SUBJECTED TO INSPECTIONS."

➤ FACT

Having insurance is not a panacea, and may in fact create a false illusion of security that could be more deadly than not having insurance. Some insurance agencies write policies without having examined the boiler or pressure vessel being insured. Indeed, because most boiler and machinery insurance is written on a commercial multiperil basis, the insurer typically learns of the existence of the boiler or pressure vessel after the policy is written – when the state notifies the owner that the object is due to be inspected. In this regard, merely having insurance will not ensure that the object is being inspected regularly for compliance with state safety laws and regulations. A boiler or pressure vessel that is close to rupture or failure will do so with or without an insurance policy. Insurance can help prevent this, *but only if state law requires the insurer to conduct a jurisdictional safety inspection.*

➤ FALLACY

"SOUTH CAROLINA HAS ALREADY LOST TOO MANY JOBS OVER THE PAST SEVERAL YEARS. WE DON'T NEED NEW REGULATIONS TO ELIMINATE ANY MORE!"

➤ FACT

South Carolina enjoys one of the most attractive business climates in the country. Yet it continues to lose jobs – especially in the manufacturing sector. So then, what is prompting these losses?

Fact is, the erosion of manufacturing jobs has nothing to do with *state* regulations. These jobs – like many positions lost in neighboring states – were eliminated as the result of *national* economic conditions that were part of a *national* trend.

And although adopting a modest number of new safety regulations will not *add* jobs to South Carolina's economy, nor will it *detract*. But new safeguards will result in additional worker safety provisions. Those companies that genuinely value and promote the well-being of their employees not only appreciate the significant investment in personnel, they fully recognize the moral and corporate obligation of keeping workers out of harm's way.

➤ FALLACY

"BOILER AND PRESSURE VESSEL REGULATIONS WILL LEAD TO REGULATION IN OTHER BUSINESS AREAS."

➤ FACT

In the 140-year history of boiler and pressure vessel safety laws, there is not one documented instance to support this misstatement. ❖

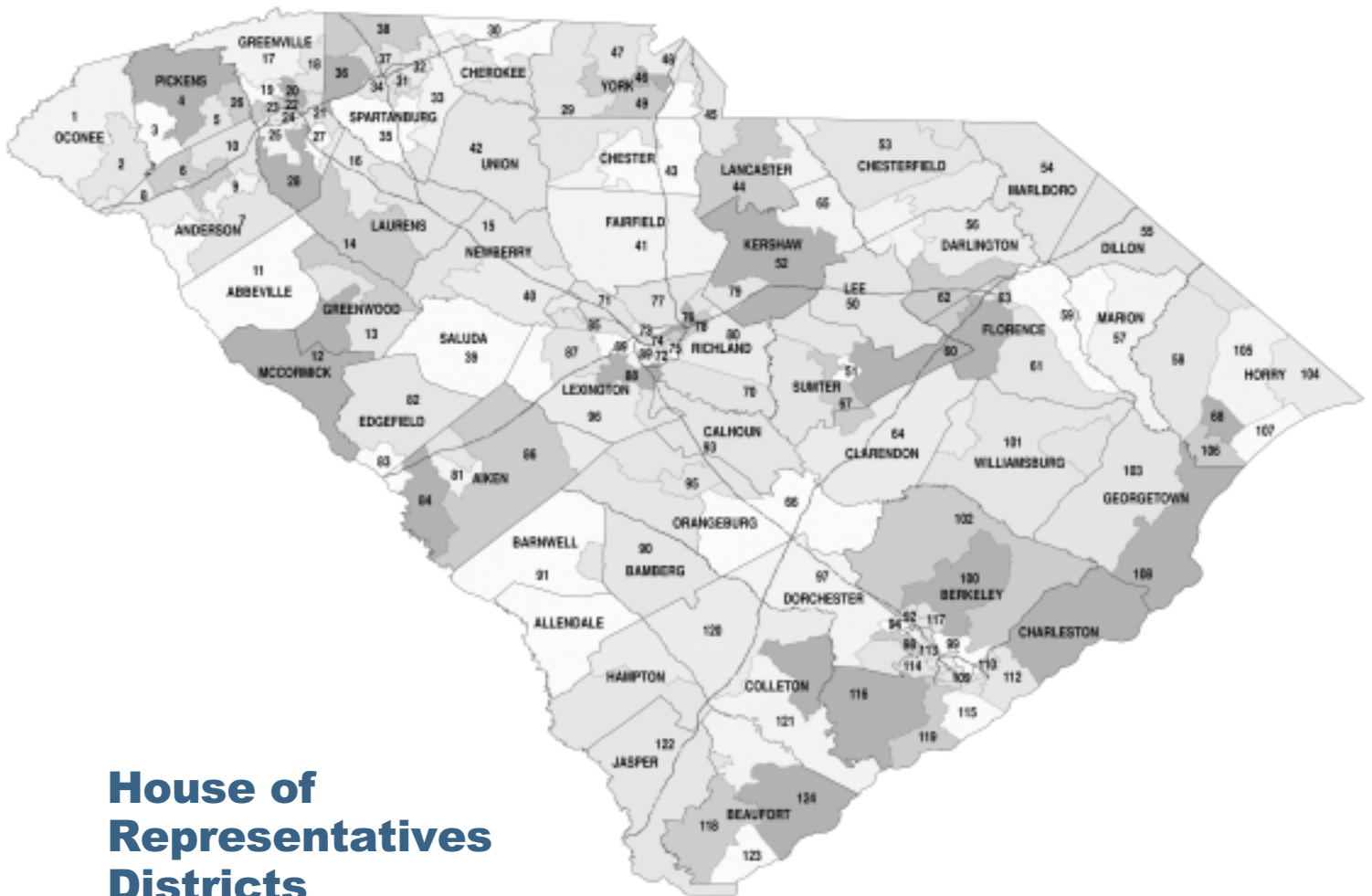
Contacting Legislators With Your Message

If boiler safety concerns you, share your thoughts with someone who can make a difference: your legislators. Legislators represent the ideals of their constituents, the folks who live in their district. Let them know what is important to you by writing, calling, or emailing. Regardless of how your legislators stand on an issue, they will appreciate the feedback. And oftentimes, contact from constituents can reinforce or shift a representative's stance on an issue.

No matter if you understand the legislative process, contacting your representatives can be simple. Keep your letter or email short and to the point. Discuss the topic of legislation, whether you think it should be supported or opposed, and your reasons. Try to be reasonable and polite; confrontational, partisan notes will not likely facilitate a positive outcome.

Assume that your letter will be filtered by a member of your legislator's staff, so be clear and succinct in your point and with what action you would like to see your legislator take. Finish the note with a one-sentence summary of this action. It is usually a good idea to follow up any letter or email with a phone call.

Your district will have one House representative and one Senator. Check the maps for your districts, then match them to the list of House and Senate members listed on the following pages. Here you will find the names, addresses, phone numbers, and email addresses of your legislators. For more information please consult the South Carolina Legislature Online Web site at www.scstatehouse.net/, or the site dedicated to the pursuit of safe boiler legislation for the state of South Carolina, www.SC4safety.org. An email can be sent to a legislator from either site. ❖



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What's in a Boiler and Pressure Vessel Safety Law?

Although there have been a number of proposed boiler and pressure vessel safety laws introduced in South Carolina, most have included provisions consistent with model legislation developed by the not-for-profit National Board of Boiler and Pressure Vessel Inspectors. Variations of the model legislation have been adopted and are now enforced in 49 states across America.

Documents NB-131 (*Recommended Boiler and Pressure Vessel Safety Legislation*) and NB-132 (*Recommended Administrative Boiler and Pressure Vessel Safety Rules and Regulations*) were developed in 1980 to encourage development of safety laws in jurisdictions that, at the time, had no laws, rules, or regulations. Both were created as a complete system to complement each other and to ensure proper construction, inspection, maintenance, and repair of boilers and pressure vessels.

NB-131 is written in a legal style consistent with jurisdictional laws. NB-132 describes how the requirements of NB-131 may be implemented.

NB-131 – Legislation

Because NB-131 was developed as a model law, it contains several legal provisions such as appeals, revocations, and suspensions associated with due process for those in violation of a jurisdiction's rules and regulations. However, NB-131 outlines six elements that are key to any jurisdictional law.

Board of Boiler and Pressure Vessel Rules (Board)

The purpose of the Board is to represent the boiler and pressure vessel industry in the regulatory process.

The Board members should be appointed by the governor or other top governmental official. This indicates the seriousness with which safety is addressed by the jurisdiction.

The Board members should represent a wide variety of interest groups from the boiler and pressure vessel industry: owners/users of power boilers; repair firms; heating boiler contractors; owners/users of pressure vessels; boiler/pressure vessel manufacturers; crafts involved with construction, repair, or operation; insurers; and a representative of the general public,

such as a mechanical engineering professor from a university. This ensures that each segment of the industry is represented in the legislative process.

It is essential that the Board have rule-making power. That is, it should be able to adopt the rules and regulations necessary for the implementation of the laws. Since the rules and regulations are related to boiler and pressure vessel technology, and the Board is comprised of a variety of interest groups from the industry, it is much more effective to give the Board rule-making power than to rely upon the jurisdiction's legislature.

Chief Inspector

A chief inspector is responsible for the enforcement of the boiler and pressure vessel law.

The jurisdiction should employ deputy inspectors, responsible to the chief inspector.

The chief inspector and deputy inspectors should meet the requirements established by The National Board of Boiler and Pressure Vessel Inspectors. Commissioning by the National

Board is a worldwide process that ensures uniformity and standardization in the qualification and examination of boiler and pressure vessel inspectors.

The chief inspector may at no cost become a member of the National Board provided the National Board's criteria for membership are met. Membership in the National Board allows easy access to all of the National Board's programs that support the jurisdiction.

Code of Construction

The jurisdiction should adopt the *ASME Boiler and Pressure Vessel Code* for the construction of new boilers and pressure vessels, as well as other standards to ensure the safe operation of boilers and pressure vessels in the jurisdiction.

Registration of Items With the National Board

The jurisdiction should require registration of new boilers and pressure vessels with the National Board. Registration ensures that a properly implemented inspection program has been enforced during the manufacturing phase. It also ensures that there is a process in place to verify that the requirements of the code of construction have been met. Additionally, it ensures that *Manufacturer's Data Reports* submitted as part of the registration process are always available to the jurisdiction or to repair firms, as necessary.

Inservice Inspection

There should be a process for the periodic inspection of boilers and pressure vessels that are in service. This ensures continued safe operation. The inservice inspection program can be a source of revenue for the jurisdiction through the issuance of operating certificates and the charging of inspection fees. In many jurisdictions, the boiler and pressure vessel department is fully funded by these fees.

Repairs and Alterations

The jurisdiction should adopt the *National Board Inspection Code* (NBIC), which is a code for jurisdictional authorities, users, and organizations performing repairs and alterations to boilers and pressure vessels. The NBIC is an internationally accepted document that covers the inspection, installation, repair, and alteration of boilers and pressure vessels. The NBIC provides for the accreditation of repair organizations to apply a repair stamp ("R") and establishes provisions of the original code of construction as applied to repairs and alterations.

NB-132 – Rules and Regulations

NB-132 was developed as a model to define technical and administrative requirements for the implementation of a jurisdiction's boiler and pressure vessel law. For example, the law may have a requirement for the periodic inspection of boilers and pressure vessels. The rules will define which specific boilers and pressure vessels must be inspected, which are exempt, the frequency of inspection, and the associated inspection and certificate fees. NB-132 focuses on boiler and pressure vessel technology issues and sets requirements for such items as maximum allowable working pressure for boilers and pressure vessels, boiler controls, and installation.

Each set of laws, rules, and regulations must meet local jurisdiction conditions.

To view the entire NB-131 (*Recommended Boiler and Pressure Vessel Safety Legislation*) document and NB-132 (*Recommended Administrative Boiler and Pressure Vessel Safety Rules and Regulations*) document, access the South Carolina boiler and pressure vessel safety Web site at www.SC4safety.org. ❖

It's Time to Enact Boiler Safety Legislation in South Carolina

The Insurance Industry's Perspective

BY ERIC M. GOLDBERG, AIA

When most people hear the word “insurance,” they probably do not think about boiler and pressure vessel safety. In fact, the property-casualty insurance industry conducts jurisdictional inspections for about 80 percent of all registered boilers and pressure vessels in the United States. Consequently, the American Insurance Association (AIA) has been an outspoken proponent of boiler safety legislation, and strongly supports enactment of the National Board’s *Recommended Boiler and Pressure Vessel Safety Legislation* in South Carolina.

The insurance industry’s relationship with the National Board, the American Society of Mechanical Engineers (ASME), and the jurisdictions dates back to 1914 when the *ASME Boiler and Pressure Vessel Code* was developed. These entities share the goals of promoting safety and preserving property, and work together to prevent boiler and pressure vessel malfunctions. By vigorously promoting modern, effective boiler and pressure vessel technical standards, failures have decreased dramatically. Today, a major incident is a rare exception, not an expected event.

While the National Board, state regulators, ASME, and the insurance industry each have an interest in promoting boiler and pressure vessel safety, insurers have a unique role. AIA’s member companies provide insurance that allows businesses of all types to spread the potentially devastating risk of loss caused by the malfunction of a boiler or pressure vessel. And, because our members are impacted financially by a covered boiler or pressure vessel loss, they dedicate a great deal of technical resources and expertise to an object’s safe construction and inspection. For example, insurers employ thousands of

qualified individuals who provide quality inspection services to their policyholders. Many of these professionals actively participate on ASME and National Board technical committees, and on state boiler boards. And AIA, through its member company representatives, is an active participant on the National Board’s Board of Trustees Advisory Committee.

AIA has opposed weak and ineffective legislation that has been introduced in South Carolina — bills that were technically deficient and did not provide for an effective enforcement mechanism. Instead, AIA has consistently pushed for enactment of the National Board’s model legislation. This model law establishes a meaningful framework for state oversight of boiler safety. Moreover, insurers know this law works in other jurisdictions. Insurance is predominantly state-regulated, and therefore, we favor uniformity, not a “patchwork quilt” of nonuniform legal requirements. Uniformity also makes compliance more efficient and cost-effective for insurers.

Virtually every other jurisdiction in the country has enacted a similar law, and South Carolina should, too. Safety should not be a political issue. ❖

Eric M. Goldberg is assistant general counsel, American Insurance Association. The AIA represents 406 major insurance companies that provide all lines of property and casualty insurance and write more than \$110 billion annually in premiums. AIA’s members write the vast majority of the boiler and machinery coverage throughout the United States. The association is headquartered in Washington, D.C., and has representatives in every state.