SQ

JAN/FEB 2012 / No.170

Journal of the National Fire Sprinkler Association

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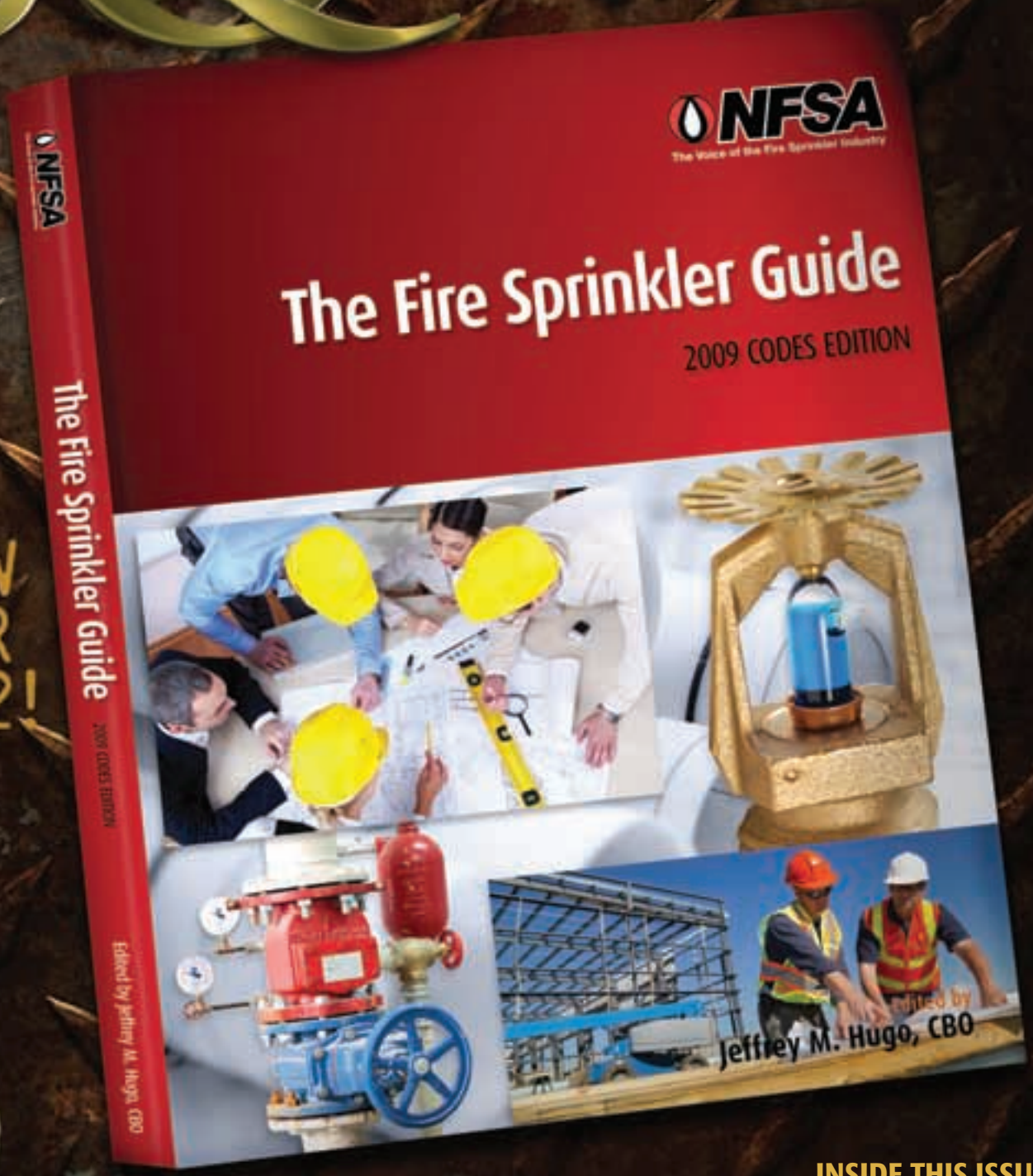

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100 sq. ft.	100 sq. ft.	100 sq. ft.	100 sq. ft.	100 sq. ft.	196 sq. ft.
50 psi	35 psi	15 psi-UL 20 psi-FM	22.7 psi (.80)	22 psi	30 psi
12 sprinklers	12 sprinklers	12 sprinklers	2000 sq. ft.	15 sprinklers (1500 sq. ft)	6 Sprinklers (3 sprinklers on 2 lines)
1200+ gpm	1200+ gpm	1200+ gpm-UL 1352+ gpm-FM	1600+ gpm	1200+ gpm	Sys. demand 828+ gpm
250 gpm HS	250 gpm HS	250 gpm HS	500 gpm HS	500 gpm HS	250 gpm HS

Building Height: 35′ Storage Height: 30′ Coverage: up to 144 sq ft (12′ x 12′)

K-14.0 ESFR	K-16.8 ESFR	K-25.2 ESFR	N252 EC
100 sq. ft.	100 sq. ft.	100 sq. ft.	144 sq. ft.
75 psi	52 psi	20 psi-UL 30 psi-FM	40 psi
12 sprinklers	12 sprinklers	12 sprinklers	8 sprinklers
1455+ gpm	1452+ gpm	1352+ gpm-UL 1656+ gpm-FM	Sys. demand 1275+ gpm
250 gpm HS	250 gpm HS	250 gpm HS	250 gpm HS

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ON THE COVER:
NFSA's Latest Edition of *The Fire Sprinkler Guide.*
See order form on page 24.

SQ

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SQ (ISSN 1050-4958) (USPS 524-010) is published six times a year (February - April - June - August - October - December) by the National Fire Sprinkler Association, Inc., 40 Jon Barrett Road, Patterson, NY 12563.

Telephone: (845) 878-4200. Subscription free to all NFSA members and member companies.

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The Sprinklerman Experience

John Viniello

I'm writing today about something that some of you may consider insignificant, or even wonder why NFSA expends the time, effort and funds to do it in first place. I'm talking about the very successful Sprinklerman program started four years ago.

We've taken Sprinklerman across the country to minor league ball parks in an effort to educate the general public about the life and property-saving benefits of fire sprinklers. We've thrilled the fans, both young and old, with the impressive countenance our Sprinklerman purveys. The Sprinklerman costume, designed by famed costume designer Scott Molampy of Geppetto Studios in Brooklyn, New York, portrays Sprinklerman as the true superhero he is. If you haven't seen Sprinklerman in person, you are truly missing out on something great. I have to say, whenever I've gotten a negative opinion regarding our Sprinklerman program, it has been from someone who hasn't even bothered to go see what this initiative is all about. That is something that I highly recommend you do. I've been to several games myself over the years and the great feeling I get when I see the crowd's reaction to this wonderful mascot of the fire sprinkler industry never seems to lessen.

Through our initiatives will minor league ball parks, contacts were made and friendships were formed with marketing directors across the country. One such director, Chris Snyder, has recently taken a position with the St. Louis Cardinals. As many of you baseball fans are aware, the Cardinals won the 2011 World Series Championship in a breathtaking finale that captured the hearts of baseball fans all over the world.

Mr. Snyder contacted NFSA Advertising and Promotions Coordinator Joanne Genadio, who spearheaded the Sprinklerman Baseball Program, to inquire about Sprinklerman making an appearance at a Cardinals spring training game in Jupiter, Florida this upcoming season. Needless to say, we are excited and thrilled to have Sprinklerman appear with the World Series Champions, where there are sure to be capacity crowds that Sprinklerman can both entertain and educate. The tentative date for this appearance is sometime in March. Keep your eyes peeled on the NFSA website and in **SQ**. We'll post the confirmed date as soon as it is available.

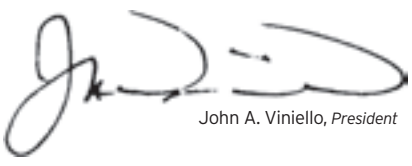
I see this as a great opportunity to spread the sprinkler message, educating not only grown-ups, but the future home buyers of America as well. The Cardinals organization has issued us the following proposal:

NFSA Awareness Day at Roger Dean Stadium in Jupiter, Florida
Game Sponsorship includes:

- Sprinkler Man appearance
- First Pitch for Sprinkler Man
- Marketing Display on the main concourse
- Pre Game Announcements
- Post Game Announcements
- Logo Display on video board

The average fan base for these games is over 6,500 fans.

This is an opportunity we can't pass up. And, if you are in the area, it's an opportunity for you to see just what the Sprinklerman initiative is all about. One final note to any of you naysayers out there, I challenge you to attend just one Sprinklerman event this coming season and... I'll eat my Yankees hat if you don't change your mind.



John A. Viniello, *President*

John A. Viniello, *President*

EVENTS OF INTEREST TO NFSA MEMBERS

calendar

Jan 10	Introduction to Standpipes	*On-Line*
Jan 10	NFPA 13, 13R & 13D 2010 Update	Poughkeepsie, NY
Jan 11	Seismic Protection for Sprinkler Systems/Protection of Flammable & Combustible Liquids	Poughkeepsie, NY
Jan 12	Inspection, Testing & Maintenance for the AHJ	Poughkeepsie, NY
Jan 24	Class II Standpipe Systems	*On-Line*
Feb 06	Two-week Technician Training	Lake Buena Vista, FL
Feb 07	Class I and Class III Standpipe Systems	*On-Line*
Feb 21	Pressure Control in Buildings with Standpipe Systems	*On-Line*
Mar 06	Inspection, Testing & Maintenance for the AHJ	Pataskala, OH
Mar 06	Pumps and Standpipe Systems	*On-Line*
Mar 07	Hydraulics for Fire Protection	Pataskala, OH
Mar 08	Foam Water Sprinkler Systems/Compacted Storage	Pataskala, OH
Mar 13	Hydraulics for Fire Protection	Winston-Salem, NC
Mar 14	Plan Review Procedures and Policies	Winston-Salem, NC
Mar 15	Inspection, Testing & Maintenance for the AHJ	Winston-Salem, NC
Mar 20	NFPA 20 and NFPA 14 for High-Rise Buildings	*On-Line*
Apr 03	Hanging, Bracing and Protection of Standpipe System Piping	*On-Line*
Apr 10	NFPA 13 Overview	Willoughby, OH
Apr 12	ITM for Water Based Fire Protection	Willoughby, OH
Apr 17	Manual Standpipe Systems	*On-Line*
May 08	Dry Standpipe Systems	*On-Line*
May 22	Horizontal Standpipes and Lateral Piping	*On-Line*
Jun 05	Acceptance Testing of Standpipes	*On-Line*
Jun 19	Periodic Inspection, Testing and Maintenance of Standpipe Systems	*On-Line*
Aug 21	Advanced Technician Training	TBD / In-Class
Sep 11	Residential Sprinklers Homes to High-Rise	Dayton, OH
Sep 12	Fire Pumps for Fire Protection	Dayton, OH
Sep 13	Hydraulics for Fire Protection	Dayton, OH
Oct 08	Two-week Technician Training	Fishkill, NY

These seminars qualify for continuing education as required by NICET. Meet mandatory Continuing Education Requirements for Businesses and Authorities Having Jurisdiction. To register or for more information, contact: Michael Repko at (845) 878-4207, E-Mail: seminars@nfsa.org. Or register online at www.nfsa.org.

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A Chairman's Farewell

Gregg Huennekens

At the next meeting of our Board of Directors in March 2012, I will be coming to the end of my second two-year term as Chairman of the Board. It has been an enriching experience for which I am extremely grateful. I owe a debt of gratitude to my fellow board members for their guidance, support and dedication, for without which we would not have been able to progress as we have. I also thank the API Group, parent of the company I started, now United States Alliance Fire Protection, for the support they have shown, affording me the opportunity to sit on the Association's Board and ultimately serve as its Chairman.

Thinking back, I remember how I felt when I was first elected to the Chair. It was an exciting time to be at the helm of the industry's preeminent trade association. My predecessor Wayne Gey, a highly respected contractor from Florida, had just provided initial funding of $30,000 as his brainchild, the non-partisan Industry Advancement Fund (IAF), was introduced to the industry. Within a very short time, contributions from within the fire sprinkler industry pushed the IAF to a bulging quarter million dollars.

At the same time, through years of coalition building and shear tenacity by the fire sprinkler industry and its allies, acceptance of automatic fire sprinkler benefits were approaching critical mass in International Code Council (ICC) code-making processes. Were the stars in perfect alignment? Was it time for fire sprinklers to finally be recognized in the International Residential Code (IRC) as essential life safety components in new home construction? Only time would tell and that time was drawing near.

The ICC had already announced the dates and location for its next final action hearing, an event at which code actions would be taken on the IRC regarding the inclusion of residential fire sprinklers, actions that would guide the homebuilding industry for perhaps generations to come. But had NFSA properly prepared to ensure successful passage of the sprinkler requirements? As it turned out, the answer was a resounding, Yes! By infusing funds from the IAF and other sources into channels perceived at the time to do the most good, the 2009 edition of the IRC for the first time saw requirements for the installation of fire sprinklers in the construction of new one- and two-family homes adopted by an overwhelming margin. It was a momentous occasion, one that I will always remember.

However, at the other end of the spectrum, there were dark clouds on the horizon. The economy had begun spiraling downward, out of control, and backlogs were shrinking to the lowest levels in years. Little did we know at the time that the resulting crash would be the worst recession since the Great Depression. A saving grace for many contractors still in business today has been inspection, testing and maintenance, the groundwork for which had been laid many years earlier with influence from NFSA when NFPA 25, Standard for Inspection, Testing and Maintenance of Water-based Fire Protection Systems, became recognized as a standard and subsequently adopted by jurisdictions around the country.

Unfortunately, slowing advancement of this continually developing market has been the lack of enforcement. A struggling economy is partly to blame, but recognizing that local authorities also had to be better informed on the important role enforcement of the standard plays in a community's overall fire protection scheme – not to mention the value the market creates, insulating contractors from radical swings in the economy – in 2010, NFSA created the position of Inspection & Testing Specialist. Later the same year, Bernie Arends was hired. Bernie has since been very active, meeting with jurisdictions, delivering training and writing articles for magazines whose primary audiences include building own-

›› CONTINUED ON PAGE 9

NFSA Regional Chart – January 1, 2012

Area	States	Regional Manager	Area Director
Northeast	*Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont*	***Associate Director of Regional Operations - North*** **Dominick G. Kasmauskas, NFSA** 1436 Altamont Ave. Suite 147 Rotterdam, NY 12303 (914) 414-3337 FAX (518) 836-0210	**Donald A. DeLuca** SRI Fire Sprinkler Corporation 1060 Central Avenue Albany, New York 12205 (518) 459-2776 FAX (518) 459-0068
Mid Atlantic	*Delaware, Maryland, New Jersey, Pennsylvania, Virginia, Washington, D.C.*	**Raymond W. Lonabaugh, NFSA** P.O. Box 126 Ridley Park, Pennsylvania 19078 (610) 521-4768 FAX (610) 521-2030	**Kent Mezaros** Quick Response Fire Protection 77 Pension Road, Suite 5 Manalapan, New Jersey 07726 (732) 786-9440 FAX (732) 786-9443
Southeast	*Alabama, Georgia, Mississippi, North Carolina, South Carolina,*	***Associate Director of Regional Operations-South*** **Wayne Waggoner, NFSA** PO Box 9 Andersonville, Tennessee 27705 (865) 755-2956 FAX (865) 381-0597	**Ken Brinkley** Music City Fire Sprinkler 238 Molly Walton Drive Hendersonville, TN 37075 (615) 826-7450 FAX (615) 826-9680
Tennesee	*Tennessee*		
Florida	*Florida, Puerto Rico*	**Lorrell Bush, NFSA** 2025 Droylsden Lane, Eustis, FL 32726 (352) 589-8402 FAX (561) 327-6366 Cell: (954) 275-8487	**Alan Wiginton** Wiginton Fire Systems 699 Aero Lane Sanford, FL 32771 Phone: 407.585.3205 FAX: 407.585.3282
Great Lakes	*Indiana, Michigan, Ohio, West Virginia, Kentucky*	**Ron Brown, NFSA** 1615 Cypress Spring Drive Fort Wayne, Indiana 46814 (845) 661-6534 FAX (260) 625-4478	**Richard A. Ackley** Dalmatian Fire, Inc. P.O. Box 78068 Indianapolis, Indiana 46278 (317) 299-3889 FAX (317) 299-4078
North Central	*Illinois, Minnesota, Wisconsin*	**Bob Kleinheinz, NFSA** 509 Dawes Street Libertyville, Illinois 60048 (914) 671-1975 FAX (847) 680-5992	**Gregg Huennekens - Chairman** United States Fire Protection, Illinois, Inc. 28427 North Ballard – Unit H Lake Forest, Illinois 60045 (847) 247-4755 FAX (847) 816-0098 **Fred Kroll - Alternate to Chairman** Alliance Fire Protection, Inc. 998 Forest Edge Dr Vernon Hills, IL 60061 Phone: 847.573.1122 FAX: 847.573.8243
South Central	*Arkansas, Iowa, Kansas, Louisiana, Missouri, Oklahoma, Texas*	**Chris Gaut, NFSA** NFSA Central Region Office 237 East Fifth St. # 135 Eureka, MO 63025 (845) 803-6426 FAX (636) 410-7700	**John Kauffman III** Kauffman Company 13225 FM529 –Ste A Houston, Texas 77041 (713) 937-4144 FAX (713) 937-4149 **Dennis C. Coleman** Engineered Fire Protection, Inc. 1615 South Kings Highway St. Louis, Missouri 63110 (314) 771-0033 FAX (314) 664-1619
Great Plains	*Colorado, Nebraska, North Dakota, South Dakota, , Utah, Wyoming*	**Terry Phillips, NFSA** 1829 Meadow Drive Cheyenne, Wyoming 82001 (914) 525-4396 FAX (307) 514-0406	**Gene Postma** Western States Fire Protection Company 7020 South Tucson Way, Unit A Centennial, Colorado 80112 (303) 792-0022 FAX (303) 790-3875
Southwest	*Arizona, California, Hawaii, Nevada, New Mexico*	**Bruce Lecair, NFSA** 25417 West Hyacinth Street Corona, CA 92883 (951) 277-3517 FAX (951) 277-3199	**Todd Little** RCI Systems, Inc. 252 South El Dorado Circle Mesa, Arizona 85202 (602) 894-8711 FAX (602) 894-8740 **Jack Thacker** Allan Automatic Sprinkler Corporation 3233 Enterprise St. Brea, California 92821 (714) 993-9500 FAX (714) 993-5708
Northwest	*Alaska, Idaho, Montana, Oregon, Washington*	**Suzanne Mayr, NFSA** 3411 North 19th Street Tacoma, WA 98466 (253) 208-8467	**James Boulanger** Patriot Fire Protection, Inc. 2707 70th Avenue East Tacoma, Washington 98424 (253) 926-2290 FAX (253) 922-6150
		VICE PRESIDENT OF REGIONAL OPERATIONS **Buddy Dewar, NFSA** 200 West College Avenue Tallahassee, Florida 32301 (850) 222-2070 FAX (850) 222-1752	DIRECTOR AT LARGE **Richard Ray** Cybor Fire Protection Company 5123 Thatcher Road Downers Grove, Illinois 60515 (630) 810-1161 FAX (630) 810-0685

>> CONTINUED FROM PAGE 7

ers and AHJs. In short, those who are responsible for making sure ITM is actually conducted. We can expect Bernie's work in this area to go a long way toward accelerating NFPA 25 enforcement around the country, spawning increased development of this very important sprinkler industry market segment.

These are just two examples of ongoing success stories I have experienced while Chairman. There are many others. Common Voices Coalition, our advocacy group, continues to bring a powerful fire sprinkler message to the public, while Fire Team USA travels the country providing free, meaningful training to fire and building officials, water purveyors, local government and other community stakeholders who have a vested interest in public safety.

As I close on my final "From the Boardroom" article as Chairman of the Board, I would like to recognize the contributions that each and every member of the Association's staff has made to our success. Please know that the work you do is very much appreciated by every member of the Board and that without your dedication we could not effectively move our industry the way we have. Through any adversity, always remember that our mission is a noble one, that of saving lives and property.

To the membership, I thank you for your continued support. I am truly privileged to have had the opportunity to serve you.

Gregg Huennekens, *Chairman*

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UL LISTED

By Don Pamplin

I saw a sign that said

"The Easiest Way Today To End-up with a Million Dollars on Wall Street Is To Start with Two Million."

It was a recent protest sign against Wall Street in New York City. The quote is an attempt at sarcastic humor that, in reality, is not really funny. There is a very serious financial problem in the investment world today and it's not just happening in the United States. It's a world-wide problem and it won't easily go away without inflicting huge financial pain and economic suffering.

The major problem is the "opaque and bloated derivative market" that, if not substantially corrected, could push the world into a very painful and lengthy global depression with devastating results far beyond most people's imagination. I'm not an expert on economics and stock market trading so I did some careful research to find out what this derivative mess was all about. How big is the derivative problem? The total derivative market exceeds 600 trillion dollars today which is ten times more than the Gross Domestic Product of all the combined countries in the world!

What is a derivative? It is basically a bet. Yes, the stock market is a bet, but at least when you buy a stock you own a part of a company that provides goods and/or services so it has some intrinsic value. When you own a derivative, you own nothing other than a worthless promise that you will make money on an ever increasing system of creating credit which has now moved globally beyond the norm. It's a super Ponzi System. Never before in the U.S. and global economy have derivative contracts/securities played such a significant role. Never before has the world economic systems been so dependent on the proliferation of derivative hedge promises to underpin the risk inherent in accepting significant and increasing credit risk. It's a terrible, frightening mess that everyone in this world will feel the impact of if it's not corrected with appropriate government controls that will harness the amount of debt that's accumulating faster than countries or individual families can sustain.

In the world of fire protection in the United States, there is another frightening mess that needs to be addressed by federal, state and local governments.

That mess is based on four significant factors:

1. Based on the 2010 National Fire Protection Association (NFPA) Needs Assessment of the U.S. Fire Service, the majority of U.S. Fire Departments cannot handle challenging incidents with the local resources they currently have. The NFPA Needs Assessment Report clearly shows that the fire service infrastructure needs (including staff training for firefighting activities) are very extensive, with smaller communities in the nation showing the greater need. For a complete listing of all these needs and the negative impact that results on providing proper fire protection when these needs are not met, see my September/October 2010 SQ article or read the NFPA Needs Assessment Report online from the NFPA Fire Analysis and Research Division.
2. The Fire Service in America has been and will for some considerable time continue to be experiencing massive firefighter layoffs across the country. This is especially true in fully-paid fire departments where local governments are trying to reduce budget expenses to offset increasing taxation levels that still do not provide adequate funding for appropriate firefighting activities. In addition to these layoffs, "brown-out programs" are being implemented across the country that create a "Russian Roulette" system of firefighting response to fires. This system is a significant gamble and no one comes out a winner. Big, impressive fire trucks don't rescue people from burning buildings and don't put out the fire by themselves. They need appropriate staff that is well-trained and properly equipped. Responding firefighters need to apply water on a fire before "flashover" occurs, which could happen within 4-5 minutes of fire ignition.

>> CONTINUED ON PAGE 12

Don Pamplin

As an NFSA Leadership in Public Safety Award recipient, Don is recognized throughout North America as a fire sprinkler advocate.

>> CONTINUED FROM PAGE 11

3. The following worrisome facts were revealed in the extensive 2010 State-by-State Residential Smoke Alarm Report issued by the United States Fire Administration:
   - 38 states have mandatory smoke alarm legislation in place;
   - 9 states do not have mandatory smoke alarm legislation in place;
   - 11 states recommend ionization, photoelectric or dual alarms;
   - 24 states don't reference any type of alarm that is acceptable;
   - 4 states say that only dual alarms are acceptable;
   - 3 states reference ionization, photoelectric, dual and CO2 as acceptable;
   - 4 states accept either ionization or photoelectric as acceptable;
   - 14 states only require new homes to be protected with smoke alarms (earliest date of requirement is 1994 and that means there is a lot of homes without smoke alarms);
   - 2 states mandate smoke alarms only for multiple or lodging occupancies.

   The current level of smoke alarm protection in the U.S. is not adequate to properly protect families in their single-family homes and other places of residence as identified in my 2010 November/December SQ Article. Still, the state and national homebuilder associations across America keep saying that residential fire sprinklers are unnecessary because smoke alarms are all that's needed to properly protect occupants. However, there are nine states that don't require any smoke alarms and homebuilders are building in those states without that protection. With smoke alarm deficiencies and confusing and/or absent requirements, those homebuilder association statements are terribly misleading and potentially very dangerous.

4. On October 28, 2009 at the International Code Development Hearings in Baltimore, MD., a historic vote was made by the International Code Council to require residential fire sprinkler protection in the 2012 International Residential Code. The American Fire Service, NFPA and many other organizations who were concerned about the number of people who were dying or suffering fire-related injuries in their homes celebrated this historic vote that would finally make American homes much safer for occupants. Approximately 80% of fire deaths and fire-related injuries occur in single-family homes, making that type of occupancy the most dangerous structure in the U.S., contrary to what the homebuilder associations are saying.

What has happened since then is a huge strategic move, motivated and supported by homebuilder associations across the country, to get states not to adopt the 2012 Residential Code and/or to get legislation passed at the state level that would prevent the local governments in that state from adopting local ordinances that would require fire sprinkler protection in homes in their jurisdiction. This type of legislation has been appropriately nicknamed "Killer Legislation" by those who clearly know what the end-result will be for the occupants of those unprotected homes. While the legislative scenario is always in a position of change, there are 18 states that have passed this type of legislation along with other states that have not taken any positive action to include sprinklers in the state adopted building or fire codes.

And when you also factor in the fact that there may not be any smoke alarm protection in that home or if there is smoke alarm protection, it may be the wrong kind and they may be unable to properly function (dead batteries, etc) and the occupants are still in the building... *the problem gets bigger!*

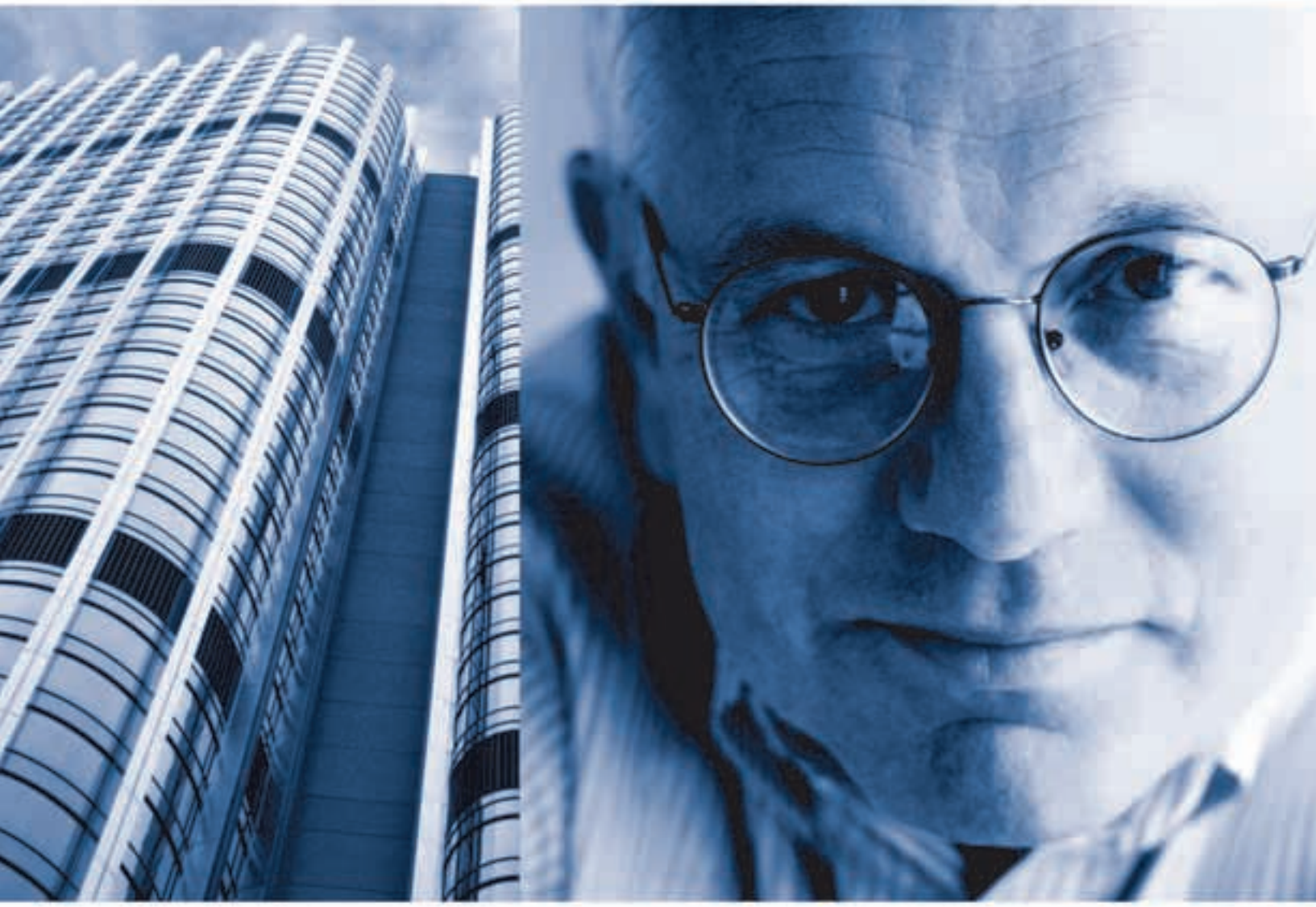
And when you also factor in the impact of firefighter layoffs and the resulting smaller fire crews that are faced with the next-to-impossible challenge of rescuing those occupants and putting the fire out before flashover occurs... *the problem gets still bigger!*

And when you factor in that those firefighters may not be properly trained in structural firefighting and their officers adequately trained in Incident Command Procedures, they may not have adequate fireground radios and they may not have adequate self-contained breathing apparatus (SCBA) to survive in the buildings they enter... *the problem gets much, much bigger!*

Is it any wonder that this whole scenario is a complete fiasco, loaded with a huge number of deadly variables that clearly means you and your family are not safe from fire in your own home?

Don Pamplin is the former NFSA Regional Manager for the Pacific Northwest and can be reached with comments and suggestions at firecon@shaw.ca

They share my passion for perfection.



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New NFSA On-Line Seminars to be Offered as Series and Set Curriculum

By James D. Lake

In 2012 NFSA will begin offering training seminars in a related subject series and in a set curriculum.

The challenge with on-line seminars is the time frame in which durable learning can truly be attained.

During in-class seminars there is ample time for interaction and discussion throughout a day or multiday period to cover larger and more detailed subject. Because of their very nature, on-line seminars do not easily facilitate discussion and the format is not conducive to subjects requiring lengthy multi-hour single sessions.

However, there is a way that larger and detailed subjects and subjects that are covered in a single or multiple day in-class seminars can be converted over to on-line learning. The answer lies in seminar series and set curriculum studies. •

Seminar Series

A seminar series is just that, a series of related independent seminars on a specific subject. For example, NFSA is presently putting together an on-line seminar series of Technical Tuesday presentations on standpipe systems.

The series is divided into 12 independent yet related seminars. In this particular seminar series the session subjects will be:

SEMINAR 1
Introduction to Standpipes

SEMINAR 2
Class II Standpipe Systems

SEMINAR 3
Class I and Class III Standpipe Systems

SEMINAR 4
Pressure Control in Buildings with Standpipe Systems

SEMINAR 5
Pumps and Standpipe Systems

SEMINAR 6
NFPA 20 and NFPA 14 for High Rise Buildings

SEMINAR 7
Dry Standpipe Systems

SEMINAR 8
Manual Standpipe Systems

SEMINAR 9
Hanging, Bracing and Protection of Standpipe System Piping

SEMINAR 10
Horizontal Standpipes and Lateral Piping

SEMINAR 11
Acceptance Testing of Standpipes

SEMINAR 12
Periodic Inspection, Testing and Maintenance of Standpipe Systems

Each seminar is designed to be an independent component of the series and there is no prerequisite to attend one seminar before another. Each seminar has its own learning objectives and assessment methods and continuing education credits. This is similar to the way Technical Tuesday seminars have been offered over the years. The difference is that this series of seminars covers the single larger topic of standpipes from basic information through

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James D. Lake
Vice President of Training and Education

NFSA
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Technical Tuesday 2011 Onlines

January to June 2012

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9:30AM Central/
8:30AM Mountain/
7:30AM Pacific/
2:30PM Greenwich

JANUARY 10, 2012
Introduction to Standpipes - Basic
- Karl Wiegand, E.I.T.
Standpipe systems are required in buildings that are four stories or more to fight fires in these larger structures. This seminar serves as an introduction to standpipe systems, NFPA 14, and this series of standpipe lessons. It covers the general types, classes, and components of these systems as well as typical layouts used for standpipe systems.

JANUARY 24, 2012
Class II Standpipe Systems - Basic
- Kevin J. Kelly, P.E.
NFPA 14 defines three different classes of standpipe systems. The Class II Standpipe System is the simplest of the three, being designed for trained personnel in the building that arrive before fire department apparatus. This seminar will discuss the purpose, design and calculation of Class II systems including how to determine where hose connections need to be located and pressure limitations on the water discharging from the system.

FEBRUARY 7, 2012
Class I and Class III Standpipe Systems - Basic
- Jeff Hugo, CBO
This seminar will cover the rules for installing Class I and Class III standpipe systems. These rules come from several sources and will explore topics such as outlet location, hydraulic calculations, and pressure rules. Several common scenarios involving Class I and Class III standpipes will be discussed. Examples of calculation procedures will also be demonstrated. Attending this seminar will increase the understanding of when and where these systems are installed, and how to calculate them.

FEBRUARY 21, 2012
Pressure Control in Buildings with Standpipe Systems
- Intermediate - Russell P. Fleming, P.E.
This seminar will begin with a review of the pressure requirements for standpipe systems, and will address the ways in which pressure is controlled for the use of standpipe systems by fire departments and, in some cases, the general public. The definitions of various terms like pressure reducing, pressure control, pressure restricting, direct acting and pilot operated will be provided, with the limitations of the corresponding devices clarified. The rules relating to configurations of zones, valves, pumps and drains will be explored, with examples provided of the arrangements allowed by the standards.

MARCH 6, 2012
Pumps and Standpipe Systems - Intermediate
- Kenneth E. Isman, P.E.
This seminar will focus on selecting fire pumps to match the flow and pressure demand requirements of the standpipe system without over pressurizing portions of the system. This will include tall buildings with significant elevation head to overcome and buildings in seismic zones with two or more water supplies at different pressures. Where high pressure is a concern, the option of splitting the building into multiple vertical zones will be explored by using multiple pumps and by using a single pump with the master pressure reducing assembly permitted by NFPA 14.

MARCH 20, 2012
NFPA 20 and NFPA 14 for High-Rise Buildings - Advanced
- James D. Lake
NFPA 20 and NFPA 14 each have different requirements for how to provide water supplies for standpipe systems in high-rise buildings. This seminar will show how the requirements of each of these standards can be put together to form a comprehensive standpipe system that meets both NFPA 20 and NFPA 14.

APRIL 3, 2012
Hanging, Bracing and Protection of Standpipe System Piping
- Basic/Intermediate - Victoria B. Valentine, P.E.
Protecting the piping for any fire protection system, including standpipe systems, is important. One aspect of this is proper hanging and gravitational support of the piping system. Another aspect is protection from environmental conditions such as freezing or earthquakes. In addition, protection from mechanical damage and fire scenarios will be discussed.

APRIL 17, 2012
Manual Standpipe Systems - Basic - Jeff Hugo, CBO
This seminar will cover the rules of installing and designing manual standpipe systems. It will cover the definitions of manual dry and wet systems and where these systems can be used, as well as some of the critical components of the system. There will also be a discussion of simple calculations and examination of the water supply for these systems from local fire department equipment.

MAY 8, 2012
Dry Standpipe Systems - Basic - Kevin J. Kelly, P.E.
There are three different types of dry standpipe systems: automatic-dry systems, semi-automatic-dry systems, and manual-dry systems. This seminar will define each of these systems, discuss how they work, when they should be selected, and cover the special design and hydraulic calculation requirements for each of the dry systems.

MAY 22, 2012
Horizontal Standpipes and Lateral Piping - Intermediate
- Kenneth E. Isman, P.E.
Horizontal standpipes are treated differently than lateral runs of pipe to standpipe outlets by NFPA 14. This seminar will cover the differences between these two situations for both layout considerations and hydraulic calculations. In addition, this presentation will cover the different protection rules for these different piping situations.

JUNE 5, 2012
Acceptance Testing of Standpipes - Intermediate
- Karl Wiegand, E.I.T.
System acceptance tests are important for making sure that a newly installed system is working correctly and establishing a baseline of performance for all future system tests. This seminar will serve as a walk through for acceptance test requirements of NFPA 14.

JUNE 19, 2012
Periodic Inspection, Testing and Maintenance of Standpipe Systems - Basic - Bernie Arends
Standpipes are often neglected in the periodic inspection, testing, and maintenance of fire sprinkler systems. However, this key component is crucial to the firefighting tactics in multi-story structures and can dramatically impede efforts if the standpipe system is not functioning properly. This seminar will review the requirements of NFPA 25, Chapter 6, that deal with the upkeep for standpipe systems to operate effectively.

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installation and inspection.

Set Curriculum

A set curriculum is to take a seminar that would be typically given in a one-day or multi-day format and break it into its smaller modules and deliver the entire seminar over successive days or weeks. For example, NFSA will be offering a set curriculum seminar on Hydraulics in 2012.

The proposed seminar is divided into 9 modules as follows:

MODULE 1
Introduction to Hydraulics

MODULE 2
Basic Hydraulics

MODULE 3
Hydraulic Calculation Theory, Part 1

MODULE 4
Hydraulic Calculation Theory, Part 2

MODULE 5
First Full System Hydraulic Calculation

MODULE 6
Computer Input and Output

MODULE 7
Residential Systems

MODULE 8
Complex Operating Areas and Non-Uniform Layouts

MODULE 9
Homework review and final comments

Unlike the Seminar Series, each module is designed to be a component of the curriculum and each module is a prerequisite for the subsequent module. All modules must be completed satisfactorily in order to obtain the necessary continuing education credits. Each seminar has its own learning objectives and assessment methods. This is similar to the way Technical Tuesday seminars have been offered over the years. The difference is that this series of seminars covers the single larger topic of hydraulics from basic information through installation and inspection.

This curriculum would be presented over a 9-week period with homework and assessment tools used to track progress. The benefit of a seminar series is that the continuing education credits can be obtained without travel or lengthy time out of the office.

Look for more subjects to be offered in series or curriculum as NFSA continues to develop learning opportunities that meet the demands of the industry and the needs of learners.

If you have any questions or suggestions on NFSA's learning opportunities, please do not hesitate to contact me at 617-372-6214.

Please mark your calendars and plan to join us at the NFSA Annual Seminar in beautiful Los Cabos, Mexico from May 3- 5, 2012. The site will be the fabulous Hilton Los Cabos Beach & Golf Resort.
Visit nfsa.org for details.

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Suction Pipe Sizing

By Kenneth E. Isman, P.E.

NFPA 20 contains a number of requirements that need to be taken into consideration before the size of the suction pipe to a fire pump can be determined. All of the rules in NFPA 20 need to be met at the same time, so even if one or two of the rules are met, the user may be forced into a different decision because of a third or fourth rule. Section numbers from the 2010 edition of NFPA 20 will be referenced in this article. Previous editions have the same concepts, but the sections numbers may be different depending on the edition.

The suction pipe is not required to be the same size from beginning to end. It is possible to use different sizes in different locations in order to meet all of the rules. However, it may also be advantageous to keep the pipe size the same to simplify installation and maximize purchasing opportunities. Ultimately, any combination of pipe sizes is allowed as long as all of the following issues are considered:

Maximum Flow

Before diving into the rules for sizing the suction pipe, the concept of "maximum flow" needs to be discussed. NFPA 20 requires the user to evaluate the water supply and make sure that it can provide a certain maximum flow. This maximum flow is generally 150% of the rated flow of the pump (see section 4.6.5.1) but there are times when the water supply cannot provide that much water.

NFPA 20 recognizes (in sections 4.6.5.2, 4.6.2.3.1, and others) that it is acceptable for the water supply to reach its maximum flow at less than 150% of the rated flow as long as the water supply can deliver whichever of the following two conditions is greater:

- The flow demand of the fire protection system.
- The rated flow of the fire pump.

Throughout this article, the author will refer to the maximum flow. Each time this term is used, it is intended to be 150% of the rated flow of the pump or the lower flow representing the maximum flow available from the water supply, which is the greater of the flow demand of the fire protection system or the rated flow of the pump.

Suction Pipe Definition

The suction pipe is defined by NFPA 20 (in section 4.14.1.1) as, "The pipe, valves, and fittings from the pump suction flange to the connection to the public or private water service main, storage tank, or reservoir, and so forth, that feeds water to the pump." This definition basically covers everything from the suction flange of the pump all the way back to the water supply.

It is possible for water supplies to be used for fire protection as well as industrial and domestic demands. Where the piping supplies both fire protection and other demands, it is typical to consider the suction piping as only going to the point where the service becomes dedicated to fire protection use. In this case, the piping carrying water for multiple uses is considered the "private main" and the suction pipe runs between this private main and the pump.

Pipe Close to the Pump

Table 4.26(a) of NFPA 20 contains requirements for minimum suction pipe sizes for the portion of the suction pipe close to the pump. Note that these rules do not apply to the entire length of suction pipe discussed above. Instead, the minimum pipes in this table have been selected to help slow the water down as it enters the suction flange. Farther away from the pump, the velocity is less of an issue. See the discussion on velocity later in this article for more information regarding the speed of the water and its effect on the pump's operation.

The pipe sizes in Table 4.26(a) are intended to be applied to the portion of the suction pipe that is within a distance of pipe equal to ten times the diameter of the pipe. For example, the Table has 8 inch pipe listed for pumps rated at 1000 gpm. This means that for a pump rated at 1000 gpm, the suction pipe within 80 inches of

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Kenneth E. Isman, P.E.

Vice President, Engineering for NFSA. Ken represents NFSA on the NFPA Technical Committee on Sprinkler System Discharge Criteria

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the suction flange needs to be at least 8 inch in size or larger. Farther away from the pump, smaller pipe could be used, but only if all of the other rules discussed in this article are also met, including the positive pressure issue discussed below.

The application of the minimum size of pipe in the Table to the portion of the suction piping that is within 10 times the diameter of the pipe is discussed twice in NFPA 20. There is a dagger next to the word "Suction" in the Table. This dagger is explained at the bottom of the Table where the user is told that the minimum size only applies to a portion of the suction pipe. The other location for this rule is in section 4.14.3.4, where the user is specifically told that the portion of pipe to apply the minimum size of the Table is ten times the diameter of the pipe.

Positive Pressure

NFPA 20 requires that suction pipe be sized so that at maximum flow, the water arrives at the pump suction flange at a positive gage pressure (see section 4.14.3.1). This is in addition to the minimum pipe size requirements of Table 4.26(a) discussed earlier in this article. There is an exception to this rule for tanks, which will be discussed later in this section of this article.

For every fire pump system, someone needs to perform a calculation of the pressure losses between the water supply and the pump. Pressure losses include friction loss and elevation loss (or gain depending on the elevation of the pump in relation to the water supply). The available pressure at the maximum flow from the water supply needs to be compared to the friction and elevation losses. The pump installation must be arranged so that the water supply is delivering water to the pump at a positive gage pressure. The pump is not allowed to pull the water from the water supply. In order to meet this rule, it might be necessary to use larger pipe sizes than those discussed in Table 4.26(a).

For tanks where the bottom of the tank is the same elevation as the pump, the requirements change just a little. In this case, the water is allowed to arrive at the pump suction flange at maximum flow at a gage pressure of -3 psig (see section 4.14.3.2). However, this calculation is required to be done with the water level in the tank at the lowest level of water being used for fire protection purposes (because the water supply needs to work at the end of a fire, not just at the beginning). Since the elevation head created by water near the bottom of the tank is close to zero, this means that the practical application of this rule is that the maximum friction loss between a pump and tank is 3 psi. If the friction loss is going to exceed 3 psi, the tank will need to be elevated above the pump so that additional head pressure can be developed to deliver the water to the pump with a minimum suction pressure of -3 psig.

Elevation pressure changes are calculated by taking the change in elevation (in feet) between the location where the water supply pressure was measured and the centerline of the fire pump and multiplying it by the constant 0.433. If the fire pump is above the water supply, the elevation pressure change is subtracted from the residual pressure because the water lost energy as it went up the hill. If the pump is below the water supply, then the elevation pressure change is added to the residual pressure because the water gained energy as it went down.

Friction loss is generally calculated in fire protection systems using the Hazen-William formula. This article will not go into detail on how to use the Hazen-Williams formula, but other NFSA resources are devoted to this subject if the reader needs more information. Friction losses are always subtracted from the residual pressure because the water always loses energy as it flows down the pipe and rubs against the pipe wall.

Net Positive Suction Head

NFPA 20 defines net positive suction head as, "The total suction head in feet of liquid absolute, determined at the suction nozzle, and referred to datum, less the vapor pressure of the liquid in feet absolute." Outside of civil engineers who work with fluid flow for a living, most people don't understand this definition. For the sake of simplicity, we can redefine net positive suction head as the energy of the water at the suction flange of the pump minus the vapor pressure of the water.

NFPA 20 does not have any requirements to calculate the net positive suction pressure, but NFPA 20 does require that you use fire pumps in accordance with the manufacturer's instructions. Most manufacturers require some minimum net positive suction head for their pumps. Since each pump is different, you should understand what the net positive suction head is for the model pump that you want to use.

Since we deal with pressure in psi in fire protection systems more often than head in feet, it may be helpful to convert the net positive suction head from feet to psi. This is easily done by multiplying the head by 0.433. So, if a manufacturer says that a specific model pump needs a net positive suction head of 20 ft, it means that you need to provide an absolute pressure of at least 8.7 psia (20 x 0.433 = 8.7).

The pressures we have been calculating so far in this article have been gage pressures. To convert a gage pressure to absolute pressure, you add the atmospheric pressure (14.7 psi near sea level). Then, to get the net positive suction head, you have to subtract the vapor pressure of the liquid. The vapor pressure for water varies between 0.12 and 0.95 psia between 40 degrees and 100 degrees Fahrenheit. For simplicity, and to be conservative, use 1 psia for the vapor pressure of water and your pump installation will be fine. This means that the net positive suction head can be calculated in psia with the following formula:

$$NPSH = P_S + P_{ATM} - P_{Vapor}$$

P_S = the suction pressure (gage pressure) calculated using the methods discussed in this article
P_{ATM} = atmospheric pressure, usually 14.7 psi near sea level
P_{Vapor} = vapor pressure of water, use 1 psia for simplicity

For example, if we had a fire pump arrangement where the gage pressure was 4 psi (gage) at maximum flow, the NPSH at this flow would be 17.5 psia (4 + 14.7 – 1 = 17.5). This would be more than enough to satisfy a pump manufacturer's require-

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ment to meet the minimum NPSH of 20 ft (8.7 psia) discussed earlier. In fact, it would be sufficient for any NPSH minimum up to 41 ft (17.7 psia). Since almost all pumps have NPSH requirements lower than 41 ft, this particular example would work fine.

While the net positive suction head rarely causes problems for fire pump suction pipe sizing, it is a variable that should be considered when determining the size of the suction pipe. Make sure that you understand the NPSH requirement of the manufacturer and provide the minimum NPSH required.

Velocity

The last of the rules regarding the selection of suction pipe sizes is the requirement for the suction pipe to be selected so that the portion close to the pump has water at maximum flow moving at a speed of 15 ft/s or less (see 4.14.3.3). This rule only applies to the length of pipe starting at the suction flange and going back towards the water supply a distance of 10 times the diameter of the pipe. Farther away from the pump, the water can be moving faster and it will not affect the operation of the pump.

The velocity rule is important because the water entering the suction flange of the pump needs to be calm so that the impeller is loaded evenly as it spins. If the water is going too fast when it enters the impeller of the pump, the turbulence caused by the greater speed might load the impeller unevenly and cause the pump to be out of balance as it spins.

Calculating the velocity of water flowing in pipes is not too difficult, but the good news is that you do not really ever need to make this calculation. If you stick with the minimum pipe sizes in Table 4.26(a), you will maintain the proper velocity of the water. Section 4.14.3.3 was really only added to the standard to show people how the committee came up with the pipe sizes in Table 4.26(a). The only time that you might need to calculate the velocity of the water in the suction pipe would be if you had multiple pumps (flowing simultaneously) that shared suction pipe. In that case, piping close to the suction flanges of the pumps carrying water for multiple pumps would need to be calculated. However, this situation is rare because in most multiple pump situations, the run of pipe to an individual pump exceeds ten times the diameter of the pipe, and since this is the only portion of the pipe to which the rule applies, just using the size in the Table is sufficient.

Some people have calculated the velocity of the water at maximum flow using the sizes in Table 4.26(a) and found that under certain conditions (thickly lined pipe with certain size pumps), the velocity goes up to 15.3 ft/s. These people have expressed concern that the size of the pipe in the table needs to be increased. The NFPA Committee on Fire Pumps has studied the issue and dismissed these concerns. The intent of NFPA 20 is to use the pipe sizes in the Table. A velocity of 15.3 ft/s is indistinguishable from a velocity of 15 ft/s. The committee points out that a velocity of 15.3 ft/s rounds off to 15 ft/s, which is the only level of precision referenced in the standard. The committee intentionally did not set the limit at 15.0 ft/s because that implies a level of accuracy not intended by the committee. In short, the committee has said, just use the sizes in the table and don't worry about the 15 ft/s limit.

Water Supply Data

In order to insure that water arrives at the pump suction flange at a positive pressure, a person needs to know the residual pressure available at the water supply at the maximum flow. This information can be obtained by performing a flow test of the water supply, but then the results of the flow test should be reduced for reasonable daily and seasonal fluctuations. The pump needs to work whenever there is a fire, not just at the time the flow test was conducted, so reasonable reductions need to be taken into account.

Some water utilities will provide pressure and flow information without the need to perform flow tests. These results can usually be used without reductions because the water utility builds safety factors into the models they use to predict flow and pressure availability in their supplies. If you have any question about

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such safety factors, speak with representatives of your water utility when you get the data from them.

For atmospheric tanks feeding fire pumps, the water level in the tank will create the pressure at the water supply. As stated before in this article, the evaluation of the pressure of the water in the tank has to be done at the lowest level of water in the tank for fire protection because the fire protection system has to work near the end of the fire, not just at the beginning. If the water in the tank does not have enough pressure as it discharges the tank, it may be necessary to elevate the bottom of the tank or to install a taller tank and not count on the water at the bottom of the tank for fire protection.

Example 1

Consider a fire pump rated at 750 gpm connected to a city water main. Flow tests of the main were conducted and adjusted to reasonable data points of a static pressure of 70 psi and a residual pressure of 50 psi at 1125 gpm. The pump is located in a pump house 35 ft above the fire hydrant where the flow tests were conducted. The suction pipe consists of 700 ft of 6-inch Class 52 lined ductile iron (distance includes all equivalent lengths of fittings), a backflow preventer (with 7 psi friction loss at 1125 gpm), and 22 ft of 6-inch schedule 40 steel pipe (includes all equivalent lengths of fittings) as shown in Figure 1. Is this suction pipe size acceptable for this pump installation? *(see Figure 1)*

The maximum flow for this situation will be 1125 gpm since this is the flow equivalent to 150% of the rated flow of the pump and the water supply is capable of providing this flow. The friction loss in the 700 ft of lined ductile iron pipe is 21 psi. The friction loss in the backflow preventer is 7 psi. The friction loss in the 22 ft of schedule 40 steel pipe in the pump house is 1 psi. This makes the total friction loss 29 psi (21 + 7 + 1 = 29). The elevation change is 15 psi (0.433 x 35 = 15). Since the pump is above the water supply, the elevation change will be subtracted from the residual pressure.

The suction pressure at maximum flow will be determined by taking the residual pressure at the water supply and subtract-

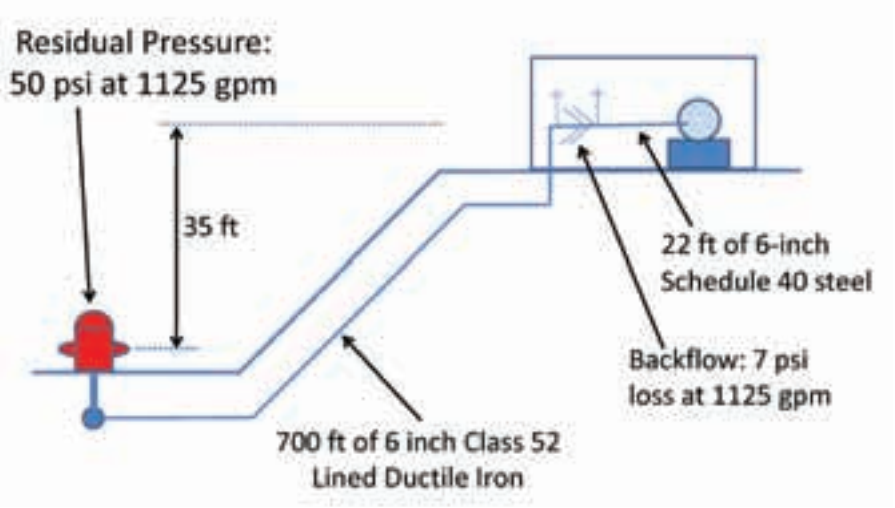

Figure 1 – Suction Pipe Arrangement for Example 1

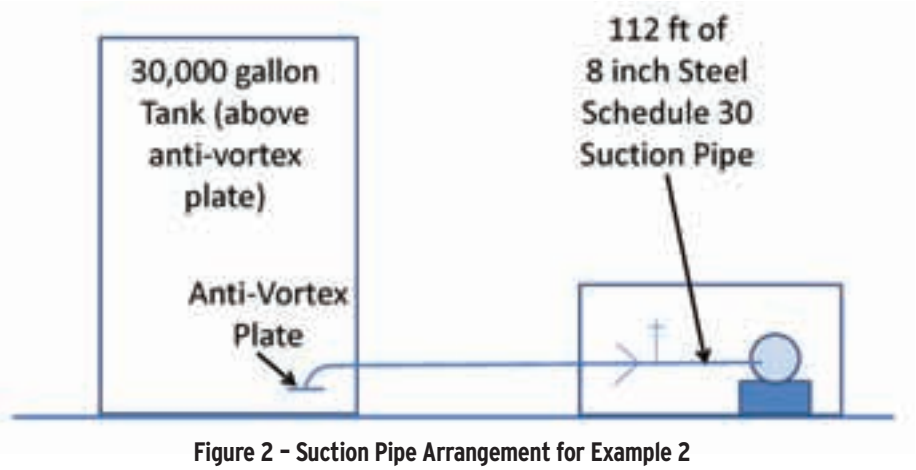

Figure 2 – Suction Pipe Arrangement for Example 2

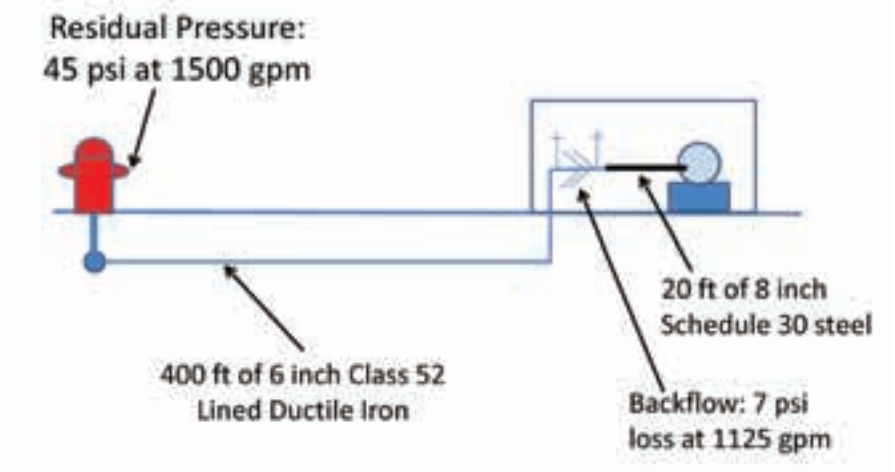

Figure 3 – Suction Pipe Arrangement for Example 3

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ing the friction loss and elevation change, which in this case will yield a pressure of 6 psi (50 – 29 – 15 = 6). This pressure is acceptable since the only requirement from NFPA 20 is that the pressure be a positive gage pressure (6 is a positive number).

Example 2

A fire pump rated at 1000 gpm is being used for a standpipe system with a demand of 1000 gpm and a duration requirement of 30 minutes. The water supply for this system will be a tank with 30,000 gallons above the anti-vortex plate in the tank. The pump and tank are on the same elevation as shown in Figure 2 with 112 ft of 8-inch schedule 30 steel pipe between the pump and tank (length already includes equivalent lengths of fittings and valves). Is this an acceptable size for the suction pipe? *(see Figure 2)*

The maximum flow for this situation is 1500 gpm (150% of the pump's rated flow). The friction loss in the 8-inch suction pipe when water is flowing at 1500 gpm is 2.1 psi. As the last of the water leaves the tank (water level at the anti-vortex plate) the elevation head in the tank will be 0 psi (0.433 x 0 = 0), making the residual pressure of the water in the tank 0 psi. The suction pressure at the pump at a flow of 1500 gpm will be -2.1 psi (0 – 2.1 = -2.1).

This pressure is acceptable because it is greater than -3 psi. Note that this pressure would only be reached during the very end of a fire. At any other time in the fire, the water level would be higher in the tank and the suction pressure at the pump would be higher.

Example 3

Consider a fire pump rated at 1000 gpm connected to a city water main. Flow tests of the main were conducted and adjusted to reasonable data points of a static pressure of 70 psi and a residual pressure of 50 psi at 1500 gpm. The pump is located in a pump house at the same elevation as the fire hydrant where the flow tests were conducted. The suction pipe consists of 400 ft of 6-inch Class 52 lined ductile iron (distance includes all equivalent lengths of fittings), a backflow preventer (with 7 psi friction loss at 1500 gpm), and 20 ft of 8-inch schedule 30 steel pipe (includes all equivalent lengths of fittings) as shown in Figure 3. Is this suction pipe arrangement acceptable for this pump installation? *(see Figure 3)*

The maximum flow for this situation will be 1500 gpm since this is the flow equivalent to 150% of the rated flow of the pump and the water supply is capable of proving this flow. The friction loss in the 400 ft of lined ductile iron pipe is 20.8 psi. The friction loss in the backflow preventer is 7 psi. The friction loss in the 20 ft of schedule 30 steel pipe in the pump house is 0.4 psi. This makes the total friction loss 28.2 psi (20.8 + 7 + 0.4 = 28.2). The elevation change in this example is 0 psi since the pump and fire hydrant are on the same elevation.

The suction pressure at maximum flow will be determined by taking the residual pressure at the water supply and subtracting the friction loss, which in this case will yield a pressure of 21.8 psi (50 – 28.2 = 21.8). This pressure is acceptable since the only requirement from NFPA 20 is that the pressure be a positive gage pressure (21.8 is a positive number).

Example 4

A fire pump rated at 750 gpm is being installed on a fire protection system with a flow demand of 800 gpm. The water supply for the pump is a city water main. Flow tests of the main were conducted and adjusted to reasonable data points of a static pressure of 40 psi and a residual pressure of 20 psi at 1100 gpm. The water utility has a rule that the pressure in their mains cannot be taken below 20 psi. What is the maximum flow for this arrangement?

In this case, the water supply cannot provide 150% of the rated flow of the pump (1125 gpm). However, the water supply can provide the rated flow of the pump of 750 gpm and the fire protection system demand of 800 gpm. Therefore, the maximum flow of 1100 gpm from this water supply will be acceptable. A flow of 1100 gpm would be used to size the suction pipe using the principles outlined in this article as long as water could still be provided to the pump suction flange at this flow at a positive pressure. If not, some lower flow would become the maximum, recognizing that you would not be allowed to go below the flow of 800 gpm since that is the greater of the system demand or the rated flow of the pump.

Conclusion

For every fire pump installation, a calculation of the suction pressure at maximum flow needs to be performed. This calculation is in addition to any hydraulic calculations performed at the system demand.

For computer programs that do hydraulic calculations, do not assume that the computer is performing this calculation at maximum flow. Most of the computer programs being used for fire sprinkler systems will provide the suction pressure at the system demand flow. To get the computer to do the calculation at maximum flow, you need to manually change the input to the maximum flow. Don't take your computer program for granted. Always check to make sure that this calculation is performed correctly, or do the calculation yourself by hand. The calculation is not difficult, as this article has shown. You just need to use the Hazen-Williams formula and make sure to account for changes in elevation.

NFSA RESOURCE CENTER

The Voice of the Fire Sprinkler Industry

The Fire Sprinkler Guide – 2009 Codes Edition is Now Available!

Produced by NFSA, this second edition of The Fire Sprinkler Guide defines those sections of the three model building codes, the Life Safety Code (NFPA 101) and International Building Code where fire sprinkler systems are required, including partial requirements and construction incentives. The guide includes comparison tables to clarify many of the code requirements. The guide is a valuable tool for architects and engineers, plan reviewers, fire and building inspectors, as well as sprinkler contractors, and serves well as a workbook for students at the NFSA's Design Advantage Seminar. With almost 400 pages of text, this book is a "must have" for anybody that performs hydraulic calculations of fire sprinkler systems or performs plan review and approval of hydraulic calculations.

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A Fire Sprinkler Guide to the 2012 International Existing Building Code (IEBC)

By Jeff Hugo, CBO

The International Existing Building Code (IEBC) is one of the model codes in the ICC family of codes. The intent of this code is to provide alternative approaches to remodeling, repair or alteration of existing buildings. While the IBC has Chapter 34 to deal with existing buildings, the IEBC is comprehensive, thorough and specific to the portion of the building being updated.

It is necessary to regulate construction in existing buildings that undergo additions, alterations, renovations, extensive repairs or change of occupancy and it is necessary to be aware of these costs. Using the new construction provisions from the IBC can be costly and confusing for an existing structure, especially when dealing with only parts of the building. This code allows for maintaining basic levels for fire prevention, structural and life safety features while controlling design decisions and costs.

The IEBC provides three main options for the user in dealing with rehabilitation of existing buildings.

1. Section 301.1.1, Prescriptive Compliance Method: Work for alteration, repair, change of occupancy, or addition of all existing buildings shall be done in accordance with Chapter 4.

2. Section 301.1.2, Work Area Compliance Method: Work for alteration, repair, change of occupancy, addition or relocation of all existing buildings shall be done in accordance with Chapters 5 through 13.

3. Section 301.1.3, Performance Compliance Method: Work for alteration, repair, change of occupancy, or addition of all existing buildings shall be done in accordance with Chapter 14.

Alteration, repair, change of occupancy, relocation, or addition are terms that are defined by Chapter 2 of the IEBC and are used throughout the code to define the activity or work that is going on. An historic building is also defined and such building shall comply with the definition to be able to use the requirements of the IEBC.

In this article I will discuss the fire sprinkler and standpipe requirements for each compliance method. It should be emphasized that each compliance method has its own "tract" and the user must (unless stated by a code section) stay within the parameters of the specific compliance method.

Prescriptive Compliance Method - Chapter 4 of the IEBC

Work in any existing building brings up the question of used materials. Materials that are already installed and are in use in a building that is in compliance with requirements or approvals that were in effect at the time of their installation shall be permitted to remain in use. For example, an existing fire sprinkler system piping that is in operation and is not in the scope of work can be left alone. However, the building official with cause could determine the piping to be unsafe per Section 115 of the IEBC.

New materials permitted by the codes or standards for new construction shall be used when the installation is new or when replacing existing components. The IEBC in this section also states that like materials shall be permitted for repairs and alterations, provided that no hazard to life, health or property is created.

When additions are constructed or alterations are made to any building or structure, they shall comply with the requirements of the IBC for new construction. The existing building together with its addition(s) must also comply with the height and area provisions of Chapter 5 of the IBC. In no case should the addition or alteration of the existing building exceed the requirements of the IBC. Fire sprinklers and standpipes, if required by the IBC, will be required to be installed in the addition or alteration.

A change of occupancy is also required to comply with the IBC for that portion of the structure or building. However,

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Jeff is NFSA's Manager of Codes

Jeff Hugo, CBO

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the building official can relieve the user from the requirements of the IBC if it is determined (by the building official) that the new occupancy is equal or less in fire and life risk than the existing occupancy.

Work Area Compliance Method - Chapters 5 through 13

The work compliance method is by far the most used option in the IEBC. Its requirements make up most of the text.

When this compliance method is chosen, the user must start at Chapter 5 to determine the requirements that apply to the work area. Alterations, repairs, change of occupancy, relocation, additions and historic buildings all have specific paths that originate from Chapter 5. The user must also understand the term "work area" which is defined in Chapter 2. "Work area" is used frequently to define the scope of the code requirements that apply.

Repairs shall be in compliance with Chapter 6. Repairs include the patching, restoration or replacement of damaged materials, elements, equipment or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing load or performance requirements. Repairing of systems outside of the work area that are part of the intended repair shall not trigger the requirements of Chapters 7-11. Repairs to fire sprinkler systems and/or standpipes shall be made to maintain the level of fire protection that was provided when the system was installed.

Alterations are classified in three different levels:

1. **Level 1 Alteration:**
   Removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose. Chapter 7

2. **Level 2 Alteration:**
   Reconfiguration of a space or spaces. The addition or elimination of any door or window. The reconfiguration or extension of any system, or the installation of any additional equipment. Chapter 8 and including all the requirements of Chapter 7.

3. **Level 3 Alteration:**
   When the work area exceeds 50 percent of the aggregate area of the building. Chapter 9 and including all the requirements of Chapters 7 and 8.

When Level 1 Alterations are performed in a work area it usually doesn't trigger the installation of fire sprinklers. For example, this level of work is typically "paper and paint" or a franchise update when a new brand is established. This level of alteration isn't constructing new walls, but rather new wall paper. However, when these alterations are made, it shall not diminish the level of fire protection already installed.

Level 2 Alterations can start crossing the threshold of fire sprinklers. Notice that a Level 2 Alteration must also contain the requirements of a Level 1 Alteration. This recognizes that when a higher level of work is performed the lower or lesser level is included within the scope of the work.

When the Level 2 Alteration work area contains existing vertical openings, and when the vertical openings are required by the IBC or IFC to have enclosures, the IEBC in Chapter 8 requires the existing vertical opening to have rated enclosures installed. For example, existing open stairs will need to be enclosed.

In Level 2 Alterations, fire sprinklers shall be installed:

- In high rise buildings, when the work area corridors and/or exits have more than one tenant or more than 30 occupants and when the work area exceeds 50% of the floor area of the floor.

- In use groups A, B, E, F-1, H, I, M, R-1, R-2, R-4, S-1 and S-2 when the work area corridors and/or exits have more than one tenant or more than 30 occupants, and if the work area use group is required to be sprinklered according to the IBC, and if the work area exceeds 50% of the floor.

- Except when the residential occupancies are three stories or less

- Except when the building does not have the municipal water supply to provide the floor(s) with water without using a new fire pump, the work area shall be provided with automatic smoke detection in all occupied spaces.
- When the work area includes a windowless story, and if the municipal water supply can provide to the floor(s) without using a new fire pump.
- In work areas of Table 1, provided the municipal water supply can provide to the floor(s) without using a new fire pump.

Table 1	
Section	Subject
402.10	Covered and open mall buildings
403.3	High-rise buildings
404.3	Atriums
405.3	Underground structures
407.6	Group I-2
410.7	Stages
411.4	Special amusement buildings
412.4.6, 412.4.6.1 412.6.5	Aircraft hangers
415.10.11	Group H-5 HPM exhaust duct
416.5	Flammable Finishes
417.4	Drying rooms
507	Unlimited area buildings
509.4	Incidental uses
1028.6.2.3	Smoke-protected assembly seating
IFC	Section 903.2.11.6

In Level 2 Alterations, sprinklers can provide trade-ups in the following:

- Fire sprinklers (installed throughout the building) will eliminate vertical enclosures in three story (or less) B, E, F, M, R-1 R-2 and S occupancies.

- Fire sprinklers also reduce the corridor rating (see IBC Table 1018.1) in every story that sprinklers are installed (provided sprinklers are installed in the stair landing of the floor below and the intermediate landings).

- Automatic heat detection is not required.

- Opening protection is not required for openings adjacent to fire escapes.

- Mezzanines are not required to have two independent exits if the building is fully sprinklered and the travel distance to an exit is less than 100 ft.

>>CONTINUED FROM PAGE 26

- In other than Group A and H, existing dead end corridors can be up to 70 ft. and new dead end corridors can be up to 50 ft.

In Level 2 Alterations, standpipes shall be installed according to the IBC:

- Where the work area has corridors or exits shared by more than one tenant and is over 50 ft. from the highest or lowest level of fire department access.

The criteria for Level 3 Alterations (Chapter 9) kick-in where the work area exceeds 50% of the aggregate area of the building. The requirements of Chapters 7 and 8 are also used. The fire protection criteria of Chapter 8 is by far the most comprehensive in the IEBC and the user must remember that Chapter 8 is used in Chapter 9 alterations.

In Level 3 Alterations, fire sprinklers shall be installed:

- In all high-rise work areas and throughout the floor when the work area exceeds 50% of the floor.
- In use groups A, B, E, F-1, H, I, M, R-1, R-2, R-4, S-1 and S-2 if the work area use group is required to be sprinklered according to the IBC.
- Except when the residential occupancies are three stories or less
- Except when the building does not have the municipal water supply to provide the floor(s) with water without using a new fire pump, the work area shall be provided with automatic smoke detection in all occupied spaces.
- In all rubbish and linen chutes when within a work area and if required in new construction according to the IBC.

Fire sprinklers are required for a change of occupancy (Chapter 10) in the IEBC only when that specific occupancy is required to be sprinklered in the IBC. When the IBC requires sprinklers in an occupancy, sprinklers shall be installed throughout the entire "changed" occupancy.

When changes in occupancy occur, sprinklers can provide trade-ups in the following:

- In other than H, S-1 and F-1, fire barriers and horizontal assemblies can be used in lieu of fire walls to create separate buildings.
- Fire sprinklers can be used to protect exterior wall openings.
- Vertical openings, other than stairs, connecting six or less stories are not required to be enclosed when sprinklers are installed throughout.

When additions (Chapter 11) are constructed to existing buildings, the addition shall comply with the sprinkler requirements of the IBC. For example, a new addition is limited by the height, area, and occupancy requirements of the IBC.

The historic building chapter (Chapter 12) contains specific guidance on alterations, repairs, and change of occupancy for buildings meeting the IEBC definition of being historic.

The code official can require historic buildings that are being repaired, altered or have changes in occupancy according to this compliance method to have a report prepared by a licensed design professional. The report shall state the areas undergoing construction, the scope of the reconstruction and compliance with the requirements of the IEBC. Fire protection details are to be included in this report.

In historic buildings, building features can remain when fire sprinklers are installed:

- In Group R-1, R-2 or R-3 occupancies, existing transoms in corridors and other fire-resistance-rated walls may be maintained if fixed in the closed position. A sprinkler shall be installed on each side of the transom.
- Historic glazing may remain in interior fire resistance rated walls (of 1-hr or less) when sprinklers are installed throughout the area.
- Fire barriers (of 1-hr or less) are not required to separate occupancies when sprinklered throughout.
- Existing nonconforming interior finish materials may remain when sprinklers are installed throughout.

Performance Compliance Method - Chapter 14

The performance compliance method is intended to maintain or increase the current degree of public safety, health and general welfare in existing buildings while permitting repair, alteration, addition and change of occupancy without requiring full compliance with Chapters 5 through 13. This chapter contains the evaluation process (value scoring) that is also in Chapter 34 of the IBC. Each project will be unique on its score and it isn't the intent of this article to explain the evaluation or scoring process. However, from experience, fire sprinklers add a tremendous value when using this system.

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At the October Illinois Chapter meeting, North Central Regional Manager Bob Kleinheinz (l.), awarded a five-year anniversary plaque to John Danis (r.) of Absolute Fire Protection, Rockford, Illinois.

How Supporting NFSA Advertising Supports You

By Joanne Genadio

2012 brings with it many exciting changes in NFSA's ability to reach out to both members and non-members alike. With the advent of live training on NFSA.tv, the possibilities of capturing an enthusiastic audience are virtually unlimited. Our new website premiers in January, showcasing new ways site visitors can explore, connect and learn. Our members will have the capability to set up their own profiles and interact with each other like never before. Our two member newsletters, TechNotes and Grassroots are now sent out digitally to all members. E-TechNotes, as it is now known, arrives in member inboxes every other Tuesday and Grassroots is delivered six times a year. E-bulletins are sent out digitally at least once a week, more often if there is breaking news the industry needs to be aware of, to over 10,000 recipients – both members and non-members.

With these enhancements to NFSA communications comes the opportunity to develop targeted advertising plans for SAM members or others looking for a way to "think outside the box" when seeking to engage potential customers. Advertising space is available in and/or on all the venues mentioned above. Not to be forgotten is the benchmark publication of the fire sprinkler industry and the winner of the MarCom Gold Award for the second year in a row; **SQ**. Details of ways to advertise are available in our 2012 Media Kit at the NFSA website through the "**SQ** magazine" link.

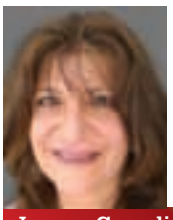
I've gone over the reasons of advertising in a bad economy in a previous **SQ** Membership Column. Following are those reasons in brief:

- Less ads means your ad will stand out
- Ceasing to advertise leaves the door open for your more forward-thinking competitors
- Research shows that companies that continue to advertise during a recession experienced significant growth. McGraw-Hill Research conducted a study of U.S. recessions from 1980-1985. Out of the 600 business-to-business companies analyzed, the ones who continued to advertise during the 1981-1982 recession hit a 256-percent growth by 1985 over their competitors that eliminated or decreased spending.
- Addressing the bad economy in your advertising can actually attract more customers

However, these new advertising initiatives and the reasons for utilizing them are not the focus of this article. In these economically trying times, it is difficult to keep up with rising costs and keep member dues down. Advertising revenue is a major component in NFSA's quest to make use of other financial resources to keep up with the increased cost of "doing business". By advertising with NFSA, our SAM members not only make wise use of their advertising dollars, but help to support the Association in its endeavors to promote the fire sprinkler concept, aid in member retention and help to attract new members by maintaining a reasonable dues structure to reflect the economic times.

As Advertising Coordinator, I truly give thanks to those of you that support us by advertising year after year and issue a challenge to those who don't. Take a look at the media kit. There are many affordable ways you can get your "advertising feet" wet. Not only will you be supporting your association, you will be reaching a target audience like no other. Members who look to do business with other members are waiting to hear from you.

Perhaps the most important point of all – supporting NFSA advertising does not end with the advertiser! All NFSA members should make it a priority to patronize our advertisers. Before purchasing a product or service, take a look through our website, electronic communications and **SQ**. Take note of who advertises and what they have to offer. Choose to do business with those companies first. Not only will you be helping to insure a steady flow of advertising monies that are used to defray the possibility of rising member dues, you will be supporting a fellow NFSA member.

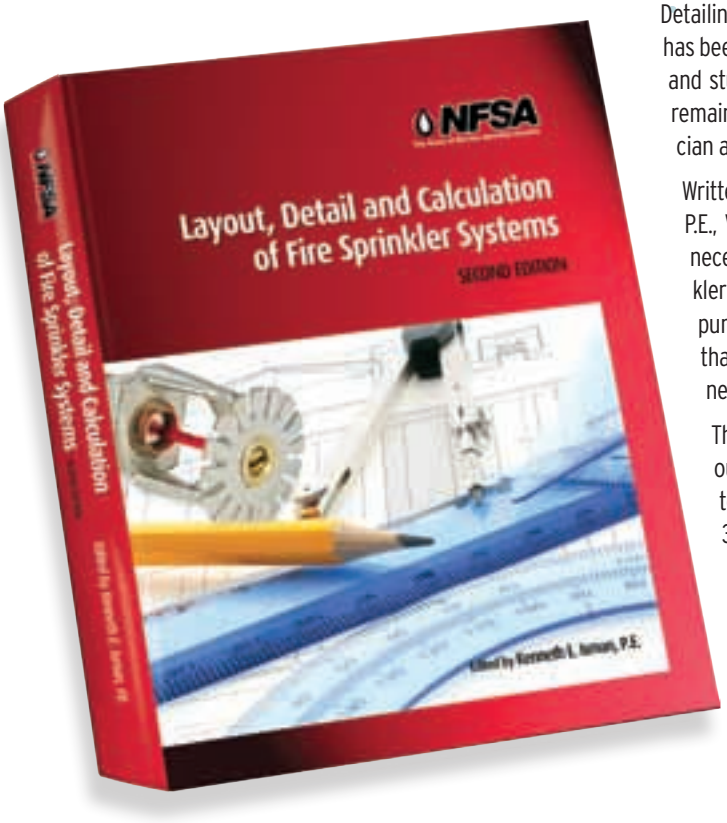


Joanne Genadio
NFSA's Advertising and Communications Coordinator

NFSA RESOURCE CENTER

The Voice of the Fire Sprinkler Industry

2nd Edition of Layout, Detailing and Calculation of Fire Sprinkler Systems



The NFSA announces the publication of the 2nd Edition of its popular textbook, Layout, Detailing and Calculation of Fire Sprinkler Systems. This newly revised hardcover textbook has been updated to reference the 2007 and 2010 editions of NFPA 13 with more examples and student exercises and new chapters on contract issues and stocklisting. This text remains the most complete book ever written for the fire sprinkler engineering technician and it's available now!

Written by the NFSA Engineering Department staff and edited by Kenneth E. Isman, P.E., Vice President of Engineering, this text covers every aspect of determining the necessary details for a fire sprinkler system including: hazard classifications, sprinkler spacing, hanger and brace requirements, hydraulic calculations, water supplies, pumps and tanks. The text also contains a review of basic math and physical science that is helpful in understanding the scientific principles behind the requirements that need to be followed.

This text makes an excellent self-study guide for the NICET Automatic Sprinkler Layout and Detail certification program and covers all of the work elements necessary to achieve Level 2 certification and many of the elements needed to achieve Level 3 and Level 4 certification. Even if you are not studying for a NICET exam, this text makes an excellent self-study guide for anyone wanting to know more about fire sprinkler systems.

The text retails for $95 (plus S&H) to members of the NFSA and $145 for non-members (plus S&H). However, as an extra added bonus, to reward the people that purchased the first edition of the book, if you clip Ken Isman's picture out of the 1st Edition back cover flap and send it back to us with your order (mail orders only, no fax orders for this offer), then you can take another $10 off the price of a single book ($70 + S&H for members and $120 for non-members). To get your book, fill out the following form and return it with your payment.

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By Victoria B. Valentine, P.E.

Flexible Sprinkler Hose Connections

Flexible sprinkler hose connections were first used as part of fire sprinkler systems to easily access sprinklers inside of ductwork where they needed to be inspected or changed on a regular basis. Since their appearance in sprinkler systems, their use has widened to a variety of applications. One example is these devices have become a tool for simplifying installing fire sprinklers in the center of tile.

There is very little information provided in NFPA 13 on installing flexible sprinkler hose connections. NFPA 13 does indicate that these products must be listed. The only mention of installation requirements for flexible sprinkler hose is under hanging requirements (Section 9.2.1.3.3), where flexible sprinkler hose longer than 6 feet (1.8 m) in length requires its own hanger for support. Each manufacturer has a data sheet and/or installation instructions that provide rules to be followed for proper installation.

The products are listed under either UL 2443 or FM 1637 when used within the United States. Flexible sprinkler hose connections go through testing for fatigue, vibration, pressure cycling, hydrostatic pressure, friction losses, among others. When UL lists flexible sprinkler hose, it may be classified as having limited flexibility or high flexibility. The difference between these classifications is the number of cycles the hose has to endure. For the limited flexibility category, the Fatigue Test is run for 100 cycles. For the high flexibility category, it is run for 50,000 cycles. FM only has one Fatigue Test, which parallels the high flexibility category from UL's standard, using 50,000 cycles. The intent of the Fatigue Test is to represent the movement that could occur over the lifespan of the flexible hose connection. Some applications are better suited with the high flexibility sprinkler hose, such as inside ducts where the sprinklers may regularly need to be inspected or changed.

The flexibility or bend-ability of flexible sprinkler hose is one of its advantages. However, there is a minimum bend radius that needs to be maintained (see figure 1). This is the shortest permissible radius for bending the flexible hose. If the hose is bent with a tighter radius, the flow characteristics of the hose could be altered. If a radius larger than the minimum value is used, then the bend would be less sharp and the flow characteristics, such as equivalent length for use in hydraulic calculations, would be a conservative assumption. These values can vary significantly with values as small as 3 inches (76 mm) and others as large as 12 inches (305 mm). A single product may have a different minimum bend radius if it is being used under its UL listing or its FM approval. It is important to verify the specific information for the product being used in a particular project. In addition, manufacturers have developed tools that can be used to confirm the radius is the minimum bend or greater once the product is installed.

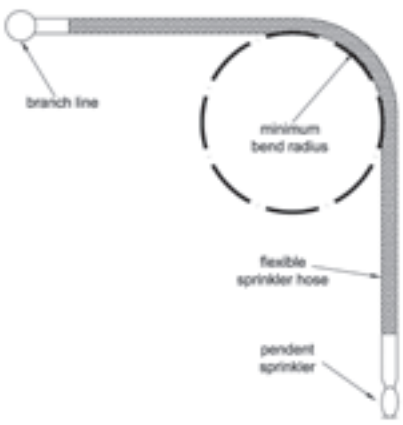

Figure 1: Minimum bend radius of flexible sprinkler hose.

Another item to discuss with arranging and installing flexible sprinkler hose is the maximum number of bends permitted in a length of flexible sprinkler hose. This is typically presented in the number of 90-degree bends allowed. The values presented by the manufacturers range from only allowing one bend in a length of flexible sprinkler hose to as many as four bends. This does vary with each

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Victoria B. Valentine, P.E.
NFSA's Director of Product Standards

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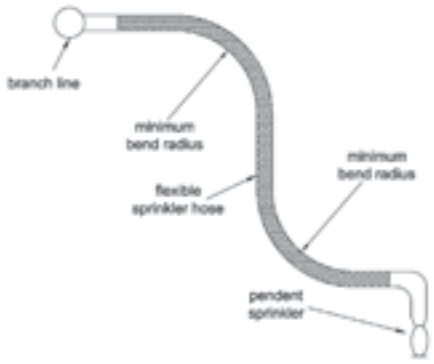

Figure 2: Two 90-degree bends in a flexible sprinkler hose installation.

One scenario that has led to field confusion is where the flexible sprinkler hose is shaped like a "U". This can be seen in Figure 3. It has been mistaken that this U-shape is a single bend in the flexible hose, when in reality the number of bends is provided in relation to 90-degree bends. This means that there are two (2) bends in the U-shape. If a specific hose is only permitted to have one 90-degree bend, this would be a problem.

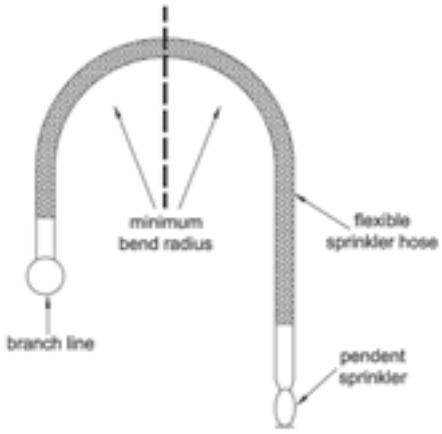

Figure 3: Flexible sprinkler hose installed with a "U" bend.

All of the installation guidelines provided warn the user of kinking the flexible sprinkler hose. As the hose is flexible, it is possible that it could be bent too far. This could cause a kink in the line that may or may not be visible from the exterior of the hose. However, it could alter the inside diameter or the flow characteristics of the flexible hose and affect sprinkler performance.

Currently, both UL and FM test standards do not list flexible sprinkler hose that is longer than 6 feet (1.8 m). In other parts of the world beyond the United States, these lengths are made and used. This is where additional support for flexible sprinkler hose would be required in accordance with NFPA 13.

Another requirement from NFPA 13 is that when flexible sprinkler hose is used with suspended ceilings, the ceiling must comply with ASTM C 635, Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings, and ASTM C636, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels. This ensures that there is sufficient strength in the ceiling grid to support the flexible sprinkler hose and to resist the upward thrust when the sprinkler activates.

The length of the flexible sprinkler hose is one piece that factors into the equivalent lengths provided by the manufacturer for use within hydraulic calculations. Both UL and FM test the flexible sprinkler hose for the equivalent length and the length is presented with relation to 1-inch (25-mm) diameter, Schedule 40 steel pipe. The equivalent length for the hose is determined with the maximum number of bends formed in the specific length. This allows for the hose to contain the maximum number of bends (using the minimum bend radius) and the hydraulic calculations to remain appropriate. The equivalent length values vary dramatically between manufacturers, hose length, and listing laboratory.

Summary

Flexible sprinkler hose can be a valuable tool when installing sprinklers, especially for those located inside ductwork or when trying to hit the center of tile. However, there are many details that need to be followed so that the system, including flexible sprinkler hose, will operate as intended. A couple of the ones to be conscious of are maintaining the minimum bend radius and the maximum allowed number of bends.

REFERENCES:

1. NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, National Fire Protection Association, Quincy, MA, 2009.
2. UL 2443, Flexible Sprinkler Hose with Fittings for Fire Protection Service. Underwriters Laboratories, Inc., Northbrook, IL. May 2010.
3. FM 1637, Approval Standard for Flexible Sprinkler Hose with Threaded End Fittings. FM Approvals LLC, Norwood, MA. February 2010.

Three NFSA Employees Appointed to ICC Committees

NFSA is very pleased to announce that **Jeff Hugo**, Manager of Codes, has been reappointed to the International Existing Building Code Committee for a second term. The International Existing Building Code is part of the ICC family of codes. With the appointment of **Dominick Kasmauskas**, NFSA's Associate Director of Regional Operations – North, to the ICC Green Committee and **Bob Kleinheinz**, North Central Regional Manager, being appointed to the ICC Residential Building Interpretation Committee, this will be the first time NFSA has representatives on three ICC committees at the same time.

SQ 2011 Buyer's Guide Issue Recipient of Marcom Gold Award for Excellence

NFSA is proud to announce that **SQ**'s 2011 Buyer's Guide issue is a recipient of the Marcom 2011 Gold Award for excellence. MarCom Awards is administered and judged by the Association of Marketing and Communication Professionals. The Association oversees awards and recognition programs, provides judges and sets standards for excellence. The competition is the largest of its kind in the world. The Gold Award was presented to only 18 percent of entrants. We wish to congratulate **SQ**'s contributors, advertisers, and all who work diligently every day to maintain the standard of excellence to which our readers have become accustomed. Thanks for making **SQ** the benchmark publication of the fire sprinkler industry!

Lecair and Hart Recipients of CAL FIRE Award

Southwest Regional Manager **Bruce Lecair** and NFSA Consultant **Steve Hart** have been named awardees for the 2010 CAL FIRE Director's Annual Recognition Program. The CAL FIRE Executive Team reviewed numerous nominations received for the Director's Annual Recognition Program Awards. According to the Executive Team, the awardees demonstrated superior performance, proving their commitment and dedication to the values and mission of the Department. Hart and Lecair were lauded for inspiring and motivating others, seeking solutions, generating initiative, resourcefulness and creative efforts through their superior accomplishments.

NFSA Announces Exciting New Seminar Offering

Sprinkler System Basic Hydraulics – Distance Learning

SEMINAR DESCRIPTION:

Over a course of nine weeks, basic hydraulic calculations for fire sprinkler systems will be covered so that the participant will be able to recognize and apply the terminology used in the fire sprinkler industry, calculate flow and pressure demands for a sprinkler system by hand, prepare the input for a computer program to perform hydraulic calculations and interpret the output from a program. The seminar will be taught via the internet in a live distance learning format using the NFSA Media Center to broadcast lectures and facilitate live discussions from wherever the participants are, worldwide. Activities will be done in class and homework will be assigned each week, graded and returned with comments. Participants will need a computer and a good internet connection.

Duration:
One class (60 to 90 minutes) per week for nine weeks

Seminar Fees:
$250 for NFSA members and $375 for non-members

Participant Materials provided by NFSA:
Participants will each get a copy of the NFSA Hydraulic Handbook along with handouts, building plans, exercises and homework assignments.

Participant Materials provided by Participant:
Participants will need to provide their own copies of NFPA 13 and a calculator with a yx key.

Seminar Schedule:
Nine classes on Wednesday afternoon from 2:00 p.m. to 3:30 p.m. EST,

February 1, 2012:	*Module 1*	Introduction to Hydraulics
February 8, 2012:	*Module 2*	Basic Hydraulics
February 15, 2012:	*Module 3*	Hydraulic Calculation Theory, Part 1
February 22, 2012:	*Module 4*	Hydraulic Calculation Theory, Part 2
February 29, 2012:	*Module 5*	First Full System Hydraulic Calculation
March 7, 2012:	*Module 6*	Computer Input and Output
March 14, 2012:	*Module 7*	Residential Systems
March 21, 2012:	*Week 8*	Complex Operating Areas and Non-Uniform Layouts
March 28, 2012:	*Week 9*	Homework review and final comments

REGIONAL ROUNDUP

NORTHEAST REGION

DOMINICK KASMAUSKAS
Associate Director of Regional Operations - North

New York City & NFPA 25

As of January 1st, 2012, the Fire Department of New York (FDNY) will fully enforce NFPA 25 within the five boroughs of New York City. Although referenced by the latest adopted New York City (NYC) Fire Code a couple years ago, FDNY, Building Owners, and inspecting contractors have needed time to ramp up.

Ramp up time is now over and full enforcement of the 2002 edition of NFPA 25 (with NYC amendments) begins January 1st.

There has been much discussion among fire sprinkler contractors regarding loss of business, contract language and liabilities. The major item of concern is if any fire sprinkler contractor offers themselves to perform the previous style of NYC inspection and testing methods, which are now outdated and technically substandard to what is now in force. Fire sprinkler contractors should speak with their insurance carrier and their attorney before considering doing something that may put their business in jeopardy and cast a shadow on the excellent reputation of our industry in NYC.

Be cautious with contract language and ensure your contracts are up-to-date to reflect the new ITM requirements and the language is consistent with industry best practices. NFSA members seeking guidance can contact Associate Director of Regional Operation✣North, Dom Kasmauskas, to obtain information needed in this area of concern.

Dominick Kasmauskas is the NFSA's Associate Director of Regional Operations-North and Regional Manager for the Northeast Region. He can be reached at Kasmauskas@nfsa.org or1436 Altamont Ave. Suite 147 Rotterdam, New York 12303, Phone 518.937.6589, Fax 518.836.0210.

MID-ATLANTIC

RAY LONABAUGH
Regional Manager

Sprinkler Saves and Stupid Criminal Acts

Abington, Maryland

Don't attempt to burn your mother's house down if it has an automatic sprinkler system! A 36 year-old man from Abington, Maryland found this out when he was convicted of arson on September 30th. The fire was set in the basement of his mother's home in Abington, Maryland on the afternoon of September 25th. Firefighters from Abington, Joppa and Bel Air responded to the alarm; however, when they arrived they found the residential fire sprinkler system had extinguished the fire. The results: Mom's house was saved and her son has a new residence, the county prison!

Herndon, Virginia

Here's a story about another genius that has no knowledge of residential fire sprinklers and tried to burn down a sprinklered residential building in Herndon, Virginia.

A 64 year old Fairfax County man was charged with arson for setting a fire inside an apartment building on Thursday, October 20th. The Fairfax County Fire and Rescue Department received an automatic fire alarm around 7:00 p.m. for an apartment building in Herndon. When firefighters arrived they found minor fire and water damage in a second floor apartment at the origin of fire. The fire sprinkler system had already extinguished the blaze. The suspected arsonist was identified and taken into custody.

Raymond W. Lonabaugh is the NFSA Regional Manager for the Mid Atlantic Region. He can be reached at: lonabaugh@nfsa.org or P.O. Box 126, Ridley Park, Pennsylvania, 19078. Phone: 610.521.4768.

SOUTHEAST REGION

WAYNE WAGGONER
Associate Director of Regional Operations - South

Four Injured in Gallatin, Tennessee Fire

A fire at an apartment complex on Woods Ferry Road sent at least four people, including two children, to the hospital.

Several neighbors attempted to rescue the three people trapped on the second floor of the burning townhome, but were unsuccessful due to the heavy smoke.

Two children were taken to Monroe Carell Jr. Children's Hospital at Vanderbilt where they were in stable condition, said spokesperson Jeremy Rush.

A witness to the fire said he was standing outside his door talking to the father of the children when they smelled smoke. The father did not immediately realize it was his apartment that was on fire but thought the smoke was coming from elsewhere.

When he realized it might be coming from his unit, the father rushed inside and attempted to get the two children out, but

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all three became trapped by heavy smoke, the neighbor said.

Based on accounts from several witnesses, the fire spread quickly.

Several neighbors tried to enter the burning apartment, but none were able to get past the thick, black smoke cloud.

Upon firefighters' arrival, the two children were found unconscious in an upstairs room at the back of the apartment, said Captain Rodney Pryor, one of the first firefighters to enter the burning townhome.

After he knew rescuers had evacuated the children, their father was able to escape the fire by jumping from a second-story window into a tarp held by police and firefighters below.

The cause of the fire is still under investigation, but a preliminary report indicated it was caused by something cooking in the kitchen, said Gallatin Fire Department Chief Billy Crook.

The father was taken to Sumner Regional Medical Center and held overnight to be monitored for respiratory difficulties, said spokesperson Rachel Lassiter. He was released the next day.

A neighbor who attempted to rescue the children was also taken to Sumner Regional where he was treated and released for an injury to his arm.

Wayne Waggoner is the NFSA Associate Director of Regional Operations-South and Regional Manager for the Southeast Region.. He can be reached at: Waggoner@nfsa.org or PO Box 9, Andersonville, Tennessee 27705, Phone 865.755.2956, Fax 865.381.0597.

FLORIDA & PUERTO RICO

LORRELL BUSH
Regional Manager

Hawk's Cay Conference a Huge Success

The 2011 Hawk's Cay conference, hosted by the Florida Fire Sprinkler Association, a chapter of NFSA, was termed a huge success. Nearly 70 contractors and more than 100 industry stakeholders attended the event in the beautiful Florida Keys.

Outstanding presentations on a variety of topics highlighted the four-day conference. Highlights of the conference included presentations by Top Myers of the Relmark Group, Wendy Niles and Tony Apfelbeck, Fire Marshals from Central Florida, Pete Schwab from Wayne Automatic, Buddy Dewar, Jim Dalton, Ken Isman and Dave Bowman from NFSA, James Golinveau, Tyco, Steve Garvis from Dale Carnegie Training, Alan Johnston, Hydracad, David Asplund, Reliable, and Greg Johansen from GJJ Law.

Attendees received at least 32 CEU's, including all of the mandatory courses needed for contractor recertification in Florida. Many of the highlights of the conference are featured on our website at: www.FloridaFireSprinkler.com.

Lorrell Bush is the NFSA Regional Manager for the Florida Region. She can be reached at: bush@nfsa.org or 2025 Droylsden Lane, Eustis, FL 32726. Phone: 352.589.8402 Cell: 954.275.8487 Fax: 561.327.6366

GREAT LAKES REGION

RON BROWN
Regional Manager

Sprinklers Save Michigan State University Fraternity House

East Lansing, Michigan fire officials are investigating a suspicious fire in a Michigan State University fraternity house. Approximately 30 students lived in the home and were having a party when the fire started. Firefighters were forced to break down the doors to three rooms to wake "incapacitated" residents and get them out of the house.

Fire department officials believe several small fires were intentionally set in the house. The structure was outfitted

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REGIONAL ROUNDUP

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with a sprinkler system and that likely saved lives.

NFSA President John Vinello responded to this incident by writing a letter to the editor recognizing the lifesaving value of fire sprinklers in this fire and all structures where people work, live, shop, stay, play or pray. The nation's Greek Houses have been very responsible over the past several years in their efforts to protect fraternity and sorority members with life saving fire sprinklers.

Ron Brown is the NFSA Regional Manager for the Great Lakes Region. He can be reached at Brown@nfsa.org or 1615 Cypress Spring Drive, Fort Wayne, Indiana 46814, Phone 845.661.6534; Fax 260.625.4478.

NORTH CENTRAL REGION

BOB KLEINHEINZ
Regional Manager

Working Sprinkler Saves Mt. Prospect, Illinois Home

An activated sprinkler system held a fire in check that broke out at 409 Oak St. in Mt. Prospect, Illinois on Tuesday, November 7th.

Firefighters responded at approximately 8:10 p.m. Upon entering the garage, they found the charred remains of a rubbish fire.

Fire officials said all occupants were able to exit the home quickly because of the activation of the residential fire sprinkler system's interior bell. An interior bell is required on all home fire sprinkler systems to alert occupants of a fire sprinkler system activation.

According to fire officials, the fire started in the garage and appeared to be accidental in nature, caused by rags coming in contact with a heating source. There was no smoke or water damage to the interior of the home.

No injuries were reported and damage was estimated at only $3,000.

Bob Kleinheinz is the NFSA Regional Manager for the North Central Region. He can be reached at Kleinheinz@nfsa.org or 509 Dawes Street, Libertyville, Illinois 60048, Phone 914.671.1975.

SOUTH CENTRAL REGION

CHRIS GAUT
Regional Manager

Sprinklers Limit Damage in Cedar Rapids, Iowa Fire

Fire officials said sprinklers did their job on November 17th by containing a fire at a Cedar Rapids processing facility.

The fire alarm system was activated around 10:15 p.m. at SunOpta Ingredients, prompting a response by firefighters. Employees evacuated without injury, and reported smoke coming from the filter receiving system on the third floor, authorities said.

Fire Department spokesman Greg Buelow said an investigation determined polyester bags inside the filter receiving system were smoldering, but sprinklers had knocked down the fire. Crews found only heavy smoke inside the building, but they were able to ventilate the area, allowing employees to return to work within an hour.

Buelow said the filter receiving system removes particulates from the air while it receives product. He said the business makes dietary fiber for the baking industry.

Company personnel estimated the damage at less than $1,000, Buelow said.

Chris Gaut is the NFSA Regional Manager for the South Central Region. He can be reached at gaut@nfsa.org or NFSA South Central Region Office, 237 E. Fifth St. #135, Eureka, MO 63025, Phone 845.803.6426, Fax 636.410.7700.

GREAT PLAINS REGION

TERRY PHILLIPS
Regional Manager

Colorado Department of Public Health & Environment Guide for Discharges from Fire Safety Maintenance Activities

The Colorado Department of Public Health and Environment Water Quality Control Division (CDPHE) has published a document addressing the rules that are required to be followed related to Fire Suppression System Discharges and Fire Suppression System Leak Discharges.

Regarding excerpts from the document:

Fire Suppression System Discharges (Draining the system)
An application for coverage under this permit must be provided to the Division at least 30-days prior to the discharge commencing.

Inspector Test
...this water cannot be discharged without a permit
...discharge water associated with this test, it may be preferable to collect all water and either request authorization from the wastewater treatment facility operator to discharge to sanitary sewer, or to inject it back into the Fire Suppression System.

Fire Suppression System Leak
An unpermitted discharge is a violation of State statute and regulations. If a discharge does occur, it must be reported to the spill line and the Division will review and may pursue enforcement options concerning the violation.

The responders to a fire suppression system leak scenario may want to explore the possibility of responding to the scene with a storage tank that can receive the fire suppression system water.

Be sure to watch for the January meeting announcement of the Colorado Fire

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Protection Association relating to this document. It is the intent of the CFPA to have Michelle DeLaria and Nicole Rolfe at the January meeting to answer questions about this document, which was adopted by the State of Colorado in 1970.

Terry Phillips is the NFSA Regional Manager for the Great Plains Region. He can be reached at: Phillips@nfsa.org or Phone 914.525.4396, Fax 307.514.0406.

SOUTHWEST REGION

BRUCE LECAIR
Regional Manager

NFSA Realigns West and Southwest Regions

NFSA has realigned its West and Southwest regions, naming Bruce Lecair, NFSA West Regional Manager, as the new Southwest Regional Manager. Bruce, who resides in Southern California, will continue as the West Regional Manager. He is a 31-year fire service veteran who joined the Woodland Fire Department in Northern California in January of 1979 and served as Assistant Fire Chief for 13-years and was the city's Fire Marshal for 6-years

Bruce currently serves on the California OSFM Automatic Extinguishing Systems Advisory Board, NFPA 25 Work Group and was co-chair of the Water Discharge for Fire Protection Systems Task Force. He is California Fire Service Training and Education System certified as a Fire Marshal and Chief Officer, has an Associate of Science degree in Fire Science, a Bachelor of Science degree in Management and a Master of Science degree in Emergency Services Administration.

Bruce joined NFSA in March of 2007 as the West Regional Manager serving California and Hawaii. He was also the interim Regional Manager for the Pacific Northwest Region.

Bruce Lecair is the acting NFSA Regional Manager for the Pacific Northwest Region. He can be reached at: lecair@nfsa.org or Phone: 951.277.3517, Fax: 951.277.3199.

NORTHWEST REGION

SUZANNE MAYR
Regional Manager

Jeff Hudson Joins NFPA Staff as Regional Sprinkler Specialist

Jeff Hudson of Shawnee, KS, has joined the staff of the National Fire Protection Association (NFPA) to promote the adoption of fire sprinkler legislation across the United States. Jeff will be working with IRC legislation in the Pacific Northwest. He joins NFPA with 36 years of experience in the fire service. Starting his career as a volunteer firefighter for the city of Shawnee, KS, he worked his way up the ranks to Fire Chief, a position he held for the past ten years.

Jeff attended the National Fire Academy in Emmitsburg, MD, and holds an associates degree in fire science, a bachelors in management and a masters in public administration. He has served in high-ranking leadership roles for a number of reputable fire associations and committees including the Kansas Association of Fire Chiefs, the Johnson County (KS) Fire Chief's Association, the Fire Marshal's Association of Kansas and the Eastern Kansas Multi-County Task Force.

Suzanne Mayr is the NFSA Regional Manager for the Pacific Northwest Region. He can be reached at: mayr@nfsa.org or Phone: 253.208.8467.

SPRINKLING OF NEWS

■ TYCO Model EC-25 Sprinkler Offers Lower Installed Cost and Better Fire Protection

Tyco Fire Protection Products (TFPP) announces enhancements to existing FM Global Approvals of the TYCO Model EC-25 Extended Coverage Sprinkler in extra hazard and storage occupancies. With the enhanced FM Approvals, the Model EC-25 Sprinkler provides advanced, cost-effective solutions for the higher density, extended coverage applications. The Model EC-25 Sprinkler provides lower installed cost and better fire protection when compared to standard coverage sprinkler systems because of these key benefits:

- Fewer branch lines and fewer sprinklers as a result of the extended coverage area
- Lower operating pressures in accordance with the S x L Spacing Rules defined by NFPA 13, Section 8.5.2
- Lowest hydraulic system demand provided in FM Global Property Loss Prevention Data Sheet 8-9 July 2011 Revision and Engineering Bulletin 06-11
- Fewer opened sprinklers and fewer consumed pallets than standard coverage sprinklers as shown in full-scale fire tests

As a result, TFPP will also consolidate its storage offerings by eliminating the Model EC-17 Sprinkler by January 1, 2012.

A set of white papers, located on www.tyco-fire.com, provide additional information on the cost-saving benefits and expanded applications of the Model EC-25 Extended Coverage Sprinkler. The technical data sheet, TFP213, also available on the website, provides detailed technical information on the product.

■ Viking Introduces Quick Response, Extended Coverage, Concealed Sprinkler for Ordinary Hazard Occupancies

Viking Corporation has introduced the industry's first quick response, extended coverage, flat plate concealed fire sprinkler for Ordinary Hazard (OH) occupancies. The new VK538 Mirage® sprinkler, which is cULus Listed for OH-1 and OH-2 occupancies, provides the enhanced aesthetics of a flat cover plate with the design advantages of a QREC sprinkler in these applications.

With a K Factor of 11.2 (161), the VK538 is well suited for systems requiring higher water densities, as well as situations where the available water pressure is limited. Potential applications include casinos, hotel atriums, retail environments, libraries, automotive showrooms, and shopping malls.

The new VK538 Mirage® is Listed for coverage areas as large as 20 x 20 ft. (6.1 x 6.1 m) and has required flows and pressures that are less than or equal to most non-concealed sprinklers for OH occupancies. The new sprinkler has a 3/4 inch (20 mm) NPT thread size and is available in 165°F (74°C) and 205°F (96°C) temperature ratings. Like all concealed sprinklers from Viking, flat cover plates are available in several standard finishes and a nearly unlimited number of custom colors.

For more information visit www.vikinggroupinc.com or call 800-968-9501.

PEOPLE

New Addition to Reliable's Sales Team

The Reliable Automatic Sprinkler Co., Inc. announces the newest addition to their sales team – **George Nicola**. Nicola joins Reliable as a sales representative responsible for sales in Southern Florida and is based in their Longwood, Florida office. With over 25 years in the industry, he has a long successful history of contracting experience, which includes branch management with a sprinkler contractor in Southwest Florida. Responsibilities have included many phases of sprinkler contracting including: design, sales, and management. Nicola is a past member of the Florida Fire Sprinkler Association Board of Directors. Educational background includes a Bachelor of Science in Business Administration from Youngstown State University and an MBA from the State University of New York at Buffalo.

NFSA

FUTURE NFSA ANNUAL SEMINAR SCHEDULE

NFSA Annual Seminar
Hilton Los Cabos
Los Cabos, Mexico
May 3 - 5, 2012

NFSA Annual Seminar & Exhibition
Caesar's Palace
Las Vegas, Nevada
April 4 - 6, 2013

NFSA Annual Seminar
Atlantis, Bahamas
May 8 - 10, 2014

NFSA Annual Seminar & Exhibition
Hilton Bonnet Creek Resort
Orlando, Florida
April 30 - May 2, 2015

STATEMENT FROM THE NATIONAL FALLEN FIREFIGHTERS FOUNDATION ABOUT DEATH OF HAL BRUNO, CHAIRMAN EMERITUS

FORMER ABC NEWS POLITICAL DIRECTOR WHO MODERATED VICE PRESIDENTIAL DEBATE

It is with deep sadness that the National Fallen Firefighters Foundation announces that Chairman Emeritus, **Hal Bruno**, died last evening, Tuesday, November 8, 2011. He was 83.

For more than 60 years, Hal Bruno served as an active member of the fire service community, giving selflessly as a dedicated volunteer firefighter, advocate, commentator and leader. He is renowned for his commitment to fire safety initiatives and his compassion for the members of the fire service and their families.

Bruno was appointed chairman of the National Fallen Firefighters Foundation in 1999, a distinction he held until his retirement in 2008. Under Hal's leadership the NFFF expanded services and resources for the survivors, including workshops, conferences and scholarships. He guided and supported the Foundation in developing safety initiatives for firefighters and advancing safety practices that will help to reduce the number of line of duty deaths and injuries.

On Capitol Hill and at the White House, Bruno was admired and respected for his integrity and ability to work with Democrats and Republicans alike to address important issues impacting our nation's firefighters and rescue personnel. He was a staunch advocate for passing the Hometown Heroes Survivors Benefit Act which provides federal death benefits to the families of firefighters who die in the line of duty from heart attack or stroke.

A native of Chicago, Bruno enjoyed an illustrious 60-year career in journalism, retiring in 1999 from ABC News where he was Political Director and host of the weekly talk show, Hal Bruno's Washington. He frequently appeared on debate panels and served as moderator of the vice-presidential debate in, among others, the 1992 campaign. He covered every national election since 1960, most recently as the senior political analyst for Politics.com and as a guest commentator on CNN and other television programs.

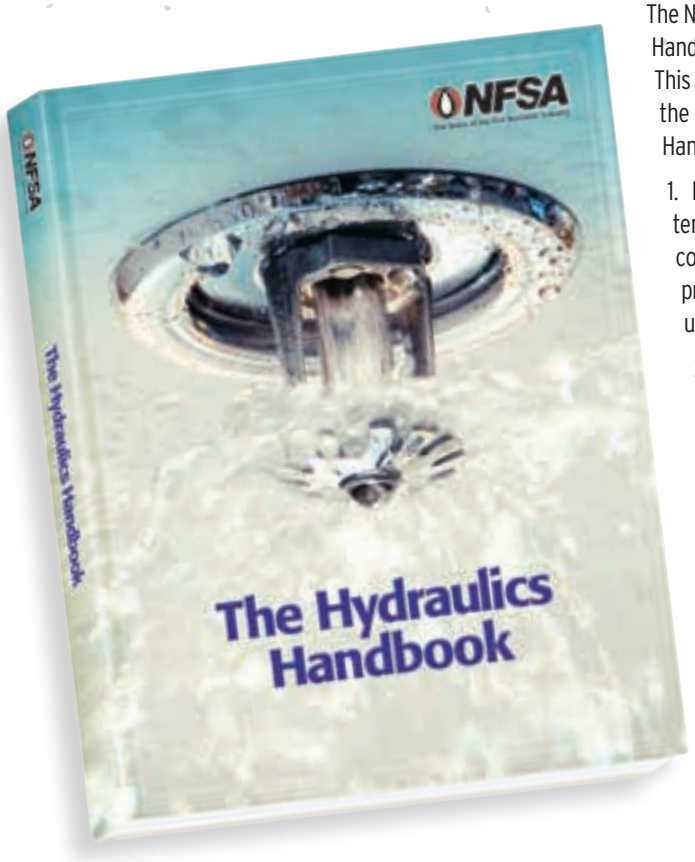
He was one of the first journalists on the scene of the tragic Our Lady of the Angels elementary school fire in Chicago on December 1, 1958 in which 92 students and 3 nuns died. His report that the fire spread so quickly because of the open stairwell lead to significant changes in fire safety and building standards and codes.

Mr. Bruno received numerous awards and recognition from the fire service for his dedication and commitment. In October of 2011 he was awarded the National Fire & Emergency Services Hall of Legends, Legacies and Leaders Award. The Congressional Fire Services Institute's Board of Directors selected him as the recipient of the 2008 CFSI / Motorola Mason Lankford Fire Service Leadership Award and in 1999 he received the "President's Award" from the International Association of Fire Chiefs. He was named "Fire Service Person of the Year" by the Congressional Fire Services Institute in 1995 and in 2009 he received the Fire Buff of the Year Award from the International Fire Buff Associates. He is also a 2008 inductee of the Washington, D.C., Pro Chapter of the Society of Professional Journalists Hall of Fame.

Bruno was a reporter, Chicago Bureau Chief, News Editor and Chief Political Correspondent for Newsweek magazine where he covered such matters as the civil rights movement, the 1968 Democratic National Convention and Watergate. He got his start at the DeKalb (Ill.) Daily Chronicle, moved to the City News Bureau of Chicago - where he covered the fire and police beat - and was also with the Chicago American newspaper. Bruno was a war correspondent who covered the 1956 Suez crisis, the Cuban revolution and the Chinese-Indian war. He was a graduate of the University of Illinois, served as an Army intelligence officer during the Korean War and was a Fulbright Scholar to India.

Hal is survived by his loving wife Meg, his sister Barbara and his sons Harold and Daniel, and their wives, Brenda and Susan and four grandchildren. •

NFSA's New Hydraulics Handbook is Here!



The National Fire Sprinkler Association is proud to announce the release of The Hydraulics Handbook, an overhaul and update of a publication originally put out in the early 1990's. This new updated edition is a comprehensive discussion of everything having to do with the hydraulic calculation of sprinkler systems. There are three distinct parts to the new Handbook:

1. Excerpts from the NFSA textbook Layout, Detail, and Calculation of Fire Sprinkler Systems that deal with hydraulics. These comprehensive chapters cover the methods and concepts involved with calculating a fire sprinkler system by hand or with a computer program. Each chapter ends with a series of questions to make sure that the user understood the concepts in the chapter.

2. A brief discussion of conducting hydraulic calculations from the perspective of a code enforcement official. This discussion is helpful for the plan review of calculations that have been submitted. A sprinkler technician can also use this information in spot checking the output from a computer program.

3. Friction loss tables. There are many different types of pipe and tube used in sprinkler systems. For each type of pipe, this book has a page with the friction loss per foot of pipe at a variety of different flows. Each page also contains the equivalent length of the fittings (tees, elbows, control valves, and check valves). These pages substitute for performing the Hazen-Williams friction loss calculation on a calculator and save time for people performing hydraulic calculations by hand or for people wanting to spot check calculations performed by a computer.

With almost 400 pages of text, this book is a "must have" for anybody that performs hydraulic calculations of fire sprinkler systems or performs plan review and approval of hydraulic calculations. **Order your copy at www.nfsa.org at the Resource Center or fill out and return the order form below.**

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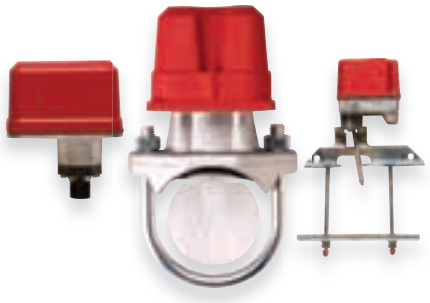

Fire sprinkler systems are designed to minimize fire damage and protect places and people where they live and work. But if they don't operate as expected, the results can be costly and tragic.

With System Sensor waterflow detectors, if a sprinkler head is activated and water begins to flow, a signal is sent to the fire alarm control panel or notification device. This enables personnel to respond quickly, minimizing damage from fire or the water used to put it out.

For over 25 years, System Sensor has provided innovative products that save lives and protect property. To learn more about our waterflow detectors or our complete line of sprinkler monitoring products, visit systemsensor.com/**wf**.

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